



CLEARCAM™ CAMERA IN LEM MIRROR SYSTEM

OWNERS MANUAL FOR STANDARD AND INFRARED CAMERA

Velvac's *ClearCam* Camera in LEM Mirror System is a fully integrated camera/mirror module in the V-Max™ and V-Max III Standard Mounted and Top Mounted mirror head designs.

NOTE: The Standard and Infrared Cameras are interchangeable. The connectors are the same but the cover plate must match the type of camera being used. Page 5 lists the standard and page 6 lists the infrared camera parts.



LEM with Standard Camera



ClearCam Standard Camera Assembly



LEM with Cover plate and Camera Assembly removed



LEM Infrared Camera on V-Max III Top Mount



ClearCam Infrared Camera Assembly



LEM Infrared Camera with Cover plate removed

CARE AND ADJUSTMENT OF MIRROR AND CAMERA

Care for your Mirrors and Camera

Clean the mirror glass with a clean cloth and glass cleaner. Clean the mirror housing, arm, and base with a wet cloth or sponge. After drying, to protect the finish apply a product designed for plastic.

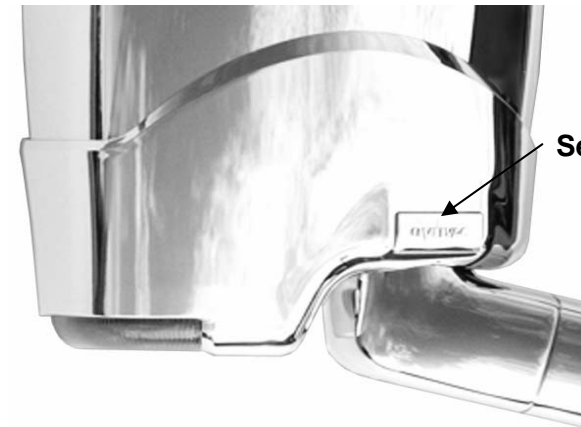
DO NOT USE A WAX ON THE TEXTURED SURFACES! Non abrasive waxes and polishes can be used on chrome and smooth surfaces. A recommended polish is Flitz™. See the Velvac web site for information on Flitz™ polish.

The camera should be cleaned as you would the lens of your personal hand held camera. A soft cloth and lens cleaner should be used without abrasives which can scratch the camera lens.



Camera Adjustment

NOTE: Camera adjustment should be made AFTER adjusting the mirror head. The camera assembly can be rotated horizontally in the Lower Electronic Module (LEM) to optimize visibility. Only horizontal movement can be made. To rotate the camera assembly loosen the screw next to the camera. This will take the tension off the camera and friction pad on the cover plate. Manually rotate the camera assembly. After obtaining the desired view, tighten the mounting screw to 10 in-lbs.

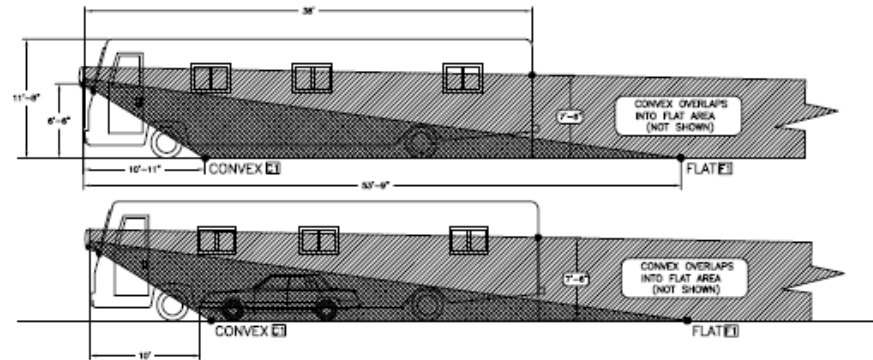


Mirror Head Adjustment (Standard Mount)

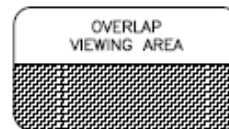
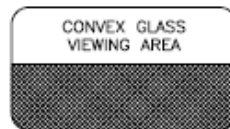
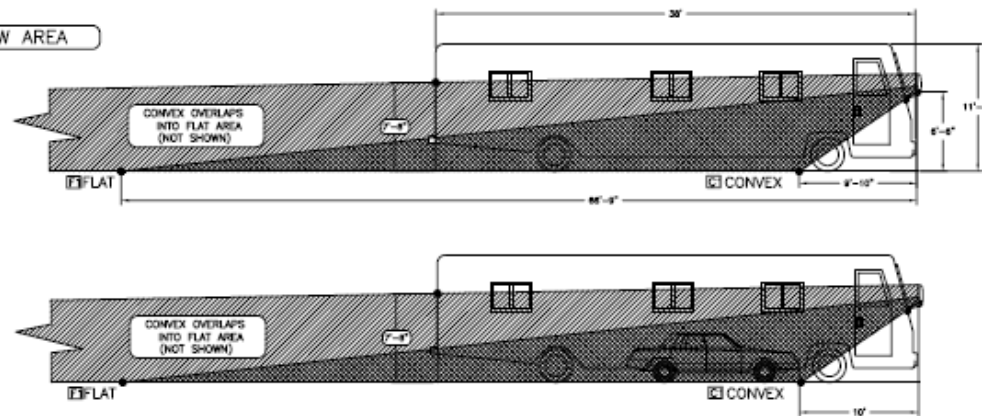
The mirror head is torqued at the factory but allows for several left to right hand adjustments during installation. If mirror head becomes loose additional adjustments are necessary. Access to the set screw is required. With a small flat head screwdriver carefully remove the "Velvac" rectangular cover from the back of the LEM housing. The cover provides access to a set screw which can be tightened with a 3/16" Allen wrench. Rotate the mirror head until the set screw is visible. Tighten the set screw to 100 in-lbs and snap the cover back into position. Adjust the head to the desired position. Then position flat glass in mirror shell and rotate the head for the driver.

MIRROR GLASS ADJUSTMENT

DRIVER'S SIDE VIEW AREA



PASSENGER'S SIDE VIEW AREA

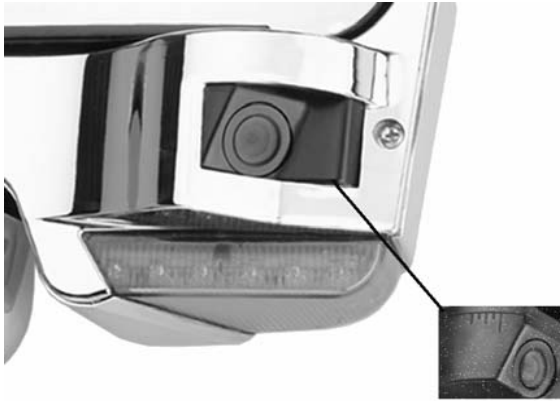


Refer to views above

With a person in the driver's seat and mirrors in the normal driving position use the remote control switch to adjust the mirror glass. If the mirrors are manual, adjust the mirror glass by gently pushing on the glass surface. If necessary, mirror glass on remote controlled mirrors can be moved manually by gently pushing on the mirror glass. Adjust flat glass horizontally to view side of vehicle and out. Then adjust flat glass vertically to view from point F1 and up. Adjust convex glass horizontally to view side of vehicle and out. Then adjust convex glass vertically from point C1 and up. Note there will be overlap of the viewing area with the flat glass and convex glass.



CAMERA ASSEMBLY AND LIGHT REPLACEMENT INSTRUCTIONS (SAME FOR STANDARD AND INFRARED CAMERAS)



Assembled LEM



LEM with Cover plate removed



Camera assembly removed

Camera Assembly Removal

The camera assembly is aligned with the cover plate with a series of lines molded into the top edge of the camera assembly. The notches are visible with the cover plate fully assembled on the LEM. See the Assembled LEM photo. Take note as to the alignment of the camera assembly prior to disassembling. To remove the camera, remove and save the two Phillips head screws which hold on the cover plate and remove the cover plate. Then remove the camera from the LEM housing by disconnecting the short harness lead from the connector.

Light Removal

After removal of the cover plate described above, there is access to the connector for the light. The light will slide out of the LEM housing and can be replaced after disconnecting the short harness lead from the electrical connector.

Camera Assembly and Light Installation

Install the new camera assembly and light in the reverse order. Remember to align the lines on the new camera assembly with the cover plate. Install the cover plate and secure with the two Phillips head screws.

REPLACEMENT PARTS



V-Max and V-Max III with Standard Camera Replacement Parts

Part #	Description	Includes
709731	Standard Left (driver) side camera assembly	Camera assembly with attached harness and connector
709730	Standard Right (passenger) side camera assembly	Camera assembly with attached harness and connector
709724	Light	LED Light with harness and connector
C709897	Chrome Left (driver) side LEM housing	Housing with removable set screw snap cover
C709896	Chrome Right (passenger) side LEM housing	Housing with removable set screw snap cover
C709723	Chrome Set screw snap cover	2 covers
C709717	Chrome Left (driver) front LEM cover plate	Cover plate and 2 mounting screws with friction pad
C709718	Chrome Right (passenger) front LEM cover plate	Cover plate and 2 mounting screws with friction pad
Q709897	Black Left (driver) side LEM housing	Housing with removable set screw snap cover
Q709896	Black Right (passenger) side LEM housing	Housing with removable set screw snap cover
Q709723	Black Set screw snap cover	2 covers
Q709717	Black Left (driver) front LEM cover plate	Cover plate and 2 mounting screws with friction pad
Q709718	Black Right (passenger) front LEM cover plate	Cover plate and 2 mounting screws with friction pad
L709897	White Left (driver) side LEM housing	Housing with removable set screw snap cover
L709896	White Right (passenger) side LEM housing	Housing with removable set screw snap cover
L709723	White Set screw snap cover	2 covers
L709717	White Left (driver) front LEM cover plate	Cover plate and 2 mounting screws with friction pad
L709718	White Right (passenger) front LEM cover plate	Cover plate and 2 mounting screws with friction pad

Infrared camera assembly

(2) Cover screws

Camera cover plate



Top Mounted V-Max and V-Max III with Infrared Camera Replacement Parts

Part #	Description	Includes
709905	Left (driver) side camera assembly	Camera assembly with attached harness and connector
709904	Right (passenger) side camera assembly	Camera assembly with attached harness and connector
709724	Light	LED Light with harness and connector
C709937	Chrome Left (driver) side LEM housing	Housing with removable set screw snap cover
C709938	Chrome Right (passenger) side LEM housing	Housing with removable set screw snap cover
C709903	Chrome Left (driver) front LEM cover plate	Cover plate and 2 mounting screws with friction pad
C709902	Chrome Right (passenger) front LEM cover plate	Cover plate and 2 mounting screws with friction pad
Q709937	Black Left (driver) side LEM housing	Housing with removable set screw snap cover
Q709938	Black Right (passenger) side LEM housing	Housing with removable set screw snap cover
Q709903	Black Left (driver) front LEM cover plate	Cover plate and 2 mounting screws with friction pad
Q709902	Black Right (passenger) front LEM cover plate	Cover plate and 2 mounting screws with friction pad
L709937	White Left (driver) side LEM housing	Housing with removable set screw snap cover
L709938	White Right (passenger) side LEM housing	Housing with removable set screw snap cover
L709903	White Left (driver) front LEM cover plate	Cover plate and 2 mounting screws with friction pad
L709902	White Right (passenger) front LEM cover plate	Cover plate and 2 mounting screws with friction pad

Replacement Glass Kits



V-Max (Standard and Top Mounted)

Flat glass has 98.7 square inches of viewing area
Convex glass has 30.1 square inches of viewing area

Part #	Description	Includes
709450	Flat glass kit	Flat glass with heating element, straight clip
709650	Convex glass kit	Convex glass with heating element, curved clip
709651	Convex repair kit	Convex glass with heating element, curved clip, convex housing and handset pivot



V-Max III (Standard and Top Mounted)

Upper convex glass has 26.4 square inches of viewing area
Flat glass has 72.5 square inches of viewing area
Lower convex glass has 30.1 square inches of viewing area

Part #	Description	Includes
709732	Flat glass kit	Flat glass with heating element, straight clip
709733	Upper convex glass kit	Convex glass with heating element, curved clip
709650	Lower convex glass kit	Convex glass with heating element, curved clip
709651	Lower convex repair kit	Convex glass with heating element, curved clip, convex housing and handset pivot



For ordering parts, warranty assistance, and technical support contact Velvac directly:

Phone: 1-800-783-8871 Monday-Friday 7:00am-4:00pm central time

Velvac web site: www.Velvac.com

Technical support Email: technicalsupport@Velvac.com

Limited Warranty

The standard warranty coverage is for twelve months from date of purchase. This warranty covers all defects in material which under normal use or service are proven defective after a factory evaluation. If proven defective, Velvac will replace, ground freight prepaid, with a new part.

This warranty does not extend to any which have been subject to misuse, accident, improper application, improper installation or improper maintenance, nor does it extend to products which have been repaired or altered outside of Velvac's plant. This warranty does not cover charges for installation, labor, travel, consequential damage, loss of time or other incidental charges. Broken mirror glass is not warrantable.

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ClearCam™ is a trademark of Velvac, Inc.

V-Max™ is a trademark of Velvac, Inc.