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Institute of Building Materials, Concrete Construction and Fire Safety | Braunschweig Civil Engineering Materials Testing Institute

Expert Opinion

– Translation –

Document number:	(2102/593/20) – CM dated 09/06/2020
Customer:	Adolf Würth GmbH & Co. KG Reinhold-Würth-Straße 12-17 74653 Künzelsau
Order date:	07/01/2020
Order ref.:	Mr Sailer
Order received:	-
Subject:	Assessment of loaded Würth Varifix® mounting rail systems combined with threaded rods fastened in solid structural elements, with regard to the loadbearing capacity and the deformation under exposure to fire along the standard temperature-time curve (ETK) in accordance with DIN EN 1363-1
Basis for assessment:	See Section 1

This expert opinion comprises 10 pages including cover sheet and 21 annexes.

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Notified body (0761-CPR) -
Approved as a civil engineering testing, inspection and certifying body as well as notified as a civil engineering testing and certifying body.

1 General

With letter of 07/01/2020, Adolf Würth GmbH & Co. KG, Künzelsau, commissioned the preparation of an expert opinion for the assessment of loaded Würth Varifix® mounting rail systems combined with threaded rods fastened in solid structural elements, with regard to the loadbearing capacity and the deformation, along the standard temperature-time curve (ETK) in accordance with DIN EN 1363-1.

The documents serving as basis for the expert opinion on the constructions to be assessed are listed below:

[1] DIN EN 1363-1 : 2012-10, Fire resistance tests - Part 1: General Requirements,

[2] Specimen guideline on fire protection requirements pertaining to conduits (Specimen Conduit Guideline (German designation: MLAR)), edition of 10/02/2015,

[3] Test Report No. (3612/5526)-CM dated 25/08/2009, issued for Adolf Würth GmbH & Co. KG, Künzelsau, and

[4] Würth Varifix® mounting rail systems, technical data sheets from Adolf Würth GmbH & Co. KG, Künzelsau.

The assessment for Varifix® mounting rail systems combined with threaded rods fastened in solid structural elements was conducted on the basis of the fire tests carried out. Currently, the existing technical directives and specifications, which regulate products for installation of conduits in cases of fire, do not provide a complete design concept for the mounting systems described below. According to Adolf Würth GmbH & Co. KG, Künzelsau, there is currently no complete building authority certificate (e.g., ETA) for the Würth Varifix® mounting rail systems combined with threaded rods that lays down the regulations to be met by the execution described here in the event of fire.

2 Description of the constructions

Würth Varifix® mounting rail systems are mounting systems made from galvanized steel that are used to fix conduits. The loads applied are guided into the anchoring base via the mounting rail and the connected threaded rods in conjunction with suitable fasteners. The fastening in the anchoring base must be executed in accordance with Section 4.4.

Annexes 1 to 4 provide the details of the single constructions. In addition, the individual load cases are distinguished for the assessment (single load, multiple load, uniformly distributed load).

The mounting rails must be suspended with threaded rods of at least M10 and M12 size (strength class ≥ 4.8).

Where multiple-span systems are installed (continuous beams), the intermediate supports in the form of threaded rod hangers must be of at least M12 size. In addition, the maximum admissible steel stresses for the threaded rods must be observed at the intermediate supports. The maximum admissible steel stress is decisive, which results – referred to the calculated core cross section of the M10 threaded rods (As = 58 mm²) / M12 threaded rods (As = 84.3 mm²) – from the load on the lateral suspension.

The structural design of the nodal points between the rails and threaded rods is to be implemented by Varifix® retaining clips 41 (∅ 11 and ∅ 13) combined with related nuts (strength class 8). The distance for the lateral rail projection, starting from the central axis of the vertical fastening (threaded rod, threaded bolt), is a ≥ 50 mm. Fastening is done using the existing clearance hole of the mounting rail. The maximum projection of the nuts and threaded rods below the rails shall not be larger than ü = 30 mm. In case of larger projections ($ü_{actual}$ > 30 mm) of the threaded rods, the amount of $ü_{actual}$ – 30 mm is to be added to the minimum distance (min. a) determined.

For elevation, the installations are fixed from above in the Würth Varifix® mounting rail systems using Varifix® ≥ M10 hammer head fasteners and, on both sides, Varifix® retaining clips 41 (∅ 11 and ∅ 13) and nuts. The suspension of installations is also possible. For this purpose, the threaded rods are laid through the clearance hole and fixing is done on both sides using Varifix® retaining clips 41 (∅ 11 and ∅ 13) and nuts.

The table below and the annexes summarize the structural design data (manufacturer data) of Würth Varifix® mounting rail systems. Further information can be taken from the technical data sheets (e.g. assembly instruction) from Adolf Würth GmbH & Co. KG, Künzelsau.

Table 1: Product range of Würth Varifix® mounting rail systems

Designation	Installation[1)]	Maximum span	Clamp fitting[1)]
	Type of installation / suspension / connection to the rail	[mm]	Combined with nuts and threaded bolts
Varifix® 41x41x2.5 "suspended mounting" (rail back at the bottom)	Ceiling installation, fixed in the solid underground using anchors / threaded rods ≥ M10 (4.8), nuts and Varifix® retaining clips 41 ∅ 11 / ∅ 13	850	Varifix® hammer head fastener ≥ M10 with Varifix® retaining clip 41 ∅ 11 / ∅ 13; and Varifix® quick fastener Systemfix ≥ M10 with Varifix® retaining clip 41 ∅ 11 / ∅ 13; Varifix® retaining clip 41 ∅ 11 / ∅ 13 with nuts, on both sides
		1250	Only for uniformly distributed loads
Varifix® bracket 36/36 (rail back at the bottom)	Ceiling/wall installation, fixed in solid underground with anchors/threaded rods ≥ M10 (4.8), nuts and Varifix® retaining clips 41 ∅ 11 / ∅ 13	570	Varifix® hammer head fastener ≥ M10 with Varifix® retaining clips 41 ∅ 11 / ∅ 13; and Varifix® quick fastener Systemfix ≥ M10 with Varifix® retaining clips 41 ∅ 11 /∅ 13; and Varifix® retaining clips 41 ∅ 11 /∅ 13 with nuts, on both sides
Varifix® bracket heavy-duty (rail back at the bottom)		870	
Varifix® bracket 41/41 (rail back at the bottom)	Ceiling/wall installation, fixed in solid underground with anchors/threaded rods ≥ M10 (4.8), nuts and Varifix® retaining clips 41 ∅ 11 / ∅ 13	745	
Varifix® bracket heavy-duty 41/41 (rail back at the bottom)		890	

1) The execution depends on the individual fixing system, the maximum load and the arrangement of the conduit.

3 Assessment of the construction

This fire-safety assessment was made for Würth Varifix® mounting rail systems combined with threaded rods fastened in solid structural elements with regard to the loadbearing capacity and the deformation under exposure to fire along the standard temperature-time curve (ETK) in accordance with DIN EN 1363-1.

This fire-safety assessment is restricted to mainly static (non-moving) loads combined with solid structural elements that must be classified in at least the same fire resistance class as the fixing systems.

The fire-safety-related design with regard to buckling of the mounted installations (elevation, threaded rod) due to the fire load is not the subject of this assessment.

When connecting system components to solid walls it has to be ensured that these are able to absorb the tensile and compressive forces occurring in the event of fire.

For the systems assessed, single loads are taken up centrally and multiple loads are symmetrically

distributed and taken up uniformly into the mounting rail system. Where this is not feasible, the loads must be adapted so that the maximum permissible steel stresses in the threaded rods are not exceeded. The maximum permissible steel stresses for the individual load case are calculated from the normal forces acting on the threaded rods of the suspension system (see also $N_{fire(t)}$ according to Section 3), relative to the calculated core cross section of the M10 threaded rods (A_s = 58 mm²).

The stated loads for single loads or multiple loads (arranged adjacently) are the maximum loads per fastening point on the rail. This means that the stated load, with simultaneous elevation and suspension at one point on the rail, must not be exceeded by the total load.

In case of the system assessed, uniformly distributed loads (with a maximum distance to the suspension of a ≤ 50 mm) are placed onto the mounting rail system. The loads must be designed in such a way that the maximum permissible loads are observed. The individual maximum loads for the systems with M10 / M12 suspensions are indicated in the annexes.

Requirements to be fulfilled by fastenings and mounting systems (e.g., pipe clamps, mounting rails, pendulum suspensions, ...) with regard to the loadbearing capacity $N_{fire(t)}$ and the deformation $f_{(t)}$ are imposed in conjunction with conduits (see, for example, Specimen Guideline on fire protection requirements pertaining to conduits (Specimen Conduit Guideline [German designation: MLAR], edition of 10/02/2015, Sections 2.1 and 3.5). According to MLAR, the fastening is part of the conduit system; special requirements may result in conjunction with ceilings (MLAR, Section 3.5). In conjunction with penetration seals, too, requirements to be fulfilled by the fastening of conduits may result from the building authority certificate.

The individually required minimum distance (min. a) can be determined on the basis of the deformations stated in the annexes. The deformations stated in the following only refer to the mounting rails combined with threaded rods under exposure to fire. Additional deformations due to the conduit systems (e.g., the deformation of a pipe) must be taken into account separately.

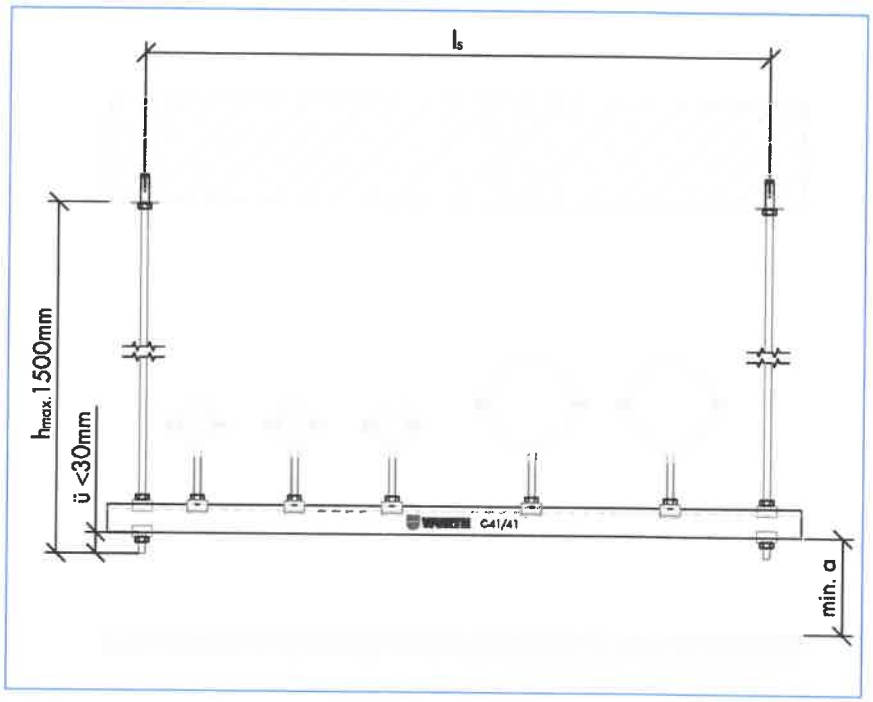


Figure 1: Example of a mounting rail in the ceiling plenum of suspended ceiling constructions in accordance with the Specimen Conduit Guideline ([German designation: MLAR]), edition of 10/02/2015, Section 3.5.3.

Minimum distance min. a ⇒ minimum distance between topside of a ceiling and underside of the mounting rail.

For combined installations consisting of mounting rails and pipe clamps suspended downwards, the necessary minimum distance min. a of the individual items installed must be added to a **total minimum distance** min. a_{total}.

$\min. a_{total} = \min. a_{rail} + \min. a_{clamp}$

$\min. a_{total}$: total distance

$\min. a_{rail}$: distance in accordance with the following sections

$\min. a_{clamp}$: distance in accordance with the corresponding test report or expert opinion

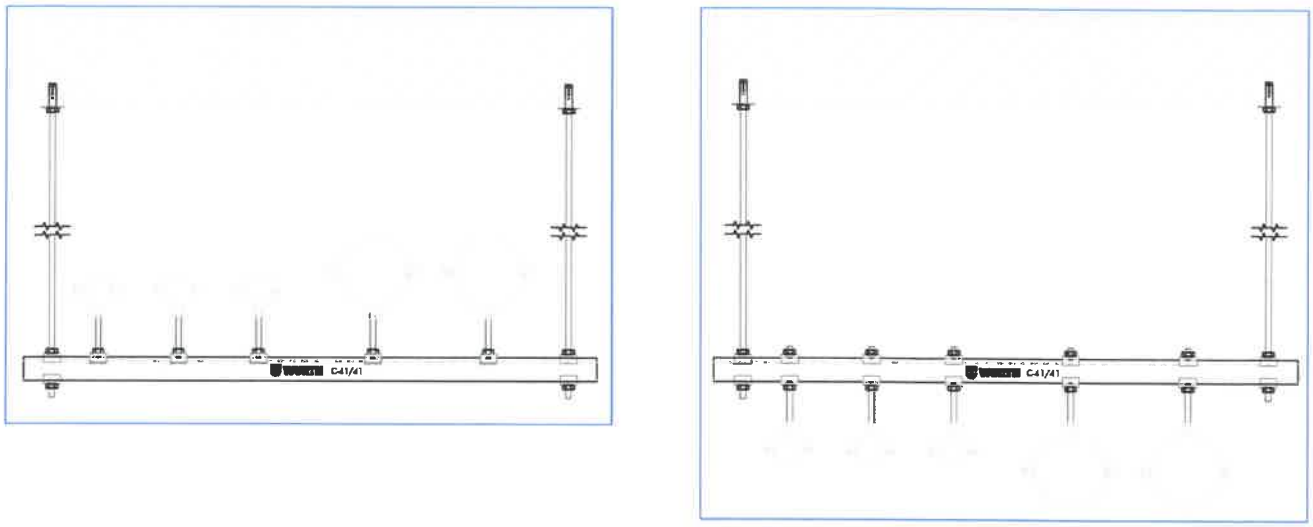


Figure 2: Example of a mounting rail combined with a pipe clamp installation

The following assessment for the Würth Varifix® mounting rail systems excludes the use for constructions, which are required to fulfil – as a total system (e.g. for cable systems designed to maintain circuit integrity and cable trunking/ducts in accordance with DIN 4102-12: 1998-11) – the requirements of a fire resistance class or for functional integrity. For these types of applications, further assessments and tests of the system as a whole are necessary.

Independent of the fire-safety-related assessment, the suitability of Würth Varifix® mounting rail systems combined with threaded rods, fastenings and the underground must also be proved for the cold as-installed condition. If for the normal purpose of use, smaller loads apply according to the Technical Data Sheets [4] from Adolf Würth GmbH & Co. KG, Künzelsau, these shall be binding.

3.1 Assessment of Würth Varifix® mounting rail systems combined with threaded rods

The proposals for assessment for Würth Varifix® mounting rail systems under tensile load and exposure to fire on one side in accordance with DIN EN 1363-1 can be taken from the annexes.

Steel failure

With regard to the loadbearing behaviour under exposure to fire, steel failure and underground failure can be distinguished.

For the Würth Varifix® mounting rail systems assessed here, the failure of the Würth Varifix® mounting rail systems combined with threaded rods (steel failure) was decisive. The proof of the fastening system to the underground has to be furnished separately.

The following sections contain proposals for assessment for Würth Varifix® mounting rail systems with regard to the loading of the mounting rails combined with threaded rods as a function of the fire resistance time.

$N_{fire(t)}$ ⇒ loadbearing capacity under exposure to fire as a function of the time

Deformation

From the fire-safety-related point of view for Würth Varifix® mounting rail systems, and provided the respective minimum distance min. a (see Fig. 1) is observed and the deformation $f_{max(t)}$ of the mounting rails is taken into account, an impairment of parts arranged on the underside (e.g., a suspended ceiling) by the mounting rails combined with threaded rods can be excluded.

The following sections contain proposals for assessment for Würth Varifix® mounting rail systems (load cases: single load and uniformly distributed load) with regard to the deformation of the mounting rail combined with threaded rods as a function of the fire resistance time and the suspension height.

$f_{(t)}$ ⇒ deformations as a function of the load, the time and the suspension height

3.1.1 Assessment with regard to maximal loading and maximal deformation of the Würth Varifix® mounting rail system as a function of the fire resistance

Annexes 14 to 21 contain proposals for assessment with regard to the maximal loads and maximal deformations (for single loads and uniformly distributed loads) as a function of the fire resistance time for Würth Varifix® mounting rail systems combined with threaded rods under exposure to fire in accordance with DIN EN 1363-1. The deformation corresponds to the sum of the deflection and the change in length of the mounting rail combined with the threaded rods that occur during exposure to fire. The values for the deformations are indicated as a function of the suspension height.

max. $N_{fire(t)}$ ⇒ design value of maximal loadbearing capacity as a function of the fire resistance time

$f_{max(t)}$ ⇒ maximal deformations as a function of the load (single load / uniformly distributed load), the time and the suspension height

The assessment of the individual systems can be taken from the annexes:

Annexes 14 to 15: Assessment for "Suspended assembly, single load and uniformly distributed load"

Annexes 16 to 18: Maximum deformation of Würth Varifix® mounting rail systems, "single load"

Annexes 19 to 21: Maximum deformation of Würth Varifix® mounting rail systems, "uniformly distributed load"

4 Special notes

4.1 This Expert Opinion applies only in terms of fire protection. Further requirements may result from the applicable technical building regulations for conduits and the individual state building code and regulations for special constructions, e.g. with regard to building physics, statics, electrical engineering, ventilation engineering, and similar.

4.2 This Expert Opinion is no certificate of suitability for use in a building control procedure. The manufacturer/erector of the construction is obliged to furnish the respective proof.

4.3 The above assessment applies only for Würth Varifix® mounting rail systems, taking the boundary conditions from the technical data sheets of Adolf Würth GmbH & Co. KG, Künzelsau, into account.

4.4 The assessment applies only for Würth Varifix® mounting rail systems fastened in solid structural elements. The underground and the fastening in the underground must have at least the same fire resistance as the individual mounting rails.

4.5 The validity of this Expert Opinion ends on 09/06/2025.

4.6 The validity of this Expert Opinion can be extended upon request and as a function of the state of the art.

This document is the translated version of Expert Opinion No. 2102/593/20 – CM dated 09/06/2020. The legally binding text is the aforementioned German Expert Opinion.

i.A.
ORR Dr.-Ing. Gary Blume
Head of Department

i.A.
Dipl.-Ing. Christian Maertins
Engineer/Official in Charge

Product table: Würth Varifix® mounting rail systems

No.	Description	Remark	Würth article no.	Material / Surface	Strength class
1	Varifix® C profile 41/41/2.5	Mounting rail	0862001006 0862001226 0862001231	Steel, Sendzimir-galvanized surface	S 280 GD + Z150/275
2	Varifix bracket 36/36/2.5	Bracket	0862009019 - 0862009023	Steel, galvanized surface	1.0037
3	Varifix bracket 36/36/2.5 heavy-duty	Bracket	0862009040 - 0862009044	Steel, hot-dip galvanized surface	1.0037
4	Varifix bracket 41/41/2.5	Bracket	0862009059 - 0862009062	Steel, hot-dip galvanized surface	1.0037
5	Varifix bracket 41/41/2.5 heavy-duty	Bracket	0862009030 - 0862009034	Steel, hot-dip galvanized surface	1.0037
6	Threaded rod M10	Suspension / Load connected	0958 10	Steel, DIN 976-1, galvanized	4.8
7	Nuts M10 Nuts M12	Nodal point / Load connected	0317 10 0317 12	Steel, DIN 934, galvanized	8
8	Retaining clip	Retaining clip Ø 11mm Retaining clip Ø 13mm	0862005152 0862005153	Steel, galvanized surface Steel, galvanized surface	- -
9	Hammer head fastener		0862100040 0862100053	Steel, galvanized surface Steel, galvanized surface	4.6
10	Systemfix 36	M10	0862102150 - 0862102153	Steel, galvanized surface	4.6
11	Systemfix 41	M10 / M12	0862104120 - 0862104133	Steel, galvanized surface	4.6

Assembly drawing for Würth Varifix® mounting rail systems

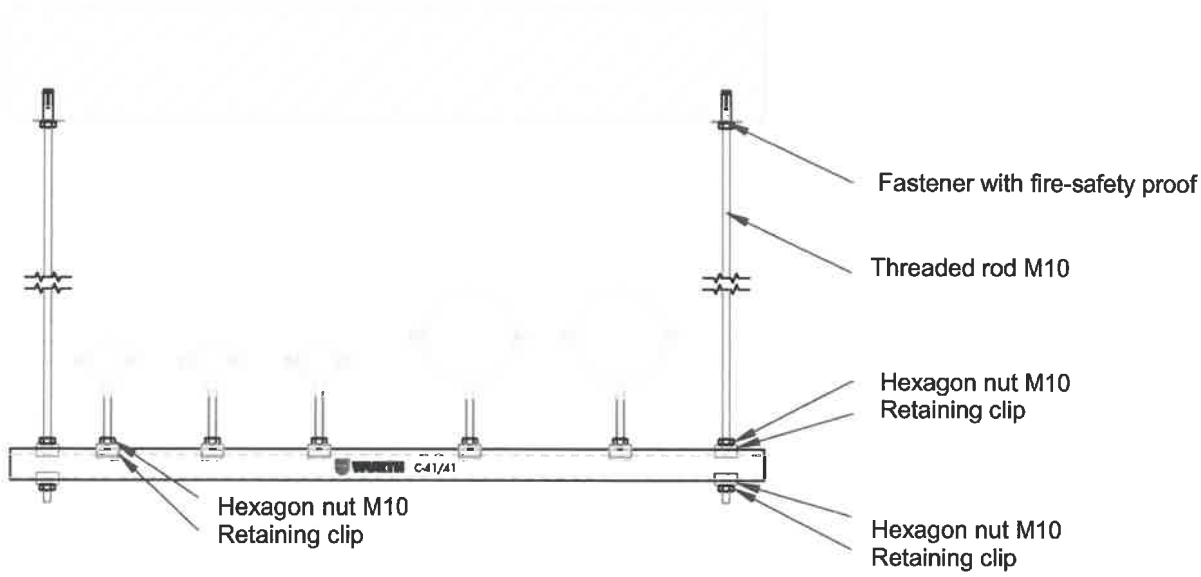


Figure: Execution as suspended assembly

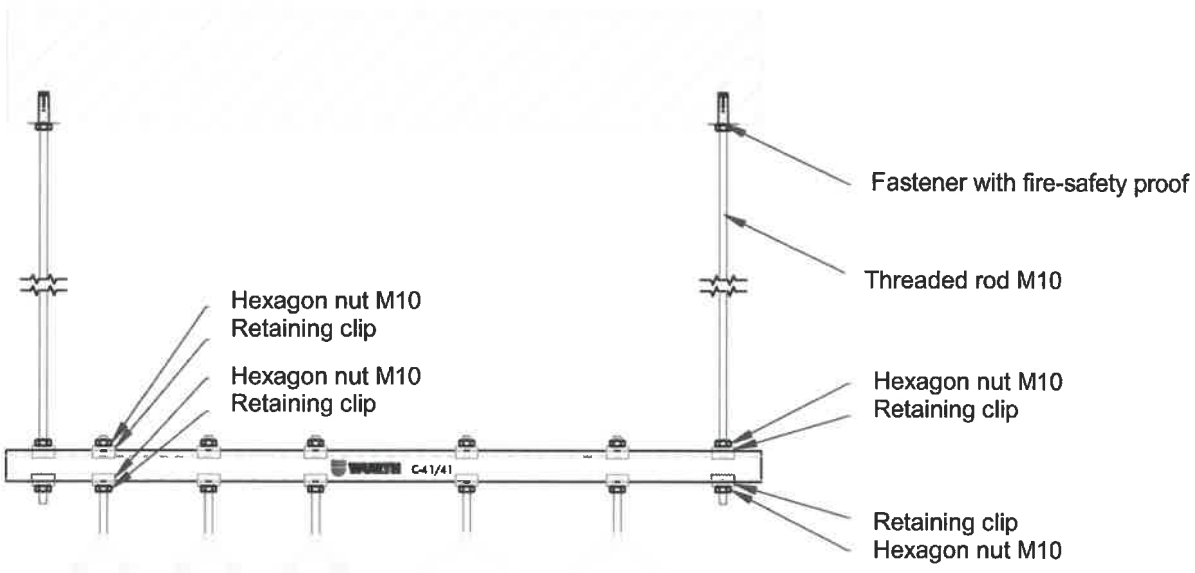


Figure: Execution as suspended assembly with suspended pipe clamps

Assembly drawing for Würth Varifix® mounting rail systems

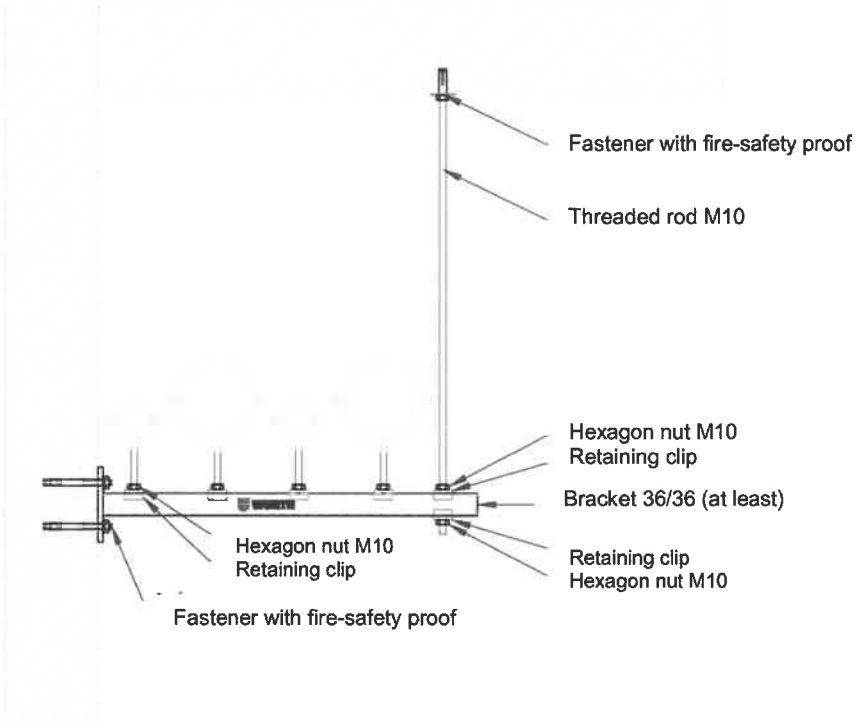


Figure: Execution as suspended assembly combined with brackets

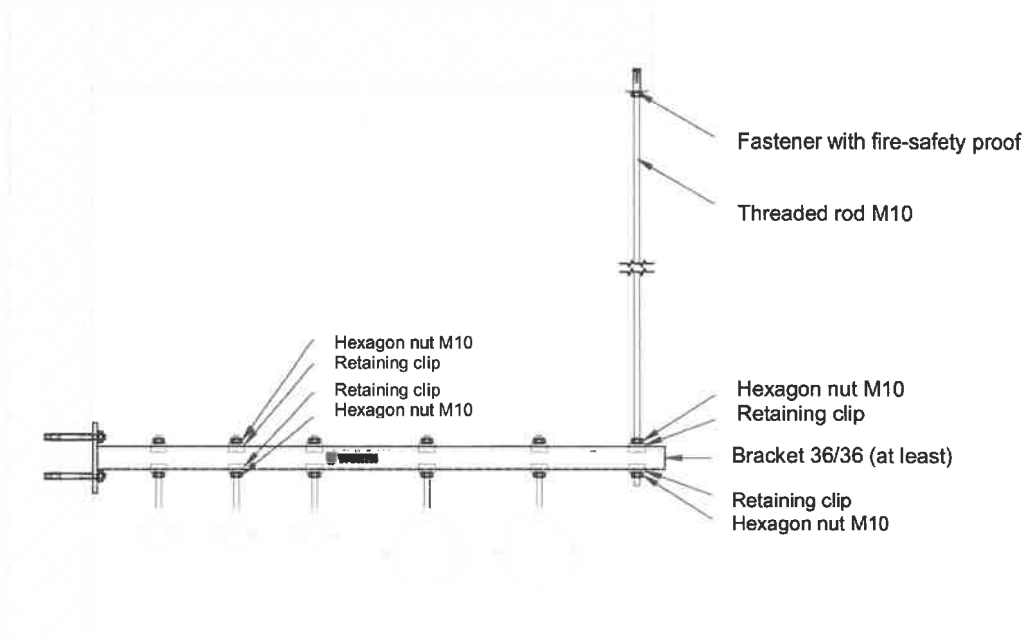


Figure: Execution as suspended assembly combined with brackets

*) The constructions can alternatively be executed with 41/41 brackets.

Assembly drawing for Würth Varifix® mounting rail systems

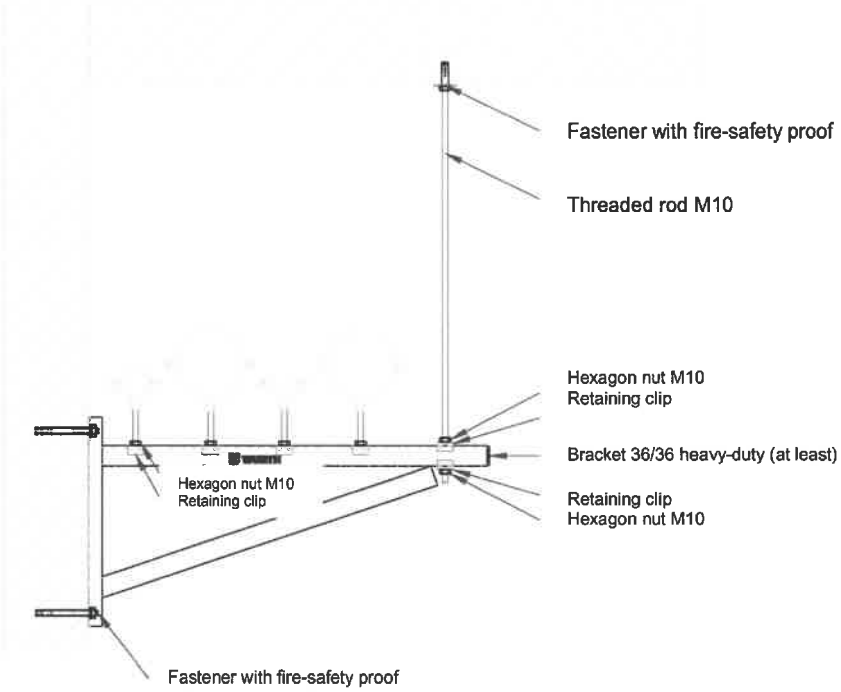


Figure: Execution as suspended assembly combined with brackets
*) The constructions can alternatively be executed with 41/41 heavy-duty brackets.

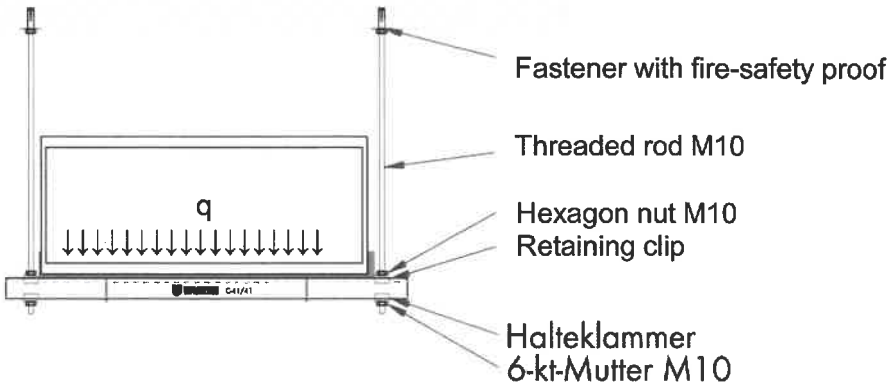
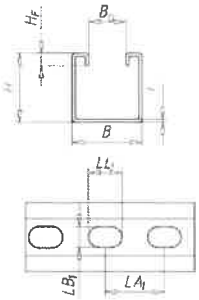


Figure: Execution as suspended assembly ("uniformly distributed load")

Data sheets for Würth Varifix® mounting rail systems*)

*) From the manufacturer

VARIFIX® C-MOUNTING RAIL 41/41



Various mounting options with extensive system components

Visually clean solution with no sharp edges
thanks to the use of cover caps

Easier alignment of the rails
thanks to lateral graduation lines

Noise insulation elements for every rail size

High load-bearing capacity
thanks to favourable profile cross-sections

Width (B)	41 mm
Height (H)	41 mm
Width of mouth ($B_ö$)	22 mm
Elongated hole length (LL_1)	20 mm
Elongated hole width (LB_1)	12.5 mm
Rebate height (H_F)	7.5 mm
Hole distance (LA_1)	35 mm
Surface	Sendzimir galvanised
Material	Steel

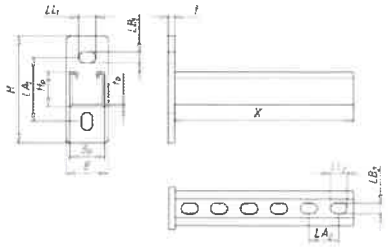
Art. No.	**0862 001 006**	**0862 001 226**	**0862 001 231**
P. Qty.	10	15	24
Material thickness (t)	2.5 mm	2.5 mm	2.5 mm
Rail length (L)	2 m	3 m	6 m
Weight per metre	2450 g	2450 g	2450 g
Fire protection certified	Yes	Yes	Yes

Data sheets for Würth Varifix® mounting rail systems*)

*) From the manufacturer

VARIFIX® BRACKET 41/41

Rail end plug included in scope of delivery



Base plate height (H)	126 mm
Base plate width (B)	50 mm
Base plate thickness (t)	8 mm
Profile height (H_p)	41 mm
Profile width (B_p)	41 mm
Profile thickness (t_p)	2.5 mm
Elongated hole length (LL_1)	20 mm
Elongated hole width (LB_1)	13 mm
Hole distance (LA_1)	75 mm
Elongated hole length 2 (LL_2)	20 mm
Elongated hole width 2 (LB_2)	12.5 mm
Hole distance 2 (LA_2)	35 mm
Surface	Galvanised
Material	Structural steel, 1.0037 previously S235 JR

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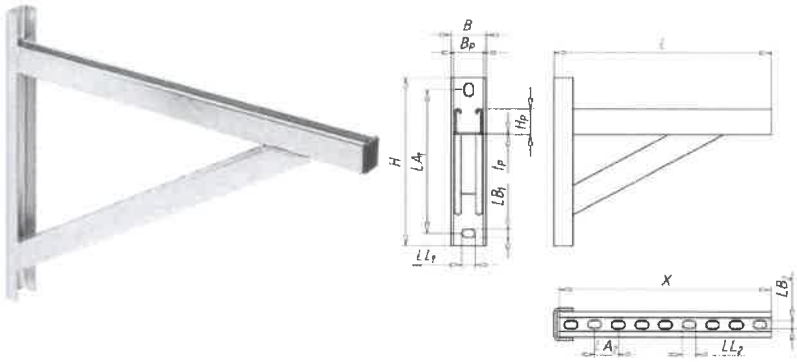
Art. No.	**0862 009 058**	**0862 009 059**	**0862 009 060**	**0862 009 061**	**0862 009 062**	**0862 009 063**
P. Qty.	1	1	1	1	1	1
Effective length of bracket (X)	1015 mm	210 mm	315 mm	455 mm	630 mm	770 mm
Permissible load for loading scenario 1	0.86 kN/m	8.76 kN/m	8.76 kN/m	4.2 kN/m	2.19 kN/m	1.47 kN/m
Permissible load for loading scenario 2	0.86 kN	4.14 kN	2.76 kN	1.91 kN	1.38 kN	1.13 kN
Permissible load for loading scenario 3	0.43 kN	2.07 kN	1.38 kN	0.96 kN	0.69 kN	0.56 kN
Permissible load for loading scenario 4	0.43 kN	2.07 kN	1.38 kN	0.96 kN	0.69 kN	0.56 kN
Permissible load for loading scenario 5	0.28 kN	1.38 kN	0.92 kN	0.64 kN	0.46 kN	0.38 kN
Fire protection certified	No	Yes	Yes	Yes	Yes	No
Product weight (per item)	3170 g	930.000 g	1124.000 g	1485.000 g	1806.100 g	2276.200 g

Data sheets for Würth Varifix® mounting rail systems*)

*) From the manufacturer

VARIFIX® HEAVY-DUTY BRACKET 41/41 - C2C

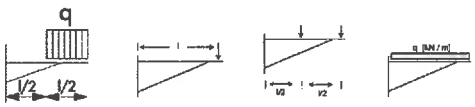


Universal wall bracket for mounting piping etc.

- Rail end plug included in scope of delivery
- Assemblies with voltage peak-to-peak value ≤ 26 N/mm²

Cradle to Cradle®-certified

- Upgrading the building using non-hazardous materials
- Wider range of application for Green-Building and building certification in accordance with LEED®, BREEAM® and DGNB



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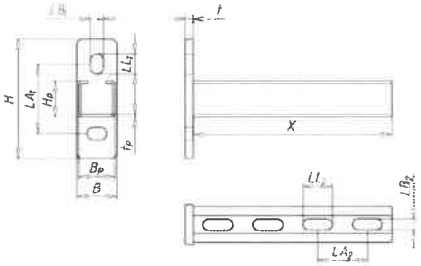
Width (B)	49.5 mm
Profile width (B_P)	41 mm
Profile height (H_P)	41 mm
Profile thickness (t_P)	2.5 mm
Elongated hole length (LL_1)	20 mm
Elongated hole width (LB_1)	12.5 mm
Elongated hole length 2 (LL_2)	25 mm
Elongated hole width 2 (LB_2)	12.5 mm
Surface	Hot-dip galvanised
Hole distance 2 (LA_2)	35 mm
Material	Structural steel, 1.0037 previously S235 JR

Art. No.	**0862 009 030**	**0862 009 031**	**0862 009 032**	**0862 009 033**	**0862 009 034**	**0862 009 035**	**0862 009 036**
P. Qty.	1	1	1	1	1	1	1
Length (L)	323 mm	428 mm	533 mm	638 mm	708 mm	813 mm	918 mm
Height (H)	270 mm	330 mm	391 mm	451 mm	492 mm	552 mm	613 mm
Effective length of bracket (X)	300 mm	400 mm	500 mm	600 mm	700 mm	800 mm	900 mm
Hole distance on wall attachment (LA_1)	223 mm	283 mm	344 mm	404 mm	445 mm	505 mm	566 mm
Product weight (per item)	2150 g	2870 g	3597 g	4316 g	4803 g	5522 g	6249 g
Permissible load for loading scenario 9	2.72 kN	2.26 kN	2.07 kN	1.97 kN	1.87 kN	1.6 kN	1.44 kN
Permissible load for loading scenario 8	3.96 kN	3.4 kN	3.1 kN	2.95 kN	2.8 kN	2.45 kN	2.15 kN
Permissible load for loading scenario 7	35.18 kN/m	33.98 kN/m	24.82 kN/m	18.48 kN/m	16 kN/m	15.6 kN/m	11 kN/m
Permissible load for loading scenario 6	26.39 kN/m	22.65 kN/m	16.55 kN/m	13.12 kN/m	10.68 kN/m	8.81 kN/m	7.38 kN/m

Data sheets for Würth Varifix® mounting rail systems*)

*) From the manufacturer

VARIFIX® BRACKET 36/36



- Rail end plug included in scope of delivery
- Assemblies with voltage peak-to-peak value ≤ 26 N/mm²

Base plate height (H)	120 mm
Base plate width (B)	40 mm
Base plate thickness (t)	8 mm
Profile height (H_p)	36 mm
Profile width (B_p)	36 mm
Profile thickness (t_p)	2.5 mm
Elongated hole length (LL_1)	20 mm
Elongated hole width (LB_1)	13 mm
Hole distance (LA_1)	75 mm
Elongated hole length 2 (LL_2)	29.5 mm
Elongated hole width 2 (LB_2)	11.5 mm
Hole distance 2 (LA_2)	50 mm
Fire protection certified	Yes
Surface	Galvanised
Material	Structural steel, 1.0037 previously S235 JR

Proof of Performance
Fire protection test: test report no. 3612/5526

CERTIFIED cradle to cradle SILVER

Green Product Award Winner 2017

Art. No.	**0862 009 019**	**0862 009 020**	**0862 009 021**	**0862 009 022**	**0862 009 023**
P. Qty.	1	1	1	1	1
Effective length of bracket (X)	208 mm	308 mm	408 mm	508 mm	608 mm
Permissible load for loading scenario 1	15.48 kN/m	6.88 kN/m	3.87 kN/m	2.48 kN/m	1.72 kN/m
Permissible load for loading scenario 2	3.1 kN	2.06 kN	1.55 kN	1.24 kN	1.03 kN
Permissible load for loading scenario 3	1.55 kN	1.03 kN	0.77 kN	0.62 kN	0.52 kN
Permissible load for loading scenario 4	1.55 kN	1.03 kN	0.77 kN	0.62 kN	0.52 kN
Permissible load for loading scenario 5	1.03 kN	0.69 kN	0.52 kN	0.41 kN	0.34 kN
Product weight (per item)	674.000 g	848.000 g	1099.000 g	1255 g	1426.6 g

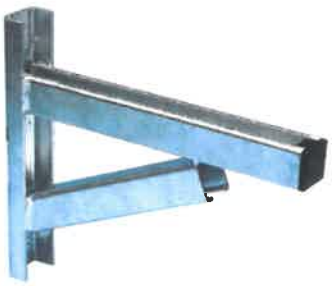
Data sheets for Würth Varifix® mounting rail systems*)

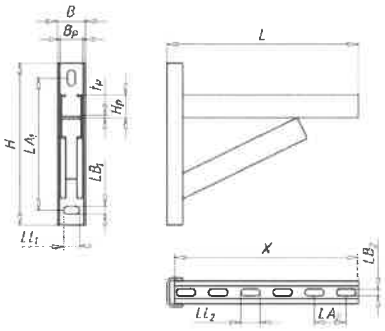
*) From the manufacturer

VARIFIX® HEAVY-DUTY BRACKET

Universal wall bracket for mounting piping etc.

- Rail end plug included in scope of delivery
- Assemblies with voltage peak-to-peak value ≤ 26 N/mm²





Width (B)	46 mm
Profile width (B_P)	36 mm
Profile height (H_P)	36 mm
Profile thickness (t_P)	2.5 mm
Elongated hole length (LL_1)	25 mm
Elongated hole width (LB_1)	12.5 mm
Elongated hole length 2 (LL_2)	29.5 mm
Elongated hole width 2 (LB_2)	11.5 mm
Surface	Hot-dip galvanised
Hole distance 2 (LA_2)	50 mm
Material	Structural steel, 1.0037 previously S235 JR

cradle to cradle CERTIFIED SILVER

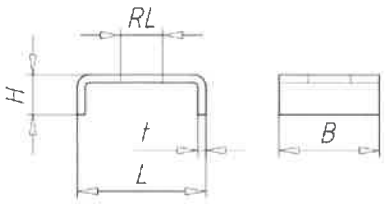
Green Product Award Winner 2017

Art. No.	**0862 009 040**	**0862 009 041**	**0862 009 042**	**0862 009 043**	**0862 009 044**	**0862 009 045**	**0862 009 046**
P. Qty.	1	1	1	1	1	1	1
Length (L)	307.5 mm	407.5 mm	507.5 mm	607.5 mm	707.5 mm	807.5 mm	907.5 mm
Height (H)	255 mm	280 mm	310 mm	340 mm	370 mm	400 mm	430 mm
Effective length of bracket (X)	300 mm	400 mm	500 mm	600 mm	700 mm	800 mm	900 mm
Hole distance on wall attachment (LA_1)	208 mm	233 mm	263 mm	293 mm	323 mm	353 mm	383 mm
Product weight (per item)	1711.800 g	2199.100 g	2723.300 g	3271.100 g	4000.000 g	3910.000 g	4370.000 g
Fire protection certified	Yes	Yes	Yes	Yes	Yes	No	No
Permissible load for loading scenario 9	2.64 kN	2.26 kN	2.07 kN	1.97 kN	1.87 kN	0.8 kN	0.72 kN
Permissible load for loading scenario 8	3.96 kN	3.4 kN	3.1 kN	2.95 kN	2.8 kN	2.45 kN	2.15 kN
Permissible load for loading scenario 7	35.18 kN/m	22.65 kN/m	16.55 kN/m	13.12 kN/m	10.68 kN/m	8.81 kN/m	7.38 kN/m
Permissible load for loading scenario 6	26.39 kN/m	16.99 kN/m	12.41 kN/m	9.84 kN/m	8.01 kN/m	6.6 kN/m	5.55 kN/m

Data sheets for Würth Varifix® mounting rail systems*)

*) From the manufacturer

VARIFIX® RETAINING CLIP - C2C



Height (H)	10 mm
Material	Steel
Surface	Galvanised

Art. No.	**0862 005 150**	**0862 005 151**	**0862 005 152**	**0862 005 153**
P. Qty.	100	100	100	100
Diameter of hole (RL)	10.5 mm	10.5 mm	10.5 mm	13 mm
Suitable for mounting rail	26 x 18 mm, 26 x 26 mm, 28 x 28 mm	36 x 36 mm	41 x 22 mm, 41 x 41 mm, 41 x 124 mm, 41 x 44 mm, 41 x 62 mm, 41 x 82 mm, 41 x 128 mm, 41 x 86 mm	41 x 44 mm, 41 x 62 mm, 41 x 82 mm, 41 x 124 mm, 41 x 22 mm, 41 x 41 mm, 41 x 128 mm, 41 x 86 mm
Width (B)	25 mm	30 mm	30 mm	30 mm
Length (L)	32 mm	42 mm	45 mm	45 mm
Thickness (t)	2 mm	2 mm	3 mm	3 mm
Weight	16 g	26 g	38 g	37 g

The safe alternative to washers

Prevents the sides of the C rail from bending upwards when loaded

Cradle to Cradle®-certified

- Upgrading the building using non-hazardous materials
- Wider range of application for Green-Building and building certification in accordance with LEED®, BREEAM® and DGNB

cradle to cradle SILVER

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Data sheets for Würth Varifix® mounting rail systems*)

*) From the manufacturer

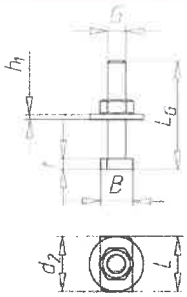
VARIFIX® HAMMER HEAD FASTENER STANDARDFIX - C2C

Preassembled with nut and washer, galvanised

Threaded bolt strength class 4.6

Application area

Recommended for direct fastening of pipe clamps



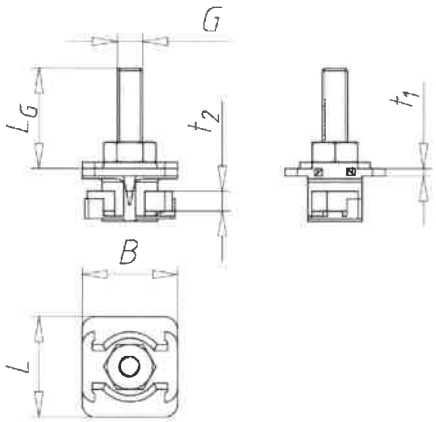
Surface	Zinc plated
Material	Steel
Thread type	Metric thread

Suitable for mounting rail	Nominal diameter (G)	Length (hammer head and stud bolt) (L_S)	Washer diameter (d_2)	Length (L)	Width (B)	Thick-ness (t)	Washer thick-ness (h_1)	Weight	Art. No.	P. Qty.
41 x 22 mm, 41 x 41 mm, 41 x 62 mm, 41 x 124 mm, 41 x 44 mm, 41 x 82 mm, 41 x 86 mm, 41 x 128 mm	10 mm	40 mm	40 mm	35 mm	20 mm	6 mm	3 mm	81 g	**0862 100 040**	100
41 x 22 mm, 41 x 41 mm, 41 x 62 mm, 41 x 124 mm, 41 x 44 mm, 41 x 82 mm, 41 x 128 mm, 41 x 86 mm	10 mm	60 mm	40 mm	35 mm	20 mm	6 mm	3 mm	92 g	**0862 100 041**	50
41 x 22 mm, 41 x 41 mm, 41 x 62 mm, 41 x 124 mm, 41 x 44 mm, 41 x 82 mm, 41 x 128 mm, 41 x 86 mm	10 mm	80 mm	40 mm	35 mm	20 mm	6 mm	3 mm	101 g	**0862 100 042**	50
41 x 22 mm, 41 x 41 mm, 41 x 62 mm, 41 x 124 mm, 41 x 44 mm, 41 x 82 mm, 41 x 128 mm, 41 x 86 mm	10 mm	100 mm	40 mm	35 mm	20 mm	6 mm	3 mm	112 g	**0862 100 043**	50
41 x 22 mm, 41 x 41 mm, 41 x 62 mm, 41 x 124 mm, 41 x 44 mm, 41 x 82 mm, 41 x 128 mm, 41 x 86 mm	12 mm	30 mm	40 mm	35 mm	20 mm	6 mm	3.5 mm	90 g	**0862 100 050**	25
41 x 22 mm, 41 x 41 mm, 41 x 62 mm, 41 x 124 mm, 41 x 44 mm, 41 x 82 mm, 41 x 128 mm, 41 x 86 mm	12 mm	40 mm	40 mm	35 mm	20 mm	6 mm	3.5 mm	94 g	**0862 100 051**	25
41 x 22 mm, 41 x 41 mm, 41 x 62 mm, 41 x 124 mm, 41 x 44 mm, 41 x 82 mm, 41 x 128 mm, 41 x 86 mm	12 mm	60 mm	40 mm	35 mm	20 mm	6 mm	3.5 mm	108 g	**0862 100 052**	25
41 x 22 mm, 41 x 41 mm, 41 x 62 mm, 41 x 124 mm, 41 x 44 mm, 41 x 82 mm, 41 x 128 mm, 41 x 86 mm	12 mm	80 mm	40 mm	35 mm	20 mm	6 mm	3.5 mm	125 g	**0862 100 053**	25

Data sheets for Würth Varifix® mounting rail systems*)

*) From the manufacturer

VARIFIX® QUICK FASTENER SYSTEMFIX 41 - C2C



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cradle to cradle CERTIFIED SILVER

Length (L)	40 mm
Width (B)	38 mm
Material thickness (t_1)	3 mm
Min./max. temperature resistance	-40 to 90 °C
Material	Steel
Surface	Galvanised
Material of the connecting component	POM - Polyoxymethylene

With threaded rod

Immediately fixed with a 1/4 rotation

Friction-locked connection with the rail
Precise fit in the mounting rail - alignment in the rail possible

One-handed assembly possible
Easier assembly, particularly when working on ladders

Optimal suspension possible with threaded rods for long lengths
For all Systemfix 41 models

Cradle to Cradle®-certified
- Upgrading the building using non-hazardous materials
- Wider range of application for Green-Building and building certification in accordance with LEED®, BREEAM® and DGNB

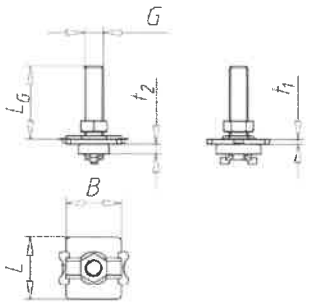
Application area
For assembly connection of all Varifix® mounting rails in the 41 range. Recommended for direct fastening of pipe clamps.

Thread length (L_G)	Thickness (t_2)	Thread type x nominal diameter (G)	Suitable for mounting rail	Weight	Art. No.	P. Qty.
40 mm	8 mm	M10	41 x 22 mm, 41 x 41 mm, 41 x 62 mm, 41 x 124 mm, 41 x 44 mm, 41 x 82 mm, 41 x 128 mm, 41 x 86 mm	101 g	**0862 104 120**	25
60 mm	8 mm	M10	41 x 22 mm, 41 x 41 mm, 41 x 62 mm, 41 x 124 mm, 41 x 44 mm, 41 x 82 mm, 41 x 128 mm, 41 x 86 mm	111 g	**0862 104 121**	25
80 mm	8 mm	M10	41 x 22 mm, 41 x 41 mm, 41 x 62 mm, 41 x 124 mm, 41 x 44 mm, 41 x 82 mm, 41 x 128 mm, 41 x 86 mm	121 g	**0862 104 122**	20
100 mm	8 mm	M10	41 x 22 mm, 41 x 41 mm, 41 x 62 mm, 41 x 124 mm, 41 x 44 mm, 41 x 82 mm, 41 x 128 mm, 41 x 86 mm	132 g	**0862 104 123**	20
40 mm	8 mm	M12	41 x 22 mm, 41 x 41 mm, 41 x 62 mm, 41 x 124 mm, 41 x 44 mm, 41 x 82 mm, 41 x 128 mm, 41 x 86 mm	119 g	**0862 104 130**	25
60 mm	8 mm	M12	41 x 22 mm, 41 x 41 mm, 41 x 62 mm, 41 x 124 mm, 41 x 44 mm, 41 x 82 mm, 41 x 86 mm, 41 x 128 mm	134 g	**0862 104 131**	25
80 mm	8 mm	M12	41 x 22 mm, 41 x 41 mm, 41 x 62 mm, 41 x 124 mm, 41 x 44 mm, 41 x 82 mm, 41 x 86 mm, 41 x 128 mm	147 g	**0862 104 132**	20
100 mm	8 mm	M12	41 x 82 mm, 41 x 44 mm, 41 x 124 mm, 41 x 62 mm, 41 x 41 mm, 41 x 22 mm, 41 x 128 mm, 41 x 86 mm	163 g	**0862 104 133**	20

Data sheets for Würth Varifix® mounting rail systems*)

*) From the manufacturer

VARIFIX® QUICK FASTENER SYSTEMFIX - C2C



cradle to cradle CERTIFIED SILVER

Green Product Award Winner 2017

With threaded rod

Immediately fixed with a 1/4 rotation

Friction-locked connection with the rail
Precise fit in the mounting rail - alignment in the rail possible

One-handed assembly possible
Easier assembly, particularly when working on ladders

Optimal suspension possible with threaded rods for long lengths
For all Systemfix models

Cradle to Cradle®-certified
- Upgrading the building using non-hazardous materials
- Wider range of application for Green-Building and building certification in accordance with LEED®, BREEAM® and DGNB

Width (B)	30 mm
Material thickness (t_1)	2.5 mm
Thickness (t_2)	5 mm
Min./max. temperature resistance	-40 to 90 °C
Material	Steel
Surface	Galvanised
Material of the connecting component	POM - Polyoxymethylene

Length (L)	Thread length (L_G)	Thread type x nominal diameter (G)	Suitable for mounting rail	Weight	Art. No.	P. Qty.
34 mm	30 mm	M8	36 x 36 mm	51 g	**0862 102 140**	50
34 mm	40 mm	M8	36 x 36 mm	54 g	**0862 102 141**	50
34 mm	60 mm	M8	36 x 36 mm	61 g	**0862 102 142**	40
34 mm	80 mm	M8	36 x 36 mm	66 g	**0862 102 143**	30
34 mm	100 mm	M8	36 x 36 mm	72 g	**0862 102 144**	25
34 mm	120 mm	M8	36 x 36 mm	77 g	**0862 102 145**	20
34 mm	40 mm	M10	36 x 36 mm	66 g	**0862 102 150**	50
34 mm	60 mm	M10	36 x 36 mm	76 g	**0862 102 151**	40
34 mm	80 mm	M10	36 x 36 mm	87 g	**0862 102 152**	30
34 mm	100 mm	M10	36 x 36 mm	96 g	**0862 102 153**	25

Proposal for assessment for Würth Varifix® mounting rail systems under tensile load and exposure to fire in accordance with DIN EN 1363-1 (suspended assembly)

Table 2: Proposal for assessment for Würth Varifix® mounting rail systems with Varifix® 41x41x2.5 and Varifix® brackets (acc. to Section 2) combined with related threaded rods as a function of the fire resistance time (30 minutes)

Fire resistance: 30 minutes		**Varifix® mounting rail systems** Varifix® 41x41x2.5, Varifix® brackets (acc. to Section 2) **combined with threaded rods "suspended assembly"**				
Static span **Uniformly distributed load**	[mm]	430	550	650	750	1250
Maximum load M12[1)]	[kN]	3.40	3.25	3.10	2.85	2.50
Maximum load M10[1)]	[kN]	2.55	2.55	2.55	2.55	2.50
Static span **Single load**	[mm]	430	550	650	750	850
Single loads		**Maximum load [kN]**				
1 single load à ≤	[kN]	0.90	0.90	0.90	0.90	0.90
2 single load à ≤		0.50	0.50	0.50	0.50	0.50
3 single load à ≤		0.35	0.35	0.35	0.35	0.35
4 single load à ≤		0.28	0.28	0.28	0.28	0.28
5 single load à ≤		-	0.23	0.23	0.23	0.23
6 single load à ≤		-	-	0.20	0.20	0.20
7 single load à ≤		-	-	-	0.17	0.17
8 single load à ≤		-	-	-	-	0.15

[1)] Dimension for suspension of the mounting rail.

Table 3: Proposal for assessment for Würth Varifix® mounting rail systems with Varifix® 41x41x2.5 and Varifix® brackets (acc. to Section 2) combined with related threaded rods as a function of the fire resistance time (60 minutes)

Fire resistance: 60 minutes		**Varifix® mounting rail systems** Varifix® 41x41x2.5, Varifix® brackets (acc. to Section 2) **combined with threaded rods "suspended assembly"**				
Static span **Uniformly distributed load**	[mm]	430	550	650	750	1250
Maximum load M12[1)]	[kN]	2.00	1.90	1.80	1.65	1.40
Maximum load M10[1)]		1.45	1.45	1.45	1.45	1.40
Static span **Single load**	[mm]	430	550	650	750	850
Single loads		**Maximum load [kN]**				
1 single load à ≤	[kN]	0.60	0.60	0.60	0.60	0.60
2 single load à ≤		0.35	0.35	0.35	0.35	0.35
3 single load à ≤		0.25	0.25	0.25	0.25	0.25
4 single load à ≤		0.18	0.18	0.18	0.18	0.18
5 single load à ≤		-	0.15	0.15	0.15	0.15
6 single load à ≤		-	-	0.13	0.13	0.13
7 single load à ≤		-	-	-	0.11	0.11
8 single load à ≤		-	-	-	-	0.10

[1)] Dimension for suspension of the mounting rail.

Proposal for assessment for Würth Varifix® mounting rail systems under tensile load and exposure to fire in accordance with DIN EN 1363-1 (suspended assembly)

Table 4: Proposal for assessment for Würth Varifix® mounting rail systems with Varifix® 41x41x2.5 and Varifix® brackets (acc. to Section 2) combined with related threaded rods as a function of the fire resistance time (90 minutes)

Fire resistance: 90 minutes		**Varifix® mounting rail systems** Varifix® 41x41x2.5, Varifix® brackets (acc. to Section 2) **combined with threaded rods "suspended assembly"**				
Static span **Uniformly distributed load**	[mm]	430	550	650	750	1250
Maximum load M12[1)]	[kN]	1.50	1.40	1.30	1.20	1.00
Maximum load M10[1)]		1.05	1.05	1.05	1.05	1.00
Static span **Single load**	[mm]	430	550	650	750	850
1 single load à ≤	[kN]	0.50	0.50	0.50	0.50	0.50
2 single load à ≤		0.28	0.28	0.28	0.28	0.28
3 single load à ≤		0.20	0.20	0.20	0.20	0.20
4 single load à ≤		0.15	0.15	0.15	0.15	0.15
5 single load à ≤		-	0.13	0.13	0.13	0.13
6 single load à ≤		-	-	0.11	0.11	0.11
7 single load à ≤		-	-	-	0.09	0.09
8 single load à ≤		-	-	-	-	0.08

[1)] Dimension for suspension of the mounting rail.

Table 5: Proposal for assessment for Würth Varifix® mounting rail systems with Varifix® 41x41x2.5 and Varifix® brackets (acc. to Section 2) combined with related threaded rods as a function of the fire resistance time (120 minutes)

Fire resistance: 120 minutes		**Varifix® mounting rail systems** Varifix® 41x41x2.5, Varifix® brackets (acc. to Section 2) **combined with threaded rods "suspended assembly"**				
Static span **Uniformly distributed load**	[mm]	430	550	650	750	1250
Maximum load M12[1)]	[kN]	1.20	1.15	1.05	0.95	0.80
Maximum load M10[1)]	[kN]	0.85	0.85	0.85	0.85	0.80
Static span **Single load**	[mm]	430	550	650	750	850
1 single load à ≤	[kN]	0.45	0.45	0.45	0.45	0.45
2 single load à ≤		0.25	0.25	0.25	0.25	0.25
3 single load à ≤		0.18	0.18	0.18	0.18	0.18
4 single load à ≤		0.14	0.14	0.14	0.14	0.14
5 single load à ≤		-	0.12	0.12	0.12	0.12
6 single load à ≤		-	-	0.10	0.10	0.10
7 single load à ≤		-	-	-	0.08	0.08
8 single load à ≤		-	-	-	-	0.07

[1)] Dimension for suspension of the mounting rail.

Deformations (f_{max}) for Würth Varifix® mounting rail systems under tensile load and exposure to fire in accordance with DIN EN 1363-1 (suspended assembly, "single load")

Table 6: Deformations (f_{max}) for Würth Varifix® mounting rail systems with Varifix® 41x41x2.5 and Varifix® brackets (acc. to Section 2) combined with related threaded rods as a function of the time, the span, the suspension height, and the load (single load, centrally)

Deformation: 30 to 120 minutes				**Varifix® mounting rail systems** Varifix® 41x41x2.5, Varifix® brackets (acc. to Section 2) **combined with threaded rods "suspended assembly"**											
Static span	l_s	≤	[mm]	**430**											
Suspension height	h_a	≤	[mm]	500				1000				1500			
Single load	P	≤	[kN]	0.90	0.60	0.50	0.45	0.90	0.60	0.50	0.45	0.90	0.60	0.50	0.45
Time [min]				**Deformations (f_{max}) [mm]**											
30 minutes				45	40	40	40	50	45	45	45	55	50	50	50
60 minutes				-	110	80	70	-	115	85	75	-	120	90	80
90 minutes				-	-	150	120	-	-	155	125	-	-	160	130
120 minutes				-	-	-	215	-	-	-	220	-	-	-	225

Table 7: Deformations (f_{max}) for Würth Varifix® mounting rail systems with Varifix® 41x41x2.5 and Varifix® brackets (acc. to Section 2) combined with related threaded rods as a function of the time, the span, the suspension height, and the load (single load, centrally)

Deformation: 30 to 120 minutes				**Varifix® mounting rail systems** Varifix® 41x41x2.5, Varifix® brackets (acc. to Section 2) **combined with threaded rods "suspended assembly"**											
Static span	l_s	≤	[mm]	**550**											
Suspension height	h_a	≤	[mm]	500				1000				1500			
Single load	P	≤	[kN]	0.90	0.60	0.50	0.45	0.90	0.60	0.50	0.45	0.90	0.60	0.50	0.45
Time [min]				**Deformations (f_{max}) [mm]**											
30 minutes				100	50	40	40	105	55	45	45	110	60	50	50
60 minutes				-	270	190	160	-	275	195	165	-	280	200	170
90 minutes				-	-	275	275	-	-	280	280	-	-	285	285
120 minutes				-	-	-	275	-	-	-	280	-	-	-	285

Deformations (f_{max}) for Würth Varifix® mounting rail systems under tensile load and exposure to fire in accordance with DIN EN 1363-1 (suspended assembly, "single load")

Table 8: Deformations (f_{max}) for Würth Varifix® mounting rail systems with Varifix® 41x41x2.5 and Varifix® brackets (acc. to Section 2) combined with related threaded rods as a function of the time, the span, the suspension height, and the load (single load, centrally)

Deformation: 30 to 120 minutes				**Varifix® mounting rail systems** Varifix® 41x41x2.5, Varifix® brackets (acc. to Section 2) **combined with threaded rods "suspended assembly"**											
Static span	l_s	≤	[mm]	**650**											
Suspension height	h_a	≤	[mm]	500				1000				1500			
Single load	P	≤	[kN]	0.90	0.60	0.50	0.45	0.90	0.60	0.50	0.45	0.90	0.60	0.50	0.45
Time [min]				**Deformations (f_{max}) [mm]**											
30 minutes				190	90	70	60	195	95	75	65	200	100	80	70
60 minutes				-	325	325	300	-	330	330	305	-	335	335	310
90 minutes				-	-	325	325	-	-	330	330	-	-	335	335
120 minutes				-	-	-	325	-	-	-	330	-	-	-	335

Table 9: Deformations (f_{max}) for Würth Varifix® mounting rail systems with Varifix® 41x41x2.5 and Varifix® brackets (acc. to Section 2) combined with related threaded rods as a function of the time, the span, the suspension height, and the load (single load, centrally)

Deformation: 30 to 120 minutes				**Varifix® mounting rail systems** Varifix® 41x41x2.5, Varifix® brackets (acc. to Section 2) **combined with threaded rods "suspended assembly"**											
Static span	l_s	≤	[mm]	**750**											
Suspension height	h_a	≤	[mm]	500				1000				1500			
Single load	P	≤	[kN]	0.90	0.60	0.50	0.45	0.90	0.60	0.50	0.45	0.90	0.60	0.50	0.45
Time [min]				**Deformations (f_{max}) [mm]**											
30 minutes				325	250	240	230	330	255	245	235	335	260	250	240
60 minutes				-	375	350	350	-	380	355	355	-	385	360	360
90 minutes				-	-	375	375	-	-	380	380	-	-	385	385
120 minutes				-	-	-	375	-	-	-	380	-	-	-	385

Deformations (f_{max}) for Würth Varifix® mounting rail systems under tensile load and exposure to fire in accordance with DIN EN 1363-1 (suspended assembly, "single load")

Table 10: Deformations (f_{max}) for Würth Varifix® mounting rail systems with Varifix® 41x41x2.5 and Varifix® brackets (acc. to Section 2) combined with related threaded rods as a function of the time, the span, the suspension height, and the load (single load, centrally)

Deformation: 30 to 120 minutes				**Varifix® mounting rail systems** Varifix® 41x41x2.5, Varifix® brackets (acc. to Section 2) **combined with threaded rods "suspended assembly"**											
Static span	l_s	≤	[mm]	**850**											
Suspension height	h_a	≤	[mm]	500				1000				1500			
Single load	P	≤	[kN]	0.90	0.60	0.50	0.45	0.90	0.60	0.50	0.45	0.90	0.60	0.50	0.45
Time [min]				**Deformations (f_{max}) [mm]**											
30 minutes				425	340	325	325	430	345	330	330	435	350	335	335
60 minutes				-	425	360	360	-	430	365	365	-	435	370	370
90 minutes				-	-	425	425	-	-	430	430	-	-	435	435
120 minutes				-	-	-	425	-	-	-	430	-	-	-	435

Deformations (f_{max}) for Würth Varifix® mounting rail systems under tensile load and exposure to fire in accordance with DIN EN 1363-1 (suspended assembly, "uniformly distributed load")

Table 11: Deformations (f_{max}) for Würth Varifix® mounting rail systems with Varifix® 41x41x2.5 and Varifix® brackets (acc. to Section 2) combined with related threaded rods as a function of the time, the span, the suspension height, and the load (uniformly distributed load)

Deformation: 30 to 120 minutes				**Varifix® mounting rail systems** Varifix® 41x41x2.5, Varifix® brackets (acc. to Section 2) **combined with threaded rods "suspended assembly"**											
Static span	l_s	≤	[mm]	**430**											
Suspension height	h_a	≤	[mm]	500				1000				1500			
Uniformly distributed load[1)]	q	≤	[kN]	3.40	2.00	1.50	1.20	3.40	2.00	1.50	1.20	3.40	2.00	1.50	1.20
Time [min]				**Deformations (f_{max}) [mm]**											
30 minutes				100	45	45	45	105	50	50	50	110	55	55	55
60 minutes				-	215	140	95	-	220	145	100	-	225	150	105
90 minutes					-	215	180		-	220	185		-	225	190
120 minutes						-	215			-	220			-	225

[1)] The individual maximum uniformly distributed load can be taken from Annexes 14 and 15.

Table 12: Deformations (f_{max}) for Würth Varifix® mounting rail systems with Varifix® 41x41x2.5 and Varifix® brackets (acc. to Section 2) combined with related threaded rods as a function of the time, the span, the suspension height, and the load (uniformly distributed load)

Deformation: 30 to 120 minutes				**Varifix® mounting rail systems** Varifix® 41x41x2.5, Varifix® brackets (acc. to Section 2) **combined with threaded rods "suspended assembly"**											
Static span	l_s	≤	[mm]	**550**											
Suspension height	h_a	≤	[mm]	500				1000				1500			
Uniformly distributed load[1)]	q	≤	[kN]	3.25	1.90	1.40	1.15	3.25	1.90	1.40	1.15	3.25	1.90	1.40	1.15
Time [min]				**Deformations (f_{max}) [mm]**											
30 minutes				230	90	60	50	235	95	65	55	240	100	70	60
60 minutes				-	275	275	210	-	280	280	215	-	285	285	220
90 minutes					-	275	275		-	280	280		-	285	285
120 minutes						-	275			-	280			-	285

[1)] The individual maximum uniformly distributed load can be taken from Annexes 14 and 15.

Deformations (f_{max}) for Würth Varifix® mounting rail systems under tensile load and exposure to fire in accordance with DIN EN 1363-1 (suspended assembly, "uniformly distributed load")

Table 13: Deformations (f_{max}) for Würth Varifix® mounting rail systems with Varifix® 41x41x2.5 and Varifix® brackets (acc. to Section 2) combined with related threaded rods as a function of the time, the span, the suspension height, and the load (uniformly distributed load)

Deformation: 30 to 120 minutes				**Varifix® mounting rail systems** Varifix® 41x41x2.5, Varifix® brackets (acc. to Section 2) **combined with threaded rods "suspended assembly"**											
Static span	l_s	≤	[mm]	**650**											
Suspension height	h_a	≤	[mm]	500				1000				1500			
Uniformly distributed load[1)]	q	≤	[kN]	3.10	1.80	1.30	1.05	3.10	1.80	1.30	1.05	3.10	1.80	1.30	1.05
Time [min]				**Deformations (f_{max}) [mm]**											
30 minutes				325	145	80	60	330	150	85	65	335	155	90	70
60 minutes				-	325	325	325	-	330	330	330	-	335	335	335
90 minutes					-	325	325		-	330	330		-	335	335
120 minutes						-	325			-	330			-	335

[1)] The individual maximum uniformly distributed load can be taken from Annexes 14 and 15.

Table 14: Deformations (f_{max}) for Würth Varifix® mounting rail systems with Varifix® 41x41x2.5 and Varifix® brackets (acc. to Section 2) combined with related threaded rods as a function of the time, the span, the suspension height, and the load (uniformly distributed load)

Deformation: 30 to 120 minutes				**Varifix® mounting rail systems** Varifix® 41x41x2.5, Varifix® brackets (acc. to Section 2) **combined with threaded rods "suspended assembly"**											
Static span	l_s	≤	[mm]	**750**											
Suspension height	h_a	≤	[mm]	500				1000				1500			
Uniformly distributed load[1)]	q	≤	[kN]	2.85	1.65	1.20	0.95	2.85	1.65	1.20	0.95	2.85	1.65	1.20	0.95
Time [min]				**Deformations (f_{max}) [mm]**											
30 minutes				375	200	115	80	380	205	120	85	385	210	125	90
60 minutes				-	375	375	375	-	380	380	380	-	385	385	385
90 minutes					-	375	375		-	380	380		-	385	385
120 minutes						-	375			-	380			-	385

[1)] The individual maximum uniformly distributed load can be taken from Annexes 14 and 15.

Deformations (f_{max}) for Würth Varifix® mounting rail systems under tensile load and exposure to fire in accordance with DIN EN 1363-1 (suspended assembly, "uniformly distributed load")

Table 15: Deformations (f_{max}) for Würth Varifix® mounting rail systems with Varifix® 41x41x2.5 and Varifix® brackets (acc. to Section 2) combined with related threaded rods as a function of the time, the span, the suspension height, and the load (uniformly distributed load)

Deformation: 30 to 120 minutes				**Varifix® mounting rail systems** Varifix® 41x41x2.5, Varifix® brackets (acc. to Section 2) **combined with threaded rods "suspended assembly"**											
Static span	l_s	≤	[mm]	**850**											
Suspension height	h_a	≤	[mm]	500				1000				1500			
Uniformly distributed load[1)]	q	≤	[kN]	2.50	1.40	1.00	0.80	2.50	1.40	1.00	0.80	2.50	1.40	1.00	0.80
Time [min]				**Deformations (f_{max}) [mm]**											
30 minutes				425	240	130	90	430	245	135	95	435	250	140	100
60 minutes				-	425	425	425	-	430	430	430	-	435	435	435
90 minutes					-	425	425		-	430	430		-	435	435
120 minutes						-	425			-	430			-	435

[1)] The individual maximum uniformly distributed load can be taken from Annexes 14 and 15.

Table 16: Deformations (f_{max}) for Würth Varifix® mounting rail systems with Varifix® 41x41x2.5 and Varifix® brackets (acc. to Section 2) combined with related threaded rods as a function of the time, the span, the suspension height, and the load (uniformly distributed load)

Deformation: 30 to 120 minutes				**Varifix® mounting rail systems** Varifix® 41x41x2.5, Varifix® brackets (acc. to Section 2) **combined with threaded rods "suspended assembly"**											
Static span	l_s	≤	[mm]	**1250**											
Suspension height	h_a	≤	[mm]	500				1000				1500			
Uniformly distributed load[1)]	q	≤	[kN]	2.50	1.40	1.00	0.80	2.50	1.40	1.00	0.80	2.50	1.40	1.00	0.80
Time [min]				**Deformations (f_{max}) [mm]**											
30 minutes				625	625	560	360	630	630	565	365	635	635	570	370
60 minutes				-	625	625	625	-	630	630	630	-	335	635	635
90 minutes					-	625	625		-	630	630		-	635	635
120 minutes						-	625			-	630			-	635

[1)] The individual maximum uniformly distributed load can be taken from Annexes 14 and 15.