MODEL	NPR-HD Diesel
GVWR / GCWR	14,500 lb. / 20,500 lb.
WB	109 in., 132.5 in., 150 in., 176 in.
CA	86.5 in., 110 in., 127.5 in., 153.5 in.
ENGINE	Isuzu 4-cylinder, in-line 4-cycle, turbocharged, intercooled, direct injection diesel.
MODEL/DISPLACEMENT	4HK1-TC / 317 CID (5.19 liters)
HP (GROSS)	215 HP @ 2500 RPM
TORQUE (GROSS)	452 lb./ft. torque @ 1850 RPM
EQUIPMENT	Dry element air cleaner with vertical intake; 2 rows 564 square in. radiator; 7 blade 20.1 in. diameter fan with viscous drive. Cold weather starting device and an oil cooler. Engine oil level check. Engine warning system with audible warning for low oil pressure, high coolant temperature, and low coolant level. Engine cruise control function. Rear engine cover. Engine cruise control, Electronic Stability Control (ESC) with Anti-Slip Regulation (ASR).
TRANSMISSION	Aisin A465id 6 speed automatic transmission with fifth and sixth gear overdrive with lock up in 2nd, 3rd, 4th, 5th and 6th. PTO capability with automatic torque converter lockup in stationary PTO mode.
STEERING	Integral power steering 18.8-20.9:1 ratio. Tilt and telescoping steering column.
FRONT AXLE	Reverse Elliot “I” -beam rated at 6,830 lb.
FRONT SUSPENSION	Semi-elliptical steel alloy tapered leaf springs with stabilizer bar and shock absorbers.
FRONT GAWR	5,360 lb.
REAR AXLE	Full floating single speed with hypoid gearing rated at 11,020 lb.
REAR SUSPENSION	Semi-elliptical steel alloy multi-leaf springs and shock absorbers.
REAR GAWR	9,880 lb.
WHEELS	16 X 6.0-K 6 hole disc wheels, painted white
TIRES	215/85R-16E (10 pr) LRR (Low Rolling Resistance) tubeless steel belted radials, all season, front and rear.
BRAKES	Dual circuit vacuum assisted hydraulic service brakes with EBD (Electronic Brake Distribution) system for load proportioning of the brake system front and rear disc brake. The parking brake is a mechanical, cable actuated, internal expanding drum type, transmission mounted. Vehicles equipped with factory optional ADAS will feature an electronically actuated cable that is controlled by a switch in the dash. The exhaust brake is standard and is vacuum operated. 4-channel anti-lock brake system.
FUEL TANK	30 gal. rectangular stainless steel fuel tank mounted in frame rail behind rear axle. Fuel water separator with indicator light on instrument cluster.
FRAME	Ladder type channel section straight frame rail 33.5 in wide through the total length of the frame.Yield strength 54,800 psi section modulus 6.65 cubic in, RBM 364,420 lb-in per rail.
CAB	All steel, low cab forward, BBC 65.9 in, 45˚ mechanical tilt with torsion assist.
CAB EQUIPMENT	Gray breathable cloth covered high back driver’s seat equipped with an armrest along with two occupant passenger seat. Dual cab mounted exterior mirrors with integral convex mirror. Tilt and telescoping steering column. Power windows and door locks, floor mats, tinted glass and air conditioning. AM/FM Radio with Aux input, USB port and Bluetooth. Rear body dome lamp switch. Cab latch switch with indicator and buzzer. Interior and exterior lights are all LED (excluding the rear taillight assembly). Driver and outboard passenger front supplemental restraint system air bags.
ELECTRICAL	Two (2) 12 volt Group 31 750 CCA maintenance-free type batteries with threaded posts, 140 Amp alternator with integral regulator.
OPTIONS	See last page for options.

Note: These selected specifications are subject to change without notice.

VEHICLE WEIGHTS, DIMENSIONS AND RATINGS

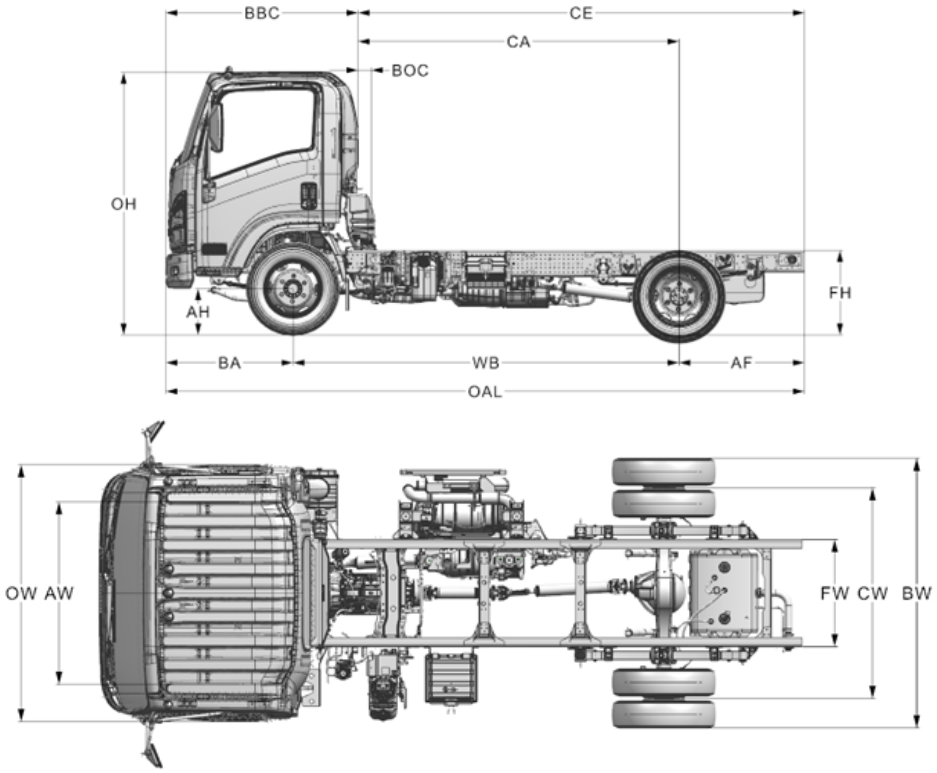


Figure 1: N-Series Diesel Cab Chassis Dimensions

Dimension Constants:

Code	Inches	Code	Inches
AH	7.5	BW	83.3
AW	65.6	CW	65
BA	43.5	FW	33.5
BBC	65.9	OH	91.3
BOC	7.7	OW	81.3
FH	31.6		

Variable Chassis Dimensions:

Unit	WB	CA*	CE*	OAL	AF
inch	109.0	86.5	129.6	195.7	43.1
inch	132.5	110.0	153.1	219.2	43.1
inch	150.0	127.5	170.6	236.7	43.1
inch	176.0	153.5	196.6	262.7	43.1

* Effective CA & CE are CA/CE less BOC.

Vertical Exhaust Option Dimensions

Variable Chassis Dimensions:

Unit	WB	CA*	CE*	OAL	AF
inch	109.0	62.5	105.6	195.7	43.1
inch	132.5	86.0	153.1	219.2	43.1
inch	150.0	103.5	146.6	236.7	43.1
inch	176.0	129.5	172.6	262.7	43.1

* Effective CA & CE are CA/CE less BOC.

BOC = 24 in. for Vertical Exhaust equipped chassis

In-Frame Tank Weights and Payload by Model:

Model	WB	Unit	Front	Rear	Total	Payload
3F154	109.0	lbs.	3986	2044	6030	8470
3F124	109.0	lbs.	3996	2044	6040	8460
3F254	132.5	lbs.	4070	2030	6100	8400
3F224	132.5	lbs.	4080	2030	6110	8390
3F354	150.0	lbs.	4136	1997	6133	8367
3F324	150.0	lbs.	4146	1997	6143	8357
3F454	176.0	lbs.	4209	1964	6173	8327
3F424	176.0	lbs.	4219	1964	6183	8317

Technical Notes:

Chassis Curb Weight reflects standard equipment and fuel, but no driver or payload.

Maximum Payload Weight is the allowed maximum for equipment, body, payload and driver and is calculated by subtracting chassis curb weight from the GVWR.

Vehicle Weight Ratings	Capacity (lb)
GVWR Designed Maximum	14,500
GCWR Combined Maximum	20,500
GAWR - Front	5,360
GAWR - Rear	9,880

Model Description
The N-Series Diesel features a low cab forward design that is ideally suited for inter-city type applications. The low cab forward design minimizes overall length for a given body length and in conjunction with the set back front axle positioning provides excellent weight distribution. The 46.5^{O} inside wheel cut angle coupled with integral power steering make it an extremely maneuverable truck.

Engine
The N-Series Diesel is powered by the 4HK1-TC engine with a displacement of 317 cubic inches (5.19 liters). This engine is designed for enhanced durability, reliability and clean/efficient combustion. This engine is turbo-charged and intercooled. The air-to-air intercooler provides increased horsepower and torque while maintaining good levels of fuel economy. The 4HK1-TC features a 16 valve, 4-cylinder, in-line overhead camshaft timing train, ladder frame structure and an electronic common rail injection system.

Vehicle Assist Features
Introduced as standard for the 22i model year midyear refresh, N-Series Diesel chassis are now factory equipped with Electronic Stability Control (ESC), which includes Anti-Slip Regulation (ASR). ESC improves safety by enhancing the vehicle's ability to maintain stability by electronically controlling engine power and applying braking as needed to help the driver stay on their intended course. ASR or Traction Control helps suppress wheel spin and can assist with launch performance on certain low traction surfaces. While driving, ASR works with ESC to help prevent skidding during turns and improve overall vehicle stability. In addition to the standard assist features, an Advanced Driver Assistance System (ADAS) is also available as a factory option. ADAS features the following systems: Automatic Emergency Braking, Following Distance Warning, Mis-Acceleration Mitigation, Full-Range Adaptive Cruise Control, Lane Departure Warning, and Attention Assist. Please reference the vehicle's Owner's Manual for additional information.

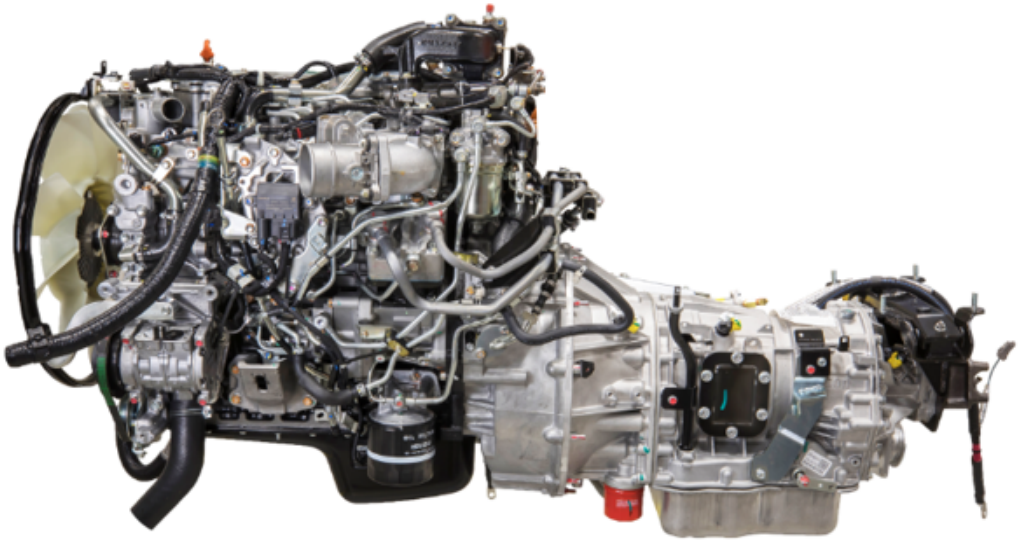


Figure 2: Isuzu Diesel 4HK1-TC engine and Aisin A465ID Transmission

Engine Features
The 4HK1-TC is turbocharged and inter cooled with a Federal/EPA emissions certification. The Turbocharger is an IHI Variable Geometry Turbocharger (VGT) that provides excellent boost response over the entire RPM range of the engine. The turbocharger compressor wheel is upgraded to a higher efficiency wheel which improves fuel consumption and emissions. The turbocharger housing structure is strengthened mechanically to also improve reliability. Each and every engine is test run prior to installation to assure rated performance and quality.

Cylinder Block
The cylinder body is made of cast iron and is a parent bore design with five bearings. The cylinder walls are induction hardened for enhanced durability and long life. The bearing cap has a ladder frame structure integrating with the crankcase to increase block rigidity for greater strength against mechanical loads and stresses. The cylinder block water passages are designed to improve coolant circulation and eliminate hot spots. Additionally, the block is strengthened and stiffened in several key areas to reduce stress and increase engine life.

Cylinder Head
The cylinder head features 4 valves per cylinder and a direct injection fuel system. The cylinder head is made from a high strength cast iron material and is held in place by 20 high strength head bolts. Additional stiffening ribs have been added to the casting to increase head stiffness in order to improve head gasket retention and improve engine reliability.

Crankshaft
The crankshaft is made from forged steel. It has 5 main bearings and is fully counterweighted. In the 2011 model year, the crankshaft main bearing journal diameters were increased for reduced wear and improved reliability. The crankshaft is retained by 27 bolts connecting the lower ladder‐structure crankcase to the engine block. Starting in the 2011 model year, the crank case bolt thread engagement to the block was increased in order to increase clamping force and further stiffen the block for improved reliability and reduced combustion noise.

Valves
Two intake and two exhaust valves are forged from heat resistant steel. The valve tappets are roller type for reduced friction and better performance.

Pistons
The aluminum alloy pistons are cam ground. This process allows them to assume a round shape when warm so they will precisely match the shape of the cylinder. This means that the piston ring assembly seals better, and results in longer engine life. The top ring carrier is cast into the top ring groove, and four sides of the top ring are nitrided and the outside is coated with hard metal to ensure sufficient strength and wear resistance between the ring and groove.

Overhead Camshaft
The camshaft is directly above the cylinder this minimizes valve train losses by eliminating the push rods and other components. The camshaft followers are is a roller type for reduced friction losses.

Engine Data: Isuzu 4HK1-TC

Power (gross)*	215 HP @ 2,500 rpm
Torque (gross)*	452 lb-ft @ 1,850 rpm
Governed RPM	2,750 rpm
Injection	Denso common rail direct injection
Displacement	317 CID / 5.2L
Cylinder Bore	4.53 in (115 mm)
Cylinder Stroke	4.92 in (125 mm)
Cylinders	4-cylinder, in-rail OHC 4-cycle,
Operating Cycles	turbocharged and inter cooled

*SAE J1349 gross ratings without fan operating.

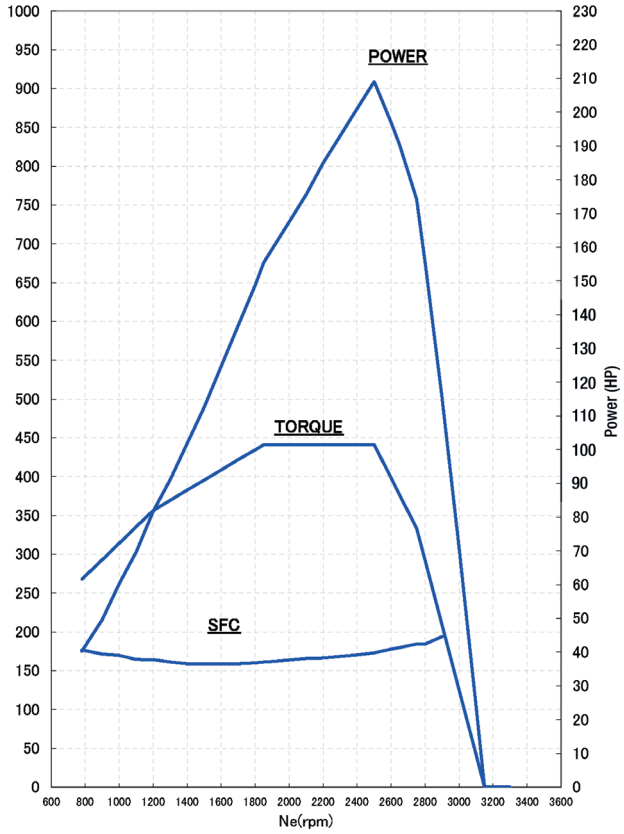


Figure 3: 4HK1-TC Engine Performance Curves

Lubrication
The engine lubrication system features a gear-driven pump which provides direct lubrication of the main, connecting rod and cam shaft bearings. The piston crowns are also oil cooled. The 4HK1-TC engine also features a plate type oil cooler in the water jacket with an oil temperature sensor to help control temperature. The crank case ventilation system features an open type PCV design. A full flow oil filter is standard. The engine uses only low ash oil as specified in the owner's manual for vehicles equipped with SCR and Diesel Particulate Filter emission systems. Please reference the vehicle's Owner's Manual for up to date service and maintenance information.

Fuel System
The fuel system is standard with a 30-gallon rectangular stainless steel fuel tank mounted in frame behind the rear axle. The fuel system features dual fuel filters, one mounted on the frame, and the other mounted on the engine. This dual filter arrangement significantly increases fuel filtration and will extend the life of fuel system components. The engine-mounted fuel filter is pressurized, which allows for a fine micron rating and significantly improved filtration performance relative to previous models. The frame-mounted fuel filter has a coarse mesh which prevents large contaminants from entering the fuel pump. The frame mounted pre-fuel filter now features an increased capacity when compared to the previous version and a transparent design to ease with inspection. The frame mounted filter is also heated and incorporates a fuel/ water separator with a hand fuel primer pump should priming the engine be required. The separator has an indicator in the MID section of the instrument cluster that indicates to the driver when the separator needs to be drained.

Biodiesel Blends
Isuzu recognizes the importance of using biodiesel fuels as an alternative and renewable fuel based on global trends and requirements such as energy security and reducing contributions to global warming. Based on current circumstances, Isuzu supports the utilization of B20 (20% Fatty Acid Methyl Ester [FAME] Blended Diesel Fuel) in our diesel trucks with some requirements or restrictions, since B20 has unique properties and is different from conventional (distilled) diesel fuels. Biodiesel blends containing more than 5% and up to 20% biodiesel must meet the latest version of ASTM Specification D7467 (biodiesel blends B6-B20). Also, the FAME (B100) to be blended with conventional diesel fuel must meet the latest version of ASTM D6751, regardless of concentration. We recommend that biodiesel users purchase biodiesel blends from a BQ-9000 certified vendor.

Injection System
The fuel injection system is a Denso common rail type fuel system. Pressure is supplied by a high pressure pump to the common rail that features a pressure control valve to help maintain desired values and improve fuel injection accuracy. Fuel is then distributed to the injectors which are controlled by the engine Electronic Control Module (ECM). The injectors deliver the correct amount of fuel regardless of speed and altitude. The injection pressure has been increased from 160 MPa (23,200 psi) to 200 MPa (29,000 psi) to reduce emissions and improve fuel consumption. Combustion noise has also been significantly reduced. Use only Ultra Low Sulfur diesel fuel grade 1-D or 2-D. Please reference the vehicle's Owner's Manual for fuel requirements and operation instructions.

Cooling System
The water pump is a belt driven centrifugal unit, and the cooling system has a capacity of 5.18 gallons. The radiator has an integrated transmission oil cooler. The radiator also features a two-row tube and corrugated fin type with a frontal area of 564 in2. The fan is 7-blade type, 20.1 inch (510 mm) diameter, with a viscous drive hub to reduce noise and increase engine fuel economy. An optional 600 watt engine block heater and an optional 300 watt oil pan heater can be ordered for cold climates.

Exhaust Gas Recirculation (EGR) System
In order to reduce emissions of harmful Oxides of Nitrogen (NOx), all N-Diesel vehicles utilize cooled EGR. The EGR system on the 4HK1-TC engine features several improvements. Current EGR coolers provide increased cooling capacity for improved emissions performance. The secondary EGR cooler is mounted across the top of the valve cover and allows air to be bled from the system and coolant to be added to the cooling system. This change significantly improves serviceability and reduce the time required to bleed the cooling system. Additionally, the EGR valve motor has been upgraded to brushless motor design, which will increase service life of the motor and valve.

Air Cleaner System
Donaldson air cleaner canister with 11.0 inch diameter paper element. The air cleaner snorkel is incorporated into the back of the cab with an integrated resonator. The air cleaner system is standard with an air restriction indicator in the instrument cluster that will alert the user when the element is due for service. This will help ensure maintenance is performed at the correct time.

Engine Warning System
The 4HK-1TC engine is standard with an engine warning system that will provide an audible warning in the event of detecting low oil pressure, high coolant temperature, or a low coolant level. A port installed option can also be added in addition to the audible engine warning system that can shut down the engine 30 seconds after an audible warning is sounded. This delay will allow the driver to safely move the vehicle off of the road.

Optional Programmable Engine Idle Shutdown The engine idle time can be limited through this optional feature. The idle shutdown will save fuel and reduce idle time wear on the engine.

The timer options available are:

IY9 – 3 min. Engine Idle Shutdown
(Timer set at 3 minutes for engine shutdown)

I9A – 5 min. Engine Idle Shutdown
(Timer set at 5 minutes for engine shutdown)

Propeller Shaft
The propeller shaft assembly is made up of a first and second shaft. The propeller shaft center support bearing is an oil seal type dust seal, and is attached to the rear of the first shaft and mounted to the crossmember by a rubber cushion and steel support bracket. The sliding spline, located on the front portion of the second shaft, is an involute spline type. Attachment of the propeller shaft assembly is by flanged couplings with four bolts each.

NPR-HD STANDARD CAB				
Wheelbase	109	132.5	150	176
No. of Shafts	1	2		
Shaft #1 O.D.	3.25 in	3.25 in	3.25 in	3.25 in
Thickness	0.0906 in	0.0906 in	0.0906 in	0.0906 in
Length	36.69 in	16.97 in	34.29 in	43.47 in
Type	A	B	B	B
Shaft #2 O.D.	N/A	3.25 in	3.25 in	3.25 in
Thickness	N/A	0.0906 in	0.0906 in	0.0906 in
Length	N/A	33.78 in	34.17 in	50.71 in
Type	N/A	C	C	C

Figure 4: NPR-HD Diesel Driveline Lengths

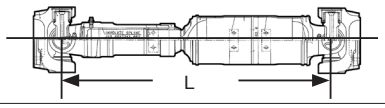
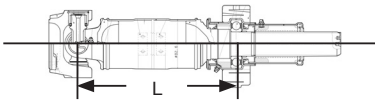
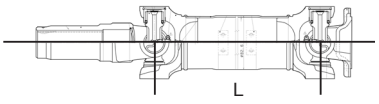
Type	Description	Illustration
Type **A**	1st shaft in 1-piece driveline	
Type **B**	1st shaft in 2-piece driveline	
Type **C**	2nd shaft in 2-piece driveline	

Figure 5: NPR-HD Diesel Driveline Configuration

Aisin Automatic HD Transmission

The Aisin A465id Automatic is the standard transmission in the N-Series Diesel. The key drivetrain components in the N-Series Diesel (engine, transmission and rear axle) are all engineered and matched to operate as a team to provide optimal performance and economy.

Aisin Automatic Transmission

Model:	**A465id**
Gear and Ratios	
1st	3.742:1
2nd	2.003:1
3rd	1.343:1
4th	1.000:1
5th	0.773:1
6th	0.634:1
Rev.	3.539:1
A/T Fluid	13.1 liters
Weight/Wet	362lbs (164 kg)

Features:

- 6-speed double overdrive with lock-up converter in 2nd, 3rd ,4th, 5th and 6th gear, acceleration and deceleration.
- Shift control-electronic through microprocessor.
- Torque converter multiplication ratio of 1.7639:1.
- See exhaust system features for additional special PTO/ regeneration options PTO options.
- Automatic torque converter lock up in stationary PTO mode.

PTO Specifications

Bolt Pattern: SAE 6 bolt PTO opening
PTO Rating: Maximum 134 lb-ft torque at 1,700 RPM

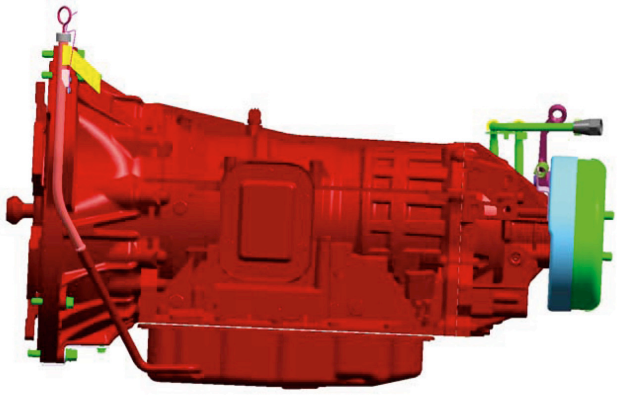


Figure 6: N-Series Diesel Transmission

Front Axle

The N-Series Diesel front axle is a drop forged steel, reverse Elliot, “I”-Beam. The wheel ends have been updated with a maintenance free unit type hub bearing.

Front Axle Specifications:

Type	Steel Drop Forged Reverse Elliot, “I”-Beam
Rated Capacity	6,830 lbs.
Tread Width	66.1 in
King Pin Type	Bronze Bushings
Thrust Bearing	Ball Type (RH)/Roller (LH)

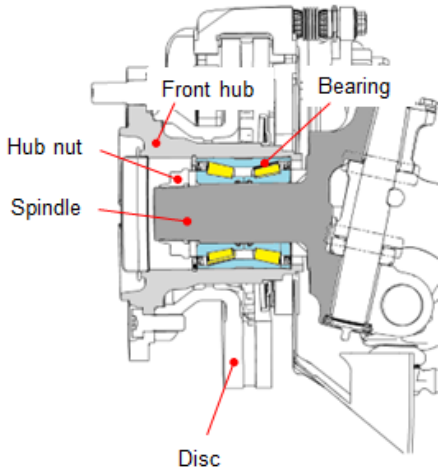


Figure 7: N-Series Diesel Front Axle

Front Suspension

The front suspension is tapered leaf springs with stabilizer bar and shock absorbers.

Front Suspension Specifications:

Type	Semi Elliptical Springs
Capacity	6,830 lbs.
Effective Length	51.2 in.
Width	2.8 in.
Deflection Rate	731 lbs./in. (108 N/mm)
No. Leaves	2
Leaf Thickness	1 X 0.61 in. 1 X 0.73 in.
Stabalizer Bar Diameter	1.65 in.
Stabalizer Bar Thickness	0.16 in.

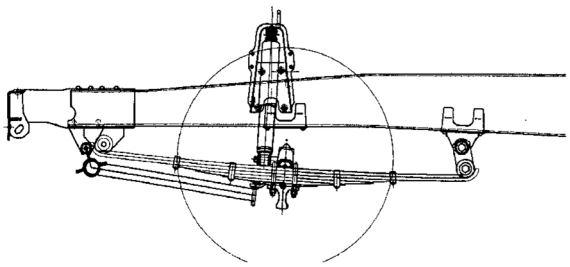


Figure 8: N-Series Diesel Front Suspension

Steering System

The N-Series Diesel is equipped with integral power steering with a 18.8-20.9:1 gear ratio and a variable ratio pump. This provides power assist when turning while providing good road feel and feedback driving straight ahead. The system also features a tilt and telescopic steering column that allows adjustment of the steering wheel location for driver comfort and convenience. For the 25MY cab update, the steering wheel shape has been updated with a smaller diameter, decreasing from 16-in. to 15-in. for a more engaging driver experience.

Figure 9: N-Series Diesel Steering Column

Turning Diameters

The N-Series Diesel steering also features a 46.5 inside wheel cut angle. This, coupled with the integral power steering, makes the N-Series Diesel an extremely maneuverable truck.

Turning Diameters (design value)

WB	B Curb to Curb	C Wall to Wall
109	31.5	37.1
132.5	38.7	44
150	42.7	48.9
176	51.2	56.4

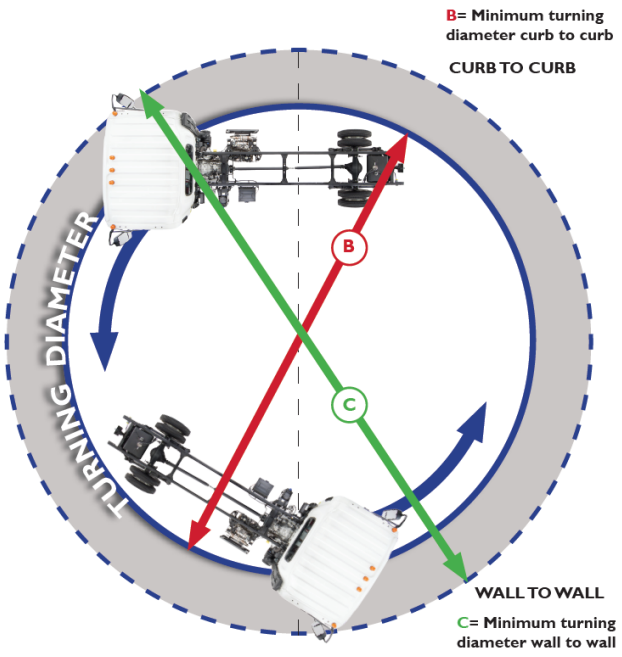


Figure 10: N-Series Diesel Turning Circle Diagram

Rear Axle
The N-Series Diesel has a full floating rear axle with a banjo type housing and separable carrier. The hub bearings have been updated to a unit type design, providing a maintenance free opperation.

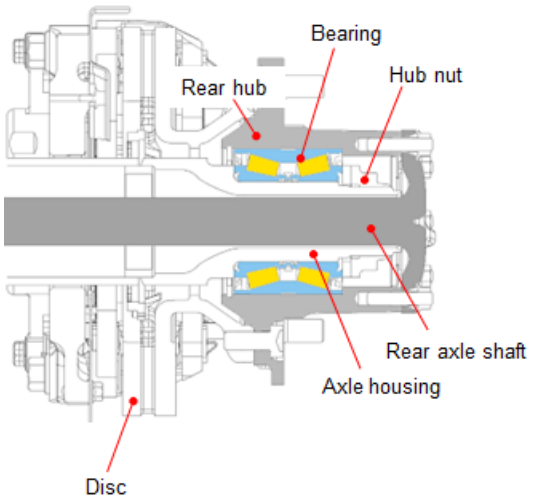


Figure 11: N-Series Diesel Rear Axle

Rear Axle Specifications

Model	R040
Type	Full Floating Banjo
Rated Capacity	11,020 lbs.
Tread Width	65.5 in.
Gear Type	Hypoid
Ring Gear Diameter	11.5 in.
Differential Type	4 Pinion Gear
Ratio	4.555
Hub Lubrication	Oil
Oil Type	See Owner's Manual
Oil Capacity	See Owner's Manual

Rear Suspension
The rear suspension consists of a multi leaf spring with shock absorbers designed to handle the loads. The long effective spring length design provides excellent ride characteristics.

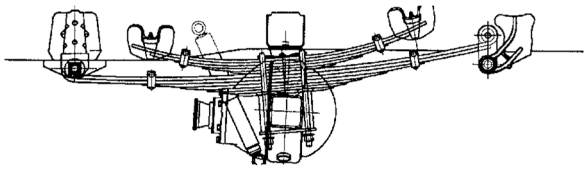


Figure 12: N-Series Diesel Rear Suspension

Rear Suspension Specifications:

Type	Multi Leaf Spring
Capacity	9,880 lbs.

Main Springs

No. Leaves	5
Effective Length	51.2 in.
Width	2.8 in.
Leaf Thickness	5 X 0.43 in.
Deflection Rate	919 lbs./in. (161N/mm)

Auxiliary Springs

No. Leaves	2
Effective Length	33.5 in.
Width	2.8 in.
Leaf Thickness	0.63 in.
Deflection Rate	3,578 lbs./in. (627 N/mm)
Main + Aux. Deflection Rate	5,472 lbs./in. (960 N/mm)

Tires & Wheels

Standard Tire Specifications:

Manufacturer[2]	Yokohama TY213B	Bridgestone M779
Rev/Mile	682.9	
Size	215/85R16E	
Type	Tubeless Steel Radial Low Rolling Resistance	
Ply Rating	10pr	
Tread	FT/RR All season	
Maximum Load Per Tire[2]	at 80 psi.	
Front (lbs)	2,680	
Rear (lbs)	2,470	

Standard Wheel Specifications:

Size (in):	16 x 6.00 K
Bolt Holes	6 JIS
Bolt Circle Diameter	8.75 in.
Outside Offset	5.0 in.
No. Piece Rim	1
Rim Type	5° DC
Manufacturer	TOPY
FT/RR Nut Size[1]	1.61 in. (41 mm) Bud Hex
Rear Stud Size[1]	0.83 in. (21 mm) Square
Nut/Stud Torque Specs.	325 ft.-lb. (440 N-m)

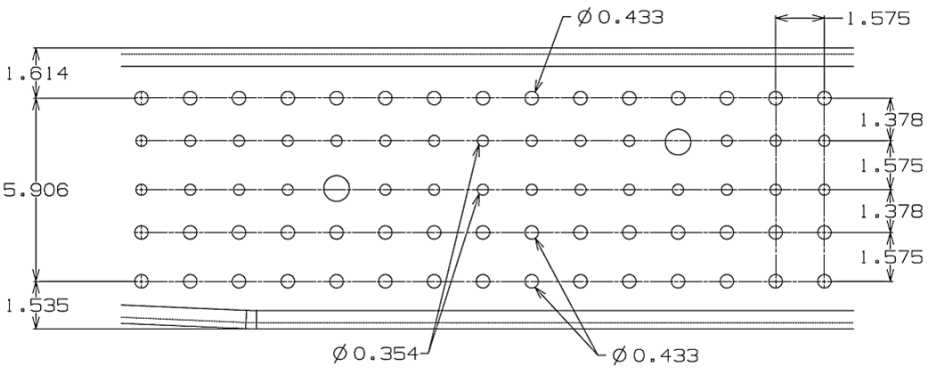
Notes: [1] O.D. wrench size
[2] Manufacturer selection is not permissible.

Frame

The frame in the N-Series Diesel is a ladder-type, channel section, straight rail from bumper to end of frame with a rivet-less top flange. Starting with the 25MY, the frame material has been changed to a hot-rolled high tensile strength steel. The new material maintains great formability and weldability, while providing a higher yield strength than the previously used steel. Changes to the frame rail shape include: an increased section height by 14-mm, a thinner 5-mm profile (down from 6-mm), and a new uniform 40-mm (1.575-in.) modular hole pattern to assists with body and equipment mounting. The new front bumper incorporates a crush block where it attaches at the frame ends and features a multi-piece design that allows for individual component replacement if damage occurs.

Frame Specifications

	Cab Chassis			
Side Rail Section	9.06 in. X 2.76 in. X 0.20 in.			
Combined Section Modulus	6.65 in^3			
Yield Strength	54,800 psi			
Rated RBM (per rail)	364,420 lb-in			
WB	109	132.5	150	176
Number of Crossmembers	5	6	6	6
Frame Width	33.5 in (850 mm)			



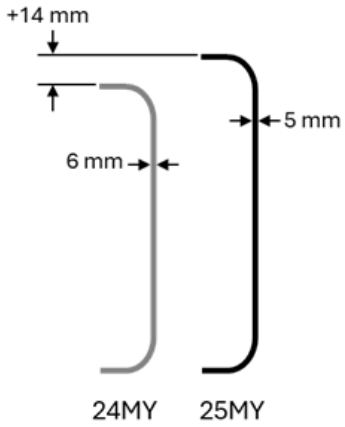


Figure 13: Updated N-Series Diesel Frame

Fuel Tank

The standard location is an in frame 30 gallon fuel tank. The fuel tank is mounted in the rail behind the rear axle, within the suspension area. This location enhances vehicle safety while providing easier installation of vocational bodies. The stainless steel fuel tank is rectangular in shape. It is equipped with a fill hose that goes through the rail allowing for the lowest possible mounting height for a body.

Figure 14: N-Series Standard Stainless Steel Fuel Tank

An optional 35 gallon aluminum cylindrical fuel tank is available in place of the standard rectangular in frame tank. It is mounted on the outside of the left hand frame rail (this tank is only available on the 150 and 176 inch wheelbase chassis).

An optional 55 gallon aluminum cylindrical fuel tank is available in place of the standard rectangular in frame tank. It is mounted on the outside of the left hand frame (this tank is only available on the 176 inch wheelbase chassis).

An optional 35 gallon aluminum cylindrical fuel tank is available in addition to the standard rectangular in frame tank. It is mounted on the outside of the left hand frame (this tank is only available on the 150 and 176 inch wheelbase chassis).

Brake System
The service brake system is a dual circuit vacuum assisted hydraulic system with a metering valve in the front brake circuit that promotes brake application timing. As of the 22iMY running change, the N-Series diesel is now standard with front and rear disk brakes. The system incorporates an Anti-lock Braking System (ABS) and Electronic Braking force Distribution (EBD). The ABS is designed to avoid the locking of the wheels and ensure the stability of the vehicle during deceleration for a stop. The system has a fail-safe mode that will turn the ABS brake system off if a malfunction in the system is detected. The ABS system has a self-diagnostic function that will improve the ease of serviceability of the system. The system offers excellent stopping power, long service life, and non-asbestos brake linings. The Electronic Braking force Distribution (EBD) suppresses an excessive rise in rear brake pressure based on wheel speeds and brake pressure sensors. EBD provides the best balance for a given load to provide maximum brake lining life based on wheel speeds and brake pressure sensors this in turn extends maintenance intervals and lowers operating costs. A new ZF brand Electronic Hydraulic Control Unit (EHCU) is mounted between the 1st and 2nd cross members. The EHCU integrates the electronic and hydraulic controls into for the following functions: ABS, EBD, ESC, ASR, and Power Assist.

ABS/EBD Brake System Operation
The ABS control unit increases, decreases, or maintains brake fluid pressure by operating the brake actuator unit in response to wheel speed sensor signals. The control unit also calculates wheel speed, wheel deceleration, and vehicle speed. When the brakes are applied in a manner that rapidly decelerates a wheel and the difference between wheel speed and vehicle speed is larger than a predetermined value, the control unit senses that the wheel is about to lock up and maintains the brake fluid pressure as it is. If the wheel further decelerates, the control unit senses that the wheel is locking up and reduces the brake fluid pressure. When the control unit senses that the wheel is unlocked, the unit maintains or increases brake fluid pressure repeatedly.

Power Assist
The Power Assist system functions to increase brake fluid pressure during sudden braking instances, or when the required braking force exceeds the boost limit of the brake servo unit.

Overriding Accelerator with Brakes
ECM logic has been adopted that will reduce engine RPM to engine idle RPM when the brake and accelerator pedals are applied simultaneously above 5 mph in a forward gear position. This ECM logic has been adopted to enhance the safe operation of the vehicle.

Parking Brake
The parking brake is a drum/shoe type that is mounted on the rear of the transmission and is operated by a manual lever actuated cable. On ADAS equipped chassis, the manual parking brake is replaced with an electric parking brake (EPB) to support the added features of those systems. The EPB runs off of a 24V booster module mounted within the cab. The EPB can be manually disable in the event of a malfunction using a tool included within the cab. For instructions on how to use the EPB please reference the owner's manual.

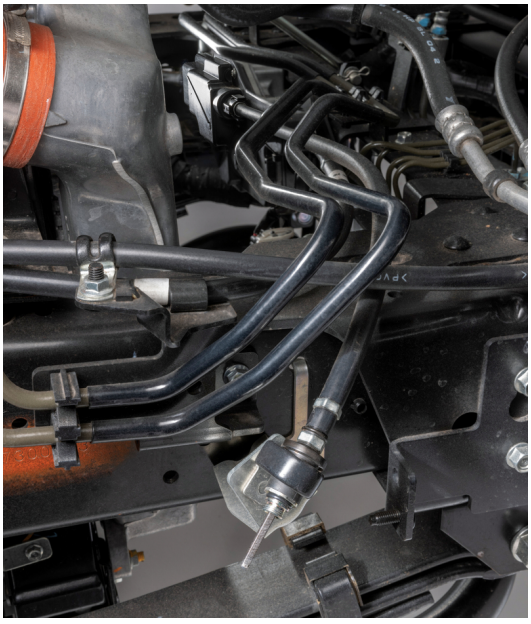


Figure 15: Electric Parking Brake Actuator and Manual Release

Brake Specifications
Type: Vacuum + Power Assist Hydraulic 4-wheel disc brakes with 4-channel ABS

	Front	Rear
Overall Diameter	11.5 in.	11.5 in.
Effect Diameter	9.4 in.	9.4 in.
Swept Area Pad	115.5 in^2.	115.5 in^2.
Pad Thickness	0.51 in.	0.51 in.

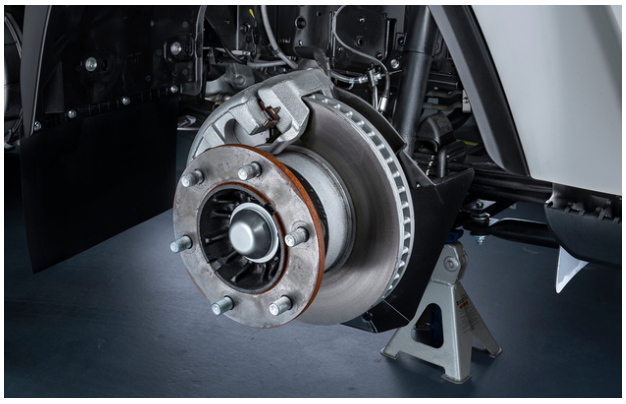
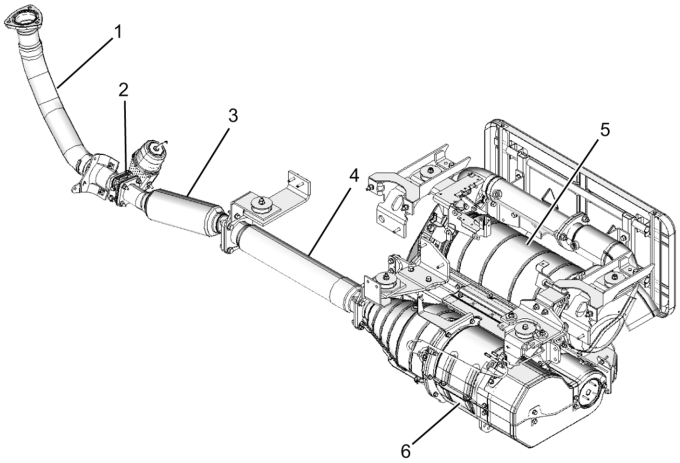


Figure 16: N-Series Diesel Disc Brakes

Exhaust Aftertreatment System
The stainless steel engine exhaust system routes to a horizontally mounted Diesel Particulate Filter (DPF) and Selective Catalytic Reduction System (SCR) unit. This combination unit along with an enhanced EGR system and variable vane turbocharger allow the N-Series to meet the latest EPA emission standards. The exhaust system monitors the particulate status of the DPF and levels of the Diesel Exhaust Fluid (DEF) need-ed for the SCR system to operate. These functions are reported to the driver via the Multi Information Display (MID) in the instrument cluster. Under normal highway operating conditions the system will regenerate itself and remove NOX and Particulate Matter automatically. Under slow speed or long idle times the system may require the vehicle operator to initiate a DPF regeneration cycle manually. The DEF tank has a 4.2 gallon (16L) capacity and will need to be replenished when the DEF supply runs low. Only DEF that carries the seal of certification from the American Petroleum Institute (API) should be used. Vehicle operators should familiarize themselves with the monitoring system (see the owners manual) to ensure smooth efficient operation of the vehicle.

Exhaust Routing Description
The exhaust system routes to a horizontally mounted package containing a stainless steel DPF and SCR Chamber on the right side of the chassis. The exhaust tail pipe then exits to the rear on the right side of this package.



1. Front Exhaust Pipe A; 2. Exhaust Brake Assembly;
3. Front Exhaust Pipe B; 4. Front Exhaust Pipe C;
5. SCR Assembly; 6. DPF Assembly

Figure 17: N-Series Diesel Exhaust Unit

DPF Regeneration Options for N-Series with 4HK1 engine

Manual Regeneration Only for GSE Vehicles
Provides programing for disabling automatic DPF regeneration for GSE applications. DPF will NOT regenerate automatically. DPF can only be regenerated using manual DPF switch, with vehicle parked with parking brake engaged. This function can also be enabled by the Isuzu Dealer via IDSS service tool.

Automatic Regeneration in PTO Mode(Stationary)
Provides programing for automatic regeneration of DPF while in stationary PTO mode. Used for applications with a PTO operating for long periods of time with operator out of cab and away from the vehicle. Requires high PTO power draw (15 or more horsepower) and sustained engine speed above 1,000 RPM. This function can also be enabled by the Isuzu Dealer via IDSS service tool.

Automatic Regeneration in PTO Mode(Mobile)
Provides programing for automatic regeneration of DPF while in mobile PTO mode used for applications with a PTO operating in mobile mode for long periods of time (i.e., sweepers or line painters). Requires high PTO power draw (15 or more horsepower) and sustained engine speed above 1,000 RPM. Option can be programmed at the time of order, or by dealer via IDSS service tool.

DPF (Diesel Particulate Filter) dimensions:
O.D. : 9.0 inches
Length: 25.1 inches
Material: Stainless Steel

SCR Chamber dimensions:
O.D. : 10.0 inches
Length: 22.6 inches
Material: Stainless Steel

Exhaust Cooler
At the end of the exhaust system is an exhaust gas cooler. This device will lower exhaust gas temperatures created during regeneration to pre-2007 exhaust gas temperature levels.

Vertical Exhaust System
An optional vertical exhaust system is available. It will use 24 inches of CA from the back of the cab to the back of the Exhaust system.

Electrical System
The electrical system is 12 volt negative ground.

Batteries
Two 12 volt Group 31 750 CCA maintenance-free type batteries with threaded posts are wired in parallel. The individual battery has a 160 minute reserve capacity rating. The battery box has a lockable battery hold down to prevent theft.

Electrical System Features:
- Flush surface LED headlamps with integral parking, turn signal, cornering lamp, and daytime running lights.
- Combined rear lamps: Turn Signal, Stop, and Backup
- LED Identification, clearance lamp, license plate lamp
- Back up alarm and body mounting circuits electrical connectors
- Trailer lighting and trailer brake controller wiring connectors
- Auxiliary power connector behind dash

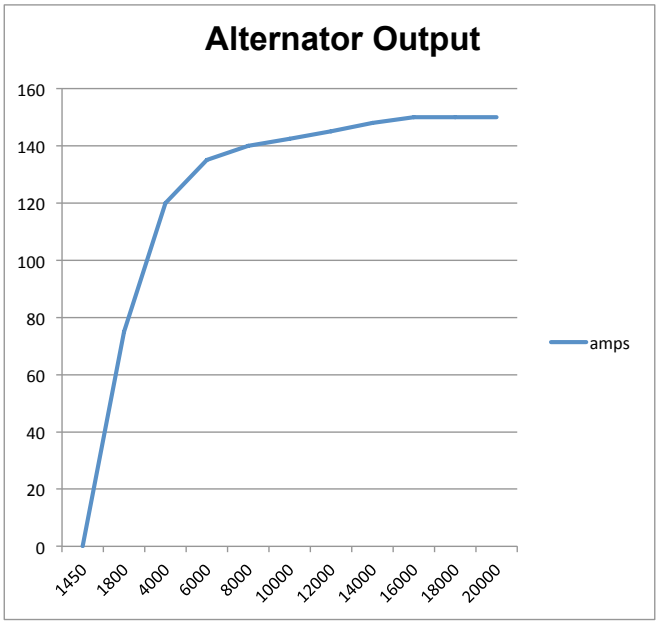


Figure 18: N-Series Diesel Alternator Output Curve

The 2025MY N-Series Diesel chassis introduces a number of new electrical control components to expand the vehicles current and future functionality. These changes include a new Central ECU, Central Gateway Control Unit, Input/Output Control Unit, Body Control Module, and FMS CAN Interface Control Unit.

Central ECU
The new central ECU has been adopted to accommodate the increasingly sophisticated control units and sensors associated with advanced safety devices. This module manages ADAS-related controls and exhaust brake operations including full-range adaptive cruise control, inter-vehicular distance warning, and preceding vehicle departure notification functions. The central ECU will send the exhaust brake operation request signal to the ECM when requested by the driver and the proper conditions are met.

Central Gateway Control Unit
This module serves as the main hub for all 7-CAN communication circuits within the vehicle. Scan tool communication with any of the on board ECU's must first pass through the central gateway control unit.

Input/Output Control Unit
The I/O Control Unit is responsible for a wide variety of vehicle systems, and consolidates information from various vehicle controllers collected over the CAN communication circuit. This module features an integrated G-Sensor to capture changes in vehicle posture and the current road gradient to aid with electric parking brake control. The I/O Control Unit also receives information from various switches and sensors within the chassis and converts those signals into CAN communications (for example: parking brake switch, ignition switch, ADAS driver controls, front and rear brake pressures, and the automatic headlight illuminance sensor).

Body Control Module
The body control module (BCM) manages an array of functions that are controlled by switches and sensors within the cab - including automatic headlights, power door locks, windshield wipers, flashers, stoplights, interior lights, and taillights.

FMS CAN Interface Control Unit
With the 25MY N-Series Diesel chassis, a CAN interface signal converter module is standard on the chassis and is designed to transfer information between the vehicle and an upfitter installed external CAN device. Standard output data includes engine speed, vehicle speed, vehicle mileage, and VIN among others.

Engine Accessibility

The N-Series Diesel tilt cab design provides complete and easy access to the engine area for service. By following the procedure shown in the owners' manual, the cab can be tilted a full 45-degrees with great ease. More engine access is provided with the tilt cab than by any conventional or van cabs offered by the competition. This ease of access allows quicker service that will translate to lower maintenance costs leading to a lower cost of operation for the LCF design. With the 25MY N-Series diesel, the cab tilt system has been revamped with a new cab tilt stay that no longer relies on a separate safety pin, and instead takes advantage of a double action lock mechanism built into the cab tilt stay itself.

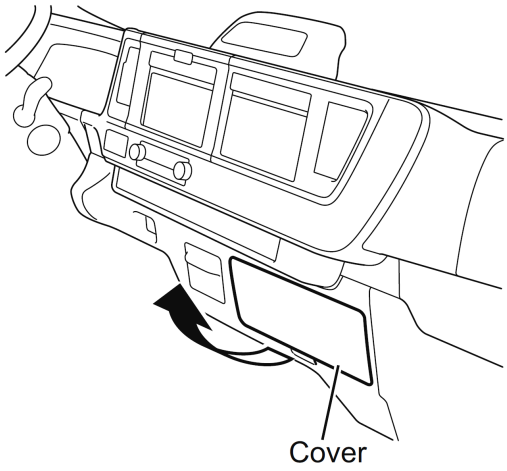


Figure 19: N-Series Diesel Internal Fuse Panel

The hydraulic brake reservoir is located at the left end of the dash for easy inspection and service (see Figure 19). Fuses and electrical relays are located behind a removable panel below the center of the dash. This location is within easy reach for access by the driver or a technician (see Figure 20). The windshield washer bottle is located on the end of the dash on the passenger side. The washer bottle feeds intermittent wet arm wipers that put the washer fluid directly on the windshield where it is needed as well as the high pressure headlamp washers integrated into the bumper. The cab roof cap is designed to channel water off the roof to the side, not down the windshield to improve driver visibility in wet weather. The windshield is bonded to the cab for increased cab rigidity, less wind noise, and no leaks. The windshield has an upper tinted area for improved visibility and safety. The chassis is equipped with a shift lever interlock system that is activated when the key is in the on position and the brake pedal is depressed. The engine coolant reservoir is located at the back of cab and is also easily checked without tilting the cab.

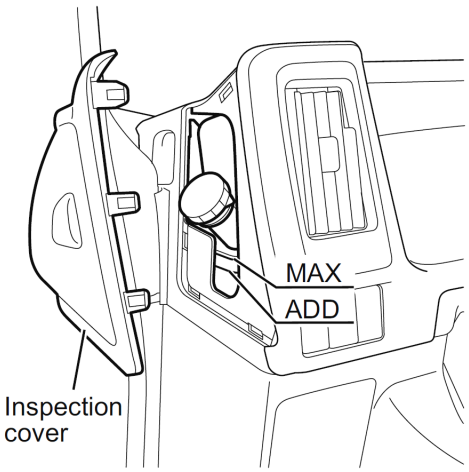


Figure 20: N-Series Diesel Brake Reservoir

Cab Environmental Systems

The cab environmental system has been designed to provide plenty of air flow and heat to keep the driver and passengers comfortable, ventilate the cab, and keep the windshield glass clear. The standard equipped air conditioning system uses an environmentally friendly 134a refrigerant and features electronic controls. The new control unit (see Figure 21) replaces the previous analog design and communicates with the various HVAC components via CAN communication.

Performance:
Heater 16,400 BTU/hr
Air Conditioner (Option) 16,000 BTU/hr
HVAC system air flow up to 265 CFM

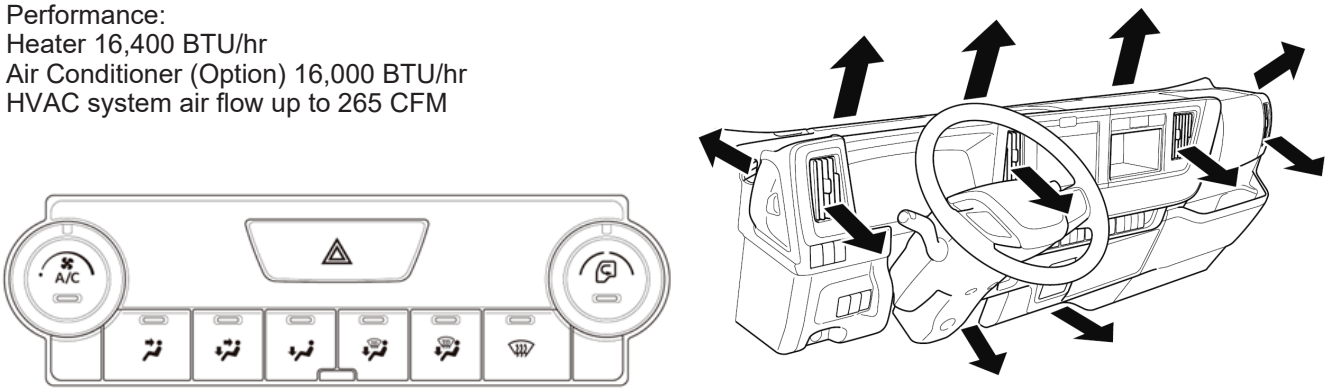


Figure 21: Electronic Manual Air Condition Controls and Air Outlets

Interior Trim Features

For the 2025MY, Isuzu introduced an all new cab interior with features that increase comfort, reduce driver fatigue, and enhance safety. Drivers will find the cab has a spacious environment with ample shoulder and head room. The standard high back driver's and passenger seats have been made slightly taller (added 40 mm) to improve comfort for larger drivers. The center passenger seat has a tray mounted on the back side to provide a convenient work area for the driver inside the cab out of the elements. The driver's seat has also been upgraded with a new folding arm rest and a new slide adjustment that can move further and lock into more intervals along the range. The slide adjustment lever has been improved into a bar design that spans the entire width of the seat for easier handling.

An optional port installed suspension divers' seat is available in the standard cab chassis. Additional storage for maps and other papers is provided in easy to reach door pockets, the passenger seat back, as well as several built-in storage areas in the dash. The overhead storage shelf has been expanded with a new center section and a rear organizer tray is standard equipment on all N-Series chassis. A LED interior dome light is installed for a brighter cab in night time operations.

To further enhance safety, the N-Series diesel offers a wide range of standard and optional safety features. SRS frontal airbags have been introduced for the driver and outboard passenger seats as a standard feature on every 2025MY N-Series diesel truck. Airbags provide supplemental protection and are designed to work in combination with seatbelts. The passenger airbag on-off switch is located on the passenger side of the instrument panel and is visible only when the passenger front door is open.

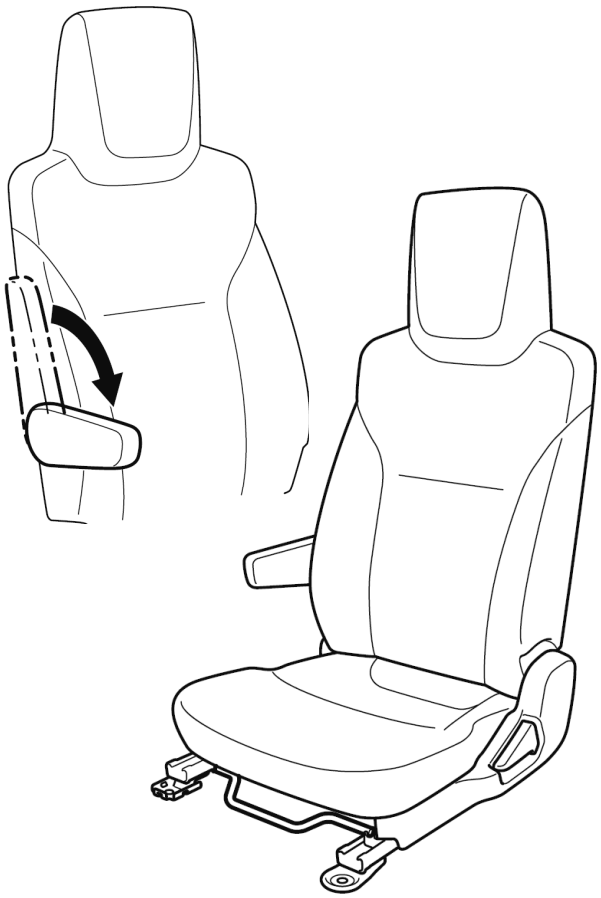


Figure 22: Driver's Arm Rest and Seat Adjustment Lever

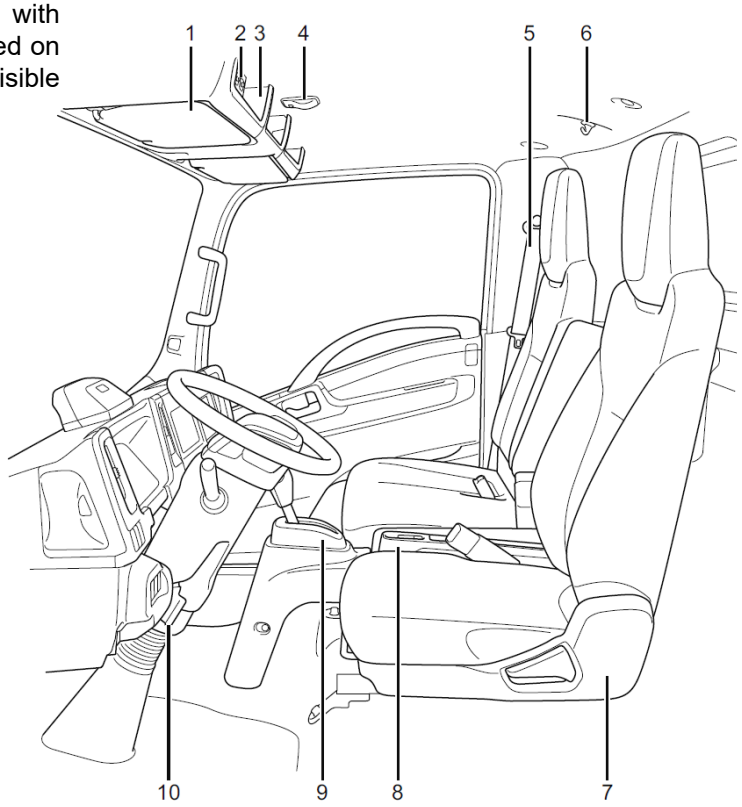


Figure 23: Updated Interior

No.	Equipment
1	Sun visor
2	Remote control mirror switch (optional)
3	Overhead tray
4	Dome light
5	Seat belt
6	Coat hook

No.	Equipment
7	Seat
8	Parking brake lever (standard)
	Electric parking brake switch (optional)
9	Selector lever
10	Fully adjustable steering

Steering wheel construction has been significantly updated for the 2025MY N-Series Diesel. The center of the wheel now features an integrated SRS frontal airbag and an array of switches for controlling the radio, phone calls, ADAS, and MID functions. To improve the driving experience, the overall size has been decreased from 16-in. to 15-in. and updated materials wrap the wheel.

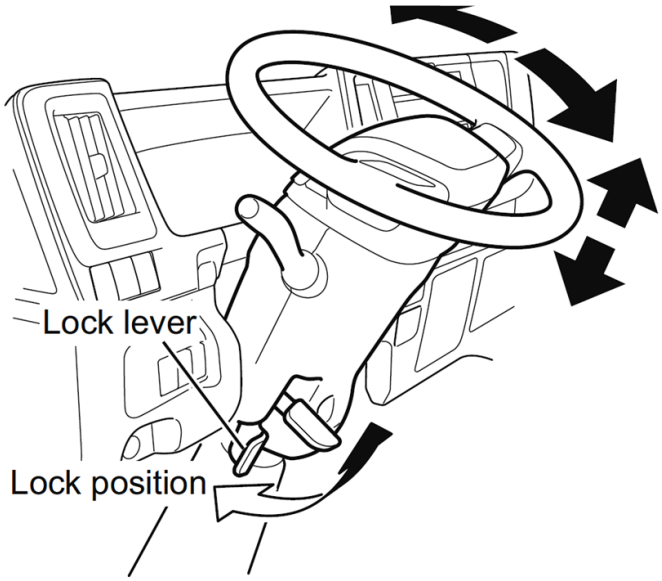
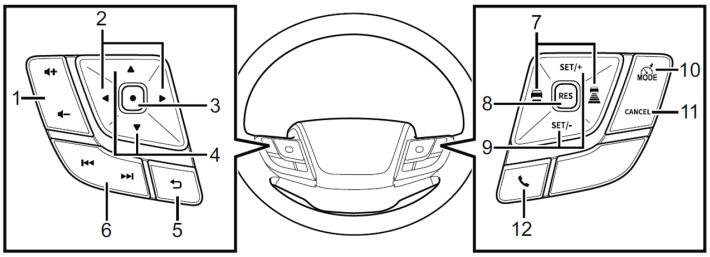


Figure 24: N-Series Diesel Steering Column

The parking brake handle is located between the driver's seat and the center passenger seat and comes on standard models as a mechanical lever with a release button. N-Series diesel chassis equipped with the factory optional ADAS package will instead feature an electronic parking brake that is controlled by a switch as shown in Figure 26. This location provides an unobstructed floor for increased driver comfort. The rubber floor cover is durable and easy to maintain. A heavy-duty floor mat is standard. The automotive style instrument panel has a low-profile design for improved downward visibility. The cab is fully trimmed to provide a quieter environment. Cup holders are mounted between the seats within convenient reach of the driver and will handle large convenience store cups. A slide out, dash mounted cup holder accommodates smaller sized cups.



No.	Equipment	Page
1	Volume adjust button	6-22 6-47
2	Right/left switch	3-29
3	Enter switch	
4	Up/down switch	
5	Return switch	
6	Tune/track button	6-22
7	Following distance setting switch (optional)	5-14

No.	Equipment	Page
8	Resume switch	4-94 5-2*
9	Set switch	
10	Mode switch	
11	Cancel switch	
12	Off hook/on hook button	6-47

*: Model with Advanced Driver Assistance System only

Figure 25: N-Series Diesel Steering Wheel Switches

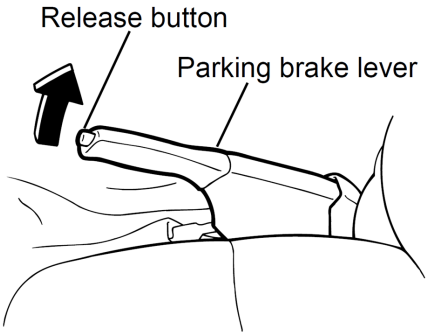
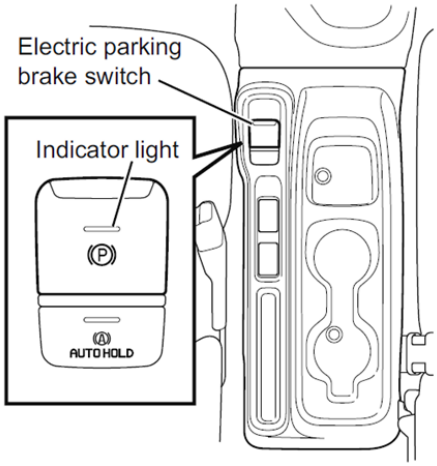


Figure 26: N-Series Diesel Manual Parking Brake



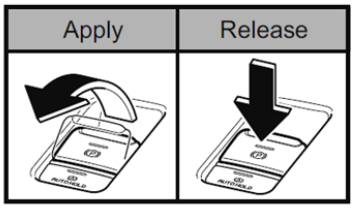


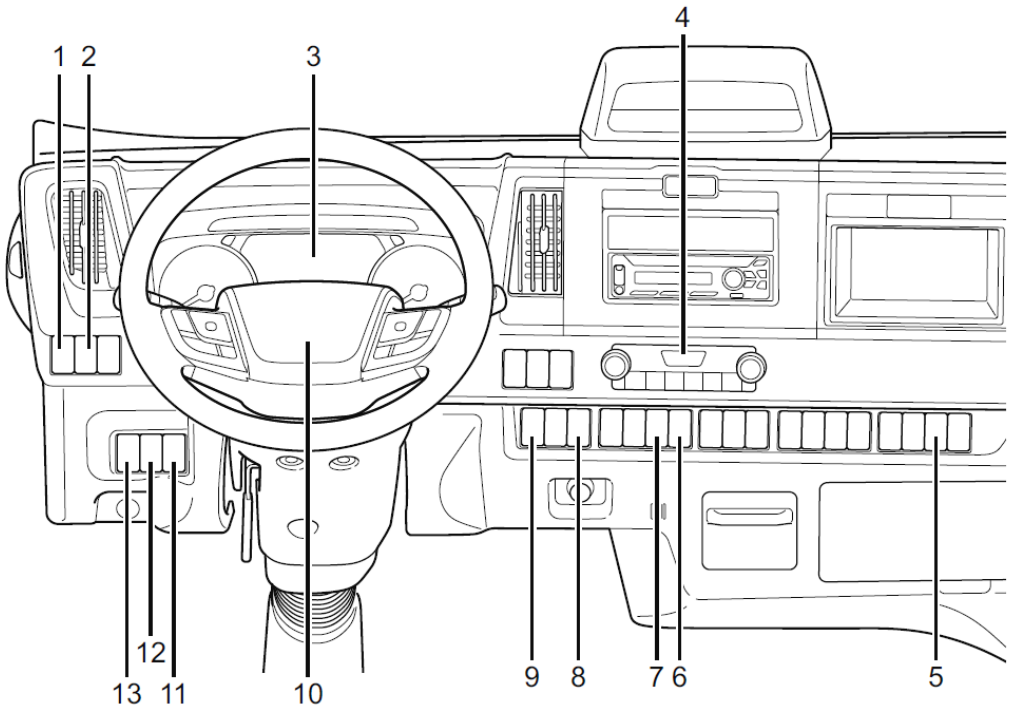
Figure 27: N-Series Diesel Electric Parking Brake

Instrumentation

The instrument cluster of the 2025MY N-Series cab has been fully redesigned with new 7-in color Multi-Information Display (MID) in addition to the speedometer, tachometer, fuel gauges, and temperature gauges. Combined with the redesigned steering wheel, instrument visibility is greatly enhanced.

Frequently used switches are styled for easy operation, and illuminated for operation at night. ISO symbols are used on the switches and instrument panel for standard recognition of control components. The combination switches are designed to fit naturally in the hand. Their function is clearly marked on the lever for easy recognition. Intermittent wiper operation intervals have been improved for a greater range of speed options. A headlight washer function has also been added to these controls for a quick and easy way of clearing the LED headlights of ice or road spray. The headlights control switch now features an AUTO function that employs a new ambient light sensor mounted ahead of the driver, just behind the windshield. This system will automatically turn on the headlights when driving in low light conditions. Cornering lights are standard to improve nighttime visibility when the turn signals are operated and headlights are on.

Standard cruise control is equipped on every N-Series vehicle with new controls positioned on the steering wheel for easy access. PTO functions can also be adjusted through the cruise control switches once enabled by the optional PTO engage switch or through connectors on the frame. An AM/FM Radio with aux input, USB port, and Bluetooth is standard equipment. The dash also has a “5 DIN” opening suitable for other electronic equipment.

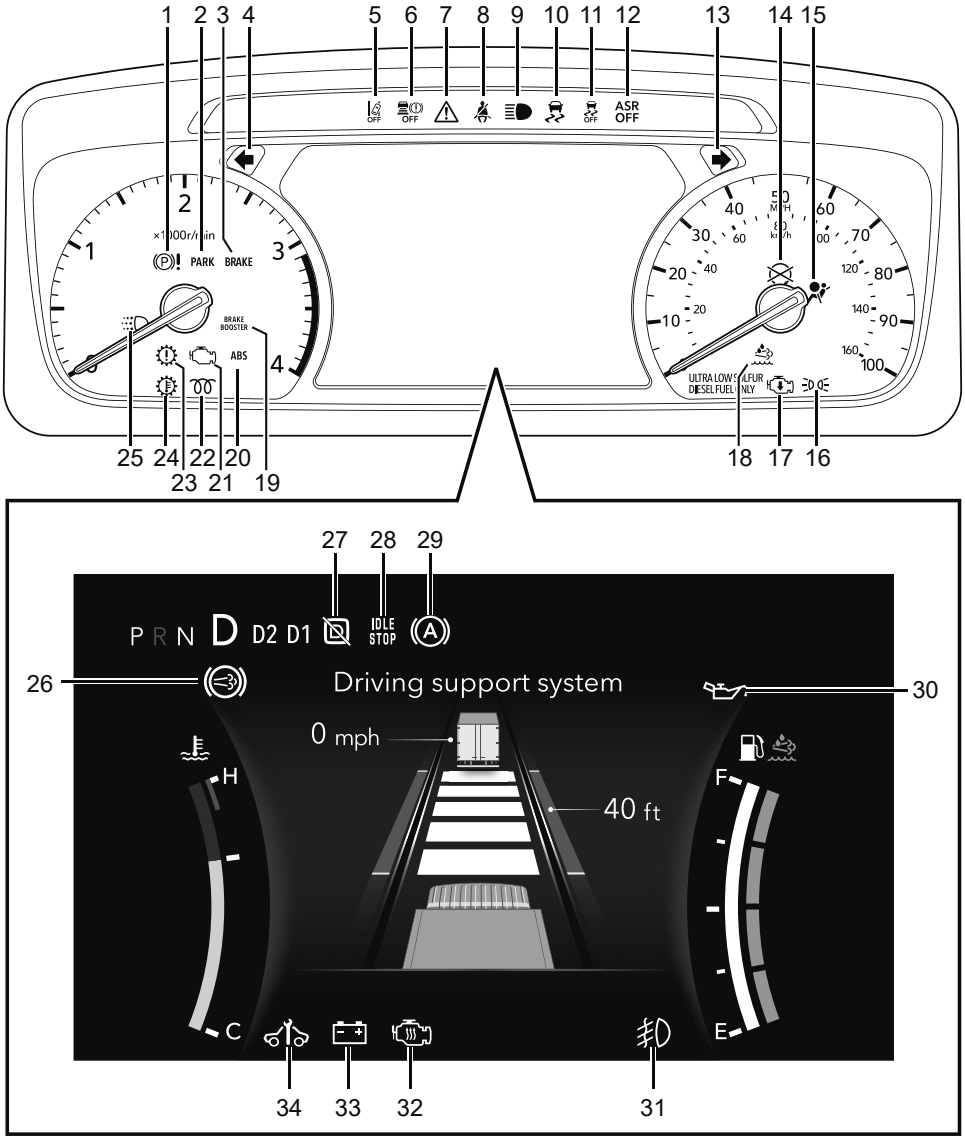


Dash Panel Switches and Controls

No.	Description	No.	Description
1	Front fog light switch (optional)	8	Outside rearview mirror heater switch (optional)
2	Rear body interior light switch	9	DPF switch
3	Instruments, warning lights and indicator lights	10	Horn button & SRS Frontal Airbag
4	Hazard warning flasher switch	11	Instrument panel light level control
5	USB power outlet	12	PTO main switch (optional)
6	LDWS switch (ADAS models only)	13	PTO engine speed control switch (optional)
7	ESC OFF switch		

Figure 28: N-Series Diesel Dash Panel

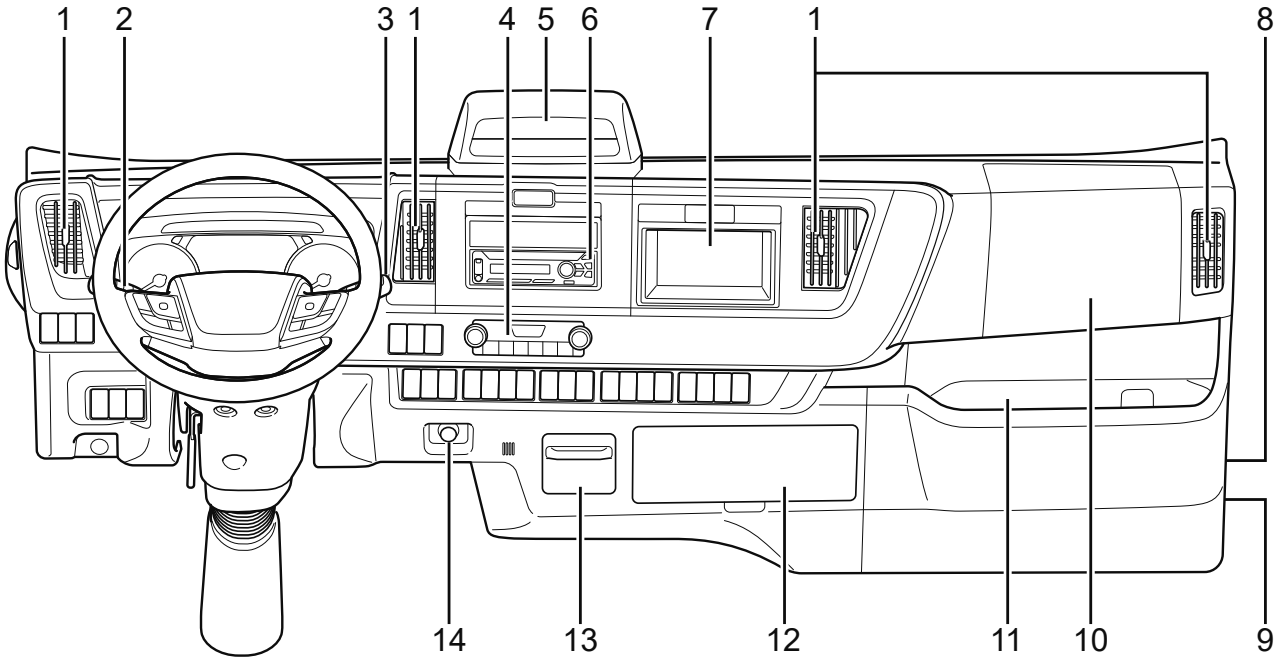
Warning and Indicator Lights



No.	Description	No.	Description
1	Electric parking brake warning light [1]	18	Diesel exhaust fluid (DEF) indicator light
2	Parking brake warning light	19	Brake low vacuum warning light
3	Brake system warning light	20	ABS warning light
4	Turn signal and hazard warning flasher indicator light - Left	21	Check engine malfunction indicator light
5	LDWS OFF indicator light	22	Glow plug indicator light
6	AEBS OFF indicator light	23	Check transmission warning light
7	Master warning light	24	Automatic transmission fluid (ATF) temperature warning light
8	Seat belt warning light	25	Daytime running lights (DRL) indicator light
9	Headlights high beam indicator light	26	Exhaust brake indicator light
10	ESC warning light	27	Overdrive off indicator light
11	ESC OFF indicator light	28	Idling stop indicator light
12	ASR OFF indicator light	29	Auto Brake Hold indicator light & warning light [1]
13	Turn signal and hazard warning flasher indicator light - Right	30	Engine oil pressure warning light
14	Engine alarm (shutdown) warning light	31	Fog light indicator light (optional)
15	SRS Frontal airbag warning light	32	Warm-up system indicator light
16	Lights on indicator light	33	Battery discharge warning light
17	Reduced engine power indicator light	34	Service vehicle soon (SVS) indicator light

Notes: [1] ADAS equipped models only

Figure 29: Warning and Indicator Lights



No.	Description
1	Air flow direction control lever
2	Combination light control switch & turn signal switch
3	Exhaust brake switch, windshield wiper switch, headlamp washer and windshield washer switch
4	Heater/air conditioner
5	Small article storage pocket (ADAS equipped models only)
6	Radio with Bluetooth
7	Small article storage pocket
8	Windshield washer fluid tank
9	Passenger Airbag on-off switch
10	Outboard Passenger SRS Frontal Airbag
11	Passenger side cup holder and storage pocket
12	Relay box
13	Cup holder
14	Accessory power outlet

Figure 30: N-Series Diesel Instrument Panel

DATA BOOK REVISION

Date:

Subject: