

MODEL	NPR Gas
GVWR / GCWR	12,000 lbs. / 18,000 lbs.
WB	109 in., 132.5 in., 150 in., 176 in.
CA	86.5 in., 110 in., 127.5 in., 153.5 in.
ENGINE	GMPT L8T (Gen V), 8-cylinder, V Block 4-cycle, OHV, Direct Fuel Injection, Oil Jet Piston Cooling
MODEL/DISPLACEMENT	GMPT-V8/400 CID (6.6 liters)
HP (GROSS)	350 HP @ 4500 RPM
TORQUE (GROSS)	425 lb.-ft. @ 3800 RPM
EQUIPMENT	Direct injection technology, mass air flow meter, powertrain interface module (PIM), onboard diagnostics, oxygen sensors, catalytic convertor, map sensor, with external oil cooler, engine cruise control, and rear engine cover.
TRANSMISSION	8L90 Hydra-Matic, 8-speed automatic with lock-up converter and overdrive. No PTO opening.
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 lbs.
FRONT SUSPENSION	Semi-elliptical steel alloy tapered leaf springs with stabilizer bar and shock absorbers.
FRONT GAWR	4,860 lbs.
REAR AXLE	Full floating single speed with hypoid gearing rated at 14,550 lbs.
REAR SUSPENSION	Semi-elliptical steel alloy multi-leaf springs and shock absorbers.
REAR GAWR	8,840 lbs.
WHEELS	16 x 6.0 - 6 hole disc wheels, painted white.
TIRES	215/85R-16E (10 ply) LRR (Low Rolling Resistance) tubeless steel belted radials, all season front and rear
BRAKES	Vacuum + Power Assist; hydraulic 4-wheel disc brakes with 4-channel ABS. Mechanical, transmission mounted parking brake. Non-asbestos semi metallic linings are standard.
FUEL TANK	38.6 gal. rectangular stainless steel fuel tank. Mounted between the frame rails with electric type fuel pump (mounted in tank) and fuel tank zone module (mounted on rearward crossmember). Through the rail fuel fill.
FRAME	Ladder type channel section straight frame rail 33.5 inches wide through the total length of the frame. Yield strength 44,000 psi, section modulus 7.20 in ³ ., RBM 316,800 lb-in
CAB	All steel, low cab forward, BBC 70.9 in, 45° mechanical tilt with torsion assist.
CAB EQUIPMENT	TRICOT breathable cloth covered high back driver's seat 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. AM/FM Radio with Aux input/USB port and Bluetooth. Rear body dome lamp switch. Cab latch switch and indicator with buzzer. Bi-LED Head Lamps and Signature Light.
ELECTRICAL	12 volt, negative ground, 750 CCA maintenance free battery located on frame, 170 Amp alternator with integral regulator.
OPTIONS	See last page for options.

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

MODEL	NPR-HD Gas
GVWR / GCWR	14,500 lbs. / 20,500 lbs.
WB	109 in., 132.5 in., 150 in., 176 in.
CA	86.5 in., 110 in., 127.5 in., 153.5 in.
ENGINE	GMPT L8T (Gen V), 8-cylinder, V Block 4-cycle, OHV, Direct Fuel Injection, Oil Jet Piston Cooling
MODEL/DISPLACEMENT	GMPT-V8/400 CID (6.6 liters)
HP (GROSS)	350 HP @ 4500 RPM
TORQUE (GROSS)	425 lb.-ft. @ 3800 RPM
EQUIPMENT	Direct injection technology, mass air flow meter, powertrain interface module (PIM), onboard diagnostics, oxygen sensors, catalytic convertor, map sensor, with external oil cooler, engine cruise control, and rear engine cover.
TRANSMISSION	8L90 Hydra-Matic, 8-speed automatic with lock-up converter and overdrive. No PTO opening.
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 lbs.
FRONT SUSPENSION	Semi-elliptical steel alloy tapered leaf springs with stabilizer bar and shock absorbers.
FRONT GAWR	6,630 lbs.
REAR AXLE	Full floating single speed with hypoid gearing rated at 14,550 lbs.
REAR SUSPENSION	Semi-elliptical steel alloy multi-leaf springs and shock absorbers.
REAR GAWR	11,020 lbs.
WHEELS	19.5 x 6.0 - 6 hole disc wheels, painted white.
TIRES	225/70R-19.5G (14 ply) LRR (Low Rolling Resistance) tubeless steel belted radials, all season front and rear
BRAKES	Vacuum + Power Assist; hydraulic 4-wheel disc brakes with 4-channel ABS. Mechanical, transmission mounted parking brake. Non-asbestos semi metallic linings are standard.
FUEL TANK	38.6 gal. rectangular stainless steel fuel tank. Mounted between the frame rails with electric type fuel pump (mounted in tank) and fuel tank zone module (mounted on rearward crossmember). Through the rail fuel fill.
FRAME	Ladder type channel section straight frame rail 33.5 inches wide through the total length of the frame. Yield strength 44,000 psi, section modulus 7.20 in ³ ., RBM 316,800 lb-in
CAB	All steel, low cab forward, BBC 70.9 in, 45° mechanical tilt with torsion assist.
CAB EQUIPMENT	TRICOT breathable cloth covered high back driver's seat 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. AM/FM Radio with Aux input/USB port and Bluetooth. Rear body dome lamp switch. Cab latch switch and indicator with buzzer. Bi-LED Head Lamps and Signature Light.
ELECTRICAL	12 volt, negative ground, 750 CCA maintenance free battery located on frame, 170 Amp alternator with integral regulator.
OPTIONS	See last page for options.

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

VEHICLE WEIGHTS AND DIMENSIONS

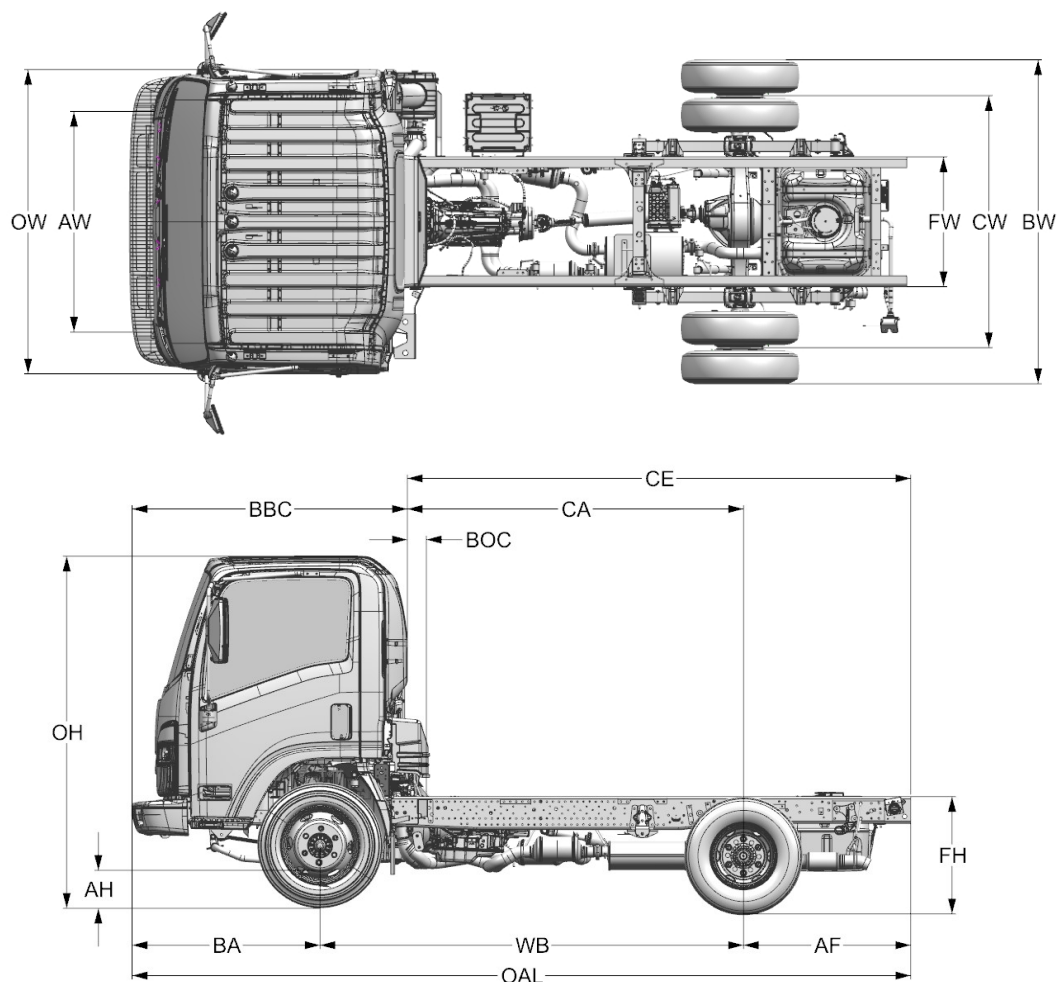


Figure 1: N-Series Gas Cab Chassis Dimensions

CHASSIS DIMENSIONS (in.)				
WB	CA[1]	CE[2]	AF	OAL
109	86.5	129.6	43.1	200.5
132.5	110.0	153.1	43.1	224.0
150	127.5	170.6	43.1	241.5
176	153.5	196.6	43.1	267.5
DIMENSION CONSTANTS (in.)				
AW = Front axle track				65.6
BA = Front bumper to centerline of axle				48.4
BBC = Bumper to back of cab				70.9
BOC = Back of cab clearance				7.7
BW = Overall width across rear axle				83.3
CW = Rear axle track				65
FW = Frame width				33.5
OW = Overall width across cab (without mirrors)				81.3
VARIABLE DIMENSIONS BY GVWR (in.)			12,000 lb.	14,500 lb.
AH = Ground to bottom of axle			7.5	8.3
FH = Frame height (unladen) at E.O.F.[3]			31.8	33
OH = Overall height (without clearance lights)			90	90.9

Chassis Curb Weights and Payloads						
NPR GAS STANDARD CAB - 12,000 lb. GVWR:						
Model	WB	Unit	Front	Rear	Total	Payload
1C1	109	lbs.	3309	1845	5154	6846
1C2	132.5	lbs.	3360	1896	5256	6744
1C3	150	lbs.	3380	1905	5285	6715
1C4	176	lbs.	3408	1925	5333	6667
NPR-HD GAS STANDARD CAB - 14,500 lb. GVWR:						
Model	WB	Unit	Front	Rear	Total	Payload
1F1	109	lbs.	3439	2075	5514	8986
1F2	132.5	lbs.	3488	2105	5593	8907
1F3	150	lbs.	3519	2114	5633	8867
1F4	176	lbs.	3549	2125	5674	8826

Notes: [1] Effective CA is CA less BOC.

[2] Effective CE is CE less BOC.

[3] Measured at the end of the frame from the top of the frame to the ground at curb weight.

[4] Chassis curb weight reflects standard equipment and fuel, but no driver or payload.

[5] 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		
Description	NPR Capacity (lb.)	NPR-HD Capacity (lb.)
GVWR Designed Maximum	12,000	14,500
GCWR Combined Maximum	18,000	20,500
GAWR – Front	4,860	6,630
GAWR – Rear	8,840	11,020

Model Description

The N-Series Gasoline vehicle features a low cab forward design that is ideally suited for intercity applications. The low cab design minimizes overall length for a given body length and in conjunction with the set back front axle positioning provides excellent weight distribution. The 49.5-degree (46.5 on 14,500lb GVWR) inside wheel cut angle coupled with integral power steering makes it an extremely maneuverable truck.

Engine

The N-Series Gasoline chassis is powered by a GMPT Gen V V8 gasoline engine with a displacement of 400 cubic inches (6.6 liters). This engine combines GM's Gen V aluminum head design with direct injection combustion technology to achieve a broader horsepower band and strong low-rpm torque. Oil-jet piston cooling channels are incorporated into the engine cast-iron cylinder block for optimized durability under heavy-duty use.

Engine Data: GMPT-V8 w/50 State Certification

Power:	350 HP @ 4500 RPM
Torque:	425 lb.-ft. @ 3800 RPM
Governed Speed:	4500 RPM
Injection:	Direct Fuel Injection
Displacement:	400 CID (6.6L)
Cylinder Bore:	103.25 mm
Cylinder Stroke:	98.0 mm
Cylinders:	8
Operating Cycles:	4-cycle
Compression:	10.8:1



*SAE J1349 Gross ratings without fan operating.

Figure 2: GMPT Gen V V8 Engine

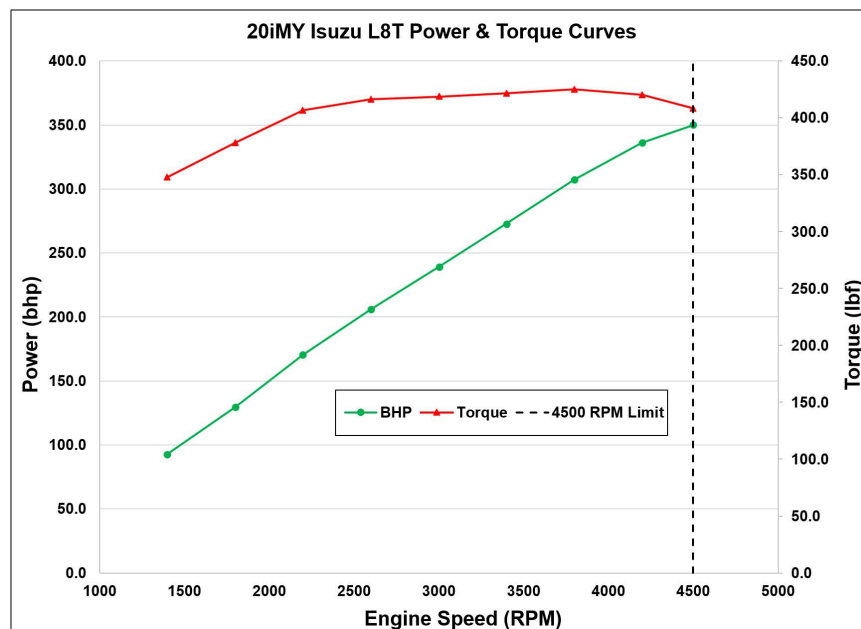


Figure 3: N-Series Gas Engine Performance Curve

Engine Features

The L8T GMPT GEN V V8 truck engine brings a selection of advanced engine technology to the Isuzu gas chassis platform. Bringing improved fuel economy, improved performance, and reduced green house gas emissions to meet current and prepare for future environmental regulations.

Featuring a cast-iron cylinder block, aluminum heads, and direct fuel injection; the 6.6L L8T engine is designed to provide a stronger feeling of on demand power with increased torque that appears earlier in the RPM range. With a cylinder compression ratio of 10.8:1, the L8T achieves a broad torque band on regular 87-octane gasoline. This engine also features the new GM E93 engine controller (ECM) and a standalone fuel tank zone module mounted behind the fuel tank.

Cast-iron Cylinder Block

A durable cast-iron cylinder block serves as the foundation for the L8T's heavy-duty design. Jet-spray piston cooling channels are incorporated directly into the block for optimal durability. While a six-bolt main cap design helps limit crank flex and stiffen the overall engine structure. The sides of the block are extended below the crankshaft centerline to maximize strength and minimize vibrations.

Aluminum Heads

Combined with the direct injection fuel system, GM's GEN V aluminum heads maximize airflow at high engine speeds to deliver strong low rpm torque and a broad horsepower band. The intake ports are large and straight, featuring a slight twist for enhanced mixing at lower rpms. Exhaust valves are constructed from Inconel alloy to help with heat dissipation and valvetrain reliability.

Direct Injection Technology

The L8T engine brings direct injection technology to the Isuzu gas chassis product line. Advancing from the previous sequential port fuel injection, direct injection introduces fuel directly into the combustion chamber for precise fuel control and a more complete burn. Fuel atomization at cold temperatures has also been improved for better starting in these conditions.

Long Life Systems

The L8T offers several long life systems. The ignition system is virtually maintenance free for the first 97,500 miles. The system includes platinum tipped spark plugs and low resistance spark plug wires. The cooling system includes a long life coolant that is rated for 2 years or 52,500 miles. An extended life accessory belt and MELCO starter are standard equipment.

Exhaust System

A new exhaust manifold design supports higher engine performance and improved tailpipe emissions. The exhaust manifold features a three-bolt flange to reduce leakage. The dual exhaust system has catalytic converters and routes to a single muffler.

Engine Control Module (ECM) & On Board Diagnostics

The vehicle has been equipped with an ECM (Engine Control Module). This module is used to control the Engine, the vehicle performance parameters, and the on board diagnostic systems. The ECM monitors a wide variety of emission systems and components for the slightest level of deterioration or malfunction. To monitor these systems the ECM uses a MAF sensor, crankshaft and camshaft position sensors, a MAP sensor, manifold temperature sensor, knock sensors, throttle position sensors, engine coolant sensor, and an engine oil pressure sensor.

The ECM also includes a starter control which ensure that if the key is prematurely released the starter motor will continue to crank until the engine starts, and also if the key is held for an excessive period the ECM will disengage the starter preventing overheating and damage to the starter. Finally, if the key is switched to crank while the motor is running the ECM will not allow the starter motor to crank. All input information is analyzed by the ECM to determine if engine emission levels and current operating status of the engine are within the operating levels that are required to meet today's increasingly stringent emission requirements. The ECM is also capable of storing and retrieving diagnostic codes to help technicians diagnose and fix problems faster and with more accuracy.

Transmission Control Module (TCM)

The vehicle has been equipped with a Transmission Control Module (TCM) mounted inside the cab. This module controls the transmission, vehicle performance parameters, and on board diagnostics. The TCM analyses data from both the ECM and transmission to select the most efficient transmission shifting algorithms for the given environment. All input information is analyzed by the TCM to determine if the transmission operating status is within the operating levels that are required to meet today's increasingly stringent emission requirements. The TCM is also capable of storing and retrieving diagnostic codes to help technicians identify and fix problems faster with more accuracy.

Cooling

The system features a controlled by-pass thermostat that enhances overall system performance. The system design improves bank-to-bank coolant flow balance, and expedites warm up and overall heater performance. The new 1" heavy duty water pump bearing is designed to extend water pump life. The radiator is a 2-row tube and fin type with an area of 506 square inches. The engine uses a viscous fan clutch hub.

Air Cleaner

Paper element with cyclone action, 11-in. diameter, back of cab location. Vertical intake stack on back of cab.

Evaporative Emission System

This system features an activated carbon storage canister that collects fuel vapors that are retained when the vehicle is not in operation. When the vehicle is operating these vapors are drawn in to the engine where they are consumed in the normal combustion process.

Emission Levels

The vehicle is certified to the following levels:

12,000 GVW Gas NPR:

Federal Emission Certificate & California MD ULEV
Emission Certificate

14,500 GVWR Gas NPR HD:

Federal Emission Certificate & California HD Emission
Certificate

Fuel

Fuel pump control no longer resides solely within the ECM, and is now supported by a standalone fuel tank zone module (FTZM). The FTZM is located on the rearmost crossmember behind the fuel tank. The FTZM cannot be relocated. Regular unleaded gasoline with a posted octane rating of 87 or higher should be used. It should meet ASTM D4814 in the U.S. and CGSB 3.5-M87 in Canada. Gasoline with a posted octane rating of less than 87 should not be used in this vehicle. Gasoline containing more than 15% MTBE should not be used in this vehicle. This system has four oxygen (O₂) sensors that help keep your engine's air fuel mixture at a proper level. Use only unleaded fuel in your vehicle. If you use leaded fuel, you could damage your oxygen (O₂) sensors and emission control system.

The following fuels **should not** be used in this vehicle:

- Fuels containing more than 5% methanol
- Fuels containing more than 10% ethanol, such as E15 or E85

NOTICE

1. The above-mentioned fuels can corrode metal parts within the fuel system. They can also damage plastic and rubber parts. This damage would not be covered under your warranty.
2. Fuels containing 5% methanol or less must contain cosolvents and corrosion prevention additives to avoid damage to the fuel system.

Fuel Filter

Fuel filter is located inside the fuel tank.

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 which is attached to the rear of the first shaft and is 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.

WB	109	132.5	150	176
No. of Shafts	1	2	2	2
Shaft #1 O.D. (Inches)	3.25			
Thickness (Inches)	0.0906			
L (Inches)	35.51	21.73	35.91	46.54
Type	A	B	B	B
Shaft #2 O.D. (Inches)	3.25			
Thickness (Inches)	0.0906			
L (Inches)	N/A	31.38	34.92	50.08
Type	N/A	C	C	C

Figure 4: N-Series Gas Propeller Shaft Lengths

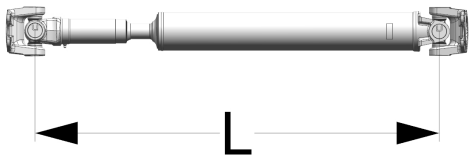
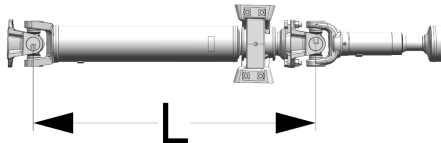
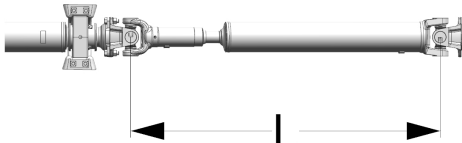
Type	Description	Illustration
Type A	1 st shaft in 1 piece driveline.	
Type B	1 st shaft in 2 piece driveline.	
Type C	2 nd shaft in 2 piece driveline.	

Figure 5: N-Series Gas Propeller Shaft

Transmission

For good vehicle performance under load, the N-Series gas chassis uses a 8L90 8-speed automatic transmission with lock-up converter and overdrive. The key drivetrain components in the N-Series Gas engine, transmission and rear axle are all engineered and matched to operate as a team to provide optimal performance and economy. The 8L90 transmission does not have a PTO gear or opening. The NPR/NPR-HD Gas chassis is equipped with a transmission fluid cooler that is mounted in front of the radiator and should not be obstructed.

Model	8L90	
Gear	Ratio	
1 ST	4.56:1	– 8-speed overdrive with converter lock-up in 2ND - 8TH gears during acceleration and deceleration. – Electronic shift control through microprocessor. – Torque converter multiplication ratio of 1.84:1. – Isuzu N-Series Gas application utilizes a single stator assembly.
2 ND	2.97:1	
3 RD	2.08:1	
4 TH	1.69:1	
5 TH	1.27:1	
6 TH	1.00:1	
7 TH	0.85:1	
8 TH	0.65:1	
Reverse	3.82:1	

Steering System

The N-Series Gas 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.

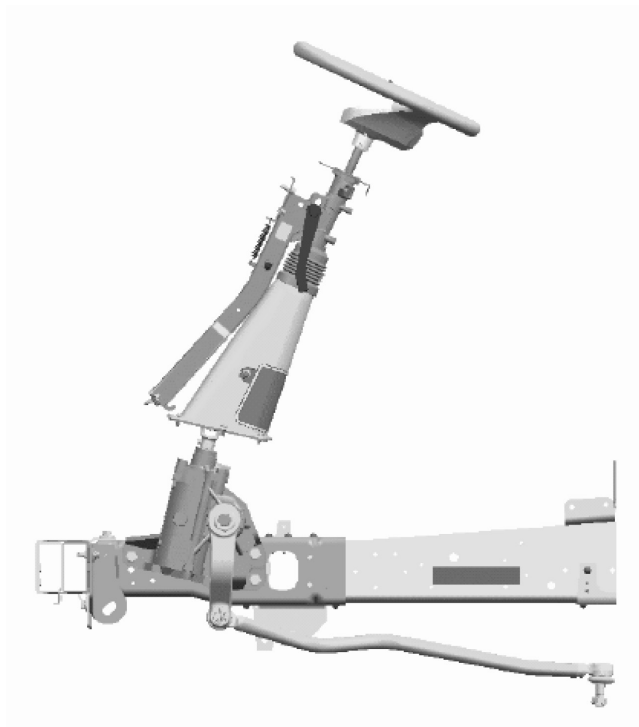


Figure 7: N-Series Gas Steering Column

Turning Diameters

The NPR and NPR-HD Gas chassis steering features a 49.5 and 46.5 degree inside wheel cut angle, respectively. This, coupled with the integral power steering, makes the N-Series Gas chassis an extremely maneuverable truck.

Turning Diameters (design value)

NPR Gas: 49.5° inner wheel cut

WB (in)	B (ft) curb to curb	C (ft) wall to wall
109	32.0	37.5
132.5	38.8	44.2
150	43.8	49.1
176	51.3	56.6

NPR-HD Gas: 46.5° inner wheel cut

WB (in)	B (ft) curb to curb	C (ft) wall to wall
109	33.0	38.3
132.5	39.9	45.2
150	45.1	50.3
176	52.8	58.0

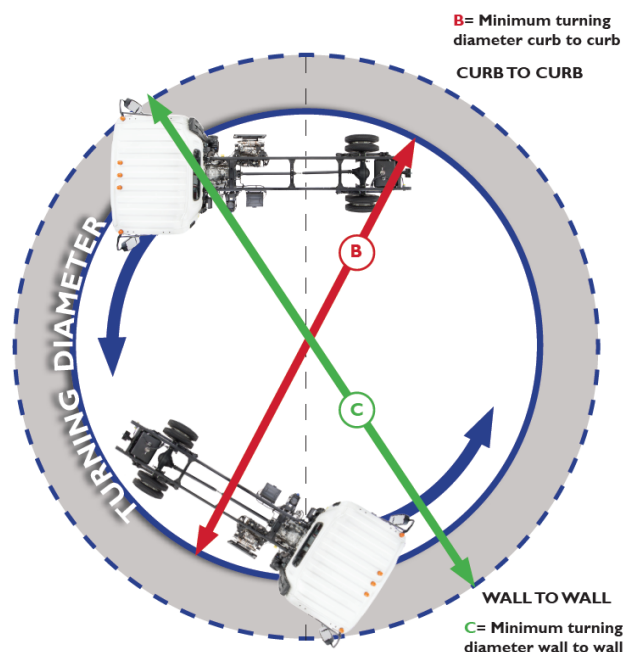


Figure 8: N-Series Gas Turning Circle Diagram

Front Axle

The N-Series Gas front axle is a drop forged steel, reverse Elliot, "I"-Beam.

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
Hub Lubrication	Grease

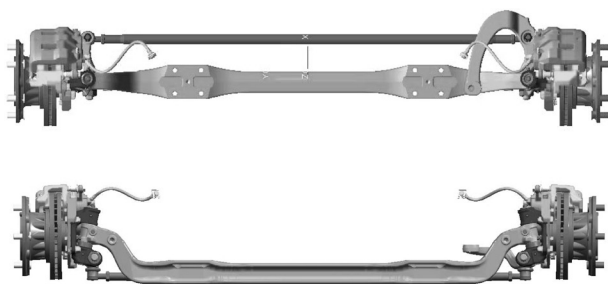


Figure 9: N-Series Gas Front Axle

Front Suspension

The front suspension is semi-elliptical tapered leaf spring. Includes shock absorbers and stabilizer bar.

Front Suspension Specifications

Type	Semi Elliptical Tapered Leaf Springs	
GVWR	12,000 lbs.	14,500 lbs.
Capacity	6,830 lbs.	6,830 lbs.
Stabilizer Bar Diameter	1.65 in.	
Stabilizer Bar Thickness	0.16 in.	

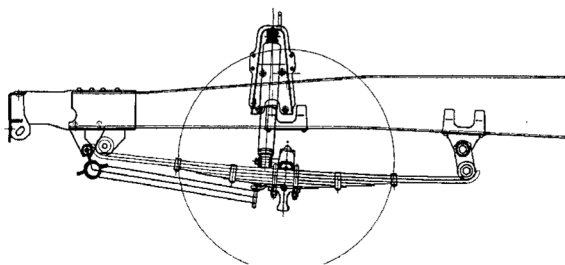


Figure 10: N-Series Gas Front Suspension

Rear Axle

The N-Series Gas has full floating rear axle with a banjo type housing and separable carrier. The wheel bearings are tapered roller type for long service life and feature oil bath lubrication.

Rear Axle Specifications:

Type	Full Floating Banjo
Rated Capacity	14,550 lbs.
Tread Width	65.0 in.
Gear Type	Hypoid
Ring Gear Diameter	11.5 in.
Differential Type	4 Pinion Gear
Ratio (by GVWR)	12,000 lbs.: 3.9:1 14,500 lbs.: 4.1:1
Hub Lubrication	Oil
Oil Type	SAE 90H
Oil Capacity	10.0 liters

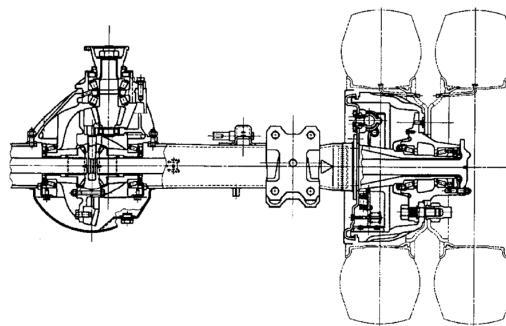


Figure 11: N-Series Gas Rear Axle

Rear Suspension

The rear suspension consists of semi-elliptical main and auxiliary multi-leaf spring. Includes shock absorbers.

Rear Suspension Specifications

Type	Multi-leaf Springs	
GVWR	12,000 lbs.	14,500 lbs.
Capacity	12,900 lbs.	12,900 lbs.

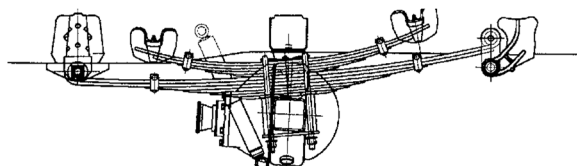


Figure 12: N-Series Gas Rear Suspension

Frame

The frame in the N-Series Gas is a ladder-type, channel section, straight rail from bumper to end of frame with a rivet-less top flange.

The frame material is a heat treated, carbon manganese, low alloy steel with good weldability. New 80/40 mm modular hole spacing is standard and assists in making body mounting easier and faster for equipment suppliers. The chassis is equipped with a steel reinforced composite front bumper for greater cab protection and improved styling.

Frame Specifications

	Cab Chassis			
Side Rail Section	8.5 in. X 2.76 in. X 0.24 in.			
Combined Section Modulus	7.20 in ³			
Yield Strength	44,000 psi			
Rated RBM (per rail)	316,800 lb-in			
WB	109	132.5	150	176
Number of Crossmembers	5	6	6	6
Frame Width	33.5 in (850 mm)			

Figure 13: N-Series Gas Frame



Figure 14: N-Series Gas Frame

Limited Slip Differential (LSD)

A limited slip differential is available from the factory. This LSD will help provide additional traction under conditions where road surface traction has been decreased.

Oil Type: Multi purpose gear oil SAE90 GL-5 for limited slip differential together with limited slip differential lubricant additive (Part No. 8-01052-358-0) or equivalent.

Fuel Tank

The fuel tank is mounted within the frame rails behind the rear axle, above the rear suspension area. This location enhances vehicle safety while providing easier installation of vocational bodies. The fuel tank is constructed from stainless steel and is rectangular in shape. It is equipped with a fuel fill hose, an electric fuel pump (mounted within tank), and a fuel tank zone module mounted to the rearward crossmember. The fuel tank zone module cannot be relocated.



Tank Size/Type: 38.6 gal. stainless steel

Figure 15: N-Series Gas Fuel Tank

Brake System

The N-Series gas 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.

Brake Specifications

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

Front Disc:	NPR	NPR-HD
Overall Diameter	11.5 in	14.3 in.
Effect Diameter	9.4 in	11.7 in.
Swept Area Pad	115.5 in	203.0 in ²
Thickness	0.51 in	0.51 in.

Rear Disk:		
Overall Diameter	11.5 in	13.7 in.
Effect Diameter	9.4 in	11.01 in.
Swept Area Pad	115.5 in ²	191.7 in ² .
Thickness	0.51 in	0.51 in.

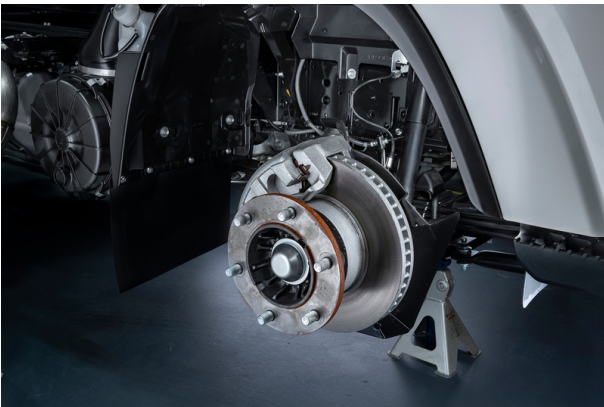


Figure 16: N-Series Brakes

Electrical**Battery Specifications:**

A 12 volt Group 31 maintenance-free type battery is standard and is located outside the frame rail on the RH side aft of the air cleaner. The electrical system is 12 volt negative ground. The battery is rated at 750 CCA.

Starter Motor:

Sliding pinion type solenoid controlled with over running clutch. Bearings are oil-free, graphite-filled bronze.

Alternator:

12V-170 AMP output with integral regulator.

Alternator Max Outputs by Engine Speed (AMPS)			
Voltage by Temperature	570 rpm	950 rpm	2060 rpm
14.0V at 77°F	100.2	157.1	188.4
13.25V at 221°F	77.8	118.6	143.3
13.0V at 257°F	75.2	114	138.9

Note: For generator speed (rpm) pulley ratio = 3.159 to 1

Figure 17: N-Series Gas Alternator Output

Lighting Specifications:

- Flush surface LED head lamps with integral parking, turn signal, and cornering lamp
- Combined rear lamps: Turn Signal, Stop and Backup
- Identification/clearance lamp (shock mounted for extended bulb life)
- License plate lamp
- Day time running lights
- LED compatible flasher and rear tail lights
- Back up alarm electrical connector
- Body mounting electrical connector

Exhaust System

The exhaust system routes through oxygen sensors to dual horizontally mounted stainless steel catalytic converters and muffler on the left side of the chassis.

Standard Tire Specifications:

GVWR	12,000 lbs.	14,500 lbs.	
Manufacturer ^[1]	Yokohama TY213B	Goodyear Fuel Max RSA	Dunlop SP688A
Rev/Mile		640	638
Size	215/85	225/70R19.5G	
Type	Tubeless Steel Radial Low Rolling Resistance		
Ply Rating	10pr	14pr	
Tread	FT /RR All season		
Maximum Load Per Tire ^[3]	@ 70 psi	@ 85psi	
Front (lbs.)	2,430	3,315	
Rear (lbs.)	2,210	3,115	

Standard Wheel Specifications:

GVWR	12,000 lbs.	14,500 lbs.
Size (in):	16 x 6 K	19.5 x 6.00 RW
Bolt Holes	6 JIS	
Bolt Circle Diameter	8.75 in.	
Outside Offset	5.0 in.	
No. Piece Rim	1	
Rim Type	5° DC	15° DC
Manufacturer	TOPY	ACCURIDE
FT/RR Nut Size ^[2]	1.6142 in. (41 mm) Bud Hex	
Rear Stud Size ^[2]	0.82688 in. (21 mm) Square	
Nut/Stud Torque Specs.	325 ft.-lb. (440 N-m)	

Notes:

[1] Manufacturer specification is not permissi

[2] O.D. wrench s

[3] 70 psi on 12,000 lbs. GVWR; 85 psi on 14,500 lbs. G

Cab Features

Cab Over Engine Design

The new N-Series cab design brings an exciting fresh new look to the N-Series product. Based on the "Hexapod Design Concept" the cab has been completely redesigned to meet new emerging market demands. Cab panels, radiator grill, head-lights, and bumper have been completely redesigned to embrace the design concept that brings maximum space to the cab interior while creating a bold look on the outside of the cab. The sleek new design conveys a solid clean vehicle with a bold presence in the market place. With these enhancements the product continues to bring many customer driven improvements in low cab forward design.

The cab interior features improved driver comfort with increased head room, leg room, storage room, and a wider door opening and larger step for easier access to the cab. Once inside the driver is greeted by a new interior color scheme and enhanced visibility of a new instrument cluster. This cab has been designed to meet all current and future market trends.

The low cab forward (LCF) design used by the N-Series Gas chassis has been recognized in urban centers throughout the world for the following features:

- More cargo space within a given overall length.
- Shorter overall length with a given body length.
- Small turn diameters.
- Better driver visibility.
- Ease of entry and exit. (Wider self cleaning entry step and door opening with 85 degree door swing)

The Hexapod cab offers additional value to the customer in many other areas.

Engine Accessibility

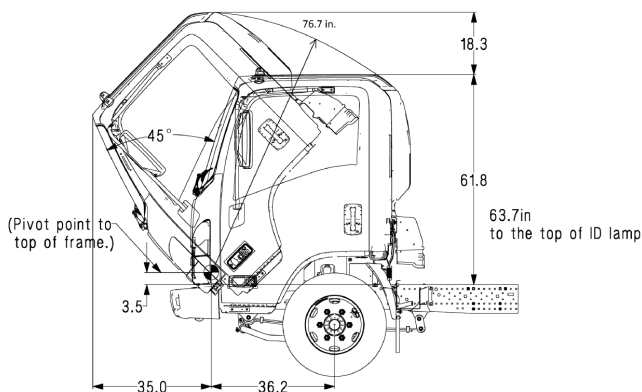


Figure 18: N-Series Gas Cab Tilt Dimensions

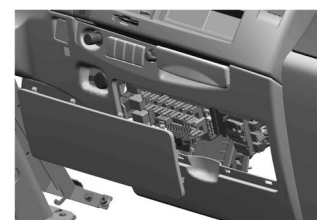
The N-Series Gas tilt cab design provides complete and easy access to the engine area for service. By following the procedure shown in the owners manual the cab can be tilted a full 45° with great ease on improved cab mounts. More engine access is provided with the tilt cab than by any conventional or 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. The engine compartment is protected from road spray by splash shields mounted under the cab. The cab floor is insulated to improve the drivers cab environment by reducing engine noise and heat in the cab interior. A rear engine cover improves the cabs appearance and further reduces noise. Convenience of operation and service are highlights of the improved cab. The hydraulic brake reservoir is located at the left end of the dash for easy inspection and service.

Fuses and electrical relays are located behind a removable panel below the center of the dash and include spare fuses and fuse puller. This location is within easy reach for access by the driver or technician. The wind-shield 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. The cab roof cap is designed to channel water off of 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 a upper tinted area for improved visibility and safety. The coolant reservoir is located at the back of cab and is also easily checked without tilting the cab. 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.



Figure 19: N-Series Gas Brake Reservoir.

Figure 20: N-Series Gas Cab Fuse Panel Location



Cab Environmental Systems

The cab environmental system has been redesigned to provide enhanced air flow through the ventilation system in the cab. The system provides plenty of air flow and heat to keep the driver comfortable, ventilate the cab, and keep the windshield glass clear. The air conditioning system uses environmentally friendly 134a refrigerant. A new larger air-conditioning condenser has been relocated vertically and raised for greater protection of this component for improved operation and less maintenance.

Performance:

Heater 16,400 BTU/hr

Air Conditioner 16,000 BTU/hr

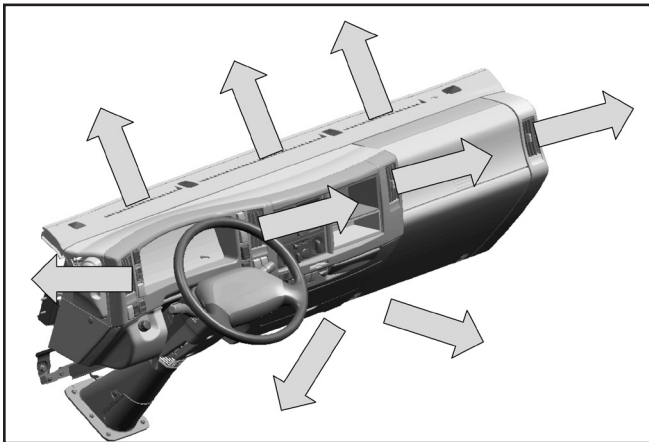


Figure 21: N-Series Cab Ventilation

Interior Trim Features

The N-Series Hexapod cab has been designed for the person who spends all day on the road. The drivers will find the cab has a spacious environment with increased shoulder and head room. The cab is standard with a high back drivers seat and passenger seat. 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.

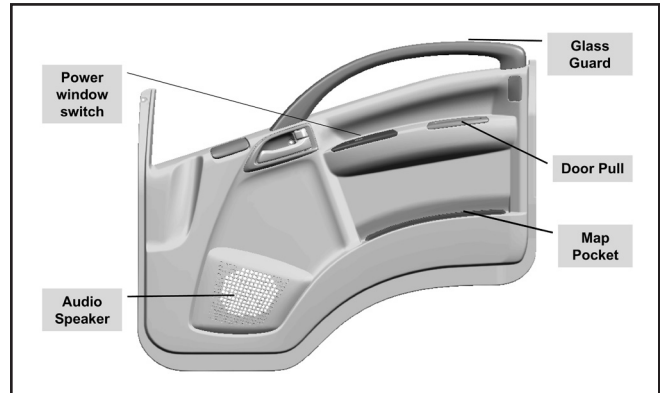


Figure 22: N-Series Gas Shift Lever

To enhance driver comfort the seat cushions, have been designed for maximum support. The seat material is a durable Tricot material, which breathes for enhanced driver comfort in hot or cold climates. The drivers seat travel fore and aft has been increased allowing more room to tilt and adjust the seat for maximum driver comfort. Additional storage for maps and other papers is provided in easy to reach door pockets, seat backs as well as several built in storage areas in the dash. An overhead storage shelf is now standard equipment on all N-Series chassis. Power windows and door locks are also standard on all models. Seat belt design is enhanced for easier operation. A new interior dome light is installed for a brighter cab in night time operations. Heavy duty floor mats are standard.



Figure 23: N-Series Gas Seat Travel Path

The parking brake handle is located between the driver's seat and the center passenger seat. This location provides an unobstructed floor for increased driver comfort. The rubber floor mat is durable and easy to maintain. The automotive style instrument panel has a low profile design for improved downward visibility. The cab is fully trimmed to provide a quieter environment. A cup holder is 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 two smaller sized coffee cups. The rear cab panel incorporates a coat hook as well as a rear storage organizer for improved driver comfort. The steering wheel is constructed to provide maximum visibility of the instrument cluster. The column tilts and telescopes to adjust for varying driver profiles.

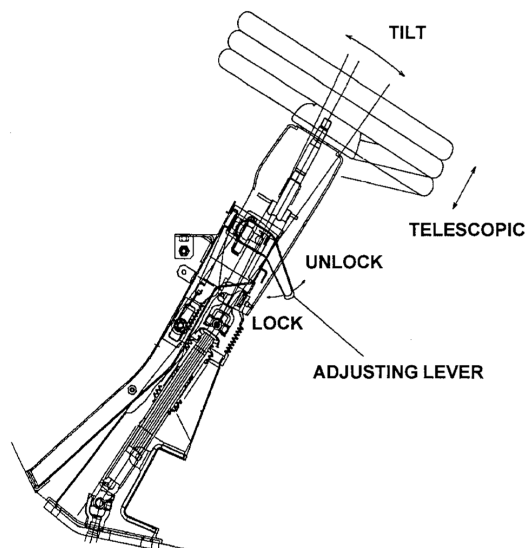


Figure 24: N-Series Steering Column



Figure 25: N-Series Gas Driver's View (non-standard options shown)

Instrumentation

The Hexapod cab includes redesigned steering wheel which greatly enhances instrument visibility. 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 more naturally in the hand. Their function is clearly marked on the lever for easy recognition. The odometer has a check switch to read the mileage without turning on the ignition switch. The fuel level can also be read without the key in the ignition by pushing the odometer check switch for rapid yard checks of parked vehicles.

Cornering lights are standard to improve night time visibility when the turn signals are operated and headlights are on. Cruise control is standard and the controls are post mounted for easier operation and greater driver comfort. An AM/FM radio with Bluetooth and USB is standard equipment. The dash also has a "5 DIN" opening suitable for other electronic equipment.

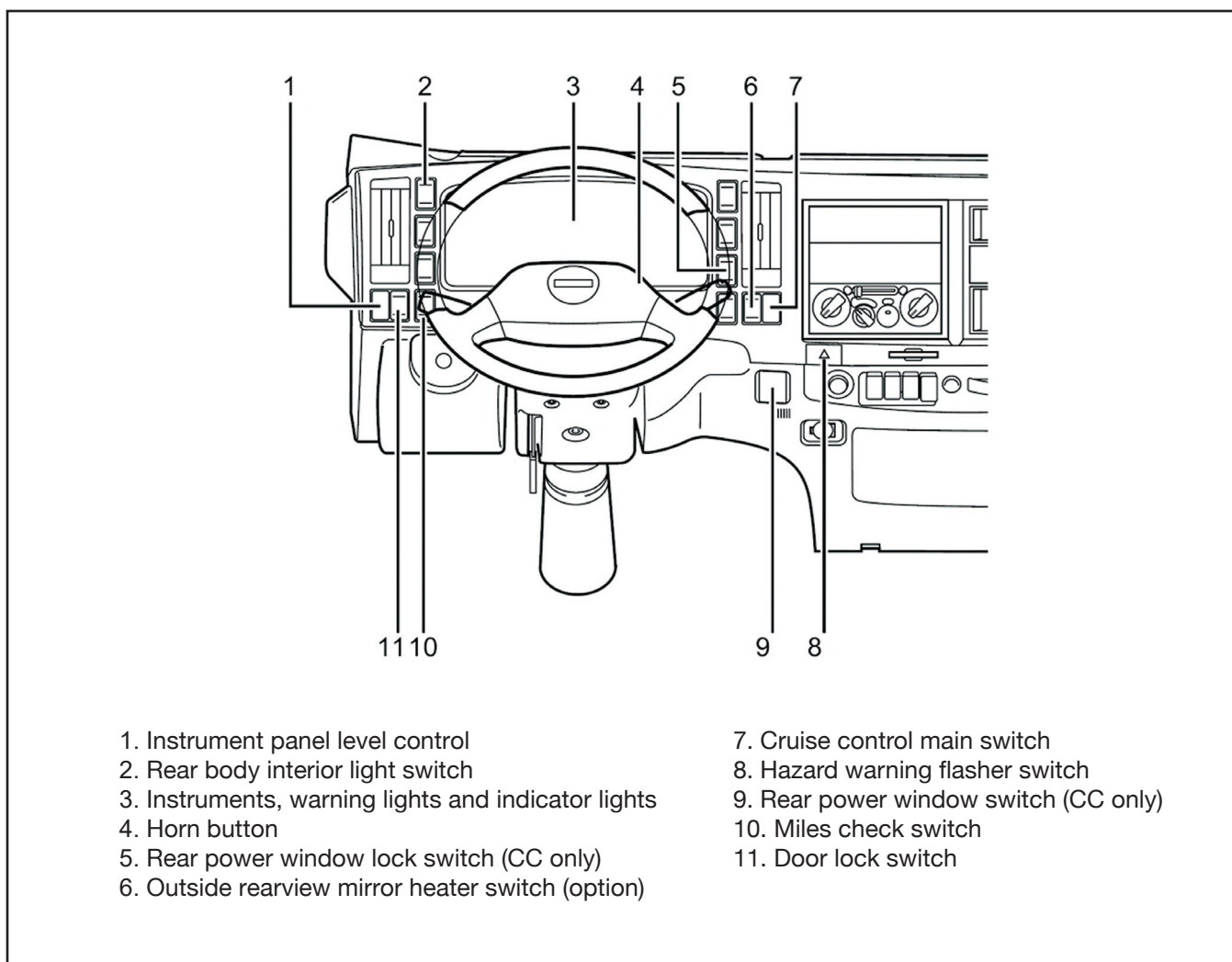


Figure 26: N-Series Gas Dash Panel

Cab Anti Corrosion Protection

The Hexapod cab has undergone improved anticorrosion treatment to ensure a long service life. This treatment begins with extended use of galvanized steel panels in the cab construction. In addition to more galvanized panels the galvanizing thickness has been increased. The cab receives a cat ion electro deposit primer "E coat" and a strong alkali-proof paint for full protection against corrosion. Undercoating has been added in the wheel wells to further protect the cab from road spray and rock chipping. A self cleaning resin doorstep has been used, combined with a plastic support to protect against corrosion in the step wells. All of these added features will result in a cab that will withstand the elements for an extended length of time.

Cab Exterior

The cabs exterior features a matte silver grill to complement the new cab and a removable front service panel for easy access to wiper motor, wiper linkage, cab air intake filter, and electrical connections. New side view mirrors have a breakaway function to protect the cab doors. These large 17x8 west coast style mirrors heads incorporate a 11x7 inch flat glass mirror and a 4x6 inch convex mirror in one mirror head. There is an option for extended mirror brackets for use with 102 inch wide bodies. Heated mirrors are an available option. Cab door handles are the large paddle type that protect the door paint and are easy to operate by a gloved hand.

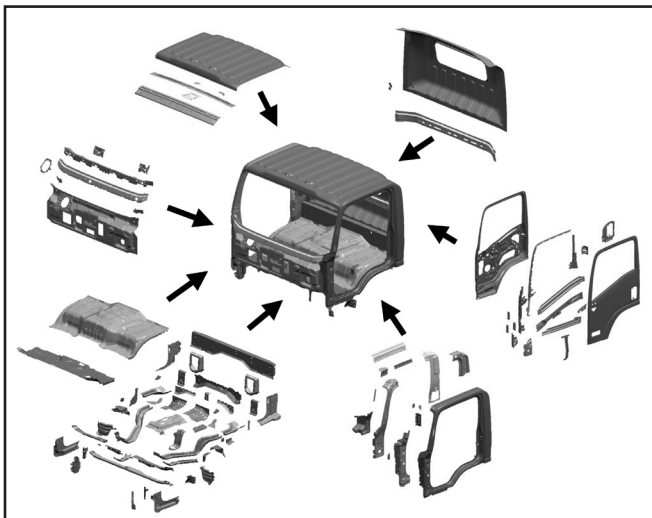


Figure 28: N-Series Gas Cab

Cab Structure

The cabs structural strength is vastly improved. The side sill is now a closed section and the under-frame is now constructed of high tension-resistant steel. In making these changes we accomplish 2 important goals, (1) structural strength is maintained in case of a collision and (2) weight is reduced so as not to affect payload.

The cab durability has also been enhanced by passing structural elements through the closed sections at the under-frame connection point to the chassis in the vehicle width direction. This arrangement of components improves cab rigidity. (Figure 29)

Additional reinforcement in front pillar area from the cowl to rocker panel area has been accomplished. Gussets have been enlarged to increase the connecting rigidity between the pillar area and the cowl. This change reduces cab deformation in case of a collision. (Figure 30)

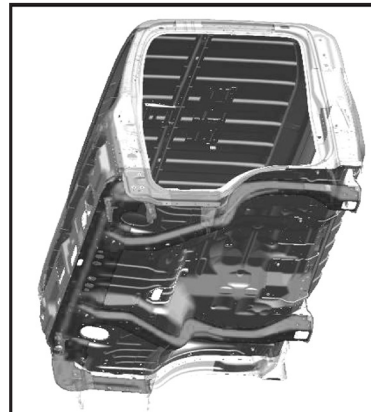


Figure 29: N-Series Gas Cab Structure

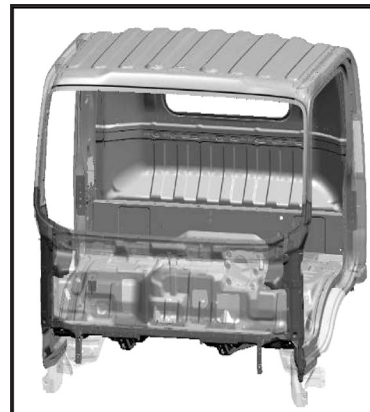


Figure 30: N-Series Gas Cab Structure

Option Weights		
RPO ^[1]	Option Description	Front / Rear (lb)
IF4	Air deflector roof mounted (not available in crew cab)	64 / 0
I1V	Audio system with 7" diagonal color touch screen	5 / 1
I2V	Audio system with 7" diagonal color touch screen with backup camera (camera shipped loose)	5 / 2
UZF	Back up alarm	0 / 2
I8T	Chrome grille	1 / 0
I2M	Delete Cruise Control Switch	0 / 0
IY4	Delete standard radio	-3 / 0
BW2	Dual Batteries (750 CCA x 2)	39 / 18
BA8	Dual AGM Batteries (825 CCA x 2)	51 / 24
I4W	Engine block heater with receptacle (115V 400W)	3 / 0
IF6	Fire extinguisher and triangle kit	19 / 0
I4V	Forward Collision and Lane Departure Warning (Mobileye)	2 / 0
I4Z	Front panel film	1 / 0
I0W	Heated dual remote control mirrors (17" head)	4 / 0
IS0	Heated mirrors	1 / 0
I8L	High visibility seat belt (orange color, driver and RH passenger seat only)	0 / 0
I7L	High visibility seat belt (orange color, driver seat only)	0 / 0
I4K	Keyless entry system	3 / 0
I6L	LED lighting package (converts all exterior and interior chassis lighting to LED bulbs)	0 / 0
IU2	Mirror bracket for 102" wide body	1 / 0
IV9	Seat covers crew cab	12 / 0
IV8	Seat covers for standard cab seats	6 / 0
I1M	Seat covers standard cab with suspension seat	6 / 0
I3Z	Spare keys (2 additional, 4 keys in total)	0 / 0
I0Z	Spartan Modification Center ship thru code	0 / 0
I3G	Speed limited to 65 mph (max cruise speed 60 mph)	0 / 0
I6T	Suspension driver's seat (standard cab only)	18 / 0
SEO ^[1]	Option Description	Front / Rear (lb)
04	Standard model specifications with power windows, power door locks, and air conditioning	Standard chassis weight includes these features
14	In rail fuel tank with power windows, power door locks, air conditioning and Limited Slip Differential	0 / 15

[1] RPO is Regular Production Option that is stocked in port inventory.

SEO is Special Equipment Option and requires 90-120 day lead time for delivery.

DATA BOOK REVISION

Date:

Subject:
