

General Operating Instructions (GOI)

Section 14

Hand Brakes – Leaving Equipment

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NOTE: In the following instructions, a car or locomotive is considered "unattended" when no crew member is close enough to the equipment to take safe and effective action to control its movement.

NOTE: Reference to hand brakes on locomotives includes electric parking brakes on SD90MAC locomotives.

1.0 Hand Brake Policy

IMPORTANT: Crew members are responsible to **inquire** and **confirm** with each other that equipment is left in accordance with these instructions.

1.1 Leaving Railway Equipment Unattended; the following instructions apply:

A	A single car must ALWAYS be left with the hand brake applied.
B	More than two cars ALWAYS require at least TWO hand brakes.
C	Never leave a car with a defective hand brake by itself. It must be coupled to another car with an effective hand brake.
D	Individual blocks of cars must be secured with hand brakes on each block.
E	Hand brakes must be applied on the cars which are at the low end of a downward sloping track.
F	When leaving equipment in a track equipped with a derail, it should be left as close as practical to the derail (about 100 feet). This does not include cars which have been spotted for loading/unloading, repair or cars being handled while switching. Operating Rules which govern proximity to public crossings at grade still apply.
G	When leaving railway equipment, the MINIMUM number of hand brakes must be applied as indicated in the following chart. Additional hand brakes may be required; factors which must be considered are: <ul style="list-style-type: none"> - total number of cars - cars loaded or empty - track grade - hand brake force applied
<i>Continued</i> →	

HAND BRAKE CHART			
CAUTION: Chart indicates the MINIMUM number of hand brakes to be applied.			
Cars	Hand Brakes	Cars	Hand Brakes
1 - 2	1	60 - 69	8
3 - 9	2	70 - 79	9
10 - 19	3	80 - 89	10
20 - 29	4	90 - 99	11
30 - 39	5	100 - 109	12
40 - 49	6	110 - 119	13
50 - 59	7	120 Plus	(divide by 10 add 2)
H	In reference to the minimum number of hand brakes in the preceding chart, it is acceptable to include the hand brakes applied on locomotives.		
I	On multi-platform cars, each platform is to be considered one car. However, if a multi-platform car has only 1 or 2 hand brakes for 3 to 5 platforms, it may be considered that the minimum requirement is met for that car.		
J	There may be situations where all hand brakes should be applied.		
K	It will be acceptable to apply less than the minimum number of hand brakes when so specified in special instructions, subdivision footnotes or operating bulletin.		

1.2 Testing Hand Brake Effectiveness

In the application of CROR Rule 112(b) "moving the cut of cars slightly", on CP the following will be used to meet the requirement of the rule:

To ensure an adequate number of hand brakes are applied, release all air brakes and allow or cause the slack to adjust. It must be apparent when slack runs in or out, that the hand brakes are sufficient to prevent that cut of cars from moving. This must be done before uncoupling or before leaving equipment unattended.

1.3 Switching and Handling Equipment

A	While switching, when a car or block of cars is left standing without air brakes applied, always apply at least one hand brake. Increase the number of hand brakes as required until it is apparent that the number of hand brakes applied are sufficient to prevent that cut of cars from moving.
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B	<p>During switching, emergency air brake applications must not be relied upon to hold equipment stationary for short periods of time unless.</p> <ul style="list-style-type: none"> i) there are at least 10 cars which are sufficiently charged with air AND ii) a crew member is in close enough proximity to safely apply hand brakes if unintended movement occurs.
C	<p>After being coupled to, no car or cut of cars may be pushed or shoved until it is known that a proper coupling has been made. The slack must be taken or be seen to run out on all cars to be moved.</p>
D	<p>When it is required to remove cars from the low end of a downward sloping track, ensure that any cars to be left standing are properly secured.</p>
E	<p>After switching has been completed, and the cars are being left, comply with items 1.1 and 1.2 above.</p>
F	<p>When a car movement is to be controlled by hand brake(s), the hand brake(s) must be tested and determined to be in good order before car(s) are cut off.</p>
G	<p>Cars cut-off in motion (flat switching):</p> <ul style="list-style-type: none"> i) Do not uncouple or allow car(s) to move under their own momentum onto standing cars unless it is positively known that the number of hand brakes applied on the standing cars are sufficient to prevent movement of all cars. To determine the minimum number of hand brakes required, add the total number of standing cars with the number of cars to be cut-off in motion. <p>For example;</p> <ul style="list-style-type: none"> • there are 9 cars standing (with 2 hand brakes applied). • it is intended to cut-off in motion 4 additional cars. • so that the total number of cars being left equals 13. • according to the chart in item 1.1, 13 cars requires 3 hand brakes and so on. • the 3rd hand brake must be applied before the additional cars are cut-off in motion. <ul style="list-style-type: none"> ii) In the application of the instruction above, do not rely on emergency air brake applications to prevent movement of the standing cars (i.e., instead of hand brakes) unless you have complied with item 1.3 (B) (e.g., there are at least 10 cars with emergency brakes applied etc.).

1.4 Hand Brake Application Procedures

A	<p>Apply a hand brake with air brake released or brake cylinder bled off. Do not attempt to bleed a car off with SERVICE brake applications in effect as this can trigger an undesired release of all other cars.</p>
B	<p>It is not always practicable to apply hand brakes with the air brakes released (e.g., heavy grades with heavy cars or when providing 3 point protection). When an air brake application is required, it must be as light an application as possible to prevent movement while hand brakes are being applied.</p>
C	<p>When applying a hand brake, it must be applied fully.</p>
D	<p>Under winter conditions ensure braking surfaces are free of ice and snow.</p>

1.5 Wreck Damaged Equipment.

When hand brakes have been damaged due to derailment or mishap, it may be necessary to secure equipment with wheel chocks or chains. These devices will be placed by Mechanical Services personnel and are designed for this purpose. In these cases, running trades employees should be governed by the officer in charge.

1.6 Releasing Hand Brakes

A	<p>Hand brakes have the ability to provide far more brake shoe force than the air brakes; therefore to avoid damage to wheels, hand brakes must be FULLY RELEASED before moving car(s).</p>
B	<p>When releasing a hand brake, it may be determined that it is properly released by ensuring that the bell crank has dropped and that the vertical rod and chain are slack.</p> <p>Note: Do not depend on brake shoes being clear of the wheels as on many cars the hand brake applies on the "B" end only.</p>
C	<p>Hand brakes must not be released from cars or trains left standing on a grade until the train air brake system has obtained its fully charged state, unless movement can be prevented with locomotive brakes.</p>

2.0 Leaving a Portion of a Train Standing with Emergency Air Brakes Applied

Example - Stopping a train enroute to lift/set off or switch.

A	<p>BEFORE CLOSING the angle cock on the portion to be moved:</p> <ul style="list-style-type: none"> i) make a service application sufficient to prevent train movement. ii) the service exhaust must stop blowing at the automatic brake. iii) advise the crew member when it is OK to close the angle cock on the portion to be moved. <p>NOTE: On trains equipped with TIBS:</p> <ul style="list-style-type: none"> • the crew member must advise the locomotive engineer when the angle cock has been closed, and then • the locomotive engineer must activate the TIBS emergency braking feature.
B	<p>The standing portion must be left in EMERGENCY with angle cock FULLY OPEN</p> <p>NOTE: Crew members are responsible to inquire and confirm with each other that the standing portion has emergency brakes applied. The FULLY OPEN angle cock may be subsequently closed only when:</p> <ul style="list-style-type: none"> • the angle cock is FULLY OPEN on opposite end of the equipment, OR • a locomotive is coupled on opposite end of the equipment, OR • the equipment has been secured with hand brakes in accordance with the hand brake policy.
C	<p>The following precautions against unintended movement must be taken because brake cylinder pressure might leak off:</p> <p>IMMEDIATE - If the standing portion is LESS THAN 10 CARS, secure with hand brakes immediately.</p> <p>ONE HOUR - On grades 1.5 percent OR LESS, if the standing portion is 10 CARS OR MORE, begin to secure with hand brakes or recouple the locomotive within 1 hour.</p> <p>1/2 HOUR - On grades GREATER THAN 1.5 percent, if the standing portion is 10 CARS OR MORE, begin to secure with hand brakes or recouple the locomotive within 1/2 hour.</p>
<p><i>Continued</i> →</p>	

	<p>NOTE: Refer to subdivision footnotes to identify locations where grades are greater than 1.5 percent.</p>
	<p>CAUTION: Whenever it is possible that the portion left standing cannot be secured within the applicable time limit, hand brakes must be applied immediately.</p>
	<p>EXAMPLE: A train has stalled on an ascending grade and must “double the hill.” It is doubtful that the portion left standing could be secured within the required time limit. This means it must be secured immediately.</p>
D	<p>In the application of this instruction, hand brakes may be applied near the head end of a train, regardless of low end or high end of a particular grade.</p>
E	<p>Broken Drawbars on Light, Heavy and Mountain Grades</p> <p>If it is not possible to test hand brake effectiveness because of a broken drawbar, and if it is possible that the portion of a train left standing on a grade cannot be secured within the applicable time limit prescribed in paragraph (C) (e.g., 30 or 60 minutes), hand brakes must be applied immediately as follows:</p> <ul style="list-style-type: none"> • On mountain grades apply hand brakes on least 65 % of the cars (unless more than 65% is specified in Time Table subdivision footnotes). • On heavy grades listed in GOI Section 16, Appendix 1, Descending Heavy Grade Job Aid, item 2.0. <ul style="list-style-type: none"> - if the grade is 1.3% to 1.8%, apply hand brakes on at least 50% of the cars. - if the grade is 1.0% to 1.29%, apply hand brakes on at least 25% of the cars. • On grades listed in Time Table subdivision footnotes that are greater than 1.5 percent, apply hand brakes on at least 50% of the cars. • On all other locations, apply hand brakes as per the minimum number of hand brakes chart in item 1.1g).

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2.1 Locomotives with Vented Brake Pipe Angle Cock

NOTE: Many leased and foreign locomotives are equipped with a “vented brake pipe angle cock”. When closed, the vent will drain brake pipe pressure in the brake pipe hose. This can cause problems when uncoupling, because if brake pipe has already been vented to 0 psi, then the standing portion cannot be placed in emergency.

In the application of item 2.0 (A) above (e.g., leaving a portion of a train standing in emergency):

- **IF** there is a leased or foreign locomotive in the consist, and
- **IF** you are uncoupling immediately next to that foreign or leased locomotive,
- **THEN BEFORE** instructing the crew member on the ground that it is OK to close the angle cock on the portion to be moved,
- **PLACE** the entire movement in **EMERGENCY** using the automatic brake valve.

This instruction applies on switching movements, on conventional trains and on Locotrol equipped trains; it applies if you are hanging on to the foreign or leased locomotive or uncoupling from it.

NOTE 2: This instruction also applies to all SOO locomotives.

3.0 Leaving a Train Unattended

• **with locomotive(s) attached**

In reference to item 1.1 (E) of the hand brake policy (apply hand brakes on the low end of a downward sloping track), trains left unattended with locomotive(s) attached may be left as follows:

A	On an ascending grade, train must be stopped with slack stretched; on other than ascending grade, stop with slack in or out.
B	LOCOMOTIVES must be ATTACHED with brake pipe coupled and angle cocks open.
C	Apply hand brakes on the head end of the train.
D	Test the effectiveness of hand brakes.
E	On the controlling locomotive, the control stand must be left as follows. <ul style="list-style-type: none"> • Independent brake cut-IN and FULLY applied. • Automatic brake cut-IN and handle in RELEASE. • Generator Field OFF, Engine Run ON, Control/Fuel Pump ON. • Engine Control Switch (ECS) to Isolate. • Reverser handle removed. • Take the reverser handle from the cab of all locomotives in the consist except as specified by Section 15 - item 10.3, or except as specified by special instructions, subdivision footnotes or operating bulletin.

CAUTION: If the ECS switch is set to **Isolate** on a AESS equipped locomotive, main reservoir and independent brake pressure are not monitored and can leak off, if the locomotive is in a shut down mode. If brake pipe pressure must be maintained, the ESC switch must be left in the **Run** position.

F	Turn off all unnecessary lights and close all doors and windows. If required by time table or operating instruction, locomotive cab doors should be locked on the lead consist.
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CAUTION: It is imperative that all steps in this procedure be followed. Otherwise, apply hand brakes on the cars which are at the low end of a downward sloping track.

Crew to Crew: When required to leave a train in this manner, the information relative to hand brakes applied and inspection performed must be documented on the Crew to Crew Form as required by GOI Section 5 Item 17.0.



4.0 Leaving a Locomotive

4.1 When Changing off with Another Locomotive Engineer - Coupled With or Without a Train or Cars.

A	Complete Crew to Crew Form
B	Take the reverser handle from the cab of the leading locomotive.

4.2 Leaving locomotive(s) unattended

<ul style="list-style-type: none"> No cars attached / engines running or dead 	
A	<p>A hand brake must be fully applied on EACH locomotive.</p> <p>EXCEPTION: It is not required to apply a handbrake on each locomotive when specified by special instruction, subdivision footnote or operating bulletin. Instructions must indicate the minimum number to be applied and effectiveness must be tested.</p>
B	Test the effectiveness of the hand brakes as per item 1.2. Examine the hand brake system to ensure that the chain is in tension to the point of application.
C	If separating locomotives, close the cocks on all air hoses between the locomotives to be separated, remove the jumper cable(s) and disconnect walkway safety chains. After separation, secure all hoses in the receptacles / dummy couplings (if provided).
D	<p>On the controlling locomotive and/or one of the locomotives left, the control stand must be set as follows:</p> <ul style="list-style-type: none"> Independent brake cut-IN and FULLY applied. Automatic brake cut-IN and handle in RELEASE. Generator Field OFF, Engine Run ON, Control/Fuel Pump ON. Engine Control Switch (ECS) to Isolate. Reverser handle removed. take the reverser handle from the cab of all locomotives in the consist except as specified by Section 15 - item 10.3, or except as specified by special instructions, subdivision footnotes or operating bulletin.
<p>CAUTION: If the ECS switch is set to Isolate on a AESS equipped locomotive, main reservoir and independent brake pressure are not monitored and can leak off, if the locomotive is in a shut down mode. If brake pipe pressure must be maintained, the ESC switch must be left in the Run position.</p>	
E	Turn off all unnecessary lights and close all doors and windows. If required by time table or operating instruction, locomotive cab doors should be locked.
<p><i>Continued</i> →</p>	

F	When separating locomotives, close the cocks on all air hoses between the locomotives to be separated, remove the jumper cable(s) and disconnect walkway safety chains. After separation, secure all hoses in the receptacles / dummy couplings (if provided).
G	Where applicable, Automatic Reporting Unit (ARU) must be connected for monitoring of locomotive.
H	Complete a Crew to Crew Form if necessary.

4.3 Electronic Air Brake (EAB) Failure

WARNING: It is not possible to cut-IN the automatic and independent brake on a locomotive on which the electronic air brake (EAB) system has failed. With a failed EAB system, the locomotive air brake backup mode defaults to trailing locomotive status only. This means the air brakes will eventually leak off. When setting off or leaving a locomotive on which the EAB system has failed, it is especially important that the hand brake effectiveness is tested.

Note: When leaving a locomotive with a failed EAB, after securing the locomotive, the automatic brake handle must be placed in the HO position and the independent brake handle in release.

5.0 Spotting of Equipment Prohibited Sign

If equipment must be left between the Spotting of Equipment Prohibited Sign and the Road Crossing:

Prior to leaving equipment between the sign and the road crossing, a crew member must advise the RTC of the location and estimated distance between the equipment and the crossing. A GBO will be issued restricting movements entering the crossing account restricted sightline. If equipment is left less than 150 feet from a crossing, then manual protection of the crossing must be provided, unless it is seen to be clear of vehicular or pedestrian traffic.

Note: At locations not equipped with signs

A crew member must advise the RTC when equipment causing restricted sightlines is left at locations not equipped with a sign and be governed by instructions from the RTC.

Note: This instruction does not apply to equipment spotted for loading or unloading as per CROR Rule 103(e).

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6.0 Winter Operation (Nov 15 – Mar 15) - Air Conservation Instruction

WINTER OPERATION AIR CONSERVATION INSTRUCTION	
This instruction applies to trains or portion thereof left unattended at Major Yards or Terminals and at Regular Crew Change Locations	
CONDITIONS...	
<ul style="list-style-type: none"> • This instruction is intended for fueling, set outs or lifts on run through trains only. • Temperature must be below minus five (-5) degrees Celsius. • Does not apply to Locotrol equipped trains. • Does not apply when it is anticipated that the equipment will be left unattended longer than two (2) hours. 	
When at the locations specified and the conditions are met, the following may be applied:	
A	In the application of this instruction, GOI Section 14, item 2.0 (C) does not apply.
B	The train or standing portion must be secured in accordance with the Hand Brake Policy as outlined in Section 14, item 1.0. Note: Local Handbrake Special Instructions apply.
C	Once the train or portion thereof is secured with sufficient handbrakes and their EFFECTIVENESS has been tested, proceed to D .
D	<p>Prior to leaving the standing portion unattended, the brake pipe must be reduced to "ZERO" at a rate that is no less than a service rate reduction, this is accomplished by placing the brake handle into the <u>Handle Off</u> position and waiting for the air to deplete from the train line. The SBU must be observed to ensure "ZERO Pressure".</p> <p>Note: On GE locomotives (except 9500-9683), due to a built in locomotive emergency feature, the brake pipe will only reduce to 10 - 11 psi.</p>
E	TIBS emergency braking feature should not be tripped.
F	Once the air is fully depleted or stabilized (10 - 11 psi as indicated above) at the SBU, the standing portion must be left with the angle cock open.

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