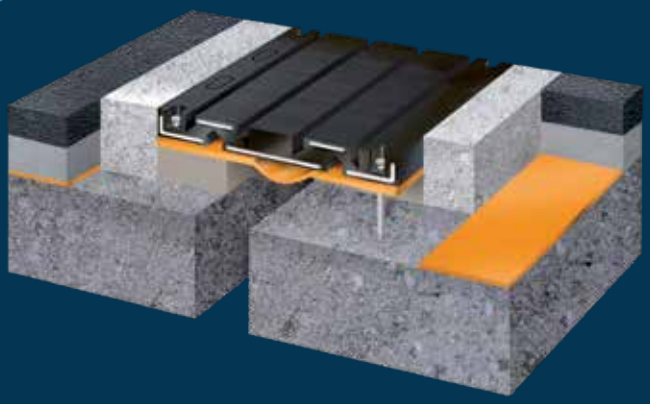
EXPANSION JOINTS

TRANSFLEX

REINFORCED ELASTOMERIC JOINT SYSTEM



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Introduction

Market Leaders In **Expansion Joint Technology.**

The system consists of moulded steel reinforced rubber modules for smooth transit between two separate surfaces on the same plane, absorbing expansion and contraction, translation and rotation movements.

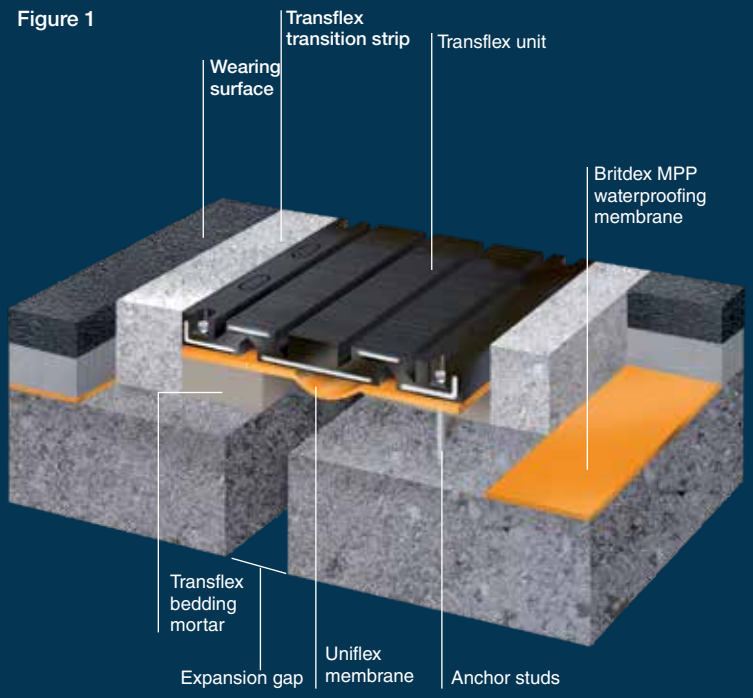
The Transflex range is supplied in modules of a given length and is anchored to both sides of the structural joint. All Transflex models offer the possibility to make special pieces for kerbs, walkways, correction of skewed joint and other contours. In this way, the continuity of the seal is ensured.

The rubber covers the steel reinforcement that entails a double benefit: the rubber protects the metallic part from corrosion and the steel reinforces the device structure.

USL Transflex is marketed by Tremco Construction Products Group in Asia Pacific.

TREMCO
Construction Products Group

Figure 1



THE PRODUCT IN BRIEF

USL Transflex bridge joints comprise of steel angles and a steel bridging plate system encased in a flexible elastomer.

They are supplied in module lengths designed to be bolted to the structural concrete on either side of the expansion gap.

A range of models are available to accommodate movement up to 330mm, providing a substantially waterproof joint and a smooth running surface.

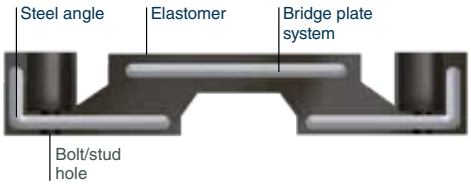
- Movement accommodation up to 330mm
- Corrosive resistant elastomer casing
- Accommodates skew movement
- Factory vulcanised kerb and skew kerb units to special order
- Membrane system included for maximum waterproofing

Principal applications

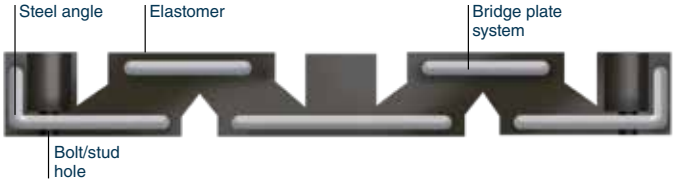
- Highway bridge decks
- Service Ramps
- Multi-storey car parks

Design features

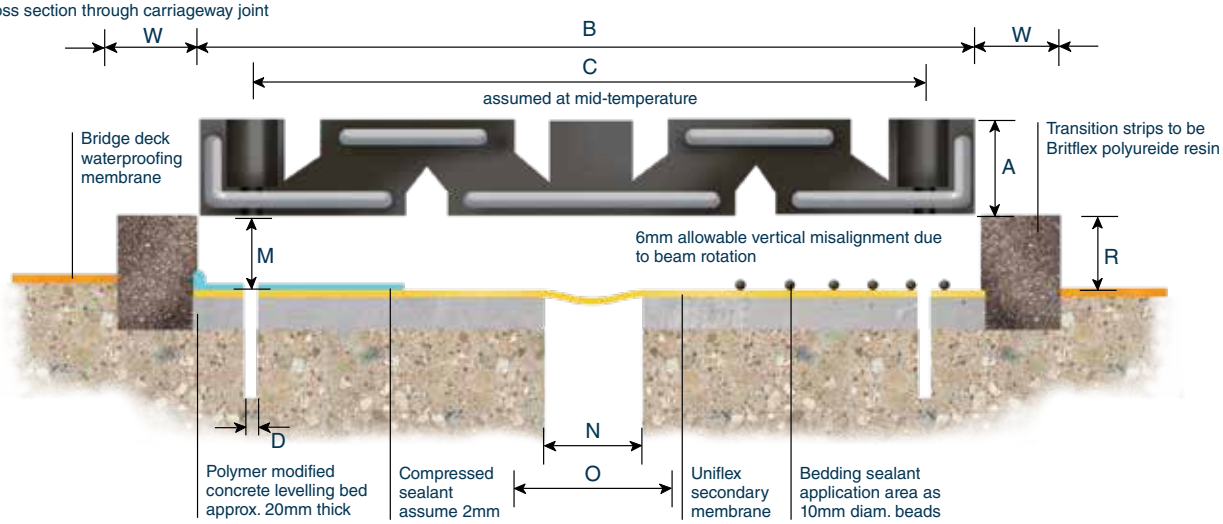
Transflex bridge joint 150, 200, 250 and 300



Transflex bridge joint 400, 650, 900 and 1300



Typical cross section through carriageway joint

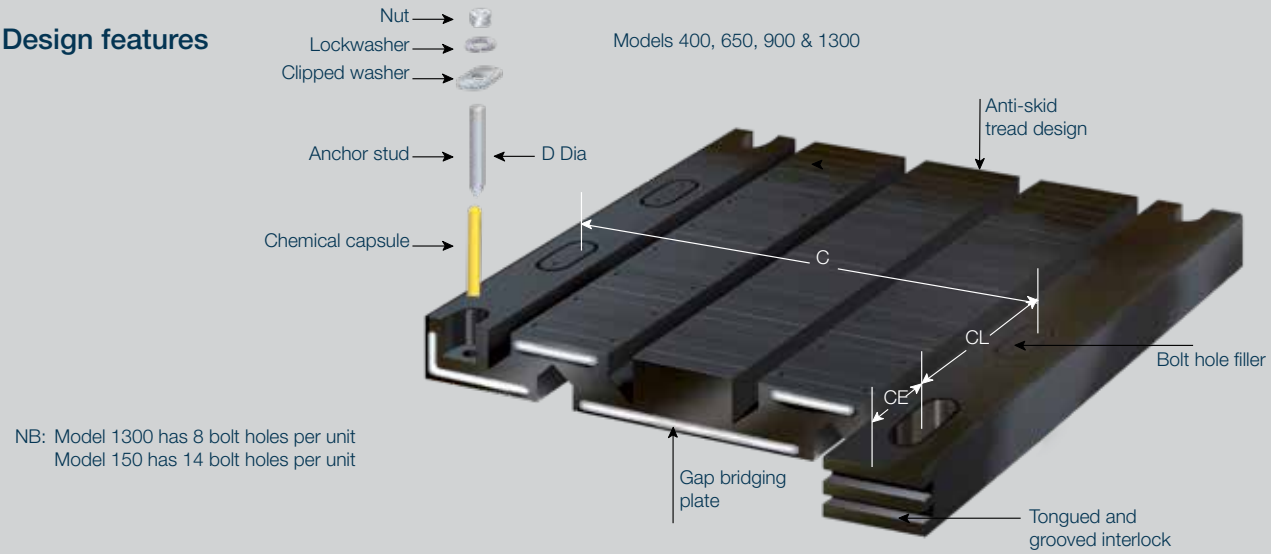


USL TRANSLFEX BRIDGE JOINT MODELS

Movement accommodation	Module length	Module width B	Module depth A	Stud diameter D	Module weight	Max stud height above shelf M	Bolt torque	Max joint width at mid-deck temp N
38mm	1750mm	240mm	35mm	12mm	30kg	32mm	38Nm	35mm
50mm	1830mm	274mm	40mm	12mm	48kg	32mm	38Nm	51mm
65mm	1830mm	356mm	46mm	16mm	68kg	40mm	95Nm	67mm
76mm	1830mm	432mm	52mm	20mm	88kg	42mm	175Nm	83mm
102mm	1830mm	590mm	54mm	20mm	150kg	42mm	175Nm	102mm
165mm	1830mm	724mm	75mm	24mm	272kg	50mm	190Nm	121mm
230mm	1830mm	890mm	93mm	24mm	375kg	60mm	275Nm	158mm
330mm	1220mm	1204mm	127mm	30mm	451kg	70mm	300Nm	216mm

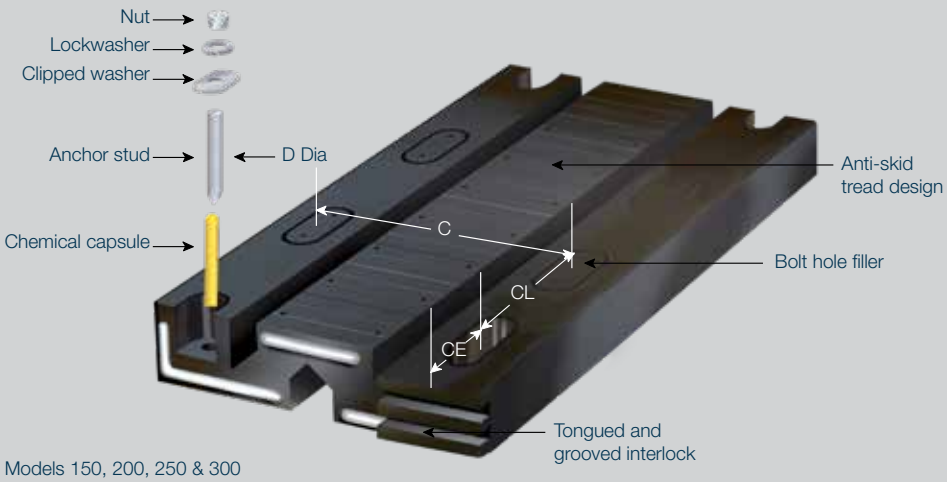
Note: Add 3mm to the recess depth ‘R’ when using the Uniflex secondary membrane.

Design features



Models 400, 650, 900 & 1300

NB: Model 1300 has 8 bolt holes per unit
Model 150 has 14 bolt holes per unit



Models 150, 200, 250 & 300

Max joint width O	Recess depth R	Transition strip width W	Bolt hole centres C	Bold hole centre along unit CL	End of unit to first bolt hole CE	Models
54mm	41mm	100mm	190mm	250mm	125mm	150
76mm	46mm	100mm	220mm	305mm	152mm	200
98mm	52mm	100mm	279mm	305mm	152mm	250
121mm	58mm	100mm	342mm	305mm	152mm	300
152mm	62mm	100mm	498mm	305mm	152mm	400
203mm	81mm	125mm	618mm	305mm	152mm	650
273mm	99mm	150mm	787mm	305mm	152mm	900
381mm	133mm	175mm	1080mm	305mm	152mm	1300

Technical specifications

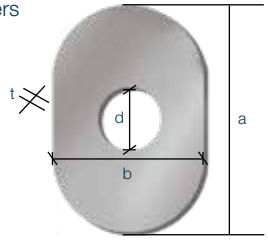
Property	Standard	Value
Hardness	ASTM D2240	62°± 5° Shore 'A'
Tensile strength (min)	ASTM D412	130kg/cm² min
Elongation at break (min)	ASTM D412	400% min
Low temperature brittleness	ASTM D746	-30°C (Not brittle)
Ozone resistance (After 48hrs. At 38°C exposure to 50 PPHM in air sample under 20% strain)	ASTM D1149	No cracks
Resistance to permanent set (24hrs. At 70°C)	ASTM D395	35% max
Oil resistance	ASTM D471	+ 18%

	Requirements	Test method
Steel	Steel components manufactured to:	DIN 17-100 Type ST 37-2 ASTM Type A36

Manufactured to DIN 37-2

	150	200	250	300	400	650	900	1300
a	34mm	34mm	45mm	60mm	60mm	65mm	72mm	70mm
b	27mm	27mm	35mm	50mm	50mm	55mm	51mm	60mm
d	14mm	14mm	17mm	21mm	21mm	25mm	25mm	31mm
t	3.0mm	3.0mm	3.7mm	4.0mm	4.0mm	4.5mm	6.0mm	6.0mm

Steel clipped washers



DESCRIPTION

The USL Transflex bridge joint system comprises of 8 No. standard models designed to accommodate movement up to 330mm by shear deformation of the elastomer between the steel components.

Each model incorporates steel angles designed to be bolted to the structural deck and a steel bridging plate system which spans the open joint gap.

The elastomer case is highly resistant to oils, solvent spillage and the trafficked surface includes an anti-skid pattern for safety having a rubber to rubber coefficient of static friction of 0.69. Each model is specifically designed to accommodate horizontal and skew movement and will also accommodate vertical movement due to rotation of up to 6mm.

Special steel clipped washers are provided with each unit designed specifically for the Transflex joint. Stainless steel washers to the same high specification can be supplied to special order.

It is important that the correct washer is used in each case.

When additional waterproofing is specified a continuous length of Uniflex membrane should be bonded to the levelling bed with adhesive over the full width of the Transflex joint unit. Drain outlets will be incorporated.

Rebond profiles
During installation it is sometimes necessary, for practical reasons, to cut a Transflex unit on-site. In order to maintain the integrity of the joint between each module, male and female rebond profiles are available for each unit to reinstate the end configuration as required.

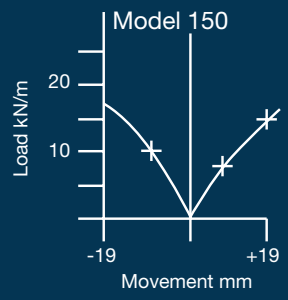
The profiles are available in lengths for cutting on-site together with an adhesive.

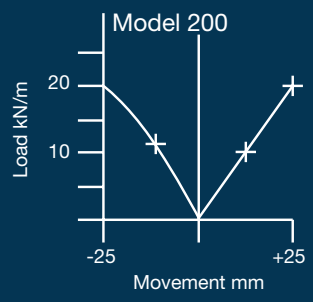
Factory Vulcanised junctions
Special factory vulcanised junctions and kerb units are available to accommodate changes in level at kerbs and central reservations, in addition, standard units are capable of being modified on-site to accommodate some level changes.

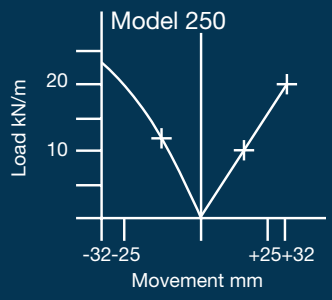
TECHNICAL DATA

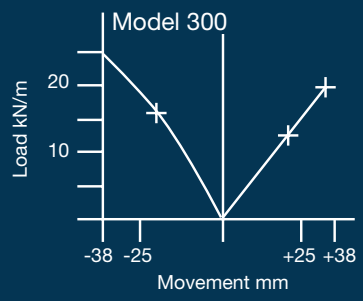
Performance
Transflex bridge joints are designed to accept both horizontal and vertical loads due to traffic in accordance with the UK Highways Agency Technical Memorandum BD 33/94.

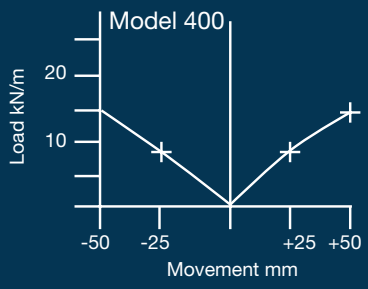
The graphs illustrated opposite are an indication of the horizontal load required to deflect each Transflex joint.

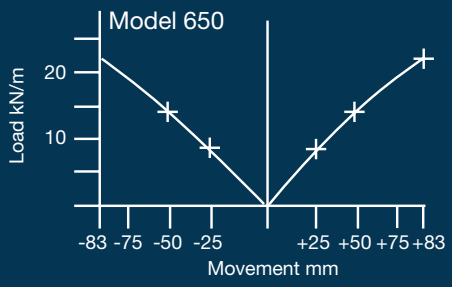


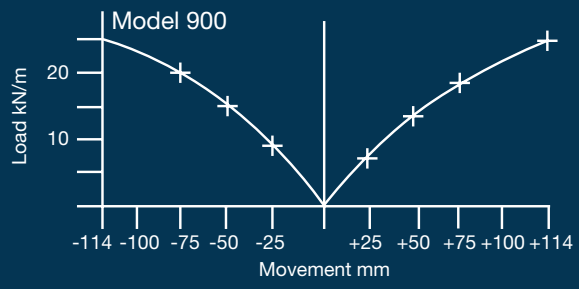


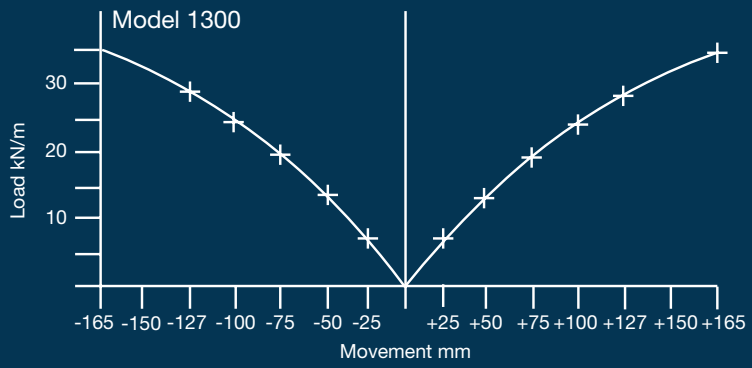




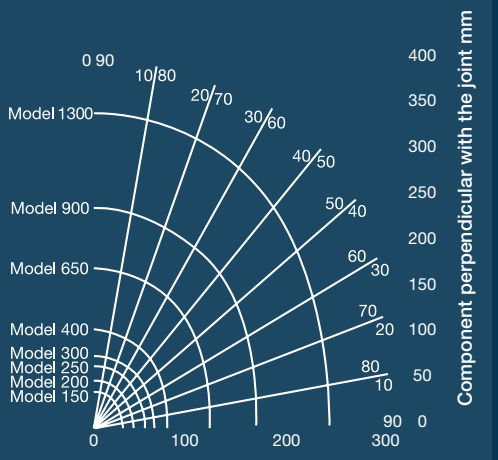








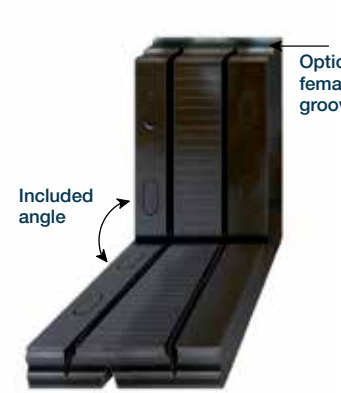
Graph of maximum movements absorbed by the different modules according to the angle formed by the joint with the longitudinal axis of the floor



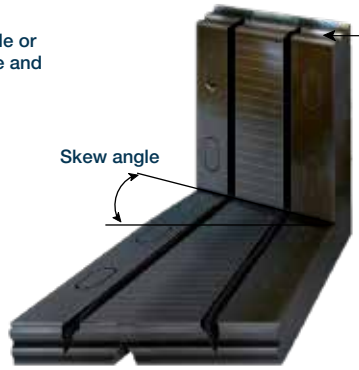
Load/movement curves for USL Transflex bridge joints

Notation:
- = Compression
+ = Extension

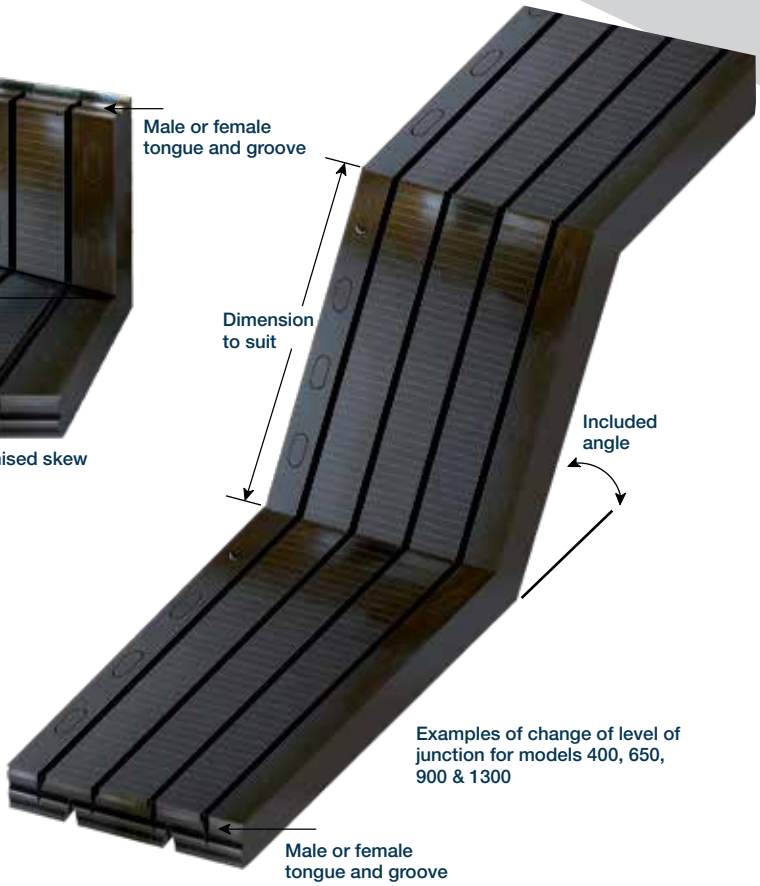
Kerb upstand units



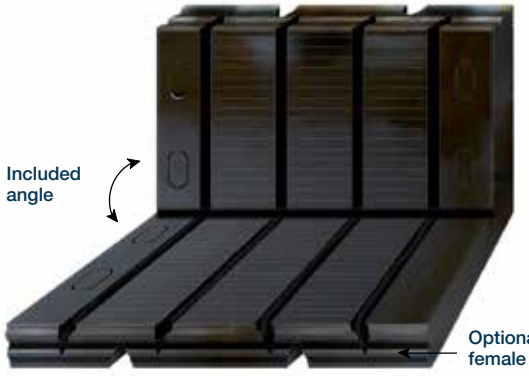
Examples of a factory vulcanised kerb unit for models 150, 200, 250 & 300



Examples of a factory vulcanised skew kerb upstand



Examples of change of level of junction for models 400, 650, 900 & 1300



Examples of a factory vulcanised kerb unit for models 400, 650, 900 & 1300

DESCRIPTION

As part of a bridge joint installation scheme factory vulcanised junctions are available to accommodate the change in level at kerbs, footways and at the central reservation subject to special order and design detail.

The junctions available include kerb units, skew kerb units and change of level units, each factory vulcanised to maintain high quality standards and integrity of the seal.

KERB UNITS

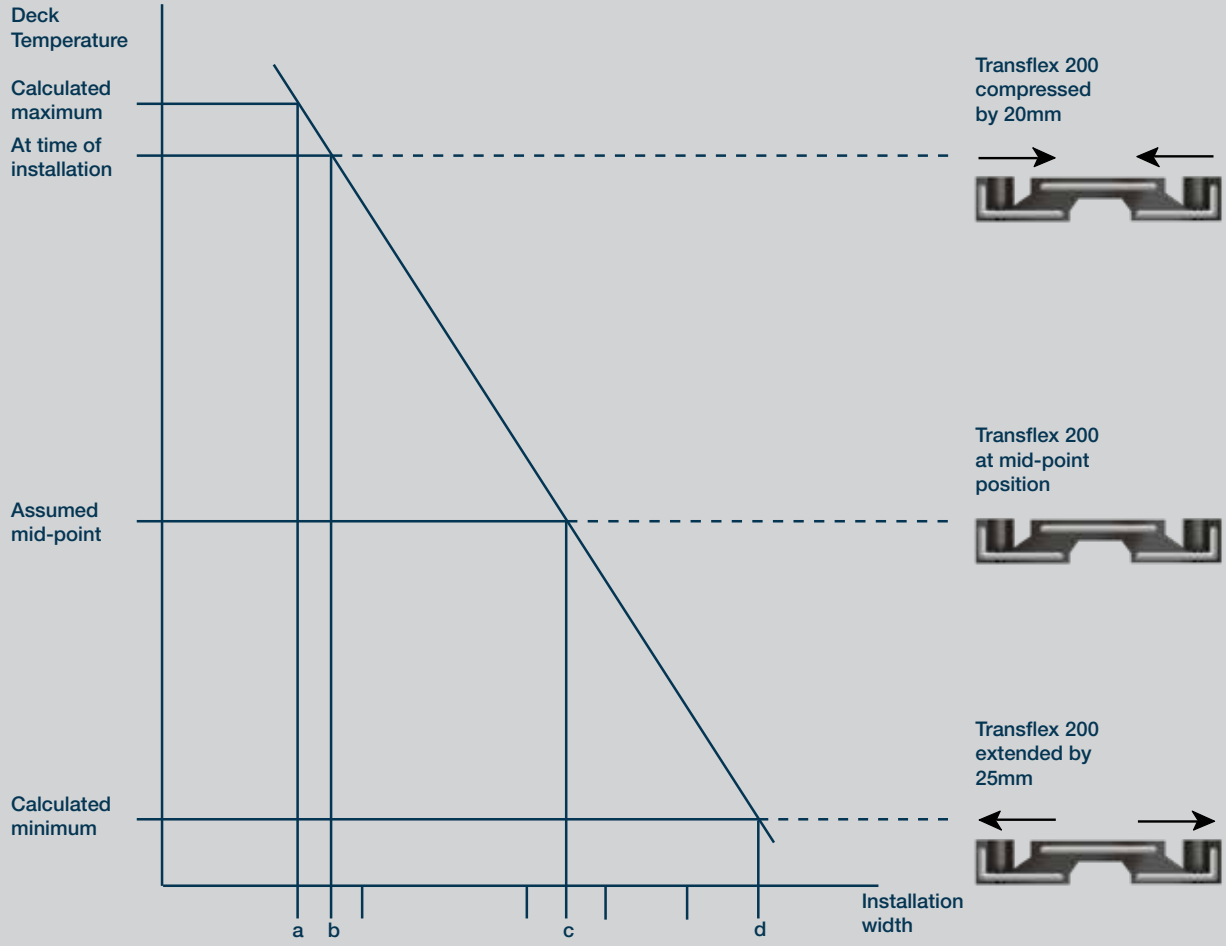
Change of level junctions are available factory vulcanised to meet the requirements for changing level from road deck to footway.

The junctions are fabricated such that the change in level from road to footway takes place behind the kerb line. Leg lengths, the included angles and the male or female end configurations should be specified at the time of order.

TECHNICAL DATA

Whilst factory vulcanised change of level junctions should be used as far as possible it may be necessary to modify standard units on-site to accommodate changes of level from road to footway.

This is achieved by cutting and notching the steel bridging system and steel angles and bending the units through 30°. The point of change of level from road to footway taking place behind the kerb line. The void in the kerb line being protected with galvanised steel cover plate.



TEMPERATURE ADJUSTMENT GUIDE

It will often be necessary to pre-compress or pre-extend the Transflex joint to pre-set the joint unit to suit the relative position of the structural expansion joint in the bridge deck.

At the time of installation therefore knowing the mean deck temperature range and the movement to be accommodated, the amount of pre-compression or pre-extension can be taken off a graph prepared in the manner of the example illustrated.

NB.

1. Example based on model 200 (274mm wide)

2. The example assumes a total design movement accommodation requirement of + and – 25mm from the mid point position.

3. The installation temperature requires that the joint be compressed to 254mm overall width – prior to installation.

4. Hence the new bolt hold centres “C” to be drilled in the structural concrete will be 199mm instead of 219mm.

5. Maximum movement of joint + and – 25mm.

6. Actual movement required + and – 25mm

Key:

a. Maximum compression 274 - 25 = 249mm

b. Compressed width for installation 254mm

c. Actual module width 274mm

d. Maximum extension 274 + 25 = 299mm

Site installation – for concrete decks

A flat and level monolithic haunch or recess should be formed in the structural deck to accommodate the Transflex joint and the transition strips.

At the design stage care should be taken to locate the reinforcement avoiding the position of the bridge joint anchor studs.

In the interest of achieving a smooth traffic ride over the joint, the wearing course should be machine laid continuously over the structural joint and subsequently removed just prior to installing the bridge joint.

INSTALLATION

The removal of the surfacing over the joint in the deck is facilitated by the location of the plywood bond breaker of a width just under the combined width of the joint and the transition strips prior to the surfacing being laid. At the time of installation dependent upon mean deck temperature it may be necessary to pre-compress or pre-extend the Transflex joint unit to suit the relative position of the structural expansion joint in the bridge deck.

The installation width of the joint may be determined using graphical means illustrated in the example under the heading “Temperature Adjustment Guide”.

Once the Transflex module installation width and the new bolt hole centres have been determined the joint module can be adjusted in width accordingly.

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