

ALL NATION PRAIRIE CHASSIS

PRAIRIE CHASSIS INSTRUCTIONS

ALL-NATION locomotives all utilize identical basic construction procedures, straightforward, simple and practical methods that enable the new builder to make a good running chassis that will perform realistically for many years. All working parts have been machined and with the exception of small clean-up jobs for flash and finish they are ready for final assembly. HOWEVER — this is a hobbyist's craftsman kit, and in the interests of economy a good deal of the drilling and tapping, and some hand-filing has been left to the constructor. Most Model Railroaders not only can, but often prefer to drill and tap a hole, and finish file the parts when necessary. If you don't, or can't do these small jobs, and an occasional solder job, DON'T BUY THIS KIT.

Read the instructions carefully and study the diagrams and pictures before attempting to assemble this kit. The final results obtained will more than compensate for the few extra minutes required to digest the instructions. All parts defective in manufacture will be replaced without charge provided the original part is sent for exchange to the factory together with the kit packing slip. DO NOT SHIP YOUR LOCOMOTIVE TO THE FACTORY FOR INSPECTION OR REPAIRS, as it will be returned Express collect.

THE MAIN FRAME of the locomotive is formed by riveting together the two stamped brass side frames, #1108 P right and left, with the three main frame rivets #1118. Be sure the last hole at the rear of the frame has the countersink on the outside — that's why one is left and one is right. Put these together by hand and temporarily screw the assembly together with the bearing plate #1133. This will line up all the holes in the rivets as the 5-40 screws are put in them. The procedure for the riveting assembly is shown in the drawing. (SKETCH 1 and 2)

Upset the rivet ends with a sharp rap of your hammer and the center punch. Turn the assembly over and repeat on the other side. Then peen the rivet over with the flat face of the hammer as shown. It's not necessary that the rivets be flush with the sides because a clearance is allowed for the wheels. Remove the bearing cover plate. The cast bronze drawbar bracket is then fitted in place as shown, a slight amount of filing may be necessary at the top of the bracket to fit snugly. You can see when it fits properly because the countersink holes then line up with the tapped ones in the bracket. Attach with two 5-40 Flat head screws, and tighten securely. If you wish, any joints showing may be filled with solder, or putty, then filed smooth.

DRIVE WHEELS

NOTE that on this locomotive the Main driver (the third axle) is NOT the geared axle, the geared one is the second. Take the light weight driver, uninsulated #1580 shove the axle into the back of the driver lining up the flat on the axle end with the corresponding flat in the driver hub. Sometimes a VERY slight swipe with a small rat tail file will assist this procedure, also a slight tap with a small hammer on the wheel — but DON'T damage the threads on the ends of the axle. Grind or file a small slot in the end of a screwdriver to fit the special driver nuts. After the axle is in the wheel, screw on the driver nut #1278. This will draw the driver down firmly on the axle shoulder. Now file all six axle bearings FLAT on one side as shown, out two of them on the axle and then attach the opposite driver INSULATED #1581 in the same manner. These will be quartered and straight if done according to above. The geared axle and its wheels are handled similarly, BUT be sure to put on the bearing, one on each side of the gear before attaching the wheels.

MAIN DRIVER. This is the third axle on this locomotive. Insert the main crank pin #1531 into the tapered hole on the front of the uninsulated driving wheel #1579. Again a SLIGHT swipe with a rat tail file may make this fit easier, but don't overdo it. Run the nut #1278 on the pin from the back loosely. Now line up the hole in the crank pin so that when a straight pin is put thru the hole it would point clockwise down from the right side of the counterweight; then tighten the nut. See drawing for this operation. (SKETCH #3)

Repeat the process for the opposite driver (insulated) with the pin point down counter clockwise from the tip of the left side of the counterweight as shown. The purpose of this is to make the eccentric crank lag the main crank in forward direction on each side of the locomotive to time the valve motion. Mount the drivers in the same way as the other drivers were done. Now drop the three pairs of drivers, with their axles and bearings into the frame slots — INSULATED wheels on the left side, bearings in place in the slots with the flat side DOWN, so the bearing plate holds them down in place, then put in the screws and tighten. The special axle nuts #1278 should be securely tightened, but don't strip them, sometimes a drop of LOCKTITE will prevent any possibility of loosening in severe service.

SIDE RODS

These are assembled as shown on the main drawing, the knuckle rod to the front, file off the rear boss of the main side rod as it's not used here. File off the lubricator bosses to make right and left assemblies as shown. The lubricators point up — make sure you have a right and left. (SKETCH #4)

Attach the rods to the wheels with crank pins #1057 which are shouldered, tighten securely — but don't strip. The mechanism should now roll freely if all the steps were followed correctly. Occasionally a SLIGHT filing with a small rat tail on one side or the other will ease a bind. BE SURE THE CHASSIS ROLLS EASILY AND NO BINDS — THIS IS A MUST.

VALVE GEAR ASSEMBLY

Assemble the links in sections as follows: The radius rod #1088A, link #1085, lifting link #1087, reverse valve crank #1086, and the eccentric rod #1090 are made in one assembly. Rivet to make right and left hand assemblies. The rivets #1084 and #1158 are set by inserting a center punch in the hollow end of the rivet — see drawing sketch #5. Exert just enough pressure with your fingers in a circular motion swivelling the center punch to flare the rivet slightly. A hammer is unnecessary and very likely to spoil the rivet so don't use it. The two parts must be free to move, do not rivet tightly or it will not operate.

Next assemble the right and left hand assembly of the valve rod #1093, the combination lever #1089 with the crosshead link #1091. The valve rod pin is driven thru the rod and cut off at each end, allowing the combination lever to move it back and forth in the valve guide. File the ends of the pin smooth to facilitate this. The cast bronze guide yoke, and the front bracket is positioned as shown, fasten the front bracket to the frame rivet with the 5-40 screw. Then file the underside of the yoke so it fits down into the frame, centered of course, then solder the yoke to the front bracket only, do not solder to the frame itself. Now assemble the valve gear frame consisting of the above, the two link brackets, and the rear bracket #1113A with the four 0-80 screws using the 5/16" in the front, and the 1/8" for the rear. This assembly can be removed from the locomotive by unscrewing the 5-40 screws in the front and rear brackets. Now insert the radius rod #1088A thru the hole in the front hanger, then rivet the radius rod to the combination lever #1089. Then insert the link pivot rivet #1159 on each side setting the rivet in the usual manner. The reverse bell crank is fastened

by driving the 1/16" brass shaft thru the link bracket and hole in the crank. Use one on each side, do not try to run the shaft across, as it will conflict with the worm shaft and transmission. On the left side the top arm should be cut off.

ENGINE STEPS

Clean flash from die castings, tap the bottom hole 2-56, attach the short running boards after tapping their hole —1-72, file off the screw flush after tightening. Then attach the assembly to the pilot beam with 2-56 screws from underside of platform.

CYLINDERS

First tap the two holes on the underside of the cylinder casting 5-40 as shown sketch #6. Insert the piston rod bushing #1382 in the holes and tap in place carefully with a hammer. The long crosshead guides #1820 should be carefully driven into the square holes in the back of the cylinder. Next screw the piston rods #1383 in the crossheads #1111 after they have been cleaned up by flash removal. Slip the crosshead in the guides with the piston rod in its bushing. The crosshead MUST slide freely, if any binding is noted check the guides for mis-alignment. Now work the valve rod into its guide, put the piston rod in its bushing, clamp the cylinder with the pilot beam casting #1152 into the front part of the main frame assembly. This is shown in the drawing. This is held together with 5-40 flat head bolts from the bottom into the cylinder block. The guides are carefully worked into the guide yoke, which might need a slight amount of filing to just clear these guides. They should not fit so tightly as to bind on the free movement of the crosshead.

MAIN RODS

These are filed to remove the lower lubrication bosses to make RIGHT and LEFT hand rods, similar to the side rods, see drawing sketch #7. Put washer #C1806 over the main crank pin #1531 and place the main rod on the crank, lubricator boss pointing up. Connect the small end of the main rod with the crosshead #1111 with the crosshead link #1091 under the head of the crosshead pin screw #1058, tighten, then check again for free rolling of the chassis, if any binding is noticed please correct it NOW, as it will only cause more trouble later.

RETURN CRANKS

The eccentrics #1056 die castings. Place the eccentric on the main crank pin over the main rods. Tap it carefully in place until the pin holes lineup as shown in the drawing sketch #3. Drive the #20 x 3/8" escutcheon pin #C2011 all the way in. A common straight pin will also do the trick. The cranks point about 20 degrees forward to the top of the counterweight when the side rods are down. This applies to both sides. If the cranks do not assume this position, reset the main crank pins to secure it. Check again for freely rolling chassis.

PILOT TRUCK

This comes assembled. Merely attach to the chassis with shouldered screw as shown.

TRAILING TRUCK

This also comes assembled, attach in like manner.

PILOT

The coupler lifting rod assembly is clearly shown in photographs as well as sketches. The three stanchions #1643 are inserted in the proper holes in the pilot beam, then the .032 wire is shaped and soldered in the slots in them. The flag stanchions #1035 are driven into their holes. Cut off the excess shank of the coupler #1591 — drill #42 hole and fasten with pin.

WORM DRIVE

Insert the worm shaft #1638 into the ball bearing of the bracket #1574 and lock in place with driver nut

#1278. Place the drive coupling #1594 on the worm shaft and insert cotter pin #C2001 thru the hole in the shaft and coupling slot. Tighten, bend, and cut off excess.

Mount the motor bracket #1566 to the rear frame with a 5-40 screw, then assemble the worm drive bracket to this using the long 6-32 screws and the two long motor spacers. Possibly you may have to bend the ears of the motor bracket slightly to parallel the worm drive brackets, also adding a small brass washer to space correctly. The motor bracket has slotted holes to allow adjustment of worm and gear after assembly to mechanism. Now add the #1414P motor fastening to the above assembly with the long 6-32 screws — tighten after checking the worm and gear adjustment. Now using the hole in the drive coupling as a template, drill thru this into the motor shaft (#56) and put in a cotter pin, clip off after bending in usual manner. Check to make sure this shaft assembly turns with your fingers, and the driving wheels revolve, etc. and you are ready to "fire up". Solder on the motor leads, connect to D.C. current 12 volts or less and start running with the wheels free to turn of course. If it doesn't run easily, stop and ascertain the cause — if it runs freely, keep it going for a couple hours, both forward and reverse, using plenty of lubrication on all moving parts. We recommend La Belle lubes highly for this and other purposes. If you have done your work well, and followed directions this should draw about one ampere at any voltage used. This will complete the chassis which is now ready for the superstructure.

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A ALL-NATION LINE
P.O. BOX 145, DES PLAINES, ILL.
A DIVISION OF THE ALL-NATION HOBBY SHOP

