



Bronz-Glow®
Protective Coatings

The Owners Coated Coil, Cleaning and Maintenance Service Manual.

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FORWARD

Bronz-Glow is a manufacturer of proprietary coatings and cleaners for temperature control systems utilized in residential, commercial and industrial markets. This service manual is a guide to assist hvac/r equipment owners and service personnel in the selection and use of proper coil cleaning materials and methods for maintaining coils coated with Bronz-Glow coatings. In most every case, these procedures and materials assist the owner in obtaining maximum equipment life and optimum operating efficiency. The integrity of our coatings is further enhanced when proper and frequent cleaning, inspection and touch-up of your Bronz-Glow coated coils are performed on a regularly scheduled basis. Like an automobile, the initial investment for a temperature control system or refrigeration system is considerable. As costly as it may be, the cost does not end with the initial purchase. Additional costs are incurred for installation, maintenance, repair and the ongoing expense for energy to operate the system. Bronz-Glow's proprietary coatings are formulated to aid in preventing corrosive destruction of the system's exposed areas and in particular the condenser and/or evaporator coils. Our coatings retard atmospheric corrosion from salt water, salt air, acid rain and virtually all other air borne pollutants.

Bronz-Glow Factory Certified Applicators apply the highest quality protective coating systems known in the industry today. Like the painted finish of an automobile, the coating must be cared for if the optimum life expectancy of the equipment is to be achieved. The coating on your system, when not properly cleaned and maintained may become abraded from environmental substances such as sand, salt or other particulate and may be damaged by cleaners that are not compatible with the coating, **or do not neutralize or remove corrosive deposits.** There are countless coil cleaners on the market. Coil cleaners may be used in various concentrations to remove oxides (rust) and soils (dirt, grease, grime or other air borne deposits) from the coil surface. Bronz-Glow's Husky coatings are formulated to withstand regular maintenance cleanings as recommended to aid in maintaining efficient operation of the equipment and for attaining extended coating life.

Bronz-Glow, because of the vast differences in coil cleaners, many of which contain very harsh and aggressive ingredients, has formulated coil cleaners that are biodegradable, safer for maintenance personnel to use and compatible with Bronz-Glow and most other coatings. Our coil cleaners are formulated to provide excellent cleaning and rinsing properties and are effective in neutralizing the effects of removed corrosive deposits. A scheduled maintenance program is required under our standard and complimentary re-coating warranty program. Immediately following the cleaning of a Bronz-Glow coated coil, the coating should be inspected for abrasive damage. In the event, abrasion damage is found (particularly on the fin edges), follow instructions found in our Husky Coil Coating Maintenance Kit to repair damage. These kits as well as Husky Brand Coil Cleaners are available through your Bronz-Glow Representative, Certified Field Applicator or local A/C Supply House. In cases where inspection of the coating reveals signs of corrosion, contact your Bronz-Glow Representative or Certified Applicator for assistance. Whenever possible, Bronz-Glow cleaners are formulated with chemicals acceptable for food grade use. However, it is important that service personnel become totally familiar with the safe handling and use practices for each product. We request that service personnel read and follow all personal safety information, coil cleaning, coating inspection and touch-up instructions provided in this manual. Material Safety Data Sheets are supplied with each product order. All necessary safety and material handling practices should remain in accordance with Federal regulation and OSHA standards. Should there be any question, request assistance from your nearest Bronz-Glow Representative.

Bronz-Glow is a service company that is committed to providing its customers the very best in anti-corrosive coatings for coils and cabinets. The Bronz-Glow family of Certified Applicators and Manufacturer Representatives stand ready to assist their customers with new technology, training assistance, quality products and superior service. Our goal is to optimize equipment life and assure that on every job we have cultivated a satisfied customer that will honor us with their repeat business.

IMPORTANCE OF PROPER AND TIMELY COIL CLEANING

Thorough coil cleaning at regular intervals is a significant contribution to the success of a good preventative maintenance program. The performance of a regularly scheduled coil cleaning to remove oxides, air borne pollutants, accumulated dirt and soils for the coil surface has a direct relationship to operating efficiency, energy savings and equipment life of a HVAC/R unit. Corrosion and energy experts recognize that clean and oxide free coils contribute to the extended life of equipment and it is also effective in reducing energy demand of the temperature control system. The cleaner the coil(s), the less energy required for operating the system because the exchange of BTU's of a clean coil is more efficient than of a dirty coil. A preventative maintenance program should be structured to maintain the highest operating efficiency possible under the environmental conditions in which the temperature control system operates. Your coil preventative maintenance program should be instituted within 90 days of installation of the equipment. In cases where equipment may be stored at the site for several months during construction prior to installation, it's usually necessary to clean the coil(s) prior to or at the time of installation. During an extended outside storage period the coil(s) may be damaged by wind, sand or other air borne particulate matter, even if the equipment is not in operation. Equipment owners purchase Bronz-Glow's coatings and services for the added value of extending equipment life and preserving energy efficiencies. We are therefore concerned with the proper maintenance of equipment coated with one or more of our coating processes. We do not profess to understand the maintenance of hvac/r equipment in any manner other than corrosion protection and the maintenance of our coatings. The beginning of an effective maintenance program for Bronz-Glow coated equipment should begin with receipt of the coated equipment. All newly coated coils and/or casings should be thoroughly inspected upon receipt. Coating damage may occur during the handling and transportation of the equipment and any damaged area should be promptly repaired using the Bronz-Glow Coating Maintenance Kit that is available for every job. It is important that those responsible for service and maintenance of equipment understand what is expected in order for the coil and/or cabinet coating to be maintained properly. Should there be any questions; contact your Bronz-Glow Representative.

Bronz-Glow offers all of its HVAC/R coil coatings in aerosol cans as well as the new Contractor Canister Coating System. These products are available through Bronz-Glow direct, or through your local / regional HVAC/R supply houses. However, when requesting Bronz-Glow's Husky Coil Coat in either aerosol cans or the new canister packaging system, coil tag numbers for the equipment must be provided in advance. Bronz-Glow tags each and every coil we coat. Do not remove these tags.



COIL CLEANER CHARACTERISTICS

There are three primary types of coil cleaners: alkaline, acidic and solvent. Alkaline and acidic coil cleaners are the most widely used of the three. In an effort to better serve its' customers, Bronz-Glow manufactures its own line of user friendly and effective coil cleaners. They are: Husky Coil Sheen, an acidic cleaner, Husky Coil Guard an alkaline cleaner and Husky Multi-Purpose Solvent Cleaner. All Bronz-Glow products, where possible are biodegradable. There are numerous brands of coil cleaners on the market with various formulations and ingredients. Some are safe to use on coated coils and many are not. We feel there are four primary considerations when selecting a coil cleaner.

1. Safe as possible for personnel to handle and safe for the environment.
2. Ability to penetrate deposits and remove soils from the coil surface.
3. Vertical hold qualities of the coil cleaner. The ability of the cleaner to remain on a vertical surface for a sufficient period of time to allow it to penetrate the deposits and break their bond so they can be rinsed free of the surface.
4. The base ingredient of a coil cleaner should not be of such a harsh nature that it actually attacks the metal or coating.

Base ingredients of an alkaline coil cleaner such as sodium or potassium hydroxide in high concentrations can be harmful to aluminum fins or applied coatings. The same is true with acidic coil cleaners which use a base of sulfuric, nitric, hydrochloric, hydrofluoric or muriatic acid. The ingredients of alkaline cleaners should be blended in such a way that they are detergent in nature. A coil cleaner blended using surfactants and wetting agents generally provides an excellent cleaning ability without attacking the fin stock or coating. Acidic cleaners may be blended using mineral acids instead of the harsh acids previously mentioned. An acidic cleaner should possess the same attributes as an alkaline cleaner. They should provide vertical surface hold, wetting agents and surfactants to penetrate and break the bond of oxides and soil deposits. Alkaline and acidic coil cleaners should be free rinsing to allow for complete removal of coil cleaner residue.

It is important when selecting a coil cleaner that it not only cleans the coil, but can be completely rinsed from the surface and not leave a residue which may in time damage the coating or metallurgy of the coil. Acidic cleaners containing material such as hydrofluoric acid brighten uncoated coils but are generally not able to be completely rinsed from the coil surface. Each time condensation or rain accumulate on the coil's surface the residue halogens of the harsh cleaner begin to attack the metallurgy of the coil. When using an acidic or alkaline cleaner; it's better to use a cleaner having less than 10 parts per million (ppm) of fluorides or chlorides. This helps to assure the applied cleaner will not have an adverse effect on the metallurgy of the coil. Properly formulated coil cleaners such as our Husky Brand aid in more thorough cleaning as their foaming properties increases vertical contact time. The bursting of the foam bubbles also provides some mechanical scrubbing action at the surface. Coil cleaning when preformed properly, removes oxides and other unwanted deposits from the coil surface and provides for the most efficient heat transfer function of a hvac/r system. Do not take the coil cleaning task lightly; it is one of the most singularly important preventative maintenance functions for a long lasting and energy efficient unit.

SELECTING THE PROPER COIL CLEANER

Selecting a proper coil cleaner may seem a bit confusing, but with a few basic considerations it's not. The first consideration should be in selecting a brand of coil cleaner that is user and environmentally friendly and one that will effectively clean coils without damaging the coils metallurgy or if coated, the coating. Our recommendation is Husky Coil Guard (alkaline) and/or Husky Coil Sheen (acidic). These cleaners are equally effective when applied to coated or uncoated coils. Another added feature and value of Husky Brand Coil Cleaners is they are packaged in concentrated form with each gallon of concentrate making 20 to 25 gallons of effective cleaning solution. This reduces the space and weight of coil cleaners on the service vehicle and dramatically reduces material cost. The first two questions to address are: Is the coil new or used and is the coil coated or uncoated? Next, determine the type of environment the coil is operating in. Is it a coastal environment containing salt air (alkaline) or an industrial environment that generally consists of a variety of acidic elements? Often an operating environment will consist of both alkaline and acidic conditions. Examples are a coastally located wastewater treatment plants or an offshore oil rig. The correct analysis of these questions will indicate the correct type of cleaner(s) to use.

TYPES OF COILS

New coil: The surface of a brand new uncoated coil is generally covered in a fine layer of oil from the stamping process used in coil manufacturing. Unless removed prior to putting the unit in operation this oily residue will attract and hold particulate throughout the coil face area including every fin/tube interface. These oils can also contribute to formicary corrosion on indoor evaporator coils. Oils on coils can negatively affect heat transfer at the very beginning of the units operation. **Use Husky Coil Guard, our neutral surfactant cleaning product** to remove petroleum base materials from a new coil. It also removes stubborn dirt and debris from normal everyday operations.

Used coils, coated coils, un-coated coils: Cleaner selection for these types of coils is generally based on environmental operating conditions.

TYPES OF ENVIRONMENTS

Acidic Environments: Common corrosion causing elements are: Acid Rain, Nitric Acid, Sulfuric Acid, Citric Acid, Hydrogen Sulfide, Chlorine, Methane Gas, Hydrocarbons, Potassium Chloride, Hydrogen Chloride, Formic Acid, etc. **Use Husky Coil Guard** Bronz-Glow's neutral base surfactant cleaner to neutralizing elements found in an acidic environment.

Alkaline Environments: Common corrosion causing elements are: Salt Air, Salt Water, Uric Acid, Ammonia, etc. **Use Husky Coil Sheen our acidic cleaner** for neutralizing elements found in an alkaline environment.

Combined Acidic & Alkaline Environments: When an environment contains both acidic and alkaline elements we recommend cleaning the coil(s) first with **Husky Coil Guard** followed by an application of our **Husky Coil Sheen**. This process will neutralize both acidic and alkaline contaminants of the operating environment. In essence, an alkaline cleaning solution will neutralize the chemical properties of acids and an acidic cleaning solution will neutralize the chemical properties of alkali.



RECOMMENDED COIL CLEANING PROCEDURES

1. Turn off electrical power to the unit at the breaker box and lock off to ensure safety for personnel.
2. Where necessary, motors and sensitive electrical equipment or panels not normally open to the atmosphere are to be protected from water chemical spray by being wrapped in plastic prior to cleaning.
3. Remove fan guards and side panel openings to the condenser and/or evaporator sections to allow for cleaning the coil(s) from both sides of the coil.
4. Use a pressure washer set at 35-50psi, a hand held 2-3 gallon pump-up pressurized sprayer, or a fertilizer type applicator placed on the end of a garden hose.



5. Water rinse the coil(s) from bottom to top on both sides to remove heavy deposits from the coil(s) surface prior to cleaning. Be sure to use fresh water.
6. Following the water rinse, spray both sides of the coil(s) from the bottom to the top with the selected **Husky Coil Cleaner**. You will notice its foaming action on the vertical sides of the coil. Let the cleaning solution soak 3-5 minutes depending on temperature and drying time. If the outside temperature is hot and the coil cleaner dries too quickly, apply a second time to assure saturation of the coils.
7. After soaking the coil(s) with coil cleaner, use fresh water to rinse the coil from the bottom to the top to flush any remaining loosened soils, dirt and deposits.
8. If the coil is a **Bronz-Glow coated coil**, inspect the coating for signs of damage, abrasion or any other type of deterioration. Check fin edges for abrasion from wind blown salt and sand. Look at the fin sides for signs of loose coating from fin edge abrasion. Check the interior arch of "U" bends and braze joints for abrasion or deterioration of coating. Braze or solder joints have a high potential for corrosive attack due to dissimilar metals. If coating touch-up is needed, use **Bronz-Glow's Aerosol Maintenance Kit**, following all instructions for coating repair. Be sure to contact your Bronz-Glow Representative if you have any questions or need for assistance.
9. Prior to returning the unit back to service, be sure to remove any plastic wrap or covers used to protect sensitive parts from the moisture and chemicals of the coil cleaning process. Replace all coil guards, panels or other accessories removed for the cleaning process. Make one last check for any loose items or tools prior to restoring power. Earlier in this maintenance manual we compared a coil coating to the painted finish of an automobile. An air conditioner coil can be compared to the skin of our body. They're both heat exchangers. Thankfully, people bathe frequently which of course aids greatly in controlling body odor, but there are even greater personal benefits. The regular bathing process is effective in cleaning skin pores. When we become overheated, our clean pores allow perspiration to exit our body, which is a great assistance in keeping our body from overheating and damaging internal organs. An a/c coil works in the exact same manner. A scheduled maintenance program including coil cleaning is well worth its time and money.

Evap Zap for Evaporator Coils.

Evap-Zap is a Bronz-Glow aerosol packaged evaporator coil cleaner. This product is available in a small aerosol can (6.5 oz), which makes it easy to use on standard residential evaporator coils as well as on hotel motel type units. Evap-Zap is self rinsing (with condensate) so it's easy for facility management personnel, homeowners and others to clean coils. Evap-Zap comes with a 6" spray line, which allows the person cleaning coils to get inside coil surfaces. By spraying inside the coil face, it helps push dirt out of the coil so it can flow freely into the drain pan. Evap-Zap in aerosol form is most desirable over other types of cleaning agents due to its foaming capacity and ability to self rinse.



Learn more about Bronz-Glow by visiting our website at <http://Bronz-Glow.com>

Ask about Bronz-Glow's

- Husky Green Fin Coil protector
- Sea Coast
- Component Coat
- SPC
- Evap Zap
- Husky Coil Guard
- Husky Coil Sheen
- Contractor Canister Coating System

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