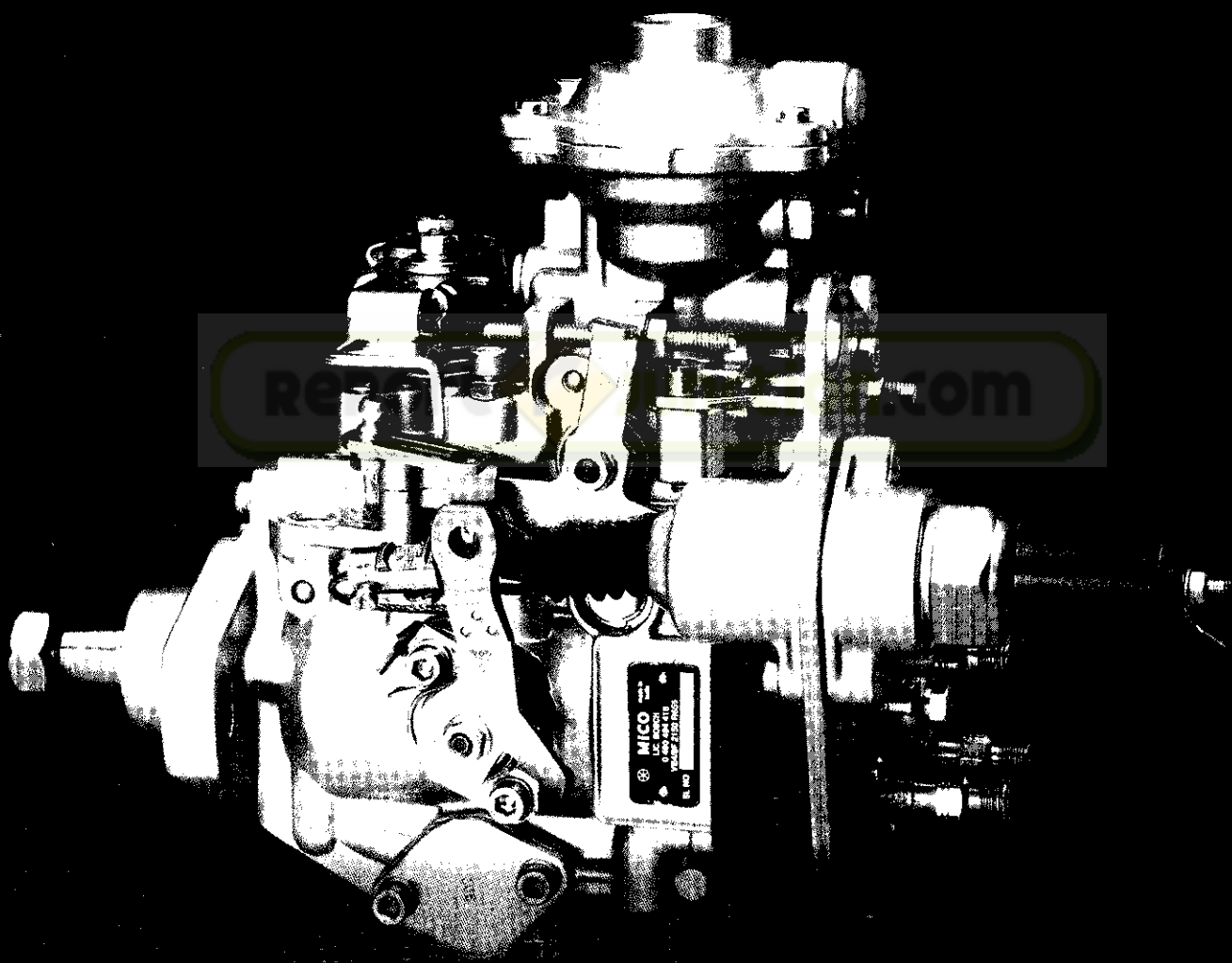




MICO
Bosch Group

Annual Report 2000



MOTOR INDUSTRIES CO. LTD.

About MICO



Motor Industries Company Limited (MICO) is a subsidiary of Robert Bosch GmbH, Germany. Founded in 1951, MICO pioneered the manufacture of automotive spark plugs and diesel fuel injection equipment in India. With access to the international technology of Bosch, conscious commitment to quality and more than 11,000 employees, MICO is the largest manufacturer of diesel fuel injection equipment in the country and one of the world's largest. In addition, MICO manufactures industrial equipment, auto-electrical, hydraulics for industrial and tractor applications, electric power tools, packaging machines and Blaupunkt car audio systems.

Partnering MICO in its quest for quality are its suppliers, including those in the small-scale sector. An all-India network of over 4,000 authorised representation ensures widespread availability of both products and after-sales service.

About Bosch



The name of Robert Bosch is closely associated with the automobile. Today, Bosch is synonymous with automotive equipment such as fuel injection, braking and driver-information systems and also for a whole range of other product areas: power tools, household appliances, thermotechnology, automation technology and packaging machinery.



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Board of Directors, Committees, etc.**Directors**

H. Zimmerer, *Chairman*
 Y.H. Malegam
 Dr. J.J. Irani
 F. Fehrenbach
 Dr. G. Krueger
 A. Nobis,
Managing Director (from 01.07.2000)
 M. Lakshminarayan,
Joint Managing Director (from 01.10.2000)
 V.K. Viswanathan,
Joint Managing Director (from 01.01.2001)

Company Secretary

B.S. Iyer

Auditors

A.F. Ferguson & Co.

Bankers

State Bank of India
 Canara Bank
 Citibank, N.A.
 Deutsche Bank AG
 The Hongkong and Shanghai Banking
 Corporation Limited

Registered Office

Hosur Road
 Adugodi
 Bangalore-560 030

Stock Exchanges (where the shares of the Company are listed)

Bangalore Stock Exchange Limited
 51, Stock Exchange Towers
 1st Cross, J.C. Road
 Bangalore-560 027
 The Stock Exchange
 Phiroze Jeejeebhoy Towers
 Dalal Street
 Mumbai-400 001

Audit Committee

Y.H. Malegam, *Chairman*
 H. Zimmerer
 Dr. G. Krueger

Shareholders'/Investors' Grievance Committee

H. Zimmerer, *Chairman*
 Y.H. Malegam
 A. Nobis
 V.K. Viswanathan

Remuneration Committee

H. Zimmerer
 Dr. J.J. Irani
 Dr. G. Krueger

Investment Committee

Y.H. Malegam
 Dr. J.J. Irani
 A. Nobis
 V.K. Viswanathan

Property Committee

H. Zimmerer
 Y.H. Malegam
 A. Nobis
 M. Lakshminarayan

Share Transfer Committee

Y.H. Malegam
 Dr. J.J. Irani
 A. Nobis
 V.K. Viswanathan

Committee on Borrowings

Y.H. Malegam
 Dr. J.J. Irani
 A. Nobis
 V.K. Viswanathan

Milestones



- 1951** Establishment of the Company.
- 1953** Construction of the first factory building at Bangalore.
- 1954** Manufacture of spark plugs, single-cylinder diesel fuel injection pumps and nozzle-holders.
- 1955** Manufacture of elements and delivery valves.
- 1956** Manufacture of multi-cylinder diesel fuel injection pumps.
- 1972** Manufacture of nozzle and nozzle-holders at Nashik.
- 1981** Manufacture of special purpose machines and tools.
- 1986** Manufacture of VE distributor pump.
- 1989** Manufacture of auto-electrical.
Manufacture of hydraulic products.
- 1991** MICO becomes the Bosch Global Development Center for single-cylinder diesel fuel injection pumps.
MICO represents Bosch for imported automotive after-market products, automotive workshop test equipment, hydraulics and pneumatics.
MICO establishes Purchase Office for Bosch.
- 1992** Marketing of automotive accessories.
ISO 9001 certification.
- 1993** Manufacture of Bosch electric power tools.
- 1994** Manufacture of packaging machines.
- 1995** MICO becomes the Bosch Global Development Center for a range of multi-cylinder diesel fuel injection pumps.
- 1996** Launch of Blaupunkt car audio systems.
- 1997** QS 9000 certification for all manufacturing plants.
- 1998** Manufacture of 20 millionth single-cylinder pump.
- 1999** Inauguration of Jaipur plant.
Manufacture of Blaupunkt car audio systems.
- 2000** Establishment of Application Development Center.
MICO apprentices win 75th gold medal at the All-India Skills Competition.



1. We want satisfied customers. That is why the highest quality of our products and services is one of our major corporate objectives. This also applies to the quality of the work carried out in our name by our trading partners and in their sales and service organizations.
2. The customer is the judge of our quality. His or her verdict on our products and services is decisive.
3. Our quality goal is always "zero defects" or "100% quality".
4. Not only do our customers assess the quality of our products, but also the quality of our services. Deliveries must be on time.
5. Enquiries, offers, samples and complaints must all be dealt with promptly and thoroughly. It is imperative that agreed deadlines be met.
6. Each and every employee in the Company contributes towards achieving our quality goals. It is therefore the responsibility of every employee – from Apprentice to Member of the Board – to ensure that their work is of the highest standard. Anyone who identifies a problem which may jeopardize quality, but does not have the authority to remedy it himself, must report the matter immediately to his superior.
7. All work must be without defects from the very beginning. This not only improves quality, but also reduces our costs. Quality increases cost-effectiveness.
8. Not only must defects be eliminated, but also their causes. Prevention of defects has priority over their elimination.
9. The quality of our products also depends upon the quality of sourced parts. Demand the highest quality from our suppliers and support them in adhering to our mutual quality goals.
10. Even when painstaking care has been taken, defects can occasionally happen. This is why we have introduced numerous and proven methods and procedures to identify defects at an early stage. These must be rigorously and consistently applied.
11. Ensuring that our quality goals are achieved is an important management duty. When assessing the performance of our employees, particular emphasis is placed on the quality of their work.
12. Our quality directives are compulsory. Further customers requirements must be fulfilled.

Quality Certification



**TÜV
CERT**

CERTIFICATE

The TÜV CERT Certification Body
of Rheinisch-Westfälischer TÜV e.V.
hereby certifies in accordance with TÜV CERT
procedure that

MOTOR INDUSTRIES CO. LTD. (MICO)
Bangalore Plant
Hosur Road, Adugodi
Bangalore 560 030 - India

has established and applies a quality system for

Diesel Fuel Injection Equipment

An audit was performed in accordance with the requirements of QS-9000,
Appendix B, Code of Practice and documented in Report No. 3.A.3-174798
Proof has been furnished that the requirements according to
DIN EN ISO 9001:1994 and QS 9000:1998
are fulfilled.
The certificate is valid until: June 2001
Certificate Registration No. 04191804



RWTUV 

Rev. 02.01.2000

**TÜV
CERT**

CERTIFICATE

The TÜV CERT Certification Body
of Rheinisch-Westfälischer TÜV e.V.
hereby certifies in accordance with TÜV CERT
procedure that

MOTOR INDUSTRIES CO. LTD. (MICO)
Nashik Plant with remote location in Bangalore (Annex)
75 MIDC Estate
Trimbak Road, Solapur
Nashik 422 007 - India

has established and applies a quality system for

Diesel Fuel Injection Equipment

An audit was performed in accordance with the requirements of QS-9000,
Appendix B, Code of Practice and documented in Report No. 3.A.3-174798
Proof has been furnished that the requirements according to
DIN EN ISO 9001:1994 and QS 9000:1998
are fulfilled.
The certificate is valid until: June 2001
Certificate Registration No. 04191804



RWTUV 

Rev. 02.01.2000

**TÜV
CERT**

CERTIFICATE


The TÜV CERT Certification Body
of Rheinisch-Westfälischer TÜV e.V.
hereby certifies in accordance with TÜV CERT
procedure that


MOTOR INDUSTRIES CO. LTD. (MICO)
Ragunathapur Plant with remote location in Solapur (Annex)
Ragunathapur P.O.
Madhavale 560 046
Bangalore District - India

has established and applies a quality system for

- Break Flange
- Glow Equipment
- Auto Backlogs
- Diesel Fuel Injection Equipment
- Car Audio Systems

An audit was performed in accordance with the requirements of QS-9000,
Appendix B, Code of Practice and documented in Report No. 3.A.3-174798
Proof has been furnished that the requirements according to
DIN EN ISO 9001:1994 and QS 9000:1998
are fulfilled.
The certificate is valid until: June 2001
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RWTUV 

Rev. 02.01.2000

**TÜV
CERT**

CERTIFICATE


The TÜV CERT Certification Body
of Rheinisch-Westfälischer TÜV e.V.
hereby certifies in accordance with TÜV CERT
procedure that


MOTOR INDUSTRIES COMPANY LIMITED
39-442, MIDCO Industrial Area
Solapur - 413 023
Solapur - India

has established and applies a quality system for

Diesel Fuel Injection Equipment

An audit was performed in accordance with the requirements of QS-9000,
Appendix B, Code of Practice and documented in Report No. 3.A.3-174798
Proof has been furnished that the requirements according to
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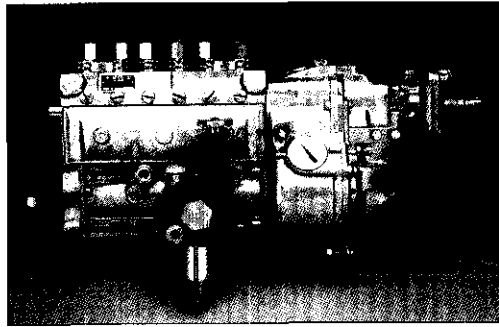
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Rev. 02.01.2000

Product Profile



Multi-cylinder
Pump



Features :

- * Catering to engines with 25 hp to 540 hp
- * Engine speeds up to 3500 RPM
- * Speed/load dependent timing options
- * Over 300 varieties catering to requirements of 2 to 12 cylinder engines
- * Add-on pneumatic shut off and manifold pressure compensator for turbo charged engines
- * Additional feature of cam-lock timing

Applications :

- * Automotive : Multi-utility vehicles, LCV, HCV, Van and Bus
- * Tractor
- * Industrial, earth moving and gensets

Distributor Pump



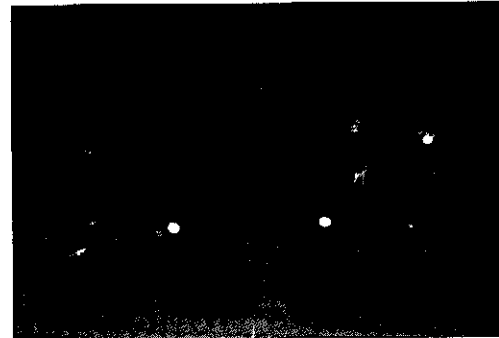
Features :

- * State-of-the-art design to meet stringent exhaust emission control
- * Suitable for 3, 4, 5 and 6 cylinder engines
- * Several add-on devices for emission control and driving comfort

Applications :

- * Suitable for passenger cars, LCV and HCV
- * Tractors, off-highway vehicles and industrial engines

Single-cylinder
Pumps



Features :

- * Injection pressure in the range of 400 to 1000 bar
- * Modular design to cater to a wide range of multi-cylinder engine applications
- * Suitable for 3 to 200 hp/cylinder diesel engines

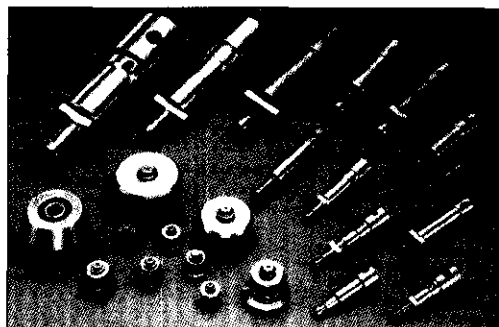
Applications :

- * Automotive engine
- * Agricultural and farm equipment
- * Marine and railway engines

Product Profile



Elements and Delivery Valves



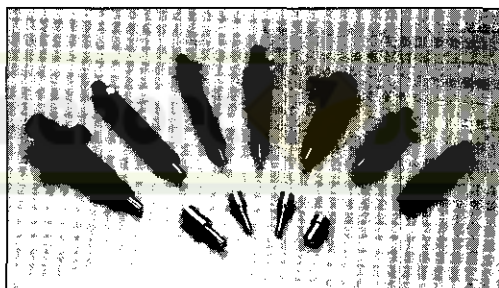
Features :

- * For use in single and multi-cylinder pumps
- * To control delivery, injection pressures, speed/load dependent timing, start advance, etc.

Applications :

- * Different types of automotive and stationary engines
- * Industrial, marine, railway, earth moving and gensets

Injectors



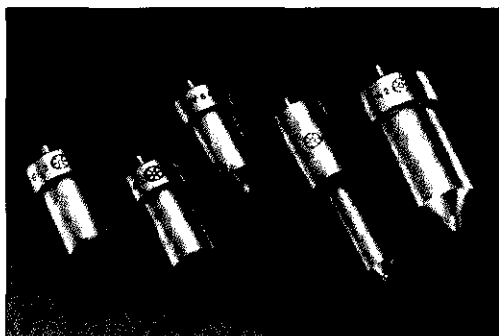
Features :

- * Catering to both Direct Injection (DI) and Indirect Injection (IDI) diesel engines
- * Injection pressure up to 1200 bar
- * Mounting by flange, claw or threaded type to suit the engine requirement
- * Nozzle-holder shaft diameter 17 mm and above

Applications :

- * Different types of automotive and stationary engines
- * Industrial, marine, railway, earth moving and gensets

Nozzles



Features :

- * Hole type for DI engines and pintle type for IDI engines
- * Smaller spray hole size for higher injection pressures
- * Nozzles with zero sac volume (VCO type) possible with hole diameter ≥ 0.16 mm
- * Spray holes rounding by hydro-grinding in VCO type
- * Straight/inclined flat on pintle for IDI engines

Applications :

- * Different types of automotive and stationary engines
- * Industrial, marine, railway, earth moving and gensets

Spark Plug

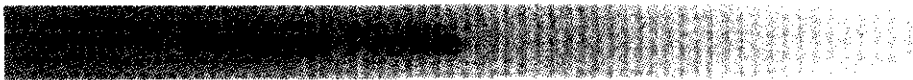


Features :

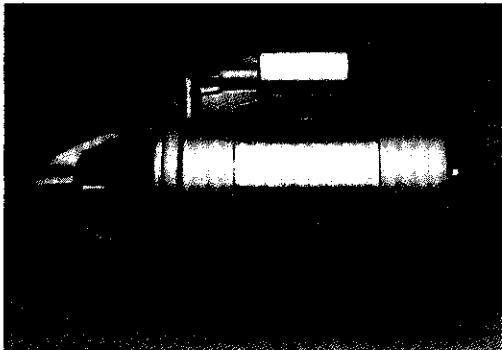
- * Available in various thread sizes and heat values to meet individual requirement of engine/vehicle
- * Available in bimetal electrode and reduced clearance (between central electrode and insulator) versions

Applications :

- * Used in petrol, CNG engines for igniting the mixture



Starter Motor



Features :

- * Used for starting engines
- * Available both in direct drive and reduction gear drive versions
- * Available in 12 V and rating from 0.6 kW to 3 kW
- * Available with internally water protected and dust protected features

Applications :

- * Automotive : Trucks, LCV, multi-utility vehicles, tractors, passenger cars and 3- wheelers
- * Stationary engines

Alternator



Features :

- * Power source for electrical loads in the vehicle and for battery charging
- * Available in ventilated, semi-sealed, sealed, internal fan versions
- * Available in 12 V version with rating from 23 A to 90 A

Applications :

- * Automotive, off-high way and industrial

Gear Pump



Features :

- * Displacement 4 to 22.5 cc/revolution
- * Maximum pressure: 250 bar
- * Various drive-ends, mounting flanges and port configurations

Applications :

- * Power packs (industrial)
- * Tractors