JORC

OIL/WATER SEPARATION

PURO-CT

COMPACT TECHNOLOGY

RELIABLE

COMPRESSED AIR CONDENSATE MANAGEMENT AND ENERGY SAVING PRODUCTS

oil/water separation

INDEX

Version 2018

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 vapor and atmospheric contaminants (hydrocarbon, dust particles or chemical vapors), 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 vapors 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

WHY INSTALL AN OIL/WATER SEPARATOR?

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 PURO-CT 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.

In the year 2018 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 PURO-CT technology is based on these current and evolving developments.

JORC'S GUARANTEE

Thousands of JORC oil/water separators are installed worldwide.

The PURO-CT 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 PURO-CT range of elements combined with JORC's in-house application and product knowledge.

HOW IS THE PURO-CT CONSTRUCTED?

The robust injection-die-casted housing is made from PPC 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 PURO-CT models have two high performance elements consisting of one poly-propylene fiber element and one activated carbon element.

The test valve and test bottle offer simple routine sample taking and this give you a visual indication of the output performance.

HIGH PERFORMANCE ELEMENTS

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

The chosen element fibers have been specially selected and treated to maximize its supreme adsorbing performance.

We have been able to design the PURO-CT 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

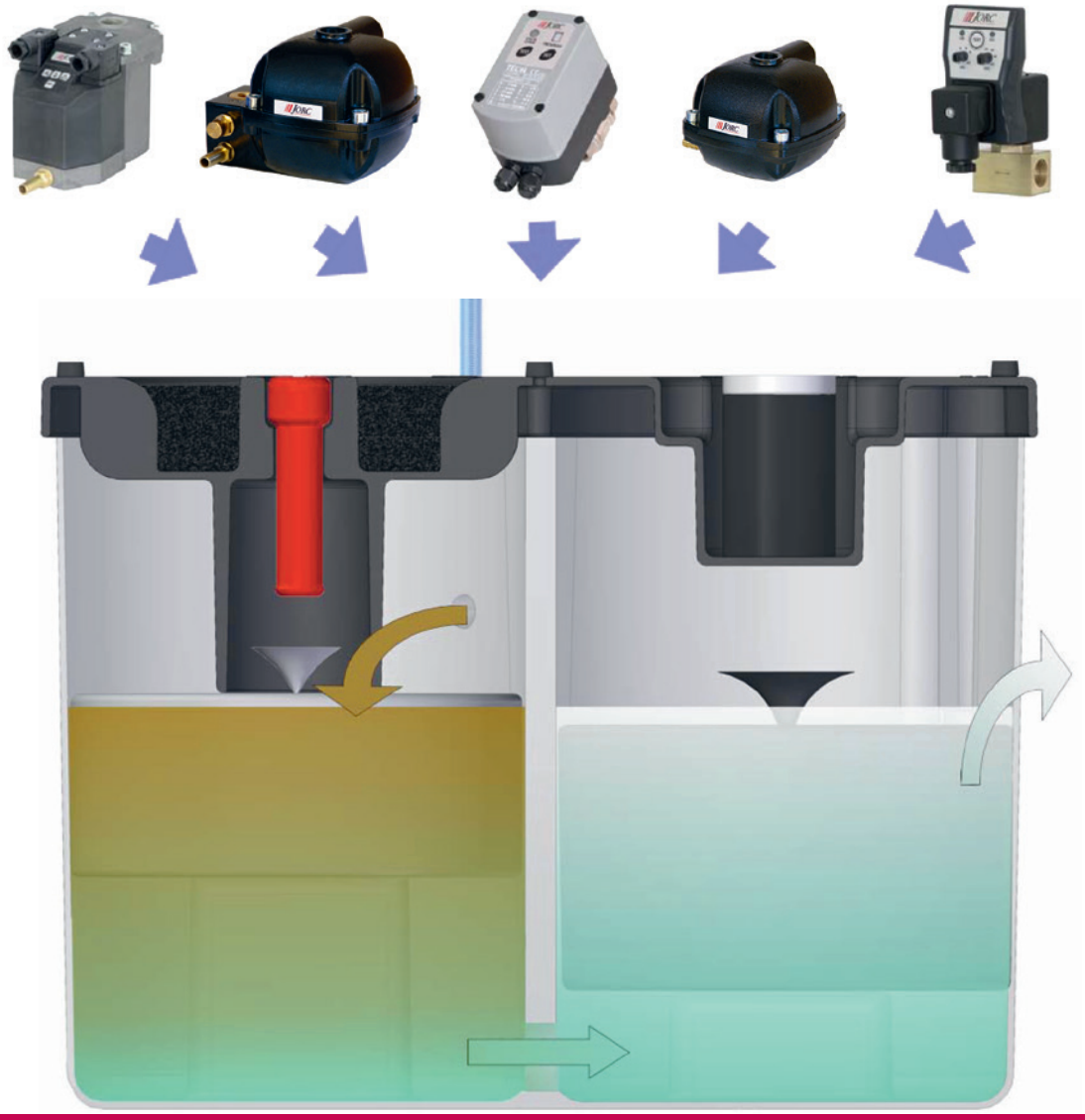
PRINCIPLE WORKINGS OF THE PURO-CT

Condensate may be discharged in to the PURO-CT by any type of condensate drain. The depressurizing chamber neutralizes the pressure.

As condensate flows in to the PURO-CT, the oil is filtered out through various filtration elements. The PURO-CT uses adsorption filter materials, instead of a weir, to remove the bulk of the oil. The life of the PURO-CT first stage filtration element is determined by the amount of oil removed, not by the amount of condensate treated. The PURO-CT carbon element is utilized only for final purification purposes and ensures that the targeted values of <10 ppm are achieved.

The professional design of the PURO–CT is incredibly compact and the elements are lightweight, maximizing the ergonomic factors when carrying out routine maintenance. 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.



COMPACT TECHNOLOGY

STANDARD COLOR

The standard color combination is grey towers and a black lid.

COLOR OPTIONS

The PURO-CT can be supplied in a branded/private labeled version. Color options of the lid is part of the branding features.

Chapter 4

PURO-CT-DISTRIBUTOR

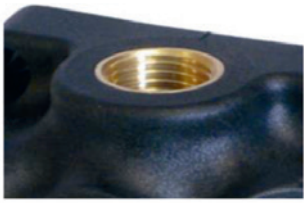
The PURO-CT-DISTRIBUTOR is designed to distribute condensate into two or three oil/water separators.

This way you can combine more PURO-CT units to match up against larger compressor systems.

As condensate flows into the PURO-CT-DISTRIBUTOR the condensate flows evenly into the connected oil/water separators.
This way the elements of the separator are equally loaded with condensate to treat.

The PURO-CT-DISTRIBUTOR has a 1" condensate inlet and three 1/2" outlets.

The PURO-CT-DISTRIBUTOR is supplied complete with the required fixings.



Brass connections, offering you a secure fixing during installation.

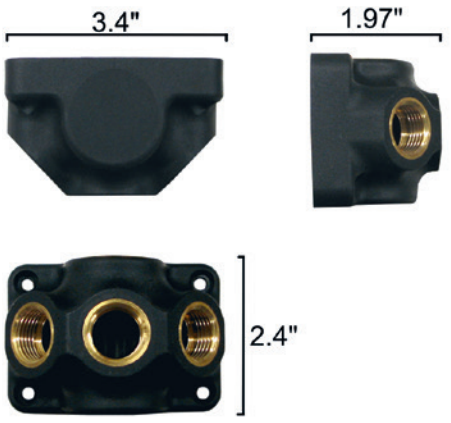
The PURO-CT-Distributor is supplidd with the requierd fixings.

A typical PURO-CT DISTRIBUTOR installation

PRODUCT SPECIFICATIONS

Number of separators that can be hooked up	3
Inlet connection	1"
Outlet connection	1/2" (3 off)
Total recyclable	Yes
Color	Black
Installation kit included	Yes

DIMENSIONS



EXPANDED VIEW

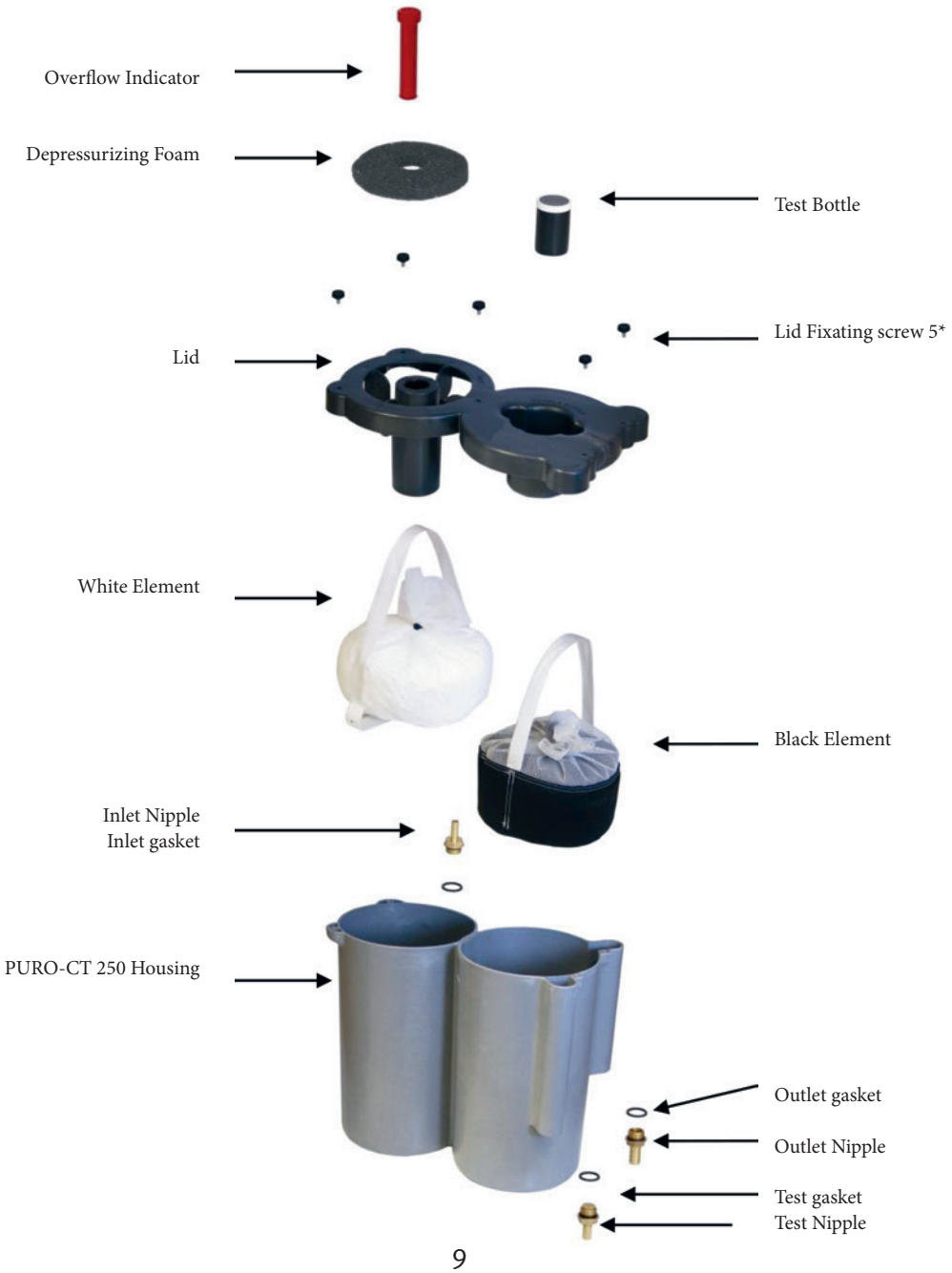
The PURO-CT models 125, 250 and 600 are designed to operate the same way. Differences are physical sizing to account for the various compressor capacities and condensate flows.

A key feature of the PURO-CT 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 PURO-CT.

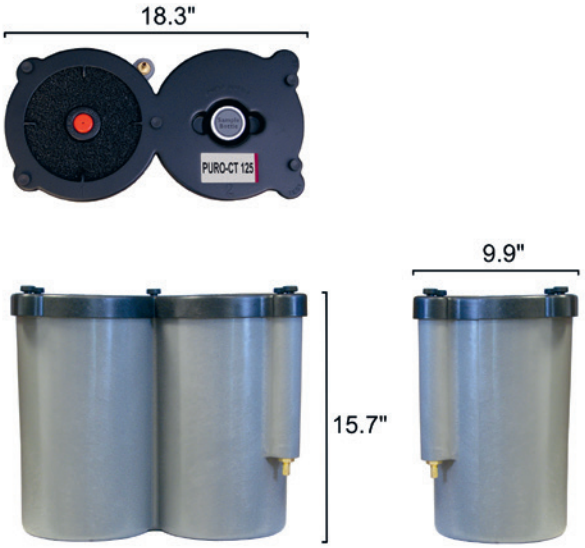
As standard the PURO-CT package includes an installation clothing kit including a breathing mask, to protect your service engineer from carbon dust, we also include the functional condensate sample bottle for routine inspection and finally a step by step instruction manual to ensure a proper installation.



Chapter 5

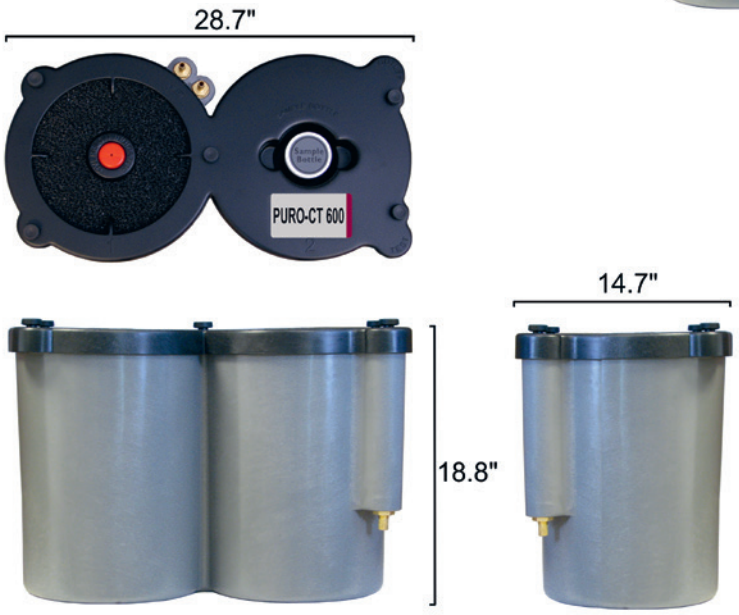
PURO-CT DIMENSIONS

PURO-CT 125



PURO-CT 250

PURO-CT 600



PURO-CT CAPACITY CHART

MODELS	PURO CT- 125	PURO CT- 250	PURO CT-600
Max. compressor capacity (CFM)	125	250	600*
Maximum oil adsorption (Gallons)	0.8	1.8	4.0
Inlet connections	1/2”	1/2”	1/2”
Outlet connection	1/2”	1/2”	1/2”
Test valve	yes	yes	yes
Overflow indicator	yes	yes	yes
Target output value	‹10 ppm	‹10 ppm	‹10 ppm
Weight (Packaged)	14 lbs	22 lbs	37 lbs
Pallet quantity	30 pieces	20 pieces	12 pieces
Housing material	PPC	PPC	PPC
Total recyclable	yes	yes	yes
Housing color	Grey	Grey	Grey
Lid color	Black	Black	Black
Separation of:			
Mineral lubricants	yes	yes	yes
Synthetic lubricants	yes	yes	yes
Stabile condensate emulsions	yes	yes	yes
Polyglycol, Roto-Inject, Sigma Mol**	yes	yes	yes

* Consult JORC for larger capacities, see page 8 for the PURO-CT-DISTRIBUTOR details.

** Consult JORC for special elements and/or 24/7 applications.
Roto-inject, Ultracoolant and Sigma Mol are oil brands available in the market for compressor lubrication.

Consult JORC for private labeling.

EASY MAINTENANCE

The initial installation of the **JORC PURO-CT** 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. The replacement of the elements is light and simple.

JORC also offer a condensate self-test kit that allows you to perform condensate separating tests, **please see page 12 for details**.

Chapter 6

CONDENSATE SELF-TEST-KIT

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

Potential complicated compressor systems, i.e. 2 different compressor brands with different lubricants, 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 PURO-CT will solve the problem.

TAILOR-MADE ELEMENTS

The PURO-CT 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 PURO-CT separators.

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

At JORC we are able to modify/adapt the polymer fibers to suit specific separating requirements. In short, we are able to minimize 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.

Chapter 6

MANUALS

The installation is as good as the instruction manual!

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

3/2017

Installation & Maintenance Instructions (Page 2)
Instructions d'Installation & Entretien (Page 7)
Instrucciones de instalación & Mantenimiento (Página 11)

TECHNICAL SPECIFICATIONS

Max. compressor capacity	3 m³/min *(based on a 8h. Shift)*	7 m³/min *(based on a 8h. Shift)*	15 m³/min *(based on a 8h. Shift)*
Max. oil adsorption elements	Approx. 3 litres	Approx. 7 litres	Approx. 15 litres
Inlet connection	1" ½" BSP	1" ½" BSP	2" ½" BSP
Outlet connection	1" ½" BSP	1" ½" BSP	1" ½" BSP
Test drain	Yes	Yes	Yes
Overflow indicator	Yes	Yes	Yes
Housing material	PPC	PPC	PPC
Total recyclable	Yes	Yes	Yes
Mineral lubricants	Yes	Yes	Yes
Synthetic lubricants	Yes	Yes	Yes
Stabile condensate emulsions	Yes *(consult factory)*	Yes *(consult factory)*	Yes *(consult factory)*
Polyglycol	Yes *(consult factory)*	Yes *(consult factory)*	Yes *(consult factory)*

6

Chapter 7

PURO-CT SERVICE PACKS

The PURO-CT service pack includes:

- Two elements.
- Plastic waste bags for disposing the saturated elements.
- Optionally available:
  clothing kit comprising of
  a mouth mask
  plastic gloves
  plastic overall.

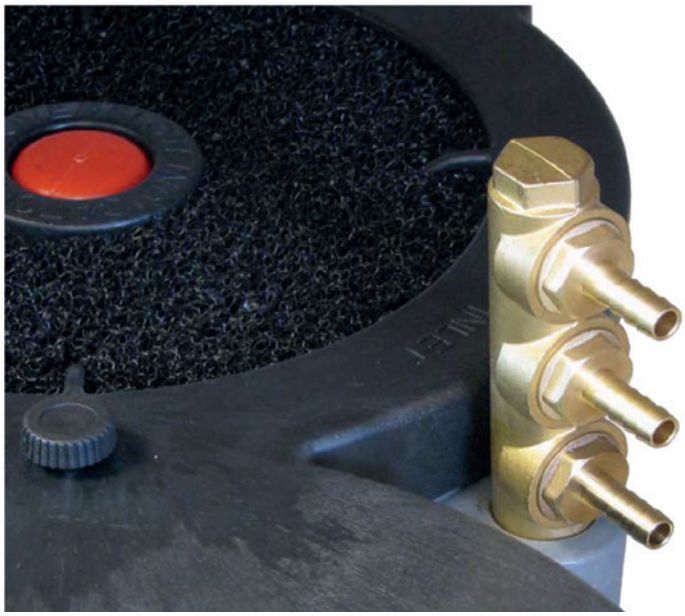
Light weight elements for easy servicing!

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 PURO-CT.

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



Chapter 7

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.

Notes:

COMPRESSED AIR CONDENSATE MANAGEMENT AND ENERGY SAVING PRODUCTS

JORC Industrial LLC.
1146 River Road
USA - DE 19720 New Castle

Phone: 302 395 0310

info@jorc.com
www.jorc.com