

#145 AUG - SEP 2022

N SCALE RAILROADING

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Ron Nowka

- N Scale Couplers

Kirk Reddie

- Rapid prototype with paper structures.

Keith Lyons

- Servo Switch Machines



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There are many ways to control turnouts. Some folks prefer throwing all turnouts manually. Opposite to that I think many of us have wanted to automate the process with lighted switches and have a panel show how the turnouts are aligned. See page 30.

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Welcome to *N Scale Railroading* #145, the August-September 2022 issue.

Page 04. **Ron Nowka** has always tweaked things like couplers and wheels. He was inspired by an article by Mike Fifer (www.fiferhobby.com) and shares his experiments on modifying N couplers.

Page 26. I decided to see if I could model a fictitious diner. It was a fun project but it turned into a paper model inspired by a fictitious diner. I spent most of the project's time on signage, but I decided signage can be the most important part of making a structure look correct.

Page 30. In his travels, **Keith Lyons** was impressed by some layouts he visited that used servos to electrically throw turnouts as well as to indicate the status of each turnout.

Page 42. **NCalendar** and **NHorizons**. ▮

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N SCALE COUPLER COMPATIBILITY

By Ron Nowka/ Images by author and Mike Fifer

N scale couplers have come a long way since the mid 1960s when Arnold Rapido developed, patented, and allowed all manufacturers to use their design; came out with the beveled hook we know as the Rapido coupler for the most part it works well, with exceptions, but they look terrible they are over sized and don't look like anything found on an American railroad. The Mike Fifer article includes a photo of a scale coupler for reference.

Then, the Kadee company, now Micro-Trains Line, produced a series of replacement couplers and conversion kits that resemble knuckle couplers found on American railroad equipment. They have many hidden features and their materials and finish are beyond exquisite. Micro-Trains protected their innovations with patents but as the patents expire there is opportunity for others to make similar features. Now most of the major brands have their versions of the Micro-Trains coupler with a similar form of operation.

Micro-Trains has many conversion kits as well as specific styles of trucks with couplers permanently mounted with short medium and long versions on some trucks. I have had mixed results with other brands of couplers for a variety of reasons, wheel profile, axel finish fit and stability, bolster pin quality and fit, coupler height and coupler form compatibility. We will explore some minor alterations that can improve the ease and dependability of different manufactures knuckle profiles. Thanks to an article by Mike Fifer of **Fifer Hobby Supply** and Peter Wisniewski, several manufacture's couplers were photographed so their fit can be compared. I enlarged the photo so it would fill a page, printed it twice then cut out the two most popular couplers so they can be overlaid on to the first page. Each style/brand will mate with itself but most manufactures won't reliably grip with others.

The original Unimate couplers (introduced in 1984) have the same T shank as the Rapido coupler and can replace the Rapido coupler almost directly. Again: Almost. This worked great for the Atlas freight trucks of the day, powered locomotive lashups, etc. Later body mount versions were offered. The latest versions of the Unimate couplers come with three shank lengths: Short , medium and long. You can pick the one that fits your application best. Out of the package Unimates click together nicely with extra pressure but won't allow the Micro-Trains knuckle to fit. I found that opening up the lip with my thumb nail gives a fit that will allow cars to couple and still remain coupled. These couplers work best on locomotives us-

ing the coupler pockets and original springs. They will couple together but don't uncouple if the heights are correct. In some applications the T can be trimmed and shimmed to adjust the height.

Atlas offers a variation of a truck mounted coupler under the brand AccuMate which couple with MicroTrains. They also have body mount draft gear. The coupler is just ok but the trucks and draft gear are not as precise as Micro-Trains. Each half of the coupler has a molded on plastic centering spring. The plastic wheel sets are softer than Delrin which may allow the axel to bend and wheels to wobble. This means unintended uncoupling and derailments especially on curves or when backing a longer train. Note: Atlas has metal wheels on many of their cars.

Kato has some variations of the MagnaMatic coupler which they use on locomotives and passenger cars that are almost compatible with Micro-Trains. Sometimes you can get them to fit together but they have a bump on the back of the knuckle which keeps them from fully coupling with Micro-Trains. This bump can be partially removed with a # 409 Dremel disk. It's not necessary to remove the whole thing just cut off part of it. Run the disk at low speed as this is a delicate operation if it is still mounted to a locomotive. If the coupler is on an F unit I usually end up replacing it with a Micro- Trains # 2004-1 (001 02 052) Underslung coupler. These couplers also have a small bump inside the pocket where the shank meets the knuckle. This can also be eliminated with a # 409 Dremel disk or a sharp X-acto blade or a tiny round file. This can be done with the coupler installed but it may be safer to remove it to hold it more securely. I am repeating myself about the # 409 disk because the Heavy Duty disk is too thick and will destroy the coupler. The Kato 11-702 coupler has a different shape but also doesn't have space for the Micro-Trains knuckle to pass onto the pocket. There is room to open the pocket to make space for the Micro-Trains knuckle with a Dremel # 409 disk. With this modification there is no reduction in coupled performance. This coupler is a two piece coupler where each arm provides some spring. Each half locks firmly with the other to make a stable block which fits into a coupler pocket. Ideally the block should be a little loose in the pocket and have a light spring behind it. I have fit these to ConCor and Atlas passenger trucks with moderate success but ultimately replaced them with Micro-Trains 1017s because of the variations in wheel sets and bolster pin quality.

While this addresses the compatibility of several brands of N

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scale coupler there is another modification that should not be overlooked and that is the magnetic trip pin (also called the operating pin). This is the little curved wire that emulates the brake hose. This must be above the rail head by .010" or it will drag on turnout rails or grade crossings. Not only do they have to be above the rail but they can't be too long. Trip pins that are too long will touch the pilot of an F unit or E unit usually causing the first car to derail. This often happens with head end cars or nose to nose coupled E or F units. Part of the problem is with the length of coupler on the locomotive. A

longer coupler will compensate for a trip pin that is too long on the next car but that makes the coupler look too long and leaves too much space between the locomotive and the first car. I trim the pins on E and F units and head end passenger cars only. I trim the pins about even with the knuckle. A sharp flush cutter (Xuron flush cutter) works well for this. Long trip pins become more problematic when backing a train because the couplers are in compression where the couplers tend to droop more.

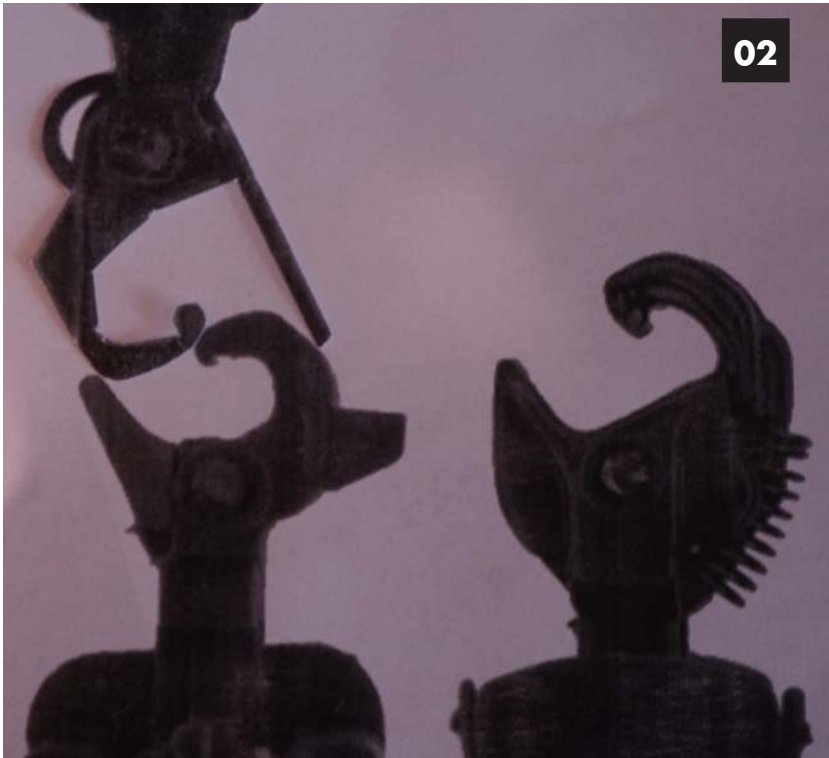


Image 01. Photo of enlarged image from Mike Fifer / Peter Wisniewski article with cut out. MT coupler for comparison. From left to right: Kato's current magnetic coupler, McHenry, Micro-Trains N coupler, and the Atlas Accu-Mate.

Image 02. Overlay MT over Kato. Notice the lack of space for the MT knuckle to engage the Kato pocket.

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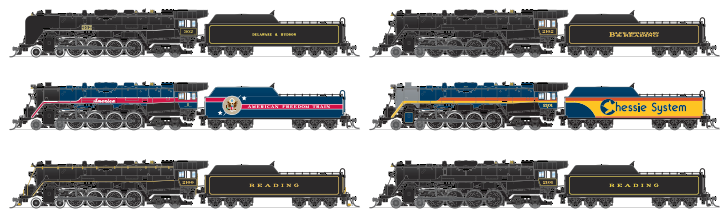
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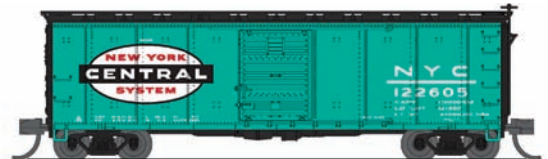
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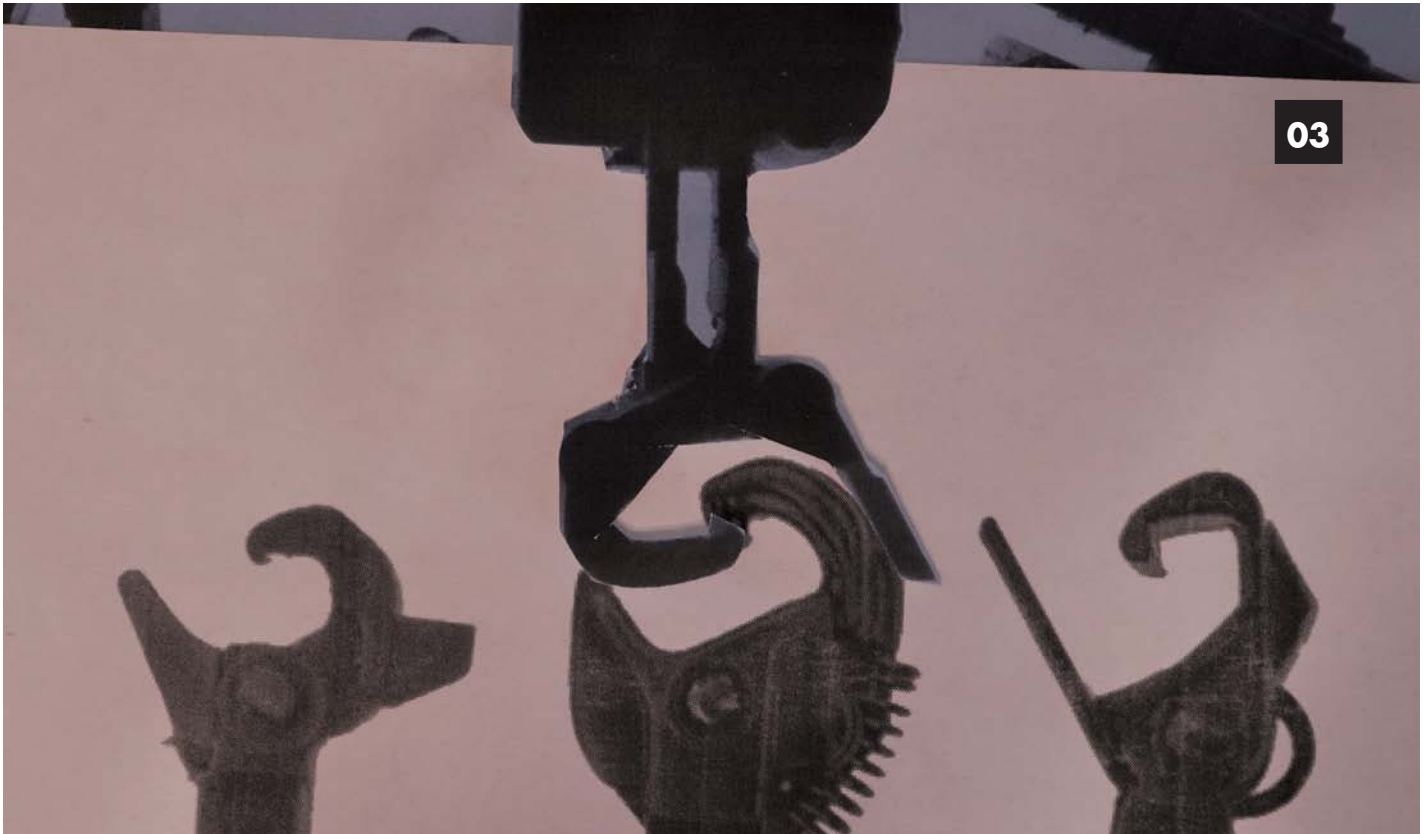


Image 03. Kato's 11-702 coupler coupled to McHenry.

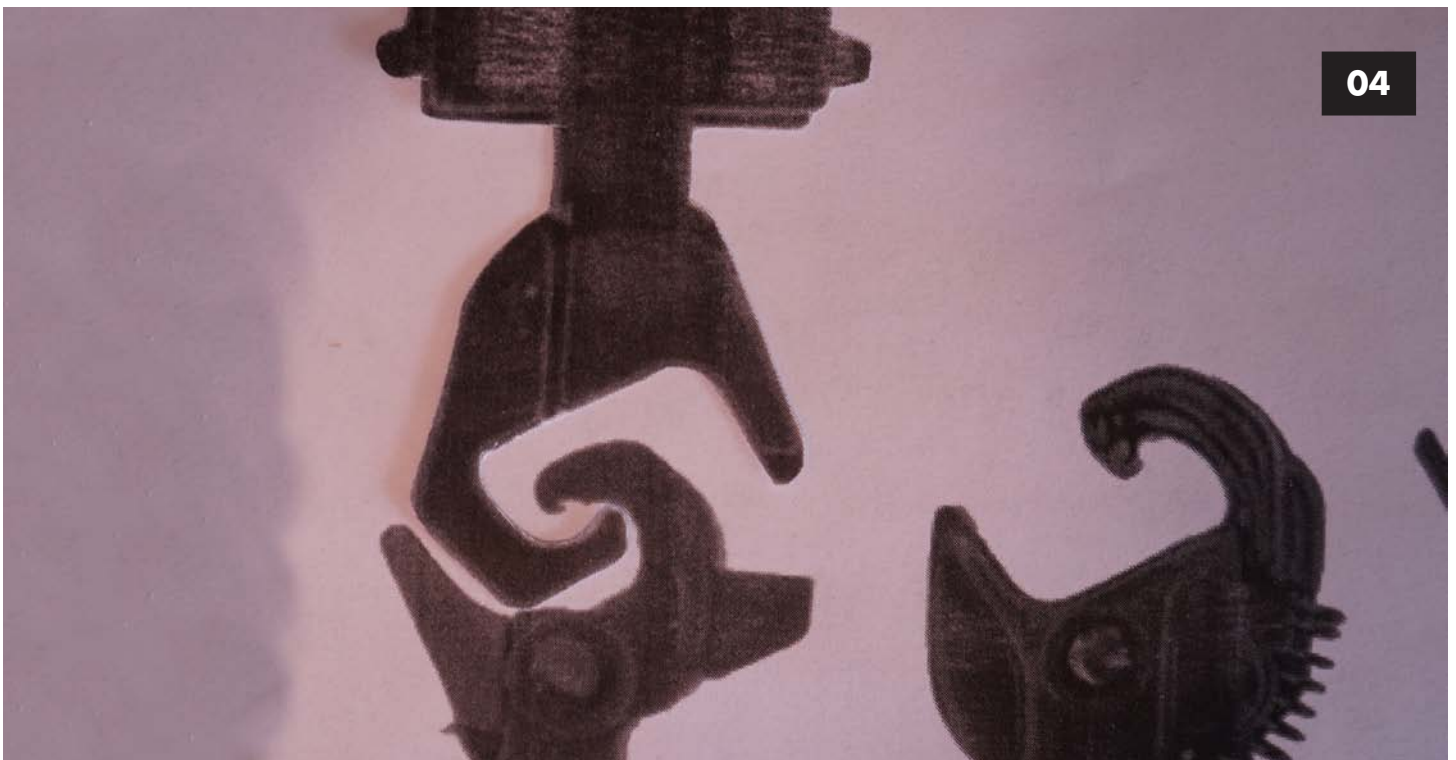
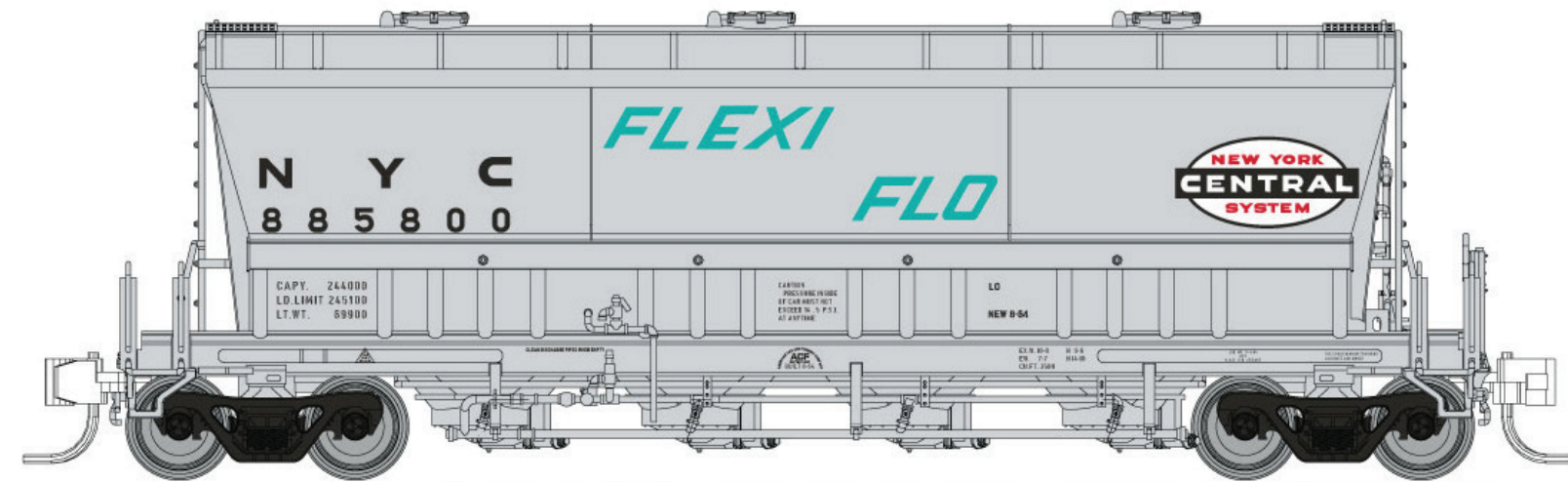


Image 04. Kato and AccuMate couples easily but coupler height consistency can be an issue.

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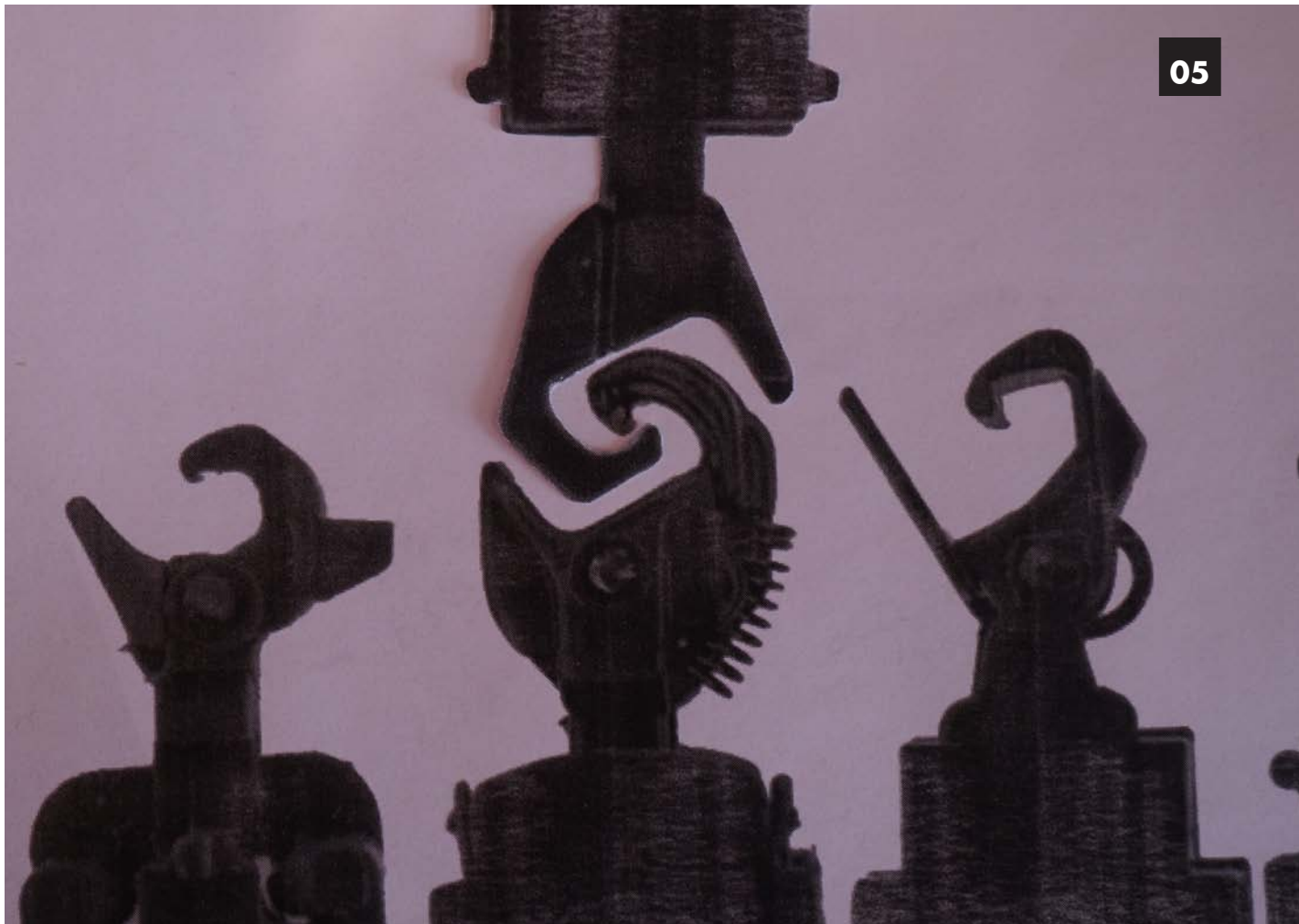


Image 05. An AccuMate and Mchenry.

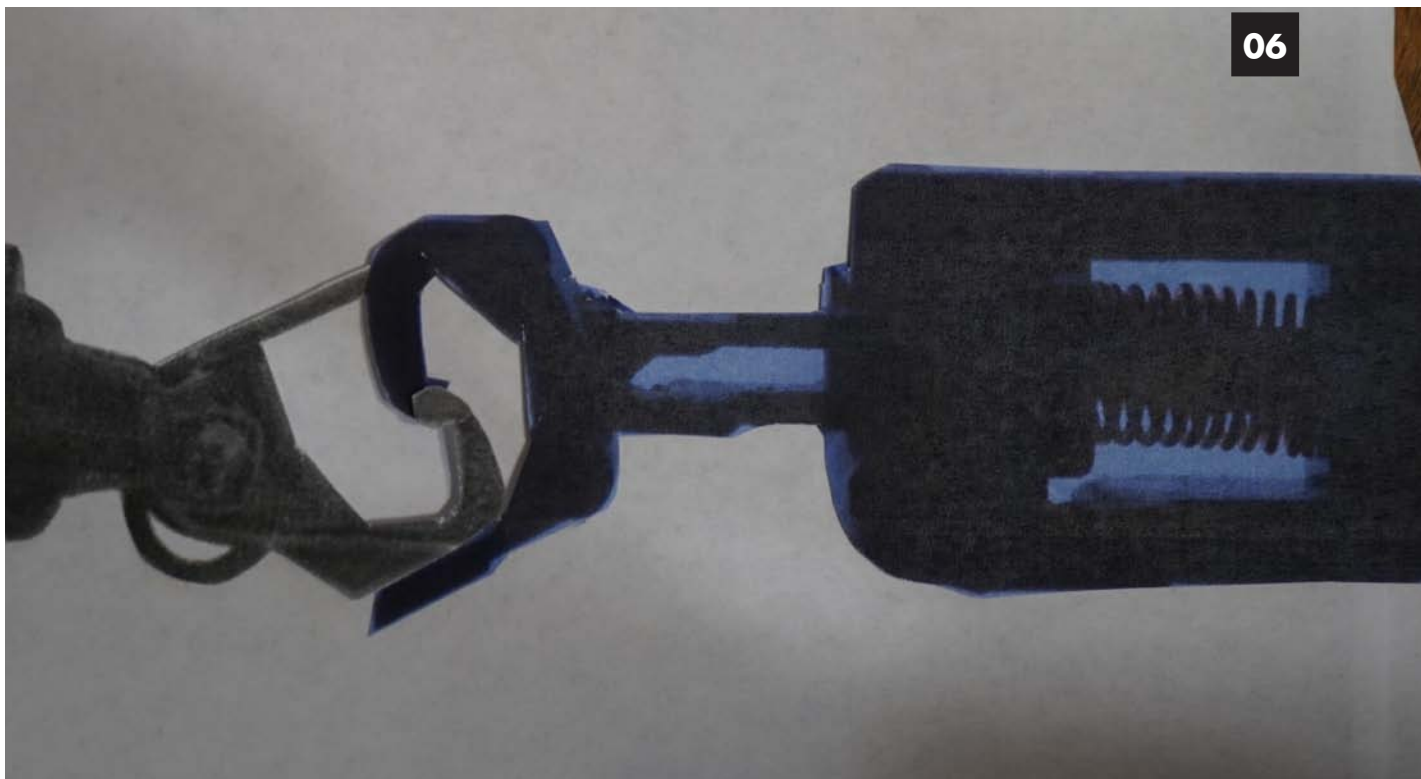


Image 06. A standard MicroTrains coupler on left and an unmodified Kato 11-702 coupler on the right.

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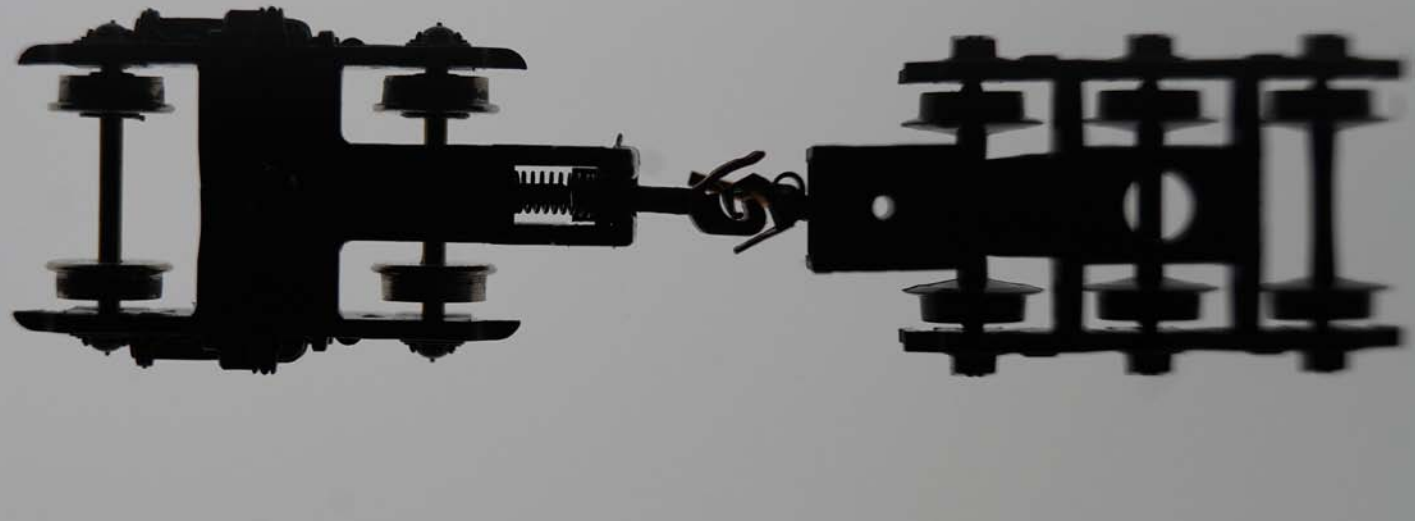


Image 07. A ConCor passenger truck with the long Unimate coupled to a MicroTrains.

08



Image 08. Bending a Unimate with thumb nail to relax the coupler's grip. Bend slowly and be careful not to over-bend. You can always bend it again if you don't bend it too far.

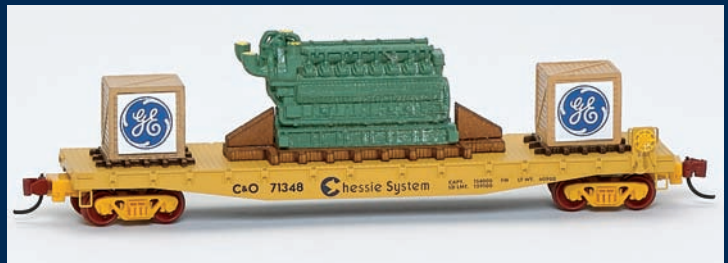


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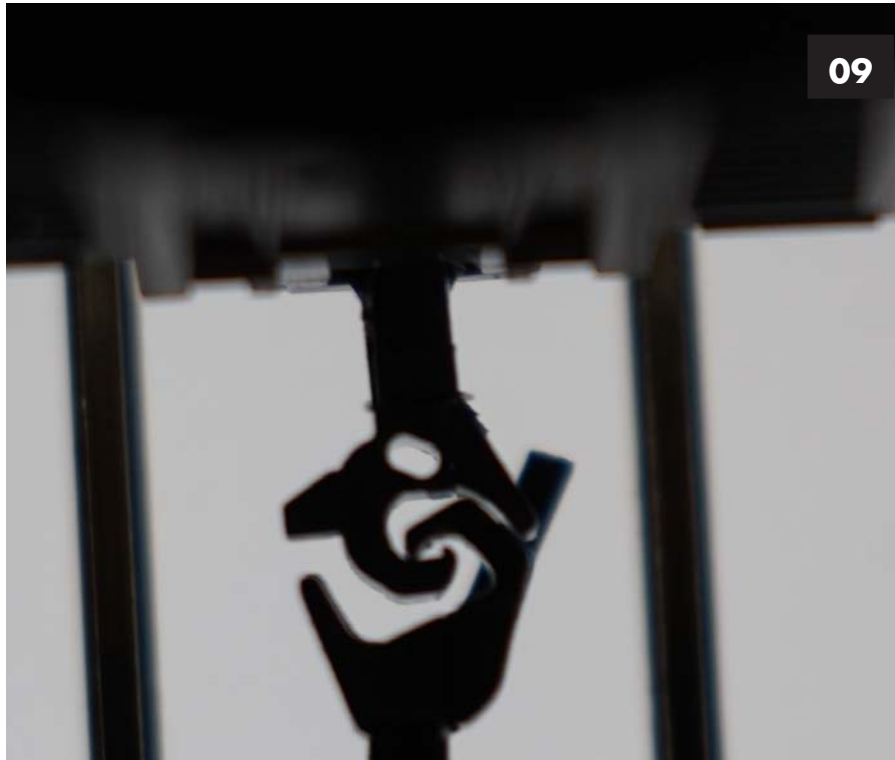


Image 09. A Kato Magnetic coupler and AccuMate. These couple but not every time. This photo shows a tight awkward fit. In practice they uncouple unexpectedly. I was looking at this Kato- AccuMate photo and I figured out a fix. I approached it two ways. The first time I thinned the back of the AccuMate knuckle by about 1/3. Their plastic is much softer than MT so it almost destroyed the coupler but it's still ok. The next one I just trimmed back the corners at the tip of the knuckle and the same at the back corner of the 45 of the knuckle. This is a delicate operation and should be done with a holding fixture and under high magnification and good lighting. The result was very good. I did the same on a Walthers? Passenger car then I test ran the cars with a Kato F7 with a standard unmodified coupler. They all coupled nicely and stayed together. I also coupled them to a car with Kato 11-702 couplers and it worked great too.

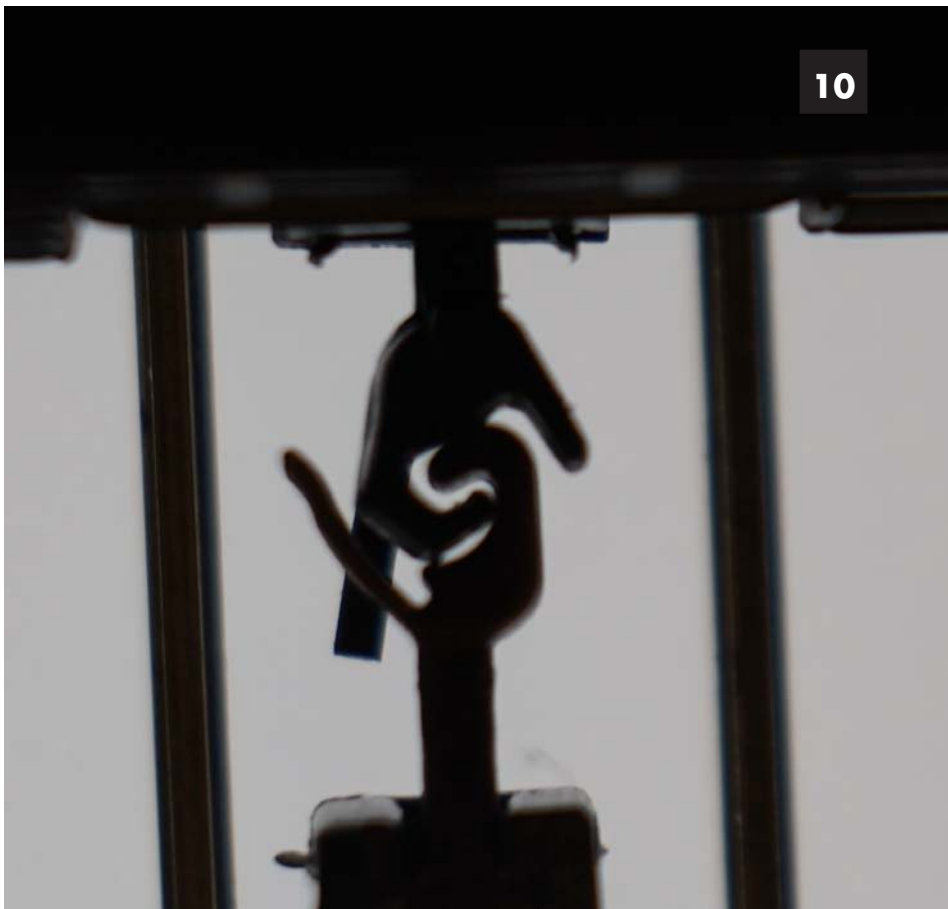


Image 10. Image 09B. Relaxed Unimate (lower) and AccuMate (above). These couple pretty well but I want to do more testing before adopting them on my layout.

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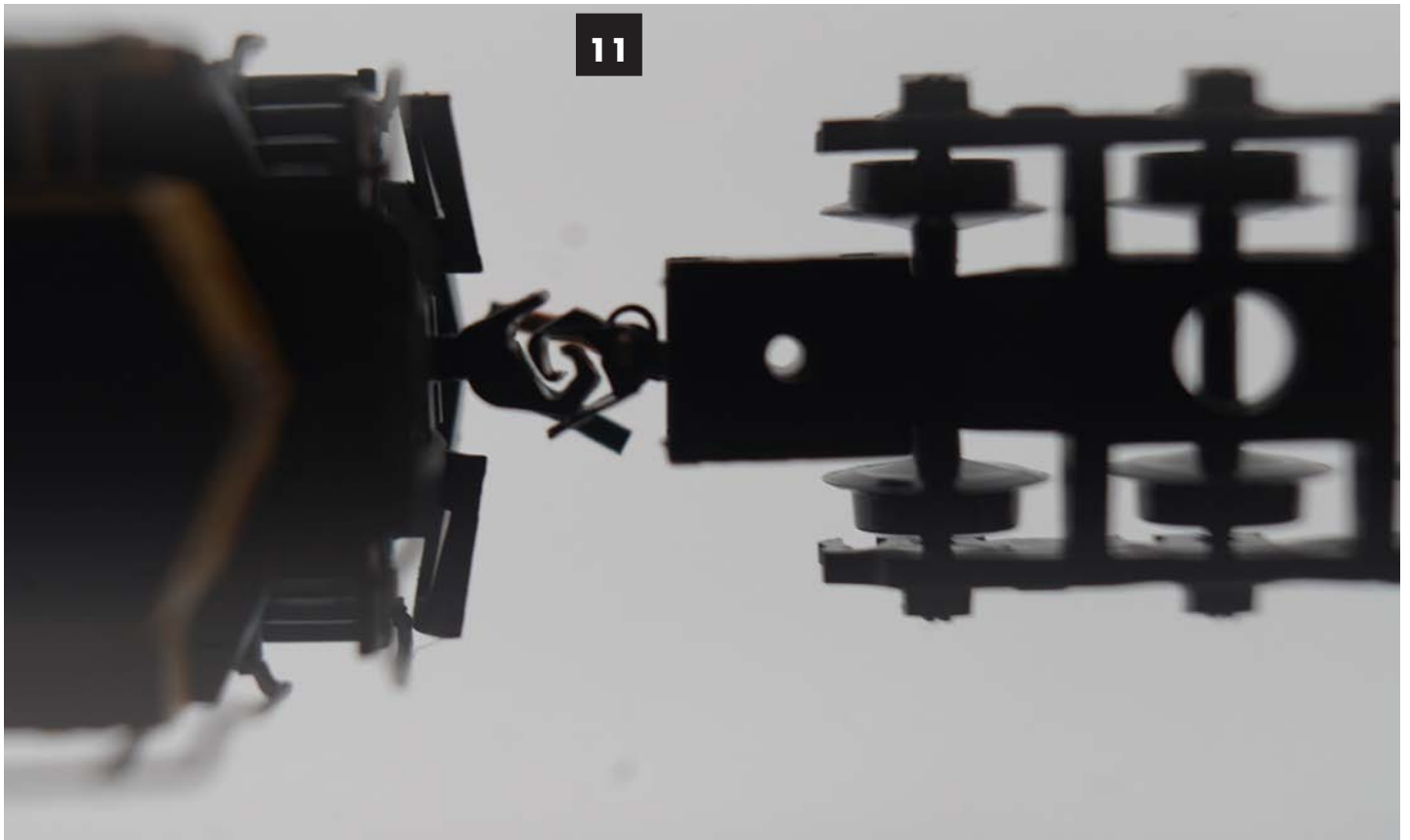
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11

Image 11. Atlas locomotive on left with AccuMate coupler coupled to MicroTrains three axle truck. Factory AccuMates on Atlas locomotives seem to couple very nicely with Micro-Trains couplers.



12

Image 12. Kato 11-702 are a great resource to keep in inventory, especially for passenger trucks with Arnold Rapido pockets such as Rivarossi passenger car trucks.



13

Image 13. Kato 11-702. Remove material in darkened area. A new X-acto #10 blade works best or a Dremel 409 disk. Turn it slowly!

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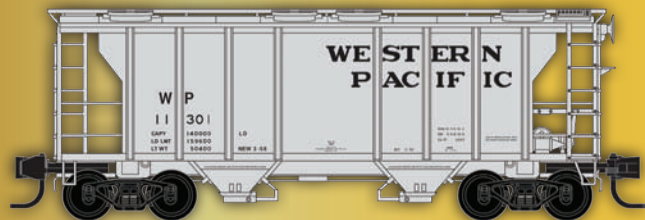
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14

Image 14. Fixture for holding AccuMate coupler to trim two tiny points on the knuckle.



15

Image 15. AccuMate modification. Remove material in darkened areas. A new X-acto #10 blade works best. High magnification improves accuracy in removing material.



16

Image 16. The fixture consists of a PVC sheet with a sheet of paper taped on top to cover part of the slot for greater clarity in the photos.

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17

Image 17. Atlas gondola with coupler attempts to couple with unmodified a Kato 11-702 but couplers lockup before joining.



18

Image 18. Above, AccuMate couples reliably with modified a Kato 11-702.

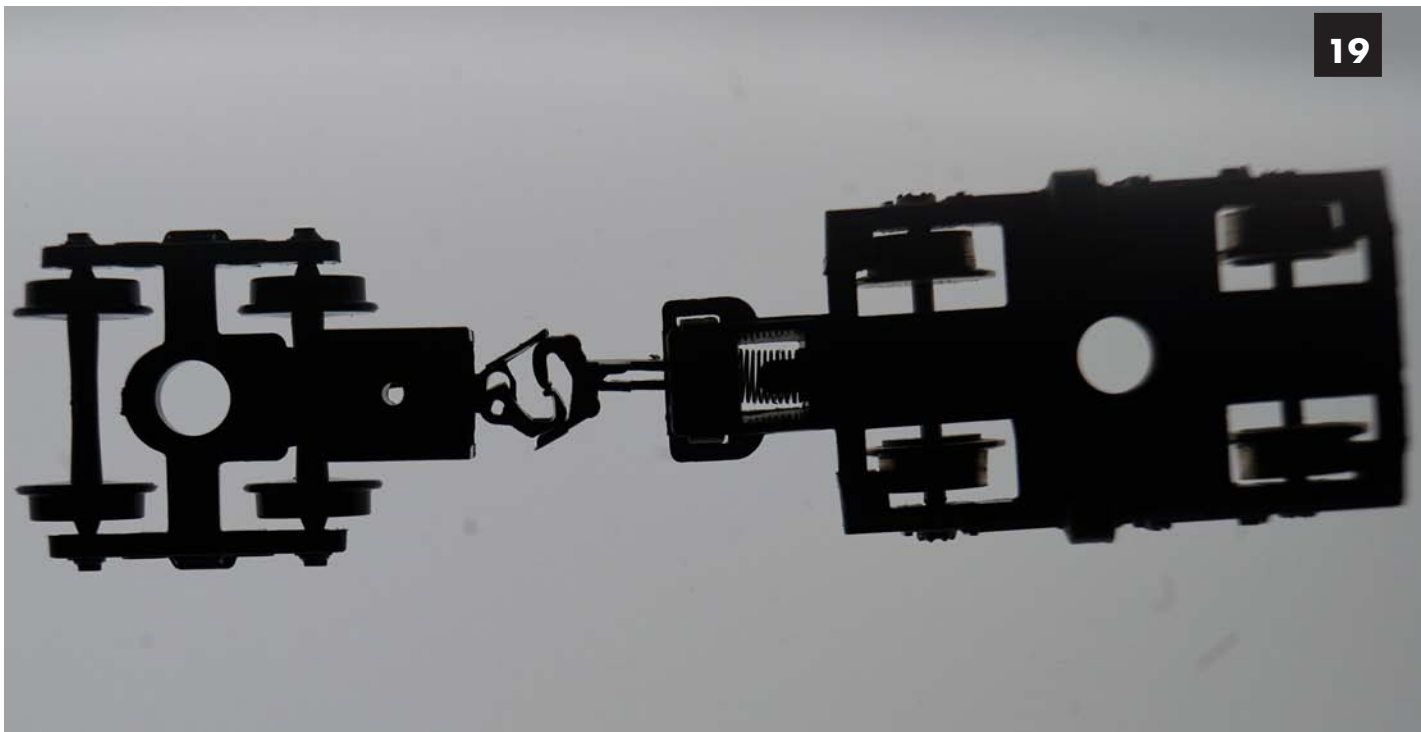


Image 19. MicroTrains truck attempting to couple to an unmodified Kato 11-702 coupler on an Atlas passenger truck.

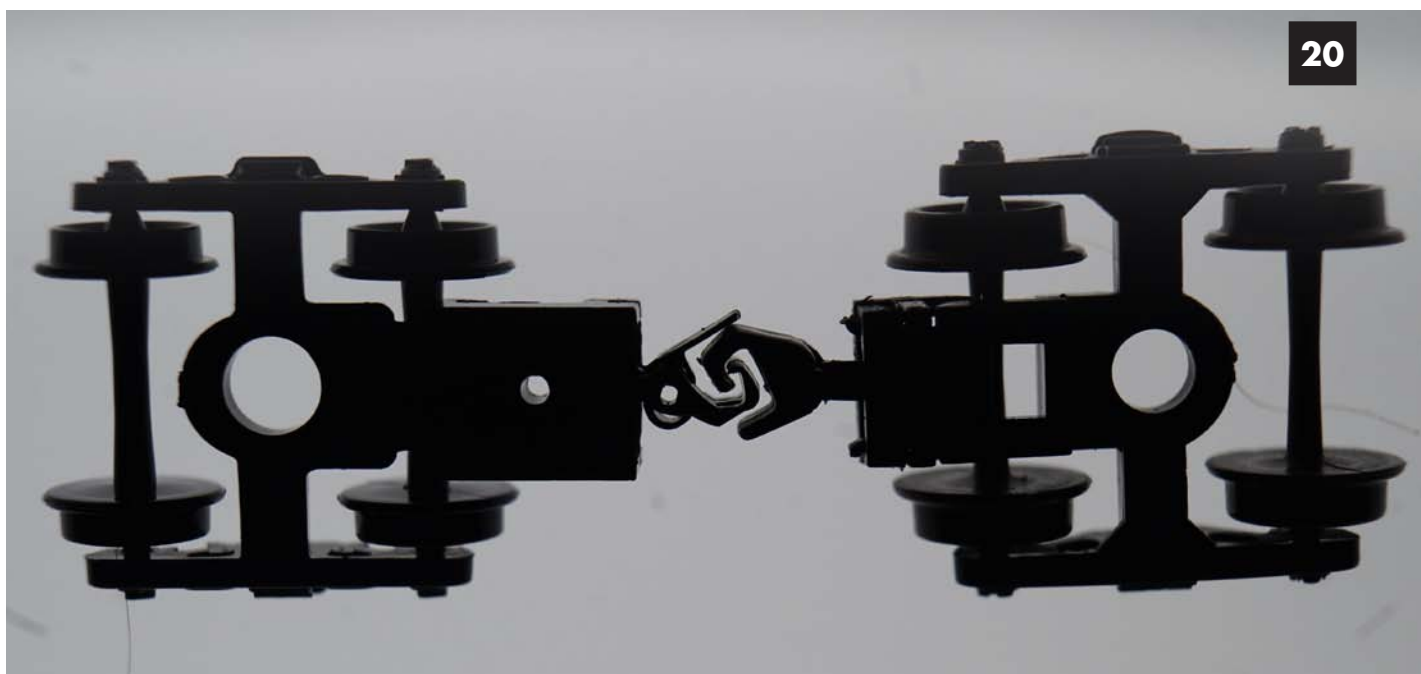


Image 20. A MicroTrains coupled to an AccuMate. Some examples of AccuMate trucks, probably early production models, don't align vertically and uncouple unexpectedly.

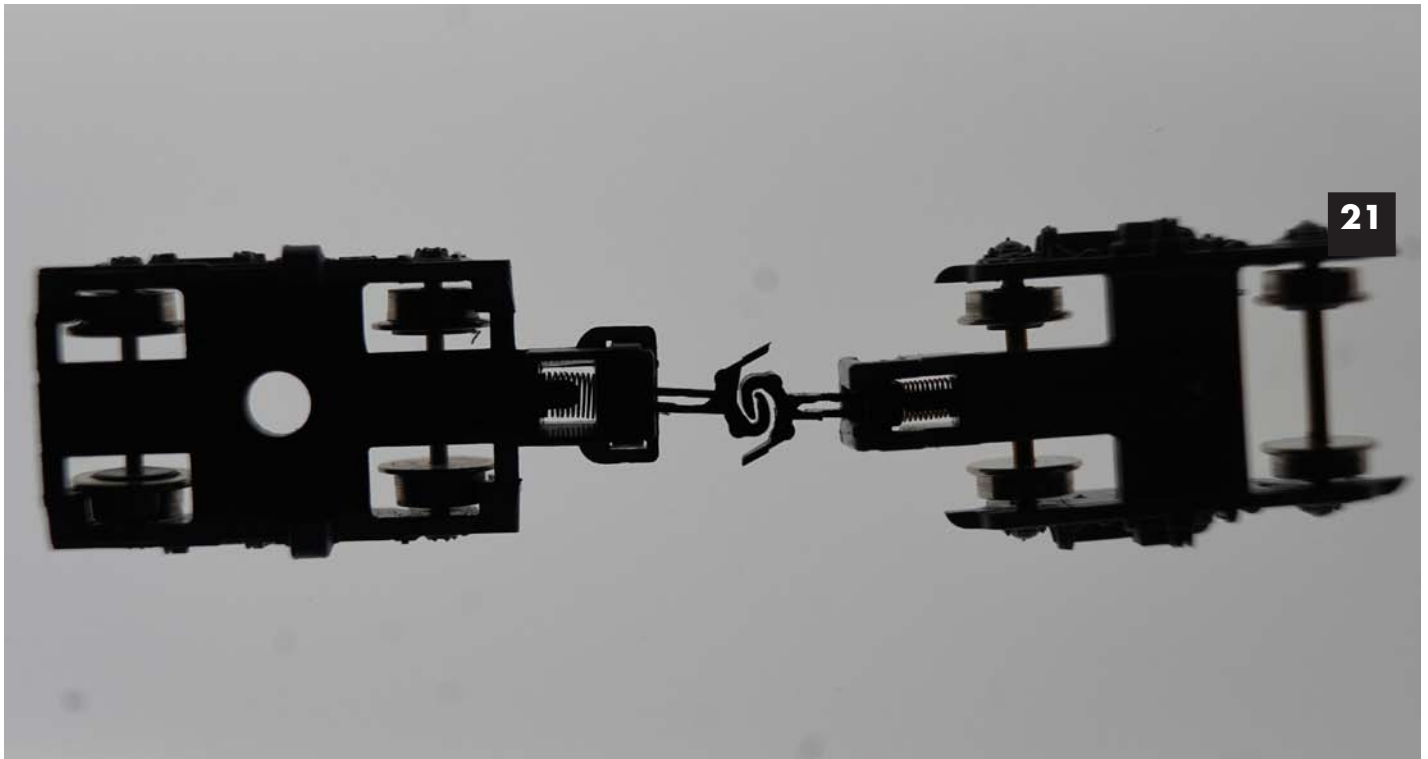


Image 21. An Atlas passenger truck with Kato 11-702 is coupled to modified Kato 11-702 coupler on a ConCor passenger truck. These couples without resistance to Kato 11-702, MicroTrains, and AccuMate couplers.

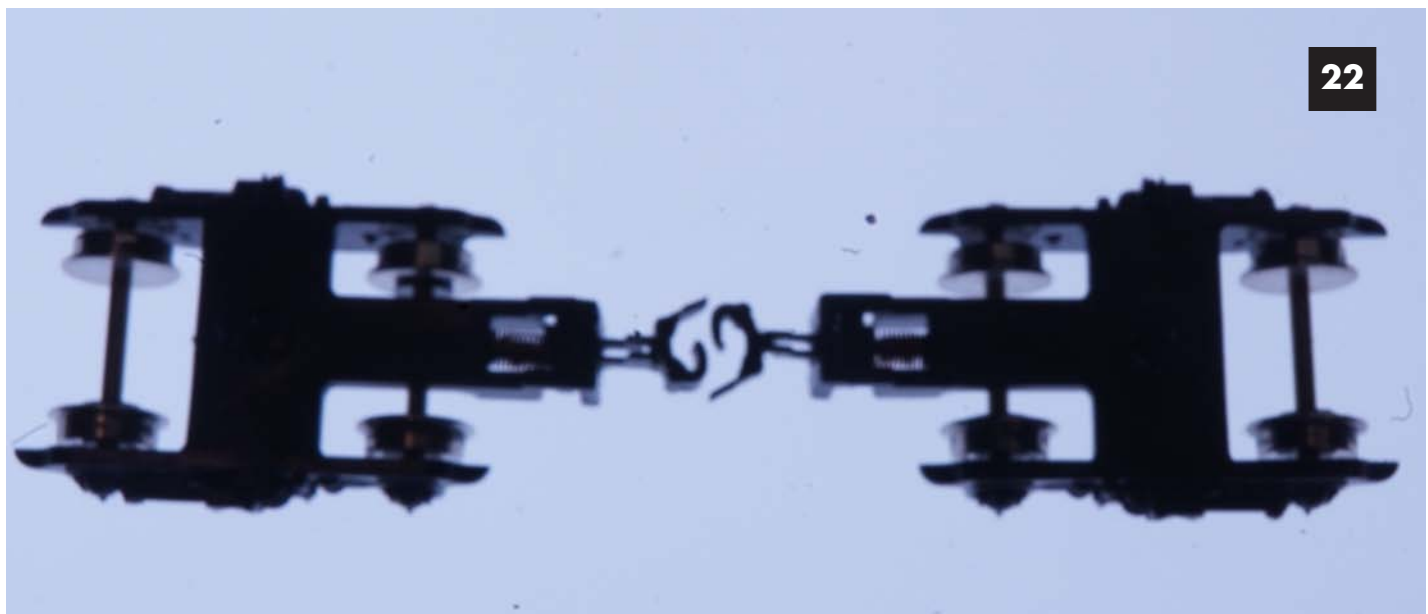
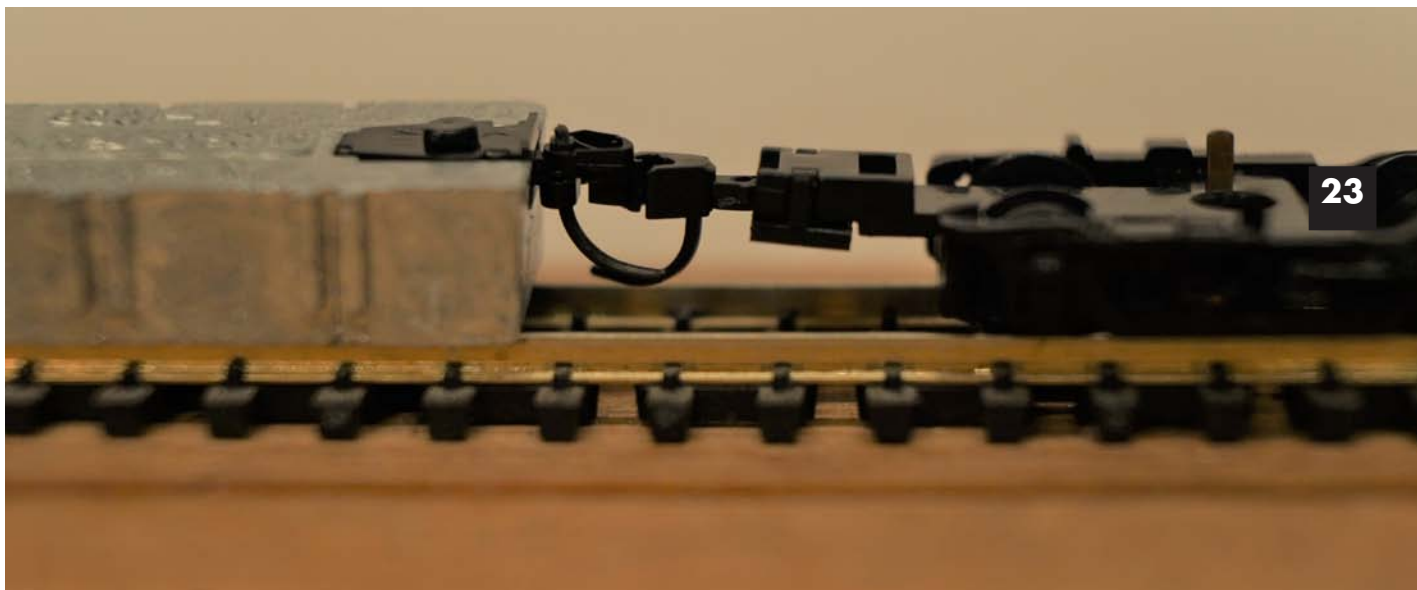


Image 22. ConCor passenger trucks with unmodified couplers.



23

Image 23. Left, Micro-Trains (MTL) 98800031 N (1055) Coupler Height Gauge used to evaluate coupler height and centering. Right, AccuMate coupler and truck. Notice the AccuMate is low, possibly resulting in unintended uncoupling. Maybe bigger 36" wheels would help.



24

Image 24. Kato F7 with Kato coupler with Atlas car and AccuMate coupler and Truck. Notice excessive coupler height on this AccuMate also the close proximity of operating arm to locomotive pilot.



Image 25. Kato F7 with modified Magnetic coupler on left coupled to Kato F3 with MT underslung body mount coupled with slightly shortened coupler pin.

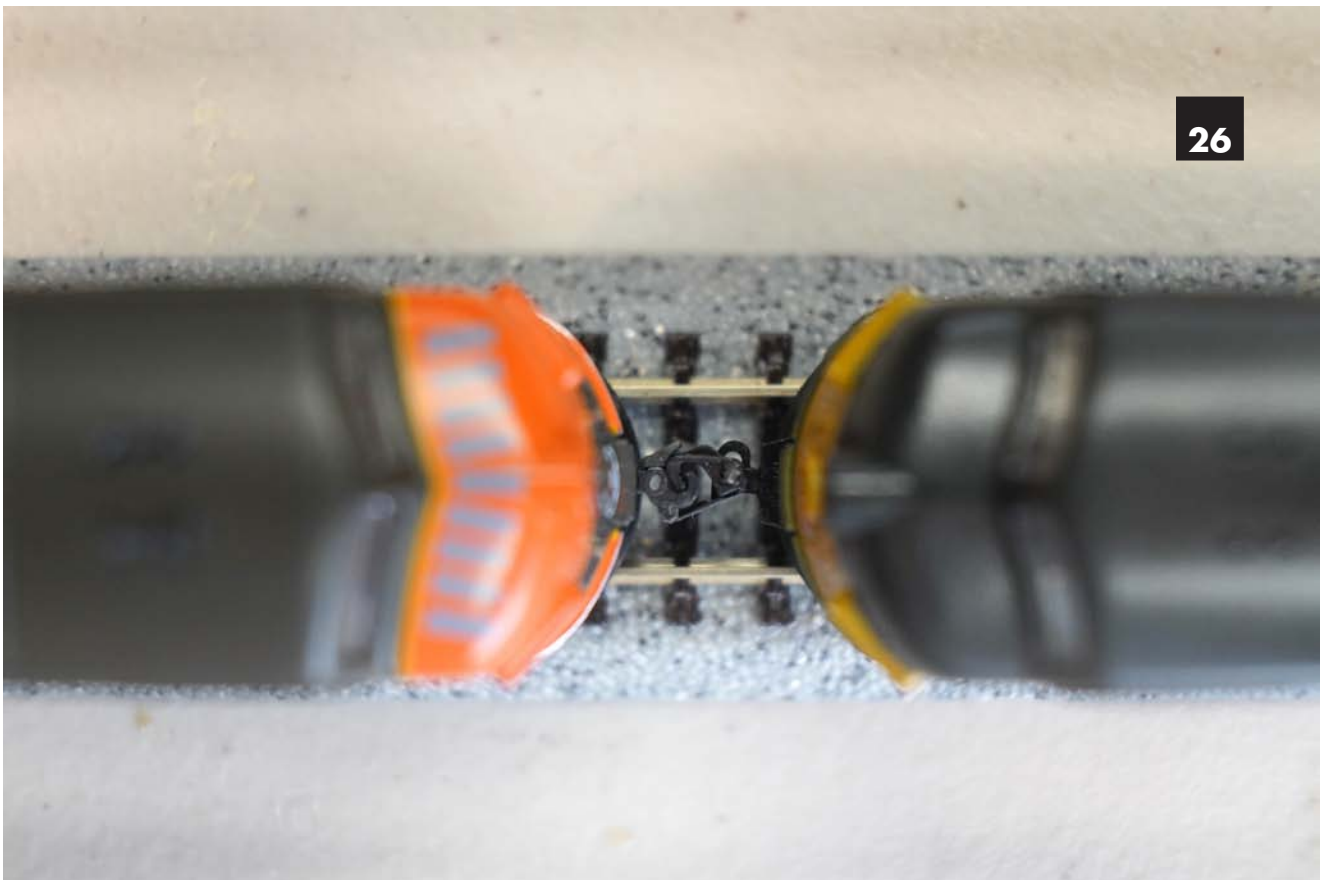
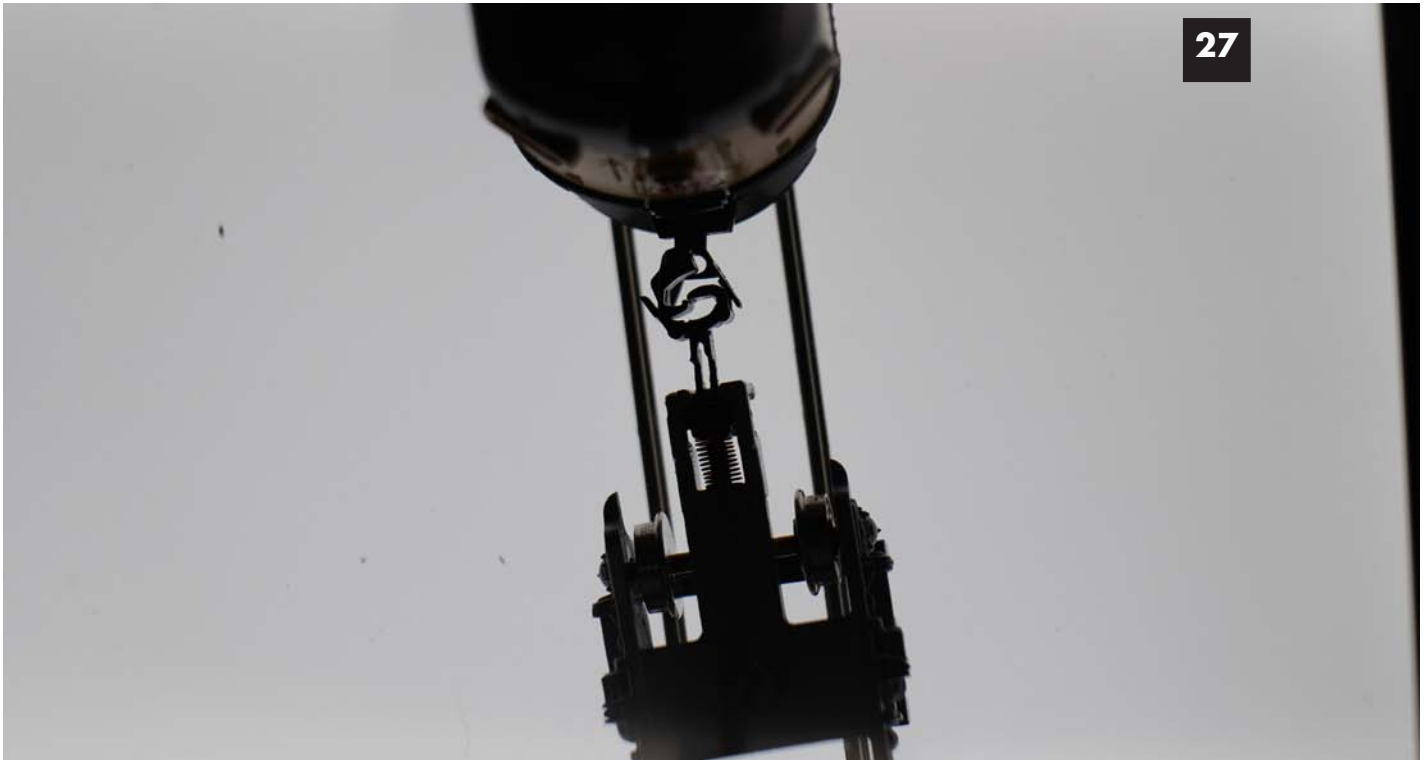
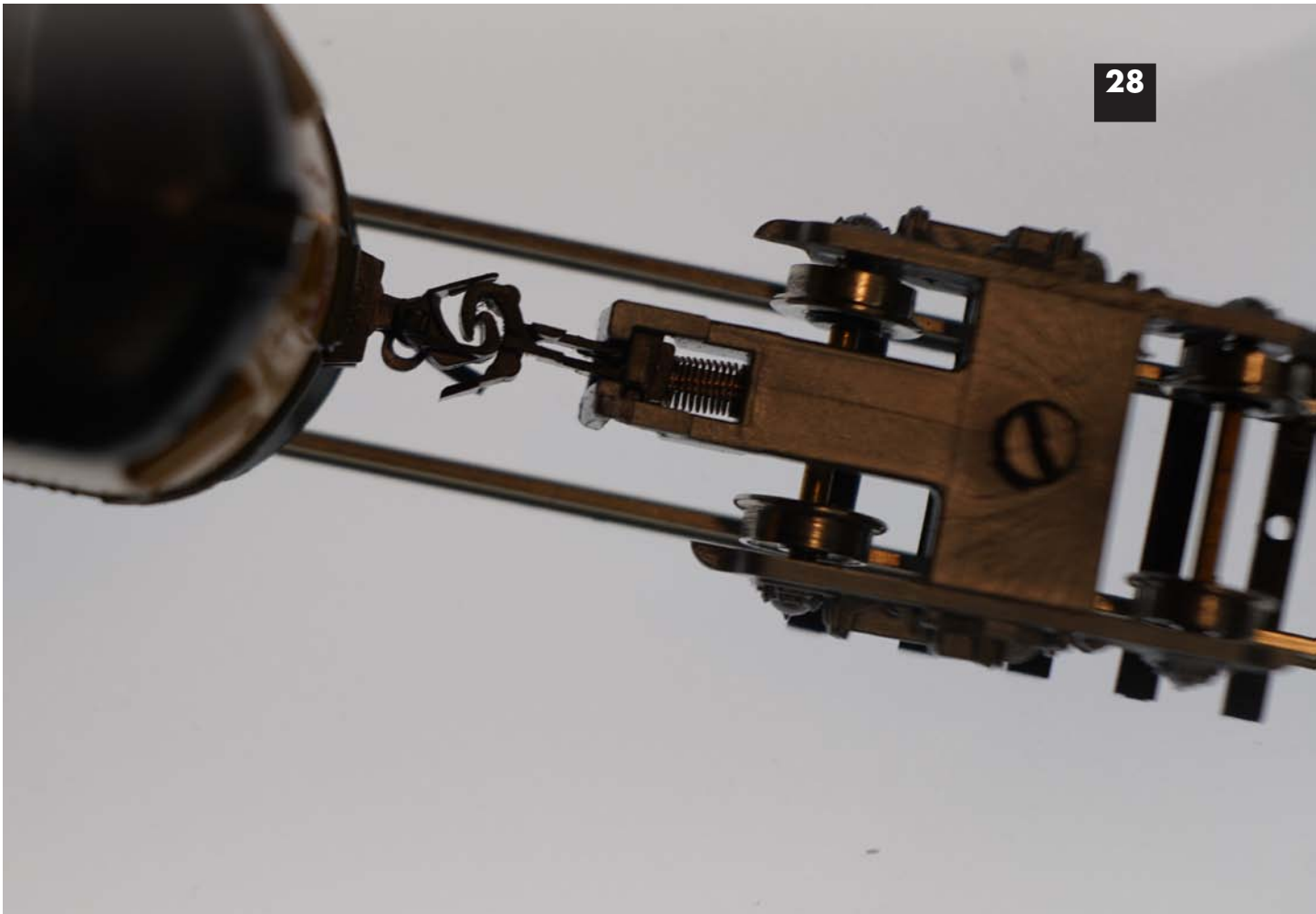


Image 26. A straight down view of image 25.



27

Image 27. (Upper), MicroTrains engaging a modified Kato 11-702 (lower) at the tightest point. A little more pressure and they slip right together.



28

Image 28. Connected! ▶

USING PAPER MODELS FOR

RAPID PROTOTYPING

By Kirk Reddie/ Images by author



The Inspiration. According to the Interweb, Pop's Moon Palace (later simplified to Pop's Diner) was owned by Pops, a retired big game hunter. Besides hamburgers, fries, and root beer: Pop's offered more unusual fare such as ahi tuna tots, clam smoothies, road kill nuggets, chili that could melt the floor, all the way to bald eagle. Scenes can be seen on Youtube from the animated documentary Johnny Bravo.



The Result. Overall I consider this a success. I spent a lot more time on the sign that I had estimated. I simplified the roof, the vertical supports, and details. I am surprised how well the windows and door turned out. I think I can make acceptable background models efficiently in the future.

Most of the structures on our layouts, like their prototypes, are rather sedate looking and often weather beaten. Exceptions include buildings wanting to invite the public to come inside, including railroad stations and restaurants.

My thinking is modeling such buildings on a layout should be limited or the impact is diluted. However odious to fellow model railroaders, they could be a hook for the uninitiated. It might be what visitors remember.

I like the absurdity of "Pop's Moon Palace". I have no idea what style of architecture this is. Perhaps "Novelty". In Georgetown, just north of Seattle's Boeing Field, there was a gas station called "Hat and Boots". The office was under a giant cowboy hat and the male and female bathrooms were accessed through a door in the back of the boots. Built in 1954, there were other odd structures built all over the US. The big windows scream southern California but we got some transplants up in mildew corner.

I looked into seeing if I could model it. I realized that I couldn't. But maybe I could scratchbuild something very similar.

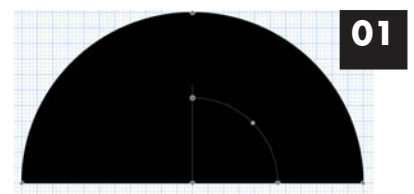
The Sign

The first step is the sign. I have no idea if that is a real font so I would have to make the sign in EazyDraw. I knew I had to make the sign oversized, create a pdf, and then import it back

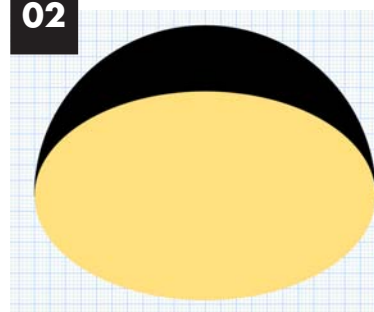
to EazyDraw and shrink it to the right size. I didn't want to cut out individual letters and if I wanted to rotate the sign, I would put a black semi ellipse behind a yellow ellipse. I couldn't make good "P" so I didn't use Pops. To keep my pals from wondering why I didn't name such a wonderful structure after them (or the opposite) I decided I could make the letters of my first name.

What I wish I did from the start:

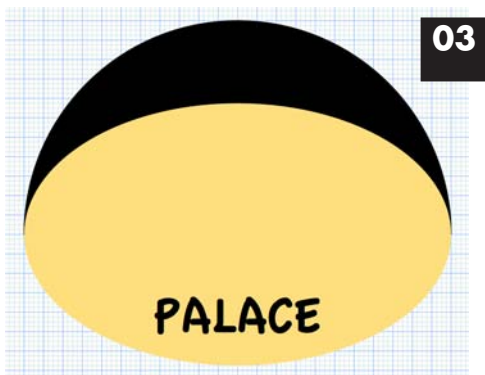
01. Draw a 44' radius semi ellipse. Fill it in black.



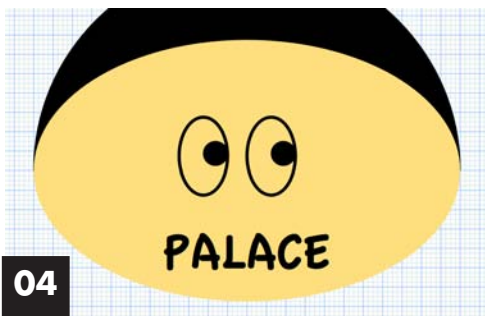
02



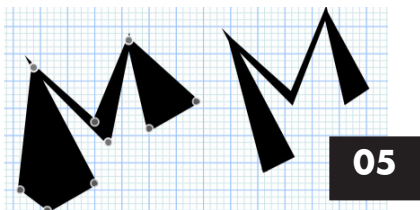
02. Then draw an ellipse 88' wide and 54' tall. Fill in with yellow.



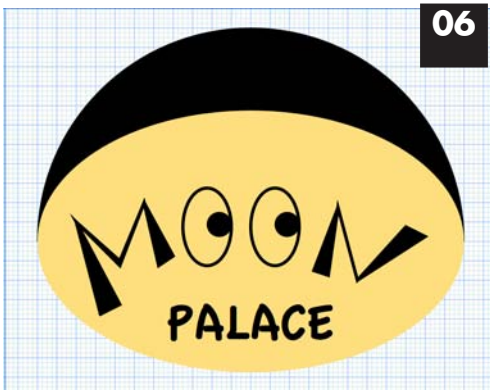
03. Align the yellow ellipse in front of the black semi ellipse. "Palace" lettering. I used "Casual" font at 60 points. Center



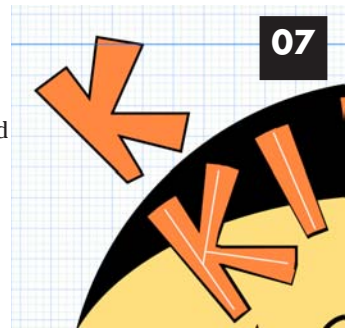
04. Moon: The vowels. The Os are 10' x 15' ellipses .050 wide. The pupils are 5' diameter circles filled with black I grouped the first one, duped it, and placed them roughly where they'll end up but they will be adjusted. Please ignore any resemblance to Eric Cartman.



05. Moon: The consonants. Here use the tool with the multiple straight lines. It makes it easier to modify your input by shape, by size, and by angle. These are pretty hard attempting with just line segments. Join the two ends and then fill it in with black.



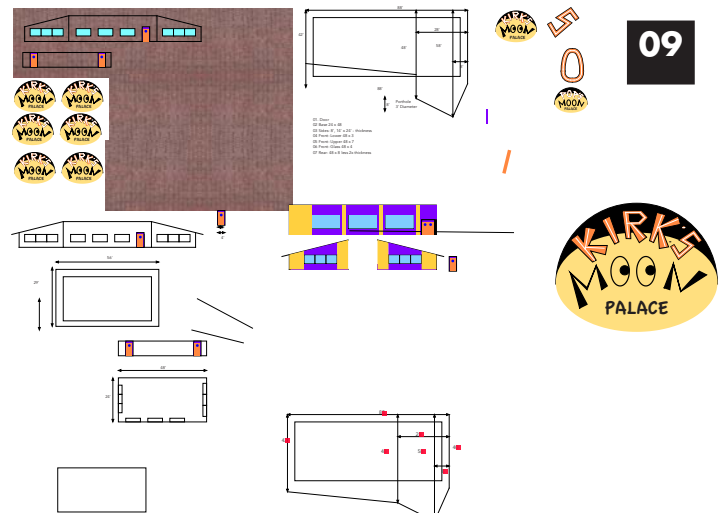
06. Place the consonants and play with the composition.



07. Big letters. I realized copying "Pop's" was not going to work because I couldn't make good looking "P"s. So I changed the name and faked the "R". The second to last way I made these was with three layers: Multiple black .20 lines, then multiple orange .14 lines, then a single .014 white line. The varying width of the orange and black was done by pinning them on the narrow parts and fanning them out on the wide ends. The problem is up close it is pretty sloppy and it is easy for a line to move. I did like the discipline of the look. So in the future I think I'll make a pdf, import it back to EazyDraw, then use the multiple straight line tool to trace the outer black. Then fill with orange and make the stroke black .025 wide. Then add the .014 white line. Then group and save each letter individually.



08. Place the letters. This step takes me a long time but keep changing until it looks right in your eyes.



09. This is the large worksheet I drew on. The smart way to do bricks is usually to buy brick sheets from N Scale Architect. Bill Weed shot bricks at King Street Station and wanted to test them for size and color. I used Photoshop to clone larger sections, then had to lighten them in 'curves'. We estimated TT (1:120) would look better in 1:160. I think my estimated TT looks fine in person but the bricks look too large in photos.

I imported the revised brick .tif to EazyDraw. Then I drew the diner's sides and ends, including three doors and windows. I placed the sides and ends over the bricks. This worked well for a background model. I will try wood siding next. I had the upper left printed at FedEx Office.



10. I placed the resized signs over scrap .020 styrene.



14. The simplest way I could think of to mount the sign was to glue it to a bamboo skewer. First mark where the bottom of the sign would be.



11. I decided to use yellow carpenter's glue. It turned out this did not work at all!



15. Then I sanded opposite sides to flatten the round skewer.



12. While using a scissors to cut out the sign, the sign and dried glue slid off the styrene. Bill Weed uses TiteBond yellow glue.



16. I used Aleene's Tacky Glue to attach the sign to the pole, and a clothespin is used for a clamp.



13. But I decided to go with Aleene's Tacky Glue. It seems to work as well as I hoped it would.



17 There is quite a gap between the two signs. In keeping with my theme of simplicity, I used a toothpick to fill the space with Aleene's Tacky Glue. It is unfortunate that this resembled the filling inside Oreo cookies but so far I have resisted temptation.



18

18. Originally I was going to build a 40' x 80' diner but switched to a 24' x 48' structure. I made a 32' x 56' bass with the 24' x 48' foundation. The paper sides and ends will wrap around the "foundation".



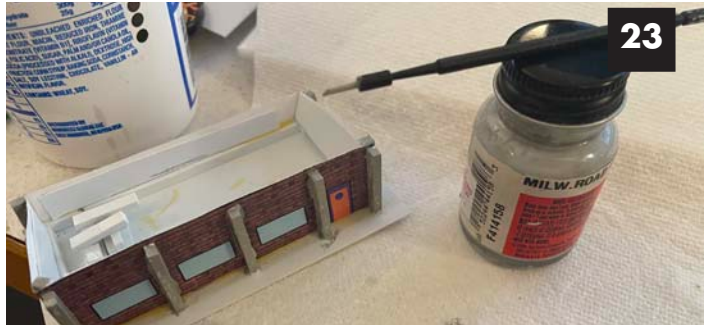
22

22. Originally I wanted the exterior vertical braces to be angled. The tops will be hidden by the roof and good angled bracing would be time consuming...



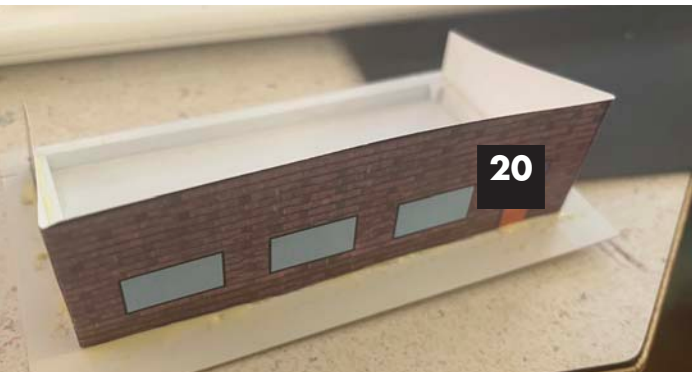
19

19. Using scissors to cut out the sides and ends is a lot easier than cutting out the signs! Fold along the faint black lines.



23

23. I painted the vertical bracing and roof "Milwaukee Road Light Gray" to simulate near-cement color. I chickened out using the garish colors of Pop's Moon Palace.



20

20. I use toothpicks to spread Aleene's Tacky Glue along the foundation and hold in place.



24

24. I drew up some roofs with exotic geometries but decided to go simple. I painted the top gray and the underside where it was over the foundation.



21

21. Attaching the printed paper to the styrene went very well and the walls are stronger than I would have guessed. I glued scrap styrene corner blocks for bracing.



25

25. This project was a good experience, though I suspect it should be planted farther away from the viewing aisle. This is supposedly ~1950 so places like this were more like Woolworth menus that 1950s fast food.

I think a key for such a detail-less structure is the sign that helps distract viewers. Automobiles in the parking lot will also help. ▾

PORTLAND TURNOUT CONTROL AND INDICATION SERVO MOUNT INSTALLATION TO DRIVE TURNOUTS (SERVO SWITCH MACHINES)

By Keith Lyons/ Images by author



I was inspired to try using 9G servos and music wire to throw turnouts after seeing Rodney Edington's Western Pacific layout in Leavenworth, KS. These are the same type servos used for R/C model cars, boats, and aircraft. Rodney showed me that they were easily connected to an eight channel driver board using pushbuttons and LEDs for control and indication. He mentioned they could be connected to an eight channel decoder for use with DCC and I was hooked.

There are several manufacturers such as N3IX Engineering, Tam Valley Depot, Digitrax, DCC Specialties, Team Digital, Walthers, Digikeijs, and more. You can even build your own servo drivers using an Arduino and additional components. For my layout (Northern Pacific Stampede Division, N Scale) I fell in love with what the Tam Valley Octopus III and Octocoder can do (8-channel decoder for DCC operation, but decoder not needed if you are not using DCC) so I have standardized on it for my layout. But for Kirk's layout I am using the N3IX Engineering Quad LN_S and the instructions to follow are very similar for both.

The music wire I use between the servo and the throw bar of the turnout (I call a "throw wire") is K&S .032" from my local hobby shop, but also from a local hardware store through their on-line portal.

I started using some brackets that Rodney had 3D printed and gave to me to try. He even designed in a spot to add a microswitch (limit switch) to add contacts for powering a live frog. I then went and fashioned a simple bracket of my own out of a vinyl square downspout material and have come up with a cost effective way to mount all my future Servo Switch Machines. I add a spacer block and a microswitch after I have mounted the bracket under the turnout for powering the turnout frog. If you have insulated frogs, or if you have live frogs and power the frogs with a Frog Juicer you wouldn't need the microswitch.

I had found a vinyl downspout material for use on our ranch out buildings and had some left over from that project. I originally used some of it for a tunnel liner through walls so that any rolling stock wouldn't fall in between the drywall and studs in case of a derailment. For my servo brackets I cut a section a little wider than the width of the servo, then cut the square material on the bias (diagonally corner to corner) to create two "L" shapes. I cut a rectangular opening on one side about two inches from the angle, drilled a hole for the throw wire at the height of the pivot arm on the other side, mounted the servo in the rectangular opening, mounted the wire to the servo throw arm, threaded the wire through the hole and mounted the arm to the servo.

The throw wire must be long enough to reach through the sub-roadbed and roadbed up through the throw bar of the turnout. I make them a little longer than needed, and after installation and adjustment I cut off any excess using a hardened steel wire cutter. Do not use rail nippers or standard diagonal cutter as the music wire is hard enough to damage your tool. Also don't use a cut-off disc on a motor tool as the heat will melt through your turnout's plastic throw bar. If you are using a PC tie as a throw bar you can carefully use a motor tool.

Placement of the servo switch machine is similar to placement of a Tortoise or Blue Point mechanism. You must have a hole through the sub surface under the hole of the turnout throw bar. I drill mine with a 1/4" bit and then widen the underside of the sub surface with a countersink tool. I "center" the servo using the Tam Valley Centering tool, then place the Servo Switch machine under the turnout threading the throw wire up through the hole in the sub surface and through the turnout throw bar. I place a clamp (Alligator clip, clamping tweezers, Binder clip, etc.) holding the wire from above and let the assembly hang straight down, then center the points. I screw the assembly in place underneath with one screw at first, then test the throw. It usually works well the first time. If not I can rotate the assembly a little one way or the other to find that sweet spot. I connect an RC servo cable to the servo and run it to the Octopus III controller. Then I use the Tam Valley adjustment tool connected to the Octopus III (with Octocoder attached) to dial in the throw and speed of the servo. Note: The N3IX Engineering QuadLN_S also has an available adjustment tool. The QuadLN_S includes LocoNet capability so no decoder is required and can be set up to use without LocoNet connection. When I purchased them they pre-programmed them for my specific use. How great is that??

RC servo extension cables come in many different lengths. A person can easily combine more RC servo cables to increase the length. The maximum length I have found for one cable is about ~3 feet (1 meter). To get longer lengths I simply take 24 gauge wire in Black, Red, and White, and twist them together into a cable and splice the required extra length in between the RC cable connectors. I thread heat shrink tubing onto each wire, solder the wires together, then push the heat shrink tubing over the bare wire to insulate each one. I have successfully made some as long as 12 feet. Be aware that functionality may be reduced for longer lengths so plan ahead for to try and keep this distance from being any longer.

Once the servos have been connected and adjusted for proper operation I can run RC extension cables from the input terminals of the servo controller to the pushbutton switch assembly for each turnout position on the control panel. I have included a drawing of how I created a combined Pushbutton and LED Assembly for use with either the Quad LN_S or the Tam Valley Octopus III. If you are using DCC (Loconet with the Quad LN_S or decoder with Octopus III) you don't have to have control panels because you can simply control the turnouts from a handheld controller (or smart phone when using WiFi and something like JMRI), but I am just more comfortable using control panels for local control and turnout position visibility so I have the option of doing both.

At the time of writing this the cost of each servo bracket assembly (with microswitch) is under \$5.00 US.

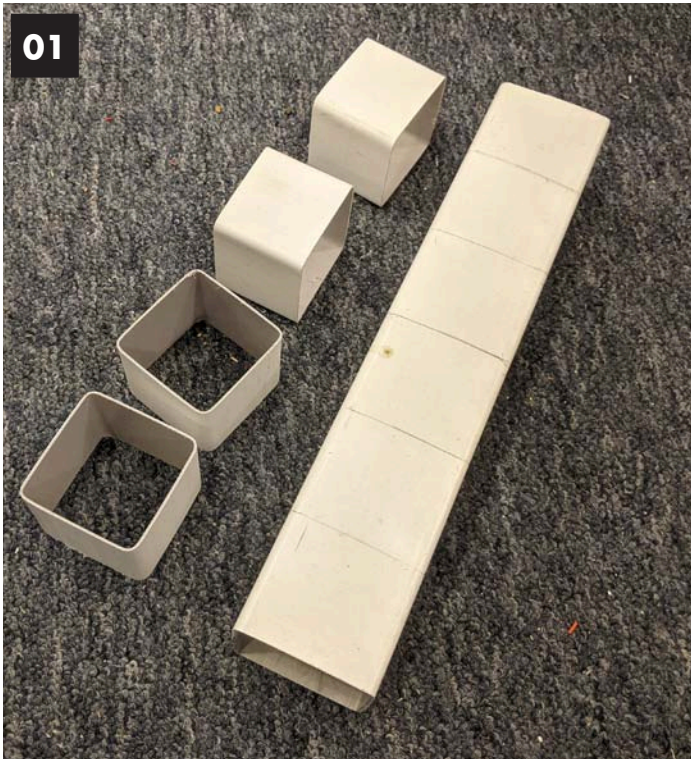


Image 01. Square vinyl downspout material cut into approximately 3" pieces.

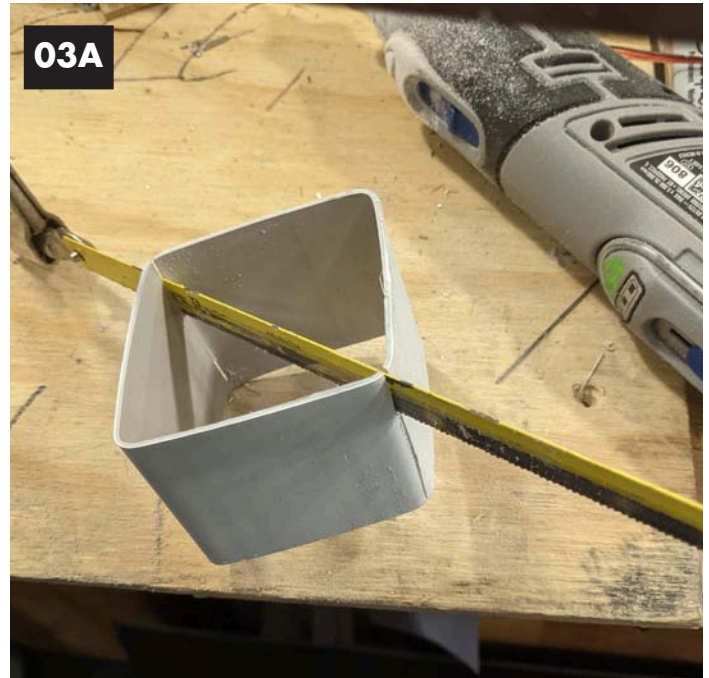


Image 03A, 03B. ... or cut with a hack saw.

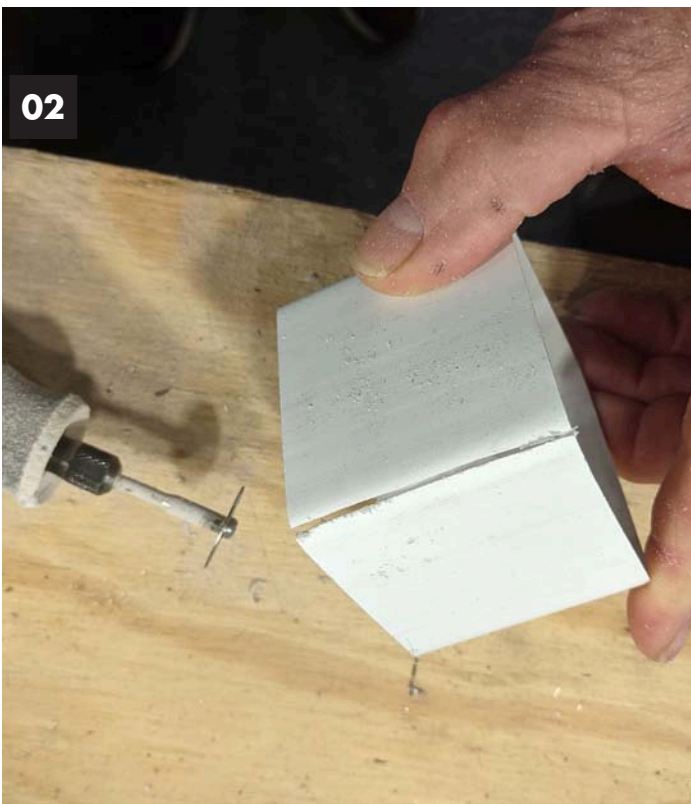


Image 02. Cut the downspout pieces on the bias (diagonally) with either a Cut-Off motorized tool (Dremel), or....

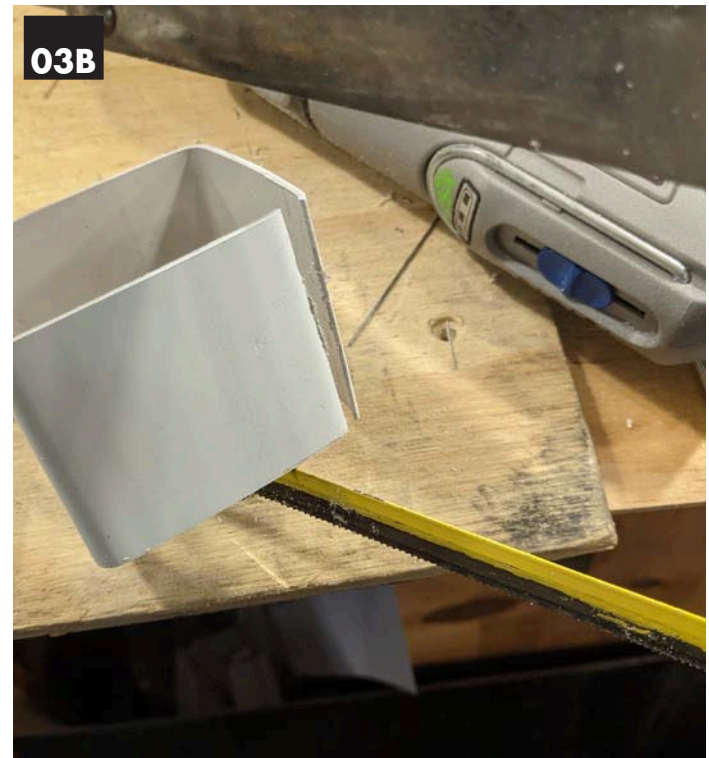




Image 04A, 04B. Line up the Master template to mark for the Servo opening.



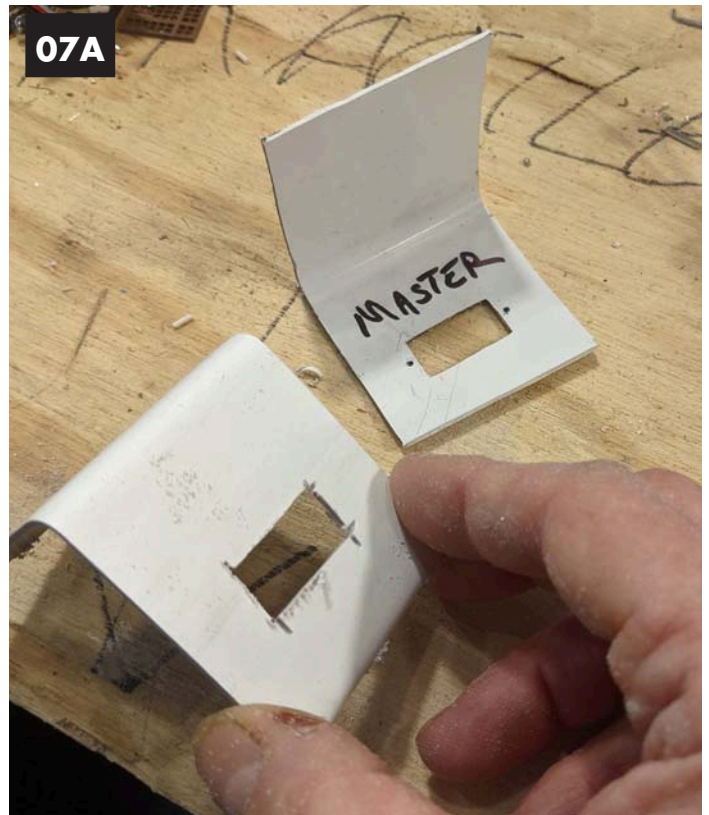
Image 05A, 05B. Mark the new bracket from the Master by backing the two pieces together.





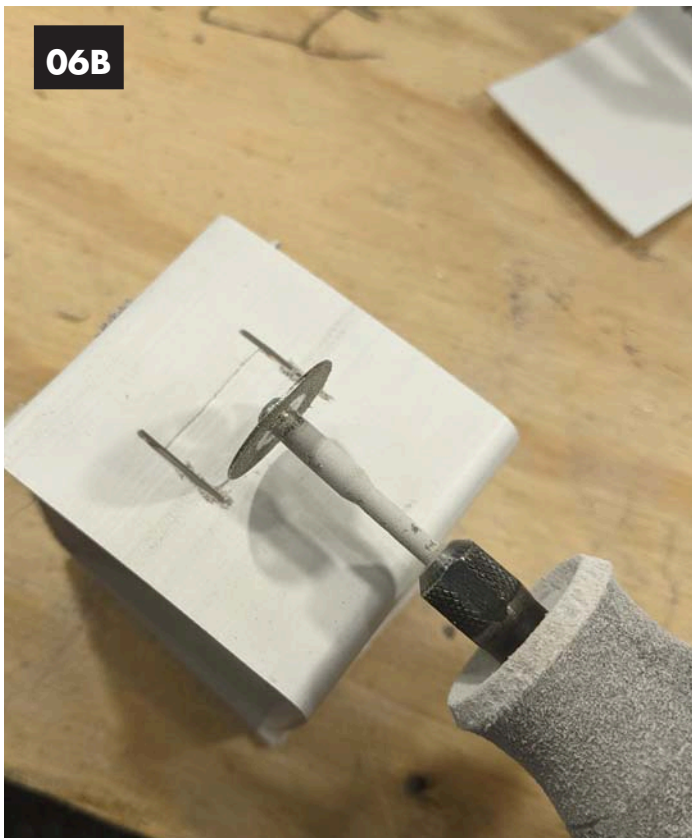
06A

Image 06A, 06B. Cut the rectangular opening with a cut-off disc. You really don't have to worry about over-cutting the short side a bit as it doesn't affect the strength of the bracket.

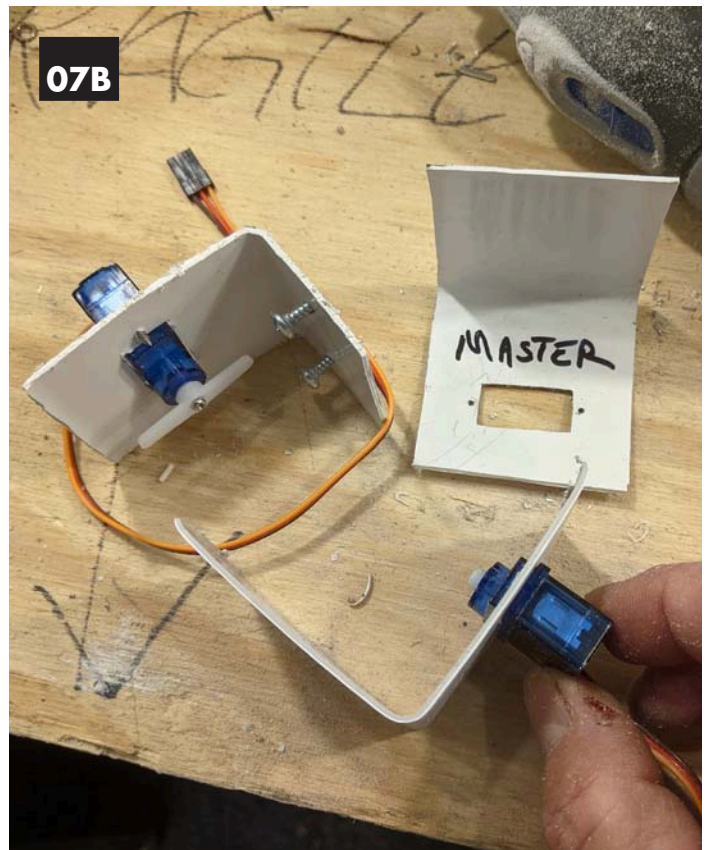


07A

Image 07A, 07B. The hole is cut, and test fit of a Servo.



06B



07B

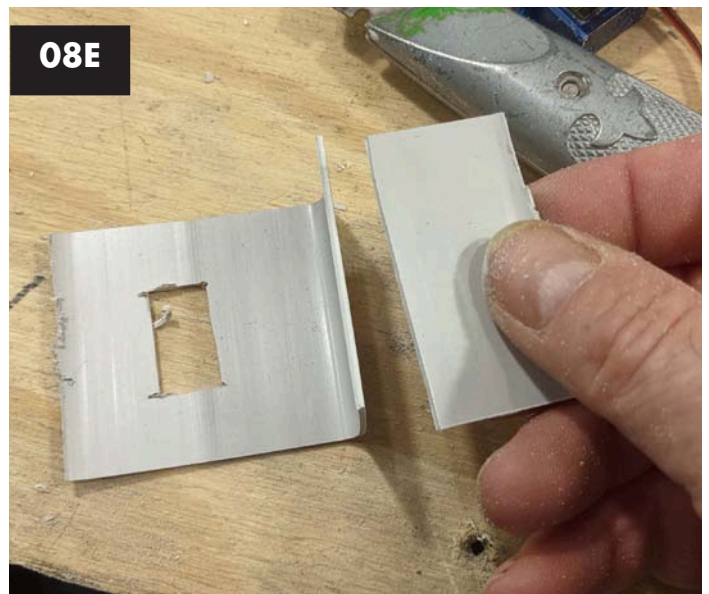
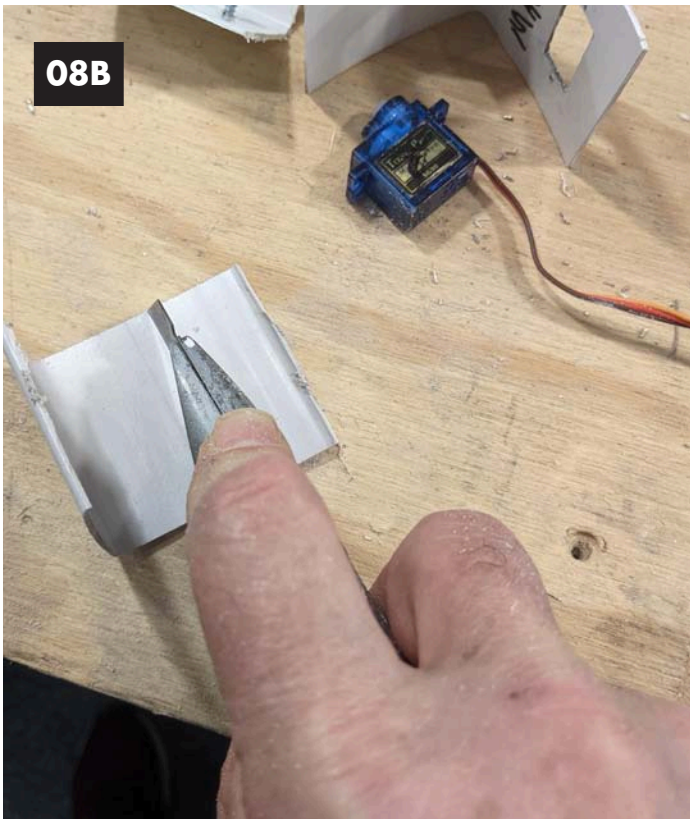
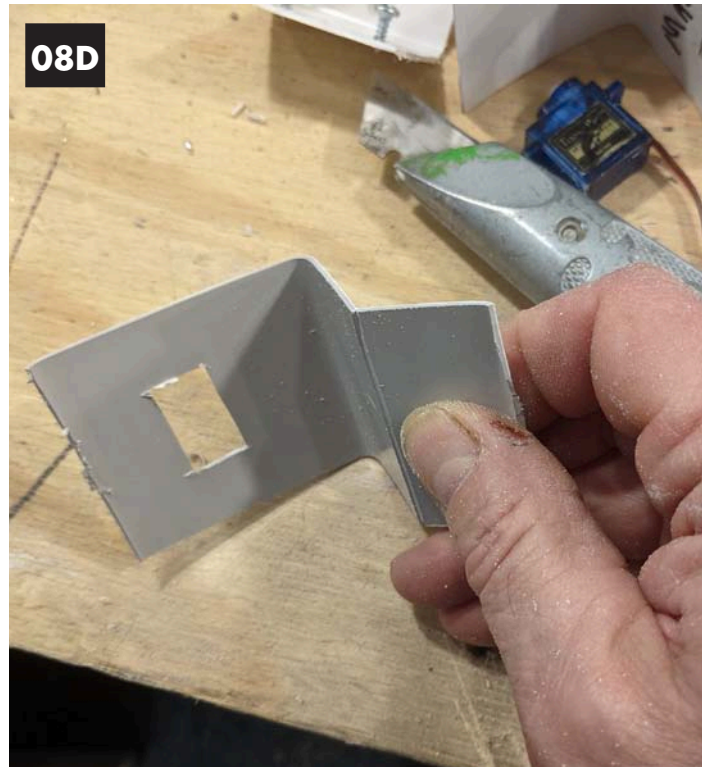
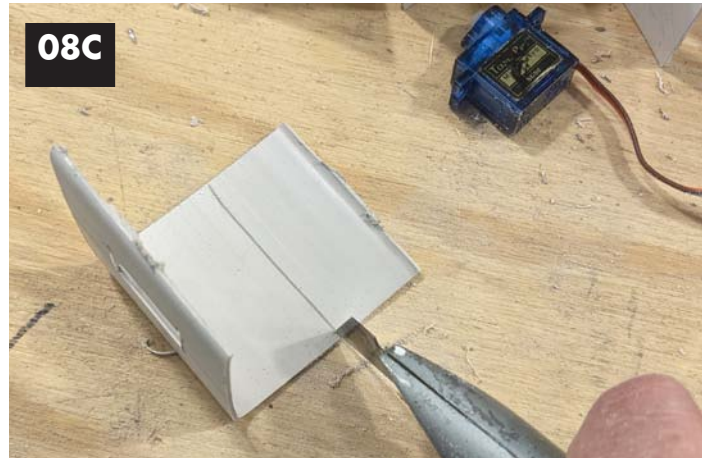
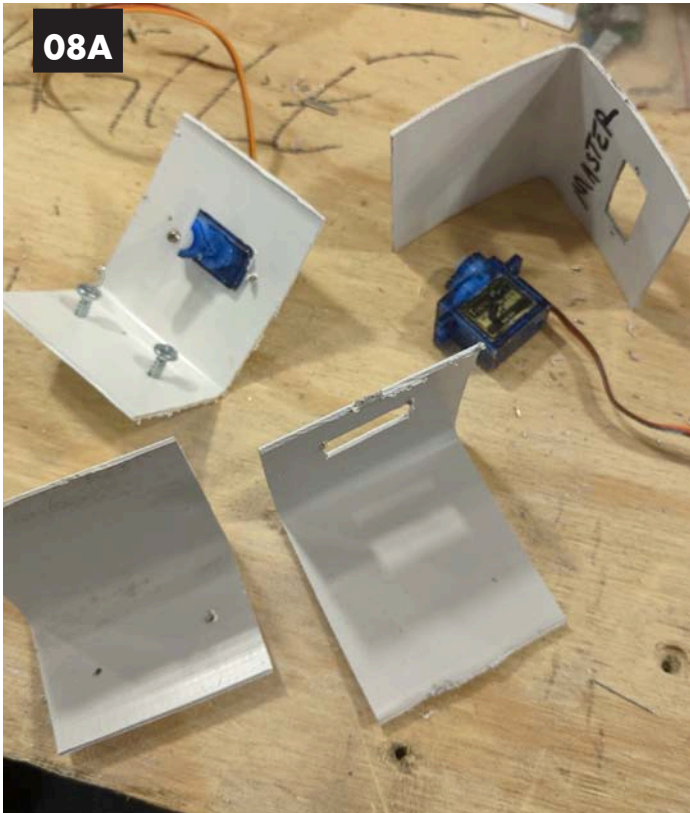
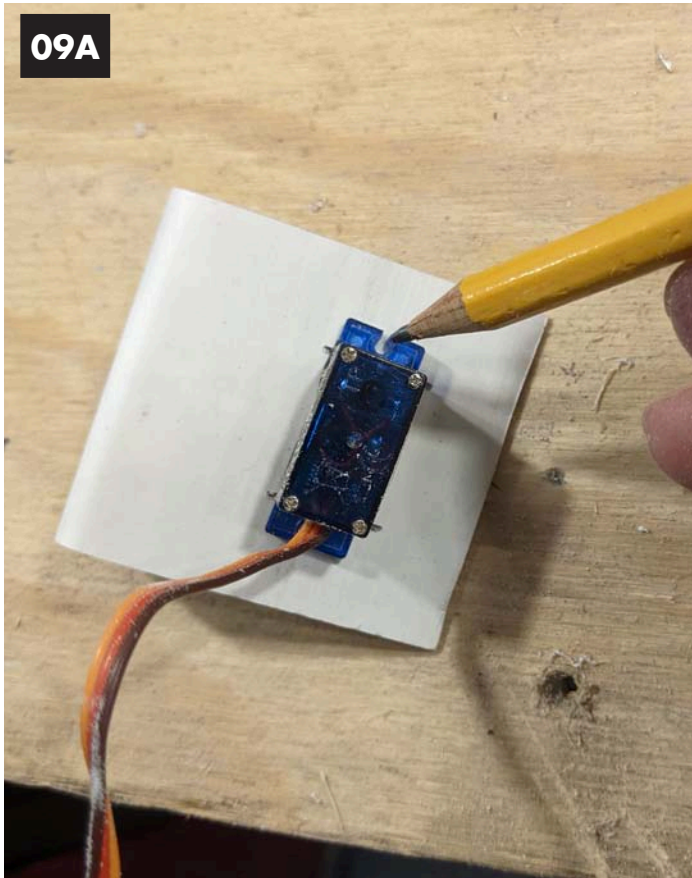
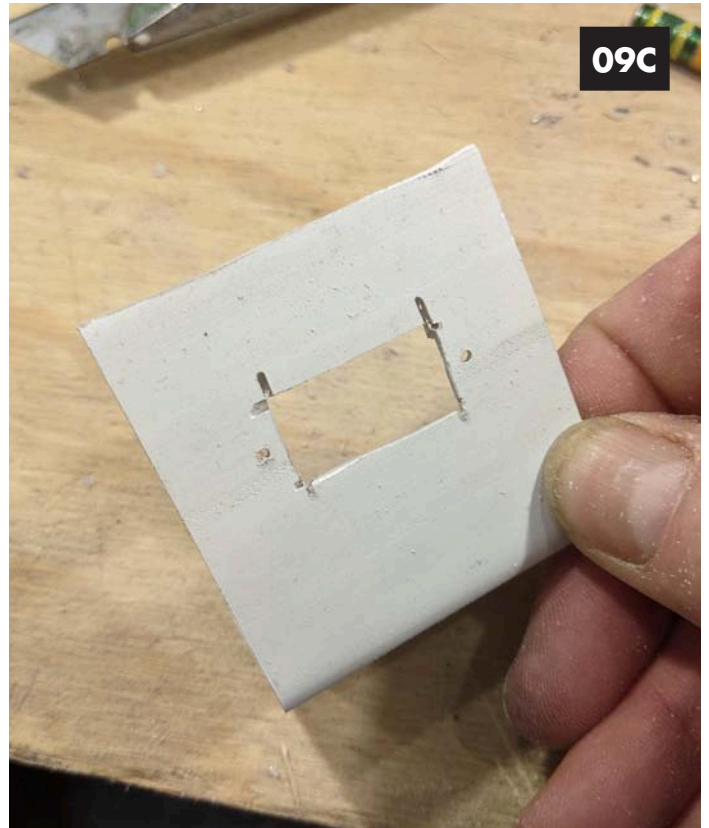


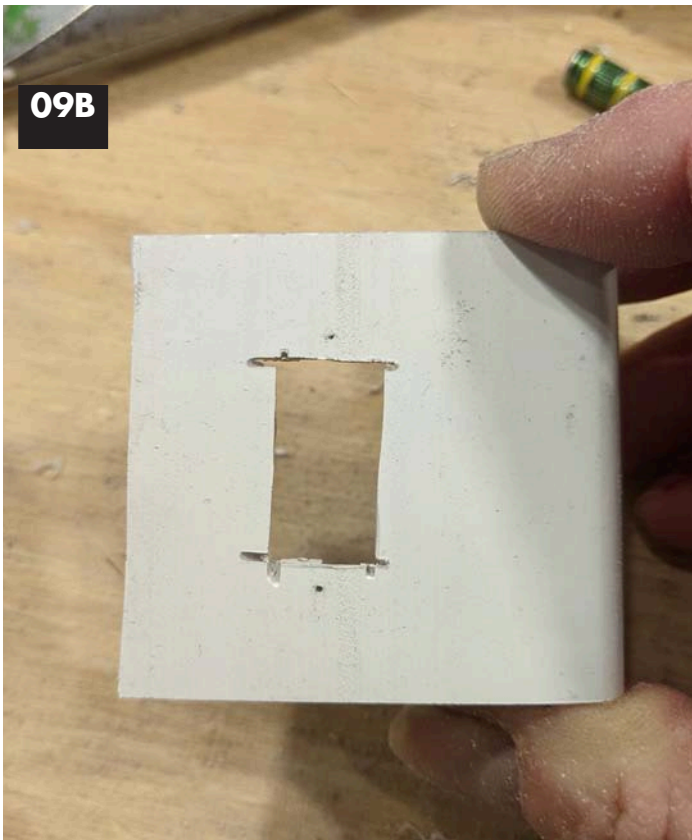
Image 08A to 08E. Mark locations for the mounting screw holes, and cut off excess material (mark, scribe, and snap).



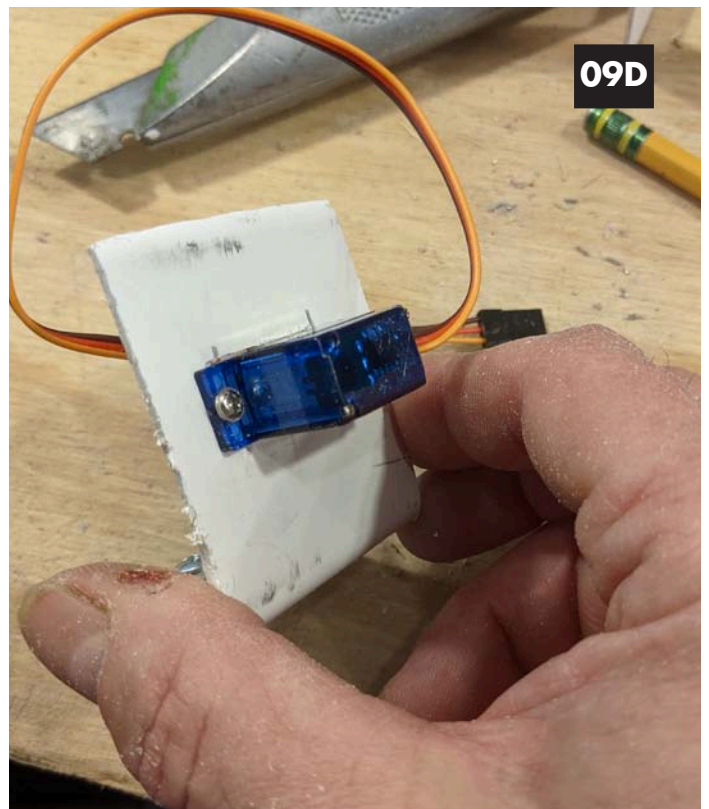
09A



09C

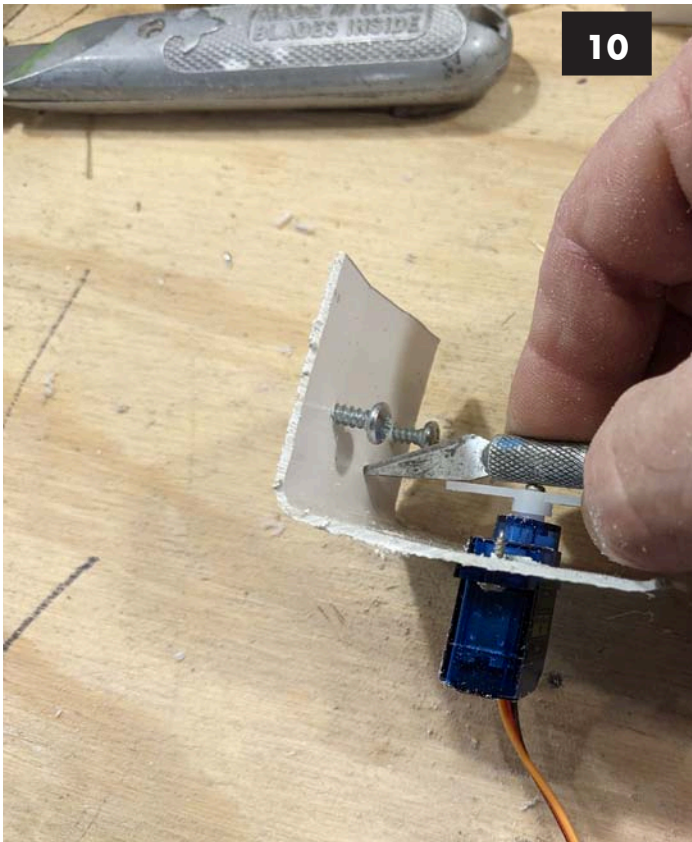


09B



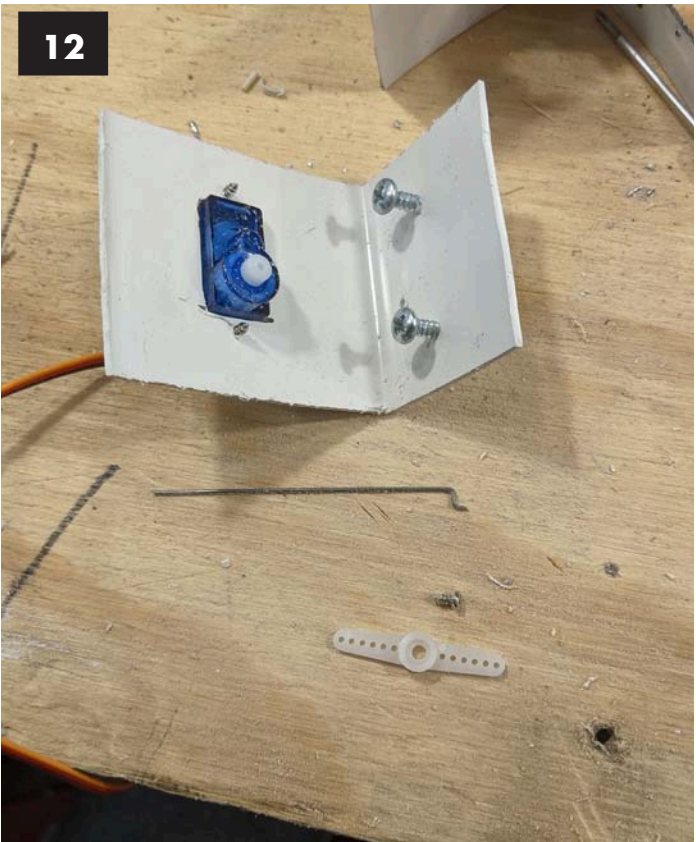
09D

Image 09A to 09D. Mark for the Servo mounting screw, drill a pilot hole, and mount the Servo into the bracket.



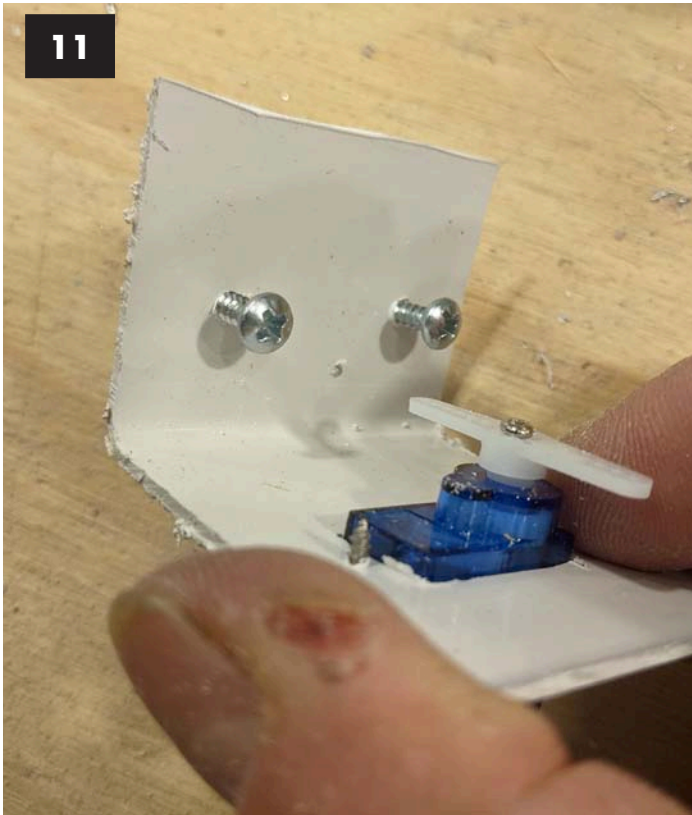
10

Image 10. With the Actuator Arm pressed onto the Servo, mark where the Throw Wire will pass through the bracket.



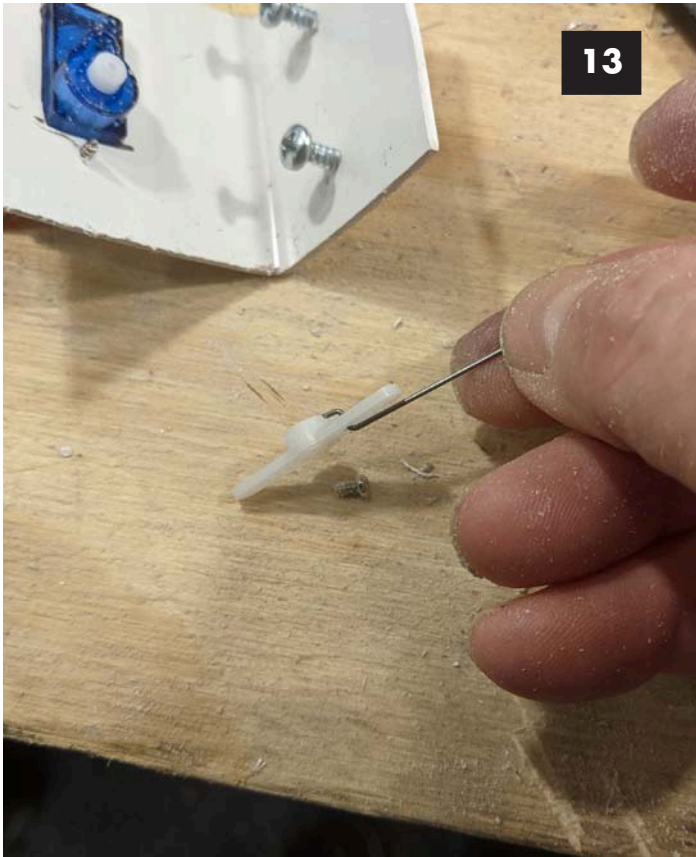
12

Image 12. Cut the Throw Wire to a length long enough to connect the Actuator Arm through the sub-roadbed and through the turnout Throw Bar.



11

Image 11. Drill the hole for the throw wire just large enough for the wire to pass through and become a Fulcrum (pivot point).



13

Image 13. Put 90 degree bends at one end of the Throw Wire to be able to hold its place in the Actuator Arm.

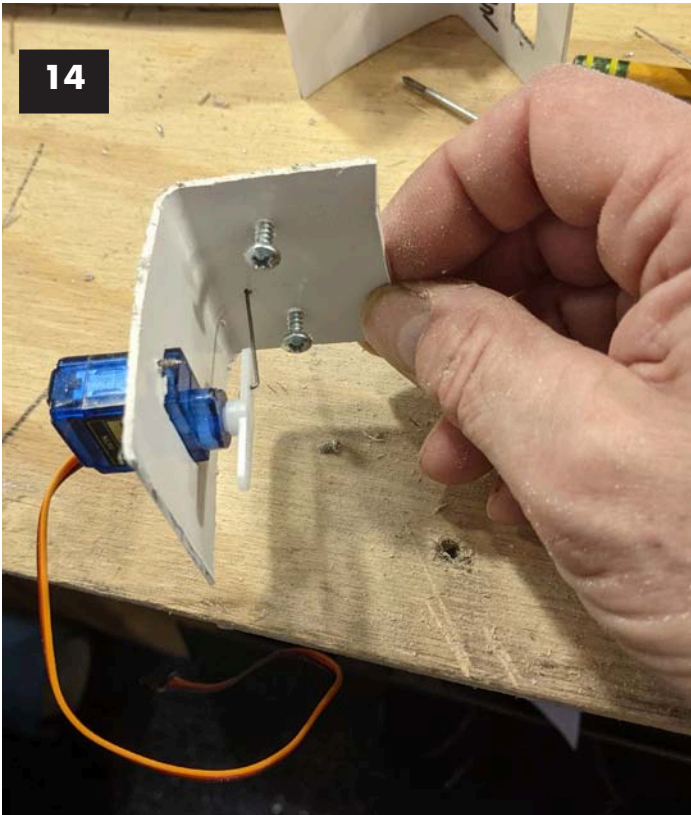


Image 14. Reinstall the Actuator Arm back onto the Servo after pushing the Throw Wire through the Fulcrum hole.



Image 16. After drilling a hole through the sub -roadbed under the Throw Bar hole I mounted the Servo Bracket under the turnout, fit the Throw Wire through the hole in the Throw Bar and made sure it was centered without obstructions, then tightened the mounting screws.

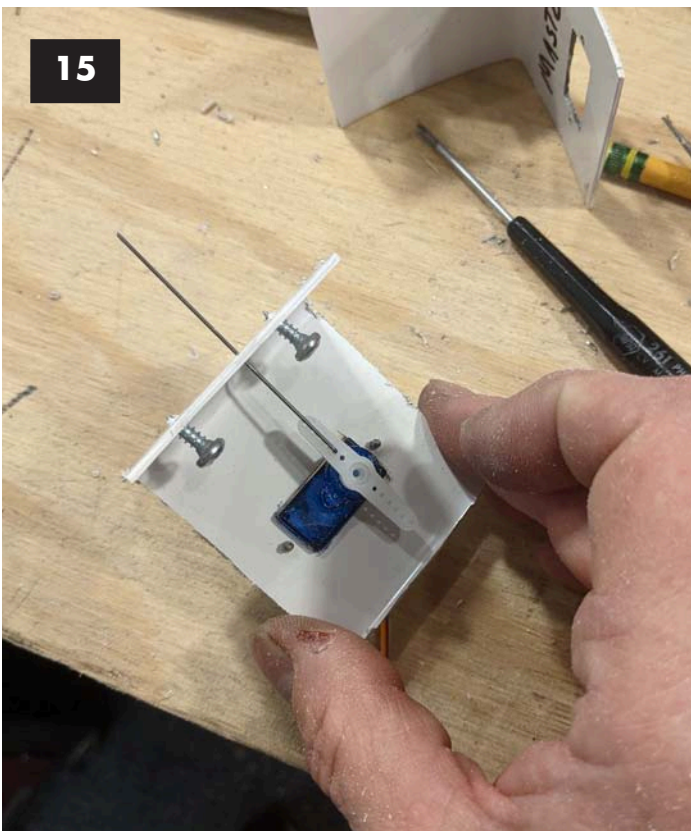


Image 15. Servo mounted in Bracket with Throw Wire and mounting screws, ready to be installed.

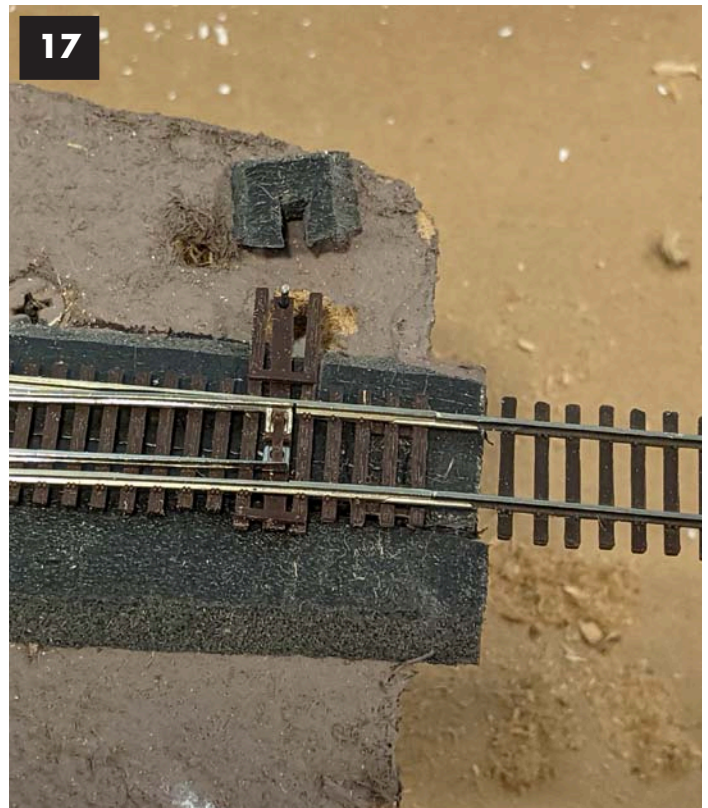


Image 17. With the movement tested I cut a piece of the roadbed material to cover the oversized Sub Roadbed hole and slipped it under the Throw Bar and extended ties.



Image 18. The roadbed hole is covered.



Image 20. The Servo brackets installed under Portland yard.



Image 19. The throw wire.

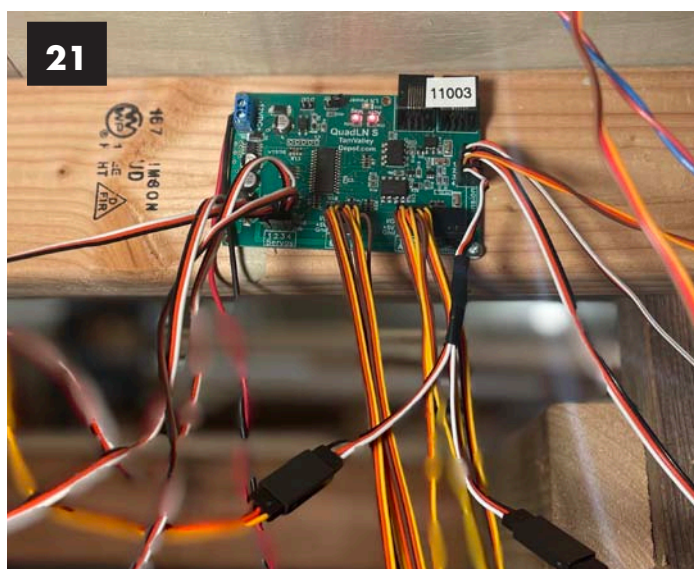


Image 21. QuadLN_S mounted under benchwork. The LocoNet connections are blocked as they won't be used.

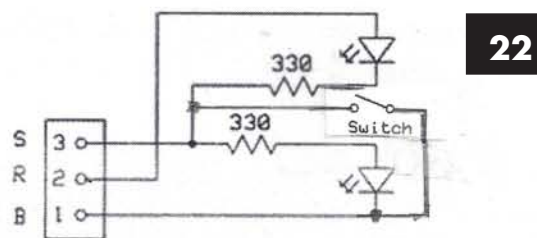


Image 22. This drawing shows the resistor values (330 ohms) for each LED, the LED orientation, as well as the connector connections where B is Black, R is Red, and S is white. Note: Some RC cables are Brown, Red, and Orange respectively. The switch is a Normally Open (N.O.) Momentary Contact pushbutton switch. Do not use a Toggle switch as damage may occur.



Image 23. The Portland yard throat. Notice a couple surface mounted servos bottom right. Sub roadbed bracing prevented them from being added under the turnout. They will be covered to hide their placement.

Image 24. This is the Portland Yard Control Panel. The LEDs I use are not the super bright kind. I found some with a low MCD (basically LED brightness) of 7. Anything brighter than that burns my eyes. This is a DC layout and the red momentary push buttons (push for "on") are to make sure blocks are on.

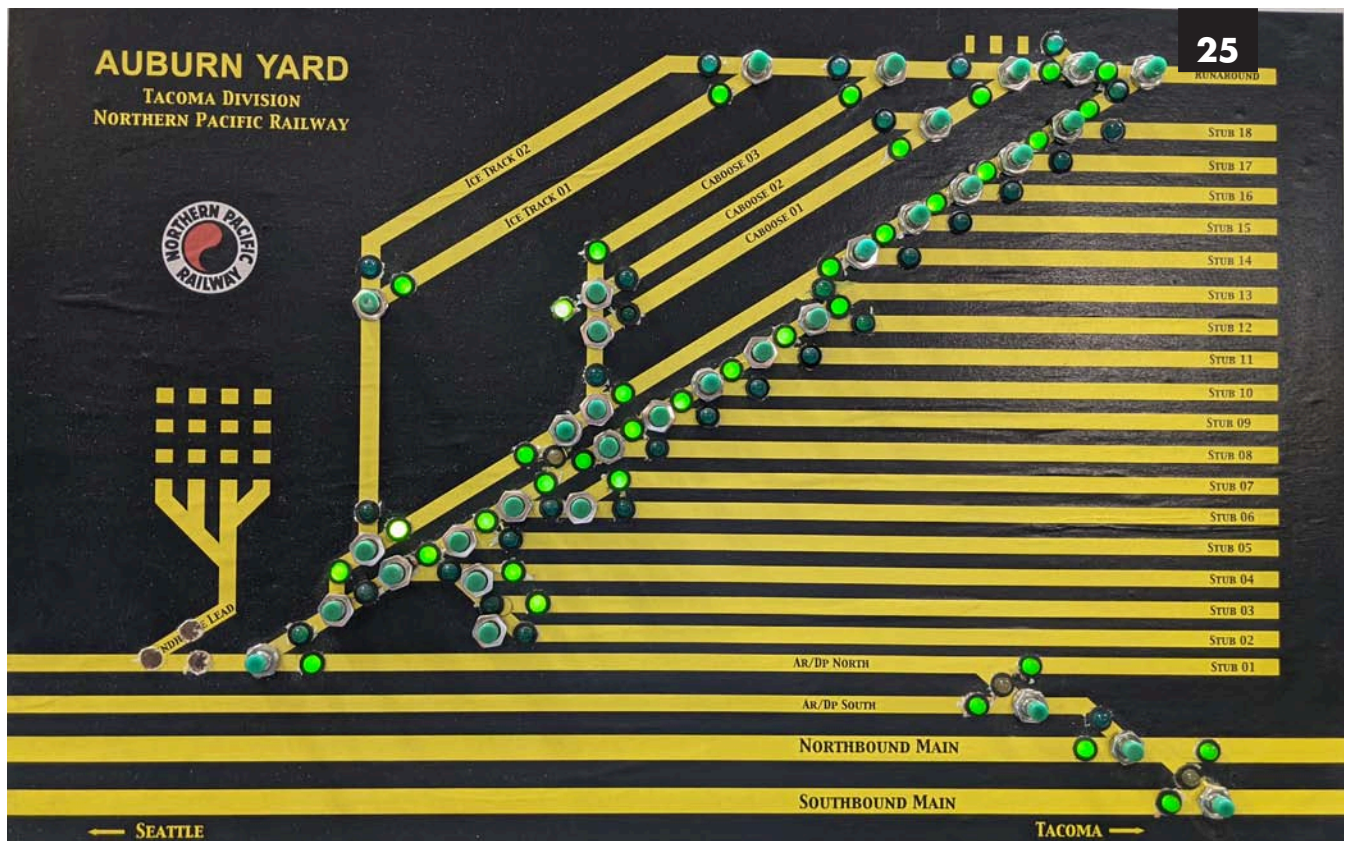
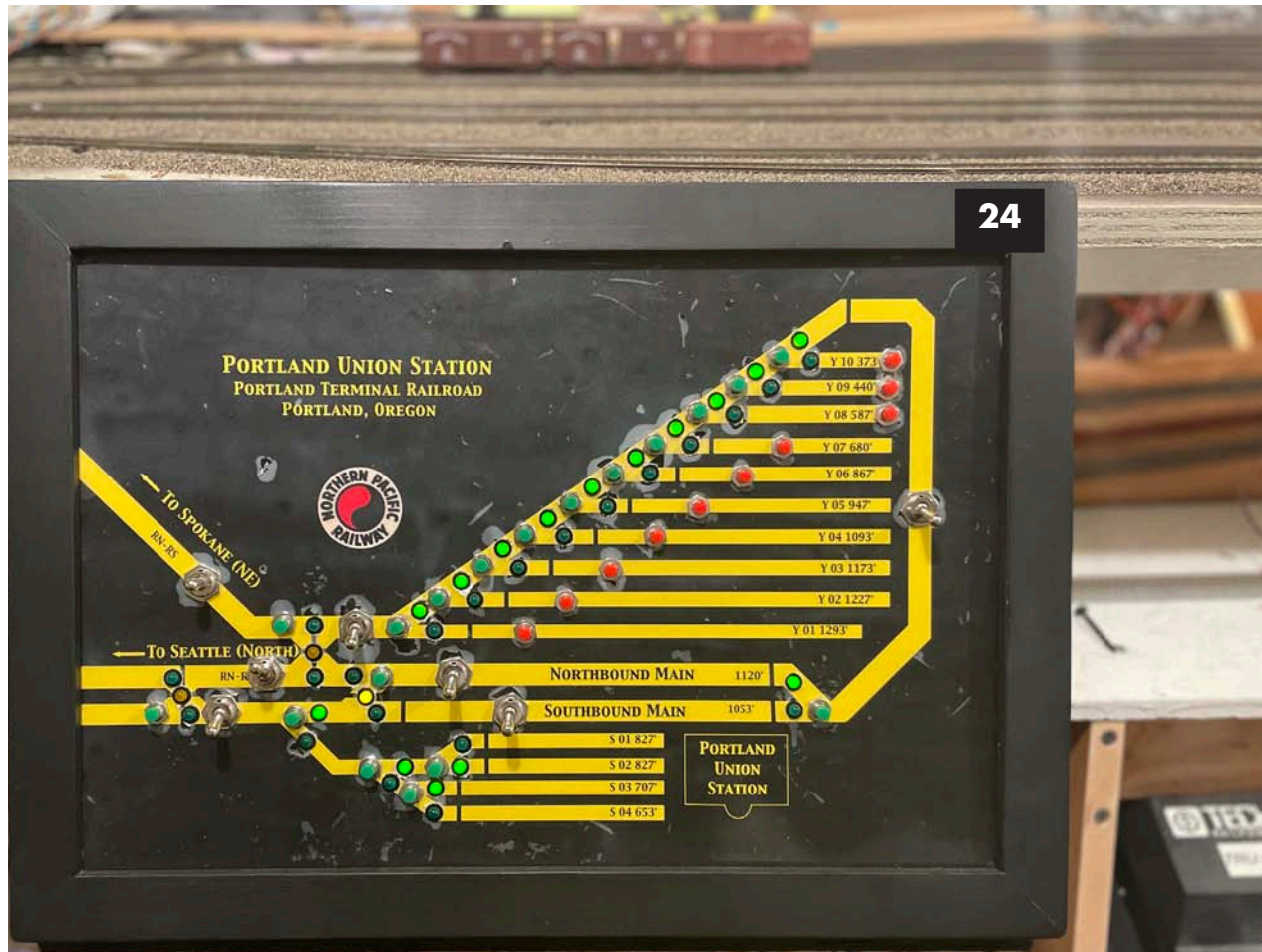


Image 25. The largest yard on the author's layout is Auburn Yard. Above is the main panel. This layout is DCC and doesn't need as many electrical switches on the panel. ▸

TRAVEL GUIDE N EVENTS

2022 SEP 10-11 UK

2022 International N Gauge Show at Warwickshire Event Centre, Nr Leamington Spa
Visit: www.ngaugeshow.co.uk

2022 SEP 16-18 PA Altoona

The 2022 N-Scale Weekend™ at the Blair County

Convention Center. Visit: [HTTPS://WWW.N-SCALEWEEKEND.COM/ABOUT-THE-SHOW](https://www.n-scaleweekend.com/about-the-show)

2022 OCT 08-09 MO Kirkwood (St.Louis)

31st Annual Greater St. Louis Metro Area Train Show at the Kirkwood Community Center, 111 S. Geyer Road, Kirkwood, Missouri 63122
Take I-44 to Lindbergh N or I-40 to Lindbergh S
Turn West on West Adams Ave; Go 4 blocks to S. Geyer All scales, swap tables, layouts, free parking. Sponsored by the Mississippi Valley N Scalers. Visit <http://mvns.railfan.net>

2022 DEC 04 NY Albany. "Great Train Extravaganza™" at the Empire State Convention Center, underneath The Egg. 10-4. \$7 adults, children free. Operating layouts all scales, 300+ vendor tables. www.gtealbany.com.

2023 FEB 25-26 WA Monroe (/Seattle). The United NorthWest Model Railroad Club's 2023 Washington State Model Railroad Show and Marketplace in Monroe, Washington Fairgrounds.

2023 JUN 13-18 NV Sparks/ Reno area. 29th Annual National N Scale Convention. ▶

N HORIZONS



Rapido. All-new ACF PD3500 Flexi Flo Hoppers with twobody styles: Early and late. Each paint scheme will have six reporting numbers and be available as a six-pack as well as single, two-, and three- packs. Timing to be announced later.

Kato USA. Kato has announced an all new ALC-42 "Charger". Amtrak's nre diesel locomotive. You can view preproduction samples by [clicking here](#). December 2022 should see the basic engine in four variations ("Day One" and three numbers in Phase VI). February 2023 the same four engines with Digitrax DCC, and May 2023. the same four engines with Soundtraxx DCC and Sound. December should also see a Phase VI Charger and three matching Phase VI Superliners.

Walthers. 933-3853 contains kits for four different structures: A pole "barn" and small, medium, and large sheds. They list the era from the 1950s to present.



N Scale Architect. (Above.) New is a model of the Sheffield Farms Creamery. This was the first creamery in the United States to use the pasteurization process from 1892 until it closed in the late 1960s... but the building still stands. ▶

SEE YOU NEXT ISSUE!