

**Work Order Detail
for Asset 233**



Work Order: **MRDVSH-2020-487 180 DAY**
Status: **OPEN**

Dept: MECH - MECHANICAL		Serial No: 233		Warranty: NO
Asset No: 233 - 1978 PULLMAN/MK BTC-1C COACH		License:		
Asset No:	Opened By:	JEFF.FORREST	Date In:	05/11/2020 06:27
Eq Type: 1978-PULLMAN/MK-BTC-1C	Current Equip Status:	CUT	Date Due:	06/25/2020 06:27
Job Type: PM	Account:	257-530001	Opened:	05/11/2020 06:27
Meter 1: 0.00	Reference WO:		Finished:	
Meter 2: 0.00	Estimated Hours:	0.00	Closed:	
Shop Hrs: 0.00	User Hours:	0.00	Warranty Expire:	
Priority: M4 - EVALUATE NEXT OPPORTUNITY	Accident:			
Incident:	Project:			

Non Service Request Tasks

Task: AC FILTER-30 - Replace Return Air And Fresh Filters -30 Day		Warranty: NO
WAC:	Reason:	
Work Class:	Comments:	
Task: BTC180-PM - Btc 180 Day Class Pm		Warranty: NO
WAC:	Reason:	
Work Class:	Comments:	

Overhead

Small Parts - Labor: **0.00** Tools: **0.00** Total Overhead Costs: **0.00**
Small Parts - Parts: **0.00** Overhead Costs: **0.00**

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PM Checklist

Task / Comment	Employee	Failed	N/A	Completed
AC FILTER-30 Exception PM: No				
PM5840 - REPLACE RETURN AIR AND FRESH FILTERS	AM	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
BTC180-PM Exception PM: No				
PM448 - ----- BLIND TRAILER COACH 180-DAY INSPECTION -----		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
PM110 - ----- SHEET METAL WORKER -----	T.C HP	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
PM323 - CHECK UNDERCAR PIPING FOR SIGNS OF LOOSENING AND DAMAGE	T.C HP	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
PM330 - INSPECT ALL PIPING, VALVES, HOSES & FITTINGS THAT SHOW SIGNS		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Procedure: OF LEAKS ABRASIONS CRACKS HOLES HAVE MISSING OR BROKEN COMPONENTS OR ARE BELIEVED TO HAVE RESTRICTIONS.	T.C HP	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
PM338 - FLUSH AND CLEAN DRAINPAN UNDER EVAPORATOR COILS	T.C HP	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
PM339 - REPAIR ANY TORN OR MISSING PIPE INSULATION	T.C HP	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
PM720 - RECONNECT HOSES FROM CAR BODY TO TRUCKS	T.C HP	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
PM721 - AVAILABLE FOR LEAK REPAIR DURING SINGLE CAR AIR TEST	T.C HP	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
PM117 - ----- CARMAN -----	US	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
PM324 - INSPECT ALL BRAKE EQUIP INCL. VALVES TREAD BRAKES FOR PROPER	OF	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Procedure: OPERATION SECUREMENT OF ALL BOLTS AND BUSHINGS AND COTTER KEYS	US	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
PM325 - INSPECT TRUCK FRAME AND TRUCK-MOUNTED COMPONENTS FOR PROPER		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Procedure: SECUREMENT AND EXCESSIVE WEAR. I.E. VERTICAL BUMPERS RUBBER BUSHINGS AIR SPRING SYSTEM SHOCK ABSORBERS JOURNAL BOX AND BEARINGS ALL SPRINGS AND SEATS TRUCK CENTER CASTING BRAKE RIGGING SIDE BEARINGS BOLSTER ANCHOR RODS SAFETY HANGERS EQUALIZERS AND TIE BAR..		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
PM817 - CHECK ALL EQUALIZER BEAM BUSHINGS FOR DAMAGE, REPLACE AS REQ	SW	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Procedure: UIRED - 8 LOCATIONS PER COACH RMM 12.2.3 FRA 238.303(C)(5)(IV)		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
PM326 - INSPECT WHEELS AXLES AND COMPLETE WHEEL REPORT	GO	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
PM327 - CHANGE BRAKE SHOES AS NEEDED	SW	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
PM328 - INSPECT COUPLERS AND COUPLER PARTS FOR HEIGHT AND CONDITION	HP	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Procedure: RECORD ON CRM-3A RMM-3.2 FRA FRA-238.303(E)(3)		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>



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PM329 - INSPECT DRAFT GEAR - TIGHTNESS IN POCKET, CRACKING, Procedure: OTHER DAMAGES	SW	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
PM637 - INSPECT WELDED BRACKETS USED TO ATTACH HANDRAILS ON BOMBARDI Procedure: ER COACHES (300` SÝ 600` S AND 1600` S) AND ON KAWASAKI COACHES (700-766Ý AND 1700` S). ALSO INSPECT WELDED BRACKETS AT UNCOUPLING LEVERS ON ALL KAWASAKI COACHES (700 SÝ 900 SÝ AND 1700 S).	QS	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
PM331 - INSPECT ENTIRE CAR BODY FOR LOOSE , DEFECTIVE AND Procedure: MISSING PARTSY TO INCLUDE LUGGAGE RACKSY SEATSY SEAT ATTACHMENTS AND TRAPS RMM-1.4.1.A FRA FRA-238.307(C)(1)	US	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
PM332 - CLEAN FRESH AIR INTAKE SCREEN AT BOTH ENDS		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
PM333 - TEST AND LUBRICATE THE HANDBRAKE	SW	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
PM334 - INSPECT FIRE EXTINGUISHER FOR PROPER GAUGE AND DATE AND VERI Procedure: FY PIN AND SEAL ARE INTACT FRA-238.307(C)(4)	ROOTHSO	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
PM335 - INSPECT FOR EMERGENCY PRY BAR IN PLACE	ROOTHSO	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
PM336 - LUBRICATE ALL MOVEABLE PARTS INCLUDING DOOR TRACKS AND Procedure: ROLLERS WITH DRY GRAPHITE	ROOTHSO	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
PM337 - REPLACE BAD-ODOR SPONGE AT BOTH ENDS OF CAR	Gm	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
PM651 - INSPECT ALL SEATS, SEAT CUSHIONS AND SEAT ATTACHMENTS FOR BR Procedure: OKENÝ LOOSEÝ OR SHARP EDGES RMM-1.4.1.A FRA FRA-238.307(C)(1)	ROOTHSO	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
PM340 - VERIFY PROPER OPERATION OF EMERGENCY EXIT WINDOW Procedure: LOCATION AND RECORD _____ Ý	ROOTHSO	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
PM341 - CHECK FOR PROPER EMERGENCY SIGNAGE INTERIOR AND EXTERIOR AND Procedure: HIGH VOLTAGE SIGNS.	ROOTHSO	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
PM341.2 - INSPECT LOW LEVEL EXIT PATH MARKING (LLEPM) SIGNAGE	ROOTHSO	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
PM342 - FUNCTIONALLY TEST OPERATION OF POWER DOOR RELEASE MECHANISMS Procedure: BOTH INTERIOR AND EXTERIOR - POWER DOOR EQUIPPED COACHES ONLY.	ROOTHSO	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
PM575 - TEST ALL EMERGENCY VALVES (CONDUCTORS VALVES)	UP	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

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PM343 - PERFORM SINGLE CAR AIR TEST (RECORD ON CRM-3A)

Procedure: NOT ON 180 DAY IN LINE INSPECTION EXCEPT IF CONDITIONS WARRANT

PM574 - REPLACE E-TYPE FILTER CARTRIDGE

PM610 - CHECK FOR FIRST AID KIT AND REPLENISH AS NECESSARY

PM360 - CLEAN RETURN AIR FILTER GRILLS

PM454 - ----- ELECTRICAL -----

PM345 - INSPECT ALL UNDERSIDE CONDUIT AND ENCLOSURES FOR SIGNS OF

Procedure: DAMAGE AND SEAL INTEGRITY

PM346 - CHECK UNDER CAR HIGH AND LOW VOLTAGE WIRING AND CABLING AND

Procedure: ELECTRICAL EQUIPMENT FOR SIGNS OF DAMAGE OR OVERHEATING

PM347 - CHECK ALL WHEEL SENSORS AND CABLING FOR SIGNS OF DAMAGE AND

Procedure: PROPER GAP

PM348 - INSPECT AND CLEAN ALL JUMPERS AND JUMPER RECEPTACLES

PM349 - REPAIR OR REPLACE AS NEEDED ALL GROUND STRAPS AND CABLES

PM712 - REPAIR AND REPLACE TRAP HEATERS (AS NEEDED)

PM350 - TEST ALL M.U. AND SIGNAL CIRCUITS

PM351 - CHECK ALL SWITCHES, RELAYS, CONTACTORS, SHUNT TRIPS, WIRING

Procedure: CONNECTIONS AND CIRCUIT BREAKERS FOR PROPER OPERATIONSÝ SIGNS OF LOOSENING AND OVERHEATING.

PM352 - REPLACE AS NEEDED HEAD LIGHTS, BRAKE INDICATOR LIGHTS, CLASS

Procedure: LIGHTSÝ NUMBER LIGHTSÝ STEP LIGHTSÝ EMERGENCY LIGHTS AND GENERAL LIGHTING.

PM353 - TEST WHEEL SLIDE SYSTEM FOR PROPER OPERATION AND SECURE CONT

Procedure: ROL BOX

PM354 - CLEAN AND VACUUM ALL ELECTRICAL LOCKERS

PM355 - CHECK FOR PROPER OPERATION OF H.V.A.C. CONTROLS AND THERMOST

Procedure: ATS

PM356 - CHECK THE EVAPORATOR BLOWER AND CONDENSER FANS FOR PROPER

Procedure: WORKING CONDITTON

	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
ROOTED	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Em	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
BHEM	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
DH	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
BHEM	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
BHEM	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
BWEM	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
DH	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
DHEM	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
DHEM	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
BHEM	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
BH	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
BB, AM	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
BB, AM	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>



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PM357 - REPLACE RETURN AIR AND FRESH AIR INTAKE FILTERS	AM	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
PM358 - INSPECT ENTIRE H.V.A.C. SYSTEM FOR LOOSE OR MISSING COMPONEN	BB, AM	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Procedure: TS, LEAKS AND SIGNS OF EXCESSIVE VIBRATION				
PM359 - INSPECT COMPRESSOR FOR PROPER OIL LEVEL AND RECEIVER TANK FO	BB, AM	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Procedure: R PROPER REFRIGERANT LEVEL				
PM362 - TEST HIGH AND LOW VOLTAGE SYSTEMS FOR GROUNDS	OH	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
PM363 - INSPECT AND REPAIR TRAP HEATERS AS NEEDED	OH	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
PM638 - TEST POWER DOOR OPERATION-POWER DOOR EQUIPPED COACHES ONLY	BD	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
PM361 - CLEAN SURFACE OF CONDENSER COILS	BB, AM	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Comments:

180 DAY

Internal Parts Cost:	
Internal Labor Cost:	
Commercial Parts Cost:	\$0.00
Commercial Labor Cost:	\$0.00
Commercial Misc Cost:	\$0.00
Commercial Tax & Markup:	\$0.00
Equipment Usage Costs:	\$0.00
Overhead Costs:	\$0.00
Internal Total:	\$0.00
Commercial Total:	0.00
Work Order Total:	\$0.00

KEOLIS

COACH COUPLER INSPECTION REPORT



Coach #: 233

For any maintenance and/or replacement

Task	Description	Other reference	Front	Rear
	Inspect Coupler to Include:			
1.	Visually Inspect Coupler for Proper Coupling, damage and Body Integrity	FRA-238.303(e)(3) APTA PR-M-RP-002-98	GM	GM
2.	Gauge Coupler for 31000 34100-1 34100-2A (if required) 32600 34101-4 44250-5	APTA PR-M-RP-002-98	GM	GM
3.	Inspect Coupler lock + lock drop/ and inspect for proper coupling CHECK "TELLTALE" IS CLEAR, NO OBSTRUCTION.	APTA PR-M-RP-002-98	GM	GM
4.	Inspect Coupler Anti-Creep+ Draft Gear for Excessive Wear, Loose or Cracked Welds in Pocket	FRA-238.303(e)(3) APTA PR-M-RP-002-98	GM	GM
5.	Coupler Lock Lift (Special Lock) lever and Operating Rod Eye Clearance.	APTA PR-M-RP-002-98	GM	GM
6.	Inspect Coupler Free Slack	APTA PR-M-RP-002-98	GM	GM
7.	Inspect Coupler Left Level Coupler as Required, Measure Height+ Record on Document# HRU-3	HRU-3	GM	GM
8.	Perform Coupler Carrier Inspection	FRA-238.303(e)(3) APTA PR-M-RP-002-98	GM	GM
	Record all Defects on Form MR1			

Date: 5-11-20

Employee: MC MATHW

Employee ID: _____

Employee Signature: _____

Foreman: K...

Foreman Signature: _____

COACH WHEEL REPORT



Coach #: 233

WHEEL MEASURE

Test Date: 5-11-20

POS.	FLANGE HEIGHT [LIMIT: 1 7/16"]	FLANGE THICKNESS [LIMIT: 1"]	RIM THICKNESS [LIMIT: 1 1/18"]	POS.	FLANGE HEIGHT [LIMIT: 1 7/16"]	FLANGE THICKNESS [LIMIT: 1"]	RIM THICKNESS [LIMIT: 1 1/18"]
L1	1 1/8	11 7/16	13 1/16	R1	1 1/8	11 7/16	13 1/16
L2	1 1/8	11 7/16	11 1/4	R2	1 1/8	11 7/16	11 1/4
L3	1 1/8	11 7/16	13 1/16	R3	1 1/8	11 7/16	13 1/16
L4	1 1/8	11 7/16	15 1/16	R4	1 1/8	11 7/16	15 1/16

Comments:

TOP OF RAIL CLEARANCE HEIGHT

COUPLER HEIGHT (MAX. 34 1/2" MIN. 32 1/2")		PILOT HEIGHT (MAX. 6" MIN. 4")		FLOOR HEIGHT (51 in ± 1.0")	
FRONT	33 1/2	FRONT	N/A	1R	51 25
REAR	34			2R	51 25
				1L	51 25
				2L	51 25

AIR SPRING VERIFICATION INSPECTION

AIR SPRING HEIGHT				AIR SPRING PRESSURE	NO. 1 END <u>56</u> LBS.
L1	9	L2	9		
		R2	9		

SINGLE CAR TEST PRESSURES

ASP		BCP	FULL SERVICE	EMERGENCY
DEFLATED	0	DEFLATED	57	67
AW0	56	AW0	58	70
AW3	72	AW3	68	79

Employee: [Signature]

Foreman: [Signature] # 1330

Officer: [Signature] # 1330

MBTA COMMUTER RAIL
COACH WHEEL SLIDE REPORT

VEHICLE NO: 233

DATE: 5/19/20

LOCATION: Reading

WHEEL SLIDE CONTROL UNIT:

Wheel Slide Control Unit System performance test

COMMENTS: _____

Electronic panels, cards, wires, test lights and fuses

Speed sensor resistance check

#1 978
#2 976
#3 950
#4 965

Signature: _____

COMMENTS: _____

PNEUMATICS:

A & B valve operation

A ✓
B ✓

Signature: _____

SPEED SENSORS AND CABLES:

COMMENTS: _____

Speed sensor cables

Proper sensor

Speed sensor gap

gear

Signature: _____

DEFERRED WORK

SEVERITY CODES

A - HOLD CAR
B - SCHEDULE FOR REPAIR
C - MONITOR

RECOMMENDED SEVERITY CODE

ITEM

SYSTEM STATUS:

FUNCTIONING

Foreman Signature: _____

NOT FUNCTIONING

[Signature]

MBTA COMMUTER RAIL HVAC SYSTEM INSPECTION for Single Level Coaches

Bombardier Coaches 600-653, 1600-1652 (Faiveley A/C System R-22)
Bombardier Coaches 350-389, (Stone Safety A/C System R-22)
MBB Coaches 500-532, 1500-1533 (Sigma A/C System R-22)
Pullman Coaches 200-257 (Stone Safety A/C System R-22)

	SIGNATURE	EMP. ID #
ELECTRICIAN	<u>P. Barry</u>	_____
LABORER	<u>A. Johnson</u>	_____
CARMEN	_____	_____
COACH CLEANER	_____	_____

CAR NUMBER: 233

DATE COMPLETED: 5-11-2020

REQUIRED TOOLS: Oil Test Kit TA-1, Fluke Multieter with clamp-on Ammeter and thermocouple attachments, Megohmmeter, Electronic Leak Detector, HVAC Manifold Gauges, Bristle Brush, Rubber Mallet, Step ladder

WARNING: ALL SAFETY PRECAUTIONS AND EQUIPMENT TAG OUT PROCEDURES MUST BE STRICTLY ADHERED TO. FOLLOW SPECIFIC PROCEDURE INSTRUCTIONS FOR DETERMINING IF EQUIPMENT IS TO BE ENERGIZED PRIOR TO STARTING ANY TEST.

	PASS	FAIL
1. Verify refrigerant level in lower sight glass of receiver tank is visible. If none visible refer to leak detection/repair procedure	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. Inspect using visual and electronic leak detector for Freon leaks and traces of oil at pipe connections, fittings, valves, compressor, condenser coils, etc.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3. Vacuum air intake compartment and check evaporator pan and drains for water flow.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
4. Wash return air grill.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
5. Check all motors and mounts for securement and deterioration/damage.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
6. Inspect air flow boots for integrity and proper attachment.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
7. Inspect all contactors, that control compressor, condenser fan, heaters, and blower motors.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
8. Blow all control boxes with air to clean any debris from them.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
9. Clean dirt and dust from temperature sensors and temperature control units. Check for proper securement.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
10. Replace air filters and Bad Odor Sponges.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	PASS	FAIL

- 11. Megger test compressor, condenser fan, and blower motors for grounds with Megohmmeter.
- 12. Test resistance values of all overhead (30-80 Ω's), and floor heaters (30-50 Ω's). Megger test from heater circuit to ground (>2MΩ). See Chart in appendix A (May through November only)
- 13. Test resistance values of all protective heaters (10 to 50 Ω's). Megger test from heater circuit to ground (>2MΩ). *Maintain. CE*
- 14. Inspect and test operation of air flow switch and overhead heat thermostat (Klixon).
- 15. Inspect all motors and record current draw on all phases.

EVAPORATOR BLOWER

MOTOR #1
 Phase A 1.3
 Phase B 1.4
 Phase C 1.4

CONDENSER FAN MOTOR #1
 Phase A 2.6
 Phase B 2.4
 Phase C 2.6

COMPRESSOR MOTOR
 Phase A 22.4
 Phase B 22.1
 Phase C 22.2

EVAPORATOR BLOWER

MOTOR #2
 Phase A 1.4
 Phase B 1.3
 Phase C 1.3

CONDENSER FAN MOTOR #2
 Phase A 2.1
 Phase B 2.1
 Phase C 2.2

- 16. Check for proper rotation and air flow of condenser fan and blower motors.
- 17. Check thermal expansion valve bulbs for proper securement.

PUT HVAC SYSTEM ON AUTOMATIC AND CHECK FOR PROPER OPERATION

- 18. Between Nov 1st through May 1st apply manifold gauges to high and low sides of system, apply diagnostic equipment (TEST BOX). Operate the system and record Freon pressures.

No. 1 END		No. 2 END	
Line valve THX	Modulation THX	Line valve THX	Modulation THX
Low Side	Low Side	Low Side	Low Side
Suction Pressure _____	Suction Pressure _____	Suction Pressure _____	Suction Pressure _____
Saturation Temp. (from chart) _____	Saturation Temp. (from chart) _____	Saturation Temp. (from chart) _____	Saturation Temp. (from chart) _____
Suction Temp _____	Suction Temp _____	Suction Temp _____	Suction Temp _____
SUPERHEAT _____	SUPERHEAT _____	SUPERHEAT _____	SUPERHEAT _____
High Side			
Ambient Temperature _____		Discharge Pressure _____	

PASS FAIL

19. Charge system as necessary to maintain Freon level 1/2 full on lower sight glass. (Nominal: 270 - 275 psig)

20. Cover condenser coils with cardboard to cause #2 condenser fan to operate. (Nominal: 250 psig)

START PRESSURE: 210

21. Restrict compressor suction valve to lower system pressure, until shutdown. (Nominal: 20 to 25 psig)

SHUTDOWN PRESSURE: 12

REOPEN SUCTION VALVE

22. Block condenser completely to cause system to go into modulation, if necessary heat coach prior to attempting modulation to cause a higher pressure. (Nominal: 380 - 400 psig)

MODULATION PRESSURE: 390

Observe that modulation occurs and continues to operate in modulation until a pressure of 330 +/-10 psig is reached. (When modulation occurs you will see a sudden drop in pressure around 400 psig).

23. Block condenser completely to cause system to shutdown on high pressure, if necessary heat coach prior to attempting shutdown to cause a higher pressure. (Nominal: 425 - 430 psig)

SHUTDOWN PRESSURE: 410

CAUTION: DO NOT CONTINUE IF PRESSURE GOES ABOVE 435 psig.

NOTE: Do not use discharge valve to raise pressure.

24. Record the loading pressure and the unloading pressure for each head. (place a heat load on the coach and use suction valve)

1st stage unloader LOADED: 64
(Nominal: 63 - 65 psig)

1st stage unloader UNLOADED: 54
(Nominal: 51 - 55 psig)

2nd stage unloader LOADED: 68
(Nominal: 68 - 70 psig)

2nd stage unloader UNLOADED: 59
(Nominal: 56 - 60 psig)

25. Check system for moisture at the filter dryer sight glass indicator, if indicator is pink in color, or the sight glass indicates moisture, checked failed. If failed change the filter/dryer.

26. Between Nov 1st through May 1st take oil sample (Acid Test) use test kit. Follow the oil sample kit instructions to determine condition of the compressor oil and record result.

MARGINAL PASS FAIL N/A

27. Wash condenser compressor unit and associated piping.

PASS FAIL

- 28 Using the DTE (Diagnostic Test Equipment) raise the temperature in the coach so that Full Cool will be called for. (>75°F)
- 29 Remove the DTE and observe that the coach responds properly moving from Full Cool to Partial Cool. Verify that the modulation valves deenergize. (Approx. 74°F)
- 30 When the Coach gets cooler Reheat is energized. Verify 1st stage OH heat contactors close. (Approx. 72°F)
- 31 The Coach should continue to cool until Partial cool drops out. Verify Compressor contactor is Open. (Approx. 71°F)

Reviewed by

FOREMAN



MANAGER



APPENDIX A

Resistance Chart

200	OH - 1st Stage	75+- 2.5	Ω
	OH - 2nd Stage	47.5+- 2.5	Ω
	FH - 1st Stage	32.5 +- 2.5	Ω
	FH - 2nd Stage	Disabled	
300	OH - 1st Stage	75+- 2.5	Ω
	OH - 2nd Stage	47.5+- 2.5	Ω
	FH - 1st & 2nd Stage	52.5 +-2.5	Ω
500	OH - 1st Stage	67.5 +- 2.5	Ω
	OH - 2nd Stage	35 +- 5	Ω
	FH - 1st & 2nd Stage	35 +- 5	Ω
600	OH - 1st Stage	57.5 +- 2.5	Ω
	OH - 2nd Stage	37.5 +- 2.5	Ω
	FH - 1st & 2nd Stage	32.5 +- 2.5	Ω



REFRIGERANT USAGE AND LEAK REPAIR RECORD

The EPA, in accordance with Section 608 of the CLEAN AIR ACT, requires record keeping of refrigerant usage and leak repairs for comfort cooling systems with a charge of 50 pounds or greater. All single level coaches have approximately a 55 pound charge. Kawasaki coaches have a 33 pound charge in each end. Any leak with an annual leak rate greater than 15% of system capacity must be repaired.

Coach 233 Date 5-11-2020 Location Reading

Defect _____

Repair _____

Amount of Refrigerant recovered from system - 0 -
 Amount of recovered Refrigerant reinstalled in system - 0 -
 Amount of new Refrigerant charged to system - 0 -
 Amount of Refrigerant drawn from stores - 0 -

Single-level 55# SYSTEM								Bi-level VSRS 33# SYSTEM							
#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%
1	1.8	12	21.8	23	41.8	34	61.8	45	81.8	1	3.0	12	36.4	23	69.7
2	3.6	13	23.6	24	43.6	35	63.6	46	83.6	2	6.1	13	39.4	24	72.7
3	5.5	14	25.5	25	45.5	36	65.5	47	85.5	3	9.1	14	42.4	25	75.8
4	7.3	15	27.3	26	47.3	37	67.3	48	87.3	4	12.1	15	45.5	26	78.8
5	9.1	16	29.1	27	49.1	38	69.1	49	89.1	5	15.2	16	48.5	27	81.8
6	10.9	17	30.9	28	50.9	39	70.9	50	90.9	6	18.2	17	51.5	28	84.8
7	12.7	18	32.7	29	52.7	40	72.7	51	92.7	7	21.2	18	54.5	29	87.9
8	14.5	19	34.5	30	54.5	41	74.5	52	94.5	8	24.2	19	57.6	30	90.9
9	16.4	20	36.4	31	56.4	42	76.4	53	96.4	9	27.3	20	60.6	31	93.9
10	18.2	21	38.2	32	58.2	43	78.2	54	98.2	10	30.3	21	63.6	32	97.0
11	20.0	22	40.0	33	60.0	44	80.0	55	100.0	11	33.3	22	66.7	33	100.0

Alstom Bi-level Alte 13# Circuits	
#	%
1	8
2	15
3	23
4	31
5	38
6	46
7	54
8	62
9	69
10	77
11	85
12	92
13	100

Has the system been charged in the past 12 months?

If yes, what was the percentage of system capacity charged?

What is the percentage of system capacity charged for this repair?

Total percentage charged past 12 months

33.3%
 Technician

[Signature]
 Foreman

PAST
History
Not
Available

Copies of this form are to go into the coach file and into the Freon control file.

EMERGENCY LIGHTING DURATION TEST RECORD

All Single-Level Coaches

90-DAY PM 180-DAY PM

Date Tested: 5/11/20 Time Test Began: (h) 11 (m) 00 Time Test Ended: (h) 12 (m) 00

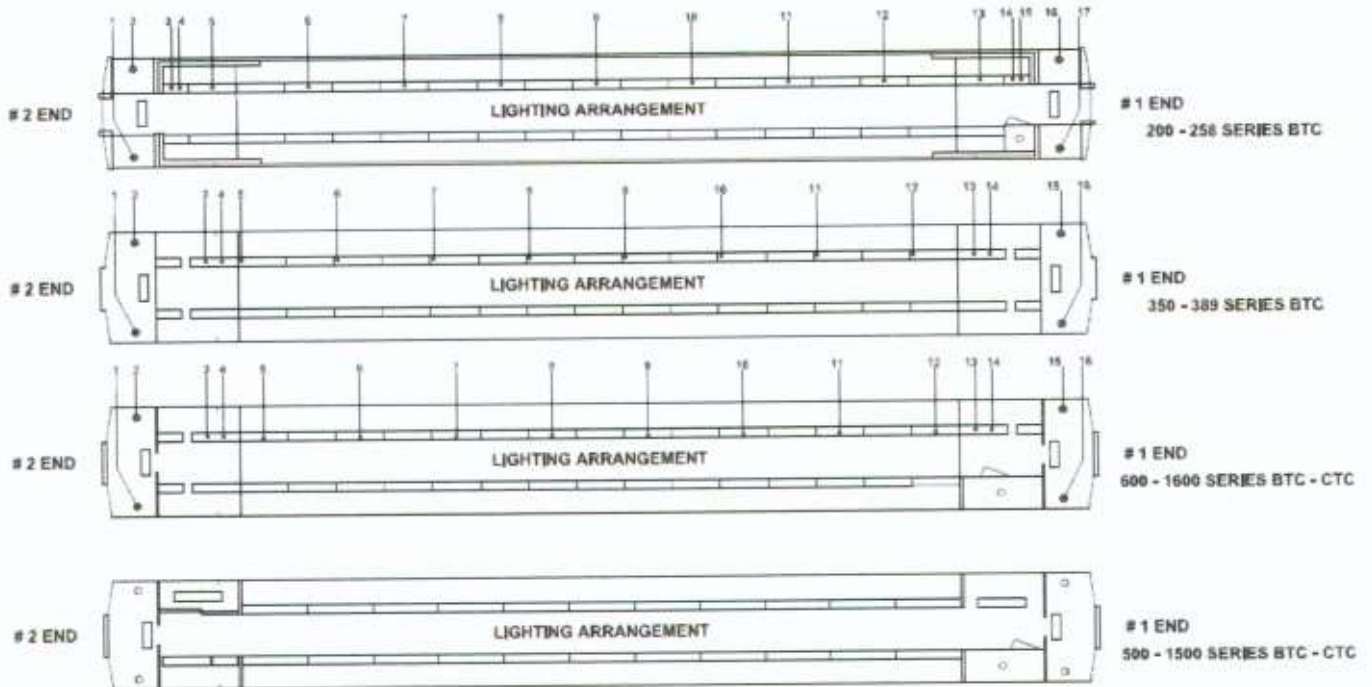
Coach #: 233 Employee #: _____ Employee Signature: B D D E M

Ensure emergency ballasts have been charged for 30 minutes.

At the end of 60 minutes in operation, the emergency lights were (check one):

All emergency lighting is functioning properly.
Duration: 60 minutes
(How long lighting functioned)

Record any failures and ballast replacements on MR1 form.



COMMENTS: _____

NOTE: Refer to instructions for performing tests on Page 2 if needed.

EMERGENCY LIGHTING DURATION TEST RECORD

All Single-Level Coaches

INSTRUCTIONS:

Before beginning, verify the following: Any/All emergency lighting ballast replacements have been completed.

1. The emergency lighting ballasts have been charging for at least 30 minutes.
2. Ensure the main lighting circuit breaker is ON, all individual light switches are ON, and when equipped, the emergency light cutout switch in the circuit breaker control panel is in the NORMAL position.
3. Verify all regular inside coach lighting is ON.
4. Turn the main lighting circuit breaker OFF.
5. Verify all emergency lighting comes ON.
6. Verify emergency lighting remains ON for 60 minutes. If at any point in the 60-minute period the emergency lighting stops functioning altogether, record its duration on the MR1 form, then refer to the NOTE that follows Step 10.
7. At the end of 60 minutes, record the results in the spaces provided on the record sheet.
8. Turn the main lighting circuit breaker ON after testing /recording is complete.
9. Ensure the record sheet is fully completed, then submit it to the Foreman on duty. The completed record sheet is to be included in the PM completed work order and control forms package.
10. Charge the emergency ballasts for 30 minutes.

NOTE: If any of the steps fail to perform as expected, consult the OEM manual as needed, and troubleshoot/repair/replace parts. If all the emergency lighting fails early, begin by double-checking that the ballast actually did charge a full 30 minutes prior to testing. Retest. Provide PM comments or open a Service Order, whichever is applicable.