



**AXFB**

EXCELLENCE IN PRECISION

# AXPB: Bearing Solutions for Compressors

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& Senior Application Specialist  
for Fluid Machinery

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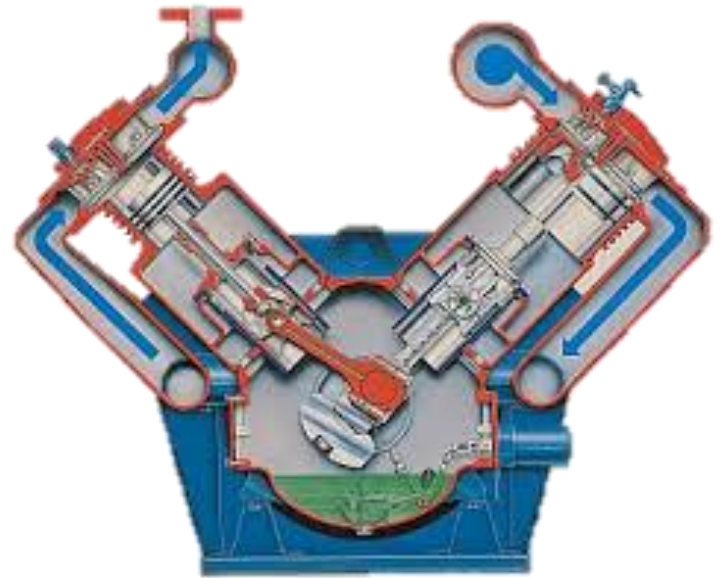
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- 2 Bearings selection for compressors
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# Types of compressors

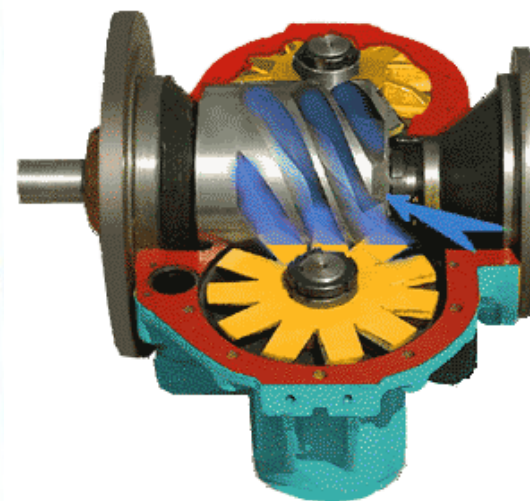
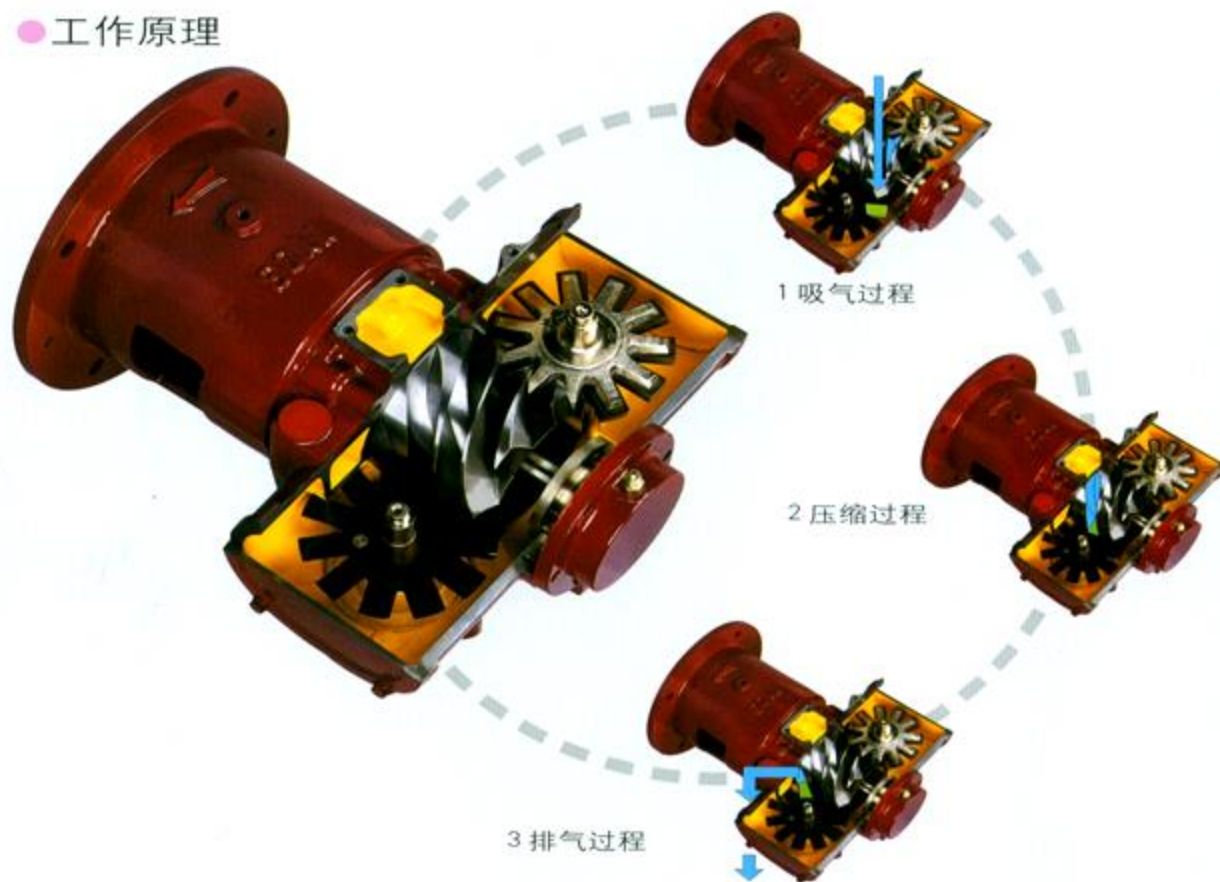
- **Reciprocating compressor (piston compressor)**
- **Single screw compressor**
- **Twin screw compressor**
  - Oil-injected screw compressor
  - Oil-free screw compressor
- **Roots blower (lobe-type compressor)**

# Reciprocating compressor (Piston compressor)

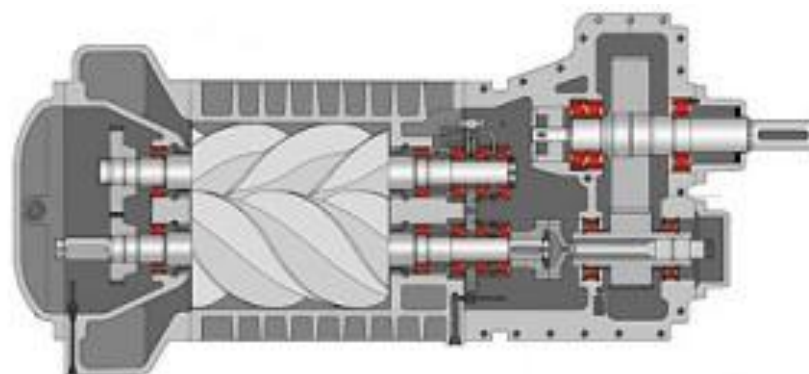
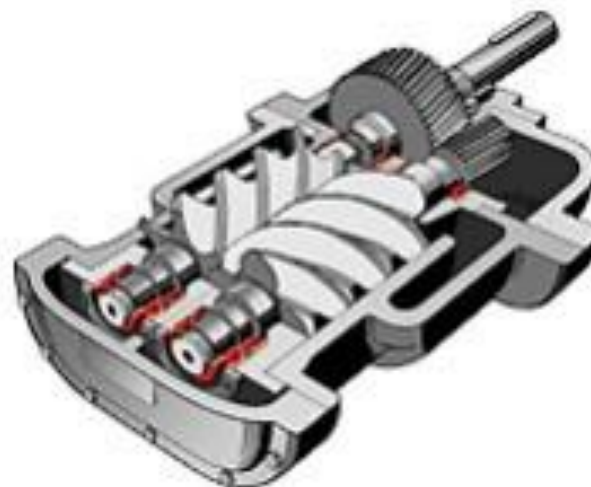


# Single screw compressor

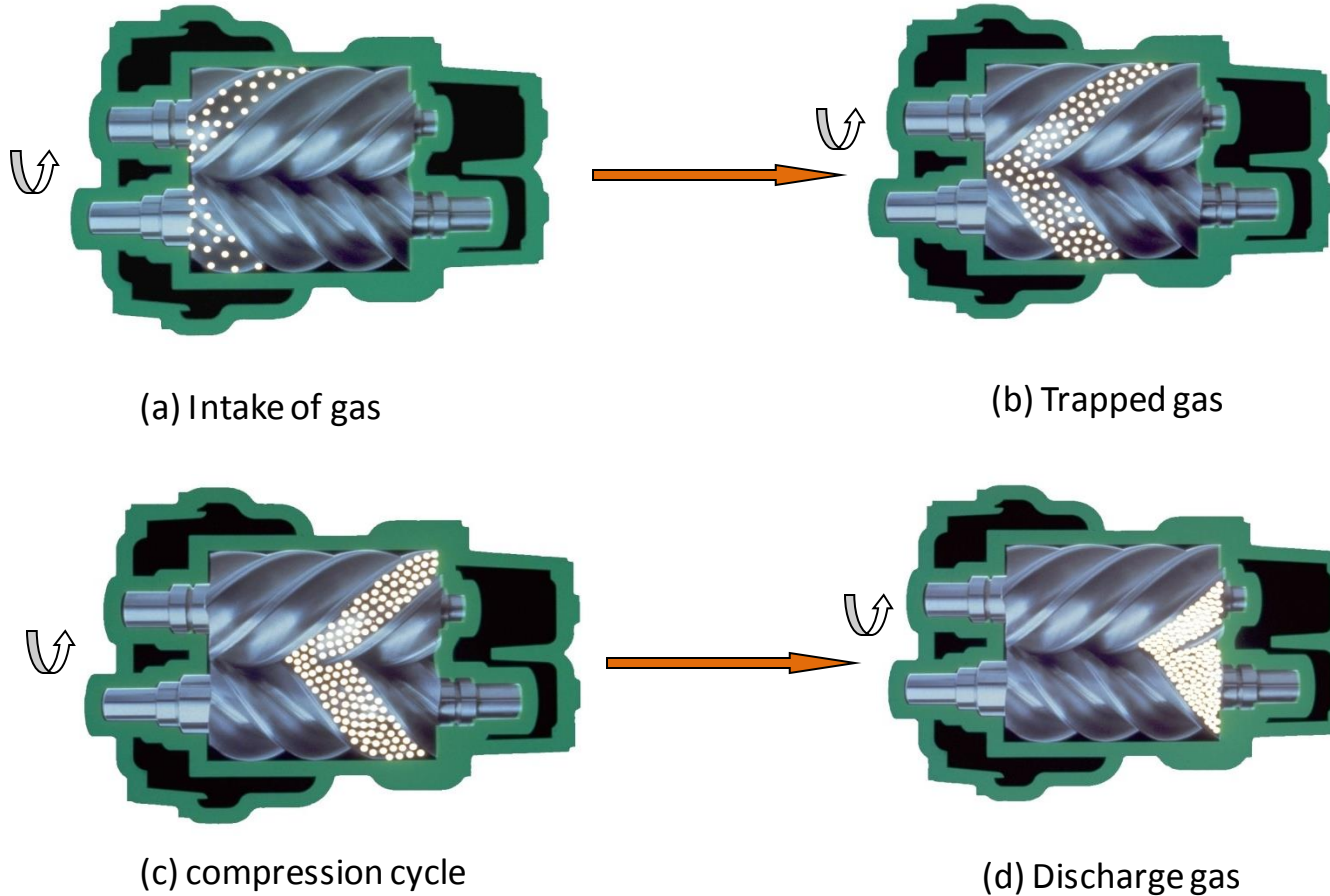
● 工作原理



# Twin screw compressor



# Twin screw compression cycle





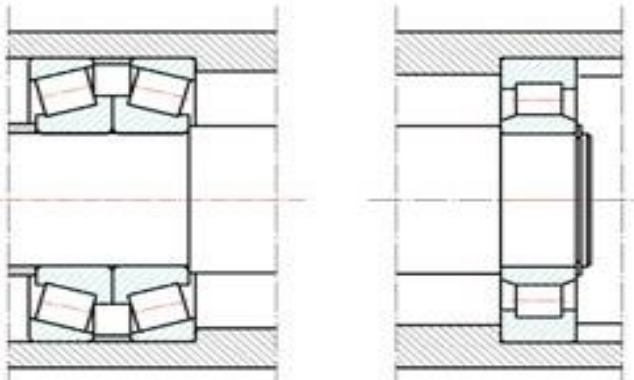
**A**



**Fixed end bearings:**

1. Four-point contact ball bearing
2. Cylindrical roller bearing

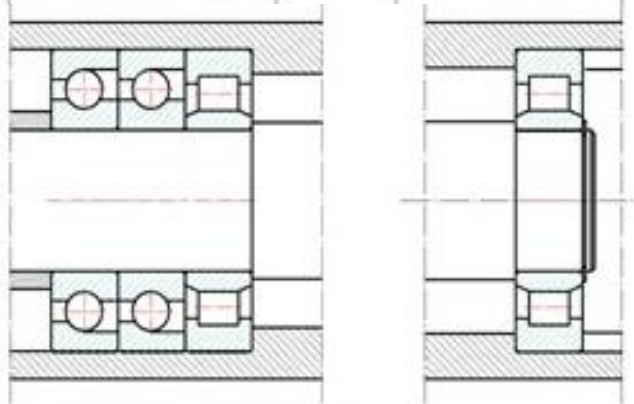
**B**



**Fixed end bearings:**

1. Tapered roller bearing  
(face to face arrangement)

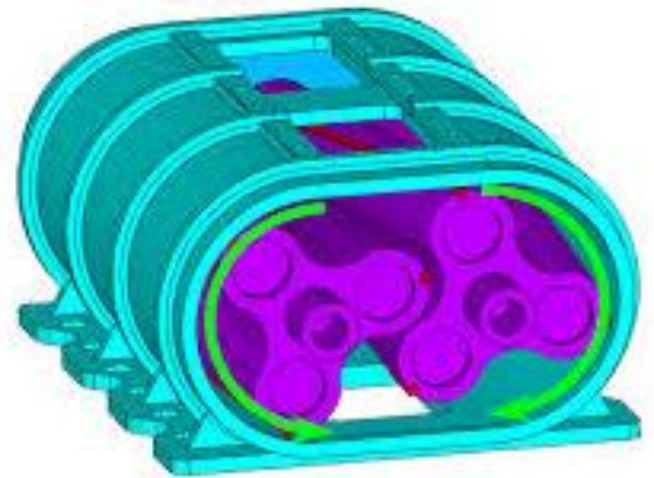
**C**



**Fixed end bearings:**

1. Angular contact ball bearing
2. Cylindrical roller bearing

# Roots blower (Lobe-type compressor)



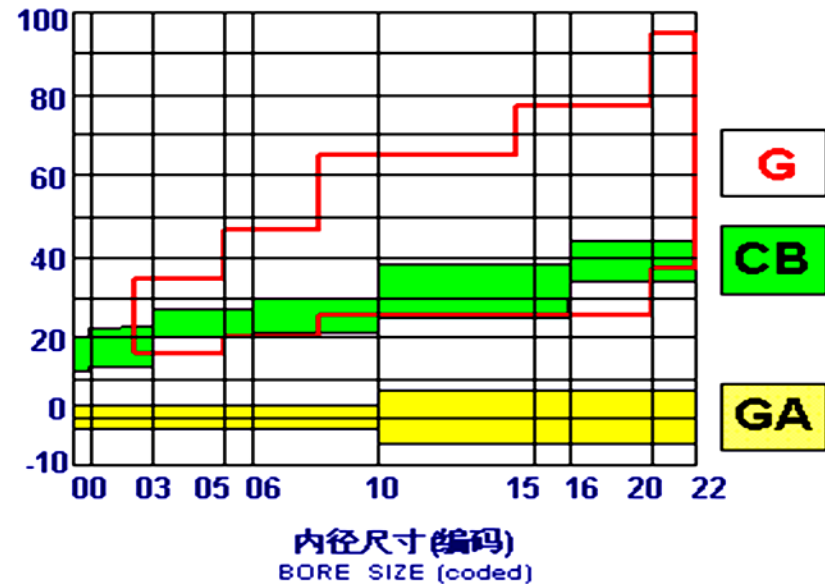
# Bearing design and features



- Angular contact ball bearings with universal matching (S series)

- ✓ Higher load-carrying capacity
- ✓ Higher speed capability
- ✓ Higher degree of stiffness
- ✓ Higher running accuracy
- ✓ Six clearance/preload classes
  - Internal clearance (CA, CB, CC)
  - Preload (GA, GB, GC)
- ✓ Extremely clean steel and unique heat treatment

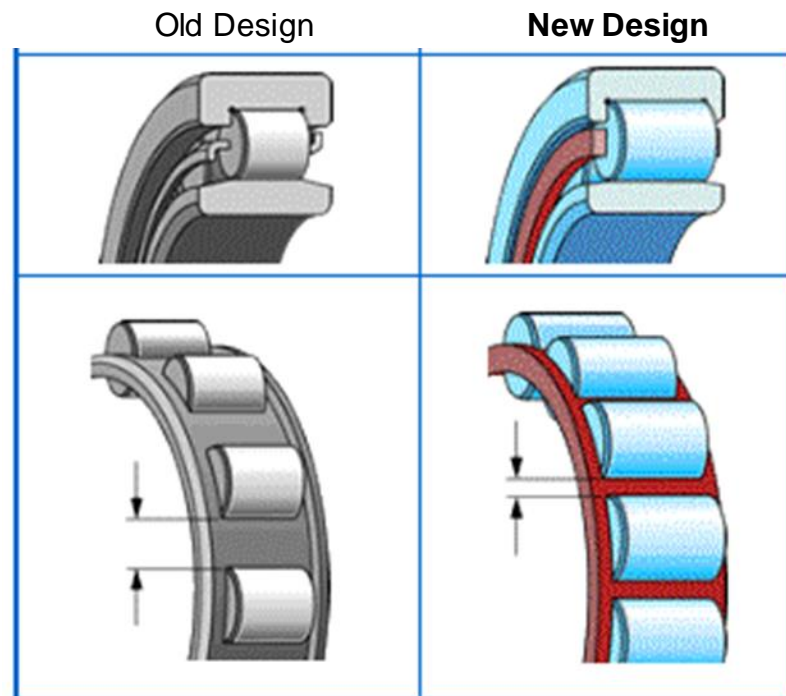
轴向游隙  
AXIAL CLEARANCE  
( $\mu\text{m}$ )





- **Cylindrical roller bearings (S series)**

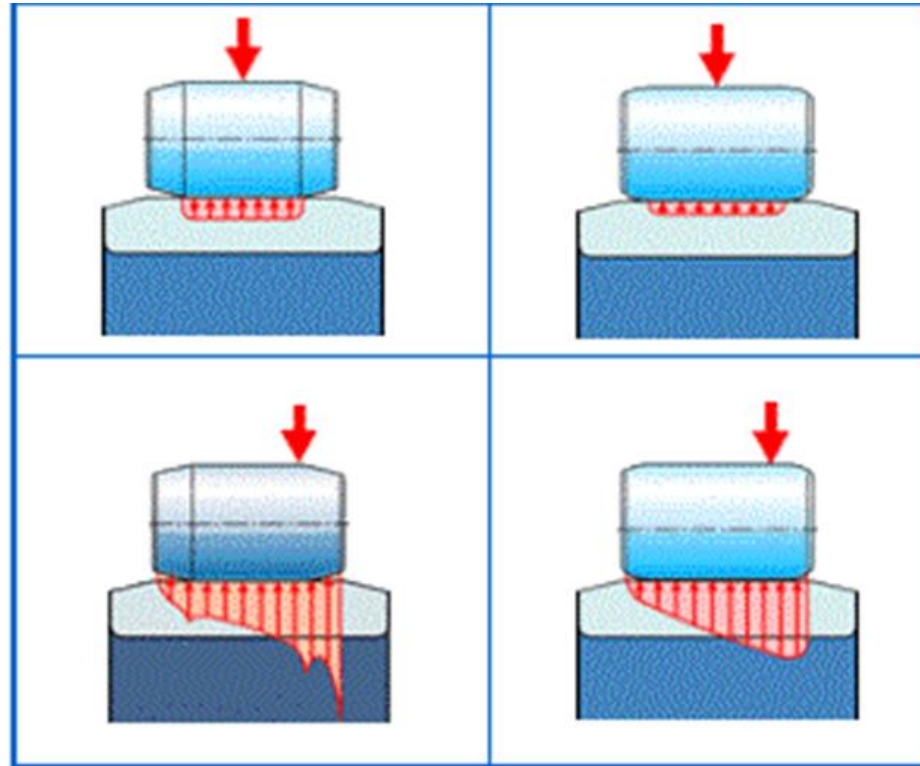
- ✓ Optimize contact profile
- ✓ Roller end/flange geometry
- ✓ Surface finish
- ✓ Cage design
  - Higher radial load-carrying capacity
  - Higher speed capability
- ✓ Interchangeability of bearing components



# Optimize contact profile

Old Design

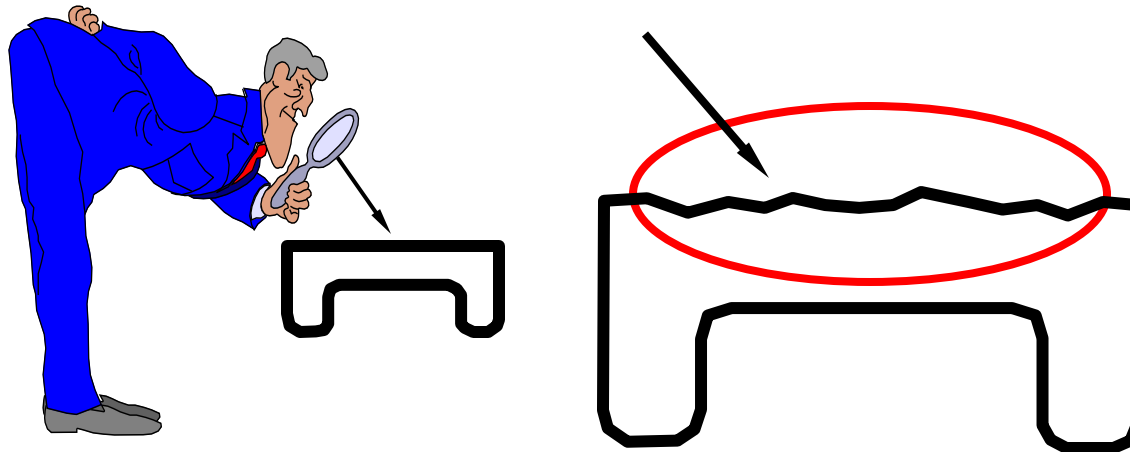
New Design



- ✓ Improve the load distribution
- ✓ Less sensitive to misalignment
- ✓ Higher capacity load

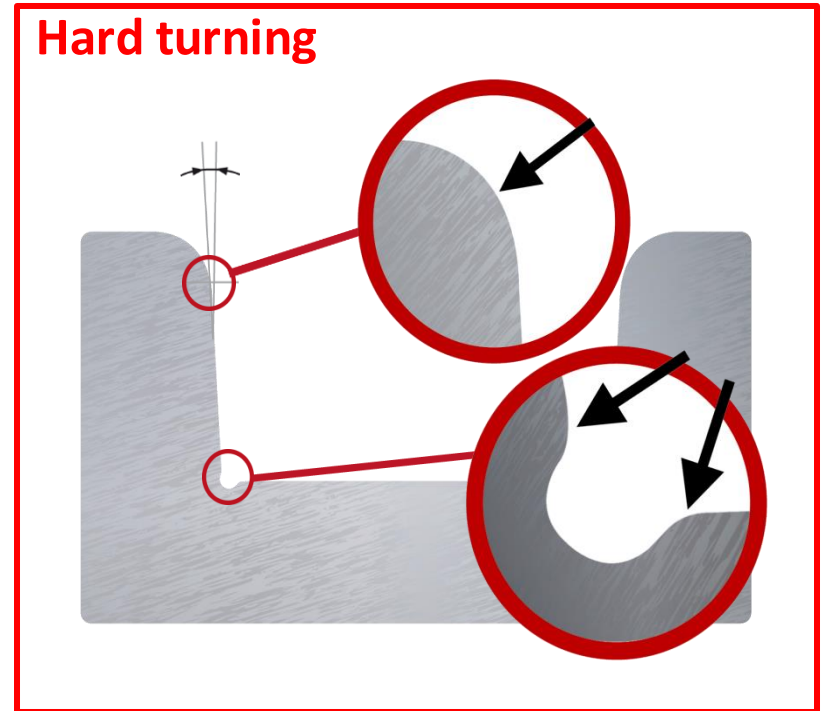
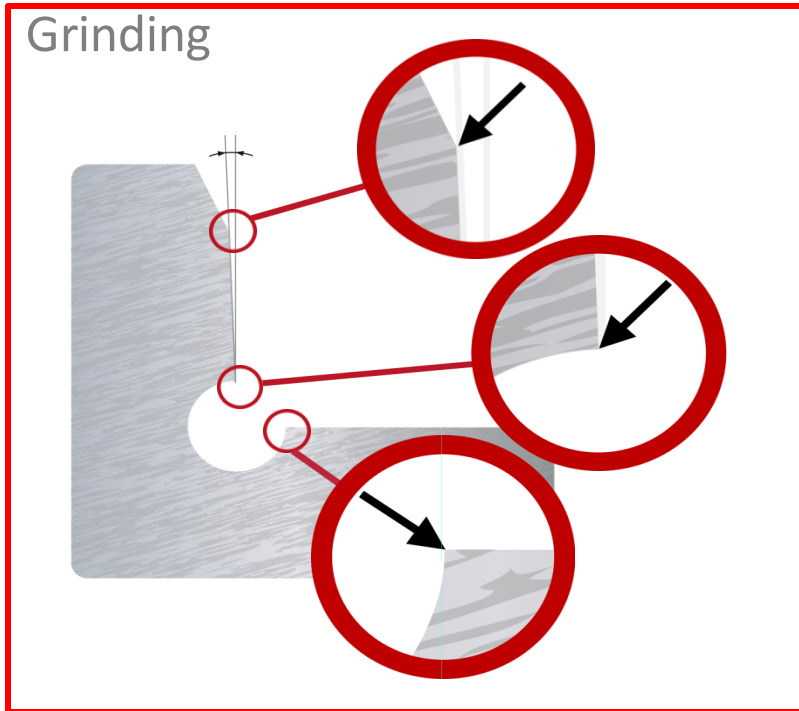
# Surface finish

	Old Design	New Design
Ra	0.25	<b>0.16</b>
Rz	Doesn't control	<b>1.28</b>



- ✓ Improve surface finish of the raceways on the rings and rollers
- ✓ Enhance lubrication conditions

# Roller end/flange geometry

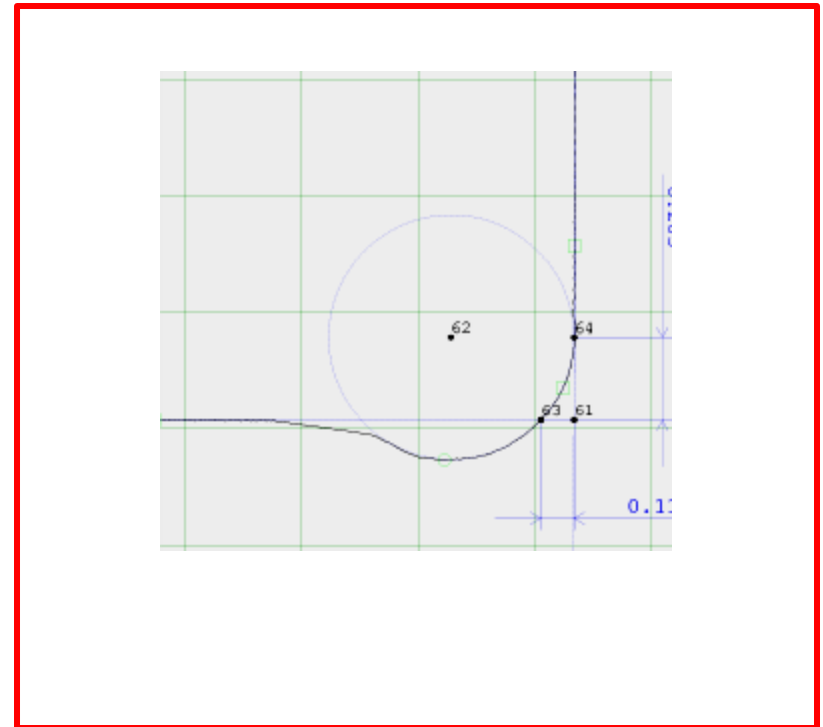
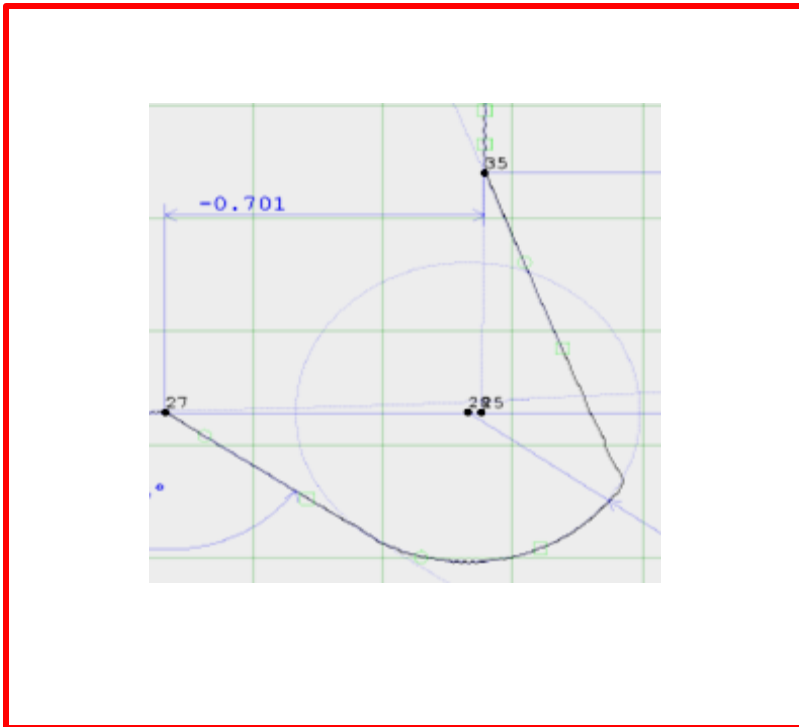


- ✓ Optimal contact condition
- ✓ Higher radial and axial load carrying capacity
- ✓ Higher operational reliability
- ✓ Longer service life

# Roller end/flange geometry

Grinding

Hard turning





# PA66 nylon cage vs PPS plastic cage (PEEK)

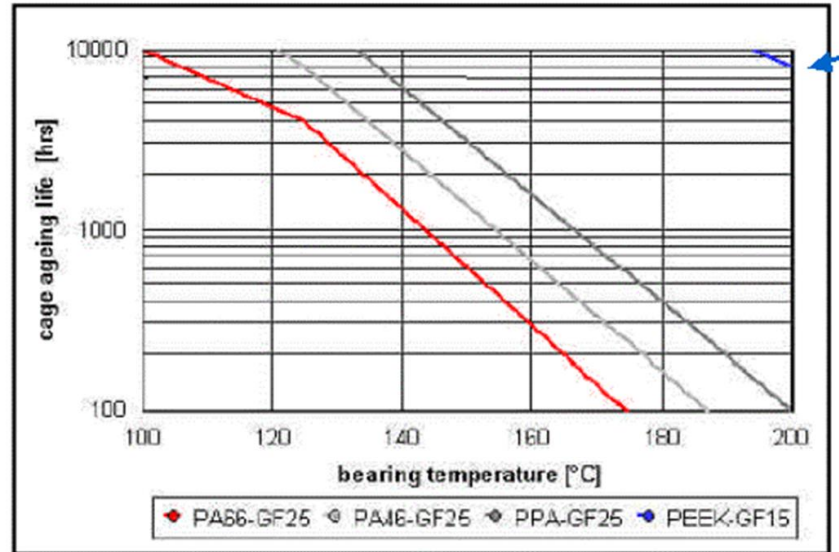
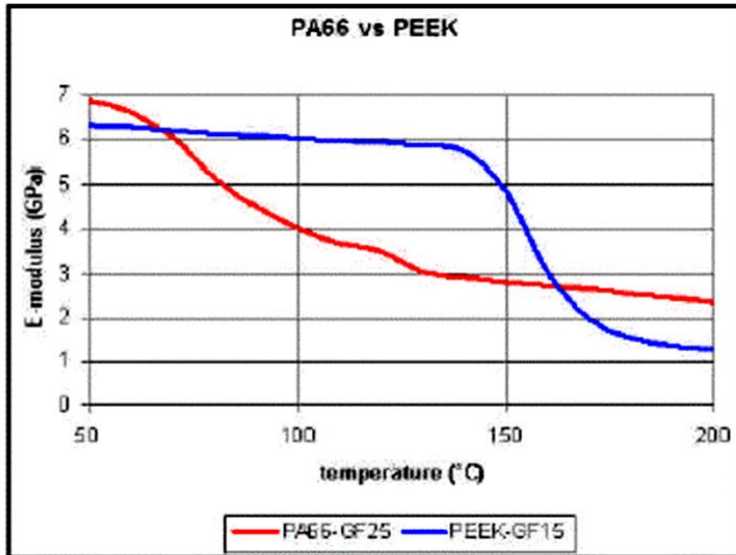
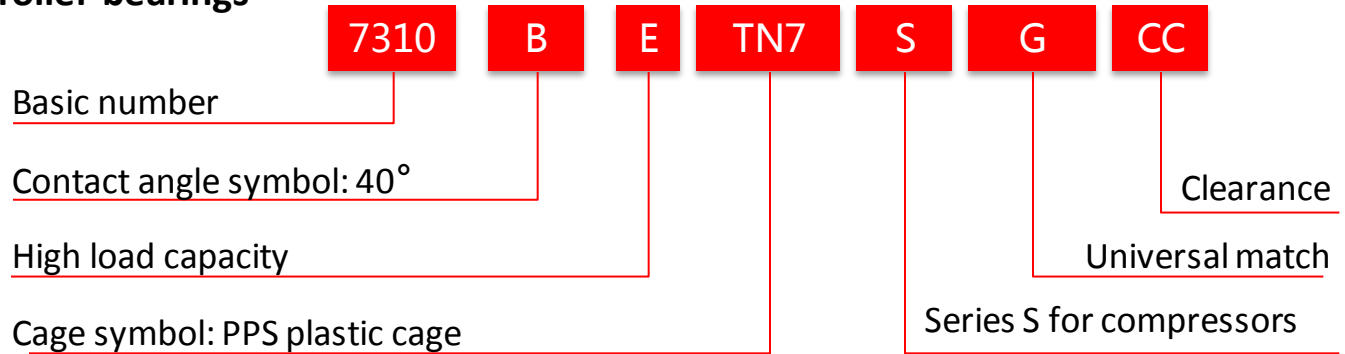


Diagram 1: E-modulus vs. temperature, comparison of PEEK and PA66. Diagram 2: Ageing in EP-enriched oil, comparison of different cage materials

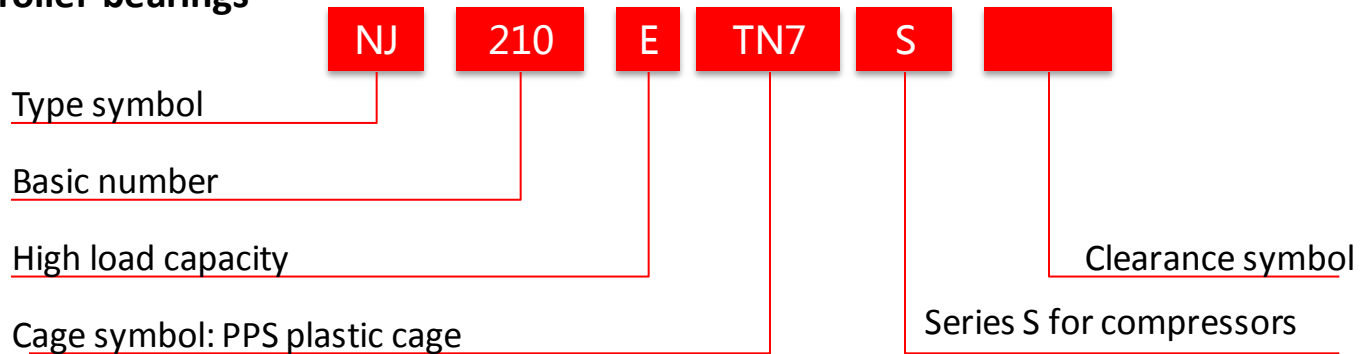
- ✓ Higher temperature resistance than nylon cage
- ✓ Abrasion resistant
- ✓ Excellent resistance to oil and chemicals
- ✓ Better dimensional stability

# AXPB Bearing Coding for Compressors

## Cylindrical roller bearings



## Cylindrical roller bearings



# Client reference:



# AXPB popular items (0.3 m<sup>3</sup>/min ~ 40 m<sup>3</sup>/min)

C R B		A C B B	4 A C B B	T R B	N R B
NU202ETN7.S	NU211ETN7.S	7203B.ETN7.SG	QJ313MA	30203.S	NA 4903
NU2203ETN7.S	NU2211ETN7.S	7206B.ETN7.SG	QJ315N2MA	32005.S	NA 6902
NU2204ETN7.S	NU2311ETN7.S	7306B.ETN7.SG	QJ319N2MA	32206.S	NA 49/32
NU2205ETN7.S	NU212ETN7.S	7307B.ETN7.SG	QJ219N2MA	32207.S	NK 12/12
NU2206ETN7.S	NU2212ETN7.S	7308B.ETN7.SG		33211.S	NKIS 50
NU206ETN7.S	NU313ETN7.S	7209B.ETN7.SG	<b>S R B</b>	31312.S	NAO 30X47X16
NU207ETN7.S	NU2213ETN7.S	7311B.ETN7.SG	22310 E	33212.S	
NU307ETN7.S	NU314ETN7.S	7313B.ETN7.SG	22212 E	31313.S	
NU208ETN7.S	NU2214ETN7.S		22319 E	31314.S	
NU2208ETN7.S	NU2216ETN7.S			33214.S	
NU209ETN7.S	NJ2206ETN7.S			31315.S	
NU210ETN7.S	NJ2208ETN7.S	NJ210ETN7.S			
NU2210ETN7.S	NJ209ETN7.S	NJ219ETN7.S			

# Comparison and Test Certificates

Part Number: **NU213ETN.S**

Brand	Ring material	Cage material	Internal clearance	Life factor	Vibration level
SKF	SKF3	PA66	C0; GA	1	V2
SKF (*)	SKF3	PEEK	CC1	1.5	V3
AXPB	SKF3	PPS	CC1	1.4	V3

Results:

✓ Life test, up to 2 times the rated life

报告编号 (Report No.): 12DS2107A




**产品质量测试报告**  
Test Report of Product Quality

产品名称: 圆柱滚子轴承  
Product Name: Cylindrical Roller Bearing

产品代号: NU213ETN.S  
Product Type:

委托单位: 优必胜 (苏州) 轴承有限公司  
Client: UBC(Suzhou) Bearing Co.,Ltd.

机械工业轴承产品质量检测中心 (杭州)  
Machinery Industry Bearing Quality Inspection Center (Hangzhou)

20-3 年(Y) 2 月(M) - 日(D)

# Thank you!

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