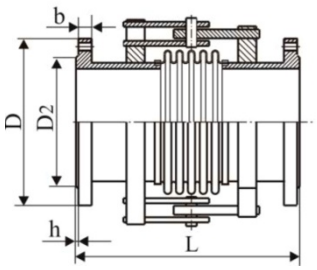
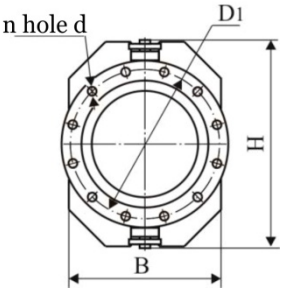
# Expansion joints, ПОФН type




## ПОФН type

ПОФН type axial, angular single-plane expansion joints with flanges. 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 19**

**Serial product range****

| Reference designation | Nominal pressure, PN, MPa (kgf/cm²) | Nominal diameter, DN, mm | Dimensions, mm | | | | | | | | | n | Angular travel amplitude, ± γ, degr. at an operation time | | Stiffness at angular movement, $C_\gamma$, N·m/degr. | Weight, kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | D | $D_1$ | $D_2$ | L | B | H | b | h | d | | Mode 1 N = 5000 cycles | Mode 2 N = 200 cycles | | |
| ПОФН.Т9-16-65 | 1.6 (16) | 65 | 180 | 145 | 122 | 460 | 140 | 250 | 21 | 3 | 18 | 4 | 8 | 15 | 4 | 32 |
| ПОФН.Т9-16-80 | | 80 | 195 | 160 | 133 | 470 | 150 | 270 | 21 | 3 | 18 | 8 | 8 | 15 | 5 | 36 |
| ПОФН.Т9-16-100 | | 100 | 215 | 180 | 158 | 524 | 180 | 290 | 23 | 3 | 18 | 8 | 8 | 15 | 6 | 48 |
| ПОФН.Т9-16-125 | | 125 | 245 | 210 | 184 | 536 | 200 | 320 | 25 | 3 | 18 | 8 | 8 | 15 | 12 | 57 |
| ПОФН.Т9-16-150 | | 150 | 280 | 240 | 212 | 536 | 240 | 350 | 25 | 3 | 22 | 8 | 8 | 13 | 19 | 75 |
| ПОФН.Т9-16-200 | | 200 | 335 | 295 | 268 | 560 | 300 | 430 | 27 | 3 | 22 | 12 | 8 | 12 | 44 | 115 |
| ПОФН.Т9-16-250 | | 250 | 405 | 355 | 320 | 598 | 370 | 530 | 28 | 3 | 26 | 12 | 8 | 11 | 61 | 175 |
| ПОФН.Т9-16-300 | | 300 | 460 | 410 | 370 | 628 | 430 | 620 | 28 | 4 | 26 | 12 | 8 | 10 | 100 | 244 |
| ПОФН.Т9-16-350 | | 350 | 520 | 470 | 430 | 642 | 490 | 700 | 30 | 4 | 26 | 16 | 7 | 10 | 197 | 302 |
| ПОФН.Т9-16-400 | | 400 | 580 | 525 | 482 | 808 | 550 | 740 | 34 | 4 | 30 | 16 | 5 | 9 | 304 | 465 |
| ПОФН.Т9-16-500 | | 500 | 710 | 650 | 585 | 836 | 620 | 863 | 44 | 4 | 33 | 20 | 5 | 8 | 426 | 638 |
| ПОФН.Т9-16-600 | | 600 | 840 | 770 | 685 | 892 | 770 | 997 | 45 | 5 | 39 | 20 | 5 | 8 | 816 | 948 |
| ПОФН.Т9-16-700 | | 700 | 910 | 840 | 800 | 926 | 855 | 1100 | 47 | 5 | 39 | 24 | 5 | 8 | 1155 | 1175 |
| ПОФН.Т9-16-800 | | 800 | 1020 | 950 | 905 | 1024 | 970 | 1230 | 49 | 5 | 39 | 24 | 5 | 8 | 1394 | 1468 |
| ПОФН.Т9-25-65 | 2.5 (25) | 65 | 180 | 145 | 122 | 460 | 140 | 250 | 21 | 3 | 18 | 8 | 8 | 15 | 6 | 36 |
| ПОФН.Т9-25-80 | | 80 | 195 | 160 | 133 | 470 | 150 | 270 | 23 | 3 | 18 | 8 | 8 | 15 | 7 | 44 |
| ПОФН.Т9-25-100 | | 100 | 230 | 190 | 158 | 524 | 180 | 290 | 25 | 3 | 22 | 8 | 8 | 15 | 9 | 58 |
| ПОФН.Т9-25-125 | | 125 | 270 | 220 | 184 | 536 | 200 | 320 | 27 | 3 | 26 | 8 | 8 | 15 | 16 | 83 |
| ПОФН.Т9-25-150 | | 150 | 300 | 250 | 212 | 536 | 240 | 350 | 27 | 3 | 26 | 8 | 8 | 13 | 26 | 107 |
| ПОФН.Т9-25-200 | | 200 | 360 | 310 | 278 | 560 | 300 | 430 | 29 | 3 | 26 | 12 | 8 | 12 | 55 | 149 |
| ПОФН.Т9-25-250 | | 250 | 425 | 370 | 335 | 598 | 370 | 530 | 31 | 3 | 30 | 12 | 8 | 11 | 77 | 211 |
| ПОФН.Т9-25-300 | | 300 | 485 | 430 | 390 | 628 | 430 | 620 | 32 | 4 | 30 | 16 | 8 | 10 | 120 | 291 |
| ПОФН.Т9-25-350 | | 350 | 550 | 490 | 450 | 642 | 490 | 700 | 38 | 4 | 32 | 16 | 7 | 10 | 229 | 385 |
| ПОФН.Т9-25-400 | | 400 | 610 | 550 | 505 | 814 | 550 | 790 | 40 | 4 | 33 | 16 | 5 | 9 | 347 | 541 |
| ПОФН.Т9-25-500 | | 500 | 730 | 660 | 615 | 848 | 620 | 904 | 48 | 4 | 39 | 20 | 5 | 8 | 533 | 723 |
| ПОФН.Т9-25-600 | | 600 | 845 | 770 | 720 | 904 | 770 | 1030 | 49 | 5 | 39 | 20 | 5 | 8 | 979 | 1018 |
| ПОФН.Т9-25-700 | | 700 | 960 | 875 | 820 | 932 | 855 | 1132 | 55 | 5 | 45 | 24 | 5 | 8 | 1251 | 1343 |
| ПОФН.Т9-25-800 | | 800 | 1075 | 990 | 930 | 1036 | 970 | 1276 | 63 | 5 | 45 | 24 | 5 | 8 | 1626 | 1697 |

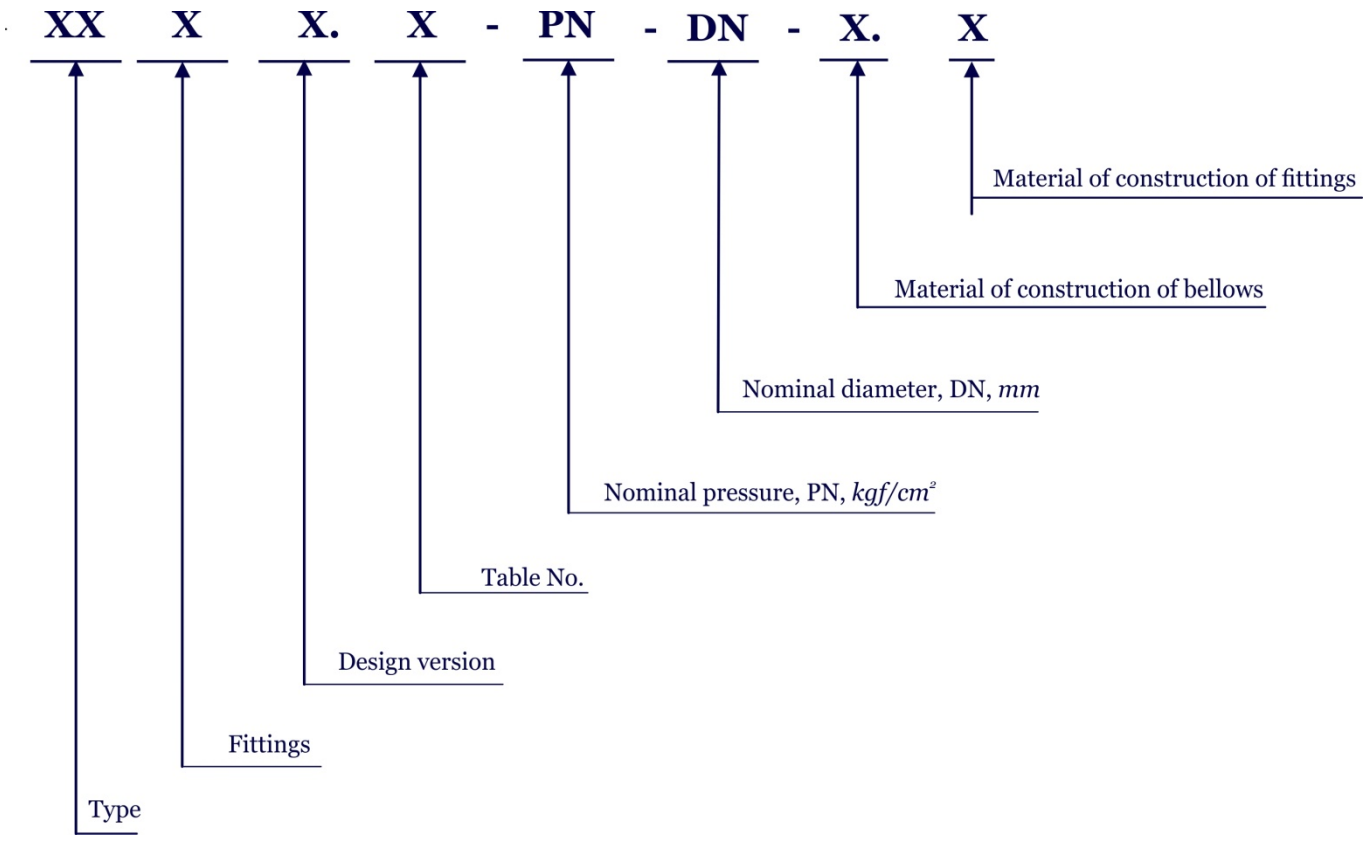
* The parameters of expansion joints given in the Table are for reference only; for precise product performance please contact the factory's technical specialists;
** The scientific, material and technical facilities, as well as testing equipment of the factory make it possible to supply both serial 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;<br>– Intermediate layers, steel grade 08кп (08пс or 08ю) as per GOST 9045. | 253 to 423<br>(–20 to 150) |
| **2** | – All layers, steel grade 05Х18Н10Т (08Х18Н10Т or 12Х18Н10Т) as per GOST 5632; | 20 to 773<br>(–253 to 500) |
| **3** | – All layers, steel grade 10Х17Н13М2Т as per GOST 5632 | 20 to 773<br>(–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<br>maximum |
| **Steam, natural gas, gaseous media not causing corrosion to expansion joint material** | 773 (500) | 80<br>maximum |
| **Note:**<br>**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.**<br>**2. The expansion joints may be used for other handled media not capable of causing sulphide stress corrosion cracking.** | | |