

MSBMA RECOMMENDED PRACTICE 001 WEIGHT DISTRIBUTION AND PAYLOAD

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- §1. SCOPE. This recommended practice establishes weight distribution and payload requirements for mid-size buses.
- §2. PURPOSE. The purpose of this recommended practice is to reduce the possibility of vehicle overloading.
- §3. APPLICATION. This recommended practice applies to all mid-size buses.
- §4. DEFINITIONS.

Completed Vehicle means a vehicle that requires no further manufacturing operations to perform its intended function, other than the addition of readily attachable components, such as mirrors or tire and rim assemblies, or minor finishing operations such as painting.

Designated seating position means any plan view location capable of accommodating a person at least as large as a 5th percentile adult female, if the overall seat configuration and design and vehicle design is such that the position is likely to be used as a seating position while the vehicle is in motion, except for auxiliary seating accommodations such as temporary or folding jump seats. Any bench or splitbench seat in a passenger car, truck or multipurpose passenger vehicle with a GVWR less than 4,536 kilograms (10,000 pounds), having greater than 127 centimeters (50 inches) of hip room (measured in accordance with SAE Standard J1100(a)) shall have not less than three designated seating positions, unless the seat design or vehicle design is such that the center position cannot be used for seating. For the sole purpose of determining the classification of any vehicle sold or introduced into interstate commerce for purposes that include carrying students to and from school or related events, any location in such vehicle intended for securement of an occupied wheelchair during vehicle operation shall be regarded as four designated seating positions.

Driver means the occupant of a motor vehicle seated immediately behind the steering control system.

Gross Axle Weight Rating or GAWR means the value specified by the vehicle manufacturer as the load carrying capacity of a single axle system, as measured at the tire-ground interfaces.

Gross Vehicle Weight Rating or GVWR means the value specified by the manufacturer as the loaded weight of a single vehicle. This is the maximum allowable weight value of the fully loaded single vehicle including passengers and cargo.

Luggage Compartment means an area, rack or enclosure (other than overhead shelf) designated for stowage of luggage.

Manufacturer means a person that manufactures motor vehicles.

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Mid-Size Bus means a motor vehicle designed to carry passengers built on a cutaway or rail chassis or on monocoque construction, under 40 feet (12.2 m) in length and having a gross vehicle weight rating class of VII (26,001 - 33,000 lb) (11,794 - 14,969 kg) or less.

Motor Vehicle means a vehicle driven or drawn by mechanical power and manufactured primarily for use on public streets, roads, and highways, but does not include a vehicle operated only on a rail line.

Payload means the total weight of the passengers, driver, luggage (cargo) and wheelchairs.

Total loaded vehicle weight means the sum of the unloaded vehicle weight and the payload, including all standard and optional equipment, passengers, accessories, luggage and the maximum capacity of engine fuel, oil, coolant.

Unloaded Vehicle Weight means the weight of a vehicle with maximum capacity of all fluids necessary for operation of the vehicle, but without cargo, occupants, or accessories that are ordinarily removed from the vehicle when they are not in use.

- §5. REQUIREMENTS. The total loaded vehicle weight, including all standard and optional equipment, maximum capacity of engine fuel, oil and coolant, 150 lb (68 kg) per designated seating position (200 lb for wheelchair position), including driver, 25 lb (11.3 kg) of luggage per person if vehicle is equipped with luggage compartment and 5 lb (2.3 kg) per person if vehicle is equipped with overhead shelf, shall not exceed manufacturer's GVWR and GAWRs when determined in accordance with §6.1, 6.2 and 6.3. To determine load distribution, for each designated seating position (including the driver), luggage compartment and overhead shelf space, the following calculations can be used.

$$\mathbf{P \times L / Wb = Wr}$$

and

$$\mathbf{P - Wr = Wf}$$

Where **P** is the load (passenger(s), luggage in luggage compartment/ overhead shelf, and any optional equipment or accessories not included in the unloaded vehicle weight), **L** is the distance from the center of gravity of the load to the front axle centerline, **Wb** is the wheelbase, **Wr** is the resulting weight of the load on the rear axle and **Wf** is the resulting weight of the load on the front axle.

- §5.1 Each mid-size bus shall be certified as meeting this standard by affixing a weight distribution and payload certification label that contains all of the information in attachment 1. The certification label, unless riveted, shall be affixed in such a manner that it cannot be removed without destroying or defacing it. It shall be affixed to a permanent interior surface at a location that is directly visible to the driver. The certification label

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shall contain the required information in the English language, lettered in block capitals and numerals not less than three thirty-seconds of an inch high. The lettering on the plate or label shall be of a color that contrasts with the background of the label.

§6. PROCEDURE.

§6.1 With the bus on level ground, weigh the motor vehicle to determine the unloaded vehicle weight on each axle. Add the axle weights obtained to determine the total unloaded vehicle weight.

§6.2 Add 150 lb (68 kg) at every designated seating position (200 lb (91 kg) for wheelchair position), including driver, 25 lb (11.3 kg) of luggage per designated seating position if vehicle is equipped with luggage compartment (load to be evenly distributed in the designated area, shelf or enclosure) and 5 lb (2.3 kg) per designated seating position if vehicle is equipped with overhead shelf (load to be evenly distributed in the designated area), to determine individual axle loads and total loaded vehicle weight. If a wheelchair position displaces another seat(s), then the heavier of the two is to be used in the weight computations. Compare the weight on each axle to the manufacturer's front and rear GAWR. Axle load shall not exceed manufacturer's GAWR.

§6.3 Add axle weights to determine total loaded vehicle weight. The total loaded vehicle weight shall not exceed the manufacturer's GVWR.

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ATTACHMENT 1

WEIGHT DISTRIBUTION AND PAYLOAD CERTIFICATION

THIS VEHICLE, AS MANUFACTURED, CONFORMS TO THE WEIGHT DISTRIBUTION AND PAYLOAD REQUIREMENTS IN MID-SIZE BUS MANUFACTURERS ASSOCIATION (MSBMA) RECOMMENDED PRACTICE 001.

IT IS THE USER'S RESPONSIBILITY NOT TO LOAD VEHICLE ABOVE NUMBER OF DESIGNATED SEATING POSITIONS AND LUGGAGE ALLOWANCE.

MANUFACTURER:

V.I.N./BODY SERIAL #:

NUMBER OF DESIGNATED SEATING POSITIONS:

NOTE: NUMBER OF DESIGNATED SEATING POSITIONS IS CALCULATED USING 150 lb (68 kg) PER DESIGNATED SEATING POSITION 200 lb (91 kg) FOR WHEELCHAIR POSITION), INCLUDING DRIVER. LUGGAGE ALLOWANCE IS CALCULATED USING 25 lb (11.3 kg) OF LUGGAGE PER DESIGNATED SEATING POSITION IF VEHICLE IS EQUIPPED WITH LUGGAGE COMPARTMENT AND 5 lb (2.3 kg) PER DESIGNATED SEATING POSITION IF VEHICLE IS EQUIPPED WITH AN OVERHEAD SHELF.