

Manufacturer of oil- and- gas field equipment

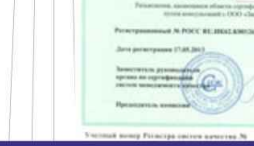
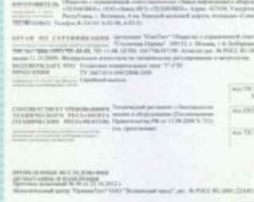
**TEXHOBEEK**

# Products catalogue

Oil-and-gas field  
equipment

2014

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**РЕГИСТР  
PG  
ИСО 9001**

**GOST R CERTIFICATION SYSTEM**

**QUALITY SYSTEMS REGISTER**  
**QUALITY MANAGEMENT SYSTEMS**  
**CERTIFICATION BODY OF**  
**«IZH-STANDART-TEST», LTD**

office 10, Business-incubator, 48 A, Studencheskaya str., Izhevsk, Udmurt Republic, 426069, Russia  
tel/fax (3412) 59-38-44; 59-42-75; e-mail: izhnst@izhnst.ru; www.izhnst.ru  
№ РОСС RU.0001.13H652

**K № 23217**

**CERTIFICATE OF CONFORMITY**

Issue 2 QMS certified since June 2009

**Is given to «Oil and Gas Equipment Plant «TECHNOVEK», LTD**  
**(«O&G Equipment Plant «TECHNOVEK», LTD)**

plantform «Siva», 6 km of Kamskaya railway,  
Votkinsk, Udmurt Republic, 427430, Russia

**THIS CERTIFICATE CERTIFIES THAT:**  
**Quality Management System with respect to activities on:**  
**-the design, development and production of oilfield equipment,**  
**drilling and exploration, and spare parts;**  
**-construction of buildings and structures**

**COMPLIES WITH THE REQUIREMENTS OF**  
**GOST ISO 9001-2011 (ISO 9001:2008)**

Further clarifications regarding the scope of certification may be obtained by consulting  
the «O&G Equipment Factory «TECHNOVEK», LTD

Registration № РОСС RU.ИЖ62.К00126

Date of registration May 17, 2013 **It is valid until June 01, 2015**

Deputy administrator of Quality Management Systems Certification Body **T.S. Petrova**

Audit team leader **O.V. Egorova**

Registration number of Quality systems register № 19679



**ФЕДЕРАЛЬНАЯ СЛУЖБА  
ПО ЭКОЛОГИЧЕСКОМУ, ТЕХНОЛОГИЧЕСКОМУ И АТОМНОМУ НАДЗОРУ**

**РАЗРЕШЕНИЕ** № РС-60-0021

На основании (использование устройств, материалов)  
Оборудование (использование устройств, материалов)  
Исходные данные: № ТР-СУ до ТУ 3607-014-080208-2009

Код ОКП (ПН ВЭД): 36 4700

Исполнитель (лицензия ООО «Завод НПО «ТЕХНОВЕК», Удмуртская Республика, г. Воткинск, ул. Степана Разина, 5)

Основные виды работ: Техническая документация, изготовление изделий промышленной безопасности ООО «Защитный корпус «ПАКТА» № 34.9620101 (Г.2010), сертификаты соответствия ОС ООО «Защитный корпус» № РОСС RU.ИЖ673.00056 от 07.12.2009.

Условия применения:  
1. Соблюдение требований законодательства Российской Федерации в области промышленной безопасности.  
2. Предоставление лицензионного паспорта, сертификатов, документов по эксплуатации, монтажу и техническому обслуживанию оборудования.

Срок действия разрешения до 28.07.2015

Дата выдачи 28.07.2010

Заступитель руководителя **Б.А. Крыжов**

11 023232

**ФЕДЕРАЛЬНАЯ СЛУЖБА  
ПО ЭКОЛОГИЧЕСКОМУ, ТЕХНОЛОГИЧЕСКОМУ И АТОМНОМУ НАДЗОРУ**

**РАЗРЕШЕНИЕ** № РС-60-39560

Исполнитель (лицензия ООО «Завод НПО «ТЕХНОВЕК», Удмуртская Республика, г. Воткинск, ул. Степана Разина, 5)

Основные виды работ: Техническая документация, изготовление изделий промышленной безопасности ООО «Защитный корпус «ПАКТА» № 34.9620101 (Г.2010) от 28.05.2010 г., сертификаты соответствия ОС ООО «Защитный корпус» № РОСС RU.ИЖ673.00057 от 29.08.2009 г.

Условия применения:  
1. Соблюдение требований законодательства Российской Федерации в области промышленной безопасности, регулирование лицензионного паспорта, сертификатов, документов по эксплуатации, монтажу и техническому обслуживанию оборудования.

Срок действия разрешения до 04.08.2015

Дата выдачи 04.08.2010

Заступитель руководителя **Б.А. Крыжов**

11 023436

- 02 - 03 Christmas tree**
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  - 09 Casing head OKp1x21(14,35)-140(146,168,178)x245**
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    - OKp2Kx21(14,35)-140(146,168,178)x219(245)x299(324)**
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  - 11 Cable penetration unit**
- 12 - 13 Disk valves ZD 65 (50,80,100)-210 (140,160,350) M**
- 14 - 15 Disk choke gate valves ZDSh65 (50,100)-210 (140,160,350) M**
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  - 18 Disk valves ZD 50 (80,100,150)-16 (25,40,65,160,250)**
- 19 - 21 Ball valve T-KSH**
  - 22 Angular valve KZ1-50x14 (21)**
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    - Throttle valve DR-65/50x21**
- 24 - 25 Needle valve VM5x35**
  - 26 Ball valve with media separator ZRU 2A-21**
  - 27 Sampling valve VP1-15x14(21,35)**
- 28 - 29 Back valve KO1-65/26x21 (14,35), KO2-65/40x21(14,35), KO3-89 (108), KO7-65/40x14**
  - 30 Lubricator L65x21, Lp65x35**
  - 31 Rod damper DSh-22**
  - 32 Distribution manifolds for pressure control «T»-BG**
  - 33 Satellite group units for crude oil measuring**
- 34 - 35 Measuring units for pressure control KR 65(32)x21, KR2 65(32)x21**
- 36 - 37 Filtration unit UF100-40M**
- 38 - 39 Pipeline insulation sleeve TIS-M, TIS-GH**
  - 40 Make-and-break coupling BRS1, BRS2**
    - Companion flange**

This equipment is designed to seal gushers, control their operation mode, install and hook-up well inspection equipment and perform process tasks.

This equipment includes reliable, easily controlled and highly leak-proof disk gate valves ZD. As controlled element (for AFK1Sh) will be applied disk choke gate valve ZDSh to provide step control of flow. Replacement of valve chokes is performed by single operator during 3-5 minutes with gate in the closed position without having to release system pressure.

This type of equipment ensures no free space inside, thus preventing water from entering and freezing inside equipment. Alloys and materials utilized provide high degree of wear- and corrosion protection.

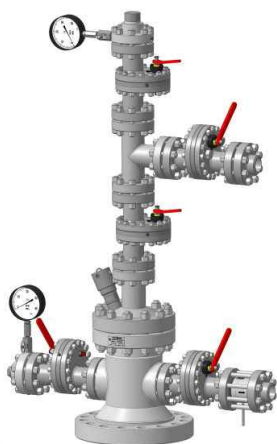
Welds-free connections.

May be modified into injection equipment ANK.

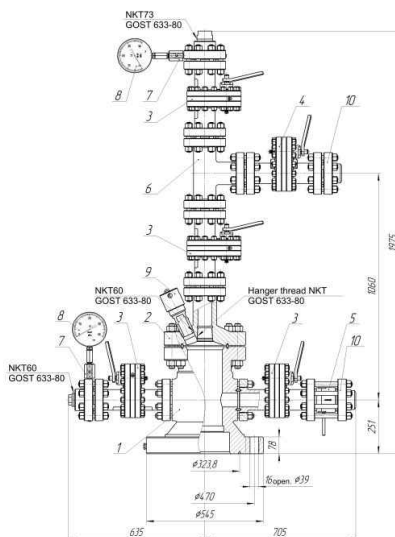
Kind of climatic modification UHL1 (HL1) in accordance with in accordance with GOST 15150-69.

Maximal ambient temperatures from +40 to -60 °C.

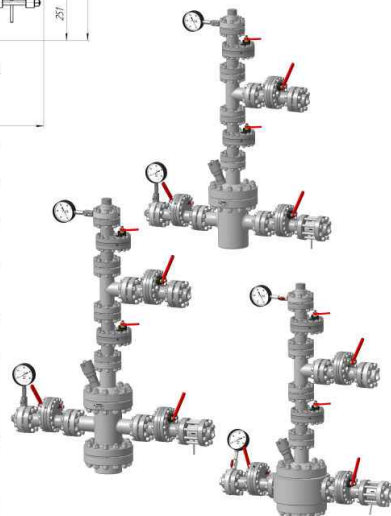
**Depending on what the Customer wants, any variants of execution and a complete set are possible.**



**Base variant**



1. Crossover
2. Adapter
3. Valve ZD 65-210M
4. Valve ZD 65-210M (ZDSh 65-210M for AFK1Sh)
5. Back inlet
6. Tee
7. Manometer valve
8. Manometer
9. Cable unit
10. Companion flange



**variants of crosses**

Technical characteristics		
Operating pressure Pn, MPa (kg/cm <sup>2</sup> )		14 (140), 21 (210), 35 (350)
Nominal sizes Dn, mm	Bore	65, 80, 100
	Laterals	50, 65, 80, 100
	Laterals of a pipe head	50, 65
Connection thread	To tubing	NKT73, NKT89, NKT102, NKT114 GOST 633-80
	To casing*	Cas. 146, 168, OTTM 146, 168 GOST 632-80
Firmness to environments influence		K1, K2 GOST 13846-89
Flow media temperature, °C		Not to exceed 120

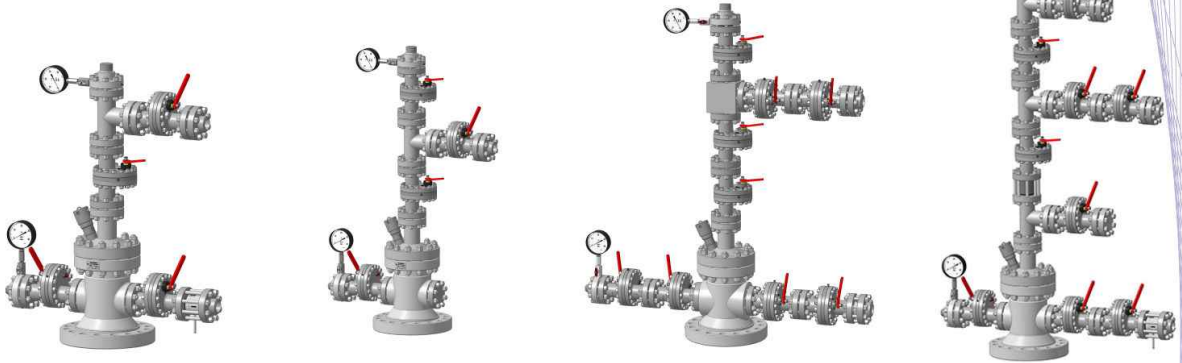
Depending on what the Customer wants, any kind of thread or flange in accordance with GOST 28919-91 can be made

# Christmas tree

Specifications 3665-009-4965 2808-2004

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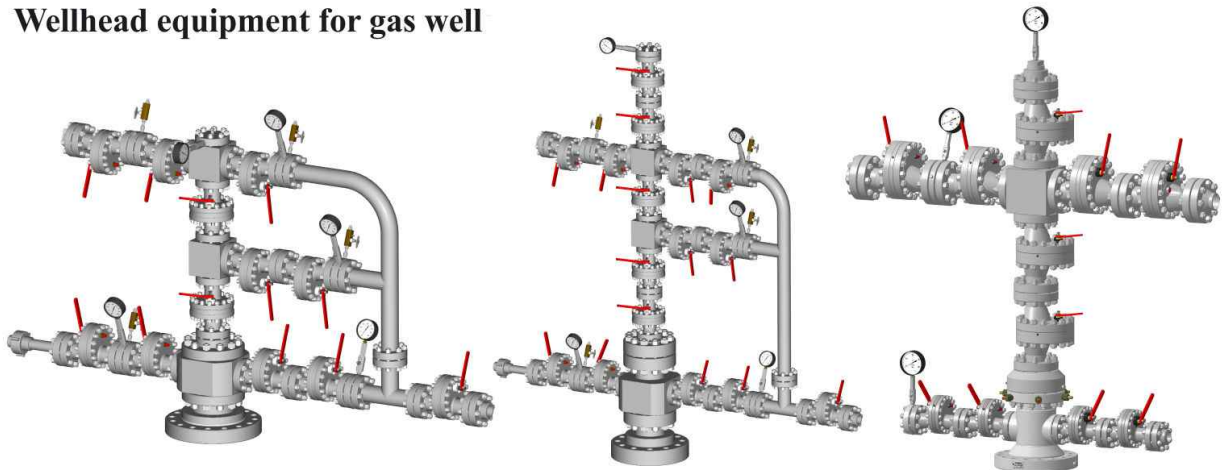
Depending on what the Customer wants, any variants of execution and a complete set are possible.



## X-mas trees with manifolds



## Wellhead equipment for gas well



This equipment is designed to seal gushers equipped by rod pumps, and also for performing process tasks, research and repair works.

This Christmas tree has a welded body and side taps for attachment of angular valve, it is also has a central crossover that allows installation of wellhead stuffing box, attachment of reducing string to the casing, relieve valve and stab-out for cable or instrumentation.

Flange of the body has mounting and sealing surfaces that allow installation of process equipment.

Compared to similar conventional equipment, AShK50-14 model is lighter, smaller and has a wider range of applications in spite of just a few number of valves and controls that it has.

Absence of external piping mitigates the risk of wellhead equipment freezing at low temperatures.

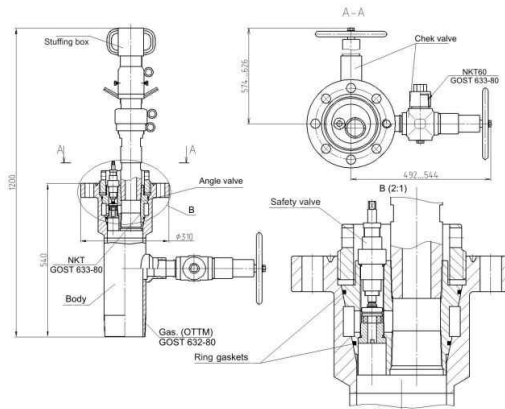
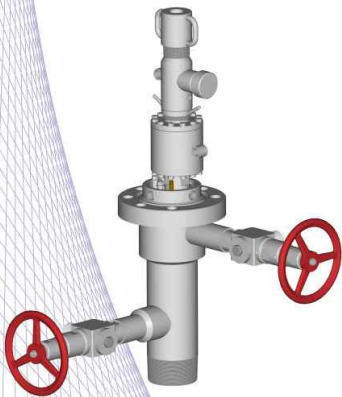
Stuffing box SUPk-2-73 is a part of the deal and is equipped with blowout preventer that automatically seals the bore of the stuffing box when connecting rod is broken. It is also equipped with durable rubberized fabric sealing rings and a socket joint that continuously tracks the location of the polished rod of the polished rod and allows to offset misalignments resulting from mismatch of wellhead and rig center lines due to soil movements.

Check valve KZ1-50x14 ensures good handling of pumping medium due to utilization of ceramic seat and composite seal.

Kind of climatic modification UHL1 (HL1) in accordance with in accordance with GOST 15150-69.

Maximal ambient temperatures from +40 to -60 °C.

**Depending on what the Customer wants, any variants of execution and a complete set are possible.**



#### Technical characteristics

Operating pressure Pn, MPa (kg/cm <sup>2</sup> )		4 (40) If rig is on	14 (140) If rig is off
Nominal sizes Dn, mm		50	
Connection thread	To tubing	NKT73 GOST 633-80	
	To casing*	Cas.146, OTTM 146 GOST 632-80	
Firmness to environments influence		K1, K2 GOST 13846-89	
Flow media temperature, not to exceed, °C		120	

- Depending on what the Customer wants, any kind of thread or flange in accordance with GOST 28919-91 can be made

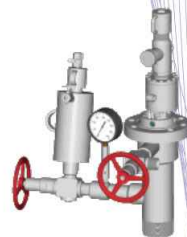
# Christmas tree for installation of rod pump

**AShK50x14K1 (K2)**

Specifications 3665-009-4965 2808-2004

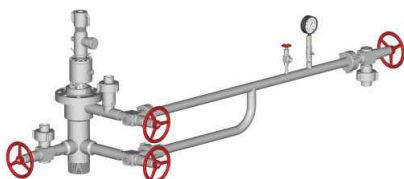
## wellhead equipment with the proportioning unit

Wellhead equipment can be equipped with proportioning unit D5-50X14 (on request) that allows to perform batching of chemicals to the annular space of the well without interruption. Volume capacity - 5 litres.



**AShK-50x14K1(K2)-7(8,9)-D**

## wellhead equipment with manifolds



**AShK 50x14 K1(K2) -7(8,9)-06KU**



**AShK 50x14 K1(K2) -7(8,9)-08KU**

# Small-size Christmas tree for installation of rod pump

**AShK65x21 K1-15**

Specifications 3665-009-4965 2808-2004

This equipment is designed to seal gushers equipped by deep-well or rod pumps, and also for performing process tasks, research and repair works.

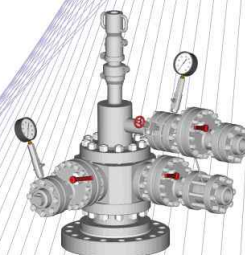
This option allows to upgrade well under squeezing with minimum expenses. Stuffing box SUUpk-2-73 is a part of the deal and is equipped with blowout preventer that automatically seals the bore of the stuffing box when connecting rod is broken. It is also equipped with durable rubberized fabric sealing rings and a socket joint that continuously tracks the location of the polished rod of the polished rod and allows to offset misalignments resulting from mismatch of wellhead and rig center lines due to soil movements.

Kind of climatic modification UHL1 (HL1) in accordance with in accordance with GOST 15150-69.

Maximal ambient temperatures from +40 to-60 °C.

**Depending on what the Customer wants, any variants of execution and a complete set are possible.**

Technical characteristics		
Operating pressure Pn, MPa (kg/sm <sup>2</sup> )		4 (40) If rig is on
		21 (210) If rig is off
Nominal sizes Dn, mm		50, 65
Connection thread	To tubing	NKT73 GOST 633-80
		K1, K2 GOST 13846-89
Firmness to environments influence		K1, K2 GOST 13846-89
Flow media temperature, not to exceed, °C		120



This equipment is designed to seal gushers maintained by Electric Centrifugal Pumps. This Christmas tree has a welded body and side taps for attachment of angular valve, it is also has a central crossover that allows installation of valve ZD65-140M, attachment of reducing string to the casing, relieve valve and stab-out for cable or instrumentation.

Flange of the body has mounting and sealing surfaces that allow installation of process equipment. Compared to similar conventional equipment, AShK(E)-50-14 model is lighter, smaller and has a wider range of applications in spite of just a few number of valves and controls that it has. Climatic modification Christmas tree UHL1 (HL1) in accordance with GOST 15150-69. Limiting values of working temperatures of air from +40 to -60 °C.

**In coordination with the customer any variants of execution and a complete set are possible.**



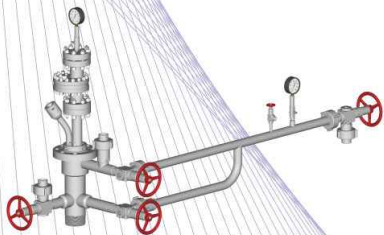
**Base variant**



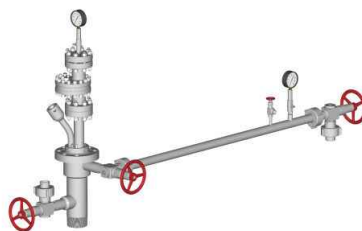
**AShK (E)-50x14K1 (K2)-7(8,9)-D  
with proportioning unit**

Description	AShK (E) 50x14K1 (K2)-7	AShK (E) 50x14K1 (K2)-8	AShK (E) 50x14K1 (K2)-9
Operating pressure Pn, MPa (kg/sm <sup>2</sup> )	14 (140)		
Nominal sizes Dn, mm	50		
Connection thread M	OTTM 146 GOST 632-80	146 GOST 632-80	BCSG 146 GOST R 51906-2002
Execution on corrosion firmness, GOST 13846-89	K1, K2		
Flow media temperature, °C	120		

### wellhead equipment with manifolds



**AShK(E) 50x14 K1(K2) -7(8,9)-06KU**



**AShK(E) 50x14 K1(K2) -7(8,9)-08KU**



This equipment is designed to seal injection wells and control their operations.

This equipment includes reliable, easily controlled and highly leak-proof disk gate valves.

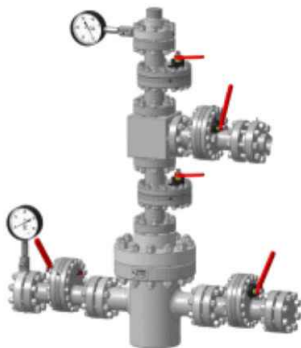
As controlled element (for ANK1Sh) will be applied disk choke gate valve ZDSh to provide step control of flow. Replacement of valve chokes is performed by single operator during 3-5 minutes with gate in the closed position without having to release system pressure. Alloys and materials utilized provide high degree of wear- and corrosion protection.

Kind of climatic modification UHL1 (HL1) in accordance with in accordance with GOST 15150-69. Maximal ambient temperatures from +40 to-60 °C.

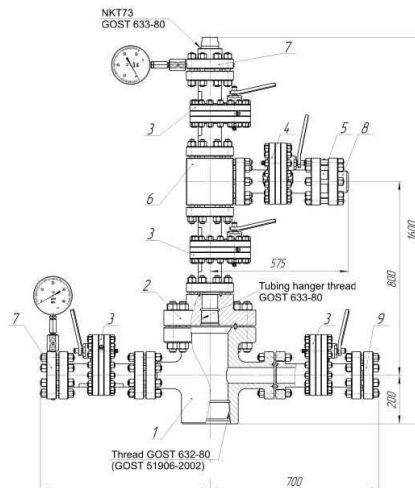
### Strengths:

Reliable, highly leak-proof disk gate valve ZD and ZDSh.

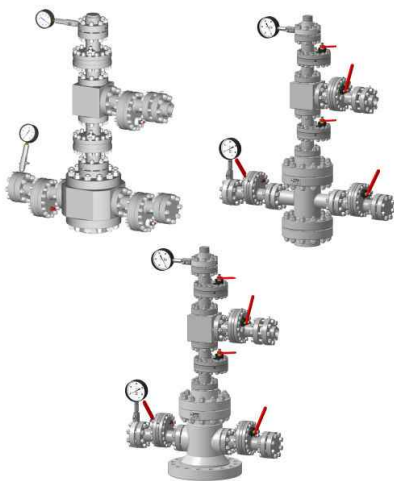
Depending on what the Customer wants, any variants of execution and a complete set are possible.



**ANK1 (Sh)-65x14 K1 (K2) M2  
Base variant**



1. Pipe head
2. Adapter
3. Gate valve ZD65-210M
4. Gate valve ZD65-210M (ZDSh65-210M for ANK1Sh)
5. Back valve
6. Tee
7. Pressure control and relieve device
8. Companion flange
9. Plug



**variants of crosses**

### Technical characteristics

Operating pressure Pn, MPa (kg/cm <sup>2</sup> )		14 (140), 21 (210), 35 (350)
Nominal sizes Dn, mm	Bore	65, 80, 100
	Laterals	50, 65, 80, 100
	Laterals of a pipe head	50, 65
Connection thread	To tubing	NKT73, NKT89, NKT102, NKT114 GOST 633-80
	To casing*	Cas. 146, 168, OTTM 146, 168 GOST 632-80
Firmness to environments influence		K1, K2 GOST 13846-89
Flow media temperature, °C		Not to exceed 120

Wellhead units expand capabilities of injection units ANK1 (ANK1Sh)-65x21 K1 (K2) and ANK (ANKSh)-65x21K1 (K2), in that it enables to set volume of liquid injected into well.

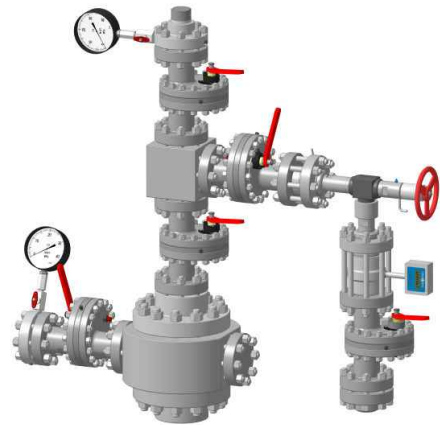
Actual flow is measured by means of in-line flow meter (PPRE-65x21) with accuracy of up to +3 %. This works only if you hook up the flow meter to the portable secondary device BIP 16.

Preliminary setting of flow value is performed by setting appropriate adjuster in valve ZDSh-65x210M located at the wellhead. Subsequent fine tuning is performed by angular throttle DRu-65/20x21.

Kind of climatic modification UHL1 (HL1) in accordance with in accordance with GOST 15150-69.

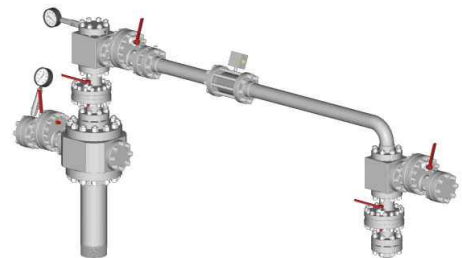
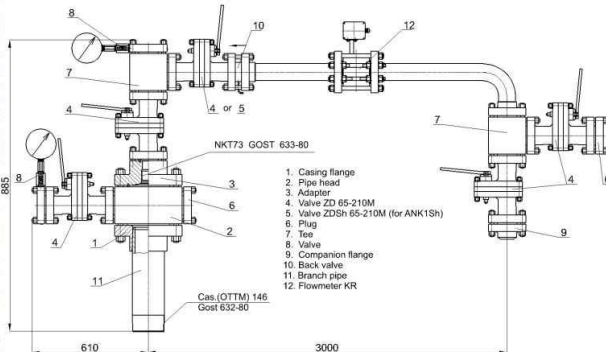
Maximal ambient temperatures from +40 to -60 °C.

**Depending on what the Customer wants, any variants of execution and a complete set are possible.**



## Wellhead unit

**ANK1 (Sh) 65x21 (14,35) K1 (K2)-05-30KUR**  
**Specifications 3665-009-4965 2808-2004**



Technical characteristics		
Operating pressure Pn, MPa (kg/sm <sup>2</sup> )		14 (140), 21 (210), 35 (350)
Nominal sizes Dn, mm	Bore	65, 80, 100
	Laterals	50, 65, 80, 100
	Laterals of a pipe head	50, 65
Connection thread	To tubing	NKT73, NKT89, NKT102, NKT114 GOST 633-80
	To casing*	Cas. 146, 168, OTTM 146, 168 GOST 632-80
Firmness to environments influence		K1, K2 GOST 13846-89
Flow media temperature, °C		Not to exceed 120

# Casing head

OKp1x21 (14,35)-140 (146,168,178) x245  
 OKp1Kx21 (14,35)-140 (146,168,178) x219 (245)  
 OKp2Kx21 (14,35)-140 (146,168,178) x219 (245) x299 (324)  
**Specifications 3665-007-49652808-2003**

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Wellheads are fitted to the top of the well casing. They carry columns, seal and separate annulus, control pressure inside the annulus. They are designed for installations blowout equipment on top and intermediate flanges at all stages of building and well operation.

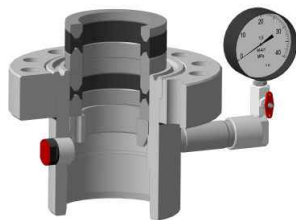
Climatic modification of wellhead units UHL1 (HL1) in accordance with GOST 15150-69.

Limiting values of working temperatures of air from +40 to -60 °C.

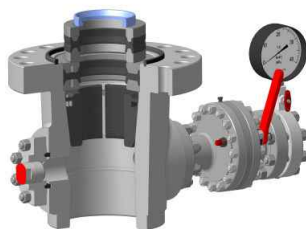
Level of technical requirements UTT2 in accordance with GOST R 51365-99.

### Designation structure of wellhead units

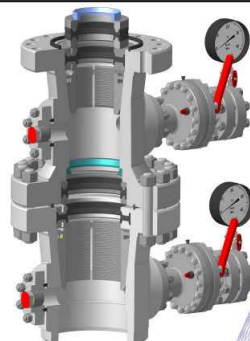
Wellhead unit	OKp	X <sub>1</sub>	X <sub>2</sub>	xX <sub>3</sub>	-H <sub>4</sub>	xX <sub>5</sub>	xX <sub>6</sub>	X <sub>7</sub>	X <sub>8</sub>
X <sub>1</sub> -	Number of suspended casings								
X <sub>2</sub> -	K – with slip hanger – small-size with tubing hanger – the index is not put								
X <sub>3</sub> -	Operating pressure, MPa, not to exceed								
X <sub>4</sub> -	Diameter of production casing, mm								
X <sub>5</sub> -	Diameter of the second intermediate casing, mm								
X <sub>6</sub> -	Diameter of the first intermediate casing, mm								
X <sub>7</sub> -	Diameter of surface casing, mm								
X <sub>8</sub> -	Firmness to environments influence in accordance with GOST 13846-89 707								
K1 – For oil and gas with volume maintenance CO <sub>2</sub> to 6 % it (is not put)									
K2 – For oil and gas with volume maintenance CO <sub>2</sub> and H <sub>2</sub> S to 6 %									



OKp1x21(14,35)  
-140(146,168,178)x245



OKp1Kx21(14,35)  
-140(146,168,178)x219(245)

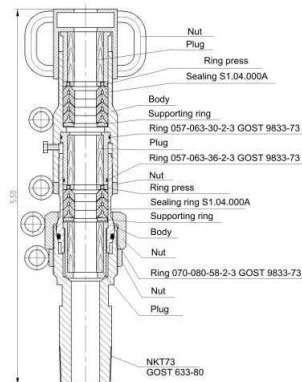


OKp2Kx21(14,35)  
-140(146,168,178)x219(245)x299(324)

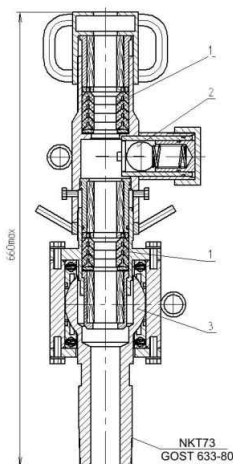
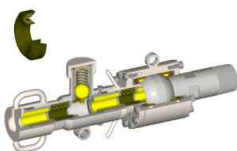
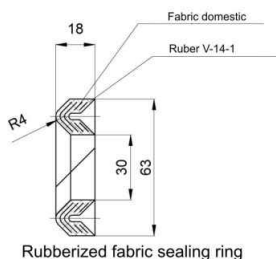
### Technical characteristics

Designation		OKp1	OKp1K	OKp2K
Operating pressure Pn, MPa (kg/cm <sup>2</sup> ), not to exceed		14 (140) / 21 (210) / 35 (350)		
Casing suspension		Coupling	Slipping	
Diameter of casing	Surface casing	245	219, 245	299, 324
	Intermediate casing	-		219, 245
	Production casing	140, 146, 168, 178		
Flow media temperature, °C, not to exceed		120		

Wellhead stuffing box is designed to seal stuffing rods of wells, maintained by rod pumps. Among distinctive features of this model is the use of durable rubberized fabric sealing rings.



## Wellhead stuffing box SUpk 2-73-31



1. Rubberized fabric sealing ring
2. Safety valve
3. Spherical joint

Technical characteristics		SU 4-73-31	SUpk 2-73-31
Maximum operating pressure, MPa (kg/cm <sup>2</sup> ):	If rig is on	4 (40)	4 (40)
	If rig is off	14 (140)	14 (140)
Polished rod diameter, mm		31... 32	31... 32
Interface threading		NKT73	NKT73
Dimensions, mm		210x150x526	210x150x616
Mass, kg		15	32

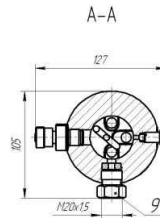
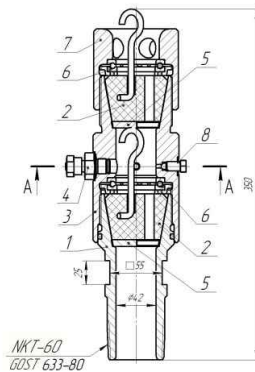
## Cable penetration unit with pressure test capability

Cable penetration unit is designed for hermetization of cables in ESP in the wellhead equipment AShK(E) and AFK(E) for working pressure =21MPa that have a hole in the adaptor with NKT60 thread GOST 633-80 for installation of the cable penetrating unit.

Advantages of cable penetrating unit with pressure test capability:

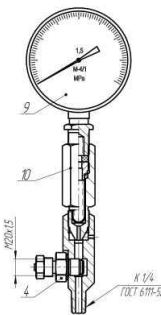
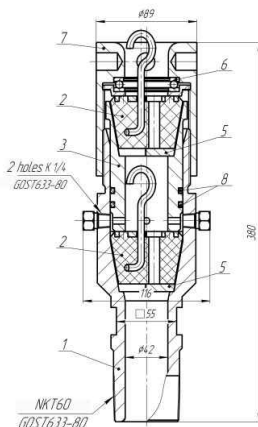
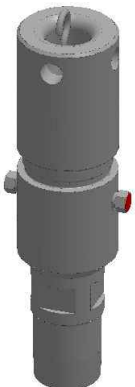
- easy installation
- allows to perform pressure testing without special technical devices after cable penetration unit installation and during operation.

### Cable penetration unit AFK(E)02.300M1



1. Choke
2. Cable gland seal SKV210
3. Casing
4. Pressure valve
5. Gasket
6. Bearing
7. Nut
8. Drain valve
9. Pressure gauge valve

### Cable penetration unit AFK(E)21.02.700



Adaptor for pressure testing

1. Choke
2. Cable gland seal SKV210
3. Casing
4. Pressure valve
5. Gasket
6. Bearing
7. Nut
8. Ring gasket
9. Needle valve
10. Media separator

Steel disk gate valve (disk valve) is designed for work as a part of Christmas trees and injection valves and for high pressure pipelines with temperature of the transported environment no more plus 120°C.

Execution of disk valve on corrosion firmness - K1 (is not designated), K2 in accordance with GOST 13846.

Kind of climatic modification UHL (HL) in accordance with GOST 15150. Air temperature at operation from a minus 60°C to plus 40°C

Level of technical requirements in accordance with GOST R 51365 UTT-2 (PSL-2)

There are following models of valves:

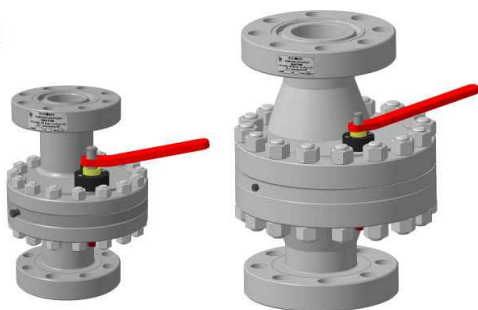
ZD - a steel gate valve, full bored, with disk gate or hose with possibility of smooth regulation of the expense of environment;

ZDSh - a steel gate valve, with disk gate, with quick change or with the built-in chokes (a valve of revolving type) for step regulation of the expense of environment.

### Disk valves

**ZD 65 (50,80,100)-210 (140,160,350) M**

**Specifications 3741-001-49652808-2000**



The valve is designed for high pressure pipeline applications or for work as a part of gushing or delivery armatures.

Unique feature of a design of a valve has allowed to receive a number of advantages in comparison with valves of a "classical" design: valve "opening-closing" is carried out by the handle; free internal volumes are minimum (as gate rotates about the axis), that allows to make closing-opening of a valve without a preliminary warming up at low temperatures.

Connection sizes of disk valves ZD are similar to ZMS (or any others by request).

#### Technical characteristics

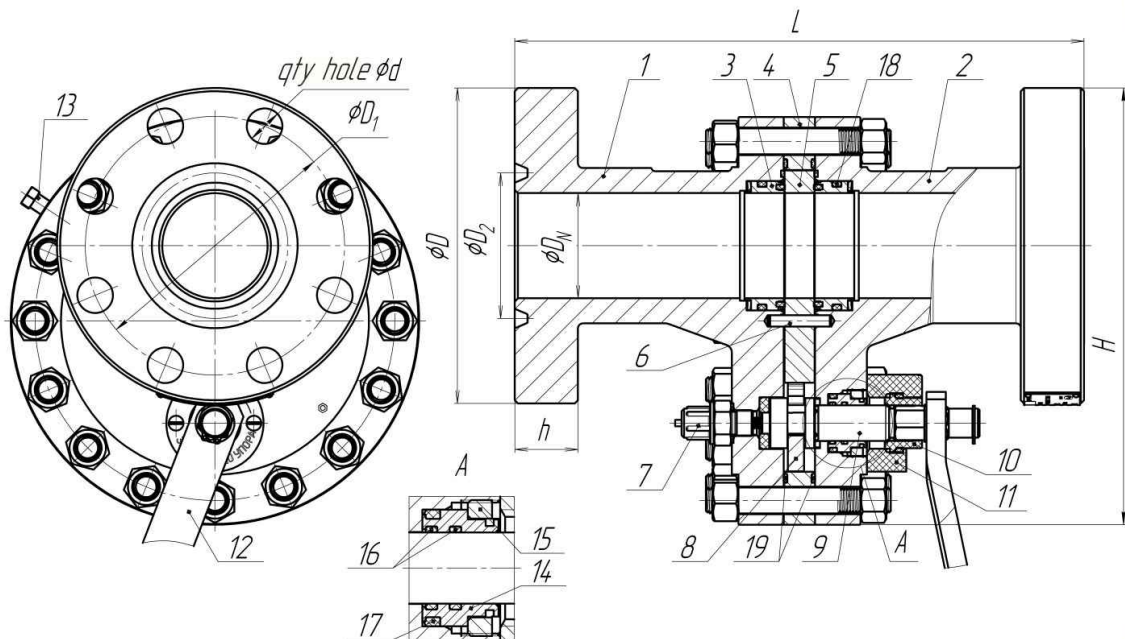
Technical characteristics	
Flow media	Water technical; oil with volume maintenance CO <sub>2</sub> and H <sub>2</sub> S to 6 %; the natural gas containing liquid hydrocarbons, ethyleneglycol, methanol (CH <sub>3</sub> OH), turbine oils, water and mechanical impurity
Ambient temperature, °C	-60... +45
Flow media temperature, °C	Not to exceed 110
Closure tightness class, GOST R 54808-2011	A
Operating position	Open
Direction of flow	Any
Location on the pipeline	Any
Type of mating to pipeline	Flange
Total service life, years, not less than	15
Total average life, cycles, not less than	1800
Time to failure, cycles, not less than	600

# Disk valves

ZD 65 (50,80,100)-210 (140,160,350) M

Specifications 3741-001-49652808-2000

www.technovek.ru



1,2. Semibody

3. Seat

4. Ring intermediate

5. Disk gate (disk)

6. Axe

7. Pressure testing adaptor

8. Sector

9. Cogget shaft

10. Indicator

11. Indicator body

12. Handle

13. Plug

14. Liner

15. Nut

16,17,18,19. Ring gaskets

Identification	DN, mm	PN, Mpa (kgs/cm <sup>2</sup> )	L, mm	D, mm	D <sub>1</sub> , mm	D <sub>2</sub> , mm	n, pieces	d, mm	H, mm	h, mm	Execution
ZD	50, 65	14 (140)	350	195	160	92	8	22	270	27	GOST 28919
		21 (210)				90				40	
		35 (350)									
	50	14 (140)	295	165	127	82,5	8	19	255	34	GOST 28919
		21 (350)	371	215	165	95,2				46	
		35 (350)									
	65	21 (210)	422	245	190,5	107,9	8	28	295	50	GOST 28919
		14 (140)	359	210	168	123,8				40	
	80	21 (210)	435	242	190,5	123,8	8	25	334,5	46	GOST 28919
		35 (350)	473	265	208	136,5				56	
	100	21 (210)	511	292	235	149,2	8	32	402	53	GOST 28919

The valve is designed for high pressure pipeline applications or for work as a part of gushing or delivery armatures.

Unique feature of a design of a valve has allowed to receive a number of advantages in comparison with valves of a "classical" design: valve "opening-closing" is carried out by the handle; free internal volumes are minimum (as gate rotates about the axis), that allows to make opening - closing of a latch without a preliminary warming up at low temperatures.

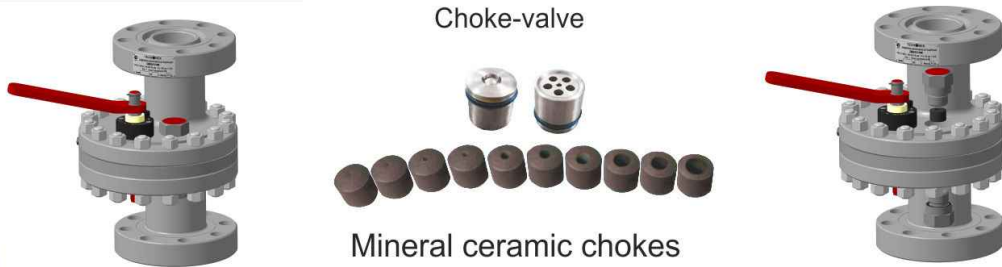
Connection sizes of ZDSh valves are similar to ZMS (or any others by request).

Design of ZDSh valve is based upon design of ZD65-210M, has similar technical parameters and includes removable mineral ceramic chokes with throttle openings of 2; 3; 4; 5; 6; 8; 10; 12 mm (by request of any completeness and diameter). It is designed to provide step control of flow (process water, oil etc.) and shall be installed on high pressure pipelines in lieu of choke chambers.

The use of mineral ceramic chokes has demonstrated their high wear endurance and durability.

Replacement of valve chokes is performed by single operator during 3-5 minutes with gate in the closed position without having to release system pressure.

By the separate order the valve can be completed with the choke-check valve preventing a cross-flow of a process liquid in the opposite direction.



### Technical characteristics

Flow media	Water technical; oil with volume maintenance CO <sub>2</sub> and H <sub>2</sub> S to 6 %; the natural gas containing liquid hydrocarbons, ethyleneglycol, methanol (CH <sub>3</sub> OH), turbine oils, water and mechanical impurity
Diameters of choke openings *, mm	2, 3, 4, 5, 6, 8, 10, 12
Ambient temperature, °C	-60... +45
Flow media temperature, °C	Not to exceed 110
Closure tightness class, GOST R 54808-2011	A
Operating position	Open
Direction of flow	Any
Location on the pipeline	Any
Type of mating to pipeline	Flange
Total service life, years, not less than	15
Total average life, cycles, not less than	1800
Time to failure, cycles, not less than	600

\* On request of the customer other diameters of replaceable chokes are supposed.

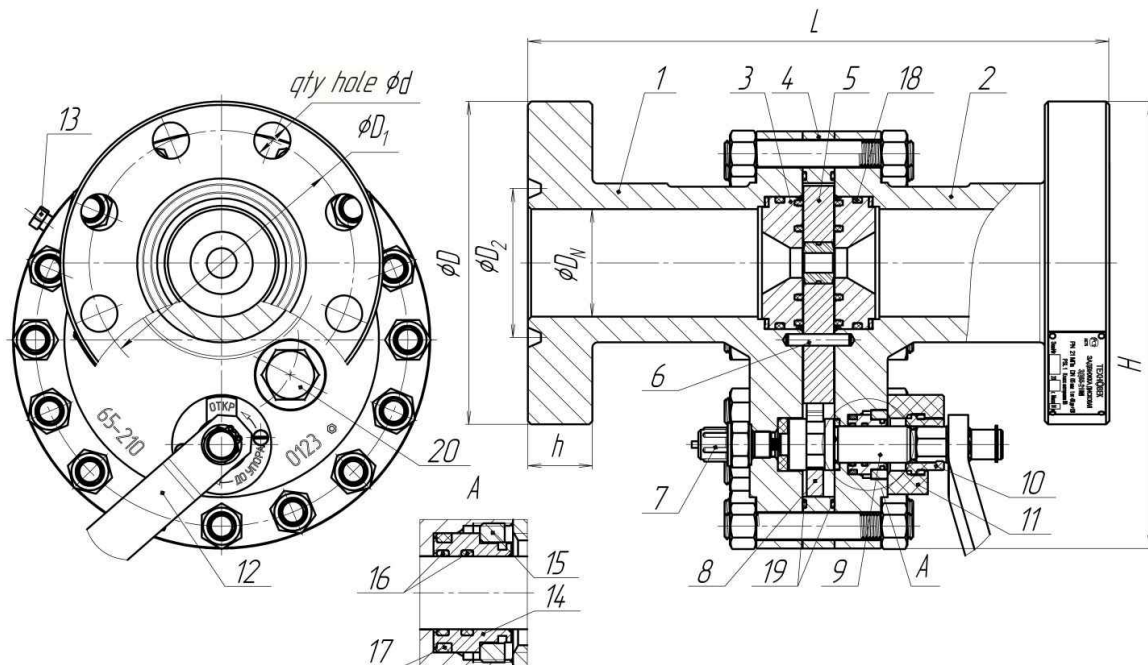


# Disk choke gate valves

ZDSh65 (50,100)-210 (140,160,350) M

Specifications 3741-001-49652808-2000

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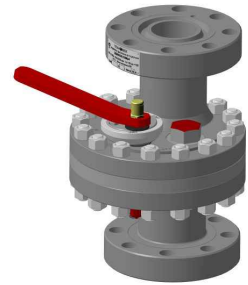
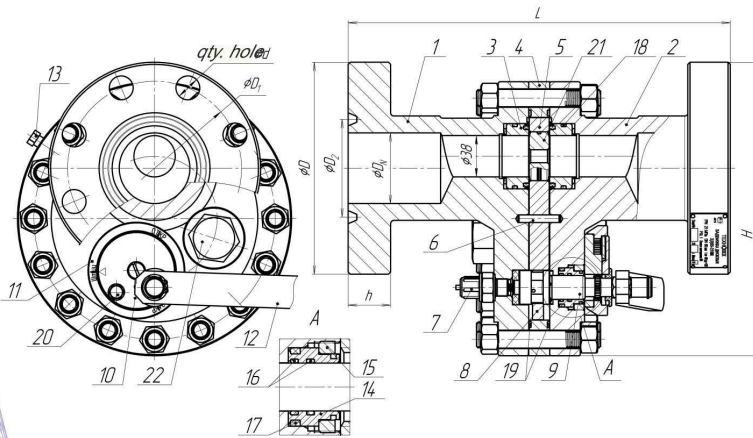
- 1,2 – Semibody
- 3 – Seat
- 4 – Ring intermediate
- 5 – Disk gate (disk)
- 6 – Axe
- 7 – Pressure testing adaptor
- 8 – Sector
- 9 – Cogget shaft
- 10 – Indicator
- 11 – Indicator body
- 12 – Handle
- 13 – Plug
- 14 – Liner
- 15 – Nut
- 16,17,18,19 – Ring gaskets
- 20 – Plug

Identification	DN, mm	PN, Mpa (kgs/sm <sup>2</sup> )	L, mm	D, mm	D <sub>1</sub> , mm	D <sub>2</sub> , mm	n, pieces	d, mm	H, mm	h, mm	Execution	
ZDSh	50, 65	14 (140)	350	195	160	92	8	22	270	27	GOST 28919	
		21 (210)				90				40		
		35 (350)										
	50	14 (140)	371	215	165	95,2	8	25	280	19	46	GOST 28919
		21 (350)								25		
		35 (350)								28		
	65	21 (210)	422	245	190,5	107,9	8	28	295	50		
	80	14 (140)	435	242	190,5	123,8	8	25	334,5	23	46	GOST 28919
		21 (210)								25		
		35 (350)								32		
	100	21 (210)	473	265	208	136,5	8	32	347	56		
			511	292	235	149,2	8	32	402	53	GOST 28919	

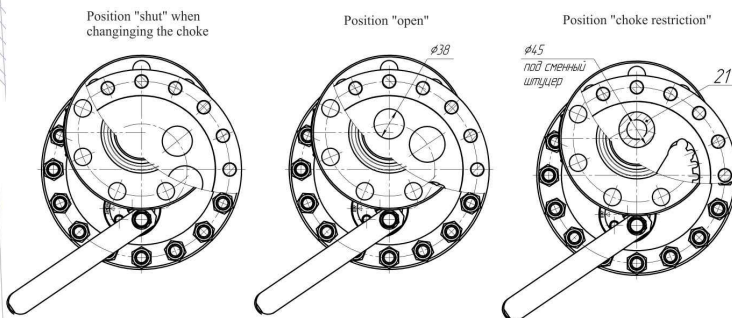
Disk choke gate valve ZDSh Mr4 is designed on the basis of the disk choke gate valve ZDSh with equivalent technical characteristics and sizes. Additional hole with the diameter 38 mm. in the disk gate allows to work not only in “choke restriction” mode but also in “full bore” mode. The disk choke gate valve goes with metal chokes with holes 2,3,4,5,6,8,10,12 mm. or 20,22,25,28,30,32.

Disk choke gate valve is designed for the flow step control (technical waters, crude oil, etc.) and is installed on the high-pressure pipelines.

Connection sizes of ZDSh valves are similar to ZMS (or any others by request).



- 1,2. Semibody
3. Seat
4. Ring intermediate
5. Disk gate (disk)
6. Axe
7. Pressure testing adaptor
8. Sector
9. Cogget shaft
10. Indicator
11. Indicator body
12. Handle
13. Plug
14. Liner
15. Nut
- 16,17,18,19. Ring gaskets
20. Fixation screw
21. Chokes
22. Plug



Identification	DN, mm	PN, Mpa (kgs/cm <sup>2</sup> )	L, mm	D, mm	D <sub>1</sub> , mm	D <sub>2</sub> , mm	n, pieces	d, mm	H, mm	h, mm	Execution
ZDSh Mr4	65	14 (140)	350	195	160	90	8	22	270	40	GOST 28919
		21 (210)									
		35 (350)									
	65	21 (210)	422	245	190,5	107,9	8	28	295	50	GOST 28919

# Disk revolver valve

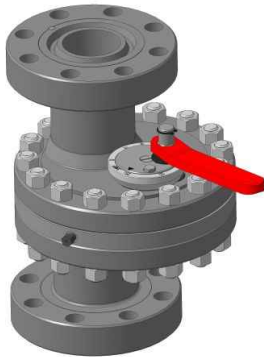
## ZDSh65 (100)-210 (140,160,350) Mr

### Specifications 3741-001-49652808-2000

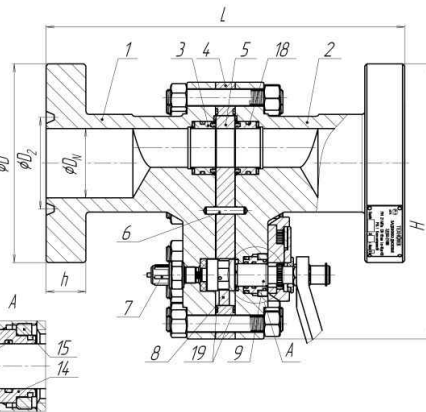
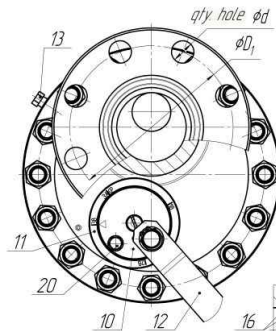
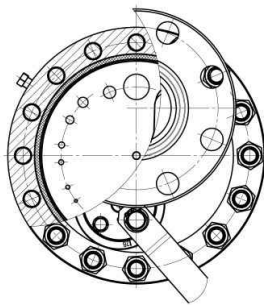
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The design of ZDSh Mr valve is based upon design of disk valve ZD and has similar technical parameters. It is designed to provide step control of flow (process water, oil etc.) and gas and shall be installed on high pressure pipelines in lieu of choke chambers. The choke position control is made on dial with corresponding signs.

Connection sizes of a valve are similar to ZMS (or any others by request).



Technical characteristics	
Flow media	Water technical; oil with volume maintenance CO <sub>2</sub> and H <sub>2</sub> S to 6 %; the natural gas containing liquid hydrocarbons, ethylene glycol, methanol (CH <sub>3</sub> OH), turbine oils, water and mechanical impurity
Ambient temperature, °C	-60... +45
Flow media temperature, °C	Not to exceed 110
Closure tightness class, GOST R54808-2011	A
Disk position monitoring	See indicator
Direction of flow	Any
Location on the pipeline	Any
Type of mating to pipeline	Flange
Total service life, years, not less than	15
Total average life, cycles, not less than	1800
Time to failure, cycles, not less than	600



1,2 – Semibody

3 – Seat

4 – Ring intermediate

5 – Disk gate (disk)

6 – Axe

7 – Pressure testing adaptor

8. Sector

9 – Cogset shaft

10 – Indicator

11 – Indicator body

12 – Handle

13 – Plug

14 – Liner

15 – Nut

16,17,18,19 – Ring gaskets

20 – Fixation screw

Identification	D <sub>N</sub> , mm	P <sub>N</sub> , Mpa (kgs/cm <sup>2</sup> )	L, Mm	D, mm	D <sub>1</sub> , mm	D <sub>2</sub> , mm	n, pieces	d, mm	d <sub>III</sub> , mm	H, mm	h, mm	Execution
ZDShMr	65	14 (140)	350	195	160	92	8	22	2, 3, 4, 5, 6, 8, 10, 12, 25 or 18, 28, 38	270	27	GOST 28919
		21 (210)				40						
		35 (350)										
	100	16 (160)	432	265	210	145	8	30	28, 33, 45	388,5	40	GOST 28919
21 (210)		511	292	235	149,2	8	32	402		53	GOST 28919	

Disk gate valves are designed to shut off flows in the pipelines with different work pressure and nominal bores. Operating media- technical waters, crude oil, crude oil emulsion. Total service life is not less than 15 years. Time to failure is not less than 600 cycles. Overhaul life is not less than 5 years.

The handle is used to open or to shut the valve (90C)

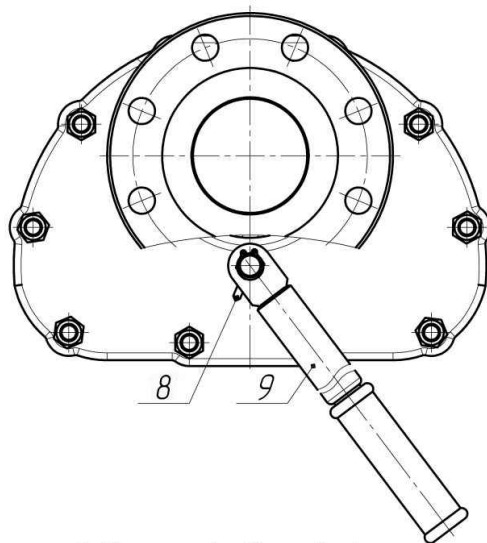
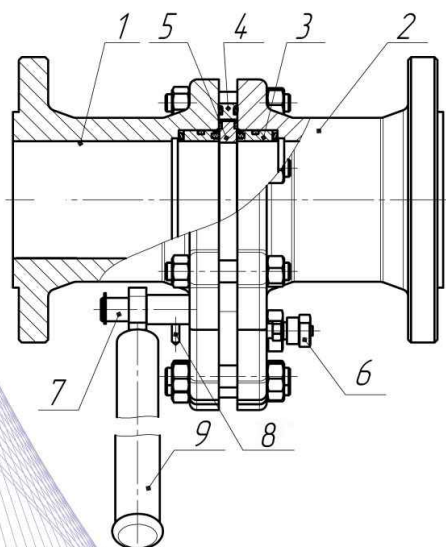
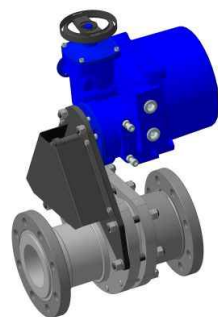
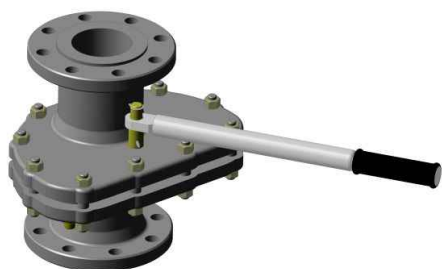
Climatic modification is UHL (HL) as per GOST 15150.

Environmental temperature is  $-60^{\circ}\text{C}$  up to  $+40^{\circ}\text{C}$ .

Operational media temperature is no more than  $+120^{\circ}\text{C}$ .

Operational media flow direction - any.

Flange sizes as per GOST 12815.



- 1,2. Semibody
- 3. Seat
- 4. Ring intermediate
- 5. Disk gate (disk)

- 6. Pressure testing adaptor
- 7. Cogget shaft
- 8. Indicator
- 9. Handle

The ball cock is designed for work as a part of Christmas trees and injection valves and for high pressure pipelines with temperature of the transported environment no more plus 110°C.

The transported environment: water technical; oil with volume maintenance CO<sub>2</sub> and H<sub>2</sub>S to 6 %; the natural gas containing liquid hydrocarbons, ethyleneglycol, methanol (CH<sub>3</sub>OH), turbine oils, water and mechanical impurity.

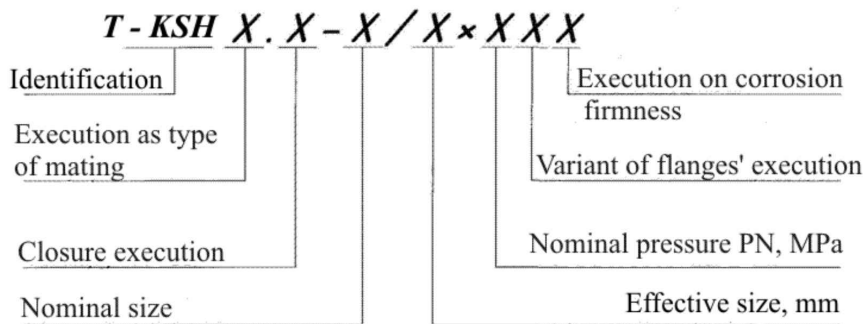
Execution of **ball cocks** on corrosion firmness - K1, K2 in accordance with GOST 13846-89. Ambient temperature at operation: from -60°C to +40°C. Kind of climatic modification UHL (HL) in accordance with GOST 15150-69. Level of technical requirements in accordance with GOST R 51365-99 UTT-2 (PSL-2).

There are ball cocks of two types:

«T»-**KSH (KSHm)** full bored;

«T»-**KSHd** - ball cocks with built- in chokes (removable or not removable single (or multiple-chokes) for step control of flow.

Ball cocks are not intended for smooth regulation of flow.



## Ball cocks' identification

### Execution as type of mating:

M - box (the thread type is underlined at the order);  
 n - nipple (the thread type is underlined at the order);  
 p - under welding;  
 f - flange;

Without a designation — interflanged.

### Closure execution:

d - throttle with removable chokes;  
 d1 - throttle with not removable chokes;  
 d2 — throttle;

Without a designation — full bored.

### Nominal size:

Bore diameter of the body.

### Effective size :

Bore diameter of the closure.

### Variant of flanges' execution:

st - flanges in accordance with GOST 28919;  
 Without a designation - flanges in accordance with RD26-16-40.

### Execution on corrosion firmness:

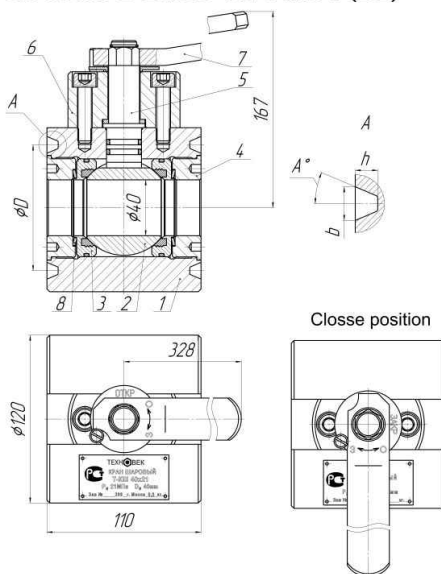
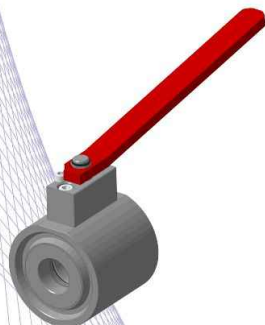
K1 (is not designated) - in accordance with GOST 13846;  
 K2 - in accordance with GOST 13846.

Technical characteristics	
Nominal size DN, mm	In accordance with GOST 28338-89*
Nominal pressure PN, Mpa (kg/cm <sup>2</sup> )	In accordance with GOST 13846-89
Closure tightness class	A, in accordance with GOST R 54808-2011
Connection sizes: - Flanges - box endings	In accordance with GOST 28919-91 smooth tubing thread in accordance with GOST 633-80
Diameters of choke openings in a ball closure, * mm - removable T-KSHd - built- in closure T-KSHd1 T- KSHd 2	2,3,4,5,6,7,8,10,12 3,4,5,6,7,8,10,12 3,4,5,6,8,10,12,18
Length **, mm T-KSH T-KSHm (T-KSHn) T-KSHd (T- KSHd1) T- KSHd2	110 (DN=40 mm, PN=21 MPa) 170 (DN=40 mm, PN=21 MPa) 110 (DN=40 mm, PN=21 MPa) 78 (DN=40 mm, PN=21 MPa)
Weight **, kg, no more T-KSH T-KSHm T-KSHd (T- KSHd1) T- KSHd2	9,5 (DN=40 mm, PN=21 MPa) 13,2 (DN=40 mm, PN=21 MPa) 10 (DN=40 mm, PN=21 MPa) 6,5 (DN=40 mm, PN=21 MPa)

The note: \* On request of the customer other diameters are supposed;

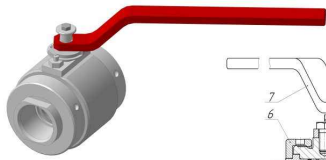
\*\* The length and weight of ball cocks of other standard sizes are established CD

### The ball cock T-KSH-65/40x14 (21)

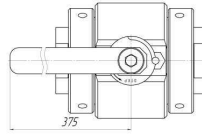
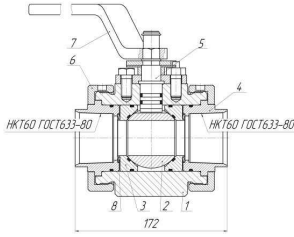


- 1 – Body;
- 2 – Closure;
- 3 – Seat;
- 4 – Nut;
- 5 – Shaft;
- 6 – Rack;
- 7 – Handle;
- 8 – Spring.

Identification	Nominal size on connection flanges, mm	Nominal size, mm	PN, Mpa	D, m	b, m	h, m	A, grad	Weight, kg
T-KSH 65/40x14	65	40	14	92	10	10	14	9,5
T-KSH 65/40x21			21	90	12	8	23	

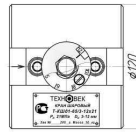
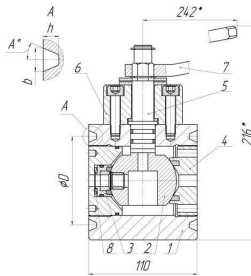


**The ball cock T-KSHm 40x14 (21)**



- 1. Body
- 2. Closure
- 3. Seat
- 4. Box
- 5. Shaft
- 6. Nut
- 7. Handle
- 8. Spring

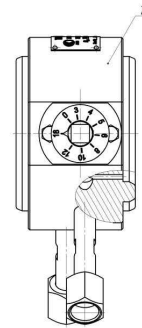
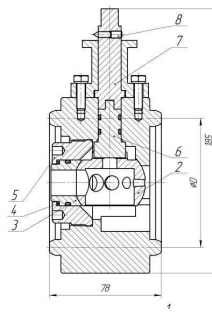
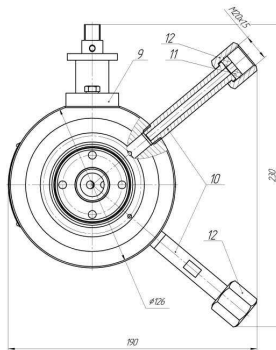
**The ball cock T-KSHd1-65/3-12x14 (21)**



- 1. Body
- 2. Closure
- 3. Seat
- 4. Nut
- 5. Shaft
- 6. Rack
- 7. Handle
- 8. Spring

Identification	Nominal size, mm	P <sub>N</sub> , Mpa	Throttle openings' diameters, mm	D, mm	b, mm	h, mm	A, grade	Weight, kg
T-KSHd1-65/3-12x14	65	14	3,4, 5, 6, 8, 10, 12	92	10	10	14	10
T-KSHd1-65/3-12x21		21		90	12	8	23	

**The ball cock T-KSHd2-65/3-18x14 (21)**



- 1. Body
- 2. Closure
- 3. Seat
- 4. Spring
- 5. Nut
- 6. Roller
- 7. Shaft
- 8. Indicator
- 9. Rack
- 10. Tube
- 11. Gasket
- 12. Nut for manometer installation

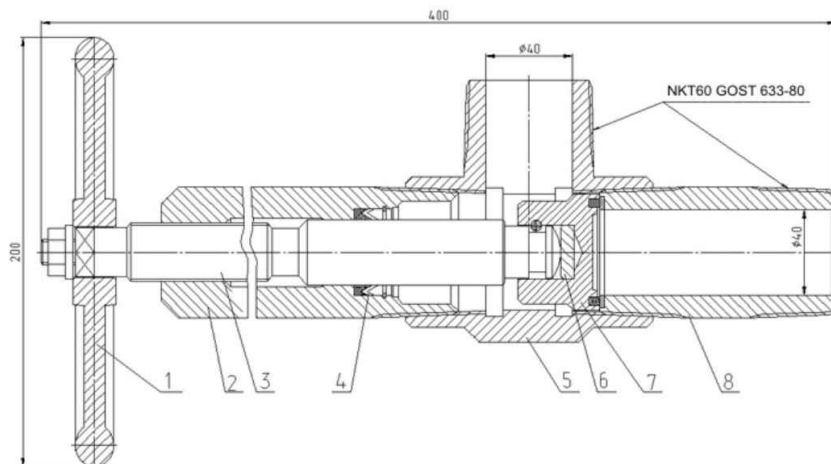
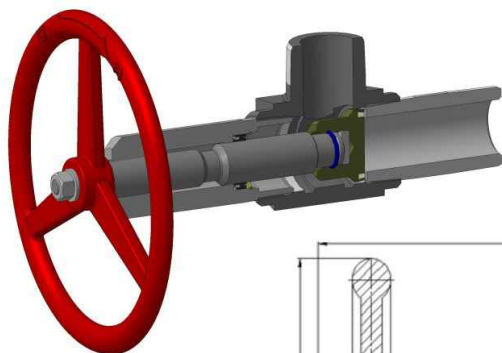
Identification	Nominal size, mm	P <sub>N</sub> , Mpa	Throttle openings' diameters, mm	D, mm	Weight, kg
T- KSHd 2-65/3-18x14	65	14	3,4, 5, 6, 8, 10, 12	92	6,5
T- KSHd 2-65/3-18x21		21		90	

This angular valve is designed to shut off liquid and gaseous media within the whole working pressure range from 0 to 21 MPa.

In terms of connection sizes and characteristics this faucet fully matches those of standard valves, however it has some advanced features.

- The seat is made from wear-resistant, high-strength ceramics, the gate itself has compound insulation (Teflon + stainless steel), which prevents gas leaks through the gate.
- The fact that the plug is pressed to the seat in plane prevents plug's break-out from the rod at the time of faucet's opening, which often poses a problem with needle-type valves.

Major components of the valve having contact to flow media, are made from alloys and high alloyed steels. Application of the valve with such set of constructive decisions allows to reduce expenses on operation, service and repair.



### Technical characteristics

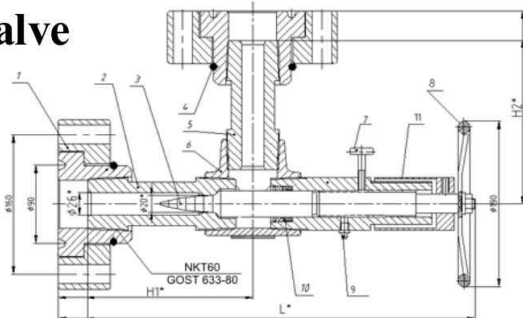
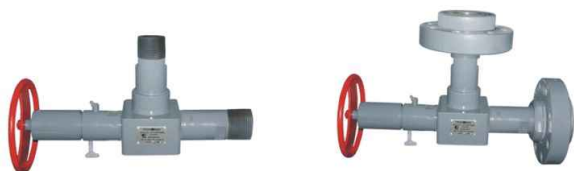
Maximum operating pressure, MPa (kg/cm <sup>2</sup> ):	14 (140), 16 (160)
Nominal bore Dn, mm	50/40
Ambient temperature, °C	-60... +48
Interface threading	NKT60
Mass, kg	4,7
Total years of service	15

1. Wheel
2. Coupling
3. Screw
4. Sealing ring
5. Body
6. Bearing
7. Valve
8. Pup joint



Angular throttle valve is designed for steps-free control of flow by gradually changing the section area of the throttle seat. It is used to ensure gradual and steps-free flow rate control inside the Christmas trees and injection equipment, high-pressure pipelines, pump flow lines.

## Angular throttle valve DRu-65/20x21 (35)

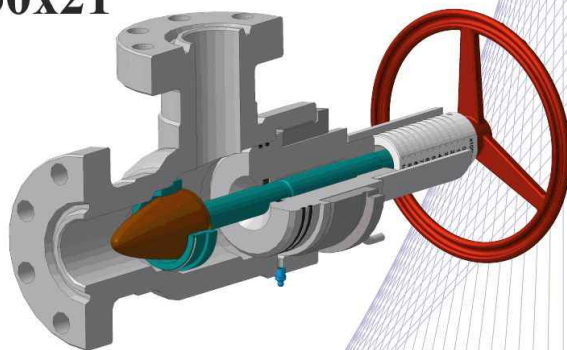
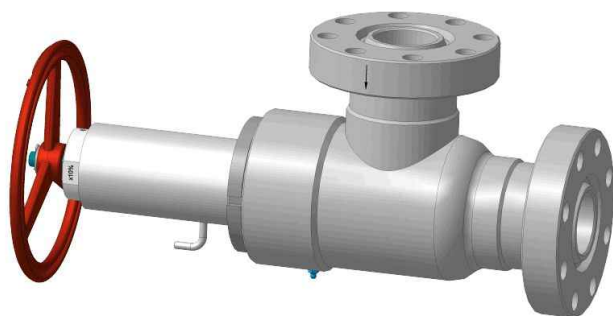


Technical characteristics	
Maximum operating pressure, MPa (kg/cm <sup>2</sup> ):	21 (210/35 (350))
Nominal bore Dn	20
Ambient temperature, °C	-60... +48
Interface threading	NKT60
Total years of service	15

Execution variant	Assembly unit structure	L*, mm	H1*, mm	H2*, mm	Mass, kg
DRu-65/20x21(35),000 SB	According to given draft	480...540	222*	222*	30,5
- 01 SB	Without components pos. 1,4,12	445...505	187*	187*	12

1. Flange rotary
2. Pup joint-seat
3. Needle
4. Ring lock
5. Threading pup joint
6. Body
7. Screw lock
8. Wheel
9. Lubricator
10. Sealing ring
11. Dial
12. Nipple

## Throttle valve DR-65/50x21



Technical characteristics	
Maximum operating pressure, MPa (kg/cm <sup>2</sup> ):	21 (210)
Nominal bore Dn	65/50
Ambient temperature, °C	-60... +48
Interface threading	NKT60
Warranty period of service, years	3
Total years of service	15

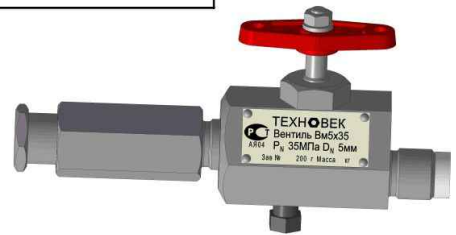
Gauge pressure valve VM5 is designed for manometers' attachment and maintenance manometer's disassembly in the presence of pressure in wellhead equipment. Valves without media separator can be applied as locking devices on wellhead equipment diversions or pipelines.

**Advantages:**

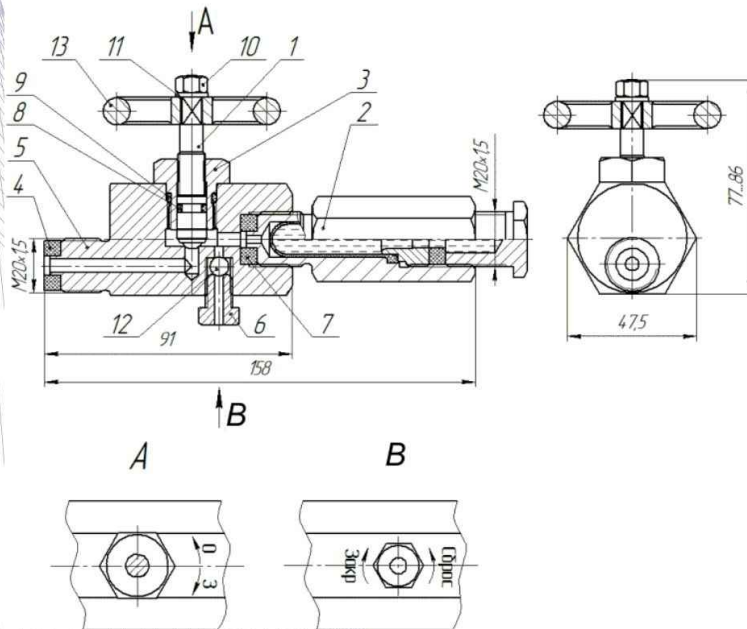
- shutter VM5x35 is made from corrosion-resistant steel, which makes it strong in corrosive environment of the well;
- allows to replace pressure gauge without having to release pressure from the main line;
- allows to make down media separator without having to release pressure from the main line for its refuelling by oil;
- it is light-weight and easy to operate.

Areas of operation – moderate and cold per GOST 15150.

Technical characteristics	
Operating pressure, MPa (kg/sm <sup>2</sup> ), no more	35 (350)
Interface threading, mm	see Scheme
Volume of separation liquid, sm <sup>3</sup> (for valves with media separator)	5 ... 6
Class of tightness per GOST 9544	A
Mass, kg	1,2



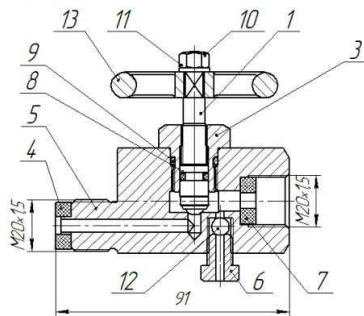
**For the scheme 5x35:**



- 1 – Mandrel unit
- 2 – Media separator
- 3 – Nut
- 4 – Gasket
- 5 – Body
- 6 – Plug
- 7 – Gasket
- 8, 9 – Sealing ring
- 10 – Nut
- 11 – Washer
- 12 – Ball
- 13 – Wheel

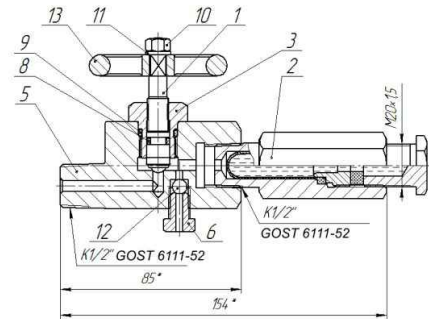
**Scheme VM5x35-01:**

- 1 – Mandrel unit
- 3 – Nut
- 4 – Gasket
- 5 – Body
- 6 – Plag
- 7 – Gasket
- 8, 9 – Sealing ring
- 10 – Nut
- 11 – Washer
- 12 – Ball
- 13 – Wheel



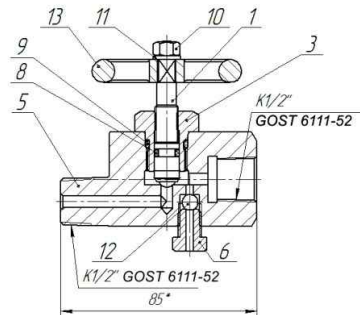
**Scheme VM5x35-02:**

- 1 – Mandrel unit
- 2 – Media separator
- 3 – Nut
- 5 – Body
- 6 – Plag
- 8,9 – Sealing ring
- 10 – Nut
- 11 – Washer
- 12 – Ball
- 13 – Wheel

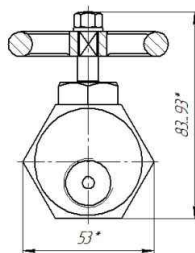
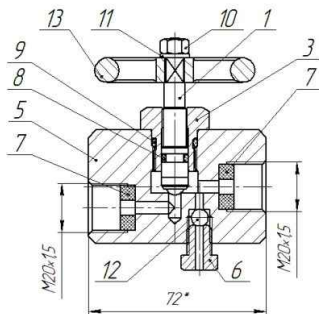


**Scheme VM5x35-02-01:**

- 1 – Mandrel unit
- 3 – Nut
- 5 – Body
- 6 – Plag
- 8,9 – Sealing ring
- 10 – Nut
- 11 – Washer
- 12 – Ball
- 13 – Wheel



**Scheme VM5x35-03:**



- 1 – Mandrel unit
- 3 – Nut
- 5 – Body
- 6 – Plag
- 7 – Gasket
- 8, 9 – Sealing ring
- 10 – Nut
- 11 – Washer
- 12 – Ball
- 13 – Wheel

### Ball valve with media separator ZRU 2A-21

Ball valve with media separator allows to install and facilitate replacement of pressure gauge while measuring the oil pressure and pressure of process water in Formation Pressure Maintenance Systems and in the oil field.

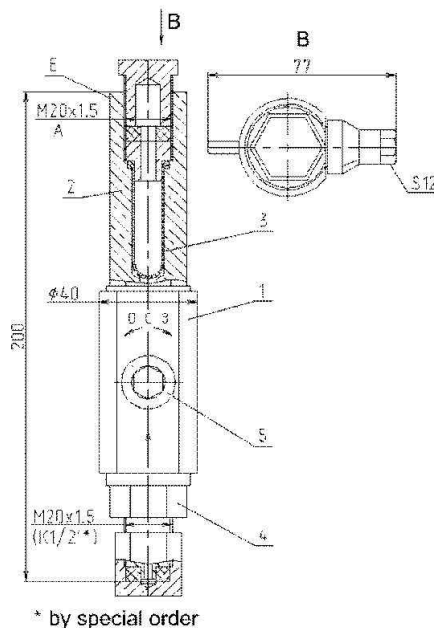
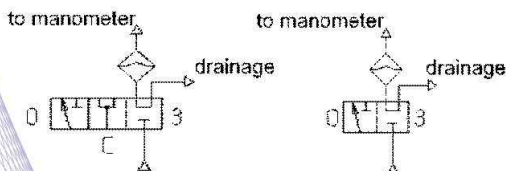
Areas of operation – moderate and cold (HL) per GOST 15150.

ZRU is equipped with media separator protecting shutter from freezing. ZRU shutter is a three-way stop ball gate made from corrosion-resistant steel, which makes it strong in corrosive environment of the well. It allows to relieve pressure alternatively from under the pressure gauge flask, and also to replace pressure gauge without having to release pressure from the main line. It is light-weight and easy to operate.



Hydraulic scheme

Variant ZRU2A-21 Variant ZRU2A-21-01



Technical characteristics	
Maximum operating pressure, MP (kg/cm <sup>2</sup> )	21 (210)
Interface threading, mm	M20x1,5 Or K1/2
Volume of separation liquid, sm <sup>3</sup>	5... 6
Dimensions	40x77x200
Class of tightness per GOST 9544-93	C
Mass, kg	1,3

The sampling valve is intended for taking the tests of product from pipe line under pressure. For more even taking away the tests on the whole section of pipe line sampling valve is provided with sampling by tube. Sampling nipple can be unrolled in any position for its axis and is fixed in given position, for prevention of drains a nipple is closed the defensive stopper.

For an exception of freezing of sampling tube flowing channel, the valve is supplied by rod which allows to clear sampling tube mechanically. Kind of climatic modification UHL1 (HL1) in accordance with in accordance with GOST 15150-69.

Maximal ambient temperatures from +40 to -60 °C.

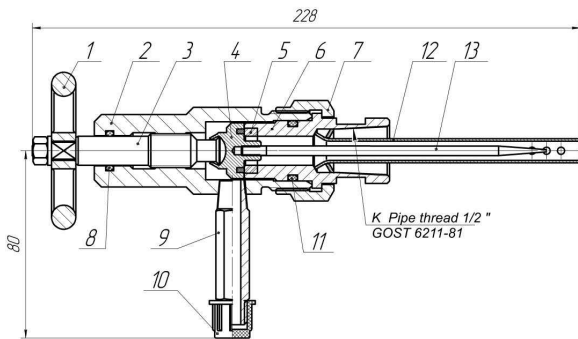
Advantages:

The shutter is supplied by the combined sealing "metal-teflon".

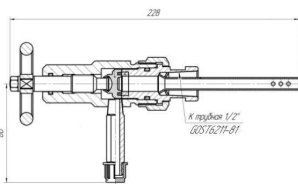
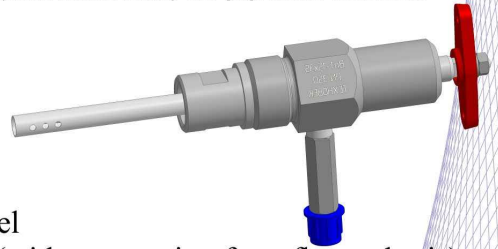
For K2 execution the valve saddle is reinforced by a ceramic insert.

Major components of a flowing path are made from corrosion-resistant steel. Sampling pipe allows to make sampling in several points (in regular intervals) on pipeline section.

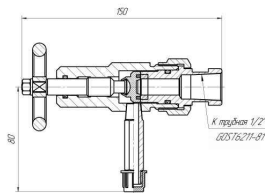
### Scheme VP1-15x14 (21.35)-01 (K2):



- 1 – Wheel
- 2 – Body
- 3 – Mandrel
- 4 – Valve (with compaction from fluoroplastic)
- 5 – Ceramic insert (for execution K2)
- 6 – Saddle
- 7 – Nut
- 8 – Sealing ring
- 9 – Nipple
- 10 – Plag
- 11 – Sealing ring
- 12 – Pipe
- 13 – Rod



Without stem  
VP1-15x14(21,35)



Without stem and tube  
VP1-15x14(21,35)-02(K2)

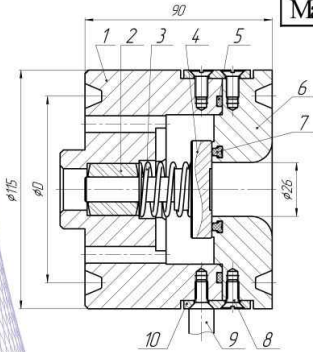
Description	
Operating pressure $P_N$ , MPa ( $\text{kg}/\text{cm}^2$ )	14 (140), 21 (210), 35 (350)
Nominal diameter, $D_N$ , mm	15
Interface threading	K1/2 "GOST 6211-81
Class of tightness per GOST 9544-2005	A
Execution on corrosion firmness in accordance with GOST 13846-89	K1, K2
Flow media temperature, °C	120
Dimensions, mm	228 ... 235x80x65
Mass, kg	1,2

## KO1-65/26x21 (14, 35)

This back valve is designed for use as a part of wellhead equipment to continuously maintain pressure difference between pipelines and prevent back flow of liquids.

Possibility of reliable operations within pressure range from 0 to 35 MPa (KO1) due to use of special sealing.

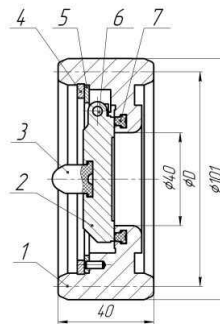
There is less potential of freezing due to no empty internal space. Hydraulic performance is improved. Major components are made of corrosion-proof steel and polyurethane.



- |                 |             |
|-----------------|-------------|
| 1 – Case        | 6 – Flange  |
| 2 – Plug        | 7 – Sealant |
| 3 – Spring      | 8 – Screw   |
| 4 – Valve       | 9 – Handle  |
| 5 – Ring gasket | 10 – Lath   |

Technical characteristics			
Description	KO1-65/26x14	KO1-65/26x21	KO1-65/26x35
Operating pressure $P_N$ , MPa (kg/cm <sup>2</sup> )	14 (140)	21 (210)	35 (350)
Nominal size of connection pipeline, mm	65		
Effective size $D_N$ , mm	26		
Average diameter of ring gasket D, mm	92	90	
Flow media temperature, °C	120		
Mass, kg	6,2		

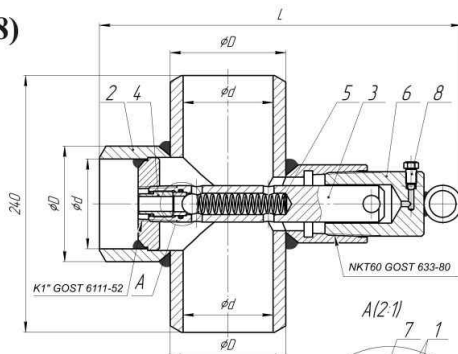
## KO2-65/40x21 (14,35)



- |                    |
|--------------------|
| 1 – Case           |
| 2 – Valve          |
| 3 – Shock absorber |
| 4 – Locating ring  |
| 5 – Ring           |
| 6 – Axis           |
| 7 – Sealant        |

Technical characteristics			
Description	KO2-65/40x14	KO2-65/40x21	KO2-65/40x35
Operating pressure $P_N$ , MPa (kg/cm <sup>2</sup> )	14 (140)	21 (210)	35 (350)
Nominal size of connection pipeline, mm	65		
Effective size $D_N$ , mm	40		
Average diameter of ring gasket D, mm	92	90	
Flow media temperature, °C	120		
Mass, kg	1,6		

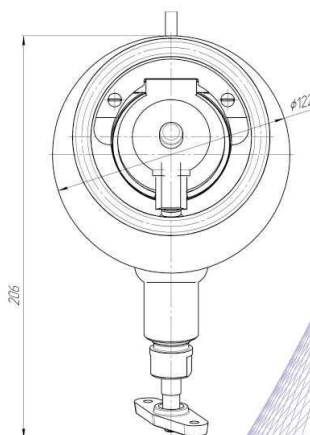
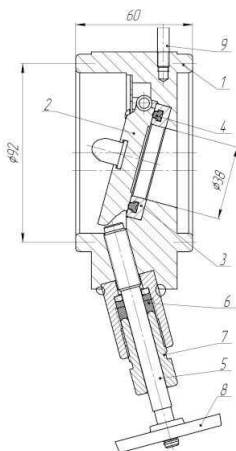
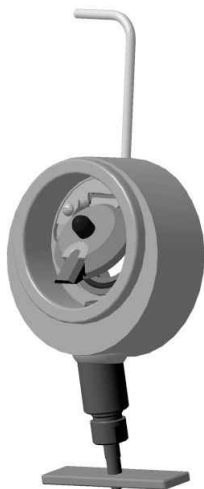
## KO3-89 (108)



- 1 – Valve
- 2 – Case
- 3 – Choke
- 4 – Nut press
- 5 – Spring
- 6 – Plug
- 7 – Ring gasket
- 8 – Bleedoff valve

Technical characteristics		
Description	KO 3-89	KO 3-108
Operating pipeline pressure $P_N$ , MPa (kg/cm <sup>2</sup> )	14 (140)	
Nominal size $D_N$ , mm	14,5	
The dimensional and connection sizes, mm	D	89
	d	65
	L	340
Flow media temperature, °C	120	
Mass, kg	11	13,5

## Back valve KO7-65/40x14



- 1. Case
- 2. Valve
- 3. Seat
- 4. Gaskets
- 5. Rod
- 6. Seal
- 7. Collar bush
- 8. Wheel
- 9. Handle

Description	KO 7-65/40x14
Operating pipeline pressure $P_N$ , MPa (kg/cm <sup>2</sup> )	14(140)
Nominal size $D_N$ , mm	40
Flow media temperature, °C	120
Mass, kg	3,5

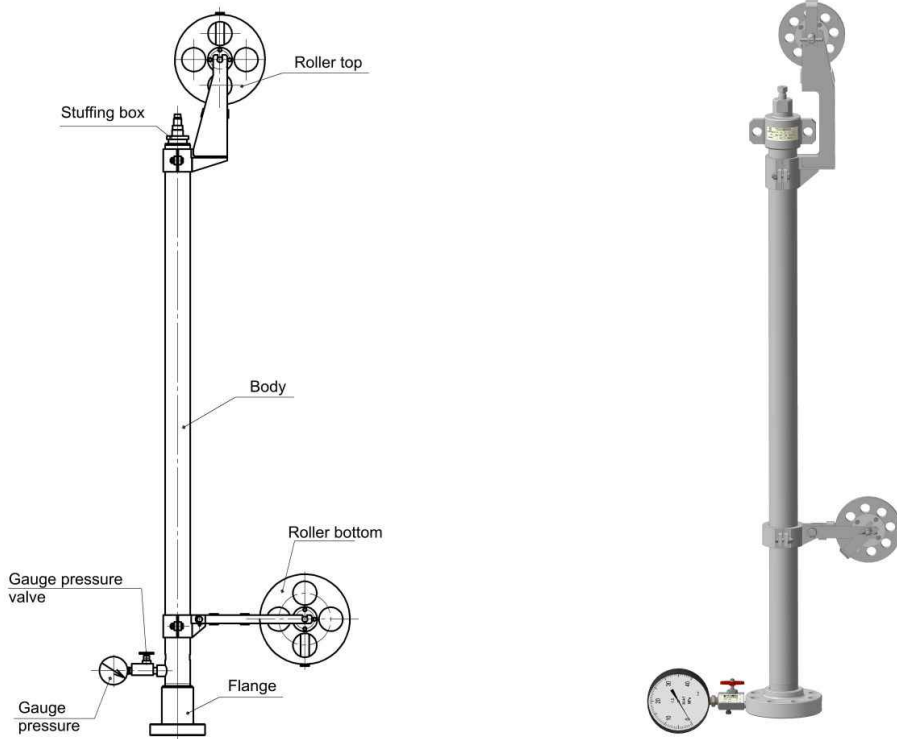
This lubricator is designed to provide sealing to the wellhead during tools lowering and geophysical surveying.

This lubricator employs two stuffing boxes and allows to replace active stuffing box under pressure. Pressure control and product discharge device is provided.

Maximum temperature:

- ambient: from plus 40<sup>0</sup>C to a minus 40<sup>0</sup>C;
- flow liquids: no more plus 100<sup>0</sup>C.

Kind of execution – K2.

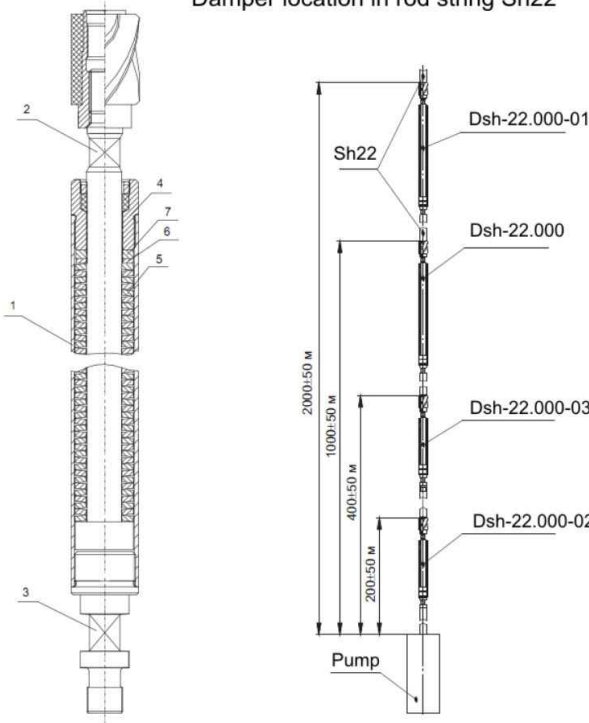


Designation	DN, mm	PN, MPa	Height of device chamber, mm	Flange and steel sealing ring	Diameter of pig cable, mm, no more	Mass, kg
L65-21	65	21	2000	«Bakinka» GOST 28919	3	90
L65-21-01	65	21	2000	GOST 28919	3	90
LP65-35	65	35	2500	GOST 28919	3	150
LP65-35-01	65	35	4000	GOST 28919	3	220
LS65-35	65	35	2000	GOST 28919	3	100
L65-70	65	70	2500	GOST 28919	2,8	145





Damper location in rod string Sh22



The set of rod dampers (DSh-22.000, DSh-22.000-01, DSh-22.000-02, DSh-22.000-03) reduce dynamic loads in rod strings and prevent rod twisting during rod string operation.

It is used as a part of a rod string Sh22 in locations determined by the Customer based on mass of the rod string against length and technical parameters of dampers.

Damper models differ from each other design-wise by size, strength of disc springs and installation locations. Dynamic loads in the rod string are damped due to resiliency of disc springs.

Rod twisting is prevented by the ability of top of the rod string located above the damper to turn in reference to the bottom part.

The damper is connected to the rod string by both the rod coupling and standard coupling MSh22 GOST 13877-96.

The Coupling rod with external spiral cogs acts as a scraper.

1. Body
2. Rod
3. Control rod
4. Bushing
5. Disc spring
6. Thrust washer
7. Friction bearing

Technical characteristics				
Parametres	DSh-22.000	-01	-02	-03
Rod travel, mm	0... 54	0... 30	0... 54	0... 32
Mean damping force value during rod travel, N	0... 33180	0... 66360	0... 5695	0... 11390
Full rod travel (full spring compression), mm	0... 90	0... 50	0... 90	0... 53
Mean damping force value at full spring compression, N	0... 55300	0... 110600	0... 6330	0... 18900
Length (L), mm	900	900	730	730
Mass, kg	13	13	9,3	9,3
Maximum allowable axial load to damper, N	98100	98100	98100	98100

Injection manifold unit is designed to distribute, measure flow and pressure of process water to be pumped into injection wells of the Formation Pressure Maintenance System. The unit consists of two rooms: process room and instrumentation room.

The process room accommodates: a distribution collector with valves; high-pressure water conduits that receive water from the distribution collector; a drainage collector with valves. Each high-pressure water conduit has water gauges of the discharge rate of water.

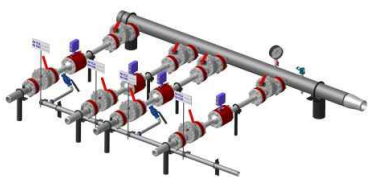
The unit is made of three-layered 50 mm thick sandwich panels.

On the Customer's order the unit can be equipped by gauges of the fire alarm system and the gassed condition alarm system.

**The Injection manifold unit has various modifications depending on:**

- Pressure;
- Number of high-pressure water conduits;
- Presence of water meter;
- Presence or absence of the second valve after the flow meter;
- Presence or absence of the process room;
- Availability of ventilation system;
- Presence of heating system;
- Type of unit shelter;
- Nominal size of target branch pipes.

**Units are available in various configurations.**



**Injection manifold unit of opened type**



**Injection manifold unit of closed type**

### Technical characteristics

Flow media	Water technological for systems PPD, fresh and waste with maintenance of mechanical impurity no more than 0,5 % with the sizes no more than 0,1 mm CO <sub>2</sub> and H <sub>2</sub> to 0,03 % on each volume	
Flow media temperature °C, not to exceed	40	
Operating pressure (P <sub>oper</sub> ), MPa (kg/sm <sup>2</sup> ), no more	16 (160), 21 (210), 35 (350)	
Light exposure level, lk, not less	20	
Temperature level indoors at settlement winter temperature of air a minus 40°C, not less	+5	
Parametres of electric chains supply: - Current sort - Pressure, In	AC 380/220 +10/10	
Nominal size of connection pipelines, mm *	reception	injection diversions
	65, 100, 130, 175	65, 100
Flow meter	According to the order (DRS.M, KR-2 and other)	
Number of high-pressure diversions (whiskers), piece	From 2 to 14	

# Satellite group units for crude oil measuring

Specification 3667-014-49652808-2009

[www.technovek.ru](http://www.technovek.ru)

Satellite group units for crude oil measuring - is designed for liquid flow and gas measuring, also for indication, zipping and passing of the results and alarm signals to the operations control station.

Measuring group unit consists of the technological unit for all measuring processes and automatic control unit for data gathering from any oil wells that are connected to the unit.

Measuring group unit is equipped with the heating system, lighting, ventilation and alarm system.

Pipeline control valves consist of disk gate valves ZD produced by Oil-and-Gas Equipment Plant «TECHNOVEK», LTD with the nominal bores  $D_N50$ ,  $Dy80$  and  $Dy100$ .

Measuring group unit has different variants depending on the number of connected wells 1, 8, 10, 12, 14 with the daily production rate 400, 1200, 1500  $m^3$ .

It can be heat-insulated by request. It is produced according the requirements of GOST R 8.615-2005.



#### Purpose and capabilities:

Measuring of instant volumetric flow values of conductive liquids, mainly oilfield waste water of the Formation Pressure Maintenance System. Display of information on the screen of the secondary unit. Maintenance of Log of Changes in the memory of the device (flow, date, time).

#### Configuration:

- Primary device (sensor) PPRE-65x21 or PPRE-32x21 integrated with oil field equipment (water conduits, wellhead equipment, distribution injection manifolds (BG), etc).
- Portable secondary device BIP-16 for model designed to provide measurements of instant flow values in field conditions; memory capable of holding 16 items of measurements.

#### How it works:

Measures electromotive force created by magnetic field in the conductive liquid proportional to the average speed of the flow.

#### Design features:

- Wide range of working pressures ( $P < 21$  Mpa);
- Constant conversion factor for all the converters;
- Capability to measure corrosive, abrasive and viscous liquids;
- Capability to operate when electrodes are covered with a film of oil;
- Capability to operate in highly heterogeneous flow media, near pipeline bends, throttles, back valves and gate valves;
- No obstructions in the passage bore. Pressure losses do not exceed those in the pipeline of the equivalent length.



Maximum operating pressure, MPa (kg/cm <sup>2</sup> )	21 (210)	
Designation of sensors	PPRE 65x21	PPRE 32x21
Nominal diameter of sensors (DN), mm	65	32
Flow measuring range, m <sup>3</sup> /hour	4... 125	0,4... 25
Sensor operations temperature range, °C	-60... +50	
Temperature range for operations of secondary devices BIP-16, °C	-20 ... +50	
Temperature of flow media, °C	0... +50	
Relative margin of error	+ - 3 %	
Number of measuring channels Secondary device BIP-16	16	
Capacity of Log of measurements (number of measurements) Secondary device BIP-16	16	
Power supplies		
Primary device PPRE-65x21, (PPRE -32x21)	Not required	
Secondary device BIP-16	6 cells x 1,2B	
Dimensions, mm		
Primary device PPRE -65x21, (PPRE -32x21)	128x170	
Secondary device BIP-16	165x140x62	
Mass, kg		
Primary device PPRE -65x21, (PPRE -32x21)	7,1	
Secondary device BIP-16	0,8	

#### Purpose and capabilities:

Measuring of instant and cumulative (for a given time period) volumetric flow values of conductive liquids, mainly oilfield waste water of the Formation Pressure Maintenance System. Display of information on the screen and telemetry.

#### How it works:

Measures electromotive force created by magnetic field in the conductive liquid proportional to the average speed of the flow. Flow sensor converts the flow into sequence of electric impulses, "by" an impulse 0,001m<sup>3</sup>, 0,01m<sup>3</sup>, 0,1m<sup>3</sup>, 1m<sup>3</sup>, on the Customer request, the format can be changed. Length of the communication line between the sensor and telemechanics system to 300 m.

#### Design features:

- Wide range of working pressures (P<21 Mpa);
- Capability to measure corrosive, abrasive and viscous liquids;
- Capability to operate when electrodes are covered with a film of oil;
- Capability to operate in highly heterogeneous flow media, near pipeline bends, throttles, back valves and gate valves;
- No obstructions in the passage bore. Pressure losses do not exceed those in the pipeline of the equivalent length.



Technical characteristics		
Maximum operating pressure, MPa (kg/cm <sup>2</sup> )	21 (210)	
Designation of sensors	KR2-65x21	KR2-32x21
Nominal diameter of sensors (DN), mm	65	32
Flow measuring range, m <sup>3</sup> /hour	4... 125	0,4... 25
Operations temperature range, °C	-40 ... +50	
Operations temperature range (with LC indicator), °C	-20 ... +50	
Temperature of flow media, °C	0... +50	
Relative margin of error, %	±3	
Power supplies	24B	
Dimensions, mm	128x291x160	
Mass, kg	9,8	9,3

This filtration unit is designed to remove particulates from process water in Formation Pressure Maintenance System in Oil and Gas Industry.

It can also be used to protect pumping and other equipment in technological installations of the Oil and Gas Industry. Installation: at the inlet manifold of sewage pumping station. Modules A and B work in alternating mode.

A (B) module filter is flushed by back flow form A (B) module.

Operating mode – continuous.

Replacement of a filter screen – within 10 minutes, no hand-tools are needed.



#### Technical characteristics

Nominal pressure (PN), MPa, no more		4 (40)
Nominal size (DN), mm		100
Size of captured firm particulates, micron		> 50*
Maximal temperature:	Air, °C	-40 ... +40
	Waters, °C	Not to exceed 80
Dimensions, mm	Length	1186
	Width	760
	Height	1430
Mass, kg		385

\*NOTE: By Customer's order.

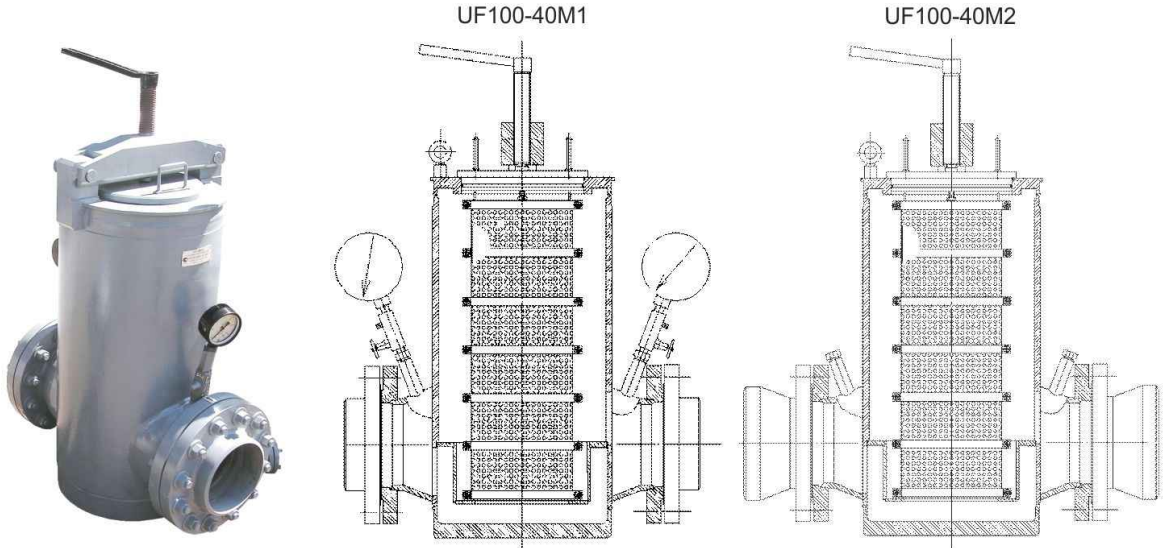
# Filtration unit

## UF100-40M1 (M2, M3, M4, M5, M6, M7, M8)

Specifications 3666-006-49652808-03

This filtration unit is designed to remove big size particulates from water in Formation Pressure Maintenance System in Oil and Gas Industry.

It can also be used to protect pumping and other equipment in technological installations of the Oil and Gas Industry.



Characteristic	M1	M2	M3	M4	M5	M6	M7	M8
Nominal pressure (PN), MPa	4	4	21	4	4	4	4	21
Nominal bore (DN), mm	200	250	65	50	50	50	200	65
Allowable pressure variance, MPa	0,5	0,5	0,5	0,5	1,5	1,5	0,5	0,3
Degree of filtration (size of captured particles)	By Customer order							1. 70 microns
Dimensions:								
- Length	845	845	675	780	780	780	997	680
- Width	665	665	475	540	540	540	805	520
- Height	1375	1375	940	1430	1390	1370	2176	1700
Mass, kg	410	415	180	180	180	200	1130	365
Cleaning of filter without disassembly of it	Washing with return flow of filtered water							
Operation conditions:								
- Ambient temperature, °C	-40 ... +40							
- Temperature of filtered water, °C	No more than 80							

Not flange not folding pipeline insulation sleeve (TIS) are designed to provide efficient cathol protection for ground, underground and underwater pipelines transporting waste oil-field waters, oil, ga the technical water.

Pipeline insulation sleeves, thanks to sufficient extent of an isolating site (some calibers), allow to exclude leaks of protective or tread current through contacting elements adjoining to a protected site to ground (equipment, input in buildings, the concrete bases, not isolated sites of pipelines, etc.).

Kind of climatic modification

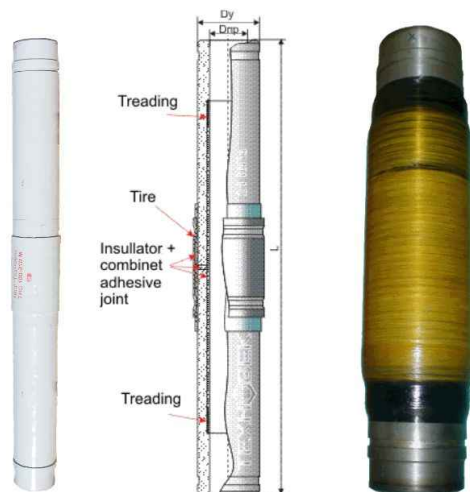
UHL1 in accordance with GOST 15150-69.

Maximal ambient temperatures from +40 to-60 °C. Temperature of the transported environment to 110°C.

Piping material is steel 20X GOST 4543, insulator material is fiberglass. All materials used at manufacturing of sleeve, are certificated.

Pipeline insulation sleeves TIS-M are issued 2 version s:

- For oil-field pipelines of petro gathering, technical water conduits— TIS-40M (Pn=4 MPa, Dn=50, 65, 80, 100,150, 200, 250, 300 mm);
- For oil-field pipelines injection sewage for maintenance anti-formation pressure — TIS -21M (Pn=21 MPa, Dn=50, 65, 80, 100, 150 mm)



### Technical characteristics

Designation	Nominal bore Dn, Mm	Operating pressure Pn, MPa (kg/s <sup>2</sup> )	Length L mm,	Conn. diameter Dcon, mm	Mass, kg
<b>TIS for petrogathering pipelines, water conduits</b>					
TIS 50-40 M	50	4 (40)	880	73	10
TIS 65-40 M	65	4 (40)	740	88	12
TIS 80-40 M	80	4 (40)	740	101	14
TIS 100-40M	100	4 (40)	740	115	16
TIS 150-40M	150	4 (40)	740	160	21
TIS 200-40M	200	4 (40)	970	218	50
TIS 200/250-40M	200	4 (40)	970	272	65
TIS 300-40M	300	4 (40)	970	321	70
<b>TIS for pipelines injection sewage in injection wells of Formation Pressure Maintenance System</b>					
TIS 65-210M	65	21 (210)	1200	88	23,5
TIS 80-210M	80	21 (210)	1200	101	26,5
TIS 100-210M	100	21 (210)	1200	115	30
TIS 150-210M	150	21 (210)	1200	160	36
<b>TIS for the main gas pipelines</b>					
TIS MG 50-80	50	8 (80)	740	73	15
TIS MG 65-80	65	8 (80)	740	88	18
TIS MG 80-80	80	8 (80)	740	101	21
TIS MG 100-80	100	8 (80)	740	115	24
TIS MG 150-80	150	8 (80)	740	160	31
TIS MG 200-80	200	8 (80)	740	218	72
TIS MG 250/200-80	200	8 (80)	740	272	94
TIS MG 300-80	300	8 (80)	740	321	111



# Pipeline insulation sleeve

TIS-GH (for a gas economy)

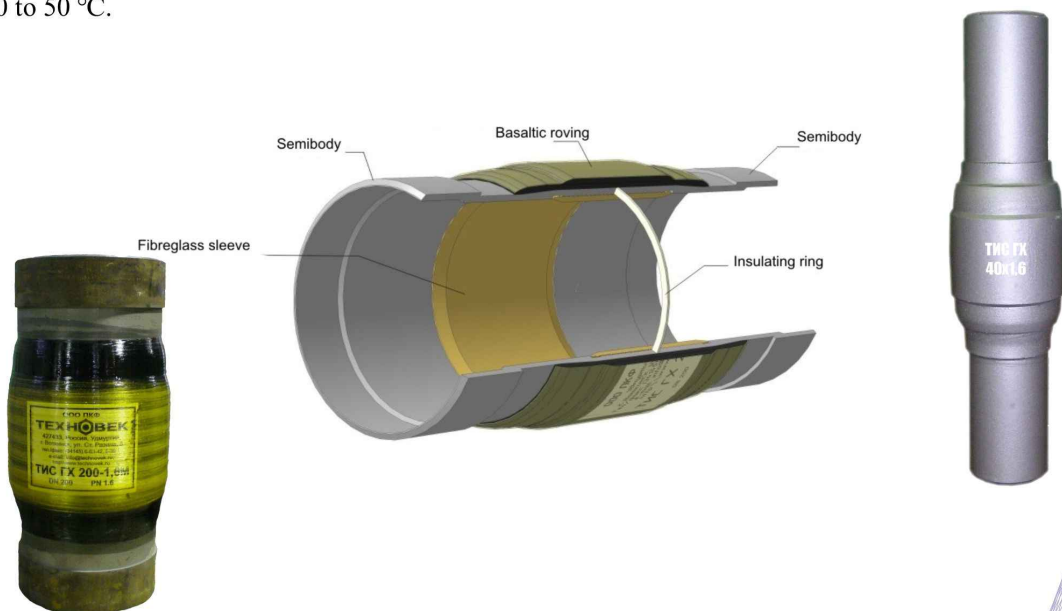
Specifications 3799-010-49652808-2004

www.technovek.ru

Pipeline insulation sleeves for a gas economy TIS GH-1,6M (Pn=1,6 MPa, Dn=25, 32, 40, 50, 65, 80, 100, 150, 200, 250, 300 mm) are established in distributive networks of a municipal gas economy, on the main gas pipelines for protection against the underground "wandering" currents, the induced currents against electric mains, other extraneous sources influencing reliability, safety and service life of gas pipelines.

Advantages:

- unmaintainability (exception: taint) during all target date of TIS GH service;
- target date of service - 30 years;
- the design excludes possibility of not authorised breaking of tightness of the pipeline, in view of absence of demountable connections;
- high reliability at the expense of absence of demountable connections;
- kind of climatic modification UHL in accordance with GOST 15150-69, ambient temperatures from -60 to 50 °C.

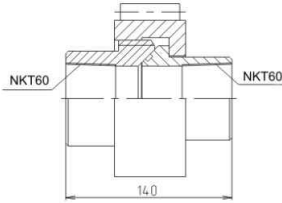


Technical characteristics

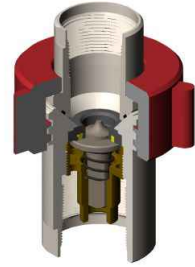
Designation	DN, mm	Dcon, mm	PN, MPa (kgs/cm <sup>2</sup> )	L, mm
TIS GH 25-16	25	32	1,6 (16)	342
TIS GH 32-16	32	40	1,6 (16)	362
TIS GH 40-16	40	48	1,6 (16)	362
TIS GH 50-16	50	57	1,6 (16)	402
TIS GH 65-16M	65	76	1,6 (16)	353
TIS GH 80-16M	80	89	1,6 (16)	353
TIS GH 100-16M	100	108	1,6 (16)	353
TIS GH 150-16M	150	159	1,6 (16)	403
TIS GH 200-16M	200	219	1,6 (16)	503
TIS GH 300-16M	300	324	1,6 (16)	803

Make and break coupling operates as a part of wellhead equipment and to facilitate installation and reinstallation of pipelines. BRS2 is equipped with a back valve.

### BRS1

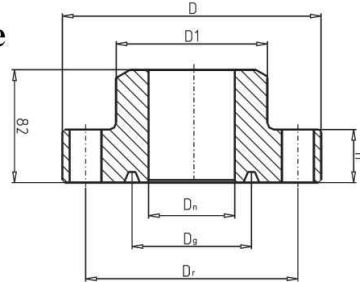


### BRS2



Description	BRS1	BRS2
Interface threading	NKT60 vn NKT60 vn	NKT60 vn NKT73 vn
Dimensions, mm	D135x140	D135x190
Back valve	Not applicable	Applicable

### Companion flange



Technical characteristics								
Description of parameter	Pr, MPa	Dn, mm	D, mm	Dr, mm	Dg, mm	D1, mm	h, mm	GOST/RD
Operating pressure	14	65	195	160	92	22	27	RD 26-16-40-89
		65	195	149	101,6	22	37	GOST 28919-91
	21	65	195	160	90	22	40	RD 26-16-40-89
		65	245	190,5	107,9	28	50	GOST 28919-91
		80	242	190,5	123,8	25	46	GOST 28919-91
		100	292	235	149,2	32	53	GOST 28919-91
	35	65	195	160	90	22	56	RD 26-16-40-89
		65	245	190,5	107,9	28	50	GOST 28919-91