

**Federal Railroad Administration, DOT**

**§ 230.105**

of the following defects shall be removed from service immediately and repaired :

- (1) Cut journals that cannot be made to run cool without turning;
- (2) Seams in axles causing journals to run hot;
- (3) Overheating, as evidenced by pronounced blue black discoloration;
- (4) Transverse seams in journals of iron or steel axles; or
- (5) Journal surfaces having any of the following:
  - (i) A circumferential score;
  - (ii) Corrugation;
  - (iii) Pitting;
  - (iv) Rust;
  - (v) Etching.

**§ 230.101 Steam locomotive driving journal boxes.**

- (a) *Driving journal boxes.* Driving journal boxes shall be maintained in a safe and suitable condition for service. Not more than one shim may be used between the box and bearing.
- (b) *Broken bearings.* Broken bearings shall be renewed.
- (c) *Loose bearings.* Loose bearings shall be repaired or renewed.

**§ 230.102 Tender plain bearing journal boxes.**

- Plain bearing journal boxes with the following defects shall be removed from service immediately and repaired:
- (a) A box that does not contain visible free oil;
  - (b) A box lid that is missing, broken, or open except to receive servicing;
  - (c) A box containing foreign matter, such as dirt, sand, or coal dust that can reasonably be expected to damage the bearing; or have a detrimental effect on the lubrication of the journal and bearing;
  - (d) A lubricating pad that:
    - (1) Is missing;
    - (2) Is not in contact with the journal;
    - (3) Has a tear extending half the length or width of the pad, or more, except by design;
    - (4) Shows evidence of having been scorched, burned, or glazed;
    - (5) Contains decaying or deteriorated fabric that impairs proper lubrication of the pad;

- (6) Has an exposed center core (except by design); or
- (7) Has metal parts contacting the journal;
  - (e) A plain bearing that:
    - (1) Is missing, cracked, broken;
    - (2) Has a bearing liner loose;
    - (3) Has a broken out piece; or
    - (4) Has indications of having been overheated, as evidenced by:
      - (i) Melted babbitt;
      - (ii) Smoke from hot oil; or
      - (iii) Journal surface damage; or
    - (f) A plain bearing wedge that:
      - (1) Is missing, cracked or broken; or
      - (2) Is not located in its design position.

**§ 230.103 Tender roller bearing journal boxes.**

Tender roller bearing journal boxes shall be maintained in a safe and suitable condition.

**§ 230.104 Driving box shoes and wedges.**

Driving box shoes and wedges shall be maintained in a safe and suitable condition for service.

**§ 230.105 Lateral motion.**

- (a) *Condemning limits.* The total lateral motion or play between the hubs of the wheels and the boxes on any pair of wheels shall not exceed the following limits:

	Inches
Engine truck wheels (with swing centers) .....	1
Engine truck wheels (with rigid centers) .....	1½
Trailing truck wheels .....	1
Driving wheels .....	¾

- (b) *Limits increased.* These limits may be increased on steam locomotives operating on track where the curvature exceeds 20 degrees when it can be shown that conditions require additional lateral motion.

- (c) *Non-interference with other parts.* The lateral motion shall in all cases be kept within such limits that the driving wheels, rods, or crank pins will not interfere with other parts of the steam locomotive.

## § 230.106

### TRUCKS, FRAMES AND EQUALIZING SYSTEM

#### § 230.106 Steam locomotive frame.

(a) *Maintenance and inspection.* Frames, decks, plates, tailpieces, pedestals, and braces shall be maintained in a safe and suitable condition for service, and shall be cleaned and thoroughly inspected as often as necessary to maintain in a safe and suitable condition for service with cleaning intervals, in any case, not to exceed every 1472 service days.

(b) *Broken frames.* Broken frames properly patched or secured by clamps or other suitable means which restores the rigidity of the frame are permitted.

#### § 230.107 Tender frame and body.

(a) *Maintenance.* Tender frames shall be maintained in a safe and suitable condition for service.

(b) *Height difference.* The difference in height between the deck on the tender and the cab floor or deck on the steam locomotive shall not exceed 1½ inches.

(c) *Gangway minimum width.* The minimum width of the gangway between steam locomotive and tender, while standing on tangent track, shall be 16 inches.

(d) *Tender frame condemning defects.* A tender frame with any of the following defects shall be removed from service immediately and repaired:

(1) Portions of the tender frame or body (except wheels) that have less than a 2½ inches clearance from the top of rail;

(2) Tender center sill that is broken, cracked more than 6 inches, or permanently bent or buckled more than 2½ inches in any six foot length;

(3) Tender coupler carrier that is broken or missing;

(4) Tender center plate, any portion of which is missing or broken or that is not properly secured; or

(5) Tender that has a broken side sill, crossbearer, or body bolster.

#### § 230.108 Steam locomotive leading and trailing trucks.

(a) *Maintenance.* Trucks shall be maintained in safe and suitable condition for service. Center plates shall fit properly, and the male center plate shall extend into the female center

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plate not less than ¾ inch. All centering devices shall be properly maintained and shall not permit lost motion in excess of ½ inch.

(b) *Safety chain required.* A suitable safety chain shall be provided at each front corner of all four wheel engine trucks.

(c) *Clearance required.* All parts of trucks shall have sufficient clearance to prevent them from interfering with any other part of the steam locomotive.

#### § 230.109 Tender trucks.

(a) *Tender truck frames.* A tender truck frame shall not be broken, or have a crack in a stress area that affects its structural integrity. Tender truck center plates shall be securely fastened, maintained in a safe and suitable condition for service, and provided with a center pin properly secured. The male center plate must extend into the female center plate at least ¾ inch. Shims may be used between truck center plates.

(b) *Tender truck bolsters.* Truck bolsters shall be maintained approximately level.

(c) *Condemning defects for springs or spring rigging.* Springs or spring rigging with any of the following defects shall be taken out of service immediately and renewed or properly repaired:

(1) An elliptical spring with its top (long) leaf or any other five leaves in the entire spring pack broken;

(2) A broken coil spring or saddle;

(3) A coil spring that is fully compressed;

(4) A broken or cracked equalizer, hanger, bolt, gib or pin;

(5) A broken coil spring saddle; and

(6) A semi-elliptical spring with a top (long) leaf broken or two leaves in the top half broken, or any three leaves in the entire spring broken.

(d) *Tender securing arrangement.* Where equipped, tender devices and/or securing arrangements intended to prevent the truck and tender body from separating in case of derailment shall be maintained in a safe and suitable condition for service.

(e) *Side bearings and truck centering devices.* Where equipped, side bearings and truck centering devices shall be