Agricultural Track Service Procedures

Removal, Installation, Inspection and Alignment

Challenger MT Series

CPB-0305
09/06

Camoplast
1 in tracks

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Introduction

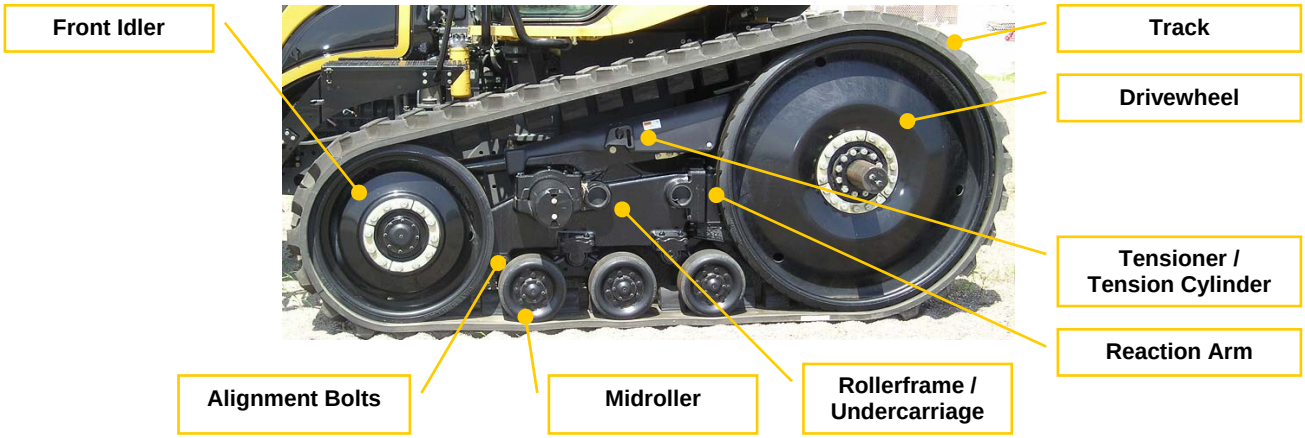
This service guide is intended for distributors and dealers to provide the basic information needed for track installation and service. As part of this guide, installation procedures are included for aligning tracks which is required to maximize overall track life.

Notice

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

Track Terminology

Within the service guide, several references are made to the tractor undercarriage components. One should familiarize himself or herself 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 the removal, installation, and alignment of Camoplast tracks. Refer to publication list CPB-0330 "Agricultural Track Technical Literature and Tooling List" for the list of specialized tools available from Camoplast.

Safety Glasses and Steel Toed Shoes	**1" Air Impact Wrench (with 700 ft-lb capacity)**
Pilot Pins (for idler / idler weight installation)	**Several large wood blocks**
Air Impact Socket Set (up to 38mm)	**(2) Lifting Eyes**
Ratcheting Strap / "Come Along"	**Air / Hydraulic Jack (min 15 Ton Capacity / 12" stroke)**
Selection of Pry Bars	**Soap solution**
Infrared Thermometer*	**CST-0100 Detension Kit***
Torque Wrench (700 ft-lb capacity)	
(4) [15 Ton Minimum] Support Stands	

Table 1 - Tooling List (* denotes special track tools)

Time Estimates - Removal, Installation, and Alignment

The time required to change a track depends mainly on the skill of the technician and the tools available. Table 2 lists average times for removal, installation, and alignment. These estimates are based on a service technician of average skills with the basic, proper tools and working on firm, level ground. Working in adverse conditions can take significantly longer, while experienced technicians will be able to work in a shorter time. Two individuals, in general, can reduce total man hours as compared to one person.

Note: Additional time for undercarriage component repairs and/or replacements are NOT included in the labor hours shown below.

Track Removal, Inspection & Installation		Track Alignment		Total
Single Track (man hrs)	Machine (man hrs)	Single Track (man hrs)	Machine (man hrs)	Total Time (man hrs)
2	4	0 - 0.5	0-1	4-5

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

Tractor Preparation

1. Move the tractor to a hard, flat surface and place the transmission in the Park position. The machine can be jacked up and supported much easier under these conditions and will be more stable during the track removal and installation. Furthermore, a hard surface makes it easier to slide the track out from under the machine and allows use of a forklift when available.

2. Make sure that any implements are disconnected from the hitch or drawbar. Never work on a tractor with an implement attached as this is an unstable condition. Also, if the tractor is equipped with outboard spray tanks, then remove that tank assembly on the side the work will be performed on.

3. Clean the tractor before working on it. Dirt and debris make access to bolts difficult.

4. Once the tractor is positioned – shut down and remove the key. Do not start the machine while track undercarriage is disassembled or injury and machine damage could result.

Important: Record new <u>track serial numbers</u> in the operators guide located in the tractor, on the warranty certificate, and for your records. Guide lugs or edge strips can be damaged….so make sure to record these numbers!

Track Removal

1. Raise the rear of the tractor to at least 8” above the ground. This allows enough clearance for the drive lugs to slide out from underneath the midrollers.

2. Place 2 jack stands under the final drive housing. Spread them as far apart as possible for increased stability.

3. Raise the front end of the tractor approximately 8”.
4. Place 2 jack stands using support brackets attached to the side of the frame to further stabilize the tractor. Support brackets attaching to the frame are available through the Challenger dealer.

Detension the Track

5. Using the CST-0100 Camoplast Detensioning Hose Kit provided in the toolbox shown below, remove the required hoses and fittings pertaining to the MT tractors. This detensioning hose kit will service the Challenger MT700, MT800, Challenger 35/45/55, as well as the JD 8000T and 9000T tractors. The gate valve (B) is used with the MT Series and the Caterpillar 35/45/55. The ball valve (C) is used with the JD series, and is attached to the end of the Cat hose section when working on those machines.

Gage – All series

Valve (C) – JD 8000T/9000T

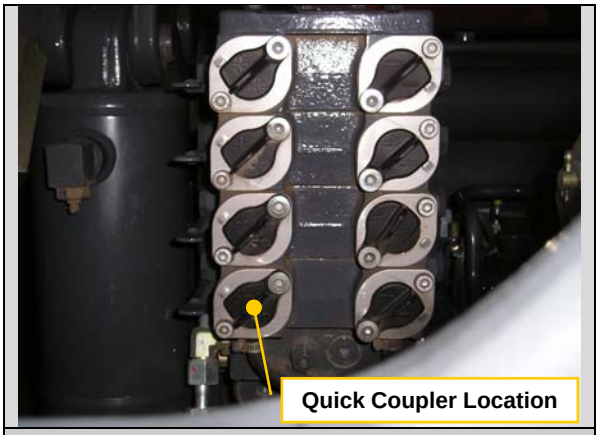
“L” adapter and drain hose – Used to transfer hydraulic fluid to and from the tension cylinder on Caterpillar 35/45/55, AGCO MT700/800

Gate Valve (B) – Caterpillar 35/45/55, AGCO MT700/800, Installed in-line with gage shown

6. Locate the charging port on the undercarriage. Remove the dust cap. Make sure the hand valves on the detensioning hose assembly are CLOSED. Then attach the hose to the coupling.

Charging Port Location MT700/MT800

7. Connect the opposite end of the detensioning hose to the lower port on the hydraulic valve bank at the rear of the machine.



#1 Hydraulic Valve

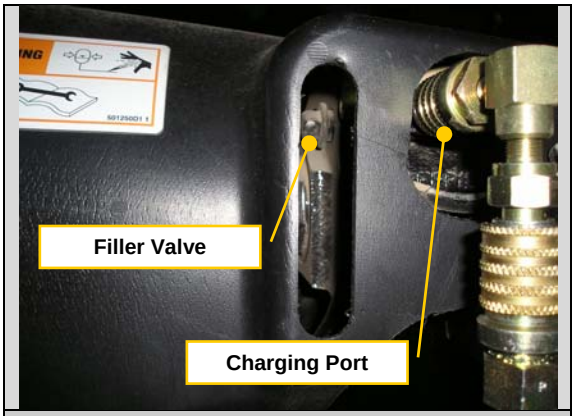
8. Locate the hydraulic control lever in the cab.

Hydraulic Valve Control

9. Start the tractor and move the hydraulic control lever all the way forward to FLOAT position.

10. OPEN the detensioning hose hand valves.

11. Slowly open FILLER valve a maximum of 1 turn to release the track tension pressure into the implement hydraulic system. When the cylinder rod stops moving, this indicates the pressure from the tensioner is released.



Hydraulic Valve Control

12. Stop engine. Close filler valve by tightening to 28 N-m (21 lb-ft). Disconnect the detensioning hose.

Removing front idler weights

Front Idler Weight Removal

Removing Front idler

13. If the tension cylinder is still partially extended. It will greatly help in track installation later if you use a come-along attached as shown below to pull the tensioner back as far as possible. Remove the remaining front idler bolts, and then remove the front idler.

Retracting Front Idler

Retracting Front Idler

Front Idler Removed

Note: Only on the MT700, the rear midroller will want to hang down making it difficult to get enough clearance for track removal. Secure the rear midroller assembly to the undercarriage making it level with the front midrollers. See photos below.

MT700 Only: Rear Midroller Supported

Note: removal of the track will require the use of either a forklift or a boom truck, as the tracks weigh between 800 and 2100 lbs each. Use care when removing tracks or injury could result.

14. Use a pry bar to work the track off the inside front idler. As an alternative, you can install a nylon strap around the track and hook it to the forklift or boom truck.
15. Gently pull the track off the front idler.
16. Once loose from the inner idlers, lift and disengage the track from the drivewheel. Slowly slide the track out from under the midrollers, and move to a suitable location. See photos below.

Using forklift to remove track

Undercarriage Inspection

1. Midroller Condition

A. Check the condition of the midroller seals. Look for any wet areas that indicate a leaking seal.
B. Check condition of midroller rubber. Worn or midrollers in poor condition can damage the track if not replaced in a timely fashion.

The general guidelines for replacement of a midroller are as follows:

- More than 1/3 of the total rubber is missing around the entire midroller
- All the rubber is missing at any point all the way across the midroller
- Any flat spots are seen which may indicate midroller stopped turning

	
Normal chipping and cutting in a severe application. Midroller may require replacement soon	**More than 1/3 of total rubber is missing or completely missing all the way across the midroller. Midroller must be replaced.**

2. Drivewheel Condition

The drivewheels should be inspected for damaged rubber and for any cracks. Check the grooves for sharpness and for depth of more than 1/8". If wear is excessive, track may not be able to tension properly and if grooves are rounded or shallow, track slippage could result. Finally, inspect the reaction arm frame for signs of rubbing as this may indicate a problem with the wheel bearing and cause alignment issues.

The drivewheel should be replaced in the following circumstances:

- If the tread pattern depth is less than 3/16"
- If any large sections of rubber are missing
- Cracks are found in the steel
- Rubber grooves are worn down to a rounded edge

2. Idler Condition

The front idlers should be inspected for damaged in the steel or rubber. Below are examples of damage that would require replacement.

The idler should be replaced in the following circumstances:

- If any large sections of rubber are missing
- Cracks are found in the steel
- Excessive amount of rocks embedded in the rubber

	
Excessive rock drilling	**Cracked steel**

Installation of Replacement Track

Installation of track is basically the reverse order of the removal.

1. Attach strap or chain to the new rubber track and carefully slide it under the midrollers while also lifting it over the rear drivewheel. You may have to use a pry bar to adjust the tracks so that the track guide lugs fall into the drive wheel slot. Always use caution when using pry bars and forks as the track can become damaged.

2. Using a forklift, boom truck, or pry bar, gently push the track beneath the track undercarriage.

3. Attach strap to the front of the track and raise it up and over the front, inside idler with the hoist or forklift. Application of a soap solution to the front idler can make the installation easier.

4. Reinstall the front, outside idler wheel and weights. Torque wheel bolts to the values listed in the table below. Make sure to follow a criss-cross sequence during tightening and retorque after tightening. **These bolts should also be retorqued after track alignment check is done**

Torques	MT700 Series	MT800 Series
Front Idler Bolts	670 ft-lbs	670 ft-lbs

5. Tension the track. Make sure the hand valves in the detensioning hose assembly are CLOSED. Then reattach the hose to the charging port. The opposite end of the detensioning hose should still be connected to the lower port on the hydraulic valve bank at the rear of the machine.
6. Locate the BLEEDER valve which is on the opposite side of the charging port. Also, locate the drain hose behind the FILLER valve. Place a container under the drain hose to collect the hydraulic oil. OPEN the BLEEDER valve ¼ to ½ turn.
7. Start the tractor and run the engine at low idle. Pull the hydraulic control lever back to the EXTEND position.
8. Slowly open the FILLER valve ½ to a maximum of 1 turn to fill the tension cylinder. When no large bubbles are present in the drain hose, tighten the BLEEDER valve to 28 N-m (21 lb-ft).
9. Continue charging the system until the system pressure reaches 2900 psi on the pressure gauge.
10. With the hydraulic control lever in EXTEND position, CLOSE the hand valves on the detensioning hose assembly.
11. Put the hydraulic control lever all the way forward to FLOAT position.
12. OPEN the hand valve a small amount on the detensioning hose assembly to relieve pressure from the tensioner while closely watching the pressure gauge. Note the pressure when a sudden decrease occurs as this indicates the nitrogen pressure in the accumulator. The nitrogren pressure should be in the range of 2100 – 2300 psi. If a low nitrogen pressure is present, consult the Challenger dealer before operating the tractor further.
13. Continue with the hand valve OPEN for a minimum of 50 seconds to allow the system to charge.

14. Pull the hydraulic control lever back to the EXTEND position. With the hydraulic control lever in EXTEND position, CLOSE the hand valves on the detensioning hose assembly.
15. Put the hydraulic control lever all the way forward to FLOAT position and stop the engine.
16. Check that the pressure gauge reads a minimum of 2900 psi. If the pressure is below 2900 psi, then repeat step 13.
17. Close filler valve by tightening to 28 N-m (21 lb-ft).
18. OPEN the hand valve on the detensioning hose assembly to relieve pressure in the hose.
19. Disconnect the hose from the charging port.

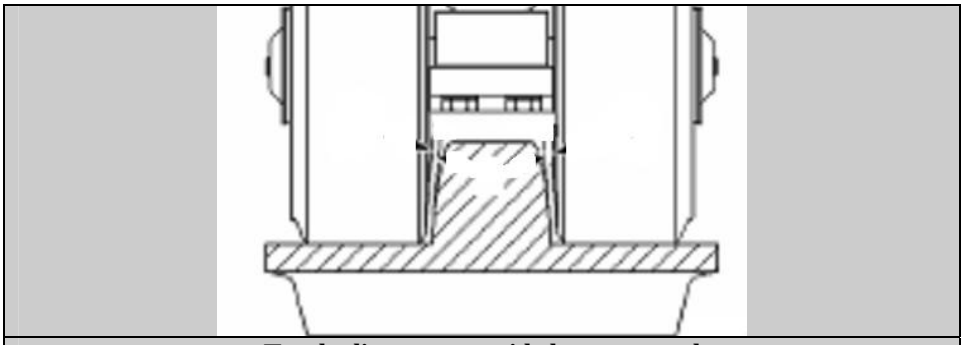
Track Alignment

It is very important to check the alignment after a track installation. Tracks must always be aligned in order to maximize track and wheel life and reduce overall rolling resistance. Note: **Failure to align the track may result in damage and or failure of the track in a short amount of time. Damage due to poor alignment is not warrantable.**

Note:
Track misalignment will reduce the life of the drive lugs on the track. It is very important to align the tracks when new and periodically recheck them for proper alignment to maximize track life.

Track Alignment Check

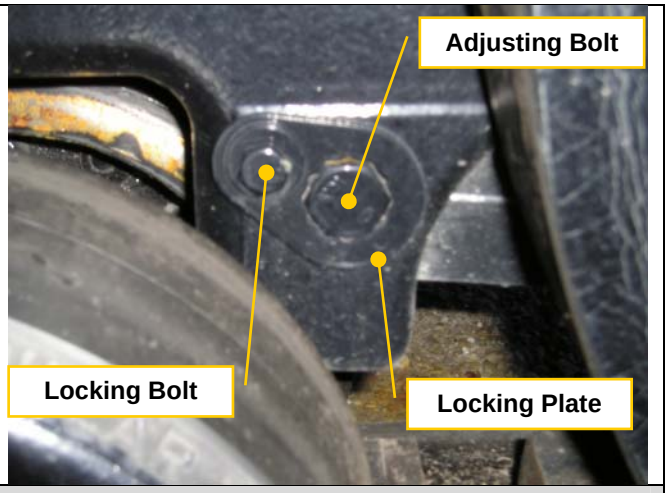
1. Drive the machine forward no faster than 5 MPH on a flat surface with no steering input for a distance of at least 200 feet.
2. Coast to a stop without steering or braking.
3. Put the transmission in park and stop the engine.
4. Place chocks at the front and rear of the tracks to prevent unwanted movement.
5. Check the gap between the guide lugs and the rolling stock (midrollers, idlers, drivewheels) (see below). A track in alignment should have guide lugs running with equal spacing between the inside and outside rolling stock (+/- 2mm). If guide lugs are running more to one side and contacting the rolling stock, then an alignment adjustment is needed.



Track alignment – guide lugs centered

Track Alignment Adjustment

The alignment adjustment is done by moving an alignment arm attached to the front idler. The alignment arm can be moved by turning the pusher/adjustment bolts.



Alignment adjustment behind front idler

1. Remove the LOCKING BOLT and LOCKING PLATE from both inside and outside of frame.
    a. To move the track OUTWARD, loosen the ADJUSTING BOLT on the inside by ¼ turn. Tighten the outer ADJUSTING BOLT to 200 N-m (150 lb–ft).
    b. To move the track INWARD, loosen the ADJUSTING BOLT on the outside by ¼ turn. Tighten the inner ADJUSTING BOLT to 200 N-m (150 lb–ft).
2. Install the LOCKING PLATE and LOCKING BOLT on both sides of frame.
3. Recheck alignment and repeat above steps as needed to center the track.

Final Alignment Check – Temperature Differential Method

Once the alignment of the guide lugs appears centered, a final active alignment check should be done.

1. Drive the tractor in a straight line at moderate speed without steering input approximately 400 m (1300 ft) or approximately ¼ mile.
2. Check the temperatures of the inner and outer face of the guide lug by carefully feeling the faces or using a heat gun. Note if there is any noticeable temperature difference.
3. If slight adjustment is needed, loosen the adjusting screw on the appropriate side by no more than 1/4 turn.
4. Tighten and torque the screw on the opposite side the same amount.
5. Retighten the locknuts on both sides.
6. Repeat step 1 and adjust if needed until temperatures of the guide lug faces are similar on both sides.

Warranty Information

After alignment and installation is completed, make sure to give customer the following documents:

- Warranty certificate
- Track Operational Guidelines brochure
- Warranty registration card

Take a few minutes to review the information in the brochure, and to discuss the warranty period. Also make sure to record track serial numbers on the warranty certificate for future reference.

Summary

Installation and adjustment of tracks is straightforward and not complicated once you know the proper procedures. As you gain experience, you will find more efficient ways to accomplish the work in a shorter period of time.

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

Title	OEM Part Number
MT700 Series Operation and Maintenance Manual	***79021902***
MT800 Series Operation and Maintenance Manual	***79021910***

Email any suggestions for improvements, clarifications, or errors to Dwight.Furleigh@camoplast.com.