NEW FLYER

INSTRUCTION TO SERVICE

ITS: 6217	
SECTION:	400- Underbody
WRITTEN BY:	Kalman Takacs
SUBJECT:	“NABI” – Chassis Corrosion Repair

ITS6217

PROCEDURE:

1. Park bus on a flat surface and apply the parking brake.
2. Turn the main battery disconnect switch to the “OFF” position.
3. Position wheel lifts underneath the wheels.
4. Lift the bus to the appropriate height. Place jack stands underneath the official jacking pads.

☞ **NOTE: Only trained personnel can operate lifts. Follow safety instructions written on the lift and in the NABI Maintenance Manual.**

5. Before inspecting the underbody structure for corrosion, remove road debris and salt built up around the front and rear axle area (see photo below). Use scraper, wire brush, pressure washer, etc. as required.

Figure 1: Road debris and salt built up on underbody structure

6. Inspect chassis from front to back and identify areas that needs to be repaired (see some examples below). If corrosion was found follow the steps written below.

Figure 2 and 3: Example for corroded underbody surfaces


Figure 4 and 5: Example for corroded underbody surfaces


Figure 6 and 7: Example for corroded underbody surfaces

Surface Degreasing with Krown Enviro Solve:

For application and MSDS sheets of the Krown Enviro Solve, refer to Appendix A

7. If underbody surfaces are contaminated with grease and or oil (for example around air dryer, axles, hydraulic reservoir, air tanks, etc.) then use Krown Enviro Solve degreaser and pressure washer to remove contamination. Follow local regulations when disposing water contaminated with oil and grease.
8. Ensure that all drain holes at the bottom surface of the underbody tubes are clean so they are allowing for drainage.

Krown Salt Eliminator Application:

For application and MSDS sheets of the Krown Salt Eliminator, refer to Appendix B

9. Spray the entire underbody with Salt Eliminator from Krown. This product can be sprayed with a foam cannon or with a sprayer that is attached to a pressure washer. The Salt Eliminator will be foamed within 10-15 minutes. Wait 15 minutes then wash foam off with water. If dirt and debris still exist after first application, repeat process on affected areas.

Figure 8 and 9: Spraying Salt Eliminator and foam built up on underbody structure

10. Let the underbody dry before continue the repair process. Compressed air can be used to blow off water and dry surfaces.
11. Remove heavy corrosion from the affected surfaces. Use electric scaler and or grinder first then the 36G abrasive wheel. Use different size and shape of wire wheels as required.

    ☞ **NOTE:** Only the heavy scaling should be removed and do not need to remove all the rust because the corrosion products need to be absorbed into the surface to properly treat the surface. If only rust staining needs to be removed, use product Enviro Solve. Spray on and let sit for a couple minutes, scrub with a brush and then rinse off with water.


Figure 10 and 11: Spraying Krown Enviro Solve and scrub underbody structure with a brush

Bare Metal Surfaces:

For mixing and application of the PPG Zinc primer, refer to Appendix C

12. Degrease bare metal surfaces with Krown Enviro Solve.
13. Apply zinc primer by using an appropriate size of brush to the bare metal surfaces that have been cleaned off with Krown Enviro Solve. Let primer dry per the instructions detailed in Appendix C.

Figure 12: Apply zinc primer to the underbody structure with a brush

14. Apply Sikaflex 221 sealer between stitch welds (A), around the joint edges of two steel components (B), between wood floor and structure (C) as required. Refer to Figure 13.

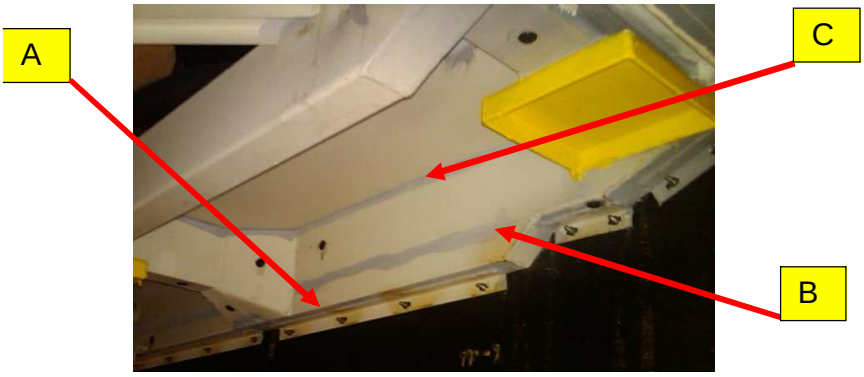

Figure 13: Example for Sikaflex 221 sealer application

Painting Large Open and Hard to Access Surfaces Showing Rust:

☞ ***NOTE: For the application of the Rust Bullet product, refer to Appendix D.***

15. For the large open and hard to access areas showing rust, apply the Rust Bullet product. This will need a minimum of 2 coats. This product can be applied by brush, roller or spray gun.

Undercoat Application:

☞ ***NOTE: For mixing and application of the PPG Undercoat (Corashield), refer to Appendix E.***

16. Apply two light coats of Corashield undercoating to the primed surfaces, surfaces threated with Rust Bullet and/or 372NF Cavity Wax. Also apply Corashield to the areas where the undercoating come off due to road wear.

Krown T-40 Corrosion Inhibitor Application:

☞ ***NOTE: For the application and MSDS sheets of the Krown T-40 Corrosion Inhibitor, refer to Appendix F.***

17. Apply Krown T-40 to the entire underbody by using the Krown spray system. Spray all fittings and electrical connectors as well.

☞ **NOTE:** The surface sprayed with Krown T-40 will look like “wet”. It will not cover up or hide anything that is there. It will displace the moisture, protect the fittings and electrical connectors as well as supplement/support the Corashield.

Figure 14: Application of T-40 to the entire underbody

Cavity Protection - Coating the Inside Surfaces of the Underbody Steel Tubes

18. Ensure that the drain holes on the bottom of each underbody tubes are clean (no plugs!).
19. Spray Krown T-40 corrosion inhibitor inside the underbody frame tubes by using the Krown spray system. Insert wand into the frame plug hole, push wand all the way to one end of the tube. Slowly pull back the wand hose while spraying the T-40 corrosion inhibitor. Once back to frame plug hole push wand hose all the way in the other direction. Slowly pull wand hose back while spraying. Repeat process on every frame plug hole throughout the understructure of the bus including 24" up the vertical sidewall locations. Use borescope to inspect cavities to ensure T-40 was applied correctly. The tubes do not need to be dry to apply the corrosion inhibitor as it will displace the moisture. Once the product is applied, it will not dry up or cure. It is designed to remain viscous so as to repel moisture. The foam will dissipate and it will penetrate any rust scale to create a thin barrier on the metal to protect it.


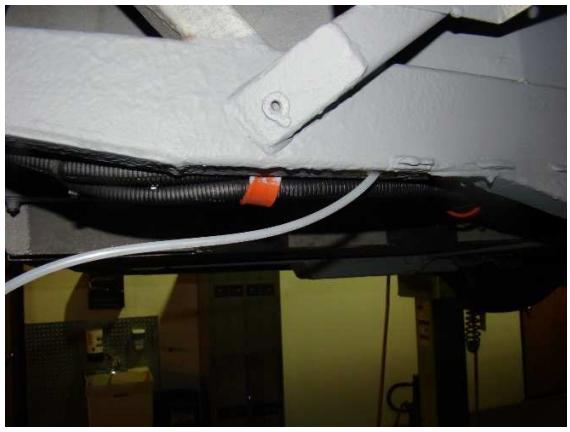

Figure 15: Krown T-40 corrosion inhibitor application inside underbody steel tubes

Final Preparation / Reassembly:

20. Reinstall previously removed components.
21. Install new hardware as required.
22. Torque hardware per NABI Maintenance Manual.
23. Check for completeness of work.
24. Remove tools and unused parts from work area.
25. Remove jack stands and lower the bus.
26. Turn the main battery disconnect switch to the "ON" position.

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LABOUR ESTIMATE

Item	Operation	Men	Hours	Labor Time M X HR
1	Disconnect battery cables. Lift bus, inspect underbody.	1	1	1
2	Pressure wash underbody, apply Salt Eliminator to underbody	1	2	2
3	Sand corroded surfaces, remove staining on underbody	1	3	3
4	Touch up sealant, zinc primer, apply Rust Bullet and undercoat (Corashield)	1	3	3
5	Apply Krown T-40 to the entire underbody and inside the underbody frame tubes	1	3	3
6	Reconnect / reassemble / refill as required, inspect, lower bus	1	1	1

Total hours: 13

PARTS REQUIRED

Item	Part Number	Description	Qty. per Coach	Units	Notes
1	6465149	Krown Salt Eliminator	5	quart	
2	6465150	Enviro Solve	1	quart	
3	115956	PPG Green Zinc Powdercoat S28080	0.2	GA	
4	108936	Urethane PPG Catalyst S28079	0.4	GA	
5	6465141	Krown T-40 Rust Inhibitor	3	GA	
6	235584	Undercoat PPG 7972W Corashield	1	quart	
7	NPN	Rust Bullet	1	quart	
8	055701	Sika 221 Sealer, WH	0.5	EA	

SPECIAL TOOLS REQUIRED

Item	Part Number	Description	Qty. per Coach	Units	Notes
1	NA	Pressure washer, borescope also See Appendix B and F for required Krown tools			

Appendix A

Application and MSDS sheets of the Krown Enviro Solve

KROWN

BUS

CITRUS POWERED
ENVIRO SOLVE

A versatile and user-friendly citrus-solvent cleaner/degreaser.

Features & Benefits

Biodegradable and Environmentally safe
Made from a combination of citrus solvents, emulsifiers and additives. Contains no petroleum distillates.

Powerful Cleaning
Enviro Solve is a versatile cleaner that can be used for dissolving tar, adhesives and heavy grease.

Safe on Most Surfaces
Enviro Solve can be used on many different surfaces including fabrics.

Floating Degreaser
Liquify crude oil and greases that are floating on the water's surface by adding Enviro Solve.

*All Krown products are NPE/APE free.

Areas of Application

- Asphalt & Tar Removal
- Liquefying Crude Oil
- Metal Cleaning
- Parts Washing
- Brake Cleaning
- Wall Cleaning
- Fire & Smoke Cleanup
- Adhesive Removal
- Decal Removal
- Oil Stain Removal from Fabric/Carpets
- Chewing Gum Removal
- Removes rust bleeding and stains

Methods of Application

- Apply with Rag
- Pump up and Trigger Sprayers

Directions For Use

1. *Always test product in an inconspicuous area before using.*
2. Spray or wipe on.
3. Let stand for up to 10 minutes. (It is preferable that the product not be allowed to dry on the surface.)
4. Remove using one of the following methods: ***a)*** Wipe product off with a wash mitt or rag. ***b)*** Rinse with water

Order Number & Sizes
4L 6465150 **20L** 6465151 **205L** 6465152

Contact Krown At:
sales@krown.com

MSDS information available at www.krown.com

NEW FLYER

MATERIAL SAFETY DATA SHEET

ENVIROSOLVE

1. PRODUCT AND COMPANY INFORMATION

Krown
35 Magnum Drive
Schomberg, ON L0G 1T0

USE: D'limonene Solvent Cleaner/Degreaser
PHONE: 1 800-267-5744
CHEMICAL FAMILY: Blended Product

2. COMPOSITION / INFORMATION ON INGREDIENTS

HAZARDOUS INGREDIENT %W/W PIN/CAS# LD50/LC50 ROUTE/SPECIES D'Limonene 60-100 5989-27-5 LD50 >5000mg/kg dermal/rabbit

3. HAZARDS IDENTIFICATION

EFFECTS OF ACUTE EXPOSURE TO MATERIAL: EYES: May cause severe eye irritation. May cause temporary or permanent damage if not treated promptly.
SKIN: Can cause skin irritation. May cause drying of skin.
INGESTION: Harmful if ingested

EFFECTS OF CHRONIC EXPOSURE TO MATERIAL: May cause drying of skin
PRIMARY ROUTE OF ENTRY: [X]-Inhalation [X]-Ingestion [ ]-Absorption OTHER
TOXIC EFFECTS: None known

4. FIRST AID MEASURES

EYES: Flush eyes with plenty of water for at least 15 minutes. Hold eyelids open while rinsing. Contact a physician immediately
SKIN: Flush affected area thoroughly with water. Seek medical attention if irritation persists
INGESTION: Rinse mouth with water. Drink large volumes of water. Do not induce vomiting. Never give anything by mouth to an unconscious patient. Contact a physician immediately. If vomiting occurs spontaneously, keep head below hips to prevent aspiration. INHALATION: Remove patient to fresh air.

5. FIRE FIGHTING MEASURES

FLAMMABLE: Combustible liquid.
FLASH POINT, CELSIUS: 46°C
AUTO IGNITION TEMPERATURE, CELSIUS: not available
EXTINGUISHING MEDIA: Dry Chemical, Carbon Dioxide, Foam (Water is unsuitable for use on burning material, but may be used to cool containers exposed to heat.)
SPECIAL FIRE FIGHTING PROCEDURES: appropriate to surrounding fire
HAZARDOUS COMBUSTION PRODUCTS: CO, CO_2, Smoke and unidentified organic compounds may be formed during combustion. EXPLOSIVE SENSITIVITY TO: Not Applicable

NEW FLYER

6. ACCIDENTAL RELEASE MEASURES

SPILL PROCEDURE: SMALL: Hose down with water
LARGE: Soak up with absorbent material and hold for disposal

7. HANDLING AND STORAGE

SPECIAL HANDLING PROCEDURES AND EQUIPMENT: Wear gloves if handling concentrated product. Avoid contact with skin and eyes. Do not take internally.
STORAGE REQUIREMENT: Avoid freezing. Store in a cool dry area in a closed container.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

PERSONAL PROTECTIVE EQUIPMENT:
GLOVES: Impermeable Gloves EYE PROTECTION: Safety Goggles
FOOTWEAR: Water Resistant OTHER: Not required
RESPIRATORY PROTECTION: Not required for normal use VENTILATION
REQUIREMENTS: Local Ventilation

9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE:	Light Orange Colour/Citrus Aroma	S.G. / DENSITY (g/cc):	0.86
PH: (Concentrate):	not applicable	VAPOUR PRESSURE (mmHg):	not established
VAPOUR DENSITY (air=1):	not established	BOILING POINT:	>160°C
FREEZING POINT:	not available	EVAPORATION RATE (water=1):	<1
SOLUBILITY IN WATER:	not soluble		

10. STABILITY AND REACTIVITY

INCOMPATIBILITY (Material to Avoid): Strong oxidizing agents STABILITY:
Stable
HAZARDOUS DECOMPOSITION PRODUCTS: CO, CO_2, Smoke and unidentified organic compounds may be formed during combustion.
HAZARDOUS POLYMERIZATION: Not applicable REACTIVITY: Not dangerously reactive

11. TOXICOLOGICAL INFORMATION

LD50 (Calculated): >5000 mg/kg (dermal/rabbit) LC50 (Calculated): Not established

NEW FLYER

12. ECOLOGICAL INFORMATION

SPILL PROCEDURE: Pick up with mop or wet-vac.
WASTE DISPOSAL: Dispose according to municipal, provincial, and federal regulations

13. DISPOSAL CONSIDERATIONS

WASTE DISPOSAL: Dispose according to municipal, provincial, and federal regulations

14. TRANSPORT INFORMATION

TDG: Not Regulated

15. REGULATORY INFORMATION

WHMIS CLASS: Not a WHMIS controlled product
CPR Compliance: This product has been classified in accordance with hazard criteria of the CPR and this MSDS contains all the information required by the CPR

16. OTHER INFORMATION

PREPARED BY: J. Brideau (800)267-5744
PREPARATION DATE: February 17, 2012
AMMENDED: February 9, 2015

Notice:
To the best of our knowledge, the information contained in this document is accurate. However, neither the above named supplier nor any of its subsidiaries assumes any liability whatsoever for the accuracy or completeness of the information contained herein. Some of the information presented in this document is from sources other than direct test data on the substance itself. As the methods of storage and handling, use, and disposal of the product are beyond our control, we do not assume responsibility and expressly disclaim liability for loss, damage, or expense arising out of or in any way connected with storage and handling, use, or disposal of this product.
Final determination of suitability of this material is the sole responsibility of the user. Materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

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Appendix B

Application and MSDS sheets of the Krown Salt Eliminator

KROWN

BUS

SALT ELIMINATOR

An advanced formula designed to break the bond formed between metals and road salts or deicing chemicals.

Features & Benefits

Helps Fight Corrosion
Calcium. magnesium, and sodium chlorides greatly accelerate the corrosion process. Salt Eliminator is specifically formulated to remove these harmful chlorides from vehicles and equipment.

Repels Moisture
Salt Eliminator creates a water repelling surface that not only leaves a beading shine to the vehicle but also helps slow salt from reforming on the surface.

Environmentally Friendly
Salt Eliminator doesn't contain any phosphates or petroleum solvents.

Safe on any Surface
Salt Eliminator can be used to remove salt stains from carpets, upholstery, plastic, leather and vinyl.

*All Krown products are NPE/APE free.

Areas of Application

- Vehicle & equipment salt removal
- Salt-spreading equipment
- Automatic and self-serve carwashes
- Interior Desalting
- Equipment washing

Methods of Application

- Foam Guns*
- High Pressure Wands
- Pressure Washing
- Vehicle Wash Systems
- Wash Bucket
- Trigger & pump-up sprayers

**Ask about Krown's High Pressure Foaming Cannon.*

Directions For Use

1. Dilute Equipment Wash to the desired ratio.

Foaming Presoak:	Dilute 50:1 - 75:1
Underbody Wash:	Dilute 20:1 – 45:1
High Pressure Wand:	Dilute 50:1 - 75:1
Wash Bucket:	Dilute 200:1 – 250:1
Trigger Sprayer:	Dilute 3:1 – 5:1

Order Number & Sizes

Aerosol 1198 **4L** 1225 **20L** 1226 **205L** 1227

NEW FLYER

KROWN

Automatic Bus Wash Systems

Foam Gun #1158

Foam Cannon #1184

Soap Dispenser 1 Gal. per soc. #1419 4 Gal. per soc. #1418

Trigger Sprayer #1277

Foam Brush #1343

The highlighted accessories are designed to work along with Krown Salt Eliminator to save time and provide unparalleled results. Please use all Krown products with the appropriate safety gear.

Contact Krown At:
sales@krown.com

MSDS information available at www.krown.com

NEW FLYER

MATERIAL SAFETY DATA SHEET

KROWN SALT ELIMINATOR

1. PRODUCT AND COMPANY INFORMATION

Krown
35 Magnum Drive
Schomberg, ON L0G 1T0

USE: Salt Remover
PHONE: 1 800-267-5744
CHEMICAL FAMILY: Blended Product

2. COMPOSITION / INFORMATION ON INGREDIENTS

HAZARDOUS INGREDIENT		%W/W	PIN/CAS#	LD50/LC50	ROUTE/SPECIES
Ethylene glycol monobutyl		1-5	111-76-2	LD50 1746 mg/kg	oral, rat ether

3. HAZARDS IDENTIFICATION

EFFECTS OF ACUTE EXPOSURE TO MATERIAL: EYES: Concentrate can cause irritation to eye tissue SKIN: Can cause skin irritation. May cause drying of skin. INGESTION: Harmful if ingested

EFFECTS OF CHRONIC EXPOSURE TO MATERIAL: May cause drying of skin
PRIMARY ROUTE OF ENTRY: [ ]-Inhalation [X]-Ingestion [ ]-Absorption OTHER
TOXIC EFFECTS: None known

4. FIRST AID MEASURES

EYES: Flush eyes with plenty of water for at least 15 minutes. Hold eyelids open while rinsing. Contact a physician immediately
SKIN: Flush affected area thoroughly with water. Seek medical attention if irritation persists
INGESTION: Rinse mouth with water. Drink large volumes of water. Do not induce vomiting. Never give anything by mouth to an unconscious patient. Contact a physician immediately
INHALATION: Remove patient to fresh air.

5. FIRE FIGHTING MEASURES

FLAMMABLE: NO
FLASH POINT, CELSIUS: Not Applicable
AUTO IGNITION TEMPERATURE, CELSIUS: Not Applicable
EXTINGUISHING MEDIA: Water Fog, Dry Chemical, CO_2 , Foam
SPECIAL FIRE FIGHTING PROCEDURES: appropriate to surrounding fire
HAZARDOUS COMBUSTION PRODUCTS: Oxides of carbon, hazardous fumes EXPLOSIVE SENSITIVITY TO: Not Applicable

6. ACCIDENTAL RELEASE MEASURES

NEW FLYER

SPILL PROCEDURE: SMALL: Hose down with water
LARGE: Soak up with absorbent material and hold for disposal

7. HANDLING AND STORAGE

SPECIAL HANDLING PROCEDURES AND EQUIPMENT: Wear gloves if handling concentrated product. Avoid contact with skin and eyes. Do not take internally.
STORAGE REQUIREMENT: Avoid freezing. Store in a cool dry area in a closed container.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

PERSONAL PROTECTIVE EQUIPMENT:
GLOVES: Impermeable Gloves EYE PROTECTION: Safety Goggles
FOOTWEAR: Water Resistant OTHER: Not required
RESPIRATORY PROTECTION: Not required for normal use VENTILATION REQUIREMENTS: Local Ventilation

9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE:	orange/red product; fruity/citrus odour	S.G. / DENSITY (g/cc):	1.017
PH: (Concentrate):	4.1	VAPOUR PRESSURE (mmHg):	not established
VAPOUR DENSITY (air=1):	not established	BOILING POINT:	100°C
FREEZING POINT:	0°C	EVAPORATION RATE (water=1):	>1
SOLUBILITY IN WATER:	Excellent		

10. STABILITY AND REACTIVITY

INCOMPATIBILITY (Material to Avoid): Sodium Hypochlorite; Peroxide
STABILITY: Stable INCOMPATIBILITY: Strong acids and oxidizing materials
HAZARDOUS DECOMPOSITION PRODUCTS: Oxides of carbon, hazardous fumes
HAZARDOUS POLYMERIZATION: Not applicable REACTIVITY: Not dangerously reactive

11. TOXICOLOGICAL INFORMATION

LD50 (Calculated): 3860 mg/kg (Oral/Rat) LC50 (Calculated): Not established

12. ECOLOGICAL INFORMATION

SPILL PROCEDURE: Pick up with mop or wet-vac.
WASTE DISPOSAL: Dispose according to municipal, provincial, and federal regulations

NEW FLYER

13. DISPOSAL CONSIDERATIONS

WASTE DISPOSAL: Dispose according to municipal, provincial, and federal regulations

14. TRANSPORT INFORMATION

TDG: Not Regulated

15. REGULATORY INFORMATION

WHMIS CLASS: Not a WHMIS controlled product
CPR Compliance: This product has been classified in accordance with hazard criteria of the CPR and this MSDS contains all the information required by the CPR

16. OTHER INFORMATION

PREPARED BY: J. Brideau (800)267-5744
PREPARATION DATE: February 17, 2012
AMMENDED: February 13, 2015

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Final determination of suitability of this material is the sole responsibility of the user. Materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

Appendix C

Zink Primer Mixing and Application Instruction

1. Clean area to be primed by using 36G abrasive disc and/or wire wheel.
2. Wipe dust off.
3. Degrease surface with industrial degreaser (Krown Enviro Solve).
4. Mix 1 part of PPG Catalyst S28079 (P/N 108936) with 2 parts of PPG Green Zinc Powdercoat S28080 (P/N 115956). No Varsol (thinner) is required. Mix thoroughly.
5. Apply mixture to the surface by brush.
6. Cure time is 4 hours at 77F (25ºC). Pot life of mixture is approximately 3 to 4 hours, BUT is significantly reduced with exposure to air (moisture).

NEW FLYER

Appendix D

Painting Large Open and Hard to Access Surfaces Showing Rust:

RUST BULLET® COATINGS APPLICATION GUIDELINES

Rust Bullet® Standard, Rust Bullet® Automotive, ColorShell™, BlackShell®, WhiteShell™, Clear Shot™

The Rust Bullet® Standard and the Rust Bullet® Automotive Formula's Patented New Technology provide superior corrosion control and protection. To ensure you achieve the best possible results, it is extremely important that these Application Guidelines are read thoroughly before use. Please refer to the most current Application Guidelines available at www.RustBullet.com or by calling Rust Bullet Customer Support at 800-245-1600.

SURFACE PREPARATION

The proper surface preparation prior to applying Rust Bullet coatings will ensure optimum performance. The surface must be completely dry and free of loose rust or paint, surface contaminates such as dirt, oily substances, salts, etc. Remove by lightly scraping, sanding or wire brushing. Use Rust Bullet Metal Blast for metal surface cleaning and conditioning prior to application when necessary. Do not use any other chemical for surface prep prior to application without consulting Rust Bullet Technical Support. Scuff up existing paint or coatings that cannot easily be removed with 100-150 grit sandpaper. This rule also applies to a previous coat of a Rust Bullet coating if 24 hours have lapsed between coats. No additional surface preparation should be necessary.

PRODUCT PREPARATION

IMPORTANT: FAILURE TO FOLLOW STIRRING PROCEDURE BELOW MAY RESULT IN POOR COATING PERFORMANCE

Do not open and stir a Rust Bullet coating when the coating's temperature is below 32°F (0°C). Rust Bullet coatings must be stirred thoroughly until completely uniform and homogeneous (approximately 3 minutes), increase time if product has settled. Do not shake or use electric or mechanical mixing devices that may whip air into the product. Use Rust Bullet Solvent for thinning if necessary (ratio of 3% - 5% by volume).

APPLICATION

Rust Bullet coatings may be applied by brush, roller, or spray equipment. Refer to Application Methods at www.RustBullet.com for application equipment details. All Rust Bullet coatings theoretical coverage is approximately 400 square feet per gallon/per coat depending on the method of application and the surface to be coated. It is critical that Rust Bullet be applied to achieve at least a 6 mil dft (0.006 inches or 0.1524 millimeters), usually a 2-3 coat application. A minimum 12 mil dft is required for industrial, commercial and marine applications. The first coat must be generous enough to soak through the rust to the steel or iron beneath with a second coat of Rust Bullet applied to completely seal the first coat; this cannot be done with any other coating material, including Rust Bullet ColorShell, BlackShell, WhiteShell, or Clear Shot. Optimum drying time between coats of a Rust Bullet coating is approximately 2 to 6 hours. Cure time varies based on relative humidity and temperature of the surface. When applying additional coats of Rust Bullet, the previous coat should be dry to the touch and not wet or tacky; if there is no transfer of coating to a gloved finger it is safe to apply an additional coat. Subsequent coats of Rust Bullet should be applied within 4 to 6 hours after the previous coat. If 6 or more hours have lapsed, wait for Rust Bullet to harden for at least 24 hours then lightly scuff with 150 grit; enough to break the glaze to create a surface profile. The same procedure applies when using a topcoat that is not a Rust Bullet coating. With all topcoat paints it is advised to check for compatibility and follow the manufacturer's recommendations. If applying Rust Bullet ColorShells, BlackShell, WhiteShell, or Clear Shot independent of Rust Bullet Standard or Rust Bullet Automotive, a two-coat application is required. Recommended air or surface temperature should not be below 35°F (2°C) or above 110°F (43°C). Ideal application temperature is between 50°F (10°C) and 80°F (27°C) with humidity below 90%. Never apply a Rust Bullet coating while raining or under threat of rain. Do not apply to surfaces when existing temperature of the surface exceeds 190°F (90°C) or is below 32°F (0°C). After fully cured, Rust Bullet coatings have a service temperature range of 314°F (157°C) continuous, and can tolerate maximum temperature between 617°F - 662°F (325°C – 350°C) for up to 72 hours.

CLEAN-UP, PRODUCT STORAGE AND HANDLING

Use Rust Bullet Solvent for cleanup. If Rust Bullet Solvent is unavailable, xylene, toluene or acetone may be substituted. Rust Bullet residue will harden, destroying equipment if not cleaned immediately. Partially used containers may be resealed using Bloxygen to prevent curing for up to six months. Limit the time the container is opened. Immediately wipe clean any coating from the rim of the container before resealing. Never pour a Rust Bullet coating that has been exposed to air or moisture back into the container. If a skin has formed in a new unopened container or a sealed container, remove by cutting edge of skin at the skin/container surface. Discard of the skin properly. Stir until uniform, filter if necessary and apply. Rust Bullet coatings are packaged in unlined paint cans. If the coating is transferred to another container, a clean unlined paint can (or similar unlined metal container) must be used. Unopened cans have a shelf life of approximately two (2) years. The shelf life of opened cans *not* re-sealed using Bloxygen is approximately one month.

SAFETY CONSIDERATIONS

Use with adequate ventilation, and if necessary, use only respiratory protection authorized in the U.S. Federal OSHA Respiratory Protection Standard (29 CFR 1910.134), equivalent U.S. State standards, Canadian CSA Standard Z94.4-93, the European Standard EN149, or EU member states. IMPORTANT: Protective clothing, gloves, and eye protection are recommended during set-up, application and cleanup; it is extremely difficult to remove Rust Bullet coatings from skin after about 10 minutes. Avoid open flames, pilot lights, sparks, heating elements, cigarettes, or any and all possible sources of ignition. ***For more complete coverage of safety issues refer to the GHS SDS at www.RustBullet.com.***

Rust Bullet LLC | 300 Brinkby Avenue, Suite 200 | Reno, NV 89509 USA | 800-245-1600 | 775-829-5606
www.RustBullet.com

NEW FLYER

Appendix E

CORA SHIELD APPLICATION INSTRUCTIONS

Cora shield Protective Coating Application

I. Remove excess dirt, dust and debris from substrate using clean, dry cloth or air stream.

II. Coating to be applied at ambient air temperature between 50 to 99°F (10 to 32°C).

III. Substrate temperature must not exceed 212°F (100°C) during application.

IV. Keep parts above freezing within first 24 hours after application.

V. Using a 50:1 ratio or higher stainless steel pump, Reverse-A-Clean tungsten carbide tipped (0.021" to 0.027" in diameter) stainless steel airless spray gun and disposable brush or trowel, apply a single coating of Corashield (NFIL P/N 080288). Spray distance 12 to 15" (30 to 38cm).
ALTERNATELY: Apply Corashield by brush.

VI. Allow to air dry at room temperature.

Appendix F

Application and MSDS sheets of the Krown T-40 Corrosion Inhibitor

KROWN

BUS

RUST PROTECTION & LUBRICANT

A petroleum-based corrosion inhibitor designed to create a long-lasting, self-healing barrier between metal and water.

Krown is a manufacturer of Penetrants, Lubricants, Corrosion Inhibitors and Cleaning Maintenance Products. We manufacture products for agriculture, automotive, bus, and trucking OEMs. Krown's products are used annually as part of preventative maintenance programs with municipal and private fleets across North America

Features & Benefits

Displaces Moisture
When applied to a metal surface, Krown bonds to the metal, lifting water off the surface and creating a strong, self-healing barrier. This creates a lasting protection against rust.

Protects Electrical Components
With a dialectric strength that exceeds 50Kv, Krown can be directly applied to electrical componets, sealing out water and preventing corrosion.

Environmentally Friendly
Krown's Rust Protection formula is not WHMIS controlled and contains no solvents or VOCs.

Areas of Application

- Steel Frame and Tubing
- Electrical Wiring & Connections
- Hinges & Locks
- Moving Parts
- Chains

Methods of Application

- Pump & Gun System
- Aerosol Can
- Pressure Pot System
- Portable Pot System

Directions For Use

1. Throughly clean area of application to remove chlorides and salts with ***Krown Salt Eliminator.***
2. Krown Rust Protection is best applied when the product is heated to 140 degrees F.
3. It is recommended that an approved NIOSH mask be worn when applying the product (in any mode, with the exception of an aerosol.)
4. Mist product evenly over surface, until it appears "wet", too much overspray will lead to excessive dripping and product loss.
5. Clean up excess product (overspray) from shop floor with a degreaser.

Order Number & Sizes

Aerosol 2024 **4L** 2023 **20L** 2019 **205L** 2020

Contact Krown At:

sales@krown.com
www.krown.com

NEW FLYER

KROWN

These accessories are designed to work along with Krown Rust Protection to save time and provide unparalleled results. Please use all Krown products with the appropriate safety gear.

Aerosol Can *#2024*

Pump & Gun System *#3062*

Pot Spray System *#1022*

Pressure Pot System *#1073*

Krown Rust Protection is designed to protect the bus chassis, tubular structure and electrical components.

MSDS information available at www.krown.com

NEW FLYER

CANADIAN KROWN DEALERS INC.
MATERIAL SAFETY DATA SHEET

KROWN T-40, T-40 with tacifier

Date Prepared: January 5, 2015
Supersedes: January 3, 2012

1. PRODUCT INFORMATION

Product Identifier:	Krown T-40, Krown T-40 with tacifier
Application and Use:	Rust Inhibitor, lubricant
Product Description:	Rust Inhibitor

REGULATORY CLASSIFICATION

WHMIS Information:
Not Controlled

TDG Information: Rail/Road
Not Regulated in Canada.

Canadian Environmental Protection Act (CEPA)
All components of this product are either on the Domestic Substances List (DSL) or exempt

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EMERGENCY TELEPHONE NUMBER

800-267-5744
(905) 939-8750

MANUFACTURER/SUPPLIER

Canadian Krown Dealers Inc.
35 Magnum Drive
Schomberg, ON LOG 1T0

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2. REGULATED COMPONENTS

The following component data is defined in accordance with sub-paragraph 13 (a) (I) to (iv) of the Hazardous Products Act.

NAME	% (v/v)	CAS
None		

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3. TYPICAL PHYSICAL AND CHEMICAL PROPERTIES

Physical State:	Liquid
Density: (g/cc)	0.9
Vapour Pressure: (mm)	N.D.
Solubility in Water:	Nil
Boiling Point:	N.D.
Freezing/Melting Point:	-20°C
Vapour Density: (air=1)	Heavier than air
Evaporation Rate, n-Butyl Acetate = 1:	N.D.
pH:	N/A
Appearance:	Viscous oil; no odour

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4. HEALTH HAZARD INFORMATION

NATURE OF HAZARD

INHALATION:
High vapour/aerosol concentrations (greater than approximately 1000 ppm) are irritating to the eyes and respiratory tract, and may cause headaches, dizziness, anesthesia, drowsiness, unconsciousness and other central nervous system effects, including death.

EYE CONTACT:
Slightly irritating, but will not injure eye tissue.

SKIN CONTACT:
Low toxicity.
Frequent or prolonged contact may irritate the skin and cause a skin rash (dermatitis).
Skin contact may aggravate an existing dermatitis condition.

INGESTION:
Small amounts of liquid aspirated into the respiratory system during ingestion or from vomiting may cause mild to severe pulmonary injury and possibly death.
Minimal toxicity.

CHRONIC:
At very high oral doses, this product caused reversible damage to the stomach, liver, and kidney (male only) of rats. These effects are not relevant to humans at occupational levels of exposure.

SPECIAL HEALTH PRECAUTIONS:
Health studies have shown that many petroleum hydrocarbons pose potential human health risks, which may very from person to person. As a precaution, exposure to liquids, vapours, mists or fumes should be minimized.

OCCUPATIONAL EXPOSURE LIMIT
5 mg/m3

MANUFACTURER RECOMMENDS:

Local Regulated limits may vary.

5. FIRST AID MEASURES

INHALATION:
In emergency situations use proper respiratory protection to immediately remove the affected victim from exposure. Administer artificial respiration if breathing has stopped. Keep at rest. Call for prompt medical attention.

EYE CONTECT:
Flush eyes with large amounts of water until irritation subsides. If irritation persists, get medical attention.

SKIN CONTACT:
Immediately flush with large amounts of water. Use soap if available. Remove contaminated clothing, including shoes, after flushing has begun.

INGESTION:
If swallowed, **DO NOT** induce vomiting. Keep at rest. Get prompt medical attention.

6. PREVENTATIVE AND CORRECTIVE MEASURES

PERSONAL PROTECTION:
The selection of personal protective equipment varies depending upon conditions of use.
Where prolonged and/or repeated eye contact is likely to occur, wear safety glasses and side shields, long sleeves, and chemical resistant gloves.
Where eye contact is unlikely, but may occur as a result of short and/or periodic exposures, wear safety glasses with side shields.

Where concentrations in the air may exceed the occupational exposure limits given in Section 4 and where engineering, work practices or other means of exposure reduction are not adequate, approved respirators may be necessary to prevent overexposure by inhalation.

ENGINEERING CONTROLS:
The use of local exhaust ventilation is recommended to control emissions near the source. Provide mechanical ventilation of confined spaces.

ELECTROSTATIC ACCUMULATION HAZARD:
Use proper ground procedure.
Additional information regarding safe handling of products with static accumulation potential can be ordered by contacting the American Petroleum Institute (API) for API Recommended Practice 2003, entitled "Protection Against Ignitions Arising Out of Static, Lighting and Stray Currents" (American Petroleum Institute, 1220 L Street Northwest, Washington, DC, 20005), or the National Fire Protection Association, 1 Batterymarch Park, P.O. Box #9101, Quincy, MA, 02269-9101)

HANDLING, STORAGE AND SHIPPING
Keep container closed. Handle and open containers with care. Store in a cool, well ventilated place away from incompatible materials.
DO NOT handle or store near an open flame, heat, or other sources of ignition.
Material will accumulate static charges which may cause an electrical spark (ignition source). Use proper grounding procedures.
DO NOT pressurize, cut, heat or weld containers. Empty product containers may contain product residue. **DO NOT** reuse empty containers without commercial cleaning or reconditioning.

SPILL CONTROL AND DISPOSAL
Dyke and Recover. Use absorbent material. Consult an expert on the disposal of recovered material. Ensure disposal in compliance with government regulations and ensure conformity to local disposal regulations. Notify the appropriate authorities immediately. Take all additional action necessary to prevent and remedy the adverse effects of the spill.

LAND SPILL
Eliminate sources of ignition. Keep public away. Prevent additional discharge of material, if possible to do so without hazard.
Prevent spills from entering sewers, watercourses or low areas. Contain spilled liquid with sand or earth. Do not use combustible materials such as sawdust.
Recover by pumping (use an explosion proof motor or hand pump), or by using a suitable absorbent.

WATER SPILL

Remove from surface by skimming or suitable absorbents. If allowed by local authorities and environmental agencies, sinking and/or suitable dispersants may be used in unconfined waters.

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7. FIRE AND EXPLOSION HAZARD

Flash Point and Method:	>185°C COC
Autoignition Temperature:	N.D.
Flammable Limits (Upper):	N.D.
Flammable Limits (Lower):	N.D.

GENERAL HAZARDS:
Combustible Liquid; may form combustible mixtures at or above the flash point.

FIRE FIGHTING:
Use water spray to cool fire exposed surfaces and to protect personnel.
Shut off fuel to fire.
Use foam, dry chemical or water spray to extinguish fire.
Avoid spraying water directly into storage containers due to danger of boilover.
A self-contained breathing apparatus (SCBA) is recommended for indoor fires and any significant outdoor fires. For small outdoor fires, which may easily by extinguished with a portable fire extinguisher, use of an SCBA is optional.
The liquid may travel some distance along the ground or surface to ignition sources where it may ignite.

HAZARDOUS COMBUSTION PRODCUTS:
No unusual products

NEW FLYER

8. REACTIVITY DATA

GENERAL:
This product is stable and hazardous polymerization will not occur.

INCOMPATIBLE MATERIALS AND CONDITIONS TO AVOID:
Strong oxidizing agents

HAZARDOUS DECOMPOSITION:
None

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9. NOTES

No comments at this time

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10. PREPARATION

Date Prepared: January 5, 2015
Supersedes: January 3, 2012

Prepared by: Vincent J. Curtis (905) 523-9333

CAUTION: The information contained herein relates only to this product or material and may not be valid when used in combination with any other product or material in any process. If the product is not to be used for a purpose or under conditions which are normal or reasonably foreseeable, this information can not be relied upon as complete or applicable. For greater certainty, uses other than those described in "Application of Use" of section 1 must be reviewed with the supplier. The information contained herein is based information available at the indicated date of preparation.