

4. APTA PR-IM-S-004-98

Standard for Passenger Car Handbrake Periodic Inspection and Maintenance

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APTA PRESS Task Force

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APTA Commuter Rail Executive Committee

Abstract: This standard establishes a procedure for handbrake inspection and maintenance. The standard covers vertical wheel, horizontal wheel, and lever type handbrakes.

Keywords: handbrake, handbrakes, maintenance, periodic inspection

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Introduction

(This introduction is not a part of APTA PR-IM-S-004-98, Standard for Passenger Car Handbrake Periodic Inspection and Maintenance.)

This introduction provides some background on the rationale used to develop this standard. This information is meant to aid in the understanding and application of this standard.

This standard describes the basic inspection and maintenance functions for handbrakes on passenger cars. It is intended for the following:

- a) Individuals or organizations that maintain handbrakes on passenger cars;
- b) Individuals or organizations that contract with others for the maintenance of handbrakes on passenger cars; and
- c) Individuals or organizations that influence how handbrakes are maintained on passenger cars.

This standard is designed to help individuals and organizations incorporate safety considerations during the maintenance process.

This standard is intended to satisfy the following objectives:

- Identify those maintenance standards and inspection criteria that provide a high level of passenger safety;
- Identify those maintenance standards and inspection criteria that provide a high level of crew safety; and
- Identify the skills and training requirements necessary for maintenance personnel to apply these standards.

Participants

The American Public Transportation Association (APTA) greatly appreciates the contributions of the following individual(s), who provided the primary effort in the drafting of the *Standard for Passenger Car Handbrake Periodic Inspection and Maintenance*:

John Condrasky

At the time that this standard was completed, the Passenger Rail Equipment Safety Standards (PRESS) Maintenance Committee included the following members:

Rich Conway, Chair

John Condrasky
Ken Donnelly
Michael Dorsi
Tom Grant
Tom Lutz

Chuck Prehm
Tom Rowbottom
Robert Scarola
Michael Scutero
James Stoetzel

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APTA PR-IM-S-004-98

Standard for Passenger Car Handbrake Periodic Inspection and Maintenance

1. Overview

This standard establishes a procedure for handbrake inspection and maintenance, and is divided into three sections on specific handbrakes. The standard covers vertical wheel, horizontal wheel and lever type handbrakes.

The passenger rail industry phased this standard into practice over the six-month period from July 1 to December 31, 1999. The standard took effect January 1, 2000.

1.1 Scope

This standard for handbrake inspection, lubrication, and maintenance applies to all passenger cars. It is intended to be applied by individual railroads for cyclic inspection, lubrication, and maintenance of passenger car handbrakes.

1.2 Purpose

This standard is intended for railroads in order to apply basic procedures for periodic inspection, servicing, lubrication, testing, and repair of handbrakes for passenger cars, with emphasis on maintenance of safety critical systems.

Passenger car handbrakes provide safety and security in the storage/layover of passenger equipment at terminals, maintenance facilities, passenger stations (where applicable), and outlying layover/storage points.

These systems (if applicable) are essential in the safe operation of passenger cars.

2. References

This standard shall be used with the following publications. If the following publications are superseded by an approved revision, the revision shall apply.

Association of American Railroad Technical Services Division-Mechanical Section Manual of Standards and Recommended Practices, Rule 13 -Handbrakes, Geared and Non-Geared.

Original equipment manufacturer instructions (OEM).

3. Definitions, abbreviations, and acronyms

3.1 Definitions

For the purpose of this recommended practice, the following terms and definitions apply:

3.1.1 original equipment manufacturer (OEM): The technical documentation produced by the organization that built or manufactured a specific piece of passenger rail equipment describing maintenance procedures and frequencies for that piece of equipment.

3.1.2 periodic maintenance: The performance of selected inspection and maintenance actions on systems or sub-systems. Regulatory agencies or the railroad may set the frequency of these actions. The frequency may be expressed as a function of time (i.e. days, weeks, or months) or of utilization (i.e., mileage, cycles, etc.).

The scope of these inspection and maintenance actions must be in full compliance with all applicable federal, state, and local regulations.

3.2 Abbreviations and acronyms

For the purpose of this recommended practice, the following terms apply:

AAR	Association of American Railroads
APTA	American Public Transportation Association
OEM	original equipment manufacturer instructions
PRESS	Passenger Rail Equipment Safety Standards

4. Materials

The lubricating materials used on passenger car handbrakes shall meet or exceed the latest specifications of the Association of American Railroads (AAR), and/or the original equipment manufacturer (OEM) instructions.

5. Handbrake maintenance and lubrication points

5.1 Lubrication points

See Figure B.1 and Table B.1 in Annex B for vertical wheel type handbrakes.

See Figure B.2, Table B.2, and Figure B.4 in Annex B for lever type handbrakes.

See Figure B.3 and Table B.3 in Annex B for horizontal wheel type handbrakes.

For any handbrake types not covered by these figures and charts, refer to OEM instructions.

5.2 Tools/materials

Standard tools carried by maintenance personnel are sufficient for this maintenance task.

5.3 Safety/personal protective equipment

Personal protective equipment as required by the railroad shall be worn at all times in the performance of this maintenance procedure.

5.4 Training requirement

Maintenance personnel shall be adequately trained to perform all aspects of handbrake maintenance.

6. Inspection and test of handbrake

CAUTION--Safely hazard
Ensure that equipment is secured against uncontrolled movement before commencing maintenance/testing procedures.

The inspection and test of the handbrake consists of the following steps:

- a) Visually inspect handbrake for worn pins, pawls, and gears. Inspect to confirm proper hand clearance.
- b) Fully apply handbrake.
- c) Inspect to ensure that all shoes/pads applied by the handbrake are firmly set against the wheel/disc.

NOTE: This may be achieved by tapping with a hammer and listening for a dull sound rather than ringing.

- d) With the handbrake in the applied position, inspect to ensure that all associated linkage and cables do not bind or foul.
- e) Fully release handbrake, inspecting mechanism for proper operation.
- f) Inspect to ensure that all shoes/pads applied by the handbrake are fully released.
- g) With the handbrake released, inspect to ensure that associated linkage and cables do not bind or foul and do not have any damage or excessive wear. Linkage includes all chains, levers, clevises, pulleys, pins, cotter pins, bushings, rods, etc.
- h) Utilizing appropriate marking device, apply test date to handbrake apparatus in a conspicuous place.

Annex A
(informative)

Bibliography

[B1] Association of American Railroad Technical Services Division-Mechanical Section Manual of Standards and Recommended Practices, Rule 8-Inspection and Lubrication of Handbrakes.

Annex B (informative)

Figures and charts for lubrication points

B.1 Vertical wheel handbrakes

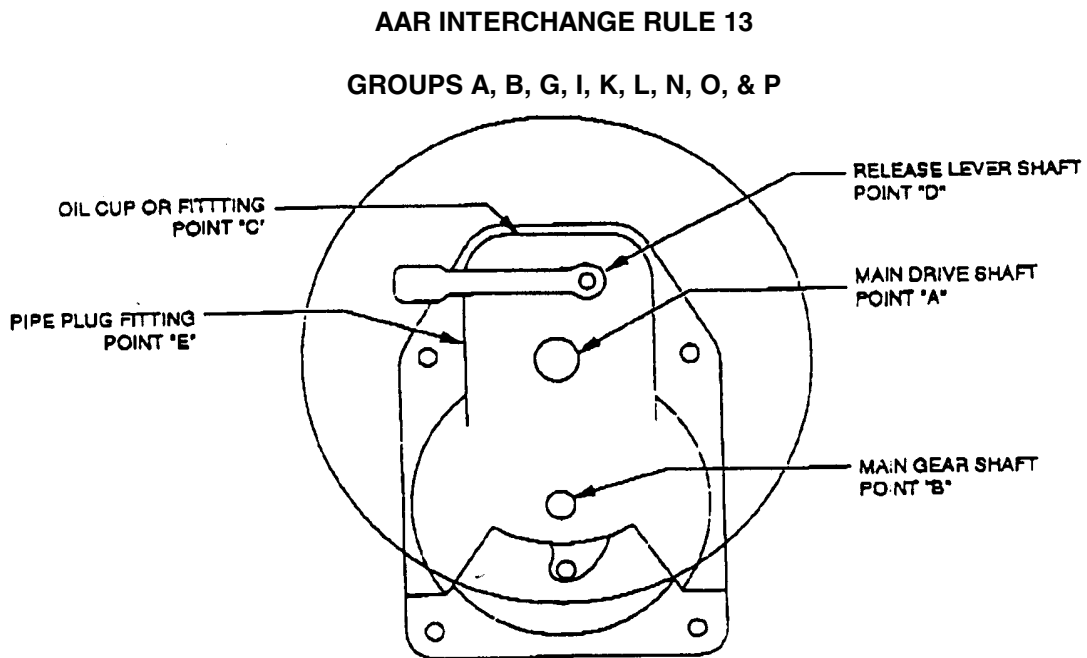


Figure 1

Figure B.1—Field lubrication chart vertical wheel handbrake

Table B.1—Lubrication chart for vertical wheel type handbrakes

(* Defined in AAR Rule 13)				Lubrication Points (see Figure B.1)					6.1.1.1.1 Re marks
Mfg.	Group*	Qual.*	Type Designation	A	B	C	D	E	
Ajax Consolidated (SAB-Ajax)	G	01	14370	X	X	X			
	G	12	14038	X	X	X			
	G	20	14377	X	X				
	G	21	14038C	X	X				
	G	24	14377-2	X	X				
	G	25	14377-3	X	X				
	G	23	14377-1	X	X				
	B	37	16019	X	X				
	B	38	16019-1	X	X				
	L	01	15018	X	X				
	L	02	15018-1	X	X				
	N	01	61091	X	X				
	N	02	61091-1	X	X				
	O	01	17020	X	X				
	O	02	17020-1	X	X				
Ellcon-National	B	04	1148	X	X				
	B	05	D-1600	X	X	X	X		
	B	06	D-1600-2	X	X	X	X		
	B	27	D-1600-6	X	X	X			
	G	03	1124	X	X				
	I	01	D-6500	X			X		
	I	02	D-6500-2	X			X		
	I	05	D-9500	X			X		
	I	06	D-9500-2	X			X		
	K	01	850-1	X	X				
	L	03	D-5600	X	X	X	X		
	L	04	D-5600-2	X	X	X	X		
	N	03	31000						No Lubrication Required
	N	04	3100-2						
	N	05	31000-6						
	O	03	33000						
	O	04	33000-2						
P	01	35000							
P	02	35000-2							
Klasing	A	02	1150						No Lubrication Required
	B	10	1500				X		Apply Oil Around Head of Pawl Pin
	B	21	1500-1				X		

(* Defined in AAR Rule 13)				Lubrication Points (see Figure B.1)					6.1.1.1.1 Re marks
Mfg.	Group*	Qual.*	Type Designation	A	B	C	D	E	
Klasing	B	22	1450						
	G	02	950						No Field Lub. Required
	N	06	1700				X		Apply Oil Around Head of Pawl Pin
	N	07	1700-1				X		
Sloan Valve (Mac Lean-Fogg)	B	23	D-8520	X	X		X		
	B	25	D-8520-1	X	X		X		
	B	26	D-8520-2	X	X		X		
	L	09	D-9450	X	X		X		
	L	10	D-9450-1	X	X		X		
	N	08	8800	X	X		X		
	N	09	8800-1	X	X		X		
URECO	G	06	D-2144		X	X			
	G	17	D-2375			X			
	G	18	D-4126	X		X			
	G	19	D-23750			X			
Miner	A	03	25090					X	
	A	06	6600				X		
	A	07	6600-L				X		
	B	24	66				X		
	B	33	6679-1				X		
	B	34	6679-2				X		
	G	13	18486-B					X	
	G	14	18486-B1					X	
	L	07	7900-1				X		
	L	08	7900-2				X		
Superior	A	04	800	X	X	X			
	G	04	726	X	X	X			
	G	15	566	X	X	X			
Unarco (Equip. Co.) (Railcar Specialties Inc.)	A	08	4000			X			
	A	09	4000-1			X			
	B	29	3750-F						No Field Lub. Required
	B	31	4000-1-A			X			
	B	32	4000-0-A			X			
	G	05	3450		X	X			
	G	16	3750						No Field Lub. Required

(* Defined in AAR Rule 13)				Lubrication Points (see Figure B.1)					6.1.1.1.2 R emarks
Mfg.	Group*	Qual.*	Type Designation	A	B	C	D	E	
Universal	B	35	9200			X			
	B	36	9200-3			X			
	G	07	4885	X		X	X		
	G	08	5550	X		X	X		Point "C" – 2 Places
	G	09	5700-6232	X	X		X		
	G	10	5700	X	X		X		
	G	11	5705	X	X	X	X		
	G	22	5705-6315	X	X	X	X		
	I	03	U-8000A U-8000B	X		X	X		
	I	04	U-8000-3-A U-8000-3B	X		X	X		
	L	05	4475			X			
	L	06	4475-3			X			
	N	10	7500			X			
	N	11	9300			X			
	N	12	9300-3			X			
	O	05	4493			X			
	O	06	4493-3						

B.2 Lever type handbrakes

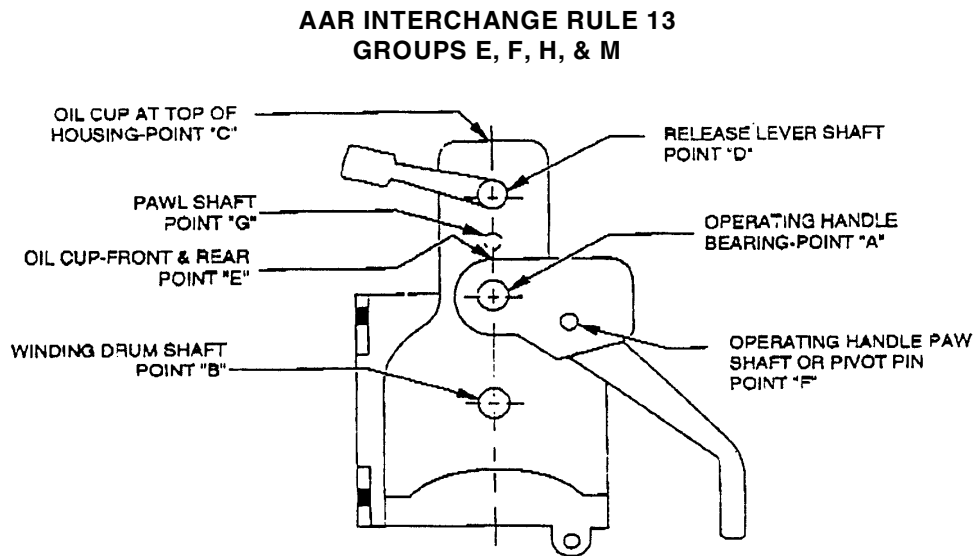


Figure B.2—Field lubrication chart lever type hand brake

Table B.2—Lubrication chart for lever type handbrakes

(* Defined in AAR Rule 13)				Lubrication Points (see Figure B.2)							6.1.1.1.3 R emarks
Mfg.	Group*	Qual.*	Type Designation	A	B	C	D	E	F	G	
Ajax Consolidated	H	01	14711								No Field Lub. Required
Ellcon-National	E	02	D-1802	X	X		X		X		
	F	01	D-2150	X	X		X		X	X	Point "G" Front & Rear
	F	05	7600	X	X		X		X	X	Point "G" Front & Rear
	M	01	4320	X	X		X		X	X	Point "G" Front & Rear
	M	03	7900	X	X		X		X	X	Point "G" Front & Rear
Klasing	E	01	700				X				
Unarco (Equipco)	E	03	3700-B								No Field Lub. Required
	F	02	5000								No Field Lub. Required
Universal	E	05	2517		X	X	X				
	E	06	2633		X	X	X				
	F	04	2417		X	X	X				
	H	02	7530	X			X		X		Point "A" Front & Rear
	H	03	5790	X	X		X	X	X		
	M	02	2420		X	X	X				

B.3 Horizontal wheel type handbrakes

AAR INTERCHANGE RULE 13
GROUPS C,D & J

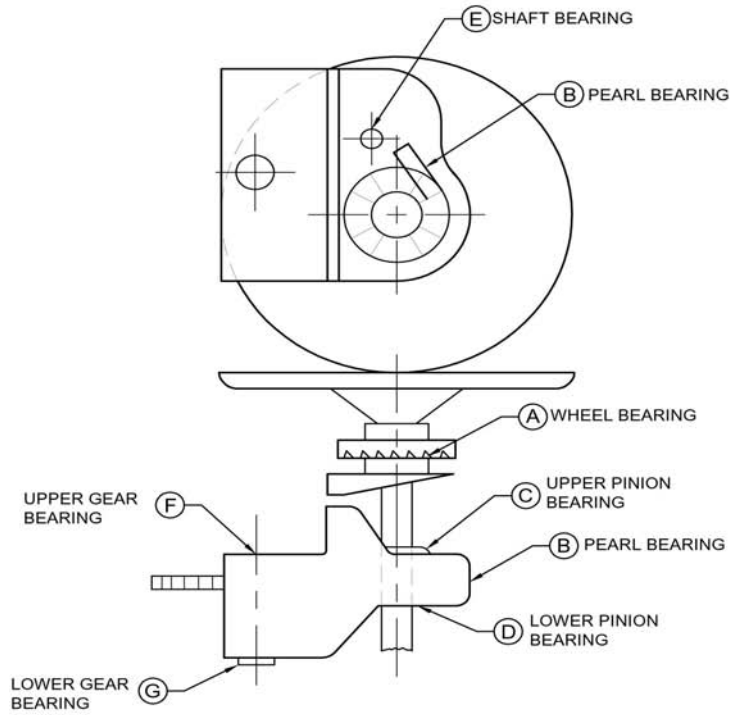


FIGURE B.3 - FIELD LUBRICATION CHART HORIZONTAL WHEEL TYPE HANDBRAKE

Table B.3—Lubrication chart for horizontal wheel type handbrakes

(* Defined in AAR Rule 13)				Lubrication Points (see Figure B.3)						
Mfg.	Group*	Qual.*	Type Designation	A	B	C	D	E	F	G
ACF	C	01	41-49681						X	X
ACF	C	02	31-7758						X	X
Canadian Cardwell	C	03	6029	X	X	X	X		X	X
Eilcon-National	C	04	D-1661			X	X	X	X	X
MacLean-Fogg (Ureco)	C	09	D-1901	X	X		X		X	X
Ellcon-National (Superior)	C	05	30640 (668)						X	X
	D	01	30620 (571)						X	X
	D	02	30630 (603)						X	X
Unarco	C	06	3657-737						X	
Universal	C	07	5934	X	X	X	X	X	X	X
	J	01	6026			X	X		X	X

Lubricate areas marked with the "L"

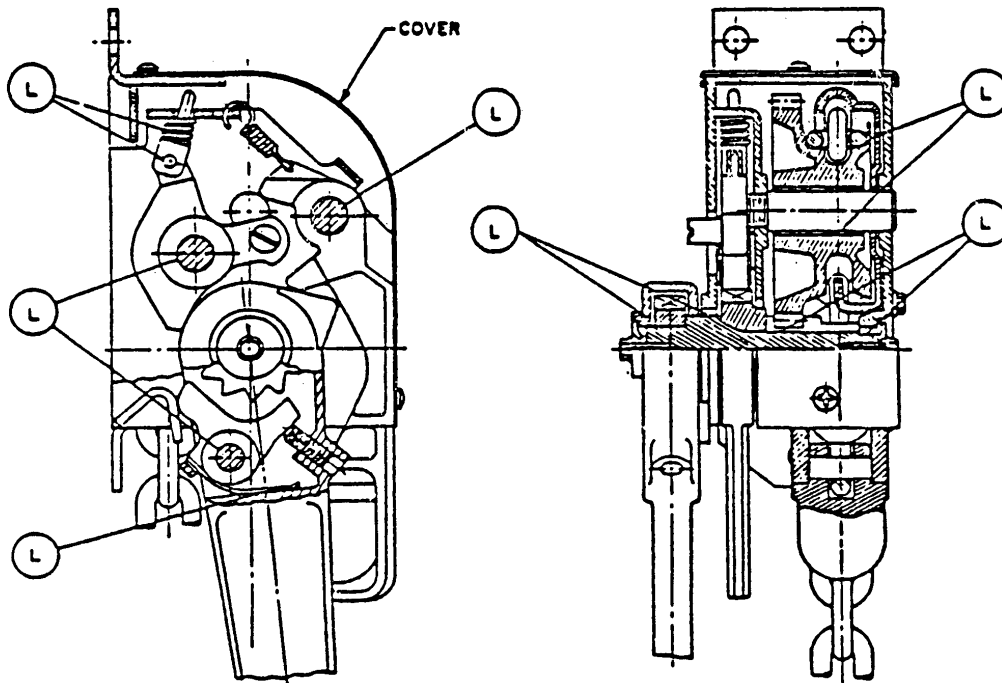


Figure B.4—Hand brake maintenance—arrow and comet equipment

B.4 Arrow and comet equipment