



NHTSA Test Reference Guide Version 5

Volume II : Biomechanical Tests

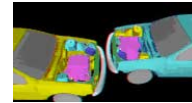
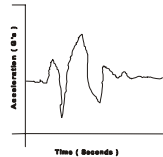
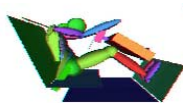
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Preface

This guide and its companion guides are to be used to create formatted submissions of data collected from automotive crash tests.

There are four guides:

Volume I: NHTSA Vehicle Test Reference Guide

Volume II: NHTSA Biomechanical Test Reference Guide

Volume III: NHTSA Component Test Reference Guide

Volume IV: NHTSA Signal Waveform Generator Test Reference Guide

You are reading Volume II, the NHTSA Biomechanical Test Reference Guide.

The first step in creating a data submission is to determine which database to use for your test data. The design and partitioning of each database is centered upon the focus of the testing. Test programs focused on the evaluation of the **occupant** should be submitted to the Biomechanical Database; tests focused on the evaluation of **vehicles** belong in either the Vehicle Database or the Component Database; and tests focused on the evaluation of the **data acquisition system** belong in the Signal Waveform Generator Database. Refer to the flow chart in **Figure 0-1 Database selection**, on the next page, to determine which database is appropriate for your test.

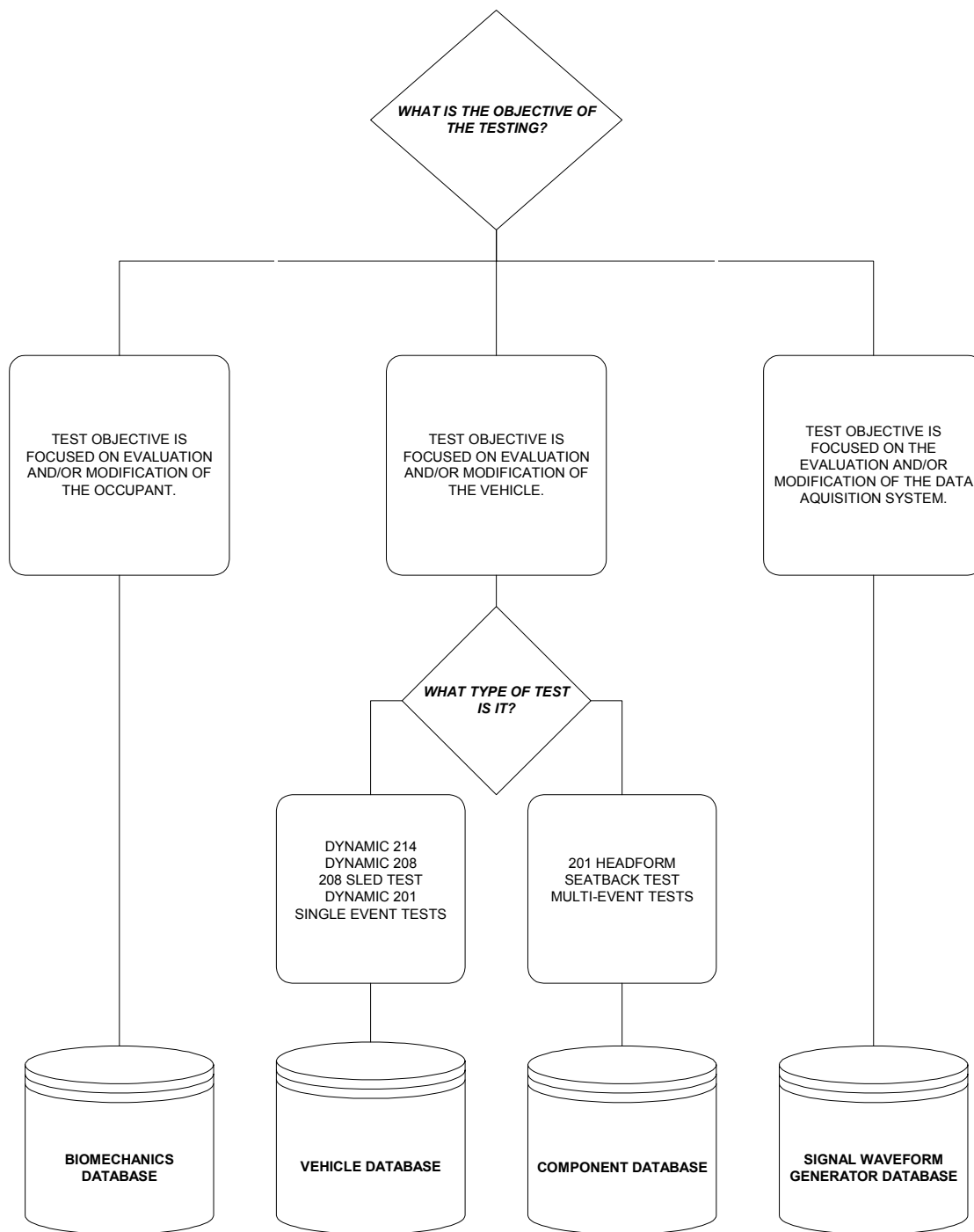


Figure 0-1 Database selection

Several examples may help to illustrate where certain types of tests fit into the databases:

- All regulatory tests shall be submitted to the Vehicle Database or Component Database.
- Tests that are performed as part of the new car assessment program shall be submitted to the Vehicle Database.
- Pendulum tests to cadavers shall be submitted to the Biomechanical Database.
- Lateral vehicle-to-vehicle impacts shall be submitted to the Vehicle Database.
- Sled tests with new dummy designs shall be submitted to the Biomechanical Database.
- Tests featuring a car body on a sled designed to evaluate occupant response should be submitted to the Biomechanical Database.
- Tests featuring a car body on a sled designed to evaluate vehicle response should be submitted to the Vehicle Database.
- Tests to record a standard waveform using new car assessment conditioning amplifiers shall be submitted to the Signal Waveform Generator Database.

In many research cases, it will be difficult to determine whether testing is focused on evaluation of the vehicle or evaluation of the occupant. Always check with the COTR in determining which database tests should be submitted. In all cases where the COTR's advice is contrary to this guide, send email to matthew.maltese@nhtsa.dot.gov.

Release Notes

This section details changes between the current version of this guide, dated as of March 6, 2001, and the most recent version preceding this guide.

Content

- The four Test Reference Guides have been substantially merged to consolidate common information into a more easily maintained format. However, they are still distributed separately at this time.
- All guides updated to represent the version 5 schema and coding.
- A flowchart has been incorporated to assist guide users in creating a proper EV5 specification data file.
- New sections added to address video, photos, and contractor reports.
- X-Y measurement / channel data is now permitted when the independent coordinate of a measurement is non-uniformly incremental (non-constant delta between adjacent X values).
- Data coordinate systems information moved to a common appendix in **Appendix A: Data Coordinate System** so as to isolate it for easier reading and maintenance.
- New technical support appendix added in **Appendix C: Technical Support Information**.
- Updated information on Entrée for Windows version 5.
- The OCCTYP variable replaces DOCCTYP and BOCCTYP and has been moved to the TEST record section in order to support business rules controlling content of the specification data file.
- Rib bending information has been extracted into its own record section.
- New fields have been added to the Biological Occupant portion of the specification to capture information on the bone mineral content of occupants.

Codes

- Values for coded strings refreshed from the current version 5 code tables.

Introduction

Background

In September of 1966, the National Traffic and Motor Vehicle Safety Act (15 U.S.C. 1381) was signed into law in the United States. The Act specifies that the Secretary of Transportation shall establish appropriate Federal Motor Vehicle Safety Standards that would lead to the reduction of the number of deaths and injuries resulting from motor vehicle accidents. In prescribing standards, the Secretary was to consider: (1) relevant motor vehicle safety data, (2) whether the proposed standard is reasonable, practical, and appropriate for the particular type of motor vehicle equipment for which it is prescribed, and (3) the extent to which such standards contribute to carrying out the purposes of the Act.

In order to meet the above requirements, the National Highway Traffic Safety Administration (NHTSA) has been mandated to develop safety standards. For each proposed regulation, an extensive research program is undertaken to ensure that the proposed standard satisfies the requirements of the Act. For each test conducted for the agency, data is recorded from various transducers mounted to the test dummies or vehicles, high-speed films or videos are recorded to document the event, still pictures of the test setup are taken, and a written report is generated. Since 1978, these data have been loaded into a single data repository, where NHTSA staff and the public can access the data and conduct analysis.

This reference guide has been written for two reasons. The first is to document the format and content requirements for submission of data, film, video, reports to the NHTSA database. The second is to encourage the adoption of this standardized format so that the exchange of data by the safety research community is readily accomplished and ultimately leads to new and better ways for reducing the fatalities and injuries in motor vehicle accidents.

Data Organization

Four types of crash test data can be submitted to the NHTSA Biomechanical database:

- **Electronic Data** (Chapter 2) - General quantitative information about the test setup and results as well as transducer output time-history data.
- **Written Report** (Chapter 3) - A report containing information about the test, such as test setup diagrams and test anomalies. The written report should be submitted in digital form using the Adobe PDF format. Alternatively, a paper copy of the report is acceptable.
- **Pre/Post-Event Images** (Chapter 4) - Pre- or post- event images of the test environment. These may be in the form of film or digital video, time sequenced or still images.
- **Event Images** (Chapter 5) - Film, video, or still images captured during the impact event. The images may be submitted on processed prints from photo-reactive film or on CCD cameras.

Chapters 2 through 5 of this guide provide instructions for formatting of each of the above data types.

Digital Media Formats

The digital crash test information should be submitted to NHTSA on a CD-ROM, ZIP disk, or 3.5" floppy disk. Multiple tests may be submitted on a single CD-ROM. Multiple CD-ROM's or disks may be submitted for each test. Please see ***Chapter 1 – Media Formats and Layout*** for details on acceptable media and the layout of directories and files on the media.

Other Media Formats

Other media, including high-speed films, VHS or BETA videotapes, paper reports, or X-Rays should be submitted along with the digital media. If you have data that you wish to submit but which is not specified in this guide, please send email to

nrd.softdev@nhtsa.dot.gov

or contact the NHTSA COTR responsible for your submission.

Return Policy

Submissions that cannot be processed, or which have too many errors as identified by Entrée for Windows or the loading and checkout programs, will be returned to the contractor to be corrected and resubmitted.

Chapter 1 : Media Format and Layout

Each submission consists of multiple types of data: descriptive test specification data defined later in this guide, measurement data digitized from the test instrumentation signal traces, a written report of the testing, and still images and video before, during, and after the test event. Several pieces of physical media may be necessary to record all of this information for submission.

1.1 Media Types and Layout

All submissions should be written to either 3.5" 1.44 MB DOS (FAT) formatted diskettes, Iomega ZIP 100MB or ZIP 250MB cartridges, or to ISO-9660 CD-ROM with optional Joliet extensions for long file name support.

Each CD-ROM or disk should have a directory structure in accordance with the following:

- 1) **Parent directory name** - All data for each test submitted on a CD/Disk should be in a directory created in

\<TSTREF>\

where <TSTREF> is the value from the field TSTREF in Chapter 2 of this guide. So, if TSTREF = 'IMPACT123', then the directory for all data for this test shall be stored in the directory, \IMPACT123\. Users should avoid illegal filename characters ('\, '*', '?') when choosing a value for TSTREF, so as not to interfere with the directory naming convention. Each piece of media should have a printout listing each TSTREF on the media.

- 2) **Electronic Data** - In accordance with the format in Chapter's 1 and 2, the EV5 specification file and associated transducer signal files shall be stored in the subdirectory

\<TSTREF>\DATA

- 3) **Written Report** - In accordance with Chapter 3, digital reports in PDF format shall be stored in the subdirectory

\<TSTREF>\REPORT

- 4) **Pre/Post-Event Images** – In accordance with Chapter 4, still images and video captured before and after the impact event shall be stored in the subdirectory

\<TSTREF>\PREPOST

- 5) **Event Images** - In accordance with Chapter 5, still images and video of the impact event, including high speed video files, shall be stored in the subdirectory

\<TSTREF>\EVENT

1.2 Data Entry Software

1.2-1 Entrée for Windows

NHTSA has developed the Entree for Windows data entry program in order to facilitate preparation of the specification data defined in *Chapter 2 : Field Specifications and Formats*. Because the program contains built-in data validation, it is highly recommended that specification data be generated using the Entree for Windows program.

In addition to producing new data sets, Entrée for Windows can import ASCII data sets generated by previous versions of Entree, typically of type EV4, EV5, or GR*. Once these files have been imported they can be written to a new data set in the EV5 format.

1.2.1.1 Requirements for Entrée for Windows:

Entree for Windows is a Windows-based application for the Microsoft Windows 95, Windows 98 and Windows NT environments with the following operating requirements:

- Microsoft Windows 95 / 98, Windows NT Workstation 4.0 with Service Pack 6a or later.
- Hardware (CPU, memory, and disk space) according to Microsoft recommendations.
- 24 MB of disk space to install, and 12 MB of disk space during normal use.
- SVGA display adapter with 1024x768 resolution, preferably using font size “small.”
- 3.5" 1.44 MB diskette drive, Iomega ZIP 100MB or 250 MB drive, or a CD-R / CD-RW drive capable of creating ISO-9660 CD-ROMs.

While Entrée may run under Microsoft Windows Millennium or Windows 2000, it has not been tested in those environments.

1.2-2 Customer Developed Software

NHTSA provides access to the source code for the Entrée for Windows program as a separately downloadable package on the Entrée web site (See: **Appendix C-1 : Reference Guide Updates and Software Updates.**) This source code package may be used as an educational resource in understanding how the Entrée application works, and the logic used in generating an EV5 data set. However, the source code is not suitable for direct inclusion in customer-developed software.

NHTSA does not provide source code for customers to develop their own software to write data compatible with the EV5 specification. This guide and data sets produced by the Entrée for Windows software may be used to engineer data sets that are conditionally compatible with the specification.

Chapter 2 : Field Specifications and Formats

Introductory Information

As a primer to understanding the following sections please review the following information and glossary of terms. We have categorized the data types in the EV5 specification so as to make it easier to model the data and the business logic necessary for validating the data.

Glossary of Field Types:

- **Free Text** – A textual string whose content is not strictly governed by a rule, containing uppercase alphanumeric characters, white-space, and a limited set of special characters including [] () , : - + and _ . A field of this type may have a maximum length.
- **Coded Value** – A textual string whose content is limited to a predefined set of enumerated values. A field of this type will have a set length and a fixed set of possible valid values that may be assigned to the field.
- **Integer** – An unbounded integer (whole number) value having no minimum or maximum limitations on value, expressed as one optional sign character (- or +) and one or more numeric characters, or digits, in the range from 0 – 9. The absence of a sign character implies a positive value.
- **Bounded Integer** – A specific class of Integer whose content is limited by an upper and lower bound. The representation of a Bounded Integer as a textual string may be limited in length.
- **Real** – An unbounded real (floating point or decimal) value having no minimum or maximum limitations on value, expressed as one sign character (- or +), one or more numeric characters, or digits, in the range from 0 – 9, a decimal point ‘.’, and one or more numeric characters in the range from 0 – 9. The absence of a sign character implies a positive value.

The representation of a Real as a textual string may be governed by a rule that specifies a total field width, placement of the sign and decimal, and relative sizes and format of the mantissa and exponent. Any alphabetic characters in the textual representation of a Real are in uppercase.

- **Bounded Real** – A specific class of Real whose content is limited by an upper and lower bound.
- **Date** – A textual string whose content represents a calendar date of the format ‘DD/MMM/CCYY’. The maximum length of a date field is limited to 11 characters.

The ‘DD’ portion of the date is the numeric day of the month, padded to a width of two (2) characters with a leading zero, in the range from 1 – 31.

The 'MMM' portion of the date is the three-character uppercase alphabetic abbreviation of the month (E.g. 'JAN', 'FEB', 'MAR', 'APR', 'MAY', 'JUN', 'JUL', 'AUG', 'SEP', 'OCT', 'NOV', 'DEC').

The 'CCYY' portion of the date is a four-digit year with the century represented in the 'CC' position and the year within the century represented as a zero padded value in the 'YY' position (E.g. '2001' would be century 20 AD, and year 01 within the century).

2.1 Electronic Data

2.1-1 Specification Data

The ASCII file for a specific test consists of groups of records from each of the categories listed below:

| RECORD TYPE | GROUP |
|--------------------|--------------|
| TEST | 1 |
| DUMMY OCCUPANT | 2 |
| BIO OCCUPANT | 3 |
| RESTRAINT | 4 |
| ANTHROPOMETRY | 5 |
| RIB | 6 |
| OCCUPANT INJURY | 7 |
| INSTRUMENTATION | 8 |
| CHEST BAND | 9 |
| CHEST BAND GAUGE | 10 |

Table 2-1 EV5 specification data groups

For example, a Biomechanical test might consist of specification records for TEST, BIO OCCUPANT, RESTRAINT, ANTHROPOMETRY, RIB, OCCUPANT INJURY, INSTRUMENTATION, CHEST BAND, and CHEST BAND GAUGE.

The flowchart in **Figure 2-1**, below, should be used to determine what record types to include in the specification data file.

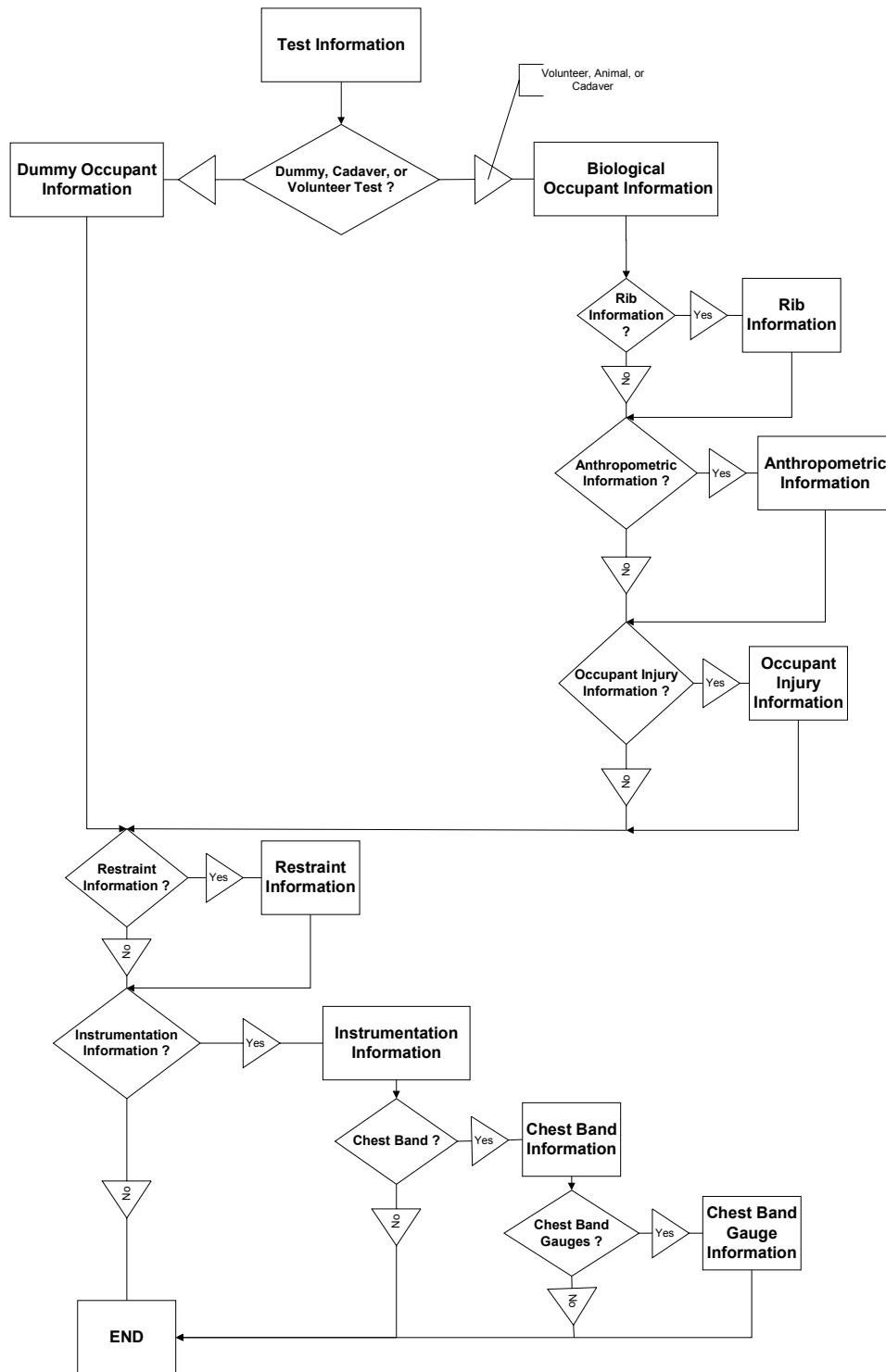


Figure 2-1 EV5 Biomechanical Specification Data Flowchart

2.1.1.1 Record Layout for ASCII Specification File

The fields and their positions in each of the specification data records are listed in the sections following this one, starting with **Section 2.2 General Test Information**. The first line of the ASCII (.EV5) specification file should be the string

“----- EV5 -----”

or

“-----”+space+ “EV5”+space+“-----”

The specification file should terminate with the line

“----- END -----”

Within the body of the specification file each section should begin with a “key” line indicating the record type for the data group following the key. These keys have the form

“----- KEY -----”

or

“-----”+space+ “KEY”+space+ “-----”

where KEY is appropriate to a particular record type as listed in **Table 2-1 EV5 specification data groups**. (E.g. KEY = TEST or KEY = DUMMY OCCUPANT, etc.)

Fields within a record are delimited by the pipe character (|), records are delimited by a line feed.

Fields for which no information is available should contain one blank character. In other words, an empty field begins after the pipe delimiter of the previous field, and consists of a single blank followed by another pipe delimiter.

All text should be uppercase.

Comments within the specification file are allowable anywhere in the file, but must start on a new line with the # (pound) sign and end with a line feed.

2.1-2 Specification Data Example: Biomechanical

Please note that while the records in this example appear to span lines, in actuality they are continuous and have been wrapped to fit this page.

```
# Source: Entree for Windows v5
# Date: <3/5/2001>
---- EV5 ----
---- TEST ----
B5|B|BIOMECHANICAL INVESTIGATIONS USING HUMAN SURROGATES|SIDE IMPACT CADAVER|25/AUG/99|MCW|DTNH22-93-Y-
17028|SC125|SLN|23|DIG|UMB|26|270|144|CD|4.25 INCHES ABDOMEN OFFSET LOADWALL
---- BIO OCCUPANT ----
NA|M|NO|68|81| |7|10|HS544|1|17/AUG/99|CONJESTIVE HEART FAILURE|UNREMARKABLE| |UNREMARKABLE| | | | | | | |
---- RESTRAINT ----
1|RIG|OT|NA|LOADWALL MOUNTED ON A HEIDELBERG CONFIGURATION TYPE SLED
---- ANTHROPOMETRY ----
1700|1495|890|1070|455|305|320|330|390|495|490|100|85|255|825|865|530|190|155|230|265|265|260|180|505|405|405|355|230|410|385|930|945|1040|215|
220|230|310
---- RIB ----
1| | | | | | | |
2| | | | | | | |
3| | | | | | | |
4| | | | | | | |
---- OCCUPANT INJURY ----
1|C|L|F|S|3| |LEFT RIB2(1) - 1 CM DOWN, 11.5 CM LEFT
2|C|L|F|S|3| |LEFT RIB3(1) - 1.5 CM DOWN, 14.5 CM LEFT; FRACTURED AT ACC MOUNT
3|C|L|F|S|3| |LEFT RIB4(1) - 6 CM DOWN, 15 CM LEFT; MEDIALLY
4|C|L|F|S|3| |LEFT RIB5(1) - 2 CM DOWN, 18.5 CM LEFT; PARTIAL FRACTURE
5|C|L|F|S|3| |LEFT RIB7(1) - 11.5 CM DOWN, 22 CM LEFT; FRACTURED AT ACC MOUNT
6|C|L|F|S|3| |LEFT RIB7(2) - COSTAL-CRONDRIAL JUNCTION
7|C|L|F|S|3| |LEFT RIB8(1) - 9 CM DOWN, 24 CM LEFT
8|C|L|F|S|3| |LEFT RIB8(2) - 19 CM DOWN, 22 CM LEFT
9|C|L|F|S|3| |LEFT RIB9(1) - 9 CM DOWN, 28 CM LEFT
10|C|L|F|S|3| |LEFT RIB9(2) - COSTAL-CRONDRIAL JUNCTION
11|M|L|L|K|3| |2.6 CM LONG AND 1 CM DEEP; ABOVE RENAL VEIN
---- INSTRUMENTATION ----
1|V|L|NA|SLED|YG|SEC|VOL|4000|MICROSWITCH|01/SEP/90|10|80|0|-975|6825|80|AM|P|NO COMMENTS
2|AC|NA|SLED|YG|SEC|G'S|4000|ENTRAN;MODEL:EGE-73BME0-750F;SN:96D96D13-B08|23/JUL/99|750|14|26|-975|6825|80|AM|R|NO COMMENTS
3|AC|NA|SLED|YG|SEC|G'S|4000|ENTRAN;MODEL:EGE-73BME0-100DF;SN:96D96D13-B01|07/NOV/96|100|34|26|-975|6825|80|AM|P|NO COMMENTS
4|CC|NA|CHBD|OT|SEC|RMM|4000|R.A. DENTON;MODEL:CHESTBAND;SN:114|08/APR/97|0|82|0|-975|6825|80|QD|P|CHESTBAND S/N : C114 GAUGE
# 01;ARTIFACT FROM DAS PRIOR TO TIME ZERO
5|CC|NA|CHBD|OT|SEC|RMM|4000|R.A. DENTON;MODEL:CHESTBAND;SN:114|08/APR/97|0|85|0|-975|6825|80|QD|P|CHESTBAND S/N : C114 GAUGE
# 04;ARTIFACT FROM DAS PRIOR TO TIME ZERO
6|CC|NA|CHBD|OT|SEC|RMM|4000|R.A. DENTON;MODEL:CHESTBAND;SN:114|08/APR/97|0|84|0|-975|6825|80|AM|P|CHESTBAND S/N : C114 GAUGE
# 05
7|CC|NA|CHBD|OT|SEC|RMM|4000|R.A. DENTON;MODEL:CHESTBAND;SN:114|08/APR/97|0|82|0|-975|6825|80|AM|P|CHESTBAND S/N : C114 GAUGE
# 07
8|CC|NA|CHBD|OT|SEC|RMM|4000|R.A. DENTON;MODEL:CHESTBAND;SN:114|08/APR/97|0|82|0|-975|6825|80|MN|P|CHESTBAND S/N : C114 GAUGE
# 08;BAD GAUGE
9|CC|NA|CHBD|OT|SEC|RMM|4000|R.A. DENTON;MODEL:CHESTBAND;SN:114|08/APR/97|0|82|0|-975|6825|80|AM|P|CHESTBAND S/N : C114 GAUGE
# 09
```

10|CC|NA|CHBD|OT|SEC|RMM|4000|R.A. DENTON;MODEL:CHESTBAND;SN:114|08|APR|97|0|80|0|-975|6825|80|AM|P|CHESTBAND S/N : C114
GAUGE # 10

11|CC|NA|CHBD|OT|SEC|RMM|4000|R.A. DENTON;MODEL:CHESTBAND;SN:114|08|APR|97|0|85|0|-975|6825|80|MN|P|CHESTBAND S/N : C114
GAUGE # 12;BAD GAUGE

12|CC|NA|CHBD|OT|SEC|RMM|4000|R.A. DENTON;MODEL:CHESTBAND;SN:114|08|APR|97|0|84|0|-975|6825|80|AM|P|CHESTBAND S/N : C114
GAUGE # 13

13|CC|NA|CHBD|OT|SEC|RMM|4000|R.A. DENTON;MODEL:CHESTBAND;SN:114|08|APR|97|0|82|0|-975|6825|80|AM|P|CHESTBAND S/N : C114
GAUGE # 14

14|CC|NA|CHBD|OT|SEC|RMM|4000|R.A. DENTON;MODEL:CHESTBAND;SN:114|08|APR|97|0|82|0|-975|6825|80|AM|P|CHESTBAND S/N : C114
GAUGE # 15

15|CC|NA|CHBD|OT|SEC|RMM|4000|R.A. DENTON;MODEL:CHESTBAND;SN:114|08|APR|97|0|85|0|-975|6825|80|AM|P|CHESTBAND S/N : C114
GAUGE # 17

16|CC|NA|CHBD|OT|SEC|RMM|4000|R.A. DENTON;MODEL:CHESTBAND;SN:114|08|APR|97|0|86|0|-975|6825|80|AM|P|CHESTBAND S/N : C114
GAUGE # 18

17|CC|NA|CHBD|OT|SEC|RMM|4000|R.A. DENTON;MODEL:CHESTBAND;SN:114|08|APR|97|0|80|0|-975|6825|80|AM|P|CHESTBAND S/N : C114
GAUGE # 19

18|CC|NA|CHBD|OT|SEC|RMM|4000|R.A. DENTON;MODEL:CHESTBAND;SN:114|08|APR|97|0|83|0|-975|6825|80|AM|P|CHESTBAND S/N : C114
GAUGE # 20

19|CC|NA|CHBD|OT|SEC|RMM|4000|R.A. DENTON;MODEL:CHESTBAND;SN:114|08|APR|97|0|86|0|-975|6825|80|AM|P|CHESTBAND S/N : C114
GAUGE # 22

20|CC|NA|CHBD|OT|SEC|RMM|4000|R.A. DENTON;MODEL:CHESTBAND;SN:114|08|APR|97|0|169|0|-975|6825|80|AM|P|CHESTBAND S/N : C114
GAUGE # 24

21|CC|NA|CHBD|OT|SEC|RMM|4000|R.A. DENTON;MODEL:CHESTBAND;SN:114|08|APR|97|0|85|0|-975|6825|80|AM|P|CHESTBAND S/N : C114
GAUGE # 25

22|CC|NA|CHBD|OT|SEC|RMM|4000|R.A. DENTON;MODEL:CHESTBAND;SN:114|08|APR|97|0|79|0|-975|6825|80|AM|P|CHESTBAND S/N : C114
GAUGE # 26

23|CC|NA|CHBD|OT|SEC|RMM|4000|R.A. DENTON;MODEL:CHESTBAND;SN:114|08|APR|97|0|80|0|-975|6825|80|AM|P|CHESTBAND S/N : C114
GAUGE # 27

24|CC|NA|CHBD|OT|SEC|RMM|4000|R.A. DENTON;MODEL:CHESTBAND;SN:114|08|APR|97|0|84|0|-975|6825|80|QD|P|CHESTBAND S/N : C114
GAUGE # 29;ARTIFACT FROM DAS PRIOR TO TIME ZERO

25|CC|NA|CHBD|OT|SEC|RMM|4000|R.A. DENTON;MODEL:CHESTBAND;SN:114|08|APR|97|0|77|0|-975|6825|80|QD|P|CHESTBAND S/N : C114
GAUGE # 30;ARTIFACT FROM DAS PRIOR TO TIME ZERO

26|CC|NA|CHBD|OT|SEC|RMM|4000|R.A. DENTON;MODEL:CHESTBAND;SN:114|08|APR|97|0|82|0|-975|6825|80|QD|P|CHESTBAND S/N : C114
GAUGE # 31;ARTIFACT FROM DAS PRIOR TO TIME ZERO

27|CC|NA|CHBD|OT|SEC|RMM|4000|R.A. DENTON;MODEL:CHESTBAND;SN:114|08|APR|97|0|82|0|-975|6825|80|QD|P|CHESTBAND S/N : C114
GAUGE # 32;ARTIFACT FROM DAS PRIOR TO TIME ZERO

28|CC|NA|CHBD|OT|SEC|RMM|4000|R.A. DENTON;MODEL:CHESTBAND;SN:114|08|APR|97|0|80|0|-975|6825|80|AM|P|CHESTBAND S/N : C114
GAUGE # 34

29|CC|NA|CHBD|OT|SEC|RMM|4000|R.A. DENTON;MODEL:CHESTBAND;SN:114|08|APR|97|0|79|0|-975|6825|80|AM|P|CHESTBAND S/N : C114
GAUGE # 35

30|CC|NA|CHBD|OT|SEC|RMM|4000|R.A. DENTON;MODEL:CHESTBAND;SN:114|08|APR|97|0|83|0|-975|6825|80|AM|P|CHESTBAND S/N : C114
GAUGE # 36

31|CC|NA|CHBD|OT|SEC|RMM|4000|R.A. DENTON;MODEL:CHESTBAND;SN:114|08|APR|97|0|80|0|-975|6825|80|AM|P|CHESTBAND S/N : C114
GAUGE # 38

32|CC|NA|CHBD|OT|SEC|RMM|4000|R.A. DENTON;MODEL:CHESTBAND;SN:114|08|APR|97|0|83|0|-975|6825|80|AM|P|CHESTBAND S/N : C114
GAUGE # 39

33|CC|NA|CHBD|OT|SEC|RMM|4000|R.A. DENTON;MODEL:CHESTBAND;SN:107|11|NOV|98|0|79|0|-975|6825|80|AM|P|CHESTBAND S/N : C107
GAUGE # 01

34|CC|NA|CHBD|OT|SEC|RMM|4000|R.A. DENTON;MODEL:CHESTBAND;SN:107|11|NOV|98|0|73|0|-975|6825|80|AM|P|CHESTBAND S/N : C107
GAUGE # 02

35|CC|NA|CHBD|OT|SEC|RMM|4000|R.A. DENTON;MODEL:CHESTBAND;SN:107|11|NOV|98|0|173|0|-975|6825|80|AM|P|CHESTBAND S/N : C107
GAUGE # 03

36|CC|NA|CHBD|OT|SEC|RMM|4000|R.A. DENTON;MODEL:CHESTBAND;SN:107|11|NOV|98|0|73|0|-975|6825|80|AM|P|CHESTBAND S/N : C107
GAUGE # 04

37|CC|NA|CHBD|OT|SEC|RMM|4000|R.A. DENTON;MODEL:CHESTBAND;SN:107|11|NOV|98|0|82|0|-975|6825|80|AM|P|CHESTBAND S/N : C107
GAUGE # 05

38|CC|NA|CHBD|OT|SEC|RMM|4000|R.A. DENTON;MODEL:CHESTBAND;SN:107|11|NOV|98|0|78|0|-975|6825|80|AM|P|CHESTBAND S/N : C107
GAUGE # 06

39|CC|NA|CHBD|OT|SEC|RMM|4000|R.A. DENTON;MODEL:CHESTBAND;SN:107|11|NOV|98|0|76|0|-975|6825|80|AM|P|CHESTBAND S/N : C107
GAUGE # 07

40|CC|NA|CHBD|OT|SEC|RMM|4000|R.A. DENTON;MODEL:CHESTBAND;SN:107|11|NOV|98|0|169|0|-975|6825|80|AM|P|CHESTBAND S/N : C107
GAUGE # 09

41|CC|NA|CHBD|OT|SEC|RMM|4000|R.A. DENTON;MODEL:CHESTBAND;SN:107|11/NOV/98|070|0|-975|6825|80|AM|P|CHESTBAND S/N : C107 GAUGE # 10

42|CC|NA|CHBD|OT|SEC|RMM|4000|R.A. DENTON;MODEL:CHESTBAND;SN:107|11/NOV/98|084|0|-975|6825|80|AM|P|CHESTBAND S/N : C107 GAUGE # 11

43|CC|NA|CHBD|OT|SEC|RMM|4000|R.A. DENTON;MODEL:CHESTBAND;SN:107|11/NOV/98|081|0|-975|6825|80|AM|P|CHESTBAND S/N : C107 GAUGE # 12

44|CC|NA|CHBD|OT|SEC|RMM|4000|R.A. DENTON;MODEL:CHESTBAND;SN:107|11/NOV/98|080|0|-975|6825|80|AM|P|CHESTBAND S/N : C107 GAUGE # 13

45|CC|NA|CHBD|OT|SEC|RMM|4000|R.A. DENTON;MODEL:CHESTBAND;SN:107|11/NOV/98|078|0|-975|6825|80|AM|P|CHESTBAND S/N : C107 GAUGE # 14

46|CC|NA|CHBD|OT|SEC|RMM|4000|R.A. DENTON;MODEL:CHESTBAND;SN:107|11/NOV/98|081|0|-975|6825|80|AM|P|CHESTBAND S/N : C107 GAUGE # 15

47|CC|NA|CHBD|OT|SEC|RMM|4000|R.A. DENTON;MODEL:CHESTBAND;SN:107|11/NOV/98|072|0|-975|6825|80|AM|P|CHESTBAND S/N : C107 GAUGE # 16

48|CC|NA|CHBD|OT|SEC|RMM|4000|R.A. DENTON;MODEL:CHESTBAND;SN:107|11/NOV/98|085|0|-975|6825|80|QD|P|CHESTBAND S/N : C107 GAUGE # 17;SPIKE IN DATA PRIOR TO TIME ZERO

49|CC|NA|CHBD|OT|SEC|RMM|4000|R.A. DENTON;MODEL:CHESTBAND;SN:107|11/NOV/98|078|0|-975|6825|80|AM|P|CHESTBAND S/N : C107 GAUGE # 18

50|CC|NA|CHBD|OT|SEC|RMM|4000|R.A. DENTON;MODEL:CHESTBAND;SN:107|11/NOV/98|078|0|-975|6825|80|AM|P|CHESTBAND S/N : C107 GAUGE # 19

51|CC|NA|CHBD|OT|SEC|RMM|4000|R.A. DENTON;MODEL:CHESTBAND;SN:107|11/NOV/98|081|0|-975|6825|80|AM|P|CHESTBAND S/N : C107 GAUGE # 20

52|CC|NA|CHBD|OT|SEC|RMM|4000|R.A. DENTON;MODEL:CHESTBAND;SN:107|11/NOV/98|089|0|-975|6825|80|AM|P|CHESTBAND S/N : C107 GAUGE # 21

53|CC|NA|CHBD|OT|SEC|RMM|4000|R.A. DENTON;MODEL:CHESTBAND;SN:107|11/NOV/98|0274|0|-975|6825|80|AM|P|CHESTBAND S/N : C107 GAUGE # 22

54|CC|NA|CHBD|OT|SEC|RMM|4000|R.A. DENTON;MODEL:CHESTBAND;SN:107|11/NOV/98|085|0|-975|6825|80|AM|P|CHESTBAND S/N : C107 GAUGE # 23

55|CC|NA|CHBD|OT|SEC|RMM|4000|R.A. DENTON;MODEL:CHESTBAND;SN:107|11/NOV/98|078|0|-975|6825|80|AM|P|CHESTBAND S/N : C107 GAUGE # 24

56|CC|NA|CHBD|OT|SEC|RMM|4000|R.A. DENTON;MODEL:CHESTBAND;SN:107|11/NOV/98|078|0|-975|6825|80|AM|P|CHESTBAND S/N : C107 GAUGE # 25

57|CC|NA|CHBD|OT|SEC|RMM|4000|R.A. DENTON;MODEL:CHESTBAND;SN:107|11/NOV/98|072|0|-975|6825|80|AM|P|CHESTBAND S/N : C107 GAUGE # 26

58|CC|NA|CHBD|OT|SEC|RMM|4000|R.A. DENTON;MODEL:CHESTBAND;SN:107|11/NOV/98|089|0|-975|6825|80|MN|P|CHESTBAND S/N : C107 GAUGE # 27;BAD GAUGE

59|CC|NA|CHBD|OT|SEC|RMM|4000|R.A. DENTON;MODEL:CHESTBAND;SN:107|11/NOV/98|0137|0|-975|6825|80|AM|P|CHESTBAND S/N : C107 GAUGE # 28

60|CC|NA|CHBD|OT|SEC|RMM|4000|R.A. DENTON;MODEL:CHESTBAND;SN:107|11/NOV/98|085|0|-975|6825|80|AM|P|CHESTBAND S/N : C107 GAUGE # 29

61|CC|NA|CHBD|OT|SEC|RMM|4000|R.A. DENTON;MODEL:CHESTBAND;SN:107|11/NOV/98|082|0|-975|6825|80|AM|P|CHESTBAND S/N : C107 GAUGE # 30

62|CC|NA|CHBD|OT|SEC|RMM|4000|R.A. DENTON;MODEL:CHESTBAND;SN:107|11/NOV/98|078|0|-975|6825|80|AM|P|CHESTBAND S/N : C107 GAUGE # 31

63|CC|NA|CHBD|OT|SEC|RMM|4000|R.A. DENTON;MODEL:CHESTBAND;SN:107|11/NOV/98|073|0|-975|6825|80|AM|P|CHESTBAND S/N : C107 GAUGE # 32

64|CC|NA|CHBD|OT|SEC|RMM|4000|R.A. DENTON;MODEL:CHESTBAND;SN:107|11/NOV/98|093|0|-975|6825|80|QD|P|CHESTBAND S/N : C107 GAUGE # 33;SPIKE IN DATA

65|CC|NA|CHBD|OT|SEC|RMM|4000|R.A. DENTON;MODEL:CHESTBAND;SN:107|11/NOV/98|0131|0|-975|6825|80|MN|P|CHESTBAND S/N : C107 GAUGE # 34;BAD GAUGE

66|CC|NA|CHBD|OT|SEC|RMM|4000|R.A. DENTON;MODEL:CHESTBAND;SN:107|11/NOV/98|087|0|-975|6825|80|AM|P|CHESTBAND S/N : C107 GAUGE # 35

67|CC|NA|CHBD|OT|SEC|RMM|4000|R.A. DENTON;MODEL:CHESTBAND;SN:107|11/NOV/98|077|0|-975|6825|80|AM|P|CHESTBAND S/N : C107 GAUGE # 36

68|CC|NA|CHBD|OT|SEC|RMM|4000|R.A. DENTON;MODEL:CHESTBAND;SN:107|11/NOV/98|076|0|-975|6825|80|AM|P|CHESTBAND S/N : C107 GAUGE # 37

69|CC|NA|CHBD|OT|SEC|RMM|4000|R.A. DENTON;MODEL:CHESTBAND;SN:107|11/NOV/98|079|0|-975|6825|80|AM|P|CHESTBAND S/N : C107 GAUGE # 39

70|CC|NA|CHBD|OT|SEC|RMM|4000|R.A. DENTON;MODEL:CHESTBAND;SN:107|11/NOV/98|0152|0|-975|6825|80|AM|P|CHESTBAND S/N : C107 GAUGE # 40

71|CC|NA|CHBD|OT|SEC|RMM|4000|R.A. DENTON;MODEL:CHESTBAND;SN:132|08/APR/97|070|0|-975|6825|80|MN|P|CHESTBAND S/N : C132 GAUGE # 01;BAD GAUGE

72|CC|NA|CHBD|OT|SEC|RMM|4000|R.A. DENTON;MODEL:CHESTBAND;SN:132|08|APR|97|0|70|0|-975|6825|80|AM|P|CHESTBAND S/N : C132 GAUGE # 02

73|CC|NA|CHBD|OT|SEC|RMM|4000|R.A. DENTON;MODEL:CHESTBAND;SN:132|08|APR|97|0|72|0|-975|6825|80|AM|P|CHESTBAND S/N : C132 GAUGE # 03

74|CC|NA|CHBD|OT|SEC|RMM|4000|R.A. DENTON;MODEL:CHESTBAND;SN:132|08|APR|97|0|73|0|-975|6825|80|AM|P|CHESTBAND S/N : C132 GAUGE # 04

75|CC|NA|CHBD|OT|SEC|RMM|4000|R.A. DENTON;MODEL:CHESTBAND;SN:132|08|APR|97|0|70|0|-975|6825|80|MN|P|CHESTBAND S/N : C132 GAUGE # 05;BAD GAUGE

76|CC|NA|CHBD|OT|SEC|RMM|4000|R.A. DENTON;MODEL:CHESTBAND;SN:132|08|APR|97|0|139|0|-975|6825|80|AM|P|CHESTBAND S/N : C132 GAUGE # 06

77|CC|NA|CHBD|OT|SEC|RMM|4000|R.A. DENTON;MODEL:CHESTBAND;SN:132|08|APR|97|0|140|0|-975|6825|80|AM|P|CHESTBAND S/N : C132 GAUGE # 07

78|CC|NA|CHBD|OT|SEC|RMM|4000|R.A. DENTON;MODEL:CHESTBAND;SN:132|08|APR|97|0|70|0|-975|6825|80|AM|P|CHESTBAND S/N : C132 GAUGE # 08

79|CC|NA|CHBD|OT|SEC|RMM|4000|R.A. DENTON;MODEL:CHESTBAND;SN:132|08|APR|97|0|72|0|-975|6825|80|AM|P|CHESTBAND S/N : C132 GAUGE # 09

80|CC|NA|CHBD|OT|SEC|RMM|4000|R.A. DENTON;MODEL:CHESTBAND;SN:132|08|APR|97|0|70|0|-975|6825|80|AM|P|CHESTBAND S/N : C132 GAUGE # 10

81|CC|NA|CHBD|OT|SEC|RMM|4000|R.A. DENTON;MODEL:CHESTBAND;SN:132|08|APR|97|0|72|0|-975|6825|80|AM|P|CHESTBAND S/N : C132 GAUGE # 11

82|CC|NA|CHBD|OT|SEC|RMM|4000|R.A. DENTON;MODEL:CHESTBAND;SN:132|08|APR|97|0|70|0|-975|6825|80|AM|P|CHESTBAND S/N : C132 GAUGE # 12

83|CC|NA|CHBD|OT|SEC|RMM|4000|R.A. DENTON;MODEL:CHESTBAND;SN:132|08|APR|97|0|70|0|-975|6825|80|AM|P|CHESTBAND S/N : C132 GAUGE # 13

84|CC|NA|CHBD|OT|SEC|RMM|4000|R.A. DENTON;MODEL:CHESTBAND;SN:132|08|APR|97|0|70|0|-975|6825|80|AM|P|CHESTBAND S/N : C132 GAUGE # 14

85|CC|NA|CHBD|OT|SEC|RMM|4000|R.A. DENTON;MODEL:CHESTBAND;SN:132|08|APR|97|0|144|0|-975|6825|80|AM|P|CHESTBAND S/N : C132 GAUGE # 15

86|CC|NA|CHBD|OT|SEC|RMM|4000|R.A. DENTON;MODEL:CHESTBAND;SN:132|08|APR|97|0|70|0|-975|6825|80|AM|P|CHESTBAND S/N : C132 GAUGE # 16

87|CC|NA|CHBD|OT|SEC|RMM|4000|R.A. DENTON;MODEL:CHESTBAND;SN:132|08|APR|97|0|72|0|-975|6825|80|AM|P|CHESTBAND S/N : C132 GAUGE # 17

88|CC|NA|CHBD|OT|SEC|RMM|4000|R.A. DENTON;MODEL:CHESTBAND;SN:132|08|APR|97|0|70|0|-975|6825|80|AM|P|CHESTBAND S/N : C132 GAUGE # 18

89|CC|NA|CHBD|OT|SEC|RMM|4000|R.A. DENTON;MODEL:CHESTBAND;SN:132|08|APR|97|0|73|0|-975|6825|80|AM|P|CHESTBAND S/N : C132 GAUGE # 19

90|CC|NA|CHBD|OT|SEC|RMM|4000|R.A. DENTON;MODEL:CHESTBAND;SN:132|08|APR|97|0|70|0|-975|6825|80|AM|P|CHESTBAND S/N : C132 GAUGE # 20

91|CC|NA|CHBD|OT|SEC|RMM|4000|R.A. DENTON;MODEL:CHESTBAND;SN:132|08|APR|97|0|73|0|-975|6825|80|AM|P|CHESTBAND S/N : C132 GAUGE # 21

92|CC|NA|CHBD|OT|SEC|RMM|4000|R.A. DENTON;MODEL:CHESTBAND;SN:132|08|APR|97|0|72|0|-975|6825|80|AM|P|CHESTBAND S/N : C132 GAUGE # 22

93|CC|NA|CHBD|OT|SEC|RMM|4000|R.A. DENTON;MODEL:CHESTBAND;SN:132|08|APR|97|0|70|0|-975|6825|80|AM|P|CHESTBAND S/N : C132 GAUGE # 23

94|CC|NA|CHBD|OT|SEC|RMM|4000|R.A. DENTON;MODEL:CHESTBAND;SN:132|08|APR|97|0|71|0|-975|6825|80|AM|P|CHESTBAND S/N : C132 GAUGE # 24

95|CC|NA|CHBD|OT|SEC|RMM|4000|R.A. DENTON;MODEL:CHESTBAND;SN:132|08|APR|97|0|72|0|-975|6825|80|AM|P|CHESTBAND S/N : C132 GAUGE # 25

96|CC|NA|CHBD|OT|SEC|RMM|4000|R.A. DENTON;MODEL:CHESTBAND;SN:132|08|APR|97|0|77|0|-975|6825|80|AM|P|CHESTBAND S/N : C132 GAUGE # 26

97|CC|NA|CHBD|OT|SEC|RMM|4000|R.A. DENTON;MODEL:CHESTBAND;SN:132|08|APR|97|0|72|0|-975|6825|80|AM|P|CHESTBAND S/N : C132 GAUGE # 27

98|CC|NA|CHBD|OT|SEC|RMM|4000|R.A. DENTON;MODEL:CHESTBAND;SN:132|08|APR|97|0|73|0|-975|6825|80|AM|P|CHESTBAND S/N : C132 GAUGE # 28

99|CC|NA|CHBD|OT|SEC|RMM|4000|R.A. DENTON;MODEL:CHESTBAND;SN:132|08|APR|97|0|143|0|-975|6825|80|AM|P|CHESTBAND S/N : C132 GAUGE # 29

100|CC|NA|CHBD|OT|SEC|RMM|4000|R.A. DENTON;MODEL:CHESTBAND;SN:132|08|APR|97|0|277|0|-975|6825|80|AM|P|CHESTBAND S/N : C132 GAUGE # 30

101|CC|NA|CHBD|OT|SEC|RMM|4000|R.A. DENTON;MODEL:CHESTBAND;SN:132|08|APR|97|0|70|0|-975|6825|80|AM|P|CHESTBAND S/N : C132 GAUGE # 31

102|CC|NA|CHBD|OT|SEC|RMM|4000|R.A. DENTON;MODEL:CHESTBAND;SN:132|08|APR|97|0|73|0|-975|6825|80|AM|P|CHESTBAND S/N : C132 GAUGE # 32

- 103|CC|NA|CHBD|OT|SEC|RMM|4000|R.A. DENTON;MODEL:CHESTBAND;SN:132|08|APR|97|0|70|0|-975|6825|80|AM|P|CHESTBAND S/N : C132 GAUGE # 33
- 104|CC|NA|CHBD|OT|SEC|RMM|4000|R.A. DENTON;MODEL:CHESTBAND;SN:132|08|APR|97|0|139|0|-975|6825|80|AM|P|CHESTBAND S/N : C132 GAUGE # 34
- 105|CC|NA|CHBD|OT|SEC|RMM|4000|R.A. DENTON;MODEL:CHESTBAND;SN:132|08|APR|97|0|70|0|-975|6825|80|AM|P|CHESTBAND S/N : C132 GAUGE # 35
- 106|CC|NA|CHBD|OT|SEC|RMM|4000|R.A. DENTON;MODEL:CHESTBAND;SN:132|08|APR|97|0|72|0|-975|6825|80|AM|P|CHESTBAND S/N : C132 GAUGE # 36
- 107|CC|NA|CHBD|OT|SEC|RMM|4000|R.A. DENTON;MODEL:CHESTBAND;SN:132|08|APR|97|0|72|0|-975|6825|80|AM|P|CHESTBAND S/N : C132 GAUGE # 37
- 108|CC|NA|CHBD|OT|SEC|RMM|4000|R.A. DENTON;MODEL:CHESTBAND;SN:132|08|APR|97|0|80|0|-975|6825|80|QD|P|CHESTBAND S/N : C132 GAUGE # 38;ARTIFACT FROM DAS PRIOR TO TIME ZERO
- 109|CC|NA|CHBD|OT|SEC|RMM|4000|R.A. DENTON;MODEL:CHESTBAND;SN:132|08|APR|97|0|80|0|-975|6825|80|QD|P|CHESTBAND S/N : C132 GAUGE # 39;ARTIFACT FROM DAS PRIOR TO TIME ZERO
- 110|CC|NA|CHBD|OT|SEC|RMM|4000|R.A. DENTON;MODEL:CHESTBAND;SN:132|08|APR|97|0|77|0|-975|6825|80|QD|P|CHESTBAND S/N : C132 GAUGE # 40;SPIKE IN DATA
- 111|AC|NA|RBLU|YL|SEC|G'S|4000|ENTRAN;MODEL:EGE-73BQ-2000F;SN:98G98E07-Z19|25|AUG|98|2000|26|0|-975|6825|80|AM|P|ACCELEROMETER ATTACHED TO 3RD RIB
- 112|AC|NA|RBLU|YL|SEC|G'S|4000|ENTRAN;MODEL:EGE-73BQ-2000F;SN:98G98F18-Z08|07|MAY|99|2000|24|0|-975|6825|80|AM|P|ACCELEROMETER ATTACHED TO 7TH RIB
- 113|AC|NA|SNMU|XL|SEC|G'S|4000|ENTRAN;MODEL:EGE-73BQ-2000F;SN:98G98E07-Z17|25|AUG|98|2000|12|0|-975|6825|80|NO|P|BAD GAUGE
- 114|AC|NA|HDOT|YL|SEC|G'S|4000|ENTRAN;MODEL:EGE-73BQ-2000F;SN:98G98F18-Z09|07|MAY|99|2000|12|0|-975|6825|80|AM|P|NO COMMENTS
- 115|AC|NA|HDOT|XL|SEC|G'S|4000|ENTRAN;MODEL:EGE-73BQ-2000F;SN:98G98D22-Z03|06|MAY|99|2000|13|0|-975|6825|80|AM|P|NO COMMENTS
- 116|AC|NA|HDOT|ZL|SEC|G'S|4000|ENTRAN;MODEL:EGE-73BQ-2000F;SN:98G98D22-Z04|06|MAY|99|2000|22|0|-975|6825|80|AM|P|NO COMMENTS
- 117|LC|NA|OTHR|YG|SEC|NWT|3125|INTERFACE INC;MODEL:1210AO-5K-B;SN:74720|07|APR|99|22241|58|0|-1679|8388|80|AM|P|THORAX LOAD WALL
- 118|LC|NA|OTHR|YG|SEC|NWT|3125|INTERFACE INC;MODEL:1210AO-5K-B;SN:74726|07|APR|99|22241|58|0|-1679|8388|80|AM|P|ABDOMEN LOAD WALL
- 119|LC|NA|OTHR|YG|SEC|NWT|3125|INTERFACE INC;MODEL:1210AO-5K-B;SN:71100|07|APR|99|22241|58|0|-1679|8388|80|AM|P|ABDOMEN LOAD WALL
- 120|LC|NA|OTHR|YG|SEC|NWT|3125|INTERFACE INC;MODEL:1210AO-5K-B;SN:74764|07|APR|99|22241|58|0|-1679|8388|80|AM|P|THORAX LOAD WALL
- 121|LC|NA|OTHR|YG|SEC|NWT|3125|INTERFACE INC;MODEL:1210AO-5K-B;SN:71103|07|APR|99|22241|80|0|-1679|8388|80|AM|P|PELVIS LOAD WALL
- 122|LC|NA|OTHR|YG|SEC|NWT|3125|INTERFACE INC;MODEL:1210AO-5K-B;SN:74753|07|APR|99|22241|80|0|-1679|8388|80|AM|P|PELVIS LOAD WALL
- 123|LC|NA|OTHR|YG|SEC|NWT|3125|INTERFACE INC;MODEL:1210AO-5K-B;SN:74756|07|APR|99|22241|80|0|-1679|8388|80|AM|P|PELVIS LOAD WALL
- 124|LC|NA|OTHR|YG|SEC|NWT|3125|INTERFACE INC;MODEL:1210AO-5K-B;SN:74738|07|APR|99|22241|80|0|-1679|8388|80|AM|P|PELVIS LOAD WALL
- 125|LC|NA|OTHR|YG|SEC|NWT|3125|INTERFACE INC;MODEL:1210AO-2K;SN:74583|08|MAY|94|8896|98|0|-1679|8388|80|AM|P|LEG LOAD WALL
- 126|LC|NA|OTHR|YG|SEC|NWT|3125|INTERFACE INC;MODEL:1210AO-2K;SN:75041|08|MAY|94|8896|98|0|-1679|8388|80|AM|P|LEG LOAD WALL
- 127|LC|NA|OTHR|YG|SEC|NWT|3125|INTERFACE INC;MODEL:1210AO-2K;SN:75045|08|MAY|94|8896|98|0|-1679|8388|80|AM|P|LEG LOAD WALL
- 128|AC|NA|SPNU|XL|SEC|G'S|3125|ENTRAN;MODEL:EGE-73BQ-2000F;SN:98G98E07-Z15|07|MAY|99|2000|10|0|-1679|8388|80|AM|P|SPINE UPPER X-ACCEL, ACCELEROMETER ATTACHED TO T4
- 129|AC|NA|SPNU|YL|SEC|G'S|3125|ENTRAN;MODEL:EGE-73BQ-2000F;SN:98G98E07-Z07|06|MAY|99|2000|10|0|-1679|8388|80|AM|P|SPINE UPPER Y-ACCEL, ACCELEROMETER ATTACHED TO T4
- 130|AC|NA|SPNU|ZL|SEC|G'S|3125|ENTRAN;MODEL:EGE-73BQ-2000F;SN:98G98E07-Z09|06|MAY|99|2000|10|0|-1679|8388|80|AM|P|SPINE UPPER Z-ACCEL, ACCELEROMETER ATTACHED TO T4
- 131|AC|NA|PVSA|XL|SEC|G'S|3125|ENTRAN;MODEL:EGE-73BQ-2000B;SN:98B98A26-D07|25|FEB|98|2000|15|0|-1679|8388|80|AM|P|PELVIS-X ACC
- 132|AC|NA|PVSA|YL|SEC|G'S|3125|ENTRAN;MODEL:EGE-73BQ-2000B;SN:98B98A26-D06|25|FEB|98|2000|15|0|-1679|8388|80|AM|P|PELVIS-Y ACC
- 133|AC|NA|PVSA|ZL|SEC|G'S|3125|ENTRAN;MODEL:EGE-73BQ-2000B;SN:98B98A26-D12|25|FEB|98|2000|15|0|-1679|8388|80|AM|P|PELVIS-Z ACC
- 134|AC|NA|OTHR|YG|SEC|G'S|3125|ENTRAN;MODEL:EGE-73BQ-2000F;SN:98G98E07-Z20|07|MAY|99|2000|15|0|-1679|8388|80|AM|P|LOADWALL ACC
- 135|AC|NA|SPNL|YL|SEC|G'S|3125|ENTRAN;MODEL:EGE-72B1Q*-2000;SN:93B93B18-V08|03|OCT|97|2000|15|0|-1679|8388|80|AM|P|LOWER SPINE Y-ACCEL, ACCELEROMETER ATTACHED TO T-11
- 136|AC|NA|SPNL|XL|SEC|G'S|3125|ENTRAN;MODEL:EGE-72B1Q*-2000;SN:93B93B18-V12|03|OCT|97|2000|15|0|-1679|8388|80|AM|P|LOWER SPINE X-ACCEL, ACCELEROMETER ATTACHED TO T-11
- 137|AC|NA|SPNL|ZL|SEC|G'S|3125|ENTRAN;MODEL:EGE-73BE0-2000F;SN:95L95L09-B01|03|OCT|97|2000|15|0|-1679|8388|80|AM|P|LOWER SPINE Z-ACCEL, ACCELEROMETER ATTACHED TO T-11
- 138|VL|NA|SLED|YL|SEC|KPH|4000|MICROSWITCH|01|SEP|90|10|80|0|-975|4380|80|CM|P|COMPUTED VELOCITY OF CURVE 1
- 139|AC|NA|SLED|YL|SEC|KPH|4000|ENTRAN;MODEL:EGE-73BME0-750F;SN:96D96D13-B08|23|JUL|99|750|14|0|-975|6825|80|CM|R|COMPUTED VELOCITY AS INTEGRATION OF CURVE 2

140|AC|NA|SLED|YL|SEC|KPH|4000|ENTRAN;MODEL:EGE-73BME0-100DF;SN:96D96D13-B01|07/NOV/96|100|34|0|-975|6825|80|CM|P|COMPUTED VELOCITY AS INTEGRATION OF CURVE 3

141|LC|NA|OTHR|YG|SEC|NWT|3125|INTERFACE INC;MODEL:1210AO-5K-B|07/APR/99|22241|58|0|-1679|8388|80|CM|P|SUMMATION OF CURVE NUMBERS : 117 120;THORAX LOADWALL

142|LC|NA|OTHR|YG|SEC|NWT|3125|INTERFACE INC;MODEL:1210AO-5K-B|07/APR/99|22241|58|0|-1679|8388|80|CM|P|SUMMATION OF CURVE NUMBERS : 118 119;ABDOMEN LOADWALL

143|LC|NA|OTHR|YG|SEC|NWT|3125|INTERFACE INC;MODEL:1210AO-5K-B|07/APR/99|22241|80|0|-1679|8388|80|CM|P|SUMMATION OF CURVE NUMBERS : 121 122 123 124;PELVIC LOADWALL

144|LC|NA|OTHR|YG|SEC|NWT|3125|INTERFACE INC;MODEL:1210AO-2K|08/MAR/94|8896|98|0|-1679|8388|80|CM|P|SUMMATION OF CURVE NUMBERS : 125 126 127;LEG LOADWALL

---- CHEST BAND ----

1|251|375|1054|8|8|4|0|19|6|29|RIB 4 CHESTBAND (UPPER BAND)

2|305|356|1041|3|3|33|13|52|0|38|ABDOMEN CHESTBAND (LOWER BAND)

3|289|384|1010|6|6|72|0|92|3|40|RIB 8 CHESTBAND (MIDDLE BAND)

---- CHEST BAND GAUGE ----

1|1|76|4|CHESTBAND S/N : C114 GAUGE # 01;ARTIFACT FROM DAS PRIOR TO TIME ZERO

1|2|152|5|CHESTBAND S/N : C114 GAUGE # 04;ARTIFACT FROM DAS PRIOR TO TIME ZERO

1|3|178|6|CHESTBAND S/N : C114 GAUGE # 05

1|4|229|7|CHESTBAND S/N : C114 GAUGE # 07

1|5|254|8|CHESTBAND S/N : C114 GAUGE # 08;BAD GAUGE

1|6|279|9|CHESTBAND S/N : C114 GAUGE # 09

1|7|305|10|CHESTBAND S/N : C114 GAUGE # 10

1|8|356|11|CHESTBAND S/N : C114 GAUGE # 12;BAD GAUGE

1|9|381|12|CHESTBAND S/N : C114 GAUGE # 13

1|10|406|13|CHESTBAND S/N : C114 GAUGE # 14

1|11|432|14|CHESTBAND S/N : C114 GAUGE # 15

1|12|483|15|CHESTBAND S/N : C114 GAUGE # 17

1|13|508|16|CHESTBAND S/N : C114 GAUGE # 18

1|14|533|17|CHESTBAND S/N : C114 GAUGE # 19

1|15|559|18|CHESTBAND S/N : C114 GAUGE # 20

1|16|610|19|CHESTBAND S/N : C114 GAUGE # 22

1|17|660|20|CHESTBAND S/N : C114 GAUGE # 24

1|18|686|21|CHESTBAND S/N : C114 GAUGE # 25

1|19|711|22|CHESTBAND S/N : C114 GAUGE # 26

1|20|737|23|CHESTBAND S/N : C114 GAUGE # 27

1|21|787|24|CHESTBAND S/N : C114 GAUGE # 29;ARTIFACT FROM DAS PRIOR TO TIME ZERO

1|22|813|25|CHESTBAND S/N : C114 GAUGE # 30;ARTIFACT FROM DAS PRIOR TO TIME ZERO

1|23|838|26|CHESTBAND S/N : C114 GAUGE # 31;ARTIFACT FROM DAS PRIOR TO TIME ZERO

1|24|864|27|CHESTBAND S/N : C114 GAUGE # 32;ARTIFACT FROM DAS PRIOR TO TIME ZERO

1|25|914|28|CHESTBAND S/N : C114 GAUGE # 34

1|26|940|29|CHESTBAND S/N : C114 GAUGE # 35

1|27|965|30|CHESTBAND S/N : C114 GAUGE # 36

1|28|1016|31|CHESTBAND S/N : C114 GAUGE # 38

1|29|1041|32|CHESTBAND S/N : C114 GAUGE # 39

2|1|76|33|CHESTBAND S/N : C107 GAUGE # 01

2|2|102|34|CHESTBAND S/N : C107 GAUGE # 02

2|3|127|35|CHESTBAND S/N : C107 GAUGE # 03

2|4|152|36|CHESTBAND S/N : C107 GAUGE # 04

2|5|178|37|CHESTBAND S/N : C107 GAUGE # 05

2|6|203|38|CHESTBAND S/N : C107 GAUGE # 06

2|7|229|39|CHESTBAND S/N : C107 GAUGE # 07

2|8|279|40|CHESTBAND S/N : C107 GAUGE # 09

2|9|305|41|CHESTBAND S/N : C107 GAUGE # 10

2|10|330|42|CHESTBAND S/N : C107 GAUGE # 11
2|11|356|43|CHESTBAND S/N : C107 GAUGE # 12
2|12|381|44|CHESTBAND S/N : C107 GAUGE # 13
2|13|406|45|CHESTBAND S/N : C107 GAUGE # 14
2|14|432|46|CHESTBAND S/N : C107 GAUGE # 15
2|15|457|47|CHESTBAND S/N : C107 GAUGE # 16
2|16|483|48|CHESTBAND S/N : C107 GAUGE # 17;SPIKE IN DATA PRIOR TO TIME ZERO
2|17|508|49|CHESTBAND S/N : C107 GAUGE # 18
2|18|533|50|CHESTBAND S/N : C107 GAUGE # 19
2|19|559|51|CHESTBAND S/N : C107 GAUGE # 20
2|20|584|52|CHESTBAND S/N : C107 GAUGE # 21
2|21|610|53|CHESTBAND S/N : C107 GAUGE # 22
2|22|635|54|CHESTBAND S/N : C107 GAUGE # 23
2|23|660|55|CHESTBAND S/N : C107 GAUGE # 24
2|24|686|56|CHESTBAND S/N : C107 GAUGE # 25
2|25|711|57|CHESTBAND S/N : C107 GAUGE # 26
2|26|737|58|CHESTBAND S/N : C107 GAUGE # 27;BAD GAUGE
2|27|762|59|CHESTBAND S/N : C107 GAUGE # 28
2|28|787|60|CHESTBAND S/N : C107 GAUGE # 29
2|29|813|61|CHESTBAND S/N : C107 GAUGE # 30
2|30|838|62|CHESTBAND S/N : C107 GAUGE # 31
2|31|864|63|CHESTBAND S/N : C107 GAUGE # 32
2|32|889|64|CHESTBAND S/N : C107 GAUGE # 33;SPIKE IN DATA
2|33|914|65|CHESTBAND S/N : C107 GAUGE # 34;BAD GAUGE
2|34|940|66|CHESTBAND S/N : C107 GAUGE # 35
2|35|965|67|CHESTBAND S/N : C107 GAUGE # 36
2|36|991|68|CHESTBAND S/N : C107 GAUGE # 37
2|37|1041|69|CHESTBAND S/N : C107 GAUGE # 39
2|38|1067|70|CHESTBAND S/N : C107 GAUGE # 40
3|1|76|71|CHESTBAND S/N : C132 GAUGE # 01;BAD GAUGE
3|2|102|72|CHESTBAND S/N : C132 GAUGE # 02
3|3|127|73|CHESTBAND S/N : C132 GAUGE # 03
3|4|152|74|CHESTBAND S/N : C132 GAUGE # 04
3|5|178|75|CHESTBAND S/N : C132 GAUGE # 05;BAD GAUGE
3|6|203|76|CHESTBAND S/N : C132 GAUGE # 06
3|7|229|77|CHESTBAND S/N : C132 GAUGE # 07
3|8|254|78|CHESTBAND S/N : C132 GAUGE # 08
3|9|279|79|CHESTBAND S/N : C132 GAUGE # 09
3|10|305|80|CHESTBAND S/N : C132 GAUGE # 10
3|11|330|81|CHESTBAND S/N : C132 GAUGE # 11
3|12|356|82|CHESTBAND S/N : C132 GAUGE # 12
3|13|381|83|CHESTBAND S/N : C132 GAUGE # 13
3|14|406|84|CHESTBAND S/N : C132 GAUGE # 14
3|15|432|85|CHESTBAND S/N : C132 GAUGE # 15
3|16|457|86|CHESTBAND S/N : C132 GAUGE # 16
3|17|483|87|CHESTBAND S/N : C132 GAUGE # 17
3|18|508|88|CHESTBAND S/N : C132 GAUGE # 18
3|19|533|89|CHESTBAND S/N : C132 GAUGE # 19
3|20|559|90|CHESTBAND S/N : C132 GAUGE # 20
3|21|584|91|CHESTBAND S/N : C132 GAUGE # 21
3|22|610|92|CHESTBAND S/N : C132 GAUGE # 22
3|23|635|93|CHESTBAND S/N : C132 GAUGE # 23

3|24|660|94|CHESTBAND S/N : C132 GAUGE # 24
3|25|686|95|CHESTBAND S/N : C132 GAUGE # 25
3|26|711|96|CHESTBAND S/N : C132 GAUGE # 26
3|27|737|97|CHESTBAND S/N : C132 GAUGE # 27
3|28|762|98|CHESTBAND S/N : C132 GAUGE # 28
3|29|787|99|CHESTBAND S/N : C132 GAUGE # 29
3|30|813|100|CHESTBAND S/N : C132 GAUGE # 30
3|31|838|101|CHESTBAND S/N : C132 GAUGE # 31
3|32|864|102|CHESTBAND S/N : C132 GAUGE # 32
3|33|889|103|CHESTBAND S/N : C132 GAUGE # 33
3|34|914|104|CHESTBAND S/N : C132 GAUGE # 34
3|35|940|105|CHESTBAND S/N : C132 GAUGE # 35
3|36|965|106|CHESTBAND S/N : C132 GAUGE # 36
3|37|991|107|CHESTBAND S/N : C132 GAUGE # 37
3|38|1016|108|CHESTBAND S/N : C132 GAUGE # 38;ARTIFACT FROM DAS PRIOR TO TIME ZERO
3|39|1041|109|CHESTBAND S/N : C132 GAUGE # 39;ARTIFACT FROM DAS PRIOR TO TIME ZERO
3|40|1067|110|CHESTBAND S/N : C132 GAUGE # 40;SPIKE IN DATA
---- END ----

2.1-3 Signal Data

Each subsequent file after the specification data file contains unfiltered, digitized measurement data collected from the sensors used in the tests. The order of the measurement files corresponds to the order of the instrumentation records in the instrumentation group specification records. The measurement files are made up of ASCII records of 1 data point each, delimited by a line feed character (ASCII decimal 10, hexadecimal \x0a, octal \012). If X-Y data - measurement data in which the independent X coordinate is non-uniformly incremental - is supplied then each record consists of 1 data point each with the X coordinate listed first, followed by a single tab character, followed by the associated Y coordinate, and ending with a line feed character.

The point specification will allow for any floating-point format, but the preferred format is the C format %12.5E. Thus, each Y-only record will be 12 characters wide (e.g. +1.23456E-01) and each X-Y record will be a maximum of 25 characters wide (e.g. +1.23456E-01<tab>-9.87654E+02). The maximum number of points for one channel is 110,000. There cannot be more than 10,000 data points prior to time zero nor more than 99,999 after time zero.

The name of the ASCII measurement data files should be the same given to the specification file described above (Entree for Windows file with extension .EV5) followed by a numeric file extension. The file extension should be the curve number of the curve contained in the file, padded on the left with zeroes to three characters, and should correspond to the curve number in the instrumentation record in the instrumentation specification group.

If the specification file is named TSTABC.EV5, and there are 35 measurement (curve) files, the measurement data files should be named TSTABC.001 through TSTABC.035.

| | | | |
|---------------|------------|------------|------------|
| Right: | TSTABC.001 | TSTABC.012 | TSTABC.101 |
| Wrong: | TSTABC.T0 | TSTABC.12 | TSTABCDAT |

Table 2-2 Measurement Data Filename Examples

2.1.3.1 Signal Data Example (Y value only)

-206786E-02
0.285321E-01
0.285321E-01
-.632679E-01
0.285321E-01
-.206786E-02
0.285321E-01
-.632679E-01
-.632679E-01
-.206786E-02
0.285321E-01
-.206786E-02
-.326679E-01
-.206786E-02
-.206786E-02
-.206786E-02
-.206786E-02
-.206786E-02
-.326679E-01
0.285321E-01

2.1.3.2 Signal Data Example (X and Y values)

| | |
|--------------|----------|
| -0.025000000 | 0.0 |
| -0.024875002 | 0.0 |
| -0.024750002 | -0.12266 |
| -0.024625001 | 0.12266 |
| -0.024500001 | 0.0 |
| -0.024375001 | -0.24532 |
| -0.024250000 | 0.0 |
| -0.024125000 | 0.0 |
| -0.024000000 | -0.12266 |
| -0.023875002 | 0.0 |
| -0.023750002 | 0.0 |
| -0.023625001 | 0.0 |
| -0.023500001 | 0.12266 |
| -0.023375000 | 0.0 |
| -0.023250000 | 0.0 |
| -0.023125000 | -0.12266 |
| -0.023000002 | 0.0 |
| -0.022875002 | 0.0 |
| -0.022750001 | 0.24532 |
| -0.022625001 | 0.0 |
| -0.022500000 | 0.0 |
| -0.022375000 | -0.12266 |
| -0.022250000 | -0.12266 |

2.2 General Test Information

The data elements defined below constitute the first test group, General Test Information.

2.2.1.1 VERNO — Version Number

(Version Number) — Coded Value, 2 characters, pre-defined

The number of this version of the NHTSA Test Reference Guide is a pre-assigned code (B5). This code should be chosen for all biomechanical tests.

2.2.1.2 TITLE — Contract or Study Title

(Title) — Free Text, maximum length 70 characters

TITLE is the title of the contract or study.

2.2.1.3 TSTOBJ — Test Objectives

(Test Objectives) — Free Text, maximum length 70 characters

TSTOBJ is a description of the purpose of the test.

2.2.1.4 TSTDAT — Test Date

(Test Date) — Date

TSTDAT is the date the test was performed.

2.2.1.5 TSTPRF — Test Performer

(Test Performer) — Coded Value, 3 characters

TSTPRF is the code for the name of the organization performing the test.

2.2.1.6 CONNO — Contract Number

(Contract Number) — Free Text, maximum length 17 characters

CONNO is the Department of Transportation contract number assigned by the sponsoring organization.

2.2.1.7 TSTREF — Test Reference Number

(Test Reference Number) — Free Text, maximum length 10 characters

TSTREF is an alphanumeric code number assigned to the test by the test performer.

2.2.1.8 TSTCFN — Test Configuration

(Test Configuration) — Coded Value, 3 characters

TSTCFN describes the test setup. If a vehicle body is used in a test, describe the make and model of the vehicle (without abbreviations) in TSTCOM.

2.2.1.9 TEMP — Ambient Temperature

(Ambient Temperature) — Bounded Integer, degrees Celsius, -99 to 99

TEMP is the temperature at the test location at the time of the test.

2.2.1.10 RECTYP — Type of Recorder

(Type of Recorder) — Coded Value, 3 characters

RECTYP is the type of data recorder being used in the test.

2.2.1.11 LINK — Data Link to Recorder

(Data Link to Recorder) — Coded Value, 3 characters

LINK is the type of connection from the transducer to the recorder.

2.2.1.12 CLSSPD — Closing Speed

(Closing Speed) — Bounded Real, kilometers per hour, 0 to 200.00

The test configuration determines CLSSPD. For a sled test, CLSSPD is the pre-impact speed of the sled; for a pendulum test, CLSSPD is the speed of the impactor; and so forth, from the occupant's frame of reference.

2.2.1.13 IMPANG — Impact Angle

(Impact Angle) — Bounded Integer, degrees, 0 to 359

IMPANG is the angle of impact in the xy plane, measured clockwise from the x-axis. The angle is 0 degrees if the impact is from the front; 90 degrees if the impact is from the right side; 180 degrees if the impact is from the rear; and 270 degrees if the impact is from the left side. The figure below shows measurement direction in the x-y plane.

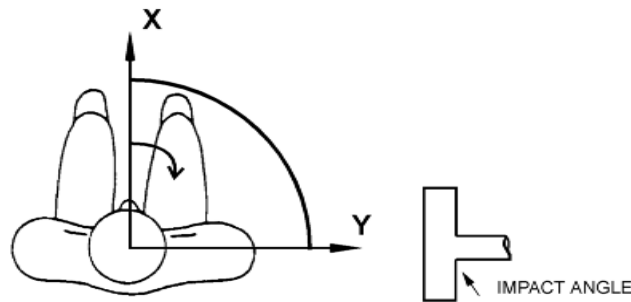


Figure 2-2 Impact angle measurement

2.2.1.14 TOTCRV — Total Number of Curves

(Number of Curves) — Bounded Integer, 1 to 200

TOTCRV is the total number of recorded instrument channels (curves) in the data submission.

2.2.1.15 OCCTYP — Occupant Type

(Occupant Type) — Coded Value, 2 characters

OCCTYP is the type of test occupant, such as the type of dummy, cadaver, animal or human volunteer.

2.2.1.16 TSTCOM — Test Commentary

(Test Comments) — Free Text, maximum length 70 characters

TSTCOM is the field used to describe other test information, for which a coded field does not exist, including anomalies or problems. The reason for coding OTHER or NOT APPLICABLE in the TSTCFN or TSTPRF fields should be recorded in this field as well. If a vehicle body is used in a test, describe the make and model of the vehicle (without abbreviations) in this field. If TSTCFN is coded PEN (an impactor), enter the mass of the impactor in the appropriate units. If no comments are to be made, code the field NO COMMENTS (left justified).

2.3 Dummy Occupant Information

The data elements defined below comprise the Dummy Occupant Information group. The information includes the field order index, the variable name, (the application label associated with the variable), and a brief description of the data type and valid data range.

2.3.1.1 DOCCLOC — Dummy Occupant Location

(Occupant Location) — Coded Value, 2 characters

DOCCLOC is coded OT for all pendulum, drop, pedestrian, and sled tests without a vehicle body. When the test occupant is seated in a vehicle body (such as when a vehicle body is mounted on a sled and the test occupant is sitting in the vehicle), OCCLOC indicates the location of the test occupant (for example, driver, front passenger, and so forth).

2.3.1.2 DOCCSEX — Dummy Occupant Sex,

(Occupant Sex) — Coded Value, 1 character

DOCCSEX is the sex of the test occupant, applicable to all test subjects except child dummies. Code the field N for child dummies.

2.3.1.3 DSEPOSN — Dummy Seat Position

(Seat Position) — Coded Value, 2 characters

DSEPOSN is the position of the seat at the initiation of the test. For pendulum and sled tests without a vehicle body, code the field NO; for drop and pedestrian tests, code the field NA.

2.3.1.4 HIC — Head Injury Criterion

(Injury Measures, HIC) — Bounded Integer, 0 to 9,999

HIC is the computed value of the head injury criterion, based on the resultant acceleration pulse for the head center of gravity. In computing this value, the contractor shall use the HIC algorithm supplied by NHTSA.

2.3.1.5 T1 — Lower Boundary of HIC Time Interval

(Injury Measures, T1) — Bounded Real, milliseconds, 0 to 999,999

T1 is the lower boundary of the time interval over which the HIC was computed.

2.3.1.6 T2 — Upper Boundary of HIC Time Interval

(Injury Measures, T2) — Bounded Real, milliseconds, 0 to 999,999

T2 is the upper boundary of the time interval over which the HIC was computed.

2.3.1.7 CLIP3M — Thorax Region Peak Acceleration Measurement

(Injury Measures, 3ms Clip) — Bounded Real, g's, 0 to 99,99

CLIP3M is the maximum 3-millisecond 'clip' value of the chest resultant acceleration, in g's, after filtering with a Class 180 filter (300 Hz Butterworth, low pass, refer to SAE Standard J211 B). In computing the CLIP3M measurement, the contractor shall use the 'clip' algorithm supplied by NHTSA.

2.3.1.8 LFEM — Left Femur Peak Load Measurement

(Peak Loads, Left Femur) — Bounded Integer, newtons, -99, 999 to 0

LFEM indicates the maximum compression load for the left femur. Listed as a negative number.

2.3.1.9 RFEM — Right Femur Peak Load Measurement

(Peak Loads, Left Femur) — Bounded Integer, newtons, -99,999 to 0

RFEM indicates the maximum compression load for the right femur. Listed as a negative number.

2.3.1.10 CSI — Chest Severity Index

(Injury Measures, CSI) — Bounded Integer, 0 to 9,999

CSI indicates the computed value of the chest severity index.

2.3.1.11 LBELT — Lap Belt Peak Load Measurement

(Peak Loads, Lap Belt) — Bounded Integer, newtons, 0 to 99,999

LBELT indicates the maximum tension load on the lap belt.

2.3.1.12 SBELT — Shoulder Belt Peak Load Measurement

(Peak Loads, Shoulder Belt) — Bounded Integer, newtons, 0 to 99,999

SBELT indicates the maximum tension load on the shoulder belt.

2.3.1.13 TTI — Thoracic Trauma Index

(Injury Measures, TTI) — Bounded Real, 0 to 99,999

TTI is the thoracic trauma index value. For a dummy, TTI(d) is computed from the maximum rib and lower spine peak accelerations. In computing this value, the contractor shall use the TTI algorithm supplied by NHTSA.

2.3.1.14 PELVG — Pelvic G's

(Injury Measures, Pelvic G's) — Bounded Real, 0 to 99,999

PELVG, the pelvis injury criterion, is the peak lateral acceleration on the pelvis. It is obtained after filtering with the FIR100 filtering software supplied by NHTSA.

2.3.1.15 CTI — Combined Thoracic Index

(Combined Thoracic Criteria) — Bounded Real, 0,99,999

CTI indicates the computed value of the Combined Thoracic Index.

2.3.1.16 VC — Viscous Criterion

(Viscous Criterion) — Bounded Real, meters per second, 0.000 to 100.000

VC indicates the computed value of the Viscous Criterion.

2.3.1.17 CMAX — Maximum Chest Compression

(Chest Deflection) — Bounded Integer, 0,99,999

CMAX indicates the maximum Chest Compression

2.3.1.18 NIJ — NHTSA Neck Injury Criterion

(Neck Injury Criteria) — Bounded Real, 0, 99,999

NIJ indicates the computed value of the NHTSA Neck Injury Criterion

2.3.1.19 MTHCAL — Method of Calibration

(Calibration Method) — Coded Value, 2 characters

MTHCAL indicates which method was used to calibrate the test dummy. This field is used for dummy tests only; for other tests, code the field NA,

2.3.1.20 DUMSIZ — Dummy Size

(Dummy Size) — Coded Value, 2 characters

DUMSIZ indicates the size of the test dummy, measured either as a standard size percentile or by 'age' classification for child dummies.

2.3.1.21 DUMMAN — Dummy Manufacturer and Serial Number

(Dummy Manufacturer) — Free Text, maximum length 70 characters

DUMMAN is the serial number as well as the manufacturer of the test dummy. The information should be entered as MFG: (manufacturer's name), S/N (dummy serial number).

2.3.1.22 DUMMOD — Dummy Modification Description 1

(Dummy Modification) — Free Text, maximum length 70 characters

DUMMOD is the description of any modifications to the design of the dummy used in the test. Indicate CONT'D at the end of this field if DUMDSC is to be used to continue this description.

2.3.1.23 DUMDSC — Dummy Description 2,

(Dummy Modification) — Free Text, maximum length 70 characters

DUMDSC is a continuation of DUMMOD. DUMDSC should only be used if more space for recording information about the modifications to the test dummy is needed.

2.3.1.24 DCOMPWT — Dummy Component Weight

(Component Weight) — Bounded Integer, 0 to 999

DCOMPWT is the mass of the Dummy component tested. Code as 0.00 if test is a full dummy test.

2.3.1.25 DOCCOM — Occupant Commentary

(Occupant Comments) — Free Text, maximum length 70 characters

DOCCOM should be used to describe any information that is important about the test occupant that does not appear in any other text field. If no comments are to be made, code the field NO COMMENTS (left justified).

2.4 Biological Specimen Occupant Information

The data elements defined below comprise the Biological Occupant Information group. The information includes the field order index, the variable name, (the application label associated with the variable), and a brief description of the data type and valid data range.

2.4.1.1 BOCCLOC - Biological Occupant Location

(Occupant Location) — Coded Value, 2 characters

BOCCLOC is coded OT for all pendulum, drop, pedestrian, and sled tests without a vehicle body. When the test subject is seated in a vehicle body (such as when a vehicle body is mounted on a sled and the test subject is sitting in the vehicle), BOCCLOC indicates the location of the test subject (for example, driver, front passenger, and so forth).

2.4.1.2 BOCCSEX — Biological Occupant Sex

(Occupant Sex) — Coded Value 1 character

BOCCSEX is the sex of the test occupant.

2.4.1.3 BSEPOSN — Biological Seat Position

(Seat Position) — Coded Value, 2 characters

BSEPOSN is the position of the seat at the initiation of the test. For pendulum and sled tests without a vehicle body, code the field NO; for drop and pedestrian tests, code the field NA.

2.4.1.4 OCCAGE — Occupant Age

(Occupant Age) — Bounded Integer, 0 to 99

OCCAGE is the age of a human cadaver or volunteer; for animal tests, code the field 99.

2.4.1.5 OCCWT — Occupant Weight

(Occupant Weight) — Bounded Integer, kilograms, 0 to 999

OCCWT is the weight of the test occupant.

2.4.1.6 BCOMPWT — Biological Component Mass

(Component Weight) — Bounded Integer, kilograms, 0 to 999

Mass in Kg of the biological component tested.

2.4.1.7 FRCTRB — Number of Fractured Ribs

(Number of Fractured Ribs) — Bounded Integer, 0 to 24

FRCTRB is the number of fractured ribs sustained by the subject. The maximum number of fractured ribs is 24. The following figure depicts four fractured ribs with six rib fractures. This field is used for animal and cadaver tests only; for human volunteer tests, code the field 99.

2.4.1.8 RBFRACT — Number of Rib Fractures

(Number of Rib Fractures) — Bounded Integer, 0 to 99

RBFRACT is the number of rib fractures sustained by the subject. Rib fractures will always be greater than or equal to fractured ribs. This field is used for animal and cadaver tests only; for human volunteer tests, code the field 99.

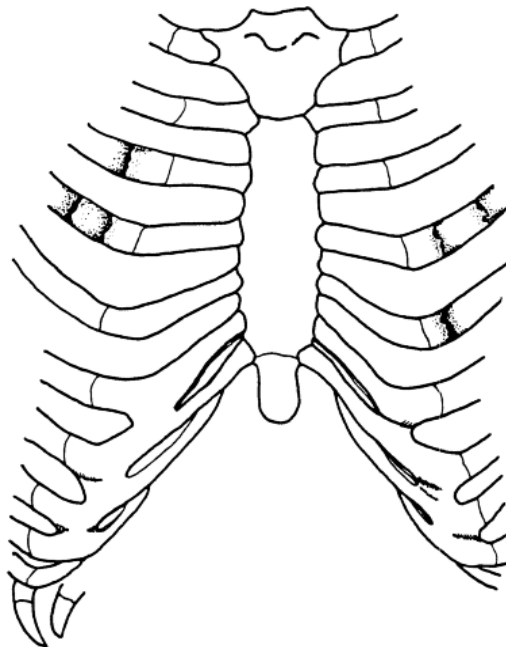


Figure 2-3 RBFRACT - Number of Rib Fractures

2.4.1.9 OCCREF — Occupant Reference Number

(Occupant Reference Number) — Free Text, maximum length 10 characters

OCCREF is the occupant reference number assigned by the test performer. If multiple tests are performed on an occupant, each test will have the same OCCREF, while each TSTREF will be different.

2.4.1.10 NOTEST — Number of Tests

(Number of Tests) — Bounded Integer, 0 to 99

NOTEST indicates the total number of impact tests conducted on the occupant.

2.4.1.11 DTEDTH — Occupant Date of Death

(Cadaver Date of Death) — Date

DTEDTH is the date of death of the occupant

2.4.1.12 CSEDTH — Occupant Cause of Death

(Cadaver Cause of Death) — Free Text, maximum length 70 characters

CSEDTH indicates the cause of death of the occupant.

2.4.1.13 CADAPP — Occupant Appearance

(Cadaver Appearance) — Free Text, maximum length 70 characters

CADAPP is the appearance of the occupant. Anything unusual about the appearance of the occupant should be noted in this field. If nothing is remarkable about the occupant, code this field UNREMARKABLE (left justified).

2.4.1.14 BEDCON — Length of Bed Confinement

(Length of Bed Confinement) — Bounded Integer, days, 0 to 999

BEDCON is the length of bed confinement, in days, of the occupant immediately prior to death.

2.4.1.15 CADAN — Occupant Anomaly

(Cadaver Anomaly) — Free Text, maximum length 70 characters

CADAN is the field in which anything unusual about the occupant prior to the test should be noted, such as a pretest condition that may affect an injury. If, for example, an occupant had a broken arm before the test, that characteristic would be noted in this field.

Also included should be an anomalous injury such as one produced by instrumentation rather than the test, e.g. mounting screws for an accelerometer puncture the pericardium.

2.4.1.16 AORPRE — Presence of Cardiovascular Pressurization

(Cardiovascular Pressurization) — Coded Value, 3 characters

AORPRE indicates whether the cardiovascular system of the thorax and/or abdomen of the test occupant was pressurized during testing. Code the field YES or NO.

2.4.1.17 CERPPE — Presence of Head Pressurization

(Head pressurization) — Coded Value, 3 characters

CERPPE indicates whether the head vascular system of the test occupant was pressurized during testing. Code the field YES or NO.

2.4.1.18 PULPRE — Presence of Pulmonary Pressurization

(Pulmonary Pressurization) — Coded Value, 3 characters

PULPRE indicates whether the pulmonary system of the test occupant was pressurized during testing. Code the field YES or NO.

2.4.1.19 BMC — Bone Mineral Content

(Bone Mineral Content), Real

BMC is the numeric value of the bone mineral content

2.4.1.20 BMCLOC — BMC Measurement Location

(Location of BMC Measurement) — Coded Value, 3 characters

BMCLOC is the location where the bone mineral content was assessed

2.4.1.21 BMCUNITS — BMC Measurement Units

(BMC Units) — Coded Value, 3 characters

BMCUNITS are the units for bone mineral content

2.4.1.22 BMCMETHOD — BMC Measurement Method

(BMC Measurement Method) — Coded Value, 3 characters

BMCMETHOD is the method used to determine the bone mineral content.

2.4.1.23 BMCCOM — BMC Commentary

(BMC Comments) — Free Text, maximum length 70 characters

BMCCOM should be used to provide comments on the calculation of BMC.

2.4.1.24 BOCCOM — Occupant Commentary

(Occupant Comments) — Free Text, maximum length 70 characters

BOCCOM should be used to describe any information that is important about the test occupant that does not appear in any other text field. If no comments are to be made, code the field NO COMMENTS (left justified).

2.4-2 Rib Bending Test Information

The data elements defined below comprise Rib Bending Test Information group. This information group is applicable to cadavers and human volunteers only. If a dummy is the test occupant, this information group should be omitted.

The information includes the field order index, the variable name, (the application label associated with the variable), and a brief description of the data type and valid data range.

2.4.2.1 RIBNO — Rib Number

(Rib Number) — Bounded Integer, ≥ 0

RIBNO is the sequential number assigned to each rib test performed.

2.4.2.2 RIBLOC — Rib Location

(Rib Location) — Coded Value, 3 characters

RIBLOC indicates the position in the rib cage of the first rib undergoing the bending strength test

2.4.2.3 RIBIN — Moment of Inertia for Rib

(Moment of Inertia) — Bounded Integer, millimeters⁴, 0 to 999,999

RIBIN is the moment of inertia for the cross-section of the rib being tested.

2.4.2.4 NADIS — Neutral Axis Distance of the Rib

(Neutral Axis Distance) — Bounded Integer, millimeters, 0 to 999,999

NADIS is the distance from the neutral axis to the most remote point of the rib cross-section of the rib being tested.

2.4.2.5 SPLLEN — Rib Length of Span

(Span Length) — Bounded Integer, millimeters, 0 to 999,999

SPLLEN is the length of the span between the two points where the rib is simply supported. The following figure depicts a rib bending strength test setup:

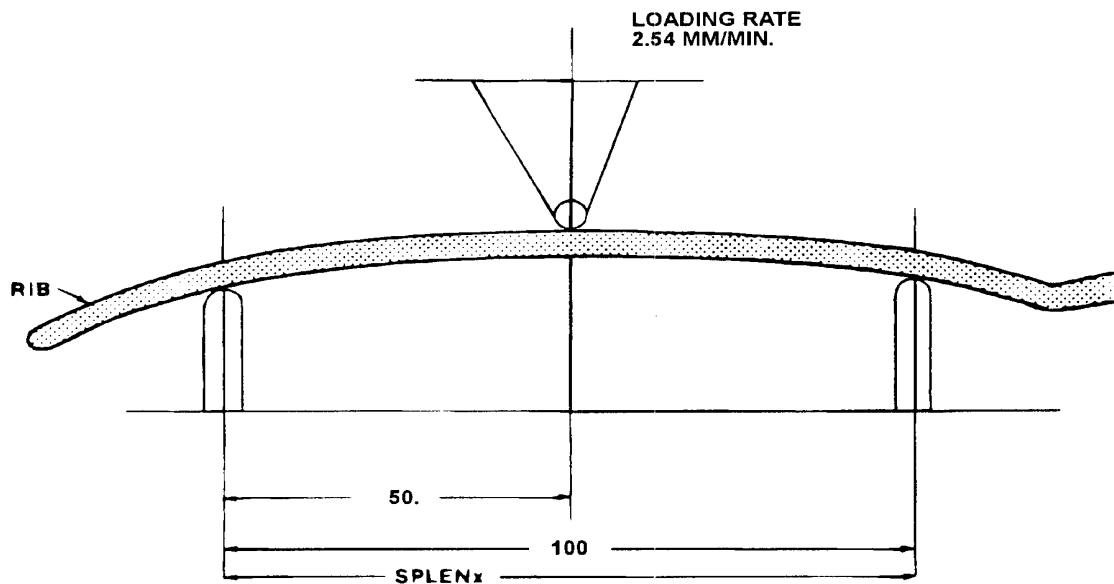


Figure 2-4 SPLLEN – Rib Length of Span

2.4.2.6 DEFL — Deflection of the Rib

(Deflection) — Bounded Integer, millimeters, 0 to 999,999

DEFL represents the deflection of the rib at the point of loading.

2.4.2.7 LOAD — Load on the Rib

(Load) — Bounded Integer, newtons, 0 to 999,999

LOAD represents the load on the rib at the time of DEFL where the relationship is linear at a loading rate of 2.54 mm per minute

2.4.2.8 BRKLD — Breakload for the Rib

(Break Load) — Bounded Integer, newtons, 0 to 999,999

BRKLD is the load on the rib at the beginning of the plastic deformation region.

2.4.2.9 ARMAR — Area of Bone Marrow of Rib Segment

(Area of Bone Marrow) — Bounded Integer, millimeters², 0 to 999,999

ARMAR is the area of the bone marrow, or core, of the rib segment being tested.

2.4.2.10 RAREA — Total Cross-sectional Area of the Rib

(Cross Sectional Area) — Bounded Integer, millimeters², 0 to 999,999

RAREA represents the total area of a cross-section of the rib being tested

2.4-3 Anthropometric Information

The data elements defined below comprise the Anthropometric Information group. This information group is applicable to cadavers and human volunteers only. If a dummy is the test occupant, this information group should be omitted. The information includes the field order index, the variable name, (the application label associated with the variable), and a brief description of the data type and valid data range.

2.4.3.1 STATUR — Stature

(Stature) — Bounded Integer, millimeters, 0 to 9,999

STATUR is the stature of the test occupant, measured as the horizontal distance from the headboard of the measuring table to the most distal portion of the heel and taken as an average of the measurement from the left heel and the measurement from the right heel. The measurement is taken with an anthropometer, with the test occupant supine, head in the Frankfort plane and firmly touching the headboard.

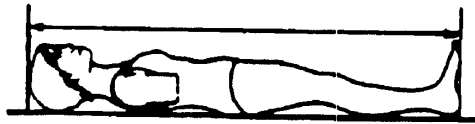


Figure 2-5 STATUR – Stature

2.4.3.2 SHLDHT — Shoulder

(Acromial) Height (Shoulder Height) — Bounded Integer, millimeters, 0 to 9,999

SHLDHT is the shoulder height of the test occupant measured as the horizontal distance from the most distal portion of the heel to the most lateral point of the acromial process of the scapula. The measurement may be obtained by measuring either the distance to both the right and left heels and averaging the two values; or by measuring the distance from the vertex of the head to the acromial process and subtracting the value from STATUR.

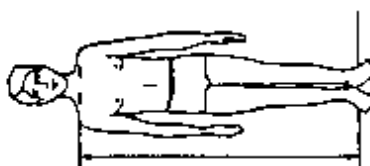


Figure 2-6 SHLDHT – Shoulder Height (Acromial)

2.4.3.3 VRTSYM — Vertex to Symphysis Length

(Vertex to Symphysis Length) — Bounded Integer, millimeters, 0 to 9,999

VRTSYM is the test occupant's vertex-to-symphysis length, measured, using an anthropometer, from the headboard of the measuring table to the symphysis, with the test occupant in a supine position, head oriented in the Frankfort plane and firmly touching the headboard.

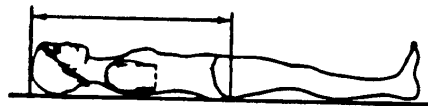


Figure 2-7 VRTSYM – Vertex to Symphysis Length

2.4.3.4 WASTHT — Waist Height

(Waist Height) — Bounded Integer, millimeters, 0 to 9,999

WASTHT is the test occupant's waist height, measured as the horizontal distance from the most distal portion of the heel to the anterior superior iliac spine. The measurement may be obtained by measuring either the distance to both the right and left heels and averaging the two values; or by measuring the distance from the vertex of the head to the anterior superior iliac spine and subtracting the value from STATUR.

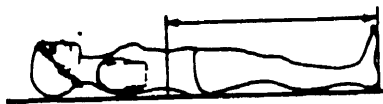


Figure 2-8 WASTHT - Test Occupant's Waist Height

2.4.3.5 SHLDBD — Shoulder

(Biacromial) Breadth (Shoulder Breadth) — Bounded Integer, millimeters, 0 to 9,999

SHLDBD is the breadth of the test occupant's shoulder measured as the distance across the body between the lateral edge of the left and right acromions.

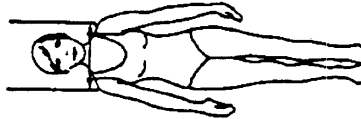


Figure 2-9 SHLDBD - Shoulder Breadth

2.4.3.6 CHSTBD — Chest Breadth

(Chest Breadth) — Bounded Integer, millimeters, 0 to 9,999

CHSTBD is the chest breadth of the test occupant, taken as the average of two measurements of the horizontal breadth of the chest -- one taken at the axilla and the other at the substernale, using a beam caliper.

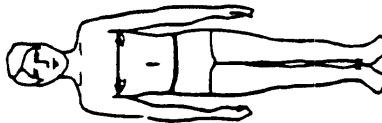


Figure 2-10 CHSTBD - Chest Breadth

2.4.3.7 WASTBD — Waist Breadth

(Waist Breadth) — Bounded Integer, millimeters, 0 to 9,999

WASTBD is the waist breadth of the test occupant, measured, using a beam caliper, as the horizontal breadth of the body at the level of the anterior superior iliac spine.

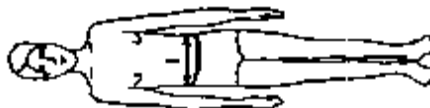


Figure 2-11 WASTBD - Waist Breadth

2.4.3.8 HIPBD — Hip Breadth

(Hip Breadth) — Bounded Integer, millimeters, 0 to 9,999

HIPBD is the hip breadth of the test occupant, measured, using an anthropometer, between the right and left illocristale landmarks perpendicular to the mid-sagittal plane.



Figure 2-12 HIPBD - Hip Breadth

2.4.3.9 SHLDEL — Shoulder to Elbow

(Acromion to Radiale) Length (Shoulder to Elbow Length) — Bounded Integer, millimeters, 0 to 9,999

SHLDEL is the length of the test occupant's arm from shoulder to elbow, measured, with a beam caliper, as the distance from the top of the acromion process to the bottom of the elbow, with the arm flexed 90 degrees.

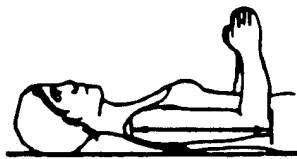


Figure 2-13 SHLDEL - Shoulder to Elbow Length

2.4.3.10 FARMHD— Forearm - Hand Length

(Forearm - Hand Length) — Bounded Integer, millimeters, 0 to 9,999

FARMHD is the length of the test occupant's forearm, measured, with a beam caliper, from the tip of the elbow to the tip of the longest finger, with the arm flexed 90 degrees.



Figure 2-14 FARMHD - Forearm-Hand Length

2.4.3.11 TIBLHT — Tibiale Height

(Tibiale Height) — Bounded Integer, millimeters, 0 to 9,999

TIBLHT is the knee height of the test occupant, measured from the most distal portion of the heel to the proximal medial margin of the tibia. The measurement may be obtained by measuring either the distance to both the right and left heels and averaging the two values; or by measuring the distance from the vertex of the head to the proximal medial margin of the tibia and subtracting that value from STATUR.

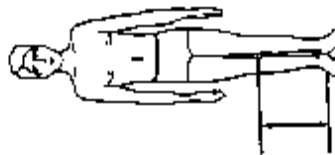


Figure 2-15 TIBLHT - Tibiale Height

2.4.3.12 ANKLHT — Ankle Height

(Ankle Height) — Bounded Integer, millimeters, 0 to 9,999

ANKLHT is the height of the test occupant's ankle as measured, with sliding calipers, from the most distal portion of the heel to the level of the minimum circumference of the ankle (at the level proximal to the malleoli of the tibia and fibula perpendicular to the long axis of the lower leg).



Figure 2-16 ANKLHT - Ankle Height

2.4.3.13 FOOTBD — Foot Breadth

(Foot Breadth) — Bounded Integer, millimeters, 0 to 9,999

FOOTBD is the breadth of the test occupant's foot, measured with sliding calipers, at the level of the metatarsal-phalangeal joints along an axis perpendicular to the long axis of the foot. Measure the breadth of both feet and take the average to obtain FOOTBD.



Figure 2-17 FOOTBD - Foot Breadth

2.4.3.14 FOOTLN — Foot Length

(Foot Length) — Bounded Integer, millimeters, 0 to 9,999

FOOTLN is the length of the test occupant's foot, taken as the average of the measurements for both feet. Take the measurements, using a beam caliper, from the dorsal surface of the heel to the tip of the big toe. Measure the length of both feet and take the average to obtain FOOTLN.



Figure 2-18 FOOTLN - Foot Length

2.4.3.15 HDTROC — Head to Trochanterion Distance

(Head to Trochanterion Distance) — Bounded Integer, millimeters, 0 to 9,999

HDTROC is the horizontal distance from the test occupant's head to the Trochanterion measured, using an anthropometer, from the headboard of the measuring table to the Trochanterion, with the test occupant supine, head in the Frankfort plane.



Figure 2-19 HDTROC - Head to Trochanterion Distance

2.4.3.16 SEATHT — Seated Height

(Seated Height) — Bounded Integer, millimeters, 0 to 9,999

SEATHT is the test occupant's seated height, measured as the vertical distance from the sitting surface to the top of the head. The measurement is taken with the test occupant sitting erect, looking straight ahead. This measurement must be made in all cases where the test occupant is seated during testing.



Figure 2-20 SEATHT - Seated Height

2.4.3.17 KNEEHT — Knee Height, Seated

(Knee Height) — Bounded Integer, millimeters, 0 to 9,999

KNEEHT is the knee height of the test occupant, taken as an average of the vertical distance from the floor to the uppermost point on the knee of both legs. The measurement is taken with the test occupant sitting erect, knees and ankles at right angles. This measurement must be made in all cases where the test occupant is seated during testing.



Figure 2-21 KNEEHT - Knee Height, Seated

2.4.3.18 HEADLN — Head Length

(Head Length) — Bounded Integer, millimeters, 0 to 9,999

HEADLN is the head length of the test occupant, measured as the maximum length of the head between the glabella and the occiput in the mid-sagittal plane.



Figure 2-22 HEADLN - Head Length

2.4.3.19 HEADBD — Head Breadth

(Head Breadth) — Bounded Integer, millimeters, 0 to 9,999

HEADBD is the test occupant's head breadth, measured, with spreading calipers, as the maximum horizontal breadth of the skull above the level of the ears, perpendicular to the mid-sagittal plane.



Figure 2-23 HEADBD - Head Breadth

2.4.3.20 HEADCH — Head Height

(Vertex - Mentum) (Head Height) — Bounded Integer, millimeters, 0 to 9,999

HEADCH is the test occupant's head height, measured from the highest point on the head to the mentum landmark.



Figure 2-24 HEADCH - Head Height (Vertex – Mentum)

2.4.3.21 BICPCR — Bicep Circumference

(Bicep Circumference) — Bounded Integer, millimeters, 0 to 9,999

BICPCR is the circumference of the test occupant's bicep, measured, with a tape, as the circumference of the upper arm at the level of the maximum anterior prominence of the biceps brachii, perpendicular to the long axis of the upper arm.



Figure 2-25 BICPCR - Bicep Circumference

2.4.3.22 ELBWCR — Elbow Circumference

(Elbow Circumference) — Bounded Integer, millimeters, 0 to 9,999

ELBWCR is the circumference of the test occupant's elbow, measured with a tape passing over the olecranon process of the ulna and into the crease of the elbow, which is flexed at 125 degrees.

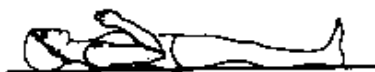


Figure 2-26 ELBWCR - Elbow Circumference

2.4.3.23 FARMCR — Forearm Circumference

(Forearm Circumference) — Bounded Integer, millimeters, 0 to 9,999

FARMCR is the circumference of the test occupant's forearm, measured at the maximum circumference of the forearm, with a tape perpendicular to the long axis of the forearm.



Figure 2-27 FARMCR - Forearm Circumference

2.4.3.24 WRSTCR — Wrist Circumference

(Wrist Circumference) — Bounded Integer, millimeters, 0 to 9,999

WRSTCR is the wrist circumference of the test occupant, measured at the minimum circumference of the wrist proximal to the radial and ulnar styloid processes, with a tape perpendicular to the long axis of the forearm.



Figure 2-28 WRSTCR - Wrist Circumference

2.4.3.25 THGHCR — Thigh Circumference

(Thigh Circumference) — Bounded Integer, millimeters, 0 to 9,999

THGHCR is the circumference of the test occupant's thigh, measured, with a tape, perpendicular to the long axis of the leg and passing just below the lowest point of the gluteal furrow.



Figure 2-29 THGHCR - Thigh Circumference

2.4.3.26 LTGHCR — Lower Thigh Circumference

(Lower Thigh Circumference) — Bounded Integer, millimeters, 0 to 9,999

LTGHCR is the circumference of the test occupant's lower thigh, measured, just superior to the patella, with a tape perpendicular to the long axis of the thigh.



Figure 2-30 LTGHCR - Lower Thigh Circumference

2.4.3.27 KNEE CR — Knee Circumference

(Knee Circumference) — Bounded Integer, millimeters, 0 to 9,999

KNEE CR is the circumference of the test occupant's knee, measured either with the leg extended or with the knee flexed 90 degrees. Only one measurement is needed for the test. For tests in which the test occupant is seated with the leg flexed 90 degrees, measure the circumference of the knee across the antecubital crease and the most anterior superior margin of the patella. Measure the circumference of both knees and take the average to obtain KNEE CR.

For all other tests, the test occupant is supine with the leg extended. Measure the circumference of both knees at the level of the mid-patella landmark and take the average to obtain KNEE CR.

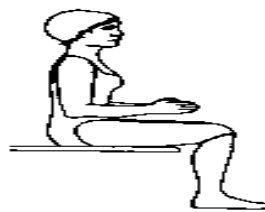


Figure 2-31 KNEE CR - Knee Circumference

2.4.3.28 CALFCR — Calf Circumference

(Calf Circumference) — Bounded Integer, millimeters, 0 to 9,999

CALFCR is the circumference of the test occupant's calf, taken as the average measurement of the calf circumferences of both legs. Using a tape perpendicular to the long axis of the lower leg, measure the maximum circumference of the calf for each leg.

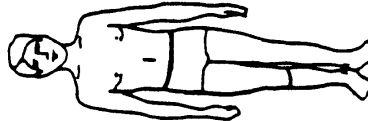


Figure 2-32 CALCR - Calf Circumference

2.4.3.29 ANKLCR — Ankle Circumference

(Ankle Circumference) — Bounded Integer, millimeters, 0 to 9,999

ANKLCR is the circumference of the test occupant's ankle, measured as the average maximum circumference of the ankle perpendicular to the long axis of the lower leg at the level proximal to the malleoli of the tibia and fibula.



Figure 2-33 ANKLCR - Ankle Circumference

2.4.3.30 NECKCR — Neck Circumference

(Neck Circumference) — Bounded Integer, millimeter, 0 to 9,999

NECKCR is the circumference of the test occupant's neck, measured with a tape in a plane perpendicular to the axis of the neck and passing inferior, but tangent, to the laryngeal prominence.

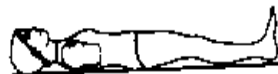


Figure 2-34 NECKCR - Neck Circumference

2.4.3.31 SCYECR — Scye

(Armpit to Shoulder) Circumference (Scye Circumference) — Bounded Integer, millimeters, 0 to 9,999

SCYECR is the test occupant's scye circumference, measured by passing through the axilla over the anterior and posterior vertical scye landmarks and over the acromial landmarks.

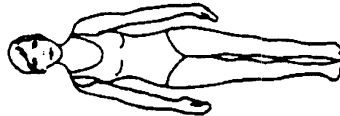


Figure 2-35 SCYECR - Scye (Armpit to Shoulder) Circumference

2.4.3.32 CHSTCR — Chest Circumference

(Chest Circumference) — Bounded Integer, millimeters, 0 to 9,999

CHSTCR is the test occupant's chest circumference, taken as the average of two measurements, made perpendicular to the long axis of the trunk: one taken as the axilla circumference and the other as the substernale circumference.



Figure 2-36 CHSTCR - Chest Circumference

2.4.3.33 WASTCR — Waist Circumference

(Waist Circumference) — Bounded Integer, millimeter, 0 to 9999

WASTCR is the waist circumference of the test occupant, measured with a tape passing over the anterior superior iliac spine and perpendicular to the long axis of the trunk.

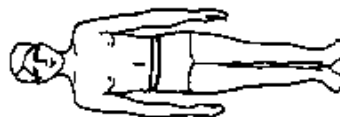


Figure 2-37 WASTCR - Waist Circumference

2.4.3.34 BUTTCR — Buttock Circumference

(Buttock Circumference) — Bounded Integer, millimeters, 0 to 9,999

BUTTCR is the horizontal circumference of the buttocks of the test occupant, measured at the level of the trochanterion surface landmarks.



Figure 2-38 BUTTCR - Buttock Circumference

2.4.3.35 CHSTDP — Chest

(Bust) Depth (Chest Depth) — Bounded Integer, millimeters, 0 to 9,999

CHSTDP is the test occupant's chest depth, taken as the average of two measurements: with an anthropometer, one is taken from the measuring table to the anterior surface of the body at the axilla and the other at the substernale.

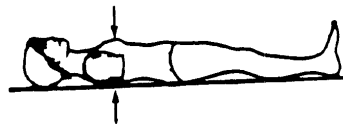


Figure 2-39 CHSTDP - Chest (Bust) Depth

2.4.3.36 WASTDP — Waist Depth

(Waist Depth) — Bounded Integer, millimeters, 0 to 9,999

WASTDP is the waist depth of the test occupant, measured as the vertical distance between the measuring table and the anterior surface of the body at the level of the anterior superior iliac spine.

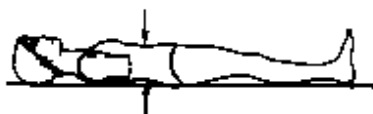


Figure 2-40 WASTDP - Waist Depth

2.4.3.37 BUTTDP — Buttock Depth

(Buttock Depth) — Bounded Integer, millimeters, 0 to 9,999

BUTTDP is the buttock depth of the test occupant, measured as the anterior-posterior distance on the medial plane projection at the level of the maximum posterior protrusion of the buttocks.



Figure 2-41 BUTTDP - Buttock Depth

2.4.3.38 INSCYE — Interscye Distance

(Interscye Distance) — Bounded Integer, millimeters, 0 to 9,999

INSCYE is the horizontal distance across the back of the test occupant, measured between the posterior scye point landmarks.

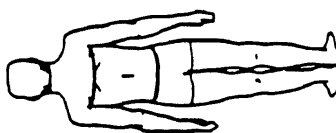


Figure 2-42 INSCYE – Interscye Distance

2.4-4 Occupant Injury Information

The data elements that are defined below comprise the Occupant Injury Information group. The fields in this information group are used only for animal and cadaver tests. The appropriate information should be recorded in all fields for each injury sustained by the test occupant. If no injuries occur, this section should be omitted.

This section is a concise report of the occupant injuries, following, in general, the practices of accident investigation teams. Code as many injuries as the test occupant received one injury per record. Start with the most severe injuries (highest AIS) and continue to the least severe injury.

If an injury is solely the result of instrumentation mounts (e.g. mounting screws lacerating the brain), do not code the injury, but do note this fact in CADAN (3, Biological Specimen Occupant Information). If the cause of the injury cannot be clearly attributed to the test or to instrumentation, note this problem in INJCOM (injury text below). For example, if a skull fracture propagates through an accelerometer mount, code the injury, but note in INJCOM that the fracture propagates through the mount.

The information includes the field order index, the variable name, (the application label associated with the variable), and a brief description of the data type and valid data range.

2.4.4.1 INJNO — Injury Number

(Injury Number) — Bounded Integer, 1 to 99

INJNO is the sequential number (1, 2, 3...) Assigned to each injury coded.

2.4.4.2 BODYRG — Body Region

(Body Region) — Coded Value, 1 character

BODYRG is the region of the test occupant's body sustaining injury.

2.4.4.3 ASPECT — Body Aspect

(Body Aspect) — Coded Value, 1 character

ASPECT provides a refinement of BODYRG by indicating which portion was injured. If a lesion involves more than one aspect of a body region, determine the predominant aspect and code ASPECT as that aspect. Use W (whole) if ASPECT cannot be determined.

As an example, consider a laceration on the right side of the spleen. The aspect would not be coded right (R) referring to where the laceration is on the spleen. The aspect would be coded left (L), referring to the position of the injury in the body region, abdomen.

2.4.4.4 LESION — Injury

(Injury) — Coded Value, 1 character

LESION is the type of injury sustained by the test occupant. Hemorrhages represent the result of injuries; indicate them as abrasion, contusion, laceration, or strain.

2.4.4.5 SYSORG — Injured Organ

(Injured Organ) — Coded Value, 1 character

SYSORG is the organ or physiological system of the test occupant sustaining injury.

2.4.4.6 AIS — Abbreviated Injury Scale

(Abbreviated Injury Scale) — Coded Value, 1 character

AIS is the abbreviated injury scale, a numerical ranking of the severity of the injury sustained by the test occupant. In AIS, injury is coded on a scale of one to six. The reference volume to be used to determine this injury classification is **The Abbreviated Injury Scale (1990 revision)**, American Association of Automotive Medicine, P.O. Box 222, Morton Grove, Illinois 60053.

2.4.4.7 AIS90 — AIS90 Injury Code

(Abbreviated Injury Scale 90) — Bounded Real, 0 to 99,999

AIS90 is the 1990 version of the AIS Injury Code

2.4.4.8 INJCOM — Injury Commentary

(Injury Comments) — Free Text, maximum length 70 characters

INJCOM is the field used to describe the injury. Some examples are: FRACTURES OF RIBS R-7 AND R-8 or LACERATION OF THE LARYNX.

2.5 Occupant Restraints Information

Data elements defined below comprise the Occupant Restraints Information group.

Restraint information is required for each test occupant. For unrestrained occupants, RESTYP = NON. Belts should be coded only if they were used in the test. Inflatable restraints should be coded whether the test resulted in deployment or not. If an occupant is protected by three restraints (E.g. a 3 point belt, and front and side air bags) three restraint records should be generated for that occupant.

The information includes the field order index, the variable name, (the application label associated with the variable), and a brief description of the data type and valid data range.

2.5.1.1 RSTNO — Restraint Number

(Restraint Number) — Bounded Integer, 1 to 9

RSTNO is the sequential number assigned to each restraint system in use for a given occupant at the time of the test. RSTNO = 1 for the first restraint listed for each occupant.

2.5.1.2 RSTTYP — Restraint Type

(Restraint Type) — Coded Value, 3 characters

RSTTYP describes the type of restraint or otherwise describes the test apparatus used. An unrestrained test in a vehicle body is NOT coded as NON; rather, dashboard, steering column, or other appropriate vehicle-related component should be coded. Likewise a pendulum test with a steel bar on the face of the impactor is coded as OTH. Use of OTH requires a description in RSTCOM such as '25 mm diameter steel bar on impactor face.'

2.5.1.3 RSTMNT — Restraint Mount

(Restraint Mount) — Coded Value, 2 characters

RSTMNT indicates the interior component(s) to which the restraint is mounted or from which it originates. For a driver frontal air bag, RSTMNT is the steering wheel hub (SH). Side air bags/air belts could be mounted in the seatback (SB), door (DR), or side header (HS).

2.5.1.4 DEPLOY — Inflator/Belt Pre-tensioner Deployment

(Pre-tensioner Deployment) — Coded Value, 2 characters

DEPLOY describes the deployment performance of inflatable restraints or the firing of the belt pre-tensioner during the test.

2.5.1.5 RSTCOM — Restraint Commentary

(Restraint Comments) — Free Text, maximum length 70 characters

RSTCOM is used to describe any distinguishing features of the restraint system. If OTHER is used to code the any of the restraint system fields, descriptive information may be added here. If no comments are to be made, enter NO COMMENTS here.

2.6 Instrumentation Information

The data elements defined below constitute the Instrumentation Information group.

Approximately twenty milliseconds of data prior to time zero should come with all measurement data; data shall meet the class 1000 specifications of the SAE J211 recommendation; and all data should be truncated at a common time value to avoid extending the pulse well past the period of significant activity.

The minimum sample rate shall be 10000 Hz. A sample rate should be chosen such that the DELT value does not have to be rounded off.

The information includes the field order index, the variable name, (the application label associated with the variable), and a brief description of the data type and valid data range.

2.6.1.1 CURNO — Curve Number

(Curve Number) — Bounded Integer, 1 to 200

CURNO is the sequential number (1,2,3...) assigned to a specific sensor and data curve.

2.6.1.2 SENTYP — Sensor Type

(Sensor Type) — Coded Value, 2 characters

SENTYP indicates the type of sensor used for collecting the measurements at the time of the test, such as AC for accelerometer.

2.6.1.3 SENLOC — Sensor Location

(Sensor Location) — Coded Value, 2 characters

SENLOC indicates the location of the test occupant or corresponding occupant restraint to which the sensor is attached. SENLOC should correspond to a previously entered value of OCCLOC.

2.6.1.4 SENATT — Sensor Attachment

(Sensor Attachment) — Coded Value, 6 characters

SENATT indicates where the sensor is attached. For example, the code APLR would be entered for an attachment on the right A-pillar.

2.6.1.5 AXIS — Axis Direction of the Sensor

(Axis) — Coded Value, 2 characters

AXIS is the axis direction for sensors measuring vector quantities. The global coordinate systems are vehicle fixed; the local systems are local within the vehicle global system. With respect to the vehicle longitudinal axis, X is positive forward, Y is positive right, (toward the passenger's door) and Z is positive down. These can differ depending on the component. For example, with the steering assembly, positive X is down the column axis and Y is positive right (toward the passenger's door).

AXIS is always applicable when the measurement is a vector quantity (acceleration, force, velocity, and so forth). The figures below illustrate the body- and vehicle-based coordinate system. Note that the head accelerometer array is a local coordinate system. The distance, d, is the length of the arm between HD90 and HD9Y, measured along the Y arm. The reporting of this value of d is described in the INSCOM field. The length of the X arm and the Z arm are reported in the same manner. All signals from anatomical sensors, (HDCG, etc.), are local coordinate systems.

2.6.1.6 X—UNITS - Time Units or 'Independent Axis' Units

(X Units) — Coded Value, 3 characters

XUNITS indicates either the unit of time for time series sensor data (e.g. 'SEC'), or the units of the independent coordinate of a non-time series signal (e.g. if a load is applied in a controlled fashion to produce a deflection, the load is the independent coordinate, and the deflection is the dependent coordinate). **Table 2-3** lists admissible unit codes.

| UNIT | DESCRIPTION | COMMENT |
|------|--------------------------|----------------------|
| CEN | DEGREES CELSIUS | TEMPERATURE |
| DEC | DECIBELS | NOISE |
| DEG | DEGREES | ANGULAR DISPLACEMENT |
| DP2 | DEGREES/SEC ² | ANGULAR ACCELERATION |
| DPS | DEGREES/SEC | ANGULAR VELOCITY |
| G'S | G'S | ACCELERATION |
| KPA | KILOPASCALS AB | PRESSURE - ABSOLUTE |
| KPG | KILOPASCALS GA | PRESSURE - GAUGE |
| KPH | KILOMETERS/HOUR | VELOCITY |
| MM | MILLIMETERS | DISPLACEMENT |
| MPM | MICROMET/MET | STRAIN |
| NON | DIMENSIONLESS | DIMENSIONLESS |
| NSC | NEWTON-SECONDS | IMPULSE |
| NWM | NEWTON-METERS | MOMENT |
| NWT | NEWTONS | FORCE |
| OTH | OTHER | OTHER |
| PST | PERCENT STRAIN | STRAIN |
| RMM | RECIPROCAL MM | CURVATURE |
| SEC | SECONDS | TIME |
| VOL | VOLTS | VOLTAGE |

Table 2-3 XUNITS / YUNITS - Acceptable Values

2.6.1.7 Y—UNITS - Data Measurement Units

(Y Units) — Coded Value, 3 characters

YUNITS indicates the units used to measure the signal of the sensor data. *Table 2-3* lists admissible unit codes.

2.6.1.8 PREFIL — Pre-filter Frequency

(Pre-filter Frequency) — Bounded Integer, 0 to 99,999

PREFIL is the cutoff frequency in Hz of a low-pass filter (digital or analog) applied to the signal. This frequency is defined as where filter gain equals 70 percent (-3db).

2.6.1.9 INSMAN — Manufacturer of the Instrument

(Instrument Manufacturer) — Free Text, maximum length 70 characters

INSMAN describes the manufacturer of the instrument. The model and serial number should also be included. The format for this field should be: MFG: manufacturer name, S/N: serial number.

2.6.1.10 CALDAT — Calibration Date

(Calibration Date) — Date

CALDAT is the most recent calibration date of the instrument.

2.6.1.11 INSRAT — Instrument Rating

(Instrument Rating) — Bounded Integer, -999,999 to 999,999

INSRAT represents the maximum value that can be accurately measured by the recording system for a channel. INSRAT should be in the same units as the data channel, except in the case of barrier load cell data where the units of INSRAT are kilo-newtons.

2.6.1.12 CHLMAX — Channel Maximum Rating

(Channel Maximum Rating) — Bounded Integer, 0 to 100

CHLMAX represents the full-scale value of the data based upon the actual test setup, including signal conditioning, as a percentage of INSRAT.

2.6.1.13 INIVEL — Initial Velocity

(Initial Velocity) — Bounded Real, kilometers per hour, -200 to 200

INIVEL is the initial (time zero) velocity of the sensor along its axis and applies only to linear accelerometers. If the sensor is a load cell attached to a barrier, the entry for this field should be zero (0.0).

2.6.1.14 NFP — Number of First Point

(First Point) — Bounded Integer, -10,000 to 0

NFP represents the index number of the first point in the data array (less than or equal to 0). Time zero always has an index number of 0. If no data exists prior to time zero, NFP is equal to 0; if 20 data points exist prior to time zero, NFP is equal to -20. There may never be more than 10,000 points before time zero.

2.6.1.15 NLP — Number of Last Point

(Last Point) — Bounded Integer, 0 to 99,999

NLP represents the index number of the last point in the data array. If 1,000 points were digitized, and NFP is equal to -100, then NLP is equal to 899. NLP can never be greater than 99,999.

2.6.1.16 DELT — Time Increment

(Time Step) — Bounded Integer, microseconds, 0 to 999,999

DELT is the time increment in microseconds between each data point. DELT is assumed to be constant for all data points for a given sensor (uniform sampling frequency).

2.6.1.17 DASTAT — Data Status

(Data Status) — Coded Value, 2 characters

DASTAT indicates the status of the data as it appears in the data submission. This field is used to indicate a signal which is invalid (code MN for meaningless), or which becomes questionable or invalid part of the way through a signal (code CF and explained in INSCOM). If a signal is computed, DASTAT is CM. An example of a computed signal would be the resultant acceleration or the rotational acceleration of the head measured with a nine linear accelerometer array.

2.6.1.18 CHSTAT — Channel Status

(Channel Status) — Coded Value, 1 character

CHSTAT indicates whether the data channel is primary or redundant. If, for example, the dummy is instrumented with a backup tri-axial accelerometer in the head, the redundant channels should be labeled R. The occupant's HIC value would be calculated using the primary head channels, labeled P.

2.6.1.19 INSCOM — Instrumentation Commentary

(Instrumentation Comments) — Free Text, maximum length 70 characters

INSCOM is any further commentary on the instrumentation data, including any unusual conditions affecting the data or a reference to a document that describes problems with a particular curve. The reasons for coding any of the coded fields in this group OTHER or NOT APPLICABLE should be recorded in this field as well. If no comments are to be made, enter NO COMMENTS.

For Head 9 array accelerometers, INSCOM contains dimensions that precisely locate the given instrument. The HD90, X-axis accelerometer, will locate the center of the Head 9 array relative to the head CG; then the entry in INSCOM for HD90 would read: CG: X: 33MM, Y: 2.5MM, Z: -5.0 MM.

The X-axis of HD9Y, HD9X, and HD9Z will contain the distance, d (See: *Figure A-3 Nine-Accelerometer Coordinate System* and the definition of AXIS earlier in this section), which is the length of the arm. Units must be shown. For example, if the Y arm is 110 mm long, then the entry in INSCOM for HD9Y, X direction would read: Y-ARM: 110 MM.

2.7 Chest Band Occupant Information

The data elements in the Chest Band Occupant Information group and tab, describe the relationship of a chest band and the occupant to which it is attached. It contains information detailing the location of the band on the occupant and the attributes of both the band and the occupant at the point of attachment.

The appropriate information should be recorded in all fields for each chest band used. For example, if three chest bands are used, the fields TSTNO through CHBCOM will be repeated three times, once for each chest band.

The information includes the field order index, the variable name, (the application label associated with the variable), and a brief description of the data type and valid data range.

2.7.1.1 BANDNO — Chest Band Number

(Chest Band Number) — Bounded Integer, 1 to 5

BANDNO is the sequential number assigned to the chest band. Chest band numbering begins at the topmost band, progressing from the superior of the occupant to the inferior of the occupant. (NOTE: BANDNO is NOT equal to INSMAN, the manufacturer's serial number, which is defined in the Instrumentation Information group.)

2.7.1.2 CHSDPT — Chest Depth

(Chest Depth) — Bounded Integer, millimeters, 0 to 999

CHSDPT is the chest depth of the seated test occupant at the location of the specific chest band, indicated by BANDNO. The measurement should be taken after the chest band is put on the occupant, when the occupant is in position for the test. (NOTE: This measurement may differ from CHSTDP, which is a measurement taken on a supine occupant. (See: *Section 2.4-3 Anthropometric Information*)

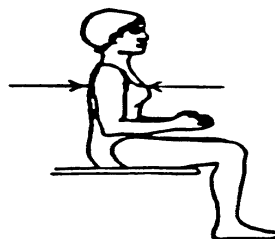


Figure 2-43 CHSDPT – Chest Depth

2.7.1.3 CHSBRD — Chest Breadth

(Chest Breadth) — Bounded Integer, millimeters, 0 to 999

CHSBRD is the chest breadth of the seated test occupant at the location of the specific chest band, indicated by BANDNO. The measurement should be taken after the chest band is put on the occupant, when the occupant is in position for the test. Note that this measurement may differ from CHSBRD, which is a measurement taken on a supine occupant. (See: *Section 2.4-3 Anthropometric Information*)

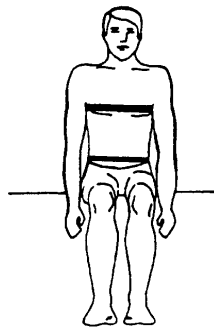


Figure 2-44 CHSBRD – Chest Breadth

2.7.1.4 BANLEN — Chest Band Length

(Band Length) — Bounded Integer, millimeters, 1 to 1,800

BANLEN circumference of the chest measured at the location of the specific chest band, indicated by BANDNO.

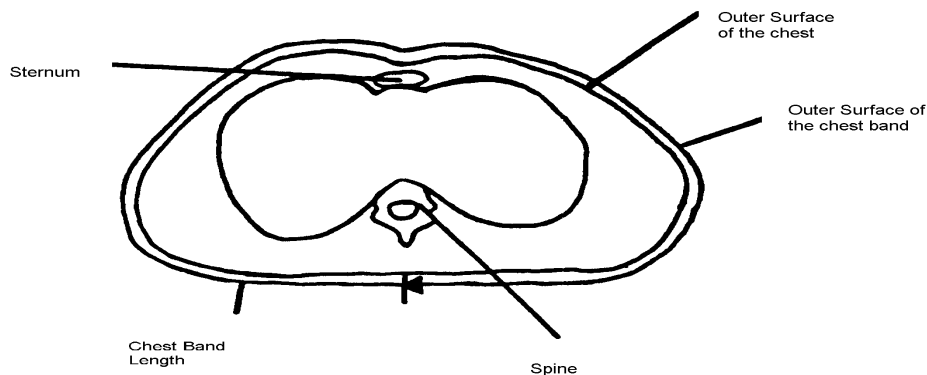


Figure 2-45 BANLEN - Chest Band Length

2.7.1.5 ANTLOC — Anterior Vertical Location

(Anterior Vertical Location) — Coded Value, 1 to 10

ANTLOC is the vertical position of the top edge of the chest band specified in BANDNO on the anterior of the occupant. To determine the vertical location of the chest band, the torso has been divided into height levels, ranging from 1 to 10. Ten corresponds to the topmost measurement on the torso, and 1 corresponds to the lowest measurement on the torso. **Figure 2-46 ANTLOC - Anterior Location - A** illustrates these height levels for the cadaver. **Figure 2-47 ANTLOC - Anterior Location - B** shows the anterior height levels for the Hybrid III dummy.

For the cadaver, ANTLOC is equal to the height level shown in **Figure 2-46 ANTLOC - Anterior Location**, which corresponds to the vertical position of the chest band. The upper limit of the range (ANTLOC = 10) is referenced to the suprasternal notch. The reference for the lower limit (ANTLOC = 1) of the range is the iliac crest. At the xiphisternal junction, ANTLOC = 6.

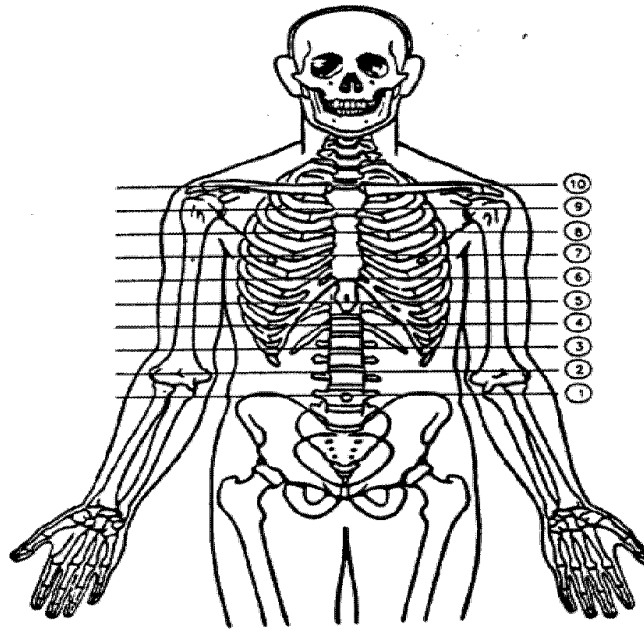


Figure 2-46 ANTLOC - Anterior Location - A

For the Hybrid III, ANTLOC is equal to the height level shown in Figure 2-47 ANTLOC - Anterior Location - B, which corresponds to the vertical position of the top edge of the chest band. The upper limit of the range (ANTLOC = 10) is referenced to the sterno-clavical link. The reference for the lower limit (ANTLOC = 1) is the upper edge of the pelvis. At the bottom of the fourth rib, ANTLOC = 5.

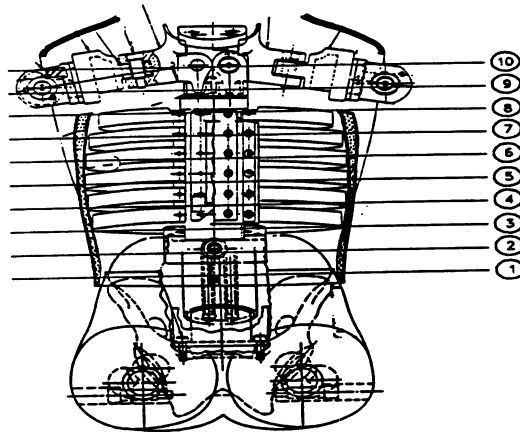


Figure 2-47 ANTLOC - Anterior Location - B

2.7.1.6 POSLOC — Posterior Vertical Location

(Posterior Vertical Location) — Coded Value, 1 to 10

POSLOC is the vertical position of the top edge of the chest band specified in BANDNO on the posterior of the occupant. The same height level designations pertain to this measurement as pertain to ANTLOC. The included figure shows the posterior height levels.

For the cadaver, POSLOC is equal to the height level in the following figure corresponding to the vertical position of the chest band. The upper limit of the range (POSLOC = 10) is referenced to the spinous process of the T02. The reference for the lower limit of the range (POSLOC = 1) is the iliac crest. At the spinous process of T10, POSLOC = 5.

For the Hybrid III, the value of POSLOC should be equal to the value of ANTLOC.

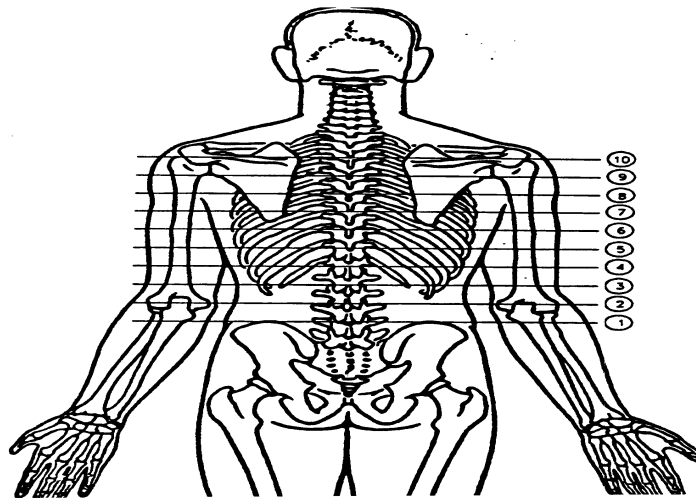


Figure 2-48 POSLOC - Posterior Location

2.7.1.7 GAGSTR — Curve Number of the Gauge Relative to the Sternum

(Gauge Curve Relative to Sternum) — Bounded Integer, 1 to 200

GAGSTR is equal to the curve number, CURNO, of the first active gauge encountered, clockwise, from the center of the sternum. This value defines the location of the sternum relative to the chest band. (CURNO is the sequential number (1,2,3 ...) assigned to a specific sensor and data curve, as defined in the Instrumentation Information group.

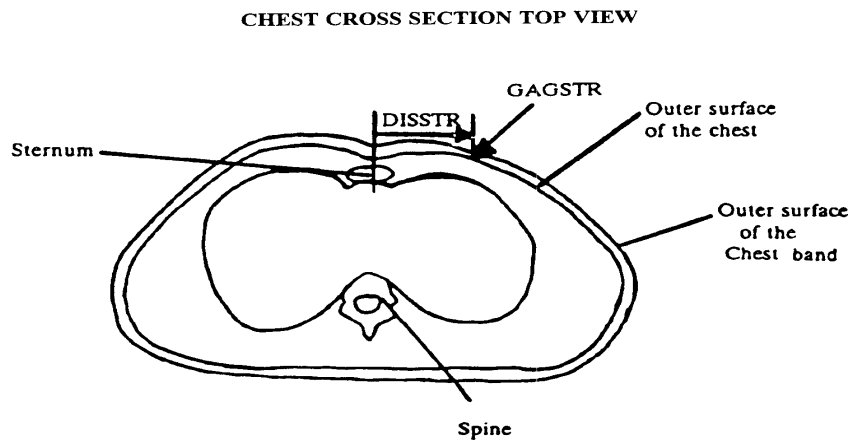


Figure 2-49 GAGSTR – Curve Number of Gauge Relative to Sternum

2.7.1.8 DISSTR — Distance Referenced to the Sternum

(Sternum Distance) — Bounded Integer, millimeters, 0 to 99

DISSTR is the curvilinear distance from the center of the sternum in a clockwise direction to the specified GAGSTR. This value, in conjunction with GAGSTR, locates the sternum relative to the chest band.

2.7.1.9 GAGSPN — Curve Number of the Gauge Relative to the Spine

(Gauge Curve Relative to Sternum) — Bounded Integer, 1 to 200

GAGSPN is equal to the curve number, CURNO, of the first active gauge encountered when proceeding in a clockwise direction from the center of the spine. This value defines the location of the spine relative to the chest band. (CURNO is the sequential number (1,2,3...) assigned to a specific sensor and data curve, as defined in **Section 2.6 Instrumentation Information**.)

2.7.1.10 DISSPN — Distance Referenced to the Spine

(Spine Distance) — Bounded Integer, millimeters, 0 to 99

DISSPN is the curvilinear distance from the spine to the gauge specified by GAGSPN. This value, with GAGSPN, locates the spine relative to the chest band.

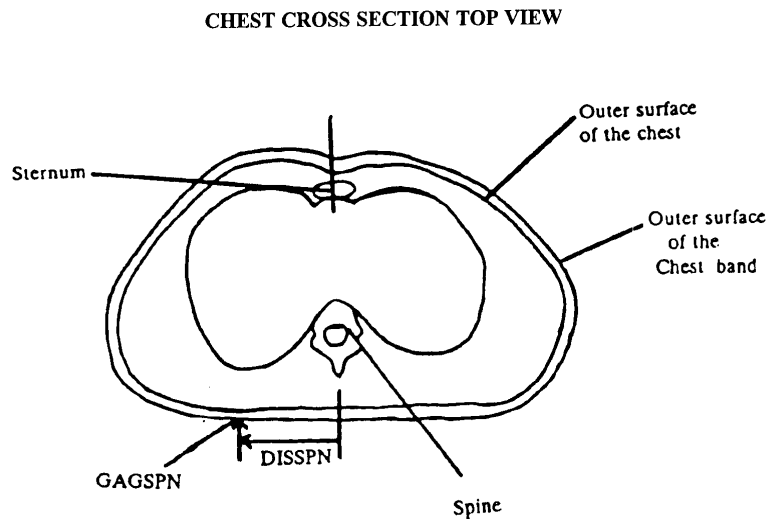


Figure 2-50 DISSPN - Distance Referenced to the Spine

2.7.1.11 TOTGAG — Total Number of Gauges

(Number of Gauges) — Bounded Integer, 1 to 40

TOTGAG is the total number of active curvature gauges on the chest band specified by the BANDNO.

2.7.1.12 CHBCOM — Chest Band Commentary

(Chest Band Comments) — Free Text, maximum length 70 characters

CHBCOM should be used to describe any information that is important about the chest band that does not appear in any other field. If no comments are to be made, code the field NO COMMENTS (left justified).

2.7-2 Chest Band Gauge Information

The data elements in the Chest Band Gauge Information group describe the relationships of the active gauges on the chest band and the relationships of those gauges and the curve number that identifies the signal generated by each gauge.

Chest Band Occupant Information must first be entered for each chest band used prior to entering Chest Band Gauge Information.

A 16-gauge chest band is shown below in two positions: lying flat and encircling the test occupant's torso. A cross section view of the torso is shown below, from the perspective of superior to inferior. As the drawings show, the gauges occur on the band in sequence beginning at the leading edge of the band.

The band should be positioned on the torso so that the gauge numbers are increasing in a clockwise direction. The location of the leading edge of the chest band in reference to the occupant is not restricted and can be placed anywhere along the circumference (surface) of the chest.

The information includes the field order index, the variable name, (the application label associated with the variable), and a brief description of the data type and valid data range.

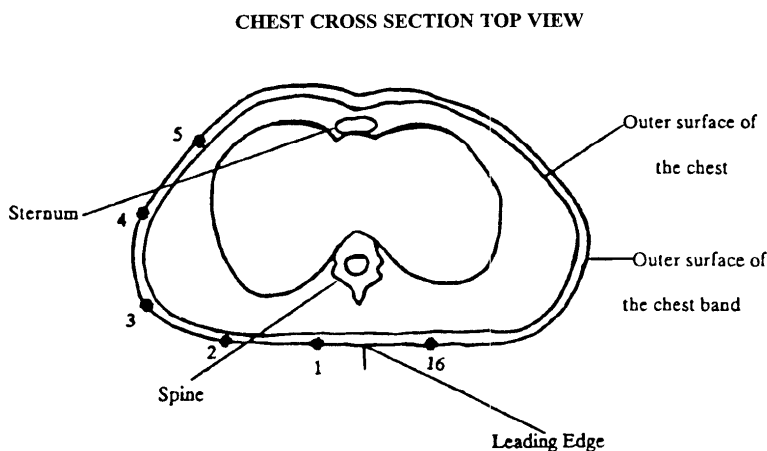


Figure 2-51 Chest Cross Section - Top View

CHEST BAND LYING FLAT

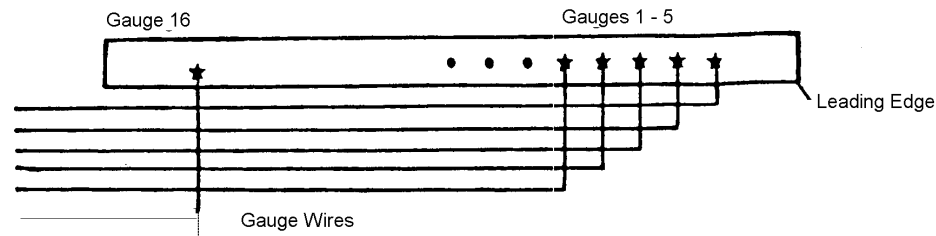


Figure 2-52 Chest Band Lying Flat

The chest band is described further in a technical article by Rolf H. Eppinger, entitled "The Development of a Measurement System and Its Application toward Developing Mechanically Based Injury Indices" and found in the 33rd Stapp Car Crash Conference Proceedings, October 1989. A detailed Chest Band User's Guide has been written for the experimentalist and can be obtained by contacting the NHTSA technical person working with you.

The fields in the Chest Band Gauge Information group apply to each active curvature gauge on a chest band. The appropriate information should be recorded in all fields for each sensor (active chest band curvature gauge) associated with the test.

For example, if three chest bands are used, with 16 active gauges per band, the fields TSTNO through GAGCOM will be repeated 48 times. This corresponds to the 48 instrumentation records where SENATT = CHBD. (The SENATT field is described in more detail in **Section 2.6 Instrumentation Information**.)

2.7.2.1 BANDNO — Chest Band Number

(Chest Band Number) — Bounded Integer, 1 to 5

BANDNO is the sequential number (1,2,3 ...) assigned to the chest band defined in the Chest Band Occupant Information group. Chest band numbering begins at the superior of the occupant, progressing to the inferior of the occupant. (NOTE: BANDNO is NOT equal to INSMAN, the manufacturer's serial number, which is defined in the *Instrumentation Information* group.)

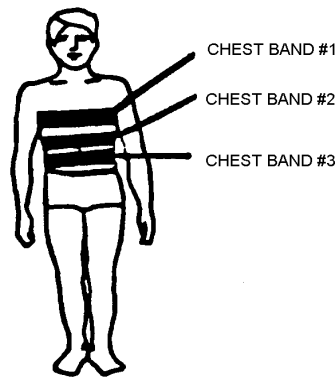


Figure 2-53 BANDNO – Chest Band Number

2.7.2.2 GAGENO — Gauge Number

(Gauge Number) — Bounded Integer, 1 to 5

GAGENO is the number of the active chest band curvature gauge. Active gauges are numbered sequentially from the leading edge of the chest band. Gauges that are not active for the test are ignored. For example, if there are ten active gauges on the chest band, then the value of GAGENO would be 1, 2, 3, 4, 5, 6, 7, 8, 9, or 10, as shown below.

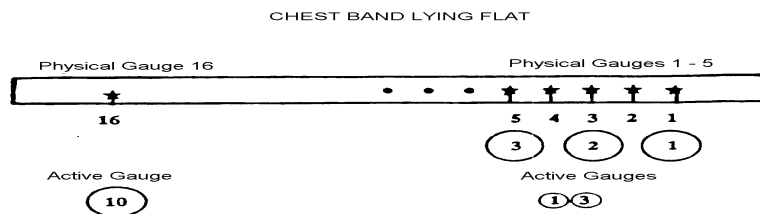


Figure 2-54 GAGENO – Chest Band Lying Flat

2.7.2.3 GAGDIS — Gauge Distance

(Gauge Distance) — Bounded Integer, millimeters, 1 to 1,800

GAGDIS is the curvilinear distance from the leading edge of the chest band in a clockwise direction to the GAGENO. There will be one value of GAGDIS that corresponds to each GAGENO (active gauge number). (Recall that the leading edge may be positioned anywhere along the circumference of the torso surface.)

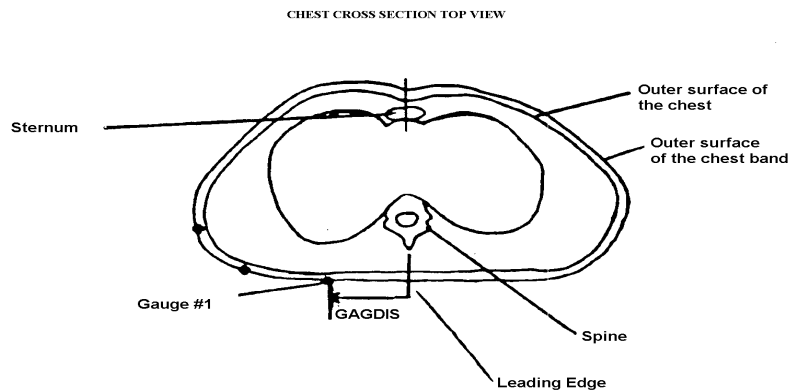


Figure 2-55 GAGDIS – Gauge Distance

2.7.2.4 BANLEN — Chest Band Length

(Band Length) — Bounded Integer, millimeters, 1 to 1,800

BANLEN circumference of the chest measured at the location of the specific chest band, indicated by BANDNO.

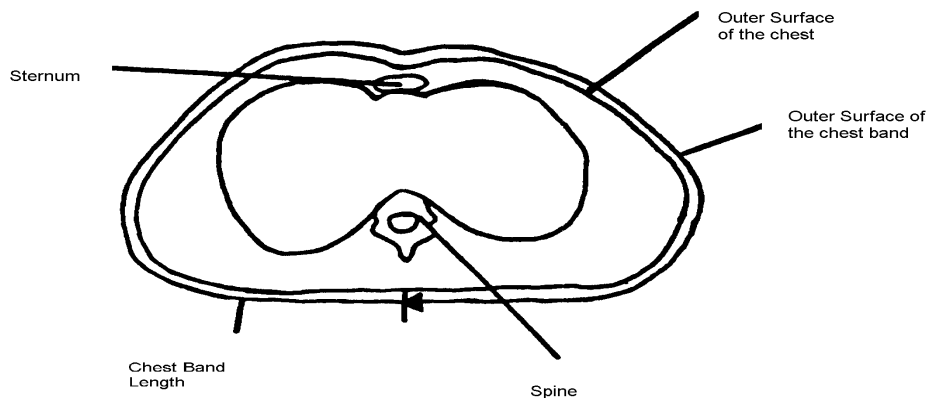


Figure 2-56 BANLEN - Chest Band Length

2.7.2.5 CURNO — Curve Number of a Specific Gauge

(Curve Number) — Bounded Integer 1 to 200

CURNO is the sequential number (1,2,3...) assigned to a specific sensor and data curve as defined in **Section 2.6 Instrumentation Information**. CURNO must be equal to the curve number of the active gauge. The total number of CURNOs is equal to the total number of records where SENATT=CHBD in the Instrumentation Information Group.

Where CURNOs for other instruments (accelerometers, load cells, for example) have been defined for the same test, CURNOs defined for the gauge numbers will follow in sequence, as the illustration shows.

| Chest Band Number | Physical Gauge | Active Gauge (GAGENO) | Curve Number (CURNO) |
|-------------------|----------------|-----------------------|----------------------|
| 1 | 1 - 16 | 1 - 10 | 22 - 31 |
| 2 | 1 - 16 | 1 - 8 | 32 - 39 |
| 3 | 1 - 16 | 1 - 7 | 40 - 46 |

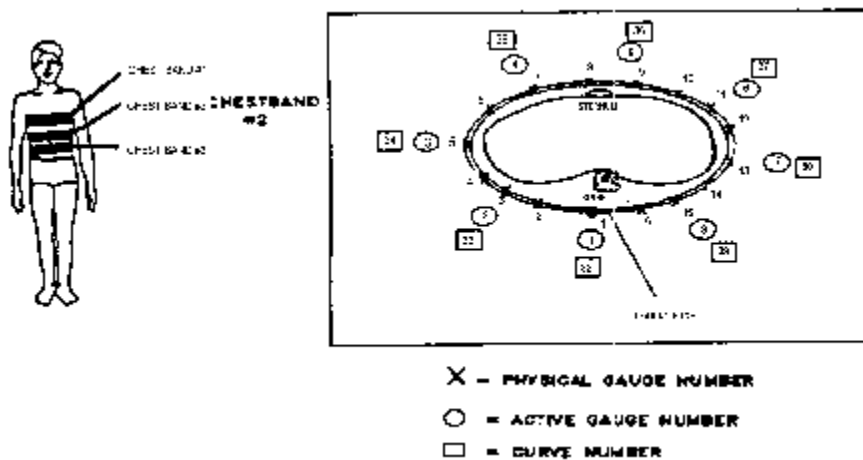


Figure 2-57 CURNO - Curve Number

2.7.2.6 GAGCOM — Gage Commentary

(Gauge Commentary) — Free Text, maximum length 70 characters

GAGCOM should be used to describe any information that is important about the gauge that does not appear in any other field. If no comments are to be made, code the field NO COMMENTS (left justified).

Three fields in the Instrumentation Information group require special codes for each active chest band sensors. These fields are:

1) SENATT - Sensor Attachment

SENATT indicates where the sensor is attached. For tests in which sensors are attached to a chest band, SENATT = CHBD.

2) SENTYP - Sensor Type

SENTYP indicates the type of sensor used for collecting the measurements at the time of the test. For tests in which chest band gauges are used as sensors, SENTYP = CC.

3) YUNITS - Data Measurement Units

YUNITS indicates the units used to measure the signal of the sensor data. For tests in which chest band gauges are used, the code RMM (for reciprocal millimeters) should be used to indicate the appropriate data measurement units.

2.7.2.7 Chest Band Impact on Instrumentation Information

Chest Band gauge information includes three fields that indicate

- 1) where the sensor is attached (SENATT)
- 2) the type of sensor used (SENTYP)
- 3) the units used for the sensor (YUNITS).

For each active chest band sensor (strain gauge bridge), special codes are used for these three fields.

SENATT - Sensor Attachment

SENATT indicates where the sensor is attached. For tests in which sensors are attached to a chest band, SENATT = CHBD.

SENTYP - Sensor Type

SENTYP indicates the type of sensor used for collecting the measurements at the time of the test. For tests in which chest band gauges are used as sensors, SENTYP = CC.

YUNITS - Data Measurement Units

YUNITS indicates the units used to measure the signal of the sensor data. For tests in which chest band gauges are used, the code RMM (for reciprocal millimeters) should be used to indicate the appropriate data measurement units.

These fields also appear in *Section 2.6 Instrumentation Information*.

Chapter 3 : Test Report Format

A written report should be generated for each test to be submitted. This report shall be saved on the submission physical media under the directory:

\REPORT\

with the filename

R<TSTREF>.pdf

where <TSTREF> has the same value as TSTREF in *Section 2.2 General Test Information* of this guide.

The report shall preferably be in the Adobe PDF document format (www.adobe.com). Alternatively, a report may be submitted in Microsoft Word 97 or Microsoft Word 2000 format if the test site is unable to generate a PDF file.

At a minimum, each report shall contain the following information:

- 1) A cover page including,
 - Title of Study
 - Test Performer
 - Test Reference Number (EV5 specification file - field TSTREF)
 - Contract Number
 - Test Date
- 2) In the main body of the test report, the following items shall be included:
 - A text description and diagram/pictures of the test setup.
 - A table of all injury criteria reported in the EV5 specification file.
 - A complete description of specimen necropsy (cadaver and animal tests only).
 - Description of camera views and type of media (film/video).
 - Information which could not be included in the EV5 specification file, and that the test engineer and/or COTR deem appropriate or important to mention.
- 3) In the report Appendix A, the following information shall be included
 - A diagram describing the coordinate system.
 - A table describing load cell manipulations for positive values.

- 4) In the report Appendix B, a plot of each curve submitted exactly as it should appear in the database. The plots will be compared with the signal data loaded into the database to ensure that the signals the test laboratory intends to enter into the NHTSA database are not corrupted during the submission and loading process. Each plot should display the maximum and minimum values of the signal and their respective event times.

- 5) In the report Appendix C, a list of the instrumentation associated with each channel, including transducer, sampling rate, signal conditioning, units and axis.

The COTR or test engineer is encouraged to include any other information that they feel is necessary to make the report meaningful. However, the COTR or test engineer may not eliminate any of five (5) minimum requirements outlined above.

Chapter 4 : Pre- and Post-Event Images

Images and video captured before and after the test may be submitted whether they are digital images or processed film images.

4.1 Digital Images

Digital images and videos of the test before and after the event shall be submitted on the submission media as noted in **Chapter 1 : Media Format and Layout**. Video files shall be submitted under the directory \PREPOST\VIDEOS. Still images shall be submitted under the directory \PREPOST\PHOTOS. File names should be descriptive. Naming convention is at the discretion of the COTR, with the exception that standard file extensions shall be applied to all files as appropriate to the content type of each file.

As an example, TIFF format image files should be named with a file extension of

.tif

while JPEG format image files should be named with a file extension of

.jpg

Digital images shall be submitted in one of the following formats: Windows bitmap (BMP), GIF, TIFF, or JPEG.

4.2 Processed Film Images

Hardcopy processed film images shall be included as an appendix in the report.

If you have data that you wish to submit but which is not specified in this guide, please send email to matthew.maltese@nhtsa.dot.gov.

Chapter 5 : Event Images, Film, and Video

The procedures for the capturing and formatting of images of the impact event are described below. Procedures for images captured by high-speed film and high-speed video are outlined below, as well as generic procedures for other event image types.

5.1 High-Speed Film

NOTE: This section describes procedures for capturing and submitting high-speed film, not digital video. Refer to **Section 5.2 High-Speed Digital Video**, below, for high-speed video requirements.

5.1-1 Film Image Content

The only content requirements of the high-speed film camera image view specified in this guide are:

- 1) Somewhere in the image view there should be text denoting the TSTREF field from the EV5 specification file as described in Chapter 2.
- 2) Some type of visible time mark should be present to indicate time zero for the test. This time zero should correspond with the time zero on the data acquisition system.
- 3) Somewhere within the image, the time at which the image was captured shall also be displayed. Alternatively, the use of the LED timing mark available on most high-speed cameras is acceptable.

5.1.1.1 Media Format

Processed film should be submitted to NHTSA with the test submission. Multiple camera angles may be submitted on a single reel, or multiple reels may be submitted.

5.2 High-Speed Digital Video

NOTE: This section describes procedures for capturing and submitting high-speed digital video, not film.

5.2-1 Video Image Content

The only content requirements of the high-speed video camera image view specified in this guide are:

- 1) Somewhere in the image view there should be text denoting the TSTREF field from the EV5 specification file as described in Chapter 2.
- 2) Some type of visible time mark should be present to indicate time zero for the test. This time zero should correspond with the time zero on the data acquisition system.
- 3) Somewhere within the image, the time at which the image was captured shall also be displayed.

5.2-2 High-Speed Digital Video Information File

The High-Speed Video Information File contains information about the data from each camera used in the test. The file is a delimited text file similar to the EV5 specification file (***Section 2.1-1 Specification Data***) containing the fields listed below. Values for TSTREF, VSCFACTOR, DESC, and COMMENT shall be written to an ASCII text file on single line, each field separated by a pipe ('|') delimiter, in the order listed above. The line shall be terminated by a carriage return. Each line constitutes a single record, and records should be included in the High Speed Video information file for each camera sequence submitted. All entries shall be in uppercase. The High Speed Video Information File shall be named <TSTREF>.HS5.

5.2.2.1 CAMNO — Camera Number

(Camera Number) — Bounded Integer, 0 to 99

5.2.2.2 TSTREF — Test Reference Number

(Test Reference Number) — Free Text, maximum length 10 characters

This should be the same as the TSTREF in the EV5 specification file.

5.2.2.3 VSCFACTOR — Video Frame Number Scale Factor

(Conversion Factor to Scale Video Frame Number) — Real, ≥ 0

This is the scale factor to be applied against the integer frame number of a sequential image file, as described below, in order to convert the integer frame sequence value into a time value in seconds. A value of zero (0) may be entered if sequential frames are not stored at constant intervals of time as with force-deflection data.

5.2.2.4 DESC — View Description

(Camera View Description) — Free Text, maximum length 70 characters

A description of the view of this high-speed video camera (example ‘front left view’, or ‘overhead view’)

5.2.2.5 COMMENT — Camera Commentary

(Camera Commentary) — Free Text, maximum length 70 characters

Comment on this particular camera view.

5.2-3 Sequential Image and Movie Submission Format

High-speed video data should be submitted in two formats, sequential raster image files and AVI movies.

5.2.3.1 Sequential Bitmap Image Files

Most high-speed video systems output sequential raster image files, with the frame number denoted within the filename of each file. Each file shall be numbered using the following file naming convention:

F<frame number>.<file format extension>

where

<frame number> is the integer sequential frame number of each image. A minus (-) should prefix the <frame number> for images captured before the start of the event.

<file format extension> is TIF for TIFF format image files, JPG for JPEG format image files, GIF for GIF format image files, and BMP for Windows bitmap files.

5.2.3.2 AVI Files

For each camera view, AVI movie files shall be generated using a widely available codec agreed upon by the laboratory and the COTR. For help with codec selection, send email to nrd.softdev@nhtsa.dot.gov. Each AVI file shall use the following naming convention:

<TSTREF> C <CAMNO>.avi (no spaces in filename)

5.2-4 Media Format

All high-speed video files shall be stored in the directory \EVENT as described in *Chapter 1 : Media Format and Layout* of this guide.

The High-Speed Video Information File <TSTREF>.HS5 shall be stored in the directory \EVENT\HSVIDEO on the test submission media with the filename

High-speed video sequential raster image files and AVI movies shall be placed on the test submission media under \EVENT \HSVIDEO\CAMERA<CAMNO>, where <CAMNO> is a sequential number assigned to each camera, further described in the HIGH-SPEED VIDEO INFORMATION FILE section above.

Example:

Test lab ABC conducted test T1234 which had 3 high speed video cameras collecting images, each having views of an impact event from the top, right side, and front. Each camera captured TIFF images from -40 to +500 milliseconds in increments of one millisecond. The digital test submission media would have the following directories:

```
\EVENT\HSVIDEO\CAMERA1\  
\EVENT\HSVIDEO\CAMERA2\  
\EVENT\HSVIDEO\CAMERA3\  

```

The following files would be included (**example only**):

```
\EVENT\HSVIDEO\T1234.HS5           (High Speed Video Information File)  
\EVENT\HSVIDEO\CAMERA1\T1234C1.AVI (AVI Movie File)  
\EVENT\HSVIDEO\CAMERA1\F-40.TIF     (Sequential Bitmap Image File)  
...  
\EVENT\HSVIDEO\CAMERA1\F0.TIF       (Sequential Bitmap Image File)  
...  
\EVENT\HSVIDEO\CAMERA1\F500.TIF     (Sequential Bitmap Image File)  
\EVENT\HSVIDEO\CAMERA2\T1234C2.AVI  
\EVENT\HSVIDEO\CAMERA2\F-40.TIF  
...  

```

\EVENT\HSVIDEO\CAMERA2\F0.TIF
...
\EVENT\HSVIDEO\CAMERA2\F500.TIF
\EVENT\HSVIDEO\CAMERA3\T1234C2.AVI
\EVENT\HSVIDEO\CAMERA3\F-40.TIF
...
\EVENT\HSVIDEO\CAMERA3\F0.TIF
...
\EVENT\HSVIDEO\CAMERA3\F500.TIF

The contents of the High Speed Video information file named T1234.HS5 would be:

1|T1234|MILLISECONDS|TOP VIEW|NO COMMENTS
2|T1234|MILLISECONDS|RIGHT SIDE VIEW|NO COMMENTS
3|T1234|MILLISECONDS|FRONT VIEW|NO COMMENTS

5.3 Other Event Images

Other event images, such as BETA or VHS tapes, can be included in the test submission packet. Please send email to matthew.maltese@nhtsa.dot.gov if you have any questions about submitting event images not specified in this guide.

Appendix A: Data Coordinate System

Starting with Version 4 of the NHTSA Test Reference Guides, all submissions will conform to SAE J211/1 MAR95 Instrumentation for Impact Test. Please refer to SAE J211 for a complete description of the coordinate system and signal polarities for vehicle occupants.

A-1. Using the Coordinate System Correctly

The rules for determining the sign conventions described below will enable anyone involved in NHTSA-sponsored testing to determine the proper sign and coordinate axis for any measured quantity.

All coordinate systems are orthogonal, three-dimensional, and right handed. The global coordinate systems for the vehicle and the test occupants are shown in *Figure A-1* and *Figure A-2*. The coordinate system for the nine-accelerometer head array is shown in *Figure A-3*, along with the proper SENATT codes.

Table A-1 lists the polarity of the sensor output from various dummy manipulations when using this coordinate system.

A-2. Vehicle Global Coordinate System

- X is positive forward
- Y is positive right (toward the passenger side door)
- Z is positive down

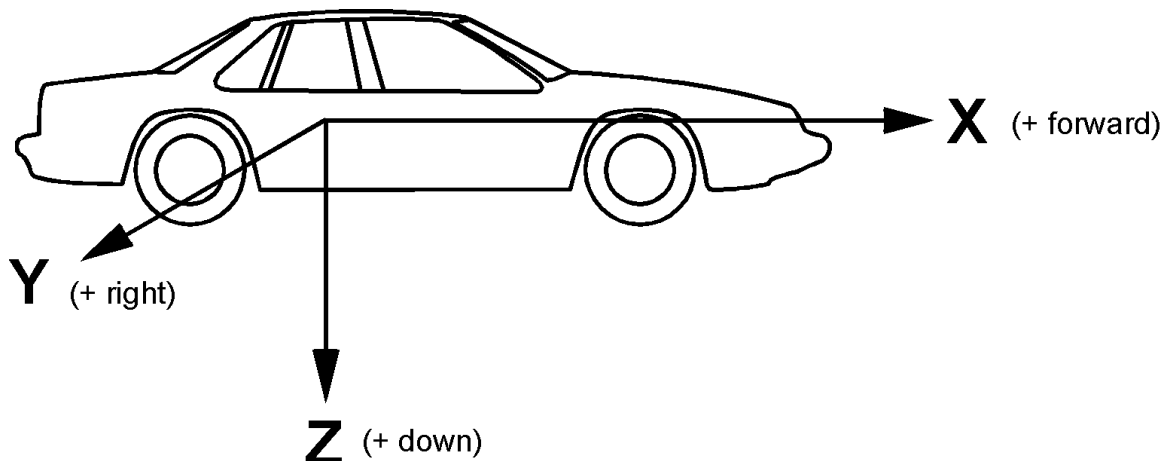


Figure A-1 Vehicle Global Coordinate System

A-3. Occupant Global Coordinate System

- X is positive forward (posterior to anterior)
- Y is positive right
- Z is positive down

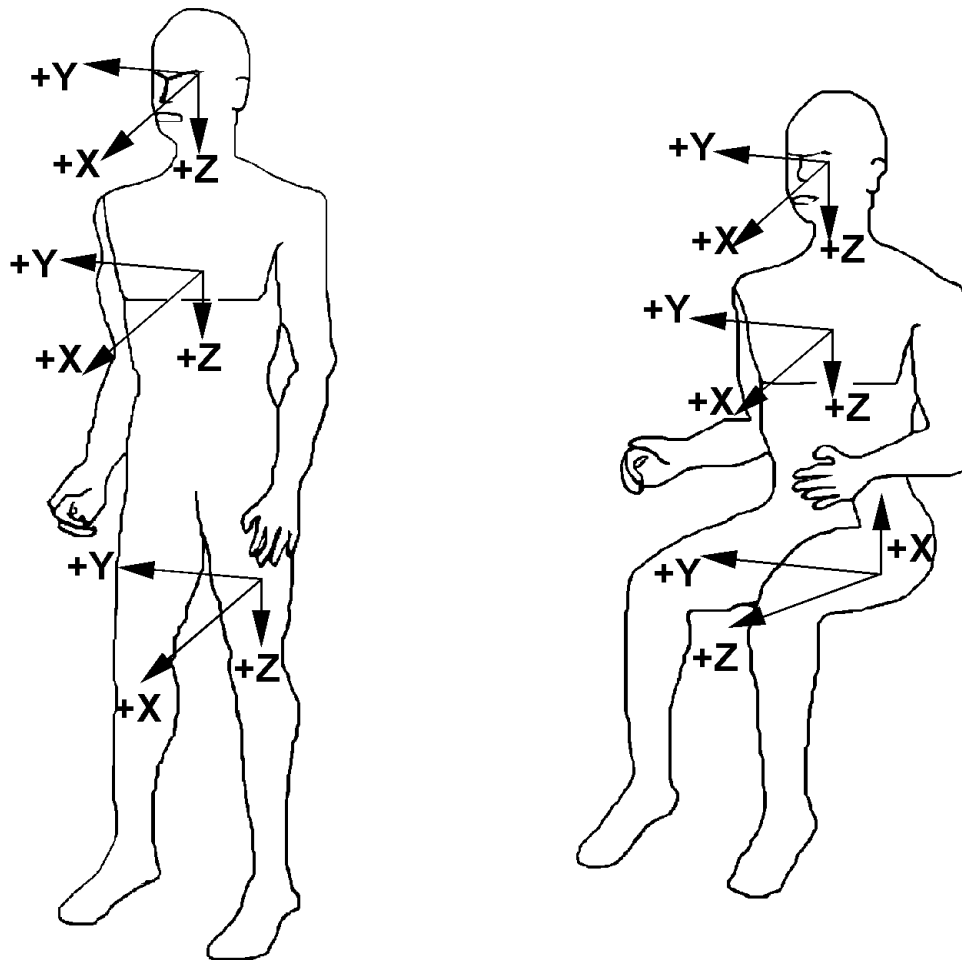


Figure A-2 Occupant Global Coordinate System

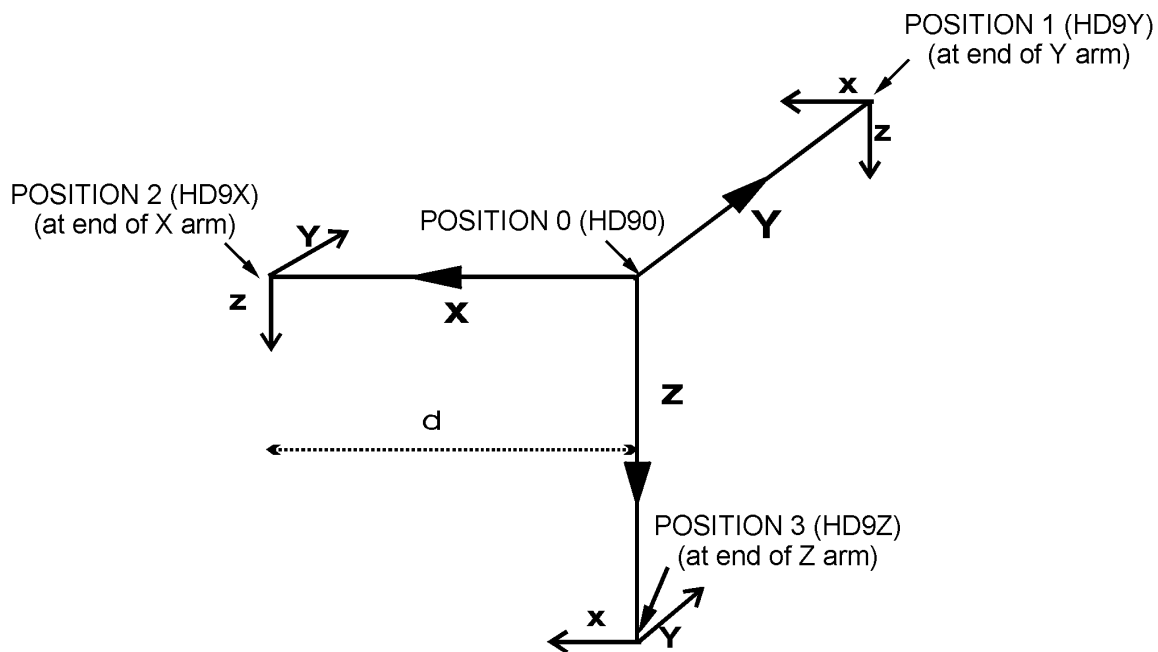


Figure A-3 Nine-Accelerometer Coordinate System

Table A- 1 Dummy Manipulations for Checking Recorded Load Cell Polarity Relative to Sign Convention

| Load Cell | Measure | Dummy Manipulations | Polarity |
|---------------------------------------|---------|---|----------|
| Upper and lower neck loads | Fx | Head rearward, chest forward | + |
| | Fy | Head leftward, chest rightward | + |
| | Fz | Head upward, chest downward | + |
| | Mx | Left ear toward left shoulder | + |
| | My | Chin toward sternum | + |
| | Mz | Chin toward left shoulder | + |
| Left shoulder loads (BIOSID) | Fx | Left shoulder forward, chest rearward | + |
| | Fy | Left shoulder rightward, chest leftward | + |
| | Fz | Left shoulder downward, chest upward | + |
| Right shoulder loads (BIOSID) | Fx | Right shoulder forward, chest rearward | + |
| | Fy | Right shoulder rightward, chest leftward | + |
| | Fz | Right shoulder downward, chest upward | + |
| Clavicle loads | Fx | Shoulder forward, chest rearward | + |
| | Fz | Shoulder downward, chest rearward | + |
| Upper and lower lumbar spine | Fx | Chest rearward, Pelvis forward | + |
| | Fy | Chest leftward, pelvis rightward | + |
| | Fz | Chest upward, pelvis downward | + |
| | Mx | Left shoulder toward left hip | + |
| | My | Sternum toward front of legs | + |
| | Mz | Right shoulder forward, left shoulder rearward | + |
| Sacrum load (BIOSID) | Fy | Left H-point pad leftward, chest rightward | + |
| Left iliac load (BIOSID) | Fy | Left iliac rightward, chest leftward | + |
| Right iliac load (BIOSID) | Fy | Right iliac rightward, chest leftward | + |
| Pubic load (side impact) | Fy | Right H-point pad leftward, left pad rightward | (-) |
| Crotch belt loads | Fx | Pubic rearward, pelvis forward | (-) |
| | Fz | Pubic upward, chest downward | (-) |
| Iliac lap belt loads | Fx | Upper iliac spine rearward, chest forward | (-) |
| | My | Upper iliac spine rearward, chest forward | + |
| Left side abdominal load (Eurosid-1) | Fy | Left side of abdomen rightward, chest leftward | + |
| Right side abdominal load (Eurosid-1) | Fy | Right side of abdomen leftward, chest rightward | (-) |

| Load Cell | Measure | Dummy Manipulations | Polarity |
|--|---------|---|----------|
| Femur loads (dummy in seated position, femurs horizontal) | Fx | Knee upward, upper femur downward | + |
| | Fy | Knee rightward, upper femur leftward | + |
| | Fz | Knee forward, pelvis rearward | + |
| | Mx | Knee leftward, hold upper femur in place | + |
| | My | Knee upward, hold upper femur in place | + |
| | Mz | Tibia leftward, hold pelvis in place | + |
| Knee clevis | Fz | Tibia downward, femur upward | + |
| Upper tibia loads | Fz | Tibia downward, femur upward | + |
| | Mx | Ankle leftward, hold knee in place | + |
| | My | Ankle forward, bottom of knee clevis rearward | + |
| Lower tibia loads | Fx | Ankle forward, knee rearward | + |
| | Fy | Ankle rightward, knee leftward | + |
| | Mx | Ankle leftward, hold knee in place | + |
| | My | Ankle forward, bottom of knee clevis rearward | + |

Appendix B: Codes

All codes are categorized and alphabetized in a logical manner. Field names are left justified in bold print and underlined, code names are in capital letters indented to the right. Categories (and sub-categories) are in italicized print. When more detailed explanations are warranted, text is listed after the field name. Any use of the code "OTHER" should be explained in an appropriate commentary field.

A comprehensive reference for currently acceptable codes for a given coded value may be obtained from the Entrée for Windows program, described briefly in *Section 1.2-1 Entrée for Windows*, or from the NHTSA Research and Development web site where the very latest updates are available as part of our database publication.

AIS

| CODE | DESCRIPTION | COMMENT |
|-------------|--------------------|----------------|
| 0 | NO INJURY | |
| 1 | MINOR INJURY | |
| 2 | MODERATE INJURY | |
| 3 | SERIOUS INJURY | |
| 4 | SEVERE INJURY | |
| 5 | CRITICAL INJURY | |
| 6 | MAXIMUM INJURY | UNTREATABLE |
| 9 | NOT DEFINED | |

AORPRE

| CODE | DESCRIPTION | COMMENT |
|-------------|--------------------|----------------|
| Y | YES | |
| N | NO | |

ASPECT

| CODE | DESCRIPTION | COMMENT |
|------|--------------|---------|
| A | ANTERIOR | FRONT |
| B | BILATERAL | |
| C | CENTRAL | |
| I | INFERIOR | LOWER |
| L | LEFT | |
| P | POSTERIOR | BACK |
| R | RIGHT | |
| S | SUPERIOR | UPPER |
| W | WHOLE REGION | |

AXIS

| CATEGORY | CODE | DESCRIPTION | COMMENT |
|---|------|----------------|--------------|
| GLOBAL – FIXED WRT VEHICLE GEOMETRY | XG | X - GLOBAL | |
| | YG | Y - GLOBAL | |
| | ZG | Z - GLOBAL | |
| LOCAL – LOCAL REFERENCE SYSTEM | XL | X - LOCAL | INCLUDES A-P |
| | YL | Y - LOCAL | INCLUDES M-L |
| | ZL | Z - LOCAL | INCLUDES I-S |
| OTHER | NR | NORMAL | |
| | RS | RESULTANT | |
| | NA | NOT APPLICABLE | |
| | OT | OTHER | |

BMCLOC

| CODE | DESCRIPTION | COMMENT |
|------|--------------------------------|---------|
| CAL | CALCANEUS | |
| CER | CERVICAL SPINE | |
| DSR | DISTAL RADIUS | |
| FMN | FEMORAL NECK | |
| GL2 | SECOND LUMBAR VERTEBRA | |
| GL3 | THIRD LUMBAR VERTEBRA | |
| GL4 | FOURTH LUMBAR VERTEBRA | |
| GLM | GENERAL LUMBAR (L2-L4) | |
| WTR | WARD'S TRIANGLE | |
| NAP | NOT APPLICABLE | |
| OTH | OTHER (DESCRIBE IN COMMENTARY) | |

BMCMETHOD

| CODE | DESCRIPTION | COMMENT |
|------|--------------------------------|---------|
| ASH | ASH CONTENT | |
| DPA | DUAL PHOTON ABSORPTIOMETRY | |
| DXA | DEXA SCAN | |
| QCT | CT SCAN | |
| SPA | SINGLE PHOTON ABSORPTIOMETRY | |
| OTH | OTHER (DESCRIBE IN COMMENTARY) | |

BMCUNITS

| CODE | DESCRIPTION | COMMENT |
|------|--------------------------------|---------|
| GRAM | GRAMS | |
| GPMM | GRAMS PER MILLIMETER | |
| GPSM | GRAMS PER SQUARE MILLIMETER | |
| GPCM | GRAMS PER CUBIC MILLIMETER | |
| OTHR | OTHER (DESCRIBE IN COMMENTARY) | |

BOCCLOC

| CODE | DESCRIPTION | COMMENT |
|-------------|--------------------|--------------------------|
| 01 | LEFT FRONT SEAT | |
| 02 | RIGHT FRONT SEAT | |
| 03 | RIGHT REAR SEAT | |
| 04 | LEFT REAR SEAT | |
| 05 | CENTER FRONT SEAT | |
| 06 | CENTER REAR SEAT | |
| 07 | LEFT THIRD SEAT | STATION WAGON/VAN |
| 08 | CENTER THIRD SEAT | STATION WAGON/VAN |
| 09 | RIGHT THIRD SEAT | STATION WAGON/VAN |
| NA | NOT APPLICABLE | |
| OT | OTHER | OTHER OR OUT OF POSITION |

BOCCSEX

| CODE | DESCRIPTION | COMMENT |
|-------------|--------------------|-------------------|
| F | FEMALE | |
| M | MALE | |
| U | UNKNOWN | NOT IN TAPE GUIDE |

BODYRG

| CODE | DESCRIPTION | COMMENT |
|------|---------------------|-----------------------------|
| A | UPPER ARM | |
| B | BACK | THORACO-LUMBAR SPINE |
| C | CHEST | ANTERIOR AND POSTERIOR RIBS |
| E | ELBOW | |
| F | FACE | |
| H | HEAD/SKULL | |
| K | KNEE | |
| L | LOWER LEG | BELOW KNEE |
| M | ABDOMEN | DIAPHRAGM AND BELOW |
| N | NECK/CERVICAL SPINE | |
| O | WHOLE BODY | |
| P | PELVIC/HIP | |
| Q | ANKLE/FOOT | |
| R | FOREARM | |
| S | SHOULDER | |
| T | THIGH | INCLUDES FEMUR |
| W | WRIST/HAND | |
| X | UPPER EXTREMITY | ENTIRE LIMBS |
| Y | LOWER EXTREMITY | ENTIRE LIMBS |

BSEPOSN

| CODE | DESCRIPTION | COMMENT |
|------|-----------------------------|---------------------|
| CN | CENTER POSITION | OF ADJUSTMENT RANGE |
| FW | FORWARD OF CENTER POSITION | |
| NA | NOT APPLICABLE | |
| NO | NON-ADJUSTABLE SEAT | |
| RW | REARWARD OF CENTER POSITION | |
| UN | UNKNOWN | |
| OT | OTHER | |

CERPRE

| CODE | DESCRIPTION | COMMENT |
|------|-------------|---------|
| Y | YES | |
| N | NO | |

CHSTAT

| CODE | DESCRIPTION | COMMENT |
|------|-------------|---------|
| P | PRIMARY | |
| R | REDUNDANT | |

DASTAT

| CODE | DESCRIPTION | COMMENT |
|------|------------------------|-----------------------|
| AM | AS MEASURED | A |
| CF | CHANNEL FAILED | F |
| CM | COMPUTED | C |
| MN | MEANINGLESS | M |
| NO | NO DATA | N |
| QD | QUESTIONABLE DATA | Q |
| SC | SCALING FACTOR APPLIED | S |
| SF | SYSTEM FAILED | NOTE CAUSE OF FAILURE |
| UN | NOT KNOW | |

DEPLOY

| CODE | DESCRIPTION | COMMENT |
|------|-----------------------|---------|
| ND | NOT DEPLOYED PROPERLY | |
| UN | UNKNOWN | |
| DP | DEPLOYED PROPERLY | |
| NA | NOT APPLICABLE | |

DOCCLOC

| CODE | DESCRIPTION | COMMENT |
|------|-------------------|--------------------------|
| 01 | LEFT FRONT SEAT | |
| 02 | RIGHT FRONT SEAT | |
| 03 | RIGHT REAR SEAT | |
| 04 | LEFT REAR SEAT | |
| 05 | CENTER FRONT SEAT | |
| 06 | CENTER REAR SEAT | |
| 07 | LEFT THIRD SEAT | STATION WAGON/VAN |
| 08 | CENTER THIRD SEAT | STATION WAGON/VAN |
| 09 | RIGHT THIRD SEAT | STATION WAGON/VAN |
| NA | NOT APPLICABLE | |
| OT | OTHER | OTHER OR OUT OF POSITION |

DOCCSEX

| CODE | DESCRIPTION | COMMENT |
|------|----------------|--------------------------------|
| F | FEMALE | |
| M | MALE | |
| N | NOT APPLICABLE | OCCUPANT IS NOT AN ADULT DUMMY |
| U | UNKNOWN | NOT IN TAPE GUIDE |

DSEPOSN

| CODE | DESCRIPTION | COMMENT |
|------|-----------------------------|---------------------|
| CN | CENTER POSITION | OF ADJUSTMENT RANGE |
| FW | FORWARD OF CENTER POSITION | |
| NA | NOT APPLICABLE | |
| NO | NON-ADJUSTABLE SEAT | |
| RW | REARWARD OF CENTER POSITION | |
| UN | UNKNOWN | NOT IN TAPE GUIDE |
| OT | OTHER | |

DUMSIZ

| CATEGORY | CODE | DESCRIPTION | COMMENT |
|----------|------|--------------------|----------------------|
| CHILD | 06 | 6 MONTH OLD CHILD | |
| | 12 | 12 MONTH OLD CHILD | |
| | 18 | 18 MONTH OLD CHILD | |
| | 3C | 3 YEAR OLD CHILD | 3C |
| | 6C | 6 YEAR OLD CHILD | 6C |
| ADULT | 05 | 5 PERCENTILE | |
| | 50 | 50 PERCENTILE | |
| | 95 | 95 PERCENTILE | |
| OTHER | NA | NOT APPLICABLE | OCCUPANT NOT A DUMMY |
| | OT | OTHER | |

LESION

| CODE | DESCRIPTION | COMMENT |
|------|--------------------------|---------|
| A | ABRASION | |
| B | BURN | |
| C | CONTUSION | |
| D | DISLOCATION | |
| E | SEVERANCE/TRANSECTION | |
| F | FRACTURE | |
| G | DETACHMENT/SEPARATION | |
| K | CONCUSSION | |
| L | LACERATION | |
| M | AMPUTATION | |
| N | CRUSHING | |
| P | PERFORATION/PUNCTURE | |
| R | RUPTURE | |
| S | SPRAIN | |
| T | STRAIN | |
| V | AVULSION | |
| Z | FRACTURE AND DISLOCATION | |
| O | NOT DEFINED | |

LINK

| CODE | DESCRIPTION | COMMENT |
|------|-------------------------------|-------------------|
| OTH | OTHER | |
| TEL | TELEMETRY | |
| UCT | UMBILICAL CABLE AND TELEMETRY | |
| UMB | UMBILICAL CABLE | |
| UNK | UNKNOWN | NOT IN TAPE GUIDE |

MTHCAL

| CODE | DESCRIPTION | COMMENT |
|------|-------------------|----------------------|
| H3 | HYBRID III | |
| HS | SIDE IMPACT DUMMY | |
| P5 | PART 572 | |
| NO | NONE | NO CALIBRATION |
| NA | NOT APPLICABLE | OCCUPANT NOT A DUMMY |
| UN | UNKNOWN | NOT IN TAPE GUIDE |
| OT | OTHER | |

OCCTYP

| CATEGORY | SUB-CATEGORY | CODE | DESCRIPTION | COMMENT |
|----------|--------------|-------------------------|------------------------------------|---------|
| DUMMY | ALL PURPOSE | AO | APR OMNI-DIRECTIONAL DUMMY | APROD |
| | | CH | CHILD DUMMY | CHLDDM |
| | | CR | CRABI | |
| | | H3 | HYBRID III DUMMY | HYB3DM |
| | | HT | HYBRID III DUMMY WITH THOR LX LEGS | |
| | | P5 | PART 572 DUMMY | P572DM |
| | | TD | TAD DUMMY | |
| | | TH | THOR DUMMY | |
| | | TR | TRRL DUMMY | TRRLDM |
| | OTHER | HP | HUMANOID PEDESTRIAN DUMMY | HMNPED |
| | SIDE IMPACT | AS | APR SIDE IMPACT DUMMY | APRSID |
| | | BS | BIO-SID DUMMY | |
| | | ES | EUROSID DUMMY | |
| | | S2 | SID-IIS SIDE IMPACT DUMMY | |
| | | S3 | SID WITH HYBRID III HEAD/NECK | |
| | SD | NHTSA SIDE IMPACT DUMMY | SID | |
| HUMAN | | AN | ANIMAL | |
| | | CD | CADAVER | CADAVER |
| | | HU | HUMAN VOLUNTEER | |
| OTHER | | OT | OTHER | |

PULPRE

| CODE | DESCRIPTION | COMMENT |
|------|-------------|---------|
| Y | YES | |
| N | NO | |

RECTYP

| CODE | DESCRIPTION | COMMENT |
|------|------------------------------|-------------------|
| DDA | DIGITAL DATA ACQUISITION | |
| DIG | DIGITAL TAPE RECORDER | |
| FMM | FM MULTIPLEXOR TAPE RECORDER | |
| FMT | FM TAPE RECORDER | |
| OSC | OSCILLOGRAPH | |
| OTH | OTHER | |
| UNK | UNKNOWN | NOT IN TAPE GUIDE |

RSTMNT

| CODE | DESCRIPTION | COMMENT |
|------|------------------------------|---------|
| AP | A PILLAR | |
| AR | ARM REST | |
| BC | BELT - CONVENTIONAL MOUNT | |
| BD | BELT - DOOR MOUNT | |
| BI | BELT - INTEGRATED SEAT MOUNT | |
| BP | B PILLAR | |
| CP | C PILLAR | |
| DM | DASH PANEL - MID | |
| DP | DASH PANEL - UNSPECIFIED | |
| DR | DOOR PANEL | |
| DT | DASH PANEL - TOP | |
| HR | HEAD REST | |
| HS | HEADER - SIDE | |
| HW | HEADER - WINDSHIELD | |
| SB | SEAT BACK | |
| SP | SIDE PANEL | |
| SS | SIDE WINDOW SILL | |
| SW | STEERING WHEEL | |
| NA | NOT APPLICABLE | |
| OT | OTHER | |

RSTTYP

| CODE | DESCRIPTION | COMMENT |
|------|----------------------|--|
| 3PT | 3 POINT BELT | LAP AND SHOULDER |
| ABG | AIR BAG | |
| ABT | AIR BELT | |
| APP | APR PADDING | |
| CHD | CHILD RESTRAINT | |
| DAS | DASHPANEL | |
| DPL | DASHPANEL | |
| FHP | FBRGL. HNCB. PADDING | FIBERGLASS HONEYCOMB |
| KNE | KNEE RESTRAINT | NOTE IF NOT PROVIDED BY MANUFACTURER |
| LAP | LAP BELT | NO SHOULDER BELT |
| MCP | MINICARS PADDING | |
| NAP | NOT APLLICABLE | |
| NON | NONE | UNRESTRAINED |
| PAD | PADDING | NOT APR,MINICARS,OR FIBERGLASS HONEYCOMB |
| PS2 | PASSIVE 2 POINT BELT | |
| PS3 | PASSIVE 3 POINT BELT | |
| RIG | RIGID WALL | |
| SBK | SEAT BACK | FOR REAR SEAT OCCUPANT |
| SCE | STR. COLUMN - EA | ENERGY ABSORBING |
| SCN | STR. COLUMN - NO EA | NOT ENERGY ABSORBING |
| SWE | STR. WHEEL - EA | ENERGY ABSORBING |
| SWN | STR. WHEEL - NO EA | NOT ENERGY ABSORBING |
| UNK | UNKNOWN | NONE |
| OTH | OTHER | |

SENATT

| CATEGORY | SUB-CATEGORY | CODE | DESCRIPTION | COMMENT | | |
|-----------|--------------|--------|-------------|------------------|---------------|--|
| BODY PART | LOWER BODY | ANKLE | ANKL | ANKLE - LEFT | | |
| | | | ANKR | ANKLE - RIGHT | | |
| | | FEMUR | FMRL | FEMUR - LEFT | | |
| | | | FMRR | FEMUR - RIGHT | | |
| | | FOOT | FOTL | FOOT - LEFT | | |
| | | | FOTR | FOOT - RIGHT | | |
| | | | FTLR | FOOT LEFT REAR | | |
| | | | FTLF | FOOT LEFT FRONT | | |
| | | | FTRR | FOOT RIGHT REAR | | |
| | | | FTRF | FOOT RIGHT FRONT | | |
| | | | KNEE | KNEL | KNEE LEFT | |
| | | | | KNER | KNEE RIGHT | |
| | | PELVIS | PVCN | CENTER | | |
| | | | PVHP | H-POINT | TROCHANTERION | |
| | | | PVIL | ILIAC | | |
| | | | PVLL | - LEFT LOWER | | |
| | | | PVLM | - LEFT MIDDLE | | |
| | | | PVLU | - LEFT UPPER | | |
| | | | PVPS | PUBIC SYMPHYSIS | | |
| | | | PVRL | - RIGHT LOWER | | |
| | | | PVRM | - RIGHT MIDDLE | | |
| | | | PVRU | - RIGHT UPPER | | |
| | | PVSA | SACRUM | | | |
| | | TIBIA | TIBL | LEFT | | |
| | | | TIBR | RIGHT | | |
| | | | TBLL | LEFT LOWER | | |
| | | | TBLU | LEFT UPPER | | |
| | | | TBRL | RIGHT LOWER | | |
| | | | TBRU | RIGHT UPPER | | |

SENATT (CONTINUED)

| CATEGORY | SUB-CATEGORY | CODE | DESCRIPTION | COMMENT | |
|-----------|--------------|----------|-------------|----------------------------|------------------|
| BODY PART | UPPER BODY | ABDOMEN | ABD1 | ABDOMEN CONTACT SWITCH 1 | OBLIQUE-ANTERIOR |
| | | | ABD2 | - SWITCH 2 | LATERAL |
| | | | ABD3 | - SWITCH 3 | OBLIQUE-POST. |
| | | | ABDO | ABDOMEN | |
| | | | ESAF | ES FR. ABDOMEN LOAD CELL | |
| | | | ESAM | ES MID. ABDOMEN LOAD CELL | |
| | | | ESAR | ES. REAR ABDOMEN LOAD CELL | |
| | | HEAD | HD90 | HEAD 9 ARRAY - CENTER | |
| | | | HD9X | - X ARM | HD92, Y&Z ONLY |
| | | | HD9Y | - Y ARM | HD91, X&Z ONLY |
| | | | HD9Z | - Z ARM | HD93, X&Y ONLY |
| | | | HDCG | HEAD CG | |
| | | | HDOT | HEAD OTHER | OTHR THAN 9AC |
| | | NECK | NECK | NECK | |
| | | | NEKL | NECK - LOWER | |
| | | | NEKU | NECK - UPPER | |
| | | RIB | RBLA | LOWER ABDOMEN | |
| | | | RBLL | LEFT LOWER | |
| | | | RBLM | RIGHT MIDDLE | |
| | | | RBLU | LEFT UPPER | |
| | | | RBRL | RIGHT LOWER | |
| | | | RBRM | RIGHT MIDDLE | |
| | | | RBRU | RIGHT UPPER | |
| | | | RBUA | UPPER ABDOMEN | |
| | | SHOULDER | SHLL | LEFT | |
| | | | SHLR | RIGHT | |
| | | STERNUM | SNML | LOWER | |
| | | | SNMM | MIDDLE | |
| | | | SNMU | UPPER | |
| | | SPINE | SPNL | LOWER | T12 |
| | | | SPNM | MIDDLE | T04 |
| | | | SPNU | UPPER | T01 |
| | | | LUMB | LUMBAR SPINE | |

SENATT (CONTINUED)

| CATEGORY | SUB-CATEGORY | | CODE | DESCRIPTION | COMMENT |
|--------------|--------------|----------------------------|------------------|----------------------------|---------------------|
| BODY PART | UPPER BODY | THORAX | CHBD | CHEST BAND | |
| | | | CHST | CHEST | THORAX/SPINE IN 208 |
| | | | CHLL | CHEST – LEFT LOWER | |
| | | | CHLU | CHEST – LEFT UPPER | |
| | | | CHRL | CHEST – RIGHT LOWER | |
| | | | CHRU | CHEST – RIGHT UPPER | |
| | | | CCLC | 8 STRING POT – CROSS LL | |
| | | | CCLS | 8 STRING POT – STRAIGHT LL | |
| | | | CLRC | 8 STRING POT – CROSS LR | |
| | | | CLRS | 8 STRING POT – STRAIGHT LR | |
| | | | CULC | 8 STRING POT – CROSS UL | |
| | | | CULS | 8 STRING POT – STRAIGHT UL | |
| | | | CURC | 8 STRING POT – CROSS UR | |
| | CURS | 8 STRING POT – STRAIGHT UR | | | |
| | | OTHER BODY PART | CRBV | CEREBROVASCULAR SYSTEM | |
| | | | CRDV | CADIOVASCULAR SYSTEM | |
| | PULM | | OULMONARY SYSTEM | | |
| VEHICLE PART | BELTS | | ABGM | AIR BAG MANIFOLD | |
| | | | ABTK | AIR BAG TRIP SWITCH - KNEE | |
| | | | ABTM | AIR BELT MANIFOLD | |
| | | | ABQ1 | AIR BAG SQUIB CIRCUIT #1 | |
| | | | ABQ2 | AIR BAG SQUIB CIRCUIT #2 | |
| | | | LPBI | LAP BELT - INBOARD | |
| | | | LPBO | LAP BELT - OUTBOARD | |
| | | | SHBE | SHOULDER BELT – EXTENSION | |
| | | SHBT | SHOULDER | | |
| | | BUMMPER | BMPF | BUMPER FRONT | |
| | | | BMPR | BUMPER REAR | |
| | | DASH | DASH | DASH PANEL | |
| | | | DPLL | DASH PANEL – LEFT | |
| | | | DPLR | DASH PANEL - RIGHT | |
| | | DOORS | DOOR | DOOR | |
| | | | DRLF | DOOR- LEFT FRONT | |
| | | | DRLR | DOOR- LEFT REAR | |
| | | | DRRF | DOOR- RIGHT FRONT | |
| | | | DRRR | DOOR- RIGHT REAR | |
| | | | DRSL | DOOR SILL | |
| | | ENGINE | ENGN | ENGINE | |
| | | FENDER | FNDR | FENDER | |
| | FLOOR | FLOR | FLOORPAN | | |

SENATT (CONTINUED)

| CATEGORY | SUB-CATEGORY | CODE | DESCRIPTION | COMMENT |
|--------------|------------------|-------------|------------------------|-----------------------------|
| VEHICLE PART | FRAME | FRAM | FRAME RAIL | |
| | | FWLL | FIREWALL | |
| | PILLARS | APLL | A PILLAR - LEFT | |
| | | APLR | A PILLAR - RIGHT | |
| | | PLBP | B PILLAR | |
| | | PLCP | C PILLAR | |
| | REAR | RAXL | REAR AXLE | |
| | | REDK | REAR DECK | |
| | ROOF | ROFR | ROOF RAIL | |
| | | ROOF | ROOF | |
| | SEATS | SEAT | SEAT | |
| | | SEBK | SEAT BACK | |
| | | SECU | SEAT CUSHION | |
| | | SEBS | SEAT BASE | |
| | | SETR | SEAT TRACK | |
| | | STCL | STEERING WHEEL COLUMN | |
| | | SWHB | STEERING WHEEL HUB | |
| | | SWRM | STEERING WHEEL RIM | |
| | | SUSP | SUSPENSION | |
| | | TRFL | TRUNK FLOOR | |
| | | VECG | VEHICLE CG | |
| | | WDSH | WINDSHIELD | |
| | | TEST DEVICE | BODY | BODY BLOCK 9(BLAK TUFFY D.) |
| HDFR | RIGID HEADFORM | | | |
| HEMI | RIGID HEMISPHERE | | | |
| IMCG | IMPACTOR CG | | | |
| PEND | PENDULUM | | | |
| POLE | POLE | | | |
| SLED | SLED | | | |
| TSTD | TEST DEVICE | | | |
| EVNT | EVENT TIMES | | | |
| | OTHR | | (GENERAL) OTHER SENATT | |

SENLOC

| CODE | DESCRIPTION | COMMENT |
|------|---------------------|-----------------------------------|
| 01 | LEFT FRONT SEAT | |
| 02 | RIGHT FRONT SEAT | |
| 03 | RIGHT REAR SEAT | |
| 04 | LEFT REAR SEAT | |
| 05 | CENTER FRONT SEAT | |
| 06 | CENTER REAR SEAT | |
| 07 | LEFT THIRD SEAT | STATION WAGON/VAN |
| 08 | CENTER THIRD SEAT | STATION WAGON/VAN |
| 09 | RIGHT THIRD SEAT | STATION WAGON/VAN |
| AP | TEST APPARATUS | SENSOR ATTACHED TO TEST APPARATUS |
| OC | OCCUPANT | SENSOR ATTACHED TO OCCUPANT |
| L1 | LEFT ROW 1, LEFT | |
| L5 | LEFT ROW 1, CENTER | |
| L2 | LEFT ROW 1, AISLE | |
| L4 | LEFT ROW 2, LEFT | |
| L6 | LEFT ROW 2, CENTER | |
| L3 | LEFT ROW 2, AISLE | |
| L9 | LEFT ROW 3, LEFT | |
| L8 | LEFT ROW 3, CENTER | |
| L7 | LEFT ROW 3, AISLE | |
| R1 | RIGHT ROW 1, AISLE | |
| R5 | RIGHT ROW 1, CENTER | |
| R2 | RIGHT ROW 1, RIGHT | |
| R4 | RIGHT ROW 2, AISLE | |
| R6 | RIGHT ROW 2, CENTER | |
| R3 | RIGHT ROW 2, RIGHT | |
| R9 | RIGHT ROW 3, AISLE | |
| R8 | RIGHT ROW 3, CENTER | |
| R7 | RIGHT ROW 3, RIGHT | |
| NA | NOT APPLICABLE | SENSOR NOT ON AN OCCUPANT |
| OT | OTHER | OR OUT OF POSITION |

SENTYP

| CATEGORY | CODE | DESCRIPTION | COMMENT |
|--------------|------|---------------------------------|---------|
| ACCELERATION | AA | ANGULAR ACCELEROMETER | |
| | AC | ACCELEROMETER | |
| DISPLACEMENT | AD | ANGULAR DISPLACEMENT TRANSDUCER | |
| | DS | DISPLACEMENT TRANSDUCER | |
| | SG | STRAIN GAUGE | |
| FORCE BASED | LC | LOAD CELL | |
| | PR | PRESSURE TRANSDUCER | |
| VELOCITY | AV | ANGULAR VELOCITY TRANSDUCER | |
| | VL | VELOCITY TRANSDUCER | |
| OTHER | CC | CHESTBAND CURVATURE GAUGE | |
| | ET | EVENT TIME INDICATOR | |
| | HL | HIGH LEVEL SIGNAL | |
| | LL | LOW LEVEL SIGNAL | |
| | TB | TIME BASED CHANNEL | |
| | TE | TEMPERATURE SENSOR | |
| | NO | NOT DEFINED | |
| | UN | NOT KNOWN | |
| | OT | OTHER | |

SYSORG

| CODE | DESCRIPTION | COMMENT |
|-------------|--------------------|--|
| A | ARTERIES/VEINS | |
| B | BRAIN | |
| C | SPINAL CORD | |
| D | DIGESTIVE | |
| E | EAR | |
| G | UROGENITAL | |
| H | HEART | |
| I | INTEGUMENTARY | |
| J | JOINT | |
| K | KIDNEY | |
| L | LIVER | |
| M | MUSCLE | |
| N | NERVOUS SYSTEM | |
| O | EYE | |
| P | PULMONARY/LUNG | |
| Q | SPLEEN | |
| R | RESPIRATORY | LARYNX, TRACHEA, PHARYNX, DIAPHRAGM |
| S | SKELETAL | |
| T | ENDOCRINE GLAND | INCLUDES THYROID |
| V | VERTEBRAE | |
| W | ALL IN REGION | |

TSTCFN

| CODE | DESCRIPTION | COMMENT |
|-------------|---------------------------|------------------------|
| ABD | NO VALUE | TEMPORARY ADD THIS ROW |
| CAN | CANNON | |
| DRP | DROP TEST | |
| ITB | IMPACTOR INTO BARRIER | |
| ITI | IMPACTOR INTO IMPACTOR | |
| ITV | IMPACTOR INTO VEHICLE | |
| OTH | OTHER | |
| PED | PEDESTRAIN | |
| PEN | PENDULUM | |
| ROL | ROLLOVER | |
| SLB | SLED WITH VEHICLE BODY | |
| SLN | SLED WITHOUT VEHICLE BODY | |
| VTB | VEHICLE INTO BARRIER | |
| VTI | VEHICLE INTO IMPACTOR | |
| VTV | VEHICLE INTO VEHICLE | |

TSTPRF

| CODE | DESCRIPTION | COMMENT |
|------|---|----------------------------|
| AUT | AUTOLIV AUSTRALIA P/L | |
| BAS | BUNDESANTALT FUER STRASSENWESEN | NONE |
| BAT | BATTELLE | |
| CAL | CALSPAN | |
| CAN | TRANSPORT CANADA | |
| CIR | CALIF. INJURY RES. ASSOC. | |
| DUK | DUKE UNIVERSITY | |
| DYS | DYNAMIC SCIENCE | |
| ENS | ENSCO | |
| FOI | FEDERAL OUTDOOR IMPACT LABORATORY | |
| FRD | FORD MOTOR COMPANY | |
| GES | GESAC | |
| GMC | GENERAL MOTORS CORPORATION | |
| GTL | GENERAL TEST LABS | |
| HDL | HEIDELBERG | |
| IIH | INSURANCE INSTITUTE FOR HIGHWAY SAFETY | |
| JAR | JAPAN AUTO RESEARCH | |
| JAY | JAYCOR | |
| JHU | JOHNS HOPKINS UNIVERSITY | |
| KAR | KARCO ENGINEERING | |
| MCR | MCR TECHNOLOGY | FORMERLY MINICARS |
| MCW | MEDICAL COLLEGE OF WISCONSIN | |
| MGA | MGA RESEARCH | |
| MSE | MOBILITY SYSTEMS | |
| NBL | NAVAL BIODYNAMICS LAB. | |
| NTC | NTS - CALIFORNIA | FORMERLY AETL - CALIFORNIA |
| NTV | NTS - VIRGINIA | FORMERLY AETL - VIRGINIA |
| ONS | ONSER | |
| SWR | SWRI | |
| TNO | TNO - ROAD VEHICLE RESEARCH INST. | NONE |
| TRC | TRC OF OHIO | |
| TRI | UNIVERSITY OF MICHIGAN TRAN. RES. INST. | |
| TTI | TEXAS TRANSP. INSTITUTE | |
| UVA | UNIVERSITY OF VIRGINIA | NONE |
| UWA | UNIVERSITY OF WASHINGTON | |
| VRT | VEHICLE RES. TEST CTR. | |
| VWG | VOLKSWAGEN AG | |
| WSU | WAYNE STATE UNIVERSITY | |
| OTH | OTHER | |

XUNITS / YUNITS

| CATEGORY | CODE | DESCRIPTION | COMMENT |
|--------------|------|-------------------|---------------------|
| ACCELERATION | DP2 | DEGREES/SEC**2 | ANGULAR |
| | G'S | G'S | LINEAR |
| DISPLACEMENT | DEG | DEGREES | ANGULAR |
| | MM | MILLIMETERS | LINEAR |
| | MPM | MICROMETERS/METER | STRAIN |
| | PST | PERCENT STRAIN | STRAIN |
| | RMM | RECIPROCAL MM | CURVATURE |
| FORCE BASE | KPA | KILOPASCALS | PRESSURE - ABSOLUTE |
| | KPG | KILOPASCALS | PRESSURE - GAUGE |
| | NSC | NEWTON-SECONDS | IMPULSE |
| | NWM | NEWTON-METERS | TORQUE |
| | NWT | NEWTONS | FORCE |
| TIME | SEC | SECONDS | TIME |
| VELOCITY | KPH | KILOMETERS/HOUR | VELOCITY |
| | DPS | DEGREES/SECOND | ANGULAR |
| OTHER | CEN | DEGREES CELSIUS | TEMPERATURE |
| | DEC | DECIBELS | NOISE |
| | NON | DIMENSIONLESS | DIMENSIONLESS |
| | VOL | VOLTS | VOLTAGE |
| | UNK | UNKNOWN | |
| | OTH | OTHER | |

VERNO

The VERNO field is used to identify the version of the reference guide used to code and prepare the content of the data set. It does not refer to the format of the files within the data set.

Example:

It is possible to convert an existing Biomechanical data set from the version 3 format, having GR files, into an EV5 format data set. Since the original data set was developed using the version 3 Test Reference Guide VERNO would then have a value of “B3”.

| CODE | DESCRIPTION |
|-------------|---|
| B5 | Data prepared according to the version 5 guide. |
| B4 | Data prepared according to the version 4 guide. |
| B3 | Data prepared according to the version 3 guide. |
| B2 | Data prepared according to the version 2 guide. |

Appendix C: Technical Support Information

C-1. Reference Guide Updates and Software Updates

NHTSA now maintains web sites for the NHTSA Test Reference Guides and the Entree for Windows software. The latest versions of the guides and the software are made available for download from the sites below:

NHTSA Test Reference Guides

<http://www-nrd.nhtsa.dot.gov/software/test-reference-guides/test-reference-guides.html>

Entree for Windows

<http://www-nrd.nhtsa.dot.gov/software/entree/index.htm>

Because the NHTSA Research and Development web site is a constantly evolving resource it may happen that the links noted above do not work correctly. In the event that this does occur please utilize the available **SEARCH** feature to search for “NHTSA Test Reference Guides” and “Entrée for Windows”.

C-2. Requesting Assistance

In the event that a user of the Test Reference Guides requires technical support with using the guides, or has questions about the content of the guides, support is offered via Internet e-mail. Simply send a message to the address

nrd.softdev@nhtsa.dot.gov

with a subject line including the text

ATTN: NHTSA Test Reference Guides

To request assistance with the Entree for Windows software send an e-mail to

nrd.softdev@nhtsa.dot.gov

with a subject line including the text

ATTN: Entrée for Windows

A staff person will acknowledge the request, and we will endeavor to provide a complete response within two (2) business days on a first-come, first-served basis.

C-3. Reporting a Problem

To report a problem or potential bug in either the guides or the Entree for Windows software, please send an e-mail to

nrd.softdev@nhtsa.dot.gov

with a subject line including the text

BUG REPORT: NHTSA Test Reference Guides

or

BUG REPORT: Entrée for Windows

for the Test Reference Guides, or Entrée for Windows, respectively.

A staff person will acknowledge the problem report. For simple problems we will endeavor to provide a complete response within five (5) business days on a first-come, first-served basis. In the event that correction of a problem requires more than 5 business days we will notify the user in advance.