Kinetic Support Systems
Vehicle Camera Mount F189

Instruction Manual

STRATTON CAMERA

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-**Hollaender Manufacturing Co.**: *Nu-Rail, Speed-Rail*

Kinetic Support Systems Vehicle Camera Mount F189, patents pending

WARNING

The following comments regarding the Kinetic Support Systems Vehicle Camera Mount F189 are extremely important:

- **Straps** must always be used to safely secure the mount to any vehicle.

- Each **suction cup rubber pad** must be dried after exposure to moisture (rinsed with fresh water and then dried after exposure to salt water), to prevent corrosion and consequent component failure.

- **Adjustment screws** made of carbon steel are used in all Mount components/assemblies and must never be replaced with screws made of stainless steel because the locking Helicoil threaded inserts will gall the stainless steel screws, causing them to seize and making their removal by unscrewing impossible.

- The **adjustment screw(s)** in each pre-assembled Mount assembly is/are not necessarily tightened before shipment; all assembly adjustment screws must be securely tightened before using the mount.

- Each **ball joint** is secured to its respective half assembly components using a permanent thread-locking compound, and unscrewing or adjustment of any ball joint should never be attempted. Any such attempt may lead to shearing of the ball joint stud(s).

Warranty

Kinetic Support Systems warrant the Vehicle Camera Mount F189 for a period of one year from the date that the original purchaser receives the Mount. The warranty is non-transferrable.

The Warranty Covers:

- Couplings.
- Half assemblies, except suction cup rubber pads (see below).
- Camera mounting Plates.
- Attachment Plates.

The Warranty Does Not Cover: *

- Suction Cup Rubber Pads.
- Pipes.
- Carrying Case.
- Pipe Bag.
- Furniture Blanket.
- Damages due to improper or inadequate maintenance, accident, misuse, abuse, alteration, unauthorized repairs, tempering, or failure to follow normal operating procedures as outlined in the Mount Instruction Manual.
- Damage or deterioration of the Mount component finishes.
- Damages occurring during shipment of the mount or any component for any reason.
- Any Mount component that has been modified in any way by anybody other than Kinetic Support Systems.
- Items not covered by the Warranty are guaranteed to be delivered in proper working condition.

No Warranty is expressed or implied regarding the Mount. Kinetic Support Systems specifically disclaims any implied warranties of merchantability and suitability for a particular purpose.

The liability of Kinetic Support Systems for the Mount is limited to the repair or replacement of the affected Mount component(s), at the option of Kinetic Support Systems. In no event shall Kinetic Support Systems be liable for damages based on inconvenience, whether incidental or consequential, loss of use of the Mount, loss of time, interrupted operation or commercial loss or any other consequential damages.

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Introduction

The Kinetic Support Systems (KSS) Vehicle Camera Mount F189 (VCM F189) is an ultra-versatile, compact and complete vehicle camera/equipment mounting system, capable of fixing a camera, or other piece of equipment, almost anywhere with respect to a vehicle. Please study this manual thoroughly in order to fully take advantage of the Mount, and to use the Mount appropriately and safely.

Throughout this manual, the performance claims made concerning the VCM F189 are made with some reservations. The Mount will perform as described provided that it is used skillfully. However, skillful usage of the Mount depends on the users general technical abilities and intuition concerning the mechanical devices, and upon the users comprehension of this manual. Because of this, KSS makes no guarantee that the VCM F189 by *itself* will perform as described.

Kit Contents

(1) Camera Mounting Plate w/Camera Mounting Plate Screw & Retainer (Part number A010)

(1) Camera Mounting Plate Coupling; General Purpose Coupling A2 (Part number A020)

(2) Suction Cup Assembly (2 X [Part number A040 plus Part number A060]

(2) Suction Cup Assembly (2 X [Part number A050 plus Part number A060]

(1) Rail Junction Assembly (1 X [Part number A030 plus Part number A050])

(2) Attachment Plate Assembly (Part number A070)

(3) Suction Cup/Attachment Plate Coupling A2 (Part number A040)

(2) Suction Cup/Attachment Plate Coupling A1; Rail Junction Coupling A (Part number A050)

(1) Carrying Case

(8) Pipes with Furniture Blanket and Bag (20' x ¼ " I.P.S. Sch. 40 Aluminum pipe [2', 3', 4', 5', 6' lengths], 5' x 2' I.P.S. Sch. 40 aluminum pipe [1', ½ ', 2 ½ 'lengths])

(1) Small Parts Bag Containing:

1 x (½ " – 13 x 1 ¼ ') socket flat-head screw, grade 8

3 x (3/8" – 16 x 1 ½") socket- head cap screw, grade 8

3 x (3/8" – 16 x 2") socket-head cap screw, grade 8

2 x (3/8" – 16 x 2 ½") socket-head cap screw, grade 8

1 x (3/8" – 16 x 1") socket-head cap screw, 18-8 stainless

1 x (3/8" x .810") flat washer, 18-8 stainless

1 x (3/8") flat washer, 18-8 stainless, MS 960 C616

1 x (3/8") lock washer, 18-8 stainless

6 x .(.390" x 2.125" x .010") washer, Mylar

3 x (.390” x 3.000” x .010”) washer, mylar

1 x suction cup instruction sheet

1 x VCM F 189 Instruction Manual

Part Numbers	Part Name
A010	Camera Mounting Plate
A020	Camera Mounting Plate; General Purpose Coupling A2
A030	Junction Coupling B
A040	Suction Cup/Attachment Plate Coupling A2; General Purpose Coupling B
A050	Suction Cup/Attachment Plate Coupling A1; Rail Junction Coupling A; General Purpose Coupling A1
A060	Suction Cup Half Assembly
A070	Attachment Plate Half Assembly

Note:

All kit items are inspected before shipment. Hand rework of certain items is sometimes necessary, resulting in partial removal of the anodized coatings of these items.

General Description and Operation

(Reference: Figures 1-7 KSS VCM F 189 Applications Summary)

Basic Concepts

The VCM F189 is always configures in essentially the same fashion using a triple-pipe coupling assembly, or **Rail Junction Assembly** (Fig. 1 & 2); the assembly is fixed into position using two crossed pipes while extending from the assembly is a third larger diameter pipe, or **Extension Pipe** (fig. 1, 2, 4 & 7) to which is attached a **Camera Mounting Plate Coupling; General Purpose Coupling A2** (fig. 1, 4, & 7). **General Purpose Assemblies** (fig. 1, 3, & 4) Are used to attach two pipes together for complex mount configurations. The Mount is attached to a vehicle using triple-articulated **Attachment Assemblies** (fig. 1, 5, & 6) which each incorporate a small suction cup or a special attachment plate. These assemblies allow a pipe to attach to a surface using an arbitrary orientation relative to that surface. The Mount can attach to anything of any shape which provides either a smooth mounting surface for the suction cups (such as automobile windows and bodies, boat hulls and decks, etc.) or a surface to which the attachment plates can be fixed (such as automobile bumpers , frame members, roll bars, etc.) using miscellaneous hardware such as u-bolts, c-clamps, etc. By using the appropriate configuration and the appropriate articulated Attachment Assemblies, the Mount can place a camera, or other device, and with an arbitrary orientation relative to the latter.

Item Names

Each VCM item is named according to its particular purpose; an item has more than one name if it serves more than one purpose. Each Coupling has at least one name which contains an alpha-numeric identifier and any coupling having a name which contains an identifier of type A (such as “A”, A1”, etc.) can mate with any other coupling having a similar name containing an identifier of type B (such as “B”, “B1”, etc.).

Consider item number A050 (see **Kit Contents** for item name). This item has three names, each separated by a semi-colon, and each indicating a particular use. For example “General Purpose Coupling A1” indicates that item number A050 may be used to make up a general purpose assembly, and that this item mates with any other coupling having a similar name containing an identifier such as “B”, “B1”, “B2”, etc. Therefore, item number A050 can mate with item number A040, which has one of its names “General Purpose Coupling B”, while item number A050 cannot mate with, for example, item number A020, which has as one of its names “General Purpose Coupling A2”.

Component Functional Descriptions

The **pipes** (fig. 1-7) dictate the basic configuration of the VCM F189 and serve as mounting fixtures for the Suction Cup/Attachment Plate Assemblies, the Rail Junction Assembly, any General Purpose Assemblies and the Camera Mounting Plate Coupling; General Purpose Coupling A2. Fixed lengths are used and each coupling of each assembly can be secured anywhere along the pipe of the appropriate diameter.

The **Rail Junction Assembly (item number A030 plus A050)** (fig. 1 & 2) connects two pipes together in a crossed fashion and provides a location for mounting the extension pipe. The crossed pipe and the extension pipe are secured by tightening adjustment screws in the split-collar portions of the assembly. The assembly is comprised of two couplings fastened together with one adjustment screw. The two couplings twist around the adjustment screw with respect to each other, allowing for change in the orientation of the crossed pipes. More than one Rail Junction Assembly can be used for complex mount configurations. Item number A050 is also used to make up attachment and general purpose assemblies.

Each of the **General Purpose Assemblies (Item number A040 plus A050, and item number A020 plus A040)** (fig. 1, 3, & 4) connects any two pipes together of the appropriate diameter. The pipes are secured by tightening adjustment screws in the split-collar portions of the assembly. Each assembly is comprised of two couplings fastened together with one adjustment screw. The two couplings twist about the adjustment screw with respect to each other, allowing for change in the orientation of the connected pipes. One or more general purpose assemblies can be used for the complex mount configurations, although none are required for many applications. Item number A040 is also used to make up attachment assemblies. Item number A050 is also used to make up Rail Junction Assembly and attachment Assemblies. Item number A020 also serves as to mount the camera mounting plate to the extension pipe.

Each of the **Attachment Assemblies**, or more specifically, each of the suction cup and attachment plate assemblies ([item number A040 or A050] plus [item number A060 or A070]) (fig. 1, 5, & 6) fastens a point on a pipe to a vehicle. Each assembly is secured by tightening the adjustment screw in the split-collar portion of the coupling used by the assembly. Each assembly is comprised of one coupling and either a suction cup or attachment plate half assembly, fastened together with one adjustment screw. These two items twist about the adjustment screw with respect to each other, allowing for change in the orientation of the half assembly with respect to the coupling. Both the suction cups and the attachment plates themselves are articulated using ball joints, allowing movement in any direction of each suction cup or attachment plate with respect to the rest of the corresponding attachment assembly. However, there is

still no ball joint motion once the mount is securely in position on the vehicle and all of the coupling adjustment screws are tightened. Item A040 is also used to make up Attachment assemblies. Item A050 s also used to make attachment assemblies. Item A050 is also used to make up the rail junction assembly and attachment assemblies.

The camera mounting plate coupling; General purpose coupling A2 (item number A020) (fig. 1, 4, &7) attaches the camera mounting plate coupling to the extension pipe. The coupling can be located anywhere along the extension pipe and is secured by tightening the adjustment screw in the appropriate split-collar portion of the coupling. This item is also used to make up a general purpose assembly.

The camera mounting plate (item number A010) (fig. 1 & 7) serves as a mounting platform for the camera, or other device, and attaches to the camera mounting plate coupling; General purpose coupling A2. The camera mounting plate cab be rotated 360° about its longitudinal axis and is secured by tightening the adjustment screw in the appropriate split-collar portion of the camera mounting plate coupling; General purpose coupling A2. The mounting plate has a slot and several holes to accommodate a screw in any of a variety of locations for attaching a camera or other device.

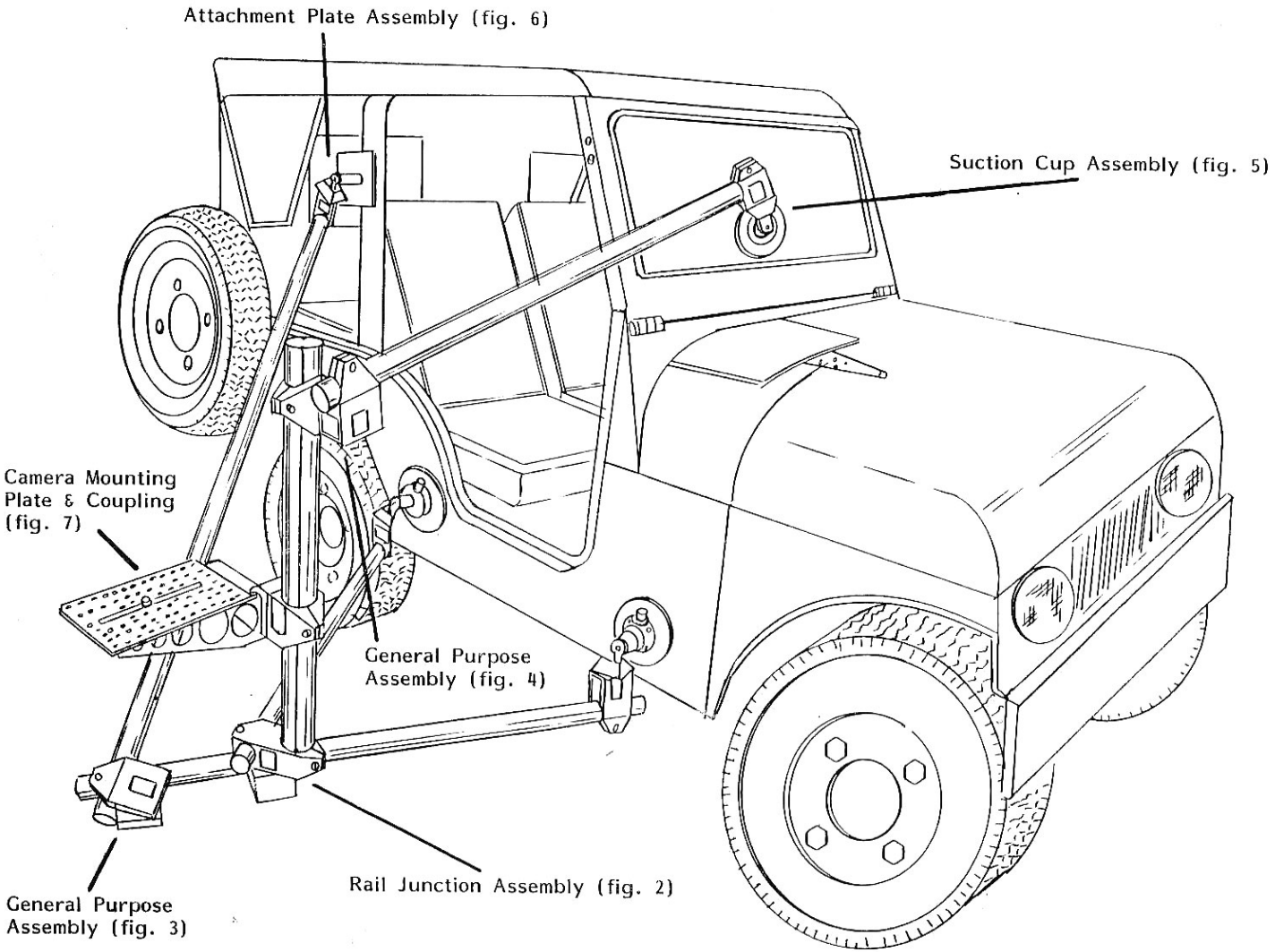


fig. 1 - Overview

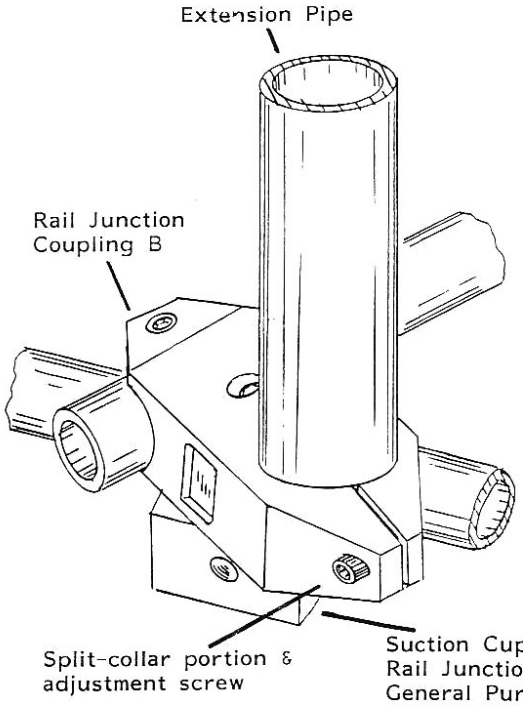


fig. 2 - Rail Junction Assembly

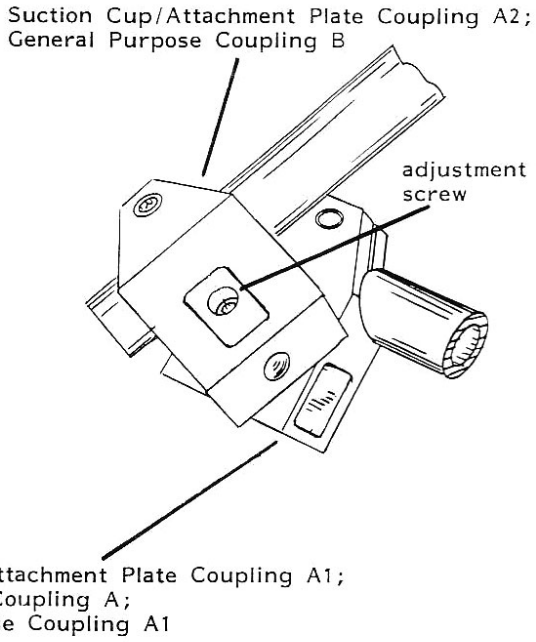


fig. 3 - General Purpose Assembly

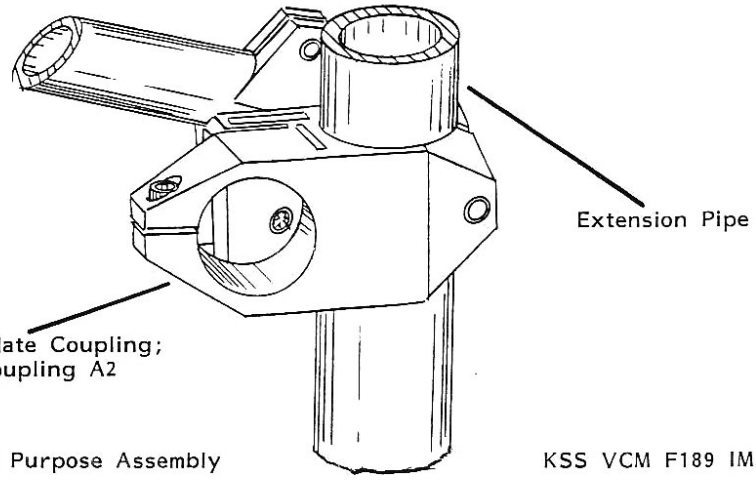


fig. 4 - General Purpose Assembly

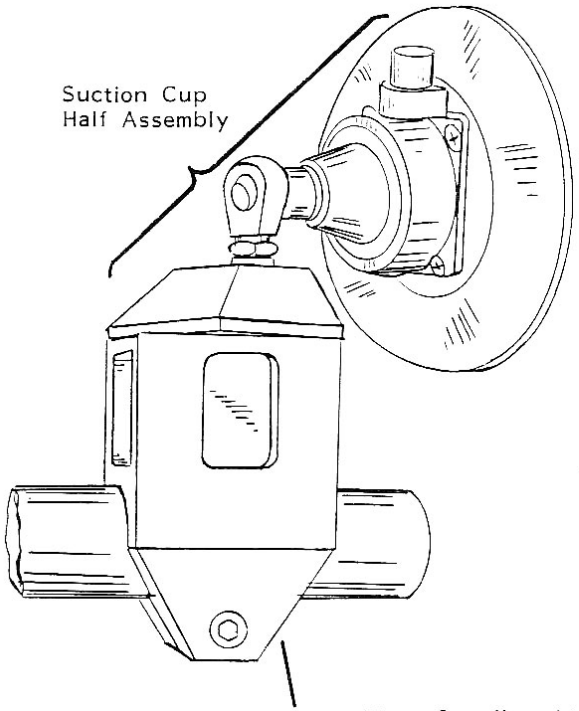
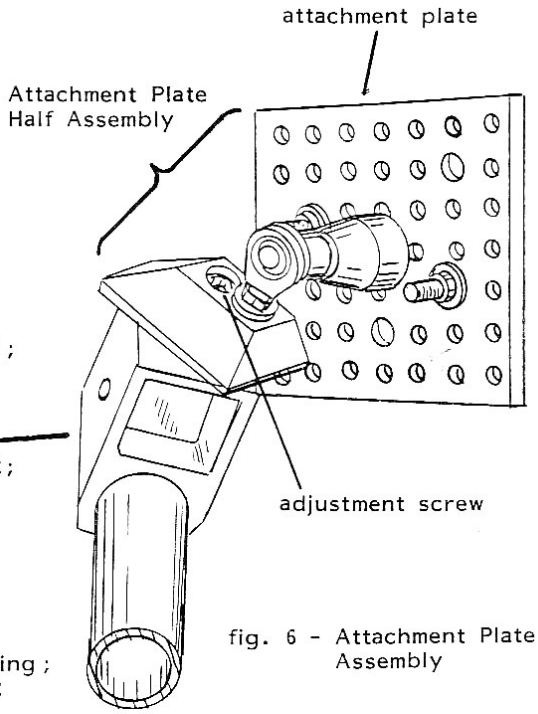


fig. 5 - Suction Cup Assembly



Suction Cup/Attachment Plate Coupling A1;
Rail Junction Coupling A;
General Purpose Coupling A1

OR

Suction Cup/Attachment Plate Coupling A2;
General Purpose Coupling B

fig. 6 - Attachment Plate Assembly

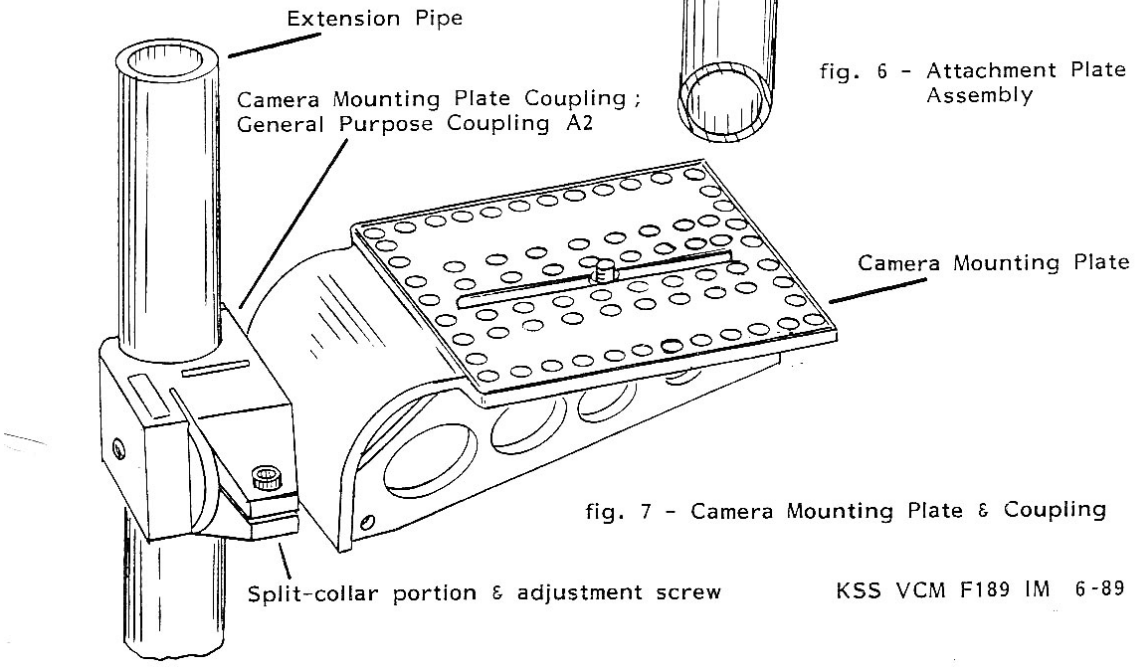


fig. 7 - Camera Mounting Plate & Coupling

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Miscellaneous Description and Operation

Suction Cups

These can be attached to smooth and non-porous surfaces only. They work best on glass but can also be attached to reinforced body areas (such as hood and roof corners, door edges, fender and body panel corners, etc.) without sheet metal bending and consequent damage, provided that there is no torque exerted about the cups. If attached to painted surfaces, they will not damage paint, provided that the paint is baked and not fresh. If a finger nail can make an impression on the paint (try a hidden area) then the attachment of a suction cup may leave an impression in the paint. In any case, such a mark can usually be removed with rubbing or polishing compound. Simple scuff marks can be removed with wax and grease remover or even soap and water. However, scuff marks can be avoided all together by first waxing the painted surface before attaching the cup.

Each suction cup rubber pad and the surface to which it is to be attached must always be cleaned (water is usually sufficient) and then wetted prior to mating to prevent loss of pad suction and grip.

Study the suction cup instruction sheet thoroughly.

Attachment Plates

These can be attached to almost anything using miscellaneous hardware. They can be displace in position relative to the rest of the attachment plate half assembly of which they are a part by removing the socket flat-head screw and relocating the adapter which fastens the attachment plate to the half assembly ball joint. The adapter can be located at any of the three countersunk holes in the attachment plate.

Assemblies

These are always comprised of two items fastened together with one adjustment screw. A screw of the correct length must always be used with each assembly, as specified below.

Assembly	Screw Length
Rail Junction	2 ½ “
General Purpose	2 “
Suction Cup or Attachment Plate	1 ½ “

When the screw of the correct length is used, the screw penetrates the item with the threaded hole to a depth of approximately 7/8".

Mylar washers should always be used to prevent galling when fastening together two items. Mylar washers of two different sizes are provided; always use the largest washer possible.

Item Adjustment Screw

All of the item adjustment screws are tightened/loosened using a 5/6" Allen wrench or Allen-head driver. The use of a small 3/8" drive ratchet and a 5/16" Allen-head driver is recommended for quickly tightening or loosening the screws once the final mount configuration is established.

All of the item adjustment screws are made of carbon steel and must never be replaced with screws made of stainless steel because the locking Helicoil threaded inserts will gall the stainless steel screws, causing them to seize and making their removal by unscrewing impossible.

Camera Mounting Plate Screws and Related Hardware

Besides the captive screw and the corresponding retainer and washers, one 18/8 stainless steel 3/8"–16 x 1" socket-head cap screw and a few extra flat washers are included with each kit to be used for mounting a camera or other device, onto the camera mounting plate. 18/8 stainless steel is usually relatively soft and excessive tightening of the Camera Mounting Plate screws should be avoided in order to prevent the damage of screw threads.

Straps

The necessity of straps cannot be emphasized enough; straps must always be used to safely secure the mount to any vehicle and use to insure that a given mount configuration is sufficiently rigid. Straps should be used in a manner which draws the mount in toward the vehicle and post-tensions the mount to help stiffen the latter, while at the same time insuring that the mount is secured against the vehicle in the event of attachment assembly failure. The difference between using straps and not using straps is the different between a mount which could fall off a vehicle, and a mount that is securely attached while providing a nearly vibration free fixture for a camera or other device.

Always tighten all of the item adjustment screws before using any straps; a flimsy Mount configuration is often due to one or more loose adjustment screws.

Coupling Hole Edges and Pipe

These must be kept burr-free to insure that every piece of pipe fits into every appropriate coupling hole. The use of a small file and sandpaper is recommended to remove any “rolled-over” pipe or coupling hole edges. Each pipe must also be kept free of burrs along its length to insure that all of the inappropriate can slide freely along each pipe.

Speed-Rail, Nu-Rail, Scaffolding, ect.

The pipe included with each kit is a special 5086-H32 WW-T-700/5 aluminum close-tolerance drawn type and is generally required for use with the VCM F189 couplings. However, the pipe conforms to I.P.S. Schedule 40 and therefore, the VCM F189 can be integrated with scaffolding, Speed-Rail rigs using Speed-Rail and Nu-Rail couplings, ect. Pipes which have been used with other couplings employing set screws should be inspected and “cleaned up” if necessary before being used with VCM F189 couplings; set screws leave “craters” with raised rims which can cause a pipe to jam in the hole of a VCM F189 coupling.

Pipe other than 5086-H32 WW-T-700/5 close-tolerance drawn type can be used with the VCM F189 provided that it conforms to I.P.S. schedule 40, and provided that it fits the coupling holes properly; the tolerances of non-drawn (e.g., extruded) pipe can be “loose” and so each piece of non-drawn pipe must be tested before use for proper fit with each appropriate coupling hole.

KSS does not guarantee the performance of the pipe other than 5086-H32 WW-T-700/5 close-tolerance drawn type, I.P.S. Schedule 40 and the other user may want to purchase only replacement pipe which conforms to these specifications (see additional customer information for details).

Applications

(Reference: KSS VCM F189 Applications Summary)

1. Hood Rig. Requires standard Kit Only

Two crossed pipes fix the Rail Junction Assembly and therefore the camera into position. Each suction cup is located at a reinforced area of the hood such as a corner or an edge. The pipe extending toward the windshield is nearly at a right angle to the pipe with which it is crossed and is as long as possible (without being present in the camera view finder), proving the greatest leverage possible to counteract the weight of the camera.

After loosening the adjustment screws in the Rail Junction Assembly, the camera can be repositioned toward either side of the vehicle by sliding the rail junction assembly along the piece of pipe spanning the width of the hood. Slight changes in the orientation of the camera can be made by loosening the adjustment screw in the split-collar portion of each Suction Cup Assembly, one or two-at-a-time, and moving the connected pipe up or down.

Straps are necessary but have been omitted for clarity.

2. Hood Rig. Requires Standard Kit Only

Two horizontal crossed pipes, supported by a somewhat vertical pipe, fix the Rail Junction Assembly and therefore the camera into position. Each suction cup is located at an edge of the hood, where the hood is reinforced. One end of the somewhat vertical pipe is connected to one of the horizontal pipes using a general purpose assembly, while the other end of the somewhat vertical pipe is fastened to the bumper using an Attachment Plate Assembly, a c-clamp and a bolt passing through a hole in the bumper.

After loosening the adjustment screws in the rails junction assembly, the camera can be re-positioned toward either side of the vehicle and/or inwards or outwards, by sliding the Rail Junction Assembly along the horizontal pipes; the camera can be raised or lowered by not only sliding the camera mounting plate & coupling along the extension pipe, but by also loosening the adjustment screws in the general purpose assembly and swinging the two horizontal pipes and the rail junction assembly up or down. Slight changes in the orientation of the camera can be made by loosening the adjustment screw in the split-collar portion of each suction cup assembly, one or two-at-a-time, and moving the connected pipe up or down.

Straps are necessary but have been omitted for clarity.

3. "Hostess Tray" Rig. Requires Standard Kit Only

Two somewhat vertical crossed pipes and a horizontal pipe fix the Rail Junction Assembly and therefore the camera into position. The vertical pipe closer to the rear of the vehicle is nearly at a right angle to the pipe with which it is crossed, providing almost the greatest leverage possible to counteract the weight of the camera. One end of the horizontal pipe is connected to one of the vertical pipes using a general purpose assembly, while the other end of the horizontal pipe is fastened to the vehicle underbody using an attachment plate assembly and a bolt passing through a hole in the underbody (see application 5).

After loosening the adjustment screws in the rail junction assembly, the camera can be raised or lowered by sliding the rail junction assembly along the vertical pipe which is attached to the general purpose assembly; the camera can be slid up the other vertical pipe after moving the general purpose assembly to the other pipe. Slight changes in the orientation of the camera can be made by loosening the adjustment screw in the split-collar portion of each suction cup assembly, one or two at a time, and moving the connected pipe in or out. Additional change in the orientation can be achieved by repositioning the general purpose assembly along the horizontal pipe.

Straps are necessary but have been omitted for clarity.

4. "Hostess Tray" Rig. Requires Standard Kit only

Two crossed pipes spanning the door and a horizontal pipe fix the rail junction assembly and therefore the camera into position. One of the suction cups is located at the edge of the door, where the door is reinforced. The pipe extending downwards is nearly at a right angle to the pipe with which it is crossed, providing almost the greatest leverage possible to counteract the weight of the camera. One end of the horizontal pipe is extending downwards using a general purpose assembly, while the other end of the horizontal pipe is fastened to the vehicle underbody using an attachment plate assembly and a bolt passing through a hole in the underbody (See application 5).

After loosening the adjustment screws to the rail junction assembly, the camera can be re-positioned toward the front or back of the vehicle by sliding the rail junction assembly along the piece of pipe spanning the length of the door. Slight changes in the orientation of the camera can be made by loosening the adjustment screw in the split-collar portion of each suction cup assembly, one or two at a time, and moving the connected pipe in or out. Additional change in the orientation of the camera can be achieved by re-positioning the general purpose assembly along the horizontal pipe.
Straps are necessary but have been omitted for clarity.

5. “Hostess Tray” Rigs 3 & 4 – detail

6. “Hostess Tray” Rig. Requires Standard kit only

Two crossed pipe fix the rail junction assembly and therefore the camera into position. Two of the suction cups are each located at a reinforced area of the body; one at a door edge and another at an edge of the rear quarter panel. The pipe extending upwards is nearly at a right angle to the pipe to which it is crossed, providing almost the greatest leverage possible to counteract the weight of the camera.

After loosening the adjustment screws in the rail junction assembly, the camera can be re positioned toward the front or back of the vehicle by sliding the rail junction assembly along the piece of pipe spanning the length of the door. Slight changes in the orientation of the camera body can be made by loosening the adjustment screw in the split-collar portion of each suction cup assembly, one or two at a time, and moving the connected pipe in or out.

Two straps, one on each of the two suction cup assemblies, insure that the mount cannot fall of the vehicle in the event of suction cup failure, while two more straps draw the mount in toward the vehicle, post-tension and thus stiffening the mount.

7. Interior Rig. Requires Standard Kit Only

Two crossed pipes fix the rail junction assembly and therefore the camera into position. The pipe attached to the rear window is nearly at a right angle to the pipe with which it is crossed, providing almost the greatest leverage possible to counteract the weight of the camera.

After loosening the adjustment screws in the rail junction assembly, the camera can be re-positioned toward either side of the vehicle by sliding along the rail junction assembly along the piece the pipe spanning the vehicle interior. Slight changes in the orientation of the camera can be made by loosening the adjustment screw in the split-collar portion of each suction cup assembly, one or two at a time, and moving the connected pipe up and down (assembly at rear window), or foreword or backward (assemblies at side windows).

The use of straps to prevent the mount from falling off the window is impractical. However, at least one strap should be used to post tension and thus to stiffen the mount.

8. I.D. Rig. Requires Standard Kit Only

Two crossed pipes, supported by the extension pipe, fix the rail junction assembly and therefore the camera into position. One end of the extension pipe is held firmly against the bumper by two straps.

After loosening the adjustment screws in the rail junction assembly, the camera can be re-positioned toward either side of the vehicle by sliding the rail junction assembly along the horizontal pipes. Slight changes in the orientation of the camera can be made by loosening the adjustment screw in the split-collar portion of each suction cup assembly, one or two at a time, and moving the conneted pipe up and down.

Two straps, one of each of the suction cup assemblies, insure that the mount cannot fall off the vehicle in the event of suction cup failure, while two or more straps draw the mount down against the vehicle bumper, holding the mount in place ans insuring that the latter is rigid.

9. I.D. Rig.

Two horizontal crossed pipes, supported by the extension pipe and two other pipes, fix the rail junction assembly and therefore the camera into position. One end of a somewhat horizontal pipe is connected to the extension pipe using a general purpose assembly, while the other end of the somewhat horizontal pipe is fastened to the vehicle underbody using an attachment plate assembly and a bolt passing through a hole in the underbody. A somewhat vertical pipe prevents pivoting of the mount by providing “triangulation”.

After loosening the adjustment screws in the rail junction assembly, the camera can be repositioned toward either side of the vehicle by sliding the rail junction assembly along the horizontal pipes. Slight changes in the orientation of the camera can be made by loosening the adjustment screw in the split-collar portion of each attachment assembly, one or two at a time, and moving the connected pipe up and down (Suction Cup Assemblies), or side to side (Attachment Plate Assembly).

Straps are necessary but have been omitted for clarity.

10. I.D. Rig.

Two horizontal crossed pipes, supported by the extension pipe and another pipe, fix the rail junction assembly and therefore the camera into position. Because the crossed pipes are spread quite far apart, the weight of the camera produces a rotational force, at the lower end of the extension pipe, in toward the vehicle.

This inward force is counteracted by a somewhat horizontal pipe, one end of which is connected to the lower end of the extension pipe using a general purpose assembly, while the other end of the somewhat horizontal pipe is fastened to the vehicle bumper using an attachment plate assembly and a c-clamp.

After loosening the adjustment screws in the rail junction assembly, the camera can be re-positioned toward either side of the vehicle by sliding the rail junction assembly along the horizontal pipes. Slight changes in the orientation of the camera can be made by loosening the adjustment screw in the split-collar portion of each suction cup assembly, one or two at a time, and moving the connected pipe in or out.

Straps are necessary but have been omitted for clarity.

11. Lift-Gate Rig.

Two horizontal crossed pipes, supported by the extension pipe and another pipe, fix the rail junction assembly ad therefore the camera into position. Because the crossed pipes are spread quite far apart, the weight of the camera produces a rotational force at the lower end of the extension pipe, in toward the vehicle. This inward force is counteracted by a somewhat horizontal pipe, one end of which is connected to the lower end of the extension pipe using a general purpose assembly, while the other end of the somewhat horizontal pipe is fastened to the vehicle bumper using the attachment plate assembly and a c-clamp.

After loosening the adjustment screws in the rail junction assembly, the camera can be re-positioned toward either side of the vehicle by sliding the rail junction assembly along the horizontal pipes. Slight changes in the orientation of the camera can be made by loosening the adjustment screw in the split-collar portion of each suction cup assembly, one or two at a time, and moving the connected pipes up or down.

Straps are necessary but have been omitted for detail.

12. Roof Rig.

Two horizontal crossed pipes fix the rail junction assembly and therefore the camera into position. Each suction cup is located at a corner of the roof, where the roof is reinforced. The horizontal pipe extending toward the rear roof corner on the driver's side of the vehicle is nearly at a right angle to the pipe with which it is crossed, providing almost the greatest leverage possible to counteract the weight of the camera. One end of the somewhat vertical pipe is connected to one of the horizontal pipes using a general purpose assembly, while the other

end of the somewhat vertical pipe is fastened to a vehicle window using a suction cup assembly. This somewhat vertical pipe stiffens the mount by helping to counteract the weight of the camera.

After loosening the adjustment screws in the rail junction assembly and general purpose assembly, the camera can be repositioned to ward the front or the back of the vehicle by sliding the rail junction assembly along the piece of pipe spanning the length of the roof. Slight changes in the orientation of the camera can be made by first loosening the adjustment screws in the general purpose assembly, followed by loosening the adjustment screw in the split-collar portion of each suction cup assemblies used on the roof, one or two at a time and moving the connected pipe up and down.
Straps are necessary but have been omitted for clarity.

13. "Boom" Rig.

Two horizontal crossed pipes and two other pipes fix the rail junction assembly and therefore the camera into position. One end of the non-horizontal pipe is connected to one of the horizontal crossed pipes using a general purpose assembly, while the other end of the same pipe is fastened to the vehicle roll bar using an attachment plate assembly and a u-bolt. One end of the upper horizontal pipe is connected o the extension pipe using a general purpose assembly, while the other end of the same pipe is fastened to the vehicle body using a suction cup assembly and a u-bolt.

After loosening the adjustment screws in the rail junction assembly and the general purpose assemblies, the camera can be moved foreword or backward, and/or inwards or outwards, by sliding the rail junction assembly along the horizontal crossed pipes. Slight changes in the orientation of the camera can be made by loosening the adjustment screw in the split-collar portion of each of the suction cup or attachment plate assemblies, one or two at a time, and moving the connected pipe up or down, or foreword or backward, whichever is applicable.

Four straps insure that the mount cannot fall off the vehicle in the event of suction cup failure, and at the same time draw the mount in toward the vehicle, post tensioning and thus stiffening the mount.

14. "Boom" Rig.

This rig is too complex to describe without ambiguity; study the associated photography thoroughly.

Straps are necessary but have been omitted for clarity.

15. “Boom” Rig.

Two horizontal crossed pipes, supported by the extension pipe and another pipe, fix the rail junction assembly and therefore the camera into position. Because the crossed pipes are not spread far apart, the weight of the camera produces a downward force on the extension pipe. This force is counteracted by a somewhat vertical pipe, one end of which is connected to the lower end of the extension pipe using a general purpose assembly, while the other end of the somewhat vertical pipe is fastened to the vehicle underbody using an attachment plate assembly and a bolt passing through a hole in the underbody.

After loosening the adjustment screws in the rail junction assembly, the camera can be repositioned inwards or outwards by sliding the rail junction assembly along the horizontal pipes. Slight changes in the orientation of the camera can be made by loosening the adjustment screw in the split-collar portion of each suction cup assembly, one or two at a time and moving the connected pipe in or out (assembly at the back of trunk), or up or down (assembly at rear window).

Straps are necessary but have been omitted for clarity.

16. “Boom” Rig.

Two horizontal crossed pipes ad two other pipes fix the rail junction assembly and therefore the camera into position. One end of the somewhat vertical pipe is connected to one end of the horizontal pipes using a general purpose assembly, while the other end of the same somewhat vertical pipe is fastened to the passenger side vehicle bumper bracket using an attachment plate assembly. One end of the other somewhat vertical pipe is connected to the extension pipe using a general purpose assembly, while the other end of the same somewhat vertical pipe is also fastened to the passenger side vehicle bumper bracket using an attachment plate assembly (see application 17).

After loosening the adjustment screws in the rail junction assembly and the general purpose assemblies, the camera can be repositioned toward either side of the vehicle and/or inwards or outwards, by sliding the rail junction assembly along the horizontal crossed pipes. Slight changes in the orientation of the camera can be made after loosening the adjustment screw in the split-collar portion of each of the suction or attachment plate assemblies one or two at a time, and moving the connected pipe up or down, o side to side, whichever is applicable.

Straps are necessary but have been omitted for clarity.

17. "Boom" Rig 16 – detail

18. Boat Rig.

Two horizontal crossed pipes fix the rail junction assembly and therefore the camera into position. The horizontal pipe extending toward the rear of the boat is nearly at a right angle to the pipe with which it is crossed, providing almost the greatest leverage possible to counteract the weight of the camera. One end of a somewhat vertical is connected to one of the horizontal pipes using a general purpose assembly, while the other end of the pipe is fastened to the boat using a suction cup assembly. This somewhat vertical pipe stiffens the mount by helping to counteract the weight of the camera.

After loosening the adjustment screws in the rail junction assembly, the camera can be repositioned inwards or outwards by sliding the rail junction assembly along the horizontal pipe spanning the width of the boat. Slight changes in the orientation of the camera can be made by loosening the adjustment screw in the split-collar portion of each of the suction cup assemblies, one or two at a time, and moving the connected pipe appropriately.

Straps are necessary but have been omitted for clarity.

19. Chase rig.

Two crossed pipes, supported by the extension pipe, fix the rail junction assembly and therefore the camera into position. A lone camera mounting plate coupling; general purpose coupling A2 is located along the extension pipe and "catches the bumper", being held against the latter by two straps.

After loosening the adjustment screws in the rail junction assembly, the camera can be repositioned toward either side of the vehicle by sliding the rail junction assembly along the horizontal pipes. Slight changes in the orientation of the camera can be made by loosening the adjustment screw in the split-collar portion of each suction cup assembly, one or two at a time, and moving the connected pipe up or down.

Two straps, one on each side of the suction cup assemblies, insure that the mount cannot fall off the vehicle in the event of suction cup failure, while two more straps draw the mount down against the vehicle bumper, holding the mount in place and insuring that the latter is not rigid.

20. Motorcycle Rig. Requires four attachment plate assemblies and no suction cup assemblies.

Two horizontal crossed pipe and another pipe fix the rail junction assembly and therefore the camera into position. One of the ends of the uppermost horizontal pipe is attached to the extension pipe using a general purpose assembly (this assembly is made up of two couplings, one of which is the camera mounting plate coupling; general purpose coupling A2 used to attach the camera mounting plate), while the other end of the same horizontal pipe is connected to the motorcycle frame using an attachment plate assembly and a u-bolt.

After loosening the adjustment screws in the rail junction assembly and the general purpose assembly, the camera can be repositioned foreword or backward by sliding the rail junction assembly along the pipe which spans the length of the motorcycle. Slight changes in the orientation of the camera can be made by loosening the adjustment screw in the split-collar portion of each attachment plate assembly, one or two at a time, and moving the connected pipe appropriately.

Straps are necessary but have been omitted for clarity.

Vehicle Camera Mount F189

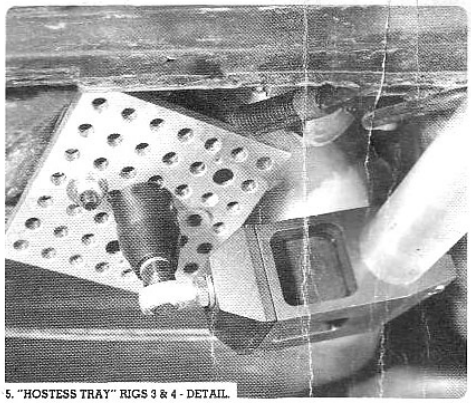
Applications Summary

1. HOOD RIG. REQUIRES STANDARD KIT ONLY.

2. HOOD RIG. REQUIRES STANDARD KIT ONLY.

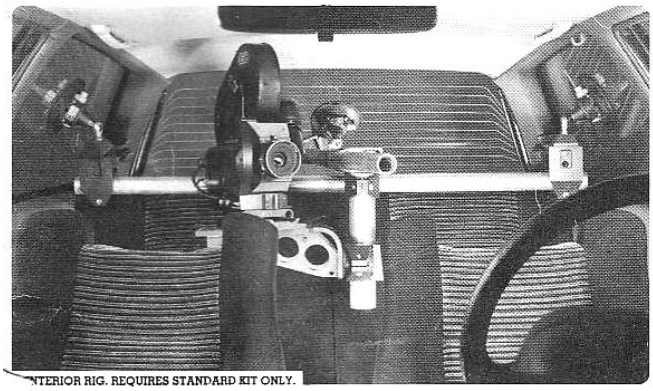
3. "HOSTESS TRAY" RIG. REQUIRES STANDARD KIT ONLY.

4. "HOSTESS TRAY" RIG. REQUIRES STANDARD KIT ONLY.

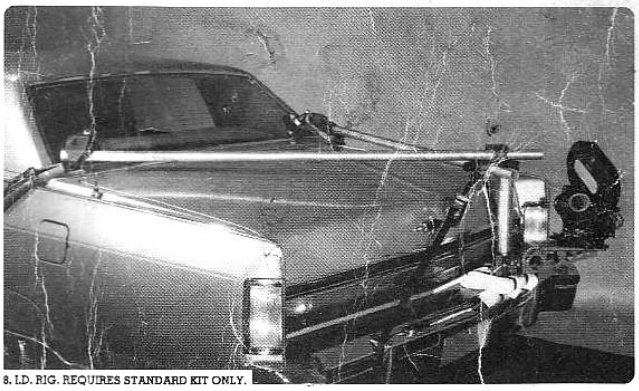


5. "HOSTESS TRAY" RIGS 3 & 4 - DETAIL.

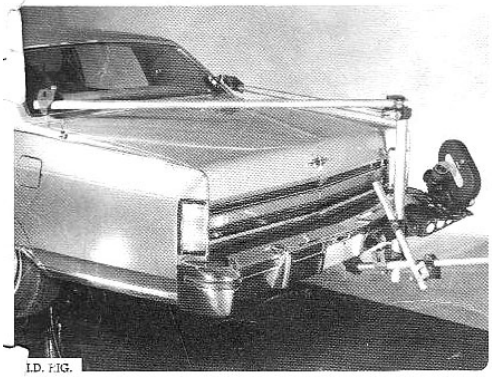
6. "HOSTESS TRAY" RIG. REQUIRES STANDARD KIT ONLY.



NTERIOR RIG. REQUIRES STANDARD KIT ONLY.

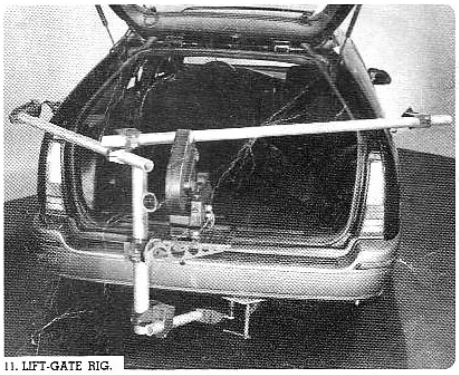


8. I.D. RIG. REQUIRES STANDARD KIT ONLY.



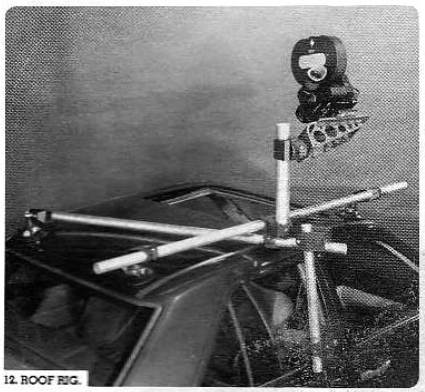
I.D. RIG.

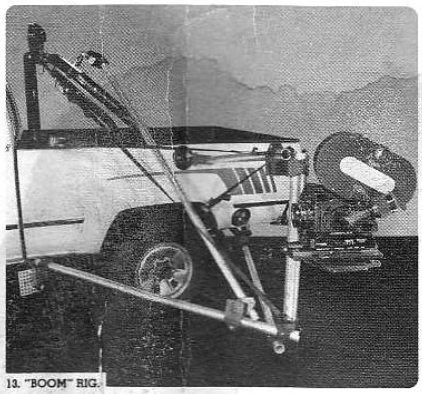
10. I.D. RIG.

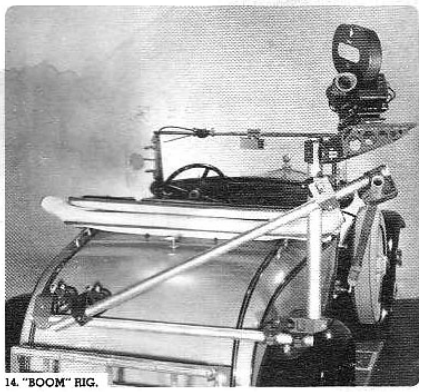


11. LIFT-GATE RIG.

Vehicle Camera Mount F189

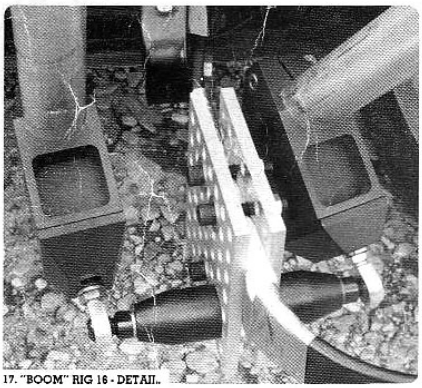

12. ROOF RIG.


13. "BOOM" RIG.

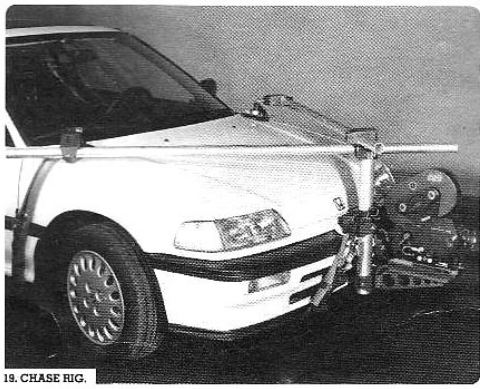

14. "BOOM" RIG.

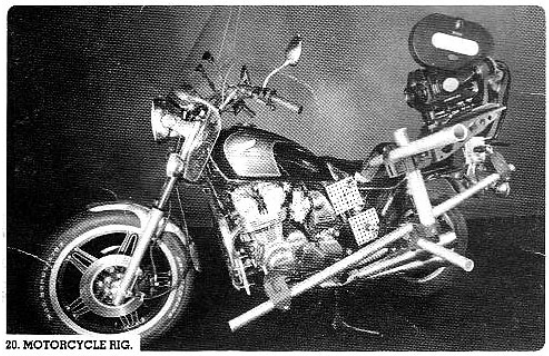

15. "BOOM" RIG.

16. "BOOM" RIG.


17. "BOOM" RIG 16 - DETAIL.


18. BOAT RIG.


19. CHASE RIG.


20. MOTORCYCLE RIG.

N.B. RIGS 9 - 19 REQUIRE STANDARD KIT PLUS ADDITIONAL VCM F189 COMPONENTS, ALL OF WHICH ARE INCLUDED IN THE ENHANCED KIT.

Kinetic Support Systems™

Main Office:
29210 POINTE O WOODS PLACE, SUITE 205, SOUTHFIELD, MI 48034 (313) 352-5130

East Coast:
115 MOUNT AUBURN STREET, SUITE 43, CAMBRIDGE, MA 02138 (617) 354-1780

Maintenance

(see WARNING for extremely important precautionary maintenance information regarding the VCM F189).

- Although the various components of the VCM F189 are water resistant, each mount component (including the inside and outside of the carrying case, the pipe bag and the furniture blanket) should be kept clean ad dry whenever possible. Acidic agents should not be used to clean any of the anodized mount items; acids can adversely affect anodized surfaces.

- The ball joints used in the half assemblies should be sprayed occasionally with a silicone lubricant. However, all coupling-coupling interfaces require no lubricant. The use of mylar washers at all such interfaces provides for smooth rotation between couplings.

- Follow the suction cup instructions included in each kit. Failure to do so could result in the deterioration of the suction cups and ultimately the loss of suction and grip.

VCM F189 Specifications

- Material used for Camera Mounting Plate, attachment plates and couplings	Aluminum Alloy
- Finish of Camera Mounting Plate, and couplings	Hard anodize
- Threaded inserts in couplings	Stainless steel locking Helicoils
- Coupling adjustment screws	Grade 8 steel
- Ball joints	Fitted with Delrin races
- Coupling-coupling interface washers	Mylar
- Pipes	5086-H32 WW-T-700/5 aluminum close tolerance draw type, I.P.S. Schedule 40
- Carrying case	ATA Approved shipping type
- Pipe bag	Cordura nylon

Additional Customer Information

Replacement Pipe

5086-H32 WW-T-700/5 aluminum close tolerance drawn type pipe, conforming to I.P.S. Schedule 40, can be obtained from:

Production Company Supply, Inc.
4342 Michoud Blvd.
P.O. Box 29324
New Orleans, LA
70129, 70189 (P.O. Box)
(504) 254-0505

Kit Serial Number

This appears on the carrying case. Reference this number during all correspondence with KSS; each serial number identifies important characteristics concerning its corresponding kit.