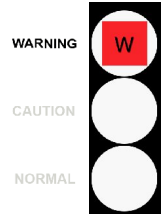


C Code : 29049  
 U Name : Limited  
 T Address : 10 I-4 Rd., Map Ta Phut Industrial Estate T. Map Ta Phut,  
 O A.Muang  
 M Rayong 21150  
 E Site : RY-ASU  
 R Location :  
 Test code : C834

Unit ID : **R 15 Before Filter**  
 Unit Type : Compressor Screw  
 Unit Make : CARRIER  
 Unit Model : 130(031)  
 Oil type/  
 Viscosity : MOBIL GARGOYLE ARCTIC 300 ISO 68  
 Oil System Capacity : 170 Liters



**Notes (Finding, Evaluation, Interpretation, Suggestion and Recommendation)**

All wear conditions and wear tests appear in normal working range.  
 All oil conditions and oil tests appear in normal working range.  
 Gravimetric analysis (photos shown) indicate the oil is highly contaminated with sludge, dirt, metal and other debris.  
 Recommend check the oil filters for proper operation and suggest using an off-line filtration system to clean up the oil system.  
 Recommend resample in 500 hours from the time this sample was taken, to monitor.

Wasan C.

			Current Sample			Previous Sample			Baseline and Alarm Limit									
Condition History			Wear	Oil	Cont.	Wear	Oil	Cont.	Wear	Oil	Cont.	Alarm Limit						
			N	N	W	N	N	W	C	C	W	Alarm Limit Matrix -Set Name (Equipment type / oil type)						
												Comp Refrig General MB Gargoyle Artic 300						
												RDE fine		RFS coarse				
Wear Element	Method	Unit	RDE fine	RFS coarse	RDE fine	RFS coarse	RDE fine	RFS coarse	RDE fine	RFS coarse	Reference Oil (RO)	U-Caution	U-Warning	U-Caution	U-Warning			
Lab ID	Test Method	Result	222361			205590			197168									
Bottle ID			959130			1004780			959160									
Date Sampled			30-Jun-13			15-Jan-13			04-Oct-12									
Oil Hours (Kms)			26681			23514			21364									
Unit Hours (Kms)			142157			138990			136840									
Oil Added (Liters)																		
Filters Hours (Kms)																		
<b>Oil Condition</b>												RO	L-Warning	L-Caution	U-Caution	U-Warning		
Viscosity @ 40°C	D-445	cSt	70.7			70.7			74.0	C	68.0	<34	<44.2	>71.4	>74.8			
Viscosity @ 100°C	D-445	cSt																
Oxidation	FTIR	Abs	4.0			3.7			10.8	W	5.0		>7.1	>8.6				
Nitration	FTIR	Abs	3.8			2.3			4.5		5.5		>7	>8.4				
TAN	D-974	mg KOH/g.	0.03			0.03			0.31		0.01		>0.51	>1.01				
TBN	D-4739	mg KOH/g.																
<b>Contamination</b>												RO			U-Caution	U-Warning		
Water	T-H2O CheckTM	% (Wt.)	0.026	C		0.053	W		0.028	C	0.010			>0.02	>0.03			
Sodium	D-6595	PPM	1			2			6		0							
Silicon	D-6595	PPM	1.2	2.9		0.6	0.4		0.7	1.8	0	>20	>30	>15	>20			
<b>Additive Element</b>												RO						
Boron	D-6595	PPM	0			0			1		0							
Magnesium	D-6595	PPM	1			0			1		0							
Calcium	D-6595	PPM	1			0			1		0							
Barium	D-6595	PPM	0			0			5		0							
Phosphorus	D-6595	PPM	0			0			0		0							
Zinc	D-6595	PPM	5	12		4	3		14	39	0							
<b>Additional Test</b>												RO	L-Caution	L-Warning	U-Caution	U-Warning		
Flash Point	D-3828	°C																
Viscosity Index	D-2270																	






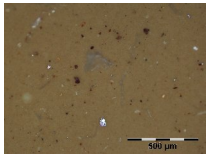
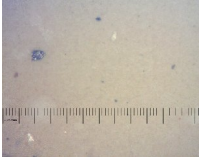
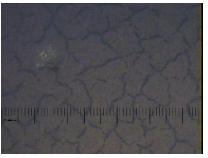
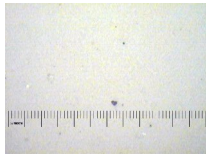
Note: Alarm Limits are variable and dependent upon dataset size and to be used as general guideline.  
 No Sign or **N** : NORMAL , **C** or **▲** : CAUTION (first level warning limit) , **W** or **■** : Warning (second level warning limit)  
 U-Caution : Upper CAUTION Level L-Caution : Lower CAUTION Level First Level Alarm\_Alert Limit in Upper Level and/or Lower Level  
 U-Warning : Upper WARNING Level L-Warning : Lower WARNING required Level Second Level Alarm\_Alert Limit in Upper Level and/or Lower Level  
 Baseline will be data of either "The new oil" or "Reference oil" or "Oil specification". TNO = The new oil , RO = Reference oil , OS = Oil Specification  
 Accuracy of interpretation and recommendation are based on representatives sample and information supplied. No warranty is expressed or implied for this report.

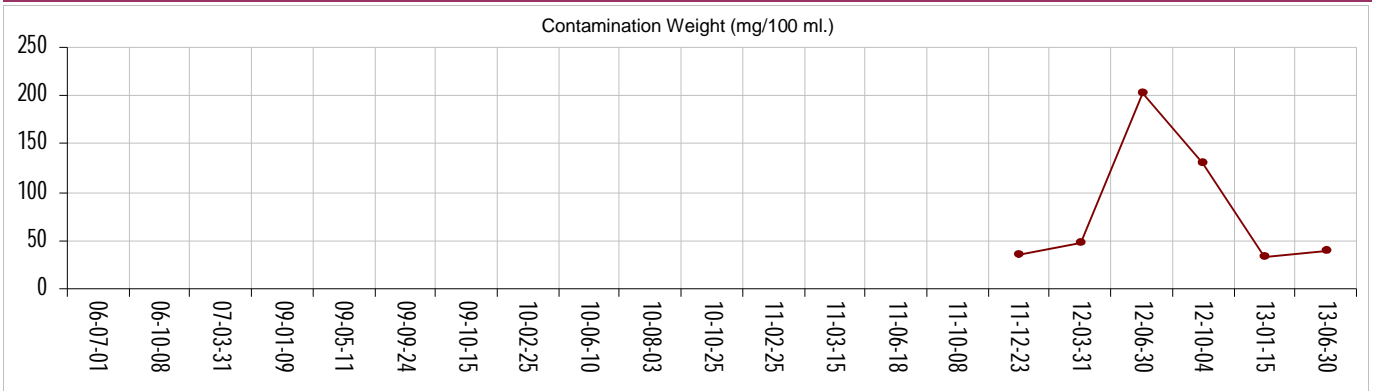
C Code : 29049  
 U S T O M E R Name : Limited  
 Address : 10 I-4 Rd., Map Ta Phut Industrial Estate T. Map Ta Phut, A.Muang Rayong 21150  
 Site : RY-ASU  
 Location :  
 Test code : C834

Unit ID : R 15 Before Filter  
 Unit Type : Compressor Screw  
 Unit Make : CARRIER  
 Unit Model : 130(031)  
 Oil type / Viscosity : MOBIL GARGOYLE ARCTIC 300 ISO 68  
 Oil System Capacity : 170 Liters

**Notes (Finding, Evaluation, Interpretation, Suggestion and Recommendation)**

Gravimetric analysis (photos shown) indicate the oil is highly contaminated with sludge, dirt, metal and other debris.

	Current Sample		Previous Sample		
<b>Lab ID</b>	222361		205590		
<b>Bottle ID</b>	959130		1004780		
<b>Date Sampled</b>	30-Jun-13		15-Jan-13		
<b>Oil Hours (Kms)</b>	26681		23514		
<b>Unit Hours (Kms)</b>	142157		138990		
<b>Oil Added (Liters)</b>					
<b>Filters Hours (Kms)</b>					
<b>Contamination</b>					
<b>Gravimetric Analysis : Test Method for Insoluble Contamination of Fluid</b>					
Fluid Volume	10 ml		10 ml		<b>The New Oil (TNO)</b>
Filter Type	0.8 micron		0.8 micron		10 ml
Photo of Insoluble Contamination Retained on Filter Membrane Disc					
Photo of Insoluble Contamination Retained on Filter Membrane Disc					
Photo of Insoluble Contamination Retained on Filter Membrane Disc - Magnification 100x					
Photo of Insoluble Contamination Retained on Filter Membrane Disc Magnification 100x					
Contaminant Retain on Filter Disk	% Visual Rating		% Visual Rating		% Visual Rating
Grey & Black Metal	20		10		
Copper Base Metal					
Bright & White Metal			10		
Rust & Corrosion					
Dirt & Dust	30		70		100
Fibers / Filters / Seals					
Sludge & Varnish	50		10		50
Contamination Weight (mg/100 ml)	39.8 mg/100 ml <b>W</b>		34.0 mg/100 ml <b>W</b>		130.0 mg/100 ml <b>W</b>
					TNO 2    Caution >20    Warning >30



**Gravimetric Analysis:**  
 - determines total solid and soft compound contamination level by weight  
 - determines oil contamination level by colorimetric (color density)  
 - identifies particle contamination in oils by microscopic analysis  
 In brief, will analyze oil cleanliness and source(s) of contamination.

<p>C Code : <b>29049</b></p> <p>U Name : <b>Limited</b></p> <p>T Address : 10 I-4 Rd., Map Ta Phut Industrial Estate T. Map Ta Phut, A.Muang R Rayong 21150</p> <p>Site : RY-ASU</p> <p>Location :</p> <p>Test code : C834</p>	<p>E Unit ID : <b>R 15 Before Filter</b></p> <p>O Unit Type : Compressor Screw</p> <p>U Unit Make : CARRIER</p> <p>I Unit Model : 130(031)</p> <p>P Oil type/ M Viscosity : MOBIL GARGOYLE ARCTIC 300 ISO 68</p> <p>E</p> <p>N</p> <p>T Oil System Capacity : 170 Liters</p>
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Lab ID : 222361    Date sampled : 30-Jun-13    Hours on Oil : 26681    Hours on Unit : 142157    Bottle ID : 959130

**ส่วนที่ 1 : หน้าหลัก**

[Section 1 : Main Page](#)

สภาพการสึกหรอและผลทดสอบการสึกหรอทั้งหมด พบว่าอยู่ในช่วงปกติ  
 คุณสมบัติของน้ำมันและผลทดสอบน้ำมันทั้งหมด พบว่าอยู่ในช่วงปกติ  
 ผลวิเคราะห์จากการกรองผ่านกระดาษกรอง (แสดงดังภาพ) พบว่าน้ำมันมีการปนเปื้อนปริมาณ สูงของคราบยางเหนียว ฝุ่นละออง เศษโลหะ และเศษโลหะสึกหรออื่นๆ  
 แนะนำให้ตรวจสอบการทำงานของกรองน้ำมัน เพื่อตรวจสอบหาการทำงานที่ผิดปกติ และแนะนำใช้ระบบกรองภายนอกพร้อมด้วย เพื่อจัดการให้ระบบน้ำมันสะอาดขึ้น  
 แนะนำเก็บตัวอย่างซ้ำอีกครั้งภายใน 500 ชั่วโมง หลังจากเก็บตัวอย่างครั้งนี้ เพื่อเฝ้าติดตาม

**ส่วนที่ 2 : หน้าของ Particle Count**

[Section 2 : Particle Count](#)

**ส่วนที่ 3 : หน้าของ Ferrographic Analysis**

[Section 3 : Ferrographic Analysis](#)

**ส่วนที่ 4 : หน้าของ Varnish and Sludge Potential**

[Section 4 : Varnish and Sludge Potential](#)

**ส่วนที่ 5 : หน้าของ Gravimetric Analysis**

[Section 5 : Gravimetric Analysis](#)

ผลวิเคราะห์จากการกรองผ่านกระดาษกรอง (แสดงดังภาพ) พบว่าน้ำมันมีการปนเปื้อนปริมาณ สูงของคราบยางเหนียว ฝุ่นละออง เศษโลหะ และเศษโลหะสึกหรออื่นๆ

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 M Rayong 21150  
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 Test code : C834

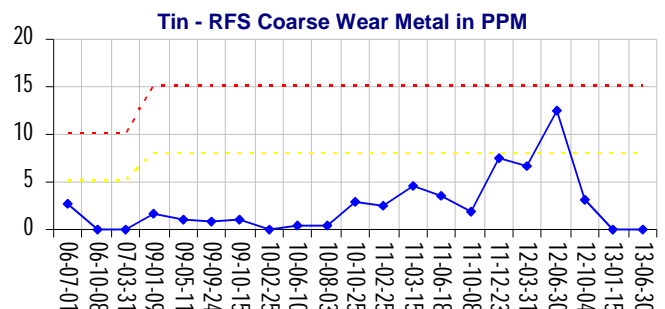
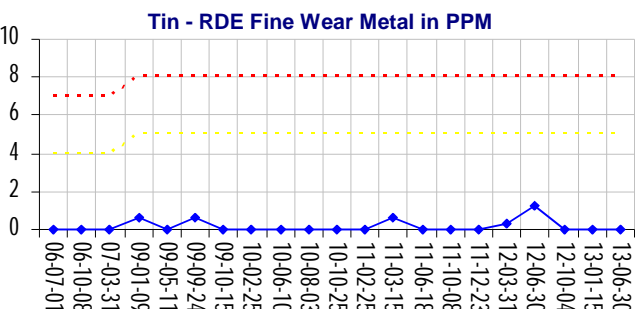
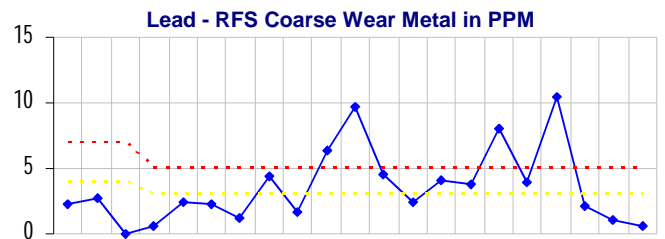
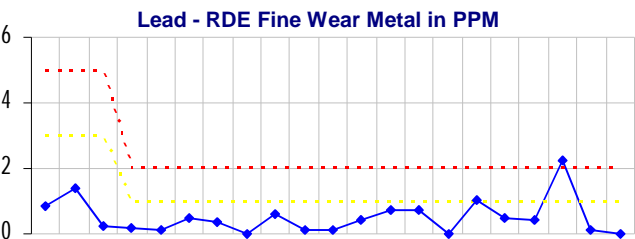
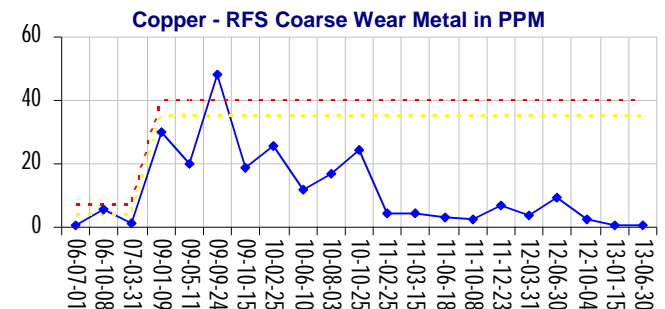
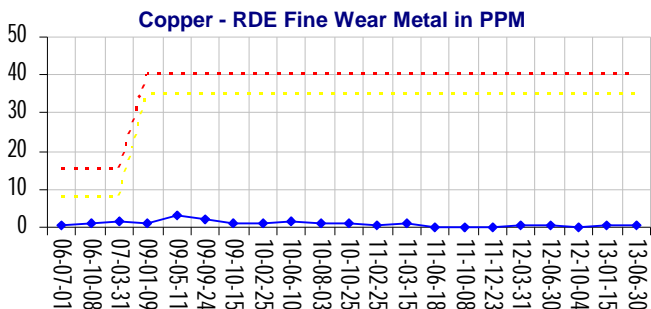
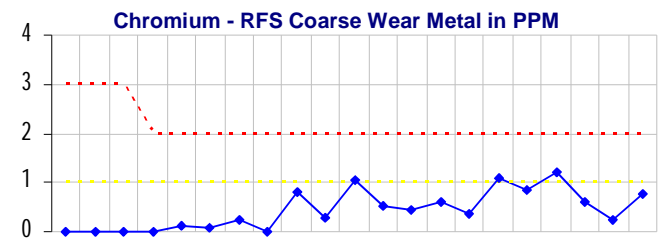
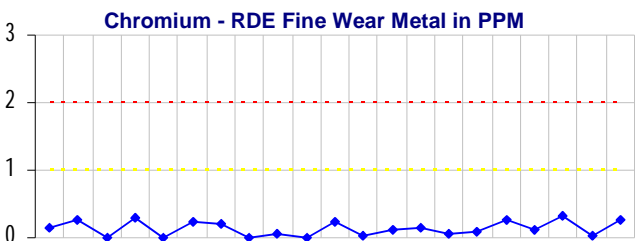
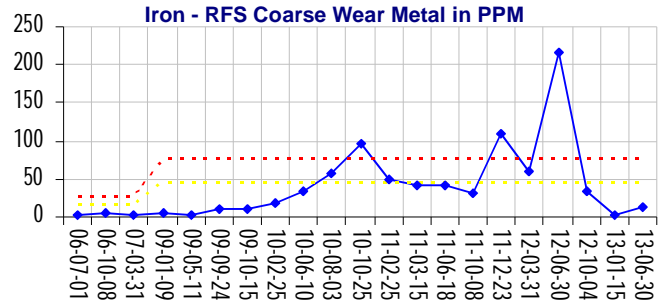
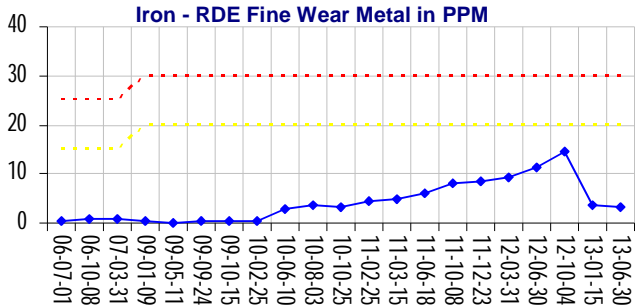
Unit ID : R 15 Before Filter

Unit Type : Compressor Screw  
 Unit Make : CARRIER  
 Unit Model : 130(031)

Oil type / Viscosity : MOBIL GARGOYLE ARCTIC 300 ISO 68

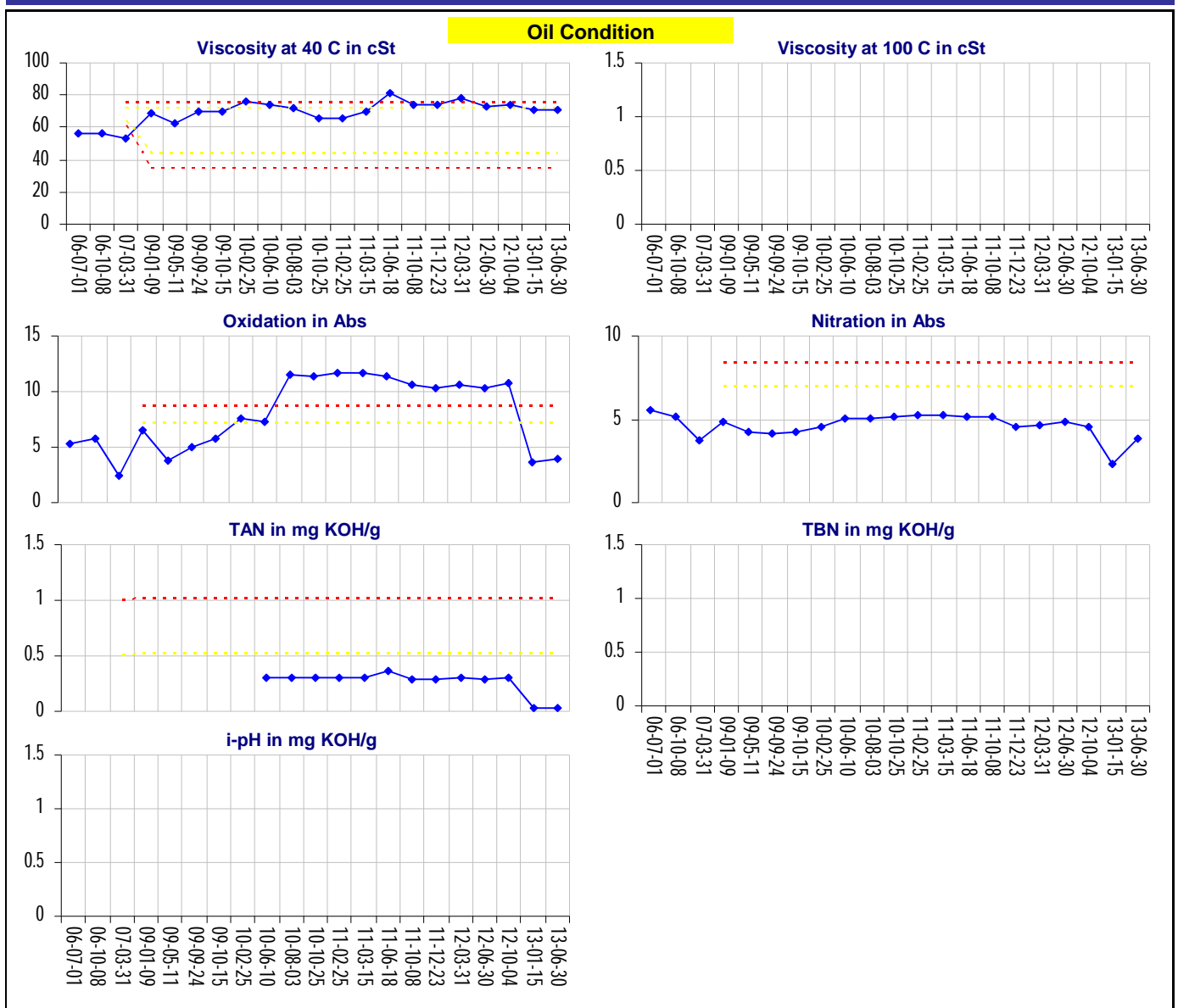
Oil System Capacity : 170 Liters

**Wear Condition**



C Code : 29049  
 U Name : Limited  
 T Address : 10 I-4 Rd., Map Ta Phut Industrial Estate T. Map Ta Phut,  
 O A.Muang  
 M Rayong 21150  
 E Site : RY-ASU  
 R Location :  
 Test code : C834

E Unit ID : R 15 Before Filter  
 O Unit Type : Compressor Screw  
 I Unit Make : CARRIER  
 P Unit Model : 130(031)  
 M Oil type /  
 E Viscosity : MOBIL GARGOYLE ARCTIC 300 ISO 68  
 N  
 L Oil System Capacity : 170 Liters



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E Unit ID : R 15 Before Filter  
 O Unit Type : Compressor Screw  
 I Unit Make : CARRIER  
 P Unit Model : 130(031)  
 M Oil type / Viscosity : MOBIL GARGOYLE ARCTIC 300 ISO 68  
 E  
 N  
 T  
 L Oil System Capacity : 170 Liters

