

Industrial Track Inspection

**Practical Guide to Inspecting
Your Industrial Siding**



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Introduction

Proper inspection and maintenance of your railroad siding is vital to your company's operation. Lack of inspections leads to costly derailments, downtime, and possible legal exposure.

Inspecting your siding is simple and requires few tools.

Do not let a lack of inspection expose you and your fellow employees to unnecessary safety risks.

This simple guide will instruct you on what to look for in your inspection. Aldon Company, Inc., can supply you with all of the equipment necessary to make an effective inspection of your track.

This guide is not intended to be a training guide for performing a complete FRA level inspection.

Before inspection, the track should be locked out and blue flag protection applied.

This can be accomplished by using a portable derail with blue flag (4014-08-S) OR a sign holder (4015-01) and sign (6SMAW-B or similar sign) AND a switch point lock (4023-43).



6SMAW-B



4014-08-S



4023-43

Track Gauge

Track gauge is one of the most important aspects of inspecting your track. The gauge of a railroad track is simply the distance between the two running rails. This distance is measured against the inside faces of the rail heads at some distance down from the top of the rails.

This distance down is known as the “gauge plane”. On standard North American railroad track, the gauge plane distance is $5/8$ ” down from the top of the rail.



The acceptable variation between the nominal $56\text{-}1/2$ ” gauge and the actual measurement depends on the class of the track. If you own and/or operate an industrial rail siding, your track is likely to be “excepted” or “class-1” track.

Class 1 track has maximum allowable speeds of 10mph (freight) and 15mph (passenger). “Excepted” track carries the same 10mph freight speed limit but cannot carry passenger traffic.

Track Class	Min. Gauge	Max. Gauge
Excepted	56”	58-1/4”
Class – 1	56”	58”

The rails are pushed outward by a passing car or locomotive.

Measuring track gauge without these outward forces present is “static gauge”. When these outward forces are present, the measurement is “dynamic gauge”.

For any track, the dynamic gauge will be wider than the static gauge measurement.

Track Gauge

When checking track gauge, look for signs of gauge widening. When traffic rolls along the track, the rails are pushed outwards. Look for these signs of rail movement.



Spikes Lifted



Tie Plate Rubbing on Tie



Rail-to-Plate Gap



Tie Plate Pocketing Tie

If there is evidence of gauge widening under load, you should make your best effort to estimate the dynamic gauge.

This is done by measuring the static gauge and adding the amount of movement evident.

For instance, if the static gauge measures 57" and you notice a 3/8" gap on one rail, the estimated dynamic gauge is 57-3/8". Note that the evidence of rail movement may be on one or both rails and may be a combination of conditions.

IMMEDIATELY SERVICE YOUR TRACK IF...

- **Your gauge is over 57-1/2" (including signs of widening).**
- **Your track shows signs of widening over 1/2".**

Aldon® Products for Checking Track Gauge

Track Inspection Tape Measure

Magnetic tip allows one-person measurement of track gauge. Built-in scale for checking limits of gauge measurement.



4124-316

Spot-Check Laser Gauge

The convenience of a tape measure with the speed and precision of a laser. Measures gauge in imperial and metric units.



4022-26

Aluminum Level/Gauge (2 piece)

An economical way to measure two inches of gauge variation to 1/16" accuracy. Slide rule action and large type scale for easy reading. Also measures cross elevation.



4022-07

Rolling Track Gauge (Economy)

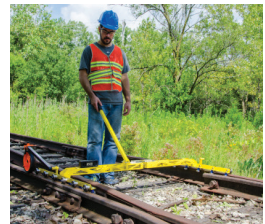
Measure track gauge as fast as you can walk. No stopping or bending required. Optional digital level (4022-12) and distance counter (4022-13) available. Replacement parts also available.



4022-10

Rolling Track Gauge (Roadmaster)

Same as 4022-10 above but can roll through switches, crossing, and over guard rails. Optional digital level (4022-12) and distance counter (4022-20) available. Replacement parts also available.



4022-14

Rail Joints

The rail joints (where one rail is bolted to another) is a critical area of the track. If a joint is allowed to fail, a derailment may occur. Each joint bar (a.k.a. “fishplate”) should have a minimum of one bolt in each rail.

Check to be sure all bolts are installed with lock washers and nuts. The nuts should be tight.



Missing Bolts



Loose Nut

Because the joint is an area of reduced strength, it is important that it is spiked down firmly. Look for loose spikes around the joint.



Spikes Loose Near Joint Bars

Rail Joints

The rails at the joint need some separation for thermal expansion. The rails should not be tight to one another. Ideally, the gap should rest between 1/8" and 7/16".

Maximum allowable gap is 2".



No Gap



Gap Too Wide



Battered Rail Ends

If the joints are wide for a long enough period of time or out of alignment, the end of the rails become damaged. This can also damage the wheels.

Look for battered rail ends at the joints.

Check the rail end mismatch on the gauge side and the top of the rails at the rail joints. Maximum mismatch is 1/4". Excessive mismatch will prematurely wear wheels, rail ends, joint bars, and bolts. (Digital Mismatch Gauge 4022-27)



Measure Gauge Face



Measure Top of Rail

Aldon® Products for Checking & Repairing Joints

Joint Bolt with Nut and Lock Washer

High quality alloy steel oval head track bolt with square nut and lock washer. Direct replacement for your joint bars.



4123-40 (1" x 5")

4123-41 (1" x 5-1/2")

Taper and Step Gauges

Taper and step gauges allow easy and fast joint gap measurement.

4123-141 (Step Gauge)

4124-98 (Small Taper, in)

4124-344 (Large Taper, in)

4124-345 (Large Taper, mm)



4123-141

4124-98

Aldon offers a range of wrenches for tightening your track bolts.

See AldonCo.com for complete listing of track wrenches.

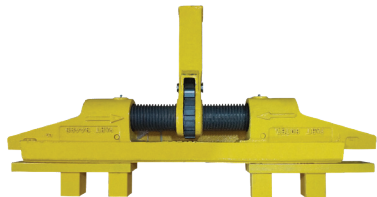


Mechanical Joint Puller/Expander

Expand and contract rail joints with 30 tons of mechanical force.

4123-69 (for 1" track bolts)

4123-70 (for 1-1/8" track bolts)



Aldon® Products for Checking & Repairing Joints

Joint Bolt Ratchet and Sockets

Get all the leverage you need to tighten track bolts with the convenience of a ratchet.

Sockets sold separately.

4123-112 (1" drive ratchet wrench)

See AldonCo.com for complete listing of 1" drive sockets.



Drift Pins

Use drift pins to align holes in joint bars prior to installing track bolts.

Comes equipped with rubber protector on striking face.

4123-96 (3/8" point, 12-1/4" long)

4123-98 (3/8" point, 14" long)

4123-97 (9/16" point, 11" long)



Sledge Hammers

4123-94 (8#)

4123-95 (10#)



Track Punch (Round Pt.)

4123-91

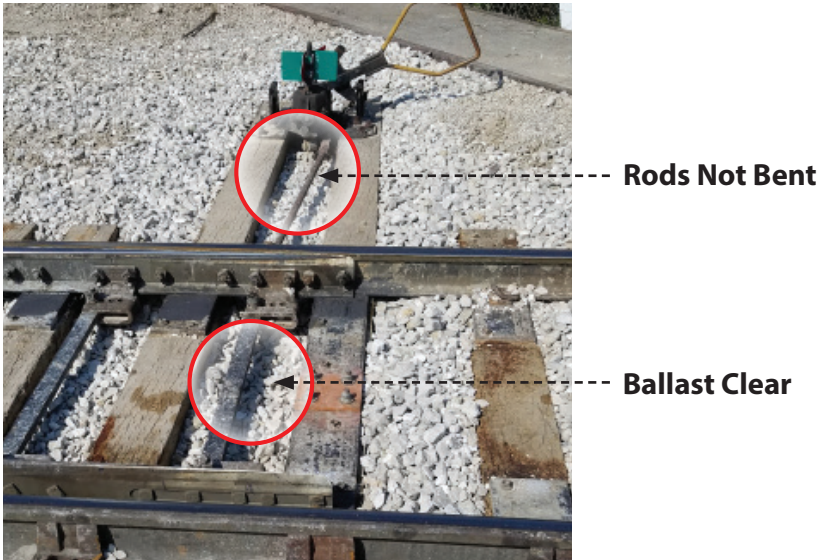


Switches

Track switches are one of the few things on the track with moving parts. For that reason, extra care should be taken to inspect the switch.

Check to be sure:

Ballast is cleared 2" below connecting rod and all moving parts.
Control rods and all sliding parts are not bent.



Check for oblong holes and shiny metal.
These are signs of loose fasteners.

Head Rod Gap Inspection

Inspect the gap between the bottom of the stock rail and the top of the head rod.



This gap should be no more than 1/2".

Switches

Ensure all bolts are tight and cotter pinned. Pay special attention to the bolts attaching the tips of the switch points to the head rod.



All of the bolts in the switch point rails must be tight.



Ensure that all bolts and cotter pins are present.

Ensure all points requiring lubrication on the switch are adequately lubricated. For instructions on switch lubrication contact Aldon for our free guide to basic switch maintenance.

Switches

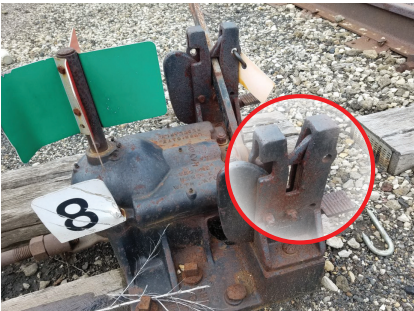
The ends of the rod that connect the switch stand to the head rod must be tight. The connecting rod bolts should be tight, positioned with the nuts up, and cotter pins installed.



Rod Bolt at Stand



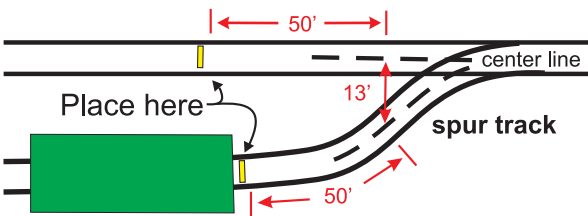
Rod Bolt at Track



Handle Latches

Check latches to be sure they fully engage and hold the handle in place.

Clearance points (a.k.a. “fouling points”) are marked positions on the track to ensure a car moving on one leg of the switch does not collide with a car on the other leg of a switch.



Check to be sure the converging tracks of a switch have clearance points marked.

Switches

Inspect the tips of the switch point rails. They should be smooth and free of damage. The points should be painted white or some other bright color to make their position readily seen. This will also help your rail contractor assess how traffic is wearing your switch points.



Good Point



Bad Point

Inspect the spiking of the operating stand. The spikes should be tight into sound ties. Throw the handle fully in both directions. The stand should remain rigidly in place.

Inspect the target (directional sign plates) for corrosion, damage, and correctness of orientation.

Inspecting for pulled spikes on inside of curved rails.

Take special notice to the spikes on the inside of the rail along the curved portion of your switches.



The spikes should be driven down firmly and not show signs of lifting.

Aldon® Products

Switch Stand Targets

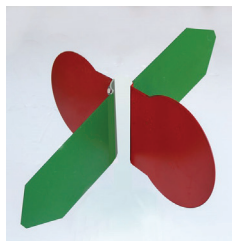
Replace your lost or damaged switch stand targets. Fits OEM switch stands.

4115-164, 4115-173 (National Trackwork)

4115-166, 4115-174 (New Century)

4015-206, 4015-207, 4015-209 (Racor)

Other targets available. Please contact us for style and availability.



Switch Cube

Eliminate confusion of how a switch is lined with easy to understand sign plates.

See AldonCo.com for complete listing of Switch Cubes.



Additional Aldon® Products

Track Clearance Markers

4015-144 (yellow)

4015-242 (orange)

Lubrication Spray Tank

4123-79

Lubrication Brush

4123-80

Track Switch Lubricants

4124-106 (Sprayable Graphite Grease)

4123-128 (Glidex Liquid)

Switch Point Protectors

4123-77 (A-J)

Track Switch Maintenance guide

Free

See AldonCo.com for additional products and details.

Derails

Derails are an important safety device.

Inspect derails for operation and proper installation.

Check for...

- All track fasteners installed and tight.
- Proper alignment and shimming.
- Derail hinges or slides freely.



Missing Spikes/Screws



Not Properly Aligned with Rail

Check derail to be sure it is not damaged. The derail should sit flat on the rail. All components of the derail should be straight and structurally sound. No cracked or missing parts.



Twisted From Prior Derailment

Not Sitting Flat On Top of Rail

Previously Damaged Derail

Derails

Your derails should be equipped with a reflective blue sign plate that reads “DERAIL”. If your sign plate is missing or damaged, it should be replaced.



Derail with Blue Sign

Inspect the derail’s paint.

Aldon® derails are furnished painted (hinged and sliding) or powder coated (portable).

The finish acts like a lubricant if a derailment occurs. This lubricating action aids in the derailing action.

Ties and Railbed

Your railroad ties and railbed are the foundation of your track. Bad ties, ballast, drainage, and spiking can quickly deteriorate your track; causing expensive repairs and possibly derailments.

Your ties should be seated in ballast (rocks). The ballast should allow water drainage and keep the ties in place. The ties should be exposed to the air and sunlight on top to help reduce rot.



Muddy Track Ballast



Properly Ballasted Track

Ties and Railbed

Inspect the track for vegetation growth. Your track should be free of vegetation. The growth will reduce visibility of the rails, hold moisture, and increase the rate of deterioration of the ties.



Light Grassy Vegetation



Heavy Growth Limiting Visibility

Track spikes are all that hold the rails down to the ties.

Without good spiking, you will have a derailment. Inspect the track for signs of spikes lifting and broken tie plates.



Spikes Lifted



Broken Tie Plate

If you find ties which need the spikes driven frequently, you may wish to respike with plugs, change spike holes, or replace the tie.

Ties and Railbed



Broken Ties

Ties should be strong and tightly grained. After all they are holding up 285,000 lb railcars. Look for ties that are broken, rotted, open-grained, or otherwise damaged.

Many sidings use gauge rods to help hold the rails together in tight curves. In such situations, gauge rods play an important role in insuring the rails are not forced apart creating a derailment.

Inspect the gauge rods for missing or broken jaws, loose jaws or nuts, and broken shafts.



Missing Jaw



Broken Shaft



Loose Jaw



Properly Installed

Aldon® Products for Checking Railbed

Spike Maul

For manually setting and driving cut spikes.



4123-17

Claw Bar

Pulls cut spikes from timber and resin ties with ease.



4123-04

Magnetic Spike Holder

Set spikes without the danger of striking your hands.



4123-132

Cut Track Spike

Conventional cut track spikes for general spiking of rails, switches, derails, and other track hardware.



4123-38 (9/16" x 5 - 1/2")

4123-39 (5/8" x 6")

Cedar Tie Plug

For plugging unused spike holes and tightening holes for respiking.



4124-14

Adze



4123-01

Gauge Rods

Help secure gauge in tight curves and critical areas such as switches and unloading chutes.



Flatten tie plate seats with adze before installing gauge rods.



GARY MANG RAILROAD CONSULTING

SERVICES INCLUDE:

- *FRA mandated inspections of tracks and switches monthly.*
- *Individualized track geometry testing recommendations.*
- *Provide maintenance program management. (Budgeting PPR, Test data analysis, CBM)*
- *RWIC Flagging.*

My goal is to maximize your track structure to its full capabilities, keeping it safe, reliable, and cost efficient.

GARY MANG CONSULTING, LLC

(847) 265-9733

www.railroad-inspections.com



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