RING KHODRO PARS

RING KHODRO PARS

Office:
Address: Floor 2, Karmania complex, Maryam street,
20 km of Tehran-Karaj special road, Tehran, Iran
Postal code: 1399155690
Tel: +98 21 9107 0082

Factory:
Address: No.26, Takestan Industrial City, Qazvin, Iran
Postal Code: 3481394379
Fax: 028 35270129

www.ringkhodropars.com

RING KHODRO PARS

Ring Khodro Pars Company (private and joint-stock company) with the aim of producing Piston ring types were registered on 11/10/1362. Since the same year Extensive studies were conducted to identify technology-owning companies. Finally, the German company Götze is the most reputable piston ring manufacturer. It was selected with the firm determination of the organization's senior management and with the help of engineers and Iranian technicians and invitation of German consultants, casting lines from Germany Purchased, installed and all equipment was commissioned in 2002. At the end of the year 2004 with the conclusion of a contract for the design and production of OHV engine piston rings Upgraded arrow mass production including casting machining operations Thermal and coating work has begun since 2006. Development and design of all Piston rings required by domestic automakers for new generation engines Euro Euro as well as Tabriz Tractor Sazi engines of the highest quality The company also manufactures the most complex castings. Engine such as EF7 TC engine turbocharger turbine shell ductile iron Austenitic 35% nickel) as well as cylinder seat and guide bushings in the years It has recently added it to its product portfolio.

Honors and achievements

1- Holder of quality grade A from Sapco Megamotor and Motor Manufacturers

2- Standard partner laboratory in the field of piston rings and the only reference laboratory for quality control of all types of piston rings in Iran

Compiled national standards for piston rings in cooperation with the Iranian Standards Organization.

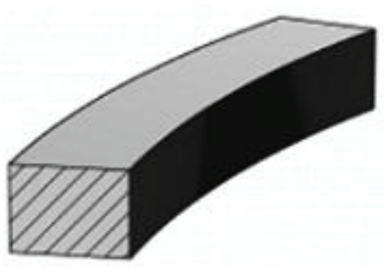
4- Holder of IATF 16949:2016 quality certificates as a ring designer, ISO 45001:2018 and ISO 9001:2015, piston

5- Obtaining the title of the country's top manufacturer in the 10th Conference on Internal Combustion Engines and Petroleum

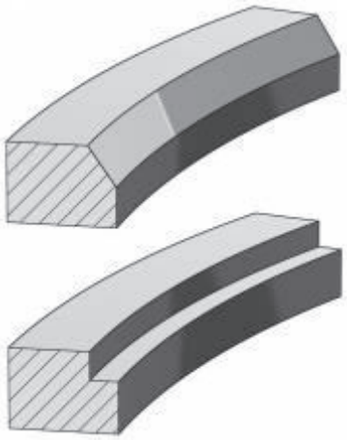
The following is a brief introduction to the product, assembly instructions, and a checklist for checking oil consumption and quick troubleshooting.

Piston Ring Types

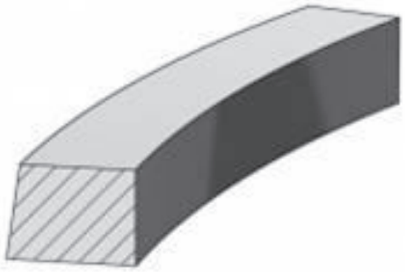
COMPRESSION RINGS



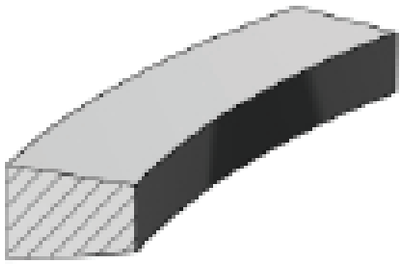
Rectangular Ring



Internally Beveled or Stepped Ring

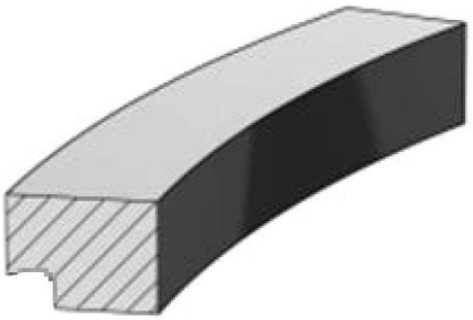


Taper Ring

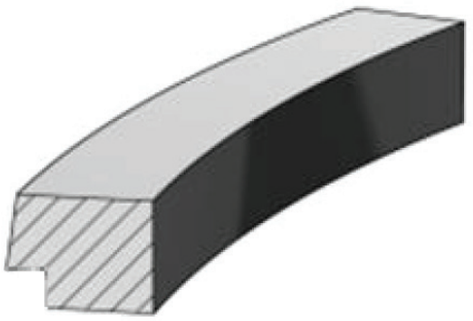


Keystone Ring

Scraper Rings



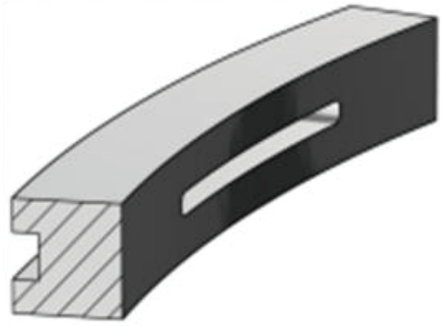
Napier ring



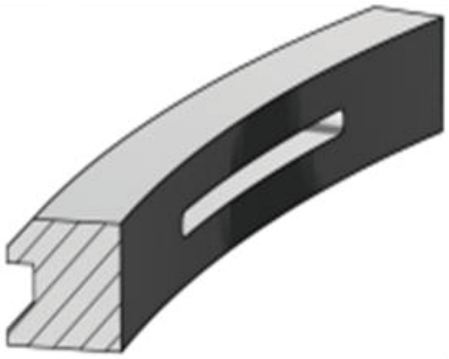
Taper Faced Napier Ring

Piston Ring Types

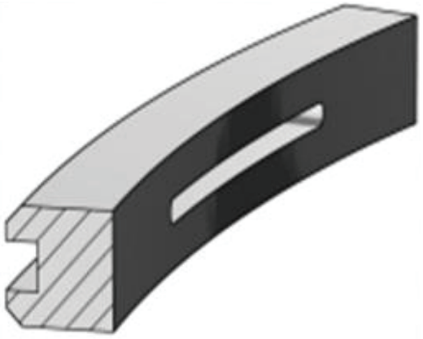
OIL CONTROL RINGS



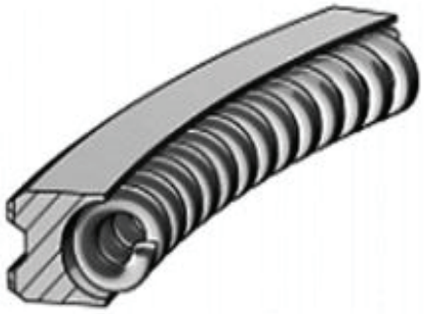
Slotted Oil Control Ring



Beveled Edge
Oil Control Ring



Double Beveled Edge
Oil Control Ring



Coil Spring Loaded Slotted
Oil Control Ring

Piston ring assembly considerations

1- First, clean the piston and cylinder thoroughly and remove any remaining soot from the ring grooves and the upper part of the cylinder.

Replace pistons that are cracked, deformed, or worn.

It is necessary to ensure that the ends and walls of the piston groove are not damaged.

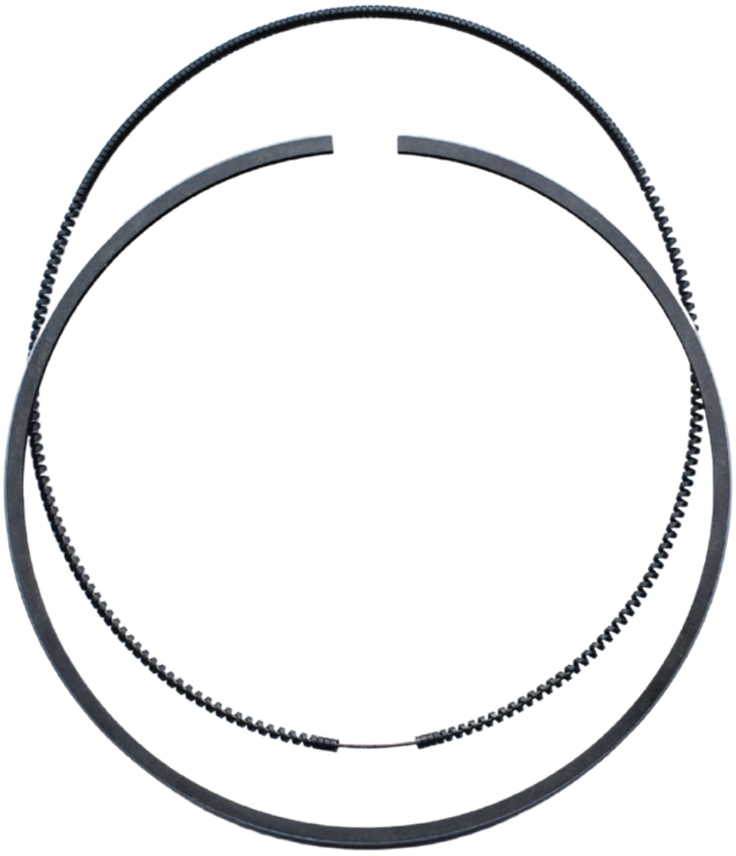
2- The clearance between the grooves of the used piston and the new rings should be measured with a feeler gauge. If this clearance exceeds 0.07 mm, the piston should be replaced. If a piston with a worn groove is used, there is a risk of oil consumption and increased crankcase vapors, and the ring part is not covered by the warranty.

3- The rings should be assembled onto the piston, preferably using a mounting bush or suitable ring opening tool, with the lowest ring installed first.

4- Excessive opening of the rings should be avoided as it will lead to deformation of the rings. Deformed rings will not be able to seal completely.

5 - The basic point in installing rings with the TOP mark is that this mark should be placed at the top and towards the piston crown.

6- In spring oil rings, the spring connection point must be located opposite the ring opening in such a way that the position of the ring opening and the spring connection point are 180 degrees apart.

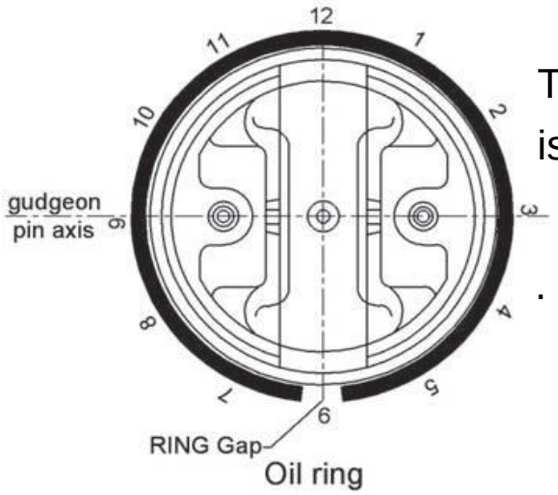


7- Cylinder or bushing wear is permitted as long as the gap size measured by placing a new ring in the cylinder is within the range given in the tables on pages 17-21, as it causes the ring gap to open.

If there is excessive wear, either a new cylinder liner should be used or the cylinder diameter should be reground and larger piston and rings (repair rings) should be used.

The wider the cylinder, the shorter the engine life and the higher the risk of oil consumption. Therefore, it is better to use a cylinder liner with the least diameter deviation.

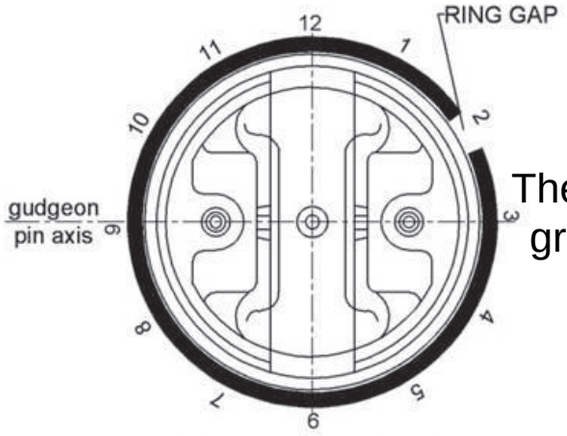
8- The ring openings should be evenly distributed around the piston and the oil ring opening should be perpendicular to the pin axis. For example, for a piston with three rings, this angle is about 120 degrees as follows:



Oil ring

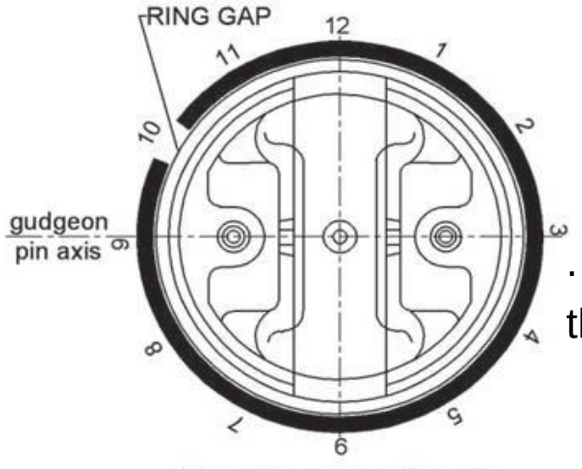
The piston position should be such that the axis of the pin hole is in the direction of 3 and 9 o'clock.

. The oil ring should be moved onto the piston groove by hand so that the ring opening is at the 6 o'clock position.



middle compression ring

The middle compression ring should be moved over the piston groove so that the ring opening is at the 2 o'clock position.



Upper compression ring

. Move the upper compression ring onto the piston groove so that the ring opening is at the 10 o'clock position.

9- After installing the piston rings, it must be ensured that they can move freely.
10- If it is necessary to control the ring opening, place them individually inside the cylinder and measure the opening with a feeler gauge according to the required values in the tables on pages 17 to 21.
11- Before assembling the ring and piston inside the cylinder, make sure that the inner surface of the cylinder liner is not too smooth or too rough. Excessive roughness of the cylinder liner will cause rapid damage to the ring.
12- Finally, the piston and the rings assembled on it are assembled inside the cylinder by the piston ring.
Assembling the rim manually or using non-standard tools will damage the rim and affect its performance in the engine.
Failure to assemble the rim with the correct tools will void the product warranty.

Quick Piston Ring Troubleshooting Checklist

When was the last oil and air filter change?

Is the type of oil used approved?

What is the mileage since the last oil change?

Has the oil deficit been compensated in various surveys?

How many liters of oil does the engine currently have?

What is the condition of the air filter gasket and tubes? Are there any leaks or tears?

What is the current status of the air and oil filters?

What is the condition of the steam hose? Is it torn? Is there oil in it?

What is the oxygen sensor number? If it is higher than 0.1 to 0.9, it means that the injector is leaking.

Is there enough oil in the engine (not more than the permissible amount of oil)?

When did the engine start to lose oil?

Are there any signs of cracking on the bushings?

Are the seals and gaskets in good condition? No oil leaks.

Is the ignition system working properly? Latest status of replacing spark plugs, coils and spark plug wires

Is the cooling system in good condition? Thermostat, water pump, and fan.

Are the idle and throttle sensors working properly?

What is the fuel injection rate? (Permissible range (4-2))

Are there any signs of piston clogging on the piston skirt?

Is the piston groove and ring clearance appropriate?

Is the sealing of the outer diameter of the rims appropriate?

Are there any signs of breakage or chipping on the rings before removing the rings from the piston?

Does the connecting rod move easily at the connection to the piston?

Is the radiator cap intact? If it is not properly sealed, it will cause air to enter the cooling system and It boils and the engine temperature rises.

Are the water pipes clogged with sediment?

Is the oil inlet door O-ring in good condition?

What is the height of the bushes?

What is the current radiator water level?

Are the oil channels of the oil filter, oil pump, oil jet, or the oil path not crooked or torn?

Is the oil gauge showing the correct number?

What is the condition of the valves? Is the air valve not lubricated? Or is there any soot buildup?

What is the condition of the valve springs and retaining caps? (Not crooked)

Is the valve gate rubber intact?

Are the valve guides and seats in proper condition?

What is the height of the bushings after opening the cylinder head? Are the bushings all in the same row of height?

What is the condition of the cylinder head gasket? (Tear, crushing, etc.)

What is the condition of the engine spark plugs? Are there any soot or oil stains on them?

Are the rims adjusted correctly?

Are the rings rotating correctly in the piston groove? They rotate easily.

Is there a lot of soot and carbon on the piston crown?

What is the inner diameter of the double-wide and bottom bushings?

Is the O-ring at the bottom of the cylinder liner intact?

Are there lines outside the ring race? The beginning of the line means dirt and contamination in the engine, and the end of the line means piston seizure.

Troubleshooting oil burning Excessive oil consumption

Action	Reason for the problem	External symptoms	problem from customer's point of view	row
Check the condition of the valve, guide, cylinder head and seat. (Check for soot on the air valve stem and smoke on the contact surface of the valve and guide, check for soot on the valve seat surface on the seat)	Valve and valve guide leakage • Valve and valve seat leakage • Cylinder head and valve guide leakage • Valve and valve seat leakage	White smoke during engine start, stopping after a few seconds • White smoke after increasing engine speed, stopping after a few seconds • White smoke while driving downhill	روغن سوزی / مصرف بیش از اندازه روغن	1
Inspect the surface contact of the ring with the cylinder wall / cylinder head (Is the entire circumference of the outer ring in contact with the cylinder head?)	عدم آب بندی مناسب رینگ و سیلندر / بوش سیلندر	دود تیره ممتد در حین کارکرد موتور		
بررسی ارتفاع (ضخامت محوری) رینگ پیستون بررسی ارتفاع شیار پیستون (محل نشست رینگ)	لقی رینگ در شیار پیستون			
بررسی سطح تماس رینگ با سیلندر / بوش سیلندر (آیا تمام محیط خارجی رینگ با سیلندر / بوش سیلندر تماس داشته است ؟)	مونتاژ رینگ شکسته در سیلندر / بوش سیلندر			
بررسی چرخش روان رینگ در شیار پیستون	تابدار شدن رینگ در هنگام مونتاژ			
بررسی وجود 4 فنر در 4 رینگ روغن یک موتور	عدم مونتاژ فنر رینگ روغن			
بررسی جهت مونتاژ دماغه رینگ کمپرس پایینی روی پیستون (دماغه رینگ باید به سمت پایین پیستون قرار گرفته باشد)	مونتاژ برعکس رینگ کمپرس پایینی روی پیستون			
بررسی همراستایی میل لنگ ، شاتون و سیلندر بررسی وجود ذرات خارجی (پلیسه ، گرد وخاک) در روغن	گیرپاژ / بوش سیلندر			
بررسی زبری سیلندر / بوش سیلندر بررسی وجود ذرات خارجی (پلیسه ، گرد وخاک) در روغن بررسی دبی انژکتور (افزایش پاشش سوخت باعث شستن روغن از دیواره سیلندر شده و رینگ خشک کار می‌کند) بررسی صحت عملکرد اویل پمپ بررسی وضعیت مونتاژ اشتباه فنر در رینگ روغن Inspect the amount and type of oil used in the engine Inspect the engine for professional use conditions Inspect the cooling system to ensure engine oil temperature is controlled and does not exceed the allowed increase	فرسایش بیش از اندازه رینگ پیستون			
Full oil change and washing of oil channels and passages	وجود پلیسه بین رینگ و بوش وجود گرد و غبار	خط افتادن روی بوش		

Passenger car engine piston rings Standard size and all repair sizes		Opening size (mm)
XU7	Top ring	۰.۲۰ – ۰.۳۵
	Second ring	۰.۴۰ – ۰.۶۰
	Oil ring	۰.۲۵ – ۰.۵۰
OHV	Top ring	۰.۲۰ – ۰.۴۰
	Second ring	۰.۳۵ – ۰.۵۵
	Oil ring	۰.۲۵ – ۰.۵۰
TU5	Top ring	۰.۱۰ – ۰.۲۵
	Second ring	۰.۲۵ – ۰.۴۵
	Oil ring	۰.۲۵ – ۰.۵۰
TU3	Top ring	۰.۱۵ – ۰.۳۰
	Second ring	۰.۳۰ – ۰.۵۰
	Oil ring	۰.۲۵ – ۰.۵۰
EF7	Top ring	۰.۱۵ – ۰.۳۰
	Second ring	۰.۲۵ – ۰.۵۰
	Oil ring	۰.۲۵ – ۰.۵۰
XU7 (New design)	Top ring	۰.۲۰ – ۰.۳۵
	Second ring	۰.۲۰ – ۰.۴۰
	Oil ring	۰.۲۵ – ۰.۴۰
EC5 **(TU5 PLUS)**	Top ring	۰.۱۵ – ۰.۳۰
	Second ring	۰.۲۵ – ۰.۴۰
	Oil ring	۰.۲۵ – ۰.۵۰

Heavy car engine compressor piston rings (Standard size and all repair sizes)		Opening size (mm)
EF7 PLUS	Top ring	۰.۱۵ – ۰.۲۵
	Second ring	۰.۴۰ – ۰.۵۵
	Oil ring	۰.۲۵ – ۰.۴۵
Pride (SLOT)	Top ring	۰.۱۵ – ۰.۳۵
	Second ring	۰.۱۵ – ۰.۳۰
	Oil ring	۰.۲۰ – ۰.۴۰
Pride EU4 (M13)	Top ring	۰.۱۵ – ۰.۳۰
	Second ring	۰.۴۰ – ۰.۶۰
	Oil ring	۰.۲۰ – ۰.۴۰
TIBA S81 (X200)	Top ring	۰.۱۰ – ۰.۲۵
	Second ring	۰.۲۰ – ۰.۴۰
	Oil ring	۰.۲۰ – ۰.۳۵
NISSAN Z24	Top ring	۰.۲۸ – ۰.۳۸
	Second ring	۰.۴۵ – ۰.۶۰
	Oil ring	۰.۲۵ – ۰.۵۰
XU7 PLUS	Top ring	۰.۲۰ – ۰.۳۵
	Second ring	۰.۳۰ – ۰.۵۵
	Oil ring	۰.۲۰ – ۰.۴۵

Heavy car engine compressor piston rings (Standard size and all repair sizes)		Opening size (mm)
Tractor UTB	Top ring	۰.۳۰ – ۰.۵۰
	Second ring	۰.۴۰ – ۰.۶۵
	Oil ring	۰.۴۰ – ۰.۶۵
	Forth ring	۰.۳۰ – ۰.۶۰
	Fifth ring	۰.۳۰ – ۰.۶۰
Perkinz 4.248	Top ring	۰.۳۰ – ۰.۴۵
	Second ring	۰.۳۰ – ۰.۴۵
	Oil ring	۰.۳۰ – ۰.۴۵
Benz OM360	Top ring	۰.۳۵ – ۰.۵۵
	Second ring	۰.۳۵ – ۰.۵۵
	Oil ring	۰.۳۰ – ۰.۵۰
Perkinz 100 0 (4 cylinder)	Top ring	۰.۲۵ – ۰.۴
	Second ring	۰.۲ – ۰.۳۵
	Oil ring	۰.۳۰ – ۰.۵۵
Benz OM 355	Top ring	۰.۳۰ – ۰.۵۰
	Second ring	۰.۳۵ – ۰.۶۰
	Oil ring	۰.۳۵ – ۰.۶۰
	Forth ring	۰.۴۰ – ۰.۶۰

Heavy car engine compressor piston rings (Standard size and all repair sizes)		Opening size (mm)
Benz OM 314	Top ring	۰.۳۰ – ۰.۵۰
	Second ring	۰.۳۰ – ۰.۵۵
	Oil ring	۰.۳۰ – ۰.۵۵
	Forth ring	۰.۳۰ – ۰.۵۵
	Fifth ring	۰.۳۰ – ۰.۵۵
Volvo N12F12	Top ring	۰.۳۵ – ۰.۶۰
	Second ring	۰.۴۰ – ۰.۶۵
	Oil ring	۰.۴۰ – ۰.۷۵
Volvo N10 D100	Top ring	۰.۳۰ – ۰.۶۰
	Second ring	۰.۳۵ – ۰.۶۰
	Oil ring	۰.۳۵ – ۰.۶۰
	Forth ring	۰.۳۵ – ۰.۶۵
Volvo N10TD100B	Top ring	۰.۳۰ – ۰.۵۵
	Second ring	۰.۳۵ – ۰.۶۰
	Oil ring	۰.۴۰ – ۰.۶۰
Perkinz 100 0 (6 cylinder)	Top ring	۰.۳۰ – ۰.۵۵
	Second ring	۰.۳۰ – ۰.۵۵
	Oil ring	۰.۳۰ – ۰.۵۵

Heavy car engine compressor piston rings (Standard size and all repair sizes)		Opening size (mm)
Compressor Volvo TD 100	Top ring	۰.۲۵ – ۰.۵۰
	Second ring	۰.۲۵ – ۰.۵۰
	Oil ring	۰.۲۵ – ۰.۵۰
Compressor OM 314	All ring	۰.۲۰ – ۰.۴۵

Goetze Technology

Member of CISQ Automotive

RINA

CERTIFIED MANAGEMENT SYSTEM

IATF 16949

IMQ

CERTIFIED

OCCUPATIONAL HEALTH AND SAFETY MANAGEMENT SYSTEM

ISO 45001:2018