



KB-1000

CATERPILLAR EUI CODING SOLUTION



DISCOVER DIESEL EXCELLENCE



The Ultimate Test Solution for Caterpillar Electronic Unit Injectors (EUI)

The KB1000 by **Merlin Diesel Systems** is a state-of-the-art, stand-alone coding solution designed specifically for workshops operating traditional diesel test benches and all-makes systems. This interface ensures precise coding and testing for Caterpillar’s range of EUI injectors, including the CAT 3500 and C Series.

The technology on offer removes the need for constant manual shim adjustments whilst testing a Caterpillar EUI. Using this unique software allows the fuelling level of the injector to be manipulated electronically, reducing testing time, increasing timing/fuelling accuracy and improving overall workshop efficiency.

Pictured with Merlin
EM Series Test Stand
(Not Included)
Please see Host
Bench Requirements
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How it works

The interface comes complete with a purpose-built single line cam-box. The cam-box software utilises the latest PicoScope technology allowing the operator to dynamically set the injectors fuelling in real time.

The operator simply inputs a **trim code** from a comprehensive database and alters the injectors pulse width, thus altering fuel delivery via response time.

Trim Codes

Trim codes are used during the manufacturing process to adjust the fuel delivery. They do this by controlling how long the solenoid stays energised.

The longer it is held energised, the greater the amount of fuel delivered.

To create the list of usable trim codes, extensive testing was done using our KB1000 CAT EUI coding solution. This demonstrated to our Research and Development team the effect of trim codes on the fuel delivery for each Injector.

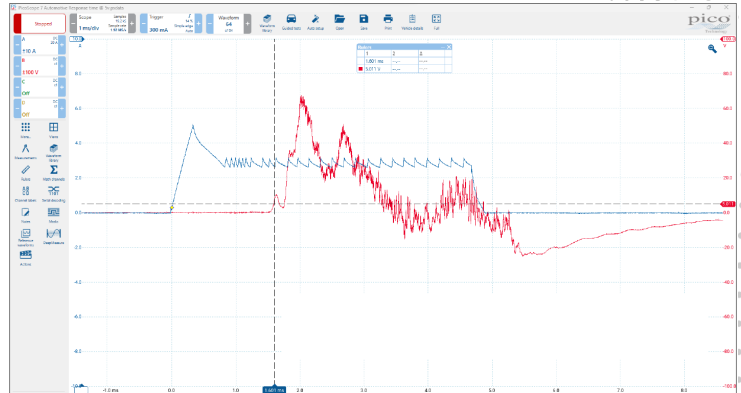
Speed	Trim code	Pulse width	Diff	Diff %	Delivery	Diff	Diff%	Serial number
700	6628	4630	+10	+0.2	242.4	+0.2	+0.1	SA53683690CS
900		4000	-20	-0.5	242.5	-0.2	-0.1	
700	4952	4770	+150	+3.2	254.0	+11.8	+4.9	SA53685981E9
900		4150	+130	+3.2	254.3	+11.6	+4.8	
700	5502	4780	+160	+3.4	254.0	+11.8	+4.9	SA53685982E0
900		4160	+140	+3.5	254.3	+11.6	+4.8	
700	6602	4780	+160	+3.4	254.0	+11.8	+4.9	SA53685987FB
900		4160	+140	+3.5	254.3	+11.6	+4.8	
700	7722	4840	+220	+4.8	264.0	+21.8	+9.0	SA53685990FB
900		4220	+200	+5.0	262.4	+19.7	+8.1	
700	7706	4640	+20	+0.4	242.9	+0.7	+0.3	SA53685992F5
900		4030	+30	+0.8	243.1	+0.4	+0.2	
700	7815	4700	+80	+1.7	249.5	+7.3	+3.0	SA53685995E0
900		4090	+70	+1.7	248.1	+5.4	+2.2	
700	8800	4710	+90	+1.9	250.0	+7.8	+3.2	SA53685998C3
900		4100	+80	+2	248.5	+5.8	+2.4	
700	2311	4630	+10	+0.2	242.5	+0.3	+0.1	SA53686081E9
900		4020	0	0	242.2	0	0	
700	2540	4640	+20	+0.4	242.9	+0.7	+0.3	SA53686084F2
900		4030	+30	+0.8	243.1	+0.4	+0.2	
700	2760	4640	+20	+0.4	242.9	+0.7	+0.3	SA53686089D1
900		4030	+30	+0.8	243.1	+0.4	+0.2	
700	2755	4700	+80	+1.7	249.5	+7.3	+3.0	SA53686092F5
900		4090	+70	+1.7	248.1	+5.4	+2.2	
700	2986	4560	-60	-1.3	236.5	-5.7	-2.4	SA53686095E0
900		3960	-60	-1.5	237.4	-5.3	-2.2	

During our research and development program, over 600 trim codes were created for each injector. Through rigorous trial and error, we established a database of over 200 useable fuel adjustment codes for each individual injector reference.



Software

This interface utilises not only PicoScope oscilloscope technology, but works in conjunction with our specifically designed diagnostic software for trim code input. If you are testing a full set of injectors, this software will be capable of setting the fuelling to match all injector response times, optimising vehicle performance.



Hardware

The KB1000 has been designed and built from the ground up for use in traditional diesel workshops, made of industrial grade steel to cope with the rigors of a busy environment.

We supply the PicoScope and the interface has two 24" digital displays along with a touch pad keyboard inbuilt.



Key Features:

- **Purpose:** The KB1000 facilitates testing and programming trim codes for Caterpillar EUI injectors, optimising fuel delivery and engine performance.
- **Compatibility:** Works with Caterpillar EUI injectors, including models C11/13, C10/12, C15-C32, and 3500.
- **Components:** Includes a single line cam-box, basic tooling, and relies on host test benches for essential functions.
- **Adaptability:** Compatible with 125mm and 246mm drive line centre heights, suitable for various test bench setups.
- **Host Bench Requirements:** The host test bench must provide drive speed control, fuel supply and return, injected quantity measurement, and appropriate fittings.
- **Communication Adapter:** A device to interface between your laptop and the engine's ECM (Electronic Control Module).

Host Bench Requirements

	Minimum	Maximum	Units
Drive Power	20	30	Hp
Drive Inertia	0.5*1		Kgm ²
Drive Couple Stiffness	ISO4008*1		
Fuel Supply Pressure	0	7	Bar
Fuel Supply Temperature	40	45	C
Fuel Supply Flow Rate	2	10	Litres/Min

Technical Information

Electrical Supply	100-200v / 1 phase / 50-60Hz
Test Oil	ISO 4113 Calibration Fluid
CPU	Windows 11 / Intel Core i3-1215U 1.2 Ghz
Dimensions	57cm / 55cm / 172cm, 85kg
Packing Dimensions (Including Cam-Box)	110cm / 70cm / 115cm, 220kg

CAT C Series References

Page	Current	Alternative	Alternative	Alternative	Alternative	Alternative
3	276-8307	10R7231	253-0597			
4	253-0618	10R2772	244-7718			
5	295-9085	10R8988				
6	374-0750	20R2284	244-7715	253-0615	10R3264	
7	253-0616	10R3265	244-7716			
8	211-3028	10R7228	200-1120	20R1936		
9	374-0751	20R2285	253-0617	10R3266		
10	CH10948		CH11073	CH10793		
11	CH11945		CH11998			
12	CH12071					
13	249-0713	10R3262				
14	356-1367	10R1273	249-0709	232-1199	239-4909	
15	229-5919	10R1000	223-5329			
16	211-3024	10R8502	118-9035	10R0958	10R2780	102-6230
16	211-3024	10R8502	117-1148	152-3680	191-3004	176-1145
17	211-3023	10R8501	118-8010	191-3003	0R9257	10R0957
17	211-3023	10R8501	102-2014	109-5021	117-0482	118-9030
17	211-3023	10R8501	159-2479	140-8993	103-4562	
18	249-0708	10R2977				
20	212-3460	10R0960	137-2497	161-1708	194-5080	0R8780
21	212-3463	10R0963	137-2500	147-0373	194-5083	
22	211-3022	10R0956	118-9027	0R4895		
23	211-3025	10R0955				



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