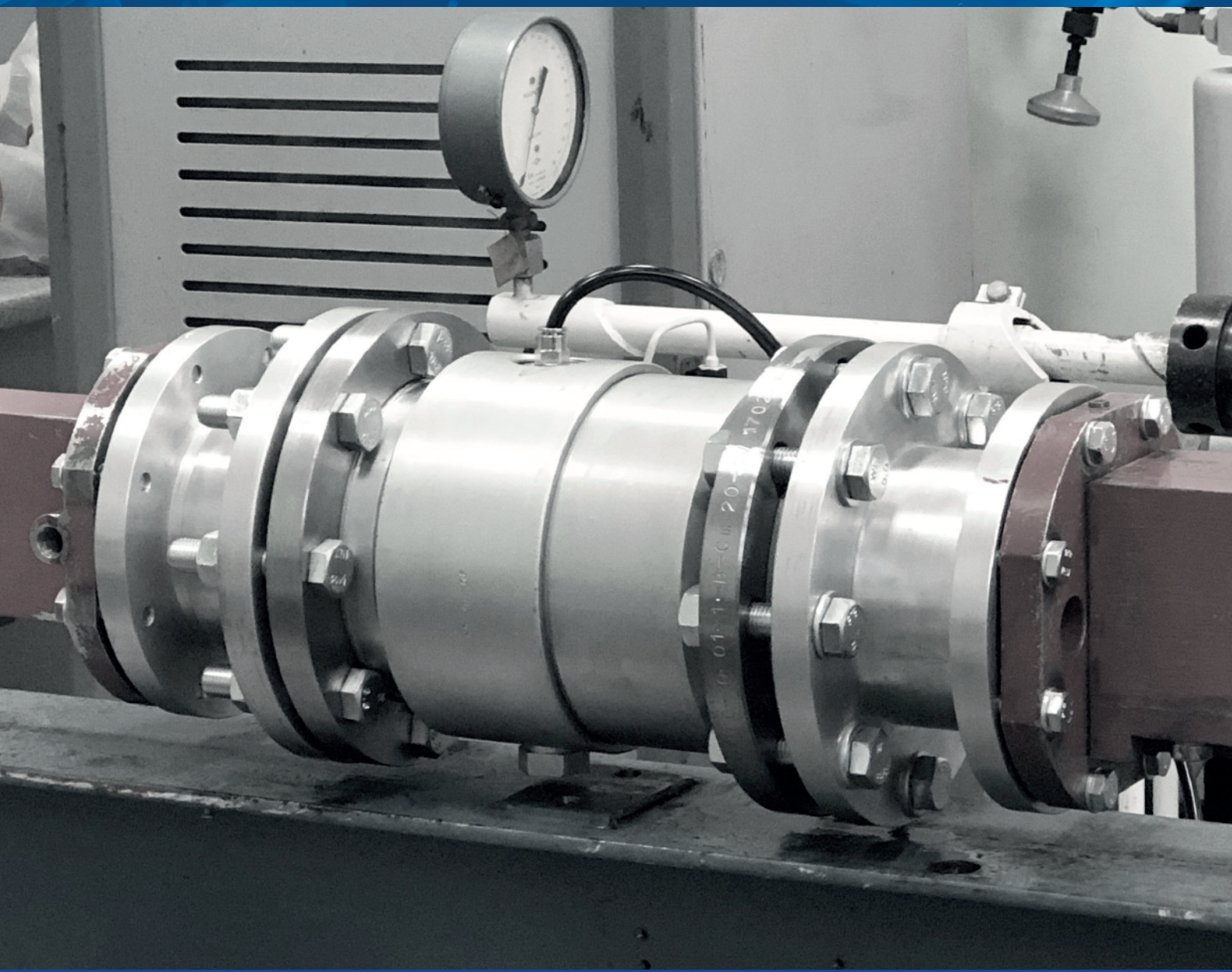
30 years on the market **ISTA Inc.**

Pneumatic systems of St. Petersburg

Quick-acting valves for shock tubes UT™ series.



www.ista-pneumatics.ru

You no longer need to "twist nuts"

Replace the diaphragm with a fast-acting valve and create new properties of shock tube

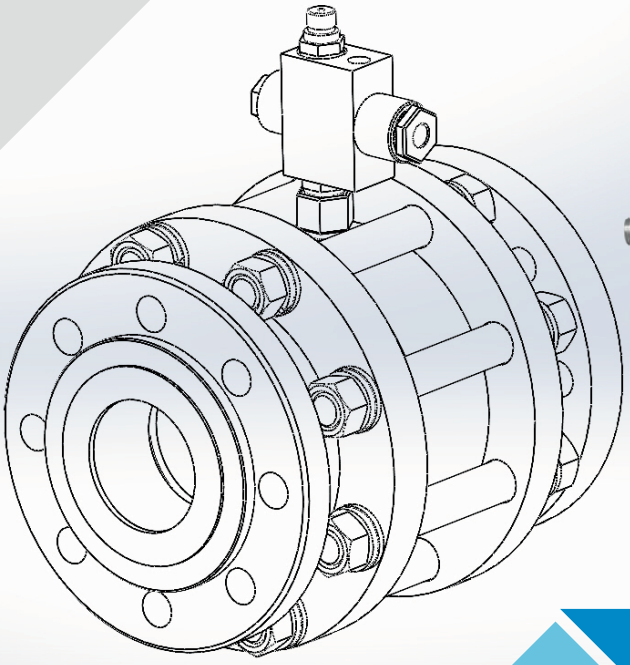
Within the framework of the European program EMPIR, a study* has been carried out comparing the characteristics of the shock tube of the Swedish Research Institute with traditional destructible diaphragms (disks) and with the ISTA's valve.

The findings demonstrate the following advantages of the fast-acting valve:

- reproducibility of results increases several times;
- there is no risk of damage to the sensors or contamination of the flow path of the shock tube;
- minimum time between starts is reduced by eight times;
- possibility of full automation of the experimental process.

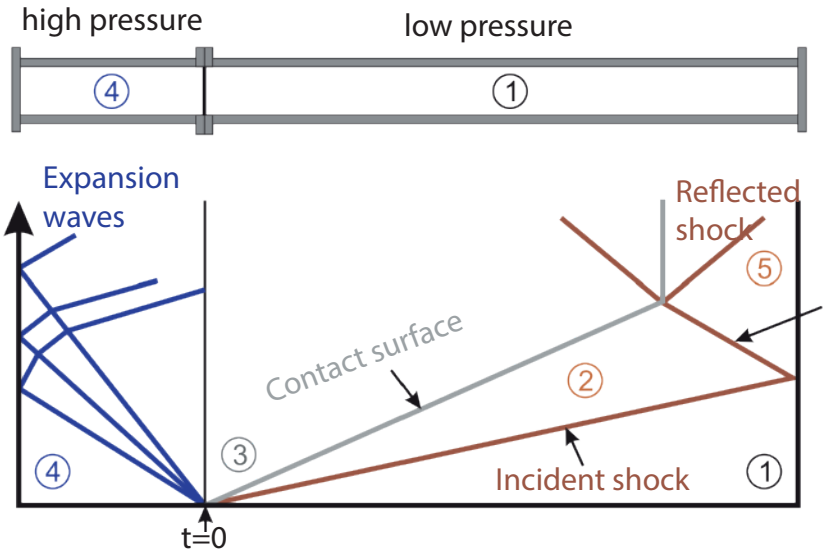
Eynas Amer *, Mikolaj Wozniak, Gustav Jönsson and Fredrik Arrhén «Evaluation of Shock Tube Retrofitted with Fast-Opening Valve for Dynamic Pressure Calibration» Sensors 2021, 21(13), 4470; https://doi.org/10.3390/ Measurement Science and Technology, RISE Research Institutes of Sweden, 504 62 Borås, Sweden

the experiment will turn to pleasure



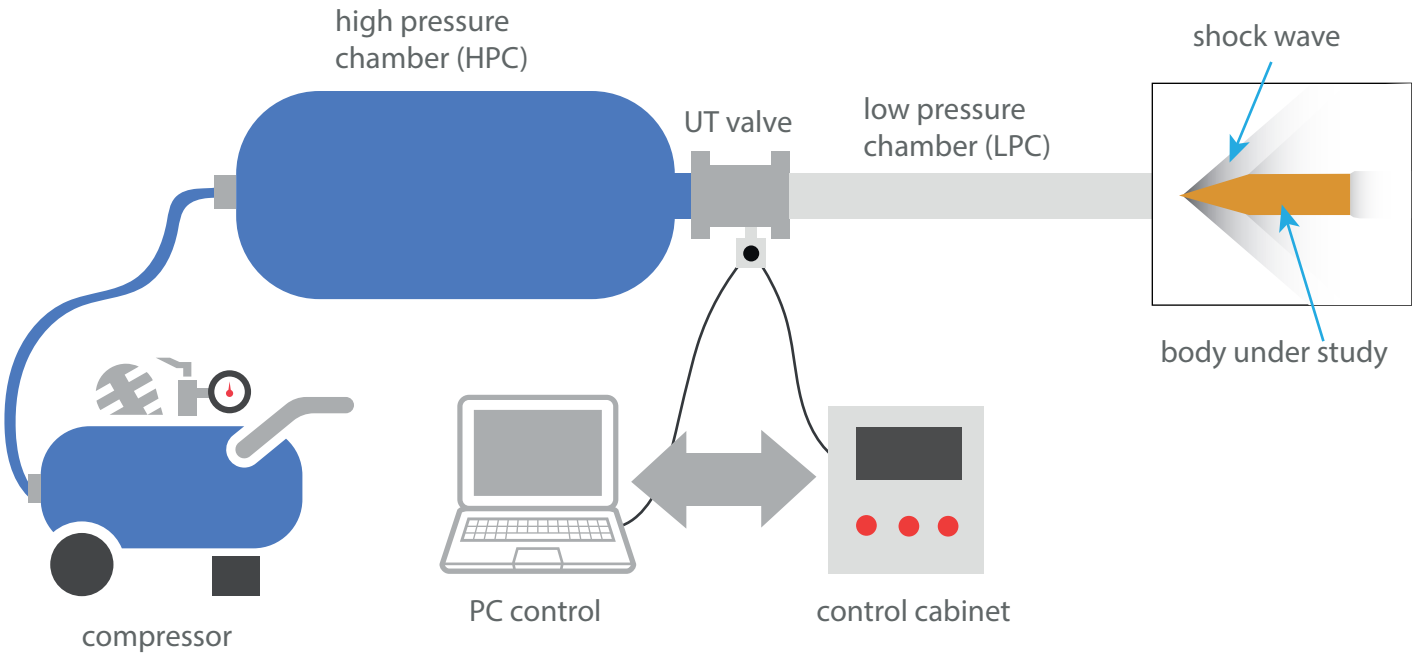
For more than 25 years ISTA Inc. has been creating shock tubes equipped with quick-acting valves. Furthermore during this time non of our clients has abandoned our products and do not returned to diaphragms, because our equipment creates tangible advantages and is carefully accompanied throughout the entire operation period.

Shock tube diagram. With UT series valves you get stable shock front:

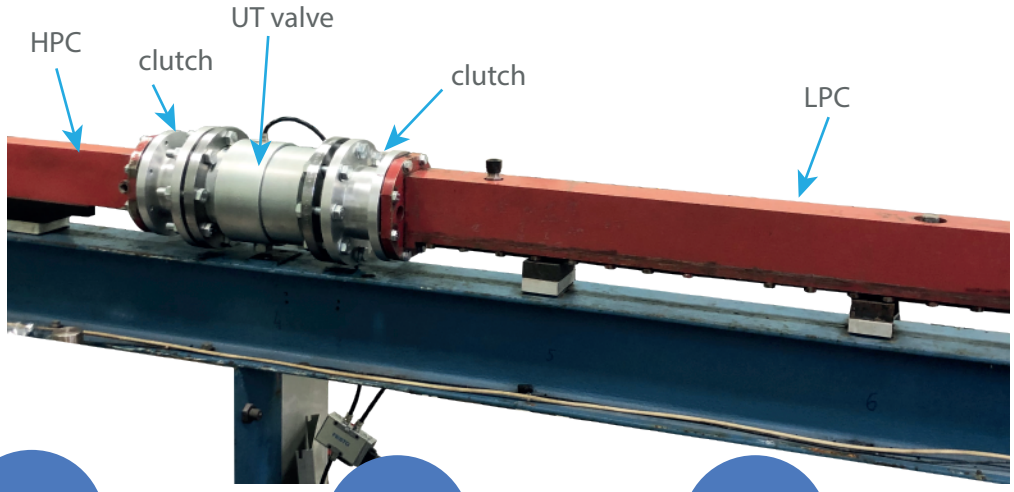


Sundarapandian, S.; Liverts, M. On using converging shock waves for pressure amplification in shock tubes. Metrologia 2020, 57, 035008

1 Replacing diaphragm between HPC and LPC



Today we are ready to calculate, design and deliver a shock tube by client's technical specifications. Our kit contains the main components:



1

Receivers (drivers or high-pressure chambers HPC) of the requested geometry in compliance with all the requirements for vessels operating under high pressure.

2

ISTA High-speed valves of the UT series, which are distinguished by their extreme speed, approaching the time of destruction of diaphragms.

3

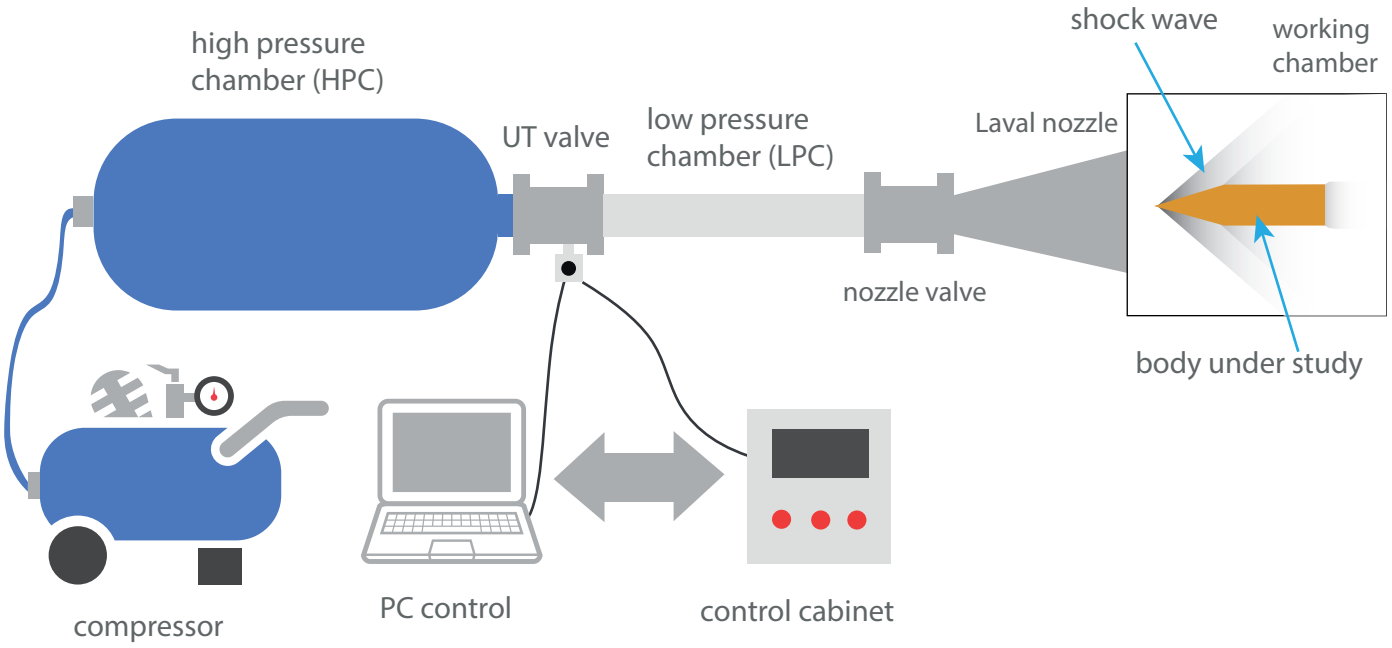
Driven section or LPC of the requested geometry.
Clutches providing smooth flow geometry mating parts HPC and LPC with the valve.

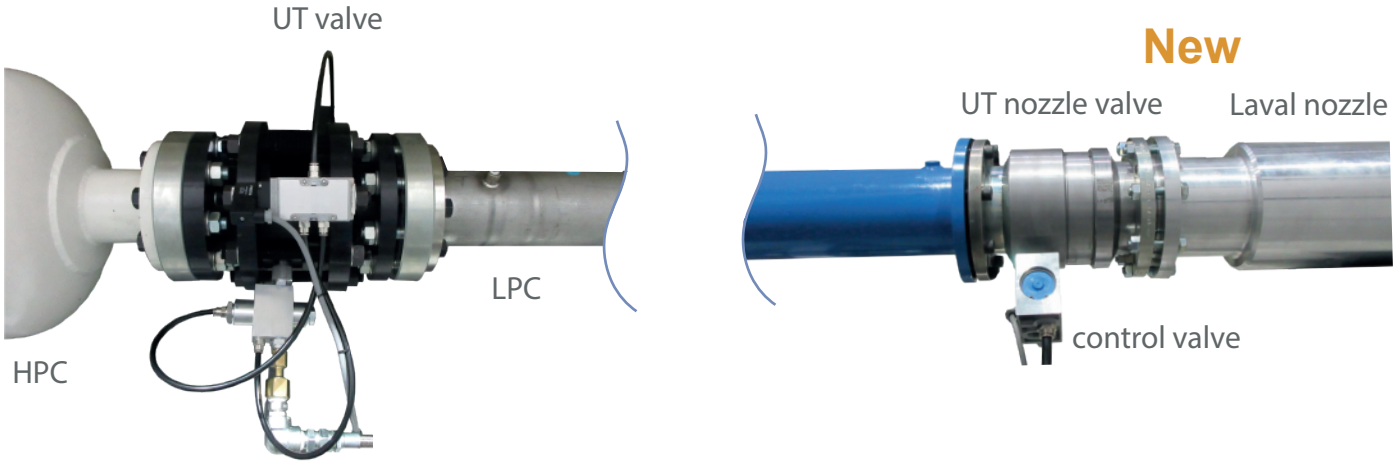
4

Slipways providing reliable and convenient operation of the shock tube, taking into account all the client's features.
Shut-off and control devices

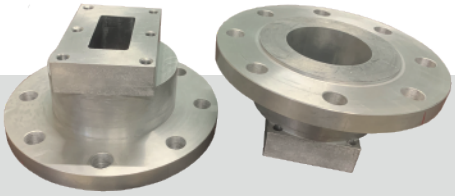
2 Replacing diaphragm between LPC and nozzle

Now it is possible to replace the diaphragm between the LPC and the Laval nozzle by means of developed ISTA UT nozzle valve.



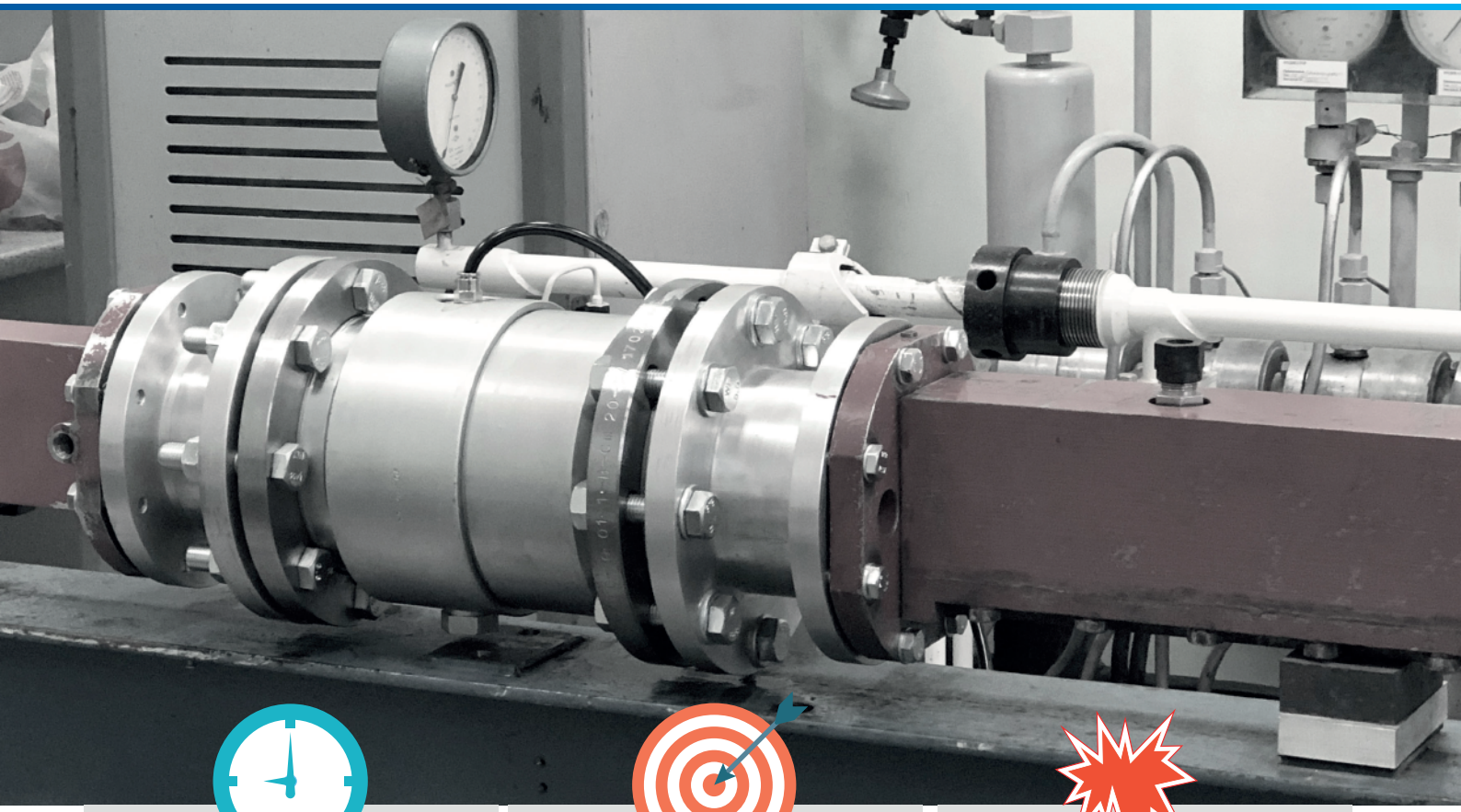


We are also ready to carry out the reconstruction of yours shock tubes, replacing the destructible diaphragms with the UT high-speed valves.



It is possible to supply valves together with a set of clutches, which provide a quick and easy replacement of the "native" diaphragm assembly in the shock tube with a fast-acting valve and vice versa.

Each delivery on this market from our part is an individual project carried out for realy demanding highly qualificated customer from whole over the world.



Saving your time

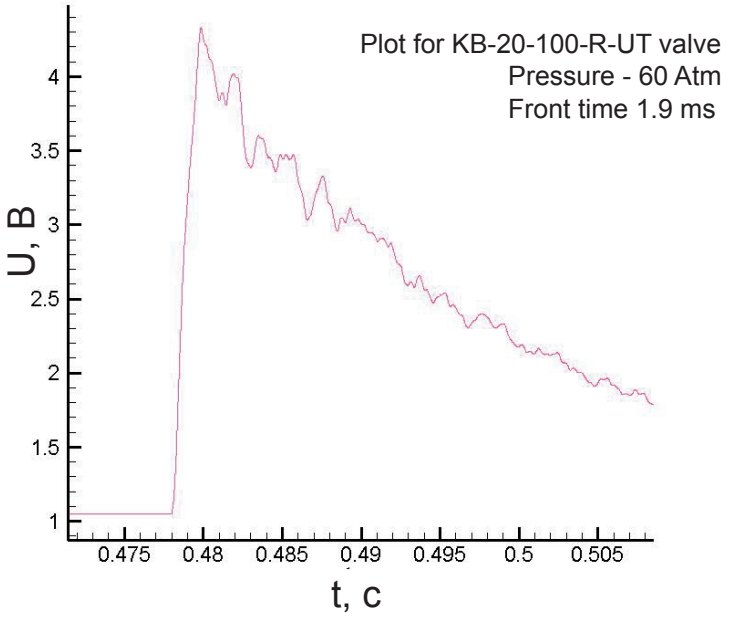
UT valves are installed on a shock tube once and for all instead of the destructible diaphragms. As a result the productivity of the experimental work increases in 8 times. There is no need to assemble and disassemble the installation every start.

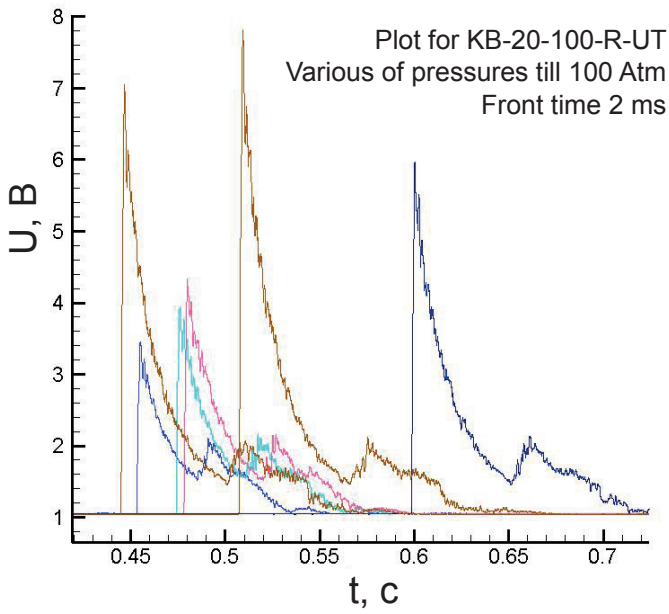
Guaranteed results

Valves of the UT series is high stability and provide incomparably more reliable and repeatable results

Save your facility

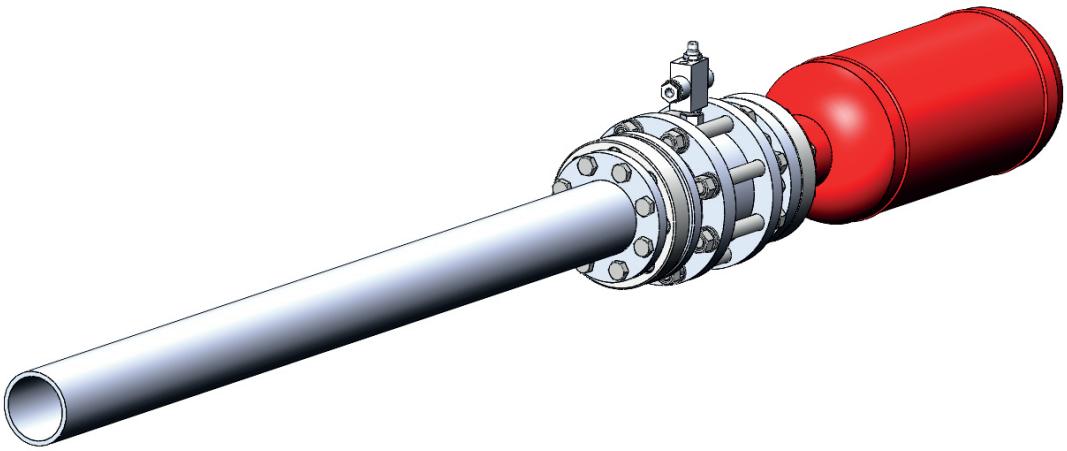
The possibility of damage to models and sensors is excluded, as sometimes occurs with abnormal destruction of diaphragms with the formation of fragments.





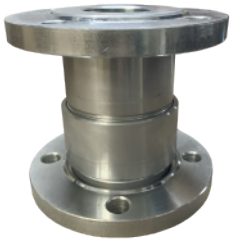
We are always open to visit our laboratory and production, however our experience of recent years, shows that all technical and commercial issues are successfully solved using modern means of communication.

In particularly difficult cases, we held ZOOM conferences, with a client's installation reproduction in our laboratory. The client's specialists followed us step by step. Importantly to do all the operations to achieve success.



Firstly on request we would help you with the target-setting as well as make a design of the installation. Then we will go through all the stages of implementation with you, and we can also interact at the stage of the results you have obtained to further improve the installation, as well as expand the experimental capabilities. The client receives a first-class tool for efficient automated research with improved quality of results. We have been leading our clients for years and helping them every step of the way.

The wide range of standard sizes will

Vendor code	Product is included in the assembly	Product name and fastenings list	Conponents	Photo
Quick-acting valves UT series for shock tubes				
KB-20-10-R-UT	—	KB-20-10 quick-acting valve with threaded mount **Inlet**: internal thread M60X1,5 **Outlet**: internal thread G1 ¼" **Control port**: fitting ø8	UPK-5/2-1000	
KB-28-10-R-UT	—	KB-28-10 quick-acting valve with threaded mount **Inlet**: internal thread M60X1,5 or G1 ¼" **Outlet**: internal thread G1 ¼" **Control port**: fitting ø8	UPK-5/2-1000	
KB-20-70-R-UT	—	KB-20-70 quick-acting valve with threaded mount **Inlet:** internal thread G1" **Outlet:** internal thread G3/4" **Control port**: two fittings ø4	UPK-5/2-100	
KB-20-100-R-UT	—	KB-20-100 quick-acting valve with threaded mount **Inlet:** internal thread G1" **Outlet:** internal thread G3/4" **Control port**: two fittings ø4	UPK-5/2-100	
KB-20-100-F-UT	—	KB-20-100 quick-acting valve with flange mount **Inlet:** 20-160-B flange 33259-2015 GOST **Outlet:** 20-160-B flange 33259-2015 GOST **Control port**: two fittings ø4	UPK-5/2-100	
KB-40-10-F-UT	—	KB-40-10 quick-acting valve with flange mount **Inlet**: 1-50-6-B flange 33259-2015 GOST **Outlet**: 1-50-6-B flange 33259-2015 GOST **Control port**: fitting ø8	UPK-3/2-800	

help you find the perfect solution....

Vendor code	Product is included in the assembly	Product name and fastenings list	Conponents	Photo
Quick-acting valves UT series for shock tubes				
KB-40-70-F-UT	—	KB-40-70 quick-acting valve with flange mount **Inlet**: 40-160-B flange 33259-2015 GOST **Outlet**: 40-160-B flange 33259-2015 GOST **Filling port**: G3/8'' or M16X1,5 **Control ports**: two fittings ø8	PK80-100 UPK-5/2-1000	
KB-40-100-F-UT	—	KB-40-100 quick-acting valve with flange mount **Inlet**: 40-160-B flange 33259-2015 GOST **Outlet**: 40-160-B flange 33259-2015 GOST **Filling port**: G3/8'' or M16X1,5 **Control ports**: two fittings ø8	PK80-100 UPK-5/2-1000	
KB-80-10-F-UT	—	KB-80-10 quick-acting valve with flange mount **Inlet**: 1-100-10-B flange 33259-2015 GOST **Outlet**: 1-80-10-B flange 33259-2015 GOST **Control port**: fitting ø8	UPK-5/2-3700	
KB-80-20-F-UT	—	KB-80-20 quick-acting valve with flange mount **Inlet**: 1-80-25 flange 12820-80 GOST **Outlet**: 1-80-25 flange 12820-80 GOST **Filling port**: G3/8'' **Control ports**: two fittings ø8	PK80-100 UPK-5/2-1000	
KB-80-50-F-UT	—	KB-80-50 quick-acting valve with flange mount **Inlet**: 1-160 flange 200530 GOST **Outlet**: 1-160 flange 200530 GOST **Filling port**: G3/8'' or M16X1,5 **Control ports**: two fittings ø8	PK80-100 UPK-5/2-1000	
KB-80-100-F-UT	—	KB-80-100 quick-acting valve with flange mount **Inlet**: 1-160 flange 200530 GOST **Outlet**: 1-160 flange 200530 GOST **Filling port**: G3/8'' M16X1,5 **Control ports**: two fittings ø8	PK80-100 UPK-5/2-1000	

Our clients

1995 - 2020

Laboratory of gas dynamics of explosion and reactants, Lomonosov Moskow state university

1998 -2018

Laboratory of Electric Arc and Thermal Plasmas Blaise Pascal University

2006-2015

The Federal State Unitary Enterprise «Russian metrological institute of technical physics and radio engineering» (FSUE «VNIIFTRI»)

2014- 2021

Department of Aerospace Engineering, Indian Institute of Science, Bangalore, India

2014- 2021

Fluid Physics Laboratory Department of Mechanics, KTH Royal Institute of Technology, Stockholm

Laboratory of the Department of Hydroaerodynamics, Faculty of Physics and Mechanics, Peter the Great St. Petersburg Polytechnic University

1996-2021

Shock Tube Laboratory Mechanical Engineering Department Ben Gurion University of the Negev

2007-2010

Deutsches Zentrum für Luft- und Raumfahrt e.V. (DLR) in der Helmholtz-Gemeinschaft (German aerospace Center)

2016- 2021

Ishlinsky Institute for Problems in Mechanics of the Russian Academy of Sciences (IPMech RAS)

2014- 2021

«Aerospace Engineering James Watt South Building University of Glasgow

2014-2021

2016

National Research Center «Kurchatov Institute»

2016

Laboratory of Measurements in Process Engineering, University of Ljubljana

2015-2020

The Central Aerohydrodynamic Institute (TsAGI)

2019-2021

Laboratory of state standards in the field of vibration, shock and variable pressure measurement, The D. I. Mendeleev All-Russian Institute for Metrology (VNIIM)

2020-2021

Chemical Kinetics & Laser Sensors Laboratory), Clean Combustion Research Center King Abdullah University of Science and Technology (KAUST)

Department of Mechanical and Aerospace Engineering, Princeton University, USA

2017-2021

Laboratory of pulsed plasma systems The Moskow Institute of Physics and Technology (MIPT)

2019-2021

Department measurement technology unit mass, force, pressure Division Safety and transport Research Institutes of Sweden

2019 -2021

Lukasiewicz Research Network Warsaw Institute of Aviation

2020 – 2021

Department of Aeronautics and Astronautics High-speed Aerothermodynamics Laboratory Tokyo Metropolitan University

2021

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