

# Universal Anchoring System

Owners Manual



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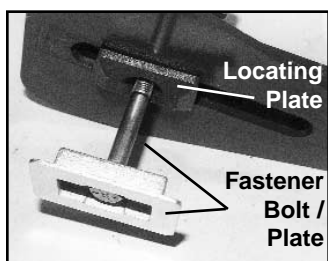
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## Introduction

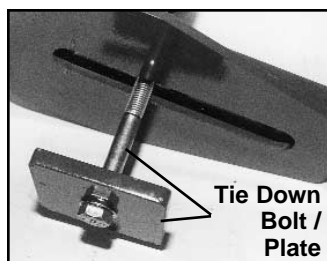
Each of Chief's patented Universal Anchoring Systems consists of four anchoring stands to be installed at the four corners of a vehicle's center section. Anchoring stands, along with pinchweld clamps/clamp bars (or appropriate optional accessories\*), provide a positive means of securing a vehicle to a Chief EZ Liner (S21 or EZ 25 Series) or G Series pulling system. In addition, the unique floating characteristic of anchoring stands allows technicians to pull out damage before totally securing the vehicle to the machine.

'Standard size' and 'tall size' anchoring stands exist in two styles: EZ Liner and G Series. Both styles are identical except for their attachment to the respective pulling systems. Each EZ Liner stand features a locating plate, fastener plate and fastener bolt for securing the stand to EZ Liner tie down holes. (See Figure 1.) Each G Series stand features a flat bottom surface and a tie down bolt and plate for securing the stand to tread-way slots on G Series machines. (See Figure 2.)



EZ Liner Attachment

Figure 1



G Series Attachment

Figure 2

Fitting within anchoring stands are clamp bar tubes which allow for height adjustment and serve as a base for pinchweld clamps/clamp bars or other anchoring attachments. Such tubes include UMS (Universal Measuring System) adapter tubes (featuring clamp jaws mounted to a vertical plate); single/dual clamp bar tubes (featuring pinchweld clamps mounted to a rigid clamp bar); and, UAS 'standard' size and 'tall' size clamp bars / clamp bar tubes (featuring pinchweld clamps mounted to pivoting clamp bars).

**IMPORTANT:** 'Tall' size UAS clamp bar tubes must be used in 'tall' size UAS stands only.

This owners manual addresses all the basic universal anchoring systems including: 'standard' size stands and UMS adapter tubes (see Figure 3); 'standard' size stands and single/dual clamp bar tubes (see Figure 4); 'stan-

dard' size stands and clamp bars/clamp bar tubes (see Figure 5), and 'tall' size anchoring stands and clamp bar tubes (see Figure 6). Read all of this owners manual prior to using any one (or combination) of anchoring systems. The manual provides an overview of the three section principle of collision repair; identifies anchoring system components and illustrates their attachment to each other and to EZ Liner or G Series mainframes; provides installation/adjustment procedures for each type of clamp bar tube; and, references the systems flexibility relative to various pulling situations.

**NOTE:** Although this manual primarily illustrates use of 'standard size' anchoring stands, instructions given are also pertinent to 'tall size' anchoring stands which are designed to secure vehicles with a high ground clearance.

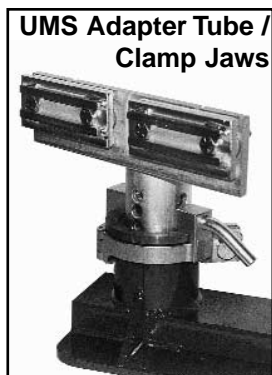


Figure 3

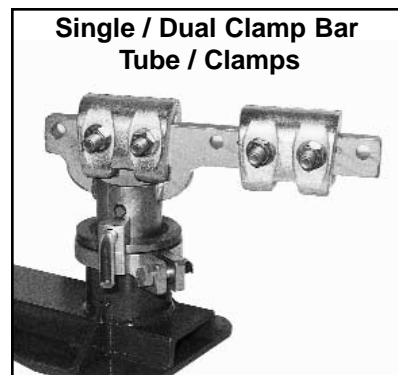


Figure 4

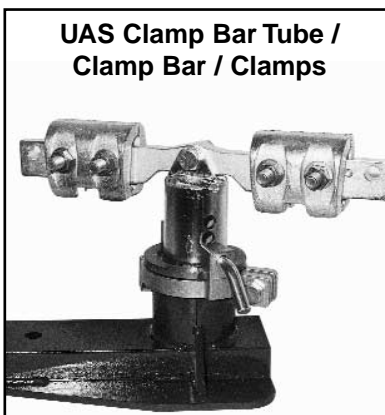


Figure 5

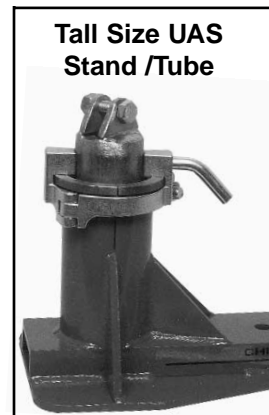


Figure 6

- Chief offers a host of optional accessories for its universal anchoring systems. To obtain information on accessories see page 11.

## Three Section Principle

Basic collision repair methods call for dividing a vehicle into three sections (see Figure 7) from which all work is measured and repaired. The three section principle is a result of vehicle design and the manner in which a vehicle reacts during a collision.

The extreme corners of a vehicle's center section (also referred to as control points) become locations where anchoring equipment must be installed. In regard to unitized body vehicles, the ends of the rocker panels are the corners of the center section. Rockers are strong structural components that control alignment within a vehicle's center section. In regard to frame rail vehicles, the center section is generally under the passenger compartment. It's formed by the rails that extend from the cowl to the rear torque box or kick up area. On pickup trucks, this area is generally from the cowl to the rear of the cab.

Throughout a repair process, a relationship exists between areas of misalignment, areas of measurement, areas where holds and pulls are applied and corners of vehicle's center section where the structure is anchored.

The clamps/clamp jaws that accompany anchoring stands attach to most rocker panel pinchwelds. They also can be attached to t-tabs welded to frame rails or to downstanding flanges. In addition to these basic types of attachment, Chief offers a host of optional accessories for practically all unibody and frame rail vehicles that have unique anchoring needs.

In addition to anchoring capabilities, anchoring stands offer additional advantages. If structural misalignment exists in a vehicle's center section, anchoring stands can be loosened to allow movement with the pull. This floating characteristic allows anchoring stands to be used as pulling attachments when single/dual or UAS clamp bar tubes are in use.

**IMPORTANT:** DO NOT secure anchoring stands to mainframe on side of center section that must move with pull (for example, when correcting diamond on frame rail vehicles). Secure stands only after center section damage has been removed.

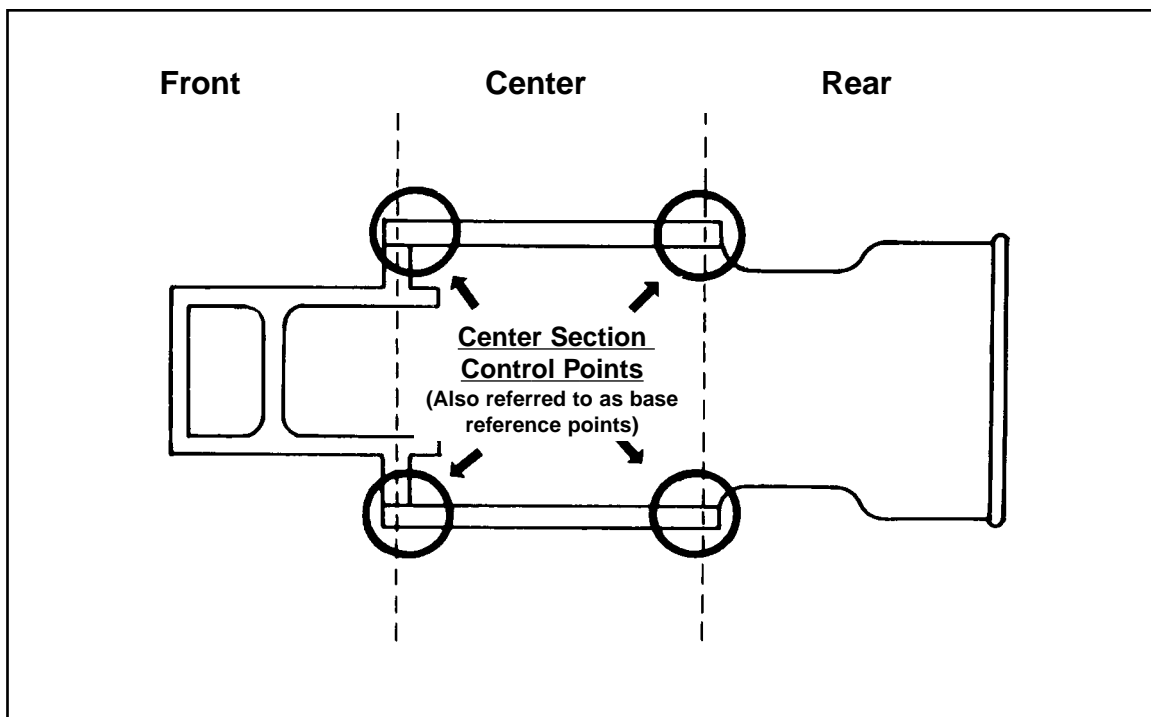


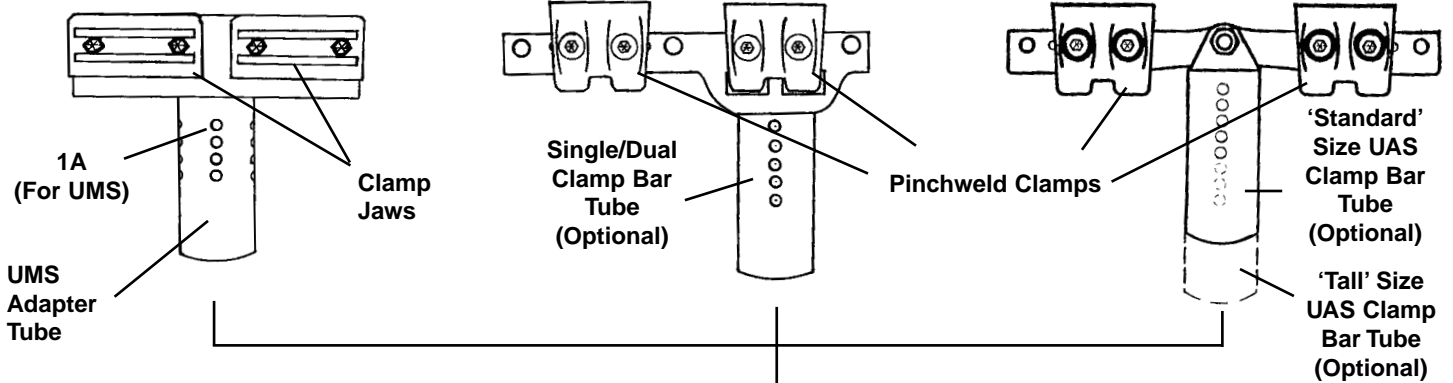
Figure 7

### Adapter Tubes / Clamps And Styles Of Attachment

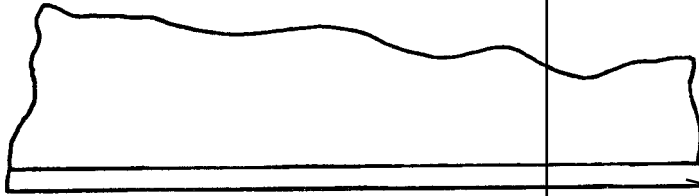
UMS Adapter Tube/Clamps

Single/Dual Clamp Bar Tube/Clamps

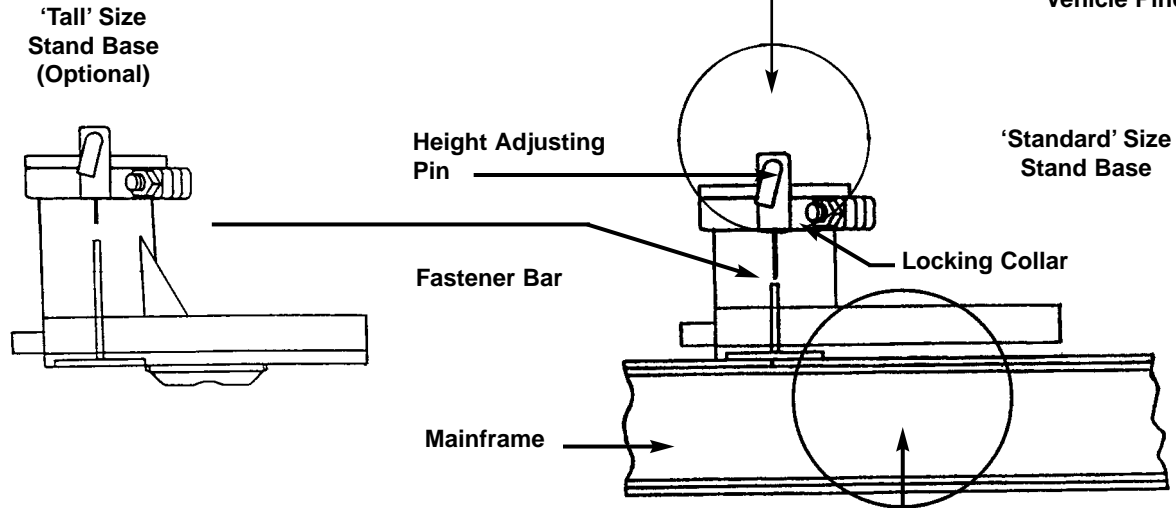
UAS Clamp Bar Tube, Clamp Bar/Clamps



**IMPORTANT:** 'Tall' size UAS clamp bar tubes must be used in 'tall' size UAS stands only.

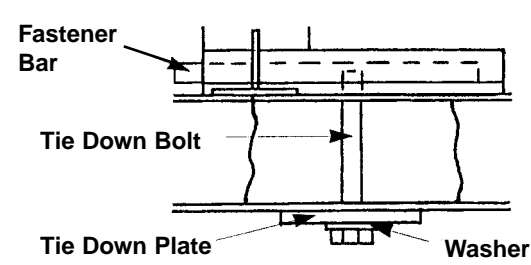
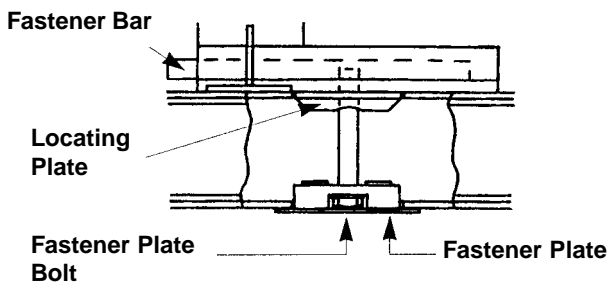


Vehicle Pinchweld



EZ Liner Style Of Attachment

G Series Style Of Attachment



## Installation

The installation procedures for Universal Anchoring Systems begin when positioning vehicle on pulling system. Technicians must allow adequate pulling room between machine's towers and vehicle (18 to 24 inches) and allow enough room for vehicle's length once corrected. This positioning, coupled with flexibility of anchoring system, allows for repairing specific types of damage. For example: center vehicle on mainframe when repairing 'front hits' or 'rear hits'; position vehicle to side of mainframe when repairing 'side hits'.

**CAUTION:** Set vehicle's parking brake and block its wheels to prevent vehicle movement during installation of anchoring system.

After positioning vehicle on pulling system, engaging its parking brake and blocking its wheels, proceed with instructions appropriate for clamp bar tubes being used.

### UMS Pinchweld Adapter Tubes

1. Attach two clamp jaws to vertical plate of adapter tube, install tube in anchoring stand base (see Figure 8) and position stand at front of center section on side of vehicle that must not move with pull.

**NOTE:**

- 1) Use of 'tall' size anchoring stands is dependent upon height of vehicle's center section.
- 2) When using 'tall' size stands, refer to vehicle application chart/specification sheet for pinning hole to use.

2. Prepare a second anchoring stand (as required) and position it on same side of vehicle at rear of center section.

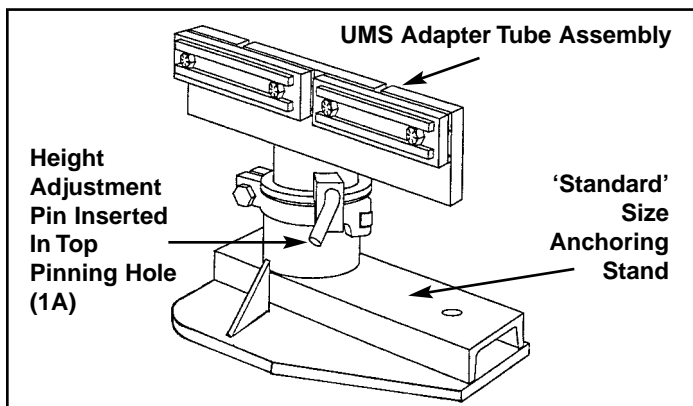


Figure 8

3. Position lifting device under subrail (or other structurally sound component). Lift entire side of vehicle high enough to install anchoring stands at both front and rear of center section.

4. Position anchoring stands directly below anchoring locations on pinchweld. Prior to positioning, observe pinchwelds to determine where clamp jaws should be attached. If possible, select reinforced pinchwelds that are free of obstructions (lines, etc.). Select locations in corners of center section and avoid locations in center of rocker. If using Universal Measuring System, refer to vehicle application chart/specification sheet which identifies anchoring locations. If pinchweld configuration requires use of optional accessory, see page 11.

On EZ Liner, center locating plate in most convenient tie down hole below attachment point on pinchweld. Anchoring stand installs more easily with locating plate positioned in tie down hole 3 to 4 inches outboard of attachment points.

On G Series, position anchoring stand below attachment points on pinchweld making sure anchoring stand spans treadway slot. (See Figure 9.)



Figure 9

5. Adjust front and rear anchoring stand height so clamp jaws engage (or are just below) rocker panel pinchweld and insert height adjustment pins in pinning holes.

**NOTE:** Insertion of pin in top pinning hole (1A) positions vehicle at specified datum height for UMS measuring. Other pinning holes provide additional height adjustment. Also, optional datum height adapters (see Figure 10, page 5) can be used to elevate vehicle either 2 inches (51mm) or 3 inches (76mm). These adapters allow measurements to be taken without removing suspension components.

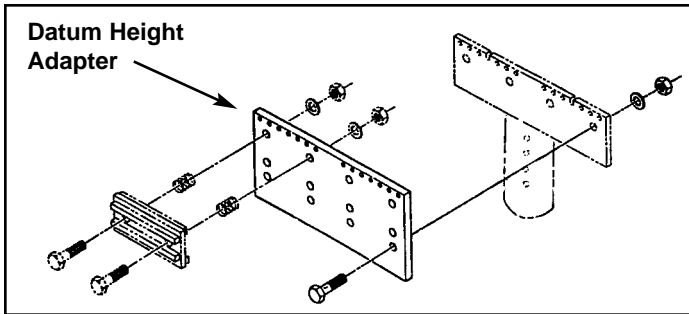


Figure 10

6. Lower entire side of vehicle to engage pinchweld in the clamp jaws. (See Figure 11.) Then tighten clamp jaw bolts.

**IMPORTANT:** Rocker must rest firmly on top of clamp jaw assembly prior to tightening.

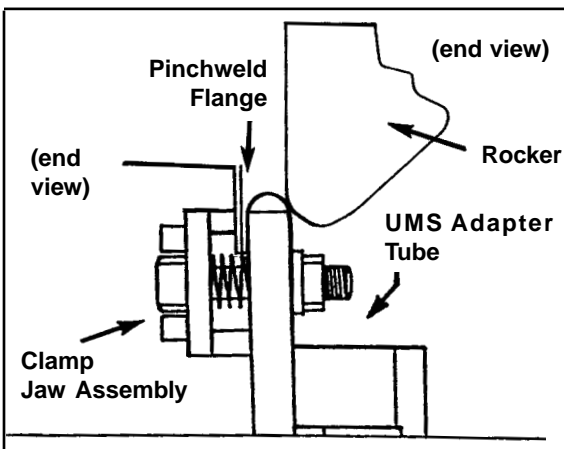


Figure 11

7. Install anchoring stands on opposite side of vehicle. Repeat Steps 1 - 6.

8. Secure anchoring stands to mainframe. See styles of attachment - page 3.

**CAUTION:** When 'tall' size anchoring stands are used and tubes are extended upward to secure a high ground clearance vehicle, use auxiliary tie down chains to prevent lateral and/or horizontal movement. Attach chain to vehicle's structural components and to mainframe at points that are opposite of the pulls.

9. Tighten clamp jaws and locking collars.

**IMPORTANT:** Clamp jaws must be retightened after initial pulls are made. Clamp jaws will seat themselves during initial pull, resulting in a loosening of the clamp jaws. Clamp jaws may slip if not retightened.

## Single/Dual Clamp Bar Tubes

1. Attach one clamp at top of single/dual clamp bar tube, install tube in anchoring stand base, and position stand at front of center section on side of vehicle that must not move with pull. (See Figure 12.) If pinchweld will accommodate an additional clamp, secure it at appropriate location on clamp bar. (See Figure 12 inset.)

**NOTE:** Use of 'standard' or 'tall' size anchoring stands is dependent upon height of vehicle's center section.

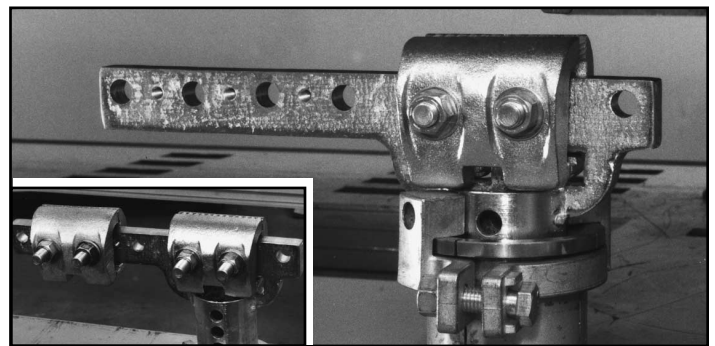


Figure 12

2. Prepare a second anchoring stand (as required) and position it on same side of vehicle at rear of center section.

3. Position lifting device under subrail (or other structurally sound component). Lift entire side of vehicle high enough to install anchoring stands at both front and rear of center section.

4. Position stands directly below anchoring locations on pinchweld. Prior to positioning, observe pinchwelds to determine where clamps should be attached. If possible, select reinforced pinchwelds that are free of obstructions (lines, etc.). Select locations in corners of center section and avoid locations in center of rocker. If configuration on pinchweld requires use of optional, accessory - see page 11.

On EZ Liner systems, center locating plate in most convenient tie down hole below attachment point on pinchweld. Anchoring stand installs more easily with locating plate positioned in tie down hole 3 to 4 inches outboard of attachment points.

On G Series, position anchoring stand below attachment points on pinchweld making sure anchoring stand spans treadway slot. (See Figure 13.)

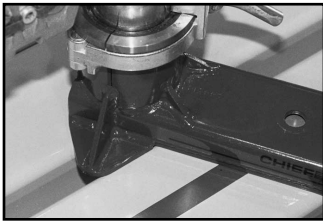


Figure 13

5. Adjust front and rear anchoring stand height so clamps engage (or are just below) rocker panel pinchweld and insert height adjustment pins in appropriate pinning holes. (See Figure 14.)

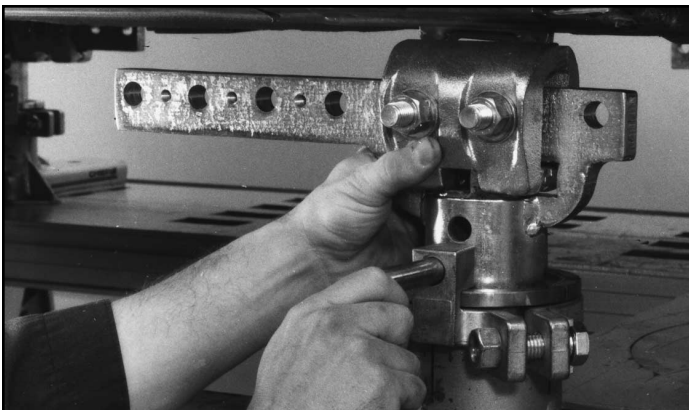


Figure 14

6. Lower entire side of vehicle to engage pinchweld in clamps. Then tighten pinchweld clamp bolts.

**IMPORTANT:** Rocker must rest firmly on top of pinchweld clamp(s) prior to tightening.

7. Install anchoring stands on opposite side of vehicle. Repeat Steps 1 - 6.

8. Adjust anchoring stands to desired height. See Height Adjustment - pages 7 and 8.

9. Secure anchoring stands to mainframe. See styles of attachment - page 3.

**⚠ CAUTION:** When 'tall' size anchoring stands are used on EZ Liner mainframe and tubes are extended upward to secure a high ground clearance vehicle, use auxiliary tie down chain to prevent lateral and/or horizontal movement. Attach chain to vehicle's structural components and to mainframe at points that are opposite of the pulls.

10. Tighten pinchweld clamps and locking collars.

**IMPORTANT:** Clamp jaws must be retightened after initial pulls are made. Clamps will seat themselves during initial pull, resulting in a loosening of the clamps. Clamps may slip if not retightened.

### UAS Clamp Bars/Clamp Bar Tubes

1. Attach two pinchweld clamps to clamp bar and attach clamp bar to clamp bar tube. Then install clamp bar tube in anchoring stand base and position assembly at front of center section on side of vehicle that must not move with the pull.

**NOTE:** Use of 'standard' size or 'tall' size anchoring stands is dependent upon height of vehicle's center section. Use 'standard' size clamp bar tubes with 'standard' size anchoring stands and 'tall' size clamp bar tubes with 'tall' size anchoring stands.

2. Prepare a second anchoring stand (as required) and position it on same side of vehicle at rear of center section.

3. Position lifting device under subrail (or other structurally sound component) at front of center section. Lift corner of vehicle high enough to install anchoring stand under rocker panel. (See Figure 15.)



Figure 15

4. Position stand directly below anchoring location on pinchweld. Prior to positioning, observe pinchwelds to determine where clamps should be attached. If possible, select reinforced pinchwelds that are free of obstructions (lines, etc.). Select locations in corners of center section and avoid locations in center of rocker panel. See Clamp Bar Adjustments, pages 9 and 10, if structural obstructions exist, or if the pinchweld requires repositioning of clamps. If optional accessory is required, see page 11.

On EZ Liner, center locating plate in most convenient tie down hole below attachment point on pinchweld. Anchoring stand installs more easily with locating plate positioned in tie down hole 3 to 4 inches outboard of attachment points.

On G Series, position anchoring stand below attachment points on pinchweld making sure stand spans treadway slot. (See Figure 16.)



Figure16

5. Adjust anchoring stand height so clamps engage (or are just below) rocker panel pinchweld and insert height adjustment pin in pinning hole. (See Figure 17). Then lower vehicle until rocker panel pinchweld fits in clamps. (See Figure 18.)



Figure 17

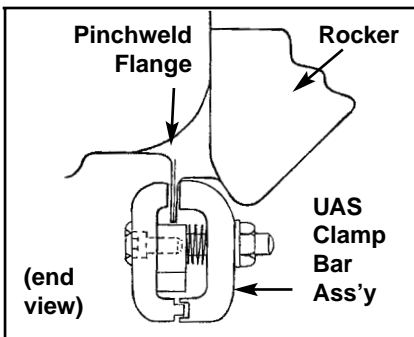


Figure 18

6. Tighten pinchweld clamp bolts.  
**IMPORTANT:** Rocker must rest firmly on top of pinchweld clamps prior to tightening.

7. Install anchoring stand at rear of center section by repeating Steps 3 - 6.

8. Install anchoring stands on opposite side of vehicle by repeating Steps 1 - 7.

9. Adjust anchoring stands to desired height. (See Height Adjustment - below and on page 8.

10. Secure anchoring stands to mainframe. See styles of attachment - page 3.

**⚠ CAUTION:** When using 'tall' size stands on EZ Liner mainframe and tubes are extended upward to secure high ground clearance vehicle, use auxiliary tie down chains to prevent lateral and /or horizontal movement. Attach chain to vehicle's structural components and to mainframe at points that are opposite of the pulls.

11. Tighten pinchweld clamps and locking collars.

**IMPORTANT:** Pinchweld clamps must be reightened after initial pulls are made. Clamps will seat themselves during initial pull, resulting in a loosening of clamps. Clamps may slip if not retightened.

## Flexibility Of Anchoring Systems

The flexibility of Chief's Universal Anchoring Systems varies and is dependent upon the anchoring tube and/or anchoring base used for the repair. UAS components are capable of height adjustment, additional holding on one side of the vehicle, vertical movement, lateral movement (not all systems), use as pulling attachments (not all systems), and clamp reconfiguration when faced with pinchweld obstructions or irregularities (not all systems),.

## Height Adjustment

(Applicable To All Universal Anchoring Systems)

Adapter tubes adjust to varying heights dependent upon repair and/or measuring needs. This adjustment allows for vehicle placement at identified locations or at a different level that's more conducive to pulls required.

For specific types of damage (and various vehicle designs) technicians have the advantage of balancing weight (load) between a vehicle's suspension and anchoring system. Although it is impossible to list a complete guide for correct height adjustment (due to the many varied repair situations), the following tips may be helpful.

1. A basic rule of collision repair is the more weight placed on anchoring stands (or blocking), the easier a vehicle will pull. Chief's Universal Anchoring Systems provide effective pulling even with the suspension supporting part of the vehicle's weight.

2. When nearly all the vehicle's weight is placed on anchoring stands, caution must be used to make sure the vehicle's end sections do not deflect from a lack of weight on the suspension.

**NOTE:** It may be necessary to raise the vehicle for repairs if the suspension is holding the structure out of alignment.

3. Some vehicles cannot withstand extreme weight on the rocker panels. Wood blocks, or a combination of wood blocks and auxiliary ram, may be used for support purposes in structural areas such as subrails located inboard of rocker panels. (See Figure 19.)

**NOTE:** Blocking reduces the possibility of rocker panels collapsing when making corrections.

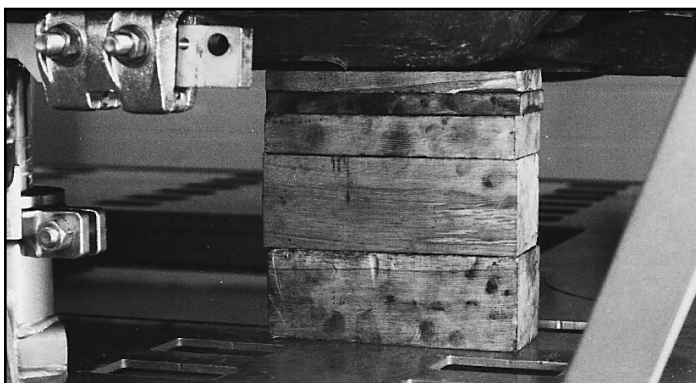


Figure 19

4. Vehicles are measured with all their weight supported by the anchoring system. Therefore, for an effective repair, anchoring stands should always support a portion of the vehicle's weight.

Although it is recommended that all of a vehicle's weight be supported by anchoring equipment, wheel stands (optional) can support some vehicle weight when sheet metal is removed. However, keep in mind that when the vehicle is measured, all sheet metal is in place and the suspension is unloaded.

**NOTE:** It is a good idea to install wheel stands (see Figure 20) even if they will not be supporting vehicle weight. This precaution is a safeguard in the event the vehicle moves from its anchoring locations.

**IMPORTANT:** When using wheel stands on G Series machines use 'standard' wheel stands with pads.

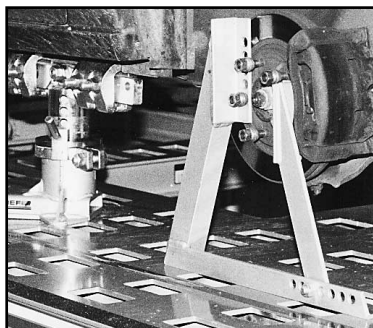


Figure 20

### Additional Holding

(Applicable To All Universal Anchoring Systems)

When correcting damage at corner of center section, it may be advantageous to install three anchoring stands on undamaged side of vehicle (for holding purposes) while using a unitized body clamp (attached to pinchweld at point of damage) as the pulling attachment. (See Figures 21 and 22.) Once corrected, the extra anchoring stand on the undamaged side of the vehicle can be reinstalled at the previously damaged corner.

**NOTE:** Severe damage at front corner of center section may require an additional pull at the hinge pillar (or cowl) on the damaged side of the vehicle to prevent rocker panel from rolling over.

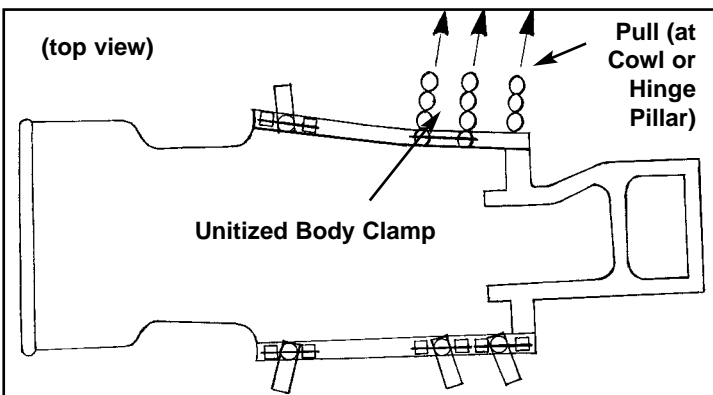


Figure 21



Figure 22

### Vertical Movement

(Applicable To All Universal Anchoring Systems)

When correcting twist, anchoring stands at low and high corner of center section are secured to vehicle and mainframe, however, anchoring tubes are not pinned to the anchoring stands. This setup allows vertical movement when pulls are applied to correct the twist. Once corrected, adapter tubes are pinned to the stands and remaining repair work addressed.

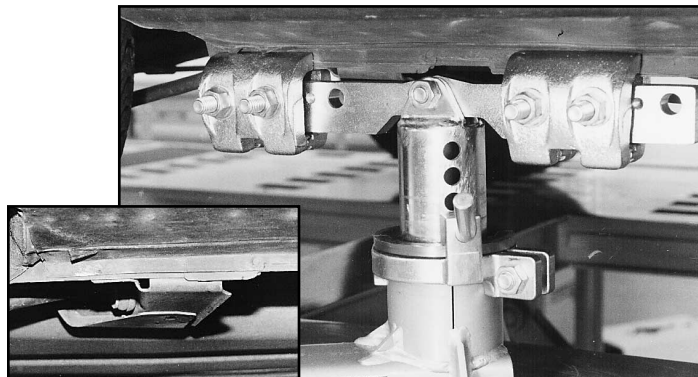


Figure 23

### Lateral Movement

(Applicable To All Universal Anchoring Systems)

When correcting either diamond or a direct side hit, one or both anchoring stands on the damaged side of the vehicle can be attached to the vehicle but not secured to the mainframe. This setup allows for lateral movement when pulls are applied to remove center section damage. Once the damage is corrected, anchoring stands are secured to the mainframe and remaining repair work addressed.

### Clamp Reconfiguration - Obstructions

(Applicable To Single/Dual Adapter Tubes and UAS Clamp Bars/Adapter Tubes)

**IMPORTANT:** The following procedure does not apply to UMS Adapter Tube usage.

To **straddle** an obstruction on a pinchweld, adjust pinchweld clamps outward. (See Figure 23 and its inset.)

**NOTE:**

- 1) When using UAS clamp bars/adapter tubes, the clamps can be extended outward to opposite ends of the bar as needed.
- 2) When using single/dual adapter tubes, one clamp can be adjusted outward to the end of the bar; however, one clamp must stay directly above the tube.

To **reach around** an obstruction on the pinchweld, remove both clamps from clamp bar and resecure them to side of clamp bar. (See Figure 24 and its inset.) This adjustment requires use of 5/8-11NC x 4 1/2 bolts.

**NOTE:** When using single/dual adapter tubes, both clamps can be secured to side of the clamp bar; however, one clamp must be directly above the adapter tube.

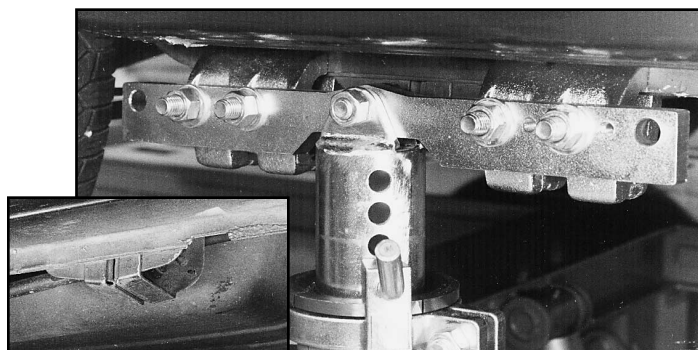


Figure 24

**Clamp Reconfiguration - Irregular Pinch Weld**

(Applicable To Single/Dual Clamp Bar Tubes and UAS Clamp Bars/Clamp Bar Tubes)

**IMPORTANT:** The following procedure does not apply to UMS Adapter Tube usage.

When pinchwelds step 'outward' or 'inward' approximately 5/8 inch (15mm), it may be advantageous to reverse one of the pinchweld clamps on the clamp bar. (See Figure 25.) If the problem still exists, remove hex socket cap screws to allow more movement.

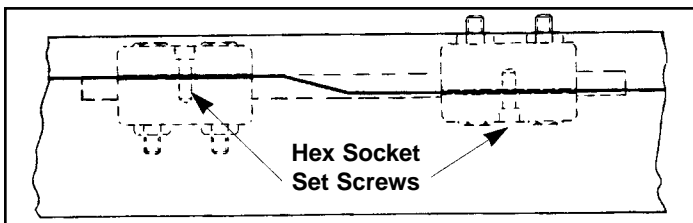


Figure 25

When deep pinchwelds (with 'inward' or 'outward' lip along bottom edge) reduce clearance around clamp bar, reverse both pinchweld clamps on clamp bar. (See Figure 26.)

**NOTE:** When using single/dual clamp bar tubes, one clamp must be directly in line with clamp bar tube.

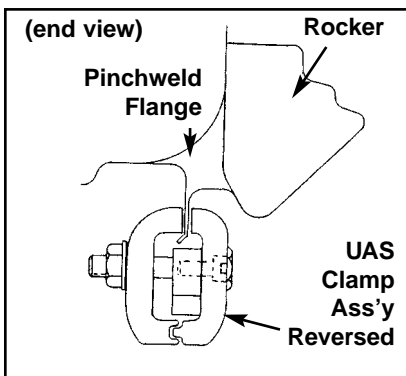


Figure 26

**Use As A Pulling Attachment**

(Applicable To Single/Dual Clamp Bar Tubes and UAS Clamp Bars/Clamp Bar Tubes)

**IMPORTANT:** The following procedure does not apply to UMS Adapter Tube usage.

Correction of center section damage is aided when using anchoring stands as pulling attachments. Stands on undamaged side of vehicle must secure vehicle to mainframe. Stands on damaged side of vehicle must be attached to vehicle but not to the mainframe.

Forward or rearward pulls can be applied directly to ends of clamp bar or to side pull attachments mounted to pinchweld clamps. (See Figures 27, 28, and 29 which illustrate a pulling setup for removing side hit damage.) Note use of oval loop and pin and shackle assemblies which link pulls to anchoring stands.

**CAUTION:** On G Series pulling systems, **DO NOT** use auxiliary rams to make forward or rearward pulls on clamp bars. Auxiliary ram usage is limited to direct side pulls only.

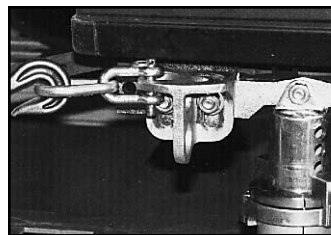


Figure 27

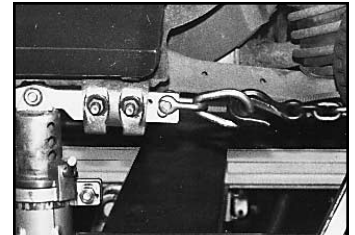


Figure 28

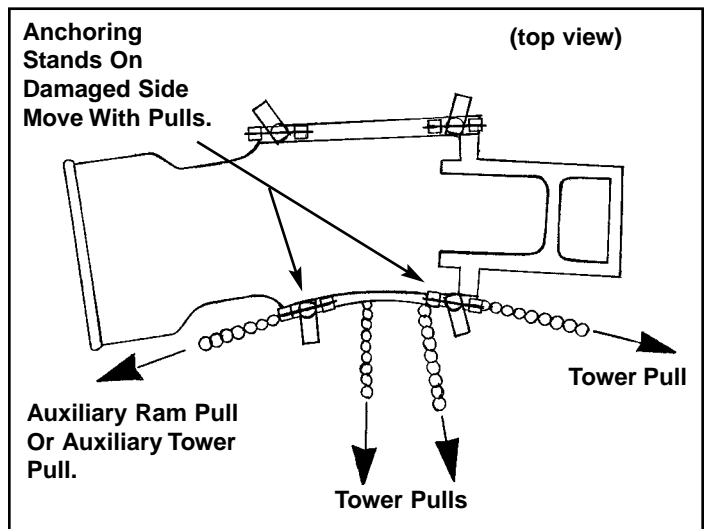


Figure 29

Direct side pulls can be applied to side pull attachments mounted to pinchweld clamps. See Figures 30 and 31 which illustrate a direct side pull at corner of center section.) Note use of bumper puller and oval loop and pin and shackle assemblies which link pull to anchoring stand.



Figure 30

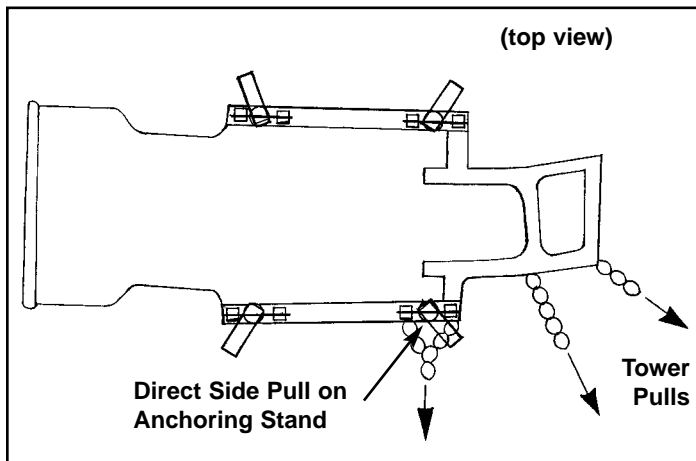


Figure 31

## Optional Accessories

A variety of optional accessories are available for vehicles that are difficult to anchor. Such vehicles have unique pinchweld or frame rail configurations that may require specially designed pinchweld clamp bars, brackets, pins, adapters, adapter tubes or crossmembers.

Some of the optional accessories are in a tube design (for insertion in anchoring stands), whereas other accessories mount directly to either the UMS pinchweld adapter tubes or the UAS clamp bar tubes identified in this manual.

For information on all anchoring accessories, contact Chief Automotive Systems, Inc., 800-445-9262. (If located outside the United States, contact the nearest Chief Automotive Systems, Inc. representative.)

### Parts Information

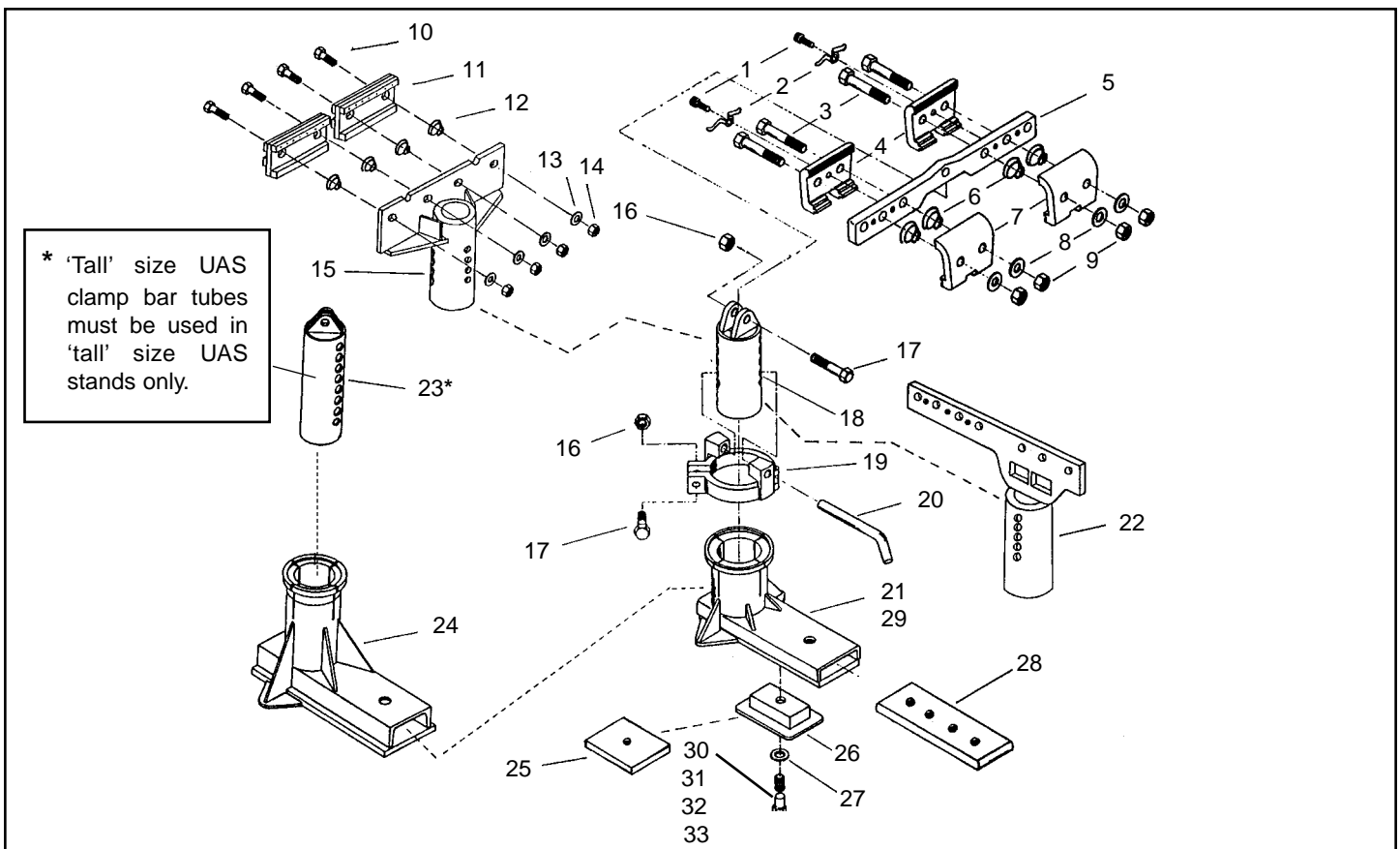
To order replacement parts for Universal Anchoring Systems, contact Chief Automotive Systems, Inc. 800-445-9262. (If outside the United States, contact nearest Chief Automotive Systems, Inc. representative.) When contacting Chief Automotive Systems, Inc. by telephone or mail, provide the following information: name, name

of shop, shop telephone number, shop address, description of part(s) and part number(s).

**NOTE:** Illustration and list reflect replacement parts for Universal Anchoring Systems. Some parts may not pertain to system purchased.

Ref.	Part No.	Description
1	620226	Hex Socket Cap Screws, 3/8-16NC x 1 1/4
2	693441	Clip, Bolt Holder, Pinchweld Clamp
3	692537	Bolt, 5/8-11NC x 3 3/4, Gr. 8
4	606264	Clamp, Male Half
5	618169	Clamp Bar, 7-Hole
6	601754	Conical Spring
7	606256	Clamp, Female Half
8	601690	Washer, 5/8 x 1/8
9	601682	Nut, 5/8 - 11NC, Gr. 8
10	010630	Bolt, 1/2 - 13 x 2 1/2, Gr. 8
11	498102	Pinchweld Clamp Jaw
12	092110	Spring, Compression, .720 x 1
13	019095	Washer, 1/2A-325 ZP
14	620736	Nut, 1/2-13NC, Gr. 8
15	508281	Adapter Tube, UMS
16	601682	Nut, 5/8-11NC, Gr. 8
17	601666	Bolt, 5/8-11NC x 2.25, Gr. 5

Ref.	Part No.	Description
18	532241	UAS Adapter Tube, Standard Size
19	607380	Locking Collar, UAS
20	606686	Height Adjusting Pin, UAS
21	702067	Stand Base, Standard Size-EZ Liner
22	532205	Adapter Tube, Single/Dual
23*	532239	UAS clamp bar Tube, Tall Size
24	702066	Stand Base, Tall Size
25	770092	Tie-Down Plate
26	607371	Fastener Plate, UAS, Machined
27	601738	Washer, 0.750 x 1.50, A-325 ZP
28	606855	Fastener Bar
29	702068	Stand Base, Standard Size - G Series
30	620496	Bolt (S21), 3/4-10NC x 5 1/2
31	685265	Bolt (EZ II/CL/EZ25), 3/4-10NC x 4 1/2
32	010079	Bolt (G Series), 3/4-10NC x 6, A-325
33	601674	Bolt (Std.), 3/4-10NC x 5 3/4







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**Chief reserves the right to alter product specifications and/or  
package components without notice.**