Chain Installation Guide

Step-by-Step Tire Chain Procedures for Commercial Vehicles

WINTER DRIVING SAFETY SERIES

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Insurance Brokers | Est. 1992
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Tire chains are legally required in many states during winter conditions and are critical for safe operation on snow and ice-covered roads. This guide provides step-by-step instructions for installing, driving with, and removing tire chains on commercial vehicles. Practice installation in dry conditions before you need chains on the road. FMCSA and state DOTs can fine drivers who fail to chain up when required.

1 When Chains Are Required

Chain requirements vary by state and road conditions. Signage and advisory levels dictate when you must install chains. Know the requirements **before** you depart.

Advisory Level	Meaning	Action Required
R-1 / Advisory	Chains or traction tires recommended	Carry chains; install if conditions worsen
R-2 / Chains Required	Chains required on drive axles except AWD/4WD with traction tires	Install chains on drive tires; CMV must chain up
R-3 / Full Chain	Chains required on all vehicles, no exceptions	Chains on all drive axles; single tires need chains too

2 Chain Types & Sizing

Chain Type	Best For	Pros	Cons
Single (Ladder)	Highway, moderate snow	Affordable; easy install; good forward traction	Less lateral grip
Triple / Dual	Heavy snow, mountain passes	Excellent traction; durable; good lateral grip	Heavier; more expensive
Cable Chains	Light snow, limited clearance	Lightweight; low profile; easy storage	Less durable; not for all CMVs
Automatic / Onspot	Urban routes, frequent stops	Activate from cab; no manual install	Costly; limited to low speeds

Sizing Tip —
Always match chain size to tire size (e.g., 11R22.5, 295/75R22.5). Check the sidewall marking and verify against the chain manufacturer's sizing chart. Improperly sized chains cause damage to tires, fenders, and brake lines. Carry the correct chains for every axle configuration.

3 Pre-Installation Checklist

- ☐ **Chains:** correct size for tire; verified
- ☐ **Links:** no broken, bent, or worn links
- ☐ **Cross-chains:** all present; hooks intact
- ☐ **Cam fasteners:** all cams lock properly
- ☐ **Bungee / rubber tighteners:** elastic; not cracked
- ☐ **Gloves:** heavy-duty; waterproof
- ☐ **Kneeling pad:** or tarp to kneel on
- ☐ **Flashlight / headlamp:** if installing at night
- ☐ **Safety vest:** reflective; if roadside
- ☐ **Location:** pull into chain-up area; level ground

SAFETY —
Always pull completely off the road into a designated chain-up area or wide turnout. Activate 4-way hazard flashers. Place reflective triangles if on the shoulder. Never install chains in a traffic lane.

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4 Step-by-Step Chain Installation

These steps cover standard single-wheel and dual-wheel chain installation using cam-lock fasteners. Adjust as needed for your specific chain type.

1. **Position the vehicle.** Park on level ground in a chain-up area. Set parking brake. Place wheel chocks on the non-chained axle.
2. **Lay chains flat behind the tire.** Spread the chain on the ground behind the drive tire. Ensure cross-chains are untangled and hooks face outward (away from tire). Remove any twists.
3. **Drape chains over the tire.** Starting from the top, drape the chain evenly over the tire so both sides hang equally. The cam fastener side should be on the outside (facing you).
4. **Connect the inside first.** Reach behind the tire and connect the inside chain rail. Hook the bottom link on the inside, pulling it snug. Use a chain tool or pliers if needed.
5. **Connect the outside rail.** Bring the outside rail around and connect using the cam-lock fastener. Tighten by pulling slack from the bottom center cross-chains upward.
6. **Pull forward slowly (one-half tire rotation).** Drive forward approximately 15 feet (half a tire revolution) to expose the slack section at the bottom. Stop and set the parking brake again.
7. **Tighten and re-adjust.** Remove all remaining slack by tightening cam fasteners. Cross-chains should be snug against the tire tread. You should not be able to pull the chain more than 1 inch away from the tread surface.
8. **Install rubber tighteners (bungees).** Hook rubber adjusters across the chain in an X or zigzag pattern to maintain tension. Tuck any excess chain through links to prevent flapping.
9. **Repeat for all required tires.** Install on all drive axle tires as required. For R-3 / full-chain conditions, install on trailer tires as well.
10. **Re-check after 1/4 mile.** Drive slowly for 1/4 mile, then stop and re-inspect all chains. Retighten any loose cams. Verify no chains are rubbing against brake lines or fenders.

Time Target —
An experienced driver should be able to install a set of chains in 15–20 minutes. Practice on dry pavement until you can do it confidently. Some states require CMV drivers to demonstrate chain installation proficiency.

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5 Driving with Chains

- [ ] **Speed:** never exceed 25–30 mph (or posted chain speed limit)
- [ ] **Acceleration:** gentle; avoid wheel spin; chains can break under torque
- [ ] **Braking:** brake earlier and gently; chains reduce stopping distance but not instantly
- [ ] **Turning:** slow down further for turns; chains change handling dynamics
- [ ] **Bare pavement:** avoid driving chained tires on dry pavement — damages chains and road
- [ ] **Noise / vibration:** steady rhythmic sound is normal; sudden clanking = loose or broken chain
- [ ] **Re-check interval:** stop and inspect every 30–45 minutes of driving
- [ ] **Broken chain:** pull over immediately; a loose chain can wrap around the axle or brake lines

6 Chain Removal

1. **Pull into a chain-off area.** Look for designated chain removal areas past the pass summit or when signage indicates chains are no longer required. Park on level ground.
2. **Release rubber tighteners first.** Unhook all bungee/rubber adjusters and set them aside.
3. **Unlock cam fasteners.** Release the outside cam-lock fasteners on each chain. Open the outside rail.
4. **Disconnect the inside rail.** Reach behind the tire and unhook the inside chain connection.
5. **Pull chains free.** Carefully pull the entire chain away from the tire and lay it flat on the ground. Do not drive over loose chains.
6. **Inspect and store.** Lay chains out straight. Check for broken links, bent hooks, or damaged cams. Bundle neatly and store in a chain bag or box on the truck.

7 Post-Trip Chain Maintenance

- [ ] **Rinse:** wash off road salt, mud, and debris with a hose
- [ ] **Dry:** allow chains to air-dry completely before storing to prevent rust
- [ ] **Inspect links:** check every link for cracks, stretching, or excessive wear
- [ ] **Inspect hooks/cams:** replace any bent or broken fasteners and cam levers
- [ ] **Inspect cross-chains:** verify all cross-chains are present and securely attached
- [ ] **Replace rubber tighteners:** swap out any cracked or stretched bungees
- [ ] **Lubricate (optional):** light oil or chain spray on moving parts to prevent corrosion
- [ ] **Store properly:** hang on a wall hook or coil neatly in a chain bag; avoid piling on floor

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8 State Chain Law Quick Reference

Requirements vary by state and change seasonally. Always verify current regulations with the state DOT before departure. This is a general reference, not legal advice.

State	Carry Requirement	Typical Season	Key Routes / Notes
Washington	Must carry Nov 1 – Apr 1 on designated routes	Nov – Apr	I-90 Snoqualmie, US-2 Stevens, SR-12 White Pass
Oregon	Must carry Oct 1 – Apr 30 on designated routes	Oct – Apr	I-84 Cabbage Hill, US-97, OR-58 Willamette
California	R-1/R-2/R-3 advisory system; chains when posted	Nov – May	I-80 Donner, I-5 Grapevine/Siskiyou, SR-88/89
Colorado	CMVs must chain on I-70 when Traction Law / Chain Law posted	Sep – May	I-70 Eisenhower Tunnel, Vail Pass, Floyd Hill
Idaho	Must carry chains; install when signs posted	Nov – Apr	I-90 4th of July Pass, US-95 Lewiston Hill
Montana	Chains or approved traction devices when posted	Oct – May	I-90 Lookout Pass, US-93, US-2 Glacier area
Nevada	Chains required when posted; NHP enforces	Nov – Apr	I-80 Reno–Elko, Mt. Rose Hwy, US-50
Utah	CMVs must carry and install when signed	Oct – Apr	I-80 Parleys Canyon, I-15 Spanish Fork Canyon

Fines —
Chain law violations typically range from $500 to $1,000+ per offense. If an unchained CMV causes a road closure, fines can exceed $5,000 in some states. Carriers may also face CSA violations that impact their safety rating.

Driver Acknowledgment

I have reviewed this chain installation guide, verified that I carry the correct chains for my vehicle, and am able to install chains within the required timeframe.

Driver Signature: _____ **Date:** _____ **Supervisor:** _____

Practice Before You Need Them —
The best time to learn chain installation is on a dry lot, not in a snowstorm at night. Schedule a chain practice session with your team each fall. For more winter safety resources visit firstunderwriters.com/risk-tips/trucking or call (425) 242-5357.

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