

## METROLOGICAL RANGE



The GPSIII, hydraulic high pressure generator and measurer is fitted with high accuracy sensors and specially dedicated to the calibration of metrological equipments.

It can be driven locally or remotely.

It can easily be integrated in a full automatic system driven by standard SCPI commands.

Dedicated to sensors or transmitters manufacturers,

# GPSIII

## Up to 500 MPa Automatic High Pressure Generator and Measurer

**UP TO THREE SENSORS**

**ACCURACY:  $\leq 1.0E^{-4}$  FS**

**RANGE UP TO 500 MPa**

**UNEQUALLED PRESSURE  
ADJUSTEMENT CAPABILITY  
AND STABILITY  $\leq 1.0E^{-5}$  FS**

**OIL OR WATER + GLYCERIN  
FLUIDS**

**LARGE GRAPHIC SCREEN**

**VERY EASY TO MAINTAIN**

**FULL AUTOMATION  
CAPABILITY**

**VERY HIGH MTBF**



## Front view

The GPSIII design answers to the most demanding metrological requirements of accurate calibrators.

Insulated from any temperature fluctuation, the sensors are fitted on the front face of the apparatus. A fan is used to manage a good and stable temperature of the room across the apparatus.

When looking for an issue, manipulating the apparatus by using the maintenance screen and the key pad, the operator is well place to operate.

The sensors, the insulation valves and connectors are, as well as the high pressure output, located on the front of the apparatus. That allows making ergonomic easy trouble shooting check or maintenance if required.

A pre-filling pump, delivered in option, is used to generate pre-pressures up to 30 MPa.

This pump usage as well as its pressure level is managed by the embedded software.

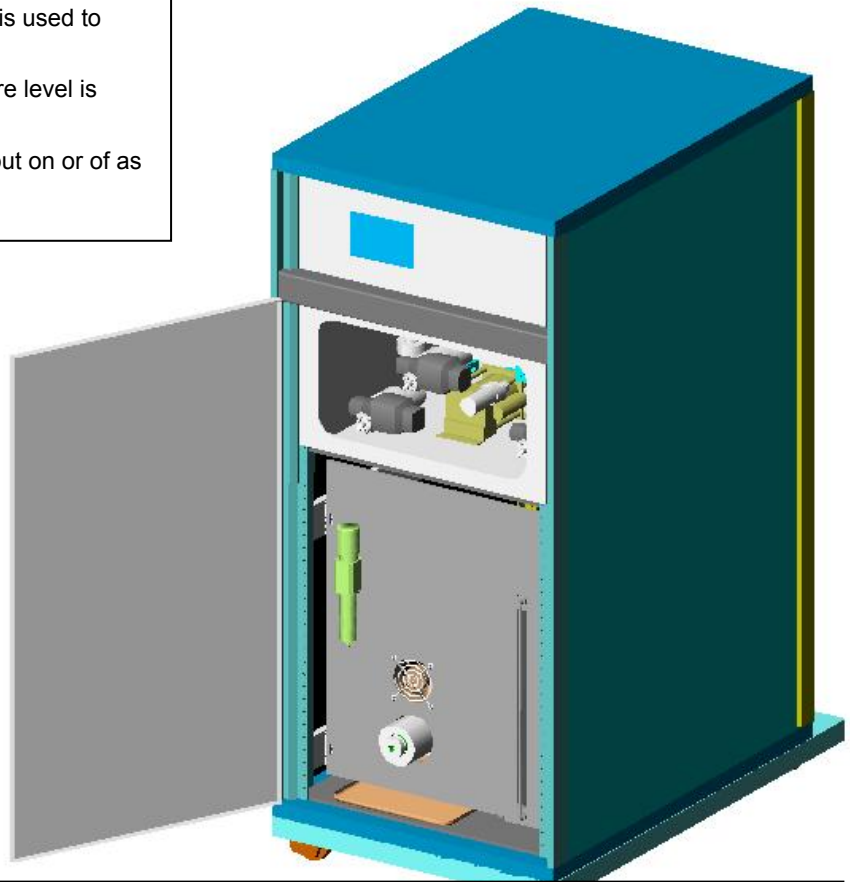
The pre-filling of the reservoir can be put on or of as well from the software.

The maintenance of the pressure stage piston is made as simple as possible.

The output pressure connector is located on operator site.

Using the manual operation of the motor, after dismantling the output pressure connector, the operator gets out the piston of the pressurization stage case.

The exchange of the piston cartridge kit is then done in a few minutes and does not need any special knowledge.



The GPSIII cabinet is fitted with four wheels.

It can move close to the apparatus that need to be calibrated.

No more than a dedicated power supply of 3 phases 380 VAC is locally required as the apparatus is totally free standing.

This hydraulic automatic pressure generator and measurer can be integrated in any production line or process.

Its SCPI standard commands make easy it remote management and integration.

The GPSIII has been built to answer to the sensor and transmitter manufacturers that need calibration of their sensors at the end of the production process.

Its very strong construction allows intensive usage including ageing or burst pressure test before proceeding to an accurate calibration.

## Rear view

The back view when side covers are removed shows the apparatus ergonomics.

220 VAC volts extra connectors are available at the top allowing the connection of extra apparatus that can be located on the top of the cabinet.

A 380 VAC 3 phases + ground electrical cabinet including electrical protections is fixed at the back of the shell.

A four liters reservoir is delivered as standard.

The front plate used to fix the sensors, valves, connectors insulate the metrological apparatus from any temperature fluctuation generated by the brushless motor.

A large volume is used to build this metrological apparatus.

This volume participates actively to the temperature homogeneity and stability of the cabinet.

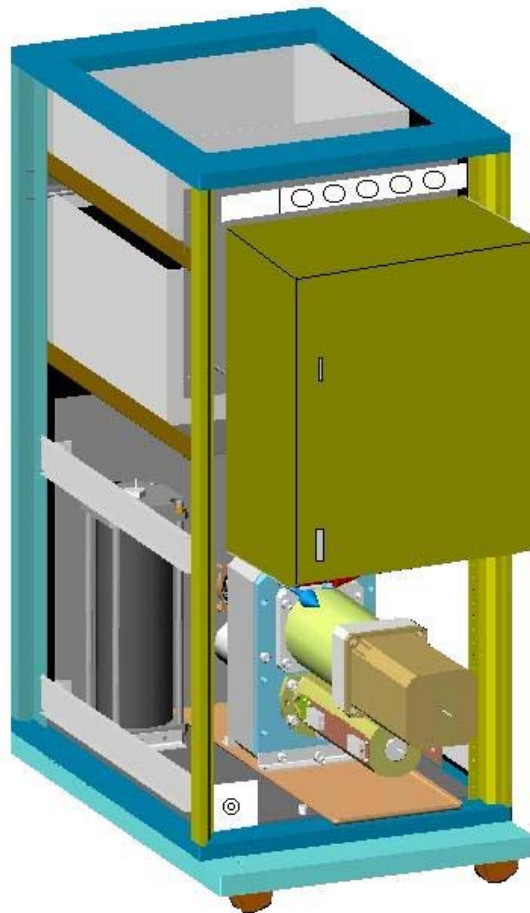
The volume allows visual control of the components and makes easy the maintenance.

The brushless motor, fitted with its gear box and high pressure stage can be locally maintained.

This pressurization stage has been built in accordance with DHB 1 GPa long time experience of very high pressure management.

Its hardness is in accordance with DESGRANGES & HUOT or DH-BUDENBERG very strong construction.

It has been largely designed to warranty a very good MTBF in intensive usage.



DHB engineering team has designed this apparatus to satisfy the most exigent laboratories or industrials.

The GPSIII is declined in different assemblies and can be easily customized if required.

- Single sensor without pre-programming pre-filling system.
- Single sensor with pre-programming pre-filling system.
- Double sensor without pre-programming pre-filling system.
- Double sensor with pre-programming pre-filling system.
- Single or double sensor with or without pre-filling system and external accurate barometer.
- Intelligent pressure management allows maintaining stable and accurate pressure over time.
- Customized system can be provided. Please contact DH-BUDENBERG Sales teams.

## AUTOMATIC CALBRATOR FOR TRANSDUCERS AND TRANSMITTERS

The GPSIII was designed to perform high quality calibration of electronic measuring instrument. Such systems are used by :

- Calibration laboratories,
- R&D departments, in order to determine the electronic and metrological characterization of transducers,
- Production departments, for the calibration of sensors, transmitters or metrological instruments.

### AUTOMATED OPERATION

The GPSIII is fully programmable by using standard SCPI command sets to automate the generation, the regulation and the measurement of pressure. For special applications, the GPSIII has an advanced programming language which enables the user to easily integrate it in a customized system.

### FINE PRESSURE GENERATION

Complying with very high MTBF customer requirements, this new pressure generator and measurer based on a brushless motor working in close loop with accurate sensors allows easy understanding and maintenance by its operator. The package includes trouble shooting software, tele-training, tele-maintenance for full time operation in production.

### MEASUREMENT ACCURACY

Reference pressure is measured with a high accuracy oscillating quartz crystal sensor (up to 2750 bar) or a silicon sensor (up to 5000 bar), which is fully temperature compensated. This technology combines long term stability with excellent metrological specifications and low sensitivity to environment influence.

## TYPICAL PRESSURE GENERATION & REGULATION RESEARCHED

Models	<b>GPSIII</b>				
Range	69 MPa	138 Mpa	207 MPa	276 MPa	Up to 500 MPa
Fluid	Oil or clean water + glycerin				
Measuring accuracy	± 1.0E <sup>-4</sup> FS			± 1.0E <sup>-3</sup> FS	
Stability of regulation	≤± 5.0E <sup>-5</sup> FS			≤± 5.0E <sup>-4</sup> FS	
Typical volume compressed	≤ 400 cm <sup>3</sup>				
Pressure gain MPa/s	Auto adaptable ≤ 15 MPa/s				
Time from 0 to 276 MPa	Eg: Typically 90 s within 1.0E <sup>-4</sup> FS with 100 cm <sup>3</sup> output volume				

- + Fluid can be any adequate mineral oil or clean water with 10% glycerin.
- + Circuits with larger volumes can be accommodated. The apparatus is delivered with a four liters reservoir.
- + Typical pressure gain is defined with a 100 cm<sup>3</sup> output volume.
- + Pressure rising time can be significantly reduced by using our pre-filling programming system.
- + Can be delivered with our full time management system allowing, if required, infinite time stable pressure setting.

## ENVIRONMENTAL MONITORING MODULE (EMM)

In addition, an Environment Monitoring Module (EMM) including temperature, humidity and barometric sensor, allows to monitor the change of the surrounding condition while calibrating instruments.

## TYPICAL METROLOGICAL SPECIFICATIONS RESEARCHED

Accuracy	Repeatability	Resolution	Hysteresis
1.0E <sup>-4</sup> FS	2.0E <sup>-5</sup> FS	Typically 20 ppm	5.0E <sup>-5</sup> FS

(\*\*\*)Accuracy statements include the combined errors of repeatability, linearity and hysteresis.

## ADVANTAGES

Our GPSIII is also used as the pressure generator of our full automated 50 000 and 60 000 series metrological balances.

## TECHNICAL SPECIFICATIONS

Dimensions (WxDxH):	550 x 1000 x 1200 mm	Measuring fluid :	Oil or Water +
Weight :	200 Kg	Operating temperature water	10 à 40 ° C
Computer interface :	IEEE488	Operating temperature oil :	0 à 50 ° C
Drive, filtered air supply :	≥ 600≤800 kPa	Power supply three phases:	380 VAC – 16 Amp

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