



TENSA®FINGER type RSFD



Design Principle

The Tensa®FINGER cantilever finger joint type RSFD consists of heavy steel edge profiles, with a reliable loop anchoring system, which support the joints finger plates. The cantilevering finger plates are each connected by two rows of bolts to the edge profile at one side of the joint or the other. It satisfies the highest demands in relation to traffic load, driving comfort and durability. By using a steel substructure and carefully designed connections, the prestress of the bolts and therefore the functioning of the joint is guaranteed to endure for many years.

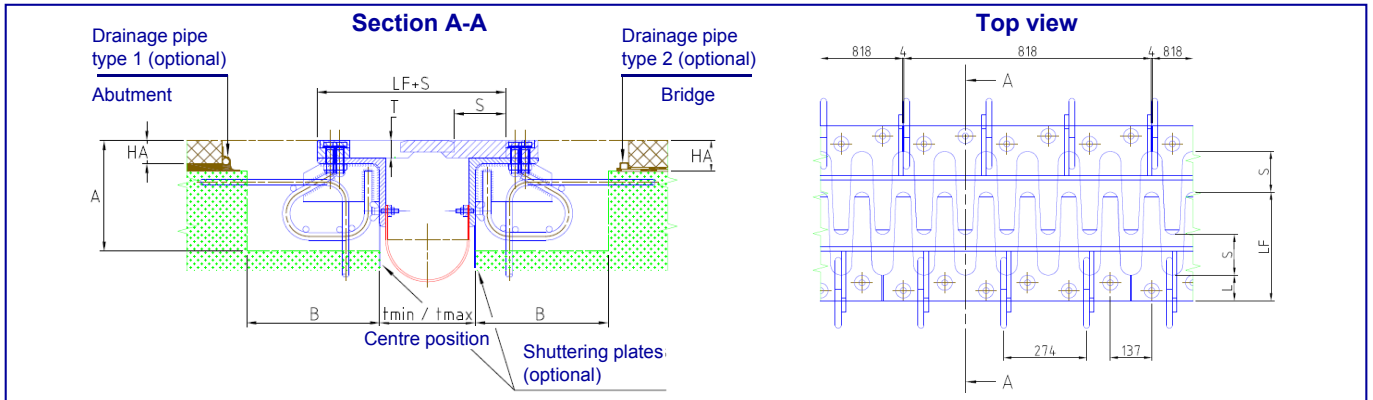
Product Characteristics

The following are the special features of the Tensa®FINGER cantilever finger joint type RSFD:

- Easily adaptable modular design
- Low noise emission and high driving comfort
- Statically determinate system with proven anchoring that fulfills all fatigue requirements
- Ends of fingers chamfered by > 12 mm to avoid dangerous protrusion of the fingers if the superstructure rotates or the abutment settles
- Standardised for movements of up to 500 mm
- Special grooved surface (optional) enhances tyre grip to improve road safety
- Water-tight drainage channel installed underneath the finger joints

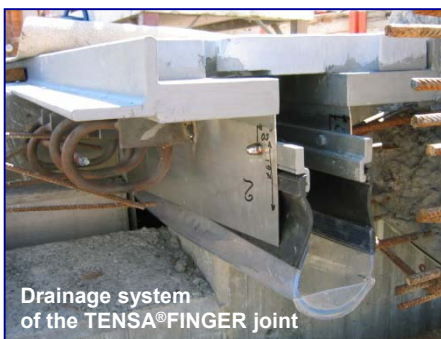
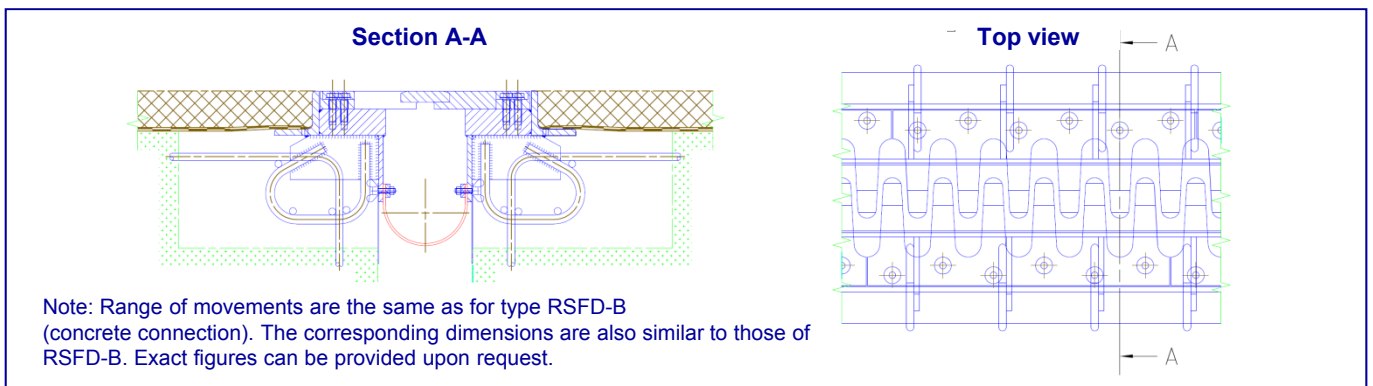


Design and dimensions of type RSFD-B (concrete connection)



| Type | Movement | L | LF | S | A | B | T | t _{min} | t _{max} | HA | Weight |
|------------|----------|-----|-----|-----|------|------|----|------------------|------------------|----------|--------|
| | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | kg/m |
| RSFD-B 60 | 60 | 58 | 118 | 30 | ≥240 | ≥270 | 25 | 70 | 130 | variable | 75 |
| RSFD-B 80 | 80 | 65 | 145 | 40 | ≥240 | ≥270 | 25 | 70 | 150 | variable | 82 |
| RSFD-B100 | 100 | 55 | 155 | 50 | ≥240 | ≥270 | 25 | 70 | 170 | variable | 93 |
| RSFD-B 120 | 120 | 60 | 180 | 60 | ≥242 | ≥270 | 30 | 84 | 204 | variable | 102 |
| RSFD-B 140 | 140 | 60 | 200 | 70 | ≥242 | ≥270 | 30 | 84 | 224 | variable | 120 |
| RSFD-B 160 | 160 | 75 | 235 | 80 | ≥250 | ≥270 | 35 | 88 | 248 | variable | 143 |
| RSFD-B 180 | 180 | 75 | 255 | 90 | ≥284 | ≥305 | 40 | 108 | 288 | variable | 176 |
| RSFD-B 200 | 200 | 77 | 277 | 100 | ≥284 | ≥305 | 40 | 102 | 302 | variable | 203 |
| RSFD-B 250 | 250 | 85 | 335 | 125 | ≥296 | ≥308 | 50 | 132 | 182 | variable | 250 |
| RSFD-B 300 | 300 | 85 | 385 | 150 | ≥306 | ≥305 | 60 | 142 | 442 | variable | 290 |
| RSFD-B 350 | 350 | 100 | 450 | 175 | ≥320 | ≥305 | 70 | 190 | 540 | variable | 328 |
| RSFD-B 400 | 400 | 100 | 500 | 200 | ≥325 | ≥305 | 80 | 240 | 640 | variable | 382 |
| RSFD-B 450 | 450 | 105 | 555 | 225 | ≥335 | ≥318 | 85 | 174 | 624 | variable | 443 |
| RSFD-B 500 | 500 | 115 | 615 | 250 | ≥350 | ≥368 | 90 | 144 | 644 | variable | 504 |

Design of type RSFD-A (asphalt connection)



Materials and corrosion protection

The following materials are used for the production of TENSA®FINGER joints:

- Finger Plates S355 J2G3
- Steel Substructure Construction of S235 JRG2 with 3.1 B certificates

Corrosion protection:

- According to DIN EN ISO 12944, Corrosivity category C3, expected durability H (high): standblasting SA 2 ½, zinc dust EP premier 80 µm and a pur coatings of 80 µm
- Corrosion protection may be adapted according to customer needs

Quality

TENSA®FINGER joints have proven themselves under heavy traffic conditions on many bridges around the world, for many years. Durability is one of their main characteristics.

Highly qualified staff, modern manufacturing facilities, and stringent quality control procedures are the fundamental elements which ensure the high quality of mageba products. mageba has been ISO 9001:2000 and EN 729-2 certified since 1991, and holds the European Standard Certificate for Welding according to DIN 18800-7.

Tests and approvals

The anchorage of the TENSA®FINGER cantilever joint has passed three complete dynamic fatigue tests. No damage occurred during testing at loads of up to 140kN, with 2×10^6 load cycles at a frequency of 2.75 Hertz.

With this loading applied, the anchoring fulfilled the requirements of the Austrian standard RVS 15.45.

External quality control

In addition to internal supervision, mageba has its production facilities regularly monitored by the respected independent construction supervision institute, MPA Stuttgart, Germany.

This institute inspects mageba's internal supervision as well as compliance with Standards and Approvals. This external quality control is in accordance with the provisions of the German, Austrian and of course the European Standards, and is another guarantee of the consistently high quality of mageba products.



Border area design

In order to ensure an optimal finish, the border area design requires special attention. Stainless steel cover plates are often a preferred solution due to their attractive appearance and long term durability.



Support rib system ROBO®DUR

The ROBO®DUR system reduces deformation by traffic loading of the asphalt adjacent to a joint. Slots are cut at a 45° angle to the edge profile and filled with ROBO®DUR high strength epoxy mortar. This optional reinforcement of the asphalt ensures a smooth ride for drivers and less impacts on the joint, resulting in reduced fatigue loading and a longer life for the joint.



Patterned surface for improves type grip

The surface of the finger plates can be provided optionally with a diamond pattern (machined depth of 2 mm), giving the surface improved gripping characteristics.

Although these finger joints generally result in low noise transmission, the described construction and patterned surface have proven to be especially advantageous in this regard. In the case of properly placed pavement, there is almost no noise even when driving a truck over the finger joint.

Drainage channel

Underneath the finger joint, a water-tight drainage channel, usually of soft PVC (other materials are possible e.g EPDM) with welded outlets and end walls is fitted. mageba drainage channels have proven themselves for over 20 years and, thanks to their comparatively high weight, also contribute to noise reduction at the underside of the bridge.

Soft PVC is transparent and allows visual inspection from below. Fastening allows replacement of the channel from above or below.



Cantilever finger joint with an access point to the water-tight drainage channel



Installation of cantilever finger joint type RSFD

Installation

mageba cantilever finger joint assemblies are pre-installed in the factory and fixed with cross-beams to the pre-setting dimensions required by the customer.

Experienced technicians position the joint accurately, and weld the anchors to the reinforcement of the main structure, before concreting.

As an optional feature, the heads of the anchor bolts can be coated with a protecting, sealing material.

Quotations and Orders

Quotations

In order to be able to provide a quotation we require the following:

- A detailed drawing of the structure at the joint location (cross sections of the bridge)
- Maximum bridge movements (including the directions of movements)

Orders

In addition to the order and already provided information, we need the following:

- Layout plan of the construction works
- Pre-setting dimensions
- Location of any service lines running along the bridge
- Other special details



product range



Bridge Bearings

- Pot bearings
- Elastomeric sliding bearings
- Earthquake bearings
- Spherical bearings
- ILM bearings
- Special bearings



Expansion Joints

- Single gap joints
- Modular expansion joints
- Sliding finger joints
- Cantilever finger joints
- Railway joints
- Architectural joints



Seismic Devices

- Seismic dampers
- Shock transmission units (STU)
- Preloaded spring dampers
- SpringDisc dampers
- Isolation bearings



Monitoring & Services

- Inspections
- Structural health monitoring
- Refurbishments
- Testing
- Cleaning
- Installation

More information on mageba and its products can be found on www.mageba.ch.

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