

Installation Manual Easy-Rail P2 Terminal

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1 General Information

1.1 Preliminary Notes

The “Easy Rail P2” terminal system is made up primarily of the following elements:

- Guard rail beam profile A or B
- Posts C-100-60-25
- Post C100-60-25 for transition (Spacer)
- Support brackets
- Spacer
- Tension Belt
- Head Piece (for guardrail beam)

Bolting material (see the parts list in Appendix 1)

which are then fitted together into a sloped-down stretch of guard rail.

It has been tested acc. to the European Norm ENV1317-4:2001. In order that the declared performance of the original test report (ITT) can be achieved, assembly and installation are to be fulfilled exactly according to following requirements. In the case that there is a deviation from these requirements in the assembly and installation without consulting with the manufacturer, the liability for the defects of the building product is transferred from the manufacturer to the installation contractor.

In the case that the installation takes place in Germany, then it is independent of the surrounding temperature at the time of installation (except in the case of repairs). In regions where the minimum outside air temperature T_{min} according to EN 1991-1-5/NA is under -24°C , then installation is only to take place with the written consent of the manufacturer.

1.2 Manufacturer

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1.3 Intended Use

The Easy-Rail P2 terminal is treatment of the beginning and/or the end for the EasyRail family of vehicle restraint systems (EasyRail (6.00 / 4.00 / 2.00 / 1.33)).

It anchors and tensions a continuous barrier run, transmits longitudinal forces into the ground and prevents errant vehicles from impacting the blunt end of the barrier. Thus, it serves for the protection of non-involved persons or areas besides the road in need of protection. It also

serves to protect oncoming traffic on a dual-lane road as well as protecting vehicle occupants in the case the vehicle leaves the roadway.

1.4 Storage and Transport

All guard rail construction parts are to be stored and handled in a technically correct manner. They are to be protected from dirt, corrosion and damage. Construction parts which are laid out for installation should be used within a short period of time. When shipping, the cargo must be securely fastened so that it does not shift. The personnel doing the shipping should be outfitted with personal protection equipment according to national regulations.

1.5 Delivery Control / Component Labeling

The delivered system components are to be compared with the delivery note, examined for completeness, faults, damages at the construction site. Also the part lists in Appendix 1 are to be consulted. Special components of the system (beams, posts, spacers, tension belts) have the labeling mentioned in Appendix 2.

Damages, defects or wrong deliveries are to be reported immediately to the deliverer. Packaging material is to be disposed of according to the local rules and regulations.

2 Technical Data

Performance Class	P2 A
Vehicle Rebound	Z1
Permanent Lateral Displacement	x1, y1
ASI	A
Installation Length	16 m
System Heights	1.) at the end facing the barrier: 75 cm \pm 3 cm 2.) at head piece: 0 cm \pm 3 cm (totally sunk into ground)
Piling depth	105-178 cm
System Width	50.0 cm
Post Center	1.33 m
Weight	500 kg (A-profile) or 486 kg (B-profile)
Material	steel S355JR /S235JR
Galvanizing of the steel and bolts	In accordance with EN ISO 1461 and EN 1179. For the beams alternatively: pre-galvanized material
Expected durability	Approx. 20 years, shorter in the case of more severe atmospheric corrosion exposure

3 Installation Notes

3.1 General Remarks

3.1.1 Place of Installation

The system is a single-sided, piled terminal, which has proved the following performance in the crash test according to ENV 1317-4:2001:

- P2A (Vehicle Rebound Z1, Permanent Lateral Displacement x1, y1)

In choosing the place of installation the respective national regulations and the system performance, which resulted from the results of the crash tests according to EN 1317 (compare above: "technical data") are to be heeded.

According to regulations, the system can be used only if the available space around the safety device is larger than the Vehicle Rebound Area and the Permanent Lateral Displacement according to ENV 1317-4:2001.

3.1.2 Limits of Installation

The general limits of installation for Easy-Rail P2 have not been specified because the local situations are so varying. Should the basic construction for any reason be deviated from because of the installation site, then the required changes should always take place in agreement with the contractee and the manufacturer.

In the execution of the installation the general known rules of engineering are to be observed and adhered to.

3.2 Grounding

3.2.1 Soil Class 1 and 2 in Accordance with DIN 18300

Easy-Rail P2 is not suitable for this ground class and should not be installed under these conditions. An alternative would be to change the ground with suitable material.

3.2.2 Soil Class 3 to 5 in Accordance with DIN 18300

Easy-Rail P2 is suitable for this ground class and may be installed if the pile-driving time for each post does not come to more than 4 minutes and no deformation or damage to the heads of the posts occur, so that a flawless installation and functioning of the system is guaranteed. Damages to the hot dip galvanizing should be repaired in a technically correct manner. In the case that the posts are deformed or move from the correct position while pile-driving then proceed as in ground class 6/7.

3.2.3 Soil Class 6 and 7 (DIN 18300) as well as with Embedded Cinder

In this case the posts must be set into drilled holes. Posts needing to be shortened because of the condition of the ground may be undertaken only after written approval of the contractee and may not have a shorter pile-driven depth than 0,8 m.

Drilled holes are to be filled with appropriate soil, followed by the pile-driving in of the posts. If necessary, bitumen material is to be used for the sealing of drilled holes. Embedding the post in concrete is not permitted.

When pile-driving hindrances are encountered, beyond the defined soil class, special arrangements need to be agreed upon.

3.3 Installation Length

The installation length of Easy-Rail P2 is 16m. Any deviation means that the construction would no longer meet the test criteria and therefore is to be regarded as untested. Like any untested construction, the deviating terminal must be individually agreed on with the client as a special onetime construction.

3.4 Permissible Assembly Temperatures

When the construction is taking place in Germany, it is not dependent upon the outside temperature at the time of the assembly. In regions where the minimum outdoor temperature T_{min} according to EN 1991-1-5/NA is under -24°C , the assembly may only take place with the written approval of the manufacturer.

3.5 Cable Clarification

Before beginning construction, the contractor should be informed of the place and the running of cables, pipes, wires etc. In the area of the underground lines no pile-driving is allowed. It is also understood that the instructions of the cable owners are to be followed.

3.6 Traffic Safety

The construction zones are to be secured according to the requirements of the respective countries.

3.7 Requirements for Installation Personnel

The construction is to be carried out exclusively by schooled and qualified personnel. The appointed installation team is to be led and watched over by a competent member with the appropriate expertise. Germany paragraph 2.4.1.1 ZTV-PS 98 applies. The personnel is to be equipped with their own personal protective gear according to the national requirements.

3.8 Personal Equipment

Protective and reflective clothing, according to the rules and regulations of the respective countries are to be worn at all times.

4 Installation

The installation of the Easy-Rail P2 is to be carried out in general according to the diagram of the system in Appendix 3. The description below and the one in Appendix 4 of this manual can be referred to in relation to the installation process.

4.1 Installation Workflow

For the installation of EasyRail P2, the following approach has been proven fast and feasible:

- Erecting of EasyRail guardrail system until beginning of terminal (height of beam 0.75 m above road surface).
- Erecting of first four horizontal metres of terminal (total length: 16 m) until beginning of slope (length of slope: three beams)
- Piling of all posts up to a height of 0.70 m above road surface (post distance 1.33 m) in compliance with the various distances between posts and road edge, measured perpendicular to the road (depending on if the posts show spacers or not).
- Pre-assembly of a 12m beam piece by connecting the three remaining guardrail beams.
- Connecting of one end of the 12m piece to the previously (step 2) erected 4m section and bolting of the other end to the last post together with head piece (which is meant to be completely sunk into the ground).
- Creating of ditch/groove for burying the beams as long as needed with a suitable tool (spade, pick ax , shovel, jackhammer).
- Piling of last post (with head piece) with suitable hammer head until the upper edge of the head piece is the top of the head piece flush with the soil.
- Piling of the rest of the posts so deep into the soil until the hole in the post and the long hole in the guardrail beam fit one above the other.
- Final bolting and control with torque wrench.
- Refilling of ditch with previously excavated soil. Subsequently, compact the ground in the area by appropriate means.

When erecting and aligning the system, any damage to the galvanized surfaces is to be avoided. When setting the posts always use an appropriate piling piece. Hitting galvanized surfaces directly with a hammer is not permitted.

Small defects on the galvanized surface are to be touched up after careful preparation through the application of a suitable zinc dust coating according to EN ISO 1461.

With the installation (new and rebuilt), as well as with repair work on guard rail construction, only new bolting materials are to be used.

4.2 Installation Heights and Connection to Guardrail

The installation height of Easy-Rail P2 generally is $75 \text{ cm} \pm 3 \text{ cm}$ at the top, but is to be adapted to the corresponding EasyRail guardrail run. The lower end of the slope (with the head piece) is to be sunk into the ground until the top of the head piece is flush with the top of the surrounding soil at the embankment.

The exact installation heights of EasyRail guardrail system can be taken from the relevant installation manual.

The distance between the front of the system to the edge of the carriageway should be 50 cm.

Curbs with a height difference of more than 7.5 cm are to be avoided. In the case that higher curbs already exist and cannot be removed, then Easy-Rail P2 can be adjusted locally as a untested special construction.

In such a case, the actual arrangement of the terminal in terms of height and position is to be adapted to the guardrail run. The proceeding is as follows:

If possible place the Easy-Rail P2 so that the front edge of the beam runs flush with the front edge of the curb.

Any deviation from the rules above has to be agreed on with the client and require the written consent of the manufacturer.

4.3 Posts

4.3.1 Posts with and without Jog

For EasyRail P2, there are posts with and without a jog.

The posts without jog are to be used where the beams are bolted to the posts directly or together with a support bracket.

The posts with jog are used where a spacers is to be put between the posts and the guardrail beams. The spacers fit to the jog.

All posts are to be put so that their closed sides are facing the traffic.

4.3.2 Piling

The posts of Easy-Rail P2 are to be inserted in the ground with an air or hydraulic pile driver and an appropriate striking attachment. The pile driver needs to have sufficient power or as the

case may be enough driving pressure.

The posts are to be driven in vertically. Deviations of up to 5 cm on each side of the post over the area are permissible. In the case that there are objects in the ground that hinder the driving (e.g. rocks, roots etc.) it can happen that individual posts may become quite out of line or be twisted. If this should be the case with more than 20% of the posts, the corresponding soil class 6 and 7 procedure must be used to drill.

The assembly of the post is to take place on the closed side of the road against the traffic.

The designated post spacing of 1.33 m shall not be exceeded. In the case that a post cannot be set at the designated place due to an obstacle or other local conditions (cables, shafts, tunnels, tree roots, and the like), it must be determined whether the position of the whole terminal can be shifted, so that the obstacle does no longer bother. If this is not possible, then the post, which cannot be driven because of the obstacle in the underground, is to be set in the shortest possible distance from the designated position and an additional post is to be set in an adjacent "field" (space between the two next posts).

4.4 Fittings

For a proper connection to be achieved, the screws should be set perpendicular in the connecting construction parts and are to be tightened according to regulations. The drilling tools need to be adjusted accordingly. When tightening the nuts a washer should be placed under each nut in order that the zinc surface under the nut not be damaged. A butt plate is not to be used as a replacement for a washer.

The required tools for bolting are suitable socket wrenches or screw wrenches.

For torques see the following table:

Art.-Nr.	Bolt	Torque
040.00	HRK (button head) Bolt with Nib M 16x27, 4.6 incl. Nut	70-140 Nm *)
040.01	HRK (button head) Bolt with Nib M 16x40, 4.6 incl. Nut	70-140 Nm *)
040.04	HRK (button head) Bolt with Nib M 16x45, 8.8 incl. Nut	70-140 Nm
040.40	Hex-head Bolt M 10x25, 4.6 incl. Nut	10-17 Nm (hand-tight)
040.43	Hex-head Bolt M 10x55, 4.6 incl. Nut	10-17 Nm (hand-tight)

*) Note: place nib of button head bolt into notch of drop hole.

4.5 Guardrail Beams

Beams with either profile A or B may be used. Where the beams connect, the overlap is to be in the direction of traffic.

4.6 Spacers with Post Clamp

The spacers are shipped with pre-mounted post clamp, which are connected with three bolts (No. 040.03, round hex-head bolt, M 16 x 30, 8.8 incl. Nut) and washers (No. 040.30, Ø 18, DIN 126).

Spacers are specifically designed for mounting at either the left or the right side of the adjacent carriageway.

Spacers are generally to be built in perpendicular to the guard rail beams. Where by variances of possible shifting within the slots in the guard rail beams are permitted.

4.7 Support Brackets

Support brackets are generally to be built in perpendicular to the guard rail beams. Where by variances of possible shifting within the slots in the guard rail beams are permitted.

4.8 Tension Belts

Tension belts have to overlap at the joints in the direction of traffic. The following parts are being used to fit the tension belts to the beam:

Art.-Nr.	Component
040.00	HRK (button head) Bolt with Nib M 16x27, 4.6 incl. Nut
040.01	HRK (button head) Bolt with Nib M 16x40, 4.6 incl. Nut
010.00	fish plate M16
040.31	Washer, 40x18x4 mm, DIN 522 C

The tension belts may be shortened at the joints.

4.9 Head Pieces

For the guardrail beams, there are individual head pieces for each profile (A or B). They have to overlap in the direction of the traffic, like the beams. The head pieces have to be bolted to the post at the profiled front side as well as on the flat back side with a screw 040.04 (button head bolt with hex. M16x45 with nut, 8.8). The existing hole Ø 12 mm at the front side has to be widened to Ø 18 mm. The hole at the backside is to be drilled on-site.

5 Deviations from Basic Construction

The EasyRail P2 has been tested according to DIN EN 1317-4 on flat underground paralleling the road. The Easy-Rail P2 is a straight running guard rail along level ground that has been tested according to EN 1317-4:2001. Should there be a need to deviate from the basic construction in some way because of local conditions; this can only be done as an untested special construction that does not have the same qualities as the tested straight

running guard rail Easy Rail 4.00. In any case this requires the approval of the contractee and the manufacturer.

In the execution of the installation the general known rules of engineering are to be observed and adhered to. Changes, which clearly lead to impairments to the functioning of the terminal are to be avoided.

In the case that subsequent work on the guard rail parts is necessary, no deviations from the standard parts should be performed, that could impair their way of functioning. This especially applies to the making of fitted parts (hole spacing, hole diameter, number of bolts, overlapping) and the shortening of posts. Cut edges are to be protected from corrosion with sufficient cold zinc coating.

5.1 Fitted Pieces

In order to make the length of the guard rail in accordance with local conditions, it may be necessary to install beams which are shorter in length than the standard building parts. These fitted pieces can be cut at the work site.

The following requirements are to be observed:

- Minimum length of 750 mm (profile overlapping)
- No exceeding of the given post spacing of the guard rail construction when installing.
- Cutting to length with a cutting machine or saw in a technically correct manner
- Drilling the holes of the bolt connections in a technically correct manner
- Touching up of the cut surfaces and the drilled holes of the bolt connections through the application of suitable zinc dust paint

The installation of such fitted parts is to be reduced to a minimum. Only in exceptional cases (e. g. between two bridge structures) should fitted parts be installed.

In the case of particular building measures in medians such as vehicle crossings, tunnels or bridge structures, transitions to concrete barriers, etc. more than 1- 2 fitted parts between such measures should not be used.

The same applies to bridge structures. In this case, a maximum of one fitted part per stretch between two roadway crossings should be made. It is to be noted here that the guard rail beam expansion joints may in no case be shortened.

In the case of maintenance and repair work it should be attempted to be done without any fitted parts, even when an increased effort for the mounting and dismounting of the undamaged connection ranges arises because of this.

Construction parts are only to be changed using drills and cutting machines in a technically correct manner. Work on the construction parts using welders, cutting devices, mandrel and striking and bending tools are not permissible.

5.2 Use of Radii

The use of radii always is a deviation from the tested construction, showing different characteristics than EasyRail P2. It is only possible, if no other tested terminal is available, which is more suitable for the local situation. In any case, the use of radius beams must be agreed on with the client and the manufacturer.

The beams in radii have to be installed without tension.

In the case of curves with radii < 30 m pre-bent beams (so-called radius beams) should be used. Radius beams are available in increments of 2.5 m:

25 m – 22.5 m – 20 m – 17.5 m – 15 m – 12.5 m – 10 m – 7.5 m – 5 m – 2.5 m

Convex radii beams should be used for outside curves and concave for inside curves. It is not permissible to bend the guard rail beams during installation at the job site to the point that permanent deformation occurs.

Especially with concave radii beams (inside curves) care must be taken, that the edge overlapping is not far apart when bolting together. It is recommended, that the edge overlapping is first bolted together and then afterwards fastening the beam to the spacers. Enlarging the holes, e. g. by means of reaming is not permissible.

5.3 Flaring

Any flaring of EasyRail P2 should be avoided as the terminal is tested in a tangent orientation. If this however is not possible, an inclination of 1:20 – in exceptional cases of 1:12 – is permissible.

In the case that deviations need to be implemented on the basis of national regulations, then these national regulations take effect.

5.4 Additional Attachments

Attachments to the EasyRail P2 terminal may have a negative effect on the performance of the system and might be endangering, so that in general, the mounting of attachments is not permitted.

Particularly traffic signs must not be fixed directly to the terminal. The erection of traffic signs within the effective range of the system is only permissible when using breakaway posts.

The following attachments may be mounted to the EasyRail P2, provided that third party risk exposures are eliminated by the way of fixture:

- Delineators mounted to the posts
- Delineators mounted to the beam joints (deviating from the drawing in Appendix 3, the bolts M 16x27 HRK (No. 040.00) must be replaced by bolts M 16x45 HRK with nib)
- Guard rail reflectors attached to the beam with HRK bolts at the middle punched hole

- Post crash absorber according to TL-SPU

The fixture of any attachment has to be proper to avoid any break off in case of a vehicle crash.

For the mounting of other additional attachments (e.g. anti-glare shield, underride protection, etc.) a written consent of the manufacturer is required.

6 Controls, Self-Monitoring Reports, Tolerances.

After installation the construction is to be checked with the aid of the general known rules of engineering and the self-monitoring reports in Appendix 5 in agreement with this manual. Adherence to staying within tolerances of installation should be particularly taken into account.

Compliance to installation tolerances, the fixed position of the bolted joints and the technically correct alignment of the stretches of guard rails are in particular to be heeded.

The installation tolerances are as follows:

<i>Measurement</i>	<i>Tolerance</i>
Spacing of the posts lengthwise	$\pm 21 \text{ mm}$
Deviation of alignment of posts or beams	auf 12 m Länge: $\pm 30 \text{ mm}$
Deviation of top edge of beam vertically	$\pm 30 \text{ mm}$ (or adjusted to the height of the connected guard rail system)

The fastening torques of the bolting have to be checked randomly. The above mentioned minimum values are decisive. In case that more than 10% of the control sample does not fulfil the requirements, all bolts need to be rechecked.

7 Repair, Inspection and Maintenance

As a basic principle all guard rail parts are to be replaced, which show obvious (plastic) permanent deformation.

When the parts of the terminal are out of alignment up to approx. 30 cm, but not permanently deformed, then an alignment of the construction should be made.

In doing so corresponding and enlarged postholes are to be filled and sufficiently packed.

When damaged guard rails parts are replaced, special care must be taken when working in areas connected to the undamaged beams.

The beams remaining after removal may not be damaged (e.g. through the use of an angle grinder, mandrel or a hammer). Due to temperature determined length changes or larger sags from difficult drives to the building site, lengthwise hole patterns often do not coincide when

connecting new beams with existing guardrails.

In the case that the distance between hole axes amounts to less than 5 cm, then the difference can usually be compensated for by the loosening of the bolts with several strikes. Otherwise proceed as follows.

As a general rule when repairs are undertaken in lower temperatures, the new beams are too short. The installation length between the post axes is greater than 4.00 m (e.g. 4.07 m), that is the overlapping amounts to less than 30 cm. This is not permissible.

As a result two fitted beam pieces must be cut in order to obtain an overall installation length > 4.00 m. (Example. 2.00 m + 2.07 m = 4.07 m).

Due to the short posts distance of 1.33 m, an additional post is not needed to be set in this case.

Is the available space smaller than the length of a beam, instead of using fitted pieces, new holes may be drilled. This, however, is only permissible when the spacing between the new outer edges and the existing drilled holes amount to more than 2.5 cm.

As a basic principle however both fitted pieces and the drilling of new holes should be avoided, even when it means an additional effort through the removal or installation of adjoined sections.

Enlarged postholes in the shoulder of the road must be so packed that the newly rammed post is sufficiently stable. In the case that several damages at the same place due to accidents have occurred, then when necessary either the shoulder must be newly fortified or an additional post must be mounted if it is needed. This should be done in consultation with the client.

7.1 Reusability of Components

In the case of refitting and/or building alterations guard rail parts may be reused if:

- the building parts show no visible deformations and/or damages (e.g. torn out, reamed out or burned out holes)
- the construction parts show a galvanized strength of at least 55 μ .
- the identification labeled building parts, the manufacturing identification and the test period identification can be clearly seen.

Materials for mounting (bolts, nuts, washers, butt plates, connecting plates) that have already been built in at one time, may not be reused. New materials should always be used for installation. When repairing damages due to accidents only new materials may be used.

Construction parts that cannot be used any more, e.g. the cutting off of or the breaking up of parts, should be made unusable. So, too, the utilization of dismantled bolting materials should be applied to the corresponding national regulations.

7.2 Disposal / Recycling

Damaged building parts and building parts that cannot be used, are to be subjected completely to utilization / recycling or be installed in other areas of use (for example: farming, solar standing supports, private business)

8 Data for Toxic Substances

The individual guard rail components consist of 2 main building substances:

- steel
- zinc (hot dip galvanizing)

Both components are not toxic and are not in need of any special treatment or operation.

For on-site installation auxiliary substances are needed for the operation of machines and tools. For example these could be:

- diesel (e.g. compressor)
- pneumatic oil (e.g. operation of air pressure tools)
- gasoline (e.g. cutting off machine)
- grease or cutting paste (for the drilling of holes in guard rail parts)

In these cases the relevant data from the manufacturer and the requirements of the individual countries should be considered and heeded to.

9 Miscellaneous Information

Because of low height of the system of 75 cm the Easy-Rail P2 can be stepped over without any problem. Consequently there is no need to mount anything to assist in stepping over.

Appendix 1 - Parts Lists (per Construction)

Easy-Rail P2, 16m, Road Side, Beginning, A-Profile

Amount	Art.-No.	Description	Weight kg
8	005.05	BeSt - spacer. right-side with 007.00 (postmounted bracket) (bolt 040.03)	6.00
3	008.00	Tension belt. construction length 4.0 m	12.22
22	010.00	Fishplate M 16	0.18
1.5	010.10	Fishplate M 10	0.18
1	012.01	Head piece. profile A. TL (drop-type hole)	10.67
36	040.00	Buttonhead bolt with catch M16 x 27. 4.6 with nut	0.07
22	040.01	Buttonhead bolt with catch M16 x 45. 4.6 with nut	0.10
4	040.04	Buttonhead bolt M 16 x 45 Mu. 8.8	0.10
60	040.30	Flat Washer Ø 18. DIN 126	0.01
2	040.31	Flat Washer 40x18x4 mm; ISO 4759-3	0.03
16	040.40	Hexhead bolt M 10 x 25 with nut. 4.6	0.03
1.5	040.43	Hexhead bolt M 10 x 55 with nut. 4.6	0.05
17.5	040.60	Flat Washer Ø 11. DIN 126	0.00
4	301.00	ER-Guardrail Beam. profile A	41.72
4.5	303.00	Post C-100-60-25. 1.750 mm	17.09
8	303.10	Post C-100-60-25. 1.750 mm for Transitions	16.85
1.5	304.00	Support bracket. profile A. inclined by 6°	1.10

Easy-Rail P2, 16m, Road Side, End, A-Profile

Amount	Art.-No.	Description	Weight kg
8	005.05	BeSt - spacer, right-side with 007.00 (postmounted bracket) (bolt 040.03)	6.00
3	008.00	Tension belt, construction length 4.0 m	12.22
22	010.00	Fishplate M 16	0.18
1,5	010.10	Fishplate M 10	0.18
1	012.00	Head piece, profile A, RL (round hole)	10.67
36	040.00	Buttonhead bolt with catch M16 x 27, 4.6 with nut	0.07
22	040.01	Buttonhead bolt with catch M16 x 45, 4.6 with nut	0.10
4	040.04	Buttonhead bolt M 16 x 45 Mu, 8.8	0.10
60	040.30	Flat Washer Ø 18, DIN 126	0.01
2	040.31	Flat Washer 40x18x4 mm; ISO 4759-3	0.03
16	040.40	Hexhead bolt M 10 x 25 with nut, 4.6	0.03
1,5	040.43	Hexhead bolt M 10 x 55 with nut, 4.6	0.05
17,5	040.60	Flat Washer Ø 11, DIN 126	0.00
4	301.00	ER-Guardrail Beam, profile A	41.72
4,5	303.00	Post C-100-60-25, 1.750 mm	17.09
8	303.10	Post C-100-60-25, 1.750 mm for Transitions	16.85
1,5	304.00	Support bracket, profile A, inclined by 6°	1.10

Easy-Rail P2, 16m, Median, Beginning, A-Profile

Amount	Art.-No.	Description	Weight kg
8	005.15	BeSt - spacer, left-side with 007.00 (postmounted bracket) (bolt 040.03)	6.00
3	008.00	Tension belt, construction length 4.0 m	12.22
22	010.00	Fishplate M 16	0.18
1.5	010.10	Fishplate M 10	0.18
1	012.01	Head piece, profile A, TL (drop-type hole)	10.67
36	040.00	Buttonhead bolt with catch M16 x 27, 4.6 with nut	0.07
22	040.01	Buttonhead bolt with catch M16 x 45, 4.6 with nut	0.10
4	040.04	Buttonhead bolt M 16 x 45 Mu, 8.8	0.10
60	040.30	Flat Washer Ø 18, DIN 126	0.01
2	040.31	Flat Washer 40x18x4 mm; ISO 4759-3	0.03
16	040.40	Hexhead bolt M 10 x 25 with nut, 4.6	0.03
1.5	040.43	Hexhead bolt M 10 x 55 with nut, 4.6	0.05
17.5	040.60	Flat Washer Ø 11, DIN 126	0.00
4	301.00	ER-Guardrail Beam, profile A	41.72
4.5	303.00	Post C-100-60-25, 1.750 mm	17.09
8	303.10	Post C-100-60-25, 1.750 mm for Transitions	16.85
1.5	304.00	Support bracket, profile A, inclined by 6°	1.10

Easy-Rail P2, 16m, Median, End, A-Profile

Amount	Art.-No.	Description	Weight kg
8	005.15	BeSt - spacer, left-side with 007.00 (postmounted bracket) (bolt 040.03)	6.00
3	008.00	Tension belt, construction length 4.0 m	12.22
22	010.00	Fishplate M 16	0.18
1,5	010.10	Fishplate M 10	0.18
1	012.00	Head piece, profile A, RL (round hole)	10.67
36	040.00	Buttonhead bolt with catch M16 x 27, 4.6 with nut	0.07
22	040.01	Buttonhead bolt with catch M16 x 45, 4.6 with nut	0.10
4	040.04	Buttonhead bolt M 16 x 45 Mu, 8.8	0.10
60	040.30	Flat Washer Ø 18, DIN 126	0.01
2	040.31	Flat Washer 40x18x4 mm; ISO 4759-3	0.03
16	040.40	Hexhead bolt M 10 x 25 with nut, 4.6	0.03
1,5	040.42	Hexhead bolt M 10 x 55 with nut, 4.6	0.05
17,5	040.60	Flat Washer Ø 11, DIN 126	0.00
4	301.00	ER-Guardrail Beam, profile A	41.72
4,5	303.00	Post C-100-60-25, 1.750 mm	17.09
8	303.10	Post C-100-60-25, 1.750 mm for Transitions	16.85
1,5	304.00	Support bracket, profile A, inclined by 6°	1.10

Easy-Rail P2, 16m, Road Side, Beginning, B-Profile

Amount	Art.-No.	Description	Weight kg
8	005.05	BeSt - spacer. right-side with 007.00 (postmounted bracket) (bolt 040.03)	6.00
3	008.00	Tension belt. construction length 4.0 m	12.22
22	010.00	Fishplate M 16	0.18
1,5	010.10	Fishplate M 10	0.18
1	012.11	Head piece. profile B. TL (drop-type hole)	10.67
27	040.00	Buttonhead bolt with catch M16 x 27. 4.6 with nut	0.07
22	040.01	Buttonhead bolt with catch M16 x 45. 4.6 with nut	0.10
4	040.04	Buttonhead bolt M 16 x 45 Mu. 8.8	0.10
51	040.30	Flat Washer Ø 18. DIN 126	0.01
2	040.31	Flat Washer 40x18x4 mm; ISO 4759-3	0.03
16	040.40	Hexhead bolt M 10 x 25 with nut. 4.6	0.03
1,5	040.42	Hexhead bolt M 10 x 55 with nut. 4.6	0.05
17,5	040.60	Flat Washer Ø 11. DIN 126	0.00
4	302.00	ER-Guardrail Beam. profile B	38.82
4,5	303.00	Post C-100-60-25. 1.750 mm	17.09
8	303.10	Post C-100-60-25. 1.750 mm for Transitions	16.85
1,5	304.10	Support bracket. profile B. inclined by 6°	1.10

Easy-Rail P2, 16m, Road Side, End, B-Profile

Amount	Art.-No.	Description	Weight kg
8	005.05	BeSt - spacer, right-side with 007.00 (postmounted bracket) (bolt 040.03)	6.00
3	008.00	Tension belt, construction length 4.0 m	12.22
22	010.00	Fishplate M 16	0.18
1,5	010.10	Fishplate M 10	0.18
1	012.10	Head piece, profile B, RL (round hole)	10.67
27	040.00	Buttonhead bolt with catch M16 x 27, 4.6 with nut	0.07
22	040.01	Buttonhead bolt with catch M16 x 45, 4.6 with nut	0.10
4	040.04	Buttonhead bolt M 16 x 45 Mu, 8.8	0.10
51	040.30	Flat Washer Ø 18, DIN 126	0.01
2	040.31	Flat Washer 40x18x4 mm; ISO 4759-3	0.03
16	040.40	Hexhead bolt M 10 x 25 with nut, 4.6	0.03
1,5	040.42	Hexhead bolt M 10 x 55 with nut, 4.6	0.05
17,5	040.60	Flat Washer Ø 11, DIN 126	0.00
4	302.00	ER-Guardrail Beam, profile B	38.82
4,5	303.00	Post C-100-60-25, 1.750 mm	17.09
8	303.10	Post C-100-60-25, 1.750 mm for Transitions	16.85
1,5	304.10	Support bracket, profile B, inclined by 6°	1.10

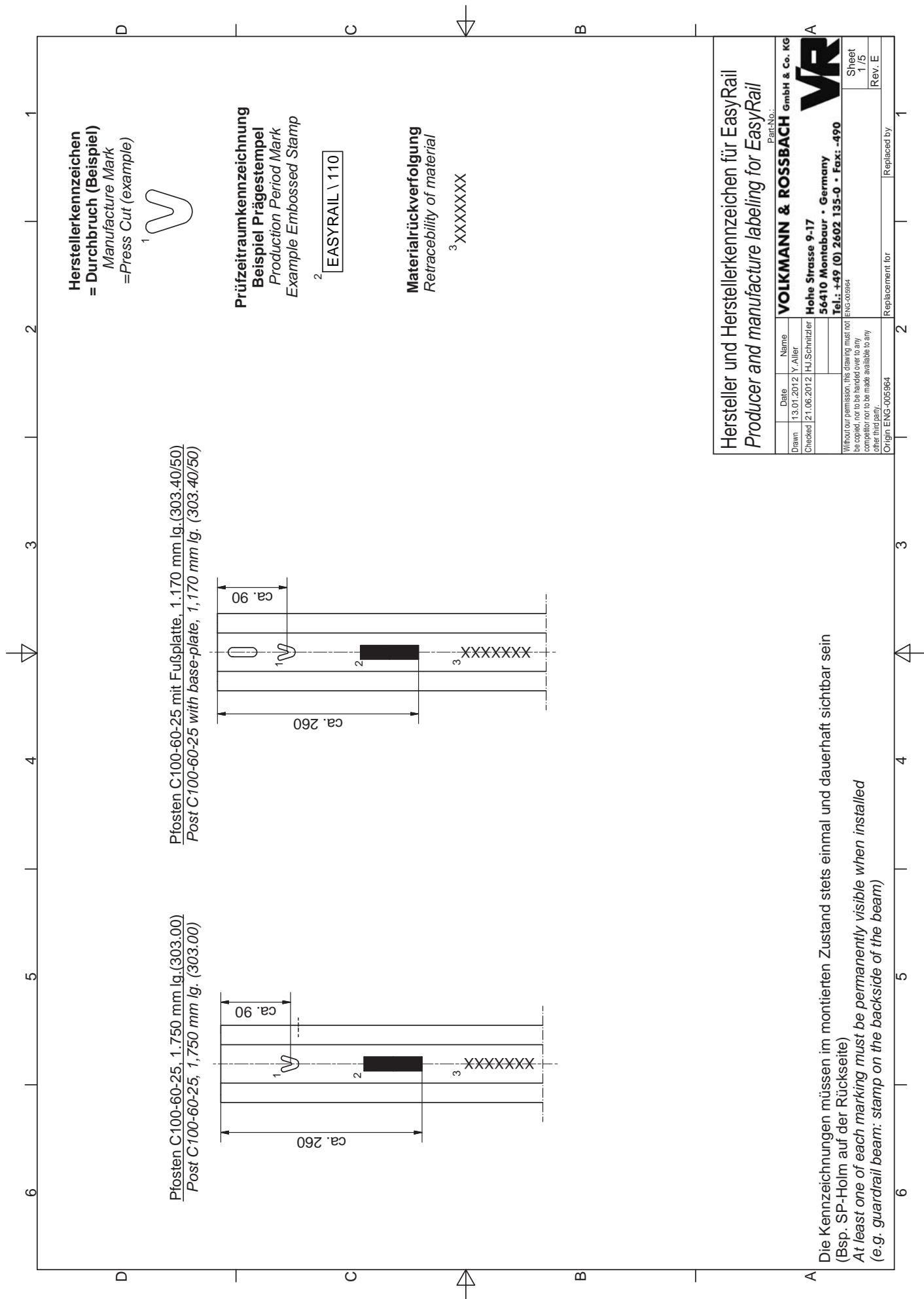
Easy-Rail P2, 16m, Median, Beginning, B-Profile

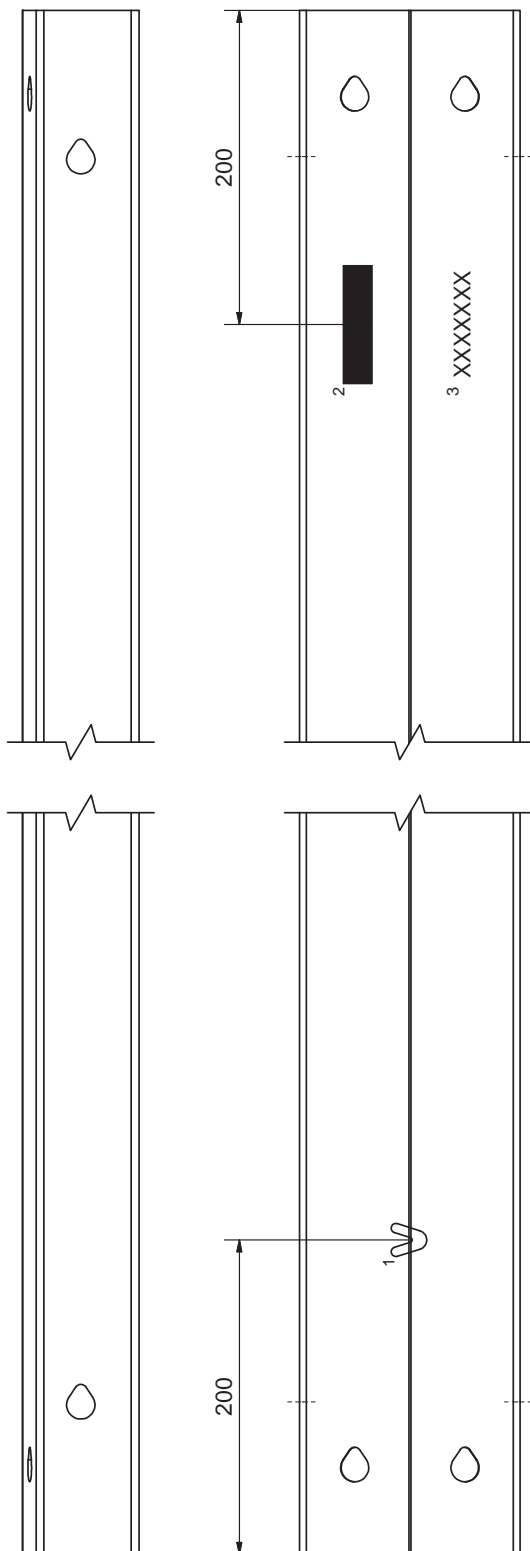
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8	005.15	BeSt - spacer. left-side with 007.00 (postmounted bracket) (bolt 040.03)	6.00
3	008.00	Tension belt, construction length 4.0 m	12.22
22	010.00	Fishplate M 16	0.18
1,5	010.10	Fishplate M 10	0.18
1	012.11	Head piece, profile B, TL (drop-type hole)	10.67
27	040.00	Buttonhead bolt with catch M16 x 27, 4.6 with nut	0.07
22	040.01	Buttonhead bolt with catch M16 x 45, 4.6 with nut	0.10
4	040.04	Buttonhead bolt M 16 x 45 Mu, 8.8	0.10
51	040.30	Flat Washer Ø 18, DIN 126	0.01
2	040.31	Flat Washer 40x18x4 mm; ISO 4759-3	0.03
16	040.40	Hexhead bolt M 10 x 25 with nut, 4.6	0.03
1,5	040.42	Hexhead bolt M 10 x 55 with nut, 4.6	0.05
17,5	040.60	Flat Washer Ø 11, DIN 126	0.00
4	302.00	ER-Guardrail Beam, profile B	38.82
4,5	303.00	Post C-100-60-25, 1.750 mm	17.09
8	303.10	Post C-100-60-25, 1.750 mm for Transitions	16.85
1,5	304.10	Support bracket, profile B, inclined by 6°	1.10

Easy-Rail P2, 16m, Median, End, B-Profile

Amount	Art.-No.	Description	Weight kg
8	005.15	BeSt - spacer, left-side with 007.00 (postmounted bracket) (bolt 040.03)	6.00
3	008.00	Tension belt, construction length 4.0 m	12.22
22	010.00	Fishplate M 16	0.18
1,5	010.10	Fishplate M 10	0.18
1	012.10	Head piece, profile B, RL (round hole)	10.67
27	040.00	Buttonhead bolt with catch M16 x 27, 4.6 with nut	0.07
22	040.01	Buttonhead bolt with catch M16 x 45, 4.6 with nut	0.10
4	040.04	Buttonhead bolt M 16 x 45 Mu, 8.8	0.10
51	040.30	Flat Washer Ø 18, DIN 126	0.01
2	040.31	Flat Washer 40x18x4 mm; ISO 4759-3	0.03
16	040.40	Hexhead bolt M 10 x 25 with nut, 4.6	0.03
1,5	040.42	Hexhead bolt M 10 x 55 with nut, 4.6	0.05
17,5	040.60	Flat Washer Ø 11, DIN 126	0.00
4	302.00	ER-Guardrail Beam, profile B	38.82
4,5	303.00	Post C-100-60-25, 1.750 mm	17.09
8	303.10	Post C-100-60-25, 1.750 mm for Transitions	16.85
1,5	304.10	Support bracket, profile B, inclined by 6°	1.10

Appendix 2 - Marking of Parts





Herstellereigenschaften
= **Durchbruch (Beispiel)**
 Manufacture Mark
 = *Press Cut (example)*

Prüfzeitraumkennzeichnung
Beispiel Prägestempel
Production Period Mark
Example Embossed Stamp

Materialrückverfolgung
Retraceability of material

 \geq

2

EASYRAIL \ 110

3

XXXXXX

Hersteller und Herstellerkennzeichen für EasyRail
Producer and manufacture labeling for EasyRail

Part-No.:

VOLKMANN & ROSSBACH GmbH & Co. KG

Hohe Strasse 9-17

56410 Montabaur • Germany
Tel.: +49 (0) 2602 135-0 • Fax: -490

Tel.: +4	
ENG-005964	

Sheet

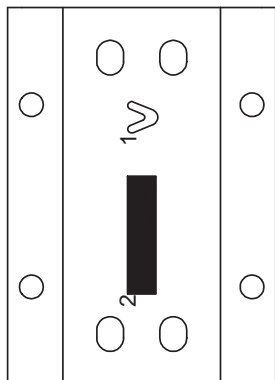
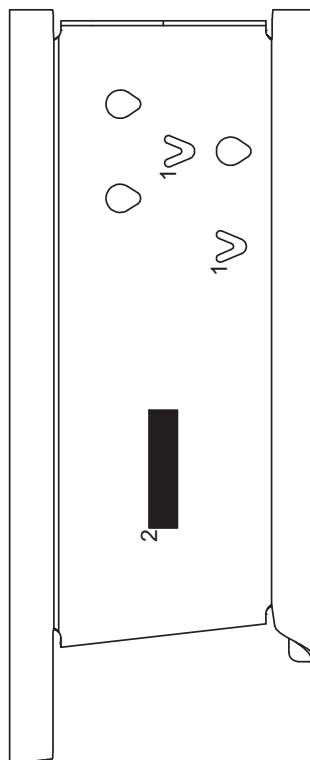
Rev. E

Replaced by

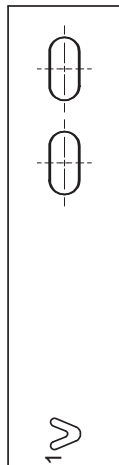
	Replacement for
--	-----------------

Origin ENG-005964

Die Kennzeichnungen müssen im montierten Zustand stets einmal und dauerhaft sichtbar sein
(Bsp. SP-Holm auf der Rückseite)
At least one of each marking must be permanently visible when installed
(e.g. guardrail beam: stamp on the backside of the beam)

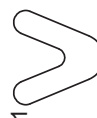

$$\frac{\text{Abstandhalter (005.00/005.10)}}{\text{Spacer (005.00/005.10)}}$$


Abspanngurt (008.00)
Tension belt (008.00)




Herstellereigenschaften
= Durchbruch (Beispiel)
 Manufacture Mark
 = Press Cut (example)

Prüfzeitraumkennzeichnung
Beispiel Prägestempel
Production Period Mark
Example Embossed Stamp



2 RAL-RG 620 + 309

Hersteller und Herstellerkennzeichen für EasyRail
Producer and manufacture labeling for EasyRail

Part-No.:		VOLKMANN & ROSSBACH GmbH & Co. KG	
Drawn	Date	Name	
13.01.2012	Y.Aller		
Checked	21.06.2012	H.J.Schmitzler	Hohe Strasse 9-17 56410 Montabaur • Germany Tel.: +49 (0) 2602 135-0 • Fax: -490 ENG-005964
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Origin ENG-005964 Replacement for			Replaced by

VR
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56410 Montabaur • Germany
Tel.: +49 (0) 2602 135-0 • Fax: -490

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		Rev. E

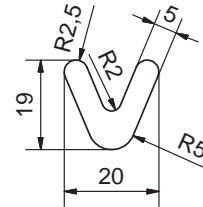
Replaced by

Freigegebene Hersteller und Herstellerkennzeichen für EasyRail

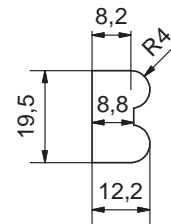
Approved producer and manufacture labeling for EasyRail

Stand/date: 16.01.2012

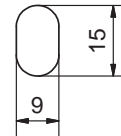
VOLKMANN & ROSSBACH GmbH & Co KG
Hohe Straße 9-17
56410 Montabaur



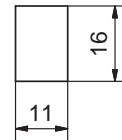
BBV Baustahl und Blechverarbeitungs-
gesellschaft mbH & Co. KG
Am Lokwerk 11
14774 Brandenburg



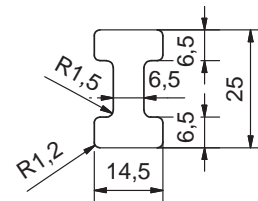
KFS Kirchmöser Formstahl GmbH
Am Lokwerk 11
14774 Brandenburg



ERWIN PEETZ GmbH & Co. KG
Finkenstrasse 14
57368 Lennestadt



ISKOOR Metals & Steel Ltd.
Industrial Area B
P.O. Box 555
Ramla 72104
Israel



Hersteller und Herstellerkennzeichen für EasyRail Producer and manufacture labeling for EasyRail

Part-No.:

Drawn	13.01.2012	Y.Aller
Checked	21.06.2012	H.J.Schnitzler

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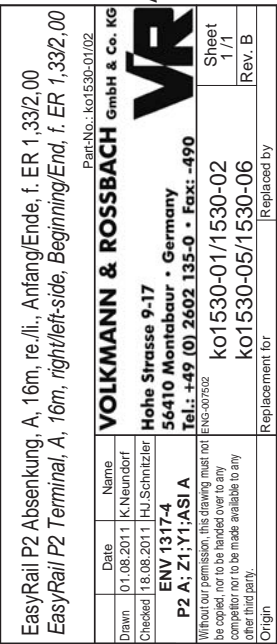
Rev. E

Origin ENG-005964

Replacement for

Replaced by

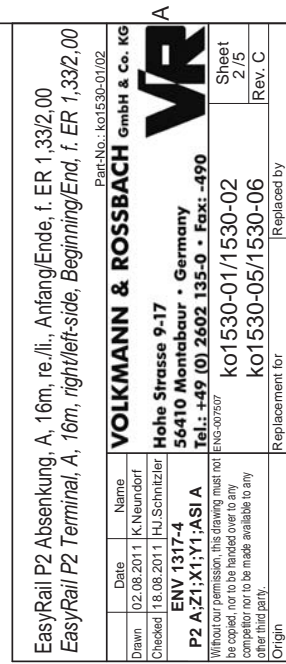
System Drawing (A-Profile)





1.) Bohrungen Ø18 für Schraube M16 in Absenkung vor Ort bohren.
Hole Ø18 for bolt M16 in terminal has to be drilled on site.

Part No.: ko1530-01/02	VOLKMANN & ROSSBACH GmbH & Co. KG	
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	56410 Montabaur • Germany	
	Tel.: +49 (0) 2602 135-0 • Fax: -490	
	ENG-007507	
Sheet 1/5	ko1530-01/1530-02	
Rev. C	ko1530-05/1530-06	
Replacement for		Replaced by
Origin		

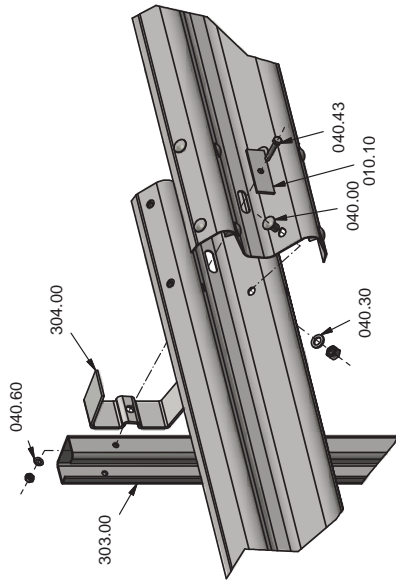


Verschraubung

SP-Holm an Pfosten C-100 mit Stützbügel

Fixing

Guardrail beam to post C-100 with support bracket

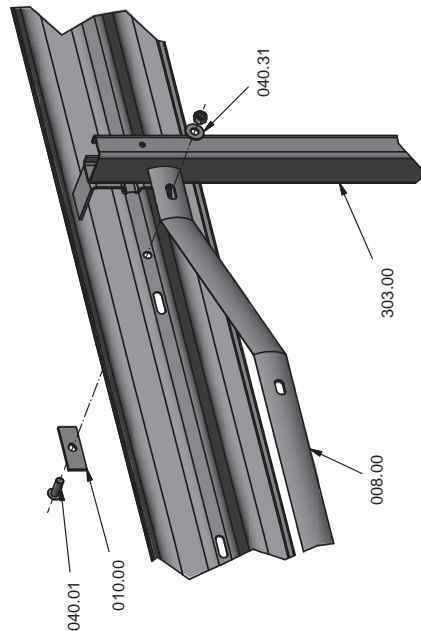


Verschraubung

Abspanngurt an SP-Holm

Fixation

de la lisse de renfort à la glissière

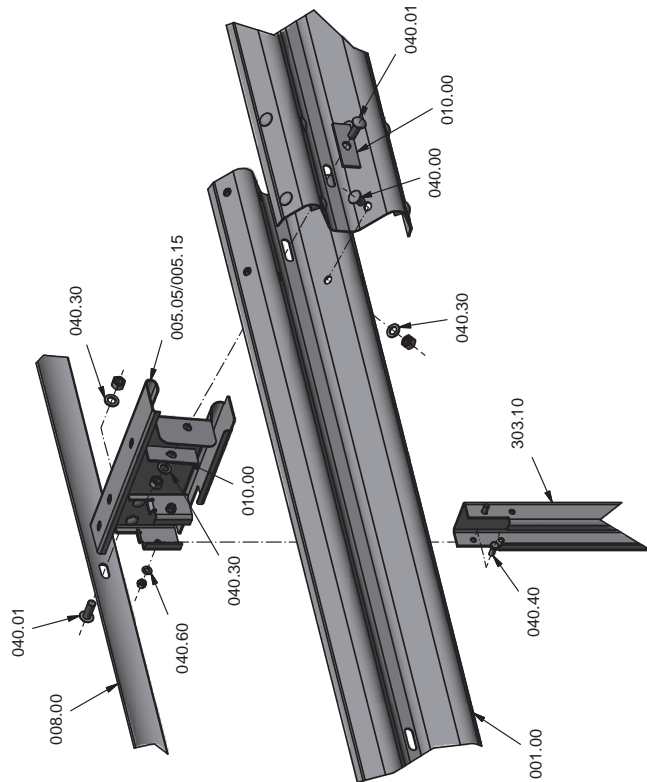


Verschraubung

bei C100-Pfosten und BeSt-AH

Fixation

du support C-100 et à l'entretoise BeSt-AH



EasyRail P2 Absenkung, A, 16m, re./li., Anfang/Ende, f. ER 1,33/2,00
EasyRail P2 Terminal, A, 16m, right/left-side, Beginning/End, f. ER 1,33/2,00

Part-No.: ko1530-01/02

VOIKMANN & ROSSBACH GmbH & Co. KG

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Sheet 3/5

Rev. C

Replacement for

ko1530-01/1530-02

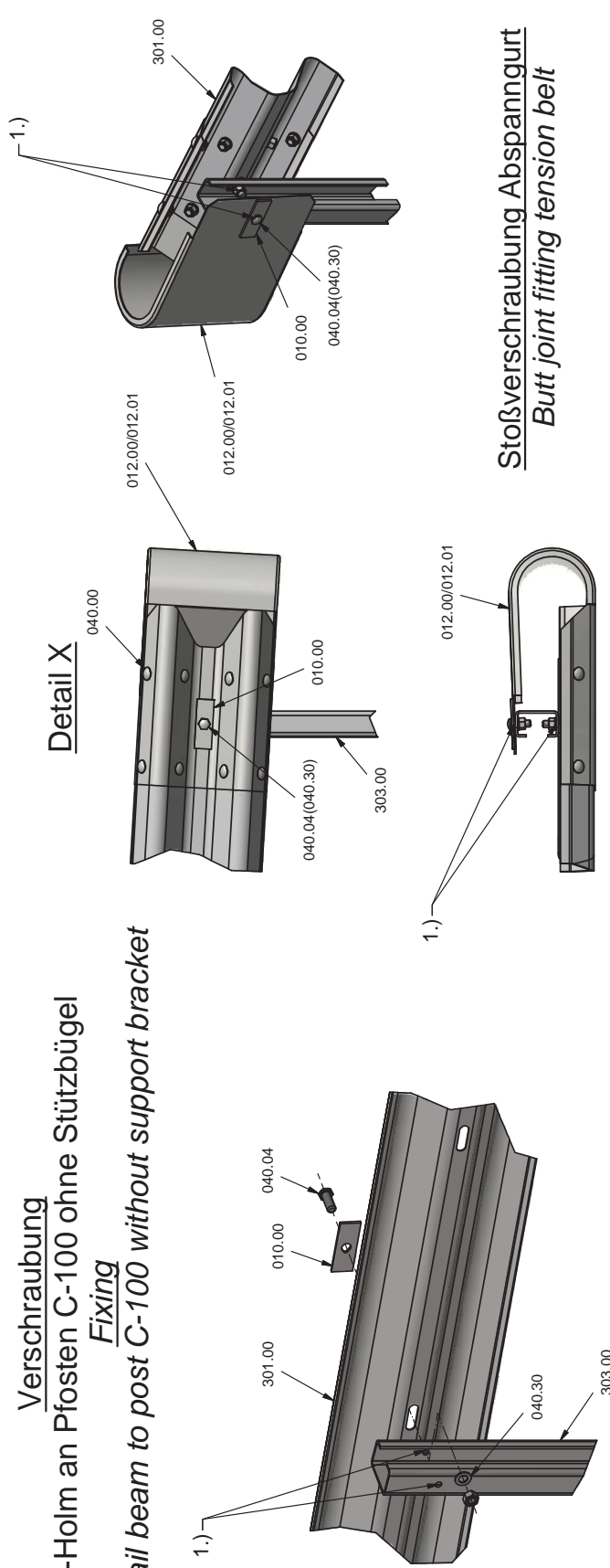
ko1530-05/1530-06

Replaced by

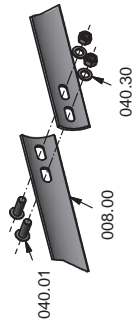
Origin

Verschraubung
SP-Holm an Pfosten C-100 ohne Stützbügel
Fixing
Guardrail beam to post C-100 without support bracket

Detail X



Stoßverschraubung Abspanngurt
Butt joint fitting tension belt



1.) Bohrungen Ø18 für Schraube M16
in Absenkung vor Ort bohren.
Hole Ø18 for bolt M16 in terminal
has to be drilled on site.

Piece	Item-No.	Description	Benennung
8	005.05/ 005.15	BeSt - spacer, right-side with 007.00 (postmounted bracket) (bolt 040.03)/ BeSt - spacer, left-side with 007.00 (postmounted bracket) (bolt 040.03)	BeSt - AH rechts mit Klaue (Verschraubg. 40.03)/ BeSt - AH links mit Klaue (Verschraubg. 40.03)
3	008.00	Tension belt 4,140 mm	Abspanngurt 4,140 mm lang
22	010.00	Fishplate M 16	Decklasche M 16
1,5	010.10	Fishplate M 10	Decklasche M 10
1	012.00/ 012.01	Head piece, profile A, RL (round hole) Head piece, profile A, TL (drop-type hole)	Kopfstück, A, Rundloch Kopfstück, A, Tropfloch
36	040.00	Buttonhead bolt with catch M16 x 27, 4.6 with nut	HRK-Schraube m. Nase M 16 x 27 Mu, 4.6
22	040.01	Buttonhead bolt with catch M 16 x 45 with nut, 4.6	HRK-Schraube m. Nase M 16 x 45 Mu, 4.6
4	040.04	Buttonhead bolt with hexhead M 16 x 45 with nut, 8.8	HRK-Schraube m. 6-kt. M 16 x 45 Mu, 8.8
60	040.30	Flat washer 18, DIN 126	U-Scheibe Ø 18, DIN 126
2	040.31	Flat washer 40x18x4 mm	Scheibe 40x18x4 mm; ISO 4759-3
16	040.40	Hexhead bolt M 10 x 25 with nut, 4.6	6-kt.-Schraube M 10 x 25 Mu, 4.6
1,5	040.43	Hexhead bolt M 10 x 55 with nut, 4.6	6-kt.-Schraube M 10 x 55 Mu, 4.6
17,5	040.60	Flat washer Ø 11, ISO 7091	U-Scheibe Ø 11, ISO 7091
4	301.00	ER-Guardrail beam, profile A	ER-Holm, Profil A
4,5	303.00	Post C-100-60-25, 1,750 mm	Pfosten C-100-60-25, 1.750 mm lg.
8	303.10	Post C-100-60-25, 1,750 mm for transition	Pfosten C-100-60-25, 1.750 mm lg. R/L für Übg.
1,5	304.00	Support bracket, profile A, inclined by 6°	Stützbügel, Profil A, 6 Grad geneigt

EasyRail P2 Absenkung, A, 16m, re./li., Anfang/Ende, f. ER 1,33/2,00
EasyRail P2 Terminal, A, 16m, right/left-side, Beginning/End, f. ER 1,33/2,00

Part-No.: ko1530-01/02

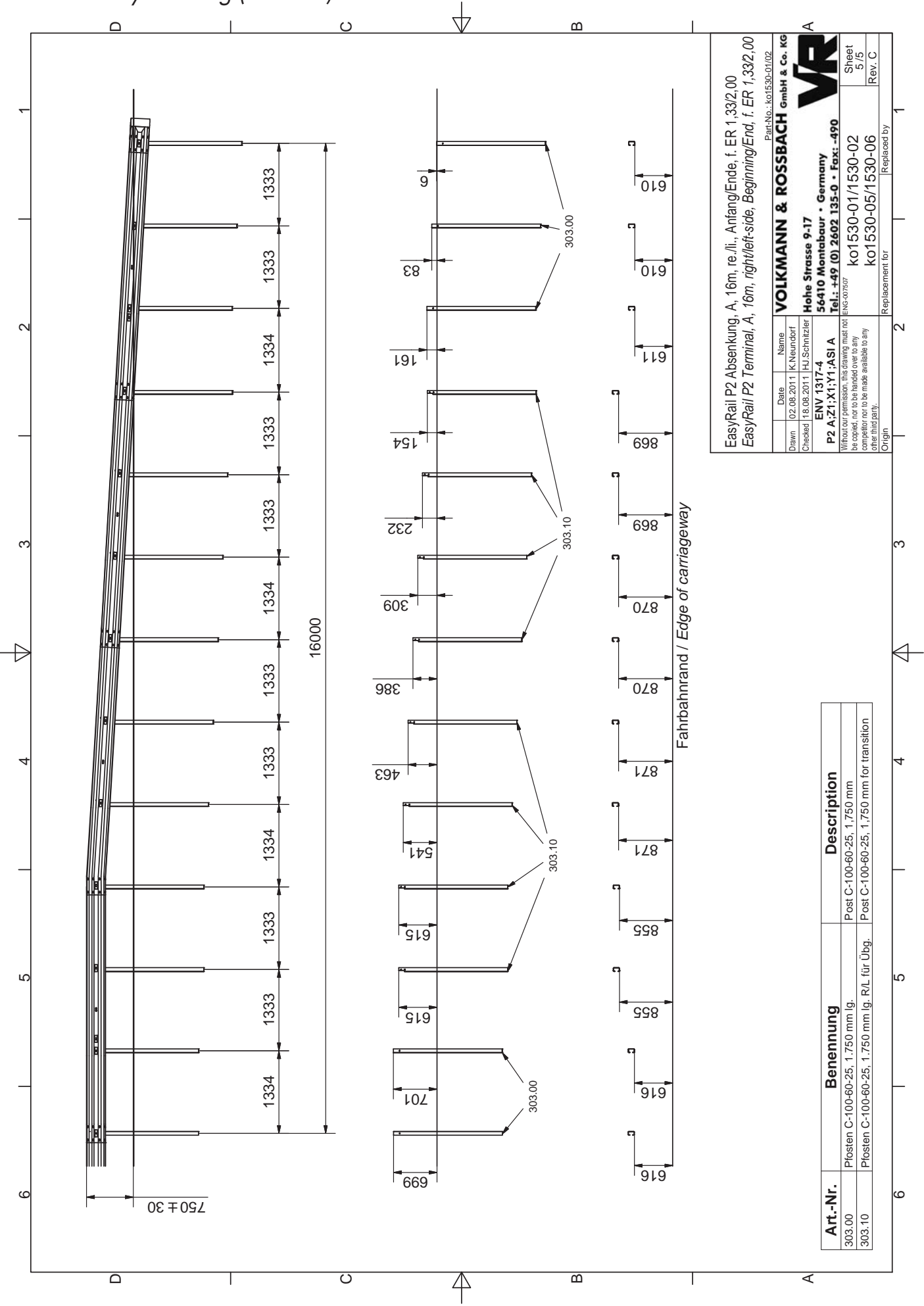
VOIKMANN & ROSSBACH GmbH & Co. KG
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ENV 1317-4
P2 A;Z1;X1;Y1;ASI A
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Drawn 02.08.2011 K Neundorff
Checked 18.08.2011 HJ Schrittzler

Sheet 4/5
Rev. C

Replacement for



EasyRail P2 Absenkung, A, 16m, re./li., Anfang/Ende, f. ER 1,33/2,00
EasyRail P2 Terminal, A, 16m, right/left-side, Beginning/End, f. ER 1,33/2,00

Part-No.: ko1530-01/02

Drawn 02.08.2011 K Neundorff
Checked 18.08.2011 HJ Schnitzler

ENV 1317-4
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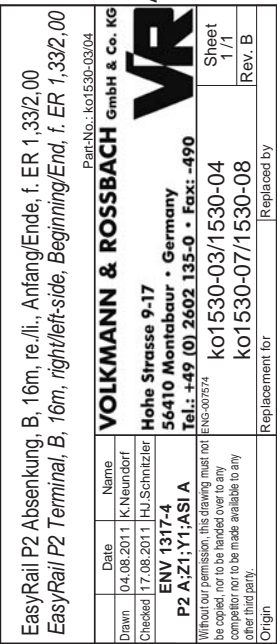
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VR
Sheet 5/5
Rev. C

Replacement for
ko1530-01/1530-02
ko1530-05/1530-06

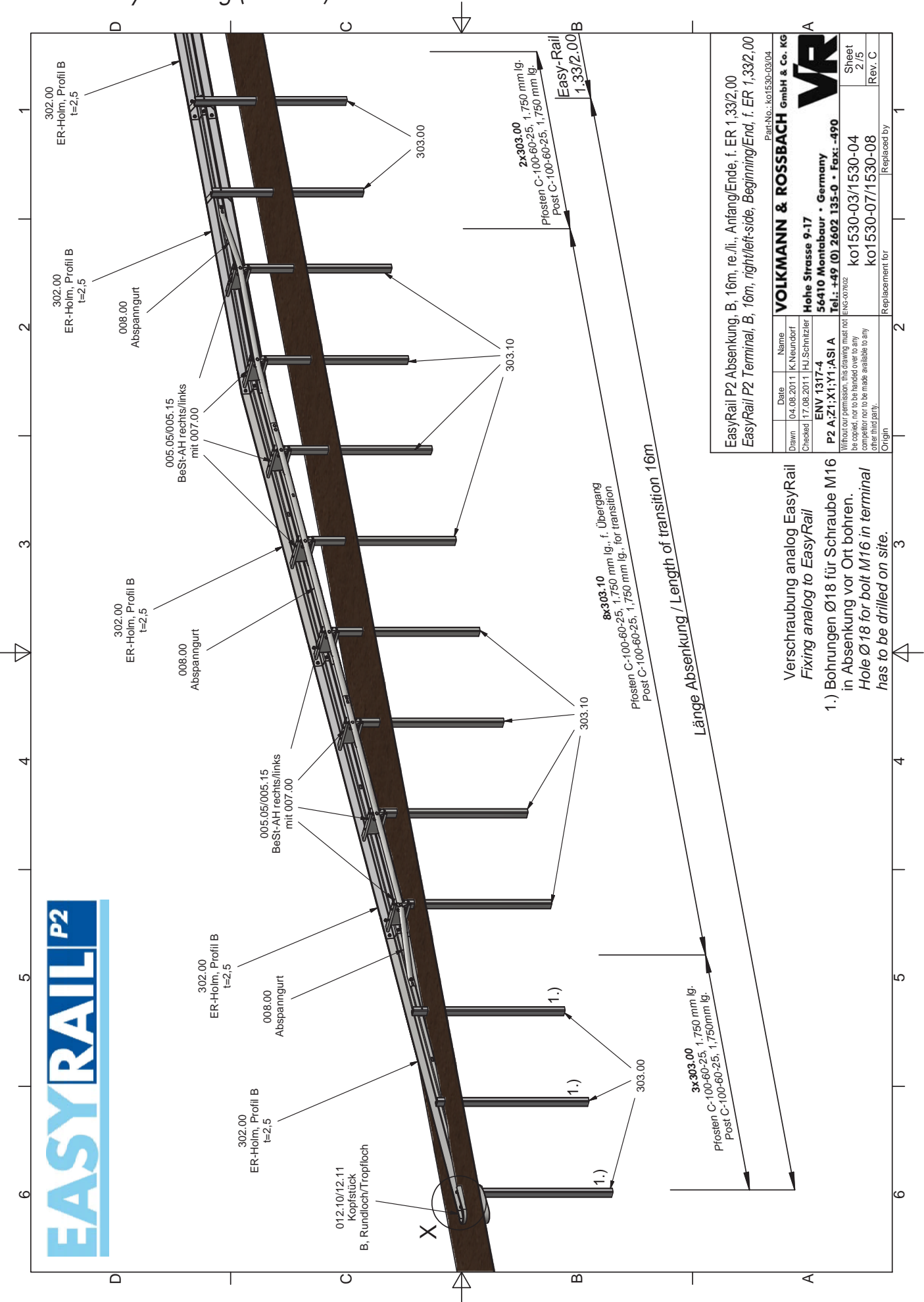
Origin
Replaced by





- 1.) Bohrungen Ø18 für Schraube M16 in Absenkung vor Ort bohren.
Hole Ø18 for bolt M16 in terminal has to be drilled on site.

PartNo.: kot1530-03/04	VOLKSMANN & ROSSBACH GmbH & Co. KG	
	Hohe Strasse 9-17 56410 Montabaur • Germany Tel.: +49 (0) 2602 135-0 • Fax: +490	
		
	EN 1317-4 P2 A2I; X1; Y1; A5IA	Sheet 1/5 Rev. C
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Origin	Replacement for	Replaced by

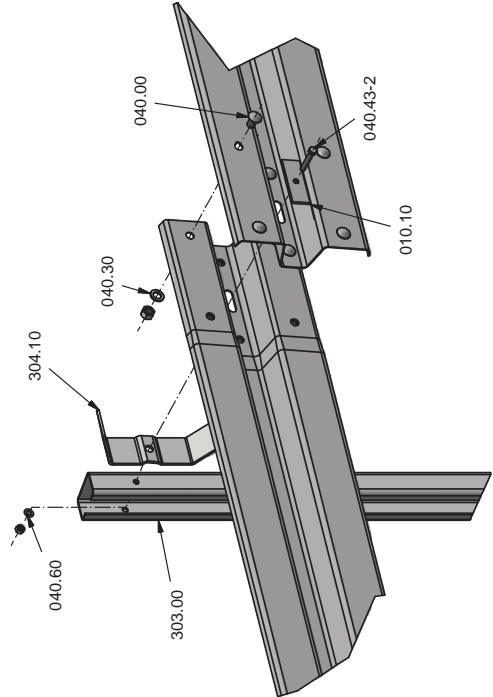


EasyRail P2 Absenkung, B, 16m, re./li., Anfang/Ende, f. ER 1,332,00		EasyRail P2 Terminal, B, 16m, right/left-side, Beginning/End, f. ER 1,332,00	
Part-No.: ko1530-03/04		Part-No.: ko1530-07/08	
VOLKSMANN & ROSSBACH GmbH & Co. KG		VOLKSMANN & ROSSBACH GmbH & Co. KG	
Hohe Strasse 9-17		Hohe Strasse 9-17	
56410 Montabaur • Germany		56410 Montabaur • Germany	
Tel.: +49 (0) 2602 135-0 • Fax: -490		Tel.: +49 (0) 2602 135-0 • Fax: -490	
ENG-007902		ENG-007902	
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Drawn	04.08.2011	Name	K. Neundorff
Checked	17.08.2011	Name	H.J. Schützler
ENV 1317-4		ENV 1317-4	
P2 A;Z1;X1;Y1;ASI A		P2 A;Z1;X1;Y1;ASI A	
Origin		Origin	
Replacement for		Replacement for	
ko1530-03/1530-04		ko1530-03/1530-04	
Sheet 2/3		Sheet 2/3	
Rev. C		Rev. C	

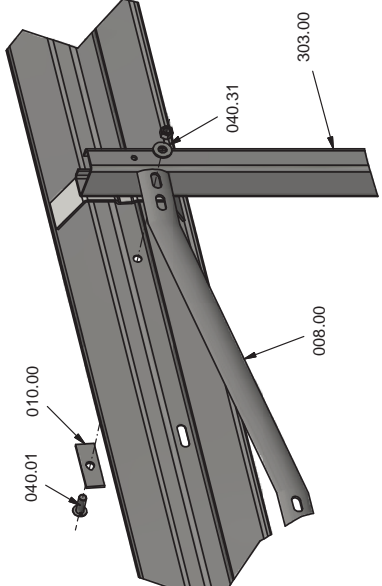
Verschraubung analog EasyRail
Fixing analog to EasyRail

1.) Bohrungen Ø18 für Schraube M16 in Absenkung vor Ort bohren.
Hole Ø 18 for bolt M16 in terminal has to be drilled on site.

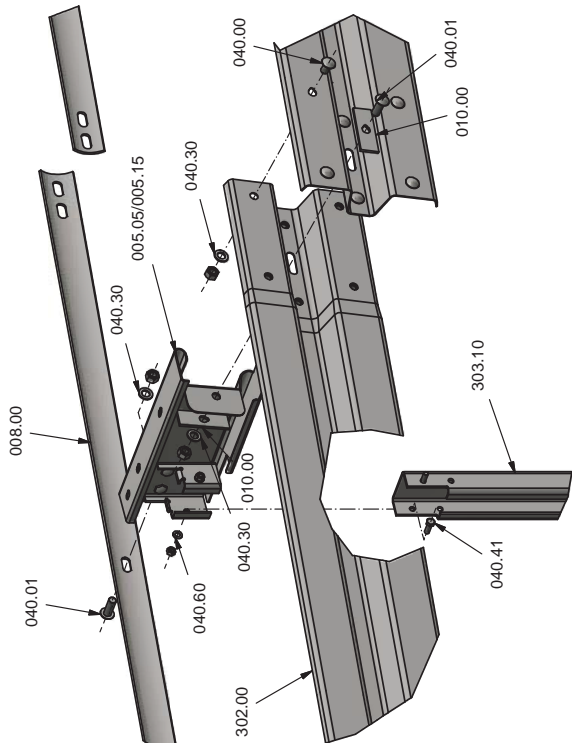
Verschraubung
Fixing
SP-Holm an Pfosten C-100 mit Stützbügel
Guardrail beam to post C-100 with support bracket



Verschraubung
Fixing
Abspanngurt an SP-Holm
Tension belt with guardrail beam



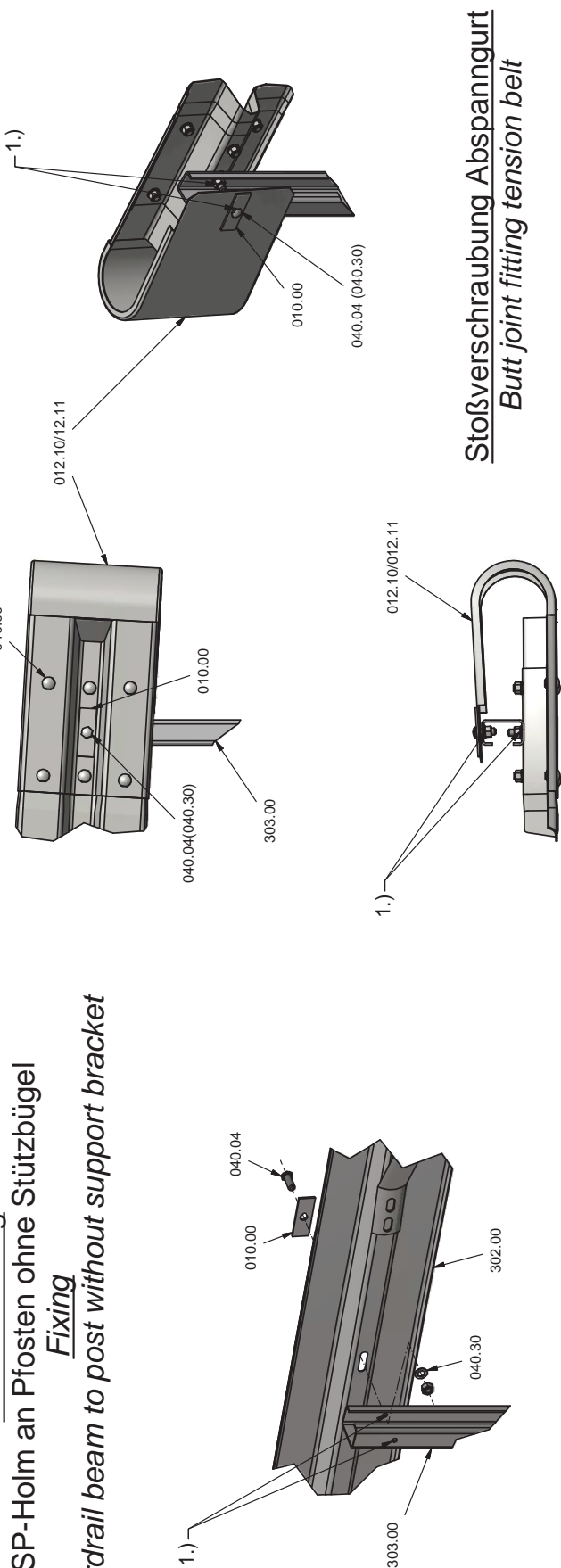
Verschraubung
Fixing
bei Pfosten C-100 und BeSt-AH
of post C-100 and BeSt-spacer



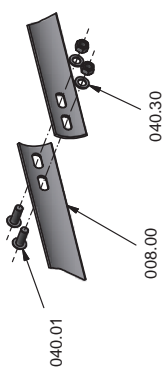
EasyRail P2 Absenkung, B, 16m, re./li., Anfang/Ende, f. ER 1,33/2,00		EasyRail P2 Terminal, B, 16m, right/left-side, Beginning/End, f. ER 1,33/2,00	
Part-No.: ko1530-03/04		Part-No.: ko1530-07/1530-08	
VOLKMAN & ROSSBACH GmbH & Co. KG		VOLKMAN & ROSSBACH GmbH & Co. KG	
Hohe Strasse 9-17		Hohe Strasse 9-17	
56410 Montabaur - Germany		56410 Montabaur - Germany	
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ENG-007602		ENG-007602	
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Drawn	04.08.2011	Name	K. Neundorff
Checked	17.08.2011	Name	H.J. Schnitzler
ENV 1317-4		ENV 1317-4	
P2 A;Z1;X1;Y1;ASI A		P2 A;Z1;X1;Y1;ASI A	
Origin		Origin	
Replaced by		Replaced by	
ko1530-03/1530-04		ko1530-03/1530-04	
Sheet 3/5		Sheet 3/5	
Rev. C		Rev. C	

Verschraubung
SP-Holm an Pfosten ohne Stützbügel
Fixing
Guardrail beam to post without support bracket

Detail X



Stoßverschraubung Abspanngurt
Butt joint fitting tension belt

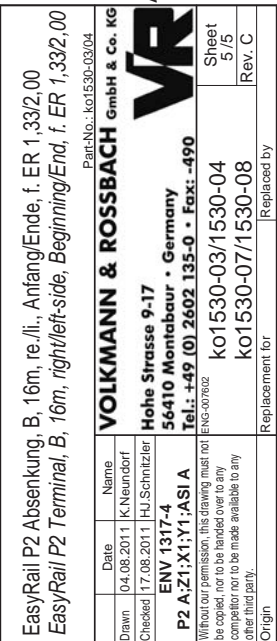


1.) Bohrungen Ø18 für Schraube M16
in Absenkung vor Ort bohren.
Hole Ø18 for bolt M16 in terminal
has to be drilled on site.

Piece	Item-No.	Description	Benennung
8	005.05/ 005.15	BeSt - spacer, right-side with 007.00 (postmounted bracket) (bolt 040.03)/ BeSt - spacer, left-side with 007.00 (postmounted bracket) (bolt 040.03)	BeSt - AH rechts mit Klaue (Verschraubg. 40.03)/ BeSt - AH links mit Klaue (Verschraubg. 40.03)
3	008.00	Tension belt 4, 140 mm	Abspanngurt 4, 140 mm lang
22	010.00	Fishplate M 16	Deckklasche M 16
15	010.10	Fishplate M 10	Deckklasche M 10
1	012.10/ 012.11	Head piece, profile B, RL (round hole) / Head piece, profile B, TL (drop-type hole)	Kopfstück, B, Rundloch / Kopfstück, B, Tropfloch
27	040.00	Buttonhead bolt with catch M16 x 27, 4.6 with nut	HRK-Schraube m. Nase M 16 x 27 Mu, 4.6
22	040.01	Buttonhead bolt with catch M16 x 45 with nut, 4.6	HRK-Schraube m. Nase M 16 x 45 Mu, 4.6
4	040.04	Buttonhead bolt with hexhead M 16 x 45 with nut, 8.8	HRK-Schraube m. 6-kt. M 16 x 45 Mu, 8.8
51	040.30	Flat washer 18; DIN 126	U-Scheibe Ø 18, DIN 126
2	040.31	Flat washer 40x18x4 mm	Scheibe 40x18x4 mm; ISO 4759-3
16	040.40	Hexhead bolt M 10 x 25 with nut, 4.6	6-kt.-Schraube M 10 x 25 Mu, 4.6
1,5	040.42	Hexhead bolt M 10 x 45 with nut, 4.6	6-kt.-Schraube M 10 x 45 Mu, 4.6
17,5	040.60	Flat washer Ø 11, ISO 7091	U-Scheibe Ø 11, ISO 7091
4	302.00	ER-Guardrail beam, profile B	ER-Holm, Profil B
4,5	303.00	Post C-100-60-25, 1,750 mm	Pfosten C-100-60-25, 1.750 mm lg.
8	303.10	Post C-100-60-25, 1,750 mm for transition	Pfosten C-100-60-25, 1.750 mm lg. R/L für Übg.
1,5	304.10	Support bracket, profile B, inclined by 6°	Stützbügel, Profil B, 6 Grad geneigt

EasyRail P2 Absenkung, B, 16m, re./li., Anfang/Ende, f. ER 1,33/2,00
EasyRail P2 Terminal, B, 16m, right/left-side, Beginning/End, f. ER 1,33/2,00

Drawn	04.08.2011	Name	K. Neundorff
Checked	17.08.2011	Name	H.J. Schnitzler
ENV 1317-4 P2 A; Z1; X1; Y1; ASI A			
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Part-No.: ko1530-03/04		Replaced by	
VOLKMAN & ROSSBACH GmbH & Co. KG		Replacement for	
Hohe Strasse 9-17		ko1530-03/1530-04	
56410 Montabaur - Germany		ko1530-07/1530-08	
Tel.: +49 (0) 2602 135-0 • Fax: +490		Sheet	
ENG-007602		4/5	
		Rev. C	



Appendix 4 - Assembly Instructions

EasyRail P2 Absenkung

EasyRail P2 Terminal

1. Für die Fertigung der Einzelteile gelten folgende Einzelteilzeichnungen:

Components of the terminal according to the drawing numbers:

005.10	005.15	007.00	008.00	010.00	010.10
012.11	040.00	040.01	040.30	040.31	040.40
040.42	040.60	302.00	303.00	303.10	304.10

2. Der Zusammenbau der Stahl-Einzelkomponenten ist im Einzelnen den folgenden Zeichnungen zu entnehmen:

Assembly of the components according to the following drawings:

01	Versuchsaufbau	Test - Layout
02	Systemzeichnung EasyRail P2 Absenkung	System drawing EasyRail P2 Terminal
03	Schnitt A-A	Section A-A
04	Schnitt B-B	Section B-B
05	Schnitt C-C	Section C-C
06	Details Absenkung	Details Terminal
07	Montagezeichnung EasyRail 2.00	Assembly drawing EasyRail 2.00

3. Die Montage und die bauliche Ausführung erfolgen gemäß den Einbauhandbüchern sowie der ZTV-PS 98.

The mounting has to be carried out according to the manuals as well as ZTV-PS 98 guidelines.



4. Die Montageschritte im Einzelnen - *Installation Details*



4.1 Abladen des LKW's

Unloading the truck

Pos.	Artikel/Bezeichnung	Menge
1.0	010.000	100,000 stk
2.0	012.10	10,000 stk
3.0	012.11	10,000 stk
4.0	012.12	10,000 stk
5.0	012.13	10,000 stk
6.0	012.14	10,000 stk
7.0	012.15	10,000 stk
8.0	012.16	10,000 stk
9.0	012.17	10,000 stk
10.0	012.18	10,000 stk
11.0	012.19	10,000 stk
12.0	012.20	10,000 stk
13.0	012.21	10,000 stk
14.0	012.22	10,000 stk
15.0	012.23	10,000 stk
16.0	012.24	10,000 stk
17.0	012.25	10,000 stk
18.0	012.26	10,000 stk
19.0	012.27	10,000 stk
20.0	012.28	10,000 stk
21.0	012.29	10,000 stk
22.0	012.30	10,000 stk
23.0	012.31	10,000 stk
24.0	012.32	10,000 stk
25.0	012.33	10,000 stk

4.2 Kontrolle der Lieferung

Delivery control



4.3 Auslegen der SP-Holme
Laying the beams



4.4 Ausrichten der Holme
Aligning the beams...



4.5 Die Holme werden später als
Schiene für die Ramme benutzt
...for the piling frame



4.6 Auslegen der übrigen Teile
Laying remaining parts



4.7 Aufbau der Ramme
Preparing the pile driver



4.8 Lotrechtes ausrichten der Ramme
*Adjusting the pile driver vertically
to the track*





4.9 Rammen der Pfosten
Pile driving the posts



4.10 Anhängen der Bauteile
Fixation of the components



4.11 Vormontage der Verschraubung
per Hand
Pre-Mounting the system



4.12 Montage erfolgt Zug um Zug
mit dem Rammen der Pfosten
*Mounting follows step by step
the piling frame*



4.13 Festziehen der Schrauben...

Tightening the screws...



4.14 mit Schlagschrauber, überprüfen
mit Drehmomentschlüssel

*...by impact wrench, checked
by torque key*





4.15 Absenken der Pfosten

Lowering the posts



4.16 Aufgraben des Erdreichs...

Digging up the soil...



4.17 ...damit das Kopfstück und der SP-Holm eingegraben werden können

...for fixing head-piece and guardrail-beam under the soil / road surface



4.18 Kopfstück und erster SP-Holm

Head piece and first guardrail-beam



4.19 Kürzen des Abspanngurtes...

Cutting the tension belt...



4.20 und führen des Abspanngurtes an den Holm

and directing the tension belt to the beam



4.21 Seitenansicht der Absenkung
Side View of the terminal



4.22 Frontalansicht der Absenkung
Frontal view of the terminal



4.23 Rückseite der Absenkung
Backside of the terminal



4.24 Draufsicht der Absenkung
Top View of the terminal



4.25 Anschluss an EasyRail Standard
Connection to EasyRail standard



Appendix 5 - Form for Internal Quality Control

Self Monitoring Report – EasyRail P2 Terminal

Customer	Contractor (Stamp)
Project-Nr.	
Work Site	
Vehicles	

Team Leader	Team Member 2
Team Member 3	Team Member 4
Team Member 5	Team Member 6

No.	Achievment/Product	Linear Metres	Pieces	Hours
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				

Consecutively use these mark: + = ok, o = not ok, - = not inspected

<input type="checkbox"/> All system parts installed according to manual? Major parts marked for traceability?	<input type="checkbox"/> Joints overlapping in direction of traffic? Overlapping 38 cm min. (fitting parts)?
<input type="checkbox"/> Closed side of posts to traffic? Post distance correct?	<input type="checkbox"/> Spacers and support brackets installed and adjusted according to manual? Left/right spacers used correctly?
<input type="checkbox"/> All fishplates installed (also at tension belt with fishplate and washer 40/18/4)?	<input type="checkbox"/> All screws and washers installed (at beams with washer 40/18/4)?
<input type="checkbox"/> Screwing torques correct?	<input type="checkbox"/> System aligned laterally and height wise?
<input type="checkbox"/> Head piece dug in? System height checked in transition area?	<input type="checkbox"/> Minimum lengths of fitting parts 750 mm?
<input type="checkbox"/> Minimum distance of drilled joint holes to beam end 50 mm? Hole diameters 20 mm min? No existing holes widened?	<input type="checkbox"/> No posts shortened?

Name and Signature Contractor	Name and Signature Customer
Place	Date