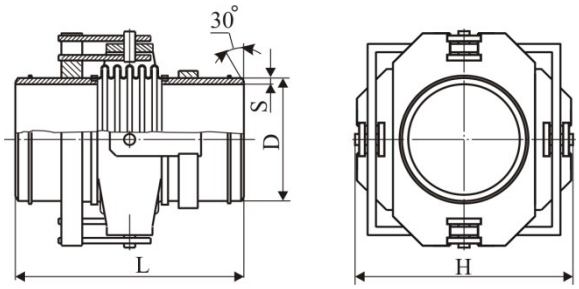
Cardan type expansion joints

Expansion joints, ППП type



ПППН type

ПППН type axial, angular double-plane (cardan) expansion joints with welded neck branch pipes. These expansion joints can be installed directly in pipelines transferring (delivery and potable) water with a temperature up to 150 °C and at a velocity up to 8 m/s, oil and oil products with a temperature up to 450 °C and at a velocity up to 8 m/s, as well as steam and gaseous media not causing corrosion to the expansion joint material, with a temperature up to 500 °C and at a velocity up to 20 m/s.

*Table 18**

Serial product range**

Reference designation	Nominal pressure, PN, MPa (kgf/cm²)	Nominal diameter, DN, mm	Dimensions, mm				Angular travel amplitude, ± γ, degr. at an operation time of 5000 cycles	Stiffness at angular movement, C_γ N·m/degr.	Weight, kg
			D	S	L	H			
ПППН.Т7-6.3-600	0.63 (6.3)	600	630	8	632	910	5	326	353
ПППН.Т7-10-600	1.0 (10)	600	630	8	640	940	5	408	408
ПППН.Т7-6.3-800	0.63 (6.3)	800	820	9	780	1150	5	581	665
ПППН.Т7-10-800	1.0(10)	800	820	9	824	1180	5	813	879

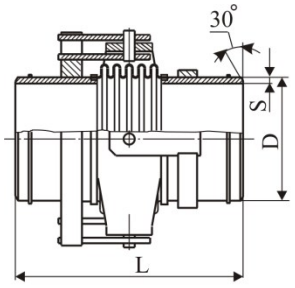
Table 18 continued*

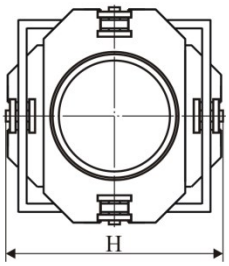
Serial product range**

Reference designation	Nominal pressure, PN, MPa (kgf/cm²)	Nominal diameter, DN, mm	Dimensions, mm				Angular travel amplitude, ± γ, degr. at an operation time		Stiffness at angular movement, C_γ N·m/degr.	Weight, kg
			D	S	L	H	Mode 1 N = 5000 cycles	Mode 2 N = 200 cycles		
ПППН.Т7-16-65	1.6 (16)	65	76	3.5	418	280	8	15	4	31
ПППН.Т7-16-80		80	89	3.5	446	290	8	15	5	34
ПППН.Т7-16-100		100	108	4	458	320	8	15	6	47
ПППН.Т7-16-125		125	133	4	526	350	8	15	12	57
ПППН.Т7-16-150		150	159	4.5	536	380	8	13	19	77
ПППН.Т7-16-200		200	219	6	546	460	8	12	44	123
ПППН.Т7-16-250		250	273	7	612	550	8	11	61	184
ПППН.Т7-16-300		300	325	7	660	630	8	10	100	265
ПППН.Т7-16-350		350	377	7	702	690	7	10	197	285
ПППН.Т7-16-400		400	426	8	808	740	5	9	304	432
ПППН.Т7-16-500		500	530	8	836	863	5	8	426	599
ПППН.Т7-16-600		600	630	8	892	997	5	8	816	840
ПППН.Т7-16-700		700	720	8	926	1100	5	8	1155	1118
ПППН.Т7-16-800		800	820	9	1024	1230	5	8	1394	1487
ПППН.Т7-16-900		900	920	10	1164	1370	3	7	2377	1812
ПППН.Т7-16-1000		1000	1020	10	1218	1470	3	6	2603	2210
ПППН.Т7-25-65	2.5 (25)	65	76	3.5	430	280	8	15	6	40
ПППН.Т7-25-80		80	89	3.5	458	290	8	15	7	50
ПППН.Т7-25-100		100	108	4	470	320	8	15	9	66
ПППН.Т7-25-125		125	133	4	536	360	8	15	16	92
ПППН.Т7-25-150		150	159	4.5	546	400	8	13	26	120
ПППН.Т7-25-200		200	219	6	578	480	8	12	55	170
ПППН.Т7-25-250		250	273	7	620	550	8	11	77	251
ПППН.Т7-25-300		300	325	7	670	630	8	10	120	280
ПППН.Т7-25-350		350	377	7	710	690	7	10	229	295
ПППН.Т7-25-400		400	426	8	814	790	5	9	347	571
ПППН.Т7-25-500		500	530	8	848	904	5	8	533	778
ПППН.Т7-25-600		600	630	8	904	1030	5	8	979	1023
ПППН.Т7-25-700		700	720	8	932	1132	5	8	1251	1327
ПППН.Т7-25-800		800	820	9	1036	1276	5	8	1626	1787
ПППН.Т7-25-900		900	920	10	1214	1460	3	7	2717	2170
ПППН.Т7-25-1000		1000	1020	10	1328	1550	3	6	2975	2573
ПППН.Т7-40-80	4.0 (40)	80	89	6	310	280	5	–	18	25
ПППН.Т7-40-200		200	219	8	460	480	5	–	88	118
ПППН.Т7-40-250		250	273	10	530	450	5	–	153	185
ПППН.Т7-40-300		300	325	10	620	610	5	–	320	278

* The parameters of expansion joints given in the Table are for reference only; for precise product performance please contact the factory's technical specialists;
** The scientific, material and technical facilities, as well as testing equipment of the factory make it possible to supply both serial products and customized products (designed and manufactured according to the customer's ToR).

Expansion joints, ППП type





ПППН type

ПППН type axial, angular double-plane (cardan) expansion joints with welded neck branch pipes. These expansion joints can be installed directly in pipelines transferring (delivery and potable) water with a temperature up to 150 °C and at a velocity up to 8 m/s, oil and oil products with a temperature up to 450 °C and at a velocity up to 8 m/s, as well as steam and gaseous media not causing corrosion to the expansion joint material, with a temperature up to 500 °C and at a velocity up to 20 m/s.

Table 18 continued*

Serial product range**

Reference designation	Nominal pressure, PN, MPa (kgf/cm²)	Nominal diameter, DN, mm	Dimensions, mm				Angular travel amplitude, ±γ, degr. at an operation time of 5000 cycles	Stiffness at angular movement, C_γ, N·m/degr.	Weight, kg
			D	S	L	H			
ПППН.Т8-6.3-800	0.63 (6.3)	800	820	9	644	1140	3	870	823

Table 18 continued*

Serial product range**

Reference designation	Nominal pressure, PN, MPa (kgf/cm²)	Nominal diameter, DN, mm	Dimensions, mm				Angular movement amplitude, ±γ, degr. at an operation time N	Preset operation time, N, cycles	Angular stiffness, C_γ, kgf·m/degr.	Weight, kg
			D	s	L	H				
ПППН.Т8-6.3-350	0.63 (6.3)	350	377	9	556	684	7	1000	9.5	295
ПППН.Т8-16-200-2.6	1.6 (16)	200	219	10	553	422	8	5000	20	110
ПППН.Т8-16-250-2.6		250	273	10	522	502	8	5000	42	180
ПППН.Т8-16-300-2.1		300	325	10	543	582	8	5000	47	272
ПППН.Т8-25-200-2.1	2.5 (25)	200	219	10	570	446	8	5000	36	147

Table 18 continued*

Serial product range**

Reference designation	Nominal pressure, PN, MPa (kgf/cm²)	Nominal diameter, DN, mm	Dimensions, mm				Angular movement amplitude, ±γ, degr. at an operation time N	Preset operation time, N, cycles	Angular stiffness, C_γ, kgf·m/degr.	Weight, kg
			D	s	L	H				
ПППН-2.5-400-2.1	0.25 (2.5)	400	426	10	470	630	5	3000	11.2	130
ПППН-25-300-2.1	2.5 (25)	300	325	8	670	590	5	5000	19.6	280

* The parameters of expansion joints given in the Table are for reference only; for precise product performance please contact the factory's technical specialists;
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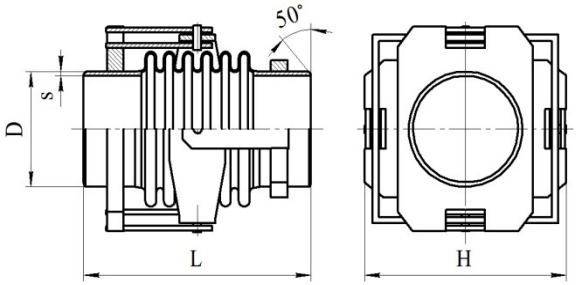
Expansion joints, ППП type



ППППН type

ППППН type axial, angular double-plane (cardan) expansion joints with welded neck branch pipes. These expansion joints can be installed directly in pipelines transferring (delivery and potable) water with a temperature up to 150 °C and at a velocity up to 8 m/s, oil and oil products with a temperature up to 450 °C and at a velocity up to 8 m/s, as well as steam and gaseous media not causing corrosion to the expansion joint material, with a temperature up to 500 °C and at a velocity up to 20 m/s.

*Table 18a**

Serial product range**

Reference designation	Nominal pressure, PN, MPa (kgf/cm²)	Nominal diameter, DN, mm	Dimensions, mm				Angular movement amplitude, ±γ, degr. at an operation time N	Preset operation time, N, cycles	Angular stiffness, C_γ, kgf·m/degr.	Weight, kg
			D	s	L	H				
ППППН-25-125-2.4	2.5 (25)	125	130	4	250	260	4	3000	2.2	20.5
ППППН-25-150-2.4		150	160	4	220	306	3	3000	6.2	28.0

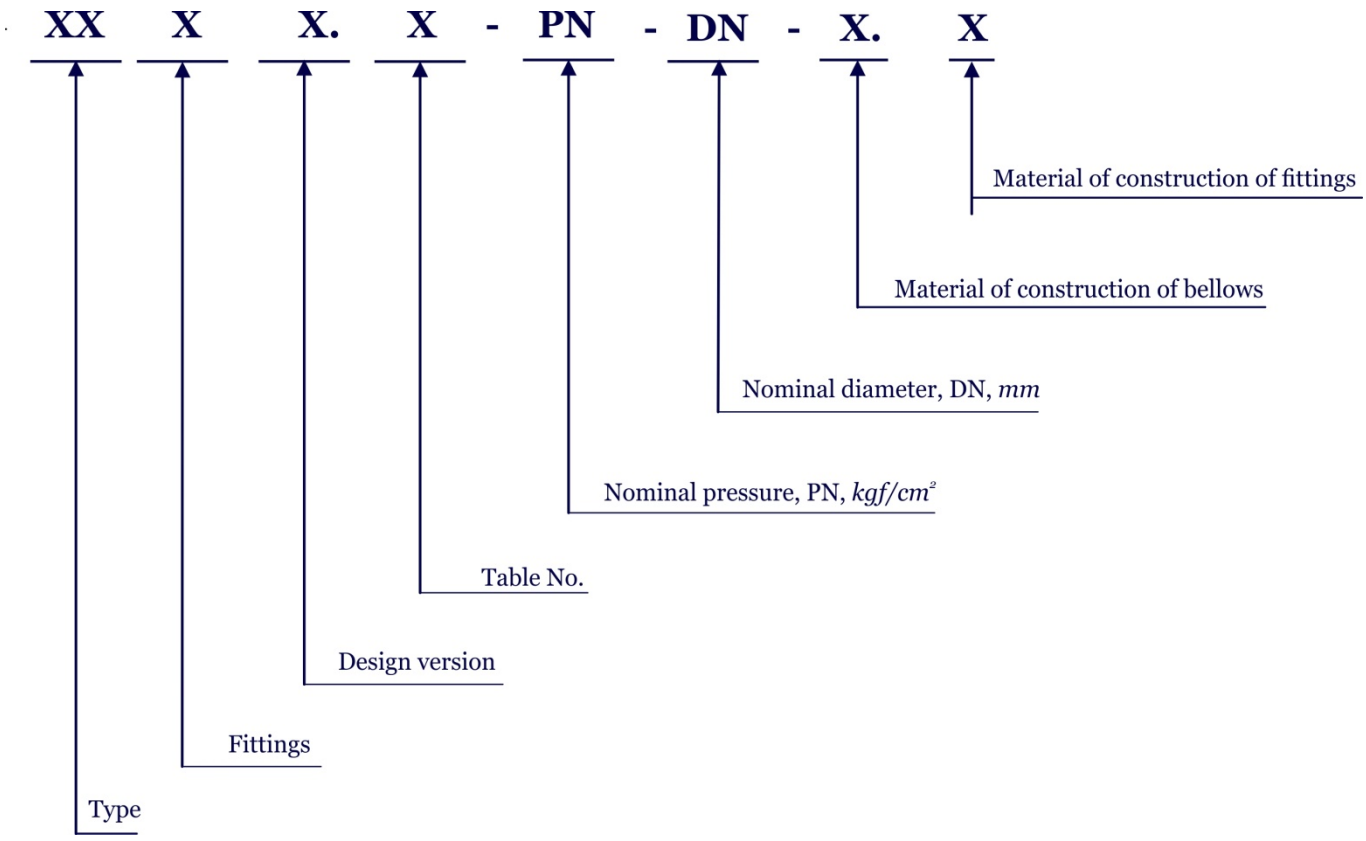
* The parameters of expansion joints given in the Table are for reference only; for precise product performance please contact the factory's technical specialists;
** The scientific, material and technical facilities, as well as testing equipment of the factory make it possible to supply both serial products and customized products (designed and manufactured according to the customer's ToR).

Reference designation of general purpose industrial grade angular expansion joints as per the ИЯНШ.300260.046ТУ specification

The reference designation of expansion joints consists of symbols and values of the main parameters:

Reference designation of expansion joint types and versions					
Type	**Symbol**	**Fittings**	**Symbol**	**Design version**	**Symbol**
Angular, single-plane	**ПО**	Weld branch pipe (on both sides)	**П**	Basic (bellows + 2 branch pipes or flanges)	**Н**
Angular, space	**ППП**	Flange (on both sides)	**Ф**	With a guide branch pipe	**Г**
Lateral, space	**СП**	Flange on one side, weld branch pipe on the other side	**Д**	Enclosed	**К**
Lateral/angular					
Lateral, single-plane	**СО**	Weld branch pipe on one side, weld branch on the other side	**ОП**	With a guide branch pipe and enclosed	**М**
Balanced, universal	**РУ**				

Expansion joint reference designation diagram



Depending on the operating conditions, the material of construction of expansion joints shall be specified at order placement in accordance with the tablesbelow:

Bellows		
Design version	**Material grade**	**Permissible operating temperature K (°C)**
1	– Exterior layers (on the outside) and interior layers (on the side of the handled medium), steel grade 05Х18Н10Т (08Х18Н10Т or 12Х18Н10Т) as per GOST 5632; – Intermediate layers, steel grade 08кп (08пс or 08ю) as per GOST 9045.	253 to 423 (–20 to 150)
2	– All layers, steel grade 05Х18Н10Т (08Х18Н10Т or 12Х18Н10Т) as per GOST 5632;	20 to 773 (–253 to 500)
3	– All layers, steel grade 10Х17Н13М2Т as per GOST 5632	20 to 773 (–253 to 500)

Fittings		
Design version	**Material grade**	**Permissible operating temperature K (°C)**
1	Steel grade 20 as per GOST 1050	253 to 698 (–20 to 425)
2	Steel grade 17Г1С as per GOST 19281	233 to 748 (–40 to 475)
3	Steel grade 09Г2С , 09Г2 as per GOST 19281	203 to 748 (–70 to 475)
4	Steel grade 08Х18Н10Т, 12Х18Н10Т as per GOST 5632	20 to 823 (–253 to 550)
5	Steel grade 10Х17Н13М2Т as per GOST 5632	20 to 823 (–253 to 550)
6	Steel grade 15Х5М as per GOST 20072	223 to 873 (–50 to 600)

Example of ordering information:

Example of ordering information and information to be included in other documentation on an angular space type expansion joint for welded attachment to a pipeline; nominal pressure, PN, 1.6 MPa (16 kgf/cm^2); nominal diameter, DN, 500 mm; design version; materialof bellows construction (all layers, steel grade 05Х18Н10Т); material of construction of fittings (steel grade 20):
“**Expansion joint ППППН.Т7-16-500-2.1 as per ИЯНШ.300260.046 ТУ**”.

Basic parameters and characteristics of handled media of the products as per ИЯНШ.300260.046ТУ

Handled media	Handled medium temperature, max., K (°C)	Handled medium velocity, m/s
Fresh delivery water, potable water, crude oil, oil products	723 (450)	8 maximum
Steam, natural gas, gaseous media not causing corrosion to expansion joint material	773 (500)	80 maximum
Note: **1. The permissible content of chloride ions in fresh water, the handled medium for expansion joints to be installed in heating networks, shall not exceed 250 mg/l.** **2. The expansion joints may be used for other handled media not capable of causing sulphide stress corrosion cracking.**		