

New WELD-Databases in FEMFAT 4.6

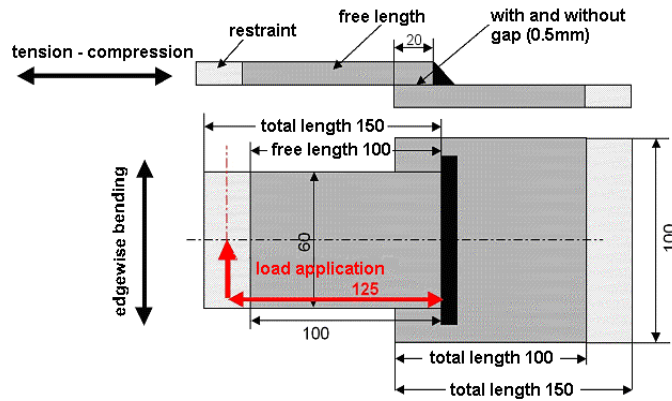


ENGINEERING CENTER STEYR
GmbH & Co KG

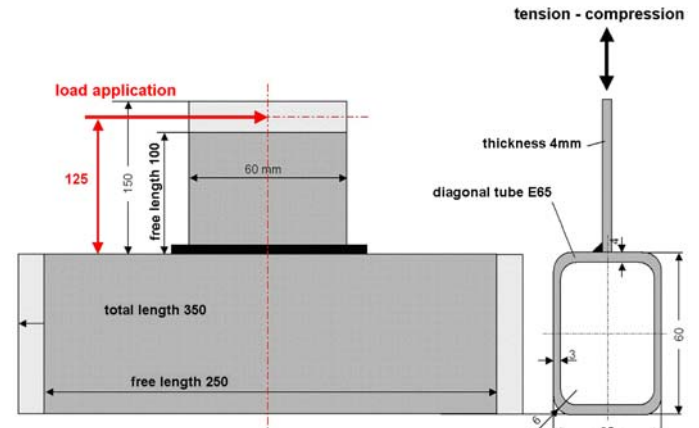
WELD databases: overview

- **extended aluminum WELD-database**
- **database for laser welds**
- **modified standard WELD database according FKM**
- **WELD database for EUROCODE 3**
- **WELD database for British Standard 7608**

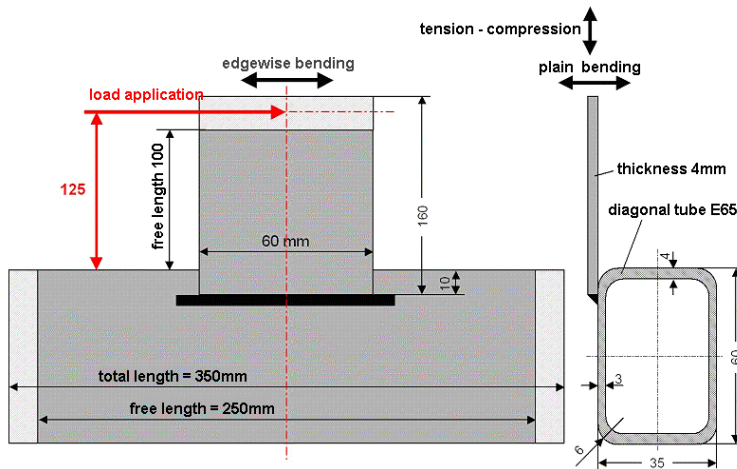
extended aluminum database : 6 new joints



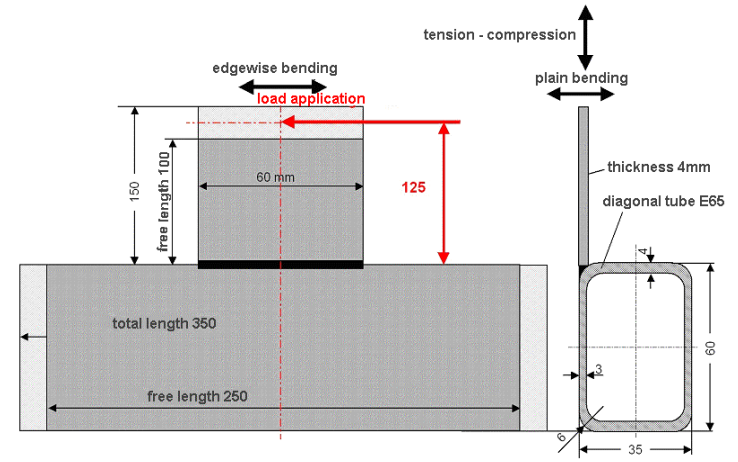
Overlap joint, fillet weld: MAT 451-456



T-joint at hollow section, fillet weld: MAT 341-346

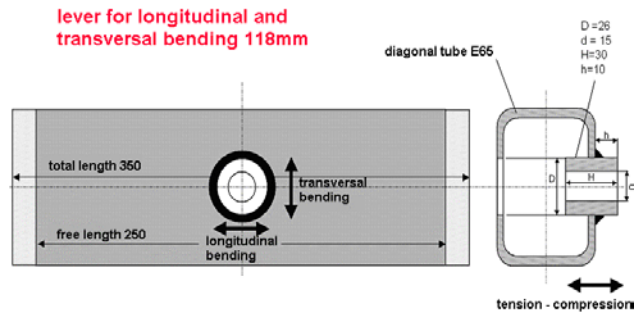


Overlap joint at hollow section, fillet weld: MAT 335-340

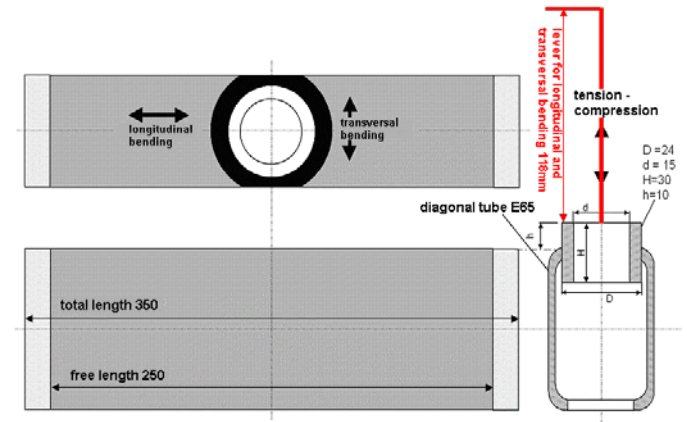
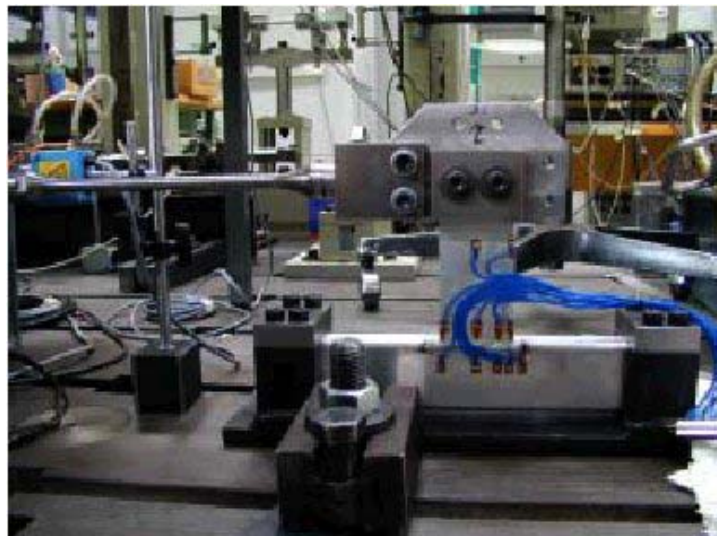


T-joint at radius of hollow section, fillet weld: MAT 331-334

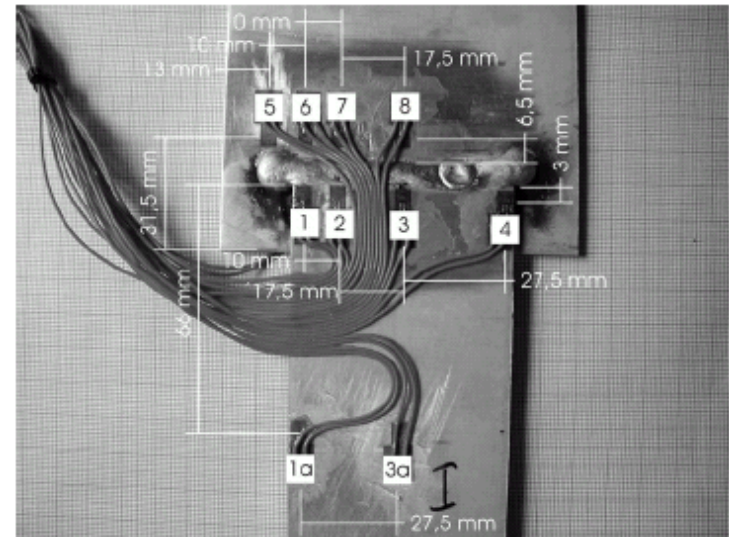
extended aluminum database : 6 new joints (continuation)



T-joint with welded nut, fillet weld (no weld ends): MAT 347-348

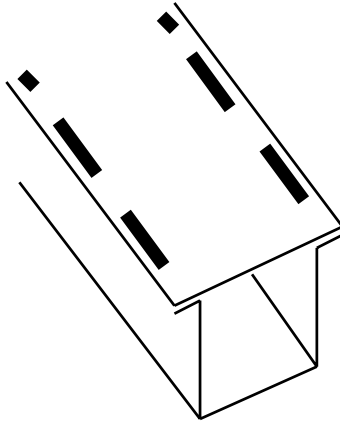


T-joint with welded nut, fillet weld (with weld ends): MAT 349-350



database for laser welds: 4 new joints

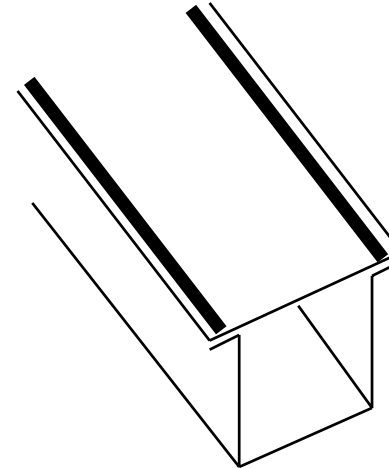
Interrupted weld



non galvanized: MAT 331 - 338

galvanized: MAT 341 - 348

Continuous weld

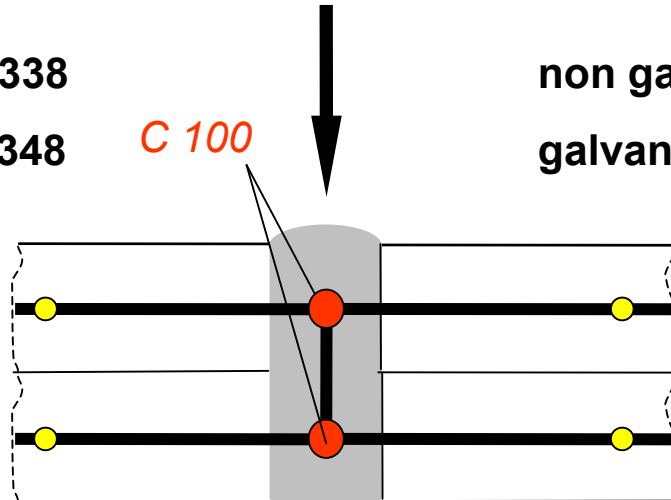


non galvanized: MAT 351 - 358

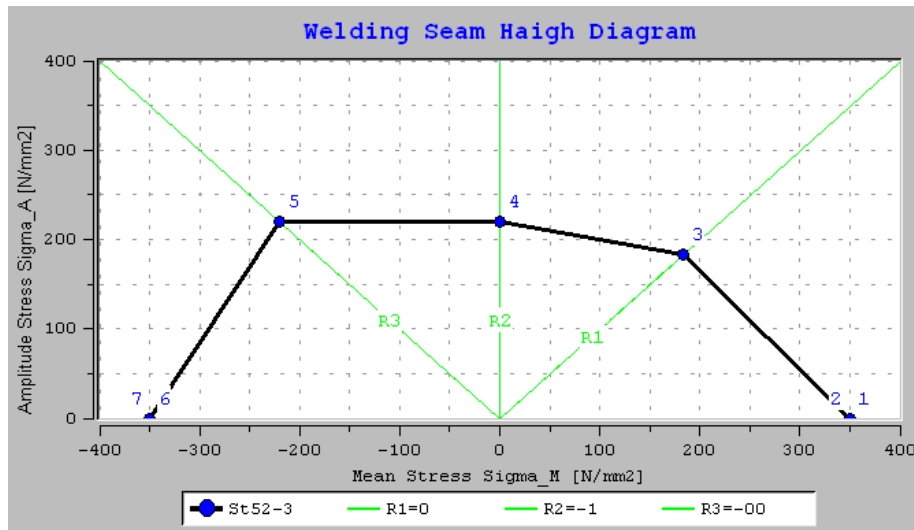
galvanized: MAT 361 - 368

LASERBEAM
DIRECTION

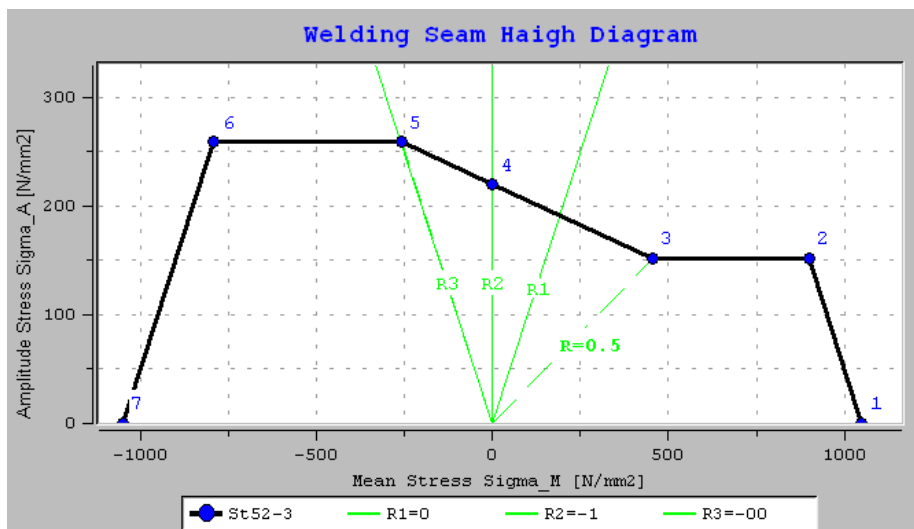
C 100



modified standard database: haigh-diagram according FKM



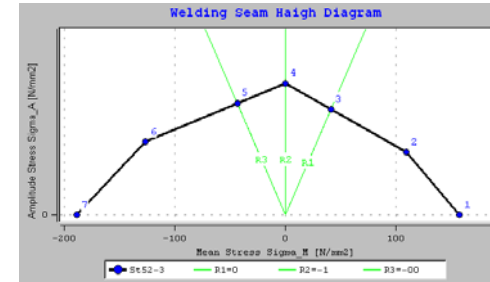
Haig-diagram according to DIN 15018
(up to FEMFAT 4.5 standard)



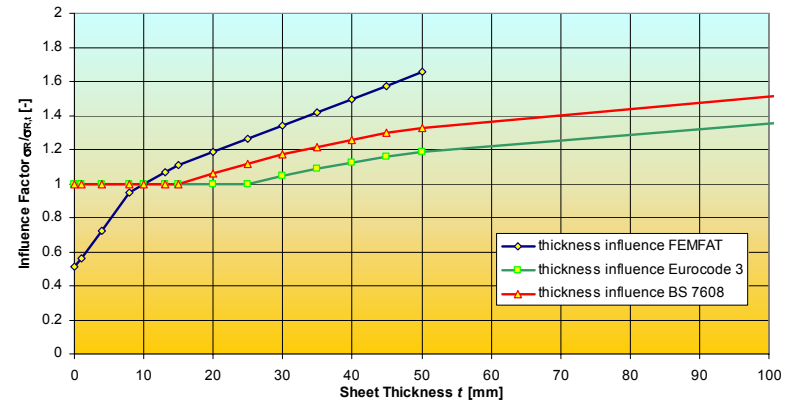
Haig-diagram according to FKM guideline
(new standard for FEMFAT 4.6)

database for EUROCODE 3 & BS 7608:

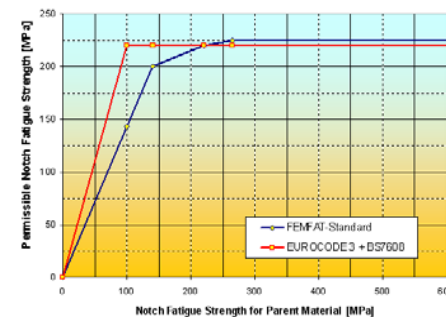
- Haigh diagram according to DS 952
- thickness influence for $t > 16$ (25)
- permissible notch fatigue strength nearly constant



Sheet Thickness Influence (0-100mm)



Permissible Notch Fatigue Strength for Welds

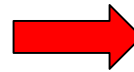


database for EUROCODE 3 & BS 7608:

- notch factors and S/N-curves for each detail category

Table 4. Classification of details: continuous welded attachments essentially parallel to the direction of applied stress

Product form	Location of potential crack initiation	Dimensional requirements	Manufacturing requirements	Special inspection requirements	Design stress area	Type number	Class	Notes	Sketch
Rolled steel structural plates, sections and built-up members	At a long-welded attachment (in the direction of S_r), away from the weld end	Butt weld with full penetration and no backing strip	Weld reinforcement dressed flush	Proved free of all flaws which are likely to degrade the joint below its stated classification (see 2.4.3)	Minimum transverse cross section of member at location of potential crack initiation	4.1	B	Finish machining should be in the direction of S_r . The significance of flaws should be determined with the aid of specialist advice and/or by the use of a fracture mechanics analysis. The non-destructive testing (NDT) technique should be selected with a view to ensuring the detection of such significant flaws. This type is only recommended for use in exceptional circumstances.	
			Automatic weld with no stop/start			4.2	C	Accidental stop/start are not uncommon in automatic processes. Repair to the standard of a C classification should be the subject of specialist advice and inspection and as a result, the use of this type is not recommended.	
			Welds with stop/start			4.3	D	For situation at the ends of flange cover plates see joint type 6.4. Backing strips, if used, need to be continuous and either not attached or attached by continuous fillet welds. If the backing strip is attached by discontinuous fillet welds see type 4.6.	
	At an intermediate gap in a longitudinal weld	Intermittent fillet weld with $g/h \leq 2.5$				4.4	B	The limiting gap ratio g/h applies even though adjacent welds may be on opposite sides of a narrow attachment (as in the case of a longitudinal stiffener with staggered fillet welds). Large gaps between intermittent fillet welds are not recommended as they increase the risk of corrosion and, in the case of compression members, may cause local buckling. If intermediate gaps longer than 2.0h are required the class should be reduced to F.	



FEMFAT Material No.	Detail Category		
	Eurocode 3	BS 7608	
140	160	--	
142	125	C	
143	112	D	
144	100	--	
145	90	T	
146	80	E	
147	71	F	
148	63	F2	
149	56	--	
150	50	G	
151	45	--	
152	40	W	
153	36	--	
154	90	tubular joints	--
155	71		--
156	56		--
157	50		--
158	45		--
159	36		--
160	50*	modified S/N	--
161	45*		--
162	36*		--
163	--		S