

Inspected the blow by issue. It does seem to have a lot. Installed a new blow by tube because the other one was all stiff and brittle. Measured the temps at each exhaust manifold outlet. Number 1 seems to be cooler than the others. Drained the engine oil and coolant. Removed the battery cover and disconnected the batteries. Removed the side shields from both sides of the tractor. Removed the exhaust pipe from the turbo then removed the exhaust stack from the tractor. Removed the air intake pipe from the filter to the turbo. Removed the air intake pipe over top of the radiator to the air cleaner. Removed the hoses from the coolant overflow tank. Removed the mounting bolts for the air cleaner assembly, removed the air cleaner/ overflow mount from over the top of the engine. Removed the turbo discharge pipe from the intake. Removed the oil feed and drain line from the turbo. Heated the exhaust manifold bolts up and removed them. Removed the exhaust manifold assembly. Removed the top radiator hose and the small coolant hose from the head to the thermostat housing. Removed the engine belt and the a/c compressor belt. Removed the engine fan. Removed the fan block from the head. Removed the a/c compressor and let it lay off to the side. Removed the injector lines. Removed the fuel return line. Removed the injection pump and fuel filter supply lines. Removed the injectors. Removed the valve cover and then the rocker arm assemblies. Removed the pushrods. Removed the head bolts. Got the head lifted off the block. Removed the fittings from the left hand side of the head. Removed the fuel filters from the head. Loaded the head up. Removed the engine oil pan. Removed the oil pick up tube. Removed all of the connecting rods. Piston #5 had a busted top ring and a decent scuff in the cylinder wall. Piston #3 had a busted top ring and a worn connecting rod bearing. Pulled all of the sleeves out of the engine. Sleeve #3 has some cavitation on it. Pulled a main bearing to verify it was standard and it was. Gathered everything back up and got a parts list made. Removed the a/c high pressure and low pressure lines. Removed the fuel supply and return lines. Removed the hydraulic oil cooler lines. Removed the plastic shield over the accumulators. Removed the harness from the left side of the engine, from the starter and the alternator. Removed the starter. Removed the rear hood latch bracket. Removed the front weights. Set the splitting stands up and split the tractor. Removed the engine dampener and flywheel. Removed the rear housing from the engine. Removed the rear main holder and the old wear sleeve.

Installed the new rear main holder and gasket. Installed the new rear main with a wear sleeve. Installed the rear flywheel housing and torqued the bolts to spec. Cleaned up the engine block. Installed new main bearings and torqued the main caps to spec. Installed the pistons on the connecting rods. Installed new bearings in the connecting rods. Installed the pistons and connecting rods in the engine. Torqued the rod caps to spec. Installed the flywheel and torqued it to spec. Installed the rear engine dampener and torqued it to spec. Removed the shield for the front crank pulley. Removed the front dampener. Removed the front timing cover and cleaned all the gasket material off both sides. Removed and replaced the front main seal. Installed a wear sleeve on the front crank. Applied sealant to the front cover, reinstalled it and torqued it to spec. Installed the front dampener pulley and torqued it to spec. Installed a new engine belt and the shield around the front dampener pulley. Removed the alternator. Removed the thermostat housing. Cleaned the old gasket material off the block and the thermostat housing. One of the thermostats fell apart as if it was broken. Cleaned the head bolt holes up and the top of the block. Installed the new head gasket. Installed all of the plugs and fittings on the left hand side of the head. Installed the fuel filter base with new o-rings on the head. Set the head on the engine. Installed new head bolts and torqued them all to spec. Installed the pushrods and rocker arm assemblies then torqued them to spec. Cleaned up the injectors, installed new sleeves and sealing washers on them. Installed the injectors into the engine and torqued them to spec. Installed the intake manifold and gasket, torqued those bolts to spec. Went through and set the valve lash on the engine. Installed a new valve cover gasket and installed the valve cover. Installed the new thermostats. Installed the thermostat housing and torqued those bolts to spec. Installed the alternator. Cleaned up the exhaust manifold and installed it with new gaskets and hardware, torqued it to spec. Installed the turbo drain line and turbo feed line. Installed the air intake pipe from the turbo to the intake. Installed the engine fan bearing block onto the front of the head. Installed the fuel return line onto the injectors. Installed the injector lines and bolted them down. Installed the fuel supply lines with new sealing washers, from the filter base to the pump. Cleaned up the bell housing on the engine side and rear end side. Got the tractor rolled back together and torqued the retaining bolts all down good. Installed the starter. Cleaned up the positive connections and installed them onto the starter. Removed the splitting stand. Hooked up the alternator connections and installed the cover on the back of the alternator. Hooked up the coolant hoses on the right hand side then put the shield over them over top of the starter. Cleaned up the oil

pan and the block. Installed the oil pick up tube with loctite on the bolts. Installed the oil pan and torqued it to spec. Installed the hood latch bracket at the front of the cab. Routed and hooked the harness back up on the left side of the engine. Routed and hooked up the steering lines with new o-rings on the fittings. Routed and hooked up the oil cooler hoses with new o-rings. Bolted the a/c compressor bracket back on and installed the a/c compressor. Bolted the engine fan back in place on the bearing block. Got the exhaust stack put back in place. Installed the heat shield over the manifold. Hooked the fuel supply and return lines back up. Hooked the low pressure line back up to the a/c compressor. Changed the coolant conditioner filter, the engine oil filter and all of the fuel filters. Filled the engine with oil. Put the throttle cable back in place. Put the air cleaner assembly back on top of the engine. Installed the air intake pipe to the turbo. Removed and replaced both inner and outer air filters. Installed the accumulator/ battery cover along with the step. Secured the hoses from the cab to the radiator. Installed new small coolant hoses from the radiator to the overflow tank. Filled the system up with coolant. Got the tractor running and checked for leaks, all seemed okay. It had good oil pressure. Put the front weights back on and bolted them in place. Pulled a vacuum on the a/c system. Moved the tractor up and cleaned up the work bay. Took the tractor out and ran it on the dyno for an hour at different pto load ratings. Charged the a/c system. Removed and replaced the engine belt tensioner. The engine oil cooler was seeping some oil. Drained the coolant out. Removed and replaced both gaskets on the engine cooler. Torqued the bolts to spec. Filled the tractor back up with coolant and checked for leaks. All seems okay. Put the side shields back on the tractor.

Key Points

- Engine Rebuild
 - Rebuilt head
 - New sleeves
 - New pistons
 - New wrist pin bushings and connecting rod bolts
 - New STD main bearings
 - New STD rod bearings
 - New front main seal
 - New rear main seal and holder
- Filters changed
 - Engine oil
 - Inner and outer air engine air filter

- Fuel filters and inline fuel filter
 - Coolant conditioner filter
- New coolant
- New engine belt and belt tensioner
- Resealed the engine oil cooler
- Charged a/c system
- Replaced thermostats
- Replaced the small coolant hoses from the radiator to the overflow tank
- Dynoed the tractor and it had around 170 HP, could have pulled it down more