Turnouts

A “turnout (track switch) is the piece of track that lets a train travel off the main line and onto a siding, transition between parallel tracks, or change track routes. Most model railroaders prefer using the name “turnout”, rather than “switch”, to avoid confusion with electrical switches, which are also common on model railroads. This prevents confusing statements like, “I use this switch to switch the switch.”

Turnouts are necessary items on nearly every model railroad.

If you are content to simply watch a train go around in circles, or perhaps two trains go around two loops of track, then you won’t need any turnouts. However, if you want to do anything beyond that, even being able to transition between the two loops, you’re going to need turnouts. Which kind of turnout to buy can be a bit confusing.

On the forum, and in advertising, you may hear references to such terms as “current routing” turnouts”, “isolated frog” turnouts, “insulated frog” turnouts “live” or “powered” frog” turnouts, “DCC compatible” turnouts, “DCC friendly” turnouts, “Wye” turnouts, “Insulfrog” turnouts, “Electrofrog” turnouts“ Unifrog” turnouts, etc., etc. ad infinitum! You will also see some turnouts referred to as, “a “#4 turnout”, or a “#6 turnout.”

Another thing you may see on the forum is discussion concerning the merits, or deficiencies, of different brands of model turnouts. No wonder then, that new model railroaders can easily become confused about turnouts!

I'll do what I can to explain what each of these terms mean.

The various parts of a turnout have names, of course, and the turnout part name that comes up most often is "frog."

The frog can be found near the middle of a model turnout. It is the plastic, or metal, part of a turnout where four pieces of rail come almost together, and form an 'X' shape. The main purpose of the frog is to let a train's wheels pass onto either of the two routes through the turnout.

The metal variety may be "powered", or "live" meaning that the frog can carry electricity up to a locomotive's wheels, just like any other piece of rail. Not all metal frogs are powered however. Some metal frogs, and all plastic frogs, do not pass any electricity to the locomotive's wheels. This fact can sometimes cause a loco to stall on the frog. Typically, this only happens when the loco is a very short, yard switcher, type and/or has few of its wheels wired to pick up power from the rails. Locomotives that can pick up power from all, or most, of their wheels will normally pass smoothly through a non-powered frog.

Metal frog turnouts can have their frogs wired in two different ways. Some have the frog electrically connected to the "points." The points are the two moveable, inside rails of a turnout. They pivot at one end, and are connected to a plastic "throwbar" at their other end. Moving this throwbar from side-to-side moves the points, which determine which route the train will take.

Turnouts that have their frog electrically connected to the points are usually "current-routing" turnouts. This means that the points take on a second task. In addition to routing the train onto one track or the other; the points of a current-routing turnout also act as an electrical switch. When a point touches the outer ("stock") rail, it passes current only to the selected route. The non-selected route does not get any power through the turnout. This feature can be used to park a locomotive on a siding. That loco will stay stationary until the current-routing turnout is set for the siding that the loco is on. Then power will pass through the turnout into the selected siding and on into the loco so it can move.

Note: Plastic frog turnouts can also be wired as "current-routing" turnouts. A common example is the Peco Company's "Insulfrog" turnout. "Insulfrog" is Peco's trade name for their plastic frog turnout. This makes sense since the plastic frog is an electrical insulator. Peco calls their metal frog turnout an

“Electrofrog.” The metal frog of Peco’s Electrofrog turnout can be wired to provide electricity to a locomotive. Recently Peco has introduced a new type of turnout called a “Unifrog” turnout. It is intended to ultimately replace both the company’s “Insulfrog” and “Electrofrog” turnouts. The new Unifrog turnout can be wired to have its frog either powered, or not powered.

An “Isolated frog” turnout has a metal frog that is electrically isolated from all the other rails in the turnout. This isolated frog gets its power from a feeder wire attached to the frog. A Micro-switch, mounted below the table, connects the frog’s feeder wire to operate with one, or the other, routes through the turnout. This micro-switch is operated by the movement of the turnout’s throwbar and points.

If you look carefully at any turnout, you’ll see that the frog will be used as the left rail through one route, and as the right rail through the other route. This is why the Micro-switch is necessary. It changes the polarity of the frog to match the selected route.

The terms “DCC compatible”, “DCC friendly” and any other verbiage concerning a particular turnout’s ability to work on a DCC controlled railroad are sometimes used in advertising too freely. They are ambiguous at the least. The fact is that any turnout can be made to work with DCC, or with traditional DC.

The possible problem that “DCC compatible/friendly” turnouts are designed to deal with is a short circuit that can occasionally happen when a metal wheel accidentally makes contact with both the running (stock) rail, and the point rail. In most turnouts the running rail, and the point rail nearest to it, are of opposite electrical polarity. If a metal wheel does make contact with both rails simultaneously, then it will create a short circuit. On DC controlled layouts this wasn’t a problem, since the short circuit was very brief. The slow circuit breaker in a typical DC power pack would not have time to react. DCC however, uses very high-speed circuit breakers, and so such a brief short circuit might temporarily shut down the DCC system.

If you have all the wheels on your railroad gaged correctly, and the turnouts were all modified to meet the NMRA specifications concerning flangeway width * (both of which you should do anyway) then this short circuit might well never even happen, because the wheel would not be able to get into a position to short the two rails.

*[Nearly all commercial turnouts have flangeways that are too wide, and too deep, to match the NMRA specs. I recently bought two Micro Engineering brand turnouts that came close. In fact, the guardrail flangeways on these M/E turnouts were actually very slightly too narrow, rather than

too wide. A simple pass with a Dremel tool widened them just enough to meet the spec.]

This brings us back to the isolated frog turnout. It can be wired so that the point rail, and stock rail, are the same polarity, and therefore the short circuit would never even be able to occur at all. That is the only electrical difference between a "DCC compatible turnout" and any other turnout.

I know of some commercial turnouts that come from the factory wired with isolated frogs. Both Atlas, and Micro Engineering, brand N-scale, code 55, turnouts come wired this way. Peco's Electrofrog, and their new Unifrog, have this as an option. There are likely others, including perhaps Atlas's equivalent turnouts in other scales. and possibly some other turnouts as well. The Atlas and Micro Engineering N-scale, code 55, turnouts are just the only two that I have had personal experience with. **

It is possible to use a DCC system "operate" (throw the points of) turnouts. However, the voltage output of a DCC controller can't be used to control switch machines directly. To control turnouts with a DCC system, a device called a stationary DCC decoder must be used in addition to the switch machine. The stationary decoder receives digital signals from the DCC control system, just as the decoders inside locomotives do. Like a locomotive decoder, a stationary decoder will only respond to

signals addressed specifically to it. The decoder will ignore any signals not addressed to it. When it receives the proper signal, the stationary decoder then operates the switch machine, which physically moves the points of the turnout to the opposite route. Some stationary decoders have multiple channels that allow them to operate more than one turnout. Buying several stationary decoders adds substantial cost to the task of operating turnouts.

Also, using the DCC system to operate turnouts, along with several trains, requires a lot of button pushing. For these reasons, many prefer to operate turnouts with simple toggle switches, or mechanical devices. Whether or not to use DCC for turnout operation is simply a matter of the individual modeler's preference.

"Wye Turnouts" have both their routes diverging at equal angles from the centerline of the turnout. They are designed to save a little space when constructing a "wye."

A "wye" is an arrangement of three turnouts connected by three tracks in a triangle. Wyes are used to let a locomotive, or train, perform the railroad equivalent of the "K-turn" an automobile uses to turn around on a narrow street.

NOTE: Further along in this document you will see references to other PDF files I've written. If you want to get more info from any of them, they are all located in the "Beginner's Q&A" section of the forum inside the "sticky" (dark type) post, "Help a new modeler to get started."

Brands of Model Turnouts

There are several brands of commercial turnouts available. It is also possible (and much easier than most modelers think) to make your own turnouts. Let's look at your choices.

[Atlas Turnouts] are, by far, the most common brand used on first layouts. This is because they are somewhat cheaper than other brands, and also because of a very effective marketing strategy used by Atlas. The track plans published by Atlas, in their track plan booklets, and online, all specify Atlas track sections, including Atlas turnouts. This is hardly surprising, since these track plans are primarily a form of advertising by the Atlas Company. Like all advertising it is going to promote only the advertiser's products, and not their competitor's. It will also fail to mention any faults in the advertising company's own products. Most model railroaders build their first layout using one of these track plans. I did, and so have many others.

NOTE: The numbers, {in brackets} after the names of the various commercial turnouts, represent my personal quality ranking in a field of seven. A double asterisk ** after this number, indicates a turnout that I have personal experience with.

In reading the forum, you will likely find varying opinions on the quality of Atlas brand turnouts in general, and their “Snap Switches” in particular. Atlas actually makes two separate lines of turnouts, “Snap Switches” {6} ** and Custom Line.” {5}

The “Snap Switches” are part of Atlas’s “Snap Track” line of products. The “Snap Track” line is designed for easy assembly. The “Snap Switch” turnouts are designed to fit in place of a section of either straight track, or curved track. An N-scale, atlas “Snap Switch” can be substituted for either a 5” straight track section, or a 19” radius curved section.
The HO-scale “Snap Switch” turnout can be used in place of a 9” straight section, or an 18” radius curved section.

While this makes it easy to plug together a track layout, in my opinion (and that of many other experienced modelers) there is a problem in this design. An 18” radius curve is a pretty tight curve in HO-scale. While shorter locomotives and cars can get around such a curve, some longer equipment may not. All rolling stock, short or long, will exhibit some very unrealistic

overhang on this tight a curve and coupling/uncoupling may be difficult.

In order to fit their HO “Snap Switch” turnout into an 18” radius curve, Atlas had to include a short segment of straight track, (the point rails) the tight curve, and a built-in kink between the two. This arrangement can work, but it tends to push some locomotives and cars to their limits, and can cause derailments.

The other “Snap Switch” design issue was to accommodate the Atlas switch machine. This is the big black mechanism attached to the side of a “Snap Switch.” It does not produce the same amount of force as some other switch machines do. In fact, it’s quite weak. To let this switch machine, move the points at all, the point rails had to be very “loosey goosey.” Atlas included rivets at both ends of the moving point rails to make things easy enough for their rather wimpy switch machine to move them. Over time these rivets can wear out the plastic they are set into. This gradually loosens the parts they join.

NOTE: The file “Improving Atlas Turnouts” has info on the potential problems of Atlas “Snap Switches” and some fixes for most of them. I, and many others, have had bad experiences with Atlas “Snap Switch” turnouts and no longer use them.

The Atlas switch machine has a long history of burnt out coils, which melt part of the plastic case. A few of these overheat

failures are caused by shorting of the internal contacts in the poorly made “blue button” electrical control that comes packaged with Atlas snap switches. However, most are caused by human error. Holding the blue button down for more than a second, or two, can burn out a coil. There are things that can be done to prevent coil burnout. More on that later, when we get into the information on “switch machines.”

However, there are plenty of other modelers who do like Atlas turnouts and use them successfully on their model railroads. Time Warp is one forum member who comes to my mind who is an advocate for Atlas turnouts. There are many others as well. If you are planning on purchasing turnouts, I suggest you look around the forum for the various opinions and then make your own informed choice. Also look around online for the best price. There are discounts available.

The other Atlas turnout option is their “Custom Line” {5} turnouts. They are not made to fit in place of an 18” radius curve; in fact they have no curved route. Like most real turnouts* and several brands of model turnouts* the Atlas Custom Line turnouts have two straight routes that split away from each other at an angle. This angle is described by a number. Called a “frog number” the number found on the package, and in advertising, may indicate that this is a “# 4 turnout, # 6 turnout, etc. The frog # shows the amount of

sideways diverging movement a wheel will take in a certain number of units of forward travel. For example, if the wheel will be moved sideways one millimeter in eight millimeters of forward travel then that is called a, “# 8 turnout.” The simple explanation is that the higher the frog #, the gentler the split between routes of the turnout will be.

{*The exception is a curved turnout where both routes curve.}

Conversely, small frog # turnout, like the # 4 will have its routes split pretty sharply. Like the radius of a curve, the frog # of a turnout can affect the performance of cars and locomotives. Some longer locos and cars may have trouble negotiating a small frog # turnout. Here is a final note concerning Atlas Custom Line turnouts. Make sure that any “Custom Line” turnout you buy actually has the frog # on the package. I have seen some Atlas turnouts labeled “Custom Line” that were physically identical to “Snap Switches.”

I have not used Atlas custom line turnouts, so I can’t really rate them from personal experience. Again, I suggest you ask about them on the forum, and get opinions from members who do have experience with them.

Micro Engineering Turnouts {2} ** are noted for their very realistic appearance. They offer only a very limited line of

turnout choices. They have a #6 right, and a #6 left. Recently the company has released a “yard ladder” (a series of turnouts connected in a row) in HO-scale. I rate Micro Engineering turnouts, as very good. I think they are second in overall quality only to the excellent Peco turnouts.

Micro Engineering is actually best in terms of realistic appearance, but the small spike detail that looks so good, also makes the Micro Engineering turnout a bit delicate. They are very good turnouts and should work well for you, as long as you handle them gently when installing them.

Peco {1} ** turnouts have the advantage of rugged construction. They are renowned for their near perfect reliability, with few, if any, derailments. Modelers who use them swear by them. I have some on my layout and they work extremely well. If you are looking for a good brand of commercial turnout, I highly recommend Peco, or Micro Engineering.

Walthers/Shinohara {3} **Turnouts (made by Shinohara, and sold by Walthers*) have both a realistic appearance, and generally reliable operation. My personal experience with them goes back many years to my membership in an N-scale club. They had dozens of the Shinohara code 70 N-scale turnouts. The only problem encountered concerned the tiny copper contacts attached below the moving point rails. These contacts

were intended to slip under the stock rail when the points were thrown. This passed power to the point rails. Sometimes they got bent upward enough to hit the stock rails and prevent the point rail from snugging up to the stock rail. I suspect some of the problem was caused by heavy-handed track cleaning by the club members. The point binding problem was easily fixed by pushing the copper contacts down with a small screwdriver. The copper contacts were also somewhat spotty as far as conducting power to the points. The club used micro-switches, mounted under the table, to power the points; instead of relying on the contacts. Looking at photos of current production, it looks like the same design may still be being used. I'm not sure though, so it would be something you should check for yourself.

*Recently the agreement between Walthers and Shinohara has ended. You may have difficulty getting a good supply of Shinohara turnouts, until they find a new U.S. distributor.

Kato Unitrack {4} turnouts are part of their Unitrack roadbed track system. Unitrack is packaged with current Kato train sets. They are available in #4 and #6 frog number configurations and either manual, or electric (remote control) variants. Kato #4 electric turnouts apparently have had some derailment issues, particularly with longer rolling stock. A modification video

shows a notch being added to “hide” one of the point rails, (the curved one) and make the turnout more reliable.

Note: I recommend doing this modification to both stock rails, so either point can recess into its mating stock rail. Newer production turnouts may possibly have this modification factory installed. The #6 turnouts are said to be exceptionally smooth-tracking, with virtually no derailments.

Bachmann EZ-Track {7} turnouts are used with the Bachmann EZ-Track roadbed track system. EZ-track is included in current Bachmann train sets. According to all I have read online, the Bachmann turnout is very inferior to the Kato, and all the other brands of turnouts I have reviewed. I strongly recommend NOT buying them. If you want roadbed track, I would definitely recommend Kato Unitrack over Bachmann EZ-Track.

Scratchbuilt Turnouts ** have the advantage of being much less costly than commercial turnouts. (Less than $5 ea. for materials vs. approx. $25- $30 ea. for a good-quality commercial turnout)

The trade off to saving lots of money is investing lots of time. It is also possible to build a turnout which, in terms of reliability, is as good as the best commercial turnouts, like Peco, or Micro Engineering, and much better than many other commercial offerings. You can also build in a better frog which will provide a smoother ride for the wheels than any commercial turnout design will, even the excellent Peco. Another advantage is that

you can build any shape turnout required to fit into that awkward spot on your layout where no commercial turnout quite fits. NOTE: The file, “How I scratchbuild turnouts” explains the idea in depth.

Switch Machines

Each turnout on your railroad will need some sort of mechanism for moving the points. These are called “switch machines.” I have already given some information about the Atlas switch machine. It is another factor in many newbies decision to use Atlas turnouts. It comes attached to the (“Snap Switch”) turnout, and is included in the price. With an Atlas “Custom Line” turnout, or some* other brands of turnout, the switch machine must be purchased separately and installed by you. This makes the Atlas “Snap Switch” look like a bargain to a new modeler. Perhaps, after reading my opinion concerning the Atlas “Snap Switch” you may see that it’s really no “bargain” at all. So let’s look at some other choices.

[Twin-coil Switch Machines] are basically an electric solenoid with two coils. (Hence the name.) Appling power to one coil pulls a movable steel slug to that end of the solenoid. Applying power to the other coil draws the slug to the other end of the solenoid. The action is instantaneous. Some folks don’t like this instant snap action, preferring the slow movement of the stall motor, or servo, types. A mechanical linkage connects the slug

to the throwbar and points of the turnout. Twin coil machines can easily burn out a coil that is energized more than a second, or two. Using a simple electronic circuit called a “Capacitive Discharge Unit (CDU) will prevent coil burnout.

(* Atlas Snap Switch, Kato Unitrack, and Bachmann EZ-Track, turnouts all come with some form of electromagnetic coil switch machine factory-installed. The Peco switch machines however, are sold separately from their turnouts.)

The Peco twin-coil machine is much stronger than the Atlas, and uses thicker wire that may not burn out quite as fast. However, it certainly can burn out, and it should still be protected by a CDU. A turnout control called a “Stapleton 751D”, has a built-in CDU, and is a much better choice for operating twin-coil machines than the Atlas blue button control, or the equivalent (black) control button packed with Bachmann’s EZ-Track turnout.

The Peco below-the-table, twin-coil machine attaches directly to the bottom surface of their turnout. It typically requires a large rectangular hole be cut under the throwbar before the turnout is installed. Peco sells a set of electrical contacts that can be added to this switch machine to control things like frog polarity, signals, or control panel indicator lights. Peco also makes an above-the-table switch machine which snaps onto

the side of a Peco turnout. Peco turnouts can also be operated by many other types of switch machine.

[Stall Motor Switch Machines] These contain a DC motor geared down to slow speed. They are very powerful, and can be adapted to use with any brand of turnout. Typically, stall motor machines are mounted directly below the turnout's throwbar, and need a hole, or slot, cut under the throwbar for the spring steel wire that mechanically links the stall motor to the throwbar of the turnout. The hole should be drilled from the top, before the turnout is installed. This is far easier, and less likely to damage your expensive turnouts, than trying drill up from below, with the turnout already installed. Read the stall motor's installation instructions for specific information. The "Tortoise" motor, made by Circitron, is a very popular stall motor machine.

[Servos] are another option. They work a bit similar to stall motors in that both types move the points slowly, and hold the point tightly against the stock rail once in place. I have not used them, but CTValley, here on the forum, does. He can answer any questions you may have about servos.

There are also a variety of purely mechanical, as opposed to electro-mechanical, devices that can be used to move the points of a turnout. They are much cheaper than any of the electric switch machines preceding.

[Caboose Industries Ground Throws] are a miniature version of a similar device used on real railroads. They are grossly over scale size in order to accommodate our giant fingers. They mount right next to the turnout and therefore are most commonly used only on turnouts within easy reach. However, in a few cases, they have been mounted at the edge of a layout and connected to more distant turnouts with mechanical rod linkages.

[Mechanical Linkages] There are many varieties in use, ranging from a simple electric slide switch, rod-connected to the throwbar, to more elaborate systems. They are very inexpensive, easy to make, and extremely reliable.

NOTE: The “Five-dollar switch machine” files show how to build one such machine.

My personal turnout ratings:

These are my quality rankings of seven brands of commonly available commercial turnouts. I have rated them from best, to worst, based on my personal experience**, online research, and opinions gathered online.

{#1} Peco**

In my opinion, Peco's turnouts are, quite simply, the best turnouts commercially available. They have an excellent reputation for reliability, and for causing few, if any, derailments. They are also ruggedly constructed. Peco makes three general models of turnouts, "Insulfrog", "Electrofrog," and "Unifrog." The Insulfrog turnouts have plastic, frogs which, of course can't be powered. This is not a problem for locomotives with all wheel pickup. Short switchers, or other locomotives that only pickup power from a few wheels, may stall on a non-powered frog. Insulfrog turnouts are also "power routing" meaning that the track route the points are set for will be the only route that will have power. If you want to, this feature can be bypassed by adding power feeders to both routes.

Peco's Electrofrog turnouts have a metal frog which can be powered, or not, as you choose. The frog is not isolated, and the adjacent point and stock rails are not electrically connected to each other. This means the turnout is not "DCC compatible" or "DCC friendly." However, it can be modified to the "Isolated frog, DCC friendly" configuration relatively easily. Like all turnouts, the Electrofrog, and the Insulfrog, can work with either DCC, or DC controlled layouts.

Peco's new Unifrog turnout is intended to replace both the Insulfrog and Electrofrog models. It has a metal frog that can be isolated and powered. It can be wired to the "DCC friendly" configuration.

{#2} Micro Engineering**

Micro Engineering turnouts are the most realistic-looking model turnouts I have ever seen. They come with the "DCC friendly" configuration from the factory. They have guard rail flangeways that are sometimes slightly too narrow to meet NMRA specs. This is unusual, since practically all other commercial turnouts come with guard rail, and frog, flangeways that are too wide, rather than too narrow to meet NMRA specs. They are also too deep to meet NMRA specs.

Micro Engineering's slightly narrow guard rail flangeways are very easy to fix. A single pass with a Dremel tool, or a little filing, will widen them enough to meet specs. The small spike detail that looks so good, also makes these turnouts a little delicate, so handle them gently during installation.

{#3} Walthers/Shinohara**

These turnouts are also quite realistic-looking, and very well made, but due to the end of Walther's US distributor contract with Shinohara they may be hard to find. Shinohara is looking for a new US distributor.

{#4} Kato Unitrack

Since I don't use Kato Unitrack, I have no personal experience with Kato turnouts. I did find a you-tube repair video that showed the inside mechanism, and another video that showed how to add a point-hiding notch to a Kato #4 turnout. Kato's Unitrack product line is the best of the "roadbed track" lines on the market. Much better than Bachmann's EZ-Track line. This is especially true of Unitrack turnouts. They are decently made, and generally reliable. However, Kato, (and Bachmann) turnouts do have some of the poor design features of Atlas "snap track" turnouts. Kato uses an unusual, single-coil, switch machine mounted inside the roadbed piece. This internal placement looks a lot better than Atlas's ugly, exposed, twin-coil machine, but any repair or adjustment would require pulling up the entire turnout, since the internal switch machine can only be accessed by removing 6 screws and the bottom cover of the turnout. The single coil alternately attracts one of two permanent magnets attached to opposite ends of a sliding plastic bar. The bar is held in place by a 'T'-shaped bracket.

Since Kato turnouts have only two control wires, instead of the three wires used to operate twin-coil machines, they apparently use current reversal to operate their built-in switch machine. The internal spring wire linkage is similar to the one used by Atlas, and Bachmann, and shares some of the weakness of the Atlas design. This means that the moving points need to be hinged with either turned-up metal tabs, (Kato) or rivets, (Bachmann) and the point rails can flop sideways enough to not line up with the mating rails. Like any electromagnetic (single or twin) coil setup, a coil can burn out quickly if the button is held down more than a couple of seconds. This burnout can be prevented by using a Capacitive Discharge System (CDU) to operate the twin-coil machine. Kato turnouts also contain a set of switch contacts, but I'm not sure whether these are part of the current reversal system, used for frog polarity switching, or intended to operate external signals or indicator lights.

{#5} Atlas "Custom Line"

I have not used Atlas custom line turnouts so I'm placing them in the #5 spot simply because all I have read about them indicates that they are better than both of the two following bad turnouts, and not as good as any of the previous four. If you want information on Atlas custom line turnouts, I

recommend you search the forum for members who use these turnouts, and get their opinions.

{#6} Atlas Snap Switch**

This is, quite simply, one of the worst turnouts available, and I strongly recommend NOT using them. They have a long history of derailment problems, coil burnouts, short circuits and even a few cases of physically falling apart. While it is possible to improve their performance with modifications, it would be a lot smarter to just buy a better brand of turnout in the first place.

{#7} Bachmann EZ-Track

This is another turnout that I have not used, and therefore this review is based on online research, rather than personal experience. Again, I recommend you seek the opinions of modelers who have used them. I did check online for just such opinions, and they are not good. The opinions I found were from 2011, so it's possible the Bachmann turnouts have improved since then.

Here is the gist of what I found.

1) "The HO-scale version is bad, the N-scale version is junk, plain and simple!"

2) "I bought five of these. Two worked perfectly right out of the box, one needed modification, and two fell apart when I

tried to modify them to get them to work. I will never use these again!"

3) "We bought a bunch of EZ-Track switches to use on our N-scale layout. We regretted it as soon as we put them into play. Fussing with them didn't seem to help. We gave up and lost a lot of money. We can't give this stuff away!"

4) "I've got about 12 EZ-Track switches, and almost all of them needed work to be useable. Some of the issue could be the mishmash of cars and wheels I have currently. After using a Dremel to grind the points, they work OK, but only OK. Some derailments but usually when backing a five-car passenger train through a #6 turnout when the cars aren't weighted correctly. Although they are remote capable, I only use them manually. You have to flip them pretty good or you will get a derailment. It's very easy to get them in the middle if you aren't paying attention, or bump it."

The Bachmann EZ-Track turnout has one more of the bad features of the Atlas "Snap Switch" turnout than the Kato Unitrack turnout. Specifically, it uses rivets to let the points move very loosely. This rivet idea didn't work well for Atlas, and I don't think it will for Bachmann. I also viewed a repair video that showed the inner workings of a Bachmann EZ-Track turnout. The mechanism consists of a twin-coil solenoid, a toothed rack, a combined gear & cam, and a fairly flimsy bit of

spring wire to move the points. (with very little surety of them getting into proper position)

Before retiring, I spent many years repairing electromechanical equipment for a living. One thing I learned was that the more complicated any mechanism was, the more often it broke down. I am a firm believer in the K.I.S.S. principal ("Keep It Simple Stupid.")

To me, this Bachmann mechanism looks way too complicated for the simple task it's intended to perform. (moving the points) It uses no less than five moving parts to accomplish the same job that the brilliantly-simple Peco twin-coil machine does, much more reliably, with only one moving part. Also, the only thing holding some of the Bachmann parts in place is the cover plate. There are no snap rings, set screws, ('T'-shaped plastic brackets, like Kato) or anything else, to keep the various parts in proper alignment. From an online repair video, I learned that one common, and potentially-derailment-causing, failure is indeed caused by these parts getting out of alignment with each other. While the problem is "fixable" (temporarily) In my opinion this mechanism looks like a series of breakdowns just waiting to happen, and it probably won't make you wait very long. This is borne out by the online reports of several Bachmann EZ-Track turnout owners who said that some of their turnouts were non-functional right out of the box, and others

broke down within their first few days of use. None of the opinions of the EZ-Track turnout owners were any better than "OK, but just OK" and even that was after the guy had to modify it. I don't find this particularly inspiring, but, again, I can't speak from my own personal experience, since I have never owned a Bachmann turnout. After what I read, I don't expect to ever own one, and I can't recommend that you do.

These turnouts are typically bought by modelers who have previously purchased a Bachmann train set containing EZ-Track. This is the marketing strategy of manufacturers of roadbed track. "When the consumer needs more track, (and/or turnouts) he will have to buy ours, since our roadbed track is designed to connect only to more of our roadbed track." In actual fact, roadbed track can be mated to non-roadbed flex track, or sectional track, with some modification, but the roadbed track manufacturer isn't likely to tell their customers that!

Thus, by online research and reputation alone, the Bachmann EZ-Track turnout has managed to just squeak by, and barely beat out, even the notoriously lousy Atlas Snap Switch turnout for the dubious distinction of becoming my choice for the very worst turnout on the market. My recommendation would be to NOT buy either of them. Any of the other turnouts on the list

would be better. Non-roadbed turnouts, like the excellent Peco, can have cork roadbed attached to raise them up even with roadbed track.

Traction Fan