

## 998GT-R Long Engines



### Ford 4.0L 6 Cylinder SOHC and DOHC Long Engines

Although we have been building high performance engines since 1978, it wasn't until 2004 that we began development work on the Ford 4.0L DOHC 6 cylinder "Barra" turbocharged engine. We witnessed numerous catastrophic engine failures after consumers had undertaken simple modifications such as free flowing exhausts and cold air intake systems, so it became apparent there was a need for us to engineer some solutions to address the inherent factory weaknesses.

The engines possess an abundance of untapped power with their large (factory fitted) Garrett GT35/40 turbocharger, however because the engine internals are almost directly taken from the original inline 6 cylinder NA (normally-aspirated) engine of the 1960's, they were not designed to handle 21st century boost-assisted power levels.

We initially developed a lightweight yet durable billet conrod to work with the 99.31mm (almost 4") stroke crank and before long our customers were making 450+ RWKW (700+ flywheel HP). Following this various other engine weaknesses came to the fore such as oil pump problems, valvespring tension, excessive torsional moments, crankcase flex, inadequate cylinder head retention, airflow distribution problems at high boost etc and engineered a range of solutions to suit.

We have seen power levels in excess of 1350KW (1800+HP) with our engines and components, such is the scope for power from these big cube 6 cylinder power plants.

We have 3 power levels available; new for 2014 is our StreeTorquer 550 engine, designed for hi-performance street cars; the venerable 698GT-A engine has been upgraded for 2014 with a few new tricky bits and finally for the seriously power crazed, our 998 Series powerplants are just the ticket!



### MY2014 Atomic 998GT-R Long engine specs

- Ultrasonic tested block in 4 spots per cylinder – thick walls are required (we reject 4 in 10 for being like Cleveland blocks - too thin in spots due to core shift)
- Full Race Spec crankshaft preparation - magnafluxed, checked for index/stroke, 3 stage Heat treatment (normalise, stress relieve and gas nitride), lightened counterweights, cross drilled main journals, reground, indexed, micropolished journals and chamfered oil holes.
- **Cosworth F1 Series pistons** – 8.5: comp ratio and include coated skirts, anti detonation bands, polished crowns, H/D pins and piston crown cooling - **an Atomic exclusive. Totally silent operation.**
- Cosworth nitro carburised steel turbo rings
- Atomic billet FatRods #306201 - bushed for floating pins, ARP2000 bolts, cylindrically ground/honed tunnels and pressure fed gudgeon pins – **an Atomic exclusive.**
- ACL Competition bearings with extra oil feeds for little end bushes
- Fully machined block inc torque plate honed cylinders, decked to crank centreline, main saddle alignment checked etc
- Deck surface CNC machined to accept 14.3mm Atomic head studs
- O-ringed block to suit copper head gasket
- O-ringed cylinder head to suit copper head gasket
- Oversize ID head dowels
- Race spec clearances to suit the intended usage
- Fully prepped Stage 5 cylinder head with 5-angle CNC machined valve job and porting of both inlet and exhaust. Fine Ra finish on deck surface, chambers relieved and CC'd, spring tensions set up, oversized head bolt holes and new PC seals fitted.
- Atomic Hi-Rev anti pump up lifters fitted and lifter preloads set.

- Inconel super alloy exhaust valves
- Atomic H/Duty Simplex timing chain
- Atomic Vernier adjustable Camshaft sprockets
- Atomic Induction hardened crank sprocket
- Atomic Hi pressure timing chain tensioner
- Precision balanced
- Atomic Hi-Mass ANDRA/SFI approved harmonic balancer
- Atomic Race Spec NASCAR valve springs - good for 34+lbs boost
- Titanium valvespring retainers
- Atomic Head stud kit - 14.3mm
- Atomic Billet gear oil pump – complete with EDM cut chrome moly gears, billet end plate (hard anodized), Grade 10 fasteners, high flow bypass circuitry and blueprinted clearances.
- Atomic Duo-phased cams – your choice of profiles
- Atomic gasket set inc Copper head gasket and Viton crank seals
- Fit new brass welch plugs
- Atomic main cap support girdle and windage tray
- Spray block grey (or any other colour you prefer)
- Precision blueprinting and assembly of long motor
- Engine is fully test run in our engine test cell - verify all vitals of the engine (oil pressure hot and cold, ring bed-in, cylinder % leak down, lifters bled, etc) and report supplied.
- Supply detailed specs report of engine and run-in procedure sheet
- Supply 8 litres of Castrol ProTec run-in oil
- Supply genuine Ford oil filter
- 3 months warranty

The 998 is optioned up with the addition of our famous FatRods, CNC machining of the block for our whopping 14.3mm head studs, copper head gasket, dual stainless O-rings per cylinder, lightened and heat treated crank, different bearing clearances, a main cap support girdles and a set of our Race Series valve springs to cope with high boost levels.



Fitting one of our engines to a non-original application is no problem with our Retrofit Series. No need to use the original Ford computer, harness and gearbox, just hook up your choice of turbo or blower, add your favourite ECU and you will have the baddest 6 powered car around!

And you have the option of either an engine built to your requirements or we can rebuild your own... the choice is yours!

Atomic engines and components are engineered, dynoed, track tested and fully warranted to give you confidence you won't be let down in the heat of competition.

#### **998GT-A Engines**

- #306490 SOHC Ford 6 cyl - EB-EL Ford
- #306491 SOHC Ford 6 cyl - AU Ford
- #306492 DOHC Ford 6 cyl - BA Ford
- #306493 DOHC Ford 6 cyl - BF Ford
- #306494 DOHC Ford 6 cyl - Retrofit Series

#### **998GT-A Engines – rebuild your engine**

- #306490-RB SOHC Ford 6 cyl - EB-EL Ford
- #306491-RB SOHC Ford 6 cyl - AU Ford
- #306492-RB DOHC Ford 6 cyl - BA Ford
- #306493-RB DOHC Ford 6 cyl - BF Ford
- #306494-RB DOHC Ford 6 cyl - Retrofit Series

