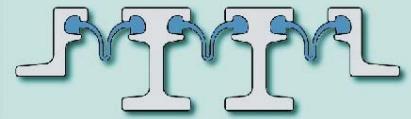
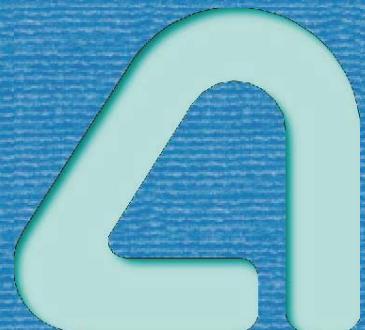




Algamod LW



Vodonepropusne dilatacione spojnice
Watertight Expansion Joints





Algamod LW je dilataciona spojnica modularnog tipa, izradena od specijalnih čeličnih profila sa zaptivnim gumenim elementima između, tako da obezbeđuju apsolutnu vodonepropusnost.

Mogućnost primene promenljivog broja elemenata daje funkciju modularnosti.

U ovom katalogu ALGA prikazuje rešenja za 12 gumenih zaptivnih elemenata.

ALGA projektuje, proizvodi i montira modularne spojnice još od 1970. godine. Na početku se proizvodila RUB dilataciona spojnica (Rheinstahl Union Bruckenbau), sve do 1975, zatim TENSA LASTIC spojnica proizvedena po licenci firme Proceq do 1978. godine.

Nakon toga, na prelazu 2000. godine, instalirane su Rheinstahl 3W dilatacione spojnice izrađene po licenci MAN-GHH sa njihovim tipičnim sistemom sa pantografskim centriranjem.

Ovo dvadesetpetogodišnje iskustvo omogućava ALGI da projektuje takav tip dilatacione spojnice, zadržavajući iskustvo ranije tehnologije i istovremeno uvođeci nove i podobnije sisteme.

Algamod LW is an expansion joint made up of special steel profiles with in between rubber seal elements installed in such a way to make it absolutely waterproofing.

The possibility to implement a variable number of elements gives it the feature of modularity.



In this catalogue ALGA presents solutions till 12 rubber seal elements.

ALGA have designed, manufactured and installed modular expansion joints since 1970.

As first was produced the RUB joint (Rheinstahl Union Bruckenbau), out of production on 1975, then it was the time of TENSA LASTIC joint, produced under Proceq's license till 1978.

Subsequently, almost at the turn of year 2000, modular joints Rheinstahl 3W have been installed, manufactured under MAN-GHH's license, with their typical pantograph centering system.

This 25-years-old experience allowed ALGA to design a type of joint, which has the heritage of previous technology but introduces new and more suitable centering and support systems.

Standardni tip

U tabeli Dimenzija tipa, određivanje tipa dilatacije je u skladu sa kapacitetom pomeranja dilatacione spojnice i obuhvata tipove od LW160T sa dve vrste gumenih zaptivki do tipa LW960L sa 12 gumenih zaptivki.

Poslednje slovo u oznaci određuje sistem poduhvatavanja: "T" za sistem sa više oslanjajućih šipki, a "L" sa jednostrukom podupirućom šipkom.

Kapacitet pomeranja se menja u skladu sa brojem gumenih zaptivki. Kako je svaka guma zaptivka projektovana za maksimalni kapacitet dilatiranja od 80mm pod SLS opterećenjima, dilataciona spojnica LW960 sa 12 zaptivki može dostići $80 \times 12 = 960$ mm (± 480 mm) ukupnog pomeranja.

Na poseban zahtev mogu se izraditi i spojnice s većim kapacitetom pomeranja.

Veličina zazora pod znakom "f" je različita, menja se prema pomeranju same dilatacije (f_{min} odgovara minimalnom zazoru kada je spojnica potpuno zatvorena). Težina data u tabeli je indikativnog karaktera i može biti promenjena u skladu sa različitim detaljima projekta.

Standard Type

In the Table of Dimensions the type of designation is given according to the joint movement capacity and includes the types from LW160T, with 2 rubber seals, to LW960L, with 12 rubber seals. The last letter of the mark recalls the type of supporting system: "T" for multiple support bars and "L" for single support bar.

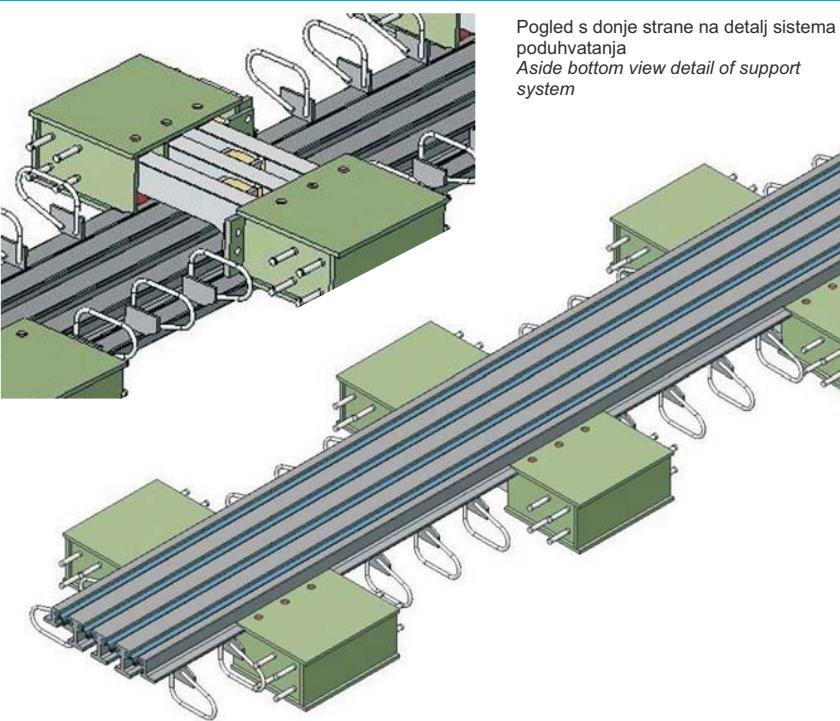
The movement capacity changes according to the number of joint rubber seals. As every rubber seal is designed for maximum 80 mm displacement at SLS, the joint LW960 with 12 seals can reach $12 \times 80 = 960$ mm (± 480 mm) movement.

Larger displacements are available and the expansion joint is designed under request.

The gap value "f" is variable, it changes according to the joint movement: $[f_{min}]$ corresponds to the minimum gap with the joint completely closed.

The weight, given in the schedule, is an indicative value and it can change according to different project details.

Algamod LW - mod.T



Pogled s donje strane na detalj sistema poduhvatavanja
Aside bottom view detail of support system

Glavne karakteristike

Apsolutna vodonepropusnost: nema potrebe za dodatnim drenažnim sistemom.

Brza i jednostavna montaža, kako na betonskim, tako i na čeličnim mostovima. Mogućnost oblikovanja prema kolovoznom profilu.

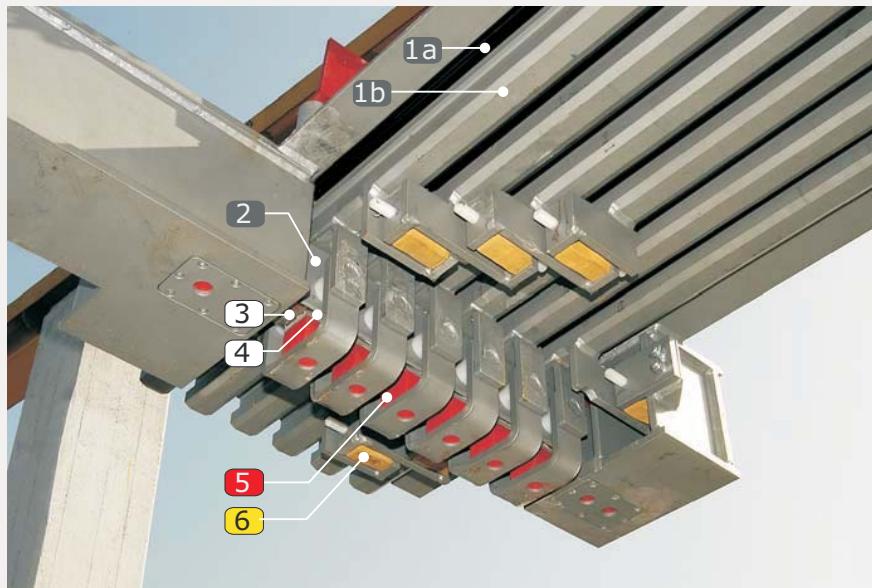
Kraj dilatacije može se ukloputi sa ivičnjakom, pešačkom stazom ili New Jersey barijerom.

Pogodna za mostove u krivinama ili za pomeranja koja nisu paralelna sa osom kolovoza.

Komforna i tihia vožnja.

Dozvoljava vertikalna pomeranja, rotacije i deformacije konstrukcije.

Dugotrajnost (materijali otporni na koroziju) i minimalno održavanje.



Main Characteristics

Absolutely waterproofing: no need for further drainage system.

Fast and easy installation, for both concrete and steel bridges.

Shape according to the carriageway profile.

Joint ends to fit kerbs, sidewalks or New Jersey barrier shape.

Suitable for curved bridges or for movement not parallel to carriageway axis.

Allow for comfortable running on it and minimum noise level.

Allow the structure vertical movements, rotation and deformations.

Long durability (corrosion resistant materials) and minimum maintenance.

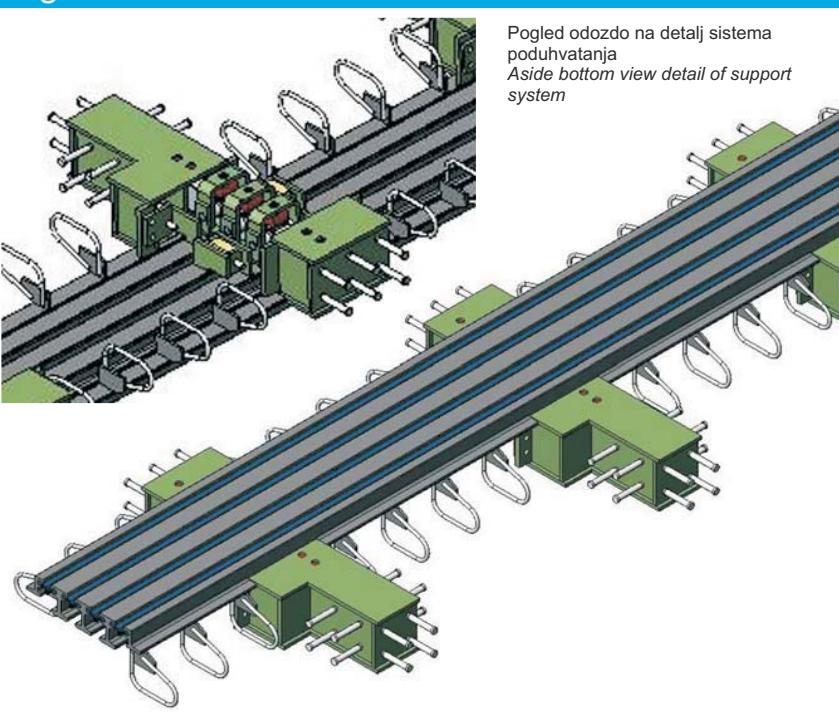
MATERIJALI - MATERIALS

Pos.	Opis	Description	Materijal	Material
1a	Gumeni profili - Rubber Seals	EPDM Compound (1)		
1b	Čelični profili - Steel Profiles	Steel gr. S355JR or S355J2G3	UNI EN 10025	
2	Podupiruće grede - Support beams	Steel gr. S355JR or S355J2G3	UNI EN 10025	
3	Nerđajući čelik - Stainless steel	X5CrNiMo 17/12 - (AISI316)	UNI 8317	
4	Niskofrikciona ploča - Low friction plates	PTFE (Teflon) - (ASTMD4894)	UNI PLAST5819	
5	Ležišta i opruge - Bearings & Springs	Polyurethane		
6	Uređaji za centriranje Centering devices	Polyurethane foam + Nylon		

1) Ovo jedinjenje je otporno na kidanje, a posebna formula čini ga otpornim na ulja, benzin, so i pesak i stareњe prouzrokovano UV zracima, solju i snegom.

1) This compound is tearing resistant and special formulated to resist oils, gasoline, salt and sand without ageing due to U.V. rays, salts and snow.

Algamod LW - mod. L



Antikorozivna zaštita

Sve čelične površine su zaštićene od korozije. Pre nanošenja epoksi boje, svi ovi elementi su peskareni do SA 2.5 stepena.

Corrosion Protection

All the steel surfaces are protected from corrosion. Before application of epoxy paint all these elements are sandblasted to grade SA2.5.

ALGA posluje u skladu sa sistemom kvaliteta UNI EN ISO 9001, certifikovan od strane IGQ dokumentom br. 9305.

ALGA works with quality assurance system according to UNI EN ISO 9001 certified by IGQ with document N.9305

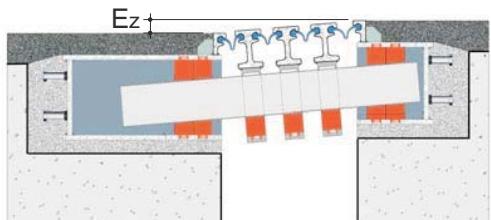


Pomeranja i rotacije

Algamod LW dilatacije omogućavaju pomeranje konstrukcije u sva tri pravca (E_x, E_y, E_z) i rotacije oko tri osovine ($\varnothing_x, \varnothing_y, \varnothing_z$).

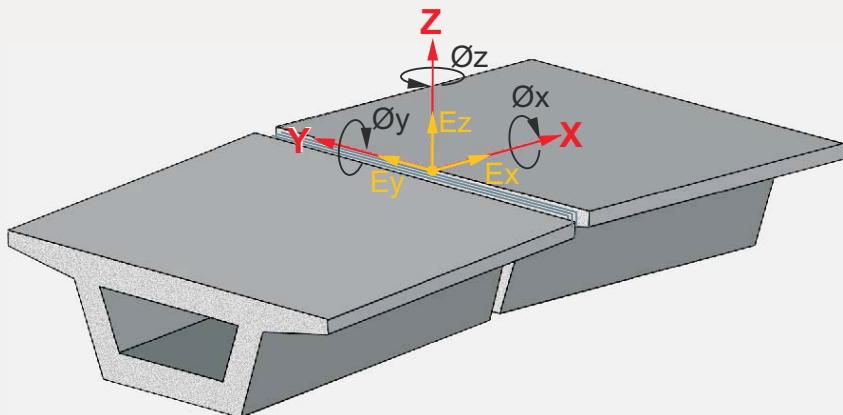
Movements and Rotations

The Algamod LW expansion joints allow movements of the structure along all three directions (E_x, E_y, E_z) and rotation about the three axes ($\varnothing_x, \varnothing_y, \varnothing_z$).



Vertikalna pomeranja - Vertical movement

POMERANJA I ROTACIJE - MOVEMENTS AND ROTATIONS



Montiranje dilatacija pod uglom

Kada pomeranje nije upravno u odnosu na osovinu dilatacije, nego je pod uglom, dilatacija je projektovana tako da funkcioniše i pod oštrim ili tupim uglom.

Izrađena je sa sistemom podupirućih šipki gde svaka šipka mora da bude u istom pravcu.

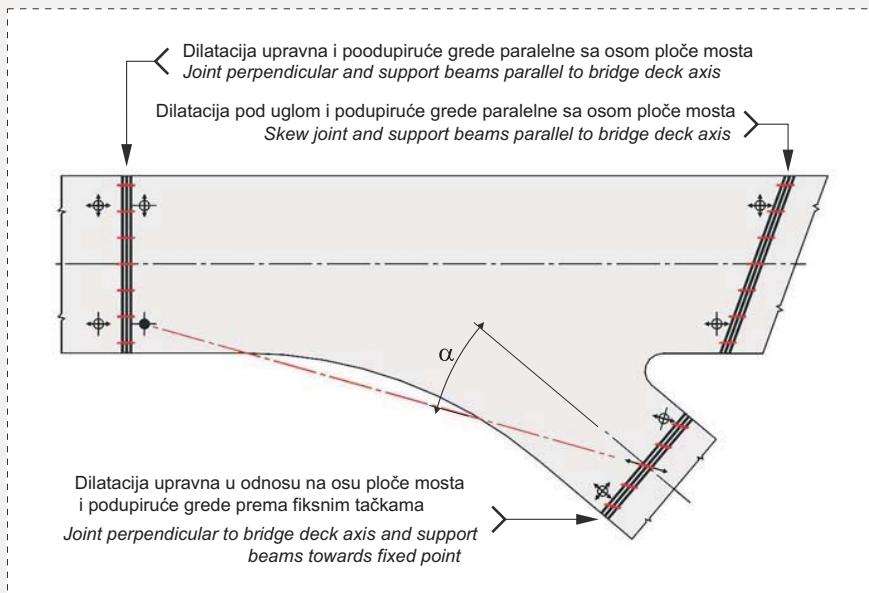
U svakom slučaju, pravac pomeranja ne mora biti isti u odnosu na osu ploče mosta.

Skew Expansion Joints Installation

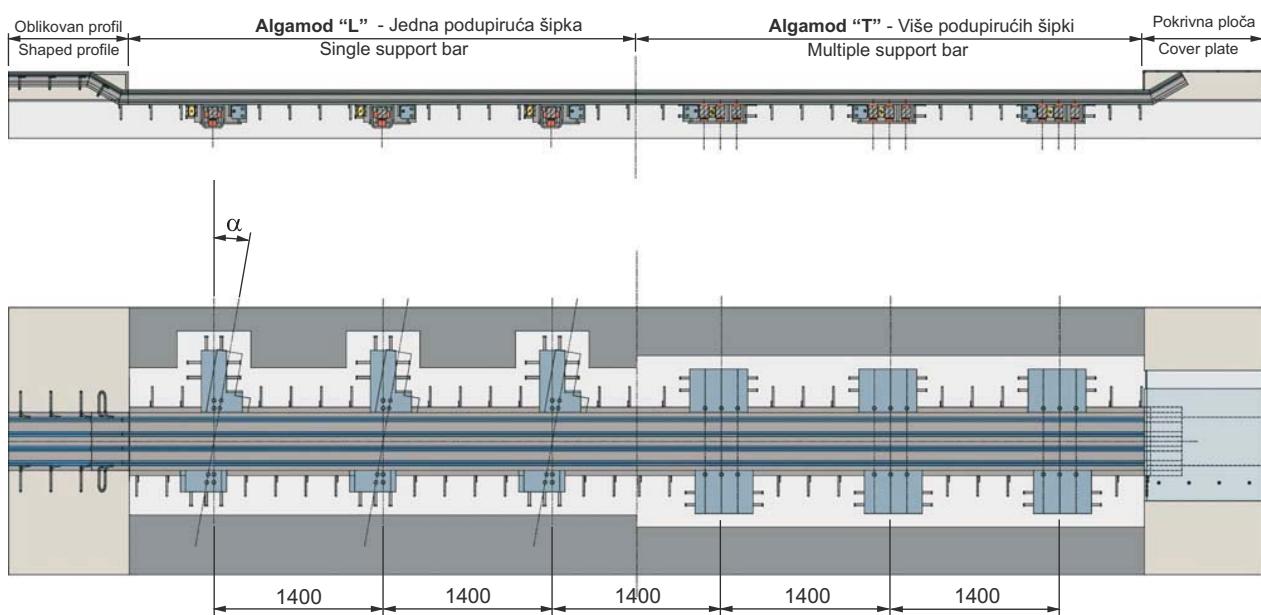
When the movement is not perpendicular to the expansion joint axis, but it is along a skewed direction, the expansion joint is designed to work with such a skew angle.

If it is made with multiple support bars system each support bar shall be aligned along the same direction.

In any way, the direction of the movement can be different from the bridge deck axis.



TIPIČNA MONTAŽA - TYPICAL INSTALLATION



Sistemi poduhvatanja

Algamod LW predviđa upotrebu dva različita sistema poduhvatanja. Za dilatacije sa pomeranjem do 400mm svaki čelični profil je spojen sa jednom podupirućom gredom; dok preko pet zaptivki, standardni sistem predviđa sistem sa više podupirućih greda. U prvom slučaju, uticaji saobraćajnog opterećenja na čelične profile se distribuiraju preko podupirućih amortizujućih ležišta i opruga. Opruga postavljena iznad podupirućeg nosača obezbeđuje kontakt, sprečava odizanje i umanjuje buku.

Sistem dopušta pomeranja izazvana temperaturom i rotacijom konstrukcije. U drugom slučaju, čelični profili se drže kroz jednostrukе podupiruće nosače preko kojih oni mogu da klizaju uz upotrebu kombinacije ležišta/opruga, slično prethodnoj. Ovakav sistem dopušta pomeranja izazvana temperaturom i rotacijom konstrukcije. Podupiruće grede su spojene sa podupirućim ankernim kutijama na isti način u oba sistema. Ležišni sistem garantuje bolje distribuiranje opterećenja od saobraćaja i prigušivanje dinamičkih velikih opterećenja pojedinačno g čeličnog profila. Oba sistema su opremljena odgovarajućim sistemom centriranja.



Prigušivanje vibracija

Jedan od glavnih sigurnosnih uslova za svaki čelični dilatacioni profil je da predupredi dinamičke napone. U tu svrhu je razvijen sistem vibracionog amortizovanja sličan sistemu koji se implementira u vozilima gde se dinamički naponi reduciraju upotrebom opružnog amortizujućeg sistema.



Vibration damping

One of the safety main conditions of each steel joint profile is to prevent the dynamic stresses.

For this aim a vibration damping system has been developed, similar to the one implemented in the cars, where the dynamic stresses are reduced using a spring damping system.



Support systems

Algamod LW foresees the use of two different support systems.

For the expansion joints with movement till 400 mm every steel profile is linked to one support beam; besides the five seals the standard system foresees a multi support beam system.

In the first case, the traffic impact loads on the steel profiles are distributed through the support beams to the structure by special damping bearings and springs.

The spring positioned above the support beam grants the contact, prevents the lifting and decreases the noise.

That system allows the thermal movements and rotations of the structure.

In the second case, the steel profiles are held through single support beams on which they can slide using a bearing/spring combination similar to the previous one. That system allows the thermal movements and rotations of the structure.

The support beams are connected to the support boxes in the same way in both systems.

The bearing system grants a better distribution of traffic loads and the damping of dynamic heavy loads for each single steel profile.

Both systems are equipped with suitable centering system.

Sistem centriranja

Opruge za centriranje napravljene su sa odbojnicima od poliuretanske pene koji mogu da prihvate velike deformacije. U kooperaciji sa gumenim zaptivkama formiraju dinamicki sistem koji može da primi sile izazvane kočenjem i ubrzanjem, a na prvom mestu, da održi čelične profile na jednakom odstojanju. Glavni uslov je da se zaptivke zadrže da ne iskaču iz čeličnih profila, a zadržavajući vodonepropusnost dilatacione spojnice.

Odbojnici **Algamod LW** sistema se montiraju u najlonske trnove koji rade uvek pod pritiskom preko nožica zavarenih za podupiruće nosače ili direktno za čelične profile.

Na ovaj način, kada se spojnica otvara, odbojnik se pritiska i obrnuto - ako se spojnica zatvara odbojnik se oslobađa.

Centering System

The centering springs are made up of polyurethane foam buffers suitable to absorb large deformations.

They co-operate, together with the rubber seals, to create a dynamic system able to stand the braking and acceleration forces and, first of all, to keep the steel profiles at equal distance.

Main condition this one to make the seals not moving out from the steel profiles, compromising the joint waterproofing.

The **Algamod LW** system buffers are mounted on nylon pins working always in compression through flanges welded to the support beams or directly to the steel profiles.

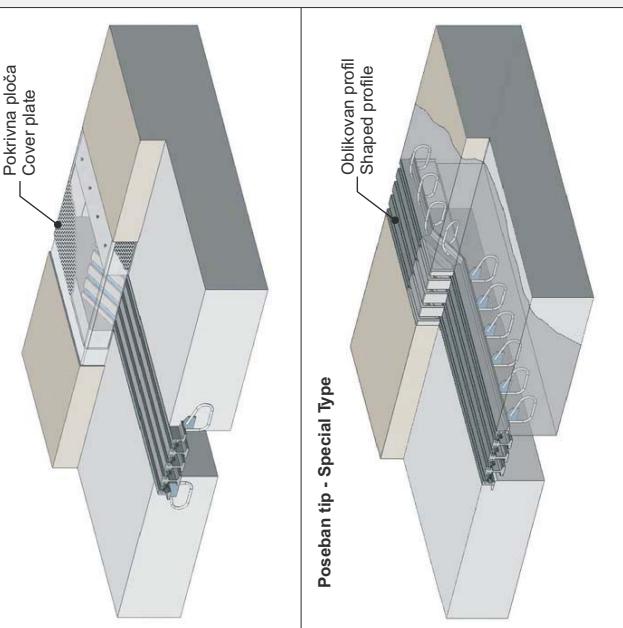
In that way when the joint is opening the buffer is further compressed and viceversa if the joint is closing, the buffers are released.

Kerbs and Sidewalk Elements

The joint ends can be customized according to the transverse bridge section, which can have kerb unit, sidewalk or New Jersey barrier. The kerbs, and also the bridge external edge, can be covered with shaped metallic sheets not directly linked with the expansion joint.

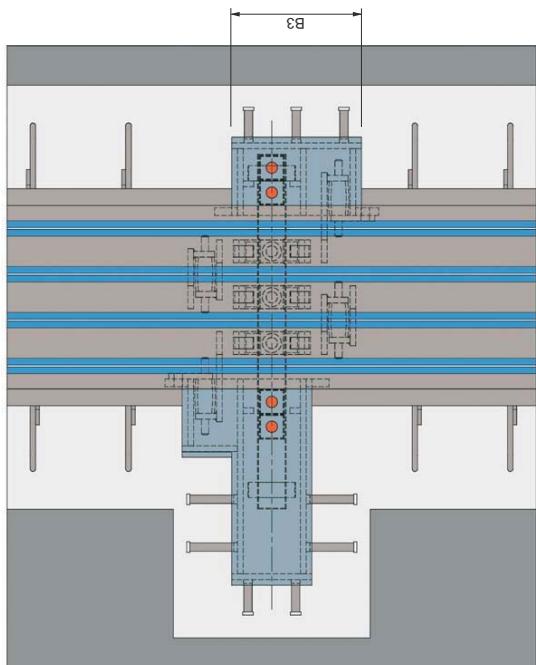
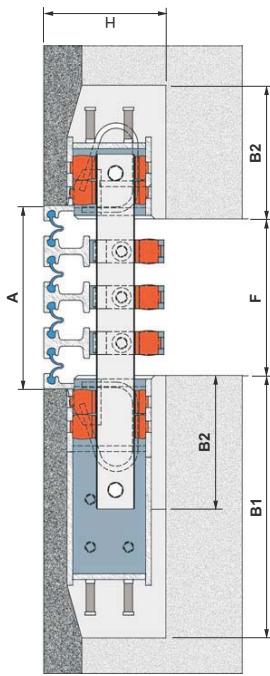
Ivičnjaci - KERBS

Standardni tip - Standard Type

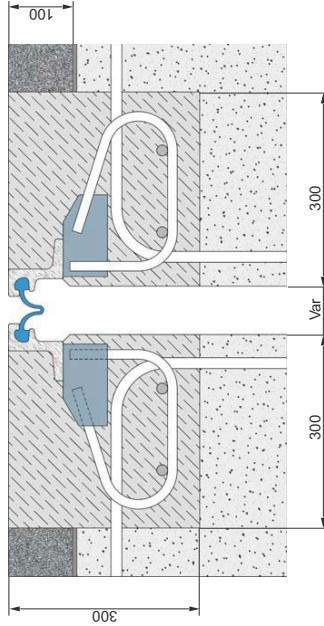


Ivičnjaci i elementi pešačke staze u odnosu na poprečni presek dela mosta, koji može imati ivičnjak, pešačku stazu ili New Jersey barijer. Ivičnjaci, kao i spolna ivica mosta, mogu biti pokriveni oblikovanim metalnim plочama koje nisu direktno povezane za dilataциону спојницу.

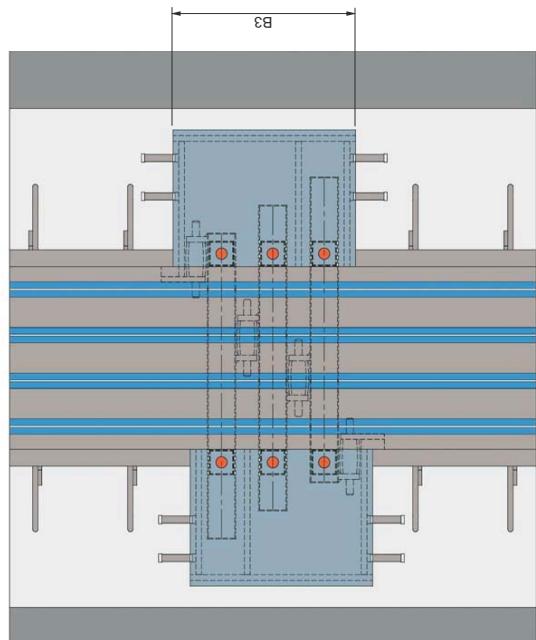
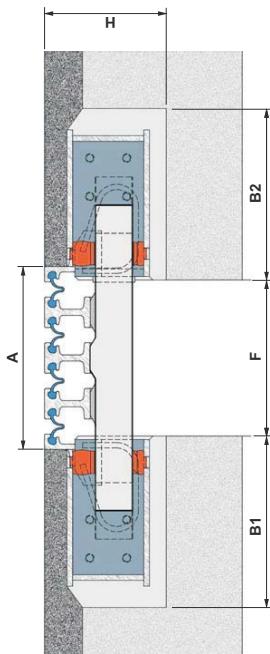
Algamod LW - mod. L



Algamod L W 80



Algamod LW - mod. T



DIMENZIJE - DIMENSIONS [mm]

Naziv Name LW	Zapitivni el. Sealing El. N.	Pomeranje Movement ± mm	Dimezije Dimension A	Težina Weight Kg/m	Visina Height H	Širina Width B1	Širina Width B2	Širina Width B3	Zazor Gap F
LW80	1	±40	120	50	280	300	300	-	40
LW60T	2	±80	240	180	290	300	300	210	170
LW240T	3	±120	360	280	290	400	400	350	290
LW320T	4	±160	480	390	320	450	450	480	410
LW400L	5	±200	600	400	350	710	350	340	530
LW480L	6	±240	720	500	350	790	350	340	650
LW560L	7	±280	840	610	370	870	350	340	770
LW640L	8	±320	960	730	370	960	350	370	890
LW720L	9	±360	1080	860	390	1030	350	370	1010
LW800L	10	±400	1200	980	390	1110	350	370	1130
LW880L	11	±440	1320	1120	420	1190	350	390	1250
LW960L	12	±480	1440	1280	420	1270	350	390	1370

Vez sa konstrukcijom

Prvi i poslednji čelični profil dilatacije imaju na dnu krak koji se zavarivanjem vezuje za ankre. Moguce je eventualno postavljanje vodo-nepropusne membrane. Ova dva čelična profila imaju visinu od 7cm za spoj sa asfaltnim zastorom. Da bi se obezbedila veza sa pešackom stazom i ivičnjacima, moguće je izvesti anketovanje Nelsonovim moždanicima.

Connection with the Structure

The first and last joint steel profile have a bottom wing on which the anchors to the structure are welded. A possible eventual waterproofing membrane on this wing can be completed. These two steel profiles have 7 cm height for pavement connection. In correspondence of kerbs or sidewalk, it is possible to provide the anchoring by Nelson studs.

Predpodešavanje

Dilatacija **Algamod LW** se isporučuje spremna za montažu i opremljena je predpodešavajućom hvataljkom za ispravan položaj za otvaranje.

Može biti isporučena u transportnoj dužini od 12m i može biti podizana u obeleženim mestima, najbolje u zoni oslanjajućih kutija. Dužina i predmontaža dilatacione spojnica moraju biti provereni pre montaže.

Pre svega, pozicioniranje mora biti pažljivo provereno tako da se obezbedi dobro poravnjanje sa površinom puta.

Zatim dilataciju treba spojiti sa konstrukcijom zavarivanjem, tako da može da radi i pre zalivanja.

Generalno, dilatacione spojnice treba montirati pod nadzorom i po instrukcijama kvalifikovanog osoblja.

Detaljne informacije o ispravnoj montaži mogu se dobiti na zahtev.



Installation - Preset

The expansion joint **Algamod LW** is delivered ready to be installed and it is provided with presetting clamps for positioning at correct opening. It can be manufactured as one structural unit till the maximum shipping length of 12 m and it shall be lifted only from the designated points, preferably at support boxes location. The expansion joint width and preset shall be verified and modified, if necessary, before the placing.

Veza za konstrukciju

Uzdužna armatura ploče mosta je pričvršćena za spojnicu ankernim sistemom poprečnih armaturnih šipki.

Zavarivanje između ankera spojnica i jačanje kolovozne ploče mosta služi samo da pomogne pri montaži.

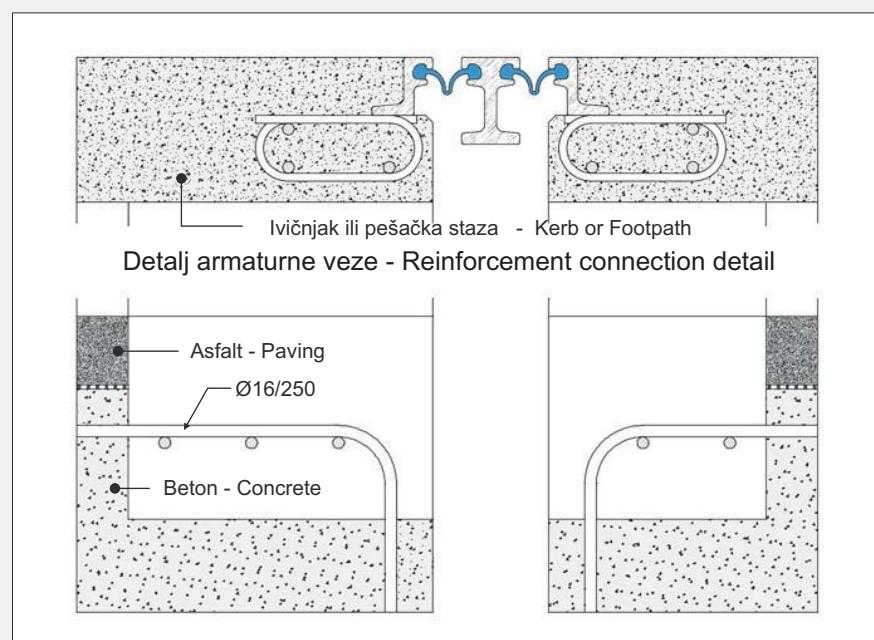
Moreover the levelling shall be checked carefully in such a way to grant a good alignment with the road surface.

Then the joint shall be linked to the structure waiting re-bars through proper welding so that it can work before the completion concrete casting.

Generally the modular expansion joints have to be installed under the instructions of qualified personnel. Further information about a correct installation can be provide under request.

Connection to the structure

The longitudinal reinforcing bars of bridge deck are connected to the joint anchoring system by transverse reinforcing bars. The welding among joint anchors and bridge deck reinforcing is just to help during the installation phase.



Održavanje

Modularna spojница **Algamod LW** ne zahteva održavanje. Dakle, dovoljno je proveriti gumene zaptivke i antikorozivnu zaštitu u toku preiodičnih provera mosta. U slučaju oštećenja gumenih zaptivki, one se lako mogu zameniti.

Maintenance

The modular joints **Algamod LW** does not need maintenance. Therefore is enough to check the rubber seals and the corrosion protection during the periodic bridge inspections.

In case of rubber seals damage they can be easily replaced.