Test report

No.: 22-00041-CP-PRG-00

Test of a type of a vehicle
with regard to ECE Regulation No. **14.00**
taking into consideration amendment No. **14.09, Supplement 1**
Approval subject: **Strength of safety belt anchorages**

And

Test of a type of a vehicle
with regard to ECE Regulation No. **145.00**
taking into consideration amendment No. **145.00, Supplement 00, corrigendum 01**
Approval subject: **Uniform provisions concerning the approval of vehicles with regard to ISOFIX anchorages systems ISOFIX top tether anchorages and i-Size seating positions**

Approval status		
☐	Granting of a type approval	N/A
☐	Extension/correction to type approval no.	N/A

I. General

Make	MOBIFRAME
Type:	RAM02, RAM03
Category of vehicle:	M1, N1, M2, N2
Name and address of manufacturer	OKB SP. Z O.O. ul. Szkolna 9 95-006 Bukowiec Poland
Reference number of information folder:	MOBIFRAME/04/2022-00
Date of issue of information folder:	16.09.2022

II. Test results

Refer to the Annex

III. Enclosures

Information Folder

IV. Statement of conformity

The mentioned information folder and the type described therein are in accordance with the test basis mentioned above. The worst-case was selected in accordance with document "Requirements for Test Reports (AS-PB-T-02)".

The test report may be reproduced and published in full and by the client only. It can be reproduced partially with the written permission of the test laboratory only.

TÜV SÜD Auto Service GmbH is designated as Technical Service by:

Genehmigungsbehörde ***Approval authority***	**Land** ***Country***	**Registriernummer** ***Registration number***
Kraftfahrt-Bundesamt (KBA)	Deutschland *Germany*	KBA-P 00100-10
Vehicle Certification Agency (VCA)	Vereinigtes Königreich *United Kingdom*	VCA-TS-006
Approval Authority of the Netherlands (RDW)	Niederlande *The Netherlands*	RDWT-082-xx
National Standards Authority of Ireland (NSAI)	Irland *Ireland*	Technical Service Number: 49
Vehicle Safety Certification Center (VSCC)	Taiwan/Taiwan	DE04-06-2
Société Nationale de Certification et d'Homologation s.à r.l.	Luxemburg *Luxembourg*	13/B(g)
Swedish Transport Agency (STA)	Schweden *Sweden*	TT 0024

Munich, 04.10.2022

Ing. Vít Bursík
Authorized signatory

Annex

Test report

1. Technical data of the test sample

1.1	Make:	MOBIFRAME
1.2	Type:	RAM02, RAM03
1.3	Commercial description(s):	RAM02, RAM03

1.3.1. Remark

Detailed drawings and description of benches (RAM02 and RAM03) and their fixation solutions in vehicles are included in Information Document MOBIFRAME/04/2022-00 attached to this test report.

Test results and comparison of RAM02 and RAM03 anchorage points geometry and its influence on the vehicle's floor are presented in section "3. Test results" of this report.

1.4	Category of vehicle:	M1, N1, M2, N2
1.5	Test object:	Double seat bench RAM02 and RAM03 mounted in representative vehicle bodies (Mercedes Sprinter 906/907, Fiat Ducato, Renault Master) and on rigid test bench). For details see manufacturer's information folder.

1.6. Table of vehicle types for which is seat bench intended to use:

Manufacturer	Commercial description / Type	Wheelbase
Daimler / Mercedes-Benz	Sprinter, e-Sprinter (906, 907)	3250, 3665, 4325
	Sprinter (910)	3259, 3924
	Vito/Viano/V-klasse, e-Vito (639, 639/2, 639/4)	3200, 3430
VW	Crafter (2E__)	3250, 3665, 4325
	Crafter, e-Crafter (SYN__ e.g. SYN1E, SYN2E, SYN2Z)	3640, 4490
	T5 (7H_, 7E_, 7J_)	3000, 3400
	T6, T6.1, e-Transporter (7H_, 7E_, 7J_)	3000, 3400
Citroen	Jumper, e-Jumper (Y)	3000, 3450, 4035
	Jumpy (X)	3000, 3122
	Jumpy, e-Jumpy (2016)	2925, 3275
	SpaceTourer, E-SpaceTourer	2925, 3275
	Berlingo, E-Berlingo	2785, 2975
Peugeot	Boxer, e-Boxer (Y)	3000, 3450, 4035
	Expert (VF3__)	3000, 3122
	Expert, e-Expert (2016-…)	2925, 3275
	Traveller, e-Traveller	2925, 3275
	Rifter, e-Rifter	2785, 2975
Fiat	Ducato, e-Ducato (250)	3000, 3450, 4035
	Scudo (270)	3000, 3122
	Scudo (2022-…)	2925, 3275
	Talento (FJL, FFL)	3098, 3498
Opel	Movano (MR, MS, MW)	3182, 3682, 4332
	Movano, Movano-e (Y)	3000, 3450, 4035
	Vivaro (F7)	3098, 3498
	Vivaro, Vivaro-e, Vivaro e-Kombi, Zafira Life	2925, 3275
	Combo Life, Combo-e Life	2785, 2975
Renault	Master, Master E-Tech (FV, MA, VA)	3182, 3682, 4332
	Trafic (FL, L)	3098, 3498
	Trafic 2014 (JL, L)	3098, 3498
Renault Trucks	Master (MF, VF)	3182, 3682, 4332
Ford	Transit, (FA_, FD_)	2933, 3300, 3750
	Transit, e-Transit (FC_)	3300, 3750, 3954
	Transit Custom (FA_, FC_), Turneo Custom	2933, 3300
	Transit Connect (PU2)	2662, 3062
Iveco	Daily, Daily Electric (IS_)	3000, 3300, 3520, 3950, 4100, 4750

Nissan	NV200	2725
	NV300, Primastar	3098, 3498
	NV400	3182, 3682, 4332
Toyota	Pro Ace (2013-2016)	3000, 3122
	Pro Ace, Pro Ace Verso, Pro Ace Electric (2016)	2925, 3275
MAN	TGE, eTGE (SYN__ e.g. SYN1E, SYN2E, SYN2Z)	3640, 4490
MAXUS (LDV)	V80, Maxus (SV6C)	3100, 3850
	V90, Deliver 9, E-Deliver 9	3000, 3366, 3760
	Deliver 3, E Deliver 3	2910, 3285
Hyundai	H350 (EU(V))	3435, 3670
RAM	ProMaster	3000, 3450, 4035
Freightliner/Dodge	Sprinter	3250, 3665, 4325

1.7.	Type of bodywork using the codes set out in Part C of Annex II of Directive 2007/46/EC and/or in Part C of Annex I of Regulation (EU) 2018/858:	AC, AF, BB, CA, SA, SH
1.8.	Mass of seats:	RAM02 – 62 kg – mass of the heaviest configuration RAM02 is double seat frame with two single seats S1NOV01 RAM03 – 62 kg – mass of the heaviest configuration RAM03 is double seat frame with two single seats S1NGR03

2. Test conditions

2.1. ECE Regulation No. 14.09

2.1.1. Instrumentation:

- Digital ballance
- Electrohydraulic test device and respective fixtures
- Force measuring chain with load cells
- Interface 1210AF
- Tape rule

2.1.2. Ambient conditions:

Normal laboratory conditions, not directly limited in Regulation

2.2. ECE Regulation No. 145.00

2.2.1. Instrumentation:

- Electro-hydraulic test equipment and control unit
- Force measuring chain
- Data acquisition unit
- Traction devices
- 3D H-point measurement device
- Tape measure

2.2.2. Ambient conditions:

Normal laboratory conditions, not directly limited in Regulation

3. Test results

3.1 Test procedures used (ECE R14):

Strength test of safety belt anchorages according to ECE R 14.09 concerning to strength of seat bench to vehicle floor.

For seat

Seat manufacturer	Seat type	Fulfilling of requirements
INTAP	S1NOV01	Test report No. BLB.056.012B
INTAP	S1NGR03	See point 3.2.6.

For seat bench

Seat manufac-turer	Seat type	Mass of the heaviest configuration (seat + legs/base)	Fulfilling of require-ments
OKB	RAM02 (RAM02 is double seat frame with two single seat S1NOV01)	62 kg	See point 3.2.1, 3.2.2., 3.2.3. and 3.2.4.
OKB	RAM03 (RAM03 is double seat frame with two single seat S1NGR03)	62 kg	See point 3.2.5 and 3.2.7. .

The below mentioned test results cover all variants including the maximum mass stated in the enclosed information document (seat bench, seat-to-vehicle anchorages, seat bench arrangement, removable elements and floor to vehicle attachment).

Geometrical requirements are fulfilled; all the seat belts anchorages are provided on- seat.

3.2. Forward facing seats for M1/N1 vehicles:

3.2.1. 2 x single seat type S1N0V01 on frame bench type RAM02 mounted on representative vehicle body structure (Mercedes Sprinter).

Mass of the heaviest possible single seat configuration covered by the test m_s = 31 kg.

Additional force applied to seat base:
F_z = 20 x ms x g (N) as relevant for M1 vehicle category.

Seat	Left	Right
Safety belt	Ar	Ar
Upper belt anchorage	Seat structure	Seat structure
Lower belt anchorages	Seat structure	Seat structure
Required force in shoulder belt portion	13 500 ± 200 N	13 500 ± 200 N
Required force lab belt portion	13 500 ± 200 N	13 500 ± 200 N
Required force inertia	12 400 N	
Force in the shoulder belt	13 700 N / > 0,2 s	13 450 N / > 0,2 s
Force in the lap belt	13 600 N / > 0,2 s	13 500 N / > 0,2 s
Inertia force in the seat base	13 600 N / > 0,2 s	
Displacement of upper anchorage point	184 mm	191 mm
Remark: No ruptures occurred. Additional force is added to seat base. Upper anchorage points were in tolerance.		

3.2.2. 2 x single seat type S1N0V01 on frame bench type RAM02 mounted on rigid test bench.

Mass of the heaviest possible single seat configuration covered by the test m_s = 31 kg.

Additional force applied to seat base:
F_z = 20 x ms x g (N) as relevant for M1 vehicle category.

Seat	Left	Right
Safety belt	Ar	Ar
Upper belt anchorage	Seat structure	Seat structure
Lower belt anchorages	Seat structure	Seat structure
Required force in shoulder belt portion	13 500 ± 200 N	13 500 ± 200 N
Required force lab belt portion	13 500 ± 200 N	13 500 ± 200 N
Required force inertia	12 400 N	
Force in the shoulder belt	13 700 N / > 0,2 s	13 500 N / > 0,2 s
Force in the lap belt	13 600 N / > 0,2 s	13 550 N / > 0,2 s
Inertia force in the seat base	13 600 N / > 0,2 s	
Displacement of upper anchorage point	168 mm	210 mm
Remark: No ruptures occurred. Additional force is added to seat base. Upper anchorage points were in tolerance.		

3.2.3. Frame bench type RAM02 on fixation plate in the representative vehicle (Renault Master).
Mass of the heaviest possible single seat configuration covered by the test m_s = see table kg.
Additional force applied to seat base:
F_z = 20 x ms x g (N) as relevant for M1 vehicle category.

Type of seat	RAM02 (left seat)	RAM02 (right seat)
Safety belt	Ar	Ar
Upper belt anchorage	Seat structure	Seat structure
Lower belt anchorages	Seat structure	Seat structure
Mass of seat/seats	62 kg	
Required force in upper anchorage point	13 500 N ± 200 N	13 500 N ± 200 N
Required force in lower anchorage point	13 500 N ± 200 N	13 500 N ± 200 N
Max force in upper anchorage point	13 800 N/ > 0,2 s	13 900 N/ > 0,2 s
Max. force in lower anchorage point	13 500 N/ > 0,2 s	14 000 N/ > 0,2 s
Required force inertia	12 400 N	
Inertia force in the seat base	12 900 N /> 0,2 s	
Displacement of upper anchorage point	82 mm	97 mm
Where was applied additional force	CoG	

3.2.4. Seat bench type RAM02 mounted on lowered fixation plate in the representative vehicle (Fiat Ducato).
Mass of the heaviest possible single seat configuration covered by the test m_s = see table kg.
Additional force applied to seat base:
F_z = 20 x m_s x g (N) as relevant for M1 vehicle category.

Type of seat	RAM02 (left seat)	RAM02 (right seat)
Safety belt	Ar	Ar
Upper belt anchorage	Seat structure	Seat structure
Lower belt anchorages	Seat structure	Seat structure
Mass of seat/seats	62 kg	
Required force in upper anchorage point	13 500 N ± 200 N	13 500 N ± 200 N
Required force in lower anchorage point	13 500 N ± 200 N	13 500 N ± 200 N
Max force in upper anchorage point	14 450 N/ > 0,2 s	14 300 N/ > 0,2 s
Max. force in lower anchorage point	14 800 N/ > 0,2 s	14 350 N/ > 0,2 s
Required force inertia	12 400 N	
Inertia force in the seat base	13 500 N /> 0,2 s	
Displacement of upper anchorage point	244 mm	203 mm
Where was applied additional force	CoG	

3.2.5. Seat bench RAM03 mounted on the rigid frame.

Two single dummy seats in rear row mounted on the seat bench (RAM03).
Mass of the single seat with seat bench m_s = 36 kg.
Additional force applied F_z = 20 x m_s x g (N) as relevant to M1/N1 vehicle category.

Seat	Left	Right
Seat adjustment	N/A	N/A
Safety belt	Ar	Ar
Mass of the tested seat bench	2 x 36 kg	
Upper belt anchorage	Seat structure	Seat structure
Lower belt anchorages	Seat structure	Seat structure
Required force in shoulder belt portion	13 500 ±200 N	13 500 ±200 N
Required force in lap belt portion	13 500±200 N	13 500 ±200 N
Required force inertia	14 400 N	
Force in the shoulder belt	13 700 N / > 0,2 s	13 700 N / > 0,2 s
Force in the lap belt	13 600 N / > 0,2 s	13 350 N / > 0,2 s
Displacement of upper anchorage point	188 mm	233 mm
Inertia force in the seat base	14 720 N / > 0,2 s	
Remark: No ruptures occurred. Additional force added to the seat base. Test is positive.		

3.2.6. Seat type S1NGR03 mounted on rigid plate.

Mass of the heaviest possible single seat configuration covered by the test m_s = 22 kg.

Additional force applied to seat base:
F_z = 20 x ms x g (N) as relevant for M1 vehicle category.

Seat	S1NGR03
Safety belt	Ar
Upper belt anchorage	Seat structure
Lower belt anchorages	Seat structure
Required force in shoulder belt portion	13 500 ± 200 N
Required force lab belt portion	13 500 ± 200 N
Required force inertia	4 400N (5 600 N*****)
Force in the shoulder belt	14 000 N / > 0,2 s
Force in the lap belt	15 500 N / > 0,2 s
Inertia force in the seat base	5 700 N / > 0,2 s
Displacement of upper anchorage point	216 mm
Remark: No ruptures occurred. Additional force is added to seat base. Upper anchorage points were in tolerance. ***Based on test results above - maximum allowable mass (seat + leg) can be 38 kg**.	

3.2.7. Comparison of RAM02 with 2 seats S1NOV01 (total mass 62 kg) and RAM03 with 2 seats S1NGR03 (total mass 62 kg) in terms of force moment exerted on the vehicle floor.

3.2.7.1. Presented calculation of force moments proves (see below), that RAM03 can be used in the same fixation solutions as RAM02 (for details see Information Document MOBIFRAME/04/2022-00), where total mass of the bench does not exceed 62 kg.

Upper anchorage height: 1,205 m
Lower anchorage height: 0,542 m
Inertia point height: 0,450 m

RAM02 (S1NOV01)	Required force		Required moment	Total moment
Shoulder belt (upper anchorage)	13 500 N		8 134 Nm	16 268 Nm
Lap belt (lower anchorage)	13 500 N		10 975 Nm	21 950 Nm
Inertia force (lower anchorage)	7 200 N		3 240 Nm	6 480 Nm
SUM			**22 349 Nm**	**44 698 Nm**

Upper anchorage height: 1,182 m
Lower anchorage height: 0,554 m
Inertia point height: 0,42 m

RAM03 (S1NGR03)	Required force		Required moment	Total moment
Shoulder belt (upper anchorage)	13 500 N		7 978 Nm	15 956 Nm
Lap belt (lower anchorage)	13 500 N		11 218 Nm	22 436 Nm
Inertia force (lower anchorage)	7 200 N		3 024 Nm	6 048 Nm
SUM			**22 220 Nm**	**44 440 Nm**

3.3. Test procedures used (ECE R145):

Test of 2 seat bench type RAM02 and RAM03 - strength of ISOFIX and Top-tether anchorages according to ECE R 145.00

Seat manufacturer	Seat type	Fulfilling of requirements
INTAP	S1NOV01	See Technical report No. 120732-15-TAC
	S1NGR03	See point 3.3.

The below mentioned test results cover all variants including the maximum mass stated in the enclosed information document (seat, seat-to-vehicle anchorages, seat arrangement).

Seat bench manufacturer	Name	Vehicle category	Direction of test forces	Fulfilling of requirements
OKB	RAM03 without TOP TETHER	M1, N1, M2, N2	Forward	See point 3.3.1.
	RAM03 without TOP TETHER	M1, N1 M2, N2	Oblique	See point 3.3.2.

Note: For M1 category minimum 2 seats with ISOFIX anchorage systems and their ISOFIX top tether anchorages shall be mounted. At least one of them shall be in 2nd row of seats.

In case of special purpose M1 vehicle (motor-caravan) converted from N1 or N2 base vehicle, according to Commission Regulation 2018/858 and Directive 2007/46, ISOFIX and top tether anchorages are only optional (therefore, no ISOFIX or only lower ISOFIX anchorage points are acceptable).

3.3.1.1. Single seat type S1NGR03 of seat bench Type RAM03 (single seat S1NGR03) - ISOFIX without Top Tether – forward direction

Seat	S1NGR03
Required force	8 000 N
Max. measured force	8 400 N
Displacement of X point SFAD device (max 125 mm)	76 mm
Result	Without failure

3.3.1.2. Single seat type S1NGR03 of seat bench Type RAM03 (single seat S1NGR03) - ISOFIX without Top Tether – oblique direction

Seat	S1NGR03
Required force	5 000 N
Max .measured force	5 400 N
Displacement of X point SFAD device (max 125 mm)	74 mm
Result	Without failure

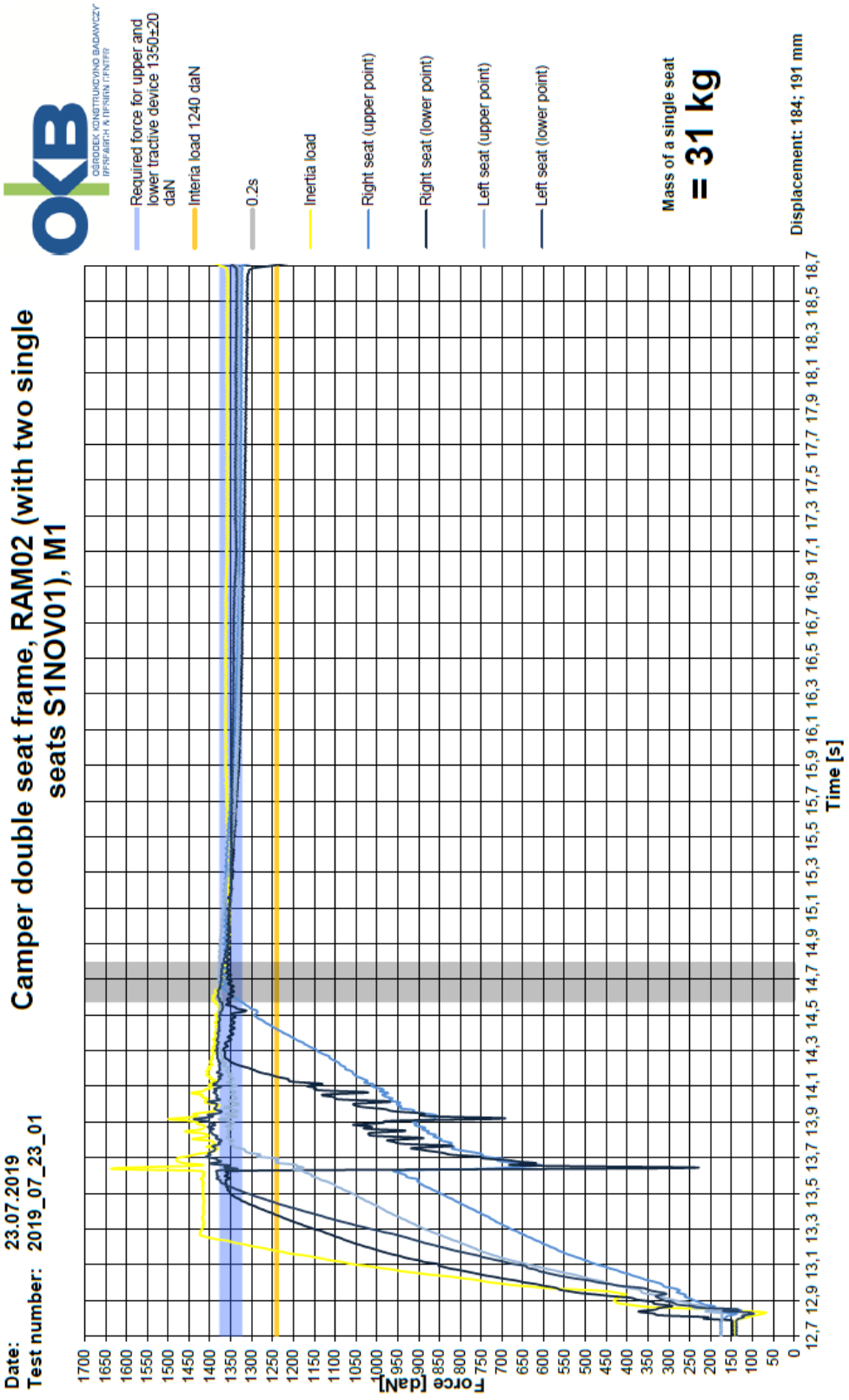
3.4. Final assessment:

Presented test results prove, that seat benches RAM02 and RAM03 meet the requirements of ECE Regulation 14-09 and Regulation 145-00 and can be used in the M1, N1, M2 and N2 vehicles, if they are fixed as presented in Information Document MOBIF-RAME/04/2022-00).

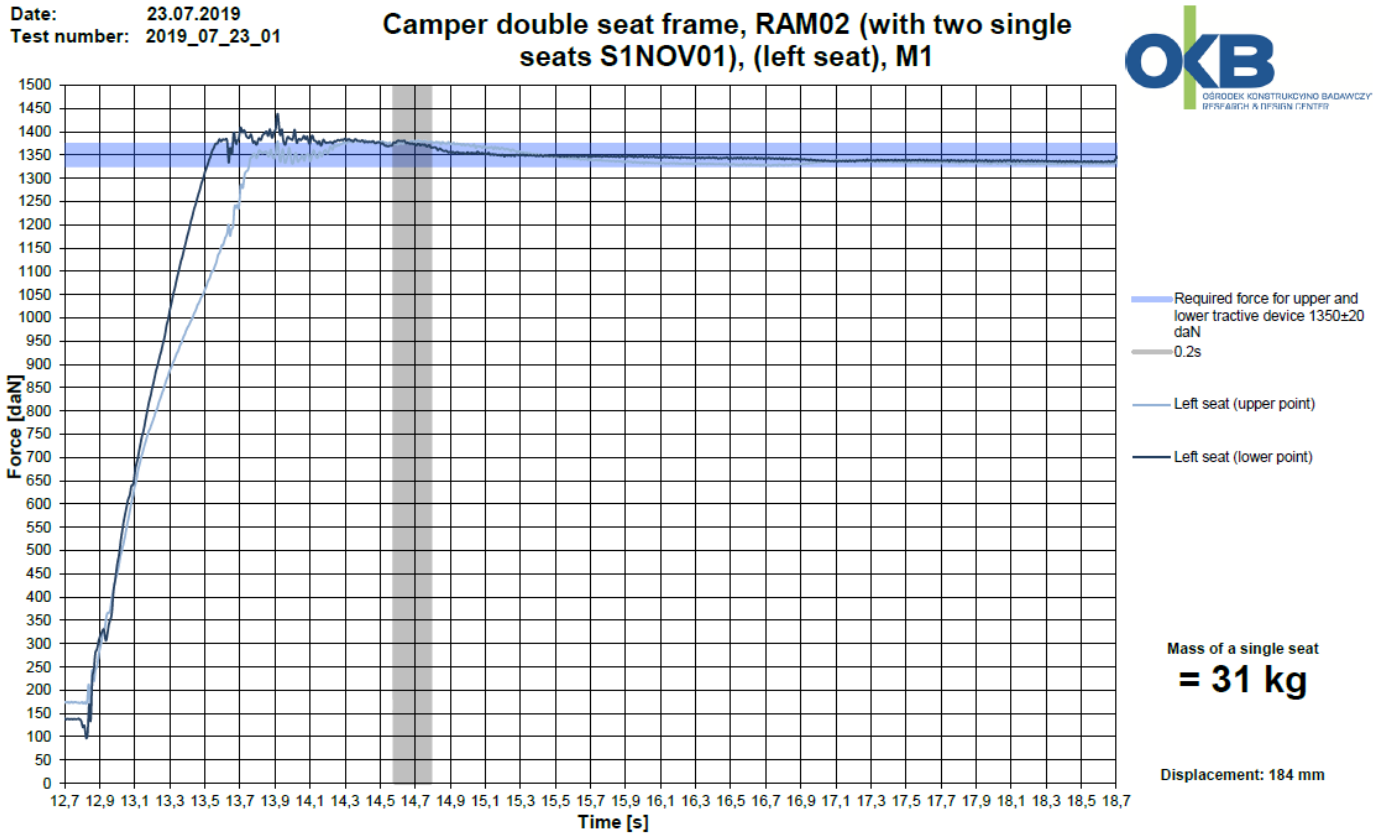
3.6. Test records

3.6.1. Graphs:

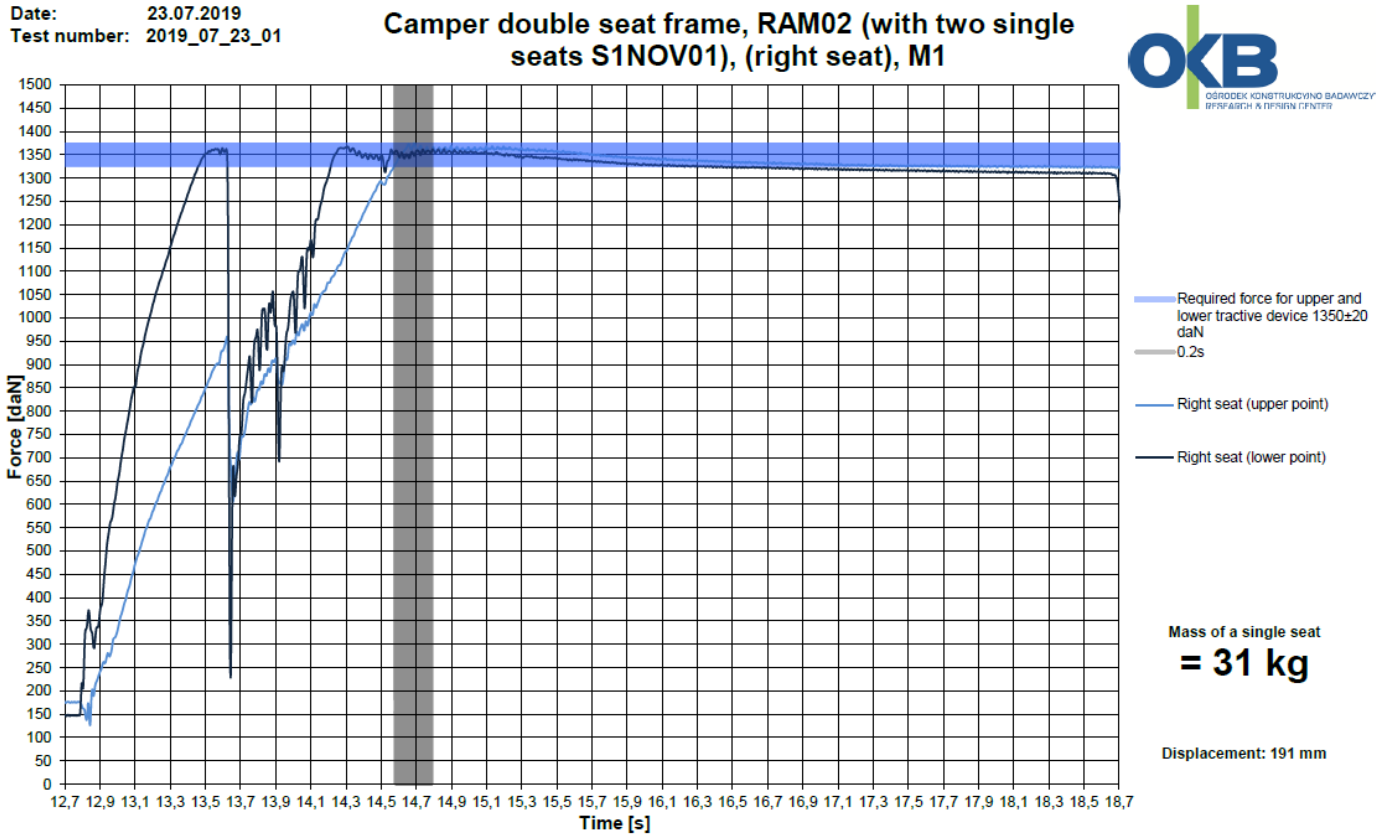
3.2.1. - 2 seats S1NOV01 on frame type RAM02



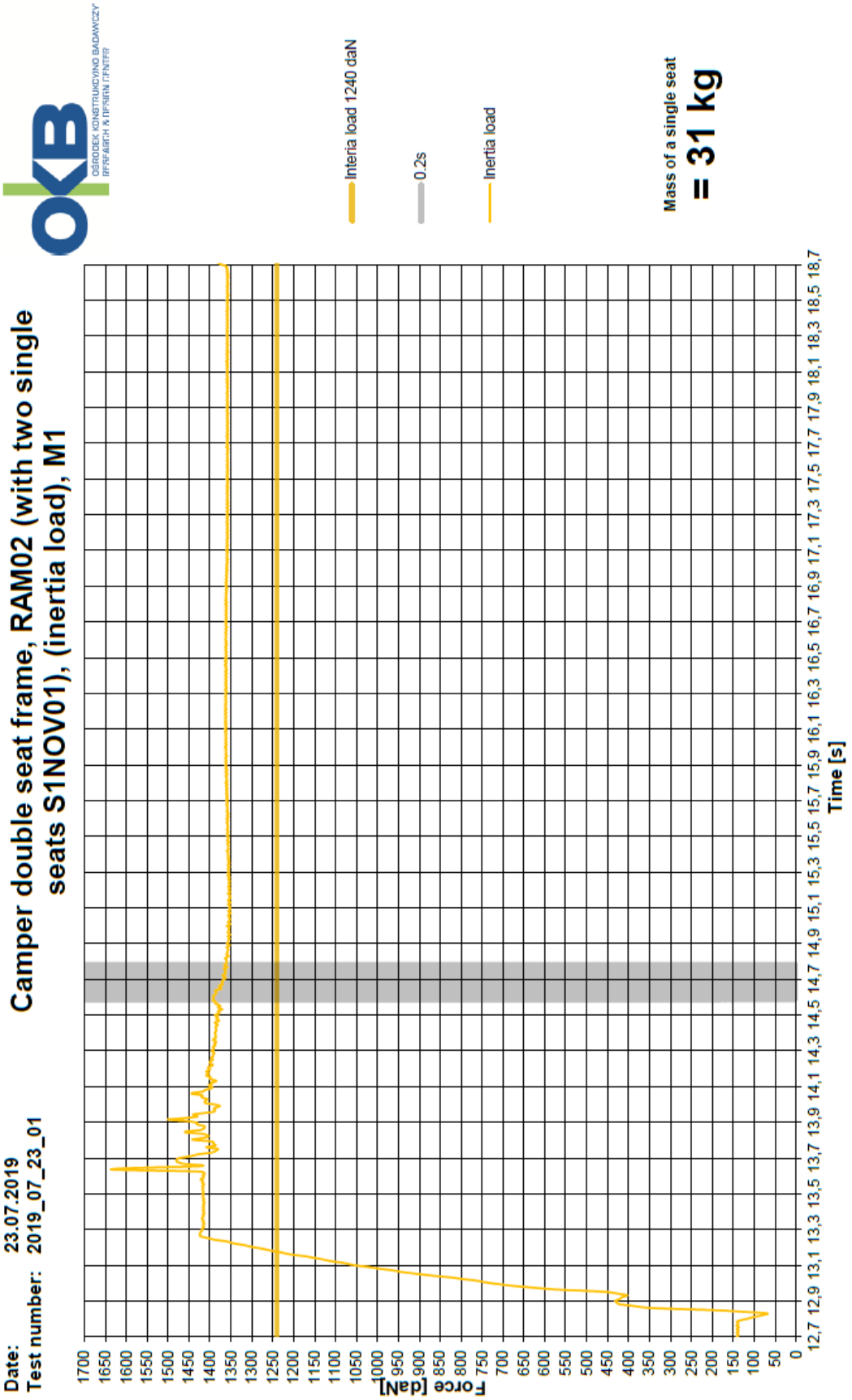
3.2.1. Left seat - type S1NOV01 mounted on frame type RAM02



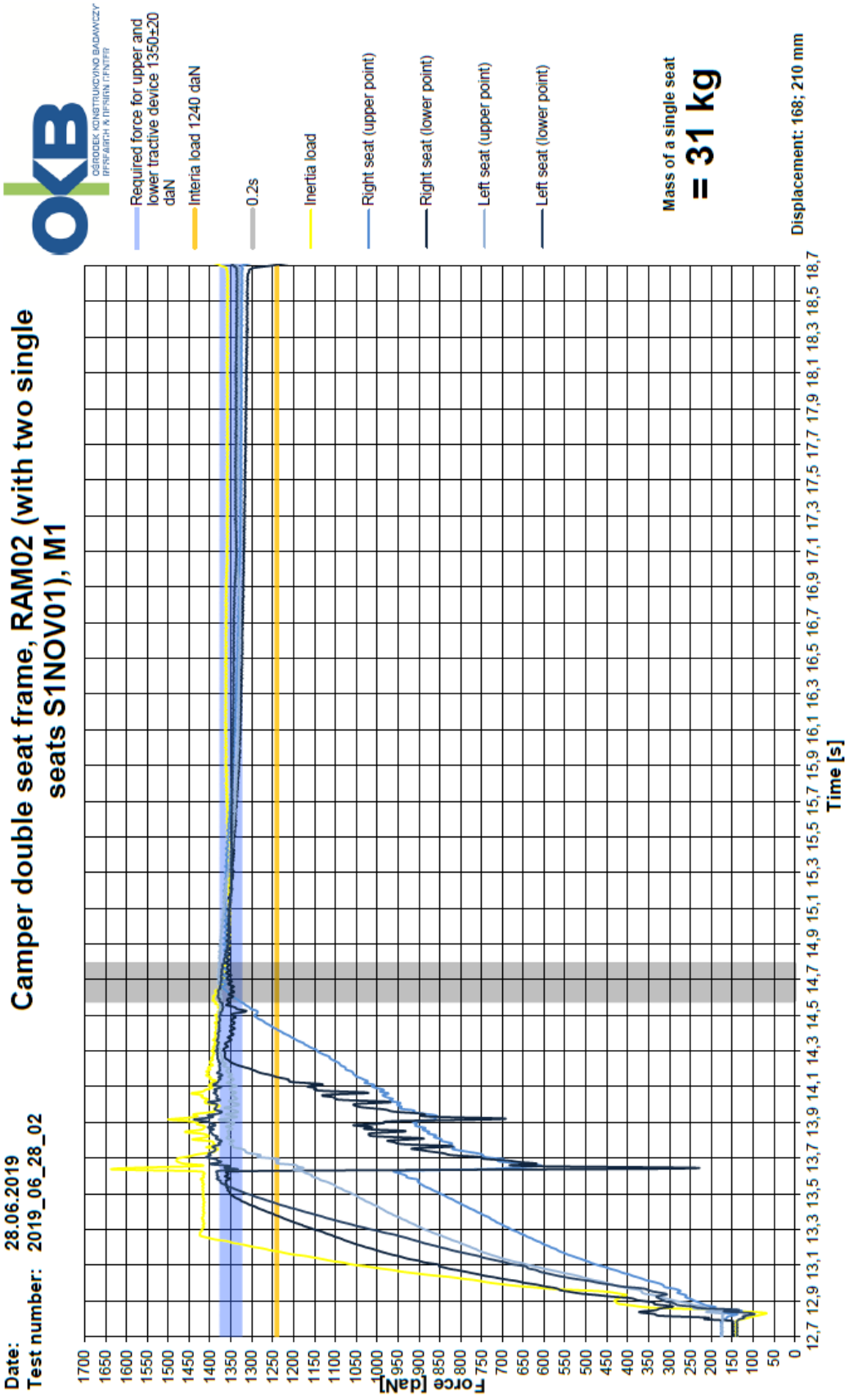
3.2.1. Right seat - type S1NOV01 mounted on frame type RAM02



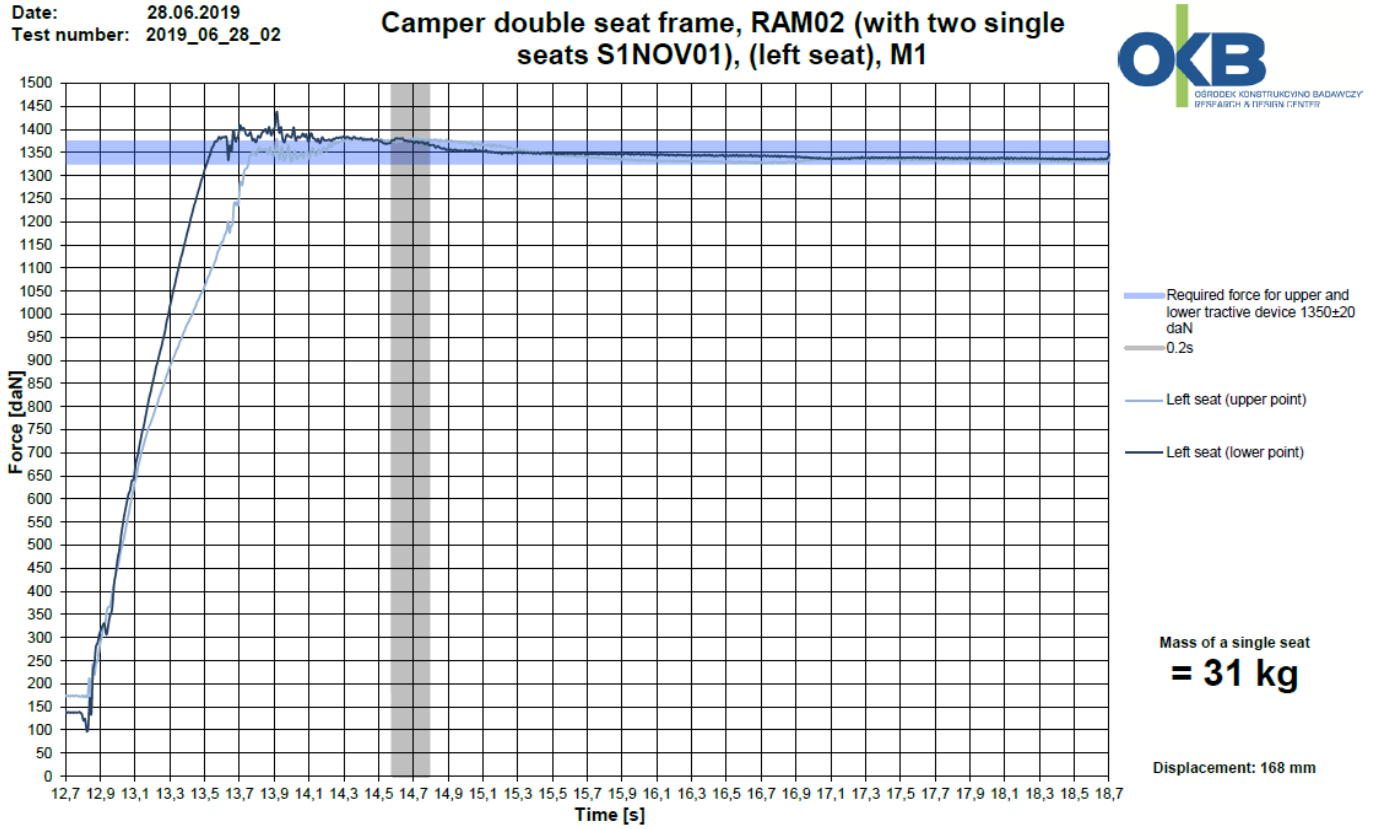
3.2.1. - Inertia load – Additional force applied to seat base (frame base)



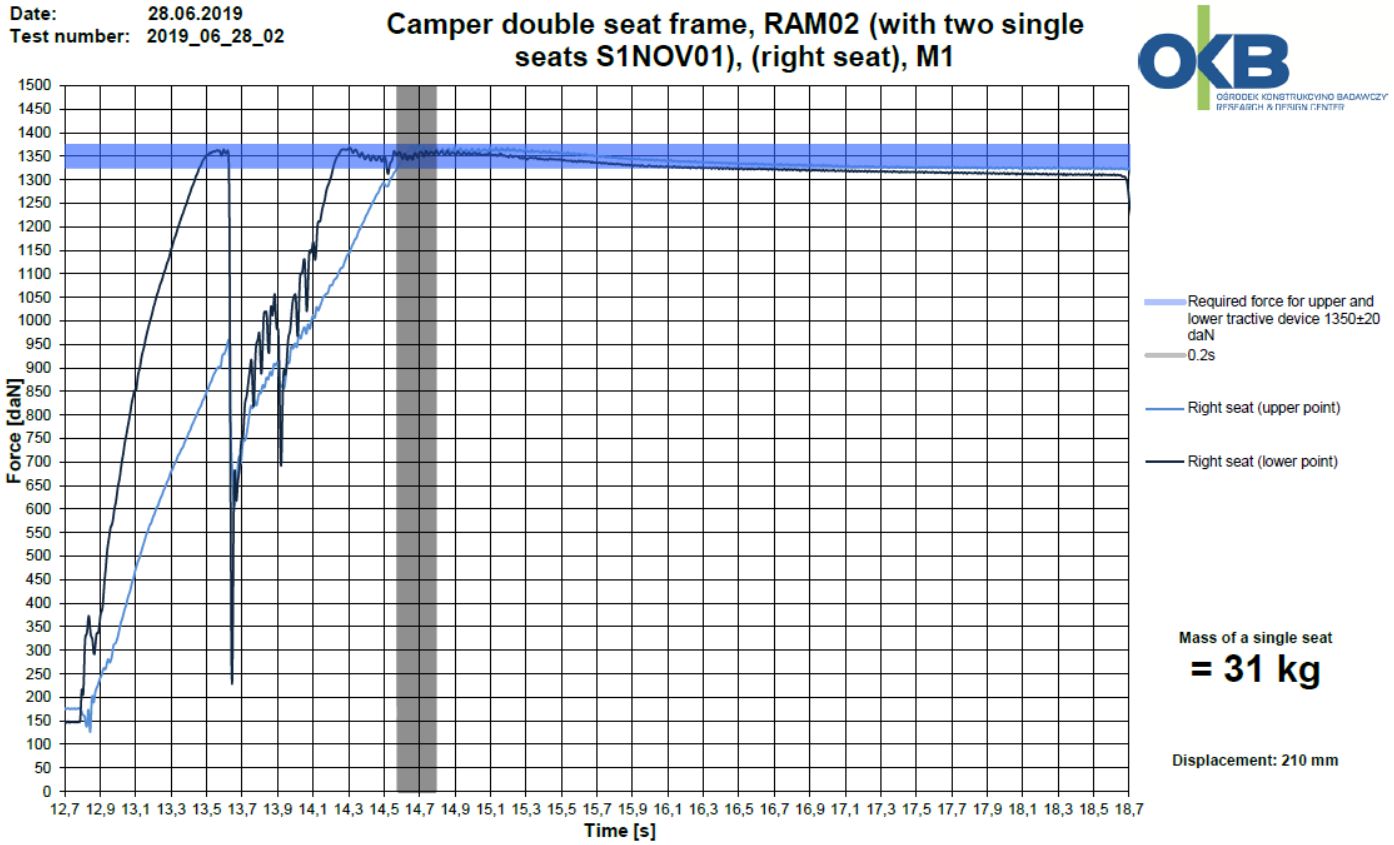
3.2.2. - 2 seats S1NOV01 on frame type RAM02 mounted on rigid test bench



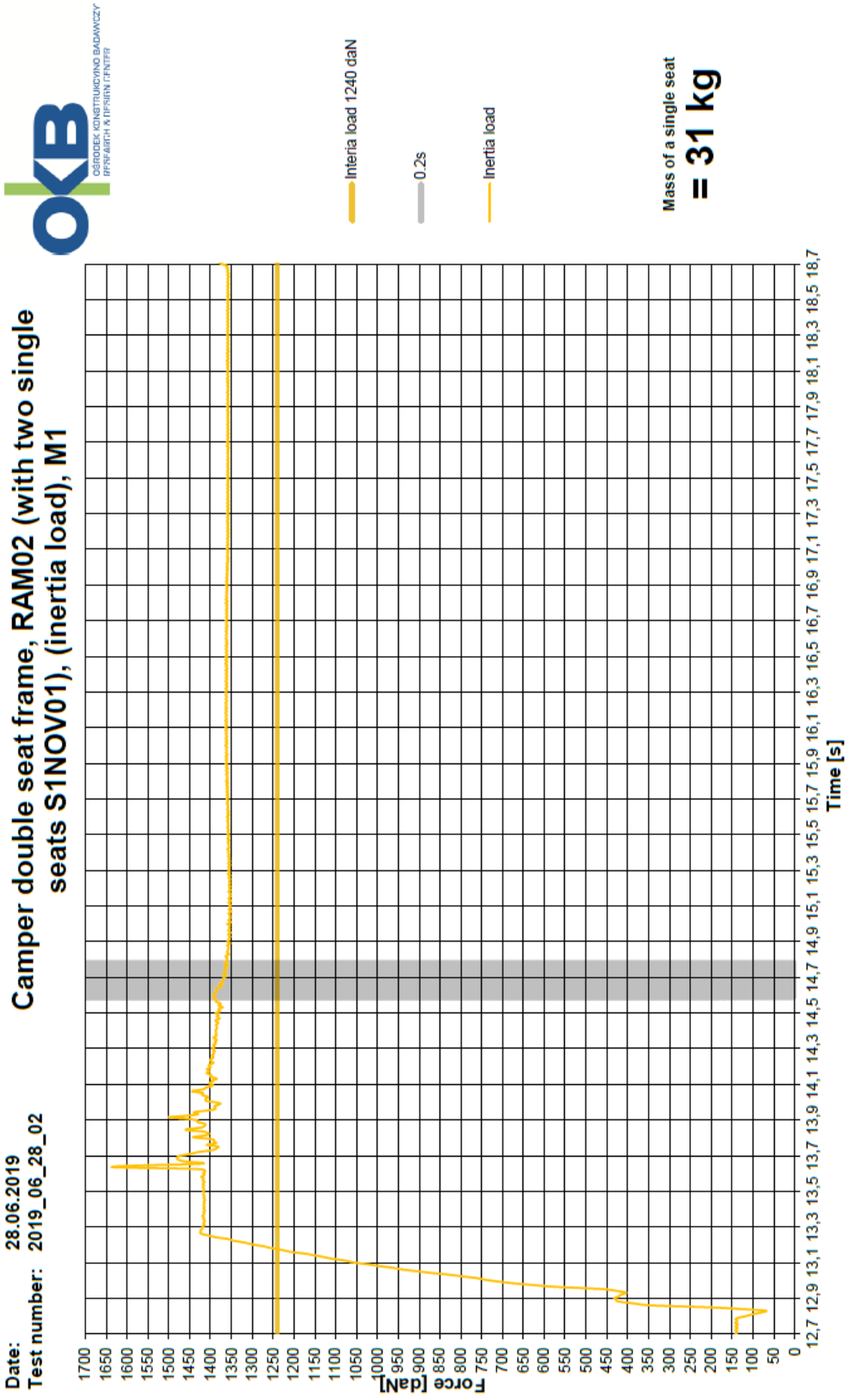
3.2.2. Left seat - type S1NOV01 mounted on frame type RAM02



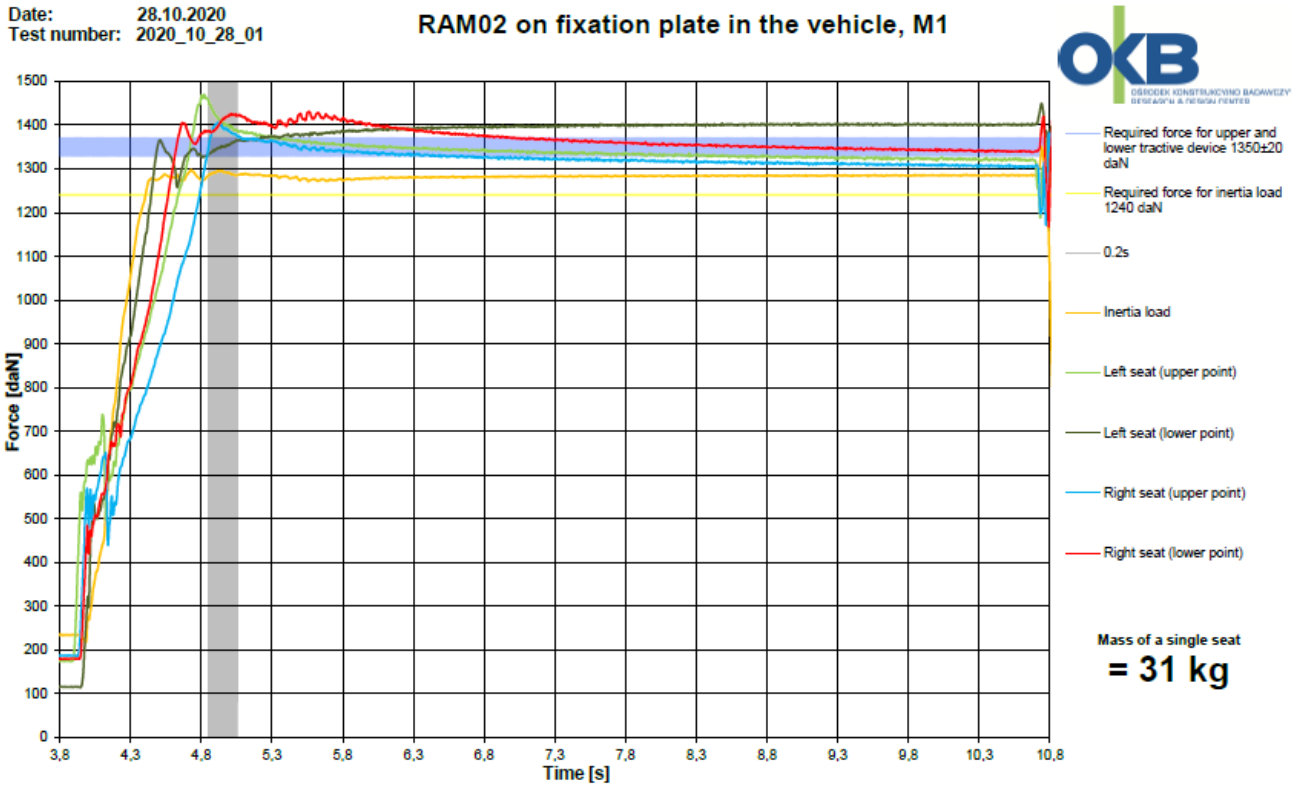
3.2.2. Right seat type S1NOV01 mounted on frame type RAM02



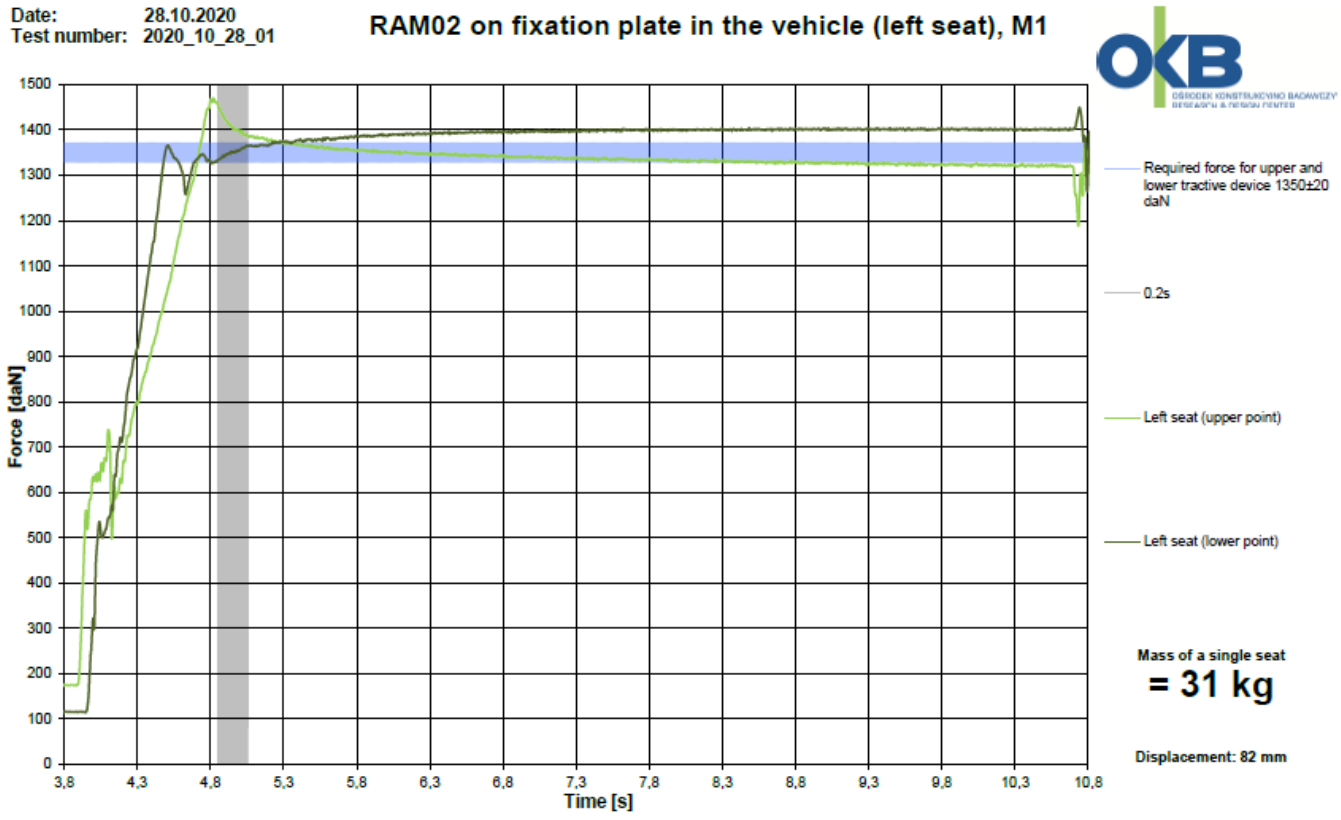
3.2.2. - Inertia load – Additional force applied to seat base (frame base)



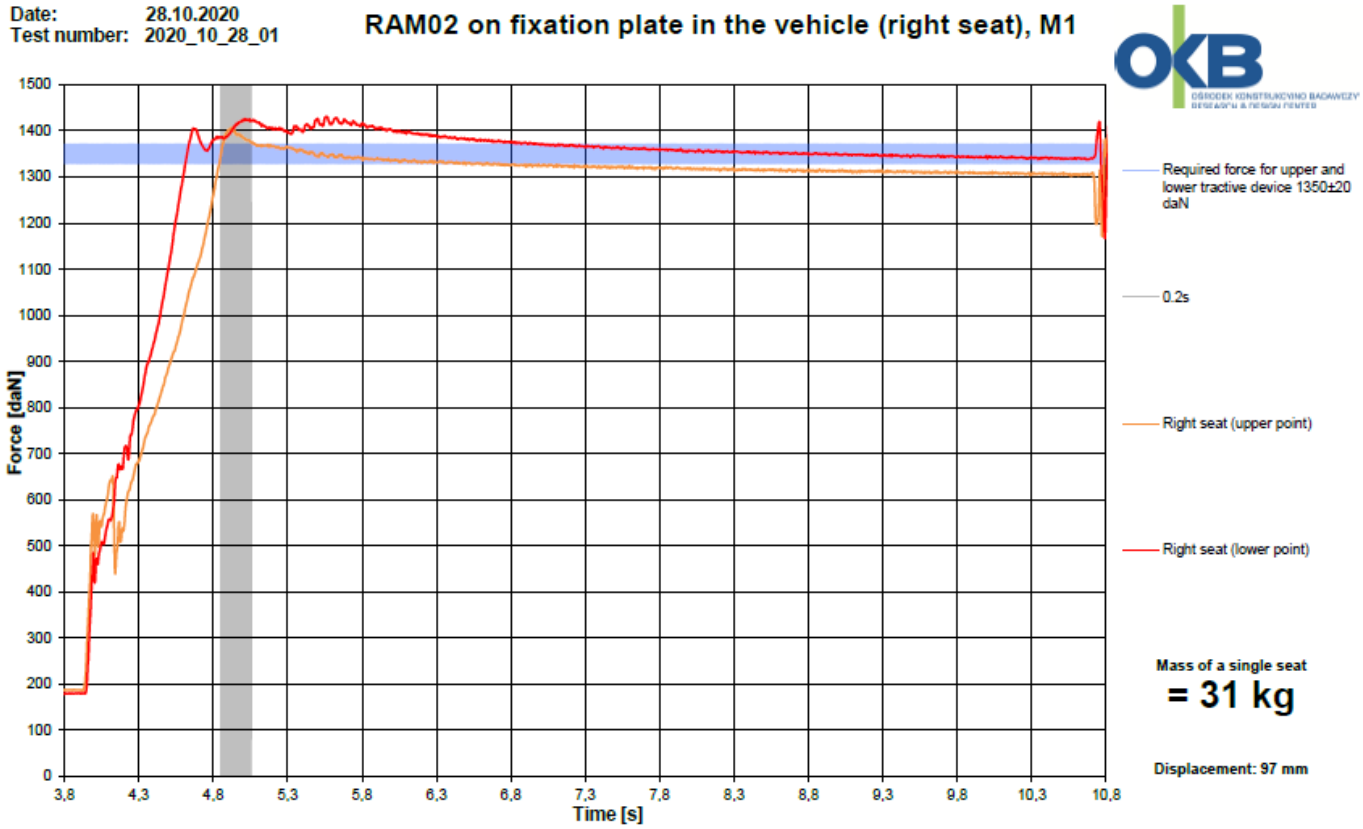
3.2.3. Frame bench type RAM02 on fixation plate in the vehicle.



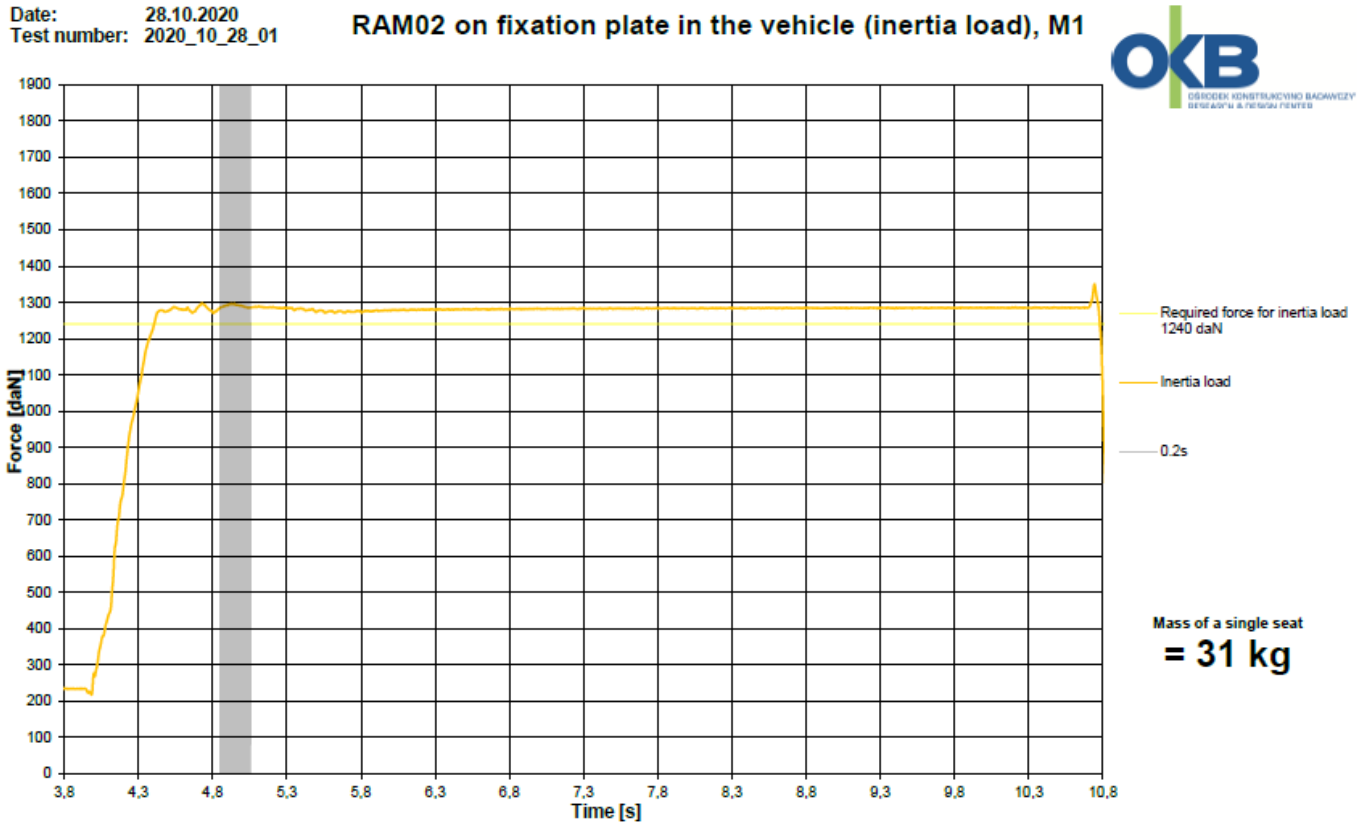
3.2.3. Frame bench type RAM02 on fixation plate in the vehicle (left seat).



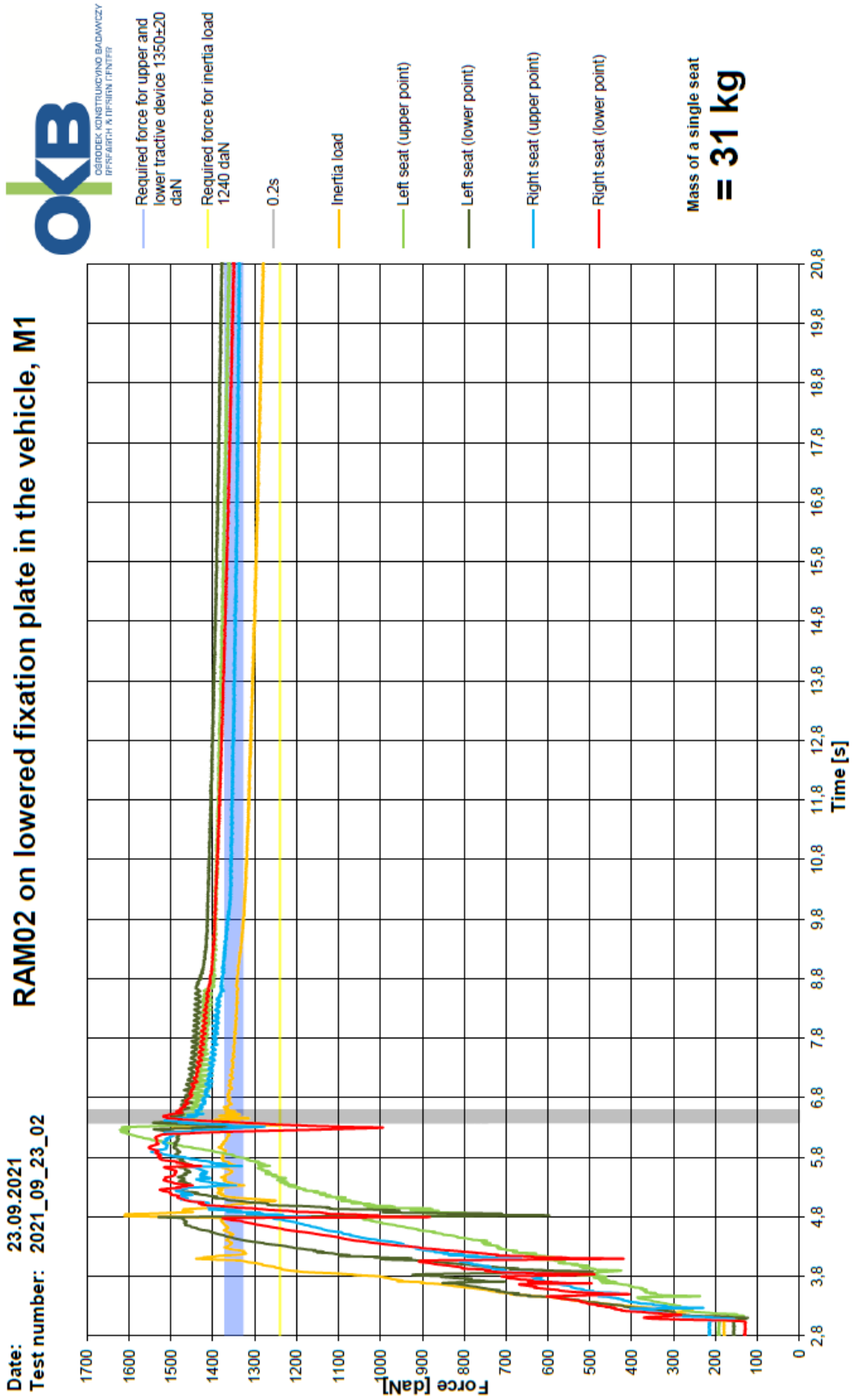
3.2.3. Frame bench type RAM02 on fixation plate in the vehicle (right seat).



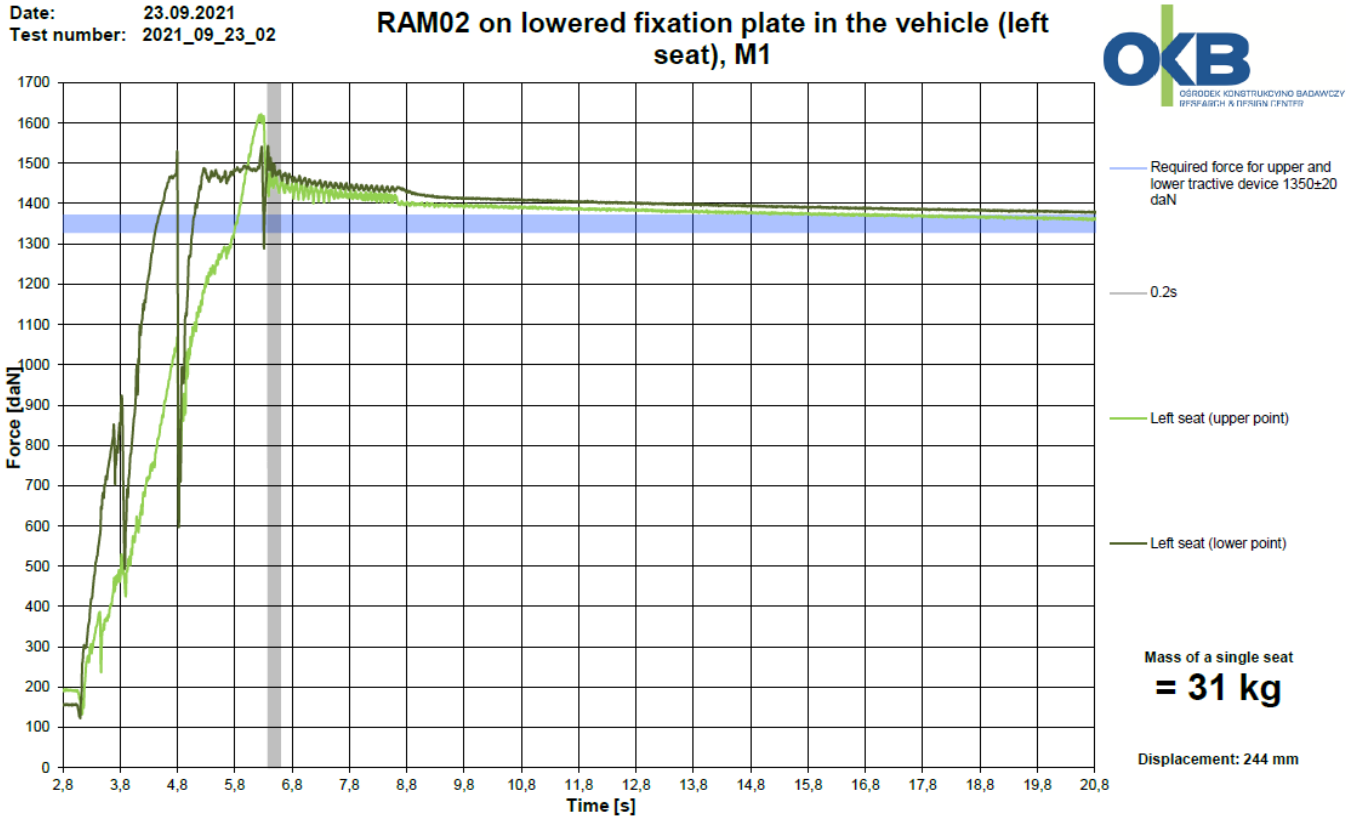
3.2.3. Frame bench type RAM02 on fixation plate in the vehicle (inertia load).



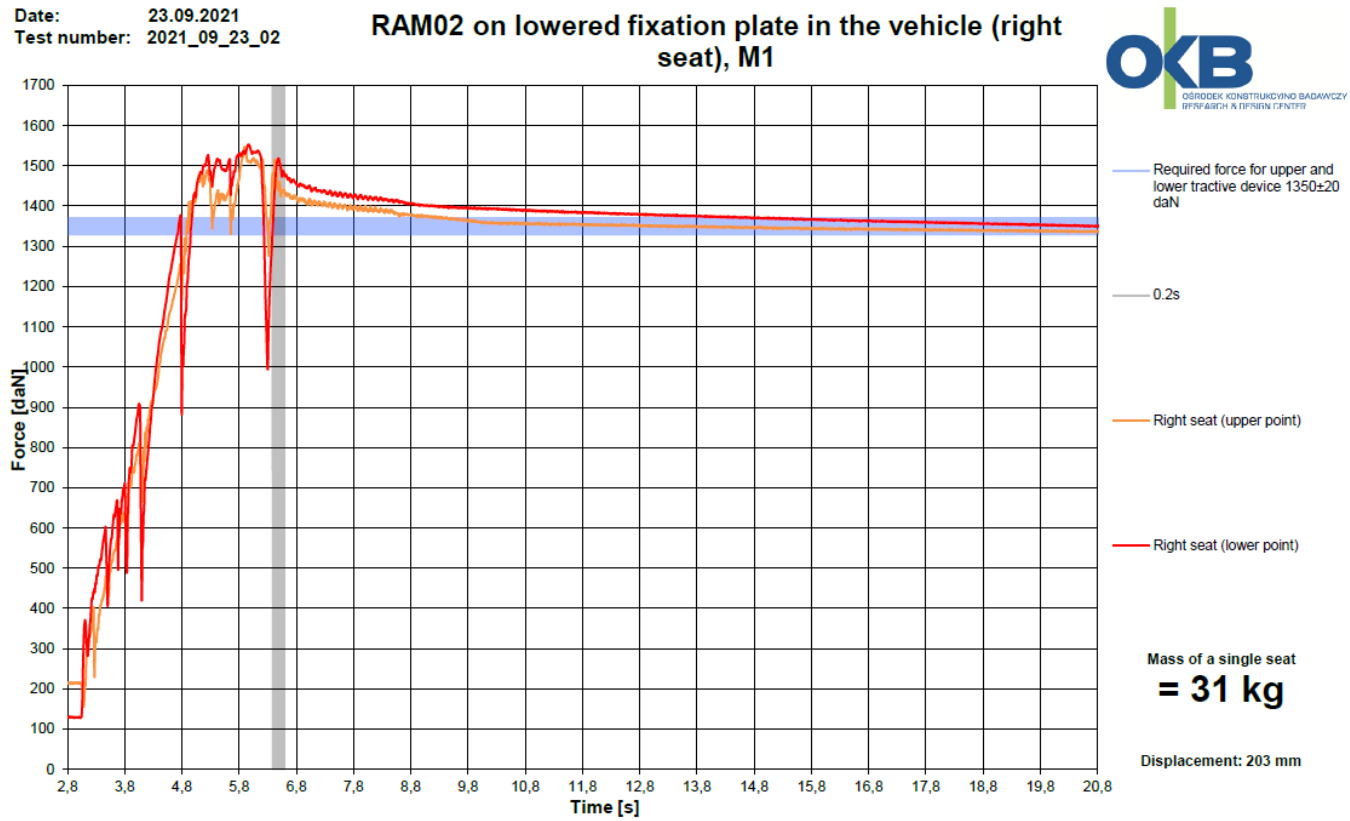
3.2.4. Seat bench type RAM02 mounted on lowered fixation plate



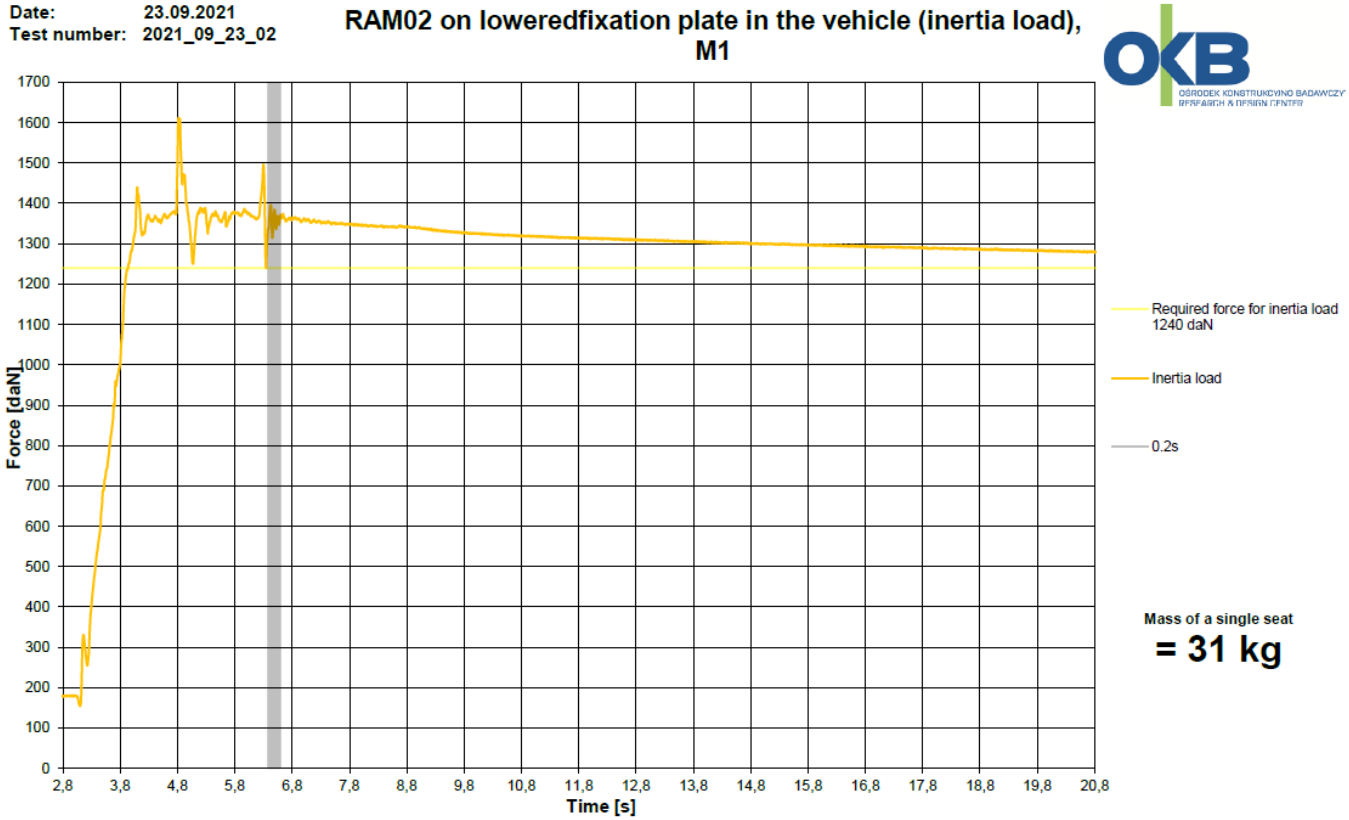
3.2.4. Left seat - Seat bench type RAM02 mounted on lowered fixation plate



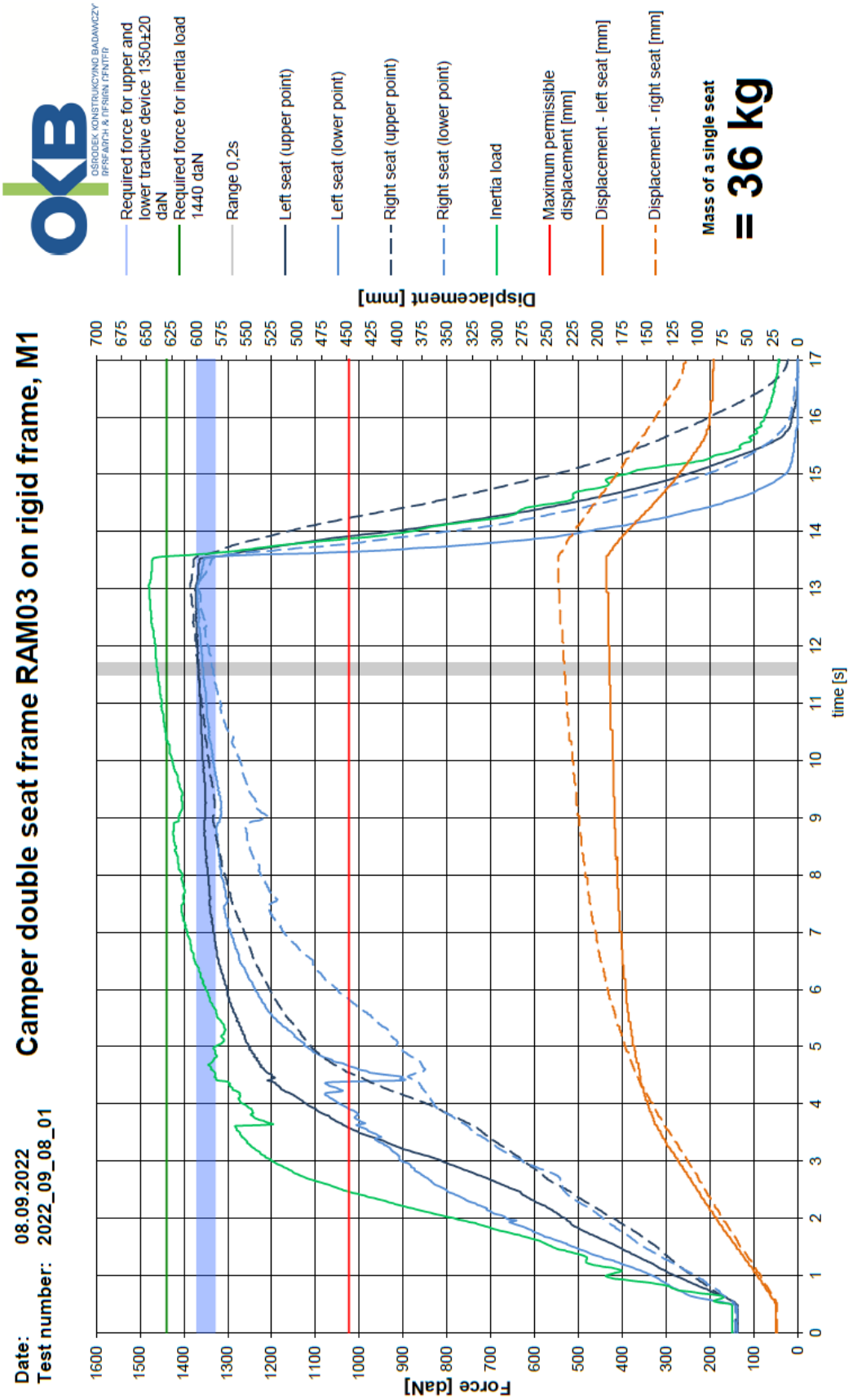
3.2.4. Right seat - Seat bench type RAM02 mounted on lowered fixation plate



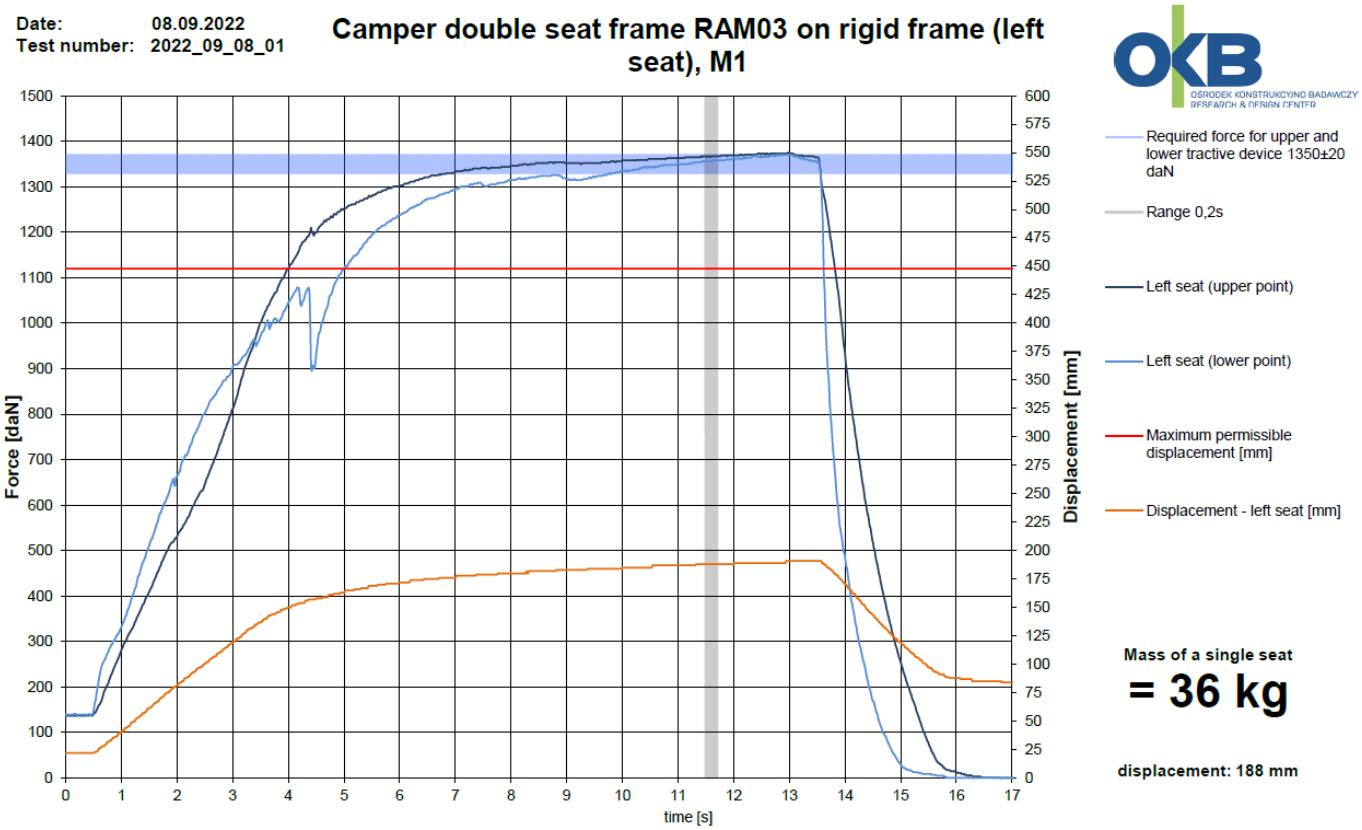
3.2.4. Inertia load - Seat bench type RAM02 mounted on lowered fixation plate



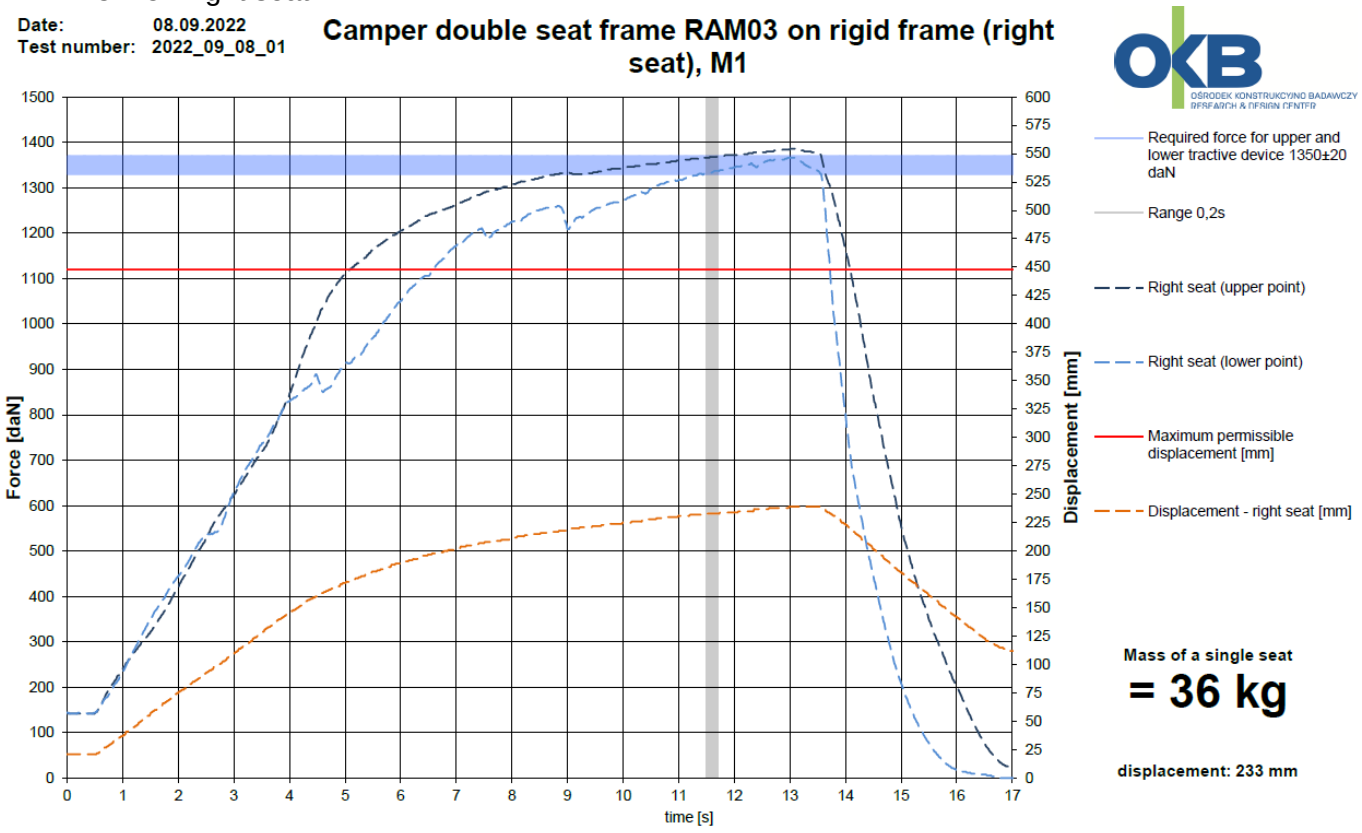
3.2.5. - 2 seats Dummy seat (S1NGR03) on frame type RAM03 mounted on rigid test bench



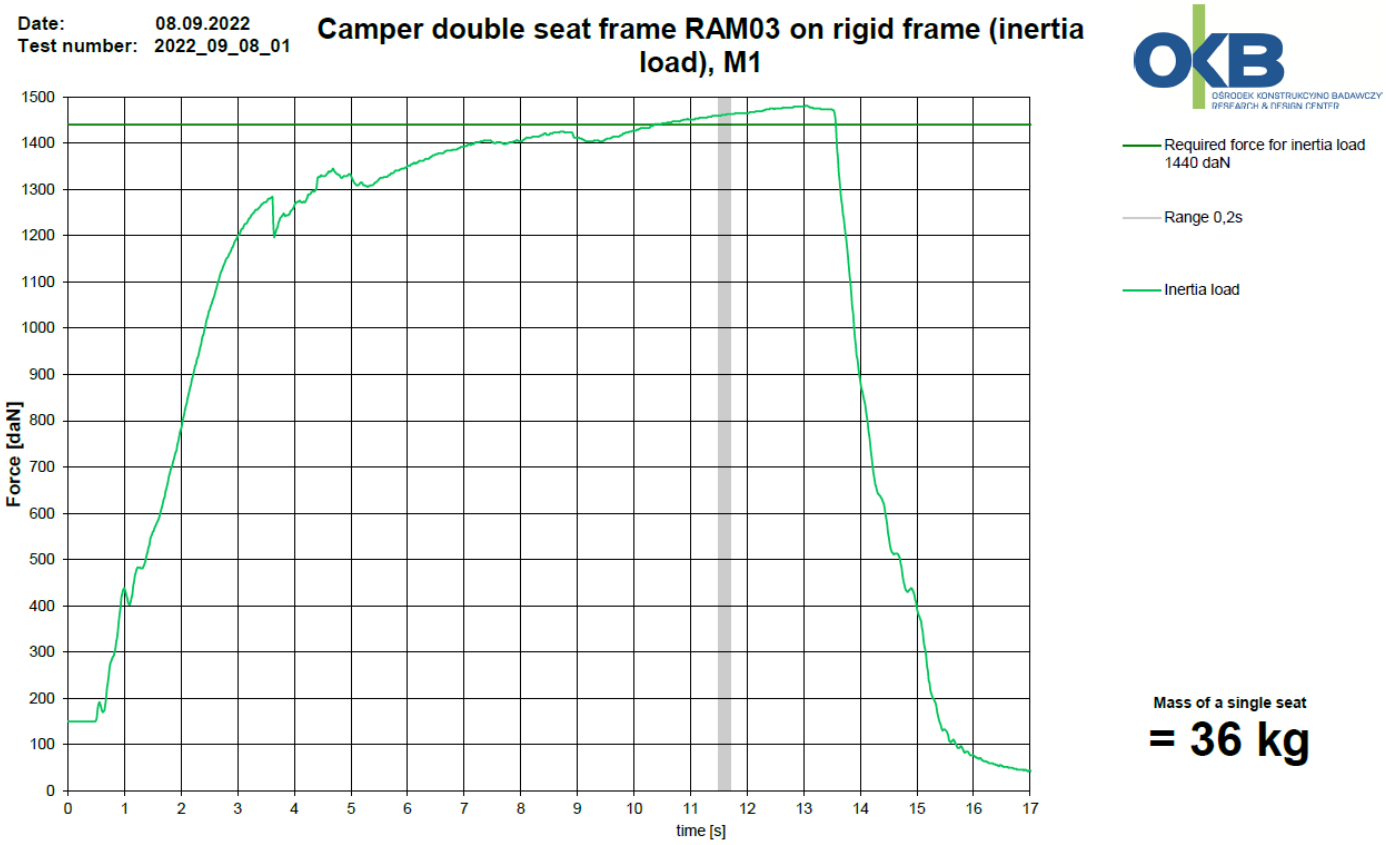
3.2.5. Left seat



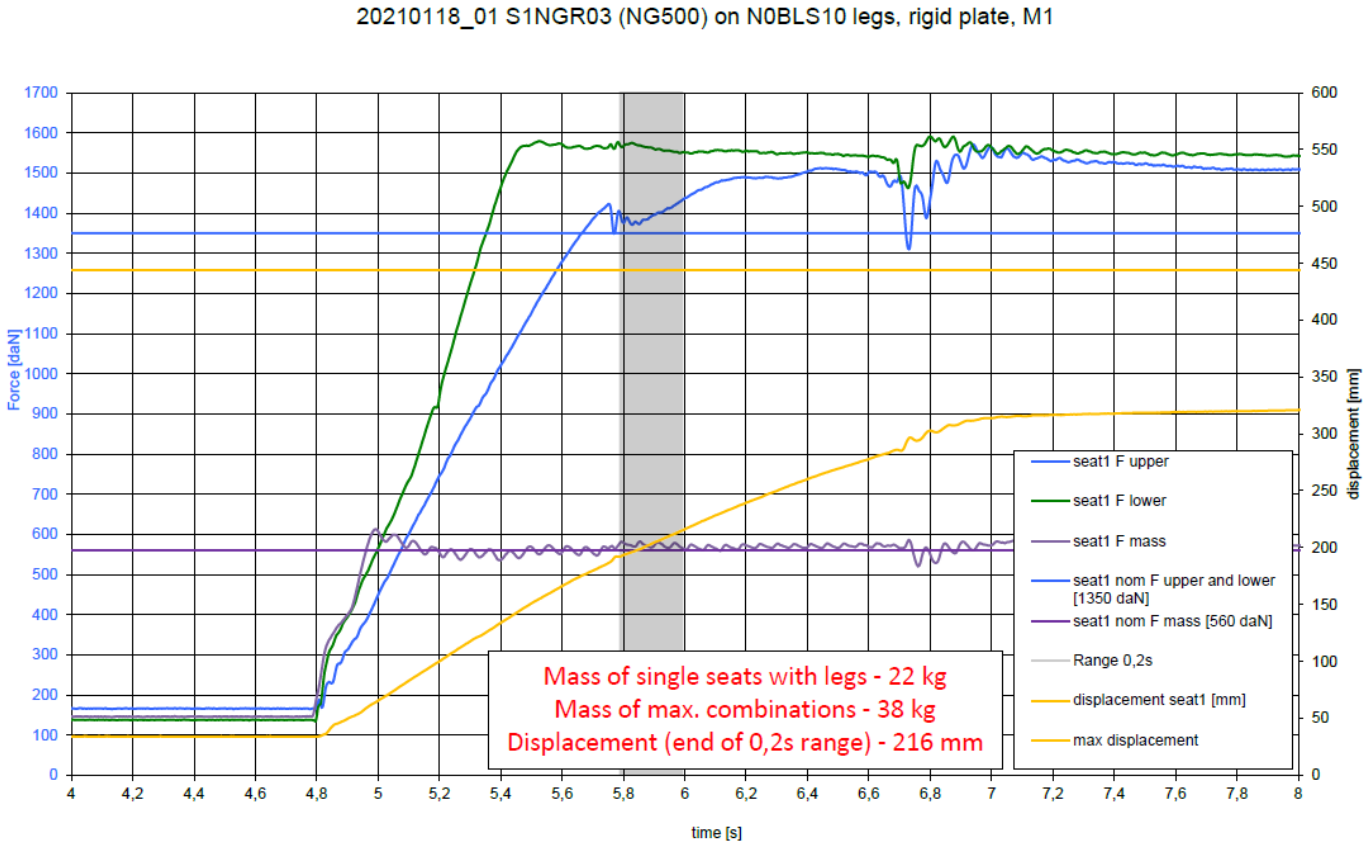
3.2.5. Right seat



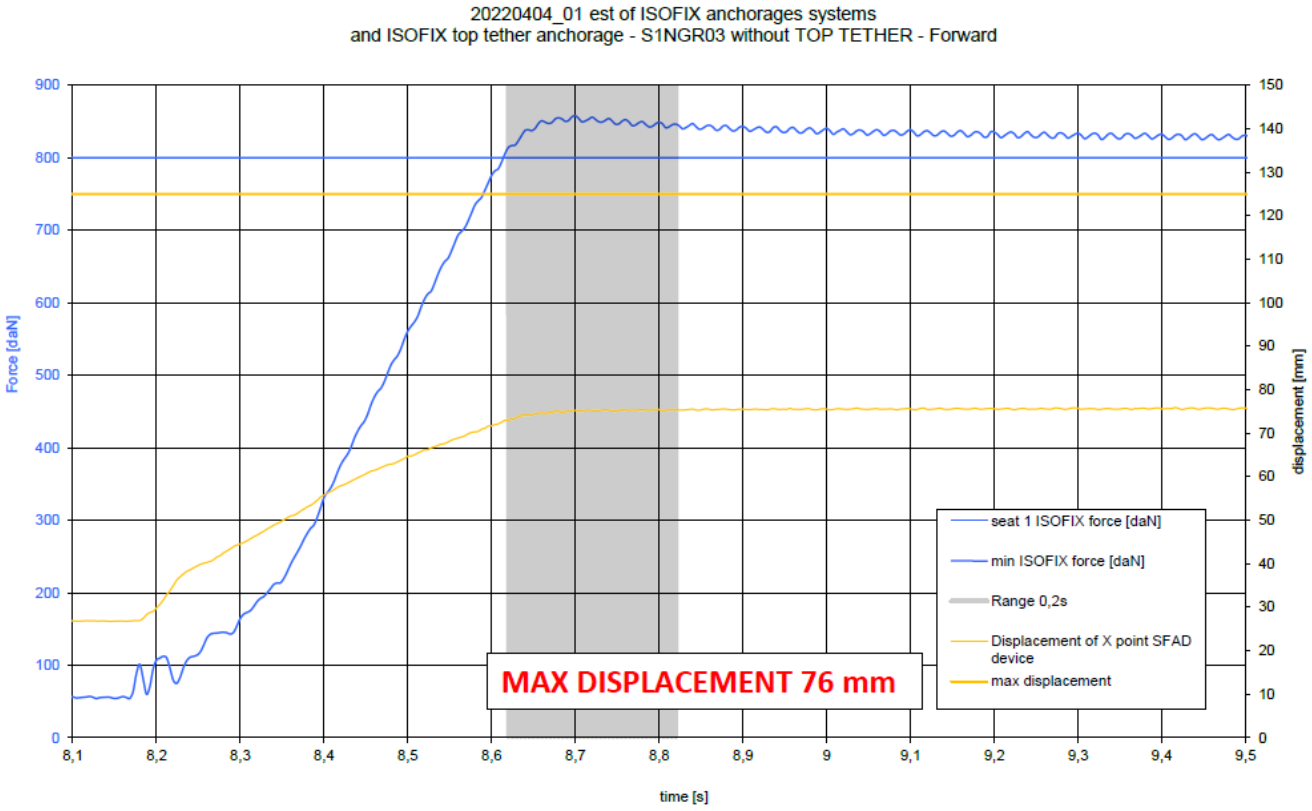
3.2.5. – Inertia load



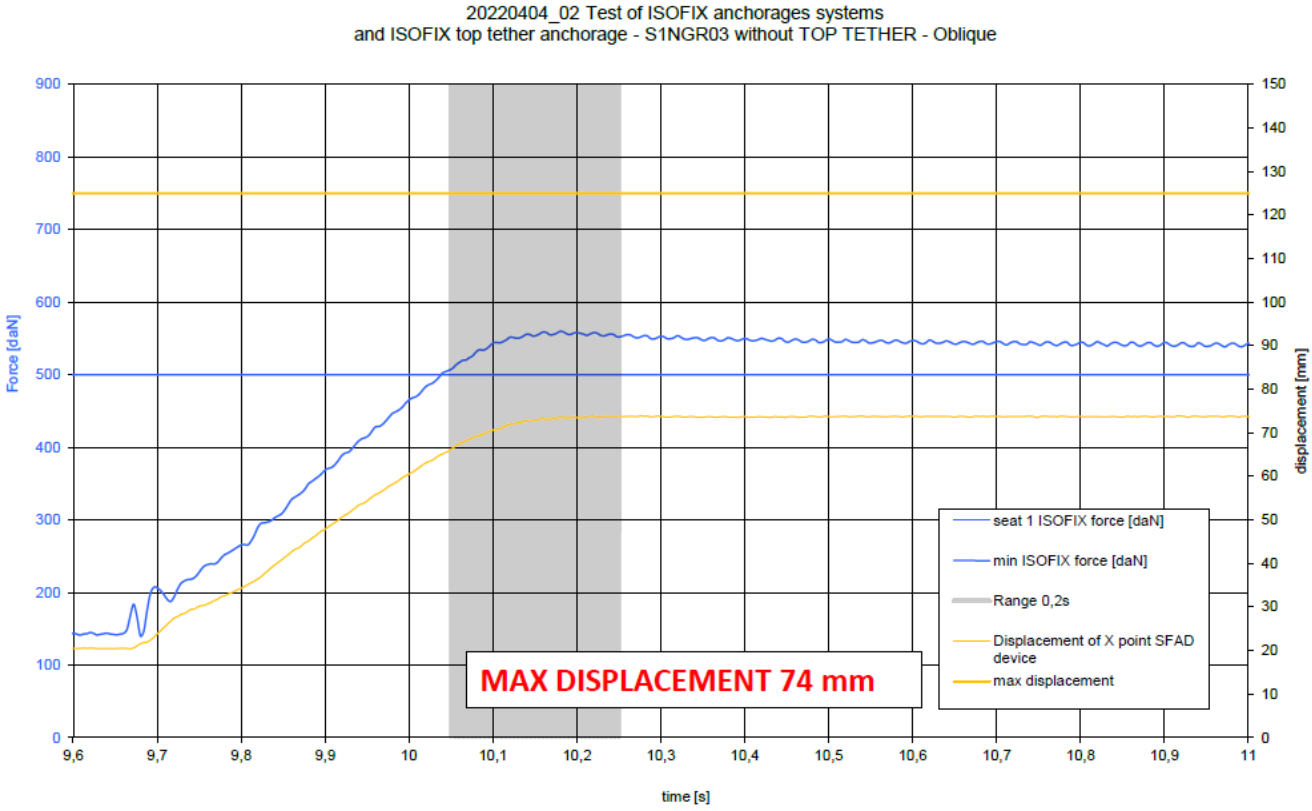
3.2.6. – Seat type S1NGR03 mounted on rigid plate



3.3.1.1. Seat bench type RAM03 – ISOFIX without TOP TETHER – forward direction



3.3.1.2. Seat bench type RAM03 - ISOFIX without TOP TETHER – oblique direction



3.6.2. Photos

Forward facing seat

3.2.1. - 2 x single seat S1NOV01 on frame type RAM02 and installed in representative vehicle body

Before test

After test

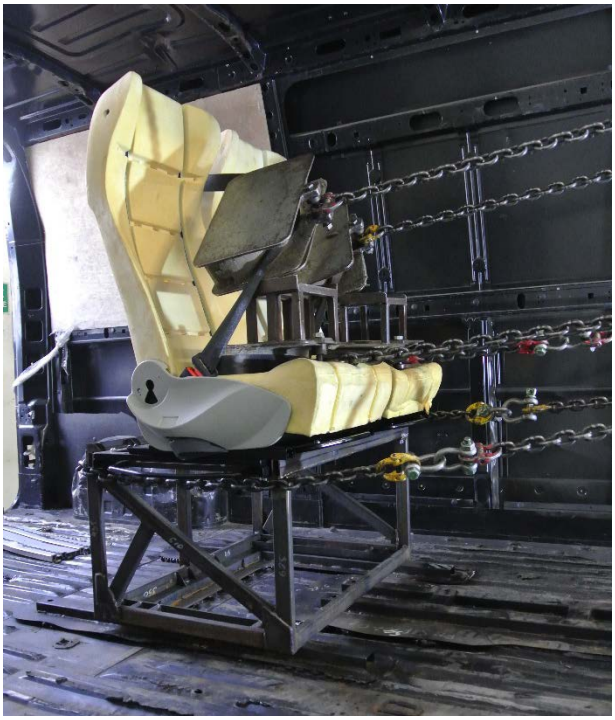
3.2.2. - 2 x single seat S1NOV01 on frame type RAM02 and installed on rigid test bench

Before test

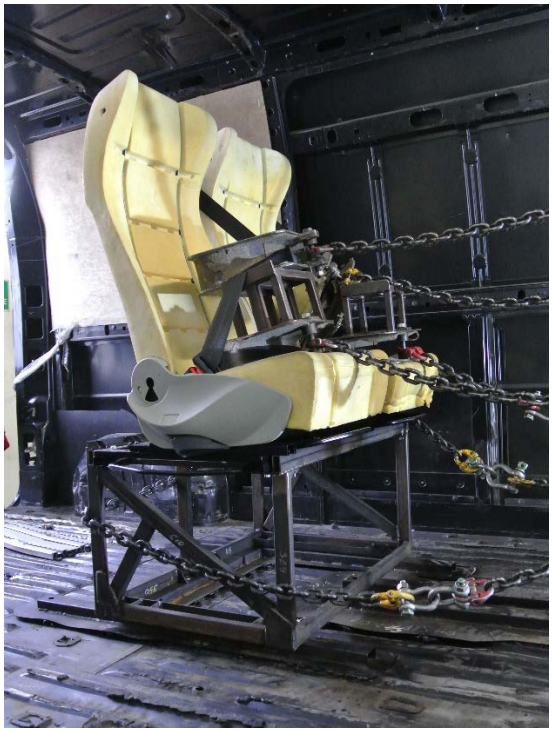
After test

3.2.3. Frame bench type RAM02 on fixation plate in the vehicle.

Before test

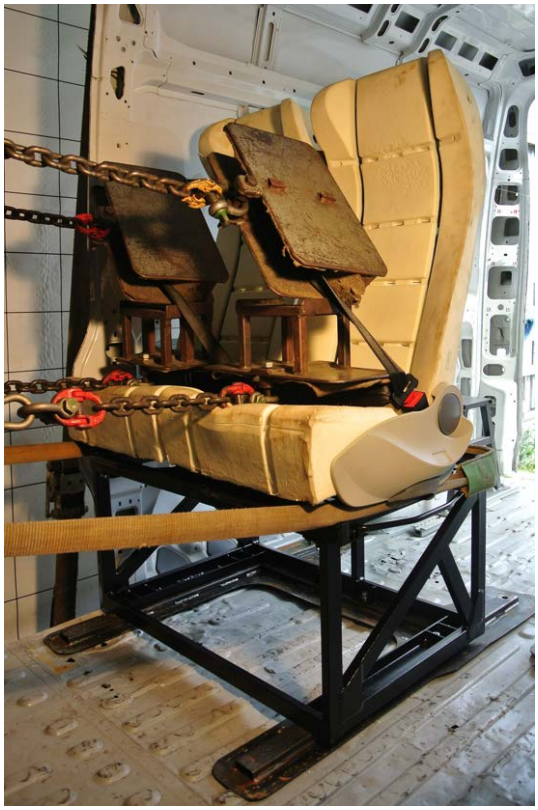


After test



3.2.4. Seat bench type RAM02 mounted on lowered fixation plate

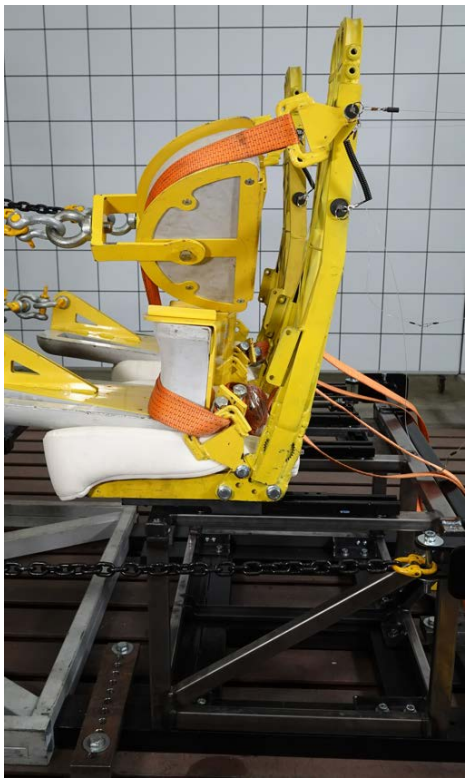
Before test



After test

3.2.5. 2 seats Dummy seat (S1NGR03) on frame type RAM03 mounted on rigid test bench

Before test



After test

3.2.6. – Seat type S1NGR03 mounted on rigid plate

Before test

After test

3.3.1.1. Seat bench type RAM03 - ISOFIX – forward direction

Before test

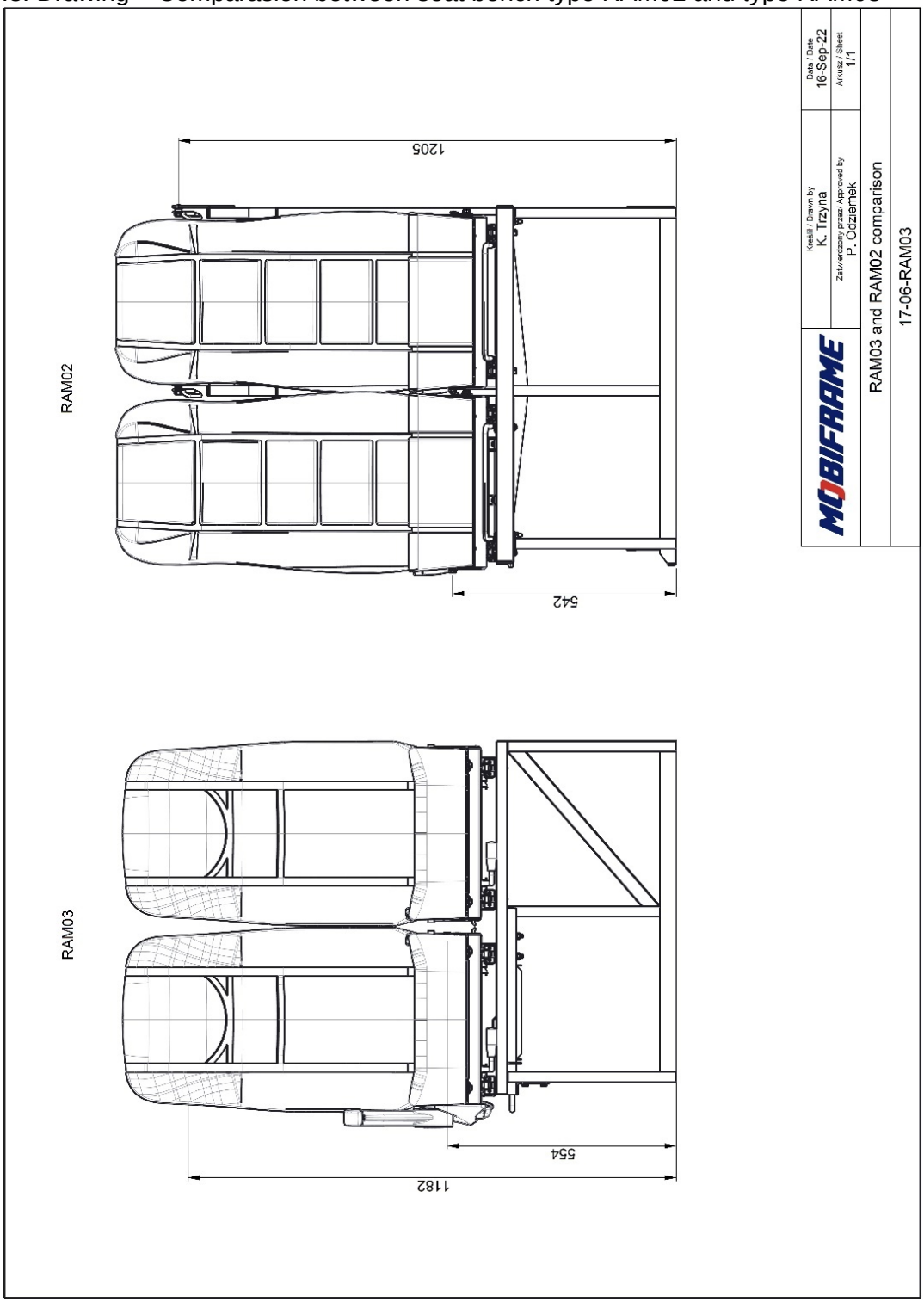
After test

3.3.1.2. Seat bench type RAM03 - ISOFIX – oblique direction

Before test

After test

3.6.3. Drawing – Comparasion between seat bench type RAM02 and type RAM03



4. Place and date of testing

As before and 08.09.2022

OKB Laboratory, Bukowiec, Poland

INFORMATION FOLDER / DOCUMENT:
MOBIFRAME/04/2022-00

PURSUANT TO UN/ECE REGULATIONS

No. 14-09
"UNIFORM PROVISIONS CONCERNING THE APPROVAL OF VEHICLES WITH REGARD TO SAFETY-BELT ANCHORAGES"
(as last amended)

and

No. 145-00
"UNIFORM PROVISIONS CONCERNING THE APPROVAL OF VEHICLES WITH REGARD TO ISOFIX ANCHORAGE SYSTEMS ISOFIX TOP TETHER ANCHORAGES AND I-SIZE SEATING POSITIONS"
(as last amended)

FOR THE SEAT *MOBIFRAME*
TYPE *RAM02* and *RAM03*

.....

Damian Goliński
Vice President

Total number of pages: *109*
Date of issue: *16.09.2022*

List of documentation and supplements

List of enclosures

Table of vehicles types	Enclosure 1
Methods of seats fixation to the vehicle	Enclosure 2
Drawings of seats and components	Enclosure 3
Adhesives for Fixation Plate	Enclosure 4

Confirmation

We hereby declare that the vehicle specimens submitted for this approval test have been manufactured and assembled on conditions of ordinary mass production and that they are compatible with the enclosed documentation.

Date of issue: *16th September 2022*

……..

Damian Goliński

Vice President

0.	GENERAL	
0.1	Make (trade name of manufacturer):	MOBIFRAME
0.2	Type:	RAM02, RAM03
0.2.1	Commercial name(s) (if available):	RAM02, RAM03
0.2.2	Dedicated for vehicle(s):	See Enclosure 1
0.3	Means of identification of type:	N/A
0.3.1	Location of that marking:	N/A
0.4	Category of vehicle:	M1, N1, M2, N2
0.5	Name and address of manufacturer:	OKB SP. Z O.O. ul. Szkolna 9 95-006 Bukowiec Poland
1.	GENERAL CONSTRUCTION CHARACTERISTICS OF THE VEHICLE	
1.1	Photographs and/or drawings of a representative vehicle:	See Enclosure 1
9.	BODYWORK	
9.1	Type of bodywork using the codes set out in Part C of Annex II of Directive 2007/46/EC or in Part C of Annex I to Regulation (EU) 2018/858:	AC, AF, BB, CA, SA, SH
9.10	Interior arrangement	
9.10.3	Seats	
9.10.3.1	Number of seating positions:	2
9.10.3.1.1	Location and arrangement:	In case of fixation by means of Fixation Plate - any position in the vehicle behind pillar B (see Enclosure 2) In case of fixation by means of dedicated underfloor reinforcements – pre-defined position (see Enclosure 2)
9.10.3.2	Seat(s) designated for use only when the vehicle is stationary:	N/A

Technischer Dienst Technical Service TÜV SÜD Auto Service GmbH 152

9.10.3.3	Mass:	RAM02 – 62 kg – mass of the heaviest configuration RAM02 is double seat frame with two single seats S1NOV01 RAM03 – 62 kg – mass of the heaviest configuration RAM03 is double seat frame with two single seats S1NGR03
9.10.3.4	Characteristics: for seats not type-approved as components, description and drawings of	
9.10.3.4.1	The seats and their anchorages:	See Enclosure 2, Enclosure 3
9.10.3.4.2	The adjustment system:	See Enclosures
9.10.3.4.3	The displacement and locking systems:	See Enclosures
9.10.3.4.4	The seat-belt anchorages (if incorporated in the seat structure):	see Enclosure 3
9.10.3.4.5	The parts of the vehicle used as anchorages:	See Enclosure 2
9.10.3.5	Coordinates or drawing of the R-point	
9.10.3.5.1	Driver's seat:	N/A
9.10.3.5.2	All other seating positions:	See Enclosure 3
9.10.3.6	Design torso angle	
9.10.3.6.1	Driver's seat:	N/A
9.10.3.6.2	All other seating positions:	See Enclosures
9.10.3.7	Range of seat adjustment	
9.10.3.7.1	Driver's seat:	N/A
9.10.3.7.2	All other seating positions:	See Enclosures
9.10.4.	Head restraints	
9.10.4.1.	Type(s) of head restraints:	integrated
9.10.4.2.	Type-approval number(s), if available:	N/A
9.10.4.3.	For head restraints not yet approved	N/A
9.13	Safety belt anchorages	
9.13.1	Photographs and/or drawings of the bodywork showing the position and dimensions of the actual and effective anchorages including the R-points:	See Enclosures
9.13.2	Drawings of the belt anchorages and parts of the vehicle structure where they are attached (with the material indication):	See Enclosures

9.13.3 Designation of the types of safety belt authorised for fitting to the anchorages with which the vehicle is equipped:

	Anchorage location	
	Vehicle structure	Seat structure
First row of seats	N/A	N/A

Other rows of seats			Anchorage location	
			Vehicle structure	Seat structure
Left-hand seat	Lower anchorages	outboard	--	*Ar*
		inboard	--	*Ar*
	Upper anchorages		--	*Ar*
Right-hand seat	Lower anchorages	outboard	--	*Ar*
		inboard	--	*Ar*
	Upper anchorages		--	*Ar*

9.13.4	Description of a particular type of safety belt where an anchorage is located in the seat backrest or incorporates an energy dissipating device:	Ar4m
9.13.5	Drawings and/or photographs of the ISOFIX anchorages systems, of the top tether anchorages if any, and of the vehicle structure	ISOFIX is optional for bodywork types: BB, CA, SA, SH
9.13.5.1	Number:	
9.13.5.1.1	Of the low ISOFIX anchorages	See Enclosure 3
9.13.5.1.2	Of the ISOFIX top tether anchorages	See Enclosure 3
9.13.5.1.3	Of the integrated " built in" child restraint system(s) of mass groups 0, or 0+, or 1:	N/A
9.13.5.2	Convertible vehicle, as defined in annex 7, paragraph 8.1 of the Consolidated Resolution on the Construction of Vehicles (R.E.3)	N/A
9.13.5.3	Photographs and/or drawings of the bodywork showing the position and dimensions of the anchorages	See Enclosure 2 and 3
9.13.5.4	Drawing and/or photographs of the ISOFIX anchorages systems, of the ISOFIX top tether anchorages	See Enclosure 3
9.13.5.5	Drawing and/or photographs of the position and the form of the symbols of the ISOFIX anchorages system, if necessary	See Enclosures

Enclosure 1: TABLE OF VEHICLES TYPES

Manufacturer	Commercial description / Type	Wheelbase
Daimler / Mercedes-Benz	Sprinter, e-Sprinter (906, 907)	3250, 3665, 4325
	Sprinter (910)	3259, 3924
	Vito/Viano/V-klasse, e-Vito (639, 639/2, 639/4)	3200, 3430
VW	Crafter (2E__)	3250, 3665, 4325
	Crafter, e-Crafter (SYN__ e.g. SYN1E, SYN2E, SYN2Z)	3640, 4490
	T5 (7H_, 7E_, 7J_)	3000, 3400
	T6, T6.1, e-Transporter (7H_, 7E_, 7J_)	3000, 3400
Citroen	Jumper, e-Jumper (Y)	3000, 3450, 4035
	Jumpy (X)	3000, 3122
	Jumpy, e-Jumpy (2016)	2925, 3275
	SpaceTourer, E-SpaceTourer	2925, 3275
	Berlingo, E-Berlingo	2785, 2975
Peugeot	Boxer, e-Boxer (Y)	3000, 3450, 4035
	Expert (VF3__)	3000, 3122
	Expert, e-Expert (2016-…)	2925, 3275
	Traveller, e-Traveller	2925, 3275
	Rifter, e-Rifter	2785, 2975
Fiat	Ducato, e-Ducato (250)	3000, 3450, 4035
	Scudo (270)	3000, 3122
	Scudo (2022-…)	2925, 3275
	Talento (FJL, FFL)	3098, 3498
Opel	Movano (MR, MS, MW)	3182, 3682, 4332
	Movano, Movano-e (Y)	3000, 3450, 4035
	Vivaro (F7)	3098, 3498
	Vivaro, Vivaro-e, Vivaro e-Kombi, Zafira Life	2925, 3275
	Combo Life, Combo-e Life	2785, 2975
Renault	Master, Master E-Tech (FV, MA, VA)	3182, 3682, 4332
	Trafic (FL, L)	3098, 3498
	Trafic 2014 (JL, L)	3098, 3498
Renault Trucks	Master (MF, VF)	3182, 3682, 4332
Ford	Transit, (FA_, FD_)	2933, 3300, 3750
	Transit, e-Transit (FC_)	3300, 3750, 3954
	Transit Custom (FA_, FC_), Turneo Custom	2933, 3300
	Transit Connect (PU2)	2662, 3062
Iveco	Daily, Daily Electric (IS_)	3000, 3300, 3520, 3950, 4100, 4750
Nissan	NV200	2725
	NV300, Primastar	3098, 3498
	NV400	3182, 3682, 4332

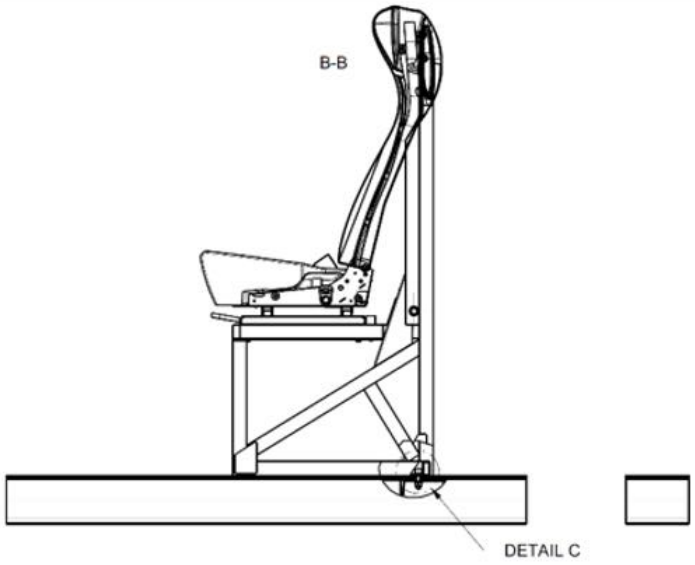
Toyota	Pro Ace (2013-2016)	3000, 3122
	Pro Ace, Pro Ace Verso, Pro Ace Electric (2016)	2925, 3275
MAN	TGE, eTGE (SYN__ e.g. SYN1E, SYN2E, SYN2Z)	3640, 4490
MAXUS (LDV)	V80, Maxus (SV6C)	3100, 3850
	V90, Deliver 9, E-Deliver 9	3000, 3366, 3760
	Deliver 3, E Deliver 3	2910, 3285
Hyundai	H350 (EU(V))	3435, 3670
RAM	ProMaster	3000, 3450, 4035
Freightliner/Dodge	Sprinter	3250, 3665, 4325

Enclosure 2: METHODS OF SEATS FIXATION TO THE VEHICLE

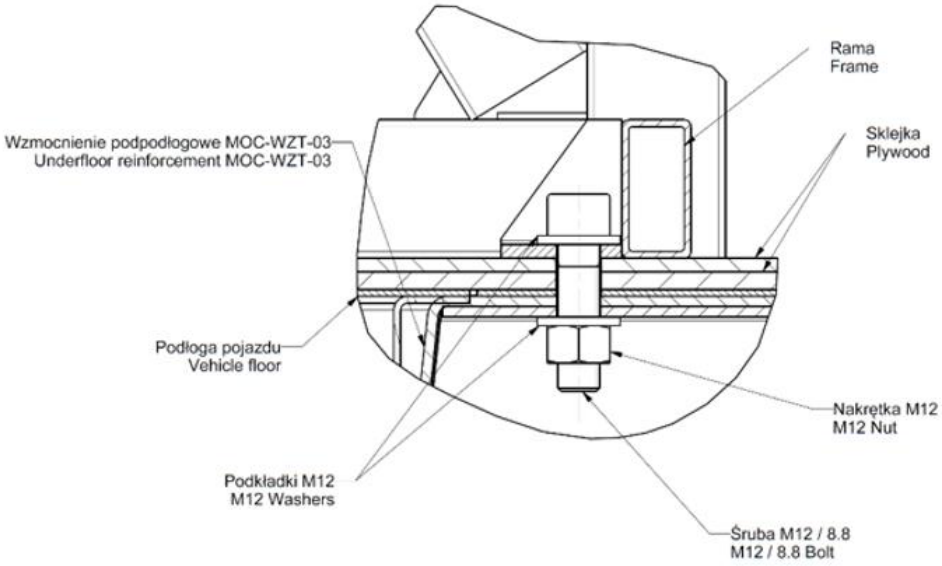
2.1 Fixation of double bench frame by means of underfloor reinforcements – dedicated for Fiat Ducato/Peugeot Boxer/Citroen Jumper/Opel Movano/RAM ProMaster

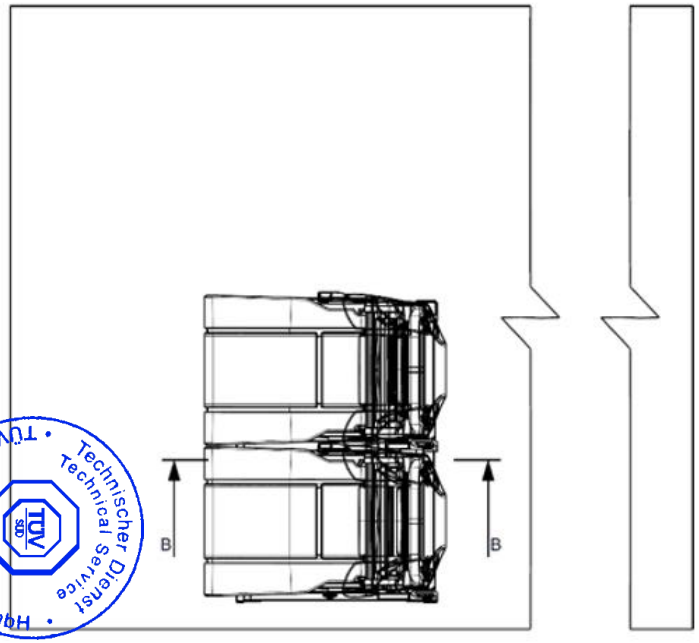
RAM02:

(see next pages)

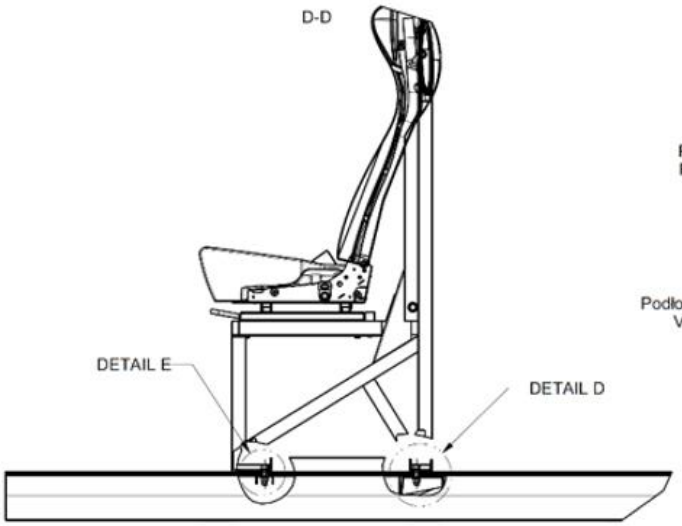


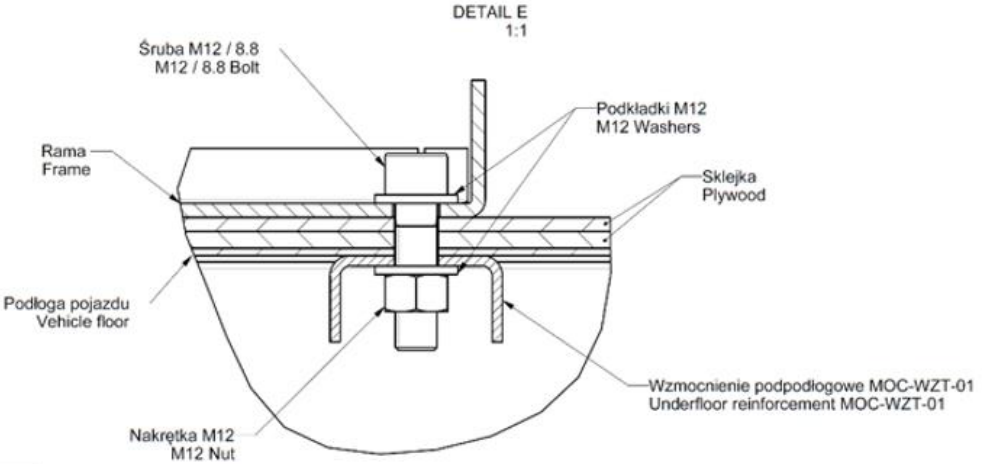
DETAIL C
1:1

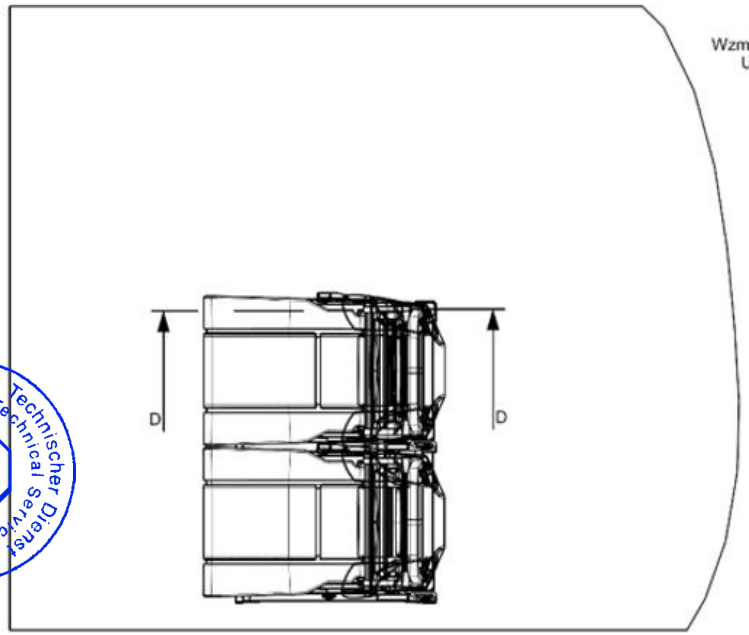


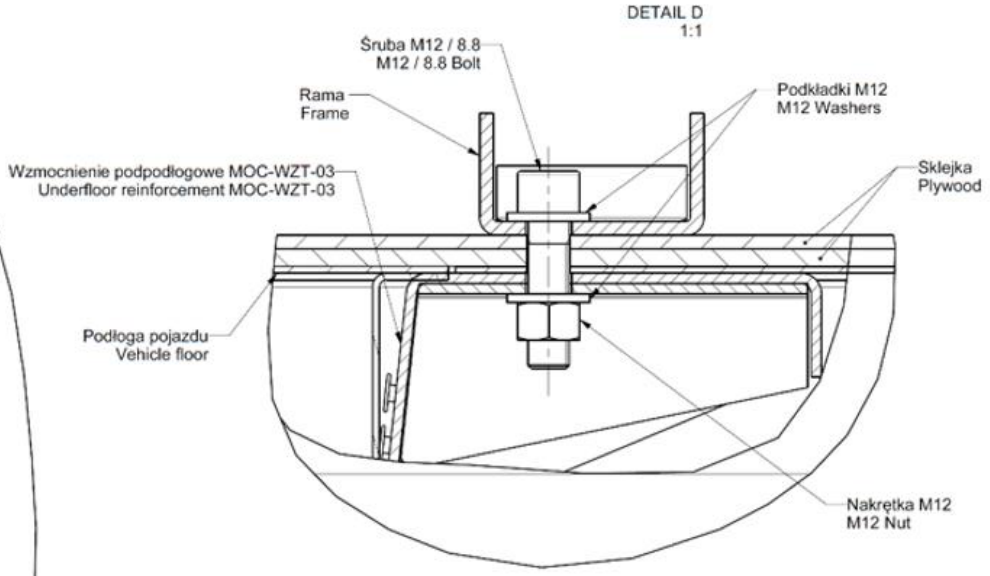


Tolerancja dla złożeń, wymiary liniowe i kątowe: Tolerances for assemblies, linear and angular dimensions:	± 0,5mm i 50'	mm
RAM 02 moc. do nadwozia		
W. Grzegorek	A 15-07-2019	1:10
MOBIFRAME		A2
		2 /4

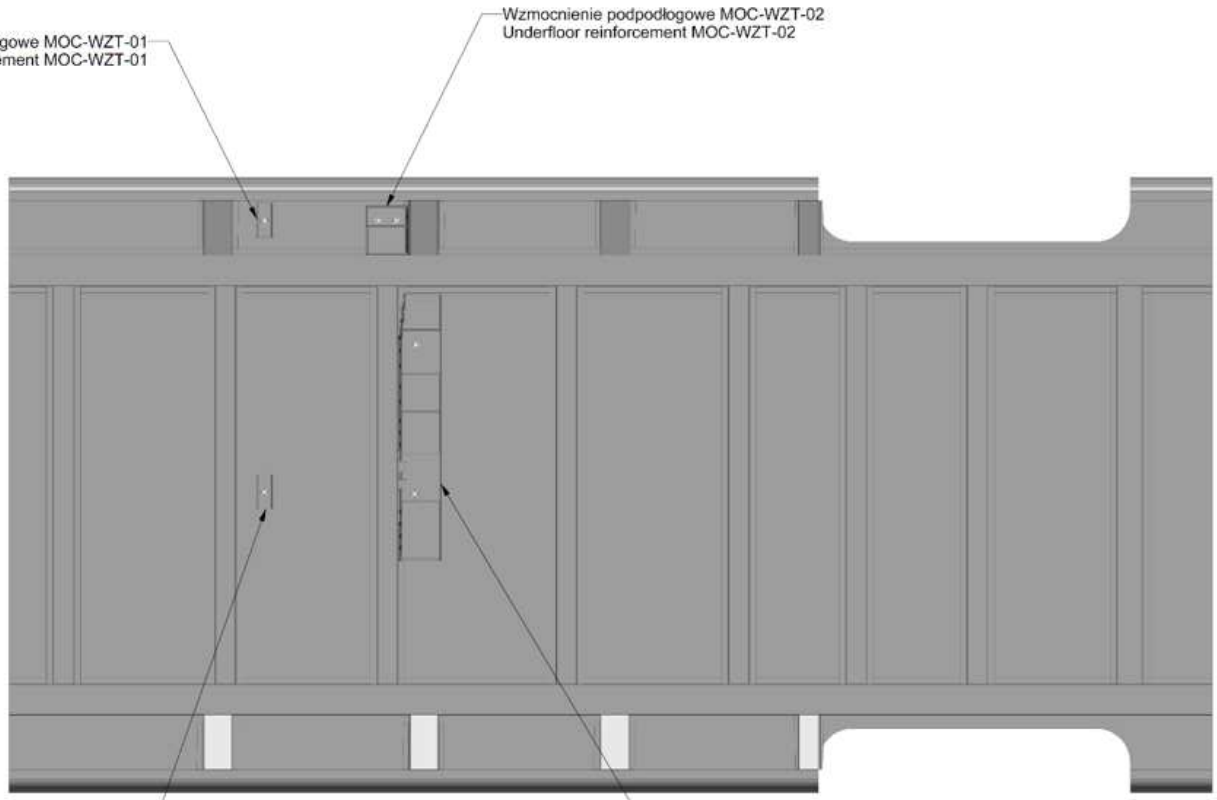








Tolerancja dla złożeń, wymiary liniowe i kątowe: Tolerances for assemblies, linear and angular dimensions:	± 0,5mm i 50'		mm
RAM 02 moc. do nadwozia			
W. Grzegorek	A	15-07-2019	1:10
MOBIFRAME			A2
			3 /4



TÜV SÜD Technischer Dienst Technical Service Auto Service GmbH 152

Tolerancja dla złożeń, wymiary liniowe i kątowe:
Tolerances for assemblies, linear and angular dimensions: ± 0,5mm i 50

Jednostki: mm

RAM 02 moc. do nadwozia

Konstruktor / Designer: W. Grzegorek

A 15-07-2019

Skala/Scale 1:10

Format A2

4 /4

RAM03:

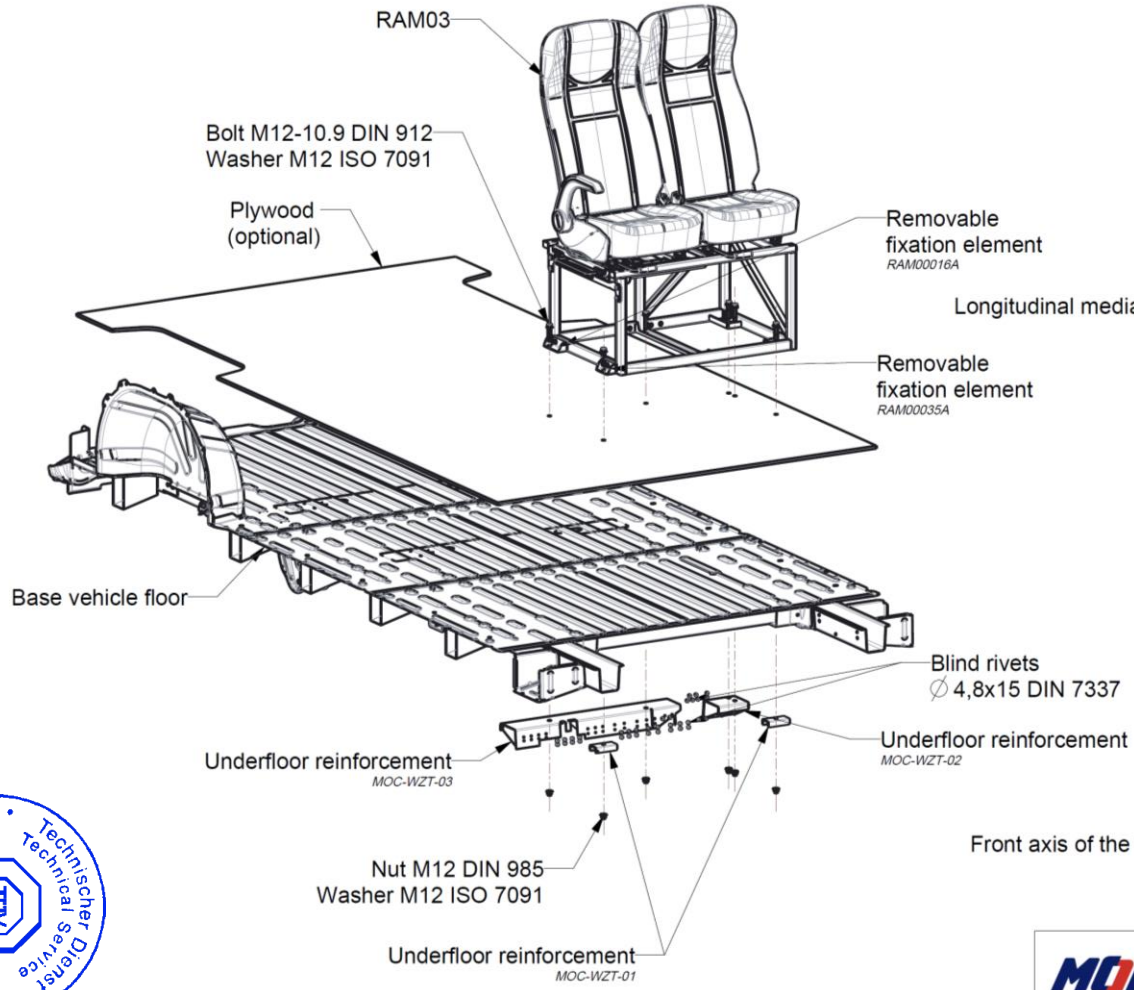
(see next pages)

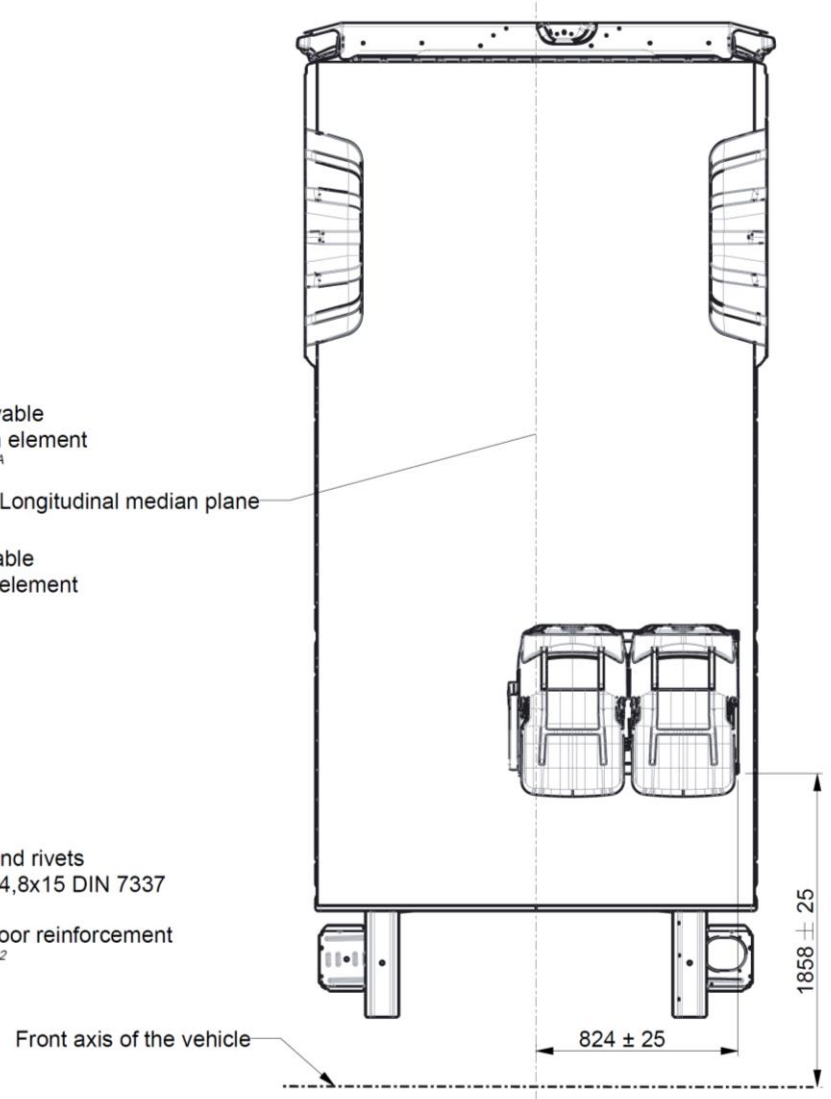
MOBIFRAME

MOBIFRAME/04/2022-00

Date: 16.09.2022

Page / pages: 14/109



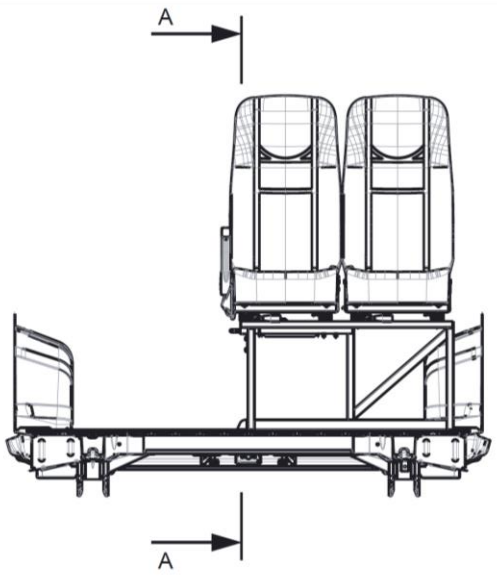


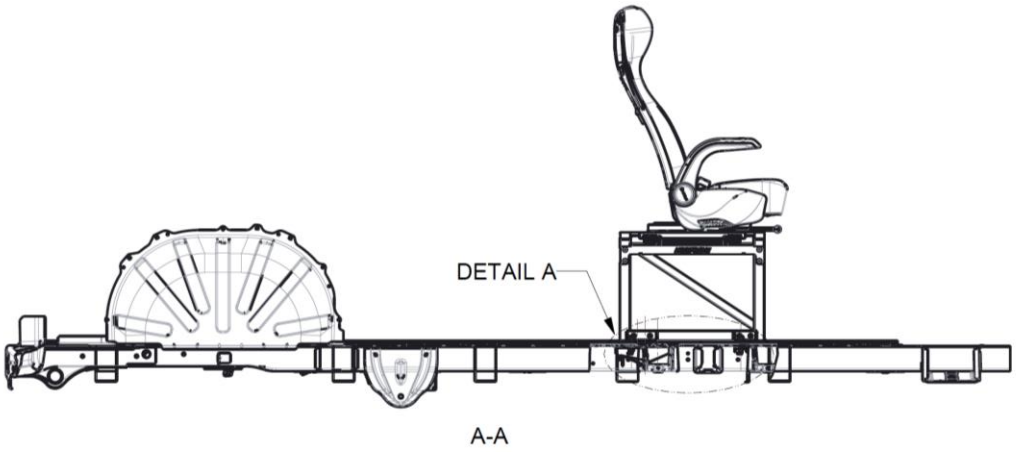
TÜV SÜD Auto Service GmbH · Technischer Dienst Technical Service · 152

MOBIFRAME	Kreślił / Drawn by: K. Trzyna	Data / Date: 14-Sep-22
	Zatwierdzony przez/ Approved by: P. Odziemek	Arkusz / Sheet: 1/5

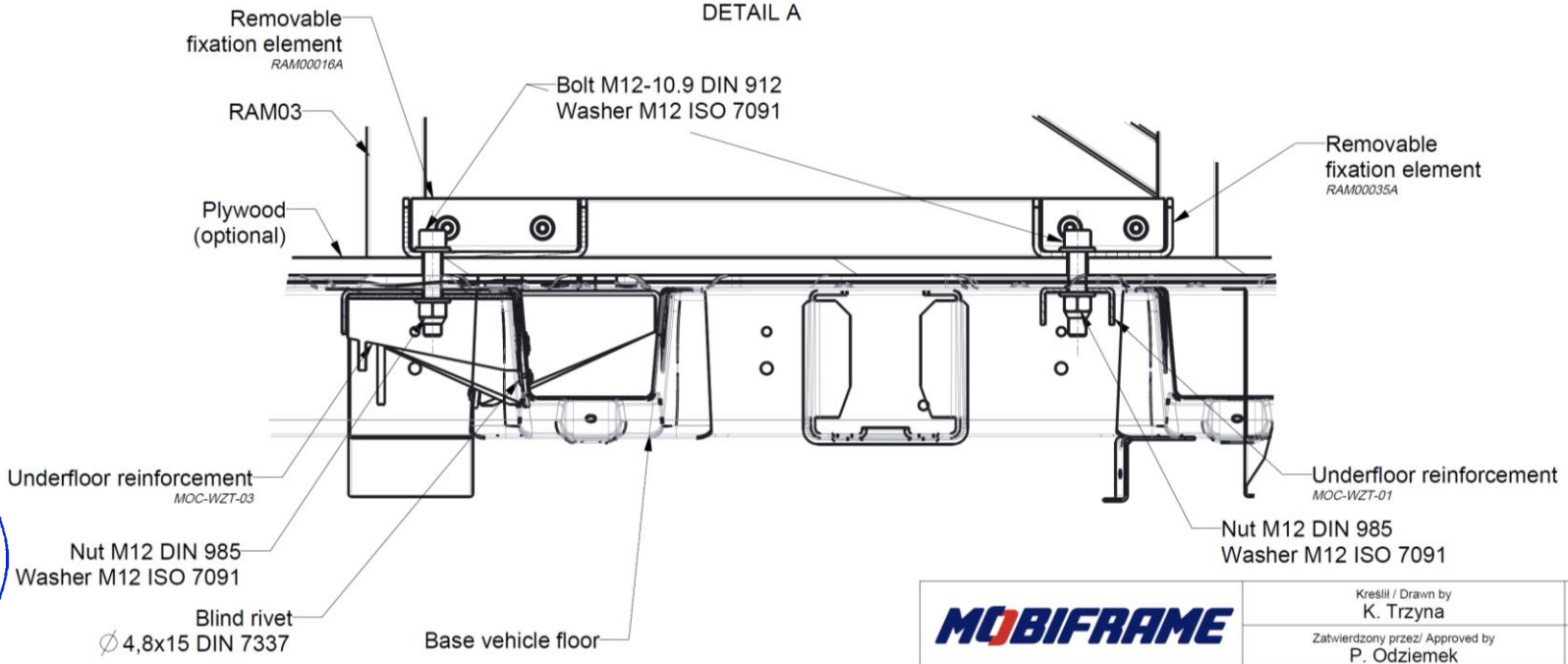
Fixation of RAM03 by means of underfloor reinforcement in the vehicle

17-04-RAM03





DETAIL A

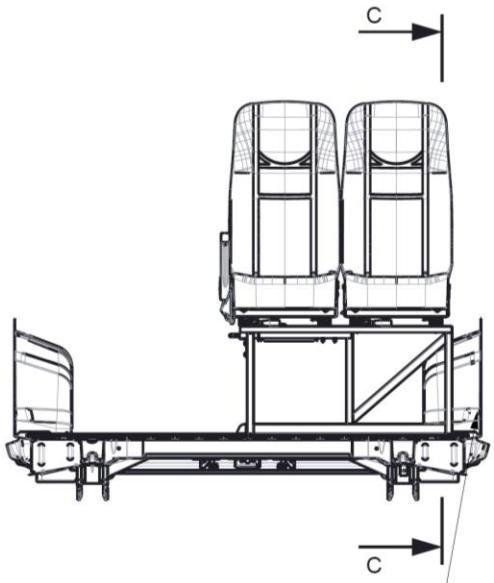


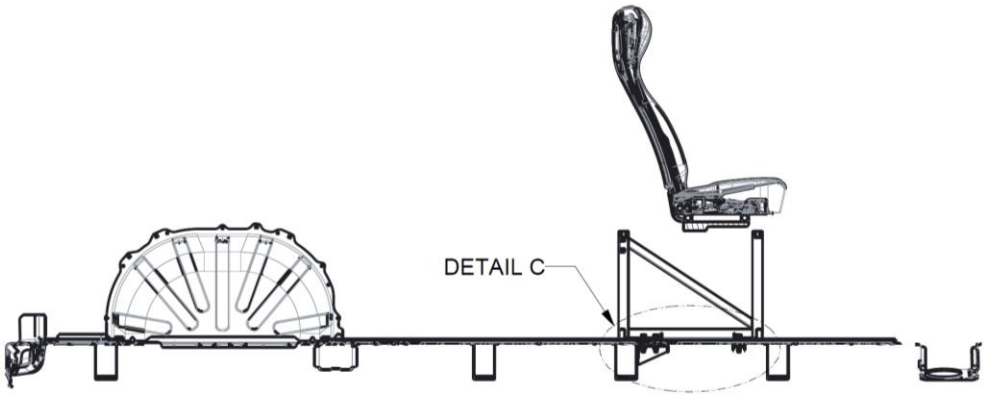
TÜV SÜD Auto Service GmbH · Technischer Dienst Technical Service 152

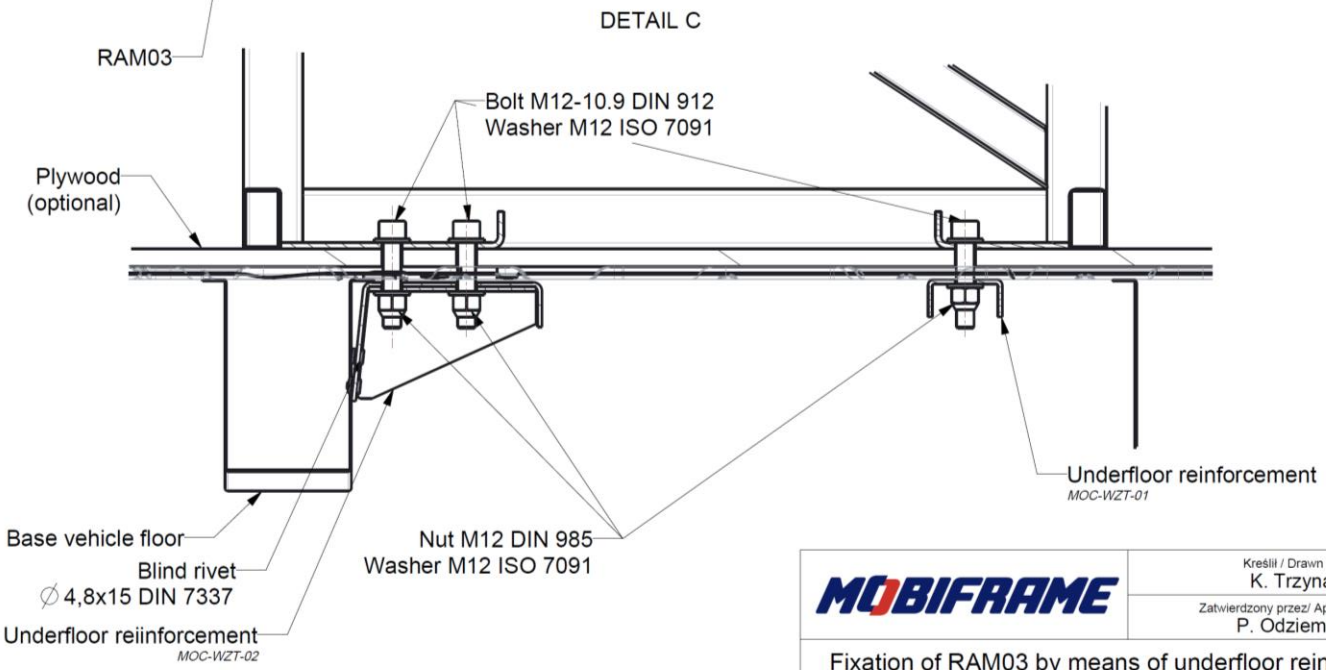
MOBIFRAME	Kreślił / Drawn by: K. Trzyna	Data / Date: 14-Sep-22
	Zatwierdzony przez/ Approved by: P. Odziemek	Arkusz / Sheet: 2/5

Fixation of RAM03 by means of underfloor reinforcement in the vehicle

17-04-RAM03





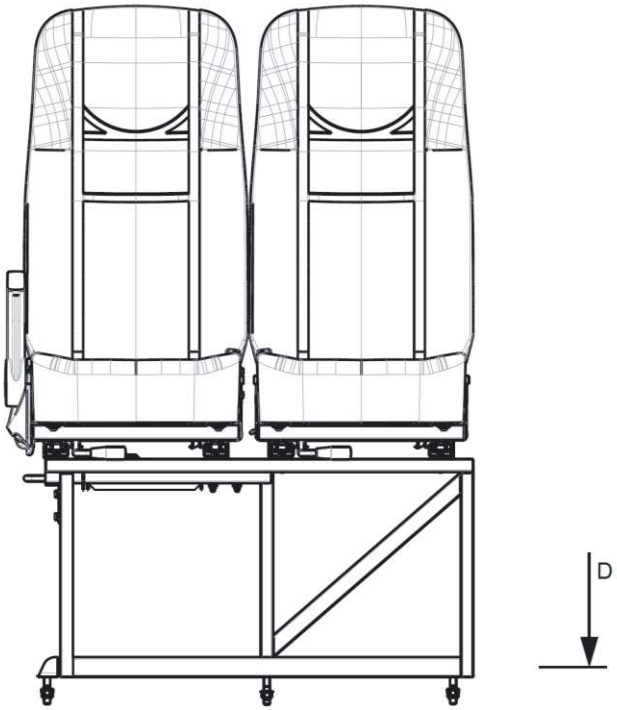


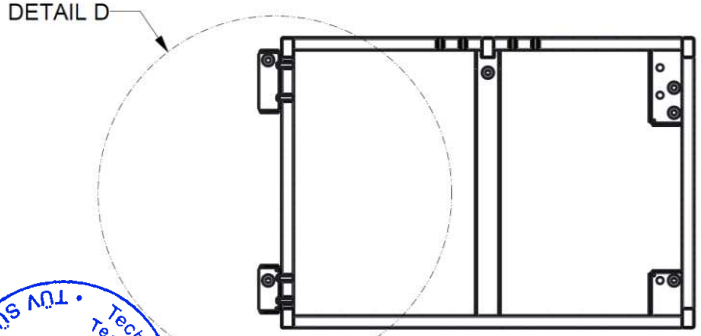
TÜV SÜD Technischer Dienst Technical Service Auto Service GmbH 152

MOBIFRAME	Kreślił / Drawn by: K. Trzyna	Data / Date: 14-Sep-22
	Zatwierdzony przez/ Approved by: P. Odziemek	Arkusz / Sheet: 4/5

Fixation of RAM03 by means of underfloor reinforcement in the vehicle

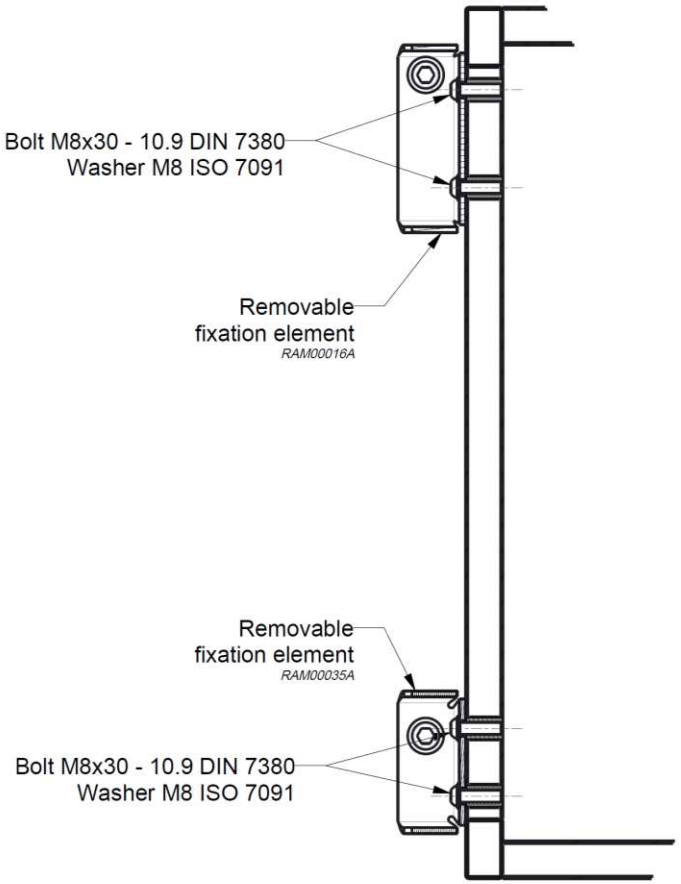
17-04-RAM03





D-D

DETAIL D



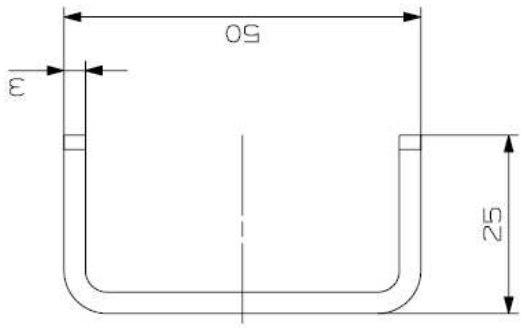
MOBIFRAME	Kreślił / Drawn by: K. Trzyna	Data / Date: 14-Sep-22
	Zatwierdzony przez/ Approved by: P. Odziemek	Arkusz / Sheet: 5/5

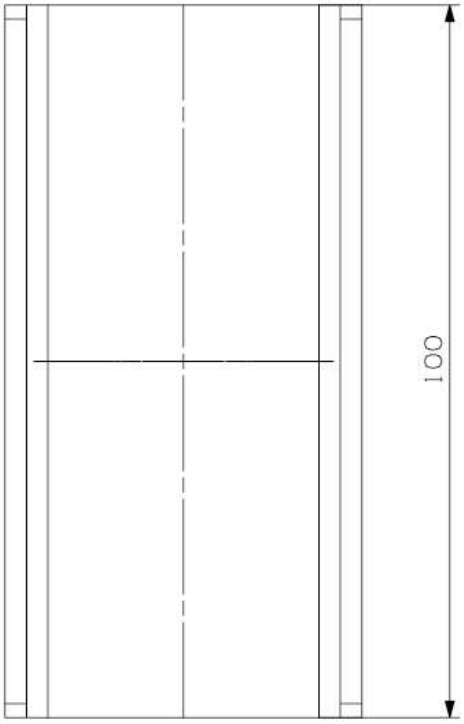
Fixation of RAM03 by means of underfloor reinforcement in the vehicle

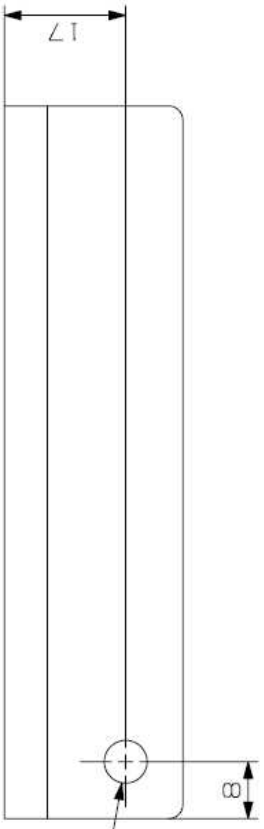
17-04-RAM03

RAM02 and RAM03 fixation components (underfloor reinforcements):

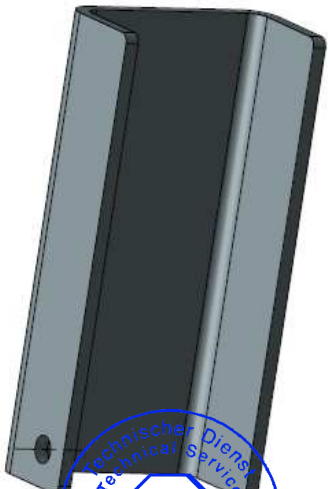
(see next pages)







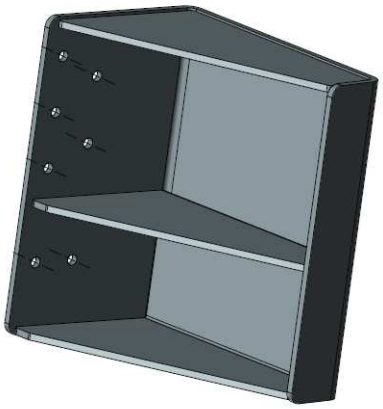
Ø6 otwor technologiczny
technological hole



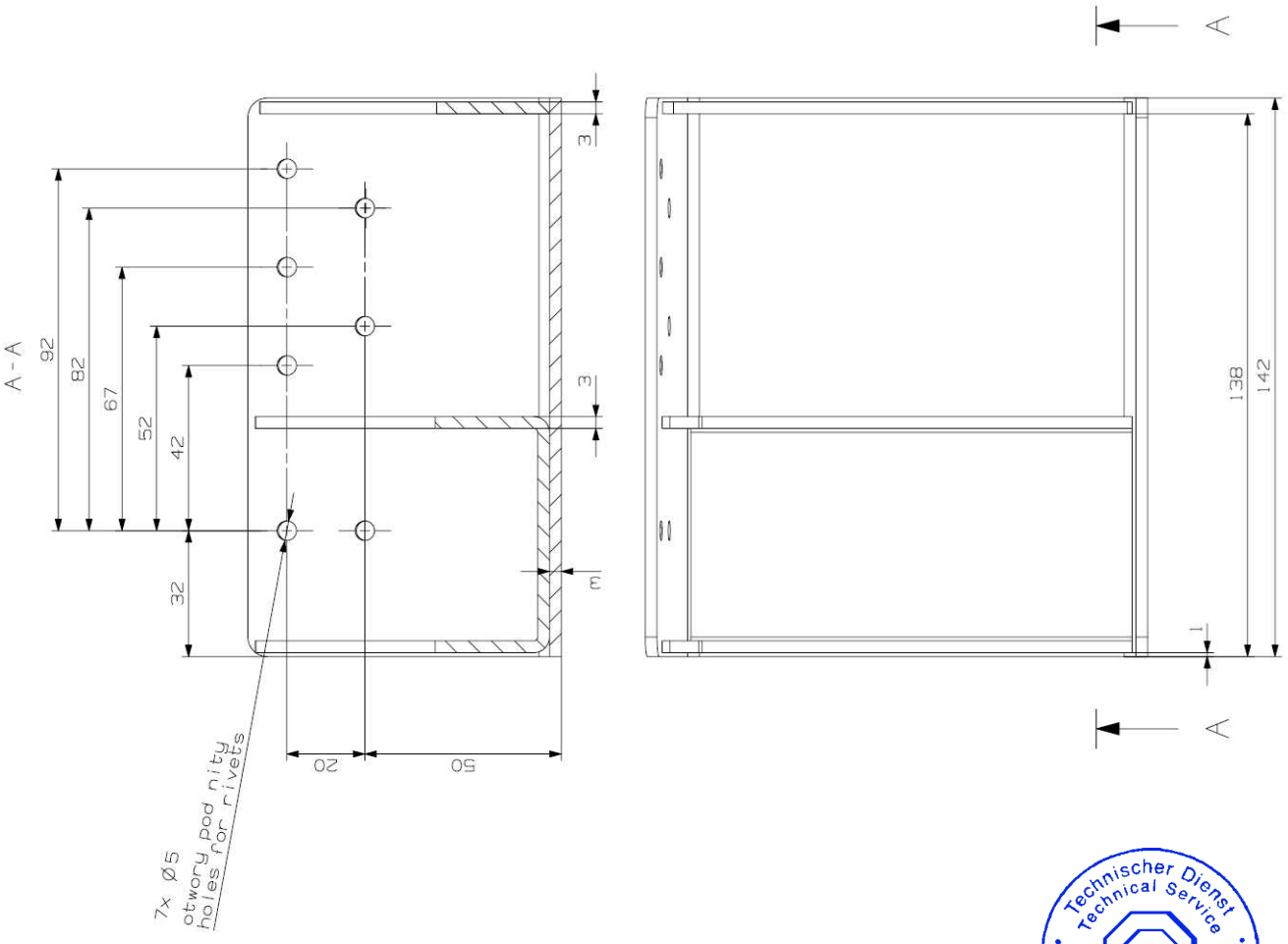
Zaprojektował: P. Odziemek	Sprawdził: L. Walczak	Zatwierdził: M. Jankowski
Data: 19.11.2014	Masa: -	
Nazwa: Mocowanie podpodłogowe/Underfloor reinforcement		
Numer rys.: MOC-WZT-01	Materiał: S235JR	Arkusz: 1 / 1

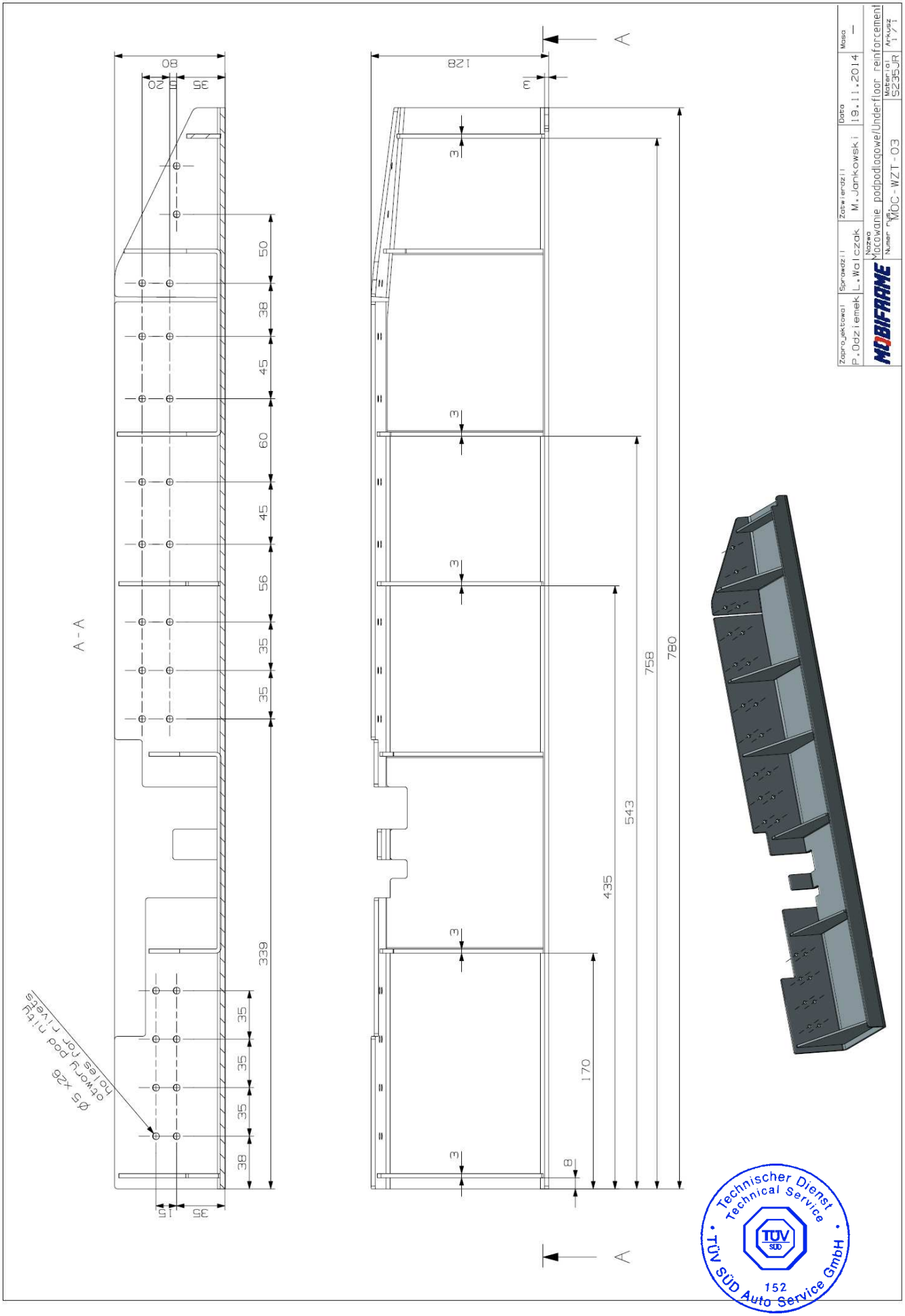
MOBIFRAME

Technischer Dienst Technical Service TÜV SÜD 152 TÜV SÜD Auto Service GmbH



Zaprojektował: P.Dziemek	Sprawdził: L.Walczak	Zatwierdził: M.Jankowski	Data: 14.01.2013
MOBIFRAME	Nazwa: Mocowanie podpodłogowe/Underfloor reinforcement		Masa: —
	Numer rys.: MOC-WZT-02	Materiał: S235JR	Arkusz: 1/1

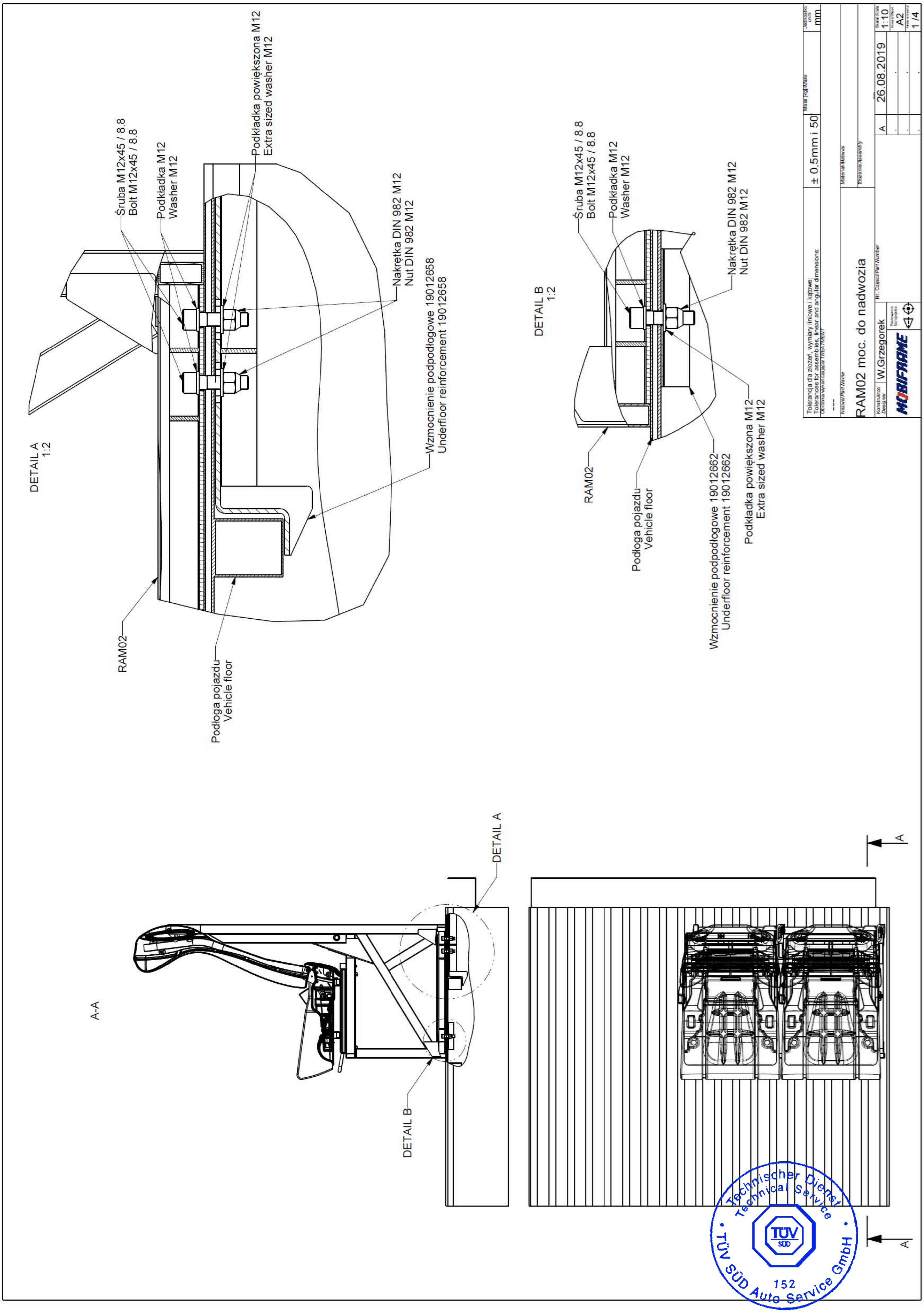



A - A
A
A
80
20
35
821
128
3
50
38
45
60
45
56
35
35
339
758
780
543
435
170
8
Technischer Dienst
Technical Service
TÜV SÜD Auto Service GmbH
152

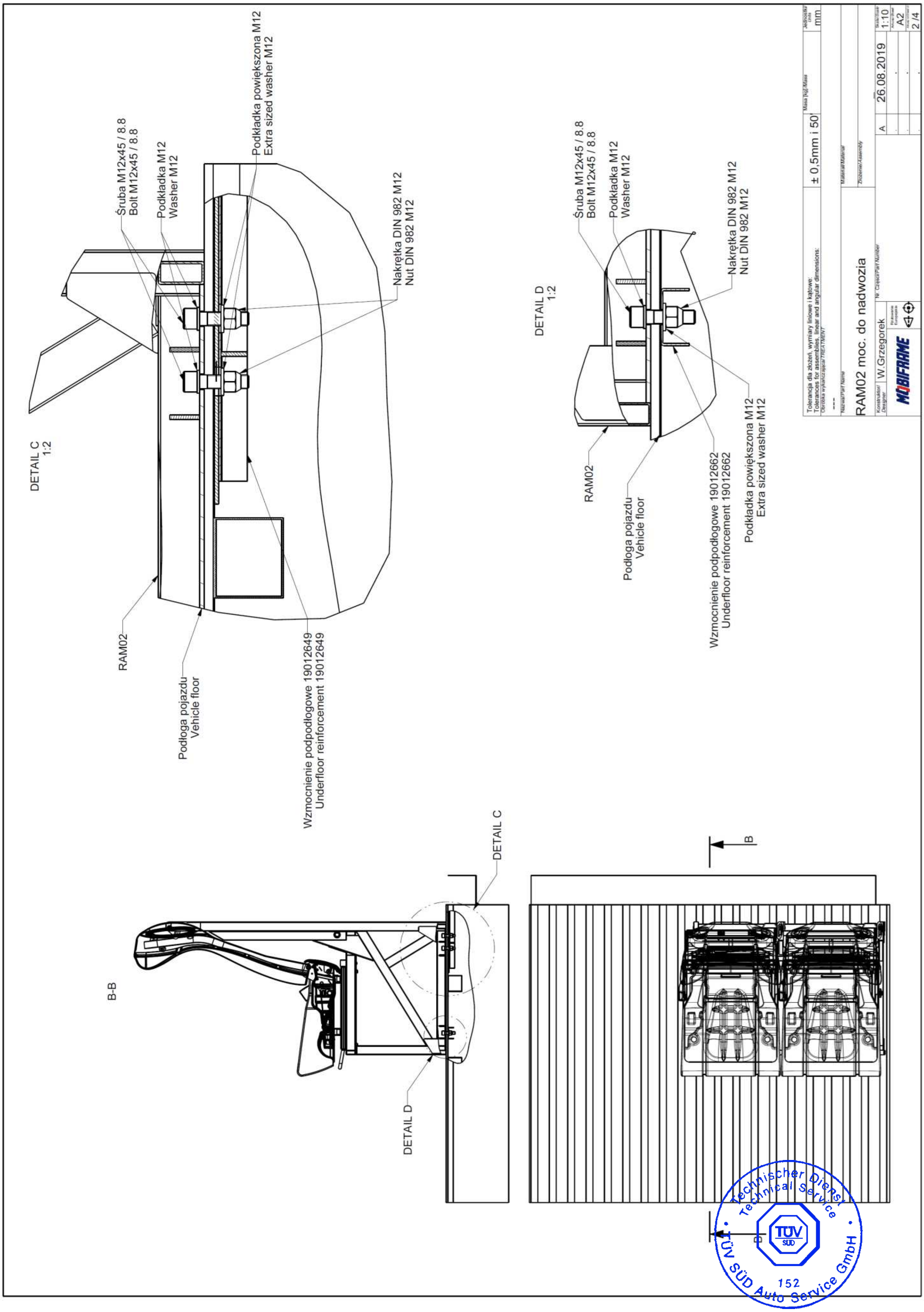
2.2 Fixation of double bench frame by means of underfloor reinforcements – dedicated for Mercedes Sprinter (906, 907)/Volkswagen Crafter (2006-2016)

RAM02:

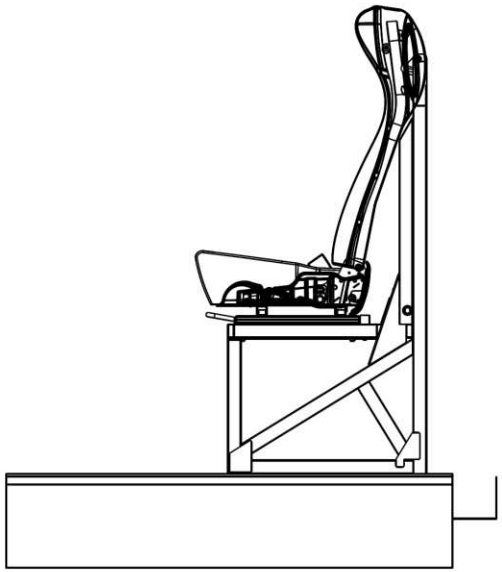
(see next pages)

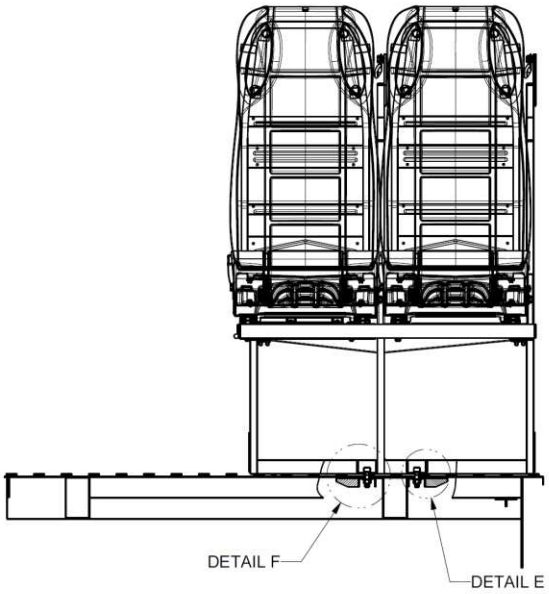


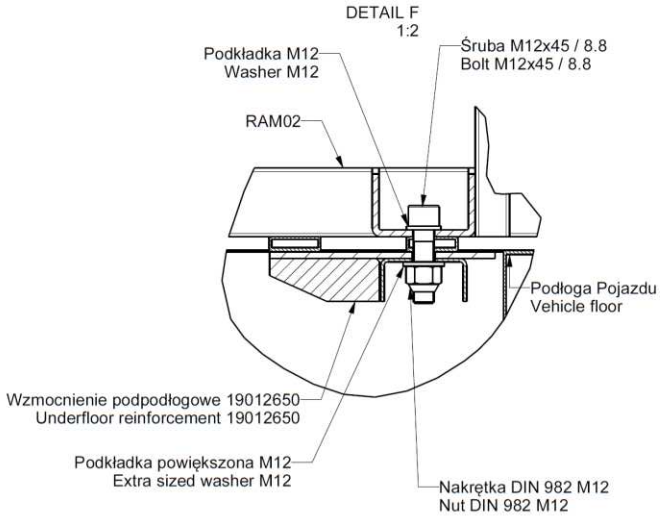
DETAIL A
1:2
Śruba M12x45 / 8.8
Bolt M12x45 / 8.8
Podkładka M12
Washer M12
Podkładka powiększona M12
Extra sized washer M12
Nakrętka DIN 982 M12
Nut DIN 982 M12
Wzmocnienie podpodłogowe 19012658
Underfloor reinforcement 19012658
RAM02
Podłoga pojazdu
Vehicle floor
DETAIL B
1:2
Śruba M12x45 / 8.8
Bolt M12x45 / 8.8
Podkładka M12
Washer M12
Nakrętka DIN 982 M12
Nut DIN 982 M12
RAM02
Podłoga pojazdu
Vehicle floor
Wzmocnienie podpodłogowe 19012662
Underfloor reinforcement 19012662
Podkładka powiększona M12
Extra sized washer M12
A-A
DETAIL A
DETAIL B
A
A
± 0,5mm i 50
mm
RAM02 moc. do nadwozia
W.Grzegorek
26.08.2019
1:10
A2
1/4
MOBIFRAME
Technischer Dienst
Technical Service
TÜV SÜD Auto Service GmbH
152

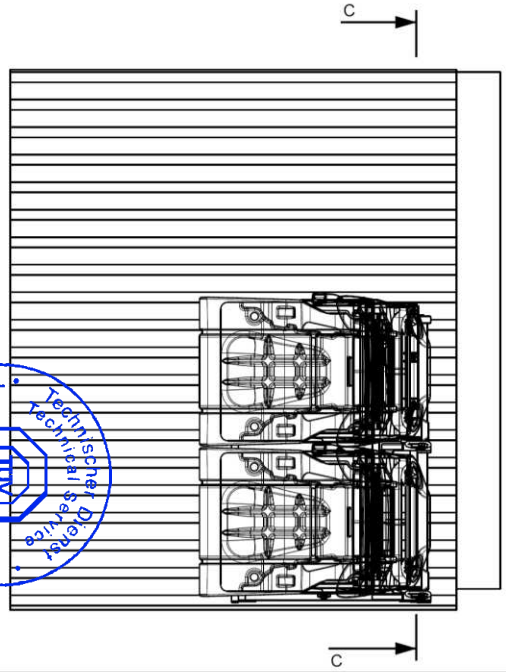

DETAIL C
1:2
Śruba M12x45 / 8.8
Bolt M12x45 / 8.8
Podkładka M12
Washer M12
Podkładka powiększona M12
Extra sized washer M12
Nakrętka DIN 982 M12
Nut DIN 982 M12
RAM02
Podłoga pojazdu
Vehicle floor
Wzmocnienie podpodłogowe 19012649
Underfloor reinforcement 19012649
DETAIL D
1:2
Wzmocnienie podpodłogowe 19012662
Underfloor reinforcement 19012662
B-B
DETAIL C
DETAIL D
B
Tolerancja dla złożeń, wymiary liniowe i kątowe:
Tolerances for assemblies, linear and angular dimensions:
± 0,5mm i 50'
mm
RAM02 moc. do nadwozia
W.Grzegorek
26.08.2019
1:10
A2
2 /4
MOBIFRAME
Technischer Dienst
Technical Service
TÜV SÜD Auto Service GmbH
152

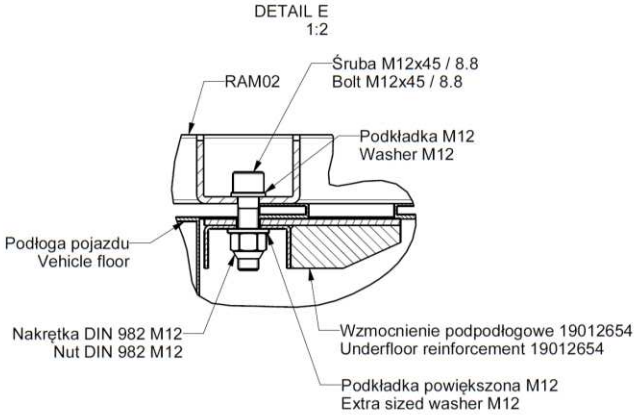
C-C





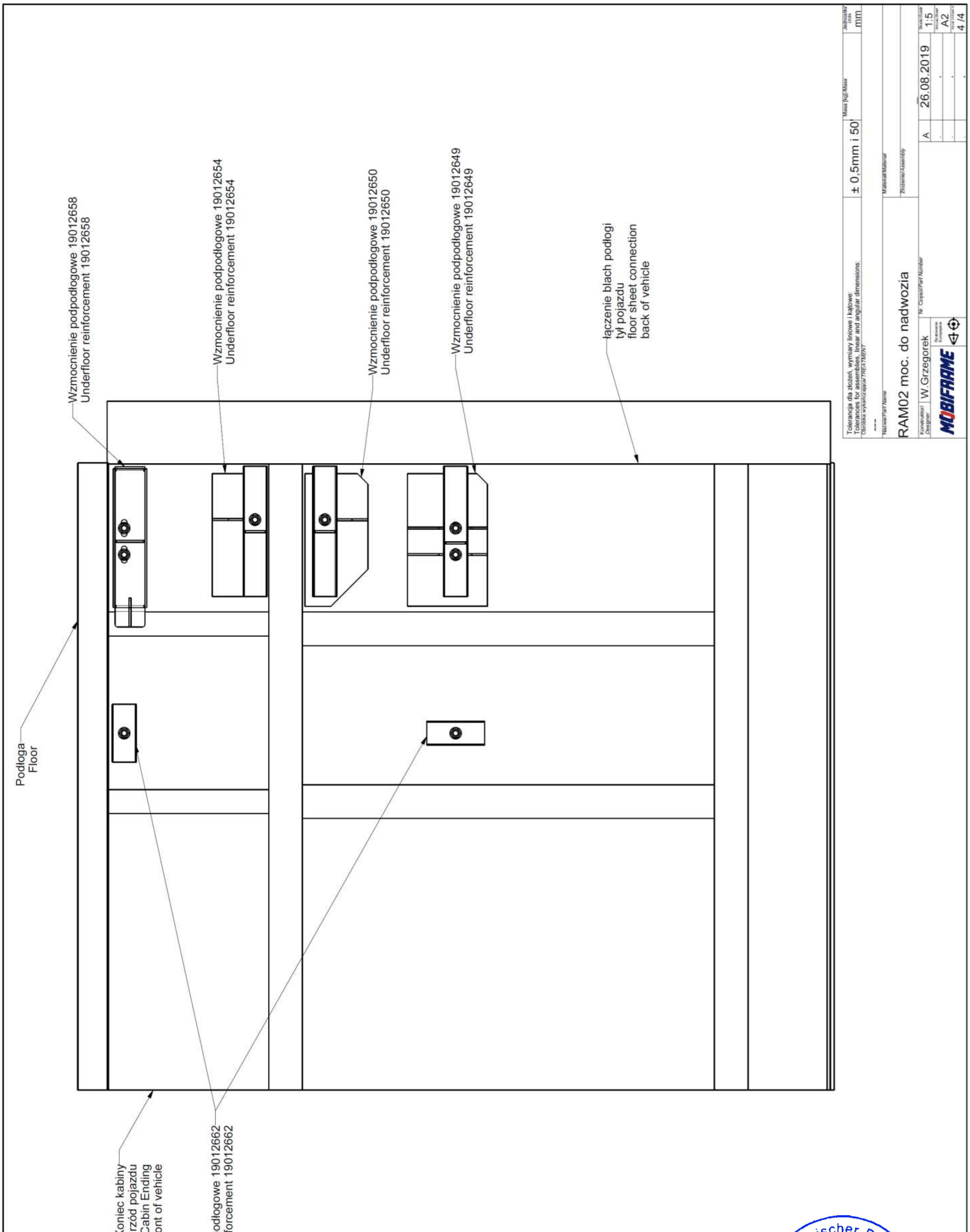






Tolerancja dla złożeń, wymiary liniowe i kątowe: Tolerances for assemblies, linear and angular dimensions:	± 0,5mm i 50	Masa [kg]/Mass	Jednostka/Units mm
Obróbka wykańczająca/TREATMENT ---			
Nazwa/Part Name: RAM02 moc. do nadwozia		Materiał/Material / Złożenie/Assembly	
Konstruktor/Designer: W.Grzegorek	Nr. Części/Part Number	A 26.08.2019	Skala/Scale 1:10
MOBIFRAME			Arkusz/Sheet A2
			3 /4

TÜV SÜD Auto Service GmbH 152 Technischer Dienst Technical Service


Wzmocnienie podpodłogowe 19012658
Underfloor reinforcement 19012658
Wzmocnienie podpodłogowe 19012654
Underfloor reinforcement 19012654
Wzmocnienie podpodłogowe 19012650
Underfloor reinforcement 19012650
Wzmocnienie podpodłogowe 19012649
Underfloor reinforcement 19012649
łączenie blach podłogi
tył pojazdu
floor sheet connection
back of vehicle
Podłoga
Floor
Koniec kabiny
Przód pojazdu
Cabin Ending
Front of vehicle
Wzmocnienie podpodłogowe 19012662
Underfloor reinforcement 19012662
± 0,5mm i 50'
mm
RAM02 moc. do nadwozia
W.Grzegorek
26.08.2019
1:5
A2
4 /4
Technischer Dienst
Technical Service
TÜV SÜD Auto Service GmbH
152

RAM03:

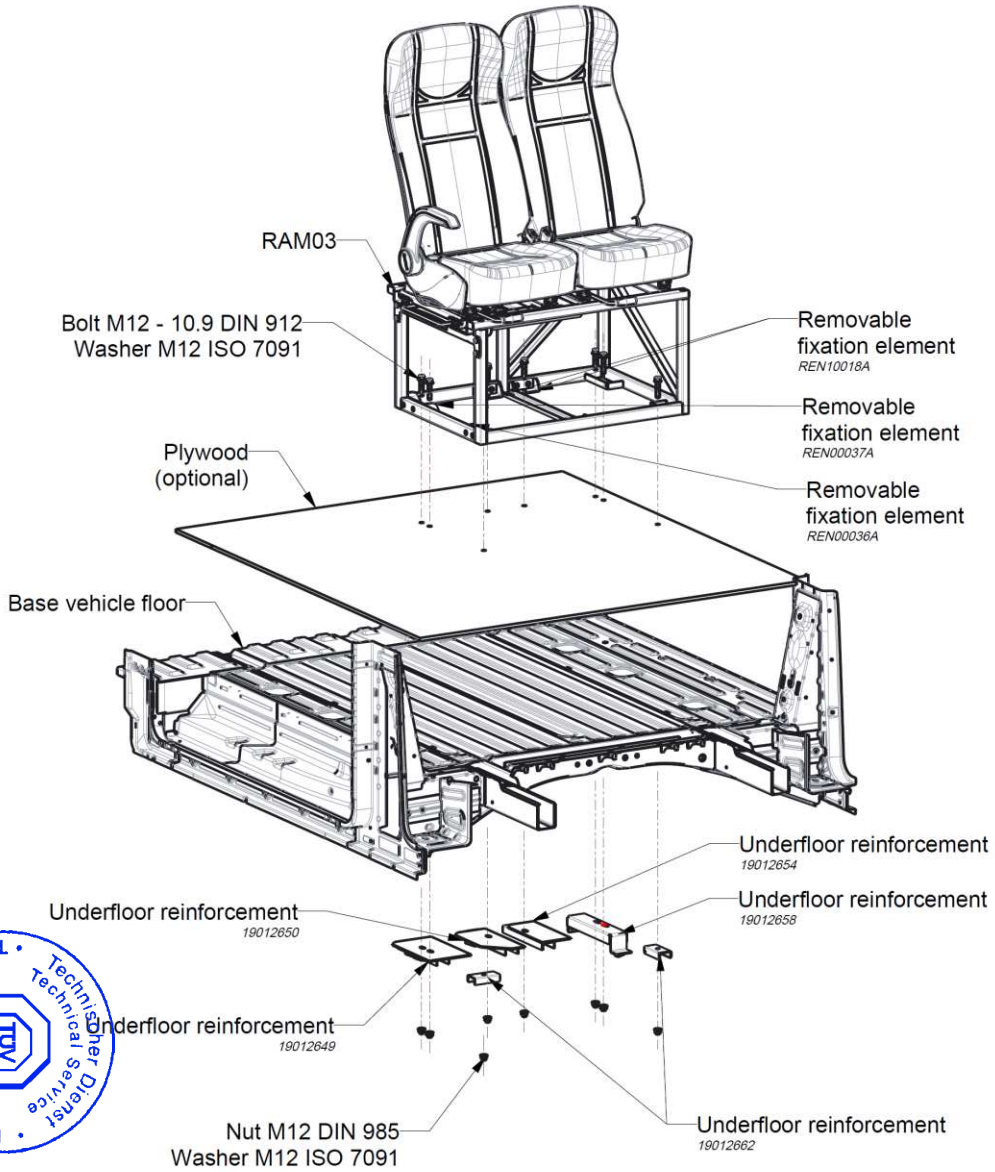
(see next pages)

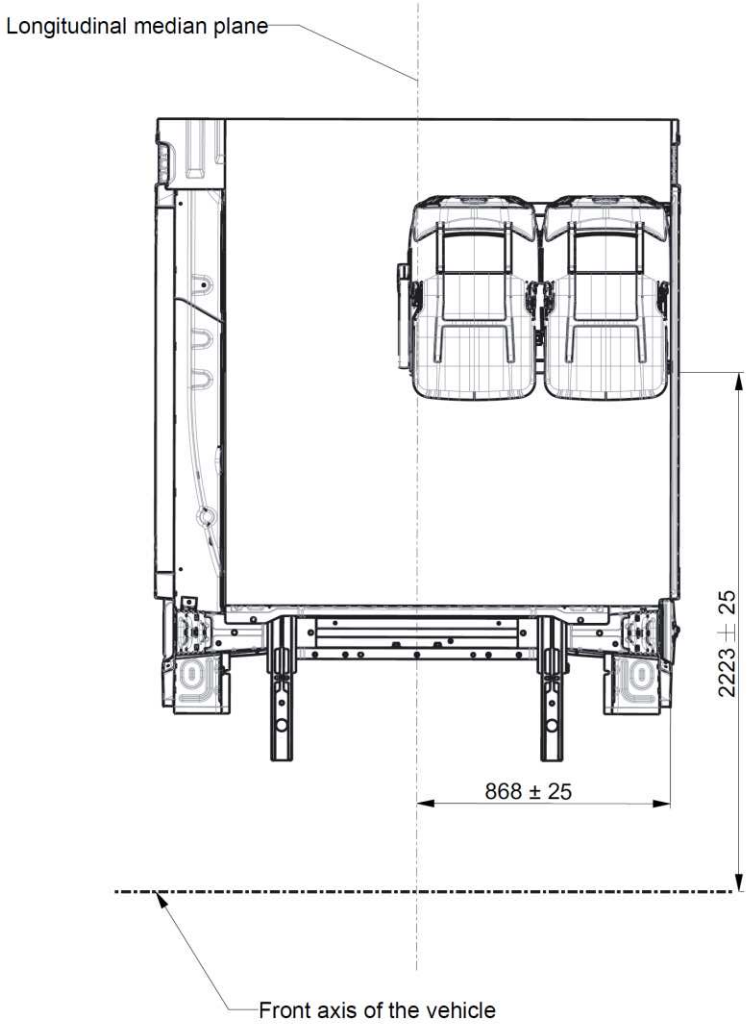
MOBIFRAME

MOBIFRAME/04/2022-00

Date: 16.09.2022

Page / pages: 28/109

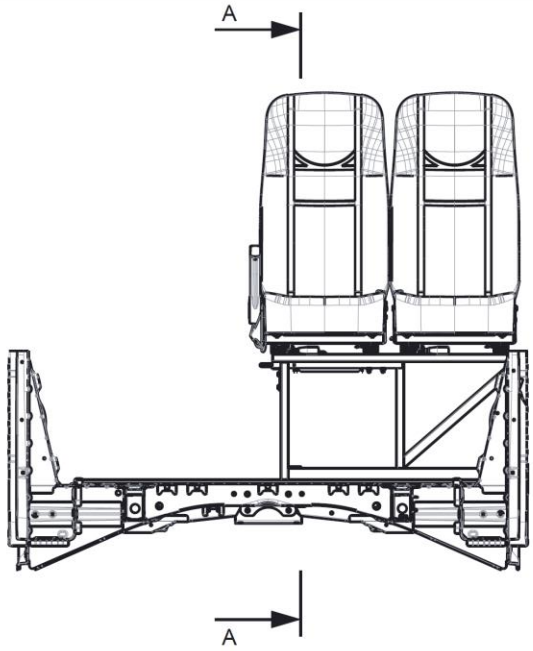


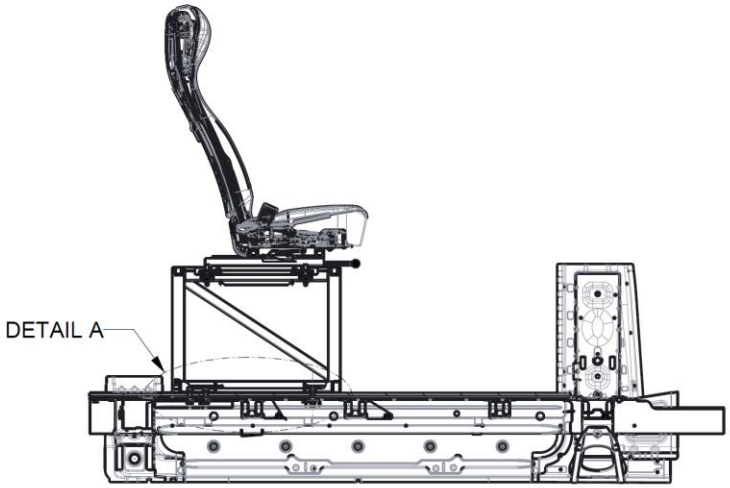


MOBIFRAME	Kreślił / Drawn by: K. Trzyna	Data / Date: 16-Sep-22
	Zatwierdzony przez/ Approved by: P. Odziemek	Arkusz / Sheet: 1/5

Fixation of RAM03 by means of underfloor reinforcement in the vehicle

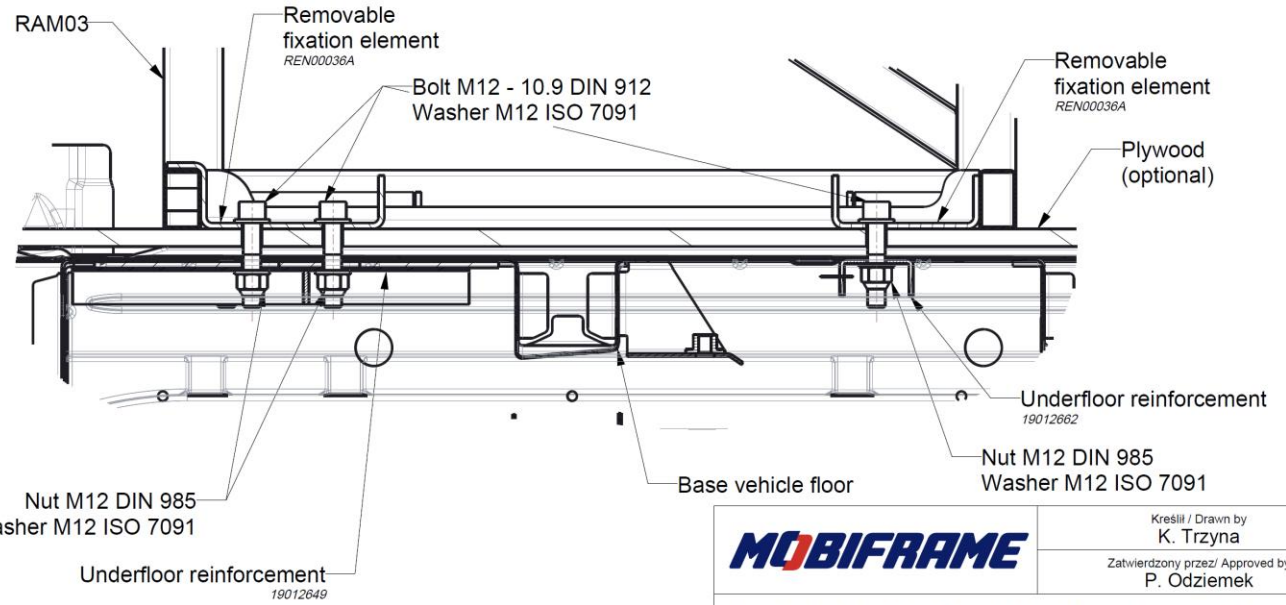
17-05-RAM03





A-A

DETAIL A

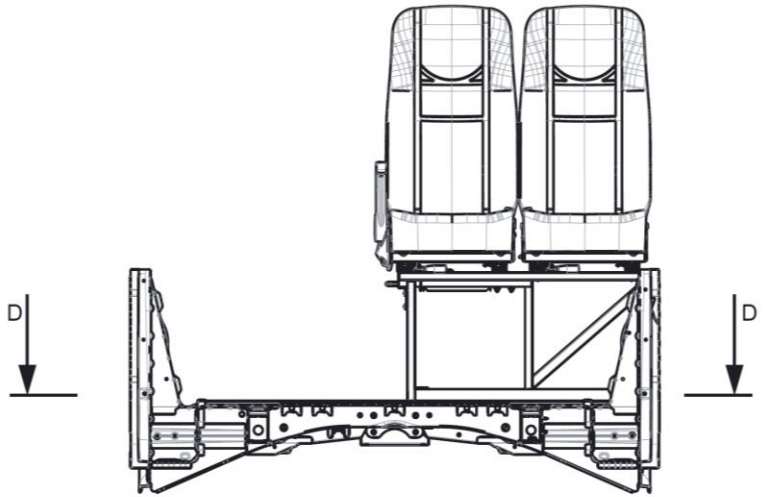


TÜV SÜD Auto Service GmbH · Technischer Technical Service 152

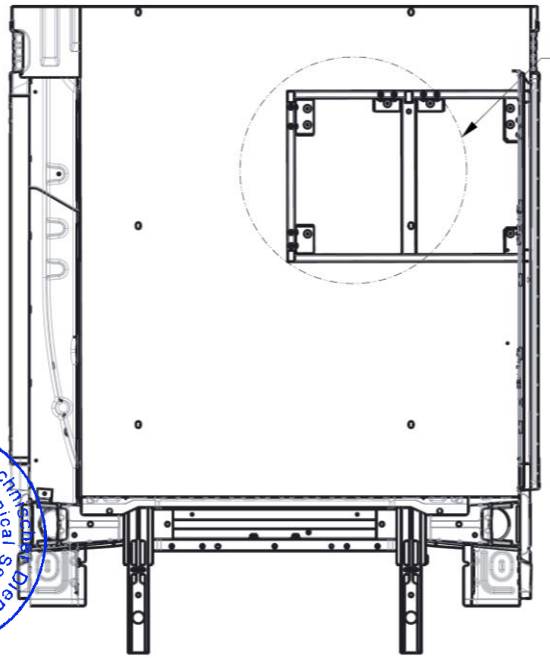
MOBIFRAME	Kreślił / Drawn by: K. Trzyna	Data / Date: 16-Sep-22
	Zatwierdzony przez/ Approved by: P. Odziemek	Arkusz / Sheet: 2/5

Fixation of RAM03 by means of underfloor reinforcement in the vehicle

17-05-RAM03

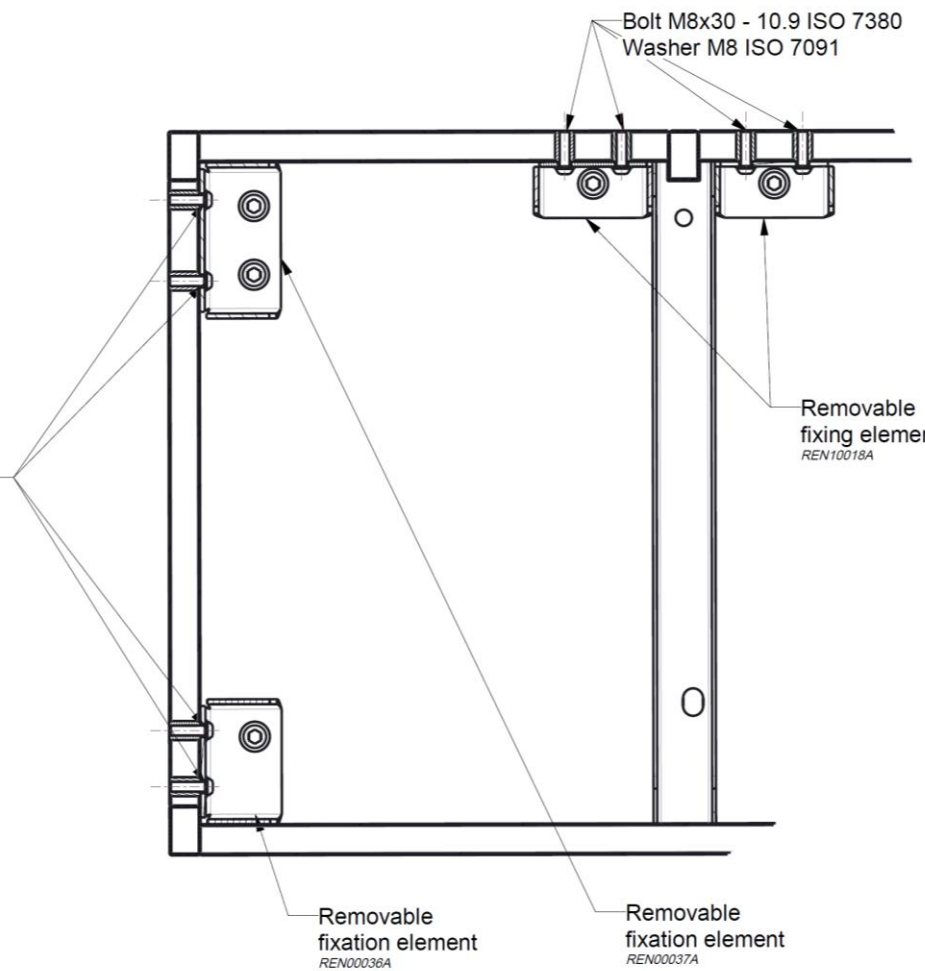


Bolt M8x30 - 10.9 ISO 7380
Washer M8 ISO 7091



D-D

DETAIL D



TÜV SÜD Auto Service GmbH 152 Technische Dienst Technical Service

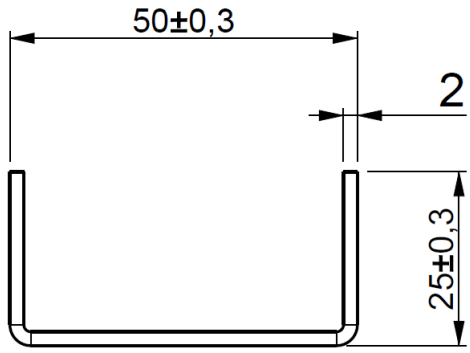
MOBIFRAME	Kreślił / Drawn by: K. Trzyna	Data / Date: 16-Sep-22
	Zatwierdzony przez/ Approved by: P. Odziemek	Arkusz / Sheet: 5/5

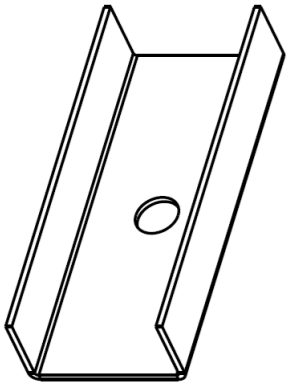
Fixation of RAM03 by means of underfloor reinforcement in the vehicle

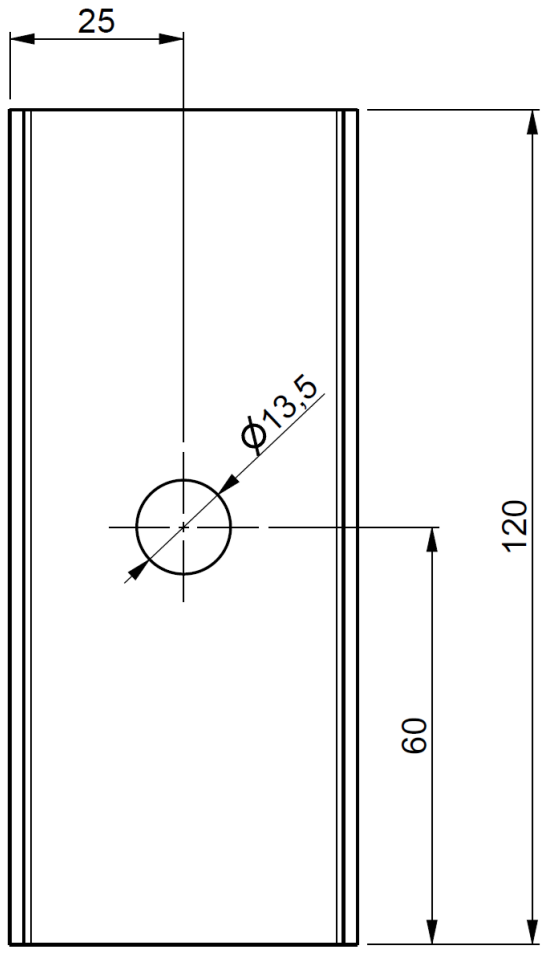
17-05-RAM03

RAM02 and RAM03 fixation components (underfloor reinforcements):

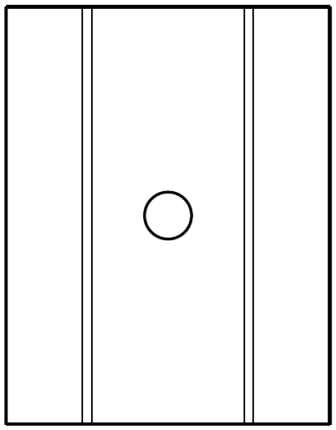
(see next pages)







Płaski wzór / Flat pattern:



UWAGI:
Laser: 19012662A.dxf

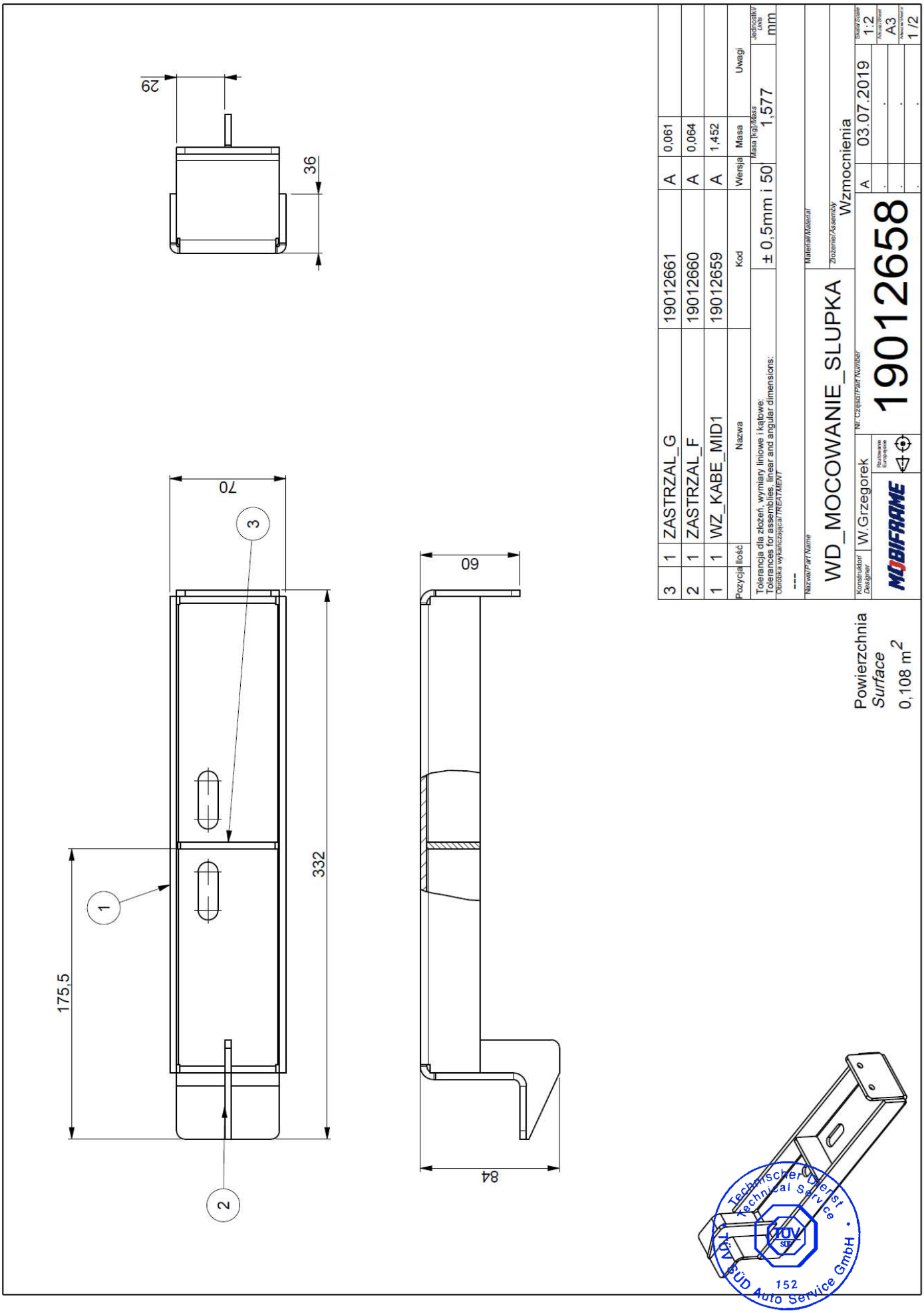
Powierzchnia
Surface
0,023 m^2

Tolerancje wg ISO 2768-1 i ISO2768-2, klasa: Tolerances according to ISO 2768-1; ISO2768-2, class: Obróbka wykańczająca/*TREATMENT*	mK	Masa [kg]/*Mass* 0,175	Jednostki/*Units* mm

Nazwa/*Part Name* WZP01	Materiał/*Material* S355JR (EN 10027-1) Złożenie/*Assembly*

Konstruktor/*Designer* S.Chrzanowski	Nr. Części/*Part Number* 19012662	A . . .	18-06-2019 . . .	Skala/*Scale* 1:1	
MOBIFRAME Rzutowanie Europejskie				Arkusz/*Sheet* A4	Arkusz/*Sheet nr* 1 /2

Technischer Dienst / Technical Service · TÜV SÜD Auto Service GmbH · 152


29
36
70
3
332
175,5
1
2
60
84
3 1 ZASTRZAL_G 19012661 A 0,061
2 1 ZASTRZAL_F 19012660 A 0,064
1 1 WZ_KABE_MID1 19012659 A 1,452
Pozycja Ilość Nazwa Kod Wersja Masa Uwagi
Tolerancja dla złożeń, wymiary liniowe i kątowe: ± 0,5mm i 50
Tolerances for assemblies, linear and angular dimensions:
Obróbka wykańczająca/TREATMENT

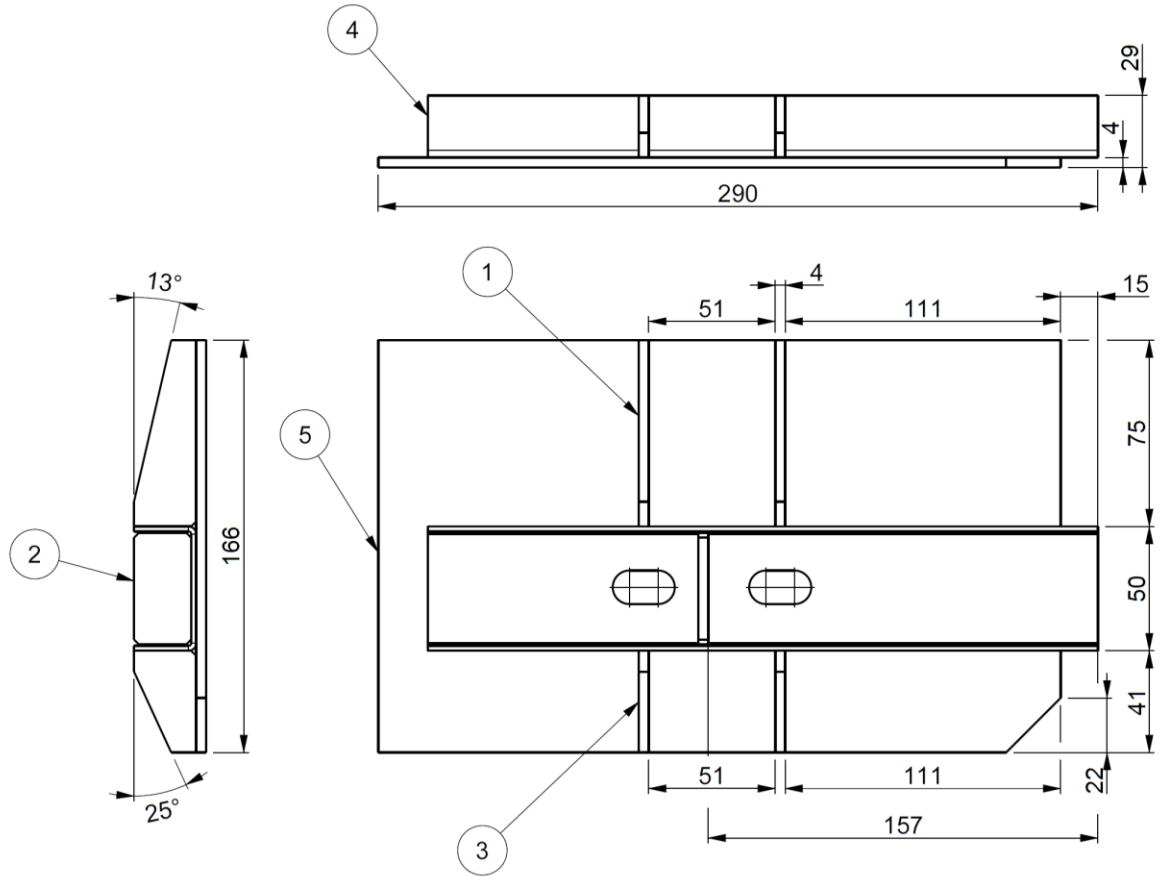
Nazwa/Part Name
WD_MOCOWANIE_SLUPKA
Masa kg/Mass 1,577
Jednostka/Unit mm
Materiał/Material
Złożenie/Assembly
Wzmocnienia
Konstruktor/Designer W.Grzegorek
Nr. Części/Part Number 19012658
A 03.07.2019
Skala/Scale 1:2
Arkusz/Sheet A3
1/2
Powierzchnia
Surface
0,108 m2
Technischer Dienst
Technical Service
TÜV SÜD
TÜV SÜD Auto Service GmbH
152

MOBIFRAME

MOBIFRAME/04/2022-00

Date: 16.09.2022

Page / pages: 34/109



Pozycja	Ilość	Nazwa	Kod	Wersja	Masa	Uwagi
5	1	BLACHA_MOCUJACA	19012648	A	1,416	
4	1	CEOWNIK_WZMACNIAJACY	19012647	A	0,390	
3	2	ZASTRZAL_C	19012646	A	0,024	
2	1	ZASTRZAL_A	19012645	A	0,032	
1	2	ZASTRZAL_B	19012644	A	0,044	

Tolerancja dla złożeń, wymiary liniowe i kątowe:
Tolerances for assemblies, linear and angular dimensions: ± 0,5mm i 50

Masa [kg]/*Mass*: 1,975

Jednostki/*Units*: mm

Obróbka wykańczająca/*TREATMENT*: Malować RAL 9005 / Paint RAL 9005

Nazwa/*Part Name*: WD_WZMOC_TYLNE_1

Materiał/*Material*:

Złożenie/*Assembly*: Wzmocnienia

Konstruktor/*Designer*: W.Grzegorek

Nr. Części/*Part Number*: 19012649

A 03.07.2019

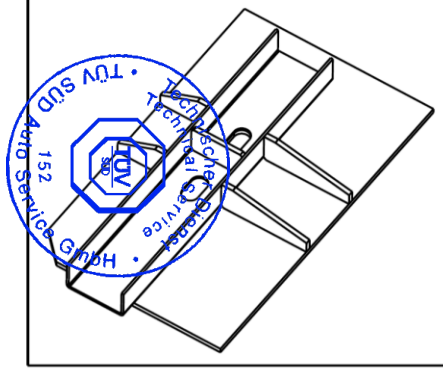
Skala/*Scale*: 1:2

Arkusz/*Sheet*: A3

Arkusz nr/*Sheet nr*: 1 /2

Rzutowanie Europejskie

Powierzchnia
Surface
0,159 m^2

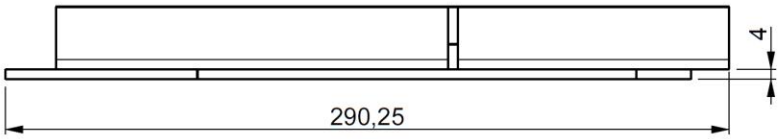


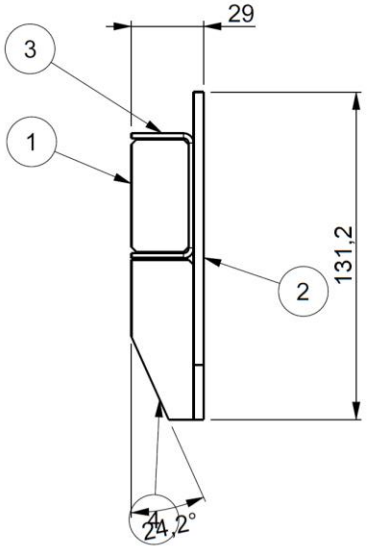
MOBIFRAME

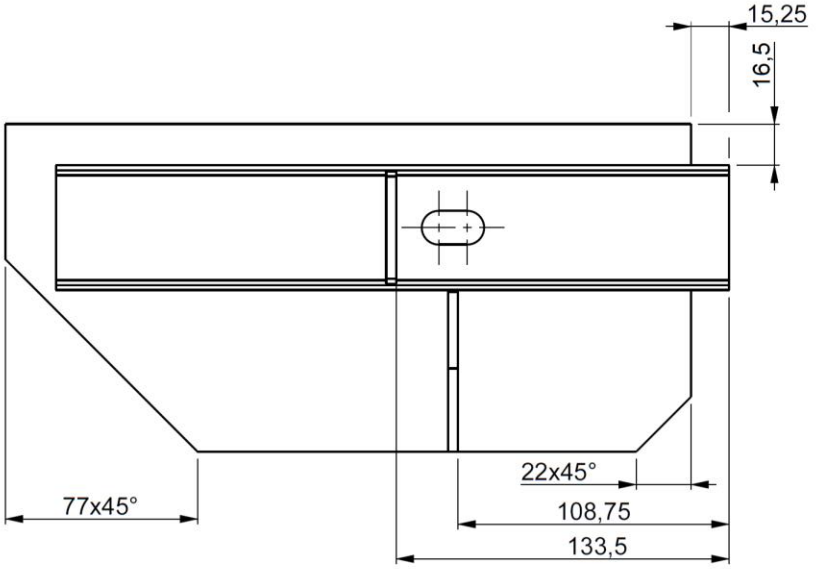
MOBIFRAME/04/2022-00

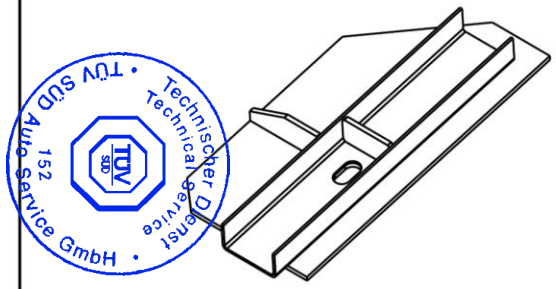
Date: 16.09.2022

Page / pages: 35/109









Pozycja	Ilość	Nazwa	Kod	Wersja	Masa	Uwagi
4	1	ZASTRZAL_D	19012653	A	0,042	
3	1	CEOWNIK_WZMAC_2	19012652	A	0,391	
2	1	BLACHA_MOCUJACA_2	19012651	A	1,023	
1	1	ZASTRZAL_A	19012645	A	0,032	

Tolerancja dla złożeń, wymiary liniowe i kątowe:
Tolerances for assemblies, linear and angular dimensions: ± 0,5mm i 50

Masa [kg]/*Mass*: 1,489

Jednostki/*Units*: mm

Obróbka wykańczająca/*TREATMENT*: Malować RAL 9005 / Paint RAL 9005

Nazwa/*Part Name*: WD_WZMOC_TYLNE_2

Materiał/*Material*:

Złożenie/*Assembly*: Wzmocnienia

Konstruktor/*Designer*: W.Grzegorek

Nr. Części/*Part Number*: 19012650

A 03.07.2019

Skala/*Scale*: 1:2

Arkusz/*Sheet*: A3

Arkusz nr/*Sheet nr*: 1 /2

Rzutowanie Europejskie

Powierzchnia
Surface
0,126 m^2

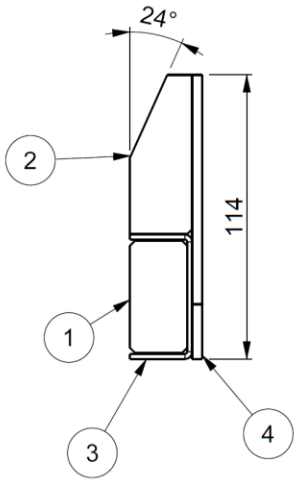
TÜV SÜD Technischer Dienst Technical Service Auto Service GmbH 152

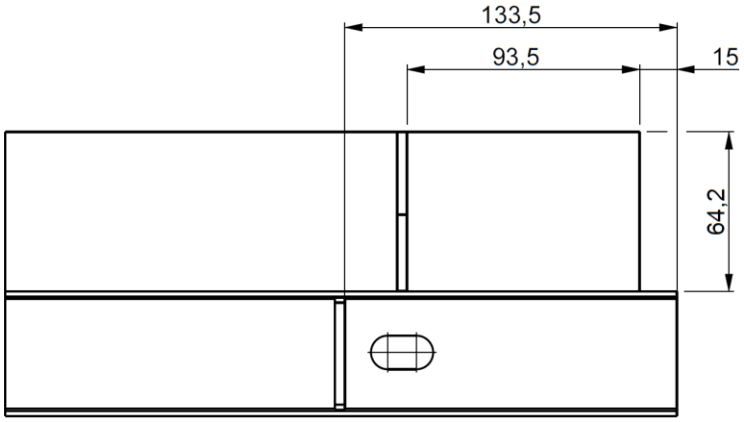
MOBIFRAME

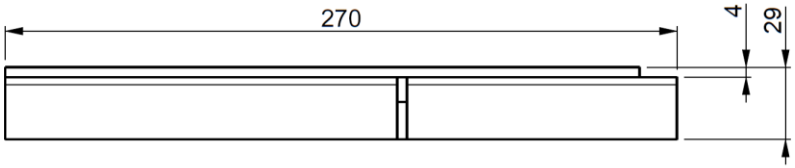
MOBIFRAME/04/2022-00

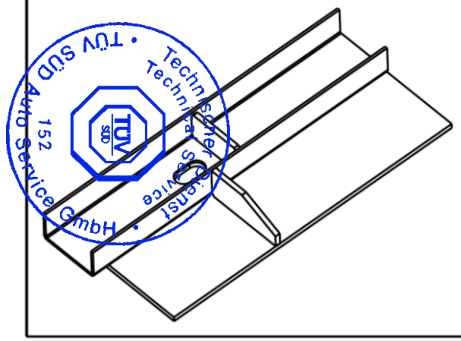
Date: 16.09.2022

Page / pages: 36/109









Pozycja	Ilość	Nazwa	Kod	Wersja	Masa	Uwagi
4	1	BLACHA_MOCUJACA_3	19012656	A	0,897	
3	1	CEOWNIK_WZMAC_3	19012655	A	0,395	
2	1	ZASTRZAL_D	19012653	A	0,042	
1	1	ZASTRZAL_A	19012645	A	0,032	

Tolerancja dla złożeń, wymiary liniowe i kątowe:
Tolerances for assemblies, linear and angular dimensions: ± 0,5mm i 50

Masa [kg]/*Mass*: 1,367

Jednostki/*Units*: mm

Obróbka wykańczająca/*TREATMENT*: Malować RAL 9005 / Paint RAL 9005

Nazwa/*Part Name*: WD_MOCOWANIE_TYLNE

Materiał/*Material*:

Złożenie/*Assembly*: Wzmocnienia

Konstruktor/*Designer*: W.Grzegorek

Nr. Części/*Part Number*: 19012654

A 03.07.2019

Skala/*Scale*: 1:2

Arkusz/*Sheet*: A3

Arkusz w/*Sheet nr*: 1 /2

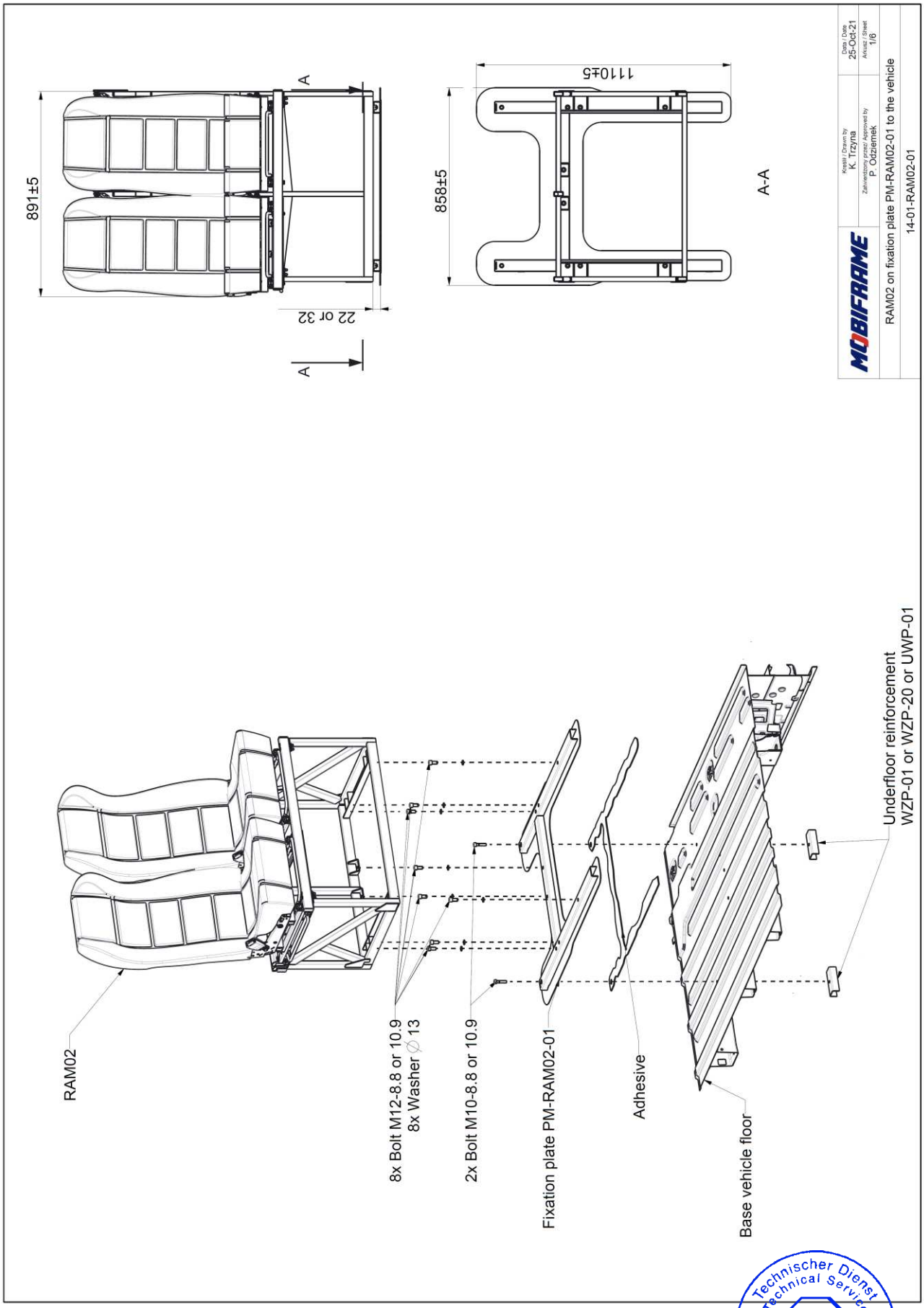
Rzutowanie Europejskie

Powierzchnia
Surface
0,118 m^2

2.3. Fixation of double seat bench by means of Fixation Plate – dedicated for all vehicles presented in Enclosure 1

RAM02:

(see next pages)



In case of use of underfloor reinforcement UWP-01 additional nut M10 and washer ∅10.5 should be applied.

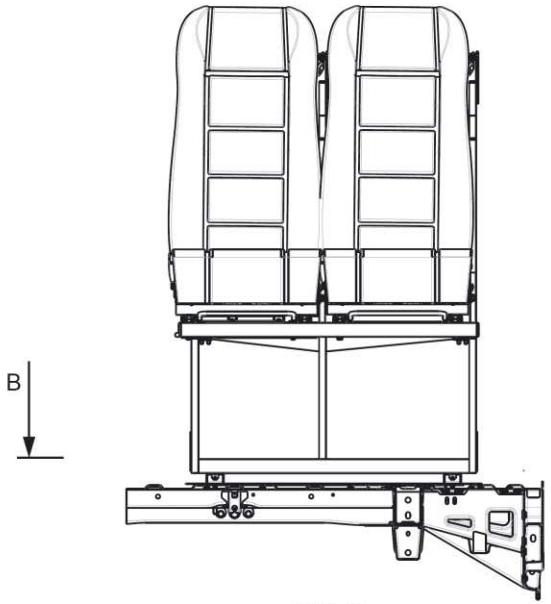
Technischer Dienst Technical Service TÜV SÜD Auto Service GmbH 152

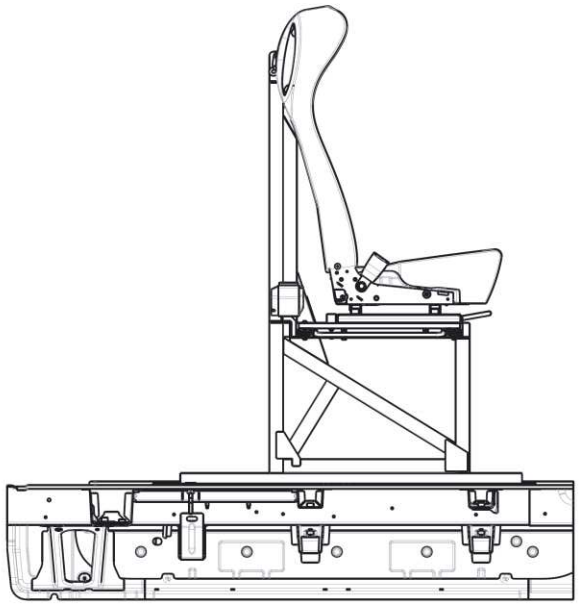
MOBIFRAME

MOBIFRAME/04/2022-00

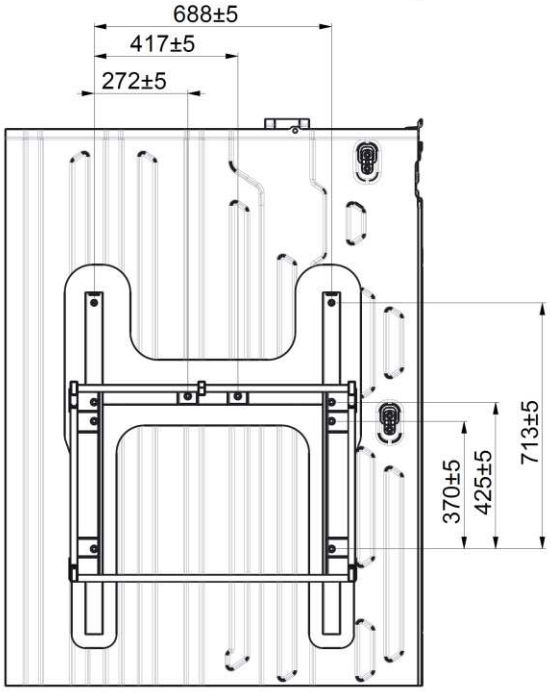
Date: 16.09.2022

Page / pages: 39/109





DRIVE
DIRECTION



B-B

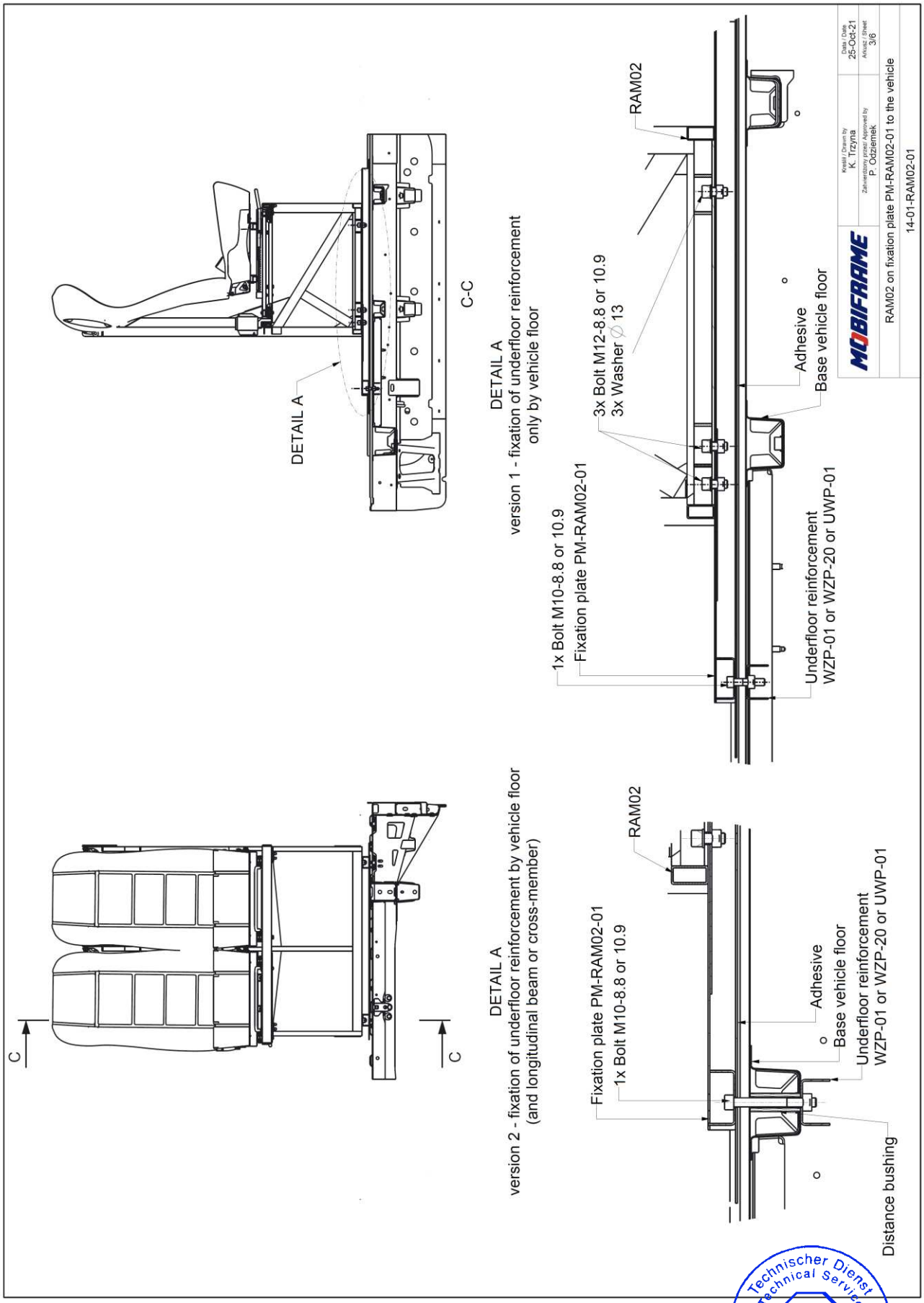
TÜV SÜD Auto Service GmbH 152 Technischer Dienst Technical Service

Remark:
Double seat frame RAM02 can be mounted forward or backward in the direction of drive

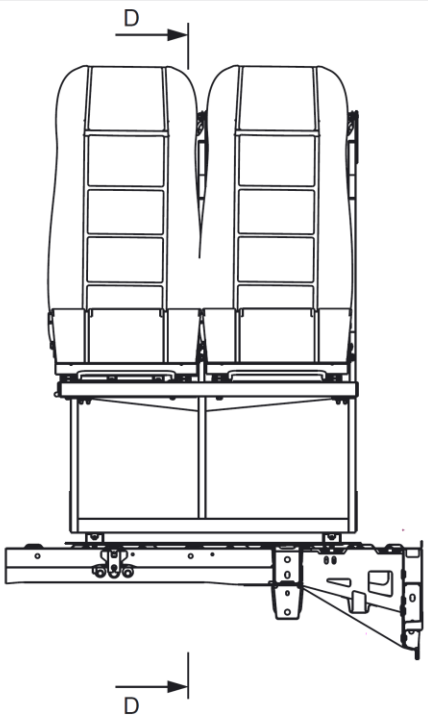
MOBIFRAME	Kreślił / Drawn by: K. Trzyna	Data / Date: 25-Oct-21
	Zatwierdzony przez/ Approved by: P. Odziemek	Arkusz / Sheet: 2/6

RAM02 on fixation plate PM-RAM02-01 to the vehicle

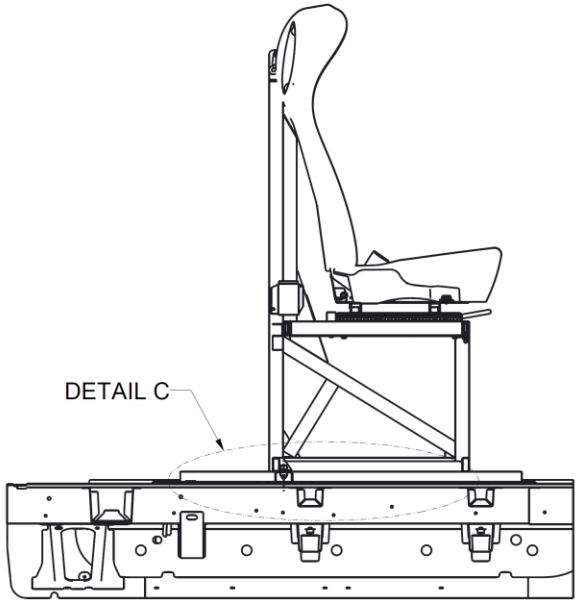
14-01-RAM02-01



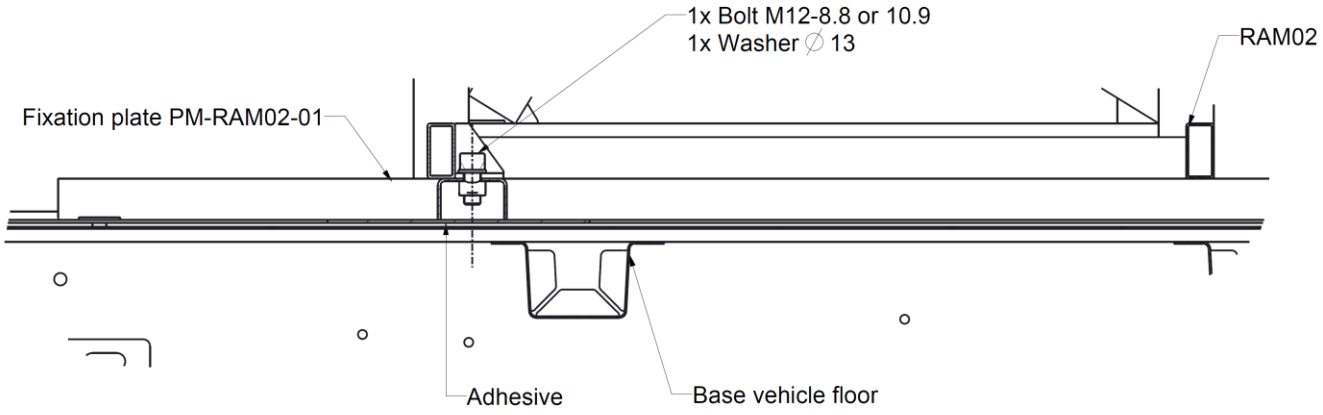
In case of use of underfloor reinforcement UWP-01 additional nut M10 and washer Ø10 should be applied.



DETAIL C



D-D

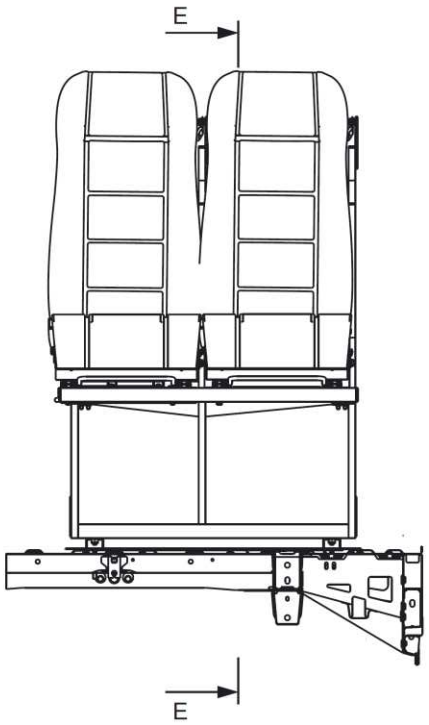


TÜV SÜD Auto Service GmbH · Technischer Dienst Technical Service

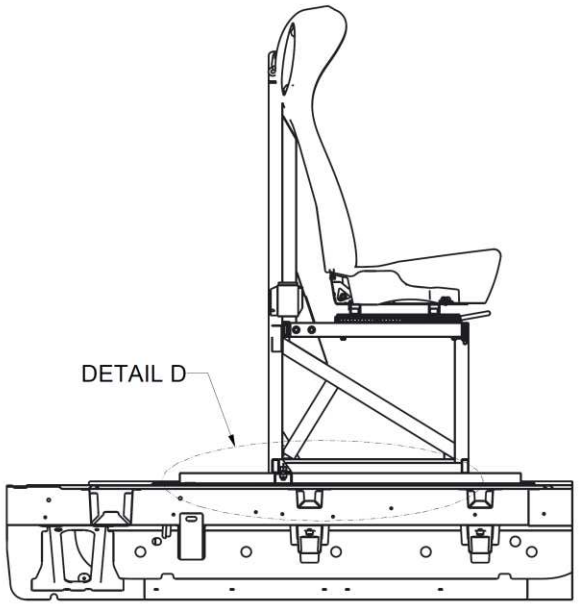
MOBIFRAME	Kreślił / Drawn by: K. Trzyna	Data / Date: 25-Oct-21
	Zatwierdzony przez/ Approved by: P. Odziemek	Arkusz / Sheet: 4/6

RAM02 on fixation plate PM-RAM02-01 to the vehicle

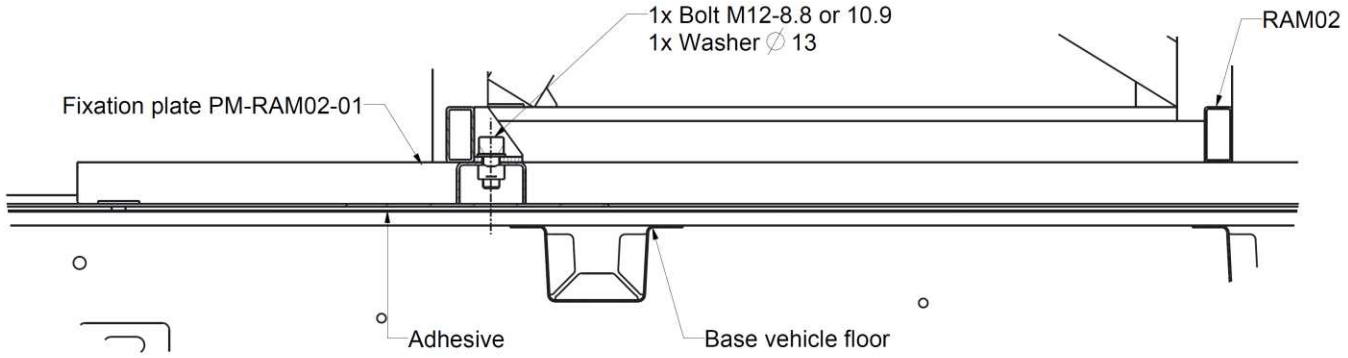
14-01-RAM02-01



DETAIL D



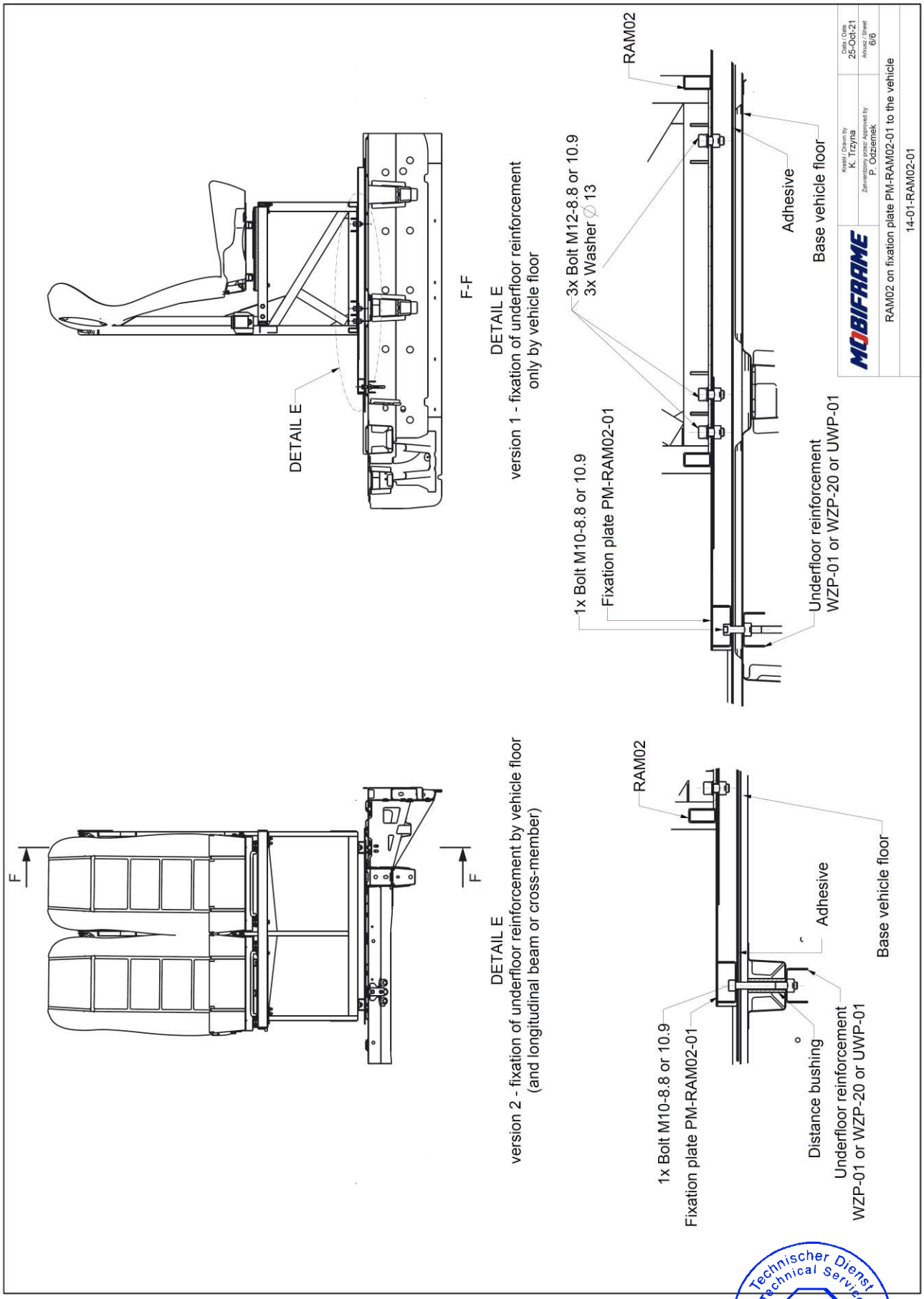
E-E



MOBIFRAME	Kreślił / Drawn by: K. Trzyna	Data / Date: 25-Oct-21
	Zatwierdzony przez/ Approved by: P. Odziemek	Arkusz / Sheet: 5/6

RAM02 on fixation plate PM-RAM02-01 to the vehicle

14-01-RAM02-01



In case of use of underfloor reinforcement UWP-01 additional nut M10 and washer Ø10.5 should be applied.

MOBIFRAME

Devices for comfort and safetiness

Installation guide:

Fixation of **RAM02** to the vehicle floor

Technischer Dienst Technical Service TÜV SÜD Auto Service GmbH 152

Step 1. Preparation of the vehicle body and fixation plate

Clean vehicle floor before installation. Surface must be clean, dry and free from all traces of grease, oil and dust. Use Betaclean (cleaner) to degrease the vehicle's floor and the bottom side of the fixation plate.

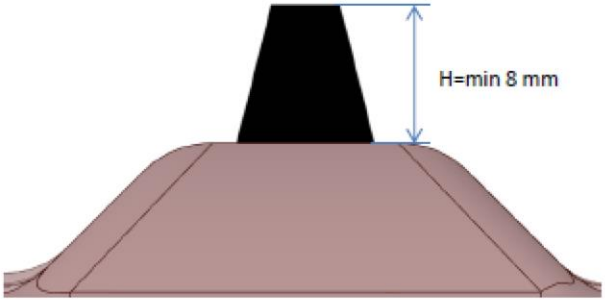
Step 2. Primmering

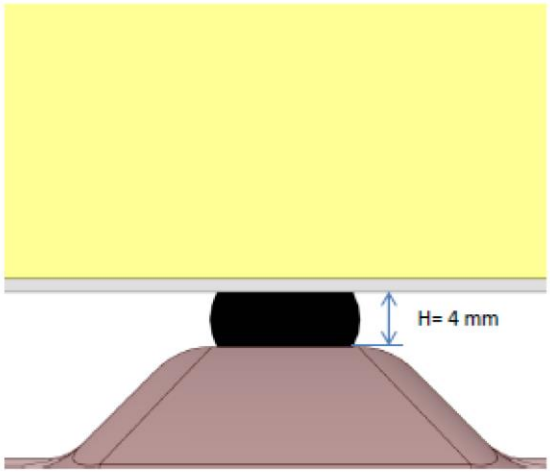
Apply Betaprime on the vehicle's floor and also on bottom side of the fixation plate. Primer can be applied with a brush or roller. Contact surfaces (of vehicle floor and fixation plate) must be covered by Betaprime.

Step 3. Gluing

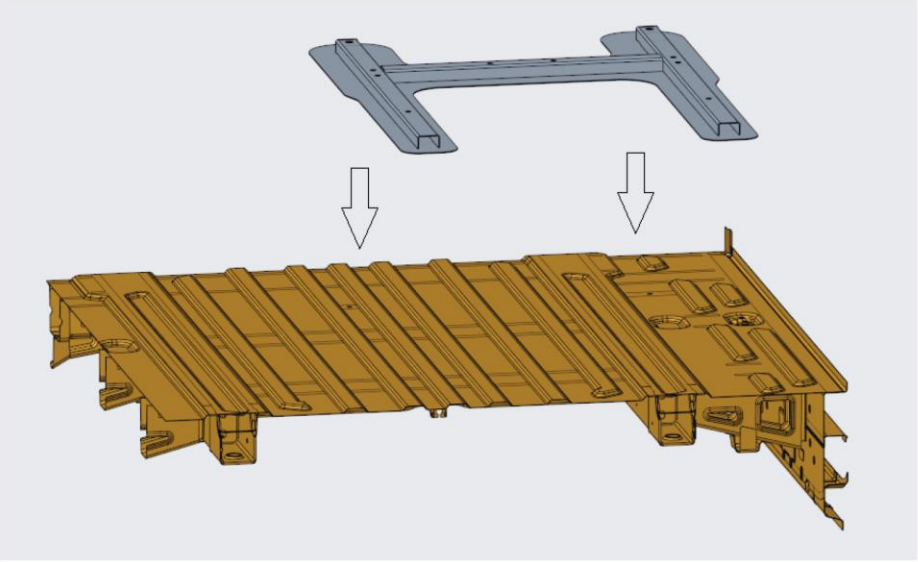
Don't walk on the primered surfaces. Use a piece of carton for protection. Apply Betamate glue on raised floor ribs of vehicle floor in the place where the bench is attached. Primer should by dry. The adhesive must be applied on the surfaces coated previously by Betaprime.

Recommended glue bead



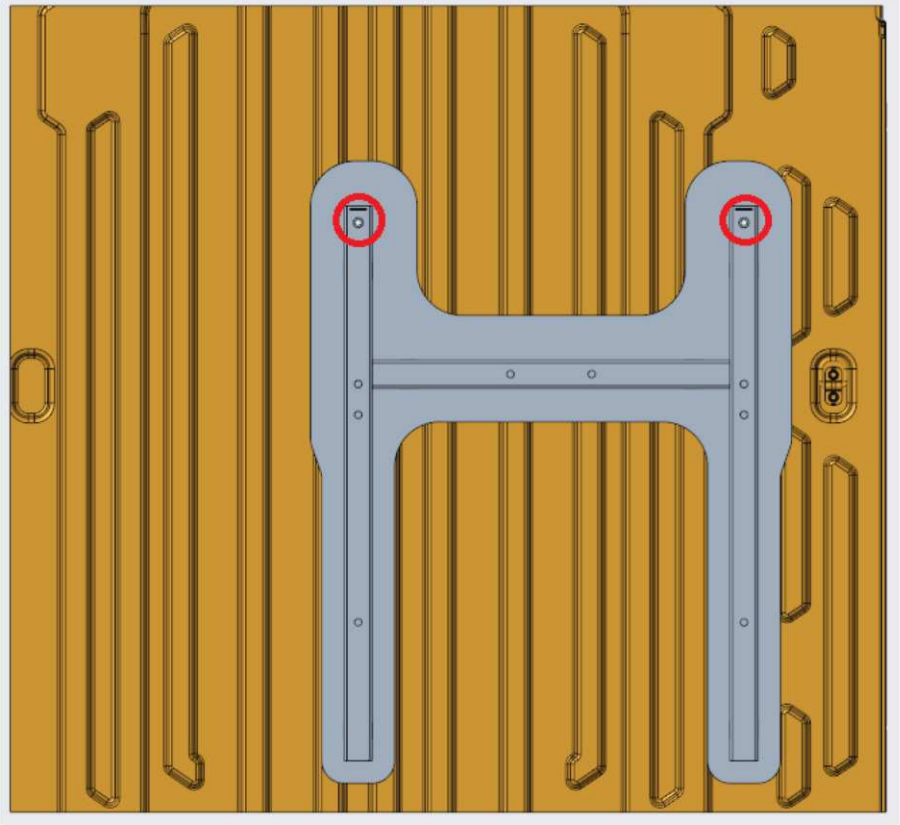


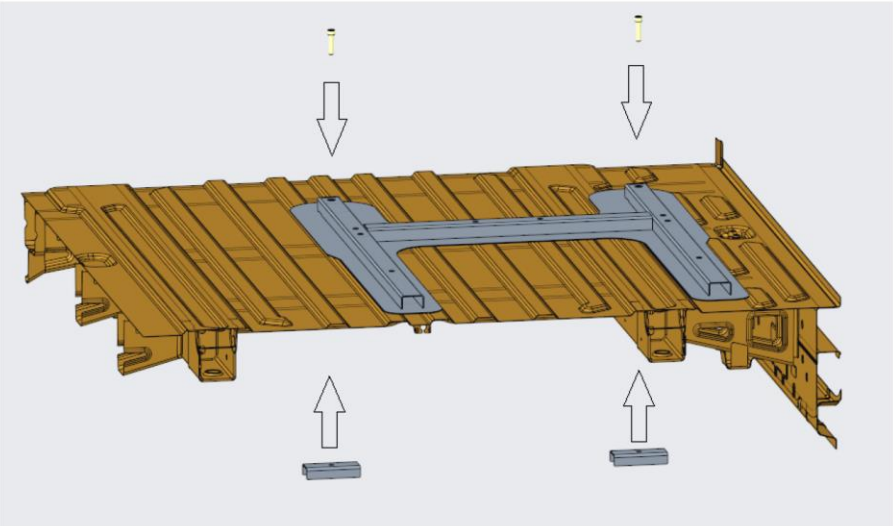
Place and glue the fixation plate to the desired location on the vehicle floor. Leave the floor for at least 24 h. Don't walk on the fixation plate and don't move the vehicle.



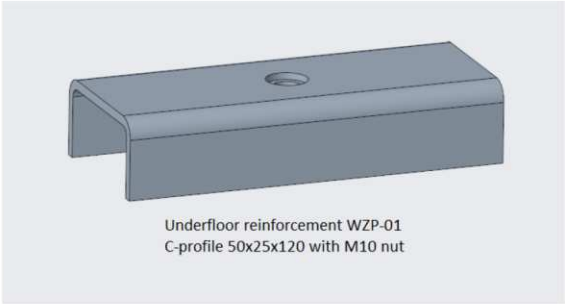
Step 4. Underfloor reinforcements

Drill holes ϕ11 in the vehicle floor according existing holes in fixation plate.

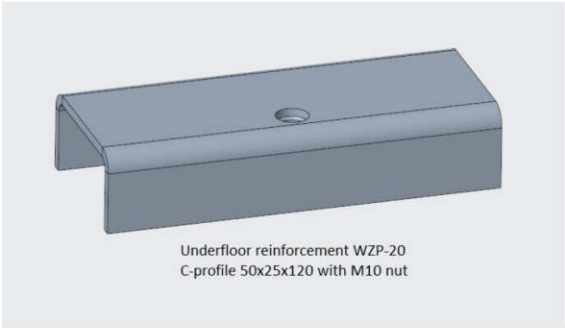




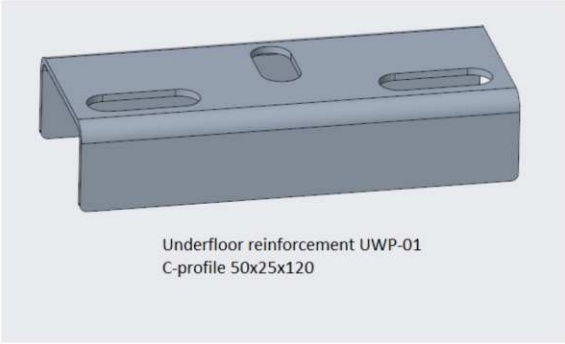
Screw the underfloor reinforcements. Tightening torque 30 Nm. Use liquid anaerobic glue to secure the bolts.



Underfloor reinforcement WZP-01
C-profile 50x25x120 with M10 nut



Underfloor reinforcement WZP-20
C-profile 50x25x120 with M10 nut



Underfloor reinforcement UWP-01
C-profile 50x25x120

Underfloor reinforcement can be rotated by 90 degrees. Put the rubber blank plugs into the installation holes.

Technischer Dienst Technical Service
TÜV SÜD Auto Service GmbH
152

RAM03:

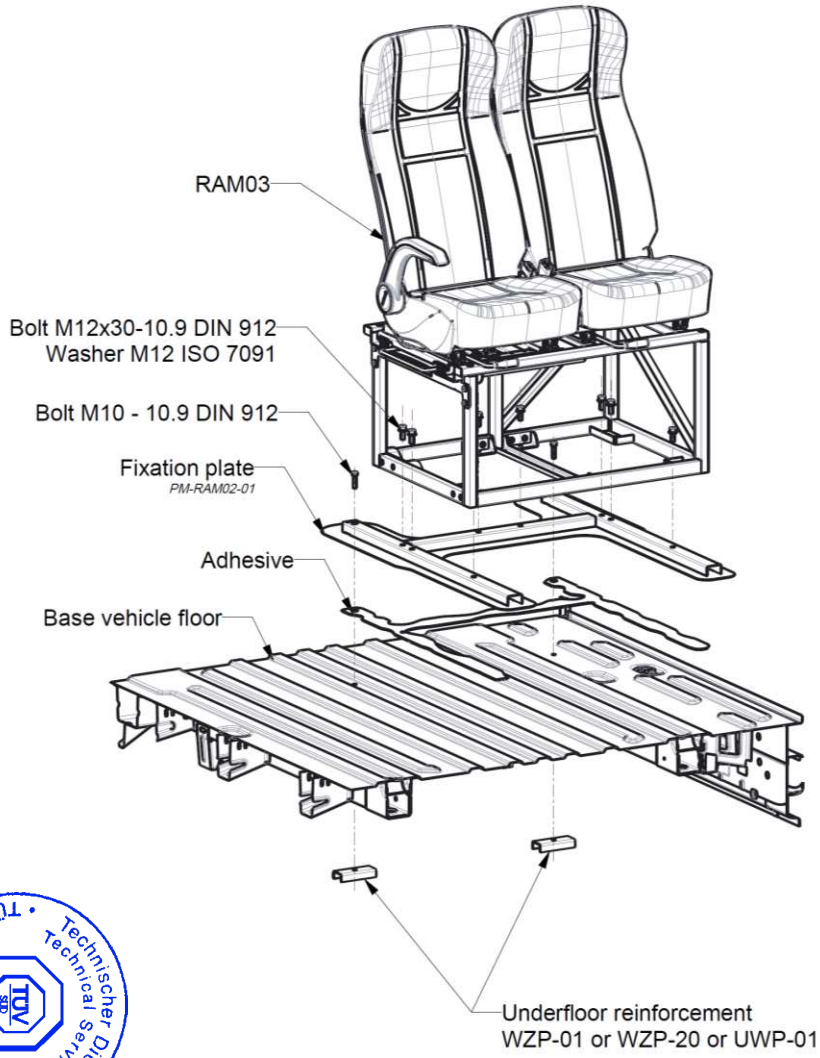
(see next pages)

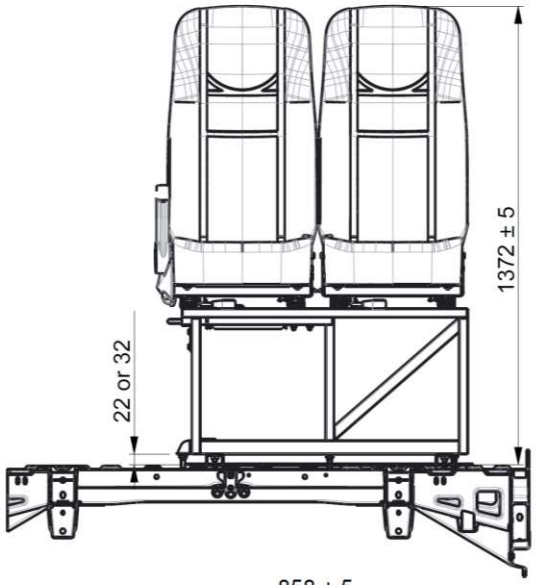
MOBIFRAME

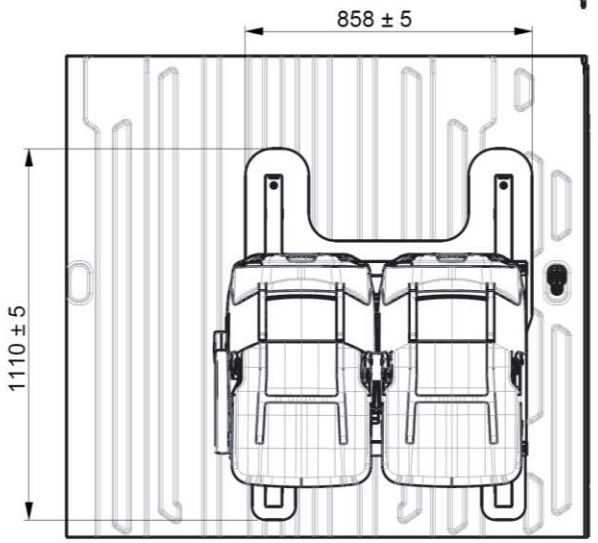
MOBIFRAME/04/2022-00

Date: 16.09.2022

Page / pages: 53/109





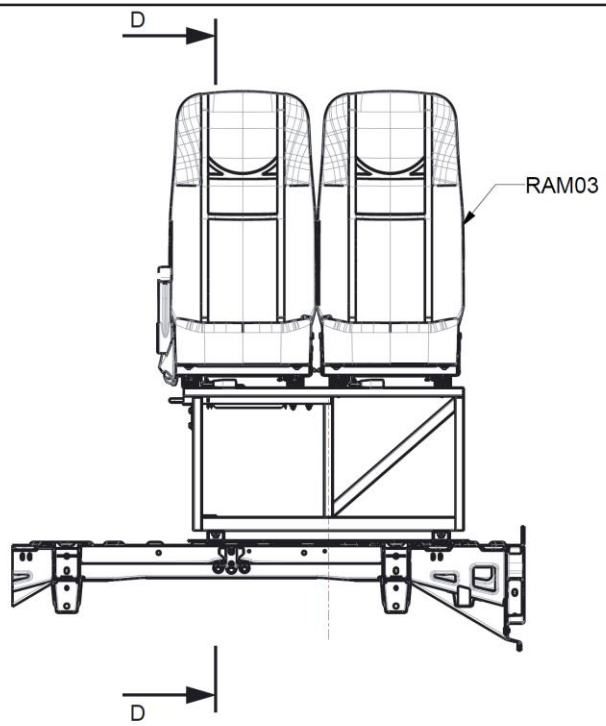


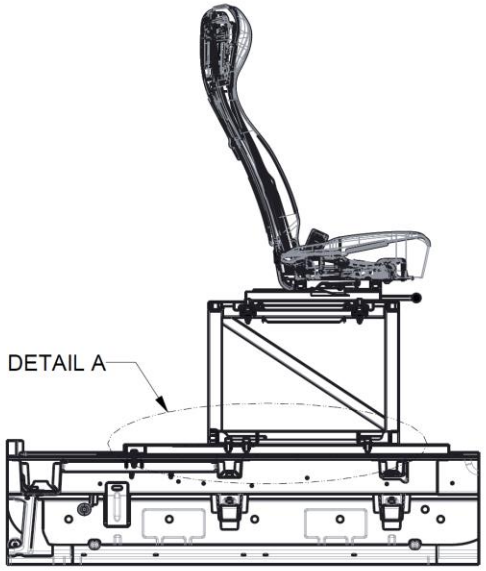
TÜV SÜD Auto Service GmbH 152 Technischer Dienst Technical Service

MOBIFRAME	Kreślił / Drawn by: K. Trzyna	Data / Date: 13-Sep-22
	Zatwierdzony przez/ Approved by: P. Odziemek	Arkusz / Sheet: 1/3

Fixation of RAM03 to fixation plate in the vehicle

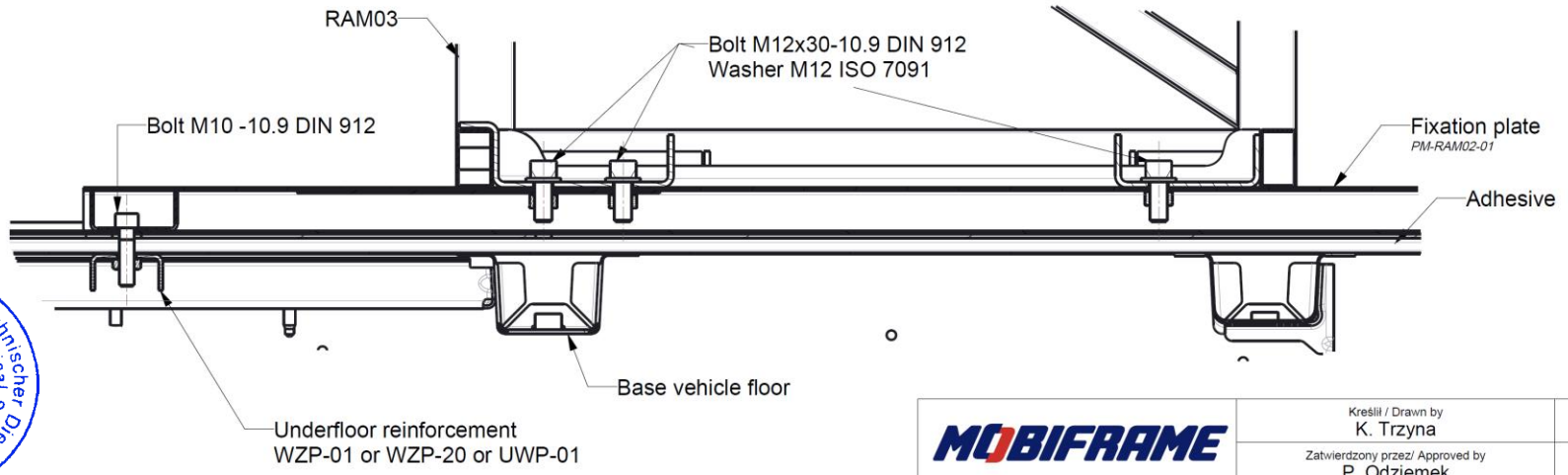
17-03-RAM03





D-D

DETAIL A

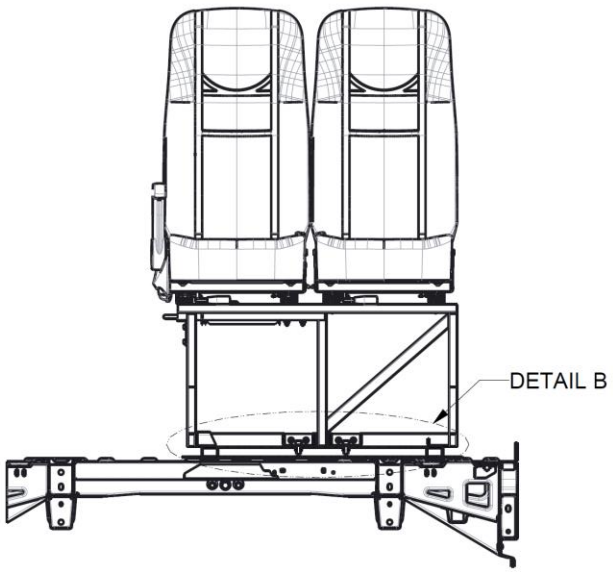


TÜV SÜD Auto Service GmbH 152 Technischer Dienst Technical Service

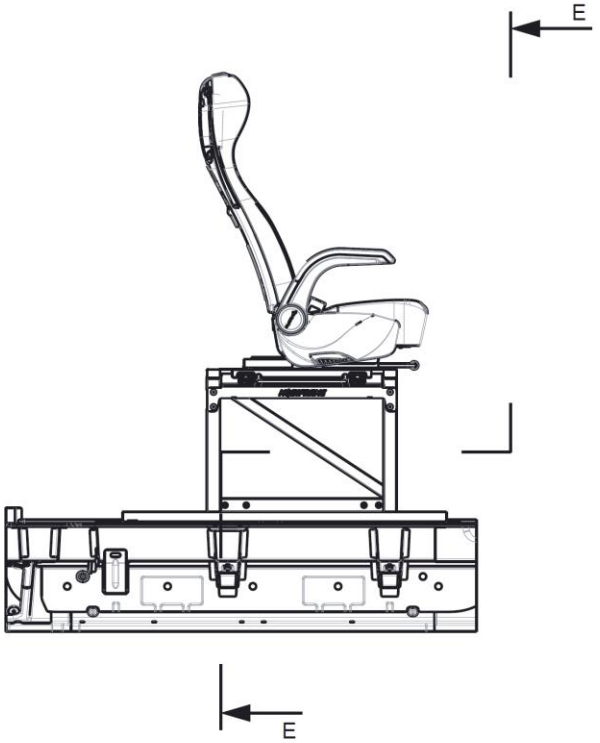
MOBIFRAME	Kreślił / Drawn by: K. Trzyna	Data / Date: 13-Sep-22
	Zatwierdzony przez/ Approved by: P. Odziemek	Arkusz / Sheet: 2/3

Fixation of RAM03 to fixation plate in the vehicle

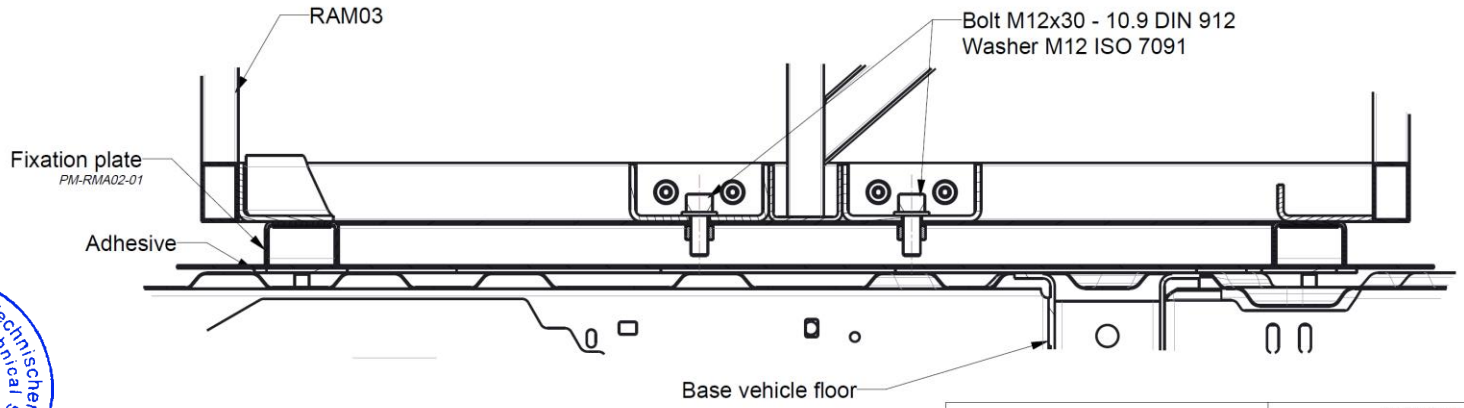
17-03-RAM03



E-E



DETAIL B



TÜV SÜD Technischer Dienst Technical Service Auto Service GmbH 152

MOBIFRAME	Kreślił / Drawn by: K. Trzyna	Data / Date: 13-Sep-22
	Zatwierdzony przez/ Approved by: P. Odziemek	Arkusz / Sheet: 3/3

Fixation of RAM03 to fixation plate in the vehicle

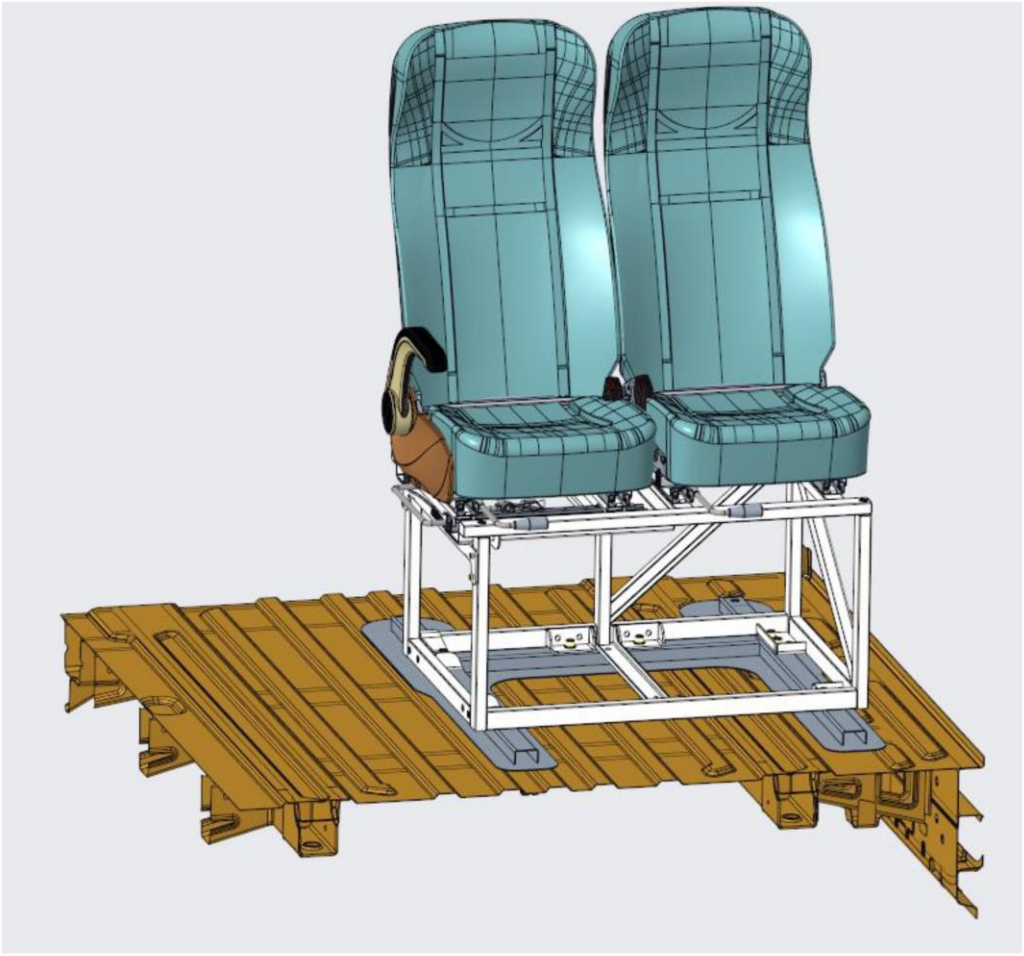
17-03-RAM03

MOBIFRAME

Devices for comfort and safetiness

Installation guide:

Fixation of **RAM03** to the vehicle floor



Technischer Dienst Technical Service TÜV SÜD Auto Service GmbH 152

Step 1. Preparation of the vehicle body and fixation plate

Clean vehicle floor before installation. Surface must be clean, dry and free from all traces of grease, oil and dust. Use Betaclean (cleaner) to degrease the vehicle's floor and the bottom side of the fixation plate.

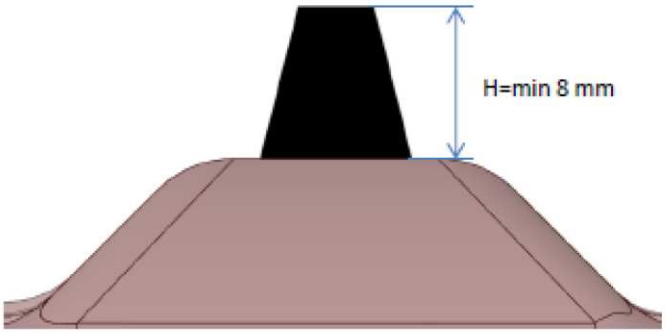
Step 2. Primmering

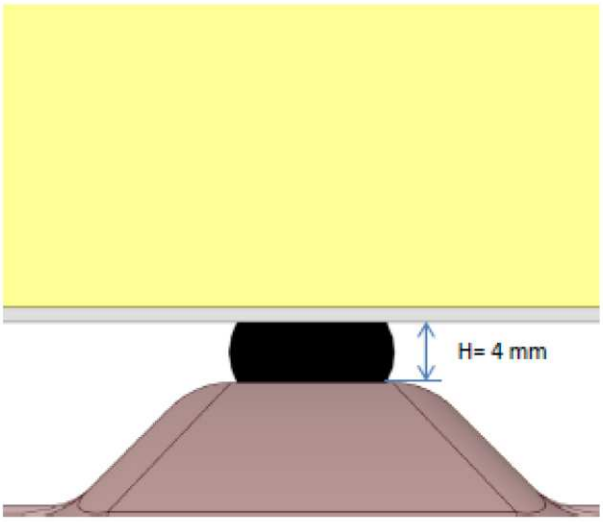
Apply Betaprime on the vehicle's floor and also on bottom side of the fixation plate. Primer can be applied with a brush or roller. Contact surfaces (of vehicle floor and fixation plate) must be covered by Betaprime.

Step 3. Gluing

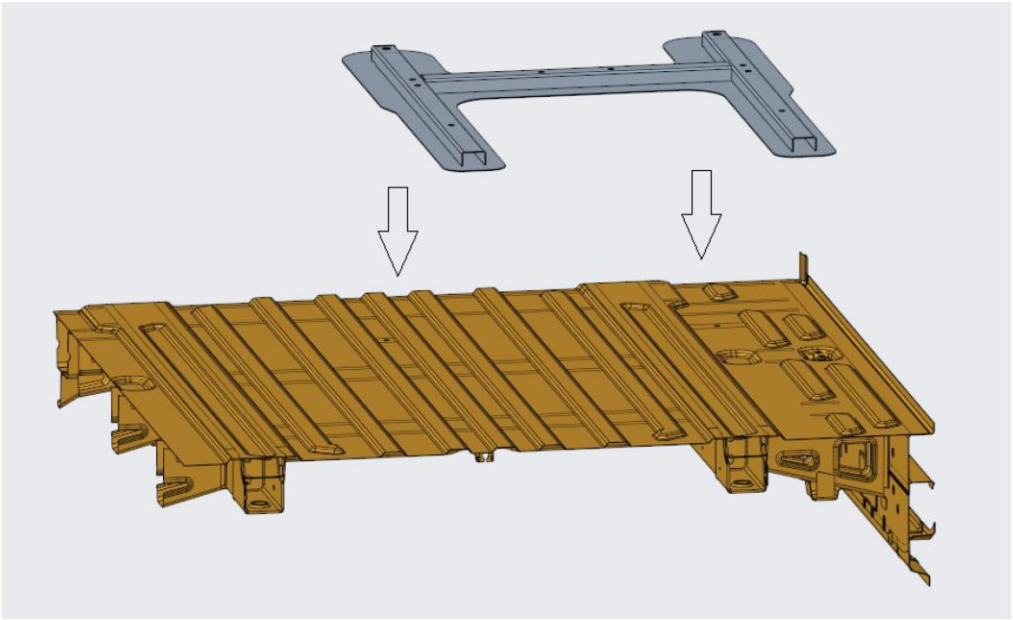
Don't walk on the primered surfaces. Use a piece of carton for protection. Apply Betamate glue on raised floor ribs of vehicle floor in the place where the bench is attached. Primer should by dry. The adhesive must be applied on the surfaces coated previously by Betaprime.

Recommended glue bead



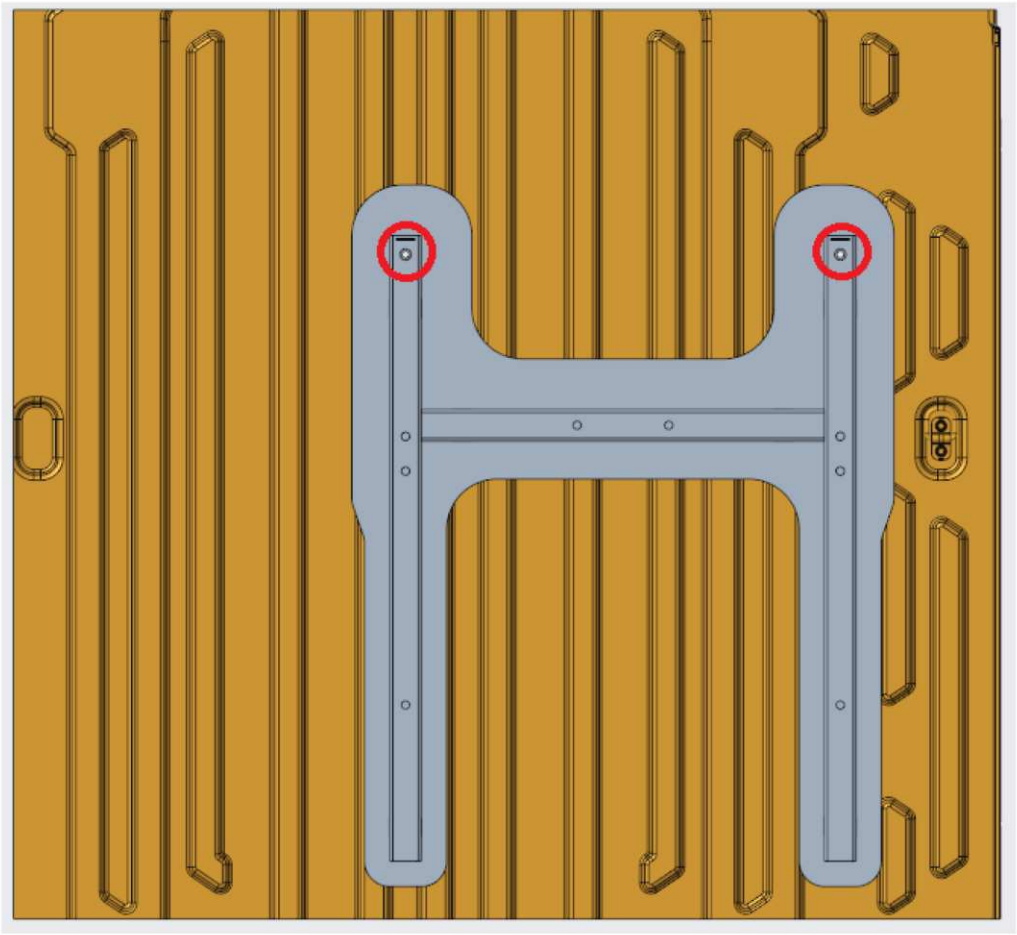


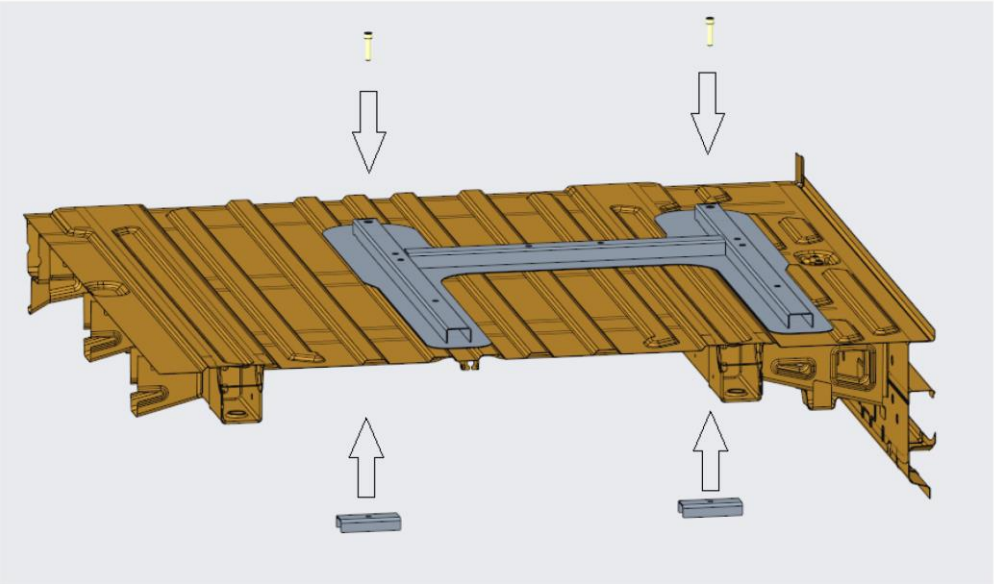
Place and glue the fixation plate to the desired location on the vehicle floor. Leave the floor for at least 24 h. Don't walk on the fixation plate and don't move the vehicle.



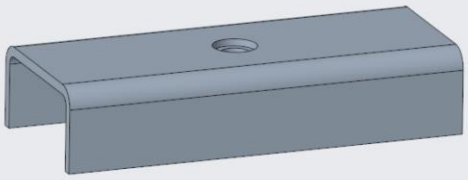
Step 4. Underfloor reinforcements

Drill holes ϕ11 in the vehicle floor according existing holes in fixation plate.

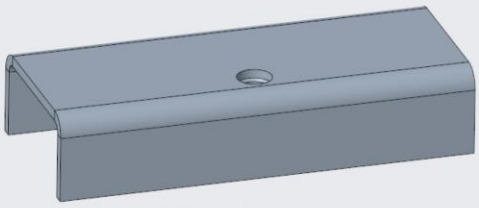




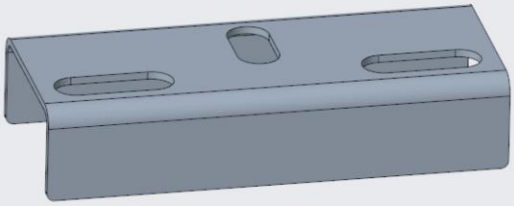
Screw the underfloor reinforcements. Tightening torque 30 Nm. Use liquid anaerobic glue to secure the bolts.



Underfloor reinforcement WZP-01
C-profile 50x25x120 with M10 nut



Underfloor reinforcement WZP-20
C-profile 50x25x120 with M10 nut



Underfloor reinforcement UWP-01
C-profile 50x25x120 with M10 nut

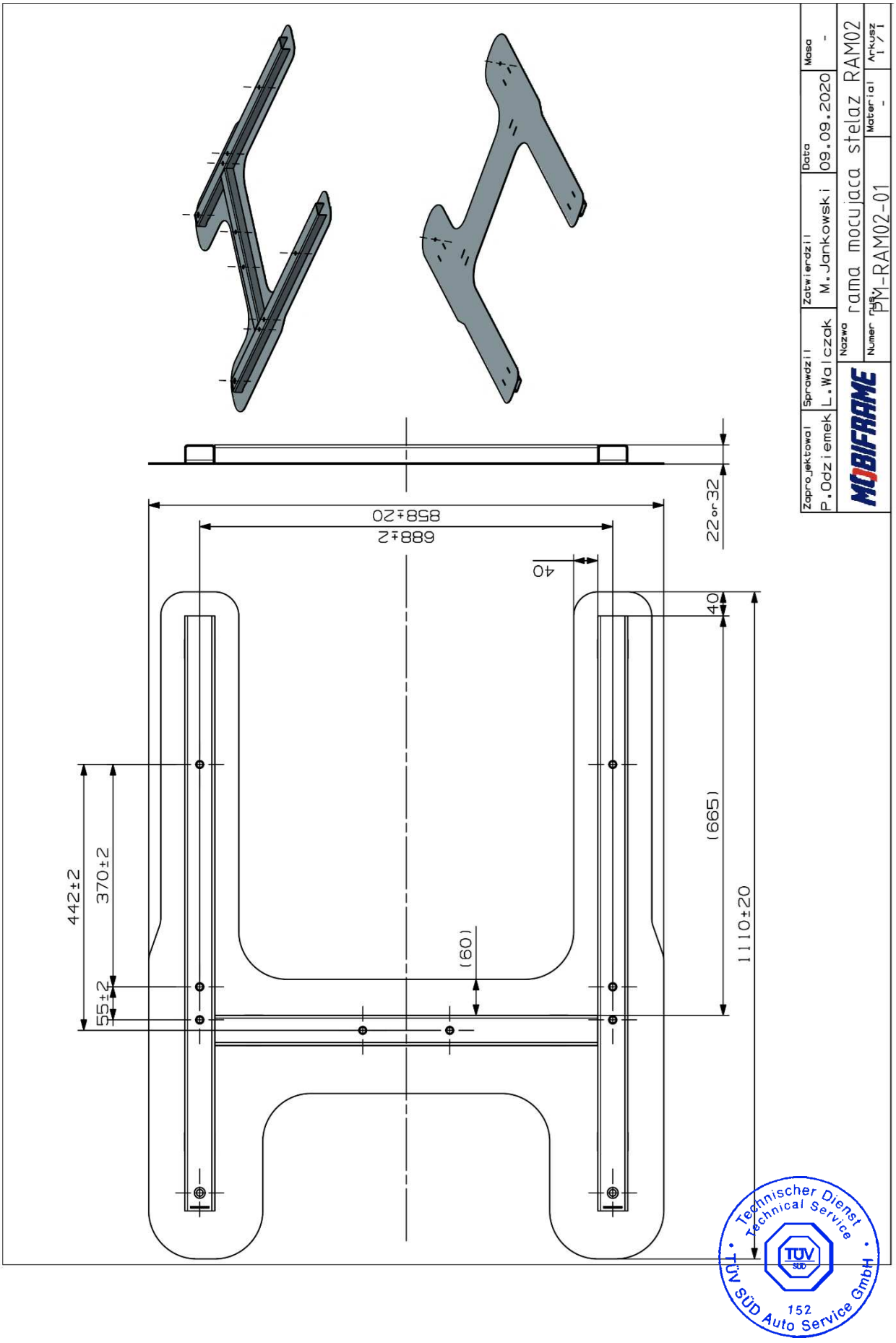
Underfloor reinforcement can be rotated by 90 degrees. Put the rubber blank plugs into the installation holes.

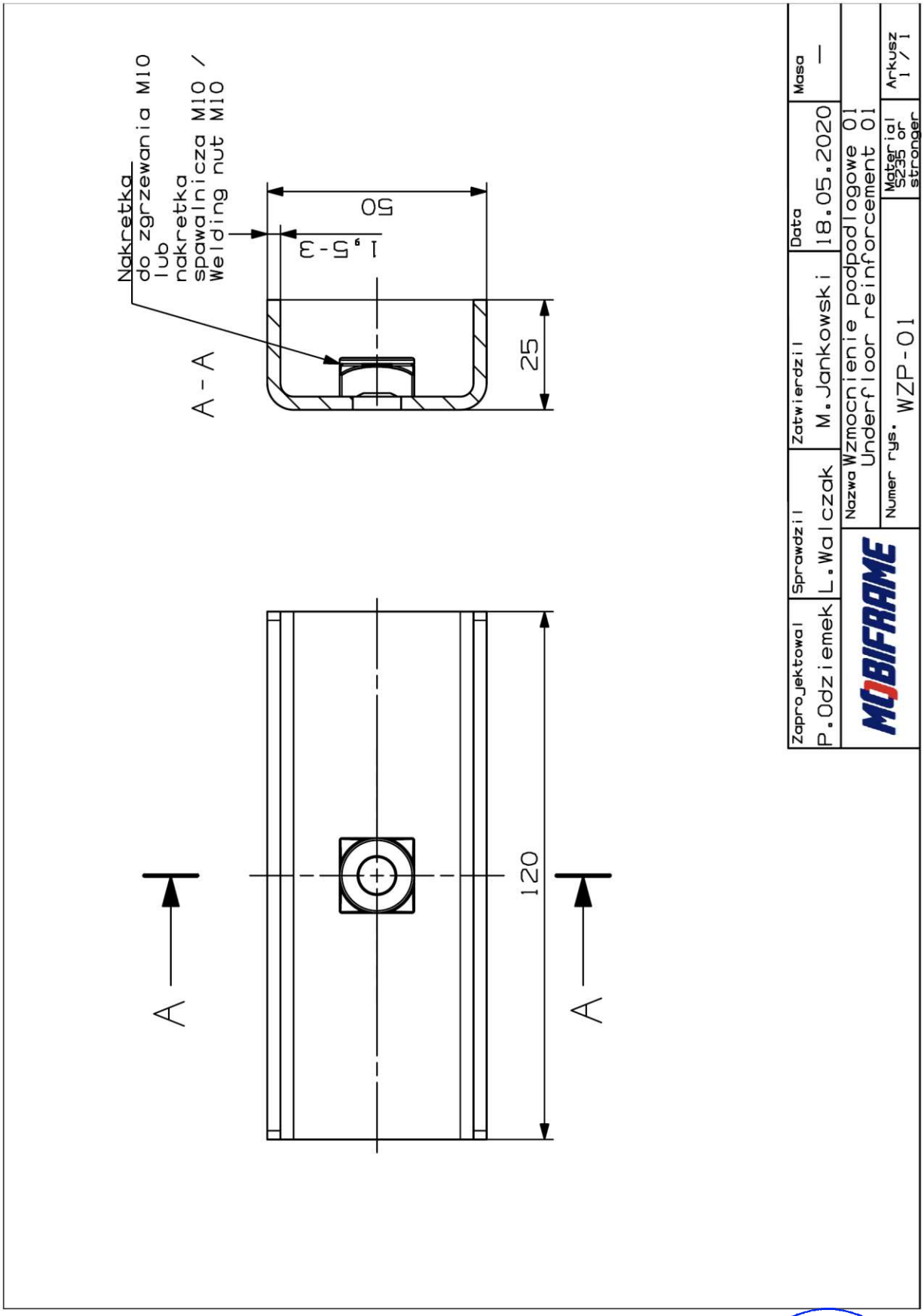
Technischer Dienst Technical Service TÜV SÜD Auto Service GmbH 152

RAM02 and RAM03 fixation components:

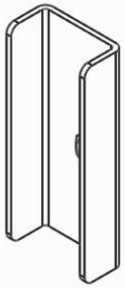
(see next pages)

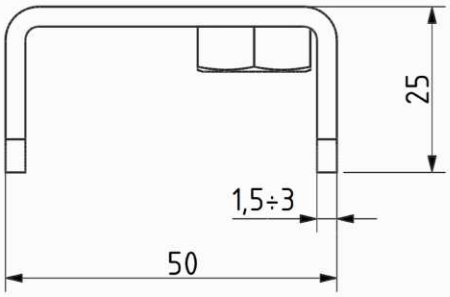
Fixation Plate:

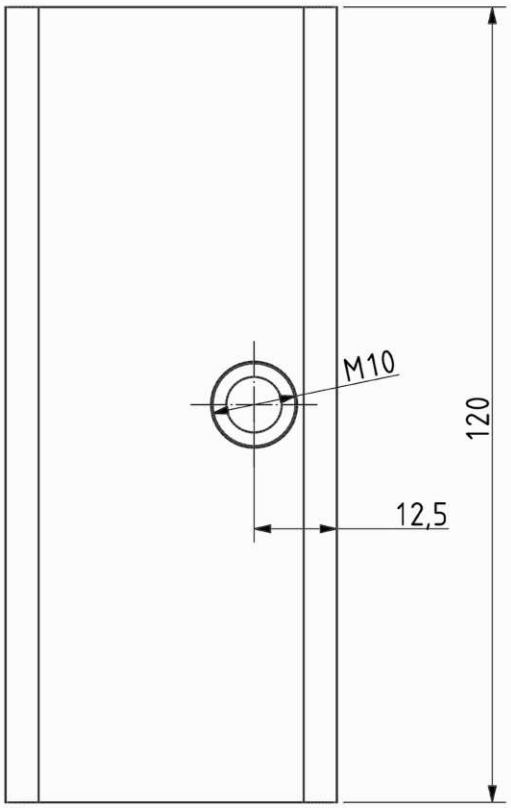




Underfloor reinforcement WZP-01 can be mounted interchangeably to UWP-01 or WZP-20







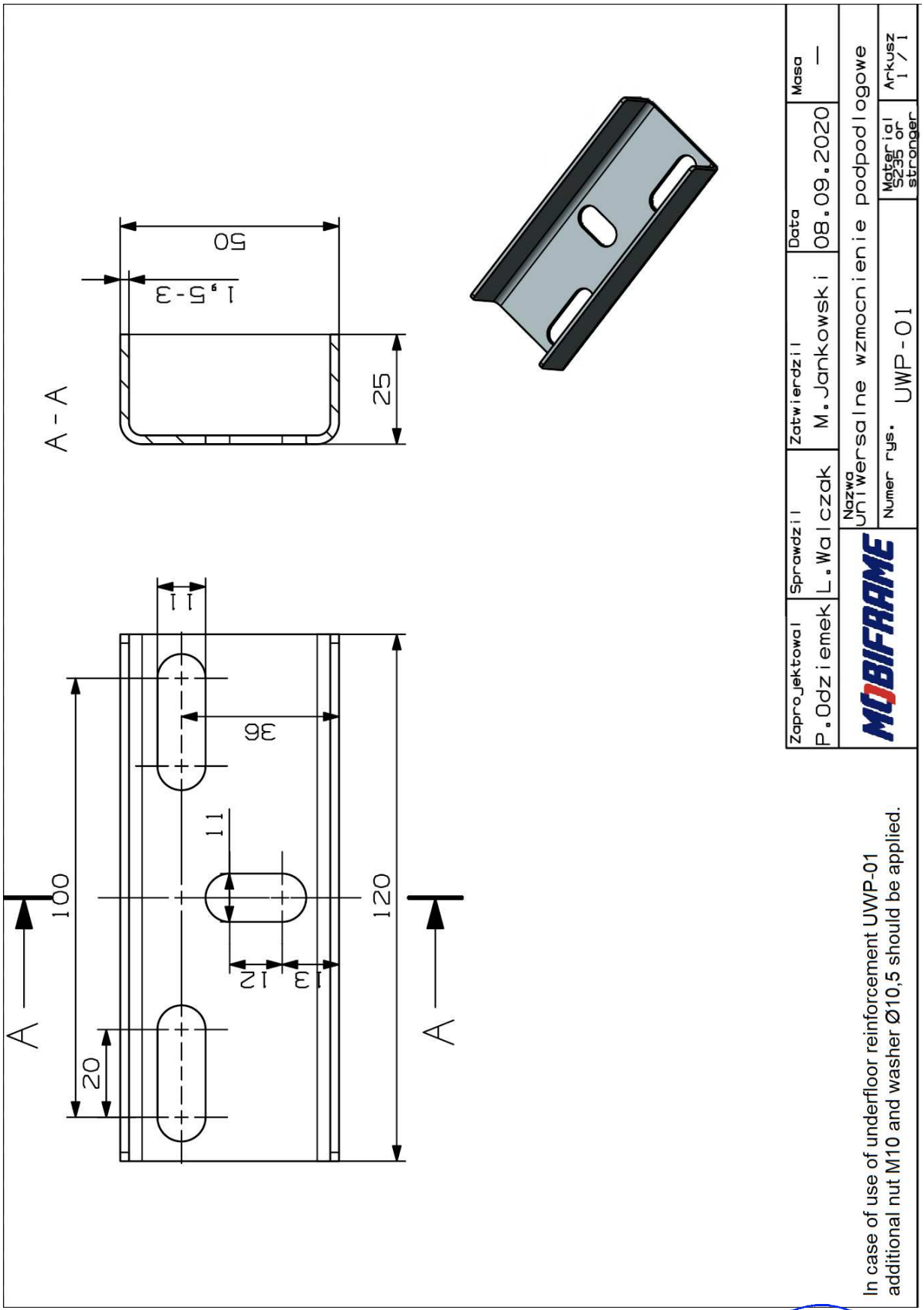
Tolerance class according to DIN 7168		0,5 - 3	3 - 6	6 - 30	30 - 120	120 - 400	400 -1000	1000 - 2000	2000 - 4000	>4000
m	Medium	±0,1	±0,1	±0,2	±0,3	±0,5	±0,8	±1,2	±2	±3

Designed by	Checked by	Approved by	Mass [kg]
P.D			0,265

MOBIFRAME	Underfloor reinforcement	Material: S235JR as stronger
	WZP-20	Date: 13.08.2019 / Sheet: 1/1

Technischer Dienst Technical Service TÜVSÜD Auto Service GmbH 152

Underfloor reinforcement WZP-20 can be mounted interchangeably to WZP-01 or UWP-01

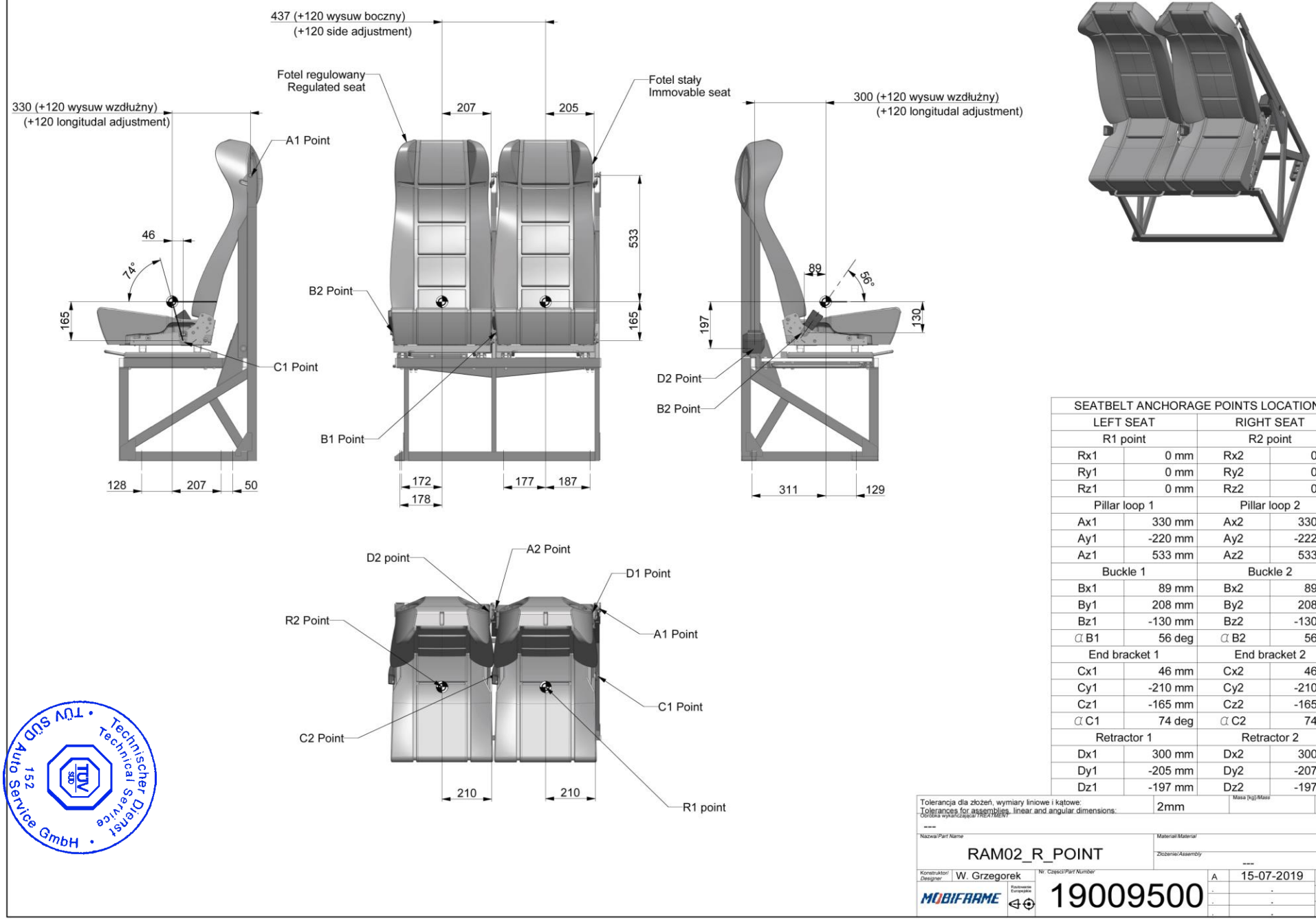


Underfloor reinforcement UWP-01 can be mounted interchangeably to WZP-01 or WZP-20

Enclosure 3: DRAWINGS OF SEATS AND COMPONENTS

RAM02 – fixation by means of underfloor reinforcements – dedicated for Fiat Ducato/Peugeot Boxer/Citroen Jumper/Opel Movano/RAM ProMaster

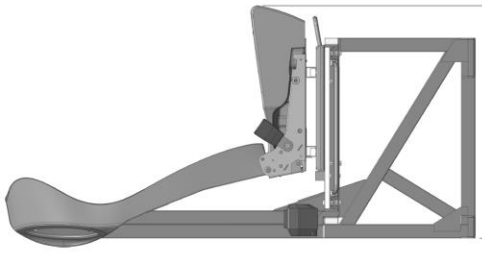
(see next pages)

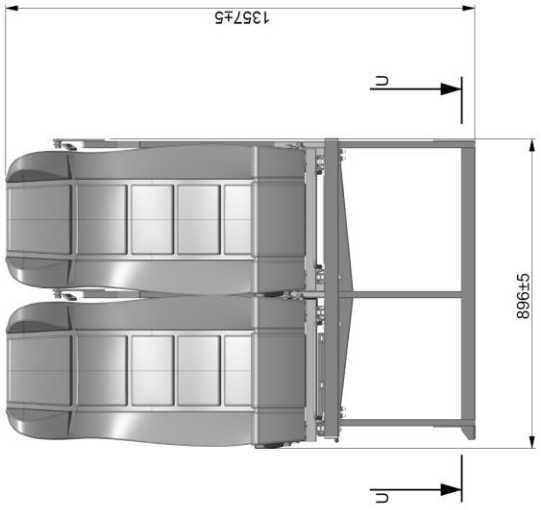


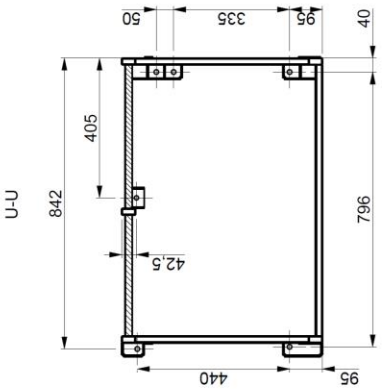
SEATBELT ANCHORAGE POINTS LOCATION			
LEFT SEAT		RIGHT SEAT	
R1 point		R2 point	
Rx1	0 mm	Rx2	0 mm
Ry1	0 mm	Ry2	0 mm
Rz1	0 mm	Rz2	0 mm
Pillar loop 1		Pillar loop 2	
Ax1	330 mm	Ax2	330 mm
Ay1	-220 mm	Ay2	-222 mm
Az1	533 mm	Az2	533 mm
Buckle 1		Buckle 2	
Bx1	89 mm	Bx2	89 mm
By1	208 mm	By2	208 mm
Bz1	-130 mm	Bz2	-130 mm
α B1	56 deg	α B2	56 deg
End bracket 1		End bracket 2	
Cx1	46 mm	Cx2	46 mm
Cy1	-210 mm	Cy2	-210 mm
Cz1	-165 mm	Cz2	-165 mm
α C1	74 deg	α C2	74 deg
Retractor 1		Retractor 2	
Dx1	300 mm	Dx2	300 mm
Dy1	-205 mm	Dy2	-207 mm
Dz1	-197 mm	Dz2	-197 mm

Tolerancja dla złożeń, wymiary liniowe i kątowe:
Tolerances for assemblies, linear and angular dimensions:
2mm
mm

Nazwa/Part Name: RAM02_R_POINT
Materiał/Material: ---
Złożenie/Assembly: ---
Konstruktor/Designer: W. Grzegorek
Nr. Części/Part Number: 19009500
A
15-07-2019
Skala/Scale: 1:10
Arkusz/Sheet: A2
Arkusz na/Sheet of: 1 /2







Tolerancja dla złożeń, wymiary liniowe i kątowe: mm
Obróbka wykańczająca: ---
Nazwa: RAM02_R_POINT
Materiał: ---
Złożenie: ---
Masa [kg]: 66,134
Jednostki: mm
Konstruktor: W. Grzegorek
Nr. Części: 190009500
A | 15-07-2019
Skala: 1:10
Arkusz: A2
Arkusz nr: 2 /2

Technischer Dienst Technical Service TÜV SÜD Auto Service GmbH 152

MOBIFRAME

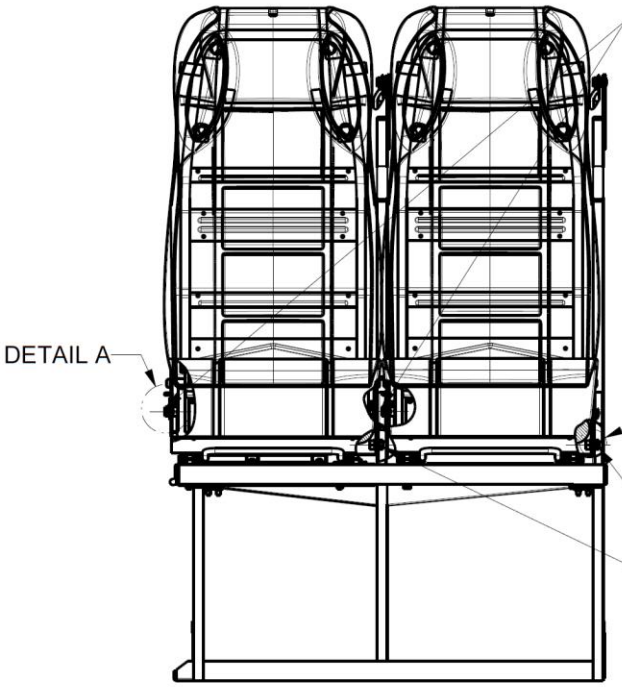
MOBIFRAME/04/2022-00

Date: 16.09.2022

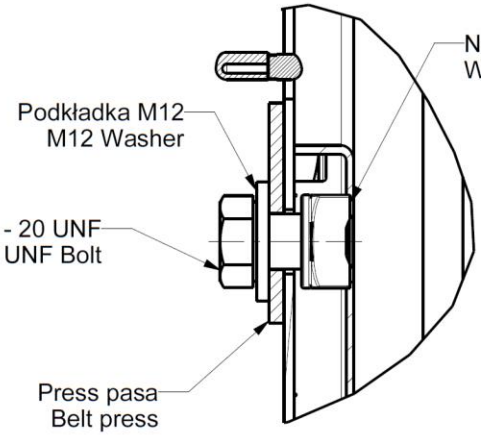
Page / pages: 72/109

Rozmieszczenie punktów kotwiczenia pasów bezpieczeństwa
Seatbelt anchorage points location

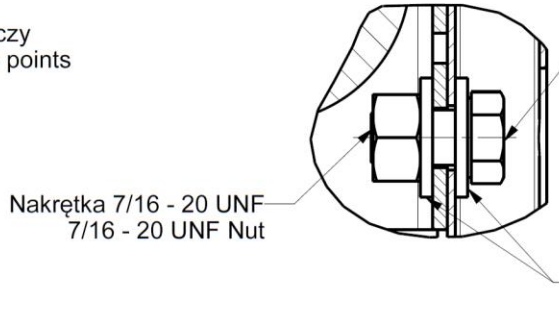
B-B
A-A

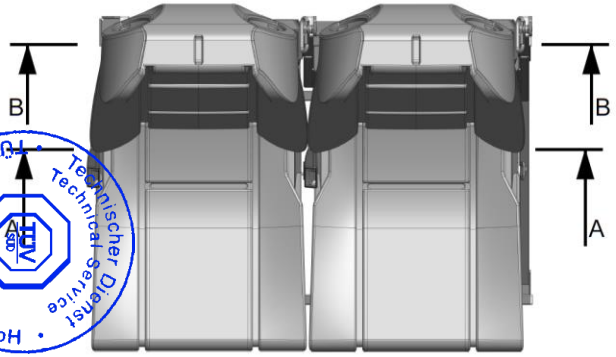


DETAIL A
1:1



DETAIL B
1:1





Tolerancja dla złożeń, wymiary liniowe i kątowe: Tolerances for assemblies, linear and angular dimensions:	2mm	Masa [kg]/*Mass*	Jednostki/*Units* mm
Obróbka wykańczająca/*TREATMENT* ---			
Nazwa/*Part Name* PKT_KOTWICZENIA_PAS		Materiał/*Material*	
		Złożenie/*Assembly* ---	
Konstruktor/*Designer* W. Grzegorek	Nr. Części/*Part Number* 19009500	A 15-07-2019	Skala/*Scale* 1:10
MOBIFRAME Rzutowanie Europejskie			Arkusz/*Sheet* A3
			Arkusz na/*Sheet no* 1 /2

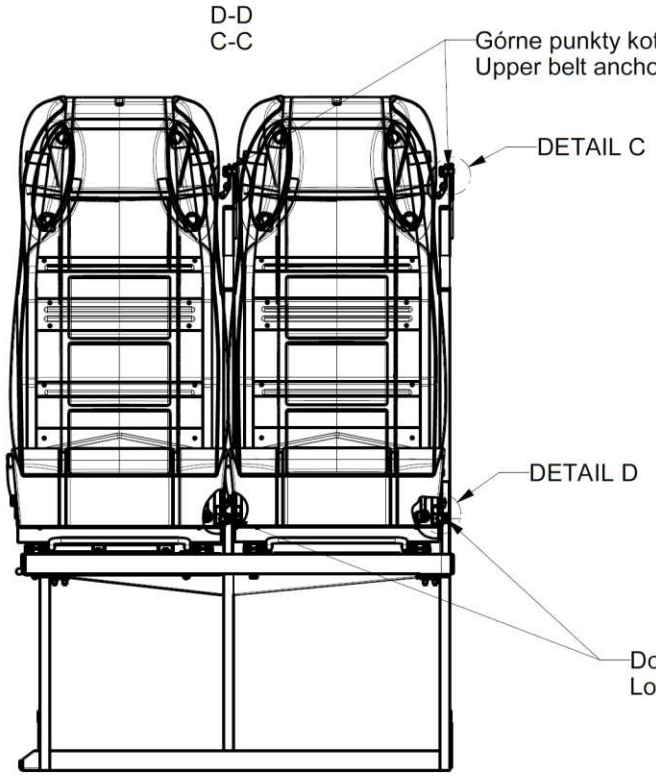
MOBIFRAME

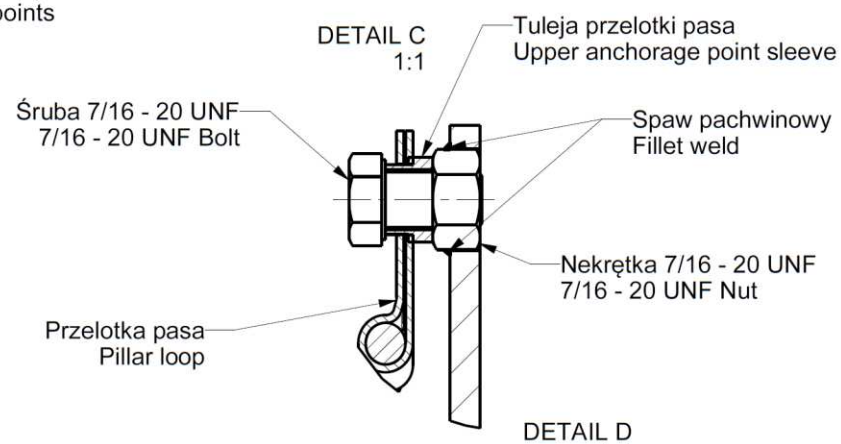
MOBIFRAME/04/2022-00

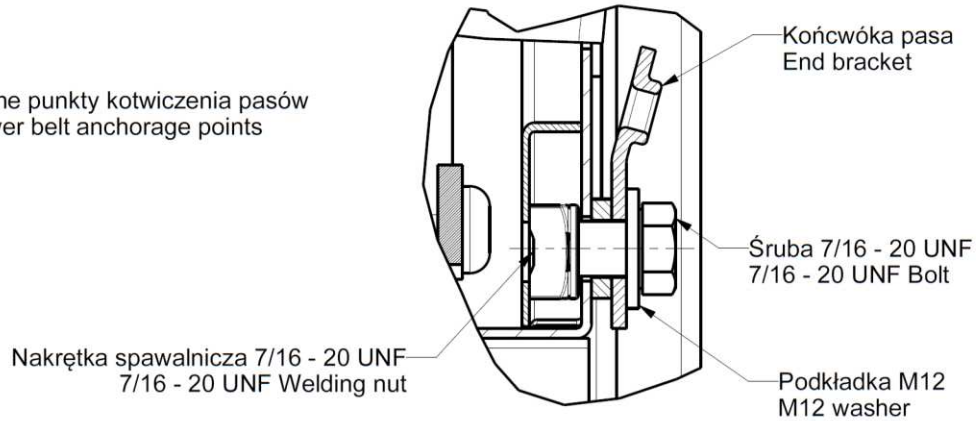
Date: 16.09.2022

Page / pages: 73/109

Rozmieszczenie punktów kotwiczenia pasów bezpieczeństwa
Seatbelt anchorage points location





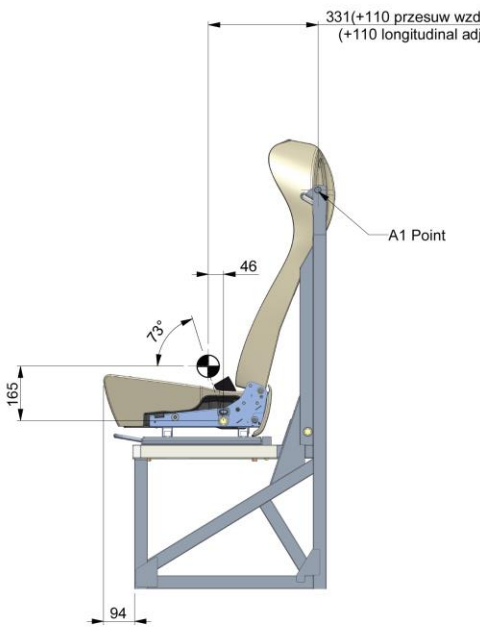


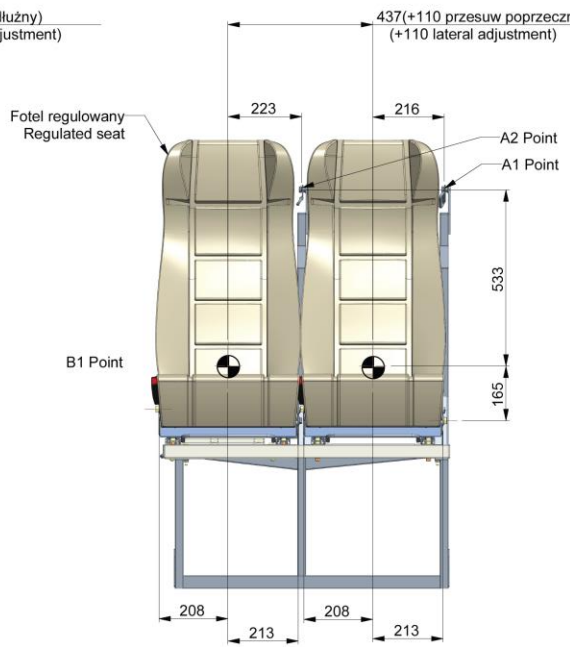
TÜV SÜD Auto Service GmbH · Technischer Dienst Technical Service

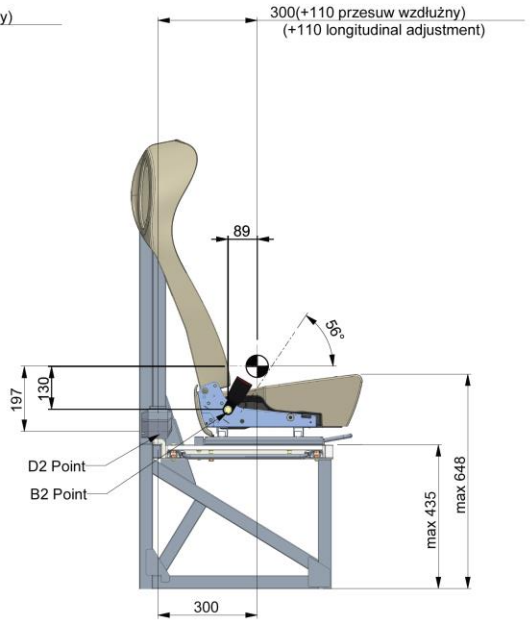
Tolerancja dla złożeń, wymiary liniowe i kątowe: Tolerances for assemblies, linear and angular dimensions:	2mm	Masa [kg]/Mass	Jednostki/Units: mm
Obróbka wykańczająca/TREATMENT: ---			
Nazwa/Part Name: PKT_KOTWICZENIA_PAS		Materiał/Material	
		Złożenie/Assembly: ---	
Konstruktor/Designer: W. Grzegorek	Nr. Części/Part Number: 19009500	A 15-07-2019	Skala/Scale: 1:10
MOBIFRAME Rzutowanie Europejskie			Arkusz/Sheet: A3
			Arkusz nr/Sheet nr: 2 /2

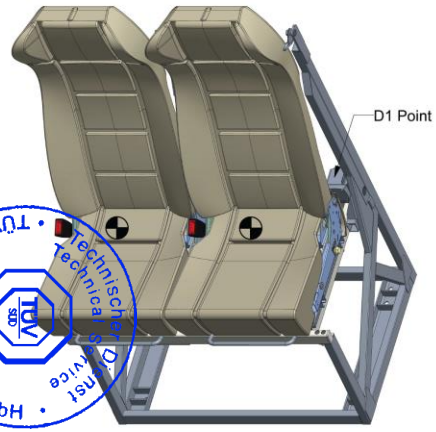
RAM02 – dedicated for Mercedes Sprinter (906, 907)/Volkswagen Crafter (2006-2016)
(fixation by means of underfloor reinforcements)
and
dedicated for all vehicles presented in Enclosure 1 (fixation by means of Fixation Plate)

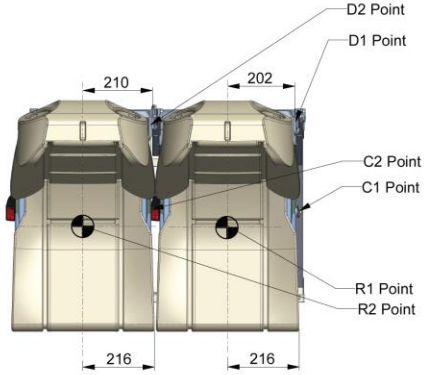
(see next pages)











SEATBELT ANCHORAGE POINTS LOCATION			
LEFT SEAT		RIGHT SEAT	
R1 POINT		R2 POINT	
Rx1	0 mm	Rx2	0 mm
Ry1	0 mm	Ry2	0 mm
Rz1	0 mm	Rz2	0 mm
Pillar loop 1		Pillar loop 2	
Ax1	331mm	Ax2	331mm
Ay1	-216mm	Ay2	-223mm
Az1	533mm	Az2	533mm
Buckle 1		Buckle 2	
Bx1	89mm	Bx2	89mm
By1	208mm	By2	208mm
Bz1	-130mm	Bz2	-130mm
αB1	56 deg	αB2	56 deg
End bracket 1		End bracket 2	
Cx1	46mm	Cx2	46mm
Cy1	-213mm	Cy2	-213mm
Cz1	-165mm	Cz2	-165mm
αC1	73 deg	αC2	73 deg
Retractor 1		Retractor 2	
Dx1	300mm	Dx2	300mm
Dy1	-202mm	Dy2	-210mm
Dz1	-197mm	Dz2	-197mm

MOBIFRAME	Kreślił / Drawn by: O. Mochalov	Data / Date: 21-Apr-22
	Zatwierdzony przez/ Approved by: Ł. Walczak	Arkusz / Sheet: 1/2

RAM02_R_POINTS

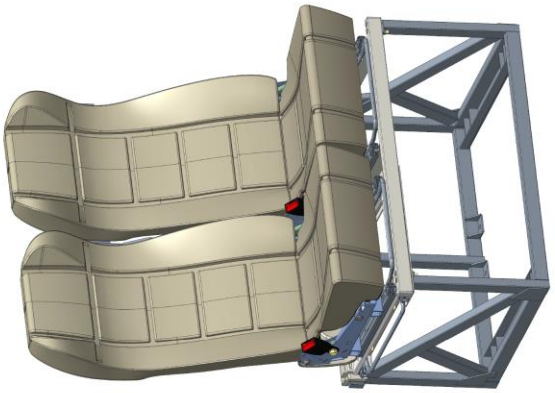
RES10002B_RAM02

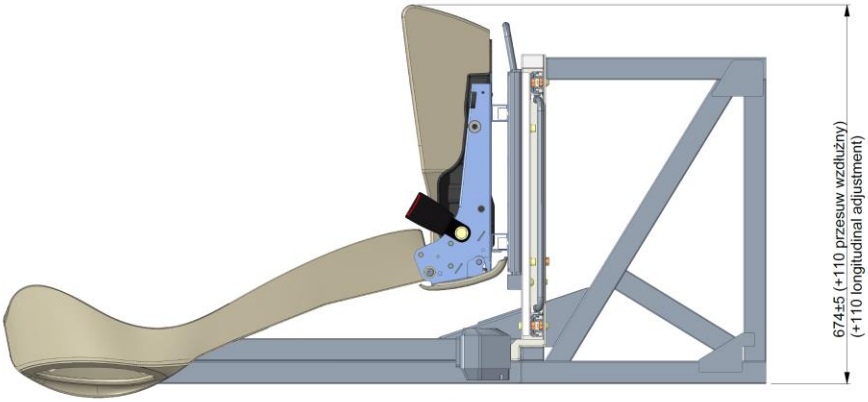
MOBIFRAME

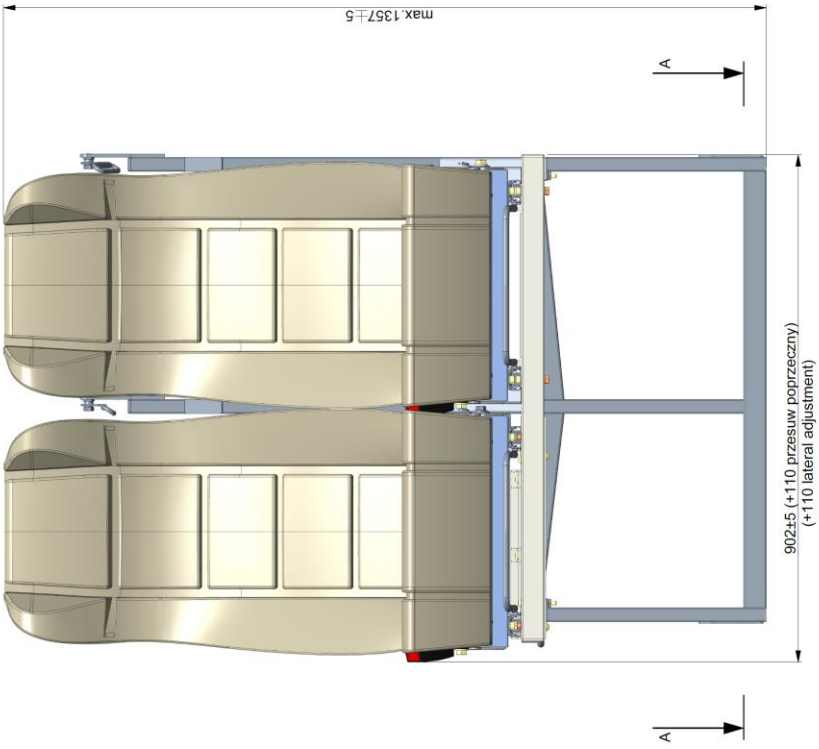
MOBIFRAME/04/2022-00

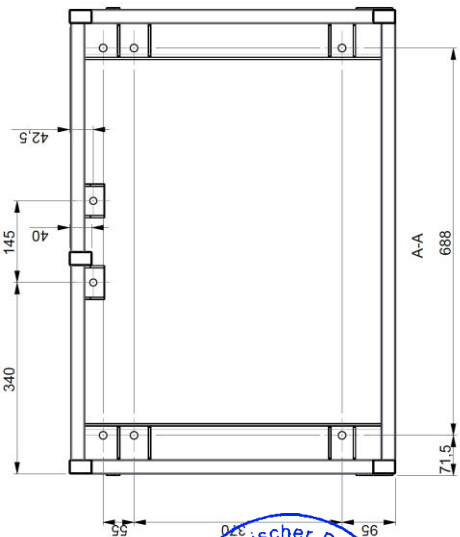
Date: 16.09.2022

Page / pages: 75/109





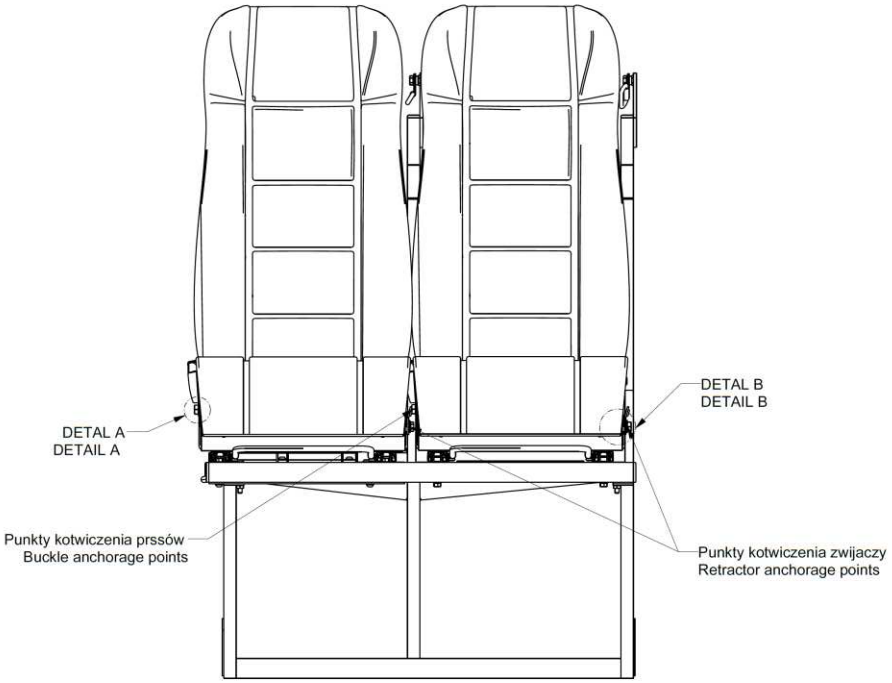


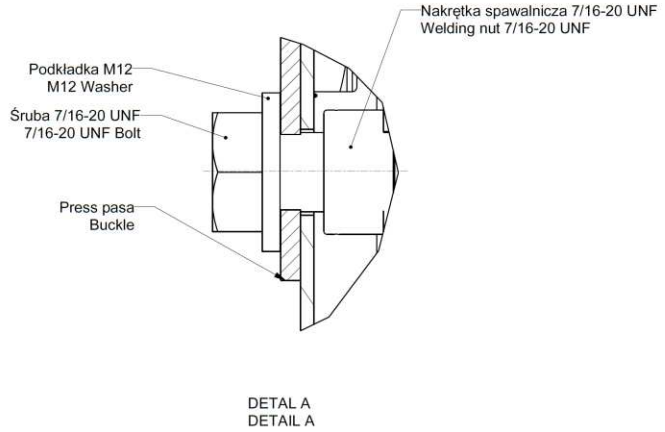


Technischer Dienst
Technical Service
TÜV SÜD
TÜV SÜD Auto Service GmbH
152

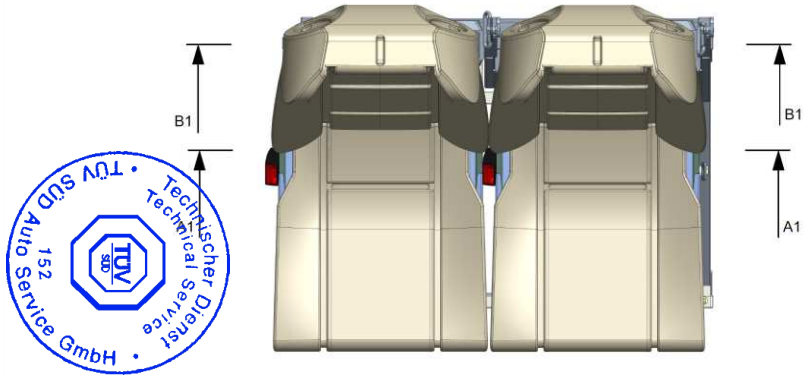
Data / Date
21-Apr-22
Arkusz / Sheet
2/2
Kreślił / Drawn by
O. Mochalov
Zatwierdzony przez/ Approved by
Ł. Walczak
MOBIFRAME
RAM02_R_POINTS
RES10002B_RAM02

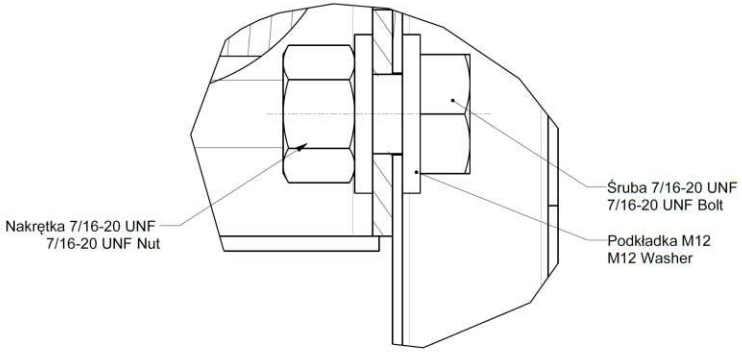
Rozmieszczenie punktów kotwiczenia pasów bezpieczeństwa
Seat belt anchorage points location





DETAL A
DETAIL A





DETAL B
DETAIL B

TÜV SÜD Auto Service GmbH 152 Technischer Dienst Technical Service

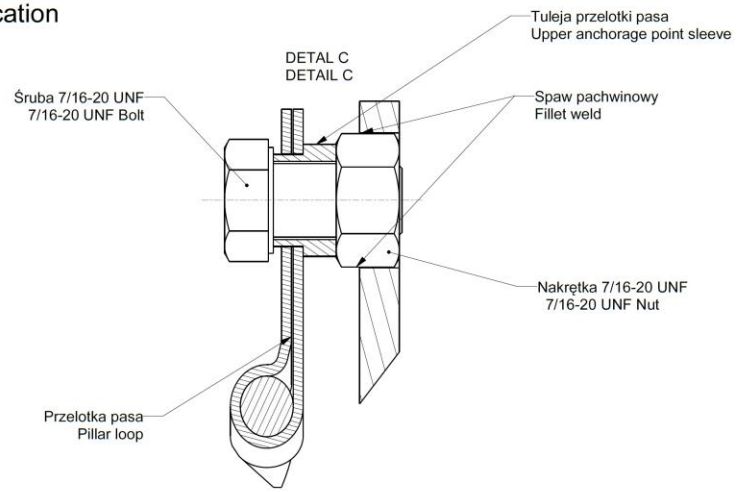
MOBIFRAME	Kreślił / Drawn by: O. Mochalov	Data / Date: 21-Apr-22
	Zatwierdzony przez/ Approved by: Ł. Walczak	Arkusz / Sheet: 1/2
PKT_KOTWICZENIA_PAS		
RES10002B_RAM02		

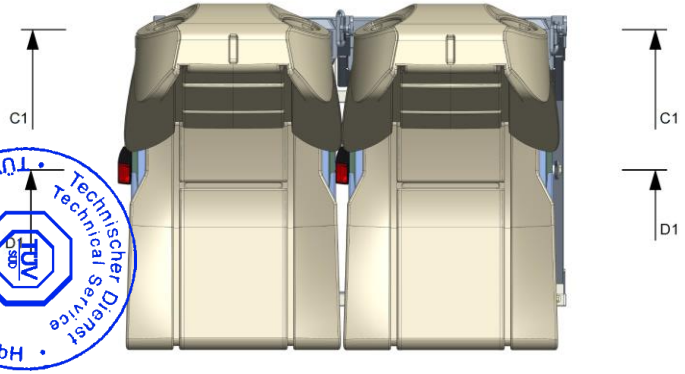
MOBIFRAME

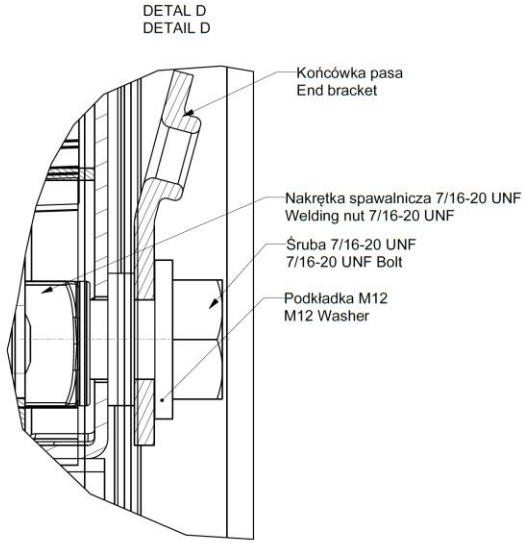
MOBIFRAME/04/2022-00

Date: 16.09.2022

Rozmieszczenie punktów kotwiczenia pasów bezpieczeństwa
Seat belt anchorage points location







TÜV SÜD Auto Service GmbH 152 Technischer Dienst Technical Service

MOBIFRAME	Kreślił / Drawn by: O. Mochalov	Data / Date: 21-Apr-22
	Zatwierdzony przez/ Approved by: Ł. Walczak	Arkusz / Sheet: 2/2
PKT_KOTWICZENIA_PAS		
RES10002B_RAM02		

MOBIFRAME

MOBIFRAME/04/2022-00

Date: 16.09.2022

Fixation of seats to RAM02 frame:

(see next pages)

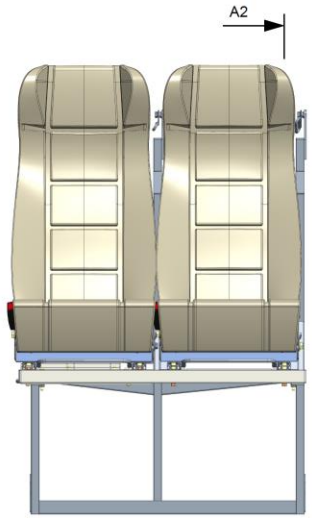
MOBIFRAME

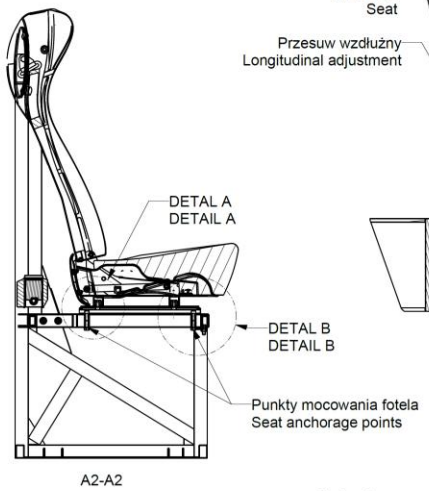
MOBIFRAME/04/2022-00

Date: 16.09.2022

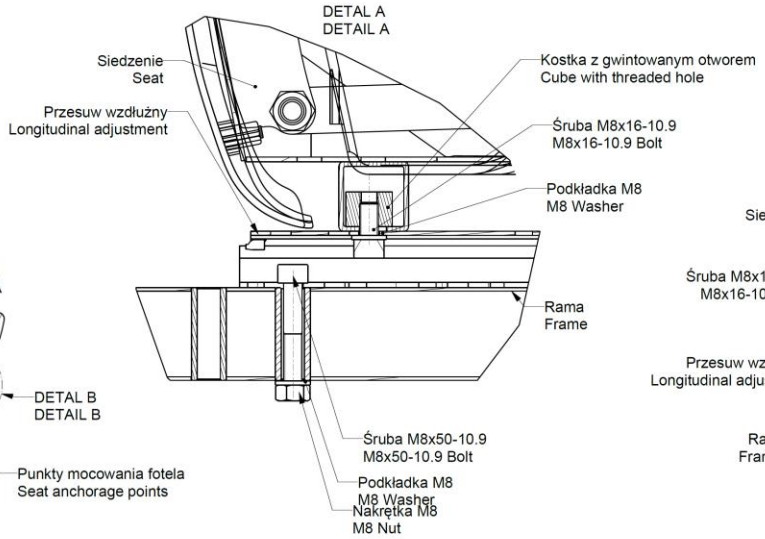
Page / pages: 80/109

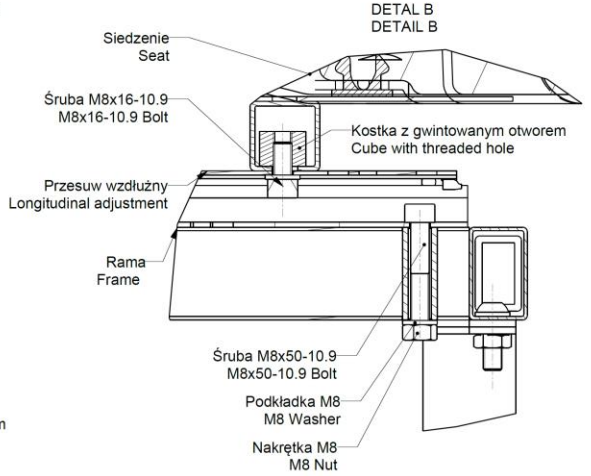
Punkty mocowania fotela / Seat anchorage points

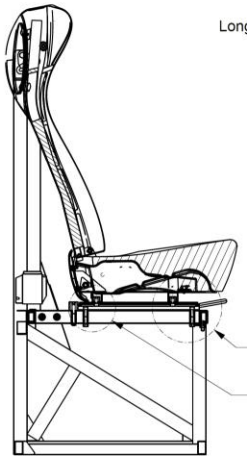




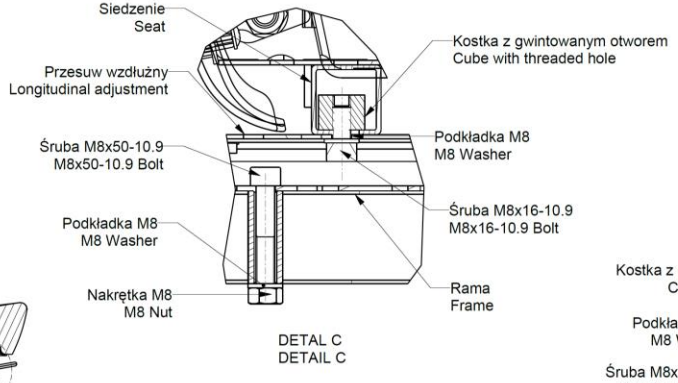
A2-A2

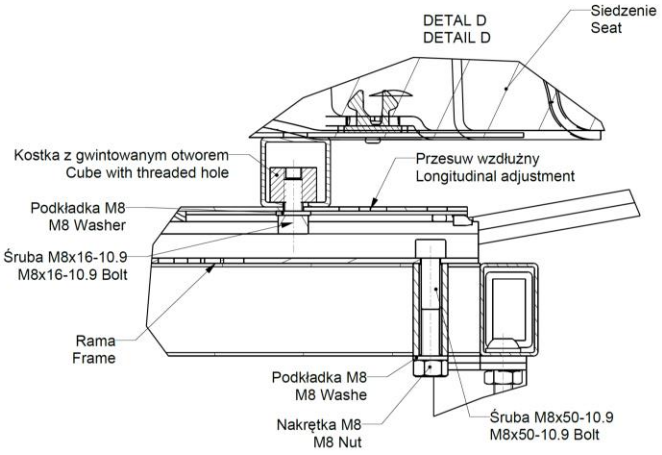






B2-B2





TÜV SÜD Auto Service GmbH 152 Technischer Dienst Technical Service

MOBIFRAME	Kreślił / Drawn by: O.Mochalov	Data / Date: 21-Apr-22
	Zatwierdzony przez/ Approved by: Ł. Walczak	Arkusz / Sheet: 1/3
RAM02 MOCOWANIE FOTELA		
RES10002B_RAM02		

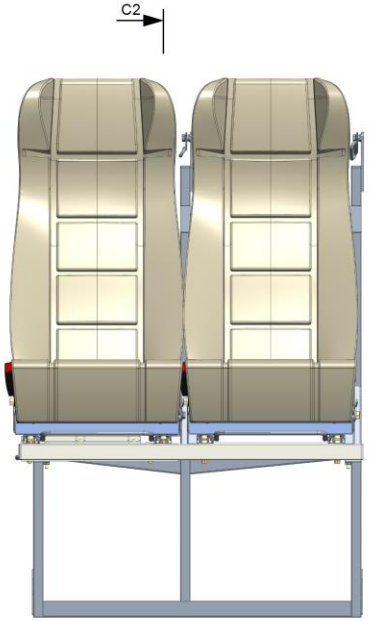
MOBIFRAME

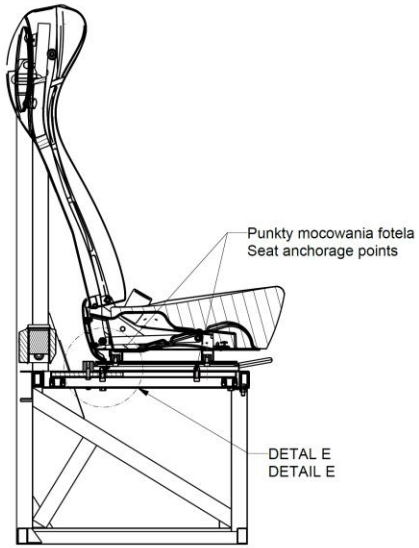
MOBIFRAME/04/2022-00

Date: 16.09.2022

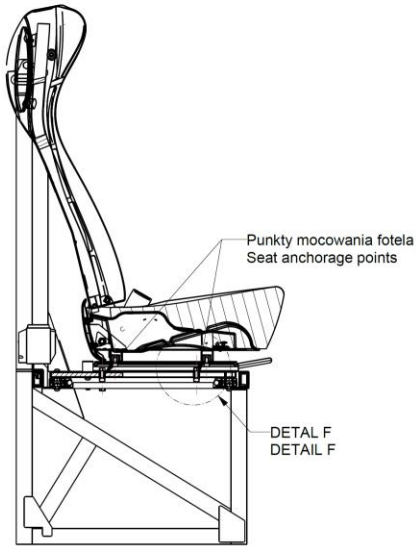
Page / pages: 81/109

Punkty mocowania fotela / Seat anchorage points

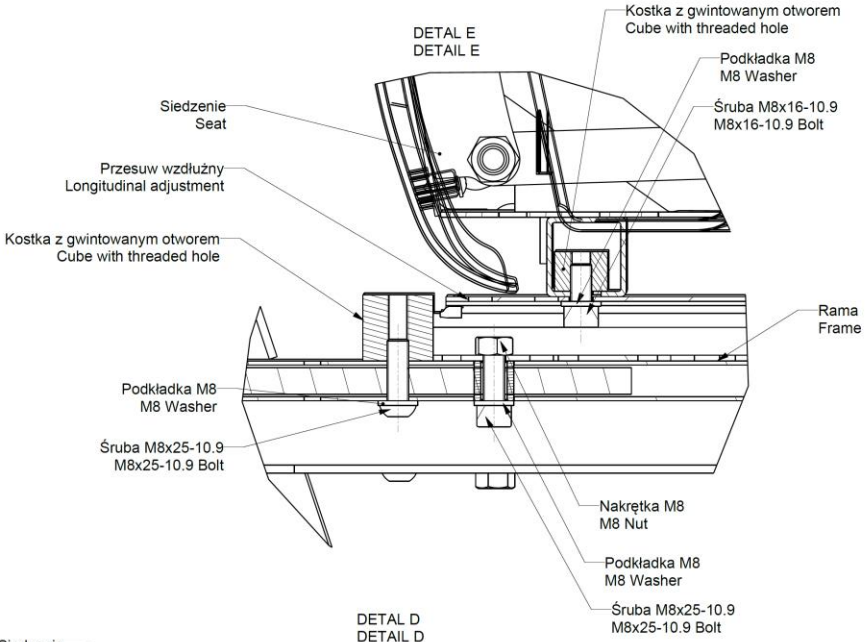


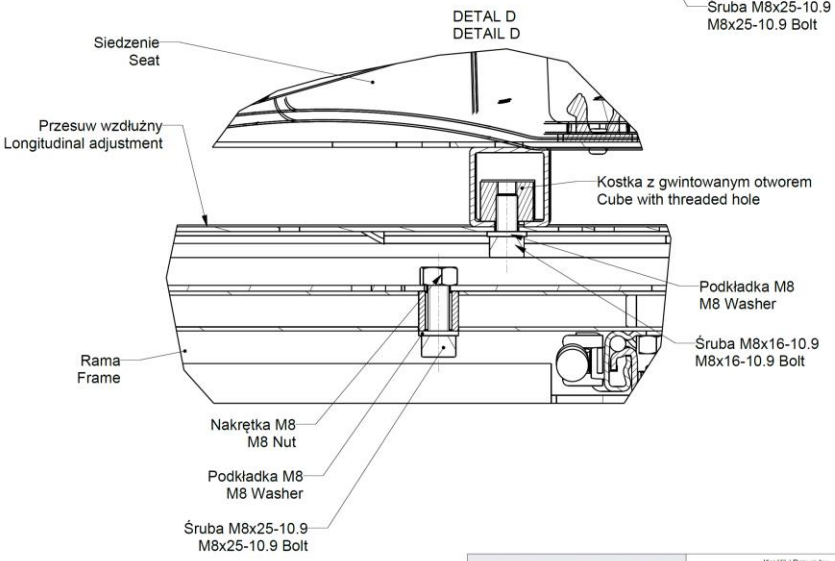


C2-C2



D2-D2





MOBIFRAME	Kreślił / Drawn by O.Mochalov	Data / Date 21-Apr-22
	Zatwierdzony przez/ Approved by Ł. Walczak	Arkusz / Sheet 2/3

RAM02 MOCOWANIE FOTELA

RES10002B_RAM02

MOBIFRAME

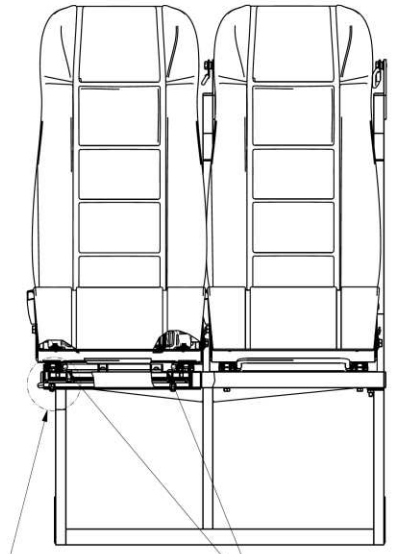
MOBIFRAME/04/2022-00

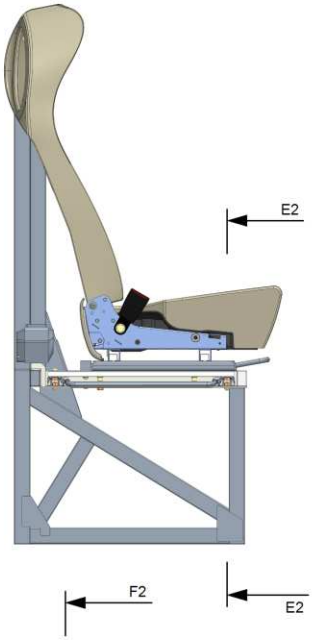
Date: 16.09.2022

Page / pages: 82/109

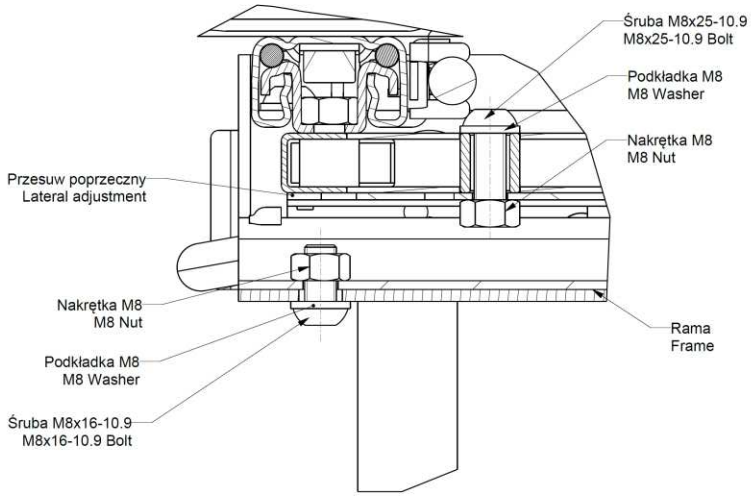
Punkty mocowania fotela / Seat anchorage points

E - E

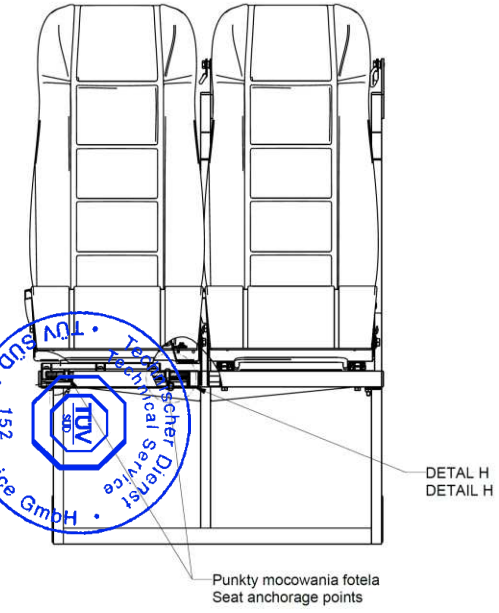


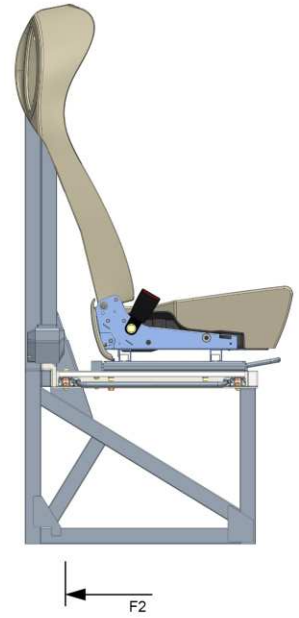


DETAL J
DETAIL J

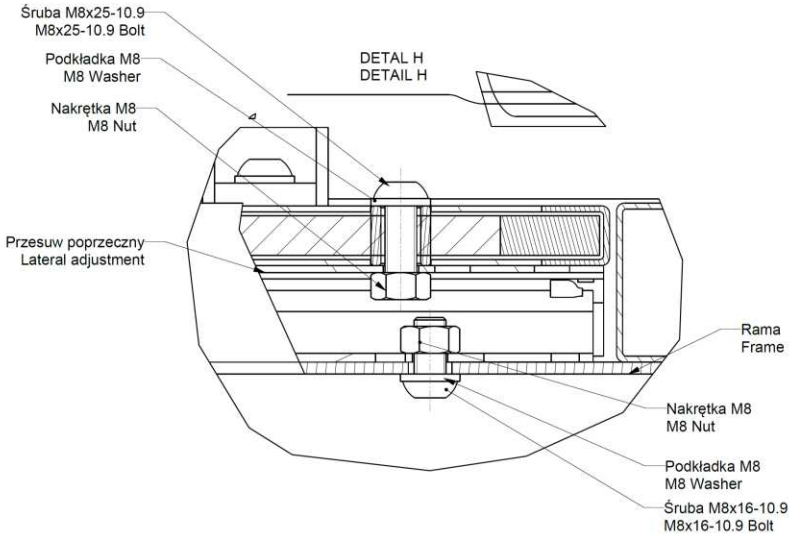


F - F





DETAL H
DETAIL H



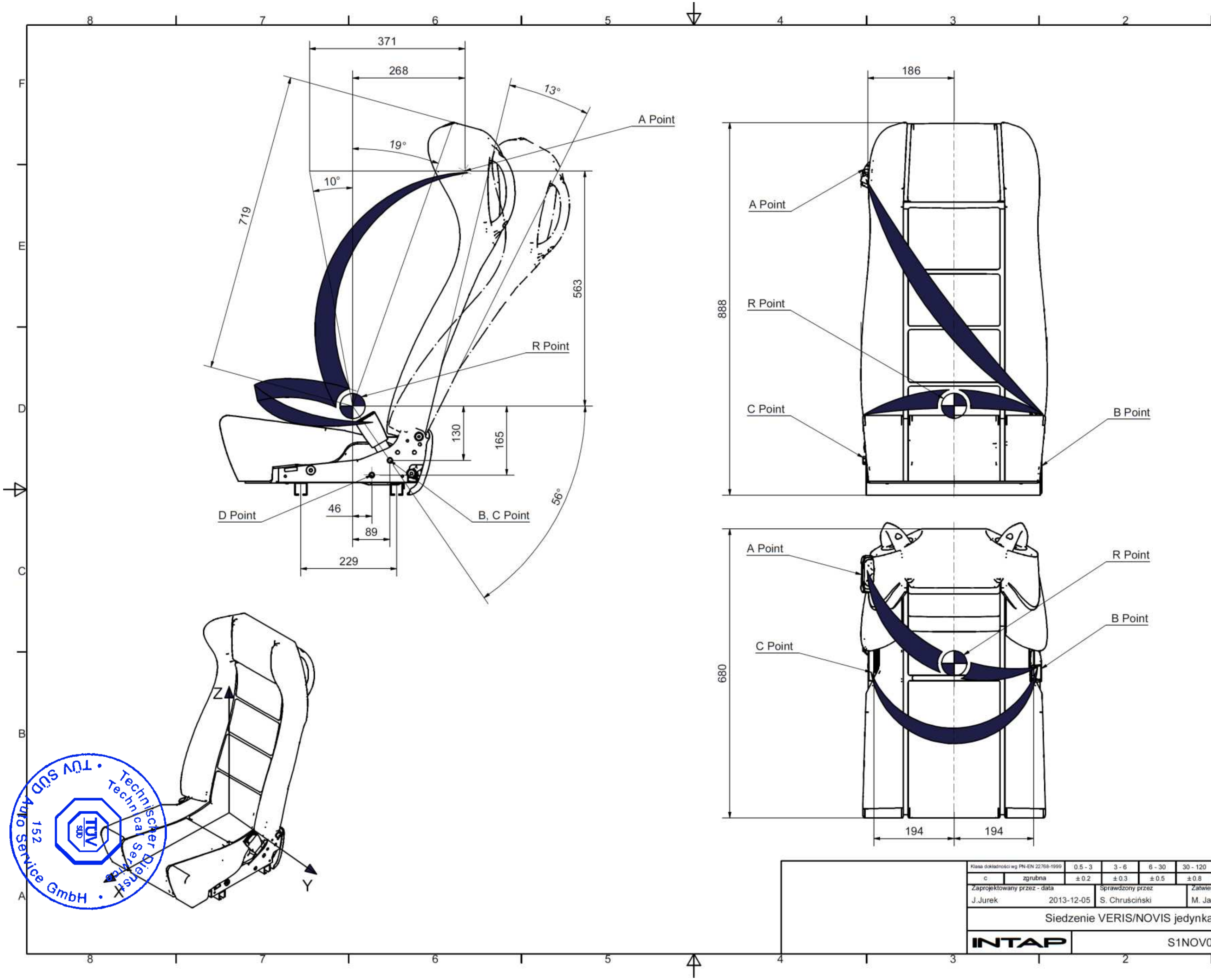
MOBIFRAME	Kreślił / Drawn by: O.Mochalov	Data / Date: 21-Apr-22
	Zatwierdzony przez/ Approved by: Ł. Walczak	Arkusz / Sheet: 3/3

RAM02 MOCOWANIE FOTELA

RES10002B_RAM02

Seats mounted to RAM02 frame:

(see next pages)



Seatbelt anchorage points location

PILLAR LOOP	
Ax	-268mm
Ay	+/-186 mm
Az	563 mm

BUCKLE	
Bx	-89 mm
By	+/-194 mm
Bz	-130 mm
αB	56 deg

END BRACKET	
Cx	-89 mm
Cy	+/-194 mm
Cz	-130 mm
αC	56 deg

RETRACTOR	
Dx	-46 mm
Dy	+/-194 mm
Dz	-165 mm

R POINT	
Rx	0 mm
Ry	0 mm
Rz	0 mm

Klasa dokładności wg PN-EN 22768-1999	0.5 - 3	3 - 6	6 - 30	30 - 120	120 - 400	400 - 1000	1000 - 2000	> 2000
c zgrubna	± 0.2	± 0.3	± 0.5	± 0.8	± 1.2	± 2	± 3	± 4

Zaprojektowany przez - data	Sprawdzony przez	Zatwierdzony przez - data	Masa
J.Jurek 2013-12-05	S. Chruściński	M. Jankowski 2013-12-05	

Siedzenie VERIS/NOVIS jedynka — Material: —

INTAP — S1NOV01 — Arkusz 1 / 2

TÜV SÜD Auto Service GmbH • Technischer Dienst • Technical Service • 152

MOBIFRAME

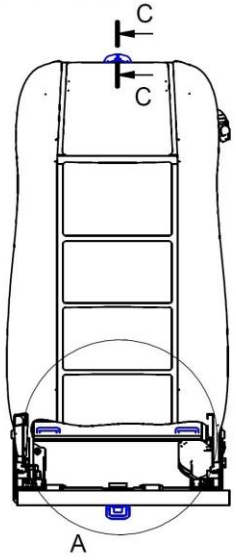
MOBIFRAME/04/2022-00

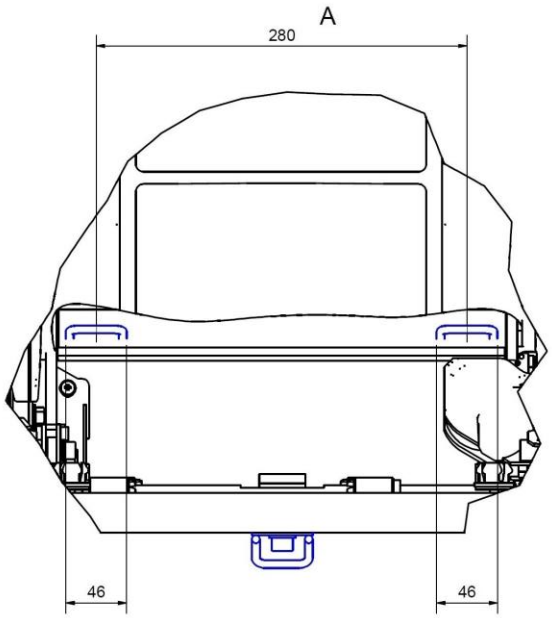
Date: 16.09.2022

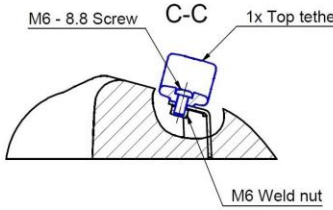
Page / pages: 85/109

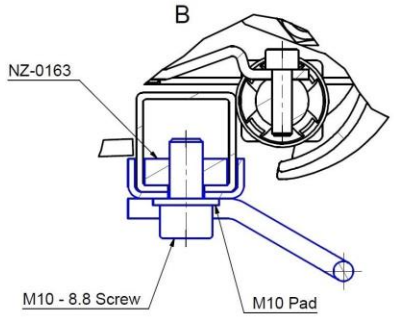
Screws tightening torque	
M6	10 Nm
M10	45 Nm

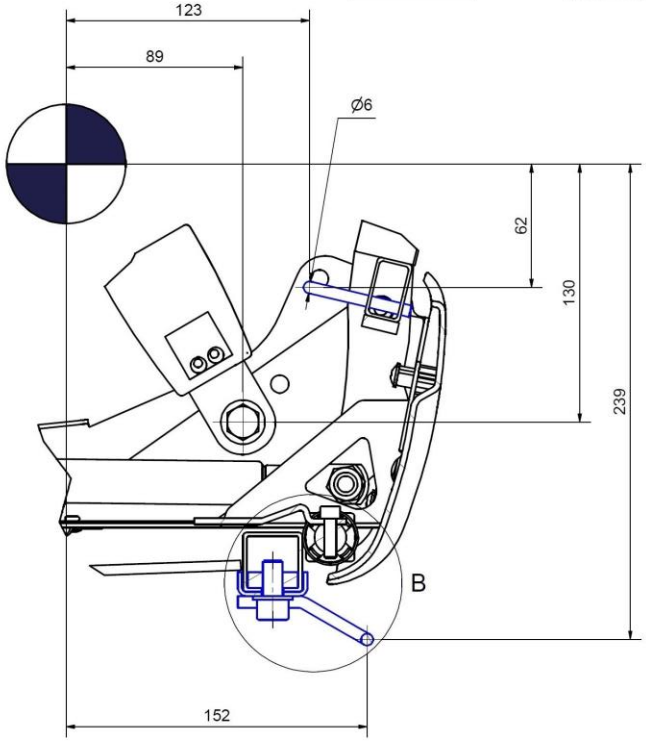
Rozmieszczenie punktów ISOFIX
ISOFIX points locations

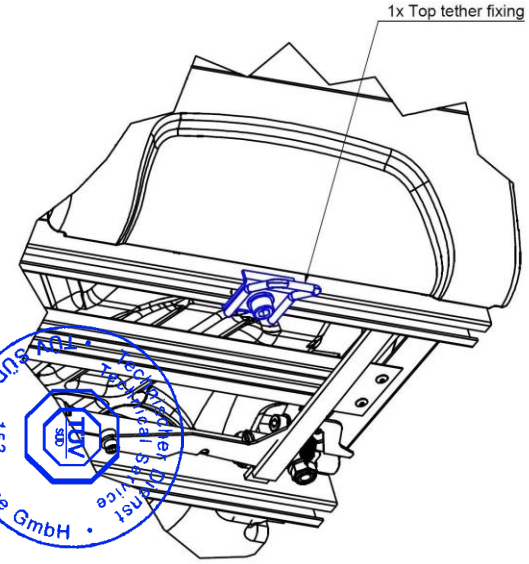


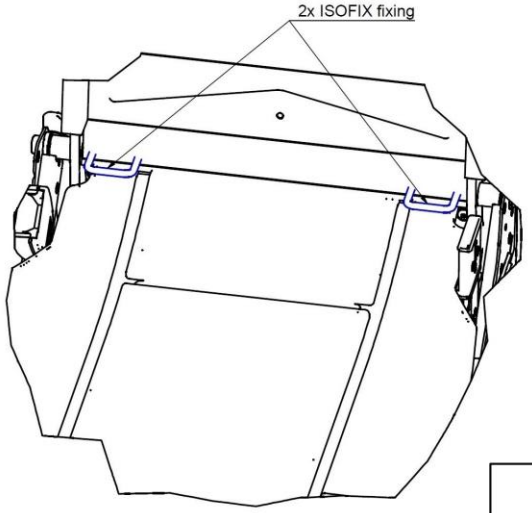












Zaprojektowany przez - data	Sprawdzony przez	Zatwierdzony przez - data	Masa
A. Kreczmer 13.08.2019	S. Chruściński	A. Szadkowski 13.08.2019	—
Novis			Materiał —
INTAP	S1NOV01		Arkusz 2 / 2

RAM03 – dedicated for all fixation solutions:

RAM03 is equipped with additional removable fixation elements used for different fixation solutions:
- fixation details of these elements - see Enclosure 2
- drawings of removable fixation elements – see drawings below

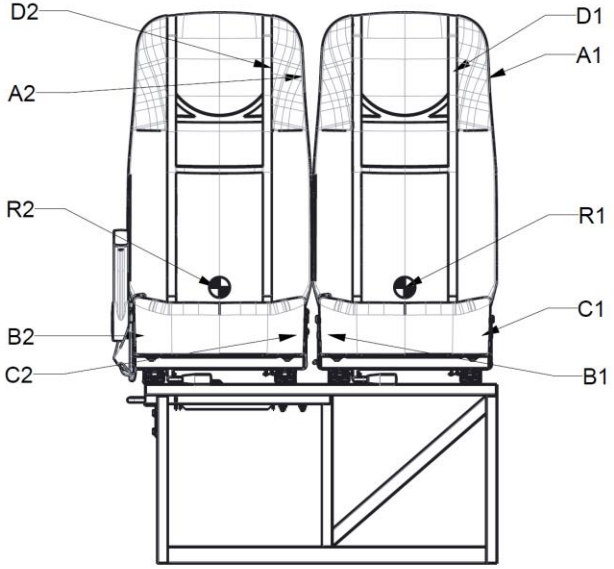
(see next pages)

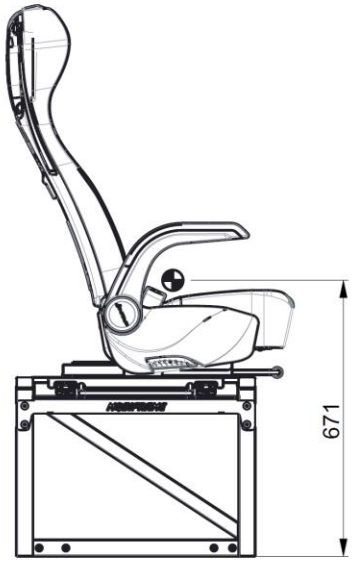
MOBIFRAME

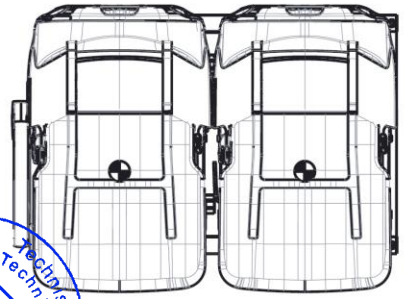
MOBIFRAME/04/2022-00

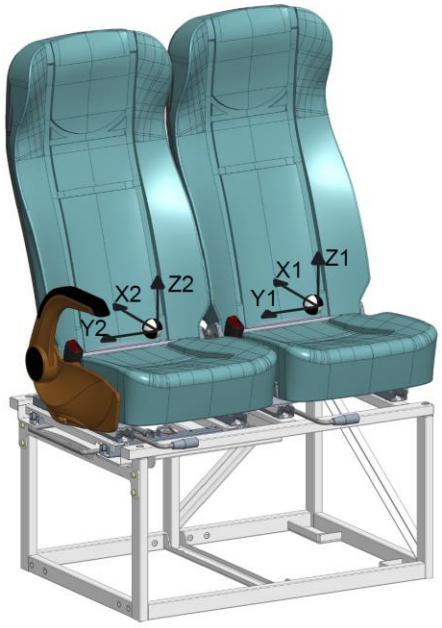
Date: 16.09.2022

Page / pages: 87/109









RAM03			
LEFT SEAT		RIGHT SEAT	
R POINT 1		R POINT 2	
Rx1	0 mm	Rx2	0 mm
Ry1	0 mm	Ry2	0 mm
Rz1	0 mm	Rz2	0 mm
Pillar loop 1		Pillar loop 2	
Ax1	358 mm	Ax2	358 mm
Ay1	±208 mm	Ay2	±208 mm
Az1	525 mm	Az2	525 mm
Buckle 1		Buckle 2	
Bx1	80 mm	Bx2	80 mm
By1	±189 mm	By2	±189 mm
Bz1	-120 mm	Bz2	-120 mm
α1	56°	α2	56°
End bracket 1		End bracket 2	
Cx1	80 mm	Cx2	80 mm
Cy1	±189 mm	Cy2	± 189 mm
Cz1	-120 mm	Cz2	- 120 mm
α1	56°	α2	56°
Retractor 1		Ratractor 2	
Dx1	327 mm	Dx2	327 mm
Dy1	±121 mm	Dy2	±121 mm
Dz1	517 mm	Dz2	517 mm

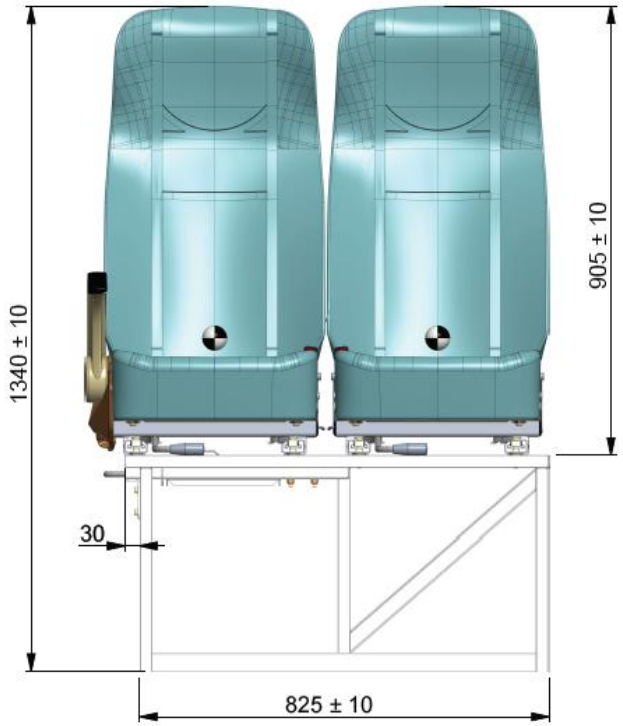
TÜV SÜD Auto Service GmbH 152 Technischer Dienst Technical Service

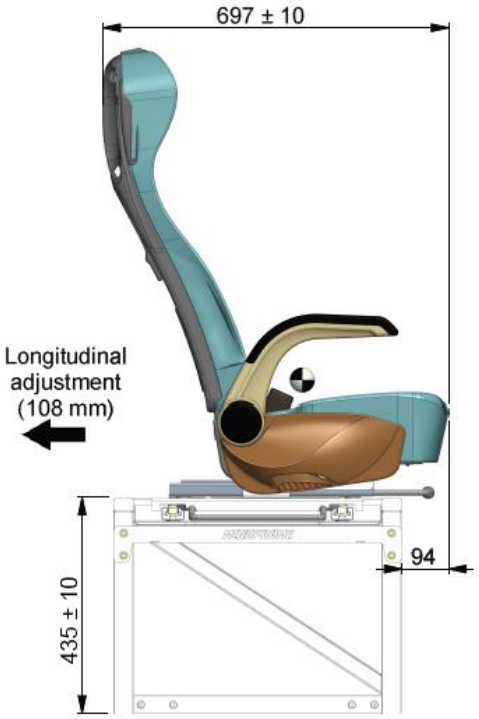
MOBIFRAME

Kreślił / Drawn by	Data / Date
K. Trzyna	19-Sep-22
Zatwierdzony przez/ Approved by	Arkusz / Sheet
P. Odziemek	1/1

R point and seatbelt anchorage points

14-01-RAM03





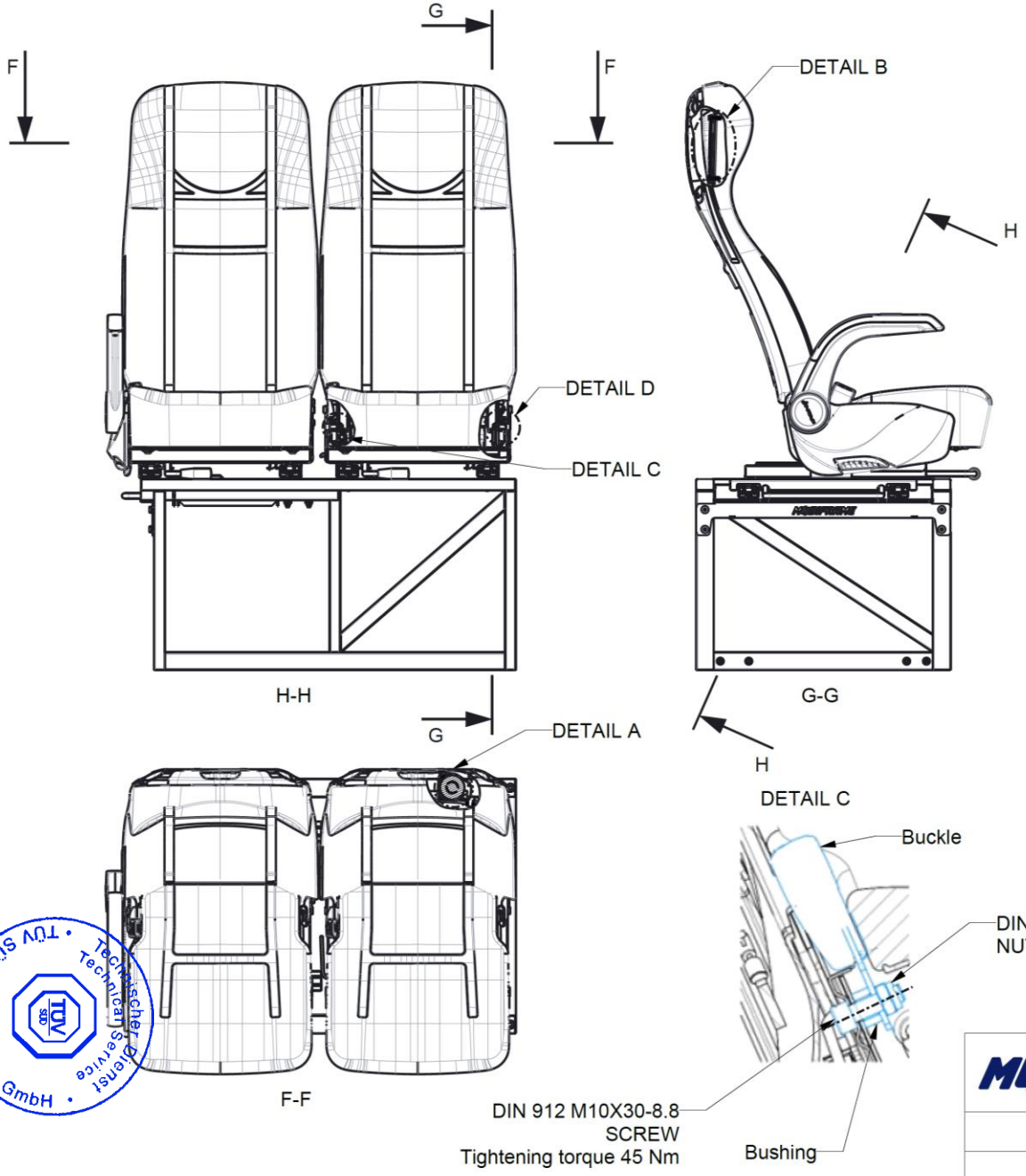
MOBIFRAME	Kreślił / Drawn by: K. Trzyna	Data / Date: 13-Sep-22
	Zatwierdzony przez/ Approved by: P. Odziemek	Arkusz / Sheet: 1/1
General view		
17-01-RAM03		

MOBIFRAME

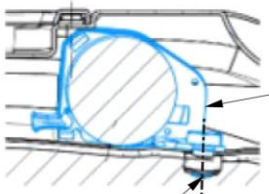
MOBIFRAME/04/2022-00

Date: 16.09.2022

Page / pages: 89/109

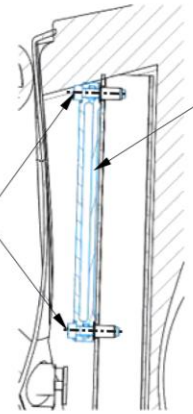


DETAIL A



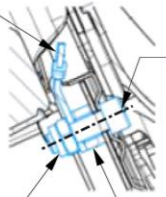
7/16" 20UNFx16 - 8.8
SCREW
Tightening torque 60 Nm

DETAIL B



2x DIN 912 M5x25-8.8
SCREW
Tightening torque 5Nm

DETAIL D



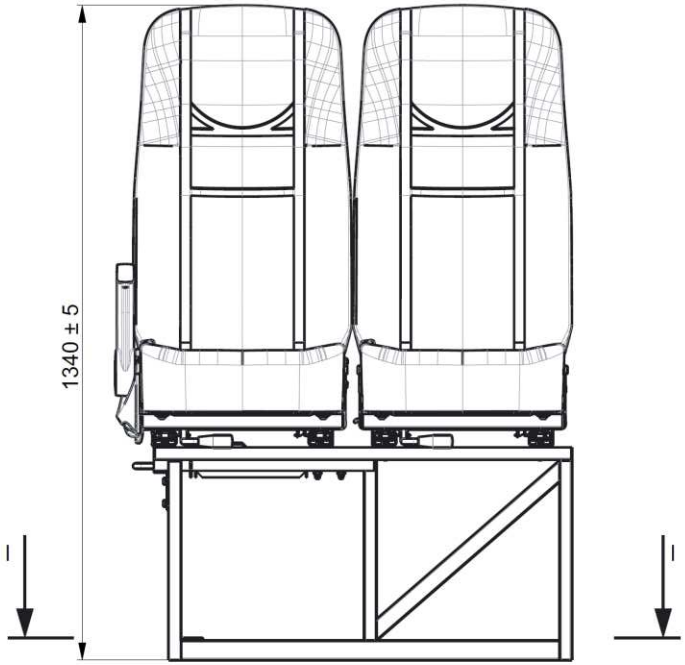
MOBIFRAME	Kreślił / Drawn by: K. Trzyna	Data / Date: 20-Sep-22
	Zatwierdzony przez/ Approved by: P. Odziemek	Arkusz / Sheet: 1/1
Seatbelt anchorage points		
14-02-RAM03		

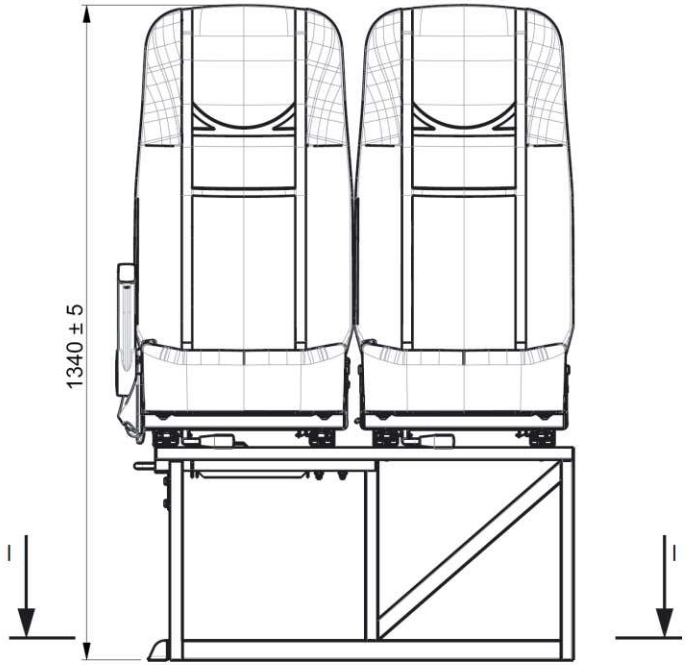
MOBIFRAME

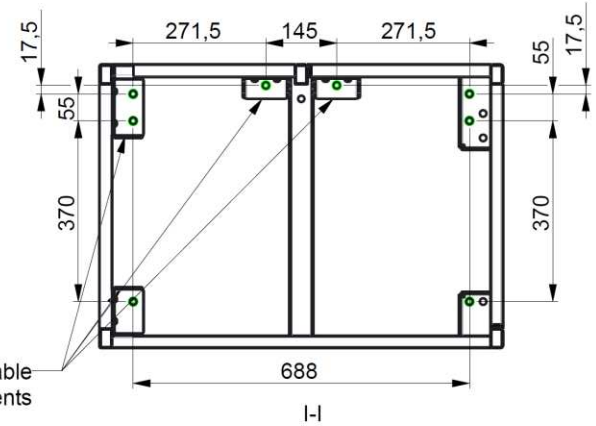
MOBIFRAME/04/2022-00

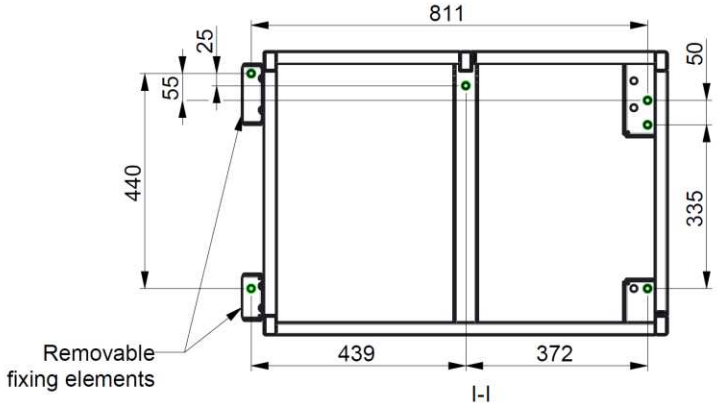
Date: 16.09.2022

Page / pages: 90/109









MOBIFRAME	Kreślił / Drawn by K. Trzyna	Data / Date 20-Sep-22
	Zatwierdzony przez/ Approved by P. Odziemek	Arkusz / Sheet 1/1

Grid of mounting holes

14-03-RAM03

Fixation of seats to RAM03 frame:

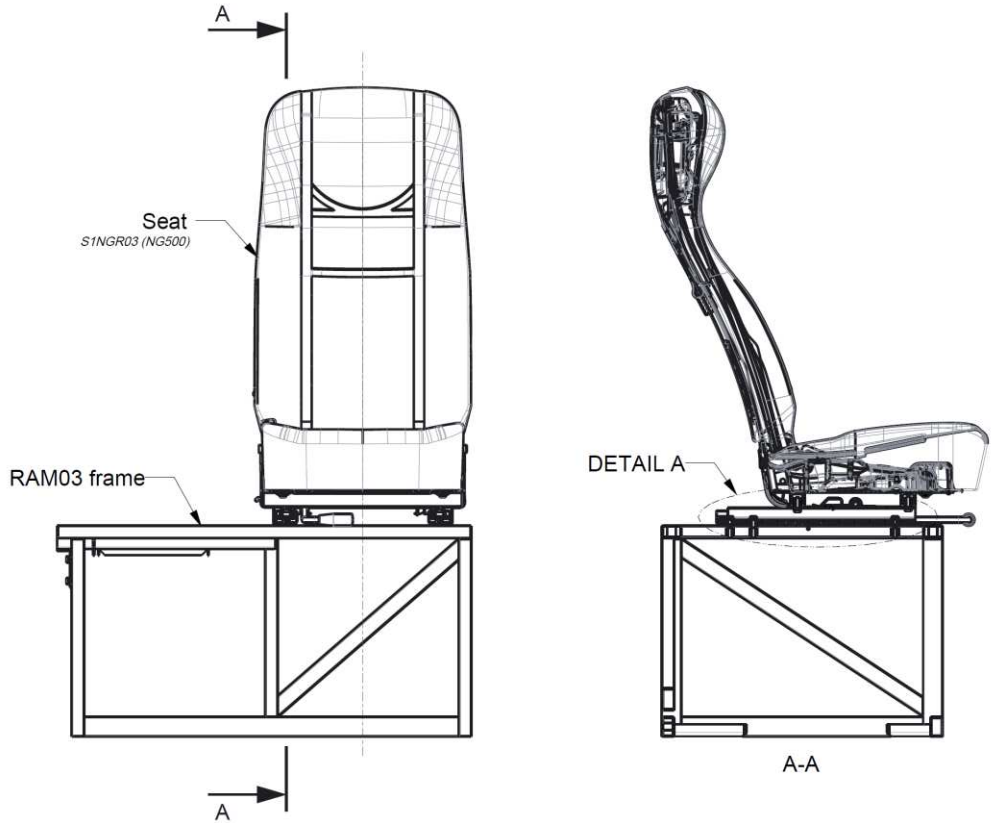
(see next pages)

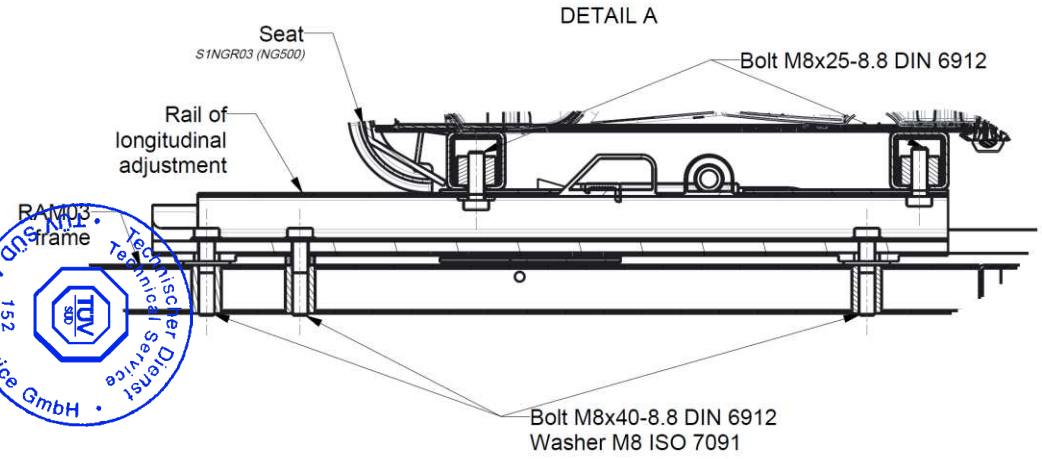
MOBIFRAME

MOBIFRAME/04/2022-00

Date: 16.09.2022

Page / pages: 92/109

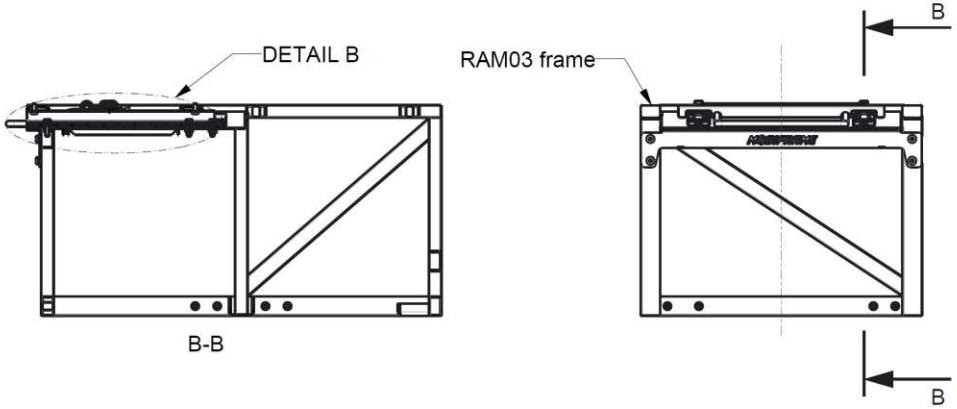


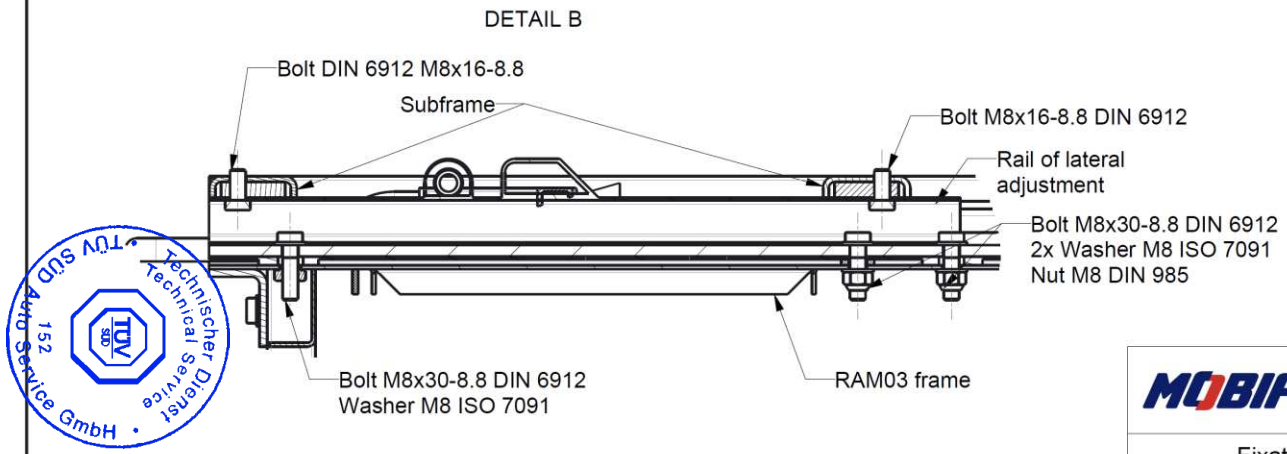


MOBIFRAME	Kreślił / Drawn by: K. Trzyna	Data / Date: 13-Sep-22
	Zatwierdzony przez/ Approved by: P. Odziemek	Arkusz / Sheet: 1/3

Fixation of seats and adjustments to the RAM03 frame

17-02-RAM03





TÜV SÜD Auto Service GmbH · Technischer Dienst Technical Service 152

MOBIFRAME	Kreślił / Drawn by: K. Trzyna	Data / Date: 13-Sep-22
	Zatwierdzony przez/ Approved by: P. Odziemek	Arkusz / Sheet: 2/3

Fixation of seats and adjustments to the RAM03 frame

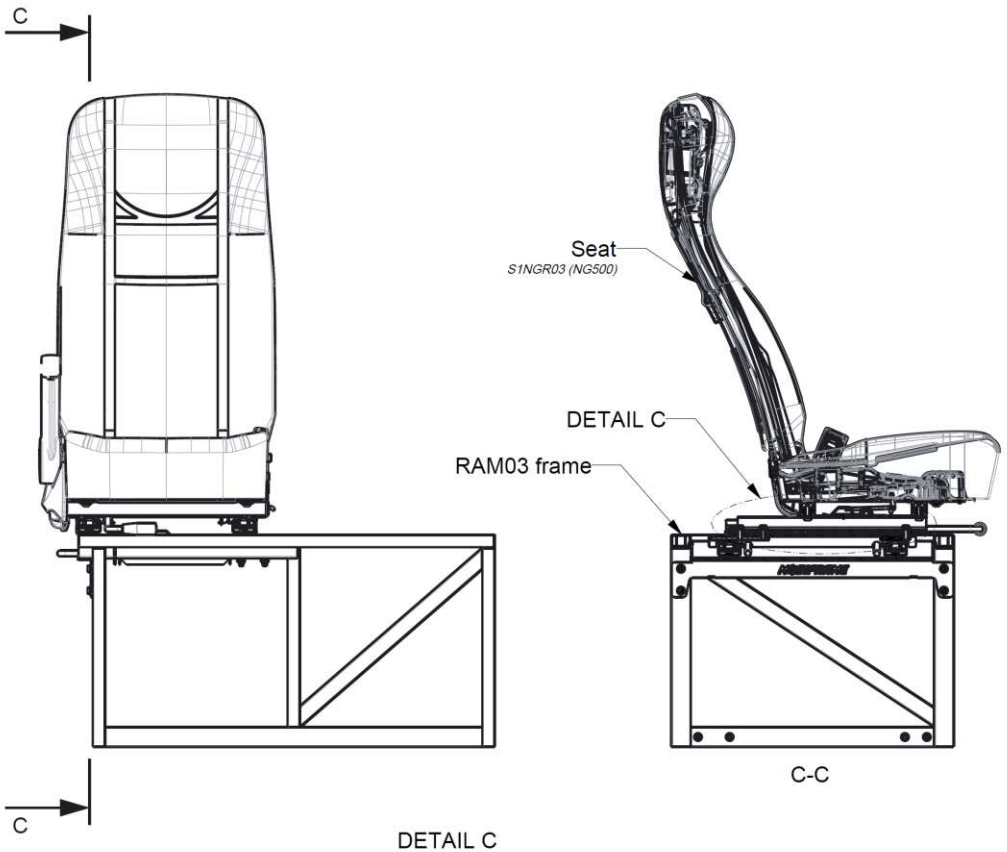
17-02-RAM03

MOBIFRAME

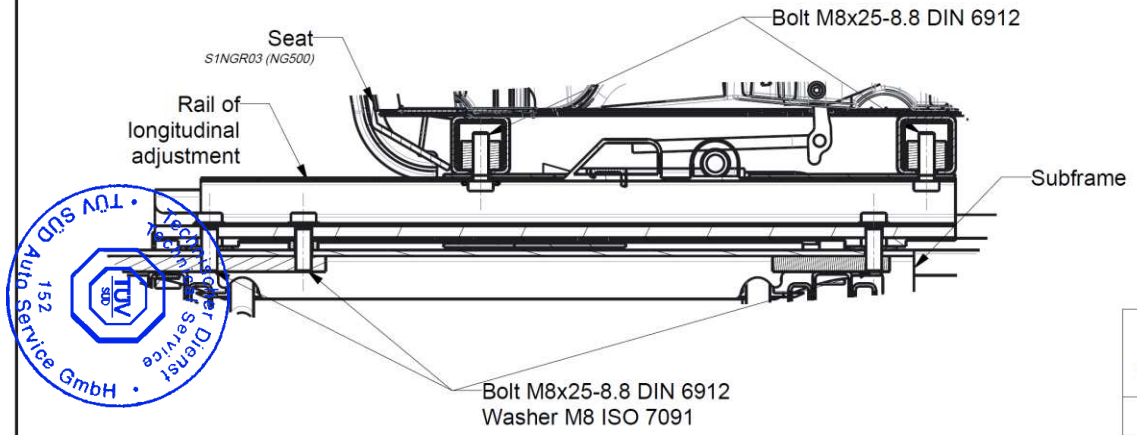
MOBIFRAME/04/2022-00

Date: 16.09.2022

Page / pages: 94/109



DETAIL C



MOBIFRAME	Kreślił / Drawn by: K. Trzyna	Data / Date: 13-Sep-22
	Zatwierdzony przez/ Approved by: P. Odziemek	Arkusz / Sheet: 3/3

Fixation of seats and adjustments to the RAM03 frame

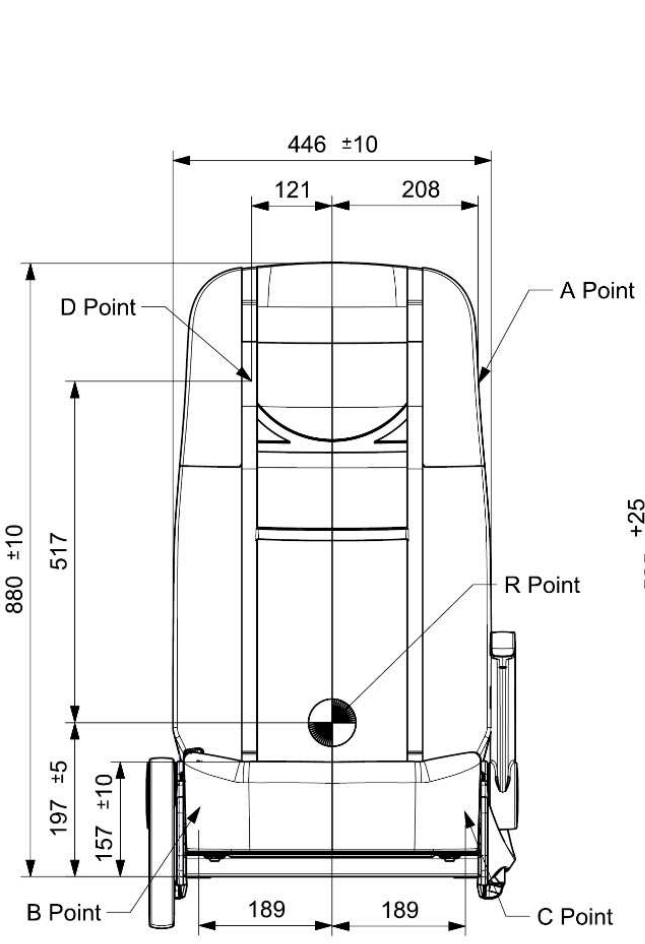
17-02-RAM03

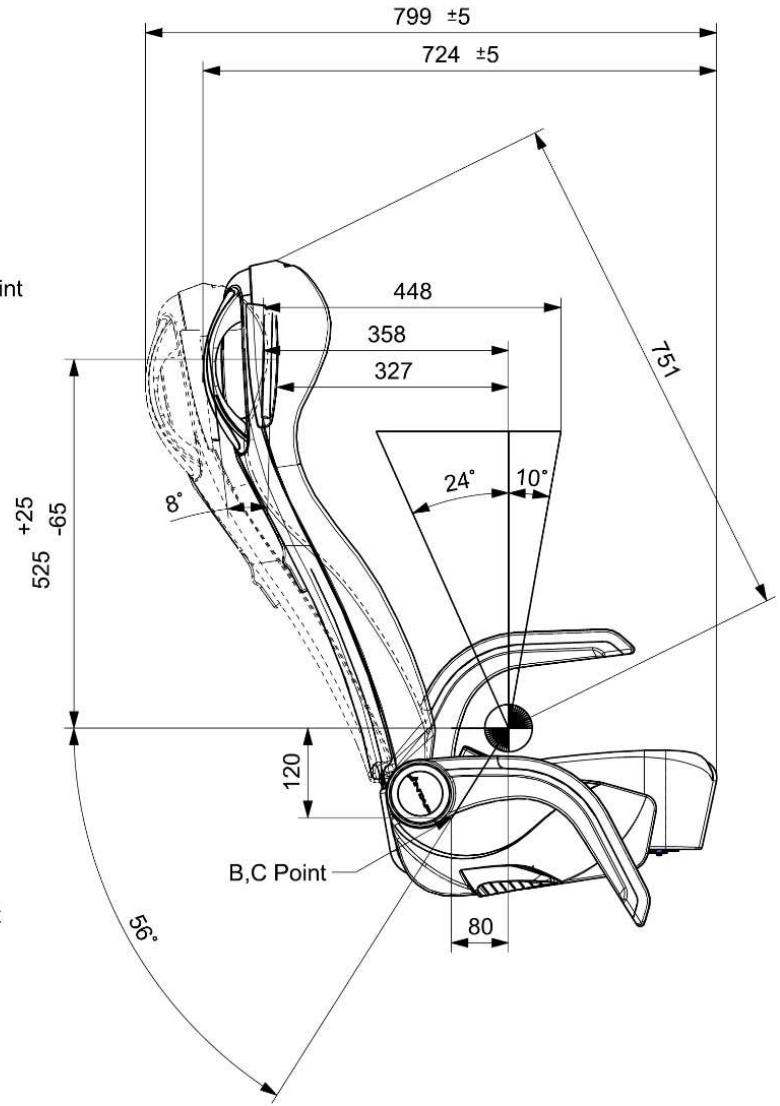
MOBIFRAME

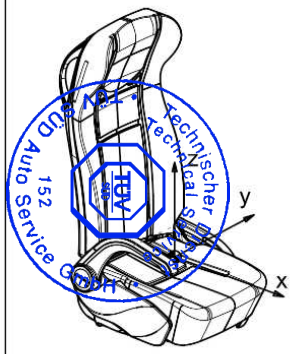
MOBIFRAME/04/2022-00

Date: 16.09.2022

Page / pages: 95/109







PILLAR LOOP	
Ax	-358 mm
Ay	±208 mm
Az	525 mm

BUCKLE	
Bx	-80 mm
By	±189 mm
Bz	-120 mm
αB	56°

END BRACKET	
Cx	-80 mm
Cy	±189 mm
Cz	-120 mm
αC	56°

RETRACTOR	
Dx	-327 mm
Dy	±121 mm
Dz	517 mm

R POINT	
Rx	0 mm
Ry	0 mm
Rz	0 mm

Zaprojektowany przez - data	Sprawdzony przez	Zatwierdzony przez - data	Masa
Ł.Dumka - 09-07-2020	S. Chrusciński	A. Szadkowski - 2020-07-16	-
NG500 R-point			Materiał
INTAP	H015-S1NGR03		Arkusz 1 z 3

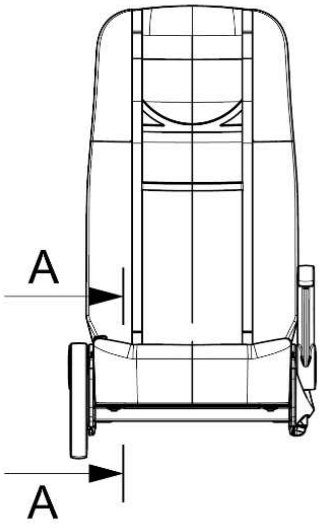
MOBIFRAME

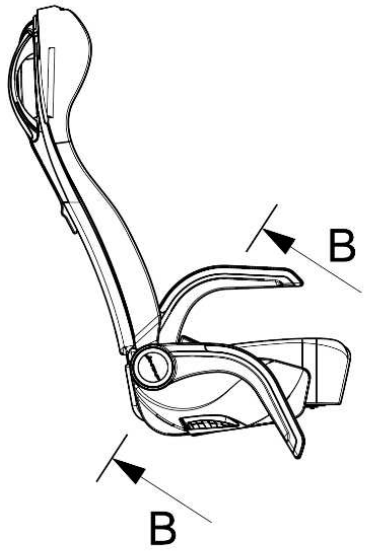
MOBIFRAME/04/2022-00

Date: 16.09.2022

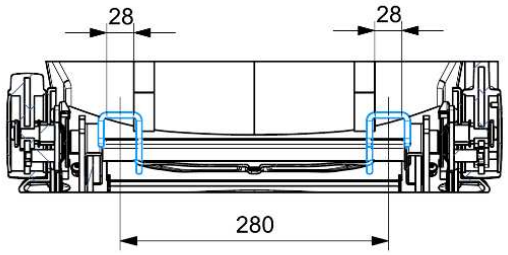
Page / pages: 96/109

ISOFIX points locations

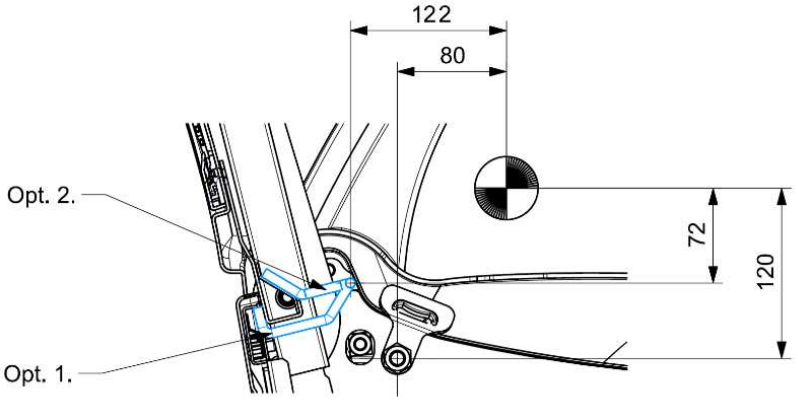


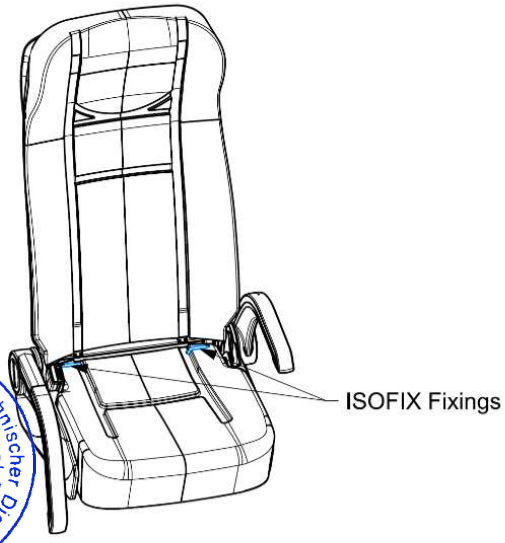


B-B



A-A



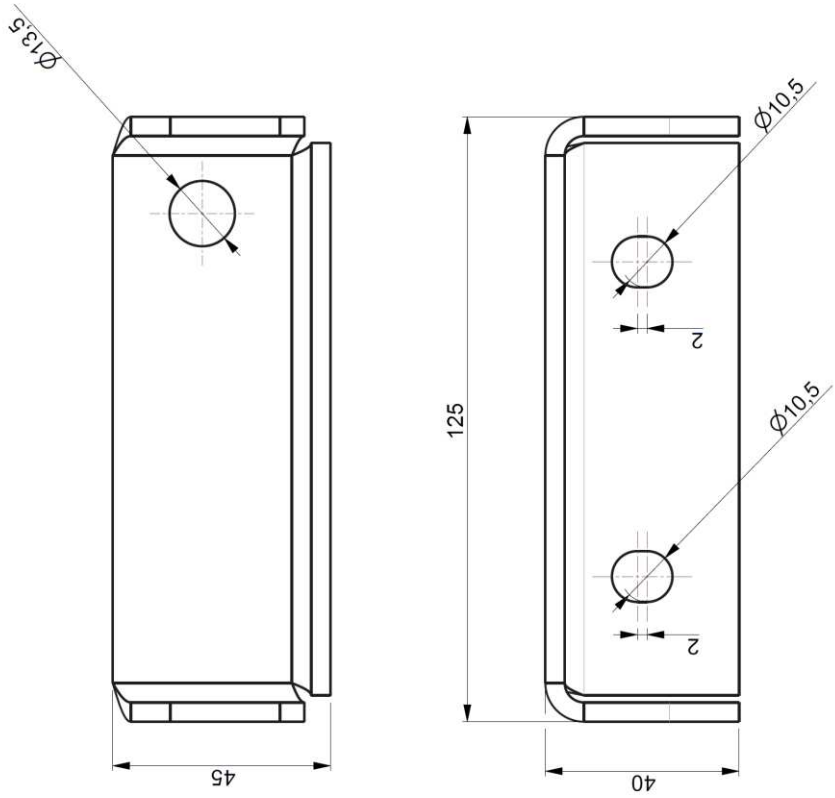


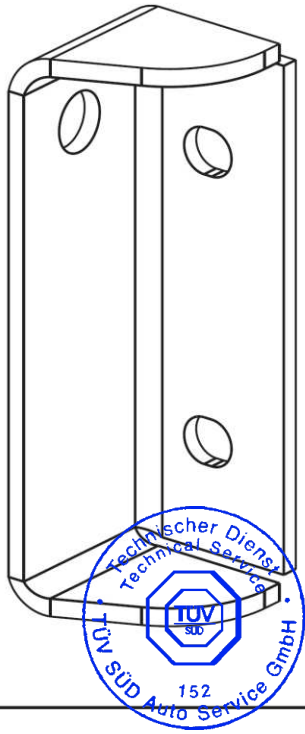
TÜV SÜD Auto Service GmbH 152 Technischer Dienst Technical Service

Zaprojektowany przez - data	Sprawdzony przez	Zatwierdzony przez - data	Masa
Ł.Dumka - 09-07-2020	S. Chruściński	A. Szadkowski - 2020-07-16	–
NG500 - ISOFIX points location			Materiał –
INTAP	H001-S1NGR05		Arkusz 3 z 3

RAM03 – removable fixation elements (fixation details and applicability – see Enclosure 2):

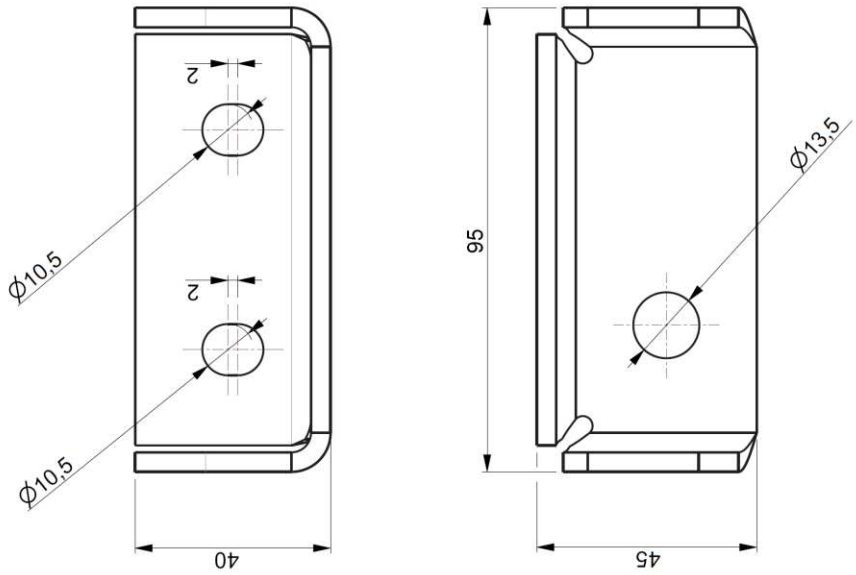
(see next pages)

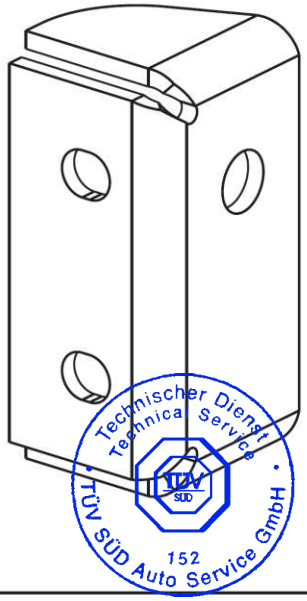




Kreślił / Drawn by K. Trzyna	Data / Date 27-Sep-22	
Zatwierdzony przez/ Approved by P. Odziemek	Arkusz / Sheet 1/1	
Fixation element	REN00016A	

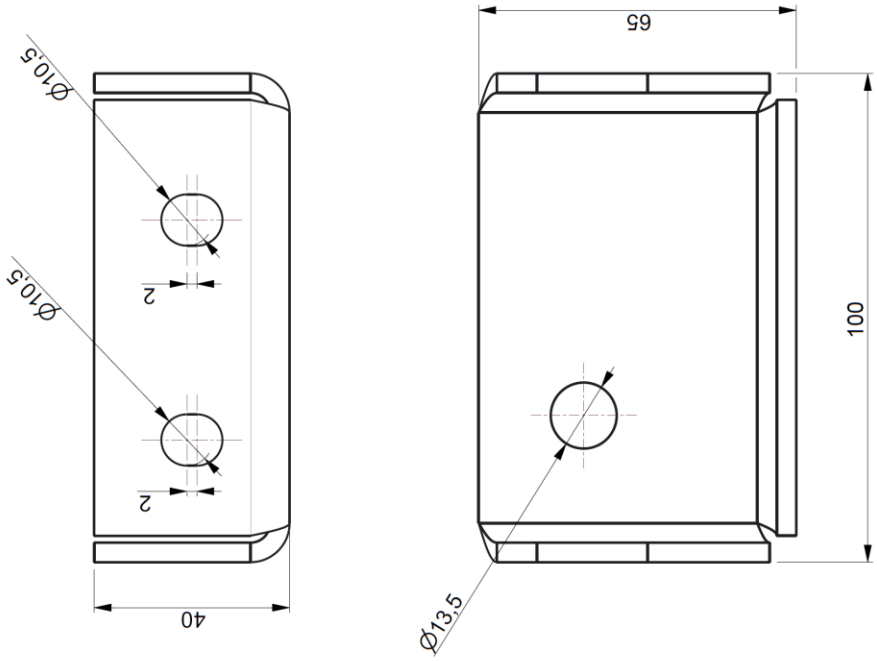
MOBIFRAME	Kreślił / Drawn by: K. Trzyna	Data / Date: 27-Sep-22	
	Zatwierdzony przez/ Approved by: P. Odziemek	Arkusz / Sheet: 1/1	
	Fixation element		
	REN00035A		

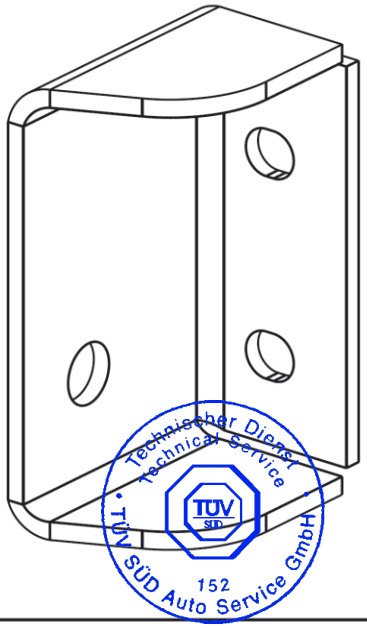




Technischer Dienst Technical Service TÜV SÜD Auto Service GmbH 152

Kreślił / Drawn by: K. Trzyna	Zatwierdzony przez/ Approved by: P. Odziemek	Data / Date: 27-Sep-22
MOBIFRAME	Fixation element	Arkusz / Sheet: 1/1
	REN00036A	



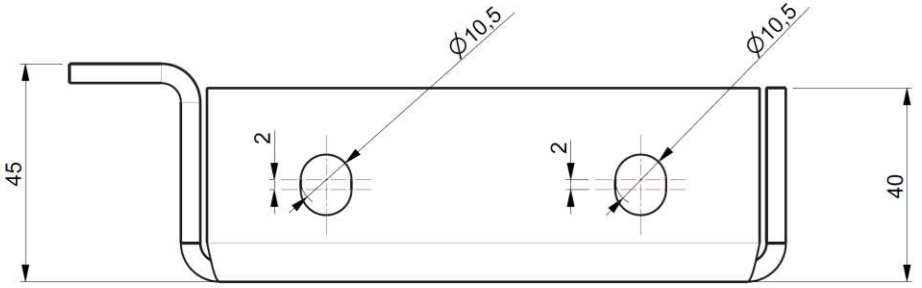


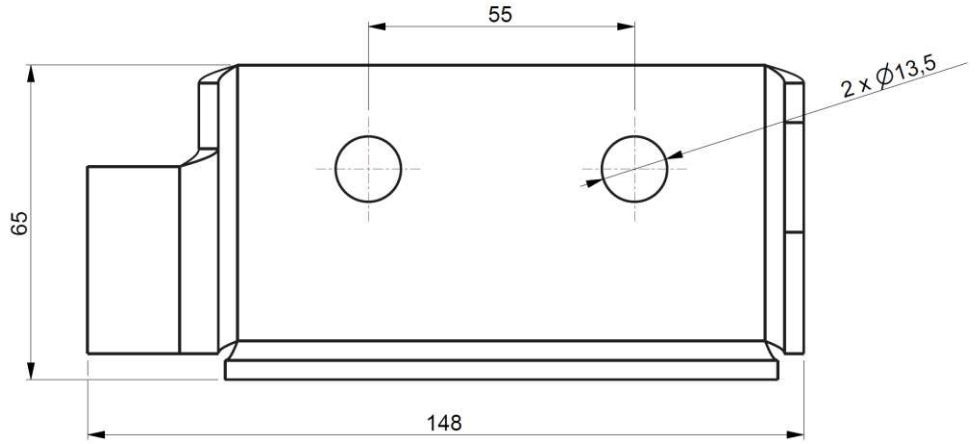
MOBIFRAME

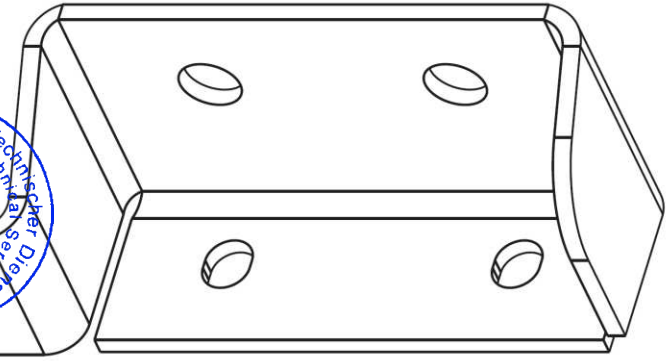
MOBIFRAME/04/2022-00

Date: 16.09.2022

Page / pages: 101/109







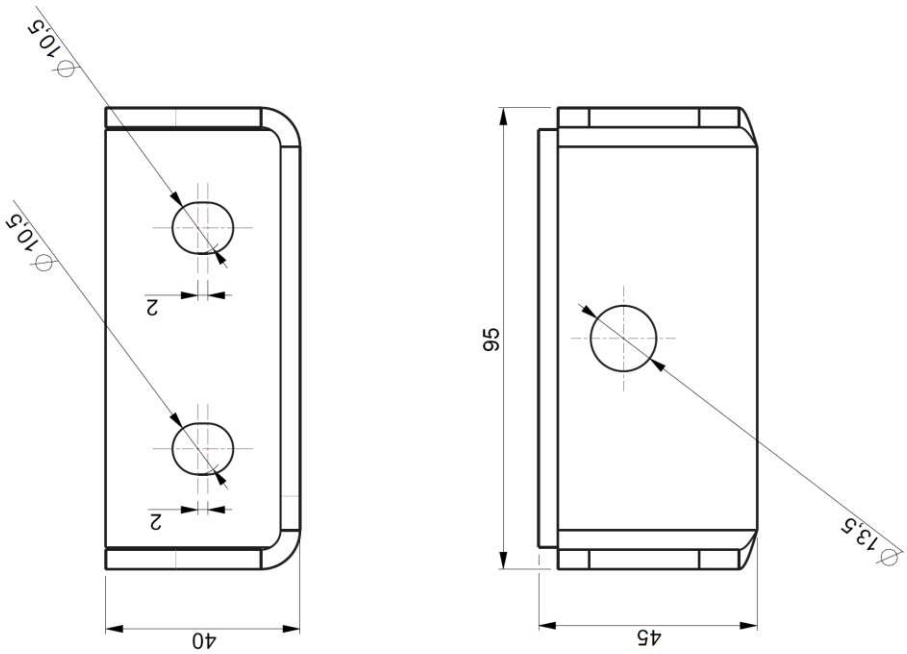
TÜV SÜD Auto Service GmbH · Technischer Dienst Technical Service 152

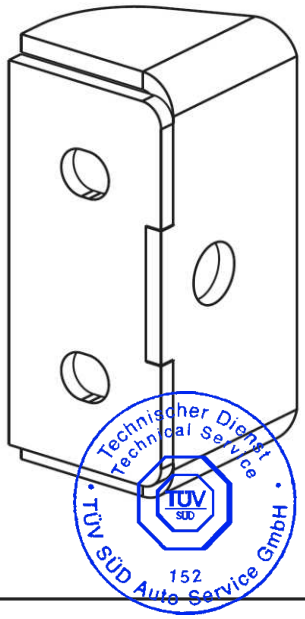
MOBIFRAME	Kreślił / Drawn by: K. Trzyna	Data / Date: 27-Sep-22
	Zatwierdzony przez/ Approved by: P. Odziemek	Arkusz / Sheet: 1/1
Fixation element		
REN00037A		

MOBIFRAME	Kreślił / Drawn by K. Trzyna	Data / Date 27-Sep-22	Arkusz / Sheet 1/1
	Zatwierdzony przez/ Approved by P. Odziemek		

Fixation element

REN10018A





Dow Automotive

Technical Data Sheet

BETACLEAN 3350

Description / Application:

BETACLEAN 3350 is a cleaner for removing dirt and grease from plastics, paints and glass

All Dow Automotive products are primarily developed in co-ordination with the automobile manufacturers, according to their needs and their specifications; they are approved for the specific applications as defined by the customer.

The use of the product other than approved application have to be released in writing by the Technical Service of Dow Automotive.

Technical Data:

Basis	Heptane
Colour	Colourless, transparent
Density	0,68 g/cm³ at 23°C
Flash point	-4°C
Instructions for use	Wipe contaminated surface with BETACLEAN 3350 saturated, binder-free tissues or cloths. Preliminary trials carried out by our technical service department are recommended.
Shelf life	12 months in unopened containers
Containers	100, 250, 1000ml aluminium containers
Protection measures	See health and safety data sheet.

DOW AUTOMOTIVE Quality Management
Quality is our highest priority. Dow Automotive works with a highly modern Quality Management System which meets all international requirements of **QS 9000, VDA-6** and **ISO 9001**.

Dow Automotive AG
CH-8807 Freienbach
Tel. +41(0)55416 81 11
Fax +41(0)55416 82 20

Dow Automotive (Italia) S.r.l
I-20010 Bareggio (MI)
Tel. +39(0)2 90 36 11 66
Fax +39(0)2 90 27 66 98

Dow Automotive (France) S.A.
F-60130 Saint-Just en chaussee
Tel. +33(0) 3 44 77 61 00
Fax. +33(0) 3 44 77 61 61

Dow Automotive (Deutschland) GmbH
D-35683 Dillenburg
Tel. +49(0)2771 8 71 40
Fax +49(0)2771 87 14 70

Dow Automotive (España) S.A.
E-28816 Camarma de Esteruelas (Madrid)
Tel. +34 (9)1 886 61 43
Fax +34 (9)1 885 75 60

Dow Automotive (UK) Ltd.
GB-Nuneaton-Warwickshire CV10 7QT
Tel. +44 (0) 24 7635 72 00
Fax. +44 (0) 24 7635 72 57

Technischer Dienst Technical Service TÜV SÜD Auto Service GmbH 152

Dow Automotive

Technical Datasheet
Aftermarket Division

BETAPRIME 5061

Description / Application:

One-Step adhesion promoter for glass, ceramic serigraphy in combination with BETASEAL and BETAMATE PUR Adhesives. A prior cleaning of the bonding surface with BETACLEAN 3300 is necessary.

All Dow Automotive products are primarily developed in co-operation with the automobile manufacturers, according to their needs and their specifications; they are approved for the specific applications as defined by the customer.

The use of the product other than approved application have to be released in written form by the Technical Service of Dow Automotive.

Technical Data:

Basis	Silane modified polymers
Colour	black
Pigments	carbon black
Density	approx. 0.97 g/cm^3 bei 23°C
Viscosity (DIN-cup 4)	< 14 s bei 23°C
Flash Point	See health and safety data sheet.
Processing temperature	ideal 10 - 40°C
Tack free time	50 - 150 sec @ 23°C / 50 % r.h.
Evaporation time	min. 10 min @ 23°C / 50 % r.h., max. 8h Reactivation with BP 5061 or BW 4001, 4002 possible.
Instruction for use	Shake container well before opening. Continue to shake for at least 60s after steel balls inside the container are released. Caution! The product is extremely hygroscopic! Close container immediately after use to preserve remaining contents. Use up remainder within a few days.
Bonding surface preparation	Clean bonding areas with the BETACLEAN 3300. Verify compatibility or consult our technical service department.
Cleaning	Clean Equipment with BETACLEAN 3000
Shelf life	9 months in unopened containers (see "use before" date printed on the container)

Technischer Dienst Technical Service TÜV SÜD Auto Service GmbH 152

Storage once opened	- applicator: single use, do not store - 100 ml bottle: 5 days in original container
Storage	Temperature: 5°C to 25°C Short term up to 40°C
Containers	Single use applicator, 100 ml aluminium bottle
Protection measures	See health and safety data sheet

Dow Automotive quality assurance

Quality is our utmost goal. Dow Automotive works according to a modern quality management system conforming to ISO/TS 16949:2002.
Environment: All sites of Dow Automotive are conforming to ISO 14001:2004.

All statements, technical information and recommendations contained in this document are based on tests that we believe are reliable.
However, the accuracy or completeness of the statements, information and recommendations is not guaranteed, as before using, the user should determine the suitability of the product for user's intended purpose.

This document does not create any liability and all warranties, express or implied, including the implied warranties of merchantability and fitness for a particular purpose are disclaimed. Neither seller nor manufacturer shall be liable either in contract or tort for any loss or damage, direct, incidental, or consequential, arising out of the use and or the inability to use the product. Seller's/manufacturer's only obligation is the replacement of defective product.

Dow France S.A.S
Z.I. Nord, route d'Amiens
F-60130 St-Just-en-Chaussée
Tel. +33 (0) 3 44 77 61 00
Fax. +33 (0) 3 44 77 61 61

Dow Automotive UK Ltd.
GB-Nuneaton Warwickshire
CV107QT
Tel. +44 (0) 1203 35 72 00
Fax. +44 (0) 1203 35 72 57

Dow Automotive (Allemagne) GmbH
Am Kronberger Hang 4
D- 65824 Schwalbach
Tel. +49 (0) 6196 566 0
Fax. +49 (0) 6196 566 444

Dow Automotive (Italie) SRL
Via Patroclo (Sales office)
I-20151 Milan
Tel. +39 (0) 2 48 221
Fax. +39 (0) 2 48 22 40 66

Dow Automotive (España) S.L.
C/ Camino del Corral, 7
E-28816 Camarma de Esteruelas (Madrid)
Tel. +34 (9) 1886 61 43
Fax. +34 (9) 1885 75 60

Dow Automotive (Suisse)
Wolleraustrasse 15-17
CH-8807 Freienbach
Tel. +41 (0) 55 416 81 11
Fax. +41 (0) 55 416 82 20

Dow Automotive (USA)
1250 Harmon Road
Auburn Hills, MI - 48326
Tel. +001 248 391 63 00
Fax +001 248 391 64 17

BETAPRIME™ 5500

Short Description

Adhesion promoting primer for laminated glass with enamel layer inside and enamel substrates. To be used in combination with Dow Automotive Systems PUR-Adhesive/sealants.

Properties

One-step primer which can be used without silane wipe pretreatment. Primer with short open time.

Application

All Dow Automotive products are primarily developed in co-operation with the automobile manufacturers, according to their needs and their specifications, they are approved for the specific applications as defined by the customer. The use of the product other than approved appliction have to be released in written form by the Technical Service of Dow Automotive.

Technical Data

Unless specified otherwise test are conducted at 23°C/50% relative humidity.

Basis	Polyisocyanates
Colour	black
Pigments	Carbon black
Density	0.901 - 1.001 g/cm³
Solid contents	35 - 40%
Viscosity DIN-cup 4mm after 3d 40°C	10.5 - 13 s
Minimum open time	3 minutes / felt application
Maximum opentime	3 days / felt application
Reactivation:	One time reactivation possible with: BETAWIPE™ VP04604 (wipe-on / wipe off) maximum open time 15 minutes.
Processing temperature	10 - 40°C
Processing instructions	Primer bottle needs to be shaken for at least one minute before opening, to release the steel balls within the container. In case steel balls are not dislodged, then it is recommended to strike the top of the container against a hard surface so that the steel balls are audible within the container. This is essential in order to disperse any possible sediment within the primer.
Caution	The product is extremely sensitive to humidity. It is imperative that container should be closed immediatly after use, in order to extend durability of the remaining primer contents.
Shelf life	6 months at + 5°C - +25°C in unopened containers.
Shelf life after opening	Depending on ambient conditions and working method: Use following test method to monitor if primer can be furter used for one day or if it is non-conformous and has to be dispode of. Daily measurement of viscosity DIN 4 cup: must not exceed 17 seconds.
Bonding Surface Preparation	All bonding surfaces must be free of impurities (dirt, dust, water, oil, grease, release agent and similar contaminants). Verify compatibility before use, or consult our Technical Service for more information.
Processing equipment	Primer applicator, primer application device (flask with primer applicator head and felt) or automatic primer application system.
Cleaning	Clean equipment with BETACLEAN™ 3000
Containers	Aluminium bottles

Health and Safety

The use of bonding agent (primer) is generally harmless and as long as the basic rules for safe handling of chemicals are applied. However, the direct contact of uncured primer to food and food containers shall be avoided. Mandatory are protective measures in order to prevent direct skin contact as well as to avoid solvent inhalation. Proper ventilation should apply when using primers with high volatile content. If any primer is applied in the means of spraying technique, special care should apply in relation to respiration and personal protection in order to prevent aerosol inhalation. Suitable solvent resistant rubber gloves, conventional eye protection as well as appropriate type of respirator mask are essential. In case of direct contact with any primers the skin must be rinsed first with warm water and then cleaned thoroughly with conventional soap. Solvents shall be avoided. For detailed protective measures refer to the material safety data sheets.

Dow Automotive Systems Quality Assurance

Quality is our utmost goal. Dow Automotive works according to a modern quality management system conforming to ISO/TS 16949.
Environment: All sites of Dow Automotive are conforming to ISO 14001.
All statements, technical information and recommendations contained in this document are based on tests that we believe are reliable. However, the accuracy or completeness of the statements, information and recommendations is not guaranteed, as before using, the user should determine the suitability of the product for user's intended purpose.

This document does not create any liability and all warranties, express or implied, including the implied warranties of merchantability and fitness for a particular purpose are disclaimed. Neither seller nor manufacturer shall be liable either in contract or tort for any loss or damage, direct, incidental, or consequential, arising out of the use and or the inability to use the product. Seller's/manufacturer's only obligation is the replacement of defective product.

Dow Automotive Systems Main Offices

The Dow Chemical Company **Customer Information Group Europe** Phone +800 3 6946367 Phone +32 3 450 2240 Italia 800 783 825 Fax +32 3 450 2815	**Dow Automotive Systems** **World Head Quarter** 1250 Harmon Road Auburn Hills, MI 48326 USA Tel. +1 248 391 63 00 Fax +1 248 391 64 17	**Dow Automotive Systems** Dow Deutschland Anlagengesellschaft GmbH Am Kronberger Hang 4 65824 Schwalbach Germany Tel: +49 6196 566 0 Fax: +49 6196 566 444	**Dow Automotive Systems** Dow Europe GmbH Bachtobelstrasse 3 CH-8810 Horgen Switzerland Tel. +41 (0) 44 728 2111 Fax. +41 (0) 44 728 2935
Dow Automotive Systems Dow Chemical Ibérica, S.L. Ribera del Loira, 4-6 - Planta 4ª (Edificio IRIS) 28042 Madrid Spain Tel. + 34 91 740 7800 Fax. + 34 91 740 7785	**Dow Automotive Systems** Dow France S.A.S. 23 avenue Jules Rimet 93631 La Plaine St Denis Cedex France Tel: +33 1 49 21 78 78 Fax: +33 1 49 21 79 79	**Dow Automotive Systems** Dow Italia Divisione Commerciale s.r.l. Via F. Albani, 65 - 20148 Milano Italy Tel: +39 02 482 21 Fax: +39 02 482 241 08	

NOTICE: No freedom from any patent owned by Dow or others is to be inferred. Because use conditions and applicable laws may differ from one location to another and may change over time, the Customer is responsible for determining whether products and the information in this document are appropriate for the Customer's use and for ensuring that the Customer's workplace and disposal practices are in compliance with the applicable laws and other governmental enactments. Dow assumes no obligations or liability for the information in this document. No warranties are given. Dow Automotive Systems is a business unit of The Dow Chemical Company.

Subject to change!

Technischer Dienst Technical Service TÜV SÜD Auto Service GmbH 152

BETAMATE 7120

Description / Application:

Single-component, high-viscosity, atmospheric humidity-curing polyurethane bonding/sealing compound for high-strength, permanently elastic adhesive joints.
This material is used in the direct glazing process of the automotive industry in combination with glass-primer and wipe and paint primer. It is also suitable for bonding certain plastic parts in conjunction with the plastic primer BETAPRIME 5404 and/or a specific pretreatment according to prior test results.

All Dow Automotive products are primarily developed in co-ordination with the automobile manufacturers, according to their needs and their specifications; they are approved for the specific applications as defined by the customer.

The use of the product other than approved application have to be released in writing by the Technical Service of Dow Automotive.

Technical Data:

Basis	polyurethane prepolymers
Colour	black
Density	ca. 1.23 g/cm³ at 23°C
Solid contents	> 98%
Viscosity (Extrusion, Ballan 4 mm nozzle, 4 bar)	pasty, pumpable 12 - 18 g/min at 23°C
Flash point	> 100°C
Processing temperature	10 - 40°C
Open time	max. 15 min at 23°C/50% rh primerless
Sagging behavior	very good, non-sagging
Tack-free time	approx. 30 min at 23°C/50% rh
Cure rate	> 4 mm in 48 h at 23°C/50%rh
Tensile strength (DIN 53 504)	9 ± 1 MPa
Elongation at break (DIN 53 504)	> 500%
Lap shear resistance (EN 1465)	min. 5 MPa (height of adhesive layer: 2mm) 23°C/50% rh,
Resistance to tear propagation (DIN 53 515)	approx. 15 N/mm
Shore A hardness (DIN 53 505)	60 +/-5
Abrasion resistance	Extremely high

Temperature stability	-40°C to 100°C, for short periods up to 120°C
Resistance to chemicals	Highly resistant to aqueous chemicals, petrol, alcohol and mineral oils. Conditionally resistant to esters, ketones, aromatics and chlorinated hydrocarbons
Bonding surface preparation	All bonding surfaces must be free of dirt, dust, water, oil and grease. In general surfaces should be primed. Verify compatibility or consult our technical service department.
Processing equipment	Cartridges: hand-operated or pneumatic gun with mechanical piston Drums, pails: commercial pumping system with connection to automatic applicator, if required.
Cleaning	Uncured BETAMATE 7120 residues can easily be removed with BETACLEAN 3000 or BETACLEAN 3500. Hardened BETAMATE 7120 residues can only be removed mechanically. Immerse equipment in BETACLEAN 3000.
Shelf life	6 months at +5°C to +25°C in unopened containers. (See "use before" date printed on container).
Containers	300 ml cartridges, cardboard packs of 12 Pails: 22 litres Drums: 200 litres
Protection measures	See health and safety data sheet.

Dow Automotive Quality Management

Quality is our highest priority. Gurit-Essex works with a highly modern Quality Management System which meets all international requirements of **QS 9000, VDA-6** and **ISO 9001**.

Dow Automotive AG
CH-8807 Freienbach
Tel. +41(0)55416 81 11
Fax +41(0)55416 82 20

Dow Automotive (Italia) S.r.l
I-20010 Bareggio (MI)
Tel. +39(0)2 90 36 11 66
Fax +39(0)2 90 27 66 98

Dow Automotive (France) S.A.
F-60130 Saint-Just en chaussee
Tel. +33(0) 3 44 77 61 00
Fax. +33(0) 3 44 77 61 61

Dow Automotive (Deutschland) GmbH
D-35683 Dillenburg
Tel. +49(0)2771 8 71 40
Fax +49(0)2771 87 14 70

Dow Automotive (España) S.A.
E-28816 Camarma de Esteruelas (Madrid)
Tel. +34 (9)1 886 61 43
Fax +34 (9)1 885 75 60

Dow Automotive (UK) Ltd.
GB-Nuneaton-Warwickshire CV10 7QT
Tel. +44 (0) 24 7635 72 00
Fax. +44 (0) 24 7635 72 57