

GEOFLEX fittings



GEOFLEX[®] is a range of ductile iron flexible fittings, capable of sliding, extending, compressing, rotating. GEOFLEX[®] fittings are designed to protect water pipe works against stresses caused by occasional but major geological events.

- Landslides, subsidence of loose or unstable ground
- Stress caused by earthquakes, seismic earth movements, tsunamis, tidal waves, etc.

A GEOFLEX[®] fitting comprises:

- a central part (sleeve), allowing an axial slide (compression & expansion), see B on above sketch
- at each extremity, 1 flanged ball-joint, allowing a maximum angular deflection (see A)

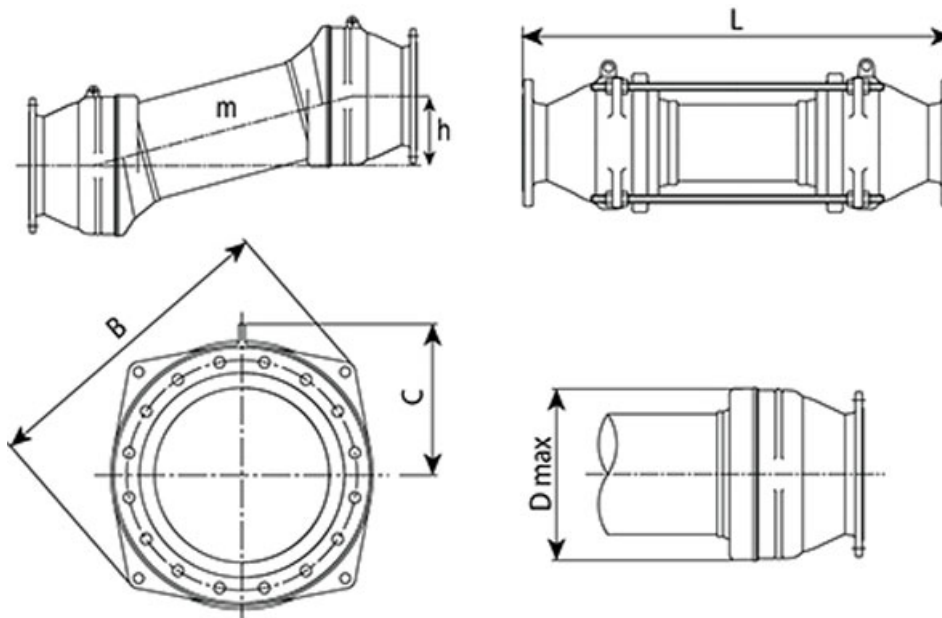
DN (mm)	Deflection h (mm)	Overall length (mm)	B (mm)	C (mm)	ØD maxi (mm)	Mass (kg)	References
100	100	630	331	157	247	53.00	BBB10GD2ETT
100	200	920	331	157	247	59.00	BBB10GD2JTT
100	300	1210	331	157	247	66.00	BBB10GD2KTT
100	400	1500	331	157	247	72.00	BBB10GD2LTT
100	500	1790	331	157	247	79.00	BBB10GD2MTT
100	600	2620	331	157	247	99.00	BBB10GD2NTT
150	100	680	390	185	307	87.00	BBB15GD2ETT
150	200	990	390	185	307	98.00	BBB15GD2JTT
150	300	1300	390	185	307	108.00	BBB15GD2KTT
150	400	1610	390	185	307	118.00	BBB15GD2LTT
150	500	1910	390	185	307	128.00	BBB15GD2MTT

DN (mm)	Deflection h (mm)	Overall length (mm)	B (mm)	C (mm)	ØD maxi (mm)	Mass (kg)	References
150	600	2620	390	185	307	152.00	BBB15GD2NTT
200	100	790	449	219	367	126.00	BBB20GD2ETT
200	200	1120	449	219	367	144.00	BBB20GD2JTT
200	300	1450	449	219	367	157.00	BBB20GD2KTT
200	400	1770	449	219	367	171.00	BBB20GD2LTT
200	500	2100	449	219	367	185.00	BBB20GD2MTT
200	600	2730	449	219	367	211.00	BBB20GD2NTT
250	100	830	516	252	432	179.00	BBB25GD2ETT
250	200	1180	516	252	432	197.00	BBB25GD2JTT
250	300	1530	516	252	432	217.00	BBB25GD2KTT
250	400	1880	516	252	432	235.00	BBB25GD2LTT
250	500	2230	516	252	432	254.00	BBB25GD2MTT
250	600	2730	516	252	432	281.00	BBB25GD2NTT
300	100	860	590	280	492	256.00	BBB30GD2ETT
300	200	1230	590	280	492	282.00	BBB30GD2JTT
300	300	1600	590	280	492	307.00	BBB30GD2KTT
300	400	1970	590	280	492	332.00	BBB30GD2LTT
300	500	2350	590	280	492	357.00	BBB30GD2MTT
300	600	2730	590	280	492	382.00	BBB30GD2NTT
350	100	1170	651	313	545	360.00	BBB35GD2ETT
350	200	1490	651	313	545	386.00	BBB35GD2JTT
350	300	1860	651	313	545	418.00	BBB35GD2KTT
350	400	2240	651	313	545	452.00	BBB35GD2LTT
350	500	2610	651	313	545	481.00	BBB35GD2MTT
350	600	2980	651	313	545	510.00	BBB35GD2NTT
400	100	1220	711	345	621	487.00	BBB40GD2ETT
400	200	1500	711	345	621	514.00	BBB40GD2JTT
400	300	1870	711	345	621	550.00	BBB40GD2KTT
400	400	2250	711	345	621	586.00	BBB40GD2LTT
400	500	2620	711	345	621	622.00	BBB40GD2MTT
400	600	2990	711	345	621	658.00	BBB40GD2NTT
450	100	1260	766	372	676	598.00	BBB45GD2ETT
450	200	1530	766	372	676	629.00	BBB45GD2JTT
450	300	1910	766	372	676	672.00	BBB45GD2KTT
450	400	2280	766	372	676	715.00	BBB45GD2LTT

DN (mm)	Deflection h (mm)	Overall length (mm)	B (mm)	C (mm)	ØD maxi (mm)	Mass (kg)	References
450	500	2660	766	372	676	757.00	BBB45GD2MTT
450	600	3020	766	372	676	797.00	BBB45GD2NTT
500	100	1390	844	418	748	781.00	BBB50GD2ETT
500	200	1610	844	418	748	813.00	BBB50GD2JTT
500	300	2000	844	418	748	868.00	BBB50GD2KTT
500	400	2380	844	418	748	923.00	BBB50GD2LTT
500	500	2770	844	418	748	978.00	BBB50GD2MTT
500	600	3120	844	418	748	1028.00	BBB50GD2NTT
600	100	1530	969	476	880	1104.00	BBB60GD2ETT
600	200	1740	969	476	880	1142.00	BBB60GD2JTT
600	300	2120	969	476	880	1213.00	BBB60GD2KTT
600	400	2510	969	476	880	1284.00	BBB60GD2LTT
600	500	2890	969	476	880	1356.00	BBB60GD2MTT
600	600	3250	969	476	880	1425.00	BBB60GD2NTT
700	200	1850	1108	535	996	1429.00	BBB70GD2JTT
700	300	2220	1108	535	996	1513.00	BBB70GD2KTT
700	400	2590	1108	535	996	1598.00	BBB70GD2LTT
700	500	2970	1108	535	996	1682.00	BBB70GD2MTT
700	600	3340	1108	535	996	1764.00	BBB70GD2NTT
800	200	2050	1238	609	1110	2000.00	BBB80GD2JTT
800	300	2320	1238	609	1110	2075.00	BBB80GD2KTT
800	400	2700	1238	609	1110	2204.00	BBB80GD2LTT
800	500	3070	1238	609	1110	2282.00	BBB80GD2MTT
800	600	3440	1238	609	1110	2360.00	BBB80GD2NTT
900	200	2160	1402	686	1259	2878.00	BBB90GD2JTT
900	300	2540	1402	686	1259	3006.00	BBB90GD2KTT
900	400	2930	1402	686	1259	3134.00	BBB90GD2LTT
900	500	3320	1402	686	1259	3263.00	BBB90GD2MTT
900	600	3610	1402	686	1259	3359.00	BBB90GD2NTT
1000	200	2230	1496	738	1363	3425.00	BBC10GD2JTT
1000	300	2610	1496	738	1363	3585.00	BBC10GD2KTT
1000	400	3000	1496	738	1363	3727.00	BBC10GD2LTT
1000	500	3390	1496	738	1363	3878.00	BBC10GD2MTT
1000	600	3680	1496	738	1363	3990.00	BBC10GD2NTT
1100	400	3160	1540	748	1390	4410.00	BBC11GD2LTT

DN (mm)	Deflection h (mm)	Overall length (mm)	B (mm)	C (mm)	ØD maxi (mm)	Mass (kg)	References
1200	400	3310	1700	837	1550	5520.00	BBC12GD2LTT
1400	400	3410	1863	935	1723	7110.00	BBC14GD2LTT
1500	400	3460				8520.00	BBC15GD2LTT
1600	400					10025.00	BBC16GD2LTT
1800	500	3870	2415	1235	2256	13730.00	BBC18GD2MTT

(*) the deflection value (h) mentioned depends on the central part m (sleeve), installed between the two ball-joint flanges. For a same DN, different deflection values are obtained thanks to the installation, during production, of a longer or shorter sleeve, whereas the ball-joint flanges remain identical.

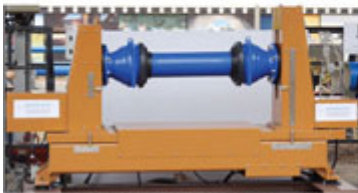


Field of use:



Some pictures
to illustrate at a
glance Geoflex's
behaviour

Deflection capability, thanks to the 2 ball flanges, capable to absorbing up to +/- 38°.



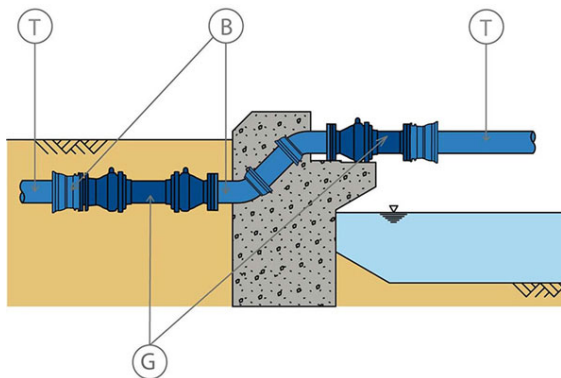
Contraction & expansion capability thanks to the sliding sleeve.
Deflexion & expansion combine to provide excellent reaction to any kind of ground movements.

- Mainly water supply pipelines
- Anti-seismic protection of pipelines
- Protection of pipelines against landslides, subsidence of loose or unstable ground
- Stress caused by earthquakes, seismic earth movements, tsunamis, tidal waves, etc.
- PN16 bar

Main characteristics:

- EPDM elastomeric gaskets
- External and internal coating : Blue Epoxy Powder 250µm (PECB)
- Bolts & nuts: stainless steel grade 304
- Performances comply with ISO 16134 standard
- Type test (in part, where relevant) compliant with EN 545 standard

Informative type-installation sketch



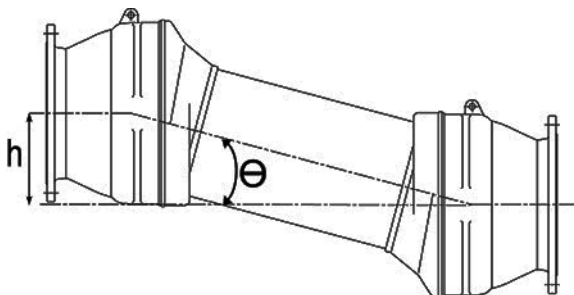
GEOFLEX® fittings (see G on sketch) can be installed on Natural (see T on sketch), Classic or Integral pipes ranges via the use of spigot-flanged fittings and flanged socket fittings (see B on sketch).

The design of the fitting's central part (sleeve), sliding inside the ball-joint flanges at each extremity, allows contraction and expansion movements.

The overall sliding capacity (expansion/contraction) varies from 100 mm (+/- 50mm) up to 600 mm (+ 350mm/-250mm). A table recaps all these values DN per DN.

[Laying procedure](#)

Project design, choice criteria



GEOFLEX®: a wide choice, ranging from DN100 up to DN1800, PN16. The selection of a GEOFLEX® fitting for a given DN, depends on the expected subsidence magnitude, which it may have to withstand.

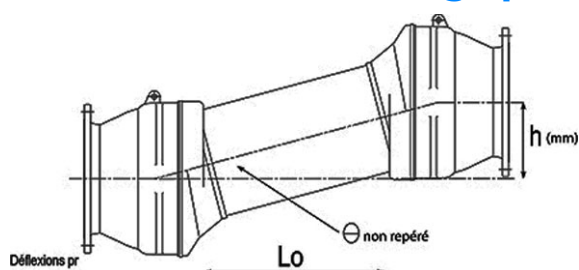
This subsidence is evaluated & assessed depending of geotechnics or seismic stresses, and on the nature of grounds met during the project design.

The selection of the right GEOFLEX® fitting is the responsibility of the consultant, once considered the geotechnics parameters of the project.

Several possible deflection values (h) , ranging from 100 mm up to 600 mm and various deviation angles from +/- 30° up to +/- 38°, address DN by DN the foreseeable stress levels.

Between the 2 flanged extremities, the sliding central part (sleeve) of a GEOFLEX® fitting allows axial compression & expansion, varying from 100 mm (+/- 50mm) up to 600 mm (+ 350mm/-250mm), depending on the DN. A table recaps all values related to each DN.

Main GEOFLEX® fittings performances



GEOFLEX® double ball-joints fittings

DN	Deflection h	Deflection θ	Extension / Contraction l_0	Resistance to dismounting
mm	mm	degree	mm	kN
100	100 → 600	+/- 38°	100 (+/- 50) **	300
150	100 → 600	+/- 36°	160 (+/- 80)	450
200	100 → 600	+/- 34°	160 (+/- 80)	600
250	100 → 600	+/- 32	160 (+/- 80)	750
300	100 → 600	+/- 30°	200 (+/- 100)	900
350	100 → 600	+/- 30°	200 (+/- 100)	1050
400	100 → 600	+/- 30°	240 (+/- 120)	1200
450	100 → 600	+/- 30°	240 (+/- 120)	1350
500	100 → 600	+/- 30°	300 (+/- 150)	1500
600	100 → 600	+/- 30°	300 (+/- 150)	1800
700	200 → 600	+/- 30°	400 (+/- 200)	2100
800	200 → 600	+/- 30°	400 (+/- 200)	2400
900	200 → 600	+/- 30°	440 (+/- 220)	2700

DN	Deflection h	Deflection θ	Extension / Contraction l_0	Resistance to dismounting
1000	200 → 600	+/- 30°	440 (+/- 220)	3000
1100	400	+/- 20°	600 (+350/-250)	3000
1200	400	+/- 20°	600 (+350/-250)	3600
1400	400	+/- 20°	600 (+350/-250)	4200
1500	400	+/- 20°	600 (+350/-250)	4500
1600	400	+/- 20°	600 (+350/-250)	4800
1800	500	+/- 20°	600 (+350/-250)	5400

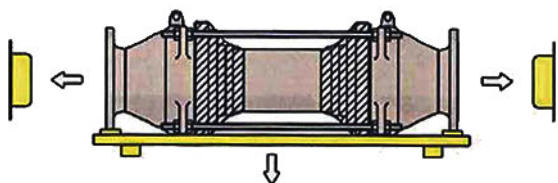
(*) The overall sliding (contraction/expansion) range depends on the length of the central part (sleeve) of the GEOFLEX® fitting. The l_0 value mentioned is the sum of both contraction and expansion movements, expressed as +/-.

(**) DN100- Expansion / Contraction: +80 mm/ -20 mm in case of a 600 mm deflection (h).

(***) The maximum resistance to dismounting must be equal or superior to $3X_n$ (in mm) n expressed in kN. This resistance value is based on ISO 16134 standard: "Earthquake and subsidence-resistant design of ductile iron pipelines".

Example: for a DN150 GEOFLEX fitting, the maximum guaranteed value of resistance to dismounting is calculated as follows: $R_{\text{dismounting}} = 3 \times 1500 = 4500 \text{ kN}$

Packaging



GEOFLEX® fittings are individually packed on pallets, which are then shrink-wrapped (transparent plastic film).

The 2 extremities of GEOFLEX® fittings are fitted with PE protective caps. GEOFLEX® fittings feature 4 threaded retaining rods (see installation sheet), aiming:

- To prevent any axial unexpected sliding movement during transport & handling
- To keep the overall distance (between flanges) identical to the factory-settings, until the fitting assembly and the overall pipeline installation is hydraulically tested & approved

Each fitting is fitted with 2 PE sleeve and 2 securing wires, which will be installed on each pipeline extremity, prior to the installation of the GEOFLEX® fitting. See installation sheet.

The information on this sketch is, to the best of our knowledge correct at the time of printing. However Saint-Gobain are constantly looking at ways of improving their products and services therefore reserve the right to change without prior notice, any of the data shown. Any orders placed will be subject to our Standard Conditions of Sale, available on request.