§ 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 stem; (2) a line tangent to the front tip of the seat and intersecting the seat mast at the top rear stay; (3) the top surface of the top tube; and (4) a line connecting the front of the seat (when adjusted to its highest position) to the junction where the handlebar is attached to the handlebar stem. The top tube on a female bicycle model shall be the seat mast and the down tube or tubes that are nearest the rider in the normal riding position. Control cables no greater than 6.4 mm (1⁄4 in) in diameter and cable clamps made from material not thicker than 4.8 mm (5⁄32 in) may be attached to the top tube.

(h) [Reserved]

(i) Control cable ends. Ends of all accessible control cables shall be provided with protective caps or otherwise treated to prevent unraveling. Protective caps shall be tested in accordance with the protective cap and end-mounted devices test, §1512.18(c), and shall withstand a pull of 9.9 N (2.0 lb).

(j) Control cable abrasion. Control cables shall not abrade over fixed parts and shall enter and exit cable sheaths in a direction in line with the sheath entrance and exit so as to prevent abrading.

(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 midpoint; 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)(iii).

(7) [Reserved]

(8) 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.

(9) 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 not more than 60° with the crank held against each position under a torque of no less than 13.6 N-m (10 ft-lb).

(4) Independent operation. The brake mechanism shall function independently of any drive-gear positions or adjustments.

(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 a pedal crank rate of 60 revolutions per

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.
§ 1512.6 Requirements for steering system.

(a) Handlebar stem insertion mark. Quill-type handlebar stems shall contain a permanent ring or mark which clearly indicates the minimum insertion depth of the handlebar stem into the fork assembly. The insertion mark shall not affect the structural integrity of the stem and shall not be less than 2 1/2 times the stem diameter from the lowest point of the stem. The stem strength shall be maintained for at least a length of one shaft diameter below the mark.

(b) Handlebar stem strength. The handlebar stem shall be tested for strength in accordance with the handlebar stem test, §1512.18(g), and shall withstand a force of 2000 N (450 lbf) for bicycles and 1000 N (225 lbf) for sidewalk bicycles.

(c) Handlebars. Handlebars shall allow comfortable and safe control of the bicycle. Handlebar ends shall be symmetrically located with respect to the longitudinal axis of the bicycle and no more than 406 mm (16 in) above the seat surface when the seat is in its lowest position and the handlebar ends are in their highest position. This requirement does not apply to recumbent bicycles.

(d) Handlebar ends. The ends of the handlebars shall be capped or otherwise covered. Handgrips, end plugs, control shifters, or other end-mounted devices shall be secure against a removal force of no less than 66.8 N (15 lbf) in accordance with the protective cap and end-mounted devices test, §1512.18(c).

(e) Handlebar and clamps. The handlebar and clamps shall be tested in accordance with the handlebar test, §1512.18(h). Directions for assembly of the bicycle required in the instruction manual by §1512.19(a)(2) shall include an explicit warning about the danger of damaging the stem-to-fork assembly and the risk of injury to the rider that can result from overtightening the stem bolt or other clamping device. The directions for assembly shall also contain a simple, clear, and precise statement of the procedure to be followed to avoid damaging the stem-to-fork assembly when tightening the stem bolt or other clamping device.

§ 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.