

SURFACE VEHICLE INFORMATION REPORT

SAE J2094

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TERMINOLOGY

- 1. Scope**—The terms included in this SAE Information Report have been collected during the development of SAE documents related to standards for the adaptation of vehicles for use by persons with physical disabilities. It includes only those terms that are pertinent to the adaptive devices discipline, leaving to other authorities more common automotive engineering terms. Where several terms have a common meaning in the practice, the Terminology Task Force has attempted to select the most appropriate term.

The Terminology Task Force recognizes that there will be a need to expand and update current terminology as advances in the industry occur, and as related standards documents are completed. Accordingly, they will continue to develop and maintain this document to reflect those changes.

- 1.1 Purpose**—The purpose of this document is to define those terms which apply to adaptive devices utilized in vehicles by persons with physical disabilities in order to facilitate and encourage:
- Utilization of consistent and understandable terminology in the preparation of related standards documents, and;
 - Communication between individuals from diverse backgrounds involved in this field.

2. References

- 2.1 Applicable Documents**—The following publications form a part of this specification to the extent specified herein. The latest issue of SAE publications shall apply.

- 2.1.1 SAE PUBLICATIONS**—Available from SAE, 400 Commonwealth Drive, Warrendale, PA 15096-0001.

SAE J140a—Seat Belt Hardware Test Procedure

SAE J384—Motor Vehicle Seat Belt Anchorages—Test Procedure

SAE J1138—Design Criteria—Driver Hand Controls Location for Passenger Cars, Multipurpose Passenger Vehicles, and Trucks, (10 000 GVW and Under)

SAE J1159—Preparation of SAE Technical Reports—Surface Vehicles and Machines: Standards, Recommended Practices, Information Reports

SAE J1903—Automotive Adaptive Driver Controls, Manual

- 2.1.2 OTHER PUBLICATIONS**

Australian Standard AS 2942: 1987

3. Definitions

Accessory Controls—Those controls not related to vehicle movement, operable by the driver or passenger, that regulate the environment of the vehicle, including heater/air conditioner, window regulator, vent, sun visor, seat positioner, radio, door lock, cigarette lighter, courtesy light, and any controls associated with wheelchair lifts, door openers, wheelchair restraints, etc. (SAE J1903)

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Access Path—The minimum open area between horizontal and vertical structures through which a person must pass while entering or exiting a vehicle.

Anchorage—The final point of attachment for transferring seat belt assembly or wheelchair tie-down loads. (Modified from SAE J394)

Automatic Tie-Down—A wheelchair securement device whose engagement is initiated and completed as a result of the wheelchair rolling into the proper position.

Automotive Adaptive Device—A piece of equipment designed to enable a person with a physical disability to operate an automotive vehicle.

Deep Dish Steering Wheel—A steering wheel where the rim of the wheel is closer to the driver than the original equipment.

Floor Modifications—Alteration of the OEM vehicle floor to facilitate access, vision, positioning, control of vehicle, and/or increase headroom (particularly for wheelchair user). This includes the following:

- a. Flat Floor: A floor modification that eliminates the uneven surface in a van floor to provide a smooth stable surface for wheelchair movement.
- b. Dropped Floor: A modification that lowers certain portions of the original van floor.
- c. Power Pan: An elevator type device for lowering and raising certain portions of the original van floor.
- d. Wheelchair Channels: Lowered portions of the van floor which align with wheels of wheelchair.

Fold Out Lift—A lifting system that supports the occupied wheelchair on a platform and functions by ascending or descending vertically outside the vehicle and folds up vertically for storage.

Four-point Tie-down—A device for securing a wheelchair at four points to the vehicle. The term usually refers to a manual belt or strap type tie-down system where two straps attach to the back of the wheelchair and two to the front.

Ground Plane—The surface (normally horizontal) on which the vehicle is parked.

Hand Controls—A term used by the handicapped driver industry. Any mechanical device that transfers operation of a control ordinarily actuated by foot to hand operation by the addition of rods, levers, and/or other hardware.

Horizontal Steering—A replacement steering system that allows horizontal reorientation of the steering wheel.

Impact Simulator—A device for accelerating, decelerating, or a combination of decelerating and accelerating a section of a vehicle or simulated vehicle structures including instrumentation for measuring pertinent data. The acceleration pulse represents the pulse obtained during the barrier crash as outlined in SAE J850 (from SAE J384).

Key Holder—A device that holds a key to facilitate turning.

Keyless Ignition—A system(s) that provides for operation of the ignition without a key.

Left Foot Accelerator (gas pedal)—A mechanical device that allows left foot operation of the accelerator.

Left Hand Gear Selector Extension Lever—Use Left Hand Gear Shift Extension.

Left Hand Gear Shift Extension—An attachment transferring operation of the gearshift to the left side of the steering column.

Lift Controls—Devices, including switches, handles, etc., by which a person directs the lift operation.

Lift Electrical Components—All electrical hardware used on a wheelchair lift, including but not limited to batteries, fuses, circuit breakers, motors, switches, wiring, and terminals.

Lift Platform—That portion of a wheelchair lift device on which the wheelchair rests while being raised or lowered.

Low Effort Steering System—A system requiring less effort for operation than factory installed equipment, but more effort than a Zero Effort Steering System (i.e., between 4.0 and 15.0 in-lb).

Manual Tie-down—A nonpowered wheelchair tie-down device.

Occupant Restraint System—A system or device for restraining the occupant in a motor vehicle to prevent or minimize contact with the vehicle interior components and prevent ejection during a crash.

OEM—An abbreviation for "Original Equipment Manufacturer."

One Hand Drive—A control system that modifies the operation of gas, brake, and steering to allow one hand operation.

Parking Brake Extension—A device attached to a foot-operated parking brake in order to adapt it for hand use.

Pedal Extensions—Attachments to the accelerator, clutch, and/or brake pedal to bring the pedal surface closer to the driver.

Pelvic Restraint—A seat belt assembly or portion thereof intended to restrain movement of the pelvis (from SAE J140a).

Personally Licensed Vehicle—A car, van, or light truck licensed to an individual for private use.

Pinch Point—A term for a hazardous location which exists when two closely spaced mechanical components rotate in opposite directions, or at the point of contact between belt and pulley, chain and sprocket, or similar moving parts of the machinery.

Pneumatic Control—A system powered by compressed air, gas, or vacuum.

Power (ed)—Those systems which are operated by means of an energy source other than manual power.

Power Assisted—Those systems which are operated by means of an energy source in addition to muscle power and which remain operable when the assist is lost.

Powered Gear Shift Selector—A powered device to select gear position.

Powered Parking Brake—A powered device to activate an OEM parking brake.

Power Seat—Use Transfer Seat Base.

Primary Driver Hand Controls—(SAE J1138 for OEM equipment)

Group A—Those controls operated by the driver which directly affect the direction and rate of travel of the moving vehicle, including the steering, brake, and throttle controls. (SAE J1903)

Group B—Those controls, operated by the driver, which are essential to the coordinated and safe operation of the vehicle in traffic situations. This includes ignition/starter switch, shift selector, parking brake, turn signal indicator, hazard flashers, horn, wiper/washer, defroster control, mirror, and headlight dimmer. (SAE J1903)

Proof Load—Static test load to insure mechanical integrity at critical points. A proof load shall not cause permanent deformation or affect continued use.

Quad Console—A panel on which controls are located for convenient operation by an individual with limited upper extremity capability.

Quad Grip—A modification or design of hand control/driver interface to accommodate drivers with limited wrist and/or hand function.

Quick Release Door Opener—A mechanism that allows for manual release of powered doors in case of power failure.

Raised Door Opening—A modification to the door(s) and door frame to gain additional height at the door.

Raised Roof—A modification of OEM vehicle roof to provide greater headroom.

Ramp—An inclined plane used to provide access between two levels.

Range of Motion—An imaginary volume of space whose outer shape is described by the limits of movement of a person or a movable portion of that person's body.

Rated Load—The maximum load under which an adaptive device should be operated under normal use.

Reduced Effort Steering System—A product of modification of a power steering system to lower the amount of effort required to steer a vehicle. This term includes both a Low Effort Steering System and a Zero Effort Steering System.

Remote Control—Relocation of control operation to other than OEM location.

Removable Seat Base—A device which allows removal and reinstallation of the vehicle seat.

Restraint System—Use Occupant Restraint System, Wheelchair Tie-down, or Wheelchair Tie-down and Occupant Restraint Systems (WTORS).

Right-Hand Directional Signal Extension Lever—Use Right Turn Signal Extension.

Rim-pin—A wheelchair tie-down device designed to secure the wheelchair by the rims of the rear wheels.

Right Turn Signal Extension—A lever attachment transferring operation of the factory installed turn signals to the right side of the steering column.

Roll Stop—A device on a wheelchair lift to prevent a wheelchair from inadvertently rolling off the lift platform when above ground level.

Rotary Lift—A lifting system that consists of a platform and functions by ascending or descending vertically outside the vehicle and rotates about a vertical axis into or out of the vehicle at floor level.

Servo—A power device which amplifies control forces and automatically corrects the output in proportion to input.

Shall—The term to be used wherever the criteria for conformance with the specific recommendation requires that there be no deviation. (J1159, June '86)

Shear Point—A term for a hazardous location where a moving (e.g., reciprocating or sliding) part approaches or crosses another part.

Should—The term to be used wherever noncompliance with the specific recommendation is permissible. (J1159, June '86)

Steering Devices—A device attached to the steering wheel which allows rotation of the steering wheel with one hand. Such as:

- a. Spinner Knob
- b. Tri-Pin
- c. Amputee Ring
- d. Palmer Cuff
- e. Steering Cuff

Swing Out Lift—The preferred term is "Rotary Lift."

T-Bar—A wheelchair tie-down device designed to hold the wheelchair in place by means of a single steel bar that presses down on the lower part of the wheelchair frame on each side and is anchored to the vehicle floor by means of a single screw bolt at the center of the bar.

Transfer Seat Base—A powered seat base that provides additional seat travel to facilitate movement of the handicapped user to and from the seat. This includes the following:

- Two way transfer seat base
- Four way transfer seat base
- Six way transfer seat base
- Eight way transfer seat base

Unoccupied Wheelchair Tie-down—A mechanism for securing an unoccupied wheelchair, carried inside the passenger space of a vehicle, preventing passive movement of the wheelchair during vehicle operation.

Upper Torso Restraint—A portion of a seat belt assembly intended to restrain movement of the chest and shoulder regions (from SAE J140a). Commonly referred to as a shoulder belt or shoulder harness.

Vacuum Gas and Brake (VGB)—A servo system powered by negative pressure. (See "Servo")

Vehicle Floor—The surface on which the wheelchair rests immediately after entry into the vehicle.

Weatherproof—The term applied to equipment so constructed or protected that exposure to the weather will cause minimal deterioration and will not interfere with successful operation.

Wheelchair—A wheeled seat for the support and conveyance of a disabled person, comprising at least a frame, seat, and wheels. (From Australian Standard AS 2942: 1987)

Wheelchair Ground Plane—An imaginary plane, nominally horizontal, upon which the wheels of the wheelchair rest.

Wheelchair Lift—A device which raises and lowers a wheelchair from ground to vehicle floor.

Wheelchair Tie-down and Occupant Restraint Systems (WTORS)—A total restraint system intended to provide occupant restraint for drivers and/or passengers seated in a wheelchair. It includes a system or device for wheelchair tie-down as well as a separate and complimentary system for occupant restraint.

Wheelchair Tie-down—The part of WTORS system which secures the occupied wheelchair to the vehicle structure.

Wire Rope Components—A term encompassing, but not limited to, wire rope, sheaves (pulleys), clips, thimbles, and end fittings.

Zero Effort Steering System—A system requiring less force for operation than a Low Effort Steering System (i.e., between 1.5 and 4.0 in-lb). While it is recognized that no system is actually "zero" effort, this is the term commonly used in the adaptive automotive industry to refer to systems requiring the amount of force noted here.

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PREPARED BY THE SAE ADAPTIVE DEVICES STANDARDS COMMITTEE

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