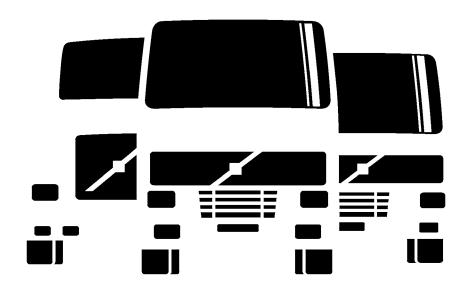
Service Manual Trucks

Group **182–500**Rustproofing Cab
VN, VHD





Foreword

The descriptions and service procedures contained in this manual are based on designs and methods studies carried out up to August 2000.

The products are under continuous development. Vehicles and components produced after the above date may therefore have different specifications and repair methods. When this is believed to have a significant bearing on this manual, supplementary service bulletins will be issued to cover the changes.

The new edition of this manual will update the changes.

In service procedures where the title incorporates an operation number, this is a reference to an S.R.T. (Standard Repair Time).

Service procedures which do not include an operation number in the title are for general information and no reference is made to an S.R.T.

The following levels of observations, cautions and warnings are used in this Service Documentation:

Note: Indicates a procedure, practice, or condition that must be followed in order to have the vehicle or component function in the manner intended.

Caution: Indicates an unsafe practice where damage to the product could occur.

Warning: Indicates an unsafe practice where personal injury or severe damage to the product could occur.

Danger: Indicates an unsafe practice where serious personal injury or death could occur.

Volvo Trucks North America, Inc. Greensboro, NC USA

Order number: PV776-TSP144735

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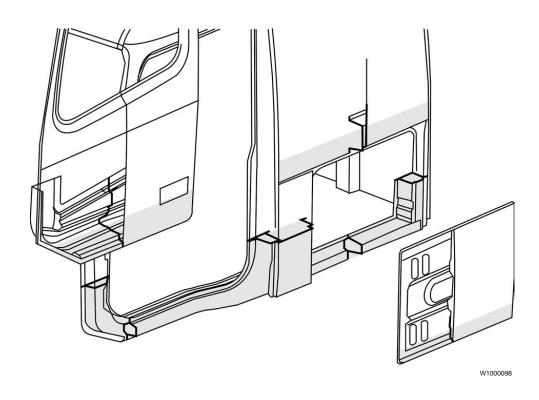
Feedback

Operation Numbers

Group 18 Rustproofing General

General

Rustproofing Information



This manual covers information and procedures for rustproofing all types of cabs for the VN and VHD series. All information needed for carrying out the work procedure is contained in this manual.

The VN and VHD cabs rust warranty is in effect for 8 years or 1 610 000 km (1 000 000 miles) from the date of purchase, whichever comes first. The warranty covers rust-through from the inside out.

If rust is found during the warranty period, that does not automatically mean that the affected area should be repaired. Contact the Volvo Warranty Department for more information in each case. If a repair is done to correct rust within the warranty period, the warranty continues to its normal expiration if the repaired area is primed, painted and treated with cavity wax according to good work practices.

If a repair is made to the cab structure or the body panels, the warranty is voided for that part of the cab. The

bodyshop that repaired the cab will warrant the repair area to cover any future rust and/or structural problems stemming from the repair.

When repairing the cab, always reapply primer, topcoat and rust preventive wax on inside metal surfaces.

For carrying out the rust protective procedure, see:

- "Specifications" page 5
- "Tools" page 7
- "Design and Function" page 9
- "Rust Prevention, Inspection" page 11
- "Rust Prevention, Retreatment (Complete Cab)" page 15, Daycab
- "Rust Prevention, Retreatment (Complete Cab)" page 20, Sleeper Cab

Group 18 Rustproofing Specifications

Specifications

Cavity Wax

Type	Solventborne, semi-firm
Drying time	
Application temperature	above 18°C (70°F)
Minimum wax coating thickness	
Heat resistance	max. 100°C (212°F)
Tested lifetime	1 000 h saltspray
Effect on paint finish	
Thinner ¹ /cleaner	White spirit

1) The listed manufacturers recommend that the wax is used at the viscosity as shipped. If unused wax is stored in a closed container, the viscosity should not not need any adjustment. Wax with too low viscosity may cause too much runoff and not give the proper coverage.



WARNING

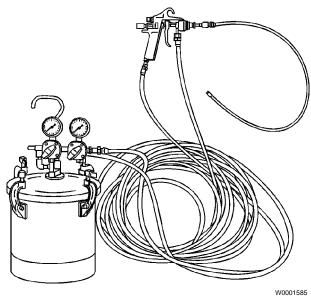
Use a breathing mask and safety goggles during application. Prevent prolonged or repeated inhalation of vapor or spray mist. If cavity wax vapors are inhaled and giving respiratory problems, see a doctor immediately. Use gloves to avoid skin contact. Wash contaminated skin with soap and water. There are no OSHA regulations for this product. Always order a Material Safety Data Sheet when ordering wax.

Group 18 Rustproofing Tools

Tools

Rustproofing, Special Equipment

The equipment can be ordered from Air Power, Inc., P.O.Box 773, 520 Apperson Dr., Salem, VA 24153, Ph. (800) 848–1011.



VRS-100

Cavity Wax Spray Kit (takes a 5 gallon pail)

Cavity Wax

Order in 5 gallon pails from:

Wax, type 74–104S Continental Products, Co. 1150 East 222 Street Euclid, OH 44110 Ph. (216) 531–0710 Fx. (216) 289–1745

Order in 5 gallon pails from:

Wax, type Dinitrol® NCP 3623 EFTEC North America 31601 Research Park Drive Madison Heights, MI 48071 Ph. (248) 585–8299 Fx. (248) 585–3799 Order aerosol spray cans (for spot treatment) from:

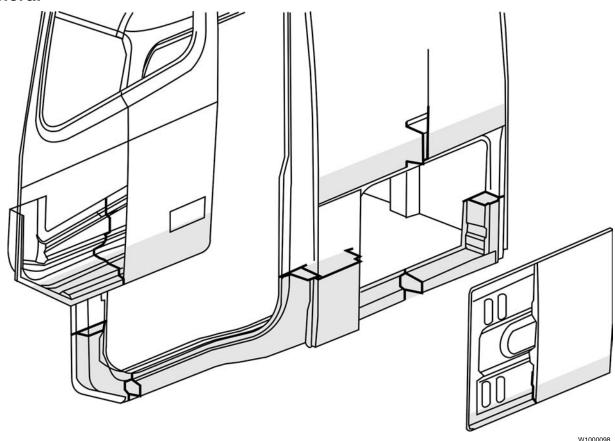
Wax, order number 16018Z
Eastwood Co.
P.O.Box 3014
Malvern, PA 19355
Ph. (800) 345–1178
Fx. (610) 644–0560
www.eastwoodco.com

Group 18 Rustproofing Design and Function

Design and Function

Rustproofing Cab

General



In production, the cab is treated against rust with several coats of primer and paint over a surface preparation procedure. This gives very good initial rust coverage. In some areas, rust protection is added on top of the paint to increase the rust protection (see shaded areas in the illustration).

Before installation of upholstery, the cab is treated with cavity wax at the factory (see areas shaded in the illustration). This way, the wax can be precisely applied and allowed to dry before the cab is dressed. Reapplication of cavity wax has to be done with as little remove and installation work as possible.

The areas shaded in the illustration can be retreated, except for the side inner rail which is located above the luggage hatch. All other areas are accessible from existing cut-outs in the cab panels and profiles. Some components are removed to uncover the cut-outs.

Group 18 Rustproofing Design and Function

Application

Rust is iron oxide (Fe2O3). Rust forms in the presence of water (H2O) on an unprotected iron surface or where the primer and top coat is damaged. Cavity wax works on the principle that if air and moisture cannot reach the material surface, there cannot be any oxidation of the material. The liquid wax dries to a semisoft coating that will slowly dry out. Depending on the manufacturer and product, the drying period is typically between three to five years.

The rustprotection applied when the cab was produced, is adequate for normal use and service. If an extention of the cab rustprotection is desired or if the vehicle is used in a severe application, it is recommended that cavity wax is re-applied every 3rd year.

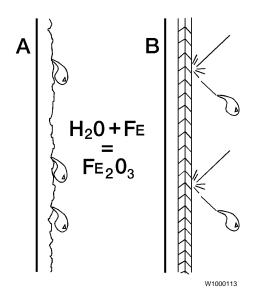
The wax should flow easily when applied but not so easy that it runs off without forming a good coat. Wax consistency can be adjusted with mineral spirit if too thick. It should flow and spray easily. Retreatment or new application should be to specification. However, since it is hard to measure the thickness of the coat, apply enough to cover the surface but not so much that it starts to run. Run-off does not harm the finished result, however, it is wasted material.

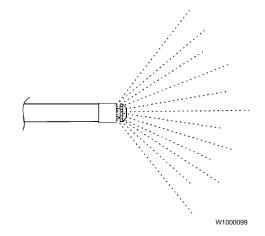
Application is typically done with an air gun and a flexible wand. The wand should have a 360° spray nozzle. The wax is applied by inserting the flexible wand into a profile and operating the air gun while slowly pulling the wand out. Before application of the cavity wax, test the spray pattern and coverage on a piece of cardboard. For complete coverage, note the speed at which the wand is moved. Try to simulate the same or slower application speed when performing the application procedures. This is especially important when treating areas (such as the bottom rails) that can not be visually monitored during the application.

Before reapplication, the surface must be clean and dry. If there are areas of rust, remove the rust and apply primer before the wax is applied. Use Sherwin Williams wash primer JBP 980 and allow it to dry thoroughly. Apply Sherwin Williams repair primer P6A47 and allow to dry thoroughly.

The cab and wax should have a temperature of 18°C (70°F) or above to get the right penetration into joints and corners. If the surface must be cleaned before application of wax, use water and let dry before applying the

In applications where rustprotection must be used in areas that are subject to abrasion (like wheel spray), there are heavier rustprotection waxes available that are made for exterior application.





Service Procedures

General Work Procedures

/ DANGER

PERSONAL INJURY HAZARD! Before working on a vehicle, set the parking brakes, place the transmission in neutral and block the wheels. Failure to do so can result in unexpected vehicle movement and can cause serious personal injury or death.

<u> (</u> WARNING

Use a breathing mask and safety goggles during application. Prevent prolonged or repeated inhalation of vapor or spray mist. If cavity wax vapors are inhaled and giving respiratory problems, see a doctor immediately. Use gloves to avoid skin contact. Wash contaminated skin with soap and water. There are no OSHA regulations for this product. Always order a Material Safety Data Sheet when ordering wax.

When applying cavity wax, observe these guidelines:

- Must be done during dry weather.
- Avoid cleaning with water before application of wax.
- If surfaces have been cleaned with water, make sure they are completely dry before applying wax.
- Surfaces should be clean, dry and free from rust, oil or metal shavings.
- Treat any corroded areas by removing rust scale, then prime and paint before application of wax.

Note: When using the work procedures described in this manual, there will be areas of overspray which may result in some wax run-off. However, since the application is done within an enclosure without a visual control of the coverage, it is better to have some overspray than to have no coverage.



CAUTION

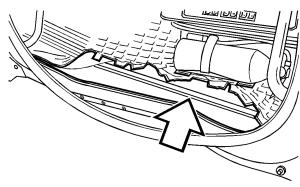
Do not apply wax in temperatures below 18°C (70°F). Wax penetration abilities are not enough at lower temperatures and the rustprotection will be inadequate.

Work should be done in a well ventilated area. Cavity wax is not a toxic product but should not be inhaled. Use of a breathing mask is recommended while the wax is being applied.

1821-06-02-01 Rust Prevention, Inspection

Before beginning rust protection inspection, read about warranty information under "Rustproofing Information" page 3, basic information under "General Work Procedures" page 11, material under "Specifications" page 5 and equipment under "Tools" page 7.

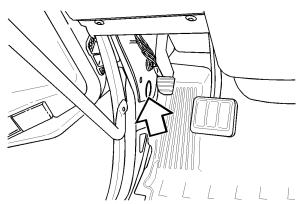
1



Torx 25

Open driver side door. Remove the 4 screws holding the door sill to the floor. Lift off the door sill. Pull off the bottom part of the door opening seal. Lift the edge of the floormat and inspect the floor area for rust. Inspect the floormat for cracks and rips. (In some applications, a bitumenous mat is placed under the floormat. Check along the edges for signs of rust.)

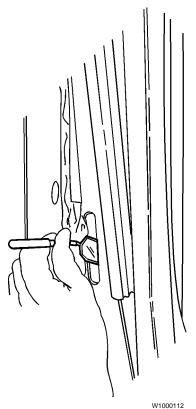
2



Remove lower bolt for the door front grabhandle and pull the handle back. Remove the A-pillar trim fastener. Remove the trim. Remove the rubber grommet close to the floor. Inspect up and down A-pillar for signs of rust. Replace all removed parts.

12 mm socket, screwdriver, mirror, flashlight

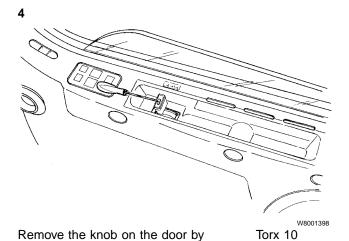
3



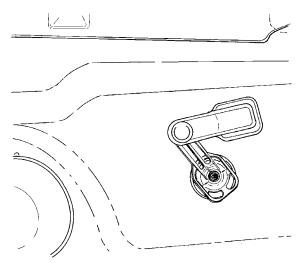
Remove the lower part of the door rear grab handle. Pull the handle out. Loosen the back trim by carefully pulling out the "christmas tree" fastener. Hold up the edge of the carpet and pull out the lower part of the B-pillar trim. Inspect the lower part of the B-pillar for signs of rust. Install the trim and handle.

pulling the rubber plug out with a scriber. Remove the screw.

16 mm socket, screwdriver, mirror, flashlight



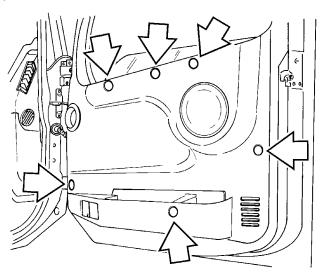
5



If the vehicle is equipped with mechanical window regulators, remove the crank. Lift the vinyl cover in the wide end and push it to the side. Remove the screw.

W8001379 Torx 25

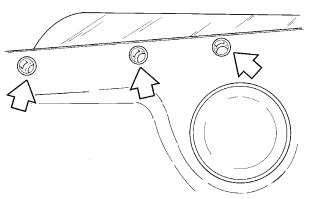
6



Using a small, flatblade screwdriver, carefully remove the six plugs in the door panel.

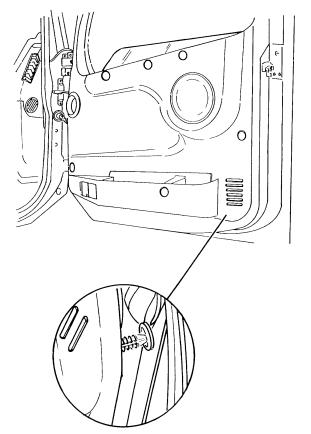
12

7



Remove the three bolts and three screws holding the panel to the door. 14 mm socket, Torx 25

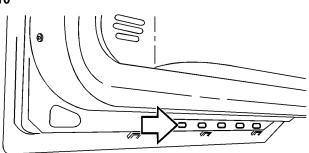
8



The panel is now held in place by the "christmas tree" fasteners. Carefully pry the door panel away from the door. Disconnect the electrical connectors for the electrical equipment in the door panel. Remove the door panel.

Torx 25

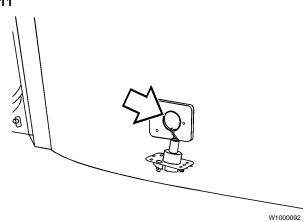
10



Inspect the inside, lower half of the door for signs of rust. Install door panel.

mirror, flashlight

11



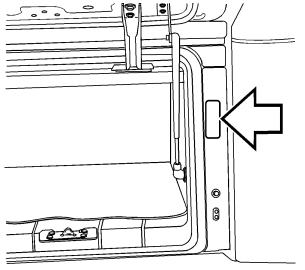
Remove side repeater light lens. Remove repeater light base. Pull base out and let it hang. Through the hole, inspect the lower cab side for signs of

rust. Install the side light repeater light.

Philips, Torx 25, mirror, flashlight

W8001382

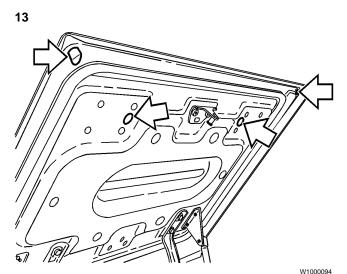
12



Sleeper cabs only:

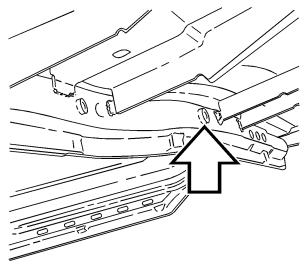
Open luggage door. Locate the vent in the rear end of door frame. With a knife blade or small screwdriver, pry out the center section. Do this by pushing the blade in between vent and grill and push the grill to the side so the lock tabs release. Pry out the lock tabs for the vent (2 per side) and remove the vent. Inspect the lower part of the C-pillar for signs of rust. Install vent.

mirror, flashlight



Inspect the lower part of the luggage door, inner and outer skin, for signs of rust.

14



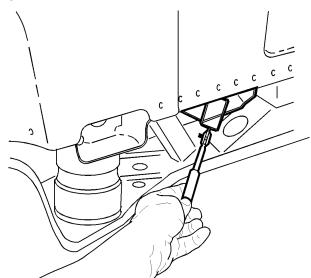
Remove plastic plugs along the inside of the bottom rail. Inspect for signs of rust on the inside of the bottom rail. Install the plastic plugs.

mirror, flashlight

Generally inspect the floor area underneath the cab. Look between the large fore-aft member and the bottom rails at the edge of the cab for signs of rust.

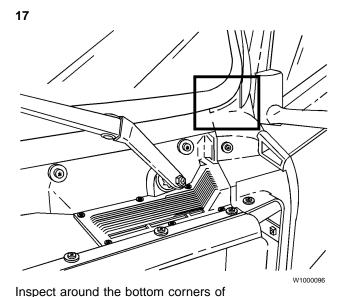
15 Repeat above steps on the other side of the cab.

16



Inspect the rear, lower cab edge for signs of rust.

mirror, w1000097 flashlight



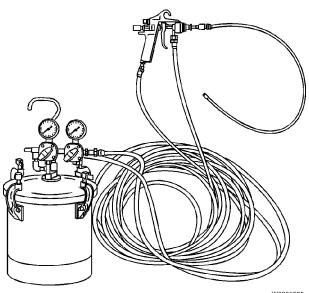
the windshield for signs of rust.

1821-09-02-02 Rust Prevention, Retreatment (Complete Cab)

Daycab

Before beginning rust prevention retreatment, read about warranty information under "Rustproofing Information" page 3, basic information under "General Work Procedures" page 11, material under "Specifications" page 5, application techniques under "Application" page 10 and equipment under "Tools" page 7.

1



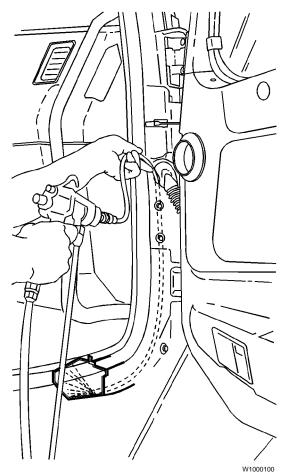
W0001585

Assemble the wax spray kit as shown in the illustration. The fluid tank is equipped with two air pressure regulators and two hoses that connects to the spray gun. The red hose supplies air and the black hose supplies wax to the spray gun.

2

Set both regulators to approximately the same pressure for proper operation. Start with 175 kPa (25 psi). Fully depress the spray gun trigger and observe the spray pattern at the tip of the application wand. The pattern should be shaped as a 360° cone with a single stream in the middle. With the pressures properly regulated, there should be some misting of the cavity wax. This will help ensure that all surfaces are coated. Adjust as necessary to get the proper spray pattern. If the spray pattern is not symmetrical, it may be necessary to clean the tip. See the spray gun operation manual.

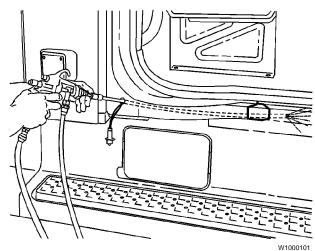
3



Open the door. Push back the door wiring grommet and insert the application wand down the A-pillar and into the bottom rail, pointing rearward. The total length of the wand should be inserted.

Fully depress the spray gun trigger then slowly pull the application wand back out from the bottom rail and A-pillar at the determined speed. Release the spray gun trigger as soon as the tip of the wand appears at the door wiring grommet. Refit the grommet and adjust to a good fit.

4



Remove the door switch for the interior light. Insert the application wand in through the switch hole forward into the bottom rail cavity. The total length should be inserted.

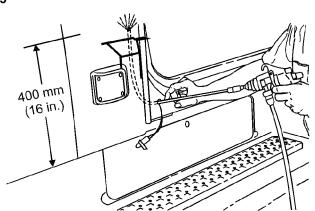
Torx 25, Cavity wax spray kit

Fully depress the spray gun trigger, then slowly pull the application wand back out from the bottom rail at the determined speed. Release the spray gun trigger as soon as the tip of the wand appears at the door switch hole.

5

Cavity wax

spray kit



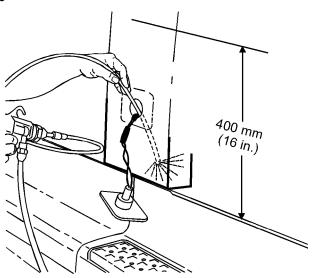
Insert the application wand up the B-pillar, through the door switch hole, to a minimum position of 400 mm (1 1/3 ft) up the cavity.

Fully depress the spray gun trigger, then slowly pull the application wand back out from the B-pillar at the determined speed. Release the spray gun trigger as soon as the tip of the wand appears at the door switch hole. Install the light switch.

Torx 25, Cavity wax spray kit

W1000102

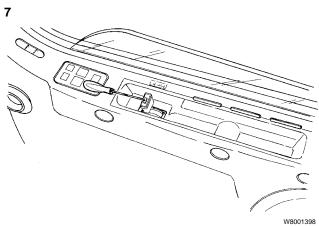
6



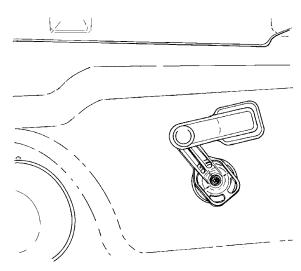
Remove the side repeater lamp lens and base. Coat the cavity behind the lamp. Move the wand as necessary to ensure complete coverage, both on the bottom and the panel side. Install the repeater lamp.

W1000104 Philips, Torx 25, Cavity wax spray kit

Torx 10



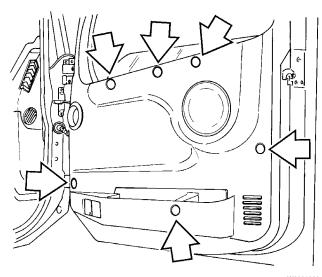
Remove the knob on the door by pulling the rubber plug out with a scriber. Remove the screw.



If the vehicle is equipped with mechanical window regulators, remove the crank. Lift the vinyl cover in the wide end and push it to the side. Remove the screw.

W8001379 Torx 25

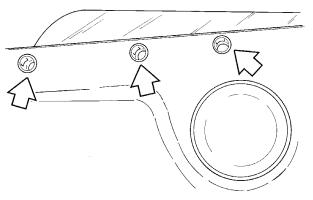
9



Using a small, flatblade screwdriver, carefully remove the six plugs in the door panel.

W8001380

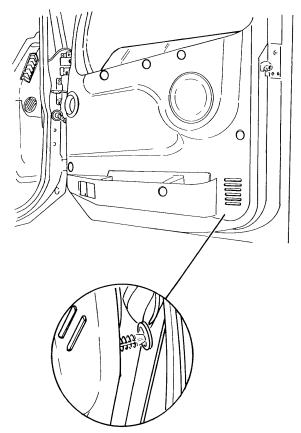
10



Remove the three bolts and three screws holding the panel to the door.

14 mm socket, Torx 25

11



The panel is now held in place by the "christmas tree" fasteners. Carefully pry the door panel away from the door.

W8001382

12

Lift the upholstery away from the door. Disconnect the electrical connectors for the electrical equipment in the door panel. Remove the door panel.

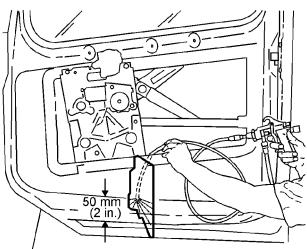
Torx 25

13

Note the position of wiring that may be taped to the cover plate. Remove tape to free the wiring. To aid in reassembly, note the position of any missing cover plate screws that were removed during door upholstery removal. Remove the cover plate screws and then remove the cover plate.

Torx 25

14



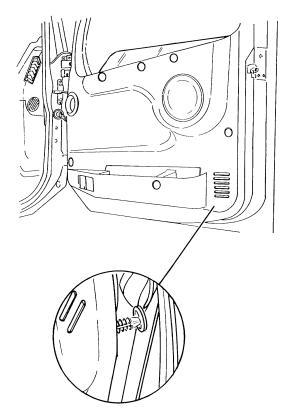
Coat the lower door cavity with cavity wax up to 50 mm (2 in.) from the bottom. With the application wand inserted in the door cavity, move the wand as necessary to ensure complete coverage.

Cavity wax spray kit

15

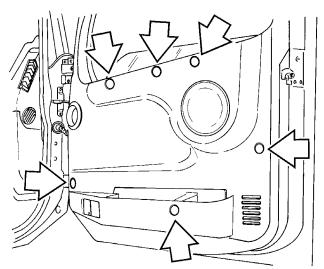
Install the cover plate. Do not allow any wiring to be pinched between plate and door. Leave the proper screw holes empty for the door upholstery installation. See step 13. Tape wiring to the cover plate as necessary. Torx 25

16



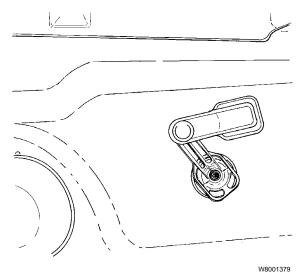
Lift the door upholstery into place. Connect all electrical connectors. Install the door upholstery and secure with the "christmas tree" fasteners. W8001382

17



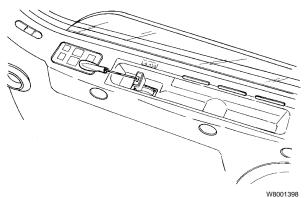
Install the 3 bolts and 3 screws that secure the upholstery panel. Install the cover plugs.

14 mm socket Torx 25 18



If equipped, install the window regulator handle.

19



Install the door handle knob. Install the Torx 10 rubber plug.

20

Repeat all steps on the opposite side of the truck. Clean off any drips or overspray with mineral spirit.

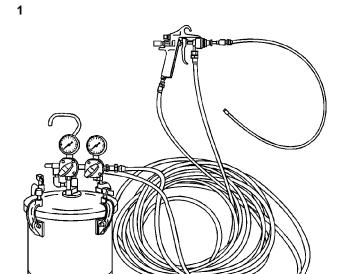
Note: To prevent the wax drying in the equipment, always thoroughly clean the cavity wax spray kit with mineral spirit after each use.

W0001585

1821-09-02-02 Rust Prevention, Retreatment (Complete Cab)

Sleeper Cab

Before beginning rust prevention retreatment, read about warranty information under "Rustproofing Information" page 3, basic information under "General Work Procedures" page 11, material under "Specifications" page 5, application techniques under "Application" page 10 and equipment under "Tools" page 7.

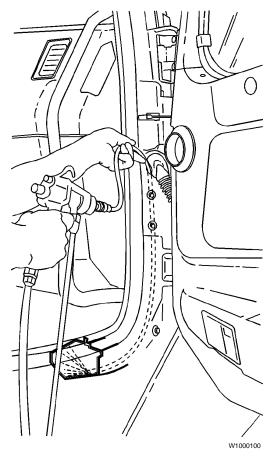


Assemble the wax spray kit as shown in the illustration. The fluid tank is equipped with two air pressure regulators and two hoses that connects to the spray gun. The red hose supplies air and the black hose supplies wax to the spray gun.

2

Set both regulators to approximately the same pressure for proper operation. Start with 175 kPa (25 psi). Fully depress the spray gun trigger and observe the spray pattern at the tip of the application wand. The pattern should be shaped as a 360° cone with a single stream in the middle. With the pressures properly regulated, there should be some misting of the cavity wax. This will help ensure that all surfaces are coated. Adjust as necessary to get the proper spray pattern. If the spray pattern is not symmetrical, it may be necessary to clean the tip. See the spray gun operation manual.

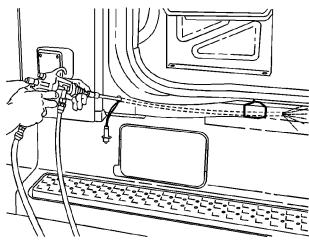
3



Open the door. Push back the door wiring grommet and insert the application wand down the A-pillar and into the bottom rail, pointing rearward. The total length of the wand should be inserted.

Cavity wax spray kit

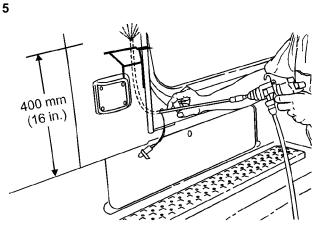
Fully depress the spray gun trigger then slowly pull the application wand back out from the bottom rail and A-pillar at the determined speed. Release the spray gun trigger as soon as the tip of the wand appears at the door wiring grommet. Refit the grommet and adjust to a good fit.



Remove the door switch for the interior light. Insert the application wand in through the switch hole forward into the bottom rail cavity. The total length should be inserted.

Torx 25, Cavity wax spray kit

Fully depress the spray gun trigger then slowly pull the application wand back out from the bottom rail at the determined speed. Release the spray gun trigger as soon as the tip of the wand appears at the door switch hole.

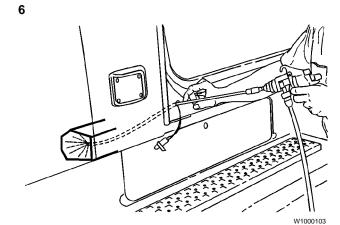


Insert the application wand up the B-pillar through the door switch hole, to a minimum position of 400 mm (1 1/3 ft) up the cavity.

Fully depress the spray gun trigger, then slowly pull the application wand back out from the B-pillar at the determined speed. Release the spray gun trigger as soon as the tip of the wand appears at the door switch hole. Install

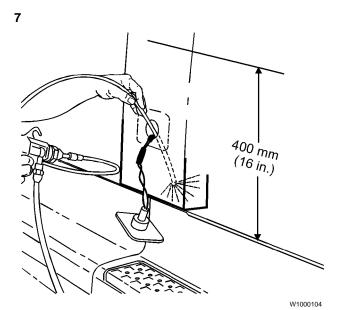
the light switch.

Torx 25 Cavity wax spray kit



Insert the application wand in through the switch hole rearward into the bottom rail cavity. The total length should be inserted.

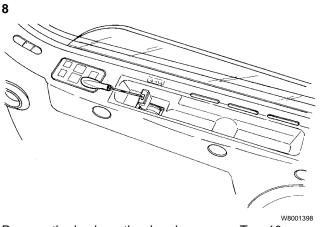
Fully depress the spray gun trigger, then slowly pull the application wand back out from the B-pillar at the determined speed. Release the spray gun trigger as soon as the tip of the wand appears at the door switch hole. Install the light switch.



Remove the side repeater lamp lens and base. Coat the cavity behind the lamp. Move the wand as necessary to ensure complete coverage, both on the bottom and the panel side. Install the repeater lamp.

Philips, Torx 25, Cavity wax spray kit

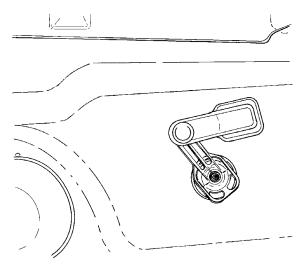
21



Remove the knob on the door by pulling the rubber plug out with a scriber. Remove the screw.

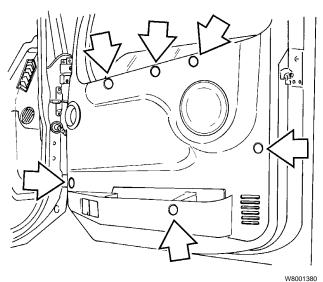
Torx 10

9



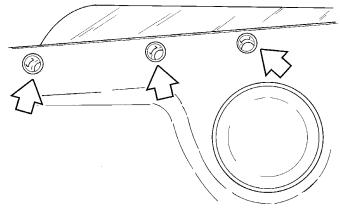
If the vehicle is equipped with mechanical window regulators, remove the crank. Lift the vinyl cover in the wide end and push it to the side. Remove the screw.

W8001379 Torx 25 10



Using a small, flatblade screwdriver, carefully remove the six plugs in the door panel.

11

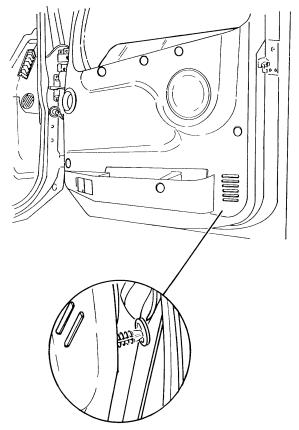


W8001381

Remove the three bolts and three screws holding the panel to the door.

14 mm socket, Torx 25

12



The panel is now held in place by the "christmas tree" fasteners. Carefully pry the door panel away from the door.

W8001382

13

Lift the upholstery away from the door. Disconnect the electrical connectors for the electrical equipment in the door panel. Remove the door panel.

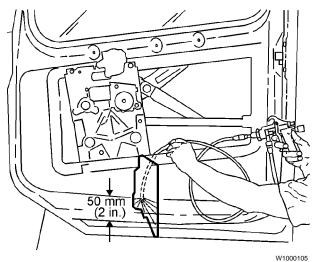
Torx 25

14

Note the position of wiring that may be taped to the cover plate. Remove tape to free the wiring. To aid in reassembly, note the position of any missing cover plate screws that were removed during door upholstery removal. Remove the cover plate screws and then remove the cover plate.

Torx 25

15



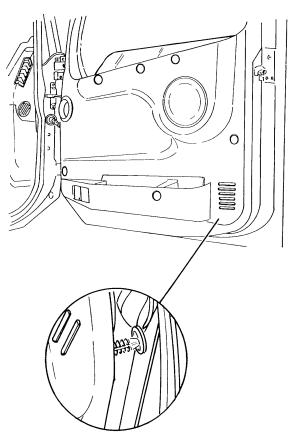
Coat the lower door cavity with cavity wax up to 50 mm (2 in.) from the bottom. With the application wand inserted in the door cavity, move the wand as necessary to ensure complete coverage.

Cavity wax spray kit

16

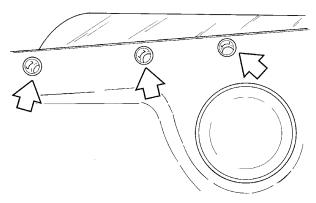
Install the cover plate. Do not allow any wiring to be pinched between plate and door. Leave the proper screw holes empty for the door upholstery installation. See step **14**. Tape wiring to the cover plate as necessary. Torx 25

17



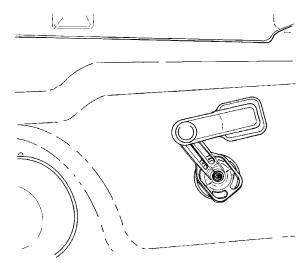
Lift the door upholstery into place. Connect all electrical connectors. Install the door upholstery and secure with the "christmas tree" fasteners. W8001382

18



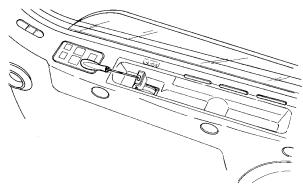
Install the 3 bolts and 3 screws that secure the upholstery panel. Install the cover plugs.

14 mm socket, Torx 25 19



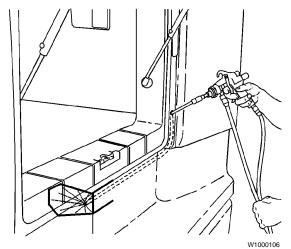
If equipped, install the window regulator handle. W8001379

20



Install the door handle knob. Install the Torx 10 rubber plug.

21

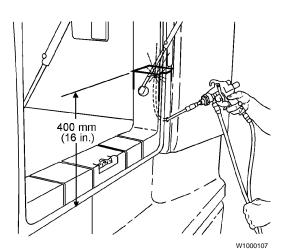


Open luggage door. Remove the compartment light switch from the C-pillar. Insert the application wand in the switch hole forward into the bottom rail cavity. The total length of the wand should be inserted.

Torx 25, Cavity wax spray kit

Fully depress the spray gun trigger, then slowly pull the application wand back out from the bottom rail at the determined speed. Release the spray gun trigger as soon as the tip of the wand appears at the switch hole.

22



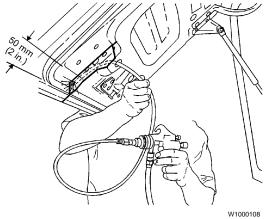
Insert the application wand through the switch hole up into the C-pillar, to a height of a minimum position of 400 mm

Torx 25, Cavity wax spray kit

(1 1/3 ft) into the cavity.

Fully depress the spray gun trigger then slowly pull the application wand back out from the bottom rail at the determined speed. Release the spray gun trigger as soon as the tip of the wand appears at the switch hole. Install the compartment light switch.

23



Coat the lower luggage compartment hatch cavity with cavity wax up to 50 mm (2 in.) from the bottom. With the application wand inserted in the hatch cavity, move the wand as necessary to ensure complete coverage. Tilt the hatch downward while applying the wax so gravity can assist in letting the wax flow to the lower portions of the cavity profile. Close the hatch immediately after application.

24

Repeat all above steps on the opposite side of the cab.

Note: To avoid the wax drying in the equipment, always thoroughly clean the cavity wax spray kit with white spirit after each use.

Feedback

One of our objectives is that workshop personnel should have access to correct and appropriate service manuals where it concerns fault tracing, repairs and maintenance of Volvo trucks.

In order to maintain the high standards of our literature, your opinions and experience when using this manual would be greatly appreciated.

If you have any comments or suggestions, make a copy of this page, write down your comments and send them to us, either via telefax or mailing directly to the address listed below.

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Fax (336) 393-3170	
Comments/proposals	
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Operation Numbers

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