

Date 12/31/20

140M SN. B9D02104

13,256 hrs #M10

** Rebuild engine, transmission, differential, circle drive & clean & flush fuel tanks **

DESCRIPTION	QUANTITY	UNIT	TOTAL
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Engine:			
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203FF Ball Bearing	1.00		
PM203FF Tapered Bearing	1.00		
0R8839 oil cooler	1.00		
10R1930 Piston	6.00		
4947120 Kit Gasket	1.00		
4418315 Kit Gasket	1.00		
2933069 Kit Gasket	1.00		
1051797 Mount Wire	7.00		
7E0759 Hose	1.00		
1154223 Regulator	2.00		
20R7247 oil pump	1.00		
10R4429 water pump	1.00		
10R7225 Inj	6.00		
1376715 Seat Spring	4.00		
20R0819 fuel pump	1.00		
2358725 Pump GP	1.00		
2246638 Con Rod Bearing	6.00		
1077708 Main Bearing	6.00		
2124893 Main Bearing THr	1.00		
1478211 Valve	6.00		
1W2715 Valve Lock	24.00		
2A4429 Valve Lock	12.00		
1093207 Seal O Ring	6.00		
1482903 Seal	12.00		
2527801 Valve Intake	12.00		
2071556 starter	1.00		
1154072 Bearing Sleeve	1.00		
1978820 Alternator	1.00		
7W9930 Bearing Sleeve	1.00		
1292861 Gasket	2.00		
1632478 Seal Valve	6.00		
1478214 Seal V Stem	12.00		
2W7212 Gasket	6.00		

571053 Kit Gasket	1.00
5662590 Kit Gasket	1.00
5037734 Kit Gasket	1.00
2165586 Bearing Sleeve	1.00
2W7213 Bearing	6.00
MELCSL420A cyl. Sleeves	6.00
140-3038 valve guide	12.00
140-3039 valve guide	6.00
B1656E-1 seat	12.00
1376515 seat spring	2.00
99360 sleeve	1.00
7X0599 washer	1.00
4F9653 seal	1.00
3696662 regulator	1.00
2223910 seal grp	1.00
2454630 sensor	1.00
6V6609 seal	3.00
6V9027 seal	2.00
6V3250 seal	1.00
2385081 seal	1.00
9X7737 seal	1.00
1367227 seal	1.00
10R9917 turbo	1.00
3261644 filter	1.00
1G8878 fliter	1.00
3383540 element	1.00
1300229 seal	1.00
9X7381 seal	2.00
9X7380 seal	1.00
1R0762 filter	1.00
1R1807 filter	1.00
3487886 belt	1.00
2147568 oring	6.00
2M9780 oring	5.00
3D2824 oring	2.00
3J1907 oring	8.00
3K0360 oring	1.00
4J5477 oring	1.00
6V8397 oring	2.00
6V8398 oring	1.00
94613 tie strap	18.00
2456376 element	1.00
2456375 element	1.00
Refrigerant	4.60
15W40 oil	8.00
ET50 coolant cube	1.00
Extend life antifreeze	6.00
Lubriplate	1.00
Sealant	1.00

ocktite	1.00
Cleaning fluid	6.00
Solvent	2.00
Surface condition pads	4.00

MACHINE WORK

Clean & magnaflux block	1.00
Chk align bore	1.00
Surface block	1.00
Magnaflux crankshaft	1.00
Polish crankshaft	1.00
Clean crankshaft	1.00
Clean & magnaflux head	1.00
Surface head	1.00
Pressure test head	1.00
3 way grind seats	18.00
Install guides	18.00
Install seats	12.00
Machine block / sleeves	6.00

Transmission and differential:

1719375 Seal O ring	1.00
1873369 Spring	2.00
3438739 Disc Friction	2.00
4j8996 Seal O Ring	1.00
2s3029 Bearing	1.00
7G4822 Ring	3.00
7T4897 Disc Thrust	1.00
8E5742 Ring	2.00
8E8319 Disc Thrust	4.00
8F3469 Ring	4.00
9U8815 Spring	2.00
9W9371 Ring Seal	2.00
8E1263 Bearing Rlr	2.00
7G4822 Ring	3.00
7T4897 Disc Thrust	1.00
8E5742 Ring	6.00
8F3469 Ring	4.00
9W9371 Ring Seal	1.00
7G4822 Ring	6.00
8E8319 Disc Thrust	4.00
8F3469 Ring	3.00
1025881 Spring	2.00
8E5734 Ring Seal	1.00
8E5736 Ring Seal	2.00
8E8319 Disc Thrust	4.00
6Y1895 Brg Sleeve	1.00
6I8912 Disc Friction	11.00

2200 Seal Lip Type	1.00
75759 Seal	2.00
8642 Race	4.00
9M2042 Cup	1.00
2H6489 Race	1.00
4M6108 Race	2.00
5P3924 Race	2.00
3d2824 Seal O Ring	1.00
7m8485 Seal	2.00
3d2824 Seal O Ring	1.00
2m9780 Seal O Ring	1.00
3k0715 Seal	1.00
4j8996 Seal O Ring	1.00
5p3863 Seal O Ring	4.00
5f3092 seal	1.00
7m8485 Seal	1.00
8m4992 Seal O Ring	1.00
1u8846 Gasket Maker	1.00
1313919 Bearing Race	4.00
4m6107 Roller	2.00
3b8921 Roller	2.00
8f3469 Seal	3.00
8m4295 spring	15.00
1m4095 Bearing	1.00
3t4377 Seal O Ring	1.00
2h6490 Roller	1.00
1T0043 Ball Bearing	1.00
8E5734 Ring Seal	3.00
8E1263 Bearing Rlr	1.00
1025881 Spring	2.00
9U8815 Spring	1.00
8E8319 Disc Thrust	4.00
6V9028 Seal	1.00
9x4609 Seal	2.00
2033940 Seal O Ring	5.00
6d7889 Seal	8.00
2p1692 Seal O Ring	1.00
1918303 Sensor	2.00
1918304 Sensor	2.00
2380112 Sensor	1.00
2443114 Valve	8.00
6V1819 Bolt	1.00
1121574 Seal O Ring	1.00
4F7952 Seal	1.00
5F8000 Ring	1.00
5p3863 Seal O Ring	1.00
2S4663 Seal O Ring	1.00
8M5253 Seal O Ring	1.00
9Y8386 Gasket	1.00

3227 Ring	1.00
39799 Seal O Ring	1.00
1654854 Seal O Ring	2.00
1300229 Seal O Ring	1.00
9H0846 Seal O Ring	1.00
6V0852 Cap	8.00
3283655 Element	1.00
2640575 Seal Lip Typ	1.00
2718528 Shim	1.00
1487841 Spring	3.00
7D1677 Race	1.00
1J2860 Cup Tapered	1.00
2D9455 Cone	1.00
7S4001 Seal O ring	1.00
1J4757 Cone	1.00
2D9454 Cup Tapered	3.00
5F9144 Seal	1.00
1121574 Seal O Ring	3.00
2D8009 seal	8.00
6Y5010 washer	1.00
1880633 seal brake	1.00
2468777 seal brake	1.00
6Y1895 Brg Sleeve	1.00
2090229 seal brake	1.00
2090230 seal brake	1.00
2445682 bearing	1.00
4532979 bearing	2.00
4532978 bearing	1.00
8L5189 seal	1.00
2017713 bearing asy	8.00
2504091 gasket	8.00
3800473 pin	1.00
10R5665 oil cooler	6.00
2M9780 oring	3.00
2S4078 oring	7.00
3D2824 oring	15.00
3J1907 oring	5.00
3K0360 oring	4.00
4J0520 oring	2.00
4J0522 oring	1.00
4J0524 oring	1.00
4J5267 oring	1.00
4J5477 oring	1.00
5H8848 oring	14.00
5K9090 oring	9.00
6V8397 oring	4.00
6V8398 oring	1.00
6V8400 oring	7.00
6V9746 oring	

9108 oring	6.00
M8485 oring	9.00
8T0315 oring	1.00
9X7380 oring	1.00
6V8397 seal	4.00
7J0204 seal	1.00
9S9233 seal	1.00
50W TO4 oil	35.00
10W oil	7.00
30W TO4 oil	19.00
94610 tie strap	9.00
94613 tie strap	12.00
Lubriplate	1.00
Sealant	1.00
Loctite	1.00
Cleaning fluid	8.00
Solvent	1.00
Surface condition pads	10.00

Circle Drive

3026335 Shim	11.00
6G5539 Gasket	1.00
4F9653 Seal	1.00
4570799 Lock Nut	1.00
3026335 Shim	1.00
3026338 Strip Wear	6.00
5H4909 Seal	1.00
9W6645 Seal Grp	1.00
4D6695 seal	2.00
3290411 seal	2.00
3D2981 gasket	4.00
1U8846 gasket maker	2.00
80W90 w. oil	3.00
Graphite lubricant	1.00
Sealant	1.00
Loctite	1.00
Cleaning fluid	2.00
Surface condition pads	1.00

Total Parts:

\$33,587.53

Additional Hard parts, hoses & electrical:

9N5253 Cord	1.00
3218710 Element	1.00
3222733 Harness	1.00
7E6794 Arm Inj	1.00
5201511 Harness	1.00

800649 Tightener	1.00
2W8147 Gear Crank	1.00
1910522 adapter	1.00
3122688 harness	1.00
2443168 bracket	1.00
2330891 bracket	1.00
2T3013 spider	2.00
3089532 hose assy.	1.00
2667650 elbow	1.00
1W2431 clamp	1.00
3086409 heat shield	1.00
2486364 hose assy.	1.00
2546802 hose elbow	1.00
3165366 backer	1.00
3718094 cm hose	70.00
2466654 hose	1.00
9N0869 washer	2.00
2997985 muffler	1.00
2573226 dryer	1.00
3240048 hose asy.	1.00
6Y9960 mount asy.	2.00
3560841 switch	1.00
3501107 Valve	1.00
8W5092 gear	1.00
1454496 hose asy.	1.00
9W9920 mount asy.	2.00
1247792 pulley	1.00
2435063 aftercooler	1.00
2051280 hose	1.00
418897 hose	1.00
3718946 cm hose	16.00
3718094 cm hose	80.00
8C3681 cm hose	186.00
9X2133 cm hose	47.00
5P0765 CM Hose	54.00

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Total Additional Hard parts, hoses & electrical:

\$9,021.33

CUSTOMER NAME: [REDACTED]		DATE: 12/31/2020
EQUIPMENT LOCATION: BHE SHOP		IDENTIFICATION #: 40396
MODEL: 140M	Unit #: M10	
HOURS 13,256.00	OR MILES 0.00	SERIAL NO, khx17610 engine

Instructions:

Rebuild engine

What did you find wrong?

Turbo shaft was broke.
Bores in the block were scored.
Bushings were worn.

How did you correct it?

Separated engine from the transmission. Removed the front pulleys and dampner. Removed the front cover and removed the timing gears. Removed the fuel pump and turbo. Removed brackets above valve cover. Removed cover and the rockers. Removed injectors. Removed the cylinder head. Removed the flywheel and the flywheel housing. Removed the oil pan and oil pump. Pushed out the pistons and rods. Removed the crank. Washed the block. Scraped gaskets off the block. Washed the crank. Tore the cylinder head apart. Cleaned the head. Sent the block, crank, and head out to the machine shop. The block was surfaced and checked out. The bores for each cylinder were scored so sleeves were put in the block. The head was surfaced and also had the seat and guides done. It was all checked for cracks. The cooler assembly was torn apart. All the parts were cleaned and inspected. The cam lobes were polished and checked for any kind of pitting. All the gears were checked for pitting on the teeth. The front crank gear was pitted so we replaced it. We got the block, crank, and head back. We removed the old cam bushings and put new ones in. We fit the cam and made sure it spun freely. We flushed the block, crank, and head in solvent. Installed the crank with new main bearings. We checked the bearing clearance for the crank. Also checked the endplay for the crank and made sure it was in specification. Went through and removed plugs in the block and installed new seals on the plubs. We got new rod and piston kits. Installed the rods and pistons in the block. Put new rod bearings in and checked the clearance. We got new valves for the head. Lapped all the valves in the head. Measured all the springs. Assembled the head with new valves and valve seals. Changed out all orings on the plugs in the head. Installed new head gasket and installed the head. Installed the camshaft. Replaced the bushing in the idler gear. Installed the gear and timed the engine. Checked backlash and endplay on the gears. Put the front housing cover on. Installed a new front main seal and put the dampner on. Installed a new fuel pump. Installed the flywheel housing and put a new rear main seal on. Installed the flywheel. Installed new injectors in the head. Tore the rocker shaft apart and inspected. Tore the cam followers apart and inspected. Assembled the followers and installed on the engine. Installed the rocker shaft. Set the valves on the engine. Replaced the injector wire harness and installed the valve cover base and valve cover. Replaced the idler pulley and belt tensioner. Replaced the alternator and the starter. Got a new water pump. Changed over fittings from the old one and installed on the engine. Tore the thermostat housing apart and replaced the thermostat. Installed it on the engine. The engine oil cooler got replaced. The transmission oil cooler got replaced. Assembled the cooler assemblies with new gaskets and installed on the engine. Put new exhaust gaskets on and installed the exhaust manifold. Replaced the turbo and installed. Installed lines. Replaced the fuel transfer pump. Changed out fittings from the old one. Got a new oil pump. The drive gear bushing

so we replaced it. Put the oil pump and drive gear on. Installed the piston coolers. Installed a new and put the oil pan on. Installed the old a/c compressor. Replaced fuel hoses. Installed a new engine. Replaced the coolant hose. Replaced the block heater and cord. Installed the intake manifold. Tested the intake heater. It was ok. Put the ecm on. Replaced the engine harness. Hooked all wires up. Changed out the speed sensors. All seals were replaced throughout engine. Inspected the flex coupler between the flywheel and transmission. It was ok. Installed it on the flywheel. Installed new oil and fuel filters. Connected engine to transmission. Painted engine and transmission.

SERVICEMAN SIGNATURE: [REDACTED]

SERVICEMAN SIGNATURE: Tim Brown

CUSTOMER NAME: [REDACTED]		DATE: 12/14/2020
EQUIPMENT LOCATION:: SHOP		IDENTIFICATION #: 40425
MODEL: 140M	Unit #: M10	
HOURS 13,256.00	OR MILES 0.00	SERIAL NO. B9D02104 TRANY CZM5413

Instructions:

Rebuild transmission

What did you find wrong?

Found some worn discs in first and third clutch.

How did you correct it?

Removed lines from the transmission. Removed filter base. Removed engine transmission pump and brake/fan pump. Removed transmission from the engine. Removed wire looms and solenoid valves. Removed the parking brake housing and discs and plates for parking brake. Removed bolts to the case halves and separated halves. Pulled out the clutches from the case. Disassembled each clutch. Removed the pistons from the housings. Washed all the clutch parts. Sanded sealing surfaces and inspected. Cleaned all the discs and plates for each clutch. Checked all the discs and plates for wear, warp, and thickness. First and third had some worn discs where the material was bad. Got new seals and resealed the pistons for each clutch. Installed the pistons. Replaced all the bad discs for the clutches. Installed new return springs in each clutch. Assembled each clutch. Replaced all thrust washers and bearings for each clutch. Air tested each clutch. Removed the bearing races from the case halves. Cleaned the case halves. Installed new bearing races in the cases. Tore the drive gears apart and cleaned. Put new bearings in and installed the drive gears. Installed the clutch shafts in the case. Put the other case half on and torqued the bolts. Changed out all the plug and fitting orings in the case. Installed new seals on them. Installed new solenoid valves on the transmission. Tore relief valve apart and cleaned. Installed new seals and assembled the valve. Installed valve on transmission. Tore the parking brake piston apart. Cleaned the parts. Inspected and reassembled. Put new seals on the pistons and replaced the return springs. Checked out the parking brake discs and plates. Had to replace a couple discs that were worn. Assembled the parking brake to the transmission housing. Replaced the parking brake valve and the pressure switch with a new one. Installed a new transmission pump. Removed the screens and cleaned. Installed with new seals for the covers. Installed lines on the transmission. Installed transmission to the engine. Put the brake/fan pump on. Tore transmission pump apart and inspected. Resealed pump and installed on transmission. Put a new transmission filter in.

SERVICEMAN SIGNATURE: [REDACTED]

CUSTOMER NAME: [REDACTED]		DATE: 12/31/2020
EQUIPMENT LOCATION: [REDACTED]		IDENTIFICATION #: 40459
MODEL: 140M	Unit #:	
HOURS 0.00	OR MILES 0.00	SERIAL NO. B9D02104

Instructions:

DIFFERENTIAL

Drain engine and transmission.
Drain fuel tank and put algae treatment in.

What did you find wrong?

POWER TRAN REBUILD.

Air drier for a/c replaced.
Some hoses for coolant and hoses for the air charge cooler were bad.

How did you correct it?

BLOCKED MACHINE UP. REMOVED FOUR WHEELS. DRAINED THE TANDEMS. REMOVED BRAKE OIL LINE FROM EACH TANDEM AND CAPPED. REMOVED THE COVERS FROM TANDEMS. REMOVED CHAINS. REMOVED BOTH TANDEMS. REMOVED DIFF AND FINAL DRIVE ASSEMBLY FROM MACHINE FRAME. REMOVED LEFT AND RIGHT FINAL DRIVES. DISASSEMBLED THE DIFFERENTIAL. CLEANED PARTS. INSTALLED NEW BEARINGS. ASSEMBLED THE SPIDER GEARS. ASSEMBLED THE RING GEAR HOUSING. TORQUED RETAINING BOLT TO 130 ftlbs. INSTALLED NEW BEARING ONTO PINION GEAR. ASSEMBLED PINION AND TIGHTEN RETAINING NUT UNTIL I HAD 10inlbs. OF ROLLING TORQUE. INSTALLED DIFF AND PINION INTO DIFF HOUSING. SET BACK LASH. HAD TO REMOVE TWO SHIMS TO GET .014 BACK LASH. TORQUED PINION RETAINING BOLTS TO 200 ftlbs. REMOVED TANDEM PIVOT HOUSINGS. INSTALLED NEW PIVOT SEALS. INSTALLED BOTH FINAL DRIVE ONTO THE DIFF HOUSING. TORQUED RETAINING BOLTS TO 200 ftlbs. INSTALLED THE TANDEM PIVOT HOUSINGS. TORQUED RETAINING BOLTS TO 130 ftlbs. INSTALLED DIFF AND FINAL DRIVE ASSEMBLY BACK UP INTO THE MACHINE FRAME. TORQUED RETAINING BOLT TO 650 ftlbs. INSTALLED BOTH TANDEM HOUSINGS. TORQUED RETAINING BOLTS TO 200 ftlbs. INSTALLED FOUR DRIVE CHAINS. INSTALLED COVERS WITH NEW GASKETS. RESEAL DRIVE AND FILL PLUGS. FILLED BOTH TANDEMS WITH 50W OIL. INSTALLED FOUR WHEELS. TORQUED LUGS BOLTS TO 330ftlbs. PUT MACHINE BACK ONTO THE GROUND.

SERVICEMAN SIGNATURE: [REDACTED]

CUSTOMER NAME: [REDACTED]

EQUIPMENT LOCATION: SHOP

DATE: 12/31/2020

MODEL: 140M

IDENTIFICATION #: 40425

HOURS 13,256.00

OR MILES 0.00

Unit #: M10

SERIAL NO. B9D02104 TRANY CZM5413

Instructions:

Install engine and transmission.
Drain fuel tank and put algae treatment in

What did you find wrong?

Air charge cooler bad.
Air drier for a/c replaced.
Some hoses for coolant and hoses for the air charge cooler were bad.

How did you correct it?

Drained the fuel out of tanks. Put new clean fuel in. Added some treatment for algae in the tank. Cleaned the inside of frame. Replaced transmission and engine mounts. Set engine and transmission in together. Hooked up lines to the engine and transmission. Installed the air cleaner. Installed new air filters. Installed a new muffler. The old one had a broken flange where it seals at the turbo. Installed the battery base assembly and hydraulic tank. Hooked up wires. Removed the charge air cooler out of the radiator assembly. It had oil in it. Sent it out to get cleaned and pressure checked. It was bad. Replaced the air charge cooler with new one. Installed it in the radiator assembly. Installed the radiator assembly. Inspected radiator hoses. Replaced bad ones. Inspected air charge hoses. Replaced a couple that were bad. Hooked up heater hoses and fuel lines. Hooked up hydraulic hoses to the pumps and cooler. Changed out orings for all the hoses and replaced with new ones. Filled the hydraulic tank back up. Changed out the hydraulic filter. Replaced the air drier for the a/c system since it had been opened up. Put a vacuum on it and charged the system with freon. Put new radiator fluid in. Filled the transmission and differential oil. Filled the engine oil. Charged batteries and started engine. Checked for leaks. Took pressures for the transmission and calibrated the clutches. Took outside and ran the machine around. Brought it back in the shop. Checked it all over. Put tinwork and hoods back on. Put doors back on.

SERVICEMAN SIGNATURE: [REDACTED]

CUSTOMER NAME: [REDACTED]

EQUIPMENT LOCATION: BHE Shop

DATE: 12/31/2020

MODEL: 140M

IDENTIFICATION #: 40426

Unit #:

HOURS 0.00

OR MILES 0.00

SERIAL NO. B9D02104

Instructions:

CIRCLE DRIVE.

What did you find wrong?

WANTED THE CIRCLE TIGHTEN UP AND DRIVE GEAR CHECKED.

How did you correct it?

THE DRIVE GEAR WAS WORN ALOT. HAD TO REMOVED ONE END OF THE SIDE SHIFT CYLINDER AND MOVE THE DRAWBAR OVER TO REMOVED THE CIRCLE DRIVE. DRAINED THE CIRCLE DRIVE. REMOVED THE CIRCLE DRIVE GEAR RETAINING NUT. REMOVED THE OIL LINES FROM THE CIRCLE DRIVE MOTOR. REMOVED THE CIRCLE DRIVE. REMOVED THE TOP COVER AND INSPECTED THE GEARS INSIDE THE CIRCLE DRIVE. ALL ARE OK. INSTALL TOP COVER. ORDERED A NEW DRIVE GEAR. INSTALLED NEW DUO CONE SEAL. INSTALLED CIRCLE DRIVE. INSTALLED THE NEW DRIVE GEAR. TORQUED RETAINING NUT TO 280 ftlbs. INSTALLED LOCK. FILLED CIRCLE DRIVE WITH 80W90 OIL. RECONNECTED CIRCLE DRIVE MOTOR LINES. REMOVED THE TOP WEAR SHOES AND INSTALLED NEW WEAR SHOES FOR THE CIRCLE. ADJUSTED THE BOTTOM SHOES. ALSO ADJUSTED AND TIGHTEN THE BLADE.

SERVICEMAN SIGNATURE: [REDACTED]