

# ROTAIR

LUBRICANTS FOR OIL-INJECTED SCREW COMPRESSORS

SECURING OPTIMAL PERFORMANCE





**PORTLAND  
COMPRESSOR**  
*Experience You Can Depend On*  
**800-542-8300**

# Why lubricants matter

## THE RIGHT LUBRICANT

Lubricants are essential for the operation of air compressors. For the perfect functioning of your machines you should choose the right lubricant. ROTAIR line lubricants will ensure optimized performance of your compressors with minimized wear and tear, because our lubricants have a unique formula designed to realize a compressor's full potential, maximize its lifetime and keep operational costs to a minimum.

### Keeping it cool

The lubricant works to cool down the compression block to protect a compressor from overheating and breakdowns.

### Optimized running

The lubricant works to protect the machine and its rotating parts from wear and tear by providing the right lubrication film, resulting in proper operation at all time.

### Tidying up

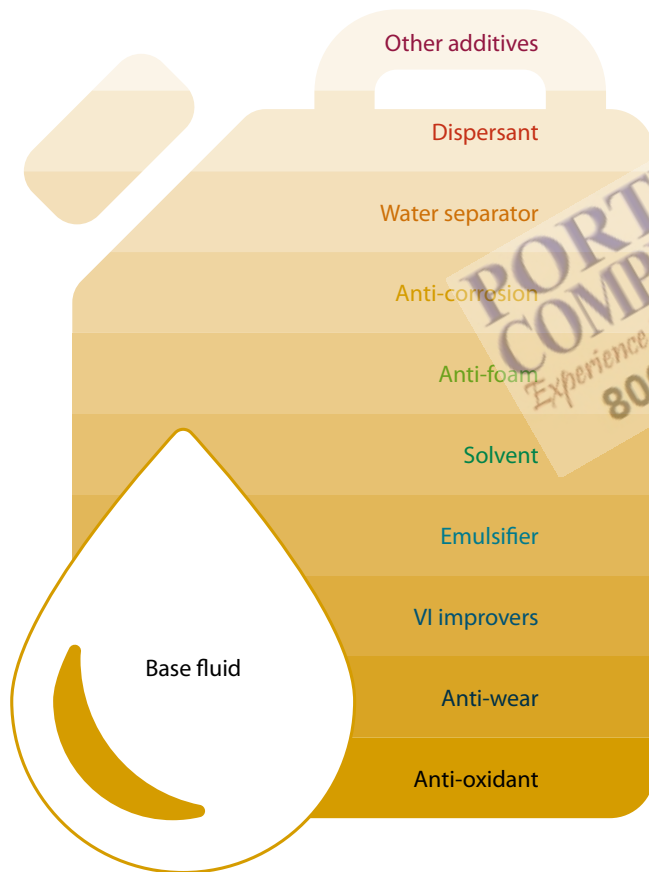
During a compressor's operation, deposits could form along the oil path, putting in danger the unit's proper functioning. The right lubricant will avoid this and eliminate the dirt, safeguarding the integrity of your machine.

### Sealing air inside

The lubricant provides excellent sealing in all sections of the compression block to ensure optimum energy efficiency.



# There is no comparison



## TAILOR-MADE FOR PERFORMANCE

A generic oil is no match for our lubricants. Consisting of a base oil and selected additives, our lubricants all have tailor-made formulas to meet the requirements of compressors in different operating conditions, from mild to highly demanding environments. This is why only ROTAIR lubricants support optimal performance of your machines.

## BALANCING ACT

Individual additives influence each other's behavior, the base fluid behavior and ultimately the effectiveness of the lubricant. Add too much of a particular additive, and one or more other additives may lose effect. To ensure every additive can perform its task, our lubricants have a balanced recipe resulting from extensive research and development.

## SPECIFIC APPLICATIONS

In industries such as food & beverage, pharmaceuticals, medical and electronics, oil can cause serious damage to the end product, leading to the loss of entire production lots. We have designed a lubricant for these applications, safeguarding production even in case of incidental contact with the end product. ROTAIR Food Grade has several certifications including NSF H1, halal, kosher and allergen free.

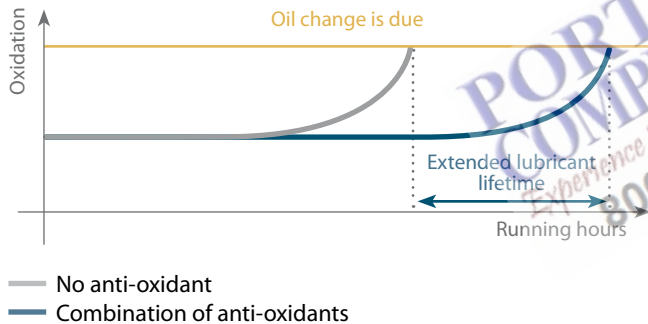
# It's in the formula

## OXIDATION RESISTANCE

When exposed to oxygen, high temperatures, water or dust, the oil will oxidize, creating oxidation products, acids and deposits that will decrease the oil life and may cause damage and undermine the compressor's performance.

### Properties

- Slows the lubricant's reaction with oxygen, water and dust
- Improves oxidation resistance at higher operating temperatures



### Benefits

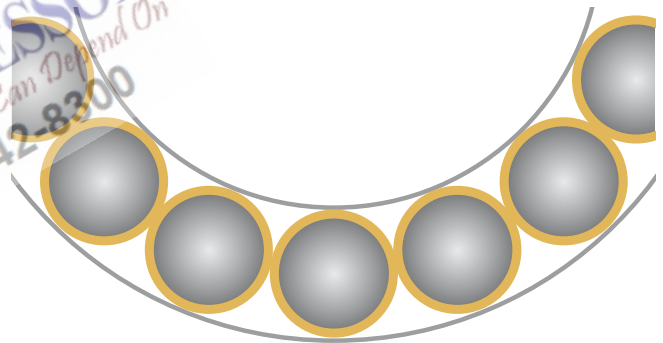
- Extends lubricant lifetime
- Prevents deposits like varnish or sludge
- Prevents acid formation and metal corrosion
- Prevents clogging of filters, blocking of valves, failure on bearings and gears
- Prevents unexpected breakdowns; ensures reliability

## RESISTANCE TO WEAR

In operating conditions where the lubrication film is not sufficient, moving parts could briefly make contact. Anti-wear additives form a protective layer on such moving parts and prevent them from getting damaged.

### Properties

- Highly reactive, attaches easily to parts
- Forms a protective layer over metal surfaces



### Benefits

- Prevents welding of metal parts
- Reduces wear on rotors, bearings and gears
- Protects the compressor element



# It's in the formula

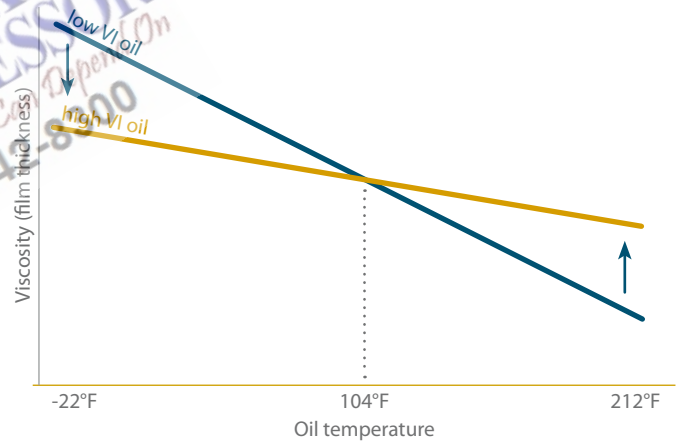


## REDUCED VISCOSITY FLUCTUATION

A lubricant's viscosity (thickness) is influenced by the temperature to which it's exposed. When the viscosity changes, the lubricant's abilities – such as providing the right film thickness – are also affected.

### Properties

- Minimizes the influence of temperature
- Reduces fluctuations in lubricant viscosity



### Benefits

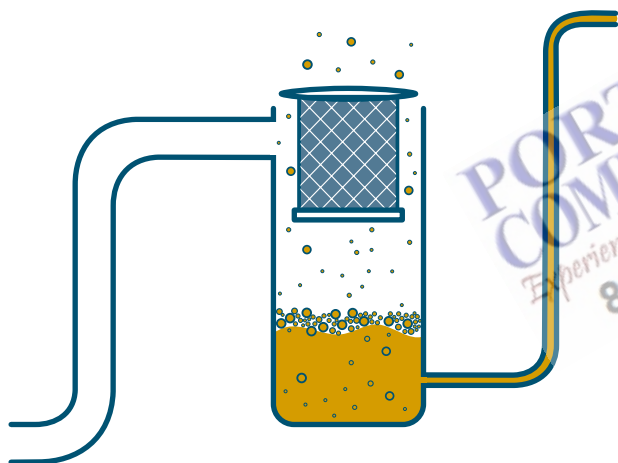
- Ensures performance at low and high temperatures
- Keeps lubricant sufficiently fluid at lower temperatures
- Prevents cold start issues
- Prevents small lubrication channels being blocked
- Ensures sufficient oil film at higher temperatures

## RESISTANCE TO FOAMING

When a lubricant is subjected to turbulent flows or pressure differences it may begin to foam, weakening its lubrication properties and increasing its oxidation rate.

### Properties

- Reduces a lubricant's foaming tendency



### Benefits

- Limits the lubricant's rate of oxidation
  - Prevents foam from reaching the oil separator element
  - Reduces oil carry-over
  - Maintains lubrication properties
  - Increases compressor efficiency (air bubbles are not compressed twice)
- 

## SEPARATING WATER

Depending on the relative humidity of the ambient air and the compressor type, transit of many liters of water vapor occurs during the compressor's operation. This increases the rate of oxidation and reduces the oil's lubrication properties.

### Properties

- Improves the water separability
- Enhances the lubricant's phase separation

### Benefits

- Protects the system from water and oil emulsions
  - Maintains the lubricant's original properties
  - Prevents oxidation
  - Lowers condensate concentration
  - Enhanced intervals of the OSC system
-

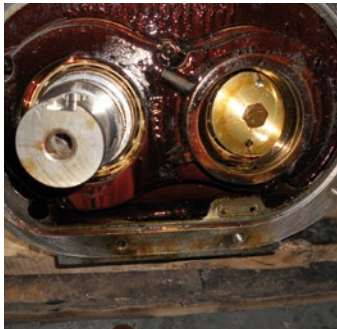
# The risk of not using original lubricants

(or changing genuine oils later than specified)

## EXAMPLES OF FAILURES

Putting your trust in generic lubricants can easily become a costly affair. Initial savings realized by choosing alternative oils will ultimately be outweighed by the costs of compressor failure, productivity losses or increased energy consumption.

Real-life examples of the potential consequences of selecting generic oils instead of original lubricants:



### Problem

Sludge and deposit formation

### Cause

- Low oxidation resistance properties

### Impact

- Lower lubricant lifetime
- Compression block breakdown
- Other parts such as oil separators suffer from clogging and valves being blocked



### Problem

Metal to metal contact between rotors and bearings, resulting in scratches and premature wear

### Cause

- Low anti-wear properties
- Not right oil film thickness

### Impact

- Replacement of the element
- Gear damage because of scuffing, requiring replacement



### Problem

High temperature in the compression block – risk of metal to metal contact

### Cause

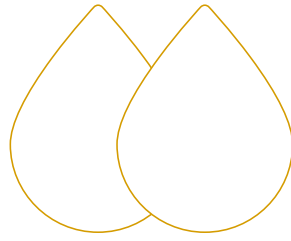
- Oil viscosity

### Impact

- Compressor shutdowns due to high outlet temperature
- Lower performance in mild and demanding conditions



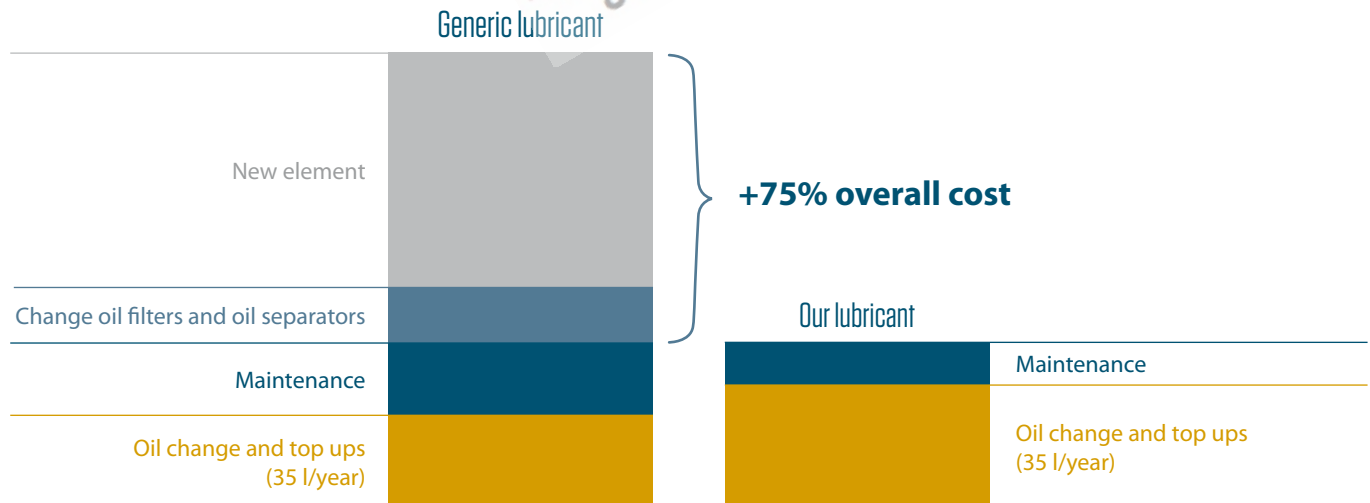




# Choosing a generic oil can significantly increase your maintenance cost

## GENERIC LUBRICANTS – THE BIGGER PICTURE

Purchasing a generic low-cost lubricant may seem like an effective way to achieve modest cost savings. However, if the generic lubricant causes deposit formation, provides insufficient lubrication or inadequate resistance to wear, the risk of a breakdown increases. If the element needs to be replaced after only a few years, the resulting overall cost reveals a different picture.



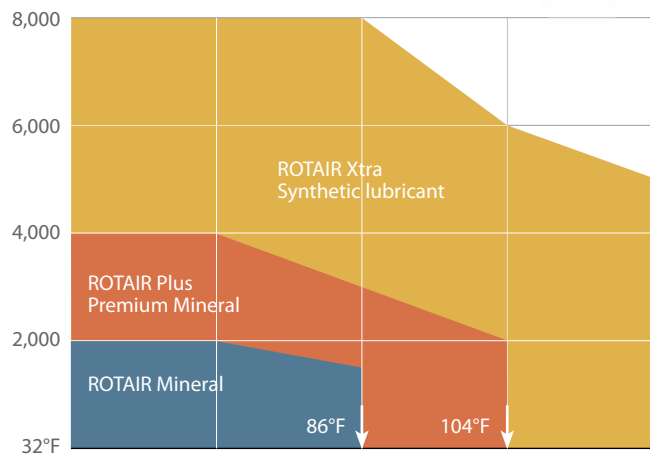
Based on compressor within power range of 55 – 75 kW

# Choosing the right lubricant

Use this table to guide you in selecting the right lubricant.

| Ambient °F (AT)   | Humid environment | Dusty environment | Environment type of operation | RH          |             |             |  |
|-------------------|-------------------|-------------------|-------------------------------|-------------|-------------|-------------|--|
|                   |                   |                   |                               | 2K          | 4K          | 8K          |  |
| < 86°F            | No                | No                | Mild                          | ROTAIR      | ROTAIR Plus | ROTAIR Xtra |  |
| < 86°F            | Yes               | No                | Mild                          | ROTAIR      | ROTAIR Plus | ROTAIR Xtra |  |
| < 86°F            | No                | Yes               | Mild                          | ROTAIR      | ROTAIR Plus | ROTAIR Xtra |  |
| < 86°F            | Yes               | Yes               | Moderate demand               | ROTAIR Plus | ROTAIR Xtra | ROTAIR Xtra |  |
| 86°F < AT < 104°F | No                | No                | Moderate demand               | ROTAIR Plus | ROTAIR Xtra | ROTAIR Xtra |  |
| 86°F < AT < 104°F | Yes               | No                | Moderate demand               | ROTAIR Plus | ROTAIR Xtra | ROTAIR Xtra |  |
| 86°F < AT < 104°F | No                | Yes               | Moderate demand               | ROTAIR Plus | ROTAIR Xtra | ROTAIR Xtra |  |
| 86°F < AT < 104°F | Yes               | Yes               | High demand                   |             | ROTAIR Xtra |             |  |
| AT > 104°F        |                   | High duty demand  |                               |             |             | ROTAIR Xtra |  |

Ambient temperature plays a major role



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## AT

The average Ambient Temperature of the operation plays a big role in choosing the right lubricant.

## RH

Running Hours per year

- 2K: basic compressor usage at around 2,000 hours
- 4K: average compressor usage at around 4,000 hours
- 8K: intensive compressor usage at around 8,000 hours



## Dust

The quality of the air depends in large part on the amount of dust. Use the following indications of dust levels in production environments for guidance only; local circumstances may influence the average dustiness.

- High dust levels: mining and cement, metal, steel manufacturing and foundries
- Normal dust levels: food and beverage, automotive, electronics, petrochemical, gas purification, etcetera

## Humidity

The other important factor in ambient air quality is humidity. Obviously humidity is influenced by rain and other weather influences, so use the following geographical indications for guidance only.

- Not humid: locations that are not humid most of the year
- Humid: locations that are humid most of the year
  - Tropical and megathermal climates
  - Tropical rainforest climates (Northwest Pacific, Central America, Malaysia)
  - Tropical monsoon climate (Jakarta, Miami, South America)

# Mastering the competition

## ROTAIR XTRA

Premium lubricant for heavy-duty use in compressors running 8,000 hours per year or more. This top performing lubricant was created to last under highly demanding operating conditions. ROTAIR Xtra delivers outstanding performance for compressors and contributes to a longer lifetime of parts and components.

| Performance        | Method      | Unit               | Value |
|--------------------|-------------|--------------------|-------|
| Density at 59°F    | ISO 3675    | kg/dm <sup>3</sup> | 0.84  |
| Viscosity at 104°F | ASTM D 445  | mm <sup>2</sup> /s | 46    |
| Viscosity index    | ASTM D 2270 |                    | 133   |
| Foam stability     | ASTM D 892  | ml                 | 0/0/0 |
| Total acid number  | ASTM D 974  | mg KOH/g           | 0.14  |
| Pour point         | ASTM D 97   | °F                 | -70   |



Ambient temperature range  
32°F to 115°F

Appearance  
transparent

## ROTAIR PLUS

The perfect match for compressors running between 2,000 to 4,000 hours per year in mild to demanding conditions. Offering reliability and steady operation of the compressor all year round.

| Performance        | Method      | Unit               | Value  |
|--------------------|-------------|--------------------|--------|
| Density at 59°F    | ASTM D 1298 | kg/dm <sup>3</sup> | 0.88   |
| Viscosity at 104°F | ASTM D 445  | mm <sup>2</sup> /s | 46     |
| Viscosity index    | ASTM D 2270 |                    | 102    |
| Foam stability     | ASTM D 892  | ml/sec I/II/III    | < 10/0 |
| Total acid number  | ASTM D 974  | mg KOH/g           | 0.10   |
| Pour point         | ASTM D 97   | °F                 | -27    |



Ambient temperature range  
32°F to 95°F

Appearance  
transparent to light brown

*These characteristics are typical of current production. Variations in these characteristics may occur. Complies with ISO 6743 /3 /1A class L-DAH.*

## ROTAIR

Excellent choice for compressors below 30 kW with total running hours up to 2,000 hours in mild operating conditions.

| Performance        | Method      | Unit               | Value  |
|--------------------|-------------|--------------------|--------|
| Density at 59°F    | ASTM D 1298 | kg/dm <sup>3</sup> | 0.88   |
| Viscosity at 104°F | ASTM D 445  | mm <sup>2</sup> /s | 46     |
| Viscosity index    | ASTM D 2270 |                    | 98     |
| Foam stability     | ASTM D 892  | ml/sec I/II/III    | < 20/0 |
| Total acid number  | ASTM D 974  | mg KOH/g           | 0.95   |
| Pour point         | ASTM D 97   | °F                 | -27    |



Ambient temperature range  
32°F to 86°F

Appearance  
light brown

## ROTAIR FoodGrade

### Who needs it?

Industries that rely on compressed air to make products which are not allowed to be contaminated by oil, require a food-grade lubricant. Specifically, industries that have a 0% tolerance for non-food-grade lubricants.

- Pharmaceuticals
- Food and beverage
- Electronics

### Safe and protected

If incidental contact occurs between the compressed air (containing oil vapors) and the end product, it will not result in harmful product contamination.

### Certifications

- Halal
- Kosher
- NSF – H1

| Performance               | Method      | Unit                  | Value    |
|---------------------------|-------------|-----------------------|----------|
| Density at 59°F           | ISO 3675    | kg/dm <sup>3</sup>    | 0.84     |
| Viscosity class ISO VG    | ISO 6743    | mm <sup>2</sup> /s    | ISO VG46 |
| Viscosity index           | ASTM D 2270 |                       | 134      |
| Water separation at 129°F | ASTM D 1401 | ml oil/water/emulsion | 40/40/0  |
| Foam stability            | ASTM D 892  | ml                    | 0/0/0    |
| Total acid number         | ASTM D 974  | mg KOH/g              | 0.3      |
| Pour point                | ASTM D 97   | °F                    | -70      |



Ambient temperature range  
32°F to 86°F

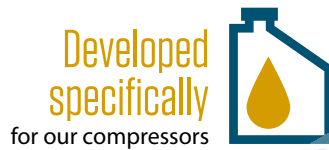
Appearance  
transparent

*These characteristics are typical of current production. Variations in these characteristics may occur. Complies with ISO 6743 /3 /1A class L-DAH.*



# ROTAIR lubricants

All our lubricants offer a unique package of additives and performance benefits, tailored to our specific compressors.



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# In a nutshell



Our lubricants meet the **specific demands** of our compressors

Every formulation has a **perfectly balanced mix** of additives

**No other lubricant** offers the same package of additives

**Choosing a lubricant** based on running hours alone is not enough

Our portfolio of lubricants covers **mild, demanding** and **highly demanding** conditions

Taking the **risk with non-genuine lubricants** ultimately costs more

Our lubricants support our **customers' profitability**

# Care. Trust. Efficiency.



**Care.** Care is what service is all about: professional service by knowledgeable people, using high-quality Original Parts.

**Trust.** Trust is earned by delivering on our promises of reliable, uninterrupted performance and long equipment lifetime.

**Efficiency.** Equipment efficiency is ensured by regular maintenance. Efficiency of the service organization is how Original Parts and Service make the difference.

