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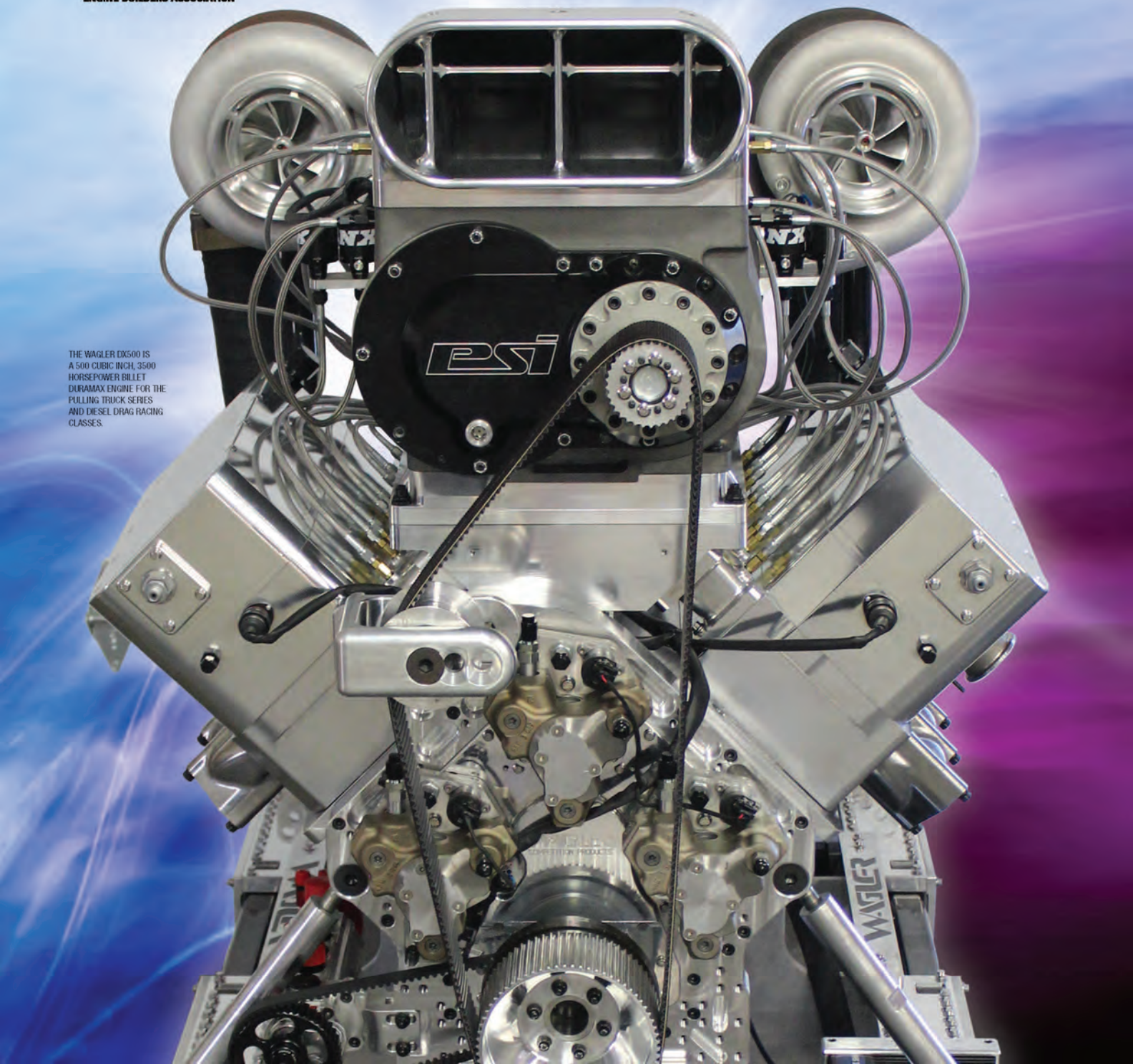

THE WAGLER DX500 IS A 500 CUBIC INCH, 3500 HORSEPOWER BILLET DURAMAX ENGINE FOR THE PULLING TRUCK SERIES AND DIESEL DRAG RACING CLASSES.

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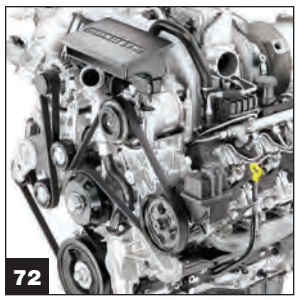
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Pickling an Engine?

BY **STEVE SCOTT**

Okay, so maybe "pickling" is not a true technical term, nor one that you normally think about, but pickling an engine is an "old school" term used to describe the process of preparing an engine for storage (i.e., preserving it). While researching storage procedures, I found several different processes depending on length of storage, such as from 1-6 months or 6-24 months, and interestingly some major differences between manufacturers. When you consider that having a machine or engine unused for several weeks, or a few months is not uncommon, the question of how best to protect your equipment becomes a concern.

The photo at the right shows two cylinder liners from an engine that was out of operation for two years.

Untouched for two years might be a little extreme, but an unprotected engine can begin to deteriorate in a short amount of time. Unprotected surfaces rust quickly, and over time moisture, corrosion, and damage from temperatures can severely damage engine components. Moisture is a major cause of damage to a stored engine, and putting a can or bucket over the exhaust stack, or throwing a tarp over the engine, may not necessarily be enough.

For an engine, you may want to consider:

Inspect the exterior and repaint any exposed surfaces where the previous paint is damaged or deteriorated. Coat exposed ball joints, thread ends, linkages, etc., with multipurpose grease. Loosen or remove all the belts. Batteries are best removed and stored inside, but if left in place then they should be cleaned, fully charged, terminals disconnected, and covered in plastic. Depending on the environment, use of protective sealant on electrical wiring, connectors, and components may be advisable.

Some OE's suggest draining the oil and fuel, while others recommend the oil be changed and a percentage of Volatile Corrosion Inhibitors (VCI) oil be added. VCI inhibitors work by evaporating inside the engine and then condense giving full protection to inside surfaces that cannot be reached directly. VCI can be added to engine oil, or sprayed into air inlets and openings, exhaust openings, cylinders, flywheel, ring gear, starter pinon, etc. VCI oil must be diluted, it should not be used full strength on non-ferrous metals. Follow the manufacturers recommendations for the best results. Some engines may need to be barred over while spraying to make sure all the surfaces are covered. Once the internal and external areas of the engine are protected, it is important that the engine be completely sealed. All covers need to be in place, dark plastic bags are best since they will not deteriorate as quickly as clear plastic, and can be placed over air cleaner elements, breathers, etc. Be sure to use weather resistant SEALING tape to seal the bags, dipstick, and all other openings. The engine must be completely sealed to keep the VCI vapor from escaping. Keeping the VCI vapor in, and blocking moisture out are the main objectives.

VCI can also be used in fuel tanks, hydraulic tanks, transmissions, air starters, and on other components. Follow the manufacturer's instructions for application and dilution.

For the cooling system, extended life coolant may be enough to protect the cooling system, but in climates where engines are stored with raw water in the cooling systems, a dilution of SCA (Supplemental Coolant Additive) should be added. Distilled or deionized water is recommended, tap water or salt softened waters are not. To prevent rusting in the top of the tank, make sure the radiator is completely full.

In the fuel system, diesel fuel over an extended period can grow small organisms that can wreak havoc with fuel pumps and injectors. If the engine is going to be in storage for a while,

PICKLING AN ENGINE

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Rust already in the coolant passages.

replacing the diesel fuel in the system with calibration fluid is the best option. Calibration fluid has rust and oxidation inhibitors for better protection. Another option to consider is kerosene, while not as good as calibration fluid, it is a better preventative than diesel fuel over the long term. Kerosene does not have rust or oxidation inhibitors, but it also does not thicken as diesel fuel will. VCI can be used to protect fuel tanks internally, and then the tanks sealed tightly.

The processes for removing an engine from storage and getting it ready to go back into service is also very important. Protective materials (plastic, tape, etc.) need to be removed, and belts and batteries replaced. Engine oil should be drained and preservatives flushed systems (lube, fuel, reservoirs, etc.). Oil, fuel and coolant filters should be changed. Pre-lube or prime the oil and fuel systems. Some suggest barring the engine over while priming to help get lubrication back into critical connections, do so. If the manufacturer doesn't require the coolant to be replaced, it's a good idea to at least test the coolant. Rubber hoses should be checked and replaced as needed, and the wiring and electronics should be inspected.

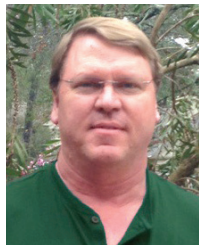
After start up, the engine may run rough for a little while. Check the engine

Rust and corrosion in the radiator.

frequently for oil, fuel, and coolant leaks as well as the fluid levels. If equipped, a forced regeneration may be required, and electronic systems monitored for fault codes.

An ounce of prevention is worth a pound of cure? Or, maybe in this case, a little "pickling" helps prevent an amazing amount of damage to an engine in fairly short order.

The information above is simply meant to highlight some of the components and methods for protecting them that you may want to consider. Referring to the manufacturer's instructions for your specific machine, engine, and climate is the best practice.■



Steve Scott joined the service department at IPD in 1982, working with parts, service and sales for a variety of equipment, diesel, and natural gas engines. Since 2004, he has been the director of product development and technical support for IPD. For more information, email sscott@ipdparts.com.