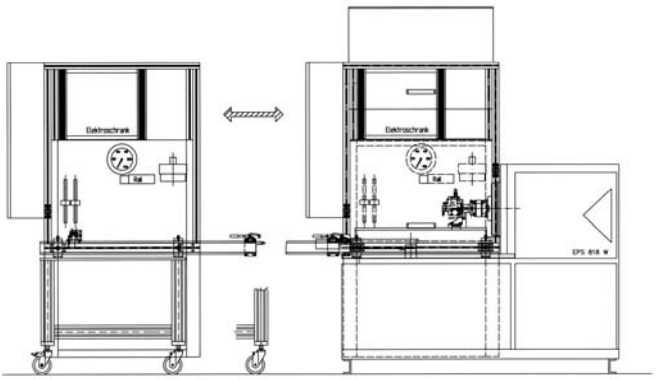
moehwald
Bosch Group

Module for testing common rail pumps

CRP 2000



Special Features:

- **Test stand module to attach to Bosch basic test bench EPS 818W/EPS 835W or EPB 2000**
- **Short setup and tear down time for the module**
- **Used for diesel common rail pumps in passenger cars and commercial vehicles**
- **Testing technology is identical to plant measurement technology**
- **Testing of common rail pumps in accordance with Bosch TKU and test requirements**
- **Easy conversion to other types by means of mounting parts**
- **The core measuring device is the Coriolis mass flow meter**
- **Safety devices**
- **Test stand control with the MOEHWALD software package Prisma NT**
- **Easy operation**
- **High reliability**
- **Suitable for use in harsh production environments**

General
The CRP 2000 licensed module for measuring common rail pumps CP1 and/or CPX.3 is a mobile attachment that can be connected to an MEP 2000 modular injection pump test system with a basic test bench EPS 818W or alternatively EPS 835W, or a RPB 2000 system (predecessor of the MEP2000 with basic test bench EPB 2000). The module is based on the Bosch plant measurement technology for CR pumps and is equipped with the same measuring equipment. This module is mainly used for quality assurance and diagnostics. Due to its great flexibility in the areas of adaptation and software, the CRP 2000 module is also excellently suited to testing in the areas of product development and application engineering with very stable testing boundary conditions.

Measurement Principle
The heart of the measuring technology that is used is the "Intelligent Sensor Module" (ISM2) from Bosch, as well as mass flow measurements following the Coriolis measurement principle. Here, the flow is recorded after the test benches own pressure control valve.
The test bench IPC in combination with the ISM2 sets the desired operating conditions on the CRP module, controls the test procedure, and records, for example, the delivered quantities of the CR HD pump.
The pump is assessed using the recorded measurements, flow, speed, rail pressure, and overflow. In addition, the ratio of delivery/theoretical delivery volume is used to bring the efficiency in as a test variable. Supplementary measurement values and measurement parameters such as ZME current, feed pressure, feed quantity, lubricating oil quantity, and the dispersion of conveyance mass complete the total assessment of the pump.

Setup
The CRP 2000 is a test stand attachment that can be mounted on the above-mentioned test benches (EPS818W/EPS835W and EPB 2000).
The moveable module consists of the following essential components:

- Aluminium profile frame
- Test hydraulics with safety devices
- Measurement and control technology with:
  - intelligent sensor module
  - Coriolis mass flow meter for measuring the delivery
  - various sensors for pressure and temperature measurements in the supply, rail and return
- Clamping and drive device for the respective pumps
- Prisma NT software as test stand control software
- Sound protection cubicle or spray protection cover
- Rail system mounted on the basic bench for easy assembly/disassembly of the complete module
- Wheeled carrier to take the complete module after removal from the test stand

The following add-ons can be optionally integrated:

- Computer equipment (if it doesn't already exist due to an MEP 2000 module)
- Additional mass flow meter (necessary if other flow areas have to be tested)
- Lubricating oil supply
- KMM mounting frame (useful if there is no KMM on the basic test stand – this must be removed one time before attaching the CRP module)
- Additional clamping devices

Modular Design:

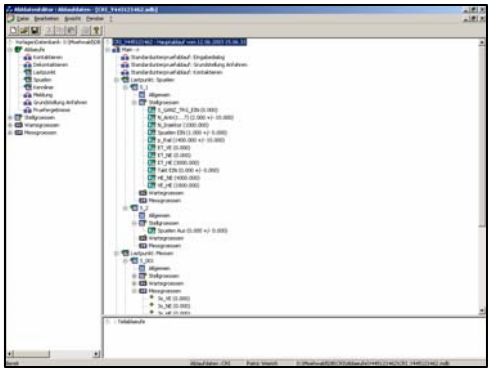
Compact unit on the
basic bench EPS818W or 835W

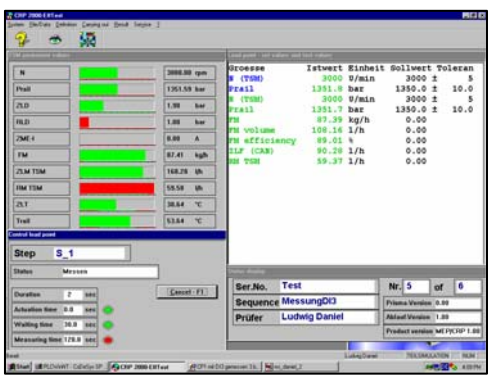
Easy mounting by means of
wheeled carrier and quick adapters

Good accessibility of the testing
area

Hydraulics and instrumentation
completely onboard

Software:





Test Procedure with Prisma NT:

Commensurate with our other licensed products, the software is designed to run the CRP 2000. The core components are the model data and process data editors (see right). With these editors, it is possible to generate a test procedure in a very easy and flexible way. Here, you can create as many “load points” as you want with as many steps and specific measurements as you want and in any order. To make sure that data conversions are possible and that trial runs coincide with plant measurements, there is a conversion programme for model data, process data, and results data.

Analysis:

All results data is available in an Access database or alternatively ASCII files. It is no problem to further process the data using Excel or other analysis programmes.

Technical Data:

Test samples:	Bosch CR pumps – models (CP1 and CP3.x). The measurement results are absolutely comparable to Bosch plant testing technology. (additional pumps on request)
Test medium	according to ISO 4113, or Shell 1404
Pressure regulator	Vehicle DRV
Adjustable rail pressure range	100 – 1600 bar (optionally 1800 bar)
Rail pressure regulator rating	+/- 5 bar
Rail pressure measurement	2x HBM sensors 0-2000 bar (+/-0.25 % ME), redundant
Supply pressure setting/measurement	0.1 to 6 bar (+/-0.35% FS)
Return pressure setting/measurement	0.2 to 2 bar (0.35% FS)
Temperature measurement in the: rail supply, pump supply, high pressure, return, lubrication	0 to 200°C (PT100, DIN IEC 751 or PT100 Class B) Measurement error of sensor: ±0.27% FS
Return flow	0.1 to 5 l/min (±0.5% delivered quantity) Measurement error of sensor: ±0.18% FS
Lubricating oil flow rate (option)	0.1 to 10 l/min (±0.5% delivered quantity) Measurement error of sensor: ±0.18% FS
Mass flow measurement I	20 to 100 kg/h ±0.15% delivered quantity ±1 digit (Range 0-20 kg/h possible, but with greater error)
Mass flow measurement II (Option)	75 to 1000 kg/h ±0.15% delivered quantity ±1 digit (Range 0-75 kg/h possible, but with greater error)
Power measurement/regulator (for ZME)	Shunt measurement/+regulator 0-3 A (+/- 5mA)
Automation:/software	Computer controlled test bench, Prisma NT Software, an unlimited number of test points can be parameterised
Dimensions (H/W/D in mm)	2200/1730/1150
Connectors:	The module is supplied from the basic bench Electric: depends on the basic test bench Cooling water: depends on the basic test bench Compressed air: 6 bar
Test stand basis	Bosch test bench EPS715/ EPS818W/ EPS835W

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