ENGINEERING SPECIFICATION

Elite Air-Ride Suspension Package

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1. OVERVIEW

This specification defines the minimum requirements for supporting components when the Elite Air-Ride Suspension Package (Option ID: 199) is installed. The Elite package provides superior ride quality, automatic leveling, and enhanced load handling for heavy-haul and premium long-haul applications. Due to the high dynamic forces generated by this premium suspension system, supporting components must meet stringent minimum specifications.

2. APPLICABLE MODELS

The Elite Air-Ride Suspension Package is available for the following truck configurations:

• Heavy-Haul Series (MDL-HEAVYHAUL) - Standard fitment

• Premium Long-Haul Series (MDL-PREMIUM) - Optional upgrade

3. SUPPORTING COMPONENT REQUIREMENTS

The following systems must meet minimum specifications for Elite Air-Ride installations. Failure to comply with these requirements may result in premature wear, reduced ride quality, frame stress fractures, or suspension system failure under load.

3.1 Frame Rails Requirements

The Elite Air-Ride system generates significantly higher point loads at the air bag mounting locations compared to conventional spring suspensions. The chassis frame must have sufficient structural integrity to handle these concentrated forces without flex or fatigue. Engineering analysis indicates that the frame rails must have a minimum yield_strength_psi of 115,000 PSI to prevent micro-cracking at the mounting brackets. Additionally, the frame must maintain a minimum rbm_rating_in_lb of 2,900,000 inch-pounds to ensure adequate torsional rigidity during cornering with heavy loads.

3.2 Axle Rating Requirements

The Elite suspension's automatic leveling feature and enhanced load capacity place additional demands on the front axle assembly. During emergency braking, weight transfer to the front axle is more pronounced with air suspension systems. The front axle must have a minimum gawr_lb rating of 18,000 pounds to safely handle the dynamic load transfer. The axle beam must also have adequate cross-sectional area, requiring a minimum beam_thickness_in of 4.25 inches to prevent deflection under load.

3.3 Front Suspension Type Requirements

For optimal handling balance and ride quality, the front suspension must complement the Elite rear air-ride system. Mismatched suspension rates between front and rear can cause unpredictable handling characteristics. The front suspension must have a minimum spring_rating_lb of 18,000 pounds to match the Elite rear suspension's load-leveling capabilities and prevent excessive nose-dive under heavy braking.

4. INSTALLATION NOTES

When installing the Elite Air-Ride Package, technicians must verify all supporting components meet or exceed the specifications described in Section 3. Non-compliant configurations will not be approved for warranty coverage and may void the vehicle's structural warranty.

5. REVISION HISTORY

Rev 1.0 - Initial Release - January 2026