

CELEBRATING TOGETHER
35 Years of Innovation



FORWARD MOBILITY SOLUTIONS



Pioneering
the Automotive
Service for 35 years
and beyond.



FORWARD MOBILITY SOLUTIONS



INNOVATION DRIVEN

DEFINING INNOVATION



Celebrating Together
35 Years of Innovation



INNOVATION TO DRIVE FORWARD MOBILITY SOLUTIONS



Carbon Zapp is dedicated in manufacturing Automotive Injection Service Solutions, providing a worldwide sales network, investing constantly in R&D and offering efficient support. With today's exponential increase in the automotive industry, Carbon Zapp offers solutions for a healthier, less polluted environment, specializing in designing & manufacturing Diesel and Gasoline Injection Service Benches, that have become a standard for major OE's and general workshops.

As a global supplier to diverse users, with broad knowledge in the automotive industry and through teamwork and skillful personnel, Carbon Zapp is able to support your corporate vision and fulfill your market's needs.

Let's make together the first step towards future and success!

Nikolaos Pantazis
Managing Director International Business

Dimitrios Pantazis
Managing Director Manufacturing

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// We have earned our position to the global market because of our commitment to quality products and well known customer service. If we fail to provide satisfaction to our customers, we forfeit our right to their business. Carbon Zapp's Management and staff loyalty to this business makes it a win-win situation

**Bill Pantazis,
Founder of Carbon Zapp**



Our Company

Carbon Zapp was founded in 1989 by Bill Pantazis. As a leading manufacturer of Automotive Injection Service Equipment and Tools, Carbon Zapp has its Headquarters and Production Plant in Athens, Greece and a constantly growing global network in every continent. Recently, the company expanded in Germany by establishing its OEM business administration offices.

Through a wide range of innovative products, including injector and pump test benches for Diesel and Gasoline High Pressure injection systems, Engine service equipment and tools, Carbon Zapp offers high quality equipment and customer service to automotive dealers, workshops and educational institutions, as well as for specialized developers, remanufacturers and most major automotive OE's. Carbon Zapp uses over 40% of its profits to update existing products with newer technological advancements and aims to provide simpler methods and tools for a safer environment.

Carbon Zapp today is the Authorized global partner for Diesel Specialists to Diagnose and Service CRDi systems, holding the unique technology to correctly control with Energy and accurately test Continental / VDO systems.

Our Mission

Carbon Zapp aims to provide user friendly, compact and time saving solutions to a wide range of operators, focusing in the automotive injection systems.



**BUILDING
THE FUTURE
OF AUTOMOTIVE
INJECTION
SERVICE TODAY**



/// Our Customers

Diesel Service Centers
Auto Workshops /Dealerships
Automotive Aftermarket OEM's
Parts Remanufacturers
Automotive OE's
Developers

**/// Let's Connect and Discover
Future Opportunities.**

**/// We Provide Authorized
Solutions for Continental/VDO**

Continental 



Innovation Driven Company

"Innovation" is the key to continuous growth and competitive advantage. Carbon Zapp "Drives" its research team to keep a high ambition level and work on their research, development and technical skills.

On an annual basis, the company invests more than 40% of its profits on research and development for upgrading existing and implementing new products. Carbon Zapp has fostered an extensive group of intellectual property and talented personnel throughout the years. Strategic agreements and world-class component suppliers have contributed in developing advanced technologies & products.

Support

At Carbon Zapp, customer satisfaction is a major priority. The staff offers the best service to increase customer trust, earn their loyalty and built their respect. The key to this success is to acknowledge the customers' needs and listen to them.

Global Sales Network

With a logistics center in Carbon Zapp can effectively export its products globally in continents and over 98 countries. The products are trusted internationally for their world class quality and unique capabilities. Carbon Zapp takes pride in consistently delivering premium products and reliable customer services.



CloudX is Carbon Zapp IoT Cloud computing Platform.

**Powerful innovations at your fingertips
with CZ CloudX computing Platform**

CZ CloudX computing technology Platform as a service (PaaS) is a complete environment in the cloud, with resources that enable clients the full control of their Bench with cloud based Apps access them over a secure Internet connection. With middleware, development tools, business intelligence (BI) services, database management systems and more.

CloudX allows clients to access live online updates of database, remote operation and status report of their bench. Generate remote reports for handling, printing, filling and organizing from machine database. Instant activation of features on a pay-as-you-go basis. Multiple machines management support. Complete machine cloud back-up and instant trouble shooting via X-Connect directly from CZ factory. Receive notifications on your smart devices for machine maintenance tasks like Oils, Filters, Service, and more.

Explore today new powerful innovations at your fingertips with CZ CloudX computing Platform.

CloudX Features



IoT Cloud Platform Industry 4.0

Remote Operation and Status Report of Client Bench

Generating remote reports for handling, printing, filing and organizing from machine database

Multiple machines management

Instant Activation of Features on a pay-as-you-go basis

Notifications on Client smart devices for machine maintenance tasks like Oils, Filters, Service, and more

Complete machine cloud back-up

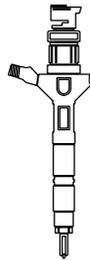
Instant troubleshooting via CX-Connex directly from CZ Factory

Live Online Updates of Database and supporting new requests from clients

INDEX BY SYSTEM



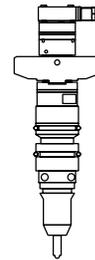
Explore our complete range of Automotive Injection Service Solutions both for Specialist and Workshops thought the supporting Systems & find your next best match.



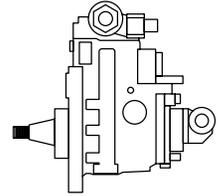
CRDI



EUI/EUP



HEUI



CRP

PAGE	MACHINES	DIESEL			
14-25	MTBr-X	•	•	•	•
26-29	PTBr-X				•
30-35	ITB.4R-X	•			
30-35	ITB.1R-X	•			
36-37	DGFR-X	•			
40-45	ETBr-X	•	•	•	•
46-51	HTBr-X			•	
52-57	GTB.4R-X				
58-61	GDU.4R-X				
62-63	ACCESSORIES				
66-67	DSR-X	•			
68-69	GDR-X				
70-71	GS4				
70-71	GS8				
72-73	ES-X				
73	EP-X				
74	FST	•	•	•	
74	FST-HF				
74	HP-G2500	•			•
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75	CRMK-110	•			
75	PIMK-010	•			
75	DIT-062	•			

SPECIALISTS

WORKSHOPS

CRDi
Common Rail Diesel Injectors

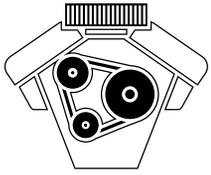
EUI
Electronic Unit Injectors

EUP
Electronic Unit Pumps

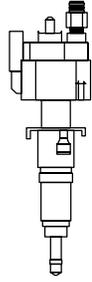
HEUI
Hydraulic Electronic Unit Injectors

CRp
Common Rail Diesel Pumps

Engine
Diagnostic and Service Solutions



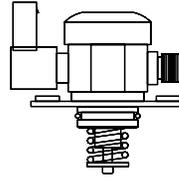
ENGINE



GDi INJECTORS



EFi INJECTORS



GDi PUMPS



CONTINENTAL \ VDO

DIESEL/GASOLINE	GASOLINE			AUTHORIZED	MACHINES
	•		•	•	MTBR-X
			•		PTBR-X
	•			•	ITB.4R-X
	•			•	ITB.1R-X
	•			•	DGFR-X
	•	•	•		ETBR-X
			•		HTBR-X
	•		•		GTB.4R-X
	•				GDU.4R-X
					ACCESSORIES
					DSR-X
	•	•			GDR-X
	•	•			GS4
	•	•			GS8
•					ES-X
•					EP-X
•	•	•	•		FST
•	•	•	•		FST-HF
•			•		HP-G2500
•	•		•		HP-G250
•					CRPT-110
•					CRMK-110
•					PIMK-010
•					DIT-062

GDi
Gasoline Direct Injectors

EFi
Electronic Fuel Injectors

GDi Pumps
Gasoline Direct Injection HP Pumps

Continental /VDO
Authorized Solutions for EU3, EU4
and EU5 Diesel Injectors



INDEX BY PRODUCT



Browse our catalog by Product and find your next best match for all your needs through Carbon Zapp's new full improved XSeries benches, a complete range of Automotive Injection Service Solutions both for Specialists and Workshops.

SPECIALISTS



MTBR-X
SPECIALISTS

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PTBR-X
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LTBR-X
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ITB.4R-X
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ITB.1R-X
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GDU.4R-X
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INNOVATION TO DRIVE FORWARD MOBILITY SOLUTIONS



WORKSHOPS



DSR-X
WORKSHOPS

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GS4
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GS8
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ES-X
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HP-G2500
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HP-G250
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CRPT-110
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CRMK-110
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PIMK-010
WORKSHOPS

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DIT-062
WORKSHOPS

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SPECIALISTS



Discover Diesel and Gasoline Specialists Solutions

Innovative, Compact and Professional Solutions for every Diesel Specialist Workshop to Test and Service All Makes and Types of Heavy Duty, Light Duty and Passenger Car Fuel Injection Systems.

CRDi
Common Rail Diesel Injectors

EUi
Electronic Unit Injectors

EUp
Electronic Unit Pumps

HEUi
Hydraulic Electronic Unit Injectors

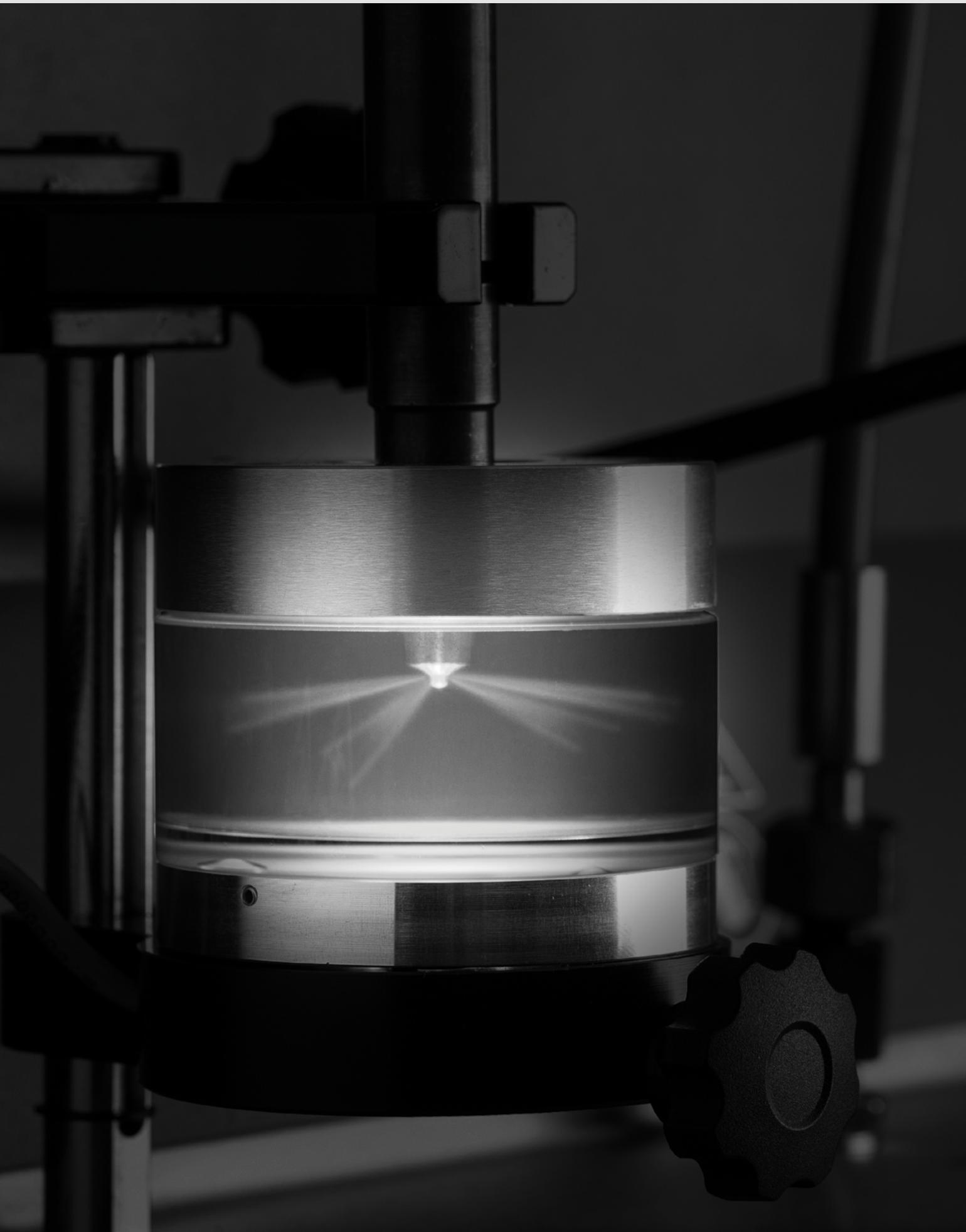
CRp
Common Rail Diesel Pumps

Engine
Diagnostic and Service Solutions

GDi
Gasoline Direct Injectors

EFi
Electronic Fuel Injectors

GDi Pumps
Gasoline Direct Injection HP Pumps



MTBR //X

Diesel System Test Bench

Authorized Solution for Continental/VDO



CloudX



2800Bar+

Standalone Diesel CRDi & GDI Test Benches for Specialists. Handles CR, HEUI, EUI/EUP, GDI injectors and pumps.

The Preferred Diesel Specialists Solution. The Comprehensive Solution for Every Advanced Diesel Service Center.

Overview of the New MTBR-X

Precise, repeatable and rapid Diesel & Gasoline Components Testing

[1] Pump Testing

- 5-15 minutes testing time per pump
- CRp / GDp Pump (All Brands and Types).
- Capable for all EU6 technologies with Sync Operation such as Denso HP5, Bosch CP4-EU6, VDO EU6 technology and more...
- Heavy-Duty CR pump (CPN5S2, CAT, Cummins HPO etc.)
- Testing of All brands and types PCV's [Pressure Control Valves]
- Testing of All brands and types VCV's [Volume Control Valves]
- Testing of All brands and types of RDS [Rail Pressure Sensors]
- Testing of all types of High Pressure Rails

[4] Injectors Testing & Coding*

- 6-12 minutes testing and coding* time for 4 injectors
- CRi / CRiN / GDi injectors (All Brands and Types).
- Capable for all EU6 technologies such as VCC and NCC technology, iART, PCRS5,
- XPI, F2X and F3X systems and more...
- CRIN 4.2 Heavy Commercial-Vehicle injectors
- Large Diesel Engine CRiN injector (QSK, MTU, L 'Orange, etc...)

[1] HEUi Testing & Coding*

- 6-8 minutes testing and coding* time per injector
- Dynamic and static measurement of the actual overflow
- Dual-Coil HEUi Injector testing capable
- Accurate and automatic measurement of the NOP without disassembling the injector

[1] EUI/EUp Testing & Coding* (requires HK1400A Cambox)

- 6-10 minutes testing and coding* time per injector
- Capable for all EU6 technologies
- Expandable to Future Systems

CGL - Authorized Continental / VDO "Blind-Lift" Measurement of Piezo-Stack

*New database and Coding is continuously being updated to new EU6 applications

SPECIALISTS

CRDi - EUi/EUP - HEUi - CRP
ENGINE - GDi - EFi - GDi Pumps



Setting the Benchmark for Test Benches

→ Our expertise, experience & innovative thinking brought together a New Design, Advanced Hardware & Upgraded Software for our New **MTBR-X**

SPECIALISTS

CRDi - EUI/EUP - HEUI - CRP
ENGINE - GDi - EFi - GDi Pumps



- 01.
DIESEL CRDI TESTING & CODING

- 02.
GASOLINE GDI INJECTOR
TESTING & CODING

- 03. DIESEL UNIT INJECTION
SYSTEMS TESTING/CAMBOX

- 04. GASOLINE GDI PUMP TESTING

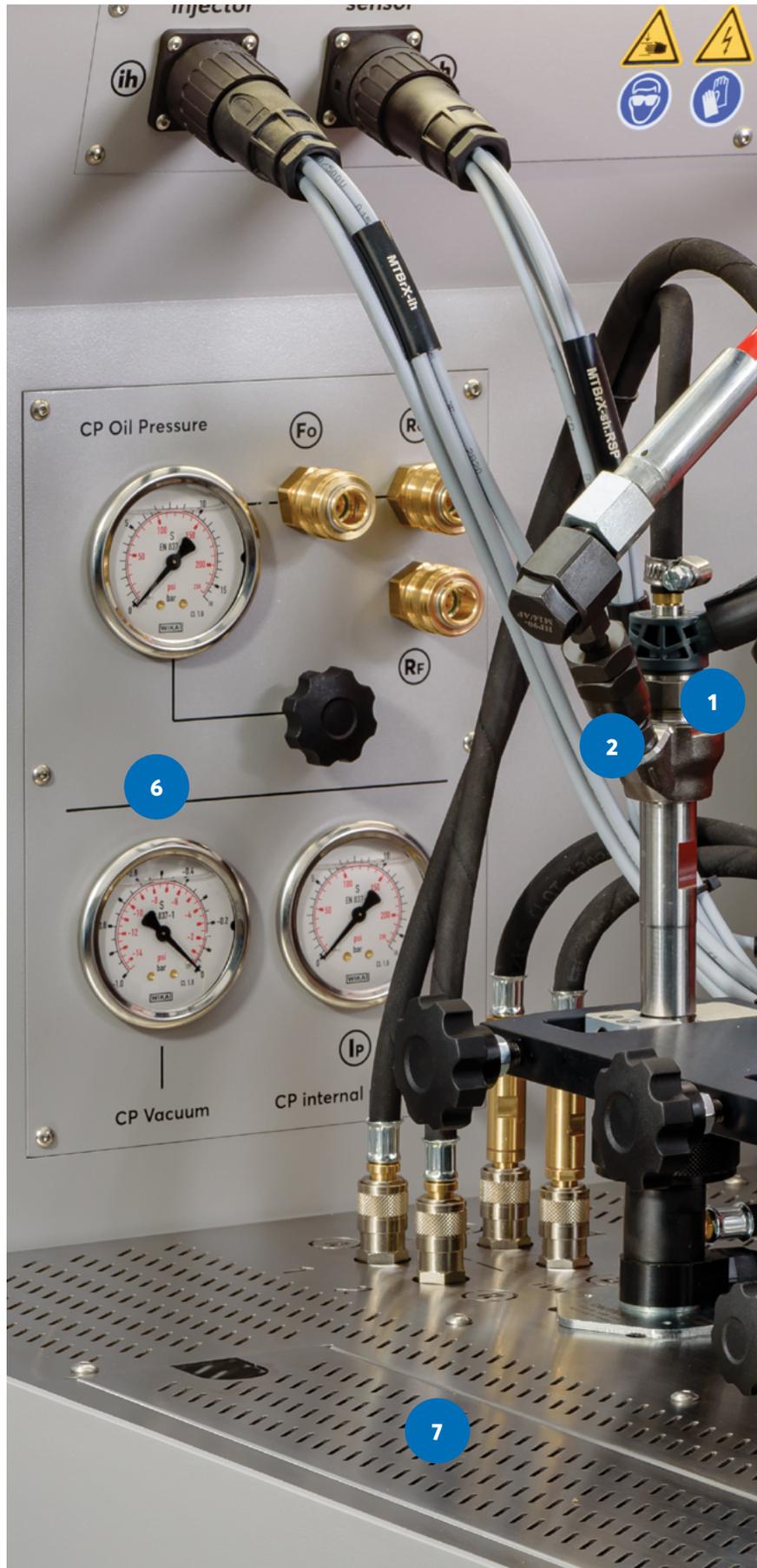
- 05. DIESEL CR PUMP TESTING

- 06. LOW SUPPLY PRESSURE/
SUCTION PERFORMANCE

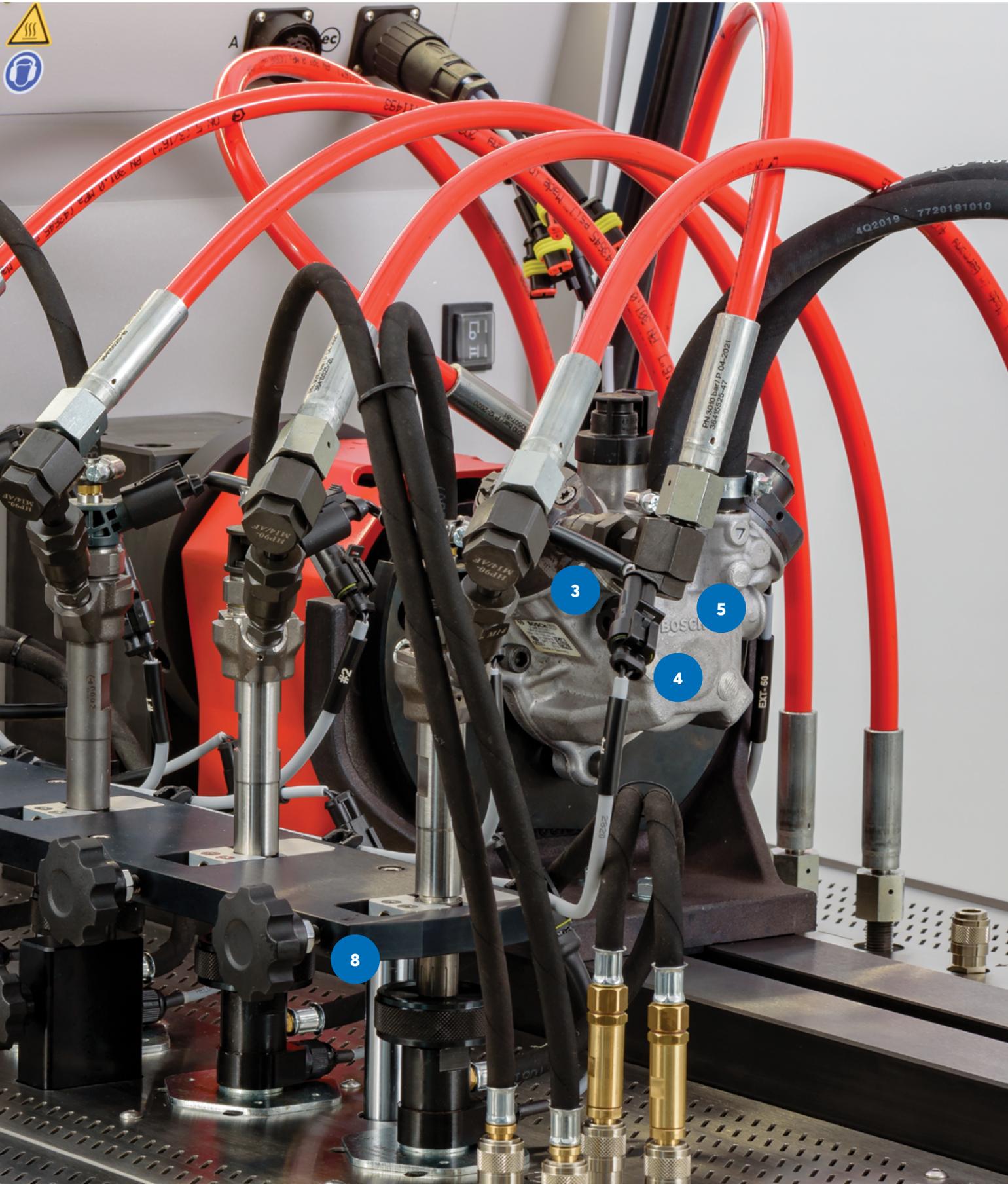
- 07. EASILY ACCESSIBLE
FILTERS & WASTE AREA

- 08. HEUI
TESTING & CODING

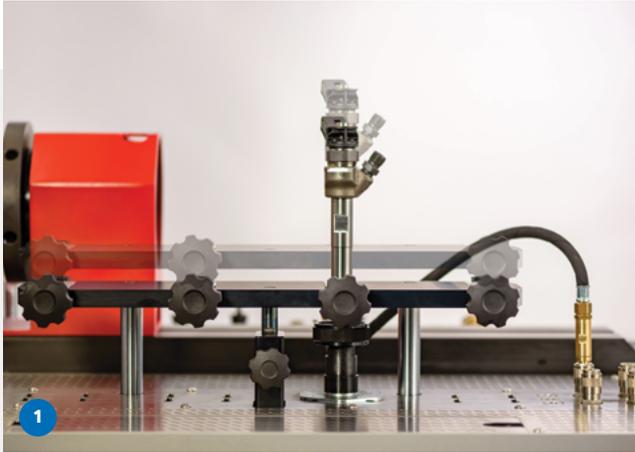
Detailed information on next page



*New database and Coding is continuously being updated to new EU6 applications

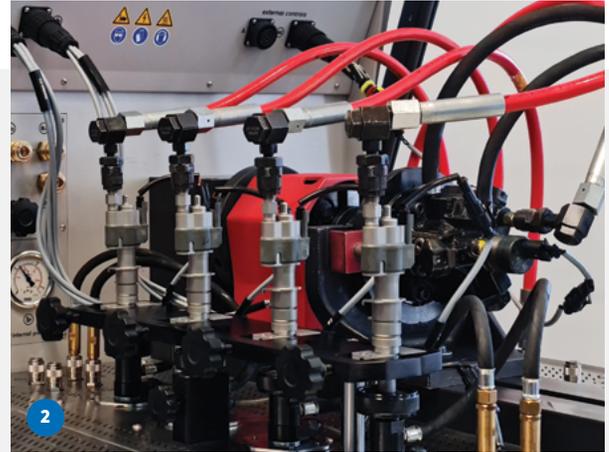


MTBR **X** → Points



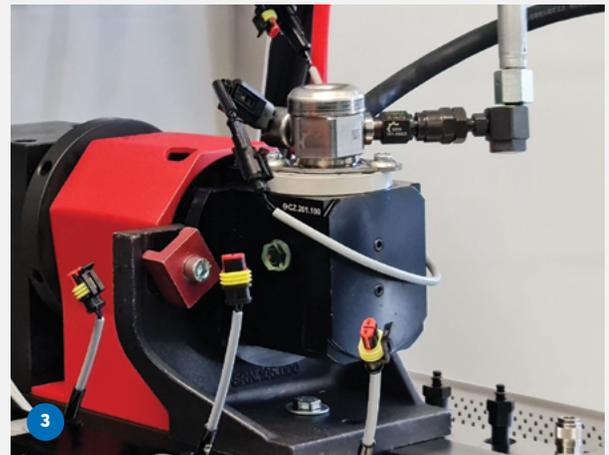
01.
Diesel CRDI Testing & Coding

Ergonomic, Fast and Easy Injector Clamping device to minimize mounting times. Fully Adjustable height for all types of CR injectors. Utilizes a spring-loaded injector holder to ease the operation of the user.



02.
Gasoline GDI Injector Testing and Coding

Quick and Easy Injector Clamping device with adjustable height to fit all types of adapters for Gasoline Direct injectors. Unperceivable testing capabilities, adaptability, global database and coding for newer EU6 applications* as well as for the widely available Siemens/VDO piezo injectors (for BMW) in the market today.



03
Gasoline GDI Pump Testing

The New MTBRX is the first machine in the world to fully test and diagnose faulty GDI (Gasoline Direct Injection) Pumps. Adaptability and operation for All Types and Makes.

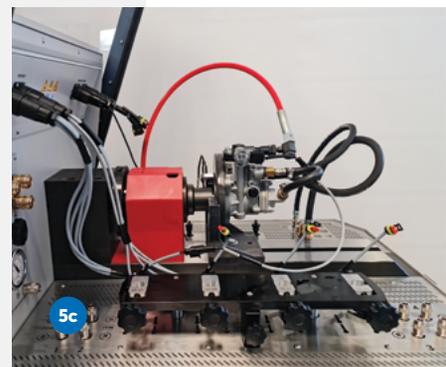
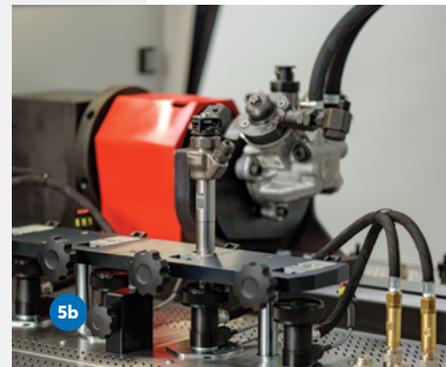
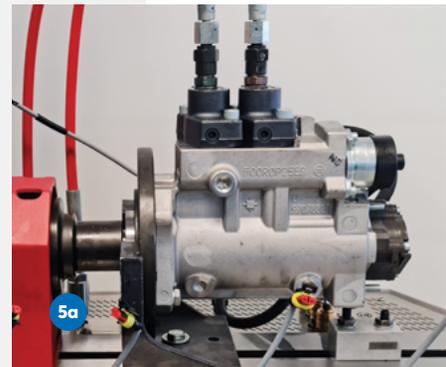
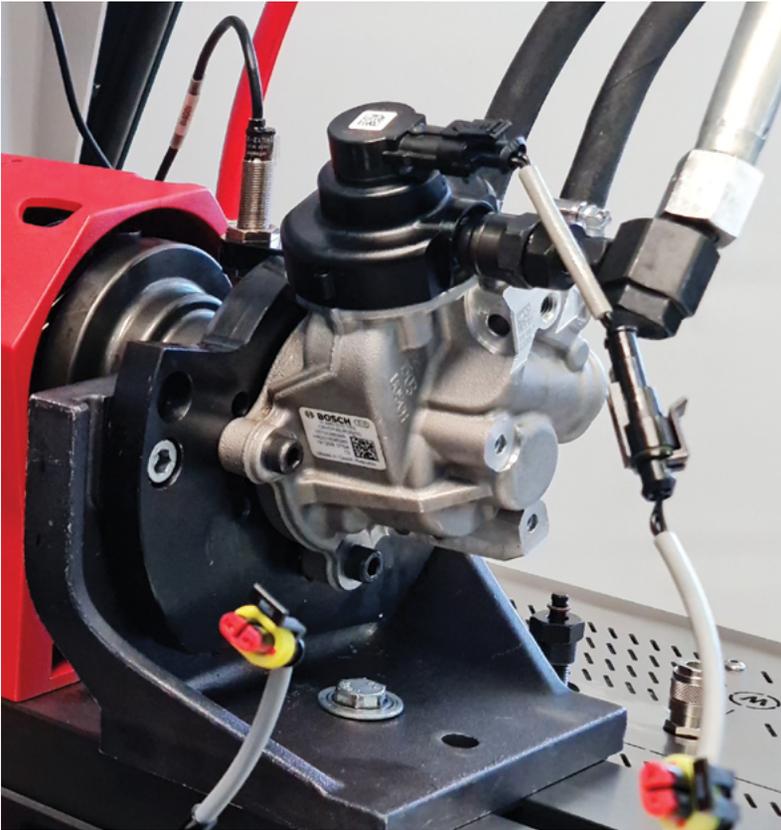
04.
Diesel Unit Injection Systems Testing/Cambox

EUI and EUP testing and coding with OE standards is now made as simple as testing a CR injector. Smart Pumps and Injectors testing and coding (EU6) has never been so accurate, repeatable and correct. Hartridge's HK-1400A Base Cambox optimized and upgraded with our ingenuity to meet all the standards of today's revolution in Medium and Heavy Duty Diesel Unit Systems.



SPECIALISTS

CRDi - EUi/EUP - HEUi - CRP
ENGINE - GDi - EFi - GDi Pumps



05.

Diesel CR pump testing

A well proven pump coupling apparatus provides the flexibility needed for future upgrades, as well as the quick coupling and versatility for today's All-Makes CR pumps. Capable to test all EU6 Common Rail pumps with sync control valve function.

5a: CPN5S2 and other **Heavy-Duty** CR Pump applications require high Power, high Torque and responsive correction of the machine's power transfer through the transmission and flywheel. The New MTBR-X is specifically designed to efficiently test these systems.

5b / 5c: EU6 Generation Common Rail Pump testing:

- Denso HP5S/D, HP6, HP7,
- Bosch CP4 new Euro6,
- Continental /VDO new Euro6
- and every other Euro 6 CR Pumps that operate by timing correctly the discharge quantity control valve(s).

The New **MTBR-X** advanced electronics and modern technology provides this unique testing capability for today's and next generation CR pumps.

MTBR **X** → Points

Capable to efficiently Diagnose and fully Calibrate all Makes and Types of CRDi's, EUI's, EUP's, HEUI's, CR-pumps, GDi-pumps and GDi injectors.



06.

Low Supply Pressure/Suction Performance

Measures the inlet pressure made by the supply pump or the vacuum produced by the pump itself. Important diagnostic information for many types of pumps and even for newest EU6 generation pumps.

07.

Easily Accessible Filters & Waste Area

Quick access to all inline filters for fast check-up and replacement located within your working area. A mess-free compartment to work at, continuously draining to the waste tank.



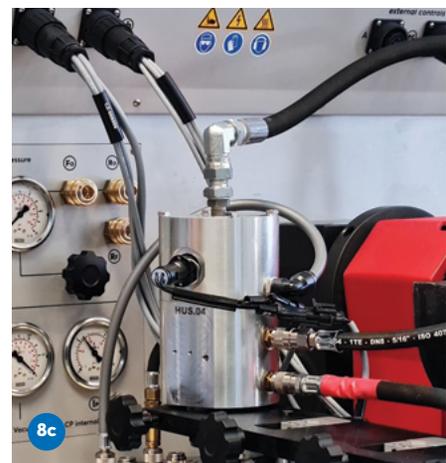
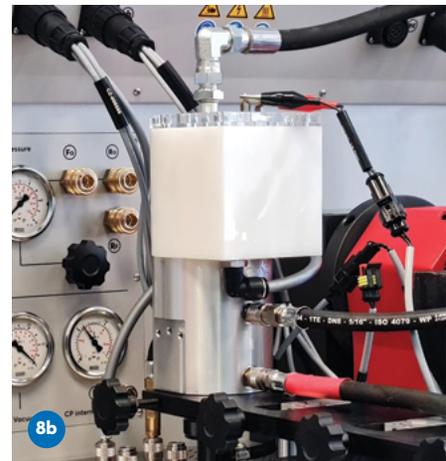
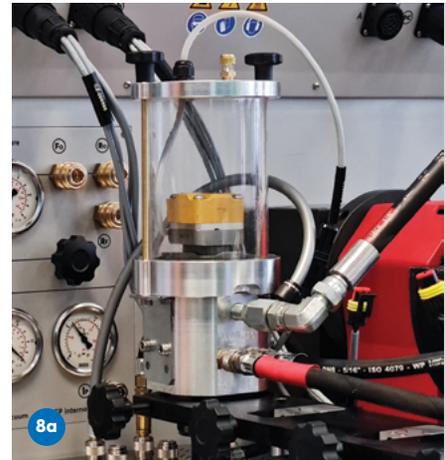
Scan to visit our YouTube channel and watch CZ Test Benches tutorials, training and product videos.





SPECIALISTS

CRDi - EUi/EUP - HEUi - CRP
ENGINE - GDi - EFi - GDi Pumps



08. HEUi testing and coding*

Pre-order your MTBR-X ready to test and code* HEUi injectors according to the OE standards. Adaptability and database available to test the majority and the diversity of injectors available in the world today. A unique capability of this add-on feature is to save space and cost from an additional standalone unit.

8. CAT C7/C9 testing and coding*. Measuring discharge and actual overflow at different loads to optimally diagnose faults and characterize the injector to generate the correct trim file for coding where applicable. Additional unique dynamic measurement of the NOP without disassembling the nozzle.

8a. CAT C7/C9 testing and coding*.

8b. CAT 3126/Navistar.

8c. Ford Power Stroke 6.0L / 7.3L*. Efficiently controlling the dual-solenoid control poppet valve .

8d. Isuzu Trooper.

MTBR //X EXPANDING CAPABILITIES



Space saving, accessory organizers for everyday tasks. Increased productivity and uncluttered space.

01.

Desk & Harness Shelf

02.

Hydraulic Hose Side Panel Pocket with Drain



03.

CZ Base Trolley

Ideal workshop organizer to fit most parts of the machine like harnesses, hoses, adapters, tools and flanges. Can be easily transformed to a Cambox and/or pump rack for easy transfer and storing.



*New database and Coding is continuously being updated to new EU6 applications

SPECIALISTS

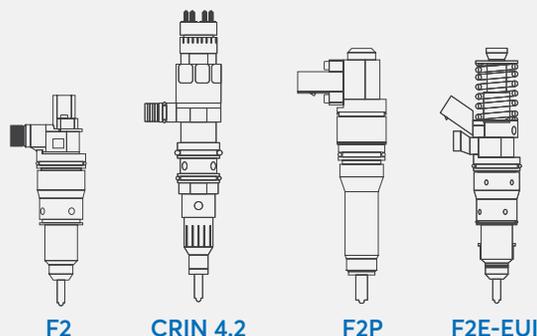
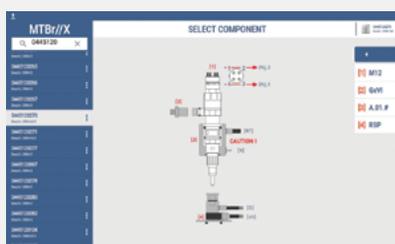
CRDi - EUi/EUP - HEUi - CRP
ENGINE - GDi - EFi - GDi Pumps



SPECIALISTS

CRDi - EUI/EUP - HEUi - CRP
ENGINE - GDi - EFi - GDi Pumps

AZO SOFTWARE



EU6 Technologies

→ Features

- A **Continental/VDO Authorized** Test Bench
- Xtremely Fast Testing Times without any Compromise
- New Design for every Service Station
- Optimized Working Area access [240o] & Component Set-up Times
- 2800Bar Operating Pressure
- EU6 Systems Testing and Coding*
- CloudX** Capabilities
 - Coding capability for all brands and types available in the market today. Bosch, Denso, Delphi, Continental /VDO, CAT, Cummins*, John Deere, ISUZU*, HINO*, KOMATSU*, E1/ E3/ DAF/ Smart Pump, F2X and F3X (Beta) technologies and more added every day...
 - Off-Highways CR applications testing and coding (John Deere, Komatsu, Hino, Isuzu)
 - Cummins XPI*, Caterpillar-Perkins C4/C6 and other Medium and Heavy-Duty testing and coding
 - Advanced water-cooling or air-cooling system to optimize long term nonstop operation at all environmental conditions.
 - Live Response Time Measurement at every test plan
 - BIP Actuation Measurement for all Heavy-Duty type solenoids (EUI & CR)
 - Adaptability for every type of Diesel Injectors in the market
 - Continuous Database updates and new Software capabilities to meet the market needs.
 - Android Powered 15.6' HMI with unlimited flexibility and connectivity competencies.
 - Injector & Pump flushing feature pre-installed



*New database and Coding is continuously being updated to new EU6 applications

MTBR  **SPECIFICATIONS**

	DESCRIPTION	UNIT	MTBRX-A (CZ-008713)	MTBRX-W (CZ-008783)	
Machine Type	Cooling System	A / W	AIR	WATER	
Machine Dimensions	Length	mm	950	950	
	Width	mm	1300	1300	
	Height	mm	1610	1610	
Weight		kg	571	573	
HMI	Tablet Touchscreen	Inches	15	15	
Pressure Source	Type	Motor Driven High Pressure CR Pump			
Test Oil	Type	(DxL-ISO) ISO4113 Calibration Oil			
Test Oil for CPL / EZO	Type	Engine Oil (0W-40 / 10W-40 / 15W-50)			
EZO Oil Tank	Capacity	Liters	0.7	0.7	
CPL Oil Tank	Capacity	Liters	5	5	
Test Oil Tank	Capacity	Liters	44	44	
Flush Tank	Capacity	Liters	11	11	
Max Pressure	Pressure	Bar	2800	2800	
Max RPM	Max Revolutions Per Minute	RPM	4000	4000	
Max Pumps	Diesel Pumps	Slots	1	1	
	Gasoline Pumps	Slots	1	1	
Max Injectors	Test Injectors	Slots	4	4	
		Types	"4 CRI / 4 GDI / 1 HEUI / 1 EUI-EUP"	"4 CRI / 4 GDI / 1 HEUI / 1 EUI-EUP"	
LP Pump	Supply Pressure	Bar	0.1 / 5.4	0.1 / 5.4	
CP Vacuum	CP Vacuum Gauge	Bar	0 / -1	0 / -1	
CP IP	CP Internal Pressure Gauge	Bar	0 / 16	0 / 16	
CPL Pressure	CP Oil Pressure	Bar	0.1 / 8	0.1 / 8	
Air Supply	Pressure	Bar	-	-	
	Air Flow	Lt/ Min	-	-	
	Phases	Number	3P	3P	
Main Power Supply		TYPE	PE	PE	
	Voltage	VAC	380-480	380-480	
	Frequency	Hz	50/60	50/60	
	Current	Ampere	32	32	
Motor	Max Consumption	kVA (380V/480V)	21 - 26.6	21 - 26.6	
	Model		TYPE	AK132-4	
	RPM		RPM 50 / 60Hz	1450 / 1740	1450 / 1740
			KW 50 / 60Hz	13 / 15.6	13 / 15.6
	POWER		HP 50 / 60Hz	17.5 / 21	17.5 / 21
		Connection Δ	Ampere (50HZ)	400 V:24.4 A	400 V:24.4 A
Water Supply		Ampere (60HZ)	480 V: 24.4A	480 V: 24.4A	
	Max Input pressure	Bar	-	4	
	Max Output Pressure	Bar	-	1Bar< Input Pressure	
	Min Input Temperature	Celsius	-	5	
	Max Input Temperature	Celsius	-	15	
	Min Diameter In/Out Water Hose	mm	-	10	
	Water Tank Capacity	Liters	-	17	
	Max Water Flow	Lt / Min (4Bar)	-	4	
	Min Water Output Temperature	Celsius	-	5	
	Max Water Output Temperature	Celsius	-	65	
	Delta T	Celsius	-	0-50	
		Max Cooling Efficiency "Debit" [27.2 liters of 5° C water in order to Cool Down the Test Oil from 43° C to 36° C (1.6 tank cycles)]	Tank Cycles	-	1.6
	Operating Temperature	Min / Max Room Temperature	Celsius	6 / 23	6 / 30
	IVM Sensors	Measurement Sensors	Type / Quantity	XKM / 4 *	XKM / 4 *
		Type / Quantity	DFM500 / 1**	2/9/23	



 - : N/A
 A: Air Cooling
 W: Water Cooling
PRESSURE SOURCES
 Motor: Motor Driven High Pressure CR Pump
 Elect. Pump: Fuel Injection system or Industrial Application Electrical Pump 12VDC

APPLICATIONS
 Passenger Car/ Motorcycles: Volumes up to 1200mm³/H
 Light Duty: Volumes up to 2000mm³/H
 Medium Duty: Volumes up to 3000mm³/H
 Heavy Duty: Volumes up to 6500mm³/H
 Marine: Volumes up to 15000mm³/H

MEASUREMENT SENSORS
 XKM: Dynamic Measurement Sensor; High Accuracy ± 0.1%, Exceptional Repeatability +0.05%, Measur. Range: 1-10000ml/min
 DFM 500: Dynamic Measurement Sensor; Accuracy ± 1%, Repeatability 0.5%, Measurement range: 5-500l/min
 DFM 50: Dynamic Measurement Sensor; Accuracy ± 1%, Repeatability 0.5%, Measurement range: 0.5-50l/min

PTBR //X

—————→
Diesel System Test Bench

CloudX

The Comprehensive Diesel Specialists Solutions for Testing Diesel Common Rail and Gasoline GDi Pumps.



2800Bar+

Standalone Diesel CR
& Gasoline GDi Pump
TestBench for Specialists

SPECIALISTS

CRDi - EUI/EUP - HEUI - **CRP**
ENGINE - GDi - EFi - **GDi Pumps**

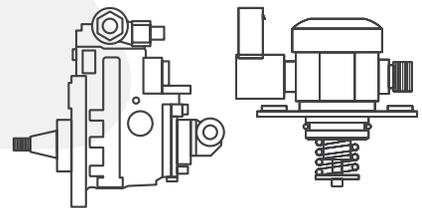
Overview of the New PTBR-X

Precise, repeatable and rapid Diesel & Gasoline High Pressure Pump Testing

[1] Pump Testing

- 5-15 minutes testing time per pump
- CRp / GDp Pump (All Brands and Types).
- Capable for all EU6 technologies with Sync Operation such as Denso HP5 / HP6 / HP7, Bosch CP4-EU6, VDO EU6 technology and more...
- Heavy-Duty CR pump (CPN5S2, CAT, Cummins, HP0 etc.)
- Testing of All brands and types PCV's [Pressure Control Valves]
- Testing of All brands and types VCV's [Volume Control Valves]
- Testing of All brands and types of RDS [Rail Pressure Sensors]
- Testing of all types of High Pressure Rails

EU6 Technologies



→ Features

Xtremely Fast Testing Times without any Compromise

New Design for every Service Station

Optimized Working Area to reduce Pump Set-up Times

2800Bar+ Operating Pressure

EU6 Systems Testing CloudX

Setting the Standard for Diesel & Gasoline High Pressure Pumps Test Benches

→ Our expertise, experience & innovative thinking brought together a New Design, Advanced Hardware & Upgraded Software for our New **PTBR-X**.

PTBR X → Points

SPECIALISTS

CRDi - EUi/EUP - HEUi - **CRP**
ENGINE - GDi - EFi - **GDi Pumps**



01. Gasoline GDI Pump Testing

The New PTBR-X is the first machine in the world to fully test and diagnose faulty GDI (Gasoline Direct Injection) Pumps. Adaptability and operation for All Types and Makes.

02. Low Supply Pressure/Suction Performance

Measures the inlet pressure made by the supply pump or the vacuum produced by the pump itself. Important diagnostic information for many types of pumps and even for newest EU6 generation pumps.

03. Diesel CR pump testing

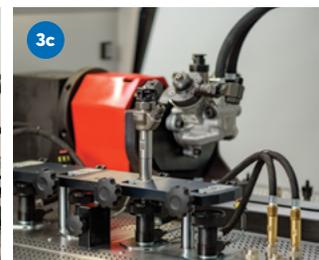
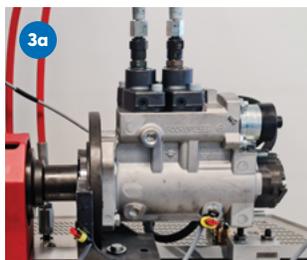
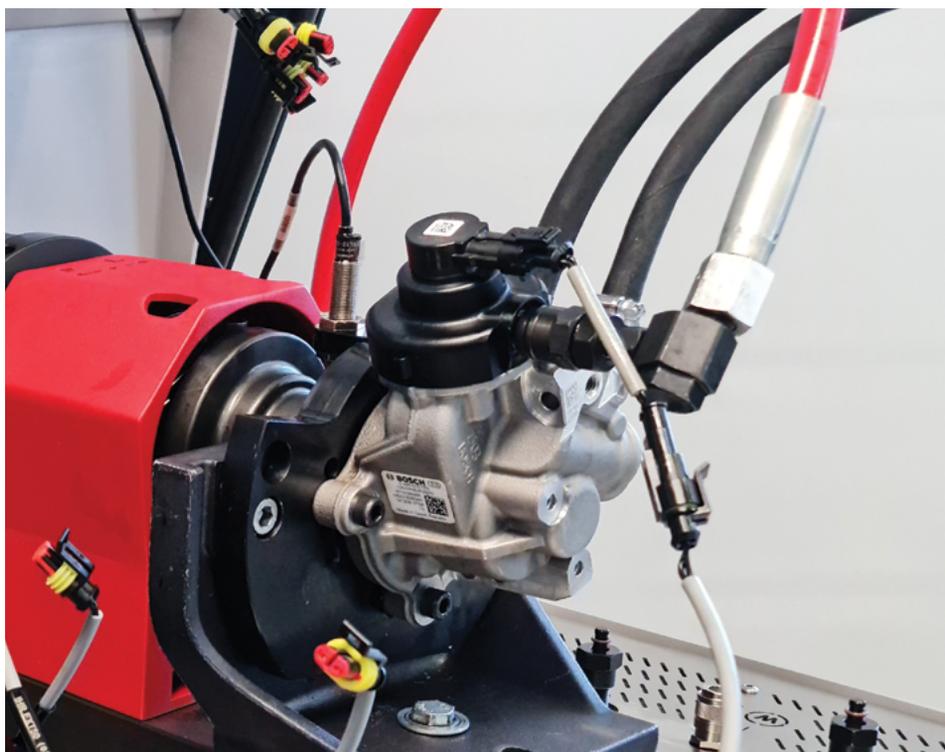
A well proven pump coupling apparatus provides the flexibility needed for future upgrades, as well as the quick coupling & versatility for today's All-Makes CR pumps. Capable to test all EU6 Common Rail pumps with sync control valve function.

3a: CPN5S2 and other Heavy-Duty CR Pump applications require high Power, high Torque and responsive correction of the machine's power transfer through the transmission and flywheel. The New PTBR-X is specifically designed to efficiently test these systems.

3b / 3c: EU6 Generation Common Rail Pump testing:

- Denso HP5S/D, HP6, HP7,
- Bosch CP4 new Euro6,
- Continental /VDO new Euro6
- and every other Euro 6 CR Pumps that operate by timing correctly the discharge quantity control valve(s).

The New **PTBR-X** advanced electronics and modern technology provides this unique testing capability for today's and next generation CR pumps.



*New database and Coding is continuously being updated to new EU6 applications

PTBR  → SPECIFICATIONS

DESCRIPTION		UNIT	PTBRX-A (CZ-008715)	PTBRX-W (CZ-008785)
Machine Dimensions	Length	mm	950	950
	Width	mm	1300	1300
	Height	mm	1610	1610
Weight		kg	520	522
HMI	Tablet Touchscreen	Inches	15	15
Pressure Source	Type	Motor Driven High Pressure CR Pump		
Test Oil	Type	(DxL-ISO) ISO4113 Calibration Oil		
Test Oil for CPL / EZO	Type	Engine Oil (0W-40 / 10W-40 / 15W-50)		
EZO Oil Tank	Capacity	Liters	0.7	0.7
CPL Oil Tank	Capacity	Liters	5	5
Test Oil Tank	Capacity	Liters	44	44
Flush Tank	Capacity	Liters	11	11
Max Pressure	Pressure	Bar	2800	2800
Max RPM	Max Revolutions Per Minute	RPM	4000	4000
Max Pumps	Diesel Pumps	Slots	1	1
	Gasoline Pumps	Slots	1	1
Max Injectors	Test Injectors	Slots	-	-
		Types	-	-
LP Pump	Supply Pressure	Bar	0.1 / 5.4	0.1 / 5.4
CP Vacuum	CP Vacuum Gauge	Bar	0 / -1	0 / -1
CP IP	CP Internal Pressure Gauge	Bar	0 / 16	0 / 16
CPL Pressure	CP Oil Pressure	Bar	0.1 / 8	0.1 / 8
Air Supply	Pressure	Bar	-	-
	Air Flow	Lt/ Min	-	-
	Phases	Number	3P	3P
Main Power Supply		TYPE	PE	PE
	Voltage	VAC	380-480	380-480
	Frequency	Hz	50/60	50/60
	Current	Ampere	32	32
	Max Consumption	kVA (380V/480V)	21 - 26.6	21 - 26.6
Motor	Model	TYPE	AK132-4	AK132-4
	RPM	RPM 50 / 60Hz	1450 / 1740	1450 / 1740
		KW 50 / 60Hz	13 / 15.6	13 / 15.6
	POWER	HP 50 / 60Hz	17.5 / 21	17.5 / 21
		Connection Δ	Ampere (50HZ)	400 V:24.4 A
	Ampere (60HZ)		480 V: 24.4A	480 V: 24.4A
	Max Input pressure	Bar	-	4
	Max Output Pressure	Bar	-	1Bar< Input Pressure
	Min Input Temperature	Celsius	-	5
	Max Input Temperature	Celsius	-	15
Water Supply	Min Diameter In/Out Water Hose	mm	-	10
	Water Tank Capacity	Liters	-	17
	Max Water Flow	Lt / Min (4Bar)	-	4
	Min Water Output Temperature	Celsius	-	5
	Max Water Output Temperature	Celsius	-	65
	Delta T	Celsius	-	0-50
	Max Cooling Efficiency "Debit" [27.2 liters of 5° C water in order to Cool Down the Test Oil from 43° C to 36° C (1.6 tank cycles)]	Tank Cycles	-	1.6
	Operating Temperature	Min / Max Room Temperature	Celsius	6 / 23
IVM Sensors	Measurement Sensors	Type / Quantity	DMF50 / 1 *	DMF50 / 1 *
			DFM500 / 1**	2/9/23



 : N/A
 A: Air Cooling
 W: Water Cooling
PRESSURE SOURCES
 Motor: Motor Driven High Pressure CR Pump
 Electr Pump: Fuel Injection system or Industrial Application Electrical Pump 12VDC

MEASUREMENT SENSORS
 DFM 500 [Dynamic Measurement Sensor]: Accuracy: ±1%, Repeatability: 0.5%, Measurement range: 5-500l/min
 DFM 50 [Dynamic Measurement Sensor]: Accuracy: ±1%, Repeatability: 0.5%, Measurement range: 0.5-50l/min

APPLICATIONS
 Passenger Car/ Motorcycles: Volumes up to 120mm³/H
 Light Duty: Volumes up to 200mm³/H
 Medium Duty: Volumes up to 300mm³/H
 Heavy Duty: Volumes up to 650mm³/H
 Marines: Volumes up to 1500mm³/H

Production Q2/2025

LTBR //XLarge Engines Diesel
Test BenchCommon Rail
Micro-Pilot Injection Systems**CloudX**

The Premier Professional
Solution for Large
Engines and Heavy-Duty
Diesel Systems.



→
SHIPPING
MARINES
GENERATORS
HD ENGINES
MACHINERY
LOCOMOTIVES
AND MORE

X Series 2024

SYSTEMS TESTED



2-STROKE ENGINES

Wärtsilä X-DF Diesel 2-stroke engines
[Conventional Electronic Injectors and
Pilot Pumps]

MAN ME Diesel 2-stroke engines
[Conventional and Slide-Valve Injectors]

Mitsubishi 2-stroke engines



4-STROKE ENGINES

Wärtsilä Diesel 4-stroke engines Conventional
& Electrical [Injectors and Pilot Pumps (CR / DF)]

MAN Diesel 4-stroke engines Mechanical
& electronic [Injectors and Pilot Pumps (CR / DF)]

HiMSEN [Injectors and Pilot Pumps DF]

YANMAR [Injectors]

DEUTZ [Injectors]

MTU [Electronic Injectors and Pumps]

CAT / MAK [Conventional & Electronic Injectors and
Pumps]

CUMMINS [Electronic Injectors and Pumps]

Daihatsu [Injectors]

Other Auxiliary / Main Engines Systems

All Makes & Types of Light, Medium
and Heavy Duty Modern Diesel Engines



INNOVATION
TO DRIVE
FORWARD
MOBILITY
SOLUTIONS



Heavy Duty Diesel Systems

Setting the Benchmark
for Large Engines Tests
Benches



Building on our expertise and extensive experience,
we have applied innovative thinking to create the new
LTBR-X, which incorporates a cutting-edge design, state-
of-the-art hardware, and enhanced AZO software.



Overview of the New LTBR-X

Advanced Diesel Test Bench Capabilities

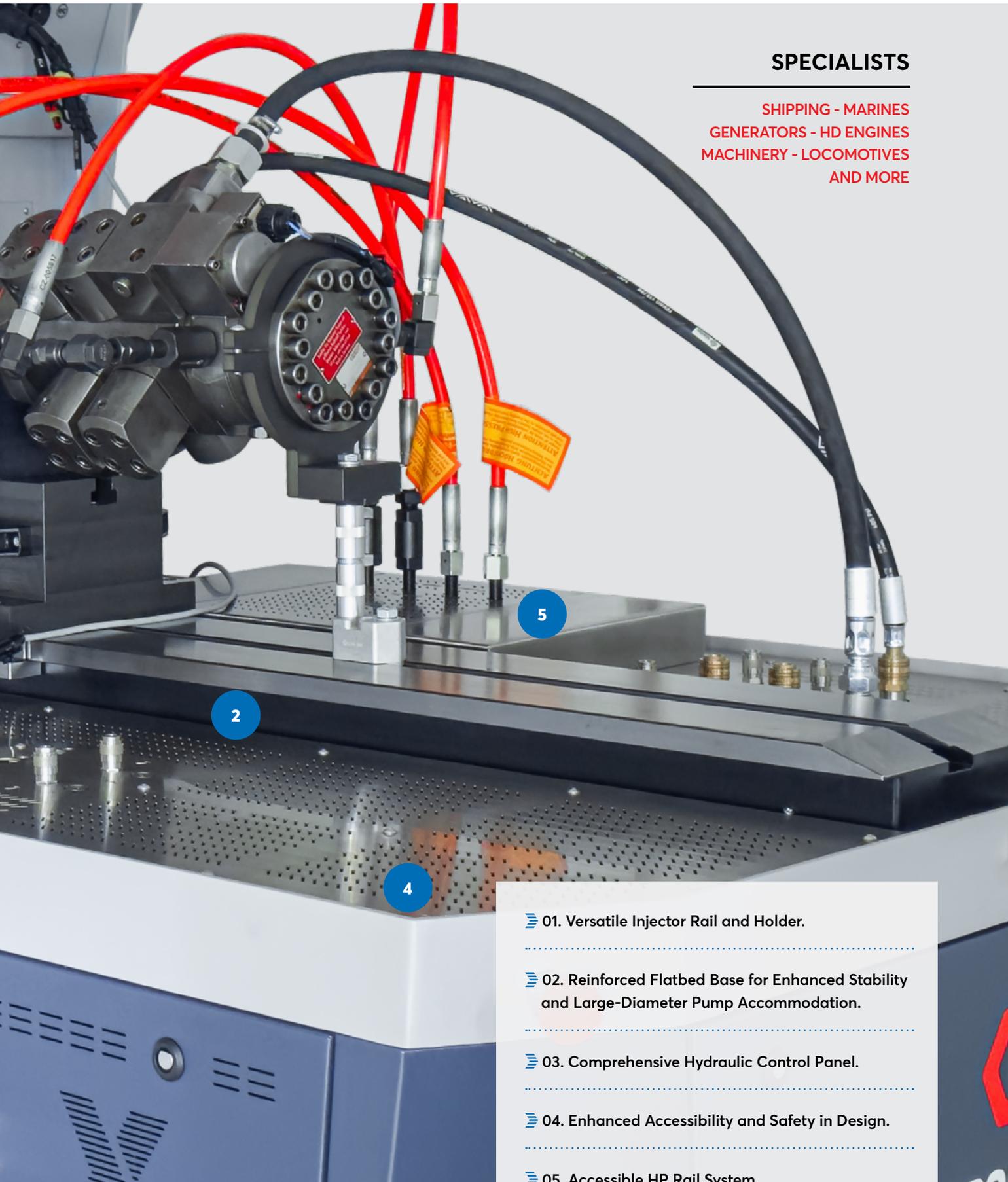
Our state-of-the-art diesel test bench is equipped with the latest technology to deliver precise and comprehensive diagnostics for fuel injection systems. Key functionalities include:

- **Cambox Integration (Optional):** Allows for advanced testing features requiring cambox connectivity.
- **Electronic Flow Rate Measurement:** Accurate measurement of flow rates across various test plans (iVMs), with Integrated Synchronous Acquisition (ISA) detection.
- **Injector Coding:** Supports calibration data generation and trim file creation (IC) for precise injector performance.
- **Dynamic Spray Pattern Analysis:** Real-time spray pattern analysis within an illuminated spray chamber (dSPR) for detailed injector diagnostics.
- **Automatic Nozzle Opening Pressure Measurement:** Electronic measurement of nozzle opening pressure (aNOP-PCV) for consistent and reliable results.
- **Live Injector Nozzle Response Time Measurement:** Real-time measurement of injector nozzle response times (RSP) for dynamic performance assessment.
- **Static and Dynamic Leakage Tests:** Electronic measurement of leakage under both static and dynamic conditions (LKT) for comprehensive component evaluation.
- **Volumetric Test Plans for Pumps:** Multiple-load test plans (pVMs) to assess volumetric efficiency under various conditions.
- **Pressure vs. Speed Tests for Pumps:** Conducts pressure versus speed assessments (PvS) to evaluate pump performance across different operating speeds.
- **Speed vs. Pressure Tests for Pumps:** Performs speed versus pressure evaluations (SvP) to determine optimal pump performance parameters.
- **Electrical Valve Diagnosis and Measurement:** Advanced diagnosis and measurement of electrical valve functionality (eRLC) for ensuring system integrity.



SPECIALISTS

SHIPPING - MARINES
GENERATORS - HD ENGINES
MACHINERY - LOCOMOTIVES
AND MORE



≡ 01. Versatile Injector Rail and Holder.

≡ 02. Reinforced Flatbed Base for Enhanced Stability and Large-Diameter Pump Accommodation.

≡ 03. Comprehensive Hydraulic Control Panel.

≡ 04. Enhanced Accessibility and Safety in Design.

≡ 05. Accessible HP Rail System.

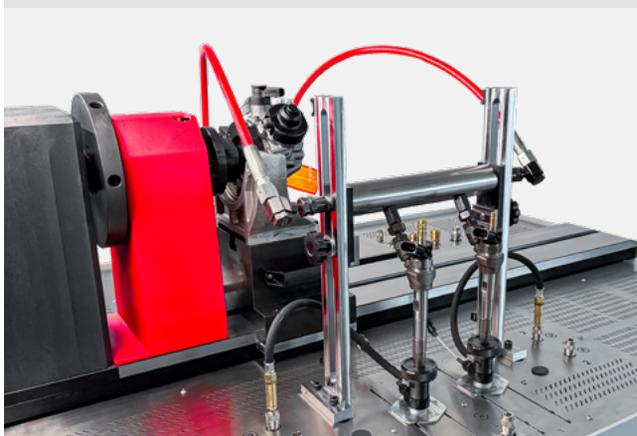
Detailed information on next page

LTBR **X** → Points

01.

Versatile Injector Rail and Holder.

Designed for seamless coupling and compatibility with all types and sizes of diesel injectors, this robust and fully adjustable fixture ensures the quickest and most efficient placement and testing on today's diesel test benches. The inclusion of illuminated multilayer glass chambers enables detailed nozzle and spray pattern analysis during dynamic injector testing. Additionally, integrated Nozzle Response Time measurement sensors provide real-time monitoring of internal component efficiency, optimizing overall test outcomes.



02.

Reinforced Flatbed Base for Enhanced Stability and Large-Diameter Pump Accommodation.

This reinforced flatbed base is engineered for exceptional stability and is specifically designed to accommodate large-diameter pumps. With a central area that exceeds standard industry dimensions, it provides the necessary support for handling oversized components, ensuring precise and reliable testing even for the most demanding applications.



03.

Comprehensive Hydraulic Control Panel.

The machine control panel is an integral component of the diesel test bench, providing comprehensive control over all hydraulic functions necessary for pump testing. From this panel, operators can manage the oil supply to the pumps, as well as regulate and test both the low-pressure supply and the vacuum generated by the 2 pump under examination. The panel also includes the hydraulic oil setup for the Cambox, ensuring reliable operation.

04.

Enhanced Accessibility and Safety in Design.

The machine is designed with ample working space and allows for easy access from 3-sides, enhancing operational efficiency. Additionally, it features a transparent protective hood, ensuring both safety and full visibility during the testing process.

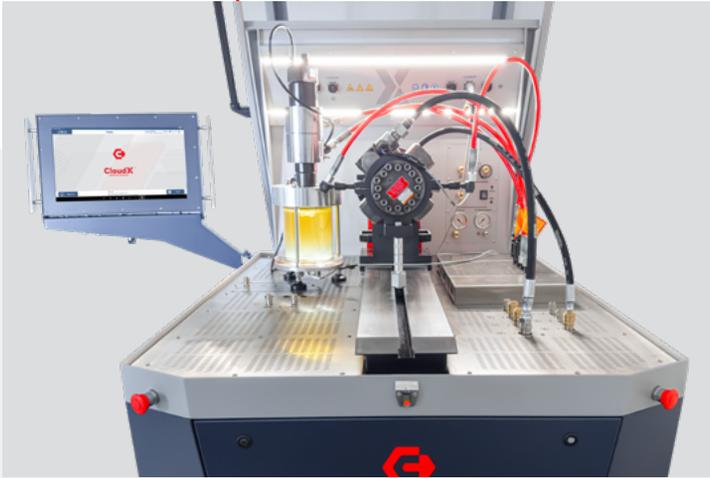
05.

Accessible HP Rail System.

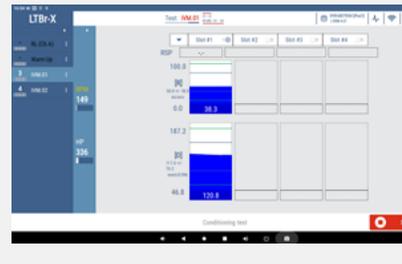
The flatbed of the machine offers convenient access to the high-pressure rails connected to the DRV, which controls the system's high-pressure. This setup is designed to facilitate efficient and accurate maintenance of the machine, ensuring optimal performance and reliability.

SPECIALISTS

SHIPPING - MARINES
GENERATORS - HD ENGINES
MACHINERY - LOCOMOTIVES
AND MORE



AZO SOFTWARE



→ Key Features

01. Versatile Testing Capabilities:

- Primary Engines: Supports testing for Low, Medium, and High-Speed primary engines.
- Dual-Fuel Systems: Equipped to manage the complexities of dual-fuel engine systems with precision.
- Secondary & Auxiliary Engines: Provides thorough testing for all secondary and auxiliary engines currently available in the market.

02. Universal Compatibility:

Designed to test all makes and models of diesel pumps and injectors, ensuring complete versatility across various engine platforms.

03. Precision and Reliability:

Engineered to deliver highly accurate and consistent results, ensuring each test adheres to the highest industry standards for performance and safety.

04. Robust Construction:

Built with heavy-duty materials and components to ensure long-lasting durability, capable of withstanding the demands of rigorous daily operation.

05. User-Friendly Interface:

Features an intuitive control system and advanced software powered by CloudX, simplifying operation and configuration, thereby enhancing productivity and reducing downtime.

06. Scalable and Future-Ready:

Designed with scalability in mind, the bench can be easily upgraded to accommodate emerging Diesel technologies, ensuring long-term relevance and utility.

07. Comprehensive Safety Features:

Incorporates multiple safety mechanisms to protect operators and equipment, in full compliance with industry standards.

This diesel test bench is an essential tool for specialists who require a robust, versatile, and reliable solution for testing a diverse array of diesel fuel system components. Its advanced features and superior build quality make it the ideal choice for professional workshops and testing facilities.



Standalone HD and LE Diesel Test Bench for Specialists

This cutting-edge standalone Diesel Test Bench is meticulously engineered for professionals who demand excellence in fuel system diagnostics and maintenance. Designed to accommodate a wide range of engines and components, it is the definitive solution for comprehensive Diesel Systems testing.

ITB4R //X
 Diesel System Test Bench

Authorized Solution for Continental/VDO



CloudX

» » » »
INNOVATION TO DRIVE FORWARD MOBILITY SOLUTIONS



2800 Bar

Standalone Diesel CRDi Test Benches for Specialists. Available in 2 models for 4 / 1 injectors

*New database and Coding is continuously being updated to new EU6 applications

The Optimum Diesel Specialists CRDi Solution. The Professional's Service Station for All Types and Makes CRDi systems.

Overview of the New ITB.4R-X
 Precise, repeatable and rapid Diesel Injectors Testing

[1 / 4] Injector(s) Testing & Coding*

- 6-12 minutes testing and coding* time for 1 or 4 injectors respectively
- CRi / CRiN injectors (All Brands and Types).
- Capable for all EU6 technologies such as VCC and NCC technology, iART, PCRS5,
- XPI, F2X / F3X Systems and more...
- CRIN 4.2 Heavy Commercial-Vehicle injectors
- Large Diesel Engine CRiN injector (QSK, MTU, L 'Orange, etc...)
- Capable to diagnose failures on GDi Injectors (Optional). Recommended unit for GDi Injector Testing and Servicing is the GTBR-X

Extra Features

Testing of All brands and types of RDS [Rail Pressure Sensors]

Testing of all types of High Pressure Rails (without DRV)

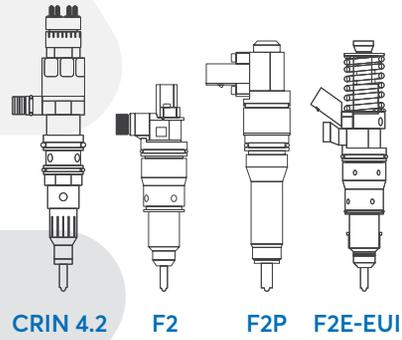
CGL - Authorized Continental / VDO "Blind-Lift"
 Measurement of Piezo-Stack



SPECIALISTS

CRDi - EUI/EUP - HEUI
CRP - ENGINE - GDi - EFI

EU6 Technologies



ITB1R **X**



**A Revolution in
CRDi Test Benches**



Our qualified team, know-how and pioneering thinking developed the New Powerful ITBR-X Generation.

ITB4R **X** → Points



*New database and Coding is continuously being updated to new EU6 applications

ITB4R //X

Diesel System Test Bench

SPECIALISTS

CRDi - EUI/EUP - HEUI - CRP
ENGINE - GDi - EFi - GDi Pumps

**01.****Working Area**

Ergonomic & easily accessible illuminated working space. Fast mounting for all types of Injectors.

02.**Easily Accessible Filters & Waste Area**

Quick access to all inline filters for fast check-up and replacement located within your working area. A mess-free compartment to work at, continuously draining to the waste tank.

03.**Machine Interface**

New CloudX based AZOV3 software features speed, connectivity and expandability in a user friendly environment.

04.**Easily accessible drawer and connection ports.****05.****Functional use of test oil tank enhances maintenance.**

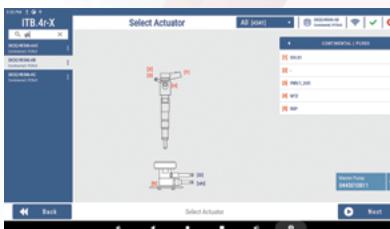
Tank extends to fill-up, drain and clean.



SPECIALISTS

CRDi - EUI/EUP - HEUI - CRP
ENGINE - GDi - EFi - GDi Pumps

AZO SOFTWARE



ITBR - X → Features

A Continental/VDO Authorized Test Bench

Extremely Fast Testing Times without any Compromise

New Design for every Service Station

Optimized Working Area to reduce Injector Set-up Times

2800Bar Operating Pressure

EU6 Systems Testing and Coding CloudX Capabilities

Coding capability for all brands and types available in the market today. Bosch, Denso, Delphi, Continental /VDO, CAT, Cummins*, John Deere, ISUZU*, HINO*, KOMATSU*, F2X and F3X (Beta) EU6 technologies and more added every day...

Off-Highways CR applications testing and coding (John Deere, Komatsu, Hino, Isuzu)

Cummins XPI*, Caterpillar-Perkins C4/C6 and other Medium and Heavy-Duty testing and coding

Ergonomic, Fast and Easy Injector Clamping device to minimize mounting times.

Fully Adjustable height for all types of CR injectors.

Utilizes a spring-loaded injector holder to ease the operation of the user.

Easily accessible filters and waste area

Quick access to all inline filters for fast check-up and replacement located within your working area.

A mess-free compartment to work at, continuously draining to the waste tank.

Advanced water-cooling or air-cooling system to optimize long term nonstop operation at all environmental conditions.

Live Response Time Measurement for all injectors

BIP Actuation Measurement for all Heavy-Duty type solenoids

Adaptability for every type of Diesel Injectors in the market

Continuous Database updates and new Software capabilities to meet the market needs.

Android Powered 15.6' HMI with unlimited flexibility and connectivity competencies.

Injector flushing feature pre-installed



ITB4R //X → SPECIFICATIONS

DESCRIPTION		UNIT	ITB.4RX-A (CZ-008721)	ITB.4RX-W (CZ-008771)	ITB.1RX-A (CZ-008719)	ITB.1RX-W (CZ-008799)	
Machine Dimensions	Length	mm	770	770	770	770	
	Width	mm	800	800	800	800	
	Height	mm	1650	1650	1650	1650	
Weight		kg	292	294	250	252	
HMI	Tablet Touchscreen	Inches	15	15	15	15	
Internet Update	WiFi / Ethernet	-	YES / YES	YES / YES	YES / YES	YES / YES	
Pressure Source	Type		Motor Driven High Pressure CR Pump				
Test Oil	Type		(DxL-ISO) ISO4113 Calibration Oil				
Test Oil Tank	Capacity	Liters	30	30	30	30	
Max Pressure	Pressure	Bar	2800	2800	2800	2800	
Max RPM	Max Revolutions Per Minute	RPM	1850	1850	1600	1600	
Max Pumps	Pumps Test	Slots	-	-	-	-	
Max Injectors	Test Injectors	Slots	4	4	1	1	
LP Pump	Supply Pressure	Bar	0.1 - 5.4	0.1 - 5.4	0.1 - 5.4	0.1 - 5.4	
Air Supply	Pressure	Bar	-	-	-	-	
	Air Flow	Lt/ Min	-	-	-	-	
	Phases	Number	3P	3P	1P	1P	
Main Power Supply		TYPE	PE	PE	P+N / PE	P+N / PE	
	Voltage	VAC	380-480	380-480	220-240	220-240	
	Frequency	Hz	50/60	50/60	50/60	50/60	
	Current	Ampere	16	16	25	25	
Max Consumption		kVA (380V/480V)	10.5-13.3	10.5-13.3	5.5 - 6	5.5 - 6	
		kVA (220V/240V)					
Motor	Model	TYPE	AK100L-4	AK100L-4	AK100L-4	AK100L-4	
	RPM	RPM 50 / 60Hz	1420 / 1700	1420 / 1700	1420 / 1700	1420 / 1700	
	POWER		KW 50 / 60Hz	3 / 3.6	3 / 3.6	3 / 3.6	3 / 3.6
			HP 50 / 60Hz	4 / 4.8	4 / 4.8	4 / 4.8	4 / 4.8
		Connection Δ	Ampere (50HZ)	400 V:6.56 A	380 V: 6.89 A	400 V:6.56 A	380 V: 6.89 A
	Ampere (60HZ)	480 V:6.56 A	460 V: 6.89 A	480 V:6.56 A	460 V: 6.89 A		
Water Supply	Max Input pressure	Bar	-	4	-	4	
	Max Output Pressure	Bar	-	1Bar< Input Pressure	-	1Bar< Input Pressure	
	Min Input Temperature	Celsius	-	5	-	5	
	Max Input Temperature	Celsius	-	15	-	15	
	Min Diameter In/Out Water Hose	mm	-	10	-	10	
	Water Tank Capacity	Liters	-	10	-	10	
	Max Water Flow	Lt / Min (4Bar)	-	4	-	4	
	Min Water Output Temperature	Celsius	-	5	-	5	
	Max Water Output Temperature	Celsius	-	65	-	65	
	Delta T	Celsius	-	0-50	-	0-50	
	Max Cooling Efficiency "Debit" [20 liters of 5° C water in order to Cool Down the Test Oil from 43° C to 36° C (2 tank cycles)]	Tank Cycles	-	2	-	2	
	Operating Temperature	Min / Max Room Temperature	Celsius	6 / 23	6 / 30	6 / 23	6 / 30
	IVM Sensors	Measurement Sensors	Type / Quantity	XKM / 4 *	XKM / 4 *	XKM / 2 *	XKM / 2 *

→

- : N/A
A: Air Cooling
W: Water Cooling

PRESSURE SOURCES
Motor Driven High Pressure CR Pump
Electric Pump: Fuel Injection system or Industrial Application Electrical Pump 12VDC

MEASUREMENT SENSORS
XKM [Dynamic Meas. Sensor]: High Accuracy: ± 0.1%, Exceptional Repeatability: ±0.05%, Measur. Range: 1-1000ml/min

APPLICATIONS
Passenger Car/ Motorcycles: Volumes up to 120mm³/H
Light Duty: Volumes up to 200mm³/H
Medium Duty: Volumes up to 300mm³/H
Heavy Duty: Volumes up to 650mm³/H
Marines: Volumes up to 1500mm³/H

Production Q2/2025

CTBR //X

Compact Diesel CRDi
Test Bench

Approved Activation
Signal for **Continental**

CloudX

The Ultimate Solution
for Diesel Specialists,
Offering Professional
Service and Coding
for All CRDi Systems.



THE NEW CTBR-X IS A
BENCH-TOP, MOTOR-DRIVEN
DIESEL CRDI TEST BENCH
THAT COMBINES COMPACT
DESIGN WITH ADVANCED
INNOVATION, MAKING IT
AN AFFORDABLE SOLUTION
FOR EVERY WORKSHOP.



2500 Bar

**Standalone Diesel CRDi
Test Bench for Specialists.**

XSeries 2024

**New database and Coding is continuously being updated to new EU6 applications*

***Recommended unit for GDI Injector Testing and Servicing is the GTBR-X*

CTBR //X

Compact Diesel CRDi
Test Bench

SPECIALISTS

CRDi - EUI/EUP - HEUI
CRP - ENGINE - GDi - EFi



Overview of the New CTB.R-X

- **Precise Measurement:** Provides accurate, repeatable, and rapid electronic measurement of Diesel CRDi injectors.
- **Efficient Testing:** Testing and coding time is between 8 to 14 minutes.
- **Operational Specifications:** Single-phase 50/60Hz VFD motor-driven; NO Air supply required.
- **Injector Compatibility:** Supports All Makes & Types CRi/CRiN injectors.
- **Technology Support:** Compatible with all EU6 technologies, including VCC, NCC, iART, PCRS5, and more.
- **Heavy Duty Systems:** [Exclusive Version] handles XPI, F2X/F3X/CRIN 4.2, and other Heavy-Duty systems. (Optional Upgrade)
- **Medium Duty Systems:** [Standard Version] supports up to Medium-Duty systems.
- **GDi Injector Testing:** Optional capability to test and diagnose most failures in GDi injectors**.
- **Portability:** Optional portable ergonomic machine stand available.

The CTB.R-X is engineered to offer comprehensive, efficient, and versatile testing solutions for a wide range of diesel injectors and systems.

A Revolution in CRDi Test Benches



Our qualified team, expertise, and pioneering thinking have developed the new, powerful CTBR-X Generation.

Extra Features

Testing of All brands and types of RDS [Rail Pressure Sensors]

Testing of all types of High Pressure Rails (without DRV)

CGL - Authorized Continental / VDO "Blind-Lift"
Measurement of Piezo-Stack

*New database and Coding is continuously being updated to new EU6 applications

**Recommended unit for GDi Injector Testing and Servicing is the GTBR-X

DGFR //X

Diesel System Test Bench

Authorized Solution for Continental/VDO



Diesel CRDi & Gasoline GDi Flushing Bench. Flushing / Cleaning and Servicing bench for up to 4 injectors.

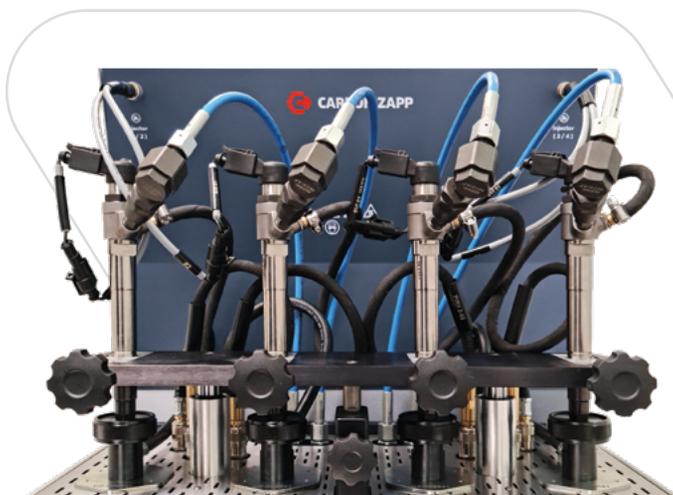
CloudX

→ **Features**

- A Continental/VDO Proposed Flushing Bench
- Xtremely Fast Flushing Times
- New Design for every Service Station
- Optimized Working Area to reduce Injector Set-up Times
- 1000Bar Operating Pressure
- EU6 Systems Capable
- CloudX Capabilities
- Off-Highways CR applications operation (John Deere, Komatsu, Hino, Isuzu)
- Cummins XPI, Caterpillar-Perkins C4/C6 and other Medium-Duty operation

→ **Diesel CRDi/Gasoline GDi Injector Flushing Bench**

- Ergonomic, Fast and Easy Injector Clamping device to minimize mounting times.
- Fully Adjustable height for all types of CRDi / GDi injectors.
- Utilizes a spring-loaded injector holder to ease the operation of the user.
- Advanced self air-cooling system to optimize long term nonstop operation at all environmental conditions.
- Adaptability for every type of Diesel Injectors in the market
- Android Powered 10" HMI with unlimited flexibility and connectivity competencies.



*New database and Coding is continuously being updated to new EU6 applications

SPAR

Diesel System Test Bench

CZ Piezo Stack Filler, Air remover and Stack Activator is the only automatic solution to assure optimum servicing and operation of Piezo injectors today after being serviced by Diesel Specialists.

- Automatic and easy operation for 4 Piezo injectors at once
- Connects directly at the return port (backleak)
- Only needs single phase 100-250Vac
- Lightweight and portable solution
- Connects to any Carbon Zapp Test Bench
- High Flow Vacuum Power 10KPa and Pressure of 100KPa
- Automatic Start / Stop function with specific Test Plans
- Adaptability to all types of Piezo injectors

SPECIALISTS

CRDi - EUi/EUP - HEUi - CRP
ENGINE - GDi - EfI - GDi Pumps



DGFR **X** → SPECIFICATIONS

	DESCRIPTION	UNIT	DGFR-X (CZ-007091)
Machine Dimensions	Length	mm	510
	Width	mm	780
	Height	mm	780
Weight		kg	66
HMI	Tablet Touchscreen	Inches	10
Internet Update	WiFi / Ethernet	-	YES / YES
Pressure Source	Type		Air Driven High Pressure Pump (DxL-ISO) ISO4113
Test Oil	Type		Calibration Oil
Test Oil Tank	Capacity	Liters	4
Flush Tank	Capacity	Liters	4
Max Pressure	Pressure	Bar	1000
Max RPM	Max Revolutions Per Minute	RPM	-
Max Pumps	Pumps Test	Slots	-
Max Injectors	Test Injectors	Slots	4
HP Pump	High Pressure Pump	Type	Pneumatic Pump
LP Pump	Supply Pressure	Bar	-
	Pressure	Bar	6 - 8
Air Supply	Air Tank Capacity	Lt	200
	Air Flow	Lt/ Min	300
	Min Diameter at Air Supply Hose	mm	8
Main Power Supply	Air	Type	Water / Oil FREE
	Phases	Number	1
		TYPE	1P+N
	Voltage	VAC	100 - 240
	Frequency	Hz	50/60
Operating Temperature	Current	Ampere	5
	Max Consumption	kVA (100V/240V)	0.5 / 1.2
IVM Sensors	Min / Max Room Temperature	Celsius	6 / 35
	Measurement Sensors	Type / Quantity	-

→
PRESSURE SOURCES
 Air: Air Driven High Pressure Pump
APPLICATIONS
 Passenger Car/ Motorcycles: Volumes up to 120mm³/H
 Light Duty: Volumes up to 200mm³/H
 Medium Duty: Volumes up to 300mm³/H
 Heavy Duty: Volumes up to 650mm³/H

DEFINING INNOVATION



Celebrating Together 35 Years of Innovation

CARBON ZAPP INSIGHTS



35+
Years of Innovation

1,000+

Hours of Training and Seminars Annually

40%

Annual R&D Investment of Profits

10,000+

Hours of Product Testing Annually

98+

Countries of Global Network

16,000+

Products Produced

At Carbon Zapp, we push the boundaries of automotive innovation. With over 35 years of experience, we redefine performance, efficiency, and technology in the automotive injection service industry ..and beyond. To understand our journey and success, we must explore the fundamentals of innovation shaping our company's present and future.

Innovation begins with a bold vision. Since Carbon Zapp's inception, our goal has been to transform the automotive industry with groundbreaking solutions. Creating new products means turning original ideas into tangible innovations that revolutionize the market.

Solving problems uniquely and efficiently is at the core of our technological advancements. We tackle challenges with creativity, developing solutions that meet needs in novel ways. Innovation results from collaboration, bringing together diverse skills and perspectives to create something greater than the sum of its parts. Our success is built on the collaborative spirit of our team, continually pushing the boundaries of what's possible.

Adapting and evolving ensures continuous improvement and relevance. By streamlining and improving processes, we enhance productivity, quality, and sustainability. Expanding globally allows us to bring innovative solutions to new markets and industries worldwide. Driven by visionary leadership, we inspire teams to achieve groundbreaking advancements and set new milestones.

BUILDING THE FUTURE OF AUTOMOTIVE INJECTION SERVICE TODAY

ETBR 

Injector & Pump Control
Bench Extension Module



The revolutionary simulator that modernizes any test bench for all types of fuel systems.

Overview to the New ETBR-X**Precise and repeatable Diesel & Gasoline Components Testing****[1] Pump Testing****5-15 minutes testing time per pump**

CRp / GDp Pump (All Brands and Types).

Capable for all EU6 technologies with Sync Operation such as Denso HP5, Bosch CP4-EU6, VDO-EU6 technology and more...

Heavy-Duty CR pump (CPN5S2, CAT, Cummins, HP0 etc..)

Testing of All brands and types PCV's [Pressure Control Valves]

Testing of All brands and types of RDS [Rail Pressure Sensors]

Testing of all types of High Pressure Rails

[4] Injectors Testing & Coding***6-12 minutes testing and coding* time per injector**

CRi / CRiN / GDi injectors (All Brands and Types).

Capable for all EU6 technologies such as VCC and NCC technology, iART, PCRS5,

XPI, F2X and F3X systems and more...

CRIN 4.2 Heavy Commercial-Vehicle injectors (max. 2 Large Diesel Engine CRiN injector (QSK, MTU, L 'Orange, etc..)

[1] HEUi Testing & Coding***6-8 minutes testing and coding* time per injector**

Dynamic and static measurement of the actual overflow

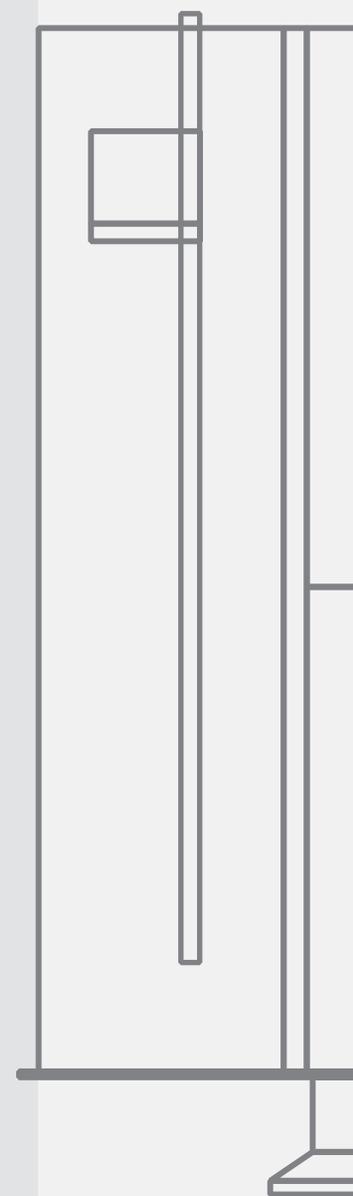
Dual-Coil HEUi Injector testing capable

Accurate and automatic measurement of the NOP without disassembling the injector

[1] EUi/EUp Testing & Coding* (requires HK1400A Cambox)**6-10 minutes testing and coding* time per injector**

Capable for all EU6 technologies

Expandable to Future Systems



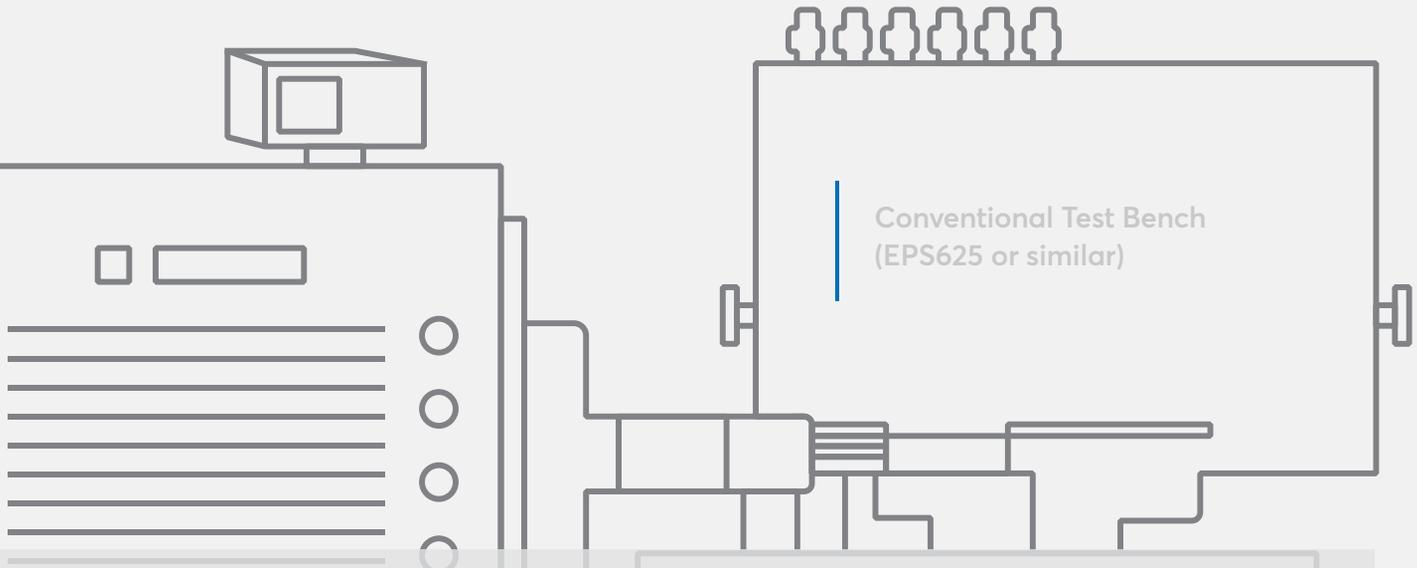
SPECIALISTS

CRDi - EUI/EUP - HEUI - CRP
ENGINE - GDi - EFi - GDi Pumps



Service Center AUTHORIZED

The optimized test bench simulator for every fuel system.



BCR.1

Injector holder (1 / 4) injectors, with Common-Rail, Pressure Control and protective hood, ready to mount on a conventional bench.



BCR.4



ETBR-X

Detailed information on next page

ETBR **X** → Points

Expandable and Fully Configurable
Modular Unit for Every Diesel
and Gasoline Specialist.

Electrical and Hydraulic connectors,
fittings and adapters are available
for all Systems in the Market.

1



2



8



ETBR //X

Injector & Pump Control
Bench Extension Module

SPECIALISTS

CRDi - EUi/EUP - HEUi - CRP
ENGINE - GDi - EFi - GDi Pumps



01.

- 0, 1 or 4 Injectors Measuring Ports
- Actuate 1-4 Injectors / Components
- Measure Response time for 1-4 injectors

02.

- External Control of any Test Bench.
- Connect With Cambox for Operation.

03.

- Measure up to 1 Pump
- Post Measurement Oils return back to Test Bench Tank.

04.

HMI - 10" Touchscreen with CloudX Based AZO.V3 Software.

05.

WiFi, USB and Ethernet Connectivity

06.

Emergency STOP

07.

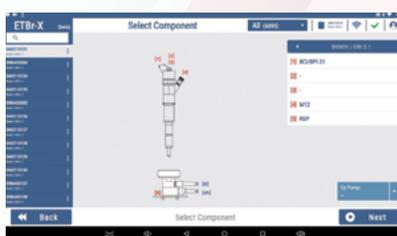
Drain Pan with Waste Port

08.

Cooling System

CRp pump outlet portable cooling system & stand for the ETBRX bench

AZO SOFTWARE



The unique, compact & Universal solution for every Test Bench in the market to operate with the latest technology Diesel and Gasoline Systems.

→ Features

- Control Unit for Every Test Bench in the Market
- Compact Size Attachment for Every Laboratory
- Expandable and Modular Apparatus
- Pressure Control up to 2800 bar
- Up to EU6 System Technologies Capable
- Semi-Automatic Operation of Cambox
- Operating, Measuring & Coding of All Types & Makes
- IoT Cloud computing Platform - Industry 4.0 Complaint
- The Diesel Specialists Affordable Choice

→ Characteristics

- Xtremely Fast Testing Times without any Compromise
- New Design for every Service Station
- Optimized Working Area
- EU6 Systems Testing and Coding*
- CloudX Capabilities
- Coding capability for all brands and types available in the market today. Bosch, Denso, Delphi, CAT, Cummins*, John Deere, ISUZU*, HINO*, KOMATSU*, E1/ E3/ DAF/ Smart Pump, F2X and F3X (Beta) EU6 technologies and more added every day...
- Off-Highways CR applications testing and coding (John Deere, Komatsu, Hino, Isuzu)
- Cummins XPI*, Caterpillar-Perkins C4/C6 and other Medium and Heavy-Duty testing and coding
- Live Response Time Measurement at every test plan
- BIP Actuation Measurement for all Heavy-Duty type solenoids (EUI & CR)
- Adaptability for every type of Diesel and Gasoline Injectors in the market (optional)
- Continuous Database updates and new Software capabilities to meet the market needs.
- Android Powered 10" HMI with unlimited flexibility and connectivity competencies.

*New database and Coding is continously being updated to new EU6 applications

SPECIALISTS

CRDi - EUi/EUP - HEUI - CRP
ENGINE - GDi - EfI - GDi Pumps

Build your **ETBR-X** according to your Testing Needs now and Upgrade it Anytime in the Future on your own.



ETBR-X → SPECIFICATIONS

	DESCRIPTION	UNIT	ETBR-X (CZ-007092)
Machine Dimensions	Length	mm	510
	Width	mm	650
	Height	mm	550
Weight		kg	23 (Basic Version)
HMI	Tablet Touchscreen	Inches	10
Internet Update	WiFi / Ethernet	-	YES / YES
Pressure Source	Type	External: Pressure coming from another Test Bench or external source	
Test Oil	Type	(DxL-ISO) ISO4113 Calibration Oil	
Test Oil Tank	Capacity	Liters	-
Max Pressure	Pressure	Bar	2800
Max RPM	Max Revolutions Per Minute	RPM	-
Max Pumps	Pumps Test (Optional)	Slots	1
Max Injectors	Test Injectors (Optional)	Slots	4
		Types	4 CRI / 1 HEUI / 1 EUI-EUIP
Main Power Supply	Phases	Number	1
	Voltage	VAC	1P+N
	Frequency	Hz	100 - 240
	Current	Ampere	50/60
	Max Consumption	kVA (100V/240V)	5
Operating Temperature	Min / Max Room Temperature	Celsius	0.5 / 1.2
IVM Sensors (Optional)	Measurement Sensors (Full Version / Pumps)	Type / Quantity	6 / 35
		Type / Quantity	XKM / 1 * DFM500 / 1 *

→

APPLICATIONS
 Passenger Car/ Motorcycles: Volumes up to 120mm³/H
 Light Duty: Volumes up to 200mm³/H
 Medium Duty: Volumes up to 300mm³/H
 Heavy Duty: Volumes up to 650mm³/H
 Marines: Volumes up to 1500mm³/H

MEASUREMENT SENSORS
 XKM [Dynamic Meas. Sensor]: High Accuracy: ± 0.1%, Exceptional Repeatability ±0.05%, Measur. Range: -11000ml/min
 DFM 500 [Dynamic Measurement Sensor]: Accuracy: ± 1%, Repeatability 0.5%, Measurement range: 5-500l/min

PRESSURE SOURCES
 External: Pressure coming from another Test Bench or external source Application: Electrical Pump 12VDC

HTBR //X

Diesel System Test Bench



The New HTBR-X is a unique Standalone Diesel Hydraulic Electronic Unit Injector Test Bench capable to thoroughly Test, Service and Code* every possible HEUi in the market today.

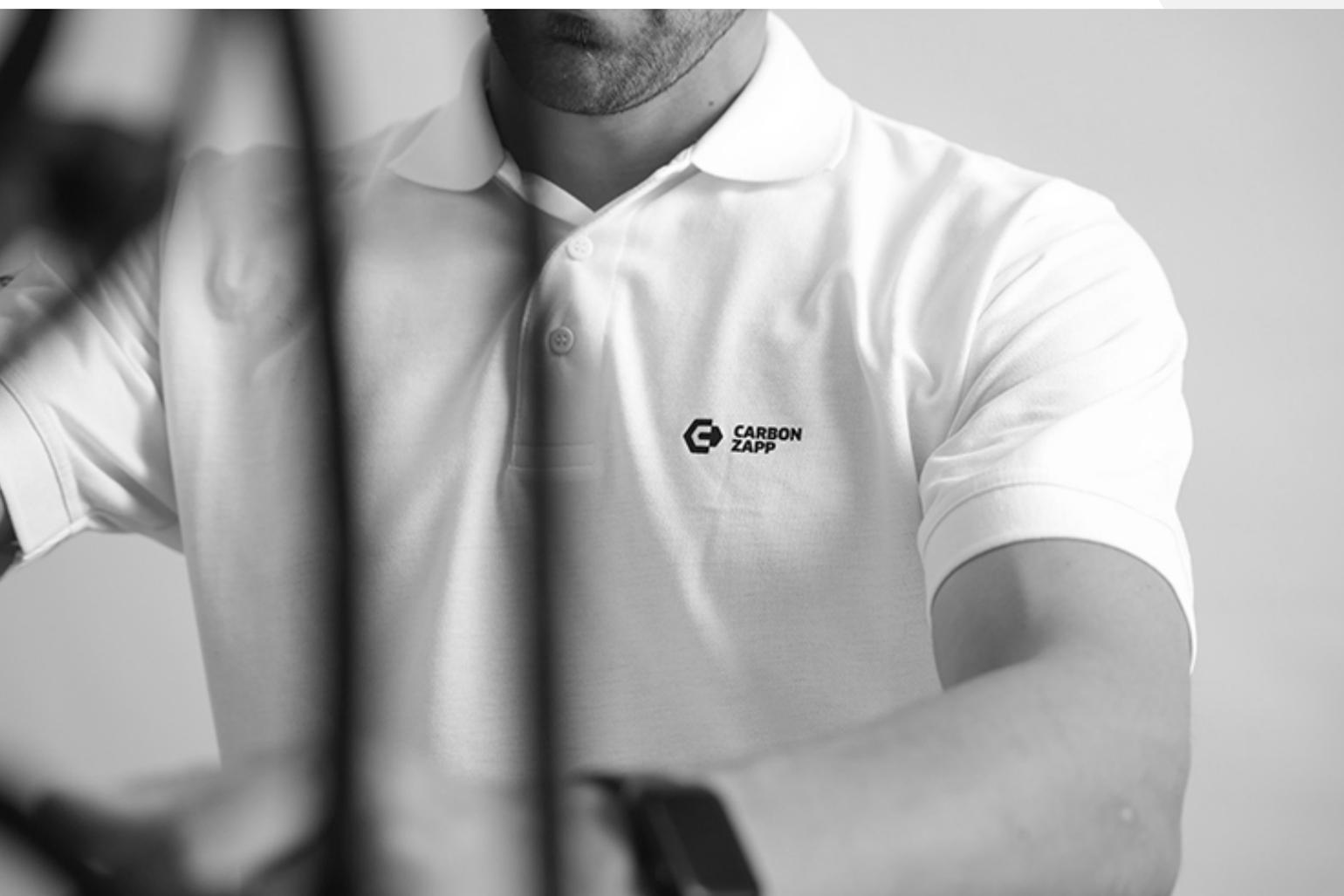
The Professional's Service Station for All Types and Makes HEUi systems.

Overview of the New HTBR-X

Precise, repeatable and rapid Diesel HEUi Injectors Testing

HEUi Testing & Coding*

- 6-8 minutes testing and coding* time per injector
- Dynamic and static measurement of the actual overflow
- Dual-Coil HEUi Injector testing capable
- Accurate and automatic measurement of the NOP without disassembling the injector



SPECIALISTS

CRDi - EUI/EUP - **HEUI** - CRP
ENGINE - GDi - EFi - GDi Pumps

#carbonzappXseries



Scan to visit our
YouTube channel and
watch CZ Test Benches
tutorials, training and
product videos.



400 Bar

**Standalone Diesel HEUI
(1 Injector) Test Bench
For Specialists**

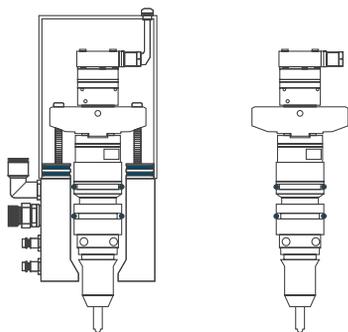
**A Revolution in
HEUI Test Benches**



Our qualified team, know-how
and pioneering thinking
developed the New Powerful
HTBR-X Generation

HTBR **X** → Points

HEUI Technologies



If you want to optimize your operations and become part of our Carbon Zapp Worldwide Authorized Service Centers, please contact us at sales@carbonzapp.com.

Set up a meeting to explore the NEW Xseries Automotive Injection Servicing Equipment and discover its features and benefits in depth. #InnovationDriven

01.

Working Area

Ergonomic & easily accessible illuminated working space. Fast mounting for all types of Injectors.

02.

Easily Accessible Filters & Waste Area

Quick access to all inline filters for fast check-up and replacement located within your working area. A mess-free compartment to work at, continuously draining to the waste tank.

03.

Machine Interface

New CloudX based AZOV3 software features speed, connectivity and expandability in a user friendly environment.

04.

Easily accessible drawer and connection ports.

05.

Functional use of test oil tank enhances maintenance.

Tank extends to fill-up, drain and clean.

(View detailed image on page 30)

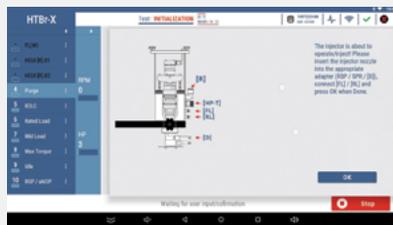
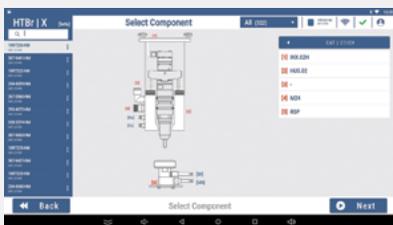
06.

Actual Dynamic measurement of the injector overflow

HTBR //X

Diesel System Test Bench

AZO SOFTWARE



→ Systems

CAT C7/C9

CAT 7.3L/3126

CAT 3408/3412

FORD POWER STROKE

ISUZU TROOPER

→ Features

Xtremely Fast Testing Times without any Compromise

New Design for every Service Station

Optimized Working Area to reduce Injector Set-up Times

400Bar Operating Pressure

All Systems Testing and Coding

CloudX Capabilities

Coding capability for CAT C7/C9*

→ Diesel HEUI testing and coding*

Ergonomic, Fast and Easy Injector Clamping device to minimize mounting times.

Fully Adjustable height for all types of injectors.

Utilizes a spring-loaded injector holder to ease the operation of the user.

Easily accessible filters and waste area

Quick access to all inline filters for fast check-up and replacement located within your working area.

A mess-free compartment to work at, continuously draining to the waste tank.

Advanced water-cooling or air-cooling system to optimize long term nonstop operation at all environmental conditions.

Live Response Time Measurement for all injectors

Capable to automatically measure the BIP of the solenoid actuator

Adaptability for every type of Diesel HEUI Injectors in the market

Continuous Database updates and new Software capabilities to meet the market needs.

Android Powered 15.6' HMI with unlimited flexibility and connectivity competencies.

Injector flushing feature pre-installed

SPECIALISTS

CRDi - EUi/EUP - **HEUi** - CRP
ENGINE - GDi - EfI - GDi Pumps

HTBR → SPECIFICATIONS

	DESCRIPTION	UNIT	HTBRX-A (CZ-008722)	HTBRX-W (CZ-008862)	
Machine Dimensions	Length	mm	770	770	
	Width	mm	800	800	
	Height	mm	1650	1650	
Weight		kg	250	252	
HMI	Tablet Touchscreen	Inches	15	15	
Internet Update	WiFi / Ethernet	-	YES / YES	YES / YES	
Pressure Source Test Oil	Type	Motor Driven High Pressure CR Pump			
	Type	(DxL-ISO) ISO4113 Calibration Oil			
Test Oil Tank	Capacity	Liters	30	30	
Max Pressure	Pressure	Bar	400	400	
Max RPM	Max Revolutions Per Minute	RPM	2500	2500	
Max Pumps	Pumps Test	Slots	-	-	
Max Injectors	Test Injectors	Slots	1	1	
LP Pump	Supply Pressure	Bar	0.1 - 5.4	0.1 - 5.4	
	Pressure	Bar	-	-	
Air Supply	Air Flow	Lt/ Min	-	-	
	Phases	Number	1P	1P	
Main Power Supply		TYPE	P+N / PE	P+N / PE	
	Voltage	VAC	220-240	220-240	
	Frequency	Hz	50/60	50/60	
	Current	Ampere	12	12	
Motor	Max Consumption	kVA (220V/240V)	2.64 - 2.88	2.64 - 2.88	
	Model	TYPE	AK100L-4	AK100L-4	
	RPM	RPM 50 / 60Hz	1420 / 1700	1420 / 1700	
	POWER		KW 50 / 60Hz	3 / 3.6	3 / 3.6
			HP 50 / 60Hz	4 / 4.8	4 / 4.8
		Connection Y	Ampere (50HZ)	400 V:6.56 A	380 V: 6.89 A
			Ampere (60HZ)	480 V:6.56 A	460 V: 6.89 A
	Max Input pressure	Bar	-	4	
	Max Output Pressure	Bar	-	1Bar< Input Pressure	
	Min Input Temperature	Celsius	-	5	
Max Input Temperature	Celsius	-	15		
Min Diameter In/Out Water Hose	mm	-	10		
Water Supply	Water Tank Capacity	Liters	-	10	
	Max Water Flow	Lt / Min (4Bar)	-	4	
	Min Water Output Temperature	Celsius	-	5	
	Max Water Output Temperature	Celsius	-	65	
	Delta T	Celsius	-	0-50	
	Max Cooling Efficiency "Debit" [20 liters of 5° C water in order to Cool Down the Test Oil from 43° C to 36° C (2 tank cycles)]	Tank Cycles	-	2	
Operating Temperature	Min / Max Room Temperature	Celsius	6 / 23	6 / 30	
IVM Sensors	Measurement Sensors	Type / Quantity	XKM / 1*	XKM / 1*	

→

- : N/A
A: Air Cooling
W: Water Cooling
PRESSURE SOURCES
Motor: Motor Driven High Pressure CR Pump
Elect: Pump: Fuel Injection system or Industrial Application Electrical Pump 12VDC
MEASUREMENT SENSORS
XKM | Dynamic Meas. Sensor | High Accuracy: ± 0.1%, Exception of Repeatability ±0.05%, Measur. Range: 1-1000ml/min
APPLICATIONS
Light Duty: Volumes up to 200mm³/h
Medium Duty: Volumes up to 300mm³/h
Heavy Duty: Volumes up to 650mm³/h

GTB4R //X

Gasoline System
Test Bench

CloudX

#carbonzappXseries

The Optimum Gasoline Specialists GDi Solution. The Professional's Service Station for All Types and Makes GDI systems.

The New GTB4R-X is a unique Standalone Gasoline Direct Injector Test Bench capable to thoroughly Test, Service and Code every possible GDi in the market today.

The machine's Innovative technology is already in compliance with all EU6 standards and requirements, meantime is prepared for future upgrades.

Overview of the New GTB.4R-X

Precise, repeatable and rapid Gasoline Injectors Testing

[4] Injectors Testing & Coding*

- 5-7 minutes testing and coding* time for 4 injectors
- GDi injectors (All Brands and Types)
- Conventional Gasoline EFi Injectors
- Capable for all EU6 technologies
- Coding Capable for all Types of GDi's (Energy Controlled or Volume Metering types)
- Flushing and Servicing options for GDi injectors
- External Control and Measurement for GDi High Pressure Pumps operating on a Conventional Test Bench**



1200 Bar

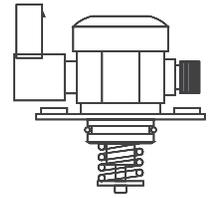
4 GDi Injectors. Capable for all EU6 Technologies

*New database and Coding is continuously being updated to new EU6 applications

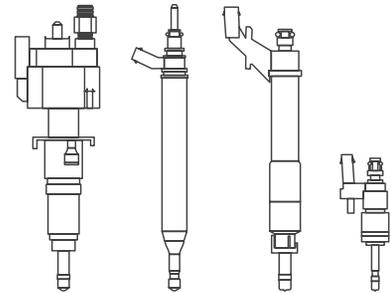


SPECIALISTS

CRDi - EUi/EUP - HEUi - CRP
 ENGINE - **GDi** - **EFi** - **GDi Pumps**



GDi Pump testing
 on a conventional bench
 as an external control
 & measurement [Optional
 future update]



EU6 Technologies

**A Revolution in
 GDi Test Benches**



Our qualified team, know-how
 and pioneering thinking developed
 the New Powerful **GTB.4R-X**

** : Future upgrade expected Q3/2025

GTB4R **X** → Points

01.

Working Area

Ergonomic & easily accessible illuminated working space. Fast mounting for all types of Injectors.

02.

Easily Accessible Filters & Waste Area

Quick access to all inline filters for fast check-up and replacement located within your working area. A mess-free compartment to work at, continuously draining to the waste tank.

03.

Machine Interface

New CloudX based AZOV3 software features speed, connectivity and expandability in a user friendly environment.

04

Easily accessible drawer and connection ports.

(View detailed image on page 30)

05.

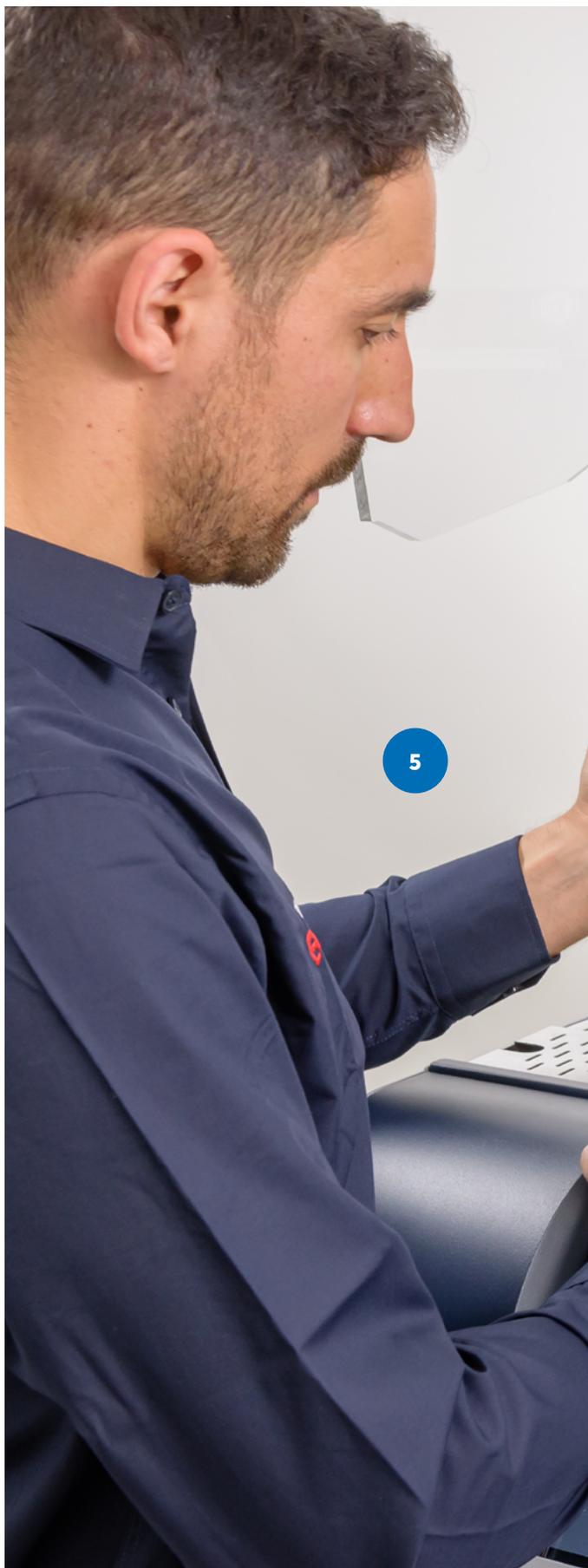
Functional use of test oil tank enhances maintenance.

Tank extends to fill-up, drain and clean.

(View detailed image on page 30)

06.

Actual Dynamic measurement of the injector overflow





4

1

6

2

3



→ **Applications**

- Gasoline Passenger cars

- Gasoline Light Duty vehicles

- Gasoline Outboard motors

- Alternative Fuels engines

→ **Features**

- Xtremely Fast Testing Times without any Compromise

- New Design for every Service Station

- Optimized Working Area to reduce
Injector Set-up Times

- 1200Bar Capable Test Bench

- EU6 Systems Testing and Coding

- CloudX Capabilities

→ **Gasoline GDi testing and coding**

Ergonomic, Fast and Easy Injector Clamping device to minimize mounting times.

Fully Adjustable height for all types of GDi and EFi injectors.

Utilizes a spring-loaded injector holder to ease the operation of the user.

Quick access to all inline filters for fast check-up and replacement located within your working area.

A messfree compartment to work at, continuously draining to the waste tank.

Advanced Testing capability for all brands and types available in the market today. Bosch, Denso, Delphi, Continental /VDO, Hitachi-HTC, Magneti Marelli and more added every day...

Coding capability for Siemens/ VDO and for the newer* generation EU6 available in the market today.

Advanced water-cooling or air-cooling system to optimize long term nonstop operation at all environmental conditions.

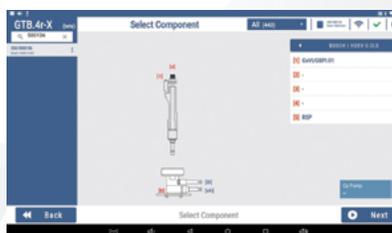
Live Response Time Measurement at every test plan

Adaptability for every type of Gasoline Injectors in the market

Continuous Database updates and new Software capabilities to meet the market needs.

Android Powered 15.6' HMI with unlimited flexibility and connectivity competencies.

AZO SOFTWARE



*New database and Coding is continuously being updated to new EU6 applications

GTB4R **///X**

Gasoline System
Test Bench

SPECIALISTS

CRDi - EUi/EUP - HEUi - CRP
ENGINE - **GDi** - **Efi** - **GDi Pumps**

GTB4R **///X** → SPECIFICATIONS

	DESCRIPTION	UNIT	GTB.4RX-A (CZ-008737)	GTB.4RX-W (CZ-008787)
Machine Dimensions	Length	mm	770	770
	Width	mm	800	800
	Height	mm	1650	1650
Weight		kg	250	252
HMI	Tablet Touchscreen	Inches	15	15
Internet Update	WiFi / Ethernet	-	YES / YES	YES / YES
Pressure Source	Type	Motor Driven High Pressure CR Pump		
Test Oil	Type	(GxL-ISO) Calibration Oil		
Test Oil Tank	Capacity	Liters	30	30
Max Pressure	Pressure	Bar	1200	1200
Max RPM	Max Revolutions Per Minute	RPM	2000	2000
Max Pumps	Diesel Pumps	Slots	-	-
	Gasoline Pumps	Slots	1	1
Max Injectors	Test Injectors	Slots	4	4
LP Pump	Supply Pressure	Bar	0.1 - 5.4	0.1 - 5.4
Air Supply	Pressure	Bar	-	-
	Air Flow	Lt/ Min	-	-
Main Power Supply	Phases	Number	1P	1P
		TYPE	P+N / PE	P+N / PE
	Voltage	VAC	220-240	220-240
	Frequency	Hz	50/60	50/60
	Current	Ampere	16	16
	Max Consumption	kVA (220V/240V)	3.52 -3.84	3.52 -3.84
	Model	TYPE	AK100L-4	AK100L-4
Motor	RPM	RPM 50 / 60Hz	1420 / 1700	1420 / 1700
	POWER		KW 50 / 60Hz	3 / 3.6
			HP 50 / 60Hz	4 / 4.8
		Connection Y	Ampere (50HZ)	400 V:6.56 A
		Ampere (60HZ)	480 V:6.56 A	460 V: 6.89 A
	Max Input pressure	Bar	-	4
	Max Output Pressure	Bar	-	1Bar< Input Pressure
	Min Input Temperature	Celsius	-	5
	Max Input Temperature	Celsius	-	15
Water Supply	Min Diameter In/Out Water Hose	mm	-	10
	Water Tank Capacity	Liters	-	10
	Max Water Flow	Lt / Min (4Bar)	-	4
	Min Water Output Temperature	Celsius	-	5
	Max Water Output Temperature	Celsius	-	65
	Delta T	Celsius	-	0-50
	Max Cooling Efficiency "Debit" [20 liters of 5° C water in order to Cool Down the Test Oil from 43° C to 36° C (2 tank cycles)]	Tank Cycles	-	2
Operating Temperature	Min / Max Room Temperature	Celsius	6 / 23	6 / 30
IVM Sensors	Measurement Sensors	Type / Quantity	XKM / 4 *	XKM / 4 *

→

- : N/A
A: Air Cooling
W: Water Cooling
PRESSURE SOURCES
Motor: Motor Driven High Pressure CR Pump
Electr Pump: Fuel Injection system or Industrial Application Electrical Pump 12VDC
MEASUREMENT SENSORS
XKM [Dynamic Press. Sensor]: High Accuracy: ± 0.1%, Exceptional Repeatability: ±0.05%, Measur. Range: 1-1000ml/min
APPLICATIONS
Light Duty: Volumes up to 200mm³/H
Medium Duty: Volumes up to 300mm³/H
Heavy Duty: Volumes up to 650mm³/H

GDU4R //X

Gasoline System
Test Bench

CloudX



650 Bar

4 GDi Injectors Capable

The professional solution for workshops to test & service Gasoline Direct Injection Systems.

Overview of the GDU.4R-X

Precise & repeatable Gasoline Injectors Testing

[4] Injectors Testing & Coding*

- 20 minutes testing and coding* time for 4 injectors
- GDi injectors (All Brands and Types)
- Conventional Gasoline EFi Injectors
- Capable for all EU6 technologies
- Coding Capable for all Types of GDi's (Energy Controlled or Volume Metering types)
- Flushing and Servicing options for GDi injectors



*New database and Coding is continuously being updated to new EU6 applications



SPECIALISTS

CRDi - EUi/EUP - HEUi - CRP
 ENGINE - **GDi** - **EFi** - GDi Pumps

A Revolution in GDi Test Benches



Gasoline Direct Injection (GDi) requires high pressure testing to truly diagnose injector operation faults.





→ Features

Controls all Types and Makes of Injectors. Includes OEM Database and Test Plans

Low Pressure Testing for Conventional MPFI or Racing application Injectors 0-10Bar

Controls NEW Generation High Pressure GDI with multiple Step Current profiles

LPG for Heavy Duty Applications (Trucks, Commercial Vehicles)

Continental / Siemens GDI injectors (EU5) testing only with approved Energy Control

Nozzle reaction time measurement for all systems via RSP sensor

Efficient Working Area with Protective Hood fully opening

The fastest and easiest clamping of injectors in the market

Fully Automatic and fast testing phase through a 10" Touchscreen HMI with AZO software

GDI Piezo Stack Regeneration function. The only way to correct GDI Piezo injectors after Cleaning them internally and reverse flushing them

Reverse flushing adapter and function with 25Bar pressure

Blue Limits Diagnosis for Specialists

Dynamic Electronic Mass (BK) Measurement

Prepared for Future Injector Coding

Emergency Safety Stop function

EXPANDING CAPABILITIES



Space saving, accessory organizers for everyday tasks. Increased productivity and uncluttered space.



Extras



MTBR-X & PTBR-X



01.
Desk & Harness Shelf



02.
Hydraulic Hose Side Panel
Pocket with Drain

Ultrasonic Shelf



for GTBR-X,
ITBR-X, HTBR-X





**Carbon Zapp Trolley
Fully Configured Setup**



/// CZ Base Trolley



**/// Hose & Harness
Side Organizer**
(max. 2 pcs per trolley)

Carbon Zapp Trolley



Ideal workshop organizer to fit most parts of the machine like harnesses, hoses, adapters, tools and flanges. Can be easily transformed to a Cambox and/or pump rack for easy transfer and storing.



**/// CRp Flange Drawer
Organizer**
(max. 1 pc per trolley)



**/// Cambox/Pump
Transfer Rack**
(max. 2 pcs per trolley)





WORKSHOPS



Explore Workshop
Diagnostic and
Service Solutions.

Passenger Car
and Light Duty Types

Diesel Common Rail
Diesel Heavy Duty
Gasoline Direct Injection GDI
Gasoline Fuel Injection
Engine & Exhaust Servicing
Diagnostic Fuel Injection Tools





CARBON ZAPP ES-X
Engine Service Unit
Chemical Carbon Cleaning for Diesel & Gasoline Engines.
In-line Washoil and DPF/GPF Servicing.

Gasoline	IMC / GPF / GPF	Diesel
2,500 0.97	1,400 38	2,100 0.57
2,000 0.83	1,200 30	2,000 0.53
1,750 0.46	1,000 28	1,700 0.46
1,500 0.40	800 22	1,500 0.40
1,250 0.33	600 17	1,200 0.33
1,000 0.28	400 12	1,000 0.28
750 0.20	200 07	700 0.20
500 0.13		500 0.13
400 0.10		400 0.10
300 0.07		300 0.07
200 0.05		200 0.05
100 0.03		100 0.03
0 0.00		0 0.00

Return Line (M) Battery (B) Feed Line (PL) Filter

DSR //X

Diesel Common-Rail
Injector Test Bench

CloudX

The Affordable Diesel
CRDi Workshop Solution
to diagnose cars and light
duty vehicles of All Makes.

Overview of the New DSR-X

**Fast, Accurate and Reliable Diesel
CRDi Injector Testing**

[1] Injector Testing

- 6-12 minutes testing time per injector
- CRi (All Brands and Types).
- Capable for all EU6 technologies such as VCC and NCC technology, iART, PCRS5 and more...
- CRIN Light Duty Vehicle injectors



→ Features

- Xtremely Fast Testing Times without any Compromise
- New Design for every Service Station
- Optimized Working Area
- EU6 Systems Testing
- CloudX Capabilities
- IoT Cloud computing Platform - Industry 4.0 Complaint
- Live Response Time Measurement at every test plan
- Adaptability for every type of Diesel CRDi's in the market (optional)
- Ergonomic, Fast and Easy Injector Clamping device to minimize mounting times.
- Continuous Database updates and new Software capabilities to meet the market needs.
- Android Powered 10" HMI with unlimited flexibility and connectivity competencies.



2000 Bar

**Standalone Air-Operated
Diesel CRi Test Bench
For Workshops**

*New database is continuously being updated to new EU6 applications



SPECIALISTS

CRDi - EUI/EUP - HEUI
CRP - ENGINE - GDi - EFI

DSR **X** → SPECIFICATIONS

	DESCRIPTION	UNIT	DSR-X (CZ-007093)
Machine Dimensions	Length	mm	510
	Width	mm	780
	Height	mm	780
Weight		kg	50
HMI	Tablet Touchscreen	Inches	10
Internet Update	WiFi / Ethernet	-	YES / YES
Pressure Source	Type		Air Driven High Pressure Pump
Test Oil	Type		(DxL-ISO) ISO4113 Calibration Oil
Test Oil Tank	Capacity	Liters	4
Max Pressure	Pressure	Bar	2000
Max RPM	Max Revolutions Per Minute	RPM	-
Max Pumps	Pumps Test	Slots	-
Max Injectors	Test Injectors	Slots	1
HP Pump	High Pressure Pump	Type	Pneumatic Pump
LP Pump	Supply Pressure	Bar	-
	Pressure	Bar	7,5-10
	Air Tank Capacity	Lt	200
Air Supply	Air Flow	Lt/ Min	400
	Min Diameter at Air Supply Hose	mm	8
	Air	Type	Water / Oil FREE
Main Power Supply	Phases	Number	1
		TYPE	1P+N
	Voltage	VAC	100 - 240
	Frequency	Hz	50/60
	Current	Ampere	5
	Max Consumption	kVA (100V/240V)	0.5 / 1.2
Operating Temperature	Min / Max Room Temperature	Celsius	6 / 35
IVM Sensors	Measurement Sensors	Type / Quantity	XKM / 1 *

→

: N/A
PRESSURE SOURCES
 Air: Air Driven High Pressure Pump
MEASUREMENT SENSORS
 XKM (Dynamic Meas. Sensor): High Accuracy: ± 0.1%, Exceptional Repeatability ±0.05%, Measur. Range: 1-1000ml/min
APPLICATIONS
 Passenger Car/ Motorcycles: Volumes up to 120mm³/h
 Light Duty: Volumes up to 200mm³/h

GDR *X*

Gasoline Direct Injector
Test Bench

The Affordable Gasoline
GDi Workshop Solution
to diagnose and service
faults for All Makes.

Overview of the New GDR-X

**Fast, Accurate and Reliable Gasoline
GDi Injector Testing**

[1] Injector Testing

5-7 minutes testing time per injector

- GDi (All Brands and Types)
- Capable for all EU6 technologies
- Capable for GDi Piezo (with Energy Controlled Signal)



450 Bar

**Standalone Air-Operated
Gasoline GDi Test**

→ Features

- Xtremely Fast Testing Times without any Compromise
- New Design for every Service Station
- Optimized Working Area
- Pressurized Reverse Flush for Injectors
- Optimized Actuation Software for Ultrasonic Cleaning
- CloudX Capabilities
- IoT Cloud computing Platform - Industry 4.0 Compliant
- Live Response Time Measurement at every test plan
- Adaptability for every type of Gasoline GDi's in the market (optional)
- Ergonomic, Fast and Easy Injector Clamping device to minimize mounting times.
- Continuous Database updates and new Software capabilities to meet the market needs.
- Android Powered 10" HMI with unlimited flexibility and connectivity competencies.

*New database is continuously being updated to new EU6 applications



WORKSHOPS

CRDi - EUi/EUP - HEUi - CRP
ENGINE - **GDi** - **EFi** - GDi Pumps

GDRiX → SPECIFICATIONS

	DESCRIPTION	UNIT	GDRiX (CZ-007094)
Machine Dimensions	Length	mm	510
	Width	mm	780
	Height	mm	780
Weight		kg	46
HMI	Tablet Touchscreen	Inches	10
Internet Update	WiFi / Ethernet	-	YES / YES
Pressure Source	Type	Air Driven High Pressure Pump	
Test Oil	Type	(GxL-ISO) Calibration Oil	
Test Oil Tank	Capacity	Liters	4
Max Pressure	Pressure	Bar	450
Max RPM	Max Revolutions Per Minute	RPM	-
Max Pumps	Pumps Test	Slots	-
Max Injectors	Test Injectors	Slots	1
HP Pump	High Pressure Pump	Type	Pneumatic Pump
LP Pump	Supply Pressure	Bar	-
	Pressure	Bar	6 - 8
	Air Tank Capacity	Lt	200
Air Supply	Air Flow	Lt/ Min	400
	Min Diameter at Air Supply Hose	mm	8
	Air	Type	Water / Oil FREE
Main Power Supply	Phases	Number	1
		TYPE	1P+N
	Voltage	VAC	100 - 240
	Frequency	Hz	50/60
	Current	Ampere	5
	Max Consumption	kVA (100V/240V)	0.5 / 1.2
Operating Temperature	Min / Max Room Temperature	Celsius	6 / 35
IVM Sensors	Measurement Sensors	Type / Quantity	XKM / 1 *

→

:- N/A
PRESSURE SOURCES
 Air: Air Driven High Pressure Pump
 Electr Pump: Fuel Injection system or Industrial Application Electrical Pump 12VDC
MEASUREMENT SENSORS
 XKM | Dynamic Meas. Sensor | High Accuracy ± 0.1% | Exceptional Repeatability ±0.05% | Measur. Range: 1-1000ml/min
APPLICATIONS
 Passenger Car / Motorcycles | Volumes up to 120mm³/h
 Light Duty: Volumes up to 200mm³/h

GS4 / GS8

Gasoline System
Test Bench



Systems Tested

- Solenoid Direct Injectors (G-Di, FSI...)
- Multi-Port Fuel Injectors (MPFi / SPFi)
- Racing Application Injectors*
- Central-Port Fuel Injectors (CSFI / CPFI)
- Throttle Body Injectors (TBI / CFI)
- Continuous Injection Injectors (K-Jetronic),
- Marines Application Injectors (E-TEC / FICHT)
- Motorcycle Application Injectors (Racing*)
- LPG & Alternative fuels Injectors

The efficient, cost-effective and proven workshop solution to bench test and service every gasoline fuel injector.



Bench for Testing & Ultrasonic Cleaning up to 8 Fuel Injectors



Ultrasonic Cleaning Baths Available at sizes up to 120L* featuring: 42KHz frequency Sweep technology* Degas function*, Controlled Heater and more...

- Fully Automatic Function
- Electronic Pressure Control 0-10Bar
- Racing Injectors Capable*
- Dynamic & Static iVM
- Auto-iRF function
- Injector Leak Test function
- User-Friendly Design
- Language Localization



Bench for Testing & Ultrasonic Cleaning up to 4 Fuel Injectors

*: Optional Upgrade



→ Features

iVM: Injection Volume Metering

Precise graduated led illuminated tubes are used for efficient diagnosis of uneven flow rates and weak or defective nozzle springs. Automatic drainage after each test resolution 1ml, accuracy ±1ml/130ml

iSPC

Illuminated Spray Pattern Chamber used for visual diagnosis of correct injection

iRF

Injector Reverse Flush Device used to remove all dirt remained inside injector body after cleaning with the use of Ultrasonics

eRSO

Electrical Resistance, Short Circuit & Open Circuit Test

0-10 Bar

Testing Capability of All Types of Injectors up to 10Bars Maximum.

GDi Advanced Units are available for High Pressure Direct Injectors up to 1200Bars

WORKSHOPS

CRDi - EUi/EUP - HEUi - CRP
ENGINE - **GDi - EFi** - GDi Pumps

→ Service & Repair

Increased exhaust emissions

Reduced engine performance (Power, Torque)

Increased fuel consumption

Poor drive-ability situations

Direct injection systems failure (Leaks, Pressure drop)

Rough idle and periodic stall of the engine

Conditions that lead to long-term catalytic converter damage

Extended engine start-up MIL - check engine light-up

GS4/GS8 → Technical Data

		GS8	GS4
	Part Number	(CZ-008350)	(CZ-008347)
TYPE	Standalone	●	●
	Add-On	-	-
USER LEVEL	Test Bench	●	●
	Service / Diagnostic Unit	-	-
SYSTEMS / [TESTING MINUTES]	Diesel / Gasoline Specialists	○	○
	Workshop / Garage	●	●
APPLICATIONS	Test Slots [injectors / Pumps]	[8/ -]	[4/ -]
	CRDi / Smart Injectors [1 / 4]	-	-
	GDi Injectors [1 / 4]	●	●
	Gasoline Injectors [1 / 4]	●	●
MEASUREMENT SENSORS	LPG / CNG Injectors [1 / 4]	●	●
	Passenger Car / HEV / PHEV	●	●
	Motorcycles	●	●
	Racing (Gasoline)	●	●
SYSTEM PRESSURE	Light Duty	-	-
	Medium Duty	-	-
	Marine	□	□
	XKM	-	-
PACKAGING	BK	-	-
	Volumetric Tubes	8	4
	Max (BAR)	10	10
	Source	ELECTR. PUMP	ELECTR. PUMP
PACKAGING	Spray Chamber	●	●
	Mains Power 50/60Hz /1-Phase 100-250VAC	●	●
	Mains Power 50/60Hz /3-Phase/PE 380-480VAC	-	-
	Tank Capacity [testing / flushing]	[4/ -]	[4/ -]
PACKAGING	HMI (Inches)	LCD	LCD
	Touchscreen	-	-
	Protective Cover	-	-
	Calibration Oils	○	○
PACKAGING	Ultrasonic Bath	●	●
	Width (mm)	660	500
	Depth (mm)	770	440
	Height (mm)	800	680
PACKAGING	Weight (kg)	52	39

-
- : Capable / Standard Equipped
 - : Capable / Optionals required
 - : Optional
 - : N/A
- PRESSURE SOURCES**
Electr Pump: Fuel Injection system or Industrial Application Electrical Pump 12VDC
- MEASUREMENT SENSORS**
Volumetric Tubes [Static Androg Measurement]; Accuracy: 1ml, Measurement range: 0.5-65ml
- APPLICATIONS**
Passenger Car/ Motorcycles; Volumes up to 120mm³/H
Light Duty; Volumes up to 200mm³/H

ES //X / EP //X

Complete Engine Service Unit



Diesel & Gasoline Engine De-Carbonizing Unit.
DPF & Intake Manifold Treatment Unit.

Systems

Common-Rail and Conventional Diesels

Gasoline Direct Injection (G-Di, FSI, HPI, CGI etc.)

Conventional Fuel Injection (MPFI / TBI / CIS)

LPG and Alternative fuels

Carburated Engines



→ Benefits

- Exhaust emissions reduction more than 70%
- De-Carbonization of the combustion chamber
- De-Carbonization of the catalytic converter
- De-Carbonizing of Intake Manifold and throttle body
- DPF Cleaning without disassembling
- Maximum restoration of engine's performance
- Reduction of fuel consumption
- Optimum fuel combustion gain
- Blocked valves and piston rings release
- Improved idle-speed stability
- Fading of engine knocking
- Prevention of long-term expensive repairs

→ Features

- Common-Rail system cleaning
- High Pressure pump conditioning
- User-Friendly, On-Display guide with language localization
- Automatic Pressure adjustment and Operation Cycle
- ESX: 3 separate tank system / EPX: 1 common tank system (flushing & filter change required)
- Adaptability to all makes and models
- Portable, Lightweight and Robust unit
- Visual-Audible Signaling Alarm
- Online Updates

**Optional Upgrade*

ES **X** / EP **X** → Technical Data

	Part Number	(CZ-007090 / CZ-007021)
	Standalone Add-On	● -
TYPE	Service Unit	●
USER LEVEL	Diesel / Gasoline Specialists Workshop / Garage Gasoline /Other Engines Diesel Engines Gasoline/Diesel Fuel Systems	○ ● ● ● ● ●
APPLICATIONS	Passenger Car / HEV / PHEV Motorcycles Racing (Gasoline) Light Duty Medium Duty Heavy Duty / Industrial Marine	● ● ● ● ● ● ● ● ● ●
SYSTEM PRESSURE	Max (BAR) Source Mains Power Tank Capacity HMI Touchscreen	10 ELECTR. PUMP 12VDC 3L/tank LCD
PACKAGING	Width (mm) Depth (mm) Height (mm) Weight (kg)	430 / 600 400 / 510 1040 / 570 36 / 21

EXPLANATIONS
 ● : Capable / Standard Equipped ○ : Optional □ : Capable / Optionals required - : N/A



EP-X, the Compact Alternative to ES-X.

The EP-X is a compact alternative to the ES-X, offering the same advanced features in a smaller package with a 1 Tank System, making it an ideal choice for workshops that prioritize space and portability.

WORKSHOPS

CRDi - EUi/EUP - HEUi - CRP
ENGINE - GDi - EFi - GDi Pumps

Detergents

The environmental friendly ESX/EPX Series Detergents for Decarbonizing the engine activates the inert carbon molecules, resins, dust varnish and gums that accumulate inside the engine components, and burns them with the combustion process.



Adapters

Exclusive fuel system adapters kit available for all types of engine configurations*



DPF.01

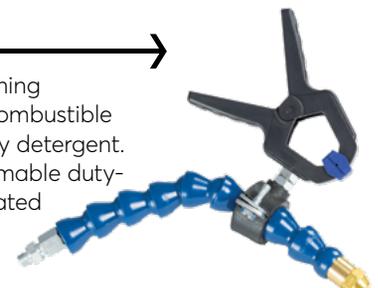
Diesel Particulate Filter Cleaning Adapter Kit. Use of Non-Combustible environmental friendly detergent to efficiently clean Particulate Matter, Carbon Soot, Ash, Organic materials and Sulfates.

Application programmable duty-cycle software integrated



IMC.01

Intake Manifold Cleaning Adapter Kit & Non-Combustible environmental friendly detergent. Application programmable duty-cycle software integrated



FST/FST-HF

Fuel System Testing and Analysis



→ Diagnosis

- Incorrect fuel pressure
- Incorrect system fuel flow Plugged fuel filter
- Faulty fuel pump
- Plugged fuel pump inlet strainer, Faulty fuel pump check valve, Leaky fuel injectors
- Plugged fuel pump inlet strainer. Faulty fuel pump check valve Leaky fuel injectors
- Restrictions in supply/ return fuel lines
- Intake manifold vacuum fluctuation
- Exhaust back-pressure for testing DPF & Catalytic Converter Turbo-boost pressure operation
- Adaptability for all Makes, Models and Types

→ Features

- Compact, Portable and Robust tool for use in the workshop
- High flow capability for Racing and Performance applications [FST-HF]
- Easy readable analog gauges: Fuel Pressure, Manifold Vacuum, Exhaust Back-Pressure
- Durable and clear analog flow tube Spill-free quick connectors
- Easy hook for mounting on engine hood

*Optional Upgrade

HP-G2500

Common-Rail Gauge



→ Features

- New Common Rail Injection Systems
- Up to 2500Bar
- Compact & Portable
- Dynamic & Static tests
- Adaptable to all CRDi Systems

HP-G250

High Pressure Gauge



→ Features

- Conventional Diesel Systems / GDi Gasoline Fuel Systems.
- Up to 250Bar
- Compact & Portable Dynamic & Static tests.
- Adaptable to all DI & G-Di Systems*

CRPT-110

Digital Common Rail Pressure Tester



→ **Diagnosis**

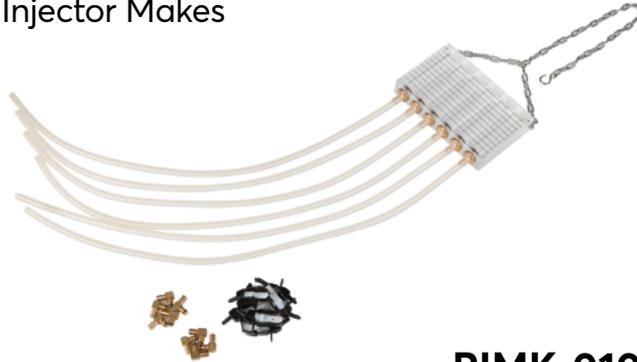
CRDi system operating pressure CRDi system leaking

→ **Features**

Easy Operation / Robust design
 Adaptability to All Makes sensors
 Operation Range 0-2000 Bar
 Measurement resolution of 1 bar
 Indication for defective pressure sensor
 Fault detection indicated by a red warning LED
 Automatic shut-off after 1 minute
 Power supply by 9 V battery (standalone unit)

**CRMK-110**

Common Rail Injectors Backflow Kit for All Injector Makes



→ **Diagnosis**

CRDi Excessive Back-Leak

→ **Features**

Test kit for checking the return flow volumes from Common-Rail Injectors
 Plexiglass robust container with graduated scales for easy comparison
 Metal chain hook to hold tester in upright position of the engine hood
 Set of backleak connectors for BOSCH, VDO, DELPHI and DENSO injectors

DIT-062

High Pressure Injector Leakage Tester

→ **Features**

Up to 600Bar
 Compact Static tests adaptable to all Di and GDi injectors

WORKSHOPS

CRDi - EUi/EUP - HEUi - CRP
ENGINE - GDi - EFi - GDi Pumps

**PIMK-010**

Piezo CRDi Backflow Pressure Tester



→ **Diagnosis**

Piezo CRDi return pressure Piezo injector proper operation

→ **Features**

Transparent Plexiglass tester to permit view of any air pockets which may be present in the fuel
 Interchangeable vacuum gauge on the test unit for further testing capabilities
 Adaptability for most injectors in the market
 Pressure relief valve for safe removing from engine
 Adaptable to BOSCH (15 Bar gauge) and VDO, DELPHI & DENSO (+3 Bar gauge)



**We always
strive for
Excellence
& Innovation**



Welcome
to an Innovation
Driven World

Product Catalog



Scan CZ Digital
Product Catalog



Headquarters & Production

New Address
Isiodou 18 (Industrial Park)
194 00 Koropi, Attica-Greece

German Branch
A.I.S. GmbH
75438 Knittlingen, Germany

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