6. POLIFINGER TYPE EXPANSION JOINT CATALOGUE

POLIFINGER

EXPANSION JOINTS

DESIGN CONCEPT

Basic purpose of expansion joints is to enable undisturbed movements of bridge spans related to abutments of bridge (two dilated parts of structure), while bridging the gap between them in order to ensure smooth flow of traffic.

By filling gaps between two dilated structures, expansion joints should ensure:

- secure load transfer to substructure
- solid components structure and fatigue resistance
- low wear
- continuous adaptation versus deformation
- watertightness
- usage of materials resistant to ageing, corrosion and wear
- durability and easy maintenance

EXPANSION JOINT DESCRIPTION

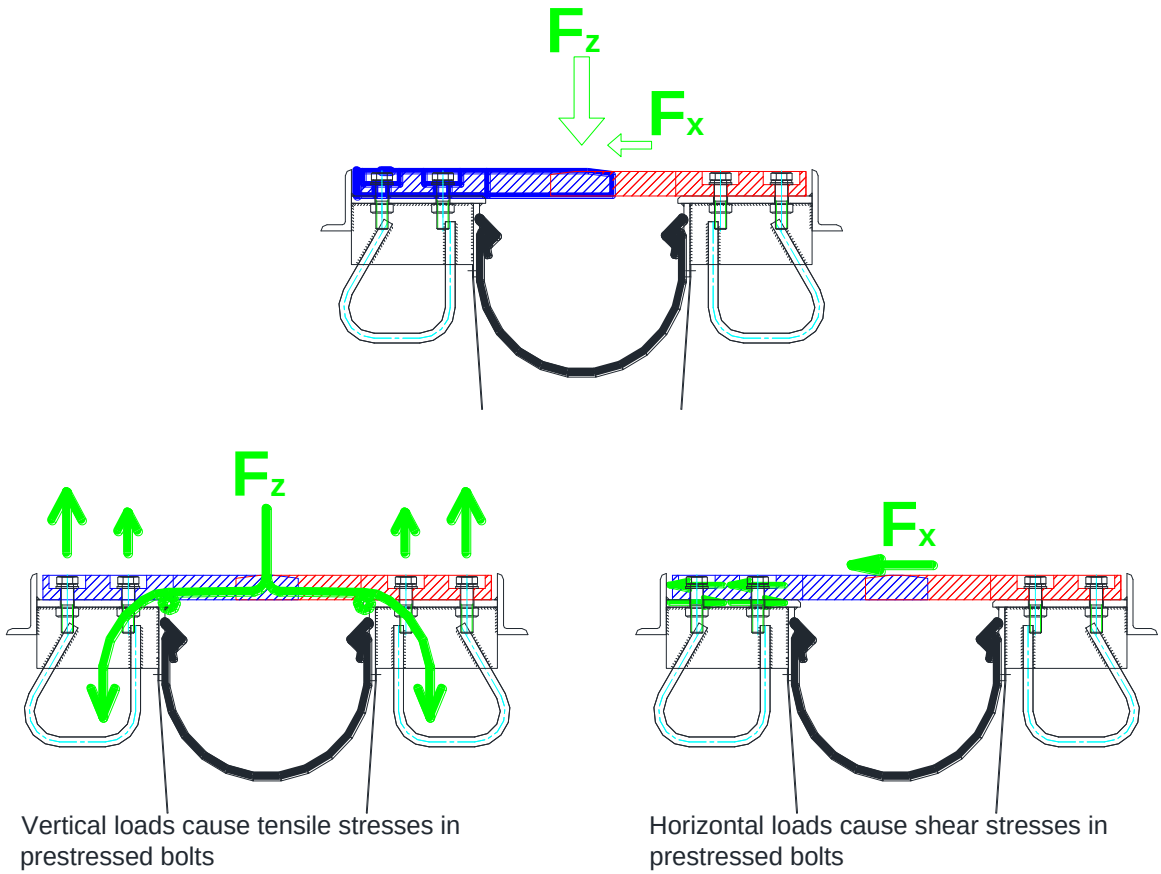
Finger type bridge expansion joints are consisted of series of finger modules, manufactured by steel molding or by machine processing of steel plates (not welding). Dimensions and weight of modules are optimized to be adequate for transport and installation.
The advantage of these modules is that they are replaceable on the building in case of damage. Steel finger modules are fastened to anchored steel substructure using HV (high value) bolts, which have very good fatigue resistance.
EPDM fiber reinforced rubber seal is installed on expansion joint by fastening to steel substructure; it ensures watertightness of expansion joint, and is replaceable in case of damage.
High quality of POLIFINGER expansion joint is guaranteed using constant factory control of all production processes and using high quality materials only.
Our corrosion protection system (2k Zn enriched epoxy basic paint + 2k epoxy basic paint + 2k polyurethane paint) ensures long-term quality corrosion protection conforming to class C5 according to EN 12944-5:2007.

ELEMENTI PRIJELAZNE NAPRAVE

ELEMENT	DESCRIPTION
STRUCTURAL ELEMENTS	
STEEL FINGER „PF“ MODULE	molded or machine processed steel S355J2+N
SUBSTRUCTURE	hot rolled steel profiles and flat steel S235JR or better
CONNECTION BETWEEN PF MODULES AND SUBSTRUCTURE	
BOLTS	DIN 6914 TZV HV 10.9 with silicon grease + washers DIN 125
BOLT NUTS	DIN 6915 TZV HV 10.9
SEALING ELEMENT	
EPDM SEAL	Fiber reinforced EPDM rubber, with high tear, ageing, salt and oils resistance
ANCHORING	
ANCHORING IN STRUCTURE	flat steel S235JR or better
STEEL ANCHORING REINFORCEMENT	reinforcing steel B500B or hot rolled S235JR
BOLT PROTECTION	rubber bolt cap NR 60 ShoreA

LOADS

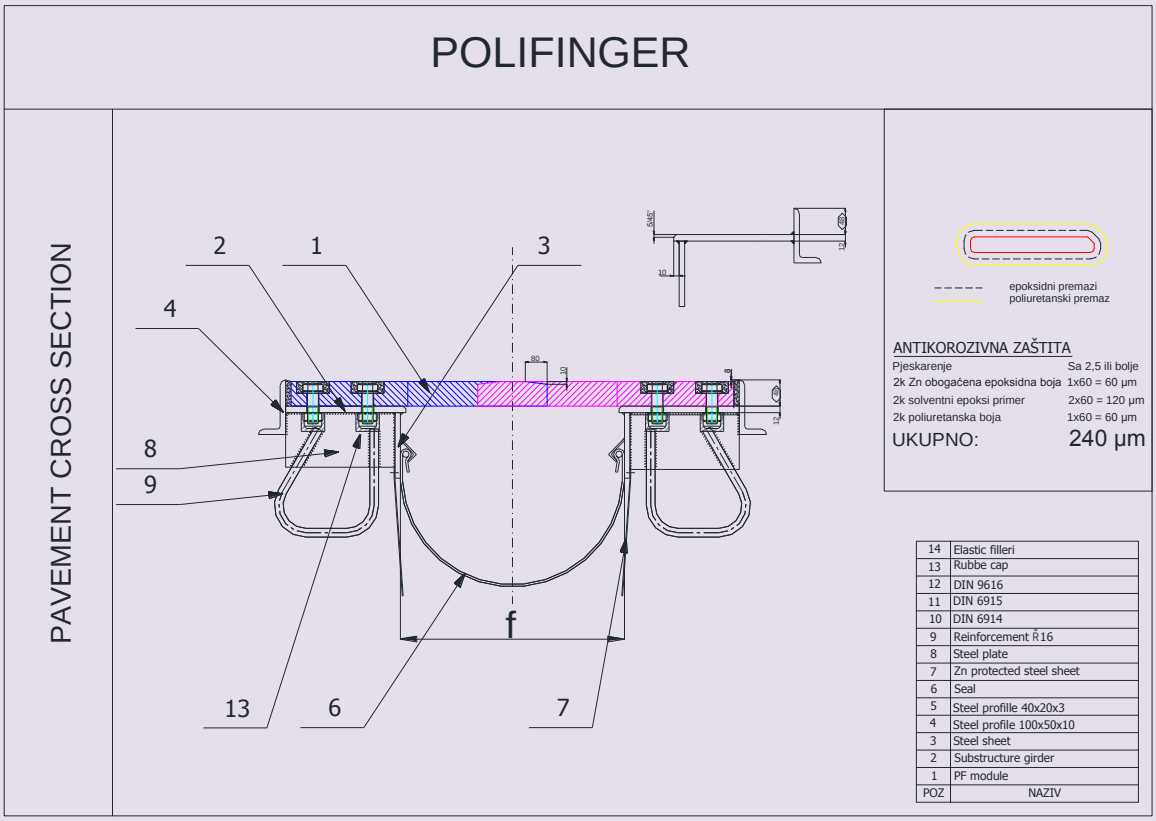
While driving over expansion joint, vehicles induce vertical and horizontal loads onto PF module, fasteners and substructure elements of expansion joint.



Because of „finger“ shaped driving surface, comfort of driving over POLIFIGER expansion is excellent. Steel surface of expansion joint is divided into relatively narrow longitudinal fingers, which on their tips have chamfering, with purpose of softening impacts of vehicle tires.

In order to prevent passing of dirt, aggressive fluids and other impurities through the expansion joint, as well as to ensure waterproofness of expansion joint, POLIFINGER expansion joint is equipped with fiber reinforced rubber seal (EPDM), which is fixed onto substructure of expansion joint.
The bond between seal and expansion joint is water proof and safe for structural elements beneath expansion joint.
Seal can be replaced easily in case of damage in few easy steps. It is not necessary to stop traffic during replacement.

TYPES, MOVEMENTS AND DIMENSIONS

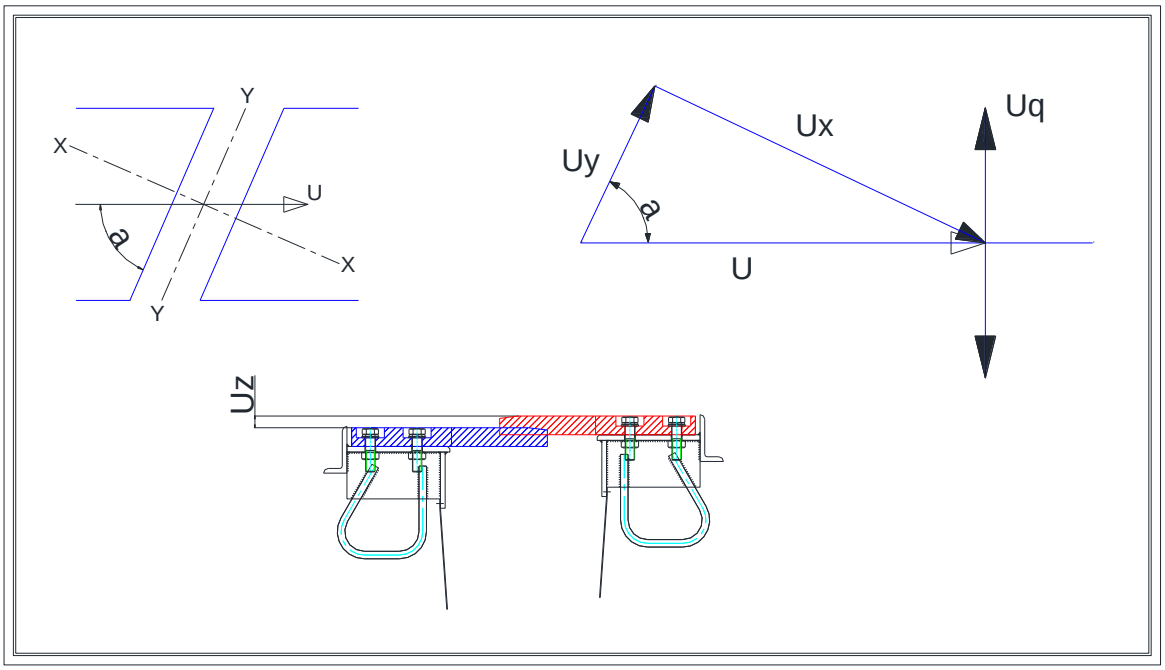


EXPANSION JOINT TYPE	MOVEMENT CAPACITY [mm]	width of dilatation f (mm)			mass (kg/m')
		f_{min}	f_{sr}	f_{max}	
PF 50	±25	80	105	130	110
PF 100	±50	135	185	235	175
PF 150	±75	185	260	335	220
PF 200	±100	235	335	435	305
PF 250	±125	285	410	535	355
PF 300	±150	335	485	635	420
PF 400	±200	435	635	835	545
PF 500	±250	535	785	1035	665
PF 600	±300	635	935	1235	790
PF 700	±350	735	1085	1435	915
PF 800	±400	835	1235	1635	1040

On special demand it is possible to produce expansion joints with other movement capacyties; in that case, module thickness, finger geometry and substructure are the same as nearest standard type of product

Total movement "U" in the main direction (longitudinal axis of building) is defined by two movement components U_x and U_y; perpendicular and parallel to expansion joint axis.

Type of the expansion joint is chosen regarding U_x component and maximum gap opening between fingers. In order to make choice easier, the most important data is shown in tabular form.



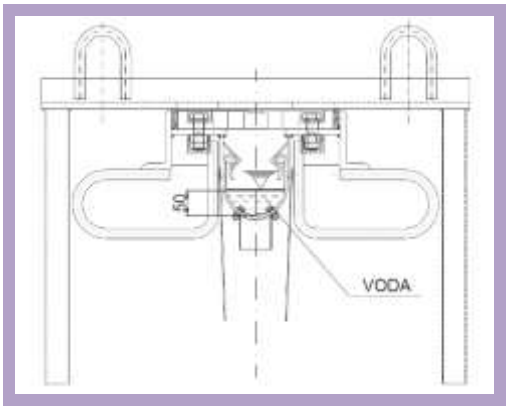
POLIFINGER prijelazne naprave		DOZVOLJENI POMACI		
		max (mm)	max (mm)	max (mm)
tip	α (°)	U_x	U_y	U_z
PF 50	45-90	±25	16	8
PF 100	45-90	±50	16	8
PF 150	45-90	±75	16	8
PF 200	45-90	±100	15	8
PF 250	45-90	±125	15	8
PF 300	45-90	±150	15	8
PF 400	45-90	±200	15	8
PF 500	45-90	±250	15	8
PF 600	45-90	±300	15	8
PF 700	45-90	±350	15	8
PF 800	45-90	±400	15	8

TESTS AND CERTIFICATION

Independent test and certification bodies (Institute IGH Zagreb) have determined quality of entire Polifinger system during developement of Polifinger expansion joint according to european guidelines ETAG 032-6.
Tests on test samples have been conducted on Institute IGH Zagreb.

The following tests have been performed:

- movement capacity
- mechanical resistance to traffic loads in exploatation
- fatigue resistance (dynamic load)
- watertightness



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CERTIFIKAT O STALNOSTI SVOJSTAVA

1/05-ZGP-1910

Ovaj certifikat, u skladu sa Zakonom o građevnim proizvodima („Narodne novine" br. 76/13), Pravilnikom o ocjenjivanju sukladnosti, ispravama o sukladnosti i označavanju građevnih proizvoda („Narodne novine" br. 103/08, 147/09 i 87/10, 129/11) vrijedi za građevne proizvode:

Prijelazne naprave tip POLIFINGER
tip PF50 do PF800,
s kutovima prstiju češljeva od 45⁰ do 90⁰ u odnosu na os dilatacije
svojstava prema tablici u prilogu ovog certifikata

koje je proizveo:

POLIROL d.o.o.,
Remetinečka cesta 7, HR-10 000 Zagreb

u proizvodnom pogonu:

POLIROL d.o.o.,
Remetinečka cesta 7, HR-10 000 Zagreb

Ovim se certifikatom potvrđuje da su primijenjene sve odredbe koje se odnose na ocjenjivanje i provjeru stalnosti svojstava i svojstva opisana u

HTD 14/001

u skladu sa sustavom 1 i da

proizvod ispunjava sve gore propisane zahtjeve.

Ovaj je certifikat prvi put izdan **21. veljače 2014.** i ima valjanost do **12. veljače 2019.** ili sve dok se ne promijene metode ispitivanja i/ili zahtjevi kontrole tvorničke proizvodnje obuhvaćene u hrvatskoj normi, koja se rabi za ocjenu svojstava objavljenih značajka, te dok se znatno ne izmijeni proizvod i uvjeti u proizvodnom pogonu.

OD 14/019-006

Zagreb, 21. veljače 2014.

OBPOC46-02/01CP_EN_Izdavanje2Rev0
Stranica 1 od 2

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PRILOG CERTIFIKATU O STALNOSTI SVOJSTAVA

1/05-ZGP-1910

Tablica a) Popis proizvoda i dozvoljeni pomaci - standardna izvedba

POLIFINGER prijelazne naprave		DOZVOLJENI POMACI max [mm]	max [mm]	max [mm]
Tip	α [°]	[illegible]	[illegible]	[illegible]
PF 50	45-90	±25	[illegible]	[illegible]
PF 100	[illegible]	±50	[illegible]	[illegible]
PF 150	[illegible]	±75	[illegible]	[illegible]
PF 200	45-90	±100	[illegible]	[illegible]
PF 250	45-90	±125	[illegible]	[illegible]
PF 300	45-90	±150	[illegible]	[illegible]
PF 400	45-90	±200	[illegible]	[illegible]
PF 500	45-90	±250	[illegible]	[illegible]
PF 600	45-90	[illegible]	[illegible]	[illegible]
PF 700	45-90	±350	[illegible]	[illegible]
PF 800	45-90	±400	[illegible]	[illegible]

Po specijalnoj narudžbi mogu se proizvoditi i s drugačijim kapacitetima pomaka; u tom slučaju detaljnu module naprave, geometriju prstiju modula i podkonstrukcije odgovaraju geometrijom najbližem tipu standardnog proizvoda

- Mehanička otpornost i stabilnost; otpornost na zamor – u skladu s HTD 14/001
- Zaštita od požara - nije primjenjivo
- Higijena, zdravlje i zaštita okoliša - POLIFINGER naprave ne otpuštaju opasne tvari u okoliš
- Sigurnost prilikom korištenja-zadovoljeni zahtjevi HTD 14/001 (nadogradnja za biciklište iznad PF 250)
- Zaštita od buke - nije primjenjivo
- Ušteda energije i toplinska zaštita - nije primjenjivo
- PF moduli - čelik S355J2+N prema normi EN 10025-2:2004
- Čelična podkonstrukcija - čelik S235JR ili bolji prema normi EN 10025-2:2004
- Spajala - vijak + matica + podložna pločica prema EN 14399 dio 4 i 5 :2005
- EPDM brtva - ρ=1,2g/cm³; tvrdoća 60 Sh.A; vlačna čvrstoća 7 MPa; izduljenje do loma 400%
- AKZ - razred C5 prema EN ISO 12944-5:2007

OD 14/019-006

Odgovorna osoba
mr.sc. Zdravko Baršić, dipl.ing.stroj.

Zagreb, 21. veljače 2014.