

## General Specifications

### Engine Data

General		V6 24V Cosworth
Engine management		EEC V module
Emission standard		96 EEC
Fuel		Super 95 RON unleaded
Engine code		BOB
Firing order		1-4-2-5-3-6
Bore	mm	93,0
Stroke	mm	72,0
Cubic capacity	cc	2935
Compression ratio		9,7:1
Compression pressure	bar	14
Power output (EEC)	kW	151,4
	at rev/min	6000
Power output (DIN)	kW	154,5
	(PS)	210
	at rev/min	6000
Torque (EEC)	Nm	281
	at rev/min	4250
Torque (DIN)	Nm	286,6
	at rev/min	4250
Idle speed	rev/min	N=730, D=650
Max. engine speed	rev/min	6150, 6250

### Dimensions

Cylinder block		
Number of main bearings		4
Cylinder bore Ø, class 1	mm	93,01 – 93,02
Cylinder bore Ø, class 2	mm	93,02 – 93,03
Cylinder bore Ø, class 3	mm	93,03 – 93,05
Main bearing shells, inside diameter	mm	60,620 – 60,640

### Dimensions

Crankshaft		
Main bearing journal Ø, class 1	mm	56,980 – 57,000
Main bearing journal end float	mm	0,08 – 0,32

### Dimensions

Connecting rod		
Bore diameter, big end	mm	56,820 – 56,840
Bore diameter, small end	mm	23,958 – 23,976
Connecting rod, distance between bores	mm	130,515 – 130,585
Big-end bearing clearance (radial)		

**Dimensions**

<b>Pistons</b>		
Piston Ø, class 2	mm	92,985 – 92,995
Piston Ø, class 3	mm	92,995 – 93,005
Piston ring groove, upper compression ring	mm	0,41 – 0,48
Piston ring groove, lower compression ring	mm	1,73 – 1,79
Piston ring gap (fitted)		
Upper compression ring	mm	0,4 – 0,65
Lower compression ring	mm	0,9 – 1,1
Oil control ring	mm	0,3 – 0,6
Top ring max. clearance	mm	0,20
Compression ring max. clearance	mm	0,10
Piston ring clearance: excessive piston ring clearance is identifiable by high oil consumption and sometimes also by blue exhaust smoke.		
Piston Pins		
Piston pin diameter	mm	24,013 – 24,019
Ring gap position: the piston ring gaps must be spread evenly around the circumference of the piston. This also applies to the elements of the oil control ring. Stagger the ring gaps at intervals of 120°.		

**Dimensions**

<b>Camshafts</b>		
Number of camshafts		4
Number of camshaft bearings		4/4
Drive		2 timing chains
Camshaft bearing, inside diameter	mm	34,5 – 34,52
Camshaft bearing, inside diameter	mm	28,0 – 28,21
Max cam lift, inlet	mm	9,5
Max cam lift, exhaust	mm	9,5
Bearing journal diameter	mm	34,439 – 34,460
Bearing journal diameter	mm	27,939 – 27,960
Valve timing, inlet opens BTDC		8°
Valve timing, inlet closes ABDC		62°
Valve timing, exhaust opens BBDC		56°
Valve timing, exhaust closes ATDC		14°
Valve timings, overlap		22°

**Dimensions**

<b>Valves</b>		
Valve tappet diameter	mm	34,9659 – 34,975
Valve head Ø, inlet	mm	34
Valve head Ø, exhaust	mm	30
Valve length, inlet	mm	105,59
Valve length, exhaust	mm	104,15

Valve stem Ø, inlet	mm	6,90 – 6,94
Valve stem Ø, exhaust	mm	6,90 – 6,94
Valve spring length, fitted	mm	32,0
Valve spring length, not fitted	mm	40,4

### Dimensions

<b>Cylinder Heads</b>		
Valve tappet bore diameter	mm	35,000 – 35,015
Valve guide bore diameter	mm	7,0 – 7,015
Valve seat angle		45° 0' – 45° 15'
Cylinder head mating face, maximum distortion diagonally or along length	mm	0,06
Cylinder head mating face, maximum distortion across width	mm	0,02
Rework to a maximum depth of	mm	0,13
Thickness of cylinder head gasket	mm	1,2

### Lubricants, Adhesives and Sealers

	<b>Ford Specification</b>
Coolant	ESD-M97B49-A
Rear main bearing cap only (Loctite 518)	ESK-M4G269
Vibration damper	
Vibration damper (Never Seez)	ESE-M1244-A
Vibration damper (Hylosil 102)	WSK-M4G320-A
Timing chain housing to cylinder block (only M8x60) (Loctite 518)	ESK-M4G269
Timing chain tensioner housing to cylinder head (Loctite 243)	WSK-M2G 349-A7
Right-hand timing chain guide to cylinder block (Loctite 243)	WSK-M2G 349-A7
Intermediate shaft bearing plate (Loctite 243)	WSK-M2G 349-A7
Sump to cylinder block, ends of the rubber gasket (Loctite 518)	WSK-M4G320-A
Timing chain housing gasket (Hylosil 502)	ESK-M4G269

### Capacity

	<b>Litres</b>
Engine oil incl. filter	4,5
Engine oil excl. filter	4,2
Coolant	9,5

### Engine oil

<b>Ambient temperature</b>	<b>Designation</b>	<b>Specification</b>
-20 to over 40°C	Ford Multigrade Super Motor Oil	SAE 10W30 API/SH/CD EC
If engine oil of a different specification is used, care must be taken to ensure it complies with viscosity class API SH/CD or better.		

**Torques**

<b>General</b>	<b>Nm</b>	<b>lbf.ft</b>
Wheel nuts	85	63

**Torques**

<b>Intake system</b>	<b>Nm</b>	<b>lbf.ft</b>
Inlet manifold cover	4	3
Bracket for speed control cable	9	7
Inlet manifold to cylinder head	16	12

**Torques**

<b>Exhaust</b>	<b>Nm</b>	<b>lbf.ft</b>
Catalytic converters to bracket (between the catalytic converters)	23	17
Catalytic converter bracket to transmission crossmember	47	35
Catalytic converter bracket to transmission	23	17
Catalyst to exhaust manifold	47	35
EGR valve, pipe to intake air plenum chamber	9	7
EGR valve, pipe to inlet manifold	9	7
EGR valve, bracket to cylinder head	19	14
Heat shields to exhaust manifold	9	7

**Torques**

<b>Alternator</b>	<b>Nm</b>	<b>lbf.ft</b>
Bracket for alternator/power steering pump to cylinder block	44	32
Alternator to bracket	25	18
Tensioning pulley for alternator/power steering pump	44	32

**Torques**

<b>Driveshaft</b>	<b>Nm</b>	<b>lbf.ft</b>
Driveshaft to rear axle	65	48
Driveshaft centre to floor assembly	21	15

**Torques**

<b>Transmission</b>	<b>Nm</b>	<b>lbf.ft</b>
Ground lead to transmission	44	32
Transmission crossmember to floor assembly	36	27

**Torques**

<b>Air conditioning system</b>	<b>Nm</b>	<b>lbf.ft</b>
Tensioning pulley for air conditioning compressor	41	30
A/C compressor to bracket	25	18
A/C compressor to cylinder block	44	32

**Torques**

<b>Coolant circuit</b>	<b>Nm</b>	<b>lbf.ft</b>
Coolant pump to timing chain housing	12	9
Bracket for the coolant pipe to the oil cooler	9	7
Coolant pump pulley	19	14
Thermostat housing bracket	9	7
Thermostat housing connector	9	7
Coolant pipe bracket to cylinder head	19	14
Coolant pipe clamp to cylinder head	9	7

**Torques**

<b>Steering</b>	<b>Nm</b>	<b>lbf.ft</b>
Power steering pump to bracket	25	18
Power steering pump pulley	25	18
Intermediate shaft to steering shaft	18	13

**Torques**

<b>Engine mounting</b>	<b>Nm</b>	<b>lbf.ft</b>
Engine mounting nuts	50	37

**Torques**

<b>Front axle</b>	<b>Nm</b>	<b>lbf.ft</b>
Transverse brace to front axle	80	59
Front axle to side member	80	59
Suspension arm to spindle carrier	83	61
Link rod to stabiliser bar	47	35
Track rod to spindle carrier	63	46

**Torques**

<b>Oil circuit</b>	<b>Nm</b>	<b>lbf.ft</b>
Sump M6x20	12	9
Sump M6x45	12	9
Sump M6x115	12	9
Oil pump	20	15
Oil drain plug	24	18
Oil baffle plate	5	4
Oil filter to oil cooler (after contact)	270°	270°
Oil cooler to oil pick-up pipe	33	24

**Torques**

<b>Cylinder block</b>	<b>Nm</b>	<b>lbf.ft</b>
Main bearing caps	97	72
Big-end bearing cap, (big-end bearings and conrod bolts 6AA or KX 110)	30	22

**Torques**

Big-end bearing cap, (big-end bearings and conrod bolts 5AB or KX 900), stage 1	20	15
Big-end bearing caps, stage 2	90°	90°
Camshaft bearing caps	10	7
Right-hand timing chain guide	9	7
Timing chain housing to cylinder block M8	19	14
Crankshaft vibration damper, 1st stage	45	33
Crankshaft vibration damper, 2nd stage	90°	90°
Crankcase breather connector to sump	9	7
Clamping sleeve bolt (crankcase breather)	9	7
Oil pressure switch	20	15
Intermediate shaft bearing plate	12	9
Intermediate shaft sprocket	50	37
Clamping piece for oil pump drive assembly bearing bracket	19	14
CKP sensor bracket to cylinder block	9	7
CKP sensor to bracket	9	7
CKP sensor wiring clamp	12	9
Drive plate to crankshaft	68	50

**Torques**

<b>Cylinder Head</b>	<b>Nm</b>	<b>lbf.ft</b>
CMP sensor to cylinder head	9	7
Camshaft sprockets	72	53
Upper chain guides	19	14
Left-hand timing chain guide	9	7
Timing chain tensioner housing	9	7
Timing chain tensioner threaded plug	13	10
Right-hand chain guide retaining bolt	9	7
Cylinder head bolts, stage 1	50	37
Cylinder head bolts, stage 2 (or 2 x 90°)	180°	180°
Cylinder head bolt in timing chain housing	19	14
Cylinder head covers	7	5
Fuel rails	9	7
Fuel pipe bracket	9	7
Spark plugs	20	15
Cylinder head heat shield	9	7
Engine lifting eyes to cylinder head	19	14
Ignition coil bracket M6	9	7
Ignition coil bracket M8	19	14
Oil dipstick tube to cylinder head	9	7