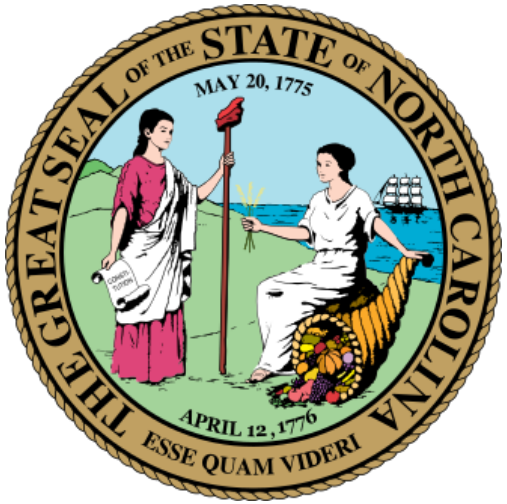
# Choosing Tires for Tow Vehicles & Trailers

North Carolina Department of Environmental Quality- Marine Fisheries Division





# Tire Selection

- Tires for the tow vehicle and trailer must be appropriate for load and speed
- Tires for the tow vehicle and trailers are different
- Selecting the wrong tires can be dangerous and lead to blowouts, rough riding, and trailer sway

# Boat Trailer Tires

# Tire Load Ranges vs. Load Index

- Tire load ranges are ambiguous.  They incorporate construction and refer to equivalency of old ply construction

- Tire load indexes are more precise and provide precises specifications from a chart

- Do not use load range alone to determine tire capacity

# Load Range and Load Index on Sidewall

In this example 92 is the load index, and H is the load range:

# Tow Vehicle Tires:  Load Ranges

- Tow vehicle tires are classified by their ability to hold air pressure and carry weight

- Classifications are by letter (B,C,D,E,etc.) according to durability, air pressure ratings, weight ratings & speed limits. C,D,& E are most common for work trucks. F-L are for commercial trucks.

- Most C-E rated tires are only rated for a maximum speed of 65 mph.  Exceeding that speed can cause blowouts

# Load Range Chart

| LT-Metric, LT-Flotation and LT-Numeric Light Truck Tires | | | |
|---|---|---|---|
| **LOAD RANGES** | **PLY RATING** | **ABBREVIATED** | **MAX. LOAD PRESSURE** |
| B | 4 | B | 35 psi (240 kPa)*** |
| C | 6 | C | 50 psi (350 kPa)*** |
| D | 8 | D | 65 psi (450 kPa)*** |
| E | 10 | E | 80 psi (550 kPa)*** |
| F | 12 | F | 95 psi (650 kPa)*** |
| ***Selected large LT sizes are designed with reduced maximum load pressures | | | |

# Load Range on Tire Sidewall

- The maximum load capacity at the maximum tire pressure is written on the tire sidewall

- Tires should not be inflated to the maximum pressure, so this number is can’t be relied on

# Load Carrying Capacity (LCC)

- Load carrying capacity for tow vehicle tires should be matched to the tow vehicle with towing in mind:
- The LCC is determined by operating temperature
- High driving speeds=more heat=lower LCC
- More weight=more heat=lower LCC

# Tire Load Index

- Load index is a numerical value usually between 1 and 150
- A chart is required to translate load index into pounds
- The higher the load index the higher the carrying capacity

# Tire Load Index on Sidewall

- The tire load index is also written on the tire sidewall

# Load Index Chart

| Load Index | Load (lbs.) | Load Index | Load (lbs.) | Load Index | Load (lbs.) | Load Index | Load (lbs.) | Load Index | Load (lbs.) |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 99 | 31 | 240 | 61 | 567 | 91 | 1356 | 121 | 3297 |
| 2 | 102 | 32 | 247 | 62 | 584 | 92 | 1389 | 122 | 3307 |
| 3 | 105 | 33 | 254 | 63 | 600 | 93 | 1433 | 123 | 3417 |
| 4 | 107 | 34 | 260 | 64 | 617 | 94 | 1477 | 124 | 3527 |
| 5 | 110 | 35 | 267 | 65 | 639 | 95 | 1521 | 125 | 3638 |
| 6 | 114 | 36 | 276 | 66 | 639 | 96 | 1565 | 126 | 3748 |
| 7 | 117 | 37 | 282 | 67 | 667 | 97 | 1609 | 127 | 3858 |
| 8 | 120 | 38 | 291 | 68 | 694 | 98 | 1653 | 128 | 3968 |
| 9 | 123 | 39 | 300 | 69 | 719 | 99 | 1709 | 129 | 4079 |
| 10 | 128 | 40 | 309 | 70 | 739 | 100 | 1764 | 130 | 4189 |
| 11 | 132 | 41 | 320 | 71 | 761 | 101 | 1819 | 131 | 4299 |
| 12 | 136 | 42 | 331 | 72 | 783 | 102 | 1874 | 132 | 4409 |
| 13 | 139 | 43 | 342 | 73 | 805 | 103 | 1929 | 133 | 4541 |
| 14 | 143 | 44 | 353 | 74 | 827 | 104 | 1984 | 134 | 4674 |
| 15 | 148 | 45 | 364 | 75 | 852 | 105 | 2039 | 135 | 4806 |
| 16 | 152 | 46 | 375 | 76 | 882 | 106 | 2094 | 136 | 4938 |
| 17 | 157 | 47 | 386 | 77 | 908 | 107 | 2149 | 137 | 5071 |
| 18 | 161 | 48 | 397 | 78 | 937 | 108 | 2205 | 138 | 5201 |
| 19 | 165 | 49 | 408 | 79 | 963 | 109 | 2271 | 139 | 5357 |
| 20 | 171 | 50 | 419 | 80 | 992 | 110 | 2337 | 140 | 5512 |
| 21 | 176 | 51 | 430 | 81 | 1019 | 111 | 2403 | 141 | 5677 |
| 22 | 182 | 52 | 441 | 82 | 1047 | 112 | 2469 | 142 | 5842 |
| 23 | 187 | 53 | 454 | 83 | 1074 | 113 | 2535 | 143 | 6008 |
| 24 | 193 | 54 | 467 | 84 | 1102 | 114 | 2601 | 144 | 6173 |
| 25 | 204 | 55 | 481 | 85 | 1135 | 115 | 2649 | 145 | 6393 |
| 26 | 209 | 56 | 494 | 86 | 1168 | 116 | 2756 | 146 | 6614 |
| 27 | 215 | 57 | 507 | 87 | 1201 | 117 | 2833 | 147 | 6779 |
| 28 | 220 | 58 | 520 | 88 | 1235 | 118 | 2910 | 148 | 6844 |
| 29 | 227 | 59 | 536 | 89 | 1279 | 119 | 2998 | 149 | 7165 |
| 30 | 234 | 60 | 551 | 90 | 1323 | 120 | 3086 | 150 | 7385 |

# Dual Load Indexes

- Light truck and Special Trailer Service (ST) tires may have two load indexes listed

- Dual load indexes look like this:  104/101

- The first number applies if your rear axle has 2 tires.  The second number applies if your rear axle has 4 tires.

# Vehicle Gross Axle Weigh Rating (GAWR)

- GAWR is usually on a tag inside the driver's door jamb and in the owner's
- Manual

- Front and rear axles each have their own GAWRs

- The vehicle weight, passengers, cargo, and trailer tongue weight must not exceed the GAWR for either axle

# Measuring Front Axle Weight

- Measuring front axle weight requires a scale.
- The tow vehicle is fully loaded with cargo and passengers.  The boat trailer is attached and fully loaded.
- The front tires of the tow vehicle are pulled onto the scale.

# Measuring Rear Axle Weight

- Measuring rear axle weight requires a scale.
- The tow vehicle is fully loaded with cargo and passengers.  The boat trailer is attached and fully loaded.
- The entire tow vehicle is pulled onto the scale.
- Subtract the front axle weight from the total weight to determine rear axle weight

# Trailer Weight Limits

- Just like the tow vehicle, your boat trailer has a GVWR (gross vehicle weight rating) and a GAWR (gross axle weight rating)
- Trailer weight=GVWR – capacity.  5100 – 4000 = 1100 lb. trailer weight
- This trailer must have 2 axles.  5100/2 = 2550

| CAPACITY | GVWR | GAWR ALL AXLES | TIRES | COLD INFL PRESSURE |
|---|---|---|---|---|
| 4000LB | 5100LB | 2550LB | WITH ST205/75R14 | 50PSI |
| THIS VEHICLE CONFORMS TO ALL APPLICABLE US FEDERAL MOTOR VEHICLE SAFETY STANDARDS IN EFFECT ON THE DATE OF MANUFACTURE SHOWN ABOVE | | | | |
| VIN 1L8TABPG4CA007605 | TYPE TRAILER | MODEL M2-4000 | | |

# How to Weigh your Boat and Trailer

- In theory you can calculate the weight of your boat and trailer with information from the tags on the boat and trailer.  However, you would also need to know the weight of engine, any aftermarket items added, cargo, and fuel.

- The accurate way to weigh your boat and trailer is at a calibrated scale.

# Where to Find a Calibrated Scale

- NC State Port
- Truck Stops
- Weigh Stations
- Junk Yards
- Landfills
- RV Lots

# How to Weigh a Boat & Trailer on a Scale

- Have the boat loaded as it would be trailered with a full fuel tank
- Pull your entire rig (tow vehicle, boat, and trailer) onto the scale and note the reading.
- Drop your boat in the parking lot, weight the tow vehicle, and subtract the tow vehicle weight from the total weight.

# Tow Vehicle vs. Trailer Tires

- Truck tires should be purchased for the tow vehicle
- Trailer tires should be purchased for the trailer
- Trailer tires have less flexible sidewalls to reduce trailer sway
- Trailer tires may be designated as ST tires (special trailer)

# Boat Trailer Tire Video

# Trailer Tire Life

- Average trailer tire life is 5 years, but a 3-year life is not uncommon
- Trailer tires may need replacement long before the tread is worn out
- Inspect trailer tires often for dry rot and uneven wear.
- Keep your trailer tires properly inflated to increase tire life
- Check tire pressure when tires are cold (driven <1 mile)
- Overloading trailers leads to heat and shorter tire life