



POLICON
Engineering & Manufacturing

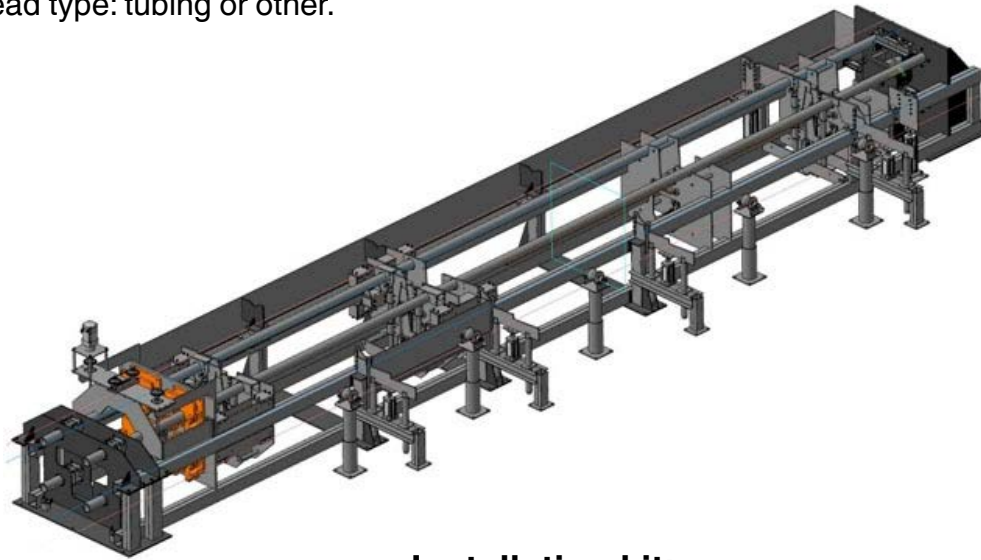
***Installation
of hydraulic testing
of pump-compressor tubes***

Description

Installation of hydraulic tests of pump-compressor pipes UG-600 (hereinafter referred to as Installation) is intended for conducting hydraulic tests of the body of pump-compressor pipes with threaded threads (or without threads) and a wound coupling (or without coupling).

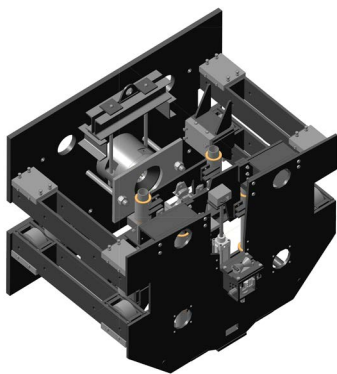
Standard sizes of the pressed pipes in accordance with GOST 633-80: NKT 60, NKT 73, NKT 89.

Thread type: tubing or other.

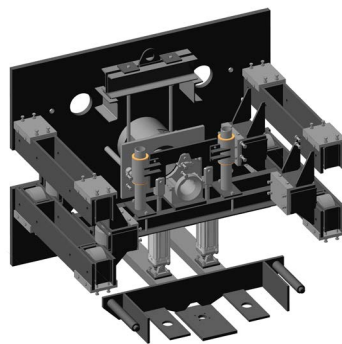


Installation kit:

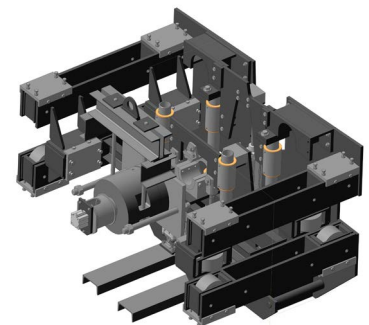
- Frame of Installation is designed for mounting all major components and equipment placement;
- Carriage of Installation moves along the frame guides and is intended for closing the sealing heads with the pipe;



Isometric View Carriage



View of the carriage without front sheet and elevator



Carriage without back plate of control

- The mechanism of fixing the carriage on the frame - hydraulic clamping device;
- Clamping devices for pipes - designed for fixing the pipe during the test;
- Elevator for placing the pipe in the working position of the Installation;
- The transfer feeder is intended for loading the pipe onto the Unit from the adjacent rack;

- Measuring conveyor is designed to pre-measure the length of the pipe before it is fed to the working position;
- The mechanism for lifting the pipe to spill position is designed to pre-flush the inner surface of the pipe body from shavings and other contaminants;
- The mechanism of raising the pipe in the position of the drain after the operation of pressure testing;
- The unloading transferor serves to transfer the pipe from the Unit to the transport line of the workshop;
- Hydraulic module - frame with a tank of circulating water and with installed low and high pressure pumps. The hydronic module is also equipped with filters to prevent foreign objects from entering the sealing heads;
- The installation management system allows you to work in manual, adjustment and automatic modes, monitor the entire process of pipe crimping, store information on the pipe-crimping operations in the database.

In the course of work, the Installation performs the following operations with each pipe:

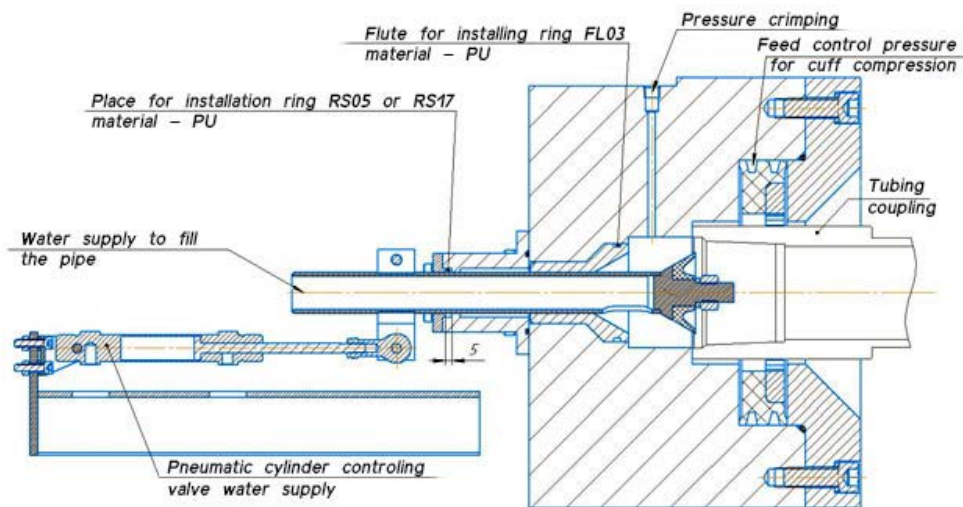
- supply pipe from the loading rack of the transport system of the shop;
- measurement of pipe length;
- Strait pipe flow of water before laying the pipe to the position of the crimp;
- relocation of the pipe to the position of the crimp;
- pipe clamp in a fixed clamp;
- carriage supply to the pipe nipple and insertion of the pipe end in the nipple sealing head and pipe clamp at the carriage clip;
- unclamp the pipe on a fixed clamp;
- introduction of the pipe coupling into the coupling sealing head and pipe clamp from the coupling side;
- pipe clamp fixed clamps and clamp on the movable module;
- filling the pipe with water;
- raising the water pressure inside the pipe;
- pressure testing pipe test pressure with a shutter speed of 10 s;
- pressure relief, pipe outlet from sealing heads, pipe unclamping;
- relocation of the pipe to the position of water removal, raising and lowering the coupling end of the pipe - draining the water with compressed air blowing;
- rerun the pipe on a live roll or rack.



Constructive and operational advantages Installations:

The design of the sealing heads is based on the use of modern sealing cuffs. Cuffs of similar design are used on imported hydraulic stands for hydraulic testing of pipes with pressure up to 1250 atm. Such cuffs are produced in Omsk.

The scheme of the device coupling sealing head



When applying the control fluid pressure (oil or coolant as agreed with the Customer), the cuff tightly wraps around the coupling surface. This scheme of the cuff allows you to eliminate friction when you enter the coupling into the head and, therefore, significantly increase the service life of the cuff. The stability of such a cuff is from 3 to 5 thousand pressing cycles. The stability of the cuff depends on many factors and can reach up to 8 thousand cycles during normal operation.

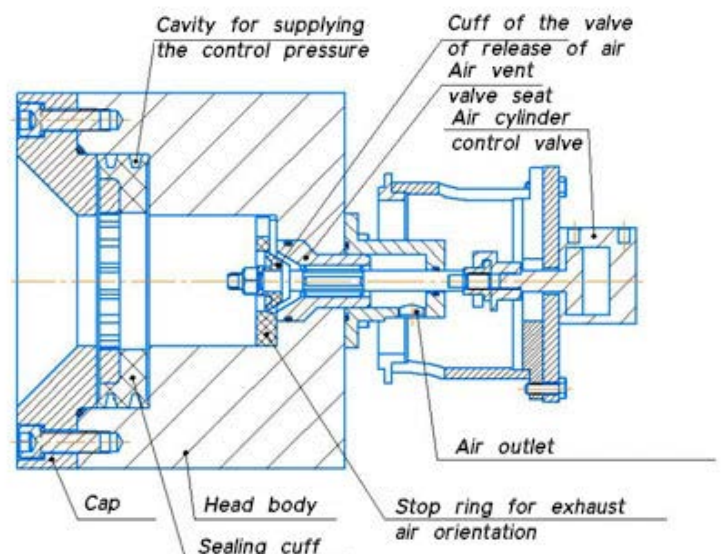
For example: the resistance of traditional collar-type cuffs made of rubber ranges from 300 to 1000 cycles due to the large friction wear when the pipe enters the head.

The constructive combination of sealing heads and water supply valves and air release, has reduced the total number of units of the Unit under pressure testing.

The diagram above shows a section of the coupling head, where you can see that a special pneumatic cylinder is responsible for closing the water supply valve, which allows you to create a pre-tension between the cuff and the seat and, as a result, avoid water losses at the very beginning of the pressure rise cycle test tube. The high hardness of the seat ensures a long period of operation of the head.

Diagram of the principle device nipple sealing head with integrated air release valve

The device nipple sealing head is similar to the clutch. The built-in controlled air discharge valve allows to exclude from the hydraulic circuit additional connections between the head and the valve and reliably close the high pressure zones in the test pipe.



The use of an upgraded scheme of water supply to the pipe

The presence of controlled valves allows you to supply water for filling along the lower generator tube, and release air through the upper generator tube. This feature, together with the presence of the operation to spill water into the pipe before crimping, can significantly reduce (or even completely eliminate) the effect of air dissolved in the pressing fluid (water) on the hydraulic testing process.

Two-stage pump system

The design implies a two-stage system of pumps to create pressure in the pipe. The first pump is a pump of type 2,3PT25D1 (three-plunger pump) or similar, using circulating water from a circulating tank to create pressure in the pipe up to 250 - 300 atm. The second pump is a high-pressure pump (or a multiplier manufactured by PKTBA PGM-750), designed to create pressure in the pipe up to working test, using clean technical (or drinking) water.

The use of such a pressure generation scheme makes it possible to use a cheaper and more reliable pump on circulating water, and a more expensive pump on clean water and to eliminate breakages and its premature failure. The use of a servo drive for a second stage pump minimizes the flow of clean water and, additionally, prolongs the service life of the second stage pump by reducing the number of working strokes of the plunger mechanism.

An important aspect of the application of the two-stage scheme is to reduce the time needed to set the test pressure in the pipe, as modern pumps with a working pressure of up to 800 atm. have relatively low productivity.

Built-in tube length meter

The presence of a built-in tube length meter reduces the cycle time of the crimp due to the pre-positioning of the carriage before receiving the tube at the crimping position.

Pressurizing head

The design feature of the nipple sealing head makes it possible not to expose the threaded part of the pipe to high pressure, as well as to pressurize the pipes with the cut premium threads.

In the case of the Customer's pipe repair requirement for mandatory pipe crimping in the nipple thread area, our Company is ready to install a special device for crimping the threaded part of the pipe with a pressure of 250 atm, or place the Installation in the process line so that the hydraulic test of the pipe is carried out before cutting the nipple thread .

Technical Specifications:

Working test pressure, MPa (kgf / cm ²).....	60 (600)
Maximum test pressure, MPa (kgf / cm ²).....	75 (750)
Productivity for pump-compressor tubes 73, P _{test} =60 МПа, pipes / hour.....	30
The length of the test tubes, m.....	6,5 – 10,5
Dwell time under pressure, not less than, seconds.....	10
Changeover time to another pipe size, no more than, an hour.....	2
Power	alternating current
Voltage, V.....	~ 380 3 phase
Frequency Hz.....	50
The compressed air is supplied to the setting:	
- Working pressure, MPa.....	0,6
- air quality.....	09 cl. in accordance with GOST 17433
Crimping liquid	technical water, pH = 6 ÷ 9
Installation Management	Manual / Automatic / Adjustment (1 operator)

This product can be manufactured according to the customer's specifications, taking into account its specified parameters and features.

Food Machinery

Machinery for tires, rubber, plastics manufacturing

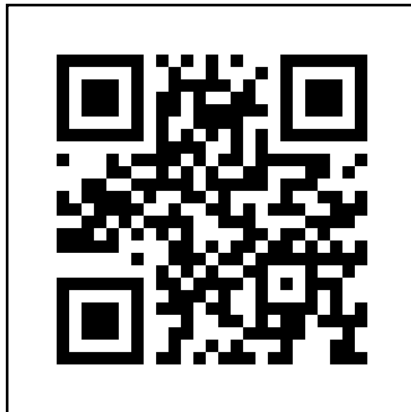
Modernization and automation of production

Non-standart equipment

Production of spare parts, components, assemblies

**Outsourcing services - repair and maintenance
of equipment**

Global engineering solutions



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