



GENERAL INFORMATION

The Insta-Chain automatic ice and snow chain apparatus is installed on a single or tandem axle vehicle.

The chains may be installed forward or to the rear of the axle, space permitting. When engaged by a toggle switch in the dash, two pneumatic air cylinders depress a set of chain wheels down against the tire into the engaged position. Each wheel has either six or twelve chain strands that are attached to the wheel via six (patented) interlocking plates, bolts, washers, and locknuts. When engaged, the chain wheels contact the inside of the vehicle tires at the center point of the tire approximately 3" to 4" above the ground. The vehicle tire spins, which turns the chain wheels.

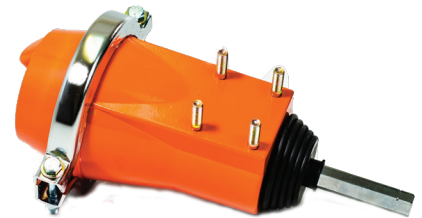
The spinning of the chain wheels cause the chains to be centrifugally thrown into the "V" formed between the tire and the road in the front or in the rear of the tires, depending on whether the vehicle is going forward or backwards. The automatic ice chains increase traction on ice or packed snow. When disengaged, a spring inside the air cylinder retracts the chain wheel into the stored position under the chassis. A unit or complete set of chains consists of a Chain Wheel Kit, Mounting Bracket Set, Chain Unit Pair, and Installation kit (aka: solenoid kit).



AIR CYLINDERS

Two air chambers are made of Orange powder coated aluminum to retard corrosion, and is approximately 5" in diameter, with a 6 mm wall thickness. The air cylinder lid has a recessed area for the diaphragm to fit tightly together with the air cylinder housing for maximum seal. Each chamber is capable of holding 62.5 cubic inches of air per side, resulting in a total of 125 cubic inches of air per application.

This is roughly 4 percent of a typical 12 CFM engine-driven air compressor in a very brief period, which is supplied by the vehicles own air system or an electric 12 volt air compressor and a 4.3 gallon reservoir tank (see Aux. Air System).



DUST SEAL

The dust seal is an air cylinder protector. It is bellows shaped like a gear shift boot and is mounted inside the air cylinder housing protruding through the bottom of the air cylinder in an accordion type fashion to a point approximately 3-1/2" below the bottom of the air cylinder housing and is clamped tightly with a re-usable nylon clamp around the push rod, thus protecting the inside of the air cylinder housing from rocks, dirt, ice, and other debris.

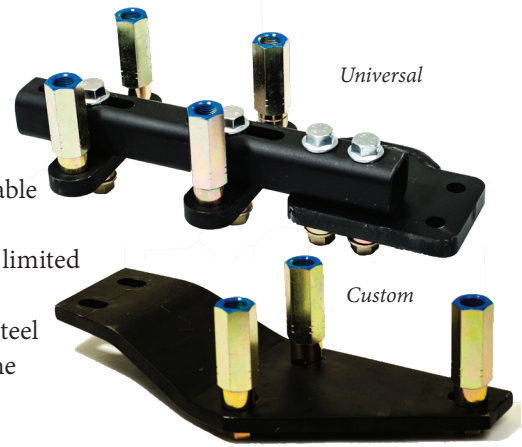
ARM, CYLINDER BRACKET AND ARM BEARINGS

Each arm is constructed of 3/4" thick A-36 steel between 12"-16" in length, depending on the model number of the chain unit. A hardened machined shaft is welded to the arm which rotates on two grease-able needle cup bearings that are mounted in the cylinder bracket. The arm shaft has a grease zerk in it to grease the needle bearings. The arm bearings are 100% greasable. The cylinder bracket is also made of A-36 steel.



MOUNTING BRACKETS

A mounting bracket is used to attach the chain unit to the vehicle's suspension. Several styles of mounting brackets are used for different types of suspensions. The primary suspension interface is the Custom Mounting Bracket, a semi adjustable solid fabrication that uses either a 3 or 4 four point mount with coupling nuts to the suspension. Custom brackets are designed to fix specific suspension, and have limited adjustments. The second option is Universal Mounting Bracket, an adjustable mounting bracket that can adjust to fit most vehicles and is made from 3/4" A36 steel and 2"x2"x1/4" wall square tubing. The Universal Mounting Bracket attaches to the U-Bolts via eight coupling nuts (four on each side of the vehicle). Insta-Chain offers the widest application selection in the industry.



CHAIN WHEELS

The chain wheel comes in two sizes, large or small. The large chain wheel is 7.5 inches in diameter (190mm) and the small chain wheel is 6.5 inches in diameter (160mm). Both wheels are constructed of a one piece cast aluminum disc with a rubber tread on the outside. The rubber has been vulcanized to the aluminum wheel for maximum adhesion. The chain wheel has two sealed roller bearings and a grease zerker, which is located on the back side of the wheel and serves as a point of lubrication for the chain wheel bearings. The chain wheel has a recessed continuous cavity in the wheel where the six interlocking chain plates are bolted. The chain plates are evenly spaced around the perimeter of the wheel. The customer can specify either six or twelve chains on each wheel.



CHAINS

Either six or twelve strands of chain approximately twelve inches in length (about 10 links) of carbon manganese square straight linked steel are affixed to the wheel by six patented interlocking 3/16" (5mm) plates. The square straight linked chain provides equal traction in Forward and Reverse. The strands of chain are affixed to the individual interlocking plates by attaching them to an 8mm wire loop which in turn is welded to the interlocking plate. The chain plate assembly is then hardened to 63 Rockwell "C" ensuring maximum wear. The 6 strand wheel assembly will have one strand of chain per interlocking plate and the 12 strand wheel assembly shall have two per interlocking plate. The six interlocking plates for each wheel are attached to the chain wheel via a hole centered in the plate permitting a 3/8" grade 8 bolt to pass through it and the wheel. Each plate is secured with a locknut and washer. A precision torque of 35-40 Ft. /Lbs. is applied to complete fastening. Interlocking plates permit changing of individual sections of chain rather than replacing all the chain, reducing maintenance costs. Anti-Spark (Stainless Steel) chain may also be specified where Hazmat conditions may exist.



AUXILIARY AIR SYSTEM FOR VEHICLES WITHOUT ONBOARD AIR SYSTEMS

The auxiliary air system includes the following components: 1. One Packbrake HP325, 12 volt air compressor, 1.2 CFM, 33% Duty Cycle. The Packbrake air compressor will maintain constant pressure from 90 to 120 lbs of air pressure. It has a recovery time of approx. 3 minutes. 2. One 4.3 gallon air tank. 3. One automatic pressure switch to maintain the air pressure in the air tank between 85 psi and 110 psi. 4. All the air fittings necessary to hook-up the system.

AIR AND ELECTRICAL SYSTEM

The Insta-Chain system comes with a continuous-duty solenoid valve and all of the air fittings needed to install the Insta-Chains. An optional Pressure Protection Valve (P/N 0114) may be purchased to protect the truck's air system from loss of air due to a broken airline. The Insta-Chain system should be protected in some way if using direct air from the Air Brake tank. Connection to air source should be made after the drier.

Insta-Chain provides a lighted toggle switch with a switch guard. The light is white when the chains are disengaged. When engaged, the light turns red to alert the driver that the chains are installed.

