Component Compatibility Requirements

605 HP Maximum Performance Engine

1. PURPOSE AND SCOPE

This document establishes mandatory component compatibility requirements for the **605 HP Maximum Performance Engine**. All configurations using this engine must include supporting components that meet or exceed the specifications defined herein.

The 605 HP engine is the highest output powerplant in the Titan Trucks lineup. Its exceptional power places significant demands on turbocharger, cooling, and drivetrain systems that exceed standard component capabilities.

2. ENGINE CHARACTERISTICS

Characteristic	Value	Compatibility Impact
Peak Power	605 HP @ 1,800 RPM	Determines turbo boost requirement
Peak Torque	2,050 lb-ft @ 1,200 RPM	Determines transmission rating
Thermal Load	~420 kW rejected	Determines cooling capacity

3. TURBOCHARGER SYSTEM REQUIREMENTS

The 605 HP engine requires forced induction capable of sustaining high boost pressure under continuous heavy load.

Boost Pressure: Minimum **40 PSI sustained boost** at rated engine speed. This ensures adequate air mass flow for complete combustion.

Power Support Rating: Minimum **605 HP continuous duty** rating. Lower-rated units may experience bearing wear or compressor surge.

Single fixed-geometry turbochargers and standard variable geometry units typically cannot achieve these specifications. Compound turbo or high-capacity twin VGT systems are generally required.

4. COOLING SYSTEM REQUIREMENTS

At maximum output, the 605 HP engine generates approximately 420 kW of thermal energy. Inadequate cooling results in elevated temperatures and potential engine damage.

Thermal Capacity: Minimum **600 HP heat rejection capacity**. This provides margin for ambient variation and system aging.

Ambient Rating: Must maintain safe temperatures at ambient up to **115 degrees F**.

Standard radiators designed for 300-500 HP engines lack the core surface area required. Extreme-duty or heavy-duty cooling packages with enhanced cores are required.

5. TRANSMISSION REQUIREMENTS

The 605 HP engine produces 2,050 lb-ft peak torque which must be transmitted without exceeding component stress limits.

Torque Capacity: Minimum **2,050 lb-ft continuous** torque rating.

Gear Count: Minimum **12 forward gears** for optimal power band utilization.

Economy transmissions rated for 1,000-1,600 lb-ft will fail prematurely. Heavy-duty units with reinforced gear trains are mandatory.

6. COMPLIANCE VERIFICATION

Configuration systems must verify turbocharger, cooling, and transmission components meet these specifications before approving builds. Verification uses component SPECS attributes in the parts catalog.

CRITICAL: Non-compliant configurations shall not be approved for production. The system must identify compliant alternatives when rejecting non-compliant component selections.