

1963 FIAT-ABARTH 1000 GT

110-0380

SERVICE RECORD

1994-2018

Post Festival 32 notes:

- car ran very well. New Dunlops made a lot of difference in handling. Did not run after Sat morning as there was too much aggressive driving in our group. very disappointing weekend
- need wide view glass in right side fender mirror
- prep for Fall finale: 9/27/2014 ~ 10/8

1. Switch to Aurore racing exhaust

- Timing check total 45° on flywheel at revs - OK
- Exhaust color perfect light gray.
- needs wide view outside right mirror check if Talbot available? ordered - not yet need.
- Decided not to check valve gap was perfect in April 2014
- 6 month since oil + filter change will Fall finale oil is clean with only slight color.
- Should tear down engine and install new rock washers 2014/15
- replace left engine cover rubber strap w NOS from Ebay \$11!!
- 10/8/1 set tire pressure in garage to 22/24 - reset at track!

# 84 KENT BAINS SHOP

Post event notes:

~~Left + right ZAGATO door handles swapped left to right causing strap fracture in left door.~~

MY FAULT!



2014 FF  
EVENT  
10/10/14  
DATE  
S. F. / K.

- Engine runs beautifully, but accusump may need re measuring - must do anyway after oil + filter change.
- ordered second wide view glass for Talbot fender mirror
- 11/16 added anti-theft Tag good to -20 F

- Spring mounts are 2011 crts.
- Trace source of brake fluid in bottom of master cylinder to bleed nut in bottom of fluid reservoir very slow leak. No significant loss of fluid.
- Torque wheel screws!
- Check transmission fluid level OK ✓
- VSCC Memorial Day. First practice was met and was not sticky. 7 in core 18/23R. in Qualifier session (Duv) front left bumpers 2005 rear bumped 4 lbs. Lots of rubber stuck to tire. ~~will likely not run final race.~~
- Check Clutch pedal return spring - replace if needed.
- Car ran very well - finally got comfortable M. De Track. Had nice run with Ed Hyman & his 356
- Limo Rock Historic Festival 32 2014
  - Enter nose straightened & restored by Automotive Restoration in stratford \$29,000 - mc richmond all small <sup>Hand</sup> <sub>small</sub>
  - I made new front ~~hood~~ shroud panels by radiator, fitted to original pop-nut holes in subframe
  - Changed Brake Fluid & bleed brakes - good pedal.
  - adjust mirrors
  - ~~got~~ New Dunlop 7 in + rears little 5" riser M rear - pressure 18/23
  - Left rear bumpers to 30 right rear to 28 } rear to 20/25  
front bumped to 27-28
  - Tech sticker on back of this page

09/25/2013 Lime Rock Historical Race - Pat Donovan  
Driving instead of me. Pat was hit left hand side  
white Alfa 1300 - did not finish

• Lime Rock Fall Festival Oct 11/12 2013.

Car was very well - clean to 7600 after just four  
laps. No prep other than for Historic Festival

10/20/2013. Drained coolant refilled with anti  
freeze good to -26 F. Spring 2014 - engine will

need Head re-torque & valve gap check & set timing

04/29/2014 Prep for Spring Sprint

• check valve gap

① .020 .010T

② .020 .010

③ .020T .010-

④ .019 .010T ~ .009

⑤

⑥

did not change shim gaps are  
close enough

• re-torque cylinder head nuts 37 FT LBS loosen all  
one round and tighten to spec. nuts broke some nuts  
and pulled & torque smoothly.

• chain tension good 5-10 mm deflection

• set plug gap to .020" were at about .022 used  
antisluge on plug threads

• torque intake manifold nut to 14 FT LBS

• only three months since Fall 2012 oil change w/  
filter. Change oil before Lime Rock historic

- cont: open left rear caliper Bleeder - had fluid flow  
This time, pedal came up a lot, checked front brake -  
very good pedal, fill reservoir to "max" line
- check compensator valve 4 1/2 turns decrease to  
Zero, reset at 4 1/2 turns. check brake pedal - good.
- install new fuel cell - Tank repainted new aerocamp  
Braided hose and AN fittings
- Low fuel warning light wiring: Aug 24 2013  
original wire to Jaeger James fuel level sender:  
white: when grounded with ignition on, indicate high  
fuel level on Jaeger gauge  
yellow: when grounded causes low fuel warning in  
Jaeger instrument to light up.  
Black: is ground to fuel level sender body and  
fuel tank
- Pushed all OEM wires inside dash, connected new  
Black and yellow wire to old harness. white wire  
not used with fuel cell
- wiring done
- waiting for AN fittings to connect pickup to steel  
fuel line
- note on right front: Inside of tire rim was very greasy,  
also inside of rotor wheel mounted to hub. Brakes were thin  
at spring mounts

renew gap check

Spring 2013

(E)	(I)
1 .020	.010
2 .020T	.010
3 .020T	.010
4 .019	<del>.010</del>

notes: essentially no change since Spring 2011 except #4 EKHPUST. Did not readjust valves this year 2013 April 4 - engine run last adjustment. air torque head to 37 FT LBS

Swapped out open exhaust & Gasket

• Drain antifreeze & flush. add distilled water + red line water wetter prep for Spring Sprinklers

• Spring Sprinklers - Set line code to 18/232

• get Pegasus to re-certify hammer?

• engine run clean & 7500 RPM rev diameter measure up again

Tire 78/23 Fastway inflated to 40 PSI

• prep for Historic Festival July 21 2013

• FRONT calipers are either stuck or master cylinder does not return fluid to reservoir - suspect master cylinder...

8/18/13 Rebuild master cylinder - bleed Bubbles - NO fluid to rear calipers! Set in car Pump pedal hard - v try for - but hard.

10/7/2012 Prep for winter storage:

- Change oil & filter metal filings evident in filter -  
will cut apart & examine - drained accu sump  
top ~~off~~ refilling ~~the~~ engine with fresh oil  
Added  $\approx$  4oz bottles of ZDDP to protect cam
- Followed. fill with 15W30 motor oil  
Synthetic! TOTAL QTY OIL 8 QUARTS - lower - filter  
accu-sump and engine sump
- Filter was clean after cutting apart metal particles  
appear to be brass <sup>everywhere</sup> - but this may be caused by the  
color of dirty (used) engine oil
- Spark plugs were clean. no sign of oil.
- ~~no~~ run engine under starter & plugs out till ~~oil~~ oil  
pressure needle moves. reinstall plugs & start. good  
oil pressure. ran till accu-sump showed full pressure  
& shut off.
- fill tires to 35 PSI for storage - note right front is  
flat spotter!
- remove plugs spray with rust creep relate engine  
with starter reinstall plugs finger tight 10/7/2012
- Spring 2013 Prep for Spring Sprint  
Demountable top of engine in vinegar check

- Spring Sprites 2012: Ran well - Trucker 8000 RPM once clutch release screws needs lube.
- new carburetor front pads Brake in easily, great pedal feel.
- Prep for June rock Holes Festival 2012: August
  1. Install solid generator mount made by J's Band.
  2. Install Brown Top Marelli coil with resistor on repeated bracket. Changed wire end to coil to right angle type
  3. started engine ran well 15 events, since total rebuild! Time for Trackdown?
- Traced source of clutch pedal squeak/bonding to 1. Lack of lube in support bearings - oiled w/ 10/40. also oiled return springs<sup>OK</sup>
- swap to own racing exhaust for Fall Festival
- replace cap and shoulder harness Betty wing, say bet!
- re-torque head (37 FT LBS)
- replace fan belt
- Bleed Brakes
- Port all jets w/ rev limiter set to 7000 -
- ran clean to almost 8000 - reset limit to 7300 as test. - & reset to 7500 - perfect on track too!
- checked paint gaps - good .013 (.012 min)
- Exhaust color light grey - as usual



Prep for winter storage 2011 - CONT:

- Fill tires to 30 PSI
- Remove plugs, spray eyes with Deep Creep - rotate engine w/ ~~oil~~ oil pressure rises, reinstall plugs - finger tight

April 2012

- replace left rear v-joint with rebuilt spare.
- Change to muffled exhaust for Spring Sprint
- Expansion Tank? Leaks...
- Accusump pressure had dropped over winter to 65 PSI - when empty, pressure in Accusump was 8 PSI. Filled to 60 PSI per Accusump instruction and bled to 10 PSI. Ran engine at this pressure changed to 70 PSI. System was probably full with no leaks since Fall 2011 - good!
- Remove coolant header tank & check for leaks. Leaks patched leak at front top of tank. Repair
- Install Carbotech front brake pads # CT9-XP10 - Racing lining - note Arching plates on inside had to be cleared to spindles - Caliper support
- note: Oil from hubs leaked from bearing caps <sup>in the store</sup> during winter storage wipe away spindles!
- Turn signals non functional signal OK
- TORQUE WHEEL SCREWS!
- Tires need pressure within 3 lbs of 30 PSI from last Fall 2011/2012 - 4/2012 - 4/2012 - 4/2012 - 4/2012
- 5/11/2012 Drain antifreeze & install water coolant bottles

2011 Cont:

- Front axle Dye + test - pass
- Clean, repack wheel bearings
- July 2010 Prep for Lime Rock historic races.  
Disassemble front suspension. New king pin left front, new A-arm bushings, new upright bushings
- make new springs centering bar
- remove clean + flush radiator and replace
- mag + install new hubs - front passed crash testing
- Aug 2011 Reinstall suspension set to 1-2 mm camber -
- rebuilt calipers, turn rotor (replica from Jagan ~~is~~ specially made and altered to fit (original rotors retired - too thin.)
- Rebuilt master cylinder, all new steel lines to front brakes, new brake pads (street)
- Checked points <sup>point!</sup> low! set to .013"
- Reset timing 15° static - checked ok running
- Set tire to 18/23 at track 9/2/11
- Historic Festival 29 IRP: FRONT BRAKE PADS overheated due to being street pads after 6 laps need racing pads front!  
car ran clean to 7800! lots of power...
- Left rear U-joint slip! should replace w/ properly rebuilt unit hope next time out
- FIX! PINHOLE IN EXPANSION TANK
- Drain coolant + refill w/ antifreeze mix 10/8/2011  
GESP TO - 26" (3 Balls float) Page 40

2011 CMV

- Break loose head bolts + retorque to 37 FT LBS  
# 3 (in square) head bolt was stiff + required total break  
loose to retighten
- Reinstall manifold + carburetor torque nuts on manifold  
to head studs to 14 FT LBS
- Replace throttle cable - old one was perfect after  
10? years
- Dye Test rear stub axles - pass  
RIGHT FLEX COUPLING: Crack in outer steel forgings.  
replaced with NOS Simca 1000/absorb part. Left  
flex coupling good.
- Torque axle nuts to 101 FT LBS
- Torque V-joint adapter to flex coupling screws to 36 FT LBS
- Torque caliper screws to 20 FT LBS NOTE Green washer  
used loc-tite on threads
- Hand tighten w-joint to adapter nuts
- When removed left + right rear rotors were on opposite  
sides - replaced some
- Left V-joint stiff should be replaced, but no play in  
joint now. 5/29/2011 don't seal pump

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- Tightened check valve where attaches to oil pump - was  
leaking slightly last year
- Right caliper boot ruined (torn) by drilled Brake pad  
backing plate. ~~Probably~~ Probably torn on installation.  
rebuild both front calipers before next time out!
- Left king pin loose - needs rebuild

2011

- Left wheel bearing loose - also slight play in King Pin - should be ok for a while -
- Accumulator showed only 80 psi before start up, should be drained + re-charged properly.
- Check + adjust valves - last time done was 2008 April

VALUE GAP MEASURED:

I 4 3 2 1  
 .010T .009T .010 .010"  
 ⑤

STD = .010"

all except # 3 was .011 2/24/09 2009

T = TIGHT

E 4 3 2 1  
 ① .019 ② .019T ③ .019 ④ .021T

STD = .0196"

all was .020 April 2009

all holes smooth, show no signs of unusual wear.

Reset # 3 intake + #1 Exhaust to spec.

1. E4 Shim = .060 NO THINNER - NEED .059" THIS SEAT CUT TOO DEEP!

2. E3 Shim = .076 TO .075"

3. E2 Shim = .080" → .079"

4. E1 Shim no change

5. # 3 intake Shim = .071" → .070"

TIGHTEN CAM JOURNAL NUTS TO 14 FT LBS

Results:

I 4 3 2 1  
 .010T .010T .010T .020"-0.21"

E 4 3 2 1  
 .010T .010T .010-0.01 .010T

2010 - cont

- Installed acuserup July 2010
  - Generator repaired - (fixed to ground wire was broken)
  - replaced regulator with original part as before
  - Installed P85 VCR while original out for repairs and new seal (was leaking - shaft in pulley end was worn).
  - Retrace head.
  - July 31 test and bleed acuserup. Dump pressure is noisy
  - Replace exhaust with open racing exhaust
  - rebuild engine
  - August Rebuild exhaust water pump with same seal as used 20 years ago (new one) Shaft in pulley end was worn inside pulley and pulley end bearing. Shaft was built up and resized to fit by Don Breslauer. Washer between ~~pad~~ impeller and impeller bearing is .037" yielding about .015" clearance to pump body. Clearance to inlet side is ~~0.040~~ .040" by two original gaskets. Assembly leaked out of weep hole but only when running. Also note both bearings are on shaft with green Loctite. Hoping seal will last with use. "Bar leak" did not stop seal leak after run engine 20 min at 2500 RPM.
  - install hillclimb 5 speed for Mt. Equinox
  - Prep for Fall Fall 2010 - rebuild 9/37 5 speed
  - Retrace head
  - Break brakes
  - adjust clutch belt play TOWLOW READJUST SPRING 2011
- 1976 Dress air change filter  
Drain coolant. Refill w/ ANTIFREEZE MIXTURE
- 1970 ReB plugs may a deep creep and local engine  
w/ slacker. Car will need new oil line w/ torque  
front end maint

Small Islands by Map Creek

- Engine located in left trans in firmly seated in hoop. Equal clearance between Hoop and Chassis horns (same  $3\frac{1}{8}$  on left side)
- 20A Carbs from through bracket holes in body — but only at certain rods unless engine seen stationary. Fuel drips from right carb after shut down
  - make angle plate? so carbs drain into manifold fuel drain. will require dropping engine about 1/2" in back - upwards? valuate steel engine mount?
- Holes from engine mounts - 7000
  - replace mandrel/wiper blade ✓
  - High speed min cleared up after first turn out
  - Change rollers?
- 2009 Stage 4001 Sierra outboard + distilled water 3 balls feeding gear - 28'
- generate lift goes up, then on as engine need means cleavage?
- now H1 only in manual in case of line replace a Spaw 1, 3, 4 plus big H 2 only but lower trans they consider changing to 750. Not doing unless a flat not intended top.
- PLUGS ARE SNUGGED ONLY!  
Sprayed yesterday at Map Creek 9/19/09

2010

- Prep for spring sprunk
- Change oil + filter - filter was clean except for a few small specs. Oil started easily 100 PSI cold  
ADDED 50% ZOPP TO PROTECT CAM + LIFTERS  
15/50 MOBIL 1 SYNTHETIC
- Install new brushes on generator still no charge POLARIZED GENERATOR NG
- New Batteries  
↓  
Swapped out regular for new - polarized generator still NG - Bad generator? yes! no amp or vol output
- Drain antifreeze w/ petcock opens (WHEN VIEWED FROM TOP) FLUSH THRU till museum refer to distilled water and water meter
- Retorque cylinder head #3 NUT stickabit
- Tighten intake manifold nuts to 14 FT (LB) due to soft studs
- Change brake fluid - old fluid was clean - front rotors should be replaced
- Set pressures (this is F20/25 coil + front wire out a second) pressure bumpers 2 PSI except RR which bumper 5 PSI 70° clear skin hot patch
- Tack cable came out of crimp
- Drain cooling system 5/11 - found more freeze. Note rotor 2 yellow full coolant
- Generator field has no continuity anymore →

8/5/06

Prep for EXT. Equinox.

Job - First time on Marelli coil w/resistor - also  
set depth .022" - old setting was .025 First 600  
(same coil) .020 ~ .024"

Change to 5 Speed. —

9/39 Main Case Drain plug almost completely stripped

- note on 9/11 5 Speed Left Transmission Mount was  
cut down .270" by previous owner. Made up .270" spara  
and put in engine stud - This repairs problems with  
throwable settings, too deep in mounts and too far left
- Helicoid Turning pointer screw hole on Bell housing (9/41)
- add spacer ahead of clutch cable nut to allow  
adjustment of free pedal properly
- Check Distributor should give 45° at full  
advance when static is set to 15° appears short  
a few degrees.
- set up pressure to 20 or 25 PSI cold
- dropped pressure to 18/23 HOT due to rough  
road.
- Ran clean to 7500!
- note on full system prep. From exhaust header bracket went  
flange - bracket (7mm on) & also bracket - showed to OK  
til next event
- Torque head. Change to 9/39 5 Speed.
- New tires replace to 5" Casagrande w/ 3 1/2 Speed technique  
Magnasco replaces to 2000. Put new wheel rim on front.



- Policy Festival 2006 coasting 20-25 - 22-28 MT  
Temp ambient 72° water Temp 19.5 w 7LBCap  
Septantipenny well - no leaks apparent.

Prep for Sag Club event VSCCA June 07

- Torque head - some minor more than others -
- change ansa muffled exhaust
- change oil + filter mobil 1 15/50
- Bleed Brakes - OK!
- First race Prohoup at USOC + Fowled plugs + restriction  
Exhaust - too rich? OR generator not charging =  
low volts?  
Second race cleaned up run well

Prep for Summer Sprint

Torquehead, bleed brakes, checkall - run well  
Broke up occasionally at the keys probably due  
to restriction street exhaust

Prep for Fall Fest 2007

- detorque head - note: NUT #6 jumps need to loosen a few  
times
- Dye test run Stech axle - good!
- note: much in head next to water out let leak?
- Refill transaxle w synthetic gear oil
- note: tabs on muffler will need repair
- Bleed Brakes - good pad!

Fall 2005

- replace tach + Speedo cables
- clean + calibrate Tach + (Speedo - to actual tire rpm)
- Drain coolant + refill with Sierra anti-freeze
- Note Charge indicator light does not go out  
Check if charging - Polarity?

5/10/06  
• Drain + flush out left rear anti-freeze replace w clean water +  
add red line water mether.

5/28  
• Polarity generator ltr still does not go out. Check on  
Tach -

- Bleed Brakes - good pedal. No fluid leaks
- Found Right front wheel was rubbing on brake caliper due to  
insufficient mount washer thickness. Made thicker washer  
to move caliper inboard by about .030" for clearance

Drop in Mt. Equinox - Note H.C. 5-speed screw thread in flywheel  
turning indicator is stripped. Will need Helicoil.

- Install 5 Speed H.C. Box
- Retorque head. Broke all nuts loose. re-torque to 87 FT LBS  
several screws more loose than others. First re-torque after  
Fall 700 05, Jay Club 06.
- car ran hot at Jay Club - hopefully due to 3LB  
Fiat Radiator Cap. Installed 7LB cap. for Equinox
- Set cold tire pressure to 18/23 for cold weather + wet  
conditions anticipated at Equinox
- Checked Timing, found found it was at about 18° - re set  
to 15° as spec.

06/2005 after VSOCA SAS Club meet:  
Action near death:

- Found #1 lash cap off valve. had dug hole through retaina + broken one keeper. Valve undamaged. Replaced retaina.
- Checked oil pump found much wear from metal that come off retaina. Oil filter full of metal. Changed oil pump to new Fiat unit. Cam bearings showed no sign of scoring - assume main bearings are also OK. Filter appears to have caught 99% of metal.
- valve gap checked out as follows:

E (1.018") (2.020") (3.000") (4.020")

I (1.011") (2.011") (3.010") (4.010")

- Change oil + filter use mobil 1 15-50 synthetic
- Re torque head - little movement on nuts.

- 
- Chassis cracked where inboard rear susp attach. remove engine, Trans + interior for repair.
  - Welded up all cracks + reattached metal to suspension pick up area where required
  - removed old Hilborn fuel injection hoses from intake manifold + welded up holes.
  - Left front wheel bearing loose - reset - but timing pin appears to be a bit loose on right side OK.
  - Zygloed rear wheels around bolt holes OK Blast + repaint
  - replaced rubber line from master cyl reservoir to master cylinder with correct, brake fluid resistant hose.
  - new Shoulder + ~~cap bolts~~
  - Re R. paint all splash shields around engine.
- god + god!

Full Foylora 07 notes:

Used some water maybe 1 pint found leak near drain, under passenger compartment.

Tightened all clamps.

70°C coolant 18/23 after practice - no leak to 19/24 HOT - min = 20/25 in race on HOT track

11/22/07  
- winter prep: • Fill w 50/50 Sierra Antifreeze  
• Run engine & drain out.  
• Remove plugs. Spray cylinders w WD40, rotate engine till 30 PSI OK & replace plugs.

06/13/08 Replace driver side belt.

Check valve gap

(E)	1.021	2.020	3.020	4.020	no change
(I)	1.011	2.010	3.010	4.009	2+4 change

RESET TO .010"   
 - .001"   
 ~~5 POINTS~~

• Chain Tension seems unchanged

• change oil - lots of metal filings in filter  
from 05? a? non magnetic probably chain rubbing on case. Why? Chain Tension appears OK? Chain rubs on case below cam covers - Tension OK. No lubrication

• Sumps could use new gasket

- Clean & adjust points. Set to factory specs
- Rebuilt carbs. found dirt in #4 jet  
Set floats to 8M W 15MM Drop
- #3 cylinder exhaust Shim over 1/2 valve, m top of  
Spring retainers - replaced - zapk, rino well,
- Compression test warm 140°

1) 160 2) 130 3) 140 4) 145

- Retorqued head 3 times. Start and warm up 3 times  
Cool the mercury 25 R 20 F

Jag Carb June 05:

- Engine Beak up over 5500 - replaced coil and points at limb neck NG  
Found 100 ohm resistance in condenser - new condenser measured 4.2K  
Changed condenser. 2 n.05. fresh.
- small metal particles on drain plug.

- Install new NGK R7436-9 plugs clean to 7200 - went back  
to old plugs in Friday race motor at high RPM. Conclusion  
new plugs have extended tip - needed hotter plugs.

Carb notes venturi 34 250 air 135 main showed plugs to J.P. Mitchell

Hoped a richer air mixture would be better for hot weather  
Plugs showed just a little metal, indications beginning of pre-  
ignition changed to 240 air cold weather - recommended  
220.

Car still running lean. - mix 220 air + 130 main

Check Camshaft to journal clearance factory is .020 mm ~ .062"

intake:	chain end	center	flywheel end
	.038 ~ .051 mm	.051 mm	.051 ~ .038 mm
	.051 mm	.051 mm	.051 mm

valve gap w old Shim:

E	1	2	3	4
	.084"	.077	.078	.077
				with .077 Shim = .058"
OLD SHIMS	.089	.083	.077	.077
NEW	.085"	.080"	.076"	.058"

*Notes: .077, .072, .075 seat height change.*

I	1	2	3	4
OLD	.076	.076	.075	.075
NEW	.075	.075	.070	.0678
	.010"	.011"	.010"	.010" Gap

Try set shaft you put (IDLER SHAFT) on bearing with 28 FT LBS w red Loctite

Various half shell thicknesses - used on 2nd

1 C .0704	.0704-.0704	.0705	
1 B .0704	.0703-.0704	.0705	

.0701      .0705      .0707 new Supp  
max: average .0002"

measured side of rod in Exhaust Side of piston

rod bearing half shell thicknesses

1 C	2 C	3 C	4 C	new clearance measured .0711" \
.0712	.0711	.0713	.0714	
1 R	2 R	3 R	4 R	.0714 - new for clearance
.0713	.0712	.0715	.0713	

Rin length 2.210 (piston) O.D.: .7085"

rod ring bridge

TOP	.014	.01	.015	.013
2	.013	.010	.013	.013
OLE	.010	.015	.014	.010
	1	2	3	4

Plastegaugl mains #1 .002" #2 .002" #3 .002"

Pyconk cement M W 240 @ 45 FT LBS

2000 all .002" with 30 FT lbs

- oil pump drive shaft tail end partially due to lack of Shim between gear + Bush in block.

- Head assemblies -  
valve shims in place:

E	1	2	3	4
	.089"	.088"	.077"	.077"
I	1	2	3	4
	.076	.075	.075	.075

valve gap cut measured before installation

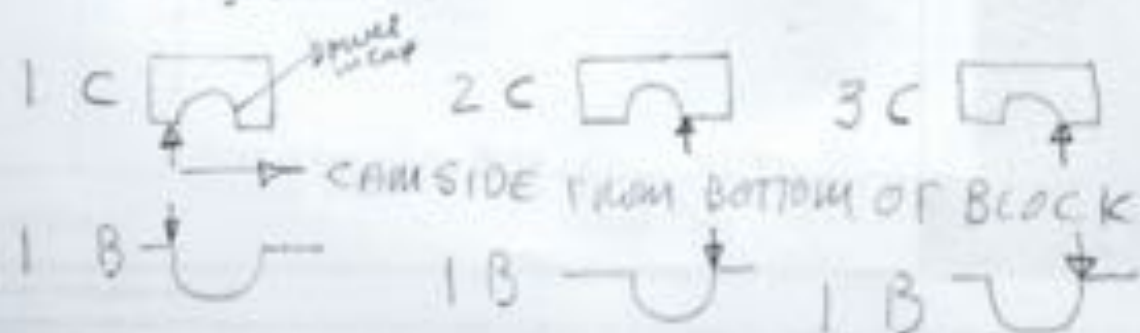
E	1	2	3	4
	.019"	.019"	.015"	.020"
I	1	2	3	4
	.012"	.011"	.010"	.012"

- measured crank journals:

RODS 1.5743 all within factory Spec 1.5742 ~ 1.5750

main 2.1235 depth 2.122 ~ 2.123

- Bearing Tang location:





TO  
NORLON CRAFT  
ATTN: NORLON  
83 LITCHFIELD ROAD  
NORFOLK, CT 06050  
(860) 542-6860

TO  
NORLON CRAFT  
ATTN: NORLON  
83 LITCHFIELD ROAD  
NORFOLK, CT 06050  
(860) 542-6860



# VENOLIA

PRETONE AND RODS

A Product of TOR-CAM Industries, Inc.  
2160 CHERRY INDUSTRIAL CIRCLE  
LONG BEACH, CA 90805  
Phone: (323) 636-9329 • (562) 531-8463  
FAX (562) 633-9439

INVOICE NO.	09723
DATE	04/25/90

5620

TO  
NORLON CRAFT  
ATTN: NORLON  
83 LITCHFIELD ROAD  
NORFOLK, CT 06050  
(860) 542-6860

SHIP TO  
NAME  
(860) 542-6860

ORDER DATE	CUSTOMER ORDER NO.	JOB NO.	SALESMAN	TERMS	CUSTOMER NO.								
04/25/90	VERBVL		DOLE	CREDIT CARD	0600000								
SHIPPED VIA	FPO	COLL	FREIGHT	INSURANCE	TOTAL WEIGHT	CTN NO	#1	#2	#3	#4	#5	#6	#7
UPS GROUND SERVICE (BRWH)			X	X	X	WEIGHT	1 LB	1 LB	1 LB	1 LB	1 LB	1 LB	1 LB

ITEM	QUANTITY			PART NUMBER	DESCRIPTION
	ORDERED	SHIPPED	6-0		
1	0	0		12010	TEFLON BUTTONS TO 1.000 DIAMETER 2.574
					SUB-TOTAL
					UPS GROUND SERVICE (BRWH) LESS DEPOSIT
					XXXX-XXXX-XXXX-0794
					03/90

OUT OF STATE NORLON CRAFT THANK-YOU

Please pay from invoice -- No statement will be sent  
There is no warranty stated or implied due to the unusual stresses placed on racing parts and because we have no control of how they are used.  
**DELINQUENCY CHARGE:**  
Buyer agrees to pay a delinquency of 2% (2% ANNUAL) on any overdue balance for each 30 day period in which such balance remains overdue and unpaid.  
**IN THE EVENT OF COLLECTIONS,** the customer will pay all costs, including attorney's fees.

No merchandise may be returned without prior consent and is subject to 20% handling and/or reworking charge. All goods must be returned transportation charges prepaid. Claims for shortage or damage must be made within 3 days of invoice date.  
Prices subject to change without notice.

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SHIPPING COPY

MAKE 750 FIAT TRUC  
 YEAR MODEL ABARTH  
 ENGINE

STREET \_\_\_\_\_  
 TOWN & STATE \_\_\_\_\_  
 HOME PHONE \_\_\_\_\_ BUS PHONE 543-6865

4-6-05

INVOICE NO \_\_\_\_\_

NO	PARTS	X AMOUNT	NO	LABOR	X AMOUNT
	RINGS			CLEAN PIST. INSTALL RINGS	
	PISTONS			PRESS PIN JOBS <u>Bristol Pins</u>	X 10.00
	SLEEVES			INSTALL BUSHINGS	
	PISTON RINGS			CHECK RODS	
	PIN BUSHINGS			CLEAN POLISH CRANK	
	CON. RODS			CLEAN GRIND CRANK	
	BLOCK PLUGS			DISSEM	
	CRANK KIT EXCHANGE			DEGREASE TN	
	ROD BRGS			DEGREASE BLOCK <u>50W</u>	X 25.00
	MAIN BRGS			BORE CYL - SIZE	
	CAM BRGS			HONE CYL	X 60.00
	CAM SHAFT			INSTALL SLEEVES	
	CAM GEAR			INSTALL BLOCK PLUGS	
	CRANK GEAR			R&R GALLEY PLUGS	
	T CHAIN			INSTALL CAM SET	
	TAPPETS			LINE BORE MAINS	
	EX VALVES			ASSEM S. BLOCK	
	INT VALVES			ASSEM COMPLETE	
	VALVE GUIDES			SURFACE BLOCK	
	VALVE SEATS			MACHINE GUIDES FOR SEALS	
	VALVE SPRINGS			SURFACE HEAD <u>CC</u>	X (OK)
	VALVE SHIMS			INSTALL SEATS	
	VALVE SEALS			INSTALL GUIDES	
	ROCKERS			RECONDITION GUIDES	
	HEAD SET			MAGNAFLUX	
	FULL SET GASKETS			<u>CASH</u> VALVE JOB <u>MR JAMES</u> - <u>5000</u>	X 110.00
	OIL PUMP			BALANCE ASSEMBLY	

DRILL FOR DST GEAR PULLEY 25.00

ALSO ← 505 CC CAM SER X  
 CC CAM JERK CLEAR. X  
 CLEAN CAM THREADS X 10.00  
 (USE PLASTICAGE)

LABOR 20.00  
 PARTS  
 TAX 14.40

TOTAL PARTS \_\_\_\_\_

TOTAL 254.40

UNLESS OTHERWISE PROVIDED BY LAW, THE SELLER (ABOVE NAMED) HEREBY EXPRESSLY DISCLAIMS ALL WARRANTIES, EITHER EXPRESSED OR IMPLIED, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE AND NEITHER ASSUMES NOR AUTHORIZES ANY OTHER PERSON TO ASSUME FOR IT ANY LIABILITY IN CONNECTION WITH SALE OF SAID GOODS.

- Remove + replace rear stub axle - Dye/DAT M Carbs OK
  - remove + replace front hubs. Dye test axle on both OK  
replace brake piston on front with spare original pair
  - rebuild all 4 calipers, new seals & new slave pistons on rear calipers.
  - remove + replace master cylinder overhauled, clean, new seals
  - replace all flexible brake lines with new -
  - Test cooling system to 14 PSI - Found General leak at Hose connection. Fixed and held pressure for 20 min OK!
  - replace brushes in generator - one had broken wire - probably cause of no-charge. no-charge wire ground was also broken - repaired
  - new fan belt.
- 
- Post Fall of original notes -
- engine brushes up over 6000 - check ignition
  - check for brake fluid leaks at reservoir + master cyl.

U/B Conclusion Port Equinox: JP Mitchell says lined hose cleaners  
do not hold ~~the~~ regular hose well in rubber fittings.  
use lined clamps only in Silicone Blue racing hose  
and cheap clamps elsewhere. TO DO

1. Check all hose connections
2. rebuild Brakes
3. Mag axles
4. Mag (x-ray) wheels - visual test
5. Re torque head & adjust valves
6. Examine oil for water contamination
7. Gen does not charge, check polarisation
8. Change to regular 5-Speed.
9. Tighten oil lines at filter, top in particular

- 
- Compression Test showed # 2 low by about 20CBS  
air leaks through intake valve at TOPDC ~~at~~
  - applied 80 + PSI TO each cyl at TDC with valves closed  
no air bubbles in expansion tank. No bad head gasket?

- 
- check chain tension OK
  - check valve gap:

1. .012 TIGHT

E<sub>1</sub> .019

2. .012 "

2 .019

3. .011 TIGHT

3 .019

4 .012

4 .020

(I)

(E)

- ~~2001~~ Prep for OMT Equinox:
  - Install Hillclimb 5 speed + adjust diff gear
  - water + red line
  - bleed brakes
  - note rear bearings, drag a little may need rehubbed
  - repair broken rear muffler bracket to sump.

Blow off oil line from pump to filter at filter - non Aeroquip fitting - fix! - suspect bearings! replace oil line!  
 oil pressure OK after each 90 PSI hot. - still low but at idl 10~20 psi (was 30)  
 • cooling fan hits radiator - fix!

- 7/18  
 03
- Pull sump bottom check bearings, red boat torque not recorded at engine assembly date. recall conversation with Dale Hall about PBS both pulling threads if torqued 2 PBS threads used 35 FT lbs as recall! not 45! checked #3 Red bearings light polish in strips along length of bearing no scores - re torque bearing to 35 FT lbs
  - New Aeroquip cloth braided oil lines. replaced 3 line ends at filter with genuine Aeroquip oil pressure at rear 100 PSI cold using 15/50 mobilone. at 60 idl steady 30 PSI. no leaks changed filter no signs of contamination.

6/01 Prep for Equinox bleed brakes

- 6/12/06 OMT Equinox notes - Blow off top hose to Expansion Tank from engine to get each line, but ran OK after replacing coolant compressor out in garage. 140° water temp:

#1 134, #2 124 #3 B2 #4 140

08/02

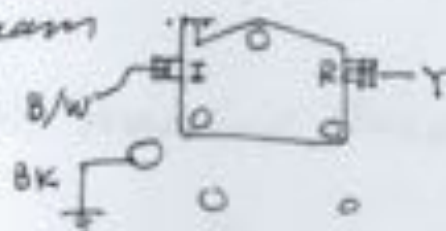
Prep for Fall Festival. .012 I .020 E

Valve gap!

E 1. .019 2. .019" 3. .019 4. .020"

I 1. .012 2. .011 3. .010 4. .012original abatch intake is .010 cam makes system is .012  
Left alone - good chain Tension.

- FRONT Right Chain case cover screw stripped. Pulver through Jaeger Fuel tank under diagram



- Bleed Braks -

- Check rear camber under load - 4°!

Spring I.D. = ~~5.95~~ 5.95" O.D. = 5.130"Left side ~~space~~ space = 1° change

added 1/2 space right left = - 4°

3/8" right = - 4 1/8°

PAD O.D. = 5.350" inner dia 5.50"

HEIGHT FREE 7.35"

7 turns - 2"

Suction coil

Check tire pressure, recheck camber after sitting over night 4° both sides

Set rear toe in to 1/16" each side 1/8" total. marked line on tire tread with nail

Set front toe in to 1/16" total wear 3/16"

End Fall Fest: 15 laps 80 (85) DIL 30 laps 75° cloudy 75°  
with 18510/4/02 monitoring flush with 50/50 Sierra antifreeze - drain coolant  
oil filter change 15/50 mobil 1  
spray cylinders with "Deep Creep" ablate engine & seal

8/01

alignment cont. measured toe by taking measurements from front + rear edge of tire by engaging tape measure in nearest tread groove. Checked also against rim OK both measurements.

- Fall festival notes. Car very much more stable, particularly under hard braking. Flaps non-ported and exhaust cone is perfect. 25 mm / 20 mm tire remains cool. good -

9/17 Drain coolant connects with 50/50 on tire + main after Decisions, 10 min

10/20 Fall Final. Started prot. Finished third overall all 4 races.

- check negative camber in rear too much.
- Car runs better with street and exhaust than race header.

wheel pattern #3 Front 40407 4.5413  
Rear

- Drain oil + change filter. Cut open filter + examine: some minor amt of metallic particles far less than first filter change. Conclusion: Normal wear in race. Run engine about 3-4 hours this year 2 hrs - Fall final. 1 hr Fall Part 45 min - Equinox
- note anti-rattle on #4 spark plug well - probably coming from stud nut on left between 3 + 4 seal up!
- remove all spark plugs + spray with "Deep Creep" potato engine with plugs out 2 carb cylinders + chocky saw for winter

- 6/20
- replace rear brake pads - bleed brakes
  - repair left carb heat shield
  - Switch to NGK plugs

6/24  
 notes on mt. Equinox: Car runs very well, except carbs loaded up badly with fuel on first run down using 2H gear. Carb on right dipped fuel - checked float level 8 mm OK. Next run down used 4TH & 5TH, and wheel brakes, no problems.  
 NGK plug perfect - get second set for second run  
 → R5687-9

- runs regular 4/39 gear by very nice to halfway, speed in last 2 hair pins. Hit third before first turn. Conclusion, need hillclimb off! For run to top.

6/24 Prepare for weathering Glen -

- Torque head - all fine
- replace fuel line from fire wall - was chafing on right carb throttle lever
- Fan belt shown to be replaced - also check generator mount. Reinspect

8/25 • Install new NGK plug - number changed from old R56879 to R7238-9 set gaps .025 - second run was even & run OK!

- bleed brakes
- change fan belt - model 7312
- Check toe front & rear  $\frac{1}{8}$ " rear front  $\frac{1}{16}$ " was almost  $\frac{1}{4}$ " (use string box method) and weighted car with my weight on driver side - 6 Cornant blocks. Rechecked with Box square on cantilever - OK. Re set to  $\frac{1}{16}$ " front  $\frac{1}{16}$ " rear - OK



02/10 Remove decompressor front valve - install spacer  
 Left front may not run due  
 may original - good

08/10 Prep for Fall Festival  
 Chain tensioner STICKS

valve gap set to MFRS Specs :

		ASSET TO		
4	E = .023" → .020"	} all THICK	J = .013	no spacer Shim .012
3	E = .022" → .020"		I = .012	Torque cam journal
2	E = .023" .020"		I = .012	copy nut to 16 FT LBS
1	E = .024" .020"		I = .012	

re torque head:

H 4 ~~stud~~ dome nut cone + stripped replaced with new stud + nut  
 using OEM steel washers and copper sealing rings  
 replaced hardened washer under stud between 3+4 intake  
 with con washer & steel washer. will barely hold  
 torque, but nut looks OK

• reset float, right meter was dripping fuel from aux-  
 iliary venturi + pump jet. found right set to 6MM  
 left set to 7 observed different fuel levels in bowls  
 reset to 5MM 15 drop - problem gone.

• reset valve - was out 3/16" set to 1/16" valve

• Fall Festival 7th runner, 30 sec 23 ft HET COED ~~25/20~~ 25/20

• Champion fuel - cleaned up 3 days Duration 1:19.4

• 4/17/10 Change oil + filter. First filter change since engine  
 built. Examination of filter shows fine white metal  
 particles in slumet. Conclusion - break in metal from  
 rings + cam gear. 15/50 motor 70 units w/ filter

• Fall fest notes, get better spark plugs! - replace clean head pads  
 repair Heat Shield on left carb page 10

• 705 cylinders in Topair  
 • 1051 Temporarily install 2V on Topair + Chain

each part must 7mm - OK the 1070 later - too low  
 replace 5mm nuts w dome nuts. Nut  
 between 3+4 on intake side will not hold  
 Type of copper sealing washer is used due to  
 insufficient thread length. Tagged to 30 FT LB

8/99 prep for Fall Festival

- Dye test stub after - OK
- New Dunlops
- valve gap After fall test 98 and equinox 99

E	1	2	3	4
	.024	.023	.022"	.023"
	+ .001	+ .002	+ .001	4
1	1	2	3	4
	.011"	<del>012</del>	.011	.013
Chamf	-.001"	.012		+ .002 chamf
		very tight		
		NC	NC	

Did not readjust gap

- Chain loose - reset tension. was 10mm reset to 8mm
- Fall festival:
- Tire pressures F: 26 R 30 - Jim Duffield's suggestion
- Pumps fruled at high RPMs. Checked & set point gap - was too tight set at .014
- Fifth too tall - reverts 27/24?
- Foot radiator cap. real new + spring the head + tight
- Brake pedal very firm - stable w/ w/ 6/10 turns decrease in rear circuit. Feredo front pads - fronts rear.
- Tire pressure - reverts F: 26 R 30 Thread did not contact track fully, especially on outside left. Try lower pressure to get full tread contact.

1. Check cam follower clearance between full lift and bottom of base: (1000 cc cam)

(E)	1	2	3	4
	.103"	.057"	.063"	.125"
	.103	.138"	.100"	.125" after grind for clearance

(I)	1	2	3	4
	.093"	.061"	.081"	.085
	.091"	.095"	.098"	.105" after grind for clearance

2. Compression chamber (#1) 36"

3. Torque cam gear screws to TO FT LBS 14MM X 1.0

4. Check valve gap with final assembly

I	1	2	3	4
	.012"	.012	.011	.011
E	1	2	3	4
	.023	.021	.021	.023

5. Torque distributor drive flange nut to 28 FT LBS  
and grease

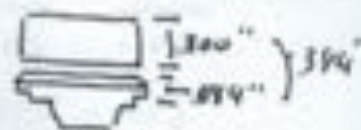
COMPUTE COMPRESSION RATIO 836cc Barbero	Date	06/27/9	
ENTER: Cylinder bore mm	mm	65.4	
ENTER: Stroke mm	mm	74	
Cylinder displacement cc	cc		248.59
ENTER: Head gasket bore dia mm	mm	65.4	
ENTER: Head Gasket thickness mm after break-in	mm	1.14	.045"
Head gasket displacement cc	cc		3.830
ENTER: Cylinder bore mm	mm	65.4	
ENTER: Piston to deck height in inches	in/mm	0.000	0.00
Cylinder displacement cc	cc		0.000
ENTER: Combustion chamber cc	cc	26	
ENTER: Piston dome cc	cc	11.52	
Cylinder, combustion chamber, head gasket, deck to piston volume	mm		268.42
Cylinder volume less piston dome cc at bottom dead center	mm		276.90
Compressed volume cc at top dead center	mm		28.31
COMPRESSION RATIO			9.78 1
ENTER: Gasket height, new, before break-in	mm	1.4	
ENTER: Shortest valve to piston clearance from clay test in inches	in	0.110	
Valve to piston clearance in mm	mm		2.79
Valve to piston clearance after break-in in inches	in		0.100
D21(line above) calculates result of change in gasket thickness only			

COMPUTE COMPRESSION RATIO 835cc Blalbero	Date	08/27/9	
ENTER: Cylinder bore mm	mm	65.4	
ENTER: Stroke mm	mm	74	
Cylinder displacement cc	cc		248.59
ENTER: Head gasket bore dia mm	mm	65.4	
ENTER: Head Gasket thickness mm after break-in	mm	1	0.39"
Head gasket displacement cc	cc		3.359
ENTER: Cylinder bore mm	mm	65.4	
ENTER: Piston to deck height in inches	in/mm	0.009	0.00
Cylinder displacement cc	cc		0.000
ENTER: Combustion chamber cc	cc	35	
ENTER: Piston dome cc	cc	11.52	
Cylinder, combustion chamber, head gasket, deck to piston volume	mm		287.95
Cylinder volume less piston dome. cc at bottom dead center	mm		276.43
Compressed volume cc at top dead center	mm		27.84
COMPRESSION RATIO			9.93 : 1
ENTER: Gasket height, new, before break-in	mm	1.4	
ENTER: Shortest valve to piston clearance from clay test in inches	in	0.119	
Valve to piston clearance in mm	mm		2.79
Valve to piston clearance after break-in in inches	in		0.094
DQ1(line above) calculates result of change in gasket thickness only			

Bl Domey piston: Piston set at .12.36 mm below deck  
 Add 30cc fluid to fill cylinder under plate  
 $12.36 \times 65.4 = 41.52 \text{ cc}$   
 $- 80.$   
 Dome volume =  $\frac{11.52}{11.52}$

1. Grinded spring height Base measurements using acfa/abault retainers and .500" spacer on top of retainers. No spacer at bottom of core. Measured with Dial indicator or Depth gauge

Intake	① .118 1.654" .030	② .145 1.663" .030	③ .085 1.649" .030	④ .093 1.657" .030
Exhaust	1.625 .385 .030	1.644 .381 .045	1.642 .385 .045	1.646 .385 .045



2. Set valve gap with weak springs

Intake	① .010+	② .011	③ .011	④ .010+
	.076	.076	.075	.0715

Custom spring seat Thickness  
 Fly spring pressure at valve open = 160 LBS  
 Seat pressure = 77 LBS  
 Gap  
 Jack cap Thickness

Exhaust	.020	.019	.019	.020" gap
	.085"	.08"	.075"	.081" Jack cap Thickness

Timings 55/85/75/45

3. Timing check exhaust opens @ 72° close @ 95°  
 (Ends)  
 Intake opens @ 53° close @ 87°  
 (Start) ends

Monitor pin  
 OK results in  
 1/4 change.

4. Valve to piston check using dial indicator

I #1	#2	#3	#4
.044 @ 70°	.066"	.085 @ 70°	.086" before correct mat
.105 @ 70-80°	.120 @ 70°	.095 @ 70°	.100" after
E #1	@ 71-80°	@ 71°	
.105"?	.066	.067"	.125 before
107 @ 85°	.120"	.150 @ 85°	.114" after @ 85°

Clearance valve  
 piston in piston  
 for clearance

1. Distance from Base line to cam follower seated on valve stem (with out lash cap.)

EX	1	2	3	4
	.157"	.167"	.154"	.161"
LEVO valve gap	-.020	-.020	-.020	-.020
	.137	.147	.134	.141

IN	1	2	3	4
	.107"	.105"	.122"	.110"
	-.010	-.010	-.010	-.010
	.097	.095	.112	.100


LEVO  
Discard  
lash cap  
Thickness  
+.003"

-.075" -.075" -.075" -.075"

-.075" -.075" -.075" -.075"

GT .062" .072" .059" .066"

.022" .020" .037" .025" ←

2. Sink valves into head by amount above
3. Cut new valve faces down to match original values.  (need to remove about .020" - TOP OF STEM SHOULD BE AT SAME INSTALLED HEIGHT AS O.E.M. VALVE.)
4. Machine spring retainers to fit springs supplied
5. Check fit of valve stems in guides - fit clearance if needed.
6. Supply springs seat washers as thin as reliable to fit guide and cam follower bal.

1. crank and float .006 with .005 oversize washers
2. Chipped cap when it fits thrust washer - billet square.
3. Piston pins needs extra clearance to counterweight

Clay Test Dimensions:

1. 0.025"    2. 0.010"    3. 0.010"    4. 0.010"

4. Precision requirements min. .050"

5. Jason's notes on head about valve head to cylinder deck head distance: "Firecracker valves"

1	2	3	4	Intake
.033	.037	.022	.031	

1	2	3	4	Exhaust
.107	.097	.111	.105	

~~Cam base circle to~~

Cam follower travel from cam base circle to top of valve stem with valve on seat (with out lash cap) using standard about 750 valve.

1	2	3	4	Intake
.107"	.105"	.122"	.110"	

1	2	3	4	Exhaust
.157"	.167"	.154"	.161"	



1967-68 1110. CA Engine to General. 1997

- Follow-up all scored after head return from PDS. Polished all.
- #1 Combustion Chamber @ 36 w Champion racing plug.
- Valve springs compressed length (cars head) .25 CM @
- approximate installed height 37 mm @
- Lift 9.2 mm

$$\begin{array}{r} 330 \\ 200 \\ \hline 13 - \text{travel} \end{array}$$

9.2

3.8 mm. Travel  
Lift at full lift

15 kg spring and wind 220° = 18.29 mm

approximate installed height  
NSTD 750 approx travel = 17 mm

$$\begin{array}{r} 29 \\ 113 \text{ and wind} \\ \hline 10.7 \end{array}$$

$$\begin{array}{r} 10.7 \\ - 9.2 \text{ lift} \\ \hline 1.5 \text{ mm} \end{array}$$

1.5 mm = .059 - need 210°

7.7 - 150°

7.7 - 210°

7.7 - 270°

PROFILO 062 RAU *Gravina*

LIFT ALZATA  
 Asc. 9.4 (ESCLUSIV.)  
 Sca.

TAVOLI - CUBICOLI  
 ANGOLI DI LAVORO  
 ASP. SCA. FEMMANT

CON LACCHE  
 PORTINELLE:  
 0.20  
 0.25  
 0.30  
 0.35  
 0.40  
 0.45  
 0.50

326°  
 312°  
 304°

CON CALETTI DI 105° (SOPRATO)  
 INCROCI AL P.M.S./U.D.C.

CON LACCHE  
 PORTINELLE:  
 0.20  
 0.25  
 0.30  
 0.35  
 0.40  
 0.45  
 0.50

57°  
 51°  
 47°

FASE DISTRIBUZIONE Trinac  
 Asp. Sca.

CON LACCHE  
 PORTINELLE:  
 0.20  
 0.25  
 0.30  
 0.35  
 0.40  
 0.45  
 0.50

87°/57°  
 81°/51°  
 77°/47°

NOTE

PROFILO 061

LIFT ALZATA  
 Asc. 9.98  
 Sca. (CINTURE)

ANGOLI DI LAVORO  
 ASP. SCA. INLET

CON LACCHE  
 PORTINELLE:  
 0.20  
 0.25  
 0.30  
 0.35  
 0.40  
 0.45  
 0.50

322°  
 310°  
 302°

CON CALETTI DI 102°  
 INCROCI AL P.M.S.

CON LACCHE  
 PORTINELLE:  
 0.20  
 0.25  
 0.30  
 0.35  
 0.40  
 0.45  
 0.50

58°  
 52°  
 49°

FASE DISTRIBUZIONE  
 Asp. Sca.

CON LACCHE  
 PORTINELLE:  
 0.20  
 0.25  
 0.30  
 0.35  
 0.40  
 0.45  
 0.50

58°/84°  
 52°/78°  
 49°/73°

86°/58°  
 78°/52°  
 73°/49°

NOTE

9 HERMAN DRIV. SIMSBURY, CONN. 06070  
 (203) 651-3418

MAKE FIAT  
 YEAR \_\_\_\_\_ MODEL \_\_\_\_\_  
 ENGINE \_\_\_\_\_

NAME M. HUN CRAFT  
 STREET \_\_\_\_\_  
 TOWN & STATE \_\_\_\_\_  
 HOME PHONE \_\_\_\_\_ BUS. PHONE \_\_\_\_\_  
 2-21-97 INVOICE NO. \_\_\_\_\_

NO.	PARTS	X AMOUNT	NO.	LABOR	X AMOUNT
	RINGS			CLEAN PIST. INSTALL RINGS	
	PISTONS			PRESS PIN JOBS	
	SLEEVES			INSTALL BUSHINGS CK + 1/16"X	X 20.00 ✓
	PISTON RINGS			CHECK RODS H2 R1	X 40.00 ✓
	PIN BUSHINGS			CLEAN POLISH CRANK	X 25.00 ✓
	CON. RODS			CLEAN GRIND CRANK	
	BLOCK PLUGS			DISSEM.	
	CRANK KIT EXCHANGE			DEGREASE TN	
	ROD BRGS			DEGREASE BLOCK	X 25.00 ✓
	MAIN BRGS			BORE CYL. SIZE To Fit	X 100.00 ✓
	CAM BRGS			HONE CYL.	
	CAM SHAFT			INSTALL SLEEVES	
	CAM GEAR			INSTALL BLOCK PLUGS	
	CRANK GEAR			R&R GALLEY PLUGS	
	T. CHAIN			INSTALL CAM SET	
	TAPPETS			LINE BORE MAINS CK	X 25.00 ✓
	EX. VALVES			ASSEM. S. BLOCK	
	INT. VALVES			ASSEM. COMPLETE	
	VALVE GUIDES			SURFACE BLOCK	X 35.00 ✓
	VALVE SEATS			MACHINE GUIDES FOR SEALS	
	VALVE SPRINGS			SURFACE HEAD	
	VALVE SHIMS			INSTALL SEATS	
	VALVE SEALS			INSTALL GUIDES	
	ROCKERS			RECONDITION GUIDES	
	HEAD SET			MAGNAFLUX RODS	X 30.00 ✓
	FULL SET GASKETS			VALVE JOB	
	OIL PUMP			BALANCE ASSEMBLY	X 175.00 ✓
				SMIT PISTON RODS	X 40.00 ✓
1	1/8" DIA TAP	X 30.00		HONED PLYWOOD	X 47.00 ✓
1	CAM PLUG	1.00		GROSS BROAD ALUM PARTS	X 48.00 ✓
				CHROMIUM BORE AIDS ASS	X 25.00 ✓
				DIST SHAFT HONE PLUG	X 10.00 ✓
				OIL GALLEY REINFORC. PLUGS	X 60.00 ✓
				FIT CAM IN JOURNAL	X 40.00 ✓
				TAP BACK TO FIT BOLT AND	X 70.00 ✓
				PLUG CAM IN CAM BRKT. BOLT	X 60.00 ✓
				REMOVE CAM PLUG (FUTURE)	X 10.00 ✓
				REMOVE OIL PUMP SHIMS 1024	X 15.00 ✓
				PLUG CRANK GAUGES	X 20.00 ✓
				TOTAL PISTON JOB	X 65.00 ✓
				LABOR	1072.00
				PARTS	21.00
				TAX	67.00
				TOTAL	1159.00

TOTAL PARTS 21.00

TOTAL 1159.00

ESTIMATES ARE FOR LABOR ONLY. MATERIAL ADDITIONAL. I HEREBY AUTHORIZE THE ABOVE REPAIR WORK TO BE DONE ALONG WITH NECESSARY MATERIALS. It is understood that this company assumes no responsibility for loss or damage by theft or fire to materials placed with them for storage, sale or repair. Page 6

# CRAFT

2.5.74 P

DATE

## - Machine work to convert pushrod block to DOHC -

Block is rare item. When in doubt please call first!

### Parts list:

- Bare Fiat-ABARTH block# AB210 1586414
- New 74mm stroke Abarth 1000cc crank
- Flywheel
- Pressure plate assembly
- Fiat rods, new - not matched set.
- 65.4mm forged Piston set with rings & Pins, new (Italian import, custom made.)
- Bearing set: Mains, Rods & Thrustwasher.
- Flywheel end cam bearing and bore plug.
- Oil pump drive shaft bearing.
- Oil pump drive shaft
- Bronze crankshaft pilot bushing.
- Oil line banjo stud.
- Transmission input shaft.

### Work required, Block:

- **BORE & FIT PISTONS.** Note ring gouge in #1 bore near top. Pistons supplied are for 65.4mm bore with .0035" clearance. If bore does not clean up - CALL me. 100
- **DISTRIBUTOR SHAFT HOLE PLUG.** Make plug to fit distributor drive shaft hole hole in top of block. Hole is marked 1 on attached drawing. 10
- **OIL GALLERY RESTRICTOR PLUGS.** Machine and install aluminum restrictor plugs with .090" passage hole in oil feeds to head. These are shown as 2 and 3 on the attached drawing. 60
- **CHECK DECK FOR STRAIGHT.** remove ABSOLUTE minimum required. >>Cut deck only after all plugs are installed. Plugs must be flush with deck.<< 25
- **FIT CRANK** to bearings. Clearances: Mains: .0020" - .0025"; Rods: .0018" - .0022" 40
- **CHECK HOUSING BORE** for straight, align bore if required. Main bearing cap screw torque 45 ft lbs. 25
- Note # 1 main bearing is reversed to align with late model crank. Main cap is drilled 5/32" for roll pin to match oil hole in bearing.

10925

19 x 1.5 TAP PURCHASED

- ✓ 1 1/2 hrs → • TAP BLOCK TO FIT OIL LINE BANJO STUD. Tap center hole ON SIDE OF BLOCK to main oil gallery to fit stud supplied. 70
- 1 1/2 hrs → • PLUG CENTER CAM BEARING BORE. Machine and install press fit plug with oil passage hole for center cam journal. 60
- Flywheel end (Near #3 main cap) cam bearing CAM BEARING. Install cam bearings as plug. No cam will be installed in block. Rotate as required to block oil flow. Install cam bore plug in flywheel end of block. 10
- ✓ → • Enlarge clearance hole in bottom of block for oil pump drive shaft to clear gear. 15
- ✓ OK • Check fit of oil pump drive bush to shaft, clearance: .001-.0025, wear limit .005" if excessive install new bush supplied. N/C

Work required Crankshaft:

- 7172 → • Install plugs in crankshaft oil gallery holes. ~~VERY HARD CRANK~~ 80
- ↳ • Drill out pilot hole to a depth of : 1." and fit pilot bush. ~~STAINED PLUG~~ 60
- ↳ • Fit pilot bush to input shaft supplied. ~~CANT TAP~~
- Polish crank. 25

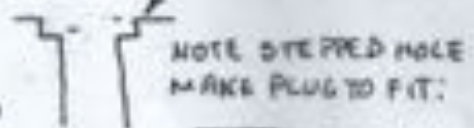
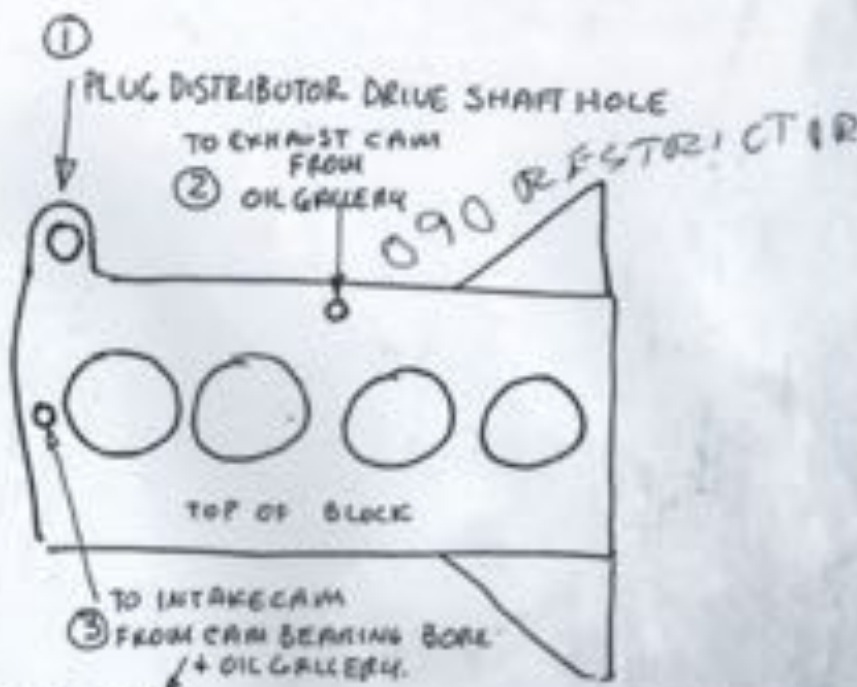
Work required Conrods:

- MAGNAFLUX
- CHAMFER rod cap bolt hole to clear custom rod bolt.
- SHOT PEIN to relieve stress.
- Fit bearings to crank. (See clearances above)
- Rod bolt torque. See sheet attached to bolt bag
- Fit pins. Clearance, thumb pressure fit. Factory specs are .00004" - .0005"
- When balancing rods, use care when removing material so as not to weaken caps, particularly on the ridges.

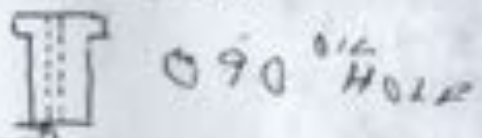
Other work:

- Lighten flywheel 48
  - ↳ • Balance assembly 155
  - ↳ • End clearance rings per standard machine shop practice for bore size, do not reinstall on pistons. 6137 616 2nd N/C
- CHECK ONLY  
SIZE OK

QUESTIONS? Call: Mahlon Craft at 860-542-6060, fax 860-542-6029



LIKE THIS?  
 THEN HOLE?



CHECK FIT OF HEAD GASKET TO BLOCK.  
 NOTE PROBLEM OF SUPPORT FOR GASKET.  
 HOLES IN HEAD GASKET WILL BE O-RINGED TO PREVENT OIL LEAKS - (COMMON PROBLEMS)  
 DECK SURFACE MUST BE SMOOTH, PLUG SHOULD FIT WITH NO GAP.

1000 Mile 99 finished - cont.

make most of global sign of corrosion  
in pedal end. Seal was beginning to go  
bad, particularly inner seal.

replaced outer pump seal  
replaced outer hose in engine bay  
installed caulk in pipe assembly.