

Train Handling When Operating with Dynamic Brakes

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Engineers making rapid adjustments of dynamic brakes while attempting to slow/control train speed or attempting to stop have contributed to several recent derailments. In all events, the slack was not adequately gathered before advancing to the higher-braking notches therefore causing a severe run-in event and subsequent derailment. **Proper planning and train-handling techniques are a must when using dynamic brakes for slowing and stopping.**

Locomotive engineers must use their best judgment to operate trains safely and efficiently. Proper train-handling techniques while using dynamic brakes will minimize the potential for derailments and damage to rail and freight equipment being transported.

In-Train Forces

One of the primary responsibilities of locomotive engineers is to control/limit the amount of in-train forces. Rapid application of dynamic brakes can create high-retarding forces that cause excessive buff forces that lead to derailments within a train. To avoid these events, ensure dynamic braking levels are slowly applied to allow slack to adjust gradually before moving into higher-dynamic braking levels. Where appropriate, consideration should be given to supplement dynamic braking with train air brakes.

Lower Speeds

Dynamic brakes are designed to be more effective at lower speeds (5-30 mph). At these lower speeds, rapid application of dynamic brakes increases the potential for derailment due to high-buff forces. At **all** speeds, it's imperative engineers plan in advance of where to slow/control train speeds and know the state of the slack in their train before advancing to higher braking notches.

Slowing/Controlling Train Speed

The following methods, listed in order of preference, for slowing or controlling train speed should be used when operating conditions allow and for the best fuel efficiency:

1. Throttle manipulation
2. Dynamic braking
3. Dynamic braking supplemented with train air brakes

Things to consider:

- Train makeup
- Speed
- Grade/curvature
- Type and axle limitations of the dynamic brake
- Amount of slack and current slack state in train
- Car types in train (EOC)
- Power configuration including distributed power (DP) consists and position in train

Proper methods when slowing utilizing dynamic brakes:

- Plan ahead.
- Ensure to pause 10 seconds before transitioning from power to dynamic brake.
- Make braking changes slowly to allow slack to adjust smoothly.
- Use only the amount of dynamic braking needed to control speed.
- Do not supplement dynamic braking with independent brake unless below the effective range of dynamic brakes.
- Use air when possible to supplement dynamic brakes and control slack.

Please contact your local RFE or SSOP for territory specific train handling techniques when utilizing dynamic brakes for slowing and stopping.