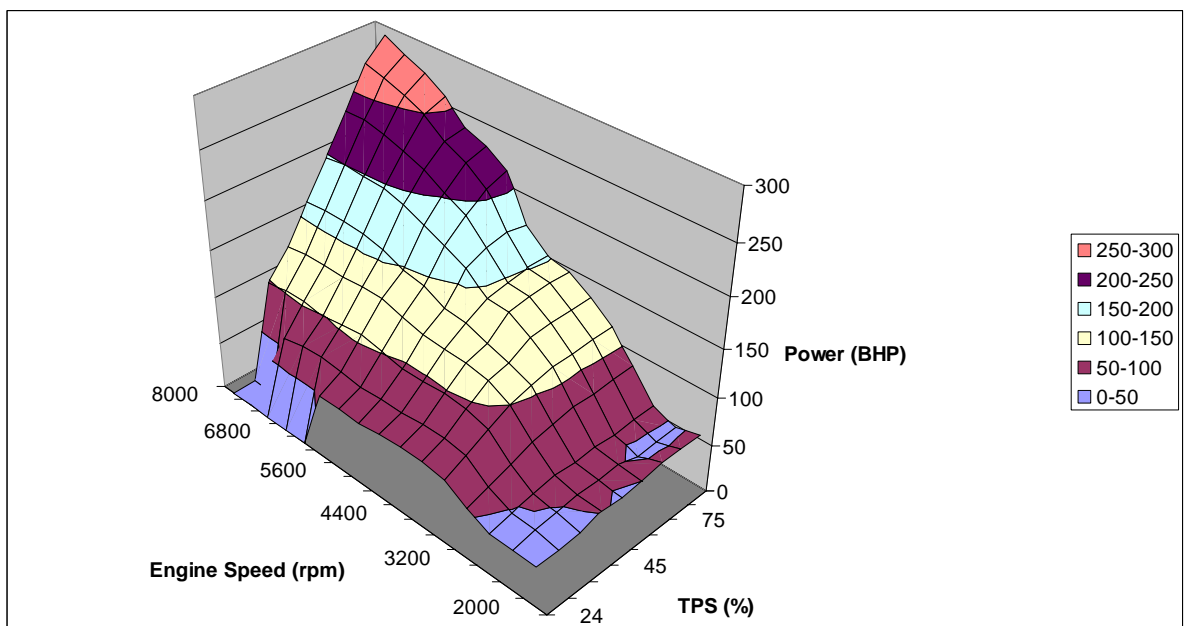




Product Specification & Quote

Duratec 2.3L 300 HP Full Engine



Includes

ECU
CALIBRATION SOFTWARE
IGNITION COIL
2.3L BASE ENGINE BLOCK
OIL COOLER
TENSIONER
TIMING GEAR
TIMING CHAIN
CHAIN GUIDE
SCREW
TENSIONER
BOLT
NUT
Rods
Cam
Cam
AIR BOX
BARREL THROTTLE
BT FIT KIT
HEAD GASKET
CYL HEAD-big valve
WASHERS
FUEL RAIL w injectors
ROD BEARINGS
HEAD STUDS
MAIN STUDS
RING SET
PISTON SET 14:1
PISTON PIN
PISTON CLIP
Crankshaft-BILLET
3 STAGE DRY SUMP
CAM COVER
Alternator system

Price: (FOB LA California) \$19,024.03

1 Whole engine

1.1 Main engine data

Item	Requirements
Application range	<i>Mainly expected to be kit cars, conversions of existing vehicles and rally cars.</i>
Base engine	<i>Ford Duratec 2.3l I4</i>
No. of cylinders	<i>4</i>
Bore/Stroke, mm/mm	<i>87.5 / 94.0</i>
Swept volume, cm ³	<i>2261</i>
Compression ratio	<i>14:1</i>
Cylinder head	<i>Cosworth Big Valve Head</i>
Valve train system	<i>Overhead cam with mechanical tappets</i>
Firing order	<i>1, 3, 4, 2</i>
In-cylinder max. pressure	<i>100 bar</i>
Charging system	<i>Normally aspirated</i>
Injection system	<i>Port injected MPi</i>
Exhaust gas after-treatment	<i>Calibrated with 3 way catalyst</i>
Direction of rotation	<i>Engine rotates counter-clockwise when viewed from flywheel end</i>
EMS	<i>MBE system</i>
Emissions/test cycle	<i>SVA</i>

1.2 Packaging & Installation

Item	Requirements
Installation	<i>Dry sump : see YD0521 for details</i>
Box dimensions (LxWxH), mm	<i>580x550x650 (wet sump)</i> <i>580x550x610 (dry sump)</i>

1.3 Weight

Weight, kg	<i>113kg (no flywheel)</i>
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1.4 Power/torque ratings

Maximum Power (bhp/DIN)	<i>295</i>
Speed at which power achieved, rpm	<i>7800</i>
Torque @ crankshaft, Nm	<i>274</i>
Speed at which torque achieved, rpm	<i>5900</i>

1.5 Speed specifications

1 = Idle speed, rpm	<i>1000</i>
2 = Soft limiter set speed, rpm	<i>7900</i>
2 = Hard limiter set speed, rpm	<i>8000</i>
2 = Max continuous over-speed, rpm	<i>None</i>

1.6 Altitude capability

Item	Requirement	Remarks
Altitude	Max 1000m	Additional mapping and high altitude testing required to increase this to 3000m.

1.7 Starting behaviour

Item	Requirement	Remarks
Battery	12V	
Hot startability	Hot start possible without delay	
Cold startability	0°C without aid	

1.8 Ambient temperatures

Item	Requirement	Remarks
Air temperature	+40°C to -7°C	

1.9 Maintenance

Item	Requirement	Remarks
Oil change intervals	6,000 miles / 1 year	
Oil type	Synthetic	SAE 0W/30
Spark plug, miles	6,000 miles / 1 year	
Spark plug type	NGK BR7EFS #7 temperature range	
Air filter, miles	Clean at every oil change 6,000 miles	Reusable element
FEAD belt, miles	12,000 miles	

Coolant changing interval	<i>36,000 miles / 3 years</i>	
Coolant type	<i>Comma XSTREAM</i>	<i>Meets Ford std WSS-M97B44-D</i>
Engine maintenance	<i>Check tappets every 6,000 miles</i>	

1.10 Durability and production quality

Item	Requirement	Remarks
Engine durability, miles	<i>10,000</i>	<i>Validate with 50 hour durability test.</i>

1.11 Styling

Item	Requirement	Remarks
Cam cover	<i>Black plastic cover</i>	

1.12 Corrosion Protection

Item	Requirement
External parts	<i>Any steel components to be made of stainless steel, zinc plated or painted</i>
Internal components	<i>No special requirements</i>

2 Cranktrain

2.1 Material & Main Suppliers

Part	Material	Supplier	Comments
Crankshaft	<i>En40b</i>	<i>cosworth</i>	<i>Billet 94mm</i>
Crank damper		<i>Ford</i>	
Piston	<i>Aluminium</i>	<i>Cosworth</i>	
Con rod	<i>Steel</i>	<i>Cosworth</i>	

3 Cylinder Block Assembly

3.1 Material & Main Suppliers

Part	Material	Supplier	Comments
Block assy	<i>Aluminium</i>	<i>Ford</i>	

4 Cylinder Head

4.1 Material & Main Suppliers

Part	Material	Supplier	Comments
Cylinder head	<i>Aluminium</i>	<i>Ford</i>	<i>Cnc port –big valve</i>
Head gasket		<i>Ford</i>	

5 FEAD System

5.1 Material & Main Suppliers

Part	Material	Supplier	Comments
Alternator		<i>Edge</i>	<i>12V, 40A</i>
Alternator belt		<i>Dayco</i>	
Alternator brackets		<i>Cosworth</i>	
Alternator belt tensioner		<i>Ford (Gates)</i>	

6 Cooling System

6.1 Material & Main Suppliers

Part	Material	Supplier	Comments
Water pump		Ford	Uses large water pump pulley
Radiator		None	

6.2 Cooling System Specification

Item	Requirement	Remarks
Cooling system type	Closed system	See : YD0505 (heater by-pass valve) YD0507 (heater shut-off valve) YD0509 (no heater)
Max permissible continuous running temperature	Validate to 120°C	Engine water out temperature limit
Thermostat	82°C	Ford part
System pressure, bar	Min cap rating = 1.0 bar Max cap rating = 1.5 bar	
Coolant flow rate at rated speed	270 l/min max	

7 Camdrive and Valvetrain

7.1 Material & Main Suppliers

Part	Material	Supplier	Comments
Inlet camshaft	Cast iron	Cosworth	High lift, YD13 profile 104° timing

Exhaust camshaft	<i>Cast iron</i>	<i>Cosworth</i>	<i>High lift, YD115 profile 100° timing</i>
Inlet valve	<i>Steel</i>	<i>Ford</i>	<i>35.5mm head diameter</i>
Exhaust valve	<i>Steel</i>	<i>Ford</i>	<i>30.5mm head diameter</i>

8 EMS and Emissions

8.1 Material & Main Suppliers

Part	Material	Supplier	Comments
ECU		<i>MBE</i>	<i>Cosworth specific, YD8176</i>
Software		<i>Cosworth</i>	
Coil		<i>Ford</i>	
MAP sensor		<i>Ford</i>	

9 Sealing and Covers

9.1 Material & Main Suppliers

Part	Material	Supplier	Comments
Camshaft cover	<i>Plastic</i>	<i>Ford</i>	
Front cover	<i>Aluminium</i>	<i>Ford</i>	

10 Lubrication and Breather System

10.1 Material & Main Suppliers

Part	Material	Supplier	Comments
Oil pump		<i>Ford</i>	
Oil filter		<i>UFI Filters</i>	
Oil cooler		<i>Ford</i>	<i>On-engine water-oil cooler</i>

10.2 Lubricants and lubricant consumption

Oil quality:	<i>Cosworth performance oil</i>
Viscosity class:	<i>SAE 5W/40</i>
Oil consumption limits	<i>1 litre per 300 km max</i>

10.3 Lubrication system – wet sump

Sump pan	<i>Ford (Cosworth wet sump baffle kit optional)</i>
Max bulk oil temperature, °C	<i>130 °C continuous 140 °C peak</i>
System pressure, bar	<i>4.0 bar min at max speed (PRV pressure : 5.0 bar)</i>
Breather system type	<i>Cam cover and crankcase breathers as per Ford base engine</i>

10.4 Lubrication system – dry sump

Sump pan	<i>Cosworth</i>
Scavenge pump	<i>Cosworth internal pump Scavenge ratio = 5.1:1</i>
Max bulk oil temperature, °C	<i>130 °C continuous 140 °C peak</i>
System pressure, bar	<i>4.0 bar min at max speed (PRV pressure : 5.0 bar)</i>
Oil tank	<i>Pace '6.5 inch' Easy Clean tank (recommended)</i>
Oil tank capacity, litres	<i>5 litres (run between 3.5 litres and 4.6 litres)</i>
Oil level indication	<i>Check with dipstick</i>

Breather system type	<i>Open system with catch tank (see YD0502)</i>

11 Intake and Fuel System

11.1 Material & Main Suppliers

Part	Material	Supplier	Comments
Throttle		<i>Cosworth</i>	<i>Barrel throttles</i>
Fuel rail		<i>Cosworth</i>	<i>Large rail without damper</i>
Injectors		<i>Cosworth</i>	<i>310gmin</i>
Air filter	<i>Dual stage foam</i>	<i>Cosworth</i>	

11.2 Fuel

Item	Requirement	Remarks
Fuel grade	<i>100 octane</i>	

11.3 Fuel System

Item	Requirement	Remarks
Feed pressure/flow	<i>Pressure : 4.3 ±0.1bar across rev range</i> <i>Flow : 1.4 l/min at max power</i>	<i>Engine does not come with fuel pump or PRV</i>
Max fuel temperature, °C	<i>60° C (at fuel rail)</i>	

12 Exhaust and Catalyst System

12.1 Material & Main Suppliers

Part	Material	Supplier	Comments
Manifold		None	
Catalyst		None	
Exhaust system		None	

12.2 Exhaust System

Item	Requirement	Remarks
Exhaust temperature limit, °C	870°C	(30mm from head face)
Max exhaust back pressure at catalyst inlet	15kPa	

Does not include exhaust system.

Exhaust system requirements: 2" diameter

