

SECTION 5

STANDARD TRAIN EXAMINATION PROCEDURES

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5.1 SCOPE

- 5.1.1 This Section prescribes Train Examination Standards which ensure an acceptable standard for the safe operation of all interstate and intrastate passenger and freight trains. These standards shall be read in conjunction with the rules and regulations of each System.
- 5.1.2 Individual systems may impose other requirements or procedures for local or route-specific application provided that the minimum level of safety provided by this Section is maintained.
- 5.1.3 For the purpose of this standard two number four wheeled vehicles are equivalent to one bogie vehicle; each brake unit on an articulated vehicle is equivalent to one bogie vehicle.

5.2 REQUIRED TRAIN EXAMINATIONS

Various classes of train examination are defined at 5.3. They shall be conducted as required by the following schedule.

5.2.1 FULL EXAMINATION (FX)

5.2.1.1 FX1

Performed by examining staff after final marshalling of non-tested loading, prior to commencement of journey.

5.2.1.2 FX2

Performed by train crew when examining staff are unavailable after final marshalling and attachment of locomotive to non-tested loading, prior to commencement of journey.

5.2.2 MODIFIED OR PARTIAL EXAMINATIONS (MX)

5.2.2.1 MX

Performed by examining staff or train crew when locomotives are changed or loading is detached.

5.2.2.2 MX1

Performed by examining staff or train crew when attaching pre-air tested and pre-mechanically examined vehicles to a locomotive or train. A maximum of two (2) separate blocks may be placed within a train consist at any location.

5.2.2.3 MX2

Performed by examining staff or train crew when attaching non-tested loading to a previously tested train or when vehicles on an existing train are remarshalled.

5.2.3 ARRIVAL EXAMINATIONS (AX)

Either an AX1 (roll by) or AX2 (after placement) is to be conducted by examining staff on arrival at the train destination.

5.2.4 DEPARTURE EXAMINATIONS (DX)

DX (roll by) examinations are to be conducted where possible on departure from a train's originating location and enroute. Depending on the location and the availability of staff, these examinations may be performed by examining staff, train crews, yard or station staff.

5.2.5 SPECIAL MODIFIED EXAMINATIONS (SM)

A special modified examination (SM) shall be conducted by examining staff or the train crew when transfer movements are required to cross main (running) lines when moving between local sidings.

5.2.6 ROLL BY EXAMINATION

A roll by examination involves the checking of a moving train for defects. The extent of the defects detected will depend on the speed of the train.

5.3 GENERAL REQUIREMENTS OF TESTS AND EXAMINATIONS

The train examinations listed at 5.2 shall include the individual tests and examinations specified below for each class of examination. Detailed requirements for these procedures are given at 5.4.

Where a complete train air brake test is specified, this may be performed using a pilot locomotive or by using yard test equipment (see 5.4.2.2) in lieu of the train locomotive.

5.3.1 FULL EXAMINATION (FX)

5.3.1.1 FX1

Full mechanical examination
Complete train air brake test
Brake pipe leakage test
Issue of a Train Examiners Certificate for interstate freight trains

5.3.1.2 FX2

General mechanical examination
Complete train air brake test

5.3.2 MODIFIED OR PARTIAL EXAMINATIONS (MX)

5.3.2.1 MX

Continuity test

5.3.2.2 MX1

Brake pipe leakage
Continuity test
Issue of a Train Examiners Certificate for interstate freight trains if the examination is conducted by a Train Examiner.

5.3.2.3 MX2

Full or general mechanical examination and air brake test on attached loading
Brake pipe leakage test
Continuity test
Issue of a Train Examiners Certificate for interstate freight trains if the examination is conducted by a Train Examiner.

5.3.3 ARRIVAL EXAMINATIONS (AX)

To prevent defective or previously carded vehicles from being reloaded, vehicles shall be examined and carded for repair as required during AX type examinations.

5.3.3.1 AX1

Roll by examination as vehicle/train arrives at a terminal yard.

5.3.3.2 AX2

An examination of all arrival vehicles after placing for unloading, but before such vehicles are reloaded.

5.3.4 DEPARTURE EXAMINATIONS (DX)

5.3.4.1 DX1

To ensure trains are travelling in a safe manner, a roll-by examination shall be conducted where possible in the following instances:

- (a) As a train departs from its originating location or from any other intermediate location where the consist is altered, and
- (b) When trains cross at intermediate locations

5.3.5 SPECIAL MODIFIED EXAMINATION (SM)

5.3.5.1 This examination is conducted to ensure that all equipment is secure and that the vehicles are in a safe and satisfactory condition prior to a transfer movement between local sidings.

5.3.5.2 The examination shall confirm that:

- (a) All discharge doors are closed and other vehicle doors are correctly secured
- (b) Automatic couplers and air hoses are correctly coupled and the corresponding end cocks are fully open
- (c) Load compensating brake equipment is set correctly
- (d) Loading is secure and vehicle attachments and equipment are safe for travel
- (e) The air brake has applied and released correctly on the required number of vehicles
- (f) All handbrakes are released
- (g) Brake pipe is continuous by performing a continuity test

5.4 PROCEDURES FOR TRAIN EXAMINATION AND TESTING

During any examination other than an AX1 all necessary repairs must be conducted wherever possible.

If undue delay to the departure of a train would be caused by such repairs, providing other train examination requirements are satisfied and the vehicle is fit to run, it must be carded for attention to the repair location nearest to the vehicle's destination.

5.4.1 MECHANICAL EXAMINATION

Detailed examinations as specified in Section 5.3 shall be carried out according to the requirements set out below:

5.4.1.1 Full Mechanical Examination

A full mechanical examination shall be carried out by examining staff during which each vehicle shall be visually examined in respect to the adjustment, condition and/or security of the following items (where fitted):

- (a) Brake pipe end cocks, coupling hoses and heads
- (b) Hose couplings correctly coupled and appropriate end cocks opened
- (c) Air pipes, pipe fittings and securing clips
- (d) Variable volume device and safety valve
- (e) Grade control valve, securing brackets and bolts
- (f) Load compensation equipment, securing brackets and bolts
- (g) Brake cylinder and reservoirs
- (h) Brake rigging levers, rods, pins, cotters and bogie safety loops
- (i) Slack adjusters and fittings
- (j) Handbrake assemblies and linkages
- (k) Automatic couplers and coupler height, knuckle pins, knuckles, yokes, draft gear, draft gear carrier plates, uncoupling rods and associated brackets
- (l) Centre sills, side sills, end sills and stanchions
- (m) Centre castings
- (n) Bogie springs, ride control equipment (ie friction wedges and other damping devices) and other specialised bogie equipment
- (o) Side bearers and side bearer clearances
- (p) Wheel profiles and wheel tread condition
- (q) Roller bearings, end caps, seals, backing rings, axlebox plugs, adaptors, hornstays and stop blocks
- (r) Doors, twistlocks, trailer hitches and wheel chocks
- (s) Securing of loads and loading within gauge
- (t) Dates for bogies, lubrication or brake equipment maintenance
- (u) Brake block thickness
- (v) Load compensating and grade control handles in correct positions
- (w) Release valve and operating chain or wire
- (x) Steps, handrails and ladders
- (y) Check presence of spare hoses for articulated vehicles

5.4.1.2 General Mechanical Examination

A general mechanical examination shall be carried out by train crews during which each vehicle shall be visually examined in respect to adjustment, condition and/or security of the following items:

- (a) Hose couplings correctly coupled and appropriate end cocks opened
- (b) Automatic couplers
- (c) Doors, twistlocks, trailer hitches and wheel chocks
- (d) Securing of loads
- (e) Brake block thickness
- (f) Brake rigging (levers, rods, pins, cotters, bogie safety loops, etc)
- (g) Load compensating and grade control handles in correct positions
- (h) Wheel flats and scale
- (i) Side bearer clearance

5.4.2 COMPLETE TRAIN AIR BRAKE TEST

- 5.4.2.1 A complete train air brake test shall be conducted in accordance with instructions issued by the appropriate authority in each System. These instructions shall ensure compliance with the requirements of this sub-section 5.4.2, and those of sub-section 5.5.2.
- 5.4.2.2 Each vehicle is to be individually inspected for the following:
- (a) Correct brake application and release
 - (b) Piston travel within limits
 - (c) Brake rigging alignment and remaining slack adjuster take up
 - (d) Audible air leakage
- 5.4.2.3 The air and handbrakes shall be operative on the number of rearmost vehicles on the train required by sub-section 5.5.6. These vehicles shall also comply with the brake retention requirements of that sub-section.
- 5.4.2.4 Should yard test equipment be used to carry out the brake test, the following conditions will apply:
- (a) The yard test plant must provide an increase or reduction of brake pipe pressure at a similar rate to that caused by the locomotive drivers brake valve
 - (b) No interference is permitted to the tested vehicles or to the marshalling of the vehicles prior to attachment of the train locomotive
- 5.4.2.5 At the completion of the examination after the train locomotive has been attached, all brakes, including handbrakes, on all vehicles, must be released prior to departure.

5.5 SPECIFIC EXAMINATION REQUIREMENTS

5.5.1 BRAKE PIPE PRESSURE

5.5.1.1 The general standard for locomotive brake pipe pressure setting shall be 500 kPa.

5.5.1.2 The minimum brake pipe pressure registered at the last vehicle of a train before departure shall be 425 kPa.

5.5.2 COMPLETE TRAIN AIR BRAKE TEST PROCEDURE

5.5.2.1 The train air system shall be fully charged with the brake pipe pressure at the rearmost vehicle being at least 425 kPa.

5.5.2.2 The train brakes shall be applied by making a brake pipe reduction of not less than 100 kPa.

5.5.2.3 The person(s) conducting the test shall inspect each vehicle in turn as required by 5.4.2 and shall ensure that:

- (a) the brakes are operative and have applied correctly on the rearmost vehicles, and
- (b) the air brakes remain applied on the rearmost vehicles to comply with the requirements of 5.5.6

5.5.2.4 After the brake application inspection has been completed the locomotive crew member, or the person operating the yard test equipment when used, shall be instructed by radio or hand signal to release the brakes. Each vehicle shall then be examined to ensure that all air brakes have released correctly.

5.5.3 CONTINUITY TEST

5.5.3.1 Full Continuity Test

The train air system shall be fully charged and examining staff shall:

- (a) ensure that the brake pipe is continuous throughout the train and the brake pipe pressure of the rearmost vehicle is not less than 425 kPa
- (b) ensure that the air brakes on the rearmost vehicle apply and release correctly

5.5.3.2 Modified Continuity Test

A Modified Continuity Test shall be conducted whenever block loading or individual vehicles are attached or detached enroute. The modified test shall check continuity of the brake pipe by observation of the correct application and release of the brakes on the three (3) vehicles immediately to the rear of the point at which the brake pipe continuity was interrupted. Any vehicle(s) with the brakes isolated (air cut out) shall not be counted in the three vehicles required.

5.5.4 BRAKE PIPE LEAKAGE TEST

5.5.4.1 The train brake pipe shall be fully charged with a brake pipe pressure of at least 425 kPa at the rearmost vehicle.

5.5.4.2 A brake application shall be initiated by making a service brake pipe reduction of approximately 100 kPa. The brake pipe shall then be isolated.

5.5.4.3 The brake pipe pressure shall be monitored for a period of one minute after allowing one minute for the pressure to stabilise. The rate of pressure drop in the brake pipe over the second minute shall not exceed 35 kPa/minute.

5.5.5 GRADE CONTROL AND LOAD COMPENSATION

5.5.5.1 Grade Control Valves

Grade control equipment provided on vehicles is to be tested and utilised when so instructed by the appropriate authority of each System.

Testing of the equipment is not normally required during train examination procedures of interstate trains before departure, except where specifically required for trains entering the SRA system.

Trains entering the SRA system from AN must have a minimum of 80% of tonnage fitted with grade control valves.

5.5.5.2 Load Compensating Equipment

Vehicles fitted with manually-operated load compensating brake equipment are identified by a hollow square on the classification plate. The changeover load is normally indicated by a number within the square (or circle where grade control valves are fitted) (see Section 22).

The load compensating equipment must be placed in the 'L' (Loaded) position when:

- (a) the payload (nett load) in tonnes indicated by the vehicle way bill is greater than or equal to the number shown on the classification plate, or
- (b) if no number is shown, the payload is 20 tonnes or greater

At all other times the load compensating equipment shall be in the 'E' (Empty) position to avoid wheel damage from excessive braking.

5.5.6 BRAKE REQUIREMENTS OF THE REARMOST VEHICLES

5.5.6.1 The number of vehicles required to conform to the requirements of this sub-section shall be:

- (a) three (3) for freight trains operated by SRA of New South Wales
- (b) two (2) for freight trains on all other systems
- (c) one (1) for all passenger trains

5.5.6.2 The vehicles shall have the air and hand brakes operating correctly.

5.5.6.3 The air brakes on the vehicles shall remain *effectively* applied for a period of time sufficient for a member of the train (locomotive) crew to reach the vehicles and secure the handbrakes in the event of a breakaway en route.

This requirement will be complied with if the brakes remain effectively applied for the time taken by examining staff to reach the vehicles from the locomotive while conducting a normal full (FX) examination.

5.5.6.4 Should any of the required number of vehicles fail the foregoing test, the faulty vehicle(s) shall be repaired or the train remarshalled to ensure compliance with the requirements of 5.5.6.2 and 5.5.6.3.

5.5.7 BRAKE CYLINDER PISTON TRAVEL

Brake cylinder piston travel on vehicles shall be within the following limits:

5.5.7.1 Freight Vehicles

Vehicles without slack adjusters	100-175 mm
Vehicles with slack adjusters	100-150 mm
Wabcopac or similar unitised brake equipment	25-125 mm

5.5.7.2 Passenger Vehicles

5.5.7.2.1 Vehicles with *bogie* mounted brake cylinders

JSL (or similar) cylinders	60-65 mm
WF cylinder	75-100 mm

5.5.7.2.2 Vehicles with *body* mounted brake cylinders 100-150 mm

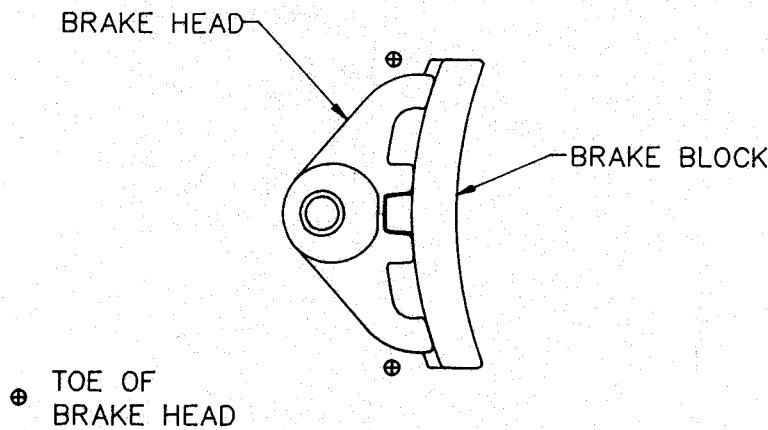
5.5.8 SLACK ADJUSTER AVAILABLE TRAVEL

- 5.5.8.1 The minimum available slack adjuster travel allowed before departure is 50 mm.
- 5.5.8.2 Where an air operated slack adjuster is defective and the brake piston travel is in excess of that given in 5.5.7.1, the air brake must not be isolated as the brake may still be capable of providing some retarding force. Any such vehicle shall be considered as an unbraked vehicle when determining brake percentage and GREEN carded for attention.
- 5.5.8.3 When a mechanical double acting (or in-line) slack adjuster is defective the air brake must be isolated and the vehicle GREEN carded accordingly.

5.5.9 BRAKE BLOCK THICKNESS

- 5.5.9.1 The measurement for brake block thickness is to be made on the outside (facing) surface at the thinnest end of the block in line with the toe (end) of the brake head. (See Diagram 5-1).

DIAGRAM 5-1



	Composition	Cast Iron
Condemning thickness at any location	10 mm	10 mm

5.5.9.2 The permitted minimum brake block thickness at the commencement of a journey on the intersystem network to enable a train to reach its destination without the need to renew brake blocks enroute shall be as follows:

5.5.9.2.1 Freight Trains

Route	Composition	Cast
	Iron	
Sydney-Perth or Perth-Sydney	15 mm	25 mm
Melbourne-Sydney or Sydney-Melbourne	15 mm	20 mm
Sydney-Brisbane or Brisbane-Sydney	15 mm	20 mm
Melbourne-Brisbane or Brisbane-Melbourne	15 mm	30 mm
Adelaide/Pt Augusta-Perth or Perth-Adelaide/ Pt Augusta	13 mm	15 mm
Adelaide/Pt Augusta-Sydney	13 mm	20 mm
Sydney-Adelaide/Pt Augusta	13 mm	15 mm
Melbourne-Adelaide or Adelaide-Melbourne	13 mm	15 mm
Adelaide-Brisbane or Brisbane-Adelaide	15 mm	20 mm

5.5.9.2.2 Passenger Trains

Route Composition	Iron	Cast
Sydney-Perth or Perth-Sydney	15 mm	25 mm
Sydney-Melbourne or Melbourne-Sydney	15 mm	15 mm
Sydney-Brisbane or Brisbane-Sydney	13 mm	15 mm
Adelaide-Perth or Perth-Adelaide	13 mm	15 mm
Adelaide-Sydney	13 mm	20 mm
Sydney-Adelaide	13 mm	15 mm
Adelaide-Melbourne or Melbourne-Adelaide	13 mm	15 mm
Adelaide-Pt Augusta	13 mm	13 mm

5.5.10 INOPERATIVE HANDBRAKES

Vehicles with inoperative handbrakes shall be clearly labelled with a NO HANDBRAKE card according to clause 5.6.7.2.

5.5.11 INOPERATIVE AIR BRAKES

5.5.11.1 In all cases where it is necessary to isolate the air brakes on freight vehicles, the vehicle shall be *green* carded in accordance with sub-section 5.6.

5.5.11.2 On freight trains with a scheduled speed of more than 80 km/hr, one bogie vehicle (or its equivalent) in ten (10) may have the air brake inoperative or isolated, provided that the total unbraked mass of any train shall not exceed 10% of the total train mass (excluding the mass of hauling locomotives).

5.5.11.3 On passenger trains, the number of vehicles permitted to run with the air brake inoperative or isolated shall be:

- (a) One (1) for every ten (10) vehicles (including the train locomotive when applicable), or
- (b) One (1) bogie for every ten (10) bogies (including the train locomotive bogies when applicable) where individual bogies can be isolated.

Each locomotive is to be counted as one (1) vehicle or two (2) bogies for the purposes of this sub-section.

5.5.11.4 Other than unbraked articulated vehicles fitted with two (2) brake units, unbraked (isolated) vehicles shall not be marshalled together on *any* freight train during a departure examination. No more than two (2) unbraked vehicles may remain coupled together in transit. There shall be a minimum of two (2) braked vehicles attached to each end of any group of one or two unbraked vehicles in a train.

5.5.11.5 Vehicles with excessive brake travel or a defective slack adjuster and permitted to run with the air brakes operating (5.5.8) shall, for the purposes of this sub-section, be considered as having the air brake inoperative or isolated.

5.5.12 END COCKS

End cocks on vehicles must be fitted in such a manner to ensure:

- (a) The operating handle is on the side of the cock furthest from the auto coupler
- (b) The coupling cock is to be positioned so the handle is in its lowest position when opened

5.5.13 DRAWGEAR

5.5.13.1 Height Limits

Drawgear height as measured from rail level at the centre of the coupler shall be:

Standard or Broad Gauge
 Maximum 915 mm
 Minimum 810 mm

5.5.13.1.1 Drawgear height shall be measured from rail level to the centre of the knuckle of an automatic coupler or to the horizontal centre line of the shank of a rigid drawbar.

5.5.13.1.2 The difference between the drawgear heights of adjacent coupled vehicles shall not be greater than 105 mm.

5.5.13.2 Condemning Limits

All drawgear components and attachments shall be examined to ensure that they are not damaged, defective or worn excessively and they are within the condemning limits specified in Section 24.

5.5.14 BOGIES

5.5.14.1 Friction Wedges

Refer to Section 24 for condemning limits.

5.5.14.2 Springs

There shall be a minimum of 2 mm clearance between adjacent coils in any spring nest arrangement.

5.5.15 WHEEL PROFILE LIMITS

Condemning limits shall be as specified in Section 24 and as determined by the application of the ROA Standard Rollingstock Wheel and Tyre Gauge - see Section 17.

5.5.16 SIDE BEARER CLEARANCES

Maximum and minimum side bearer clearances shall be as specified in Section 24.

5.5.17 SECURING OF LOADS

The Train Examiner or member of the train crew if applicable shall check that chains, twistlocks etc provided to secure loads are correctly applied and that the vehicle is safe to travel in accordance with the requirements of Section 20, Loading and Securing of Loads.

5.5.18 LOADING OUTLINE

5.5.18.1 The measurements of loads for unrestricted transport shall conform to the dimensions given in Section 18, Rolling Stock Outlines, Section 20, Loading and Securing of Loads, or as specified by the Systems over which the load will travel.

5.5.18.2 Loads accepted for transport but exceeding these outlines are classified as out of gauge and shall be handled in accordance with the instructions issued by the appropriate authority of each System.

5.5.19 MARSHALLING REQUIREMENTS

Trains shall be marshalled in accordance with the following requirements:

- (a) Requirements of Railways of Australia Code of Practices and Conditions for the Carriage of Dangerous Goods
- (b) Instructions laid down by the appropriate authority in each System
- (c) Requirements of clause 5.5.11, Inoperative Air Brakes
- (d) Limitations on trailing load imposed by drawgear classification
- (e) Vehicles with a gross mass on rail of less than 34 t shall, wherever possible, be marshalled towards the rear of freight trains
- (f) On the Adelaide-Melbourne-Sydney route, all vehicles with a gross mass on rail of 28 t or less shall be marshalled so that the trailing load on the foremost such vehicle is not more than 2600 t

5.5.20 STEPS, HANDRAILS AND UNCOUPLING RODS

Defects in steps, handrails and uncoupling rods (as well as inoperative handbrakes) are considered as shunters hazards and if found shall be handled according to sub-section 5.6.7.

In general any vehicle with a step, handrail or uncoupling rod which is damaged or distorted so that safety is compromised, shall be carded accordingly.

Loose or missing bolts, cracked or broken welds or components, and any components with cracks through or into bolt holes are unacceptable and the vehicle concerned shall be carded for repairs or replacements.

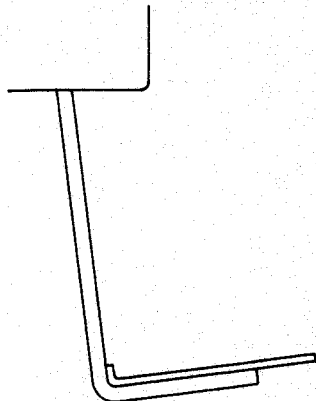
5.5.20.1 End Steps with Step Plate of Solid Material

5.5.20.1.1 This sub-section applies to those steps where the foot support surface consists of flat (smooth), diamond or chequer pattern plate.

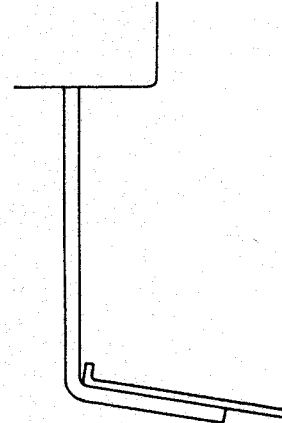
5.5.20.1.2 Any distortion of the step plate *above or below* the horizontal plane is unacceptable (Diagram 5-2(a) and (b)).

5.5.20.1.3 The distance from the end sill face to the step leg or rear of the step plate is unacceptable if greater than 65 mm (Diagram 5-2(c)).

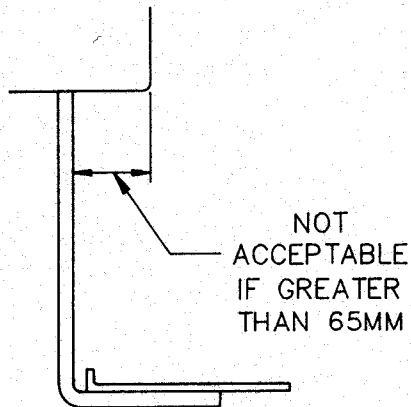
DIAGRAM 5-2



(a) NOT ACCEPTABLE



(b) NOT ACCEPTABLE



NOT
ACCEPTABLE
IF GREATER
THAN 65MM

(c) ACCEPTABLE

5.5.20.2 End Steps with Step Plate of Expanded Metal

- 5.5.20.2.1 This sub-section applies to those steps where the foot support surface consists of an open mesh expanded metal panel with anti-slip features.
- 5.5.20.2.2 Any distortion of the step plate *above* the horizontal plane is unacceptable (Diagram 5-3(a)).
- 5.5.20.2.3 For straight leg steps bolted behind the end sill, distortion below the horizontal is acceptable up to a maximum of 5° (Diagram 5-3(b)).
- 5.5.20.2.4 For straight leg steps bolted to the outside of the end sill and for bent leg steps bolted behind the end sill, downward distortion of the step plate is acceptable up to a maximum of 10° *below* the horizontal (Diagrams 5-3(c) and (d)).
- 5.5.20.2.5 Any distortion of the vertical step legs, in the vehicle's longitudinal direction, of more than 5° is unacceptable for straight or bent leg steps. Distortion up to 5° is acceptable for:
- (a) Straight leg steps bolted not more than 65 mm inboard of the end sill face (Diagram 5-4(a)). If bolted more than 65 mm inboard *no* distortion is acceptable (Diagram 5-4(b)).
 - (b) Bent leg steps provided the back of the step plate is not more than 65 mm inboard of the end sill face (Diagram 5-4(c)).

DIAGRAM 5-3

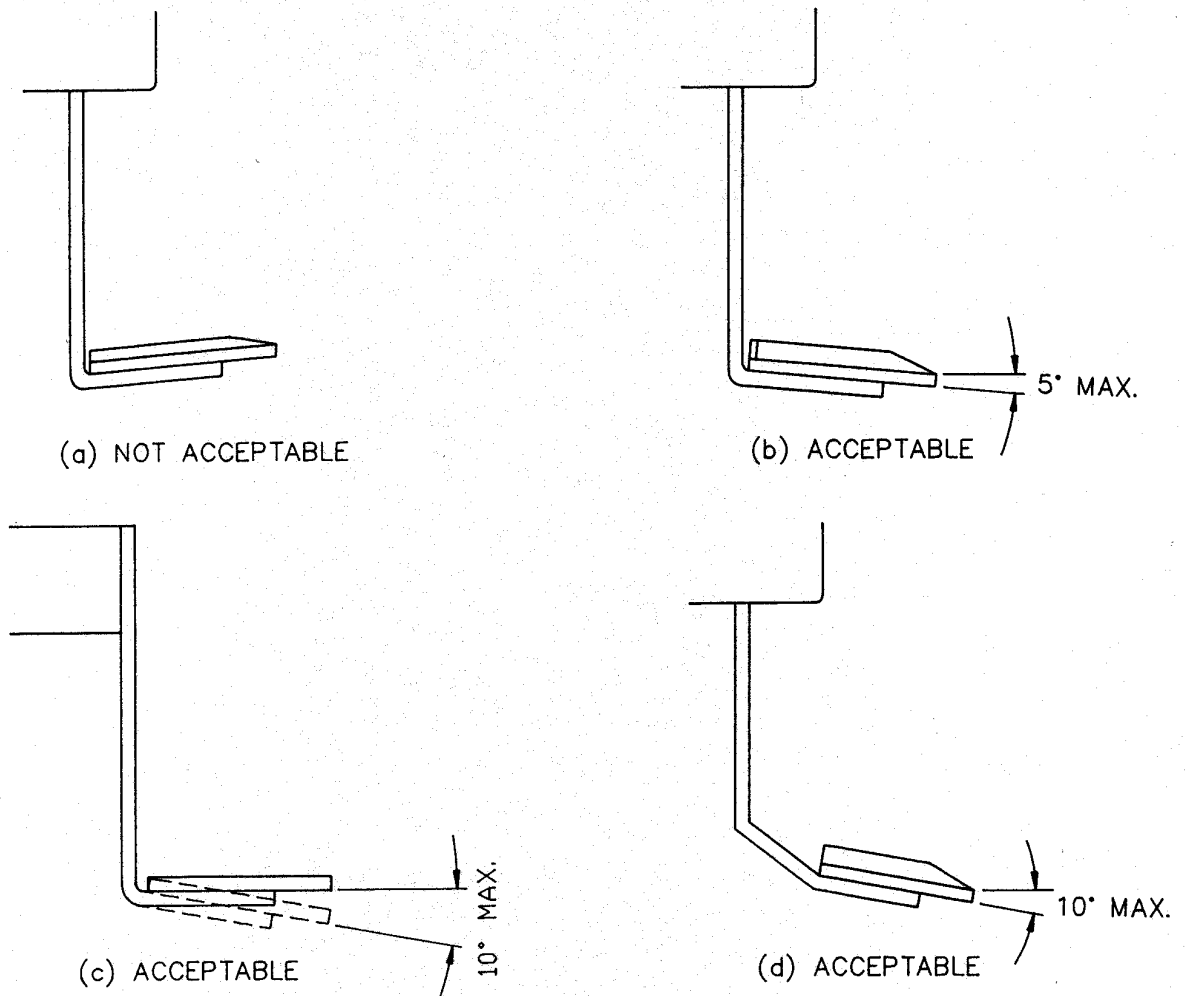
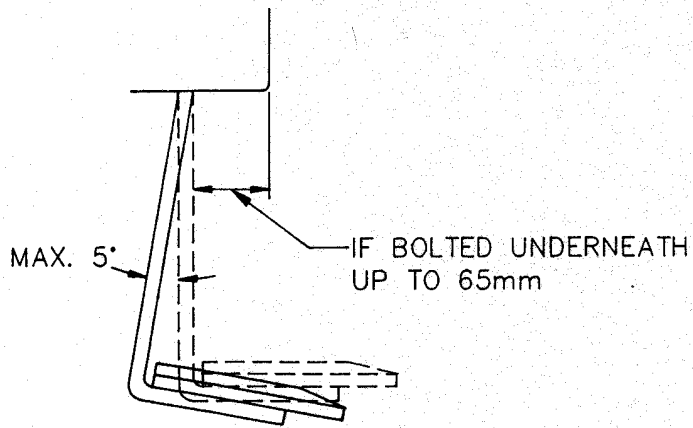
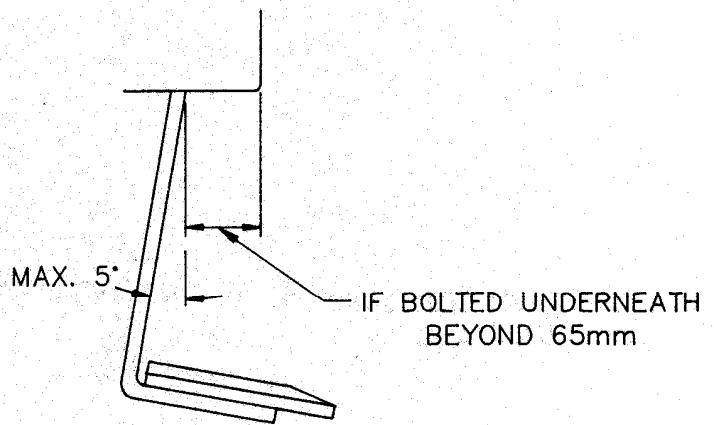


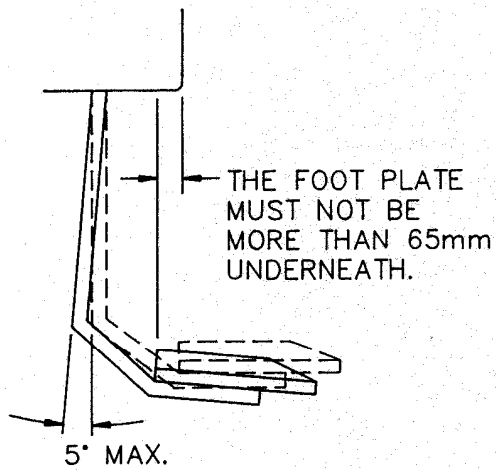
DIAGRAM 5-4



(a) ACCEPTABLE



(b) NOT ACCEPTABLE

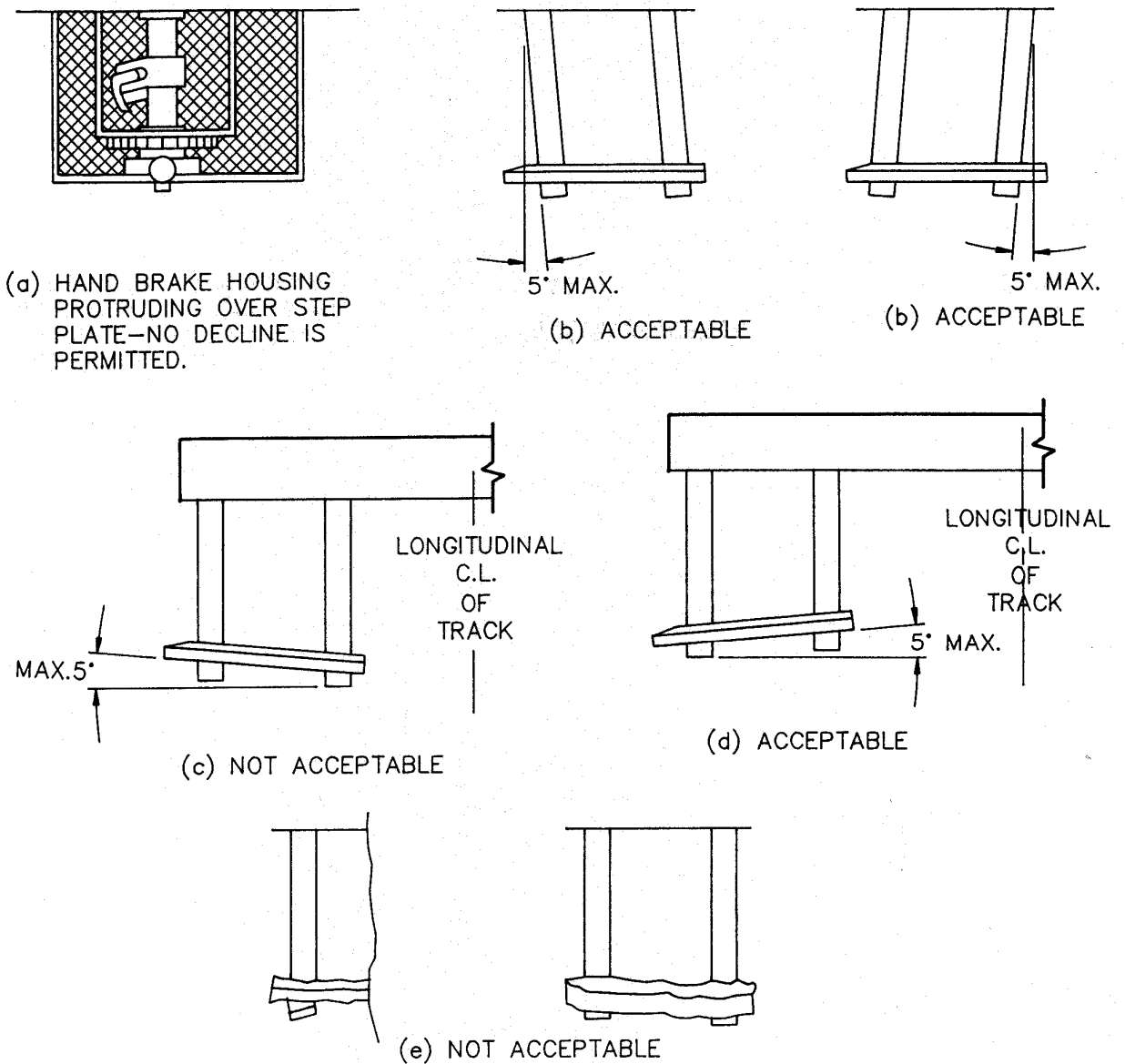


(c) ACCEPTABLE
SUBJECT TO ABOVE

5.5.20.3 End Steps of All Types

- 5.5.20.3.1 Distortion of the step plate below the horizontal is unacceptable where an end mounted handbrake housing or mechanism protrudes into the space immediately above the step plate (Diagram 5-5(a)).
- 5.5.20.3.2 Lateral displacement of step legs greater than 5° from the vertical, in either direction, is unacceptable. Displacement of up to 5° is acceptable provided that the step plate conforms to all other acceptable parameters (Diagram 5-5(b)).
- 5.5.20.3.3 Any inclination of the step plate downward towards the longitudinal centre line of the track is unacceptable (Diagram 5-5(c)).
- 5.5.20.3.4 Any inclination of the step plate greater than 5° downward towards the outside of the track is unacceptable (Diagram 5-5(d)).
- 5.5.20.3.5 Any damage, distortion or misalignment of the step plate itself is unacceptable (Diagram 5-5(e)).

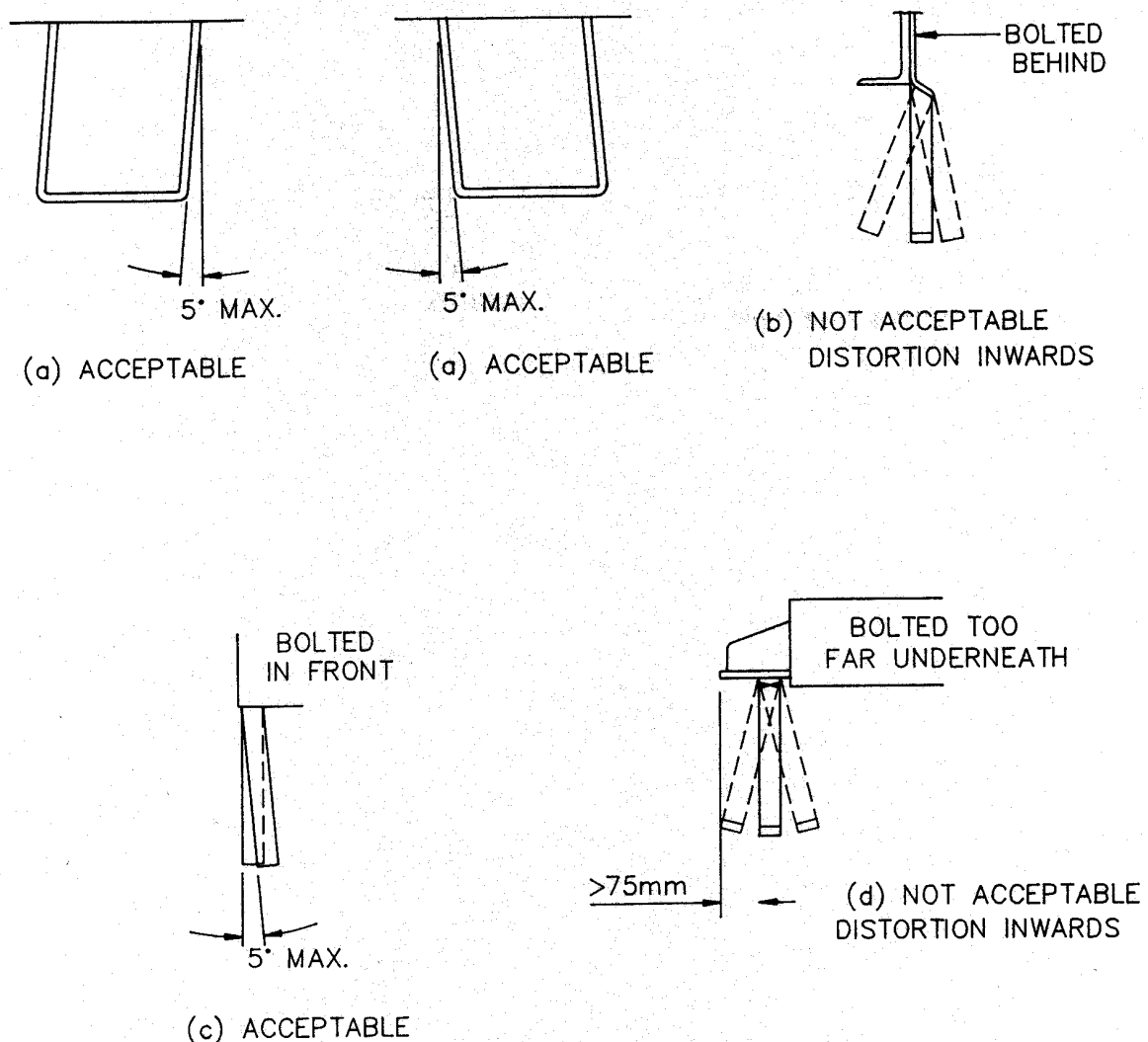
DIAGRAM 5-5



5.5.20.4 Side Stirrup Steps

- 5.5.20.4.1 Provided the foot support surface is parallel with the underframe, longitudinal distortion of the vertical legs up to 5° in either direction is acceptable (Diagram 5-6(a)).
- 5.5.20.4.2 For stirrup steps bolted *inside* the side sill, no inwards (lateral) distortion is acceptable. Outwards distortion is acceptable provided the step does not protrude past the outside of the underframe (Diagram 5-6(b)).
- 5.5.20.4.3 For stirrup steps bolted to, or level with, the outside of the side sill, inwards distortion up to 5° from the vertical is acceptable. Outwards distortion is acceptable provided the step does not infringe the permissible vehicle outline of Section 18 (Diagram 5-6(c)).
- 5.5.20.4.4 For stirrup steps bolted more than 75 mm inboard of the adjacent outer face of the underframe, no inwards distortion is acceptable. Outwards distortion is acceptable provided the step does not protrude past the outside of the underframe (Diagram 5-6(d)).

DIAGRAM 5-6



5.5.20.5 Uncoupling Rods

- 5.5.20.5.1 Any distortion of an uncoupling rod which obstructs or hinders the safe mounting or dismounting of end steps is unacceptable.
- 5.5.20.5.2 Any uncoupling rod handle which protrudes over the step plate by more than one third (1/3) of the step plate length is unacceptable (Diagram 5-7(a) and (b)).
- 5.5.20.5.3 Where the uncoupling rod protrudes over the step plate for an acceptable distance, no distortion of the step plate below the horizontal is permitted (Diagram 5-7(c)).
- 5.5.20.5.4 Any damage, defect or distortion of an uncoupling rod, associated brackets or mechanism is unacceptable if it impairs the correct operation of the uncoupling mechanism or is liable to cause injury to a person operating the rod.

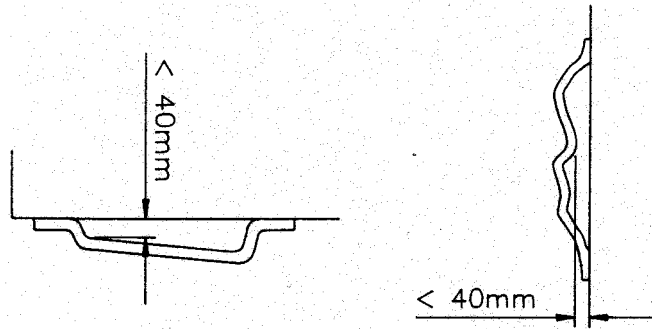
DIAGRAM 5-7

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5.5.20.6 Handrails

Any distortion to a handrail so that hand clearance at any location is less than 40 mm is unacceptable (Diagram 5-8).

DIAGRAM 5-8



5.6 CARDING OF FREIGHT VEHICLES FOR REPAIRS

Vehicles which require repairs or are unfit for traffic shall be carded in accordance with the requirements of this sub-section. In addition to the attachment of cards, specific defects classified as shunter's hazards shall be identified by the application of standard 'Danger' cards.

The required cards are:

- (a) RED 'Not to Go' Cards, Diagram 5-9
The standard format is shown on the diagram, and includes provision for both an alphabetical and a numerical defect code on the reverse side. Individual Systems may provide for additional information to be included on these cards for local use.
- (b) GREEN 'For Repairs' Card, Diagram 5-10
The standard format is shown on the diagram, and includes provision for both an alphabetical and a numerical defect code on the reverse side. Individual Systems may provide for additional information to be included on these cards for local use.

Both the above cards make provision for the issuing System's name and/or logo on the face side.

Note that the diagrams for the above cards show only those numerical codes directly equivalent to the alpha codes. Additional numerical codes may be used to indicate more specific faults. Layout of the reverse side of the card is optional at the discretion of the System.

- (c) Danger Card 'Handrail/Footsteps Unsafe', Diagram 5-11
- (d) Danger Card 'No Handbrake, Unsafe', Diagram 5-12
- (e) Danger Card 'Uncoupling Rod Unsafe', Diagram 5-13

Danger cards shall incorporate holes at the top and bottom of the card for securing to the vehicle. Each hole shall be fitted with metal eyelets for protection.

- (f) Mechanical Condition Advice Form, Diagram 5-15
This form is completed in duplicate. Examining staff shall enter on the form each vehicle carded for defects and each vehicle which has been repaired and the status changed, eg from RED carded to 'fit to run'. The original form is supplied to the vehicle monitoring section and the duplicate to the local supervisor.

5.6.1 "OWNING SYSTEM" AND FOREIGN VEHICLES UNFIT FOR TRAFFIC

5.6.1.1 When a vehicle is not fit for traffic it shall be carded with a standard ROA "Not to go" RED card (see Diagram 5-9) by the Train Examiner or other authorised, qualified officer or employee. This card shall be placed in the appropriate waybill clip in front of any other cards and on both sides of the vehicle. The authorised mechanical employee who attaches the red card shall advise the supervisor or other appropriate officer in charge, as soon as possible.

5.6.1.2 Vehicles which have been RED carded shall not continue in traffic. Individual Systems may institute procedures which permit local movements of such vehicles for unloading, where necessary, and for transit to an appropriate repair facility. These procedures shall provide for positive identification of the vehicle as having been RED carded but permitted to travel.

5.6.2 EMPTY "OWNING SYSTEM" VEHICLES FIT FOR TRAFFIC

When an empty vehicle requires repairs, but is fit to run and does not have a shunter's hazard (see 5.6.7), it shall be carded with the standard ROA "For repairs" GREEN card (see Diagram 5-10).

5.6.2.1 When the vehicle is not fit to be reloaded it shall be carded with the standard ROA "For repairs" GREEN card marked, "send empty", to the appropriate repair depot.

5.6.2.2 When the vehicle is fit to be reloaded it shall be carded with the standard ROA "For repairs" GREEN card, marked "return loaded". Such vehicles may be reloaded for a destination in the direction of the appropriate repair depot.

5.6.2.3 Owning System vehicles requiring repairs shall not be loaded for a destination outside of that System.

5.6.3 EMPTY FOREIGN VEHICLES FIT FOR TRAFFIC

When an empty vehicle requires repairs, but is fit for traffic and does not have a "Shunter's Hazard" (see sub section 5.6.7) it shall be carded as follows:

5.6.3.1 If the vehicle is not fit to be reloaded it shall be carded with the standard ROA "For repairs" GREEN card marked "send empty" to the appropriate repair depot.

5.6.3.2 If the vehicle is fit to be reloaded, it shall be carded with the standard ROA "For repairs" GREEN card marked "return loaded". Such a vehicle may be reloaded for a destination only on the owning System.

5.6.4 LOADED "OWNING SYSTEM" VEHICLES FIT FOR TRAFFIC

When a loaded vehicle requires repairs, but is fit for traffic and does not have a "Shunter's Hazard" (see sub-section 5.6.7), it shall be carded as follows:

5.6.4.1 All loaded vehicles which require repairs, but are fit to run are to be forwarded to their destination, but shall be carded with the standard ROA "For repairs" GREEN card.

5.6.4.2 If it is necessary for the vehicle to be returned empty, it shall be carded with the standard ROA "For repairs" GREEN card and the Train Examiner or other authorised qualified officer or employee shall indicate on the card to which depot the vehicle is to be sent or returned for repairs. The GREEN card shall be marked "send empty".

5.6.4.3 If the vehicle is in a fit condition to return loaded, it shall be carded with the standard ROA "For repairs" GREEN card and the Train Examiner or other authorised qualified officer or employee shall indicate on the card to which depot the vehicle is to be sent or returned for repairs. The GREEN card shall be marked "send loaded".

5.6.5 LOADED FOREIGN VEHICLES FIT FOR TRAFFIC

5.6.5.1 Foreign vehicles loaded for destinations within the system on which the defect is detected shall be forwarded to their destination and then handled as in 5.6.3 above for empty vehicles.

5.6.5.2 Foreign vehicles loaded for destinations on other systems shall be forwarded to their destination and shall be carded with the appropriate GREEN cards for attention by the receiving System.

5.6.6 "OWNING SYSTEM" AND FOREIGN VEHICLES, RECEIVED WITH GREEN CARDS WHICH HAVE BEEN ATTACHED BY ANOTHER SYSTEM

When vehicles are received with green cards attached by another (foreign) System, account damage or other defects, the following procedures shall be adopted:

5.6.6.1 "Owning System" Vehicles

5.6.6.1.1 When owning System vehicles are received loaded for destinations outside of that System (they are passing through the System), the foreign GREEN cards shall not be removed from these vehicles, except where the required repairs are necessary to ensure safe working. In this case the vehicle shall be forwarded to the nearest repair depot and repaired in accordance with the ROA Interchange Agreement for Freight Rolling Stock.

5.6.6.1.2 Vehicles loaded for destinations within the owning System shall be forwarded to their destination and then returned empty to the nearest repair depot. Repairs shall be carried out in accordance with the ROA Interchange Agreement for Freight Rolling Stock.

5.6.6.2 Foreign Vehicles

5.6.6.2.1 Foreign vehicles received loaded for destinations outside of the System shall be handled as in 5.6.6.1.1.

5.6.6.2.2 Foreign vehicles loaded for destinations within a System may be forwarded to their destination and may be reloaded for destinations in the direction of the owning System if fit for traffic. The foreign GREEN cards shall not be removed from these vehicles. Attention is drawn to Section 3.1 "System's Responsibilities" of the ROA Interchange Agreement for Freight Rolling Stock.

When a vehicle is not fit for reloading it shall be forwarded empty to the nearest repair depot for inspection and repair as in 5.6.6.1.1.

5.6.6.3 Removal of Green Cards

Foreign GREEN cards shall be removed from vehicles only when repairs have been completed in accordance with 5.6.8. Cards removed shall not be destroyed under any circumstances, but shall be forwarded to the appropriate officer in charge who will make arrangements for raising a debit if appropriate.

5.6.7 VEHICLES WITH DEFECTS CLASSED AS "SHUNTER'S HAZARDS"

All vehicles with "Shunter's Hazards" shall be handled as follows:

5.6.7.1 Damaged or Defective Steps and/or Handrails

When such hazards are detected on vehicles they shall be identified by the attachment of the standard "Danger, Handrail and/or Footstep Unsafe, DO NOT USE" card (see Diagram 5-11) to the handrail relative to the defective component.

5.6.7.2 Vehicle with Defective Handbrake

When the handbrake of any vehicle cannot be effectively applied or difficulty is encountered and injury may result in applying the handbrake, the defective handbrake shall be identified by:

- (a) The attachment of a standard "Danger, No Handbrake Unsafe" cards (see Diagram 5-12) to the handbrake operating wheel/s or lever/s.

NOTE: Vehicles which are identified as having a defective handbrake shall not be reloaded under any circumstances.

- (b) Brakevans

A brakevan so identified shall have additional standard, "Danger, No Handbrake, Unsafe" cards attached to the handrails on both sides of the brakevan as an indication to shunting staff that the brakevan shall not be loose shunted.

- (c) Badly Damaged Vehicles

Vehicles which have an identified inoperative handbrake due to major damage to underframe and/or brake gear and have to be forwarded to a major owning system or interstate repair depot, shall be attached to a fender safety vehicle.

The fender safety vehicle shall be carded with the standard ROA "For repairs" GREEN card. This card shall be marked "DO NOT UNCOUPLE - SAFETY FOR" (insert class and number of the defective vehicle).

The uncoupling rod of the defective wagon and uncoupling rod of the fender safety vehicle shall be secured in order to prevent accidental uncoupling by hand.

5.6.7.3 Ineffective Uncoupling Rods

When the uncoupling rod of any vehicle cannot be effectively operated or difficulty is encountered and injury may result in operating the uncoupling rod the defective uncoupling rod must be identified by the attachment of a standard "Danger, Do Not Use Uncoupling Rod" card (see Diagram 5-13).

5.6.7.4 Movement of Vehicles Identified with Shunter's Hazards

Movement of vehicles identified with Shunter's Hazards shall be handled as specified below and in accordance with ROA Interchange Agreement for Freight Rolling Stock.

- (a) Vehicles at Originating Stations or Marshalling Yards

In all cases where vehicles are identified as defective at originating stations or marshalling yards where repair facilities are available, they shall be moved to the nearest repair depot for necessary attention

regardless of whether they are owning System or foreign vehicles.

Where such vehicles are detected marshalled into consists they shall be removed from the consist for repairs at the nearest repair depot or repaired in situ.

Where vehicles are identified as having a shunter's hazard in a train consist at an originating station where repair facilities are not available, the vehicle shall be carded to the repair depot nearest to the destination of the train.

Vehicles which have been identified as having a defect which constitutes a Shunter's Hazard shall not be reloaded under any circumstances.

(b) Vehicles Enroute to Destination

Vehicles damaged with a "Shunter's Hazard" enroute on a through working train where no break up shunting (within a through working block of wagons) is involved shall be suitably carded and permitted to run to their destination and handled as in 5.6.6.1.1 or 5.6.6.2.1.

Vehicles damaged with a "Shunter's Hazard" enroute received at the train terminating location shall not be permitted to run to their destination with the exception of local movement from the receival yard to the local unloading terminal in accordance with 5.6.6.1.1 or 5.6.6.2.1.

5.6.7.5 Advance Warning Advice Procedure

In all cases where a vehicle on a through train is carded due to a defect which constitutes a Shunter's Hazard, the following action shall be taken:

- (a) The Train Examiner carding the vehicle shall enter full details on the Mechanical Condition Advice (Diagram 5-15) and, immediately after examination of the train, deliver this advice for entering into the appropriate rail traffic management system.

The description codes "M" or "23" Uncoupling Rod, "R" or "31" Handrail/Step and "W" or "12" Handbrake will automatically be recognised as a Shunter's Hazard and will be highlighted with appropriate warnings throughout the traffic information management systems.

This information shall be recorded on the train consist list, (as is presently the case with vehicles carrying dangerous goods).

This ensures that all Supervisors are aware of the presence of a vehicle which has a Shunter's Hazard and enables the Supervisor to inform all shunting staff accordingly.

- (b) In addition the Train Examiner shall inform the Enginemmen of the presence of such a defective vehicle on the train, together with full details.

- (c) In yards where a vehicle is carded on arrival due to a defect which constitutes a Shunter's Hazard, the Train Examiner shall, in addition to procedures laid down in sub-clause (a) above, also inform the Supervisor of the hazard by radio prior to the commencement of the train being shunted.

5.6.8 REMOVAL OF CARDS, ETC

5.6.8.1 Under no circumstances shall red cards, green cards or danger cards be removed or altered by other than an authorised employee.

5.6.8.2 RED 'Not to Go' cards shall only be removed when the defects listed thereon have been repaired or corrected and the vehicle is again fit for traffic or approved for transit to a repair depot.

5.6.8.3 GREEN 'For Repairs' cards shall only be removed when the defects listed thereon have been repaired or corrected. Green cards attached by 'foreign' Systems (Systems other than the handling System) shall not be removed from vehicles in transit to destinations on another System except where the required repairs have been effected prior to departure.

5.6.9 GREEN AND RED CARDS

5.6.9.1 A code of defects is listed on the back of green and red cards and the standard terminology and abbreviations on

the back of these cards have been adopted by all Systems. Each defect is indicated by both an alphabetical and a numerical code.

Unless otherwise specified a defect is only noted on the front of the card by the appropriate alphabetical/numerical code:

5.6.9.2 Example 1 - If a vehicle has the following defects:

Air brake cut out
Defective slack adjuster
Worn brake blocks

The codes to be written on the front of the card are:

Alphabetical	Numerical
A	01
E	04
V	11

5.6.9.3 Example 2 - If a vehicle has the following defects:

Faulty bearing
Broken pipework
Broken door hinge

The codes, together with a typical brief description of the defects are:

N/14 No 2 bearing for inspection
F/05 Broken branch pipe
T/25 Broken hinge No.4 door

5.6.9.4 Train Examiners shall in all cases indicate on the front of the card the Depot to which the vehicle is to be sent or returned for repairs and delete all words which are not applicable. The Train Examiner's name, location and date shall be entered on all green or red cards. All cards shall be made out in duplicate and a card attached to each side of the defective vehicle.

5.6.9.5 Cards shall be marked clearly and legibly with waterproof markers to ensure resistance to the effects of weather, transit conditions etc.

5.7 CARDING OF PASSENGER VEHICLES

- 5.7.1 The carding of passenger vehicles necessitated by damage or defects to equipment and components which are similar in description to those used on freight vehicles shall be in accordance with Section 5.6. This applies principally to bogies, drawgear, brakegear, underframes etc.
- 5.7.2 The reporting of defects in equipment and components specific to a vehicle's use for passenger transport (interior fittings, toilets, partitions, air conditioning etc) shall be as determined by the System(s) operating the vehicles and/or the servicing depots. Reporting may be performed by:
- (a) recording faults in a vehicle repair log book permanently kept in each vehicle, with appropriate entries made by on-train, examining and servicing/repair staff, or
 - (b) recording faults on a specific 'For Repair' card using a standard list of defect codes, or
 - (c) implementing such other procedure as fulfils the requirements of the examining/repairing System

5.8 TRAIN EXAMINATION CERTIFICATION FOR INTERSYSTEM FREIGHT TRAINS

5.8.1 On completion of the brake test on all intersystem freight trains or part thereof, and on all passenger trains at their originating location, a "Train Examiners Certificate" (see Diagram 5-14) shall be issued for the train or part thereof by the Train Examiner who conducted the test. For all freight trains, the original certificate shall be kept on the train locomotive until arrival at the train's final terminal.

The certificate is not required to be carried on the locomotive of a passenger train, but, if required by an adjacent system, suitable arrangements shall be made for a copy to be available at border stations.

5.8.2 The Train Examiner's Certificate shall be signed by the examiner and countersigned by the driver.

5.8.3 When it is intended to divide an interstate freight train into two separate portions enroute it is permissible to issue two Train Examiner's Certificates, one for each portion at the originating location. Each portion of the train, as well as the whole train, shall comply with all train examination and air brake testing requirements stipulated in Sections 5.2, 5.3, 5.4 and 5.5.

5.8.4 The Train Examiner's Certificate shall indicate the following information:

- (a) Location of test
- (b) Date
- (c) Train number
- (d) Commencement and completion time of test
- (e) Vehicle number and class of the vehicles with air brake isolated
- (f) Brake pipe leakage rate (to be completed by driver)
- (g) Number and class of the rear vehicles having the last two (2) brake units (three (3) for NSW) tested for brake retention purposes

5.8.5 The Train Examiner's Certificate shall be printed in triplicate. The copies shall be marked original, duplicate and triplicate which shall be of different colours.

The original remains on the hauling locomotive/s to the terminating point. The duplicate copy is retained by the driver. The triplicate copy is retained by the Examiner.

5.8.6 If a correctly completed Train Examiner's Certificate is not available at the originating location of a freight train, the train shall be inspected again and brake tested in accordance with Section 5.2.

5.8.7 In the event that a Certificate previously issued for any Interstate freight train becomes lost enroute, it shall not be necessary for the train to stop for another Certificate to be issued. However, in these circumstances the driver shall endorse on the back of the Train Consist Form that the necessary brake examination was conducted at the commencement point (or enroute if applicable), and verbally advise the outgoing driver accordingly when changing over.

5.9 SCHEDULED MAINTENANCE

5.9.1 VEHICLE MARKING

When scheduled periodic maintenance is performed on components the vehicle/bogie shall be marked with the DATE (month and year) that the work was performed in accordance with Section 22.

5.9.2 OUT OF DATE (OVERDUE) MAINTENANCE

The following procedure shall be observed when vehicles are found to be out of date for periodic maintenance.

5.9.2.1 Slide Valve Type Triple Valve

Where a vehicle equipped with a slide valve type triple valve is overdue for periodical air brake examination and cleaning by two (2) months or less, no action need be taken to card the vehicle.

Where a vehicle is overdue by a period greater than two months and it cannot be dealt with at the depot where the defect is detected, a GREEN card 'For Repair' marked 'Overdue Brake Service' shall be attached to the vehicle and the periodic maintenance of such vehicle shall be given preference at depots where such work is carried out. Under no circumstances shall the GREEN card 'For Repair' be removed until this work has been completed.

5.9.2.2 Diaphragm Type Triple Valve

When a diaphragm type triple valve fitted to a vehicle is overdue for periodical examination by six (6) months or less no action need be taken to card the vehicle.

When the maintenance is overdue by more than six months and it cannot be dealt with at the depot where the defect is noted, a GREEN card 'For Repair' marked 'Overdue Brake Maintenance' shall be attached to the vehicle. The periodic maintenance of that vehicle shall be given preference at depots where such work is carried out. Under no circumstances shall the GREEN 'For Repair' card be removed until the work has been completed.

5.9.2.3 Bogies or Vehicles Overdue Lift/Overhaul

Bogies or vehicles overdue for lift or overhaul by three (3) months or less do not require to be carded for attention. Where the lift or overhaul is more than three months overdue, the vehicle shall be carded to the owning System for attention, loaded wherever possible. Repairs may be performed by the handling System in accordance with Part 3 of the Interchange Agreement, Section 4.

DIAGRAM 5-9

RED 'NOT TO GO' CARD

Code for Defects

01	A	Airbrake cut out
02	B	Brakes not applying
03	D	Brakes not releasing
04	E	Slack adjuster attention
05	F	Broken pipework Define on front
06	G	Coupling cock attention
07	H	Brake rigging Define on front
08	I	Grade control valve attention
09	J	Load control valve attention
10	K	Hose to replace
20	L	Carrier plate attention
23	M	Uncoupling rod attention
-	N	Bogies/wheel condition
32	O	Due Date bogie/brakes/body lift
40	P	Twistlocks (container anchors)
31	R	Handrail/footstep
18	S	Side bearer clearance
-	T	Body repairs Define on front
11	V	Brake blocks
35	U	Other defects Define on front
12	W	Handbrakes

(SYSTEM LOGO)

Not To Go

This Card not to be removed by other than an authorised employee.

Vehicle No.

Defect as per code on reverse side of card/other defects

Card Attached By
 Grade Date
 Location

L 16 (8/83)

Back

Front

GREEN 'FOR REPAIRS' CARD

Code for Defects

01	A	Airbrake cut out
02	B	Brakes not applying
03	D	Brakes not releasing
04	E	Slack adjuster attention
05	F	Broken pipework Define on front
06	G	Coupling cock attention
07	H	Brake rigging Define on front
08	I	Grade control valve attention
09	J	Load control valve attention
10	K	Hose to replace
20	L	Carrier plate attention
23	M	Uncoupling rod attention
-	N	Bogies/wheel condition
32	O	Due Date bogie/brakes/body lift
40	P	Twistlocks (container anchors)
31	R	Handrail/footstep
18	S	Side bearer clearance
-	T	Body repairs Define on front
11	V	Brake blocks
35	U	Other defects Define on front
12	W	Handbrakes

Back

(SYSTEM LOGO)

For Repairs

This Card not to be removed by other than an authorised employee.

Vehicle No.

Send * Empty * To.

Return * Loaded * (Write in name of depot)

Defect as per code on reverse side of card/other defects

.....

.....

.....

Card Attached By

Grade

Location Date

.....

.....

.....

* Delete words not applicable

L 15 (8/83)

Front

DIAGRAM 5-11

DANGER CARD - HANDRAILS/FOOTSTEPS

	<p>DO NOT REMOVE THIS CARD</p> <p>TO DO SO WITHOUT AUTHORITY RENDERS YOU LIABLE TO DISCIPLINARY AND/OR LEGAL ACTION</p> <p>IT IS HERE FOR A PURPOSE</p> <p>SEE OTHER SIDE</p>
--	---

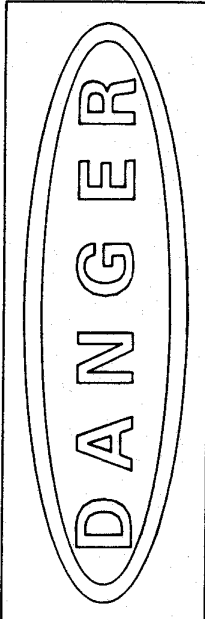
<p>(SYSTEM LOGO)</p> 	<p>HAND RAIL ^{AND/OR} FOOTSTEPS</p> <p>UNSAFE</p> <p>DO NOT USE</p> <p>GRADE _____</p> <p>LOCATION _____</p> <p>DATE/TIME _____</p> <p>SEE OTHER SIDE</p>
--	--

DIAGRAM 5-12

DANGER CARD - NO HANDBRAKE

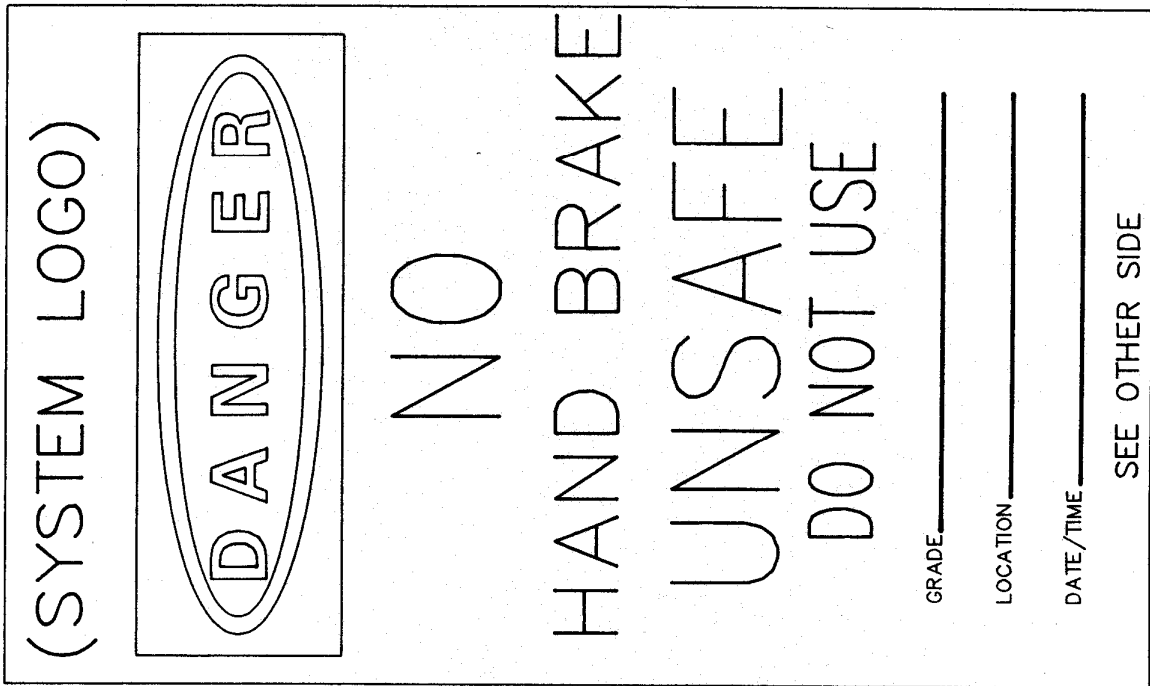


DIAGRAM 5-13

DANGER CARD - UNCOUPLING ROD

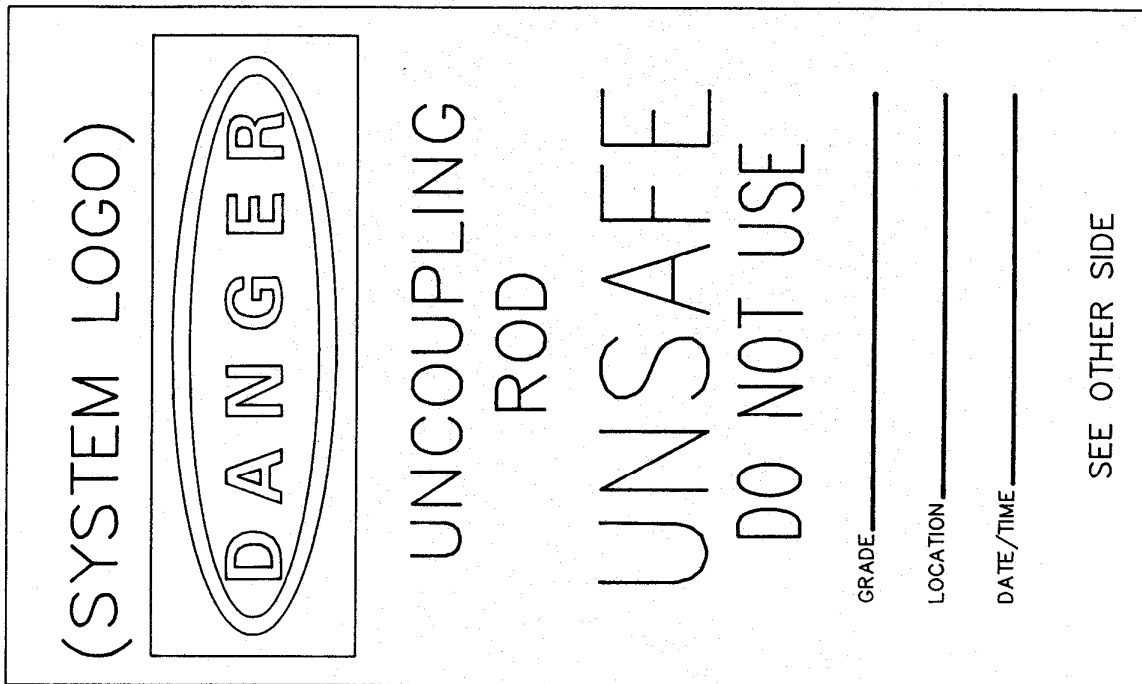


DIAGRAM 5-15

MECHANICAL CONDITION ADVICE FORM

SYSTEM
LOGO

Mechanical
Condition Advice

Location..... Date.....

Form Prepared

By..... Grade.....

	Vehicle			Mechanical Condition	Time
	Class	Number	Ck L		
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					

ANM 1 (7/83) (Mech. Cond. Codes printed on the back of the pad)