

# ENGINE EXPERTISE

BY  **FEDERAL-MOGUL  
MOTORPARTS**



**P. 7**  
New Goetze  
ringset catalogue



**P. 12**  
The power in heavy  
duty Diesel parts

OE partnerships **P. 3**

What's new **P. 8**

Federal-Mogul  
Motorparts at  
Automechanika **P.14**



# Engine parts which keep you rolling

At Federal-Mogul, we have decades of experience in servicing the CV sector and we understand the extremely demanding operating environments in which these vehicles have to function. Powerful engines carrying heavy loads and racking up high mileage can be susceptible to failure if they are not equipped with parts of the highest quality. We know that any downtime can have a major impact on operations, logistics and profitability.

The world-class engine component brands we offer include AE's top engine products, Glyco bearings, Goetze rings and liners, Nüral pistons and Payen sealing products, for heavy duty diesel engines we offer the extensive range of FP Diesel parts. We know how costly downtime can be for you, so we ensure that our parts are always up to the challenge of keeping you on the move.





# Proud partnerships

On the following pages, you'll get a glimpse of some of the parts we can offer thanks to our OE partnerships. We work with major motor manufacturers on a daily basis to develop the engines of tomorrow. This means that when tomorrow comes, we can bring all the latest OE technologies to the aftermarket and supply you with top quality parts.



## Mercedes-Benz Actros

*Niral*

GOETZE

GLYCO

BRAND	PRODUCT DESCRIPTION	PART NUMBER	OE PART	SUPPLIED AS OE
<i>Niral</i>	Piston	87-440600-00	A 471 030 1417	✓
	Piston Ring Set	08-440600-00	A 471 030 0324	✓
	Conrod Bearing	71-5022*	A 471 038 0610 / A 471 038 0611	✓
	Main Bearing	H1352/7*	A 471 033 0701 / A 471 033 0702	✓
	Thrust Washer	A329/4*	A 471 033 0408 / A 471 033 0407	✓

<b>Manufacturer</b>	Mercedes-Benz	<b>Features</b>	OE design and material
<b>Model</b>	Actros		Monosteel Technology
<b>Year</b>	2011		GDC & LKZ technology
<b>Fuel</b>	Diesel		Glyco sputter conrod bearings
<b>Number of cylinders</b>	6 cyl	<b>Benefits</b>	High durability piston
<b>Engine codes</b>	OM471 LA HDEP Euro 6		High wear resistance
<b>Engine cc</b>	12800		Reduced emissions
<b>kW/Hp</b>	310-375 / 421-510		Improved scuff resistance
<b>Bore x stroke</b>	132 x 156	<b>Federal-Mogul exclusive technology</b>	Monosteel piston, GDC and LKZ rings
		<b>Latest catalogue part #</b>	CATGT1401

\* In development





## Iveco Trakker 340T36



BRAND	PRODUCT DESCRIPTION	PART NUMBER	OE PART	SUPPLIED AS OE
GOETZE	Piston Ring Set	08-431100-00	2996412	✓
GLYCO	Conrod Bearing	71-4087/6	98485718	
GLYCO	Main Bearing	H1021/7	984857200/99473626 99473682/99473625	
<b>Manufacturer</b>	Iveco	<b>Features</b>	Chrome Ceramic top ring Goetze OE design	
<b>Model</b>	Trakker 340T36	<b>Benefits</b>	Reduced emissions and oil consumption High durability Improved economy	
<b>Year</b>	2007>	<b>Additionally applicable for following models</b>	Trakker 190, 260, 380, 400 Stralis 260, 320, 440	
<b>Fuel</b>	Diesel	<b>Latest catalogue part #</b>	CATGT1401, CATGY1201	
<b>Number of cylinders</b>	6			
<b>Engine codes</b>	F2BE3681 A/B/C			
<b>Engine cc</b>	7790			
<b>kW/Hp</b>	228-265 / 310-360			
<b>Bore x stroke</b>	115 x 125			



## DAF XF Series



BRAND	PRODUCT DESCRIPTION	PART NUMBER	OE PART	SUPPLIED AS OE
GOETZE	Piston Ring Set	08-432500-00*		✓
GOETZE	Piston Ring Set	08-437500-00**		✓
GLYCO	Conrod Bearing	71-4787	1624847/1655712	✓
GLYCO	Main Bearing	72-4788	1780809/1780810	✓
GLYCO	Thrust Washer	A293/4	1736755	✓
GLYCO	Small End Bush	55-4790	1665625	✓
GLYCO	Camshaft Bush	NI95/7	1365744	✓

<b>Manufacturer</b>	DAF	<b>Features</b>	GDC top ring
<b>Model</b>	XF series Euro 4/5		LKZ oil rings
<b>Years</b>	2006>		Goetze/Glyco OE design
<b>Fuel</b>	Diesel		Glyco sputter conrod bearings
<b>Number of cylinders</b>	6	<b>Benefits</b>	Reduced emissions and oil consumption
<b>Engine codes</b>	MX 265, 300, 340, 375		High durability
<b>Engine cc</b>	12900		Improved economy
<b>kW</b>	265 - 375 / 360 - 510	<b>FM exclusive technology</b>	GDC and LKZ rings
<b>Bore x stroke</b>	130 x 162	<b>Latest catalogue part #</b>	CATGT140I, CATGY120I

\* for steel piston  
\*\* for aluminium piston





## Volvo FH Series

*Niiral*

GOETZE

GLYCO

BRAND	PRODUCT DESCRIPTION	PART NUMBER	OE PART	SUPPLIED AS OE
<i>Niiral</i>	Piston	87-434400-00	21523462	
GOETZE	Piston Ring Set	08-434400-00	20747511	
GLYCO	Conrod Bearing	71-4052/6	20508263/20508264	
GLYCO	Main Bearing	H1015/7	20530900/20530898/ 20530901/20530902	✓
GLYCO	Thrust Washer	A131/4	3093651	✓
GLYCO	Small End Bush	55-4054	20730397	✓
<b>Manufacturer</b>	Volvo	<b>Features</b>	Glyco OE design and technologies	
<b>Model</b>	FH Series - Truck of the Year 2014	<b>Benefits</b>	Lower emissions Fuel economy Reliable	
<b>Year</b>	2013>	<b>Additionally applicable on following models</b>	FH/FL/FM Series, RVI Magnum, Kerax	
<b>Fuel</b>	Diesel	<b>Latest catalogue part #</b>	CATGTI40I, CATGY120I	
<b>Number of cylinders</b>	6			
<b>Engine codes</b>	DI3C/DI3K			
<b>Engine cc</b>	12800			
<b>kW/Hp</b>	309-338/368-397			
<b>Bore x stroke</b>	131 x 158			

# New ringset catalogue

- Large increase in overall coverage.
- Significant Asian LV expansion - covers most popular Asian cars in Europe.
- Over 200 new references since last catalogue – over 1800 in total
- Contains latest unique FM technologies – LKZ, Carboglide, GDC
- Over 200 new parts, including over 50 new sets for Asian applications
- Over 100 manufacturer sections
- Over 1800 sku's in total

### Single catalogue (A4 size):

EAN 5010874260355

2,7 kg

### Box of 5 catalogues:

EAN 15010874260355

Size box: 305x229x229

13,5 kg

### ADDITIONAL CV NPI HIGHLIGHTS

08-428800-00	Iveco F2CE Cursor 9
08-428000-00	Iveco F3BE Cursor Euro 4/5
08-427900-00	Iveco F4AE Tector Euro 4/5
08-428600-00	MAN D2066 Euro 5

08-438800-00	Renault Trucks DXi II
08-430000-00	Volvo D7E Euro 4
08-438900-00	Volvo D9B Euro 4/5



#### EN - HOW TO USE

**Legend:**

- Head information
- Ring information
- Part No.
- Ring set reference and size
- Size (see footnote)
- Ring width
- Ring height and profile
- Ring before and after spring
- Material code

**PART NUMBERING STRUCTURE**

08-118800-00 Catalogue reference  
 00-118810-00 Reference  
 00-118820-00 Size from rings oversize table  
 00-118830-00 Version

**MATERIAL CODES**

Material Code	Description
170P14	Cast-iron
00E12	Not-heat-treated grey Cast Iron
00E13	Cast-iron, heat-treated
00E14	Graphite Cast Iron
00E15	Steel
00E16	Cast Iron
00E17	Steel
00E18	Separable graphite Cast Iron

**RINGS OVERSIZE TABLE**

Size	Metric	Imperial
00	0.020mm	
01	0.025mm	
02	0.030mm	0.0118
03	0.035mm	0.0138
04	0.040mm	0.0157
05	0.045mm	0.0177
06	0.050mm	0.0197
07	0.055mm	0.0217
08	0.060mm	0.0236
09	0.065mm	0.0256
10	0.070mm	0.0276
11	0.075mm	0.0295
12	0.080mm	0.0315

#### HOW TO USE - EN

**PISTON RING CROSS SECTIONS**

Cross Section	Description
001	Plain compression ring
005	Tapered Ring
006	Slightly tapered fling
007	Wedge type compression ring
008	Keystone type compression ring
009	Tapered keystone ring
013	Single hook scraper
024	Tapered single hook scraper
030	Slanted Oil Scraper ring
031	Beveled edged oil control ring
032	Double bevel-edged oil control ring
034	Slanted Oil Scraper ring
230	Slanted Oil Scraper ring with coil spring
231/241	Beveled edged oil control ring with coil spring
232	Double bevel-edged oil control ring with coil spring
234	Slanted Oil Scraper with coil spring
712	Steel rail oil control ring with V-ring

**RING FEATURE**

Cross Section	Description
IF	Inside bevel - top side
BF2	Inside bevel - bottom side
IF1	Inside step - top side
BF1	Inside step - bottom side
LC2	Tapered Ring

**COATINGS AND TREATMENT CODES**

Type and Code	Description	Type and Code	Description
CR	Chromium	IF	Phosphated
ML	Molybdenum nitrid	NT	Nitrided
NOL	Molybdenum coated	PS	Plasma spray coated
CR	Chromium-Diamond coated	GDC	Graphite Diamond Coated
PVD	Chromium Nitride	DLC	Diamond Like Carbon

# New Product Introductions

## Payen and Goetze to offer a full CV sealing range



Payen and Goetze will be introducing a full range of Commercial Vehicle sealing products over the next few months, as they renew their focus on developing parts for the CV market. The new ranges will include head sets, conversion sets and single gaskets. New materials and an ALD (Analysis Led Design) process will provide robust sealing solutions for the higher cylinder pressures and higher exhaust temperatures typical of today's heavy duty diesel engines.

Payen will be introducing a new fully cured, resin impregnated fibre gasket which has been optimised to provide an outstanding sealing capability. Goetze will extend its head bolt range to cover fast-moving CV applications. The gasket sets will also come in reinforced packaging to give fragile parts better protection from the heavier ones.

All these new developments, underlining Payen and Goetze's commitment to the CV market, will be featured in their own special bulletins which will appear regularly throughout the year.



MANUFACTURER	ENGINE	DESCRIPTION	PAYEN	GOETZE
SCANIA	DSC12	Full Set + CHG	FH6550	20-30455-00/0
SCANIA	DSC12	Exhaust Manifold Gasket	JD6048	31-030456-00
SCANIA	DSC12	Intake Manifold Gasket	JD6049	31-030457-00
SCANIA	DSC12	Valve Stem Seals Set (24pcs)	HR5117	24-30706-75/0
RVI	MIDR 062465	Head Set + CHG Fiber	CH7410	21-30460-00/0
RVI	MIDR 062465	Cylinder Head Gasket Fiber	AH7410	30-030460-00
RVI	MIDR 062465	Exhaust Manifold Gasket	JD6051	31-030459-00
RVI	MIDR 062465	Intake Manifold Gasket	JD6050	31-030458-00
RVI	MIDR 062465	Valve Stem Seals Set (24pcs)	HR5118	24-31954-40/0
Volvo	D7C	Full Set + CHG Steel Elastomer	GT842	20-27604-00/0
MERCEDES	OM457	CHG Euro 4&5	AH6720	30-030424-00
MERCEDES	OM457	Head Set + CHG Steel Elastomer	CH6720	21-30424-00/0
MERCEDES	OM457	Head Set + CHG Steel Elastomer	CH6721	21-30424-01/0



# Glyco G-488 lead-free bearings improve robustness in CV engines

Federal-Mogul Powertrain is applying its expertise in light vehicle engine bearings to provide robust, lead-free bearing solutions for the CV market. Glyco G-488® is the first 'intelligent' lead-free bearing material which is capable of resisting very high loads. It is soft and adaptable during the running-in phase, but becomes hard and fatigue-resistant throughout the rest of its lifetime. It is ideally suited to the very high load demands of diesel engine crankshafts.

While there is no current legislation which limits lead in bearings for the CV sector, Federal-Mogul's extensive experience in lead-free bearings for the light vehicle sector can be easily adapted to satisfy any proposed future legislation for heavy-duty engines. In addition to environmental benefits, lead-free materials also provide improved bearing fatigue life.

Federal-Mogul's first heavy-duty application of lead-free bearings is already in series production with one global OEM, and is being considered by other customers. Heavy-duty engines contain a much higher number of bearing parts compared to passenger car engines. They are found beyond the crank train to rocker gear, cam drives and cam bushings. "Our extensive experience with lead-free materials in the automotive sector is invaluable," said Joachim Häring, manager application engineering, Bearings, Europe, Federal-Mogul Powertrain. "We have been able to adapt efficiently to the CV market where vehicle lifetime mileages are much higher, often as high as 1.5 million kilometres."

Future trends for heavy-duty engines include higher combustion loads (with peak pressures reaching 250 bar or more), greater use of stop-start and hybrid operation, and thinner oils to improve efficiency and increase wear-resistance for longer engine life. Federal-Mogul is well-positioned to meet these future challenges, with developments underway that indicate how current materials can be adapted to satisfy the needs of future engine requirements.



 GLYCO

## Current applications:

- 71-5032 Mercedes-Benz MDEG engines  
OM936.912, OM936.916
- H1352/7 Mercedes-Benz HDEP engines  
OM471.900, OM471.902, OM471.909



## Nüral Monosteel® pistons make their European debut in the Mercedes-Benz Actros OM 470

Monosteel® pistons are full of original features which provide the strength and cooling performance to meet the most arduous requirements of heavy-duty engines. These include the increased firing pressures required in new generation engines designed to meet Euro VI upwards emissions regulations for on-highway vehicles. The robust design with inertia welded, forged steel sections creates a large, closed cooling gallery. The gallery helps to reduce the top ring groove temperature by 20 - 60°C, and the bowl rim temperature by 50 - 100°C. This reduces groove distortion and improves oil control and gas sealing.

The piston head and skirt are joined using an innovative friction welding process which enables Monosteel® pistons to withstand increased mechanical loads. This process allows flexibility in material choice, with crown material options to reduce corrosion or oxidation and/or options in skirt materials to make manufacturing easier. The full-length skirt provides stable piston dynamics and reduces the risk of liner cavitation while also improving ring sealing. Monosteel® pistons incorporate recent developments for large bore industrial engines, as well as using the thin wall light forgings and castings which have only been used in light vehicle diesel engines until now.

## Goetze LKZ® piston rings' edge profile boosts efficiency

Federal-Mogul's award-winning Goetze LKZ® ring is an innovative two-piece design originally developed for highly-demanding diesel applications and now also optimised for direct-injection petrol engines. The unique stepped edge profile of Goetze LKZ® piston rings acts in two ways to reduce oil consumption by up to 50%. On the downstroke, the profile helps to return more oil to the sump. On the upstroke, the ring shape has less resistance thereby reducing pumping losses. As this prevents the oil from entering the combustion chamber, it cannot deposit carbon on the spark plug or cylinder head, so as well as helping to keep oil consumption consistently low, the LKZ® piston ring also helps ensure that combustion quality is not reduced by the products of burnt oil.

The stepped nature of the profile also reduces ring tension and friction by 15%. Goetze LKZ® piston rings have a variety of surface treatments such as CKS (chrome ceramic coating), GDC® (Goetze Diamond Coating®) and PVD (Physical Vapour Deposition). They protect the ring from periphery scuffing which minimises wear and ensures the ring can function properly over the life of the engine.





# FP Diesel® , the power in heavy duty diesel parts

For many years, FP Diesel has been regarded as the premier advanced replacement engine technologies brand for a broad range of off-highway, commercial and heavy duty vehicles. In March of 2014, we opened our new Off-Highway & Heavy Duty Department at Federal-Mogul headquarters in Kontich, Belgium. This professional pan-European, Middle East and Africa (EMEA) team is there to offer you high quality service for all your FP Diesel needs.

FP Diesel replacement engine components include pistons, piston rings, bearings, cylinder liners, camshafts, crankshafts, valvetrain components, gaskets, seals, fuel system products, cooling and lubrication system components.



## A 'Dedicated customer Care' for FP Diesel EMEA

The Customer service for EMEA's FP Diesel customers is now based at the newly assigned Off-Highway & Heavy Duty Customer Care department in Kontich. This department is dedicated to support you on all questions relating to FP Diesel, the new European operations or any daily operational aspects, the focus is on Federal-Mogul Motorparts' Off-Highway business exclusively.

Together with Europe's regional Customer Service team, a synergetic order management solution became possible. Federal-Mogul Motorparts EMEA serves its FP Diesel customers from a European sourced stock, or on request from its US location. For more details ask your Customer care representative.

## A new Express Order option for FP Diesel EMEA customers

FP Diesel's EMEA customers now have the option of using a new Emergency Order tool for urgent parts deliveries. An Express Order shipped directly from Federal-Mogul Motorparts in the USA ensures that the order will be processed and received within the shortest time possible. The FP Diesel Customer Care team in Kontich is the exclusive peer-to-peer contact point for specific FP Diesel customers.

For more information about the processes, costs and regulations needed: Contact your Off-Highway & Heavy Duty Customer Care team in Kontich.

CONTACT:

**Christel Belloy**

Christel.Belloy@federalmogul.com

**Frank Piojda**

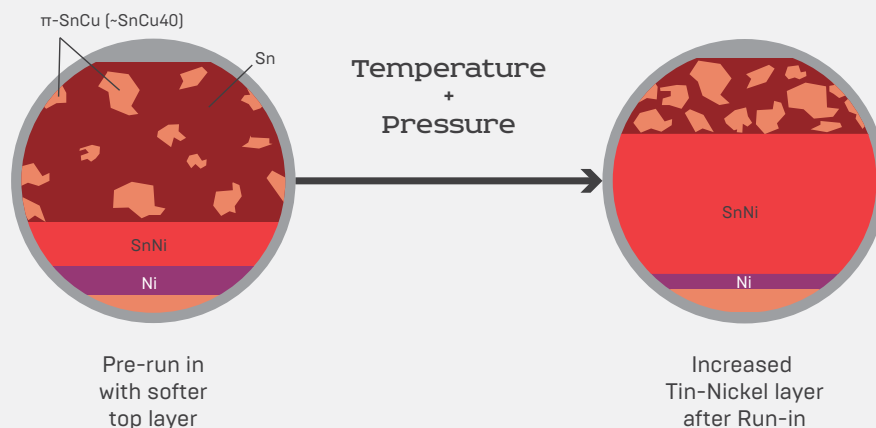
Director Off-Highway & Heavy Duty EMEA

Frank.Piojda@federalmogul.com

## FP Diesel launches improved over plate material for Caterpillar 3500 con rod bearings

G-188, a new over plate material developed by Federal-Mogul and used by FP Diesel, has demonstrated significant improvement in performance for FP Diesel's Caterpillar connecting rod bearing (part number FP-1077330). The conventional tri-metal aluminium alloys that other suppliers use can be susceptible to cavitation erosion and over plate adhesion problems.

G-188 contains EC-88, a proprietary adaptive over plate material, which allows running in on relatively soft layers. These adapt their wear resistance and load carrying capacity under thermal stress and pressure. This in turn results in the development of a harder tin-nickel (SnNi) layer which improves performance and reliability in the demanding environments in which the Caterpillar engine sees service.





# Federal-Mogul Motorparts enjoys a successful Automechanika

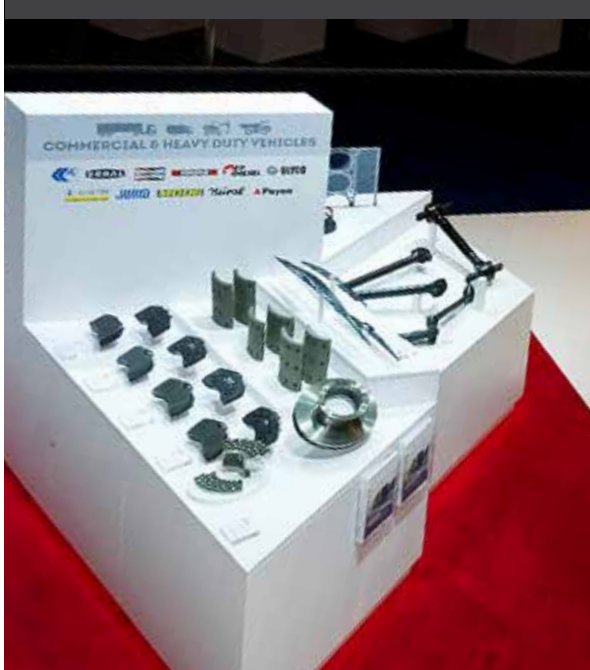
Between September 16th and 20th of 2014, we were at the world's largest parts trade fair, Automechanika, which is held every 2 years in Frankfurt (Germany).

It gave us an excellent opportunity to launch our new Federal-Mogul Motorparts name to the international aftermarket. The fair was also the perfect occasion to introduce our two new braking brands, Jurid® and Stop®, which we acquired from Honeywell Friction Materials in July.

## A dynamic and interactive stand

Our stand at Automechanika was uncluttered and modern, and divided into three main islands. There was one which displayed our full Commercial Vehicle range, with the focus on our FP Diesel heavy duty products. These included FP Diesel's Powerforged® pistons and ML7 gaskets for Caterpillar, Cummins and John Deere vehicles. AE had a range of engine valves, guides and camshafts for Mercedes-Benz and Scania on display. Goetze and Nüral showed matching ring and piston products for Mercedes-Benz's new Antos and Actros trucks. Glyco presented their bearings for the Volvo FH truck of the year. Payen offered a wide range of sealing kits, seals and head bolts for Mercedes-Benz. Another island showed our Light Vehicle engine and sealing products, highlighting Nüral® Elastothermic pistons, Glyco® lead-free bearings and the Payen® green gasket range. The third island featured our Light Vehicle service brands like Champion, BERU, Ferodo, MOOG, Jurid.





In addition to these islands, our technology cube screened videos about our latest technologies such as Ferodo Eco-Friction, Nüral Elastothermic pistons and Champion 7-in-1 Multi-clip.

To present the BERU Glow Plug Tester, the Ferodo and MOOG Axe workstation, the Engine & Sealing engine block and F-M Campus, we set up a garage concept. This was the first time we had built a workstation at a trade fair, and our garage concept attracted a lot of visitors and positive comments.

## Meeting the press, outlining the future

On September 17th, we held our major press conference with the international media at the fair. Our key speakers were:

- Dan Ninivaggi, Co-CEO, Federal-Mogul Holdings Corporation and CEO, Federal-Mogul Motorparts
- Martin Hendricks, President, Federal-Mogul Motorparts EMEA
- Rainer Bostel, Senior Vice President & General Manager Braking, Federal-Mogul Motorparts
- Olivier Legrand, Vice President Aftermarket, Federal-Mogul EMEA

Dan Ninivaggi used the press conference to introduce Federal-Mogul Motorparts' new five element strategy:

**Global expansion** – to develop EMEA opportunities and to export regional successes to other regions.

**Distribution and IT** – to improve our capability, infrastructure and footprint to serve customers better, to strengthen delivery performance and engage end customers and to create a robust, online presence, order and inventory management system and a state-of-the-art e-catalogue.

**Product line growth** – to develop existing product lines and add new ones through acquisition or internal investment.

**Operation performance** – to continue to improve our manufacturing and engineering footprint in the EMEA regions.

**Product differentiation and brand value** – to continue to invest in product innovation and to communicate more effectively about premium brands which have real value to end customers.

We had thousands of visitors to our stand during Automechanika and they were extremely impressed by its look and feel. We are already looking forward to making Automechanika 2016 an even more successful event.

# ENGINE EXPERTISE

BY  **FEDERAL-MOGUL  
MOTORPARTS**

## Subscribe for free

If you'd like to receive future Engine Expertise newsletters and stay up to date with all the latest Federal-Mogul Motorparts news and developments, send an e-mail to [engineexpertise@federalmogul.com](mailto:engineexpertise@federalmogul.com) and you'll get the next one as soon as it's published.

