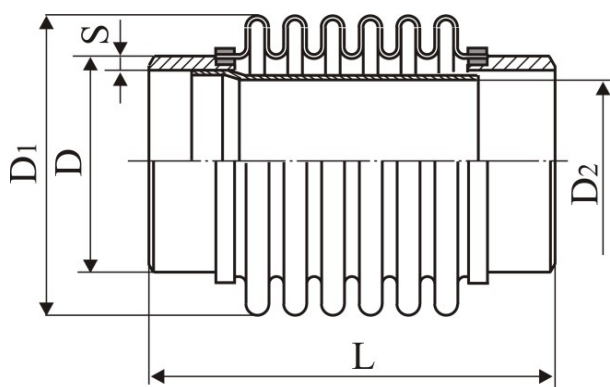


Axial expansion joints, HOПГ type



HOПГ type

HOПГ type axial expansion joints with welded neck branch pipes are basic products for more complex designs of expansion joints, but they can be installed directly in pipelines transferring water with a temperature up to 150 °C and at a velocity above 8 m/s, oil and oil products with a temperature up to 450 °C and at a velocity above 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 of 20 to 80 m/s.

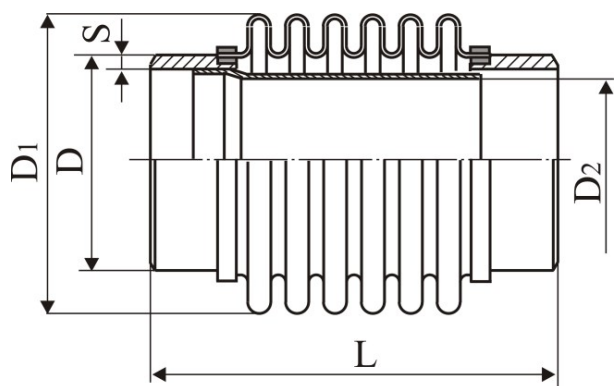
Table 2*

Serial product range**

| Reference designation | Nominal pressure, PN, MPa (kgf/cm ²) | Nominal diameter, DN, mm | Dimensions, mm | | | | Weight, kg |
|-----------------------|--|--------------------------|----------------|------|----------------|-----|------------|
| | | | D | S | D ₁ | L | |
| HOПГ-2.5-65 | 0.25 (2.5) | 65 | 76 | 3.5 | 104 | 340 | 2 |
| HOПГ-2.5-80 | | 80 | 89 | 3.5 | 118 | 348 | 3 |
| HOПГ-2.5-100 | | 100 | 108 | 4.0 | 142 | 358 | 4 |
| HOПГ-2.5-125 | | 125 | 133 | 4.0 | 170 | 372 | 6 |
| HOПГ-2.5-150 | | 150 | 159 | 4.5 | 203 | 384 | 8 |
| HOПГ-2.5-200 | | 200 | 219 | 6.0 | 258 | 410 | 15 |
| HOПГ-2.5-250 | | 250 | 273 | 7.0 | 318 | 588 | 30 |
| HOПГ-2.5-300 | | 300 | 325 | 7.0 | 372 | 606 | 36 |
| HOПГ-2.5-350 | | 350 | 377 | 7.0 | 431 | 612 | 43 |
| HOПГ-2.5-400 | | 400 | 426 | 7.0 | 485 | 622 | 51 |
| HOПГ-2.5-500 | | 500 | 530 | 8.0 | 600 | 626 | 64 |
| HOПГ-2.5-600 | | 600 | 630 | 8.0 | 706 | 658 | 77 |
| HOПГ-2.5-700 | | 700 | 720 | 8.0 | 797 | 634 | 87 |
| HOПГ-2.5-800 | | 800 | 820 | 8.0 | 911 | 668 | 111 |
| HOПГ-2.5-900 | | 900 | 920 | 10.0 | 1015 | 650 | 141 |
| HOПГ-2.5-1000 | | 1000 | 1020 | 10.0 | 1117 | 664 | 158 |
| HOПГ-2.5-1200 | 1200 | 1220 | 12.0 | 1319 | 664 | 237 | |
| HOПГ-2.5-1400 | 1400 | 1420 | 14.0 | 1522 | 664 | 277 | |
| HOПГ-6.3-65 | 0.63 (6.3) | 65 | 76 | 3.5 | 105 | 346 | 3 |
| HOПГ-6.3-80 | | 80 | 89 | 3.5 | 120 | 358 | 4 |
| HOПГ-6.3-100 | | 100 | 108 | 4.0 | 143 | 376 | 6 |
| HOПГ-6.3-125 | | 125 | 133 | 4.0 | 172 | 396 | 8 |
| HOПГ-6.3-150 | | 150 | 159 | 4.5 | 206 | 412 | 12 |
| HOПГ-6.3-200 | | 200 | 219 | 6.0 | 261 | 432 | 20 |
| HOПГ-6.3-250 | | 250 | 273 | 7.0 | 318 | 588 | 30 |
| HOПГ-6.3-300 | | 300 | 325 | 7.0 | 372 | 606 | 37 |
| HOПГ-6.3-350 | | 350 | 377 | 7.0 | 431 | 602 | 43 |
| HOПГ-6.3-400 | | 400 | 426 | 7.0 | 485 | 632 | 50 |
| HOПГ-6.3-500 | | 500 | 530 | 8.0 | 600 | 644 | 74 |
| HOПГ-6.3-600 | | 600 | 630 | 8.0 | 706 | 678 | 92 |
| HOПГ-6.3-700 | | 700 | 720 | 8.0 | 797 | 660 | 111 |
| HOПГ-6.3-800 | | 800 | 820 | 8.0 | 911 | 694 | 142 |
| HOПГ-6.3-900 | | 900 | 920 | 10.0 | 1015 | 674 | 171 |
| HOПГ-6.3-1000 | | 1000 | 1020 | 10.0 | 1117 | 694 | 205 |
| HOПГ-6.3-1200 | 1200 | 1220 | 12.0 | 1319 | 694 | 294 | |
| HOПГ-6.3-1400 | 1400 | 1420 | 14.0 | 1522 | 694 | 345 | |
| HOПГ-10-65 | 1.0 (10) | 65 | 76 | 3.5 | 106 | 358 | 4 |
| HOПГ-10-80 | | 80 | 89 | 3.5 | 120 | 364 | 4 |
| HOПГ-10-100 | | 100 | 108 | 4.0 | 145 | 386 | 7 |
| HOПГ-10-125 | | 125 | 133 | 4.0 | 174 | 406 | 9 |
| HOПГ-10-150 | | 150 | 159 | 4.5 | 204 | 396 | 10 |
| HOПГ-10-200 | | 200 | 219 | 6.0 | 259 | 416 | 16 |
| HOПГ-10-250 | | 250 | 273 | 7.0 | 319 | 600 | 33 |
| HOПГ-10-300 | | 300 | 325 | 7.0 | 373 | 616 | 40 |
| HOПГ-10-350 | | 350 | 377 | 7.0 | 431 | 620 | 50 |
| HOПГ-10-400 | | 400 | 426 | 7.0 | 485 | 654 | 59 |
| HOПГ-10-500 | | 500 | 530 | 8.0 | 600 | 676 | 92 |
| HOПГ-10-600 | | 600 | 630 | 8.0 | 706 | 706 | 115 |
| HOПГ-10-700 | | 700 | 720 | 8.0 | 797 | 678 | 128 |
| HOПГ-10-800 | | 800 | 820 | 8.0 | 911 | 712 | 162 |
| HOПГ-10-900 | | 900 | 920 | 10.0 | 1015 | 698 | 203 |
| HOПГ-10-1000 | | 1000 | 1020 | 10.0 | 1117 | 716 | 243 |
| HOПГ-10-1200 | 1200 | 1220 | 12.0 | 1319 | 716 | 340 | |
| HOПГ-10-1400 | 1400 | 1420 | 14.0 | 1522 | 716 | 400 | |

* 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).



HOПГ type

HOПГ type axial expansion joints with welded neck branch pipes are basic products for more complex designs of expansion joints, but they can be installed directly in pipelines transferring water with a temperature up to 150 °C and at a velocity above 8 m/s, oil and oil products with a temperature up to 450 °C and at a velocity above 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 of 20 to 80 m/s.

Table 2* continued

Serial product range**

| Reference designation | Nominal pressure, PN, MPa (kgf/cm ²) | Nominal diameter, DN, mm | Dimensions, mm | | | | Weight, kg |
|-----------------------|--|--------------------------|----------------|------|----------------|-----|------------|
| | | | D | S | D ₁ | L | |
| HOПГ-16-65 | 1.6 (16) | 65 | 76 | 3.5 | 108 | 374 | 5 |
| HOПГ-16-80 | | 80 | 89 | 3.5 | 122 | 382 | 5 |
| HOПГ-16-100 | | 100 | 108 | 4.0 | 143 | 376 | 6 |
| HOПГ-16-125 | | 125 | 133 | 4.0 | 172 | 390 | 8 |
| HOПГ-16-150 | | 150 | 159 | 4.5 | 205 | 406 | 12 |
| HOПГ-16-200 | | 200 | 219 | 6.0 | 275 | 502 | 20 |
| HOПГ-16-250 | | 250 | 273 | 7.0 | 320 | 632 | 38 |
| HOПГ-16-300 | | 300 | 325 | 7.0 | 374 | 632 | 49 |
| HOПГ-16-350 | | 350 | 377 | 7.0 | 431 | 640 | 65 |
| HOПГ-16-400 | | 400 | 426 | 7.0 | 485 | 682 | 80 |
| HOПГ-16-500 | | 500 | 530 | 8.0 | 600 | 702 | 111 |
| HOПГ-16-600 | | 600 | 630 | 8.0 | 706 | 748 | 146 |
| HOПГ-16-700 | | 700 | 720 | 8.0 | 797 | 712 | 161 |
| HOПГ-16-800 | | 800 | 820 | 8.0 | 911 | 754 | 214 |
| HOПГ-16-900 | | 900 | 920 | 10.0 | 1015 | 734 | 258 |
| HOПГ-16-1000 | | 1000 | 1020 | 10.0 | 1117 | 748 | 294 |
| HOПГ-16-1200 | 1200 | 1220 | 12.0 | 1319 | 748 | 400 | |
| HOПГ-16-1400 | 1400 | 1420 | 14.0 | 1522 | 748 | 471 | |
| HOПГ-25-65 | 2.5 (25) | 65 | 76 | 4.0 | 106 | 358 | 4 |
| HOПГ-25-80 | | 80 | 89 | 4.0 | 120 | 364 | 4 |
| HOПГ-25-100 | | 100 | 108 | 4.0 | 144 | 384 | 6 |
| HOПГ-25-125 | | 125 | 133 | 4.0 | 173 | 398 | 9 |
| HOПГ-25-150 | | 150 | 159 | 4.5 | 218 | 512 | 13 |
| HOПГ-25-200 | | 200 | 219 | 6.0 | 277 | 514 | 21 |
| HOПГ-25-250 | | 250 | 273 | 7.0 | 320 | 632 | 37 |
| HOПГ-25-300 | | 300 | 325 | 8.0 | 374 | 642 | 51 |
| HOПГ-25-350 | | 350 | 377 | 9.0 | 431 | 648 | 68 |
| HOПГ-25-400 | | 400 | 426 | 9.0 | 485 | 702 | 90 |
| HOПГ-25-500 | | 500 | 530 | 8.0 | 600 | 722 | 124 |
| HOПГ-25-600 | | 600 | 630 | 8.0 | 706 | 766 | 162 |
| HOПГ-25-700 | | 700 | 720 | 8.0 | 797 | 736 | 187 |
| HOПГ-25-800 | | 800 | 820 | 8.0 | 911 | 780 | 249 |
| HOПГ-25-900 | | 900 | 920 | 10.0 | 1015 | 748 | 278 |
| HOПГ-25-1000 | | 1000 | 1020 | 12.0 | 1117 | 776 | 345 |
| HOПГ-25-1200 | 1200 | 1220 | 14.0 | 1319 | 776 | 461 | |
| HOПГ-25-1400 | 1400 | 1420 | 14.0 | 1522 | 776 | 544 | |

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

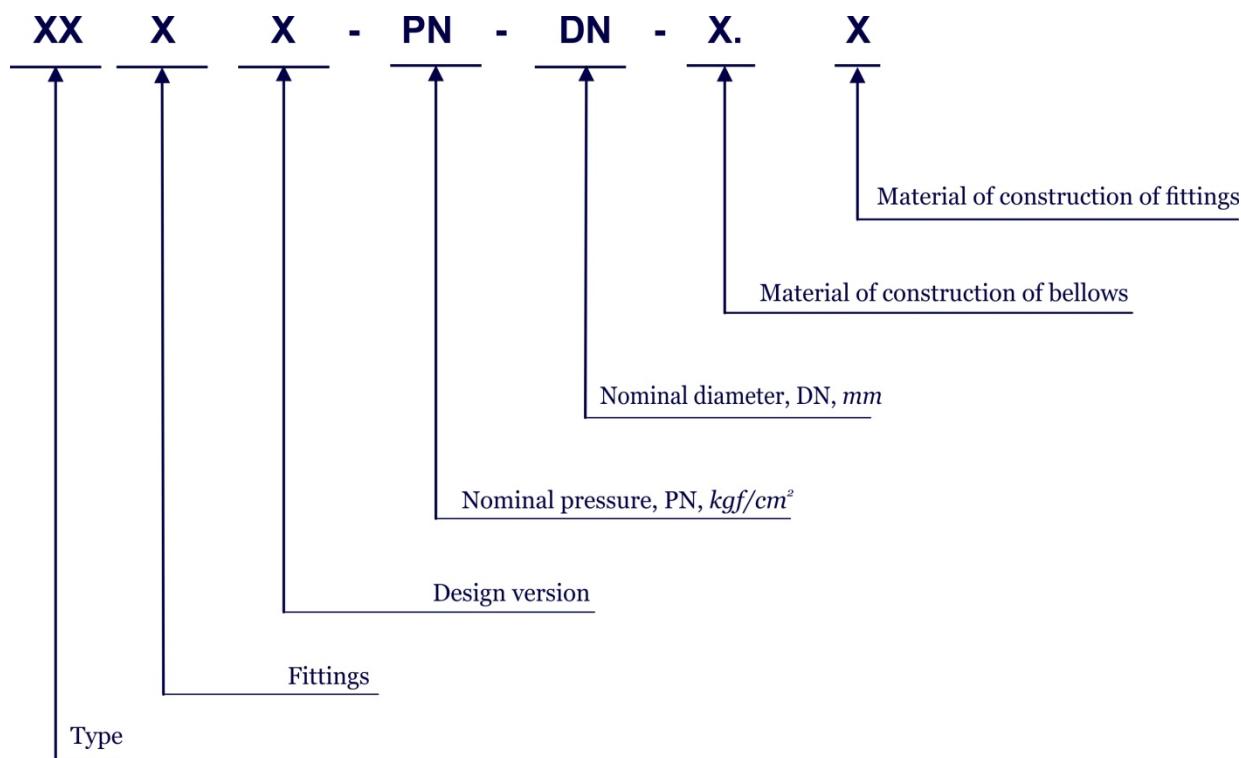
** The scientific, material and technical facilities, as well as testing equipment of the factory make it possible to supply both serial products and customized products (designed and manufactured according to the customer's ToR).

Reference designation of unbalanced general purpose industrial grade axial expansion joints as per the ИРНС.300260.052TV 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 | Fitting | Symbol | Design version | Symbol |
| Axial | HO | Weld branch pipe (on both sides) | Π | Basic (bellows + 2 branch pipes or flanges) | H |
| | | Butt welded plate flange (on both sides) | Φ | With a guide branch pipe | Γ |
| | | Plate flange (on both sides) | B | Enclosed | K |
| | | | | With a guide branch pipe and enclosed | M |

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 tables below:

| Bellows | | |
|--------------------------|--|---|
| Material of construction | Material grade | Permissible operating temperature, K (°C) |
| 1 | Steel 08X18H10T (12X18H10T) as per GOST 5632 | 20 to 773 (-253 to 500) |
| 2 | Steel 10X17H13M2T as per GOST 5632 | 20 to 773 (-253 to 500) |

| Fittings | | |
|--------------------------|---|---|
| Material of construction | Material grade | Permissible operating temperature, K (°C) |
| 1 | Steel 20 as per GOST 1050 | 253 to 698 (-20 to 425) |
| 2 | Steel 17ГC, 17Г1C as per GOST 19281 | 233 to 748 (-40 to 475) |
| 3 | Steel 09Г2C, 09Г2 as per GOST 19281 | 213 to 748 (-60 to 475) |
| 4 | Steel 08X18H10T, 12X18H10T as per GOST 5632 | 20 to 823 (-253 to 550) |
| 5 | Steel 10X17H13M2T as per GOST 5632 | 20 to 823 (-253 to 550) |
| 6 | Steel 12MX, 12X1MΦ as per GOST 20072 | 223 to 773 (-50 to 500) |

Also, depending on the operating conditions of expansion joints, a heat-resistant corrosion-protection and waterproof coating can be applied onto outer surfaces of bellows and fittings.

Example of ordering information for:

1. An axial expansion joint for welded attachment to a pipeline made of 12X18H10T steel; nominal pressure, PN, 1.6 MPa (16 kgf/cm²); nominal diameter, DN, 250 mm; mounted casing; material of bellows construction, 08X18H10T steel as per GOST 5632; material of construction of fittings, 12X18H10T steel as per GOST 5632: “Expansion joint **НОПК-16-250-1.4** as per ИЯНШ.300260.052 ТУ”.

2. An axial expansion joint for flanged attachment to a pipeline made of grade 20 steel; nominal pressure, PN, 2.5 MPa (25 kgf/cm²); nominal diameter, DN, 250 mm; mounted casing and guide branch pipe; material of bellows construction, 08X18H10T steel as per GOST 5632; material of construction of fittings, grade 20 steel as per GOST 1050: “Expansion joint **НОФМ-16-250-1.1** as per ИЯНШ.300260.052 ТУ”.

Basic parameters and characteristics of handled media of the products as per ИЯНШ.300260.052 ТУ

| Handled media | Handled medium temperature, K (°C) | Handled medium velocity, m/s | |
|---|---|------------------------------|--------------------------|
| | | Without a guide branch pipe | With a guide branch pipe |
| Oil, oil products | 723 (450) | up to 8 | over 8 |
| Fresh water | 423 (150) | | |
| Steam, natural gas, gaseous media not causing corrosion to expansion joint material | 773 (500) | up to 20 | above 20 to 80 |
| Note: | <ol style="list-style-type: none"> 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. 3. The data provided in the table do not cover the expansion joints, dwg. ИЯНШ.302667.700-01.61, ИЯНШ.302667.701-01.61, ИЯНШ.302667.732-01.41. | | |