

Equipment Service Professional's Inc.

291 Ave. C

PO Box 531

Kuna, ID 83634

PAID
8662113
10/05/2022

CUSTOMER

DATE	INVOICE #
8/22/2022	16139

MILEAGE	LICENSE
10518.0 ...	

ITEM	DESCRIPTION	QTY	AMOUNT
Labor	<p>Engine Repair. Checked the coolant and engine oil. Inspected the engine. Drained oil and removed the oil pan. Removed the torsion bar. Removed all necessary brackets, belts, hoses, and pumps to get to the engine. Removed the exhaust, intake, sheet metal, and radiator. Removed and disassembled the engine. Found bearings were completely wore out. Pistons and liners also wore out. Sent engine for machining work. The cam was ok. The crank shaft was still round but polished out the water marks. The engine head was good, as it was new just a few months ago. Cleaned the engine block. Cleaned the crank shaft. Wire brushed the oil galleries on the shaft. Installed the crank shaft with new bearings and #518 loctite to prevent block fretting. Installed the cam bearings. Cleaned the bell housing and bolts. Cleaned and removed bearings and races out of housing and off gears. Wire wheeled the silicone off of bolts and the yoke. Installed new bearings and races in flywheel housing for the pump drive. Installed housing and torqued. Installed idler shaft and plug. Installed rear main seal and torqued. Flipped engine assembly. Cleaned silicone out of grooves in front cover. Removed front pump drive. Removed and installed new bearings in assembly drive. Installed inner gear cover and torqued bolts.</p>		24,452.33

Total

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ITEM	DESCRIPTION	QTY	AMOUNT
	Installed and torqued the cam. Installed timing idler and thrust washers. Installed and torqued other idlers. Removed the water pump manifold. Wire wheeled housing and found housing was rotted. Ordered and installed new housing. Cleaned the water manifold block plate. Wire wheeled counterbores for liners. Cleaned cosmoline off liners. Assembled pistons, rings, and rods. Installed liners. Installed piston assemblies. Torqued rods with six steps each. Clamped and measured liner depth. Cleaned and installed piston coolers and nozzles and torqued. Installed oil pressure regulator. Cleaned and installed the oil pan and pick up tube. Torqued all bolts. Flipped engine. Cleaned and installed the head that was recently replaced with new gasket and bolts. Torqued to spec at three steps. Cleaned, inspected, and prepped water header plate, coolant filter adaptor, oil filter adaptor, thermostat housing, and block heater housing. Installed all new gaskets and seals. Installed new thermostat. Replaced coolant and oil filters. Reassembled EGR cooler, exhaust manifold, turbo, intake air manifold with all hoses and pipes. Reinstalled ECM brackets and ECM. Replaced cam position sensors. Reinstalled engine wiring harness. Replaced air compressor and		

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	gaskets. Mounted compressor and fuel pump assembly. Cleaned and installed the hydraulic pump adaptor with new bearing and gaskets on lower left accessory drive. Installed new rope gasket into groove of gear housing with nine new o-ring seals. Installed timing cover with new hardware and loctite and thread sealer. Installed new front crank and accessory drive seals. Reinstalled pulleys and dampener after cleaning and inspecting. Installed new pilot bearing in flywheel bore. Installed a new clutch. Ran overhead adjustment of valves and injectors. Reinstalled the Jake brakes and checked the clearance between the actuators and bridges, it was good. Loaded, transported, and installed engine assembly into crane chassis. Reinstalled hoses, intake, exhaust, and coolant pipes. Connected pump drive shaft and greased the u-joints. Installed small hydraulic pump with new gasket. Reinstalled chassis to axle link. Removed and replaced starter. Replaced batteries. Filled engine oil and coolant. Repaired AC compressor mount bracket. Installed new AC compressor with two new hoses and new belt. Filled the compressor with PAG oil. Flushed the AC system and replaced all o-rings. Replaced the air and fuel filters. Reinstalled all sheet metal.		

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ITEM	DESCRIPTION	QTY	AMOUNT
	Started and ran engine. Initial test was good. Topped off fluids. Charged AC system. Started engine from upper and raised boom. Tested good. Subtotal		24.452.33
Hazard Fee			366.78
Part	Engine kit	1	3.775.82T
Part	Cam bearing	1	111.82T
Part	Cooling tubes	1	168.60T
Part	Rod bolts	1	212.41T
Part	Oil pump	1	514.60T
Part	Head bolts		460.50T
Part	Lubriplate motor assembly grease	2	39.51T
Part	Misc. Screws	2	5.07T
Part	Injector	6	3.666.10T
Part	Water pump	1	522.02T
Part	Thermostat	1	69.37T
Part	Position sensor	2	51.15T
Part	Engine control module	1	200.76T
Part	Air compressor gasket	1	7.95T
Part	Brake compressor	1	1.318.15T
Part	Needle bearing	1	8.36T
Part	Fuel transfer pump	1	297.91T
Part	Bearing cups		46.63T
Part	Bearing assembly	2	59.88T

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ITEM	DESCRIPTION	QTY	AMOUNT
Part	Bearing cones		106.08T
Part	Locktite flange sealant		67.36T
Part	Seal kit	1	158.49T
Part	Needle bearing	1	12.06T
Part	Needle bearing	1	19.05T
Part	Locktite sealant	1	26.25T
Part	Engine heater	1	131.96T
Part	Water pump cover	1	123.49T
Part	Oil cooler	1	1,247.41T
Part	Oil cooler support gasket	2	9.72T
Part	O-ring seal	2	7.28T
Part	Roller bearing	1	101.60T
Part	A/C compressor	1	302.50T
Part	Clutch	1	2,485.33T
Part	Bearing	1	16.16T
Part	Cooling system filter	1	23.06T
Part	Oil filter	1	90.04T
Part	Gloss black paint	2	38.07T
Part	Relay solenoid	1	56.39T
Part	V-belt	1	38.78T
Part	Serpentine belt	1	79.52T
Part	Delo 400 15w40	10	337.09T
Part	Red antifreeze	7	204.75T
Part	Battery	2	404.52T
Part	Refrigerant oil	1	15.78T
Part	Air filter	1	236.50T

Total

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ITEM	DESCRIPTION	QTY	AMOUNT
Part	Air filter	1	162.42T
Part	Fuel filter	1	33.52T
Part	Starter	1	444.10T
Part	Hose assemblies		185.76T
Part	50 w synthetic gear oil	1	348.39T
CL	Cleaner	27	165.24T
Part	Fan Hub	1	1,443.75T
	Subtotal		20,659.03
Shop Supplies			1,032.95T
Sublet			812.00
Sublet	Cleaned and checked crankshaft polished		695.75
Sublet	Resurfaced HD Flywheel		100.00
Sublet	Checked radiator		275.00
Freight			944.18
	Idaho sales tax		1,301.52

Total	\$50,639.54
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I hereby authorize the above repair work to be done along with the necessary material and hereby grant you and/or your employees permission to operate the vehicle herein described on streets, highways or elsewhere for the purpose of testing and/or inspection. An express mechanics lien is hereby acknowledged on above vehicle to secure the amount of repairs thereto. We are not responsible for loss or damage to cars or articles left in cars in case of fire, theft, or any other cause beyond our control. **VEHICLE MUST BE RETURNED TO ESPI FOR WARRANTY WORK. YOU MUST HAVE A COPY OF YOUR ORIGINAL INVOICE.**

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