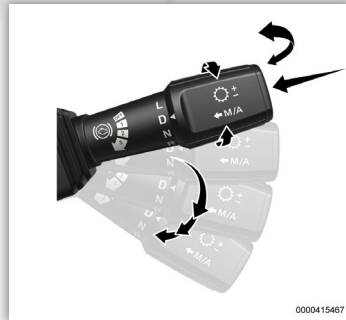


# International S13/T14 Basic Operation Drivers Guide

- Drive (D) – From Neutral (N), roll the collar of the gear selector dial one position forwards (towards the dash).
- Reverse (R) – From Neutral (N), roll the collar of the gear selector dial one position backwards (away from the dash).
- Low (L) – From Neutral (N), roll the collar of the gear selector dial two positions forwards (towards the dash).
  - Will engage low range, gears 1-8.
- The gear selector dial will “click” at each position.
- Always come to a complete stop before changing positions of the shift collar
- **ALWAYS** place the gear selector dial in Neutral (N) and set the Parking Brakes before exiting the vehicle. While the T14 does include Auto Neutral to prevent rollaways, this is only intended for emergency scenarios and should never be relied on.



## Operation of Engine Brakes

- All S13 engines are equipped with 3-stage compression release brake (CRB).
- The CRB is engaged by pulling the stalk shifter towards the driver, parallel to the plane of the steering wheel.
  - Stage One will brake on three cylinders with the least braking force.
  - Stage Two will brake on all six cylinders with moderate braking force.
  - Stage Three will brake on all six cylinders and close the exhaust flap to provide maximum braking force, up to 470 HP.

*Note: Depending on engine parameters of the vehicle, the service brake may need to be applied to engage the CRB.*

**\*\*The engine brake should never be considered a substitute for the vehicle service brakes. The service brakes should always be viewed as the primary vehicle braking system. The engine brake cannot bring the vehicle to a complete stop. Only the service brakes can bring the vehicle to a complete stop.**

## Drive Modes – LT/RH Series

*Dependent on configuration*, there are three different drive modes for On-Highway Applications:

- (1) Economy (2) Performance (3) Performance +
- \*\*Off Road – Severe Service Applications Only (HV/HX)



Optional Features

## Manual Mode and Shifting

- Manual Mode may be engaged by pushing the gear selector dial in towards the steering column.
- Once engaged:
  - Manual downshifts may be requested by pressing the shift stalk down towards the pedals, parallel to the steering column.
  - Manual up shifts may be requested by pulling the shift stalk up towards the steering wheel, parallel to the steering column.
- Even if manual mode is not enabled, a parameter may allow for a temporary manual shift request.
  - This gear may be maintained by holding the stalk up or down
- The S13 Integrated Powertrain will protect the vehicle and prevent engine lugging or overspeeding in manual mode by upshifting or downshifting.

Optional Feature

## Creep Mode

- Imitates the torque converter of a true automatic transmission with an Initial Vehicle Movement (IVM).
- Driver releases foot from brake, vehicle will begin to “creep” forward or back, depending on position of the gear selector dial.
- Speed may be increased by pulling up on the shift stalk, requesting a higher gear
  - Accelerator pedal input is not required.
  - Manual mode is not required at these speeds.
- Speed may be decreased by pushing down on the shift stalk, requesting a lower gear.
  - Brake pedal input is not required.
  - Manual mode is not required at these speeds.
- This is a passive feature – no driver input is required to enable/disable this feature and there is no indication on the dash.

Standard Feature

Learn More



## Hill Start Aid

Standard Feature

- Holds the service brakes for up to 3 seconds, allowing the driver to safely move their foot from the brake pedal to the accelerator pedal.
- Once on the accelerator pedal, the service brakes will automatically release
- Active on grades of 2% or greater, inclines and declines.
- As with all commercial vehicles equipped with air brakes, there may be a momentary lag in disengagement and should be anticipated.
- Disable switch located on the dash for situations where rolling is desired (ex. Banked docks).



Brakes Releasing



Hill Hold Active

## Eco Coast

Standard Feature

- May disengage the driveline by opening the clutch on slight downhill grades at highway speeds, allowing the vehicle's momentum to carry the truck forward, improving fuel economy.
- When this occurs, the gear indication in the ICU will flash, engine rpm will fall to 500 rpm and engine oil pressure will drop to idle levels (~20-25 psi).
- As the engine, transmission, and stability control system are in constant communication, the vehicle will only deviate 2-5 mph and will reengage the driveline immediately if a wheel slip is detected.



Learn More

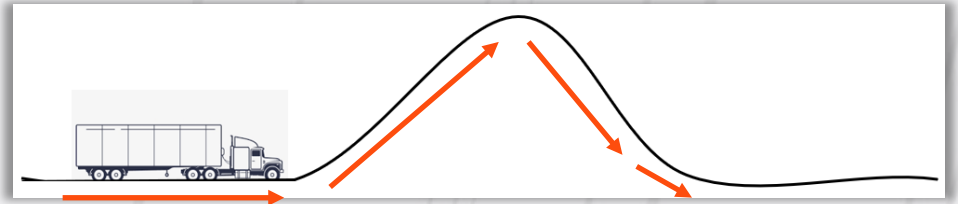


## Predictive Cruise Control (PCC)

Standard Feature

- Predictive Cruise Control utilizes onboard 3D mapping to improve fuel economy while maintaining trip time.
    - Trip time may vary +/- 2% vs. conventional CC while improving fuel economy 4% or greater.
  - May predictively accelerate 1-2 mph above CC set speed before climbing a grade.
  - May coast / Eco Coast over the crest of a hill at down to 4 mph below CC set speed, if PCC predicts the CC Set Speed will be reattained when descending the other side of the hill.
  - May coast / Eco Coast up to 5 mph over CC set speed down the hill.
  - May coast / Eco Coast up to 2 mph further over CC set speed at the bottom of a hill if PCC predicts the vehicle will roll out back to CC set speed on coming flat terrain
- \*\*Note: May be modified through parameters.

CC Set Speed = 65 mph



Actual Speed =

+1 = 66 mph

-4 = 61 mph

+5 = 70 mph

+5+2 = 72 mph

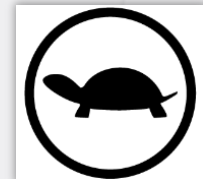
## Precision Maneuvering Mode

Optional Feature

- Allows very fine control of the vehicle at slow speeds.
  - Engaged by depressing the "Turtle" switch on the dash.
  - Creep Mode is disabled and Accelerator Pedal is desensitized.
  - The Accelerator Pedal will now function much like a Clutch Pedal
    - When backing to a trailer, the accelerator pedal may be lightly depressed to the point the vehicle begins to roll and gently move back to the kingpin.
  - The feature may be disengaged by selecting the crossed through "Turtle" switch or driving above 10 mph.
- \*\*Note: As the accelerator pedal now functions like a Clutch Pedal, large movements may cause the vehicle to lurch, similar to dumping a clutch pedal.



Maneuver Mode  
On ICU Message



Maneuver Mode  
OFF ICU Message

## Direct Drive Optimization & Low RPM Cruise

Optional Feature

- An S13 Integrated Powertrain may be downsped to primarily operate in Direct Drive (13th gear) for peak fuel economy
  - While this is one gear down from top gear, this is intentional, no driver interaction is needed.
- This also allows the T14 to upshift for further fuel economy improvements in light/bobtail, heavy tail winds, and/or downhill scenarios (aka. Low RPM Cruise)
  - Optimized not to lug the engine. Very low NVH.
  - Engine speeds between 800-1000 RPM are normal.



## Downhill Speed Control

- Downhill Speed Control functions like conventional cruise control without acceleration.
- While descending a grade, the driver may turn on downhill speed control to maintain up to their current speed.
  - Note: the vehicle will brake to maintain up to this speed but will not throttle to regain the speed upon roll out.
- The Downhill Speed Control Set speed may be increased or decreased through the Res+ or Set- toggle switch.
- When DHSC is engaged, the icon to the right of the gear selection will turn green with the DHSC speed limit shown.
  - This is the speed above cruise that can be achieved before the engine brakes engage to slow the truck.

Optional Feature



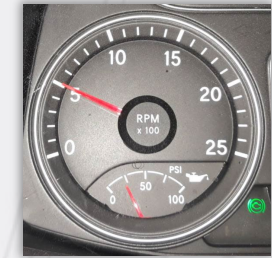
Learn More



## S13 Engine Differences – Engine RPM Variations

Standard Feature

- Engine RPMs of the S13 Engine may often be lower than previously experienced.
- Normal idle RPM may range from 500-600, unless otherwise programmed.
- When the engine is warm and the parking brake is set, engine RPMs may fall to 500 to reduce fuel consumption\*.
- In Eco-Coast, engine RPMs will reduce to 500.
- During low RPM Cruise (14th gear with a Direct Drive optimized truck), engine RPMs may safely fall to 800 - 1000 rpm while in gear.

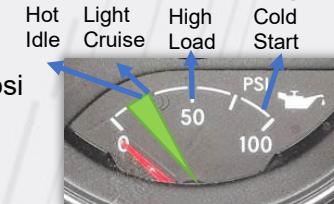


## S13 Engine Differences – Oil Pressure & Drain Back

Standard Feature

- Oil pressure may safely fluctuate to values as low 19 psi under normal operating conditions.
- S13 Engine is equipped with active oil pressure management
  - Ensures all components are adequately lubricated
  - Enhances oil pump efficiency / improves fuel economy.
  - If oil pressure is a concern, a malfunction indicator lamp will illuminate.
    - **Note: This is an electronically controlled variable pump – the pressure may jump abruptly from value to value (ex: 90-95psi at cold start, to 25psi at operating temp cruising)**

Light Load Cruise – 25 psi  
High Load Operation – 50 psi  
Hot Idle – 19-25 psi  
Cold Idle – Near 90 psi



Malfunction Indicator Lamp (MIL)



- Due to oil pump configuration, oil drain back can take longer than previously experienced
  - If checking the oil within 15 mins of engine operation, oil may be in the lower part of the hashmarks and top-off is not required.
  - If engine is left sitting for an extended time (~2 hours), oil will drain back to full.

