

Foreword

The Sierra RS Cosworth is the latest product of Ford's long and fruitful collaboration with Cosworth, developers of some of the worlds most famous competition engines.

In addition to the 16 valve engine the Sierra RS Cosworth includes a considerable number of new components and systems, all designed to make it the most exciting and exhilarating saloon car ever sold by Ford.

This Technician Information has been developed to inform you, the Service Technician, about these new components and systems and their maintenance requirements.

More detailed information is included in the Special Workshop Manual on the Cosworth RS Sierra.

Service Training Programmes

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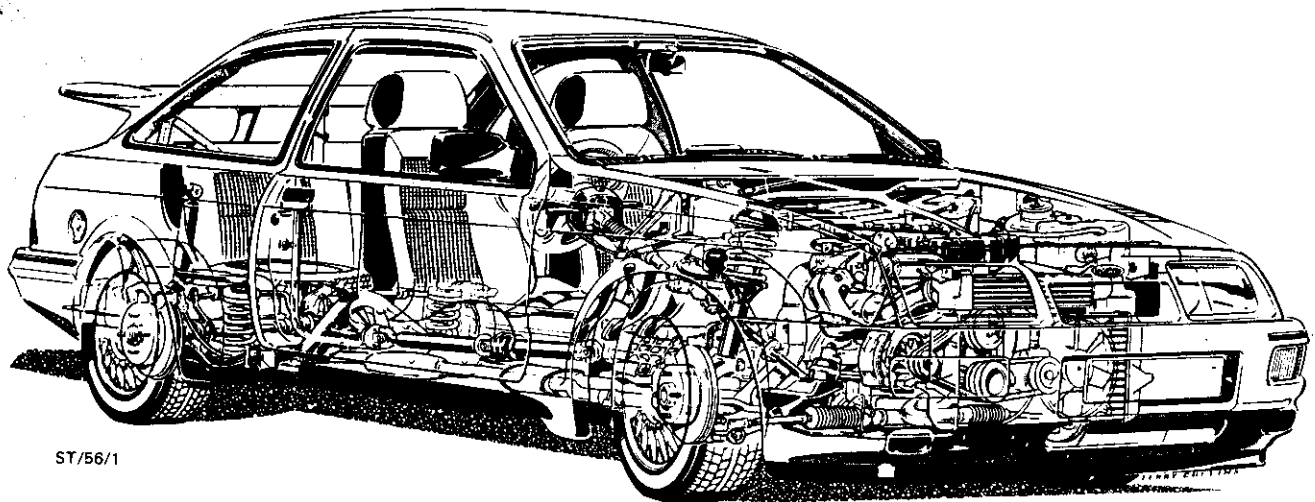
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General

The Sierra RS Cosworth is available as a 3 door Saloon car and is instantly recognisable from the way it sits low on the road and from its unique body panels. Front and rear wheel arch extensions cover the extra wide tyres mounted on 15" x 7" racing style light alloy road wheels. A new front grill panel with a single large cooling slot; a unique bumper with air dam; brake cooling pick-up point and louvres in the hood for optimum air flow are the main features of the front end.

A single plane areofoil/rear wing generates the positive down force required for traction and handling.



(RHD-Version shown)

General (cont'd.)

The 16 valve Cosworth engine presents the key element of the Sierra RS Cosworth. It uses the engine block from the proven Ford OHC engine but is completed with a host of new components and systems such as

- The new cylinder head with its two camshafts to actuate the 4 valves of each cylinder
- A water cooled Garret turbo charger
- A Weber electronic fuel injection system and
- an ignition system made by Marelli.

However, in addition to its unique power plant, Sierra RS Cosworth houses a host of other new or modified components and systems a Service Technician needs to be familiar with and these are

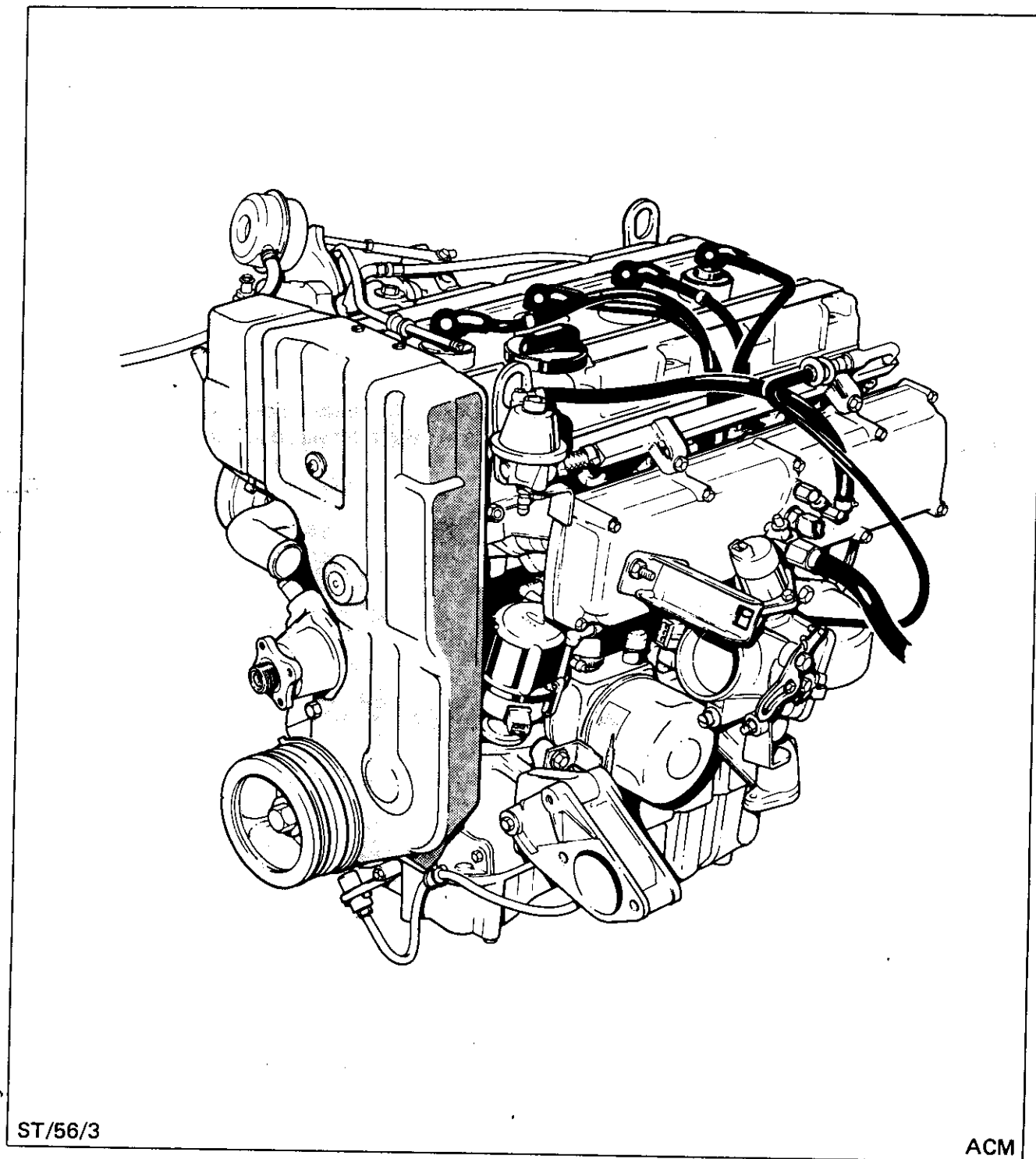
- A close ratio 5 speed transmission
- New clutch and driveshaft
- Limited slip differential similar to Scorpio
- Revised rear axle mounting
- Revised front and rear suspension with power steering and specially tuned shock absorbers and springs to meet Sierra RS Cosworths demands on road holding and road adhesion
- Teves ABS braking system similar to the system used on Scorpio.

In addition to this exciting list of features the interior has been redesigned to match the vehicles sporty appearance and to provide the driver with the environment required for a car of this class.

PART A – Engine, Engine Management and Turbocharger

1. The Ford Cosworth Engine

General Information



The Ford Cosworth 2.0 litre 16 valve D OHC Engine with Turbocharger

PART A – Engine, Engine Management and Turbocharger

1. The Ford Cosworth Engine

General Information (cont'd.)

- Sierra's high performance 16 valve engine has been developed by Cosworth in England, a company well known for its racing car engines.

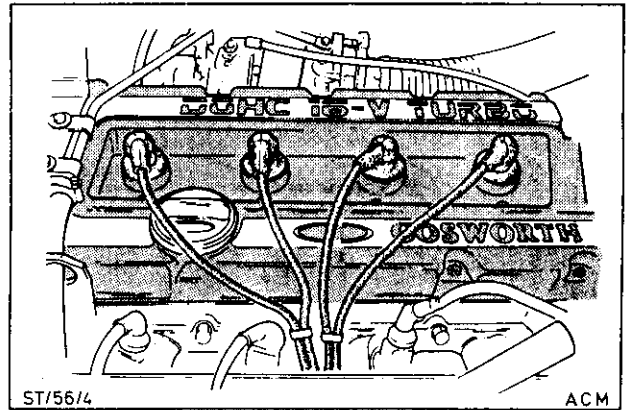
The Ford 2.0 ltr. OHC regular production cylinder block forms the mainstay of this engine.

- The valve cover bears the following identifications:

D OHC = Double Overhead Camshaft – indicating that the engine has two overhead camshafts

16 V = 16 valves

Turbo = Turbocharger

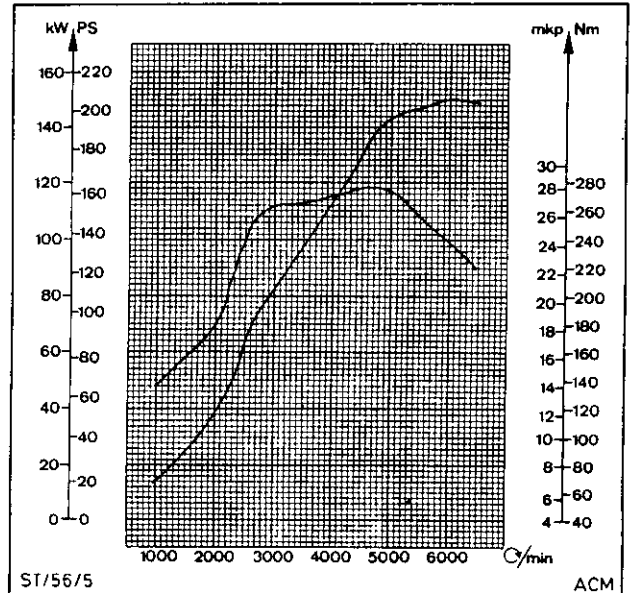


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ACM

- Power = 150 kW (204 PS) at 6000 rpm
- Max. Torque = 278 Nm at 4500 rpm
- Max. Engine speed
 - continued running : 6500 rpm
 - intermittent running: 6800 rpm

204 STD.
300+ Race



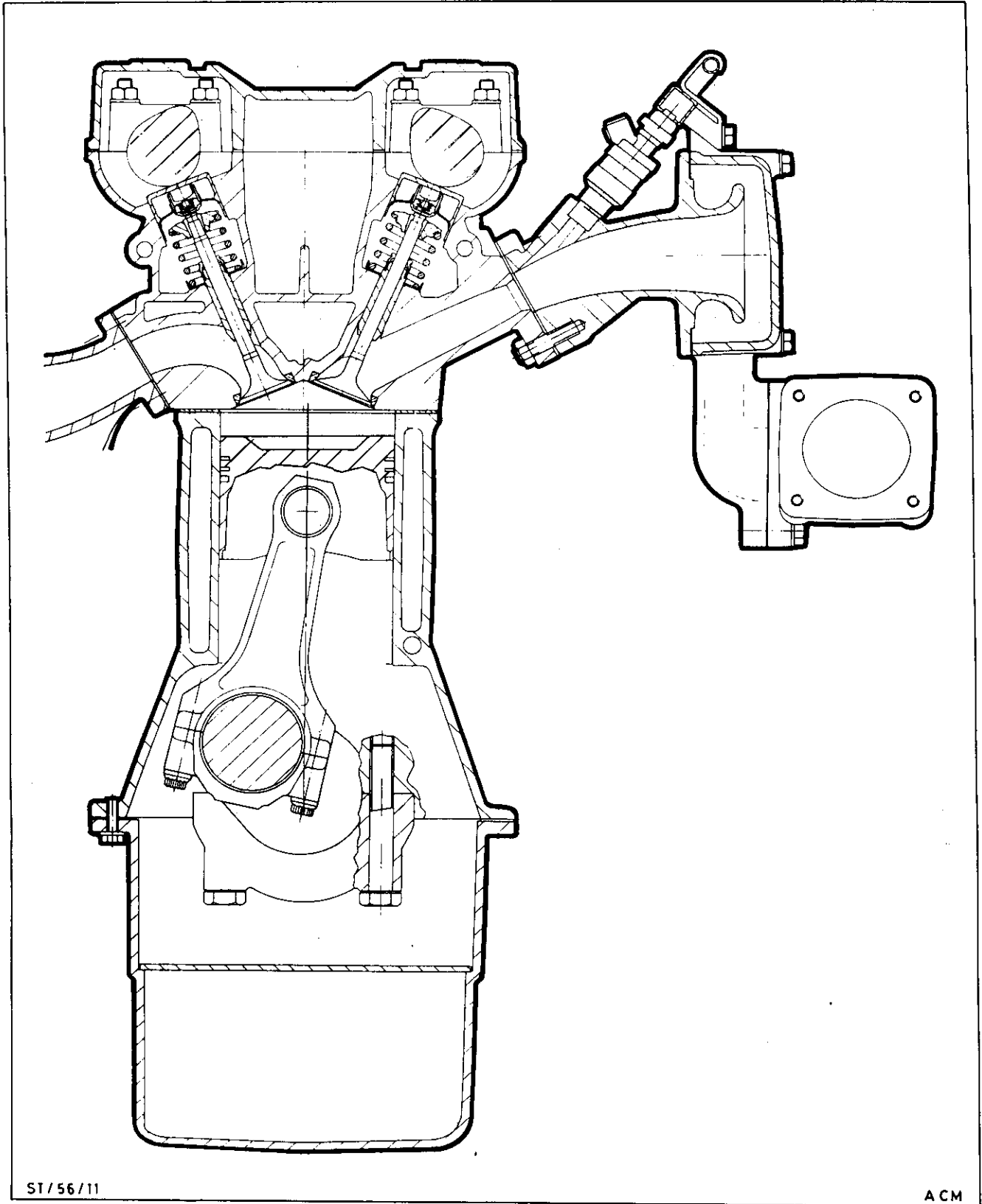
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ACM

- Apart from the cylinder block, which has been selected from regular production, all other major components of the engine have been newly developed by either Ford or Cosworth or have been uprated to suit the engines high performance. Main feature of the engine is the 16 valve aluminium cylinder head with its two camshafts specially developed for this engine by Cosworth.

PART A – Engine, Engine Management and Turbocharger

1.1 Engine Components



Engine – front cross section

PART A – Engine, Engine Management and Turbocharger

1.1 Engine Components (cont'd.)

The Cylinder Head

- The Cosworth light-alloy cylinder head has two overhead camshafts – one for the inlet side and one for the exhaust side.
- A better volumetric efficiency is achieved by two inlet and two exhaust valves for each cylinder.
- The valves are inclined and their “V” arrangement has an angle of 22,5°.

Valve stem diameter – inlet valve 7.0 mm

– exhaust valve 8.0 mm

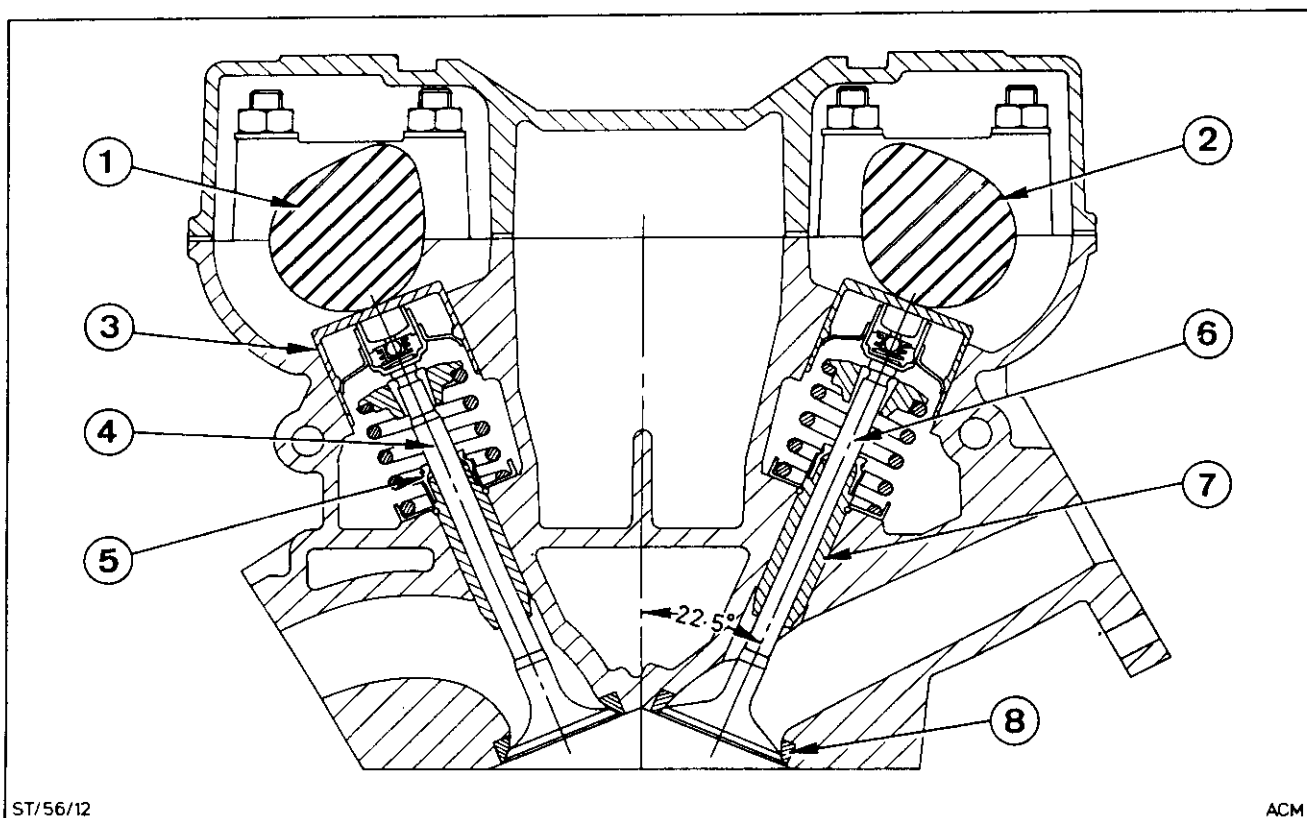
The exhaust valve stems are sodium filled for optimum cooling.

The exhaust valve stem is stepped and its upper end is 7.0 mm to enable identical valve retainers and collets to be used.

- The valves are actuated directly via hydraulic valve tappets. This eliminates the need for valve gap adjustment in service.
- Valve seats and guides are fitted in production by shrinking. Replacement can be done by specialists for this type of work.

Valve guides – inlet : Copper-alloy inner dia. 7.0 mm

exhaust : Copper-alloy inner dia. 8.0 mm



- 1 = Camshaft – outlet side
- 2 = Camshaft – inlet side
- 3 = Hydraulic valve tappets
- 4 = Exhaust valves – sodium filled

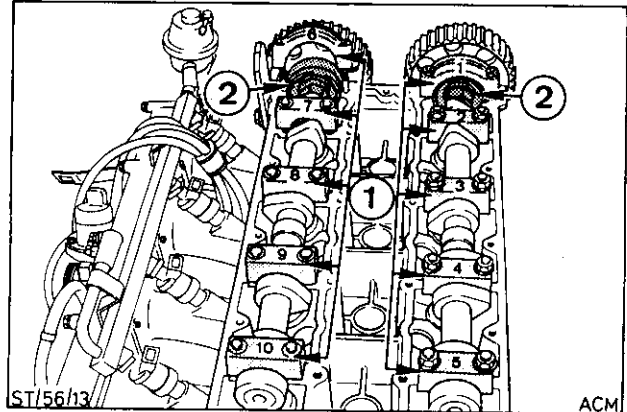
- 5 = Valve stem seals
- 6 = Inlet valves
- 7 = Valve guides
- 8 = Valve seats

PART A – Engine, Engine Management and Turbocharger

1.1 Engine Components (Cylinder Head, cont'd.)

- The valve stem seals have a press fit on the valve guides. Removal is done with special pliers, for installation a special installer tool is required (refer section "Cylinder head – remove and install").

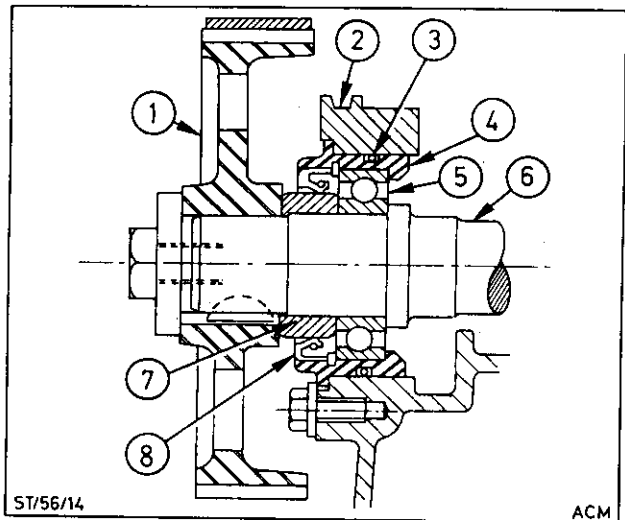
- Each camshaft is supported in five bearings with bolt-on bearing caps.
- The cam bearings are machined in such a manner, that bearing liners are not required.
- The bearing caps are marked 1 to 5 on the exhaust side and 6 to 10 on the inlet side with the counting starting from the front on both sides.



Camshaft support bearing

- 1 = Bearing cap
- 2 = Bearing retainer with bearing

- The front end of each camshaft is supported in a ball bearing to reduce the high start up torque transmitted through the timing belt of the sprocket wheel.



Camshaft front bearing

- 1 = Camshaft sprocket wheel
- 2 = Bearing cap
- 3 = O-Ring
- 4 = Bearing retainer
- 5 = Ball bearing
- 6 = Camshaft
- 7 = Oil seal race
- 8 = Oil seal