Test report

*No.: 2*1-00097-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 safetybelt 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

Test report only.

I. *General*

Type	SAF11, SAF12
Commercial name(s) (if available):	SAF11, SAF12
Name and address of manufacturer	OKB SP. Z O.O. Szkolna 9, Bukowiec 95-006 Brójce Poland
Reference number of information folder	MOBIFRAME/03/2021-00
Date of issue of information folder	04.10.2021

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. Sampling plan or method result from the requirements of the test basis. The worst-case configuration was selected in accordance with process description "Requirements for Test Reports (AS-PB-T-02)". Valid decision rule in accordance with ILAC G8:2019, 4.2.1: in question of meeting the limits the measurement uncertainty was ignored.

The manufacturer is responsible for the information (III.) and the test specimens provided by him. The test results relate only to the test specimens as received and mentioned (II.). The test specimens are representative for the type described (III.).

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

Approval authority	***Country***	***Registration number***
Kraftfahrt-Bundesamt (KBA)	*Germany*	KBA-P 00100-10
Vehicle Certification Agency (VCA)	*United Kingdom*	VCA-TS-006
Approval Authority of the Netherlands (RDW)	*The Netherlands*	RDWT-082-xx
National Standards Authority of Ireland (NSAI)	*Ireland*	Technical Service Number: 49
Société Nationale de Certification et d'Homologation s.à r.l.	*Luxembourg*	13/B(g

München, 19.10.2021

Technischer Dienst Technical Service TÜV SÜD Auto Service GmbH 152

Ing. Vít Bursík
Authorized signatory

Annex

1. Technical data of the test sample

1.1	Make:	MOBIFRAME
1.2	Type:	SAF11, SAF12
1.2.1.	Variant-version:	SAF11_???_?_??? – 2-seating positions SAF12_???_?_??? – 3-seating positions SAF??_STD_?_??? – standard version of seat cushion SAF??_SLM_?_??? – slim version of seat cushion SAF??_???_L_??? – fixation to the floor via quick release system SAF??_???_B_??? – fixation to the floor via bolts SAF??_???_?_086 – bench width 86 cm SAF??_???_?_112 – bench width 112 cm SAF??_???_?_120 – bench width 120 cm SAF??_???_?_126 – bench width 126 cm SAF??_???_?_129 – bench width 129 cm SAF??_???_?_150 – bench width 150 cm
1.2.2.	Commercial name(s) (if available) :	SAF11, SAF12
1.3	Category of vehicle:	M1, N1, M2, N2
1.4.	Test object:	

ECE Regulation No. 14.09

	Test object:	Seat bench SAF11, SAF12 mounted on MOBIFRAME Composite floor. For details see manufacturer's information folder.

ECE Regulation No. 145.00

	Worst case evaluation:	The worst-case variant was chosen. The tested vehicle is the worst case with regard to ISOFIX anchorages systems.
1.4.1.	Vehicle types for which is device intended to use:	See manufacturer's information document Enclosure 1

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):

Test of 3 seat bench MOBIFRAME type SAF12 - strength of safety belt anchorages according to ECE R 14.09 concerning to strength of seat to vehicle anchorages and safety belt anchorages strength.

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).

3.1.1. Forward facing seats for M1/N1 vehicles:

SAF12 on MOBIFRAME composite floor, rigid plate.

Mass of the heaviest possible configuration m_s = 135 kg.

Additional force applied to seat base:

$F_z = 20 \times m_s \times g$ (N) as relevant for M1/N1 vehicle category.

Type of seat – SAF12	Left seat	Central seat	Right seat
Mass of seat/seats	45 kg	45 kg	45 kg
Required force in upper anchorage point	13 500 ± 200 N	13 500 ± 200 N	13 500 ± 200 N
Required force in lower anchorage point	13 500 ± 200 N	13 500 ± 200 N	13 500 ± 200 N
Max force in upper anchorage point	14 100 N/>0,2s	14 200 N/>0,2s	14 500 N/>0,2s
Max. force in lower anchorage point	14 000 N/>0,2s	14 600 N/>0,2s	14 900 N/>0,2s
Required force inertia	27 000 N/>0,2s		
Inertia force in the seat base	29 800 N		
Displacement of upper anchorage point	155 mm	154 mm	150 mm
Where was applied additional force	Lap belt		

Note: SAF12 bench is a worst case due to number of seating places and forces during the test. SAF11 is double seat bench.

3.1.2. Seat bench SAF12_STD_L_150 in representative vehicle body on composite floor FLA.
Mass of the heaviest possible configuration m_s = 135 kg.
Additional force applied to seat base:
$F_z = 20 \times m_s \times g$ (N) as relevant for M1, N1 vehicle category, covers also M2/N2 vehicle category.

Type of seat	SAF12 (left seat)	SAF12 (central seat)	SAF12 (right seat)
Safety belt	Ar	Ar	Ar
Mass of seat/seats	135 kg total		
Required force in upper anchorage point	13 500 N ± 200 N	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	13 500 N± 200 N
Max force in upper anchorage point	13 600 N/> 0,2 s	14 400 N/> 0,2 s	14 100 N/> 0,2 s
Max. force in lower anchorage point	14 000 N/> 0,2 s	14 100 N/> 0,2 s	13 800 N/> 0,2 s
Required inertia force	27 000 N		
Inertia force in the seat base	27 100 N /> 0,2 s		
Displacement of upper anchorage point	195 mm	197 mm	187 mm
Where was applied additional force	CoG		

3.1.3. Seat bench SAF12_STD_L_150 in representative vehicle body on composite floor FLM.

Mass of the heaviest possible configuration m_s = 135 kg.
Additional force applied to seat base:

$F_z = 20 \times m_s \times g$ (N) as relevant for M1, N1 vehicle category, covers also M2/N2 vehicle category.

Type of seat	SAF12 (left seat)	SAF12 (central seat)	SAF12 (right seat)
Safety belt	Ar	Ar	Ar
Mass of seat/seats	135 kg total		
Required force in upper anchorage point	13 500 N ± 200 N	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	13 500 N± 200 N
Max force in upper anchorage point	14 000 N/> 0,2 s	13 500 N/> 0,2 s	14 100 N/> 0,2 s
Max. force in lower anchorage point	13 800 N/> 0,2 s	13 900 N/> 0,2 s	14 000 N/> 0,2 s
Required inertia force	27 000 N		
Inertia force in the seat base	28 100 N /> 0,2 s		
Displacement of upper anchorage point	212 mm	213 mm	210 mm
Where was applied additional force	CoG		

Note: SAF??_???_?_???:

SAF11_???_?_??? – 2-seating positions
SAF12_???_?_??? – 3-seating positions

SAF??_STD_?_??? – standard version of seat cushion
SAF??_SLM_?_??? – slim version of seat cushion

SAF??_???_L_??? – fixation to the floor via quick release system
SAF??_???_B_??? – fixation to the floor via bolts

SAF??_???_?_086 – bench width 86 cm
SAF??_???_?_112 – bench width 112 cm
SAF??_???_?_120 – bench width 120 cm
SAF??_???_?_126 – bench width 126 cm
SAF??_???_?_129 – bench width 129 cm
SAF??_???_?_150 – bench width 150 cm

3.2. Test procedures used (ECE R145):

Test of 3 seat bench MOBIFRAME type SAF12 - strength of ISOFIX and Top-tether anchorages according to ECE R 145.00

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 manufacturer	Name	Vehicle category	Direction of test forces	Fulfilling of requirements
OKB	SAF12 with TOP TETHER	M1, N1	Forward	See point 3.2.1.
	SAF12 without TOP TETHER	M1, N1	Forward	See point 3.2.2.
	SAF12 without TOP TETHER	M1, N1	Oblique	See point 3.2.3.

Note: SAF12 bench is a worst case due to number of seating places and forces during the test. SAF11 is double seat bench.

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.

3.2.1. ISOFIX – SAF12

SAF12 - ISOFIX and Top Tether – forward direction

Seat	Left rear	Right rear
Required force	8 000 N	8 000 N
Max .measured force	8 100 N	8 200 N
Displacement of X point SFAD device (max 125 mm)	80 mm	81 mm
Result	Without failure	Without failure

3.2.1. ISOFIX – SAF12

SAF12 - ISOFIX without Top Tether – forward direction

Seat	Left rear	Right rear
Required force	8 000 N	8 000 N
Max .measured force	8 200 N	8 400 N
Displacement of X point SFAD device (max 125 mm)	74 mm	60 mm
Result	Without failure	Without failure

SAF12 - ISOFIX – oblique direction

Seat	Left rear	Right rear
Required force	5 000 N	5 000 N
Max .measured force	5 000 N	5 100 N
Displacement of X point SFAD device (max 125 mm)	96 mm	102 mm
Result	Damage of ISOFIX anchorages after 1,2 s of required force reach	

3.3 Floor system strength including seat to vehicle attachment and legs strength:

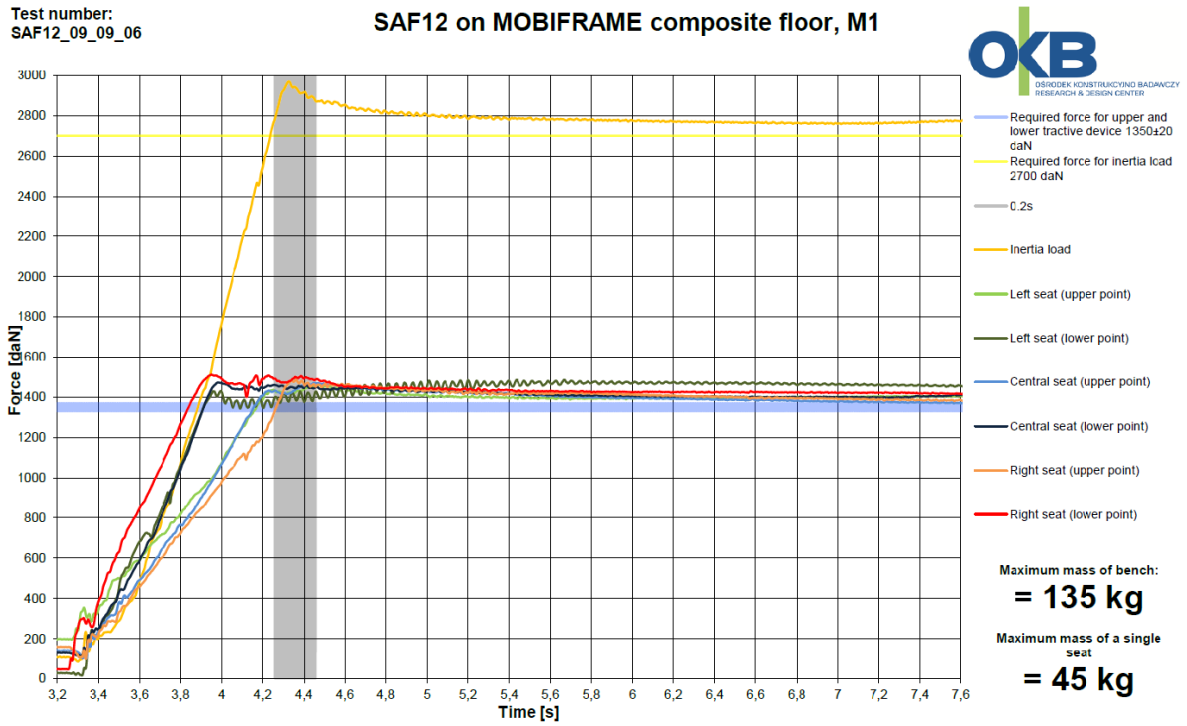
See test report No. 19-00055-CP-PRG-00, 19-00055-CP-PRG-01

3.4. Final assessment:

Frame(s) SAF11 and SAF12 are intended for use in vehicles - list see point 1.4.1. due to the results mentioned in point 3.1., 3.2. and 3.3. of this report. Attachment of any frame type to vehicle is possible via MOBIFRAME composite floor (FLA, FLM) or directly to vehicle floor with plate or plate with rails (for details see enclosed information documents).

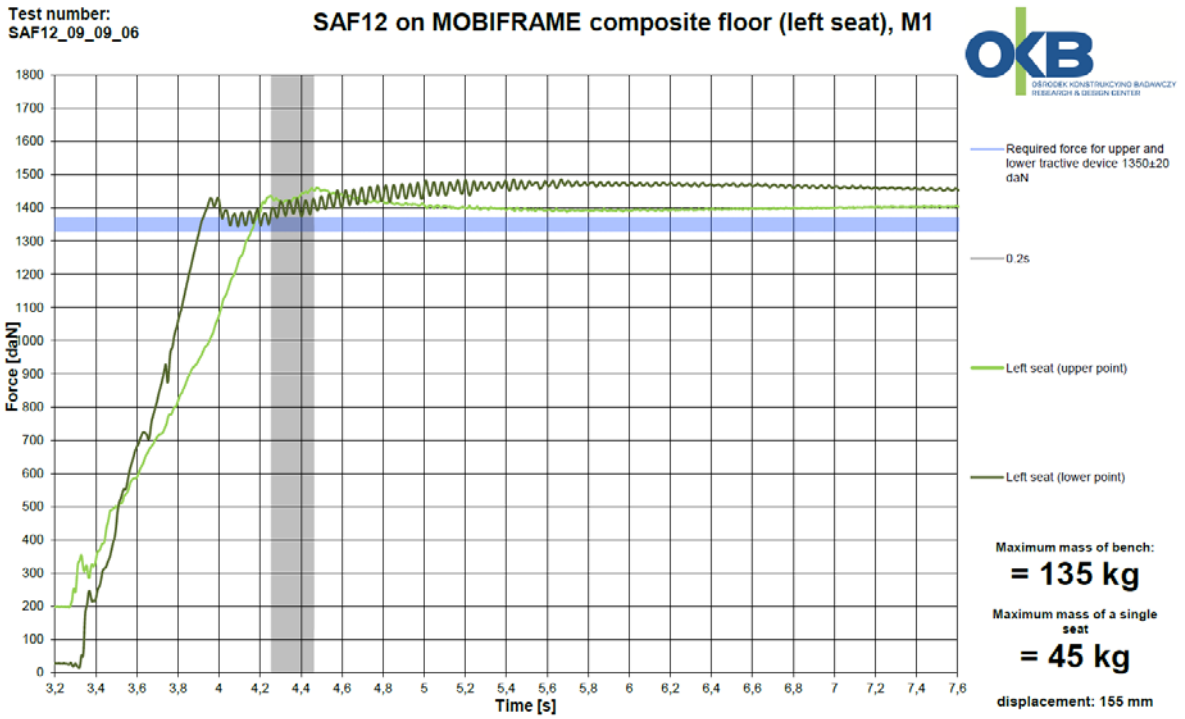
3.5. Test records – diagrams:

3.1.1. SAF12 on MOBIFRAME composite floor, rigid plate.

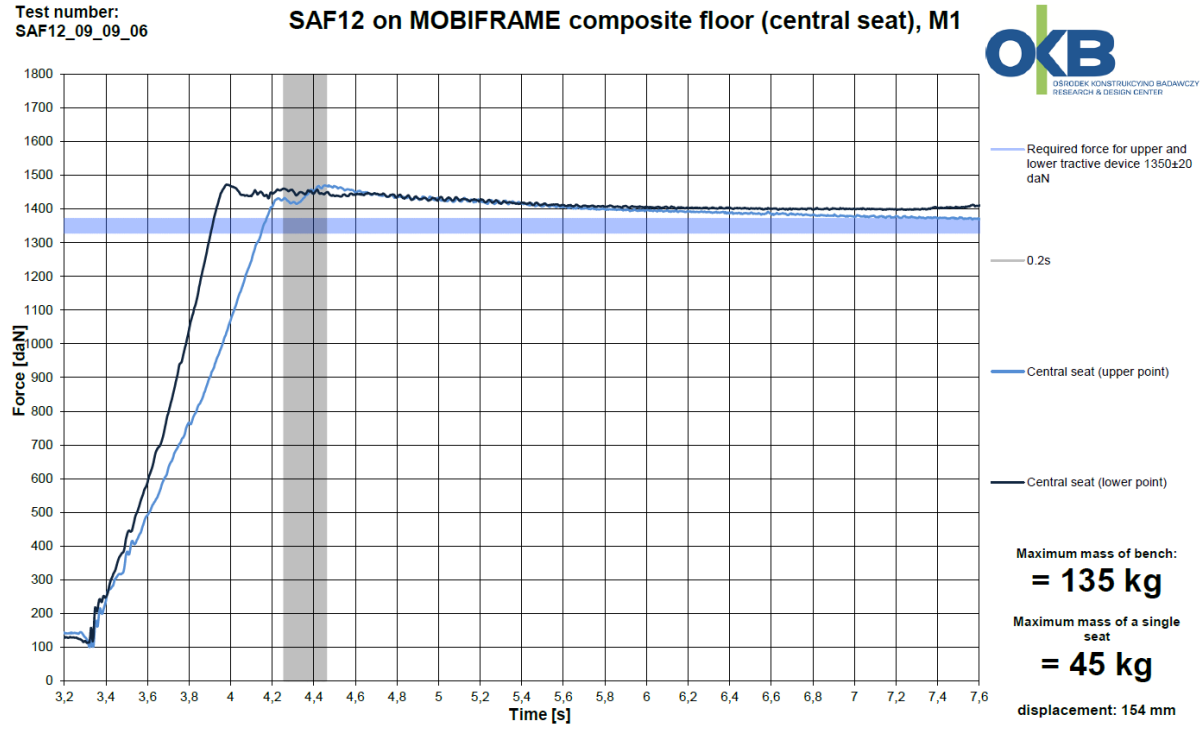


3.5. Test records – diagrams:

3.1.1. SAF12 on MOBIFRAME composite floor, rigid plate – left seat

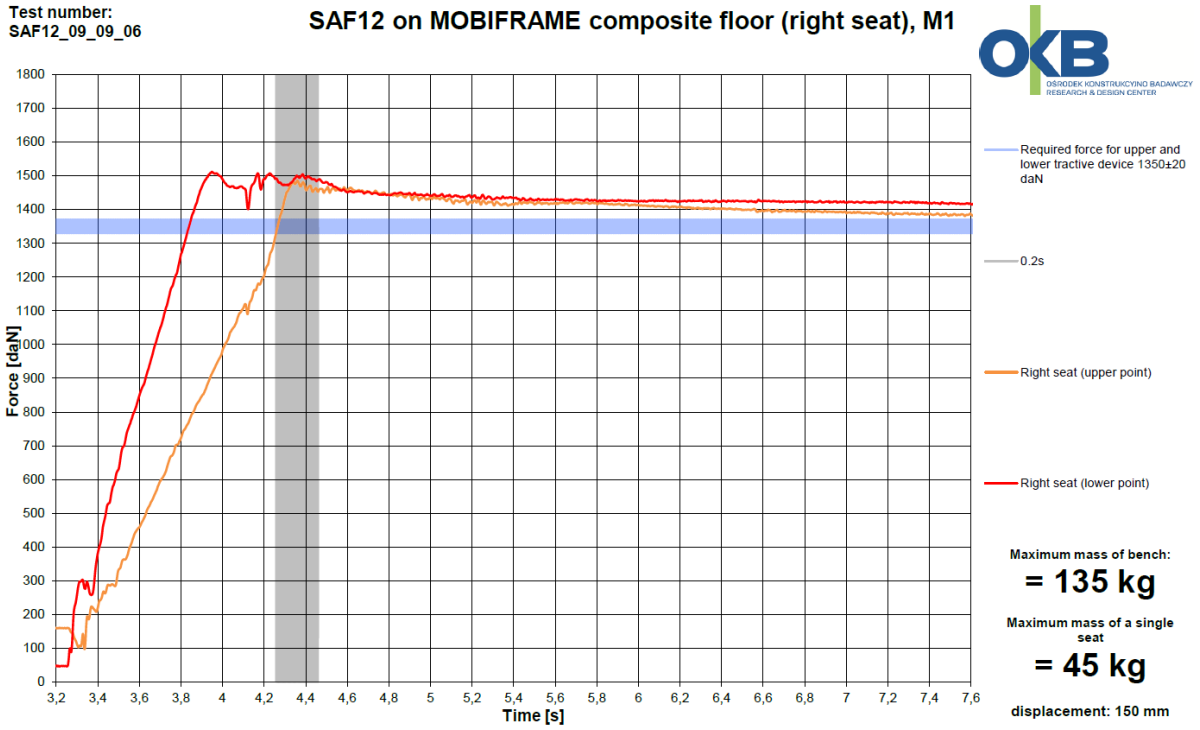


3.1.1. SAF12 on MOBIFRAME composite floor, rigid plate – central seat

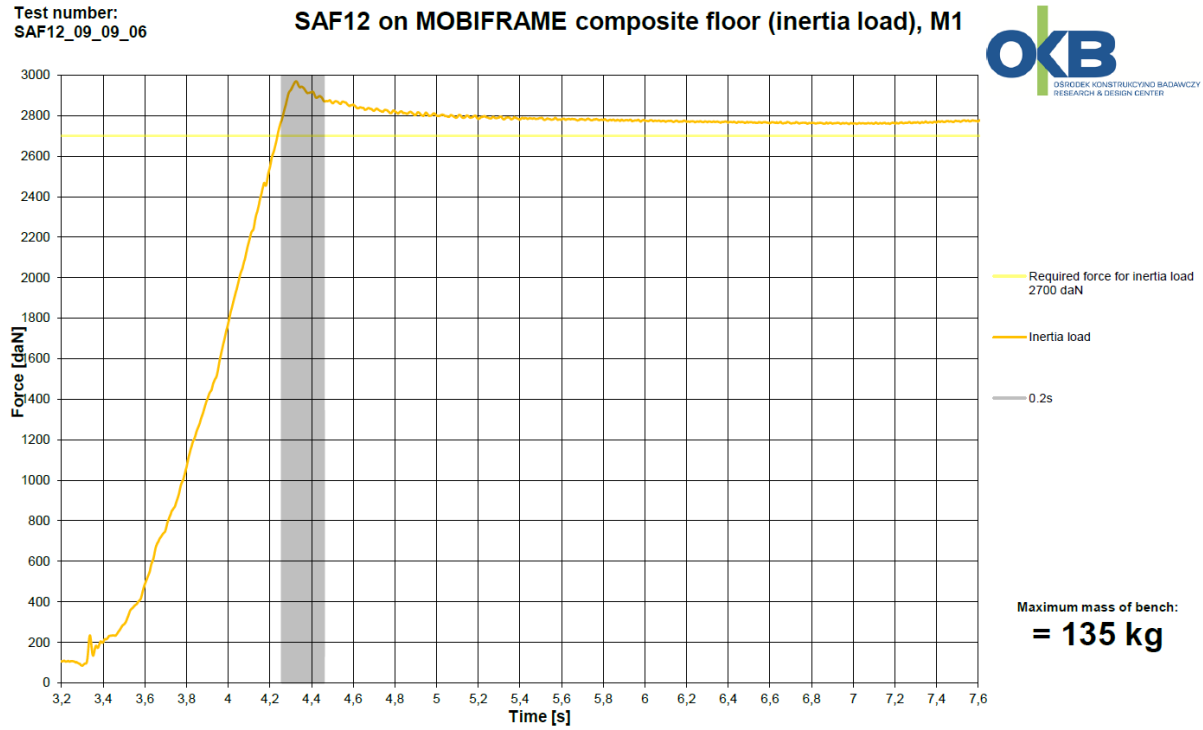


3.5. Test records – diagrams:

3.1.1. SAF12 on MOBIFRAME composite floor, rigid plate – right seat

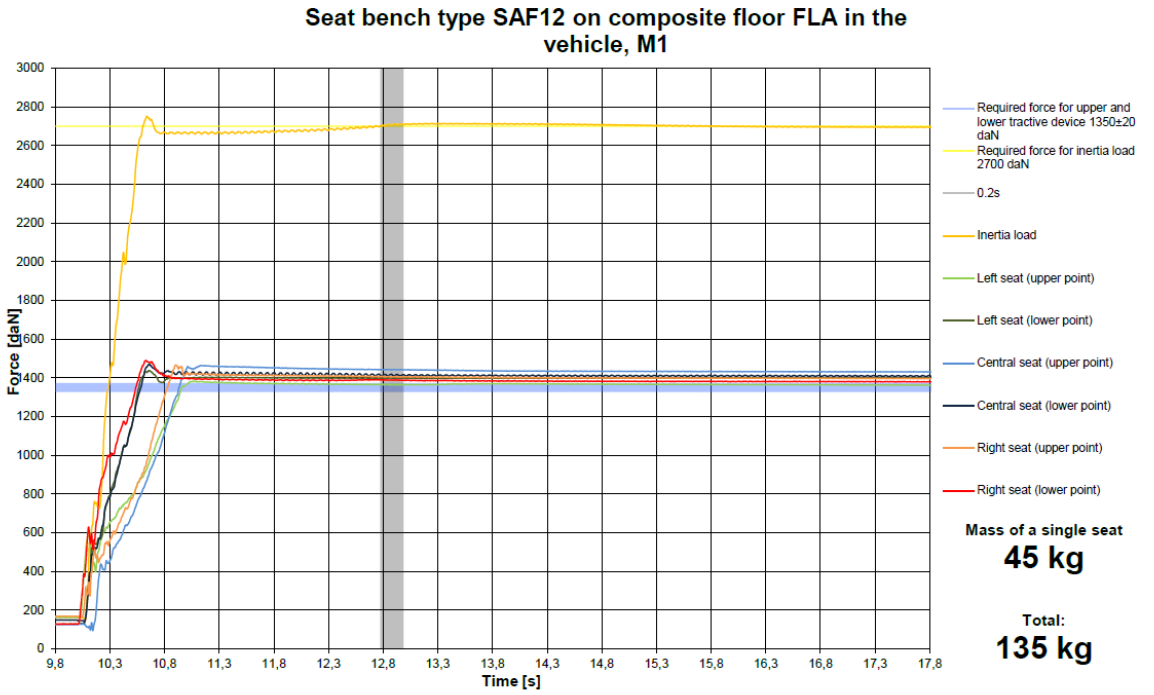


3.1.1. SAF12 on MOBIFRAME composite floor, rigid plate – interia load

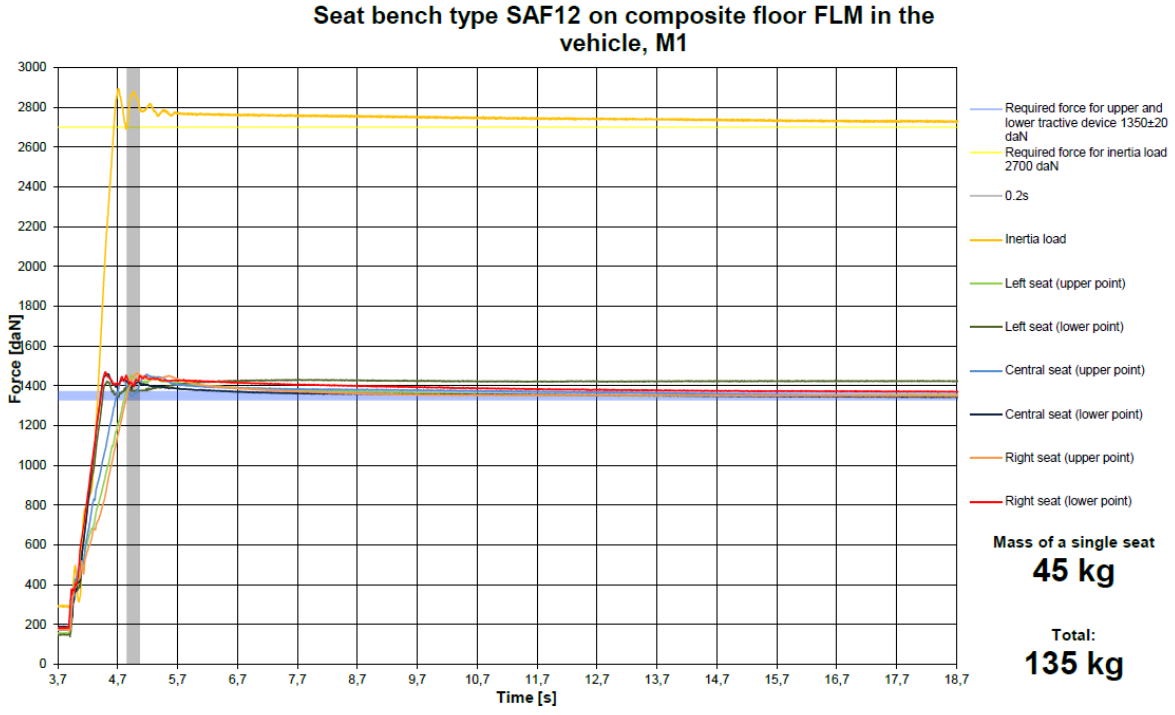


3.5. Test records – diagrams:

3.1.2. Seat bench SAF12_STD_L_150 in representative vehicle body on composite floor FLA.



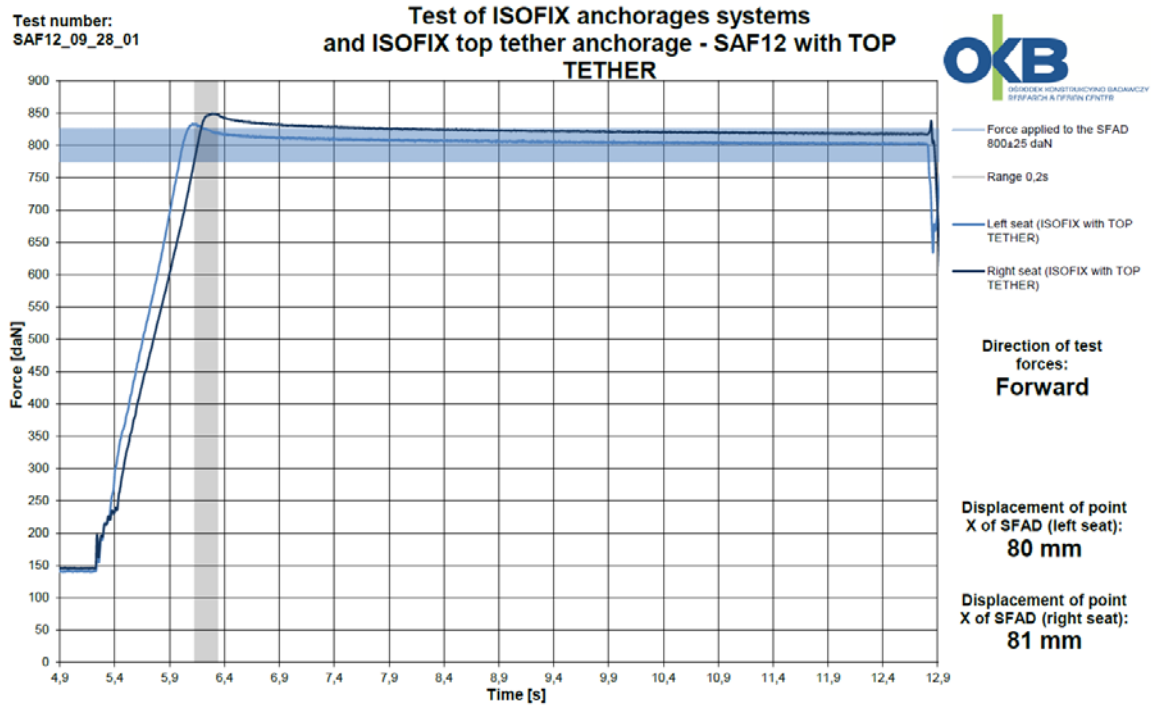
3.1.3. Seat bench SAF12_STD_L_150 in representative vehicle body on composite floor FLM.



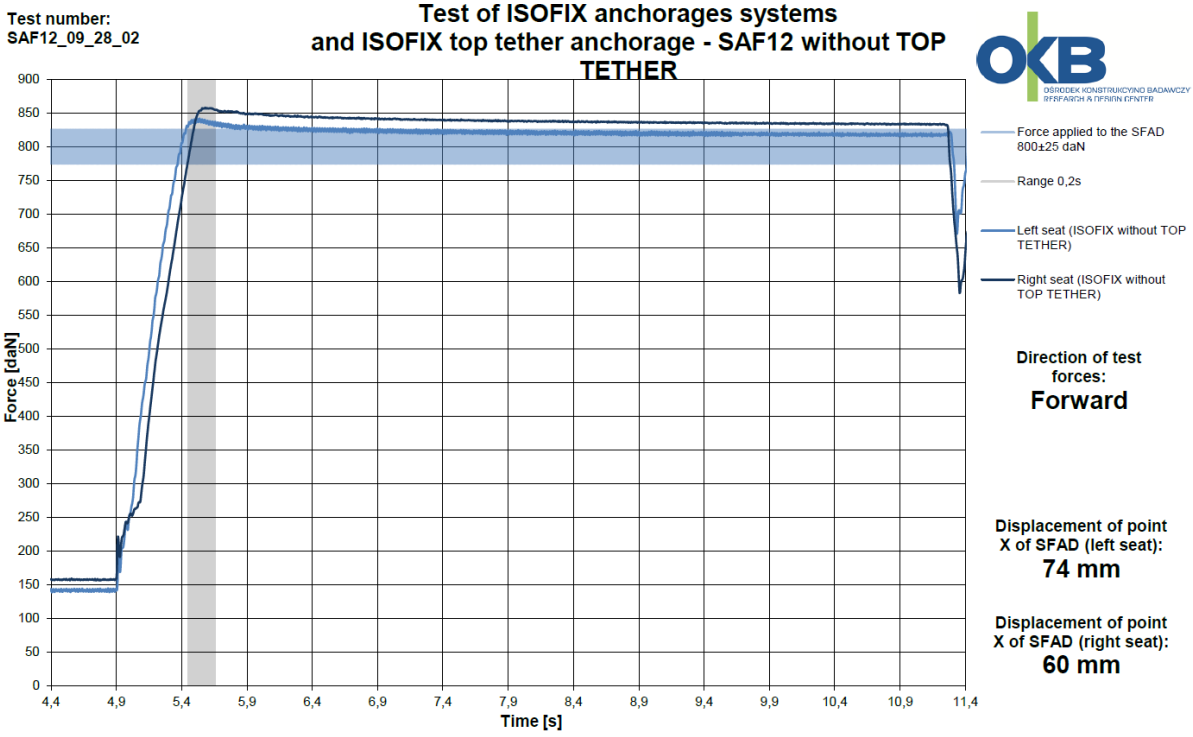
3.5. Test records – diagrams:

3.2.1. ISOFIX – SAF12

SAF12 - ISOFIX and Top Tether – forward direction

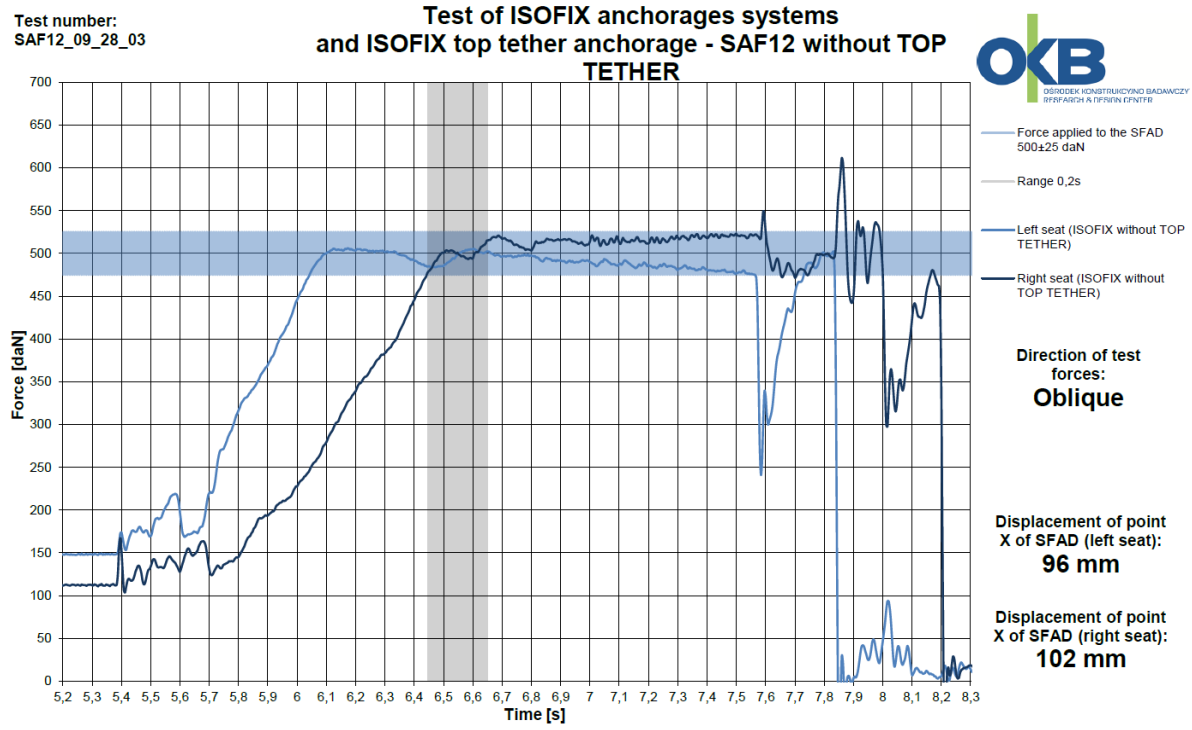


3.2.1. SAF12 - ISOFIX without Top Tether – forward direction



3.5. Test records – diagrams:

3.2.1. SAF12 - ISOFIX – oblique direction



4. Place and date of tests

16. 12. 2019

OKB laboratory, Bukowiec, Poland

Test report

No.: 21-00098-CP-PRG-00

Test of a seat bench
with regard to ECE Regulation No. **16.00**
taking into consideration amendment No. **16.08, Supplement 2**
Approval subject: **Safety belts and their insalation and child restraint systems**

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

Test report only.

I. *General*

Type	SAF11, SAF12
Commercial name(s) (if available):	SAF11, SAF12
Name and address of manufacturer	OKB SP. Z O.O. Szkolna 9, Bukowiec 95-006 Brójce Poland
Reference number of information folder	MOBIFRAME/03/2021-00
Date of issue of information folder	04.10.2021

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. Sampling plan or method result from the requirements of the test basis. The worst-case configuration was selected in accordance with process description "Requirements for Test Reports (AS-PB-T-02)". Valid decision rule in accordance with ILAC G8:2019, 4.2.1: in question of meeting the limits the measurement uncertainty was ignored.

The manufacturer is responsible for the information (III.) and the test specimens provided by him. The test results relate only to the test specimens as received and mentioned (II.). The test specimens are representative for the type described (III.).

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

Approval authority	***Country***	***Registration number***
Kraftfahrt-Bundesamt (KBA)	*Germany*	KBA-P 00100-10
Vehicle Certification Agency (VCA)	*United Kingdom*	VCA-TS-006
Approval Authority of the Netherlands (RDW)	*The Netherlands*	RDWT-082-xx
National Standards Authority of Ireland (NSAI)	*Ireland*	Technical Service Number: 49
Société Nationale de Certification et d'Homologation s.à r.l.	*Luxembourg*	13/B(g

München, 19.10.2021

Technischer Dienst Technical Service TÜV SÜD Auto Service GmbH 152

Ing. Vít Bursík
Authorized signatory

Annex

1. Technical data of the test sample

1.1	Make:	MOBIFRAME
1.2	Type:	SAF11, SAF12
1.2.1.	Variant-version:	SAF11_???_?_??? – 2-seating positions SAF12_???_?_??? – 3-seating positions SAF??_STD_?_??? – standard version of seat cushion SAF??_SLM_?_??? – slim version of seat cushion SAF??_???_L_??? – fixation to the floor via quick release system SAF??_???_B_??? – fixation to the floor via bolts SAF??_???_?_086 – bench width 86 cm SAF??_???_?_112 – bench width 112 cm SAF??_???_?_120 – bench width 120 cm SAF??_???_?_126 – bench width 126 cm SAF??_???_?_129 – bench width 129 cm SAF??_???_?_150 – bench width 150 cm
1.3	Category of vehicle:	M1, N1, M2, N2
1.4	Test object:	Seat bench SAF12_STD_L_150 as a worst case representative, intended for use in other than front rows of vehicle. For details see manufacturer's information folder.
1.4.1.	Vehicle types for which is device intended to use:	see manufacturer's information document Enclosure 1

2. Test conditions

2.1. Instrumentation:

- Test fixtures ZZ-347, ZZ-430/1, /2, /3
- Force measurement device PM-1876
- Digital level gauge PM-2407
- Tape measure PM-3129

2.2. Ambient conditions:

Normal laboratory conditions, not directly limited in Regulation

3. Test results

3.1 Test procedures used (ECE R16):

Test of 3 seat bench MOBIFRAME type SAF12 according to ECE R 16.08, par. 8 and Annex 17 concerning to check of installation of safety belts and child restraint systems.

The below mentioned test results cover all variants stated in the enclosed information document.

3.2 Forward facing rear row of seats for M1/N1 vehicles MOBIFRAME type SAF12

(Numbering according to ECE Regulation No.16.08, marked *italic*)

3.2.1 General

8.1. All the seats are equipped with 3-point safety belts with automatically or emergency locking retractor. The seat belts fulfilling the requirements of this regulation, component certificates are in hand.

8.1.1. Tab - Number and position of safety belts and restraint systems and seats on which they can be used.

Number and position of safety belts and restrain systems and seats on which they can be used:

Row	Seat	Complete EC type-approval mark	Variant (if applicable)	Belt adjustment device for height
First row of seats	Left-hand seat	No changes in 2nd stage of production	No changes in 2nd stage of production	No changes in 2nd stage of production
	Central seat*			
	Right-hand seat			
Rear row(s) of seats	Left-hand seat**	E20 16R-04 0886	E20 16R-04 0885 or E20 16R-04 0889	N/A
	Central seat*/**			
	Right-hand seat**			

*-If present
**- seats alternatively mounted symmetrically about the longitudinal symmetry line

8.2. Seatbelts are fixed to the seatbelt anchorages fulfilling the requirements of ECE 14 (see Test Report No. 21-00097-CP-PRG-00),
Seatbelts are designed so that they are readily to use, work properly and minimize the risk of injury during impact.

8.3. Rigid parts do not increase the risk of injury; the releasing buckle is visible and easily accessible. All safety belts are equipped with retractor with emergency locking.

8.3.5 Compliance with Annex 17 was confirmed.
Instruction manual contains information about transport of children in vehicle and instruction for installation of child restraint systems (CRS).

All seats intended for installation of CRS comply with requirements of Annex 17 of this Regulation.

8.4. Safety-belt reminder equipment

8.4.1. Requirements per specific seating position and exemptions

8.4.1.3. The safety-belt reminder is not compulsory on motor-caravans, vehicles for transport of disabled persons and for rear removable seats in all vehicle types until September 2022 (SAF??_???_L_???)

3.2.2 General CRS installation requirements

8.2.2.5. The possible slack in the belt does not prevent the correct installation of child restraint system recommended by manufacturer.

In the case of three-point belts, a tension of at least 50 N can be established in the lap section of the belt by external application of tension in the diagonal section of the belt.

8.3.5. In order to inform the vehicle user(s) of the provision made for the transport of children, the requirements of Annex 17 are met, see 3.2.3. and 3.2.4.

8.3.6 i-Size position

All i-Size seating position allow the installation of the ISOFIX child restraint fixtures "ISO/F2X" (B1), "ISO/R2" (D) and the support leg installation assessment volume as defined in Appendix 2 to Annex 17.

3.2.3 Compatibility test of “universal” category child restraint system – outboard seating positions only

(Numbering according to Annex 17 - Appendix 1 of the Regulation (marked italic))

	Test condition	**Required**	**Measured**
2.1.	Adjust the seat	To be in its full rearward and lowest position	No adjustment
2.2.	Adjust the seat-back angle	To be in designed position, if not given be at 25° degree	No adjustment
2.3.	Adjust upper belt anchorage	To be in its lowest position	No adjustment
2.9	Application of horizontal force	Push force of 100 N ±10N applied in the middle front part of fixture parallel with fixture base.	Rear outboard seat: 105 N
2.10	Application of vertical force	Push force of 100 N ±10N applied in the middle of upper surface of fixture vertically.	Rear outboard seat: 99 N
3.1.	With the belt arranged around the fixture	Base of fixture shall be in contact with both the forward and the rearward seat cushion surface	Pass rear outboard seat
3.2.		Lap portion of belt shall be in touch with the fixture on both sides	Pass rear outboard seat
3.3.		If requirements are not fulfilled while seat set acc. to 2.1., 2.2., 2.3, different location of the seat stated by the manufacturer is possible (vehicle handbook)	N/A

3.2.4 Compatibility test of ISOFIX child restraint system and i Size child restraint system

(Numbering according to Annex 17- Appendix 2 of the Regulation (marked italic))

	Test condition	**Required**	**Measured**
2.1.	Adjust the seat	To be in its full rearward and lowest position	No adjustment
2.2.	Adjust the seat-back angle	To be in designed position, if not given be at 25 degree	No adjustment
2.5.	Application of force	Push force of 100 N ±10N in the middle between ISOFIX anchorages parallel with fixture base.	Fixture ISO/F2X: Pass Fixture ISO/R2: Pass
3.1.	With the fixture accommodate on seat	Fixture shall not be in interference with vehicle interior. Fixture base pitch angle shall be 15°±10° above the horizontal plane passing through the ISOFIX anchorages.	Fixture ISO/F2X: 6,8° Fixture ISO/R2: 7,0°
3.2.		The ISOFIX top tether anchorage shall remain accessible.	Pass
3.3.		Front passenger seat adjusted to the position stated by manufacturer in vehicle handbook: rearmost and lowest, seat-back in design position	Pass including space for support leg

3.3. Photos:

Space for support leg (i-Size)

Fixture ISO/F2X

Fixture ISO/R2

Fixture “universal” CRS – outboard seat

Fixture “universal” CRS – outboard seat

4. Place and date of testing

TÜV SÜD Czech s.r.o., Bezděčín, Czech Republic
27.09.2021

Test report

No.: 21-00099-CP-PRG-00

Test of a seat bench
with regard to ECE Regulation No. **17.00**
taking into consideration amendment No. **17.09, Supplement 1**
Approval subject: **Strength of seats and their anchorages and head restraints**

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

Test report only.

I. *General*

Type	SAF11, SAF12
Commercial name(s) (if available):	SAF11, SAF12
Name and address of manufacturer	OKB SP. Z O.O. Szkolna 9, Bukowiec 95-006 Brójce Poland
Reference number of information folder	MOBIFRAME/03/2021-00
Date of issue of information folder	04.10.2021

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. Sampling plan or method result from the requirements of the test basis. The worst-case configuration was selected in accordance with process description "Requirements for Test Reports (AS-PB-T-02)". Valid decision rule in accordance with ILAC G8:2019, 4.2.1: in question of meeting the limits the measurement uncertainty was ignored.

The manufacturer is responsible for the information (III.) and the test specimens provided by him. The test results relate only to the test specimens as received and mentioned (II.). The test specimens are representative for the type described (III.).

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

Approval authority	***Country***	***Registration number***
Kraftfahrt-Bundesamt (KBA)	*Germany*	KBA-P 00100-10
Vehicle Certification Agency (VCA)	*United Kingdom*	VCA-TS-006
Approval Authority of the Netherlands (RDW)	*The Netherlands*	RDWT-082-xx
National Standards Authority of Ireland (NSAI)	*Ireland*	Technical Service Number: 49
Société Nationale de Certification et d'Homologation s.à r.l.	*Luxembourg*	13/B(g

München, 19.10.2021

Technischer Dienst Technical Service TÜV SÜD Auto Service GmbH 152

Ing. Vít Bursík
Authorized signatory

Annex

1. Technical data of the test sample

1.1	Make:	MOBIFRAME
1.2	Type:	SAF11, SAF12
1.2.1.	Variant-version:	SAF11_???_?_??? – 2-seating positions SAF12_???_?_??? – 3-seating positions SAF??_STD_?_??? – standard version of seat cushion SAF??_SLM_?_??? – slim version of seat cushion SAF??_???_L_??? – fixation to the floor via quick release system SAF??_???_B_??? – fixation to the floor via bolts SAF??_???_?_086 – bench width 86 cm SAF??_???_?_112 – bench width 112 cm SAF??_???_?_120 – bench width 120 cm SAF??_???_?_126 – bench width 126 cm SAF??_???_?_129 – bench width 129 cm SAF??_???_?_150 – bench width 150 cm
1.3	Category of vehicle:	M1, N1, M2, N2
1.4	Test object:	Seat bench SAF12_STD_L_150 as a worst case representative, intended for use in other than front rows of vehicle. For details see manufacturer's information folder.
1.4.1.	Vehicle types for which is device intended to use:	See manufacturer's information document Enclosure 1

2. Test conditions

2.1. Instrumentation:

- Digital ballance
- Dynamic sled test rig
- Accelerometre
- High speed camera
- Head restraint performance test device
- Linear impactor
- 3DH-point measurement device
- Caliper
- Measurement 2D frame

2.2. Ambient conditions:

Normal laboratory conditions, not directly limited in Regulation

3. Test results

3.1 Test procedures used (ECE R17):

Static, dynamic and energy dissipation test of strength of seat anchorages, adjustment and displacement mechanisms and head restraints according to UN ECE Regulation No. 17.09

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).

3.2 Static tests:

Geometry, head restraint performance, energy dissipation (test 62122-21-03 and 04):

3.2.1. H-point measuring: See Table 1

Table 1: H-point coordinates

H-point position	Seating position	left	centre	right
	coordinate X [mm]	267,4	267,4	267,4
	coordinate Z [mm]	494,1	494,1	494,1
	relatively to	front attachment bolt of seat bench to floor		
	torso angle [°]	17,0°		

3.2.2. Head restraint/seat back performance

Definition and requirement	Paragraph		Measured values
	Require ment	Test procedure	Seat bench type SAF12_150
No side facing seats in vehicles of the class M1, N1	*5.1.*	*N/A*	No side facing seats installed
Adjusting and displacement automatic locking systems	*5.2.1 – 5.2.2.*	*N/A*	No displacement system provided, folding seat backs and seat cushions lock automatically in the position for use
Energy absorption of the rear parts of the seats, the deceleration of the headform **≤ 80 g** continuously for more than 3 ms under the impact	*5.2.3*	*6.8.1.1, Annex 6*	N/A, Seats are the last row of seats
Roughness or sharp edges of the rear seat parts - radii 2,5 mm in area 1 - radii 5,0 mm in area 2 - radii 3,2 mm in area 3	*5.2.4*	*6.8.1*	N/A, Seats are the last row of seats
No seat ruptures after tests	*5.2.5*	*6.2*	No ruptures occurred
Requirements for vehicles of category N, M_2 and M_3	5.3.		Deemed to be compliant due to the results of the tests mentioned below
Installation of the head restraints	5.4.	N/A	Height adjustable head restraint is provided
No additional cause of danger to occupants of the vehicle by the head restraint; energy absorption - the deceleration of the headform **≤ 80 g** continuously for more than 3 ms under the impact	*5.5.*	*6.8.1.1.3, Annex 6*	Front head restraint surface: outboard seat selected outboard seat: 15,77 g (for 3 ms) at 24,03 km/h
Highest distance of the head restraint top from R point: H ≥ 750 mm for rear outboard seat H ≥ 700 mm for rear middle seats	*5.6.3.1.*	*6.5*	left seat: 835 mm Right seat: 835 mm middle seat: 835 mm
Min. height in any position for use H ≥ 750 mm for rear outboard seat H ≥ 700 mm for rear middle seats	*5.6.3.2*	*6.5*	left seat: 800 mm right seat: 800 mm middle seat: 800 mm

3.2.2. Head restraint/seat back performance

Height of the head restraint effective area h ≥ 100 mm	*5.7.1*	*6.5*	all > 100 mm
Gap between head restraint and seat-back m ≤ 25 mm	*5.8*	*6.7*	left seat: 0 mm right seat: 0 mm middle seat: 0 mm
Integral head restraints	*5.9*	*6.7, 6.4.3.3.2*	N/A (not installed)
Head restraints with gaps	*5.10*	*6.7*	N/A (no gaps)
Width of head restraint 65 mm below its top L ≥ 170 mm	*5.11*	*6.6*	left seat: 263 mm right seat: 263 mm middle seat: 263 mm
Head rearward displacement X < 102 mm when loaded to moment 373 Nm around R point	*5.12*	*6.4*	left seat: 77,2 mm middle seat: 75,7 mm right seat: 89,0 mm (negative value, when loaded headform does not pass through the displaced reference line)
Loading force for head restraint F ≥ 890 N	*5.13*	*6.4.3.6.*	left seat: 898,6 N middle seat: 898,4 N right seat: 898,4 N without rupture
Raise the head restraint beyond the operational height	*5.14*	*N/A*	Only with deliberate action
Strength of the seat back under the load of 530 Nm per seating position	*5.2.7, 5.15*	*6.2*	Deemed to be compliant due to the results of the test acc. to 4.11.

Note: **When using a seat bench in normal driving conditions, there must be clear information for occupant, where the passenger recognizes the position out of use and correct height position of the head restraint for normal use.**

3.3. Dynamic tests

3.3.1. Rear Impact

Requirement acc. to 5.2.5, 5.2.6. test according to paragraph 6.3

Test pulse: Annex 9 (corridor) – see point 3.4.

For details see test report BLB.057.21B

3.3.1.1 Test speed and achieved deceleration

	Requirement	Measured
Impact speed v_0	50^{+0}_{-2} km/h	OK
Acceleration	corridor	OK

3.3.1.2 Results

Paragraph of the regulation ECE 17.09 marked in *italics*

5.2.5 There was no failure of the seat frame or seat anchorage, adjustment and displacement systems or their locking devices during the test

5.2.6 There was no release of the locking systems during the tests

3.3.2 Frontal impact
Requirement acc. to 5.2.5, 5.2.6. test according to paragraph 6.3
Test pulse: Annex 9 (corridor) – see point 3.4.

For details see test report BLB.057.21B

3.3.2.1 Test speed and achieved deceleration

	Requirement	Measured
Impact speed v_0	50^{+0}_{-2} km/h	OK
Acceleration	corridor	OK

3.3.2.2 Results

Paragraph of the regulation ECE 17.09 marked in *italics*

5.2.5 There was no failure of the seat frame or seat anchorage, adjustment and displacement systems or their locking devices during the test

5.2.6 There was no release of the locking systems during the tests

Note: Luggage displacement test was not provided due to no possibility of struck of seat bench with luggage – behind the seat bench is partition wall or cabinet mounted.

General note:

5.3.1. Bench seats are firmly anchored to the vehicle floor.

5.3.2. Bench seats are automatically lockable in all the positions provided.

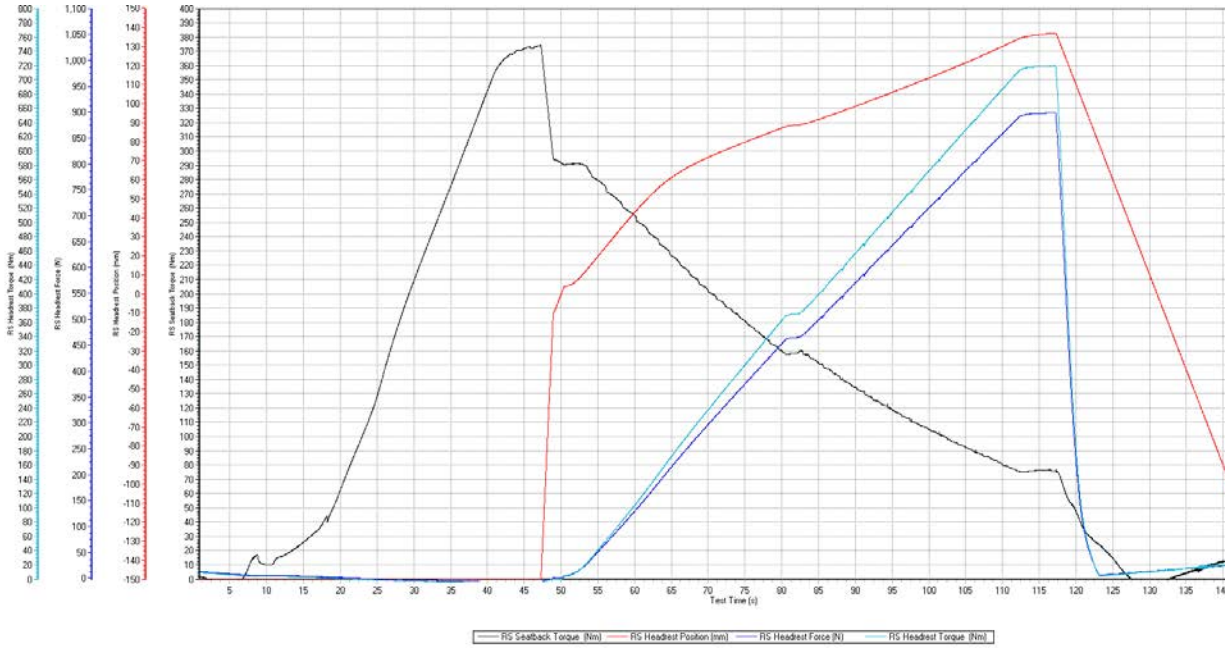
5.3.3. Adjustable seat-backs are lockable in all the positions provided (if applicable)

5.3.4. All Bench seats which can be tipped forward or have fold-on backs and folding seats are lock automatically in the position of use by occupants.

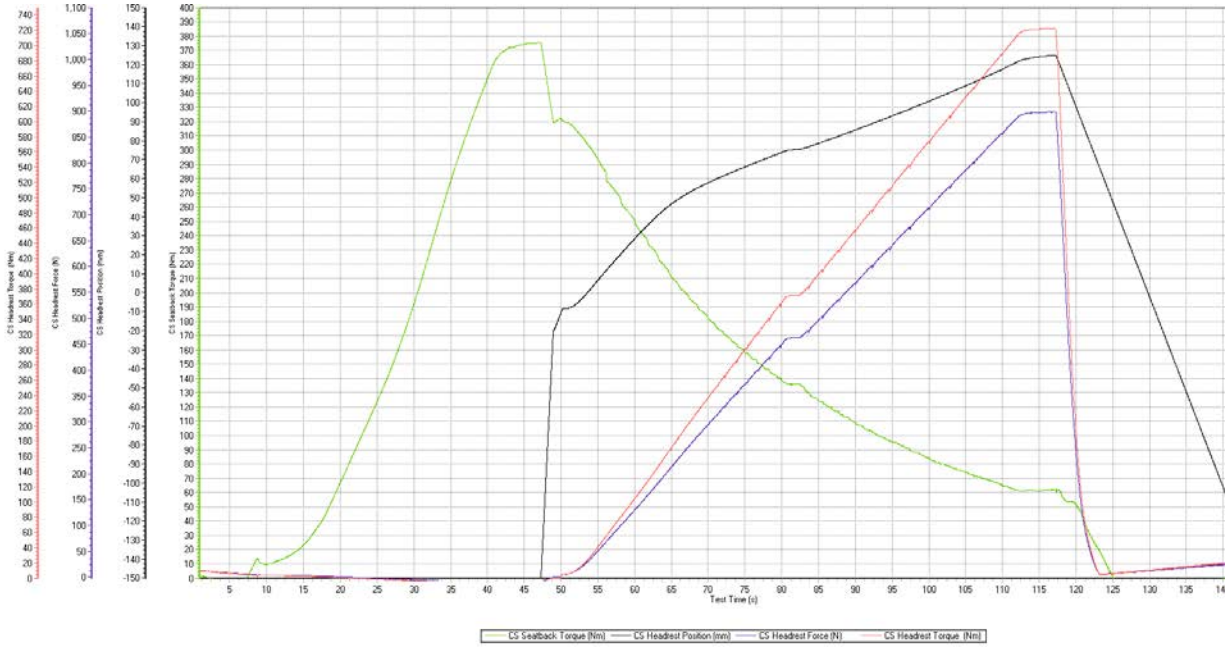
3.4 Test records – diagrams:

Head restraint performance

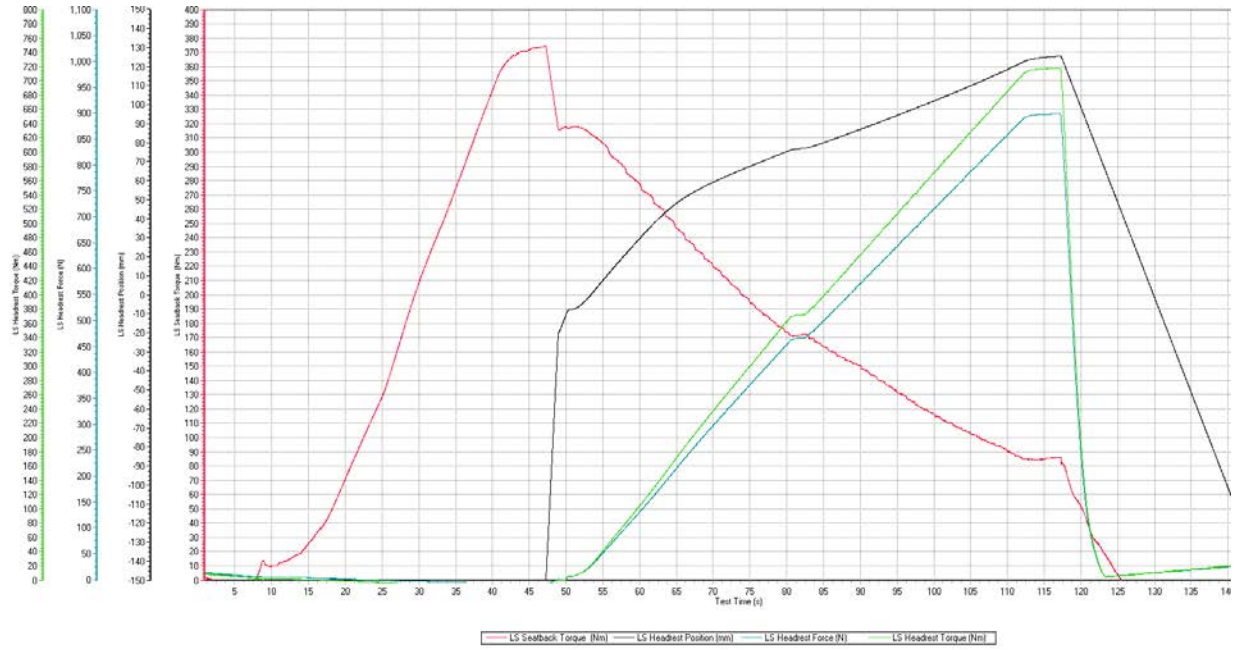
right seating position



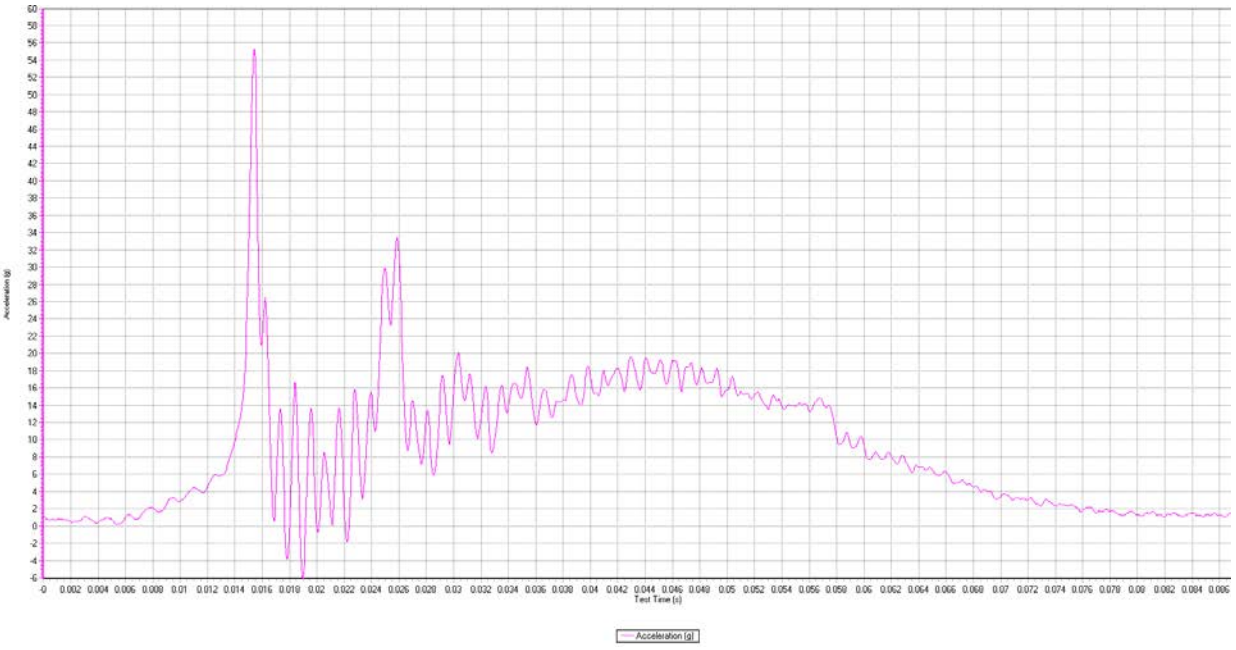
centre seating position



left seating position

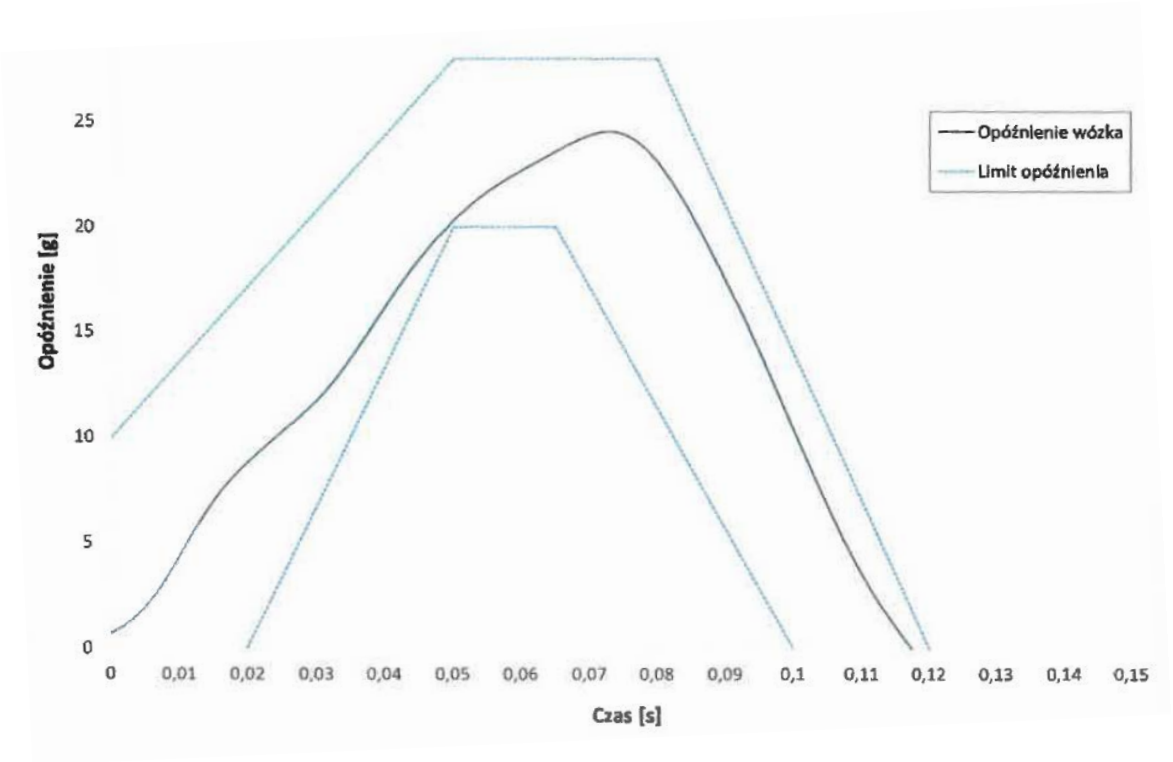


energy absorption – tested on representative (left) head restraint

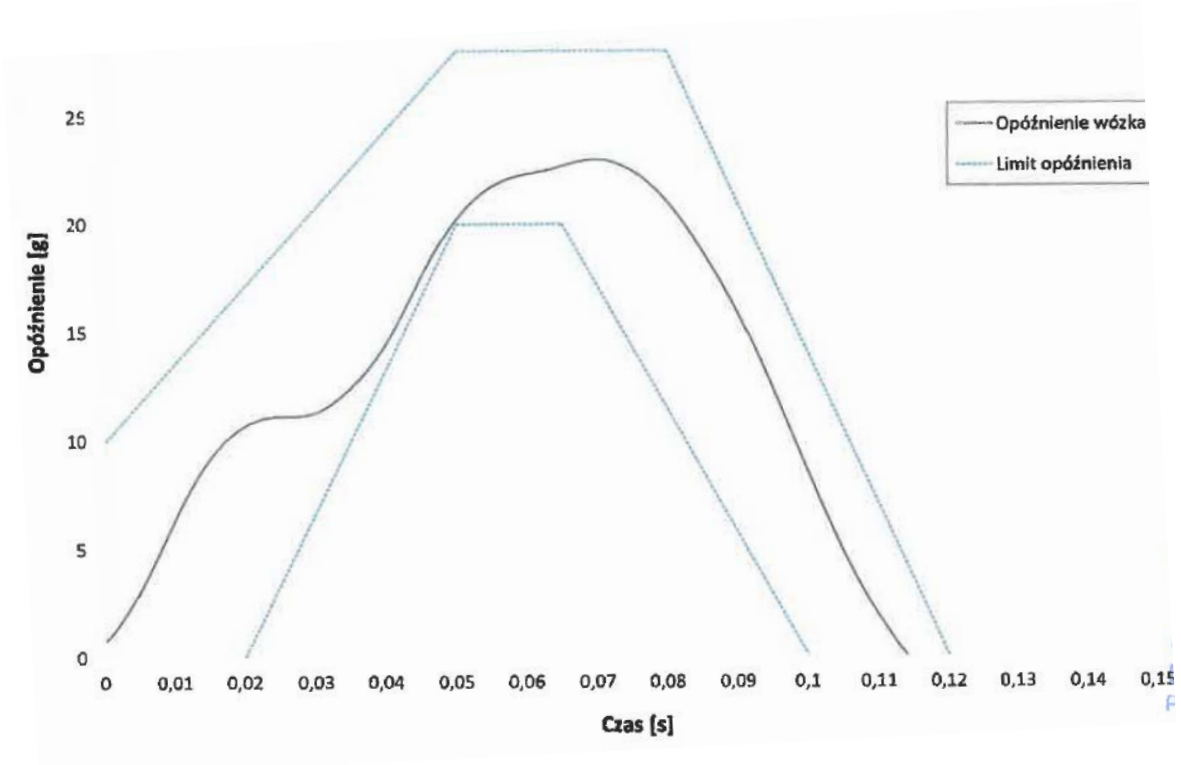


Dynamic tests

frontal impact



rearward impact



3.5. Test records – photos:

Seat bench SAF12_SD_L_150:

4. Place and date of testing

TÜV SÜD Czech, Bezděčín, Czech Republic
PIMOT Laboratory, Warsaw, Poland
04. to 05.10.2021
27.09.2021

INFORMATION FOLDER / DOCUMENT:
MOBIFRAME/03/2021-00

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

No. 16-08
"UNIFORM PROVISIONS CONCERNING THE APPROVAL OF:
SAFETY-BELTS, RESTRAINT SYSTEMS, CHILD RESTRAINT SYSTEMS AND ISOFIX CHILD RESTRAINT SYSTEMS FOR OCCUPANTS OF POWER-DRIVEN VEHICLES EQUIPPED WITH SAFETY-BELTS, SAFETY-BELT REMINDER, RESTRAINT SYSTEMS, CHILD RESTRAINT SYSTEMS AND ISOFIX CHILD RESTRAINT SYSTEMS"
(as last amended)

No. 17-09
"UNIFORM PROVISIONS CONCERNING THE APPROVAL OF VEHICLES WITH REGARD TO THE SEATS, THEIR ANCHORAGES AND ANY HEAD RESTRAINTS"
(as last amended)

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 *SAF11, SAF12*

……...
Damian Goliński
Vice President

Total number of pages: *124*
Date of issue: *04.10.2021*

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

MOBIFRAME

List of documentation and supplements

Confirmation 3

0. General 4

1. General construction characteristics of the vehicle 5

9. Bodywork 5

List of enclosures

Table of vehicles types	Enclosure 1
Drawings of seats, head restraints, displacement and locking systems and seat belt anchorages	Enclosure 2
Seat anchorages and floor details	Enclosure 3

Technischer Dienst Technical Service TÜV SÜD Auto Service GmbH 152

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: *4th October 2021*

.....

Damian Goliński

Vice President

Technischer Dienst Technical Service TÜV SÜD Auto Service GmbH 152

0.	GENERAL	
0.1	Make (trade name of manufacturer):	MOBIFRAME
0.2	Type:	SAF11, SAF12
		Variant/Version:
		SAF11_???_?_??? – 2-seating positions SAF12_???_?_??? – 3-seating positions
		SAF??_STD_?_??? – standard version of seat cushion SAF??_SLM_?_??? – slim version of seat cushion
		SAF??_???_L_??? – fixation to the floor via quick release system SAF??_???_B_??? – fixation to the floor via bolts
		SAF??_???_?_086 – bench width 86 cm SAF??_???_?_112 – bench width 112 cm SAF??_???_?_120 – bench width 120 cm SAF??_???_?_126 – bench width 126 cm SAF??_???_?_129 – bench width 129 cm SAF??_???_?_150 – bench width 150 cm
0.2.1	Commercial name(s) (if available):	SAF11, SAF12
0.2.2	Dedicated for vehicle(s):	See Enclosure 1
0.4	Category of vehicle:	M1, N1, M2, N2
0.5	Name and address of manufacturer:	OKB SP. Z O.O. Szkolna 9, Bukowiec 95-006 Brójce Poland

1.	GENERAL CONSTRUCTION CHARACTERISTICS OF THE VEHICLE	
1.1	Photographs and/or drawings of a representative vehicle:	See base vehicle type approvals of vehicles in 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, BX, CA, SA, SH
9.10	Interior arrangement	
9.10.3	Seats	
9.10.3.1	Number of seating positions:	No restrictions (depending only on the vehicle category and vehicle size)
9.10.3.1.1	Location and arrangement:	Anywhere on the floor
9.10.3.2	Seat(s) designated for use only when the vehicle is stationary:	N/A
9.10.3.3	Mass:	SAF11 – 115 kg – mass of the heaviest configuration SAF12 – 135 kg – mass of the heaviest configuration
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 Enclosures
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 Enclosures
9.10.3.4.5	The parts of the vehicle used as anchorages:	See Enclosures
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 Enclosures
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	

Technischer Dienst Technical Service TÜV SÜD Auto Service GmbH 152

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:	detachable
9.10.4.2.	Type-approval number(s), if available:	N/A
9.10.4.3.	For head restraints not yet approved	See Enclosures
9.12.	Safety belts and/or other restraint systems	
9.12.1.	Number and position of safety belts and restraint systems and seats on which they can be used: (L = left, R = right, C = centre)	

		Complete EC type-approval mark	Variant (if applicable)	Belt adjustment device for height
First row	L	N/A	N/A	N/A
	C[1]	N/A	N/A	N/A
	R[1]	N/A	N/A	N/A
Other rows	L*	E20 16R-04 0886	E20 16R-04 0885 E20 16R-04 0889	N/A
	C*			
	R*			

[1]-If present

*- seats alternatively mounted symmetrically about the longitudinal symmetry line

9.12.2.	Nature and position of supplementary restraint system:	ISOFIX anchorages mounted in 2 seating positions (concerns ECE Regulation No. 145)
9.12.3.	Nature and position of safety belt anchorages and proof of compliance with ECE R 14 or Directive 76/115/EEC:	See paragraphs in this document
9.12.4.	Brief description of the electrical/ electronic components (if any):	No seatbelt reminder or other electronic components. Seatbelt reminders not required in motor-caravans and wheelchair accessible vehicles and for rear removable seats in all vehicle types.

Technischer Dienst Technical Service TÜV SÜD Auto Service GmbH 152

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):	Seatbelt anchorages and ISOFIX anchorages systems and ISOFIX top tether anchorages – 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			No changes in 2nd stage of production	No changes in 2nd stage of production
Second row of seats			Anchorage location	
			Vehicle structure	Seat structure
Left-hand seat	Lower anchorages	outboard	--	*Ar*
		inboard	--	*Ar*
	Upper anchorages		--	*Ar*
Central seat	Lower anchorages	outboard	--	*Ar*
		inboard	--	*Ar*
	Upper anchorages		--	*Ar*
Right-hand seat	Lower anchorages	outboard	--	*Ar*
		inboard	--	*Ar*
	Upper anchorages		--	*Ar*

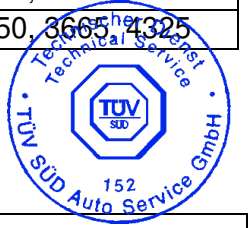
9.13.4	Description of a particular type of safety belt where an anchorage is located in the seat backrest or incorporates an energy dissipating device:	Ar4m
9.13.5	Drawings and/or photographs of the ISOFIX anchorages systems, of the top tether anchorages if any, and of the vehicle structure	
9.13.5.1	Number:	
9.13.5.1.1	Of the low ISOFIX anchorages	See Enclosures
9.13.5.1.2	Of the ISOFIX top tether anchorages	See Enclosures

Technischer Dienst Technical Service TÜV SÜD Auto Service GmbH 152

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 Enclosures
9.13.5.4	Drawing and/or photographs of the ISOFIX anchorages systems, of the ISOFIX top tether anchorages	See Enclosures
9.13.5.5	Drawing and/or photographs of the position and the form of the symbols of the ISOFIX anchorages system, if necessary	Label with the word „ISOFIX“ complies with requirements of ECE R14 - near ISOFIX system – see Enclosure 2

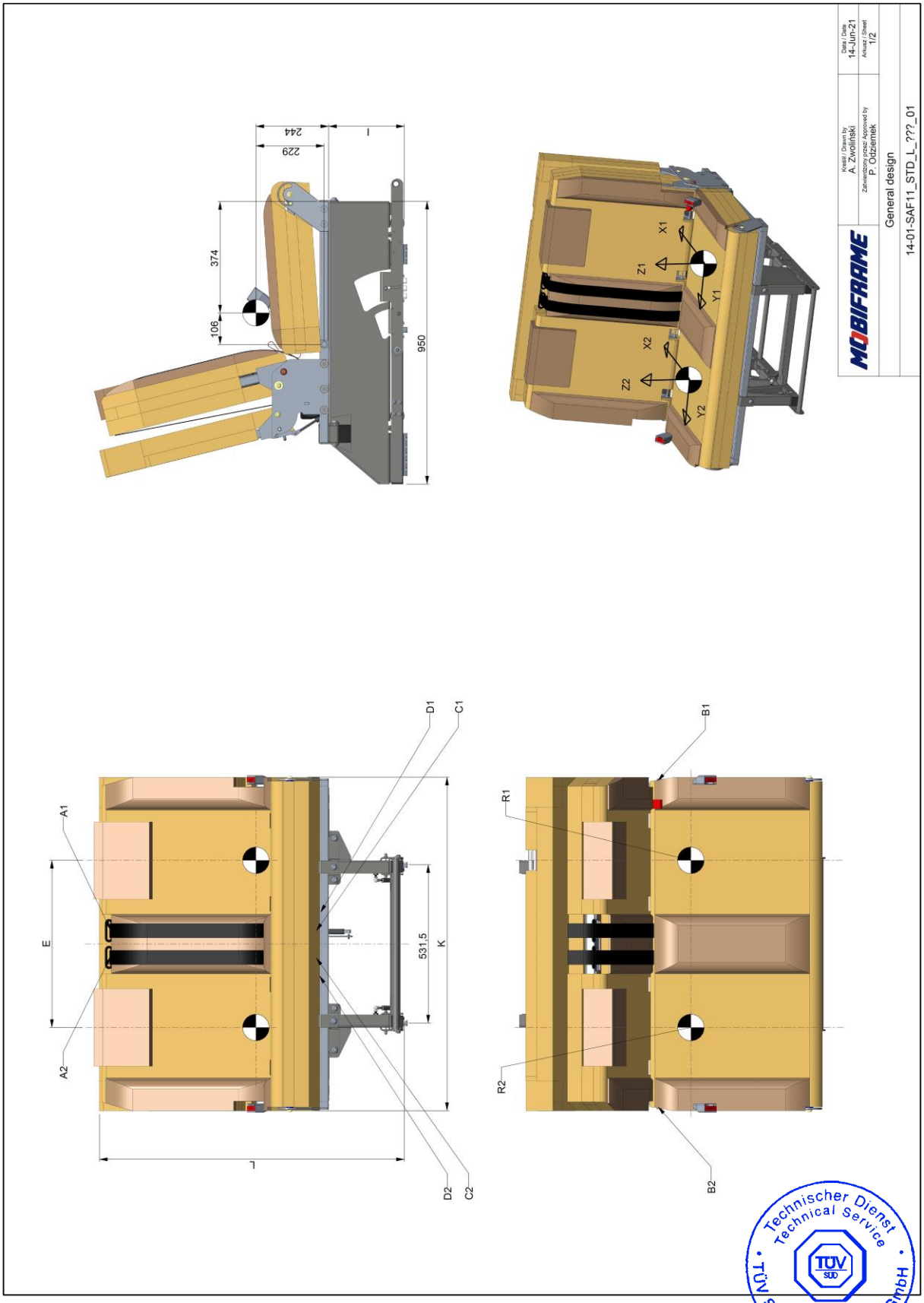
Enclosure 1: TABLE OF VEHICLES TYPES

Manufacturer	Commercial description / Type	Wheelbase
Daimler / Mercedes-Benz	Sprinter (906, 907)	3250, 3665, 4325
	Sprinter (910)	3259, 3924
	Vito/Viano/V-klasse (639, 639/2, 639/4)	3200, 3430
VW	Crafter (2E__)	3250, 3665, 4325
	Crafter (SYN__ e.g. SYN1E, SYN2E, SYN2Z)	3640, 4490
	T5 (7H_, 7E_, 7J_)	3000, 3400
	T6, T6.1 (7H_, 7E_, 7J_)	3000, 3400
Citroen	Jumper (Y)	3000, 3450, 4035
	Jumpy (X)	3000, 3122
	Jumpy (2016)	2925, 3275
	SpaceTourer	2925, 3275
Peugeot	Boxer (Y)	3000, 3450, 4035
	Expert (VF3__)	3000, 3122
	Expert (2016)	2925, 3275
	Traveller	2925, 3275
Fiat	Ducato (250)	3000, 3450, 4035
	Scudo (270)	3000, 3122
	Talento (FJL, FFL)	3098, 3498
Opel	Movano (MR, MS, MW)	3182, 3682, 4332
	Vivaro (F7)	3098, 3498
	Vivaro	2925, 3275
Renault	Master (FV, MA)	3182, 3682, 4332
	Trafic (FL, L)	3098, 3498
	Trafic 2014 (JL, L)	3098, 3498
Renault Truck	Master (MF)	3182, 3682, 4332
Ford	Transit (FA_, FD_)	2933, 3300, 3750
	Transit (FC_)	3300, 3750, 3954
	Transit Custom (FA_, FC_)	2933, 3300
	Transit Connect (PU2)	2662, 3062
Iveco	Daily (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 (2016)	2925, 3275
MAN	TGE (SYN__ e.g. SYN1E, SYN2E, SYN2Z)	3640, 4490
LDV	V80, Maxus (SV6C)	3100, 3850
	V90, Deliver 9, E Deliver 9	3000, 3366, 3760
Hyundai	H350 (EU(V))	3435, 3670
RAM	ProMaster	3000, 3450, 4035
Freightliner/Dodge	Sprinter	3250, 3665, 4325



Enclosure 2: DRAWINGS OF SEATS, HEAD RESTRAINTS, DISPLACEMENT AND LOCKING SYSTEMS AND SEAT BELT ANCHORAGES

SAF11 – Standard



SAF11_STD_B_112			
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	324 mm	Ax2	324 mm
Ay1	236 mm	Ay2	-236 mm
Az1	488 mm	Az2	488 mm
Buckle 1		Buckle 2	
Bx1	106 mm	Bx2	106 mm
By1	-259 mm	By2	259 mm
Bz1	-229 mm	Bz2	-229 mm
α1	65 deg	α2	65 deg
End bracket 1		End bracket 2	
Cx1	229 mm	Cx2	229 mm
Cy1	236 mm	Cy2	-236 mm
Cz1	-205 mm	Cz2	-205 mm
α1	42 deg	α2	42 deg
Retractor 1		Retractor 2	
Dx1	282 mm	Dx2	282 mm
Dy1	181 mm	Dy2	-172 mm
Dz1	-219 mm	Dz2	-219 mm

	SAF11_STD_B_112	SAF11_STD_B_86
E	562	460
I	254	
K	1120	860
L	1023	

SAF11_STD_L_86			
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	324 mm	Ax2	324 mm
Ay1	185 mm	Ay2	-185 mm
Az1	488 mm	Az2	488 mm
Buckle 1		Buckle 2	
Bx1	106 mm	Bx2	106 mm
By1	-180 mm	By2	180 mm
Bz1	-229 mm	Bz2	-229 mm
α1	65 deg	α2	65 deg
End bracket 1		End bracket 2	
Cx1	229 mm	Cx2	229 mm
Cy1	185 mm	Cy2	-185 mm
Cz1	-205 mm	Cz2	-205 mm
α1	42 deg	α2	42 deg
Retractor 1		Retractor 2	
Dx1	282 mm	Dx2	282 mm
Dy1	130 mm	Dy2	-130 mm
Dz1	-219 mm	Dz2	-219 mm

TÜV SÜD Technischer Dienst Technical Service Auto Service GmbH 152

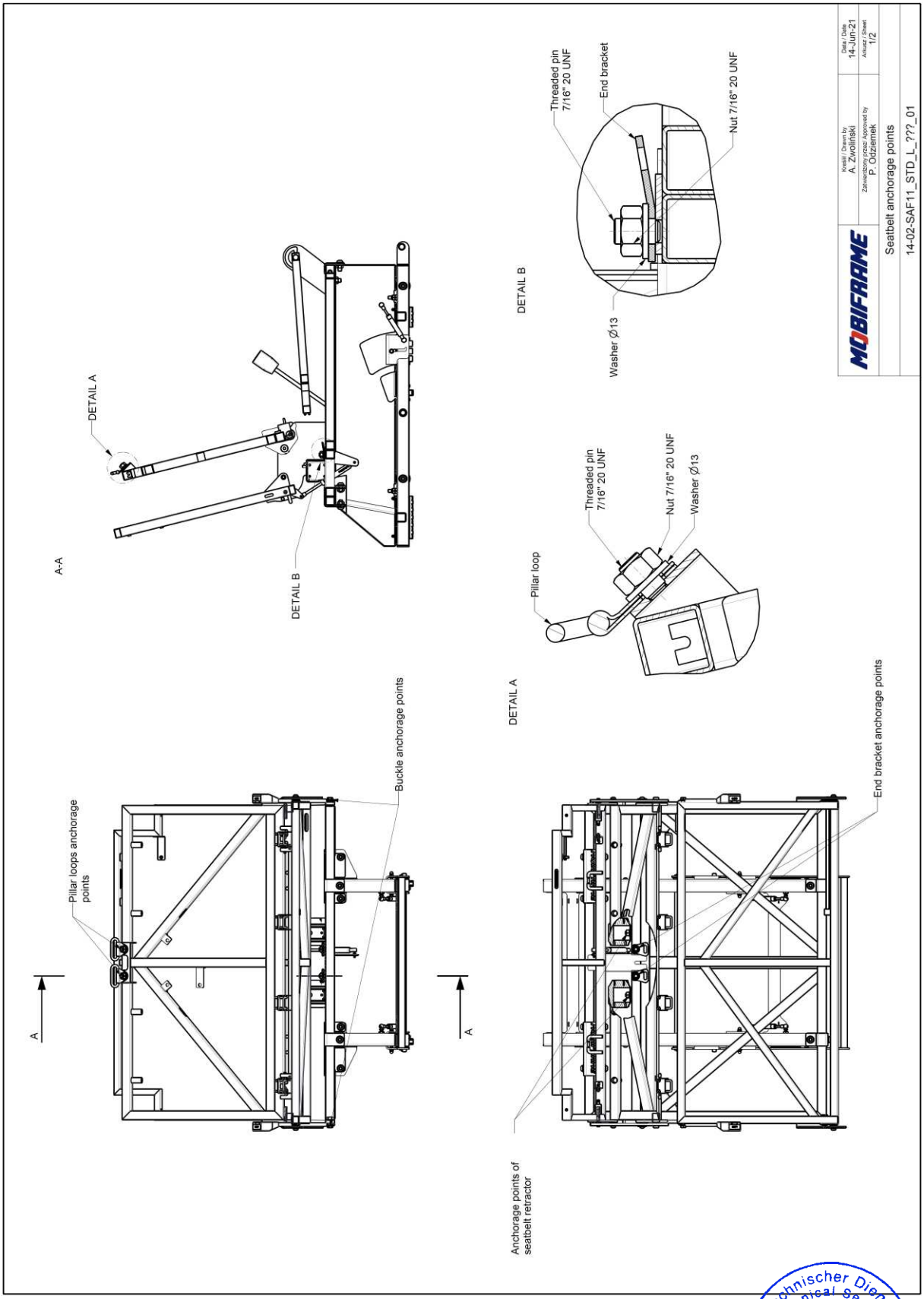
MOBIFRAME	Kreślił / Drawn by: A. Zwoliński	Data / Date: 14-Jun-21	
	Zatwierdzony przez/ Approved by: P. Odziemek	Arkusz / Sheet: 2/2	
General design			
14-01-SAF11_STD_L_???_01			

MOBIFRAME

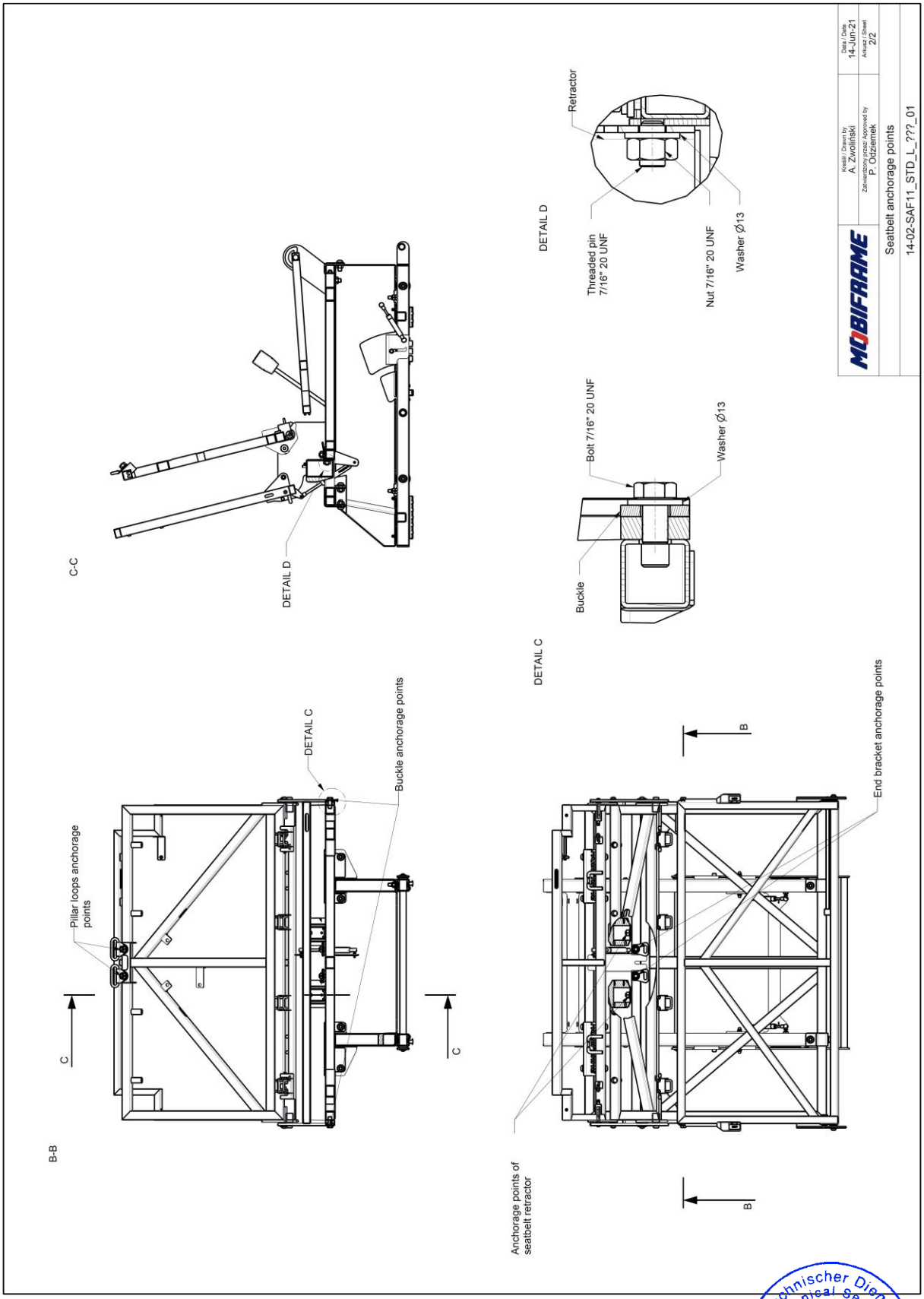
MOBIFRAME/03/2021-00

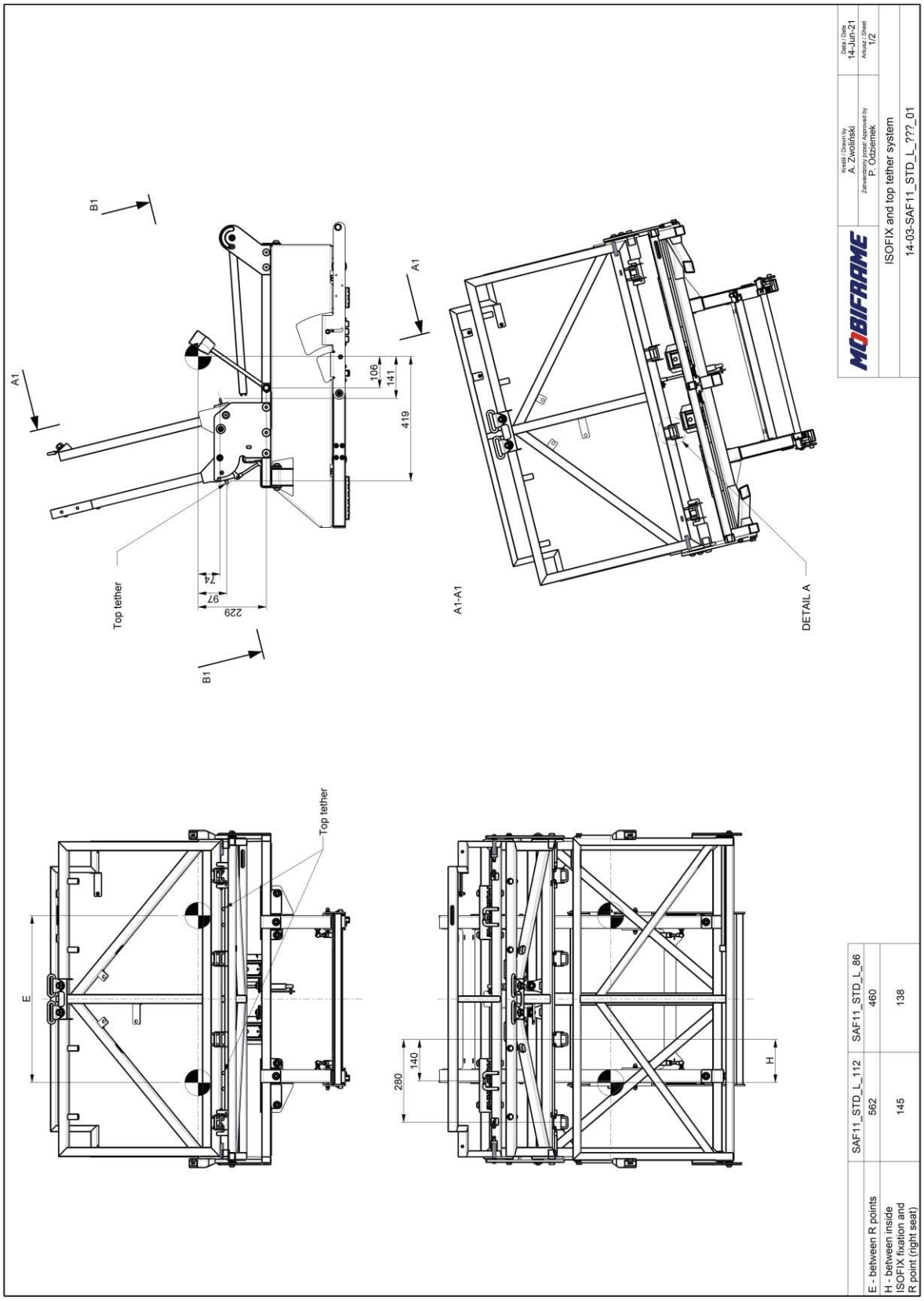
Date: 04.10.2021

Page / pages: 11/124

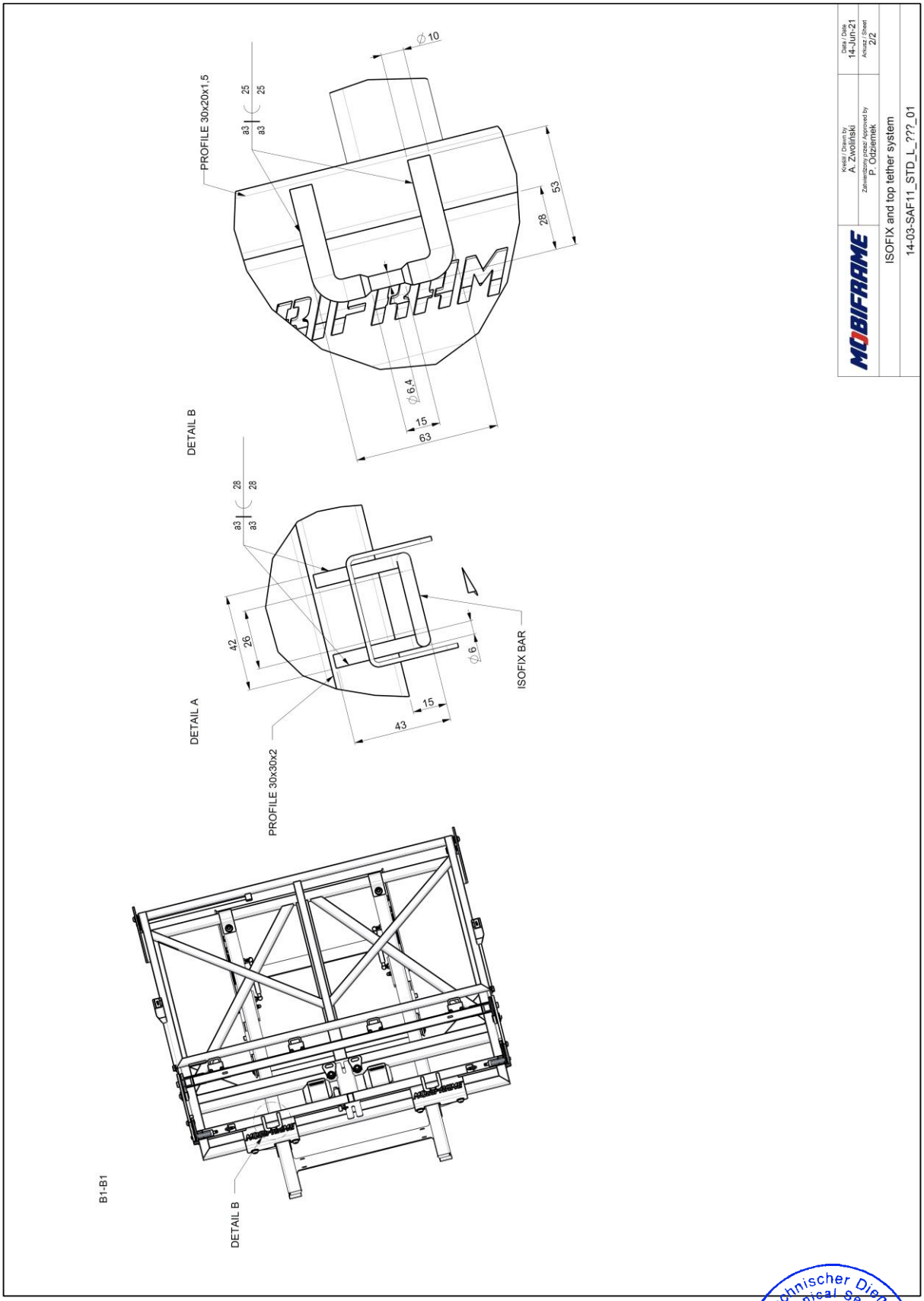


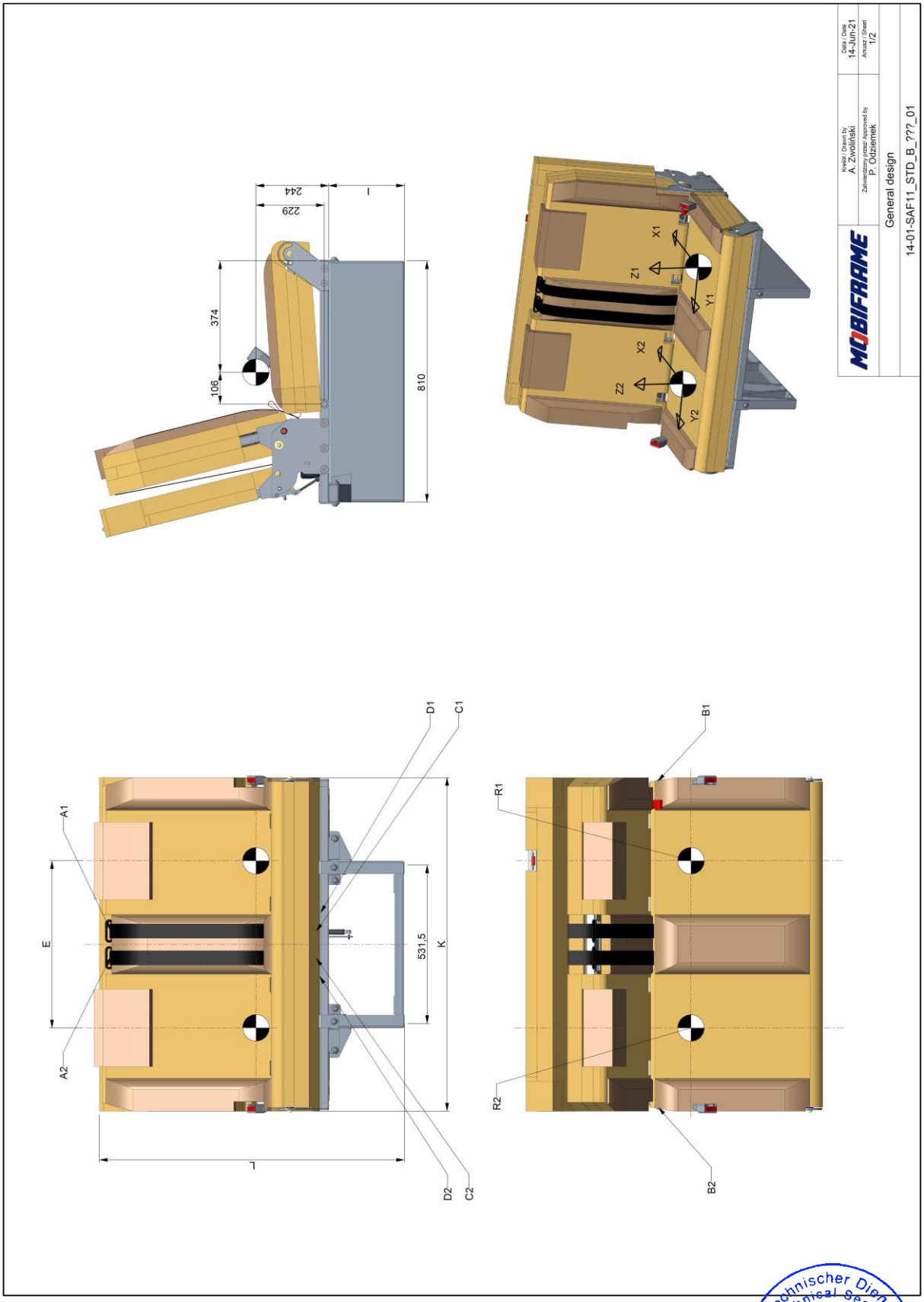
Technischer Dienst Technical Service TÜV SÜD 152 TÜV SÜD Auto Service GmbH





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





SAF11_STD_B_112			
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	324 mm	Ax2	324 mm
Ay1	236 mm	Ay2	-236 mm
Az1	488 mm	Az2	488 mm
Buckle 1		Buckle 2	
Bx1	106 mm	Bx2	106 mm
By1	-259 mm	By2	259 mm
Bz1	-229 mm	Bz2	-229 mm
α1	65 deg	α2	65 deg
End bracket 1		End bracket 2	
Cx1	229 mm	Cx2	229 mm
Cy1	236 mm	Cy2	-236 mm
Cz1	-205 mm	Cz2	-205 mm
α1	42 deg	α2	42 deg
Retractor 1		Retractor 2	
Dx1	282 mm	Dx2	282 mm
Dy1	181 mm	Dy2	-172 mm
Dz1	-219 mm	Dz2	-219 mm

	SAF11_STD_B_112	SAF11_STD_B_86
E	562	460
I	254	
K	1120	860
L	1023	

SAF11_STD_B_86			
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	324 mm	Ax2	324 mm
Ay1	185 mm	Ay2	-185 mm
Az1	488 mm	Az2	488 mm
Buckle 1		Buckle 2	
Bx1	106 mm	Bx2	106 mm
By1	-180 mm	By2	180 mm
Bz1	-229 mm	Bz2	-229 mm
α1	65 deg	α2	65 deg
End bracket 1		End bracket 2	
Cx1	229 mm	Cx2	229 mm
Cy1	185 mm	Cy2	-185 mm
Cz1	-205 mm	Cz2	-205 mm
α1	42 deg	α2	42 deg
Retractor 1		Retractor 2	
Dx1	282 mm	Dx2	282 mm
Dy1	130 mm	Dy2	-130 mm
Dz1	-219 mm	Dz2	-219 mm

TÜV SÜD Technischer Dienst Technical Service Auto Service GmbH 152

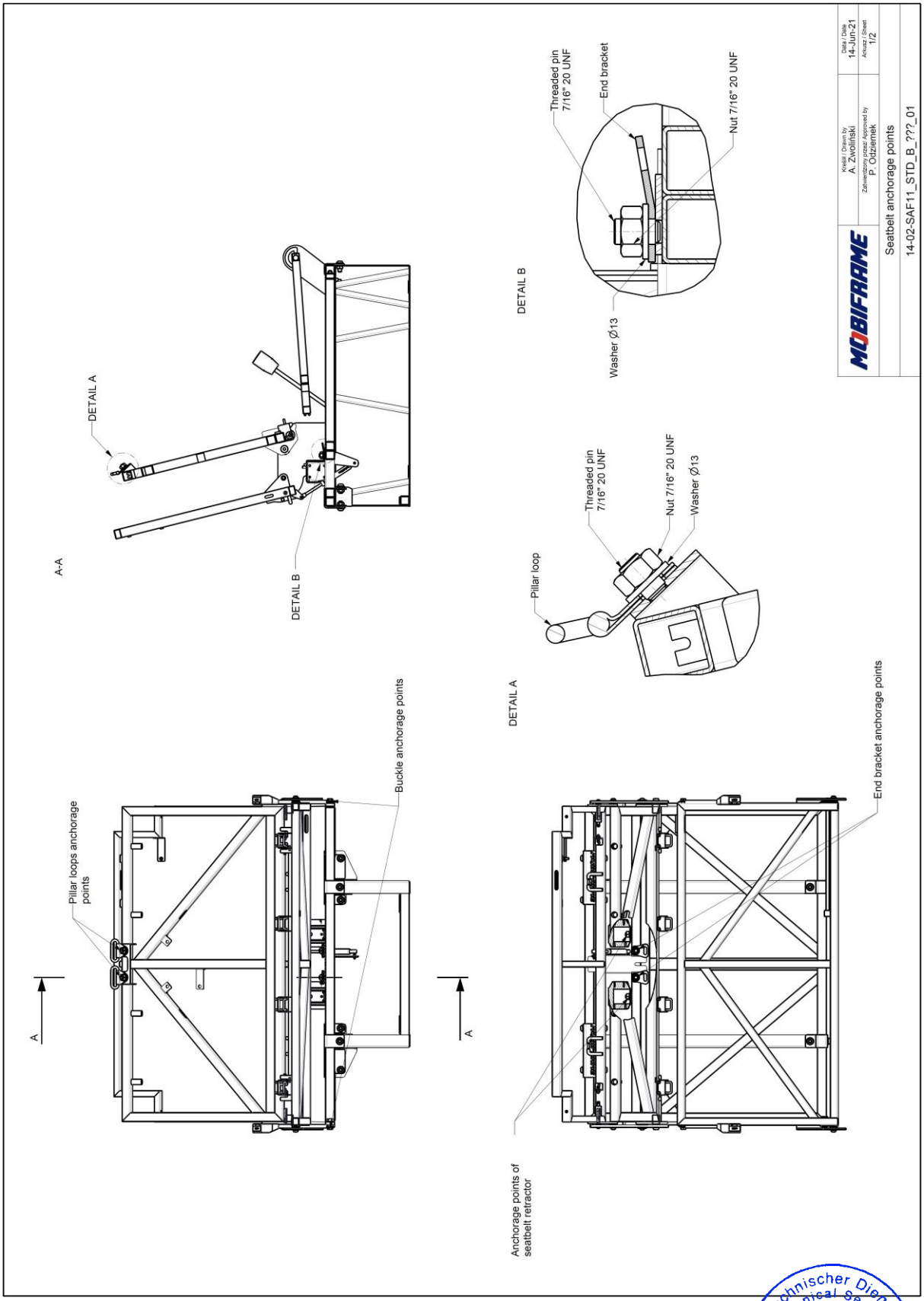
MOBIFRAME	Kreślił / Drawn by: A. Zwoliński	Data / Date: 14-Jun-21	
	Zatwierdzony przez/ Approved by: P. Odziemek	Arkusz / Sheet: 2/2	
General design			
14-01-SAF11_STD_B_???_01			

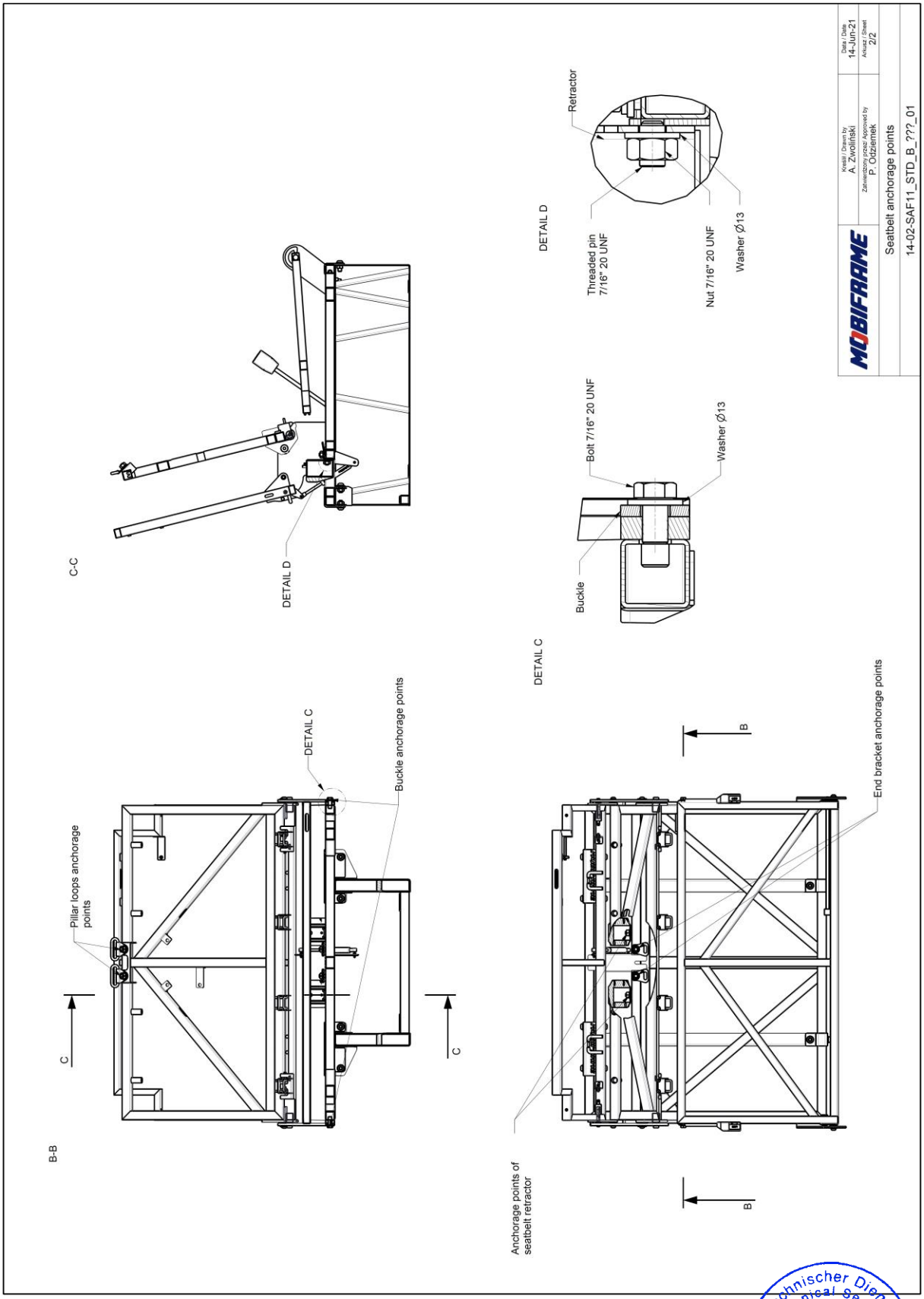
MOBIFRAME

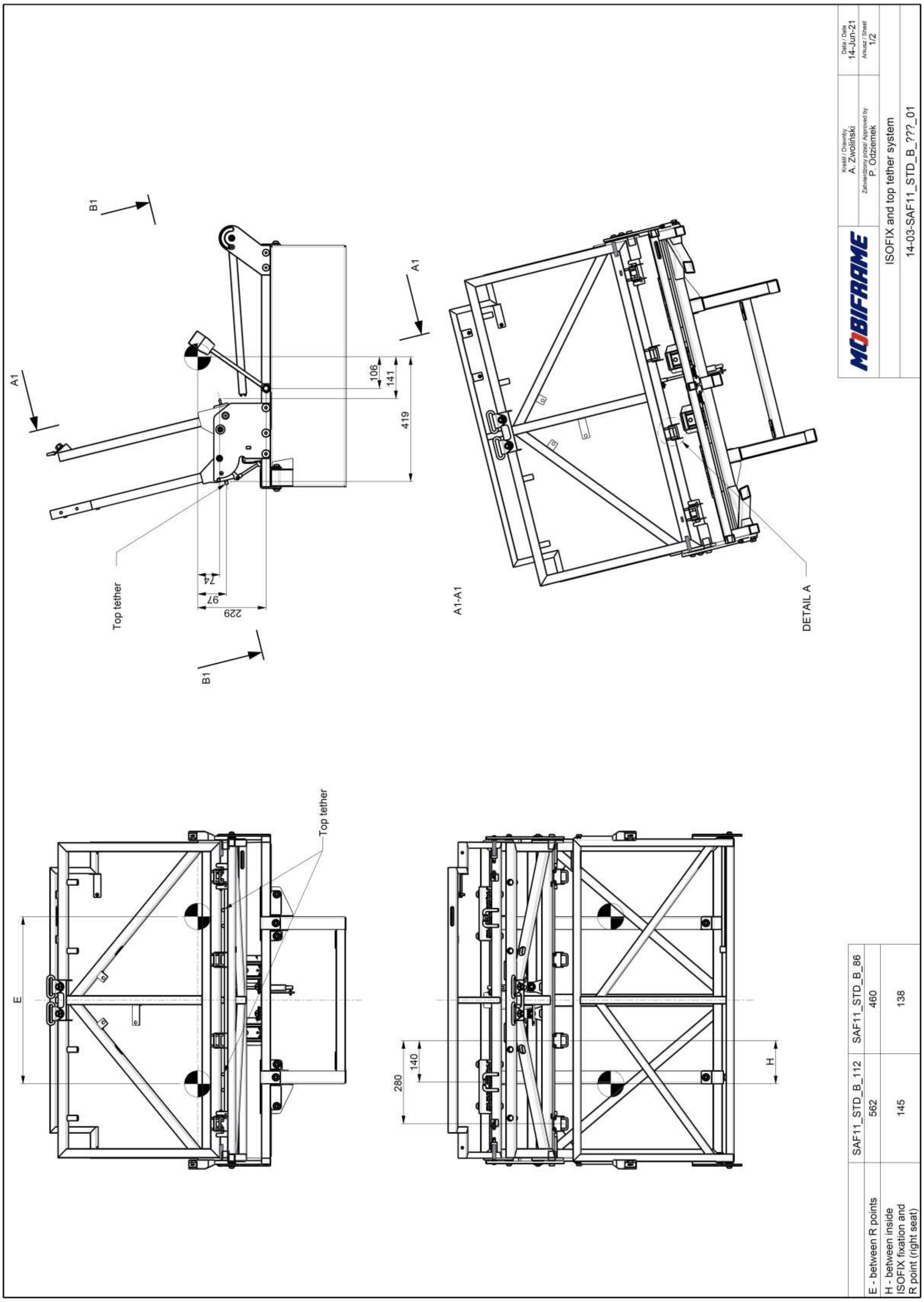
MOBIFRAME/03/2021-00

Date: 04.10.2021

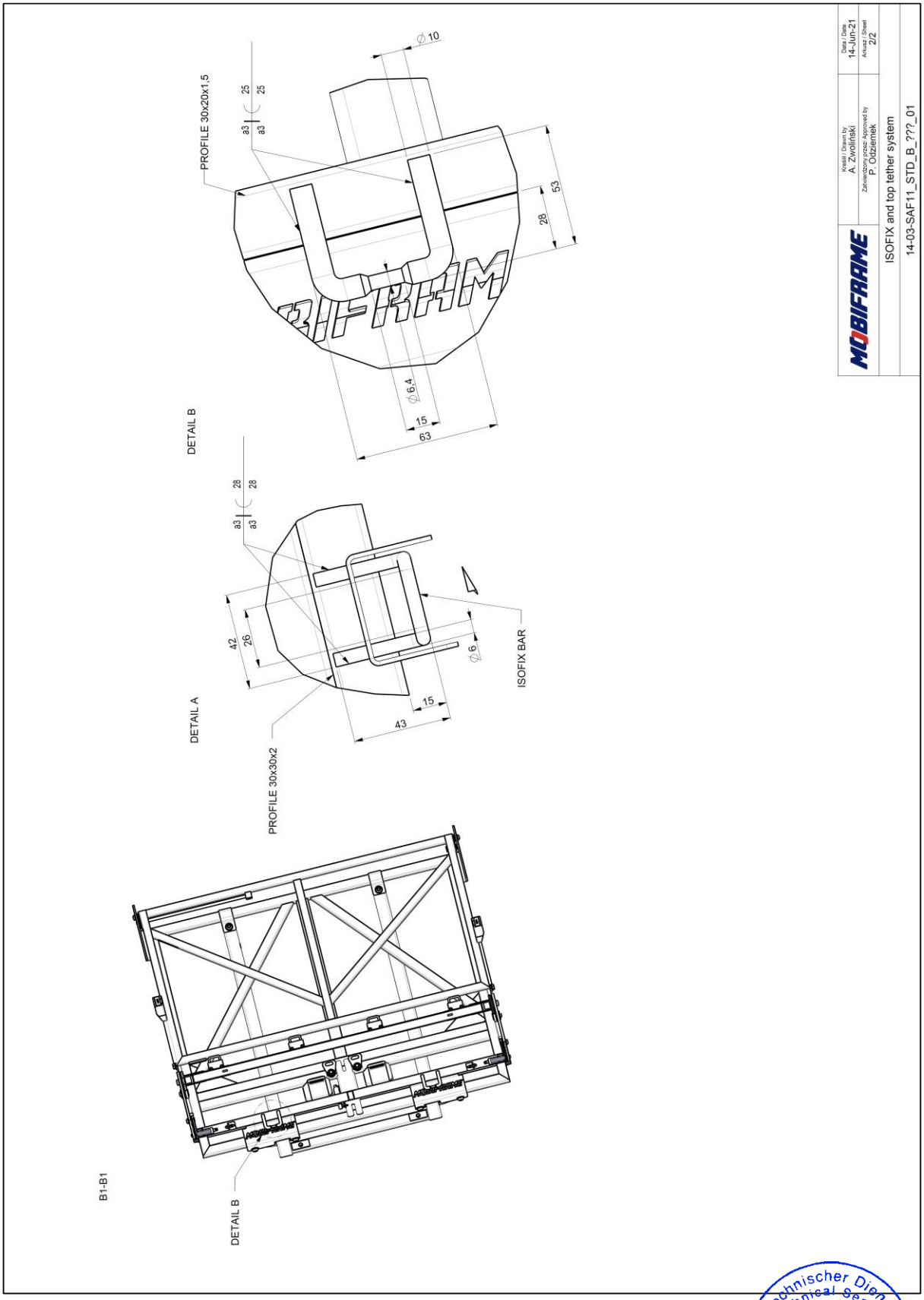
Page / pages: 17/124



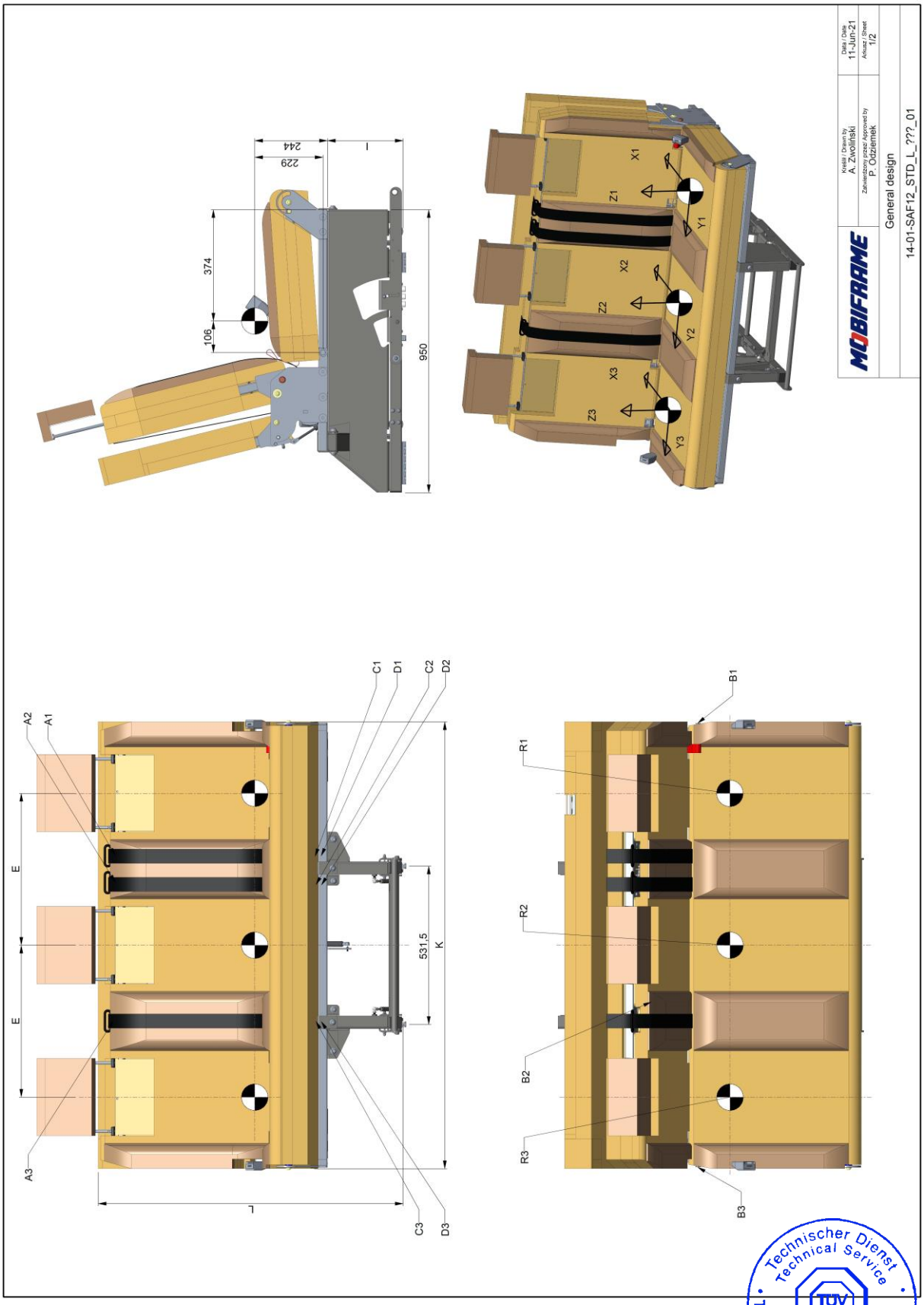




Technischer Dienst Technical Service TÜV SÜD Auto Service GmbH 152



SAF12 – Standard



SAF12_STD_L_150					
LEFT SEAT		CENTER SEAT		RIGHT SEAT	
R Point 1		R Point 2		R Point 3	
Rx1	0 mm	Rx2	0mm	Rx3	0 mm
Ry1	0 mm	Ry2	0mm	Ry3	0 mm
Rz1	0 mm	Rz2	0mm	Rz3	0 mm
Pillar loop 1		Pillar loop 2		Pillar loop 3	
Ax1	324 mm	Ax2	324 mm	Ax3	324 mm
Ay1	210 mm	Ay2	-210 mm	Ay3	-255 mm
Az1	488 mm	Az2	488 mm	Az3	488 mm
Buckle 1		Buckle 2		Buckle 3	
Bx1	106 mm	Bx2	265 mm	Bx3	106 mm
By1	-220 mm	By2	195 mm	By3	220 mm
Bz1	-229 mm	Bz2	-211 mm	Bz3	-229 mm
α1	65 deg	α2	38 deg	α3	65 deg
End bracket 1		End bracket 2		End bracket 3	
Cx1	229 mm	Cx2	229 mm	Cx3	229 mm
Cy1	212 mm	Cy2	-204 mm	Cy3	-255 mm
Cz1	-205 mm	Cz2	-205 mm	Cz3	-205 mm
α1	42 deg	α2	42 deg	α3	42 deg
Retractor 1		Retractor 2		Retractor 3	
Dx1	282 mm	Dx2	282 mm	Dx3	282 mm
Dy1	212 mm	Dy2	-204 mm	Dy3	-255 mm
Dz1	-219 mm	Dz2	-219 mm	Dz3	-219 mm

SAF12_STD_L_129					
LEFT SEAT		CENTER SEAT		RIGHT SEAT	
R Point 1		R Point 2		R Point 3	
Rx1	0 mm	Rx2	0mm	Rx3	0 mm
Ry1	0 mm	Ry2	0mm	Ry3	0 mm
Rz1	0 mm	Rz2	0mm	Rz3	0 mm
Pillar loop 1		Pillar loop 2		Pillar loop 3	
Ax1	324 mm	Ax2	324 mm	Ax3	324 mm
Ay1	177 mm	Ay2	-179 mm	Ay3	-223 mm
Az1	488 mm	Az2	488 mm	Az3	488 mm
Buckle 1		Buckle 2		Buckle 3	
Bx1	106 mm	Bx2	265 mm	Bx3	106 mm
By1	-180 mm	By2	163 mm	By3	180 mm
Bz1	-229 mm	Bz2	-211 mm	Bz3	-229 mm
α1	65 deg	α2	38 deg	α3	65 deg
End bracket 1		End bracket 2		End bracket 3	
Cx1	229 mm	Cx2	229 mm	Cx3	229 mm
Cy1	174 mm	Cy2	-176 mm	Cy3	-222 mm
Cz1	-205 mm	Cz2	-205 mm	Cz3	-205 mm
α1	42 deg	α2	42 deg	α3	42 deg
Retractor 1		Retractor 2		Retractor 3	
Dx1	282 mm	Dx2	282 mm	Dx3	282 mm
Dy1	174 mm	Dy2	-176 mm	Dy3	-222 mm
Dz1	-219 mm	Dz2	-219 mm	Dz3	-219 mm

	SAF12_150_L	SAF12_129_L	SAF12_126_L	SAF12_120_L
E	510	445	440	397
I	254			
K	1500	1290	1260	1200
L	1023			

SAF12_STD_L_126					
LEFT SEAT		CENTER SEAT		RIGHT SEAT	
R Point 1		R Point 2		R Point 3	
Rx1	0 mm	Rx2	0mm	Rx3	0 mm
Ry1	0 mm	Ry2	0mm	Ry3	0 mm
Rz1	0 mm	Rz2	0mm	Rz3	0 mm
Pillar loop 1		Pillar loop 2		Pillar loop 3	
Ax1	324 mm	Ax2	324 mm	Ax3	324 mm
Ay1	175 mm	Ay2	-175 mm	Ay3	-224 mm
Az1	488 mm	Az2	488 mm	Az3	488 mm
Buckle 1		Buckle 2		Buckle 3	
Bx1	106 mm	Bx2	265 mm	Bx3	106 mm
By1	-170 mm	By2	162 mm	By3	170 mm
Bz1	-229 mm	Bz2	-211 mm	Bz3	-229 mm
α1	65 deg	α2	38 deg	α3	65 deg
End bracket 1		End bracket 2		End bracket 3	
Cx1	229 mm	Cx2	229 mm	Cx3	229 mm
Cy1	168 mm	Cy2	-176 mm	Cy3	-218 mm
Cz1	-205 mm	Cz2	-205 mm	Cz3	-205 mm
α1	42 deg	α2	42 deg	α3	42 deg
Retractor 1		Retractor 2		Retractor 3	
Dx1	282 mm	Dx2	282 mm	Dx3	282 mm
Dy1	168 mm	Dy2	-176 mm	Dy3	-218 mm
Dz1	-219 mm	Dz2	-219 mm	Dz3	-219 mm

SAF12_STD_L_120					
LEFT SEAT		CENTER SEAT		RIGHT SEAT	
R Point 1		R Point 2		R Point 3	
Rx1	0 mm	Rx2	0mm	Rx3	0 mm
Ry1	0 mm	Ry2	0mm	Ry3	0 mm
Rz1	0 mm	Rz2	0mm	Rz3	0 mm
Pillar loop 1		Pillar loop 2		Pillar loop 3	
Ax1	324 mm	Ax2	324 mm	Ax3	324 mm
Ay1	153 mm	Ay2	-154 mm	Ay3	-198 mm
Az1	488 mm	Az2	488 mm	Az3	488 mm
Buckle 1		Buckle 2		Buckle 3	
Bx1	106 mm	Bx2	265 mm	Bx3	106 mm
By1	-183 mm	By2	138 mm	By3	183 mm
Bz1	-229 mm	Bz2	-211 mm	Bz3	-229 mm
α1	65 deg	α2	38 deg	α3	65 deg
End bracket 1		End bracket 2		End bracket 3	
Cx1	229 mm	Cx2	229 mm	Cx3	229 mm
Cy1	150 mm	Cy2	-154 mm	Cy3	-199 mm
Cz1	-205 mm	Cz2	-205 mm	Cz3	-205 mm
α1	42 deg	α2	42 deg	α3	42 deg
Retractor 1		Retractor 2		Retractor 3	
Dx1	282 mm	Dx2	282 mm	Dx3	282 mm
Dy1	150 mm	Dy2	-154 mm	Dy3	-199mm
Dz1	-219 mm	Dz2	-219 mm	Dz3	-219 mm

MOBIFRAME

MOBIFRAME	Kreślił / Drawn by: A. Zwoliński	Data / Date: 11-Jun-21
	Zatwierdzony przez/ Approved by: P. Odziemek	Arkusz / Sheet: 2/2

General design

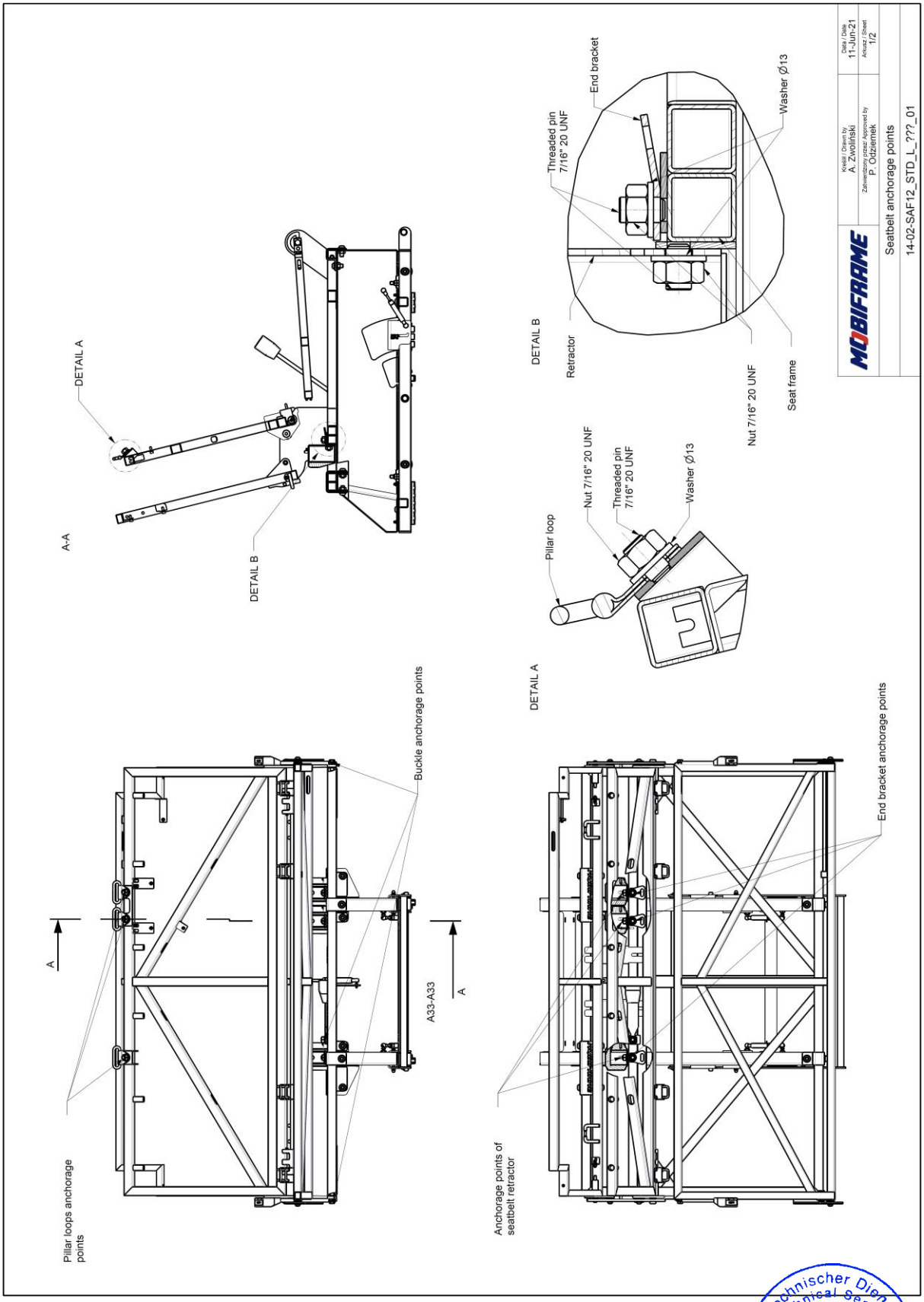
14-01-SAF12_STD_L_???_01

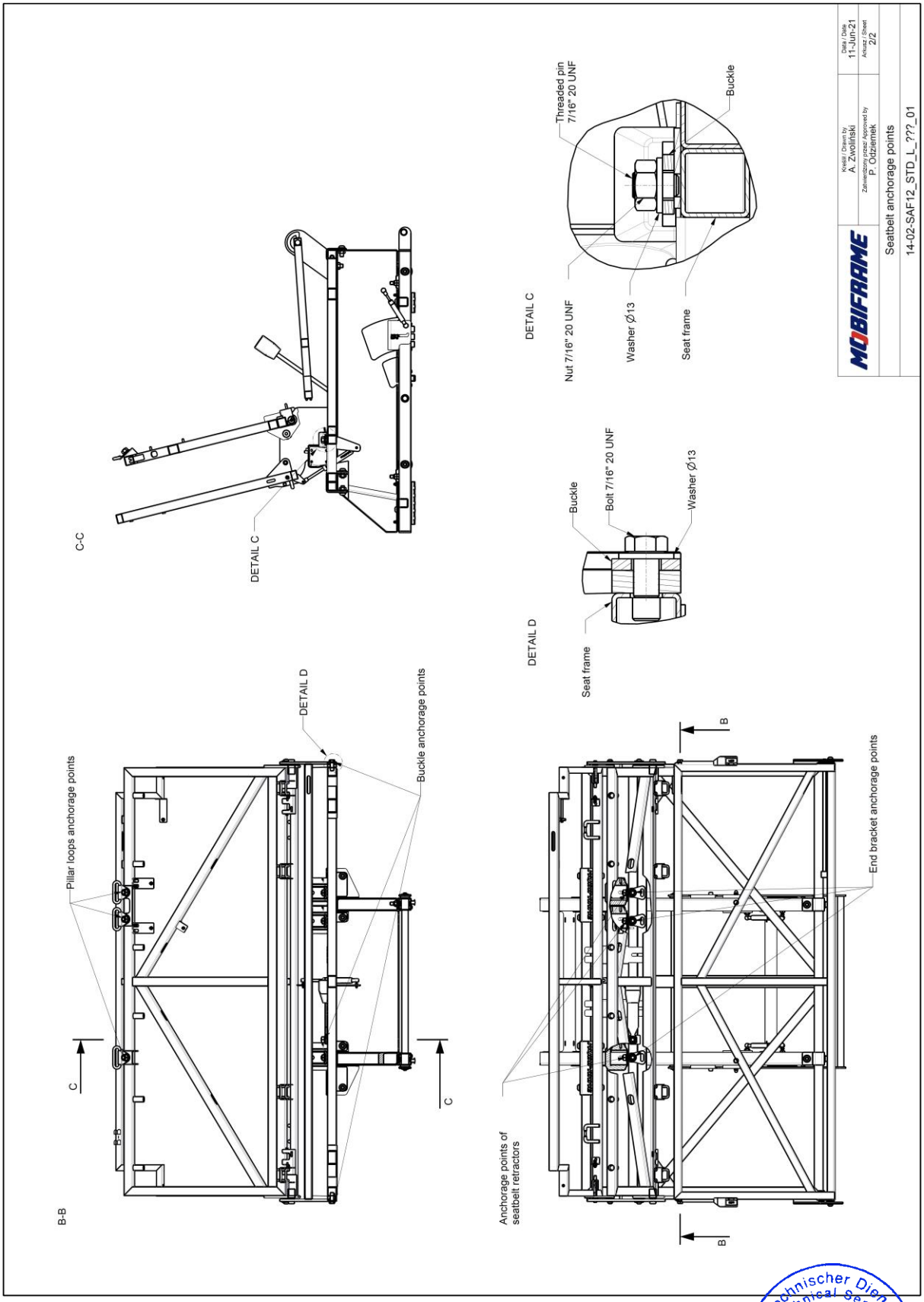
MOBIFRAME/03/2021-00

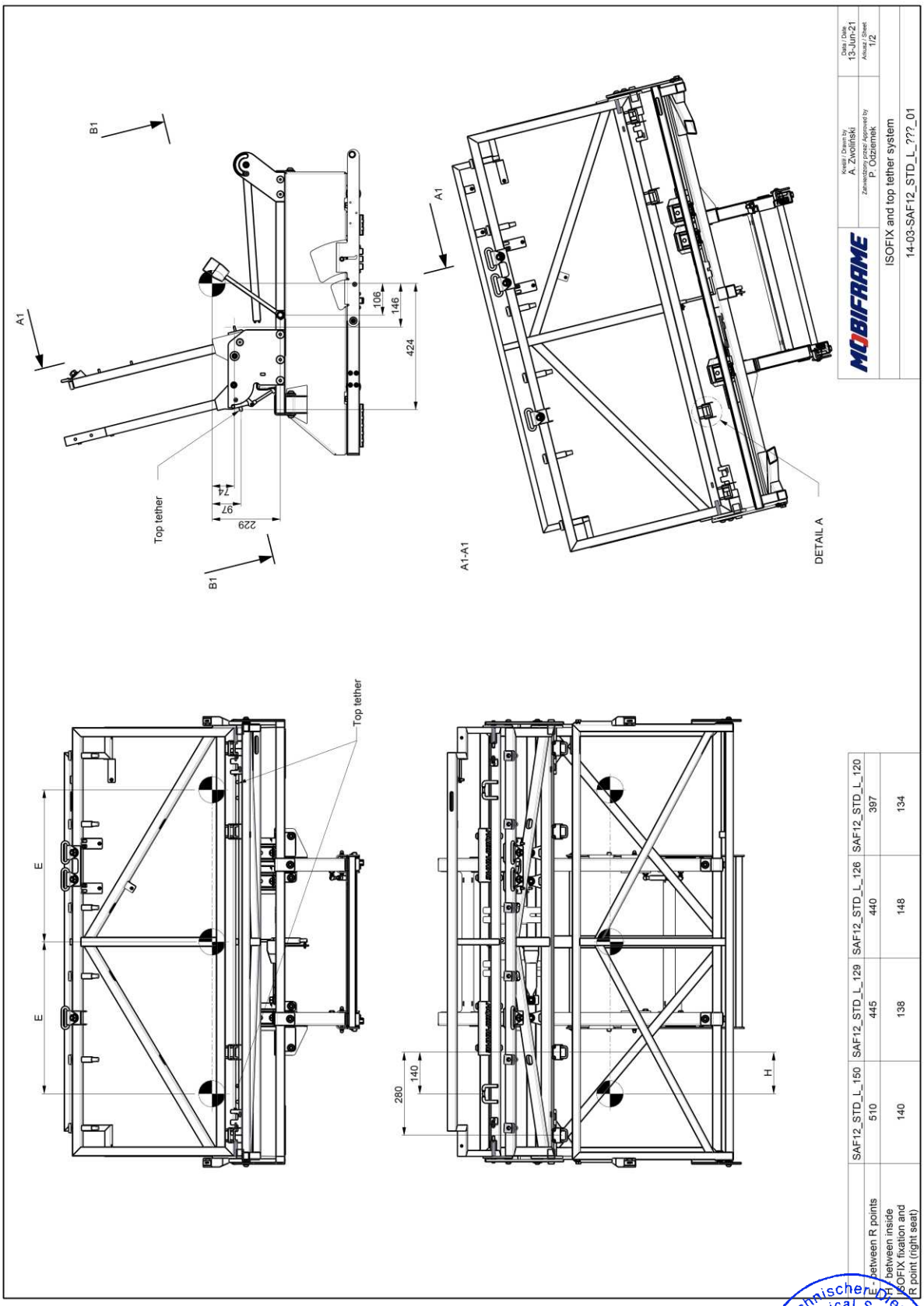
Date: 04.10.2021

Page / pages: 23/124

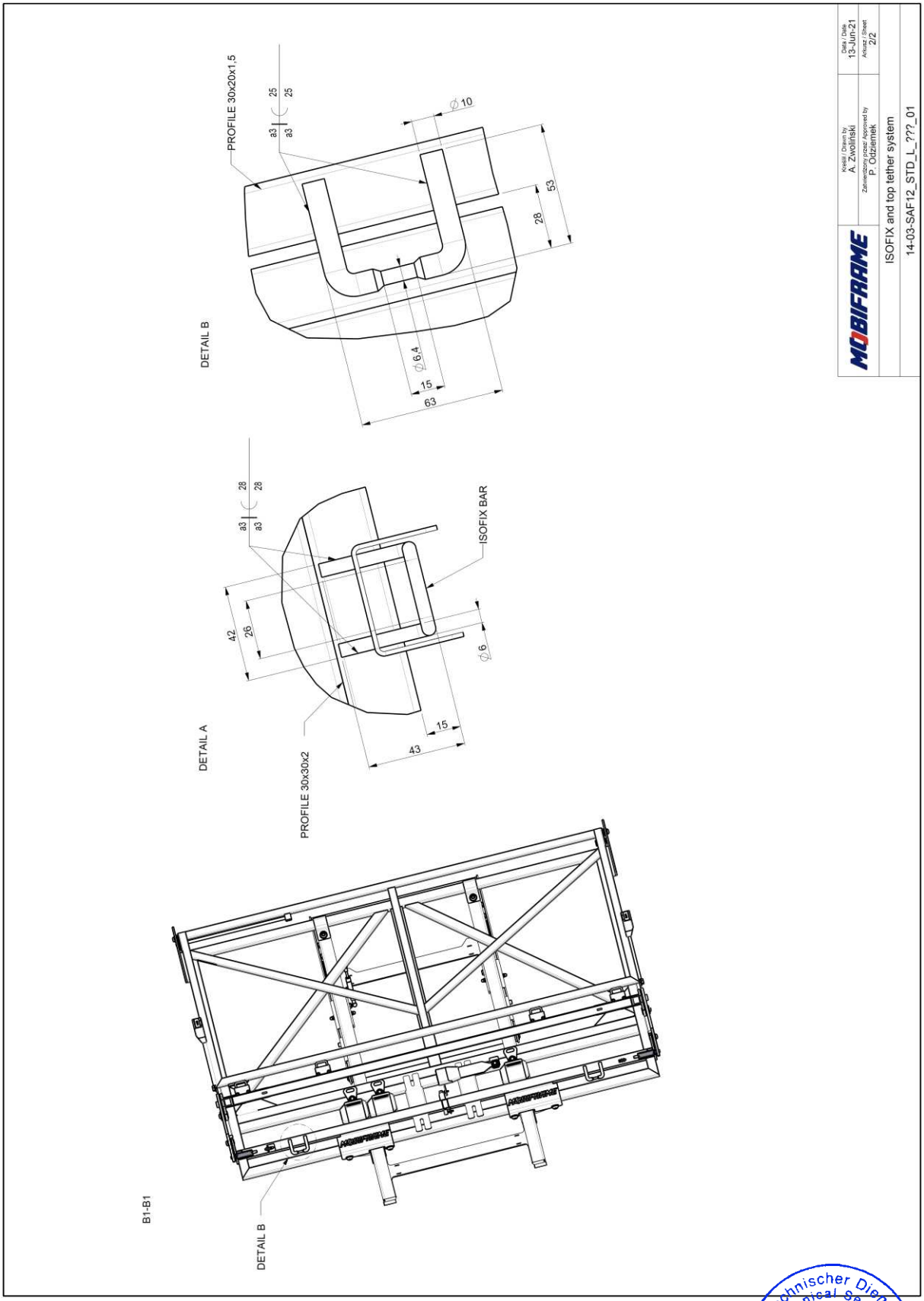
TÜV SÜD Auto Service GmbH 152 Technischer Dienst Technical Service

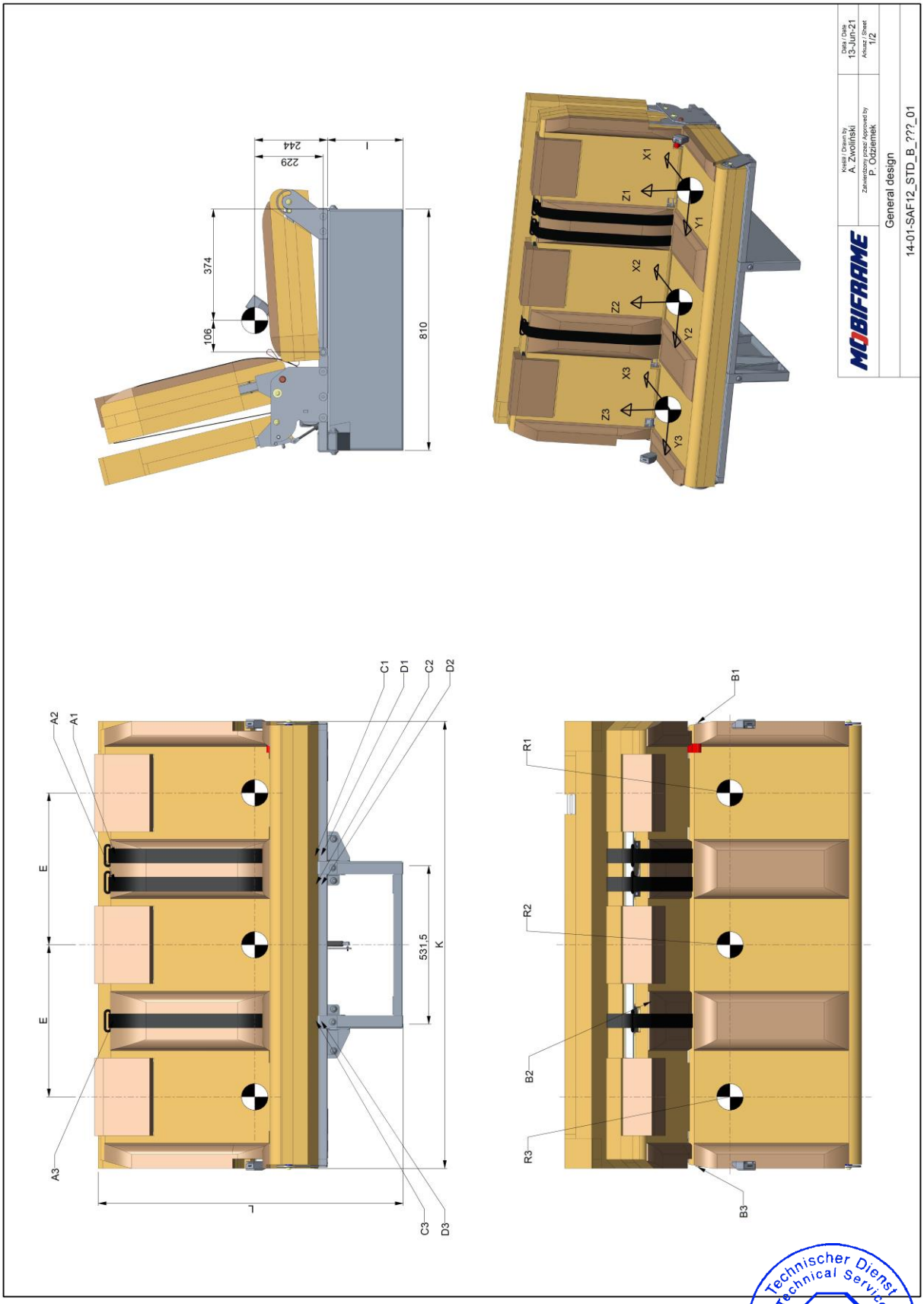






	SAF12_STD_L_150	SAF12_STD_L_129	SAF12_STD_L_126	SAF12_STD_L_120
E - between R points	510	445	440	397
H - between inside ISOFIX fixation and R point (right seat)	140	138	148	134





SAF12_STD_B_150					
LEFT SEAT		CENTER SEAT		RIGHT SEAT	
R Point 1		R Point 2		R Point 3	
Rx1	0 mm	Rx2	0mm	Rx3	0 mm
Ry1	0 mm	Ry2	0mm	Ry3	0 mm
Rz1	0 mm	Rz2	0mm	Rz3	0 mm
Pillar loop 1		Pillar loop 2		Pillar loop 3	
Ax1	324 mm	Ax2	324 mm	Ax3	324 mm
Ay1	210 mm	Ay2	-210 mm	Ay3	-255 mm
Az1	488 mm	Az2	488 mm	Az3	488 mm
Buckle 1		Buckle 2		Buckle 3	
Bx1	106 mm	Bx2	265 mm	Bx3	106 mm
By1	-220 mm	By2	195 mm	By3	220 mm
Bz1	-229 mm	Bz2	-211 mm	Bz3	-229 mm
α1	65 deg	α2	38 deg	α3	65 deg
End bracket 1		End bracket 2		End bracket 3	
Cx1	229 mm	Cx2	229 mm	Cx3	229 mm
Cy1	212 mm	Cy2	-204 mm	Cy3	-255 mm
Cz1	-205 mm	Cz2	-205 mm	Cz3	-205 mm
α1	42 deg	α2	42 deg	α3	42 deg
Retractor 1		Retractor 2		Retractor 3	
Dx1	282 mm	Dx2	282 mm	Dx3	282 mm
Dy1	212 mm	Dy2	-204 mm	Dy3	-255 mm
Dz1	-219 mm	Dz2	-219 mm	Dz3	-219 mm

SAF12_STD_B_129					
LEFT SEAT		CENTER SEAT		RIGHT SEAT	
R Point 1		R Point 2		R Point 3	
Rx1	0 mm	Rx2	0mm	Rx3	0 mm
Ry1	0 mm	Ry2	0mm	Ry3	0 mm
Rz1	0 mm	Rz2	0mm	Rz3	0 mm
Pillar loop 1		Pillar loop 2		Pillar loop 3	
Ax1	324 mm	Ax2	324 mm	Ax3	324 mm
Ay1	177 mm	Ay2	-179 mm	Ay3	-223 mm
Az1	488 mm	Az2	488 mm	Az3	488 mm
Buckle 1		Buckle 2		Buckle 3	
Bx1	106 mm	Bx2	265 mm	Bx3	106 mm
By1	-180 mm	By2	163 mm	By3	180 mm
Bz1	-229 mm	Bz2	-211 mm	Bz3	-229 mm
α1	65 deg	α2	38 deg	α3	65 deg
End bracket 1		End bracket 2		End bracket 3	
Cx1	229 mm	Cx2	229 mm	Cx3	229 mm
Cy1	174 mm	Cy2	-176 mm	Cy3	-222 mm
Cz1	-205 mm	Cz2	-205 mm	Cz3	-205 mm
α1	42 deg	α2	42 deg	α3	42 deg
Retractor 1		Retractor 2		Retractor 3	
Dx1	282 mm	Dx2	282 mm	Dx3	282 mm
Dy1	174 mm	Dy2	-176 mm	Dy3	-222 mm
Dz1	-219 mm	Dz2	-219 mm	Dz3	-219 mm

	SAF12_STD_B_150	SAF12_STD_B_129	SAF12_STD_B_126	SAF12_STD_B_120
E	510	445	440	397
I	254			
K	1500	1290	1260	1200
L	1023			

SAF12_STD_B_126					
LEFT SEAT		CENTER SEAT		RIGHT SEAT	
R Point 1		R Point 2		R Point 3	
Rx1	0 mm	Rx2	0mm	Rx3	0 mm
Ry1	0 mm	Ry2	0mm	Ry3	0 mm
Rz1	0 mm	Rz2	0mm	Rz3	0 mm
Pillar loop 1		Pillar loop 2		Pillar loop 3	
Ax1	324 mm	Ax2	324 mm	Ax3	324 mm
Ay1	175 mm	Ay2	-175 mm	Ay3	-224 mm
Az1	488 mm	Az2	488 mm	Az3	488 mm
Buckle 1		Buckle 2		Buckle 3	
Bx1	106 mm	Bx2	265 mm	Bx3	106 mm
By1	-170 mm	By2	162 mm	By3	170 mm
Bz1	-229 mm	Bz2	-211 mm	Bz3	-229 mm
α1	65 deg	α2	38 deg	α3	65 deg
End bracket 1		End bracket 2		End bracket 3	
Cx1	229 mm	Cx2	229 mm	Cx3	229 mm
Cy1	168 mm	Cy2	-176 mm	Cy3	-218 mm
Cz1	-205 mm	Cz2	-205 mm	Cz3	-205 mm
α1	42 deg	α2	42 deg	α3	42 deg
Retractor 1		Retractor 2		Retractor 3	
Dx1	282 mm	Dx2	282 mm	Dx3	282 mm
Dy1	168 mm	Dy2	-176 mm	Dy3	-218 mm
Dz1	-219 mm	Dz2	-219 mm	Dz3	-219 mm

SAF12_STD_B_120					
LEFT SEAT		CENTER SEAT		RIGHT SEAT	
R Point 1		R Point 2		R Point 3	
Rx1	0 mm	Rx2	0mm	Rx3	0 mm
Ry1	0 mm	Ry2	0mm	Ry3	0 mm
Rz1	0 mm	Rz2	0mm	Rz3	0 mm
Pillar loop 1		Pillar loop 2		Pillar loop 3	
Ax1	324 mm	Ax2	324 mm	Ax3	324 mm
Ay1	153 mm	Ay2	-154 mm	Ay3	-198 mm
Az1	488 mm	Az2	488 mm	Az3	488 mm
Buckle 1		Buckle 2		Buckle 3	
Bx1	106 mm	Bx2	265 mm	Bx3	106 mm
By1	-183 mm	By2	138 mm	By3	183 mm
Bz1	-229 mm	Bz2	-211 mm	Bz3	-229 mm
α1	65 deg	α2	38 deg	α3	65 deg
End bracket 1		End bracket 2		End bracket 3	
Cx1	229 mm	Cx2	229 mm	Cx3	229 mm
Cy1	150 mm	Cy2	-154 mm	Cy3	-199 mm
Cz1	-205 mm	Cz2	-205 mm	Cz3	-205 mm
α1	42 deg	α2	42 deg	α3	42 deg
Retractor 1		Retractor 2		Retractor 3	
Dx1	282 mm	Dx2	282 mm	Dx3	282 mm
Dy1	150 mm	Dy2	-154 mm	Dy3	-199mm
Dz1	-219 mm	Dz2	-219 mm	Dz3	-219 mm

MOBIFRAME

Kreślił / Drawn by	A. Zwoliński
Data / Date	13-Jun-21
Zatwierdzony przez/ Approved by	P. Odziemek
Arkusz / Sheet	2/2

General design

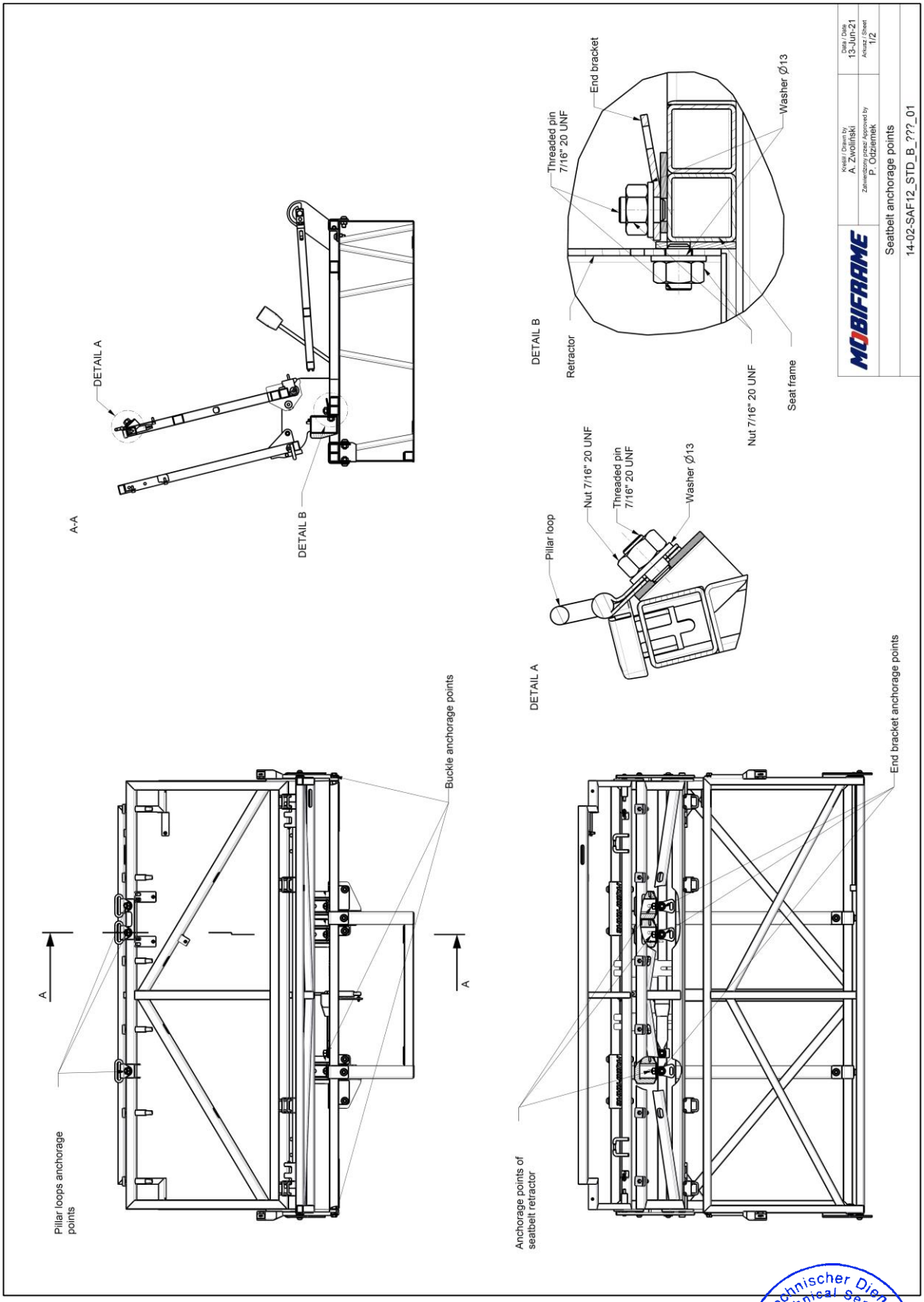
14-01-SAF12_STD_B_???_01

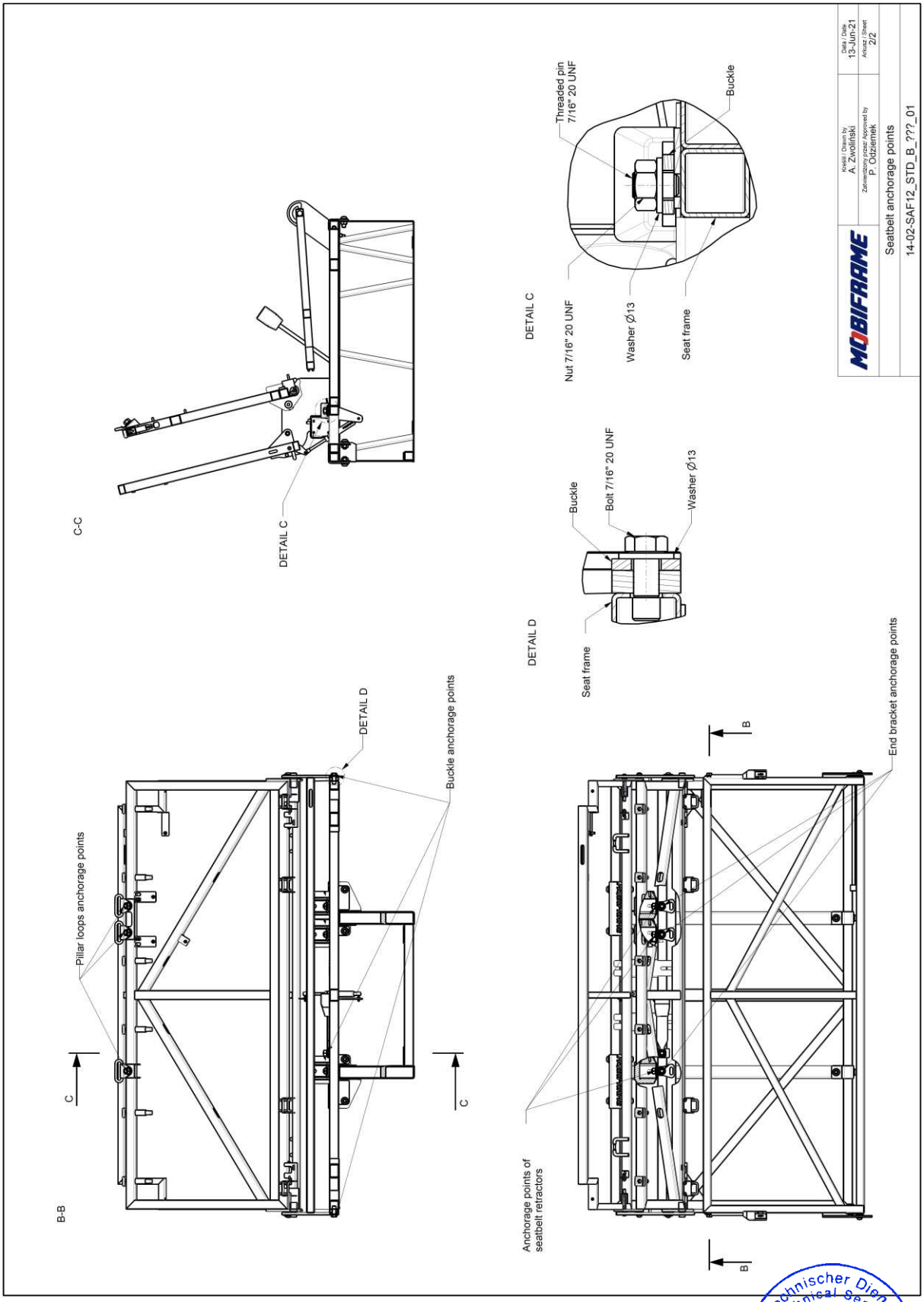
MOBIFRAME/03/2021-00

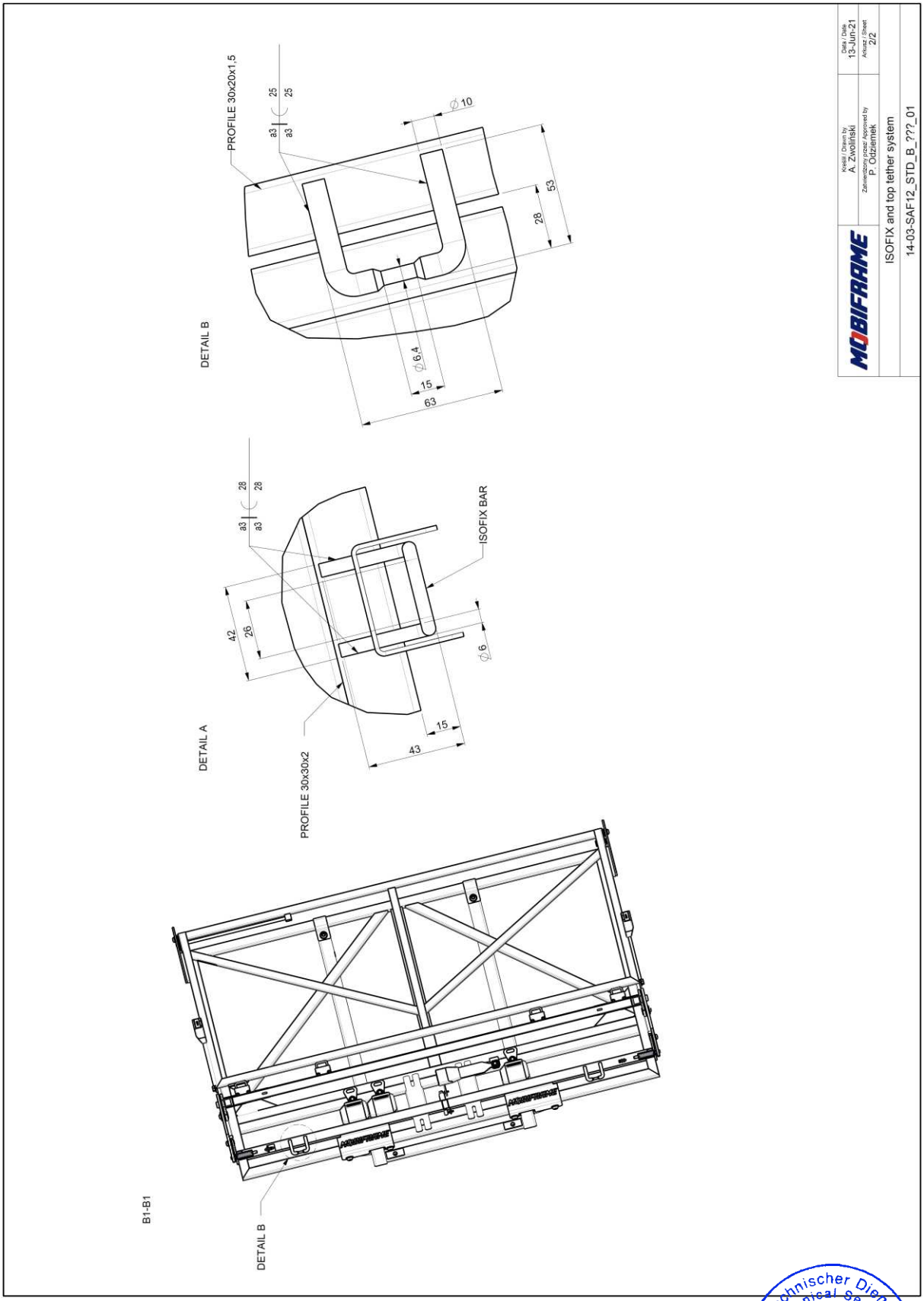
Date: 04.10.2021

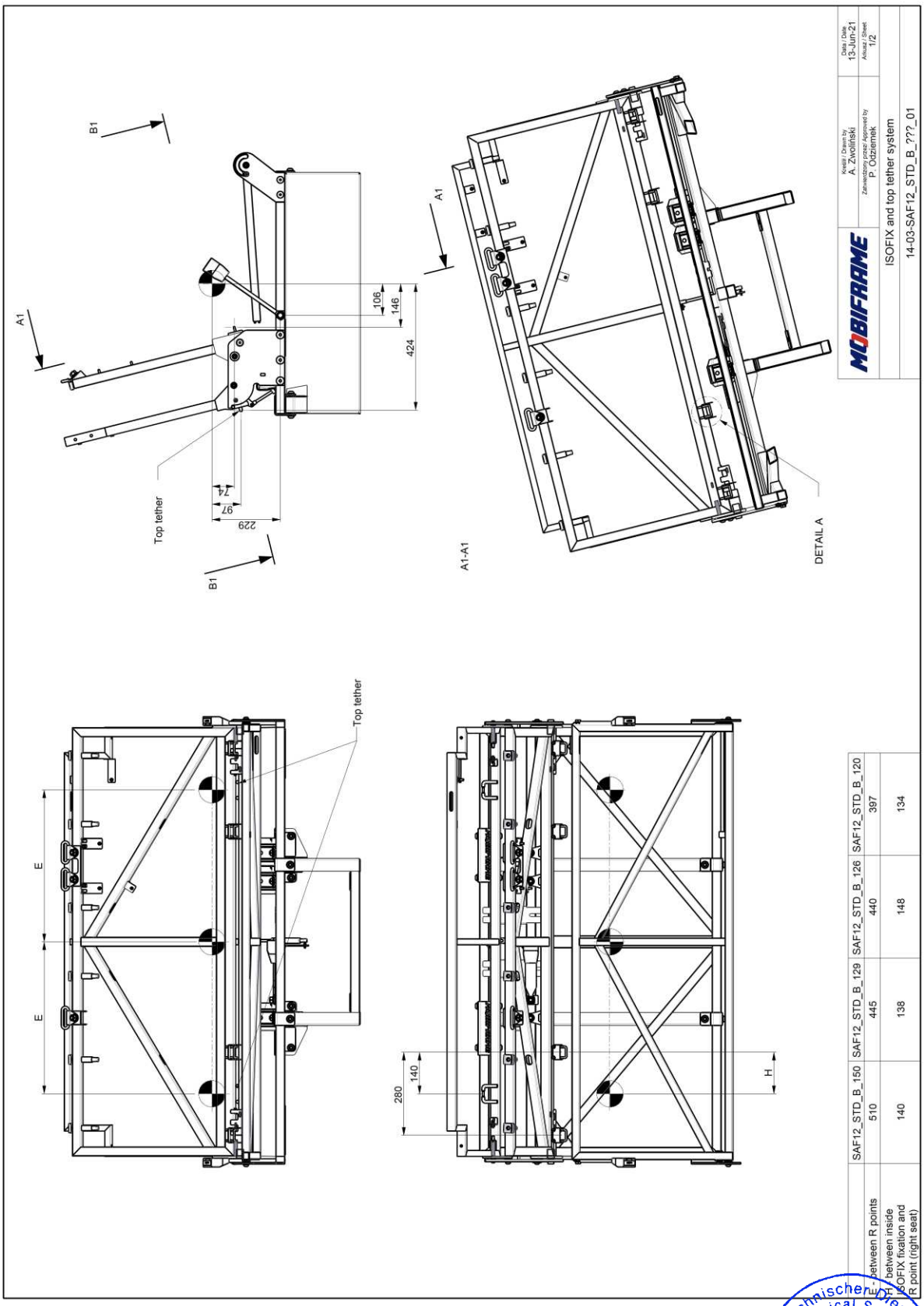
Page / pages: 29/124

TÜV SÜD Auto Service GmbH 152 Technischer Dienst Technical Service

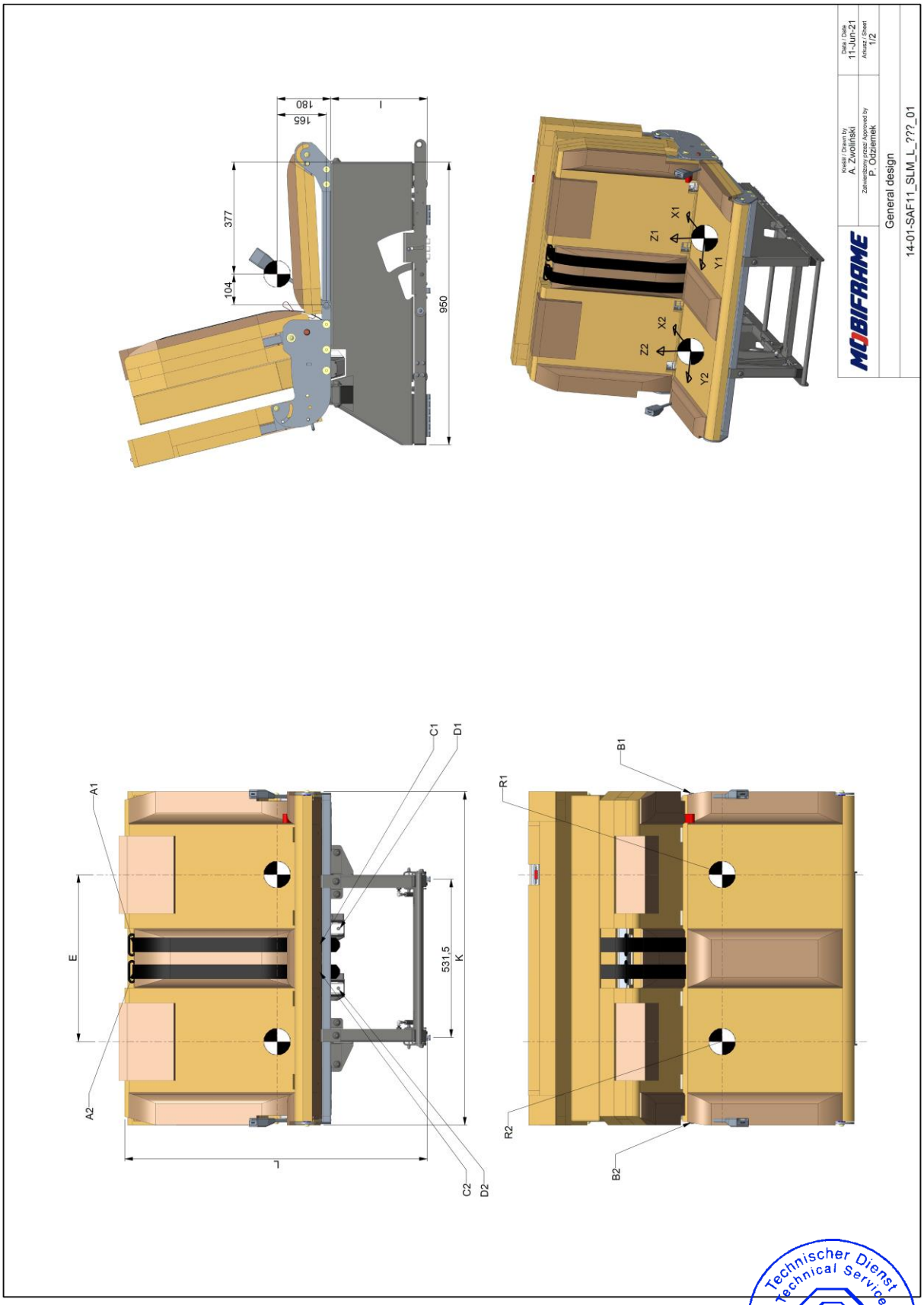








	SAF12_STD_B_150	SAF12_STD_B_129	SAF12_STD_B_126	SAF12_STD_B_120
E - between R points	510	445	440	397
H - between inside ISOFIX fixation and R point (right seat)	140	138	148	134



SAF11_SLM_L_112			
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	321 mm	Ax2	321 mm
Ay1	236 mm	Ay2	-236 mm
Az1	477 mm	Az2	477 mm
Buckle 1		Buckle 2	
Bx1	104 mm	Bx2	104 mm
By1	-259 mm	By2	259 mm
Bz1	-165 mm	Bz2	-165 mm
α 1	58 deg	α 2	58 deg
End bracket 1		End bracket 2	
Cx1	226 mm	Cx2	226 mm
Cy1	236 mm	Cy2	-236 mm
Cz1	-139 mm	Cz2	-139 mm
α 1	32 deg	α 2	32 deg
Retractor 1		Retractor 2	
Dx1	282 mm	Dx2	282 mm
Dy1	181 mm	Dy2	-181 mm
Dz1	-205 mm	Dz2	-205 mm

	SAF11_SLM_L_112
E	561
I	324-344
K	1120
L	1015-1035

TÜV SÜD Auto Service GmbH · Technischer Dienst Technical Service 152

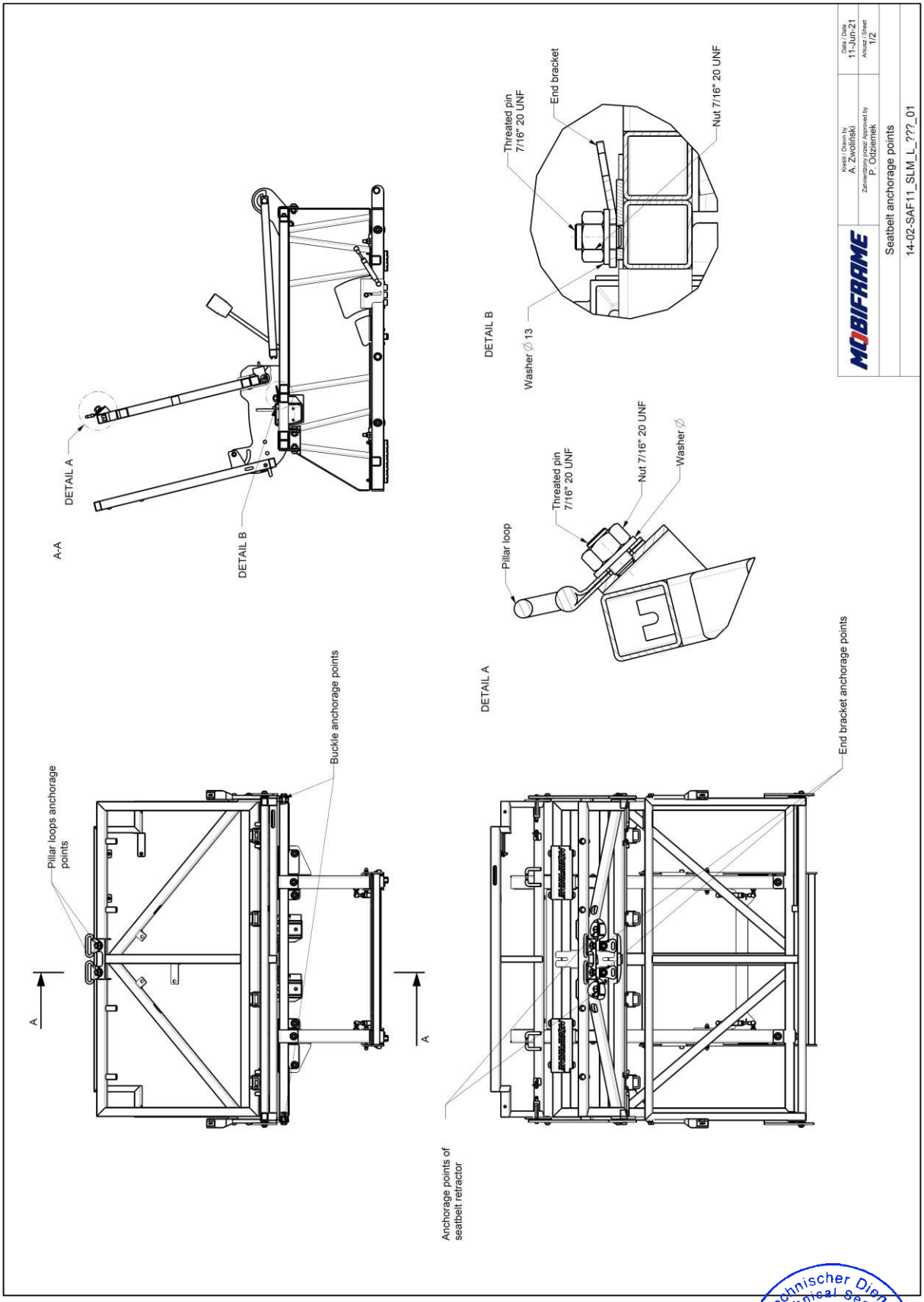
MOBIFRAME	Kreślił / Drawn by: A. Zwoliński	Data / Date: 11-Jun-21
	Zatwierdzony przez/ Approved by: P. Odziemek	Arkusz / Sheet: 2/2
General design		
14-01-SAF11_SLM_L_???_01		

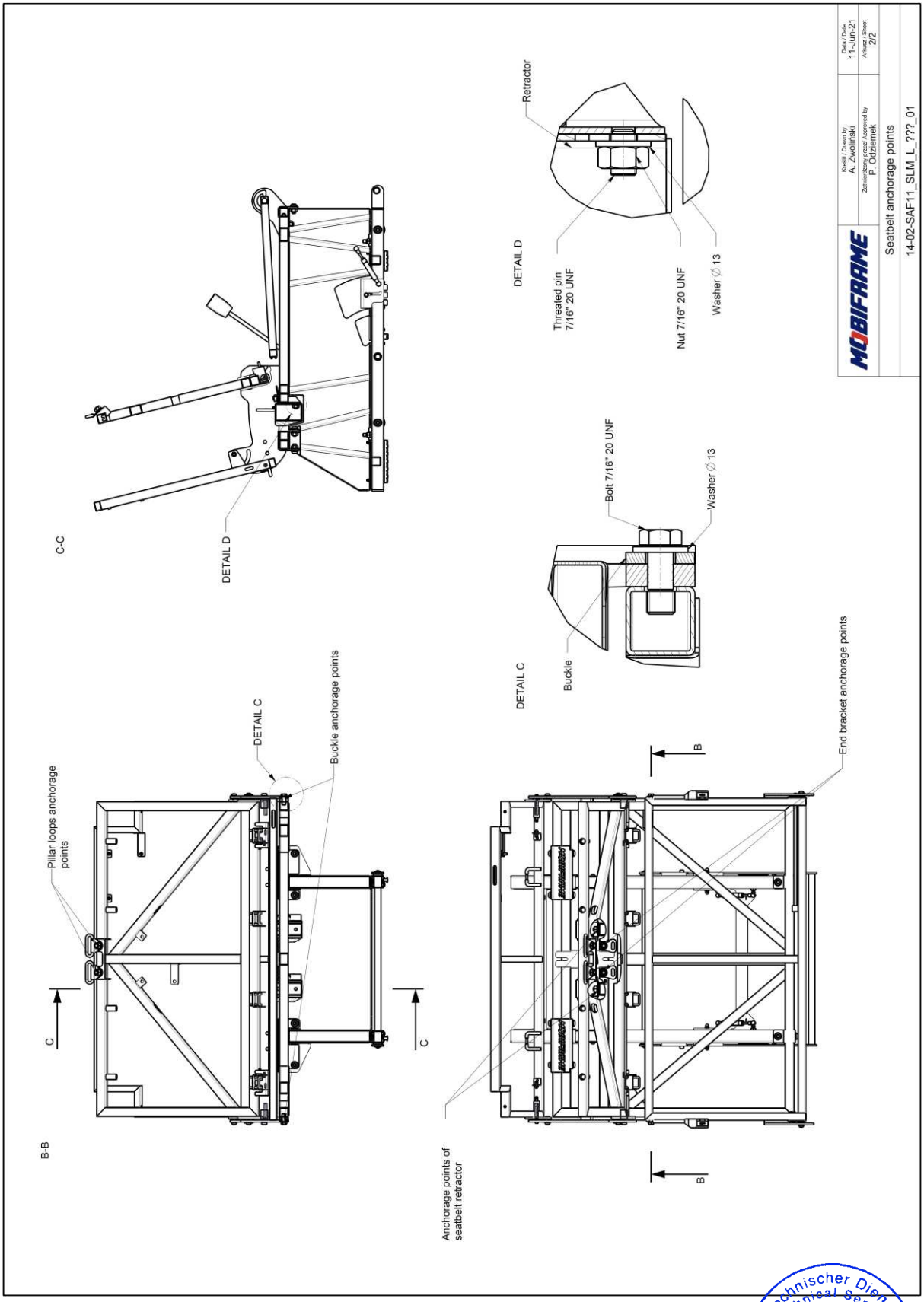
MOBIFRAME

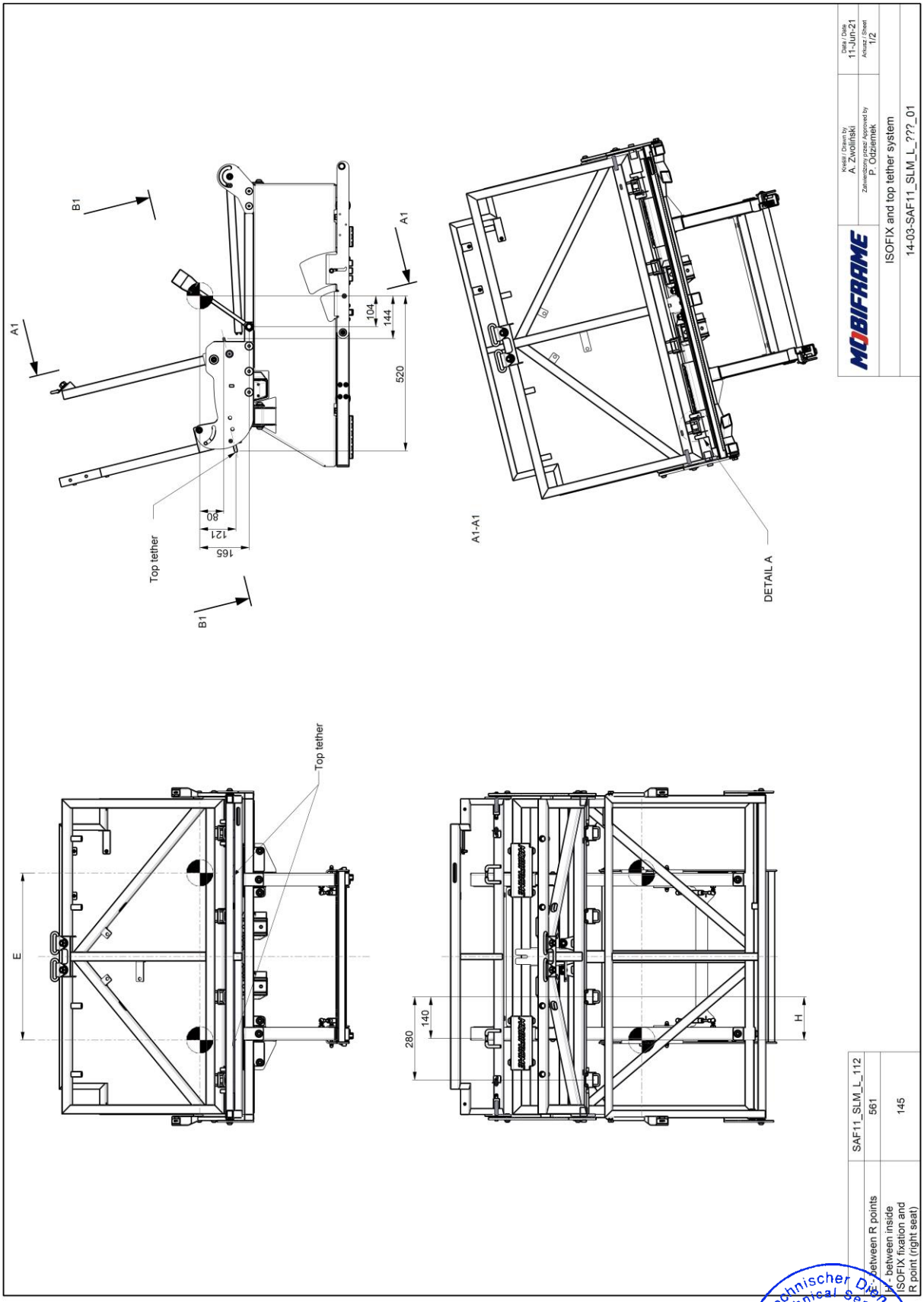
MOBIFRAME/03/2021-00

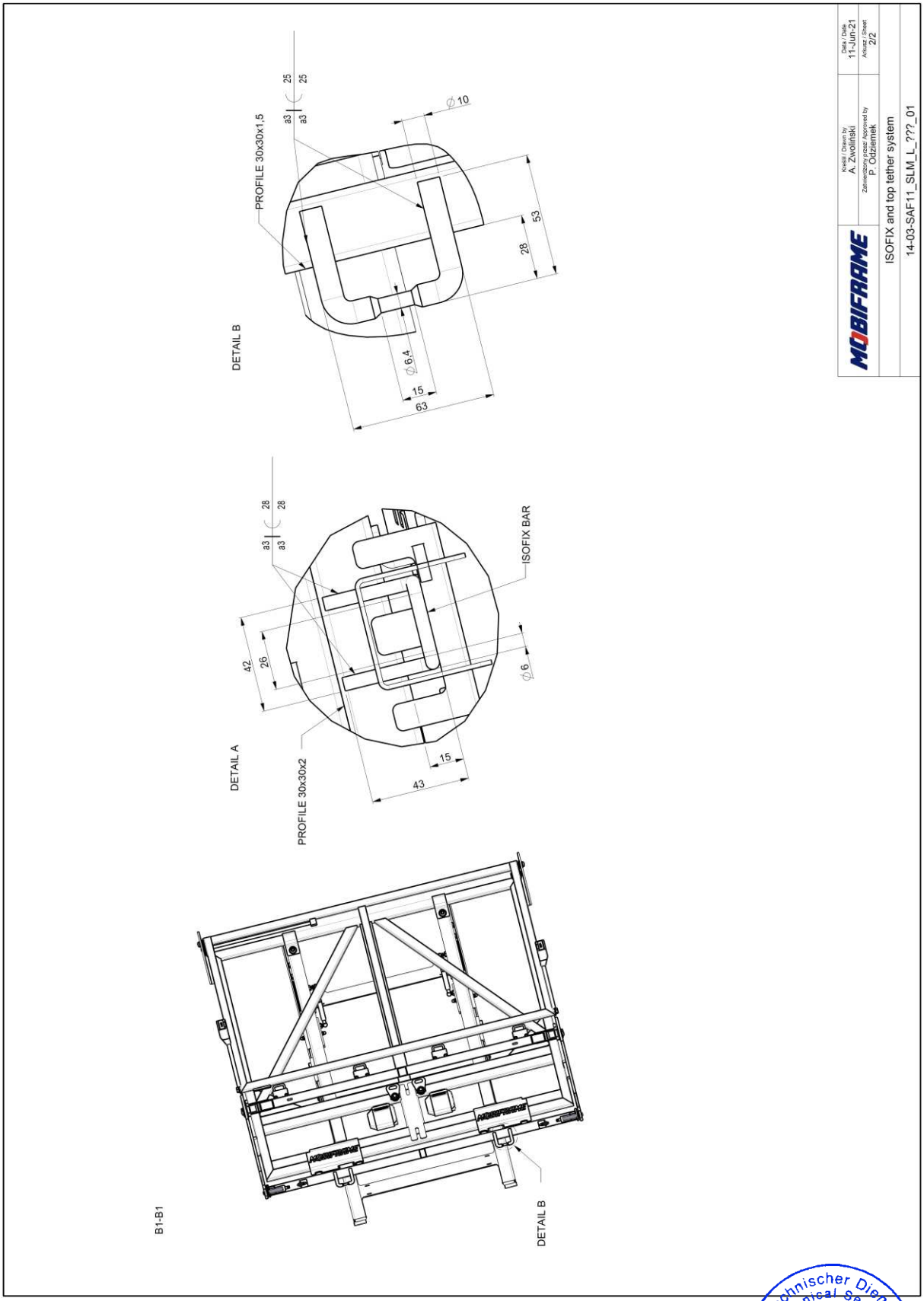
Date: 04.10.2021

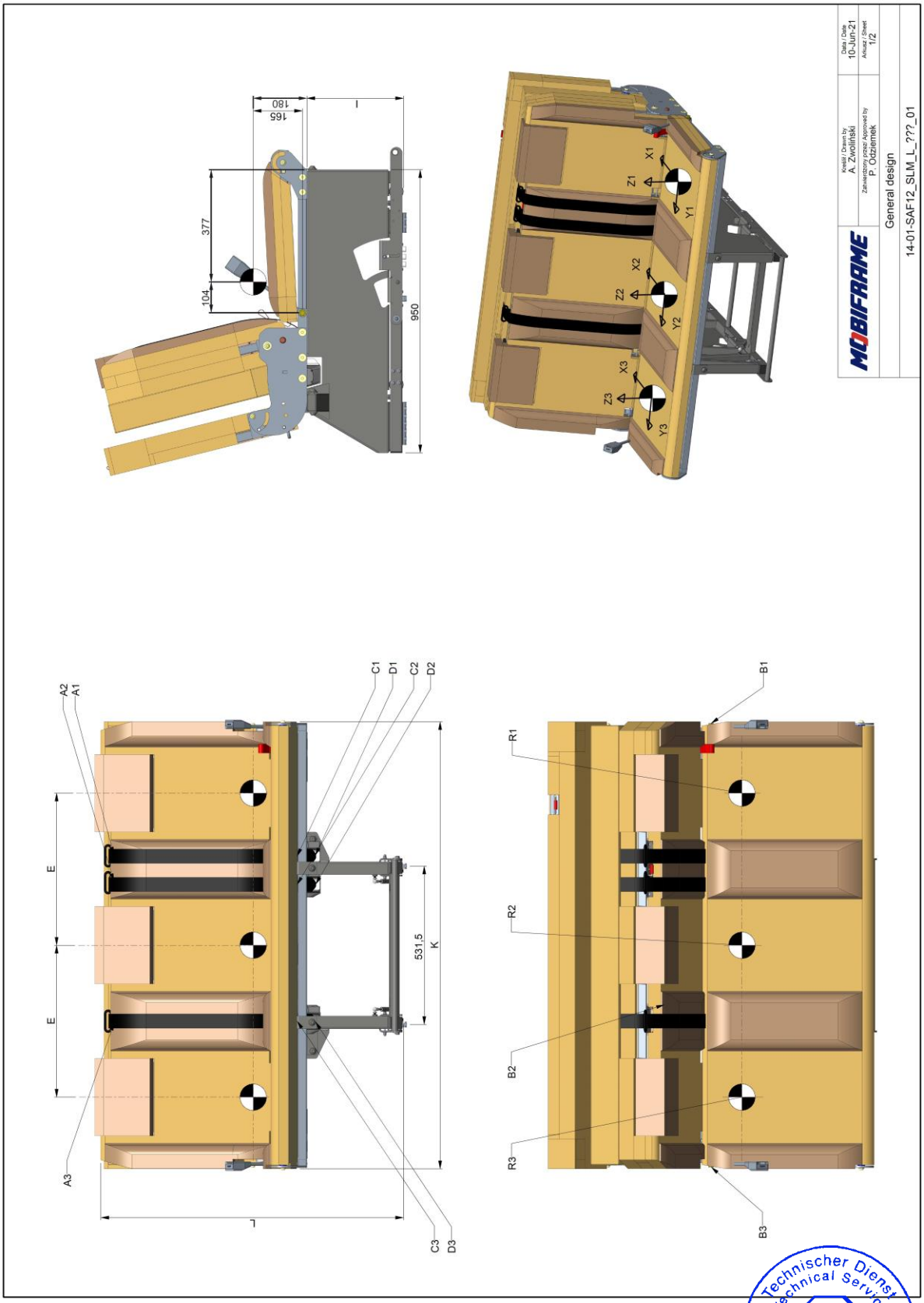
Page / pages: 35/124











SAF12_SLM_L_150					
LEFT SEAT		CENTER SEAT		RIGHT SEAT	
R Point 1		R Point 2		R Point 3	
Rx1	0 mm	Rx2	0mm	Rx3	0 mm
Ry1	0 mm	Ry2	0mm	Ry3	0 mm
Rz1	0 mm	Rz2	0mm	Rz3	0 mm
Pillar loop 1		Pillar loop 2		Pillar loop 3	
Ax1	323 mm	Ax2	323 mm	Ax3	323 mm
Ay1	210 mm	Ay2	-210 mm	Ay3	-255 mm
Az1	482 mm	Az2	482 mm	Az3	482 mm
Buckle 1		Buckle 2		Buckle 3	
Bx1	104 mm	Bx2	263 mm	Bx3	104 mm
By1	-220 mm	By2	195 mm	By3	220 mm
Bz1	-165 mm	Bz2	-147 mm	Bz3	-165 mm
α1	58 deg	α2	29 deg	α3	58 deg
End bracket 1		End bracket 2		End bracket 3	
Cx1	226 mm	Cx2	226 mm	Cx3	226 mm
Cy1	212 mm	Cy2	-204 mm	Cy3	-255 mm
Cz1	-139 mm	Cz2	-139 mm	Cz3	-139 mm
α1	32 deg	α2	32 deg	α3	32 deg
Retractor 1		Retractor 2		Retractor 3	
Dx1	279 mm	Dx2	279 mm	Dx3	279 mm
Dy1	212 mm	Dy2	-204 mm	Dy3	-255 mm
Dz1	-205 mm	Dz2	-205 mm	Dz3	-205 mm

SAF12_SLM_L_129					
LEFT SEAT		CENTER SEAT		RIGHT SEAT	
R Point 1		R Point 2		R Point 3	
Rx1	0 mm	Rx2	0mm	Rx3	0 mm
Ry1	0 mm	Ry2	0mm	Ry3	0 mm
Rz1	0 mm	Rz2	0mm	Rz3	0 mm
Pillar loop 1		Pillar loop 2		Pillar loop 3	
Ax1	323 mm	Ax2	323 mm	Ax3	323 mm
Ay1	177 mm	Ay2	-178 mm	Ay3	-223 mm
Az1	482 mm	Az2	482 mm	Az3	482 mm
Buckle 1		Buckle 2		Buckle 3	
Bx1	104 mm	Bx2	263 mm	Bx3	104 mm
By1	-180 mm	By2	162 mm	By3	180 mm
Bz1	-165 mm	Bz2	-147 mm	Bz3	-165 mm
α1	58 deg	α2	29 deg	α3	58 deg
End bracket 1		End bracket 2		End bracket 3	
Cx1	226 mm	Cx2	226 mm	Cx3	226 mm
Cy1	174 mm	Cy2	-176 mm	Cy3	-223 mm
Cz1	-139 mm	Cz2	-139 mm	Cz3	-139 mm
α1	32 deg	α2	32 deg	α3	32 deg
Retractor 1		Retractor 2		Retractor 3	
Dx1	279 mm	Dx2	279 mm	Dx3	279 mm
Dy1	174 mm	Dy2	-176 mm	Dy3	-223 mm
Dz1	-205 mm	Dz2	-205 mm	Dz3	-205 mm

	SAF12_150_L	SAF12_129_L	SAF12_126_L	SAF12_120_L
E	510	445	440	397
I	324-344			
K	150	129	126	120
L	1015-1035			

SAF12_SLM_L_126					
LEFT SEAT		CENTER SEAT		RIGHT SEAT	
R Point 1		R Point 2		R Point 3	
Rx1	0 mm	Rx2	0mm	Rx3	0 mm
Ry1	0 mm	Ry2	0mm	Ry3	0 mm
Rz1	0 mm	Rz2	0mm	Rz3	0 mm
Pillar loop 1		Pillar loop 2		Pillar loop 3	
Ax1	323 mm	Ax2	323 mm	Ax3	323 mm
Ay1	175 mm	Ay2	-175 mm	Ay3	-218 mm
Az1	482 mm	Az2	482 mm	Az3	482 mm
Buckle 1		Buckle 2		Buckle 3	
Bx1	104 mm	Bx2	263 mm	Bx3	104 mm
By1	-170 mm	By2	163 mm	By3	170 mm
Bz1	-165 mm	Bz2	-147 mm	Bz3	-165 mm
α1	58 deg	α2	29 deg	α3	58 deg
End bracket 1		End bracket 2		End bracket 3	
Cx1	226 mm	Cx2	226 mm	Cx3	226 mm
Cy1	170 mm	Cy2	-176 mm	Cy3	-217 mm
Cz1	-139 mm	Cz2	-139 mm	Cz3	-139 mm
α1	32 deg	α2	32 deg	α3	32 deg
Retractor 1		Retractor 2		Retractor 3	
Dx1	279 mm	Dx2	279 mm	Dx3	279 mm
Dy1	170 mm	Dy2	-176 mm	Dy3	-217 mm
Dz1	-205 mm	Dz2	-205 mm	Dz3	-205 mm

SAF12_SLM_L_120					
LEFT SEAT		CENTER SEAT		RIGHT SEAT	
R Point 1		R Point 2		R Point 3	
Rx1	0 mm	Rx2	0mm	Rx3	0 mm
Ry1	0 mm	Ry2	0mm	Ry3	0 mm
Rz1	0 mm	Rz2	0mm	Rz3	0 mm
Pillar loop 1		Pillar loop 2		Pillar loop 3	
Ax1	323 mm	Ax2	323 mm	Ax3	323 mm
Ay1	153 mm	Ay2	-154 mm	Ay3	-198 mm
Az1	482 mm	Az2	482 mm	Az3	482 mm
Buckle 1		Buckle 2		Buckle 3	
Bx1	104 mm	Bx2	263 mm	Bx3	104 mm
By1	-183 mm	By2	139 mm	By3	183 mm
Bz1	-165 mm	Bz2	-147 mm	Bz3	-165 mm
α1	58 deg	α2	29 deg	α3	58 deg
End bracket 1		End bracket 2		End bracket 3	
Cx1	226 mm	Cx2	226 mm	Cx3	226 mm
Cy1	150 mm	Cy2	-153 mm	Cy3	-198 mm
Cz1	-139 mm	Cz2	-139 mm	Cz3	-139 mm
α1	32 deg	α2	32 deg	α3	32 deg
Retractor 1		Retractor 2		Retractor 3	
Dx1	279 mm	Dx2	279 mm	Dx3	279 mm
Dy1	150 mm	Dy2	-153 mm	Dy3	-198 mm
Dz1	-205 mm	Dz2	-205 mm	Dz3	-205 mm

MOBIFRAME

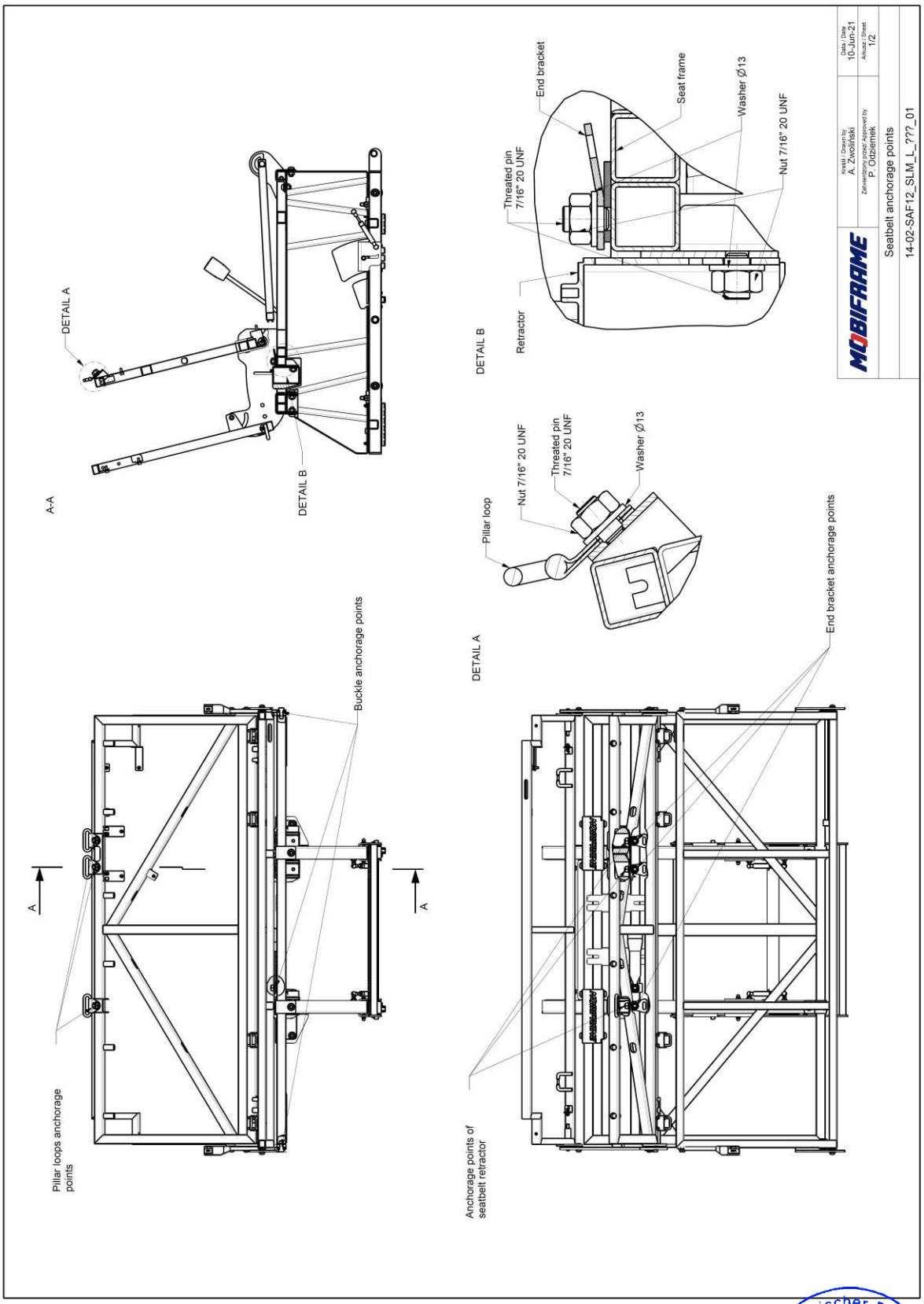
MOBIFRAME	Kreślił / Drawn by: A. Zwoliński	Data / Date: 10-Jun-21	
	Zatwierdzony przez/ Approved by: P. Odziemek	Arkusz / Sheet: 2/2	
General design			
14-01-SAF12_SLM_L_???_01			

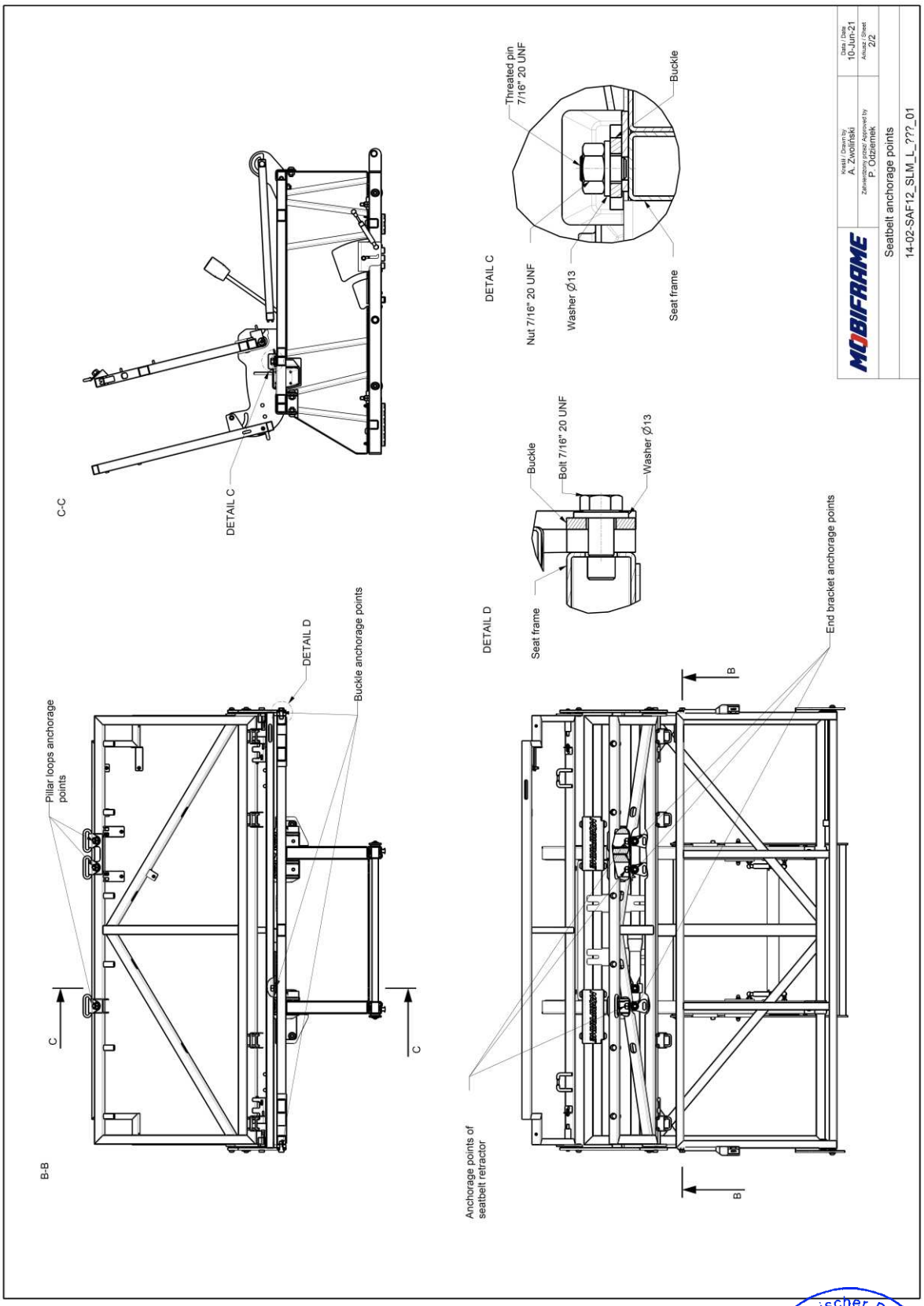
MOBIFRAME/03/2021-00

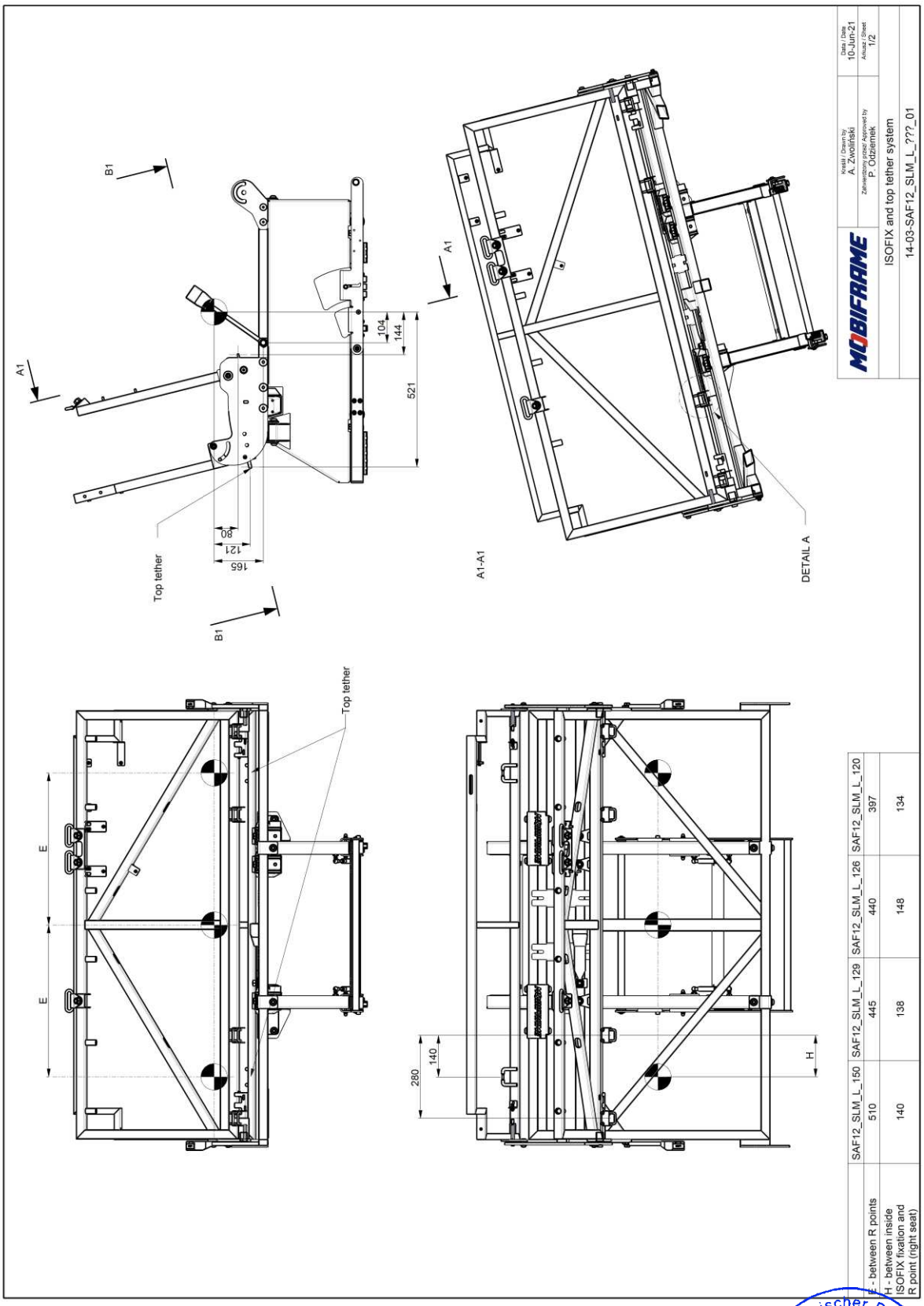
Date: 04.10.2021

Page / pages: 41/124

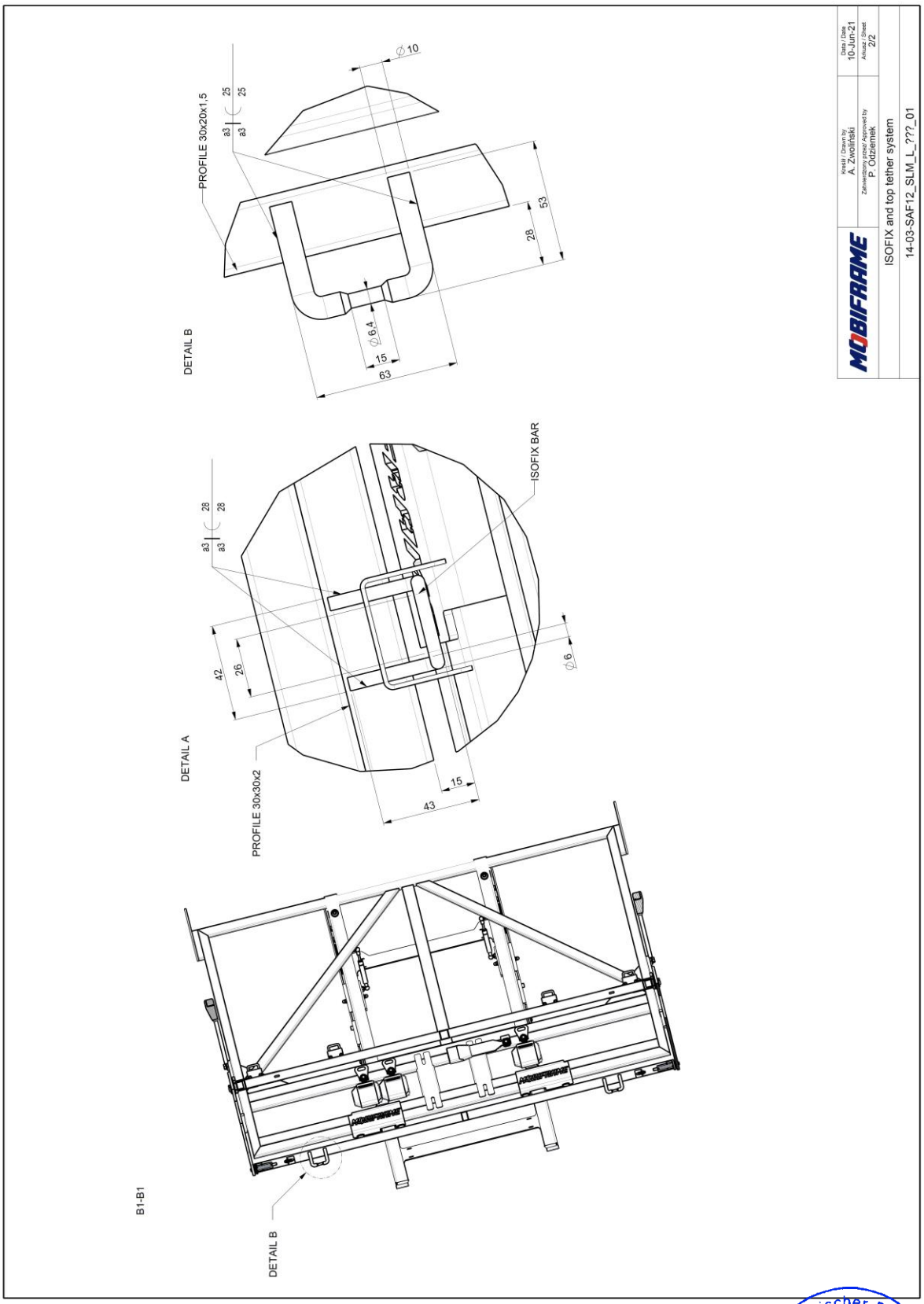
TÜV SÜD Auto Service GmbH · Technischer Dienst Technical Service 152



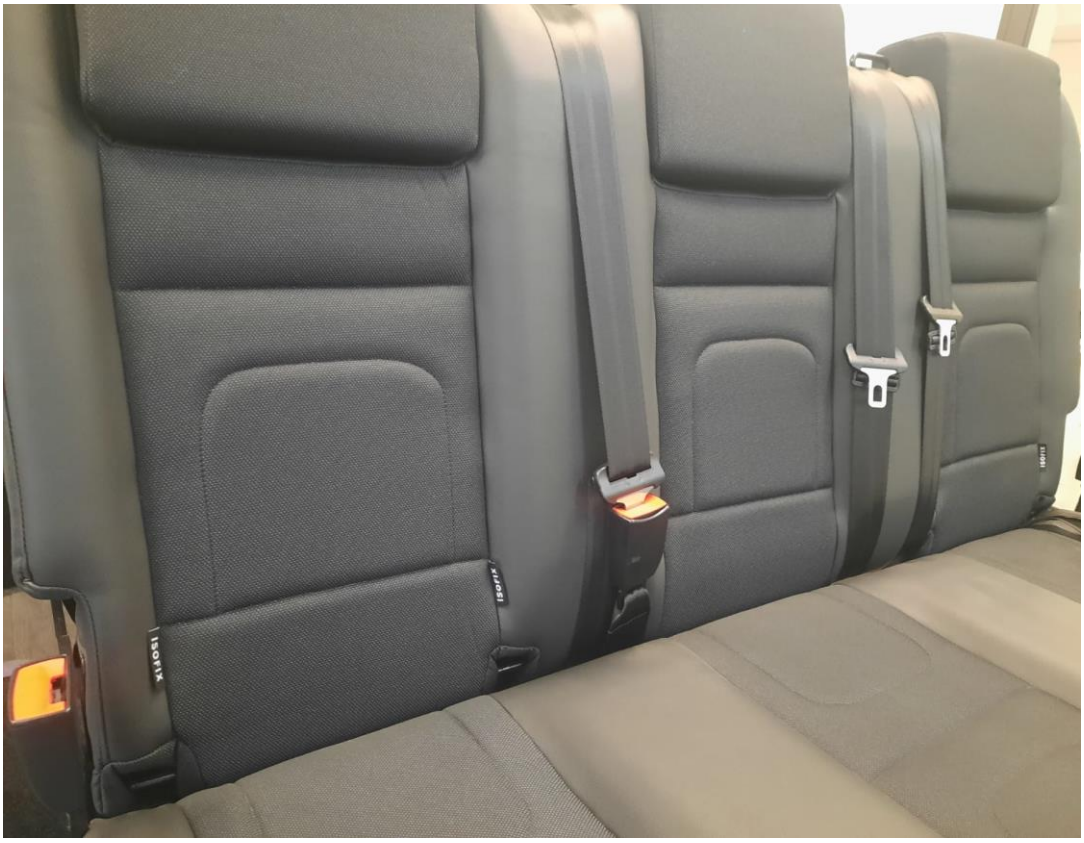




	SAF12_SLM_L_150	SAF12_SLM_L_129	SAF12_SLM_L_126	SAF12_SLM_L_120
E - between R points	510	445	440	397
H - between inside ISOFIX fixation and R point (right seat)	140	138	148	134

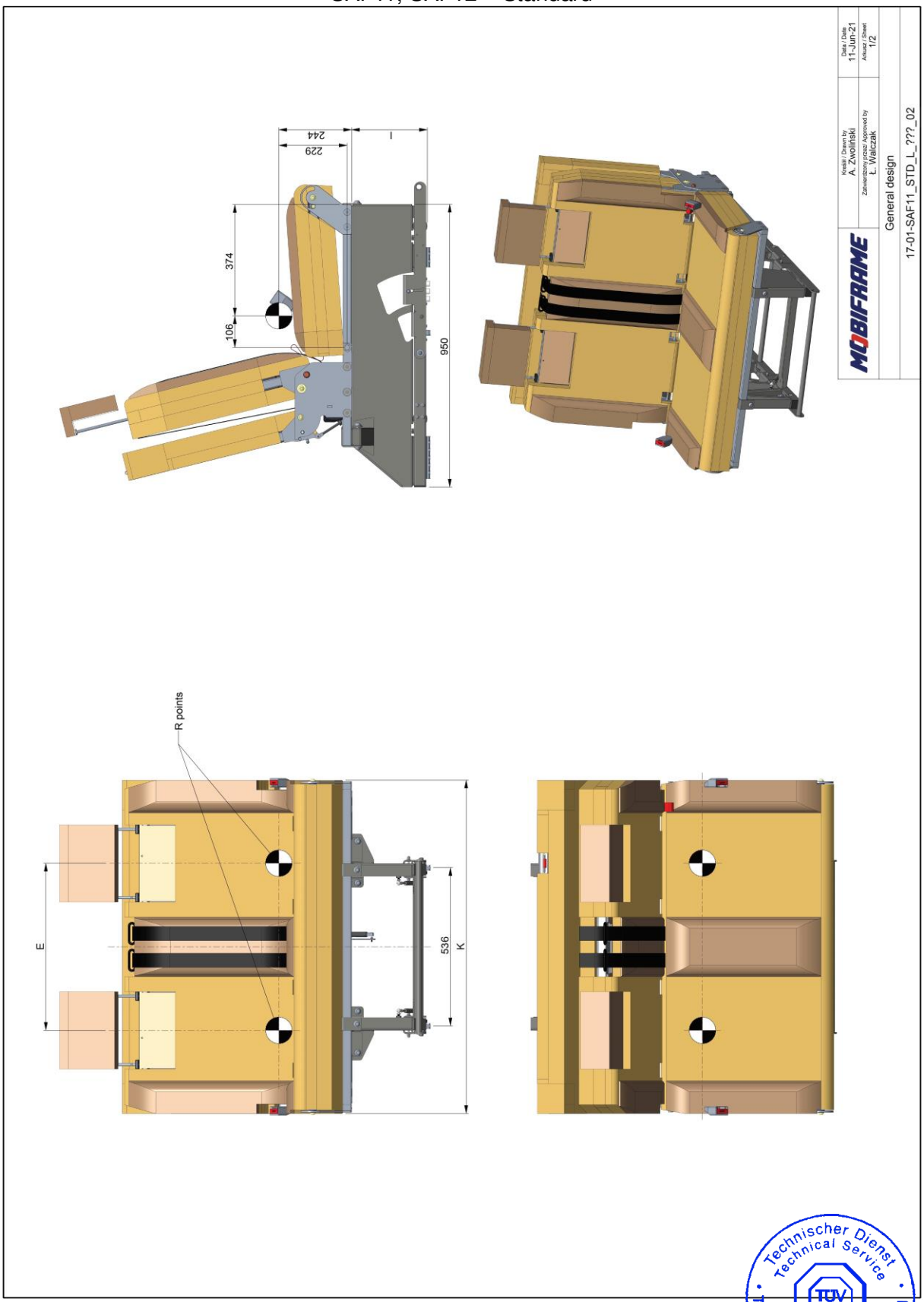


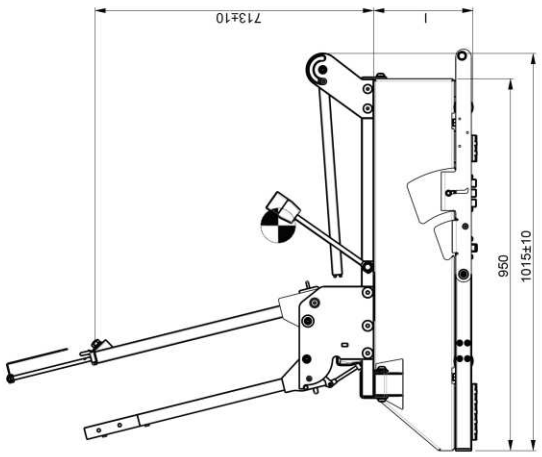
Position and the form of the symbols of the ISOFIX anchorages system



Technischer Dienst Technical Service TÜV SÜD Auto Service GmbH 152

Drawings with general dimensions and bench and base connection
SAF11, SAF12 – Standard





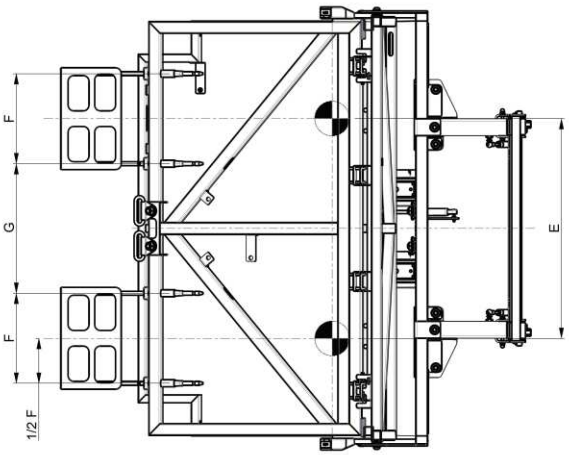
Tolerances for all parameters: ±10	SAF11_STD_L_112	SAF11_STD_L_86
E	562	460
F	230	230
G	331	230
I	254	
J	1112	852
K	1120	860

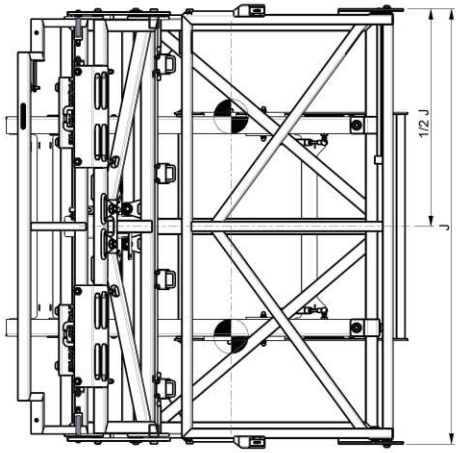
Kreślił / Drawn by: A. Zwoliński
Data / Date: 11-Jun-21
Zatwierdzony przez/ Approved by: Ł. Wałczak
Arkusz / Sheet: 2/2

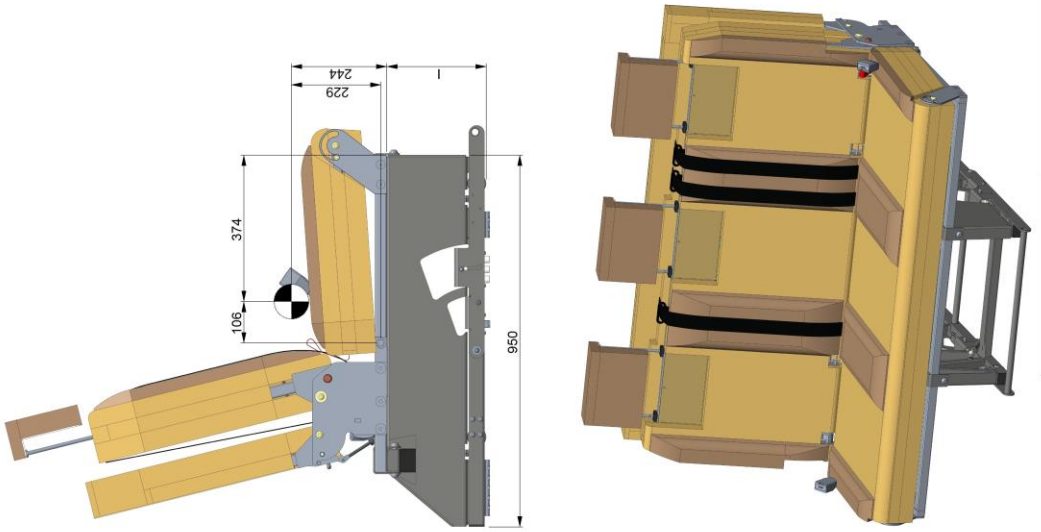
MOBIFRAME

General design

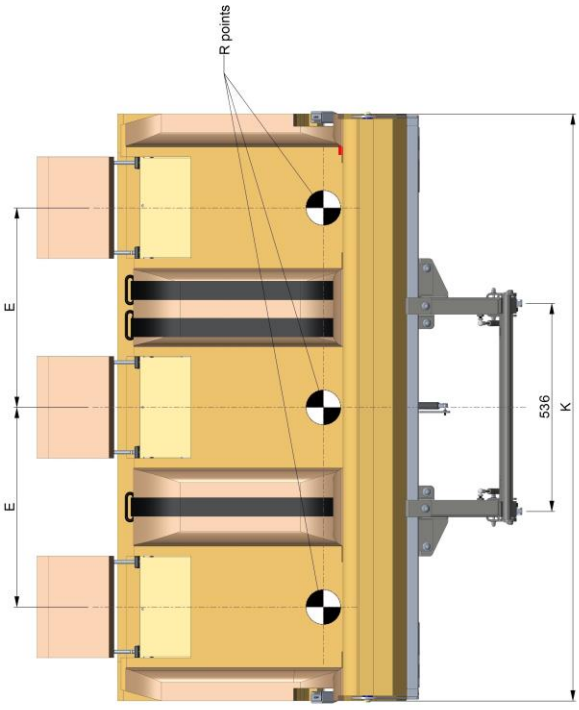
17-01-SAF11_STD_L_???_02

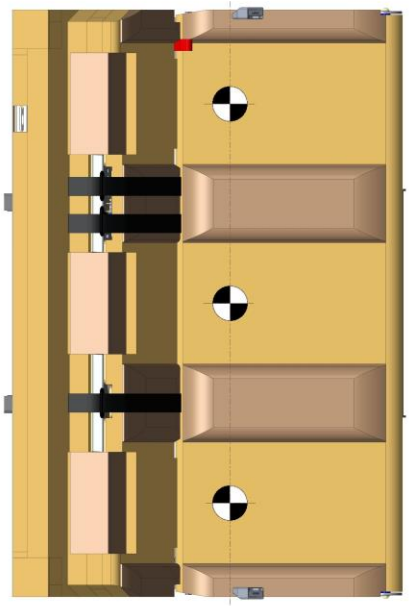






Data / Date 11-Jun-21
Arkusz / Sheet 1/2
Kreślił / Drawn by A. Zwoliński
Zatwierdzony przez/ Approved by Ł. Walczak
MOBIFRAME
General design
17-01-SAF12_STD_L_???_02





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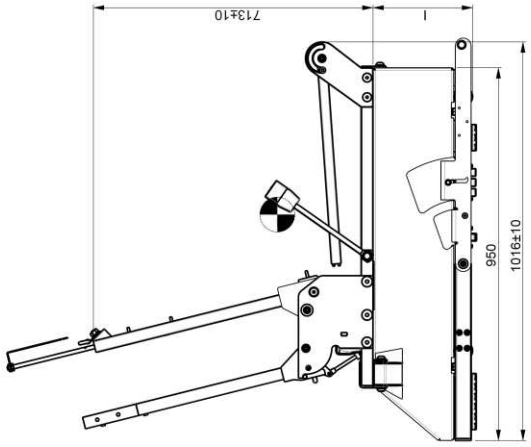
TÜV SÜD
TÜV SÜD Auto Service GmbH
152



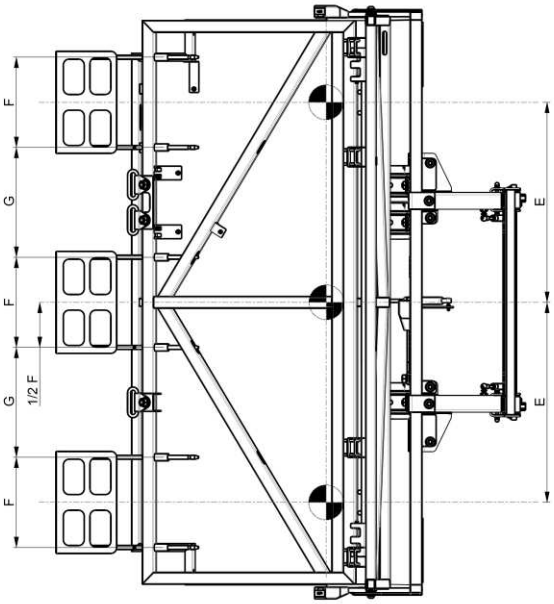
Tolerances for all parameters: ±10	SAF12_STD_L_150	SAF12_STD_L_129	SAF12_STD_L_126	SAF12_STD_L_120
E	510	445	440	397
F	230	230	230	160
G	280	215	210	237
I		254		
J	1492	1282	1252	1192
K	1500	1290	1260	1200

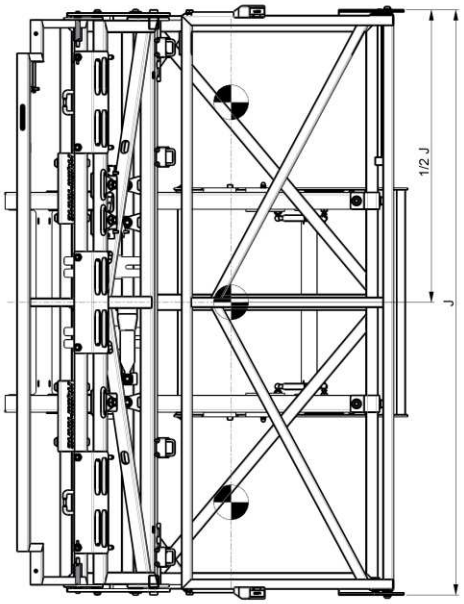
MOBIFRAME

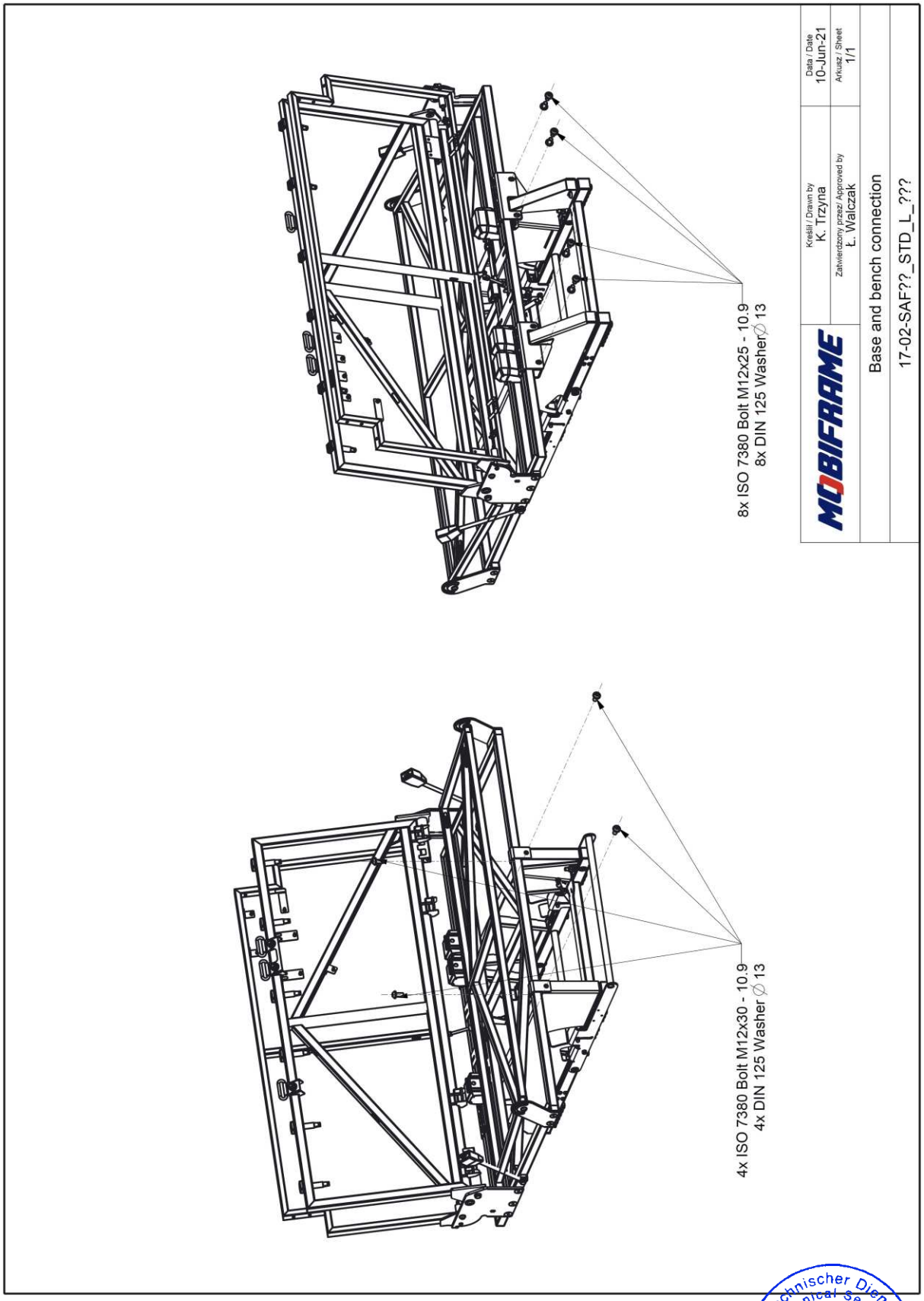
Kreślił / Drawn by: A. Zwoliński — Data / Date: 11-Jun-21
Zatwierdził / Approved by: Ł. Walczak — Arkusz / Sheet: 2/2

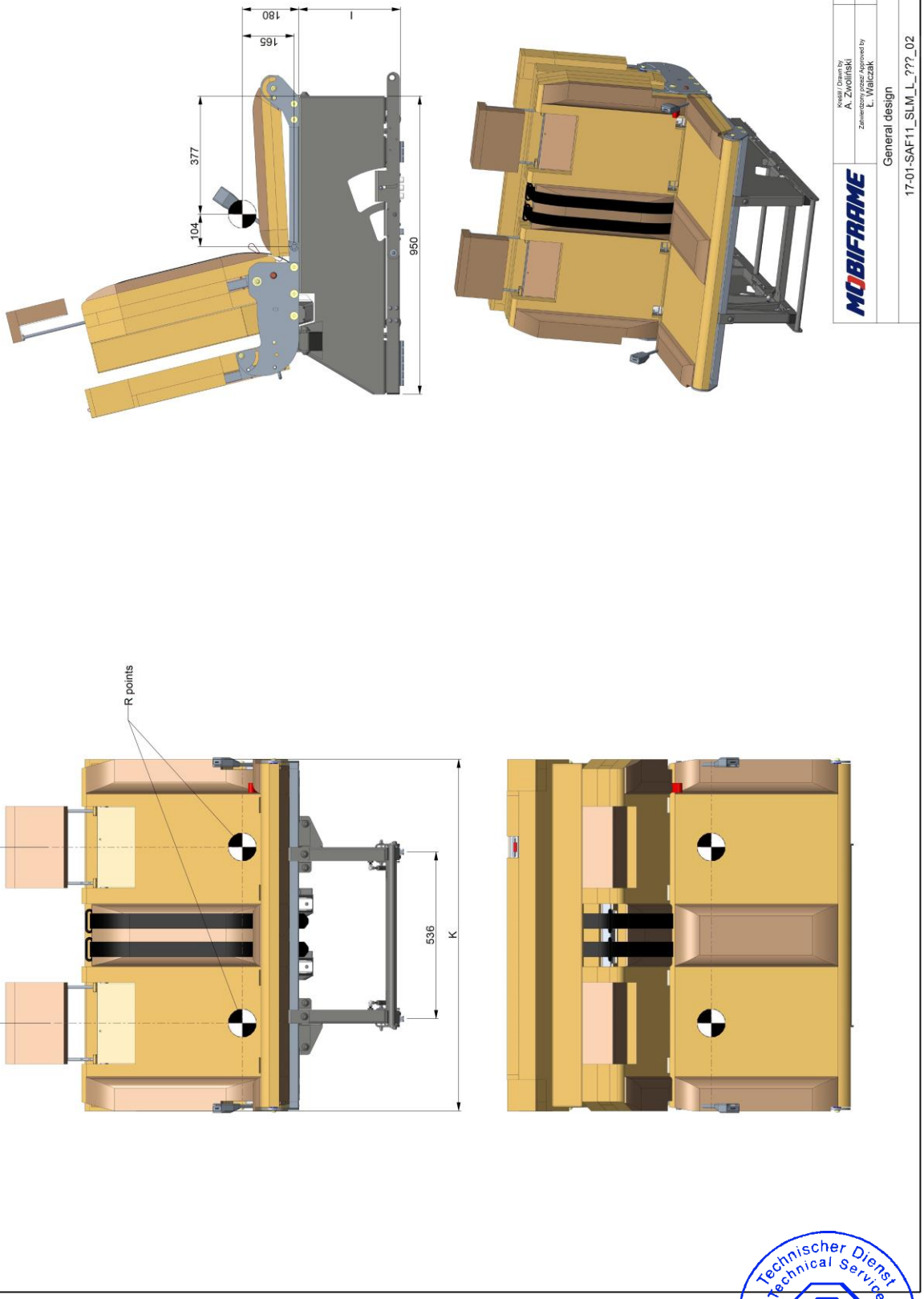
General design

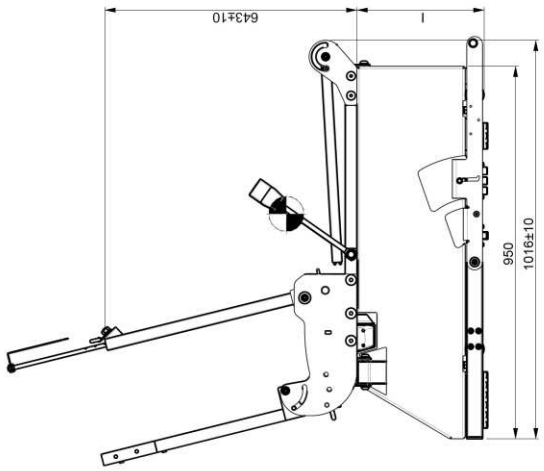
17-01-SAF12_STD_L_???_02





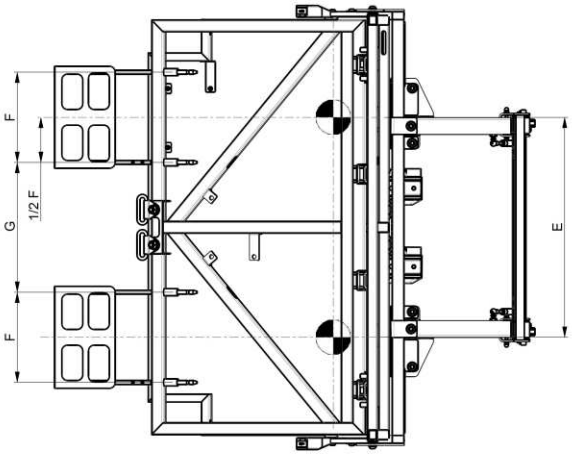


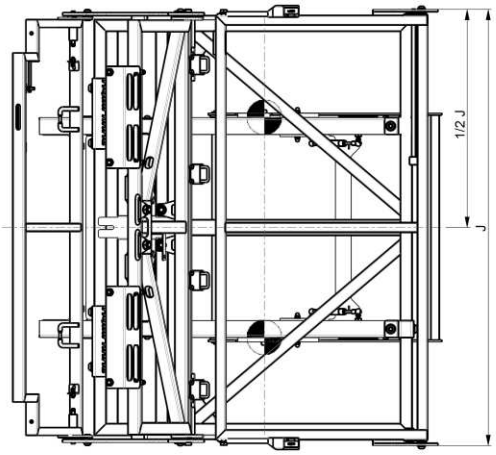


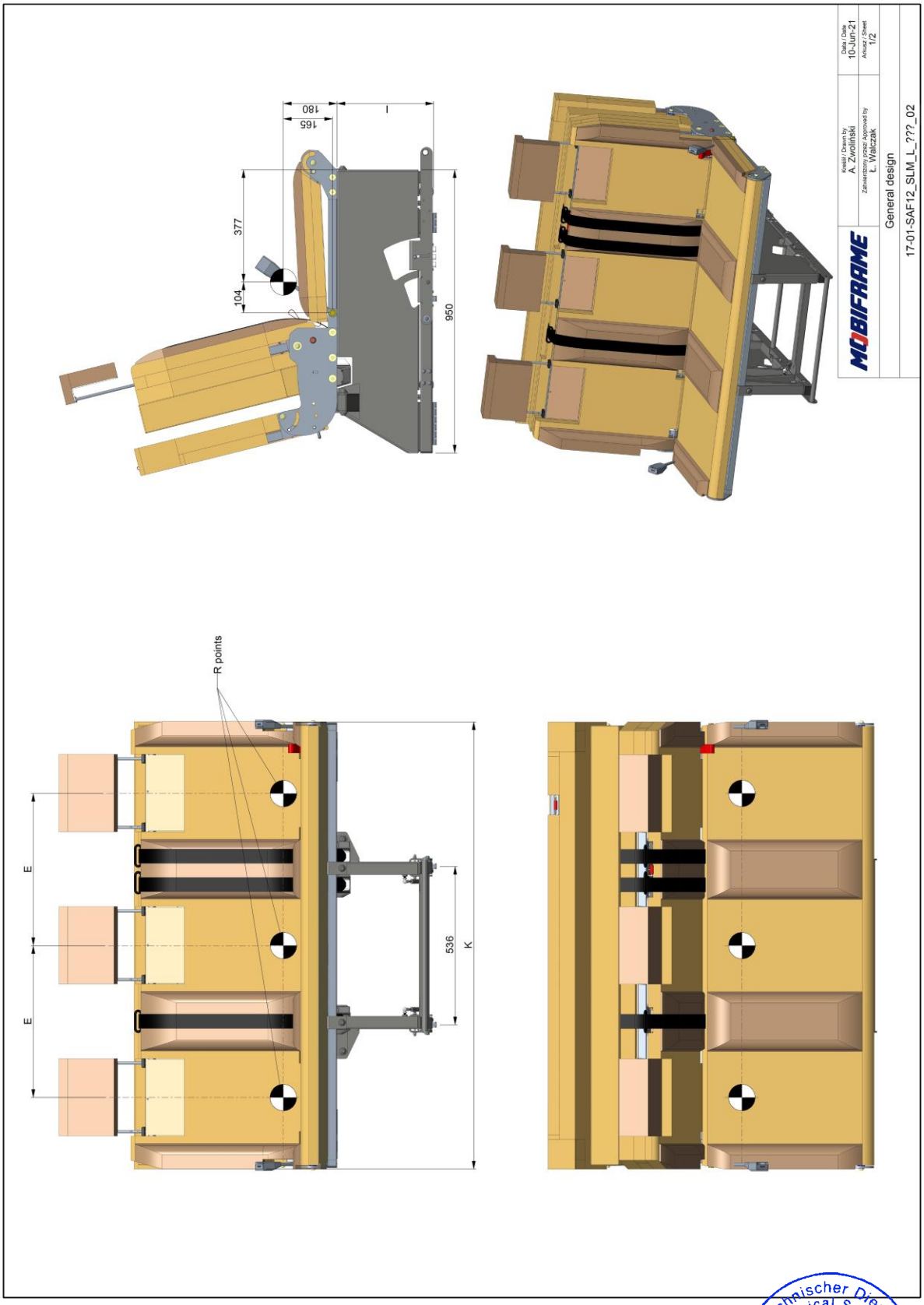


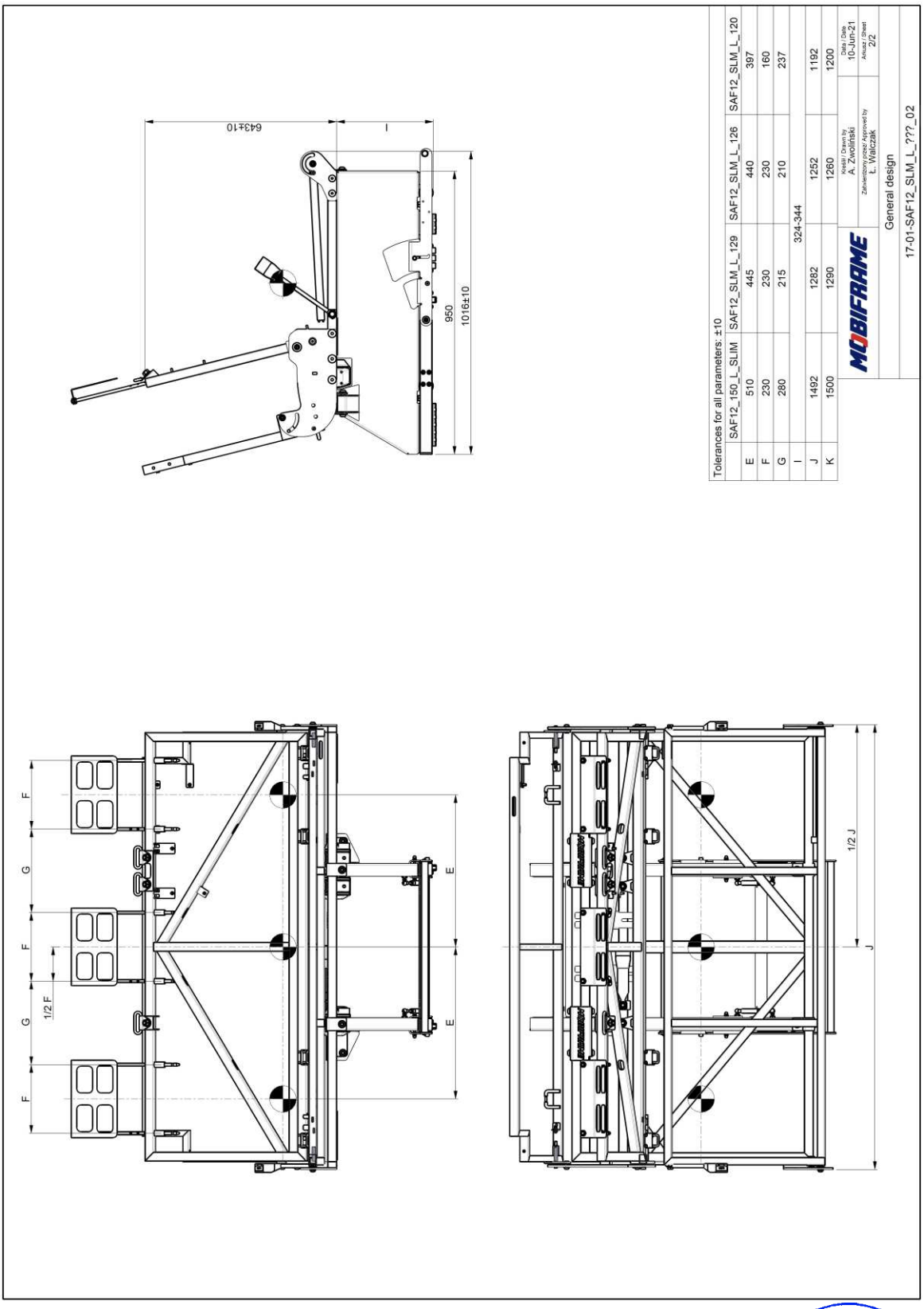
Tolerances for all parameters: ±10		
	SAF11_SLM_L_112	SAF11_SLM_L_86
E	561	460
F	230	230
G	331	230
I	324-344	
J	1112	852
K	1120	860

MOBIFRAME	Kreślił / Drawn by: A. Zwoliński	Data / Date: 11-Jun-21
	Zatwierdził / Approved by: Ł. Walczak	Arkusz / Sheet: 2/2
	General design	
	17-01-SAF11_SLM_L_??_02	









Tolerances for all parameters: ±10	SAF12_150_L_SLIM	SAF12_SLM_L_129	SAF12_SLM_L_126	SAF12_SLM_L_120
E	510	445	440	397
F	230	230	230	160
G	280	215	210	237
I		324-344		
J	1492	1282	1252	1192
K	1500	1290	1260	1200

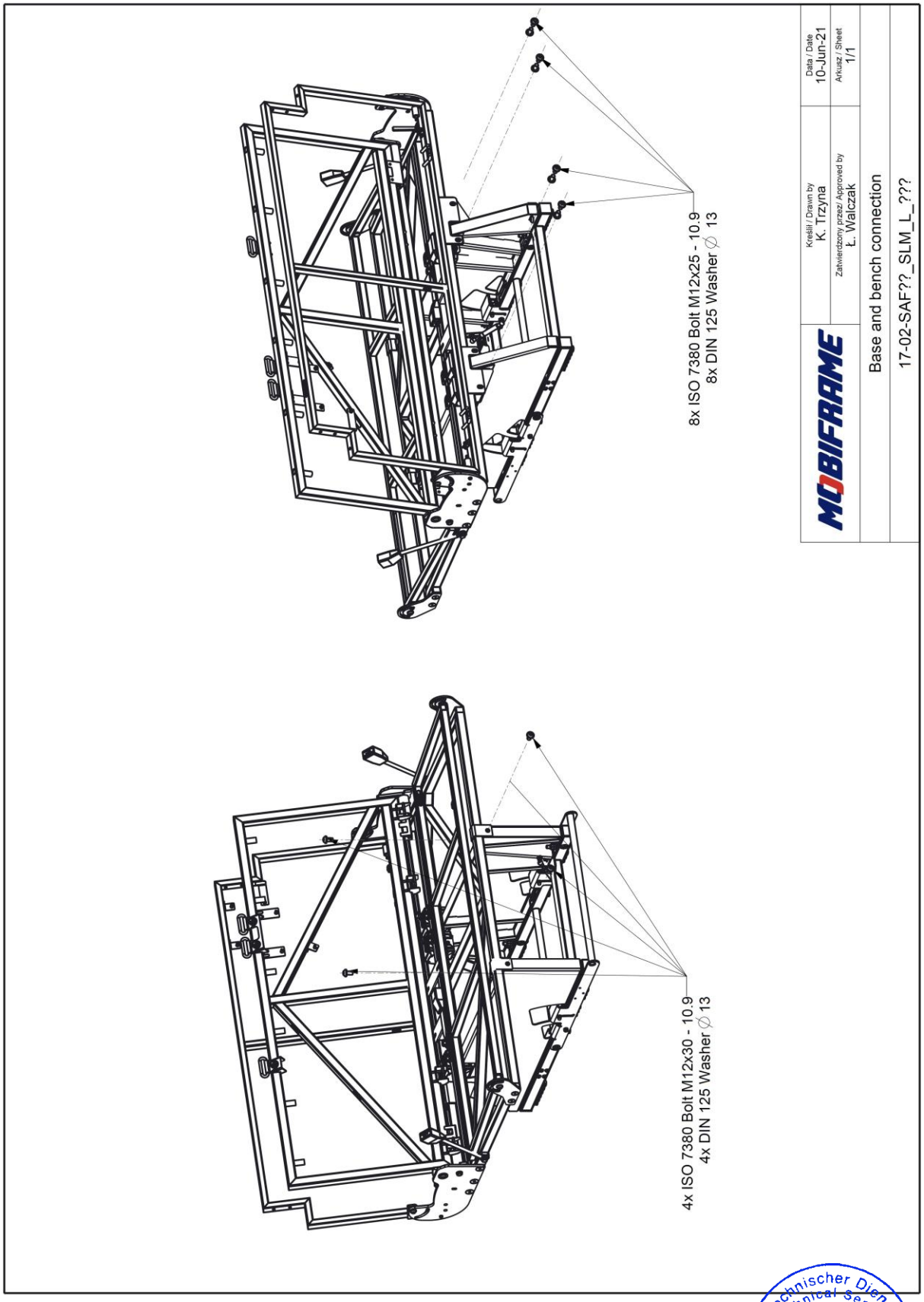
MOBIFRAME

Kreślił / Drawn by: A. Zwoliński — Data / Date: 10-Jun-21

Zatwierdzony przez / Approved by: Ł. Walczak — Arkusz / Sheet: 2/2

General design

17-01-SAF12_SLM_L_???_02



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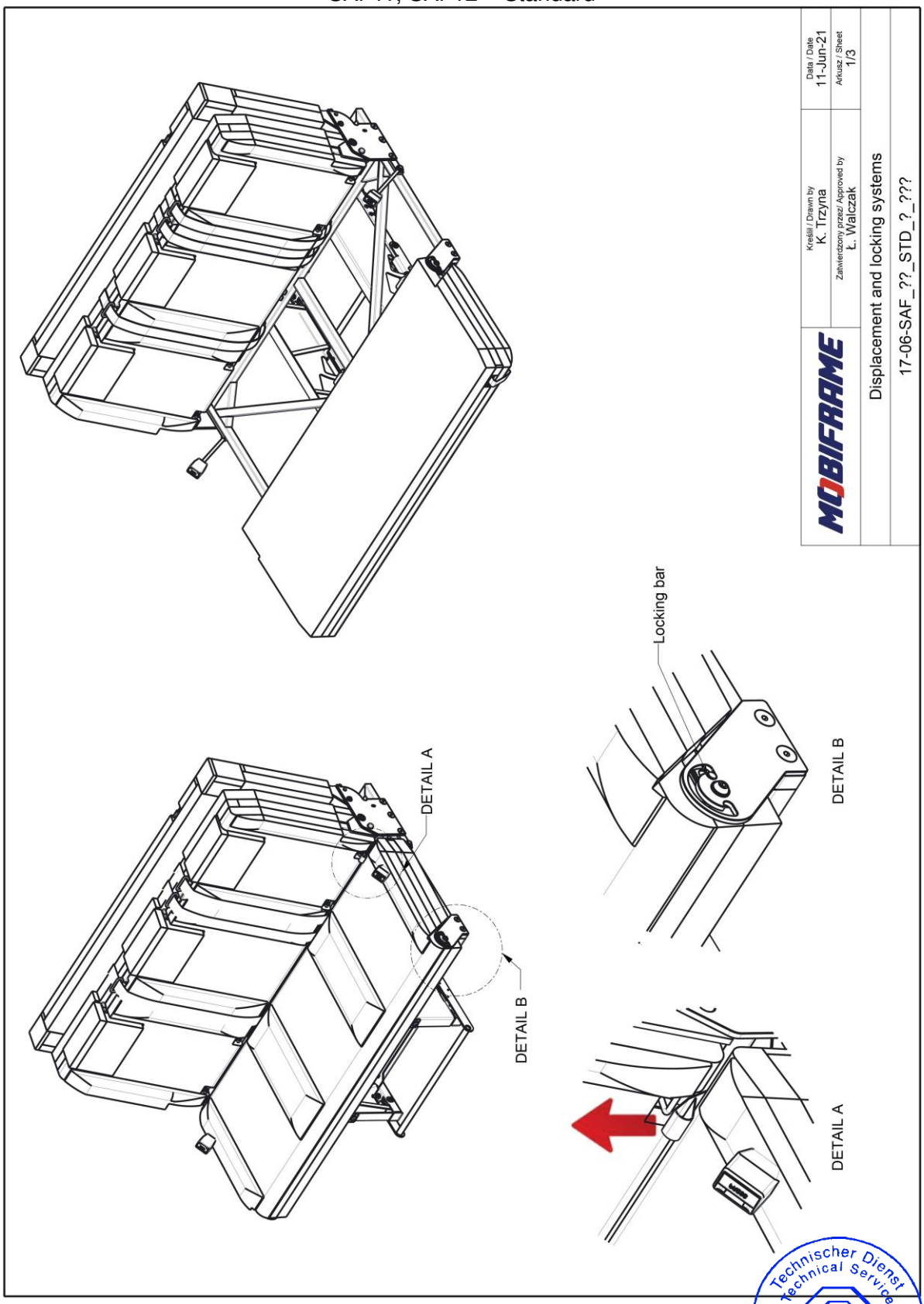
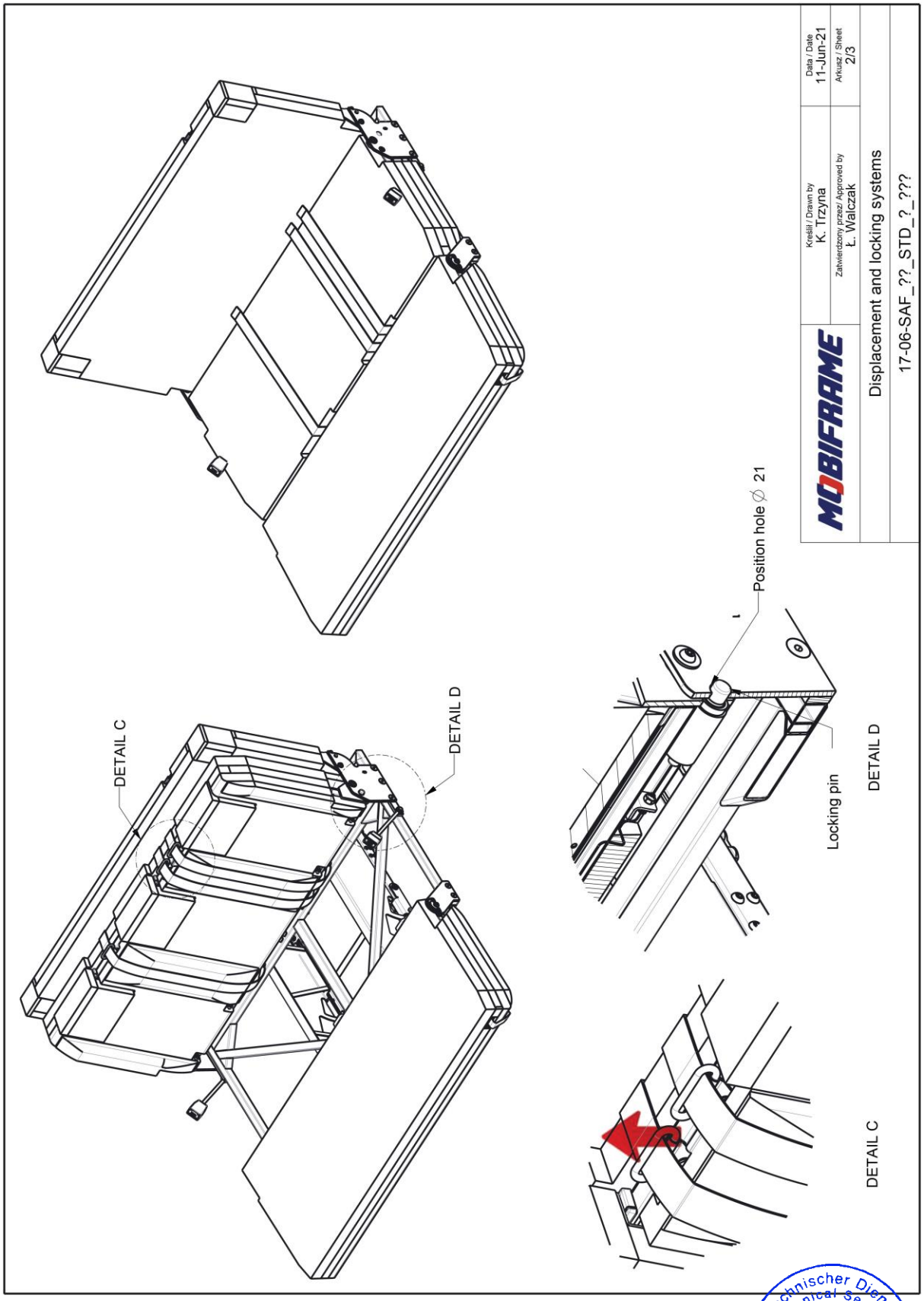
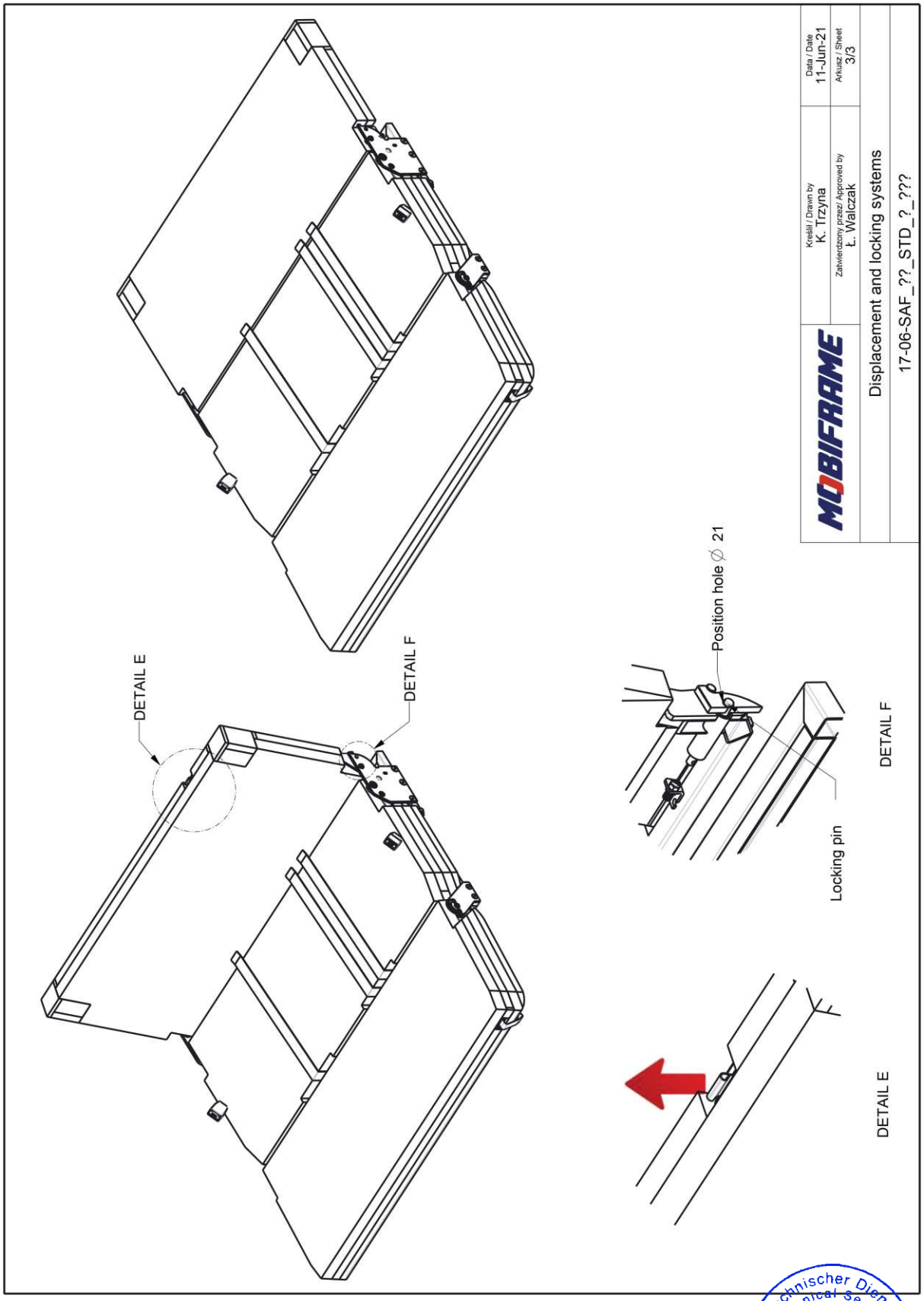
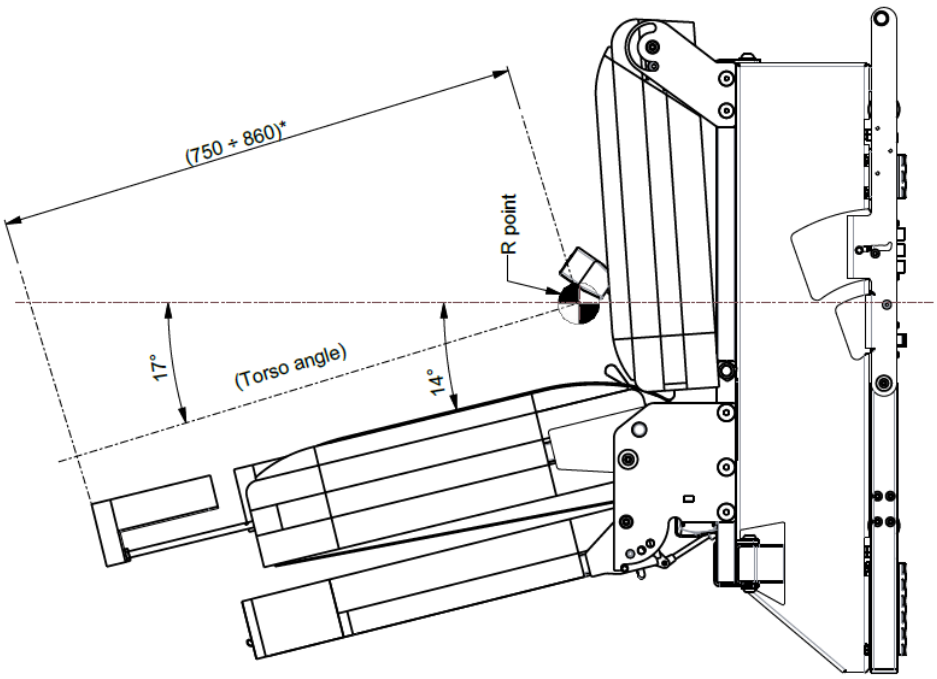
Drawings of displacement, locking systems and head restraint
SAF11, SAF12 – Standard









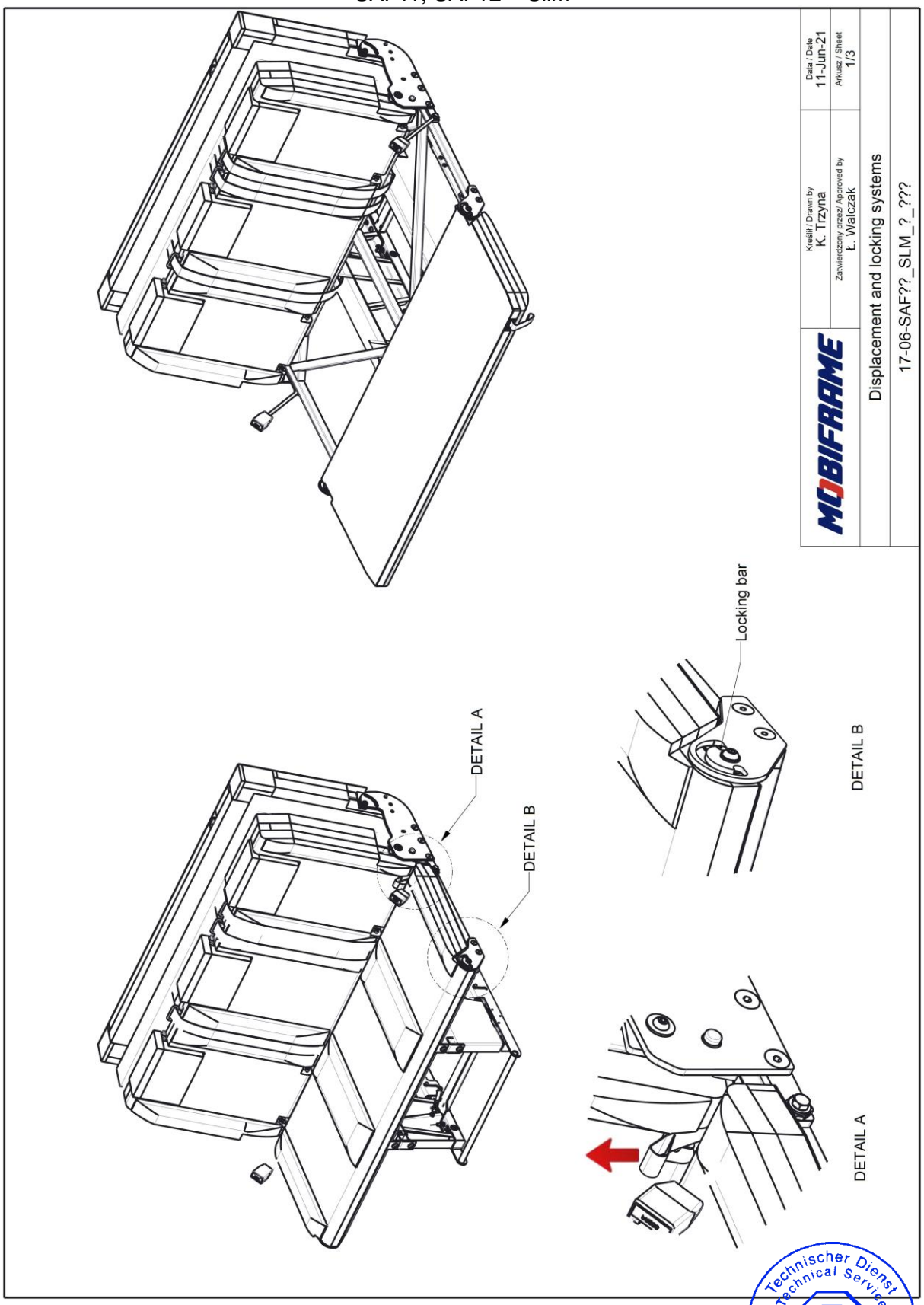
Remark:
* Maximum 3 positions of use.
Actual minimum, intermediate and maximum position shall lie within presented range.
Head restraint with only 1 position of use is also allowed.

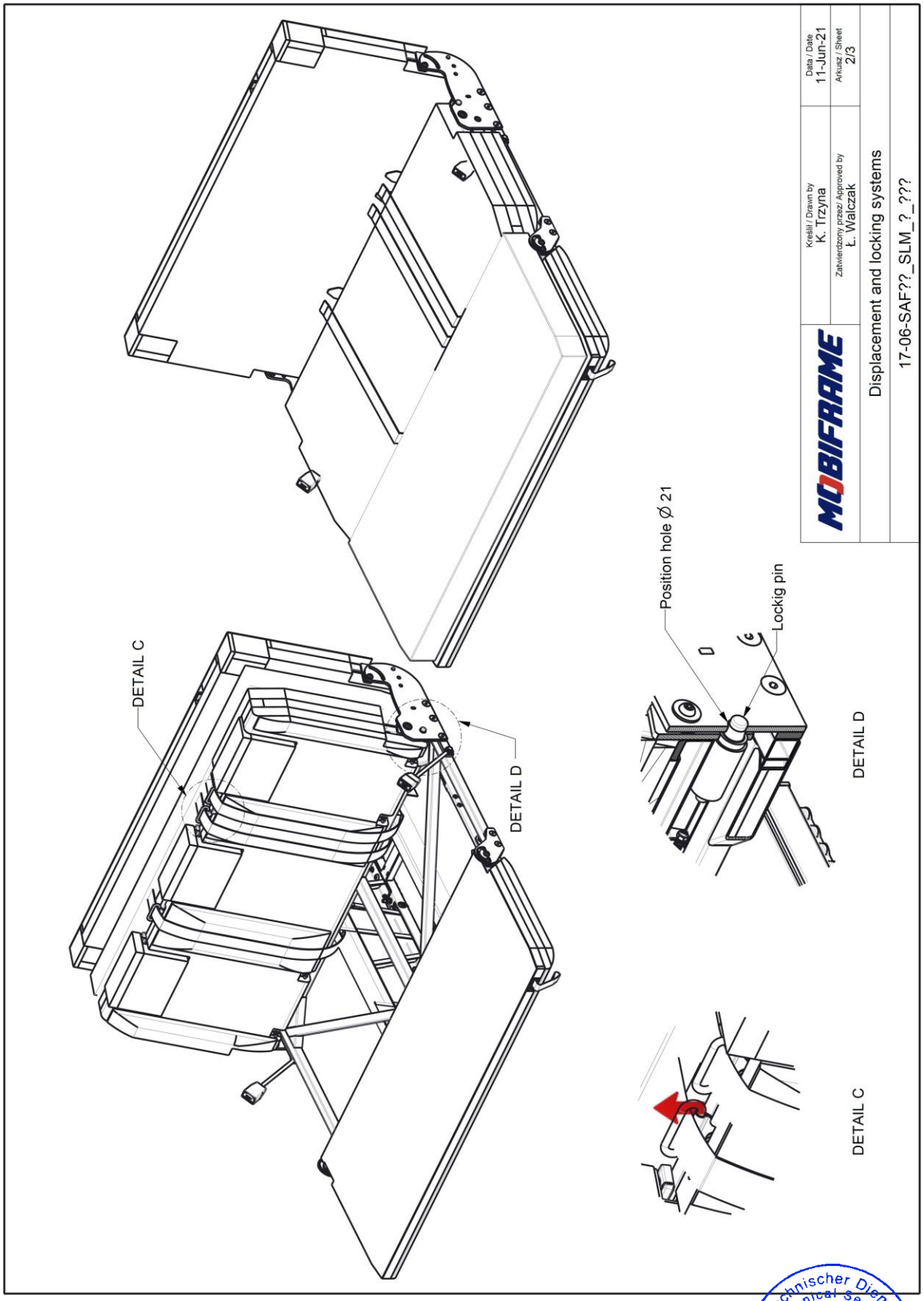
MOBIFRAME	Kreślił / Drawn by: A. Zwoliński	Data / Date: 04-Oct-21
	Zatwierdzony przez / Approved by: Ł. Walczak	Arkusz / Sheet: 1/1

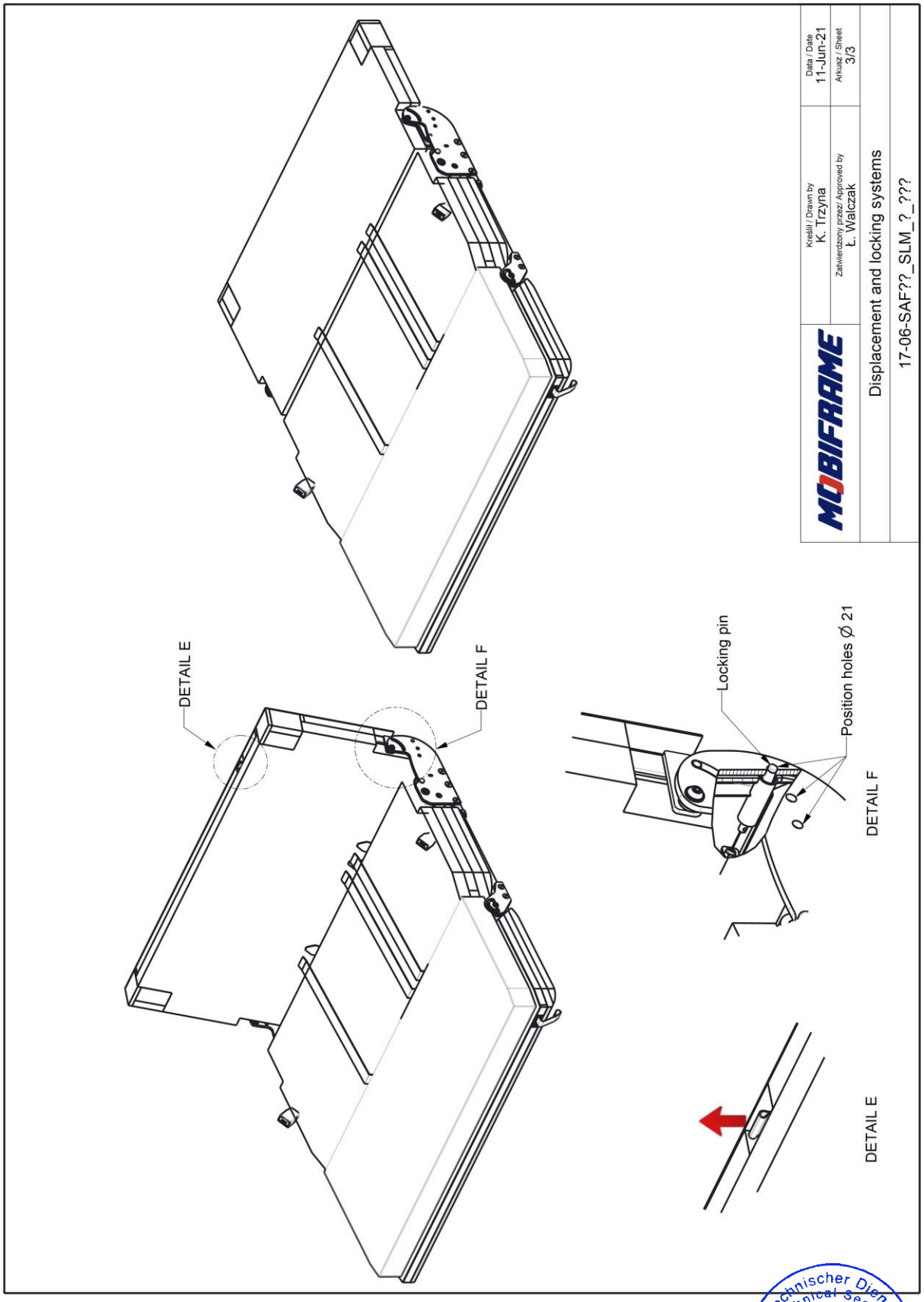
Height of adjustable head restraint

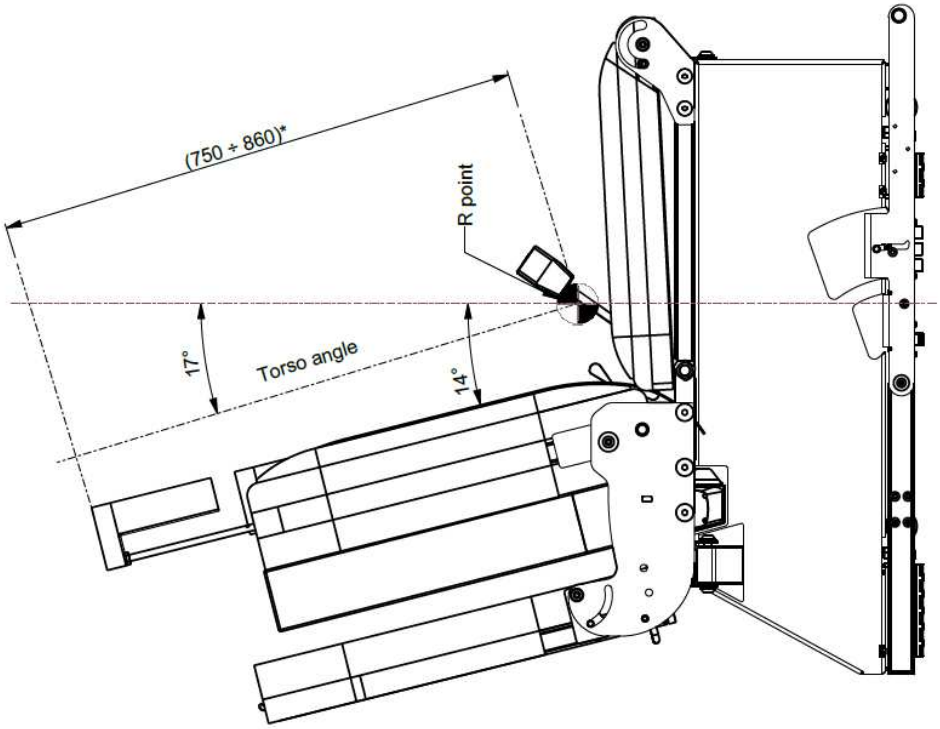
17-07-SAF??_STD_?_???

Technischer Dienst Technical Service TÜV SÜD Auto Service GmbH 152









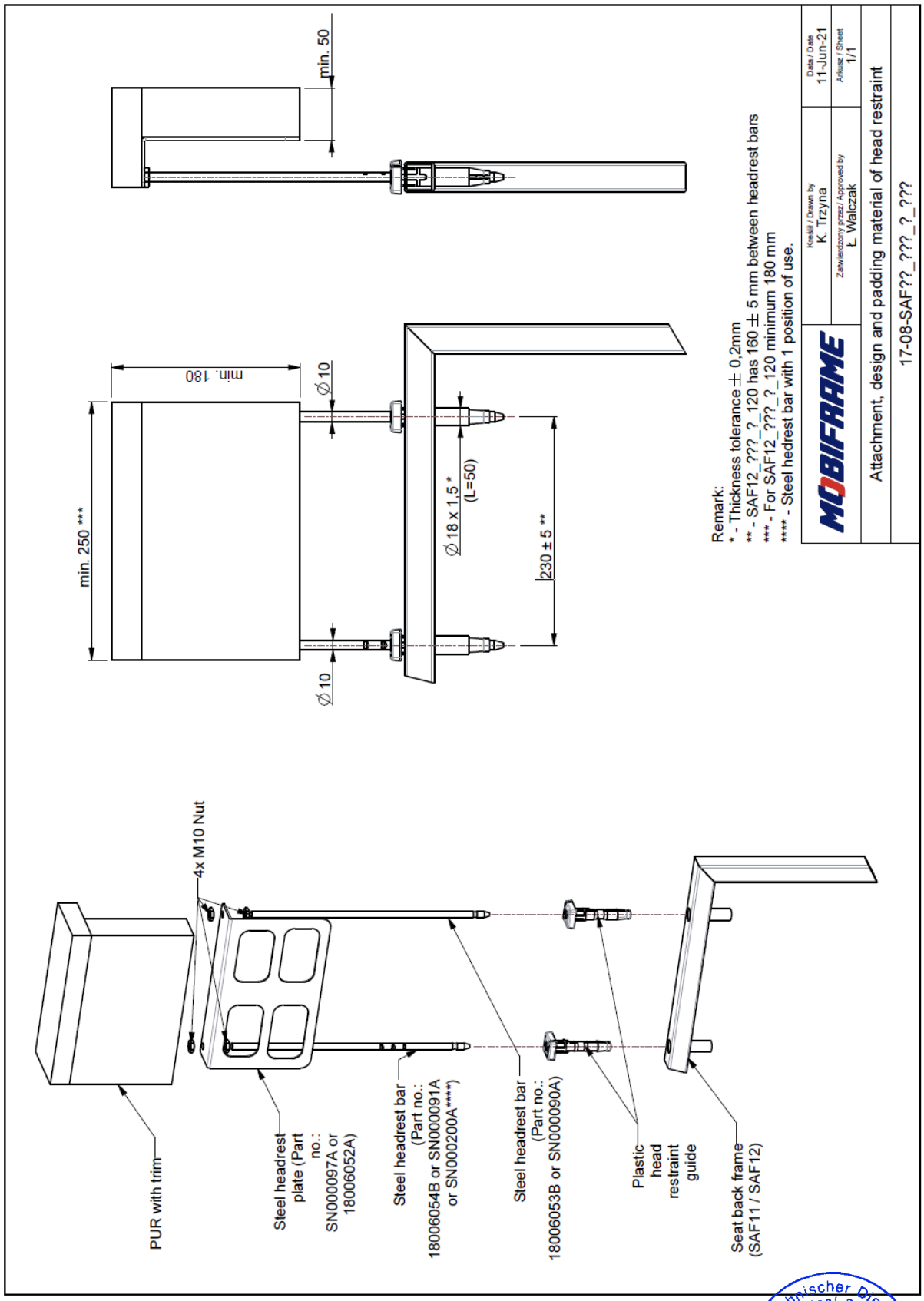
Remark:
* Maximum 3 positions of use.
Actual minimum, intermediate and maximum position shall lie within presented range.
Head restraint with only 1 position of use is also allowed.

MOBIFRAME	Kreślił / Drawn by: A. Zwoliński	Data / Date: 04-Oct-21
	Zatwierdzony przez / Approved by: Ł. Walczak	Arkusz / Sheet: 1/1

Height of adjustable head restraint

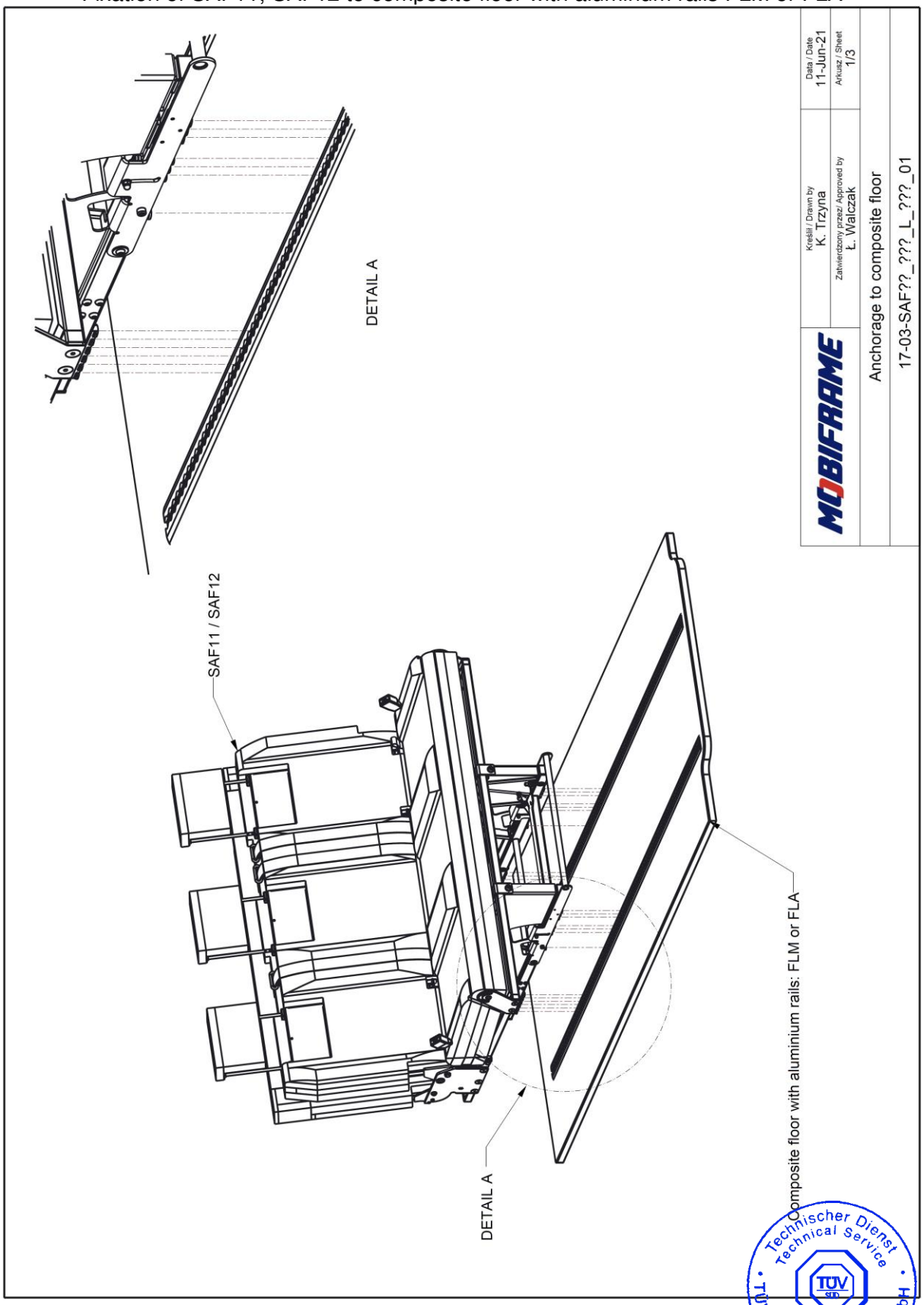
17-07-SAF??_SLM_?_???

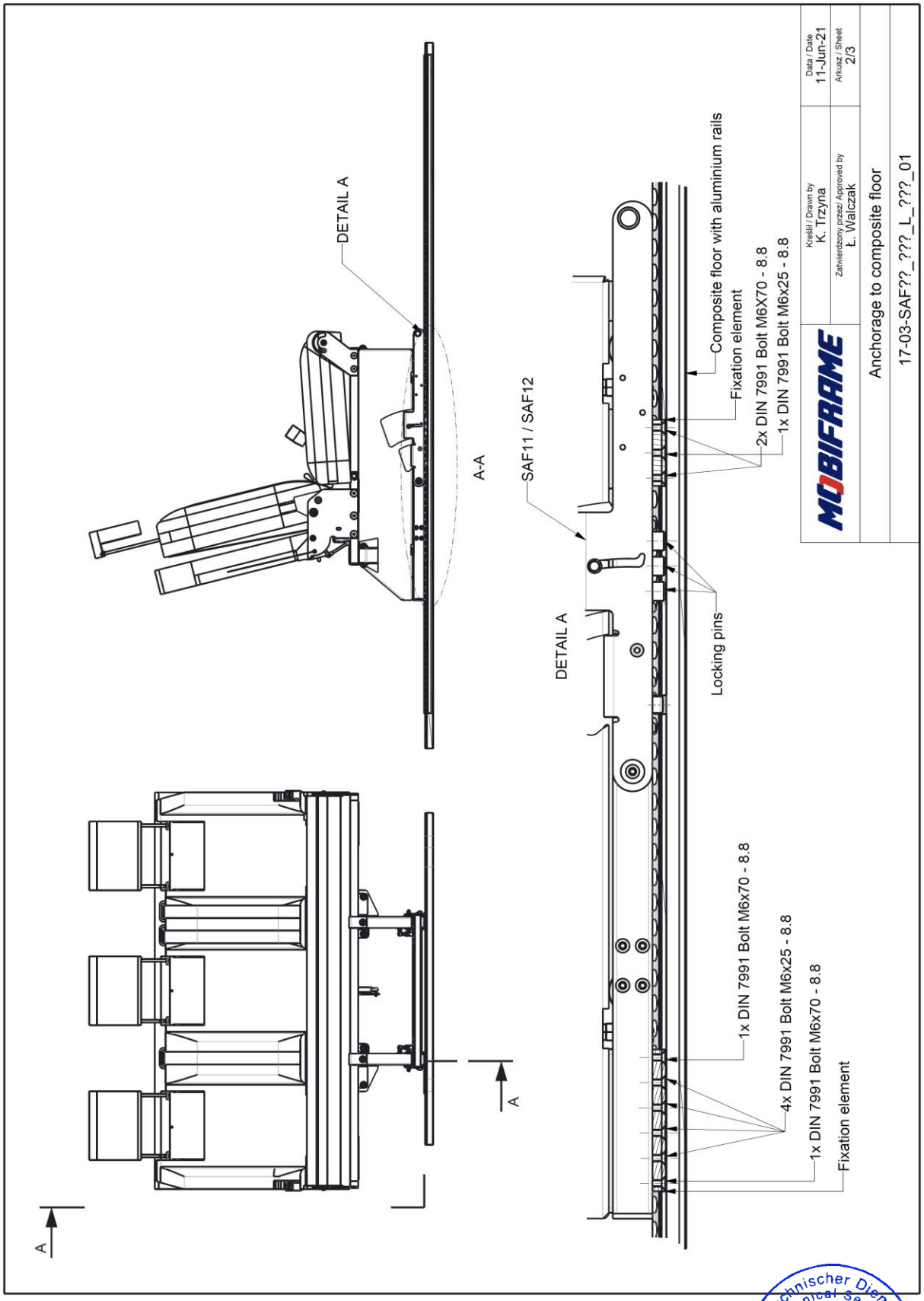
Technischer Dienst Technical Service TÜV SÜD Auto Service GmbH 152

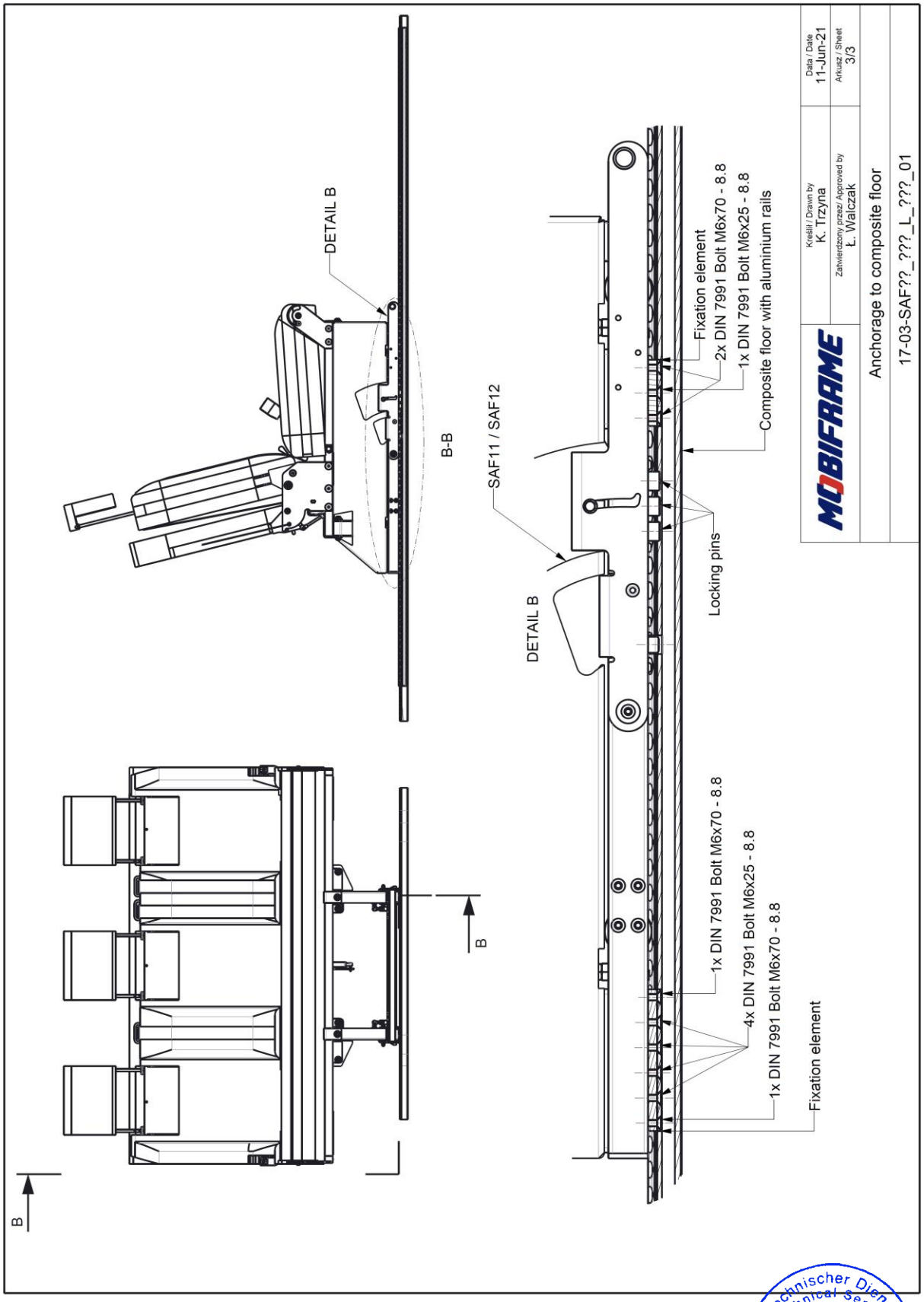


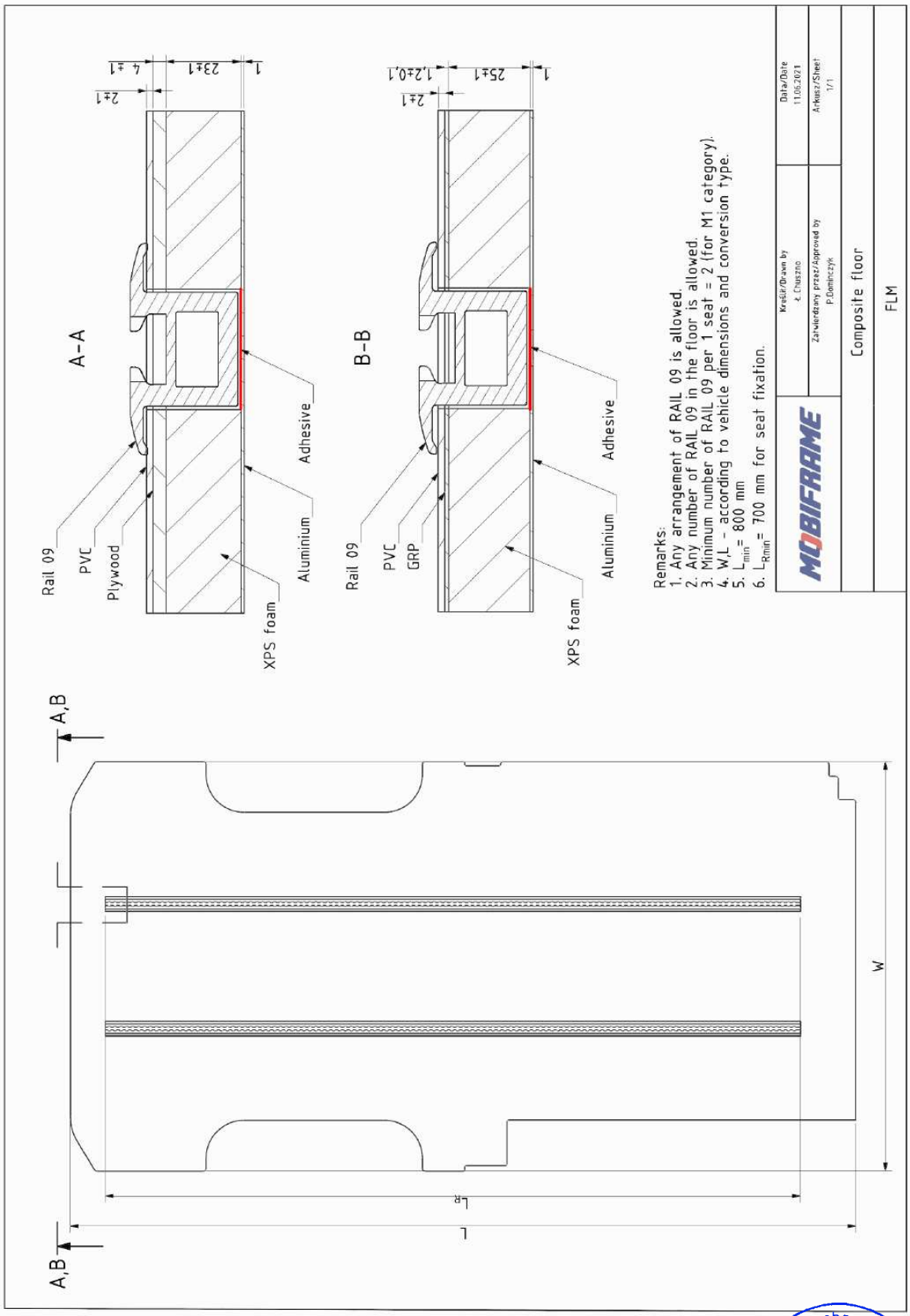
Enclosure 3: SEAT ANCHORAGES AND FLOOR DETAILS

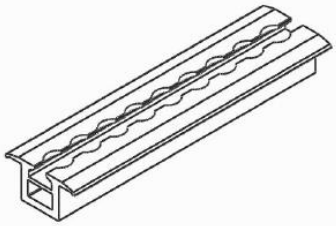
Fixation of SAF11, SAF12 to composite floor with aluminum rails FLM or FLA

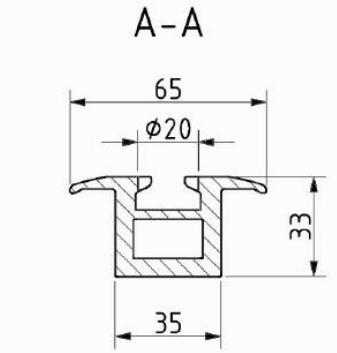


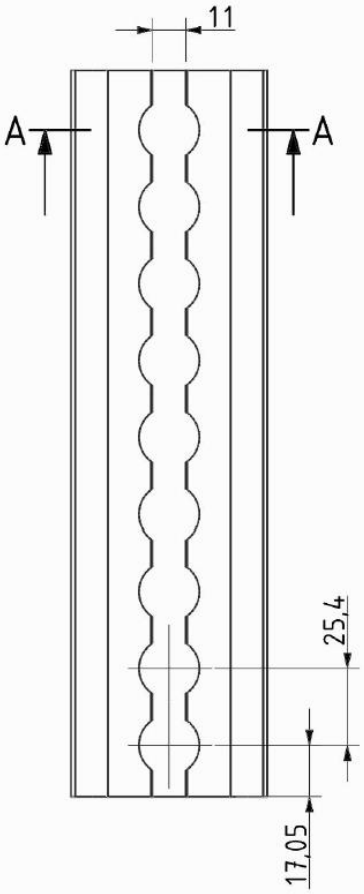










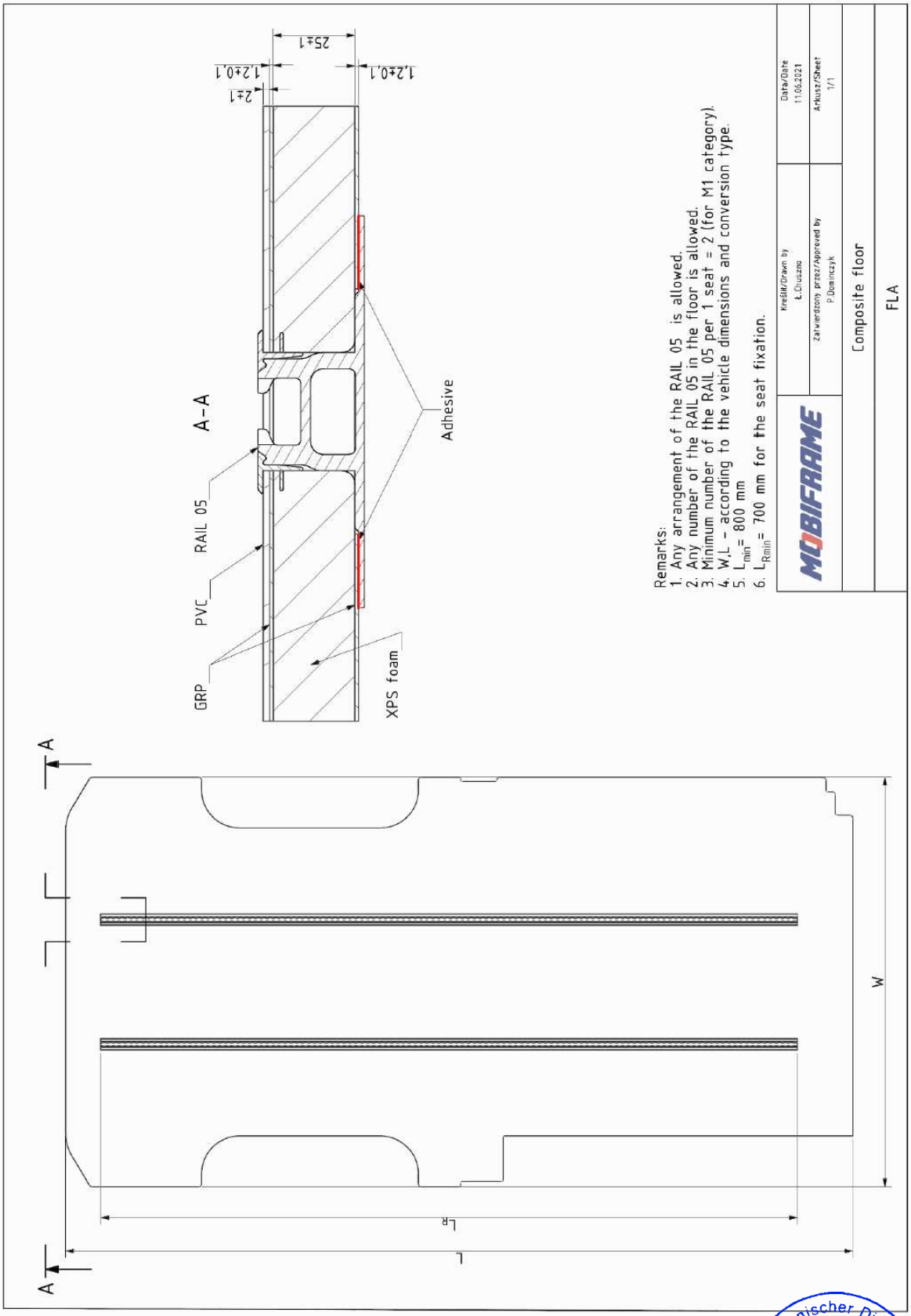


Uwagi/Remarks:
1. Tolerancja/Tolerance PN-EN 755-9
2. Materiał/Material: EN AW 6005 T6

	Kreślił/Drawn by	Data/Date
MOBIFRAME	Ł.Chuszno	11.06.2021
	Zatwierdzony przez/Approved by	Arkusz/Sheet
	P.Dominczyk	1/1

Rail 09

RAI09



Remarks:
1. Any arrangement of the RAIL 05 is allowed.
2. Any number of the RAIL 05 in the floor is allowed.
3. Minimum number of the RAIL 05 per 1 seat = 2 (for M1 category).
4. W,L - according to the vehicle dimensions and conversion type.
5. L_{min}= 800 mm
6. L_{Rmin}= 700 mm for the seat fixation.

Kreślił/Drawn by Ł.Drużno	Data/Date 11.06.2021	
Zatwierdzony przez/Approved by P.Dominczyk	Arkusz/Sheet 1/1	
MOBIFRAME	Composite floor	FLA

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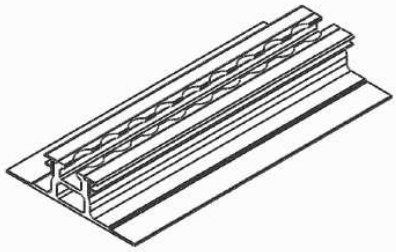
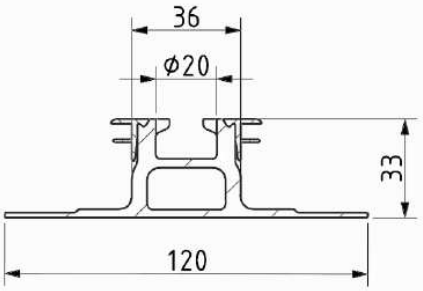
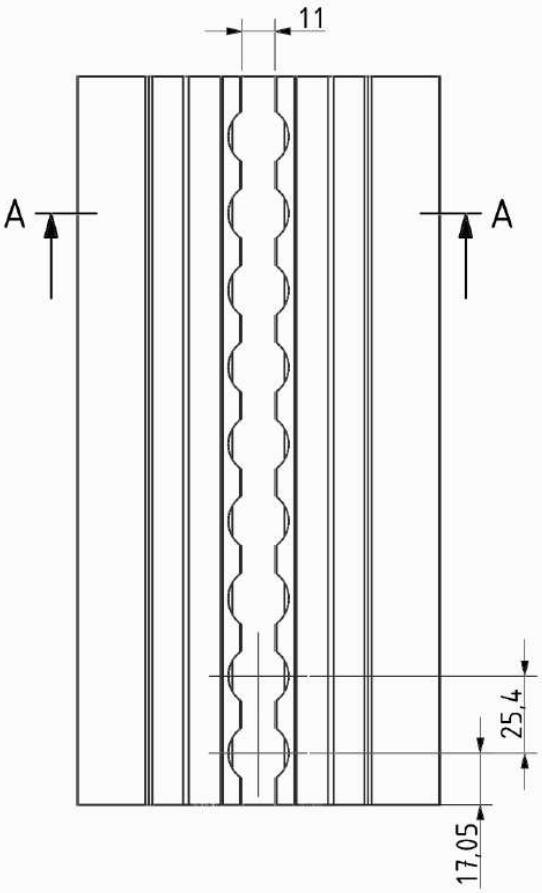






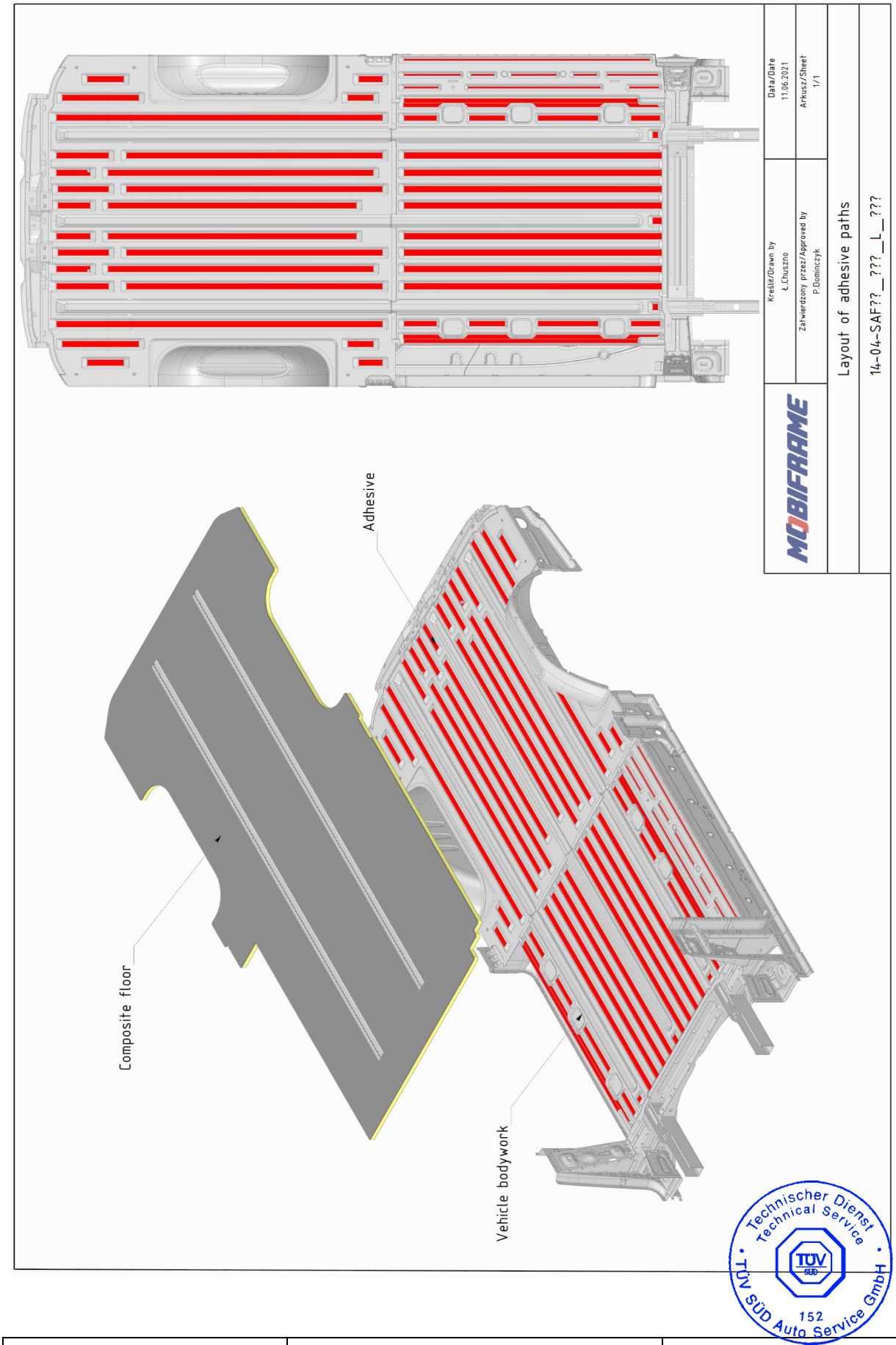
Uwagi/Remarks:
1. Tolerancja/Tolerance PN-EN 755-9
2. Materiał/Material: EN AW 6005 T6

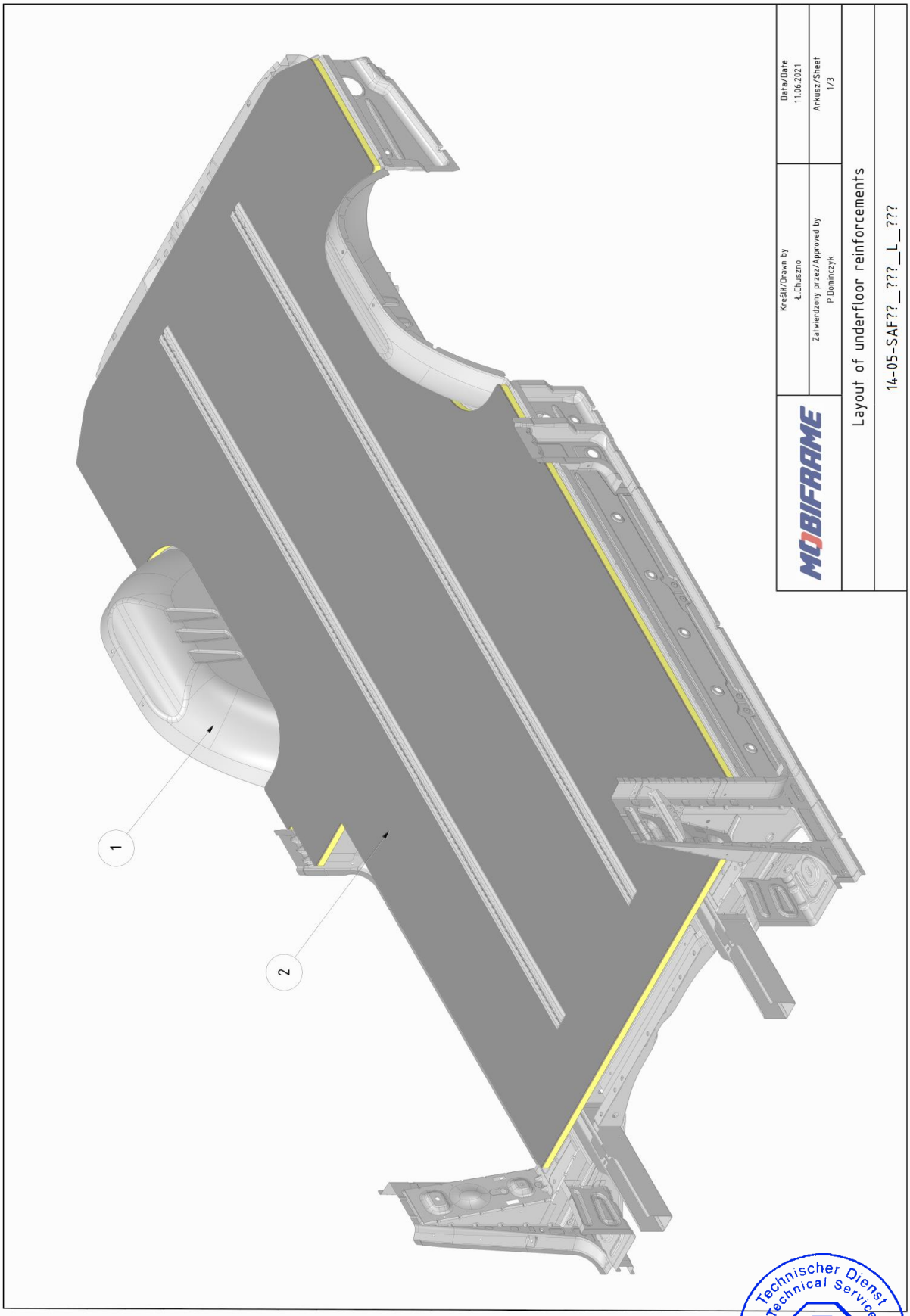
	Kreślił/Drawn by	Data/Date
MOBIFRAME	Ł.Chuszno	11.06.2021
	Zatwierdzony przez/Approved by	Arkusz/Sheet
	P.Dominczyk	1/1

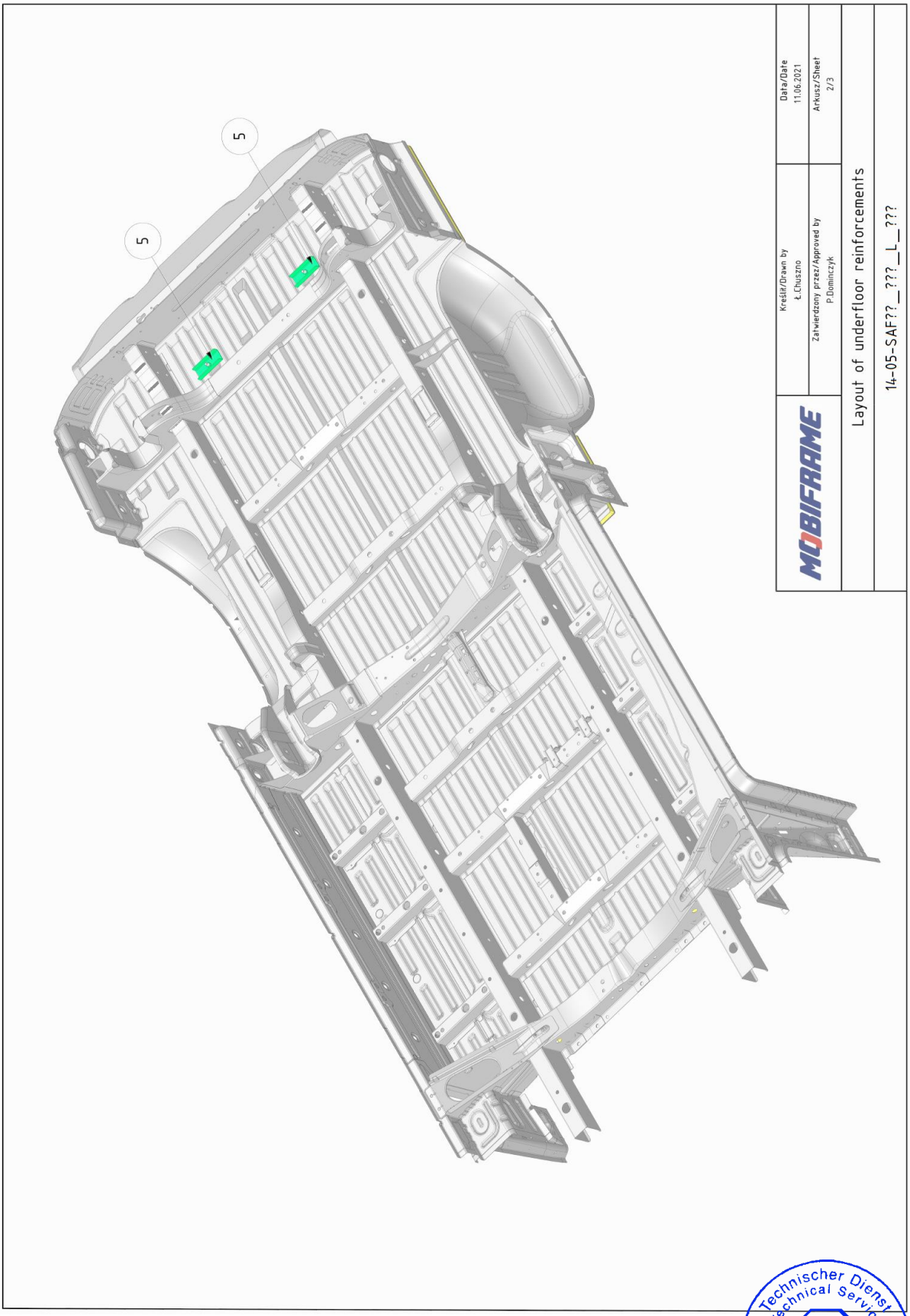
Rail 05

RAI05

Installation of composite floor to the vehicle







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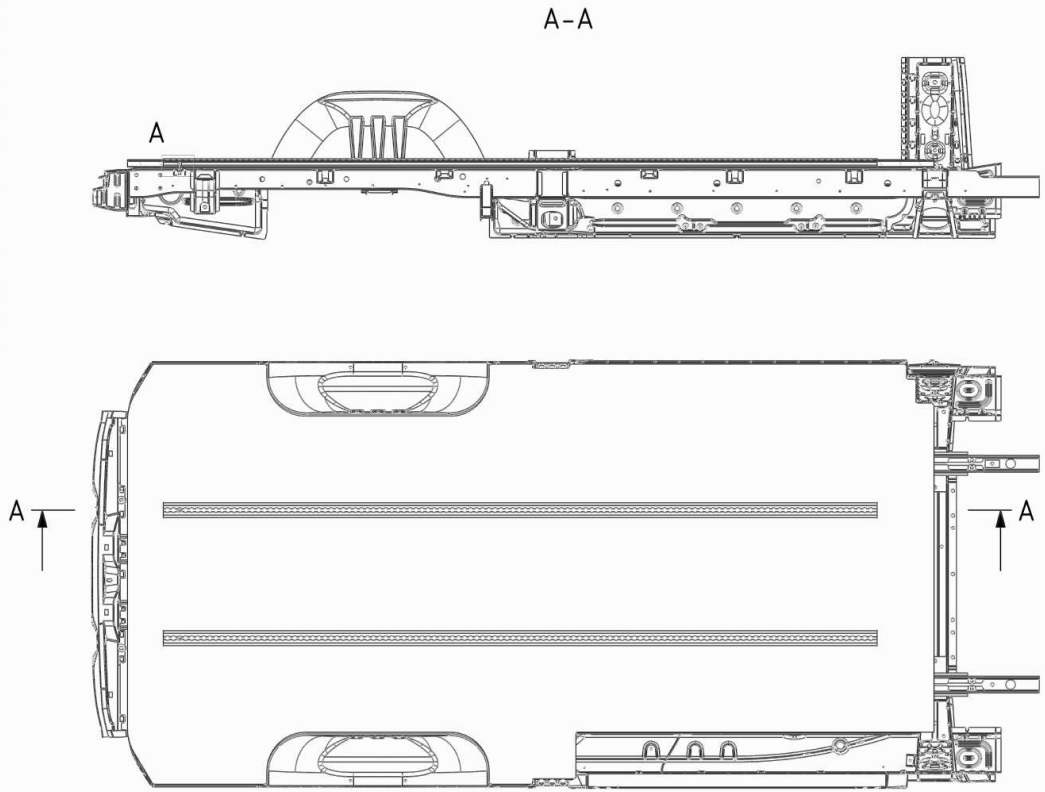

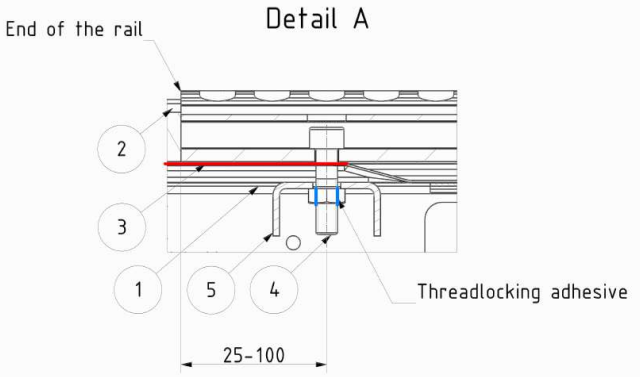

ITEM NO.	PART NAME	QTY
1	Vehicle bodywork	1
2	Composite floor	1
3	Adhesive	1
4	DIN 912 - M10 x 40	2
5	Underfloor reinforcement	2

Remarks:
1. Tightening torques:
   M10 - 10.9: 30 NM
2. The length of the bolts depends on vehicle's bodywork.
3. Every rail must be tightened at the end using one of the reinforcements:
   WZP-01, WZP-20, UWP-01.
4. In case of use of underfloor reinforcement UWP-01 additional nut M10 and washer Ø10,5 should be applied.
5. It is allowed to rotate the underfloor reinforcements by 90±5 degrees.
6. Minimal usage of the adhesive per m^2 is 1000 g.
7. Use the threadlocking adhesive to tighten the rail to the underfloor reinforcement.

MOBIFRAME	Kreślił/Drawn by Ł.Chuszno	Data/Date 11.06.2021
	Zatwierdzony przez/Approved by P.Dominczyk	Arkusz/Sheet 3/3
Layout of underfloor reinforcements		
14-05-SAF??__???__L__???		

Preparation of the vehicle body and the composite floor

Clean vehicle bodywork before installing the floor.

For this purpose use Betaclean (cleaner) to degrease the vehicle's floor and the underside of the composite floor.

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Application of primer

Apply Betaprime to the vehicle's floor and underside of the composite floor.

Primer can be applied with either a brush or a roller.

Note: Contact surfaces (of vehicle floor and composite floor) must be covered by Betaprime.

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Gluing of the floor into vehicle

Use Betamate to glue the composite floor.

The adhesive must be applied to the surfaces coated previously by Betaprime.

After placing the composite floor in the vehicle, the beads of glue must be pressed down evenly over the whole surface of the floor.

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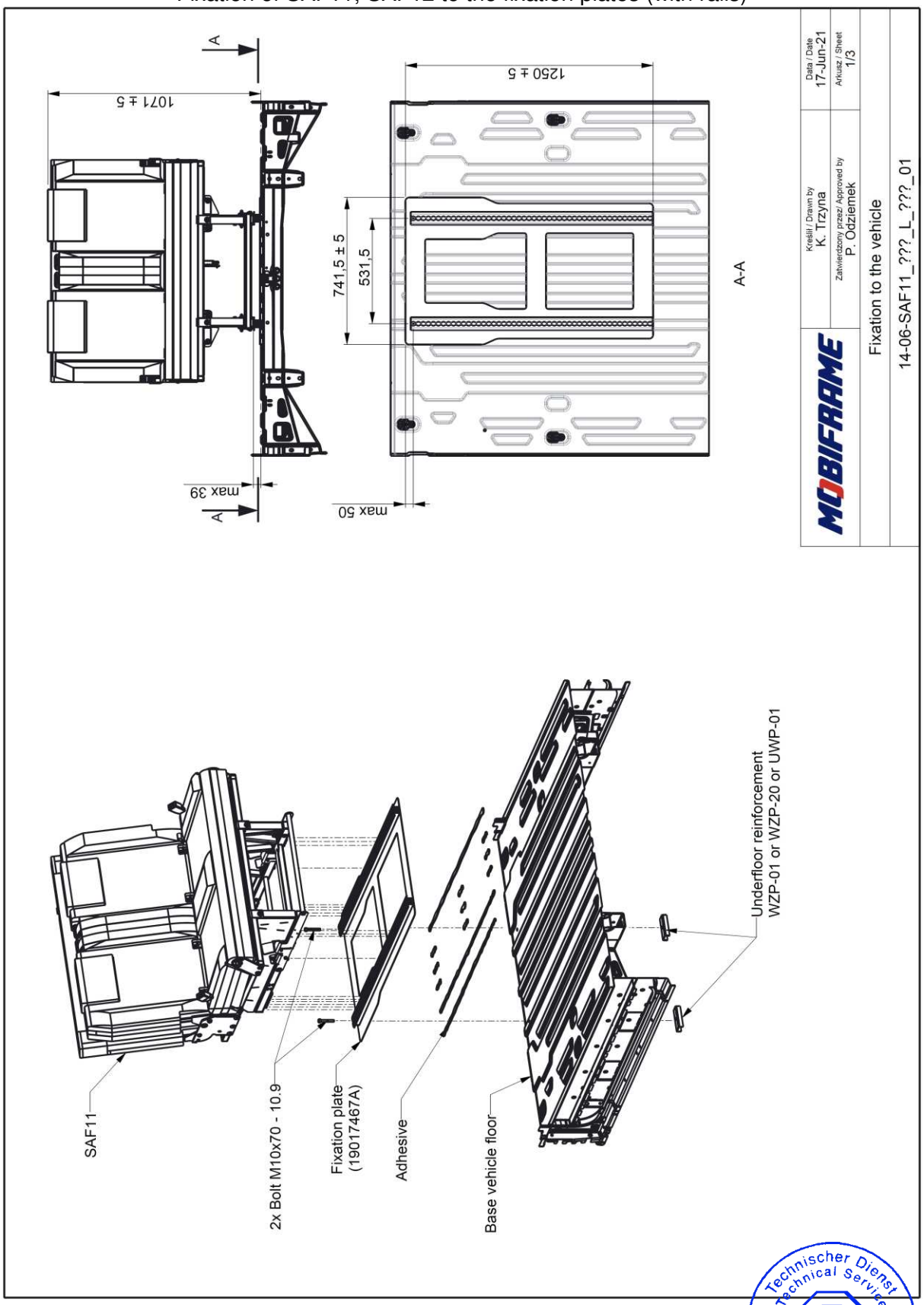
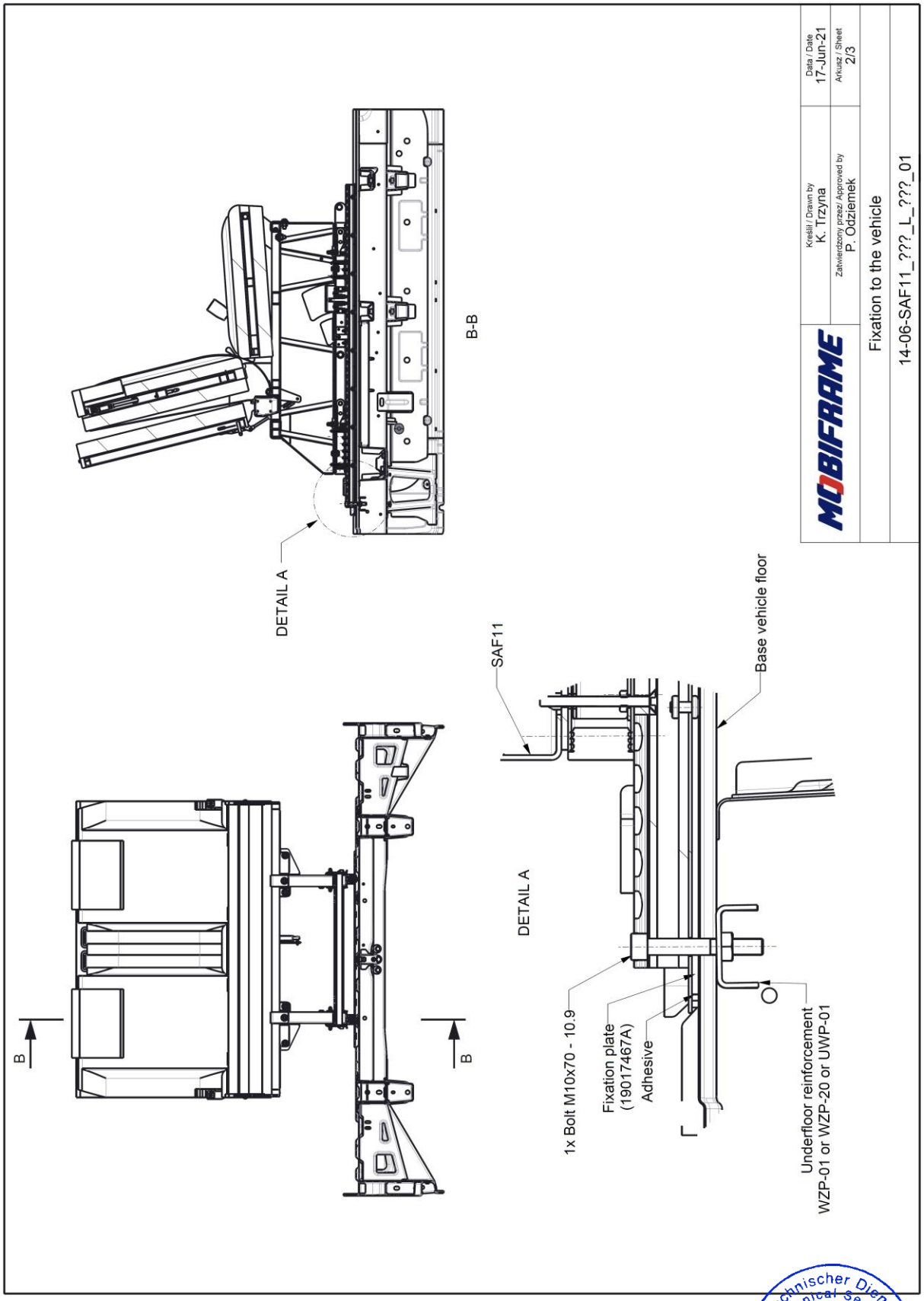
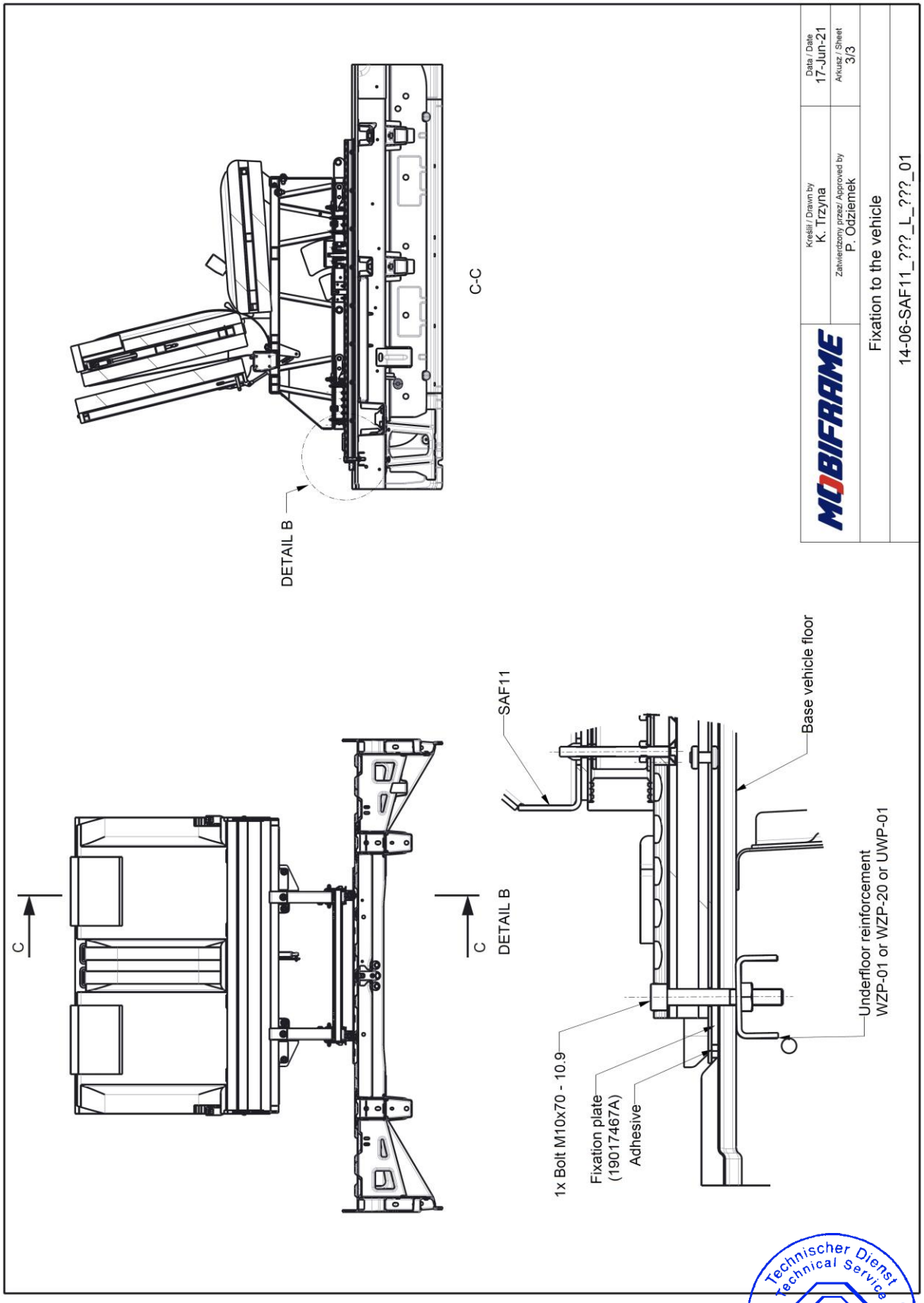
Fixation of SAF11, SAF12 to the fixation plates (with rails)







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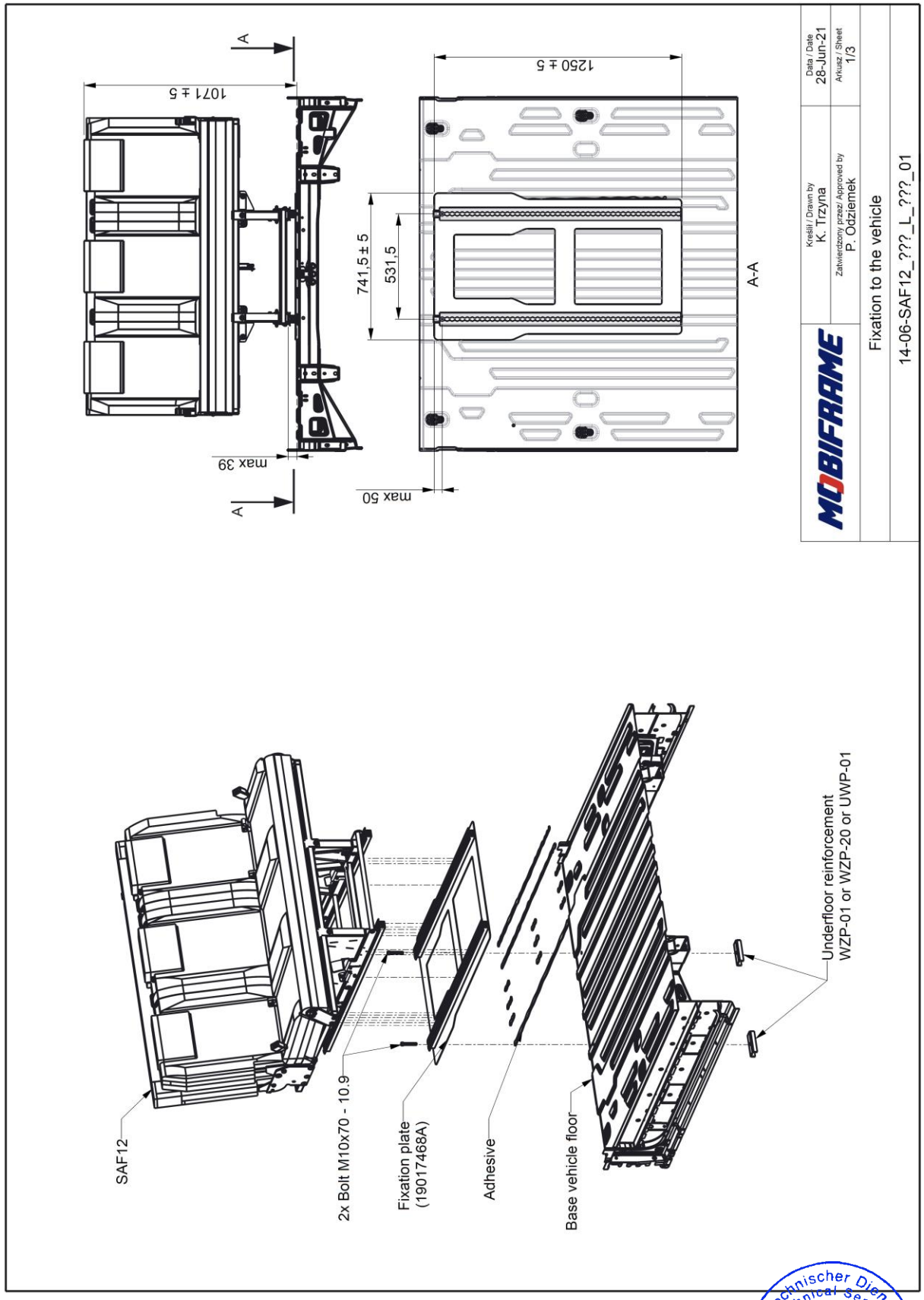
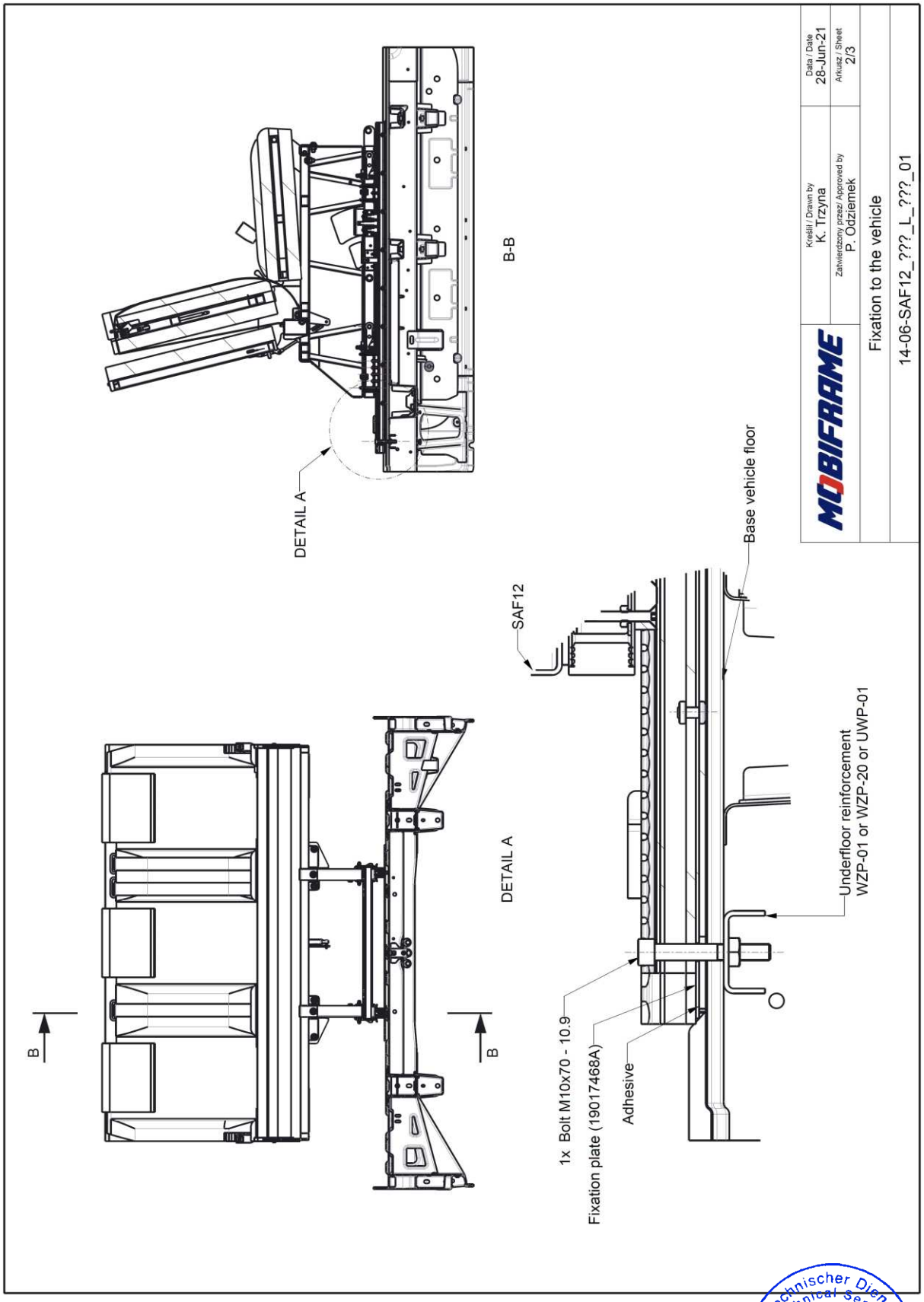
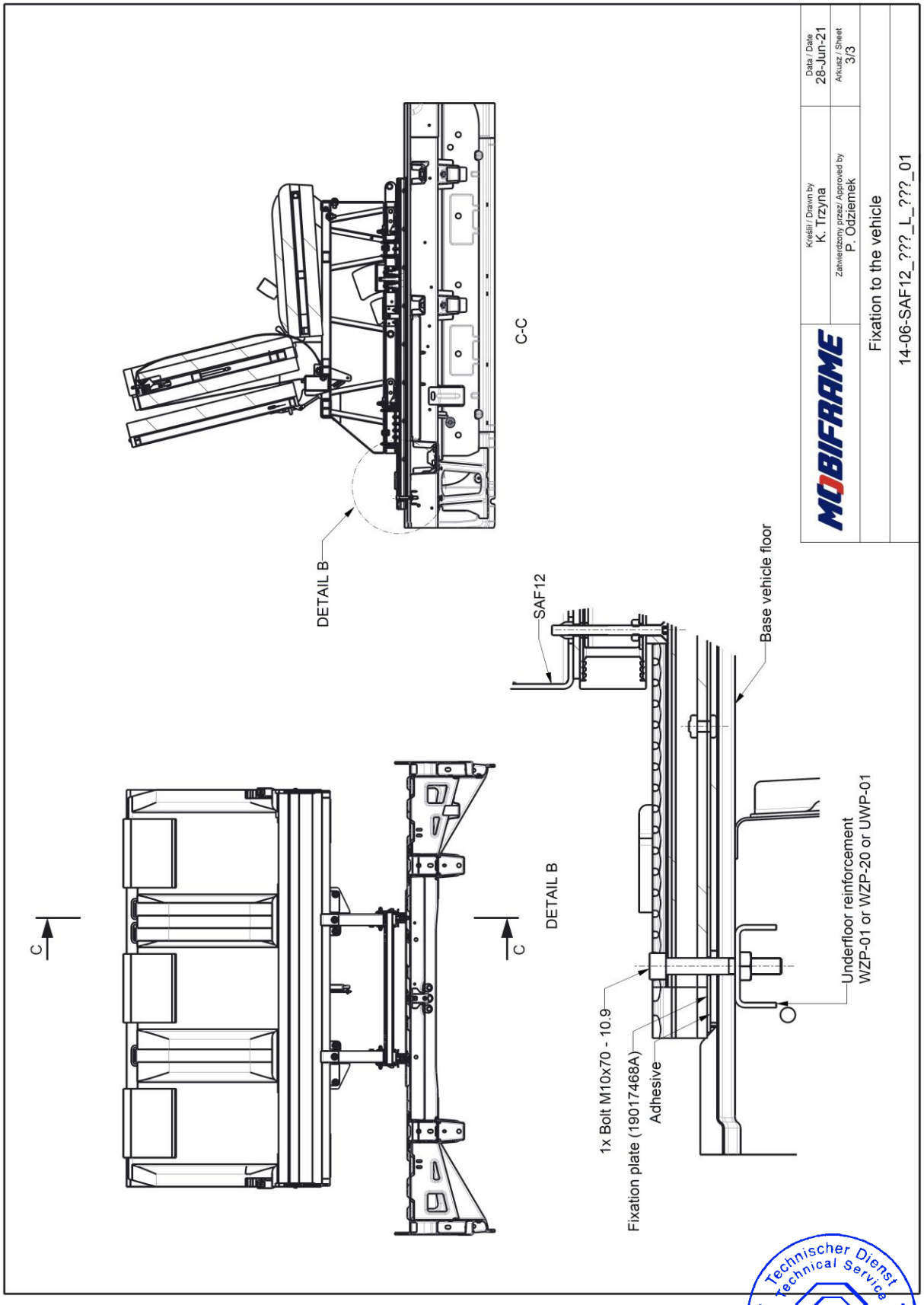
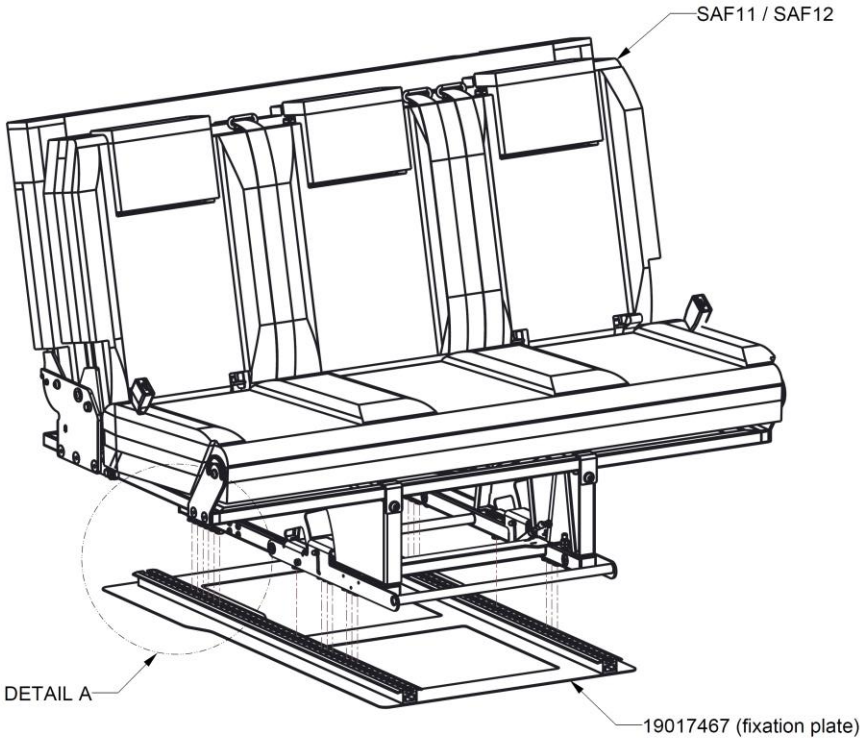
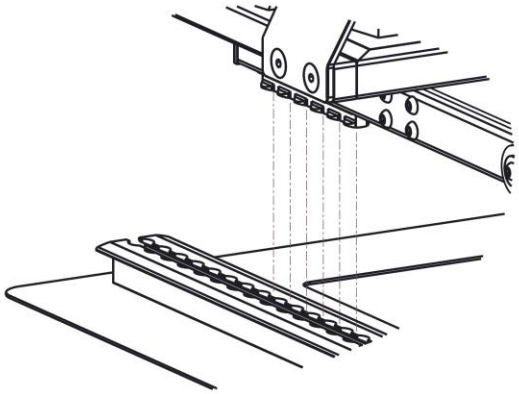










DETAIL A

MOBIFRAME	Kreślił / Drawn by K. Trzyna	Data / Date 11-Jun-21
	Zatwierdzony przez/ Approved by Ł. Walczak	Arkusz / Sheet 1/2
Anchorage to fixation plate with rails		
17-05-SAF??_???_L_???_01		

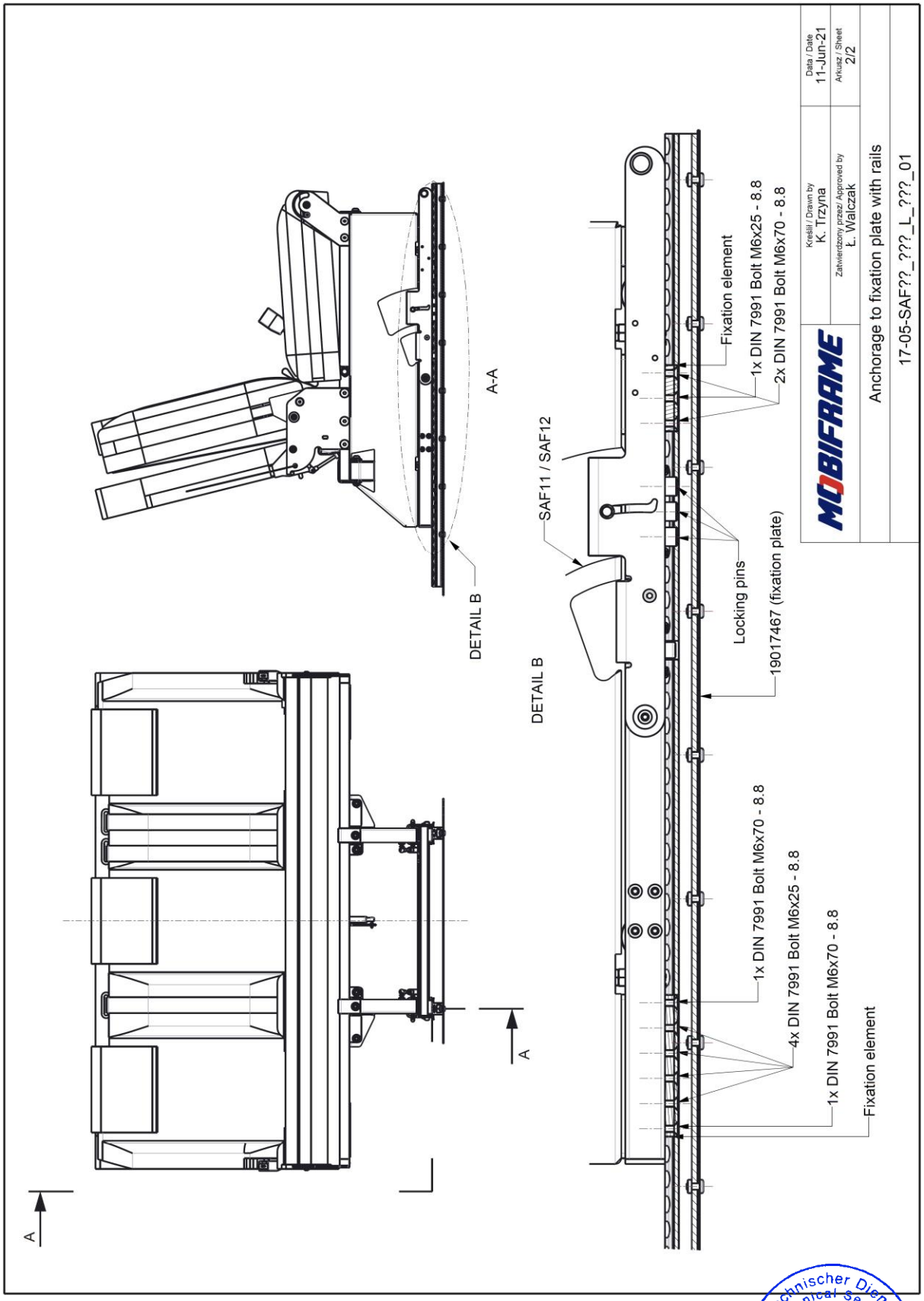
MOBIFRAME

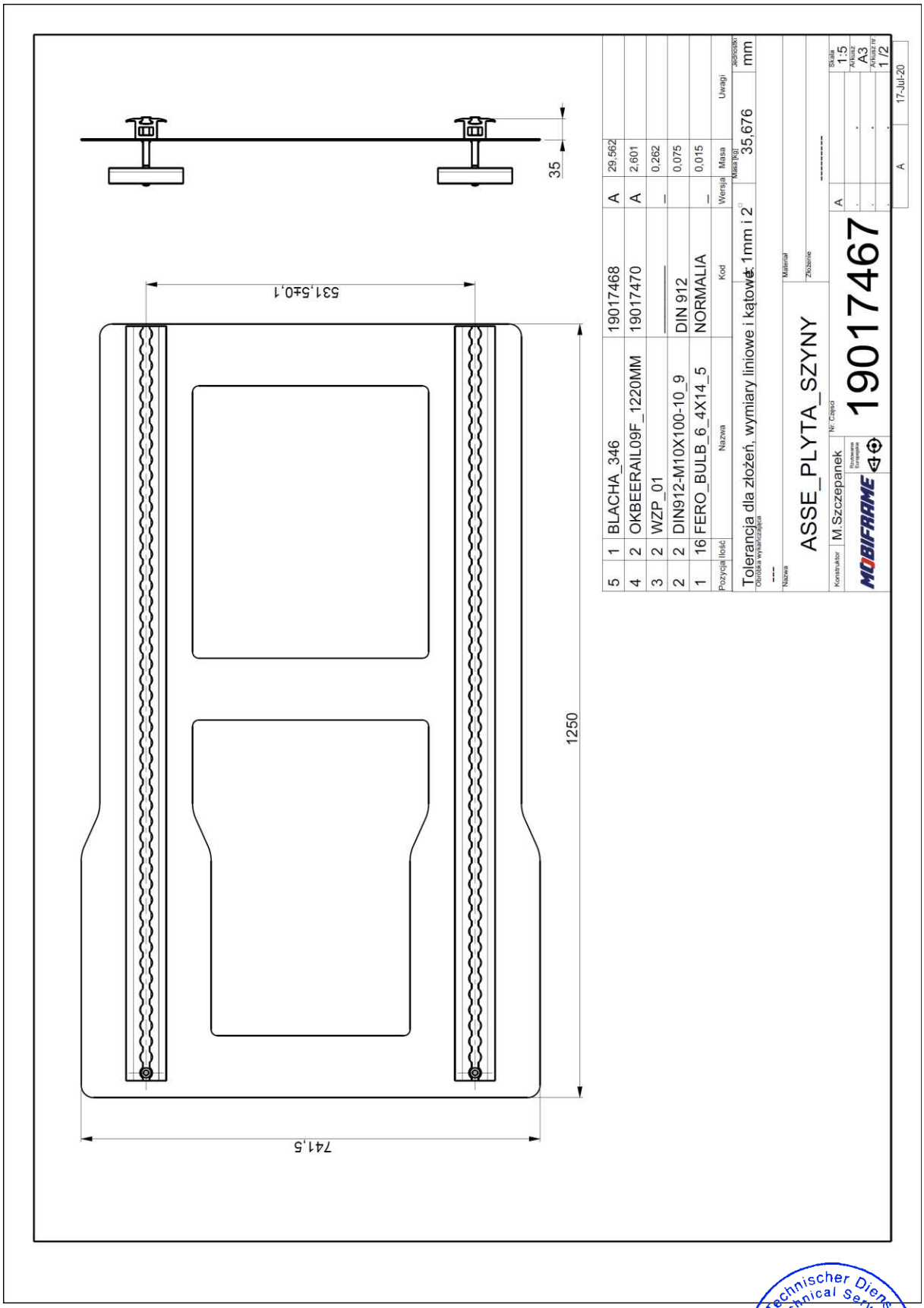
MOBIFRAME/03/2021-00

Date: 04.10.2021

Page / pages: 86/124

TÜV SÜD Auto Service GmbH 152 Technischer Dienst Technical Service



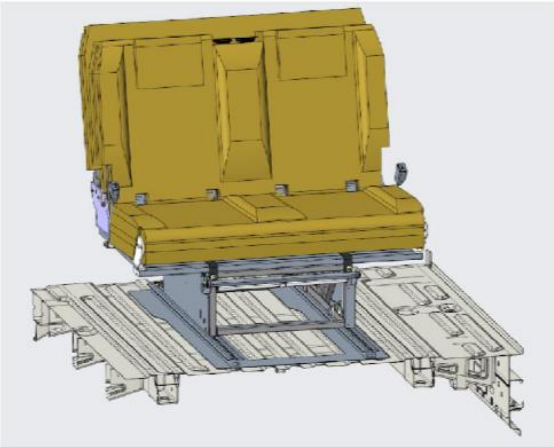


Installation guide:

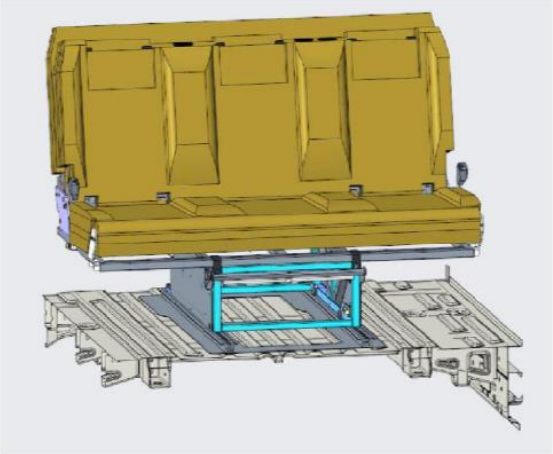
Fixation of **SAF11_???_L_???** to the vehicle floor

and

Fixation of **SAF12_???_L_???** to the vehicle floor



SAF11



SAF12

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.

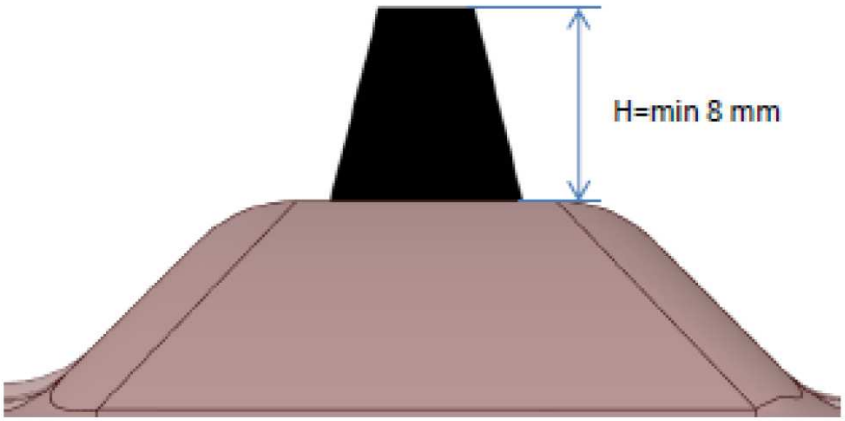
Step 2. Primmering

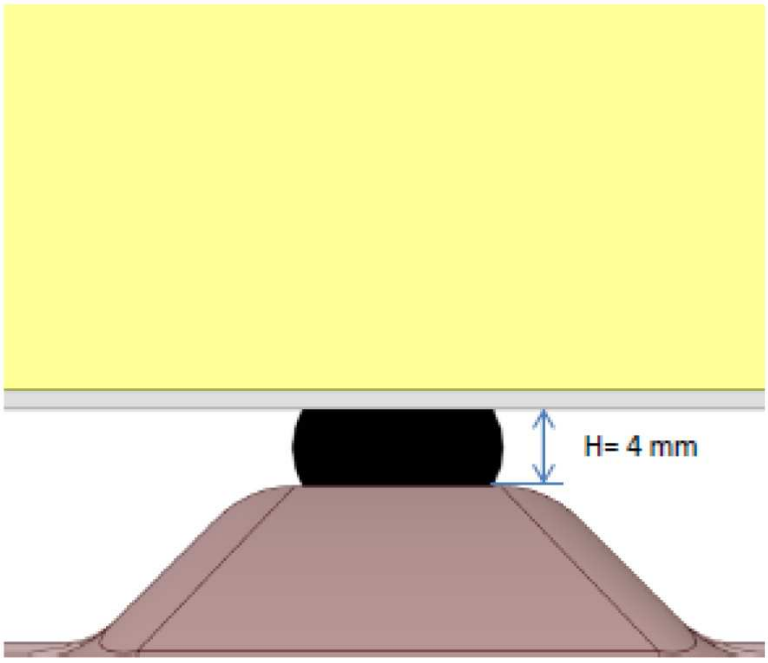
Apply Betaprime on the vehicle's floor and also on bottom side of the fixation plate. Primer can be applied with a brush or roller. Contact surfaces (of vehicle floor and fixation plate) must be covered by Betaprime.

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





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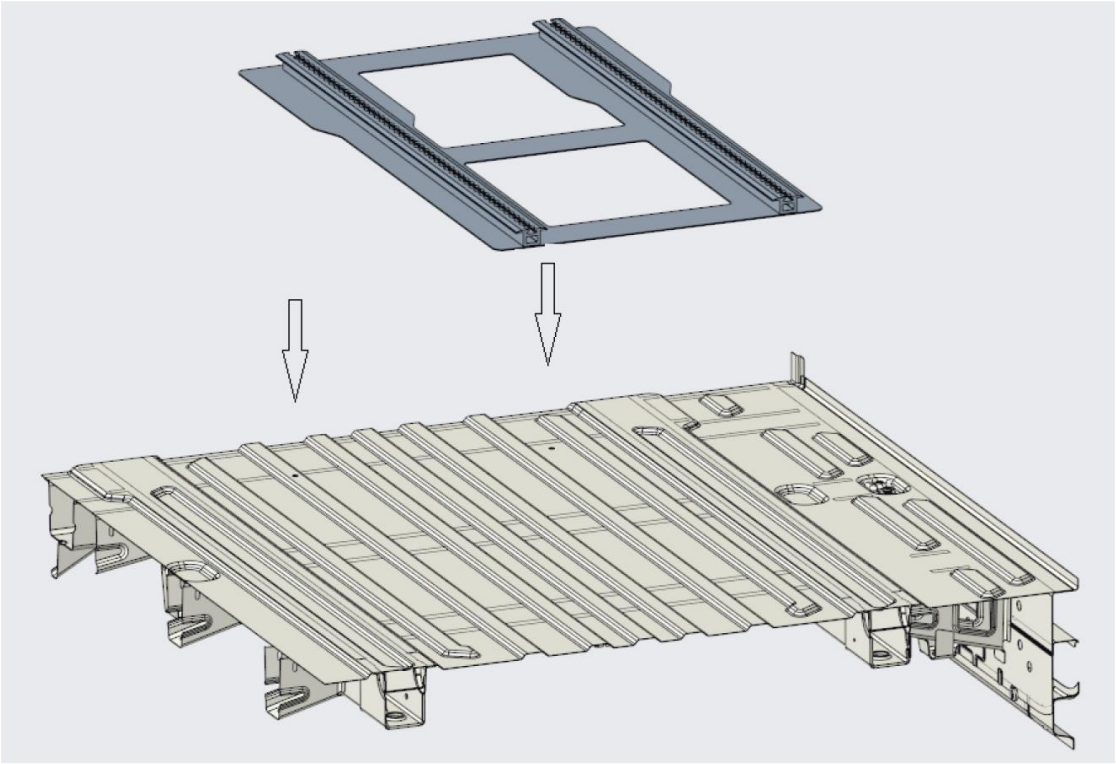
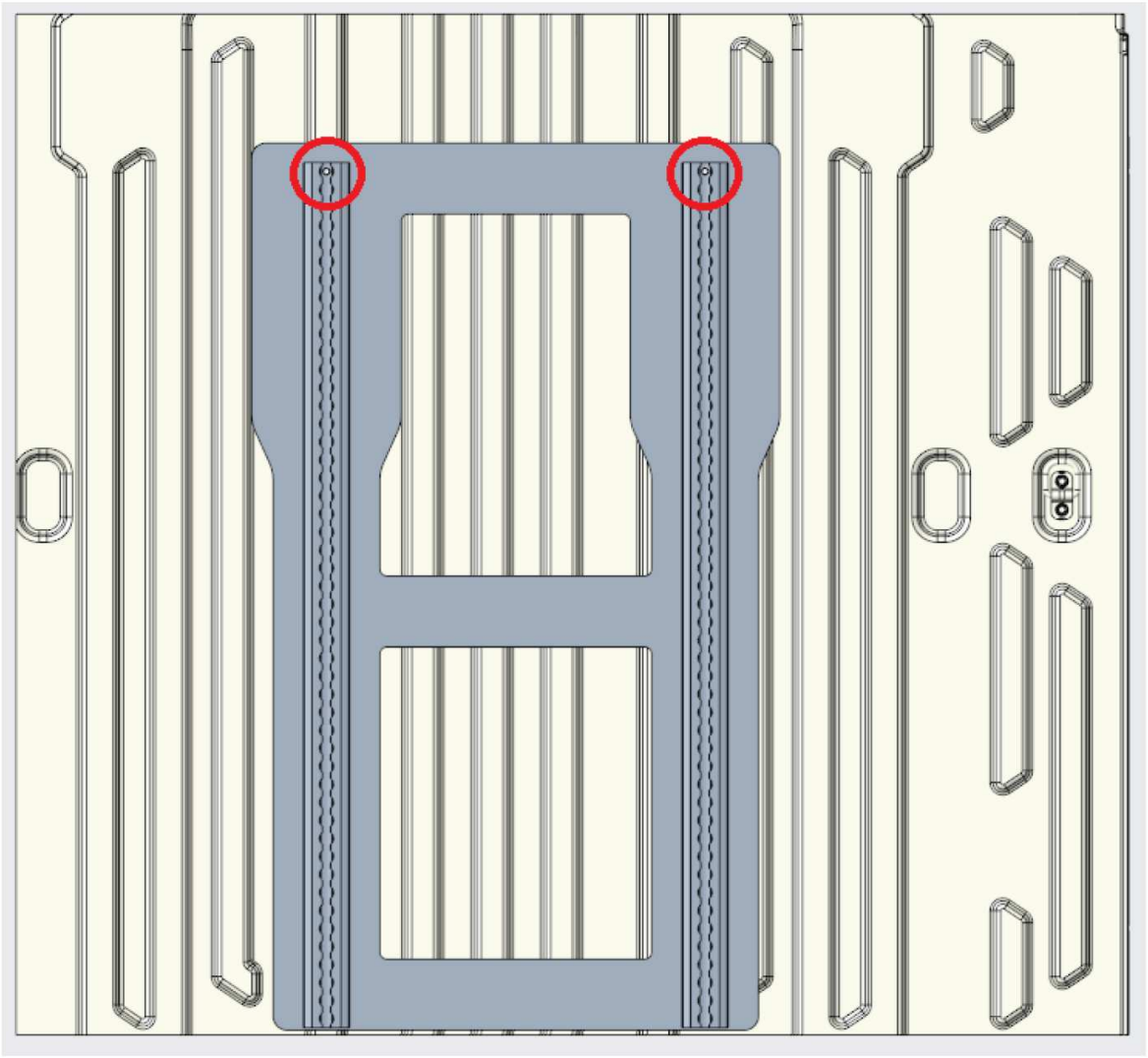
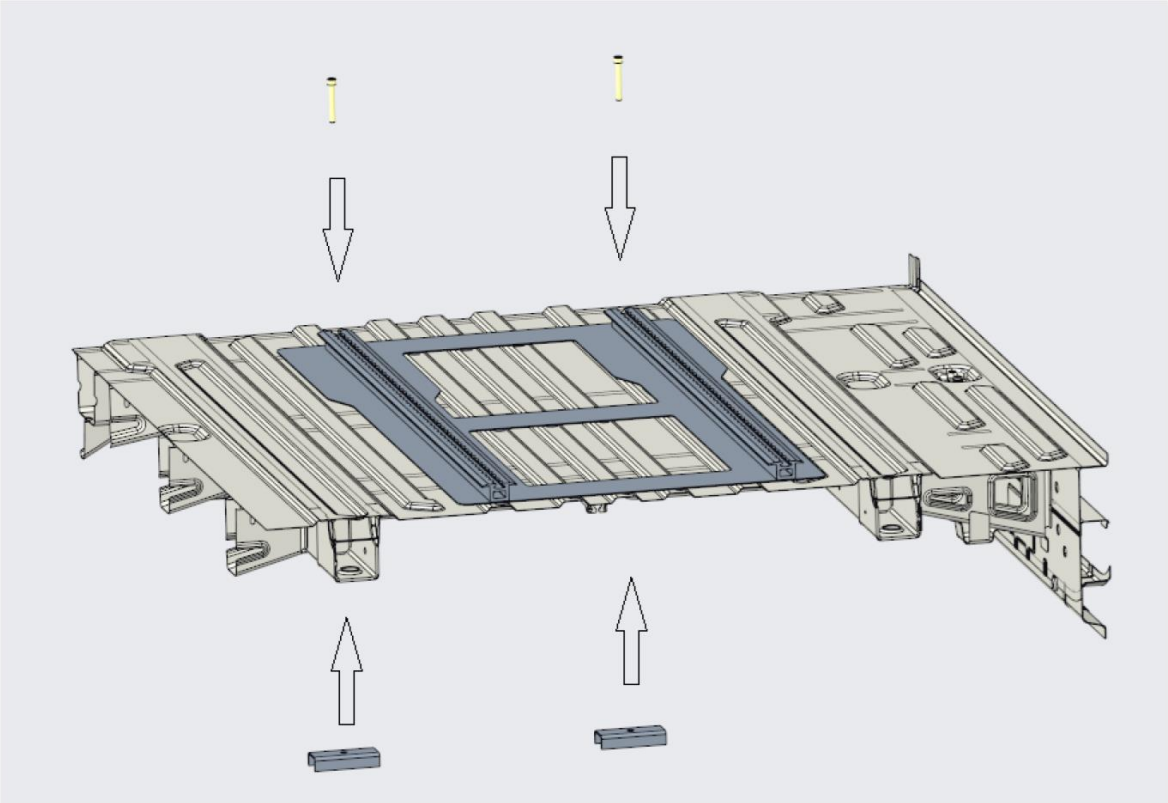
Place and glue the fixation plate to the desired location on the vehicle floor. Leave the floor for at least 24 h. Don't walk on the fixation plate and don't move the vehicle.



Step 4. Underfloor reinforcements

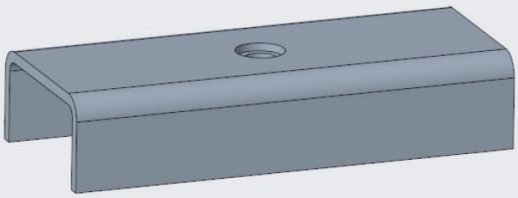
Drill holes ϕ11 in the vehicle floor according existing holes in fixation plate.



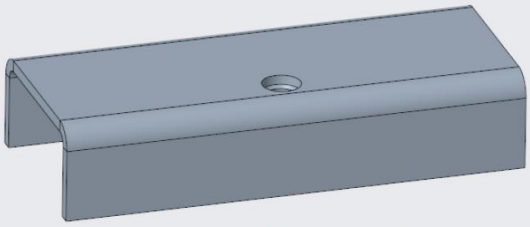


Tight the underfloor reinforcements. Tightening torque 30 Nm. Use liquid anaerobic glue to secure the bolts.

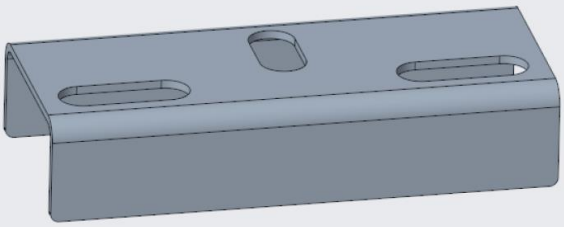
In case of use of underfloor reinforcement UWP-01 additional nut M10 and washer Ø10,5 should be applied.



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 is allowed to turn by 90°. After all put the rubber blank plugs into the installation holes.

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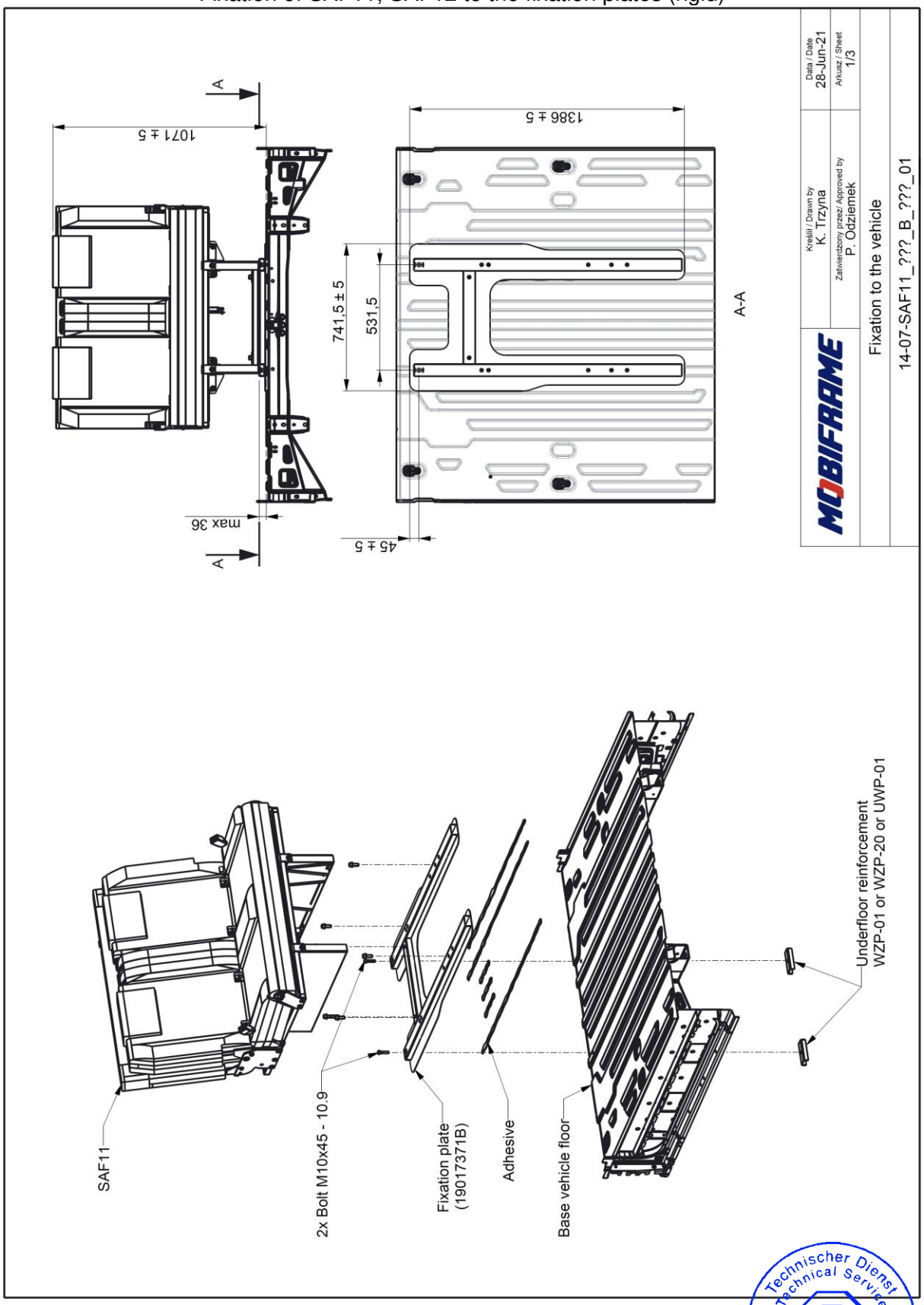
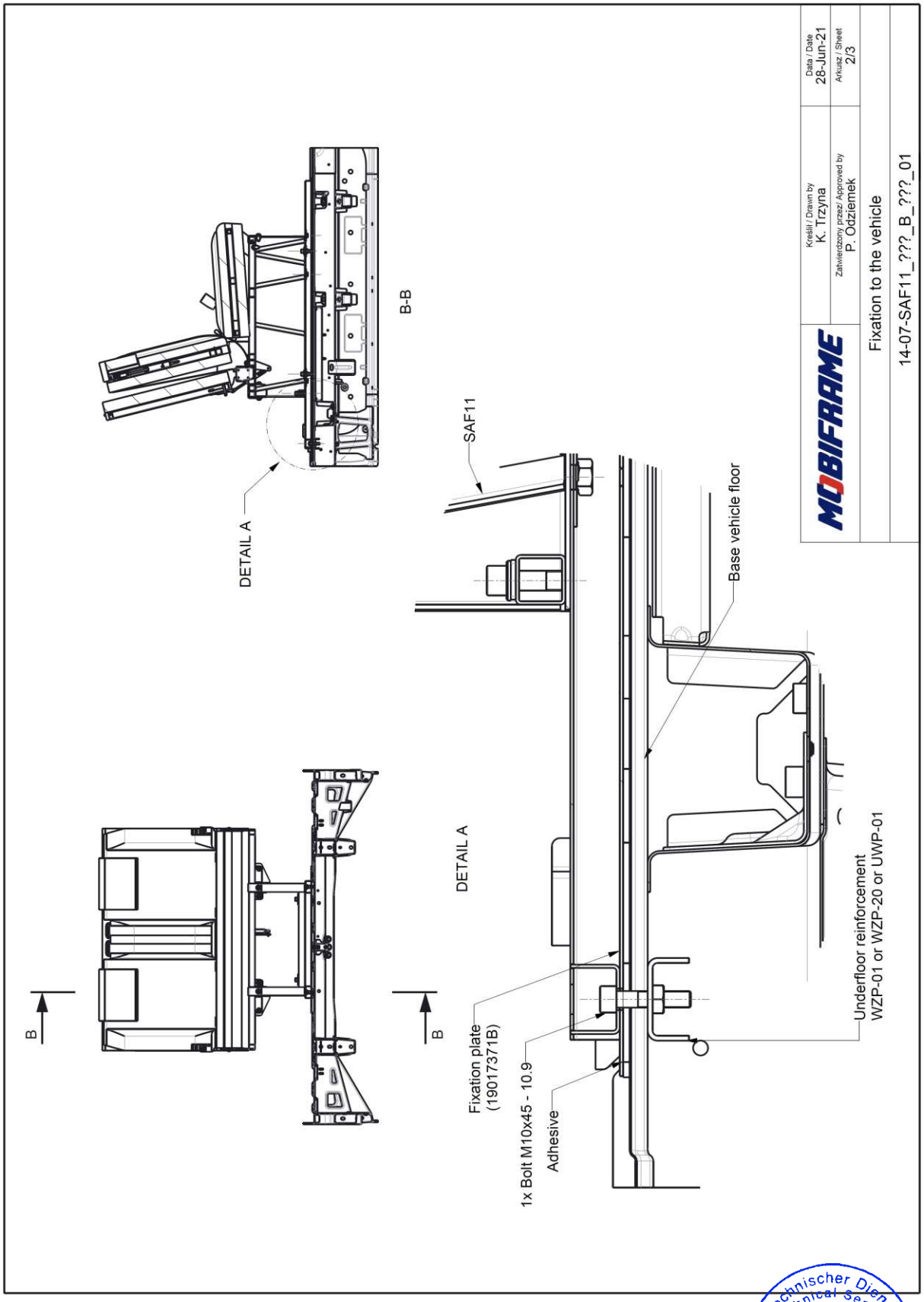
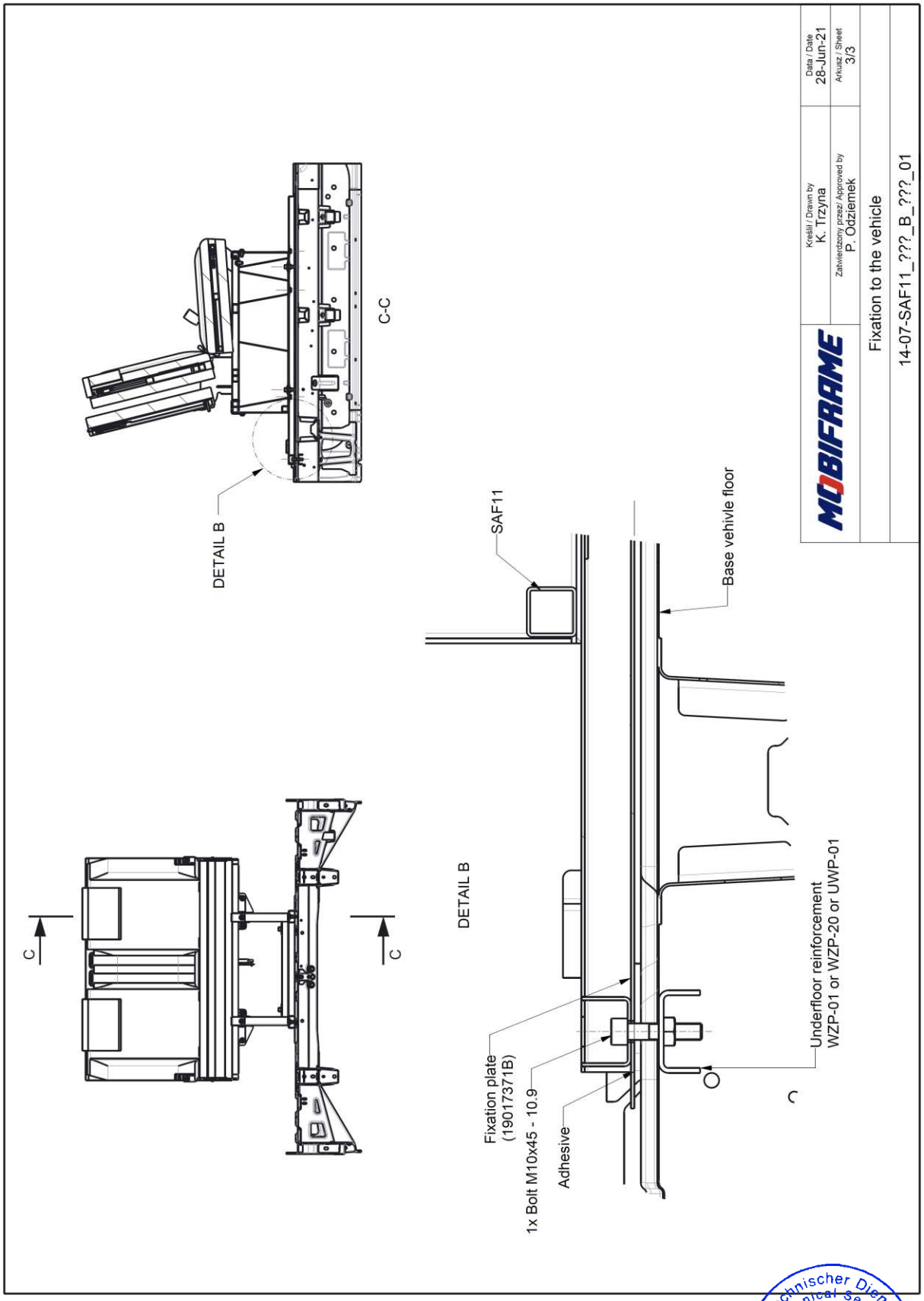
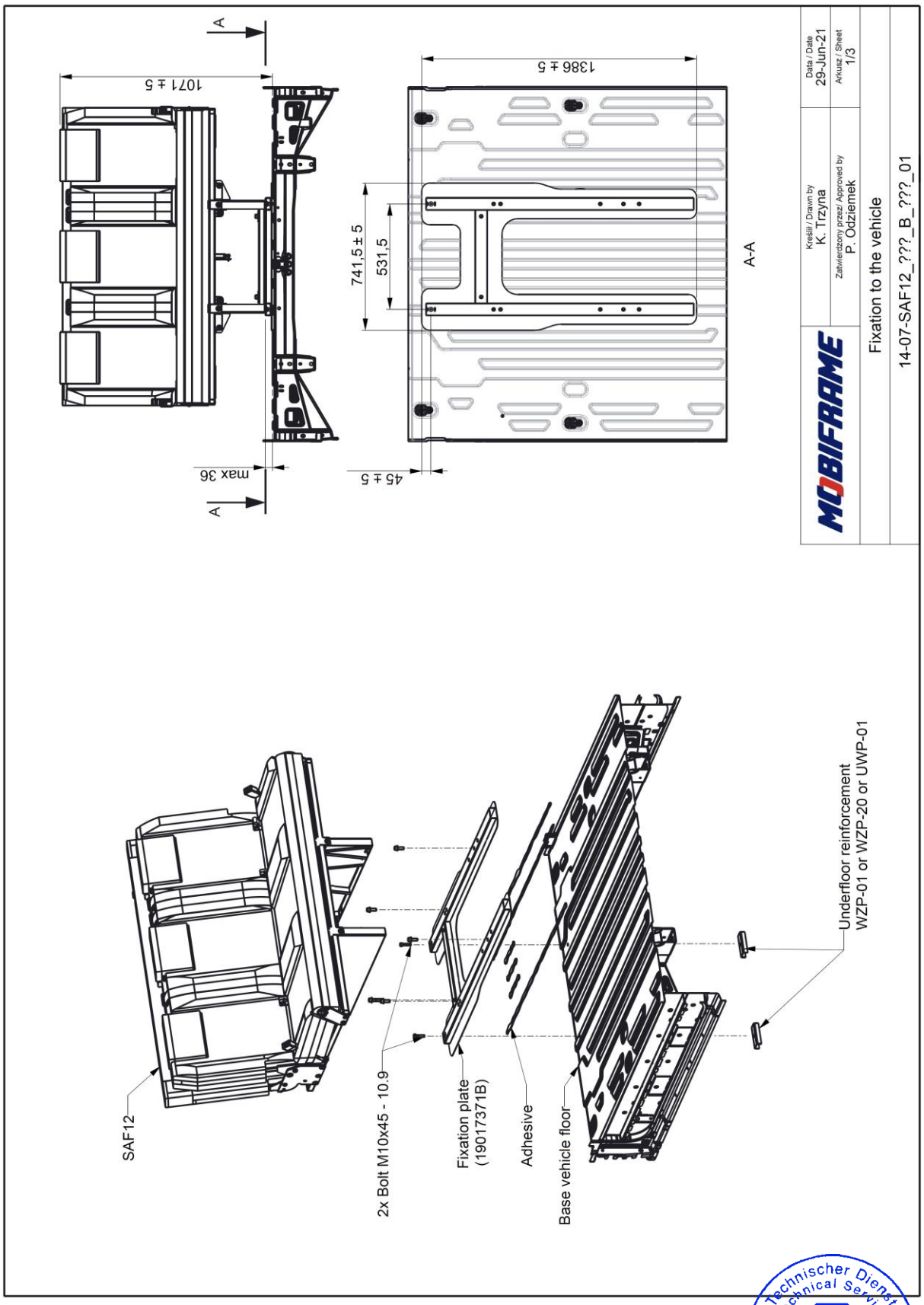
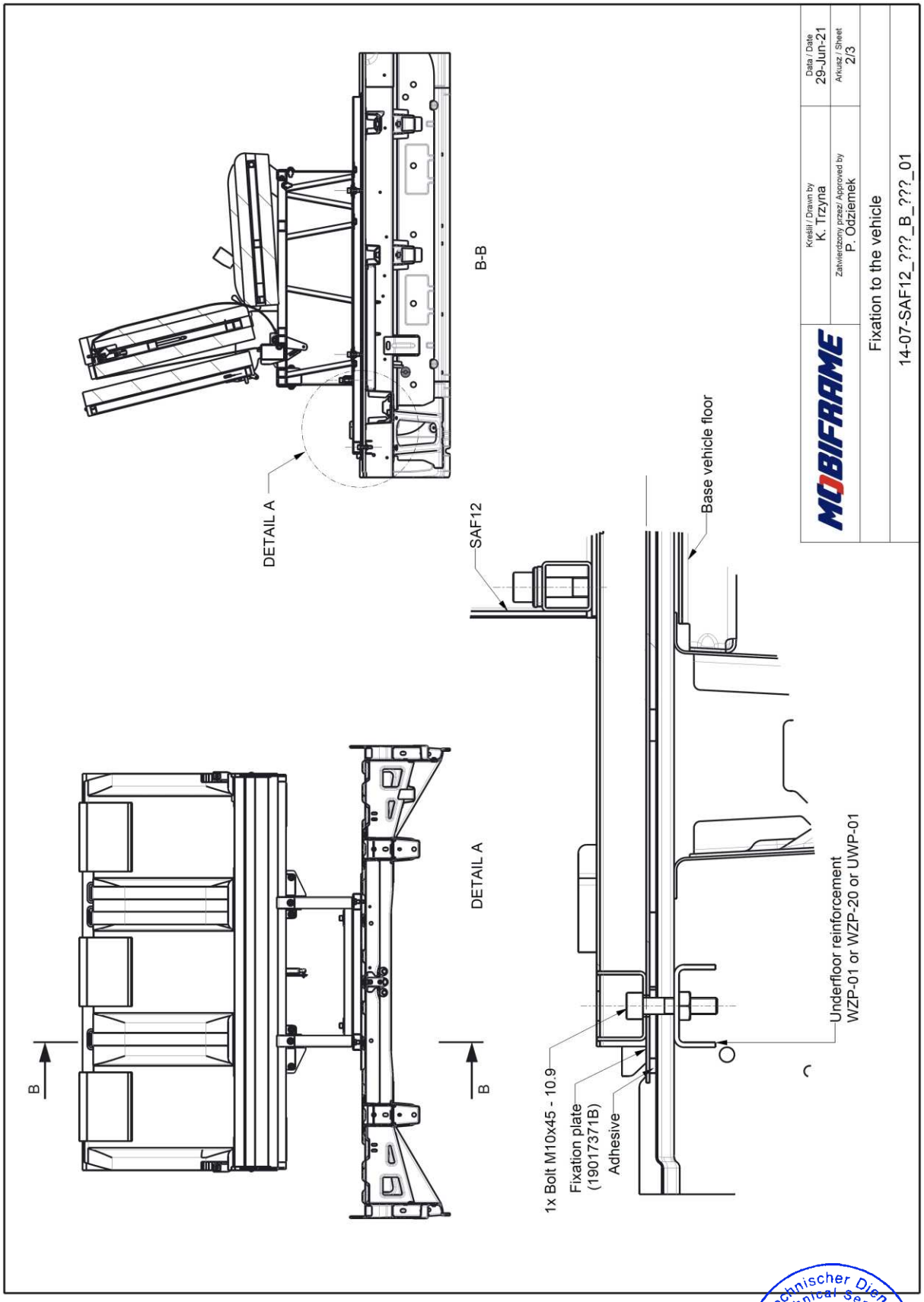
Fixation of SAF11, SAF12 to the fixation plates (rigid)

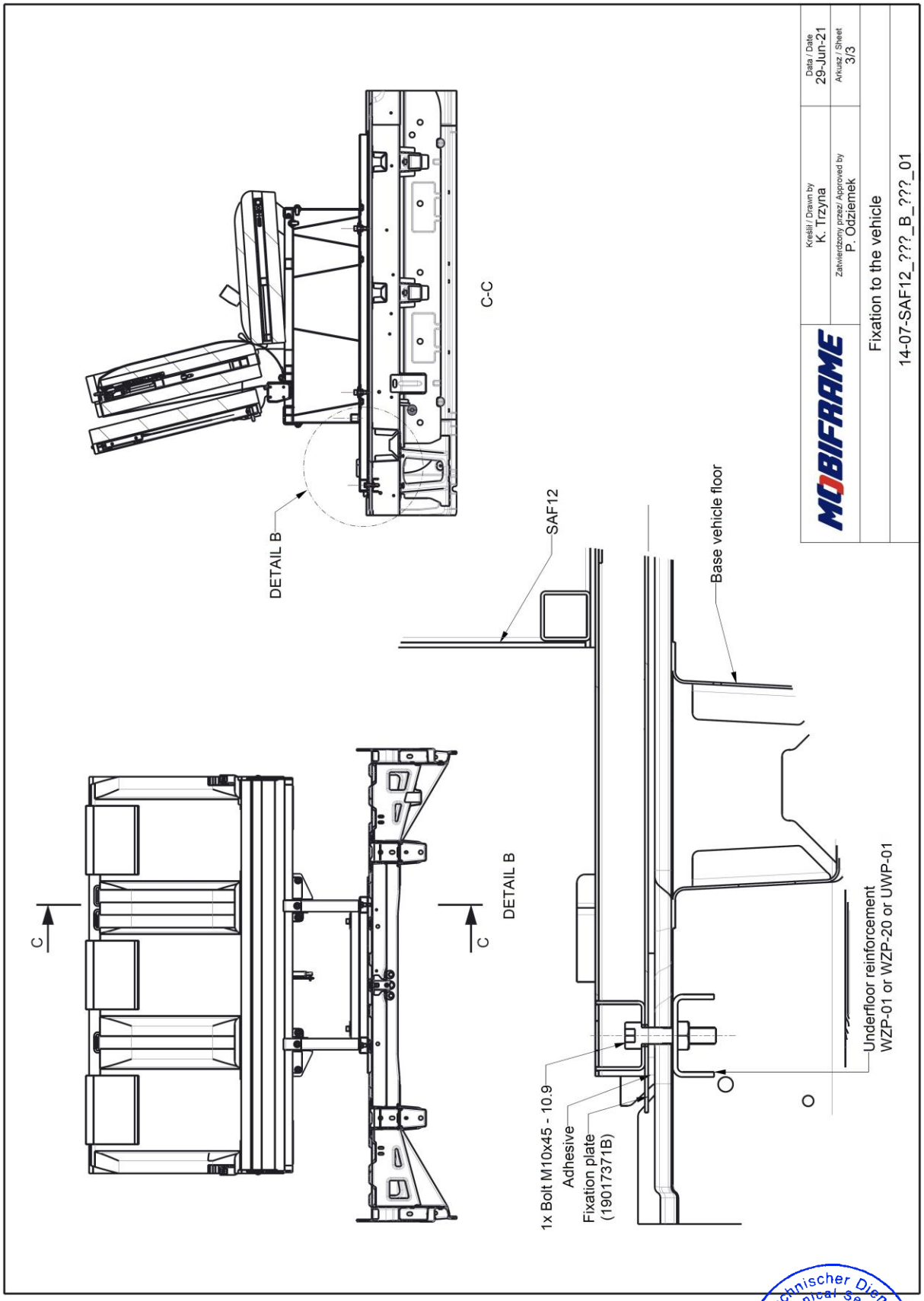


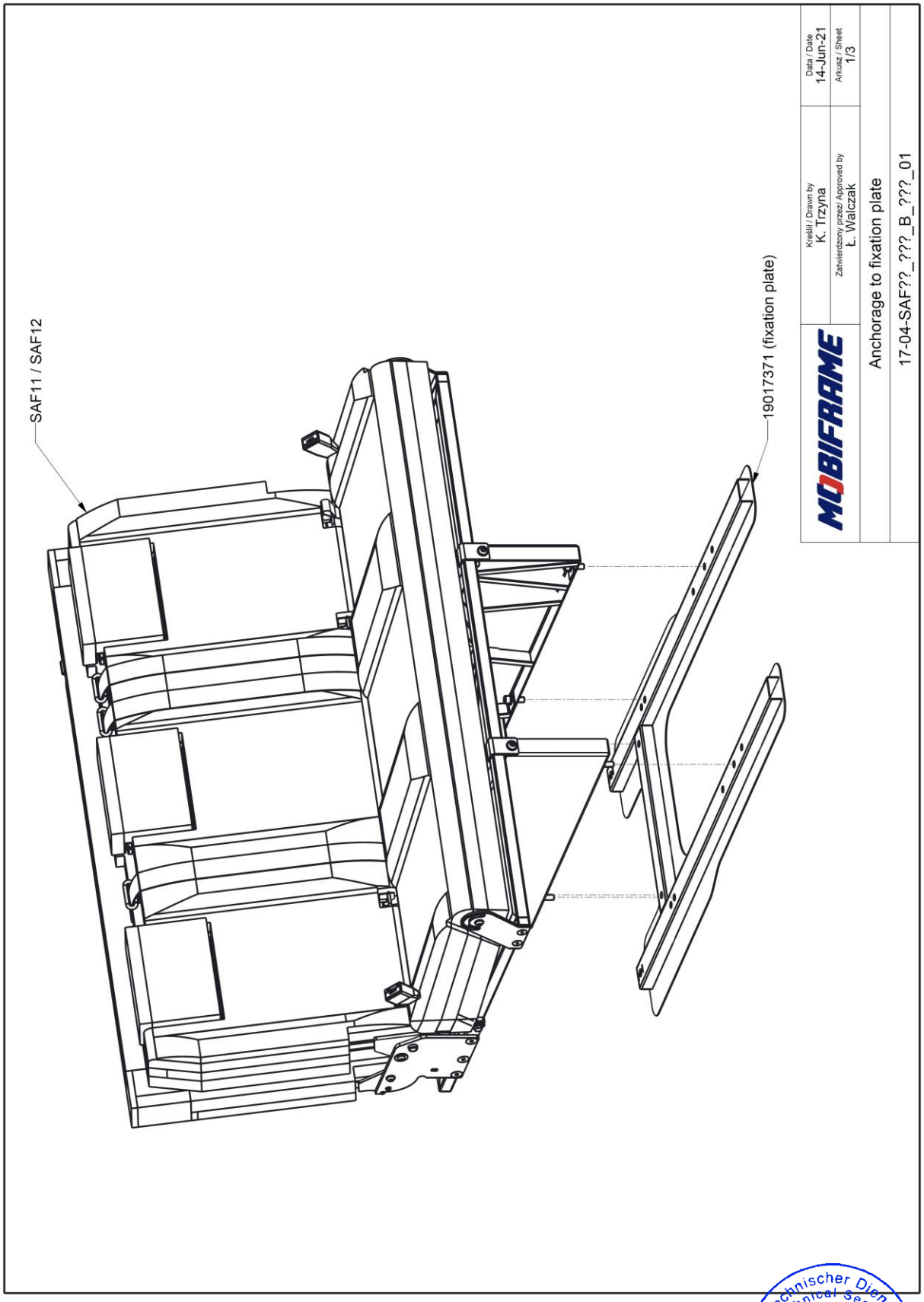


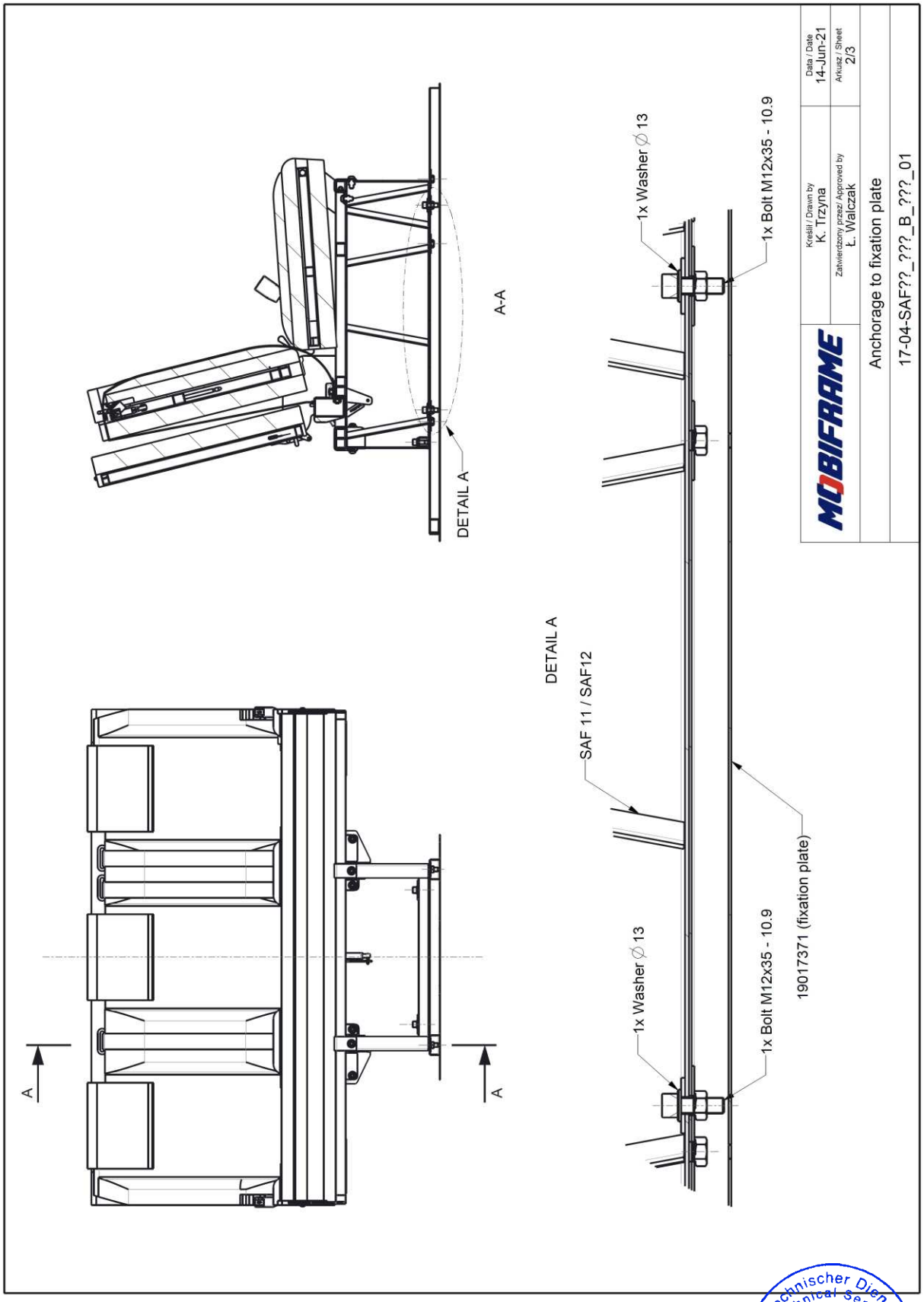


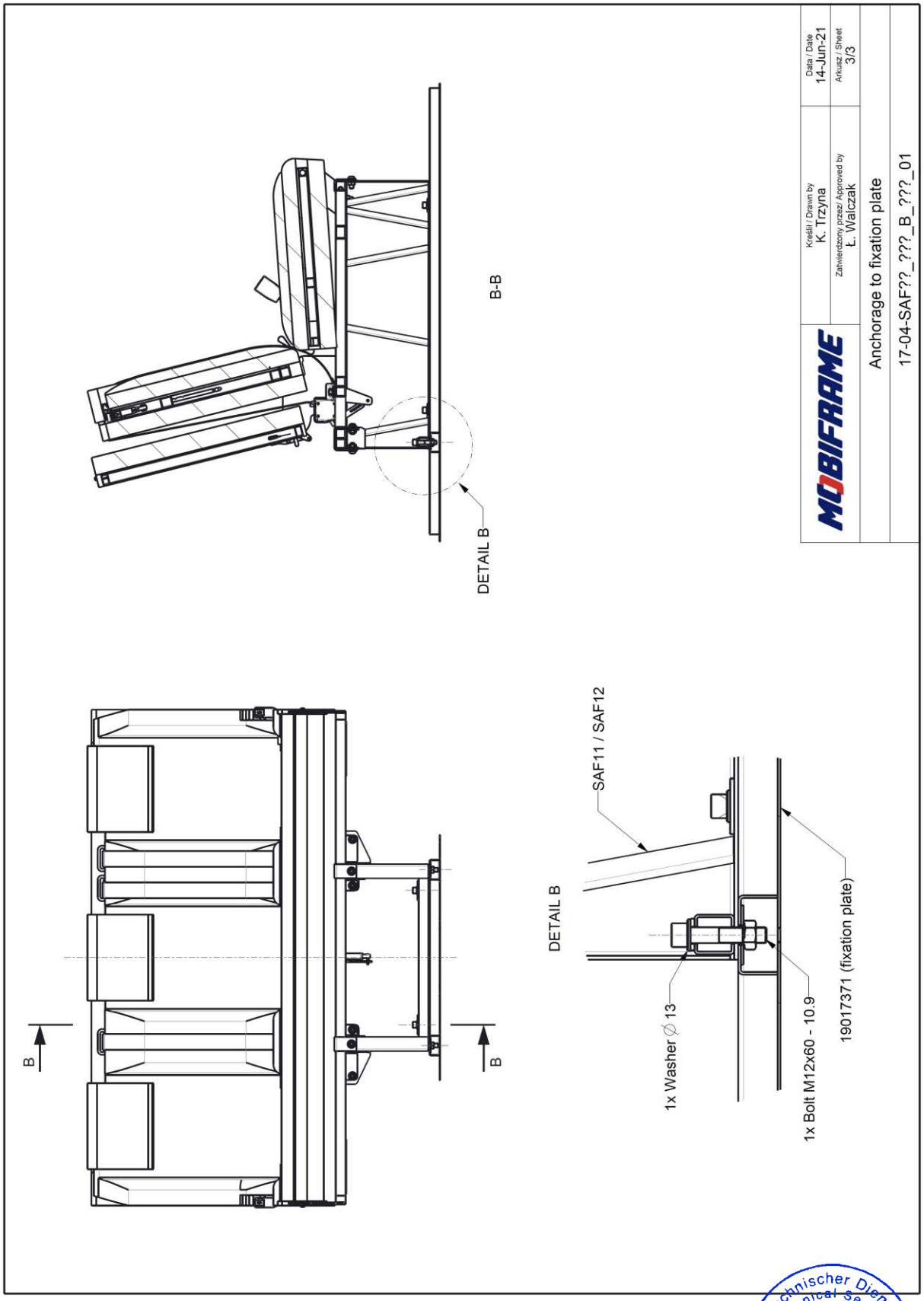


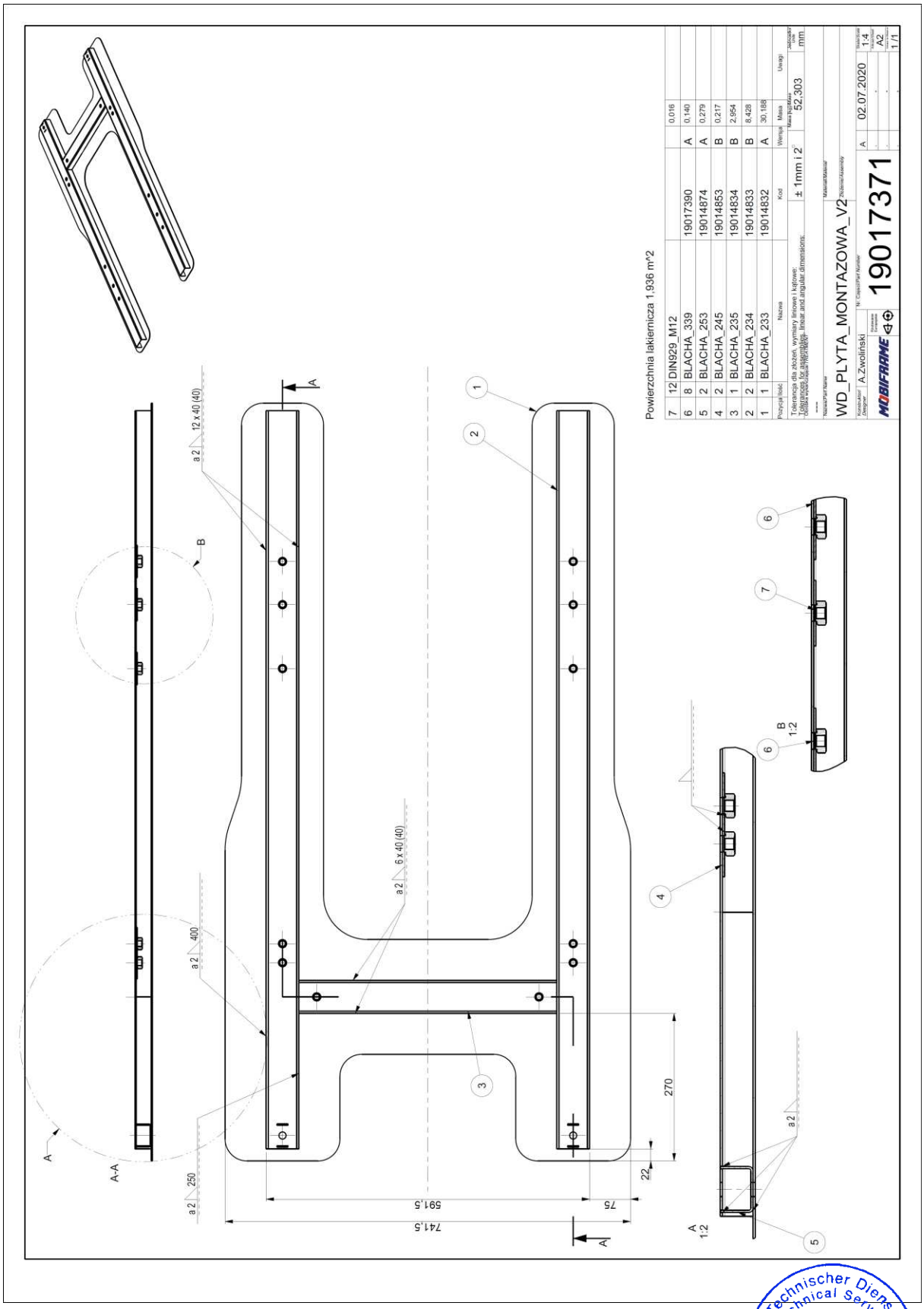










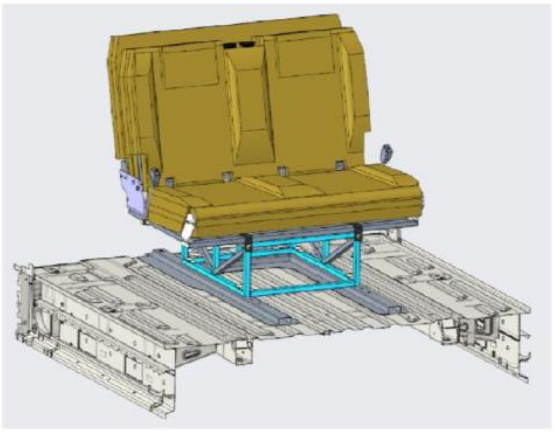


Installation guide:

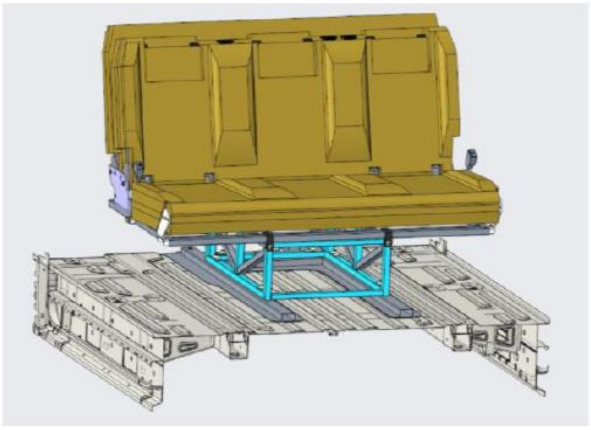
Fixation of **SAF11_???_B_???** to the vehicle floor

and

Fixation of **SAF12_???_B_???** to the vehicle floor



SAF11



SAF12

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.

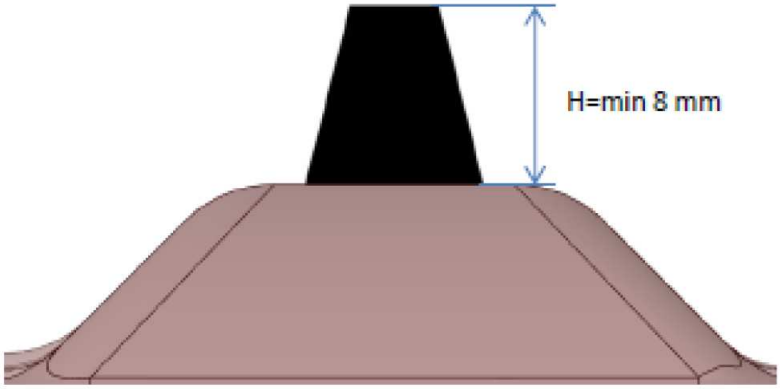
Step 2. Primmering

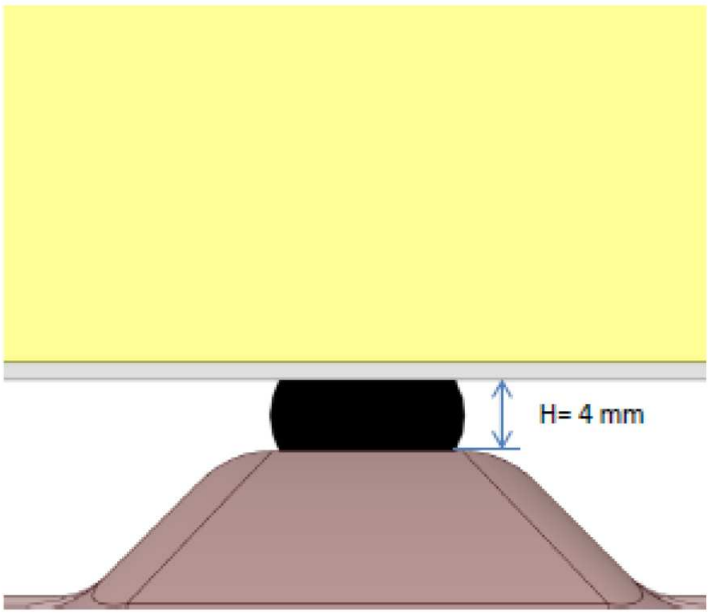
Apply Betaprime on the vehicle's floor and also on bottom side of the fixation plate. Primer can be applied with a brush or roller. Contact surfaces (of vehicle floor and fixation plate) must be covered by Betaprime.

Step 3. Gluing

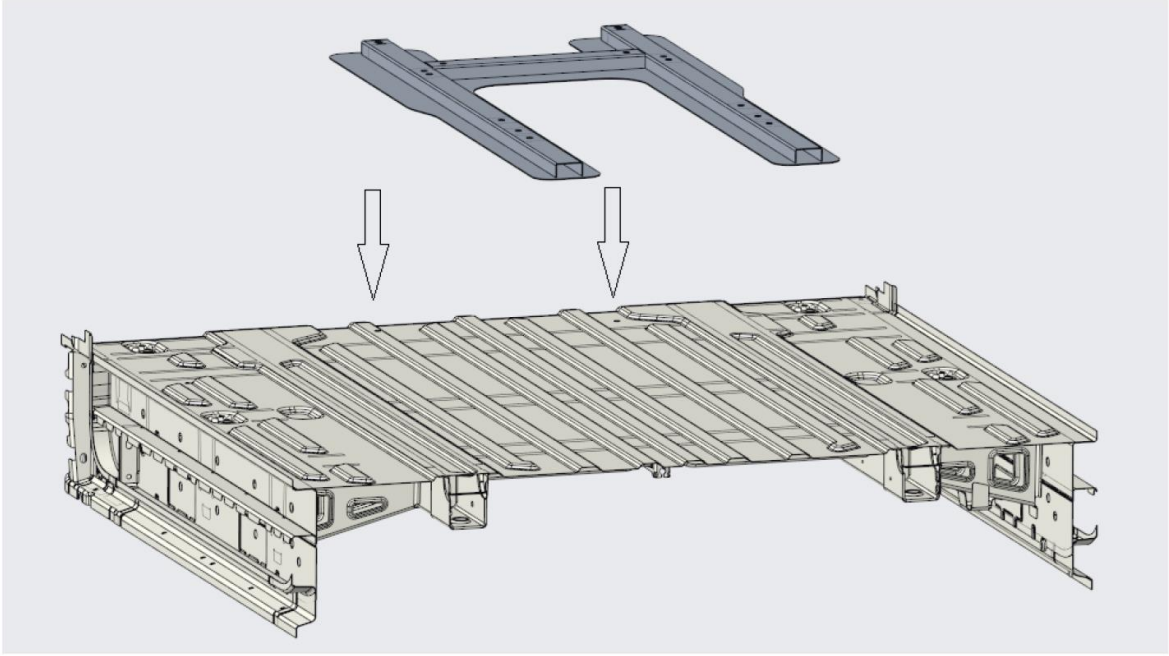
Don't walk on the primered surfaces. Use a piece of carton for protection. Apply Betamate glue on raised floor ribs of vehicle floor in the place where the bench is attached. Primer should by dry. The adhesive must be applied on the surfaces coated previously by Betaprime.

Recommended glue bead



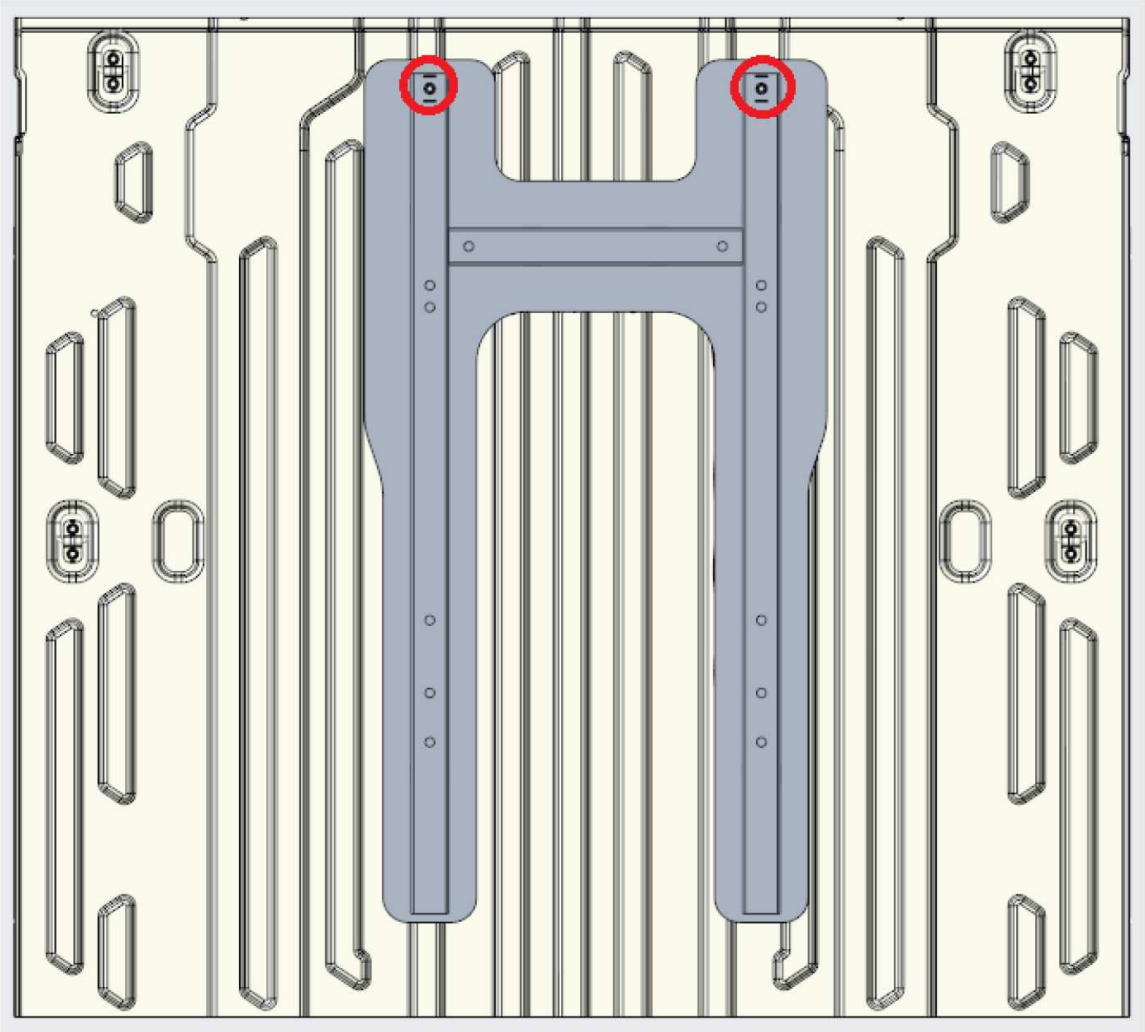


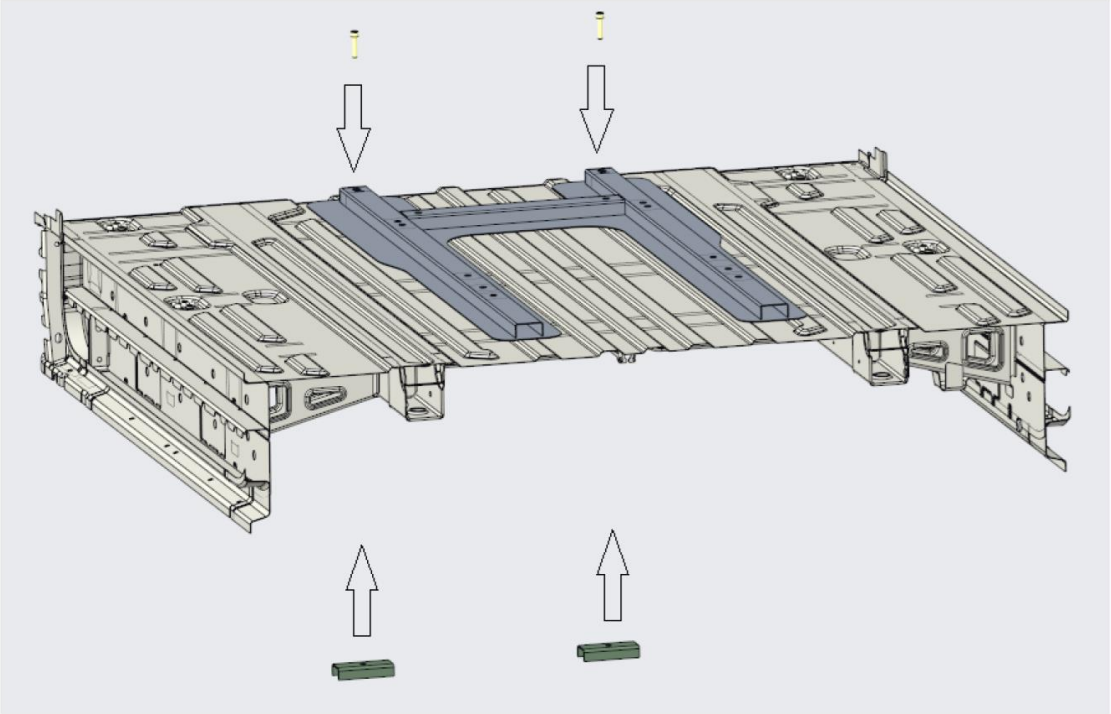
Place and glue the fixation plate to the desired location on the vehicle floor. Leave the floor for at least 24 h. Don’t walk on the fixation plate and don’t move the vehicle.



Step 4. Underfloor reinforcements

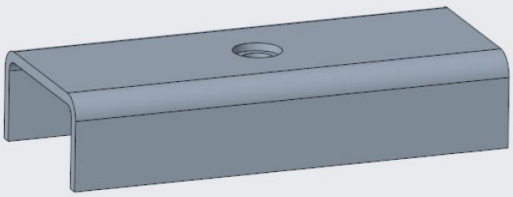
Drill holes ϕ11 in the vehicle floor according existing holes in fixation plate.



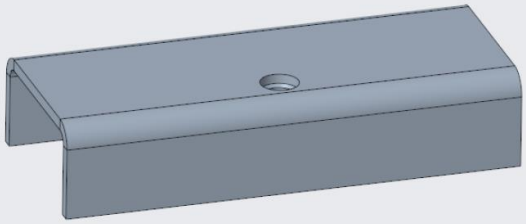


Screw the underfloor reinforcements. Tightening torque 30 Nm. Use liquid anaerobic glue to secure the bolts.

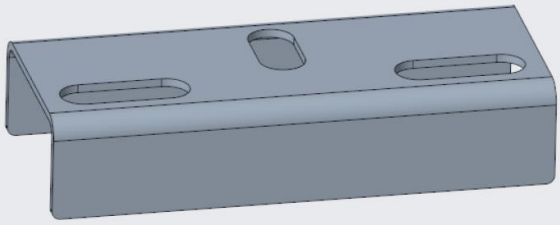
In case of use of underfloor reinforcement UWP-01 additional nut M10 and washer Ø10,5 should be applied.



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 is allowed to turn by 90°. After all put the rubber blank plugs into the installation holes.

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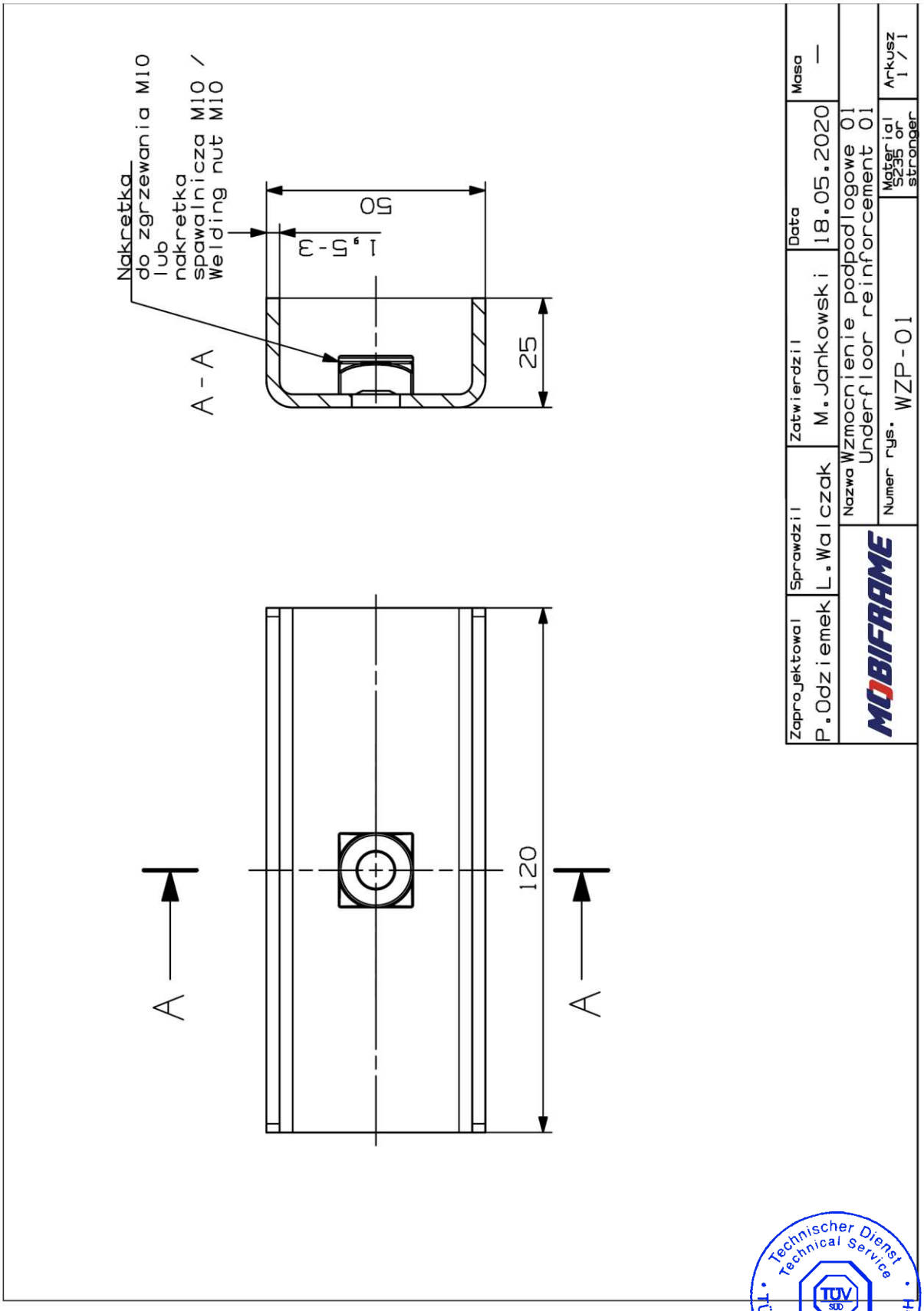

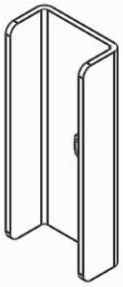

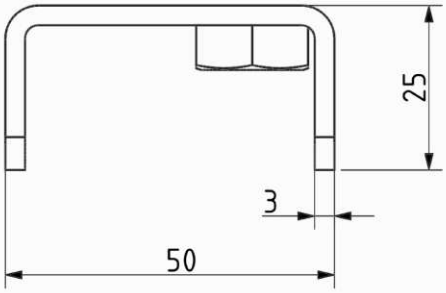

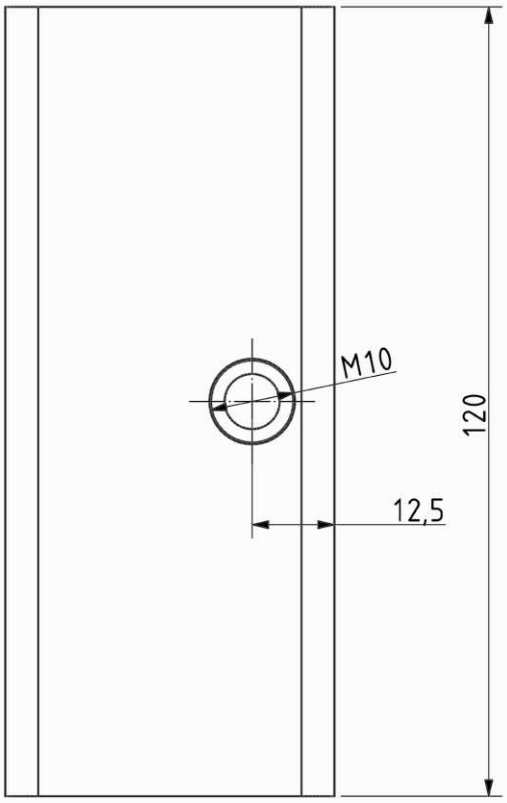

Tolerance class according to DIN 7168		0,5 - 3	3 - 6	6 - 30	30 - 120	120 - 400	400 -1000	1000 - 2000	2000 - 4000	>4000
m	Medium	±0,1	±0,1	±0,2	±0,3	±0,5	±0,8	±1,2	±2	±3

Designed by	Checked by	Approved by	Mass [kg]
			0,265

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

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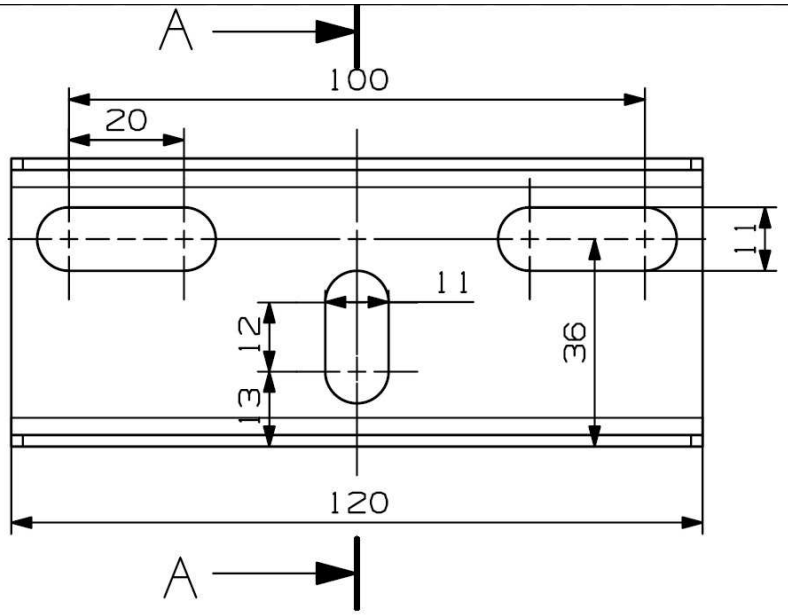

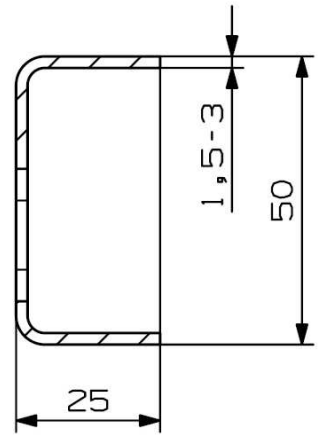

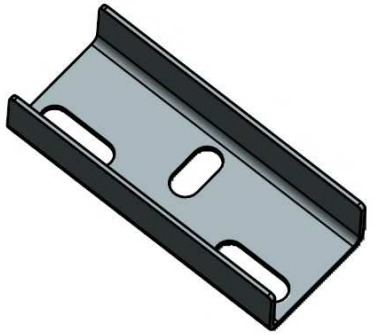

In case of use of underfloor reinforcement UWP-01
additional nut M10 and washer Ø10,5 should be applied.

Zaprojektował	Sprawdził	Zatwierdził	Data	Masa
P.Odziemek	L.Walczak	M.Jankowski	08.09.2020	—

MOBIFRAME

Nazwa: uniwersalne wzmocnienie podpodłogowe

Numer rys.: UWP-01 | Materiał: S235 or stronger | Arkusz: 1 / 1

MOBIFRAME

Dow Automotive

Technical Data Sheet

BETACLEAN 3350

Description / Application:

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

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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.

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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.

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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)

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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

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Environment: All sites of Dow Automotive are conforming to ISO 14001:2004.

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DOW Automotive Systems

Technical Datasheet

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

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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

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Subject to change!

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Dow Automotive

Technical Data Sheet BTR

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.

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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

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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

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