JORC

OIL/WATER SEPARATION

SEPREMIUM

ENVIRONMENT SAFEGUARD

RELIABLE

COMPRESSED AIR CONDENSATE MANAGEMENT AND ENERGY SAVING PRODUCTS

Oil/water separation

INDEX

Version 2013

JORC Industrial is a global condensate management specialist of Dutch origin offering condensate drains, oil water separators and air saving equipment to distributors, dealers and OEM's in more than 100 countries. JORC Industrial is dedicated to setting the standard in helping its customers manage their condensate management requirements.

CONDENSATE MANAGEMENT SPECIALIST

Chapter 1

INTRODUCTION TO COMPRESSOR LUBRICANTS

Compressed air is the fourth energy utility after electricity, gas and water.
Few production lines in the world would run without it. The majority of compressed air is provided by oil-injected screw compressors and the compressor oils play a major role in generating clean compressed air in an energy-efficient way. They account for less than one percent of the cost of compressor operation; however, the right oil helps save a considerable part of the total cost.

The oil has three key functions:

1. It ensures that the rotors and rotor bearings in the compressor are lubricated;
2. It dissipates the heat of the compression process;
3. It forms a sealing film at the seal edge between the rotor and the compressor casing.

Two key factors play a major role in compressed air generation: high availability of clean compressed air and compressed air generation at reasonable cost. Newly developed synthetic compressor oils have proven their worth in practice. Long oil lifetime, high efficiency and a very low oil content in the compressed air combine to reduce operating costs considerably.

For efficient and trouble-free production, an oil with long service life and good temperature behavior with low residual content in the compressed air is required. However, there are considerable differences between the performances of different compressor oils.

A well-formulated synthetic product has considerable advantages over mineral oil-based products and particularly stands out for optimum oxidation protection, good adhesion and low residue formation.

However there is a consequence, the modern lubricants create an emulsification in the condensate that does not separate fast enough for gravity type separators. A JORC adsorption type separator offers a guaranteed separating solution.

ADDITIVES & DETERGENTS

Oil additives are vital for the proper lubrication and prolonged use of air compressor oil. Without many of these, the oil would become contaminated, break down, leak out, or not properly protect compressor parts at all operating temperatures.

Just as important are additives for oils used inside gearboxes, automatic transmissions, and bearings.
Some of the most important additives include those used for viscosity and lubricity, contaminant control, for the control of chemical breakdown, and for seal conditioning.

Some additives permit lubricants to perform better under severe conditions, such as extreme pressures and temperatures and high levels of contamination.

EFFICIENT LUBRICATION REQUIRES EFFICIENT SEPARATION

COMPRESSED AIR CONDENSATE

During the process of compressing air, atmospheric air along with water vapour and atmospheric contaminants (hydrocarbon, dust particles or chemical vapours), are drawn into the compressor intake.

Additionally, the compression chambers of most compressors require oil for lubrication, sealing and cooling. Once compressed, the air flows into an after cooler to remove the heat of compression. As the air cools in the after cooler, water and hydrocarbon vapours will condense.

Additional condensation takes place as the air is further cooled in the piping and air dryers.

Environmental regulations strictly prohibit the discharge of oily wastes and chemicals, including the condensate drained from a compressed air system. Because of these requirements, municipalities regulate the discharge of compressor condensate to surface water, wastewater treatment facilities, and sanitary sewers.

Compressor condensate must therefore be either collected or treated prior to disposal. An oil/water separator can be used here to remove the oil from the condensate. Untreated condensate disposal is costly as your customer will be charged by volume. As most of the untreated condensate is water it makes financial sense to separate the lubricant from the condensate by means of an oil/water separator.

Fully synthetic | Polyglycol based | Mineral oil | Semi synthetic | Separated condensate

ADDITIVES & DETERGENTS

Condensate is a by-product of air compressors. It is a mixture of oil and water with particles and hydrocarbons that have been concentrated during the compression process.

This mixture of oil and water is classified as hazardous industrial waste. Environmental laws and regulations prohibit the discharge of untreated compressor condensate into foul sewers.

After the oily condensate has been efficiently removed from the compressed air system by a reliable JORC drain, it cannot be discharged directly to the foul sewer without first having the oil content reduced to within legal disposal limits.

Considering that compressor condensate consists of approximately 95% water, it makes financial sense to separate the oil from the condensate prior to the waste is disposed.

Every end-user that operates a compressed air system should have a (condensate) waste management program (ISO 14000) in place not only to abide to laws and regulations but to also practice ecological responsibility.

JORC's SEPREMIUM Oil/Water Separators are a reliable, effective, efficient and above all an environmental solution.

Chapter 2

WILL ANY OIL/WATER SEPARATOR DO?

Back in the 1980's the lubricant was much more buoyant versus water and as such floated to the water surface much quicker than current lubricants do. Oil/water separators that were developed to work on this gravity type separation might have performed better in the days **prior to the introduction of "commercial internet...".**

These days these old-style oil/water separators simply do not perform to current environmental laws and regulations because the modern oils form an emulsion in the condensate which will not separate on gravity.

The old-style (gravity separation/weir type) separators were also developed back in the day when **ergonomic laws** were not considered, or did not exist. For instance, the weight of the saturated elements exceed current ergonomic laws and regulations. Carrying out routine element replacement activities therefor carries a potential risk to the servicing engineer.

Anno 2013 it is critical to understand that modern day lubrications require modern day oil/water separation technology solutions. JORC is constantly in direct contact with compressor lubrication manufacturers to understand and follow the lubricant development based on the demands made be compressor manufacturers.

The SEPREMIUM technology is based on these current and evolving developments.

JORC'S GUARANTEE

Thousands of JORC oil/water separators are installed worldwide.


Allgemeine bauaufsichtliche Zulassung

The SEPREMIUM elements are designed and manufactured to successfully separate compressor lubricant from condensate.

Even application specific tailor made elements are designed and manufactured to successfully operate in unique circumstances whereby possible external influences require to be considered.

There appears to be no application that cannot get resolved with the SEPREMIUM range of elements combined with JORC's in-house application and product knowledge.

Particularly relevant for the German market, we have had the SEPREMIUM oil/water separator tested to the DiBt standards.

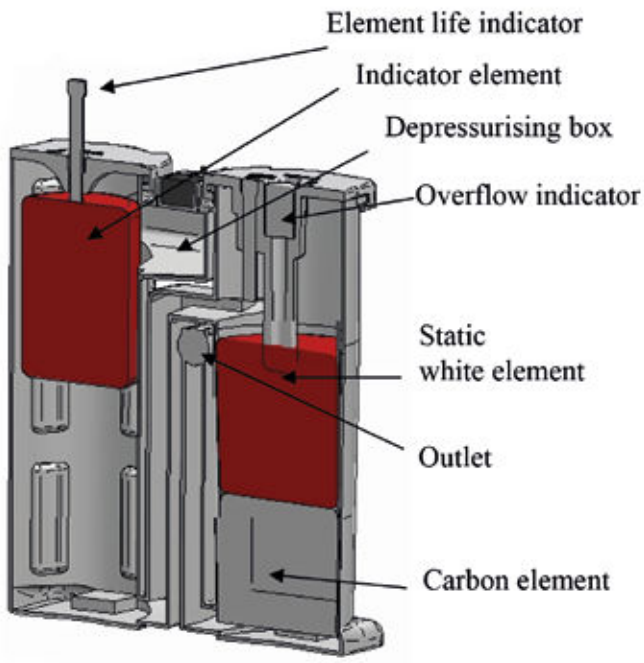
HOW IS THE SEPREMIUM CONSTRUCTED?

The robust rotor-die-casted housing is made from poly-ethylene (PE) material and the design is based on JORC's familiar two tower principle.

We apply brass thread inserts to ensure a secure piping installation without running the risk of easy damaging of the threads, like you can see when applying plastic threads.

The SEPREMIUM models have three high performance elements consisting of two poly-propylene fiber elements and one activated carbon element.

There is an element life indicator offering you a visual guidance as to when to replace the elements with new ones.



HIGH PERFORMANCE ELEMENTS

The clever lubricant adsorbing elements of the SEPREMIUM are designed to perform in the widest range of applications.

The chosen element fibres have been specially selected and treated to maximise its supreme adsorbing performance.

We have been able to design the SEPREMIUM's elements in to a multi-stage configuration, offering an increased filtration efficiency and easy servicing procedures.

Ergonomic laws and legislation have been taken into account during the R&D of the elements.

Chapter 3

PRINCIPLE WORKINGS OF THE SEPREMIUM

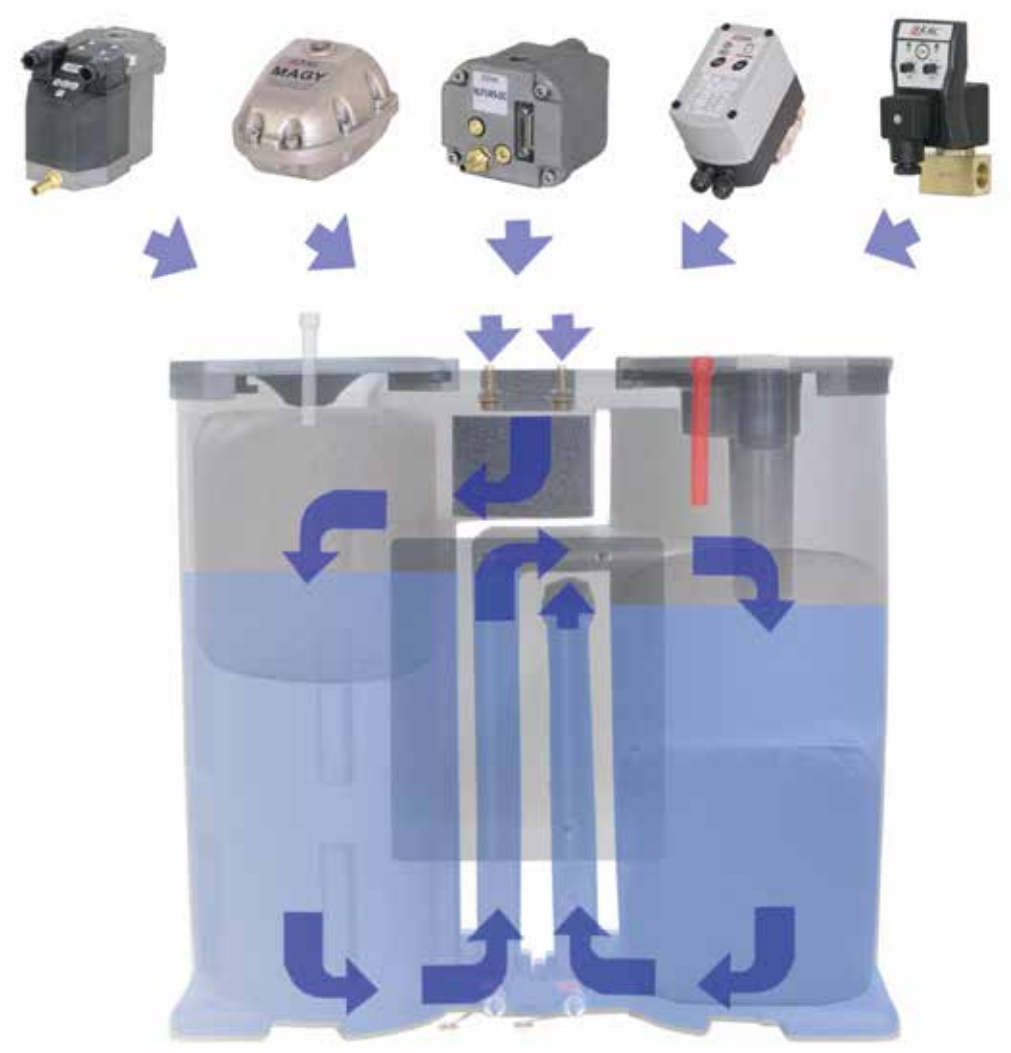
Condensate may be discharged in to the SEPREMIUM by any type of condensate drain.
The depressurising chamber neutralises the pressure.

As condensate flows through the SEPREMIUM, the oil is filtered out through various filtration elements.

The first oil adsorbing element has a clever saturation indicating feature, offering you a visual element life status of the separator at a distance. As the elements adsorption level increases, the first indicating element will become heavier and slowly sink down the tower. On top of the element there is an indicator that sticks up when the elements are new and sinks downwards as the saturation levels increase. Once the indicator has completely sunk down, the elements require to be replaced with new ones.

The elements are designed to combine various types of adsorption technologies to achieve less than 10 ppm oil residue values at the output stage.

Final separation stage includes specially selected activated carbon to polish out the remaining contaminants.



PREMIUM SEPARATION TECHNOLOGY

PRODUCT FEATURES

The SEPREMIUM 2 is a cost effective high performance solution for small compressed air applications.

The SEPREMIUM 2 drops in to its holding bracket (supplied as standard). Servicing involves disconnecting the inlet and outlet, removing the separator and placing the new unit in the holding bracket.

There are no separate replacement elements and as such servicing is a quick and above all a clean process.

Brass connections offer a quick coupling installation feature.

CLEAN AND EASY SERVICING PROCEDURE

TECHNICAL ADVANTAGES

The element component build-up of the SEPREMIUM 2 is made up out of the same components as the larger models, offering high performance separation of virtually all types of compressor lubricants.

The package comes complete with the installation bracket and relevant fixings.

COMMERCIAL BENEFITS

Any type of condensate drain may be applied including cost effective timer drain combination options. The SEPREMIUM 2 is a highly competitively priced oil/water separator and offers an incredibly small footprint. It is light-weight and simple to install.

Exchanging the units could not be quicker, more simple or cleaner!

Chapter 4

PRODUCT FEATURES

The DISTRIBUTOR is designed to collect and distribute condensate into two to eight oil/water separators.

This way you can combine more SEPREMIUM units to match up against larger compressor systems.

As condensate flows into the DISTRIBUTOR the depressurisation takes place. Thereon after the condensate flows evenly into the connected oil/water separators. This way the elements of the separators are equally loaded with condensate to treat.

The DISTRIBUTOR has two 1" condensate inlets and eight 1/2" outlets.

The DISTRIBUTOR is supplied complete with wall brackets and fixings. A spirit level is also included to ensure the correct installation.

PRODUCT SPECIFICATIONS

Number of separators that can be hooked up	8
Inlet connection	1" (2 off)
Outlet connection	1/2" (8 off)
Service/draining valve	Yes
Overflow warning indicator	Yes
Housing material	PE
Total recyclable	Yes
Housing colour	Black
Installation kit included	Yes

SUPPLIED WITH ALL THE FIXINGS

Complete installation kit is included

Service valve

Overflow indicator

EXPLODED VIEW

The SEPREMIUM models 5, 10, 20 and 30 are designed to operate the same way. Differences are physical sizing to account for the various compressor capacities and condensate flows.

A key feature of the SEPREMIUM is the simplicity and ease of servicing.

The elements are designed to be replaced/serviced in a time efficient way. They are also designed to be as light-weight as possible.

Brass threads add to the professional finish of the SEPREMIUM.

As standard the SEPREMIUM package includes an installation clothing kit including a breathing mask, to protect your service engineer from carbon dust, we also include the functional condensate sample bottle for routine inspection and finally a step by step instruction manual to ensure a proper installation.

Chapter 5

DIMENSIONS

SEPREMIUM 5

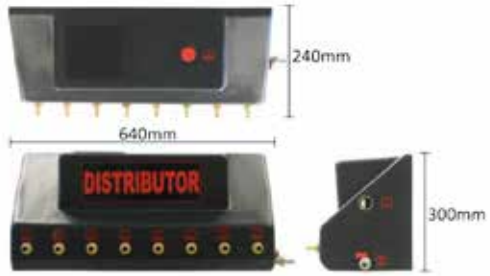
SEPREMIUM 10

SEPREMIUM 20

SEPREMIUM 30

SEPREMIUM 2

DISTRIBUTOR



CAPACITY CHART

MODELS	2	5	10	20	30
Max. compressor capacity (m^3/min)	2	5	10	20	30*
Maximum oil adsorption (litres)	2	5	10	15	25
Inlet connections	1/2”	1/2” (2)	1/2” (2)	1/2” (2)	1/2” (2)
Outlet connection	1/2”	1”	1”	1”	1”
Test valve	no	yes	yes	yes	yes
Service drain	no	no	yes	yes	yes
Overflow indicator	no	yes	yes	yes	yes
Target output value	‹10 ppm	‹10 ppm	‹10 ppm	‹10 ppm	‹10 ppm
Housing material	ABS	PE	PE	PE	PE
Total recyclable	yes	yes	yes	yes	yes
Housing colour	Black	Black	Black	Black	Black
Lid colour	Dark grey	Dark grey	Dark grey	Dark grey	Dark grey
Mineral lubricants	yes	yes	yes	yes	yes
Synthetic lubricants	yes	yes	yes	yes	yes
Stabile condensate emulsions	yes	yes	yes	yes	yes
Polyglycol, Roto-Inject, Sigma Mol**	yes	yes	yes	yes	yes

* Consult JORC for larger capacities, see page 7 for the DISTRIBUTOR details.
** Consult JORC for special elements and/or 24/7 applications.
Consult JORC for private labelling.

** Roto-inject, Ultracoolant and Sigma Mol are oil brands available in market for compressor lubrication.

EASY MAINTENANCE

The initial installation of the **JORC SEPREMIUM** oil/water separator will reward you with a high performing separation performance. Thereon after the maintaining and servicing of the oil/water separator is required. Here too we have designed the replacement of the elements to be light and simple.

JORC also offers a condensate **self-test kit** that allows you to perform condensate separating tests, **please see page 11 for details.**

The **JORC WARNER** is an alarm system that sends SMS messages to your mobile phone, please check our web site http://www.jorc.eu/7600main.htm

Chapter 6

CONDENSATE SELF-TEST-KIT

JORC offers an in-house laboratory test kit to analyse and determine the success rate of our oil/water separators prior to sale and/or installation.

Potential complicated compressor systems, i.e. two different compressor brands with different lubricants could make it difficult to determine which elements to use. This self-test kit will enable you to determine the right unit and to demonstrate its effectiveness to your customer prior to installation.

The test kit consists of a universal kit for all types of lubricants, any type of compressor etc.

The test is quite simple to carry out and a detailed instruction manual is provided. After carrying out your test we advise if tailor made elements are required.

If your customer has a failing old style separator, this is an ideal tool to apply to prove the SEPREMIUM will solve the problem.

TAILOR MADE ELEMENTS

The SEPREMIUM elements offer supreme separation performance in applications where other separators are failing to separate the lubricant from condensate.

Applications where your customer might have two different compressor models running on two different types of lubricant forms no problem for the SEPREMIUM separators.

When a stabile emulsion flows through the separator we have limited time to extract the lubricant from the condensate.

At JORC we are able to modify/adapt the polymer fibres to suit specific separating requirements. In short, we are able to minimise the contact time required to adsorb the lubricant.

You will be given a specific part number relating to a special separating case. This way you will always apply the correct elements in the right application.

INSTRUCTION MANUALS

The installation is as good as the instruction manual!

The installation procedure of the SEPREMIUM separators is quite straight forward. Nevertheless we have designed the instruction manuals with step by step pictures of every aspect involved in getting your SEPREMIUM up and running.

Installation & Maintenance Instructions

SEPREMIUM 10

Oil /water separator

GENERAL OPERATION

The SEPREMIUM range of oil/water separators separates oil from condensate, generated by compressed air systems. The SEPREMIUM achieves separation of oil from condensate by means of directing the condensate through various separation stages.

As condensate flows in to the SEPREMIUM, the oil is filtered out through various filtration elements.

The first oil adsorbing element has a clever saturation indicating feature, offering you a visual operating status of the separator at a distance.

The elements are designed to combine various types of adsorption technologies to achieve less than 10 ppm oil residue values at the output stage.

Final separation stage includes specially selected activated carbon to polish out the remaining contaminants.

SEPREMIUM SERVICE PACKS

The SEPREMIUM service pack includes:

- three elements
- plastic waste bags for disposing the saturated elements
- clothing kit comprising of a mouth mask
  plastic gloves
  plastic overall
  (as pictured).

LIGHT WEIGHT ELEMENTS FOR EASY SERVICING!

MULTI-INLET ADAPTER

The Multi-inlet adapter allows for up to three additional condensate inlet options.

The brass adapter threads in to the brass inlet of the SEPREMIUM.

To simplify installation, we include the brass hose connection nipples also.

FUNCTIONAL SAMPLE BOTTLE

The JORC oil/water separators include a functional sample bottle for visual routine inspection of the output quality.

This visual inspection sample bottle offers the service engineer an indication of the output performance.

The sample bottle kit is positioned in the tower lid.

ADAPTERS

Adapter, nipples and hose connectors applied on all JORC's separators are also available as stand alone products.

REPLACEMENT ELEMENTS

Replacement elements of virtually all competitive oil/water separator models are available.

These are produced with JORC's high quality nettings and fillings.

COMPRESSED AIR CONDENSATE MANAGEMENT AND ENERGY SAVING PRODUCTS

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