28 YORK ST
HANOVER, PA 17331
(717) 637-4717

Cleaning and Servicing American Flyer Trains

Cleaning, oiling and servicing American Flyer trains and accessories should be fairly straightforward. After all, people have been doing so for over 50 years, and the basic activities haven't changed. At first glance, all we would need to do is to use the right tools, lubrications and cleaning solvents, and we can clean and service American Flyer trains just like they did in the 1950's

Unfortunately, it isn't quite that simple. Two factors make it much more difficult:

- Most of the solvents and lubricants used in the 1940's and 1950's are no longer available.
- Many new cleaning products can be very harmful to plastic and painted surfaces.

Compounding things is the penchant for manufacturers to change the formulas of their products without warning. What might be a safe cleaner one day can change overnight to one that removes printing from plastic. Greases and oils may suddenly harden or become too viscous to work on small motors.

This pamphlet provides some guidance on available products, those to use and those to avoid. It is not the definitive list, as that would require additional research and may not improve the current set.

Whatever products are used, the following advice remains true:

- Don't use a new cleaning product without first testing it on an unseen part of the painted or plastic surface
- Don't use a new lubricant without first reading the instructions, including what products it destructively interacts with (such as plastic or paint)

In summary, please keep in mind that this is a guide and not the final answer. Subtle changes to any of these products may not be listed by their manufacturers, negating their use for American Flyer trains

WARNING

This pamphlet is meant only as a guide to the proper use of products for cleaning and lubricating American Flyer trains, rolling stock and accessories. Since none of these products are specifically manufactured for cleaning or lubricating American Flyer trains, their manufacturer assumes no warranty on their use for such a purpose. Furthermore, neither the author nor the publisher of this guide assumes such a warranty. The reader is therefore warned to be alert, test all products prior to their use, and don't try to use a product for something it was not intended for.

Chapter 1

Cleaning Exterior Surfaces

Most American Flyer trains and accessories get dirty either through heavy use or by sitting on shelves in dusty conditions. In some cases, the dust may just need to be wiped off. In other situations, there may be many types of dirt, grime and mold that will need to be cleaned off of prized possessions.

Cleaning Process

Always place cleaning solvent on the cleaning material and then rub gently in a circular motion on the surface to be cleaned. Placing the cleaning solvent directly onto the surface may cause such damage that it destroys the value of the item.

Cleaning materials and solvents may differ depending upon the type of cleaning to be done (see Table 1). The sections below list the most common cleaning materials and solvents and their application.

Cleaning materials

Use **clean cotton rags** such as old T-shirts. Cotton rags can also be purchased at most hardware stores in five-pound bags for about $10. Do not use rough cloth such a demin, terry cloth, paper rags, etc. These products have rough edges and abrasive particles that can scratch plastic and painted surfaces.

A **soft bristle toothbrush** is ideal for working cleaning fluid into nooks and crannies of locomotive shells, frames and accessories. Always start with a new toothbrush as old toothpaste leaves a white film on painted surfaces, no matter how well the toothbrush has been cleaned. A toothbrush can also be used on the tops of boxcars and refers if done carefully.

Q-Tips are also needed for reaching places where a toothbrush or rag are impractical. Examples are for cleaning around corners of accessories or windows of rolling stock. Use them once and toss them out.

A small, cheap **hair dryer** is used to remove the white "mildew" from link couplers, cows, plastic wheels, bases of heavyweight passenger cars and some 1946 rolling stock. Turn the heat on high and pass the air back and forth across the surface. The "mildew" will appear to melt and turn into a liquid form. When all of the white is gone, rub the surface with a white rag until only the plastic remains. Since the white "mildew" is really mold release agent, it may take two or more cleanings to remove it. It can also return years later.

Cleaning Solvents

One solvent that has proven to be relatively safe is **plain water**. Water on a soft cloth can remove most dust and loose dirt. However, water doesn't have the ability to clean grime, oils, grease or molds and true mildew. In a pinch, spit can also be used.

Glass cleaners with no ammonia or phosphates are also relatively safe cleaning solvents. **Avoid ammonia at all cost** as it will quickly dissolve lettering on plastic surfaces. Spray on a rag and then rub on the train item. Don't spray directly on the car or accessory unless you are absolutely positive the lettering won't run. (On Gilbert cars and

accessories, the red coloring is really printers ink and may run with just water!)

One good glass cleaner is **Glass Plus**. I use this as my mainstay for cleaning all items (except those trimmed with red printers ink). The current Glass Plus ingredients include no ammonia, but the formula can change at any time. Always read the label, especially if it says "New and improved".

If the grime will not come off with glass cleaner, it might be necessary to use a slightly more corrosive cleaner such as **Wheel Magic**. This product is used in the auto industry to remove dirt and oil from white sidewalls, and does a good job on painted surfaces. Keep it away from any printing as it might dissolve it quickly.

The next most corrosive cleaner is **Simple Green**. This product should be limited to use on painted metal surfaces, and is good for removing oil and hardened grease. Be careful not to rub your eyes while using it.

The last of the cleaners are **Fantastik** and **409**. These are very corrosive and should only be used as a last resort. If done carefully, Fantastik can be used to clean the white paint on the Gilbert Talking Station, Tool Shed and metal shack on the Crossing Gate, Aircraft Beacon, etc. But if used improperly, it will wipe off lettering and red printers ink as though they were never used! NEVER spray Fantastik or 409 directly on an American Flyer train or accessory. If used to clean Gilbert Green paint, wash off the residue quickly as it may "crackle" the paint if left to dry.

Don't use any other cleaners, especially cleansers with abrasives such as Comet or Boraxo as they will remove Gilbert paint.

As explained previously, **try out any new cleaner** on an unexposed surface before using it to clean the exterior. If the color starts to bleed, don't use the cleaner. And never use anything corrosive on Gilbert's red printer's ink or on shiny plastic surfaces.

Table 1. Recommended Uses of Solvents

Item	Problem	Recommend Solvent
Steam Engines - (die cast or plastic shell)	Dirt, oil	Glass Plus with toothbrush. Use Wheel Magic or more caustic solvent if Glass Plus is ineffective.
Diesel Engines and passenger cars (painted or plastic shells)	Dirt, oil	Glass Plus. Be careful when cleaning around lettering and numbers. Use Q-Tip for windows.
Metal accessories with green, yellow, black or blue paint and metal transformers	Dirt, oil	Glass Plus with toothbrush, then wipe dry with clean cotton rag. If stubborn stain, use more caustic cleaners, but clean off residue with water or Glass Plus.
Metal accessories, red ink trim	Dirt	Nothing. Rub with clean, dry cloth.
Metal accessories, white paint	Dirt, oil	Glass Plus to start and carefully work up to more caustic cleaners. Clean residue with water
Glossy yellow or white plastic with red or black lettering	Dirt	This must be cleaned very carefully as the lettering is easily removed. Use Glass Plus.
Bakelite switches, transformers	Dirt, oil	Glass Plus with toothbrush. Can use Fantastik as long as no painted letters are on the Bakelite.
Red or green painted plastic rolling stock	Dirt	Glass Plus with toothbrush. If the paint starts to bleed on the cloth, revert to water only.

Chapter 2
Removing Rust & Caked-On Dirt

Rust and caked-on dirt are facts of life for steel and other metal parts. As engines and rolling stock operate over a layout, caked-on dirt and oil attaches to the metal and plastic wheel sets and axles. Moisture causes rust on exposed metal, and even under caked-on dirt and paint. The rust and caked-on dirt needs to be removed for better operation.

The major problem with removing rust from American Flyer parts is getting to the parts without damaging other parts and assemblies. Metal wheel sets are a prime example. Removing them requires careful bending of the truck frames. Since the sintered iron side frames are attached with two pressed metal points, these can be easily broken if the stamped steel frames are not bent properly. Because of this, many people try to clean rust from wheel sets and axles while they are still in their side frames.

Rust Removing Process

Rust can be removed with many methods. Normally, light rust can be removed with wire brushing, soaking or abrasive buffing of the parts. Heavier rust may require chemical rust removers or grinding. Rust under painted surfaces usually cannot be easily removed without repainting the surfaces afterwards. Specifics of each rust removing process will depend upon the type of material and severity of the rust as discussed below.

Caked-On Dirt Removing Process

Caked-on dirt can be removed from plastic wheels by pressing the head of a small, flat head **screwdriver** on the plastic wheel and rotating the wheel against the blade. This also works for removing caked-on dirt from metal wheels. Caked-on dirt can also be removed by soaking the wheel sets in CLR as described below.

Rust and Dirt Removing Materials

The most commonly used material for removing rust and caked-on dirt is a **Bright Boy**. This product is a heavy grit compound that can scrape dirt and light rust off of metal surfaces such as wheel sets and axles. It looks like a large, gray or brown "Pink Pearl" eraser. A Bright Boy is also ideal for cleaning track surfaces, locomotive wheel rims and white wall tires and steam engine linkages. Because it is an abrasive, however, it will scratch plastic. The Bright Boy comes in two grits. Use the gray/brown version as it is made for tinplate trains. The yellow version is for HO and N gauge.

A second common material for removing rust is a **small wire brush** similar to those available with a Dremel tool. The brush can buff the metal and remove surface rust. If the surface rust is on blackened steel, such as on link coupler truck frames, a small drop of oil will provide a luster to the surface similar to bluing. However, the wire wheel brush should be used carefully. The little metal wires on the brush wheel can break off easily and get caught up in armatures, gears and reverse units.

CLR (Calcium, Lime, Rust) is a great chemical compound for removing rust and caked-on dirt from wheel sets. Place the

wheels and axles into a glass jar and cover liberally with CLR. Let stand for at least two hours, and then shake vigorously. Then remove and wash off with hot water. The dirt and rust will be removed and the metal surfaces will shine like new. CLR will also remove bluing, so it should be kept away from any blued metal.

When all else fails, or the rust is very heavy, use any of the industrial strength rust removers such as **Naval Jelly**. Follow the instructions on the bottle. These products will also remove bluing and soften paint.

Rust under painted surfaces needs to be stopped or it will eventually cause the metal to fall apart. Remove the paint with and surface rust should be removed first, and the rusted surface primed with one of the rust stopping primers such as **Rustoleum** prior to repainting.

Table 2. Removing Rust and Caked-On Dirt

Item	Problem	Recommend Solution
Metal wheel sets and axles	Rust, oil, Dirt	Use a Bright Boy. If heavier rust, clean with a Dremel wire brush or soak in CLR
Plastic wheel sets	Caked-on Dirt	Use flat blade of screw driver and rotate wheel against the blade or soak in CLR.
Blued stamped steel (trucks, boxcar bases, etc.)	Light rust	Use a Dremel wire brush and a drop of light oil to restore gloss. If bluing is removed, re-blue with gun metal bluing.
Die cast truck side frames	Light rust	Use Dremel wire brush and a drop of light oil.
Metal plates on bottom of switches	Rust	Nothing. Replace with plates from junk switch or ignore.
Metal tower superstructure or base of Electromatic Crane	Rust	Remove rust with Naval Jelly and wire brush. Spray paint with Testor's silver paint.
Painted metal (Base of Sam the Semaphore, 770 Box Loader, Guilford Station, etc.)	Heavy rust	Remove paint with paint remover or brake fluid. Remove rust with Naval Jelly, Clean thoroughly, prime and repaint.
Wire handrails for locomotives and tank cars	Rust	Remove handrails and use Bright Boy or light sandpaper to remove rust. Reblue if necessary.
Boxcar door guides and latches	Rust	Remove and replace with new or reproduction door guides and latches.

Chapter 3
Electrical Cleaning and Lubrication

Any locomotive, car or operating accessory will have electrical problems if operated for long periods without routine cleaning and lubrication. Even engines that have been in storage for many years will need a "tune-up" to ensure trouble-free operation. This chapter covers the basic maintenance to keep engines, cars, and operating accessories in tip-top shape.

Cleaning Electrical Parts

A complete electrical circuit is needed to operate American Flyer motors. Current must flow from the Base Post of the transformer, through the field, through the armature and brushes, and back to either the 15 volt post or the 7-15 volt post of the transformer. A reverse unit can be used to reverse the direction of the current through the field and change the rotational direction of the armature. If the current is blocked at any point, the armature will not turn over. Dirt, oil and grease are common culprits in blocking electrical current, and a thorough cleaning can sometimes restore "dead in the water" locomotives to operating condition.

The major items to be cleaned of dirt and oil are all metal and carbon surfaces involved in the electrical circuit. These include the track, metal wheels and axles, electrical glide pick-ups, carbon brushes, copper armature plates, reverse unit fingers, and the reverse unit drum. Soldering of wires can also become corroded, and these should also be checked. Each will be covered separately below.

Cleaning Materials

The best product to clean American Flyer track is the **Bright Boy**. This product is especially formulated for cleaning caked-on dirt, oil, rust and paint for metal surfaces. For quickest cleaning, place the Bright Boy flat on the rails and rub lengthwise, down the track. If the dirt is stubborn, use the side of the Bright Boy and rub across the rails.

Similar products that can be used to clean rails are **emery cloth** and **light sandpaper** wrapped around a piece of wood. Do not use metal Dremel brushes because the metal wires will break off and can be sucked into the armature of passing locomotives and cause shorts.

Use a **Bright Boy,** flat head **screwdriver,** or **CLR** for cleaning metal wheels and axles as explained in the previous chapter. For electrical glide pick-ups, use the Bright Boy only. When electrical pick-up is enhanced with copper strips rubbing against the axles in a tender, clean the dirt off the copper strips where they touch the axles and then ensure the tension is adequate.

Cleaning the Motor

Disassemble the motor before cleaning the brushes and copper armature plates. For locomotives, first remove the screws holding the brush holder in place and then slowly back off the brush holder so the brush springs don't launch across the room. Then remove the brush caps, springs, and brushes.

Use a **Bright Boy** to clean the copper plate surfaces and then clean the spaces between the plates with a **toothpick**. When clean,

squirt the copper plates with **TV Tuner Cleaner** such as Radio Shack Tuner Control Cleaner and lubricant, and rub dry with a clean cotton rag. Do not use any other cleaning solvent on the copper plates.

Clean the brushes by wiping away any excess carbon with a clean cotton rag. Clean the brush holders by pushing a **pipe cleaner** through them until they shine. Wipe any carbon off of the inside of the brush holder as well.

To reassemble the motor, first place a drop of light machine oil, such as **Labelle 107**, on the worm gear and thrust washer. Other light oils, such as sewing machine oil, will also work, but Labelle 107 has a handy one-drip applicator and an internal seal to prevent spillage. Never use WD-40 as it will harden within a year to a gummy substance that will bring the motor to a halt. WD-40 must be removed with mineral spirits which can damage plastic parts.

After re-seating the armature in the chassis, add a drop of oil to the washers and bushing in the brush bracket holder. Replace the brush bracket holder and secure with the two mounting screws and lock washers. Then wipe off the carbon brushes and insert into the brush holders. (If the carbon bushes are not at least ¼ inch in length, replace with new brushes.) Then add each spring and secure in place with the brush cap. Check wiring for a good solder joint becore continuing.

Cleaning the Reverse unit

Gilbert used a number of different reverse units. The most common is the four position reverse unit that had its origin prior to World War II and was the mainstay between 1946 and 1957. A different four position reverse unit was used on the 343 and 346 engines in 1955 and 1956, and the two position reverse unit made its debut in 1957. Cleaning of the reverse unit is essentially the same, but the disassembly of the two latter units requires a lot of care because many small parts are only held in place with friction. The explanation below is for the earlier reverse unit, but the procedure generally applies for all versions.

Remove reverse unit from the tender base or engine chassis but do not unsolder wires unless absolutely necessary. Using needle-nose pliers, straighten the tabs holding the finger holder in place and slowly remove the fingers. Separate the sides of the reverse unit and let the drum fall out.

Using a Bright Boy, clean the copper on the drum. Then spray the drum with TV Tuner Cleaner and wipe dry. Lubricate the hinge where the prawl lever attaches to the thrust plate under the electromagnet. Replace the drum in the reverse unit, ensuring the teeth on the drum are aligned on the same side with the prawl lever. Then straighten the sides of the reverse unit and make sure the reverse unit rotates easily and the prawl lever is properly positioned in the hole on the side of the reverse unit.

Turn each set of fingers over so the curved parts of the copper strips are facing up. Place one of your fingers underneath the copper strips for support and clean the curved part with a Bright Boy. Then turn each set of fingers over and bend the copper strips down slightly to ensure proper contact with the drum. Align the sides of the reverse unit and slip the finger holder over the tabs. Then re-bend the tabs with a pair of needle nose pliers. Ensure the reverse unit drum moves freely and them re-attach the reverse unit to the tender base or engine chassis. Cycle the reverse unit with the transformer to ensure circuit flow occurs.

Checking for Electrical Connection

Apply power to the tender trucks and cycle the reverse unit. If all of the cleaning has been completed properly, the armature should turn over and run smoothly. If not, check to see that the locking lever on the reverse unit is in the proper position. If the locking level is positioned properly, and the armature still doesn't turn over, use a circuit continuity tester to ensure electricity is flowing through all wires. If a wire is broken, replace the wire with a new one of the proper gauge wire and color. If a loose solder joint is found, re-solder the joint.

Soldering wires

Use a high quality, electric soldering iron with replaceable copper tips. The **Weller 8200N** is a good example of such a product with the proper sized tip. Before using, ensure tip is tightly locked into the soldering iron and has been cleaned down to the copper with a metal file. If the soldering iron takes more than five seconds to heat up, tighten lock nuts to ensure proper contact. If it still takes a long time to heat up, replace tip with new one of same size.

Clean the pieces to be soldered of dirt and oil. Place regular **soldering flux paste** on the parts such as LA-CO flux. Heat the parts with the soldering iron until the flux smokes and starts to run. Then touch the parts with a small amount of 63% tin, 37% lead **rosin core solder** such as the Radio Shack 64-C15 High Tech solder. Do not use acid core solder at any time as it will eventually eat through most plastics and some light metal wires. Hold the parts steady until the solder hardens.

Lubricating Gears

Generally speaking, the grease that the A. C. Gilbert Company used on toy train gears hardens after about ten years. This grease needs to be removed using a **dental pick** or small screw driver. Once the grease is removed, oil with labelle 107 and re-grease with a **silicon-based grease** such as Sly-Gel.

Table 3. Cleaning Electrical Connections and Lubrication

Item	Problem	Recommend Solution
Track rails	Rust, oil, Dirt	Use a Bright Boy. If heavy rust, replace rails
Armature Copper Plates	Caked-on Dirt and oil	Use a Bright Boy then spray with TV Tuner Cleaner and wipe dry.
Brush Holders	Oil, excess carbon	Draw a pipe cleaner through the brush holder until clean.
Carbon brushes	Dirt, excess carbon	Wipe off with clean cotton rag.
Reverse unit drum and fingers	Dirt, oil	Use a Bright Boy then spray with TV Tuner Cleaner and wipe dry.
Metal pieces to be soldered	Broken solder joint	Clean off dirt and oil, paint with flux, and solder with rosin core solder.
Gears	Lubrication	Remove old grease and re-grease with Sly Gel.