§ 1512.5 Requirements for braking system.

(a) Braking system. Bicycles shall be equipped with front- and rear-wheel brakes or rear-wheel brakes only.

(b) Handbrakes. Handbrakes shall be tested at least ten times by applying a force sufficient to cause the handlebar to contact the handlebar, or a maximum of 445 N (100 lbf), in accordance with the loading test, §1512.18(d)(2); and shall be rocked back and forth with the weight of a 68.1 kg (150 lb) rider on the seat with the same handbrake force applied in accordance with the rocking test, §1512.18(d)(2)(iii); there shall be no visible fractures, failures, movement of clamps, or misalignment of brake components.

(1) Stopping distance. A bicycle equipped with only handbrakes shall be tested for stopping distance by a rider of at least 68.1 kg (150 lb) weight in accordance with the performance test, §1512.18(d)(2)(v) and (vi), and shall have a stopping distance of no greater than 4.57 m (15 ft) from the actual test speed as determined by the equivalent ground speed specified in §1512.18(d)(2)(v).1

(2) Hand lever access. Hand lever mechanisms shall be located on the handlebars in a position that is readily

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2Copies may be obtained from: American National Standards Institute, 1430 Broadway, New York, New York 10018.
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accessible to the rider when in a normal riding position.

(3) **Grip dimension.** The grip dimension (maximum outside dimension between the brake hand lever and the handlebars in the plane containing the centerlines of the handgrip and the hand brake lever) shall not exceed 89 mm (3 1/2 in) at any point between the pivot point of the lever and lever mid-point; the grip dimension for sidewalk bicycles shall not exceed 76 mm (3 in). The grip dimension may increase toward the open end of the lever but shall not increase by more than 12.7 mm (1/2 in) except for the last 12.7 mm (1/2 in) of the lever. (See figure 5 of this part 1512.)

(4) **Attachment.** Brake assemblies shall be securely attached to the frame by means of fasteners with locking devices such as a lock washer, locknut, or equivalent and shall not loosen during the rocking test, §1512.18(d)(2)(iii). The cable anchor bolt shall not cut any of the cable strands.

(5) **Operating force.** A force of less than 44.5 N (10 lbf) shall cause the brake pads to contact the braking surface of the wheel when applied to the handlebar at a point 25 mm (1.0 in) from the open end of the handlebar.

(6) **Pad and pad holders.** Caliper brake pad shall be replaceable and adjustable to engage the braking surface without contacting the tire or spokes and the pad holders shall be securely attached to the caliper assembly. The brake pad material shall be retained in its holder without movement when the bicycle is loaded with a rider of at least 68.1 kg (150 lb) weight and is rocked forward and backward as specified in the rocking test, §1512.18(d)(2)(i)(I).

(7) **Hand lever location.** The rear brake shall be actuated by a control located on the right handlebar and the front brake shall be actuated by a control located on the left handlebar. The left-hand/right-hand locations may be reversed in accordance with an individual customer order. If a single hand lever is used to actuate both front and rear brakes, it shall meet all applicable requirements for hand levers and shall be located on either the right or left handlebar in accordance with the customer’s preference.

(8) **Hand lever extensions.** Bicycles equipped with hand lever extensions shall be tested with the extension levers in place and the hand lever extensions shall also be considered to be hand levers.

(c) **Footbrakes.** All footbrakes shall be tested in accordance with the force test, §1512.18(e)(2), and the measured braking force shall not be less than 178 N (40 lbf) for an applied pedal force of 310 N (70 lbf).

(1) **Stopping distance.** Bicycles equipped with footbrakes (except sidewalk bicycles) shall be tested in accordance with the performance test, §1512.18(e)(3), by a rider of at least 68.1 kg (150 lb) weight and shall have a stopping distance of no greater than 4.57 m (15 ft) from an actual test speed of at least 16 km/h (10 mph). If the bicycle has a footbrake only and the equivalent groundspeed of the bicycle is in excess of 24 km/h (15 mph) (in its highest gear ratio at a pedal crank rate of 60 revolutions per minute), the stopping distance shall be 4.57 m (15 ft) from an actual test speed of 24 km/h (15 mph) or greater.

(2) **Operating force.** Footbrakes shall be actuated by a force applied to the pedal in a direction opposite to that of the drive force, except where brakes are separate from the drive pedals and the applied force is in the same direction as the drive force.

(3) **Crank differential.** The differential between the drive and brake positions of the crank shall be no more than 60° with the crank held against each position under a torque of no less than 13.6 N·m (10 ft·lb).

(d) **Footbrakes and handbrakes in combination.** Bicycles equipped with footbrakes and handbrakes shall meet all the requirements for footbrakes in §1512.5(c), including the tests specified. In addition, if the equivalent ground speed of the bicycle is 24 km/h (15 mph) or greater (in its highest gear ratio at

3This is proportional to a gear development greater than 6.67 m (21.9 ft) in the bicycle’s highest gear ratio. Gear development is the distance the bicycle travels in meters, in one crank revolution.
§ 1512.7 Requirements for pedals.

(a) Construction. Pedals shall have right-hand/left-hand symmetry. The tread surface shall be present on both top and bottom surfaces of the pedal except that if the pedal has a definite preferred position, the tread surface need only be on the surface presented to the rider’s foot.

(b) Toe clips. Pedals intended to be used only with toe clips shall have toe clips securely attached to them and need not have tread surfaces. Pedals designed for optional use of toe clips shall have tread surfaces.

(c) Pedal reflectors. Pedals for bicycles other than sidewalk bicycles shall have reflectors in accordance with §1512.16(e). Pedals for sidewalk bicycles are not required to have reflectors.