



# EMISSIONS FREE COOLING

ENGINE OFF COOLING SOLUTION



**SIGMA**





# HCF6BX4

EMISSIONS FREE COOLING

H0433161



**COOLING**

4kW / 13648 BTU



**POWER SUPPLY**

24VDC

SIGMA's Emissions Free Cooling HVAC system is an innovative idle-reduction system engineered to reduce or eliminate unnecessary energy consumption or idling when not in active use.

This technology aims to improve energy efficiency, prolong device lifespan, and reduce environmental impact.

Designed for ease of installation and operation in mind, this new system features improved reliability and robust applications suitable for various mobile and stationary applications.

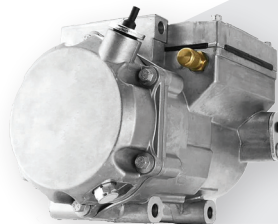


## NEW TECHNOLOGY



### LATEST BRUSHLESS TECHNOLOGY

- BLDC condenser for soft start
- Semi-hermetic scroll compressor with built-in inverter & controller
- Compressor pre-configured for reliable operation



Displacement	24cc/rev
Communication	CAN 2.0B
Power Voltage Range	16-32V
Signal Voltage Range	9-32V
Refrigerants	R134A
Oil Type	PAG oil



### BATTERY MANAGEMENT

- 2x 200Ah maintenance-free deep cycle 12V batteries
- Up to 1400 cycles
- Optional Battery isolation



### ELECTRO MECHANICAL SWITCHING

- Designed for robust & reliable operation
- Simplified for easy service & diagnosis
- Configured for easy ON-OFF operation



### ROBUST STAINLESS STEEL CONSTRUCTION

- Increase gauge thickness to withstand severe shock & vibration loads



### CAN CONNECTIVITY

- CAN network enabled 24VDC compressor

## SPECIFICATIONS

	METRIC	IMPERIAL
Cooling Capacity (Remote off-engine compressor)	4.0 kW	13648 BTU
Fan Speeds	1	1
Air Flow	670 l/s	1419 CFM
Power Supply	24VDC	24VDC
Total Current Draw	105 A	105 A
Refrigerant	R134a	R134a
Maximum Ambient Temperature	54°C	129°F
Weight (nominal)	75 kgs	165.3 lbs
Technical Manual Reference	SM508-3993	SM508-3993
Dimension (L X W X H)	752mm X 429mm X 480mm	29.6in X 16.8in X 18.8in

**NOTE:** Cooling capacity and current drawn measured at high ambient conditions of 46°C (114.8°F)

## KEY BENEFITS



### REDUCE CO<sub>2</sub> EMISSIONS

Not only are diesel engines one of the largest emitter of CO<sub>2</sub> gas, but causes a lot of CO<sub>2</sub> emission in its extraction. Our Emissions Free Cooling solution enables you to reduce your carbon footprint by eliminating the dependence on diesel engines whilst stationary.



### REDUCE MAINTENANCE

Our Emissions Free Cooling solution extends the life of your engine and its maintenance intervals, by eliminating the use of the main engine to power the HVAC system.



### FUEL SAVING

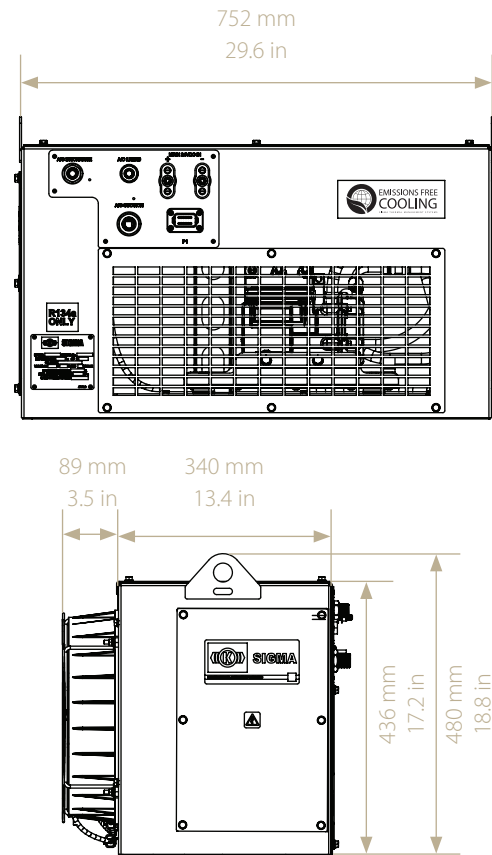
Designed to integrate with your existing HVAC system, SIGMA Emissions Free Cooling Technology converts machine idle time into cost saving through a reduction of fuel consumption and extended service intervals.



### EMISSIONS FREE CALCULATOR

Enter your make & model and our Emissions Free Calculator will return your expected return on investment and carbon emission reduction figures

## DIMENSIONS



## ABOUT US



SIGMA Air Conditioning is specialised HVAC division of the Knorr-Bremse Group.

With over 65 years of experience in specialised HVAC solution, we develop, design & engineer bespoke Heavy Duty Thermal Management Systems for the Mining, Industrial, Defence and Track maintenance markets and an OEM supplier to global brands.



## Where does the fuel go and how does SIGMA Emissions Free Cooling fit in the equation?

### TRAFFIC MANAGEMENT

Traffic management, controlled accelerations and efficient non-stop run management all contribute to the ideal vehicle flow and fuel reduction.

### LOAD FACTORS

Load factors have a huge impact on fuel consumption. High resource and investment is required to reduce costs through vehicle model and capacity selection, payload arrangement and engine power control changes.

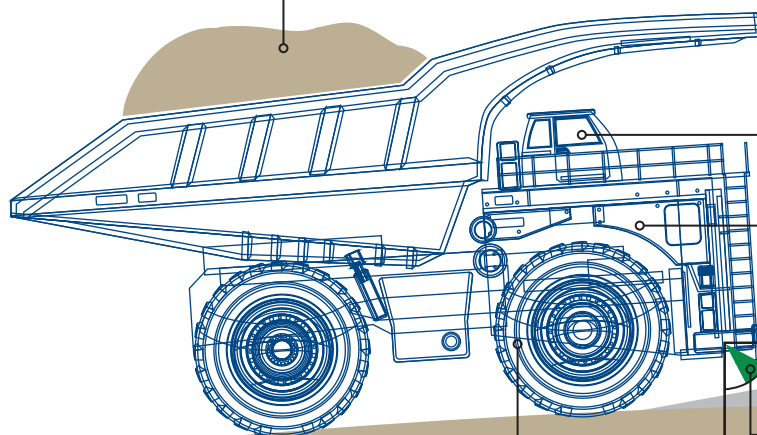
### DRIVER TRAINING

Driver behaviour can have a big effect on fuel consumption. Training can involve significant resources in effort and are challenging to measure and monitor.

### HVAC

### EMISSIONS FREE

SIGMA Emissions Free Cooling technology is part of the engine management system and it will work alongside all of these initiatives. This technology can be up and running immediately on a large haul truck and can pay for itself in fuel savings in less than 12 months.



### FORWARD MOTION

### FUEL SAVINGS

### ROAD SURFACING

Roll resistance and traction greatly reduces vehicle performance and increases fuel consumption. Road resurfacing has a high investment cost financially, and in time, creating long payback periods.

### TYRES

Tyre technology advancements in addition to tyre maintenance reduces replacement costs and fuel usage. Under tyre inflation reduces carcass life, reduces tread life, and increases fuel consumption.



### QUEUING



### IDLING



### TIME MANAGEMENT

### GRADIENT

Road planning that incorporates haul slope optimisation and elevation changes can greatly reduce energy and fuel usage. Initiatives however has a high investment cost financially, and in time, creating long payback periods.



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