

M0-3

M0-6

M0-9

Locomotive Release from Shop Form

To be completed on every engine released from the Shop

I have reviewed the work packet for locomotive 8583 on this date 4-9-12 and take no exception to applicable laws, rules and or MMA standards, policies and standards.

DRAINED WATER from wick Boxes - JBlack
checked all wicks - JBlack
Support Boxes full of oil - JBlack

J. Black

Service Operations

THROTTLE 8 INBOUND LOAD TESTS

UNIT _____

DATE _____

Eng RPM (900)	EMD	_____	Lube Oil Pres	_____
Eng RPM (1050)	GE	_____	Water Temp	_____
Horsepower		_____	Overspeed Setting	_____
Volts (5.3)	B-23	_____	RACK SETTING	_____
Volts (7)	C-30	_____		
Volts (720)	B-39	_____		

THROTTLE #1 STALL TEST

OP Mode	(PWR)	_____	NOT APPLICABLE TO B-23 AND C-30
AMPS	(300)	_____	
MGA	(1220)	_____	
Charging Rate	(70v)	_____	

B-23, B-39, C-30, GP-7 MO3 INSPECTION

In-Bound Loadtest Electrical/Mechanical

WORKED BY:

ELECTRICAL

- VERIFY THE OPERATION OF THE GROUND RELAY
- CHECK FOR LOW VOLTAGE GROUNDS (7 watt bulb)
- WHILE IN THROTTLE 3 LOAD TEST, CHECK FOR AC GROUNDS
- CHECK OPERATION OF:
 - A. HEATING
- COMPLETE THE IN-BOUND LOAD TEST SHEETS
- GROUND RELAY-(TEST THREE TIMES TO VERIFY LOCK-OUT)(DYNAMIC & POWER)
- CHECK THE FOLLOWING FOR PROPER OPERATION:
 - A. CREW ALERT
 - B. RADIO AND ANTENNA
 - C. AXLE ALT. SPEEDO
 - D. MU ENGINE SHUTDOWN
 - E. FUEL CUT-OFF
 - F. TEST WARNING DEVICES

MECHANICAL

- CLEAN AND SERVICE TOILET AND RESTROOM
- DRAIN RETENTION TANK
- PROPER LUBRICATION? FUEL LEAKS? CAM ROLLER ROTATION? ETC.
- INSPECT FUEL SYSTEM HOSES AND PIPES FOR LEAKS
- INSPECT COOLING SYSTEM:
 - A. CHECK HOSES AND PIPES FOR LEAKS
- CHECK OPERATION OF ENGINE PROTECTION DEVICES:
 - A. CRANKCASE PRESSURE
- VISUALLY INSPECT AIR COMPRESSOR FOR WATER, AIR OR OIL LEAKS
- PERFORM MANUAL AIR BRAKE TEST
- Verify Flow Gauge
130 main reservoir is 64 + or - 3,
reservoir is 60 + 0
- PERFORM PENALTY BRAKE TEST
- CHECK FOR CORRECT AIR PRESSURE SETTINGS:
 - A. MAIN RESERVOIR (130 - 140 PSI)
 - B. BRAKE PIPE (90 PSI)
 - C. EQUALIZING RESERVOIR (90 PSI)
 - D. BRAKE CYLINDER (72 - 74 PSI)
 - E. COMPRESSOR CONTROL (130 - 140 PSI +/-5 PSI)
- CHECK FLUID LEVELS BEFORE LOADING:
 - A. ENGINE OIL
 - B. COOLING WATER
 - C. AIR COMPRESSOR OIL
- TEST OPERATION OF THE FOLLOWING DEVICES:
 - A. BELL
 - B. SANDERS (FORWARD, REVERSE, EMERGENCY)
 - C. RADIATOR SHUTTERS

NOTE: 120-
130-140 main

B-23, B-39, C-30, GP-7 MO3 INSPECTION

Revision Date: 8/18/2010
 Issued By: Tim Scalia

Electrical in House		WORKED BY:
SERVICE THE BATTERIES AND COMPLETE JSP-010		<i>[Signature]</i>
VERIFY EVENT RECORDER IS WORKING	-Recorder B.O. - D. STU-	<i>[Signature]</i>
CHECK & RECORD THE DATE ON HEAD END DEVICE	12-28-12	<i>[Signature]</i>
COMPLETE THE HEAD END DEVICE CONNECTOR SHEET		-NA-
CHECK THE FOLLOWING EQUIPMENT AND THEIR RELATED GUARDS AND LENSES FOR PROPER OPERATION:		
CHECK ALL GROUND AND STEP LIGHTS, FRONT AND REAR HEADLIGHTS, DITCH LIGHTS, CAB LIGHTS, GAUGE LIGHTS, NUMBER PLATES, PLATFORM LIGHTS, ALL WARNING AND INDICATOR LIGHTS		<i>[Signature]</i>
TRACTION MOTORS AND UNDERFRAME		
CHECK THE TRACTION MOTOR LEADS, VERIFY NO LEADS ARE RUBBING ON THE FRAME		<i>[Signature]</i>
INSPECT TRACTION MOTOR COVERS AND ENSURE BOLTS ARE IN PLACE AND TIGHT		<i>[Signature]</i>
CHECK M.U. RECEPTACLE PINS AND LIDS. MAKE NECESSARY REPAIRS		<i>[Signature]</i>
MAKE SURE M.U. CABLES DO NOT FOUL COUPLERS		-NA-

TM#1 c/o All brushes - worn down - *[Signature]*
 CHECKED MAIN GEN. BRUSHES - *[Signature]*
 checked G-RFD BLOWER BRUSHES - *[Signature]*

B-23, B-39, C-30, GP-7 MO3 INSPECTION

MECHANICAL IN HOUSE	WORKED BY:
REVIEW LAB CODE AND PERFORM A COMPLETE AIRBOX/CRANKCASE INSPECTION IF A LAB CODE EXISTS	
WITH THE ENGINE WARM, PRESSURE TEST COOLING SYSTEM AT 20 PSI FOR 15 MINUTES AND IF THE PRESSURE ON THE GAUGE DOES NOT DROP, THEN NO FURTHER ACTION IS REQUIRED	
CHANGE THE FOLLOWING FILTERS AND ASSOCIATED GASKETS:	
FUEL SPIN ON FILTERS. EMD ONLY	<i>J Black</i>
SOAK BACK FILTER. EMD ONLY	<i>J Black</i>
TURBO SPIN ON FILTER. EMD ONLY	<i>J Black</i>
COMPLETE FRA INSPECTION (DAILY INSPECTION CHECKLIST)	
CARBODY	
INSURE SAND NOZZLES AND HOSES ARE IN PLACE AND SECURED. MAKE SURE THEY ARE ALIGNED WITH WHEEL AND TRACK. INSPECT SAND TRAPS AND REPAIR AS NEEDED.	<i>J Black</i>
INSPECT COUPLERS & DRAFT GEARS. MAKE REPAIRS AS NECESSARY	<i>J Black</i>
CHECK KNUCKLE CLEARANCE AND KNUCKLE THROWER, MAKE REPAIRS AS NEEDED AND APPLY SPARE KNUCKLES (E AND F TYPE) (2.5")	<i>J Black</i>
INSPECT PIN LIFTERS CHECKING FOR PROPER HAND CLEARANCE AND ANTI-CREEP	<i>J Black</i>
CHECK SNOWPLOW (IF EQUIPPED) FOR HANDHOLDS AND PROPER DISTANCE	<i>J Black</i>
CHECK AUTO BLOWDOWNS FOR PROPER OPERATIONS IN AUTOMATIC MODE	<i>J Black</i>
ENSURE SUMP DRAINS ARE OPEN AND FREE OF DEBRIS	<i>J Black</i>
TRUCKS	
INSPECT WICK BOLT SECUREMENT AND REPAIR IF NECESSARY	<i>J Black</i>
CHECK SUSPENSION BEARING OIL LEVEL	<i>J Black</i>
CHECK JOURNAL BOX OIL LEVEL (FILL TO POINT OF OVERFLOW)	<i>J Black</i>
CHECK GEAR CASES AND INSPECT BULL GEAR (ADD 6lbs. OF GEARCASE GREASE)	<i>J Black</i>
CHECK OIL FILLED GEAR CASES AND FILL (RECORD USAGE BELOW) <i>3 pks each</i>	<i>J Black</i>
# 1 TRACTION MOTOR: OIL USED <i>3 pks Filled with 680 gear oil</i>	<i>J Black</i>
# 2 TRACTION MOTOR: OIL USED <i>3 pks</i> " "	<i>J Black</i>
# 3 TRACTION MOTOR: OIL USED <i>3 pks</i> " "	<i>J Black</i>
# 4 TRACTION MOTOR: OIL USED <i>3 pks</i> " "	<i>J Black</i>
# 5 TRACTION MOTOR: OIL USED	<i>X</i>
# 6 TRACTION MOTOR: OIL USED	<i>X</i>
INSPECT ALL BRAKE HANGERS, HEADS, GUIDES AND STRAPS ENSURING BRAKE SHOES ARE IN LINE WITH WHEELS	<i>J Black</i>
CAB	
CHECK FIRE EXTINGUISHERS, DATE AND TAG. REPLACE IF USED OR OUT OF DATE.	
CHECK CAB SEATS FOR PROPER OPERATION INSURING ALL BOLTS ARE IN PLACE AND TIGHT.	
CHECK HANDBRAKE AND INSPECT DATE. MAKE REPAIRS AS NECESSARY	<i>J Black</i>
MISC	
IN ACCORDANCE WITH FRA 229.23. VERIFY AIR GAUGES (+/- 3PSI) (CALIBRATE AT +/- 1PSI, REQUIRES 130 PSI MR)	
CHECK ALL FLUID LEVELS, ENGINE OIL, COOLING WATER, AIR COMPRESSOR OIL	<i>J Black</i>
DRAIN RETENTION TANK	<i>J Black</i>
TOILET MAINTENANCE:	<i>J Black</i>
A. INSPECT/REPAIR AS NEEDED TOILET DRAIN VALVE & FLOOR SEALS	<i>J Black</i>
Cab Seat Inspection:	
A. INSPECT THE VERTICAL ADJUSTMENT LEVER. VERIFY THAT THE LEVER OPERATES AND THAT THE SEAT PAN ADJUSTS UP AND DOWN AND DOES NOT DROP SUDDENLY.	
B. LUBRICATE PIVOT POINTS	
C. INSPECT ROTATION ADJUSTMENT LOCKING PIN. VERIFY THAT THE LOCKING PIN OPERATES (PULL OUT TO RELEASE LOCK) AND THAT THE SEAT ROTATES WHEN UNLOCKED.	
D. LUBRICATE THE PIN MECHANISM.	
E. SEAT PAN COMPONENTS: INSPECT THE FORE-AFT FINE ADJUSTMENT LEVER.	
F. VERIFY THAT THE LEVER SLIDES SIDWAYS TO UNLOCK SEAT FOR/AFT ADJUSTMENT AND SEAT SLIDES FOR/AFT EASILY	

B-23, B-39, C-30, GP-7 MO3 INSPECTION

Out Bound Loadtest Electrical/Mechanical

WORKED BY:

ELECTRICAL		
VERIFY THE OPERATION OF THE GROUND RELAY		<i>[Signature]</i>
CHECK FOR LOW VOLTAGE GROUNDS (7 watt bulb)		<i>[Signature]</i>
WHILE IN THROTTLE 3 LOAD TEST, CHECK FOR AC GROUNDS		<i>[Signature]</i>
CHECK OPERATION OF:		
A. HEATING		<i>[Signature]</i>
COMPLETE THE IN-BOUND LOAD TEST SHEETS		<i>[Signature]</i>
GROUND RELAY-(TEST THREE TIMES TO VERY LOCK-OUT)(DYNAMIC & POWER)		<i>[Signature]</i>
CHECK THE FOLLOWING FOR PROPER OPERATION:		
A. CREW ALERT		<i>[Signature]</i>
B. RADIO AND ANTENNA		<i>[Signature]</i>
C. AXLE ALT. SPEEDO		<i>[Signature]</i>
D. MU ENGINE SHUTDOWN		<i>[Signature]</i>
E. FUEL CUT-OFF		<i>[Signature]</i>
F. TEST WARNING DEVICES		<i>[Signature]</i>
MECHANICAL		
CLEAN AND SERVICE TOILET AND RESTROOM		<i>[Signature]</i>
DRAIN RETENTION TANK		<i>[Signature]</i>
PROPER LUBRICATION? FUEL LEAKS? CAM ROLLER ROTATION? ETC.		
INSPECT FUEL SYSTEM HOSES AND PIPES FOR LEAKS		
INSPECT COOLING SYSTEM:		
A. CHECK HOSES AND PIPES FOR LEAKS		<i>[Signature]</i>
CHECK OPERATION OF ENGINE PROTECTION DEVICES:		
A. CRANKCASE PRESSURE		<i>[Signature]</i>
VISUALLY INSPECT AIR COMPRESSOR FOR WATER, AIR OR OIL LEAKS		<i>[Signature]</i>
PERFORM MANUAL AIR BRAKE TEST		<i>[Signature]</i>
Verify Flow Gauge		
130 main reservoir is 64 + or - 3, reservoir is 60 + o	NOTE: 120- 130-140 main	
PERFORM PENALTY BRAKE TEST		<i>[Signature]</i>
CHECK FOR CORRECT AIR PRESSURE SETTINGS:		
A. MAIN RESERVOIR (130 - 140 PSI)		<i>[Signature]</i>
B. BRAKE PIPE (90 PSI)		<i>[Signature]</i>
C. EQUALIZING RESERVOIR (90 PSI)		<i>[Signature]</i>
D. BRAKE CYLINDER (72 - 74 PSI)		<i>[Signature]</i>
E. COMPRESSOR CONTROL (130 - 140 PSI +/-5 PSI)		<i>[Signature]</i>
CHECK FLUID LEVELS BEFORE LOADING:		
A. ENGINE OIL		<i>OK</i>
B. COOLING WATER		<i>OK</i>
C. AIR COMPRESSOR OIL		<i>OK</i>
TEST OPERATION OF THE FOLLOWING DEVICES:		
A. BELL		<i>[Signature]</i>
B. SANDERS (FORWARD, REVERSE, EMERGENCY)		
C. RADIATOR SHUTTERS		

UNIT 8583

Service Operations

DATE _____

THROTTLE 8 OUTBOUND LOAD TESTS

Eng RPM (900)	EMD	<u> </u>	Lube Oil Pres	<u> </u>
Eng RPM (1050)	GE	<u>1050</u>	Water Temp	<u>170</u>
Horsepower		<u>3640</u>	Overspeed Setting	<u> </u>
Volts (8.3)	EMD	<u>690 volts</u>	RACK SETTING	<u>240</u>
Volts (7)	GE	<u>3790 Amps</u>		
Volts (720)	EMD	<u> </u>		

THROTTLE #1 STALL TEST

OP Mode	(PWR)	<u>F</u>	
AMPS	(300)	<u>300</u>	
MGA	(1220)	<u> </u>	NOT APPLICABLE TO B-23 AND C-30
Charging Rate	(70v)	<u>73.9</u>	

JSP-010 (BATTERY MAINTENANCE AND QUALIFICATION)

JOB SPECIFIC PROCESS

Locomotive Type: ALL MODELS

Valid for Road Numbers: (All Models)

Overview: This job process sheet will assist with the maintenance and qualification of batteries.

SPECIAL TOOLS OR EQUIPMENT:

SEQUENCE OF JOB STEPS	Please print your name, NO signatures
1. Ensure the locomotive is shutdown, discharged, all of the circuit breakers are open and the battery knife switch is open.	DAVID STUPAKIEWICZ
Battery Qualification/Maintenance	
2. NOTE: If batteries are dead, connect the charger until the charge rate falls below 10 amps to determine state of charge. Readings under 20 V are suspect for units with just 2 batteries.	
3. Insert hose stem into battery cell and squeeze bulb.	
4. Release pressure until enough acid solution is drawn into the tube allowing the float to float freely. Be sure float does not touch rubber stopper at the top of the tube.	
5. The float reading at the water line is the uncorrected charge level of the battery.	
6. Read and record the specific gravity of all 16 pilot cells. "record readings below": acceptable range is 1.225 – 1.300 (if out of this range notify tech support) Note 1: the sheet below is set up for 2 or 8 batteries as some units have 8 batteries. Note 2: accurate readings cannot be obtained if water has recently been added to cells. Differences of 50 points or more between readings in battery cells may indicate pending battery failure.	
7. Based on the above specific gravity readings, do any batteries need replaced? Remember, if the unit came in with already dead batteries, an attempt to charge the batteries must be made before taking the specific gravity readings. YES	
8. Return acid to cell from which it was drawn.	
9. Be sure all vent plugs are replaced and tight.	
10. With Unit shut down measure the voltage reading across each battery at the terminals, record readings on the chart below.	
11. Make a general check of the battery as to proper blocking, clean and tight connections at all points, and any unusual appearance or condition. If any unusual appearance or conditions exit, like corrosion, clean with scotch-brite buffer or wire br	
12. Apply approved protective coating to connections after terminals are cleaned and dried	
13. Add water as required (Add water to bottom of filler neck).	DAVID STUPAKIEWICZ
Battery Cranking Voltage Test	
14. Close battery knife switch, and circuit breakers.	
15. Open the injector toggle switch, on EUI units to prevent unit from starting.	
NOTE: Battery cranking voltage readings do not need to be taken on Air Start Locomotives.	

16. On MUI engines, pull the Governor button and hold back the Lay-shaft while cranking the engine over to prevent unit from starting.

18. Based on the cranking voltages, is any battery suspect of needing replaced? YES NO

2 Battery Units	Specific Gravity				Water Added			Battery Replaced-Reason
	Cell 1	Cell 2	Cell 3	Cell 4	Yes	No	Yes	
Battery 1	Cell 1	Cell 2	Cell 3	Cell 4	Yes	No	Yes	o
Section A	1.28	1.28	1.28	1.28		✓		
Section B	1.28	1.28	1.28	1.28		✓		
Section C	1.28	1.28	1.28	1.18		✓		
Section D	1.28	1.28	1.28	1.28		✓		

Bats out
67.9V

2 Battery Units	Specific Gravity				Water Added			Battery Replaced-Reason
	Cell 1	Cell 2	Cell 3	Cell 4	Yes	No	Yes	
Battery 2	Cell 1	Cell 2	Cell 3	Cell 4	Yes	No	Yes	o
Section A	1.28	1.28	1.28	1.28		✓		
Section B	1.28	1.28	1.28	1.28		✓		
Section C	1.28	1.28	1.28	1.28		✓		
Section D	1.28	1.28	1.28	1.28		✓		

8 Battery Units	Specific Gravity				Water Added			Battery Replaced-Reason
	Cell 1	Cell 2	Cell 3	Cell 4	Yes	No	Yes	
Battery 1	Cell 1	Cell 2	Cell 3	Cell 4	Yes	No	Yes	o
Battery 2								
Battery 3								
Battery 4								
Battery 5								
Battery 6								
Battery 7								
Battery 8								

BATTERY CRANKING VOLTAGE CHART

	Battery 1	Battery 2	Battery 3	Battery 4	Battery 5	Battery 6	Battery 7	Battery 8
Battery Voltage	33.8V							

	Battery 1	Battery 2	Battery 3	Battery 4	Battery 5	Battery 6	Battery 7	Battery 8
Battery Voltage	34.1V							

	Battery 1	Battery 2	Battery 3	Battery 4	Battery 5	Battery 6	Battery 7	Battery 8
Cranking Battery Voltage								
Battery Voltage								

	Battery 1	Battery 2	Battery 3	Battery 4	Battery 5	Battery 6	Battery 7	Battery 8
Cranking Battery Voltage								

Unit: 8583

Date: 4-9-12

DEFECTS FOUND DURING INSPECTION

DEFECT <u>Event Recorder not signaling download box</u>	INSPECTED BY: <u>D. Stv</u>
REPAIR <u>✓/o Event Recorder, with used unit on shelf All fields tested OK - good for service</u>	CORRECTED BY: <u>D. Stv</u>

DEFECT <u>Heaters Booked for not working</u>	INSPECTED BY: <u>D. Stv</u>
REPAIR _____	CORRECTED BY: _____

DEFECT <u>Hot Start booked for not working Needs fuses - none in stock -</u>	INSPECTED BY: <u>D. Stv</u>
REPAIR _____	CORRECTED BY: _____

DEFECT <u>#1 BAD ORDR GEN CASE COVER (loose)</u>	INSPECTED BY: <u>JB</u>
REPAIR <u>Changed Spring Cover on #2 gen case</u>	CORRECTED BY: <u>JBland</u>

DEFECT <u>⊙ Thin brake shoes</u>	INSPECTED BY: <u>JB</u>
REPAIR <u>Changed ⊙ Brake shoes</u>	CORRECTED BY: <u>JB</u>

Left FRt MR valve leaking By JBland
Replaced FRnt left MR valve - or JBland

Montreal, Maine, & Atlantic Railway
Locomotive

Unit 8583

Date 4-9-12

3 Month Federal Air Work

Signature

1. Inspect and repair air piping and valves for leaks David Black / K. Hasey

2. Test all air gauges with gauge tester and set if required..... (OK) J. Black

3. With full brake pipe pressure, make a 20lb. reduction, move the cutoff valve to "OUT" position and move the lead - dead valve to "DEAD" position. Brakes must remain applied for 5 minutes..... K. Hasey

4. Cover each trainline hose coupling with hand and test for leakage through valve, then apply blank dummy couplings to the trainline hoses on each end of the unit and open trainline valves. Make a 20lb. reduction with the Automatic, move the cutoff valve to "OUT" position and check for brake pipe leakage. Leakage shall not exceed 5 lb. per minute..... David Black / K. Hasey

5. Reduce main reservoir pressure to 85 lbs. by draining #2 main reservoir. (*) Check cab gauge for leakage from main reservoirs and piping for 3 minutes. Leakage must not exceed an average of 3 lb. per minute during the test..... David Black

6. Drain #1 main reservoir (*) completely and test check valve between reservoirs. Pressure should remain on the main reservoir gauge in the cab as #1 main reservoir is drained..... K. Hasey

7. Check all MU valve handles to ensure the locking devices work properly. Lubricate or replace as necessary..... David Black

8. Check knuckle thrower to make sure it opens the knuckle. Lubricate or repair as necessary..... K. Hasey

Note (*) #1 reservoir is without the check valve, # 2 is with the check valve.

Manufacturer is QEI Version # S450
Serial Number is 0097100717
Customer is NS

Data was removed on - 08:05:39 on 04/10/12
Last Downloaded on - 12:05:00 on 06/29/04
Battery was installed on - 01/18/00
Locomotive Number is - 8583

Downloaded by - Dave Stu...
Location - Derby,Maine,US
Train - MMA#1
Wheel Size Entry - 42.6
Wheel Size used by program:
Circumference = 133.8 Diameter = 42.6
No memo present.

Wheel size used for printout is 133.83

QDP Version V



Quantum Desktop Playback
Data Scan Report

Report Date: 04-10-2012

Locomotive 8583

Data Removed on 04-10-12

SPEED (MPH)	OK
TRACTION MOTOR CURRENT	Never above 200.
BRAKE PIPE PRESSURE	Never equals zero.
INDEPENDENT BRAKE	Never equals zero.
END-OF-TRAIN PSI	Never above 20.
THROTTLE	Dynamic Brake never reported. Stop never reported. Low Idle never reported. Notch 1 never reported.
REVERSE	Never ON/ACTIVE
EIE	Never ON/ACTIVE
PCS	Never ON/ACTIVE
HORN	OK
EOT MOVING	Never ON/ACTIVE
EOT MSG. JUST RX	Never ON/ACTIVE
EOT LIGHT	Never ON/ACTIVE

LOCOMOTIVE
P5P3

DATE
4-18-12

	Start Readings				Has Shims			END READING				Has Shims		OLD GAUGE
	Flange Height	Flange Thickness	Rim Thickness	Witness Groove	YES	NO		Flange Height	Flange Thickness	Rim Thickness	Witness Groove	YES	NO	
L#1	<i>0-18</i>	<i>0-0</i>	<i>46</i>				L#1							FLANGE THICKNESS MEASUREMENT 0 - on 0 - 1-17/64" 1 - on 0 - 1-15/64" 2 - on 0 - 1-7/32" 3 - on 0 - 1-5/32" 4 - on 0 - 1-7/64" 5 - on 0 - 1-3/64" 6 - on 0 - 1-1/32" 7 - on 0 - 63/64" 8 - on 0 - 15/16"
L#2	<i>6-18</i>	<i>0-0</i>	<i>44</i>				L#2							
L#3	<i>0-17</i>	<i>0-0</i>	<i>38</i>				L#3							
L#4	<i>0-17</i>	<i>0-0</i>	<i>46</i>				L#4							
L#5							L#5							
L#6							L#6							
R#1	<i>0-17</i>	<i>0-0</i>	<i>46</i>				R#1							FLANGE THICKNESS MEASUREMENT 0-on-0-1-17/64" 0-on-1-17/64" 0-on-2-1-1/8" 0-on-3-1-3/16" 0-on-4-1-1/4" 0-on-5-1-5/16" 0-on-6-1-3/8" 2-on-6-1-13/32" 4-on-6-1-7/16" 6-on-6-1-31/64"
R#2	<i>0-17</i>	<i>0-0</i>	<i>44</i>				R#2							
R#3	<i>0-17</i>	<i>0-0</i>	<i>38</i>				R#3							
R#4	<i>0-17</i>	<i>0-0</i>	<i>46</i>				R#4							
R#5							R#5							
R#6							R#6							

WEAR LIMITS FOR ROAD & SWITCH LOCOMOTIVES - MINIMUM DAILY REQUIREMENTS

FRA 1 1/2"	MMA 1 7/16"	Flange Height
FRA 7/8"	MMA 15/16"	Flange Thickness
FRA 1"	MMA 1 1/16"	Rim Thickness
FRA 5/16"	MMA 1/4"	Tread Wear

all four wheels turn 4-18-12

NEW GAUGE
0-on-17-1-1/16"
0-on-18-1-1/8"
0-on-19-1-3/16"
0-on-20-1-1/4"
0-on-21-1-5/16"
0-on-22-1-3/8"
2-on-22-1-13/32"
4-on-22-1-7/16"
6-on-22-1-15/32"
8-on-22-1-1/2"

WEAR LIMITS - ROAD & SWITCH LOCOS - MIN. 92 DAY REQ				WEAR LIMITS - PASSENGER LOCOS - MIN 92 DAY REQ				
FLANGE HEIGHT	FLANGE THICKNESS	RIM THICKNESS	TREAD WEAR	FLANGE HEIGHT	FLANGE THICKNESS	RIM THICKNESS	TREAD WEAR	
FRA 1 1/2"	FRA 7/8"	FRA 1"	FRA 5/16"	FRA 1 1/2"	FRA 7/8"	FRA 1"	FRA 5/16"	
MMA 1 7/16"	MMA 1 1/32"	MMA 1 1/8"	MMA 1/4"	MMA 1 7/16"	MMA 1"	MMA 1 1/4"	MMA 1/4"	

CONVERSION CHART FOR WHEEL DIAMETER

8= 37"	15= 37 7/8"	22= 38 1/2"	29= 39 5/8"	36= 40 1/2"
9= 37 1/8"	16= 38"	23= 38 7/8"	30= 39 1/4"	37= 40 5/8"
10= 37 1/4"	17= 38 1/8"	24= 39"	31= 39 7/8"	38= 40 3/4"
11= 37 3/8"	18= 38 1/4"	25= 39 1/8"	32= 40"	39= 40 7/8"
12= 37 1/2"	19= 38 3/8"	26= 39 1/4"	33= 40 1/8"	40= 41"
13= 37 5/8"	20= 38 1/2"	27= 39 3/8"	34= 40 1/4"	41= 41 1/8"
14= 37 3/4"	21= 38 5/8"	28= 39 1/2"	35= 40 3/8"	42= 41 1/4"

NEW GAUGE
0 - on 0 - 1 - 17/64"
1 - on 0 - 1 - 15/64"
2 - on 0 - 1 - 7/32"
3 - on 0 - 1 - 5/32"
4 - on 0 - 1 - 7/64"
5 - on 0 - 1 - 3/64"
6 - on 0 - 1 - 1/32"
7 - on 0 - 63/64"
8 - on 0 - 15/16"

COUPLER HEIGHT		PILOT HEIGHT		HEIGHT OF HORIZONTAL END HANDHOLD OR UNCOUPLING LEVER IF USED AS HORIZONTAL HANDHOLD		LOCO RAIL CLEARANCE	
FRONT	REAR	FRONT	REAR	FRONT	REAR	FRONT	REAR
FRA MAX 34 1/2" MIN 31 1/2"		FRA MAX 6" MIN 3"		FRA MIN 30" MMA MIN 30" FRA MAX 50" MMA MAX 50"		FRA MIN 2 1/2"	
MMA MAX 34 1/2" MIN 32 1/2"		MMA MAX 6" MIN 3 1/2"				MMA MIN 3"	

WHEEL DIAMETER MEASUREMENTS ARE TAKEN FROM THE TOP OF THE WITNESS GROOVE. 40" DIAMETER WHEELS WITNESS GROOVE = 36"
42" DIAMETER WHEEL WITNESS GROOVE = 38"

WHEEL MATCHING STANDARDS FOR 6 AXLE LOCOMOTIVES (FRA & MMA STANDARDS ARE THE SAME)

3/4" IS THE MAXIMUM VARIATION ALLOWED, IN WHEEL DIAMETER, BETWEEN ANY 2 WHEELS IN THE SAME TRUCK WITHOUT SHIMS.
1 1/2" IS THE MAXIMUM VARIATION ALLOWED, IN WHEEL DIAMETER, BETWEEN ANY 2 WHEELS IN THE SAME TRUCK WITH SHIMS APPLIED.
1 3/4" IS THE MAXIMUM VARIATION ALLOWED, IN WHEEL DIAMETER, BETWEEN ANY 2 WHEELS ON DIFFERENT TRUCKS.

NOTE:
WHEN FIGURING THE DIFFERENCE IN WHEEL DIAMETER, TO DETERMINE IF SHIMS ARE REQUIRED, YOU MUST USE THE AVERAGE WHEEL DIAMETER FIGURES
REMEMBER THIS RULE
0 TO 5 DIAMETER DIFFERENCE NO SHIMS REQUIRED 6 TO 10 DIAMETER DIFFERENCE ADD APPROPRIATE SHIMS TO BOTH BOXES ON BOTH SIDES OVER 10 IN DIAMETER DIFFERENCE REQUIRES WHEEL CHANGE OR TRUED NOTE: ON EMD LOCOMOTIVES USE ONLY ONE 1/4" SHIM EMD PART NUMBER 8455981 SHELLED TREAD AND FLAT SPOTS MUST BE TRUED OR CHANGED WHEN FOUND ON PERIODIC OR UNSCHEDULED MAINTENANCE. KCS CONDEMNING LIMITS FOR SHELLED TREAD ON A SERVICE TRACK:
• ONE SHELLED SPOT 1" OR GREATER IN LENGTH • ONE SHELLED SPOT WITH A DEPTH OF 1/4" OR MORE

EMPLOYEES SIGNATURE

D. Black

SUPERVISORS SIGNATURE

LOCOMOTIVE 858.3	DATE 4-9-12
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Start Readings					Has Shims		END READING					Has Shims		OLD GAUGE
Flange Height	Flange Thickness	Rim Thickness	Witness Grove		YES	NO	Flange Height	Flange Thickness	Rim Thickness	Witness Grove	YES	NO	FLANGE THICKNESS MEASUREMENT	
L#1	0-22	0-0	44				L#1						0-on-0-1-17/64"	
L#2	4-22	0-0	50				L#2						1-on-0-1-15/64"	
L#3	6-22	0-0	50				L#3						2-on-0-1-13/32"	
L#4	6-22	0-0	50				L#4						3-on-0-1-5/32"	
L#5							L#5						4-on-0-1-7/64"	
L#6							L#6						5-on-0-1-3/64"	
													6-on-0-1-1/32"	
													7-on-0-63/64"	
													8-on-0-15/16"	
R#1	4-22	0-0	44				R#1						0-on-0-1"	
R#2	4-22	0-0	50				R#2						0-on-1-1/16"	
R#3	5-22	0-0	50				R#3						0-on-2-1-1/8"	
R#4	5-22	0-0	50				R#4						0-on-3-1-3/16"	
R#5	7-22	0-0	50				R#5						0-on-4-1-1/4"	
R#6							R#6						0-on-5-1-5/16"	
													0-on-6-1-3/8"	
													2-on-6-1-13/32"	
													4-on-6-1-7/16"	
													6-on-6-1-31/64"	

WEAR LIMITS FOR ROAD & SWITCH LOCOMOTIVES - MINIMUM DAILY REQUIREMENTS

FRA 1 1/2"	MMA 1 7/16"	Flange Height
FRA 7/8"	MMA 15/16"	Flange Thickness
FRA 1"	MMA 1 1/16"	Rim Thickness
FRA 5/16"	MMA 1/4"	Tread Wear

NEW GAUGE

0-on-17-1-1/16"
0-on-18-1-1/8"
0-on-19-1-3/16"
0-on-20-1-1/4"
0-on-21-1-5/16"
0-on-22-1-3/8"
2-on-22-1-13/32"
4-on-22-1-7/16"
6-on-22-1-15/32"
8-on-22-1-1/2"

FLANGE HEIGHT MEASUREMENT

WEAR LIMITS - ROAD & SWITCH LOCOS - MIN. 92 DAY REQ

WEAR LIMITS - PASSENGER LOCOS - MIN 92 DAY REQ

FLANGE HEIGHT	FLANGE THICKNESS	RIM THICKNESS	TREAD WEAR	FLANGE HEIGHT	FLANGE THICKNESS	RIM THICKNESS	TREAD WEAR
FRA 1 1/2"	FRA 7/8"	FRA 1"	FRA 5/16"	FRA 1 1/2"	FRA 7/8"	FRA 1"	FRA 5/16"
MMA 1 7/16"	MMA 1 1/32"	MMA 1 1/8"	MMA 1/4"	MMA 1 7/16"	MMA 1"	MMA 1 1/4"	MMA 1/4"

CONVERSION CHART FOR WHEEL DIAMETER

8= 37"	15= 37 7/8"	22= 38 1/4"	29= 39 5/8"	36= 40 1/2"
9= 37 1/8"	16= 38"	23= 38 7/8"	30= 39 1/4"	37= 40 5/8"
10= 37 1/4"	17= 38 1/8"	24= 39"	31= 39 7/8"	38= 40 3/4"
11= 37 3/8"	18= 38 1/2"	25= 39 1/8"	32= 40"	39= 40 7/8"
12= 37 1/2"	19= 38 3/8"	26= 39 1/4"	33= 40 1/8"	40= 41"
13= 37 5/8"	20= 38 1/2"	27= 39 3/8"	34= 40 1/4"	41= 41 1/8"
14= 37 3/4"	21= 38 5/8"	28= 39 1/2"	35= 40 3/8"	42= 41 1/4"

NEW GAUGE

0-on-0-1-17/64"
1-on-0-1-15/64"
2-on-0-1-13/32"
3-on-0-1-5/32"
4-on-0-1-7/64"
5-on-0-1-3/64"
6-on-0-1-1/32"
7-on-0-63/64"
8-on-0-15/16"

FLANGE THICKNESS MEASUREMENT

LOCOMOTIVE RAIL CLEARANCE

COUPLER HEIGHT	FRONT	PILOT HEIGHT	FRONT	HEIGHT OF HORIZONTAL END HANDHOLD OR UNCOUPLING LEVER IF USED AS HORIZONTAL HANDHOLD	LOCO RAIL CLEARANCE
FRA	MAX 34 1/2" MIN 31 1/2"	FRA	MAX 6" MIN 3"	5"	FRA MIN 30"
MMA	MAX 34 1/2" MIN 32 1/2"	MMA	MAX 6" MIN 3 1/2"	5"	MMA MIN 30" FRA MAX 50" MMA MAX 50"
	34"				FRA MIN 2 1/2" MMA MIN 3"

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