

via email

# HIGH MOUNTAIN CLASSICS

601 1st Street / PO Box 46  
Berthoud, CO 80513  
(970) 532-2339

Graham Wallis  
1460 Padre Lane  
Nipomo, CA 93444

30-Jul-15

**INVOICE # 07311509**  
**1929 Lagonda # 9517**

**LABOR (Shawn):**

7/16	Set mechanical timing; Painted engine; Installed head; Installed tach drive.	8.00
7/17	Installed external engine parts including lines, magneto, exhaust manifold, etc.; Started mounting engine on dyno stand.	7.75
7/20	Continued mounting engine on the dyno; Honed rocker bolt holes in replacement block; Started installing rockers; Setup the flywheel to the dyno adaptor and began connecting everything up to the dyno.	8.00
7/21	Finished setting engine up on the dyno; Installed rockers and external parts and continued assembling engine components.	8.00
7/22	Finished installing externals and plumbed the engine to the cooling and fuel; Pressurized the oil system and found an oil leak in the head; Removed the rocker assembly on the right side and removed the oiling pipe assembly; Had Ross repair the oiling pipe assembly; Installed the oil pipe assembly and the rocker assembly; Pressurized the system and had pressure; Test fired the engine and ran it for a while; Found a second leak in the front cover where a bolt had thread failure; Attempted 'quickie repair of compromised threads/bolt and that didn't hold, so disassembled the front cover.	8.00
7/23	Repaired front cover leak and reinstalled front cover; Ran the engine on the dyno; Fixed minor leaks; Found a third significant leak where the water jacket plate under the exhaust manifold started leaking; Removed the exhaust manifold and found another threaded hole in the block has failed; Repaired it with a timesert and reassembled everything; Ran the engine on the dyno some more.	9.25

7/24	Continued running engine in on dyno; Noticed a new leak around the aluminum plate behind the exhaust manifold again, so got approval to repair all those threads, but since coolant only seeking, finished running the engine in and doing power pulls; Removed engine from dyno and moved it to the chassis; Removed exhaust manifold and aluminum plate and drilled, tapped, and repaired all remaining threaded holes in the block under the exhaust manifold and reassembled everything; Started installing engine into the chassis; Began having trouble getting clutch to operate properly, so called it a day.	8.25
7/25	Continued with engine installation; Found clutch wasn't moving freely because of a bolt that came with the kit that was too long, so replaced it and got good clutch movement; Installed radiator.	4.00
7/27	Wrapped up installation and put the hood on; Tightened down the exhaust; Tuned the car on the shop floor; Test drove the car; Exhaust came apart at clamp in front of muffler so brought it back to the shop for repairs and further tuning.	7.75
7/28	Estimate time to finish fine-tuning and test driving.	2.00
Total Hours (Shawn)		<u>71.00</u>

#### LABOR (Matt):

7/20	Fabricated adaptor plate for mounting engine on dyno.	4.00
7/21	Machined new rocker cover bolts; Ground valve lash caps.	2.00
7/22	Machined new brass oil line fitting for the leaking copper oil line assembly.	0.50
7/23	Machined new stud for front cover; Helped run engine on dyno; Helped disassemble front engine cover to repair damaged thread.	6.00
7/24	Machine the clutch crossmember for correct fitment of new clutch per drawings for new clutch assembly; Helped the team lower the engine into the chassis and connecting up engine ancillaries.	3.75
Total Hours (Matt)		<u>16.25</u>

#### LABOR (Keith):

7/16	Started repairing threads on block for cam cover plates.	3.50
7/17	Measured block after rocker arms wouldn't fit and found it was one to two thousandths undersized; Sourced and ordered proper hone to hand bore the block to fit the rocker shafts.	1.00
7/20	Sourced helicoils for Lagonda repairs; Measured travel to release clutch disc and measured throw of clutch pedal to compare the two and ensure the clutch would work correctly.	1.00
Total Hours (Keith)		<u>5.50</u>

#### LABOR (Ross):



7/16	Helped Shawn install head; Prepared and painted magneto mount and installed it.	0.75
7/17	Prepared and painted magneto mount stand; Fabricated dyno stand for this engine and motor mounts for the stand; Worked on the sheet metal trays between the engine and chassis rails and bead blasted them, welded up a crack in one of them; Straightened and flattened them with hammer and dolly, and painted them.	6.00
7/20	Finished fabricating engine mounts for dyno; Repaired exhaust manifold by welding up the crack; Installed helicoils into cam cover plate holes.	6.00
7/21	Prepared and painted exhaust manifold; Helped Shawn with engine ancillaries assembly.	7.00
7/22	Installed more engine ancillaries including intake manifold and carburetors; Helped Shawn pressurize the oiling system and found an oil leak at a broken copper oil pipe in the head; Fabricated new copper pipe segment and soldered the assembly back up; After repair of 1st leak, helped Shawn start the engine and found a second leak at a stud at the front cover; Helped Shawn with quickie repair that didn't work; Disassembled the front cover to fix the leak.	8.50
7/23	Helped reassemble the front of the engine and installed the oil pump; Installed new dowel push rods into the clutch assembly; Helped run the engine on the dyno; Prepared the car for engine installation.	6.50
7/24	Continued final running of the engine in on the dyno and helped Shawn with running in, fixing minor leaks, and assessing performance; Worked on preparing and assembling clutch assembly components in preparation for installation; Helped Shawn remove the engine from the dyno and move it over to the chassis; Then helped lower the engine into the chassis and began connecting ancillaries.	8.50
7/25	Helped Shawn with connecting all the ancillary systems to the engine.	4.00
7/27	Made new gaskets for exhaust down pipe; Helped Shawn with final installation details; Added coolant.	3.50

Total Hours (Ross) 50.75

**SUBLET:**

**Mike's Balancing** - Balanced rotating assemblies.

Total Sublet:

\$375.00

**\$375.00**

**PARTS:**

**AMOUNT**



<b>McMaster-Carr</b> - s; Helicoil kit BSF1/4" for block side cover attachment to block; flexible hone kit for boring new block bores for rocker shaft	\$184.40
<b>Napa</b> - spark plugs	\$29.24
<b>Advantage Auto Parts</b> - 30W motor oil for initial cleansing run on dyno.	\$49.28
<b>Hill Petroleum</b> - 11 quarts Brad Penn 30W break in oil.	\$97.43
<b>Hill Petroleum</b> - 11 quarts Brad Penn 20W50 motor oil.	\$117.70
Fuel for running the engine on the dyno and for test driving the car..	\$92.68
<b>Napa</b> - Siera antifreeze	\$33.66
<b>Total Parts:</b>	<b>\$604.39</b>

#### SUMMARY:

	AMOUNT
Labor - Shawn (\$95/hour)	\$6,745.00
Labor - Matt (\$95/hour)	\$1,543.75
Labor - Keith (\$95/hour)	\$522.50
Labor - Ross (\$95/hour)	\$4,821.25
Sublet	\$375.00
Parts	\$604.39
Shipping	\$0.00
Shop Supplies	\$1,499.58
<b>TOTAL DUE</b>	<b>\$16,111.46</b>

Credit for time running on dyno: 15 hours @ \$50/hour instead of \$95 yields credit of \$675.	-\$675.00
Shop Supplies' credit of \$1000.	-\$1,000.00

**TOTAL DUE AFTER 1ST ROUND OF ADJUSTMENTS** **\$14,436.46**

Credit for error of duplicate billing for removing radiator.	-\$190.00
Credit for error of duplicate billing for Mike's Balancing.	-\$375.00
Credit for shop supplies.	-\$3,000.00
Credit for work on camshaft.	-\$2,371.46

**TOTAL AFTER 2ND ROUND OF ADJUSTMENTS** **\$8,500.00**

**CUSTOMER UNDERSTANDS THAT THE CAR STILL REQUIRES FINAL TUNING AND IS BEING RELEASED TO CUSTOMER, AT CUSTOMER'S REQUEST, BEFORE FINAL TUNING HAS BEEN COMPLETED. THE CAR IS BEING RELEASED WITH THE FOLLOWING ENGINE DETAILS:**

COMPRESSION IN ALL FOUR CYLINDERS OF 100 PSI @ SHOP.  
LEAK DOWN IN ALL FOUR CYLINDERS OF LESS THAN 5%  
CAM TIMING: IVO 15 deg BTDC and EVC 15 deg ATDC  
SPARK PLUG GAP 18 THOU  
VALVE LASH 6 THOU ON INTAKE AND 8 THOU ON EXHAUST

**CUSTOMER AGREES TO PAY THE TOTAL AMOUNT DUE UNDER ANY AND ALL CIRCUMSTANCES AS A CONDITION OF THE SHOP RELEASING THE VEHICLE. CUSTOMER AGREES TO ACCEPT THE VEHICLE IN AS-IS CONDITION WITH NO WARRANTY EXPRESSED OR IMPLIED OTHER THAN THAT WRITTEN ABOVE RELATED TO ENGINE DETAILS.**



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A Finance Charge of 1.5% Will Be Assessed On Any Unpaid Balance After 30 Days

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Graham Wallis  
1460 Padre Lane  
Nipomo, CA 93444

15-Jul-15

INVOICE # 07151509  
1929 Lagonda # 9517

## LABOR (Shawn):

7/1	Worked on engine assembly.	4.75	Eng.
7/7	Helped Matt with rod installation; Installed pistons after having to repair two wrist pins.	4	
7/9	Continued with engine assembly.	6	Eng.
7/10	Made adjustments to motor mount arms and front cover to get correct fit of sump/scroll to crankshaft per Keith's direction; Prepared surfaces for mating and started attaching the sump.	8	Eng.
7/13	Installed timing cover, sump, and rear cover; Continued assembling engine.	4	Eng.
7/14	Installed bellhousing and flywheel; Continued with engine assembly.	2.5	Eng.
7/15	Installed camshafts and cam sprockets; Installed cam timing chain; Installed water pump.	3	Eng.
Total Hours (Shawn)		32.25	

## LABOR (Matt):

7/1	Started setting the crush on the main bearings.	3.5	Eng.
7/2	Finished fitting the main caps to the correct crush.	6.5	Eng.
7/6	Found the stud which went into the repaired area of the block wasn't bottoming out, so removed this cap and machined a longer than normal stud so that it would bottom out into the repaired, deeper, hole in the block; Installed longer stud and reset crush.	6.25	Stud.



7/7	Machined all rod cap nut shoulders to allow correct torque and correct cotter-pin alignment; Installed rods onto crankshaft and torqued and cotter-pinned them; Machined new clutch shaft to fit clutch disc; Repaired damaged wrist pins x 2.	8	<del>8</del> 50/50 <i>eg</i> + caps.
7/10	Clutch shaft was too large for clutch disc so turned it down to fit; Hardened clutch shaft and machined it after hardening; Machined new bushing for inside of shaft; Made new square key for shaft to mate with driveshaft coupler..	7.5	<i>clutch.</i>
7/13	Cut oil grooves into the clutch shaft bushing and installed it into the shaft; Machined the other end of the clutch shaft to fit with the driveshaft coupler; Machined new key for clutch shaft.	5	<i>clutch.</i>
7/15	Helped Shawn install camshafts and timing chain.	1.5	<i>eg.</i>
Total Hours (Matt)		38.25	

#### LABOR (Keith):

7/1	Reviewed final crankshaft fitting issues.	2	<i>eg. ✓</i>
7/2	Started polishing main bearings.	1	<i>eg. ✓</i>
7/6	Helped with setting proper end play on crankshaft.	2	<i>eg. ✓</i>
7/7	Helped Matt with setting shoulders on rod cap nuts to allow correct torque and correct cotter-pin alignment.	1	<i>eg. ✓</i>
7/9	Helped Shawn with installing camshafts and final fitting them; Reviewed cam side cover plates and the threaded holes are very worn and loose; These should be timeserted/helicoiled.	2	<i>cam.</i>
7/10	Reviewed sump fit on crankcase and clearances required for oil scroll to work properly; Showed Shawn how the motor mounts and front cover had to be adjusted to get correct clearances for sump and scroll; Helped Shawn with assembly.	2.5	<i>eg. ✓</i>
7/13	Noticed clutch shaft was too large for driveshaft flange on back end and had Matt machine to fit correctly; Modified the front cover so its lower edge fits flush with the block.	2	<i>clutch.</i>
Total Hours (Keith)		12.50	

#### SUBLET:

Mike's Balancing - Balanced rotating assembly. \$375.00

#### SUMMARY:

	AMOUNT
Labor - Shawn (\$95/hour)	\$3,063.75
Labor - Matt (\$95/hour)	\$3,633.75
Labor - Keith (\$95/hour)	\$1,187.50
Labor - Ross (\$95/hour)	\$0.00
Sublet	\$375.00
Parts	\$0.00
Shipping	\$0.00
Shop Supplies	\$709.65
<b>TOTAL DUE</b>	<b>\$8,969.65</b>

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30-Jun-15

INVOICE # 06301509  
1929 Lagonda # 9517

## LABOR (Shawn):

6/19	Cleaned engine and parts and prepared for assembly; Installed motor mount legs.	1.00	Eng.
6/26	Set engine on stand and cleaned for final assembly; Began final assembly process.	8.00	Eng.
6/29	Installed bearings and crankshaft; Plastigauged the bearings to confirm clearances; Installed new crankshaft end caps.	4.50	Eng.
Total Hours (Shawn)		13.50	

## LABOR (Matt):

6/16	Set up for, and started align-boring crankshaft main bearings.	9.00	Eng.
6/17	Align-bored crankshaft bearings and started setting end play.	9.00	Eng.
6/18	Machined oil grooves in bearings; Fit crankshaft to block and set the end play; Machined two crankshaft end sleeve/bushing spacers.	7.50	Eng.
6/29	Machined crankshaft plugs for fitment.	1.00	Eng.
Total Hours (Matt)		26.50	

## LABOR (Ross):

6/16	Helped Matt position engine block on the mill and set it up for align-boring; Helped with setting up the cutters in the boring bar and helped position angle plates.	3.00	Eng.
6/17	Helped Matt remove the engine block from the mill and started setting it up on the engine stand.	0.50	Eng.
Total Hours (Ross)		3.50	

## LABOR (Keith):

6/26	Performed final descaling of block internals; Started final fit of crankshaft.	3.00	Eng.
Total Hours (Keith)		3.00	



**SUMMARY:**

	<b>AMOUNT</b>
Labor - Shawn (\$95/hour)	\$1,282.50
Labor - Matt (\$95/hour)	\$2,517.50
Labor - Keith (\$95/hour)	\$285.00
Labor - Ross (\$95/hour)	\$332.50
Sublet	\$0.00
Parts	\$0.00
Shipping	\$0.00
Shop Supplies	\$485.93
<b>TOTAL DUE</b>	<b>\$4,903.43</b>

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15-Jun-15

INVOICE # 06151509  
1929 Lagonda # 9517

## LABOR (Matt):

6/9	Worked on fitting new caps to block and machined for bearing fitment; Found a crack in the block where the main bearing cap stud was located and sent it to Ross for welding.	8.50	sig. ✓
6/10	Ground the repair welds on the block to smooth them out and fit the bearing to that journal; Machined caps to get correct block fitment; Machined pins to hold bearings from rotating; Machined bronze bearing shells to fit new caps.	9.00	4 1/2 - 4 1/2
6/11	Continued preparing block, shell bearings, and caps for crankshaft; Machine oil port holes in shells. Machine oiling grooves in babbitt; Set crankshaft position and back lash	9.00	sig. ✓
6/15	Finished preparing the block, shell bearings, and caps to be mated together; Rough-bored the babbitt.	4.25	sig. ✓
Total Hours (Matt)		30.75	

## LABOR (Ross):

6/9	Cleaned cracked area; Sprayed crack exposor onto area to expose the complete crack; Ground 'u' groove into the area around the crack; Heated the surrounding area to 350 degrees; Welded crack with TIG welder and silicon bronze rod; Ground weld and confirmed good adhesion; Warmed block back up and completed weld and placed in oven overnight.	4.00	stud
6/11	Brazed the sides of the bearing shells to build up the bronze per Keith's measurements.	0.50	stud
Total Hours (Ross)		4.50	



**LABOR (Keith):**

6/8	Received main bearing caps and inspected and measured them.	1.00	<i>Eng. ✓</i>
6/9	Reviewed cracked block and determined best repair method; Measured/managed Matt's fitting of main bearing caps to block and shells.	1.50	<i>Crack ✓</i>
6/10	Reviewed bearing shells and reviewed the welded crack on the block; Cleaned up weld and removed stud.	1.00	<i>Engin ✓</i>
6/11	Reviewed problem of side-play in main bearings and laid out thickness of bronze bead to lay out in the bearings.	1.00	<i>Engin ✓</i>
<b>Total Hours (Keith)</b>		<b>4.50</b>	

**SUMMARY:**

	<b>AMOUNT</b>
Labor - Matt (\$95/hour)	\$2,921.25
Labor - Keith (\$95/hour)	\$427.50
Labor - Ross (\$95/hour)	\$427.50
Sublet	\$0.00
Parts	\$0.00
Shipping	\$0.00
Shop Supplies	\$339.86
<b>TOTAL DUE</b>	<b>\$4,116.11</b>

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Graham Wallis  
1460 Padre Lane  
Nipomo, CA 93444

31-May-15

INVOICE # 05311509  
1929 Lagonda # 9517

## LABOR (Shawn):

5/4	Cleaned parts for assembly; Painted head and open plain covers; Set up and installed water pump on rear of timing cover.	6.25	Eng.
Total Hours (Shawn)		6.25	

## LABOR (Matt):

5/6	Machined new castle nuts for main bearing caps.	3.50	Caps.
5/8	Machined sleeves for cam bores.	4.00	Cam.
5/11	Worked on fitting the cams with new bearing to the sleeved cam bores in the block.	5.00	Cam.
5/12	Finished fitting cams to the block.	6.00	Cam. Eng.
5/26	Machined babbitt on main bearing shells and began fitting shells to mains and main caps.	3.50	Babb. Eng.
5/27	Continued with babbitt and discovered cracks on some mains while preparing them for assembly; Deep-cleaned the main bearing caps to inspect them and found that some had cracks that when probed were flaking metal off; It appears these have been repaired in the past by thermal or 'flame' spaying; Reviewed problem with Keith and priced out machining new caps to replace the bad ones.	7.75	Caps.

Total Hours (Matt) 29.75

## LABOR (Keith):

5/8	Helped Matt with cam bearings to sleeves fitment.	2.00	Cam
5/27	Inspected main bearing caps as some were falling apart, and determined that at least three of them need to be replaced.	1.00	Caps.
Total Hours (Keith)		3.00	



**SUBLET:**

**Sandy's Upholstery** - Selected closest material to give patina-look of rest of interior and fabricated a new lower seat cover in same style as original. \$355.25

**Hope Fabrication** - Machined new cam bearings for the rebuilt camshafts. \$2,500.00

**Total Sublet:** \$2,855.25

**PARTS:**

**Napa** - engine paint \$19.16

**Total Parts:** \$19.16

**SUMMARY:****AMOUNT**

Labor - Shawn (\$95/hour) \$593.75

Labor - Matt (\$95/hour) \$2,826.25

Labor - Keith (\$95/hour) \$285.00

Labor - Walter (\$95/hour) \$0.00

Sublet \$2,855.25

Parts \$19.16

Shipping \$0.00

Shop Supplies \$407.55

**TOTAL DUE** \$6,986.97

- 355.25.

6631.72

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Graham Wallis  
1460 Padre Lane  
Nipomo, CA 93444

30-Apr-15

INVOICE # 04301509  
1929 Lagonda # 9517

## LABOR (Shawn):

4/2	Received new clutch kit from England and inspected the parts; Honed the cylinder walls in the block for the new pistons.	3.00
4/20	Discovered and documented missing parts from clutch kit; Organized parts for reassembly.	1.00
4/30	Began fitting and assembling the sub-components; Replaced sump gaskets and torqued the plates; Prepared the block for the cams; Made required gaskets; Began engine assembly.	9.00
<b>Total Hours (Shawn)</b>		<b>13.00</b>

8 1/2 - 4 1/2

50/50  
Eng Cam.

## LABOR (Matt):

4/3	Machined and honed the connecting rods for correct piston wrist pin clearance; Machined dyno plate for engine.	3.00
4/24	Machined alignment plugs and rod; Checked the cam bores for straightness; Confirmed the cam bores in the block are straight and true; Saved plugs and rod for later use for align-boring cam bearings.	7.75
<b>Total Hours (Matt)</b>		<b>10.75</b>

Eng.

Cam.

## LABOR (Keith):

4/1	Set the crankshaft in the block and reviewed main bearing shells and babbitt for fit; Received the new pistons and measured them against the block to check for correctness.	3.00
4/27	Reviewed cam bearing issues; Since the block checked out to have perfectly straight cam bores, reviewed the new Kent camshafts; learned the camshafts were not made straight and the cam shop reported that the cams were poorly made and they are repairing them to a higher standard.	2.00
<b>Total Hours (Keith)</b>		<b>5.00</b>

Eng.

Cam.



**SUBLET:**

**MegaCyle Cams** - Ground two cams to straighten them and worked on the journals to achieve the largest possible consistent diameter on both cams. \$507.60

**Total Sublet:** \$507.60

**SHIPPING:**

**FedEx** - shipping of babbitted shells for retouching \$20.99  
**FedEx** - next-day shipping of camshaft to cam rebuilding shop. \$85.38  
**TNT** - customs duties on clutch parts. \$143.84

**Shipping Total:** \$250.21

**SUMMARY:****AMOUNT**

Labor - Shawn (\$95/hour)	\$1,235.00
Labor - Matt (\$95/hour)	\$1,021.25
Labor - Keith (\$95/hour)	\$475.00
Labor - Walter (\$95/hour)	\$0.00
Sublet	\$507.60
Parts	\$0.00
Shipping	\$250.21
Shop Supplies	\$300.44

**TOTAL DUE** \$3,789.50

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Arias Pistons  
13420 S Normandie Ave  
Gardena, CA 90249  
United States of America

Ph: (310)532-9737

Fax: (310)516-8203

## Invoice

Number: 29941

Date: 27-Mar-15

To

GRAHAM WALLIS / GR1460  
1460 PADRE LANE  
NIPOMO, CA 93444  
United States of America

Ship To

HIGH MOUNTAIN CLASSIC  
601 FIRST STREET  
BERTHOUD, CO 80513  
United States of America

Ph: 805-343-0683

Ph: 970-532-2339

Terms		Due Date	Ship Via	Salesperson	
50% Deposit		27-Mar-15	UPS Red	379NR	
Quantity	Description	Unit Price		Amount	
	PLEASE INSPECT ALL PARTS UPON RECEIPT AND CALL YOUR SALES REPRESENTATIVE IMMEDIATELY TO REPORT ANY ERRORS. MISSING OR INCORRECT PARTS WILL BE SHIPPED THE SAME WAY AS ORIGINAL OR SHIPPED ONLY. NO EXCEPTIONS! ***NO RETURNS OR EXCHANGES AFTER 90 DAYS, NO EXCEPTIONS***				
4 ea	EXOTIC-RESTORATION LATHE DOME LATHE DISH---NO VALVE Packing List: 30102 Shipped On: 27-Mar-15 Part: ERLD0 Ln: 001 SO: 460262 Ordered: 4	T \$132.52		\$530.08	
4 ea	PIN FIT Packing List: 30102 Shipped On: 27-Mar-15 Part: PF Ln: 002 SO: 460262 Ordered: 4	\$4.34		\$17.36	
4 ea	.708x2.204 CHF MED DUTY PIN 7082215 .040" CHAMFER Packing List: 30102 Shipped On: 27-Mar-15 Part: 7082215 Ln: 003 SO: 460262 Ordered: 4	T \$22.17		\$88.68	
8 ea	.708 WIRE USE FOR .675-.740 Packing List: 30102 Shipped On: 27-Mar-15 Part: 708047CW Ln: 004 SO: 460262 Ordered: 8	T \$2.37		\$18.96	
4 ea	INTERNAL MILL, 4 OPERATIONS Packing List: 30102 Shipped On: 27-Mar-15	\$26.92		\$107.68	





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13420 S Normandie Ave  
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United States of America

Ph: (310)532-9737

Fax: (310)516-8203

## Invoice

Number: 29941

Date: 27-Mar-15

To

GRAHAM WALLIS / GR1460  
1460 PADRE LANE  
NIPOMO, CA 93444  
United States of America

Ship To

HIGH MOUNTAIN CLASSIC  
601 FIRST STREET  
BERTHOUD, CO 80513  
United States of America

Ph: 805-343-0683

Ph: 970-532-2339

Terms	Due Date	Ship Via	Salesperson
50% Deposit	27-Mar-15	UPS Red	379NR
Quantity	Description	Unit Price	Amount
4 ea	Part: M4 Ordered: 4 NON STK CYL RING SET Packing List: 30102 Part: NSI-30 Ordered: 4 2.0x2.0x4.0x2.835 CHROME UPS Red  EVERYONE AT "ARIAS PISTONS" THANKS YOU FOR YOUR PATRONAGE PROUDLY MADE IN USA	Ln: 005    SO: 460262  T  Shipped On: 27-Mar-15  Ln: 006    SO: 460262  SubTotal: CALIFORNIA SALES TAX Invoice Total: Amount Paid: Amount Due:	\$131.76            \$69.73 \$964.25 \$61.56 \$1,025.81 \$0.00 \$1,025.81

via email

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(970) 532-2339

Graham Wallis  
1460 Padre Lane  
Nipomo, CA 93444

28-Feb-15

INVOICE # 02281509  
1929 Lagonda # 9517

**LABOR (Shawn):**

2/17	Measured and checked crankshaft for correctness after grinding/polishing and it checked out good; Cleaned crankshaft oil sealing cap areas in counterweights of crankshaft; Installed new caps and finished assembly of crankshaft.	2.50
2/19	Made valve cover studs.	0.50
<b>Total Hours (Shawn)</b>		<u>3.00</u>

**LABOR (Keith):**

2/17	Helped Shawn with measuring and assembly of crankshaft.	1.00
<b>Total Hours (Keith)</b>		<u>1.00</u>

**SUBLET:**

<b>Hope Fabrication</b> - machined babbitted connecting rods to fit the crankshaft.	\$1,200.00
<b>Hope Fabrication</b> - machined new connecting rod small end bushings.	\$750.00
<b>Total Sublet:</b>	<u>\$1,950.00</u>

**SUMMARY:**

	<b>AMOUNT</b>
Labor - Shawn (\$95/hour)	\$285.00
Labor - Matt (\$95/hour)	\$0.00
Labor - Keith (\$95/hour)	\$95.00
Sublet	\$1,950.00
Parts	\$0.00
Shipping	\$0.00
Shop Supplies	\$41.80
<b>TOTAL DUE</b>	<u><b>\$2,371.80</b></u>

Thank you, as always, for your business. Your prompt payment is appreciated.  
A Finance Charge of 1.5% Will Be Assessed On Any Unpaid Balance After 30 Days  
It is important to keep your car insured, as shop insurance doesn't cover the primary causes of claims; it only covers damages from shop negligence.



via email

# HIGH MOUNTAIN CLASSICS

601 1st Street / PO Box 46  
Berthoud, CO 80513  
(970) 532-2339

Graham Wallis  
1460 Padre Lane  
Nipomo, CA 93444

15-Feb-15

INVOICE # 02151509  
1929 Lagonda # 9517

## LABOR (Shawn):

2/2	Torqued main caps on block to check for roundness without babbitt; Helped Keith with measurements on block; Cleaned and prepared head for valve installation.	3.00	Eng.
2/4	Lapped valves in head; Installed valves, springs, keepers, etc.; Performed final cleaning on block and prepared it for machine work of making bearing shells.	7.00	Head. Eng.
2/5	Measured combustion chamber volumes on both heads and calculated volumes of combustion chambers and change in volume from change of pistons: "old" head was 87cc, and "new" head was 92cc, so 5cc larger combustion chamber in "new" head due mostly to less material decked off of the bottom of the "new" head. New piston's larger dome reduces the volume by 14cc compared to old piston, so net reduction of combustion chamber with "new" head and new pistons is ~9cc, which will yield a higher compression ratio.	1.00	Eng.

Total Hours (Shawn) 11.00

## LABOR (Keith):

2/2	Measured main bearing caps for offset to get dimensions for machining top shells properly. *	1.00	Bab.
2/10	Machined two new studs for head for water outlet and installed threaded inserts to repair head; Installed new studs.	2.00	Eng.

Total Hours (Keith) 3.00

## SUBLET:

Mile High Crankshaft - Removed oil seal plugs; Ground crankshaft rod journals and main bearing journals; Cleaned, straightened and polished crankshaft.	\$343.00
---	----------

Total Sublet: \$343.00

**PARTS:**

**British Tools** - threaded inserts and repair kit to repair block for water outlet studs.

**AMOUNT**

\$94.50

*Eggs***Total Parts:**

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\$94.50**COST FOR MAKING BABBITTED MAIN BEARING SHELLS FOR BLOCK**

**Hope Fabrication** - machined new main bearing shells from bronze.

\$1,907.13

**Patrick Ottis** - babbitting of 5 main bearing shells.

\$1,230.00

**MacMaster-Carr** - bronze stock for main bearing shells.

\$201.06

**FedEx** - insured shipping of main bearing shells to get them babbitted.

\$24.27

**Total Block Babbitting Cost:**

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\$3,362.45

**Credit, as Block Babbitting Cost was capped at \$2500.**

~~\$862.45~~**Total Adjusted Block Babbitting Cost:**

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\$2,500.00**SUMMARY:****AMOUNT**

Labor - Keith (\$95/hour)

\$285.00

Labor - Walter (\$95/hour)

\$0.00

Labor - Shawn (\$95/hour)

\$1,045.00

Sublet

\$343.00

Parts

\$94.50

Block Babbitting Cost

\$2,500.00

Shop Supplies

\$126.30

**TOTAL DUE**

---

**\$4,393.80**

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Graham Wallis  
1460 Padre Lane  
Nipomo, CA 93444

31-Jan-15

INVOICE # 01311509  
1929 Lagonda # 9517

## LABOR (Shawn):

1/13	Picked up block from deep cleaning; Performed final clean up of block with vinegar and solvent to remove deep cleaning chemicals; Chased all threads.	2.50	Eng.
1/27	Received, cleaned up, and bead blasted the second head; Removed the rusted head outlet studs from head and cleaned threaded holes in the head and inspected them, and they will need to be drilled, and rethreaded; Inspected second head and found the valve seats are pitted and need to be recut and valve guide bosses have cracks from improper removal of guides, but they are still plenty strong to work; Reveiwed both blocks with Jim and determined best to use the second block.	4.25	Head
1/30	Transferred all plumbing from original head to new head after thorough cleaning.	1.25	Head.

Total Hours (Shawn) 8.00

## LABOR (Keith):

1/13	Reviewed crankshaft issues and measured and concluded building it up won't work. Checked diameter of bearings in block to make shells and began drawing up shell design for machining to estimate the shell bearing babbitt option.	2.00	Babbitt.
------	---	------	----------

Total Hours (Keith) 2.00

## SUBLET:

<b>Automotive Machine Supply</b> - hot tanked the block and jet washed it to clean it.	Eng.	\$74.25
<b>Patrick Ottis Co.</b> - Babbitted four connecting rods.	Eng.	\$628.43
<b>US Performance</b> - Removed old guides from second head and installed new guides; Performed a three-angle cut on the valve seats; Decked head just enough to make it perfectly flat and to allow measurments, and can deck more later if desired.	Head.	\$482.06

Total Sublet: \$1,184.74

## SHIPPING:

<b>FedEx</b> - insured shipping of connecting rods to get them babbitted.	\$28.72
---	---------

**SUMMARY:**

	AMOUNT
Labor - Keith (\$95/hour)	\$190.00
Labor - Walter (\$95/hour)	\$0.00
Labor - Shawn (\$95/hour)	\$760.00
Sublet	\$1,184.74
Parts	\$0.00
Shipping	\$28.72
Shop Supplies	\$104.50
<b>TOTAL DUE</b>	<b>\$2,267.96</b>

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Graham Wallis  
1460 Padre Lane  
Nipomo, CA 93444

31-Dec-14

INVOICE # 12311409  
1929 Lagonda # 9517

## LABOR (Shawn):

12/5	Cleaned crankcase and prepared it for deep cleaning; Cleaned engine parts; Removed head studs from crankcase, and found the center studs went all the way through into the water jacket and were very corroded and took extra time to remove without risking any damage to the crankcase.	7.75
12/8	Removed the aluminum motor mount arms from the crankcase and cleaned them up.	1.75
12/18	Disassembled, cleaned, reassembled, and resealed the water pump and the oil pump;	5.25
12/29	Made gaskets; Cleaned and inspected parts; Worked on repairing loose rivets on left-side motor mount-to-chassis connection including: Protecting surrounding areas, heating rivet heads and hammering them while having the opposite ends of the rivets held solid. Repeated this process several times to get tight and secure clamping forces from all of the rivets, then repainted the areas that were heated up.	5.50
Total Hours (Shawn)		20.25

## LABOR (Keith):

12/5	Reviewed babbitt issues with crankcase since babbitt is applied directly onto crankcase without bearing shells, and looked into making shells or a jig for the babbitt.	2.00
12/16-19	Measured rod big ends and main bearings to document out-of-roundness and dimensions; Took pictures of pistons and measured them and wrote all dimensions on pictures per Graham's instruction; Made video of work clutch drive splines; Ordered hardware for engine.	3.25

Paint 1/15.

✓  
1.8 - 2.25.

✓  
Bab.

✓  
Bjig

12/22	Reviewed crankshaft test results and the crankshaft tested with no cracks; Measured crankshaft and reviewed build-up options in order to be able to reuse existing babbit in block, and determined we would do that and avoid rebabbing the block.	1.50	<i>Eggin</i>
12/29	Helped Shawn bucking the motor mount-to-chassis rivets; Machined custom screw for waterpump; Machined new starter pilot bushing.	3.00	<i>Probs. Eggin.</i>
<b>Total Hours (Keith)</b>		<u>9.75</u>	

**SUBLET:**

<b>Intermountain Testing</b> - mangaflux testing of connecting rods, which checked out ok.	\$150.00
<b>Total Sublet:</b>	<u>\$150.00</u>

**SUMMARY:**

	<b>AMOUNT</b>
Labor - Keith (\$95/hour)	\$926.25
Labor - Walter (\$95/hour)	\$0.00
Labor - Shawn (\$95/hour)	\$1,923.75
Sublet	\$150.00
Parts	\$0.00
Shipping	\$0.00
Shop Supplies	\$347.56
<b>TOTAL DUE</b>	<u><b>\$3,347.56</b></u>

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via email

# HIGH MOUNTAIN CLASSICS

601 1st Street / PO Box 46  
Berthoud, CO 80513  
(970) 532-2339

Graham Wallis  
1460 Padre Lane  
Nipomo, CA 93444

30-Nov-14

INVOICE # 11301409  
1929 Lagonda # 9517

## LABOR (Shawn):

11/17	Drained coolant and removed radiator; Started removing linkages and engine ancillaries for engine removal.	2.00	* ? Duplicate
11/18	Began engine disassembly on stand.	1.00	
11/19	Continued with engine disassembly including, cleaning parts, inspecting parts, and tagging and bagging parts.	8.25	
11/20	Continued with engine disassembly including, cleaning parts, inspecting parts, and tagging and bagging parts.	7.50	
11/21	Continued with engine disassembly including, cleaning parts, inspecting parts, and tagging and bagging parts.	8.00	
11/24	Continued with engine disassembly including, cleaning parts, inspecting parts, and tagging and bagging parts.	5.75	
11/25	Completed engine disassembly.	7.75	
11/26	Finished labeling, organizing, and storing engine parts.	2.25	
Total Hours (Shawn)		42.50	42

## LABOR (Keith):

11/20	Helped Shawn with camshaft removal and revisited how three years ago we have to make a spacer to get proper alignment of camshaft in block, which caused difficulty in disassembly, so we should align-bore the block for proper repair; Inspected the head and its cracks and reviewed some welding options; Reviewed clutch assembly and clutch friction pad surfaces and metal wear surfaces are all in good shape and don't need replaced, but the clutch disc is riveted to a splined shaft, and that shaft and the coupler that goes over it have very worn splines that are about to fail.	4.50	
Total Hours (Keith)		4.50	

**PARTS:**

**MGGY Weld** - SSF6 silver solder for exhaust manifold crack  
welding repair.

**AMOUNT**  
\$75.00

**Total Parts:**

**\$75.00**

**SUMMARY:**

Labor - Keith (\$95/hour)  
Labor - Walter (\$95/hour)  
Labor - Shawn (\$95/hour)  
Sublet  
Parts  
Shipping  
Shop Supplies

**AMOUNT**  
\$427.50  
\$0.00  
\$4,037.50  
\$0.00  
\$75.00  
\$0.00  
\$446.15

**TOTAL DUE**

**\$4,986.15**

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# HIGH MOUNTAIN CLASSICS

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(970) 532-2339

Graham Wallis  
1460 Padre Lane  
Nipomo, CA 93444

15-Nov-14

INVOICE # 11151409  
1929 Lagonda # 9517

## LABOR (Shawn):

11/11	Got the car in the shop and put it up in the air; Drained coolant and removed radiator; Started removing linkages and other engine ancillaries in preparation for engine removal from chassis and photo-documented the process.	5.00
11/12	Continued with engine removal process.	7.25
1/13	Finished engine removal from chassis, installed the engine on the engine stand, drained the oil, and started cleaning the engine; Cleaned engine bay and chassis and noticed one motor mount bracket has rivet that is loose and will need to be re-riveted.	4.50

Total Hours (Shawn) 16.75

## SUMMARY:

	AMOUNT
Labor - Keith (\$95/hour)	\$0.00
Labor - Walter (\$95/hour)	\$0.00
Labor - Shawn (\$95/hour)	\$1,591.25
Sublet	\$0.00
Parts	\$0.00
Shipping	\$0.00
Shop Supplies	\$143.21
<b>TOTAL DUE</b>	<b><u>\$1,734.46</u></b>

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**1929 LAGONDA**  
**ENGINE REBUILD**

**2014**

Sympathetic rebuild using as many of the existing components as possible

**Top end & timing**

- As this work was done in 2012 there should be little that needs doing.
- I intend to replace with a new head when they are remanufactured late 2015 so minimum work unless it's needed.
- However as the head needs lifting it seems prudent to fit new head studs & nuts.
- If needed
  - Lap in the existing valves or replace.
  - Replace valve guides if worn.
- If it is possible to calculate the compression ratio, what would it take to skim the head to increase compression ratio to 7.5 / 1?

**Cylinders & pistons**

- When I last lifted the head 3 years ago the bores were good
- Compression last year was excellent
- No oil usage.
- Unless there is any damage to the pistons rings or bores I would prefer not to replace the pistons or rebore.

**Bottom end**

- Crack test, balance and regrind crankshaft
- Crack test connecting rods
- Babbitt bearings
- Little end bearings
- Balance assembly with flywheel & clutch
- Replace rear oil seal. **Leaking badly.**
- Big end and main bearing bolts and nuts are available if required.
- Big end sludge plus are available if required.

**Heads up.** When you drop the sump can you mark the screen. I cannot remember why but the position of the screen is critical. Otherwise cannot generate oil pressure.



## **Clutch**

- Reassemble with new pressure plate coming from the club
- Others parts if worn can be purchased from the club if necessary but rebuilt with new parts only 2 years ago.
- New clutch friction linings coming from the club

## **General**

- Clean and descale all waterways.
- Paint engine
- Coat manifold?
- When replacing engine, is possible to reroute choke cable to make it easier to use?
- The positioning of the carbs gives very poor breathing, is there any way the carbs can be moved closer to the engine?. Alternatively what would it cost to reproduce the hood side panel to cut holes for the carbs to breath?

## **Upholstery**

- Sympathetically reproduce driver's seat squab

## **Parts provided**

- 25 - Cylinder head studs
- 14 - Cylinder head nuts
- 8 - Valves
- 8 - Valve guides
- 8 - Spare thimbles & collets for valve stems
- 1 - spare rocker arm (all replaced last year)
- 2 - rocker arm spacers
- 1 - spare rocker arm pivot
- 2 - Cylinder head gaskets
- 4 - rocker cover gaskets
- 2 - exhaust flange gaskets
- 2 - carb gaskets
- 8 - cork gaskets for head
- 1 - spare (used) double valve spring
- Manifold gaskets (engine & pipe flange)
- Side water gasket

I'm going to order these from the club and have them sent to you.

- Sump gasket (if available)
- Engine mountings (you replaced the radiator mountings 2 years ago)
- Clutch parts
  - Friction linings & rivets
  - Pressure plate



**JOE CURTO, INC.**

Replacement Parts for SU &amp; Zenith Carburetors

22-09 126th Street

College Point, NY 11356

Phone (718) 762-SUSU Fax (718) 762-6287

E-mail joecurto@aol.com

**Invoice**

Date	Invoice #
3/19/2012	3084

Bill To
Graham Wallis 1460 Padre Lane Nipomo, Ca 93444 USA 805 458-9650

Ship To
Graham Wallis 1460 Padre Lane Nipomo, Ca 93444

P.O. Number	Terms	Ship Date	Ship Via
	Due on receipt	3/19/2012	UPS

Quantity	Our Item #	Your #	Description	Price Each	Amount
2	HV3 rebuild		Pre-war Lagonda 1 1/4 bronze bodied horizontal flange carbs rebuilt	287.50	575.00
2	Return sprin...		pre-war shaft rtn spring assy	20.00	40.00
2	WZX 1320		SU butterfly 1 1/4 solid	13.50	27.00
1	Throttle stop			12.50	12.50
1	AUC 3006		Choke lever to match original	25.00	25.00
1	auc 1159		H type float bowl flat mount short arm	25.00	25.00
1	AUC 1160 co...		H type bowl cover inlet on left looking in Pre war used to match other cover	45.00	45.00
2	AUC 1245		Vent cap brass pre-war	5.00	10.00
2	AUC 4667		Choke Return Spring - H Type Manual	4.25	8.50
2	AUC 2139		Fuel Inlet / Banjo Bolt screen	4.50	9.00
4	AUC 2175 B...		Dome Screw (Brass)	1.40	5.60
2	AUC 4334		Shaft Connector	12.50	25.00
1	Banjo Fitting		assorted banjo & brass T fitting to make fuel pipe	25.00	25.00
1	E-49		choke arm connector bar	22.50	22.50
1	Cable Stops		Cable Stops	3.50	3.50
	freight - Non ...		ups ship ups groundf insured 4000.00 to High mountain classics return customer SU shop manual	57.00	57.00

**PAY THIS INVOICE**  
Printed  
**NO STATEMENT WILL**  
**BE SENT**

**Subtotal** \$915.60**Sales Tax (0.0%)** \$0.00**TOTAL** \$915.60

WWW.BRITISHSUPERIOR.COM  
WWW.JOECURTO.COM



via email

# HIGH MOUNTAIN CLASSICS

601 1st Street / PO Box 46  
Berthoud, CO 80513  
(970) 532-2339

Graham Wallis  
1460 Padre Lane  
Nipomo, CA 93444

April 30, 2012

**INVOICE # 04301209**  
**1929 Lagonda # 9517**

**LABOR (Mike):**

**HOURS**

4/16	Replaced water pump after fixing the leak; Replaced carbs and fuel lines; Restarted engine and found small water leak at petcock at bottom of radiator; Installed hood aprons; Determined exhaust system wasn't safe as many joints were loose and leaking exhaust gasses; Removed exhaust downpipe and muffler; Flange gasket had failed causing exhaust pipe inlet to leak; Modified exhaust pipe inlet and outlet for tighter fit; Installed new hardware and gasket for header flange; Extended the length of the downpipe by 3" and reinstalled downpipe and muffler with new clamps; Checked operation of kill switch and wiring.	7.00
4/17	Found a new fuel leak at old solder joint that was failing at the forward end of the chassis hard fuel line; Made a new fitting and repaired the line and fixed the leak; Cleaned the underside of motor with cleaner; Raised car on jack stands and ran motor to inspect for any other leaks.	5.50
4/18	Replaced flywheel cover on firewall and re-checked for oil leaks.	1.00
4/19	Set carburetor jet nuts to start tuning; Test drove car and found one flat spot so made adjustments and re-balanced the carbs; Test drove the car again; Found the car pulls left under braking and found two more small oil leaks to repair; Re-set valve lash at .004" and checked spark plugs; Adjusted throttle arms on linkage to eliminate front carb from sputtering; Fit new return springs and cleaned up engine compartment.	5.50

3.



4/20 Removed the generator and generator adaptor to front cover, since it was discovered there was a small oil leak there; Cleaned parts and made a new gasket for the adaptor; Re-installed generator and adaptor on engine; Test drove the car again and the brakes feel great after Jerry's latest brake adjustments; Removed the tie rod and disassembled in preparation for alignment. 8.00

4/21 Inspected and greased the tie rod ends; Re-set the length of the tie rod to 48 13/16 ball center to ball center; Replaced tie rod on chassis; Adjusted toe to 1/8" toe-in; Tightened and cotter pinned all fasteners; Test drove the car and it feels much better with this alignment. 4.00

4/23 Cleaned up hood and installed on the car; Made new radiator cap gasket; Waxed hood and fenders; Re-wired under-dash fuel pump switch; Gathered up Graham's old parts and books and prepared car for shipping. 5.00

Total Hours (Mike) 36.00

#### LABOR (Jim):

4/23 Test drove the car and re-adjusted the carb as they were running too rich. 1.50

Total Hours (Jim) 1.50

#### LABOR (Jake):

4/19 Helped Mike with getting the car running smoother by adjusting the timing and dialing the carbs in. 2.00

4/20 Test drove the Lagonda. Alignment doesn't seem correct yet. 1.00

4/21 Helped Mike with the alignment of the car. 1.00

Total Hours (Jake) 4.00

#### LABOR (Jerry):

4/19 Investigated braking problem with Mike and AJ. 1.00

4/20 The right front pinot arm was installed backwards, explaining why the car would pull left under braking; Disassembled and reinstalled the correct way. 3.5 hours but no charge since this was a shop error. No charge

4/20 Adjusted the brakes all around, and they work excellent now; Investigated oil leak at rear main seal; Test drove several times; Appears that the leak is worse when the oil is closer to the top mark on the dip stick. 3.50

Total Hours (Jerry) 4.50

*this was an assembly error*

**SUBLET:****AMOUNT****PARTS:****Total Sublet**

One extra case of 20W50 Brad Penn motor oil (12 liters/case)  
+ 2 extra liter bottles for a total of 14 liters  
4 gallons gasoline

\$ -  
\$ 131.60  
\$ 15.52  
\$ 147.12

*\$112 per case.  
Buy locally  
\$87 per case*

**SHIPPING:**

Shipping of car to California (reduced by XX to be paid by the shop)

*Est 1200 - 800 me 400 HMC.*

\$ 1,350.00  
\$ 1,350.00

*\$*

**SUMMARY:****AMOUNT**

Labor - Mike (\$95/hour)  
Labor - Jim (\$95/hour)  
Labor - Jake (\$95/hour)  
Labor - AJ (\$85/hour)  
Labor - Jerry (\$95/hour)  
Labor - Victor (\$85/hour)  
Sublet  
Parts  
Shipping  
Shop Supplies

\$ 3,420.00  
\$ 142.50  
\$ 380.00  
\$ -  
\$ 427.50  
\$ -  
\$ -  
\$ 147.12  
\$ 1,350.00  
\$ 480.70

*-?*

**TOTAL DUE THIS INVOICE:**

\$ 6,347.82

Previous due from Invoice 4151209 dated April 15, 2012:

\$ 8,980.31

**TOTAL DUE**

\$ 15,328.13

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# HIGH MOUNTAIN CLASSICS

601 1st Street / PO Box 46  
Berthoud, CO 80513  
(970) 532-2339

Graham Wallis  
1460 Padre Lane  
Nipomo, CA 93444

April 15, 2012

**INVOICE # 04151209**  
**1929 Lagonda # 9517**

**LABOR (Mike):**

**HOURS**

4/2 Checked new lash caps on valve stems and determined they were the wrong size; Installed rebuilt magneto and rough timed at #1 TDC firing; Began installing the four water jacket covers on the block with new gaskets; Went over progress with Graham on his visit; Installed throttle linkage cross shaft; Cleaned and painted magneto advance linkage.

8.00

4/3 Assembled and installed magneto advance linkage; Assembled carburetor linkage; Made four bushings for intake manifold and installed with loctite; Installed throttle arms onto linkage and lockwired ends; Installed choke linkage and cable; Installed carburetors and cross-shaft; Checked for full throttle movement of linkages; Installed fuel manifold and tied it into the main fuel line; Inspected plug wires and cleaned and re-soldered the ends and checked for continuity.

8.50

4/4 Installed plug wires into cap and rounded to spark plugs; Installed waterjacket covers on right-hand side of engine; Disassembled oil pump, inspected, cleaned and reassembled it; Repaired cracks in screen filter housing and cleaned hardware; Reinstalled loose stud with locktite; Make gasket and installed filter in sump; Removed top water neck and hose and cleaned; Replaced fiber washer under the temp gauge fitting; Replaced rubber hose and clamps and refit to the engine.

7.00



4/5	Greased splines and installed new wheels/tires; Removed lower water pipe from radiator and made new top and bottom hoses; Rolled a bead on the end of the lower pipe and replaced clamps; Replaced worn out rubber radiator vibration mounts with new rubbers; Removed choke linkage on front carburetor and modified it to clear the water pipe; Reassembled and checked for proper operation.	5.50	
4/6	Rethreaded six 1/2-28 thread bolts to 1/4 BSF and installed them in cam gears with lockwashers and blue loctite @ 8 ft-lb of torque.	2.00	
4/9	Surface ground tops of used lash caps before installation; Bored ID of lash caps for clearance on valve stems; #2 exhaust valve stem was peened by the rocker, so had to dress it by hand to fit lash cap; Finished setting lash on all cylinders except #2 exhaust (waiting for new rocker); Gapped new spark plugs and installed; Pressured up fuel system and checked for leaks.	8.00	
4/10	Arranged front covers and parts for installation; Test fitted oil pump and generator to front cover; Finished chasing fuel leaks on carburetors; Cleaned up generator; Drilled and safety-wired drain petcock on lower water pipe; Removed drain from bottom of radiator and cleaned and repaired it; Machined three spare thrust washers for rocker arms; Installed the magneto.	8.00	
4/11	Assembled radiator, cleaned it up and it is ready for installation.	1.00	
4/12	Sorted the hardware for and assembled the front engine covers; checked the fit of the adapter and the generator (will not be used, but it is cleaned up and looks attractive).	3.00	
4/13	Removed interior panel and checked TDC mark and pointer on back of flywheel; Installed refurbished exhaust rocker and new shaft on cylinder #2; Performed final installation of front covers and oil pump; Installed oil lines from sump to oil pump; Installed radiator; water lines, and radiator stay; Installed generator.	6.00	
4/14	Routed and soldered end of magneto kill wire and attached it to the magneto; Added oil and primed the pump and oil system. Added water and started the engine; Ran the engine to check for leaks and found a small leak at the water pump connector; Removed the carbs and water pump and fixed the leak.	4.00	2.00
Total Hours (Mike)		61.00	

LABOR (AJ):



4/2

Made gaskets for front timing covers, rocker covers and inspection cover gaskets and glued these gaskets to covers and made them ready for installation.

2.00

Total Hours (AJ)

2.00

**SUBLET:****AMOUNT**

**Hunt Magnetos** - Scope check, complete disassemble, clean and rebuild 3rd magneto; inspect and test all internal parts; reassemble and machine test.

\$ 237.55

Total Sublet

\$ 237.55

**PARTS:**

New trailer hitch and tie-down straps for Graham's trip back.

\$ 57.43

5 Blockely tires, tubes, and balancing.

\$ 1,885.80

Four new NGK spark plugs

\$ 24.25

10 quarts Brad Penn 20W50 motor oil

\$ 94.00

4.9 gallons gas

\$ 20.36

\$ 2,081.84

**SHIPPING:**

Duties on backing plates

\$ 39.77

\$ 39.77

**SUMMARY:****AMOUNT**

Labor - Mike (\$95/hour)

\$ 5,795.00

Labor - Keith (\$95/hour)

\$ -

Labor - AJ (\$85/hour)

\$ 170.00

Labor - Jerry (\$95/hour)

\$ -

Labor - Victor (\$85/hour)

\$ -

Sublet

\$ 237.55

Parts

\$ 2,081.84

Shipping

\$ 39.77

Shop Supplies

\$ 656.15

TOTAL DUE

\$ 8,980.31

Thank you, as always, for your business. Your prompt payment is appreciated.

A Finance Charge of 1.5% Will Be Assessed On Any Unpaid Balance After 30 Days

**It is important to keep your car insured, as shop insurance doesn't cover the primary causes of claims; it only covers damages from shop negligence.**

LAGONDA 2 LITER SPEED (2)

GRAHAM WALLIS

805 343 0683  
805 458 9650 (c)

*to Jim 2012*

1. WHEELS & TYRES

The person who normally rebuilds my wheels cannot get the rims. I suspect I'll need new rims on all five wheels but as we saw they are 3 different spoke configurations. Would appreciate your wheel builders advice.

Left you with the details of rims from Richard Bros UK and NZ.

*\$1500 x 5.  
+ skym.*

*Can you please ask him for a quote rebuilding with old hubs and an alternative of buying new wheels? New spindles are available from the UK as a last resort.*

*+ tyres.*

Blockley Tires are just too wide for the rear so I'm going to stay with the Firestone. (Unless the wheel expert had other options) I'll need 5 tires and new tubes (Offset valves I think). Available at Coker Tires

Mounted and balanced.

2. ENGINE

Nothing major done to the engine since you rebuilt. Changed cylinder head gaskets a couple of times. Last time rebuilt the head with new valves, springs and rockers.

Oil changed (Valvoline Racing 50) every few hundred miles or before every race.

*Can you let me know your views on the condition of the engine and what we should do when you have done the initial "air test"?*

Cylinder head.

I've decided not to go for the downdraft head. It seems so contrary to treasure the car for its originality and then make a change that was not in period.

The head will need rebuilding. They are prone to cracking. I left the spare head that was original on the car. It was cracked and I had it repaired and tested a few years ago. We can choose the better of the two.

If we use the "spare" head it will need skimming. The head on the car has been taken down 60thou plus a later skim to make sure it is flat. I'm told 60 thou increases compression to 7.1 to 1. 100 thou to 8.0 to 1

*Can you test the compression ratio of the existing head before stripping?*



I've ordered new valves, the springs are only a couple of years old. If you think I need new springs let me know. Also ordered new guides.

Use existing rockers but I have ordered new thimbles.

I have new head studs on order. At least one is stripped in the head.

2 head gaskets are in the box.

**Valves and Guides will be shipped from the UK early February.**

#### **Cams**

Cams and bearings are on order and will ship directly to you. They are fast road cams with different timing. Details will be in the book I leave. I'll forward the timing to use.

#### **Timing chains & drive**

Replacement timing chains and connecting links are in the box. I'm hoping I can get new sprockets from the UK. Will know in the next few days. Again shipped directly to you.

**Replacement sprockets on order and will ship to you mid December**

A new fiber drive gear will be in the box. Use if the existing is worn.

Note, If you read anything about the timing. Mine is one of the early engines with an anticlockwise (left) rotation.

#### **SU carbs**

The car came originally with either single or twin SU's or Zenith. Mine is single SU but for years I've been trying to find a matching bronze bodied one. I found almost the correct one last year at Beaulieu. The only difference is the size of the float chamber but Joe Curto in NY or another SU guy should be able to match them.

*Let me know if you want me to work directly with Joe Curto.*

I have new inlet manifolds and gaskets.

The big job new controls. I'll left as many photo's etc of the twin carb set up as I can.

Need double springs on throttle.

#### **Full flow oil filter**

Again it is in the box and diagrams in the folder. We decided to go for the simplified arrangement.

*You were going to test the inlet / outlet to make sure they are correctly marked.*

## Engine / radiator mountings

On order will come directly to you.

## Heads up

When you drop the sump can you mark the screen. I cannot remember why but the position of the screen is critical. Otherwise cannot generate oil pressure.

### 3. CLUTCH.

I relined the clutch and rebuilt with a new pressure plate in July. However it now judders slightly but the drag I talked about earlier has gone.

Can you please check when you take it off. It may need balancing. I'm including a new plate in the unlikely event it is warped.

### 4. RADIATOR.

When the radiator is off the chassis can you please back flush and check it is clear. No issue but just want to check.

New rubber mounting bushes will be in the shipment from UK

New gasket for the radiator filler (Motometer) will be in the shipment from the UK. If it is the wrong size can you please make up a new filler gasket.

### 5. INSTRUMENTS

A lot of work needs doing on the instruments. New Ammeter when rewired and sort out the gas gauge / sender. This will be phase 2.

However can you please add a new oil line to the oil pressure gauge?

### 6. MAGNETO

*Can you please have the two spare mags checked and get a quote for doing whatever work is necessary.*

If we have one or both worked on can you put the best on the car and I'll use the existing as a spare.

### 7. STEERING

There is play in the steering box. Can you please see what can be done. The club is making some parts but I need to know what to order.

The club has the steering shaft and roller or just roller assembly available for Marples box  
[http://lagondaclub.co.uk/spares/acatalog/Parts\\_catalogue\\_Steering\\_45.html](http://lagondaclub.co.uk/spares/acatalog/Parts_catalogue_Steering_45.html)



May jus need adjusting.

If you take the steering box off can you please check the bracket holding the box to the chassis? In the folder market "Steering" there is a diagram showing where cracking has occurred.

If you have to take the steering column out can you run new horn wires (I'll connect later) and see why the A/R and throttle are not working properly.

I will replace track rod ends and other steering parts myself.

## 8. WIRING

I'll rewire next winter. Some fool replaced the Lagonda generator with a VW unit that I have never coupled up. As soon as I find a replacement I'll fit.

## 9. REAR AXIL SEALS

The modern lip seals and instructions on how to fit (may need some machining) are on order. However in case they are not available the regular felt seals are in the box.

If the linings are past redemption because of oil I've put a replacement set in the box. If both sides need doing the second set will be with the shipment from the club. I'm going to rebuild the brakes when I get the car back.

## 10. TONNEAU COVER & CARPET

I've left several photos etc. I'll probably go with just a simple one piece tonneau cover. That can be used in 3 positions. Fully closed.  $\frac{3}{4}$  when there is just the driver and folded behind the front seats when there are two people in the front.

I need to retain the longer stud fasteners behind the rear seat. These take two "lift a dot" fasteners. Tonneau and hood cover.

If the trimmer has any idea how I can secure the rear seat to stop it swinging forward would be glad of some advice.

*Can you please get me an estimate?*

Left some carpet produced by the club. Need a simple carpet on floor to replace existing. Rummer by the pedals. I enclosed several photos. Need to keep it as simple as possible. Not replacing back of seats or the carpet that goes up the sides.

*Can you please get me an estimate?*

I have new floor boards being made. Will be ready when car returns.

## 11. WINDSCREEN

*I'd like your advice on the strip at the bottom of the windscreen and the best way to repair.*

*Can you please get me an estimate?*

I forgot to bring the fillet that goes between the body (scuttle) and the bottom of the windscreen but I can fit this when the car gets back

#### **12. STONE GUARD.**

The stone guard I brought over is missing the fittings. Tried in vain to obtain them. Photos in the books. I've tabbed them "Stone Guard".

Is it possible to fabricate and chrome?

*Can you please get me an estimate?* Probably bottom of the priority list.



via email

# HIGH MOUNTAIN CLASSICS

601 1st Street / PO Box 46  
Berthoud, CO 80513  
(970) 532-2339

Graham Wallis  
1460 Padre Lane  
Nipomo, CA 93444

March 31, 2012

**INVOICE # 03311209**  
**1929 Lagonda # 9517**

**LABOR (Mike):**

		<b>HOURS</b>
3/19	Cleaned oil filter parts and soldered new screen onto filter housing; Cleaned and prepped ends of rear brake cables and hardware; Installed left-rear hub and torqued and installed cotter pin; Began installing right-rear hub and found threads galled, so rethreaded nut and cleaned the threads on the axle.	5.50
3/20	Started on water pump repair reassembly; fabricated new locking tab for right-rear axle nut; Assembled right-rear hub; Assembled left-rear brake cables to arms and did rough adjustment of cables; Installed right-rear brake cables and adjusters; Set rear brake balance; Cleaned both sides and lubed the brake balance box; Fit lower timing chain and shortened to the correct length.	2 00 8.00
3/21	Cleaned left-hand side of engine prior to test-fitting new manifolds and carbs; Removed carb linkage, inspected, and cleaned; Test fitted new manifolds and removed original studs which were the wrong length.	4.50
3/22	Made new studs for intake manifolds and installed into the block; Made manifold balance tube from copper pipe; Mocked up new carburetors and worked on getting throttle and choke linkages to work properly and synchronized.	7.00
3/23	Made up a throttle cross-shaft between the carbs; Began to build up the new throttle linkage, and connected it up to check for proper full and closed throttle positions from the pedal; Removed old/existing copper fuel line and began building new twin carb fuel line set up; Attached choke linkage to twin carbs.	7.50



3/24	Finished building fuel lines for twin carbs; Modified choke cable and housing for best operation; Machined intake manifolds to provide more wrench clearance; Silver soldered balance tubes into new manifolds and glass beaded manifolds.	6.00
3/26	Removed right-rear cam bearing from block; Sealed and installed water passage side plate on left-side of motor; Helped Keith install the sleeves into the block for the front cam bearings; Installed new packing into water pump; Installed water pump drive gear and new lower timing chain; Began final assembly of water pump housing-to-drive gear; Found a mismatch on the shaft and machined it down for proper .005" clearance.	8.50
3/27	Finished assembly of water pump drive and installed water pump back into engine after several fit issues were resolved; Performed final assembly of lower timing chain and set tension; Began intake camshaft installation and found bearings too large on OD; Removed camshaft and bearings for re-machining; Started to fit additional oil and water lines.	8.00
3/28	Re-installed cam bearings after Keith machined .002" smaller on OD, on intake cam; Cam still didn't fit as line bore in cam box/block is incorrect; Installed center bearing only on exhaust cam and test fitted; Installed and disassembled cams in block many times, machining and fitting bearings and sleeves each time until finally getting a good fit on both cams; Cleaned and painted throttle linkage parts and made them ready for final assembly; Removed cams and bearings from block to prep them for final assembly; Removed tach drive gearbox from block and cleaned it.	9.00
3/29	De-burred cam bearings and performed final assembly of intake cam; De-burred exhaust cam bearings; Helped Jerry modify waper pump oiler; Reintalled inlet cam into block; Reassembled exhaust cam and bearings; With both cams installed into block, installed cam bearing lock bolts and jam nuts; Reassembled tach drive gearbox and intalled on block with new gasket; Intalled blanking plate on rear of left-hand side of head with new gasket; Began to install top timing chain and shortened it to the correct length.	9.00
3/30	Continued working on top timing chain installation; Finished aligning cam sprockets with idler sprocket by shifting cams forward or back as needed; Rechecked cams for ease of rotation and tightened cam bearing locating screws; Installed rockers on #4 cylinder; Made a degree wheel and adaptor for the crank snout; Zeroed degree wheel at TDC #1 firing; Roughed in timing on inlet cam at about 107 degre lobe center; Installed fiber drive gear for magneto with new hardware on exhaust cam;	8.50



3/31	Set up exhaust cam and timed at 107 degrees; Rechecked inlet with both cams installed and it was also at 107 degrees; Removed rockers from #4 inlet and exhaust.	5.50
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<b>Total Hours (Mike)</b>	<b>87.00</b>
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**LABOR (Keith):**

3/16	Machined new taper pin for left-front king pin repair	2.00
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3/22	Sorted through water pump parts from original water pump and the extra water pump and selected the best components; Neither shaft will work so machined new shaft and other internals for best fit.	6.50
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6.5

3/23	Continued machining work on water pump shaft rebuilding	1.00
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1.0

3/24	Finished machining shaft, attaching impeller, and rebuilding water pump	6.00
------	---	------

6.0

3/26	Fabricated sleeves to accept resized front cam bearings and installed the sleeves into the block; Machined the new cam bearings to fit cam.	8.00
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3/27	Machined larger bore into defective new front hubs; Modified cam shaft bearings per Mike's request.	4.25
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3/28	Machined and fitted cam bearings to fit into cam box/block with proper alignment so cam can spin freely; Several iterations were required to get smooth operation and spin of exhaust cam.	6.50
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3/29	Machined the tachometer drive to press into the threaded hole in the end of the camshaft. Machined the end of the camshaft and the tach drive gear to receive a pin and pinned the assembly together.	5.25
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<b>Total Hours (Keith)</b>	<b>39.50</b>
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**LABOR (AJ):**

3/16	Cleaned up intake manifold and water pump areas and made new gaskets for both; Pressed in new right-front hub large bearing and assembled related pieces; Cleaned right-front perrot shaft and cam area and re-greased and repaired the seal.	6.50
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3/22	Removed the right-hand side coolant cover from the block and cleaned the threads on the bolts; One bolt was rusted through and broken, so drilled it out and replaced it; Noticed much debris inside block around cylinders and the block and radiator will need complete flushing.	3.50
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3/23	Installed new fuel lines and clamps; Made new gaskets for cam covers, fuel cap, coolant cover, radiator lower neck; Tightened up loose rear upholstery trim; Made new radiator pads; Flushed radiator and slushed the block clean.	7.00
3/28	Cleaned windshield frame; Installed weatherstripping and windshield felt and installed windshield; Started making several gaskets for engine; Cracks found around cam chain thrust adjuster.	6.00
3/29	Adjusted seat frames and installed seats; Finished making front engine cover gaskets; Cleaned and prepped the front engine covers for final installation; Cleaned and conditioned the interior leather; Installed seat belts.	6.00
<b>Total Hours (AJ)</b>		<b>29.00</b>

**LABOR (Jerry):**

3/26	Assembled and installed left-front spindle and king pin; Installed new perot shaft, new backing plate, and new brake shoes; New right-front backing plate which arrived today, so decided to replace old one with the new one; Installed new right-side perot shaft; Began making the new oil filter element from woven brass screen.	7.50
3/27	Finished soldering oil filter together; Installed bearings into front hubs and installed drums to hubs; Checked arc radius of brake shoes to drums and found they were high in the center, so removed all front shoes and re-arched the linings, then re-installed shoes and drum assemblies onto the front spindles.	5.50
3/28	Fabricated water tube from water pump to back of block using fittings from the original; Helped AJ set the windshield in the frame; Wood spacers beneath the window needed spacers, so began making spacers to trim out the windshield ends.	5.50
3/29	Finished making spacer shims for filler piece below windshield and adjusted for proper fit and installed; Made oiler to water pump modification that was required to clear intake manifold and carb flanges for dual carb set up; Installed balance tube and intake manifolds to engine.	4.50
<b>Total Hours (Jerry)</b>		<b>23.00</b>

**SUBLET:**

**AMOUNT**



<b>Wheel Tech</b> - Six wheels, 5x2.75, including making drawings, manufacture, shipping, customs, shipping, and powder coating. \$6220.50-\$2000 deposit.	\$ 4,220.50
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<b>Total Sublet</b>	<b>\$ 4,220.50</b>
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**PARTS:**

Woven brass wire screen for making oil filter	\$ 48.18
Second new outer race for second front hub bearing	\$ 73.71
Fuel line and gasket material	\$ 43.55
Fuel line hardware and brass for balance pipe	\$ 12.68
	<b>\$ 178.12</b>

**SHIPPING:**

Exchange of two outer hub bearings for oversized ones	\$ 9.13
Shipping for 3rd magneto for rebuilding	\$ 28.00
	<b>\$ 37.13</b>

**SUMMARY:**

	<b>AMOUNT</b>
Labor - Mike (\$95/hour)	\$ 8,265.00
Labor - Keith (\$95/hour)	\$ 3,752.50
Labor - AJ (\$85/hour)	\$ 2,465.00
Labor - Jerry (\$95/hour)	\$ 2,185.00
Labor - Victor (\$85/hour)	\$ -
Sublet	\$ 4,220.50
Parts	\$ 178.12
Shipping	\$ 37.13
Shop Supplies	\$ 924.28

**TOTAL DUE**

**\$ 22,027.53**

Thank you, as always, for your business. Your prompt payment is appreciated.  
 A Finance Charge of 1.5% Will Be Assessed On Any Unpaid Balance After 30 Days  
**It is important to keep your car insured, as shop insurance doesn't cover the primary causes of claims; it only covers damages from shop negligence.**

via email

## HIGH MOUNTAIN CLASSICS

601 1st Street / PO Box 46  
Berthoud, CO 80513  
(970) 532-2339

Graham Wallis  
1460 Padre Lane  
Nipomo, CA 93444

March 15, 2012

**INVOICE # 03151209**  
**1929 Lagonda # 9517**

**LABOR (Mike):**

3/1 Removed bushings from large duplex sprocket for rebushing of sprockets; Made new water neck gasket; Cleaned hardware and bushings from duplex-sprockets; Began removing old oil pressure line from engine to gauge; Removed oil cross tube at rear of head and two banjo bolts; Cleaned all parts for crossover oil line; Made new end for engine side of oil pressure line to solder onto new line, as the old one was damaged; Removed end from gauge side of line to be reused; Cleaned all parts for soldering and reassembly.

**HOURS**

**7.00**

3/2 Reinstalled cross-over pipe to rear of motor with new fiber washers; Made up replacement oil pressure line and installed it on the car; Began cleaning front of engine inside cam tower; Removed crankshaft snout and gear with puller and continued cleaning inside of gear tower.

**7.50**

3/5 Measured new cam bearings and determined their OD was too small on front journal only; Need to order another set; Determined sleeving solution with Keith and Victor; Dressed the crank snout with a stone and emery paper to ensure proper fit with new sprocket, assembled, and torqued new sprocket onto crankshaft and installed new cotter pin; Began assembling new sprockets on chain tensioner assembly with Keith's new idler sprocket bushings.

**7.50**



3/6      Cleaned and stored old cams; Removed drive gear from old exhaust cam; Cleaned new rockers and shafts; Finished assembling the two sprockets on the chain tensioner assembly and installed into gear case; Mocked up new timing chains for correct length; Removed water pump support, casting, hardware, oil slinger and thrust washer and cleaned all.

7.50

3/7      Finished cleaning water pump support and related parts; Cut new gasket for same; Cleaned and mocked up parts for water pump drive; Made new rear axle felt seals for rear end assembly.

6.00

2.00

3/8      Cleaned, prepped, and mocked up all parts for left-rear axle and bearing assembly; then pressed new bearing on axle, installed new felt seals, and bolted up assembly to backing plate. Began the same process on the right-rear side.

7.00

3/9      Finished prepping parts for the right-rear axle and bearing assembly; Pressed new bearing on axle, installed new felt seals, and bolted up assembly to backing plate; Woodruff key slots are narrower on splined hubs than on axles on both sides, so will have to machine the outer parts of woodruff keys; Masked and painted both sides to look nice and prevent rusting; Drained the differential gear oil and refilled and safety-wired drain plug, then thoroughly cleaned the rear end housing and surrounding areas.

7.00

**Total Hours (Mike)**      49.50

**LABOR (Keith):**

3/1      Machined new fiber gear to fit casting.      1.00

3/2      Rebushed idler sprockets under timing cover      2.50

3/13      Modified rear hub-to-axle woodruff keys to fit properly on both sides.      1.25

**Total Hours (Keith)**      4.75

**LABOR (AJ):**

3/2      Cleaned oil lines, filters, and sump; New filter screen will have to be fabricated.      2.50

3/9      Began making new oil filter screens      1.50

3/12      Cleaned sump; removed all old gaskets; Made new gaskets; Installed new gaskets on sump front plate; Installed new right-front brake shoes; Reviewed left-front king pin repair issues.      8.00

3/13	Applied new gaskets to sump and installed and sealed sump; Cleaned left-front steering parts in preparation for kingpin repairs.	3.50
3/14	Made new starter gasket; Cleaned and painted left-front brake actuator; Tightened motor mounts; Adjusted interior trim; Begtan fuel pump replumbing and rewiring.	8.00
3/15	Finished replumbing and rewiring fuel pump system and installed proper switch; Cleaned and bead-blasted parts; Removed old bearing-related parts from original left-front splined hub and installed new bearings and retainers in new hub.	7.00

Total Hours (AJ) 30.50

**SUBLET:**

**Hunt Magnetos** - Scope check, complete disassemble, clean and rebuild 2nd magneto; inspect and test all internal parts; reassemble and machine test.

**AMOUNT**

Total Sublet

\$ 237.55  
\$ 237.55

**PARTS:**

Two new outer races for small front hub bearings  
One new outer race for large front hub bearing  
Two quarts gear oil for differential

\$ 168.86  
\$ 73.71  
\$ 16.39  
\$ 258.96

**SUMMARY:**

Labor - Jerry (\$95/hour)  
Labor - Keith (\$95/hour)  
Labor - AJ (\$85/hour)  
Labor - Mike (\$95/hour)  
Labor - Victor (\$85/hour)  
Sublet  
Parts  
Shipping  
Shop Supplies

**AMOUNT**

TOTAL DUE

\$ -  
\$ 451.25  
\$ 2,592.50  
\$ 4,702.50  
\$ -  
\$ 237.55  
\$ 258.96  
\$ -  
\$ 852.09  
\$ 9,094.84

Thank you, as always, for your business. Your prompt payment is appreciated.  
A Finance Charge of 1.5% Will Be Assessed On Any Unpaid Balance After 30 Days  
It is important to keep your car insured, as shop insurance doesn't cover the primary causes of claims; it only covers damages from shop negligence.





# THE LAGONDA CLUB

Website <http://www.lagonda-club.com>

Telephone 01728 604040

Fax 01728 604570

Email [spares@lagonda-club.com](mailto:spares@lagonda-club.com)

Please reply to

Robin Cooke  
Lagonda Spares  
Johnson's Farm  
Carlton, Saxmundham  
Suffolk IP17 2QW

Mr G Wallis  
1460 Padre Lane  
Nipomo  
California  
93444  
U S A

## Invoice

Invoice Number 5980

Date 03/02/2012

Order Number

Quantity	Stock Code	Description	Unit Price	Net Amount
2	GRS221	Halfshaft woodruff key	11.62	23.24
1	BRK214	Pair rear hubs, 3 7/8 inch location, 2L, 3L 16/80, 14/80	331.07	331.07
1	S1	one BRK213 Front hub	181.00	181.00
2	BRK202	Perrot shaft long LC	147.98	295.96
1	BRK215	Pair of Aluminium Screw Caps for Front Hubs	42.14	42.14

THIS IS NOT A MONTHLY ACCOUNT  
PLEASE PAY BY RETURN. THANKS.  
Spares are sold subject to the Lagonda  
Club's Terms and Conditions of Sale,  
copies of which are available on request.

Total Net	£	948.41
Carriage	£	75.00
VAT Total	£	36.20
Invoice Total	£	984.61

### Axle work on Graham's Lagonda

- Axle seals provided are the outer bearing seals. They are secondary seals and the primary ones are inner side of the bearings.
- Right side bearing-retaining nut was loose, so right hand axle-related parts have been worn from axle moving in and out.
- RR Hub is in rough shape:
  - splines are very worn. Only about 25% of steel left in many areas.
  - Inside the spline the keyway is hammered out at an angle, as if a key of too large a size was used in the last repair.
  - The beveled shoulder where the wheel hub sits on this hub is worn badly.
  - The tapered inside of the hub where the hub presses onto the axle is worn.
- LR Hub is also in rough shape:
  - Splines are worn. Not as bad as right hub, but still rough.
  - The beveled shoulder where the wheel hub sits on this hub is worn badly.

#### New Parts Required:

- Felt axle seal for right side.
- Two felt axle seals for left side, a smaller inner and larger outer one are required.
- The two felt seals provided with the car are the outer bearing seals and will be utilized.
- Two half-moon keys.
- One bearing-retaining nut locking-tab washer.

#### Recommended:

- Magnaflux half shafts.
- Magnaflux old axle hubs if they aren't replaced.
- Replace worn axle hubs.
- Replace wheel hubs on spoked wheels.
- Replace axle bearings.
- Replace left side bearing-retaining nut, as it is compromised from being pounded on in the past.

CALL BOB GATES  
NEW CENTERS

3 - 5/8  
3 7/8

DRUM HOLE



via email

pd  
3/6/12

# HIGH MOUNTAIN CLASSICS

601 1st Street / PO Box 46  
Berthoud, CO 80513  
(970) 532-2339

Graham Wallis  
1460 Padre Lane  
Nipomo, CA 93444

**INVOICE # 02291209**  
**1929 Lagonda # 9517**

February 29, 2012

## LABOR (Victor):

- |      |  |      |
|------|--|------|
| 2/16 | Removed and inspected rockers and determined that newly provided cam bearings were too large for new cams.   | 1.50 |
| 2/17 | Removed exhaust side cam and cam bearings, these are the same as intake side cam and bearings.   | 2.00 |
| 2/20 | Performed more lapping on right rear axle and new hub was required for proper fit; Removed cam adjusters from old cams and installed new sprockets and timing adjusters on new cams; Began installing new magneto fiber gear provided but it will need some machining to fit on cast center. | 3.00 |
| 2/22 | Removed intermediate cam timing sprockets and bushings, and need some work on the bushings.  | 1.00 |

**Total Hours (Victor) 7.50**

## HOURS

## LABOR (Mike):

- |      |  |      |
|------|--|------|
| 2/17 | Disassembled, inspected and cleaned rocker-arm assemblies for hardness testing. Threads on 3 rocker bolts damaged. Hardness tested in low 40s range. | 1.50 |
| 2/28 | Disassembled and inspected old waterpump; Cleaned old water pump and spare water pump parts.   | 1.50 |

## HOURS

2/29

Measured clearances on old and spare water pump shafts and housings; Mixed and matched the best parts; Determined machining work required to requild one good water pump, and will require new shaft be machined up; Pressed bronze bushings out of small idler gear and cleaned parts.

3.50

**Total Hours (Mike) 6.50**

**SUBLET:**

**Brake Warehouse** - Reline four front brake shoes.

**AMOUNT**  
\$ 246.76

**Chamberlain Woodworking** - Repair of windscreen trim

\$ 199.00

**Total Sublet**

**\$ 445.76**

**PARTS:**

**Whisler** - Rear axle bearings

\$ 193.41

Gasket making materials

\$ 12.00

**\$ 205.41**

**SUMMARY:**

Labor - Jerry (\$95/hour)

\$ -

Labor - Keith (\$95/hour)

\$ -

Labor - Jake (\$95/hour)

\$ -

Labor - Mike (\$95/hour)

\$ 617.50

Labor - Victor (\$85/hour)

\$ 637.50

Sublet

\$ 445.76

Parts

\$ 205.41

Shipping

\$ -

Shop Supplies

\$ 138.05

**TOTAL DUE**

**\$ 2,044.22**

**Thank you, as always, for your business. Your prompt payment is appreciated.**

**A Finance Charge of 1.5% Will Be Assessed On Any Unpaid Balance After 30 Days**





# THE LAGONDA CLUB

Website <http://www.lagonda-club.com>

Telephone 01728 604040

Fax 01728 604570

Email [spares@lagonda-club.com](mailto:spares@lagonda-club.com)

Please reply to

Robin Cooke  
Lagonda Spares  
Johnson's Farm  
Carlton, Saxmundham  
Suffolk IP17 2QW

Mr G Wallis  
1460 Padre Lane  
Nipomo  
California  
93444  
U S A

## Invoice

Invoice Number 6011

Date 22/02/2012

Order Number

Quantity	Stock Code	Description	Unit Price	Net Amount
8	VLV209	Valve Rocker pin 2L	19.57	156.56
8	VLV210M	Valve Rocker Machined 2L	84.21	673.68
1	ENG209X	Camshaft bush set undersized	198.01	198.01
1	GRS226	Half shaft felt seal oil seal - OH Series Axle	4.86	4.86
1	VLV211	Valve rocker spacer 2L	4.84	4.84
2	STG204	Front hub felt seal, 2L & 3L	4.79	9.58

...taking card payments into the future

streamline

LY ACCOUNT

URN. THANKS.

to the Lagonda  
tions of Sale,  
able on request.

Total £782.94

CARDHOLDER NOT PRESENT

Retain for your records

AUTH CODE: 264334

Thank You

Total Net £ 1077.53

Carriage £ 30.00

VAT Total £ 0.00

Invoice Total £ 1077.53

VAT REFUND  
OF £294.59

via email

## HIGH MOUNTAIN CLASSICS

601 1st Street / PO Box 46  
Berthoud, CO 80513  
(970) 532-2339

Graham Wallis  
1460 Padre Lane  
Nipomo, CA 93444

February 16, 2012

**INVOICE # 02161209**  
**1929 Lagonda # 9517**

**LABOR (Victor):**

		HOURS
2/8	Removed water pump assembly and disassembled and cleaned the water pump components; New sprocket/water pump shaft is slightly too large for existing bushing.	2.00
2/13	Got rear drums turned; Locktited and bolted new rear axle hubs to drums with new hardware.	2.00
2/14	Lapped old half shaft into new right side axle hub for correct fit; Installed brake backing plates/brakes assemblies to axle tube flanges.	3.00
2/15	Removed intake cam.	1.00
<b>Total Hours (Victor)</b>		<b>8.00</b>

1.00

**LABOR (Keith):**

		HOURS
2/9	Machined down the water pump gear shaft to proper size.	0.75
<b>Total Hours (Keith)</b>		<b>0.75</b>

**SUBLET:**

	AMOUNT
<b>PLAYS Mobile Auto Upholstery</b> - New Tonneau cover and cut/install carpet.	\$ 1,137.99
<b>NAPA</b> - Turned rear drums.	\$ 54.00
<b>Total Sublet</b>	<b>\$ 1,191.99</b>

**PARTS:**

Fuel line tee and related parts	\$ 8.76
	<b>\$ 8.76</b>



**SHIPPING:**

Shipping for front brake shoes for relining	\$ 22.16
Shipping for 2nd magneto for rebuilding	\$ 28.00
	<u>\$ 22.16</u>

**SUMMARY:**

	AMOUNT
Labor - Jerry (\$95/hour)	\$ -
Labor - Keith (\$95/hour)	\$ 71.25
Labor - Jake (\$95/hour)	\$ -
Labor - Mike (\$95/hour)	\$ -
Labor - Victor (\$85/hour)	\$ 680.00
Sublet	\$ 1,191.99
Parts	\$ 8.76
Shipping	\$ 22.16
Shop Supplies	\$ 75.13
<b>TOTAL DUE</b>	<u><b>\$ 2,049.29</b></u>

Thank you, as always, for your business. Your prompt payment is appreciated.

A Finance Charge of 1.5% Will Be Assessed On Any Unpaid Balance After 30 Days

Graham Wallis  
1460 Padre Lane  
Nipomo, CA 93444

# HIGH MOUNTAIN CLASSICS, INC.

*Jim Stranberg*

February 1, 2012

**INVOICE # 02011209**  
**1929 Lagonda # 9517**

**LABOR (Victor):**

		HOURS
1/18	Removed rod and main bearing caps #1, #2, and #3 to assess bearing wear, previously assessed wear on #4; began mocking up dual carburetor setup.	2.5
1/24	Put together rear brake assemblies with newly re-surfaced shoes.	3.0
1/26	Removed cam chains and related intermediate gear adjustor assembly.	2.5
1/27	Fitted newly machinge intake manifolds, requiring some adjustments; removed magnetto and cleaned and prepped it for rebuilding.	1.5
<b>Total Hours (Victor)</b>		<b>9.5</b>

**LABOR (Keith):**

		HOURS
1/27	Machined two intake manifolds to match ports and stud holes to block.	4.0
<b>Total Hours (Keith)</b>		<b>4.0</b>

**SUBLET:**

	AMOUNT
<b>Brake Warehouse</b> - Reline eight rear brake shoes.	\$ 362.03
<b>Hunt Magnetos</b> - Scope check, complete disassemble, clean and rebuild magneto; inspect and test all internal parts; reassemble and machine test.	\$ 262.55
<b>Total Sublet</b>	<b>\$ 624.58</b>

**PARTS:**

Fasteners	\$ 9.82
	<b>\$ 9.82</b>

**SHIPPING:**

Ship camshaft to High Mountain Classics from LMB Racing.	\$ 62.38 ?
--	------------



# HIGH MOUNTAIN CLASSICS, INC.

**SUMMARY:**

Labor - Jerry (\$95/hour)  
Labor - Keith (\$95/hour)  
Labor - Jake (\$95/hour)  
Labor - Mike (\$95/hour)  
Labor - Victor (\$85/hour)  
Parts  
Shipping  
Shop Supplies

*Jim Stranberg*

Remaining Balance - Payment \$2,500.00 1/21/12

**TOTAL DUE**

**AMOUNT**

\$	-
\$	380.00
\$	-
\$	-
\$	807.50
\$	-
\$	624.58
\$	118.75
\$	90.17
<b>\$</b>	<b>2,021.00</b>

Thank you, as always, for your business. Your prompt payment is appreciated.

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*Wheel deposit \$2K?*

Graham Wallis  
1460 Padre Lane  
Nipomo, CA 93444

January 16, 2012

**INVOICE # 01161209**  
**1929 Lagonda # 9517**

**LABOR (Victor):**

**HOURS**

1/3	Removed and cleaned water pump and related components; disassembled all rear brake components, and marked and cleaned all parts for re-shoeing.	4.00
1/4	Removed left front wheel, brakes, wheel hub, and related components and cleaned all parts up.	2.50
1/5	Removed brake shoes and other components from left front backing plate, and cleaned all components; discovered several cracks and prior repairs on backing plate.	3.00
1/6	Further cleaned and bead blasted left front backing plate to determine extent of cracking; removed right front wheel, wheel hub, brakes, steering and related components and cleaned all parts up; applied crack detector to backing plates and labeled all cracks for photographing.	5.00
1/9	Removed carburetor and intake manifold, cleaned, and shipped carburetors for repair; removed main timing cover and cleaned it, excess silicon proved problematic; cleaned block where timing cover adjoins.	4.00

**Total Hours (Victor)**

**18.50**

**SHIPPING:**

Ship brake shoes to for relining.  
Ship carburetors to be rebuilt.

**AMOUNT**

\$	26.37
\$	23.34
<b>\$</b>	<b>49.71</b>

**Total Shipping**



**SUMMARY:**

Labor - Jerry (\$95/hour)  
Labor - Keith (\$95/hour)  
Labor - Jake (\$95/hour)  
Labor - Mike (\$95/hour)  
Labor - Victor (\$85/hour)  
Parts  
Shipping  
Shop Supplies

**AMOUNT**

\$ -  
\$ -  
\$ -  
\$ -  
\$ 1,572.50  
\$ -  
\$ 49.71  
\$ 157.25  

---

\$ 1,779.46

**TOTAL DUE**

Thank you, as always, for your business. Your prompt payment is appreciated.

A Finance Charge of 1.5% Will Be Assessed On Any Unpaid Balance After 30 Days



Historic Race Preparation and Restoration

Wijnegemsteenweg 110  
2160 Wommelgem, Belgium  
T. +32 (0)3 354 05 52  
F. +32 (0)3 354 05 56  
www.lmbracing.be

RPR BTW BE 0.442.856.072  
IBAN nr: BE58 4037 1096 2179  
BIC code: KREDBEBB

Doc Nummer  
Job Nummer  
Datum  
Reference  
BTW Klant

3776

4/01/2012

**Factuur**  
**10/550**

**Graham Wallis**  
**1460 Padre Lane**  
**Nipomo**  
**CA 93444**  
**United States**

Omschrijving  
**1993 Camshaft Pair 2 Litre**  
**1068 Post & Packing / Delivery**

	Netto	BTW	BTW%
1	1.334,59	0,00	0%
1	130,00	0,00	0%

Totaal Netto **1.464,59** BTW **0,00** Factuurbedrag **1.464,59** EUR

De klant verklaart kennis genomen te hebben van de algemene verkoops- en herstellingsvoorwaarden en van de factuurvoorwaarden van LMB, gedrukt op de achterzijde van dit document.



Graham Wallis  
1460 Padre Lane  
Nipomo, CA 93444

January 2, 2012

**INVOICE # 01021209**  
**1929 Lagonda # 9517**

**LABOR (Victor):**

**HOURS**

12/19	Removed the rear wheels and brake assemblies; removed the right axle, bearing, and related parts; cleaned and disassembled and then inspected the parts for wear and replacement.	6.50
12/20	Removed left axle, bearing and related parts; cleaned, disassembled and inspected parts for wear and replacement.	4.50
12/21	Placed the front of the car on jack stands and inspected the front axle components, found left front spindle loose.	1.00
12/22	Removed the inner three steering assembly columns and advance retard mechanisms; cleaned all components; removed the steering wheel and machined a new key to remove the play from the steering wheel; installed new horn wires in the column; cleaned and tested all components and then reassembled the horn and advance retard and throttle assemblies on the steering column.	5.00
12/23	Removed engine oil sump; removed #4 rod and main bearing caps to assess bearing wear, both of the bearings had a clearance of a little more than 0.003"; reassembled caps and measured the wear; dismantled the sump, baffles filter assembly plumbing, vent and oil filler basket assemblies and cleaned them.	6.00
12/27	Drained coolant and removed radiator, bonnet, chassis trim and related components.	2.00
12/29	Reassembled rod and main caps on crankshaft and performed compression test and leak-down test, (see attached results); removed and cleaned front-most timing case cover.	

4.50

**Total Hours (Victor)**

**29.50**

**SUMMARY:**

Labor - Jerry (\$90/hour)  
Labor - Keith (\$90/hour)  
Labor - Jake (\$90/hour)  
Labor - Mike (\$90/hour)  
Labor - Victor (\$75/hour)  
Parts  
Shipping  
Shop Supplies

**AMOUNT**

\$ -  
\$ -  
\$ -  
\$ -  
\$ 2,212.50  
\$ -  
\$ -  
\$ 221.25  

---

\$ 2,433.75

**TOTAL DUE**

Thank you, as always, for your business. Your prompt payment is appreciated.

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