



## Track Mobile Engine Rebuild

### Engine disassembly and removal:

- Had unit picked up from South Fraser Container Services and delivered to shop.
- Disassembled all components around engine, removed radiator, hood, and front grill area.
- Removed engine head. Disassembled head as far as needed and detached ports that were in the way. Hoisted out engine head. Disassembled the rest of head, cleaned and inspected: no cracks found, no excessive wear in rockers, lots of oil found in the head (cleaned). Removed seals and gaskets. Cleaned head area on block and removed remaining seals and gaskets.
- Turned engine over and cleaned pistons and liners of oil. Checked liners for visible cracks and wear. #2 and #3 had overheating spots and wear. Pistons were covered in carbon residue. Removed head gasket and ring seals.
- Prepared engine removal. Removed all hoses and wires. Removed transmission bolts and engine mount bolts. Removed both air compressors. Chained up engine and lifted out of machine. Removed blower from engine.
- Cleaned engine and disassembled. Cleaned and inspected all parts. Prepared parts for transport. Sent block, cylinder head, crankshaft, camshaft, balancing shaft, rods and pistons to machine shop for proper inspection and repair.

### Machine Shop Repairs:

Cylinder head: Used Magnaflux in hot tank to check for cracks - OK. Valve grinded 16V H.D. Installed new seals, re and re guides and replaced valve springs. Vacuum tested and resurfaced head.

-Crankshaft, camshaft, balance shaft: Used Magnaflux to check for cracks. Polished all. Installed new crank shaft speedi sleeve.

-Engine block: Used Magnaflux to check for cracks. Replaced cam bearings, surface planed and installed 4 new liners.

-Pistons & Rods: spin-checked rod ends, assembled new pistons & pin bushings.

-Assembled engine components.



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### **Engine Assembly and Install:**

- Received all engine parts, assembled engine, inspected and set up for installation.
- Found starter and ring gear both had damaged teeth. Replaced ring gear on fly wheel and had starter rebuilt.
- Installed engine in track mobile. Replaced old and worn cooling hoses and air compressor hoses. Once engine and all components were installed, ran engine and found low fuel pressure. Replaced all fuel lines. In order to replace fuel lines side air tank and step had to be removed. Drained air tank that was full of water, oil and sludge. Cleaned the inside of tank once removed. Side step was badly damaged and sections needed to be cut off in order to remove. Once step was removed, cleaned off tank and removed fuel hoses - hoses were plugged with debris. Inspected diesel tank and found it was full of debris. Drained tank and removed. Cleaned out tank and pick-up tubes. Installed tank and new hoses, installed side step and air tank, and replaced fuel one-way check valve. Ran engine and tested fuel pressure - good.
- Repaired broken air piping for train car brake hook up.
- Replaced broken hour meter.
- Replaced and repaired old wires and connections.
- Replaced rusted out exhaust elbow and clamps.
- Tested all machine functions and found rear wheels would not go down for transportation. Inspected and found cylinder not hooked up. Attached hydraulic hoses for testing and found cylinder was leaking badly out of the side housing. Cleaned and prepared cylinder housing for welding. Welded housing and tested cylinder.
- Had Detroit Diesel technician come out to test, adjust and fine tune engine operations.

### **Technician call-out:**

- Checked all torque specifications. Checked valve lash, injector settings and fuel injector racks. Checked RPM and idle speed. Pressure tested fuel and cooling systems.





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### **Service & Lube/General Repairs**

- Changed engine oil and filter. Replaced fuel filters and air filter. Greased unit. Checked all fluid levels.
- Replaced faulty transmission oil pressure gauge.
- Replaced transmission oil and filter.
- Topped up hydraulic oil and replaced filters.
- Checked all lights, replaced 2 of 4 roof lights that weren't working. Dash illuminator bulbs burnt out. Replaced all bulbs. Replaced 2 worn light switches. Track lights were not working. Found wiring old/faulty - rewired and tested. Rewired missing connection for cabin light.
- Wiper motor was not working, found wiring problems repaired, tested. Roof had holes in it due to ripped light bar. Removed bar and welded roof.
- Straightened front end and front grill of unit.

### **Final Inspections:**

- Conducted final checks on unit and all systems. Ran unit under variable load to break in cylinder liners and rings.
- Prepared unit for transport and delivered to South Fraser Container Services.



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## **Recommended Maintenance:**

Pre-trip inspection of this unit is recommended. This engine should be visually inspected for any leaks before use. All hose conditions should be checked. Oil and coolant levels should be checked, filled up and documented on a regular schedule.

### Leaks/Hoses (Pre-Trip Inspection):

- Look for puddles on the ground.
- Look for dripping fluids on the underside of the engine and transmission.
- Inspect hoses for condition and leaks.

### Oil Level (Pre-Trip Inspection):

- Indicate where the dipstick is located.
- Make sure the oil level is within safe operating range. The level must be above the refill mark.

### Coolant Level (Pre-Trip Inspection):

- If the engine is not hot, remove the radiator cap and check for visible coolant level.

### Engine Compartment Belts (Pre-Trip Inspection):

- Check the following belts for snugness, cracks, or frays:
- Alternator belt.
- Fan belt.

If any engine issues are found with the engine, repairs should be carried out with importance and in a hasty manner.

- First oil change should be performed at 40 hours of operation.
- Second oil change should be performed at 300 hours of operation or within 4 months depending on usage.

## **Lanz Mechanical Ltd.**

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Lanz Mechanical Ltd.  
 728 E 39th Ave  
 Vancouver, BC V5W 1K6



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# Invoice

Date	Invoice #
3/14/2016	3421

<b>Invoice To</b>
South Fraser Container Services Ltd. 7654 Hopcott Road Delta, B.C. V4G 1B6 Canada

<b>Unit#: Track Mobile</b>
<b>Model#: 55TM</b>
<b>SIN#: 1020646</b>
<b>Hour Reading: 0</b>

<b>JOB: Engine Rebuild</b>
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<b>P.O. #: 292</b>
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Item	Serviced	Description	Qty	Rate	Amount
Machine Shop		cylinder head rebuild	1	2,102.63	2,102.63
Machine Shop		pistons & liners	1	1,700.40	1,700.40
Machine Shop		rod bearings	1	144.32	144.32
Machine Shop		main bearings	1	220.50	220.50
Machine Shop		gasket set	1	236.54	236.54
Machine Shop		rod pins	1	72.45	72.45
Machine Shop		cam bearings	1	159.45	159.45
Machine Shop		crankshaft speedi sleeve	1	33.00	33.00
Machine Shop		freight	1	80.00	80.00
Machine Shop		labour	12.25	110.00	1,347.50
Hour Meter		hour meter	1	170.43	170.43
TM-ST878		starter 12V	1	295.50	295.50
TM-EN-RG301		ring gear	1	315.66	315.66
Installation		ring gear installation	1	42.50	42.50
TM-BEL430		fan belt	2	0.00	0.00
TM-BEL75		alternator belt	2	0.00	0.00
Brake Line		1/4" x 8"	1	0.00	0.00
Heater Hose		803 coolant (per foot)	1	3.38	3.38
Heater Hose		802 coolant (per foot)	12	1.44	17.28
Hose Assembly		custom fabricated hose 4 foot (fuel)	1	27.47	27.47
Hose Assembly		custom fabricated hose 5 foot (fuel)	2	68.50	137.00
Hose Assembly		custom fabricated hose 6 foot (fuel)	1	77.69	77.69
Exhaust Elbow		90 degree	1	69.30	69.30
Exhaust Clamp		aluminized	3	22.87	68.61
Tubing		rubber large blk (per foot)	1	23.65	23.65
Fitting		3/8" connector / adapters	5	2.96	14.80
VAL-200-1WC		valve 1 way check	1	0.00	0.00
Fitting		90 degree elbow	1	0.00	0.00
Technician Call-out		-Fine tuning and adjustments. Detroit Diesel dealer.	1	0.00	0.00
Gauge		transmission oil pressure	1	176.10	176.10
ELE-SW105		push/pull switch	2	15.44	30.88
LIG-SB64931		sealed beam 4" 12V	2	0.00	0.00
FIL-TM-AJ28		filter air	1	85.85	85.85
FIL-TM-EO70		filter engine oil	1	31.69	31.69

<b>Terms</b>	Net 30 Days		<b>Subtotal</b>
<b>Due Date</b>	4/13/2016	(778) 870-9768 thomas.lanz85@gmail.com www.lanzmechanical.com	<b>Balance Due</b>

Lanz Mechanical Ltd.  
 728 E 39th Ave  
 Vancouver, BC V5W 1K6



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Item	Serviced	Description	Qty	Rate	Amount
FIL-TM-FU28		filter fuel	1	22.13	22.13
FIL-TM-FU36		filter fuel	1	14.70	14.70
FIL-TM-HY75		filter hydraulic	2	61.29	122.58
FIL-TM-TR45		filter transmission	1	62.90	62.90
GRE-558R		grease red	2	6.83	13.66
OIL-40w		oil 40w (per litre)	20	6.95	139.00
OIL-ATF		oil ATF (per litre)	16	6.24	99.84
OIL-HYD46		oil hydraulic 46 (per litre)	26	4.79	124.54
LIG-B1893		bulb mini 12V indicator	8	0.00	0.00
Transportation		Unit transport to shop and back	2	296.35	592.70
Labour		total hours on job 178	79	95.00	7,505.00
Shop Supplies					0.00
		GST on sales		5.00%	819.08
		PST (BC) on sales		7.00%	1,146.71

<b>Terms</b>	Net 30 Days		<b>Subtotal</b>	\$16,381.63
<b>Due Date</b>	4/13/2016	(778) 870-9768 thomas.lanz85@gmail.com www.lanzmechanical.com	<b>Balance Due</b>	\$18,347.42