



**BOSCH**

Invented for life

# HEF/HEP 109

Bosch heavy-duty off-highway starters  
for top starting performance



# HEF/HEP 109 starters

## Overview

**Around the world, large-displacement engines are used for ore mining, decentralized supply of electric energy, construction machinery, agricultural vehicles as well as marine and railway vehicles.** Whether displacements of up to 180 l, high thermal loads or applications with additional hydraulic loads, Bosch HEF 109 starters ensure reliable starting – both as single-starter solutions or parallel-starter system.



### [Starter range for several off-highway applications](#)

Bosch HEF 109 starters are available in different versions meeting the specific requirements of different environmental conditions and off-highway applications. The modular starter concept

allows free selection of the performance features and even their partial combination (see table) – ideal for individual alignment with different specific requirements.

# HEF/HEP 109 starters

## Product range & details



Up to 50%  
lighter than  
comparable  
products

### HEF 109 starter for high power requirements

With a nominal output of up to 10 kW (24 V), HEF 109 starters are used to start diesel engines with a displacement of up to 30 l and usual cold start requirements. Their robust, compact and modular design makes them a great solution. The starter systems are designed for up to 14 000 hours of operation in stationary machines and off-highway applications (some 800 000 km on-highway). They stand out for their high performance density and great cold start performance. And, on top, they are up to 50 % lighter than direct starters of the same performance class.

### HEP 109 parallel-starter systems for large engines

Parallel starter systems consisting of two or three synchronized HEP 109 starters increase the scope of application. They are suitable for diesel engines with up to 90 l and gasoline engines with up to 180 l of displacement.

### Rotatable ductile-iron flange for high flexibility

- ▶ 8 possible mounting positions per part number
- ▶ Increased flexibility and cost effectiveness with small and medium batch sizes

### Protection class (IP57)

- ▶ Additional protection of starters used for tough off-highway applications
- ▶ Protection in case of short-term submersion

### Electrically insulated terminal 31

- ▶ Improved corrosion protection
- ▶ Ideal for marine applications and special application requirements of construction vehicles and railway applications

### Reversible thermal overload circuit breaker

- ▶ Safe protection against overloads
- ▶ Integrated into the starter harness

### Integrated mechanical relay (IMR) with optional plug connector

- ▶ Easy connection to the vehicle electrical system
- ▶ No external control relay required
- ▶ Controlled start via ECU is possible

### Smooth engaging

- ▶ Smooth electrical two-stage engaging
- ▶ Increased service life of ring gear and starter pinion

### Starter design in line with the specific application

- ▶ Designed for high cold start performance, high starting torque and good start-up support
- ▶ Different motor parts with a thermal behavior optimized for the specific application purpose


### Noseless bearing principle

- ▶ Optimized protection of the pinion shaft against dust, water and splash oil
- ▶ High installation flexibility due to the pinion-shaft bearing located inside the starter



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## Technical data

Technical data	HEF109-M 24V	HEF109-MP 24V	HEF109-L 24V	HEP109-MP 24V (2x)	HEP109-L 24V (2x)	HEP109-MP 24V (3x)	HEP109-L 24V (3x)
Mechanical peak performance (At -20°C and SOC*=80 %)	7.62 kW	8.24 kW	10.0 kW	16.5 kW	20.0 kW	24.7 kW	30.0 kW
Typical scope of application: displacement up to (diesel)	... 16 l	... 24 l	... 30 l	... 48 l	... 60 l	... 72 l	... 90 l
Typical scope of application: displacement up to (gas / gasoline)	... 32 l	... 48 l	... 60 l	... 96 l	... 120 l	... 144 l	... 180 l
Max. battery cold testing current EN	1300 CCA	1500 CCA	2000 CCA	3000 CCA (2x1500 CCA parallel)	4000 CCA (2x2000 CCA parallel)	4500 CCA (3x1500 CCA parallel)	6000 CCA (3x2000 CCA parallel)
Starter weight	11.6 kg	<14 kg	<17 kg	2x16.5 kg	2x19.5 kg	3x16.5 kg	3x19.5 kg
Pole housing diameter	109 mm	109 mm	109 mm	109 mm	109 mm	109 mm	109 mm
Installation length (starter flange / commutator bearing cap)	287.5 mm	287.5 mm	319.5 mm	287.5 mm	319.5 mm	287.5 mm	319.5 mm
Typical control current	2 A	2 A	2 A	2x2 A	2x2 A	3x2 A	3x2 A
Scope of application							

Order number:**	Suitable for engine**		
	CAT	Cummins	MTU
0 001 33F 102	C9; C11; C13; C15; C18	QSM11; QSX15; QSK19	
0 001 35F 105 (1 or 2 starters)	C27; C32; 3408; 3412	QSK23; QST30; QSK38, QSK45	8V4000; 12V4000
0 001 35J H02 (special flange)	3508B; 3512B; 3516A/B/C		
0 001 36F 806 (2 or 3 starters)	C175-X	QSK50; QSK60; QSK78; QSK95	16V4000; 20V4000

\* SOC = state of charge

\*\* Additional order numbers and applications upon request

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