UTILIMASTER®

Body Service Manual

Truck Body and PDV

Read First: Top Tips on Using This Online Manual

Browse pages with Bookmarks (hyperlinks) or Thumbnails

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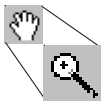
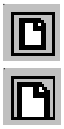
Thumbnails are visual icons of the actual pages. After selecting the thumbnail view button (Acrobat Reader ver. 3.0) or tab (ver. 4.0/5.0; "Page" tab in 6.0), you can quickly browse for parts sections just by the "look" of the page. Click on the appropriate thumbnail to view that page.

Use the Zoom and Fit tools for magnification of page sections



Select the Zoom tool. (**In ver. 4.0 and later, when the Hand tool is selected, you can temporarily change to the Zoom tool by holding down the Ctrl key and the space bar at the same time.**) Click and drag to draw a rectangle around the area you want to magnify.



To return to an overview, you can click on one of the following buttons:

- The Fit Page button scales the *entire* page to display within the main window.
- The Fit Width button scales the page *width* to display within the main window.

Find parts or procedures with the Find tool

Use the Find tool to search for a fragment of a word, a complete word, or multiple words in the active document. To **find** a word (e.g., a part name):

1. Click the Find tool.
2. In the Find What text box, enter the text to be found and click Find. When the program finds the text, the Find dialog box closes and the page containing the text is displayed with the text highlighted.
3. To find the **next occurrence** of the word, press F3, press Ctrl + G, or reopen the Find dialog box and click Find Again.

NOTE: No unauthorized reproduction of this document is allowed. For a printed version of this manual, contact Utilimaster Customer Service.

- **Call 800-237-7806** (or 574-862-3219).
- **Fax** to **574-862-7637**.
- **Email** to **CustSvc@Utilimaster.com**.
- Mail to the following address:

  Utilimaster
  Attn: Customer Service Department
  65528 State Road 19
  P.O. Box 585
  Wakarusa, IN 46573-0585
  U.S.A.

Part Number: 03102101-VY04EN

Revision Control

Revision A May 2004

The latest updates and other information about parts and service will be available for viewing and downloading at **www.utilimaster.com**.

Important Notices

NOTE: When phoning Utilimaster, be aware that our 219 telephone area code changed to 574 in January 2002. The 800 numbers were unaffected.

Printed in U.S.A.

Title: *Truck Body and PDV—Body Service Manual*

Utilimaster Corporation attempts to provide information that is accurate, complete, and useful. All information contained in this manual is based on the latest product information available at the time of publication. However, because of the Utilimaster policy of continual product improvement, Utilimaster reserves the right to amend the information in this document at any time without prior notice. Should you find inadequacies in the text, please send your comments to the following address:

Utilimaster
Attn: Designer of Technical Publications
65906 State Road 19, P.O. Box 585
Wakarusa, Indiana, 46573-0585, U.S.A.

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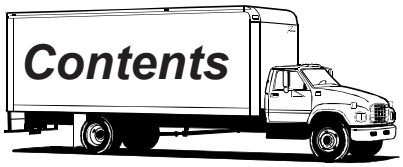
Browse the award-winning web site **www.utilimaster.com** for more information about Utilimaster and its products.



Contents

Introduction

Vehicles Covered

This manual includes service information for **Utilimaster's Metromaster®, Trademaster®, and Utilivan® vehicle bodies, known generically as PDVs (Parcel Delivery Vans) and mounted (usually) on cutaway chassis, as well as Utilimaster's truck bodies mounted (usually) on cab chassis**.

> *NOTE: Utilivan and Trademaster bodies can also be mounted on cab chassis, and Utilimaster truck bodies can be mounted on cutaway chassis. The body style is the important factor regarding the information in this manual, not the type of chassis it is mounted on.*
>
> ***NOTE: Your type of vehicle and installed options determine the relevance of the various sections of this manual. This service information is generic. Details in illustrations and procedures may differ from those in your vehicle.*** *Because Utilimaster manufactures many customized vehicle bodies, this manual cannot list and illustrate every possible part in every vehicle. Nevertheless, the most common body options are described here. Use this information as a guideline where it applies.*

Information Included

This manual's various sections contain information on:

- Repair and replacement procedures
- Maintenance (inspection and lubrication)
- Wiring diagrams
- Warranty claim procedures
- Flat rates (warranty time and labor standards)
- Other resources

This manual contains drawings and photos to aid in servicing the vehicle, and it may include maintenance information on some items installed but not manufactured by Utilimaster Corporation. Items such as chassis and drive train components or certain interior furnishings may be covered by separate manufacturer-supplied information. Information provide here is intended to assist Utilimaster customers and is no way meant to replace or supercede instructions provided by other suppliers of their products.

All information, specifications, and illustrations contained in this manual are based on the latest product information available at the time of publication. However, because of Utilimaster's policy of continual product improvement, the information contained in this document is subject to change without notice.

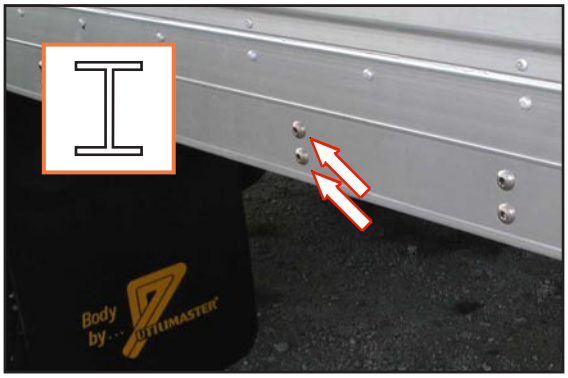
Other Information

See the appropriate body parts manual for more information about ordering replacement parts. (See the More Information section, surf Utilimaster's Technical Manuals page on **www.utilimaster.com**, and/or contact Customer Service.)

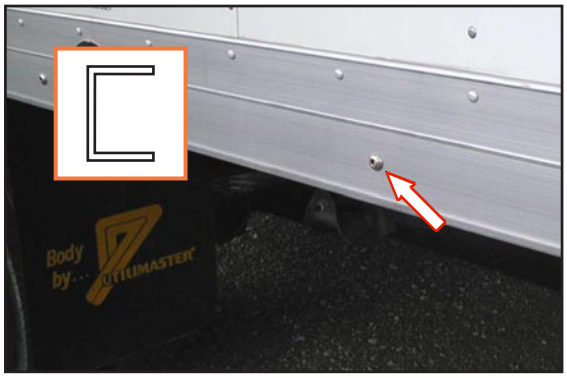
To download the correct manual or order the correct parts you will need to know whether you have a Utilivan, Metromaster, Trademaster, Aeromaster, or Truck Body. If you are uncertain, see Utilimaster's product information on **www.utilimaster.com** and the following two sections.

Utilivan and Truck Body Differences

Although Utilimaster Utilivans and Truck Bodies have many parts in common, in some areas (e.g., subframe, front wall, rear structure) you will need to know which body model your vehicle has to correctly order parts. The body model can be identified by looking at the subfloor (cargo floor) and its attachment to the sidewall. The floor of a Truck Body is built of structural I-beam crossmembers (visible from underneath) and is attached to the sidewall with **two** fasteners. The Utilivan uses formed-C crossmembers that attach to the sidewall with a **single** fastener. See Illustrations FL–10 and FL–20.



FL–10
*Two Fasteners Attach the **Truck Body** Floor and Sidewall*

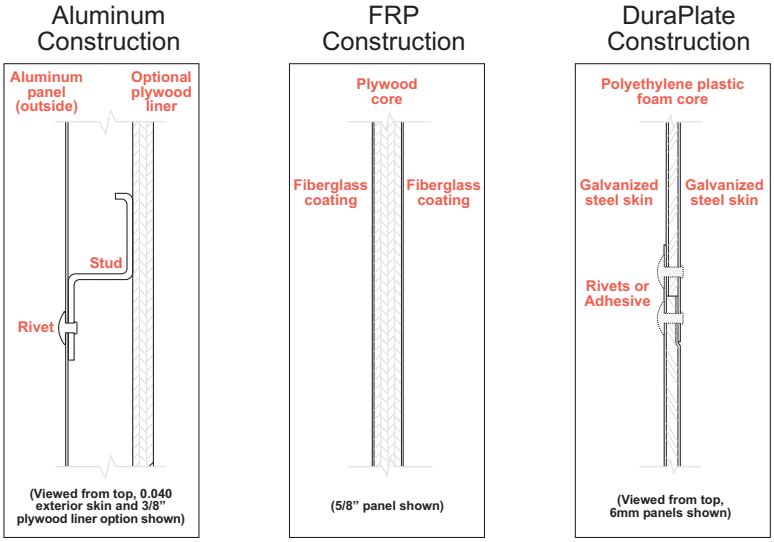


FL–20
*One Fastener Attaches the **Utilivan** Floor and Sidewall*

Wall Construction Types

This manual documents the three different types of body construction. Metromaster and Trademaster construction is FRP only. Utilivan and Truck Body construction can be any of these types. See Illustration FL–30.

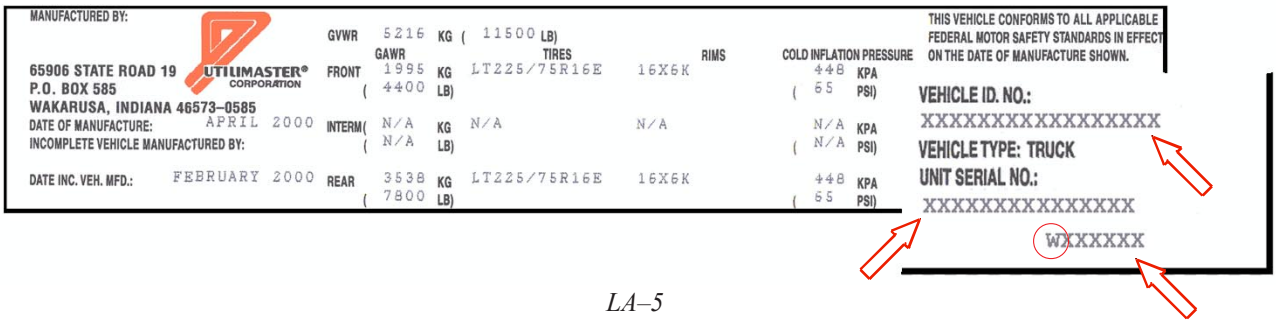
- Aluminum (sheet and post) has an aluminum exterior skin joined to steel vertical interior studs with buck rivets. The studs might be covered with an optional interior liner.
- FRP (Fiberglass Reinforced Plastic) has no studs or panel seams and the surface has a little rougher texture than painted metal.
- DuraPlate has seams at the overlapping steel laminate panels, but no studs. The panels might be joined together with rivets or adhesive.



FL–30 Aluminum, DuraPlate, and FRP Construction

Body (or Unit) Serial Number

The 15-digit **Utilimaster Body** (or **Unit**) **Serial Number** is recorded on the **Federal Certification Label**. (See Illustrations LA–5 and LA–10.) This label is a plastic decal (about 11" long and 2" high) that contains a variety of manufacturing information (including the VIN and Work Order Number). This label should be near the hinge, latch, or catch on a cab door or door post. Open the door to see it.



LA–5
Federal Certification Label

Vehicle Identification Number (VIN)

The 17-digit chassis **Vehicle Identification Number (VIN)** is the legal identifier for this vehicle and is the number recorded in the license plate registration. The VIN appears in one of several locations depending on the model:

- The VIN may appear on a small metal plate on the front corner of the dash on the driver's side. You can read the VIN if you look through the windshield. (See Illustration LA–15.)
- In vehicles over 10,000 lb. (4,536 kg.) GVWR, the plate may be mounted near the latch on the driver's door post or on the edge of the door. Open the door to see it. (See Illustration LA–10.)
- The number is also recorded on the Federal Certification Label. (See Illustrations LA–5 and LA–10.)

LA–10
Federal Certification Label and VIN Plate on Door Post

Work Order Numbers

On the Federal Certification Label, below the Body Serial Number, is the vehicle's 7-digit **Work Order Number**. (See Illustrations LA–5 and LA–10.) This number (without the leading W) may also be stamped (since 1999) on the left-hand base rail. (See Illustration LA–20.) On vehicles built before 1999, the Body Serial Number was stamped on the base rail. Either number can be used to identify the body if it is no longer mounted on the original chassis.

Part Numbers

This manual lists some parts and kit numbers that can be ordered directly from the Utilimaster Customer Service Department. For more comprehensive illustrations and parts lists, see the relevant Utilimaster parts manual. (See the Technical Manuals page on **www.utilimaster.com** or contact Customer Service.)

Some parts or procedures may be dependent on which side of the vehicle they are located. **R**ight **H**and **(RH)** or **L**eft **H**and **(LH)** is **based upon the position of the driver while facing forward**. Right Hand is also sometimes called *Curb Side*, and Left Hand is sometimes called *Road Side*.

LA–15
Vehicle Identification Number Plate on Dash

Illustration LA–20
Work Order or Body Serial Number

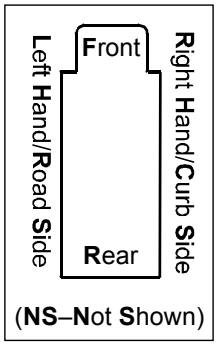


Illustration LA–25
Vehicle Orientation

Ordering Parts

How to Order

To order parts for this vehicle, gather the following information:

- **Model and year of vehicle** (200x-*Customer name*).
- **Chassis VIN or Utilimaster Body Number** (see page 11).
- **Complete shipping address.**
- **Preferred method of shipping.**
- **Complete description of all the necessary parts** (see the relevant parts manual).
- **Method of payment.**

  NOTE: Customer Service prefers payment by Visa, MasterCard, Discover, or American Express credit cards. Purchase Orders from customers with established open accounts are also accepted.

Then contact Utilimaster Customer Service by using one of the following methods:

- **Email** your order to **CustSvc@Utilimaster.com**. (See the Customizable Parts Order Form section.)
- **Fax** your order to **574-862-7637**.
- **Call 800-237-7806** (574-862-3219) and ask for the Parts Department.
- **Mail or express service** your order to the following address:

  Utilimaster Corp.
  Attn: Parts Department
  65528 State Road 19
  P.O. Box 585
  Wakarusa, IN 46573-0585
  U.S.A.

Returns

To return parts for credit, call the Customer Service Department for prior authorization. All returns must be shipped prepaid freight. A restocking fee will be charged to all returns. Special-order parts are not returnable.

Customizable Parts Order Form

You can download a customizable form template file from the Utilimaster web site **www.utilimaster.com**. That template has a header that you can customize with your name and address. Then, to order parts, you only have to enter the specific information about the vehicle—saving retyping the same address information repeatedly. After completing the form information, the file can be emailed as an attachment. That form can also be used for mailing or faxing.

NOTE: When phoning Utilimaster, be aware that our 219 telephone area code changed to 574 in January 2002. The 800 numbers were unaffected.

Filing Warranty Claims

If a problem on the Utilimaster body is caused by a defect in materials or workmanship during the warranty period, it will be covered by our Limited Warranty. Chassis, engine, tires, and battery failures are covered by the individual manufacturers.

Claims must meet the requirements listed below. Failure to meet these requirements may result in a denied or delayed claim.

Complete a repair order with the following information:

- **Chassis VIN or Utilimaster Body Serial Number** (see page 11).
- **Year and model of vehicle.**
- **Owner's and/or service facility's name and complete address.**
- **Service center representative's signature** (or name).
- **Date vehicle was repaired.**
- **Mileage at time of failure.**
- **Itemized description of the problem, including complaint, cause of failure** (if known)**, and correction** (describe in detail).
- **Service center labor rate and total time of repair.**
- **Total claim amount, including cost of parts** (include Utilimaster P/Ns)**, labor, miscellaneous charges, and sales tax** (if applicable).
- **Your claim or repair order number.**
  NOTE: The claim or repair order number is the number used to match Utilimaster payment with the work done. It will be noted on your payment.
- **Utilimaster authorization number** (repairs costing over $150 U.S. or for structural warranty require prior authorization from Utilimaster).

Other claim requirements:

- Any repairs **over $150 U.S. or for structural warranty require prior authorization** from Utilimaster, and that number must appear on the repair order. Contact the Warranty Department.
- Any claim that is not **legible and complete** will be returned for completion.
- **All paint claims** require pictures, estimates, and prior authorization.
- **Shipping damage claims** also require pictures, estimates, and prior authorization. The damage must also be noted on the Delivery Acceptance form. This form requires the signature of the carrier driver.
- **Sublet work** must have the sublet repair order attached to the service facility's repair order that is being submitted.
- Claims must be **submitted within 30 days** after the repair is completed.

The claim can be mailed, faxed, emailed, or performed on-line on our web site (assuming all required information is included).

- Warranty claims should be **mailed** to:
  Utilimaster
  Attn: Warranty Department
  65528 State Road 19
  P.O. Box 585
  Wakarusa, IN 46573-0585
  U.S.A.
- Alternately, you can **fax** your claim (if no photographs are involved) with the above information to **574-862-7637.** (The resolution of the received copies must be acceptable, or you will be asked to mail your hard copies.)
- Or you can **email** your claim with the above information to **Warranty@Utilimaster.com**. (You can download a customizable **Warranty Claim Form template** from the Utilimaster web site **www.utilimaster.com**. The template has a header that you can customize with your name and address. Then, to file a claim, you only have to enter the specific information about the vehicle—saving retyping the same address information repeatedly. After completing the form information, the file can be emailed as an attachment. This form can also be used for mailing or faxing.)

Claims are paid semimonthly. Utilimaster generally does not pay sales tax on claims. If you do not have our tax exemption number on file, please call 800-528-3454 or 574-862-4561 and ask for the accounting department to obtain the number.

Before returning any parts, contact a Utilimaster Warranty representative.

NOTE: When phoning Utilimaster, be aware that our 219 telephone area code changed to 574 in January 2002. The 800 numbers were unaffected.

CAUTION: Utilimaster vehicles are built to designed specifications. Improper use or overloading can cause damage to the equipment and void the warranty.

WARNING: Unauthorized alteration or improper maintenance or repair can result in possible dangerous driving conditions.

Reporting Safety Defects

United States Only

If you believe that your vehicle has a defect that could cause a crash, injury, or death, you should immediately inform the National Highway Traffic Safety Administration (NHTSA), in addition to notifying Utilimaster.

If NHTSA receives similar complaints, it may open an investigation, and if it finds that a safety defect exists in a group of vehicles, it may order a recall and remedy campaign. However, NHTSA cannot become involved in individual problems between you, your dealer, or Utilimaster.

To contact NHTSA, you may either call the Auto Safety Hotline toll-free at **800-424-9393** (or **202-366-0123** in the Washington, D.C., area) or write to:

NHTSA
U.S. Department of Transportation
400 Seventh Street
Washington, DC 20590

You can also obtain other information about motor vehicle safety from the Hotline.

Canada Only

If you believe that your Canadian-registered vehicle has a defect that could cause a crash, injury, or death, you should immediately inform Transport Canada, in addition to notifying Utilimaster.

To contact Transport Canada, call **800-333-0510** (or **613-993-9851** in the Ottawa region) or write to:

Transport Canada
Motor Vehicle Defect Investigation
PO Box 8880
Ottawa, Ontario, K1G 3J2

Flat Rates (Time and Labor Standards)

Allowed time is the average or typical time (in hours) needed to make a given repair. In some cases, because of the complexity or unpredictable nature of the task, **straight time** (ST), the actual repair time recorded, is used in a warranty claim. For example, repairing a translucent panel in the roof is straight time, but resealing a complete roof is allowed 4.0 hours. Warranty claims for labor are the number of allowed-time hours (or number of actual straight-time hours) multiplied by the labor rate of the repair facility at which the job was done.

These times have been established to promote fair and impartial treatment in the processing of warranty claims. The policies and procedures are designed to improve communication in processing warranty claims and to minimize customer inconvenience concerning repairs.

Even though a repair has been assigned an allowed time, this does not mean that any such repair is automatically covered under warranty. These times may be used as guidelines and reference only.

DESCRIPTION	TIME
Door, Bulkhead	
Stop, Open Position—Replace	0.2
Catch, Closed Position—Replace	0.5
Door Seal—Replace	1.0
Latch—Replace	0.5
Door, Roll-up	
Roll-up Door—Adjust	0.5
Door Cable—Replace	0.5
Door Side Seal—Replace	0.5
Door Bottom Seal—Replace	1.0
Door Latch—Replace	1.0
Counterbalance Shaft—Replace	1.5
Door, Swing	
Handle, Rear Swing—Replace	0.3

DESCRIPTION	TIME
Door, Side	
Handle, Interior Sliding Door—Replace	0.2
Handle, Exterior Sliding Door—Replace	0.5
Side Roll-up Door—Replace	ST
Side Roll-up Door Spring—Replace	1.0
Electrical	
Light, Cargo Dome—Replace	0.3
Light, Clearance/Identification—Replace	0.2
Light, Marker—Replace	0.2
Light, Stop/Turn/Tail/Back-up—Replace	0.2
Light, License Plate—Replace	0.2
Switch, Cargo Off/On—Replace	0.5
Harness, Cargo Light—Replace	0.5
Harness, Rear Clearance Lights—Replace	0.5
Harness, Taillight—Replace	0.5

DESCRIPTION	TIME

Floor Assembly

Body Mounting Bolts—Tighten Fasteners	0.1
Body Mounting Bolts—Replace	0.3
Floor Corner Seal, Top—Replace	0.2
Hardwood Floor—Complete Replacement	16.0
Mud Flap Bracket—Replace	0.7
Mud Flap—Replace	0.4

Front Wall Assembly

Front Roof Cap—Reseal	1.0
Front Corner Post—Reseal	0.5
Aluminum Panel—Repair	ST
Aluminum Panel—Replace	8.0
FRP Panel—Repair	ST
FRP Panel—Replace	ST
DuraPlate Panel—Repair	ST
DuraPlate Panel—Replace	ST

Mirrors

Rear Crosswalk Mirror—Replace	0.2
Rear Crosswalk Mirror—Tighten	0.1

Roof

Complete Roof—Reseal	4.0
Complete Roof Structure—Replace	ST
Translucent Panel—Repair	ST
Translucent Panel—Replace	ST
Roof Bows—Tighten	0.2
Cargo Light Bracket—Replace	0.2

DESCRIPTION	TIME

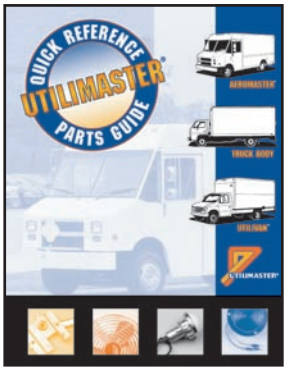
Rear Structure

Grab Handle—Replace	0.2
Rear Corner Post—Reseal	0.5
License Plate Bracket—Replace	0.3

Sidewall

E-track—Repair	0.2
Side Vent—Reseal	0.3
Apitong (Wood) Scuff—Replace	1.0
Apitong (Wood) Slats—Replace	0.4
Baserail—Replace	7.0
Aluminum Panel—Repair	ST
Aluminum Panel—Replace	ST
DuraPlate Panel—Repair	ST
DuraPlate Panel—Replace	ST
FRP Panel—Repair	ST
FRP Panel—Replace	ST
Reflector Tape—Replace	0.1

More Information

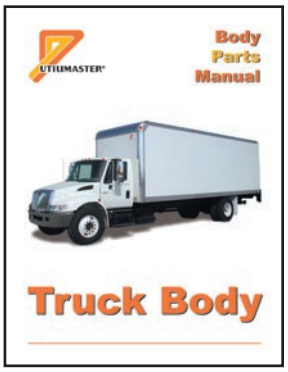


Download Files

Many support documents, including those described here, are downloadable (as Adobe® Acrobat® PDF files) from our award-winning web site at **www.utilimaster.com**. **Click on the Technical Manuals button, to access the download page.** To view the files you must have the Adobe Acrobat Reader version 4.0 or higher installed on your computer. Acrobat readers are available free for all leading computer operating systems on the Adobe web site (**www.adobe.com**).

Utilimaster Quick Reference Parts Guide

Easily find commonly replaced parts for most Utilimaster vehicles in the *Utilimaster Quick Reference Parts Guide*. This illustrated document includes part numbers for door hardware, electrical components, mirrors, vents, mud flaps, roll-up door parts, and many other parts. It also includes sealants and repair kits.

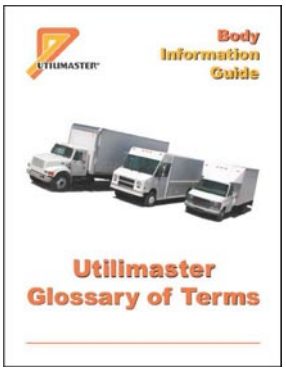


Utilimaster Detailed Parts Manual

Find parts specific to Utilimaster PDV and truck bodies in detailed parts manuals.

Utilimaster Glossary of Terms

If you are not familiar with some of the terminology used in this manual, you can find many Utilimaster and industry associated terms and definitions in the *Utilimaster Glossary of Terms—Body Information Guide*.



Contact Utilimaster

Browse our site for more information about Utilimaster and its products or contact Utilimaster Customer Service by using one of the following methods:

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- **Fax** to **574-862-7637**.
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  65528 State Road 19
  P.O. Box 585
  Wakarusa, IN 46573-0585
  U.S.A.

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Safety Considerations

Notes, Cautions, and Warnings

As you read through the procedures, you will come across NOTES, CAUTIONS, and WARNINGS. Each one is there for a specific purpose.

- **NOTES** give you additional information that will help you to complete the procedure.
- **CAUTIONS** warn you against making an error that could damage the vehicle.
- **WARNINGS** remind you to be careful when there is a risk of personal injury.

Below are some basic WARNINGS that you should heed when you work on the vehicle's body. They are not all inclusive, however, and common sense must be used when servicing vehicles.

- Always wear safety glasses and wear other proper protective equipment (gloves, steel-toed shoes, face shields, knee pads, hearing protection) as appropriate to the process.
- Use safety stands and/or wheel blocks whenever you are underneath the vehicle.
- Be sure that the ignition switch is Off unless otherwise required by the procedure.
- Put the transmission in Park and set the parking brake before working on the vehicle.
- Operate engines only in well-ventilated areas.
- Keep yourself and your clothing away from the radiator fan, belts, and any moving parts when the engine is running.
- Avoid contact with hot metal parts, such as the radiator or exhaust system.
- Do NOT smoke while working on the vehicle.
- Always remove rings, watches, hanging jewelry, and loose clothing before working on a vehicle. Tie long hair securely behind your head.
- Become familiar with all warning labels.
- Always maintain firm footing and control of tools.
- Use only tools that are in good condition, and use them only in the appropriate manner.
- Get help when needed to avoid injuries caused by overexertion.
- Always be aware of the location of other people and potential trip hazards (e.g., air lines, electrical cords, tools).

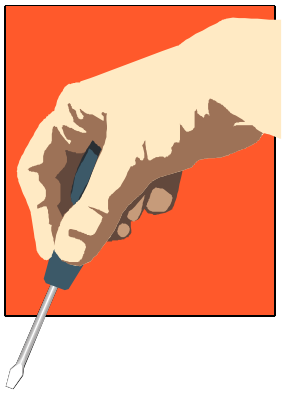
Towing and Emergency Repairs

Problems with the Utilimaster body are unlikely to disable a vehicle enough to make it undrivable. **See the chassis operator's manual and the engine service manual for emergency information.**

See the chassis operator's manual for information on towing procedures. Utilimaster recommends the following:

- A wheel lift or flatbed equipment is the preferred method of towing.
- Unload the vehicle when possible to reduce stress on the chassis during towing.
- Be sure to place the transmission in Neutral and fully release the parking brake if towing.

Service Information



Manufacturers' Recommendations

Safety, application, and operation instructions provided by the manufacturer with sealants, adhesives, cleaners, accessories, and other equipment should always supersede information provided by Utilimaster.

Body Maintenance Checklist

By design, the Utilimaster body is low-maintenance. However, Utilimaster recommends the following items should be checked every three to four months, unless otherwise stated. For more detailed information, check the relevant sections of the manual.

Pre-Trip Inspection (daily)

The driver should check the following items on the body each day:

- ❑ Adjust crosswalk mirrors as needed.
- ❑ Inspect operation of rear vision camera system. See the Rear Vision (Back-up) Camera System section.
- ❑ Check all exterior and interior lights.
- ❑ Check that doors open easily and close tightly.

Routine Body Maintenance (every three to four months)

Utilimaster recommends that a technician do the above pre-trip inspection before performing the following body maintenance checks:

Bumpers

- ❑ Check for loose fasteners on the bumper and brackets.
- ❑ Check for damaged or bent components.

Door, Central Locking System (Trademaster Compartments)

- ❑ Lubricate as needed. See the Door, Central Locking System (Trademaster) section.

Door, General

- ❑ Check operation of the locks.
- ❑ Check interior and exterior handles for tightness.
- ❑ Check alignment of latches and catches. At least 1/8" of the Kason® latch tongue needs to engage the catch plate. (See Illustration MC–10.)
- ❑ Check for wear on the bulkhead catch plates and latch tongue.
- ❑ Inspect and clean rubber seals around door edges.
- ❑ Lubricate ABLOY® lock cylinders with a light oil (such as Exxon Hydraulic oil type NUTO® 68, or equivalent, for the lock cylinders.)
- ❑ If the ABLOY lock cylinders become dirty, use ZEP® 45 penetrating lubricant to clean the cylinders before applying the NUTO® 68.

NOTE: This service information is generic. Details in illustrations and procedures may differ from those in your vehicle. Since doors differ, adapt these instructions as needed.

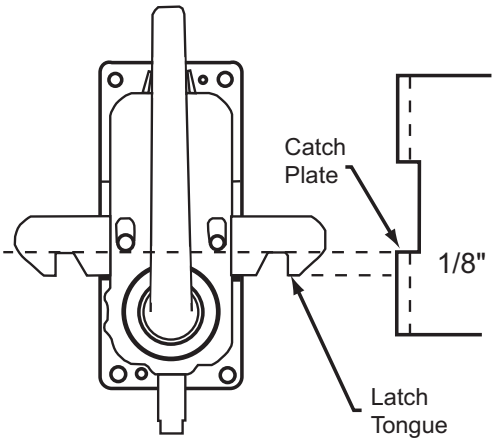


Illustration MC–10
Check Latch Tongue and Catch Plate for Wear

Door, Roll-up

Inspection

Check the condition of the door and strap:

- ❑ Check that the door opens easily and closes tightly.
- ❑ Check condition of latch. See Illustration MC–15, Door, Roll-up—MSL ("Banana Lock") Replacement section, and Door, Roll-up—Two-point (Fan-type) Latch Adjustment section.
- ❑ Check for loose fasteners or other components.
- ❑ Check the condition of the pull-down strap for fraying or wear.
- ❑ Check that the rear door is centered in the opening.

Illustration MC–15
Check Roll-Up Door Latch Dead Bolt for Wear

CAUTION: Do NOT use grease on doors. Do NOT get oil on rubber seals. Wipe up any drips immediately.

Lubrication

Lubricate the following rear roll-up door parts with a (Utilimaster P/N 04202540, or equivalent) light oil (see Illustration MC–30):

- ❑ Roller drums and shafts—wipe off excess oil (#1, #3).
- ❑ Springs—lubricate both springs along their entire length to prevent rusting (#2).
- ❑ Hinges (center and end)—wipe off excess oil (#5).
- ❑ Rollers (#6, #7).
- ❑ Latches (NS).
- ❑ Clean and lubricate track (#4).

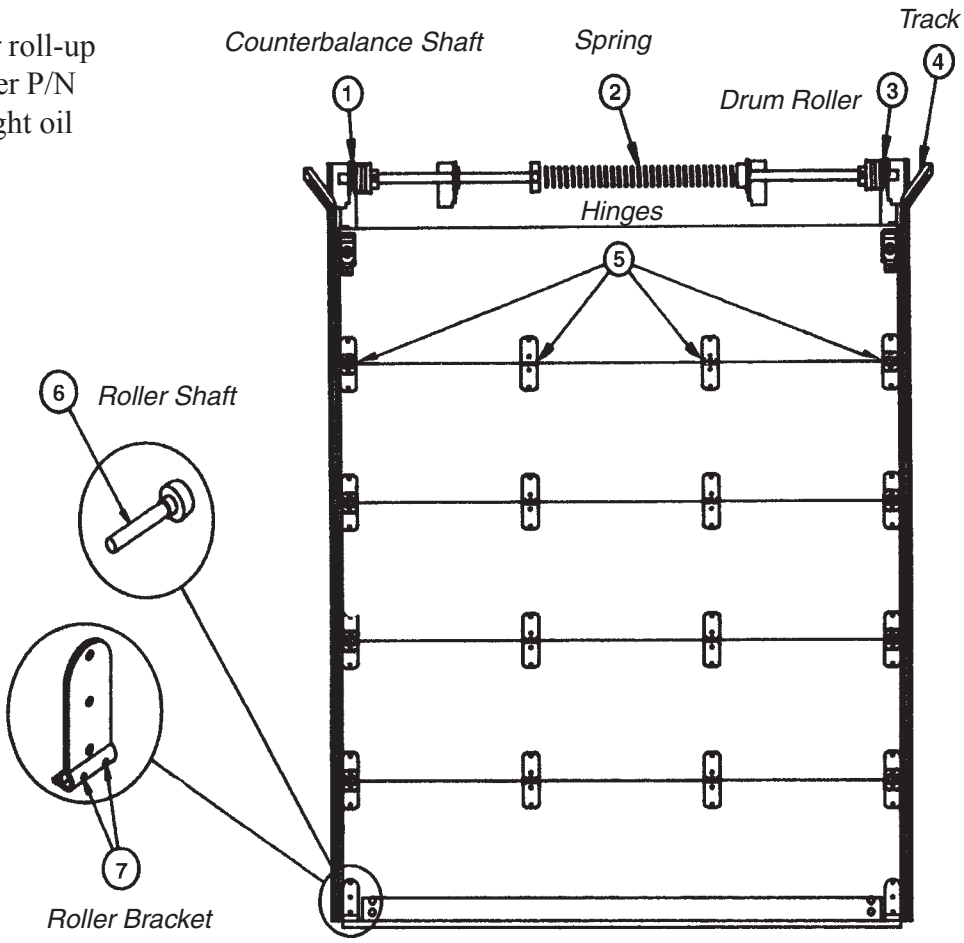


Illustration MC–30
Lubrication Points on Rear Roll-Up Door

Door, Swing

- ❑ Handles/latches (metal)—use ZEP® 45 penetrating lubricant to clean contact points and moving parts before applying a lightweight oil. (Exxon Hydraulic oil type NUTO® 68, or equivalent.)
- ❑ Hinges and metal exterior door catches—lubricate the zerk fittings with #2 grease at six-month intervals (or three-month intervals in hot, dusty conditions). (See Illustration MC–35.)
- ❑ Interior door catches (metal)—use ZEP 45 penetrating lubricant to clean before applying a lightweight oil. (Exxon Hydraulic oil type NUTO 68, or equivalent.) (See Illustration MC–40.)
- ❑ **Rubber** door catches and latches—clean and check for loose fasteners. (See Illustration MC–45.) Do NOT use petroleum jelly on rubber door catches. It will attract dirt and become abrasive to the fittings.

  NOTE: The information in this illustration is generic. Details may differ from your vehicle. Use this information as a guideline where it applies.

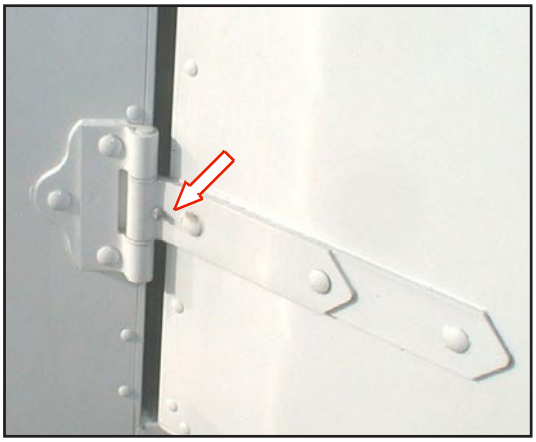


Illustration MC–35
Grease Swing Door Hinges

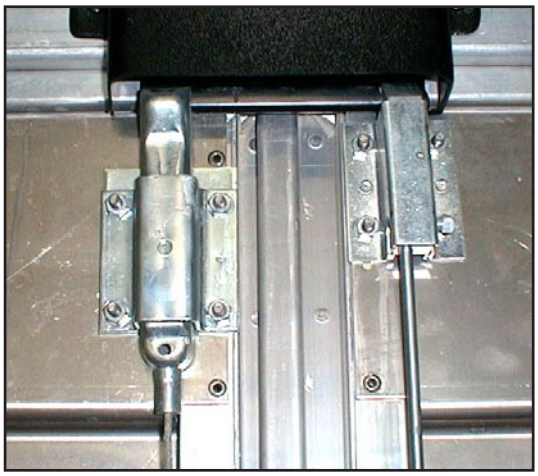


Illustration MC–40
Lubricate Swing Door Catches

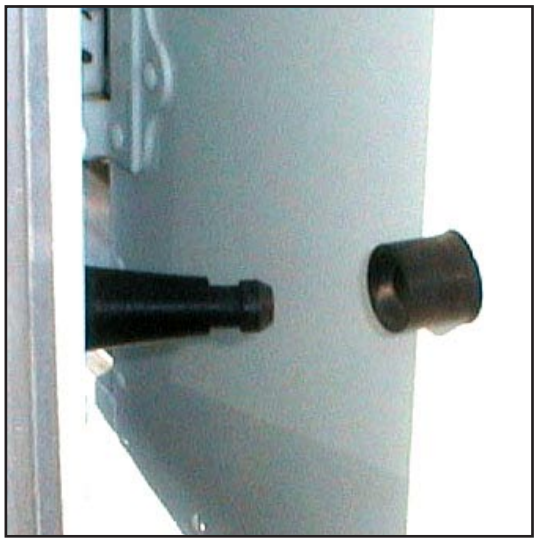


Illustration MC–45
Clean Rubber Catches

Other Body Parts

- ❑ Check the alignment of body mounting spacers and tighten mounting bolts after the first 30, 60, and 90 days of operation and every six months after that. (See Illustration MC–50 and the Body Mounting Bolts section.)
- ❑ Sweep debris from floor surface.
- ❑ Do NOT wash down wooden floors since this can cause wood to warp.
- ❑ Check that all reflective tape is securely attached.
- ❑ Clean rear threshold drains and drain troughs. (See also the Drains section.)
- ❑ Check grab handle mounting bolts for tightness. (See also the Grab Handle section.)
- ❑ Check mirror mounting bolts for tightness. (See also the Mirror section.)

Illustration MC–50
Body Mounting Bolts

CAUTION: Do NOT power-wash for the first 90 days. Wash and wax the body periodically to preserve the body finish, but avoid harsh cleaning solutions and high-pressure washes.

CAUTION: Do NOT drive a forklift into a vehicle rated under 14,000 lbs GVWR.

NOTE: This service information is generic. Details in illustrations and procedures may differ from those in your vehicle. *Because Utilimaster manufactures many customized vehicle bodies, this manual cannot list and illustrate every possible part in every vehicle. Nevertheless, the most common body options are described here. Use this information as a guideline where it applies.*

Tools and Fasteners

Common Tools

Below are tools, including recommended brands and models, commonly used in vehicle body repairs.

- Phillips and flat-blade screwdriver set including Torx® bit
- Metric and standard box-end and open-end wrench set
- Metric and standard socket sets
- Torque wrenches (any quality sets with in•lb and ft•lb [or N•m] measurements)
- 3/8" drill (Dewalt® DW221 recommended)
- 1/2" drill (Dewalt® DW231 recommended)
- Drill stop
- Drill bit set (including 1/4" or F-bit and 3/16" or #11 bit)
- Screw gun (Dewalt® DW281 recommended)
- POP® riveter (Emhart® PRG 540 for both POP® rivet and MONOBOLT® installation)
- Monobolter (Emhart® PRG 540 with 1/4" nose assembly—this nose assembly consists of Jaws PRG 540-44, Jaw Pusher PRG 740-7A, and 1/4" Nose Tip BRN-811)
- Huck® riveter (Huck 2025-L) with:
  - ❑ Hucktainer nose assembly 99-3464, for Hucktainer fasteners
  - ❑ 1/4" nose assembly 99-3204, for Magna-Grips/pin-and-collars
  - ❑ 1/4" nose assembly 99-3305, for Magna-Locks and Magna-Bulbs
- Nutsert insert tool (Sioux 02107TL recommended)
- Air hammer with a buck riveter attachment (Sioux 270 with 3/16" Ajax rivet set #1620) and buck bar
- Hand punch or an air hammer with a punch attachment
- Disk air sander with 220-, 320-, and 600-grit sandpaper
- Saber saw (Porter Cable 548)
- Die grinder with blade
- DVOM (Digital Voltmeter)
- Terminal tool kit (Snap-On TT600 recommended)
- Needle-nose pliers
- Locking pliers (VISE-GRIP® recommended, 9" or 10" [23 or 25 cm] long)
- Multigrips pliers (any standard model about 9" or 10" [23 or 25 cm] long)
- Tape measure
- Fine-pointed marker
- Rubber mallet
- Razor knife
- Pry bar or large screwdriver
- Memory saver
- Caulking gun
- Safety glasses

Fastener Replacement

BOM® Fastener

Removal

Cut it off with a die grinder. With a center punch, knock out the center pin. The remaining ring may need to be drilled out. (See Illustration FR–5.)

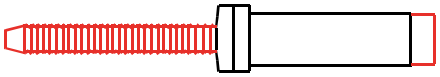


Illustration FR–5
BOM Fastener

Replacement

A BOM fastener should be replaced per original specifications. However, in some applications it may be able to be replaced with a Grade 8 bolt, and a Grade 8 locknut of like diameter. If replacing with a nut and bolt, always remember to use flat washers against all aluminum surfaces.

Buck Rivet (Solid Brazier-head)

Removal

Use a #11 or 3/16" [5 mm] drill bit (depending on rivet size) to drill off the head of the rivet, starting at the dimple located in the center. After the head pops off, use a punch to knock out the stems. (See Illustration FR–10.)

NOTE: A center punch can be used on the rivet head in order to get a good start for the drill bit.

NOTE: Brazier-head buck rivets 3/16" [5 mm] in diameter and of varying lengths are used on a number of locations on the body.

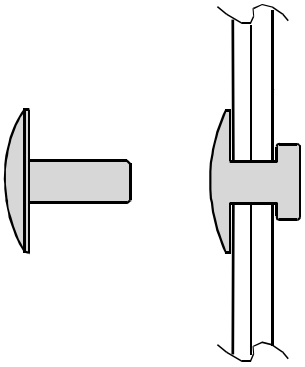


Illustration FR–10
Buck Rivet

Replacement

Use an air hammer with a buck-riveter attachment and bucking bar to replace the rivet. In most applications a MONOBOLT can also be used to replace a buck rivet. Do NOT replace buck rivets with a POP rivet.

Buck Rivets Lengths

Rivet Length	Metal Thickness Range
7/16" [11.1 mm]	3/16" to 15/64" [4.8 to 6.0 mm]
1/2" [12.7 mm]	1/4" to 19/64" [6.4 to 7.5 mm]
9/16" [14.3 mm]	5/16" to 23/64" [7.9 to 9.1 mm]
5/8" [15.9 mm]	3/8" to 27.64" [9.5 to 10.7 mm]
3/4" [19.1 mm]	7/16" to 17/32" [11.1 to 13.5 mm]
7/8" [22.2 mm]	35/64" to 21/32" [13.9 to 16.7 mm]
For Rivet Diameter 3/16" [4.76 mm], Hole Diameter 0.191" [4.85 mm], Drill Bit #11	

NOTE: This vehicle was designed using English (S.A.E.) measurements. ***Utilimaster provides metric conversion equivalents as a courtesy if metric tools must be used, but Utilimaster does not warrant metric values given in this manual.***

Hucktainer

Note: A Hucktainer has a rubber-covered head and is used on panels.

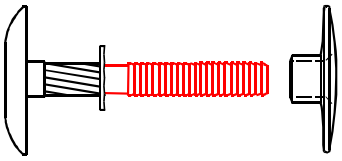


Illustration FR–15
Hucktainer Fastener

Removal

1. With a center punch (or an air hammer with a punch attachment), knock the stem out of the fastener from the collar side. (See Illustration FR–15.)
2. If the fastener sections don't fall out, pry them out with a screwdriver.

Replacement

Use a Huck® riveter to replace it. (The rubber-covered head should be positioned on the exterior side.)

Locknut

CAUTION: Utilimaster uses center-lock-type locknuts, which distort the threads of the nut and bolt. This type, should NOT be reused after disassembly. Always replace the locknut and bolt with new.

Removal

Remove with an appropriate open-end or box-end wrench.

Replacement

Utilimaster commonly uses center-lock type locknuts, which distort the threads. These locknuts **and** the bolts should always be discarded and replaced with ***new***. Nylon insert nuts and KEPS® nuts are reusable. If locknuts are not available, use lock washers and a thread adhesive like Loctite®. Flange head nuts and bolts can be used in place of flat washers. Always use flat washers against aluminum surfaces.

Slowly torque the new bolt to the appropriate value. (Using a power tool to spin the fastener quickly may lower its effectiveness.)

MONOBOLT®, Magna-Bulb®, Magna-Lok®, and Hemlok® Rivets

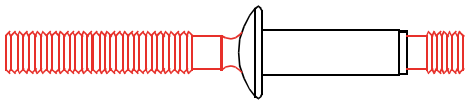


Illustration FR–20
Magna-Bulb

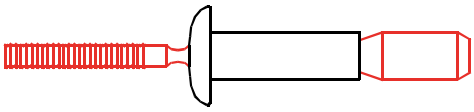


Illustration FR–25
Magna-Lok

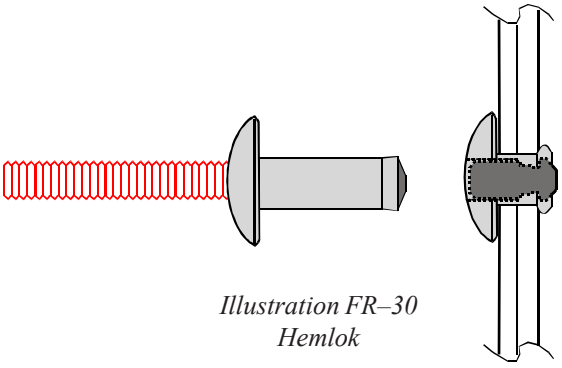


Illustration FR–30
Hemlok

Removal

1. With a center punch (or an air hammer with a punch attachment), knock the stem out of the fastener. (See Illustrations FR–20 through FR–30.)
2. Drill off the head of the rivet using a #11 (or 3/16" [5 mm]) or F (or 1/4" [6 mm]) drill bit (depending on rivet size). The back stem should fall off.

   NOTE: Be very careful (especially for Hemloks) not to enlarge the hole while drilling off the head. If the hole does become enlarged, you will need to put a larger fastener in its place.

Replacement

Use a MONOBOLT rivet gun to replace it.

For a Hemlok, you may also replace it with a Magna-Lok or buck rivet.

Nutsert

NOTE: A nutsert is a threaded insert that is crimped into place. A nutsert need only to be removed if it is damaged and the threads cannot be retapped.

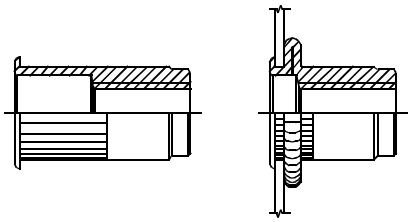


Illustration FR–35
Nutsert

Removal

Cut it off with a die grinder. (See Illustration FR–35.)

Replacement

Using a nutsert insert tool, replace the nutsert with one meeting original specifications. Do NOT use Loctite® thread locker on the threads of a nutsert.

CAUTION: Do NOT use Loctite® thread locker on the threads of a nutsert.

If a nutsert of original specifications or the tool to install nutserts is not available, the nutsert may be replaced with another form of threaded insert or a nut and bolt. This depends upon application and should be approved by Utilimaster Customer Service. If it is to be replaced with a nut and bolt, it is important to use flat washers on both sides of the material.

Pierce-and-Roll (Self-Piercing) Rivet

This hardened steel fastener (attaching the translucent or aluminum roof panel to the roof rails) crimps parts together by driving through the top material and mushrooming out into the bottom part without penetrating the lower surface. (See Illustration FR–40.)

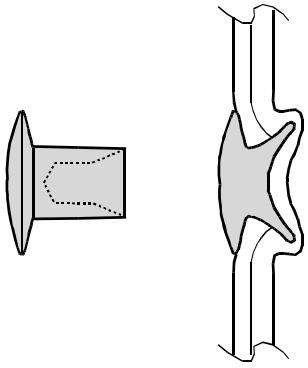


Illustration FR–40
Pierce-and-Roll Rivet

Removal

The rivet head can be ground or drilled off. Use a 4" angle grinder to grind off the rivet head. Or use a **solid carbide or cobalt steel** 1/4" [6 mm] drill bit to drill off the head of the rivet, starting at the dimple located in the center. Use a variable-speed drill, **drilling as slowly as possible** and periodically dipping the drill bit in Mer*Lube 829 lubricant (cut 50/50 with water). You do not need to drill all the way through the rivet—just enough to remove the head.

After the roof panel is removed, use a 4" angle grinder to grind down all rivet stems and rough areas until they are flush with the rail surface. Be careful to not grind off excess metal.

Replacement

Drill 3/16" [5 mm] new holes through the panel and rails, staggered from the old rivets. Use an air hammer with a buck-riveter attachment and bucking bar to install a 3/16" diameter by 1/2" long soft buck rivet (P/N 11600108-0308S). (See Illustration FR–30.)

Alternately, drill 1/4" [6 mm] new holes through the panel and rails, staggered from the old rivets. Use a MONOBOLT rivet gun and 1/4" Magna-Loks (P/N 11400026).

Do NOT replace with POP rivets.

Pin-and-Collar Fastener (Magna-Grip®)

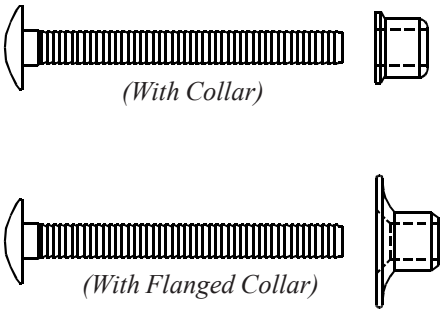


Illustration FR–45
Magna-Grip®

Removal

a. From **either side**, the rivet can be **cut off with a die grinder**. Punch out the center and the remaining ring. (See Illustration FR–45.)

b. Or from the **head side**, using the appropriate-size drill bit (3/16" [5 mm], 1/4" [6 mm], or 3/8" [10 mm]), **drill off the head** of the pin. Punch out the center of the remaining pin.

c. Or from the **collar side**, using the appropriate-size drill bit (3/16" [5 mm], 1/4" [6 mm], or 3/8" [10 mm]), **drill out the center of the collar**. With a center punch, knock out the center of the remaining pin.

NOTE: Be extremely careful not to overheat the steel pin and collar. Use low-RPM drill speed.

Replacement

Use a Huck® rivet gun to replace it.

If a Huck rivet gun is not available, replace the fastener with a Grade 8 bolt of like diameter and a Grade 8 locknut. For additional locking capacity, use Loctite thread locker.

NOTE: Flat washers are required against aluminum surfaces.

POP® Rivet

Illustration FR–50
POP Rivet

Removal

Drill off the head of the rivet using a #11 or 3/16" [5 mm] drill bit. The back stem should fall off. (See Illustration FR–50.)

Replacement

Use a POP rivet gun to replace it.

T-Nut and Bolt

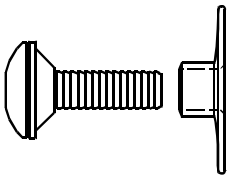


Illustration FR–55
T-Nut and Bolt

Removal

With an appropriate screwdriver, unscrew the bolt while keeping the nut stationary. (See Illustration FR–55.) Discard the bolt and nut. The bolt has thread adhesive and a compressible plastic spacer/seal, so not attempt to reuse either the bolt or the nut. After the bolt is removed, if any residue from the adhesive or seal is present on a reusable surface, scrape off the residue.

Replacement

While keeping the nut stationary, screw in a new bolt. Slowly torque the new bolt to the appropriate value. (Using a power tool to spin the fastener quickly may lower the effectiveness of the seal.)

Tape, Double-faced Adhesive

Removal

With a razor knife, cut along the length of the tape while pulling apart the joined flat surfaces. Scrape off remnants as much as possible. Clean with a solvent.

Replacement

Apply to one surface from a fresh roll. Do **NOT** remove the tape paper until the other surface is in the proper position. Once the tape sticks to a surface, you will **not** be able to reposition it without starting over.

Tape, Vinyl Barrier

White vinyl tape is used wherever steel and aluminum surfaces mate in order to prevent corrosion of the surfaces.

Removal

Peel or scrape off.

Replacement

Apply to mating surfaces from a fresh roll.

NOTE: Tape rolls can be ordered with the following part numbers:
1" [25.4 mm]-wide roll.....P/N 12303707 *2" [50.8 mm]-wide roll.....P/N 12303706*
3" [76.2 mm]-wide roll.....P/N 12303705 *4" [101.6 mm]-wide roll.....P/N 12605947*

Thread Adhesive

Removal

Bolts with thread adhesive cannot be reused. After the bolt is removed, if any residue from the seal is present on a reusable surface, scrape off the residue.

Replacement

Slowly torque the new bolt to the appropriate value. (Using a power tool to spin the fastener quickly may lower the effectiveness of the seal.)

Torque Seal

The torque seal appears as a small painted line across a bolt thread and nut or across a bolt and washer seam. If the seal line is broken (out of alignment), the fastener has loosened.

*NOTE: Torque seal **indicates** a fastener has loosened but does not prevent it.*

Removal

After the bolt is removed, if any residue from the seal is present on a reusable surface, scrape off the residue.

Replacement

When the fastener installation is complete, apply a small bead of torque seal or paint stick across the new bolt threads, nut, head, and/or washer.

Sealant

WARNING: Always wear proper protective equipment when appropriate for the process.

WARNING: Safety and application instructions provided with sealants, adhesives, and other products should always supersede information provided by Utilimaster.

The one-compound polyurethanes Utilimaster uses are very effective sealants. They remain permanently elastic (less cracking due to shrinkage), they can be painted, and they require no mixing. They bond as well as seal, thus reducing the number of mechanical fasteners needed, and they also reduce noise and corrosion.

The following statements provide an overview of what to look for when working with polyurethane sealants:

1. **Manufacturer's Recommendations:** Always follow manufacturer's cautions and recommendations for protective equipment, application, and cleanup.
2. **Conditions:** Recommended application temperatures are 40º [5º C] to 100º F [37º C]. For cold-weather applications, store sealants at approximately 70º F [21º C] and remove them just prior to using. Make sure joint is frost-free.
3. **Surface:** Clean the surface with a strong jet of compressed air, sandblast, or solvent. Remove all loose particles and old sealant. The surface must be clean, dry, free of grease or rust, and of sound quality.
4. **Priming:** Usually no priming is required. Since substrate type and uniformity can vary, a pretest is recommended. Sealant manufacturers have primers when substrates require them. Since compatibility among manufacturers is in question, do not mix and match different manufacturers' primers and sealants.
5. **Application:** Cut the tip of the plastic nozzle to joint size. Puncture the airtight seal. Install with a hand- or power-operated caulking gun. For best performance, sealant should be gunned in the joint where the joint slot is at the midpoint of its designed expansion and contraction. Dip a Poly-stick in a soapy solution to ease spreading the adhesive to seal any gaps.

Limitations:

- For curing, permit sufficient exposure to air.
- Do NOT apply over silicones or in the presence of curing silicones.
- During cure, avoid contact with alcohol and alcohol-containing solvents.
- For best results, use open cartridges in the same day.

NOTE: This service information is generic. Details in illustrations and procedures may differ from those in your vehicle. *Because Utilimaster manufactures many customized vehicle bodies, this manual cannot list and illustrate every possible part in every vehicle. Nevertheless, the most common body options are described here. Use this information as a guideline where it applies.*

Service Procedures

Battery, Disconnecting

WARNING: To avoid accidental shock or damage to the vehicle, disconnect the battery before servicing an electrical component. Check your chassis-supplied operation or service information for specific recommendations.

WARNING: Always remove the (Black) Negative cable first and connect it last.

1. Make sure the ignition switch is Off.
2. You **may** need to plug a memory saver (with 9-volt battery) into the accessory outlet on the dash. (See Illustration BA–20.) **Check your chassis-supplied operation or service information for specific recommendations.**
3. Disconnect the **Negative (Black)** battery cable(s) **first**. (See Illustration BA–25.)
4. Tuck the battery cable away from the terminal to prevent accidental contact.
5. When servicing the vehicle is finished, reconnect the cable.

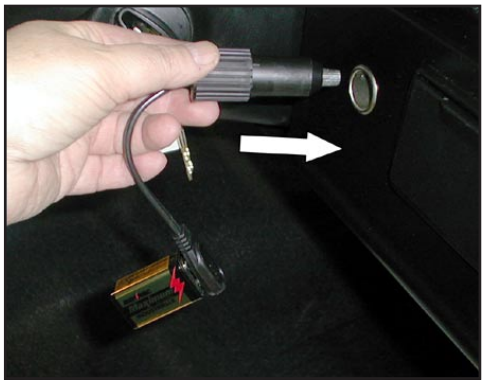


Illustration BA–20
Plugging in a Memory Saver

Illustration BA–25
Negative (Black) Cable Disconnected and Tucked Away

Body Mounting Bolts

NOTE: Mounting bolts come in a variety of configurations depending on the application.

Normal road vibration and the natural changing properties of the wood runners between the chassis and body may reduce the clamping force on the body mounting bolts.

Therefore, it is important to check the alignment of body mounting spacers and tighten the mounting bolts after the first 30, 60, and 90 days of operation and every six months after that. (See Illustrations BM–5 through BM–20 and the torque chart.)

Always tighten the lower nuts because, in some applications, the top nuts have been welded in place.

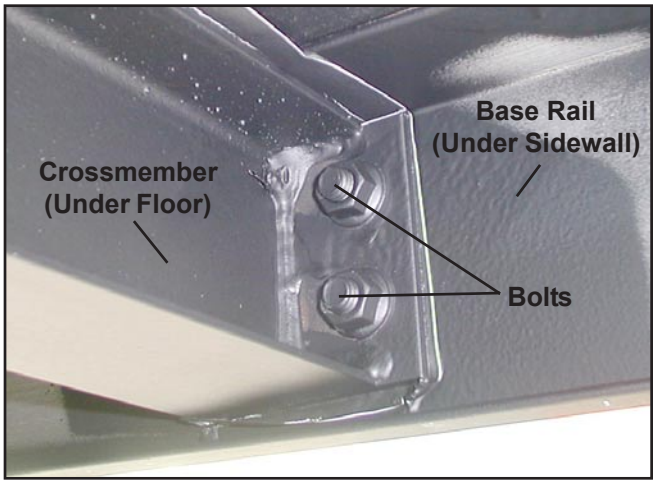


Illustration BM–5
Base Rail to Crossmember Bolts

CAUTION: Check the alignment of body mounting spacers and tighten the mounting bolts after the first 30, 60, and 90 days of operation and every six months after that.

Description and Application	Illustration	Torque	
		ft•lb	N•m
Base rail to crossmember	BM–5	24–31	32.6–42.0
Tie rod with angle bar	BM–10	45–55	61.0–74.5
Tie rod with J-hook	BM–15	24–35	32.6–47.4
U-bolt with angle bar	BM–15	45–55	61.0–74.5
5/8 bolt in body tie-down angle	BM–20	80–110	108.5–149.1
5/8 bolt at chassis frame rail for body mounting angle	BM–20	90–120	122.0–162.6

NOTE: Utilimaster vehicles are designed using English (S.A.E.) measurements. ***Utilimaster provides metric conversion equivalents as a courtesy if metric tools must be used, but Utilimaster does not warrant metric values given in this manual.***

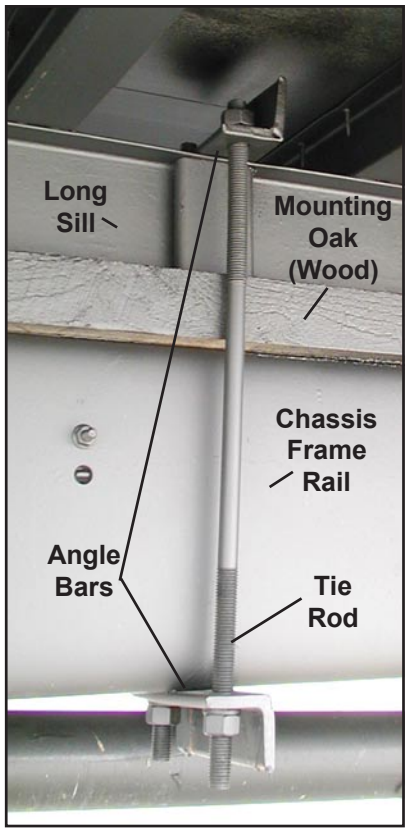


Illustration BM–10
Tie Rods with Angle Bars

Illustration BM–15
J Hook and U Bolt

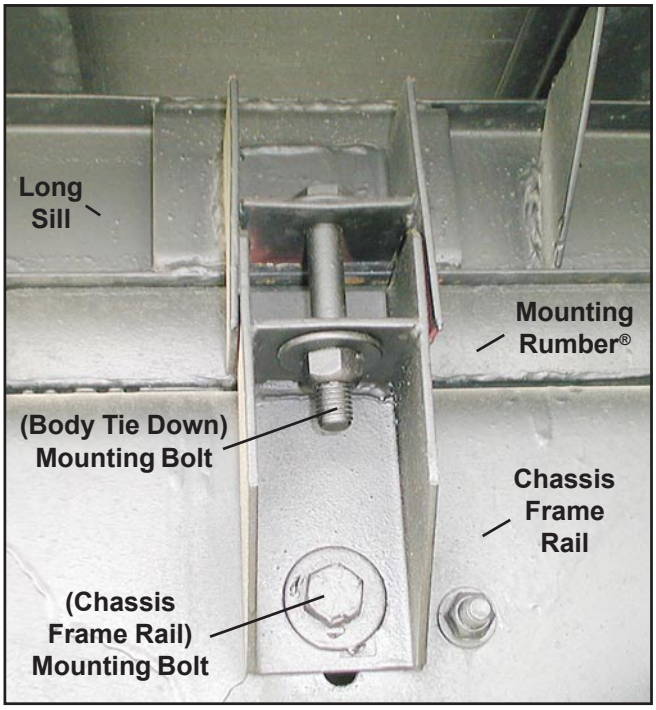


Illustration BM–20
Chassis Frame Rail and Body Tie Down Bolts

Bumper, Rear

Most truck body bumpers are welded in place. To replace a bumper, cut it off with a torch and weld the new bumper in place. Remove any other applicable fasteners and install with new fasteners.

For bumper rubber impact strips, remove the bolt attaching the strip to the bumper. Replace with a new strip as well as **new stainless-steel** bolts and nuts. (See Illustration BU–5.)

Most PDV bumpers are bolted to a bumper support and have rivets attaching lights and splash guards. Remove the various fasteners to replace the bumper. To replace the bumper support, it may need to be cut off with a torch and the replacement welded into position.

Illustration BU–05
Rubber Impact Strip and Fasteners

WARNING: When replacing a bumper, always support the bumper to keep it from falling.

CAUTION: Always use *new* bolts and two-way Grade 8 locknuts. Do NOT *reuse* locknuts or bolts when replacing bumpers.

Cable Retainment Track

Removal

1. With a Torx bit, unscrew the fasteners. (If the exterior encapsulated T-nut starts to spin, hold it while unscrewing the bolt.)
2. Remove the track from the sidewall.

Installation

1. Position the track in place and screw in the fasteners with a Torx bit. (If the exterior encapsulated T-nut starts to spin, hold it while unscrewing the bolt.)
2. If a new T-nut is required, punch out the old T-nut, and pound in the new one before screwing in the bolt.

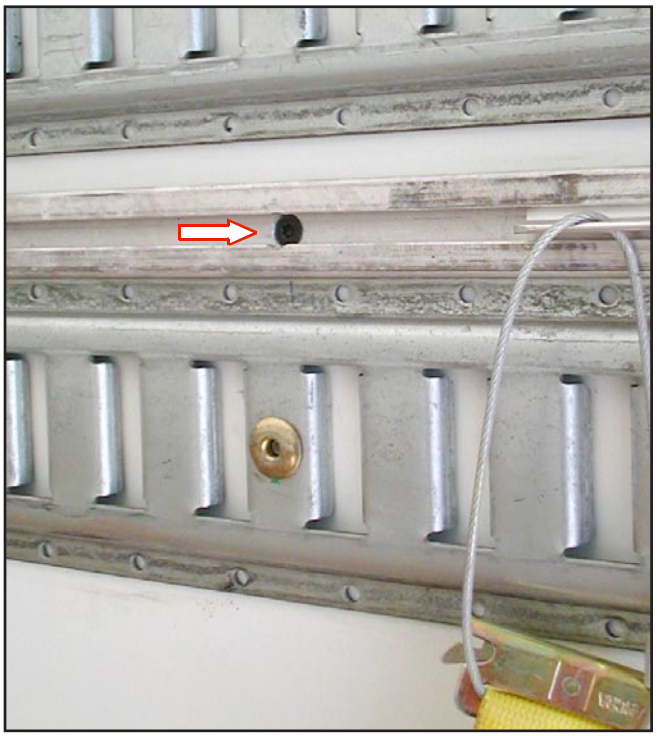


Illustration CR–5
Cable Retainment Track (Middle) and E-track

Decals

NOTE: See also the Paint section.

Removal

1. Use a heat gun to soften the adhesive under the decal.
2. With a razor knife, carefully peel the edge back.
3. Continue to heat evenly while manually pulling the decal off.

Installation

1. Before reapplying decals over fresh paint, wait 24 hours for nonreflective decals or 72 hours for reflective decals.
2. Clean the surface with DuPont 2319S Cleaner.
3. Align the decal into position.
4. Smooth the decal from the center to the edges.
5. Squeegee the edges to ensure a proper seal.

Deflector Plate

Removal

1. Remove the cargo light switch. (See the Switch, Cargo Light section and Illustration DE–5.)
2. Remove the fasteners holding the plate to the sidewall.
3. Remove the plate.

Installation

1. Using the fastener holes in the sidewall, drill holes in the new deflector plate from the outside.
2. Insert Hucktainer fasteners into the holes.
3. Reinstall the cargo light switch.

Illustration DE–5
Switch and Hucktainer Fasteners on a Deflector Plate

Door, Bulkhead (Midship/Front Wall) Latch Adjustment

NOTE: Not all door latches are adjustable.

1. Loosen the fasteners on the catch. (See Illustration DR–5.)
2. Position the door latch to properly align with the catch.
3. Holding the catch in this position, tighten the fasteners.
4. Open and close the door multiple times to ensure proper operation. Repeat the process if necessary.

   NOTE: Depending on the door hardware, you may be able to make the door close tighter with this adjustment.

Illustration DR–5
Bulkhead Door Latch (Cargo Side)

NOTE: This service information is generic. Details in illustrations and procedures may differ from those in your vehicle. *Because Utilimaster manufactures many customized vehicle bodies, this manual cannot list and illustrate every possible part in every vehicle. Nevertheless, the most common body options are described here. Use this information as a guideline where it applies.*

Door, Central Locking System (Trademaster)

Operation (electric and manual systems)

The keyed lock in each compartment door handle works in conjunction with but is independent from the dead-bolt central locking system. The keyed lock enables its compartment to remain locked while the rest of the compartments are conveniently unlocked by the central system.

To fully open a door, both the keyed lock AND the central locking system must be unlocked.

- For **electric** system operation, press the lock or unlock button on the key fob. (See Illustration DR–10.)
- For **manual (or override)** system operation, slide the locking lever toward the rear of truck to unlock the compartments and toward the front to lock them.

When the central system is locked, a door will still open slightly when you rotate and pull on the handle. For maximum security, use keys to individually lock each compartment and place a padlock around the locking lever and through the supplied (hasp) hole. (See Illustration DR–15.)

If a locking lever ever starts moving with greater difficulty, open all the compartments, clean the locking rod, and apply lithium grease to the rod 2" on each side of the plastic bushings.

CAUTION: To close an open compartment door, the central locking system must be UNLOCKED! Slamming a door closed with the central system locked may damage the system.

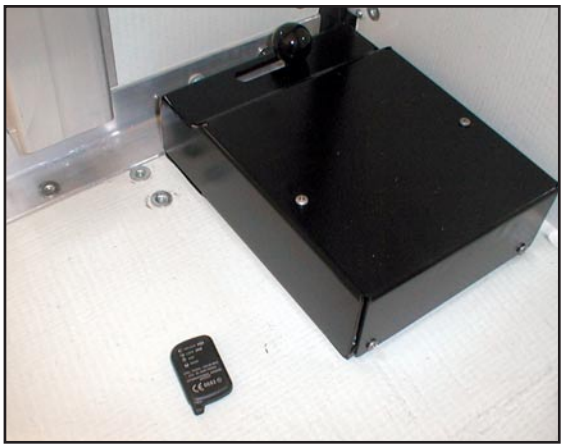


Illustration DR–10
Electric System and Key Fob

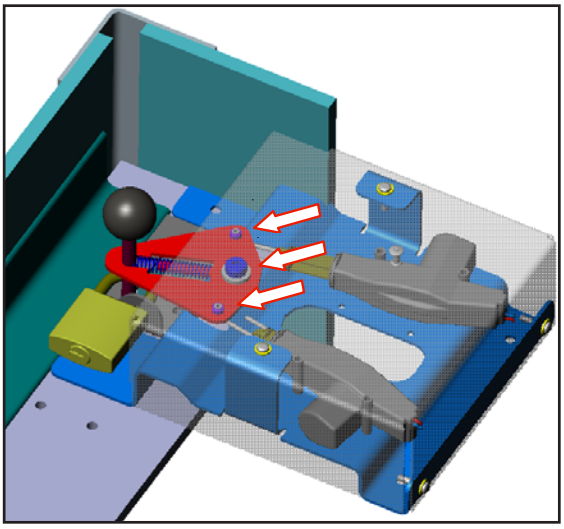


Illustration DR–15
Electric System Lubrication Points

Maintenance (electric system only)

NOTE: Perform every 12 months in normal use.

1. Remove the four screws that holding the cover in place and remove the cover.
2. On the triangular actuator plate that moves the locking lever, find the large pivot bolt at the base of the triangle and two smaller rod pivot pins at the outside corners. (See Illustration DR–15.)
3. Lightly oil these three pivot points with light machine oil (not penetrating oil) and reinstall the cover.

Door, Roll-up

WARNING: Read all instructions before starting repair. Always maintain firm footing and control of tools.

NOTE: When ordering parts for a rear door, specify the serial number of the door. (See Illustration DR–25.) The serial number can be found on a metal tag attached to the inside of the door.

NOTE: After replacement of any part, check relevant adjustments and proper operation of the door.

NOTE: The following instructions and illustrations are generic. Doors in particular vehicles may differ in details. Use these instructions as a guide where appropriate.

NOTE: A vehicle may have a hollow-core (aluminum or fiberglass) door or a solid-core (DuraPlate, aluminum-clad wood, or plastic-coated wood) door. On hollow-core doors, although some fasteners extend all the way through the door, most brackets are fastened ONLY to the inner panel. (Some "hollow-core" doors have interiors filled with foam, but the fasteners are the same.) In those cases, do NOT drill through the outside panel. Solid-core doors have most fasteners through the entire door. When drilling holes in the door, be sure to drill only to the appropriate depth. Follow the appropriate instructions where the differ.

WARNING: Do NOT use the rear door pull strap to support yourself when entering or exiting. The strap can break or pull the door down upon you. Use a grab handle for assistance when getting in and out of the back of the truck.

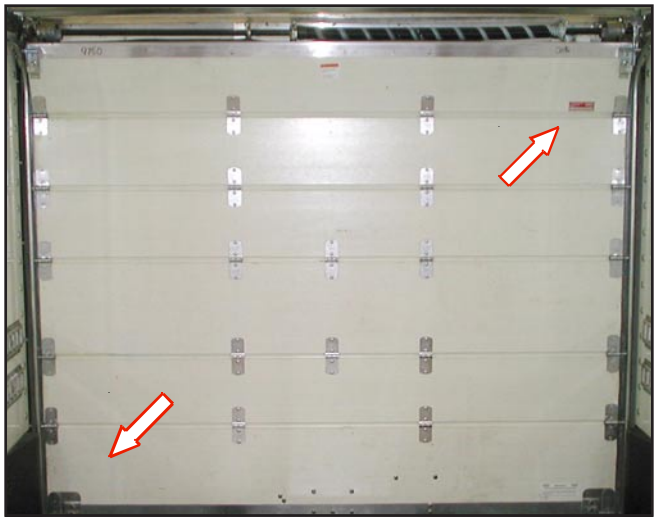


Illustration DR–25
Typical Locations of Roll-up Door S/N Plates

WARNING: The counterbalance spring is wound under high tension. This high-tension spring can cause severe injury or death.

Installation, repairs, and adjustments must be made by trained service personnel using proper tools and instructions.

Use two heavy-gauge steel winding bars with the proper dimensions. (See Illustration DR–35.) DO NOT USE bent winding bars, screwdrivers, or punches for spring winding.

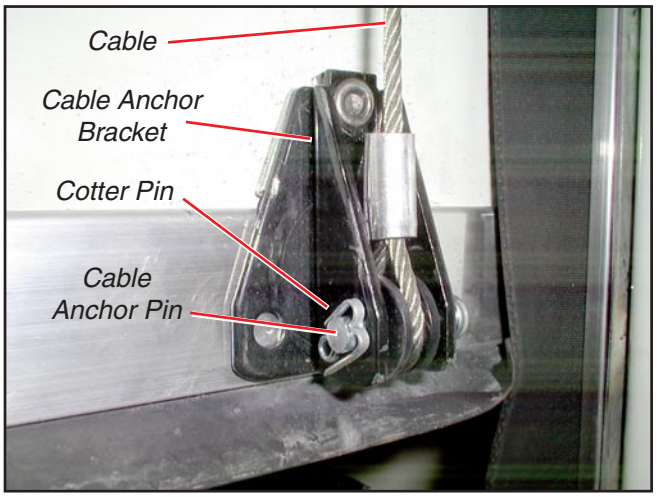


Illustration DR–30
Cable Anchor

Cable Replacement (with Tension on Spring)

Removal

NOTE: If only one cable is frayed or damaged, Utilimaster still recommends that both cables be replaced at the same time.

1. Close the door from the inside. Release the spring tension from the cables by fully inserting a heavy-gauge steel winding bar into one of the spring-winding plug holes. **(See Illustration DR–35.)**

   NOTE: If the door has two springs, you will need to release the tension on both sides.

2. Raise the bar enough to allow insertion of a second winding bar into the lower hole, and then release the tension enough to let the second bar rest against the top panel of the door.
3. Loosen the two setscrews on the cable drum, releasing the cable drum from the shaft, and remove the cable from the cable drum.
4. Remove the cable from the door bottom panel by removing the anchor and cotter pins. (See Illustration DR–30.)

WARNING: Do NOT raise the door with the winding bar in place. Raising the door at this point can cause injury or damage to equipment.

Installation

1. Mount the new cable at the base of the bottom panel by slipping the cable anchor pin through the cable anchor bracket and the eye at the end of the cable.
2. Insert the cotter pin into the cable anchor pin to secure the cable.
3. Bring the other cable end to the top of the door and thread it over the top of the door to the inside.
4. Temporarily tape the cable to the outside top panel of the door.
5. From inside the cargo area, insert the cable end into the cable drum slot. Thread the cable into the groove nearest the slot and turn the cable drum toward you until all slack is taken out, making sure the cable is following in its proper groove.

   NOTE: The cable must be wound from the outermost groove toward the inside of the drum.

6. Maintaining tension on the cable, slide the cable drum on the counterbalance shaft against the bearing and tighten the two setscrews on the drum.
7. Clamp the counterbalance shaft with a locking pliers, handle against the ceiling, to keep the cables tight. (See Illustration DR–35.)

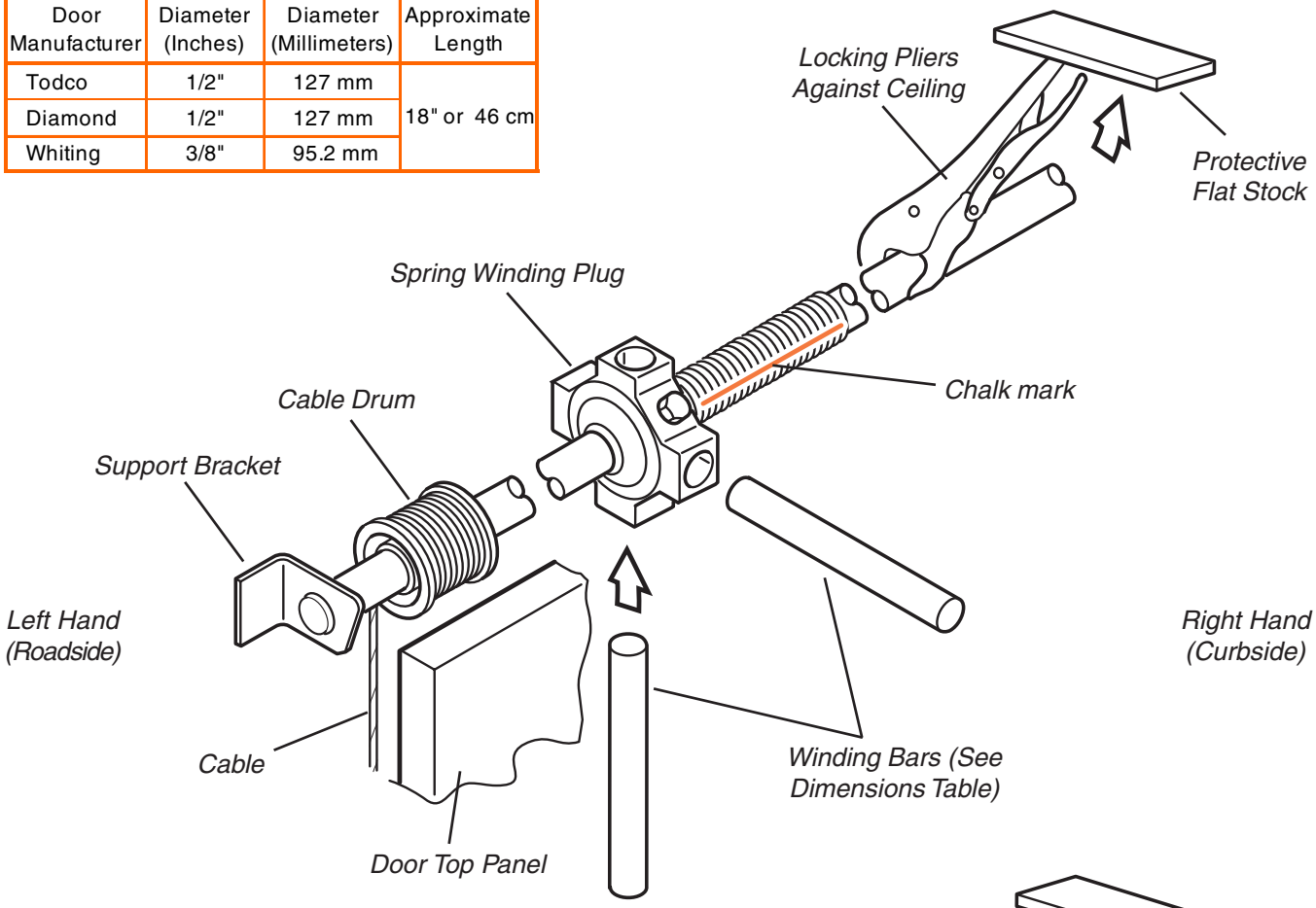
CAUTION: Protect the roof panel from the pliers with a piece of flat stock (plywood or sheet metal).

8. Release the spring tension by rotating the spring winding plug just far enough to allow removal of the winding bar against the top of the door.
9. Remove the clamp and tape, and then check the operation of the door.

   NOTE: A properly adjusted door should open easily and, when stopped, should remain at any given location. (See the Door, Roll-up—Spring Winding and Adjustment section.)

CAUTION: Make sure the drums are against the counterbalance shaft bearings, the setscrews are properly tightened, and the cables have equal tension. Rotating the counterbalance assembly too far may cause cables to jump off the cable drum.

Winding Bar Dimensions			
Door Manufacturer	Diameter (Inches)	Diameter (Millimeters)	Approximate Length
Todco	1/2"	127 mm	18" or 46 cm
Diamond	1/2"	127 mm	
Whiting	3/8"	95.2 mm	



NOTE: This vehicle was designed using English (S.A.E.) measurements. Utilimaster provides metric conversion equivalents as a courtesy, but Utilimaster does not warrant metric values given in this manual.

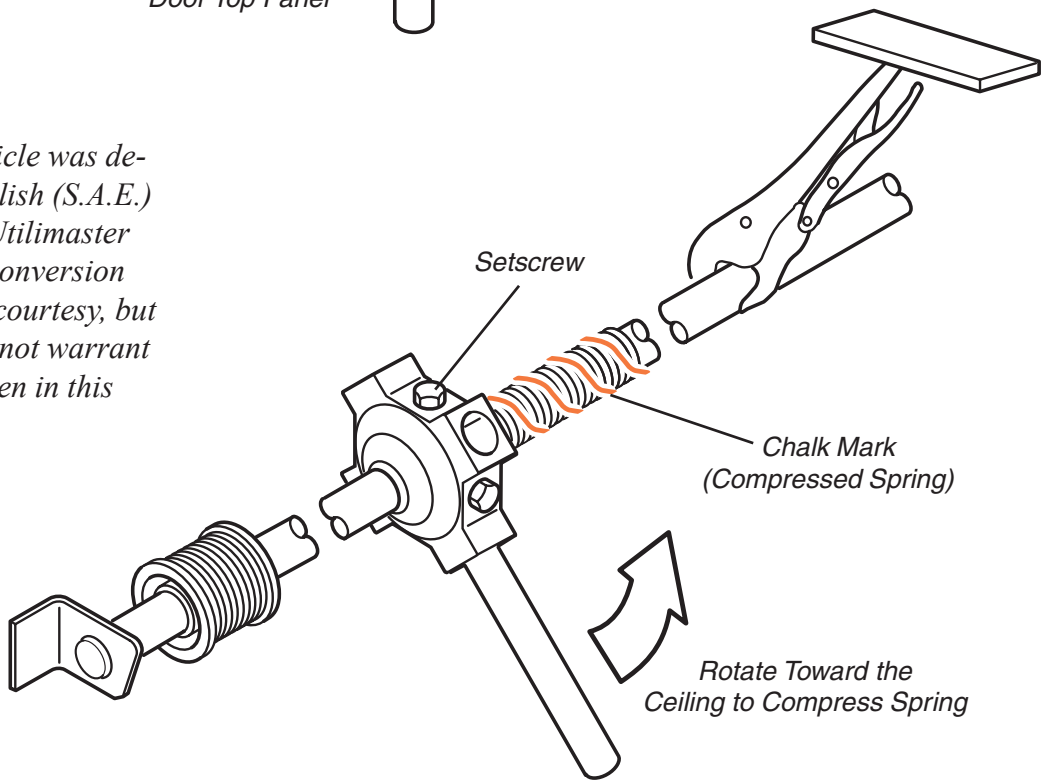


Illustration DR–35
Winding the Counterbalance Spring

Spring Winding and Adjustment

NOTE: A properly counterbalanced door should, when stopped, remain at any given location. ***If the door leaves the floor by itself, the spring is wound too tightly, and a few quarter turns should be released. If the door has a tendency to drop when stopped, a few more quarter turns should be added.***

1. Close the door and, on the inside, clamp the counterbalance shaft with the handle of the locking pliers against the ceiling to keep the cables tight. (See Illustration DR–35.)

CAUTION: Protect the roof panel from the pliers with a piece of flat stock (plywood or sheet metal).

2. Run a chalk mark the full length of the counterbalance spring.
3. Insert a heavy-gauge steel winding bar (see Illustration DR–35 for dimensions) into one of the spring-winding plug holes.

   NOTE: If the door has two springs, you will need to use this procedure on both sides and wind each spring the same amount.

4. Loosen the setscrews on the spring-winding plug.
5. Wind the spring by lifting the bar. While holding the first bar, place a second bar in the next hole and lift in the same manner after removing the first bar.

WARNING: The counterbalance spring is wound under high tension. This high-tension spring can cause severe injury or death.

Installation, repairs, and adjustments must be made by trained service personnel using proper tools and instructions.

Use two heavy-gauge steel winding bars with the proper dimensions. (See Illustration DR–35.) DO NOT USE bent winding bars, screwdrivers, or punches for spring winding.

CAUTION: Rotating the counterbalance assembly too far may cause cables to jump off the cable drum.

   Repeat for about 10-1/2 turns (for a new door or as many needed to adjust). Turns are counted by using the chalk marks, which show up as stripes as the spring is wound.

6. After adjusting the spring tension, tighten both setscrews on the spring-winding plug and remove the locking pliers from the counterbalance shaft.
7. Check the operation of the door by opening and closing the door.
8. If further adjustment is needed, repeat Steps 1, 3, and 4. Then raise the winding bar to add spring tension (door lifts more easily) or lower the winding bar to remove spring tension (door lifts less easily). Then repeat Steps 6 and 7.

NOTE: This service information is generic. Details in illustrations and procedures may differ from those in your vehicle. Since doors differ, adapt these instructions as needed.

Top Panel Replacement

CAUTION: On hollow-core (some aluminum and fiberglass) doors, although some fasteners extend all the way through the door, most brackets are fastened ONLY to the inner panel. In those cases, do NOT drill through the outside panel. Solid-core doors (DuraPlate, aluminum-clad wood, or plastic-coated wood) have most fasteners through the entire door. When drilling holes in the door, be sure to drill only to the appropriate depth.

Removal

1. With the door closed, clamp the track below the top panel to prevent the door from raising.
2. Drill out the rivet heads in the center hinges on the top panel and the rivet heads on the joint roller bracket in the lower half of the top panel. (See Illustrations DR–45 and DR–50.)
3. Punch out the rivets and, in at least one of the hinges, insert a punch in one of the rivet holes to stabilize the door panel while detaching the remaining rivets and bolts.
4. Using a wrench and socket, remove the roller brackets and rollers at the top of the panel. (See Illustration DR–40.)
5. Remove the punch and lift out the old panel.

NOTE: This service information is generic. Details in illustrations and procedures may differ from those in your vehicle. Since doors differ, adapt these instructions as needed.

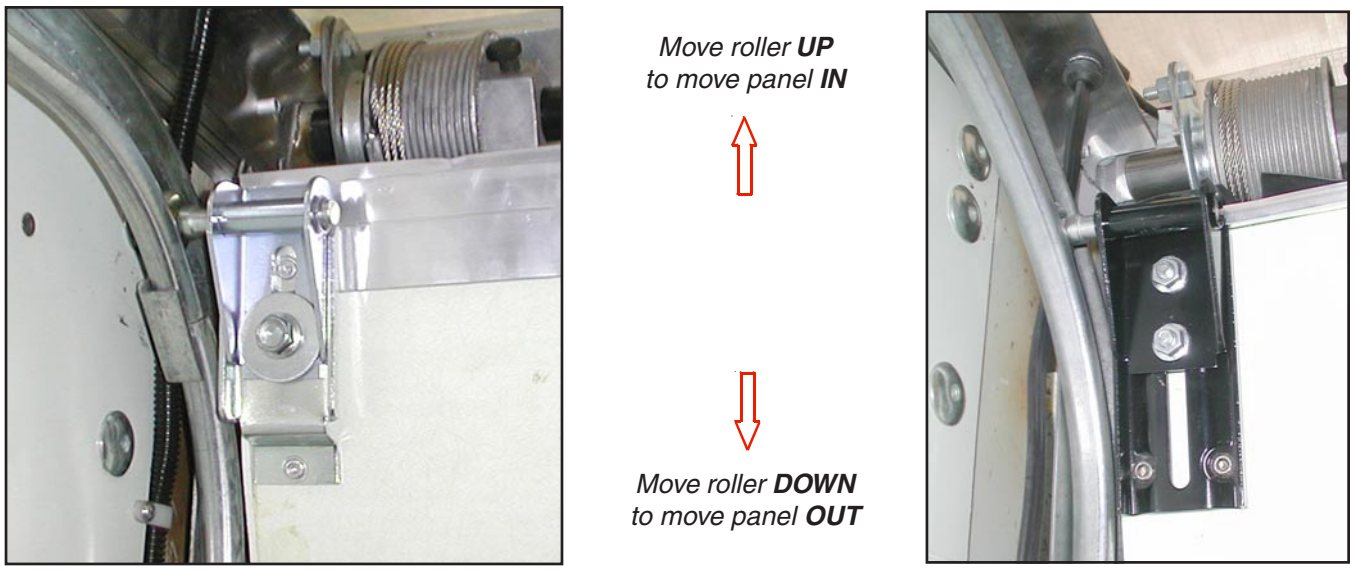


Illustration DR–40
Sample Top Roller Brackets and Adjustments

NOTE: If you are unable to secure the hinges with the original type of rivets that extend completely through the door, use carriage bolts or rib-neck carriage bolts to attach them. (The bolt head must be on the exterior side of the door, and the nut must be on the interior!)

1. Using a wrench and socket, attach the roller brackets and rollers to the top of the new panel while putting the rollers in the tracks. (See Illustration DR–40.)
2. Line up the new top panel with the panel below it (making sure they align for a close fit at the joint) and (using the hinge holes as a guide) drill all of the hinge holes on the **bottom** of the new panel:

   2a. For a **solid-core** door, drill through the entire panel with an F (or 1/4") bit. Tip the panel toward you to insert carriage bolts through the outside of the panel. Install the hinges over the bolts and tighten the nuts.

   2b. For a **hollow-core** door, **drill through the interior panel only** with an F (or 1/4") bit and install Magna-Lok fasteners through the hinges.

CAUTION: Do NOT drill through the outside panel of a hollow core door.

3. Check the door operation by opening and closing the door.

   NOTE: A properly adjusted door should open easily and, when stopped, remain at any given location. (See Door, Roll-up—Spring Winding and Adjustment section.)

4. Also check the seal gap on the outside top of the roll-up door and adjust as necessary. (See the following Adjustment section.)
5. If paint repair is necessary, see the Paint section.

Adjustment

1. Close the door.
2. Loosen the nuts slightly on the top roller bracket. (See Illustration DR–40.)
3. Position the top roller brackets so that the top panel is nearly vertical and seals both along the top and at the sides.

   *NOTE: Moving the roller bracket **up** moves the panel **in** (toward the interior); moving the roller bracket **down** moves the panel **out** (toward the exterior).*

   NOTE: Adjusting the panel too tightly may cause the door to jam before it latches.

4. Tighten the nuts with a wrench.
5. Check the operation of the door and readjust as necessary.

NOTE: This service information is generic. Details in illustrations and procedures may differ from those in your vehicle. Since doors differ, adapt these instructions as needed.

Intermediate Panel Replacement

Removal

1. With the door closed, clamp the track below the panel to be replaced (to prevent the door from rising).
2. Drill off the rivet heads in the **center hinges** on the panel to be removed. (See Illustration DR–45.)
3. Punch out the rivets and, in at least one of the hinges, insert a punch into one of the rivet holes to stabilize the door panel while detaching the remaining rivets and bolts.
4. Using a wrench and socket, (if applicable) remove both roller brackets and rollers of the joint roller brackets (at the top of the panel). (See Illustration DR–50.)
5. Drill off the rivet heads of the joint roller bracket hinges attached to the **bottom** of the panel.
6. Punch out the rivets and, in at least one of the hinges, insert a punch into one of the rivet holes to stabilize the door panel while detaching the remaining rivets and bolts.
7. Lift the door panels (above the panel to be replaced) into the horizontal track and secure them with a locking pliers clamped on the horizontal track.
8. Remove the punches and lift out the old panel.

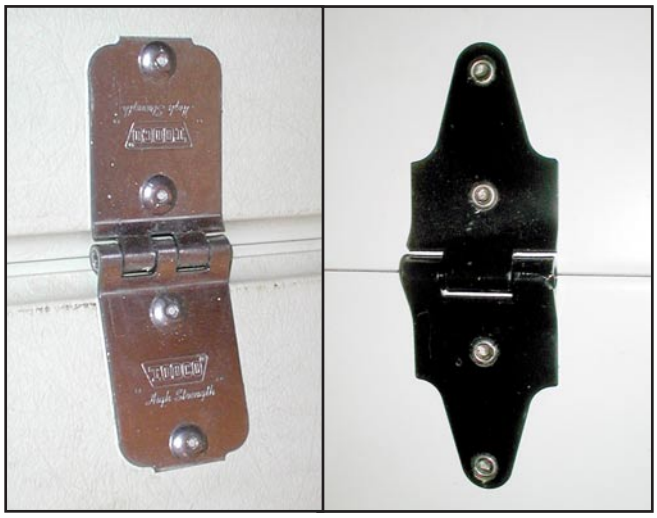


Illustration DR–45
Sample Center Hinges

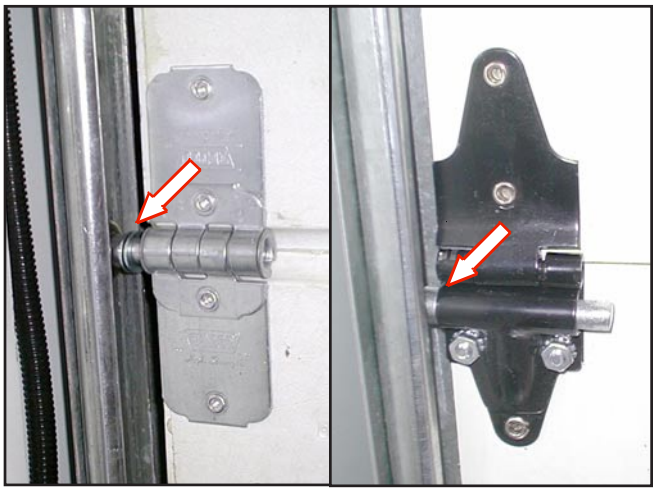


Illustration DR–50
Sample Joint Roller Brackets and Alignment Washers

NOTE: This service information is generic. Details in illustrations and procedures may differ from those in your vehicle. Since doors differ, adapt these instructions as needed.

CAUTION: On hollow-core (some aluminum and fiberglass) doors, although some fasteners extend all the way through the door, most brackets are fastened ONLY to the inner panel. In those cases, do NOT drill through the outside panel. Solid-core doors (DuraPlate, aluminum-clad wood, or plastic-coated wood) have most fasteners through the entire door. When drilling holes in the door, be sure to drill only to the appropriate depth.

Installation

NOTE: If you are unable to secure the hinges with the original type of rivets that extend completely through the door, use carriage bolts or rib-neck carriage bolts to attach the handle. (The bolt head must be on the exterior side of the door, and the nut must be on the interior!)

1. Line up the new panel with the panel **below** it (making sure they align for a close fit at the joint) and (using the hinge holes as a guide) drill all of the hinge holes on the **bottom** of the new panel:

   1a. For a **solid-core** door, drill through the entire panel with an F (or 1/4") bit. Tip the panel toward you to insert carriage bolts through the outside of the panel. Install the hinges over the bolts and tighten the nuts.

   1b. For a **hollow-core** door, **drill through the interior panel only** with an F (or 1/4") bit and install Magna-Lok fasteners through the hinges.

CAUTION: Do NOT drill through the outside panel of a hollow core door.

2. Swing the new panel upright and clamp into position.
3. Lower the door from the horizontal tracks.
4. Line up the new panel with the panel **above** it (making sure they align for a close fit at the joint) and (using the hinge holes as a guide) drill all of the hinge holes on the **top** of the new panel:

   4a. For a **solid-core** door, drill through the entire panel with an F (or 1/4") bit. Tip the panel toward you to insert carriage bolts through the outside of the panel. Install the hinges over the bolts and tighten the nuts.

   4b. For a **hollow-core** door, **drill through the interior panel only** with an F (or 1/4") bit and install Magna-Lok fasteners through the hinges.

5. Using a wrench and socket, (if applicable) attach the roller brackets and rollers to the top of the new panel while putting the rollers in the tracks. (See Illustration DR–50.)

   NOTE: The roller brackets on the bottom of the top panel and on the top of the bottom panel play an important part in maintaining proper door alignment within the track. (See the Door, Roll-up—Roller Play Adjustment section and Illustration DR–50.)

6. Remove the clamps and check the door operation by opening and closing the door.

   NOTE: A properly adjusted door should open easily and, when stopped, should remain at any given location. (See the Door, Roll-up—Spring Winding and Adjustment section.)

7. If a load bar is installed on the old panel, remove it and install on the new panel. See the Door, Roll-up—Protective Beam (Load Bar) Assembly section and Illustration DR–60.
8. If paint repair is necessary, see the Paint section.

Bottom Panel Replacement

CAUTION: On hollow-core (some aluminum and fiberglass) doors, although some fasteners extend all the way through the door, most brackets are fastened ONLY to the inner panel. In those cases, do NOT drill through the outside panel. Solid-core doors (DuraPlate, aluminum-clad wood, or plastic-coated wood) have most fasteners through the entire door. When drilling holes in the door, be sure to drill only to the appropriate depth.

Removal

1. Push open the door until the bottom of the door is about 16" [40 cm] from the header at the top of the door opening.
2. Place a clamp in the horizontal tracks, on each side, below the bottom rollers.
3. Place a clamp on one of the cables, near the eye of the cable.
4. Grasping the clamp with one hand, release the cable from the bottom of the door by pulling the cotter pin out of the cable anchor pin (or other fastener) and removing the anchor pin. (See Illustration DR–30.)
5. Allow the spring to wind the cable onto the drum until the clamp stops it by contacting the drum.

CAUTION: Protect the roof from the clamp with a piece of flat stock (plywood or sheet metal) if necessary.

6. Repeat on the opposite cable.
7. Drill out the rivet heads in the center hinges attached to the **bottom** panel. (See Illustration DR–45.) Punch out the rivets and, in at least one of the hinges, insert a punch into one of the rivet holes to stabilize the door panel while detaching the remaining rivets and bolts.
8. Using a wrench and socket, (if applicable) remove both roller brackets located at the bottom of the bottom panel and remove the rollers. (See Illustration DR–55.)
9. Using a wrench and socket, (if applicable) remove both roller brackets and rollers of the joint roller brackets (at the top of the panel). (See Illustration DR–50.)
10. Drill out the rivet heads in the joint roller brackets attached to the bottom panel. Punch out the rivets and, in at least one of the hinges, insert a punch into one of the rivet holes to stabilize the door panel while detaching the remaining rivets and bolts.
11. Remove the panel from the tracks and push the remainder of the door slightly up and toward the front of the truck.
12. Place a (fourth) clamp in the track to prevent the door from rolling back down.
13. If the new bottom panel does not have a bottom roller bracket attached, drill off the rivets holding the bottom brackets on the old panel and remove the brackets.

Illustration DR–55
Sample Bottom Roller Brackets

1. If the new bottom panel does not have a bottom roller bracket attached, attach the bottom brackets taken from the old panel.

   NOTE: If you are unable to secure the hinges with the original type of rivets that extend completely through the door, use carriage bolts or rib-neck carriage bolts to attach them. (The bolt head must be on the exterior side of the door, and the nut must be on the interior!)

2. Using a wrench and socket, (if applicable) attach the roller brackets and rollers to the bottom of the new panel while putting the rollers in the tracks. (See Illustration DR–55.)

3. Line up the new bottom panel with the panel above it (making sure they align for a close fit at the joint) and (using the hinge holes as a guide) drill all of the hinge holes on the top of the new panel:

   3a. For a **solid-core** door, drill through the entire panel with an F (or 1/4") bit. Tip the panel toward you to insert carriage bolts through the outside of the panel. Install the hinges over the bolts and tighten the nuts.

   3b. For a **hollow-core** door, **drill through the interior panel only** with an F (or 1/4") bit and install Magna-Lok fasteners through the hinges.

CAUTION: Do NOT drill through the outside panel of a hollow core door.

4. Install the rollers in the bracket at the top of the panel, as well as any spacer washers on the roller shafts. (See Illustration DR–50.)

   NOTE: The roller brackets on the top of the bottom panel and on the bottom of the top panel play an important part in maintaining proper door alignment within the track. (See the Door, Roll-up—Roller Play Adjustment section and Illustration DR–50.)

5. Reconnect each cable by drawing it by the clamp to the outside of the bottom door panel.

6. Insert the cable anchor pin through the cable eye and the cable anchor bracket. (See Illustration DR–30.)

7. Secure the cable anchor pin with the cotter pin.

8. Remove the clamps and check the door operation by opening and closing the door.

   NOTE: A properly adjusted door should open easily and, when stopped, it should remain at any given location. (See the Door, Roll-up—Spring Winding and Adjustment section.)

9. If paint repair is necessary, see the Paint section.

10. See also the Door, Roll-up—Pull Strap Replacement section.

NOTE: This service information is generic. Details in illustrations and procedures may differ from those in your vehicle. Since doors differ, adapt these instructions as needed.

Protective Beam (Load Bar) Assembly

Removal

1. Remove the fasteners.
2. Remove the load bar assembly.

Installation

1. Place the new load bar assembly in position.
2. Install new fasteners.

   NOTE: If you are unable to secure the assembly with the original type of fasteners, use carriage bolts or rib-neck carriage bolts. (The bolt head must be on the exterior side of the door, and the nut must be on the interior!)
3. Adjust the latches on both sides.

Latch Adjustment

1. Close the door from the inside.
2. Loosen the bolts on the ends just enough to be able to slide the latches in and out. (See Illustration DR–60.)
3. Position each latch so that the metal "finger" is in front of the catch's "finger" but not touching.
4. Tighten the bolts.
5. Raise and lower the door several times to ensure the latch and catch do not hit each other.

NOTE: This service information is generic. Details in illustrations and procedures may differ from those in your vehicle. Since doors differ, adapt these instructions as needed.

Roller Play Adjustment

NOTE: The roller brackets on the bottom of the top panel and on the top of the bottom panel play an important part in maintaining proper door alignment within the track.

1. Check that the door has some but not excessive side play (1/4" maximum) and is centered in opening. There should be some slight play so that the door does not bind in the track. Approximately three to five spacer washers should be at the second-from-top joint roller and the second-from-bottom joint roller on each side. (See Illustration DR–50.)
2. Add or subtract spacer washers on roller shafts, if necessary, to achieve proper play. Equal numbers of washers should be used on each side to ensure that the door remains centered. (See the Door, Roll-up—Roller Replacement section for removing rollers.)

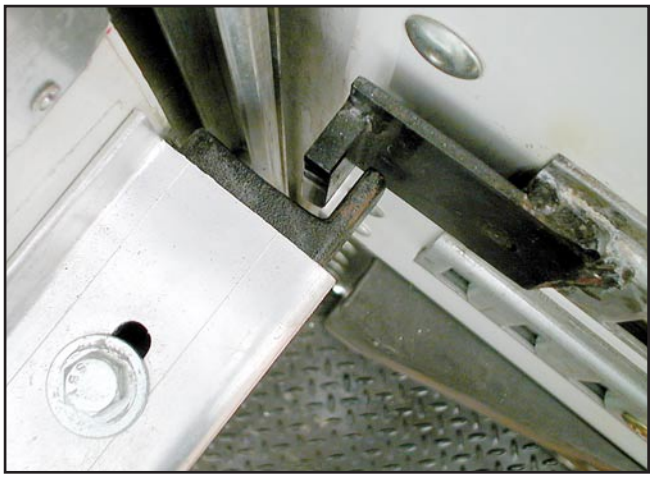


Illustration DR–60
Protective Beam Latch and Catch

Roller Replacement

1. Open the door.
2. If the roller cover is held in place with nuts, use a wrench and socket to remove the nuts that secure the roller cover. (See Illustrations DR–40, DR–50, and DR–55.) If the roller cover is held in place by rivets, drill out the rivets.

CAUTION: On hollow-core (some aluminum and fiberglass) doors, although some fasteners extend all the way through the door, most brackets are fastened ONLY to the inner panel. In those cases, do NOT drill through the outside panel. Solid-core doors (DuraPlate, aluminum-clad wood, or plastic-coated wood) have most fasteners through the entire door. When drilling holes in the door, be sure to drill only to the appropriate depth.

3. Remove the roller from the track.
4. Install a new roller in the track.
5. If the roller cover was held by **nuts**, replace the roller cover on the hinge and tighten the nuts. If it was held by **rivets**:

   5a. For a **solid-core** door, insert carriage bolts through the outside of the panel. Install the roller cover over the bolts and tighten the nuts.

   5b. For a **hollow-core** door, install the roller cover with Magna-Lok fasteners.

NOTE: This service information is generic. Details in illustrations and procedures may differ from those in your vehicle. Since doors differ, adapt these instructions as needed.

MSL ("Banana Lock") Replacement

NOTE: There is no adjustment on a Master Security Lock. If the handle becomes worn to the point that the door no longer closes tightly as it should, replace the handle.

1. Remove the fasteners holding the handle. (See Fastener Replacement section and Illustration DR–65.)
2. Remove the handle.
3. Align the holes in the new handle with those in the door and fasten the handle into place.

   NOTE: If you are unable to secure the lock with the original type of rivets, use carriage bolts or rib-neck carriage bolts to attach the handle. (The bolt head must be on the exterior side of the door, and the nut must be on the interior!)

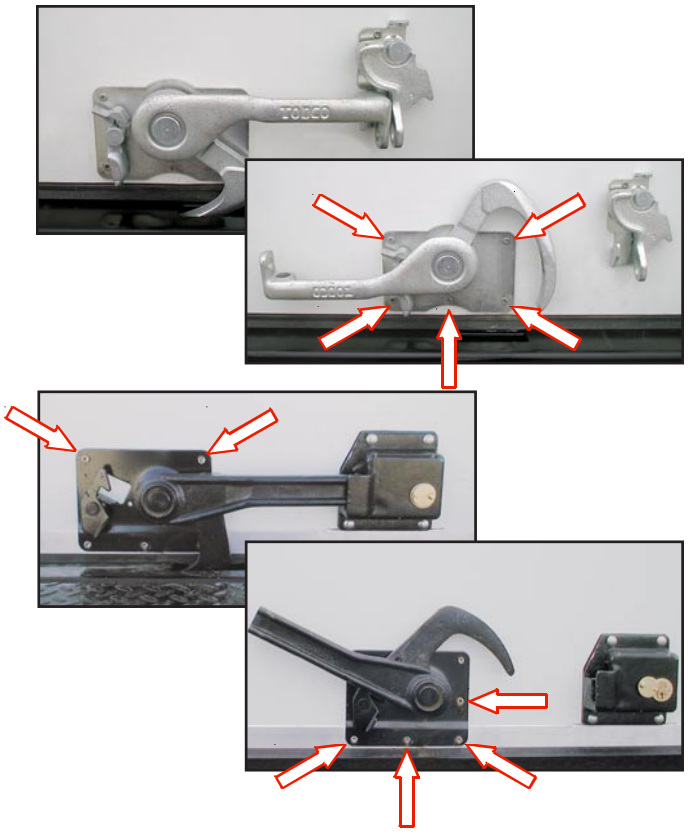


Illustration DR–65
Master Security ("Banana") Locks and Fasteners

Two-point (Fan-type) Latch Adjustment

1. From inside the truck, close the door tightly.
2. The fan-type latch should be in the primary latch position (see Illustration DR–70), with the latch plate rod resting on the top of the fan of the latch assembly. If the latch is not properly adjusted, it might latch in the secondary position (see Illustration DR–75). If necessary, reposition the latch plate so that the latch plate fits snugly against the fan.
3. Ensure that the latch plate is level and square with the fan. (See Illustration DR–80.)
4. After both latches are checked/adjusted according to this procedure, check that latching/unlatching is smooth and that the door seals at the bottom.

NOTE: This service information is generic. Details in illustrations and procedures may differ from those in your vehicle. Since doors differ, adapt these instructions as needed.

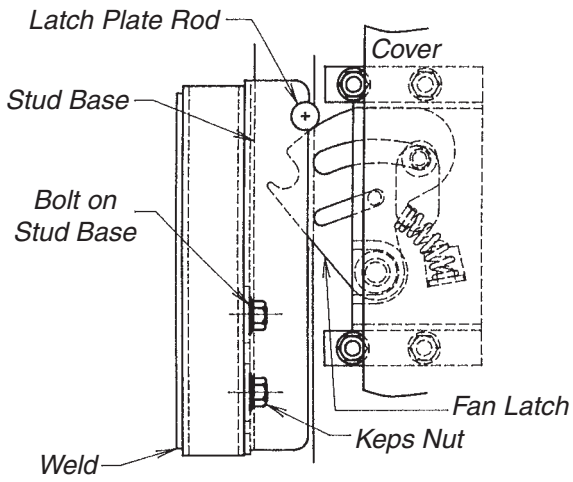


Illustration DR–70
Normal Latch and Striker Position

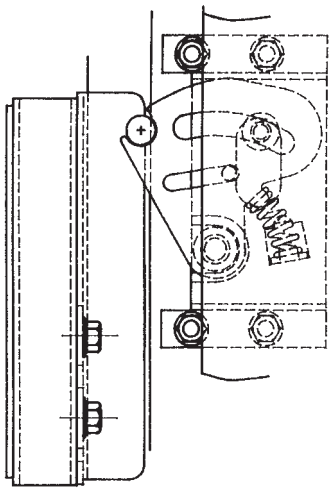


Illustration DR–75
Secondary Latch and Striker Position

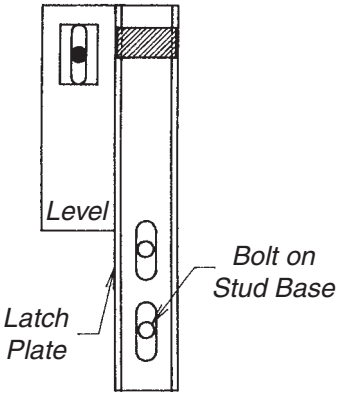


Illustration DR–80
Square Latch Plate with Fan

Pull Strap Replacement

NOTE: Be sure to order a new pull strap that is long enough to reach when the door is open but short enough so that the strap does not drag on the ground when the door is closed.

NOTE: If you are unable to secure the strap with the original type of rivets, use carriage bolts or rib-neck carriage bolts to attach them. (The bolt head must be on the exterior side of the door, and the nut must be on the interior!)

1. Open the door enough to allow for comfort while working, then clamp the track to prevent the door from opening or closing.
2. Drill out the rivets holding the pull strap to the bottom panel of the roll-up door. (See Illustration DR–85.)
3. Attach the end of the new strap to the bottom panel of the roll-up door with rivets or carriage bolts.
4. Remove the clamp and test the strap while opening and closing the door.

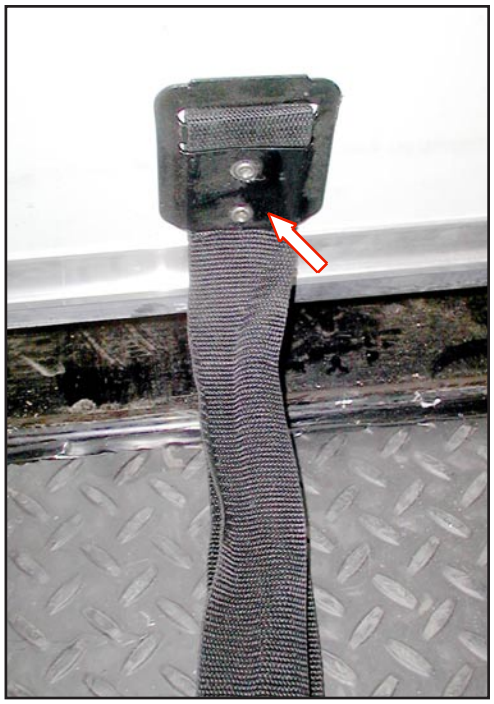


Illustration DR–85
Pull Strap

Door Seal Replacement

Side Seal

1. Open the roll-up door.
2. Drill out the rivets that hold the seal's aluminum extrusion in place. (See Illustration DR–90.)
3. Uncrimp both ends of the seal extrusion.
4. Remove the seal from the extrusion.
5. Cut the new seal to the proper length with bolt cutters.
6. Insert the new seal into the extrusion and crimp the ends.
7. Reattach the extrusion using aluminum fasteners or stainless-steel sheet-metal screws.
8. Close the door and check the seals.

Illustration DR–90
Side Seal on Roll-Up Door

Top and Bottom Vinyl Seals

1. Fully open the roll-up door and clamp the track below the bottom panel to prevent the door from moving.
2. Uncrimp both ends of the desired seal extrusion. (See Illustrations DR–95 and DR–100.)
3. Use a locking pliers to extract the old seal.
4. Slide the new seal into the extrusion and crimp the ends to secure the seal.
5. Remove the clamp, close the door, and check the seal.

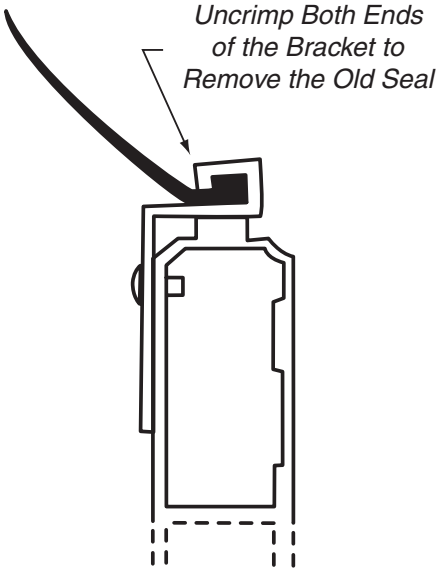


Illustration DR–95
Top Seal on Roll-up Door

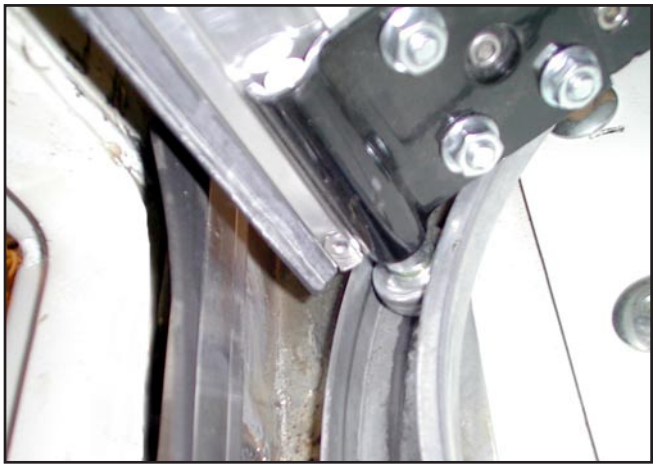


Illustration DR–100
Vinyl Seal Crimped on Bottom of Rear Roll-Up Door

NOTE: This service information is generic. Details in illustrations and procedures may differ from those in your vehicle. Since doors differ, adapt these instructions as needed.

Drains

Cargo Floor

Cleaning

Rubber "duck-bill" or "kazoo" drain valves are designed to let the water out without allowing water to siphon into the cargo area in a negative pressure condition.

Clean the drains periodically to ensure that they are not blocked by debris or dirt and are able to drain properly. (See Illustration DN–5.)

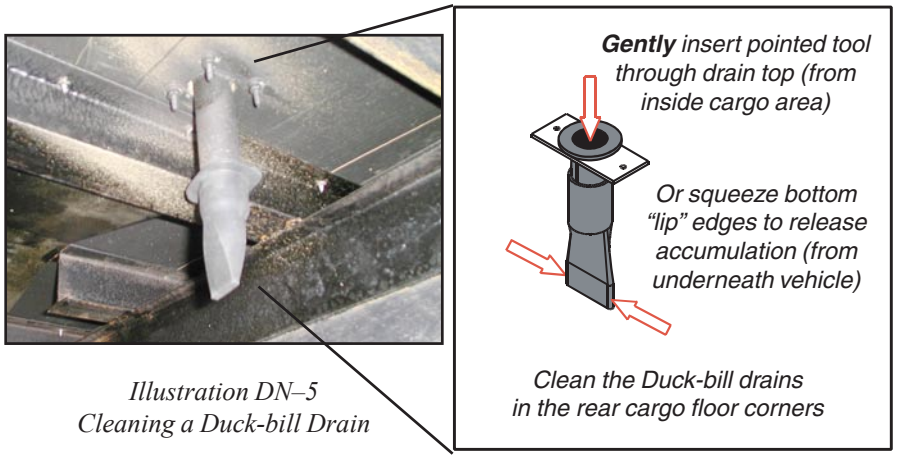


Illustration DN–5
Cleaning a Duck-bill Drain

- From the interior of the vehicle, use a small pointed tool, such as a pen or small screwdriver, to **gently** poke down through the drain.
- Or from underneath the vehicle, squeeze the wide section on the bottom to open the "lips" and release any accumulation that did not drain normally.

Replacement

1. Remove the fasteners.
2. Remove drain valve assembly.
3. Position the new drain valve assembly.
4. Fasten into place.

Vent

Side or front vents may have small formed drains to allow water to escape. To ensure they have not gotten plugged with dirt, run a short piece of wire up into the openings. (See Illustration DN–10.)

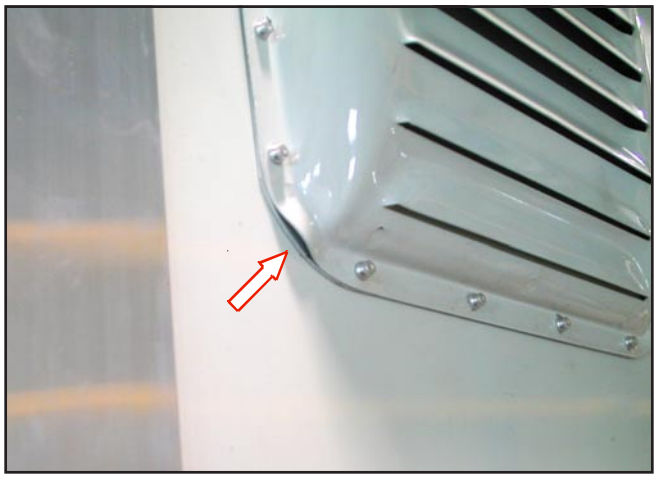


Illustration DN–10
Vent Drain

NOTE: This service information is generic. Details in illustrations and procedures may differ from those in your vehicle. *Because Utilimaster manufactures many customized vehicle bodies, this manual cannot list and illustrate every possible part in every vehicle. Nevertheless, the most common body options are described here. Use this information as a guideline where it applies.*

E-track

Removal

1. Use a die grinder to grind off the weld (if present) between the front corner brace and the E-track. (See Illustration ET–5.) Stop periodically and allow a DuraPlate panel to cool.
2. Remove the Hucktainer fasteners. (See the Fastener Replacement section.)
3. Remove the E-track.

Installation

1. Cut the new E-track to length, noting where the prepunched holes must align with the holes in the sidewall panels.
2. Hold the new E-track in position and install new Hucktainer fasteners.
3. Reweld the front corner brace and the new E-track. Weld quickly and stop periodically to allow the panel to cool. You may also spray water on the exterior DuraPlate surface to cool it.

Grab Handle

1. While holding the handle, remove the stainless-steel Phillips-head fasteners from the handle. (See Illustration GH–5.)
2. The handle should release into your hand.
3. While holding the new handle in place, attach it using stainless-steel fasteners.

Liftgate

If the vehicle is supplied with an optional aftermarket liftgate installation, see the documentation supplied by the liftgate manufacturer for operation and service information. **To order replacement liftgate component parts, contact an authorized liftgate distributor.** See information supplied by the liftgate manufacturer and/or their web site. See, for example, **www.anthonyliftgates.com**, **www.eagleliftgates.com**, **www.interlift.net**, **www.leymanlift.com**, **www.maxonlift.com**, **www.thieman.com**, **www.tommygate.com**, **www.liftgate.com** (Ultron/Del/Canadian), or **www.waltco.com**.

CAUTION: When welding or cutting next to a DuraPlate panel, be very careful to not overheat the DuraPlate panel (and melting the plastic core).

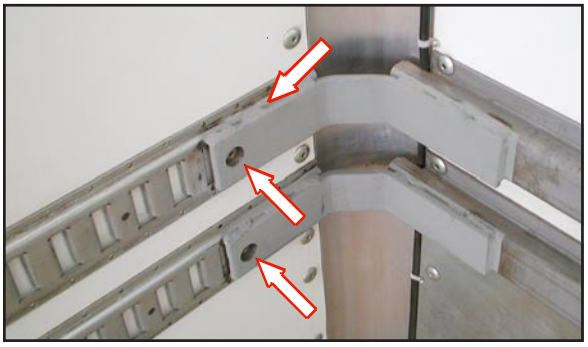


Illustration ET–5
E-track, Fasteners, and Welded Front Brace

CAUTION: Use stainless-steel fasteners for all grab handles.

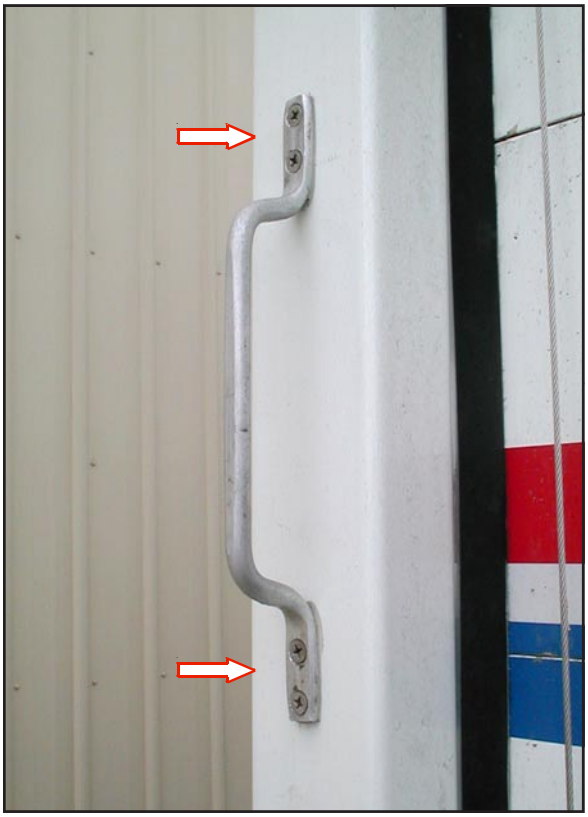


Illustration GH–5
Grab Handle at Roll-Up Door Entrance

Lights

*NOTE: This section illustrates **lights mounted on Utilimaster vehicle bodies**. For chassis-mounted lights, refer to the chassis service information.*

Clearance, Identification, and Side Marker

NOTE: Light assemblies that are sealed units must be replaced as complete units. Some assemblies have removable lenses and replaceable bulbs. Some assemblies have pigtail wires spliced to the body wiring, requiring the pigtails to be cut, and the new pigtails spliced in. For information about upgrading to long-lasting LED lights, contact Utilimaster Customer Service.

Sealed Assembly

1. Turn off the ignition and all lights.
2. As applicable, remove the screws, drill off the heads of the rivets, or snap the unit out of its holder that attaches the light assembly to the vehicle. (See Illustrations LI–5 through LI-15.)
3. Disconnect the electrical harness at the back of the unit.
4. Attach the electrical harness to the back of the replacement unit.
5. Align the holes of the new light unit and attach to the vehicle.

Replaceable Bulb

1. Turn off the ignition and all lights.
2. Use a Phillips screwdriver, remove the screws holding the lens on the light fixture.
3. Remove the lens and old bulb.
4. Insert the replacement bulb.
5. Place the lens back on the fixture and secure with the screws.

CAUTION: To avoid cracking the lens for a replaceable bulb, do not overtighten the screws.

CAUTION: Always replace a light with one of the same size, shape, and wattage.

CAUTION: Many lights have a definite top and bottom. Always check the position of the light before removing and install right side up.

Illustration LI–5
Front Clearance Light (Sealed Unit)

Illustration LI–10
Rear Identification Light (Sealed Unit)

Illustration LI–15
Side Marker Light on Rear Light Assembly

Stop/Turn/Tail/Back-up

CAUTION: Always replace a light with one of the same size, shape, and wattage.

Permanent Mount (Sealed Assembly)

1. Turn off the ignition and all lights.
2. Drill off the heads of the rivets holding the light unit to the rear of the vehicle. (See Illustration LI–20.)
3. Disconnect the electrical harness at the back of the unit.
4. Attach the electrical harness to the back of the replacement unit.
5. Align the predrilled holes of the new light unit and POP-rivet the unit in place.

Grommet Mount (Sealed Assembly)

1. Turn off the ignition and all lights.

   NOTE: Lightly spray the outer grommet and marker light surface with soapy water to ease the removal and installation.
2. Slip a flat-blade screwdriver under the inner lip of the outside grommet to pry the light unit up, so that it can be pulled out of the grommet. (See Illustration LI–25.)
3. Disconnect the light from the electrical harness at the back of the unit.
4. Plug in the replacement light.
5. Replace the unit by pushing it through the outside (front) of the grommet.

CAUTION: The slit on the rear of the grommet must be pointed down to allow water to drain.

NOTE: See also the Wiring Diagrams section.

Illustration LI–20
Stop/Turn/Tail Light (Permanent Mount)

Illustration LI–25
Back-up Light (Grommet Mount)

Snap-ring Mount Lens (Replaceable Bulb)

1. Turn off the ignition and all lights.
2. Using a flat-blade screwdriver, pry the snap ring out. (See Illustration LI–30.)
3. Remove the lens and old bulb.
4. Insert the replacement bulb.
5. Reinsert the lens and snap ring.

Screw Mount Lens (Replaceable Bulb)

1. Turn off the ignition and all lights.
2. Remove the screws holding the lens on the light fixture. (See Illustration LI–35.)
3. Remove the lens and old bulb.
4. Insert the replacement bulb.
5. Place the lens back on the fixture and secure with the screws.

CAUTION: To avoid cracking the lens, do not overtighten the screws.

License Plate

1. Turn off the ignition and all lights.
2. Remove the screws holding the lens (or metal cover over the lens) on the light fixture or pinch/pry off the lens (or sealed unit) from the light fixture. (See Illustrations LI–35 through LI–45.)
3. Replace the bulb or sealed unit.
4. Place the lens/unit back on the fixture by snapping into position or securing with the screws.

CAUTION: To avoid cracking the lens, do not overtighten the screws.

NOTE: See also the Wiring Diagrams section.

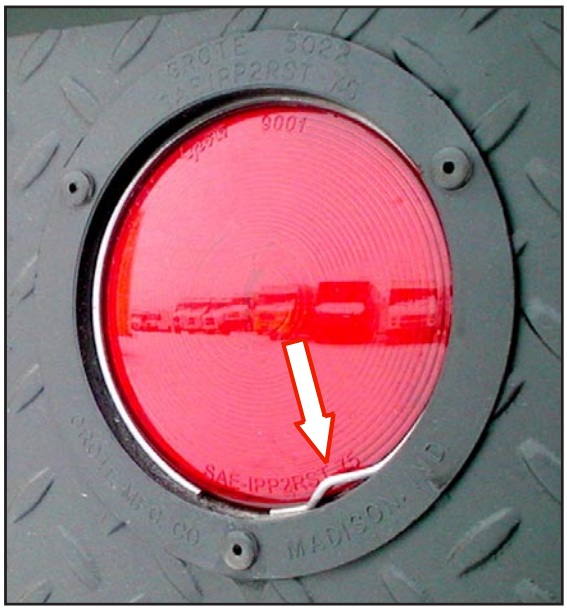


Illustration LI–30
Brake Light (Snap-ring Mount)

Illustration LI–35
Stop, Turn, Tail, Back-up, and License Plate Light

Illustration LI–40
License Plate Light (Replaceable Bulb)

Cargo

CAUTION: Always replace a light with one of the same size, shape, and wattage.

Grommet Mount (Sealed Assembly)

NOTE: The light assembly is a sealed unit and must be replaced as a unit.

1. Turn off the ignition and all lights.

   NOTE: Lightly spray the outer grommet and marker light surface with soapy water to ease the removal and installation.

2. Slip a flat-blade screwdriver under the inner lip of the outside grommet to pry the light unit up so that it can be pulled out of the grommet. (See Illustrations LI–25 and LI–50.)
3. On the back of the unit, disconnect the electrical harness.
4. Plug in the replacement light.
5. Replace the unit by pushing it through the outside (front) of the grommet.

Permanent Mount (Sealed Assembly)

1. Turn off the ignition and all lights.
2. Drill out the rivets holding the unit.
3. On the back of the unit, disconnect the electrical harness.
4. Plug in the replacement light unit and align the unit with the previous mounting holes.
5. Use small POP rivets to reattach the unit.

Removable Lens (Replaceable Bulb)

1. Turn off the ignition and all lights.
2. As applicable, pry off the snap-on lens or remove the screws holding the light lens and remove the lens. (See Illustration LI–55.)
3. Replace the bulb.
4. Reattach the lens.

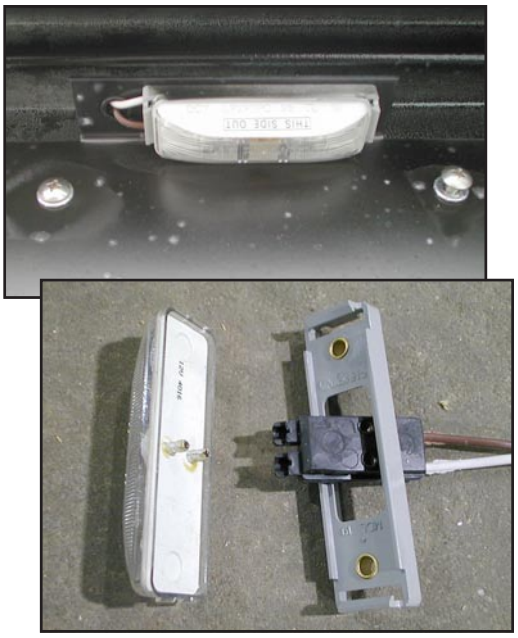


Illustration LI–45
License Plate Light (Sealed Unit)

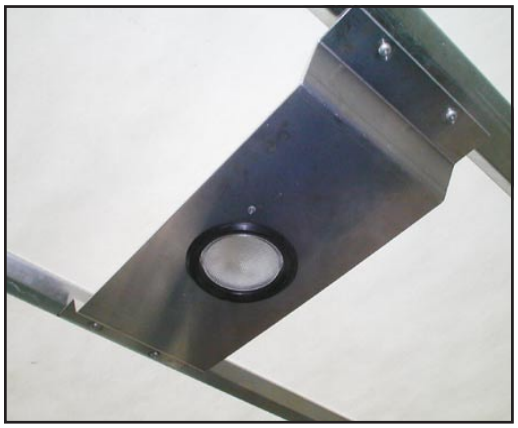


Illustration LI–50
Cargo Light (Grommet Mount)

Illustration LI–55
Cargo Light (Removable Lens)

Mirror

Adjustment

To receive maximum benefit from the rear mirror, have someone assist you by loosening the mirror mounts and adjusting the crosswalk mirror while you sit back in the driver's chair.

To adjust a mirror, loosen the nut until the mirror is just loose enough to turn, then grab the outside edge of the mirror and gently pull in the desired direction. Retighten the nut when the mirror is in the desired position.

WARNING: Crosswalk exterior mirrors are convex. A convex mirror's surface is curved so you can see more from the driver's seat, but it makes things appear farther away than they really are. While driving, allow plenty of space between the vehicle and other objects.

CAUTION: Do NOT reuse two-way locknuts or bolts; always replace with new fasteners.

Use stainless-steel fasteners to mount mirrors.

Replacement

1. Remove the fasteners holding the mirror.
2. Use new stainless-steel fasteners to re-mount mirrors. Do NOT reuse two-way locknuts or bolts; always replace with new fasteners.

   NOTE: Rotate the mirrors as little as possible for the first 72 hours after installation.

NOTE: This service information is generic. Details in illustrations and procedures may differ from those in your vehicle. *Because Utilimaster manufactures many customized vehicle bodies, this manual cannot list and illustrate every possible part in every vehicle. Nevertheless, the most common body options are described here. Use this information as a guideline where it applies.*

Paint

*NOTE: This procedure describes how to repair paint damage on **aluminum** and **DuraPlate**® surfaces of Utilimaster bodies as well as **FRP with a gelcoat** finish. A different process is required for FRP with a Tedlar® finish. See the relevant Panel section.*

NOTE: See also the Decals section.

WARNING: Utilimaster recommends that a professional body shop do all paint repairs. The service technician should read this entire procedure before working on the vehicle.

Adequate ventilation is required when working in a confined area with paint and paint-related chemicals. Always wear proper protective equipment when appropriate to the process. Safety and application instructions provided with chemical products should always supersede information provided by Utilimaster.

Tools and Parts

The following are the tools and items used in this procedure:

- All applications can be done with one or more of the following:
  - ❑ Blender gun (1.3 to 1.4 fluid tip for gravity-fed guns; conventional guns use 40–55 PSI at the gun)
  - ❑ Cup gun (for application of Dupont 2222S Adhesion Promoter)
  - ❑ Touch-up gun (see above statement for blender gun tips and required PSI)
- Clean white cotton rags
- 320 and 600 grit sand paper
- Tack cloth
- Masking tape and masking paper
- Dupont® 3900S Cleaner
- Dupont® 3901S Cleaner
- Dupont® 3401S Blender
- Dupont® Imron 5000 paint (check with Customer Service for the original paint code)
- Dupont® 193S Activator
- Dupont® 8989S Activator
- Dupont® 8685S Reducer
- Dupont® 222S Adhesion Promoter
- Paint strainer
- Measuring cup graded in ounces up to 1 cup or 2 cups
- Paint mixing stick
- **Optional Items:**
  - ❑ Dupont® 2510S Primer and Dupont® 2505S Activator
  - ❑ Dupont® 359S Paint Additive
  - ❑ Dupont® 2319S Cleaner
  - ❑ Buffing compound

Although some substitutions can be made, these products match the original paint and process and are recommended for best results of your paint repair.

Substrate Preparation

1. If necessary, remove any decals from the affected area (see Decals section) and fill in damaged areas with body putty as needed (see manufacturer's instructions). Allow body putty to cure and sand it smooth.
2. Use a clean rag soaked in DuPont® 3900S Cleaner to clean the repair area and the area surrounding the repair. Using a second clean dry rag, wipe off the 3900S cleaner before it evaporates. If the 3900S dries before it is removed, re-wet and wipe dry. (See Illustration PA–10.)
3. Sand the defective area with 320-grit sand paper. (See Illustration PA–15.)

   NOTE: If necessary, use a finer (600-grit) sandpaper to smooth the blend area surrounding the repair area.
4. Repeat cleaning with a clean rag soaked in DuPont 3901S Cleaner to remove sanding dust. (See Step 2.)
5. Mask all fixtures (lights, bumper, etc.) to protect from overspray. (See Illustration PA–20.)

CAUTION: Make sure the area cleaned is bigger than the spray area.

NOTE: Use masking tape and a paper that cannot be penetrated by paint.

6. Wipe a wide area with the tack cloth to make sure all areas to be sprayed are clear of dust and debris. (See Illustration PA–25.)
7. If the **base or substrate is exposed** by sanding (or if it is a replacement part that has **never been painted**), apply DuPont 2510S Primer and 2505S Activator.

Illustration PA–10
Use DuPont 3900S and 3901S Cleaners

Illustration PA–15
Sand Area to Be Prepared

Illustration PA–20
Protect with Masking Tape and Paper

CAUTION: Mix paint thoroughly to ensure proper application and paint performance.

Paint Preparation

1. Using a graduated (9-ounce) measuring cup, pour 3 ounces paint (DuPont Imron 5000) to 1 ounce activator (DuPont 193S). (See Illustrations PA–30 and PA–35.)
2. Add 1/8 ounce of accelerator (DuPont 8989S gallon can) to the paint mixture. (See Illustration PA–40.)
3. Using a paint stick, stir paint mixture thoroughly.
4. Place the paint strainer in the touch-up gun cup and pour the paint through the strainer. (See Illustration PA–50.)

   NOTE: A drop or two of DuPont 359S Paint Additive may be added if there is a problem with "fish eyes" or other contaminant-related imperfections.
5. Assemble the touch-up gun.
6. Check the blender gun to make sure it has sufficient blender (DuPont 3401S).

Illustration PA–25
Use Tack Cloth for Final Wipe

Illustration PA–30
Three Ounces of Paint

Illustration PA–35
One Ounce of Activator

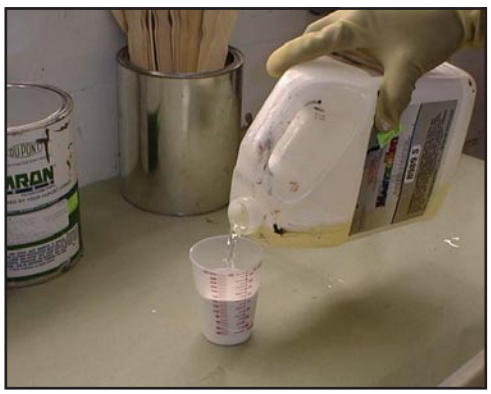


Illustration PA–40
Add 1/8 Ounce Accelerator

Illustration PA–50
Use Paint Strainer

CAUTION: Clear nozzle before spraying.

Paint Application

1. Using the cup gun with DuPont 222S Adhesion Promoter, do a test spray directed away from the vehicle to make sure the gun nozzle is clear.
2. Spray DuPont 222S Adhesion Promoter across the area to be repaired and extend to the area surrounding the repair to ensure adequate adhesion of the new to old paint.
3. Air dry for 1 to 2 **minutes**.
4. Using the touch-up gun containing DuPont Imron 5000 Paint, do a test spray directed away from the vehicle to make sure the touch-up gun nozzle is clear.
5. Apply the first coat of paint. (See Illustration PA–55.)
6. Air dry for 1 to 2 **minutes**.
7. Using the blender gun with DuPont 3401S Blender, do a test spray directed away from the vehicle to make sure the blender nozzle is clear.
8. Apply a first coat of blender. (See Illustration PA–60.)
9. Air dry for 1 to 2 **minutes**.
10. Apply a second coat of paint, covering an area just beyond the first coat of color.
11. Air dry for 1 to 2 **minutes**.
12. Apply the final coat of blender, extending just beyond the previous spray patterns.
13. Air dry 3 to 4 **hours** before removing masking materials. (See Illustration PA–65.)
14. If the repair is not glossy enough after drying, use buffing compound and buff to achieve the desired appearance.
15. If applicable, see the decal installation procedure in the Decals section.

Illustration PA–55
Apply Paint

Illustration PA–60
Apply Blender

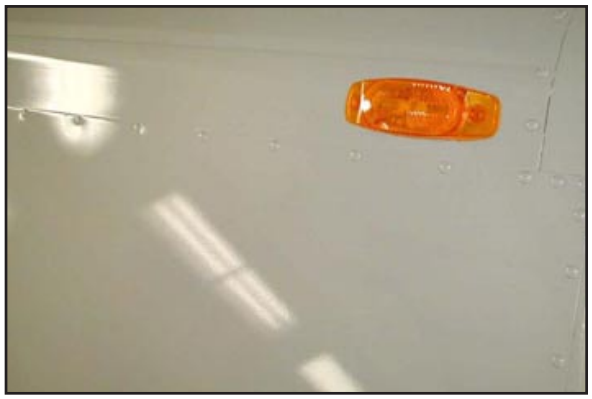


Illustration PA–65
Air Dry 3 to 4 Hours

Panel, Aluminum

Minor damage may be hammered out and filled in with standard body filler. Follow the manufacturer's instructions for using the body filler. For paint repair, see the Paint section in this manual.

For **severe or large areas** of damage, the panel should be replaced. Remove the necessary fasteners and replace the panel. See the Fastener Replacement section in this manual. See also the appropriate Utilimaster body parts manual or contact Utilimaster Customer Service if you need assistance.

Panel, FRP

CAUTION: For FRP repairs, the underlying plywood in the FRP must be dry. Protect from the weather any gouge that exposes the plywood.

NOTE: FRP panels will have either a Tedlar® finish or a gelcoat finish. The best way to repair ***minor*** *damage to a panel depends on the type of finish it has. If you do not know what kind of finish your vehicle has, contact Utilimaster Customer Service with the body serial number.* ***Major*** *damage may require replacing the entire panel.*

FRP Panel Replacement

For damage to a **large** area, have the vehicle's panel repaired at a professional body shop or replace the damaged panel.

Replacing an FRP sidewall involves supporting the roof while the mechanical fasteners are removed from the top, bottom, and sides of the sidewall, the sidewall is replaced, and then the original-type fasteners are installed. See the Fastener Replacement section in this manual. See also the appropriate Utilimaster body parts manual.

Utilimaster recommends sidewalls be replaced only at a professional body shop or at Utilimaster's Customer Service Department in Wakarusa, Indiana. Contact Utilimaster Customer Service for assistance.

Gelcoat FRP Surface Repair

Damage to a **small** area, may be filled in with standard body filler and then painted. Follow the manufacturer's instructions for using the body filler. For paint repairs, see the Paint section in this manual.

Tedlar FRP Surface Repair

CAUTION: PAINT repairs on Tedlar surfaces should only be attempted by a professional body shop that is familiar with Tedlar.

Damage to a **small** area may be filled in with standard body filler and covered with a Tedlar polyvinyl fluoride tape (various widths are available). Contact Utilimaster Customer Service for assistance.

1. Following the manufacturer's instructions, fill in the small gouges with body filler.
2. Sand the damaged area smooth. As much as possible, avoid sanding the Tedlar surface beyond the damaged area. Be sure the final tape repair covers all the sanded area.
3. Clean the surface to be repaired.
4. Cut the tape to the proper length.
5. Peel back the leading edge of the paper liner and fold it down, exposing the adhesive surface.
6. Align the tape as needed and apply the exposed surface to the panel.
7. Begin peeling the liner from the tape, smoothing down with a squeegee and feathering to the outer edges from the center as you go. If wrinkles occur, carefully pull back the tape, stretch the tape out, and resume a smooth application.
8. If there are trapped air bubbles, use a pin to pop them and then smooth out the tape with the squeegee.

Panel, DuraPlate®

WARNING: Always wear proper protective equipment whenever appropriate for the process. Safety and application instructions provided with adhesives should always supersede information provided by Utilimaster.

Introduction

Procedures for repairing DuraPlate body panels depend on the severity and size of damage.

Small dents and scratches in the panel can be covered up by cosmetic repairs by using Options A or B.

If the galvanized steel panel is punctured or badly dented, the steel skins in the damaged section may become delaminated from the plastic core. Over time the delamination may spread, weakening the integrity of the panel. Such a delaminated area should be cut out and replaced, using Option C. All damage should be tested for delamination. See the Testing for Delamination section.

Severe damage may require that the entire panel or sidewall be replaced, using Option D.

Testing for Delamination

If a DuraPlate panel is punctured or severely dented, one or more of the steel skins and the plastic core may start to separate. To prevent this delamination from spreading and weakening the DuraPlate panel, the delaminated area should be cut out and replaced. **All damaged areas should be tested for delamination.**

With a quarter, begin tapping on the damaged area and continue tapping while moving outward until you are well away from the damaged area. (See Illustration PL–5.) If there is a noticeable difference in the **sound** while tapping over the damaged area compared to the undamaged area, delamination has probably occurred in that area. The damaged section should be cut out and replaced (Option C), or the panel should be replaced (Option D).

CAUTION: When welding or cutting next to a DuraPlate panel, be very careful to not overheat the DuraPlate panel (and melting the plastic core).

CAUTION: Read and understand ALL adhesive application instructions and safety procedures. Effectiveness of the repair can be compromised by environmental conditions or poor application.

CAUTION: All damaged areas in DuraPlate should be tested for delamination of the steel skins to the plastic core. If detected, delaminated areas should be cut out and replaced (Option C), or the panel should be replaced (Option D).

CAUTION: Do not attempt to hammer out a dent in the DuraPlate panel. This can result in delamination of a steel skin to the core. Over time delamination can spread and weaken the strength of the panel.

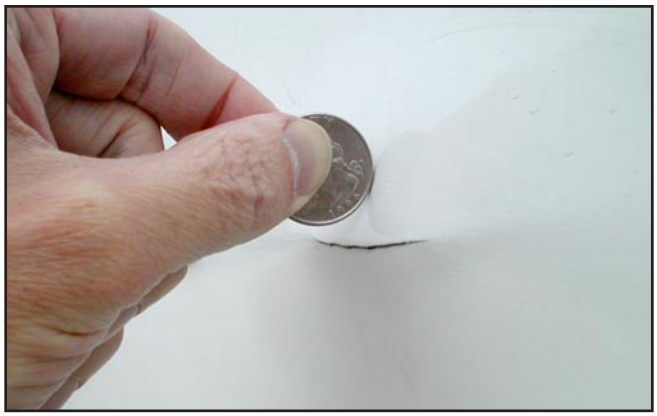


Illustration PL–5
Tap Across Damaged Area to Test for Delamination

Procedure Options Summary

NOTE: This section summarizes the various repair options. They are listed in order of severity of damage repaired and/or difficulty of the process. See the subsequent sections for detailed instructions.

CAUTION: Do not attempt to hammer out a dent in the DuraPlate panel. This can result in delamination of a steel skin to the core. Over time delamination can spread and weaken the strength of the panel.

CAUTION: All damaged areas in DuraPlate should be tested for delamination of the steel skins to the plastic core. If detected, delaminated areas should be cut out and replaced (Option C), or the panel should be replaced (Option D).

Option A (Minor Damage)

Covering surface dents and scratches with a cosmetic self-adhesive patch.

Option B (Minor Damage)

Filling in a dent with automotive body filler and painting over the filler to match the panel.

Option C (Moderate Damage)

Cutting out a section of damaged panel and securing a replacement panel section with self-adhesive patches on both sides. (This is not considered a structural repair but would prevent further damage caused by delamination.) The largest hole that can be covered in a single application is 8" x 20".

Option D (Severe Damage)

For severe damage over a large area, replace the affected panels or sidewall.

Utilimaster recommends this procedure be done only at a professional body shop or at Utilimaster's Customer Service Department in Wakarusa, Indiana. Contact Utilimaster Customer Service for assistance.

Self-adhesive Patch (Option A)

Parts and Supplies

- Isopropyl alcohol
- Sealant (contact Utilimaster Customer Service)
- Self-adhesive patch panels (contact Utilimaster Customer Service)

NOTE: The largest currently available size of the self-adhesive patch panels is 12" x 24".

Tools Required

- Safety glasses and gloves
- Metal file or deburring tool
- Metal snips
- Rubber mallet
- Caulk gun

Procedure

1. File down burrs and protruding metal in the damaged area.
2. With isopropyl alcohol, thoroughly clean the area surrounding the damage. The area cleaned should be larger than the size of the patch panel.
3. Peel the paper off the patch panel and carefully center it over damaged area. Apply pressure for good contact. (See Illustration PL–10.)

   NOTE: Clipping off the corners of the patch panel at a 45-degree angle before applying may help prevent something catching the edge and peeling the panel back.
4. Carefully tap down the edges of the panel with a rubber mallet.
5. For additional protection, apply a thin bead of sealant around the perimeter of the panel.

CAUTION: Do not attempt to hammer out a dent in the DuraPlate panel. This can result in delamination of a steel skin to the core. Over time delamination can spread and weaken the strength of the panel.

CAUTION: All damaged areas in DuraPlate should be tested for delamination of the steel skins to the plastic core. If detected, delaminated areas should be cut out and replaced (Option C), or the panel should be replaced (Option D).

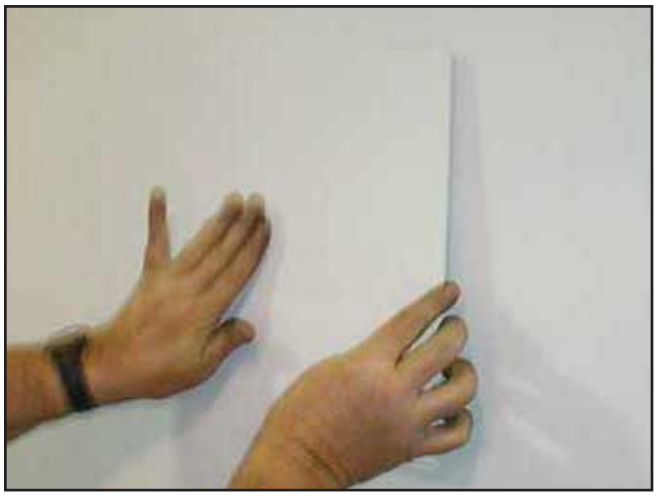


Illustration PL–10
Apply Self-adhesive Patch Panel

Body Filler (Option B)

Parts and Supplies

- Isopropyl alcohol
- Sandpaper
- Body filler

Tools Required

- Safety glasses and gloves
- Metal file or deburring tool
- Sander

Procedure

1. File down burrs and protruding metal in the damaged area and then sand the area smooth.
2. With isopropyl alcohol, thoroughly clean the damaged area.
3. Follow the body filler manufacturer's instructions for preparation and application. (See Illustration PL–15.)
4. After the body filler is completely cured, sanded smooth, and cleaned (according to the manufacturer's instructions), paint the damaged area. See the Paint section.

   *NOTE: The **standard white** paint code for DuraPlate panels is PPG 3HW76160 (but codes may vary).*

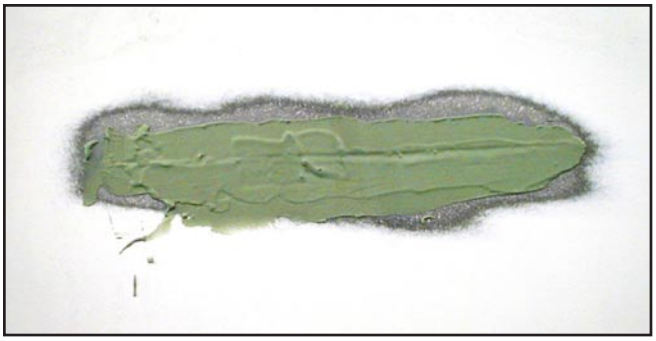


Illustration PL–15
Body Filler Applied (Before Final Sanding and Painting)

Self-adhesive Panel (Option C)

NOTE: The largest available size of the self-adhesive patch panels is 12" x 24". Allowing for a minimum 2" overhang, ***the largest hole that can be covered in a single application is 8" x 20".***

Parts and Supplies

- DuraPlate repair panel (contact Utilimaster Customer Service)
- Self-adhesive patch panels (contact Utilimaster Customer Service)
- Isopropyl alcohol
- Masking tape

Tools Required

- Safety glasses
- Drill with drill bit set
- Metal snips
- Metal file or deburring tool
- Tape measure
- Rubber mallet
- Reciprocating saw

Damaged Area Removal

1. Measure and mark off the area of the damaged panel to be replaced. Apply tape around the area to prevent scratching the wall.
2. Drill relief holes along the edges and cut out the area with a reciprocating saw. (See Illustration PL–25.)
3. Deburr the edges on the inside and outside of the opening.

Patch Panel Preparation

NOTE: The ***flange*** *of the self-adhesive patch panel should overhang the opening by 2" on all sides. The* ***inset*** *of the panel should be NO LESS than 1/8" smaller (on each of the four sides) than the opening. (See Illustration PL–20.)*

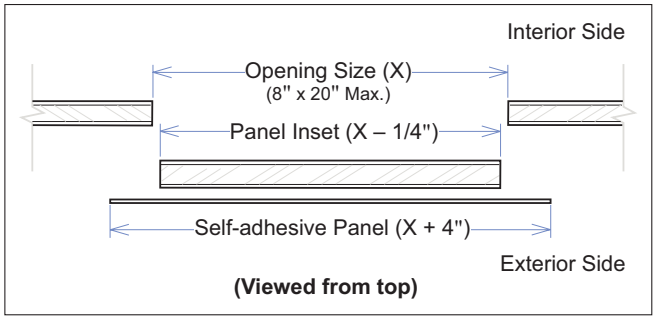


Illustration PL–20
Self-adhesive Panel and Cut-out

Illustration PL–25
Mark Off Damaged Area and Cut Out

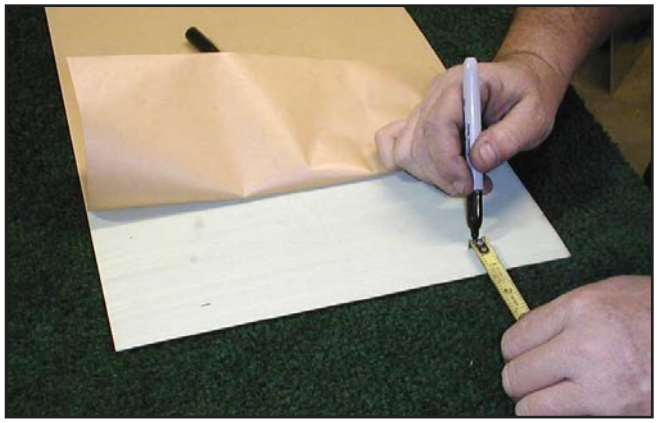


Illustration PL–30
Mark 2" Inset on Adhesive Side of Panel

1. Using a low-RPM circular saw or die grinder, cut a piece of DuraPlate that is 1/8" smaller (on each of the four sides) than the hole opening and deburr the edges.

   NOTE: To easily capture the size of the patch panel, hold it up next to the opening and mark around the opening from the inside. Measure the opening and the marks on the panel. Verify that the dimensions of the marked panel are 1/4" less than the overall height and width of the opening. (See Illustration PL–20.)

2. Thoroughly clean the **outside** perimeter of the cutout and the inset panel with isopropyl alcohol.

   NOTE: Clipping off the corners of the patch panel at a 45-degree angle before applying may help prevent something catching the edge and peeling the panel back.

3. Peel the paper back from the patch panel just far enough to mark 2" back from the edges. (See Illustration PL–30.)

4. Peel the paper off the patch panel and carefully set the inset panel in place. Apply pressure for good contact. (See Illustration PL–35.)

Patch Panel Installation

1. Carefully set the panel assembly in the opening from the outside. Apply pressure around the 2" perimeter. (See Illustration PL–40.)

2. Thoroughly clean the inset panel and surrounding 2" perimeter on the **inside** of the vehicle with isopropyl alcohol.

3. Peel the paper off a second patch panel and carefully center it over the **interior** side of the inset panel. Apply pressure for good contact. (See Illustration PL–40.)

4. Carefully tap down the edges of the panels with a rubber mallet. Do **NOT** compress the panels inside the 2" perimeter.

5. For additional protection, apply a thin bead of sealant around the perimeter of the panels.

Illustration PL–35
Inset Panel Set on Self-adhesive Patch Panel

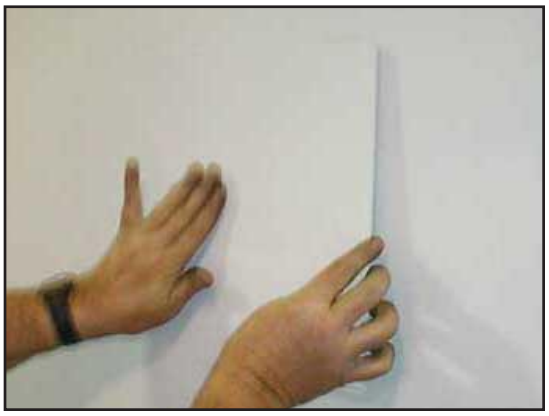


Illustration PL–40
Apply Self-adhesive Patch Panel

NOTE: This procedure describes applying the self-adhesive panel to the inset panel first and then adhering it to the sidewall. Alternately, you can apply the self-adhesive panel to the sidewall first and then place the inset panel into the hole in the sidewall (and against the self-adhesive panel).

Entire Panel Replacement (Option D)

For severe damage over a large area, replace the affected panels.

See the Fastener Replacement section.

Utilimaster recommends this procedure be done at a professional body shop or at Utilimaster's Customer Service Department in Wakarusa, Indiana. Contact Utilimaster Customer Service for assistance.

"Bonded panels" means the individual DuraPlate panels are fastened to each other with adhesive and only have mechanical fasteners through the rails and posts. (See Illustrations PL–80 and PL–95.) "Riveted panels" means the panels are fastened to each other with rivets instead of adhesive. For **riveted** panels, see the Riveted Panel Removal and Riveted Panel Installation sections. For **bonded** panels, see the following Bonded Panel Removal and Bonded Panel Installation sections.

Parts and Supplies

- DuraPlate panel (contact Utilimaster Customer Service)
- Isopropyl alcohol
- Appropriate fasteners for rails, castings, and posts as needed (contact Utilimaster Customer Service)
- Sealant (contact Utilimaster Customer Service)
- Foam Tape (P/N 12301025)
- Two-part methacrylate adhesive for bonded panel (contact Utilimaster Customer Service)
- Rivets for riveted panel (contact Utilimaster Customer Service)

Tools Required

- Safety glasses, gloves, and ear protection
- Drill with drill bit set
- Step ladder
- Pry bar
- Scraper
- Caulk guns
- Air tools for removing and installing fasteners
- Bar clamps, load bars, spacer blocks, and other braces for bonded panel
- Windshield removal tool (CP-838 equivalent)
- MONOBOLT rivet gun or air hammer with buck rivet attachment for riveted panel

WARNING: Always wear proper protective equipment whenever appropriate for the process. Safety and application instructions provided with adhesives and sealants should always supersede information provided by Utilimaster.

Illustration PL–45
Removing Floor Plank Fasteners

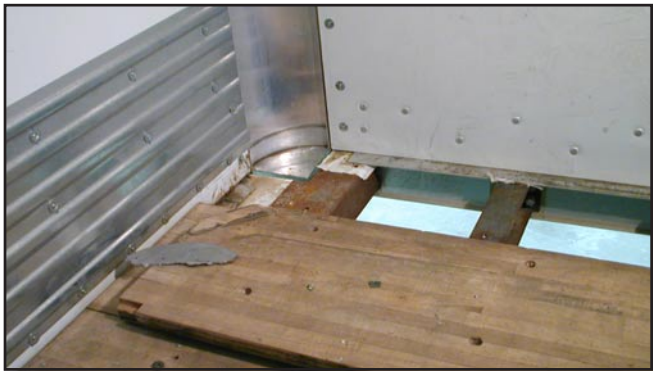


Illustration PL–50
Removing Floor Plank and Front Floor Cap

Illustration PL–55
Removing Panel Fasteners

Bonded Panel Removal

1. After unloading and parking the truck on a level surface, remove E-track, slats, scuff plates, vent, deflector plate, cable retainment track, roll-up door track, or any other item that will interfere with the panel removal. (See relevant sections in this manual.)
2. On the damaged panel, cut any decals at the seam between the panels. Also, cut the sealant around the perimeter of the panel at the rail, post, and casting.

   NOTE: Steps 3 through 5 and the illustrations in this section describe a vehicle with hardwood floor planks that run the length of the body. For a vehicle with a plywood floor instead of planks, you will need to remove the ***plywood section(s)*** *next to the damaged panel instead of a floor plank.*
3. If a rear floor cap is present (it protects the floor planks at the rear door threshold), remove the fasteners and the cap.
4. Remove the fasteners in the outer floor plank (and front floor cap inside the front post) on the same side as the damaged panel. (See Illustration PL–45.)
5. Remove the floor plank. (See Illustration PL–50. Depending on the orientation of the plank lap joint, you may need to loosen or remove the adjacent plank as well.)
6. On the exterior and interior, mark the location of the edges of the damaged panel on the other panels and/or post (to help with proper alignment of the new panel during installation).
7. Remove all the fasteners holding the damaged DuraPlate panel to the applicable roof rail, base rail, front/rear post, and/or corner casting. (See Illustration PL–55.)

CAUTION: If removing multiple panels, the roof must be supported.

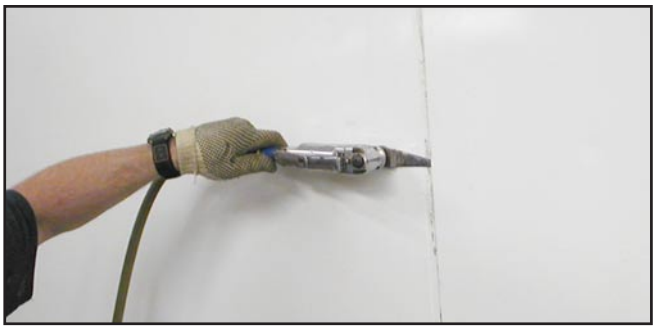


Illustration PL–60
Cutting Adhesive in Seam with Windshield Removal Tool

Illustration PL–65
Leveling Old Adhesive

Illustration PL–70
Applying Foam Tape (Interior Seam Side)

8. Continue removing fasteners about three feet beyond the damaged panel at the base and roof rails (to allow the adjacent panel to flex). (See Illustration PL–65.)
9. Place a pry bar or other object between the panel and the base rail to provide a few inches of clearance. (See Illustration PL–65.)
10. Use a windshield removal tool to cut the adhesive bond on the interior and exterior sides of the DuraPlate seam. (See Illustration PL–60.)
11. Remove the damaged panel (from inside the vehicle).
12. Carefully use the knife tool and/or scraper to remove the high spots of adhesive and tape from the seam of the adjacent panel. Be careful not to remove any paint from the DuraPlate. (See Illustration PL–65.) Also clean off old sealant from rails, posts, and castings. Wipe surfaces clean with isopropyl alcohol.

Bonded Panel Installation

CAUTION: Read and understand ALL adhesive and sealant application instructions and safety procedures. Effectiveness of the repair can be compromised by environmental conditions or poor application. Follow adhesive and sealant manufacturer's application instructions and recommendations for cure time. Safety and application instructions provided by manufacturers always supersedes information provided by Utilimaster.

NOTE: After removing the bonded panel, if desired, you may fasten the replacement panel with rivets instead of adhesive as described in Steps 2 through 8. (See the Panel, DuraPlate—Riveted Panel Installation section.)

Illustration PL–75
Removing Tape Backing (Exterior Seam Side)

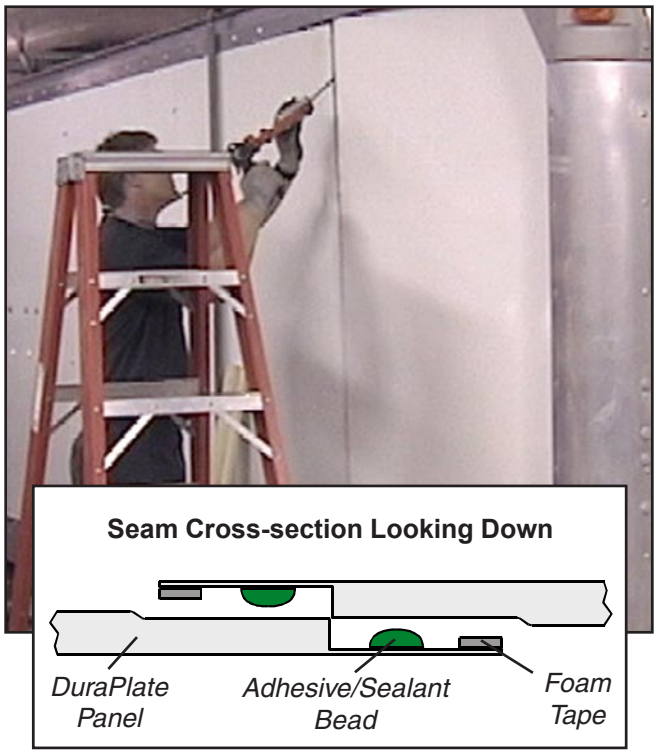


Illustration PL–80
Applying Tape and Adhesive (Bonded Repair) or Sealant (Riveted Repair)

1. Test fit the new DuraPlate panel. (If necessary, cut to the correct length and width and cut the front top edge of the new panel to fit under the front roof casting. Be sure the panel lap is correctly oriented before cutting.)
2. Using the applicable fastener holes in the roof rail, base rail, front/rear post, and/or corner casting as a template, drill holes through each of the four corners of the new panel. (These holes are for help locating the correct panel position and inserting the four anchor fasteners as quickly as possible in Steps 6 through 10.)
3. Test fit the panel, bar clamps, load bars, braces, and spacer blocks. (See Illustrations PL–85 and PL–95.) After the adhesive is applied, a consistent, even pressure will need to be applied immediately along the entire length of the seam for at least 30 minutes or the time recommended by the adhesive manufacturer.) Be sure that you can position them all again as quickly as possible in Steps 6 and 7.
4. After pulling back the panel, apply foam tape (P/N 12301025) on the interior and exterior edge of the seam (both sides) and remove the backer paper. (See Illustrations PL–70 through PL–80.)

   *NOTE: If a middle panel or multiple panels are replaced, repair one seam at a time and allow to cure **thoroughly** (wait at least double the normal cure time) before repairing the next seam.*

CAUTION: The adhesive sets very quickly. Read and understand ALL adhesive application instructions and safety procedures. Effectiveness of the repair can be compromised by environmental conditions or inadequate application. If the procedure is not performed correctly, after the adhesive is fully cured, you will need to remove the panel and start over.

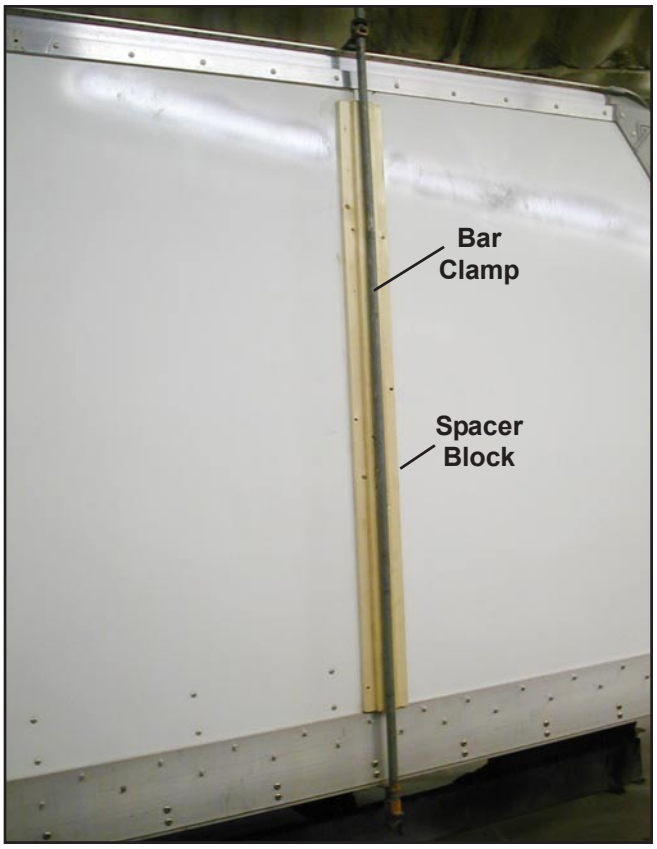


Illustration PL–85
Clamped in Position (Exterior)

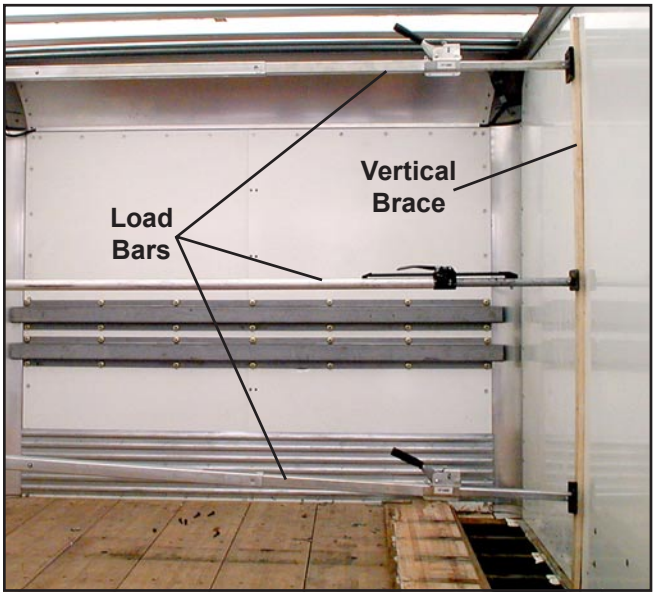


Illustration PL–90
Braced in Position with Load Bars (Interior)

5. Assemble two adhesive cartridges in two separate applicators—**but do not open the cartridge seal until everything else is ready**. You will need two short tubes per lapped seam (one for each side). **Two** people will need to quickly apply the adhesive simultaneously on the interior and exterior of the panel. **After the adhesive is applied you have only four to five minutes to position the panel, brace it, fasten the four predrilled anchor holes, and wipe up any excess adhesive! Have all necessary personnel and materials (tools, fasteners, panel, etc.) ready before continuing!**

CAUTION: The adhesive sets very quickly. You will have NOT MORE THAN FOUR TO FIVE MINUTES to perform Steps 6 through 10. If the panel is moved or repositioned after the adhesive's "open" time, you will need to remove the panel and adhesive and start over. HAVE ALL NECESSARY PERSONNEL AND MATERIALS (TOOLS, FASTENERS, PANEL, ETC.) READY BEFORE CONTINUING!

6. Cut the two tube tips down to the point where the adhesive has mixed as it is being pushed out. The adhesive beads should be at least 1/4" wide as they are applied. (See Illustration PL–80.) Apply the adhesive on both sides of the seam and quickly move the panel into position. Remove the pry bar between the panel and the base rail.
7. In the four corner anchor holes, **immediately** insert and then secure new Utilimaster-approved fasteners that are equal to or superior to the original fasteners. Do not reuse old fasteners. Do not use POP rivets.
8. Place a bar clamp and spacer block on the exterior of the seam. (See Illustration PL–85.)
9. After the exterior side is clamped, place a vertical (wood or metal) brace and three load bars securely against the interior side of the seam. The vertical brace must be the full height of the panel and sturdy enough to evenly distribute the pressure against the full length of the bonded seam. (See Illustration PL–90.) The DuraPlate panel must be flat and not bowed.

CAUTION: The exterior spacer block and interior vertical brace must align with but not cover the edge of the seam where excess adhesive may squeeze out (and bonding the wood to the panel).

10. Wipe up any adhesive that squeezes out with a clean disposable rag (**before** it cures).
11. After the panel is anchored in position at the four corners and braced, continue using the applicable fastener holes in the roof rail, base rail, front/rear post, and/or corner casting as a template, drill the remaining holes through the new panel.

    *NOTE: If you will be installing a second panel, install **all four** anchor fasteners in the first panel (Step 7)—but then install only the first half of the fasteners nearest the seam just completed (Step 12). When the adhesive is fully cured (wait at least double the normal cure time), remove the two anchor fasteners at the seam that will join with the next panel.*
12. Continue installing the new Utilimaster-approved fasteners that are equal to or superior to the original fasteners. Do not reuse old fasteners. Do not use POP rivets.
13. Allow at least 30 minutes (or adhesive manufacturer's recommendation), before removing the braces.
14. Place the floor plank (or plywood section) in position and install the fasteners.

15. Place the front corner cover in position and install the fasteners.
16. Place the rear floor cap (if present) in position and install the fasteners.
17. Reinstall E-track, slats, vent, deflector plate, cable retainment track, roll-up door track, or other items removed at the beginning.
18. Apply sealant around the perimeter of the rails, posts, castings, and front corner cover.

CAUTION: When welding or cutting next to a DuraPlate panel, be very careful to not overheat the DuraPlate panel (and melting the plastic core).

19. Install new decals as needed. See the Decals section.

*NOTE: "Bonded panels" means the individual DuraPlate panels are fastened to each other with adhesive and only have mechanical fasteners through the rails and posts. (See Illustrations PL–80 and PL–95.) "Riveted panels" means the panels are fastened to each other with (buck or Hemlok) rivets instead of adhesive. Buck rivets are solid; Hemlok rivets have a stem through the center. For **riveted** panels, see the Riveted Panel Removal and Riveted Panel Installation sections on the following pages. For **bonded** panels, see the Bonded Panel Removal and Bonded Panel Installation sections on the preceding pages.*

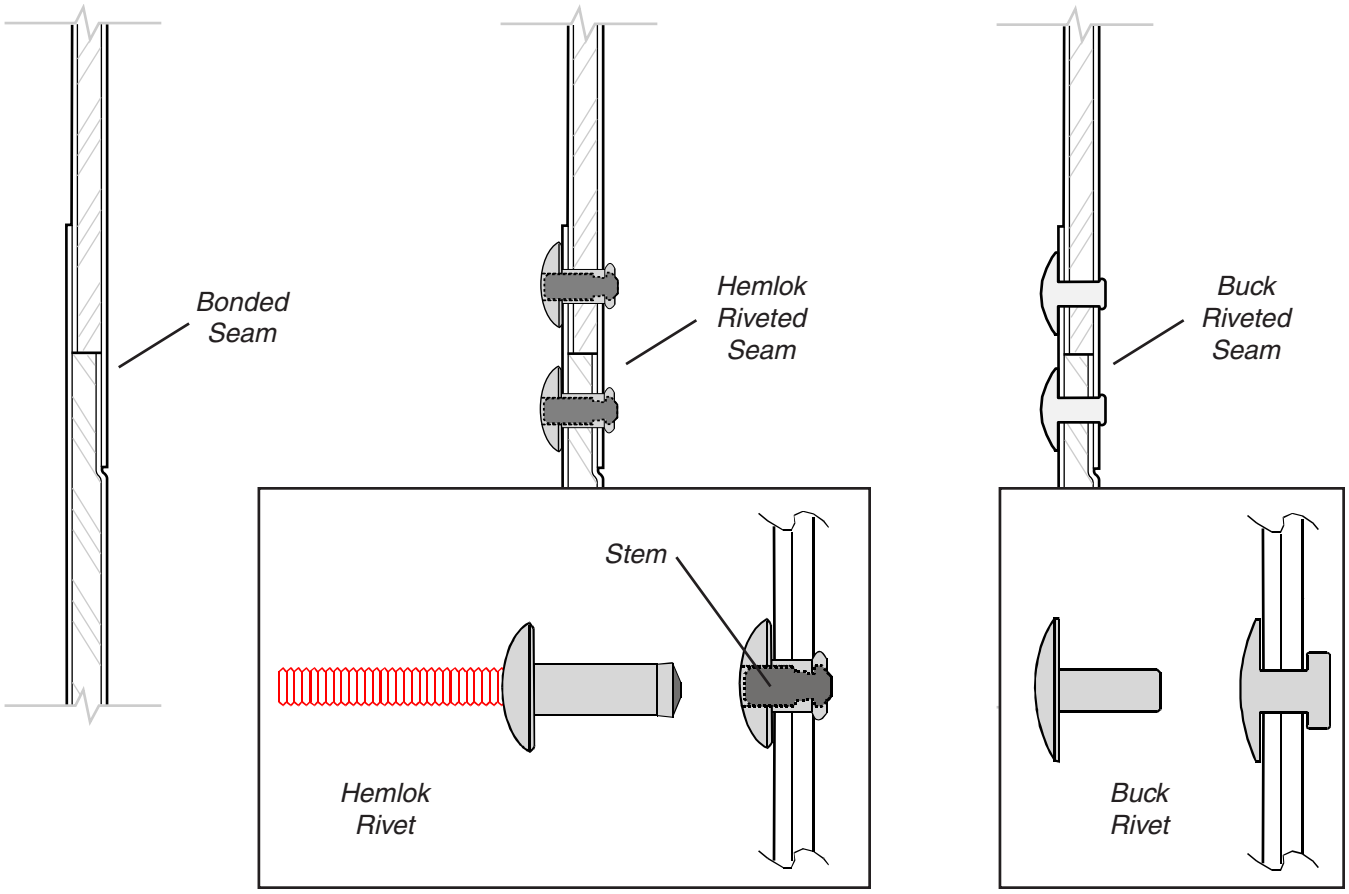


Illustration PL–95
Fastening/Bonding DuraPlate Seams (Cross-section Looking Down)

Riveted Panel Removal

NOTE: Read all instructions and have all documents and materials needed before attempting this repair!

NOTE: For riveted panels, ***in addition to this manual, see also the "Shiplap DuraPlate Panel Change" section in the Wabash National*** **DuraPlate Repair Manual**. *It can be downloaded from* ***www.wabashnational.com/products/features/duraplate.htm*** *or from following the links on the Technical Manuals page of the Utilimaster web site (****www.utilimaster.com****).*

1. After unloading and parking the truck on a level surface, remove E-track, slats, scuff plates, vent, deflector plate, cable retainment track, roll-up door track, or any other item that will interfere with the panel removal. (See relevant sections in this manual.)
2. On the damaged panel, cut any decals at the seam between panels. Also, cut the sealant around the perimeter of the panel at the rail, post, and casting.

   NOTE: Steps 3 through 5 and the illustrations referenced in this section describe a vehicle with hardwood floor planks that run the length of the body. For a vehicle with a plywood floor instead of planks, you would need to remove the ***plywood section(s)*** *next to the damaged panel instead of a floor plank. With riveted panels, you* ***might*** *not need to remove the floor plank or plywood section* ***if*** *you have sufficient clearance to remove the panel.*
3. If a rear floor cap is present (it protects the floor planks at the rear door threshold), remove the fasteners and the cap.
4. Remove the fasteners in the outer floor plank (and front floor cap inside the front post) on the same side as the damaged panel. (See Illustration PL–45.)
5. Remove the floor plank. (See Illustration PL–50. Depending on the orientation of the plank lap joint, you may need to loosen or remove the adjacent plank as well.)
6. On the exterior and interior, mark the location of the edges of the damaged panel on the adjacent panels and/or post (to help with proper alignment of the new panel during installation).
7. Remove all the fasteners holding the damaged DuraPlate panel to the applicable roof rail, base rail, front/rear post, and/or corner casting. (See Illustration PL–55.)
8. Continue removing fasteners at least one foot beyond the damaged panel at the base and roof rails (to allow the adjacent panel to flex). (See Illustration PL–65.)
9. Remove the buck or Hemlok rivets along the seam holding the damaged panel to the adjacent panel. See Illustration PL–95 and the Fastener Replacement section.
10. Place a pry bar or other object between the panel and the base rail to provide a few inches of clearance. (See Illustration PL–65.)
11. Use a windshield removal tool to cut the sealant and tape on the interior and exterior sides of the seam between the panels. (See Illustration PL–60.) Alternately, you can use a hammer and wedge (see the "Shiplap DuraPlate Panel Change—Breaking the Panel Sealant Bonds" section in the Wabash National *DuraPlate Repair Manual*).
12. Remove the damaged panel (from inside the vehicle).
13. Clean off old sealant and tape from the remaining adjacent panel as well as rails, posts, and castings. Wipe surfaces clean with isopropyl alcohol.

Riveted Panel Installation

1. Test fit the new DuraPlate panel. If necessary, cut to the correct length and width and cut the front top edge of the new panel to fit under the front roof casting. Be sure the panel lap is correctly oriented before cutting.
2. Using the applicable fastener holes in the roof rail, base rail, front/rear post, and/or corner casting as a template, drill holes through each of the four corners of the replacement panel. (These holes are for help locating the correct panel position and inserting the four anchor fasteners.)
3. After pulling back the panel, apply foam tape (P/N 12301025) on the interior and exterior edge of the seam (both sides) and remove the backer paper. (See Illustrations PL–70 through PL–80.)
4. Apply beads of sealant along both sides of the seam. The beads should be at least 1/4" wide as they are applied. (See Illustration PL–80.)
5. Carefully place the panel in position (and remove the pry bar between the panel and the base rail). The seam must fit flush and tight together.

   NOTE: If the seam is not tight and flush, drill shavings may lodge in the sealant and obstruct the final fit of the seam.
6. In the four corner anchor holes, install new Utilimaster-approved fasteners that are equal to or superior to the original fasteners. Do not reuse old fasteners. Do not use POP rivets.
7. Using the holes in the adjacent panel as a template, drill holes and fasten rivets in pairs at 12" intervals along the seam (to prevent puckering of the panel and drill shavings accumulating in the seam). (See the Fastener Replacement section.)
8. Continue drilling and riveting along the seam between the 12" intervals done in Step 7.
9. Wipe up any sealant that squeezes out with a clean disposable rag before it cures.
10. Using the fastener holes in the roof rail, base rail, front/rear post, and/or corner casting as a template, drill the remaining holes through the replacement panel.

    *NOTE: If you will be installing a second panel, install **all four** anchor fasteners in the first panel (Step 6)—but then install only the first half of the fasteners nearest the seam just completed (Step 11). When ready to install the next panel, remove the two anchor fasteners at that seam.*
11. Continue installing the new Utilimaster-approved fasteners that are equal to or superior to the original fasteners. Do not reuse old fasteners. Do not use POP rivets.
12. Place the floor plank (or plywood section) in position and install the fasteners.
13. Place the front corner cover in position and install the fasteners.
14. Place the rear floor cap (if present) in position and install the fasteners.
15. Reinstall E-track, slats, vent, deflector plate, cable retainment track, roll-up door track, or other items removed at the beginning.
16. Apply sealant around the perimeter of the rails, posts, castings, and front corner cover.

CAUTION: When welding or cutting next to a DuraPlate panel, be very careful to not overheat the DuraPlate panel (and melting the plastic core).

17. Install new decals as needed. See the Decals section.

Rear Vision (Back-up) Camera System

Operating Instructions

NOTE: These instructions refer to a Safety Vision system. Other camera systems/models may operate in a similar, but not necessarily identical, manner.

When the vehicle ignition key is turned to the Accessory or On position, power is supplied to the monitor.

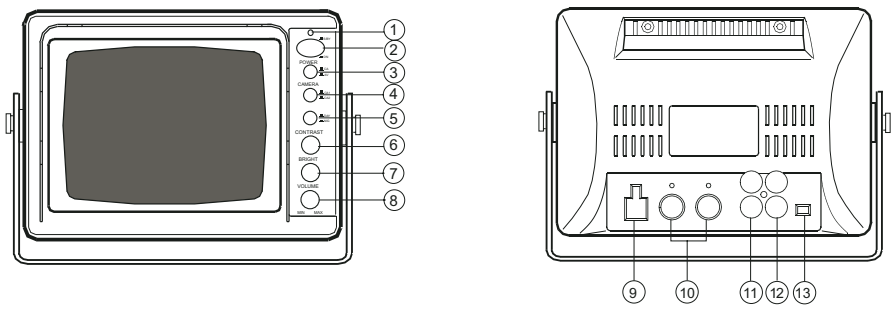
With power supplied to the monitor, the screen can be turned On by pushing the Power button (in). (See the Monitor Controls section below.) The screen will display a picture of the area behind the vehicle the entire time the vehicle is operated.

When the Power button is in the S/By position (out), the monitor is placed in Stand By mode (the screen is normally blank and the LED is not illuminated). However, (if the vehicle has the appropriate wiring option) when the engine is running, placing the transmission in Reverse overrides the Stand By. While the transmission is in Reverse, the LED will glow, and the screen will display a picture.

For safe operation, the entire back edge of the bumper must be visible at the bottom of the monitor's screen. If it is not, loosen the screws on the camera and adjust the camera for the best view. Tighten the screws and recheck the screen.

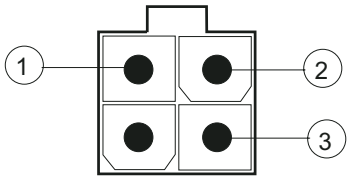
(Typical operating temperature range of the system is –13° F to +122° F or –25° C to +50° C.)

Monitor Controls



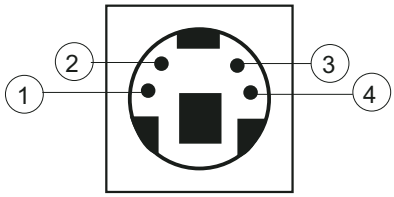
1. **Power LED**
   This LED glows green whenever the vehicle ignition switch is in the On or Accessory position **and** the monitor's Power switch is in the On position (pushed in). Alternately, when the Power switch is set to S/By (Stand By), the LED will glow (and the monitor will display a picture) when the engine is running and the transmission is put in Reverse.
2. **Power Switch**
   Press the Power switch in to turn the monitor On. Press the power switch again (out) to turn the screen Off (Stand By). (Putting the vehicle in reverse overrides the Standby position and turns on the screen.)
3. **Camera Audio/Video Selector**
   The button should be out (Ca) to select the camera input.
4. **Camera Selector**
   The button should normally be out (Ca1) to select the camera input Ca1. (If the camera has been attached to the other input, push the button the other way.)
5. **Day/Night Switch**
   This switch should normally be in the out position (DAY). At night or in a tunnel, depress the switch to reduce the picture brightness (NIG).
6. **Contrast Control**
   Adjust the contrast control for the desired overall best picture. Turn clockwise to increase picture contrast and counterclockwise to decrease.

7. **Brightness Control**
   Adjust the brightness control for the best overall picture or display brightness. Turn clockwise to increase picture brightness and counterclockwise to decrease.
8. **Volume Control**
   Adjust the volume control for the desired sound level. Turn clockwise to increase and counterclockwise to decrease.
9. **Monitor Power Connector**
   This connector supplies power to the monitor when the engine is on.



Monitor Power Connector			
Pin No.	**Description**	**Value**	**Tool**
1	Black: Ground		
2	Green: R(reverse) gear power (optional)	(10 - 26 VDC)	DVOM
3	Red: Positive power	(10 - 26 VDC)	DVOM

10. **Camera Input Connector**
    Two mini-DIN type connectors provide the video camera inputs, but only Ca1 is normally used on Utilimaster vehicles. The monitor supplies power to the camera.



Camera Input Connector			
Pin No.	**Description**	**Value**	**Tool**
1	Power Supply	12 VDC	DVOM
2	Audio Input	35 decibel	Tone Generator
3	Ground		
4	Video Input	1.0V p-p	Oscilloscope

NOTE: See also the Wiring Diagrams section.

11. & 12. **VCR Jacks**
    (Not used on Utilimaster vehicles.)
13. **Normal/Mirror Option**
    When the switch is in MIRROR position, the picture will be reversed. When the switch is in NORMAL position, the picture will be displayed normally.

Basic Troubleshooting

Monitor Screen is **Black**

- Make sure the monitor's Power switch is On (not just in Stand By) **and** the vehicle's ignition is turned to On or Accessory. If the monitor's green LED power indicator is **not** illuminated, see Flowchart A.
- Be sure the Camera Audio/Video Selector switch is set to Ca (button is out) and the Camera Selector Switch is set to the correct input (normally Ca1).
- Check Contrast and Brightness knobs for proper adjustment.
- Check the Day/Night switch for the appropriate setting.
- See Flowchart A.

Monitor Screen is **White**

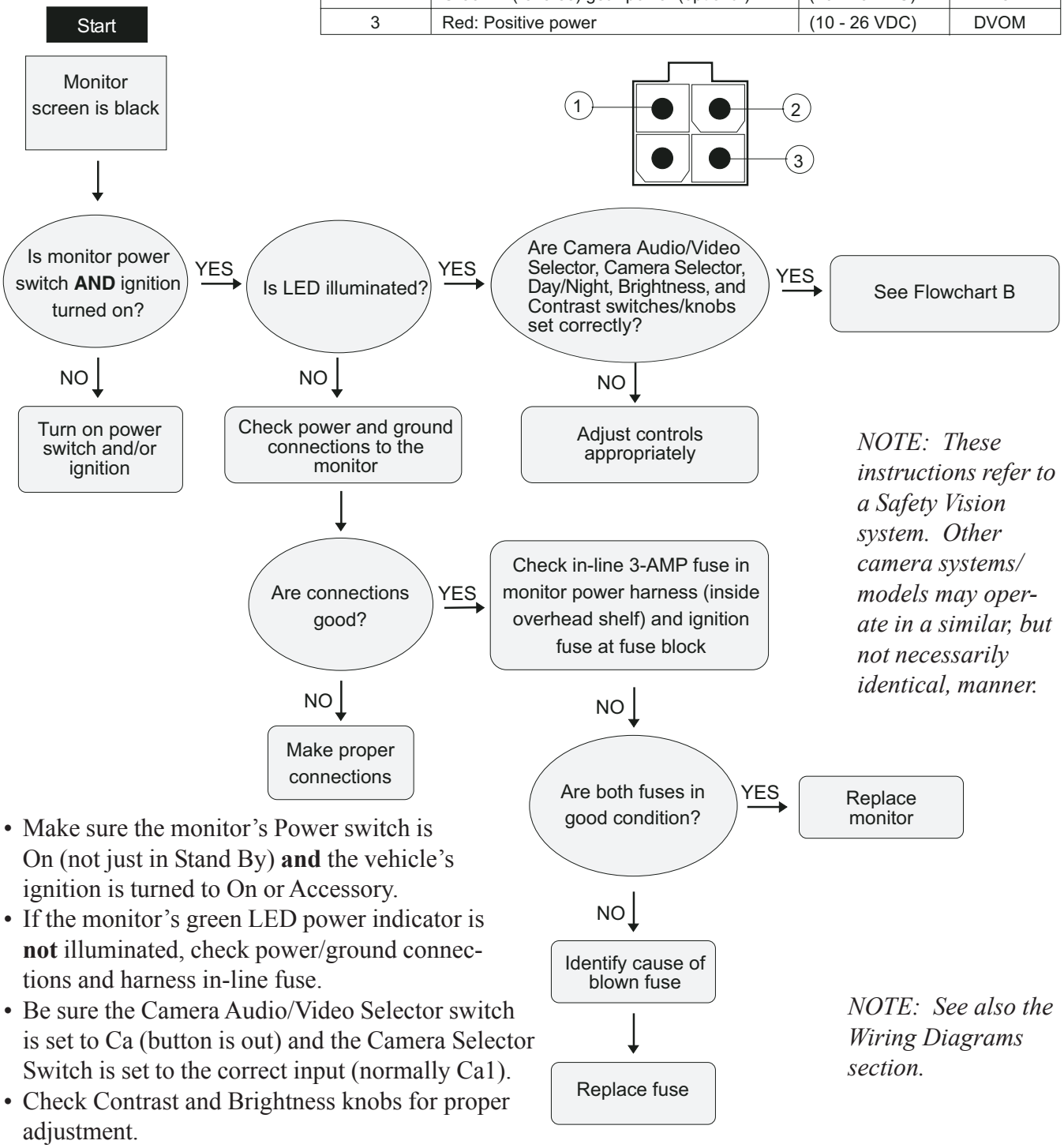
- Be sure the Camera Audio/Video Selector switch is set to Ca (button is out) and the Camera Selector Switch is set to the correct input (normally Ca1).
- Check Contrast and Brightness knobs for proper adjustment.
- Check the Day/Night switch for the appropriate setting.
- See Flowchart C.

NOTE: These instructions refer to a Safety Vision system. Other camera systems/models may work in a similar, but not necessarily identical, manner.

Troubleshooting Flowcharts

Flowchart A: If Monitor's Screen is Black

Monitor IPower			
Pin No.	**Description**	**Value**	**Tool**
1	Black: Ground		
2	Green: R(reverse) gear power (optional)	(10 - 26 VDC)	DVOM
3	Red: Positive power	(10 - 26 VDC)	DVOM

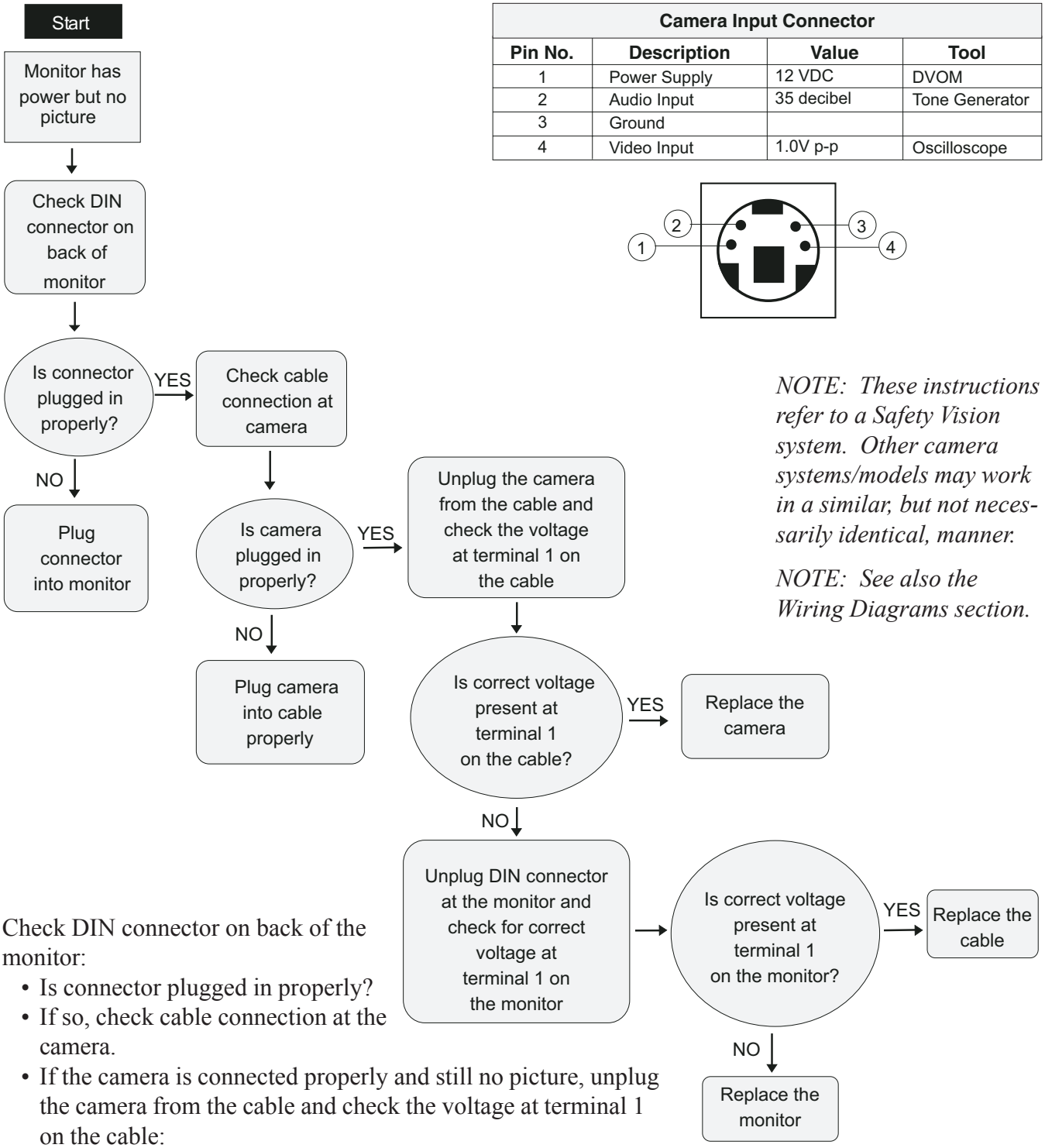


NOTE: These instructions refer to a Safety Vision system. Other camera systems/ models may operate in a similar, but not necessarily identical, manner.

- Make sure the monitor's Power switch is On (not just in Stand By) **and** the vehicle's ignition is turned to On or Accessory.
- If the monitor's green LED power indicator is **not** illuminated, check power/ground connections and harness in-line fuse.
- Be sure the Camera Audio/Video Selector switch is set to Ca (button is out) and the Camera Selector Switch is set to the correct input (normally Ca1).
- Check Contrast and Brightness knobs for proper adjustment.
- Check the Day/Night switch for the appropriate setting.
- See Flowchart B.

NOTE: See also the Wiring Diagrams section.

Flowchart B: If Monitor has Power but No Picture



Camera Input Connector			
Pin No.	**Description**	**Value**	**Tool**
1	Power Supply	12 VDC	DVOM
2	Audio Input	35 decibel	Tone Generator
3	Ground		
4	Video Input	1.0V p-p	Oscilloscope

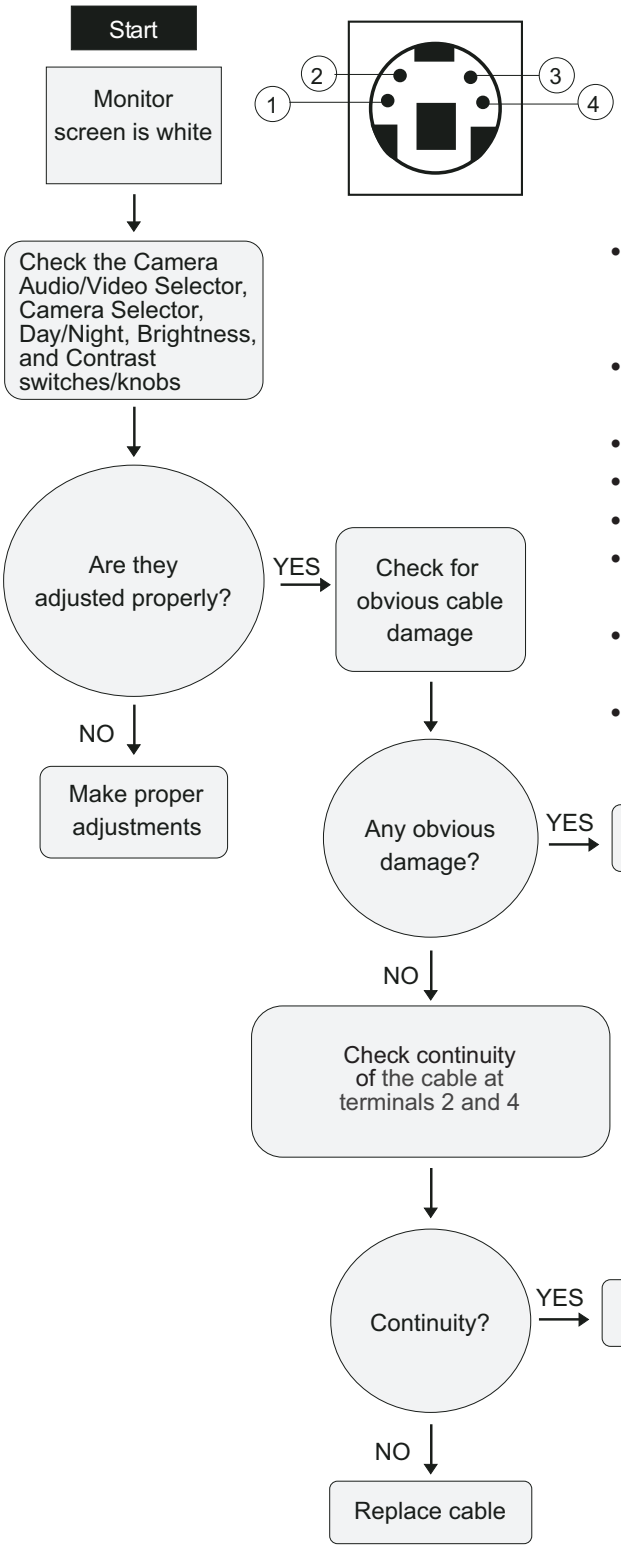
NOTE: These instructions refer to a Safety Vision system. Other camera systems/models may work in a similar, but not necessarily identical, manner.

NOTE: See also the Wiring Diagrams section.

Check DIN connector on back of the monitor:

- Is connector plugged in properly?
- If so, check cable connection at the camera.
- If the camera is connected properly and still no picture, unplug the camera from the cable and check the voltage at terminal 1 on the cable:
  - ❑ If correct voltage is not present at terminal 1 on the cable, unplug DIN connector at the monitor and check for correct voltage at terminal 1 on the monitor.
  - ❑ If correct voltage is present at terminal 1 on the monitor, then replace the cable.
  - ❑ If correct voltage is not present at terminal 1 on the monitor, then replace the monitor.

Flowchart C: If Monitor's Screen is White



Camera Input Connector			
Pin No.	**Description**	**Value**	**Tool**
1	Power Supply	12 VDC	DVOM
2	Audio Input	35 decibel	Tone Generator
3	Ground		
4	Video Input	1.0V p-p	Oscilloscope

- Be sure the Camera Audio/Video Selector switch is set to Ca (button is out) and the Camera Selector Switch is set to the correct input (normally Ca1).
- Check Contrast and Brightness knobs for proper adjustment.
- Check the Day/Night switch for the appropriate setting.
- Check for obvious cable damage.
- Check the continuity of the cable at terminals 2 and 4.
- If the continuity cannot be confirmed on circuits 2 and / or 4, then replace the cable.
- If there is a short in the camera, temporarily install a known good camera.
- If there is a short in the monitor, temporarily install a known good monitor.

NOTE: These instructions refer to a Safety Vision system. Other camera systems/models may work in a similar, but not necessarily identical, manner.

NOTE: See also the Wiring Diagrams section.

Roof

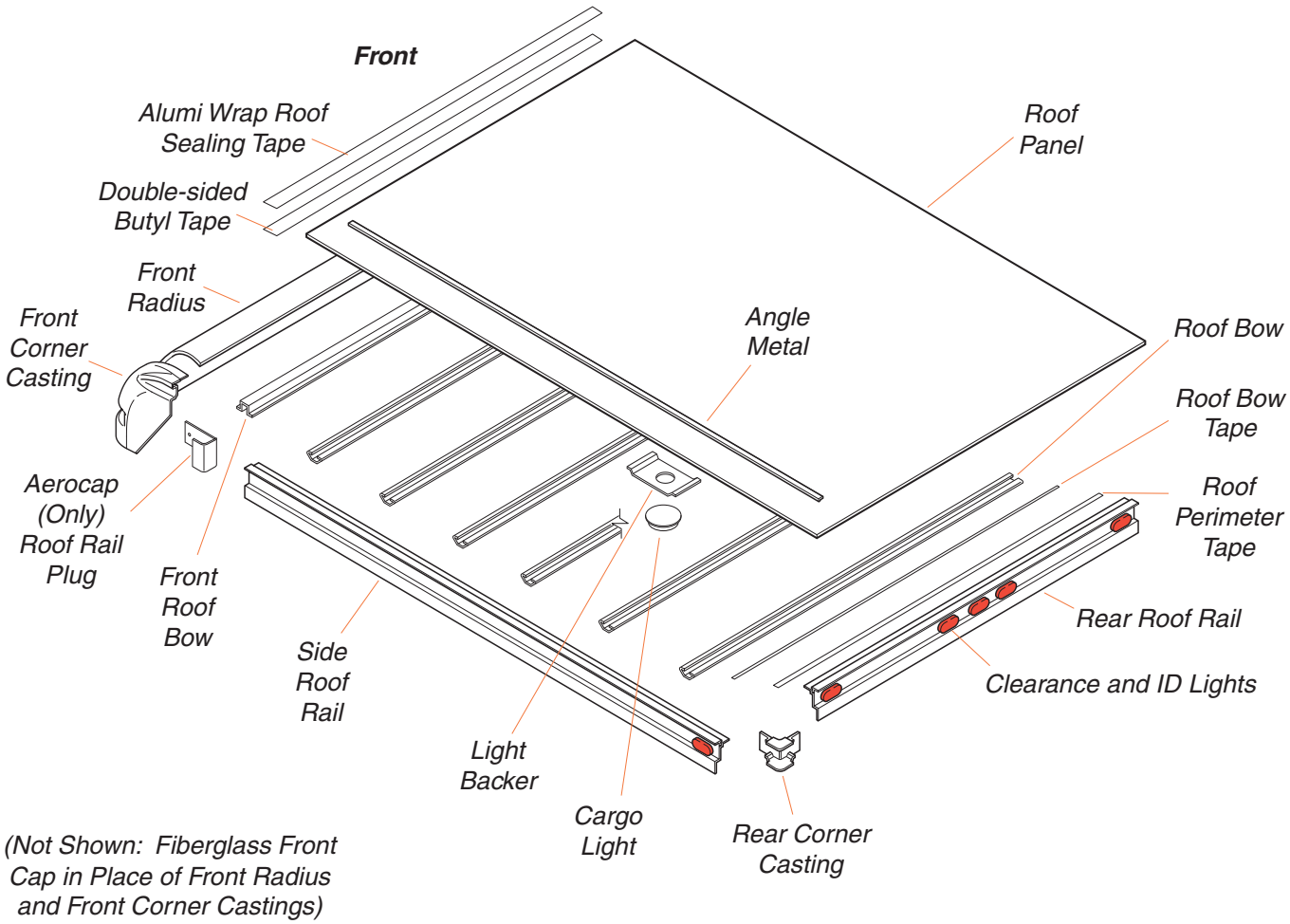


Illustration RO–5
Roof Assembly

CAUTION: Removal and replacement of the roof could result in roof leaks. If a vehicle requires major roof or structural repair, check with Utilimaster for a recommendation on returning the vehicle to Utilimaster or repairing damage at a professional body shop.

NOTE: This service information is generic. Details in illustrations and procedures may differ from those in your vehicle. *Because Utilimaster manufactures many customized vehicle bodies, this manual cannot list and illustrate every possible part in every vehicle. Nevertheless, the most common body options are described here. Use this information as a guideline where it applies.*

NOTE: Some vehicles have a one-piece fiberglass front roof cap (Illustration RO–10). Others have a separate aluminum front radius and two aluminum corner castings (Illustration RO–15). See the relevant Front (Fiberglass) Cap Replacement, Front (Aluminum) Corner Casting Replacement, and/or Front (Aluminum) Radius Replacement sections.

Illustration RO–10
Fiberglass Front Roof Cap

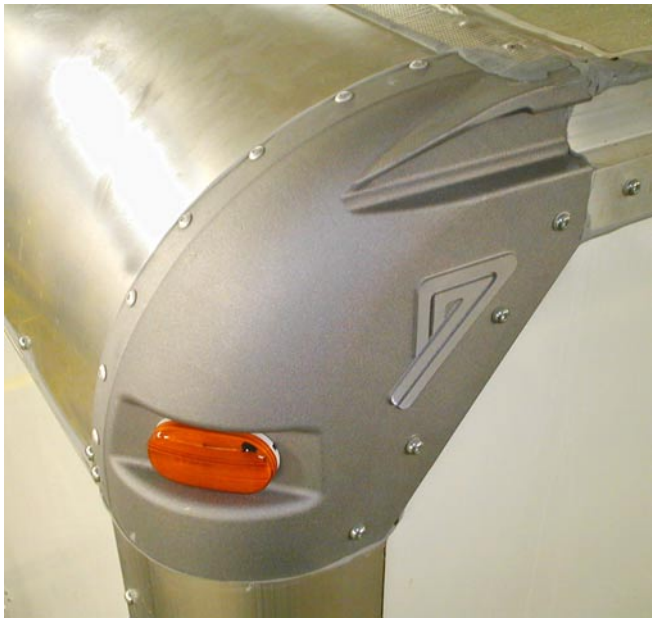


Illustration RO–15
Aluminum Front Corner Casting and Radius

Front (Fiberglass) Cap Replacement

Removal

1. On the cap, remove all clearance and identification lights for reuse. See the Lights—Clearance, Identification, and Side Marker section.
2. Remove the roof sealing tape over the front roof cap and roof panel seam.
3. Remove the fasteners holding the front cap to the roof and wall sections. (See the Fastener Replacement section.)
4. Using a razor knife, cut the sealant and tape around the cap. Pull off the cap.

Installation

1. Scrape off old sealant and tape and clean the bonding surfaces with isopropyl alcohol.

   NOTE: For the new cap, drill new holes using the old cap as a model (if possible) or mark and drill hole locations from test-mounting the cap on the vehicle.
2. Place double-sided butyl tape along top edge of the roof panel.
3. Carefully place the cap in position and fasten in place.
4. Apply "Alumi Wrap" roof sealing tape where the front cap and the roof panel overlap.
5. Apply polyurethane sealant around the exterior perimeter of the cap. (See the Sealant section.)
6. Install the lights removed from the original cap.
7. After an eight-hour waiting period, water-test the roof. With doors closed tightly, spray the roof and the top of the side structures near the affected area with water. Check for leaks. (Reseal and retest if any leaks appear.)

Front (Aluminum) Corner Casting Replacement

NOTE: If the vehicle has a front roof cap (Illustration RO–10), see the Front (Fiberglass) Cap Replacement section.

Removal

1. Remove the clearance light for reuse. See the Lights—Clearance, Identification, and Side Marker section.
2. Remove the fasteners holding the casting to the front radius, walls, and roof. (See the Fastener Replacement section.)
3. Using a utility knife, cut the sealant around the casting. Pull off the casting.

Installation

1. Scrape off the old sealant and clean the bonding surface with isopropyl alcohol.

   NOTE: For the new casting, drill new holes using the old casting as a model (if possible) or mark and drill hole locations from test-mounting the casting.
2. Apply polyurethane sealant along the bonding surface where the casting will mate with the front radius, roof, and walls. (See the Sealant section.)
3. Fasten the casting into place.
4. Apply polyurethane sealant around the exterior perimeter of the corner casting. (See the Sealant section.)
5. Install the clearance light removed from the original casting.
6. After an eight-hour waiting period, water-test the roof. With all doors tightly closed, spray the roof and the top of the side structures near the affected area with water. Check for leaks. (Reseal and retest if any leaks appear.)

Front (Aluminum) Radius Replacement

NOTE: If the vehicle has a front roof cap (Illustration RO–10), see the Front (Fiberglass) Cap Replacement section.

Removal

1. Remove any identification lights on the radius for reuse. See the Lights—Clearance, Identification, and Side Marker section.
2. Remove the tape over the front radius and roof panel seam.
3. Remove one of the castings. (See the Roof—Front Corner (Aluminum) Casting Replacement section.)
4. Remove the fasteners holding the front radius to the other casting, roof, and wall sections. (See the Fastener Replacement section.)
5. Using a razor knife, cut the sealant and tape around the radius. Pull off the radius.

Installation

1. Scrape off old sealant and tape and clean the bonding surfaces with isopropyl alcohol.

   NOTE: For the new radius, drill new holes using the old radius as a model (if possible) or mark and drill hole locations from test-mounting the radius on the vehicle.
2. Place double-sided butyl tape along top edge of the roof panel.
3. Carefully place the radius in position and fasten in place.
4. Reinstall the corner casting. (See the Roof—Front Corner (Aluminum) Casting Replacement section.)
5. Apply "Alumi Wrap" roof sealing tape where the front radius and the roof panel overlap.
6. Apply polyurethane sealant around the exterior perimeter of the radius. (See the Sealant section.)

7. Install any identification lights removed from the original radius.
8. After an eight-hour waiting period, water-test the roof. With doors closed tightly, spray the roof and the top of the side structures near the affected area with water. Check for leaks. (Reseal and retest if any leaks appear.)

Rear Corner Casting Replacement

Removal

1. Remove the fasteners holding the casting to the roof rails. (See the Fastener Replacement section.)
2. Using a utility knife, cut the sealant around the casting.
3. Pull off the casting.

Installation

1. Scrape off the old sealant and clean the bonding surface with isopropyl alcohol.

   NOTE: For the new casting, drill new holes using the old casting as a model (if possible) or mark hole locations from test-mounting the casting.
2. Apply polyurethane sealant along the bonding surface where the casting will mate with the roof rails. (See the Sealant section.)
3. Fasten the casting into place.
4. Apply polyurethane sealant around the exterior perimeter of the corner casting.
5. After an eight-hour waiting period, water-test the roof. With all doors tightly closed, spray the roof and the top of the side structures near the affected area with water. Check for leaks. (Reseal and retest if any leaks appear.)

WARNING: Always follow the manufacturer's cautions and recommendations for protective equipment, application, and cleanup.

CAUTION: Removal and replacement of roof sections could result in roof leaks. If a vehicle requires major roof or structural repair, check with Utilimaster for a recommendation on returning the vehicle to Utilimaster or repairing damage at a professional body shop.

Roof Panel REPAIR

Quick and easy translucent fiberglass repair kits are available for permanently repairing small tears and punctures. These kits, such as Kemlite® SunPatch™ repair kit (P/N 01900680), work in a wide range of temperatures and do not require the mixing of resins. (See also the *Utilimaster Quick Reference Parts Guide*.)

Roof Panel REPLACEMENT

NOTE: If the roof panel is translucent Kemlite®, Utilimaster recommends the use of a patch kit such as SunPatch™ (P/N 01900680) where possible. See the Roof Panel Repair section.

NOTE: A heat gun may help break the adhesive bond holding the translucent panel to the roof bows and rails.

Removal

1. Remove the tape over the front radius and roof panel seam.
2. Remove the pop rivets securing the panel to the front radius and the heads of the pierce-and-roll rivets securing the roof panel to the roof rails. **(See the Fastener Replacement section.)**
3. Remove the angle metal above the rails.
4. Cut the double-sided tape between the roof panel and the front radius, roof bows, and rails with a razor knife.

   NOTE: If adhesive was used on the roof bows and rails, a heat gun may help break the adhesive bond holding the roof panel.

5. Remove the panel (some prying and additional cutting of tape may be required to break the panel loose from the roof bows and rails).
6. On the outer edge of the rail use a marker to mark each rivet location (for reference after a new angle metal is placed on top).
7. Use a 4" angle grinder to grind down all rivet stems until they are flush with the rail surface. Be careful to not grind off excess metal.
8. Scrape the rails, front radius, and roof bows to remove the old tape.
9. Clean the tape areas with isopropyl alcohol and allow to dry.

Installation

1. Test fit the new panel and trim as required.
2. Remove the panel.
3. Apply double-sided butyl tape along the bottom of the front radius where the roof panel will overlap. On the side facing down, leave the paper strip on for now.
4. Apply 1/2"-wide adhesive tape (P/N 12605933) on all the roof bows. On the side facing up, leave the paper strip on for now.

   NOTE: In older trucks that used polyurethane sealant instead of tape along the tops of the roof bows and rails, you may choose to use sealant in those places, but tape is easier and cleaner to install. (See the Sealant section.)
5. Apply the 1"-wide adhesive tape (P/N 12605927) around the roof perimeter on the side and rear roof rails. On the side facing up, leave the paper strip on for now.
6. Peel off about an inch (a few centimeters) of the tape paper at each tape end of the roof perimeter.
7. Peel off about an inch (a few centimeters) of the tape paper at each end of the roof bows.
8. Lay down the new roof panel.

   NOTE: As you are lowering the panel, make sure you can reach (from the interior or the exterior) the peeled-off paper on every tape strip.
9. Carefully lay down the new roof panel, inserting the front edge under (the tape of the) front radius, and then carefully remove the paper strip on the tape (between the radius and the roof).
10. Carefully pull out all the remaining tape paper.
11. Apply pressure around the perimeter (by hand or preferably with a roller) to firmly adhere the tape to the roof.
12. Place **new** angle metals over the panel ends and over the rails.
13. Drill 3/16" (for buck rivets) or 1/4" (for Magna-Loks) holes through the new angle metals and panel staggered from the old rivets. **(See the Fastener Replacement section.)**
14. Fasten the panel in position with buck rivets or Magna-Loks.
15. Using the holes in the front radius as a template, drill holes through the front of the roof panel.
16. Fasten the panel to the front radius with POP rivets. (See the Fastener Replacement section.)
17. Apply Alumi Wrap roof sealing tape where the front radius and the roof panel overlap.
18. Apply a bead of sealant around the exterior perimeter of the panel. Ensure there are no voids in the sealant.
19. After an eight-hour waiting period, water-test the roof. With all doors closed tightly, spray the roof and the top of the side structures with water. Check for leaks. (Reseal and retest if any leaks appear.)

Scuff Plate

Lower Scuff Plate

Removal

1. Remove the fasteners holding the lower scuff plate to the sidewall. (See Illustration SC–5 and the Fastener Replacement section.)
2. Remove the scuff plate.

Installation

1. Measure and cut the plate to length as needed.
2. From the exterior, drill holes in the scuff plate from the exterior, using the fastener holes in the sidewall as a template.
3. Insert fasteners into the holes.

Illustration SC–5
Lower Scuff Plate (and Fasteners)

Top "Gator" Plate

Removal

1. Remove the fasteners at the front and rear of the plate. (See Illustration SC–10 and the Fastener Replacement section.)
2. Use a utility knife to cut the double-sided tape between the plate and the sidewall.
3. Pull and/or gently pry the plate off the sidewall.
4. Clean remnants of the tape off the sidewall.

Installation

1. Measure and cut the plate to length.
2. Leaving the top paper strip on for now, apply double-sided tape to the top and bottom parts of the plate.
3. If necessary, position the plate and mark where rivets protrude.
4. Lay the plate down.
5. Cut and remove the tape from the rivet areas.
6. Remove the paper strips from all the tape.
7. Carefully position the plate and press it against the sidewall.
8. From the exterior, drill holes in the scuff plate, using the fastener holes in the sidewall as a template.
9. Insert fasteners into the holes.

Illustration SC–10
"Gator" Scuff Plate

Slats

Removal

1. Remove the fasteners securing the slat to the sidewall. (See Illustration SL–5 and the Fastener Removal section.)
2. Remove the slat and save it for use as a possible template.

Installation

1a. For mounting to a vertical support, you may be able to use the old slat as a template to drill holes in the new slat.

1b. If not, hold the new slat in position slightly above or below the old position and drill new holes through the slat and vertical support.

CAUTION: Use a drill stop and take care not to accidentally drill holes into the sidewall.

1c. If the slat is mounted directly to the sidewall with spacers, you may be able to use the holes in the sidewall as a template. Brace the new slat in position and drill holes (from the outside) in the new slat.

2. Attach the fasteners.

Illustration SL–5
Slats, Fasteners, and Vertical Supports

Switch, Cargo Light

CAUTION: On three-way switches the order in which the wires connect to the switch is very important. Failure to reconnect properly will cause the three-way switch system to fail.

NOTE: The cargo light typically can be turned on with or without the key in the ignition.

Removal

1. Disconnect the Negative (Black) terminal of the battery. (See Battery, Disconnecting section.)
2. Identify and tag the connectors at the back of the switch bodies so that they can be reconnected in the same order.
3. Detach the electrical harness from the back of the switch body.
4. Squeeze the top and bottom of the switch body (or remove screws as necessary) to remove it from the panel. (See Illustrations SW–5 and SW–10.)
5. Pop off the actuator (if separate).

Installation

1. Snap the actuator onto the new switch body (if necessary).
2. Attach the wiring harness connectors in the same locations as on the old switch.
3. Reattach the switch to the panel or plate.
4. Reconnect the battery.
5. Test the function of the switch.

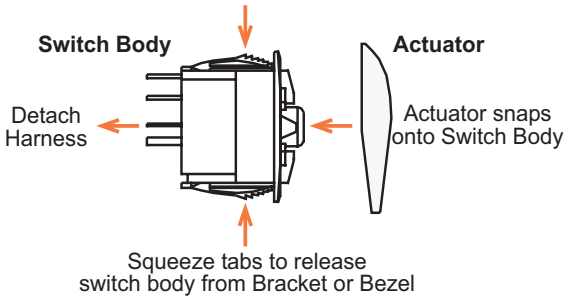


Illustration SW–5
Switch Components

Illustration SW–10
Cargo Light Switch

NOTE: This service information is generic. Details in illustrations and procedures may differ from those in your vehicle. *Because Utilimaster manufactures many customized vehicle bodies, this manual cannot list and illustrate every possible part in every vehicle. Nevertheless, the most common body options are described here. Use this information as a guideline where it applies.*

Vents

Side

Removal

NOTE: If a scuff plate covers any fasteners, remove the scuff plate first.

NOTE: Vents may be mounted from the inside or outside.

1. Remove **all** the fasteners securing the vent. (See Illustrations VE–5 through VE–15 and the Fastener Replacement section.)
2. Remove the vent.
3. Remove any excess sealant (if applicable) from vent mounting area.
4. If sealant was present, clean contacting surfaces with isopropyl alcohol.

Installation

1. If applicable, apply polyurethane sealant between the contacting surfaces.
2. Align the hole in the vent and the panel opening.
3. Fasten into position.
4. From the exterior, apply a bead of sealant to the joint between the vent and the wall (if applicable).

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Illustration VE–5
Louvered Butterfly Side Vent (Outside Mounted)

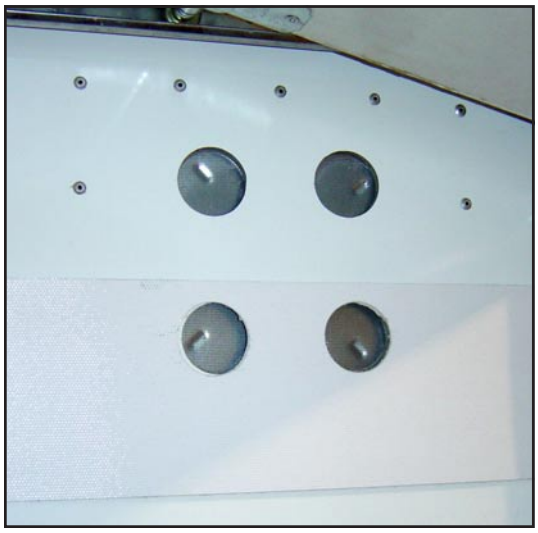

Illustration VE–10
Louvered Butterfly Side Vent Interior View

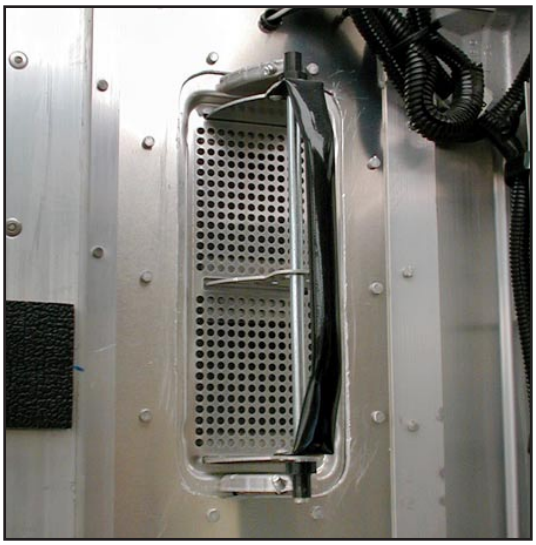

Illustration VE–15
Two-Way Hingeless Side Vent (Outside Mounted)

Front

Removal

1. From the interior of the vehicle, remove the screws holding the plate to the wall and remove the plate. (See Illustration VE–25.)
2. From the exterior of the vehicle, remove the fasteners that attach the vent and remove the vent assembly. (See Illustration VE–20 and Fastener Replacement section.)

Installation

1. From the interior of the vehicle, insert the screws through the plate and sidewall.
2. While the screws are held in position from the interior, from the exterior place the foam rubber spacer over the screws. (See Illustration VE–30.)
3. Place the wire screen over the screws.
4. Turn the screws into the holes of the vent cover.
5. Rivet the vent cover to the wall using the existing holes.

   NOTE: See also the Drains section for cleaning information.

Illustration VE–30
Front Vent Assembly Parts

Illustration VE–20
Front Butterfly Vent (Exterior View)

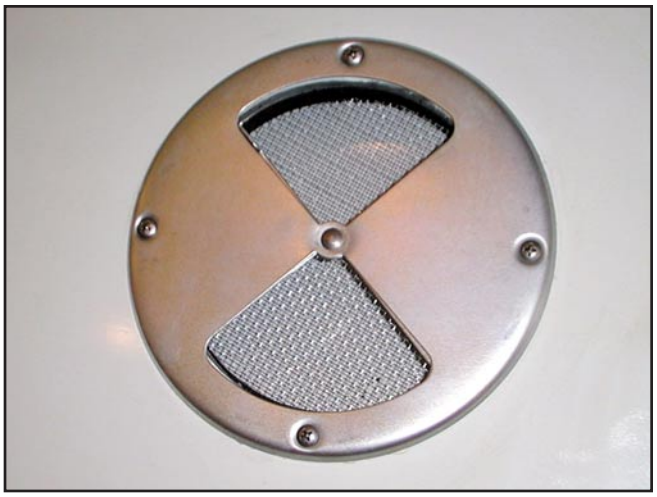

Illustration VE–25
Front Butterfly Vent (Interior View)

Roof

Removal

1. From the exterior of the vehicle, remove the fasteners that attach the roof vent to the backer plate. (See the Fastener Replacement section and Illustration VE–35.)
2. Gently cut the sealant around the circumference of the vent before removing the vent from the roof.
3. Remove any excess sealant from the vent mounting area.
4. Clean the roof surface with alcohol.
5. From the interior, remove screws securing the interior baffle plate. (See Illustration VE–40.)

Installation

1. On the outside of the vehicle, apply polyurethane sealant around the circumference of the roof vent flange.
2. Align the vent with the holes in the roof and the vent backing plate.
3. Refasten the vent to the roof.
4. From the exterior, apply a bead of sealant to the joint between the vent and the roof.
5. From the interior, reattach the baffle plate with screws.

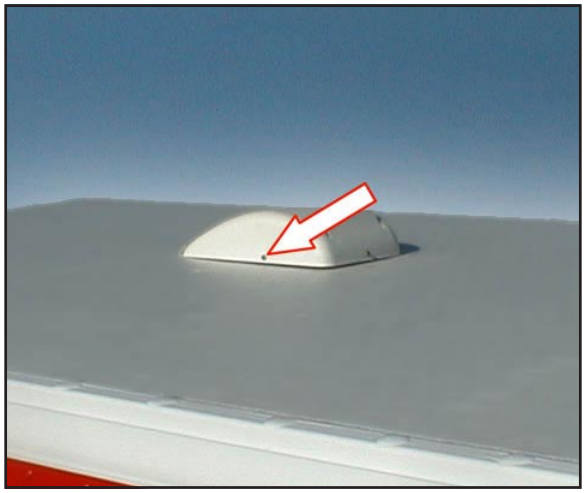

Illustration VE–35
Roof Vent (Exterior View)

Illustration VE–40
Roof Vent (Interior View)

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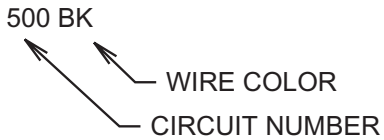
Wiring Diagrams

Circuit Number Identification and Codes

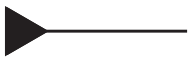
WIRE CODE:



SYMBOL CODE:


CONNECTOR SYMBOL


CONTINUE TO ANOTHER SHEET


CONTINUED FROM ANOTHER SHEET


SPLICE

WIRE COLOR CODE:

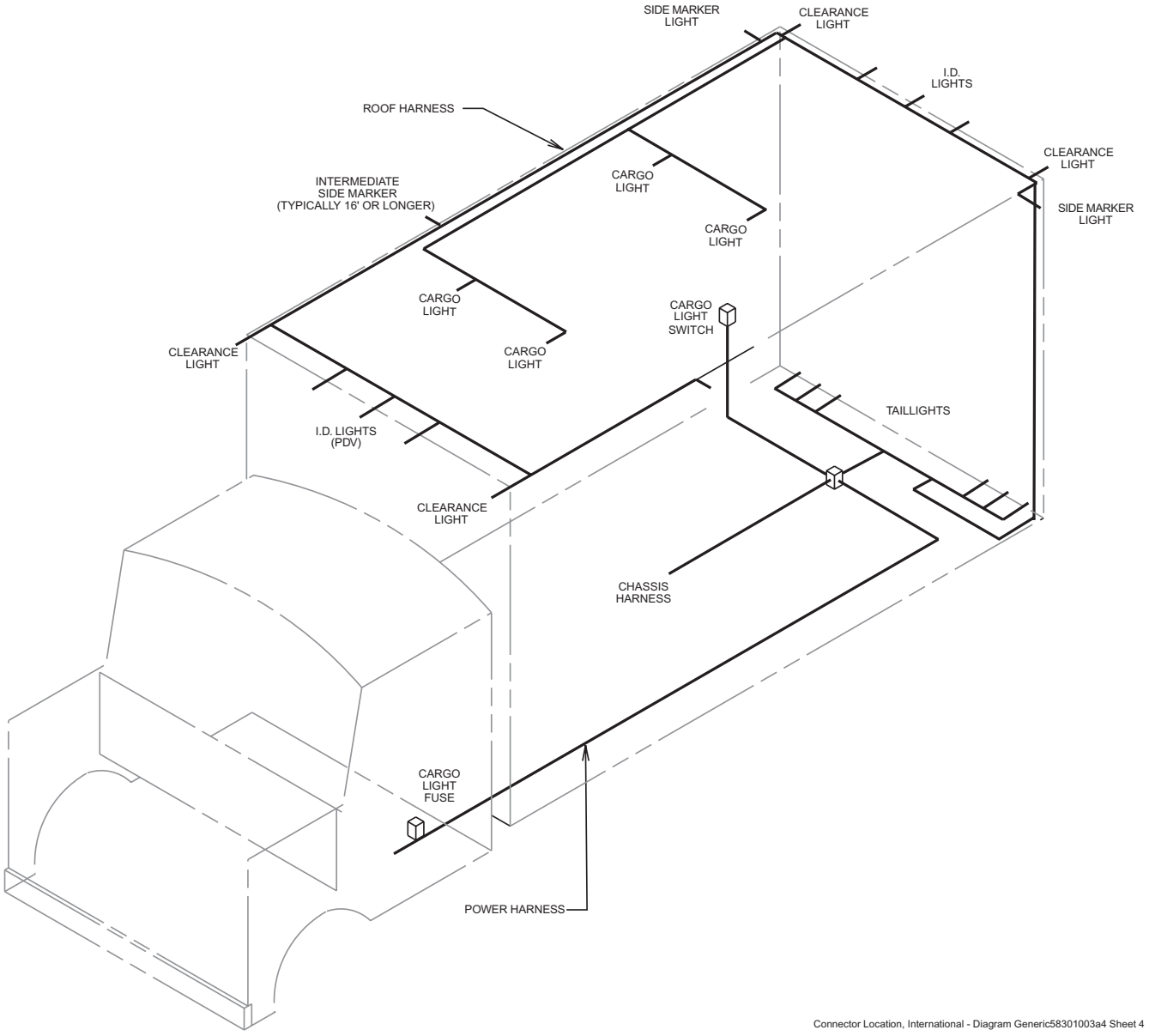
BK - BLACK	LG - LIGHT GREEN
BR - BROWN	RD - RED
DG - DARK GREEN	YL - YELLOW

CIRCUIT NUMBER	TYPICAL COLOR	DESCRIPTION
150	RED	BATTERY POWER
220	DARK GREEN	CARGO LIGHTS
230	BROWN	TAIL/RUNNING LIGHTS
232	DARK GREEN	REAR RIGHT TURN LIGHTS
234	RED	STOP LIGHTS
236	LIGHT GREEN	BACK UP LIGHTS
238	YELLOW	REAR LEFT TURN LIGHTS
500	BLACK	GROUND

Codes and Circuit Number ID - Diagram Generic58301003a1-3 Sheet 1/3

NOTE: These wiring diagrams are a generic sample. Details in these diagrams may differ from those in your vehicle. *Because Utilimaster manufactures many customized vehicle bodies, this manual cannot list and illustrate every possible wiring configuration for every vehicle. Use this information as a guideline where it applies.*

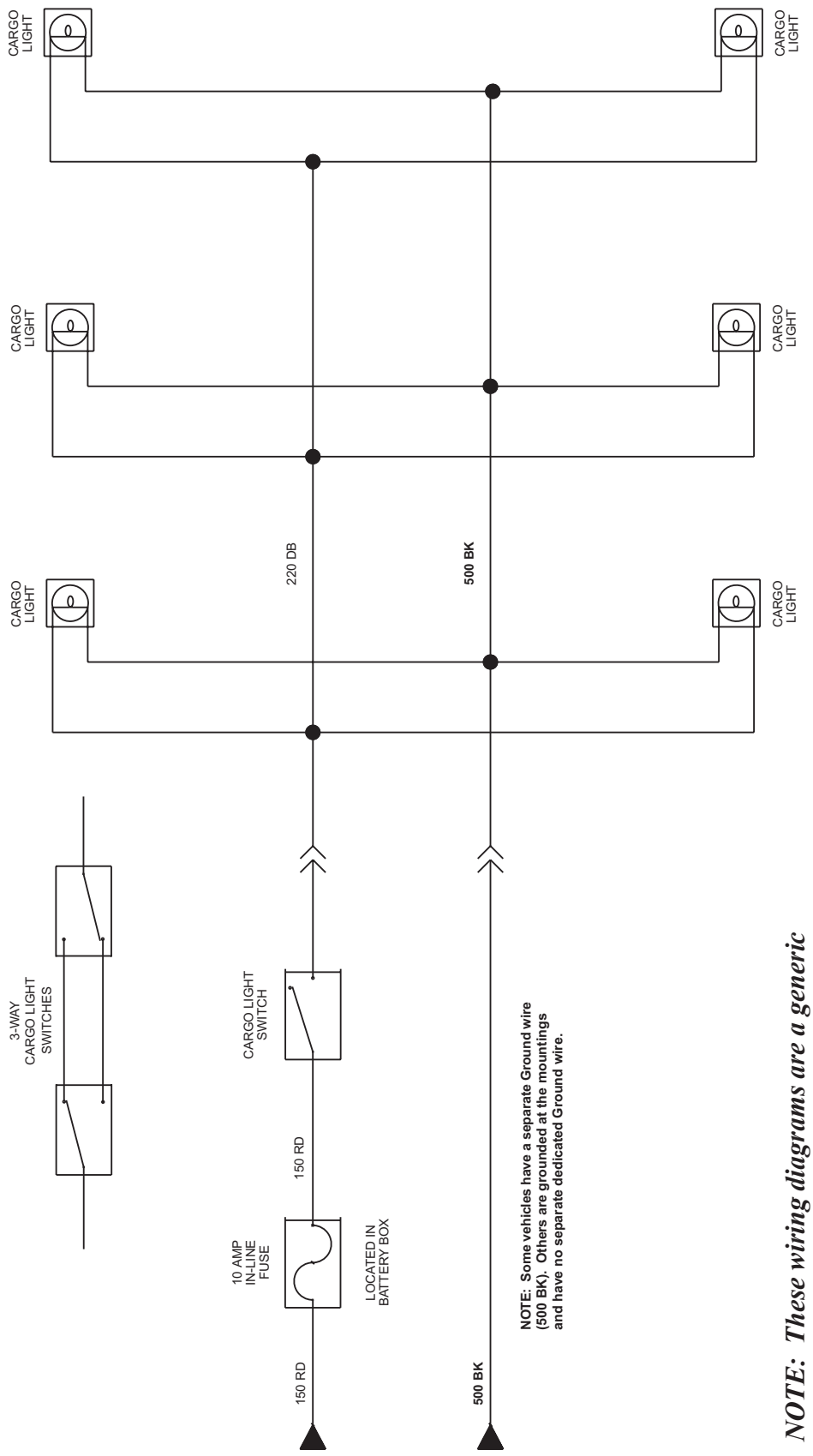
Connector Locating Diagram



Connector Location, International - Diagram Generic58301003a4 Sheet 4

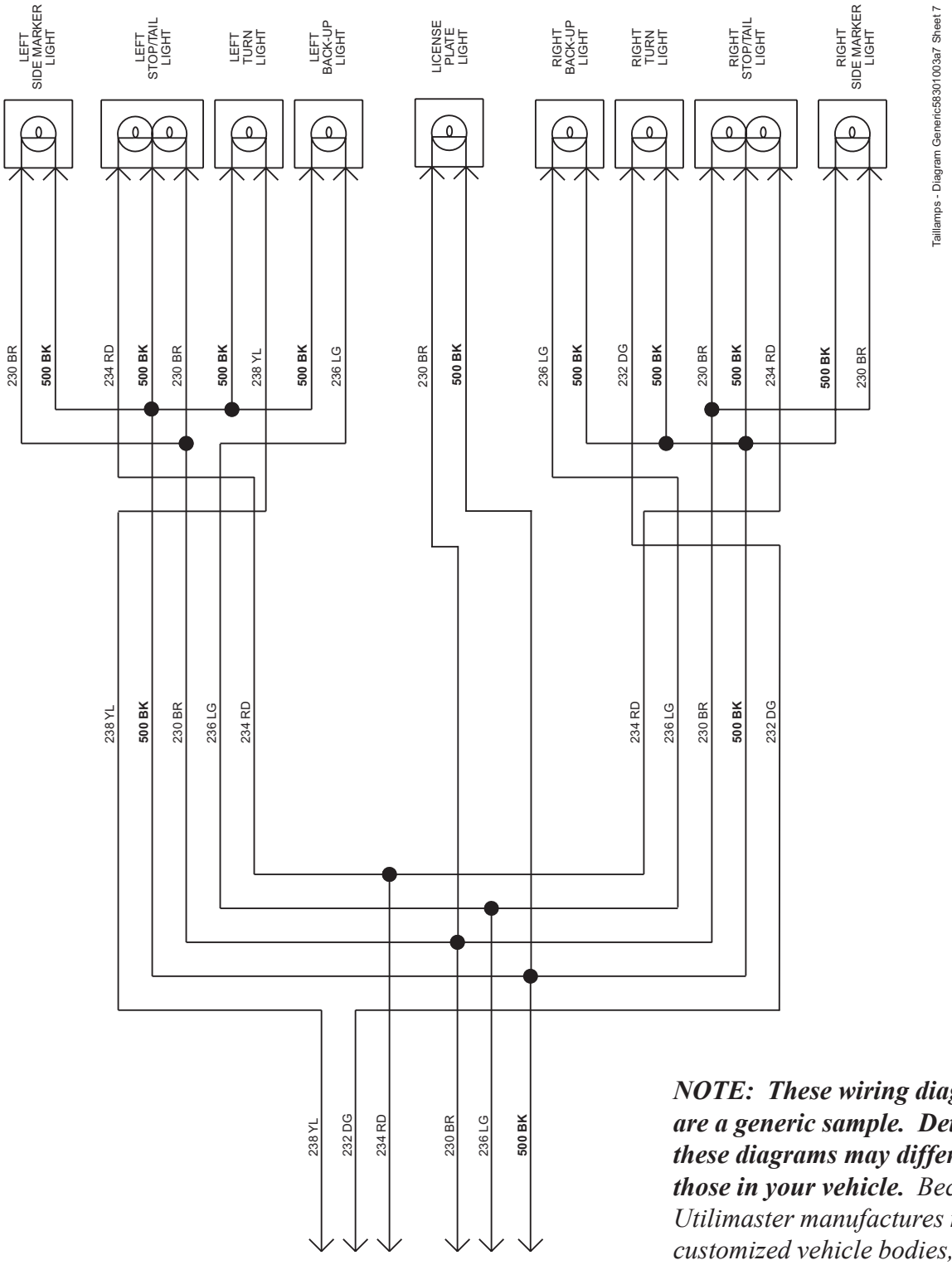
NOTE: These wiring diagrams are a generic sample. Details in these diagrams may differ from those in your vehicle. *Because Utilimaster manufactures many customized vehicle bodies, this manual cannot list and illustrate every possible wiring configuration for every vehicle. Use this information as a guideline where it applies.*

Cargo Light Wiring



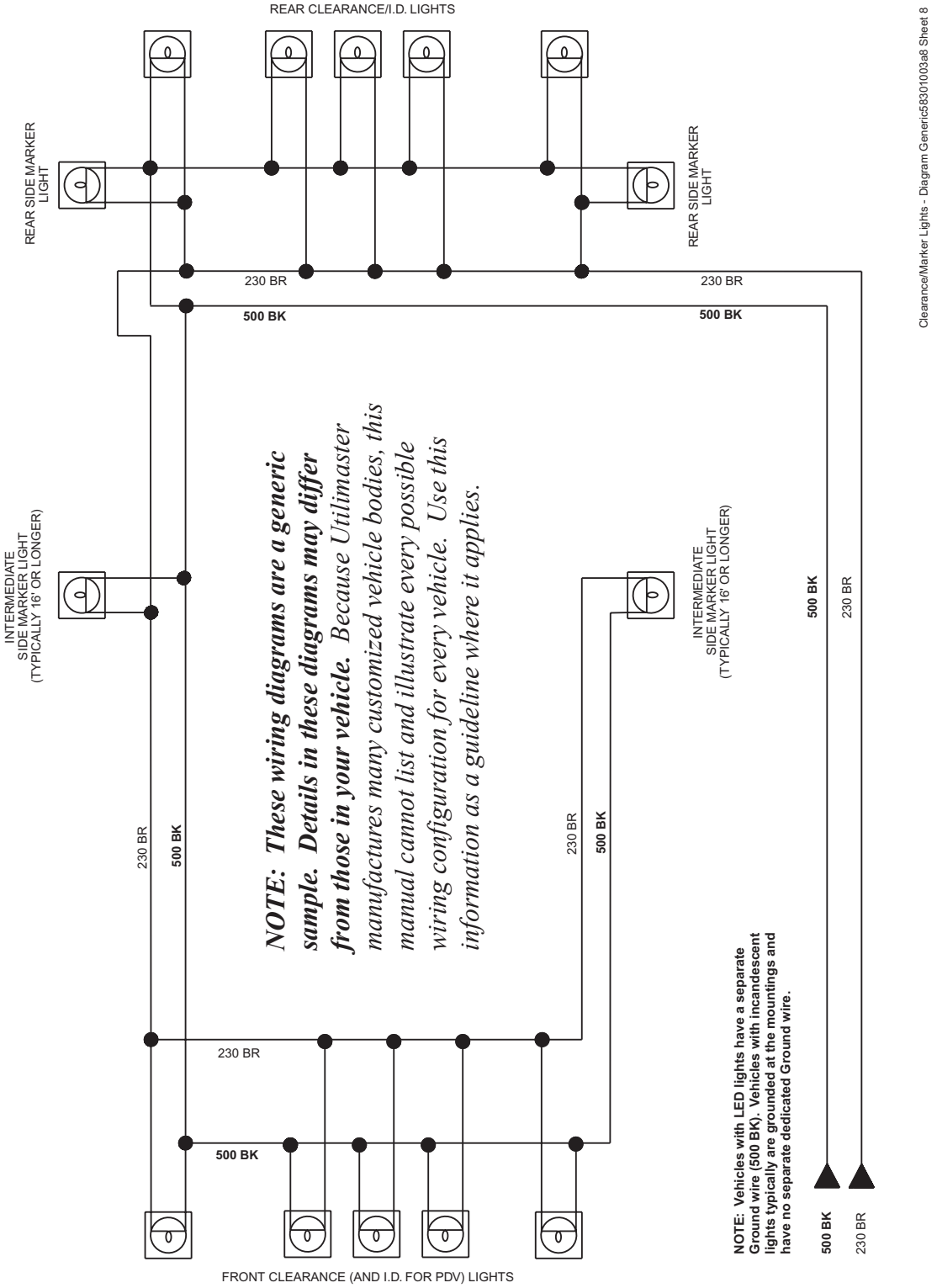
***NOTE:** These wiring diagrams are a generic sample. Details in these diagrams may differ from those in your vehicle. Because Utilimaster manufactures many customized vehicle bodies, this manual cannot list and illustrate every possible wiring configuration for every vehicle. Use this information as a guideline where it applies.*

Taillight Wiring

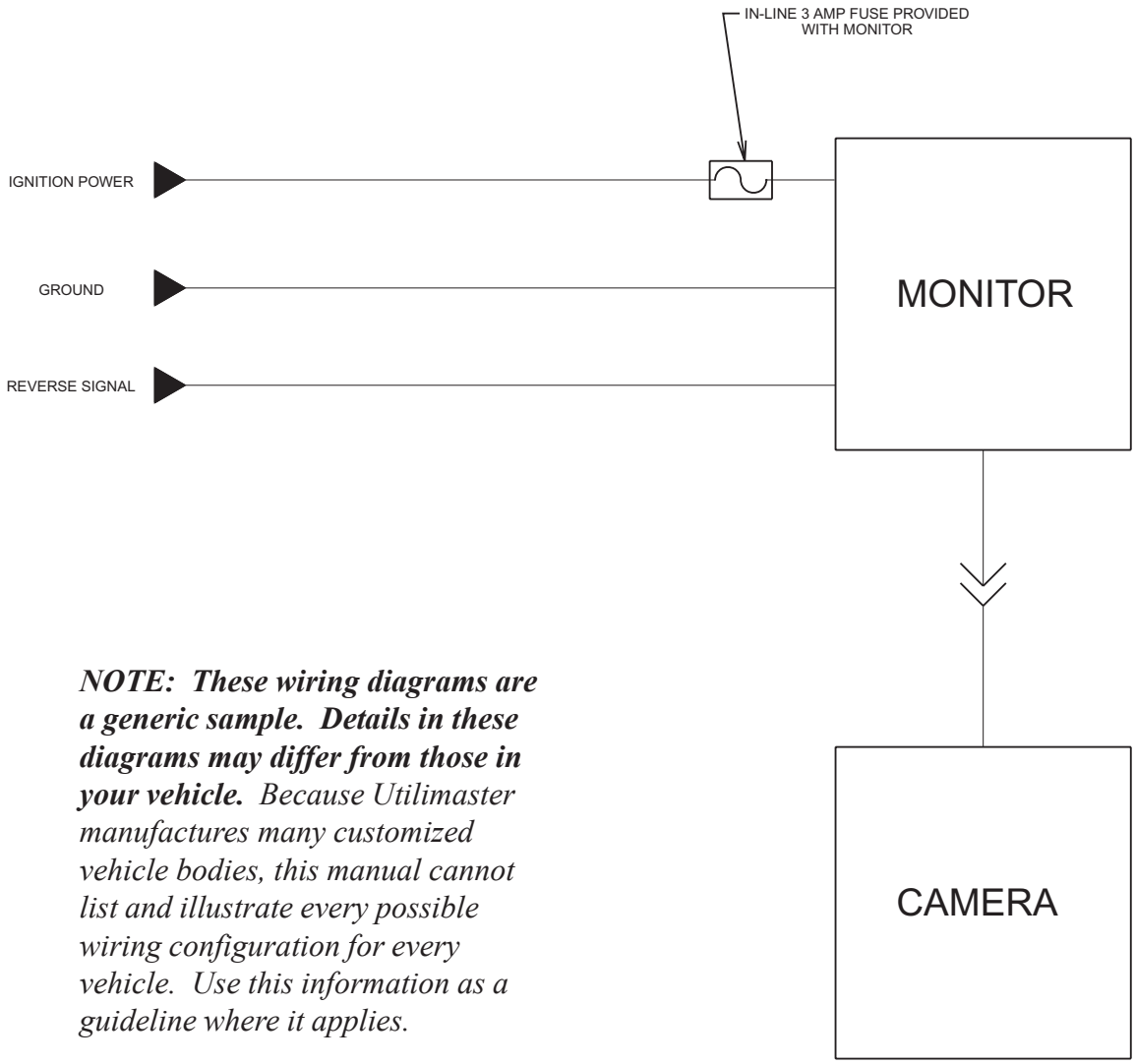


NOTE: These wiring diagrams are a generic sample. Details in these diagrams may differ from those in your vehicle. *Because Utilimaster manufactures many customized vehicle bodies, this manual cannot list and illustrate every possible wiring configuration for every vehicle. Use this information as a guideline where it applies.*

Clearance/Identification/Marker Light Wiring



Rear Vision (Back-up) Camera System Connections



NOTE: These wiring diagrams are a generic sample. Details in these diagrams may differ from those in your vehicle. *Because Utilimaster manufactures many customized vehicle bodies, this manual cannot list and illustrate every possible wiring configuration for every vehicle. Use this information as a guideline where it applies.*

Rear Vision - Diagram 58301003a9 Sheet 9

NOTE: See also the Rear Vision (Back-up) Camera System under the Service Information section.

R

S

T

U

V

W

Truck Body and PDV

Body Service Manual

Part Number: 03102101-VY04EN