



**Mobile Climate Control**  
On Road



# A choice for the future

Reciprocating compressors  
versus screw compressors

# Meet the demands of the future

Reciprocating compressors are the most efficient and environmentally friendly choice thanks to performance and fuel consumption.



## Can I get the same cooling performance with a reciprocating compressor as compared to a screw compressor?

**Yes.** MCC has a full portfolio of reciprocating compressors that can match the capacity of any of the screw compressors sold on the market.

### Example 1:

TK screw model S391: 391 cm<sup>3</sup> – 39.5 kW cooling at 1800 min<sup>-1</sup> with R-407C  
Bitzer reciprocating model 6PFC: 836 cm<sup>3</sup> – 39.5 kW cooling at 2100 min<sup>-1</sup> with R134a

### Example 2:

TK screw model S616: 616 cm<sup>3</sup> – 45.4 kW cooling at 1800 min<sup>-1</sup> with R134a  
Bitzer reciprocating model, 6NFC: 970 cm<sup>3</sup> – 45.4 kW cooling at 2000 min<sup>-1</sup> with R134a

Meets the challenge!

## Are reciprocating compressors available with unloaders?

**Yes.** MCC reciprocating compressors have always been available with unloaders.

Wide range!

## Are reciprocating compressors lighter than screw compressors?

**Yes.**

### Example 1:

TK S391: 66.8 kg vs 6PFC: 51.5 kg

### Example 2:

TK S616: 77.2 kg vs 6NFC: 50.0 kg

Lower weight!

## Will I use less fuel with a reciprocating compressor compared to a screw compressor?

**Yes.** An optimized reciprocating compressor equipped system when compared to a similarly optimized screw compressor equipped system will consume less fuel over the entire operating range. However, a sub-optimized system will always consume more fuel no matter what the compressor.

Saves more fuel!

## Will my reciprocating compressor be as efficient as a screw compressor?

**Yes.** Applied properly with the system a reciprocating compressor can be as efficient or more efficient.

**Example:** Correctly applied reciprocating compressors can match the efficiency of other compressor types. Below is data from Bitzer comparing their reciprocating and screw products. However a sub-optimized application will be less efficient no matter the type.

Case	I	II	III	IV
<b>Description</b>	Screw OSK 5341 R134a 480 cm <sup>3</sup> 2900 min <sup>-1</sup>	Reciprocating 6TFC R134a 480 cm <sup>3</sup> 3500 min <sup>-1</sup>	Reciprocating 6NFC R134a 970 cm <sup>3</sup> 2000 min <sup>-1</sup>	Screw OSK 5341 R407C 480 cm <sup>3</sup> 2900 min <sup>-1</sup>
<b>Refrigeration capacity (kW)</b>	45.1	44.8	46.3	65.1
<b>Btu/h</b>	153900	152900	158000	222200
<b>Brake power (kW)</b>	16.11	20.10	16.65	24.80
<b>hp</b>	21.60	26.95	22.33	33.32
<b>COP</b>	2.80	2.22	2.78	2.62
<b>hp / (1000 Btu/h)</b>	0.140	0.177	0.141	0.15
<b>Discharge gas temperature (°C) °F</b>	86.2 187	97.1 207	86.4 188	98.8 210

More efficient!

### MCC compressor strategy:

## Reciprocating compressors versus screw compressors

- Strategy of using larger reciprocating compressors versus screw compressors
- Similar efficiency in the mid-range and better in the low range of operating speeds for reciprocating compressors
- Both Bock and Bitzer published data showing the above
- Bock data shows that their semi-hermetic compressor can beat both screw compressor and scroll compressor over the operating cycle
- Our calculations show a 25% improvement in compressor power draw by running a reciprocating compressor efficiently

## Full product portfolio

- Globally proven designs
- R134a compatible
- World class efficiency
- Wide capacity range
- Lightweight materials



Bitzer 4 & 6 NFCY series



Carrier/Carlyle 05G series



Bock semi-hermetic reciprocating series



Bock FXK/40/50 series

# Heading for a better climate.

## Another step on the road towards a better climate

We know and understand that our business – to provide exceptional performance in mobile climate comfort by supplying custom engineered and manufactured HVAC solutions – impacts the environment. With the aim to manage this impact at processing and at use of our products we actively strive to minimize the usage of resources and other negative environmental impact in the entire supply chain and to optimize their performance and energy consumption when used in our customer's end products.

Our environmental work is based on our employees having an open mind and assuming ownership of the actual situation.



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