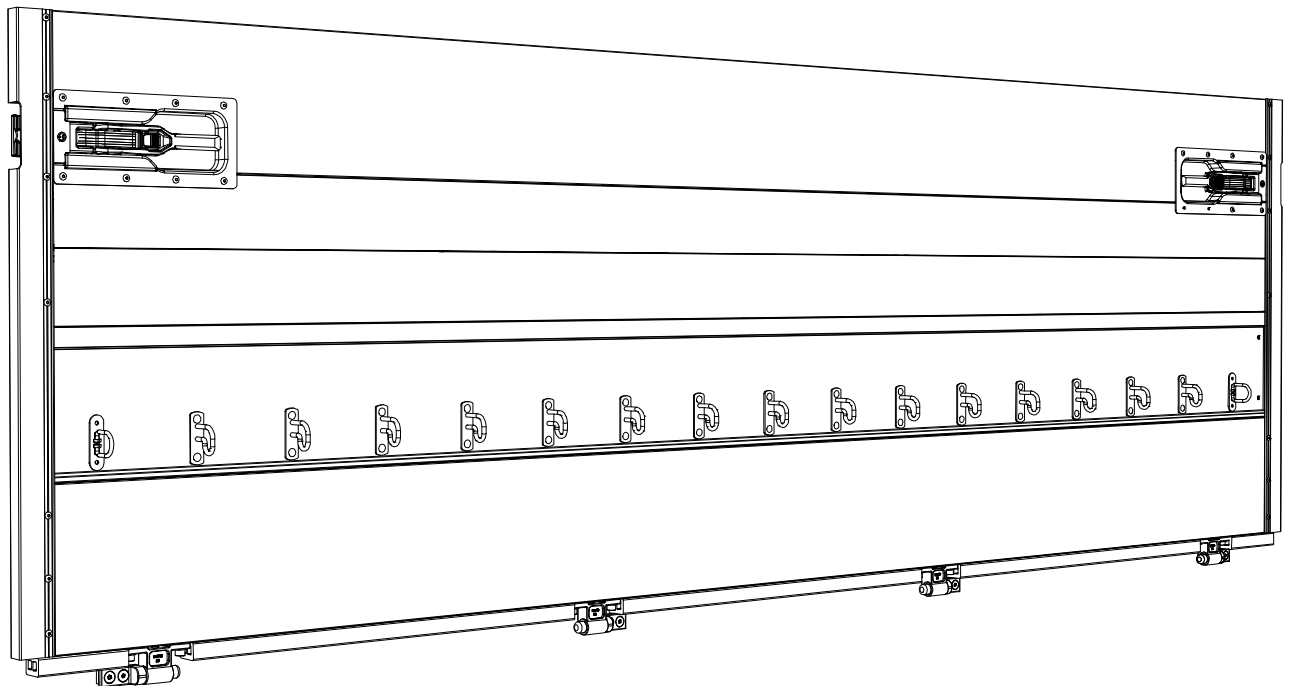


Mounting instruction drop side



Translation of the original mounting instruction



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GENERAL REMARKS

Introduction to Mounting Instruction

Alteration service: Yes

Staff: According to curriculum for apprenticeship as a body and vehicle mechanic and a body and vehicle construction mechanic.

This Mounting Instruction is part of the delivery and an important help for successful mounting. Therefore, it must be available to the mechanic during the mounting works.

Furthermore, the assembly guidelines of the applicable vehicle producers must be obeyed.

Copyright:

The copyright for this mounting instruction is reserved by TSE Trailer System Engineering GmbH & Co. KG

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Instruction and training support

As an employer, you are obliged to inform and instruct your personnel about existing legal and accident prevention regulations.

The personnel must have understood these instructions, and it must be safeguarded that the instructions are obeyed.

Only in this way you will reach safety and danger awareness of your personnel at work.

Example for training topics

1. About safety

- Accident prevention regulations
- General legislation
- General safety hints
- Measures in emergency cases
- Personal protective equipment

2. Maintenance and repair regulations

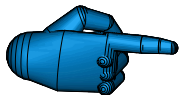
- Correct use of cleaning agents and lubricants
- Special experience of the mechanic in maintenance, repair, cleaning and upkeep of the product

Hints



Attention

Texts with this symbol will warn you against possible mistakes in mounting and, therefore, against potential material damages.



HINT!

Texts with this symbol will give you tips or additional information.



TIGHTENING TORQUE

Texts with this symbol will give you the necessary tightening torques.

Safety

General

Although our products are in accordance with the state of the art, they may pose a risk if:

- they are mounted by unskilled personnel
- they are maintained improperly.

Safety hints

This safety instruction informs you about the products of TSE Trailer System Engineering GmbH & Co. KG. It contains information about maintenance and repair of the parts and their components. The service instruction has only been written for skilled personnel of qualified and authorized specialized companies in motor vehicle crafts. The service instruction is not applicable for other target groups.

We want to support specialized companies with the present mounting instruction during the mounting works with our products.

TSE Trailer System Engineering GmbH & Co. KG accepts no liability for the installation of inapplicable or unreleased parts in their products. We do not accept any warranty for the correctness, completeness or currency of the given information. The contents and information of this mounting instruction are neither a warranty or warranted characteristics within the meaning of German legislation, respectively the German Civil Code (Bürgerliches Gesetzbuch (BGB)), nor can they be interpreted as such.

No claims can be derived from provision of information, recommendation or consulting. Liability for damages is generally excluded as far as we are not responsible in the sense of intent or gross negligence, or as far as this does not contradict mandatory legal provisions.

Texts and graphics are subject to our rights of use; copy rights or right of distribution in any form require our agreement.

Mentioned brand names, even if they are not marked as such in every case, are still subject to the regulations of the trade mark law.

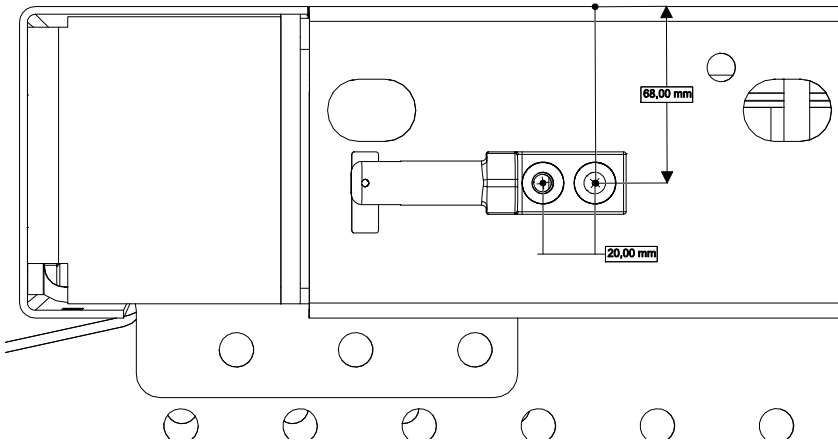
If any disputes of legal nature occur from applying information found in this mounting instruction, they shall solely be subject to the regulations of German law.


The Amtsgericht (county court) Stuttgart is regarded to be agreed upon as place of jurisdiction. If some clauses of this Limitation of Liability Statement are not or no more compliant with the applicable legal provisions, the validity of the other clauses shall be unaffected thereof.

Mounting of hinge pins

1

Identify position of the hinge pins



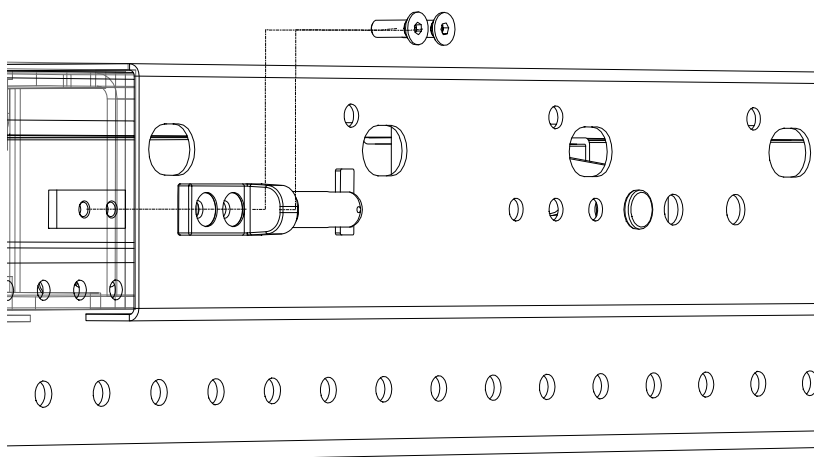
 Hinge pin with catch nose and without catch nose


The hinge pins are part of the **mounting kit**
TSE no.: 1166951


Prepare a second drill hole, $\varnothing 8.5\text{mm}$.

2


Fix hinge pins



 Hinge pin with catch nose and without catch nose

 Countersunk screw with internal hex M8x25

 Threaded plate for hinge pins

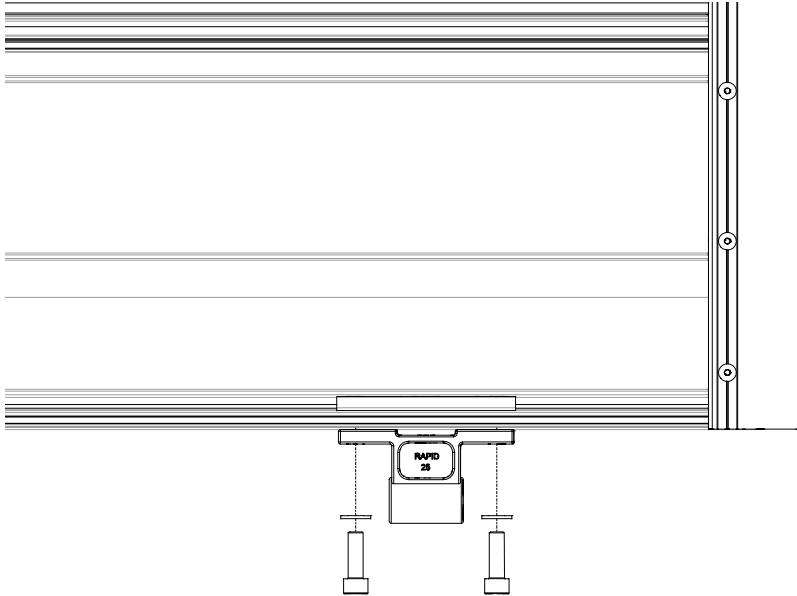
 **Tightening torque 55.8 Nm**

Hinge pin, countersunk screws and threaded plate are part of the **mounting kit**
TSE no.: 1166951

Mounting of hinged bearings of drop side and buffer

1

Mounting the hinged bearing



Hinged bearing



Cylinder screw with
internal hex M8x25



Washer A8.4



Threaded plate for hinged
bearing



Tightening torque 38 Nm

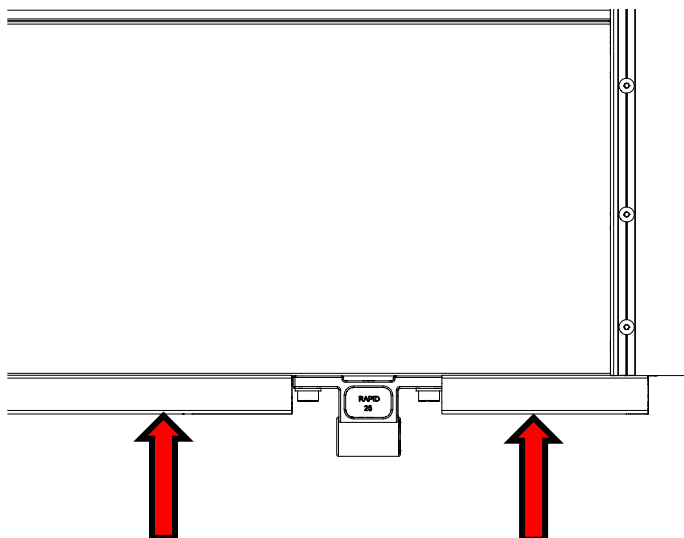


By turning the hinged bearing,
the distance to the outer frame
can be changed.

The hinged bearings, cylinder
screws, washers and threaded
plates **are part of the
applicable drop sides.**

2

Mounting the buffer



Buffer



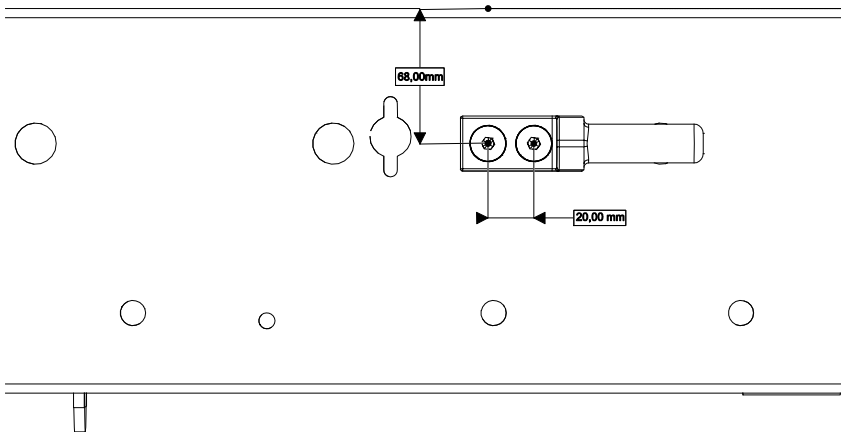
The length of the buffer has to
be adjusted by the customer.


The buffer is part of the
applicable drop side.

Mounting of hinge pins for rear drop side

1

Identify position of the hinge pins



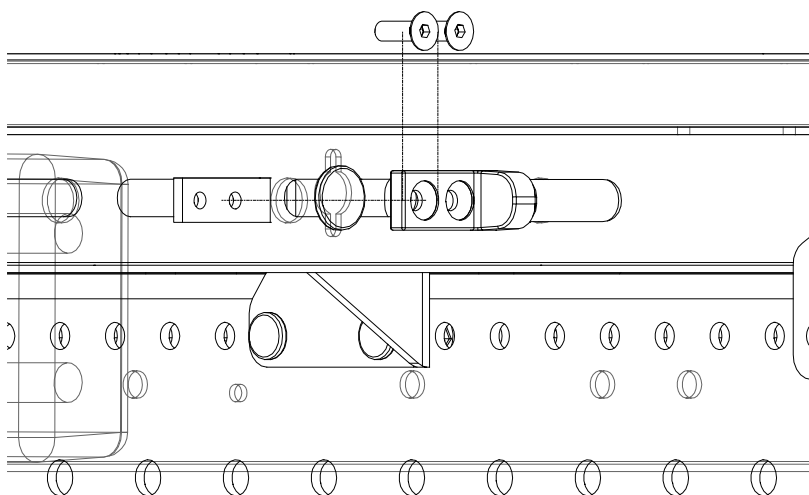
 Hinge pin with catch nose and without catch nose


The hinge pins are part of the **mounting kit**
TSE no.: 1166951


Prepare a second drill hole,
Ø8.5mm.


2


Mounting of hinge pin



 Hinge pin with catch nose and without catch nose

 Countersunk screw with
internal hex M8x25

 Threaded plate for hinge pins

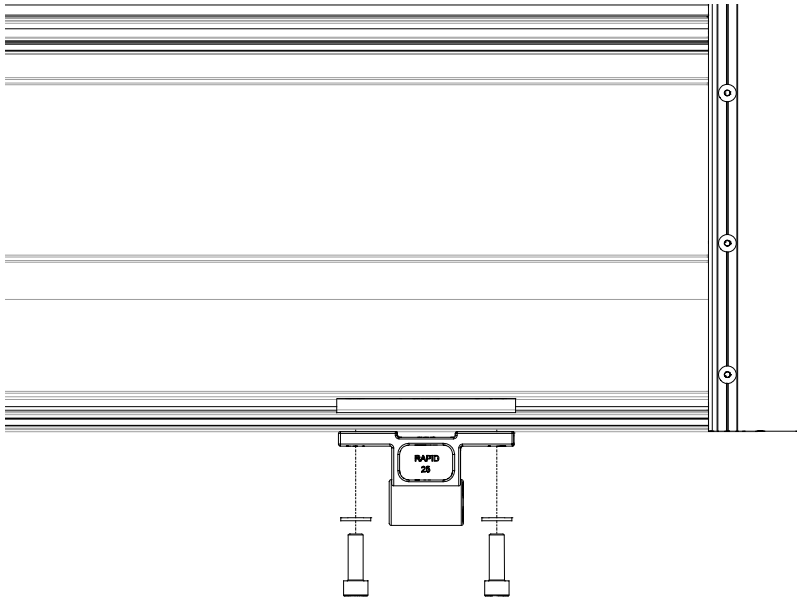
 **Tightening torque 55.8 Nm**

Hinge pin, countersunk screws
and threaded plate are part of
the **mounting kit**
TSE no.: 1166951

Mounting of drop side hinged bearings and buffer for rear drop side

1

Mounting the hinged bearing



Hinged bearing



Cylinder screw with internal hex M8x25



Washer A8.4



Threaded plate for hinged bearing



Tightening torque 38 Nm

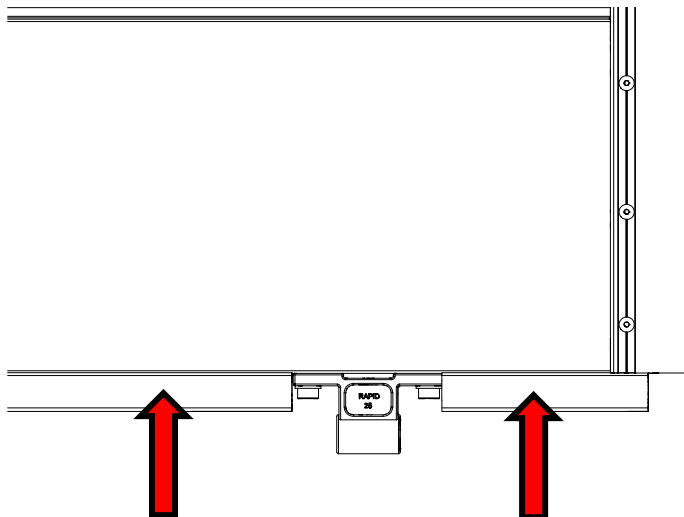


By turning the hinged bearing, distance to the outer frame can be changed.

The hinged bearings, cylinder screws, washers and threaded plates are **part of the applicable drop sides.**

2

Mounting the buffer



Buffer



The length of the buffer has to be adjusted by the customer.

The buffer is part of the applicable drop side.

Assembly preloads and tightening torques of screw connections according to VDI guideline 2230

Measure	Strength class	Assembly preloads for mounting F_T in kN für $\mu_G =$							Tightening torques M_A in Nm for $\mu_K = \mu_G =$						
		0.08	0.10	0.12	0.14	0.16	0.20	0.24	0.08	0.10	0.12	0.14	0.16	0.20	0.24
M 4	8.8	4.6	4.5	4.4	4.3	4.2	3.9	3.7	2.3	2.6	3.0	3.3	3.6	4.1	4.5
	10.9	6.8	6.7	6.5	6.3	6.1	5.7	5.4	3.3	3.9	4.6	4.8	5.3	6.0	6.6
	12.9	8.0	7.8	7.6	7.4	7.1	6.7	6.3	3.9	4.5	5.1	5.6	6.2	7.0	7.8
M 5	8.8	7.6	7.4	7.2	7.0	6.8	6.4	6.0	4.4	5.2	5.9	6.5	7.1	8.1	9.0
	10.9	11.1	10.8	10.6	10.3	10.0	9.4	8.8	6.5	7.6	8.6	9.5	10.4	11.9	13.2
	12.9	13.0	12.7	12.4	12.0	11.7	11.0	10.3	7.6	8.9	10.0	11.2	12.2	14.0	15.5
M 6	8.8	10.7	10.4	10.2	9.9	9.6	9.0	8.4	7.7	9.0	10.1	11.3	12.3	14.1	15.6
	10.9	15.7	15.3	14.9	14.5	14.1	13.2	12.4	11.3	13.2	14.9	16.5	18.0	20.7	22.9
	12.9	18.4	17.9	17.5	17.0	16.5	15.5	14.5	13.2	15.4	17.4	19.3	21.1	24.2	26.8
M 7	8.8	15.5	15.1	14.8	14.4	14.0	13.1	12.3	12.6	14.8	16.8	18.7	20.5	23.6	26.2
	10.9	22.7	22.5	21.7	21.1	20.5	19.3	18.1	18.5	21.7	24.7	27.5	30.1	34.7	38.5
	12.9	26.6	26.0	25.4	24.7	24.0	22.6	21.2	21.6	25.4	28.9	32.2	35.2	40.6	45.1
M 8	8.8	19.5	19.1	18.6	18.1	17.6	16.5	15.5	18.5	21.6	24.6	27.3	29.8	34.3	38.0
	10.9	28.7	28.0	27.3	26.6	25.8	24.3	22.7	27.2	31.8	36.1	40.1	43.8	50.3	55.8
	12.9	33.6	32.8	32.0	31.1	30.2	28.4	26.6	31.8	37.2	42.2	46.9	51.2	58.9	65.3
M10	8.8	31.0	30.3	29.6	28.8	27.9	26.3	24.7	36	43	48	54	59	68	75
	10.9	45.6	44.5	43.4	42.2	41.0	38.6	36.2	53	63	71	79	87	100	110
	12.9	53.3	52.1	50.8	49.4	48.0	45.2	42.4	62	73	83	93	101	116	129
M 12	8.8	45.2	44.1	43.0	41.9	40.7	38.3	35.9	63	73	84	93	102	117	130
	10.9	66.3	64.8	63.2	61.5	59.8	56.3	52.8	92	108	123	137	149	172	191
	12.9	77.6	75.9	74.0	72.0	70.0	65.8	61.8	108	126	144	160	175	201	223
M 14	8.8	62.0	60.6	59.1	57.5	55.9	52.6	49.3	100	117	133	148	162	187	207
	10.9	91.0	88.9	86.7	84.4	82.1	77.2	72.5	146	172	195	218	238	274	304
	12.9	106.5	104.1	101.5	98.8	96.0	90.4	84.8	171	201	229	255	279	321	356
M 16	8.8	84.7	82.9	80.9	78.8	76.6	72.2	67.8	153	180	206	230	252	291	325
	10.9	124.4	121.7	118.8	115.7	112.6	106.1	99.6	224	264	302	338	370	428	477
	12.9	145.5	142.4	139.0	135.4	131.7	124.1	116.6	262	309	354	395	433	501	558
M 18	8.8	107	104	102	99	96	91	85	220	259	295	329	360	415	462
	10.9	152	149	145	141	137	129	121	314	369	421	469	513	592	657
	12.9	178	174	170	165	160	151	142	367	432	492	549	601	692	769
M 20	8.8	136	134	130	127	123	116	109	308	363	415	464	509	588	655
	10.9	194	190	186	181	176	166	156	438	517	592	661	725	838	933
	12.9	227	223	217	212	206	194	182	513	605	692	773	848	980	1092
M 22	8.8	170	166	162	158	154	145	137	417	495	567	634	697	808	901
	10.9	242	237	231	225	219	207	194	595	704	807	904	993	1151	1284
	12.9	283	277	271	264	257	242	228	696	824	945	1057	1162	1347	1502
M 24	8.8	196	192	188	183	173	168	157	529	625	714	798	875	1011	1126
	10.9	280	274	267	260	253	239	224	757	890	1017	1136	1246	1440	1604
	12.9	327	320	313	305	296	279	262	882	1041	1190	1329	1458	1685	1877

Source: VDI guideline 2230 sheet 1 page 109

Montagevorspannungen F_{MTab} und Anziehdrehmoment M_a bei $\nu = 0,9$ für **Schaftschrauben** mit metrischem Regelgewinde nach DIN ISO, 68, DIN ISO 724, DIN 13-19; Kopfabmessungen von Sechskantschrauben nach DIN EN ISO 4014 bis DIN EN ISO 4018, Schrauben mit Außensechsrund nach DIN 34 800 bzw. Zylinderschrauben nach DIN EN ISO 4762 und Bohrung „mittel“ nach DIN EN 20 273

Assembly preload F_{MTab} and tightening torque M_a with $\nu = 0.9$ for **shank bolts** with metric standard thread according to DIN ISO, 68, DIN ISO 724, DIN 13-19; head dimensions of hexagonal bolts according to DIN EN ISO 4014 to DIN EN ISO 4018 Hexalobular external driving head bolts according to DIN 34 800 or cylindrical bolts according to DIN EN ISO 4762 and hole “medium” according to DIN EN 20273

Revision status

Revision status	Kind of change	Date	Name
00	New creation of mounting instruction	15 August 2018	Dingler / Maier