

repairing the future...

TK1029.03

HEAVY DUTY COMMON RAIL INJECTOR TEST BENCH

TK1029.03, 4th version of TK1029 family, is more than a test bench with its new electronic drive system and many updated features.

The new electronic drive system and CR1 test control software are faster and capable to measure bigger injectors up to 3000 mm³/stroke. Another new feature is a improved temperature control, providing more accuracy in injector fuel readings.

TK1029.03 Heavy Duty Common Rail Injector Test Bench is a test bench for both heavy duty testing and testing heavy duty injectors.

If you are looking for a test bench to test injectors one after other during long shifts, almost running 24/7; TK1029 is the test bench you should be looking for. The test bench is designed as such to cope with continuous testing, with its better filtration, larger and different design test oil tank, cooling algorithm, motor drive and master pump selection.

In the mean time all of those features helps to accomodate Heavy Duty Injectors such as L'Orange MTU 1163, MTU4000, Cummins QSK and as such for testing.



The only powerful, accurate and precise solution for Heavy Duty Common Rail Injector testing



MAKTEST DIESEL
INJECTION TEST AND
REPAIR SOLUTIONS



Description of Options:

Measurement Capacity Options:

Standard: Measuring system capacity is limited to measuring On-Road Vehicles including Trucks and Work Machines up to 700 HP (400mm3/Str). The precision for measuring upto this level delivery is maximized.

High Flow: Measuring system capacity is designed to measure high fuel deliveries from super Heavy Duty applications like high output generator sets, marine applications e.g. MTU 4000, MTU1163 etc. Horsepower rating ofr such engines start from 1000HP to 8000 HP.

Measurement Technology Options:

PD: Positive Displacement sensor is used as standard.

Coriolis: Mass measurement with high accuracy and precision is obtained in delivery measurement.

Introduction Rate: Measuring the flow rate of each injection, helping observe control valve response, dynamic flow characteristics of nozzle. System is capable present oscilloscope views of flow. Extensive reporting is available with custom software development as per customer's specifications. System is recommended for mass reconditioning operation and R&D labs.

Voltage Options:

200-240 VAC 50/60 Hz. : TK1029 is designed to run at 360-415 VAC 50/60 Hz. This option includes a Maktest Transformer suitable for TK1029.

360-415 VAC 50/60 Hz. : Standard model.

Code Option:

Currently only Bosch IMA Coding option is available. More options will be included in the near future.

No Coding: Standard Model.

Bosch IMA Coding: Option provides coding calculator for Bosch Electromagnetic and Piezo injectors, including ISA Classification. Feel free to contact us for more information, or watch application videos in TK1029 Channel on product page.

CR1 Test Report **MAKTEST**

Test Details
Injector No: test1
Serial No: CR1019/ZEREK205
Make: BOSCH
Type: CR1019/ZEREK205
Application: Hyundai
Model: *
Customer Info: *

CR1019 CR102 T113
NRE-NRE CI-1118
ED Number: 101908 T217
CODE Version: 113A213
Software Version: CR08.0

Test Date & Time: 2020-05-17 2:35
Authorized Personnel:

Status	Test	Bar	µs	NRT1 Rate Table Bar	Target	Result	IPM	RPM	°C (Inlet) °C (Return)
FAIL	Condition	1600 +10	800	0 = 0	max:300	0.0	1000	1000	40 ± 2 45 ± 10
		1402		433	63.0 ± 7.2	0.0			00.0 00.0
Density	°C (Coriolis)								

Status	Test	Bar	µs	NRT1 Rate Table Bar	Target	Result	IPM	RPM	°C (Inlet) °C (Return)
PASS	Leak	1700 +10	0	0 = 0	max:300	0.0	0	1000	40 ± 2 45 ± 10
		990		0.0	40.0 ± 40.0	0.0			00.0 00.0
		µs							

CR1 Test Report as PDF File

CR1 Tester Control Software **MAKTEST**
Advanced Injector Drive Signal Settings

Channel	Stroke V (0-200)	Stroke V (10-20)	Stroke V (0-200)	Stroke V (0-200)	Stroke Time (0-1.0 s)	Stroke A Max (0-200)	Stroke A Min (0-200)	Stroke B Max (0-200)	Stroke B Min (0-200)	Ph
Conditioning	24	250	100	0	0.200	200	0	200	0	0
Leak	24	250	100	0	0.200	200	0	200	0	0
UL Return	24	250	100	0	0.200	200	0	200	0	0
ULM	24	250	100	0	0.200	200	0	200	0	0
UL	24	250	100	0	0.200	200	0	200	0	0
UL	24	250	100	0	0.200	200	0	200	0	0
UL	24	250	100	0	0.200	200	0	200	0	0
UL	24	250	100	0	0.200	200	0	200	0	0
UL	24	250	100	0	0.200	200	0	200	0	0

Advanced Test Plan Creator



Test Screen Image



Clamping Unit



3 Phase Voltage : 360-415 Vac 50/60 hz.
18A

220V AC 50-60Hz Mono Phase for Computer.



Home Screen of TK1029.03 CR1 Test Control Software

High Pressure System

HP Pump : Bosch Cp3 or Denso HP3 HP Pump
Motor : 4 kW . 1400 rpm @ 50 Hz; 1800 rpm @ 60 Hz
Max Pressure : 2200 bar
Pressure Regulator : Bosch
Rail Volume : 28 cm³

Test Oil Supply System

Tank : 27 L
LP Supply Pump : 4 L/min, max 4 bar
Heater Element : 2kW
Cooling System : Air Cooled, 4 L/min $\Delta T = - 5 \text{ }^\circ\text{C}$
between 40- 50 $^\circ\text{C}$
Filter : 5 μ

Instrumentation

HP Sensor : Bosch 2200 bar
Flow Sensor : Gear Type 1000 mm³/stroke @ 1000
Injections per minute
Nozzle ResponseTime (NRT) : Piezo with Acceleration
correction. $\pm 10 \mu\text{s}$ Accuracy
Electronics : Maktest CR1

Computer

All-In-One
Processor Dual Core 1.86 Ghz or X5 28350 1.44 Ghz
RAM 2GB
HD : SSD 64 GB
Monitor 15" Touch Screen /Wide
OS : Windows 10



KO2001 : MTU 4000.01 Clamping Unit

Dimensions

Machine Dimensions:
Width: 930 mm
Depth: 650 mm
Height: 1690 mm
Weight: 320 kg

Packing Dimensions:
Width: 1240 mm
Depth: 1000 mm
Height: 1920 mm
Weight: 420 kg



Optional Accessories for Various CR

- KO2000 Standard Injector (Bosch - Denso - Caterpillar etc.) Clamping Unit
- KO2001 KO2001 ADAPTER SET FOR L'ORANGE MTU Series 4000.01 INJECTOR
- KO2002 QSK-19 Adapter Set
- KO2003 KO2003 ADAPTER SET FOR BOSCH MTU 2000 SERIES for Old & New Types
- KO2005 Scania XPI Adapter Set
- KO2004 ADAPTER SET FOR BOSCH CRIN 4.2 (4 PIN) Double Magnetic.
- KO2006 CUMMINS XPI ADAPTER SET
- KO1950 MTU Series 4000.03 L'Orange CR Injector Adapter
- KO2005 SCANIA XPI ADAPTER SET
- KO1389 BOSCH (0445 120 064 / 137 / 394)
- KO1426 DENSO - KOMATSU (275) (0561 09E 0582) (095000-0560)
- KO1427 BOSCH - RENAULT (0445120020)
- KO1428 BOSCH - IVECO/CUMMINS (0445120 113 / 114)
- KO1429 BOSCH - MAN (0445 120 030 / 061 / 202 / 218)
- KO1430 BOSCH - DAEWOO (0445120040)
- KO1431 BOSCH - FORD (0445120025)
- KO1432 DENSO - JOHN DEERE (095000-5480 /5050)
- KO1768 CUMMINS XPI (QSX11.9) (2872127)
- KO1459 DENSO - HYUNDAI (095000-5550)
- KO1462 BOSCH-MAN (0445 120 024 / 044 / 055 / 056)
- KO1472 DELPHI-JAGUAR X400 (EJDR01001D) (EJDR00504Z)
- KO1484 DENSO - JOHN DEERE (7560-07K00201)
- KO1502 DELPHI - MERCEDES - SMART (RA0020109751)
- KO1584 DENSO - ISUZU (095000-6222 09K60394)
- KO1587 BOSCH-KOMATSU (0445 120 007 / 059 / 075 / 123 / 140 / 212 / 250) (F431-4-8965)
- KO1592 DENSO-KOMATSU (PC800) (0562 01L 0516) (095000-1211 09K0047)
- KO1631 BOSCH-CUMMINS (0445 120 070) (0445 120 241) (0445 120 121 - (F2093-02-0370))
- KO1634 DELPHI (EMBR00002D)
- KO1636 SIEMENS - FORD 6.4 L (1875072C91)
- KO1714 BOSCH - VOLVO (0445 120 066 / 067 / 141)
- KO1715 BOSCH-FOTON/SHANQI (0445 120 086)
- KO1716 DENSO-MASSEY FERGUSON (095000-6490)
- KO1718 BOSCH (0445 120 102)
- KO1737 BOSCH - MAN (0445 120 092 / 157)
- KO1767 DELPHI - DAF (1742535)
- KO1830 BOSCH - MAN 0445 120 026/045/098/099/105/147
- KO1860 DENSO - 095000-5450
- MO1105 RETURN ADAPTOR - DELPHI
- AA3459 CR PIPE CONNECT NIPPLE-DENSO INJ
- AP1757 INJECTESTER CR DELPHI INJECTOR CABLE
- BA1351 RETURN CONNECTION NIPPLE
- KO1583 CATERPILLAR (320DL-32F61-00062)
- KO1902 Bosch CRIN Injector Adapter suitable for 0445 120 078 and same body size injectors.
- KO1644 ADAPTOR SET FOR BOSCH-GOLDEN DRAGON 0445 120 078



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For more detailed information, contact your Maktest Inc. distributor or visit



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INJECTION TEST AND
REPAIR SOLUTIONS

Continuous development is taking place. Maktest reserves the right to alter the design &/or specification without prior notice.
@Maktest 2020 / TK1029.03 Heavy Duty CR Injector Test Stand

