

**Low Emission
pays off!**



WAECO LOW EMISSION

SAVE COSTS AND PROTECT THE ENVIRONMENT WITH LOW EMISSION A/C SERVICE UNITS

LOW EMISSION ENVIRONMENTALLY SOUND AND PROFITABLE

Scarce refrigerant resources and soaring prices are hot topics when it comes to the service of vehicle A/C systems. In the period from August 2017 to August 2018 alone the price for one kilogram of R 134a rose from about 17 € to about 46 € – and this trend is bound to continue.

The **WAECO Low Emission service concept** gives you an economical, safe and environmentally sound solution – for conventional R 134a A/C systems as well as for the alternative R 1234yf refrigerant. The benefits: close to **100 % refrigerant recovery**, virtually **no harmful emissions** and no money lost unnecessarily.

WAECO LOW EMISSION

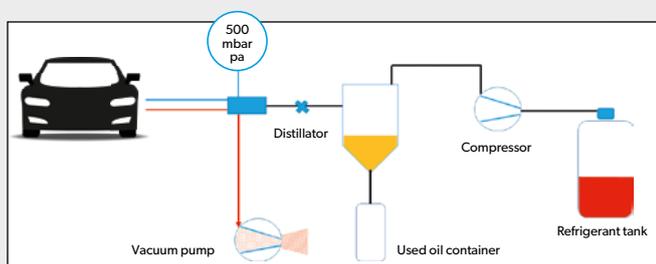
ENVIRONMENTALLY SOUND AND PROFITABLE

The WAECO ASC Low Emission technology allows you to recover almost 100 % of the refrigerant during A/C service. How does it manage to do so? Refrigerant loss mainly occurs in the phase when the refrigerant oil is forced out from the used oil container. The ASC Low Emission series uses a hermetically and pressure-tight container. Moreover, the refrigerant escaping during used oil

discharging is collected in the used oil container, recovered and returned to the refrigerant tank. The result is a refrigerant loss rate of close to 0 %!

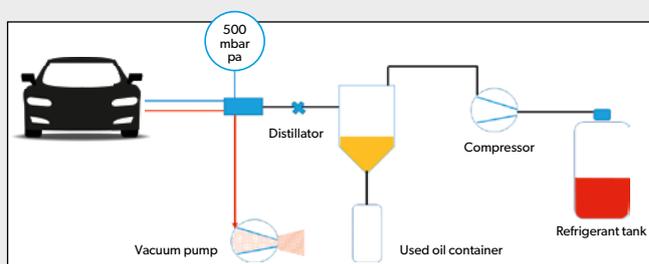
The accurate identification of the amount of recovered refrigerant also allows conclusions about the tightness of the air conditioner. This makes the service unit a diagnosis tool.

PROCESS FLOW DURING REFRIGERANT RECOVERY WITHOUT LOW EMISSION



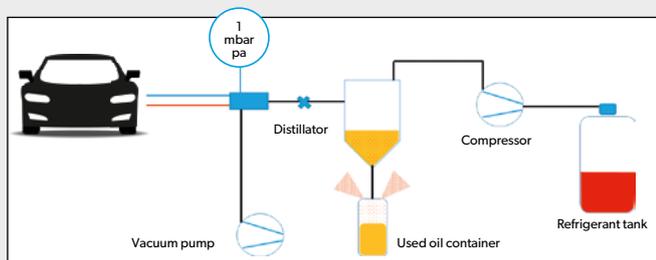
Refrigerant discharge without Low Emission

The A/C system is not emptied completely. The remaining refrigerant generates a residual pressure of about 500 mbar (absolute pressure).



Vacuum phase without Low Emission

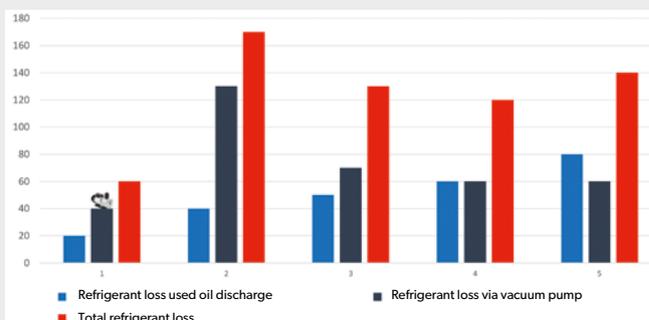
The remaining refrigerant (500 mbar) is discharged into the atmosphere via the ventilation side of the vacuum pump. Depending on the service unit this amounts up to 10 % of the refrigerant to be recycled.



Used oil discharge without Low Emission

The refrigerant contained in the used oil escapes through the vent holes of the used oil container into the environment. Depending on the service unit the loss amounts to 40 – 100 g per service.

Service emissions with different A/C service units

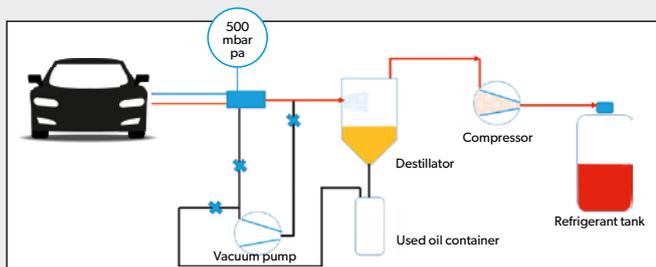


IT IS YOUR CHOICE!

During A/C service works thousands of tons of refrigerant escape into the atmosphere every year. Emission quantities vary depending on the type of service unit used. Before you buy a new one, it's worthwhile to take a closer look at the technology. We are pleased to show you why our Low Emission service concept is friendlier to the environment and more profitable for you.

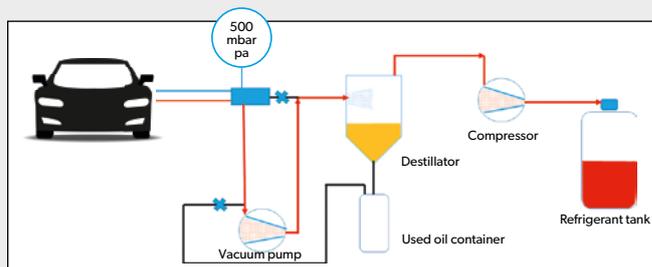


PROCESS FLOW DURING REFRIGERANT RECOVERY WITH LOW EMISSION



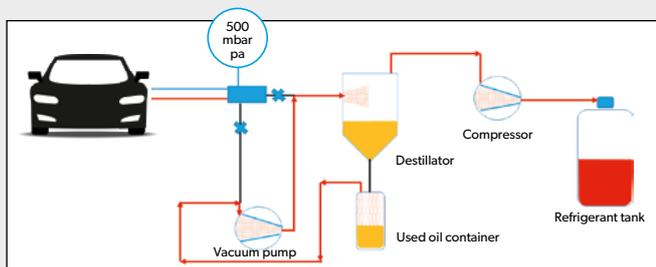
Refrigerant discharge with Low Emission

The compressor discharges the refrigerant from the A/C system up to a residual pressure of about 500 mbar. Then the deep-discharge with the Low Emission technology starts.



Deep-discharge with Low Emission

The compressor teams up with the vacuum pump to achieve a genuine deep-discharge of almost 100%. As a result, virtually no refrigerant is lost.



Used oil discharge with Low Emission

The refrigerant is discharged by the vacuum pump from the hermetically sealed used oil container and then returned to the refrigerant tank by the compressor. That means you also recover the refrigerant contained in the used oil.



CHARACTERISTICS OF THE LOW EMISSION CONCEPT



Patented, low-emission used oil container prevents refrigerant loss during used oil purging; the refrigerant recovered with the used oil is supplied to the refrigerant tank and included in the weighing.



Vacuum pump with control block The vacuum pump ensures deep down evacuation of the A/C system. It pumps the evaporated refrigerant into the internal container of the Low Emission service unit, so no refrigerant can escape into the environment.

RECOVER REFRIGERANT INSTEAD OF BUYING NEW ONE CALCULATION EXAMPLE CAR REPAIR SHOP (250 VEHICLES) R 134A

A/C service without low emission concept			
Average amount of refrigerant charged into the A/C system	600 g		
Average market price for refrigerant (kg)	50,00 €		
Refrigerant lost during used oil purging	35 g	1,75 €	
Refrigerant recovered 95% = a loss of 5%	30 g	1,50 €	
Refrigerant lost per service			3,00 €
For 3 x A/C service per week, the annual loss on refrigerant is			507,00 €

A/C service with low emission concept			
Average amount of refrigerant charged into the A/C system	600 g		
Average market price for refrigerant (kg)	50,00 €		
Refrigerant lost during used oil purging	0 g	0 €	
Refrigerant recovered 99,9% = a loss of 0,1%	0,06 g	0,03 €	
Refrigerant lost per service			0,03 €
For 3 x A/C service per week, the annual loss on refrigerant is			4,68 €

THE EU F-GAS REGULATION

The F-gas regulation of the European Union has been in force since 2015. Aiming at a reduction of fluorinated greenhouse gases, it regulates, among other things, the import quantities for R 134a refrigerant. As a result, R 134a is growing more and more expensive.

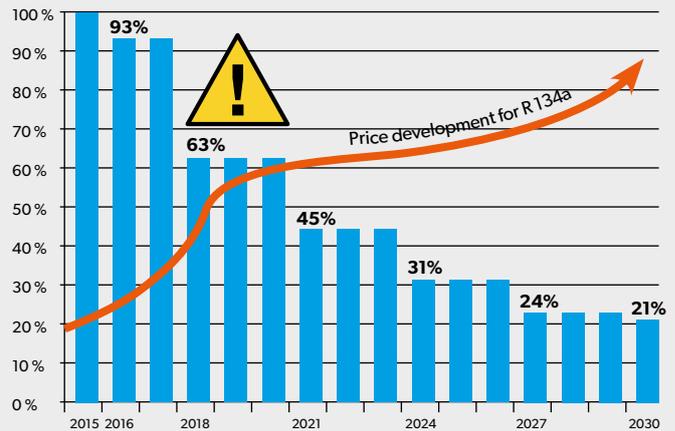
Invest in a low-emission service unit now to be able to offer your customers an attractive and cost-efficient A/C service in the long run. Dometic WAECO's well engineered low-emission concept keeps you a step ahead of your competitors.

SAVE WITH LOW EMISSION!

Despite the fact that modern vehicles require less and less refrigerant, R 134a is increasingly becoming a scarce resource. This is not only due to the limited import quantity (F-gas regulation), but also to the shut-down of a factory in Europe and China's failure to deliver the promised amounts. As a result, the price for R 134a rose from about 17 € to about 46 € in the period from August 2017 to August 2018 alone, and there's no end to it.

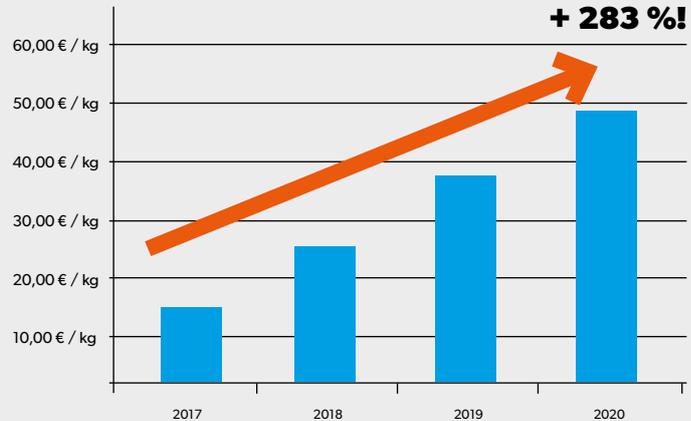
That means it is all the more important for workshops to save costly refrigerant. After all, A/C service is impossible without it ... and vehicles with R 134a A/C systems will continue to come in for service for a long time to come. A low-emission A/C service unit for R 134a will therefore pay off in the future, too!

Phase-down timetable for R 134a



Source: European Partnership for Energy and the Environment

Expected price increase + 283 %!



HOW TO IDENTIFY A LOW EMISSION UNIT – ONLY REAL WITH FOUR-STEP DISCHARGE

Most A/C service units are using three process steps: refrigerant recovery, evacuation and recharging. WAECO ASC Low Emission service units are using an additional process step to ensure close to 100 % refrigerant recovery. In this process step the vacuum pump teams up with the compressor to also recover the refrigerant contained in the oil. It is collected in the patented used oil container and then drained into the internal storage tank.

The additional step has two major benefits. First, there's virtually no refrigerant lost or escaping into the environment. Second, the exact amount of the recovered refrigerant can be identified in the weighing. This avoids misinterpretation with regard to the tightness of the A/C system, which would otherwise lead to unnecessary trouble-shooting and costly repairs.



Step 1
Refrigerant recovery

Step 2
Low Emission phase

Step 3
Vacuum phase recovery

Step 4
Refrigerant recharging