

Humanetics ATD Calibration Fixtures

Head Drop: TF-100-0000

Size: 2'9" by 2' by 6'4" (.84m by .61m by 2m)

Work Area: 3' by 5' (.92m by 1.53m)

Number of Channels: 4

Instrumentation Needed: 3 Uniaxial Accelerometers, Trigger

Neck Pendulum: TF-200-0000

Size: 8' by 3' by 13' (2.44m by .92m by 3.97m)

Work Area: 13' by 5' (3.97m by 1.53m)

Number of Channels: 6 to 8

Instrumentation Needed: 1 (or 4) Uniaxial Accelerometer(s), Upper Neck Load Cell
2 or 3 Potentiometers, Velocity Gate

Thorax Impact: TF-300-0000

Size: 19'9" by 6'4" by 15'1" (6.02m by 1.93m by 4.6m)

Work Area: 21' by 9' (6.4m by 2.75m)

Number of Channels: 6 to 12

Instrumentation Needed: 1(or 6) Uniaxial Accelerometer(s), 1(or 6) Potentiometer(s), Velocity Gate

Knee Impact/Knee Slider: TF-400-0000

Size: 16' by 3'10" by 9'5" (4.88m by 1.17m by 2.87m)

Work Area: 16' by 4' (4.88m by 1.22m)

Number of Channels: 3 to 6

Instrumentation Needed: 1 Uniaxial Accelerometer, Femur Load Cell, Potentiometer, Velocity Gate

Torso Flexion: TMA-001

Size: 4'8" by 2'10" by 5'2" (1.43m by .87m by 1.58m)

Work Area: 5' by 4' (1.53m by 1.22m)

Number of Channels: 3

Instrumentation Needed: Tension Load Cell, Velocity Gate, Inclinometer

Humanetics ATD Calibration Fixtures

Hip Calibration: V00039

Size: 4'10" by 3'2" by 6'6" (1.48m by .97m by 1.99m)

Work Area: 5' by 7' (1.53m by 2.14m)

Number of Channels: 3

Instrumentation Needed: Torque Sensor, Potentiometer, Trigger

Option 1: EuroSID Drop Tower: TF-1500-0174

Size: 4' by 2' by 20'4" (1.22m by .61m by 6.2m)

Work Area: 5' by 5' (1.53m by 1.53m)

Number of Channels: 3

Instrumentation Needed: 1 Uniaxial Accelerometer, Linear Displacement Potentiometer, Velocity Gate

Option 2: Rib Module Only Testing TF-1500-0600

Size: 4' by 2' by 10'2" (1.22m by .61m by 3.1m)

Work Area: 5' by 5' (1.53m by 1.53m)

Number of Channels: 3

Instrumentation Needed: 1 Uniaxial Accelerometer, Linear Displacement Potentiometer, Velocity Gate

Foot Compression: 320-0000

Size: 1'4" by 2'1" by 5' (.41m by .68m by 1.41m)

Work Area: 3.5' by 3.5' (1.1m by 1.1m)

Number of Channels: 2

Instrumentation Needed: Load Cell, Trigger

Foot Impactor: TF-1603-0000

Size: 4'2" by 3' by 11'1" (1.22m by .91m by 3.43m)

Work Area: 7' by 5' (2.13m by 1.52m)

Number of channels: 4

Instrumentation Needed: 1 Uniaxial Accelerometer, Tibia Load Cell, Velocity Gate



BioRID Sled/Table Sled Assembly: TRA-101

Size: 10'3" by 4'8" by 4'6" (3.13m by 1.43m by 1.38m)

Work Area: 23' by 9' (7.1m by 2.75m) (Attaches to thorax impact frame)

Number of Channels: 9

Instrumentation Needed: Trigger, Probe Accelerometer, Sled Accelerometer, T1 Accelerometer, MY,
4 Rotary Potentiometers

Lumbar Flexion, (Manual): TF-600

Size: 2' by 2' by 2' (.61m by .61m by .61m)

Work Area: 3' by 4' by 5' (.92m by 1.22m by 1.53 m)

Number of Channels: 0

Instrumentation Needed: Inclinometer, Manual Force Gauge

Abdomen Test Rig – P & Q: TF-1900

Size: 1.34' by 1.5' by 1.84' (.41m by .46m by .57m)

Work Area: Bench Top- 3.3' by 2' Bench Recommended (1m by .5m)

Number of Channels: 0

Instrumentation Needed: Dial Indicator, Timer

Neck/Spine Certification Rig – P1.5: TF-1800-2000

Size: 1'1" by 1'1" by 2'6" (.34m by .34m by .77m)

Work Area: Bench Top- 3' by 2' Bench Recommended (.91m by .61m)

Number of Channels: 0

Instrumentation Needed: Dial Indicator, Timer

Calibration Lab Specification

The Customer will provide the following for maintaining the HUMANETICS Calibration Lab

•The test lab is a controlled environment area specifically designed and maintained for dummy calibration and storage. The Customers Calibration Lab will contain:

- Test Fixtures
- Dummy Storage Areas
- Spare Parts Storage Areas
- Adequate work areas for dummy assembly and disassembly

•Test lab environment must be maintained 24 hours a day and 7 days a week for both temperature and humidity, as defined in CFR 49 Part 572

- Temperature range is 20.6C to 22.2C
- Humidity range is 10% to 70% relative humidity

•HUMANETICS will work with the customer to design and implement a lab, which meets their requirements and available space.

•Calibration test lab will have at minimum the following dimensions:

- 9.2m in width
- 9.2m in length
- 7.25m in height

•Power requirements should be:

- 110-120v AC 60Hz
- (2) 15amp outlets per wall
- 220vAC option is available upon request

•Lab floor must be tiled or painted concrete suitable for fixture placement

ATD TEST LAB HEALTH & SAFETY PREREQUESTIES FOR INSTALLTION

NOTE: Electrical practices and suggestions in the document are based on North American practices referencing NEC 2008 where applicable. In relation to other International Standards " NEC 2008" addresses fundamental principles of protection for safety contained in Section 131 of International Electrotechnical Commission Standard 60364-1. All suggestions and practice contained here within this document yield to local electrical codes where local authority has jurisdiction.

- 1) All Test Equipment will be on site prior to the arrival of the installation/training engineer.
- 2) Premises wiring for the ATD TEST LAB, shall not be connected to a power supply system without proper grounded conductor: NEC 200.3.
- 3) The physical structure where ATD TEST LAB is located shall have the main electrical service entrance equipped with an earth ground connection. The Power Panel shall be grounded to the electrical service entrance with green (green/yellow) wire ground conductors as per NEC 250.4(A)(1), NEC 250.4(A), NEC 250.4(A)(2), NEC 250.119.
- 4) The power distribution safety grounding system will have various points in the power distribution system connected to earth ground using green (green/yellow) wire ground conductors. Having these ground connections tied to metal chassis parts protects the Test Lab personnel from shock hazard. All HUMANETICS electrical equipment shall be tied to ground, conforming to NEC 250.119
- 5) ALL electrical outlets must be wired and covered.
- 6) The ATD TEST LAB voltage shall be within +/- 10% of the local target voltage. The electrical system frequency shall be within +/- 3% of the target frequency.
- 7) Level of illumination required for lab installation shall not be less than 50 fc per ANSI/IESNA RP-1-04 standards.
- 8) ATD TEST LAB shall be clean and free of any standing water.
- 9) ATD TEST LAB shall be kept within the following temperature range at the time the test equipment installation begins: 10 to 26.6 centigrade.
- 10) ATD TEST LAB shall maintain temperature and humidity specifications per 49 CFR Part 572 in order to initiate ATD training and testing.
- 11) There shall be no excessive chemical fumes or contaminates (e.g. dust, paint, etc.) in the air during installation and training of ATD lab equipment.
- 12) Arrangements will be made to secure all necessary equipment (e.g. scissor lift, fork lift, etc) that will ensure the safe installation of the test fixtures. The arrangement will be made by the customer or local HUMANETICS representative.
- 13) The customer and/or local HUMANETICS representative will provide an appropriate location to access crated test fixtures so that the fixtures can be removed from the packaging and transported to the ATD TEST LAB safely.

- 14) The customer and/or local HUMANETICS representative will provide all necessary moving equipment so that the test fixtures can be removed from the crates and transported to the ATD TEST LAB for assembly.
- 15) Humanetics requires a signed check list by the customer declaring their facility is complete and in a safe status for Humanetics technicians to enter and perform their duties – the list will be developed by the Humanetics operations group. Humanetics also reserves the right to visit the customer facility to make physical observations and confirm the readiness prior to sending the technicians to the customer location for installation of the lab.
- 16) Humanetics has the right to delay installation by the agreed timing if the facility is not ready or signed off by both parties. Humanetics should not be penalized financially or otherwise if such delay was to occur.
- 17) The Customer is responsible to ensure the facility is completed by the projected date