

# Heavy Lift Vehicle Start & Stop Procedures

## Engine Pre-Start

1. Make sure the engine oil and coolant levels have been checked before attempting to start the engine.
2. Sit in your normal operating position and adjust the seat for personal comfort. Make certain to fasten the safety belt.
3. Check that the spring applied emergency/parking brake is engaged as specified in your operator's manual (varies by model). This brake will apply automatically when brake pressure (air or hydraulic) drops sufficiently.
4. Place the shift lever at the neutral position, "N".
5. Give warning that you are going to start the engine. Remember, there is ample space with the engine, transmission, and driveline compartments for several men, and you cannot see them from the cab. Be certain the area around the unit is clear of all personnel and obstructions.
6. Turn the key switch to the "ON" position. The emergency brake light and circuit lights should come on.
4. Warm the engine at idle until the air pressure reaches at least 60 psi (if applicable), then recheck that the transmission is in neutral and that the parking brake is applied. Using the hand throttle, continue to warm the engine at 1000 RPM until the engine temp reaches at least 130° F, and the air pressure rises to 120 psi (if applicable).
5. Release the hand throttle. Observe the gauges for proper readings and operation. Check the operation of all safety equipment and accessories.
6. Select gear speed, release parking brake, and move the shift selector to forward or reverse.

## Engine Shut-Down

1. Move the throttle to idle speed, and let the engine idle for a **minimum of 5 minutes** in order to normalize internal engine temperatures.



### **WARNING**

**WARNING:** Failure to allow the engine to idle for a *minimum of 5 minutes* before turning the key switch to "OFF" can severely damage the engine.

## Engine Start-Up

1. Turn the key switch to the start position. NOTE: If engine does not start within 30 seconds, allow the starter to cool for two minutes before re-engagement.
2. When the engine starts, let it idle. Do not accelerate. Remember, high RPM and full load conditions on cold oil can severely damage the engine, transmission, and hydraulic system.
3. If a rise in oil pressure of the engine or transmission is NOT observed within 5 seconds, or a rise in air pressure (if applicable) is NOT observed in 10 seconds, shut down the engine and have maintenance investigate the problem.
2. Meanwhile, place all controls in neutral and set the emergency brake. Lower the boom or bucket to the ground.
3. Turn the key switch to the "OFF" position after sufficient idle time has elapsed.

