

**Dry All®**

Full Range of HVAC&R Line Products



**Coalescent Oil Separator - CTOS Series**

### Introduction

Oil separators play a critical role in HVAC&R systems by efficiently separating oil from the discharge refrigerant to ensure optimal oil return to the compressor. Dry All Coalescent Oil Separators, part of the CTOS Series, excel at this task by employing advanced technology that offers superior oil separation efficiency. These separators utilize a high-purity borosilicate glass fibre filter media, capable of effectively capturing even the tiniest oil molecules. By facilitating collisions and subsequent aggregation of these molecules into larger droplets, the oil is then directed back to the compressor through gravity-assisted drainage. This approach results in impressive oil separation efficiencies, ranging from 95% to 99%, in contrast to conventional oil separators with efficiency levels between 75% to 85%.

### Key Features

**Enhanced Oil Separation Efficiency:** The CTOS Series Coalescent Oil Separators are designed to remove a significantly higher percentage of oil components from the mass flow, thereby optimizing system efficiency and minimizing excessive oil circulation.

**Pure Borosilicate Glass Fibre Media:** The innovative filter media, composed of highly pure borosilicate glass fibres, ensures effective coalescence of even the smallest oil molecules, leading to the formation of larger oil droplets for improved separation.

**Preservation of System Efficiency:** By preventing the accumulation of oil on internal heat exchanger surfaces, these separators maintain system efficiency and reduce energy consumption.

**Protection Against Insulation Formation:** The separators prevent oil from escaping the compressor and circulating in the system, thereby eliminating the formation of an insulating film on internal surfaces, which can hinder system performance.

**Diverse Refrigerant Compatibility:** The CTOS Series supports a wide range of refrigerants, including HCFC, HFC, HC, and HFO, ensuring compatibility with various HVAC&R applications.

### Advantages

**Reduced Energy Costs:** The effective oil separation process minimizes oil circulation, leading to reduced energy consumption and enhanced system efficiency.

**Optimized Lubrication:** By ensuring proper oil return to the compressor, the separators contribute to optimal compressor lubrication and extended compressor lifespan.

## Coalescent Oil Separator: CTOS Series



**Minimized Maintenance Requirements:** Coalescent Oil Separators act as efficient system filters, trapping particles as small as 0.3 microns, thereby reducing the risk of mechanical component damage and maintenance needs.

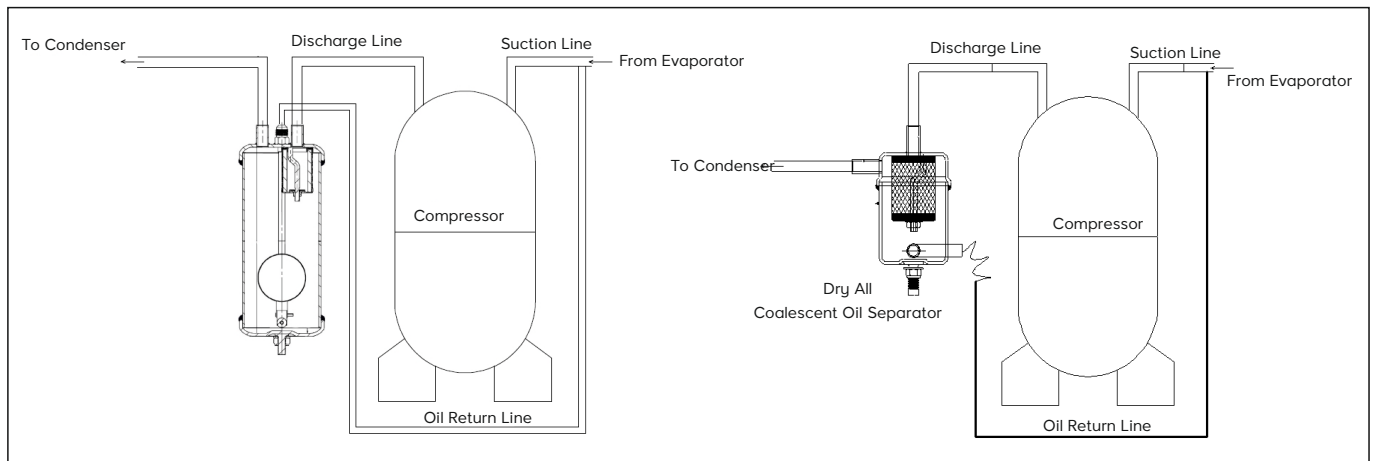
**Quieter Operation:** In addition to their primary function, these separators can also serve as discharge line mufflers, contributing to noise reduction in the system.

**Enhanced Cooling Capacity:** With less oil circulating, the refrigerant mass flow is more dominant, resulting in increased cooling capacity and reduced demand on the compressor.

### Applications

Dry All Coalescent Oil Separators find application in various HVAC&R systems where efficient oil separation and preservation of system efficiency are crucial. They are suitable for air conditioning systems, refrigeration systems, and heat pump installations, contributing to improved performance, reduced energy consumption, and prolonged component lifespan.

### Installation Guide for Coalescent Oil Separator



- Install the Oil Separator vertically immediately after the compressor and before the condenser.
- Ensure the separator is placed in a temperate area and wrap it with insulation to maintain proper temperature control.
- Securely fasten and protect both the Oil Separator and system tubing to minimize vibrations.

- Use system tubing with the same diameter as the separator connection size for both inlet and outlet connections.
- For the CTOS-25102-3S model, employ methods like capillary tubes, metered orifices, or timed solenoids for oil return to the compressor, based on the application's requirements.
- Keep the Oil Separator cool during brazing to prevent any damage.
- If the Oil Separator is positioned below the condenser, take precautions to prevent liquid refrigerant from entering the separator.
- Regularly check oil levels for new installations to ensure proper operation.
- For the CTOS-4250-4S model, perform an oil pre-charge of 444ml.
- Apply a torque of 27 Nm to the 3/8" SAE Oil Return Connection of the CTOS-4250-4S model using an M10 bolt.

### Technical Specifications

Maximum Working Pressure: 600 PSIG

Temperature Range: -10°C to 100°C

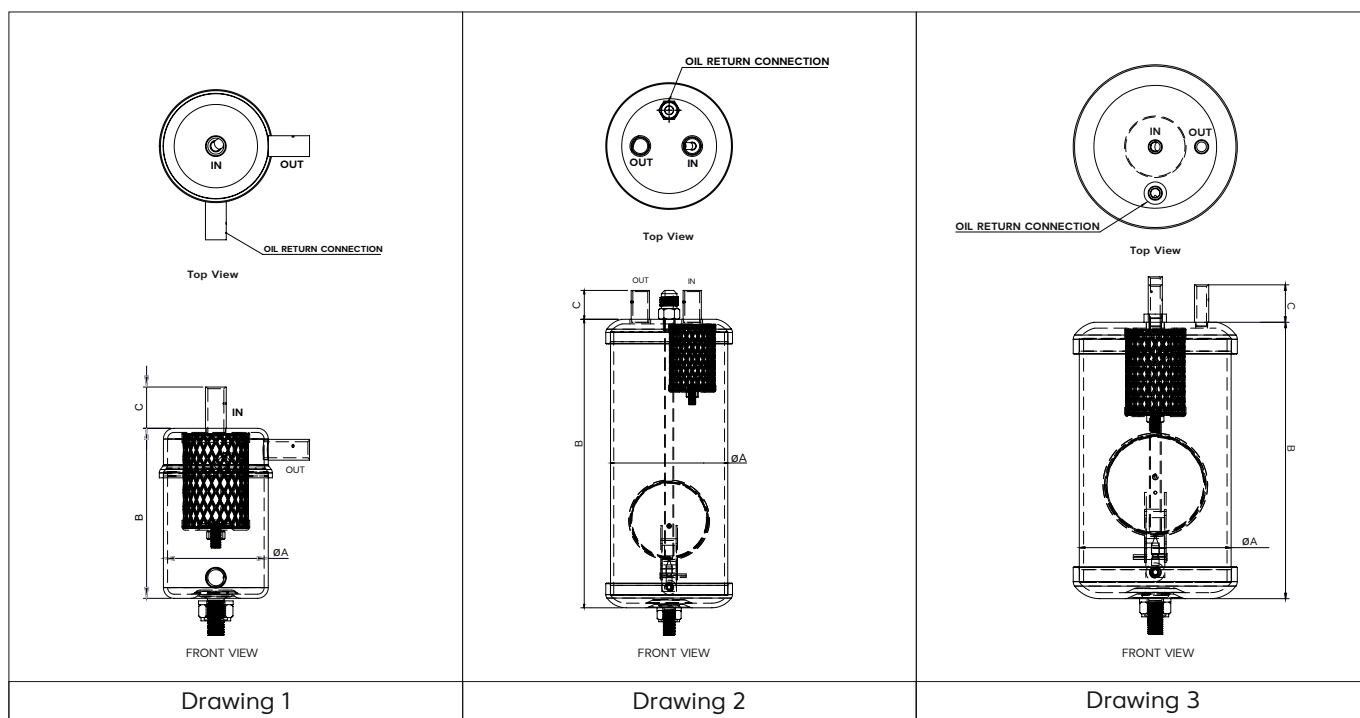
Compatible Refrigerants: HCFC, HFC, HC, HFO

Connections: ODF solder connection (3/8", 1/2", & 1/4")



## Coalescent Oil Separator: CTOS Series

### Dimensional Details

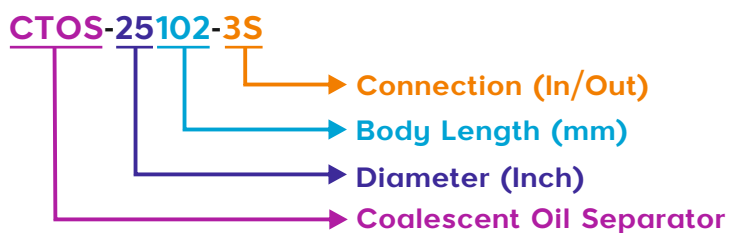


### Models Available

Sr. No.	Model	Connection Size	Oil Return Connection	ØA		B		C		Mounting Detail	Oil Charge Amount (ml)	Refer Drawing No
		In & Out		mm	Inch	mm	Inch	mm	Inch			
1	CTOS-25102-3S	3/8" ODF	3/8" ODF	63.5	2.5	102	3.54	25	0.98	M10 X 1.5 Bolt With Washer & Nut	No Oil Charge	1
2	CTOS-4250-4S	1/2" ODF	3/8" SAE*	101.6	4	250	9.84	25	0.98		444	2
3	CTOS-4185-2S	1/4" ODF	1/4" ODF	101.6	4	185	7.28	25	0.98		443.6	3

[\*] Denotes Connections are of Steel

### Nomenclature



## Coalescent Oil Separator: CTOS Series



### Performance Details

Sr. No.	Refrigerants	Temperature		CTOS-4185-2S		CTOS-25102-3S		CTOS-4250-4S	
		°F	°C	Kw	TR	Kw	TR	Kw	TR
1	R22	40	4.4	3.48	1.00	7.8	2.24	13.94	3.98
		20	-6.7	3.33	0.95	7.5	2.14	13.33	3.81
		0	-18	3.13	0.90	7.1	2.01	12.54	3.58
		-20	-29	2.87	0.82	6.5	1.85	11.49	3.28
2	R410A	40	4.4	4.12	1.18	9.3	2.65	16.48	4.71
		20	-6.7	3.98	1.14	9.0	2.56	15.91	4.55
		0	-18	3.82	1.09	8.6	2.45	15.27	4.36
		-20	-29	3.65	1.04	8.2	2.35	14.59	4.17
		-40	-40	3.47	0.99	7.8	2.23	13.89	3.97
3	R404	40	4.4	2.97	0.85	6.7	1.91	11.86	3.39
		20	-6.7	2.80	0.80	6.3	1.80	11.21	3.20
		0	-18	2.63	0.75	5.9	1.69	10.52	3.01
		-20	-29	2.45	0.70	5.5	1.58	9.80	2.80
		-40	-40	2.27	0.65	5.1	1.46	9.07	2.59
4	R134a	40	4.4	3.24	0.92	7.3	2.08	12.95	3.70
		20	-6.7	3.08	0.88	6.9	1.98	12.32	3.52
		0	-18	2.91	0.83	6.6	1.87	11.65	3.33
		-20	-29	2.74	0.78	6.2	1.76	10.98	3.14
		-40	-40	2.58	0.74	5.8	1.66	10.30	2.94
5	R407C	40	4.4	3.76	1.07	8.5	2.42	15.03	4.29
		20	-6.7	3.59	1.03	8.1	2.31	14.38	4.11
		0	-18	3.42	0.98	7.7	2.20	13.67	3.91
		-20	-29	3.24	0.93	7.3	2.08	12.96	3.70
		-40	-40	3.06	0.87	6.9	1.96	12.22	3.49

### Packing Details

Sr. No.	Model	Weight Per Product (kg)	Packing Format	Packing Quantity
1	CTOS-25102-3S	0.5	Multi-Pack	10
2	CTOS-4250-4S	1.3	Multi-Pack	4
3	CTOS-4185-2S	0.96	Multi-Pack	4

By choosing Dry All Coalescent Oil Separators from the CTOS Series, you're investing in cutting-edge technology that enhances system efficiency, reduces energy consumption, and ensures the longevity of your HVAC&R components.

**Check Hologram for  
Genuine Product**

Manufactured by:



Full Range of HVAC&R Line Products

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File No.: L/S&M/01

REV23-04-09-00