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Winter Testing Season at Ram Truck

February 20, 2015, Auburn Hills, Mich. - Piles of snow and below-zero temperatures in Houghton, Mich., Bemidji, Minn., and other hostile winter areas are the cue for Ram Engineering to suit up and run severe cold weather and plow testing.

Every year, the dedicated truck engineering teams take advantage of the naturally reoccurring elements to reproduce the harsh environments some customers and operators experience. Although the conditions are far from humanly comfortable, those folks running a “Cold Trip” could not ask for a finer setting.

“Only a small percentage of Ram truck owners will subject their truck or van to the harshest winter conditions, but for those who do our durability testing procedures instill confidence,” said Mike Cairns, Director of Ram Truck Engineering. “When it’s minus 20 outside and I walk up to my Ram Truck on a morning of a Michigan winter, I have a sense of self-reliance and assurance that my truck will start, warm up quickly and run well because I know that we have tested and verified our trucks to perform in these harsh environments. We want every Ram customer to feel that way."

The Cold Trip

Ram Engineering conducts a multitude of lab tests at the company’s Technical Center in Michigan and full vehicle tests at the company’s two major proving grounds in Arizona and Michigan. The purpose of the Cold Trip is to run real world operational tests in extreme environments. The Cold Trip serves as the engineering team’s final validation, assuring all Ram trucks are fully capable and the components will withstand the harshest environments in the United States and Canada. Being based in Michigan offers a naturally cold environment for testing but the northern region amplifies the experience. Houghton, Mich., not only provides below zero temps, it also is home to a testing facility dedicated to the winter bloom. The team also travels to Bemidji, Minn., to experience extreme cold, where the trucks soak in frigid below-zero temps for extended periods of time.

Slush test

When deicer is spread on the road in temperatures around 28 degrees Fahrenheit, slush can collect. Because slush is water during an in-between state of liquid and solid it can shift either way, but when the sun goes down and temperatures drop, solid has the advantage. Slush does not drip off the undercarriage. It hangs on, filling gaps and covering components. During a hard freeze, anything covered in slush becomes encased in ice -- fuel lines, diesel exhaust fluid tanks, engine oil pan, brakes, etc. Ram engineers run trucks through 12-inch-deep slush and immediately park the truck overnight in a refrigeration facility set at minus 20 degrees. The truck is then inspected top to bottom to assure components and systems are functioning properly. Ram trucks feature dedicated systems to protect areas of potential vulnerability. For example, the diesel exhaust fluid (DEF) tank is allowed to freeze in such conditions. The tank and lines are made of materials to allow a hard freeze without breaking. An independent heating system keeps just enough DEF above freezing temperatures to allow engine start up while meeting tailpipe emissions. Another example is the location of vent lines. Water can freeze, clogging vent lines for the axles, transmission and transfer case. Windows must continue to roll up and down. More importantly, windshield wipers and defrost mechanisms must function.

Arctic blast

Anyone who has walked across a windy parking lot in low temperature conditions knows the effects. Imagine that force at higher wind speeds and even lower temps while delivering a healthy dose of snow and ice. That’s exactly what Ram executes during the arctic blast test. Ram engineers create a convoy of trucks and drive in-line for hours on end, switching positions in the order. The leader pulls a “drag” or rake to kick up ice and snow. This test addresses performance of windshield wipers, lighting, defrost and systems related to the engine.

Snow ingestion can be particularly bad in such conditions. Similar to driving though a sandstorm, snow can pack the truck's air filter and air box, limiting the truck's "breathing" capabilities. If the intake system is compromised it will dramatically reduce engine performance. It is important to place the engine's air intake in a location that avoids an over exuberance of snow ingestion. Alternatively, areas such as Arizona in the summer can create a need for the air intake to be present at the front of the truck for maximum flow of cooler air. The industry-exclusive Ram Active Air intake system addresses both scenarios. When the intake system senses extreme heat it draws cooler air from the front of the vehicle – a function that also engages at high altitudes for superior throttle response in low-oxygen environments. When conditions are wet from snow, ice or water fording, the system pulls air from an under-hood inlet, clear from snow packing and water.

Moving white stuff

Each season, Ram engineers plow more than 10,000 tons of snow to validate every system and ensure reliable operation. Moving a large amount of snow is paramount to a plow operator, which is why more than 80 percent of commercial and private plow trucks are ¾-ton or greater. Although the Ram 2500 and 3500 are very popular for such duties, Ram also sells a large number of Chassis Cab trucks for snow removal. Ram 2500 and 3500 are available with a Snow Chief Package, which includes:

- Upgraded cooling system
- Higher-amp alternator
- Anti-spin differential
- More robust front suspension
- Plow lighting interface eliminates the need for a lighting harness and enables plow lights to override the headlights upon plow installation
- Transfer case skid plates
- Auxiliary switches to operate the plow
- Clearance lamps
- OWL 18" tires

All Chassis Cab trucks come standard with heavy duty cooling, auxiliary switches, limited slip rear axle, clearance lamps and 3500 (optional on/off road 4x4 tires) and 4500/5500 (rear traction tires on 4x4).

Ram Chassis Cab 3500 4x4 is available with a Snow Plow Prep Package, which includes:

- Higher-amp alternator
- Transfer case skid plate

Ram Chassis Cab 4500 and 5500 4x4 and 4x2 are available with a Snow Plow Prep Package, which includes:

- Higher-amp alternator
- Transfer case skid plate
- Heavy Duty front suspension group

The front Gross Axle Weight Rating (GAWR) is the dictating specification for how much weight can be attached to the front of the truck. Front GAWR is the maximum allowable weight on the front two tires of the truck, including added equipment (winch, PTO, plow, rack, etc.). Plow operators balance plow size with truck weight, traction and power. Ram 4500 and 5500 Chassis Cabs are rated for up to 7,000 pounds of front GAWR on 6.4-liter gas engine-equipped models and up to 7,250 pounds GAWR on 6.7-liter Cummins Turbo Diesel models, allowing for the largest plow in the segment.

Before you can use a piece of equipment on your truck, it needs to be installed. Ram Truck has benefitted from a long-standing relationship with truck equipment manufacturers. Our pickups, vans and chassis cab trucks are known for upfitter friendliness.

Not every plow is brand new and there are a variety of plows available. Ram engineering tests trucks with new and "experienced" plows — some with minor damage, V-plows and straight plows, to assure a range of use and

equipment is covered.

Operating at maximum front GAWR is a sure way to push the trucks. The largest possible plows are used, matched with each truck's capability. Plow truck operators often take multiple passes in a small area, pushing forward and reversing out, only to make another push. The engineering team has logged a staggering amount of plow miles pushing snow and nearly an equal amount in reverse. That type of use can be punishing for a transmission and Ram has included the actions in the durability schedule.

Additional weight (about 500 pounds) is mounted over the rear axle, in the bed, to help maintain rear tire traction and counter the hanging weight of the plow on the front of the truck. This also presents an opportunity to test tires in low-traction environments. Heavy Duty trucks normally carry tire pressures upward of 70 psi, which isn't always helpful when trying to gain traction while pushing mounds of snow.

Ram Truck cold weather testing video:
https://www.youtube.com/watch?v=G6Z2jL85f3Q

Additional winter-friendly features available in Ram trucks:

- SiriusXM Travel Link with weather forecasting, alerts and real-time weather maps
- SiriusXM Traffic
- WiFi Hotspot
- 9-1-1 Call
- Real time gas and diesel pricing
- Remote start key fob activates defrosters, heated seats and steering wheel
- Uconnect Access remote start from any computer or smartphone
- 115v center stack outlet allows you to charge and have access to battery-powered winter accessories – from flashlights to handwarmers
- Choice of beds/organizers: spray in bedliner (traction), Tonneau, Bed divider/extender, tiedowns, RamBox for storing winter gear and equipment
- Power sliding rear window with defroster
- Three different winter friendly floor mats
- Cargo/bed camera with LED lights
- Backup camera and parking sensors
- Wheel to wheel side steps for easy entry and bed access

Ram Truck winter commercial link:
https://www.youtube.com/watch?v=YMEqIOiyVgg&list=PLNHFyWSuB8_jKK1Wad1smt5yfwNLTk-33&index=3

Ram Truck Brand
In 2009, the Ram Truck brand launched as a stand-alone division, focused on meeting the demands of truck buyers and delivering benchmark-quality vehicles. With a full lineup of trucks - the Ram 1500, 2500/3500 Heavy Duty, 3500/4500/5500 Chassis Cab and ProMaster - the Ram brand builds trucks that get the hard work done and families where they need to go.

Ram continues to outperform the competition and sets the benchmark for:

- Best-in-class standard horsepower
- Segment-first 1,000 lb.-ft of torque with Cummins Turbo Diesel
- Most luxurious: Ram 1500 Tungsten with real metal and leather elements and a new 14.5-inch Uconnect touchscreen
- Best ride and handling with a double wishbone front suspension and five-link solid rear axle with available, segment-exclusive, active-level, four-corner air suspension
- Best-in-class available rear leg room
- The most cargo space available in any traditional full size cargo van
- Most capable full-size off-road pickup – Ram Power Wagon
- Most awarded light-duty truck in America

- Highest owner loyalty of any half-ton pickup

The latest J.D. Power APEAL study,which rates the emotional bond between customers and their vehicles, named the 2023 Ram 1500 as the best full-size light-duty pickup.

Ram is part of the portfolio of brands offered by leading global automaker and mobility provider Stellantis. For more information regarding Stellantis (NYSE: STLA), please visit www.stellantis.com.

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