

**\*\* Reprint \*\***

Invoice: **00205W2973**

Date / Hour: 7/18/2023 9:48:17AM

Repair Order:

Customer: '

Branch: I

Total Invoice: \$16,403.83

\*\*\*Warranty - Paccar MX\*\*\*

Page 1 of 4

**Bill To:**

Customer P/O:

Open Date: 06/21/2023

Completion Date: 07/13/2023

Add User: jwhitehead

Salesperson:

Unit Number: 20

Model Year: 2020

Make/Model: Kenworth W990

Type: Tractor

VIN: 1XK1PP9X4LJ417746

Meter: 288156 Miles

In-Service Date: 12/20/2019

ECM Reading: 7702

Task: 1 ENG / PACCAR ENGINE PACCAR

Department: Service

Complaint: USING COOLANT AND COOLANT IS NOW DARK COLORED \*\*\*POSSIBLE WARRANTY\*\*\*

received  
W21193

**\*\* Reprint \*\***

Invoice: **00205W2973**

Date / Hour: 7/18/2023 9:48:17AM

Repair Order:

Customer:

Branch: |

Total Invoice: \$16,403.83

\*\*\*Warranty - Paccar MX\*\*\*

Page 2 of 4

Open Date: 06/21/2023

Completion Date: 07/13/2023

Customer:

Salesperson:

Add User: jwhitehead

**Correction:** RAN TRUCK UP TO TEMPERATURE AND NO LEAKS WERE FOUND, CHECKED FOR COMBUSTION IN THE COOLANT AND NONE WAS FOUND. PRESSURIZED COOLING SYSTEM WITH SHOP AIR AND FOUND THE PRESSURE CAP IS ONLY HOLDING 10PSI AND ITS SUPPOSED TO HOLD 15PSI. INSTALLED NEW CAP AND LOOKED FOR MORE LEAKS, NONE AT THIS TIME. STEAMED TRUCK OFF AND SENT FOR A TEST DRIVE.

TEST DRIVE. BEGAN FOLLOWING THE COMBUSTION IN COOLANT PROCEDURE IN RMI AND GOT TO DRAINING THE OIL TO DROP THE OIL PAN TO CHECK OVER THE CAM LOBES. PULLED THE OIL PAN AND INSPECTED THE CAMSHAFT AND IS IN GOOD SHAPE. UPDATED MY CASE AND STARTED PULLING THE HEAD. PULLED DOWN BOTH THE HOT AND COLD SIDE OF THE HEAD. REMOVED VALVE COVER, ROCKER BOX, ROCKER ASSEMBLIES, PUSH TUBES, CROSS HEADS, AND HEAD BOLTS. REMOVED THE HEAD. CLEANED IN BETWEEN ALL VALVES AND FOUND NO ISSUES WITH THE HEAD. LOOKED OVER THE HEAD GASKET AND NO ISSUES FOUND. THE #6 LINER FEELS A BIT LOW ON THE BACK. CLEANED AROUND THAT HOLE WITH SCOTCH BRITE AND SET THE CLAMPING TOOL DOWN. PULLED DOWN THE OIL PUMP AND STIFFENER. PULLED THE APR OUT OF THE 6 CYLINDER AND PULLED NUMBER 6 PISTON. PULLED OUT THE LINER AND CHECKED OVER THE DECK. NO FRETTING. CHECKED AND FOUND THE LINER IS ERRODING WHERE THE LINER ORING SITS.

UPLOADED IMAGE OF LINER AND UPDATED CASE. UPDATED CASE. PULLED REMAINING PISTONS AND LINERS, CLEANED THE BLOCK AND FOUND MINIMAL FRETTING IN CYLINDER 3 AND 4  
MEASURED ALL THE VERTICAL BORES AND CHECKED FOR FRETTING ALL IN GOOD SHAPE. PUT PARTS LIST TOGETHER AND ALSO GOT THE OKAY TO REPLACE THE OIL PAN AS IT IS NOT HOLDING THE BOLT INSERTS AS IT SHOULD. REMOVED O RINGS, CLEANED BLOCK. SCRATCH CUT THE HOLES AND MEASURED PERTRUSION FIRST PHASE. CUT ALL HOLES AND MEASURED ALL LINER PERTRUSIONS AND PRINTED OUT SHEET OF CUTTING AND PUT INTO PACKET. CLEANED UP CRANK JOURNALS, CLEANED CARBON DEPOSITS FROM RING LANDS ON ALL 6 PISTONS. CLEANED THE BLOCK AND THE LINER O RING RIDGES. CLEANED ALL THE ROD BEARINGS AND FOUND ONE BEARING ON #3 WAS COMING APART AND NEEDS REPLACED. CLEANED ALL THE PISTONS AND RODS. INSTALLED NEW RING SETS AND INSTALLED ALL THE BEARINGS BACK TO ORIGNIAL POSITION. INSTALLED ALL LINER O RINGS AND LINERS WITH MOLIKOTE ON ALL. INSTALLED THE PISTONS AND TORQUED THE CAPS TO 50NM 130NM PLUS 90°. PACKAGED ALL LINER AND ARP CORES, CLEANED CYLINDER HEAD AND BLOCK SURFACE, PUT HEAD GASKET INTO PLACE AND SET CYLINDER HEAD INTO PLACE, TORQUED HEAD BOLTS IN SEQUENCE 1ST 70 NM 2ND 250 NM 3RD 90 DEGREES AND FINAL ON LARGE BOLTS ADDITIONAL 90 DEGREES, TORQUED SMALLER BOLTS TO 60 NM PLUS 120 DEGREES, COVERED UP ENGINE FOR NOW. DISCONNECTED OIL AND COOLANT LINES TO TURBO, REMOVED TURBO, UNBOLTED DRAINED COOLANT AND OIL FROM OIL MODULE, REMOVED OIL FILTER MODULE, REMOVED #2 COOLING NOZZLE AND INSTALLED NEW TORQUED BOLT TO 30 NM, INSTALLED FILTER MODULE WITH NEW SEALS TORQUED BOLTS TO 30 NM, PUT TURBO BACK INTO PLACE WITH NEW GASKETS, TORQUED TURBO BOLTS TO 40 NM PLUS 60 DEGREES, CONNECTED ALL OIL AND COOLANT LINES WITH NEW O-RINGS. CLEANED UP ROCKER ASSEMBLIES AND PUSH TUBES, INSTALLED INTO PLACE TORQUED ROCKER BOLTS TO 50 NM PLUS 90 DEGREES, RAN OVERHEAD SET INTAKE TO 0.020" AND EXHAUST TO 0.028", INSTALLED VALVE TRAIN CASE WITH NEW GASKET, CONNECTED ALL ELECTRICAL CONNECTIONS TO INJECTORS AND ENGINE BRAKES, INSTALLED VALVE COVER WITH NEW GASKET, ATTACHED FUEL DRAIN LINE TO BACK OF HEAD, SECURED PIPING AND WIRING TO BACK OF HEAD, INSTALLED AIR COMPRESSOR INTAKE PIPE, INSTALLED BRACKET AROUND FUEL RAIL AND PRV DRAIN LINE TORQUED BOTH ENDS TO 30 NM, INSTALLED NEW FUEL SUPPLY LINES FROM PUMPS TO RAIL TORQUED BOTH ENDS TO 15 NM PLUS 60 DEGREES, SECURED WIRING HARNESS AND A/C LINE TO BRACKET, PUT FUEL MANIFOLD BACK INTO PLACE, INSTALLED EGR COOLER AND EGR VALVE WITH NEW SEALS TIGHTENED DOWN ALL CLAMPS, INSTALLED VENTURI PIPE AND INTAKE MANIFOLD. INSTALLED FAN SHROUD BRACKET AND UPPER COOLANT PIPE, ATTACHED COOLANT AIR BLEED HOSE, PUT AIR CLEANER INTO PLACE, PUT CAC PIPES INTO PLACE, REPLACED OIL FILTERS, INSTALLED OIL PUMP TORQUED BOLTS TO 60 NM, INSTALLED FIXING FRAME AND DELIVERY PIPE TORQUED BOLTS TO 110 NM, INSTALLED PICKUP TUBE TORQUED BOLTS TO 60 NM, INSTALLED OIL PAN AFTER APPLYING SILICONE TO CORNERS TORQUED BOLTS TO 30 NM, FILLED ENGINE WITH 44 QTS 15W40 DELO, RE-FILLED COOLING SYSTEM, HOOKED UP BATTERY CHARGER.

**\*\* See Last Page for Invoice Total \*\***

**\*\* Reprint \*\***

Invoice: 00205W2973  
Date / Hour: 7/18/2023 9:48:17AM  
Repair Order: 2973  
Customer:  
Branch:  
Total Invoice: \$16,403.83  
\*\*\*Warranty - Paccar MX\*\*\*  
Page 3 of 4

Customer P/O: Open Date: 06/21/2023 Completion Date: 07/13/2023  
Add User: jwhitehead Salesperson:

PRIMED FUEL SYSTEM AND PRE-LUBED ENGINE, GOT TRUCK STARTED AND BACKED OUT OF SHOP, RAN AT HIGH IDLE TO PURGE  
COOLING SYSTEM, TOPPED OFF COOLANT, STEAMED OFF TRUCK AND HAD TAKEN FOR TEST DRIVE, NO ISSUE AFTER TEST  
DRIVE, PARKED TRUCK.  
\*\*\*CU-1591087

Supp.	Part	Description / Ref Number	U/M	Quantity	Price	Extended Price
Sales Tax Info:						
Idaho ID State Tax					\$0.00	
					\$0.00	

Total Parts: |  
Total Labor: |  
Total Miscellaneous: |  
Invoice Subtotal: |  
Total Tax: |  
Total Invoice: \$16,403.83

Payment Method Terms Due Date  
CASH 7/18/2023

Remit To:

**\*\* Reprint \*\***

Invoice: 00205W2973

Date / Hour: 7/18/2023 9:48:17AM

Repair Order: 2973

Customer:

Branch:

Total Invoice: \$16,403.83

\*\*\*Warranty - Paccar MX\*\*\*

Page 4 of 4

Customer P/O:

Open Date: 06/21/2023

Completion Date: 07/13/2023

Add User: jwhitehead

Salesperson:

The customer ("Customer") acknowledges inspecting the repairs performed by Kenworth Sales Co., Inc. ("Seller") on Customer's equipment ("the Equipment") and accepts the 2.00 same in satisfaction of the repairs requested by Customer from Seller ("the Repairs"). As consideration for the Repairs Customer agrees to the following terms and conditions. Customer will pay the total amount due, together with a service charge of 1-3/4% per month (21% per annum) on all amounts remaining unpaid after the 10th of the month following receipt, with a minimum charge of \$15.00, and a daily storage fee of \$30.00 for each piece of Equipment remaining with Seller 30 days after 1) completion of authorized repairs or 2) cessation of repairs/service for any reason. Customer will pay all collection costs including a reasonable attorney's fee, and hereby waives all claims or rights to claim exemptions under applicable state laws. Customer grants Seller an express Repalman's Lien on the Equipment for the value of the parts and any services provided and warrants that no 3rd party holds a superior lien on the Equipment except as disclosed by Customer. Any warranties on the product(s) sold hereby are those of the manufacturer. Warranty claims must be submitted within 30 days of discovery of defect. Seller disclaims all warranties, either express or implied, including any implied warranty of merchantability or fitness for a particular purpose. Seller neither assumes nor authorizes any other person to assume for it any liability in connection with the sale of the merchandise or services hereunder. Claims for adjustments or credits must be made within ten (10) days of the date of this document and must be accompanied by a complete copy of this document. Customer acknowledges that in the course of performing the Repairs, Seller may have connected the Equipment to Original Equipment Manufacturer ("OEM") approved electronic equipment, and that such tool may reset the operating parameters of the Equipment to OEM required settings. Customer accepts any and all risks that may occur in the event of a conflict between such original OEM settings and any post-production modifications made by Customer to the Equipment. Customer releases Seller from liability for any damages to the Equipment or its contents due to loss, theft, destruction, or causes other than gross negligence, and further releases Seller from liability for down time, damage to cargo, or other damage related to delays in completing the requested repairs and/or delay in obtaining parts.

Customer Signature: \_\_\_\_\_



3468

10/16/2025

Service Order		Purchase Order		Authorizer	
3468				Kevin Cleverley	
Item	Description	Quantity	Rate	Amount	
Complaint: CEL					
Cause: Customer request					
Labor	Correction: Chassis / Chassis / MULTIPLE INACTIVE CODES FOR 5V SUPPLYS, ERG TEMP, EXHAUST TEMP AFTER BPV, MISFIRE. #5 INJECTOR NOT FIRING RIGHT. EGR AND EXHAUST CODES ACTIVE. CHECKED HARNESS. GOOD. TIRED NEW SENSORS. NO CHANGE. REPLACED ECM. ALL CODES GONE. MISSFIRE GONE. RAN REGEN. NOX OUTLET CODE ACTIVE. REPLACED OUTLET NOX SENSOR. RAN ANOTHER REGEN. ALL GOOD.	6.00000		\$570.00	
Parts	ECM, PACCAR EPA17 - 2298833PEX - A	1		\$3,257.70	
Parts	Inherent Core for ECM, PACCAR EPA17 - Inherent Core for 2298833PEX - A	1		\$343.75	
Parts	Dirty Core for ECM, PACCAR EPA17 - Dirty Core for 2298833PEX - A	-1		-\$343.75	
Parts	SENSOR- NOX - 1954665PRX - A	1		\$592.56	
				Subtotal	\$4,420.26
Complaint: REPLACE LIFT AXLE RIDE BAGS					
Cause: Customer request					
Labor	Correction: Chassis / Chassis / OMAR, TREVOR-REPLACED BOTH RIDE BAGS ON LIT AXLE.	3.00000		\$285.00	
Parts	AIRBAG, CONVOLUTED 3 STAGE - 553342 - A	2		\$177.98	
Parts	AIR, ELBOW 90 MALE 1/2 X 1/4 - 10778-1 - A	2		\$11.00	
Parts	BOLTS & NUTS, GRD 5 - GRD5 - A	14		\$4.84	
				Subtotal	\$478.82
Shop Supplies				\$42.75	