ANNEX A

GLOSSARY OF BRAKE AND CNG FUEL SYSTEMS TERMINOLOGY

BRAKE TERMINOLOGY

Actuator. A device which physically initiates mechanical motion of a brake system component.

Air Assisted Hydraulic Brake System. A hydraulic type brake system which utilizes air to assist the driver's effort to apply the brakes.

Air Brake Hose. A flexible hose used in or connected directly into the service or emergency stopping air supply system. All flexible air brake hoses must conform with the requirements of FMVSS 106. (Brake hoses need not carry DOT labeling.) (Any identifying marks or other factors which indicate that the hose is not intended or suitable for air brake use would be cause for rejection.)

Air Brake Line. Metallic or non-metallic tubing or pipe used in a section of the air system where flexing action is not necessary. (Non-metallic brake tubing may be coiled or non-coiled. Original equipment need not meet any standards nor be labeled. Replacement non-metallic brake tubing installed after July 1, 1992, must be of the reinforced type and comply with the requirements of SAE J844 Type B (13 CCR 1245)).

Air Brake Reservoir. A storage container for compressed air.

a. Wet Tank - the air reservoir tank that receives the direct discharge from the air compressor through the compressor discharge line.

b. Dry Tank - any air reservoir tank which receives its air supply from another tank rather than by direct discharge from the air compressor.

Air Brakes. A brake system using compressed air for actuating the service brakes at the wheels of a vehicle.

Air Compressor. A device which compresses air used for actuation of the brakes and/or other components of the vehicle.

Air Compressor Governor. A regulator which controls the supply of air pressure for the brake system, generally by controlling the air compressor cut-in and cut-out pressure within a preset range.

Air Disc Brakes. Air-actuated brakes which, upon application, employ a caliper to clamp two brake pads against a rotor.

Air Dryer. A filter, typically containing a desiccant, which is installed between the compressor and service reservoir to remove water and vapor and oil blow-by from the compressor.

Air Gauge. A gauge, usually mounted on the instrument panel, which indicates the air pressure in the air reservoir tanks, brake application pressure, or other air system pressures.

Air Hydraulic Power Unit. A unit consisting of an air brake cylinder or chamber, hydraulic cylinder(s) and control valve, in which driver effort is combined with force from the cylinder piston or chamber diaphragm to displace fluid under pressure for actuation of the brake(s).

Air Over Hydraulic Brake System. A- hydraulic type brake system actuated by an air-powered master cylinder.

Air-Powered Master Cylinder. A brake master cylinder actuated by an air brake cylinder or chamber.

Air Pressure Protection Valve. A unit which delivers a preselected output pressure. Air Pressure Reducing Valve. A unit which delivers a preselected output pressure.

Air-to-Vacuum Conversion Relay Valve. A relay valve which converts air brake signals to equivalent vacuum brake signals.

Alcohol evaporator. An optional device, installed in the air compressor discharge line between the compressor and the supply air tank, which-injects alcohol mist into the air flow to reduce the risk of freeze-up. (Not normally used in a vehicle with an air dryer).

Anti-compounding. An optional system that prevents application of service brakes from compounding (adding to) the force exerted by parking brakes. Functionally, this guards against brake drum cracking, lining damage, and stretching of brake hardware components.

Antilock/Antiskid Brake Systems (ABS). Currently optional, a safety-oriented system that senses wheel rotation (at one or more axles) during braking and cycles the brakes to prevent locking those wheels.

Armature. The rotating part of the electric brake actuating mechanism which is attracted by the magnet.

Automatic Moisture Election Valve. (Spitter Valve) A unit which operates to expel a fixed volume of fluid when air under pressure is delivered to its control port.

Automatic Slack Adjuster. An adjuster designed to automatically adjust for the clearance between the brake shoes and drum to compensate for lining wear.

Auxiliary Control Valve. A unit which controls pressure in various portions of the brake system.

Auxiliary Vacuum Pump. A device which creates vacuum to augment the primary source of vacuum.

Brake. An energy conversion mechanism used to retard, stop, or hold a vehicle.

Brake Assembly. An assembly of brake parts, the components of which are determined according to the type or design of the brake system.

Brake Balance. Brake balance is achieved when all brakes on all axles do their fair share of the work.

Brake Block. Friction material or lining-attached to a brake shoe.

Brake Cam. A cam mounted on the brake camshaft and located between the ends of the brake shoes. When rotated by the brake camshaft, the cam expands the brake shoes against the brake drum.

Brake Camshaft. The brake camshaft is held to the vehicle axle housing or backing plate by bosses containing bronze or nylon bushings. Air pressure is converted into mechanical force by the brake chamber which is attached by a push rod to the slack adjuster. The slack adjuster multiplies this force and converts it into torque, which is transmitted by the camshaft to the brake cam. The brake cam once more multiplies the force by the lever principle and applies the force to the brake shoes.

Brake Chamber or Actuator. A unit in which a diaphragm converts pressure to mechanical force for actuation of the brake(s).

Cylinder. A unit in which a piston or pistons convert(s) pressure to mechanical force fo actuation of the brake(s).

Brake Failure Waming Switch-Hydraulic. A device used to complete an electrical circuit to indicate a pressure loss in one portion of a dual hydraulic circuit brake system.

Brake Hose. A flexible conductor for the transmission of fluid pressure in the brake system.

Brake Lever or Handle. A hand or foot-operated lever or handle which, when actuated, causes the brake(s) to be applied.

Brake Line. A non-flexible conductor for the transmission of fluid pressure in the brake system.

Brake Master Cylinder. The primary unit for displacing, hydraulic fluid under pressure in the brake system.

Brake Pedal. A foot-operated lever which, when actuated, causes the brake(s) to be' applied.

Brake Shoe. A rigid, half-moon shaped metal device with friction material affixed to the outer surface. The brake shoes are generally mounted on a backing plate and are located inside the brake drum. When expanded by the brake mechanism, the brake shoes press the brake lining against the brake drum, which creates friction to stop the rotation of the wheels, which in turn stops the vehicle.

Brake Shoe Anchor Pin. A pin which holds the brake shoe in its proper place within the brake drum and serves as a pivot for the. brake shoe. One end of each brake shoe is generally connected to the backing plate or spider by anchor pins.

Brake System. A combination of one or more brakes and the related means of operation and control.

Brake Wheel Cylinder. A unit for converting hydraulic fluid pressure to mechanical force for actuation of a brake.

Cam-over. Term denoting that an air brake "S" cam has traveled beyond its designed stopping position during brake application, causing the cam rollers at the live ends of the brake tables (shoes) to roll off the ends of the cam lobes. This event renders the brake inoperative until the brake is disassembled and the condition corrected. A brake in this condition is sometimes described as having "rolled over."

Caliper. A clamping device containing friction material. When actuated, the caliper applies braking force to both sides of the rotor.

Check Valve (Air). A unit used in the air brake system to isolate one part of the air system from another part.

a. Single. A check valve which allows air flow in one direction only, preventing the flow of air in the reverse direction.

b. Double. A check valve .(used in FMVSS 121 air brake systems) used to direct the flow of air into a common line from either of two sources, whichever is at the higher pressure. The double check valve may also be used for directing air flow for specific functions, or to select the higher pressure of either of two sources of air as a suppl source.

c. “Two-Way". A shuttle-type valve usually placed in the tractor service lines between the lines from the hand valve and foot valve. The two-way check valve provides for activation of the brake system by either of the two controls. The valve prevents air from exhausting from the foot valve when the hand valve is applied and vice versa.

Check Valve (Hydraulic). A unit which is used to isolate one part of the brake fluid system from another part.

a. Closed Type. A check valve which allows fluid flow in one direction only.

b. Open Type. A check valve, normally open to fluid flow in both directions, which closes when fluid'flow in one direction exceeds a predetermined value.

c. Residual (and Compensating) Type. A two-function unit in which one function, either restricts fluid from the brake wheel cylinder(s) or retains a pressure in the brake wheel cylinder(s) at the time of brake release, and the other function permits fluid compensation for fluid volume changes.

Constant Line (Supply). A flexible conductor terminated by a hose coupler for transmitting supply vacuum from a towing vehicle to a towed vehicle.

Controller. A variable resistance for graduated control of electric brake(s).

Control Line. A flexible conductor terminated by a hose coupler for transmitting control vacuum from a towing vehicle to a towed vehicle.

Cutoff Valve. A shutoff valve generally located behind the cab on tractors, or at the rear of truck beds, in the service and emergency lines of the air brake system. The valves are used to manually shut off the air to the trailer lines while the motor vehicle is running "bobtail". (These valves are not usually installed when a tractor protection valve is used.)

Dash Control Valve. A manually operated valve that actuates the tractor protection valve, emergency stopping/parking brake system, or other devices.

Deceleration. The rate of reduction of the speed of a vehicle usually expressed in feet per second.

Diaphragm. A rubber partition located inside a brake chamber. When air pressure is introduced into the chamber on one side of the diaphragm, the pressure flexes the diaphragm and exerts force on the pushplate attached to the push rod. The pushplate is held against the diaphragm by a light return spring.

Disc Brake. A brake in which the friction forces act on the faces of a disc(s).

Disc Brake Caliper Assembly. The nonrotational components of a disc brake, including its actuating mechanism for development of friction forces at the disc.

Disc (Rotor). The parallel-faced circular rotational member of a disc brake assembly acted upon by the friction material.

Drain Valves. Small valves located in the bottom of reservoir tanks to permit draining of accumulated condensed water and oil from the tanks.

Driver Perception Reaction Time or Distance. The time elapsed or distance traveled between the instant or point at which the driver has an opportunity to perceive a demand for braking and the instant or point at which the driver starts to move the braking controls.

Drum. The cylindrical rotational member of a drum brake assembly acted upon by the friction material.

Drum Brake. A brake in which the friction forces act on the cylindrical surface(s) of a drum.

Dual Air Brake System. A dual air brake system has dual or split air control' circuits, consisting of primary and secondary systems (usually front and rear, but may be split diagonally). The purpose of the dual system is to retain braking ability if a failure occurs in one of the two separate systems.

Dual Brake Master Cylinder. A master cylinder with two separate hydraulic sections for displacing fluid under pressure in a dual-circuit hydraulic brake system.

Dual Hydraulic Circuit (Split Hydraulic) Brake System. A service brake system consisting of two separate hydraulic circuits which, upon failure in either circuit, retains partial brake actuating capability.

Dual Power Brake System. A dual power brake system uses two power sources, commonly hydraulic and vacuum, to assist the driver's efforts to apply the brakes.

Electric Breakaway Switch. A control unit used on a towed vehicle to provide for automatic application of the electric brake(s) in case of a breakaway from the towing vehicle.

Emergency Brake System. A brake system used for stopping a vehicle in the event of a malfunction in the means of operation and control of the service brake system.

Emergency Brake Valve. A unit under the control of the driver which, when actuated, will activate the emergency brake system.

Emergency Line (Supply). A flexible air brake hose terminated by a hose coupler for transmitting supply air from a towing vehicle to a towed vehicle.

Fade.

a. Heat Fade. A temporary reduction of brake effectiveness due to a loss of friction between braking surfaces resulting from excessive heat.

b. Water Fade. A temporary reduction of brake effectiveness due to a loss of friction between braking surfaces resulting from the presence of water between the brake shoes and the brake drum.

Follow-Up Type Valve. A unit which responds to fluid displacement or mechanical linkage movement, to modulate pressure in a cylinder or chamber.

Foot Valve. A brake application and release valve located on the floor or firewall of a motor vehicle between the throttle and the clutch. It may be either a treadle or a pedal and is operated by foot pressure applied by the driver to apply air pressure to the service brake system. The valve may be either attached to the treadle or may be remotely mounted under the floor and connected to the pedal by means of a rod. This valve generally applies air pressure to all braking axles on all vehicles in a combination.

Gladhand. See Hose Coupler.

Gladhand Rubber. A rubber gasket used in the hose couplers to provide a seal between two connected gladhands to prevent the escape of air.

Hand/Trailer Control Valve (also called Graduating Hand Control Valve). A lever-operated valve located in the cab of a motor vehicle, normally mounted on the dash or steering column. This valve permits the driver to make controlled application and release of only the trailer brakes.

Hold-Off Valve. A unit which permits free fluid flow in either direction when the brakes are not applied, but prevents pressure build-up in one part of the brake system until pressure in the other part reaches a predetermined value.

Hose Coupler. A separable mechanical connector for the brake hose between a truck or tractor and a trailer, or between two trailers.

Hydraulic Brake System. A brake system in which brake operation and control utilizes hydraulic brake fluid.

Inversion Valve. An inversion valve (commonly used in combination with DD3 safety actuators) is an air-operated control valve, which is normally open. The inversion valve is closed by air pressure from another source, normally an isolated reservoir used in

emergency or parking brake systems. Most inversion valves operate automatically when air pressure drops to a predetermined pressure. The valve may also be used in interlocking and sequencing applications, where the operation of components must take place in specific sequence.

Lining Glaze. Surface hardening accompanied by reduction in friction value.

Load Compensating Resistor. An adjustable resistance for limiting current in an electric brake control circuit to achieve brake balance.

Load Proportional Brake Control. A system or device which regulates the input force to' the brakes on an axle in proportion to the load on that axle.

Logic Controller. A part of the wheel slip brake control system which interprets input signals from the sensor(s) and transmits controlling output signals to the modulator(s).

Low Pressure/Vacuum Indicator. A unit or combination of units which provides a visible and/or audible warning signal whenever the stored pressure/vacuum in the brake system is below a predetermined value.

Magnet. The part of an electric brake activating mechanism which, when energized, attracts the armature, creating a force to apply the brake(s).

Manual Hydraulic Brake System. A hydraulic type brake system which utilizes unassisted driver effort.

Modulator. A part of the wheel slip brake control system which receives signals from the logic controller and adjusts brake actuation force.

Oversized Drum. A brake drum having an inner diameter greater than the discard diameter marked on the drum by its manufacturer.

Parking Brake System. A brake system, independent in operation from the service brake system, used for holding a vehicle in a parked position. A locking mechanism is employed to hold the brakes in the applied position when the vehicle is unattended or when the energy used to apply the brakes is no longer present.

Pedal Reserve. The amount of total pedal travel left in reserve when the brake pedal is depressed to the "brake applied" position.

Power Brakes. Any braking gear or mechanism that aids in applying the brakes of a vehicle and which utilizes vacuum, compressed air, separate hydraulic pressure, or electricity for that purpose.

Pressure Differential. The difference between the inlet and outlet air pressure of an open brake valve. Also, the difference in air pressure between any two points within a brake system.

Pressure Proportioning Valve. A unit which changes the ratio of its output pressure to its input pressure.

Pressure Regulating Valve. A valve which controls the amount of air pressure taken from the air brake system to operate auxiliary devices such as windshield wipers, air doors, etc.

Protected Air. Protected air is that air pressure which is retained in a reservoir system by a check valve when both the wet and dry air reservoirs in the service air supply system are drained.

Push Rod. The sliding rod projecting from a brake chamber, which connects the pushplate to the slack adjuster.

Quick Release Valve. A control unit which accelerates the release of air pressure from various portions of brake systems.

Reactionary Type Valve. A unit which responds to fluid displacement and pressure, or mechanical linkage movement and force, to modulate pressure in a brake cylinder or chamber.

Relay Emergency Valve. A relay valve which also provides for automatic application of trailer brakes in case of a breakaway or loss of pressure in the trailer supply (emergency) line.

Retarder. An auxiliary braking device. (Engine brake, exhaust brake, hydraulic retarder or electric retarder).

Roll-over. See "Cam-over."

S-cam Brake. Type of brake where mechanically-induced rotation of an S-shaped cam forces brake linings against the brake drum.

Safety Valve. A pressure release unit used to protect the air system against excessive pressure.

Service Brake System. The primary brake system used for retarding and stopping a vehicle.

Service Brake Valve. A foot-operated unit which is used for graduated control of all the brakes in the service brake system.

Service Line (Control). A flexible air brake hose terminated by a hose coupler for transmitting control air pressure from the towing vehicle to the towed vehicle.

Slack. The sum of all clearances in the braking system.

Slack Adjuster. A lever attached to the brake camshaft and connected to the brake chamber push rod. The slack adjuster provides a means of adjusting the brakes to compensate for brake lining wear.

Snub. The act of retarding a motor vehicle between two speed values by use of the brake system.

Snubbing Time. The time elapsed between the instant of first retardation by the brakes during a snub and the instant at which the lower velocity of the vehicle is reached.

Spring Brake. Generally refers to a tandem-chamber brake actuator that incorporates an air applied service brake chamber and an air-released/spring-applied parking or emergency brake chamber. Spring brakes apply upon sudden air loss (emergency mode) or upon activation of a dash-mounted parking brake control. Spring brakes remain applied until that chamber is recharged or the spring is manually compressed or caged. The spring portion is often referred to as a "piggyback". Some spring brake actuators do not incorporate a service air chamber and are solely parking and emergency brakes. For example, some parking brakes are applied by air. pressure and subsequently held mechanically by a pawl which drops into a notch on the brake chamber push rod.

Spring Brake Actuator. A unit which utilizes the stored energy in a spring(s) to actuate the brake(s).

Stop Light Switch. A switch which completes the electrical circuit to the stop lamp(s) when the brake(s) is (are) applied.

Straight Air Brake System. A mechanical type brake system actuated by 'air pressure in brake cylinder(s) or brake chamber(s).

Stroke. Refers to total distance traveled by a brake chamber push rod or slack adjuster arm during brake application.

Supplemental Brake System. An additional brake system used to assist the service brake system in retarding a vehicle.

Supply Air. Supply air is air under pressure in the air supply system of a vehicle. It consists of those lines or tanks (except protected air tanks) which are under pressure when the system is fully charged and when all valves are in the normal position with the brakes unapplied.

Trailer Control Valve. See Hand Control Valve.

Tractor Protection Valve. A unit which is a part of a towing vehicle's air brake system and which:

a. Permits driver control of the opening and closing of the air brake lines to the towed vehicle whenever air pressure in the towing vehicle exceeds a predetermined value.

b. Closes the air brake lines automatically when the tractor brake system pressure is less than the predetermined value.

c. Vents the trailer supply (emergency) line when closed either manually or automatically.

Treadle Valve. A foot-operated, brake actuation valve.

Vacuum Assisted Hydraulic Brake System. A hydraulic type brake system which utilizes vacuum to assist the driver's effort to apply the brakes.

Vacuum Brake Reservoir. A storage container for vacuum.

Vacuum Hydraulic Power Unit. A unit consisting of a vacuum brake cylinder or chamber, hydraulic cylinder(s), and control valve, in which driver effort is combined with force from the cylinder piston or chamber diaphragm to displace fluid under pressure for actuation of the brake(s).

Vacuum Over Hydraulic Brake System. A hydraulic type brake system actuated by a vacuum powered master cylinder.

Vacuum Powered Master Cylinder. A brake master cylinder actuated by a vacuum brake cylinder or chamber.

Vacuum Pump. A device which creates vacuum to actuate the brakes.

Wedge Brake. A wheel brake which uses air or hydraulic pressure to force wedges instead of cams between the brake shoes to apply the shoes against the brake drums. In air-applied wedge brake systems, the brake actuator axis is parallel to the axle and pushes directly on the wedge in this direction instead of being mounted at right angles to push a slack adjuster and rotate a cam as in the conventional type of air brake system.

Wheel Slip Brake Control System. A system which automatically controls the degree of rotational wheel slip during braking.

Wheel Speed Sensor. A part of the wheel slip brake control system which senses angular rotation of the wheel(s) and transmits signals to the logic controller.

TERMS COMMON TO CNG FUEL SYSTEMS

The definitions in this annex are not intended to be all-inclusive but to cover words, phrases, and acronyms that are typically used in the installation, repair and maintenance of CNG vehicles. Some of the terms may have different meanings when used in other contexts.

Abrasion Damage. Damage to a container caused by wearing, grinding or rubbing away of the container material by friction.

Acoustic Emission. A form of non-destructive container inspection.

Alternative Fuel. An alternative to gasoline or diesel fuel which is not produced in a conventional way from crude oil, e.g., CNG, liquid petroleum gas (LPG), liquefied natural gas (LNG), ethanol, methanol, hydrogen.

Appliance. Any apparatus or fixture that uses or, consumes CNG furnished or supplied by a CNG gas system to which it is connected or attached.

Aramid Fiber. One of the types of reinforcement fibers used in the container's composite overwrap.

ASME Code. The American Society of Mechanical Engineers' Boiler and Pressure Vessel Code.

ASME Container. Any CNG container/cylinder manufactured to the specifications of the American Society of Mechanical Engineers in effect at the time of fabrication.

Bi-Fuel or Dual Fuel. A system that can operate on either of two fuels, but not a mixture of fuels, such as gasoline or CNG, or diesel or CNG.

Blunt Impact. A forceful blow to the surface of the container which does not cut, gouge or significantly indent the surface. This type of impact may induce damage such as delamination, which may not be readily apparent by visual examination.

Brake Horsepower. The horsepower output of an engine. The term brake horsepower is derived from the use of a brake or dynamometer to measure the engine's power output.

British Thermal Unit (BTU). The quantity of heat required to raise the temperature of one pound of water one degree Fahrenheit at or near 39.2° F.

Bulkhead. An upright partition separating compartments, such as an engine firewall.

Burst Disc or Rupture Disc. A safety device commonly used on high pressure cylinders to relieve overpressure of the container. The burst disc is designed to rupture when subjected to a predetermined pressure level.

Bypass. A separate passage which permits a liquid, gas, or electric current to take a path other than that normally used.

Capacity. The water volume of a container in standard cubic feet (cf) per gallons. One gallon equals .13368 cubic foot.

Carbon Fiber. One of the types of reinforcement fibers used in the composite overwrap.

Carburetor. The device in an engine fuel system that mixes fuel with air and supplies the combustible mixture to the intake manifold for varied speed and load conditions of the engine.

Check. To verify that a component, system, or measurement complies with regulations or specifications.

Check Valve. A valve that opens to permit the passage of air or fluid in one direction only, or operates to prevent (check) some undesirable action.

Composite Container. A container fabricated of two or more materials that interact together to facilitate the container design criteria. Examples include fiberglass composites fabricated from glass fibers and epoxy resin or carbon composites fabricated from carbon fibers and epoxy resins.

CNG Fuel System. A system of safety devices, cylinders, piping, fittings, valves, regulators, gauges, relief devices, vents, and installation. fixtures for use on a motor vehicle fueled by compressed natural gas.

Container (CNG). When used as a motor fuel, natural gas is stored aboard a vehicle in cylindrical containers at a pressure of approximately 3,000 psi. Among terms used to describe CNG fuel containers are tanks, containers, cylinders, and high pressure vessels. They will be referred to as "containers" throughout this publication.

Container Appurtenances. Devices connected to container opening for safety, control, or operating purposes.

Container Valve. A valve connected directly to a container outlet. Used to isolate the container from the rest of the fuel system.

Condemned Container. A container that must be removed from service. Repairs cannot be performed that will assure acceptable container performance.

Corrosion Damage. A process that refers to the oxidation of materials primarily in wet environments, or by a corrosive material.

Crazing. Hairline cracking of the resin, giving it an opaque, "frosty" appearance.

Cut Damage. This type of damage is caused by a sharp object in contact with a composite surface.

Cylinder. A container constructed, inspected, and maintained according to DOT or Transport Canada (TC) regulations, American National Standards Institute/American Gas Association (ANSI/AGA) Natural Gas Vehicle (NGV2), or Canadian Standards Association (CSA) B51, Boiler, Pressure Vessel and Pressure Piping Code standards. Referred to as "containers" throughout this chapter.

Delamination. A form of container damage in which a separation develops between layers of the composite materials. This type of damage usually results from excessive internal pressure exerted on a weakened portion of the container.

Domes. The curved end portions of the fuel container.

Epoxy. A type of resin used in the composite wrap to protect the fibers and hold them together.

External/Exterior Coating. A surface treatment or the clear/colored coating applied to the container for environmental protection and appearance.

Fast Fill. A CNG refueling facility that can refuel a vehicle in just a few minutes.

Fiber. The load-carrying portion of the overwrap consisting of continuous filaments. The reinforcing fibers provide the majority of the container's strength.

Fiberglass. A general term referring to glass fibers used for reinforcement.

Filament Winding. An automated process used for orienting strands of high strength fibers and plastic resin to construct composite containers.

Filter. A device through which air, gases, or liquids are passed to remove impurities.

Fuel Line. The pipe, tubing, or hose, including all related fittings on a vehicle, through which CNG passes.

Full-Wrapped Container. The reinforcement of a filament and resin system applied over the entire liner including the domes if so equipped.

Galvanic Corrosion. Corrosion that may occur when different materials are in contact with each other.

General Corrosion. Corrosion which covers considerable surface area of a container. It reduces the structural strength and, is often accompanied by pitting.

Helical Wrap. The layers in the composite overwrap filament-wound to provide additional longitudinal strength for both the cylindrical and dome regions of the container. The strands of reinforcing fibers are oriented at an angle to the longitudinal axis of the container.

Hoop-Wrapped Container. Winding of filament in a substantially circumferential pattern over the cylindrical portion of the CNG container liner so that the filament does not transmit any significant stresses in a direction parallel to the container's longitudinal axis. Hoop winding generally leaves both container liner heads exposed.

Hydrostatic Test. A test performed on a container where the container is pressurized hydraulically to at least 1.5 times the service pressure and the container volume expansion is used to determine its condition.

Impact Damage. Damage caused by dropping or by a blow from another object. Impact damage may be at the surface, internal to the structure, or both.

Isolated Pitting. Pits of various depth and diameter which stand alone, as opposed to appearing in a group, as in line corrosion or general corrosion. Isolated pits of small diameter and shallow depth do not effectively weaken the container.

Kevlar. An organic fiber (nylon) used for reinforcement.

Kilo Pascals (kPa). A metric measure of pressure. One pounds per square inch (psi) is equal to 6.9 kPa.

Line Corrosion. When pits are connected to others in a narrow band or line, such a pattern is termed line corrosion., This condition is more serious than isolated pitting.

Liner. The internal component of the composite container which prevents leakage of gas through the composite structure and to which an over wrap is applied.

Lock off. The device in a air-fuel system that prevents fuel from entering the converter or secondary regulator when the engine is not running.

Longitudinal Wrap. Fibers running in the general direction of the long axis of, the container.

Manifold. The assembly of piping and fittings used for interconnecting containers.

Manual Shutoff Valve. A quick-closing valve located downstream of all fuel supply containers on the vehicle.

Metallic Hose. A hose in which the strength of the hose depends primarily upon the strength of metallic parts; it may have metallic liners and or covers.

Mounting Brackets and/or Straps. The devices used to secure fuel containers in a vehicle. The bracket and/or straps are specially designed to restrain containers' without causing damage, and to accommodate container growth caused by changes in internal pressure.

Non-load Bearing. Parts of the container which do not support load. An example is the plastic liner in all-composite containers whose purpose is to prevent gas leakage.

Over wrap. Refers to both the fibers and resin as a combined unit. Permeation. Process by which gas diffuses through a plastic liner. Pitting. Type of localized corrosion that occurs in metals.

Polyethylene. A type of plastic material used in liners in all-composite containers. Known as PE (polyethylene) or HDPE (High-density polyethylene).

Ports. The openings at the ends of the container in which pressure relief devices, valves and blank plugs are installed.

Pressure Relief Device. A device installed in the container or integrated with a valve which will release the contained gas in specific emergency conditions. The device may be pressure and or temperature activated, and is used to prevent the pressure from rising above a predetermined maximum, thereby prevent the rupture of a normally or partially charged container when subjected to a standard fire test.

Pressure Relief Device Channels. The passage 'or passages beyond the operating parts of the pressure relief device through which fluid must pass to reach the atmosphere.

Pressure Vessel. A container or other component designed in accordance with the ASME Code.

Primary Regulator. A regulator in CNG systems that reduces the pressure. of CNG coming from the container to around 100 psig. Also known as "first stage regulator" or "high pressure regulator".

Rejected Container. A container that must be removed from service and evaluated further before final disposition.

Resin. The material (typically epoxy or polyester) which is used to bind the fibers together and protects the fibers from environmental effects and provides a means to accomplish load transfer among fibers.

Road Debris. Materials such as small rocks, stones, or gravel that have the potential to damage containers.

Service Pressure. The settled pressure at a uniform gas temperature of 70° F and full gas content. It is the pressure for which the equipment has been constructed, under normal conditions. Also referred to as nominal pressure.

Shielding. Structure constructed to protect a container from road debris or other forms. of attack that may damage the container.

Sidewall. The cylindrical portion of the container that does not include the domes.

Slow-Fill. A type of refueling in which the cylinders are filled slowly over a period of hours. Since the CNG in the vehicle container(s) has time to cool during the refueling process, the vehicle container(s) can be filled more completely than with fast-fill refueling.

Sources of Ignition. Devices or equipment which, because of their modes of use or operation, are capable of providing sufficient thermal energy to ignite flammable compressed natural gas-air mixtures when introduced into such a mixture or when such a mixture comes into contact with them and that will permit propagation of flame away from them.

Stress Corrosion Cracking. A form of cracking that occurs as a result of a combination of stress and aa corrosive environment.

Supply Line. The pipe, tubing or hose, including all related fittings on a vehicle through which CNG passes.

Thermal Trigger. The portion of a thermally activated pressure relief device which is activated by excessive heat input.

Water Capacity. The amount of water, in pounds or gallons, at 600 F required to fill a container.

Working Pressure. The pressure at which the equipment was designed to function, or if conditions have changed, the maximum pressure allowed at specified temperatures.

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ANNEX B

AMERICAN TIRE AND RIM ASSOCIATION LOAD LIMIT TABLES

NOTE: Load limits in this annex are shown at the maximum cold inflation pressure.

1. PASSENGER CAR TIRES. When passenger car tires are used on light trucks and trailers, the load limits are 9% lower than shown in the tables in this section.

Table B-1. "Alpha" Designated Bias and Radial Ply Tires for Passenger Cars and Station Wagons

Tire Size Designation*	Load Range B	Load Range C	Load Range D
A	1,060	1,130	1,200
B	1,150	1,230	1,300
C	1,230	1,320	1,400
D	1,320	1,410	1,490
E	1,400	1,490	1,580
F	1,500	1,610	1,700
G	1,620	1,730	1,830
H	1,770	1,890	2,010
J	1,860	1,980	2,100
K	1,900	2,030	2,150
L	1,970	2,100	2,230
M	2,090	2,230	2,370
N	2,210	2,360	2,500

NOTE: These load limits apply to all 50, 60, 70, and 78 series tires of all sizes, except those designated LT (such as E78-14LT) for "light truck."

*The letter R following the alpha designation marked on the tire (as in AR70-13) denotes a radial tire of the same load capacity as the corresponding bias ply tire (A70-13).

Table B-2. Bias Ply Tires for Passenger Cars, Station Wagons, and Multipurpose Passenger Vehicles

Tire Size Designation	Load Range B	C	D
6.00-13	1,010	--	1,140
6.50-13	1,150	1,230	1,300
7.00-13	1,270	--	1,440
5.60-14	920	--	1,050
6.00-14	1,100	--	1,240
6.45-14	1,120	--	1,270
6.50-14	1,210	--	1,370
6.95-14	1,230	--	1,390
7.00-14	1,340	--	1,520
7.35-14	1,360	1,450	1,540
7.50-14	1,500	--	1,700
7.75-14	1,500	1,600	1,690
8.00-14	1,620	--	1,830
8.25-14	1,620	--	1,830
8.50-14	1,740	--	1,960
8.55-14	1,770	--	2,000
8.85-14	1,860	--	2,100
9.00-14	1,860	--	2,100
9.50-14	2,000	--	2,260
6.00-15	1,150	--	1,300
6.50-15	1,270	--	1,440
6.70-15	1,450	--	1,640
6.85-15	1,230	--	1,390
7.00-15	1,700	1,820	1,930
7.10-15	1,550	--	1,760
7.35-15	1,390	1,480	1,570
7.60-15	1,710	1,820	1,930
7.75-15	1,490	1,590	1,690
8.00-15	1,800	--	2,040
8.15-15	1,610	1,720	1,820
8.20-15	1,920	--	2,170
8.25-15	1,620	--	1,830
8.45-15	1,740	1,860	1,970
8.55-15	1,770	1,890	2,000
8.85-15	1,860	1,980	2,100
8.90-15	2,210	--	2,500
9.00-15	1,900	--	2,150
9.15-15	1,970	--	2,230
6.00-16	1,400	1,500	--
6.50-16	1,580	1,690	--
7.00-16	1,780	1,900	--

Table B-3. Radial Ply Tires for Passenger Cars, Station Wagons, and Multipurpose Passenger Vehicles

Tire Size Designation	Load Range B	Load Range D
155R13	950	1,075
165R13	1,010	1,140
175R13	1,150	1,300
185R13	1,270	1,440
195R13	1,370	1,560
155R14	1,010	1,140
165R14	1,120	1,280
175R14	1,230	1,400
185R14	1,360	1,540
195R14	1,500	1,690
205R14	1,620	1,830
215R14	1,770	2,010
225R14	1,860	2,100
155R15	1,015	1,150
165R15	1,130	1,280
175R15	1,230	1,400
185R15	1,390	1,570
195R15	1,490	1,690
205R15	1,610	1,820
215R15	1,740	1,970
225R15	1,860	2,100
235R15	1,970	2,230

Table B-4. Radial, Bias Belted, and Diagonal Bias Ply, P-Type Tires for Passenger Cars and Station Wagons

Tire Size Designation	Load Range Standard Load	Load Range Extra Load
P165/75*13	1,003	1,080
P155/80*13	905	1,005
P205/70*14	1,356	1,466
P185/75*14	1,290	1,389
P195/75*14	1,440	1,521
P205/75*14	1,532	1,653
P255/60*15	1,786	1,929
P225/70*15	1,664	1,808

*Tire size designation will include either R (radial ply), B (bias belted) or D (diagonal or bias ply), as in P165/75R13.

2. LIGHT TRUCK, BUS, AND TRAILER TIRES.

a. The letter R marked on the tire in place of the dash shown in the tire size column (as in C78R15LT) denotes a radial tire of the same capacity.

b. The letter D in the wheel column denotes dual wheel; S denotes single wheel.

c. Percentage tire load increases as shown in the tables are permissible when:

(1) The speed of the vehicle is mechanically restricted to no more than that listed for the increased load, or

(2) The vehicle, or combination of vehicles, carries on the rear of the last vehicle a sign showing the maximum speed for the tire load.

Table B-5. Bias and Radial Ply Tires on 5-degree Drop Center or Semi-drop Center Rims for Light Trucks, Buses, Trailers, and Multipurpose Passenger Vehicles

Tire Size Designation	Wheel	Load Range C	D	E
C78-15LT	D	1,200	1,420	--
	S	1,370	1,620	--
D78-14LT	D	1,240	1,460	1,670
	S	1,400	1,660	1,890
E78-14LT	D	1,270	1,500	1,710
	S	1,440	1,710	1,950
F78-16LT	D	1,420	1,680	1,920
	S	1,620	1,910	2,180
G78-14LT	D	1,400	--	--
	S	1,590	--	--
G78-15LT	D	1,460	1,730	1,970
	S	1,660	1,960	2,240
H78-15LT	D	1,610	1,910	2,170
	S	1,830	2,170	2,470
H78-16LT	D	1,680	1,990	2,270
	S	1,910	2,260	2,580
L78-15LT	D	1,790	2,120	2,410
	S	2,030	2,400	2,740
L78-16LT	D	1,860	2,200	2,510
	S	2,110	2,500	2,850

Percentage increase when speed is restricted:

Maximum Speed (mph)	Increased Load (%)
45 through 54	9
35 through 44	16
25 through 34	24
15 through 24	32

Table B-6. Bias and Radial Ply Tires on 5-degree Drop Center or Semi-drop Center Rims for Light Trucks, Buses, Trailers, and Multipurpose Passenger Vehicles

Tire Size Designation	Wheel	Load Range C	D	E	F	G
6.00-16LT	D	1,255	1,480	1,690	--	--
	S	1,430	1,690	1,920	--	--
6.50-16LT	D	1,420	1,670	1,900	--	--
	S	1,610	1,900	2,160	--	--
6.70-15LT	D	1,355	1,600	1,820	--	--
	S	1,530	1,810	2,060	--	--
7.00-13LT	D	1,110	1,315	--	--	--
	S	1,260	1,490	--	--	--
7.00-14LT	D	1,155	1,365	1,555	--	--
	S	1,310	1,550	1,770	--	--
7.00-15LT	D	1,520	1,800	2,040	--	--
	S	1,720	2,040	2,320	--	--
7.00-16LT	D	1,580	1,870	2,130	2,370*	--
	S	1,800	2,130	2,430	2,700*	--
7.10-15LT	D	1,470	1,740	1,990	--	--
	S	1,670	1,970	2,250	--	--
7.50-15LT	D	--	2,060	2,350	--	--
	S	--	2,330	2,660	--	--
7.50-16LT	D	1,815	2,140	2,440	2,730	2,890*
	S	2,060	2,440	2,780	3,090	3,290*
8.25-16LT	D	--	2,340	2,600	2,970	3,300
	S	--	2,660	2,960	3,370	3,750
9.00-16LT	D	--	2,665	2,965	3,380	3,760
	S	--	3,303	3,370	3,840	4,275

Percentage increase when speed is restricted:

Maximum Speed (mph)	Increased Load (%)
45 through 54	9
35 through 44	16
25 through 34	24
15 through 24	32

*Load limit in this load range applies only to radial tires.

Table B-7. Bias and Radial Ply Tires on Wide Base Bias Ply Tires Mounted on 5-degree Drop Center Rims for Use on Trucks, Buses, and Trailers

Tire Size Designation	Load Range B	C	D
7.9-14LT	1,000	1,260	1,490
8.5R14LT	1,120	1,420	--
9-15LT	1,560	1,980	2,340
10-15LT	1,760	2,230	2,640
10-16LT	1,840	2,330	2,750
11-14LT	1,820	2,300	2,730
11-15LT	1,900	2,410	2,850
11-16LT	1,980	2,500	2,950
12-15LT	2,250	2,850	3,370

Percentage increase when speed is restricted:

Maximum Speed (mph)	Increased Load (%)
45 through 54	9
35 through 44	16
25 through 34	24
15 through 24	32

Table B-8. Bias and Radial Ply Tires on 15-degree Drop Center Rims for Light Trucks, Buses, Trailers, and Multipurpose Passenger Vehicles

Tire Size Designation	Wheel	Load Range B	C	D	E	F
7-14.5LT	D	--	--	1,650	1,840	2,020
	S	--	--	1,870	2,090	2,300
8-14.5LT	D	--	--	--	2,240	2,460
	S	--	--	--	2,540	2,790
9-14.5LT	D	--	--	2,310	2,590	2,840
	S	--	--	2,620	2,940	3,230
7-17.5LT	D	--	1,590	1,880	2,150	--
	S	--	1,815	2,145	2,445	--
8-17.5LT	D	--	1,820	2,155	2,460	--
	S	--	2,075	2,455	2,795	--
8.00-16.5LT	D	1,195	1,520	1,800	2,050	2,280
	S	1,360	1,730	2,045	2,330	2,590
8.75-16.5LT	D	1,380	1,750	2,070	2,360	--
	S	1,570	1,990	2,350	2,680	--
9.50-16.5LT	D	1,635	2,070	2,445	2,790	--
	S	1,860	2,350	2,780	3,170	--
10-16.5LT	D	1,620	2,050	2,420	2,760	--
	S	1,840	2,330	2,750	3,135	--
10-17.5LT	D	--	2,135	2,525	2,880	3,200
	S	--	2,425	2,870	3,270	3,640
12-16.5LT	D	--	2,090	2,640	3,120	3,560
	S	--	2,370	3,000	3,550	4,045

Percentage increase when speed is restricted:
*Load limit in this load range applies only to radial tires.

2. HEAVY TRUCK, BUS, AND TRAILER TIRES.

a. The letter R marked on the tire in place of the dash shown in the tire size column (as in C78R15LT) denotes a radial tire of the same capacity.

b. The letter D in the wheel column denotes dual wheel; S denotes single wheel.

c. Percentage tire load increases as shown in the tables, are permissible when:

(1) The speed of the vehicle is mechanically restricted to no more than that listed for the increased load, or

(2) The vehicle, or combination of vehicles, carries on the rear of the last vehicle a sign showing the maximum speed for the tire load.

Table B-9. Bias and Radial Ply Tires on 15-degree Drop Center Rims for Trucks, Buses, and Trailers

Tire Size Designation	Wheel	Load Range C	D	E	F	G	H	J
7-22.5	D	1,860	2,170	--	--	--	--	--
	S	2,120	2,470	--	--	--	--	--
8-19.5	D	2,110	2,460	2,780	3,070	--	--	--
	S	2,410	2,800	3,170	3,500	--	--	--
8-22.5	D	--	2,750	3,100	3,430	--	--	--
	S	--	3,140	3,530	3,910	--	--	--
9-22.5	D	--	--	3,550	3,950	4,320	--	--
	S	--	--	4,050	4,500	4,920	--	--
10-22.5	D	--	--	4,040	4,520	4,970	--	--
	S	--	--	4,610	5,150	5,670	--	--
11-22.5	D	--	--	--	4,760	5,300	5,800	--
	S	--	--	--	5,430	6,040	6,610	--
11-24.5	D	--	--	--	5,070	5,640	6,170	--
	S	--	--	--	5,780	6,430	7,030	--
12-22.5	D	--	--	--	5,190	5,780	6,320	--
	S	--	--	--	5,920	6,590	7,200	--
12-24.5	D	--	--	--	5,520	6,140	6,720	--
	S	--	--	--	6,290	7,000	7,660	--
12.5-22.5	D	--	--	--	5,290	5,890	6,440	--
	S	--	--	--	6,030	6,710	7,340	--
12.5-24.5	D	--	--	--	5,630	6,270	6,960	--
	S	--	--	--	6,420	7,150	7,820	--
14-17.5	D	2,820	3,570	4,220	4,810	5,360	--	--
	S	3,210	4,060	4,800	5,470	6,090	--	--

(continued)

Table B-9. (Continued)

Tire Size Designation	Wheel	Load Range C	D	E	F	G	H	J
15-19.5	D	--	--	--	--	6,150	--	--
	S	--	--	--	--	6,980	--	--
15-22.5	D	--	--	5,000	5,910	6,740	7,500	--
	S	--	--	5,680	6,720	7,660	8,520	--
16.5-19.5	D	--	--	--	--	--	7,430	--
	S	--	--	--	--	--	8,440	--
16.5-22.5	D	--	--	--	--	--	8,120	--
	S	--	--	--	--	--	9,230	--
18-19.5	D	--	--	--	--	6,980	7,960	8,850
	S	--	--	--	--	7,930	9,040	10,060
18-22.5	D	--	--	--	--	7,610	8,680	9,650
	S	--	--	--	--	8,650	9,860	10,970
19.5-19.5	D	--	--	--	--	--	--	9,370
	S	--	--	--	--	--	--	10,650

Percentage increase when speed is restricted:

Maximum Speed (mph)	Increased Load (%) Tire Sizes Below 14-17.5	Tire Sizes 14-17.5 and Above
41 through 50	9	7
31 through 40	16	9
21 through 30	24	12
11 through 20	32	17

Table B-10. Bias Ply High Load Tires on 15-degree Drop Center Rims for Trucks and Trailers

Tire Size Designation	Wheel	Load Range G	H
9.4-22.5	D	4,320	--
	S	4,920	--
10.3-22.5	D	4,970	--
	S	5,670	--
11.1-22.5	D	--	5,800
	S	--	6,610
11.9-22.5	D	--	6,320
	S	--	7,200

NOTE: Load limits may be increased 9% for restricted speed highway service not exceeding 50 mph when the speed of the vehicle is mechanically restricted or the vehicle is operated with a sign indicating the maximum speed for the increased tire load.

Table B-11. Bias and Radial Ply Tires on Type I, II, and III Rims for Trucks, Buses, and Trailers

Tire Size Designation*	Wheel	Load Range C	D	E	F	G	H	J
6.50-20	D	1,860	2,170	2,450	--	--	--	--
	S	2,120	2,470	2,790	--	--	--	--
7.00-15TR	D	--	--	2,260	2,500	--	--	--
	S	--	--	2,580	2,850	--	--	--
7.00-17	D	1,870	2,180	--	--	--	--	--
	S	2,130	2,490	--	--	--	--	--
7.00-18	D	--	2,270	2,560	--	--	--	--
	S	--	2,590	2,920	--	--	--	--
7.00-20	D	--	2,450	2,760	3,050	--	--	--
	S	--	2,790	3,150	3,480	--	--	--
7.50-15TR	D	--	--	2,550	2,820	--	--	--
	S	--	--	2,910	3,210	--	--	--
7.50-17	D	--	2,460	2,780	3,070	--	--	--
	S	--	2,800	3,170	3,500	--	--	--
7.50-18	D	--	2,550	2,890	3,190	--	--	--
	S	--	2,910	3,290	3,640	--	--	--
7.50-20	D	--	2,750	3,100	3,430	3,640	--	--
	S	--	3,140	3,530	3,910	4,150	--	--
8.25-15TR	D	--	--	--	3,260	3,570	--	--
	S	--	--	--	3,720	4,070	--	--
8.25-17	D	--	--	3,180	3,540	3,870	--	--
	S	--	--	3,630	4,040	4,410	--	--
8.25-20	D	--	--	3,550	3,950	4,320	--	--
	S	--	--	4,050	4,500	4,920	--	--
9.00-15TR	D	--	2,920	3,360	3,760	4,130	--	--
	S	--	3,330	3,830	4,290	4,710	--	--
9.00-20	D	--	--	4,040	4,520	4,970	--	--
	S	--	--	4,610	5,150	5,670	--	--
10.00-15TR	D	--	--	--	3,980	4,430	4,850	--
	S	--	--	--	4,540	5,050	5,530	--
10.00-20	D	--	--	--	4,760	5,300	5,800	--
	S	--	--	--	5,430	6,040	6,610	--
10.00-22	D	--	--	--	5,070	5,640	6,170	--
	S	--	--	--	5,780	6,430	7,030	--
11.00-15TR	D	--	--	--	--	4,840	5,300	--
	S	--	--	--	--	5,520	6,040	--
11.00-20	D	--	--	--	5,190	5,780	6,320	--
	S	--	--	--	5,920	6,590	7,200	--
11.00-22	D	--	--	--	5,520	6,140	6,720	--
	S	--	--	--	6,290	7,000	7,660	--
11.00-24	D	--	--	--	5,860	6,520	7,130	--
	S	--	--	--	6,680	7,430	8,130	--
11.50-20	D	--	--	--	5,290	5,890	6,440	--
	S	--	--	--	6,030	6,710	7,340	--

(continued)

Table B-11. (Continued)

Tire Size Designation*	Wheel	Load Range C	D	E	F	G	H	J
11.50-22	D	--	--	--	5,630	6,270	6,960	--
	S	--	--	--	6,420	7,150	7,820	--
12.00-20	D	--	--	--	--	6,140	6,790	7,200
	S	--	--	--	--	7,000	7,740	8,210
12.00-24	D	--	--	--	--	6,910	7,640	8,100
	S	--	--	--	--	7,880	8,710	9,230

Percentage increase when speed is restricted:

Maximum Speed (mph)	Increased Load (%)
41 through 50	9
31 through 40	16
21 through 30	24
11 through 20	32

*TR denotes "truck" to differentiate between passenger car, light truck and other service for tires of same size designation.

3. TRUCK AND TRAILER TIRES FOR RESTRICTED SERVICE.

d. In Tables B-12 and B-13, the letter R marked on the tire in place of the dash shown in the tire size column (as in C78R15LT) denotes a radial tire of the same capacity.

e. In Tables B-12 and B-13, the letter D in the wheel column denotes dual wheel; S denotes single wheel.

f. Percentage tire load increases as shown in the tables are permissible when:

(1) The speed of the vehicle is mechanically restricted to no more than that listed for the increased load, or

(2) The vehicle, or combinations of vehicles, carries on the rear of the last vehicle a sign showing the maximum speed for the tire load.

Table B-12. Bias Ply High Load Tires on Type I, II, and III Rims for Trucks and Trailers

Tire Size Designation	Wheel	Load Range G	H	J
9.4-20	D	4,320	--	--
	S	4,920	--	--
10.3-20	D	4,970	--	--
	S	5,670	--	--
11.1-20	D	--	5,800	--
	S	--	6,610	--
11.1-22	D	--	6,170	--
	S	--	7,030	--
11.9-20	D	--	6,320	--
	S	--	7,200	--
11.9-22	D	--	6,720	--
	S	--	7,660	--
12.5-20	D	--	--	7,200
	S	--	--	8,210

Table B-13. Bias and Radial Ply Tires for Trucks and Trailers Operated at 50 MPH Maximum

Tire Size Designation	Wheel	Load Range G	H	J	L
13.00-20	D	--	7,400	8,140	--
	S	--	8,440	9,280	--
14.00-20	D	6,770	7,800	8,740	9,610
	S	7,720	8,890	9,960	10,960
14.00-24	D	--	--	9,750	10,730
	S	--	--	11,120	12,230

Percentage increase when speed is restricted:

Maximum Speed (mph)	Increased Load (%)
31 through 40	7
21 through 30	13
11 through 20	21

Table B-14. Bias Ply Mining and Logging Tires
for Intermittent Highway Service

Tire Size Designation	Load Range C	D	E	F	G	H	J	L
7.00-16ML	1,790	--	--	--	--	--	--	--
7.00-20ML	--	--	2,760	3,050	--	--	--	--
7.50-20ML	--	--	3,100	3,430	--	--	--	--
8.25-20ML	--	--	3,550	3,950	--	--	--	--
9.00-20ML	--	--	4,040	4,520	4,970	--	--	--
10.00-20ML	--	--	--	4,760	5,300	--	--	--
10.00-22ML	--	--	--	5,070	5,640	--	--	--
10.00-24ML	--	--	--	5,380	5,990	--	--	--
10.3-20ML*	--	--	--	--	--	4,970	--	--
11.00-20ML	--	3,850	4,560	5,190	5,780	--	--	--
11.00-22ML	--	--	--	5,520	6,140	--	--	--
11.00-24,25ML	--	--	--	5,860	6,520	--	--	--
11.1-20ML*	--	--	--	--	--	5,630	--	--
12.00-20,21ML*	--	--	--	--	6,140	6,790	--	--
12.00-24,25ML*	--	--	--	--	6,910	7,640	7,870	7,870
12.5-20ML*	--	--	--	--	--	6,790	7,000	--
13.00-20ML*	--	--	--	--	--	7,400	8,140	--
13.00-24,25ML*	--	--	--	--	--	8,290	9,120	--
14.00-20,21ML*	--	--	--	--	6,770	7,800	8,740	9,610
14.00-24,25ML*	--	--	--	--	--	8,710	9,750	10,730†
9-22.5ML	--	--	3,550	--	--	--	--	--
9.4-22.5ML*	--	--	--	--	4,200	--	--	--
10-22.5ML	--	--	4,040	4,520	--	--	--	--
10.3-22.5ML	--	--	--	--	4,970	--	--	--
11-22.5ML	--	--	--	4,760	--	5,630	--	--
11-24.5ML	--	--	--	5,070	5,640	--	--	--
12-22.5ML	--	--	--	5,190	5,780	--	--	--

NOTE: These load limits apply for a maximum speed of 55 mph and a maximum distance of 55 miles in any 1 1/2-hr period.

Maximum Speed (mph)	Increased Load (%)
31 through 40	9
21 through 30	18
11 through 20	32
6 through 10	60

*Maximum of 50 mph and 50 miles in 1 1/2 hr.
†Same load limit applies to this tire in load range N.

Table B-15. Wide Base Bias Ply Mining and Logging Tires for Intermittent Highway Service

Tire Size Designation	Load Range C	D	E	F	G	H	J
14-17.5ML	2,820	3,570	4,220	4,810	5,360	--	--
15-19.5ML	--	3,930	4,560	5,390	6,150	--	--
15-22.5ML	--	--	5,000	5,910	6,740	7,500	--
16.5-19.5ML	--	--	--	--	6,580	7,430	--
16.5-22.5ML	--	--	--	--	--	8,120	--
18-19.5ML	--	--	--	--	--	7,960	--
18-21ML*	--	--	--	--	--	8,680	--
18-22.5ML	--	--	--	--	--	8,680	9,650
19.5-19.5ML	--	--	--	--	--	--	9,370
19.5-21ML	--	--	--	--	--	--	10,190
23-21ML*	--	--	--	--	--	--	13,400
23-23.5ML*	--	--	--	--	--	--	13,400

NOTE: These load limits apply for a maximum speed of 55 mph and a maximum distance of 55 miles in any 1 1/2-hr period.

Maximum Speed (mph)	Increased Load (%)
31 through 40	7
21 through 30	9
11 through 20	17
6 through 10	40

*Maximum of 50 mph and 50 miles in 1 1/2 hr.

Table B-16. Bias Ply Special Tires for Trailers

Tire Size Designation	Load Range B	C
6.00-13ST	935	1,150
6.50-13ST	1,065	1,315
7.00-13ST	1,175	1,450
6.45-14ST	1,035	1,275
7.35-14ST	1,245	1,530
7.75-14ST	1,365	1,680
8.25-14ST	1,470	1,815
8.55-14ST	1,605	1,975
6.85-15ST	1,130	1,390
7.35-15ST	1,280	1,575
7.75-15ST	1,365	1,680
8.25-15ST	1,485	1,825
8.55-15ST*	1,620	2,000
8.85-15ST	1,695	2,090

*This tire size also available in Load Range D with a 2,330 pound load limit.

Table B-17. "78 Series" Bias Ply Tires for Special Trailer Service

Tire Size Designation	Load Range B	Load Range C
B78-13ST	1,065	1,315
C78-13ST	1,145	1,410
C78-14ST	1,145	1,410
E78-14ST	1,300	1,600
F78-14ST	1,385	1,710
G78-14ST	1,515	1,865
H78-14ST	1,650	2,035
J78-14ST	1,705	2,100
E78-15ST	1,300	1,600
F78-15ST	1,385	1,710
G78-15ST	1,515	1,865
H78-15ST*	1,650	2,035
J78-15ST	1,705	2,100
L78-15ST	1,805	2,225

*This tire size also available in Load Range D with a 2,370 pound load limit.

Table B-18. Bias Ply Tires for Trailers and Powered Vehicles Other Than Passenger Cars

Tire Size Designation	Load Range A	B	C	D	E
4.80-8	390	590	745	--	--
4.80-12	--	780	990	--	--
5.30-12	--	840	1,045	--	--
5.70-8	--	715	910	1,075	--
6.90-9	590	885	1,120	1,375	1,510
6.90-12	--	1,060	1,345	--	--
6.50-10	--	--	1,190	--	1,605
7.00-10	--	--	--	1,650	1,835
7.50-10	--	--	--	--	1,975
16.5x6.5-8	395	620	795	915	--
20.5x8.0-10	--	905	1,105	1,330	1,535
18.5x8.5-8	--	770	940	--	--
23.5x8.5-12	--	1,085	1,320	--	--

3. BUS TIRES FOR RESTRICTED SERVICE. Restricted service for buses is a maximum speed of 35 mph in continuous operation or 55 mph when operation does not exceed one hour. Tires marked "inter-city" or "thru-way" are not subject to the speed restrictions.

Table B-19. Bias and Radial Ply Tires for Buses in Restricted Service

Tire Size Designation*	Wheel†	Load Range F	Load Range G
8.25-20	D	3,950	--
	S	4,500	--
9.00-20	D	4,520	--
	S	5,150	--
10.00-20	D	--	5,300
	S	--	6,040
11.00-19	D	--	5,510
	S	--	6,280
11.00-20	D	--	5,780
	S	--	6,590
11.00-22	D	--	6,140
	S	--	7,000
11.50-20	D	--	5,890
	S	--	6,710
11.50-22	D	--	6,270
	S	--	7,150
11.5-22.5	D	--	5,510
	S	--	6,280
12.00-20	D	--	6,140
	S	--	7,000
12-22.5	D	--	5,780
	S	--	6,590
12-24.5	D	--	6,140
	S	--	7,000
12.5-22.5	D	--	5,890
	S	--	6,710
12.5-24.5	D	--	6,270
	S	--	7,150
12.75-22.5	D	--	6,140
	S	--	7,000
12.75-24.5	D	--	6,530
	S	--	7,440
13.5-24.5	D	--	6,770
	S	--	7,720

*R marked on the tire in place of the dash (as in 8.25R20) denotes a radial tire of the same capacity.

†D denotes dual wheel; S denotes single wheel.

4. MOBILE HOME TIRES. Tires used on mobile homes may exceed 100% but not more than 150% of the load limit and not more than 3,000 pounds provided the speed of the towing vehicle is mechanically restricted or the rear of the trailer has a sign indicating a 45 mph maximum speed.

Table B-20. Bias Ply Tires for Mobile Homes

Tire Size Designation	Load Range C	D	E	F
7-14.5MH	--	1,870	2,090	2,300
8-14.5MH	1,970	2,270	2,540	2,790
9-14.5MH	--	2,620	2,940	3,230

ANNEX C

EUROPEAN TIRE AND RIM TECHNICAL ORGANIZATION LOAD LLKIT TABLES

NOTE: Load limits in this annex are shown in pounds at the maximum cold inflation pressure.

1. ETRTO SPEED AND LOAD MARKINGS. Tires manufactured under the European Tire and Rim Technical Organization Standards (ETRTO) may be marked with numbers and letters such as 98/97F following the tire size, designation as in 6.00 R 16C 98/97F. The numbers are the "load index" for single-wheel/ dual-wheel usage and have been taken into account in the loads shown in the following tables. The letter is a "speed symbol" representing the top speed for which the tire is designed at rated maximum load. The speeds represented by the symbols are as follows:

Speed Symbol	Maximum Designed speed (mph)	Steed Symbol	Maximum Designed Speed (mph)
F	50	P	93
G	56	Q	99
J	62	R	106
R	68	S	112
L	7 5	T	118
M	81	U	124
N	87	H	130

For speeds of 25 mph and under, the carrying capacity of each tire of a dual wheel is equal to the capacity shown for a single wheel plus the additional percentage allowance for the actual speed.

2. The letter R marked on ,the tire in place of the dash shown in the tire size column (as in C78R15LT) denotes a radial tire of the same capacity.

3. The letter D in the wheel column denotes dual wheel; S denotes single wheel.

4. Percentage tire load increases as shown in the tables, are permissible when:

a. The speed of the vehicle is mechanically restricted to no more than that listed for the increased load, or

b. The vehicle, or combination of vehicles, carries on the rear of the last vehicle a sign showing the maximum speed for the tire load.

5. LIGHT COMMERCIAL VEHICLE TIRES.

Table C-1. Bias and Radial Ply Tires for Light Commercial Vehicles

Tire Size Designation	Wheel	Load Range C	Load Range D	Load Range E
6.00 - 16C	D	1390	1610	1820
	S	1520	1650	1930
6.50 - 16C	D	1610	1870	2150
	S	1650	1980	2210
6.50 - 17LC	D	--	1610	--
	S	--	1710	--
6.50 - 20C	D	--	2210	--
	S	--	2340	--
7.00 - 16C	D	1760	2090	2470
	S	1870	2210	2540
7.00 - 20C	D	--	2400	2600
	S	--	2540	2760
7.50 - 16C	D	2090	2340	2600
	S	2210	2470	2760
8.25 - 16C	D	--	--	3000
	S	--	--	3090
9.00 - 16C	D	--	2830	3090
	S	--	3000	3310

Percentage increase when speed is restricted:

Maximum Speed (mph)	Speed Symbol Marked on Tire* F	G	J & K	L, M, & N
51 through 55	-6	0	2	8
41 through 50	0	4	4	10
31 through 40	8	-9	9	14
26 through 30	12	12	12	20
21 through 26	15	15	15	25
10 through 20	25	25	25	35
below 10	65	65	65	60

*Where no speed symbol is marked on the tire, speed symbol L applies (75 mph maximum).

Table C-2. Bias and Radial Ply Super Balloon and Low Section Tires for Light Commercial Vehicles

Tire Size Designation	Wheel	Load Range C	D	E
5.20 - 12C	D	910	--	--
	S	940	--	--
5.50 - 12C	D	880	--	--
	S	940	--	--
5.60 - 12C	D	1020	--	--
	S	1070	--	--
6.00 - 12C	D	1020	--	--
	S	1070	--	--
6.00 - 14C	D	--	1320	--
	S	--	1390	--
6.40 - 13C	D	--	1480	--
	S	--	1570	--
6.40 - 14C	D	1360	--	--
	S	1430	--	--
6.50 - 14C	D	1360	--	--
	S	1430	--	--
6.70 - 13C	D	1430	1650	--
	S	1480	1710	--
6.70 - 14C	D	1480	1710	--
	S	1570	1820	--
6.70 - 15C	D	1570	1870	2150
	S	1650	1930	2210
7.00 - 14C	D	1430	1710	--
	S	1480	1760	--
7.50 - 14C	D	1570	1820	--
	S	1650	1870	--

Percentage increase when speed is restricted:

Maximum Speed, (mph)	Speed Symbol Marked on Tire* F	G	J & K	L, M, & N
51 through 55	-6	0	2	8
41 through 50	0	4	4	10
31 through 40	8	9	9	14
26 through 30	12	12	12	20
21 through 26	15	15	15	25
10 through 20	25	25	25	35
below 10	65	65	65	60

*Where no speed symbol is marked on the tire, speed symbol L applies (75 mph maximum).

Table C-3. Radial Ply Metric Tires for Light Commercial Vehicles

Tire Size Designation	Wheel	Load Range C	Load Range D
155 R 12C	D	1020	--
	S	1070	--
165 R 13C	D	1280	1390
	S	1360	1480
165 R 14C	D	1360	1520
	S	1430	1610
165 R 15C	D	1390	1520
	S	1480	1610
175 R 13C	D	1390	1520
	S	1480	1610
175 R 14C	D	1480	1650
	S	1570	1710
175 R 16C	D	1570	1710
	S	1650	1820
185 R 13C	D	1520	1650
	S	1610	1760
185 R 14C	D	1610	1760
	S	1710	1870
185 R 15C	D	1650	1870
	S	1760	1930
185 R 16C	D	1710	1870
	S	1820	1980
195 R 14C	D	1760	1980
	S	1870	2090
195 R 16C	D	1870	2040
	S	1980	2150
205 R 14C	D	1930	2150
	S	2040	2270
205 R 16C	D	2090	2210
	S	2090	2340
215 R 14C	D	2090	2340
	S	2210	2470
215 R 16C	D	2210	2400
	S	2340	2540

Percentage increase when speed is restricted:

Maximum Speed, (mph)	Speed Symbol Marked on Tire* F	G	J & K	L, M, & N
51 through 55	-6	0	2	8
41 through 50	0	4	4	10
31 through 40	8	9	9	14
26 through 30	12	12	12	20
21 through 25	15	15	15	25
10 through 20	25	25	25	35
below 10	65	65	65	60

*Where no speed is marked on the tire, speed symbol L applies (75 mph maximum).

Table C-4. Miscellaneous Diagonal and Radial Tires for Light Commercial Vehicles

Tire Size Designation	Wheel	Load
7 R 17.5C	D	2150
	S	2210
8 R 17.5C	D	2470
	S	2540
17 R 15C	D	1870
	S	1930
17 R 380C	D	1870
	S	1930
17 R 400C	D	1870
	S	1930
19 R 400C	D	2340
	S	2470
125 - 12C	D	620
	S	660
245 - 16C	D	2090
	S	2210

Percentage increase when speed is restricted:

Maximum Speed, (mph)	Speed Symbol Marked on Tire*			
	F	G	J & K	L, M, & N
51 through 55	-6	0	2	8
41 through 50	0	4	4	10
31 through 40	8	9	9	14
26 through 30	12	12	12	20
21 through 25	15	15	15	25
below 10	65	65	65	60

*Where no speed is marked on the tire, speed symbol L applies (75 mph maximum).

6. HEAVY TRUCK, BUS, AND TRAILER TIRES,.

Table C-5. Bias and Radial Ply Tires for Trucks, Buses, and Trailers

Tire Size Designation	Wheel	Load Range E	F	G	H	J
6.50 R 20	D	2540	--	--	--	--
	S	2680	--	--	--	--
7.00-16	D	--	2760	--	--	--
	S	--	2830	--	--	--
7.00-20	D	--	2910	--	--	--
	S	--	3090	--	--	--
7.50-16	D	--	3090	--	--	--
	S	--	3200	--	--	--
7.50-20	D	3310	3860	--	--	--
	S	3420	4000	--	--	--
8.25-16	D	--	3530	3750	--	--
	S	--	3640	4000	--	--
8.25-17	D	--	3420	3970	--	--
	S	--	3750	4190	--	--
8.25-20	D	3530	3970	4300	--	--
	S	3750	4190	4540	--	--
9.00-16	D	--	3970	4300	--	--
	S	--	4410	4670	--	--
9.00-20	D	4080	4540	5070	--	--
	S	4540	4940	5510	--	--
10.00-20	D	--	4680	5360	6010	--
	S	--	5070	5840	6620	--
10.00-22	D	--	--	--	6170	--
	S	--	--	--	6950	--
11.00-20	D	--	--	6010	6400	--
	S	--	--	6620	7170	--
11.00 R 22	D	--	--	--	6620	--
	S	--	--	--	7390	--
11.00 R 24	D	--	--	--	6780	--
	S	--	--	--	7610	--
12.00-20	D	--	--	--	6620	7170
	S	--	--	--	7390	8270
12.00-24	D	--	--	--	7170	8050
	S	--	--	--	8050	8820

Percentage increase when speed is restricted:

Maximum Speed, (mph)	Speed Symbol Marked on Tire* F	G	J & K	L & M†	N
51 through 55	-6	0	2	2	8
41 through 50	0	4	4	4	10
31 through 40	8	9	9	9	14
26 through 30	12	12	12	12	20
21 through 25	15	15	15	15	25
10 through 24	25	25	25	25	35
below 10	65	65	65	65	60

*When no speed symbol is marked on the tire, speed symbol J applies (62 mph maximum).
†For tire sizes 6.50-20, 7.00-16, 7.00-20, and 7.50-16 with L or M speed symbol, use percent increases for speed symbol N.

Table C-6. Bias and Radial Ply Tires for Trucks, Buses, and Trailers

Tire Size Designation	Wheel	Load
7 R 19.5	D	2470
	S	2540
8 R 17.5	D	2760
	S	2830
8 R 19.5	D	3310
	S	3420
8 R 22.5	D	3860
	S	3970
8.5 R 17.5	D	3090
	S	3200
9 R 17.5	D	3200
	S	3420
9 R 19.5	D	3970
	S	4190
9 R 22.5	D	4300
	S	4540
9.5 R 17.5	D	3530
	S	3750
9.5 R 19.5	D	4300
	S	4670
10 R 17.5 (130/128)	D	3970
	S	4190
10 R 17.5 (134/132)	D	4410
	S	4670
10 R 19.5	D	4680
	S	5070
10 R 22.5	D	5070
	S	5510
11 R 22.5	D	6010
	S	6620
12 R 22.5	D	6400
	S	7170
13 R 22.5	D	7170
	S	8270
15 - 19.5	S	7390
15 - 22.5	S	8540
15 R 22.5	S	9100
16.5 - 19.5 (156)	S	8820
16.5 - 19.5 (159)	S	9650
16.5 R 19.5	S	10200
16.5 - 22.5 (160)	S	9920
16.5 - 22.5 (162)	S	10470
16.5 R 22.5	S	11360
18 - 19.5 (163)	S	10750
18 - 19.5 (165)	S	11360
18 R 19.5	S	11360
18 - 22.5	S	11690
18 R 22.5	S	12350

(continued)

Table C-6. (Continued)

Percentage increase when speed is restricted:

Maximum Speed, (mph)	Speed Symbol Marked on Tire*				
	F	G	J & K	L & M†	N
51 through 55	-6	0	2	2	8
41 through 50	0	4	4	4	10
31 through 40	8	9	9	9	14
26 through 30	12	12	12	12	20
21 through 25	15	15	15	15	25
10 through 24	25	25	25	25	35
below 10	65	65	65	65	60

*When no speed symbol is marked on the tire, speed symbol J applies (62 mph maximum).

†For tire sizes 7 R 19.5 and 8 R 17.5 with L or M speed symbols use percent increases for N speed symbol.

Table C-7. Radial Ply, 70, 75 and 80 Series Tires for Trucks, Buses, and Trailers

Tire Size Designation	Wheel	Load
9/70 R 22.5	D	4300
	S	4540
10/70 R 22.5	D	5070
	S	5510
11/70 R 22.5 (142/139)	D	5110
	S	5840
11/70 R 22.5 (144/141)	D	5680
	S	6170
11/70 R 22.5 (146/143)	D	6010
	S	6615
12/70 R 22.5	D	6400
	S	7170
12/80 R 20	D	6400
	S	7170
12/80 R 22.5	D	6010
	S	6620
13/70 R 22.5	D	7170
	S	8270
13/80 R 20	D	7170
	S	8050
14/80 R 20	D	—
	S	9100
14/80 R 24	D	—
	S	10200
14.75/80 R 20	D	--
	S	10750
15.5/80 R 20	D	--
	S	11030
315/70 R 22.5	D	6400
	S	7170
315/75 R 22.5	D	7170
	S	8270

Percentage increase when speed is restricted:

Maximum Speed, (mph)	Speed Symbol Marked on Tire* F	G	J, K, L, & M
51 through 55	-6	0	2
41 through 50	0	4	4
31 through 40	8	9	9
26 through 30	12	12	12
21 through 25	15	15	15
10 through 20	25	25	25
below 10	65	65	65

*Where no speed symbol is marked on the tire, speed symbol J applies (62 mph maximum).

7. MULTIPURPOSE TRUCK TIRES.

Table C-8. Bias and Radial Ply Wide Base Tires for On-highway and Off-highway Multipurpose Trucks

Tire size Designations	Load Range C	D	E	F	G	H	J
7.50 - 18 MPT	2340	--	--	--	--	--	--
10.5 - 18 MPT	3000	3310	--	--	--	--	--
10.5 - 20 MPT	3090	3420	3970	4300	--	--	--
12.5 - 18 MPT	--	3640	3970	4300	--	--	--
12.5 - 20 MPT	--	3750	4080	4410	4940	5360	--
14.5 - 20 MPT	--	--	4410	4940	5360	5680	6010
14.5 - 24 MPT	--	--	--	--	--	6170	--
385/55 R 18 MPT	5200	--	--	--	--	--	--

Percentage increase when speed is restricted:

Maximum Speed, (mph)	Speed Symbol Marked on Tire* F	G	J, K, L, & M
51 through 55	-6	0	2
41 through 50	0	4	4
31 through 40	8	9	9
26 through 30	12	12	12
21 through 25	15	15	15
10 through 20	25	25	25
below 10	65	65	65

*When no speed symbol is marked on the tire, speed symbol G applies (56 mph maximum).

8. HEAVY COMMERCIAL VEHICLE TIRES FOR SPECIAL APPLICATIONS.

Table C-9. Bias and Radial Ply Tires for Special Applications

Tire Size Designation	Wheel	All Ranges	Load Range F	G	H	J	L	M	N
5.00 R 8	D	1650	--	--	--	--	--	--	--
	S	1764	--	--	--	--	--	--	--
6.00 - 9	D	--	2210	--	--	--	--	--	--
	S	2271	--	--	--	--	--	--	--
7.00 - 12	D	--	3420	--	--	--	--	--	--
	S	--		--	--	--	--	--	--
7.00 - 15	D	--	3640	--	--	--	--	--	--
	S	--	3749	--	--	--	--	--	--
7.50 - 15	D	--	--	--	4540	--	--	--	--
	S	--	--	--	4807	--	--	--	--
8.25 - 15	D	--	--	3970	--	5680	--	--	--
	S	--	--	4190	--	5843	--	--	--
10.00 - 15	D	--	--	4410	--	6400	--	--	--
	S	--	--	4807	--	6946	--	--	--
12.00 - 20	D	--	--	--	--	--	8050	--	--
	S	--	--	--	--	--	9096	--	--
12.00 - 24	D	--	--	--	--	--	8820	--	--
	S	--	--	--	--	--	9923	--	--
13.00 - 20	S	--	--	--	--	9370	--	10200	--
14.00 - 20	S	--	--	--	--	9920	10470	11030	--
14.00 - 24	S	--	--	--	--	11030	--	12350	--
15.00 - 20	S	--	--	--	--	--	11690	12790	13890
225/90 R 20	D	5360	--	--	--	--	--	--	--
	S	5843	--	--	--	--	--	--	--

Percentage increase when speed is restricted:

Maximum Speed, (mph)	Speed Symbol Marked on Tire* F	G	J, K, L, & M
51 through 55	-6	0	2
41 through 50	0	4	4
31 through 40	8	9	9
26 through 30	12	12	12
21 through 25	15	15	15
10 through 20	25	25	25
below 10	65	65	65

*Where no speed symbol is marked on the tire, speed symbol F applies (50 mph maximum).

ANNEX D

APANESE STANDARDS ASSOCIATION LOAD LIMIT TABLES.

NOTE: Load limits in this annex are shown in pounds at the maximum cold inflation pressure.

1. The letter R marked on the tire in place of the dash shown in the tire size column (as in C78R15LT) denotes a radial tire of the same capacity.

2. The letter D in the wheel column denotes dual wheel; S denotes single wheel.

3. Percentage tire load increases as shown in the tables are permissible when:

   a. The speed of the vehicle is mechanically restricted to no more than that listed for the increased load, or

   b. The vehicle, or combination of vehicles, carries on the rear of the last vehicle a sign showing the maximum speed for the tire load.

4. LIGHT TRUCK TIRES.

Table D-1. Bias Ply Tires for Light Trucks

Tire Size Designation	Wheel	Load Range B	C	D	E	F	G
5.00-13 LT	D	800	960	--	--	--	--
	S	840	1010	--	--	--	--
5.50-13 LT	D	--	1090	1280	--	--	--
	S	--	1150	1350	--	--	--
5.50-14 LT	D	--	1150	1350	--	--	--
	S	--	1200	1420	--	--	--
6.00-13 LT	D	--	1280	1490	--	--	--
	S	--	1350	1570	--	--	--
6.00-14 LT	D	--	1350	1570	--	--	--
	S	--	1410	1650	--	--	--
6.00-15 LT	D	--	1410	1640	--	--	--
	S	--	1480	1720	--	--	--
6.00-16 LT	D	--	1480	1720	--	--	--
	S	--	1550	1810	--	--	--
6.50-13 LT	D	--	1430	1680	--	--	--
	S	--	1500	1760	--	--	--
6.50-14 LT	D	--	1500	1750	--	--	--
	S	--	1580	1850	--	--	--
6.50-15 LT	D	--	1580	1840	2030	--	--
	S	--	1650	1930	2140	--	--
6.50-16 LT	D	--	1640	1920	2120	--	--
	S	--	1730	2030	2230	--	--
7.00-15 LT	D	--	1760	2060	2270	2470	--
	S	--	1850	2160	2380	2600	--
7.00-16 LT	D	--	1850	2160	2370	2580	--
	S	--	1940	2260	2490	2710	--
7.50-15 LT	D	--	--	2370	2680	2900	3030
	S	--	--	2480	2820	3050	3200
7.50-16 LT	D	--	2120	2470	2790	3020	3180
	S	--	2230	2590	2930	3180	3330
8.25-16 LT	D	--	--	--	--	--	3590
	S	--	--	--	--	--	3770
9.00-16 LT	D	--	--	3050	3420	--	--
	S	--	--	3210	3590	--	--

Percentage increase when speed is restricted:

Maximum Speed (mph)	Percent Increase
38 through 43	1
32 through 37	4
26 through 31	7
25 and under	10

Table D-2. Radial Ply Tires for Light Trucks

Tire Size Designation	Wheel	Load Range E	F	G
7.00 R 15 LT	D	--	2470	--
	S	--	2600	--
7.50 R 15 LT	D	--	2900	--
	S	--	3050	--
6.50 R 16 LT	D	2120	--	--
	S	2230	--	--
7.00 R 16 LT	D	--	2580	--
	S	--	2710	--
7.50 R 16 LT	D	--	--	3180
	S	--	--	3330
8.25 R 16 LT	D	--	--	3590
	S	--	--	3770

Percentage increase when speed is restricted:

Maximum Speed (mph)	Percent Increase
38 through 43	1
32 through 37	4
26 through 31	7
25 and under	10

Table D-3. Series 78 and 82 Tires for Light Trucks

Tire Size Designation	Wheel	Load Range B	C	D
A78-13 LT	D	--	--	1330
	S	--	--	1400
Y78-13 LT	D	830	980	1150
	S	860	1030	1200
6.95-14	S	--	1310	1530

Percentage increase when speed is restricted:

Maximum Speed (mph)	Percent Increase
38 through 43	1
32 through 37	4
26 through 31	7
25 and under	10

Table D-4. Bias Ply Tires for Heavy Trucks and Buses

Tire Size Designation	Wheel	Load Range E	F	G	H
7.50-18	D	3080	3370	--	--
	S	3230	3550	--	--
7.00-20	D	2830	--	--	--
	S	2980	--	--	--
7.50-20	D	3310	3640	--	--
	S	3470	3830	--	--
8.25-20	D	--	4070	4260	--
	S	--	4280	4480	--
9.00-20	D	--	4730	5070	--
	S	--	4970	5330	--
10.00-20	D	--	4870	5350	--
	S	--	5400	5950	--
11.00-20	D	--	5370	5890	--
	S	--	5700	6260	--
11.1-20	D	--	--	--	5530
	S	--	--	--	6060
12.00-20	D	--	--	6090	6540
	S	--	--	6390	6870
12.00-24	D	--	--	--	7360
	S	--	--	--	7730
12-22.5	D	--	--	5890	--
	S	--	--	6260	--

Percentage increase when speed is restricted:

Maximum Speed (mph)	Percent Increase
38 through 43	6
32 through 37	9
26 through 31	12
25 and under	15

Table D-5. Radial Ply Tires for Heavy Trucks and Buses

Tire Size Designation	Wheel	Load Range F	G	H
7.50 R 20	D	3640	--	--
	S	3830	--	--
8.25 R 20	D	--	4250	--
	S	--	4480	--
9.00 R 20	D	--	5070	--
	S	--	5330	--
10.00 R 20	D	--	5350	--
	S	--	5950	--
11.00 R 20	D	--	5890	--
	S	--	6260	--
11.1 R 20	D	--	--	5530
	S	--	--	6060
12.00 R 20	D	--	--	6540
	S	--	--	6870

Percentage increase when speed is restricted:

Maximum Speed (mph)	Percent Increase
38 through 43	6
32 through 37	9
26 through 31	12
25 and under	15

Table D-6. Large Size Bias Ply Tires for Heavy Trucks and Buses

Tire Size Designation	Wheel	Load Range E	J	L	N
12.00-20	D	--	6820	--	--
	S	--	7170	--	--
12.00-24	D	--	7680	--	--
	S	--	8070	--	--
13.00-20	D	7430	7960	8140	--
	S	7810	8360	8540	--
14.00-20	D	--	8760	9390	--
	S	--	9210	9870	--
14.00-24	D	--	--	10480	10710
	S	--	--	11000	11250

Percentage increase when speed is restricted:

Maximum Speed (mph)	Percent Increase
38 through 43	6
32 through 37	9
26 through 31	12
25 and under	15

6. LOW PLATFORM TRAILER TIRES.

Table D-7. Bias Ply Tires for Low Platform Trailers.

Tire Size Designation	Load Range G
8.25-15	3450
9.00-15	4130
10.00-15	4480

Percentage increase when speed is restricted:

Maximum Speed (mph)	Percent Increase
38 through 43	6
32 through 37	9
26 through 31	12
25 and under	15