

# Tech Page

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## **Engine Specifications**

### **3.9 L (238 cu.in.) V6**

<b>Engine Type</b>	<b>90' V-6 OHV</b>
<b>Bore &amp; Stroke</b>	<b>99.3 x 84.0 mm. (3.91 x 3.31 in.)</b>
<b>Displacement</b>	<b>3.9 L (238 cu.in.)</b>
<b>Compression Ratio</b>	<b>9.1 :1</b>
<b>Torque</b>	<b>312 N.m (230 ft. lbs.) @ 3200 rpm</b>
<b>Firing Order</b>	<b>1-6-5-4-3-2</b>
<b>Lubrication</b>	<b>Pressure Feed - Full Flow Filtration</b>
<b>Engine Oil Capacity</b>	<b>3.8 L ( 4.0 Qts.) with filter</b>
<b>Cooling System</b>	<b>Liquid Cooled - Forced Circulation</b>
<b>Cooling Capacity</b>	<b>14.3 L (15.1 Qts.)</b>
<b>Cylinder Block</b>	<b>Cast Iron</b>
<b>Crankshaft</b>	<b>Nodular Iron</b>
<b>Cylinder Head</b>	<b>Cast Iron</b>
<b>Combustion Cambers</b>	<b>" Fast Burn " Design</b>
<b>Camshaft</b>	<b>Nodular Cast Iron</b>
<b>Pistons</b>	<b>Aluminum Alloy with Strut</b>
<b>Connecting Rods</b>	<b>Forged Steel</b>

**5.2 L (318 cu.in.) V8**

<b>Engine Type</b>	<b>90° V-8 OHV</b>
<b>Bore &amp; Stroke</b>	<b>99.3 x 84.0 mm.(3.91 x 3.31 in.)</b>
<b>Displacement</b>	<b>5.2 L (318 cu.in.)</b>
<b>Compression Ratio</b>	<b>9.1 :1</b>
<b>Torque</b>	<b>407 N.m (300 ft. lbs.) @ 3200 rpm</b>
<b>Firing Order</b>	<b>1-8-4-3-6-5-7-2</b>
<b>Lubrication</b>	<b>Pressure Feed - Full Flow Filtration</b>
<b>Engine Oil Capacity</b>	<b>4.7 L (5.0 Qts.) with Filter</b>
<b>Cooling System</b>	<b>Liquid Cooled - Forced Circulation</b>
<b>Cooling Capacity</b>	<b>16.1 L (17.0 Qts.)</b>
<b>Cylinder Block</b>	<b>Cast Iron</b>
<b>Crankshaft</b>	<b>Nodular Iron</b>
<b>Cylinder Head</b>	<b>Cast Iron</b>
<b>Combustion Cammers</b>	<b>Wedge - High Swirl Valve Shrouding</b>

<b>Camshaft</b>	<b>Nodular Cast Iron</b>
<b>Pistons</b>	<b>Aluminum Alloy with Strut</b>
<b>Connecting Rods</b>	<b>Forged Steel</b>

## 5.9 L (360 cu.in.) V8 (Gas)

<b>Engine Type</b>	<b>90° V-8 OHV</b>
<b>Bore &amp; Stroke</b>	<b>101.6 x 90.9 mm. (4.00 x 3.58 in.)</b>
<b>Displacement</b>	<b>5.9 L (360 cu.in.)</b>
<b>Compression Ratio</b>	<b>9.1 :1</b>
<b>Torque</b>	<b>448 N.m (330 ft. lbs.) @ 3250 rpm</b>
<b>Firing Order</b>	<b>1-8-4-3-6-5-7-2</b>
<b>Lubrication</b>	<b>Pressure Feed - Full Flow Filtration</b>
<b>Engine Oil Capacity</b>	<b>4.7 L (5.0 Qts.) with Filter</b>
<b>Cooling System</b>	<b>Liquid Cooled - Forced Circulation</b>
<b>Cooling Capacity</b>	<b>14.7 L (15.5 Qts.)</b>
<b>Cylinder Block</b>	<b>Cast Iron</b>
<b>Crankshaft</b>	<b>Nodular Iron</b>

<b>Cylinder Head</b>	<b>Cast Iron</b>
<b>Combustion Chambers</b>	<b>Wedge - High Swirl Valve Shrouding</b>
<b>Camshaft</b>	<b>Nodular Cast Iron</b>
<b>Pistons</b>	<b>Cast Aluminum Alloy</b>
<b>Connecting Rods</b>	<b>Forged Steel</b>

## 5.9 L (359 cu.in.) L6 (Diesel)

<b>Engine Type</b>	<b>Inline 6 (Cummins Turbo Diesel)</b>
<b>Bore &amp; Stroke</b>	<b>102.0 x 120.0 mm. (4.02 x 4.72 in.)</b>
<b>Displacement</b>	<b>5.9 L (359 cu. in.)</b>
<b>Compression Ratio</b>	<b>17.5 to 1</b>
<b>Torque (Auto)</b>	<b>542 N.m (400 ft. lbs.) @ 1600 rpm</b>
<b>Torque (Manual)</b>	<b>569 N.m (420 ft. lbs.) @ 1600 rpm</b>
<b>Firing Order</b>	<b>1-5-3-6-2-4</b>
<b>Lubrication</b>	<b>Pressure Feed - Full Flow Filtration with Bypass</b>
<b>Valve</b>	
<b>Engine Oil Capacity</b>	<b>9.5 L (10.0 Qts.) with Filter</b>
<b>Cooling System</b>	<b>Liquid Cooled - Forced Circulation</b>

<b>Cooling Capacity</b>	<b>23 L (24 Qts.)</b>
<b>Cylinder Block</b>	<b>Cast Iron</b>
<b>Crankshaft</b>	<b>Induction Hardened Forged Steel</b>
<b>Cylinder Head</b>	<b>Cast Iron</b>
<b>Combustion Cammers</b>	<b>High Swirl Bowl</b>
<b>Camshaft</b>	<b>Chilled Ductile Iron</b>
<b>Pistons</b>	<b>Cast Aluminum</b>
<b>Connecting Rods</b>	<b>Forged Steel</b>

## 8.0 L (488 cu.in.) V10

<b>Engine Type</b>	<b>90° V-10 OHV</b>
<b>Bore &amp; Stroke</b>	<b>101.6 x 98.6 mm. (4.00 x 3.88 in.)</b>
<b>Displacement</b>	<b>8.0 L (488 cu.in.)</b>
<b>Compression Ratio</b>	<b>8.4 :1</b>
<b>Torque</b>	<b>617 N.m (450 ft. lbs.) @ 2400 rpm</b>
<b>Firing Order</b>	<b>1-10-9-4-3-6-5-8-7-2</b>

<b>Lubrication</b>	<b>Pressure Feed - Full Flow Filteration  (Direct Crankshaft Driven Pump )</b>
<b>Engine Oil Capacity</b>	<b>6.6 L (7.0 Qts.)</b>
<b>Cooling System</b>	<b>Liquid Cooled - Forced Circulation</b>
<b>Cooling Capacity</b>	<b>20.5 L (21.75 Qts.)</b>
<b>Cylinder Block</b>	<b>Cast Iron</b>
<b>Crankshaft</b>	<b>Nodular Cast Iron</b>
<b>Cylinder Head</b>	<b>Cast Iron</b>
<b>Combustion Cammers</b>	<b>Wedge - High Swirl</b>
<b>Camshaft</b>	<b>Nodular Cast Iron</b>
<b>Pistons</b>	<b>Cast Aluminum Alloy</b>
<b>Connecting Rods</b>	<b>Forged Steel</b>

## Automatic Transmission

### 42RH Transmission

The 42RH is used with 3.9 L engine in 4x2 1500 models with a 273 mm (10.75 in.) torque converter.

42RH forward gear ratios are:

- First gear = 2.74 : 1
- Second gear = 1.54 : 1
- Third gear = 1.00 : 1
- Fourth gear = 0.69 : 1

## 46RH / 47RH Transmission

The 46RH is used with 3.9 L, 5.2 L, and 5.9 L gas engine. The 47RH is used with V10 and Cummins Diesel engines only. The 46RH uses a 273 mm (10.75 in.) torque converter while the 47RH uses a 310 mm (12.2 in.) torque converter.

46RH / 47RH forward gear ratios are:

- First gear = 2.45 : 1
- Second gear = 1.45 : 1
- Third gear = 1.00 : 1
- Fourth gear = 0.69 : 1

## Manual Transmission

### NV3500 Transmission

The NV3500 is a medium-duty, fully synchronized 5-speed manual transmission. It is used with 3.9 L and 5.2 L engines and available in two versions; a wide ratio and a close ratio.

#### Wide Ratio Version

First gear = 4.016 : 1  
 Second gear = 2.318 : 1  
 Third gear = 1.40 : 1  
 Fourth gear = 1 : 1  
 Fifth gear = 0.729 : 1  
 Reverse = 3.55 : 1

#### Close Ratio Version

First gear = 3.49 : 1  
 Second gear = 2.16 : 1  
 Third gear = 1.40 : 1  
 Fourth gear = 1 : 1  
 Fifth gear = 0.729 : 1  
 Reverse = 3.55 : 1

### NV4500 Transmission

The NV4500 is a fully synchronized 5-speed manual transmission available in two versions, a



**standard duty version for 5.2 L and 5.9 L applications and a heavy duty version for V10 / Cummins Diesels.**

**NV4500 gear ratios are:**

- **First gear = 5.61 : 1**
  - **Second gear = 3.04 : 1**
  - **Third gear = 1.67 : 1**
  - **Fourth gear = 1.00 : 1**
  - **Fifth gear = 0.74 : 1**
  - **Reverse = 5.61 : 1**
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## **Transfer Case**

- **NP231HD**
- **NP241**
- **NP241HD**

**All of the above mentioned transfer cases are part-time transfer cases with a low-range gear system. They provide three operating ranges plus a Neutral position. The low range position provides a gear reduction ratio of 2.72:1 for increased low speed torque capability. Operating ranges are: 2-high, 4-high and 4-low.**

**The NP231 HD is used in 1500 models only. The NP241 is used in 2500 models and the NP241 HD is used in 2500 and 3500 models with a V10 or diesel engine.**

**Recommended lubricant for all three transfer case models is Mopar Dexron II, or ATF Plus. Approximate lubricant refill capacities are 3.1 liters (6.5 pints) for the NP241 HD and 1.5 to 2 liters (3 to 3.6 pints) for the NP231 HD.**

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## **PTO Adapter**

**The NV 021 PTO adapter provides power take-off capability for 2-wheel and 4-wheel drive BR models with an automatic transmission. The adapter is available as an option on 2500 and 3500 models.**

## Front Axles

### Model: Dana 44

<b>Axle Type</b>	<b>Hypoid</b>
<b>Lubricant</b>	<b>Thermal Stable SAE 80W-90</b>
<b>Lube Capacity</b>	<b>2.28 L ( 4.8 pints )</b>
<b>Axle Ratio Options</b>	<b>3.54, 3.55, 3.92, 4.09</b>
<b>Ring Gear Diameter</b>	<b>215.9 mm ( 8.50 in. )</b>
<b>Pinion Standard Setting</b>	<b>109.5 mm ( 4.312 in. )</b>
<b>Pinion Bearing Preload</b>	<b>1-2 N.m ( 10-20 in. lbs. ) 2.3-4.5 N.m (20-40 in. lbs. )</b>
<b>Original Bearing</b>	
<b>Bearing</b>	
<b>New Bearing</b>	

### Model: Dana 60

<b>Axle Type</b>	<b>Hypoid</b>
<b>Lubricant</b>	<b>Thermal Stable SAE 80W-90</b>

<b>Lube Capacity</b>	<b>3.6 L ( 122 oz. )</b>
<b>Axle Ratio Options</b>	<b>3.54, 4.10</b>
<b>Ring Gear Diameter</b>	<b>247.6 mm ( 9.75 in. )</b>
<b>Pinion Standard Setting</b>	<b>127 mm ( 5.000 in. )</b>
<b>Pinion Bearing Preload</b>	<b>1-2 N.m ( 10-20 in. lbs. ) 2.3-4.5 N.m ( 20-40 in. lbs. )</b>
<b>Original Bearing</b>	
<b>New Bearing</b>	

## Rear Axles

### Model: 9 1/4 in.

<b>Axle Type</b>	<b>Semi-floating, hypoid</b>
<b>Lubricant</b>	<b>SAE 80W-90</b>
<b>Lube Capacity</b>	<b>2.26 L ( 4.77 pints )</b>
<b>Axle Ratio Options</b>	<b>3.21, 3.55, 3.92</b>

<b>Differential</b>	
Case Clearance	<b>0.12 mm ( 0.005 in. )</b>
Case Flange Runout	<b>0.076 mm ( 0.008 in. )</b>
Bearing Preload	<b>102 N.m ( 75 ft. lbs. )</b>
<b>Ring Gear</b>	
Diameter	<b>23.50 cm ( 9.25 in. )</b>
Backlash	<b>0.12- 0.20 mm ( 0.005- 0.008 in. )</b>
Runout	<b>0.127 mm ( 0.005 in. )</b>
<b>Pinion Bearing</b>	
Preload	<b>1-2 N.m ( 10-20 in. lbs. )</b>

**Model: Dana 60**

<b>Axle Type</b>	<b>Hypoid</b>
<b>Lubricant</b>	<b>Thermal Stable SAE 80W-90</b>
<b>Lube Capacity</b>	
4x2	<b>2.95 L ( 6.26 pints )</b>
4x4	<b>3.43 L ( 7.25 pints )</b>
<b>Axle Ratio Options</b>	<b>3.54, 4.09</b>
<b>Ring Gear</b>	
Diameter	<b>247.7 mm ( 9.75 in. )</b>
Backlash	<b>0.10- 0.23 mm ( 0.004- 0.009 in. )</b>
<b>Pinion Standard Setting</b>	<b>127.0 mm ( 5.000 in. )</b>



<b>Axle Type</b>		<b>Hypoid</b>
<b>Lubricant</b>		<b>Thermal Stable SAE 80W-90</b>
<b>Lube Capacity</b>	<b>4x2 4x4</b>	<b>3.22 L ( 6.8 pints ) 4.79 L (10.1 pints )</b>
<b>Axle Ratio Options</b>		<b>3.54, 4.10</b>
<b>Ring Gear</b>	<b>Diameter Backlash</b>	<b>279.4 mm ( 11.00 in. ) 0.13- 0.23 mm (0.005- 0.009 in. )</b>
<b>Pinion Standard Setting</b>		<b>124.625 mm (5.812 in. )</b>
<b>Pinion Bearing Preload</b>	<b>Original Bearing New Bearing</b>	<b>1- 3 N.m (10- 20 in. lbs. ) 2- 5 N.m ( 20- 40 in. lbs. )</b>

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