# Improving Atlas (and other brands of) Turnouts II

## [ The N-scale version]

Atlas turnouts, particularly their “Snap Switch” turnouts are easily the most common brand used on first model railroads. This is because they are somewhat cheaper than other brands, and because of some clever marketing by the Atlas Co.

The track plans published by Atlas, both online and in print, are primarily advertising for Atlas products. They use Atlas “Snap Track” components including “Snap Switches.” These track plans are commonly used by “newbies” to build their first model railroad.

Unfortunately, the Atlas Snap Switch has many issues that may cause problems down the line. If you have not purchased your turnouts yet, I strongly recommend you look seriously at other brands of turnouts. Later in this article I will review some of the commercial turnouts available in N-scale, and list their advantages and disadvantages.

We N-scalers are fortunate in that two of the problems built into the Atlas design for their HO-scale “Snap Switch” turnout, are not present in the N-scale version. These two problems are the tight (for HO) 18” radius curve and the rivets that connect both ends of the moving point rails, to the rest of the HO turnout. The N-scale Snap Switch uses a broad (for N) 19”

radius curve. (This is roughly equivalent to a 38” radius, very broad, curve, in HO-scale.)

The N-scale Snap Switch also does not have rivets at either end of it’s point rails. It uses metal tabs instead. While by no means perfect, this tab system is better than the rivet system used in the HO version.

The device that moves the points of a model turnout is called a “switch machine.” Atlas Snap Switches come with either a manual, or electric, (twin-coil type) switch machine attached to the side of the turnout. While this may look like a bargain to first time buyers, there is a downside. The Atlas switch machine is very weak. It simply does not produce the same amount of force that most other switch machines do. I have also had several cases of Atlas N-scale switch machines actually shaking themselves to pieces, due to a poor joint between the top & bottom of the black plastic casing, and the snap action of their design. To prevent this, I recommend sticking scotch tape all along the seam between top and bottom pieces, with the tape spanning the seam. Any excess tape can be trimmed off with a sharp hobby knife.

This weak switch machine is why the point rails and throwbar of Atlas turnouts need to be very “loosey-goosey” and super-easy to move. Many other brands of commercial turnouts use rail joiners for the pivot end of their point rails. I make my own turnouts without any pivots. The point rails are each one continuous piece that bends to change routes.

The Atlas, Peco, Kato, and Bachmann, coil-driven switch machines are all subject to burning out of their coils if current passes through them for more than a second or two. This can happen several ways. The most common is that the operator simply holds the button down too long. Those little “blue button” controls that are packed with Atlas Snap Switches, also have a spotty history of sometimes shorting out their internal contacts, and burning out coils. Sometimes a modeler may actually connect the wrong type of switch to the turnout and cause the coils to melt. There was a case on the forum where a newbie used an Atlas “selector” switch array to control his turnouts. Unfortunately for him, the Atlas selector contains slide switches that stay connected constantly when they are slid to the “on “position. Electrically, they operate like a light switch in your house, and not like a doorbell button. Thus, the current kept right on flowing, until his switch machines smoked and melted!

The possibility of this sort of meltdown can be eliminated altogether by using a device called a Capacitive Discharge Unit, or CDU. You can either buy, or build, your own CDU, or you can buy a much better-quality turnout controller called a Stapleton 751D, which has a CDU built-in. If you use any brand of twin-coil switch machine, I strongly recommend using a CDU to protect your turnouts.

There are also things you can fix on your turnouts, whether Atlas or other brand, to help them pass trains through without derailments.

When some of the wheels of a train go along one route through a turnout, and other wheels take the opposite route that's called "picking the points", and it's one of the most common types of derailment. There are two things we can do to prevent wheels from picking the points. First, let's look at the points themselves. The points are the two moving rails in a turnout. They determine which route a train takes through the turnout. They are often less "pointy" than they should be. In fact, they may be quite blunt. Simply filing the points thinner can often prevent derailments. Another thing we need to check is whether the stock rails each have a little notch in them where the point can "hide" when it is moved next to that stock rail. Most turnouts come with these notches from the factory. If yours does not have them, you can file a notch into the inside of each stock rail, at the place where the end of the point rail snugs up against it. The combination of thin points, and notched stock rails, makes it all but impossible for any wheel to pick the points, and go the wrong way.

Let's Move on to another problem area, the guard rail flangeways. With the exception of Micro Engineering* every brand of commercial turnout I've seen has flangeways that are both too wide (which is a common cause of derailments) and also too deep (which causes cars to bump up-and-down & sway

side-to-side, as their wheels pass through the frog of the turnout.) Fortunately, both these problems are easy to fix.

The first step in improving the performance of your turnouts, (and your whole railroad for that matter) is to buy yourself an NMRA track/standards gauge. A gauge costs only about $12, and it is a very wise investment. Most online hobby sites have NMRA gauges available. One good site is www.modeltrainstuff.com another is www.trainworld.com . The gauge will help you measure many important things on your layout, including many critical areas of your turnouts. It can also check the "gauge" (distance between) of the wheels, and the gauge of the track. The NMRA gauge comes with instructions that show you how to check all these things.

One side of the metal gauge has two tabs labeled "Flangeways." Another edge of the gauge has a single tab that is also used to check flangeways, to see if they are too wide.

OK, so just what the heck are these flangeway things I've been talking about anyway? The flangeways of a turnout are the slot shaped spaces between the stock rails, that the wheels ride on, and two short rails mounted just inside the stock rails. These short rails are called "guard rails" and may be metal or plastic. Atlas uses black plastic guard rails on their "Snap Switch" turnouts.

In the center of your Atlas turnout, you will see another black plastic component called a "frog." The frog has four rails running into it that look like they will all meet each other in an

‘X’ pattern. The frog also has its own flangeways. These are the slots in the frog that wheel flanges travel through.

The purpose of the frog is to let the wheels of railcars pass onto either of the two possible routes through the turnout. The purpose of the guard rails is to keep all the wheels on the selected path through the frog. It does this by forcing the flanges of the wheels to travel through, (you guessed it) the “flangeway” between that guard rail, and the stock rail next to it. It can only do this job properly if it is the right width. (Also, all the wheels, on every locomotive and car, need to be set the same distance apart from each other on the axle each pair of wheels share. This is why its important to be able to check, and adjust if necessary, the gauge of the wheels.)

Any flangeway should be just wide enough to let one of the “flangeways” tabs of the NMRA gauge slide smoothly through it. There should be no sideways slop, but the “flangeways” tab should not bind either.

Remember that single, large, tab I mentioned? It should not be able to slide through any flangeway. If it does, then the flangeway is too wide. Being too wide means that the wheels can drift side-to-side within the flangeway. At the other end of the axle, the other wheel may try to take the wrong route through the frog, or hit the point of the frog. Either will cause the wheel to derail. If you check the flangeways of an Atlas, Peco, or most other brands of turnouts, you will likely find that

the flangeways tab has plenty of side-to-side play, and that the single “oversize” tab will slide right through.

* The exception is a Micro Engineering turnout which has flangeways that are slightly too narrow, instead of way too wide, like the other brands. A single pass with a Dremel tool, or a little filing, will fix the problem. For those too wide flangeways on other brands, the fix is to glue some styrene strips to the inside of the flangeway to get it narrowed down to the width of the flangeways tab. This procedure is covered in text, and photos, in my file “Improving Atlas turnouts” starting on page 8.

Here are my opinions on various brands of turnouts available in N-scale, and some of the advantages and disadvantages of each.

1) Peco

   Long regarded by many model railroaders as the best commercial turnout available. Its main advantage is high reliability, with few, if any, derailments. The Peco turnout is also rugged in its construction This makes it suitable for those who are likely to change their track arrangements, since it can stand up to repeated handling.

One disadvantage of a Peco turnout is its somewhat odd appearance, since it is based on a British, rather than American, prototype. This is not all that noticeable once the turnout has been ballasted and possibly painted, especially in N-scale.

A big disadvantage of Peco's "code 55" turnouts (and track) is their incompatibility with other brands of code 55 turnouts or track, without serious adaptation. Peco's "code 55" turnouts don't actually use code 55 rail at all. The rail in them is really code 78 rail, with part of the rail set deep into the thick plastic tie strip. This makes the bond between rails and tie strip super strong. Oddly, Peco made this rail with two flared out rail bases. One base at the normal bottom-of-the-rail-position, and the other base set partway up the rail, at the code 55 height. This would have been relatively easy to join to non-Peco, true code 55 track, if Peco had factory-cut a slot for a rail joiner directly below this code 55 base. Unfortunately, for reasons defying logic, they didn't.

So, the Peco "code 55" turnouts, and track can only be easily joined to either more Peco "code 55" track, or to any brand of code 80 track. In both cases, the rail joiner would go on the lower of the two bases, and the rail tops would be quite close in height. However, if you want to connect Peco "code 55" turnouts to Micro Engineering, or Atlas, code 55 flex track, it's necessary to do some fairly major "Dremel surgery" on the Peco rail to get the rail tops of the Peco turnout and the non-Peco track, even with each other. The

lower base, and bottom part of the weird Peco rail need to be cut off to allow a rail joiner to be slid onto the upper base of the Peco rail. This is not easy to do on an assembled turnout, and makes it necessary to solder the rail joints of the Peco turnout.

2) Micro Engineering

This turnout is, like the Peco, highly reliable, and unlikely to cause any derailments. However, in some respects, the Micro Engineering turnout is the opposite of the Peco. First, its appearance is excellent! It is the best-looking model of an American prototype turnout that I have ever seen. The tie wood grain, and spike details, are all very good.

On the disadvantage side, that same tiny spike detail makes for an easily broken connection between rails and tie strip. These turnouts need careful handling during installation. While they will look great, and perform very well, on a permanent railroad, these turnouts would be a bad choice for a modeler who is still in the “plug and play” stage of layout development. They are unlikely to stand up well to repeated handling.

The other disadvantage of Micro Engineering turnouts is extremely limited selection of turnout types. The only N-scale offerings are a #6 right hand turnout, and a #6 left hand turnout. That’s it. No wye turnouts, curved turnouts, or other frog # turnouts.

3) Atlas code 80 “Snap Switch” turnout.

As I mentioned early on, this is one of the most commonly used turnouts. Unfortunately, its not a particularly good one, at least not without modification. The only advantages are slightly lower cost, and the ability to fit easily into those Atlas track plans. The latter is due to the unique geometry of the Atlas “Snap Switch” turnout. It has one 5” long straight route, and one 19” radius curved route. All other turnouts have two straight routes, or, in the case of curved turnouts, two curved routes, of different radii.

The disadvantages, and fixes for them, have already been covered earlier in this article.

Atlas code 55 turnout

This turnout looks better than the code 80 Atlas turnout, it also comes with the “DCC friendly “configuration built-in. This includes an isolated metal frog and point rails insulated from each other. Unfortunately, that’s about all I can say for it in the way of advantages.

The big disadvantage is flimsy construction. For “plug and play” layouts, this turnout is likely to be damaged too easily. Permanent model railroads deserve a better turnout.

Walthers/Shinohara turnout

This is a good turnout in many respects. It looks like an American Prototype turnout, is generally well built enough to stand up to repeated handling, and is reliable if attached to a good switch machine, or ground throw. This turnout does not have either the internal spring of the Peco and Micro Engineering turnouts, or the attached switch machine/external spring of the Atlas code 80 "Snap Switch." Therefore, there is very little to hold the points in position against the stock rails. There are tiny copper contacts attached to each point rail, and intended to slide under the stock rail. These contacts are easily bent down to the point where they provide a poor electrical connection and they can also interfere with the mechanical mating of the point rail and stock rail, possibly causing derailments. So, despite its general ruggedness, I would not recommend this turnout for "plug and play" temporary layouts.

On the other hand, it could be a very good turnout on a permanent model railroad, when combined with a good switch machine, such as the Tortoise. I recommend pushing the copper contacts down out of the way of point movement, and using the micro-switch built into the Tortoise to control frog polarity.

Kato Unitrack turnout

I only know this turnout by reputation. I have never owned one. The reputation is very good however. There are very few complaints against Kato turnouts. One of the few

complaints was about wheels occasionally “picking-the-points” of the Kato #4 turnout. The fix was to slide the outside stock rail out of the turnout enough to file a notch for the point rail to recess into. These notches are a standard feature on most commercial turnouts, and I don’t know why Kato did not incorporate them into their design.

The fix looks easy enough to do in the online video by Mike Fifer of Fifer’s Hobby supply. I recommend filing this notch in both stock rails, rather than just the outer one. The Kato #6 turnout, reportedly, does not have this “picking-the-points” problem.

Bachmann EZ-Track turnout

This is another turnout I have not used, so again I only know it by reputation.

That reputation is absolutely dismal. All the comments I could find online were quite negative. Most were from people who had bought these turnouts to go with the Bachmann EZ-Track in a train set they had purchased. In most cases, they ended up throwing their Bachmann EZ-Track turnouts away, and buying a different brand of turnouts.

For anyone interested in “roadbed track” and turnouts, I recommend Kato Unitrack over Bachmann EZ-Track, due to the very bad reputation of the Bachmann turnouts.

Traction Fan