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TENSA® FINGER RSFD325

Performance Declaration
RTD1007-2

Version : 1.0



Expansion joints
Dehnfugen



Structural bearings
Bauwerkslager



Seismic devices
Erdbebenschutz



Vibration damping
Schwingungsdämpfung



Structural monitoring
Bauwerksüberwachung

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1 GENERAL

A	Product name	: TENSA®FINGER RSFD325
B	Manufacturer	: mageba SA Solistrasse 68 8180 Bülach Switzerland
C	Concept Number RTD1007-1	: 2.1a2
D	System Description	: Steel cantilever finger joints joint with triangular shaped fingers and a steel substructure anchored in a concrete substructure by loop anchors and a subsurface flexible water drainage system. According to drawing TENSA®FINGER RSFD325, drawing nr.: PD_TENSA®FINGER RSFD325_RTD1007-2_1-2_1.2
E	Identification	: Identification plate mechanically connected to the expansion joint in a non-driven part of the joint. <div data-bbox="751 969 1490 1131" style="border: 1px solid black; padding: 5px;">  <div style="display: flex; justify-content: space-between;"> <div style="font-size: small;"> <p>Switzerland www.mageba.ch</p> <p>Certified management system acc. to ISO 9001 Reg. no. D-2M-16083-01-00</p> <p>DVS ZERT</p> </div> <div style="text-align: center;">  <p>GSV Geotechnische Versuchsanstalt</p> </div> <div style="font-size: small;"> <p>Typ / Type <input style="width: 100px;" type="text"/></p> <p>Zeichnungsnummer / Drawing-Number <input style="width: 100px;" type="text"/></p> <p>Baujahr / Year of production <input style="width: 100px;" type="text"/></p> <p>Totale Bewegung / Total movement <input style="width: 100px;" type="text"/></p> </div> </div> </div>



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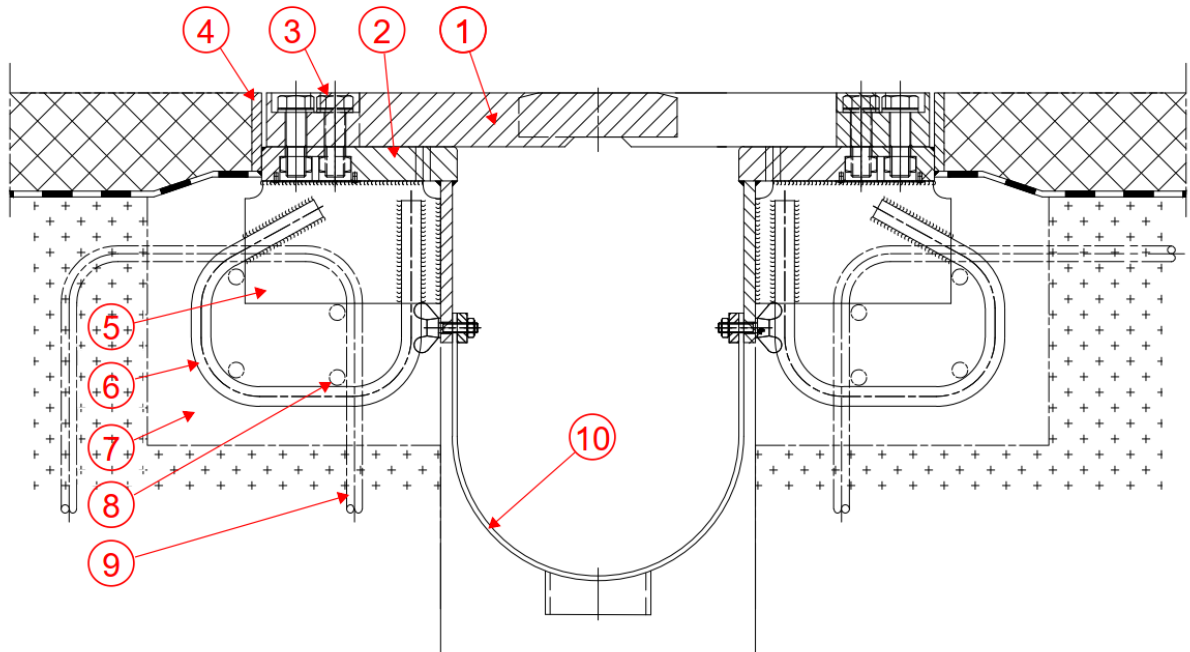


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F System Components



Pos.	Description	Size	Material
1	Cantilever finger plate	420x992x55mm	S355 J2+N or AR
2	Substructure	200x35mm + 165x12mm	S355 J2+N or AR
3	Bolt/nut assembly	M20x70	10.9/10 HV HDG [EN14399-4]
4	Back strip	80x10mm	S235 J2+N or AR
5	Anchor plate	200x125x15mm	S235 J2+N or AR
6	Anchor loop	Ø20	S235 J2+N or AR
7	Concrete	-	C30/37
8	Coupling reinforcement	Ø16	B500B
9	Structures reinforcement	Ø16	B500B
10	Drainage channel	5mm	EPDM



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2 INTENDED USE

A	Traffic category	:	Traffic category 1 acc. to RTD1007-2:2014 table NB.5-4.5 ($N_{obs,a,ai} = 2,0 \cdot 10^6$)
B	Design life system	:	40 years
C	Design life components	:	<ul style="list-style-type: none"> - Anchorage (embedded in structure) : 100 years (RTD1001:2017) - Structural steel elements : 40 years - Plastic and rubber components : 15 years
D	Maintenance	:	<ul style="list-style-type: none"> - Every year, cleaning of the drainage channel, preferably after the winter period - Every 15 years*, replacement of drainage channel. Preloaded bolt sets to be replaced when loosened. <p><i>*advised intervals</i></p>
E	Displacement capacity	:	<p>Ux = 325mm (390mm ULS opening) Uy = ± 7.8mm @ 0mm gap Uz = ± 5mm (10mm for bearing replacement)</p> <p><i>Values are standard values at full closure of the expansion joint. Transverse capacity will increase with opening of the expansion joint.</i></p>
F	Operating range	:	<p>Installation angle : 60° to 120° Longitudinal slope : ≤ 4% Temperature range: -40°C to +100°C</p>



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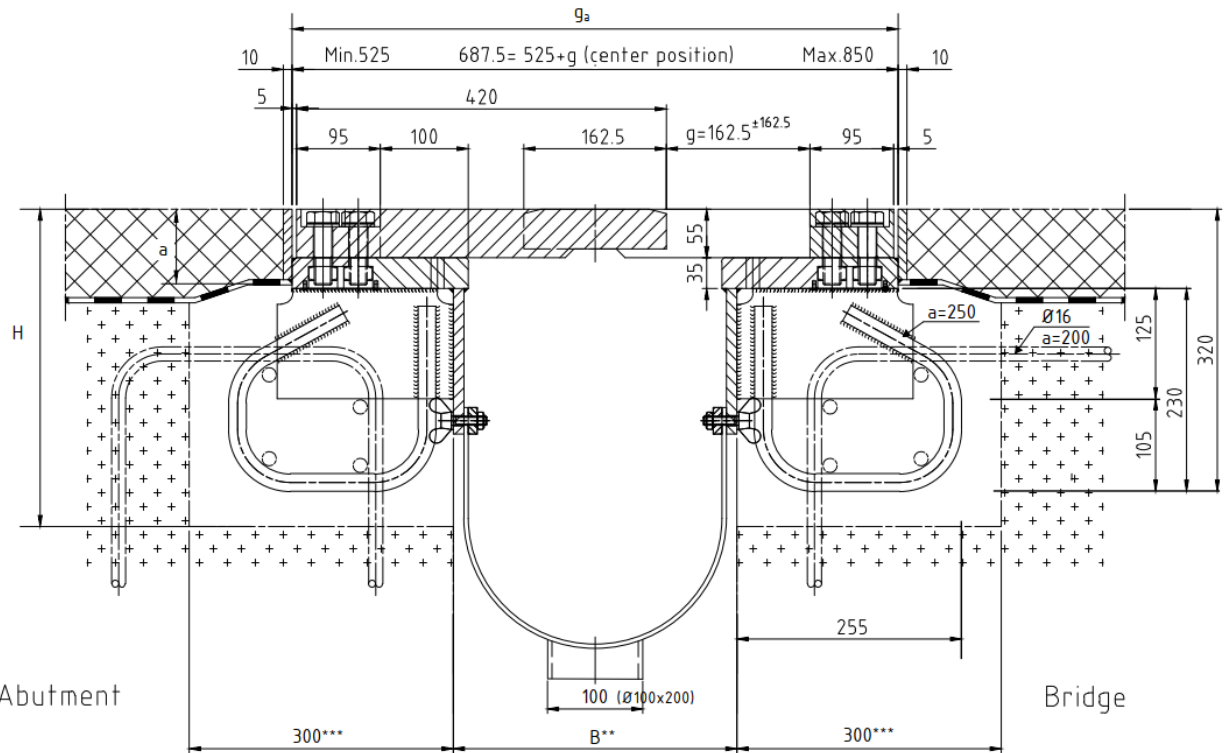


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G Structure geometry



B Structural gap

H Recess height

g Closing capacity (joint gap)

g_a Pre-setting value (distance back finger plates)

a Maximum asphalt height

	Fully closed	Middle position	Fully open
g (closing capacity)	0 mm	162.5 mm	325 mm
g _a (pre-setting value)	525 mm	687.5 mm	850 mm
B (structural gap)	159 mm	321.5 mm	484 mm
H (construction height)	360 mm	360 mm	350 mm

* Recommended values shown. Smaller recesses are possible depending on maximum aggregate size.

** Advised structural gap width. Tolerance +20mm / -60mm, other values to be assessed by project engineer.

*** Advised recess width, depending on aggregate size. (in conjunction with B and g_a)

Project specific alternatives for loop anchors are possible to allow less construction height but will require a larger construction width.



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3 MECHANICAL RESISTANCE AND STABILITY

A	Mechanical resistance	:	Characteristic SLS, ULS and ALS loads			
			Vertical load	Lane 1	$Q_{1k} = 300\text{kN}$	RTD 1007-2:2014, Table B1.1
				Lane 2	$Q_{2k} = 200\text{kN}$	RTD 1007-2:2014, Table B1.1
				Lane 3	$Q_{3k} = 100\text{kN}$	RTD 1007-2:2014, Table B1.1
			Horizontal (breaking/acceleration) load:		$Q_{lk} = 120\text{kN}$	RTD 1007-2:2014, B1.2.2.1 [2]
			Horizontal (centrifugal) load:	Lane 1	$Q_{tk1} = 60\text{kN}$	RTD 1007-2:2014, B1.2.2.2 [4]
				Lane 2	$Q_{tk2} = 40\text{kN}$	RTD 1007-2:2014, B1.2.2.2 [4]
				Lane 3	$Q_{tk3} = 20\text{kN}$	RTD 1007-2:2014, B1.2.2.2 [4]
			Vertical impact load:		$Q_{vks} = 100\text{kN}$	RTD 1007-2:2014, B1.2.2.3
			Horizontal impact load:		$Q_{lks} = 15\text{kN}$	RTD 1007-2:2014, B1.2.2.3 [5]
			Vertical wheel load footway:		$Q_{fwk} = 35\text{kN}$	RTD 1007-2:2014, B1.2.1.2
			Accidental vertical wheel load on curb:		$A_{dv} = 0\text{kN}$	RTD 1007-2:2014, B1.2.2.4.2
			Accidental horizontal wheel load on curb:		$A_{dH} = 10\text{kN}$	RTD 1007-2:2014, B1.2.2.4.2
B	Resistance to fatigue	:	Infinite Working Life Model: FLM1 _{EJ}			
C	Partial factors	:	$Y_{M0} =$	1.00	NEN-EN 1993-2+C1/NB, Section 6.1 [Table NB.2]	
			$Y_{M1} =$	1.00	NEN-EN 1993-2+C1/NB, Section 6.1 [Table NB.2]	
			Y_{M2} [bolted joints]=	1.35	RTD 1007-2:2014, clause 5.2.3.2 [Table 5.1]	
			Y_{M2} [other components]=	1.00	RTD 1007-2:2014, clause 5.2.3.2 [Table 5.1]	
			$Y_{M3} =$	1.25	NEN-EN 1993-2+C1/NB, Section 6.1 [Table NB.2]	
			$Y_{M3,ser} =$	1.10	NEN-EN 1993-2+C1/NB, Section 6.1 [Table NB.2]	
			$Y_C =$	1.50	NEN 1992-1-1, Section 2.4.2.4	
			$\alpha_{cc} =$	1.00	NEN 1992-1-1, Section 3.1.6	
			$k_1 =$	0.85	NEN 1992-1-1, Section 6.8.2	
			$\alpha_{Qi} =$	1.00	NEN 1992-2, Section 4.3.2	
			Y_{Mf} (bolted-joints) =	1.35	RTD 1007-2:2014, clause 5.2.3.2 [Table 5.2]	
			Y_{Mf} (other-component) =	1.15	RTD 1007-2:2014, clause 5.2.3.2 [Table 5.2]	
			D	Cleanability	:	Cleanable
E	Water tightness	:	Watertight	EAD 120111-00-0107 clause 2.2.6 Assessment according to: EAD120109-00-0107 Annex D, Clause D4		



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4 SAFETY IN USE

A	Allowable surface gaps and voids	:	EAD 120111-00-0107 clause 2.2.9 a. vehicles: no restrictions b. cyclists: restrictions, special measures to be added project specific c. pedestrians: no restrictions, special measures to be added project specific is advised.
B	Level differences in the running surface	:	Without any imposed horizontal deformations and in unloaded condition the difference in the levels of the running surface of the joints from the ideal line between the two adjacent pavements in the traffic direction shall not be greater than 5mm. Steps shall not be greater than 3mm (without considering surface texture and discontinuities due to gaps and voids).
C	Skid resistance	:	+ acc. to RTD1007-1
D	Drainage capacity	:	EAD 120111-00-0107 clause 2.2.11 $Q_0 = 29\text{l/s}$ for standard size outlet 100x200 (equiv. $D=\varnothing 139\text{mm}$) $k_0=1.0$ $h=500\text{mm}$

5 PROTECTION AGAINST NOISE

A	Noise emission	:	Emission levels above the expansion joint acc. to RTD1007-1	
			Speed vehicles	Noise emission [GLW]
			80 km/h	82.0 dB(A)
			90 km/h	83.1 dB(A)
			100 km/h	84.1 dB(A)
			110 km/h	85.0 dB(A)
			120 km/h	85.8 dB(A)
			130 km/h	86.6 dB(A)
			The use of a drainage channel makes additional noise reducing measures obsolete.	

6 ASPECTS OF DURABILITY

A	Corrosivity category	:	EN ISO 9223 corrosivity category C5
B	Durability	:	EN ISO 14713-1 Durability "VH" Very High
C	Corrosion protection system	:	Hot Dip Galvanized acc. to EN ISO 1461 with increased zinc layer thickness of 140µm acc EN ISO 14713-1