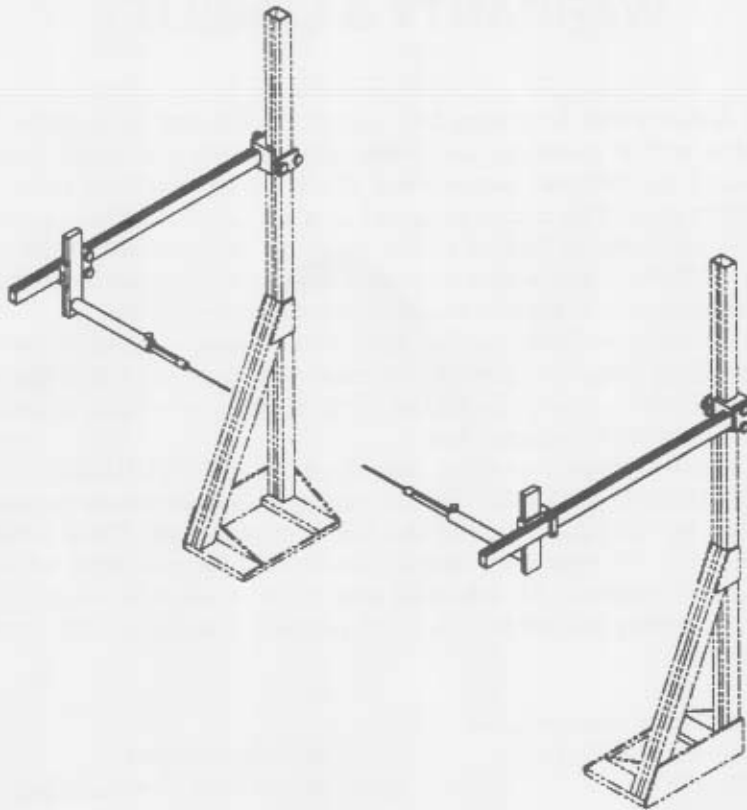


Chief Upper Body Measuring



OWNERS MANUAL



CHIEF AUTOMOTIVE SYSTEMS, INC.

The driving force in collision repair.™



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INTRODUCTION

This owners manual is designed to familiarize technicians with Chief's Upper Body Measuring Package. This package includes not only precision instruments that reach and measure a wide variety of upper body locations but also a full line of upper body specification sheets. These sheets are similar to the specification sheets provided with the Universal Measuring System; however, they feature additional symbols and procedures that are unique to upper body measuring.

NOTE: Measurements appearing on both types of specification sheet were obtained at the Chief Automotive Systems, Inc. Research Facility.

In addition to measuring the extent of damage, the Upper Body Measuring Components (see Figure 1) monitor the repair until correct alignment is achieved. During corrective pulls, pointers and scales may need to be moved from damage; however, they are easily returned for monitoring and verification of the repair.

In addition to an explanation of upper body specification sheets and upper body measuring components, this owners manual identifies components (see Figure 1 — below) and provides a Sample "Upper Body" Specification Sheet for reference purposes. (See inside back cover.)

As with the Universal Measuring System, proper handling and storage of the Upper Body Measuring Equipment assures prolonged calibration and usefulness. The equipment is a calibrated precision instrument, machined and manufactured for easy operation. **DO NOT** use force when assembling or moving UMS parts.

- ⚠ CAUTION:**
- 1) Always wear safety glasses when using UMS and its optional accessories.
 - 2) UMS aluminum components will conduct electricity so keep extrusions away from power lines or other sources of electrical output.

NOTE: Refer to the Illustrated Parts Manual for complete description and part numbers.

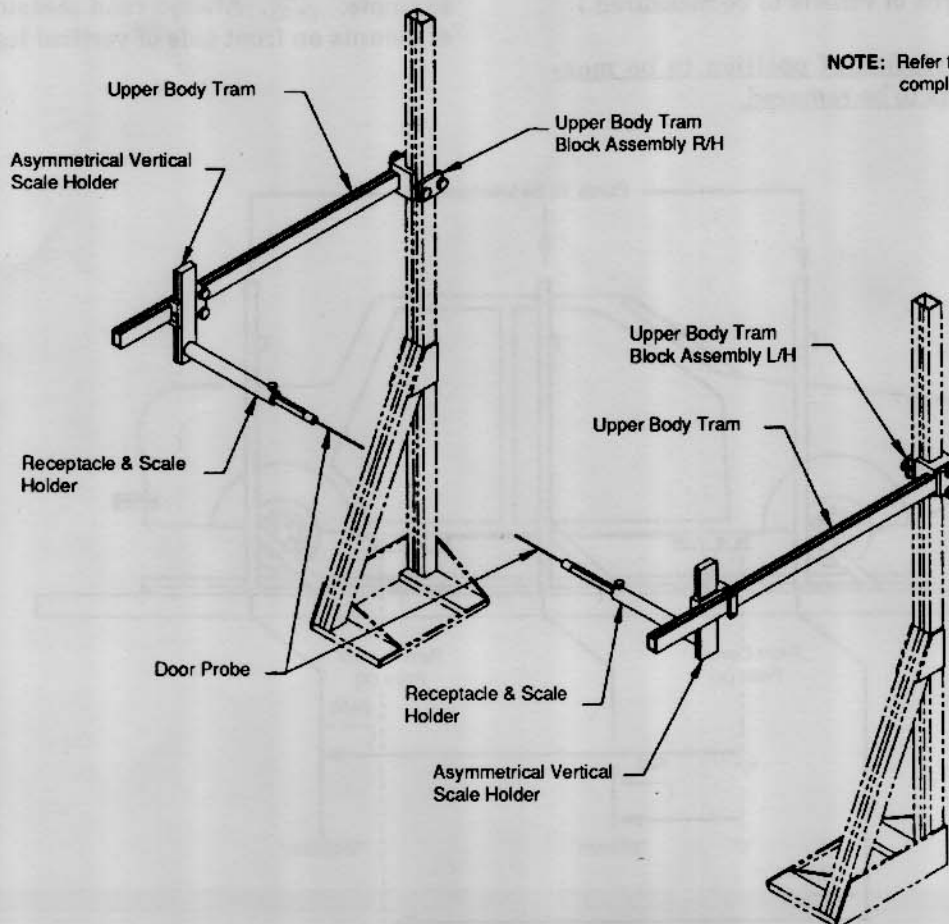


Figure 1



EXPLANATION OF UPPER BODY SPECIFICATION SHEET





The following information refers to Instructional Specification Sheet — see inside back cover. The letters A-K of this text correspond with specific locations on the Instructional Sheet.



- NOTE:**
1. Driver's side (left side) is always at bottom of specification sheet and front of vehicle is always to left of specification sheet.
 2. Upper body dimension tolerances are the same as those on lower body specification sheet for same vehicle.
 3. All moldings, weather stripping, and rocker covers are **always** removed. . . even if not called for on specification sheet.

A. Every upper body specification sheet has three ways of distinguishing a position.

- A1. Line drawing of entire vehicle. (This visually helps locate area of vehicle to be measured.)
- A2. Written description of position to be measured and parts to be removed.

A3. Detailed drawing of each position. (This shows exactly what is being measured as well as how the attachment is being used.)

- B. The front secondary ladder setting, see example at right:  corresponds with secondary ladder setting in underhood view on lower body specification sheet for same vehicle. Length measurements for each secondary ladder setting **MUST BE** done on the driver's (left side). The direction of the hook shaped arrow  designates control point (X) to be used for 'zero' reference. If arrow points to front of vehicle, , rear control point (X) is to be used as 'zero'. If arrow points to rear of vehicle , front control point (X) is to be used as 'zero'. (See Figure 3.)

C. Number in  symbol just below secondary ladder length setting is height setting for overhead bar mount on each vertical leg. For example: . Always read measurement at top of mounts on front side of vertical legs.

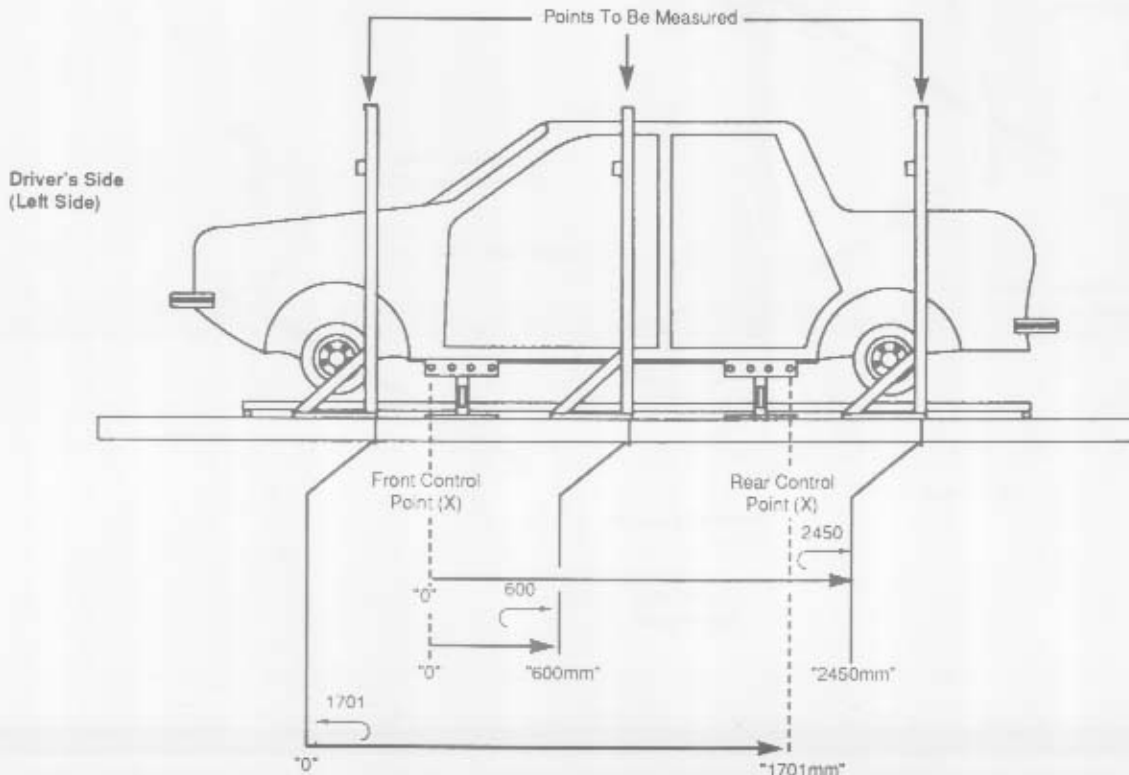


Figure 3

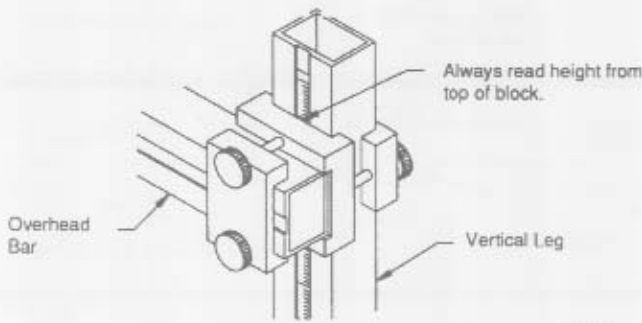


Figure 4

D. All fitting requirements for measurements taken from overhead bar are found on second line of symbols from top of page. Any time a centerline measurement appears on upper body specification sheet, it indicates use of upper scale guide and pin assembly on overhead bar, or, rigid tram assembly mounted on overhead bar. When using upper scale guide on overhead bar (without rigid tram), an upside down triangle ∇ appears. For example: ∇ . Inside the triangle is attachment to be used and reading for upper scale pin. Below triangle, and to its left, is an arrow indicating direction upper scale pin is to be inserted through upper scale guide. (See Figure 5.) The upside down triangle symbol is only used when measurements are taken directly off overhead bar using upper scale guide.

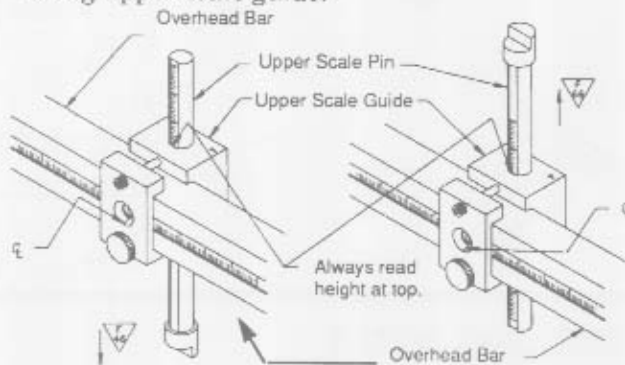


Figure 5

E. All symbols relating to upper scale guide and pin or scale and pin assembly on rigid tram are in second row of symbols from top of page. Each symbol has an 'up' or 'down' directional arrow and a single line extending from bottom of symbol directly to point of measure at outer ends of centerline.

F. Positions measured forward of overhead bar are measured with rigid tram. Arrow to lower left of all symbols relating to rigid tram indicates whether vertical scale is to point up \uparrow or down \downarrow from rigid tram. Within these symbols are fitting requirements for vertical scale and vertical dimensions. Length settings for scale holder on rigid tram $\leftarrow \rightarrow$ are found just below vehicle drawing. (See Figure 6.)

G. A \square symbol found in length setting line for rigid tram $\leftarrow \rightarrow$ indicates use of asymmetrical scale holder is necessary. Below this symbol will be a set of brackets (). Within these brackets is direction (in or out) and setting of asymmetrical scale holder. To use asymmetrical scale holder on rigid tram, remove standard vertical scale holder and install asymmetrical holder in the direction indicated. (See Figure 6.)

NOTE: 'In' is toward vehicle and 'out' is away from vehicle.

H. All symbols in top row that are attached to double line arrows are used when scale and pin assembly is mounted in asymmetrical scale holder and attached to upper body tram in a horizontal position.

NOTE: No centerline is used when measuring with upper body tram.

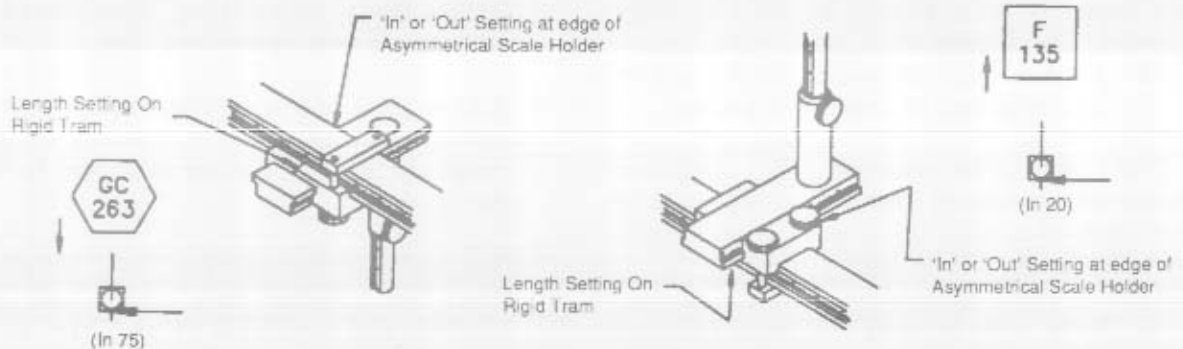


Figure 6



- I. The \square symbol found under \triangle symbol indicates height for mounting upper body tram block on vertical leg. For example: $\triangle 460$. Each block is mounted on outside of vertical legs. Be sure to note driver's side (left side) and always read height at top of block on front side of vertical leg. (See Figure 7.)

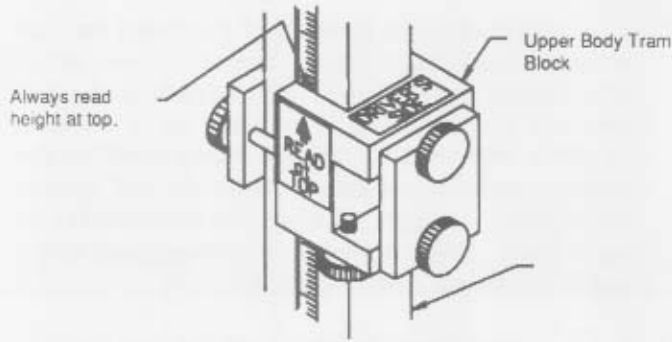


Figure 7

Line extending from rectangle $\leftarrow 460$ $\square 460 \rightarrow$ indicates direction upper body tram will extend from upper body tram block. When positioning upper body tram, the zero point for tram will be on opposite side of upper body tram block. (See Figure 8.)

Above the line extending from rectangle (for example: $\square 460 \overset{189}{\leftarrow}$) is length setting for asymmetrical scale holder, shown as \square . Below this symbol is a set of brackets (). Within these brackets is direction (up or down) and setting of asymmetrical scale holder. If direction is 'up', read height at the top of asymmetrical scale holder. If direction is 'down', read height at bottom of asymmetrical scale holder.

NOTE: If no symbol or direction is shown (for example: \square), asymmetrical scale holder is to be set at zero. (See Figure 9.)

- J. If a door probe is needed, a square symbol will appear. (For example: $\square \begin{matrix} DS \\ BC \end{matrix}$). In this example, a 'door probe — short' should be used at height indicated. If DL appears in square, it indicates a 'door probe — long' should be used at height indicated. (See Figure 10.)

NOTE: In most applications, length is used only as a reference to locate door probe.

- K. The \diamond symbol, for example, $\diamond \begin{matrix} C \\ 352 \end{matrix}$, indicates a measurement (using cone attachment) to the outer edge of a vehicle. (For example: rocker panel curve, edge of roof, etc.)

NOTE: In these applications, length on upper body tram is used only as a reference. (See Figure 11.)

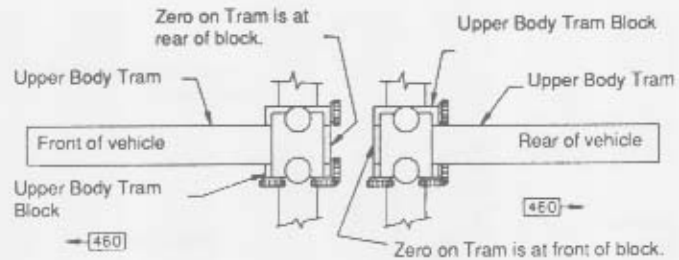


Figure 8

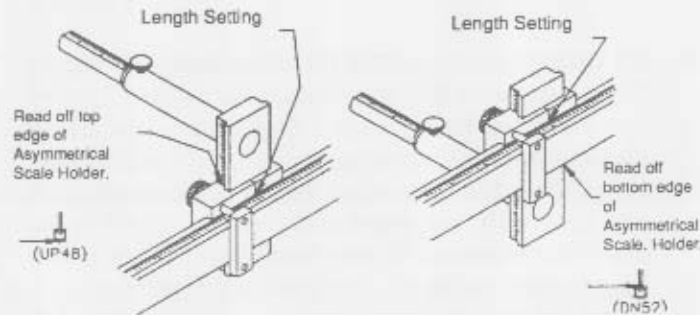


Figure 9

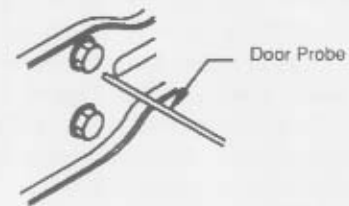


Figure 10



Figure 11

ADDITIONAL NOTES

- When welding or using cutting torch near UMS or Upper Body Measuring Equipment, protect components from sparks and slag.
- Although UMS and Upper Body Measuring Equipment have an anodized finish, some chemicals (such as battery acid) may be harmful to the finish.
- Diagnostic worksheets for 'lower body/underhood' (Part No. 150296) and 'upper body' (Part No. 150297) are available from Chief Automotive Systems, Inc., 800-445-9262.



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