SERVICE GUIDE

CPB-404

AGRICULTURAL TRACK

Versatile Delta Track

VERSATILE

REMOVAL
INSTALLATION
INSPECTION
ALIGNMENT

CAMSO

ROAD FREE COMPANY

Table of Contents

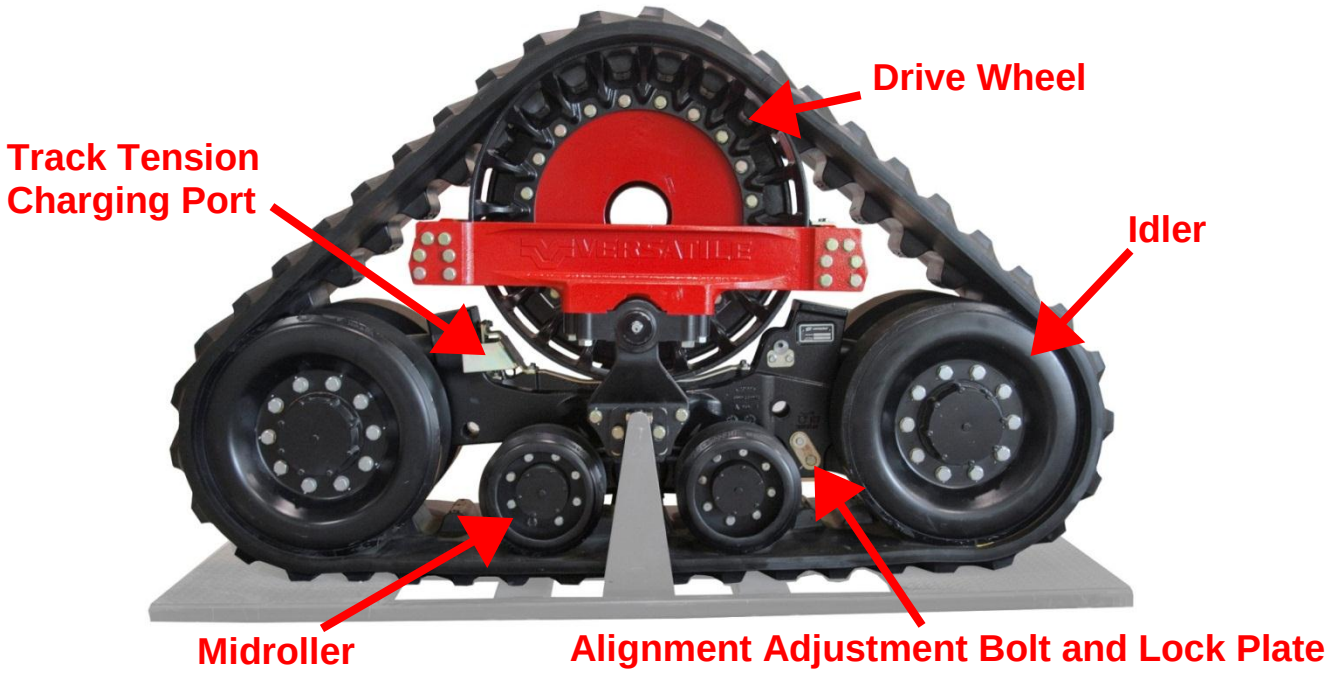
Introduction

This service guide is intended for distributors and dealers, and provides the basic information needed for track installation and service. Whenever tracks are changed, they also require alignment in order to maximize overall track life. Also, see the appropriate operator's manual for track maintenance, alignment procedures, and specific bolt torque by model. **NOTE**: **Wheel bolt torque is critical. Over tight is as bad as too loose.**

Notice:
When servicing track machines, follow all manufacturers recommended safety precautions. Failure to follow safe procedures can result in injury or death.

Track Terminology

Familiarize yourself with the terms below before reading further instructions or working on any tracked machine.



General Tooling Requirements

Table 1 lists both the standard and specialized tools required for removal and installation of Camso tracks.

Safety Glasses and Steel Toed Shoes **Versatile P/N 86052514 Track Tensioning Tool** **or** **Camso P/N CST-0120 Track Tensioning Tool** **Ratcheting hoist / "Come Along"** **Selection of pry bars (1 at least 5 ft long)** **Infrared Thermometer*** **Torque Wrench (600 lb ft / 813 Nm capacity)** **(4) 15 Ton / 15000Kg minimum Support Stands**	**3/4" Impact Wrench (450 lb ft / 610 Nm capacity)** **Several large wood blocks** **(2) Lifting Eyes** **Air / Hydraulic Jack (Minimum 15 Ton /15000 kg Capacity / 12" stroke)** **Soap solution (used for track installation)** **18mm, 19mm, and 30mm sockets with extensions** **24mm, 36mm ¾ drive impact sockets**
Table 1. Tooling List (* denotes special track tools)	

Special Torque Values

Idler wheel bolts.....790 lb ft (1070Nm)
Midroller wheel bolts..... .....236 lb ft (320 Nm)
Alignment Adjustment Bolt.....221 lb ft (300 Nm)
Alignment Adjustment Bolt Lock Plate.....95 lb ft (130 NM)

NOTE: Bolt torque is critical. Always use a torque wrench and refer to the operator's manual for wheel bolt torques by specific model. Damage to tracks from failed hardware is not covered by track warranty!

Time Estimates - Removal, Installation and Alignment

The time required to change a track depends on the experience of the technician and the tools available. Table 2 lists average times for removal, installation, and alignment. This estimate is based on a service technician of average skills with the basic correct tools and working on firm, level ground. Working in adverse conditions can take significantly longer, while experienced technicians will be able to complete the work in a shorter time.
*** Note: If additional parts need to be replaced on the undercarriage as a result of a machine inspection, the total time may be significantly longer than shown.**

****NOTE: With track removed always inspect front idler tension link pivot for wear or play and repair as needed before installing new track. Excessive play in tension link pivot assembly will cause track alignment problems and track damage that will not be covered by track warranty.**

Track Removal, Inspection & Installation	Track Alignment
Single Track (man hrs)	Single Track (man hrs)
1.5 - 2	0 - 1

Table 2. Estimated man hours required for average track set installation and alignment

Track Removal

Machine Preparation

1. If possible, always move the machine to a flat, firm surface. The machine can be lifted much easier and will be more stable if the track removal and installation is done on a stable surface. A hard surface also makes it easier to slide the track out from under the machine, and allows use of a forklift if available.

2. Make sure that any implements are disconnected from the hitch or drawbar. Never work on a machine with an implement attached, as this is an unstable condition.

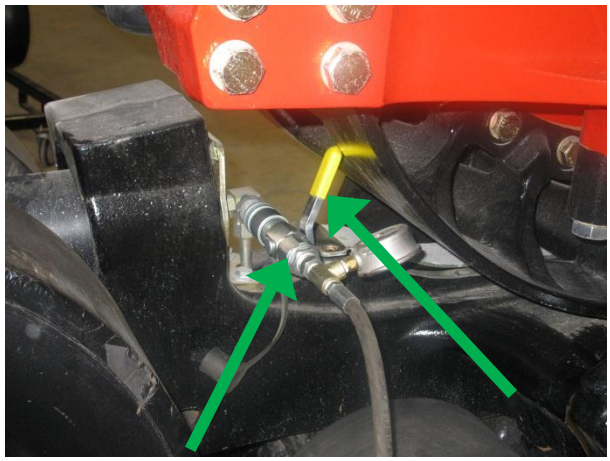
3. Clean the machine before working on it. Dirt and debris makes access to bolts difficult.

4. Once the machine is positioned – turn engine off, remove the key, and install the articulation lock (if equipped). Do not start the machine while the track undercarriage is disassembled or injury and machine damage could result.

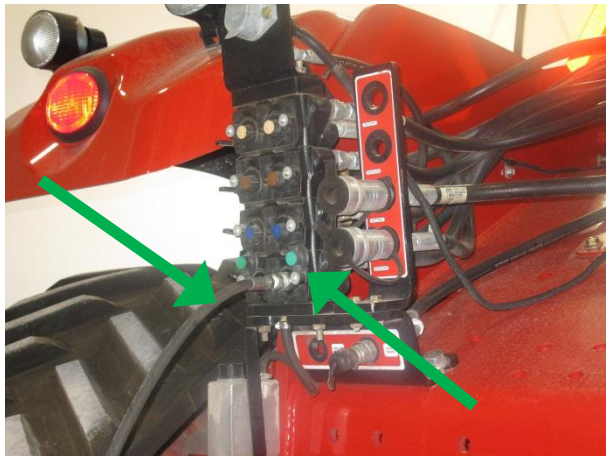
Detension the track

1. Obtain the Track Tensioning Tool (see General Tooling Requirements).

2. Locate the track tension charging port on the undercarriage. Remove the protective metal shield, and remove the rubber dust cap from the hydraulic tip. Make sure the valve on the track tensioning tool is in the “Closed” position (lever perpendicular to valve body) and connect the track tensioning tool to the track tension charging port.



3. Connect the opposite end (male hydraulic tip) of the track tensioning tool to one of the retract couplers at the rear of the tractor. Start the engine and put the hydraulic valve in the float position. Move the handle on the track tensioning tool to the “Open” position. A pin inside the tool will open the valve in the quick coupler on the tensioner charge fitting and release the hydraulic oil from the tensioning system into the tractor’s hydraulic return line. Allow the tensioning system to drain for 30 seconds with the hydraulic valve in the float position. As the pressure in the tensioning cylinder is released, the front idlers should relax towards the undercarriage and the track will become loose.



4. Put the hydraulic valve in the neutral position and shut the engine off.

Track Removal

1. Raise the machine until the midrollers are approximately 1 inch above the track.

****NOTE – lifting devices with focalized contact areas such as bottle jacks <u>can damage or fail the axle housings</u>. Lifting on the frame of the tractor is recommended. <u>Do not attempt to lift or support the machine by jacking or lifting on front weights or the front weight mounting area (if equipped)</u>. Refer to the operator’s manual or contact the Versatile dealer for recommended lifting and supporting instructions.**

2. Remove front and rear outside idler wheel bolts and remove front and rear outside idler wheels.

3. Using a Come-Along or Ratcheting Winch, pull the front idler tension link rearward to fully retract the tensioning cylinder. This will aid in track removal and is necessary for track installation. Other methods of retracting the tensioning cylinder may be used. Be mindful not to damage the track or undercarriage components when retracting the tensioning cylinder. NOTE: As in Step 3 of "Detension the Track", it may be necessary to start the engine and place the hydraulic valve in float to allow the tensioning cylinder to fully retract.

4. With both idler wheels removed, the tensioning cylinder retracted, and the track tensioning tool removed, raise the machine approximately 8 inches off the ground, or until the midrollers clear the track drive lugs.

5. Using an overhead hoist, boom truck, or forklift, remove the track. The best way to remove the track is to lift up on it using fabric slings or chains, and work the drive lugs out of the drive wheel pockets, and then work the track off the inner idlers. Pry bars may be used to the work track out of the drivewheel pockets and off of the idler wheels. Take care not to damage the track or other components. Slowly slide the track out from under the midrollers, and move to a suitable location.
Notes: Tracks weigh approximately 1100 lbs. Use caution when removing tracks, or injury could result. Route slings or chains carefully to avoid track damage.

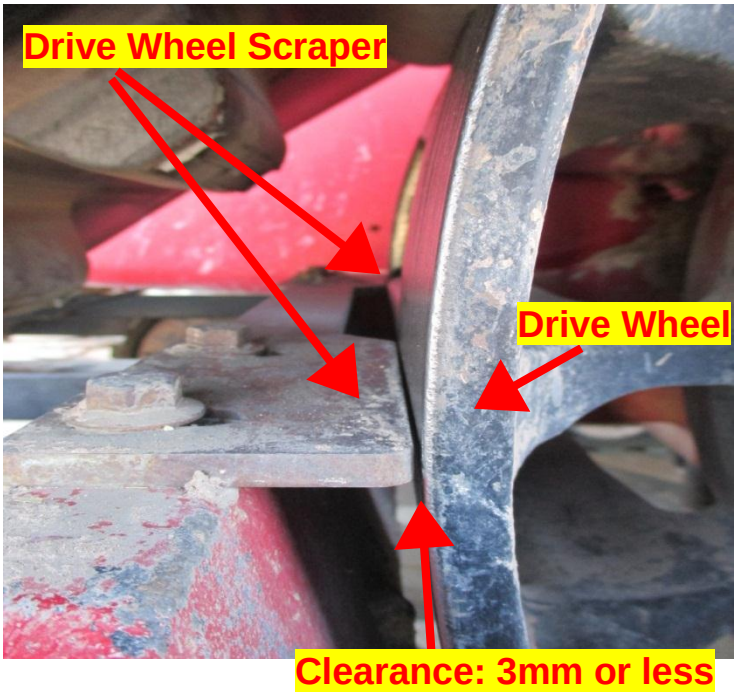
Undercarriage Inspection

Installing a new track on a worn undercarriage may result in significantly reduced track life. Track wear and damage is not covered by warranty.

1. Inspect the removed tracks for wear characteristics that may indicate undercarriage components that need repair. Check idler and midroller flanges for damage, proper thickness, and cracks – all of which reduce drive lug and track life.

2. Check the front idler tension link pivot bushings for wear. If loose, the track will not stay aligned. Early drive lug damage will result.
   Note: Idler hub removed for picture clarity. Tension link pivot bushings can be accessed without idler hub removal

3. Drive Wheel Scrapers – Make sure the machine is equipped with drive wheel scrapers, and ensure they are adjusted correctly to 3mm (or less) clearance on both sides without contacting the wheel. Adjusted correctly, the scrapers remove and prevent debris build-up on the smooth surface of the drive wheel. Debris build-up reduces drive lug and inner track life. Drive wheel scrapers should be used on all drive wheels and in all applications.



4. Midroller and Idler Wheel Condition - Check the condition of the midroller and idler seals by look for any wet areas that indicate a leaking seal.
   Check the condition of midroller polyurethane coating and the idler rubber coating. Worn or damaged wheels can damage the track if not replaced in a timely fashion.

   The general guideline for replacing a midroller or idler is as follows:
   - More than 1/3 of the total rubber is missing around the entire wheel
   - All the rubber is missing at any point all the way across the wheel
   - Any flat spots are seen which may indicate wheel stopped turning
   - Any cracks are found along the wheel flanges or bolt holes

Midroller with more than 1/3 of polyurethane coating missing. It should be replaced

Midroller with flat spot. It should be replaced.

Idler with outside edge damage from rocks and debris.

Idler with inside edge damage from misalignment and/or hard contact with drive lugs during turning

Track Installation

1. Using an overhead hoist, boom truck, or forklift, carefully pick up the track and set it onto the drive wheel so the drive lugs engage in the drive wheel pockets. Work the track into position by sliding it under the midrollers, and then around the inner idler wheels. A soap and water solution may be used to help the track slide around the inner idler wheels. Note: Do not use a petroleum based lubricant as it may damage the rubber track.

2. Reinstall the outside front and rear idler wheels. Torque wheel bolts to the values listed on page 3 (also see Operators manual for bolt torque specification by specific model). Make sure to follow an alternate tightening sequence until bolts hold the specified torque. **These bolts should be retorqued after the first 3 hours of operation.**

3. Raise the machine off the jack stands and remove the jack stands. Then lower the machine to the ground.

Track Alignment

It is very important to align the tracks when new and periodically recheck them for proper alignment to maximize track life. Tracks must be properly aligned in order to maximize drive lug and wheel life, as well as reducing overall rolling resistance. Note: Failure to align the track may result in drive lug damage and/or failure of the track in a short amount of time. Damage due to poor initial alignment is not warrantable.

IMPORTANT: The tractor should be on the ground during the alignment procedure. Any adjustment made while tractor is up on stands may not be correct or may change when the tractor weight is on the undercarriage and track.

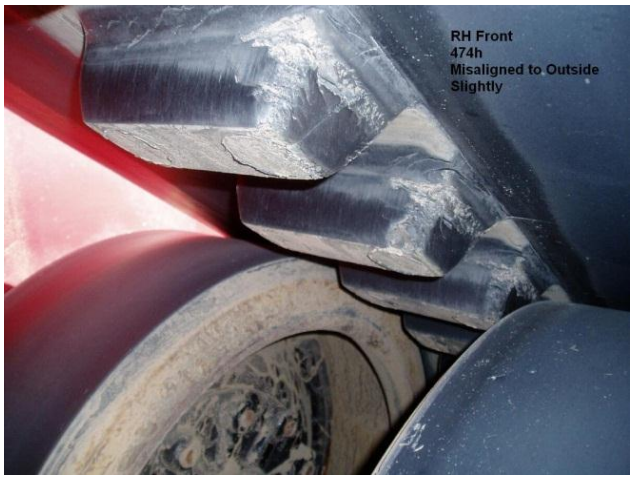
NOTE: For use in this discussion, the inboard side of the drive lug is the lug side next to the machine frame, and the outboard side of the drive lug is the side away from machine. If the inboard side of the drive lug shows misalignment wear, the track must be adjusted outboard. If the outboard side of the drive lug shows misalignment wear, the track must be adjusted inboard.

Check Track Alignment

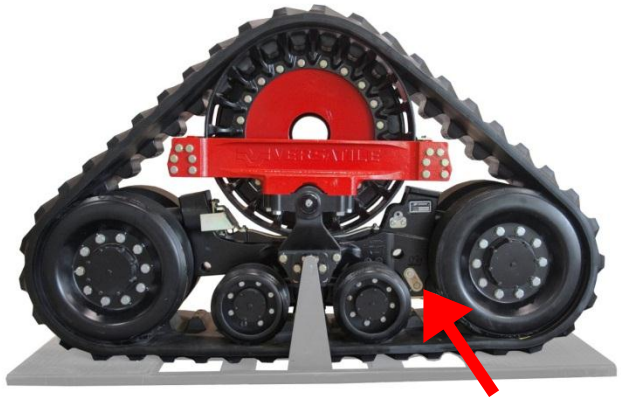
1. Drive the machine straight ahead at not faster than 5 MPH, on a flat surface, and with no steering input, for a distance of at least 400 feet.

2. Coast to a stop using the clutch/inching pedal without touching the steering or brakes, place tractor in park and turn off ignition.

3. Using your hand, observe the temperature difference between the inboard and outboard faces of the drive lugs. If a noticeable temperature difference is felt by hand and/or one side of the drive lugs are shiny or shows signs of rubbing, then an alignment adjustment is needed and the steps below should be followed. If no noticeable temperature difference is felt by hand, then proceed to the "Final Alignment Check" procedure on page 11.



4. If an alignment adjustment is needed, remove the lock plate bolts and spacers, then remove both inboard and outboard side lock plates.



Alignment Lock Plate, Spacer, and Bolt

Adjustment

IMPORTANT

It is very important that the alignment adjustment arm cavity be clear of mud or debris at this point. If packed material is in this area, the alignment arm will not be able to move and the track alignment will be difficult or impossible to accomplish.

5. Loosen the adjustment bolt 1 ½ turns (turn CCW) on the side where drive lugs are rubbing. Then tighten the adjustment arm bolt on the opposite side of the track frame (which is the side you want to move the track towards) 1 turn (CW), or until tight. Then torque both adjustment bolts to 300 N-m (221 ft-lbs).

6. Repeat steps 1 – 3 above and check the alignment again. If required, continue to repeat the procedure until minimal temperature difference is felt, or no drive lug rubbing is occurring. Smaller ½ turns of the adjustment bolt may be necessary to obtain satisfactory alignment. Once alignment appears satisfactory, perform a "Final Alignment Check" as described below.

Final Alignment Check

7. Operate the tractor for a distance of ½ to 1 mile on a straight and flat surface and at moderate speed (10 – 15 mph). Stop the tractor, shut off the engine, and use the palm of your hand or an infrared temperature gun to verify the inboard and outboard faces of the drive lugs are similar in temperature, indicating a properly aligned track. If one side of the drive lugs is significantly warmer than the opposite side (20 degrees F or more differential), make small adjustments to "fine tune" the track alignment to get the temperatures as close as possible.

8. Repeat step 7 until track alignment is satisfactory.

9. When completed, verify both adjustment bolts are torqued to 300 N-m (221 ft-lbs). Reinstall the lock plate, spacer, washer and bolt. Torque bolts to 130 N-m (95lb-ft).

It is recommended alignment be rechecked again after 10-20 hours of operation. Some track alignment changes can be expected over time.

Summary

After alignment and installation is completed, provide the customer the following documents:

- Warranty Certificate (appropriate for application – Ag or Scraper)
- Track Operational Guidelines Brochure
- Product Registration Card

Take a few minutes to review the information in the brochure, and to discuss the warranty coverage details. Also make sure to record track part number, serial numbers and installation date on the warranty certificate for future reference.

For additional information on the maintenance of the undercarriage, and on the extended procedures for servicing and rebuilding these areas, refer to the proper service or owner's manual (available from the local Versatile dealer).

Email any suggestions for improvements, clarifications, or errors, to:
ag.productsupport@camso.co**.**