RCL II / BELTPACK II

Technical Reference Card

PB-14252

LOCOMOTIVE INSPECTION & SETUP

Always ensure the handbrake is applied before you begin.

(A) Air and Engineers Console

Lead locomotive Control Console

1. Ensure that the headlights and ditch lights are in the off position on the control console.
2. Ensure that the generator field switch is off and the fuel pump and control switches are on:
   up-down-up
3. Ensure the reverser handle is removed and stowed.
4. Place locomotive radio on the same channel the handsets will be used on.

Air Brake Set Up

If the locomotive is already in Trail, skip the following steps

26L Automatic Air Brake

1. Release all of the air brakes to ensure the handbrake will hold the consist.
2. Main Reservoir, Brake Pipe, and Brake Cylinders meet the minimum requirements.
3. Fully apply the Independent brake.
4. Make a 20 psi reduction of the Brake Pipe using the Automatic Brake.
5. Turn the MU/MU2a Valve to the Trail position.
6. Turn the BVCOV from FRT to the Out position.
7. Place the Automatic Brake handle in the Handle Off position.
8. Place the Independent Brake handle in the Release position.
9. Hang an RCL warning sign in a visible location on the Engineers' Console.
   - If a plastic warning sign is not available, one can be made with a piece of paper.
10. Place the Air Transfer Valve in the Remote position and pin/hasp in place.

CCB26 Automatic Air Brake

1. Release all of the air brakes to ensure the handbrake will hold the consist.
2. Main Reservoir, Brake Pipe, and Brake Cylinders meet the minimum requirements.
3. Fully apply the Independent brake.
4. Make a 20 psi reduction of the Brake Pipe using the Automatic Brake.
5. Turn the EBV to trail position.
6. Place the Automatic Brake handle in the Handle Off position and pin in place
7. Place the Independent Brake handle in the Release position.
8. Hang an RCL warning sign in a visible location on the Engineers Console.
   - If a plastic warning sign is not available, one can be made with a piece of paper.
9. Place the Air Transfer Valve in the Remote position and pin/hasp in place.

(B) Breakers

1. Ensure the locomotive is isolated.
2. Headlight control switch is in the correct position.
3. Turn on the lead locomotive number lights and check that the running lights are on.
4. Open the Control Panel breaker box.
5. Ensure the RCL breaker is on.

(C) Computer

1. Turn the RMS switch from the Manual to the Remote position on the RCR.

CCB26 Equipped Locomotives:

Verify the status display on the CCB26 reads "ROL ENABLED" after placing the RMS switch in Remote.

The computer will go through a series of self tests and the screen on the RCR will display **"testing system."**
Once the testing is complete, the RCR display screen will show the following message: **"EPD GPS is out of synch."**
Once the GPS has established a connection, there will be a light on the upper left portion of the RCR display screen that scrolls back and forth. The RCR is now ready to link up.

Full Test at Link-Up

- Vigilance feature must be tested
- The RCT Tilt Attachment Test and Man Down Broadcast message test can be done simultaneously after the RCT is linked to the RCL.
- The RCL Light Engine Running Test must also be performed after the link up procedure. However, the operator may perform a Locomotive Consist Test before linking up instead of the RCL Light Power Running Test.

Crew Change Test

This test will be performed when:

- A linked transmitter is transferred from one shift to a subsequent shift.
- At the beginning of the subsequent crew(s) shift.
- The Vigilance feature must be tested.
- The RCT Tilt Attachment Test and Man Down Broadcast message test can be completed simultaneously.
- The RCL Light Engine Running Test or Class III Air Test

RCT LINK UP & TESTING

The Foreman or Conductor will ALWAYS linkup first.

1. Ensure both RCTs are turned off.
2. **(P)** Press the No/Function button until the question "*Link Primary RCT*" is received.
3. **(P)** Press the Yes/Alarm Reset button to confirm.
4. **(P)** Line the RCT infrared eyes with the infrared port on the RCR (not more than 24 inches away).
5. With the right hand, hold the Vigilance toggle down with the thumb and press the power button with the index finger.

- You have 30 seconds to link up.
- Once the RCR acknowledges the signal from the RCT, it will begin a series of chirps.

6. Release the Vigilance toggle and power button.
   - The Status Display screen on the RCT will count C1 through C7.
   - (C9 on Common Air RCT.)

   Keep the RCT IR eyes aligned with the IR Port on the RCR during this procedure.

   - Once a series of 4 chirps is heard, the RCT can now be turned off and a radio message will be broadcast: ***"(Loco ID#) radio test, Out."***
7. Turn off the RCT.
   - The RCR will display a screen asking if a second RCT is to be linked.
8. Within 10 seconds, press the **Yes/Alarm/Reset** button to continue with linking a second RCT.
9. If a secondary RCT is to be used, follow the procedure outlined above.

Secondary will not receive radio test message.

Tilt Test at Initial Link-Up

1. Both RCTs must be tilted at a 45° angle until the audible tilt alarm is heard on the RCT speaker.
2. Keep the RCT tilted until the RCT countdown timer reaches zero on the RCT Status Display.
3. The LED light will be lit in the Emergency position on both RCT boxes.
4. When the Tilt Test has been completed, bring both RCTs upright and recover the Emergency application, using the S.M.V.R. method.
5. Hold the Automatic Brake toggle back for 3 seconds.

Tilt Attachment Test & Man Down Broadcast Message Test

Tilting the RCT must be done hands free.

1. Attach the RCT using all 4 d-rings to the RCO vest if not already done.
2. Remove all slack from the adjustable straps if bottom clips are used on the RCO vest
3. Place the RCL and handheld radios on the channel indicated in the Job Profile for testing the Man Down broadcast message.
4. Announce over the radio "(Loco ID) Conducting Man Down Broadcast Message Test."
5. Tilt BOTH RCT's greater than 45° and allow tilt timer to time out on BOTH of the RCT's.
6. Wait for Man Down Broadcast Message to transmit from RCL indicating both A&B tilted out
7. Recover Emergency from RCT.
8. Announce over the radio (After recovery procedure) "(Loco ID) Man Down Broadcast Message Test complete."
9. Place the RCL and handheld radio back to the assigned channel indicated in the Job Profile for operations.

Vigilance Test

The locomotive(s) will remain tied down and isolated. Test must be performed from the ground.

1. Choose a direction on the RCT using the direction selector, press the vigilance toggle and within 5 seconds place the speed selector in the Coast position.
2. Observe that all of the brakes release when the speed selector is placed in Coast.
   - After 50 seconds a pulse tone alert will sound for 10 seconds.

Do not touch any of the controls or the timer will restart.

   - After a total of 60 seconds, a Full Service brake application will be made on the Automatic brakes, full set on the Independent brakes, and the throttle will return to idle.
3. Make a complete brake recovery (S.M.V.R.).

Remote Control Light Engine Running Air Brake Test

A remote control operator must perform this air test when:

- Controlling ends have been changed on a remote control consist,
  or
- As required by ABTH Rule 35.4.2.

When the test is required, follow these steps:

1. Select direction on the RCT, press either vigilance button then position Speed Selector to Couple Setting to cause locomotive to move.
2. Verify that brakes are released and then position Speed Selector to 10 MPHmph.
3. Move Speed Selector to Coast and apply a low setting with the Independent Brake Override.
   - A speed reduction indicates brakes have applied.
4. Release Independent Brake Override and position Automatic Brake Selector to Minimum Setting.
5. Verify that brakes do not apply.
6. Position Automatic Brake Selector to Light Setting and verify that brakes do not apply.
7. Position Automatic Brake Selector to Medium Setting.
   - A speed reduction indicates brakes have applied.
8. Position Automatic Brake Selector to Released Setting.
   - The locomotive should roll freely.

RCT Attachment Test (During the Shift)

1. With the RCT reattached to the vest, bend forward until the Tilt Alarm is heard to ensure the RCT is properly attached to the vest and functioning as intended.
   DO NOT ALLOW THE TIMER TO TIME OUT.

Pitching Preconditions

- Movement must be stopped.
- Both RCTs must be "set and centered."
- The primary operator must verbally ask the Secondary if they are in position to accept the pitch.
- Secondary operator must verbally reply they are in position for the pitch.
- New Primary operator must verbally confirm the pitch has been received.

RCT MESSAGE	EXPLANATION
INDEPENDENT BRAKE FAULT	The RCR has detected that the Independent Brakes have not reached the required pressure. Perform the EMERGENCY BRAKE Recovery routine after the brakes have been repaired.
LOW MR AIR PRESS	The RCR has detected that Main Reservoir Air Pressure has fallen below 105 PSI. Perform SMVR after the Brake Pipe Pressure has risen above 105 psi.
RCR FAILED	A fault has been detected in the RCR.

***Not all faults are listed on this reference card. Please see the Troubleshooting section in the RCL Technical Guide for a complete list of all the RCL faults.*

Locomotive EPA

If you do not see your locomotive listed below, please refer to your SSI Item 4 for further details.

1 EPA = 10,000 lbs of tractive effort

Locomotive	EPA	Tractive Effort
SW1500	3.7	37,000 lbs.
MP1500	4.0	40,000 lbs.
GP38	4.5	45,000 lbs.
GP38-2	4.5	45,000 lbs.
SD38-2	5.4	54,000 lbs.
SD40-2	7.1	71,000 lbs.

STS/EPD Override (RCL II)

1. (Either operator) Enter the cab of the RCL.
2. On the front of the RCR, press and hold both the **No/Function** and the **Yes/Alarm/Reset** buttons for approximately 5 seconds.
   - The Status Display on the front of the RCR will display **"STS is being manually overridden."**
   - This will also be displayed on the Status Display of both RCT boxes.
3. Once this message is displayed, and the STS has been overridden, provide point protection.
   - If the operator is working in a zone, the locomotive will need to exit the zone by at least 300 feet on either end and re-enter to reactivate the EPD.
   - The system will allow for 15 minutes of operation before system will need to be overridden again.

If the STS is overridden, the EPD will also be overridden and point protection MUST be provided.

Overriding the PSP (Beltpack II)

1. Start at the RCR in the cab of the controlling locomotive.
2. Press the **No/Function** and **Yes/Alarm Reset** buttons for approximately 5 seconds.
   - The message **"Start PSP Override, Press Yes or No"** will be displayed.
3. Press the **Yes** button on the RCR.
   - The next message displayed will be **"Start PSP Override with OCU Bell."**
4. Ring the bell.
   - The next message displayed will be **"PSP Override On"** and the OCU will display **"EPD Manual Override."**
   - PSP is now overridden.

Point Protection is required and PSP tags will no longer control the speed inside the zone.

Reactivating the PSP (Beltpack II)

1. Start at the RCR in the cab of the controlling locomotive.
2. Press the **No/Function** and **Yes/Alarm Reset** buttons for approximately 5 seconds.
   - The message **"End PSP Override, Press Yes or No"** will be displayed.
3. Press the **Yes** button on the RCR.
   - The next message displayed will be **"End PSP Override with OCU Horn."**
4. Blow the horn.
   - The next message displayed will be **"PSP Override Off."**
5. PSP is now reactivated.

Point Protection is not required and PSP tags will control the speed inside the zone as long as the tonnage and entry speed restriction is met for that zone.

Procedure for Yard Transfer Air Test

The train must receive a full safety inspection as outlined in UPRR Rule 30.2.
A train making transfer movements that does not exceed 20 miles in one direction is considered a transfer train. Intermediate switching is permitted on Transfer Train movements.

Test the air brake system on a transfer train as follows:

1. Couple brake pipe hoses between all cars.
2. Charge the brake system to at least 75 psi as indicated by a gauge or device at the rear of the train.
3. Make a 20 psi brake pipe reduction. (Full set on the RCT ABS.)
4. Verify that the brakes apply and remain applied on each car until release signal is given.
   - Any car whose brakes release prior to signal given to release the brakes may be re-tested once.
   - On retest, the brakes must remain applied for at least 3 minutes.
   - Release will be initiated after the 3-minute period.

Cars added to the transfer train must be tested as outlined above at that location before proceeding.

If cars are set out during a transfer train and yard movement, determine that brake pipe pressure at the rear car has been restored before proceeding.

Short Term Securement

1. Isolate locomotives and apply hand brakes.
2. The Primary operator will choose a direction, press either vigilance button, and select the Coast position.
3. Observe the brakes on the locomotive release.
4. Once brakes are released and no movement is detected, return the Speed Selector to the Stop position and center the Direction Selector.
5. Toggle the Automatic Brake Selector to the Full position
6. Turn off both RCT(s).
   - When leaving the locomotive unattended more than 15 minutes, shut the engines down.
7. Leave the RMS switch in the remote position.
   - The Control and Remote breakers will remain on.
   - The battery knife switch will also remain closed to allow the remote equipment to stay linked.
8. Keep the RCT(s) secured.

Service Units may have additional instructions for short term securement.

Long Term Securement (26L or CCB26)

1. Apply hand brake and isolate the locomotive.
2. Place the RMS switch in the Manual position.
3. Leave the remote breaker on.
4. Place the Air Transfer Valve in the Manual position.
5. Restore the Independent and Automatic brakes on the Control Console.
6. Remove the Remote Control Warning Sign.
7. Release the air brakes and ensure the hand brake will hold the consist.
8. Fully apply the Independent brake and make a 20 psi brake pipe reduction using the automatic brake.
9. Shutdown locomotive(s) in accordance with the UPRR policy.
10. Ensure that the cab is secured.
11. Unlink the RCT.

The RCT must be secured in a locking cabinet.

Unlinking RCT

1. Turn the RCT off.
2. Hold the right Vigilance toggle down and turn the RCT on.
   - The Status Display will now show **"IR Link"**
   - 30 Seconds later, you will receive 3 tones from the RCT and the Status display will show **"No IR Link."**
3. Turn off the RCT.
4. Secure RCT in a locking cabinet and place battery on a charger.

Troubleshooting

When trouble shooting the Cattron system, observe all RCT LED lights and Status Displays for information about the fault and recovery procedure to be used.

RCT MESSAGE	EXPLANATION
AUTO BRAKES DRAGGING	The RCT's ABS is set at MEDIUM or FULL and the Speed Selector Lever is set to 4 MPH or higher. If this condition continues for 30-seconds or longer, the system will go into an "Independent Brake Application" shutdown. Perform the INDEPENDENT BRAKE Recovery routine.
AXLE GENERATOR FAULT	An Axle Generator Fault has been detected on the locomotive. Board the locomotive and press the RCR ALARM/RESET pushbutton until the fault clears.
EMG STOP SWITCH ACTIVE	An external E-STOP Switch has been activated on the Locomotive. Board the locomotive and press the RCR's ALARM/RESET pushbutton until the fault clears. Perform SMVR.
ENG ALARM – GND FAULT	An Electrical Ground Fault has been detected on the locomotive. When the fault on the locomotive has been fixed, press the RCT's VIGILANCE switch to clear the Message.
ENG ALARM – GOV SHUTDOWN	The engine's governor has been shut down. When the fault on the locomotive has been fixed, press the RCT's VIGILANCE switch to clear the Message.
ENG ALARM – HOT ENGINE	High Water Temperature has been detected on the locomotive. When the fault on the locomotive has been fixed, press the RCT's VIGILANCE switch to clear the Message.
EPD FAULT – MISSED PUCKS	The RCL has traveled in the pullback direction and missed reading two consecutive Pucks. Recover by entering the EPD Manual Override condition.
EPD FAULT – OVERSPEED	The RCL is traveling in the pullback direction and the actual speed remains 3 MPH greater than the EPD limit for longer than 5 seconds. Emergency Brakes have been applied. Recover by entering the EPD Manual Override condition (with RCT switched ON: press YES and NO buttons together on RCR for 3 seconds).
EPD LOST GPS BACKUP	The locomotive has lost GPS communications. When in a Pullback region and traveling in a Pull direction: 100 feet after GPS is lost, locomotive speed is reduced by 1 MPH. Every 100 feet of travel thereafter, the speed is reduced another 1 MPH except where a speed puck is seen (speed will be set to speed puck value).
EPD MANUAL OVERRIDE	All EPD protections (except crossing) are overridden. Point protection is required.
ILLEGAL REVERSER CHANGE	This occurs when the RCL is moving and the RCT's Direction Selector has been set to the opposite direction. To recover, set the RCT's Direction Selector back to the direction the locomotive is traveling in and move the Speed Selector Lever to STOP.