INSTRUCTIONS

The right attitude of mind has a great deal to do with the final results you obtain in building any model and in the pleasure that you can get from your hobby. It may seem strange that we start our instructions with this remark, but we are anxious that you get the greatest possible pleasure from scale model railroading. After all, the reason for any hobby is to provide fun.

In designing Nord equipment, we start with this idea. We earnestly endeavor to make things as easy as possible, never forgetting that the finished model is to be a permanent and lasting thing. In spite of all the thought and care that we can put into bringing you the best of parts, it is you and your work that will determine the quality of the final results.

The first step is to get a clear picture of the parts, their names and how they are intended to fit together.

The drawings clearly show the different parts. Especially Figure 9, which is a general view of the chassis. All holes are drilled in precision jigs to insure perfect location. Wherever necessary, they have been threaded for screws. All machining and difficult work is completed. While it is possible to assemble many of these parts without any further work, it will pay you to study each part carefully and see how you can put on the finishing touches by judicious handwork.

If you have ever watched a skilled mechanic assemble a fine mechanism, you know that he carefully removes every trace of burr and fits the parts together before he finally assembles them in place. You can do no better than to follow his methods.

It is possible to vary the order in which the parts are assembled to a considerable degree, but the following procedure is a satisfactory one. Starting with the frame sides, careful examination will show that there is a right and left side. Some of the screw holes on the side of the frame are countersunk so that flathead screws will fit flush. The countersunk sides are the outside of the frame.

Before going any further, check the frames to see that they are straight and flat; testing with the edge of a steel scale is a good way to do this. Any slight straightening can be done with the fingers.

All sharp edges should be touched lightly with a fine file. Do not round these perceptibly as great care has been used to preserve good clean sharp corners. File only enough so that they feel smooth to the touch and to insure the removal of any burrs which may be invisible to the eye. This is a standard procedure with every part, and therefore, we will not repeat this statement for each step in assembly.

A spacer block is screwed into place at the front end of the frame with four flathead screws. The rear end of the frame is fastened together in a similar manner, using either a spacer block or the rear frame section casting, depending upon the type of locomotive.

The next step is to prepare the load pins. Insert the load pins in the small holes above each bearing with the heads on the inside of the frame. Insert the bearings and fasten them in place with the bearing retainers. Two short round headed screws are used with each bearing retainer.

After the load pins are placed properly, the heads will prevent them from coming out and a short length of the pin will extend above the top of the frame. File these so that exactly 1/32 of an inch projects.

The crossties are fastened down to the frame as shown in the drawings. The first and last crossties have a flat bronze operating spring which is held down by the same screw. Assemble as follows:

Take a long #2-56 screw and slip the spring on first. Then screw this home in the frame, using the equalizer as you would a nut. Be sure that the detailed side of the equlizer is toward the outside of the frame. The center crosstie does not need any operating spring. The frame is now complete and can be set aside.

The next job is to insulate the wheel rims, and to assemble the wheels and axles. The rim insulation is completed first. This is a simple matter if you follow instructions carefully. We have tried a number of different ways and the following method is recommended as easiest.

Lay the wheel face up on a flat surface. Cut a strip of insulating paper 1/4" wide and long enough so that when wrapped around the wheel, the ends almost meet. Under no circumstances, have the ends overlap.

Pull the strip of paper over a sharp corner so that it curls tightly. It can then be slipped over the wheel and will stay around it. Figure 1 shows this. Lower the tire carefully in place, being sure that the insulating paper enters the rim all around. Be careful of this as it is the most important part of the job. Be sure to leave the wheel down on the table while doing this. Do not attempt to pick it up.

The top of the table will prevent the paper from pushing back as the rim is slipped down. Start the rim on as far as it will go with the finger, getting it approximately square. At this stage, the insulating paper is tightly gripped and the entire wheel can be picked up and the tire can be pressed into place.

The tire can be pressed home with screw clamps or an arbor press, but the easiest way is with a vise. The trick is to do this a little at a time and not to try to press it all the way home at any one place. Insert one edge of the wheel in the vise and close it a little way, releasing it, rotate the assembly and push the other side on. Keep rotating the assembly and pressing it a little at a time until it is almost completely in place.

At this stage, trim off the excess paper. On the front of the wheel point the blade out from the center of the wheel so that it shaves the paper off cleanly against the tire. On the back of the wheel, reverse this procedure and cut into the center of the wheel, shaving the paper off. See Figure 2.

After the excess paper is removed, go back over the wheel again, and press the tire into final position. The rim of the wheel and the tire are exactly the same thickness so that it is very easy to get the rim on exactly true.

Only wheels on the left-hand side of the locomotive are insulated. Wheels on the right side must be grounded. Although not essential, we recommend grounding all drivers on the right side. This can be done in several ways.

Brass shim stock can be substituted for insulating paper. However, we recommend an easier method.

A small piece of brass shim about 1/8" wide can be soldered to the inside of the tire, as shown in "A", Figure 3. The insulating paper is cut a little shorter so as to permit this piece of brass to contact the wheel.

The easiest method is to coat the inside of the tire with a number of spots of solder, as shown in "B", Figure 3. Only a thin layer is required. If there are high spots, it is advisable to scrape them down until they are approximately equal. The tire is then pressed on the wheel in the usual way, and it will be found that the solder shaves off easily, making a nice press fit.

The next operation is to fasten in the counterweights. Notice that there are several sizes. These are carefully paired off. Clean them up carefully, being sure not to file the counterweights themselves. They are very carefully sized to produce a nice press fit.

Enter the two pins in the back of the counterweights in the corresponding holes in the wheel. A light tap of the hammer will set these counterweights home so that they are firmly held. Be sure that the wheel is on a flat true surface.

The final operation is to press these wheels home onto the axles. The wheels are pressed onto one end of each axle, being very careful to get them on square so that they run true. The holes in the wheels and size of the

axles are very carefully held to an accurate fit so that they are easy to press on.

After one set of wheels are in place, slip two bearings onto the axles and press on the second wheel. Be sure that the wheels have the same size counterweights and are pressed onto each end of the same axle so that they form pairs. (The wheel on one side of the second axle is not assembled at this time, since a gear will later be required for driving purposes.)

The next step is to assemble the dummy springs and spring hangers. This is the only place on the chassis that requires the use of solder.

We would like to say a few words about soldering. Some hobbiests are afraid of soldering, but it is actually a very simple and easy process and so universal that it is easier to learn to solder properly than to try to get along without soldering.

The reason many people avoid soldering is because they encountered some difficulty in their first attempt. This, in turn, was caused by failure to observe some essential requirement. There are not many of these, but failure to observe any one of them will invaribly result in failure.

First of all, the iron must be the right size for the job. At least, it must be large enough to do the job. Too large an iron may be clumsy, but useable. Too small an iron is simply impossible. For the present job, a small or minimum size electric iron, such as is used on radio work will serve very nicely. Before starting, it must be allowed to come to the proper working temperature. This means that it must be hot enough to readily melt the wire solder.

Do not start to use the iron the instant it is barely able to do this. Rather, allow it to pick up a little excess heat because the function of the iron is to transfer heat to the work and unless it has a little excess, it will cool off the instant it is touched to the work. On the other hand, do not allow the iron to stand around for a long period with the current on. This will overheat the iron so that the tip is blackened and burnt.

The tip of the iron must be clean and coated with a wet surface of solder. Such as iron is called "tinned". To tin an iron, it is necessary to have it clean and bright. This can be done with a file before the iron is heated.

A flux is essential. There are many kinds of fluxes and the prepared paste type is recommended. An acid flux will gradually corrode and cause trouble later. Rub a little paste on the tip of the hot iron and then rub with solder. If the iron is cleaned and well fluxed, the solder will immediately flow over the surface of the iron.

Parts may be temporarily fastened together to hold them in place for soldering. Be sure that they are not held in such a way that the heat flows away from the joint. The use of wood or something similar to lay the parts on while soldering is a good idea.

Failure of the solder to "take" properly is due to only four possible causes.

1. The wrong kind of metal. This cannot happen in the case of Nord kits.

2. The work does not get hot enough to melt the solder. (If you drop molten solder on a cold surface, it will not stick.) It may be the iron is too small or that the heat is flowing away from the joint because the parts are in contact with a large body of cold metal.

3. The surface of the work is not clean.

4. A small quantity of flux is necessary to get the solder to flow easily on the work.

Observe these points carefully and you will have no difficulty in soldering.

To return to our present assembly. The completed assembly is shown in "E", Figure 4. The first step is to attach the saddles to the springs. The saddles are bent into a U form as shown in the drawing, and it is necessary that the saddle is accurately centered and square with the spring.

See that the solder flows well in between the spring and the saddle. If excess solder is left, it can be scraped or filed off. The next thing is to attach the spring hangers. It will be noted that two of these are slipped into the slots in each end of the dummy spring.

The perforated ends are lined up and a rivet temporarily dropped in place to hold them in line. See "A", figure 4. A drop of solder is placed in the slot and allowed to flow around the upper ends of the spring.

To prevent the saddles from loosening up, a small piece of wet cloth is wrapped around the parts already soldered. This will prevent them from heating up while other soldering is being done. On all of these assemblies, be very careful that the saddles and spring hangers are square with the springing itself. As soon as they are attached, hold them up and look at them carefully.

If necessary, it is an easy matter to touch the iron to the assembly and readjust the spring hangers.

Each spring hanger is then bent outward to a 45 degree angle as shown in the drawing "B", Figure 4 and also Figure 5. Then with a pair of pliers, put another bend in the legs so that they are parallel with each other, and spaced exactly 1/8" apart, drawing "C", Figure 4.

The saddle should be closed in slightly with the finger so that it fits snugly against the frame.

The dummy spring assembly will then be lowered into place and the rivets passed through the holes in the spring hangers and equalizers as shown in the arrows in Figure 6.

A drop of cement such as Plastico Rok, can be dropped on the inside end of the rivets and should be allowed to thoroughly dry. Or perhaps you would prefer to drop a little solder on the inside of the frame to anchor the rivet in place.

There is still another way, and it is to trim off the inside end of the rivet with a wire cutter and then push the end over by pinching firmly with a pair of pliers. This will also flatten the head of the rivet down slightly which is an advantage.

After the rivets are fastened in place by any of these methods, take a fine file. File the head of the rivet down slightly. Do not file the head off entirely, of course.

Be careful to avoid the condition shown in "D", Figure 4.

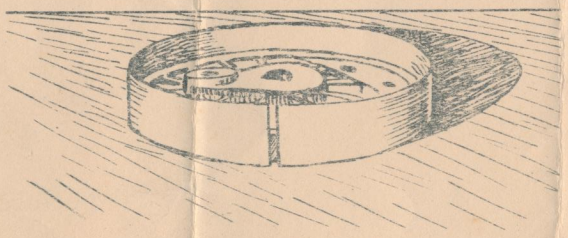
This type of spring arrangement is the most common but in some cases, the smaller springs are used which fit inside the frame. This is the case on the two rear drivers on the Consolidation. This arrangement is shown in Figure 8.

It will be noted that two small springs are fitted on each side of the rear driver and these fasten into the frames in a manner similar to the equalizers. The drive box saddles are flat stampings which are soldered to the outside of the frame, as shown in the drawing. Figure 7 shows another view of this.

The frame is now completed and ready for reassembly with the wheels. At this point, you will probably want to paint the frame. Be sure that you scrape excess paint away from the working surfaces where it would interfer with the function of the bearings and other such parts.

All work on this section of the kit is now completed.

FIG. 1



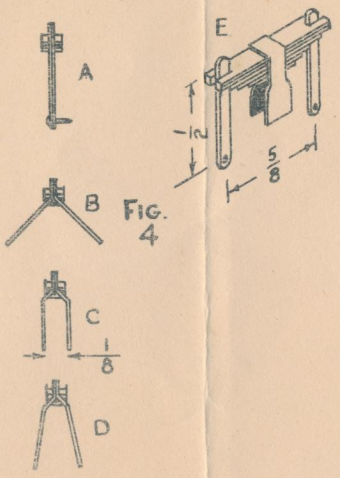


FIG. 4

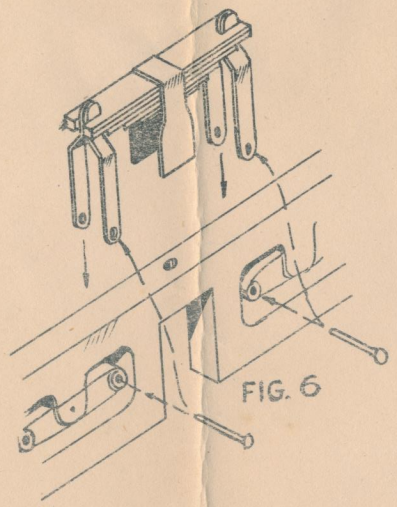
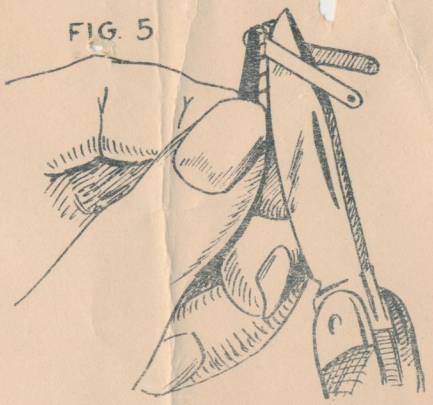
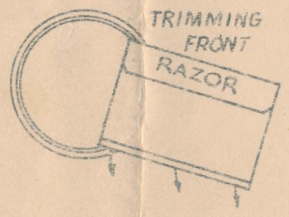


FIG. 6

FIG. 5





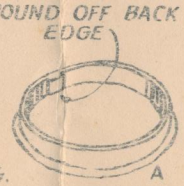


FIG. 3

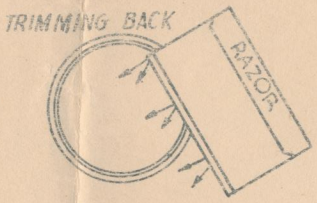


FIG. 2

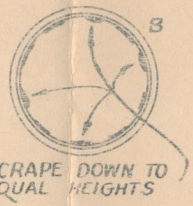


FIG. 7

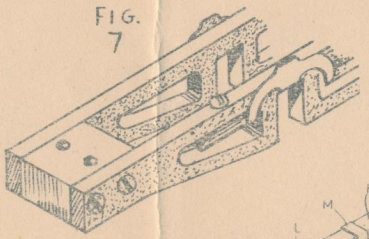


FIG. 9

A. Frame Sides
B. Spacer Blocks
C. Rear Cradle
D. Cross Ties
E. Brake Hanger
F. Load Pin
G. Bearing
H. Bearing Retainer
J. Operating Spring
K. Dummy Spring
L. Spring Hanger
M. Saddle
N. Equalizer

CONSOLIDATION

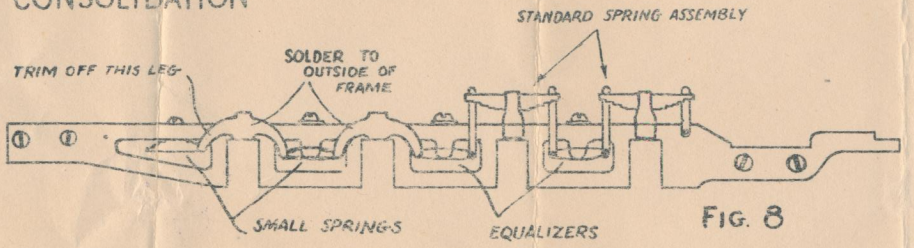


FIG. 8