GOETZE®

Payen®

Goetze® Sealing becomes Payen®
Same product – Different pack

DRiV™ announces that **Goetze® Sealing parts will be offered as Payen®**. Exactly the same product with the identical quality and performance that is manufactured on the same production lines.

This will benefit your business:

- Industry-leading coverage of the regional vehicle parc
- Significantly enhanced speed-to-market of our latest sealing components
- Simplified stocking requirements

The globally respected **Payen® brand continues to be DRiV™'s "Expert Brand" within the sealing category.** This encompasses gaskets, gasket sets, oil seals and head bolts for all applications.

Goetze® remains our "Expert Brand" for piston rings and cylinder liners.

Europe / Middle East/Africa:
Federal-Mogul Global Aftermarket EMEA, Prins Boudewijnlaan 5, 2550 Kontich – Belgium

ENGINE EXPERTISE

AE FP DIESEL GLYCO GOETZE Nüral Payen

PRMGT2001-EN

GOETZE®

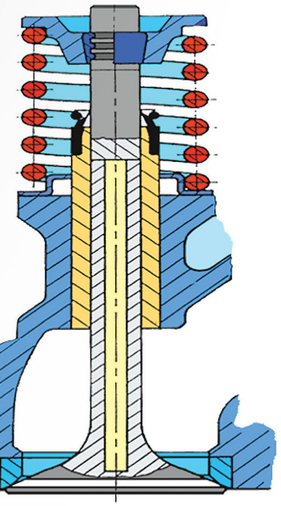
Goetze's bi-metallic and mono-metallic valves are engineered with genuine German precision for optimum performance under extreme stress conditions. These OE Quality products maintain their strength and resist wear at high temperature. Covering applications for both light vehicles and commercial vehicles.

A VALVETRAIN CONSISTS OF MANY COMPONENTS

Valves control the admittance of fuel and air into the combustion chamber. They are some of the most highly stressed parts operating within an engine. Goetze's mono and bi-metallic valves are produced using only the best materials, including:

- **Chrome-Silicon (Cr-Si)**
- **Chrome-Manganese-Nickel (Cr Mn Ni)**
  [note only 4% nickel, i.e. 21-4N]
- **Chrome-Manganese-Nickel-Niobium (Cr Mn Ni Nb)**
- **Nimonic 80A (Ni Cr 20 Ti Al)**
  [note: balance of the material is Nickel which could be up to 72%]

This ensures that every Goetze valve is available in the material best suited to its intended application.



ENGINE EXPERTISE BY FEDERAL-MOGUL MOTORPARTS

AE · FP DIESEL · GLYCO · GOETZE · Nüral · Payen

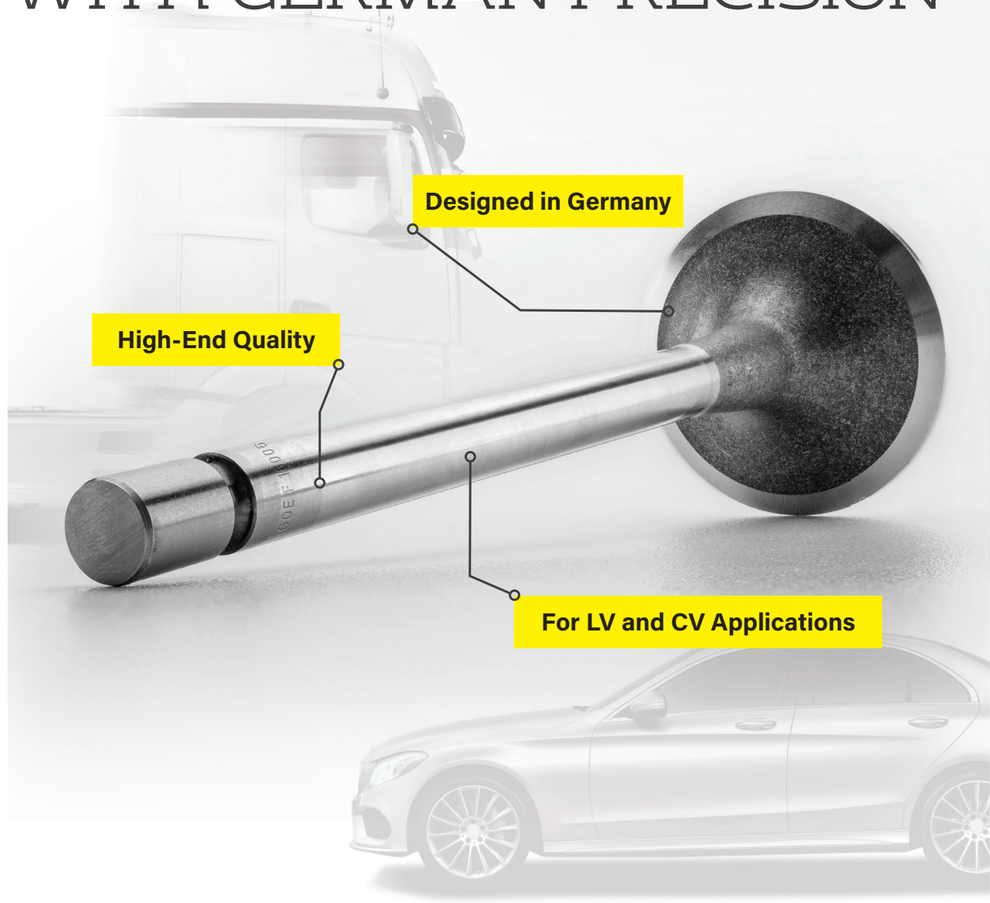
PRMGT1804-EN

GOETZE®

RANGE PRESENTER

SMOOTH ENGINE PERFORMANCE WITH GERMAN PRECISION

ORIGINAL QUALITY OE



ENGINE EXPERTISE BY FEDERAL-MOGUL MOTORPARTS

AE · FP DIESEL · GLYCO · GOETZE · Nüral · Payen

GOETZE®

Goetze Valve	Type	Vehicle Manufacturer	Engine	Application	Head Ø (mm)	Stem Ø(mm)	Length (mm)	Seat Angle	Type	Valve Material	Seat Feature	Surface Coating
91-181107-00	Exhaust	Ford	FYDA/B/C/D	LV	24,10	6,00	101,40	45°	Mono-Metallic	RA		tu
90-181106-00	Inlet	Ford	FYDA/B/C/D	LV	30,10	6,00	99,00	45°	Mono-Metallic	S		tu
91-002560-00	Exhaust	MAN	D 0824 GF01	CV	42,00	10,00	136,30	45°	Bi-Metallic	A/S		cr
90-025127-00	Inlet	MAN	D 0824 GF01	CV	49,00	10,00	136,60	30°	Mono-Metallic	S		cr
91-025305-00	Exhaust	MAN	D 0834 LFL 40	CV	34,00	7,00	141,20	45°	Bi-Metallic	A/S		cr
90-025304-00	Inlet	MAN	D 0834 LFL 40	CV	38,00	7,00	141,50	30°	Mono-Metallic	S		cr
91-025307-00	Exhaust	MAN	D 2066 LF 01	CV	38,00	9,00	160,40	45°	Bi-Metallic	RA/S		cr
90-025306-00	Inlet	MAN	D 2066 LF 01	CV	40,00	9,00	160,40	30°	Bi-Metallic	RA/S		cr
91-025303-00	Exhaust	MAN	D 2840 LF 25	CV	41,00	9,00	153,70	45°	Bi-Metallic	RA/S		cr
90-025302-00	Inlet	MAN	D 2840 LF 25	CV	44,00	9,00	153,70	30°	Bi-Metallic	RA/S		cr
91-025250-00	Exhaust	MAN	D 2866 LF 23	CV	46,00	9,00	153,60	45°	Bi-Metallic	RA/S		cr
90-025249-00	Inlet	MAN	D 2866 LF 23	CV	46,00	9,00	153,60	30°	Bi-Metallic	RA/S		cr
90-025322-00	Inlet	MAN	E3262 / E3268 (GAS)	CV	44,00	9,00	153,70	45°	Bi-Metallic	RA/S	ss	cr
91-025323-00	Exhaust	MAN	E3262 / E3268 (GAS)	CV	42,00	9,00	153,70	30°	Bi-Metallic	I/S	ss	cr
91-261123-00	Exhaust	Mercedes-Benz	M271	LV	27,00	7,00	109,20	45°	Bi-Metallic	RA/S	ss	
90-261122-00	Inlet	Mercedes-Benz	M271	LV	30,50	7,00	105,40	45°	Mono-Metallic	S		
91-261129-00	Exhaust	Mercedes-Benz	M271.956	LV	27,00	6,00	109,30	45°	Bi-Metallic	A/S	ss	cr
90-261128-00	Inlet	Mercedes-Benz	M271.956	LV	30,50	6,00	105,30	45°	Mono-Metallic	S		cr
91-261141-00	Exhaust	Mercedes-Benz	OM 651.911	LV	24,60	6,00	109,20	45°	Bi-Metallic	A/S		cr
90-261140-00	Inlet	Mercedes-Benz	OM 651.911	LV	28,50	6,00	108,90	45°	Mono-Metallic	S		cr
91-016116-00	Exhaust	Mercedes-Benz	OM401.900	CV	51,00	12,00	142,50	45°	Bi-Metallic	A/S		cr
90-016117-00	Inlet	Mercedes-Benz	OM401.900	CV	59,00	12,00	142,50	30°	Bi-Metallic	A/S		cr
91-016205-00	Exhaust	Mercedes-Benz	OM457, OM460, OM521, OM541, OM542, OM941, OM942	CV	42,10	9,00	145,00	36°	Bi-Metallic	RA/S		cr
91-160055-00	Exhaust	Mercedes-Benz	OM457, OM460, OM521, OM541, OM542, OM941, OM942	CV	41,00	9,00	145,00	45°	Bi-Metallic	RA/S		cr
90-160054-00	Inlet	Mercedes-Benz	OM457, OM460, OM521, OM541, OM542, OM941, OM942	CV	45,50	9,00	144,90	30°	Bi-Metallic	RA/S		cr
90-016204-00	Inlet	Mercedes-Benz	OM457, OM460, OM521, OM541, OM542, OM941, OM942	CV	45,50	9,00	145,00	30°	Mono-Metallic	S		cr, tu
91-160057-00	Exhaust	Mercedes-Benz	OM900, OM902, OM904, OM906, OM907, OM909, OM924, OM926	CV	38,00	8,00	152,55	45°	Bi-Metallic	RA/S		cr
90-160056-00	Inlet	Mercedes-Benz	OM900, OM902, OM904, OM906, OM907, OM909, OM924, OM926	CV	34,00	8,00	128,90	20°	Bi-Metallic	RA/S		cr
91-291120-00	Exhaust	Opel	Z 16 XE	LV	27,50	6,00	102,20	45°	Bi-Metallic	A/S		cr
90-029397-00	Inlet	Opel	Z 16 XE	LV	31,00	6,00	103,10	45°	Mono-Metallic	S		cr
91-539008-00	Exhaust	PSA	NFU (TU5JP4)	LV	24,50	6,00	104,40	45°	Bi-Metallic	A/S	ss	
90-539007-00	Inlet	PSA	NFU (TU5JP4)	LV	31,30	6,00	103,80	45°	Mono-Metallic	S		
91-511014-00	Exhaust	Renault	F9Q 710	LV	32,60	7,00	110,70	45°	Bi-Metallic	A/S		
90-511013-00	Inlet	Renault	F9Q 710	LV	35,30	7,00	110,90	45°	Mono-Metallic	S		
91-531032-00	Exhaust	Renault	K4M 854 Euro 4/5	LV	28,00	5,50	107,50	45°	Bi-Metallic	A/S		
90-531031-00	Inlet	Renault	K4M 854 Euro 4/5	LV	32,40	5,50	109,20	45°	Mono-Metallic	S		
91-511018-00	Exhaust	Renault	K7M 710	LV	33,60	7,00	107,75	45°	Bi-Metallic	A/S		
90-511017-00	Inlet	Renault	K7M 710	LV	37,60	7,00	107,70	30°	Mono-Metallic	S		
91-539014-00	Exhaust	Renault	F4Rt 811 Euro 4	LV	29,00	5,50	108,90	45°	Bi-Metallic	RA/S		
90-539011-00	Inlet	Renault	F4Rt 811 Euro 4	LV	33,50	5,50	110,00	45°	Mono-Metallic	S		
91-935548-00	Exhaust	Scania	DC 16.19 Euro 5	CV	41,00	10,00	171,50	45°	Bi-Metallic	RA/S	ss	cr
90-935547-00	Inlet	Scania	DC 16.19 Euro 5	CV	44,00	10,00	171,40	20°	Bi-Metallic	RA/S		cr
91-048227-00	Exhaust	Volvo LKW	D12A	CV	40,00	8,00	192,00	45°	Bi-Metallic	RA/S		cr
90-048225-00	Inlet	Volvo LKW	D12A	CV	40,00	8,00	192,00	30°	Mono-Metallic	S		
91-331107-00	Exhaust	VWAG	ADR	LV	29,90	6,00	103,90	45°	Bi-Metallic	RA/S	ss	cr
90-033413-00	Inlet	VWAG	ADR, AJL	LV	27,00	6,00	105,10	45°	Mono-Metallic	S	ss	
91-331108-00	Exhaust	VWAG	AEB / AMB / AGU Euro 2; AJL	LV	29,90	6,00	104,00	45°	Bi-Metallic	RA/S	ss	cr
91-331124-00	Exhaust	VWAG	ATL	LV	31,50	7,00	89,00	45°	Bi-Metallic	RA/S	ss	
90-331123-00	Inlet	VWAG	ATL	LV	36,00	7,00	89,50	45°	Mono-Metallic	S		
91-331034-00	Exhaust	VWAG	AXB Euro 3	LV	31,50	7,00	90,00	45°	Bi-Metallic	A/S	ss	
90-331033-00	Inlet	VWAG	AXB Euro 3	LV	35,90	7,00	89,90	45°	Mono-Metallic	S		
91-331047-00	Exhaust	VWAG	BAH / CHFB Euro4	LV	28,00	6,00	99,10	45°	Bi-Metallic	A/S	ss	
90-331137-00	Inlet	VWAG	BAH / CHFB Euro4	LV	34,50	6,00	99,30	45°	Mono-Metallic	S		
91-039523-00	Exhaust	VWAG	CAVA, CAXA/C	LV	26,00	6,00	100,60	45°	Bi-Metallic	RA/S	ss	
90-039522-00	Inlet	VWAG	CAVA, CAXA/C	LV	29,50	6,00	100,90	45°	Mono-Metallic	S		
91-033416-00	Exhaust	VWAG	CBPA / CBSA	LV	33,00	7,00	91,20	45°	Bi-Metallic	A/S	ss	
90-033403-00	Inlet	VWAG	CBPA / CBSA	LV	39,50	7,00	91,90	45°	Mono-Metallic	S		
91-331058-00	Exhaust	VWAG	CCSA	LV	32,90	6,00	93,90	45°	Bi-Metallic	A/S	ss	
90-331057-00	Inlet	VWAG	CCSA	LV	39,50	7,00	89,90	45°	Mono-Metallic	S		
91-331142-00	Exhaust	VWAG	CEBA/B	LV	31,50	8,00	96,90	45°	Bi-Metallic	RA/S		
90-039423-00	Inlet	VWAG	CEBA/B	LV	36,00	8,00	96,90	45°	Bi-Metallic	RA/S	ss	
91-331157-00	Exhaust	VWAG	CJZA, CJZB, CYVA, CYVB	LV	23,50	5,00	110,09	30°	Bi-Metallic	RA/S	ss	cr
90-331156-00	Inlet	VWAG	CJZA, CJZB, CYVA, CYVB	LV	26,50	5,00	110,25	45°	Mono-Metallic	S		

THE FOLLOWING 13 VALVES ARE SPECIAL TO ORDER ITEMS

Goetze Valve	Type	Vehicle Manufacturer	Engine	Application	Head Ø (mm)	Stem Ø(mm)	Length (mm)	Seat Angle	Type	Valve Material	Seat Feature	Surface Coating	Other Feature
90-111229-00	Inlet	BMW	N63 B44 A, N63 B44 B	LV	33,20	6,00	102,80	45°	Mono-Metallic	S			
91-111230-00	Exhaust	BMW	N63 B44 A, N63 B44 B	LV	29,00	6,00	106,00	45°	Bi-Metallic	RA/S	ss		Na
90-025308-00	Inlet	MAN	D 2840 LE, D 2842 LE, D 2876 LUH 01 (GAS)	CV	58,00	12,00	142,50	30°	Bi-Metallic	I/S		cr	
91-025309-00	Exhaust	MAN	D 2840 LE, D 2842 LE, D 2876 LUH 01 (GAS)	CV	51,00	12,00	142,50	45°	Bi-Metallic	I/S		cr	
90-025310-00	Inlet	MAN	E 2842, E 2846, E 2866, E 2876, G 2866 (GAS)	CV	58,00	12,00	142,50	30°	Bi-Metallic	I/S	ss	cr	
91-025311-00	Exhaust	MAN	E 2842, E 2846, E 2866, E 2876, G 2866 (GAS)	CV	51,00	12,00	142,50	30°	Bi-Metallic	I/S	ss	cr	
90-261148-00	Inlet	Mercedes-Benz	M 270.910, M270.920, M274.910, M274.920	LV	31,50	6,00	115,80	45°	Mono-Metallic	S		cr	
91-261149-00	Exhaust	Mercedes-Benz	M 270.910, M270.920, M274.910, M274.920	LV	25,00	6,00	107,00	45°	Bi-Metallic	RA/S	ss	cr	Na
90-003073-00	Inlet	PORSCHE	930.03, 930.51, 930.52, 930.66, M 30.69, M 30.69S	LV	49,00	9,00	110,10	45°	Bi-Metallic	A/S	ss	cr	
91-003071-00	Exhaust	PORSCHE	930.03, 930.51, 930.52, 930.66, M 30.69, M 30.69S	LV	41,50	9,00	108,40	45°	Bi-Metallic	A/S	ss	cr	Na
90-331125-00	Inlet	VWAG	CABA, CABB, CJKA, CDLJ, CDLF, CDLC, CDLA, CCZA and more	LV	33,90	6,00	104,00	45°	Mono-Metallic	S	ss	cr	
91-331126-00	Exhaust	VWAG	CABA, CABB, CJKA, CDLJ, CDLF, CDLC, CDLA, CCZA and more	LV	28,00	6,00	101,90	45°	Bi-Metallic	RA/S	ss	cr	Na
91-033394-00	Exhaust	VWAG	APY, APX, APU, APP, APH, ANB, AMK, AMB, AJQ, AJL and more	LV	30,00	6,00	103,90	45°	Bi-Metallic	RA/S	ss	cr	Na

TYPE	FEATURE CODE	DESCRIPTION
Valve Material	I	Nimonic 80a
Valve Material	RA	Cr Mn Ni Nb
Valve Material	A	Cr Mn Ni
Valve Material	S	Cr Si
Seat Feature	ss	Stellite seat
Surface Coating	cr	Chrome plated stem
Surface Coating	tu	Nitrided
Other Feature	Na	Sodium-Filled

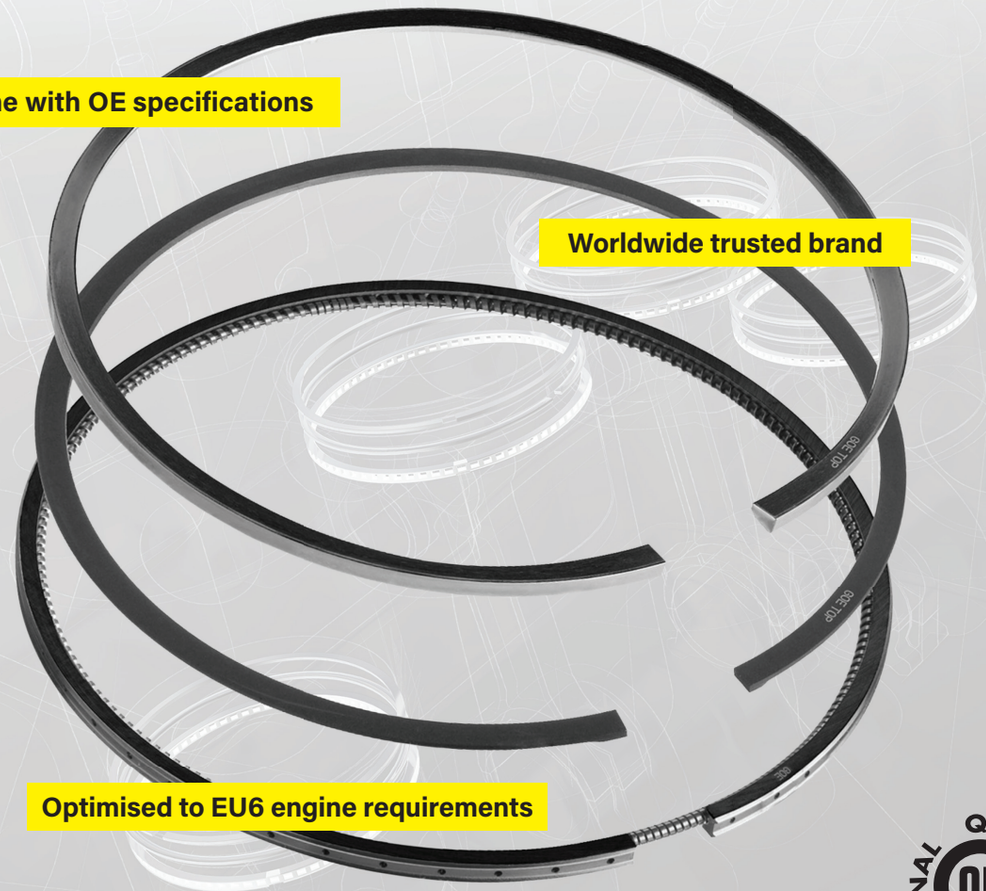
GOETZE®

PRODUCT BULLETIN

COMMITTED TO EXCELLENCE?
PUT A GOETZE RING ON IT.

In line with OE specifications

Worldwide trusted brand



Optimised to EU6 engine requirements

ORIGINAL QUALITY OE

The new Goetze CV Ringset **08-445200-10** for Scania DC9 engines has an enhanced design tailored specifically to the requirements of the Eu6 versions. This new design reduces pressure overlap, thereby reducing oil consumption which would otherwise be seen in this challenging engine.

ENGINE EXPERTISE BY FEDERAL-MOGUL MOTORPARTS

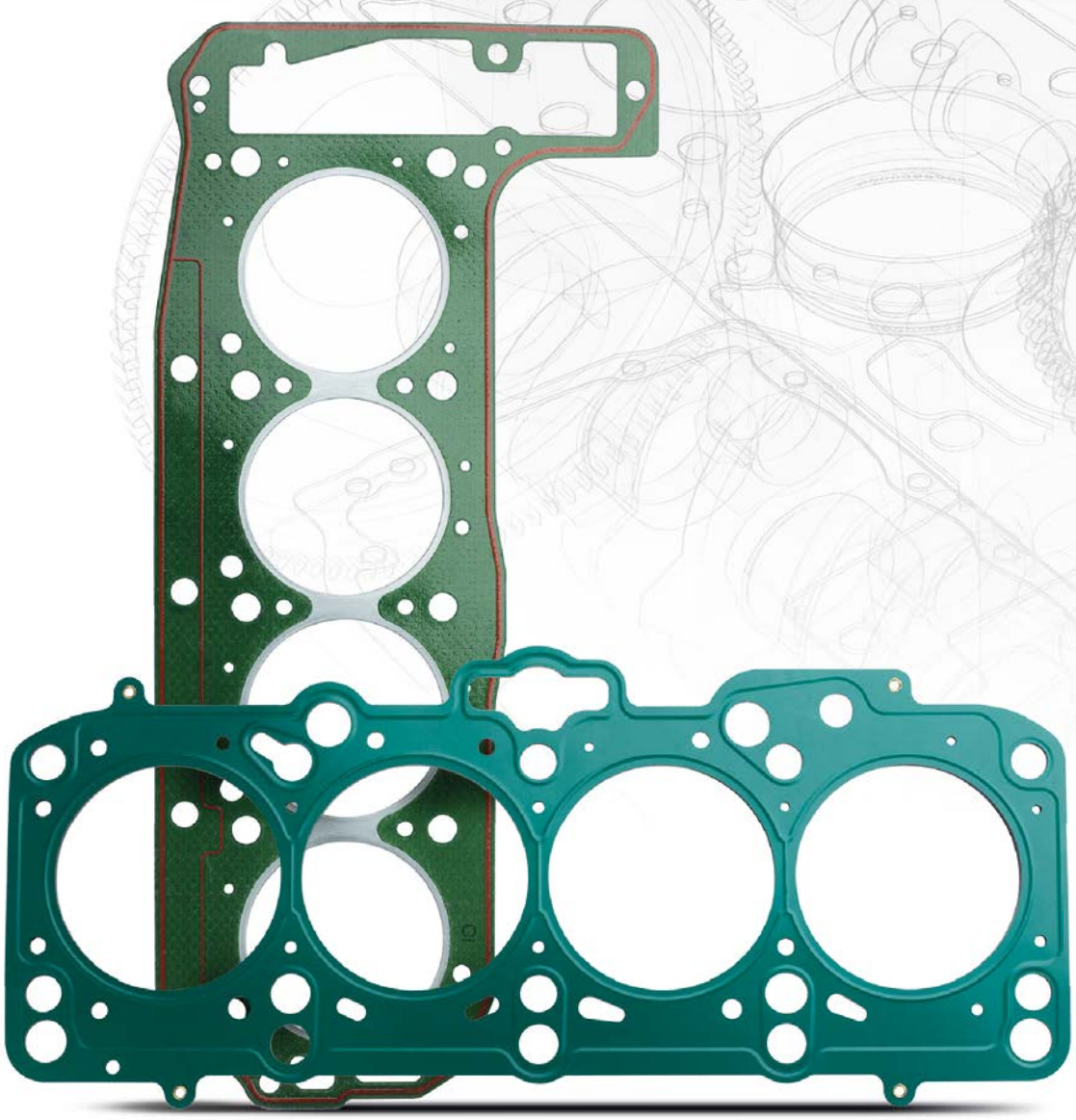
AE | FP DIESEL | GLYCO | GOETZE | Nüral | Payen

PRMGT1801-EN

GOETZE®

INTRODUCING
OUR LATEST
TECHNOLOGIES

A PERFECT FIT FOR THE AFTERMARKET



ENGINE EXPERTISE
BY FEDERAL-MOGUL MOTORPARTS

AE | GLYCO | GOETZE | Nüral

Applied OE heritage
to serve Aftermarket needs

With a clear focus on innovation,
it's our day-to-day objective to deliver excellent quality and performance.

That's why 90% of all Goetze gaskets are produced in-house in factories with an OE pedigree. Our production sites are spread all over the world, and enable us to consistently deliver excellent quality gaskets to the OE and Aftermarket.

Federal-Mogul facility in Herdorf, Germany:

- Premium manufacturer of Goetze gaskets
- Received 'TOP 100' Award from the German Ministry of Economic Affairs
- Produced more than 43 million OEM MLS head gaskets
- Highly advanced R&D facility (Burscheid)

Our technologies

HTA (High-Temperature Alloy):

- Offers excellent sealing at high temperatures
- Won Automotive News PACE™ Award for product innovation
- High-temperature coating resists exhaust temperatures up to 1000°C
- Ideal for turbocharged diesel and petrol engines

LEM (Liquid Elastomer Moulding):

- Conforms perfectly to contact surface
- Great high-pressure resistance
- Excellent flange distortion
- Low clamping load
- Patented technology

NEW - LATEST DEVELOPMENTS

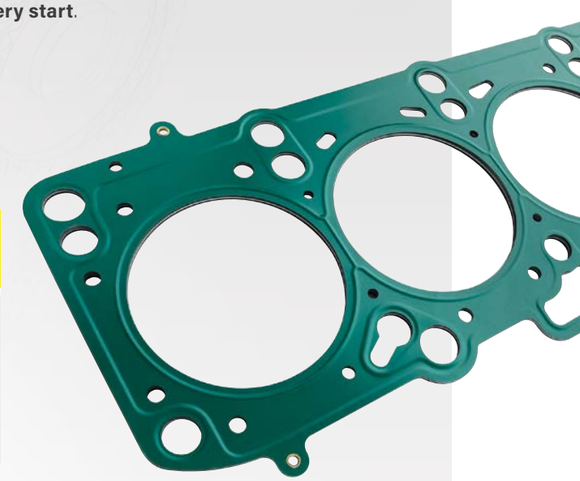
Our newly designed **CORIUSIM™** and **CORIUSEAL™** gaskets perfectly demonstrate our understanding of what professionals are looking for in an Aftermarket product. This new range of green gaskets not only helps you achieve a **perfect seal**, it also delivers **excellent performance from the very start**.

CORIUSEAL™

PTFE coating: Non stick superior chemical and thermal properties

- **Welded stopper for improved fatigue resistance**
- **Easily disassembled thanks to PTFE coating**

- High-performance engineered elastomer
- Optimum sealing performance
- Conforms to most surface finishes on rebuilt engines
- Improved anti-friction properties for reduced gasket fretting
- Enhanced initial gas sealing on start-up



CORIUSIM™

Optimum sealing on rough surfaces

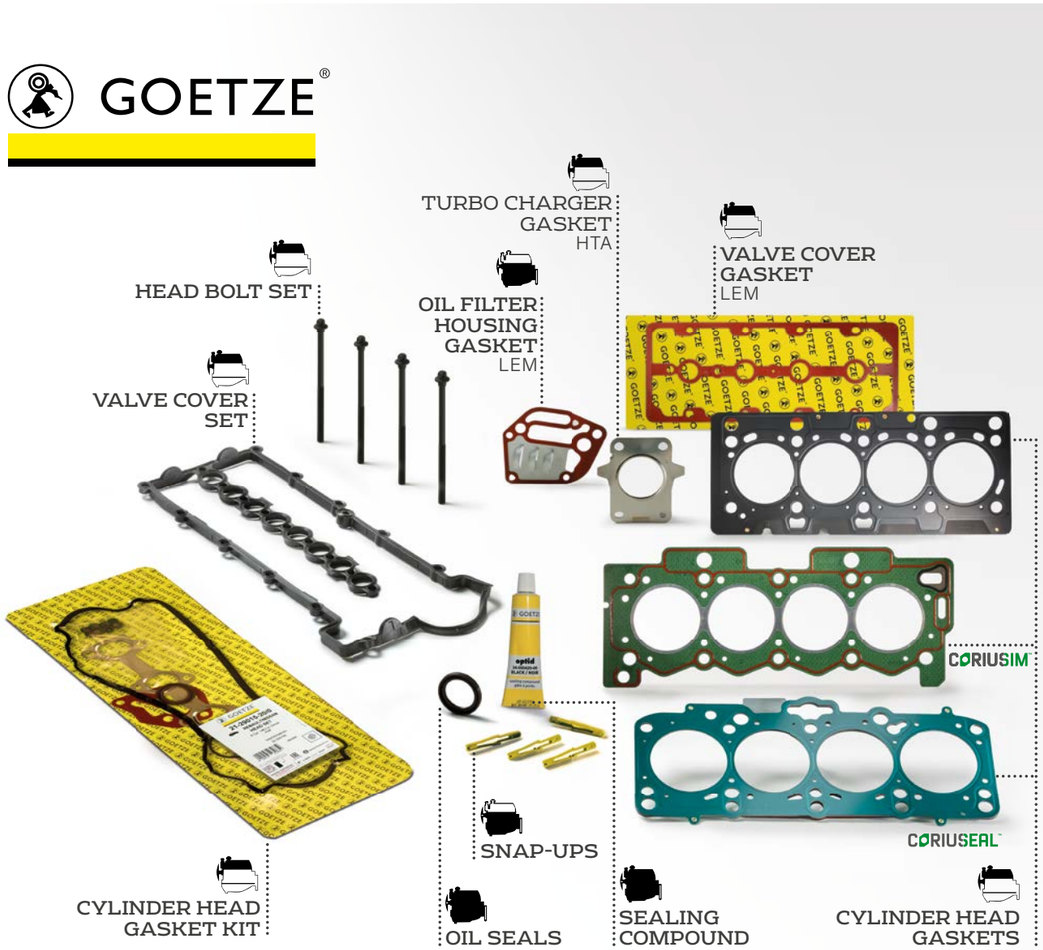
- **SIM1™-impregnated and readily cured**
- **Impregnated cut edges for flawless fluid hole sealing**

- Ready to conform to head and block surfaces
- Increased micro-sealability
- Superior performance and durability
- Superseding Astadur technology
- No use of organic solvents
- Helps minimize bore distortion to reduce oil consumption and optimize piston ring performance

A complete **sealing range**

Covering your engine from top to bottom

Decades of experience working with engine rebuilders have led us to develop a comprehensive range of high-performance sealing products. It covers everything from cylinder head and valve cover gaskets to oil seals and head bolts. A tight engineering approval process ensures that all our developments come with the ultimate Goetze quality guarantee.



A **Goetze** solution

For every type of car

Working together with all the major vehicule manufacturers offers us **a key role in the development of the engines of tomorrow**. This also means that when tomorrow comes, we are capable of **bringing all the latest OE technologies to the Aftermarket** and supply you with the top-quality sealing parts you need.

But our commitment to the Aftermarket goes even further. Our corporate investment culture aimed at boosting national coverage rates has led us to complete no less than **314 New Product Introductions (NPIs)** for all vehicle makes and models in **the last 18 months**. This clear focus on NPIs allows us to realise one of the most competitive coverage rates on the market.


FIAT GRANDE PUNTO


CITROËN C5


MERCEDES GLK-CLASS


TOYOTA AURIS


SEAT IBIZA


NISSAN X-TRAIL


VOLVO V70


OPEL INSIGNIA


BMW 3


PEUGEOT RCZ


RENAULT MASTER


ALFA ROMEO BRERA


RANGE ROVER SPORT

Always **in stock**

Decades of experience working with engine rebuilders have led us to develop a comprehensive range of high-performance sealing products. It covers everything from cylinder head and valve cover gaskets to oil seals and head bolts. A tight engineering approval process ensures that all our developments come with the ultimate Goetze quality guarantee.

To better keep our availability in check, we have invested in an in-house packaging line for our distribution site in Kontich (Belgium).

A clear focus on **Aftermarket support**

In April 2015, the Federal-Mogul test lab and training centre was established in Kontich, Belgium to provide the Aftermarket with an answer to its needs as quickly as possible. Located in the Benelux headquarters, it's the ideal European operations centre for:

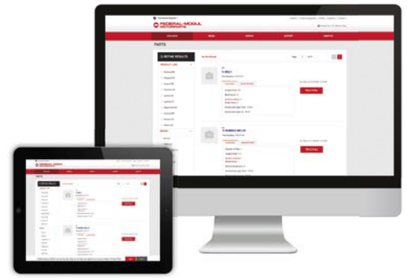
- Comprehensive NPI testing and post-launch quality checks
- OE and comparative competitor testing
- Swift response to customer technical queries
- Technical and commercial training courses for employees and customers

The support you want when you need it

DATA MANAGEMENT

- E-catalogue

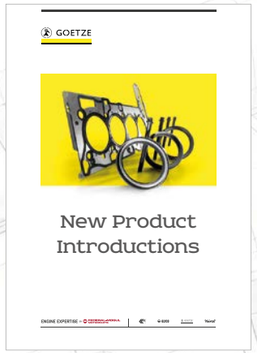
You can find our sealing products at www.fmecat.eu. A convenient search utility lets you easily browse and order the parts you are looking for. And you can verify the authenticity of your Goetze products with the anti-counterfeit tool.



TECHNICAL SUPPORT

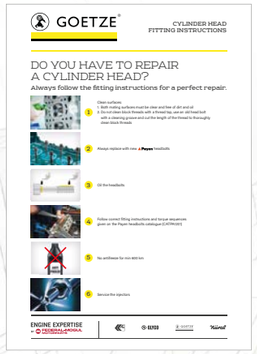
Our service engineering bulletins, installation guides, product bulletins and trouble tracer charts are there to fully support you in the technical department.

NPI LEAFLET

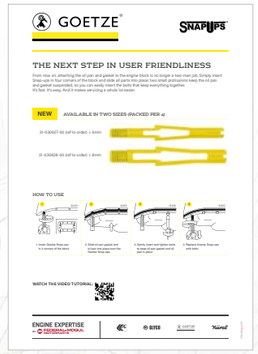


ANTI-COUNTERFEIT

INSTALLATION GUIDES



SNAP-UPS LEAFLET



In-field support

Technical managers in all our sales teams to better understand your needs and offer you the appropriate support

To subscribe to the Engine Expertise newsletter to receive the latest updates, news and New Product Introductions (NPIs) please ask your sales representative.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GOETZE®

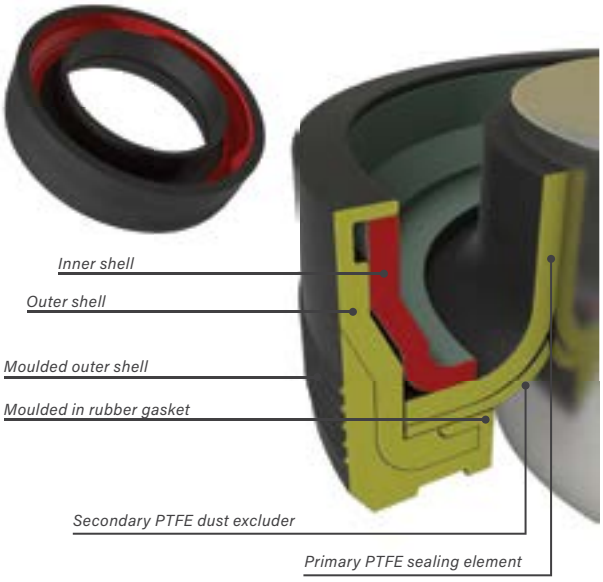
SERVICE ENGINEERING BULLETIN - SB2217

PTFE SEALS

Understanding PTFE seal technology

PTFE SEAL INTRODUCTION

The materials used for oil seals have been developed over the years in response to increased performance requirements. The elastomeric materials used for oil seals have been changed to provide improved levels of temperature resistance and durability. The use of PTFE (Polytetrafluoroethylene) for oil seals has now become more common as not only does it provide excellent resistance to the wide range of oil conditions found in modern engines, but also provides lower friction at the shaft interface.

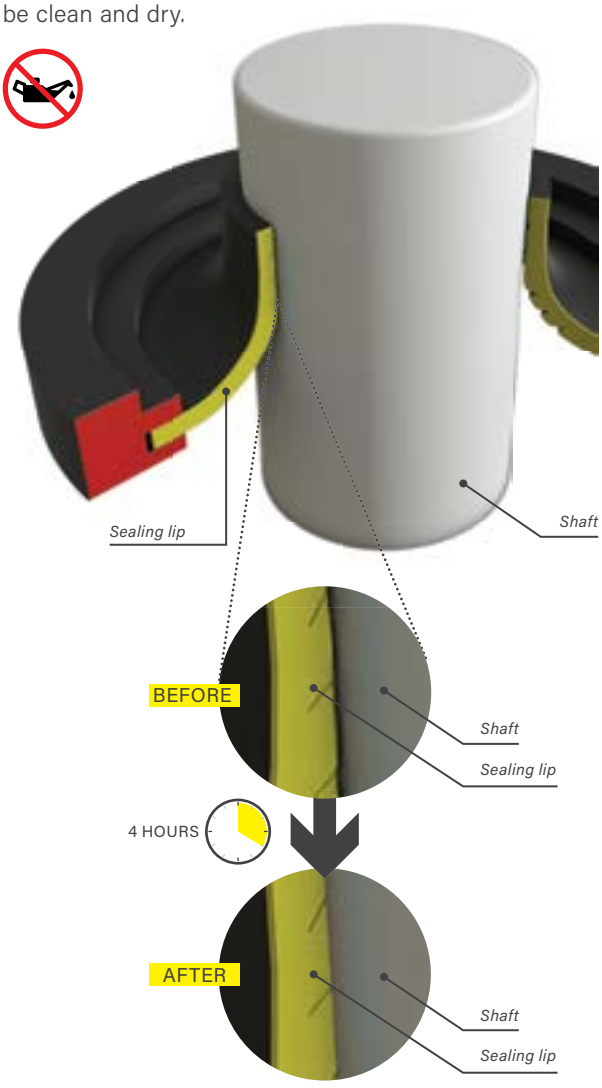


KEY FEATURES

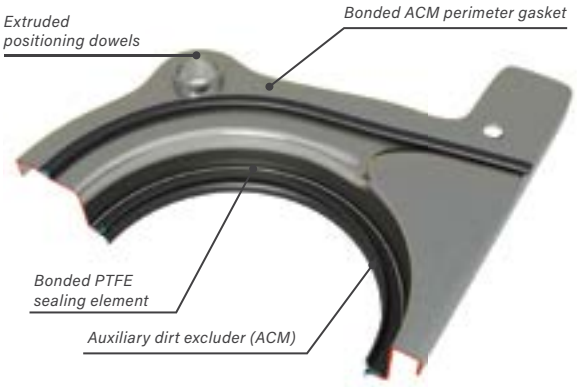
- Excellent chemical resistance against attack and contamination from engine oil.
- Provides enhanced durability and supports longer oil change intervals.
- Offers superior temperature resistance, so it is suitable for the higher temperatures found in modern engines.
- Reduces shaft wear due to the lower friction conditions.

BEDDING IN ON A DRY SHAFT

PTFE seals require a different assembly technique when fitting to an engine. The seal normally comes with a plastic collar that fits over the shaft. The collar is withdrawn and the seal then needs a minimum of four hours to adapt to the shaft. At no stage during this process must any oil be used and all the surfaces must be clean and dry.



INTEGRATED PTFE OIL SEALS



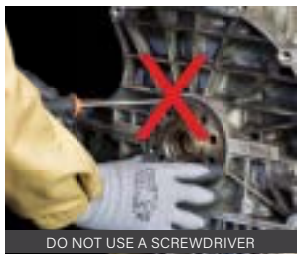
For rear crank seal applications, the oil seal housing and gasket are often now combined into a single unit known as an integrated oil seal which also provides a better level of overall sealing ability. The design of these integrated oil seals means that replacement of the individual sealing elements is not feasible and the unit will need to be replaced as a complete item.

SEAL MODULE WITH INTEGRATED ENCODER

The module can also contain the crank sensor and encoder.

TIPS & TRICKS

- PTFE seals require careful fitting using the plastic collar provided with the seal.
- Don't remove the plastic collar before fitting and avoid touching the PTFE lip to prevent contamination.
- Always fit on a clean and dry shaft without any oil or grease.
- Fully tighten the bolts used in fitting an integrated seal before removing the plastic collar.
- Once the plastic collar is removed, make 2 full rotations, allow 4 hours for the seal to recover onto the shaft before starting the engine.



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PRODUCT BULLETIN

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No risk of the blister cup getting loose from the carton.

Anti-counterfeit hologram on the back

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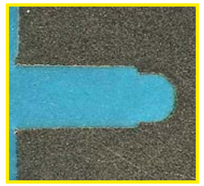
TROUBLE TRACER CHART
PISTON RINGS

Extreme flank wear in the first piston groove

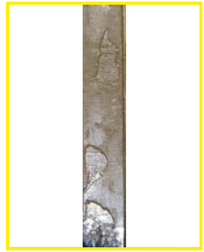


Cause: Lack of lubrication, overfuelling. Dirt or debris in the engine oil or air intake. Defective catalytic converter.
Remedy: Replace defective parts. Change engine oil and ensure there is adequate lubrication. Clean the intake manifold and change the air filter. Check the functioning of the catalytic converter.

Scratches and surface cracks

Cause: Dry start. Lack of lubrication, dirt and debris in lubricating oil.
Remedy: Replace defective parts. Thoroughly clean the engine, replace engine oil and filter and ensure rings are lubricated prior to initial start-up.

Molten areas on piston ring face



Cause: Overheating due to insufficient oil or coolant supply.
Remedy: Replace defective parts. Check that lubrication and cooling levels are correct, and that the correct grade or lubricating oil has been used.

Fretting on face of ring and initial stages of ring coating peeling away

Cause: Insufficient lubrication, overheating due to high frictional loads.
Remedy: Replace defective parts. Check that lubrication and cooling levels are correct, and that the correct grade of lubricating oil has been used.

Fretting on piston ring face

Cause: Overheating. Piston ring face and cylinder wall not compatible. Excessive pressure between piston ring and cylinder wall.
Remedy: Replace defective parts. Ensure that the piston rings and cylinder walls are compatible. Check if the piston rings are correct for the application.

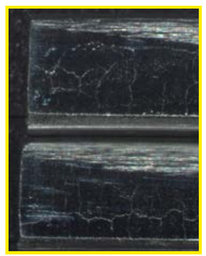
Foreign bodies in engine, 'rolling traces'

Cause: Dirt or debris in engine. Secondary damage due to overheating and seized piston(s).
Remedy: Replace defective parts. Thoroughly clean engine and replace oil and filter.

Ring in first groove broken

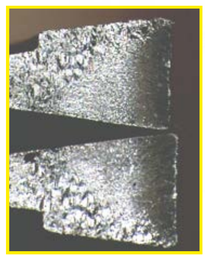
Cause: Overexpansion of ring when fitting the piston. Faulty fitting of piston or ring into engine block. Excessive pressure or worn piston grooves.
Remedy: Replace defective parts. Ensure piston and rings are correctly fitted. Use piston ring expander to prevent overstressing of ring during assembly. Check if the piston grooves are to specification.

Overheating (thermal overload)



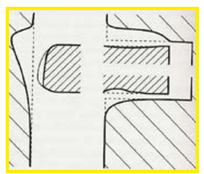
Cause: Overheating, insufficient lubrication, insufficient cooling and high friction levels.
Remedy: Replace defective parts. Check that lubrication and cooling levels are correct, and that the correct grade of lubricating oil has been used.

Failure of piston ring



Cause: Ring overexpanded when fitting to piston. Discolouration at ring edge and polishing at fracture face indicate long time in service prior to failure.
Remedy: Replace defective parts. Ensure piston and rings are fitted correctly. Use piston ring expanders during assembly to piston.

Wear at top dead center (TDC)

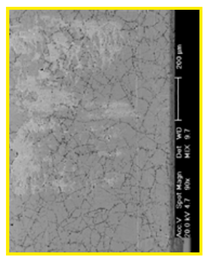


Cause: Shortage of lubrication. Incorrect choice of piston rings or cylinder liners. Cylinder distortion or inadequate cooling.
Remedy: Replace defective parts. Ensure correct selection of parts. Ensure that lubrication and cooling levels are correct. Check if tightening torques and sequences are followed.

Foreign bodies in engine

Cause: Dirt or debris in engine. Secondary damage due to overheating and seized piston(s).
Remedy: Replace defective parts, clean engine, change oil, oil filter and air filter.

Microwelding on piston ring face



Cause: Poor honing of cylinder wall. Dirt or debris in the lubricating oil.
Remedy: Replace defective parts. Thoroughly clean the engine, replace oil and filter. Ensure correct honing pattern is applied to the cylinder wall.

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SNAP UPS™

THE NEXT STEP IN USER FRIENDLINESS

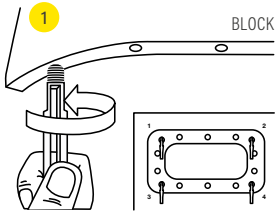
From now on, attaching the oil pan and gasket to the engine block is no longer a two-man job. Simply insert Snap-ups in four corners of the block and slide all parts into place: two small protrusions keep the oil pan and gasket suspended, so you can easily insert the bolts that keep everything together.
It's fast. It's easy. And it makes servicing a whole lot easier.

NEW AVAILABLE IN TWO SIZES (PACKED PER 4)

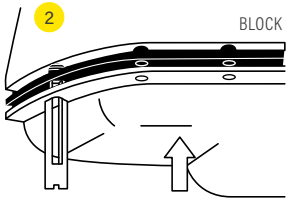
31-030627-00 (ref to order) > 6mm

31-030628-00 (ref to order) > 8mm

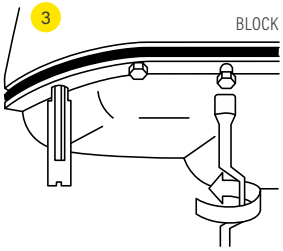
HOW TO USE



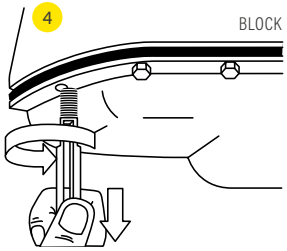
1. Insert Goetze Snap-ups in 4 corners of the block



2. Slide oil pan gasket and oil pan into place over the Goetze Snap-ups



3. Gently insert and tighten bolts to keep oil pan gasket and oil pan in place



4. Replace Goetze Snap-ups with bolts

WATCH THE VIDEO TUTORIAL:

ENGINE EXPERTISE
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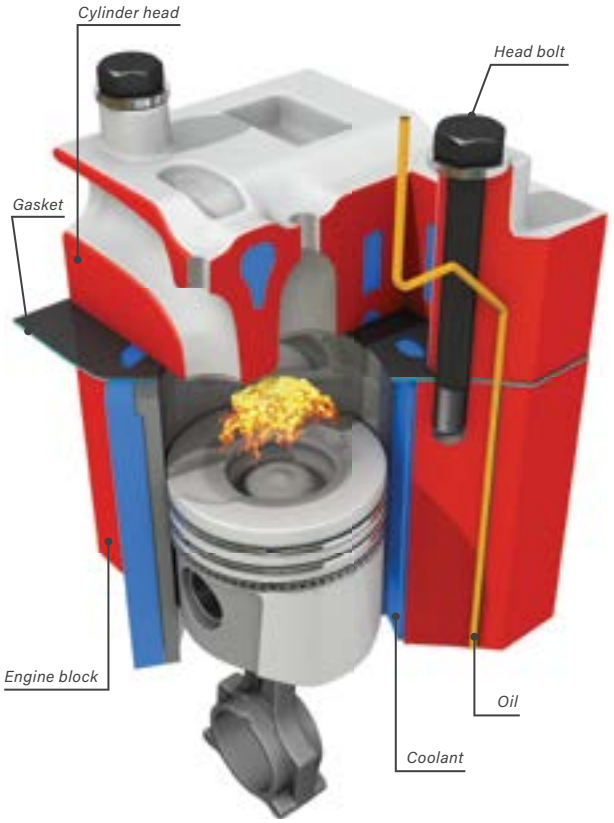
SERVICE ENGINEERING BULLETIN - SB2218

CYLINDER HEAD BOLTS

Understanding cylinder head bolts

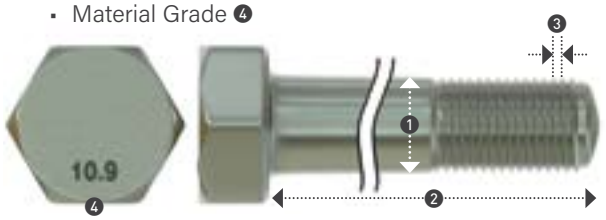
CYLINDER HEAD BOLT FUNCTION

The purpose of the cylinder head bolts is to generate sufficient clamp load for the head gasket to seal gas and fluids.



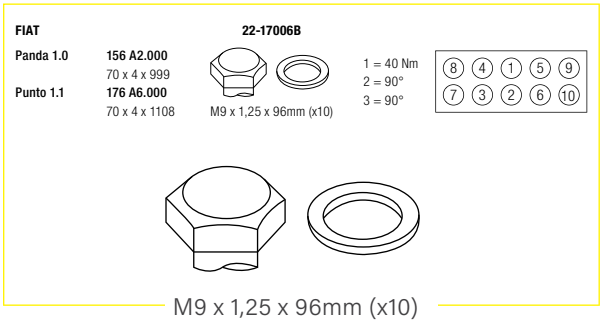
IMPORTANT BOLT DIMENSIONS:

- Major diameter ❶
- Length ❷
- Thread pitch ❸
- Material Grade ❹



FITTING PROCEDURE

The effective generation of bolt load is critical to the sealing of the cylinder head gasket. Approximately 80% of the effort put into turning a head bolt is just to overcome friction. The remaining 20% generates the clamp load.



M9 x 1,25 x 96mm (x10)

If the bolt is not turned enough an inadequate load level will be generated. However if the bolt is turned too far into yield the bolt is likely to fail.

BOLT TIGHTENING METHODS

Traditionally, cylinder head bolts were tightened using a measured amount of torque in several steps. It is now more common for a combination of torque and angle tightening to be used. This generates a more consistent amount of bolt load since it is independent of the friction conditions.

DON'T REUSE HEAD BOLTS!

This could lead to inadequate load generation due to:

Rusty bolts

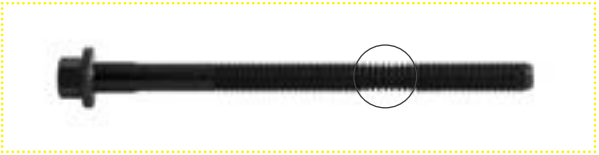
Damaged bolt threads

Corrosion

Stress corrosion cracking

Previous overtightening

Previously yielded giving permanent extension and plastic deformation



GOETZE TIPS & TRICKS

- Inspect bolts for damage.
- Clean and lubricate or seal threads as recommended.
- Inspect bolt hole threads and depth.
- Blind bolt holes should be dry at the bottom.
- Ensure that the joint surfaces are clean and free of oil.
- Torque the bolts using the recommended sequence.
- Stop pulling the torque wrench when it clicks.
- Use a degree wheel when required.
- Verify the accuracy of the torque wrench regularly - certainly after it has been dropped!

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Always at Reach

Goetze® **optid 34-000420-00 sealing compound** is particularly intended to create durable fluid sealing of cylinder liners, synthetic housings, and all surfaces in engines, gearboxes and axles. This all-purpose sealant is suitable for uneven and rough surfaces in all engine makes.

The convenient sized compact tube ensures easier access to areas within the engine that are difficult to reach. Always keep one in your toolbox!

optid 34-000420-00

- Content: 70 ml
- Includes nozzle and key
- - 65°C to +300°C
- Fast curing 0.1 mm/hour

How to order

1 carton* of Goetze **34-000420-00** needed > **Order 30 x 34-000420-00** > **Checkout quantity = 30**

* sold per full carton only

Safety data sheet available on TecDoc.