



# **DEVELOPMENT AND PRODUCTION OF CALIBRATION AND PROVING RIGS AND INSTALLATIONS**



## List of metrological equipment being developed and produced

1. Calibration and Proving Rigs for gas meters (working medium "air" at atmospheric pressure):
  - with critical nozzles;
  - with reference (master) meters;
  - combined versions.
2. Calibration and Proving Rigs for high-pressure testing (working medium "air", "natural gas").
3. Automatic modular calibration rigs in enclosed in container.
4. Automatic Proving Rigs for liquid flow meters.
5. Liquid and gas reference meters.
6. Portable flow rate standards for liquids and gases .

Established cooperation for calibration with  
certified laboratories of  
Europe, USA, Canada, Ukraine, CIS countries

## Automated proving rig APU-G-011/5000



**Automated proving rig APU-G-011/5000** is intended for calibration and proving flow meters working on air, natural gas, and other gases and mixtures.

### Features:

meters being proven are installed on the rig after the master meters. This eliminates the possibility of contamination of reference meters from meter being verified. There is no need to clean the meters taken off the working unit. You can see the real defects of the meter before carrying out proving work .;

Low-leg temperature sensors with a reaction time in the air stream of not more than 10 seconds are used

### Specifications:

- Consumption range	0.5 - 5000 m <sup>3</sup> / h
- Flow rate accuracy	2%
- Maximum Extended Uncertainty	0,27%
- Number of reference meters	5
- Diameter of meters to be verified	50 - 300 mm
- Number of meters to be verified	up to 4
- Number of fans	2
- Power consumption	up to 8 kW
- Overall dimensions (w - h - d)	0,45x1,6x10m
- Material of pipelines	stainless steel

### Automated verification rig APU-G-105/12

Automated verification rig APU-G-105/12 is intended for diagnostics, calibration and verification of household gas meters having pulse output signal, rotometers, aspirators, rotometric tubes, diaphragm meters.



Working medium	air
Operating temperature, ° C	20±5
Minimum flow rate Q <sub>min</sub> , m <sup>3</sup> / h	0,004
Maximal flow rate Q <sub>max</sub> m <sup>3</sup> / h	12
Limits of permissible relative error of installation, %	0,3
Maximum diameter of verified meters, mm	50
Standard size of meters	G1.0, G1.6, G2.5, G4, G6
Number of desktops, pcs.	3
Number of working lines on each desktop, pcs.	2
Number of meters proving on one line, pcs.	7
Total number of proving meters , pcs.	42
Working pressure, MPa, not more	0,15
Accuracy of temperature measurement	±0,05
Accuracy of pressure measurement %, not more	0,1
Power consumption, kW, not more	5
Power Supply - AC mains, V	380 ±38
Frequency, Hz	50±0,5
Overall dimensions, m	1,2x0,7x1,2
Average life span, years	15

## Automated verification rigs combined type (working medium "air", atmospheric pressure)



### Automated verification rig APU-G-011/2500

**APU-G-011/2500 installation is intended for calibration, verification and service of flowmeters operating on air, natural gas, other gases and their mixtures.**



Name of the parameter	Parameter value
Operating medium	air
Type of climatic configuration	UHL 4.2 according to GOST 15150-69
Temperature of operating environment, ° C	20 ± 5
The lower limit of gas flow rate produced by the installation, Q <sub>min</sub> , m <sup>3</sup> / h	0,016
The upper limit of gas flow rate produced by the installation, Q <sub>max</sub> , m <sup>3</sup> / h	2500
Limits of basic relative permissible error, at least, %	± 0,3
Limits of basic relative permissible error, at least, %	± 0,25
Limits of permissible relative error of measurement by critical nozzles, %	± 0,25
Accuracy of temperature measurement, ° C	± 0,05
Accuracy of pressure measurement, %	± 0,1
Standard size of proving meters	від G1,6 до G1600
Nominal size of proving meters	від DN25 до DN200
Types of meters that can be verified on the installation	diaphragm, rotary, turbine, ultrasonic
Number of proving meters at least, pcs.	1 or 2 - when proving the diaphragm meters in manual mode
Performance management of pumping units	frequency-pulse
Number of reference meters, pcs.	4



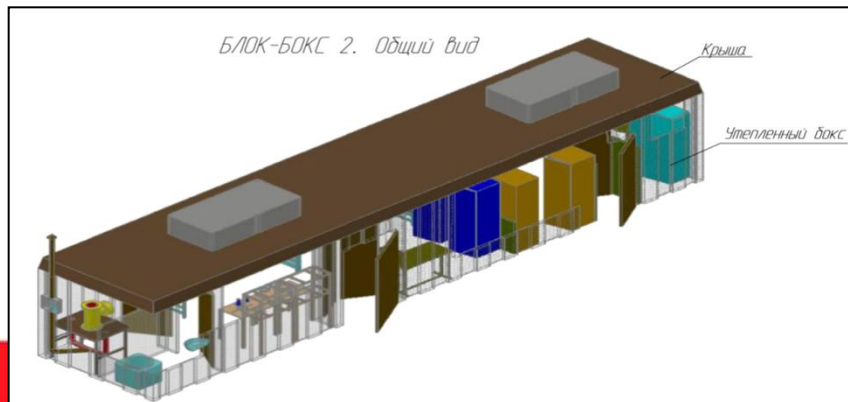
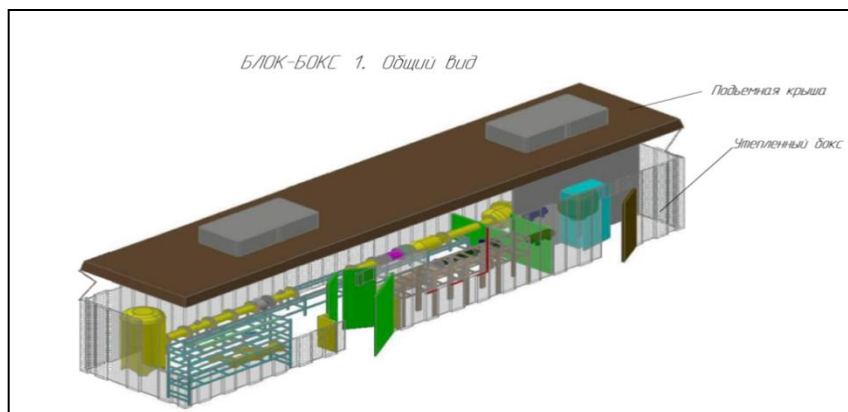


## Automated verification installation APU-G-10/2500-B (modular)

The APU-G-10/2500-B automated calibration unit is intended for calibration, metrological certification and verification of industrial gas meters with an accuracy class of 1.0% and worse in the range of flow rate from 0.5 to 2500 m<sup>3</sup> / h.

The installation is used at the facilities as an operating reference verification rig and provides:

- the operator with information in real time about the status of electro-pneumatic shut-off valves;
- submission of information on the measured parameters (flow rate, pressure, temperature) to the operator in real time;
- drafting of the protocol of calibration or verification of the measuring equipment;
- remote control of shut-off valves;
- drafting and storage of technological database;
- maintenance of the set pressure and flow rate during the tests.

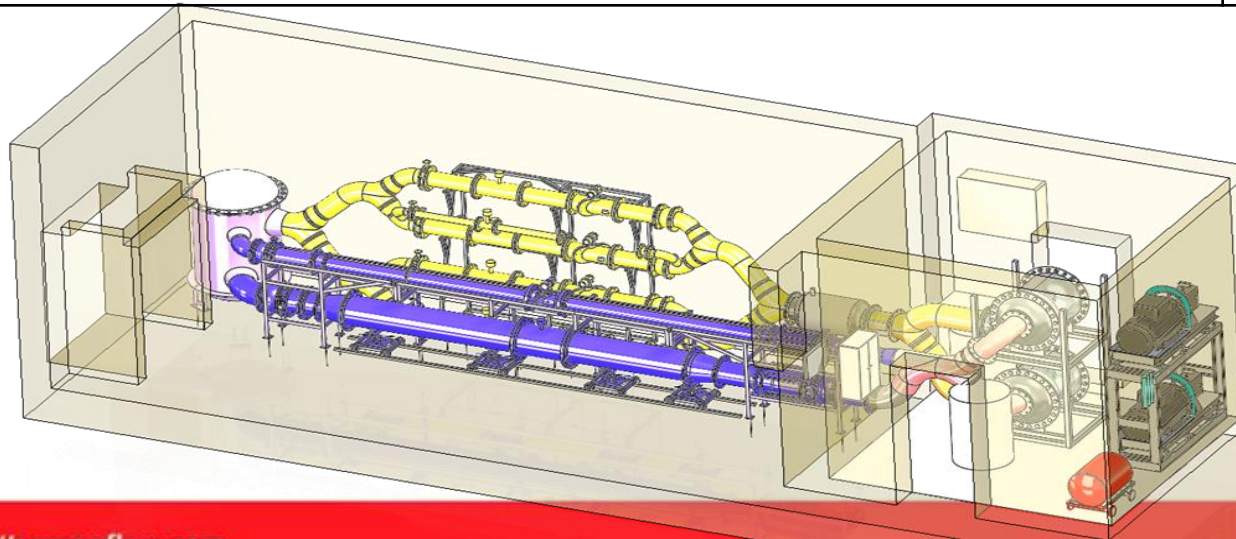


Specifications	
Flow rate range, m <sup>3</sup> / h	from 0,5 to 2500
Nominal size of proving meter	from DN50 to DN200
Standard size of proving meter	from G40 to G1600
Number of proving meters at least, pcs.	1
Number of reference meters, pcs.	4
Operating medium	air
Accuracy of reference measurement, %.	not more 0,2
Accuracy of temperature measurement, °C.	not more 0,05
Accuracy of pressure measurement, %	not more 0,1
Maximum power consumption, kW.	100
Absolute pressure of operating environment, MPa.	0,1 – 5,0
Number of operating lines, pcs.	1
Temperature of the operating environment, °C.	20 ± 5
The accuracy of maintaining the temperature, °C.	± 2
Ambient temperature, °C.	20 ± 5
Overall dimensions, m	12 x 2,4 x 2,4

## Reference rig for high-pressure calibration of gas meters APU-G-110/10000

**Purpose:** to carry out automated calibration and verification of gas meters having a pulse output signal, by the method of comparison with reference meters at different pressures. Air is used as the operating medium.

Parameter	Value
Installation air flow rate range, m <sup>3</sup> / h	0,5...10000
Limits of basic relative permissible error, at least %	±0,25
Nominal meter diameter, being verified, DN, mm	40...400
Accuracy of temperature measurement, °C	±0,06
The accuracy of instantaneous air flow, not worse, %	±1
Excessive air pressure in the installation, MPa	0,1...1,6
The accuracy maintaining air pressure, not worse,, %	±2
Number of meters to be verified (calibrated) at the same time (depending on the type and value of DN), not more, pcs.	4



## Portable standard for transmission of units of flow and volume of liquid EP-011/60

Designed to measure fluid flow rate and volume and can be used for calibration, testing and interlaboratory flow meter comparisons, which measure the volume and / or flow rate of the fluid and is intended for use as a mobile transmission standard.

### Specifications

The operating medium is water.

Maximum flow rate is 60 m<sup>3</sup> / h.

The minimum flow rate is 0.012 m<sup>3</sup> / h.

The number of reference flowmeters - 4 pcs.

Name of flowmeters - ABB HygienicMaster EH521.

Characteristics of reference flowmeters:

Table 1

Nominal diameter, DN, mm	Minimum об'ємна витрата, Q <sub>max</sub> , м <sup>3</sup> /год	Максимальна flow rate, Q <sub>min</sub> , м <sup>3</sup> /h	Number of pulses per 1 m <sup>3</sup>	Limits of basic relative permissible error, %
2	0,012	0,12	60 000 000	0,15
6	0,12	1,2	6 000 000	0,15
15	0,6	6	1 200 000	0,15
50	6	60	120 000	0,15

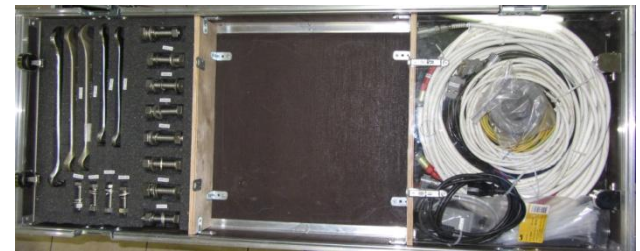
Pressure range: from 0 to 1.6 MPa.

The limits of the permissible absolute error of measuring the temperature of the medium is not more than 0.05 ° C.

Power supply - 220 V.

Computer connection output - RS485.

Calibration and verification output - pulse / frequency







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