

INSTRUCTIONS

GENERAL

The Rokuhan Z-scale USRA 0-6-0 consists of a die-cast split-frame locomotive chassis with a friction-fit injection-molded boiler shell and separate injection-molded cab. The locomotive pilot is injection molded as an integral part of the bottom cover-plate. The steam chest, crosshead-guides, and valve gear hanger are a separate assembled part. Disassembly begins by pulling off the cab then the boiler (friction fit), then removal of the pilot/cover-plate by removing two screws (for 2-6-0 conversions). See instructions for optional modifications to steam cylinders and valve gear to simulate Stephenson valve gear of older era locomotives such as in conversion kits #2 & #5.

Using a dental burr in a motor tool, files, or sanding sticks, remove any remaining nubs left from the 3D printing process supports. Test fit the 3D printed parts to the chassis and file/sand if necessary to assure an easy friction-fit. Chase screw holes to fit. For the 2-6-0 conversions, if necessary, drill out the hole to attach the pilot truck (which sometimes likes to fill in during the printing process.) The same applies to the handrail stanchion holes. Use Gold Medal Models etched brass handrail stanchions and .012" diameter brass wire to fabricate and install handrails. It is suggested the superstructure parts be painted before installing on the chassis, using Vallejo Acrylic-Polyurethane primer followed by your choice of locomotive colors.

Conversion Kit #1

Changing cab and headlight of Z scale model to N scale.

To quote Li H'sen Chang: "First trick vely simple."

Cut away sprue holding headlight prints inside 3D-printed cab. Pull Rokuhan cab off and replace it with 3D-printed N-scale cab. File or sand fin on 3D-printed cab that fits between plastic boiler and die-cast frame if necessary to get cab down tight to boiler and chassis. Press down until the bottom of the 3D print sits down on the step in the die cast chassis.

Cut away black plastic headlight housing taking care not to damage clear plastic light tube and place 3D-printed headlight over the light tube. Glue in place using Pacer canopy glue. (You may want to replace the rather ineffective Rokuhan light board and light tube with a pre-wired SMLED and resistor.)

Cut a short length of small diameter heat-shrink tube (not included) and slide over Rokuhan stack. Hold the tip of a low-wattage soldering iron near heat-shrink tubing near the base of the stack to shrink the tube to fit tight to the Rokuhan stack at the bottom.

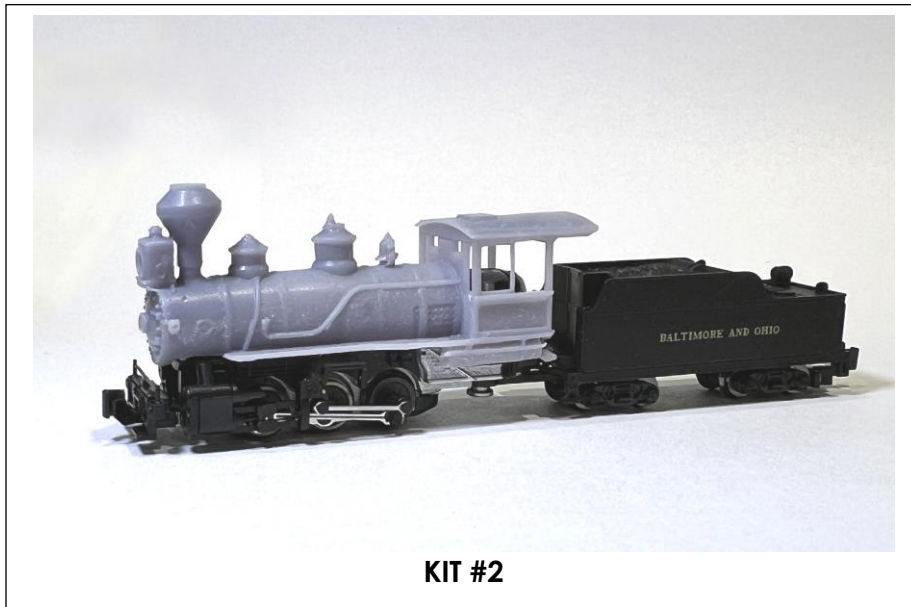


Conversion Kit #2

Changing superstructure of Z scale model to 1890's-1920's N scale wood or coal burning steam locomotive with diamond stack. (Based loosely on a Pacific Coast Railway 1893 Baldwin which was scrapped in 1924.)

Remove the Rokuhan cab then the boiler (friction fit) by lifting up vertically. Using a dental burr in a motor tool, files, or sanding sticks, remove any remaining nubs left from the 3D printing process supports from the new 3D-printed superstructure. Test fit the 3D printed parts to the chassis and file/sand if necessary to assure an easy friction-fit. Press down until the bottom of the 3D print sits down on the step in the die cast chassis. Add brass wire handrails to suit. If you intend to have an operational headlight (optional), replace the Rokuhan light board with a pre-wired SMD LED and resistor. It is suggested the superstructure parts be painted before installing on the chassis, using Vallejo Acrylic-Polyurethane primer followed by your choice of locomotive colors, then press-fit the N-scale superstructure to the Rokuhan chassis.

Optional: recommend modifying the steam cylinders and removing the Walschaerts valve gear as described at the end of these instructions.



Conversion Kit #3

Changing superstructure of Z scale model to 1890's-1920's N scale oil or coal burning steam locomotive. (Based loosely on a Pacific Coast Railway 1893 Baldwin which was scrapped in 1924.)

Remove the Rokuhan cab then the boiler (friction fit) by lifting up vertically. Using a dental burr in a motor tool, files, or sanding sticks, remove any remaining nubs left from the 3D printing process supports from the new 3D-printed superstructure. Test fit the 3D printed parts to the chassis and file/sand if necessary to assure an easy friction-fit. Press down until the bottom of the 3D print sits down on the step in the die cast chassis. Add brass wire handrails to suit. If you intend to have an operational headlight (optional), replace the Rokuhan light board with a pre-wired SMD LED and resistor. It is suggested the superstructure parts be painted before installing on the chassis, using Vallejo Acrylic-Polyurethane primer followed by your choice of locomotive colors, then press-fit the N-scale superstructure to the Rokuhan chassis.

Optional: recommend modifying the steam cylinders and removing the Walschaerts valve gear as described at the end of these instructions.

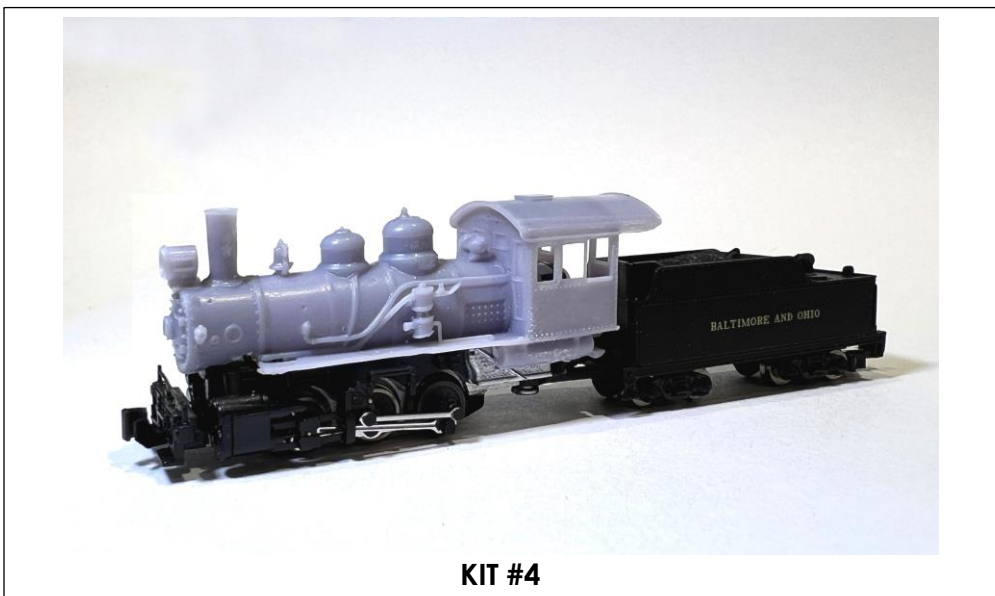


Conversion Kit #4

Changing superstructure of Z scale model to "modern" N scale coal or oil burning steam locomotive. (Based loosely on a 1904 Pacific Coast Railway Baldwin which was scrapped in 1938.)

Remove the Rokuhan cab then the boiler (friction fit) by lifting up vertically. Using a dental burr in a motor tool, files, or sanding sticks, remove any remaining nubs left from the 3D printing process supports from the new 3D-printed superstructure. Test fit the 3D printed parts to the chassis and file/sand if necessary to assure an easy friction-fit. Press down until the bottom of the 3D print sits down on the step in the die cast chassis. Add brass wire handrails to suit. If you intend to have an operational headlight (optional), replace the Rokuhan light board with a pre-wired SMD LED and resistor. It is suggested the superstructure parts be painted before installing on the chassis, using Vallejo Acrylic-Polyurethane primer followed by your choice of locomotive colors, then press-fit the N-scale superstructure to the Rokuhan chassis.

Optional: recommend modifying the steam cylinders and removing the Walschaerts valve gear as described at the end of these instructions.



Conversion Kit #5

Changing Z scale 0-6-0 model to N scale 2-6-0 1890's-1920's N scale wood or coal burning locomotive with diamond stack. (Based loosely on an 1893 Baldwin which was scrapped in 1924.)

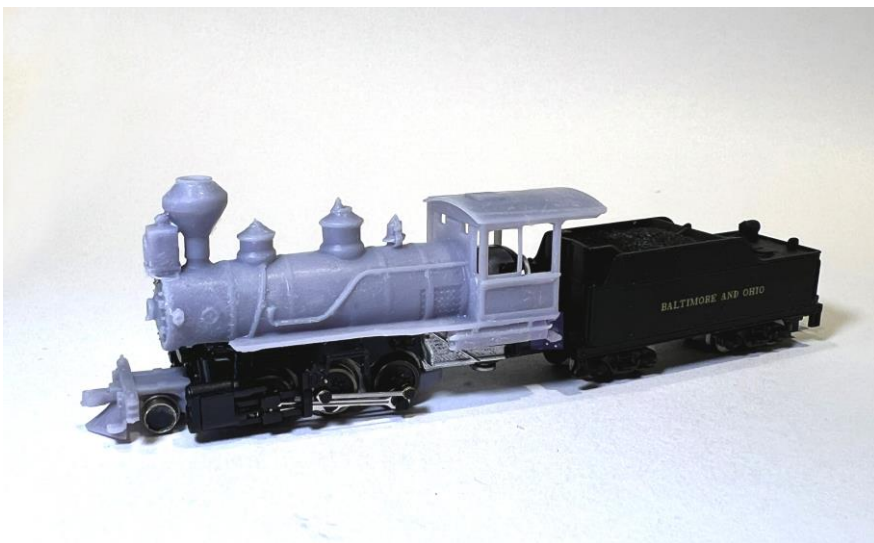
Remove the Rokuhan cab then the boiler (friction fit) by lifting up vertically. Replace the Rokuhan cover-plate with the 3D-printed cover-plate and pilot with its integral steam chest, cylinders and crosshead guides and the transferred main rods, making sure the printed cover-plate fits the die cast chassis tightly. Chase cover-plate screw holes if necessary to fit. Re-attach main rods to drivers with a new crankpin (not included).

If necessary, drill out the hole to attach the pilot truck (which sometimes likes to fill in during the printing process) to fit your choice of screw or pin. Fabricate and install a pilot truck using 3.5mm diameter wheels or modify a Märklin pilot truck to fit (not included). See diagram. (Contact designer-vendor offline for 3.5mm pilot truck wheels.)

Using a dental burr in a motor tool, files, or sanding sticks, remove any remaining nubs left from the 3D printing process supports from the new 3D-printed parts. Test fit the 3D printed parts to the chassis and file/sand if necessary to assure an easy friction-fit. Add brass wire handrails to suit.

Press down until the bottom of the 3D print sits down on the step in the die cast chassis. If you intend to have an operational headlight (optional), replace the Rokuhan light board with a pre-wired SMLED and resistor. It is suggested the superstructure parts be painted before installing on the chassis, using Vallejo Acrylic-Polyurethane primer followed by your choice of locomotive colors, then press-fit the N-scale superstructure to the Rokuhan chassis.

Optional: recommend modifying the steam cylinders and removing the Walschaerts valve gear as described at the end of these instructions.



KIT #5

Conversion Kit #6

Changing Z scale 0-6-0 model to N scale 2-6-0 steam: 1890s-1920s oil-burning locomotive with straight stack. (Based loosely on an 1893 Baldwin which was scrapped in 1924.)

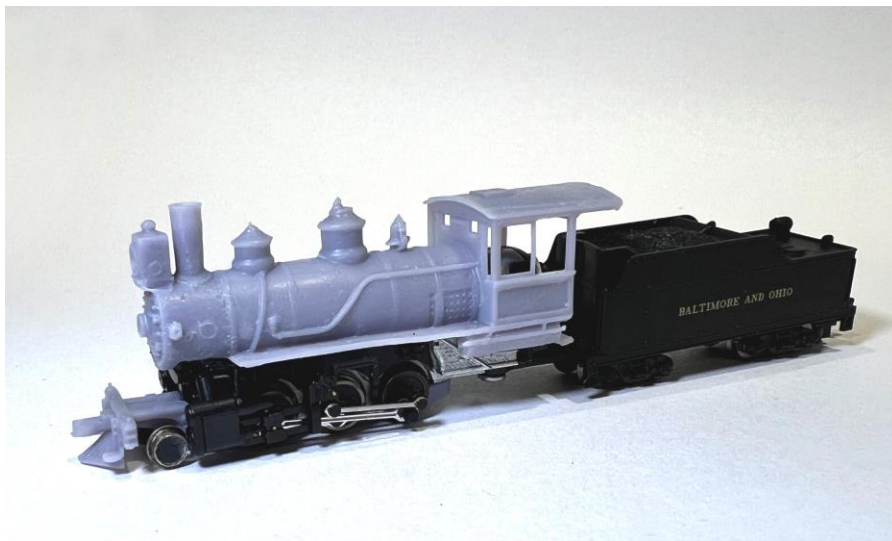
Remove the Rokuhan cab then the boiler (friction fit) by lifting up vertically. Replace the Rokuhan cover-plate with the 3D-printed cover-plate and pilot with its integral steam chest, cylinders and crosshead guides and the transferred main rods, making sure the printed cover-plate fits the die cast chassis tightly. Chase cover-plate screw holes if necessary to fit. Re-attach main rods to drivers with a new crankpin (not included).

If necessary, drill out the hole to attach the pilot truck (which sometimes likes to fill in during the printing process) to fit your choice of screw or pin. Fabricate and install a pilot truck using 3.5mm diameter wheels or modify a Märklin pilot truck to fit (not included). See diagram. (Contact designer-vendor offline for 3.5mm pilot truck wheels.)

Using a dental burr in a motor tool, files, or sanding sticks, remove any remaining nubs left from the 3D printing process supports from the new 3D-printed parts. Test fit the 3D printed parts to the chassis and file/sand if necessary to assure an easy friction-fit. Add brass wire handrails to suit.

Press down until the bottom of the 3D print sits down on the step in the die cast chassis. If you intend to have an operational headlight (optional), replace the Rokuhan light board with a pre-wired SMD LED and resistor. It is suggested the superstructure parts be painted before installing on the chassis, using Vallejo Acrylic-Polyurethane primer followed by your choice of locomotive colors, then press-fit the N-scale superstructure to the Rokuhan chassis.

Optional: recommend modifying the steam cylinders and removing the Walschaerts valve gear as described at the end of these instructions.



KIT #6

Conversion Kit #7

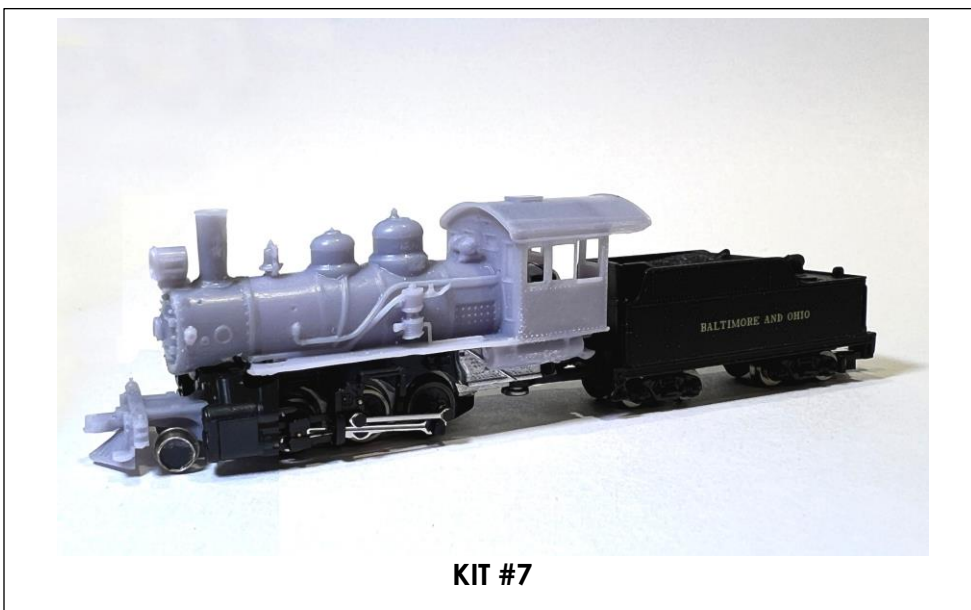
Changing superstructure of Z scale model to "modern" N scale 2-6-0 steam locomotive. (Based loosely on a 1904 Baldwin which was scrapped in 1938.)

Remove the Rokuhan cab then the boiler (friction fit) by lifting up vertically. Turn the Rokuhan loco over and remove the two screws holding the cover-plate and pilot in place. Replace with the 3D-printed cover-plate and pilot, making sure the printed cover-plate fits the die cast chassis tightly. Chase screw holes to fit. If necessary, drill out the hole to attach the pilot truck (which sometimes likes to fill in during the printing process) to fit your choice of screw or pin. Fabricate and install a pilot truck using 3.5mm

diameter wheels or modify a Märklin pilot truck to fit (not included). See diagram. (Contact designer-vendor off line for 3.5mm pilot truck wheels.)

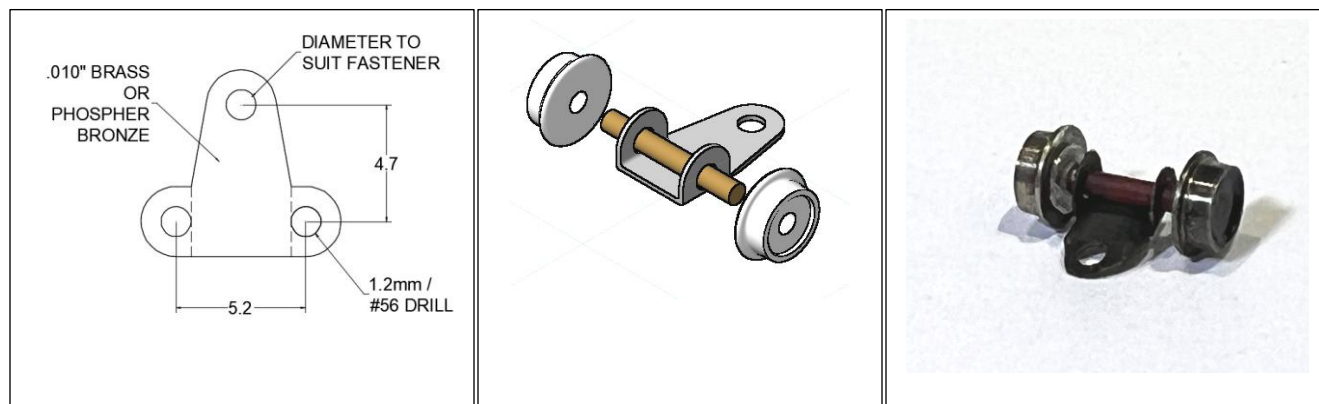
Using a dental burr in a motor tool, files, or sanding sticks, remove any remaining nubs left from the 3D printing process supports from the new 3D-printed parts. Test fit the 3D printed parts to the chassis and file/sand if necessary to assure an easy friction-fit. Add brass wire handrails to suit.

Press down until the bottom of the 3D print sits down on the step in the die cast chassis. If you intend to have an operational headlight (optional), replace the Rokuhan light board with a pre-wired SMLED and resistor. It is suggested the superstructure parts be painted before installing on the chassis, using Vallejo Acrylic-Polyurethane primer followed by your choice of locomotive colors, then press-fit the N-scale superstructure to the Rokuhan chassis.



Pilot Truck Construction

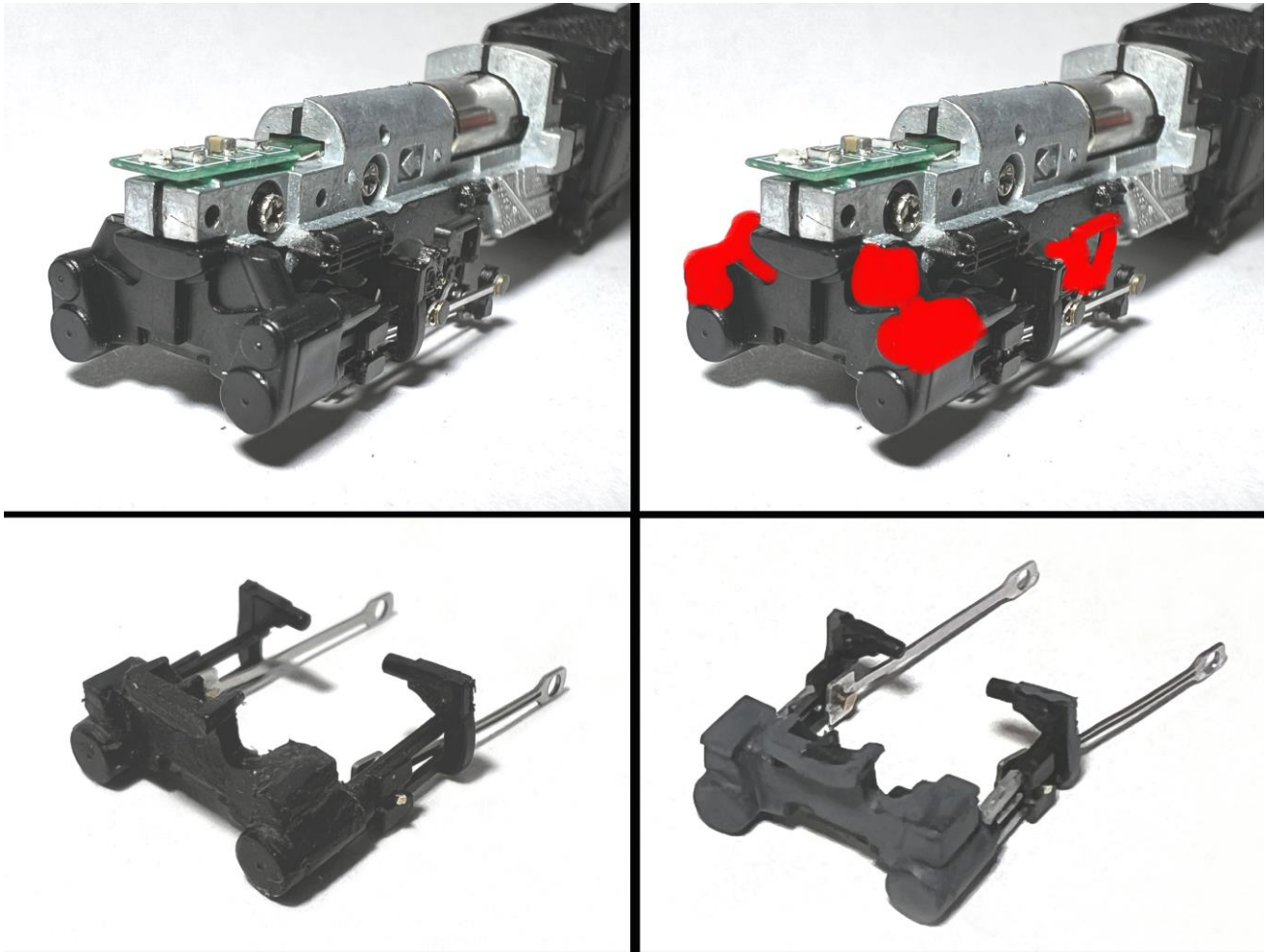
There are several two-wheel pilot trucks which could be used to convert the 0-6-0 to a 2-6-0, but difficult to source from Z-scale manufacturers as spare parts. The most likely source for these is your scrap box or a defunct locomotive. The alternative is to build your own pilot truck, which is not difficult. It is recommended 3.5mm diameter wheels be used, available from the Japanese scratch-building cottage industry from manufacturers such as Pair Hands or contact this vendor via e-mail. Below is a template for the pilot truck shown in the accompanying photo. Use non-conductive 1mm fiberglass rod for axle.



Stephenson Valve Gear Conversion

The Rokuhan 0-6-0 comes with piston valves and Walschaerts valve gear on each side of the locomotive. Most nineteenth and many early 20th century locomotives had slide valves and Stephenson valve gear which is between the locomotive frames. If the modeler wants to simulate Stephenson valve gear, there are two options: (1) install new 3D-printed steam chest and cylinders (available separately) and swap-over the Rokuhan crossheads and main rods, or (2) modify the Rokuhan steam chest and valve gear. Following are instructions for modifying the Rokuhan steam chest.

Rokuhan Steam Chest Modifications:



OPTIONAL STEAM CHEST AND VALVE GEAR MODIFICATION TO MODEL SLIDE VALVE AND STEPHENSON VALVE GEAR

Top Left: As supplied Rokuhan piston valve cylinders and Walschaerts valve gear.

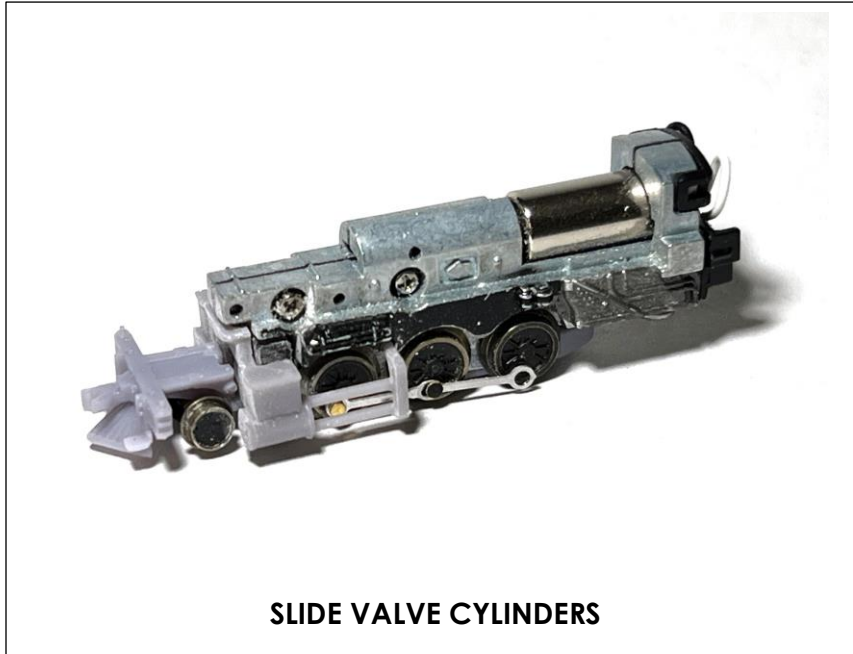
Top Right: Red indicates areas to be removed with motor tool, dental burrs, cut-off disc, knife and files; also, cut off valve gear hanger.

Lower Left: Cylinders rough-cut to shape and valve-hanger cut off.

Lower Right: Finished, with valve chest overlaid with .010" styrene; crosshead guide drilled with #76 drill for valve rod to be installed later.

Replacement Steam Chest (available separately on 3DP TRAINS):

Replacement 3D-printed steam chest and cylinders to simulate Stephenson valve gear of older era locomotives.



SLIDE VALVE CYLINDERS

Turn the Rokuhan loco over and remove the two screws holding the cover-plate and pilot in place. Carefully pull out the return cranks and pins from the rear set of drivers freeing up the main rod taking care not to lose the spacer. Carefully spread the valve gear hangers to free the pins from the die-cast chassis and remove the steam chest assembly. Remove the crossheads and main rods from the Rokuhan assembly by pulling the pins from the back taking care not to lose the very small pins, then reassemble crossheads and main rods on new 3D-printed crosshead guides and install steam chest with pins in holes in dicast chassis. Install the new cover-plate and pilot, and new pilot truck.