



# HK1400 Expert / HPi brochure

All-Makes EUI/EUP/HPI Test Solution

 **magma**<sup>Touch</sup>  
Advanced  
software

**3rd  
Generation**  
Cam box

**Extended  
Application**  
coverage

Comprehensive  
**Test-plan**  
database







# hartridge

## Key Features Overview

Unique HD Multi-Cam

Easy-to-use magmah<sup>Touch</sup> software

Fully unlocked & extensive test plan database

3rd Generation upgraded Expert Eui/Eup solution

Designed for Universal bench compatibility

OE standards of accuracy & durability

Advanced in-test features such as Hartridge's FERT (Full Event Response Time) measurement

Ancillary plug-and-play hardware upgrades for improved control and accuracy.

High levels of protection through safety guards and interlocks.



## Technical Specification Overview

Single Phase 85-264 volt, 5-/60HZ, fused at 2A with IEC connector inlet	
Weight (dry, no application)	– 26kg
Max Speed	– 2400rpm
Max Cam Lift	– 18mm
Injector clamp load	– up to 1.5 tonnes
Test Oil	– ISO4113 Calibration Fluid
Lubrication Oil	– 10W-40W or similar

### Programmable parameters

Injector coil drive peak current	Injector pulse duration
Peak current duration	Injector cam timing
Hold current	Maximum & minimum limits for injected quantity
Injector piezo charge	Response time
Discharge current	Coil resistance measurements
Injector piezo charge and discharge current	



# Testing

Simplified  
Usability



Flexible &  
Adaptable



Innovative  
Design



OE  
Heritage



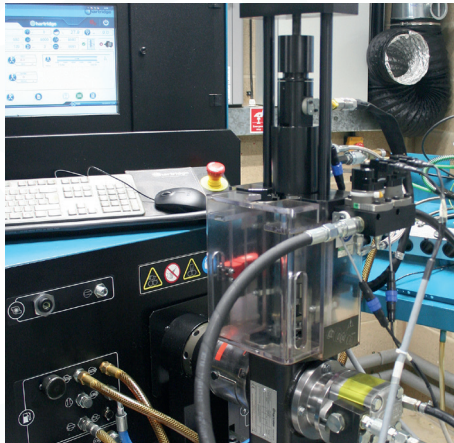
The HK1400 Expert magmah<sup>Touch</sup> test screen has ease of use at the forefront of every feature.

## HK1400 Expert Evolution

Now in its 3rd generation, the HK1400 has greatly evolved, becoming taller and more robust to expand its EUI testing capability. This has enabled new applications to be developed such as the full range of Caterpillar MUi/EUi, Scania XPi and Cummins HPI.

Continuous engineering development is a core value for Hartridge and the 3rd Gen HK1400Expert comes complete with a new upgraded controller (AE75), enabling it to utilise the legendary magmah<sup>Touch</sup> software and new ancillary hardware. This enables accuracy and repeatability to be taken to another level as well as allowing completely automatic testing on the AVM2-PC via a special link license.

For progressive independent workshops that want to expand their EUI/EUP/HPI capability and gain the competitive edge then this is the best all makes test solution that there is.



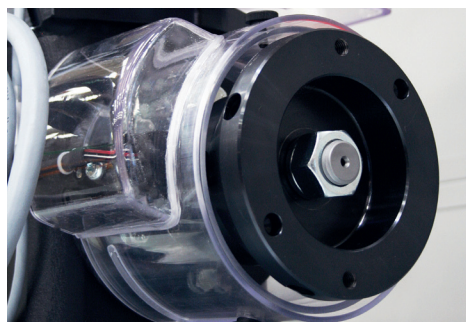
HK1400 Expert & application installed on an AVM2-PC

## Patented Multi-Position Cam

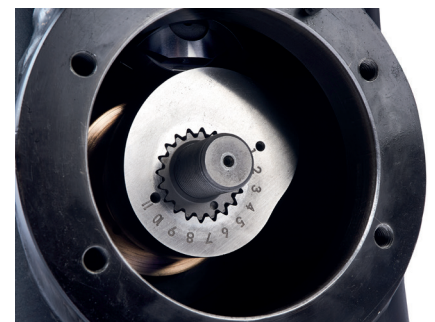
At the heart of Hartridges success is engineering innovation & excellence, starting with the variable drive torque converter wheel itself from the 1920s. The 11-position Multi-Cam was designed to enable the workshop technician to easily and quickly adjust injector plunger lift. This simple yet ingenious feature reduces the burden of purchasing and storing individual Cams and it also makes life easier for the workshop when changing between applications. There is a dedicated high speed cam for VW 1.9/2.0 TDi and Land Rover TD5 applications.



This next generation control unit features additional ports ready for when you need them



The coupling guard & safety interlocks ensure maximum possible protection for HK1400 users



11 position cam for HD applications saves time & money for the workshop



# Specification

Electronic Unit Injectors	Volvo	E1
		E3
		A Series
	Landrover	TD5
	Volvo Bosch	A Series
	Caterpillar	C10, C11, C12, C13, C15, C16, C18, C27, C32
		C3500 Series, 3406, 3412, 3176, 3116
	Scania	11, 12, & 16
		Cummins XPI
		Cummins HPI
	Iveco	Cursor 8
		Cursor 10 & 13
		Cursor E1
	Detroit Diesel	Series 60 N2
		Series 60 N3
Electronic Unit Pumps	VW	PD
		PDB
		PPD (Piezo)
	Cummins	CELECT
	Nissan Bosch	GE13
	Delphi	DAF
	Bosch	MACK
		MB Actros
		MB Atego
		Volvo
	John Deere	E1
		A Series

## magmah<sup>Touch</sup> Software

Launched initially on Hartridge’s award-winning Sabre CRi platform, our magmah<sup>Touch</sup> software has undergone a high rate of continuous development ever since.

Used on a multitude of our latest products magmah<sup>Touch</sup> has become a very well respected and familiar user-interface amongst Hartridge-equipped workshops worldwide.

It provides superior in-test user control and provides an expert level of functionality that completely changes the user-experience over the previous generations of magmah software.

magmah<sup>Touch</sup> is available as standard with the HK1400 Expert. It is also available for existing users of older HK1400 camboxes who wish to upgrade to the latest AE75 controller and benefit from continued application development in addition to the user benefits of magmah<sup>Touch</sup>.

Workshops with a Hartridge AVM2-PC can also purchase a link-license that enables magmah<sup>Touch</sup> to be installed, eliminating the need for a separate laptop and enabling seamless & fully automatic testing for all-makes Eui/EUp for the very first time.

## Application Coverage & Test Plans

The HK1400 comes with an extensive database of testplans across all the known technologies, providing excellent coverage of the EUi/HPI vehicle parc. Each one has been developed using a proven process that is unique to Hartridge, based on the experience and knowledge we have gained from decades of developing OE test solutions. Hartridge test plans replicate real world injector operating conditions as closely as possible.

## Advanced Applications Development

When developing new applications, Hartridge seeks to understand the dynamics of the entire fuel system and account for any variables & fluctuations in stability so that Hartridge testplans solutions replicate real-world injector operating conditions on the vehicle as accurately as possible.



# Specification

## Cummins ISX HPI



For full details on these application components & more, please refer to the supplemental HK1400 Cummins HPI leaflet

With the addition of dedicated hardware and the Cummins OE valves to control delivery and timing, Hartridge's HPI kit for the HK1400 ensures that the off-vehicle simulation of the fuel system accurately replicates on-vehicle conditions

In addition this combination of hardware ensures that OE fuel delivery is achieved along with stable and consistent fuel pressure control. This guarantees reliable and repeatable results to correctly assess the injectors function.

**Cummins HPI variants** (TP – Time Pressure & PT – Pressure Time). The Hartridge solution caters for both variants. TP injectors are usually seen on the highway and PT injectors are popular for off-highway applications.

**20 bar Supply Pressure Kit** (HK1412) – provides stable and consistent fuel supply at 4-20 bar automatically, simulating specific on-vehicle running conditions.

**HPI Base Kit** (HK1413) – OE timing and metering valves, a piezo sensor to measure delay time (FERT). This ensures the correct actuation method for HPI.

**Anxillary Supply Pump Kit** (HK1414) – upgrades hoist bench pressure and flow, required for correct HPI testing. This permanently integrates into the customer's HK1400 Cam-box.

**AE75 Controller Unit** (HK1415) – this is standard when purchasing the HK1400EXPERT and is required for testing Cummins HPI. This will be required by customers who already have a Mod A or Mod B Cam-box

**Boxed text adjacent to the HPI hardware:** The HK1412 supply pressure control unit can also be used with the HK1414 auxiliary pump kit to boost and provide advanced supply pressure control for all EUI/EUp testing. This provides more stability and improved diagnostic accuracy.

