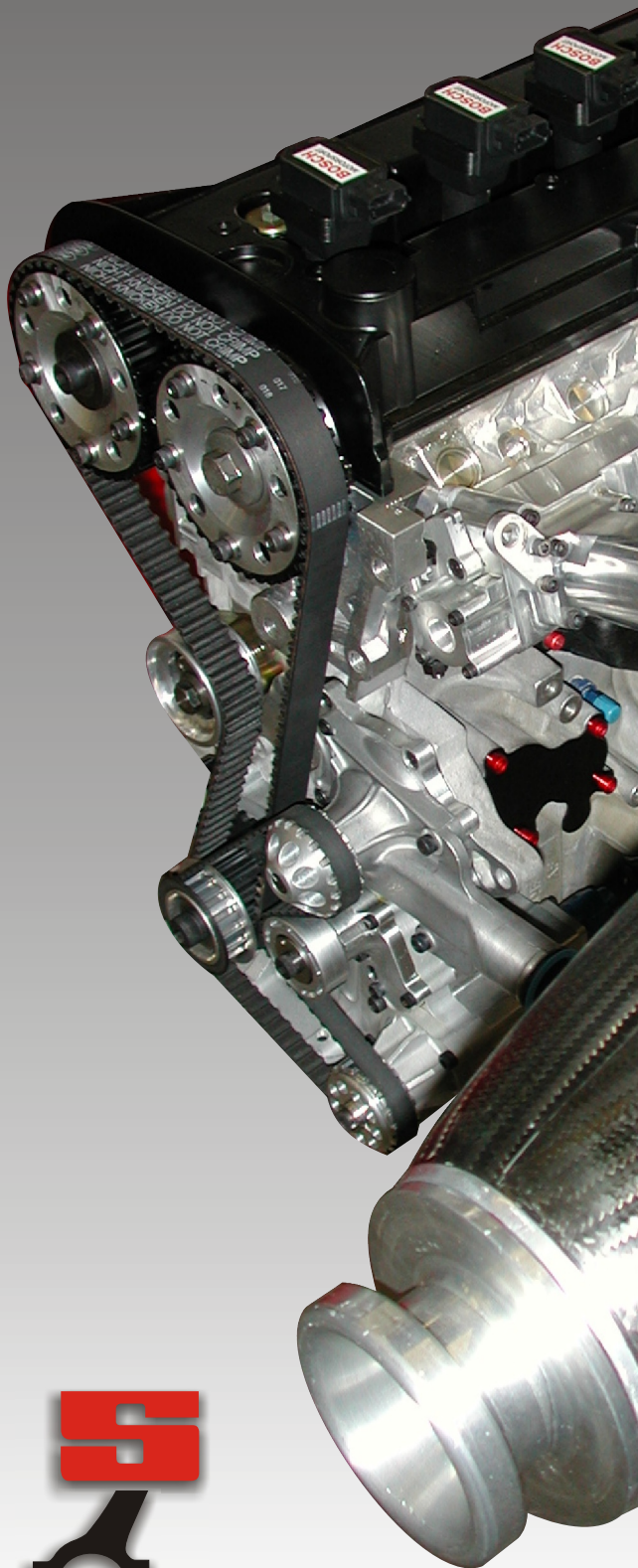


FORMULA 3 ENGINE 2002

An Introduction

SWINDON-FORD



ISSUE 1

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SWINDON RACING ENGINES

Introduction



Swindon Racing Engines has no shortage of Formula 3 experience working with Toyota, Mitsubishi, Alfa Romeo, Volkswagen and originally with Triumph



Our impressive premises and facilities give our employees the space and equipment to be very productive. In total there are currently 18,600 sq/ft of factory space.



Shown below is the engine rebuild section where each engineer has their own bay and set of tools. Each engine is assigned an area and control bench for efficiency.

FORMULA 3 ENGINE 2002

An Introduction

SWINDON-FORD

Swindon Racing Engines are developing a new Formula 3 engine that will be utilised in the 2002 racing season.

The engine is now in it's final stages of development having completed very convincing feasibility tests. This has led to a full Formula 3 programme that was started in May 2000.

Swindon Racing Engines have previously had successful experience within Formula 3 working on Toyota, Mitsubishi, Alfa Romeo, Triumph and Volkswagen power units.

This information pack is the first in a series that will help to keep you in touch with our development program and how we are working through this process. If you have any questions after reading this overview, please do not hesitate to contact Andy Pycock (details below) who will be happy to answer any queries that you may have.

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Feasibility Study



The Factory Ford Puma Rally project that started the Formula 3 programme.

Cylinder Block



Cylinder Head



Project Origination:

Swindon Racing Engines were contracted by Ford to design and produce an engine for the Puma European rally car. Through this extensive project it was realised what great potential the identical cylinder block and head could offer as a Formula 3 engine.

Production Based Engine Parts:

Cylinder Block

Production: The cylinder block was designed and manufactured by Yamaha for Ford.

Characteristics: A light weight aluminium cylinder block that has excellent structural design. The compact layout of the block offers excellent torsional strength, and combined with a Nicosil bore makes an excellent base unit.

Cylinder Head

Production: Like the cylinder block, the cylinder head has been designed and manufactured by Yamaha for Ford.

Characteristics: The cylinder head has a very compact combustion chamber layout, allowing high compression ratios.



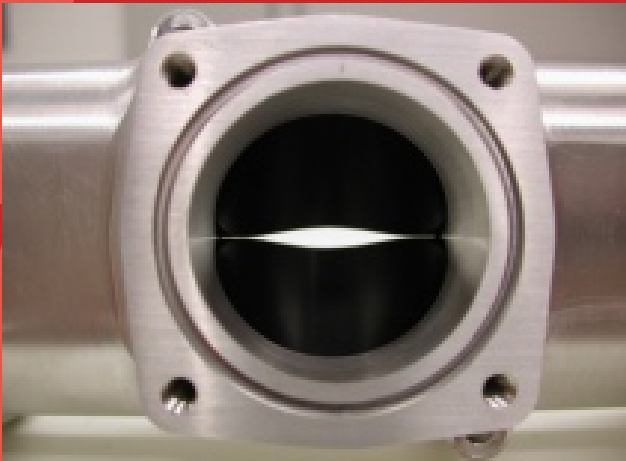
Development Program



Prototyping/Manufacture

Development work has been highly efficient due to the in-house capability to produce components quickly and make modifications when needed.

CNC machines ensure our turn around times are reduced greatly and our number of solutions is not limited. These facilities enable different ideas to be easily tested on the various development engines.

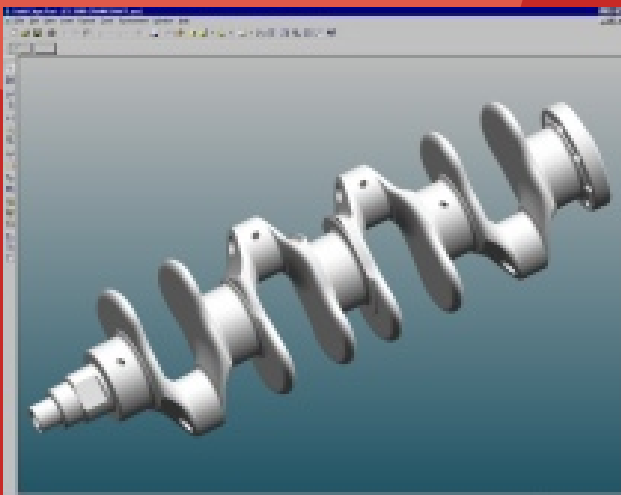


Gas-Dynamic Roller Throttle

The Formula 3 engine will utilise the fully developed twin roller throttle system. This assembly increases air speed and capacity into the head, and gives a far more responsive and progressive throttle for the driver.



Left: Part Throttle
Right: Full Throttle



3D Modelling

Full 3D modelling capability has allowed the design office to produce virtual prototypes of all items that are manufactured for the F3 engine. This allows such tools as clash detection and FEA to be utilised. In turn, this has reduced the amount of time needed to physically develop the engine. Our CAD software is continually updated as part of our software agreement, ensuring our design office never stands still with technology.

Development Program



Engine Requirements

With three engines already in existence, we have been able to speed up development and reduce the cost of manufacture. These engines have a continuous development program.

We are currently producing a further three engines to help with development both in the factory and on the race track.



Test Analysis

The cylinder head, induction and exhaust system have spent a large amount of time on the flow bench. This analysis combined with 30 years of cylinder head experience is enabling us to optimize performance.

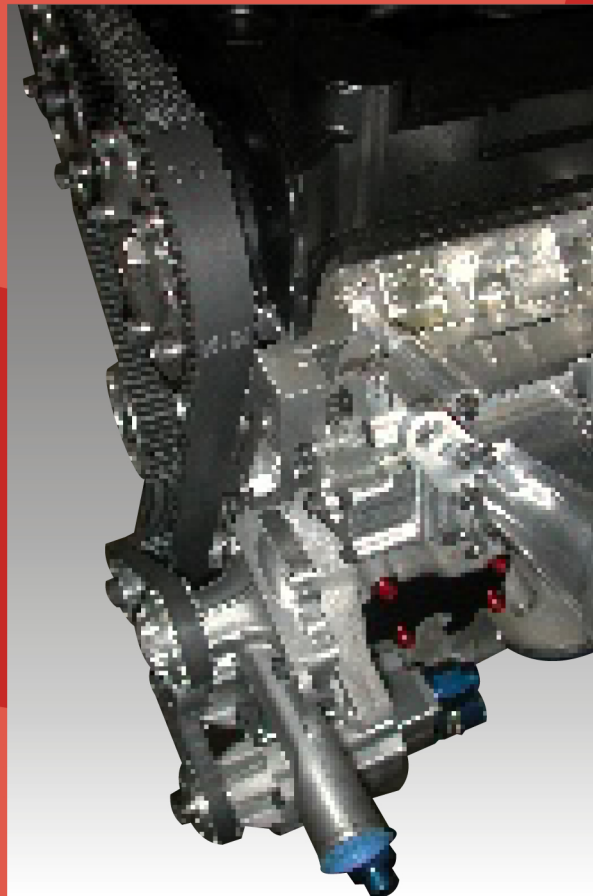


Test facility

We have the latest technology dynamometers on-site that allow us to quickly test components that have just been produced in the factory. The electronically programmable control systems and data analysis play a big part in the continual efforts to improve engine performance and reliability. To date, the Formula 3 engine has recorded over 750 hours of dynamometer time with many more hours planned on the existing development schedule.



Technical Specification



Engine: 1997cc

Cylinder Block: Aluminium alloy casting with nicosil-plated cylinder bores
Weight with main caps, bolts and bearings - 15.8kg

Dry sump: High oil control efficiency, structurally designed with direct mounting from chassis and transmission.

Cylinder Head: Cast aluminium alloy, 4 valves per cylinder.
Weight, complete with valve train - 12.1kg

Crankshaft: Steel billet light weight crank

Connecting Rod: Forged steel

Piston: Forged aluminium alloy

Tappet: Direct overhead tappet piston

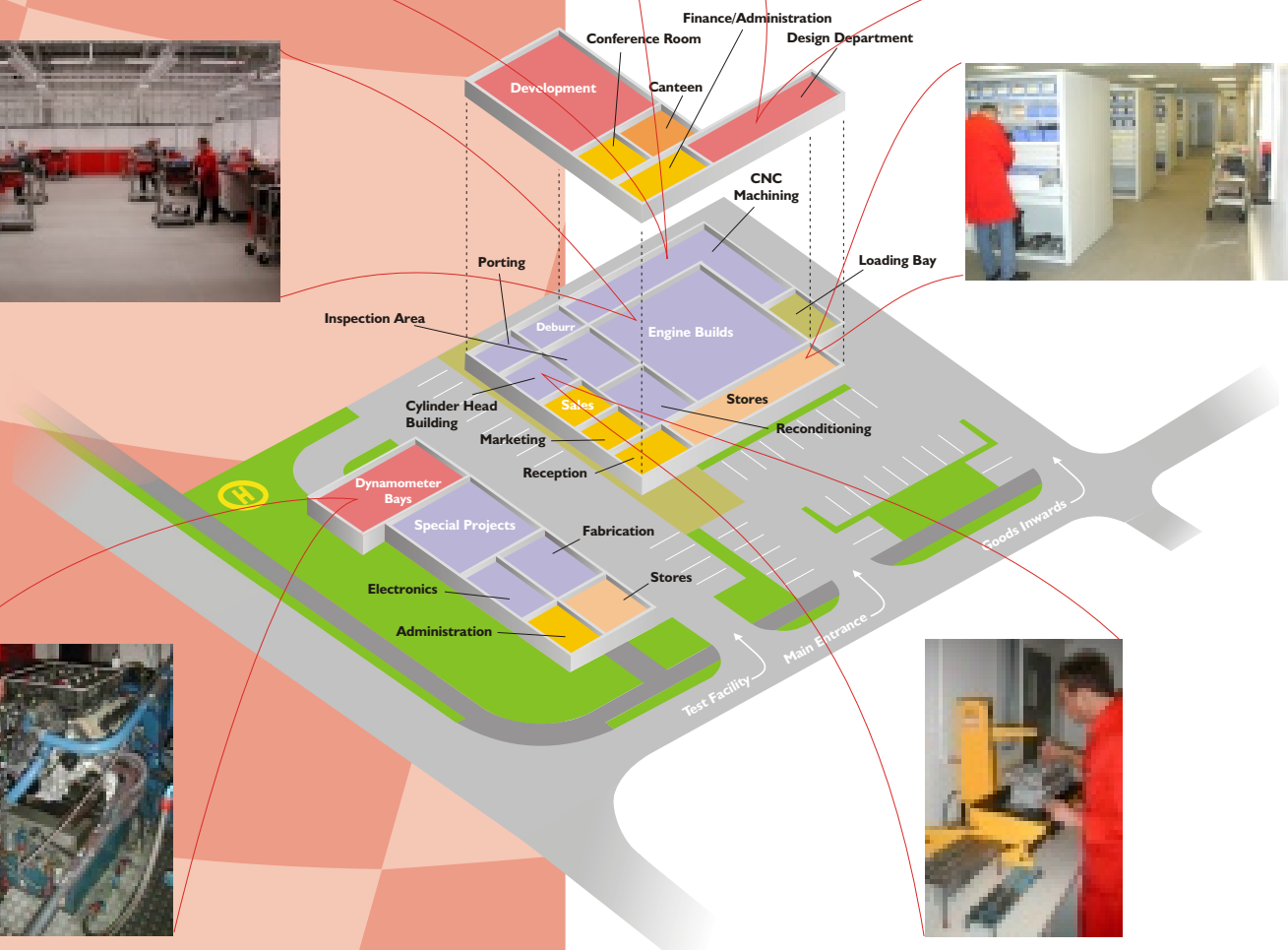
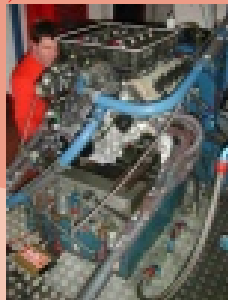
Camshafts: Belt driven

Throttle System: Compact high response throttle system, enabling close mounting to inlet valves.

Engine Weight: Less clutch, starter, exhaust and structural mounting - 73.7kg

This low basic weight allows us to design a very effective structural installation package and still maintain a lightweight solution.

Facilities



Swindon Racing Engines has impressive facilities that allow us to provide solutions for many customers. With so much equipment on site it allows us to complete projects quickly and efficiently.

The factory is being continually developed, ensuring the latest technology is utilised and workflow is as efficient as possible.

We would be pleased to give a guided tour of the factory to any teams.

Support



Swindon Racing Engines will be working closely with your team to ensure you are completely up to speed with any information required. You are more than welcome to visit us to discuss technical matters, watch your engine be dyno' tested or simply to see what facilities can be utilised.

- **Dyno' Test Viewing**
- **Technical Assistance**

Our support programme is there to evaluate how the adoption of an engine package can become a smoother process for your technical personnel. Areas that will be developed include technical information and guides.

- **Installation Guide**
- **Maintenance Information**
- **Specified Checklists**

Image is taken very seriously at Swindon Racing Engines.

We understand that the image of your engine supplier is portrayed onto your race team in view of financial partners and guests.

To help you in this area, we will ensure that our trackside presence is professional and substantial, helping both with technical support and showing that you have significant support for your engines. We can also offer factory tours for your sponsors/potential sponsors to help your team acquire funding and show the operations behind your cars power units.

- **Trackside Facilities**
- **Factory Tours**

Economics

Having researched the current marketplace, we can assure you that the Swindon-Ford will be a competitively priced effective engine package.



Company History



**30 Years of
Championship
Winning
Experience**

Foundations:

Founded by John Dunn, the company now has 30 years of race winning experience. Originally created to service, and later develop Ford DFV Formula 1 engines, the company went on to utilise this engineering knowledge to branch out into many different motorsport disciplines. Engine programmes have varied over the years to accommodate very different applications, and the list of championship wins below underlines the companies success rate. Now headed by Gary Dunn, the business has the benefit of a vastly knowledgeable staff base, and enthusiastic manner that few companies could match.

Current Major Programmes:

Formula 3 Swindon-Ford
Super I 600 Opel Corsa Factory Project
Ferrari F360 GT3 Programme
GM Sportscar Engine

Previous Formula 3 Experience:

Triumph Dolomite
Volkswagen
Alfa Romeo
Toyota
Mitsubishi HKS

Championship Wins Include:

Formula 1
Formula 3000
Formula 3
World Sportscars
British Touring Cars
International Touring Cars
British Hill Climb
British Rally
World Rally



F3 - FAXBACK

Team Name: _____

Team Owner: _____ Email: _____

Team Manager: _____ Email: _____

Chief Engineer: _____ Email: _____

F3 Series: British German French Japanese

Other: _____ No. of Cars: _____

British Series: scholarship main

What is your average annual mileage? _____

What are your current engine costs? _____

Will you require track support? Yes No

How many spare engines do you carry? _____

Do you compete in international events? (Macau, Zandvoort etc) Yes No

What disappoints you about your current service? _____

What do you like about your current service? _____

What would you like to see in terms of support and service? _____

Would your team be interested in testing the engine at the end of the year? yes no
(we would supply the car installation kit)

Thank you for your time.



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