

BENDIX DD-3 BRAKE CHAMBERS

Type	Outside diameter	Brake readjustment limit
30	8 ¹ / ₈ in. (206 mm)	2 ¹ / ₄ in. (57.2 mm).

BOLT-TYPE BRAKE CHAMBERS

Type	Outside diameter	Brake readjustment limit
A	6 ¹⁵ / ₁₆ in. (176 mm)	1 ³ / ₈ in. (34.9 mm).
B	9 ³ / ₁₆ in. (234 mm)	1 ³ / ₄ in. (44.5 mm).
C	8 ¹ / ₁₆ in. (205 mm)	1 ¹ / ₄ in. (44.5 mm).
D	5 ¹ / ₄ in. (133 mm)	1 ¹ / ₄ in. (31.8 mm).
E	6 ³ / ₁₆ in. (157 mm)	1 ³ / ₈ in. (34.9 mm).
F	11 in. (279 mm)	2 ¹ / ₄ in. (57.2 mm).
G	9 ⁷ / ₈ in. (251 mm)	2 in. (50.8 mm).

ROTOCHAMBER-TYPE BRAKE CHAMBERS

Type	Outside diameter	Brake readjustment limit
9	4 ⁹ / ₃₂ in. (109 mm)	1 ¹ / ₂ in. (38.1 mm).
12	4 ¹⁹ / ₁₆ in. (122 mm)	1 ¹ / ₂ in. (38.1 mm).
16	5 ¹⁹ / ₃₂ in. (138 mm)	2 in. (50.8 mm).
20	5 ¹⁵ / ₁₆ in. (151 mm)	2 in. (50.8 mm).
24	6 ¹³ / ₃₂ in. (163 mm)	2 in. (50.8 mm).
30	7 ¹ / ₁₆ in. (180 mm)	2 ¹ / ₄ in. (57.2 mm).
36	7 ⁵ / ₈ in. (194 mm)	2 ³ / ₄ in. (69.9 mm).
50	8 ⁷ / ₈ in. (226 mm)	3 in. (76.2 mm).

(2) For actuator types not listed in these tables, the pushrod stroke must not be greater than 80 percent of the rated stroke marked on the actuator by the actuator manufacturer, or greater than the readjustment limit marked on the actuator by the actuator manufacturer.

(f) *Wedge brake adjustment.* The movement of the scribe mark on the lining shall not exceed 1.6 mm (1/16 inch).

(g) *Drums and rotors.* The thickness of the drums or rotors shall not be less than the limits established by the brake drum or rotor manufacturer.

[70 FR 48051, Aug. 15, 2005, as amended at 77 FR 46638, Aug. 6, 2012]

§ 393.48 Brakes to be operative.

(a) *General rule.* Except as provided in paragraphs (b), (c), and (d) of this section, all brakes with which a motor vehicle is equipped must at all times be capable of operating.

(b) *Devices to reduce or remove front-wheel braking effort.* A commercial motor vehicle may be equipped with a device to reduce the front wheel braking effort (or in the case of a three-axle truck or truck tractor manufactured before March 1, 1975, a device to remove

the front-wheel braking effort) if that device meets the applicable requirements of paragraphs (b)(1) and (2) of this section.

(1) *Manually operated devices.* Manually operated devices to reduce or remove front-wheel braking effort may only be used on buses, trucks, and truck tractors manufactured before March 1, 1975. Such devices must not be used unless the vehicle is being operated under adverse conditions such as wet, snowy, or icy roads.

(2) *Automatic devices.* Automatic devices must not reduce the front-wheel braking force by more than 50 percent of the braking force available when the automatic device is disconnected (regardless of whether or not an antilock system failure has occurred on any axle). The device must not be operable by the driver except upon application of the control that activates the braking system. The device must not be operable when the brake control application pressure exceeds 85 psig (for vehicles equipped with air brakes) or 85 percent of the maximum system pressure (for vehicles which are not equipped with air brakes).

(c) *Exception.* Paragraph (a) of this section does not apply to—

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(1) A towed vehicle with disabling damage as defined in § 390.5;

(2) A vehicle which is towed in a driveway-towaway operation and is included in the exemption to the requirement for brakes on all wheels, § 393.42(b);

(3) Unladen converter dollies with a gross weight of 1,361 kg (3,000 lbs) or less, and manufactured prior to March 1, 1998;

(4) The steering axle of a three-axle dolly which is steered by a co-driver;

(5) Loaded house moving dollies, specialized trailers and dollies used to transport industrial furnaces, reactors, and similar motor vehicles provided the speed at which the combination of vehicles will be operated does not exceed 32 km/hour (20 mph) and brakes on the combination of vehicles are capable of stopping the combination within 12.2 meters (40 feet) from the speed at which the vehicle is being operated or 32 km/hour (20 mph), whichever is less.

(6) Raised lift axles. Brakes on lift axles need not be capable of being operated while the lift axle is raised. However, brakes on lift axles must be capable of being applied whenever the lift axle is lowered and the tires contact the roadway.

(d) *Surge brakes.* (1) Surge brakes are allowed on:

(i) Any trailer with a gross vehicle weight rating (GVWR) of 12,000 pounds or less, when its GVWR does not exceed 1.75 times the GVWR of the towing vehicle; and

(ii) Any trailer with a GVWR greater than 12,000 pounds, but less than 20,001 pounds, when its GVWR does not exceed 1.25 times the GVWR of the towing vehicle.

(2) The gross vehicle weight (GVW) of a trailer equipped with surge brakes may be used instead of its GVWR to calculate compliance with the weight ratios specified in paragraph (d)(1) of this section when the trailer manufacturer's GVWR label is missing.

(3) The GVW of a trailer equipped with surge brakes must be used to calculate compliance with the weight ratios specified in paragraph (d)(1) of this section when the trailer's GVW exceeds its GVWR.

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(4) The surge brakes must meet the requirements of § 393.40.

[70 FR 48051, Aug. 15, 2005, as amended at 72 FR 9870, Mar. 6, 2007]

§ 393.49 Control valves for brakes.

(a) *General rule.* Except as provided in paragraphs (b) and (c) of this section, every motor vehicle manufactured after June 30, 1953, which is equipped with power brakes, must have the braking system so arranged that one application valve must when activated cause all of the service brakes on the motor vehicle or combination motor vehicle to operate. This requirement must not be construed to prohibit motor vehicles from being equipped with an additional valve to be used to operate the brakes on a trailer or trailers or as required for buses in § 393.44.

(b) *Driveway-Towaway Exception.* This section is not applicable to driveway-towaway operations unless the brakes on such operations are designed to be operated by a single valve.

(c) *Surge brake exception.* This requirement is not applicable to trailers equipped with surge brakes that satisfy the conditions specified in § 393.48(d).

[72 FR 9871, Mar. 6, 2007, as amended at 78 FR 58484, Sept. 24, 2013]

§ 393.50 Reservoirs required.

(a) *Reservoir capacity for air-braked power units manufactured on or after March 1, 1975, and air-braked trailers manufactured on or after January 1, 1975.* Buses, trucks, and truck-tractors manufactured on or after March 1, 1975, and air-braked trailers manufactured on or after January 1, 1975, must meet the reservoir requirements of FMVSS No. 121, S5.1.2, in effect on the date of manufacture.

(b) *Reservoir capacity for air-braked vehicles not subject to FMVSS No. 121 on the date of manufacture and all vacuum braked vehicles.* Each motor vehicle using air or vacuum braking must have either reserve capacity, or a reservoir, that would enable the driver to make a full service brake application with the engine stopped without depleting the air pressure or vacuum below 70 percent of that indicated by the air or vacuum gauge immediately before the