BPF-Q1000-10

FLOW TEST BENCH



BPF series test benches are designed to perform hydraulic tests and measure the performance and endurance characteristics of hydraulic components. The BPF-Q family performs flow rate tests on hydraulic components in general, simulating real operating conditions and testing even under extreme conditions, to characterize components and define their performance limits.

1150 L/min
maximum flow rate with three pumps (DN50 system)

295 L/min
maximum flow rate with one pump (DN25 system)

0.2÷13 bar
adjustable delivery pressure

2,000 L
internal closed-circuit tank

APPLICATIONS

Flow rate tests and Kv coefficient calculation. Each bench is built with maximum flow rate and delivery pressure matched to the typical operating conditions of the component under test.

TESTABLE COMPONENTS

- Flexible hoses, plastic pipes, multilayer pipes, pipe-fitting assemblies.
- Fittings in general, hydraulic and pneumatic couplings.
- Valves, heat exchangers, plastic or metal bodies and hydraulic components in general.

MAIN FEATURES

Max. flow rate, one pump (DN25)	**295 L/min**
Max. flow rate, three pumps (DN50)	**1150 L/min**
Delivery pressure	**0.2÷13 bar**
Max. pressure at 47 L/min (1 pump)*	**12.5 bar**
Max. pressure at 295 L/min (1 pump)*	**12.0 bar**
Max. pressure at 1000 L/min (3 pumps)*	**11.0 bar**
Max. pressure at 1150 L/min (3 pumps)*	**10.0 bar**
Min. pressure downstream of component	**1.5 bar**
Kv of DN25 control valve	**20**
Kv of DN50 control valve	**62**
Water supply	**cold water**

** Pressure available at pump outlet.*

BPF-Q1000-10

FLOW TEST BENCH

AVAILABLE FLOW RATE TESTS

The BPF-Q1000-10 bench performs four types of flow rate tests, each managed by dedicated software.

1 Kv calculation

Nominal operating range up to 1150 L/min

The component under test is connected to the measuring line. The software first tares the system and then measures the Kv of the component, net of the system's pressure losses. The test runs automatically.

Software: AQ2TB-KV-LAB

2 Free discharge flow rate

Nominal operating range up to 1150 L/min

The component under test is connected to the measuring line and the supply pressure is automatically increased linearly. Up to 6 independent acquisitions on the same graph.

Software: AQ2TB-FLOW-LIN

3 Delivered pressure vs. flow rate

Open circuit, up to 1150 L/min

The component under test is connected to the measuring line. With a fixed supply pressure, the flow rate is varied by a downstream control valve and the outlet pressure is measured. This provides the delivery curve of a pressure reducer. Up to 6 acquisitions on the same graph.

Software: AQ2TB-P-FLOW

4 Flow rate vs. differential pressure

Open circuit, up to 1150 L/min

The component under test is connected to the measuring line at inlet and outlet; the supply pressure is varied automatically and linearly, and the differential pressure is measured as a function of flow rate. Up to 6 acquisitions on the same graph.

Software: AQ2TB-FLOW-DP



Front view of the measuring lines



Control console

BPF-Q1000-10

FLOW TEST BENCH

STANDARD INSTALLED SOFTWARE

AQ2TB-BASEMOD: “SWG” service software with multichannel acquisition engine, user management, calibration, unit of measure and language selection, messages.

AQ2TB-KV-LAB: pressure loss evaluation and Kv calculation by measuring differential pressure as a function of flow rate. As differential pressure varies, it provides: flow rate in L/min and kg/min, fluid velocity, Kv and Cv coefficients, flow resistance coefficient (ζ) and Reynolds number.

PC EQUIPMENT

Windows 11 IoT Enterprise LTSC 2024

Macrium Backup: automatic backup of data and operating system

SoMachine: PLC management

TeamViewer: remote control via internet

OPTIONAL TEST SOFTWARE

AQ2TB-FLOW-LIN: automatic flow rate tests with linear pressure increase and/or decrease, multi-trace pressure/flow or flow/pressure graph.

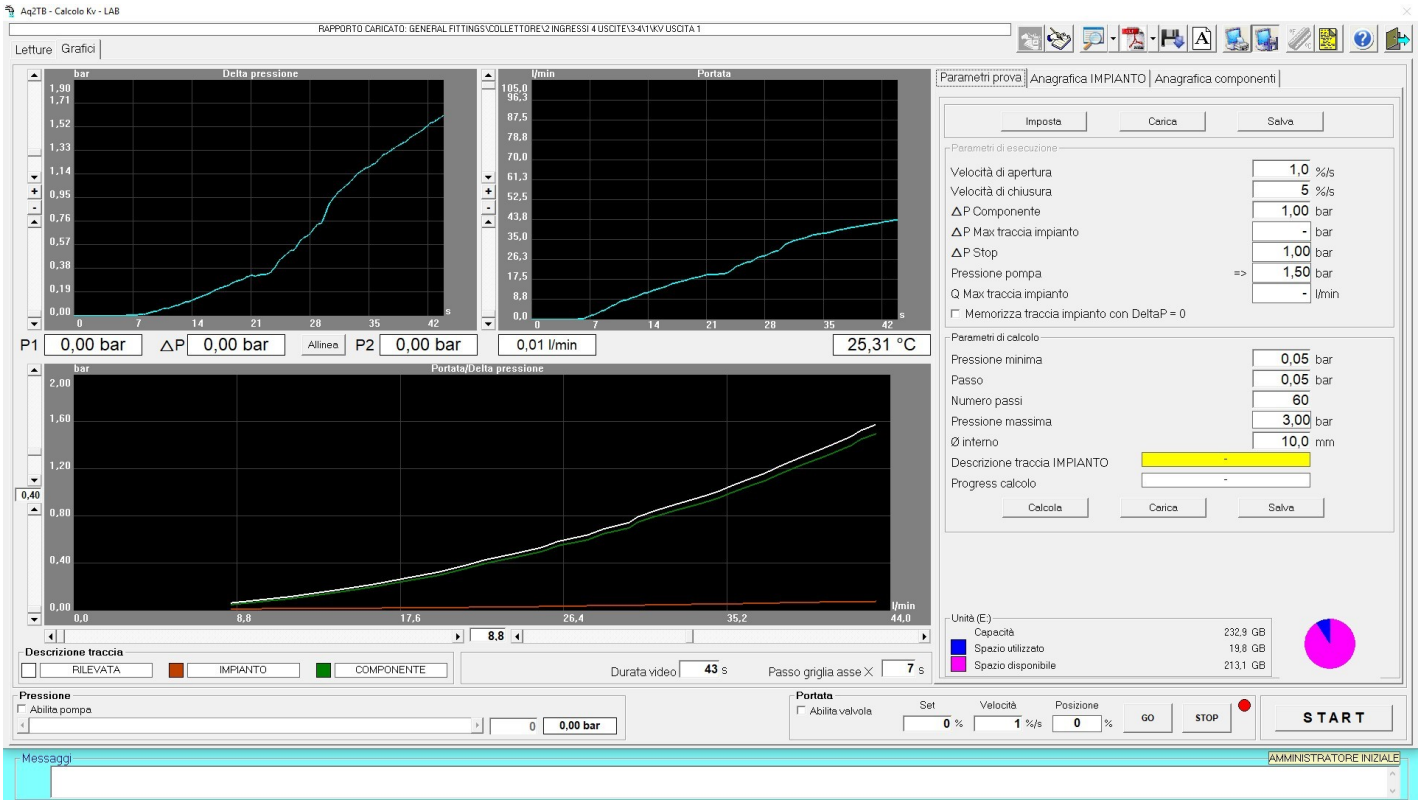
AQ2TB-P-FLOW: flow rate tests on pressure reducers with automatic linear flow increase and outlet pressure measurement. Multi-trace graph, up to 6 acquisitions.

AQ2TB-FLOW-DP: flow rate tests vs. ΔP to determine the characteristic curve of flow limiting valves. Multi-trace graph, up to 6 acquisitions.

BP-OPZ-IND40R: incoming (company server to test bench) and outgoing (test bench to company server) data exchange, in line with the Italian Industry 4.0 plan.

Languages and connectivity

Standard software in Italian plus a second language of choice, English or German; other languages available on request at extra cost. The bench's Ethernet port enables internet connection for remote assistance via TeamViewer (included with the PC) and connection to the company network (intranet) to export test data and reports and to monitor the machine remotely.



Test software screen

BPF-Q1000-10

FLOW TEST BENCH

MAIN COMPONENTS

Pump unit: three 11.0 kW vertical multistage centrifugal pumps (22SV10R) with cast stainless steel body, mounted in parallel on a frame integrated into the control console. They operate individually or in parallel for high flow rate tests.

Inverter: three pump inverters with front keypad for manual control, combined with computer control and pressure transducer feedback, to keep delivery pressure constant regardless of flow rate.

Collection and supply tank: fiberglass, 3,100 x 1,350 x (h) 1,000 mm, nominal capacity approx. 2,000 L, with overflow pipe, sectioned laminate cover, float level controls and drain valve. Additional removable grids and covers for maximum coverage.

Protective enclosure: above the test tank (3,250 x 1,450 x (h) 2,350 mm), with folding doors on both sides and safety microswitches that prevent testing with doors open; key selector to bypass the microswitches.

Support frame for load distribution and tank containment structure with side panels.

Chiller-ready: 3/4” connections on the collection tank.

Automatic filling: 1/2” pneumatic valve controlled by 2 start/stop levels.

Test circuit

PN16 press-fit pipes and fittings according to EN 1267:

- Supply line approx. DN76; delivery line approx. DN54.

DN25 circuit (medium flow rates) with motorized shut-off valve, downstream manual flow control valve, collar supports and union connectors.

DN25 measuring line: range 10-295 L/min, 2 standard pressure taps, PC-controlled proportional servo valve, additional discharge line for testing 90° products.

DN50 circuit (high flow rates) with motorized shut-off valve, downstream manual flow control valve, collar supports and union connectors.

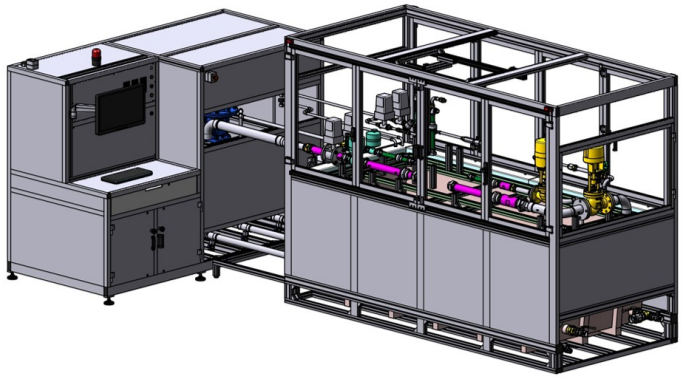
DN50 measuring line: range 39-1150 L/min, 2 standard pressure taps, PC-controlled proportional servo valve, additional discharge line for testing 90° products.

Independent discharge lines draining into the tank.

Note: the DN25 and DN50 pipe sections upstream and downstream of the pressure taps comply with EN 1267.

DIMENSIONS AND WEIGHTS (APPROX.)

Test tank	**3,250 x 1,450 x (h) 2,350 mm**
Control console	**1,200 x 2,600 x (h) 1,900 mm**
Overall footprint	**5,000 x 2,700 x (h) 2,350 mm**
Total weight, empty	**1,300 kg**
Total weight, full	**3,400 kg**



3D view of the bench

CONNECTION REQUIREMENTS

Power supply	**400 V 3-phase + N + GND, 50 Hz**
Power	**34.0 kW (chiller excluded)**
Filling	**automatic (1/2” valve)**
Compressed air supply	**5÷9 bar**
Drain	**2”**
Water temperature	**ambient (chiller-ready)**

CERTIFICATION:
All instruments are supplied with final testing, stability and accuracy report traceable to Accredia standards.

GIUSSANI S.r.l.
Via dei Crederi, 411
24045 Fara Gera d’Adda (BG) - Italy
Tel.: 0363/399019 - Fax.: 0363/398725
www.giussanionline.it
info@giussanionline.it