How to Setup : e*thirteen 9-46T 12s Cassette with Shimano® 12s Drivetrain

Set up your Shimano® 12s Drivetrain (XTR/XT/SLX) with an e*thirteen TRS+ 12s 9-46T Cassette

Written By: Greg

DERAILLEUR	
COMPATIBLE	NOT COMPATIBLE
(RD-M9100-SGS) **XTR 1X LONG CAGE**	*(RD-M9100-GS)* **XTR 1X MEDIUM CAGE**
(RD-M8100-SGS) **XT 1X LONG CAGE**	*(RD-M9120-SGS)* **XTR 2X LONG CAGE**
(RD-M7100-SG) **SLX 1X LONG CAGE**	*(RD-M8100-SGS)* **XT 2X LONG CAGE**
	(RD-M7100-SGS) **SLX 2X LONG CAGE**

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INTRODUCTION

Setting up an e*thirteen 12s 9-46T TRS+ cassette to work with Shimano® 12 speed drivetrains - With a few simple tips in mind, you'll have your bike up and running in no time.

TOOLS:

- 2mm hex wrench (1)
- 3mm hex wrench (1)
- 4mm hex wrench (1)
- 5mm hex wrench (1)
- Torque wrench (1)
- 4mm Hex Bit Socket for Torque Wrench (1)
- 5mm Hex Bit Socket for Torque Wrench (1)
- Cable cutter (1)
- Chain Tool (1)

PARTS:

- Shift Cable (1)
- Shift Cable End Crimp (1)

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Step 1 — Before You Start.. (Derailleur Compatibility)

DERAILLEUR	
COMPATIBLE	NOT COMPATIBLE
(RD-M9100-SGS) **XTR 1X LONG CAGE**	*(RD-M9100-GS)* **XTR 1X MEDIUM CAGE**
(RD-M8100-SGS) **XT 1X LONG CAGE**	*(RD-M9120-SGS)* **XTR 2X LONG CAGE**
(RD-M7100-SG) **SLX 1X LONG CAGE**	*(RD-M8100-SGS)* **XT 2X LONG CAGE**
	(RD-M7100-SGS) **SLX 2X LONG CAGE**

⚠ e*thirteen 12s Cassettes are only compatible with Shimano® SGS Long Cage 12s derailleurs, Including the Following:

- RD-M9100-SGS XTR 1X Long Cage
- RD-M8100-SGS XT 1X Long Cage
- RD-M7100-SGS SLX 1X Long Cage

⚠ **NOT COMPATIBLE** with the following:

- GS Medium Cage Derailleurs
- SGS Long Cage Derailleurs for double chainring setups.

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Step 2 — Before you Start (Chain Compatibility)

CHAIN	
RECOMMENDED	NOT COMPATIBLE
KMC X12 CHAIN SRAM™ EAGLE™ CHAIN *(ANY LEVEL)* YBN 12s CHAIN *(ANY LEVEL)* e*thirteen 12s CHAIN	SHIMANO™ 12 SPEED *(ANY LEVEL)*

ⓘ For best results, use your e*thirteen 9-46T cassette with one of the following 12 speed chains:

- KMC X12 chains
- SRAM(tm) Eagle(tm) 12 speed Chains
- YBN 12 Speed Chains
- e*thirteen 12 speed chain

⚠ The e*thirteen 9-46t cassette is **NOT** compatible with Shimano 12 speed chains.

⚠ IE CN-9100, etc.

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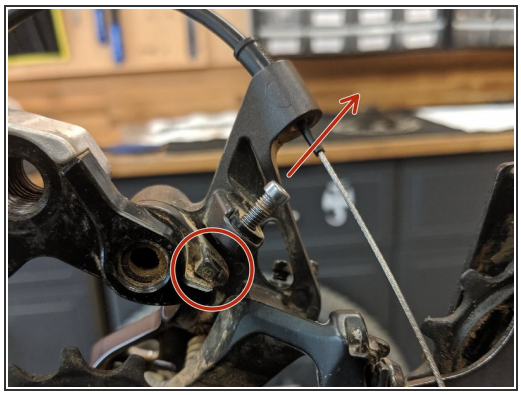
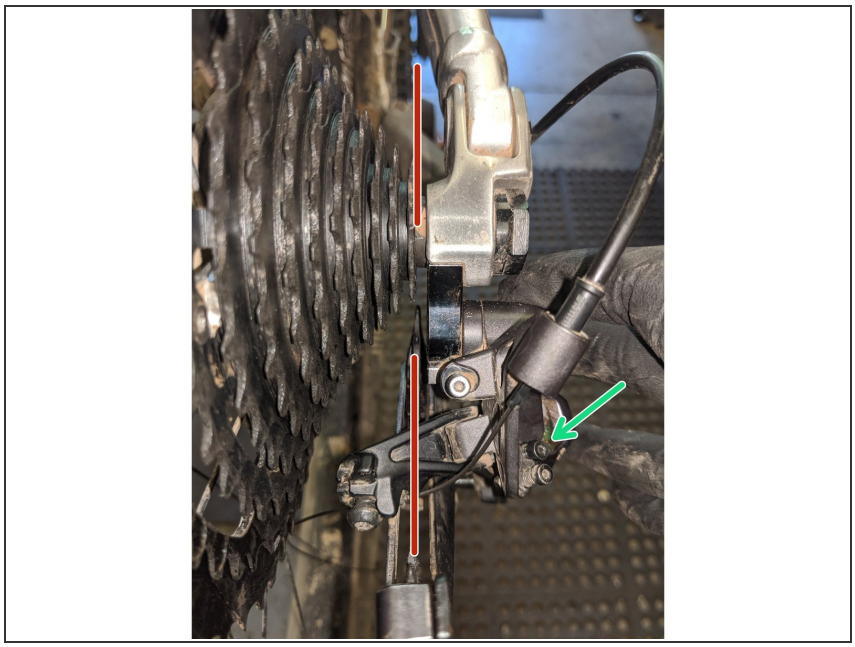
Step 3 — Install the Derailleur on the Bike



- Set the clutch switch lever to OFF
- Back the b-limit screw out until it no longer protrudes against the stopper plate tab
- Install the Derailleur using a 5mm hex key
  - ⓘ Press the stopper plate tab against the derailleur hanger while tightening the rear derailleur fixing bolt, so that there is no gap between the b-tension stop and the tab
- Finish tightening using the torque wrench with the 5mm hex bit socket: **8-10Nm**

Step 4 — Adjust the High Limit Screw



- Adjust the derailleur top adjustment bolt so that the upper pulley wheel is aligned with the outer edge of the smallest cassette cog using the 2mm hex key

ⓘ The high-limit screw is labeled “H”

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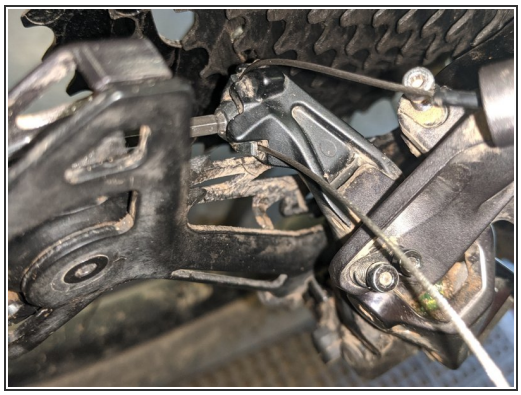
Step 5 — Install a New Shift Cable



⚠ Before installing a new shift cable, inspect your shift housing closely. Dirty, abraded, worn, cracked, or otherwise-damaged housing should be replaced before proceeding.

ⓘ Make sure to use a metal pick, toothpick, or other pointy object to flare the inner sheath of your cable housing at each cut end. This will reduce friction and improve shifting.

- Make sure the shifter is shifted to the **highest gear** (smallest cog) by pressing the small shift release lever repeatedly, then install a new cable in your shifter. Route the cable through the shift housing to the derailleur.
- Route the shift cable through the derailleur and around the groove of the cable anchor washer.
- Pull the cable taught, and tighten the cable anchor bolt using the 4mm hex wrench.
- Remove slack from the cable by actuating the shift lever several times or pulling on exposed cable.
- Resecure the shift cable by loosening the anchor bolt, then pulling the cable just taught, then re-tighten the anchor bolt. Torque the anchor bolt to **6-7Nm**.
- Cut the cable and install a cable end crimp.

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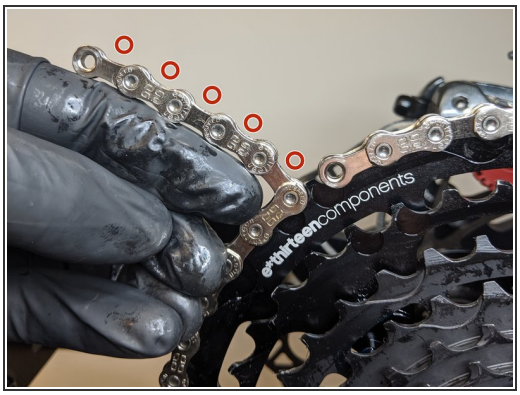
Step 6 — Install the Chain



⚠ Chain length is Critical to the success of your setup, so inspect your chain length carefully before cutting the chain! **When counting the number of extra links, count both narrow and wide chain links.**

- Wrap the uncut chain around the chainring and the largest cog on the cassette. Set the last roller on one end of the chain next to a roller on the long-end of the chain.
  - ⓘ **For Full Suspension bikes** - Add 5 or 6 links of extra chain so that the chain will end on a narrow-link.
  - ⓘ **For Hardtail Bikes** - Add 4 or 5 links of chain so that the chain will end on a narrow link.
- Break the chain at your measured length using the chain breaking tool.
- Install the chain through the derailleur and connect the two ends of the chain, following the chain manufacturers quick-link installations instructions.
  - ⚠ Remember that some quick-links (Shimano®, SRAM®) are directional
  - ⚠ Remember that Shimano® chains are directional, and the text stamped on the wide links of the chain should face away from the wheel/cassette

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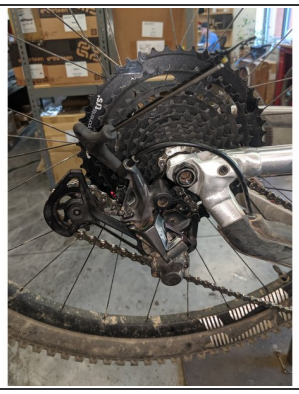
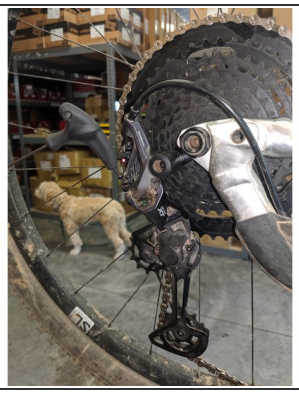
Step 7 — Adjust the Low Gear Stop Screw

⚠ Note that before adjusting the low gear stop screw it may be possible to shift the chain into the spokes! Shift carefully during this process!

- Thread the B-limit screw in until the slack is taken out of the chain by the derailleur
- Slowly pedal the cranks forward and shift the derailleur to the lowest gear position, so that the chain is on the largest cassette sprocket.
- Adjust the low gear stop screw so that the upper guide pulley is centered on the largest cassette sprocket
  - ⓘ The low limit screw is labeled “L”
- Verify that the chain will not overshift into the spokes by gently pressing on the downshift paddle while pedaling the cranks forward and watching the chain movement.

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Step 8 — Adjust the B-limit Screw : 9-46T Cassette

- Shift the chain onto the largest cassette cog
- **For Full Suspension Bikes:** Adjust the b-limit screw until the alignment mark on the inside surface of the derailleur cage is aligned with the tips of the teeth on the largest cassette sprocket (46T)

⚠ Note that suspension sag / chainstay length growth will change the position of the derailleur when the suspension is weighted.

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Step 9 — Adjust the Shifter Cable Adjustment Barrel for Optimum Shifting

- Turn the cranks and shift the chain into one of the sprockets in the center of the cassette
- Adjust the barrel adjuster to eliminate running noise on the cassette if any is present
  - Sight down the back of the bike to see if the chain needs to be adjusted in towards the wheel (turn barrel counter-clockwise) or out (turn barrel clockwise)
  - Shift gears up and down through the cassette, pausing on each sprocket to listen for ticking/running noise, adjusting the barrel 1 click at a time to eliminate noise

ⓘ Shift the cassette into the largest steel sprocket, and listen for rubbing noise between the chain and smallest aluminum sprocket. If rubbing is present, turn the barrel adjuster clockwise 1 turn, then shift out of the largest steel cog then back into that cog and re-check for rubbing

- Switch the clutch switch lever to ON, and Shift through all the gears one last time to check for any outstanding issues - make small adjustments (1 click) at a time if necessary.. A little goes a long way!

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Step 10 — Troubleshooting

- Did you inspect or replace your shift housing and cable? This is a common source of shifting issues, don't sleep on it!
- Check Derailleur hanger is straight: 12s systems are very sensitive to misalignment between components - if you cannot solve shifting/noise issues with the barrel adjuster, have your derailleur hanger checked using a Park Tool DAG, Shimano® TL-RD11, or other derailleur hanger checking tool. Straighten as necessary
- Shift quality in the largest sprockets is heavily affected by b-limit screw adjustment. If you are experiencing issues upshifting from the aluminum sprockets, adjust the b-limit screw out (counter-clockwise) to move the upper derailleur pulley towards the cassette. Adjust ¼ turn at a time then test shifting.
- Remember that b-limit adjustment is affected by suspension sag, so even if shifting is great in the stand, your setup will change somewhat with you sitting on the bike, so b-limit setup may need to be dialed out to account for suspension sag.

Thanks for reading, now get out there and ride!

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