

TIRE TIPS

INTRODUCTION

The tires on U.S. military tactical vehicles are the best in the world. They are designed to exceed mission requirements and function well in all climates and terrain. The following information will help you get the best performance and longest life from these tires.

GENERAL TIRE MAINTENANCE

Tire maintenance is very important. Team Tire recommends taking a few minutes to check and maintain the correct air pressures and to visually inspect tires for cuts and tread depth. These techniques will help extend the life and performance of your tires and assist you in accomplishing your mission. In addition, we recommend not overloading (exceeding the Gross Vehicle Weight) any vehicle. Overloading affects a vehicle's handling and stability and definitely affects the tires and braking. The following provides some general tire maintenance tips:

1. Do not mix radial and bias-type tires on the same vehicle. Doing so will lead to poor handling, decreased traction and braking and a possible loss of vehicle control.
2. Use the appropriate tire lubricant (indicated below) to mount and demount tires. Do not use engine oil or any other petroleum based oils as this can cause rapid decay of the tires rubber compounds.
3. When re-inflating a tire which has been removed for service or replaced, always use a tire safety cage, clip-on chuck, 10-foot hose with in-line air gage, and stand at least 10 feet out of the danger zone (danger zone is anywhere in front or back of the rim or outward from the sidewall area of the tire). Inflate tires to only 40 psi to seat bead on rim and carefully check to ensure that the bead and all wheel components have seated properly before inflating to maximum air pressure. Furthermore, we recommend the tire inflation cage not be bolted down. Bolting down the tire inflation cage reduces its ability to absorb the impact of a catastrophic tire failure.
4. When re-inflating a tire that is on a vehicle that has been operated at lower off-road pressures, it is still very important to stay out of the trajectory of flying tire components, because a rim/wheel separation may occur. This can happen even when the tire is mounted on the vehicle. Use a 10-foot hose with clip-on chuck

and in-line gage. No one should stand within 10 feet of the possible trajectory of wheel and tire components. We also recommend the use of a safety cage.

5. Sometimes tire sizes are similar and can get mixed up while in local storage. To make sure you have the right tire, always check your vehicle TM and the size imprinted on the sidewall of the tire before mounting the tire.
6. When changing a tire, do not use sledgehammers, truck outriggers or any other unauthorized methods to break the bead. Hydraulic bead breakers are available. They are easy to use and make tire changing quicker. See the list of tools below for the NSN of this bead breaker.
7. Bead constrictors were designed for mounting only bias tires and should not be used for mounting radial tires. A bead constrictor is a tool, which has a belt that wraps around the tires' circumference and squeezes it until the bead is seated. If bead constrictors are used on radials, the squeezing can cause the sidewall to buckle and to kink or break the radial sidewall cords. Unfortunately many times the damage to radial sidewall cords can go unnoticed until a catastrophic tire failure occurs. Don't forget to remove the constrictor before inflating a bias tire.
8. Out-of-balance tire/wheel assemblies reduce tire mileage by causing cupping and other irregular tread wear patterns, vibration and poor vehicle handling.
9. Check and correct alignment per TM intervals. Total vehicle alignment refers to the tracking of all axles, to include trailers. It encompasses the various angles of steer axle geometry, caster, camber and toe. A properly aligned vehicle allows tires to roll without needlessly scrubbing off tread rubber.
10. Tires on vehicles that travel at excessive speeds (over 65 mph) for long periods of time, are subject to tire casing failure, if they are not designed to handle the loads and speeds they are subjected to. If you have a high-speed operation, select tires that are approved by the tire manufacturer to operate at high speeds.

WARNING

IMPROPERLY SEATED SIDE RING FLANGES OR LOCKRINGS MAY FLY OFF DURING INFLATION. NEVER ATTEMPT TO SEAT A SIDE RING FLANGE OR LOCKRING DURING OR AFTER INFLATION.

TIRE INFLATION PRESSURES: By far, the single most important step a user can take to maximize the performance and life of a tire is to maintain the appropriate air pressure. This is also the quickest and most economical remedy to increase traction in the mud and snow.

OPERATIONAL TIPS

TIRE BLOWOUTS: Vehicle operators seldom get a warning before a tire blows out. After a blowout, the vehicle immediately swerves to one side or sways dangerously. If that happens, keep the vehicle going straight ahead; **DO NOT IMMEDIATELY APPLY THE BRAKES!** Make sure you have the vehicle under control before braking.

SKIDS: To avoid skids, always stop, start, drive and turn the vehicle slowly when on slippery roads. If you do skid, ease up on the accelerator, **DO NOT APPLY BRAKES** and keep the vehicle in gear. Always turn your wheels in the direction of a skid. If the rear of the vehicle is skidding to the right, then turn to the right. If the rear is skidding towards the left, then turn to the left. Ease the steering wheel back to center position as the vehicle recovers and let the engine slow down the vehicle gradually.

DOWNHILL BRAKING: To maintain control of a vehicle while descending downhill, follow braking procedures in applicable -10 Technical Manual. The rule of thumb is to go downhill in one lower gear than used to go up the hill. While descending, brakes are used along with the engine and transmission to keep the vehicle under control.

BRAKE FAILURE: If hydraulic brakes fail, pump the brake pedal rapidly to restore braking action just long enough to get off the highway. If this does not work, apply steady pressure to the parking brake controlling the rear wheels. **DO NOT LOCK UP THE REAR WHEELS!** Down shifting also serves as braking force.

RUNNING OFF THE PAVEMENT: If the vehicle you are driving drifts off the road, don't panic. Ease off the accelerator and avoid braking, other than a gentle squeeze, if necessary, to control the steering. Also, keep the vehicle headed in a straight line and resist the urge to immediately steer the vehicle back onto the pavement. Instead, when the vehicle is under control and approximately 1 ½ to 2 feet from the pavement, turn the steering wheel quickly about ¼ of a turn. As soon as the front tires are on the road, counter steer and quickly return to your lane.

VEHICLE INSPECTION: Include a visual walk around inspection checking for proper inflation pressure, tread depth and condition of tires before and after vehicle operation.

OFF ROAD: Cross shallow ditches slowly in low gear. Enter the ditch so one wheel leaves as the other on the same side enters it, never at the same time. Crossing ditches with very steep sides may require cutting away the top of banks before trying to cross. Avoid straddling high tree stumps. They can seriously damage vehicle axles and suspension parts. Check ground clearance and drive with caution.

ROCKY TERRAIN: Do not straddle large boulders. Move very slowly. Remove stones from dual tires as often as possible to prevent sidewall damage.

MUD AND SWAMP: Pull out of mud and swampy areas slowly and in low gear. If necessary, place brush, boards or similar material under wheels to increase traction. Roll onto the soft area at medium speed for the selected gear and maintain a steady speed until you reach solid ground.

When stopped by mud rolling up on your wheels, stop and go again to regain momentum. This requires prompt action; otherwise mud will fill the tracks behind your wheels and slow or stop the vehicle.

When in a vehicle with an automatic transmission, try to pull out slowly in low gear. If necessary, get another vehicle to pull you out. If the vehicle is equipped with a winch, attach the winch cable to a tree or solid object and pull out with winch power. Do not rock the vehicle. It will only dig in more.

SAND: First, estimate whether or not your vehicle has a sufficient amount of traction to drive through the sandy area. If not, adjust/lower tire pressure to meet changing sand conditions and then accelerate slowly while maintaining a steady rate of movement. If possible, follow in tracks of preceding vehicles. Make wide turns, because sharp turns can stall or overturn the vehicle.

Let your vehicle roll to a halt when stopping in sand if practical. This prevents tires from digging in when brakes are used. Try to stop on a downhill slope to give you an advantage when driving is resumed.

If the vehicle bogs down, use a lower gear. If that doesn't work, stop the power to the driving wheels. Continuing will only sink the vehicle deeper and make it more difficult to get out. Shovel a clear path ahead of the wheels, if necessary. Lay boards, brush, channels, canvas wire netting, rope ladders or similar material under and in front of the tires, for better floatation and traction. Use a winch or tow the vehicle, since continued operation, under it's own power, will only cause it to sink deeper.

TIRE PRESSURE: Reduce tire pressure to drive over soft sand. This increases the amount of tire surface in contact with the sand, thereby providing better floatation (support). However, never reduce tire pressure so much that the tire slips on the rim. As soon as the need for low pressure ceases, stop and re-inflate tire to the appropriate pressure. Always keep valve caps on tires. Carry a tire gauge and equipment to re-inflate tires and keep spare valve cores and readily available material for use under wheels in extremely soft areas. We also recommend that you carry shovels and tow chains or cables.

WINTER DRIVING: Carbon monoxide poisoning is one of the hazards of winter driving. This poison comes from inhaling vehicle exhaust fumes and can result in death. Never sleep in the cab with the engine or heater running, nor leave the engine running while working on a vehicle in a closed building. While driving with the heater on, leave the

window open slightly. Also, inspect the vehicle exhaust manifold, muffler and tailpipe for serviceability, per the vehicle TM.

The preferred method of parking is to keep vehicles from resting directly on ice, snow, or frozen mud for extended periods of time. Initial thawing may occur and subsequently the ground may freeze around the tires. The best way to keep tires from freezing to the ground is to park on a hard surface or on any other available material such as planks and logs. If hard surface parking is not possible, and then the vehicle should be moved periodically so that the tires rotate approximately 180 degrees.

Synthetic rubber tubes can become brittle when temperatures fall below –40 F. If you are expecting operations in temperatures below –40 F, you can minimize the effects of these extreme temperatures by lubricating the inside of the tire, tube, flap, bead, bead lock, and rim flanges. Use concentrated lubricant, NSN 2640-00-256-5526 (quart can) or 2640-00-256-5527 (gallon can) without adding water. We recommend this lubrication be done when you are performing other tire maintenance.

Air pressure should be adjusted for the terrain and surface in which the vehicles operate, not for extremes in temperatures. Technical manuals provide guidelines for pressure versus surface type. Always ensure, when lowering air pressures to increase mobility in snow, that tires are re-inflated before the vehicle returns to improved or highway road surfaces.

To prevent tire valves from icing up, freezing or getting clogged with mud and debris, make sure all tire valve stems have valve caps installed.

Tire chains should only be used in severe snow and icy conditions and should be removed immediately upon returning to improved road surfaces. Tire and vehicle damage can occur if you leave the chains on over improved roads or for extended periods of time.

If using tire chains, apply them to all tire positions on the vehicle, if possible. This will provide the maximum amount of braking and traction.

Correct tire pressure is critical for vehicle mobility in snow, ice or mud and provides better vehicle braking and stability. Check your tire pressures regularly and as indicated in your vehicle technical manuals.

MUD & SNOW TIRES: Vehicles equipped with mud/snow tires will slide on icy road surfaces more so than those with an all season tread. Mud/snow tires are more effective on roads covered with loosely packed snow.

All-wheel-drive vehicles without chains usually perform better than two-wheel-drive vehicles with chains on rear wheels.

Avoid quick acceleration and sudden braking on slick roads to minimize skidding of the vehicle. Better traction is gained when the vehicle load is evenly distributed on all wheels. Sand, cinders or dirt also improve traction.

Drivers of large vehicles should be aware that the shoulder of the road might give way due to vehicle weight.

Fresh snow may conceal an icy road surface.

Even when snow and ice may have melted on most surfaces, it may remain solidly packed or frozen on bridges. Also, isolated patches of ice may be on an otherwise clear road, especially in shaded areas.

Three to 11 times greater distance is required to stop a vehicle on pavement covered with ice or snow.

MIRE D VEHICLE: Check the chain's condition and eliminate twist. To install chains on a vehicle that is bogged and stuck, drape the chain over the tire with open ends of cross chain hooks away from the tire and then fasten it on the trailing end of the side chains.

If using dual chains, fold the inner half of the chain over the top of the outer half. This makes a double chain on the outer wheel. Secure one end of each side chain to the wheel by a strong wire, cord or chain passed through the opening in the wheel and fasten to the inner and outer side chains adjacent to the first cross chain. Pull the chain back to take up slack and align with tire. Revolve wheels slowly to draw the chain around tires. Stop when fasteners are at the top of the tire. Pull side chains tight. Hook inner side chain first.

When a vehicle is moved to solid ground, loosen and remove the temporary wires, cords or chains. Adjust the chain to their proper position.

TIRE CHAINS

Tire chains can improve traction on ice and packed snow. However, in order to perform their function, they must be installed properly and cleaned regularly, since chains packed with ice will lose their effectiveness.

Tire chains are designed to fit snugly, however, you should allow for some “creep” or movement of the chain of the tire. We also recommend tightening chains by hand, rather than with tools. This reduces the possibility of over tightening the chains and thereby gouging the tires. If additional measures need to be taken to make the chains fit properly, use the appropriate straps from those listed in the Tire Accessories Catalog.

Some vehicles require chains on all drive wheels. Check the vehicle operator's manual to determine the correct procedure for your particular vehicle.

When installing chains on dual wheels, first fasten chains between the wheels, and then fasten the inner wheel chain and finally, the outer chain. When installing on a single wheel, fasten the inner chain before the outer chain. Straighten and center and check to eliminate twisting.

NOTE

The Defense Supply Center Columbus manages Tire Chains. Call DSN 850-1094 for assistance.

SNOW TIRES: We do not supply snow tires for tactical vehicles. The tires currently on our tactical vehicles are all-weather tires and provide good traction in both mud and snow.

COMMON TIRE TOOLS AND EQUIPMENT

- A. Tools available in Shop Equipment, Automotive Maintenance and Repair: Organizational Maintenance Common No. 1, Less Power, NSN 4910-00-754-0654, SC 4910-95-A74:
1. Gage, Depth, Tire Tread, 1" Depth, 3" Tread contact, NSN 5210-00-019-3050
 2. Chuck, Air, Inflating, dual Face, NSN 4730-00-174-4584
 3. Inflator-Gage & hose, Pneu Tire 10' long, NSN 4910-00-441-8685
 4. Injector Tool for plugs, Tubeless, NSN 2640-00-922-6922
 5. Inserter and Remover: Pneu Tire Valve Core, NSN 5120-00-541-4687
 6. Repair Kit, Inner Tube, NSN 2640-00-052-6724
 7. Repair Material, Tubeless Tire, NSN 2640-00-922-6921
 8. Repair Tool, Pneu Tire, Standard Tire Valve, NSN 5120-00-308-3809
 9. Tire Iron: Curved Spoon Type, 24" long, NSN 5120-00-277-4071
 10. Tire Iron: Curved Spoon Type, 18" long, NSN 5120-00-422-8558
 11. Tire Iron: Hooked Spoon-Drop CTR Type, 18" long, NSN 5120-00-449-7073
 12. Tire Iron: Lock Ring, 37" long, NSN 5120-00-765-8536
- B. Tools available in Shop Equipment, Automotive Maintenance and Repair: Organizational Maintenance Common No. 2, Less Power, NSN 4910-00-754-0650, SC 4910-95-A72:
1. Compressor, Gas driven, 5 CFM, 175 PSI, NSN 4310-00-752-9633
 2. Gage, Depth 1" Depth, 3" Tread Contact, NSN 5120-00-019-3050
 3. Gage, Tire 10-50 PSI, NSN 4910-01-117-2994
 4. Inflator Gage Indicator with deflating position, Calibrated to 10-120 lb, NSN 4910-00-204-2547
 5. Repair, Kit, Tire & Tube, NSN 2640-00-102-0978
 6. Repair, Kit, Puncture, Pneumatic, NSN 2640-00-102-0978
 7. Repair, Tool Pneumatic Valve, NSN 5120-00-308-3809
- C. Tools available in Shop Equipment, Automotive Maintenance and Repair: Field Maintenance Supplemental No.1, NSN 4910-00-754-0706, SC 4910-95-A62:
1. Compressor Unit, Gas driven, 15 CFM, 175 PSI, NSN 4310-00-542-4566
- D. Tools indicated in TM 9-2610-200-14, Tire Maintenance Manual include:
1. Bead Breaker, NSN 4910-01-325-2974
 2. Bead Seater (15" whl), NSN 4910-01-022-9721
 3. Bead Seater (16" whl), NSN 4910-00-437-7215
 4. Constrictor, Bead, Bias Tire (Hvy Constr Veh), NSN 4910-00-138-1819
 5. Constrictor, Bead, Bias Tire, NSN 4910-01-132-4933
 6. Tire Iron (30.5" L), NSN 5120-00-545-4370
 7. Tire Iron (33" L), NSN 5120-00-580- 8924
 8. Tire Iron (10" L), NSN 51200-0-313-3036
 9. Tire Mounter/Demounter, HIT/Coats 5000M, NSN 4910-01-370-9855
 10. Lubricant, Tire & Rim, 1 Qt Can, NSN 2640-00-256-5526

11. Lubricant, Tire & Rim, 1 Gal Can, NSN 2640-00-256-5527
12. Tire Servicing Tool Kit, NSN 5180-01-355-2166
13. Tire Inflation Safety Cage, Length 40 3/4", Width 25", Height 56", 315 lbs., NSN 4910-01-373-0267
14. Tire Inflation Safety Cage, Length 78 3/4", Width 35 1/2", Height 86 1/4", 1,600 lbs., NSN 4910-00-025-0623 – Tire Cages are managed by Robins Air Force Base, Georgia and are purchased only once per year. The DSN for the Item Manager is 468-7603, ext. 260.

E. Tire Changer (Replaces the Bishman), NSN 4910-01-370-9855 10

RADIAL TIRES: Replacing bias ply tires with radials may be a very effective method of improving traction on snow and ice, but it is also the most costly approach and may involve the longest lead-times. Radials also have the advantage of improving traction on other surfaces including mud and increasing tread life. Replacing bias ply tires with radials can be a simple procedure using few items (like on the 5 tons) or it can be complex and require many new parts (like on the HMMWV).

WARNING

DO NOT MIX BIAS AND RADIAL TIRES ON THE SAME VEHICLE. MIXING BIAS AND RADIAL TIRES MAY RESULT IN DAMAGE TO EQUIPMENT AND PERSONNEL INJURY.

Remember that some radial tires use tubes because not all wheels are designed for tubeless tires. We also recommend using ONLY radial tubes on radial tires. The use of other tubes (such as bias) not designed for radial tires could result in tube failure causing tire damage.

WARNING

AGAIN, DO NOT MIX BIAS PLY TIRES WITH RADIAL TIRES ON THE SAME VEHICLE. MIXING TIRES MAY RESULT IN DAMAGE TO EQUIPMENT, LOSS OF VEHICLE CONTROL AND PERSONNEL INJURY.

FOREIGN MANUFACTURED TIRES: These are tires without Department of Transportation (DOT) codes stamped on the side. They are usually purchased from a local supplier and may not comply with our strict standards for performance and quality. Foreign manufactured tires are not approved for use on our vehicles and will not be accepted for turning to the wholesale logistics system.

We hope the above information will help to you. Please call us if you have any questions or comments.

HOW TO DETERMINE THE DATE OF MANUFACTURE OF OFF – ROAD AND HIGHWAY TIRES

The following is a guide to reading the date of manufacture of off-road and highway tires sold by our major suppliers: Denman, Bridgestone/Firestone, Goodyear, Cooper, General and Michelin. Each manufacturer, with the exception of Michelin, has molded a serial number into the sidewall of each tire. However, there are some differences among them, noted below:

DENMAN: Denman uses a serial number, the last 3 digits of which constitute the date of manufacture. These last 3 digits are to be read just as a DOT Code, i.e., 1st 2 digits = week of manufacture and the last digit = the year of manufacture. For example, serial number 1234527 = a date of manufacture of the 52nd week of 1997.

BRIDGESTONE/FIRESTONE: Bridgestone/Firestone serial numbers are normally 9 characters in length and usually begin with a letter (usually the letter Y). The second position of the serial number indicates the year of manufacture. For example, a tire with serial number Y61234567 was manufactured in 1996.

GOODYEAR: Each Goodyear off – road tire has a serial number beginning with the letters MJ or MC. The last 3 numbers of the serial number indicate the week and year of manufacture. For example, a tire with serial number MJ1234567236 was manufactured during the 23rd week of 1996.

COOPER: Cooper brand off – road tires, have a ten-digit serial number. The last 3 digits of the serial number indicate the week and year of manufacture. For example, a Cooper tire with serial number 1234567205, was manufactured during the 20th week of 1995.

GENERAL: General uses a 9 position alphanumeric code, with the last three characters representing the month and year of manufacture. General is different from the other manufacturers in that the seventh character, representing the month of manufacture, is a letter, rather than a number. Using this code, the first letter of the Alphabet represents the first month of the year and the second letter of the Alphabet represents the second month, etc.. The last two characters are numbers representing the year of manufacture. For example, a General tire with the code 01479BK96, was manufactured in the 11th month, since the letter K is the 11th letter of the Alphabet and the year of manufacture is 1996, since the last 2 numbers are 96.

MICHELIN: Michelin has no serial numbers on it's off – road tires that would indicate the date of manufacture. SUGGESTION: Look for a DOT Code.

TITAN: Titan uses the DOT Code system for all of its tires. Therefore, prior to 1 January 2000, the last three digits of their code for both off and on road tires indicate the week and year of manufacture. For example, a tire with the DOT Code DOT CH EV HU4 501

was manufactured during the 50th week of 1991. All Titan tires produced since 1 January 2000 reflect the new DOT coding system. Therefore, the last 4 digits for those tires reflect the week, year and decade of manufacture. For example, a tire with DOT Code DOT V5 2J EFT 4600 was manufactured during the 46th week of the year 2000. 12

DOT CODES: All highway type tires sold in the United States must have a DOT (Dept. of Transportation) Code molded into their sidewalls. The DOT code is alphanumeric, is composed of 13 characters and always begins with the letters DOT. The last 3 positions of this code indicate the week and year of manufacture. For example, a tire with the DOT Code DOT CH EV HU4 501 was manufactured during the 50th week of 1991.

DOT CODE UPDATE: Starting with year 2000 production tires, an additional number was added to DOT Codes. As a result DOT Codes are now 14 characters in length instead of 13. This change has enabled tire manufacturers to show the decade of manufacture. For example, a tire with DOT Code DOT V52J EFT 4600 was manufactured during the 46th week of the year 2000.