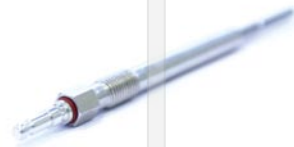


## New Flash Start System - FSS 2



Cold start has never been so easy



### System description:

- FSS 2 starts as fast as gasoline engine even at extremely low temperatures
- Higher heat-up temperature: 1000 °C instead of 850 °C
- At long starts the battery voltage drops down to 8V. In this case the 5V glow plug still has full temperature functionality whereas the ordinary 11V glow plug cools down.
- 100 % controllable glow temperature
- Independent glow plug control and diagnosis:
  - In case of failure on any glow plug, the others work on
  - The system can detect exactly which switch is defective and what the failure is (open load, short circuit)
- OBDII ready

## Introduction

Since the aspect of environmental suitability has gained the leading role in automotive field, a struggling effort has been made through the market to satisfy ever greater emission demands. Our engineers are in a constant pursuit for better products and so we are proud to present the new FSS 2, which combines various products of the company:

- low voltage metallic glow plugs
- heater flanges
- control electronic units

## The 2<sup>nd</sup> generation of Flash Start System

The second generation of FSS diesel cold start system from HIDRIA assists diesel engine to start at low temperatures, so that it additionally heats up both the combustion chamber and the intake air.

Low voltage glow plugs heat up the combustion chamber of the diesel engine.

In comparison with standard 11V glow plugs, the heat-up time of the low voltage glow plugs is considerably shorter. Robust and reliable system operation is guaranteed by embedded **advanced diagnostic** features as for example glow plug failure detection, system under-voltage or over-voltage detection etc. .

While the low voltage glow plug provides **heat locally** in the combustion chamber, our system also comprises an additional heating element – a heating flange – which heats up the intake air before it enters the engine. This technology is currently used in heavy and light duty vehicles, however with the new emission requirements it is expected to enter passenger vehicle segment.

The use of additional heating flange has several advantages as for example **an easier start** at even lower temperatures, **smother running** of the engine and **lower emissions**.

## Ecology

Environmental awareness is one of our main concerns as we are very conscious of the growing number of vehicles, more and more strict emission standards and, as most important, the increasing level of pollution. Our post-heating capable glow plugs help **to cut back soot emissions**, while the heating flange is especially effective in **lowering white smoke**.

Considering all FSS 2 benefits and the advanced diagnostic features it can be stated that we are making an excellent contribution to our environment.

## Advantages:

- Fast and reliable, gasoline like start at low temperatures
- Suitable also for higher displacement engines
- More engine power, less emissions
- Smooth and stable engine running
- Advanced electric power consumption
- Environmental awareness

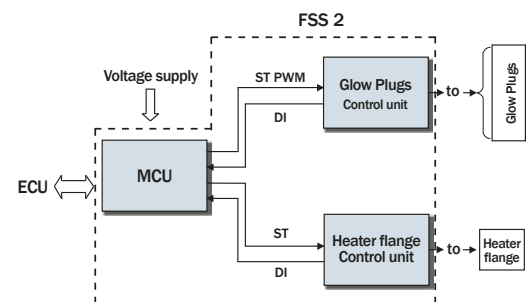
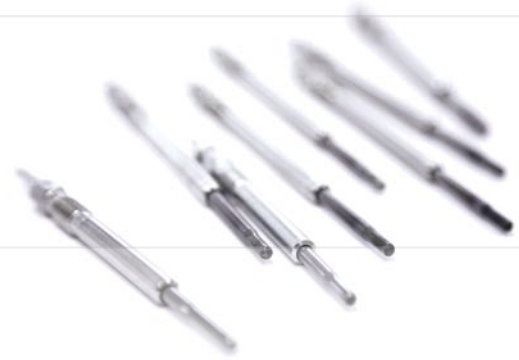
## Technical data

### Glow plug:

- Glow-plug diameter down to 4 mm
- Nominal voltage: 5 V
- Low power consumption
- Fast heat-up time to 1000°C:  $2 \pm 0,5$  s
- Fully automated production line
- 6 sigma ppm level

### Heater flange:

- Solid-state control
- Stand-alone solution - control unit mounted directly on the heater flange
- Over-current protection (short-circuit detection)
- Over-temperature protection



## HIDRIA AET FSS 2

- Suitable for 4 to 6 cylinder engines
- PWM control
- Sequential switching
- CAN communication

### Diagnosis for each glow plug output:

- Short circuit
- Open load
- Defective switch

### Additional functions:

- Active voltage clamping
- Supply voltage monitoring
- System temperature protection



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