

Company **presentation for**

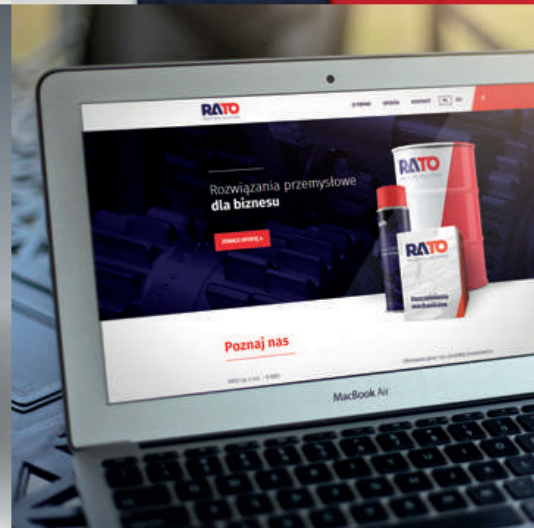
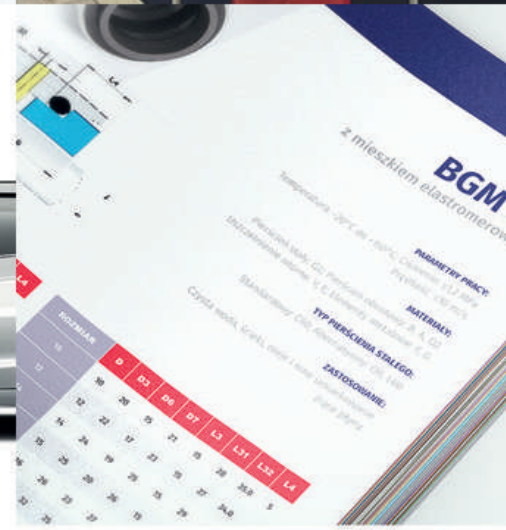
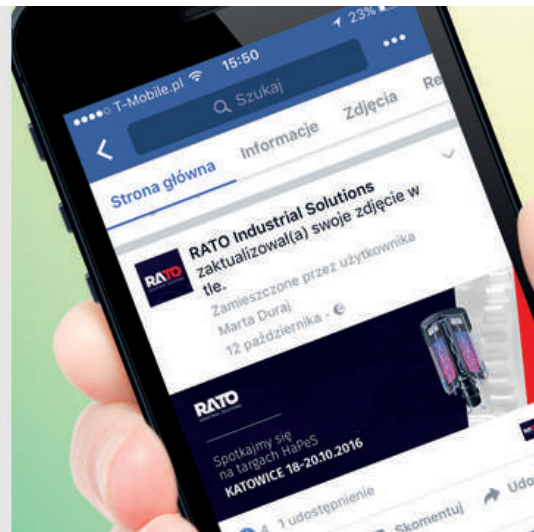


RATO

INDUSTRIAL SOLUTIONS

Our
strategy

Strong
brand
identity





The First Line of Defense Against Contamination

Des-Case distributor:

Rato Industrial Solutions Sp. z o.o. Sp. K.

ul Dolna 2B, 84-230 Rumia

biuro@rato.pl

+48 58 672 62 72



The Problem We Help Solve – Contamination

Particulate contamination is the most common, most serious failure culprit.

- Cost of removal = 10X cost of preventing
- Contamination is a leading cause of machinery failure by directly impairing the lubricant's ability to control friction, wear and corrosion
- Contamination is responsible for as much as 80% of the wear that leads to mechanical failure



Particulate Measurement

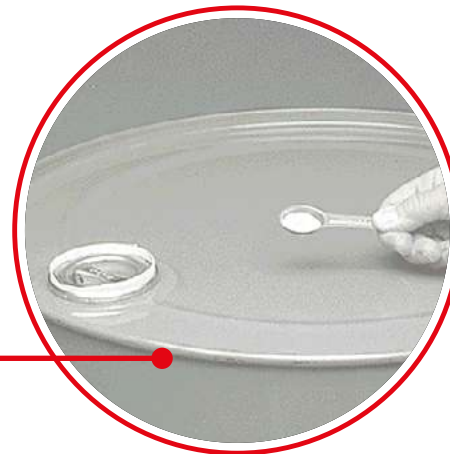
How Clean Is Clean?

- ISO Cleanliness Codes – indicates ranges of particles at micron increments: R4/R6/R14
- Dirt in 208 Liter drum of oil = ISO 16/13 = ½ Teaspoon

Size microns	Count Larger Than Size per ml
4	1,752
6	517
10	144
14	55
20	25
50	1,3

Number of particles / ml		Range number
More than	Less than or equal to	
80,000	160,000	24
40,000	80,000	23
20,000	40,000	22
10,000	20,000	21
5,000	10,000	20
2,500	5,000	19
1,300	2,500	18
640	1,300	17
320	640	16
160	320	15
80	160	14
40	80	13
20	40	12
10	20	11
5	10	10
2.5	5	9
1.3	2.5	8
0.64	1.3	7
0.32	0.64	6
0.16	0.32	5
0.08	0.16	4
0.04	0.08	3
0.02	0.04	2
0.01	0.02	1

Measurement of
contaminations



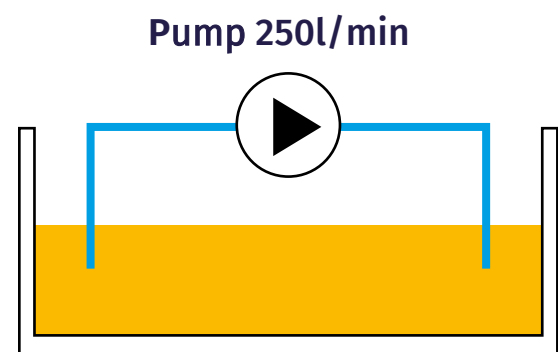
Lower Particle Count = Better Reliability

New Cleanliness Level (ISO COD)

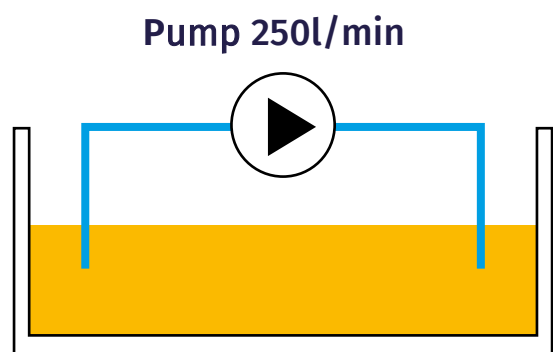
	20/17		19/16		18/15		17/14		16/13		15/12		14/11		13/10		12/9		11/8		10/7	
Current Machine Cleanliness (ISO COD)	26/23	5	3	7	3,5	9	4	>10	5	>10	6	>10	7,5	>10	9	>10	>10	>10	>10	>10	>10	>10
		4	2,5	4,5	3	6	3,5	6,5	4	7,5	5	8,5	6,5	10	7	>10	9	>10	10	>10	>10	>10
	25/22	4	2,5	5	3	7	3,5	9	4	>10	5	>10	6	>10	7	>10	9	>10	>10	>10	>10	>10
		3	2	3,5	2,5	4,5	3	5	3,5	6,5	4	8	5	9	6	10	7,5	>10	9	>10	>10	>10
	24/21	3	2	4	2,5	6	3	7	4	9	5	>10	6	>10	7	>10	8	>10	10	>10	>10	>10
		2,5	1,5	3	2	4	2,5	5	3	6,5	4	7,5	5	8,5	6	9,5	7	>10	8	>10	10	>10
	23/20	2	1,5	3	2	4	2,5	5	3	7	3,5	9	4	>10	5	>10	6	>10	8	>10	9	>10
		1,7	1,3	2,3	1,5	3	2	3,7	2,5	5	3	6	3,5	7	4	8	5	10	6,5	>10	8,5	>10
	22/19	1,6	1,3	2	1,6	3	2	4	2,5	5	3	7	3,5	8	4	>10	5	>10	6	>10	7	>10
		1,4	1,1	1,8	1,3	2,3	1,7	3	2	3,5	2,5	4,5	3	5,5	3,5	7	4	8	5	10	5,5	>10
	21/18	1,3	1,2	1,5	1,5	2	1,7	3	2	4	2,5	5	3	7	3,5	9	4	>10	5	>10	7	>10
		1,2	1,1	1,5	1,3	1,8	1,4	2,2	1,6	3	2	3,5	2,5	4,5	3	5	3,5	7	4	9	5,5	10
	20/17			1,3	1,2	1,6	1,5	2	1,7	3	2	4	2,5	5	3	7	4	9	5	>10	7	>10
				1,2	1,05	1,5	1,3	1,8	1,4	2,3	1,7	3	2	3,5	2,5	5	3	6	4	8	5,5	10
	19/16					1,3	1,2	1,6	1,5	2	1,7	3	2	4	2,5	5	3	7	4	9	6	>10
						1,2	1,1	1,5	1,3	1,8	1,5	2,2	1,7	3	2	3,5	2,5	5	3,5	7	4,5	9
18/15							1,3	1,2	1,6	1,5	2	1,7	3	2	4	2,5	5	3	7	4,5	>10	
							1,2	1,1	1,5	1,3	1,8	1,5	2,3	1,7	3	2	3,5	2,5	5,5	3,7	8	
17/14									1,3	1,2	1,6	1,5	2	1,7	3	2	4	2,5	6	3	8	
									1,2	1,1	1,5	1,3	1,8	1,5	2,3	1,7	3	2	4	2,5	6	
16/13		Hydraulics & Diesel Engines				Rolling Element Bearings					1,3	1,2	1,6	1,5	2	1,7	3	2	4	3,5	6	
15/12											1,2	1,1	1,5	1,3	1,8	1,5	2,3	1,8	3,7	3	4,5	
14/11													1,3	1,2	1,6	1,5	2	1,7	3	2	4	
13/10															1,3	1,3	1,6	1,6	2	1,8	3	
															1,3	1,2	1,6	1,4	1,9	1,5	2,3	
																	1,4	1,2	1,8	1,5	2,5	
																	1,2	1,1	1,6	1,3	2	
																					1,6	

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The Cost of Particulate Ingression



4.4 tons of dirt pass
through pump each year
Expected pump life - 2 years



25 kg of dirt pass
through pump each year
Expected pump life – 14 years

Number of Particles per 100 ml of fluid		
Particle Size	ISO 21/18	ISO 14/11
Particles larger than > 6µm	1,000,000-2,000,000	8,000-16,000
Particles larger than > 14µm	130,000-250,000	1,000-2,000

Moisture

- Water is the second most destructive contaminant.
- Water plays a huge role long before it is detected.



Water Forms

DISSOLVED WATER

Oil appears bright and clear.
Difficult to separate.



EMULSIFIED WATER

Very small droplets dispersed in oil. Oil viscosity may go UP (like mayonnaise). Tiny amounts of detergent engine oil can contaminate industrial oils.

FREE WATER

Large drops that readily settle out.



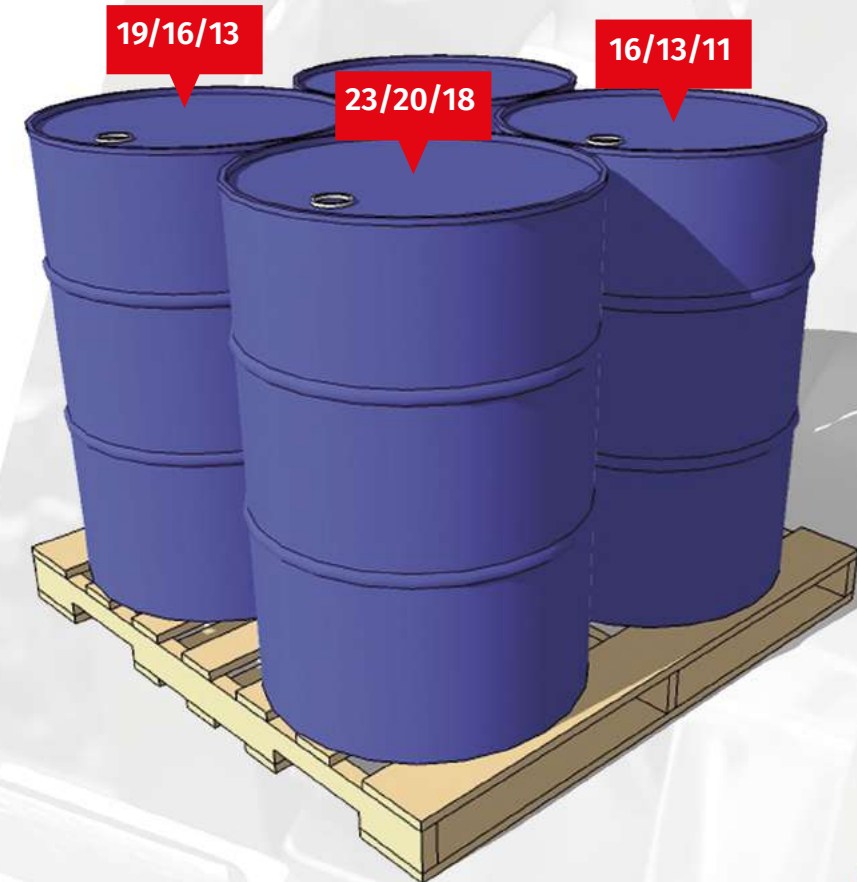
PARTICULATE MEASUREMENT



How Clean Is Clean?

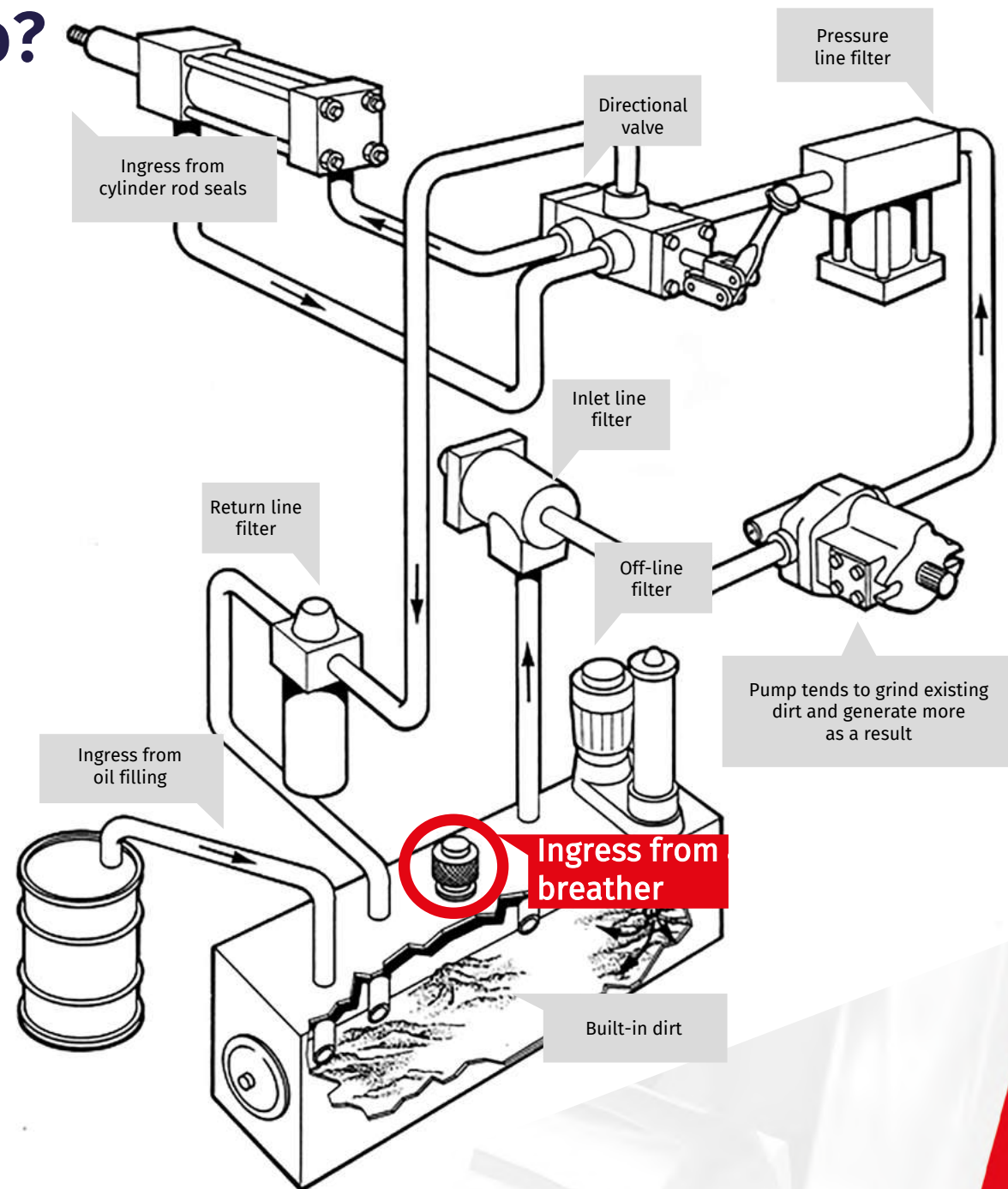
With few exceptions, new oil is never clean enough for common applications. New oil must be filtered before installation to provide any reasonable level of cleanliness.

New oil can contain **8 to 16** times more particle contamination and **2 to 4** times more water than the manufacturer's recommendation



How Clean Is Clean?





IMPORTANT CHARACTERISTICS OF BREATHER TECHNOLOGY



Breather's role in Contamination Control

The breathers are not the same as
DES CASE Breathers

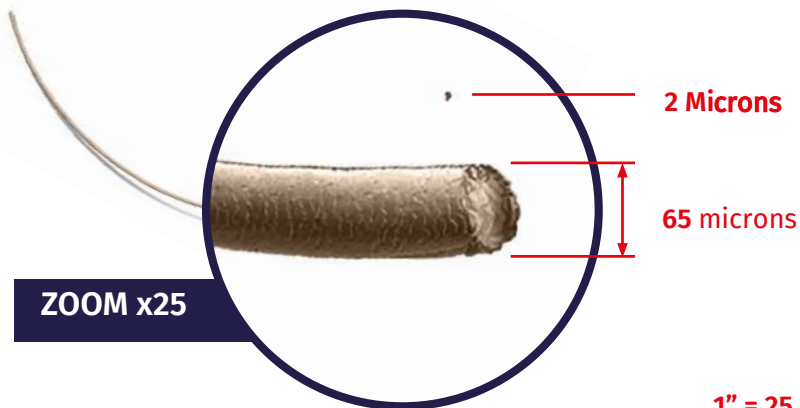


Breather's role in Contamination Control

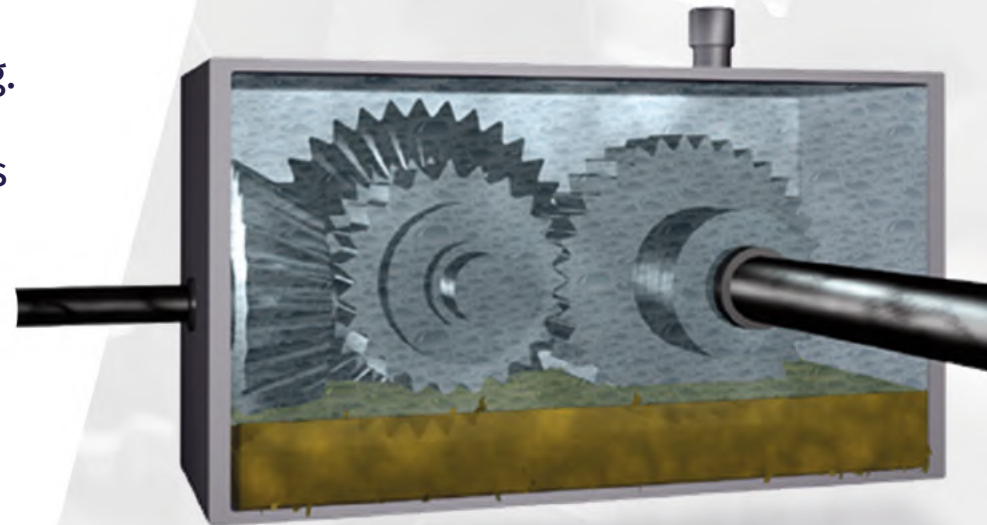
- Traditional breather caps are a primary source of entry for contaminants.
- Most are rated around 40-microns.
- Small particles (3-20 microns) are often the most damaging.
- No protection against ingress of water and water vapors

How Big is a Micron?

Human hair



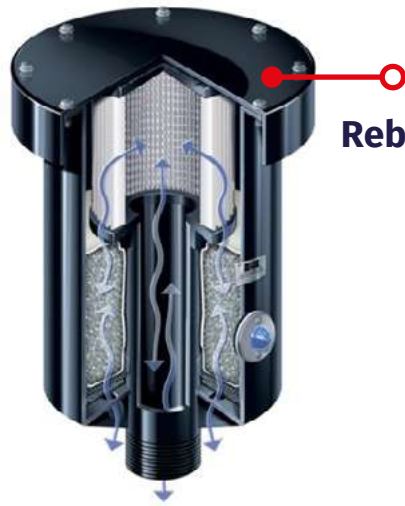
1" = 25,400 microns



BREATHER PRODUCT OVERVIEW



Desiccant Breathers– Keeping Lubricants Clean & Dry



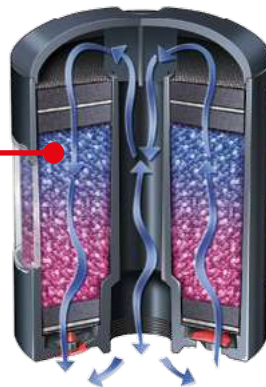
Rebuildable Steel



Standards



Extended Series™
Breathers



Extreme Duty

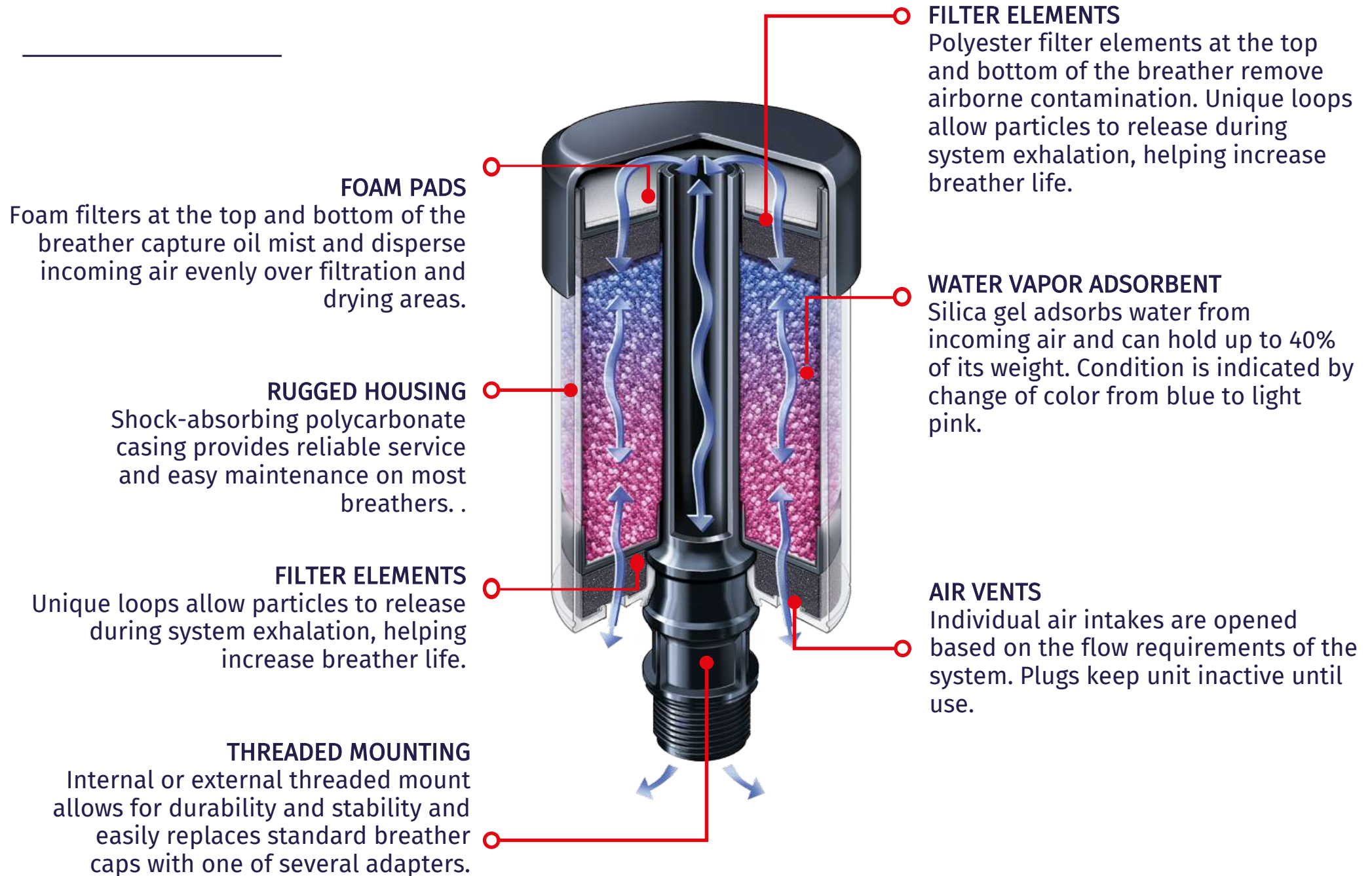


VentGuards

Non-Desiccant



Explore the Desiccant Breather



Desiccant Breathers– How do they work?

- Removes moisture in the headspace of equipment
- Eliminates rust-forming condensation
- Prevents sludge deposits and water-contaminated oil
- Prevents contamination ingress
- Provides longer lubricant life
- Reduces wear and tear on equipment, prolongs life



SEEING PINK?

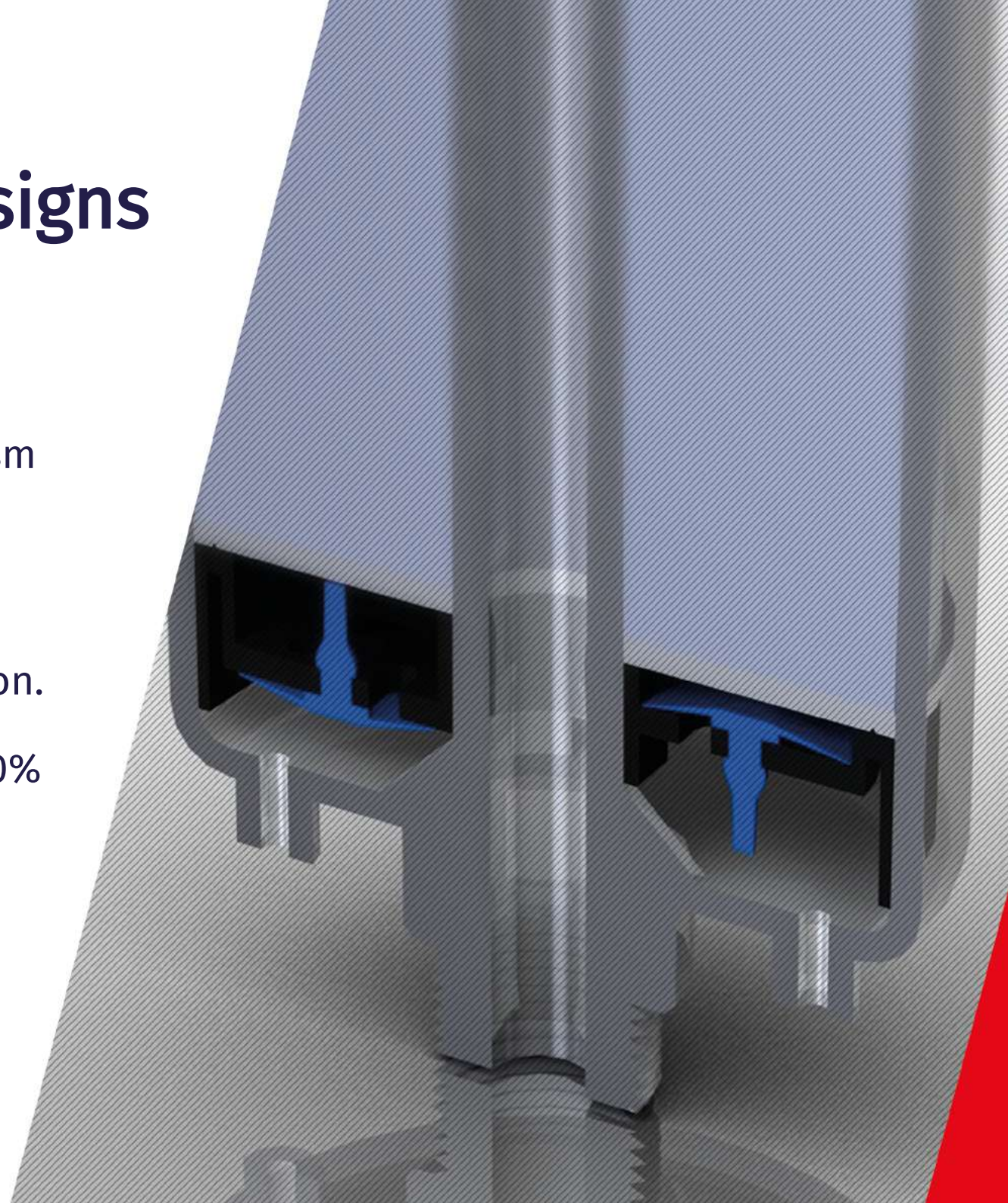
A pink breather means it has done its job keeping moisture out of your lubricants. Time to replace the breather with a new one.

Des-Case Hybrid Breathers new designs

“Controlled breathing” mechanism
Hybrid miniature breather

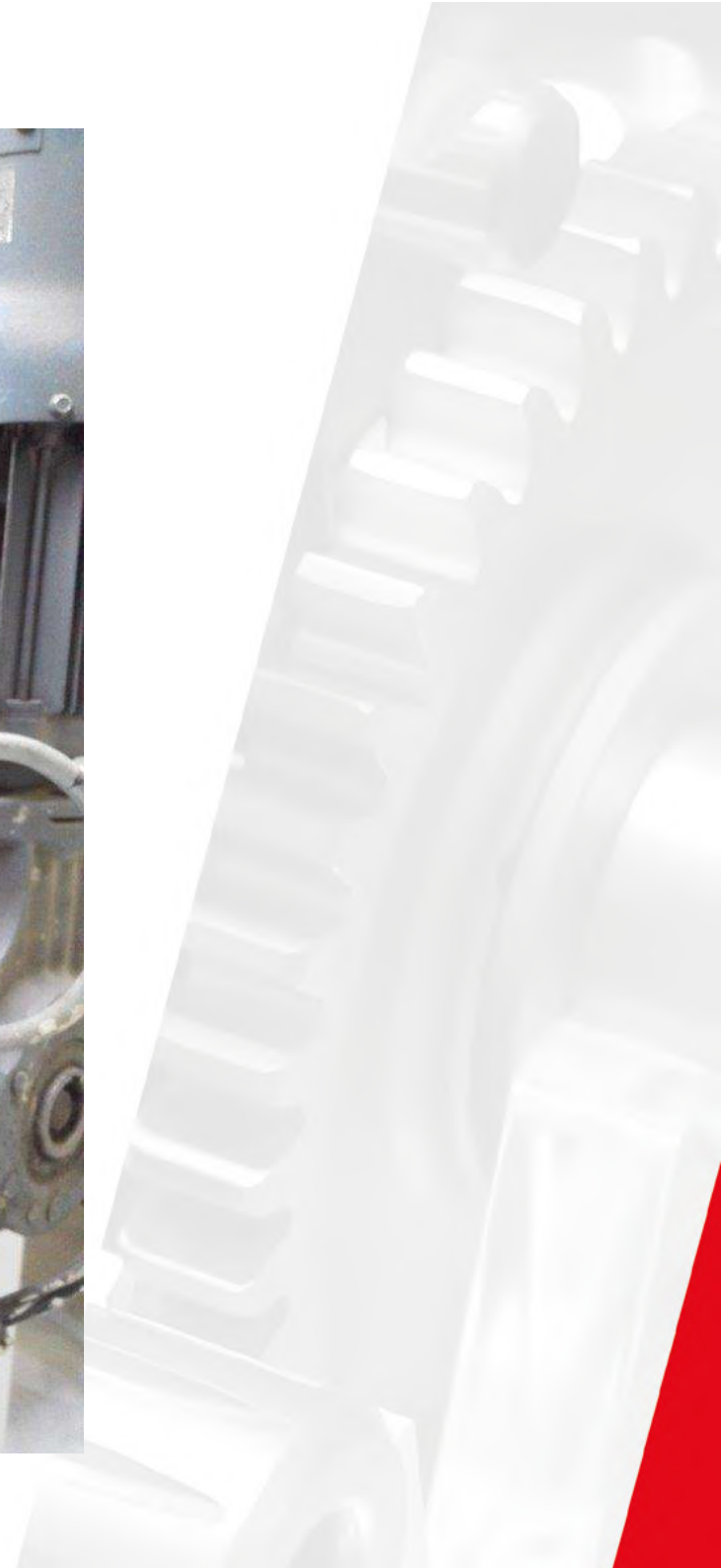
Internally mounted umbrella
check valves, for added protection.

Check Valve cracking pressure 50%
less than previous version
(0.23 psi)











Extreme Duty Breather

Rugged Construction

- Integrates design advantages of standard breathers
- Enhances for high vibration and elevated temperatures
- Automotive grade polymer housing for high strength and vibration dampening
- Thick walled design greatly increases resistance to handling abuse

Increased Longevity

- Large amount of desiccant
- Optional integrated fluorosilicone check valve system extends useful life

Ease / Broad Range of Use

- Higher airflow , additional adapters



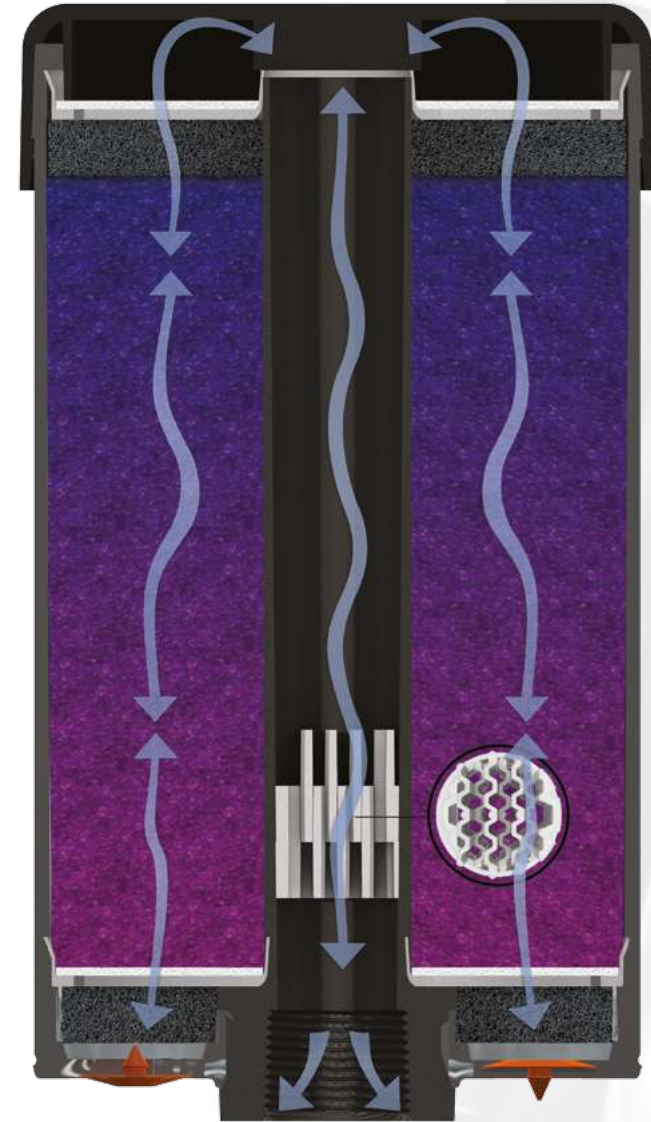




Extended Series™ Breathers

Check-valves plus new honeycomb

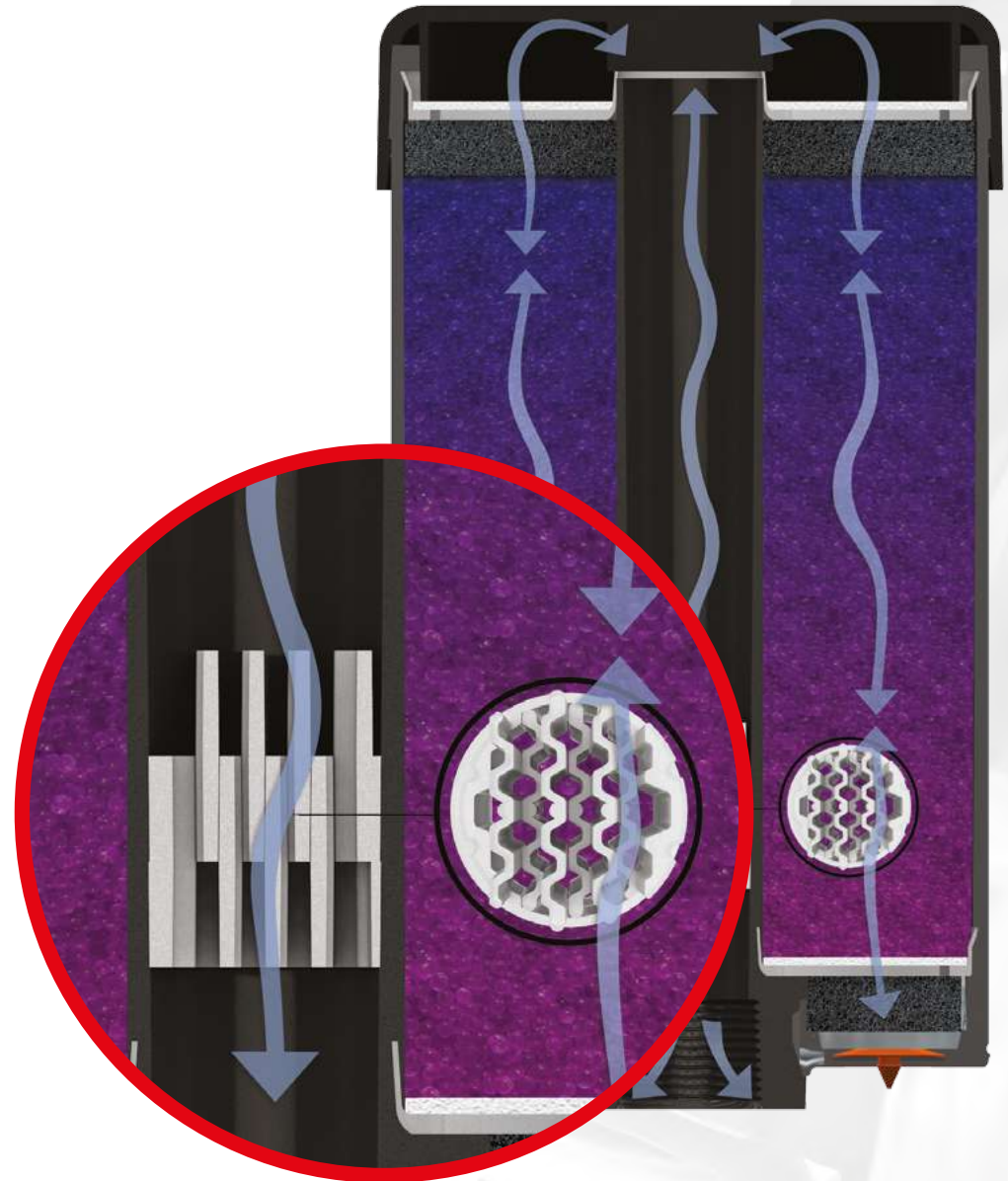
- Extended Series (EX) breathers combine the trusted materials
- Design of our Standard breathers with the check-valves of our VentGuard plus a new honeycomb
- Technology oil mist reducing feature, higher air flows, and more than double the desiccant.



Additional Features of Extended Series™ Breathers

"Honeycomb"

Mimicking nature's intricate honeycomb design, this feature allows oil mist to coalesce and drain back into the reservoir, rather than compromising the desiccant. Available in Extended Series breathers.









Rebuildable Steel Breathers

- Rugged Carbon steel or optional Stainless Steel Housing
- Multi-Tiered Filtration Process
- Water Vapor Adsorbent
- 1-micron Absolute Filter Media
- High Temperatures and Corrosive Environments
- Airflow from 150 - 2,100 GPM

Ideal for Large Volume Tanks and High Airflow Applications



DESICCANT
BAG FILTER



SIGHT GLASS
INDICATOR



REPLACEMENT
FILTER ELEMENT











Non-Desiccant Breathers

Non-Desiccant (ND) breathers prevent contamination ingress in low humidity environments or in applications where water-based fluids are in use (e.g. water glycol hydraulic fluid). They help control contamination by preventing free water as well as particles down to 1 micron from getting into the reservoir.



**Single Position Vacuum
Indicator Adapter**





DES-CASE

Finishing characteristics under pressure





VAPORGUARD ADAPTERS

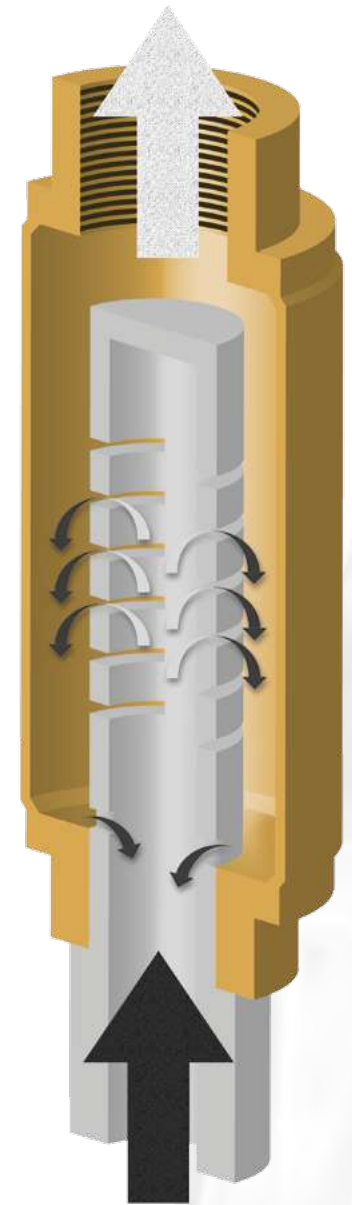






The VaporGuard™ Oil Mist Adapter

- The oil saturated air breather is removed from the vent port on the bearing housing.
- A new air filter is then turned into the top port of the oil mist adapter.
- The migrating vapors continue to condense back into oil, but now they are contained inside the adapter.
- The air, purged of oil mist by VaporGuard, can now exit through the vent port without contaminating the air filter.
- The oil mist that condensed inside VaporGuard is uncontaminated and is returned to the bearing housing to continue lubricating the bearing



**Protect your lubricants and
equipment with Des-Case
specialty filtration products.**

Adapter Kits



Drum Adapter Kit

Hydraulic Adapter Kit



Gearbox Adapter Kit

Tote Adapter



Hydraulic kit

FLUID HANDLING

Portable Filtration - Filter carts

Offer portable, offline filtration and are ideal for use on small to medium-sized reservoirs with low flow rates. They are fully customizable with options for flow rate, connections, filters, and more.

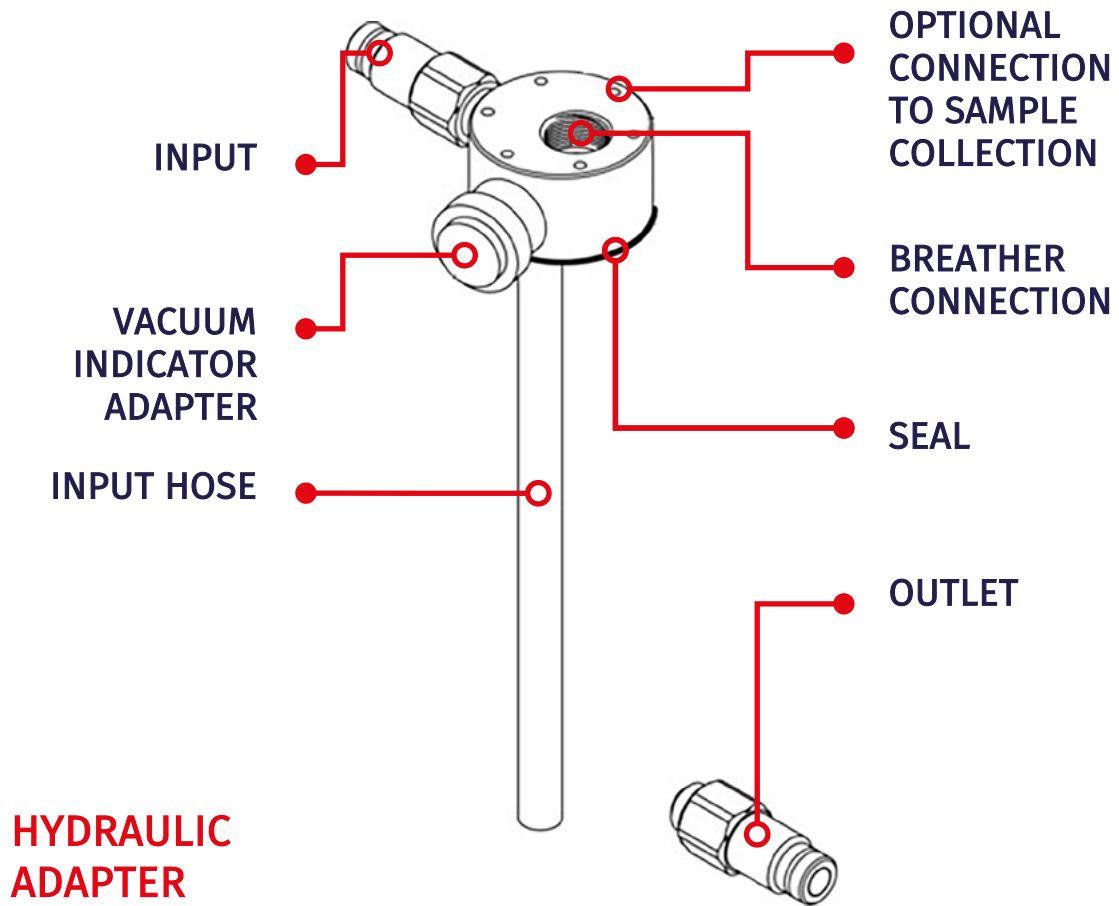


OLD VERSION



NEW VERSION

Filtration process



Drum Filter Cart

The drum filter cart

Is a customizable, all-in-one cart that is ideal for pre-cleaning, protecting, and transferring oil from a conveniently attachable, secured drum. A drum adapter kit with a desiccant breather is included for complete contamination control.



Handheld Drum Topper

Compact, portable, and customized for your application, the handheld drum topper is an option you can carry wherever you need to go or affix securely atop an oil drum.



OLD VERSION



NEW VERSION

Dedicated Filtration

Panel units

Are ideal for mineral-based industrial fluids in small to medium-sized reservoirs with low flow rates. The panel unit can be mounted where you need it most for applications that need regular filtration, or a maintenance location where you bring equipment to be filtered.



LT-LMS



Simple, stackable and easy storage meets solid contamination control practices in a unique design with the Des-Case LT-Series Lubricant Management System. Dedicated filtration per container ensures no cross-contamination of fluids, while disposable desiccant breathers prevent dirt and water ingress.

LT-LMS Applications



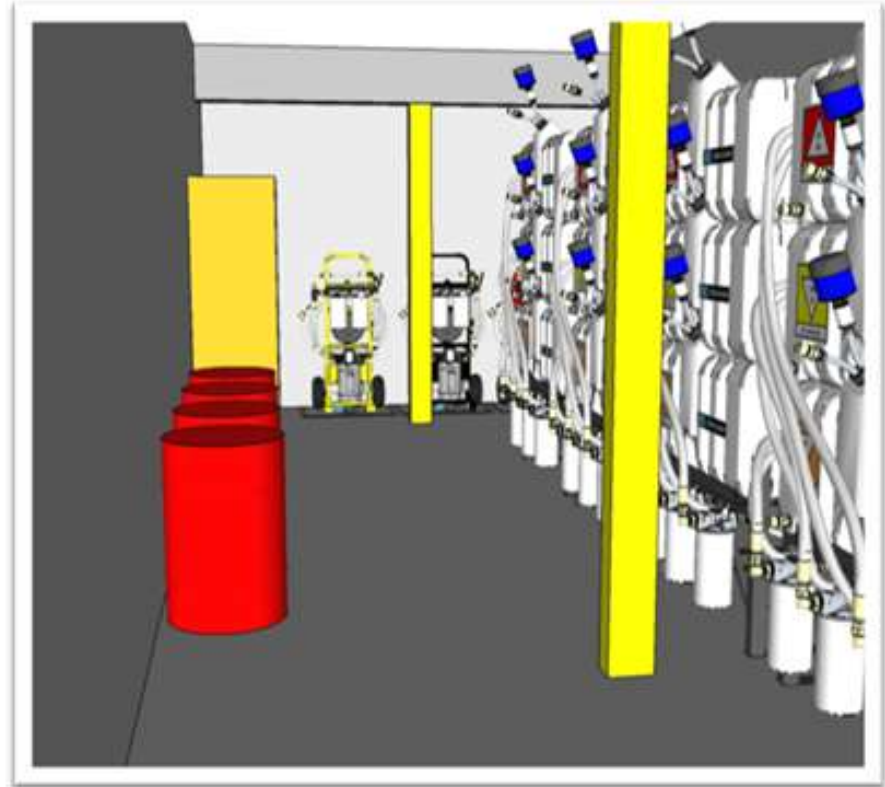
LT-LMS Applications



Lubricant Storage & Filtration



Complimentary Lube Room Design



VISUAL OIL ANALYSIS



VISUAL OIL ANALYSIS



OIL LEVEL
INDICATORS



OIL SIGHT GLASS
LEVEL MONITOR

Visual Oil Analysis tools allow users to monitor the level and condition of oil, as well as collect and drain any collected water or other contaminants.



THE NEW OIL
SIGHT GLASS



3-D BULLSEYE®

The Clear Difference



VS







IsoLink™ Oil Transfer Containers



IsoLink™ Oil Transfer Containers

The first best practice solution to keep oil clean and dry during oil transfer.

With non-desiccant and desiccant breather options, as well as quick connects for clean filling, IsoLink isolates oil from the environment providing the ultimate in best practice contamination control.







Thank you for your
attention

Distributor:

Rato Industrial Solutions Sp. z o.o. Sp. K.
ul Dolna 2B, 84-230 Rumia biuro@rato.pl
+48 58 672 62 72

