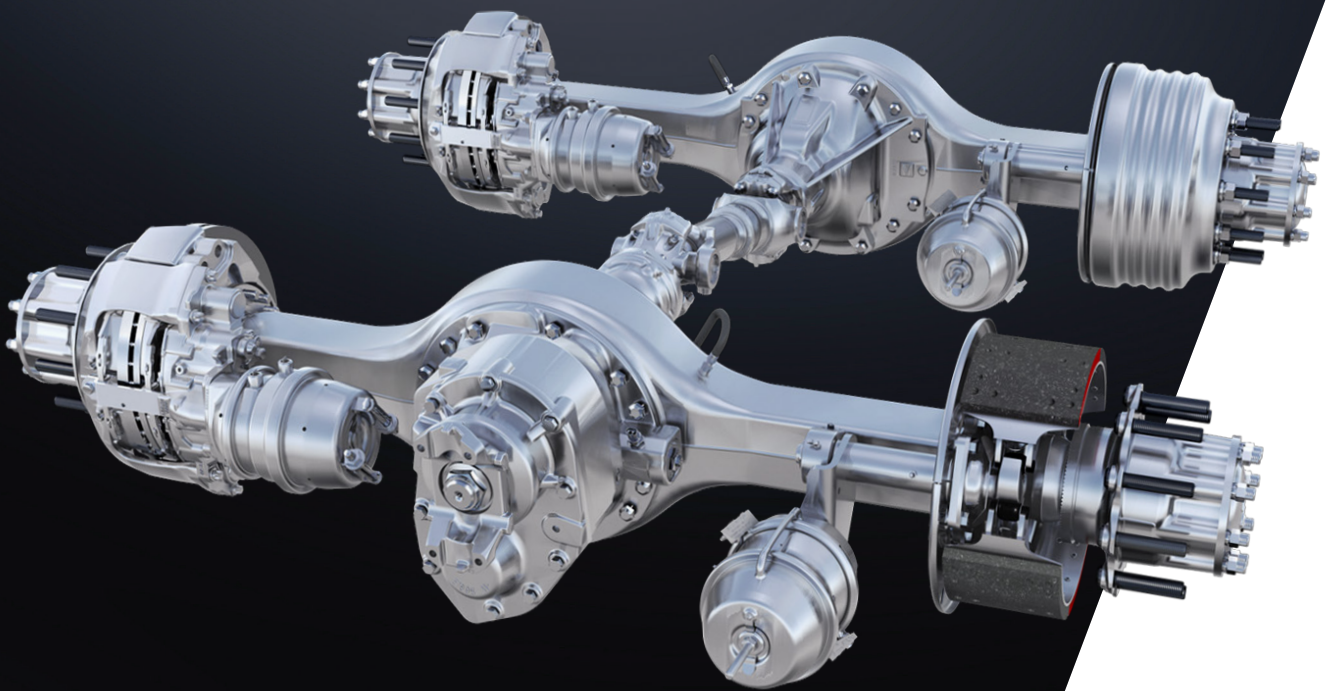# ADVANCED PERFORMANCE.

**STEER AND DRIVE AXLES RANGE**



**Cummins**®  **Meritor**

**FOR A WORLD THAT'S ALWAYS ON**™

# STEER AXLES

The Cummins-Meritor steer axles continue that long running trend by providing great packaging flexibility, optimised performance and reliability. With a wide selection of steering and tie rod arms, wheel base lengths and axle tracks, Cummins-Meritor offers a wide range of options to spec your vehicle. And because it's backed by the Cummins-Meritor team, you can count on the industry leading expertise and support in the field and on the road.

## NON-DRIVE STEER AXLE SPECIFICATIONS

| Model | Rating Tonne | King Pin* intersection mm (inch) | Axle Beam Drop mm (inch) |
|-------|-------------|----------------------------------|--------------------------|
| MFS-66 | 6.6 | 1753 (69.0) | 88.9 (3.5) & 127 (5.0) |
| MFS-73 | 7.3 | 1753 (69.0) | 88.9 (3.5) |
| MFS-75 | 7.5 | 1740 (68.5) | 121 (4.76) |
| FL-941 | 9.1 | 1740 (68.5) | 88.9 (3.5) |

MFS66 Series
Front Non-Drive Steer Axles

| Drum Brake | | |
|-----------|-----------|-------------------------|
| Axle | Brake Series | Nominal Size mm (inch) |
| Steer Axle | Q Plus | 419 x 127 (16.5x5) |
| | Q Plus | 419 x 152 (16.5x6) |

| Air Disc Brake | | |
|----------------|--------|------------------|
| Brake Type | | Wheel Size (inch) |
| Steer Axle (MFS66, MFS75 only) | EX225H | 22.5 |

All product applications subject to Cummins-Meritor engineering approval

# DRIVE AXLES

Since 1909, Cummins-Meritor has been leading the heavy-duty axle market with reliable, long-life axles and advanced gearing technology. With nearly 100 years of axle-producing experience, Cummins-Meritor is the world's largest independent manufacturer of heavy-duty truck axles for a range of vehicle applications. Products include front axles, single-rear, tandem-drive, tridem-drive and trailer axles. Cummins-Meritor's complete family of products meets the steer, drive and trailer axle requirements of customers in multiple vocations. Additionally, all products are backed by an excellent sales, service and support network.

## REAR DRIVE AXLE SPECIFICATIONS

| Axle Model | Ground Rating Pounds (Tonnes) | Housing Wall Thickness mm (inch) | Housing Section at Drive Axle Spring Seat mm (inch) | Carrier Series | Carrier Lube Pump | Crown Wheel Nominal Pitch Dia. mm (inch) | Axle Shaft Dia. mm (inch) | Weight*** kg (lb) |
|---|---|---|---|---|---|---|---|---|
| Single Drive Axles | | | | | | | | |
| RS-23-161G* (MS-11-165G*) | 23,000 (11.0) | 12.7 (1/2) | 117x133 (4.63x5.25) | 160 | NA | 457 (18.0) | 57 (2.25) | 342 (754) |
| RC-23-161G* (MC-11-165G*) | 23,000 (11.0) | 12.7 (1/2) | 117x133 (4.63x5.25) | 160 | NA | 457 (18.0) | 57 (2.25) | 346 (763) |
| Tandem Drive Axles | | | | | | | | |
| MT-40-14XG* (MT-18-14XG*) | 40,000 (18.1) | 11.0 (7/16) | 117x133 (4.63x5.25) | 14X | Optional | 386 (15.2) | 51 (2.00) | 635 (1,378) |
| MT-40-14XGP* (MT-18-14XGP*) | 40,000 (18.1) | 11.0 (7/16) | 117x133 (4.63x5.25) | 14X | Std - Fwd | 386 (15.2) | 51 (2.00) | 630 (1,389) |
| RT-46-160G** (MT-21-165G**) | 46,000 (20.9) | 12.7 (1/2) | 117x133 (4.63x5.25) | 160 | NA | 457 (18.0) | 57 (2.25) | 775 (1,760) |
| RT-46-160GP* (MT-21-165GP*) | 46,000 (20.9) | 12.7 (1/2) | 117x133 (4.63x5.25) | 160 | Std - Fwd | 457 (18.0) | 57 (2.25) | 805 (1,774) |
| RT-50-160GP* (MT-23-168GP*) | 50,000 (22.7) | 16.0 (5/8) | 117x133 (4.63x5.25) | 160 | Std - Fwd | 457 (18.0) | 57 (2.25) | 819 (1,804) |
| RT-52-185G** (MT-24-186G**) | 52,000 (23.6) | 14.3 (9/16) | 140x140 (5.50x5.50) | 180 | Std - Fwd | 498 (19.6) | 57 (2.25) | 990 (2,182) |
| RT-52-380G (MT-24-386G) | 52,000 (23.6) | 14.3 (9/16) | 140x140 (5.50x5.50) | 380 | Std - Fwd & Rear | 498 (19.6) | 57 (2.25) | 1,002 (2,208) |
| P610-38 | 84,000 (38.0) | 16.0 (5/8) | 166x177 (6.53x6.97) | 100/70 | NA | 415 (16.3) | 45 (1.77) | 1,936 (4,268) |
| Tri-Drive Axles | | | | | | | | |
| P610-57 | 126,000 (57.0) | 16.0 (5/8) | 166x177 (6.53x6.97) | 100/70 | NA | 415 (16.3) | 45 (1.77) | 2,863 (6,315) |

*Available with Driver-Controller Locking Main Differential

**Available with Driver-Controller Locking Main Differential in rear-axle only

***Excludes brakes, hubs, drums, eals, drive yokes, suspension brackets, DCDL.

Subject to Cummins-Meritor Engineering approval

# DRIVE AXLES

## DRIVE AXLE GEAR RATIO (:1)

| Model | Available Ratios |
|---|---|
| **Single Drive Axles** | |
| RS-23-161G (MC-11-165G) | 2.50, 2.67, 2.80, 2.93, 3.07, 3.21, 3.42, 3.58, 3.73, 3.91, 4.10, 4.30, 4.56, 4.89, 5.13, 5.38, 5.63, 6.14, 6.43, 6.83, 7.17 |
| RC-23-161G (MC-11-165G) | 2.50, 2.67, 2.80, 2.93, 3.07, 3.21, 3.42, 3.58, 3.73, 3.91, 4.10, 4.30, 4.56, 4.89, 5.13, 5.38, 5.63, 6.14, 6.43, 6.83, 7.17 |
| **Tandem Drive Axles** | |
| RT-40-145G (MT-20-14XG) | 2.64, 3.08, 3.25, 3.36, 3.42, 3.55, 3.70, 3.90, 4.11, 4.33, 4.63, 4.88, 5.29, 5.86, 6.14, 6.43, 6.83, 7.17 |
| RT-40-145GP (MT-20-14XGP) | 2.64, 3.08, 3.25, 3.36, 3.42, 3.55, 3.70, 3.90, 4.11, 4.33, 4.63, 4.88, 5.29, 5.86, 6.14, 6.43, 6.83, 7.17 |
| RT-46-160G (MT21-165G) | 3.07, 3.21, 3.42, 3.58, 3.73, 3.91, 4.10, 4.30, 4.56, 4.89, 5.38, 5.63, 6.14, 6.43, 6.83, 7.17 |
| RT-46-160GP (MT21-165GP) | 3.21, 3.42, 3.58, 3.73, 3.91, 4.10, 4.30, 4.56, 4.89, 5.38, 5.63, 6.14, 6.43, 6.83, 7.17 |
| RT-50-160GP (MT23-168GP) | 3.07, 3.21, 3.42, 3.58, 3.73, 3.91, 4.10, 4.30, 4.56, 4.89, 5.38, 5.63, 6.14, 6.43, 6.83, 7.17 |
| RT-52-185G (MT-24-186G) | 3.73, 4.30, 4.56, 4.89, 5.38, 6.14, 6.83, 7.17 |
| RT-52-380G (MT-24-386G) | 5.52, 6.07, 6.37, 6.75, 7.24, 7.83, 9.14, 10.12, 10.62 |
| P610-38 | 3.46, 3.60, 3.77, 4.12, 4.57, 4.67, 5.40, 5.47, 6.19, 7.20, 8.65 |
| **Tri-Drive Axles** | |
| P610-57 | 4.67, 5.40, 5.47, 6.19, 7.20, 8.65 |

Gear ratios subject to Cummins-Meritor engineering approval

| Drum Brake | | |
|---|---|---|
| Axle | Brake Series | Nominal Size mm (inch) |
| Drive Axle | Q Plus | 419x178 (16.5x7) |
| | P (Heavy Duty) | 419x178 (16.5x7) |

| Air Disc Brake | | |
|---|---|---|
| Brake Type | | Wheel Size (inch) |
| Drive Axle | EX225H | 22.5 |

All product applications subject to
Cummins-Meritor engineering approval

# DRIVE AXLES

## DRIVE AXLE NOMINAL RATINGS

| Axle Model | Ground Rating Pounds (Tonnes) | Engine Limit[1] (ft lb) | Nominal GCM Rating (Tonne)* | | |
|---|---|---|---|---|---|
| | | | Highway Operation | B Doubles/ Triples Operation | Road Train Operation [2,3] |
| | | | Gradients 8% Typical 13% Maximum | Gradients 5% Typical 8% Maximum | Gradients 3% Typical 5% Maximum |
| Single Drive Axles | | | | | |
| RS-23-161G (MS-11-165G) | 23,000 (11.0) | 1,850 | 36 | NA | NA |
| RC-23-161G (MC-11-165G) | 23,000 (11.0) | 1,850 | 36 | NA | NA |
| Tandem Drive Axles | | | | | |
| MT-40-14XG (MT-18-14XG)[4] | 40,000 (18.1) | 1,650 | 50 | NA | NA |
| MT-40-14XGP (MT-18-14XGP)[4] | 40,000 (18.1) | 1,650 | 50 | NA | NA |
| MT-44-14XG ( MT-20-14XG)[4] | 44,000 (20) | 1,650 | 50 | NA | NA |
| MT-44-14XGP (MT-20-14XGP)[4] | 44,000 (20) | 1,650 | 50 | NA | NA |
| RT-46-160G (MT-21-165G) | 46,000 (20.9) | 2,050 | 80 | 90 | By Eng. Application |
| RT-46-160GP (MT-21-165GP) | 46,000 (20.9) | 2,050 | 80 | 90 | 110 |
| RT-50-160GP (MT-23-168GP) | 50,000 (22.7) | 2,050 | 90 | 100 | 131 |
| RT-52-185G  (MT-24-186G) | 52,000 (23.6) | 2,050 | 100 | 110 | 140 |
| RT-52-380G (MT-24-386G) | 52,000 (23.6) | 2,050 | 120 | 120 | 155 |
| P610-38 | 84,000 (38.0) | 2,050 | By Eng. Application | By Eng. Application | 200 |
| Tri-Drive Axles | | | | | |
| P610-57 | 126,000 (57.0) | 2,050 | By Eng. Application | By Eng. Application | 250 |

Subject to Cummins-Meritor engineering approval

NOTES
1. Nominal on-highway ratings. For higher engine torques or GCM, refer to Cummins-Meritor engineering for possible approval
2. For low loader applications use road train at B-Double gradients
3. The GCM ratings apply at legal ground loads (up to 18.1 tonne) not a ground rating
4. 1850 lb-ft (2508 Nm) engine may be approved with straight torque engines up to 50 tonnes

## GRADEABILITY

An important consideration when selecting the most suitable drive axle ratio for a particular vehicle is the gradeability that can be achieved. Gradeability is the measure of the ability of a vehicle to climb a grade or incline. It is expressed in percent representing the height of the rise from level over a given distance.

For example if a road rises 5 metres over a 100 metre distance it would represent a 5% grade.

There are two measurements of gradeability:
1. Maximum gradeability
2. Starting gradeability (maximum gradeability minus 10%)

Generally speaking, a vehicle should provide at least 10% gradeability to set the vehicle in motion from a standing start on level road. In addition, the vehicle should have sufficient gradeability to climb the steepest grade that will be encountered in operation. For example, if a prime mover will encounter 5% grades on its normal runs, at least 15% (10% starting plus 5% operating) gradeability must be provided. As a general rule maximum gradeability of 30% will provide satisfactory performance in the most extreme operating conditions.

Estimated gradeability can be calculated by substituting values in the following formula:

$$\text{Est. max. gradeability} = \frac{C \times N \times R \times T}{GM} - 1.0$$

**Where:**

**C : Constant for type of rear axle**

0.0544 for single axle

0.0533 for single drive tandem

0.0511 for dual drive tandem

**N: Tyre revolutions per kilometre**

**R: Max. gear reduction**
(1st gear main transmission ratio x 1st gear auxiliary transmission x largest rear axle ratio)

**T: Engine maximum nett torque (Nm)**

**GM: Total loaded gross mass of vehicle (kg)**

# USEFUL CONVERSION FACTORS

Distance

1 inch (in) = 25.40 millimetres (mm)

1 millimetre (mm) = 0.03937 inches (in)

1 mile (m) = 1.609 kilometres (km)

1 kilometre (km) = 0.6214 miles (m)

Mass

1 pound (lb) = 0.4536 kilograms (kg)

1 kilogram (kg) = 2.205 pounds (lb)

Speed

1 mile per hour (mph) = 1.609 kilometres per hour (kph)

1 kilometre per hour (kph) = 0.6214 miles per hour (mph)

Volume

1 gallon (UK gal) = 4.546 litres (l)
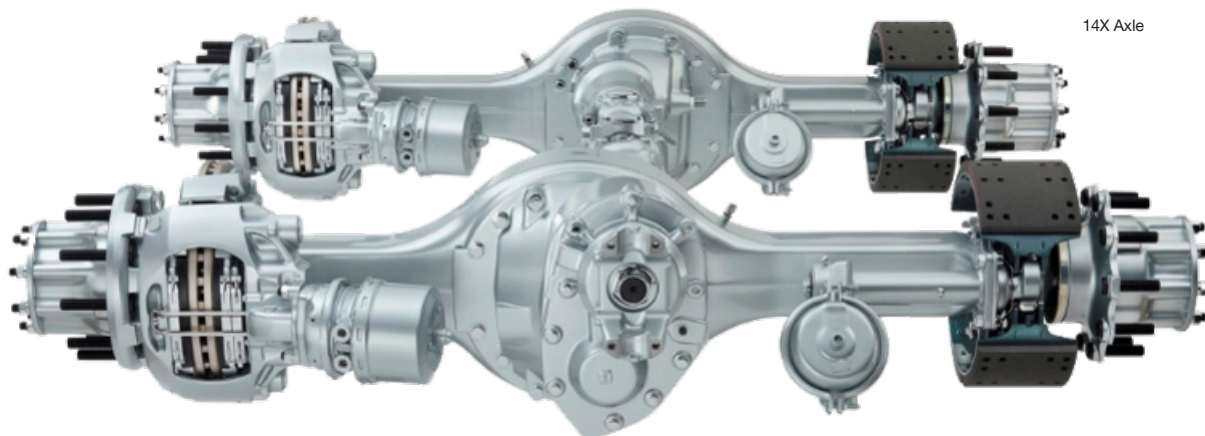
1 litre (l) = 0.220 gallons (UK gal.)

Torque

1 pound force per foot (lb ft) = 1.356 Newton Metre (Nm)

1 Newton Metre (Nm) = 0.7375 pound force foot (lb ft)

Power

1 horsepower (hp) = 0.7475 kilowatt (kW)

1 kilowatt (kW) = 1.341 horsepower (hp)

14X Axle

# CUMMINS-MERITOR VEHICLE SPEED CHART

**ENGINE SPEED (RPM)**

| AXLE RATIO | 600 | 700 | 800 | 900 | 1000 | 1100 | 1200 | 1300 | 1400 | 1500 | 1600 | 1700 | 1800 | 1800 | 2000 | 2100 | 2200 | 2300 | 2400 | 2500 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2.8 | 40.8 | 47.6 | 54.4 | 61.2 | 68 | 74.8 | 81.6 | 88.4 | 95.2 | 102 | 108.8 | 115.6 | 122.4 | 129.3 | 136.1 | 142.9 | 149.7 | 156.5 | 163.6 | 170.1 |
| 2.9 | 39.4 | 46 | 52.2 | 69.1 | 65.7 | 72.2 | 78.8 | 85.4 | 92 | 98.5 | 105.1 | 111.7 | 118.2 | 124.8 | 131.4 | 137.9 | 144.6 | 161.1 | 167.6 | 164.2 |
| 3 | 38.1 | 44.4 | 50.8 | 57.1 | 63.5 | 69.8 | 76.2 | 82.5 | 88.9 | 95.2 | 101.6 | 107.9 | 114.3 | 120.6 | 127 | 133.3 | 139.7 | 146 | 152.4 | 168.7 |
| 3.1 | 36.9 | 43 | 49.2 | 63.3 | 61.4 | 67.6 | 73.7 | 79.9 | 86 | 92.2 | 98.3 | 104.5 | 110.6 | 116.7 | 122.9 | 129 | 135.2 | 141.3 | 147.5 | 153.6 |
| 3.2 | 35.7 | 41.7 | 47.6 | 63.6 | 59.6 | 66.5 | 71.4 | 77.4 | 83.3 | 89.3 | 96.2 | 101.2 | 107.1 | 113.1 | 119 | 125 | 131 | 136.9 | 142.9 | 148.8 |
| 3.3 | 34.6 | 40.4 | 46.2 | 51.9 | 57.7 | 63.5 | 69.3 | 75 | 80.8 | 86.6 | 92.4 | 98.1 | 103.9 | 109.7 | 115.4 | 121.2 | 127 | 132.8 | 138.5 | 144.3 |
| 3.4 | 33.6 | 39.2 | 44.8 | 50.4 | 56 | 61.6 | 67.2 | 72.8 | 78.4 | 84 | 89.6 | 96.2 | 100.8 | 106.4 | 112 | 117.6 | 123.2 | 128.9 | 134.5 | 140.1 |
| 3.5 | 32.7 | 38.1 | 43.5 | 49 | 54.4 | 59.9 | 65.3 | 70.7 | 76.2 | 81.6 | 87.1 | 92.5 | 98 | 103.4 | 108.8 | 114.3 | 119.7 | 125.2 | 130.6 | 136.1 |
| 3.6 | 31.7 | 37 | 42.3 | 47.6 | 52.9 | 68.2 | 63.5 | 68.8 | 74.1 | 79.4 | 84.7 | 89.9 | 96.2 | 100.5 | 105.8 | 111.1 | 116.4 | 121.7 | 127 | 132.3 |
| 3.7 | 30.9 | 36 | 41.2 | 46.3 | 51.5 | 56.6 | 61.8 | 66.9 | 72.1 | 77.2 | 82.4 | 87.5 | 92.7 | 97.8 | 103 | 108.1 | 113.3 | 118.4 | 123.6 | 128.7 |
| 3.8 | 30.1 | 35.1 | 40.1 | 45.1 | 50.1 | 55.1 | 60.2 | 65.2 | 70.2 | 75.2 | 80.2 | 86.2 | 90.2 | 96.2 | 100.3 | 105.3 | 110.3 | 115.3 | 120.3 | 125.3 |
| 3.9 | 29.3 | 34.2 | 39.1 | 44 | 48.8 | 63.7 | 58.6 | 63.6 | 68.4 | 73.3 | 78.1 | 83 | 87.9 | 92.8 | 97.7 | 102.6 | 107.4 | 112.3 | 117.2 | 122.1 |
| 4 | 28.6 | 33.3 | 38.1 | 42.9 | 47.6 | 52.4 | 67.1 | 61.9 | 66.7 | 71.4 | 76.2 | 81 | 85.7 | 90.5 | 95.2 | 100 | 104.8 | 109.5 | 114.3 | 119 |
| 4.1 | 27.9 | 32.5 | 37.2 | 41.8 | 46.5 | 51.1 | 55.7 | 60.4 | 65 | 69.7 | 74.3 | 79 | 83.6 | 88.3 | 92.9 | 97.6 | 102.2 | 106.9 | 111.5 | 116.1 |
| 4.2 | 27.2 | 31.7 | 36.3 | 40.8 | 45.4 | 49.9 | 54.4 | 59 | 63.5 | 68 | 72.6 | 77.1 | 81.6 | 86.2 | 90.7 | 95.2 | 99.8 | 104.3 | 108.8 | 113.4 |
| 4.3 | 26.6 | 31 | 36.4 | 39.9 | 44.3 | 48.7 | 53.2 | 57.6 | 62 | 66.4 | 70.9 | 75.3 | 79.7 | 84.2 | 88.6 | 93 | 97.5 | 101.9 | 106.3 | 110.7 |
| 4.4 | 26 | 30.3 | 34.6 | 39 | 43.3 | 47.6 | 51.9 | 56.3 | 60.6 | 64.9 | 69.3 | 73.6 | 77.9 | 82.3 | 86.6 | 90.9 | 95.2 | 99.6 | 103.9 | 108.2 |
| 4.5 | 25.4 | 29.6 | 33.9 | 38.1 | 42.3 | 46.6 | 50.8 | 55 | 59.3 | 63.5 | 67.7 | 72 | 76.2 | 80.4 | 84.7 | 88.9 | 93.1 | 97.4 | 101.6 | 105.8 |
| 4.6 | 24.8 | 29 | 33.1 | 37.3 | 41.4 | 45.5 | 49.7 | 53.8 | 58 | 62.1 | 66.3 | 70.4 | 74.5 | 78.7 | 82.8 | 87 | 9.1 | 95.2 | 99.4 | 103.5 |
| 4.7 | 24.3 | 28.4 | 32.4 | 36.5 | 40.5 | 44.6 | 48.6 | 52.7 | 56.7 | 60.8 | 64.8 | 68.9 | 72.9 | 77 | 81.1 | 85.1 | 89.2 | 93.2 | 97.3 | 101.3 |
| 4.8 | 23.8 | 27.8 | 31.7 | 35.7 | 39.7 | 43.7 | 47.6 | 51.6 | 65.6 | 59.5 | 63.5 | 67.5 | 71.4 | 75.4 | 79.4 | 83.3 | 87.3 | 91.3 | 95.2 | 99.2 |
| 4.9 | 23.3 | 27.2 | 31.1 | 35 | 38.9 | 42.8 | 46.6 | 50.6 | 54.4 | 58.3 | 62.2 | 66.1 | 70 | 73.9 | 77.7 | 81.6 | 85.5 | 89.4 | 93.3 | 97.2 |
| 5 | 22.9 | 26.7 | 30.5 | 34.3 | 38.1 | 41.9 | 45.7 | 49.5 | 53.3 | 57.1 | 61 | 64.8 | 68.6 | 72.4 | 76.2 | 80 | 83.8 | 87.6 | 91.4 | 95.2 |
| 5.1 | 22.4 | 26.1 | 29.9 | 33.6 | 37.3 | 41.4 | 44.8 | 48.6 | 52.3 | 56 | 59.8 | 63.5 | 67.2 | 71 | 74.7 | 78.4 | 82.2 | 86.9 | 89.6 | 93.4 |
| 5.2 | 22 | 25.6 | 29.3 | 33 | 36.6 | 40.3 | 44 | 47.6 | 51.3 | 54.9 | 58.6 | 62.3 | 65.9 | 69.6 | 73.3 | 76.9 | 80.6 | 84.2 | 87.9 | 91.6 |
| 5.3 | 21.6 | 25.2 | 28.8 | 32.3 | 35.9 | 39.5 | 43.1 | 46.7 | 50.3 | 53.9 | 57.5 | 61.1 | 64.7 | 68.3 | 71.9 | 76.5 | 79.1 | 82.7 | 86.3 | 89.8 |
| 5.4 | 21.2 | 24.7 | 28.2 | 31.7 | 35.3 | 38.8 | 42.3 | 45.9 | 49.4 | 52.9 | 56.4 | 60 | 63.5 | 67 | 70.5 | 74.1 | 77.6 | 81.1 | 84.7 | 88.2 |
| 5.5 | 20.8 | 24.2 | 27.7 | 31.2 | 34.6 | 38.1 | 41.6 | 45 | 48.5 | 51.9 | 55.4 | 58.9 | 62.3 | 65.8 | 69.3 | 72.7 | 76.2 | 79.7 | 83.1 | 86.6 |
| 5.6 | 20.4 | 23.8 | 27.2 | 30.6 | 34 | 37.4 | 40.8 | 44.2 | 47.6 | 51 | 54.4 | 57.8 | 61.2 | 64.6 | 68 | 71.4 | 74.8 | 78.2 | 81.6 | 86 |
| 5.7 | 20.1 | 23.4 | 26.7 | 30.1 | 33.4 | 36.8 | 41.1 | 43.4 | 46.8 | 50.1 | 53.5 | 56.8 | 60.2 | 63.5 | 66.8 | 70.2 | 73.5 | 76.9 | 80.2 | 83.6 |
| 5.8 | 19.7 | 23 | 26.3 | 29.6 | 32.8 | 36.1 | 39.4 | 42.7 | 46 | 49.3 | 52.5 | 55.8 | 59.1 | 62.4 | 65.7 | 69 | 72.2 | 75.5 | 78.8 | 82.1 |
| 6.9 | 19.4 | 22.6 | 25.8 | 29.1 | 32.3 | 35.5 | 38.7 | 42 | 45.2 | 48.4 | 61.7 | 54.9 | 58.1 | 61.3 | 64.6 | 67.8 | 71 | 74.3 | 77.6 | 80.7 |
| 6 | 19 | 22.2 | 26.4 | 28.6 | 31.7 | 34.9 | 38.1 | 41.3 | 44.4 | 47.6 | 50.8 | 54 | 57.1 | 60.3 | 63.5 | 66.7 | 69.8 | 73 | 76.2 | 79.4 |
| 6.1 | 18.7 | 21.9 | 25 | 28.1 | 31.2 | 34.3 | 37.5 | 40.6 | 43.7 | 46.8 | 50 | 53.1 | 56.2 | 59.3 | 62.5 | 65.6 | 68.7 | 71.8 | 74.9 | 78.1 |
| 6.2 | 18.4 | 21.5 | 24.6 | 27.6 | 30.1 | 33.8 | 36.9 | 39.9 | 43 | 46.1 | 49.2 | 52.2 | 55.3 | 58.4 | 61.4 | 64.5 | 67.6 | 10.1 | 73.7 | 76.8 |
| 6.3 | 18.1 | 21.2 | 24.2 | 21.2 | 30.2 | 33.3 | 36.3 | 39.3 | 42.3 | 45.4 | 48.8 | 51.4 | 54.4 | 57.4 | 60.6 | 63.5 | 66.5 | 69.5 | 72.6 | 75.6 |
| 6.4 | 17.9 | 20.8 | 23.8 | 26.8 | 29.8 | 32.7 | 35.7 | 38.7 | 41.7 | 44.6 | 47.6 | 50.6 | 53.6 | 56.5 | 59.5 | 62.5 | 66.5 | 68.6 | 71.4 | 74.4 |
| 6.6 | 17.6 | 20.6 | 23.4 | 26.4 | 29.3 | 32.2 | 35.2 | 38.1 | 41 | 44 | 46.9 | 49.8 | 52.7 | 66.7 | 68.6 | 61.5 | 64.5 | 67.4 | 70.3 | 73.3 |
| 6.6 | 17.3 | 20.2 | 23.1 | 26 | 28.9 | 31.7 | 34.6 | 37.5 | 40.4 | 43.3 | 46.2 | 49.1 | 51.9 | 54.8 | 67.7 | 60.6 | 63.5 | 66.4 | 69.3 | 72.2 |
| 6.7 | 17.1 | 19.9 | 22.7 | 25.6 | 28.4 | 31.3 | 34.1 | 37 | 39.8 | 42.6 | 45.5 | 48.3 | 51.2 | 54 | 66.9 | 59.7 | 62.5 | 65.4 | 68.8 | 71.1 |
| 6.8 | 16.8 | 19.6 | 22.4 | 25.2 | 28 | 30.8 | 33.6 | 36.4 | 39.2 | 42 | 44.8 | 47.6 | 50.4 | 53.2 | 56 | 58.8 | 61.6 | 64.4 | 67.2 | 70.2 |
| 6.9 | 16.6 | 19.3 | 22.1 | 24.8 | 27.6 | 30.4 | 33.1 | 35.9 | 38.6 | 41.4 | 44.2 | 46.9 | 49.7 | 52.4 | 55.2 | 68 | 60.7 | 63.6 | 66.3 | 69 |
| 7 | 16.3 | 19 | 21.8 | 24.5 | 27.2 | 29.9 | 32.7 | 35.4 | 38.1 | 40.8 | 43.5 | 46.3 | 49 | 51.7 | 64.4 | 57.1 | 59.9 | 62.6 | 66.3 | 68 |
| 7.1 | 16.1 | 18.8 | 21.5 | 24.1 | 26.8 | 29.5 | 32.2 | 34.9 | 37.6 | 40.2 | 42.9 | 45.6 | 48.3 | 51 | 53.7 | 56.3 | 59 | 61.7 | 64.4 | 67.1 |
| 7.2 | 15.9 | 18.5 | 21.2 | 23.8 | 26.5 | 29.1 | 31.7 | 34.4 | 37 | 39.7 | 42.3 | 45 | 47.6 | 50.3 | 52.9 | 55.6 | 58.2 | 60.8 | 63.5 | 66.1 |

# USEFUL CONVERSION FACTORS

A vehicle's road speed is determined by engine r.p.m., transmission and drive axle reduction ratio, and vehicle tyre size. The **CUMMINS-MERITOR VEHICLE SPEED CHART** assists in selecting the most suitable axle ratio for particular vehicle applications.

Calculations are based on the transmission(s) being in direct drive and the ability of the engine to run at a given r.p.m. The terrain, engine power, air resistance, tyre rolling resistance and vehicle load are not taken into consideration.

Table 1

| Tyre Designation | | | Revolutions per km | Tyre Size Factor |
|---|---|---|---|---|
| 9x20 | 9R20 | | 325 | 0.97 |
| 10x20 | 10R20 | 11R22.5 | 315 | 1.00 |
| 10x22 | 10R22 | 11R24.5 | 300 | 1.05 |
| 11x20 | 11R20 | 12R22.5 | 310 | 1.02 |
| 11x22 | 11R22 | | 295 | 1.07 |
| 275/80 R 22.5 | | | 320 | 0.95 |
| 295/80 R 22.5 | | | 320 | 0.98 |

Note: The chart is based on a tyre size of 10 x 20, 1 OR20 or 11 R22.5. These rotate at approximately 315 revolutions per kilometre. To determine the vehicle speed for other sizes of tyre, simply multiply the vehicle speed by the tyre size correction factor as per Table 1. For transmissions operating in ratios other than direct drive, vehicle road speed can be calculated by dividing the vehicle speed obtained from the chart by the transmission ratio.

To illustrate some typical uses of the **CUMMINS-MERITOR VEHICLE SPEED CHART** some examples are shown below:

- A vehicle with governed engine speed of 1800 r.p.m. and with 11 R22-5 tyres is desired to have a maximum road speed of 104 k.p.h.

From the 1800 r.p.m. column of the chart, it can be seen that for a vehicle speed of 103.9 k.p.h. a 3.3. axle ratio is necessary.

- A vehicle with 1 OR20 tyres has a maximum speed of 95.0 k.p.h. If the vehicle is now fitted with 11 R20 tyres the maximum speed can be calculated by taking into consideration the different tyre size factors.

New maximum speed is equal to:

$$95.0 \times \frac{1.02}{1.00} = 96.9 \text{ k.p.h.}$$

Where 1 .00 is tyre size factor for 1 OR20 tyres and 1 .02 is tyre size factor for 11 R20 tyres

- A 0.87 overdrive transmission is fitted to a vehicle with 3.7 axle ratio and 2100 r.p.m. engine.

The maximum speed of the vehicle can be calculated by taking into consideration the overdrive ratio.

For the 0.87 overdrive transmission the vehicle speed would be:

$$108.1 \times \frac{1}{0.87} = 124.3 \text{ k.p.h.}$$