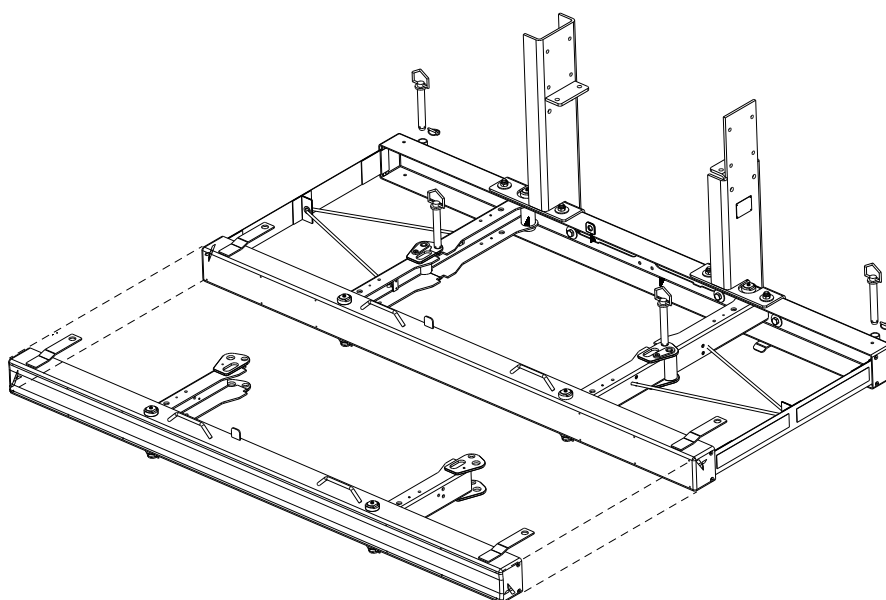


# EXTENDABLE UNDERRUN BAR



## MOUNTING INSTRUCTIONS

Version 2015-3010-01-EN

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# 1. FOREWORD

Dear customer,

In this mounting instruction you will find instructions and rules for mounting the several types of underrun bars.

These underrun bars are build according the CE machine directive.

Before you mount the underrun bar, we advise you to read the mounting instructions very carefully and follow the given instructions. If you have any questions or when some instructions are not clear, please contact Terberg Techniek B.V.

Terberg Techniek B.V. has the freedom to change the mounting instructions without giving any announcement before, as result of product change and engineering.

The mounting instruction can be downloaded by clicking on the link on our website [www.terbergtechniek.nl](http://www.terbergtechniek.nl) . Check regularly if you use the most recent version of the mounting instructions.

Best regards,

## **Terberg Techniek B.V.**

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## **Concerning:**

Types : TER-850-ME/HY/EL-V (DISPLACEMENT 850/670/400 MM)

does not provide, please contact Terberg Techniek B.V.

## 2. SAFETY INSTRUCTIONS

- Terberg Techniek B.V. is not liable for damage, caused on the underrun bar construction and suspension including its mechanical, hydraulic and electrical control by improper installation.
- It's not permitted to make changes to the construction and mounting requirements of the underrun bar.
- **Always use the original supplied components due to prescribed material specifications and strength classes.**
- It's not permitted to change the pressure settings of the hydraulic system differently than described in the hydraulic diagram and construction guidelines.
- Make sure that when you connect the hydraulic underrun bar with the hydraulic system, that the required working pressure is not too high or too low for this application.
- Make sure that when you connect the hydraulic underrun bar with the hydraulic system, that the required liter income is not too high or too low for this application.
- Make sure that when you have built and mounted the hydraulic pipes, hoses and valves, there is no pollution in these components. Pollution in these components can cause a malfunction of the hydraulic underrun bar.
- If an oil spill occurs, immediately stop the hydraulic system.
- Regular inspection and periodic maintenance of the mechanic system is the best way to prevent damage and accidents
- Regular inspection and periodic maintenance of the hydraulic system is the best way to prevent damage en accidents.
- Regular inspection and periodic maintenance of the electric system is the best way to prevent damage and accidents.
- **Never remove the sidebands of the underrun bar ! These sidebands are part of the CE directive.**
- If there must be **welded** on the truck or build up, take special precautions to prevent damage on the hydraulic and electrical components.  
**Place the ground clamp always directly at the welding place. Make sure that the welding current never can flow through the hydraulic or electrical components, this can damage the components. Also see the construction requirements of the various truck manufactures for any additional requirements.**
- Before you start using the underrun bar you need to read the User Documentation of the extendable underrun bar. This documentation is attached to the underrun bar when delivered.

### 3. TECHNICAL SPECIFICATION

#### Physical conditions of use:

The following physical conditions are:

During transport / storage	: +0 till 55 degrees Celsius
Ambient temperature, operating	: -15 till 40 degrees Celsius
Relative humidity "RH"	: 30% till 100% not condensing
Lighting	: normal ambient lighting
Height	: air pressure attitude up to 1000 m above sea level

!! The extendable underrun bar is intended for use outdoor.

!! The extendable underrun bar is not suitable for explosion hazardous areas.

#### Technical specifications extendable underrun bar:

Complies with directive	: ECE R58
Test report number	: E4-R58-020392 Ext.00
Adjustment	: 400 / 670 or 850 mm
Dimensions (folded in) l x w x h	: 2408 x 221 / 223 x 142 mm
Dimensions (folded out) l x w x h	: 2408 x 1071 / 1073 x 142 mm
Width of underrun bar	: 2408 mm
Height of underrun bar	: 142 mm
Distance underside underrun bar from floor	: NL= 550 mm maximum, or another height according the regulations in your country
Maximum mounting size underrun bar to the front with respect to rear body	: 330 mm
Weight (when installed)	
TER-850-ME-V	: ca. 145 kg
TER-850-HY-V	: ca. 160 kg
TER-850-EL-V	: ca. 160 kg

#### Construction requirements / specifications:

Chassis dimensions / Wx chassis minimum	: 260x72x6 mm of Wx = 165 cm <sup>3</sup>
Chassis width min. – max.	: 758 – 905 mm
Maximum hydraulic pressure setting	: 100-120 bar
Maximum flow of liters of oil	: ca. 40-80 liter
Oil type / model	: SHELL Tellus oil T32 ISO classification HV or a similar hydraulic oil
Voltage supply EL implementation	: 24 Volt DC
Floating fuse at the battery (type EL)	: 30 Ampere
Fuse in the central box (type EL)	: 7,5 Ampere
Grease	: Shell Retinax Grease EP2 or a similar grease
Thickness paint layer on chassis surface	: 120 µ maximum
Thickness paint layer on mounting profiles	: 120 µ maximum

## 4. MOUNTING THE UNDERRUN BAR ON THE CHASSIS

Types: Mechanic TER-850-ME-V / Hydraulic TER-850-HY-V / Electric TER-850-EL-V

### STANDARD MOUNTING WITH U-BEAM PROFILE 80x200x80x10 mm:

- Ensure that the chassis has the minimum size of 260x72x6 mm or minimum  $W \times = 165 \text{ cm}^3$ .
- The coating thickness on the chassis and the mounting profiles may be up to max. 120  $\mu$ .
- Ensure that the chassis height is in the correct position and that it is leveled.
- Calculate the position of the underrun bar to the chassis.
- Determine the mounting method to the chassis. The flanges of the U-beam profile should point to the outside. The cut out of the U-beam profile should always point to the rear of the vehicle.



Picture 1: U-beam flanges to outside mounting

- With the method "flanges to the outside" nothing needs to be changed to the profile. The back of the U-beam has to be mounted to the outside of the chassis.
- The U-beam profiles have to be mounted to the chassis with 6x M16 class 10.9 bolts. 4x Bolts in the body of the U-beam profile and 2 bolts in the plate below the lower flanges of the chassis.
- The placement of the bolts in the U-beam profile is variable but should, as far as possible, be placed in a rectangular or square shape. The bolts need to be placed always with the greatest possible center to center distance. Consult the "Table for mounting the bolts" and consult the assembly drawing N2010-0100-HAND for the minimum center to center distance of the bolts.
- Ensure that the planned installation fulfils the specified dimensions on the assembly drawings S14-8100-1-E till S14-8100-14-E (if applicable) and N2010-0100-HAND.
- Calculate the length of the U-beam profiles 80x200x80x10 mm. The length of the U-beam profile from underside of the chassis should not exceed 460/600 mm, depending of the basic length of the U-beam profile which can be L=720 or L=860. Be aware during calculating the length of the maximum allowable distance from floor to underside of the underrun bar. This is maximum 550 mm (could be different in your country, please check this measurement and calculate herewith). In practice, it is recommended to have the maximum distance - 20 mm minimum to exclude any measurement errors.

- Cut off the U-beam profiles to the correct length.
- Drill the necessary holes in the U-beam profiles. Use existing holes in the chassis when possible. If you can't use the original holes in the chassis, then drill the new holes in the chassis as well.
- Drill the holes in the lower flange of the chassis for the plate which is mounted under the bottom flange of the chassis.



Picture 2: Bolts in body and lower flange.

- Mount the U-beam profiles to the chassis. Use temporary some M16 bolts to hold the profiles in place.
- Mount the plate under the chassis. When mounted with the flanges to the outside, the plate comes against the outer body of the U-beam profile.
- Attach the plate by welding this securely to the U-beam profiles.
- Make sure that the folded underrun bar with pre-assembled mounting brackets are in the correct position near the U-beam profiles. You can use for instance a pulley.



Picture 3 en 4: Positioning underrun bar against U-beam profiles

- Ensure that the already mounted mounting brackets on the underrun bar fit in the cut out form in the U-beam profiles.



Picture 5: Connecting mounting bracket to U-beam profile.

Ensure that the underrun bar is placed horizontally very well, as well as to the side as in length direction.

- Connect the mounting brackets to the U-beam profiles 80x200x80x10 firmly by small weldings.
- Remove the underrun bar. Disassemble the U-profiles from the chassis and then weld the mounting brackets and plates all around (all welds  $a=0.6 \times$  the thinnest material thickness).
- The places that will not be longer accessible to apply a surface treatment must be well primed with priming coat as anti-rust treatment.
- You also can make the choice to weld all parts (plates on bottom chassis and mounting brackets to the U-beam profiles) on the vehicle itself without dismounting them. Ensure that in case self-locking nuts are close to the weldings become not too hot. The plastic securing of the nuts could melt and the self-locking effect will disappear. If this should happen replace the self locking nuts by new ones with the correct specifications.
- Otherwise mount the U-beam profiles with the welded plates and the mounting brackets both on the chassis. Be aware that the specified bolts are installed in the correct locations. See drawing N2010-0100-HAND.
- Mount the M16 bolts in the body of the chassis with the nuts to the outside. Mount the M16 bolts in the bottom flange of the chassis with the nuts to the top. Use two pieces of washers M16 200HV for each bolt.
- The M16 bolts in the body have to be tightened with a tightening torque of 332 Nm. All other M16 bolts should be tightened with a tightening torque of 250 Nm.



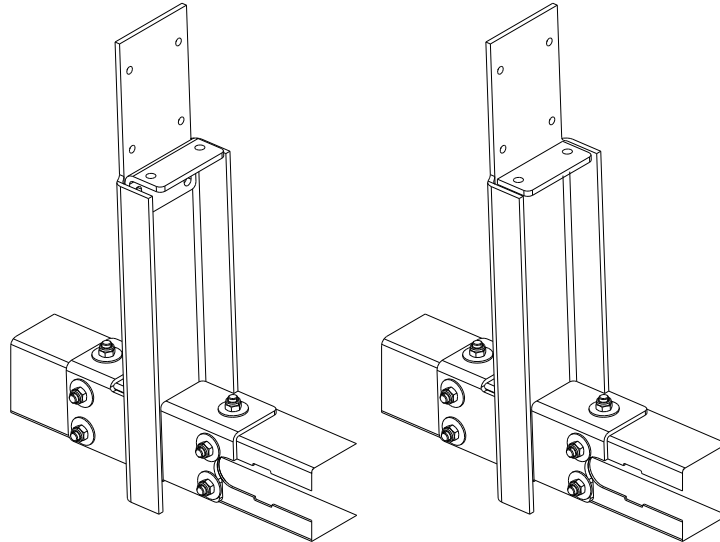
Picture 6: Mount the bolts in body and flange.

- Mount the underrun bar back on the mounting brackets. Tighten the M16 nuts to the proper tightening torque.



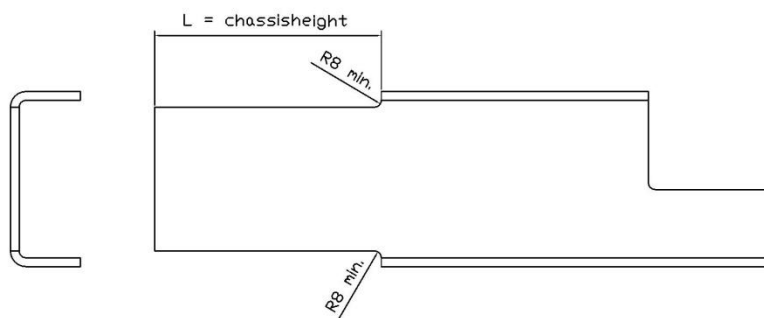
## ALTERNATIVE ASSEMBLY WITH U-BEAM PROFILES – INSIDE MOUNTING

There is also the possibility to mount the U-beam profiles with the flanges to the inside.



Picture 7: Inside mounting of the U-beam profiles

- With the method “flanges to the inside” the flanges have to be cut out over the height of the chassis. Be aware that there are no sharp edges in the corners of the cut out parts. Ensure the radius has at least  $R=8$  mm minimum.



Picture 8: Radius of edges  $R=8$  minimum

- With the method flanges to the inside the plates come in the inside of the U-beam profile against the inner body. This method could be used for larger chassis widths where the U-beam profile will come too far to the outside on the mounting bracket or when having problems with the flanges to the outside.
- A plate must be fitted also under the chassis and welded in the inside of the U-beam profile.
- With this assembly, the mounting method and assembly is identical to the version with flanges to the outside.

## 5. ALTERNATIVE L-BRACKETS IN STEAD OF PLATES

### L-bracket 95x80x10-L=160 mm and L-bracket 95x80x10-L=400 mm:

There is also the possibility to use a L-bracket instead of a plate on the underside of the chassis. With this method you do not need to make weldings to make the connection between the U-beam profile and the L-bracket profile.

- It is necessary to drill two extra holes in the U-beam profile for the mounting bolts.
- The holes in the bottom flange remain the same as when you use the plates.
- Be aware with this method that a heavier washer (17x40x6) should be used in the slotted holes of the L-bracket.



Picture 9: L-bracket under chassis in stead of a plate

- This version of the L-bracket can also be used in a longer version up to 400 mm length. Where problems may arise, with the bolts in the flange of the chassis, the bolts can be mounted more to the outside. Minimum number of bolts should be 2.



Picture 10: Length of L-bracket max. 400 mm

## 6. ALTERNATIVE MOUNTING PROFILES ON CHASSIS

L-beam profile 80x260x10 mm and L-beam profile 80x385/260x10 mm:

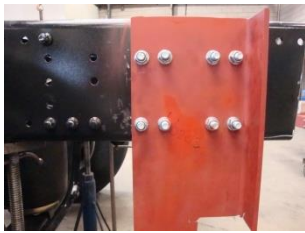


Picture 11: L-beam 80x260x10 mm



Picture 12: L-beam 80x385/260x10 mm

- In both these profiles, also the edges should be cut out for assembling the underrun bar.
- An alternative mounting to the chassis of these two profiles is to use an 8 bolt M16 mounting in the body of the chassis and no plate or L-bracket at the underside of the flanges. In some cases this can be an advantage in the mounting process. Be aware of using the correct, prescribed bolts for it (drawing N2010-0112-HAND). Tighten the bolts to the specified tightening torque. Use 2 pieces of M16 washers 200HV for each bolt.
- **The M16 bolts in the body must be mounted with a tightening torque of 332 Nm.**



Picture 13: 8 bolts mounting in the body



Picture 14: Mounting example 8 bolts

- If you have problems with the width of the standard L-beam profile, due to the required hole pattern, then the L-beam profile with the wider upper side can be used. This L-beam profile has to be mounted with 8 bolts as well in the body without a plate or L-bracket under the chassis flange.

## 7. EXTENDED MOUNTING SEVERAL TYPES

### Mechanical version of the extendable underrun bar ME-V (old type):

When the mechanical underrun bar is mounted on the U-beam profiles, the locking plates and the tubes for the locking pins have to be welded on the underrun bar also. For the correct position of these parts see drawing N2009-0025.

- Weld the two locking plates to each side of the U-profile which moves backwards. Weld the tube at rear side of the fixed beam. In the closed position of the underrun bar, the locking pin goes through the hole in the locking plate and in the tube of the fixed beam. Make sure the bumper is closed.



Picture 15: Locking plates on movable beam



Picture 16: Tube on fixed beam

- Weld the grips on the movable beam so you can use them to unfold the underrun bar.
- Optionally it is possible to weld on the rear side of the fixed beam, two additional tubes as a counter-holder for the locking pins during opening and closing of the underrun bar.
- The same locking pins are used to secure the bumper in extended position in order to prevent that the underrun bar folds together during use.
- Check that the pins in extended position fit well into the holes of the two folding arms. If necessary widen the holes with a round file or a similar tool.



Picture 17: Locking pin in the folding arms

## Mechanical version of the extendable underrun bar ME-V (new type):

On the new type mechanical underrun bar are the plates for locking in closed position already mounted on the U-beam profiles when delivered. For the position of the plates see drawing N2009-0031-rev01. You do not need to weld anymore.

- Weld the two locking plates to each side of the U-profile which moves backwards. Weld the tube at rear side of the fixed beam. In the closed position of the underrun bar, the locking pin goes through the hole in the locking plate and in the tube of the fixed beam. Make sure the bumper is closed.



Picture 18: Locking plates on movable beam



Picture 19: Upper plate on movable beam



Picture 20: Locking plates on fixed beam



Picture 21: Grips on movable beam

- On the movable beam there are mounted when delivered 2 grips for pulling backwards the movable beam.
- The same locking pins are used to secure the bumper in extended position in order to prevent that the underrun bar folds together during use.
- Check that the pins in extended position fit well into the holes of the two folding arms. If necessary widen the holes with a round file or a similar tool.



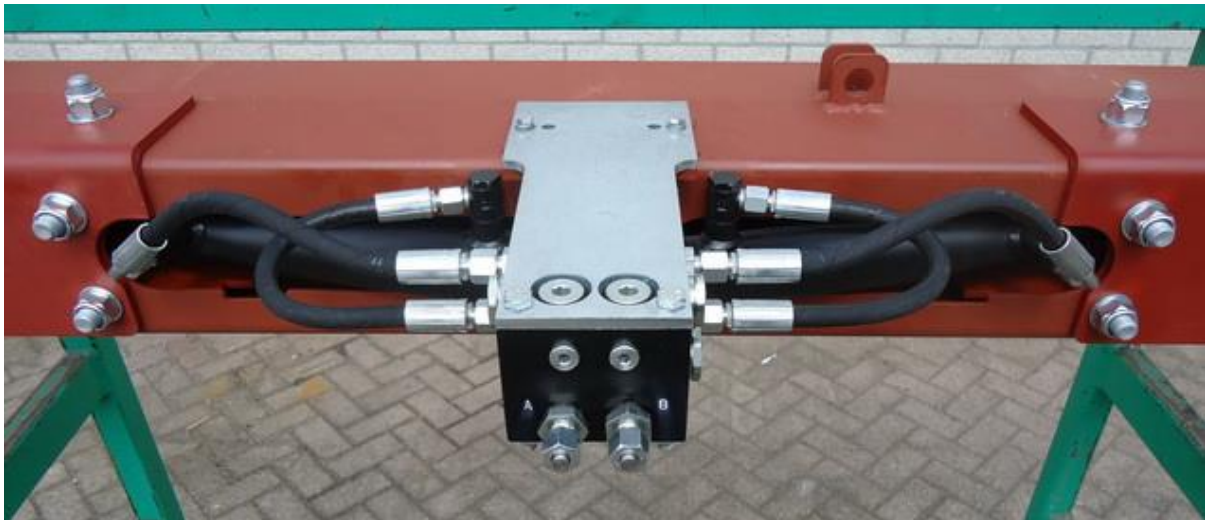
Picture 22: Locking pin in the folding arms



## Hydraulic version of the extendable underrun bar HY-V:

If the hydraulic bumper beam is mounted to the U-beam profiles it has to be hydraulically connected according diagram HYDR-S09-8000-rev02.

Connecting the system hydraulically can be done to the hydraulic function that must be provided on the truck to operate the underrun bar. Connect the already mounted manifold block on the underrun bar (including double pilot check valve, flow divider and orifices) to the pipes and or hoses coming from the sectional valve and mounted already to the back of the truck.



Picture 23: Hydraulic connections manifold block



Picture 24a and 24b: Hydraulic connections underrun bar

To complete the last part from the solid pipes to the manifold block, hydraulic hoses must be used for the possibility to move as result of bending and twisting of the chassis. Ensure that all pipes are cleaned at the inside before using them for the first time. It is advisable to use hydraulic hoses with a internal diameter of 1/4" (6.4 mm) up to 3/8" (9,5 mm).

To make a hydraulic system in which the cylinders bleed out the air and can renew their own oil, you must use as thin as possible pipe or hose diameters.

If you use a pipe / hose with an inner diameter of 6.0 to 6.4 mm, the maximum length of the pipe / hose is 7.900 mm for each pipe / hose.

If you use a pipe / hose with an inner diameter of 7.9 to 8.0 mm, the maximum length of the pipe / hose is 5.100 mm for each pipe / hose.

If you use a pipe / hose with an inner diameter of 9.0 to 9.5 mm, the maximum length of the pipe / hose is 3.500 mm for each pipe / hose.

Because there is a pilot check valve built in the hydraulic system we advise to use a control valve with an open center position. If not, then there is a risk that the pilot operated check valve will be affected in its correct functioning and will cause internal leak resulting that the cylinders and therefore also the underrun bar will expand by itself.

Before you operate the underrun bar for the first time, both hoses who are connected to the cartridge valve must be connected to each other. Start the engine, activate the PTO and operate the control valve by cabin control or manually. Allow the oil to circulate for about 20 to 30 seconds. This will vent the pipes and hoses in the system. Turn off the PTO and stop the engine.

Then the hoses must be connected to the correct compression fittings again. Now the underrun bar can be extended. Start the engine, activate the PTO and operate the control valve. Let the underrun bar several times fold in and out so that all remaining air is flushed out of the system. If the underrun bar response is spongy or it is movable by hand, check all the connections and compression fittings if there is air left in the system. When the cylinders are on pressure, loosen the glands of the fittings slightly to let the air escape out of the hydraulic system. Repeat this procedure until no air is coming out of the system anymore.

Check the hydraulic pressure of the hydraulic system for the underrun bar function and make sure this is adjusted correctly.

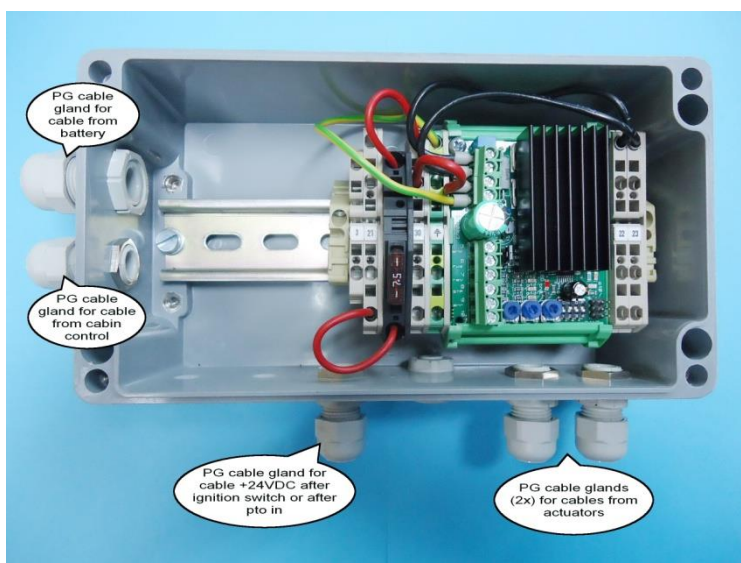
**The oil pressure of the two supply lines from the control valve must be limited at a pressure of 100 – 120 bar for the incoming and outgoing movement.** Those pressure adjustments, can be mounted in the section ports of the control valve or in a double crossed pressure valve.

The speed of the folding and unfolding is controlled by the fixed orifices mounted in the manifold block. When the hydraulic system is mounted and connected properly, the too much supplied oil will be discharged by the pressure safety valves.

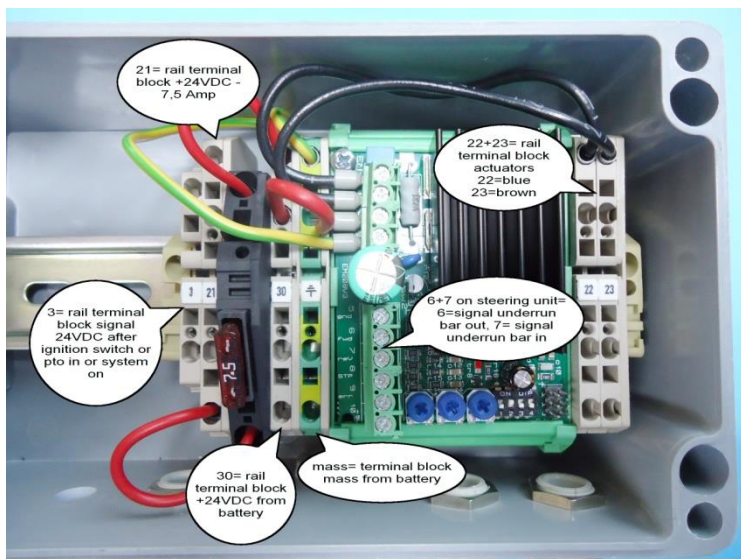
## Electric version of the extendable underrun bar EL-V:

After the electric underrun bar is mounted to the U-beam profiles it needs to be electrically connected according diagram N2009-040.

Mount the central box with the control unit in an easily accessible place somewhere on the side of the chassis. In this box both cables from the actuators can be connected. The cables can be inserted through the PG9 cable gland on the bottom at the right side of the box. Connect the two blue cables to the rail mounted terminal block 22 and the two brown cables to the rail mounted terminal block 23. Clamp wire ferrules to the wires to get a proper connection. Make sure that the cables are not too long, if necessary cut them to the right length. Use the correct tools for this.



Picture 25: Input cable's through PG cable glands



Picture 26: Connections on rail mounted terminal blocks



In order to create a power supply from the battery to the central box, it is necessary to mount a heavy duty relay (24V/70A) in the battery box which will be activated by a +24VDC signal after switching on the ignition, a +24VDC after activation PTO or a +24V after activating the system. The intention of this is that the electrical system of the underrun bar is switched off if the car is not being used and/or the PTO is not enabled and/or the system is not switched on.



Picture 27: relay set for mounting near battery

Between + from battery terminal and the relay should be fitted a fuse holder with a 30 amp fuse. From this relay a 3-wire cable 3x2,5 mm<sup>2</sup> has to be mounted for the power supply of the central box and the actuators. Cut the supplied 3x2,5 mm<sup>2</sup> cable to the correct length, depending on the mounting place of the central box. 1x +24V power supply from the relais to rail mounted terminal block 30, 1x ground to the ground rail mounted terminal block and 1x signal wire for +24V behind the ignition switch or PTO activation signal or system activating for switching on the heavy duty relay. This cable has to be inserted in the central box through the PG11 cable gland in the left side of the central box. Use wire ferrules on the wire ends to get a proper connection. Ensure in general that cables are as short as possible in relation to loss of current.

In order to let move the actuators you must mount a cabin control box in the cabin of the truck. In this control box there is a 3 position spring centered switch mounted. The cable from the cabin control box must be connected to the central box and can be entered through the PG9 cable gland on the left side. The blue (bl) cable is for the power supply of the control box and this cable must be connected on the rail mounted terminal block 21 of the central box. The white (wi) cable must be connected to connector 6 and the black cable to connector 7 on the green colored steering unit.



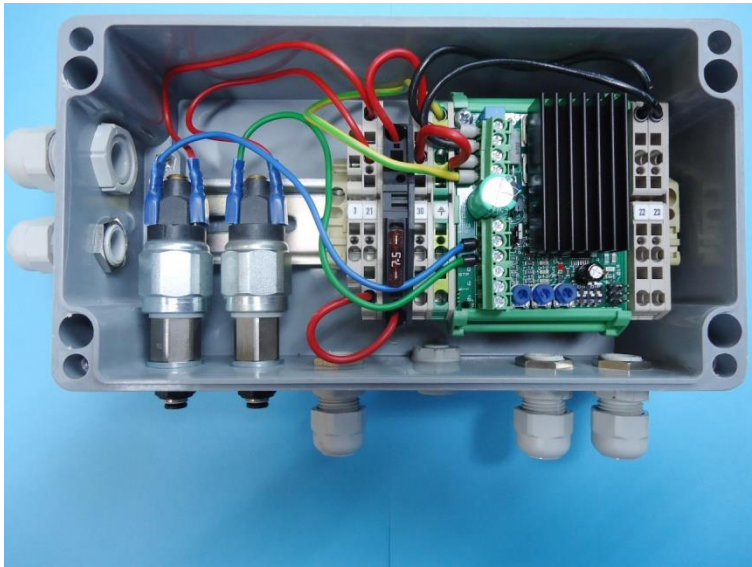
Picture 28: cabin control box with 3 position spring centered switch

When all connections are made, the relay is activated and the switch on the cabin control box will be operated, then the underrun bar will move. If the movement does not match the logical movement of the switch, then you can switch the 2 outer cables on the connector poles of this switch or turn the switch in the control box complete 180°.

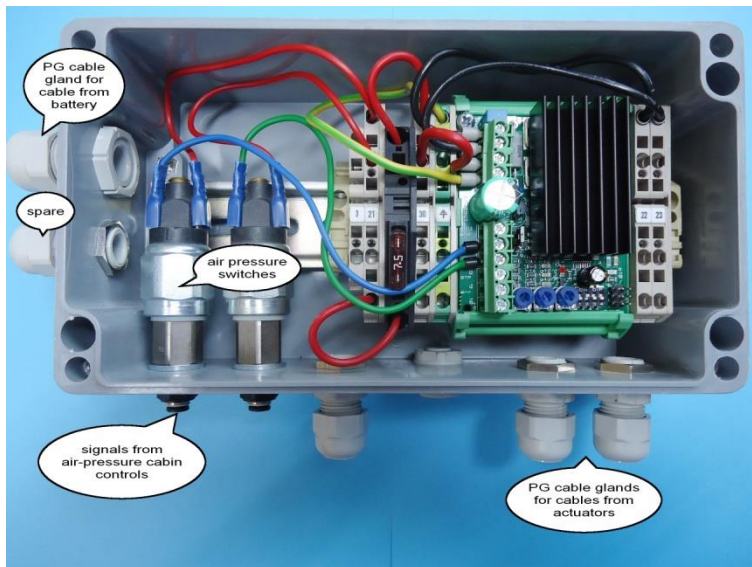
On the cabin control box are also two indicator lights. These are standard not being used. They are meant for the optional detecting sensors, which detect the position of the extendable underrun bar.

A second option is to make the central box not electrical but air operated. This requires an expansion in the central box by fitting two pressure switches which let operate the actuators. They change the air signal from the cabin control into an electrical signal. In this case you can use the original existing pressure operated cabin control (expand it with 1 extra section) to control these pressure switches. See drawing N2009-0046 for the connection diagram.

This connection method will give a little delay in the response time because the air pressure will first need to build up before the pressure switch is going to switch.



Picture 29: Central box with air pressure switches



Picture 30: Cable insertion by PG cable glands and air to pressure switches

## 8. MOUNTING SAFETY SENSOR UNDERRUN BAR POSITION IN

### All version's ME-V, HY-V and EL-V:

On the underrun bar there are placed two small plates. One detection plate and one sensor mounting plate. The underrun bar can be equipped with a sensor as a safety function. If mounted this sensor can be connected f.i. to a safety circuit. This is required for example if there is no tipping allowed when the underrun bar is extended. Of course other protection circuits can be connected. See drawing N2010-0120 for the electrical diagram of the protection sensor. You can make a layout for your own safety circuit also.



Picture 31: sensor protection underrun bar folded or extended

Choose a sensor with a short-range detection and only detection to the front. As type use a 3-wire NO (normally open). This means that the sensor will make a connection only if the sensor detects iron. The colors and functions of the cables can be; blue = ground, brown = +24VDC and black = signal wire.

The sensor can activate a relay to switch and activate a safety function. This relay is necessary in connection with the low amperage on which the sensors operate continuously. Depending on the type of relay the switch can be a make contact NO, or a break contact NC or even both.

How to design the wiring diagram depends on the system. **The switch function(s) and wiring diagram can be designed according your own system requirements.** It is possible to use the make and break function of the sensor or just to use the make function or just to use the break function.

With this sensor it is also possible to connect the control light "folded in" in the cabin control box. This control light is a LED and it is possible to connect it directly without using the relay. If you use the relay already for a switch function then it is possible to use this same circuit also to activate the control light "folded in".

## 9. SECURITY SENSOR UNDERRUN BAR “FOLDED OUT”

### All versions ME-V, HY-V and EL-V:

At the rear of the fixed bumper beam 2 sensor brackets can be mounted. In these sensor brackets you can mount the sensors with whom you can operate the control light “folded out”.

These sensors can be installed if it is desirable to control whether the underrun bar is fully expanded yes or no. Consult diagram N2010-0036 Sensors for position signals underrun bar “folded in” or “folded out”.

For this application sensors with a short range detection and only detection to the front should be used, like a 3-wire NO (normally open) type. This means that if the sensor detects iron it will give a signal. The colors and functions of the cables can be: blue = ground, brown = +24VDC and black = signal wire.

With this sensor it is possible to give a signal to the control light “folded out” in the cabin control box. Both sensors have to be connected in series and must be in position switched on to let the LED lamp in the cabin control box burn. For this it is necessary that both arms of the underrun bar are fully folded out. This control light is a LED and it is possible to connect it directly without using the relay.



*Pictures 32 and 33: arm sensors folded out left and right*

## 10. WARNING STICKERS

### All versions ME-V, HY-V and EL-V:

If the bumper is mounted, safety and warning stickers have to be attached to warn for possible risks and to prevent accidents. Attach the stickers after the underrun bar is painted. It has no use to attach them before the paintjob.

- The round white sticker with the red outside alerts that nobody should be standing behind the underrun bar because the rear part moves backwards when it is being operated.
- The triangular yellow sticker with the black outside warns that nobody should stand between the fixed and movable beams of the underrun bar.
- The round blue sticker with the book symbol indicates that the instruction manual should be read before using the extendable underrun bar.



Picture 34: Left side top on fixed beam bar.



Picture 35: Right side on fixed beam bar



## 11. CHECKLIST ACCORDING TO COP ECE R58

Fill in this checklist to keep the mounting data registered for filing. These lists are intended to check whether the bumper is mounted according to the instructions, named and specified by the ECE type approval. Per type ME / HY or EL is a list added.

Terberg Techniek Baarlo BV			
Date:	06-02-2014	Checklist COP E4-58R-020392 Ext.00	FOR COP TER-850-ME-V
Revision:	-	Terberg Extendable Underrun Bar	Page 1 van 1
Checkfrequentzy:	Individual mounting every vehicle		Checking method: Visual
<b>Algemeen:</b>			
Date of check			
Name inspector			
Categorie vehicle	N2, N3, O3 en O4 - 3500 kg up to 44.000 kg		
Type of Underrun Bar	TER - 850 - ME - V (mechanical, definite mounting)		
Inspection according drawing(s)	S14-8100-1-E t/m 14-E		
Approval number	E4-58R-020392 Ext.00		
<b>Inspection points according drawings</b>			
<b>Measurements:</b>	min. acc. approval	taken measurements	max. acc. approval
Underrun Bar inside the tyres (per side)	≥ 0 mm	mm *	≤ 100 mm
Movement of extendable Bar	0 mm	mm *	max. 850 mm
Chassis measurement or chassis Wx in cm <sup>3</sup>	≥ 260x72x6 mm ≥ Wx=165 cm <sup>3</sup>	mm * cm <sup>3</sup> *	
Wide of chassis	≥ 758 mm	mm *	≤ 905 mm
Profile measurement U-Profile	80x200x80x10		80x600x80x10
Length of U-Profile under chassis			
When L=720 mm	142 mm	mm *	≤ 460 mm
When L=860 mm	142 mm	mm *	≤ 600 mm
Profile measurement L-Profile	260x80x10	mm *	260x80x10
Length of L-Profile under chassis			
When L=720 mm	142 mm	mm *	≤ 460 mm
When L=860 mm	142 mm	mm *	≤ 600 mm
Plates underside of chassis	72x10 - 160 lg	yes / no **	
L-plates underside of chassis	80x95x10 - 160 lg	yes / no **	80x95x10 - 400 lg
No plates or L-profile	min.8 bolts	yes / no **	
Bolt connection side of chassis			
number of bolts	4 x	x *	8 x
measurement and quality	M16 - 10.9	yes / no **	M16 - 10.9
Bolt connection underside of chassis			
number of bolts	2 x	x *	4 x
measurement and quality	M16 - 10.9	yes / no **	M16 - 10.9
Distance from road to underside of Underrun Bar in user situation	≥ 0 mm	mm *	≤ 550 mm
VIN number	***		
Type plate completely and correct filled in	E4-58R-020392 Ext.00 - MEV - .....***		
Type plate mounted and filled in on described place	on the right or on the left ** mounting profile to the chassis		
Date + Signature:	Customer :		
	Number plate vehicle:		
Remarks:			

\*=measurement and/or number \*\*=blot out with yes / no

\*\*\*=chassis- and or serialnumber

COP controlelijst montage stootbalk NL-DU-EN.xlsx / COP TER-850-ME-V (E)

Picture 36: Example of the COP checklist

## 12. ATTACHMENT AND DRAWING LIST

The following drawings are valid for these installation instructions VERSION 2015-3010-01-EN.

Attachment	Name	Date	Revision
FOR COP TER-850-ME-V	Checklist COP ECE R58	06-02-2014	n/a
FOR COP TER-850-HY-V	Checklist COP ECE R58	06-02-2014	n/a
FOR COP TER-850-EL-V	Checklist COP ECE R58	06-02-2014	n/a
TABLE BOLT MOUNTING	Table for mounting the bolts in U-beams and L-beams	V25-05-2010	n/a

Drawing number	Name	Date	Revision
N2010-0100-HAND	DRAWING MOUNTING UNDERRUN BARS WITH PLATE	25-05-2010	n/a
N2010-0104-HAND	DRAWING MOUNTING U-BEAM PROFILES WITH BRACKET	25-05-2010	n/a
N2010-0112-HAND	DRAWING MOUNTING WITH L-BEAM PROFILE	25-05-2010	n/a
N2009-0025-rev01	PLACEMENT PINS FOR LOCKING UNDERRUN BAR OLD	16-09-2009	22-12-2011
N2009-0031-rev01	PLACEMENT PINS FOR LOCKING UNDERRUN BAR NEW	16-09-2009	20-09-2015
S09-8000-HYDR-rev02	HYDRAULIC PLAN EXTENDABLE UNDERRUN BAR	28-05-2010	1-4-2012
N2009-0040	ELECTRICAL OPERATING TER-850-EL	24-08-2009	1-10-2010
N2009-0046	ELECTRICAL OPERATING TER-850-EL AIR CABIN CONTROL	24-08-2009	1-10-2010
N2010-0120	ELECTRICAL PLAN SENSOR UNDERRUN BAR OUT	14-06-2010	n/a
N2010-0036	ELECTRICAL PLAN UNDERRUN BAR IN AND OUT	20-05-2010	n/a
S14-8100-1-E	EXTENDABLE UNDERRUN BAR TER-850-ME-V	06-02-2014	n/a
S14-8100-2-E	EXTENDABLE UNDERRUN BAR TER-850-HY-V	06-02-2014	n/a
S14-8100-3-E	EXTENDABLE UNDERRUN BAR TER-850-EL-V	06-02-2014	n/a
S14-8100-4-E	EXTENDABLE UNDERRUN BAR TYPES OF PROFILES	06-02-2014	n/a
S14-8100-5-E	EXTENDABLE UNDERRUN BAR MOUNTING TO CHASSIS	06-02-2014	n/a
S14-8100-6-E	EXTENDABLE UNDERRUN BAR MOUNTING TO CHASSIS	06-02-2014	n/a
S14-8100-7-E	EXTENDABLE UNDERRUN BAR MOUNTING TO CHASSIS	06-02-2014	n/a
S14-8100-8-E	EXTENDABLE UNDERRUN BAR MOUNTING ON PROFILE	06-02-2014	n/a
S14-8100-9-E	EXTENDABLE UNDERRUN BAR MOUNTING ON PROFILE	06-02-2014	n/a
S14-8100-10-E	EXTENDABLE UNDERRUN BAR MOUNTING ON PROFILE	06-02-2014	n/a
S14-8100-11-E	EXTENDABLE UNDERRUN BAR MOUNTING ON PROFILE	06-02-2014	n/a
S14-8100-13-E	EXTENDABLE UNDERRUN BAR MOUNTING ON PROFILE	06-02-2014	n/a
S14-8100-14-E	EXTENDABLE UNDERRUN BAR MOUNTING ON PROFILE	06-02-2014	n/a
S14-8000-E	EXTENDABLE UNDERRUN BAR TYPE: TER-850-HY-S/V	04-02-2014	n/a
S14-8001-E	EXTENDABLE UNDERRUN BAR TYPE TER-850-EL-S/V VER1	06-02-2014	n/a
S14-8002-E	EXTENDABLE UNDERRUN BAR TYPE PLATE	06-02-2014	n/a

**Terberg Techniek BV, Baarlo**Date: 06-02-2014  
Revision: -Checklist COP E4-58R-020392 Ext.00  
Terberg Extendable Underrun BarFOR COP TER-850-ME-V  
Page 1 van 1

Checkfrequency: Individual mounting every vehicle

Checking method: Visual

**Algemeen:**

Date of check

Name inspector

Categorie vehicle

Type of Underrun Bar

Inspection according drawing(s)

Approval number

N2, N3, O3 en O4 - 3500 kg up to 44.000 kg

**TER - 850 - ME - V (mechanical, definite mounting)**

S14-8100-1-E t/m 14-E

E4-58R-020392 Ext.00

**Inspection points according drawings****Measurements:**

Underrun Bar inside the tyres (per side)

Movement of extendable Bar

Chassis measurement or  
chassis Wx in cm<sup>3</sup>

Wide of chassis

Profile measurement U-Profile

Length of U-Profile under chassis

When L=720 mm

When L=860 mm

Profile measurement L-Profile

Length of L-Profile under chassis

When L=720 mm

When L=860 mm

Plates underside of chassis

L-plates underside of chassis

No plates or L-profile

Bolt connection side of chassis  
number of bolts  
measurement and qualityBolt connection underside of chassis  
number of bolts  
measurement and qualityDistance from road to underside of  
Underrun Bar in user situation

VIN number

Type plate completely and correct  
filled inType plate mounted and filled in on  
described placemin. acc.  
approval

≥ 0 mm

0 mm

≥ 260x72x6 mm

≥ Wx=165 cm<sup>3</sup>

≥ 758 mm

80x200x80x10

142 mm

142 mm

260x80x10

142 mm

142 mm

72x10 - 160 lg

80x95x10 - 160 lg

min.8 bolts

4 x

M16 - 10.9

2 x

M16 - 10.9

≥ 0 mm

taken measurements

mm \*

mm \*

mm \*

cm<sup>3</sup> \*

mm \*

mm \*

mm \*

mm \*

mm \*

mm \*

mm \*

yes / no \*\*

yes / no \*\*

yes / no \*\*

x \*

yes / no \*\*

x \*

yes / no \*\*

mm \*

max. acc.  
approval

≤ 100 mm

max. 850 mm

≤ 905 mm

80x600x80x10

≤ 460 mm

≤ 600 mm

260x80x10

≤ 460 mm

≤ 600 mm

80x95x10 - 400 lg

8 x

M16 - 10.9

4 x

M16 - 10.9

≤ 550 mm

\*\*\*

**E4-58R-020392 Ext.00 - MEV - ..... \*\*\***

on the right or on the left \*\* mounting profile to the chassis

Date + Signature:

Customer :

Number plate vehicle:

Remarks:

\*=measurement and/or number \*\*=blot out with yes / no

\*\*\*=chassis- and or serialnumber



# Terberg Techniek BV, Baarlo

Date: 06-02-2014 Checklist COP E4-58R-020392 Ext.00 FOR COP TER-850-HY-V  
Revision: - Terberg Extendable Underrun Bar Page 1 van 1

Checkfrequency: Individual mounting every vehicle Checking method: Visual

## Algemeen:

Date of check  
Name inspector  
Categorie vehicle N2, N3, O3 en O4 - 3500 kg up to 44.000 kg  
Type of Underrun Bar **TER - 850 - HY - V (hydraulical, definite mounting)**  
Inspection according drawing(s) S14-8100-1-E t/m 14-E  
Approval number E4-58R-020392 Ext.00

## Inspection points according drawings

### Measurements:

	min. acc. approval	taken measurements	max. acc. approval
Underrun Bar inside the tyres (per side)	≥ 0 mm	mm *	≤ 100 mm
Movement of extendable Bar	0 mm	mm *	max. 850 mm
Chassis measurement or chassis Wx in cm <sup>3</sup>	≥ 260x72x6 mm ≥ Wx=165 cm <sup>3</sup>	mm * cm <sup>3</sup> *	
Wide of chassis	≥ 758 mm	mm *	≤ 905 mm
Profile measurement U-Profile	80x200x80x10		80x600x80x10
Length of U-Profile under chassis			
When L=720	142 mm	mm *	≤ 460 mm
When L=860	142 mm	mm *	≤ 600 mm
Profile measurement L-Profile	260x80x10	mm *	260x80x10
Length of L-Profile under chassis			
When L=720 mm	142 mm	mm *	≤ 460 mm
When L=860 mm	142 mm	mm *	≤ 600 mm
Plates underside of chassis	72x10 - 160 lg	yes / no **	
L-plates underside of chassis	80x95x10 - 160 lg	yes / no **	80x95x10 - 400 lg
No plates or L-profile	min.8 bolts	yes / no **	
Bolt connection side of chassis			
number of bolts	4 x	x *	8 x
measurement and quality	M16 - 10.9	yes / no **	M16 - 10.9
Bolt connection underside of chassis			
number of bolts	2 x	x *	4 x
measurement and quality	M16 - 10.9	yes / no **	M16 - 10.9
Distance from road to underside of Underrun Bar in user situation	≥ 0 mm	mm *	≤ 550 mm

VIN number

Type plate completely and correct  
filled in

**E4-58R-020392 Ext.00 - HYV - ..... \*\*\***

Type plate mounted and filled in on  
described place

on the right or on the left \*\* mounting profile to the chassis

Date + Signature:

Customer :

Number plate vehicle:

Remarks:

\*=measurement and/or number \*\*=blot out wich yes / no

\*\*\*=chassis- and or serialnumber

# Terberg Techniek BV, Baarlo

Date: 06-02-2014 Revision: - Checklist COP E4-58R-020392 Ext.00 Terberg Extendable Underrun Bar FOR COP TER-850-EL-V Page 1 van 1

Checkfrequency: Individual mounting every vehicle Checking method: Visual

## Algemeen:

Date of check  
Name inspector  
Categorie vehicle N2, N3, O3 en O4 - 3500 kg up to 44.000 kg  
Type of Underrun Bar **TER - 850 - EL - V (elektrical, definite mounting)**  
Inspection according drawing(s) S14-8100-1-E t/m 14-E  
Approval number E4-58R-020392 Ext.00

## Inspection points according drawings

### Measurements:

	min. acc. approval	taken measurements	max. acc. approval
Underrun Bar inside the tyres (per side)	≥ 0 mm	mm *	≤ 100 mm
Movement of extendable Bar	0 mm	mm *	max. 850 mm
Chassis measurement or chassis Wx in cm <sup>3</sup>	≥ 260x72x6 mm ≥ Wx=165 cm <sup>3</sup>	mm * cm <sup>3</sup> *	
Wide of chassis	≥ 758 mm	mm *	≤ 905 mm
Profile measurement U-Profile	80x200x80x10		80x600x80x10
Length of U-Profile under chassis			
When L=720 mm	142 mm	mm *	≤ 460 mm
When L=860 mm	142 mm	mm *	≤ 600 mm
Profile measurement L-Profile	260x80x10	mm *	260x80x10
Length of L-Profile under chassis			
When L=720 mm	142 mm	mm *	≤ 460 mm
When L=860 mm	142 mm	mm *	≤ 600 mm
Plates underside of chassis	72x10 - 160 lg	yes / no **	
L-plates underside of chassis	80x95x10 - 160 lg	yes / no **	80x95x10 - 400 lg
No plates or L-profile	min.8 bolts	yes / no **	
Bolt connection side of chassis			
number of bolts	4 x	x *	8 x
measurement and quality	M16 - 10.9	yes / no **	M16 - 10.9
Bolt connection underside of chassis			
number of bolts	2 x	x *	4 x
measurement and quality	M16 - 10.9	yes / no **	M16 - 10.9
Distance from road to underside of Underrun Bar in user situation	≥ 0 mm	mm *	≤ 550 mm

VIN number

Type plate completely and correct filled in

**E4-58R-020392 Ext.00 - ELV - ..... \*\*\***

Type plate mounted and filled in on described place

on the right or on the left \*\* mounting profile to the chassis

Date + Signature:

Customer :

Number plate vehicle :

Remarks:

\*=measurement and/or number \*\*=blot out wich yes / no

\*\*\*=chassis- and or serialnumber

**TABLE FOR MOUNTING THE BOLTS IN U-BEAMS AND L-BEAMS WITH L=720 ON THE CHASSIS:** V 25-05-2010

	Bolts per side total	Per side quantity	Bolt type	Bolt distance minimum b x h	Tightening torque	quantity with plate 72x160x10 per side	Bolt type	Tightening torque	quantity with L-beam 95x80x10 per side	Bolt type	Tightening torque	Per side quantity	Bolt type	Bolt distance minimum b x h in mm	Tightening torque
U-beam 80x200x80x10 Length=720	6x	4x	M16	50x100 mm	332 Nm	2x	M16	250 Nm							
U-beam 80x200x80x10 Length=720	8x	4x	M16	50x100 mm	332 Nm				4x	M16	250 Nm				
L-beam 260x80x10 Length=720	6x	4x	M16	50x100 mm	332 Nm	2x	M16	250 Nm							
L-beam 260x80x10 Length=720	8x	4x	M16	50x100 mm	332 Nm				4x	M16	250 Nm				
L-beam 260x80x10 Length=720	8x											8x	M16	50 (3x)x100 mm	332 Nm
L-beam 385/260x80x10 Length=720	6x	4x	M16	50x100 mm	332 Nm	2x	M16	250 Nm							
L-beam 385/260x80x10 Length=720	8x	4x	M16	50x100 mm	332 Nm				4x	M16	250 Nm				
L-beam 385/260x80x10 Length=720	8x											8x	M16	50 (3x)x100 mm	332 Nm

**Opmerkingen:**

All bolts M16 class 10.9

All nuts and jam nuts M16 class KI10

All washers used for mounting on the chassis side steel HV 200 class.

All other washers steel HV140 class.

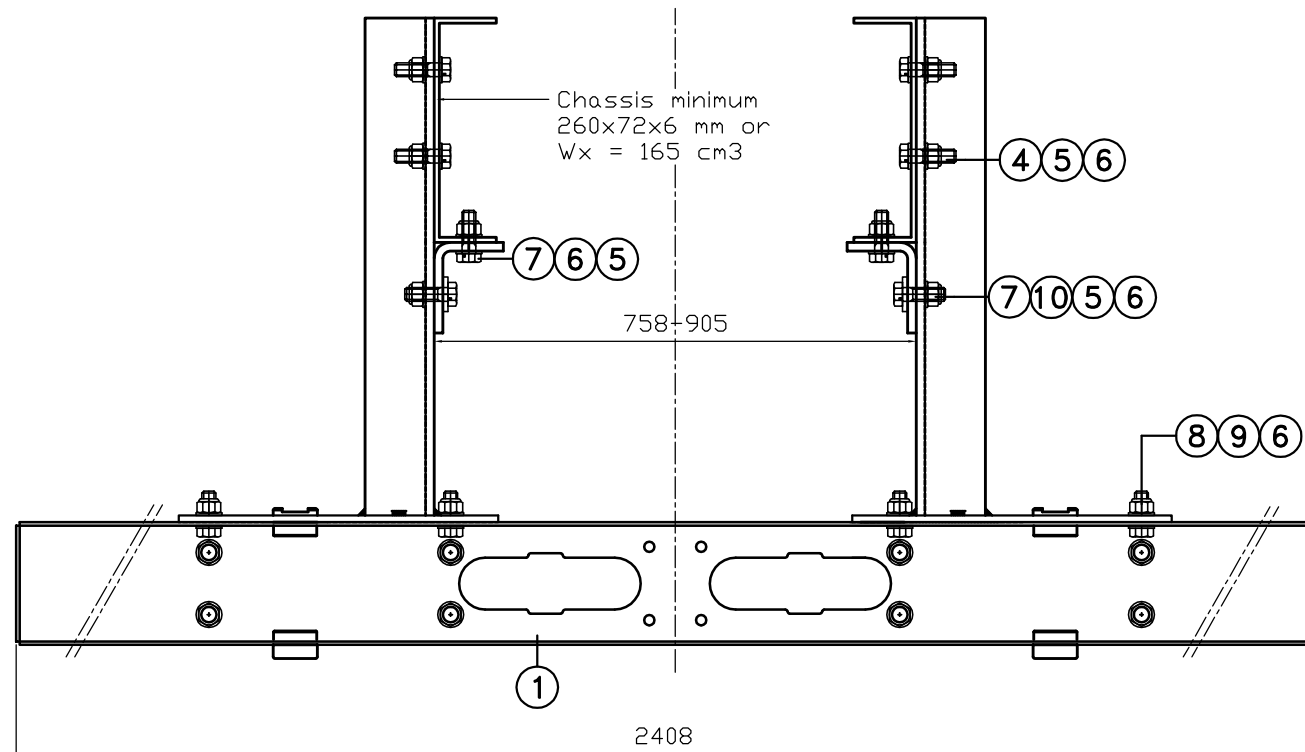
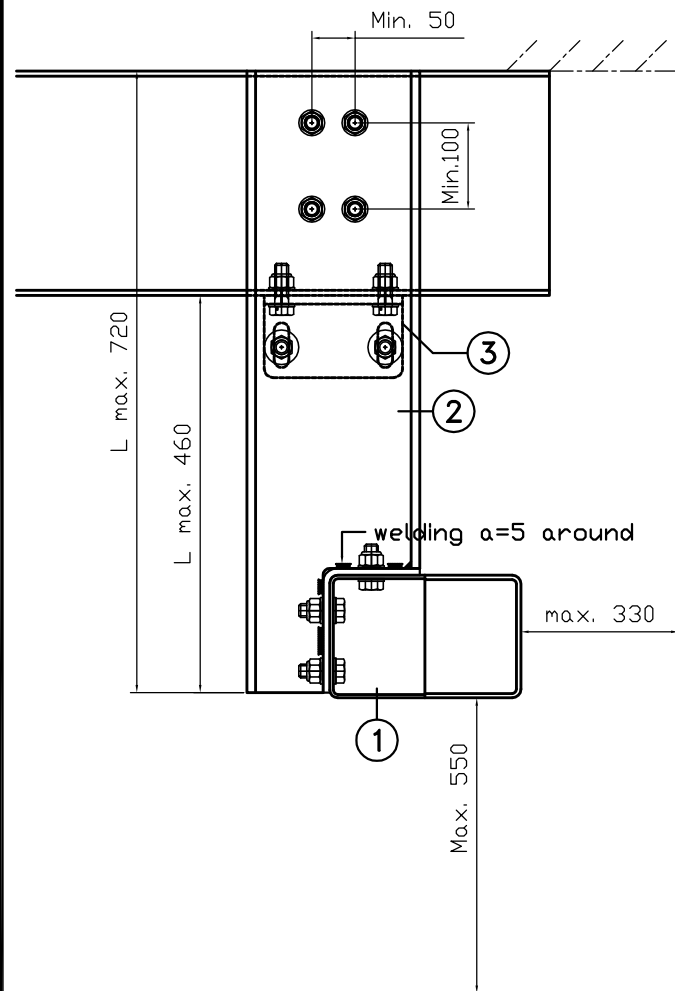
When plate at the underside, then weld plate/U-beam or plate/L-beam a=min. 0,6x thinnest material thickness so a=6 mm.

If L-beam at the underside instead of plate then 2 extra bolts M16 class 10.9 for connection to U-beam or L-beam.

If L-beam mounting at the underside at the side of the slotted holes of the L-beam use washer thickness 6 mm diameter 17x40 mm.

Tightening torque M16 nuts of the L-beam connection to the underrun bar U-beam 250 Nm.

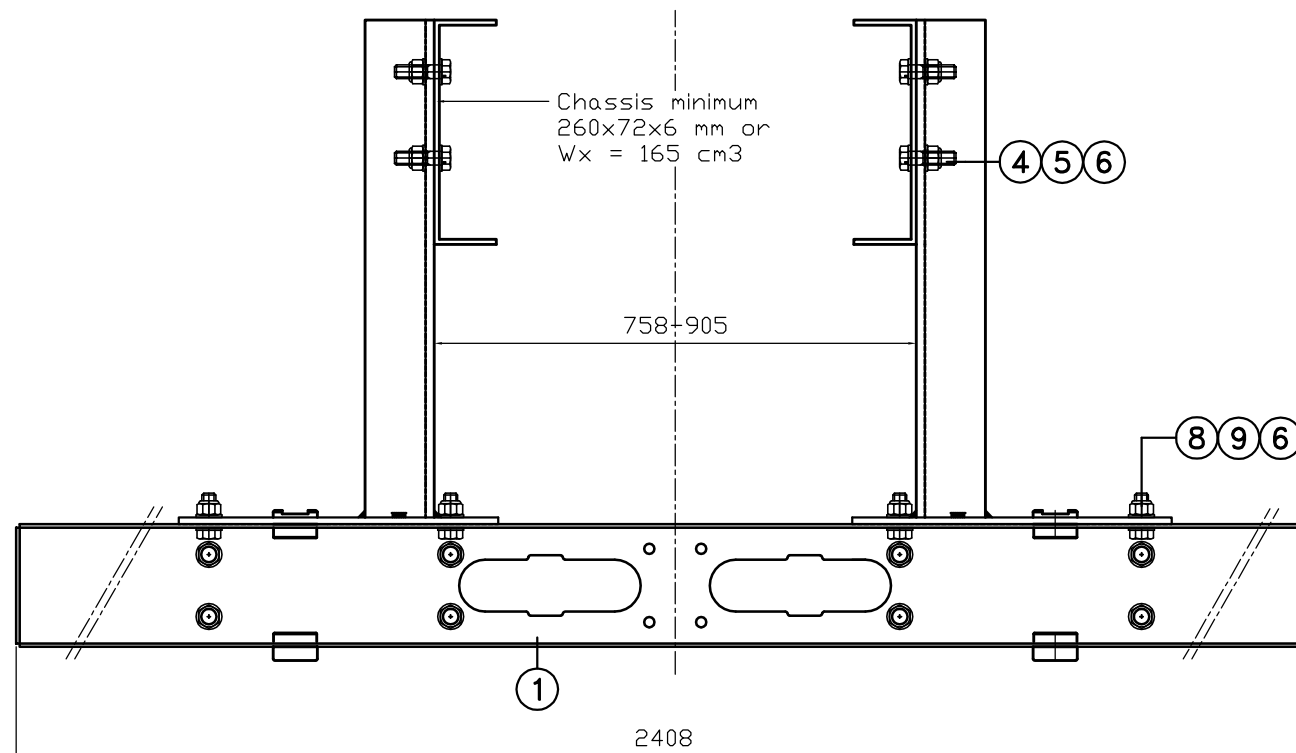
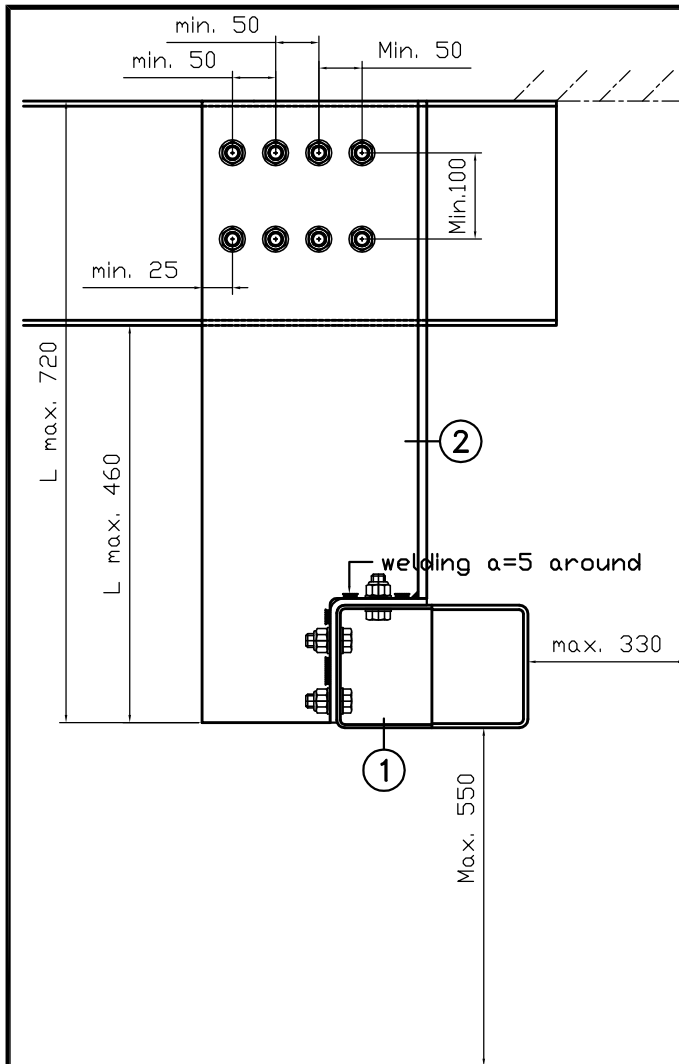




TIGHTENING TORQUE BOLTS M16 CLASS 10.9 MOUNTED IN SIDE OF CHASSIS 332 Nm  
TIGHTENING TORQUE BOLTS M16 CLASS 10.9 IN UNDERSIDE REGARDING TO CHASSIS 250 Nm  
TIGHTENING TORQUE BOLTS M16 CLASS 10.9 IN L-BEAM MOUNTING REGARDING TO U-BEAM 250 Nm  
DISTANCE BOLTS REGARDING TO UNDER- AND UPPER SIDE OF CHASSIS SEE BODYBUILDER RULES  
OVERHANG CONTAINER REGARDING TO THE UNDERRUN BAR MAX. 330 MM

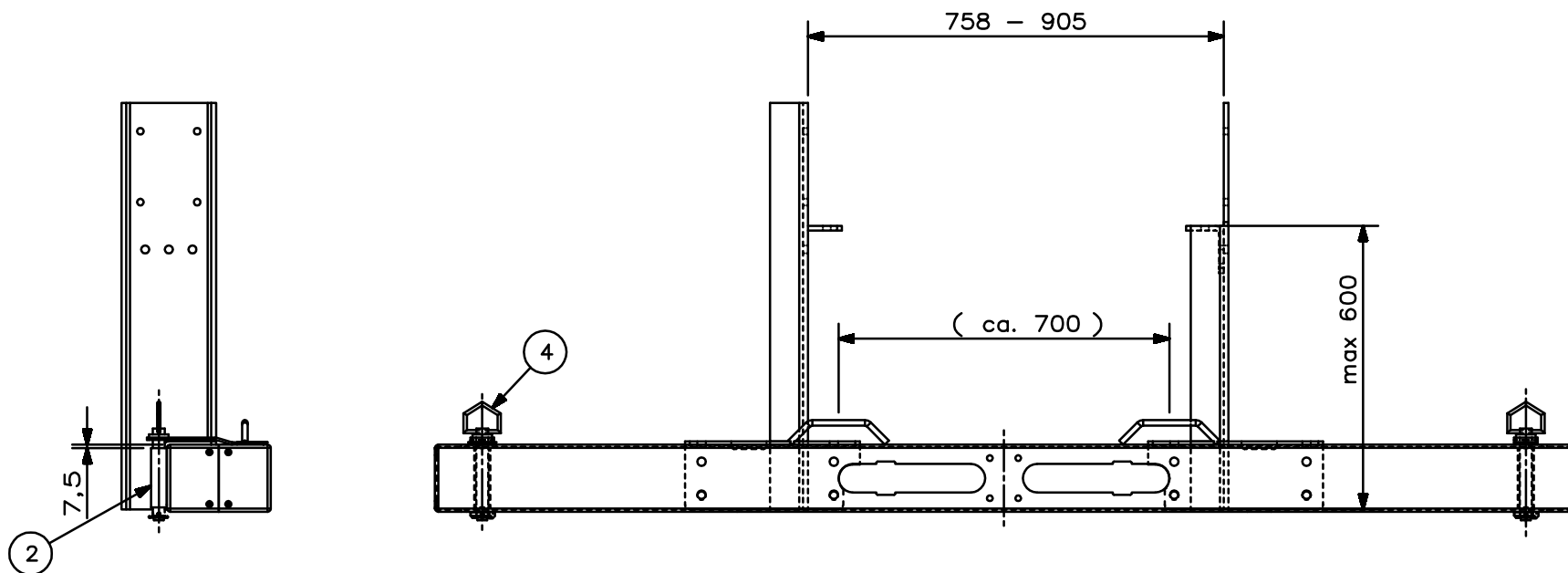
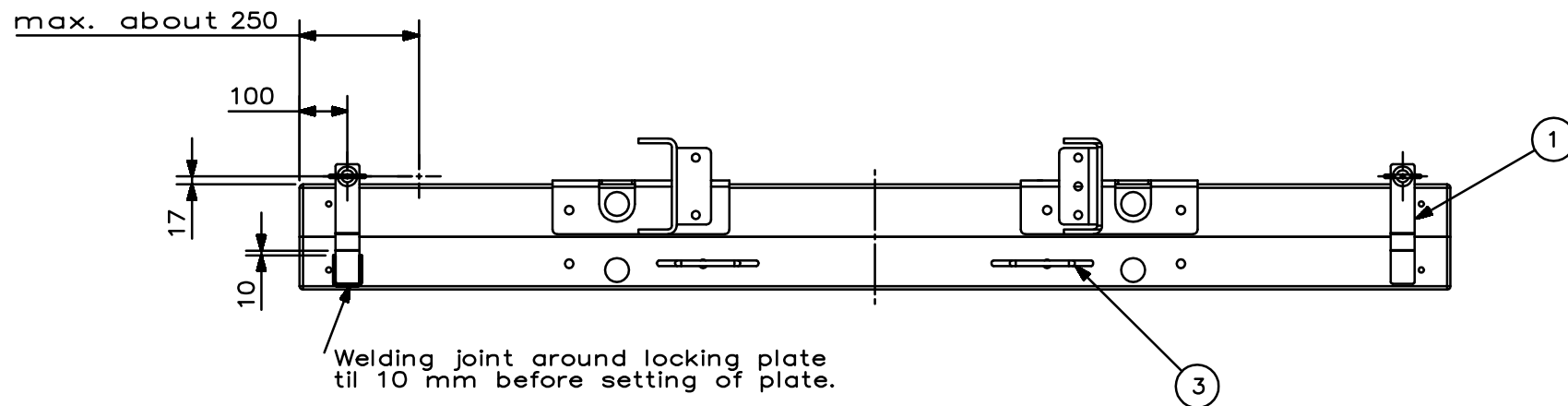
11	1	Type plate	TER-850-MEV/HYV/ELV		
10	4	Washer	17x40x6		08718
9	24	Washer	M16 140HV		08717
8	12	Bolt	M16x40	10.9	08962
7	8	Bolt	M16x50	10.9	08966
6	28	Nut	M16	K10	08982
5	28	Washer	M16 200 HV		08732
4	8	Bolt	M16x55	10.9	08967
3	2	Plate			46024
2	2	Mounting profile	U-beam		46066
1	1	Underrun bar	TER-850/ME/HY/EL/V/S		
POSNR	NUMBER	NAME	MEASUREMENT	MATERIAL	REMARK

POS. NR.	AANTAL	BENAMING	AFMETINGEN	MATERIAAL	OPMERKINGEN
WIJZ. D.D.		BENAMING:		GETEKEND:	F.Josten
MAATEENHEID: MM		DRAWING MOUNTING UNDERRUN BAR		GECONTR.:	
DATUM: 25-05-2010		EXTENDABLE e4x70/221x2006/20x0828x0		CHASSISNUMMER:	
SCHAAL: 1:4		TER-850-ME/HY/EL-V			
PROJECTIE METHODE		AUTEURSRECHT VOORBEHOUDEN VOLGENS DE WET			
		TERBERG TECHNIEK BAARLO B.V.		AANT. BLD.	BLD. NR.
		NAPOLÉONSBAAAN NR.D. 30 5991 NW			
		POSTBUS 8338 5990 AA BAARLO			
		TEL. (31) 077 - 4772039			
		FAX. (31) 077 - 4771226			
				Tekening nr.	
					N2010-0104-HAND






TIGHTENING TORQUE BOLTS M16 CLASS 10.9 MOUNTED IN SIDE OF CHASSIS 332 Nm  
TIGHTENING TORQUE BOLTS M16 CLASS 10.9 IN L-BEAM MOUNTING REGARDING TO U-BEAM 250 Nm  
DISTANCE BOLTS REGARDING TO UNDER- AND UPPER SIDE OF CHASSIS SEE BODYBUILDER RULES  
OVERHANG CONTAINER REGARDING TO THE UNDERRUN BAR MAX. 330 MM

10	1	Type plate	TER-850-MEV/HYV/ELV			POS. NR.	AANTAL	BENAMING	AFMETINGEN	MATERIAAL	OPMERKINGEN
9	24	Washer	M16 140HV		08717	WIJZ. D.D.		BENAMING:			GETEKEND: F.Josten
8	12	Bolt	M16x40	10.9	08962	MAATEENHEID: MM		DRAWING MOUNTING UNDERRUN BAR			GECONTR.:
7						DATUM: 25-05-2010		EXTENDABLE e4x70/221x2006/20x0828x06			CHASSISNUMMER:
6	28	Nut	M16	K10	08982	SCHAAL: 1:4		AUTEURSRECHT VOORBEHOUDEN VOLGENS DE WET			
5	32	Washer	M16 200 HV		08732	PROJECTIE METHODE		TERBERG TECHNIEK BAARLO B.V.		AANT. BLD.	BLD. NR.
4	16	Bolt	M16x55	10.9	08967			NAPOLÉONSBAAAN NRD. 30 5991 NW			A3
3								POSTBUS 8338 5990 AA BAARLO			Tekening nr.
2	2	Mounting profile			46068			TEL. (31) 077 - 4772039			N2010-0112-HAND
1	1	Underrun bar	TER-850/ME/HY/EL/V/S					FAX. (31) 077 - 4771226			
POSNR	NUMBER	NAME	MEASUREMENT	MATERIAL	REMARK						

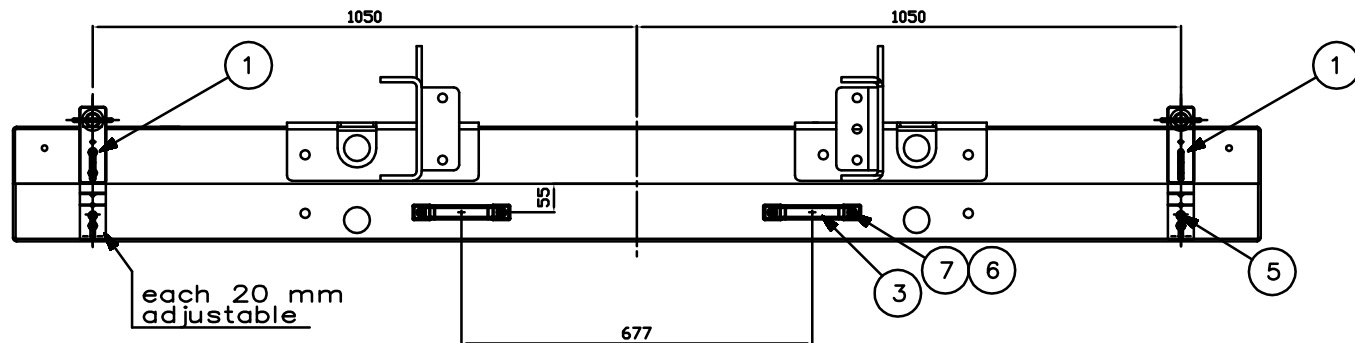
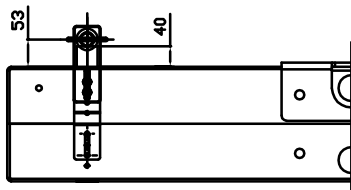


Locking pins are also for TER-670-ME-V/S  
and TER-400-ME-V/S types.

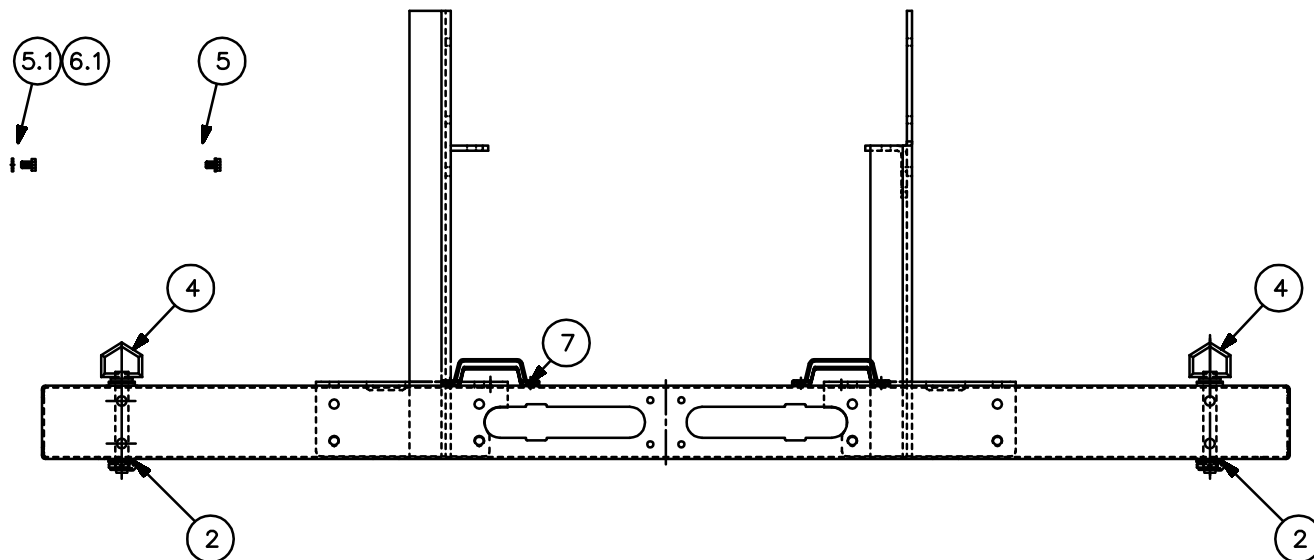
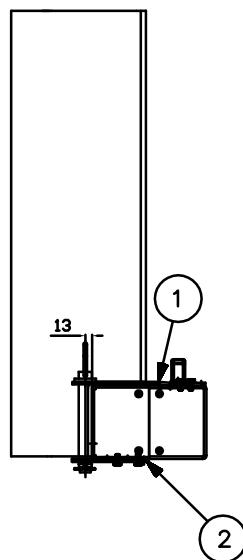
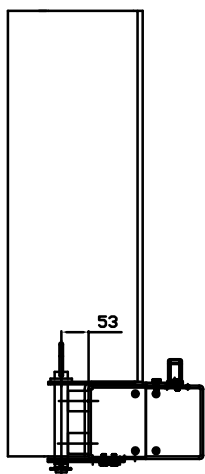
4	2	Pin			23243	N2009-0029-rev01
3	2	Grip			45873	N2009-0028-rev01
2	2	Tube			45879	N2009-0027-rev01
1	2	Locking plate			45875	N2009-0026-rev03
Pos nr	Number	Name	Measurements	Material	Norm/Suppl	Drw nr/art nr
Getek: FJ		Datum: 16-09-2009	Wijz: 22-12-2011	Schaal: 1/10		
Toleranties volgens NEN-ISO 2768 mK Maten in mm Alle rechten voorbehouden. Nadruk verboden		Behandeling	Alg. bewerking	✓		
	Name: Underrun bar TER-850-ME-V/S					
	Placing pins for locking the underrun bar					
	Project number N2009-1		A1	Drawing number N2009-0025		Rev 01

DATUM WIJZIGING

option:  
fill out 20/40 mm







each 20 mm  
adjustable



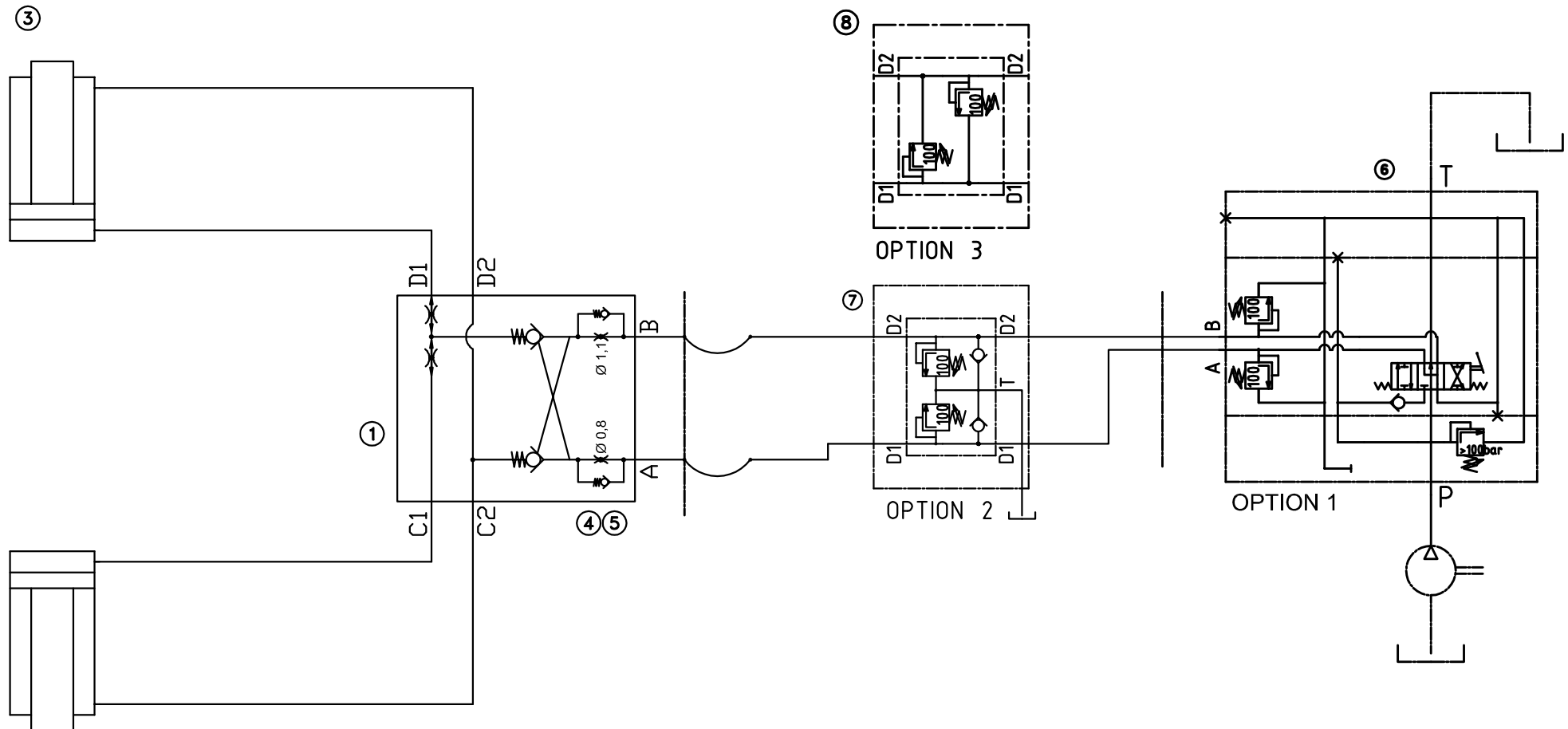
Locking pins are also for TER-670-ME-V/S  
and TER-400-ME-V/S types.

Pos 5.1 and Pos 6.1 alternatives for Pos 5

6.1	8	Ring M8	DIN 125-1A	St140HV	ELVZ	08707	
5.1	8	Bout M8x16	DIN 933	8.8	ELVZ	08101	
7	4	Cil. schroef met bzk M8x10	DIN 912	8.8	ELVZ	08494	
6	4	Veerring 8 mm	DIN 127 B	Verenstaal	ELVZ	08789	
5	8	Flensbout M8x16	DIN 6921	8.8	ELVZ	46013	
4	2	Borgpen			23243	N2009-0029-rev01	
3	2	Handgreep	300000KR	Kunststof	45815	N2014-0120-rev00	
2	2	Vergendelstrip onder		St 37	45877	N2009-0033-rev00	
1	2	Vergendelstrip boven		St 37	45871	N2009-0032-rev01	
Pos nr	Aantal	Omschrijving	Afmetingen	Materiaal	Norm/Suppl	Drw nr/art nr	
Getek: FJ		Datum: 16-09-2009	Wijz: 20-09-2015	Schaal: 1/10	 		
Toleranties volgens NEN-ISO 2768 mK Maten in mm Alle rechten voorbehouden. Nadruk verboden		Behandeling		Alg. Bewerking 			
		Benaming					
		Underrun bar TER-850-ME-V/S locking pins placement					
		Projectnummer		Tekening nummer		Rev	
		N2009-1		A1		N2009-0031	01




Pressure adjusting of the antishock valves and/or crossed pressure valves max. 100-120 bar



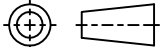
Attention ! for a good working of the pilot operated check valve, use a sectional control valve with open middle position when possible  
Pipe/hose diameter 6 mm up to max. 9 mm inside.

8	1	Crossed pressure valve (double) pressure setting 100-120 bar (option 3)							
7	1	Crossed pressure valve (double) pressure setting 100-120 bar with sepearte tank connection (option 2)							
6	1	Sectional control valve, if antishock valves are mounted, then use not pos 7 or pos 8							
5	1	Orifice 2 (in manifold block)							
4	1	Orifice 1 (in manifold block)							
3	1	Hydraulical cylinder R							
2	1	Hydraulical cylinder L							
1	1	Manifold block (double pilot check valve, flow divider and orifices)							
PDS. NR.	NUMBER	NAME	MEASUREMENTS	MATERIAL	REMARKS				

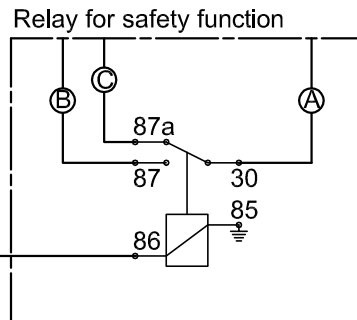
PDS. NR.	AANTAL	BENAMING	AFMETINGEN	MATERIAAL	OPMERKINGEN
CHANGE:	1-4-2012	BENAMING: HYDRAULIC PLAN			DRAWN: F. Josten
UNITS:	mm	TYPE: TER-850/670/400-HY-V/S			CHECK: F. Josten
DATE:	28-05-2010	Hydraulical operated underrun bar			REVISION:
SCALE:		AUTEURSRECHT VOORBEHOUDEN VOLGENS DE WET			rev02
PROJECTION METHOD					PAGES 1 PAGE 1 A4
					Drawing number: S09-8000-HYDR



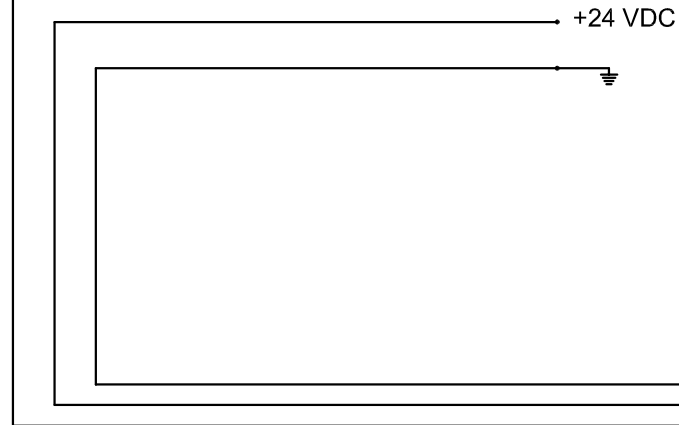


POS. NR.	AANTAL	BENAMING	AFMETINGEN	MATERIAAL	OPMERKINGEN
WIJZ. D.D. 1-10-2010		BENAMING: ELEKTRICAL OPERATING TER-850-EL KOMPLETE ELECTRIC PLAN AIR CABIN CONTROL		GETEKEND: F.Josten	
MAATEENHEID: MM				GECONTR.:	
DATUM: 24-8-2009				CHASSISNUMMER:	
SCHAAL: 1:2		AUTEURSRECHT VOORBEHOUDEN VOLGENS DE WET			
PROJECTIE METHODE	 TERBERG TECHNIEK BAARLO B.V. NAPOLEONSBAAAN NRD. 30 5991 NW POSTBUS 8338 5990 AA BAARLO TEL. (31) 077 - 4772039 FAX. (31) 077 - 4771226			AANT. 1 BLD. 1 NR. 1	A 3
				Tekening nr. N2009-0046	

- Ⓐ = 30 = +24VDC from battery, from system on, from pto in or from system in  
 Ⓑ = 87 = signal (close function) for activating safety circuit  
 Ⓒ = 87a = signal (opener function) for activating safety circuit



How you engineer the electrical plan is depending on the system you have. The switching function(s) for the safety circuit you have to design yourself. You can use the "close" and "open" function both, or only the "close" function or only the "open" fuction.

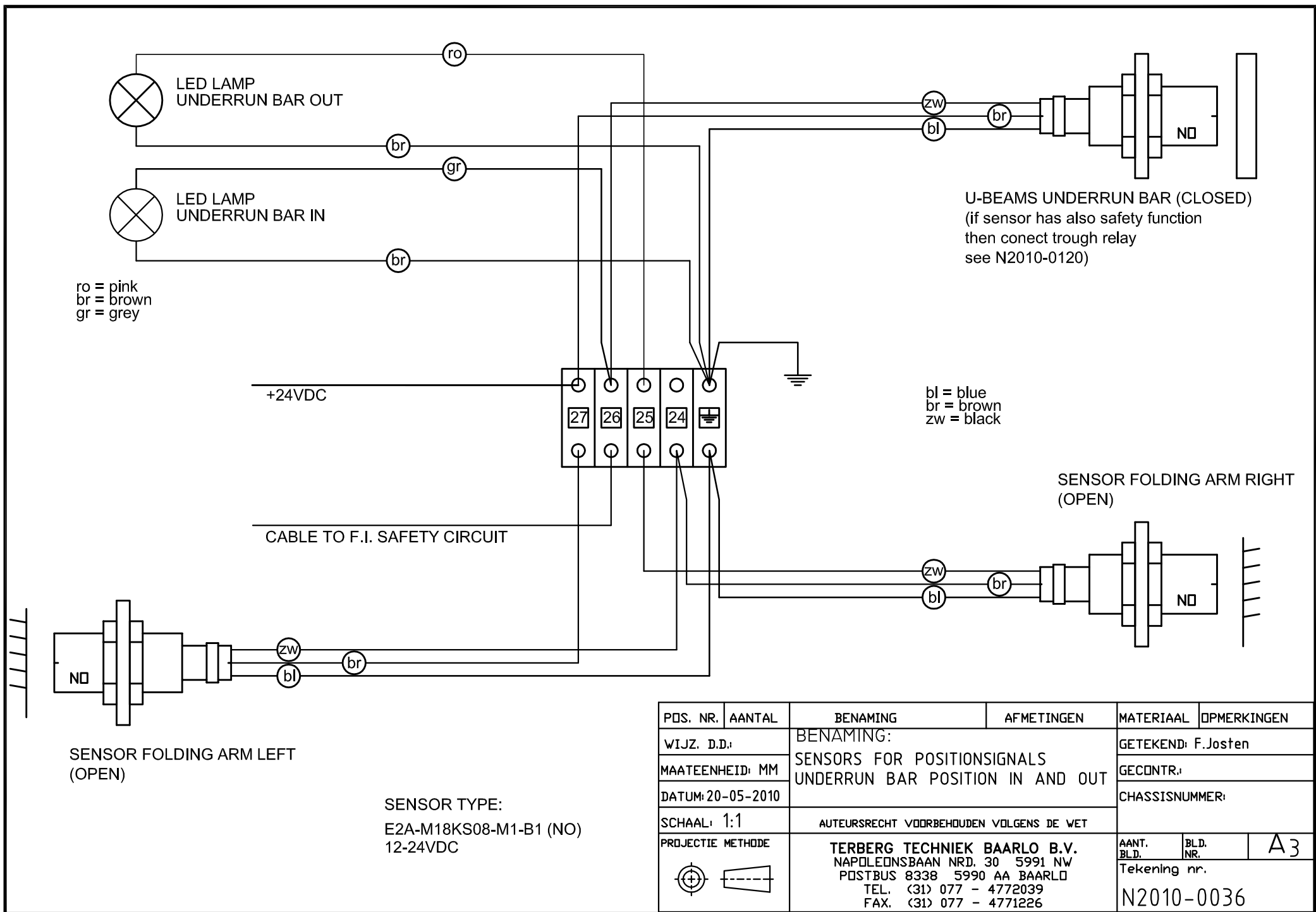


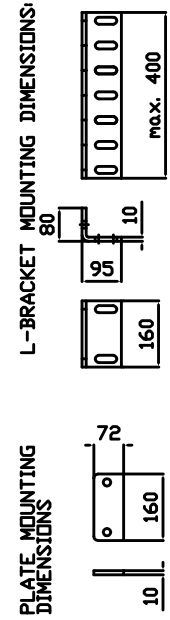
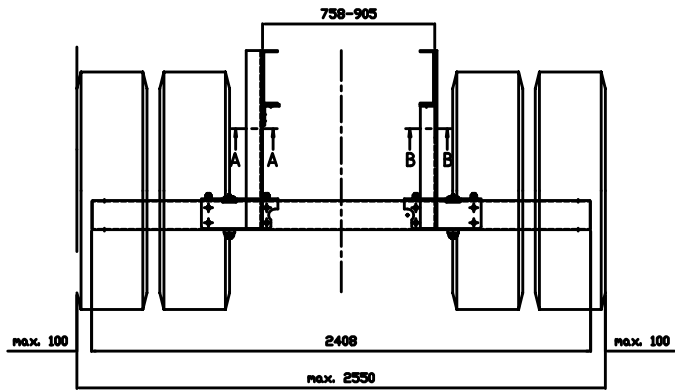
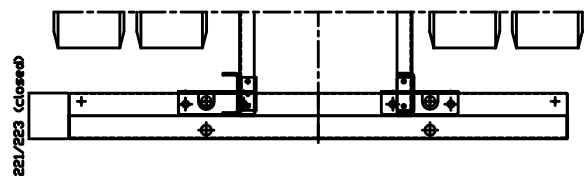
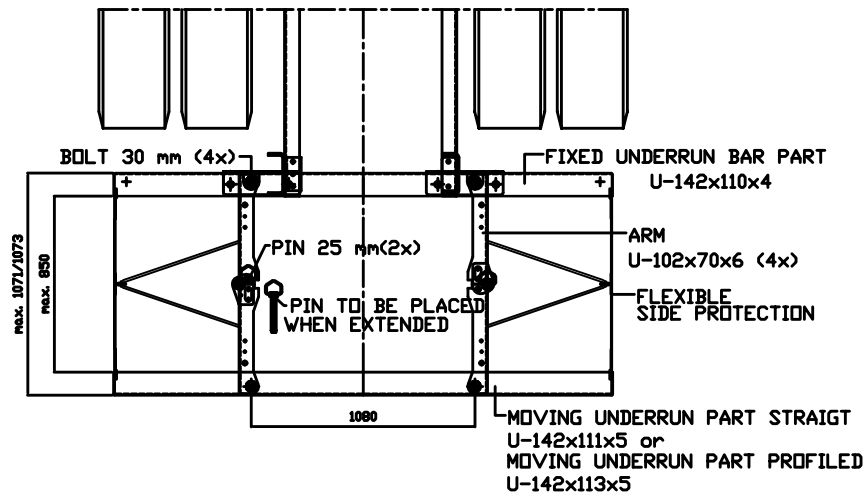
- Ⓛ = blue = Mass  
 Ⓡ = brown = + 24VDC  
 Ⓥ = black = signal wire

when detection position (iron)  
 (is underrun bar in)  
 = relay activated

Sensor on  
 underrun bar

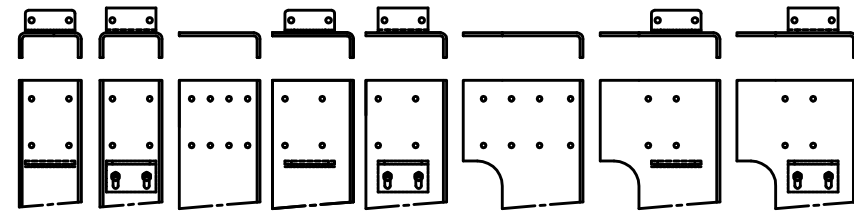
POS. NR.	AANTAL	BENAMING	AFMETINGEN	MATERIAAL	OPMERKINGEN
WIJZ. D.D.:		BENAMING:		GETEKEND: F.Josten	
MAATEENHEID: MM		ELECTRICAL PLAN SENSOR		GECONTR.:	
DATUM: 14-06-2010		UNDERRUN BAR EXTENDED		CHASSISNUMMER:	
SCHAAL: 1:1		AUTEURSRECHT VOORBEHOUDEN VOLGENS DE WET			
PROJECTIE METHODE		TERBERG TECHNIEK BAARLO B.V. NAPOLEONSBAAAN NR.D. 30 5991 NW POSTBUS 8338 5990 AA BAARLO TEL. (31) 077 - 4772039 FAX. (31) 077 - 4771226		AANT. BLD. NR.	BLD. NR.
				Tekening nr.	A3
				N2010-0120	



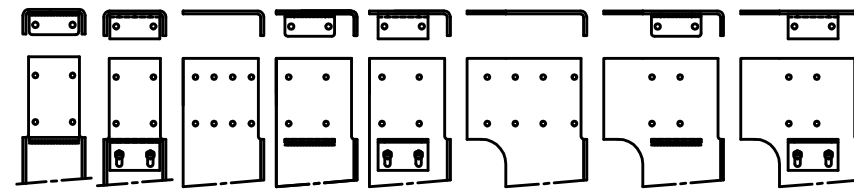


# CHASSIS MOUNTINGS:

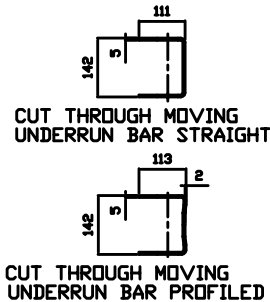
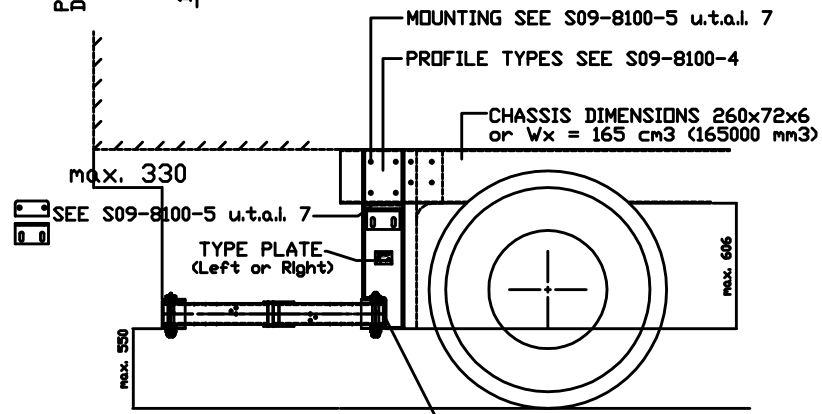
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B-B (2:1)



u.t.a.i. = up to and including

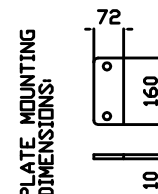
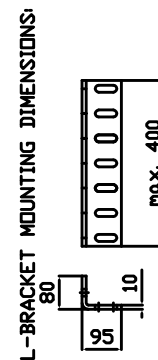
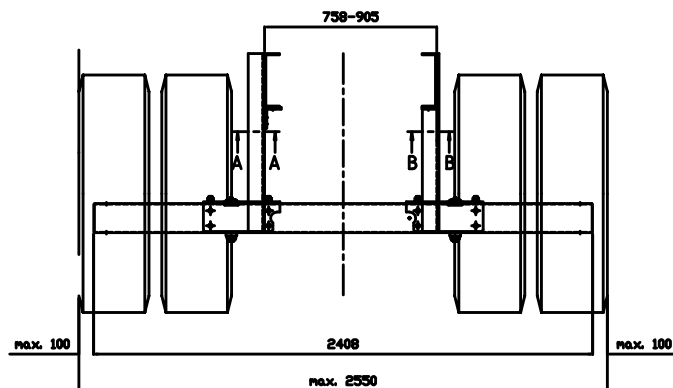
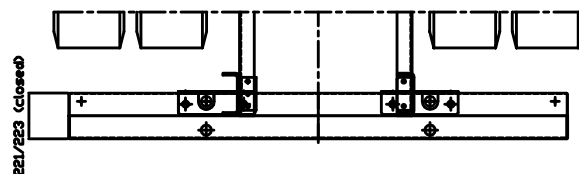
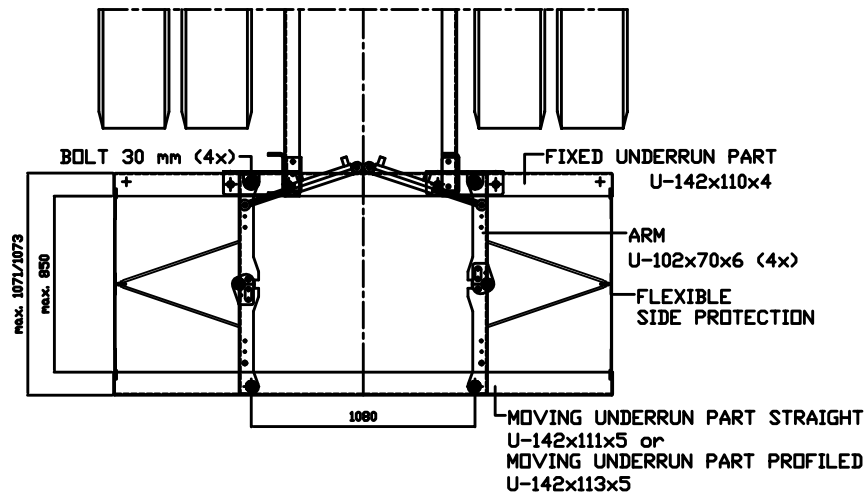


E4-58R-020392 Ext.00

MOUNTING BRACKETS 142x110x6 ON UNDERRUN BAR  
6 BOLTS PER SIDE M16 10.9

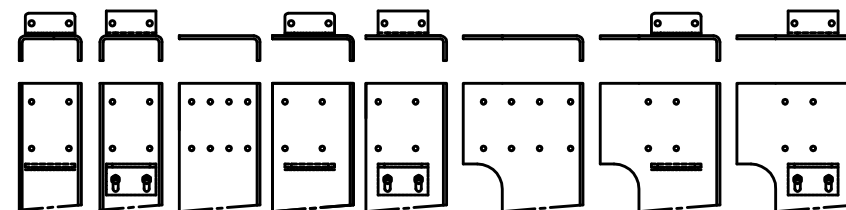
PAGE NR.8 u.t.a.i. NR.14 > ALTERNATIVE MOUNTINGS, ADD ONLY WHICH USED  
PAGE NR.5 u.t.a.i. NR.7 > CHASSIS MOUNTING, ADD ONLY WHICH IS USED  
PAGE NR.4 TYPES OF MOUNTING PROFILES, ADD ALWAYS

<p>All edges R&gt;2.5</p> <p>All weldings C02 or electrical minimum welding a= 0,6x thinnest material thickness. All parts welded completely around.</p> <p>VIN number: x</p>	<p>Stamp Factory</p> <p>Stamp R.D.W.</p>	<p>CHANGING DATE:</p> <p>DIMENSIONS: mm</p> <p>DATE: 06-02-2014</p> <p>SCALE:</p> <p>PROJECTION METHOD</p>	<p>NAME: EXTENDABLE UNDERRUN BAR TYPE: TER-850-ME-V FOR ALL VEHICLES</p> <p>COPYRIGHT PROTECTED BY LAW</p> <p><b>TERBERG</b> TECHNIEK BV BAARLO</p>	<p>DRAWN BY: F.Josten</p> <p>CHECKED BY: F.Josten</p> <p>VIN NUMBER:</p> <p>NR. OF 14 PAGES PAGE 1 NR. A4</p> <p>DRAWING NUMBER: S14-8100-1-E</p>
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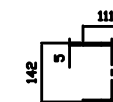
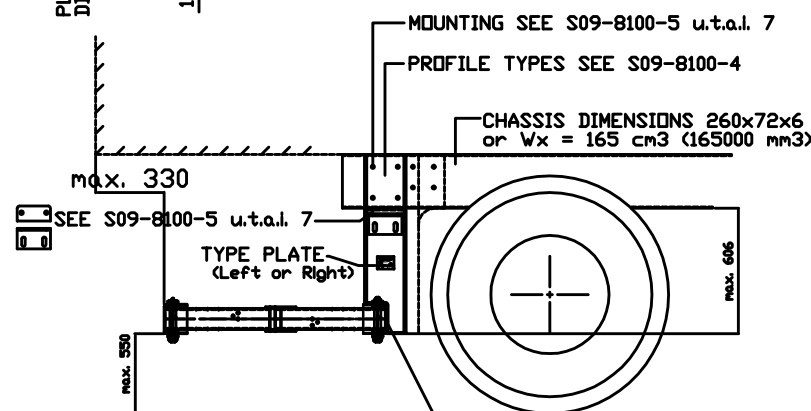
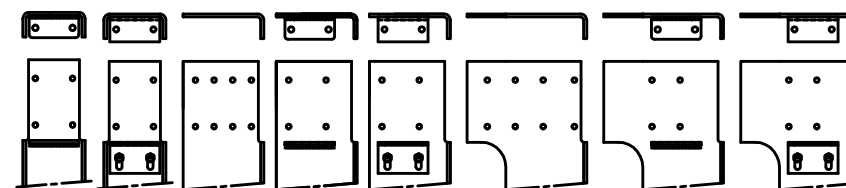


## CHASSIS MOUNTINGS

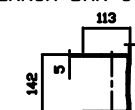
A-A (2:1)



B-B (2:1)



CUT THROUGH MOVING UNDERRUN BAR STRAIGHT



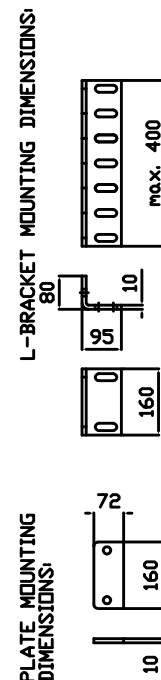
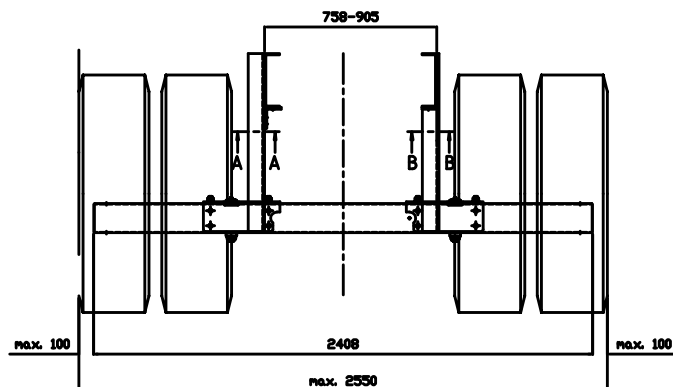
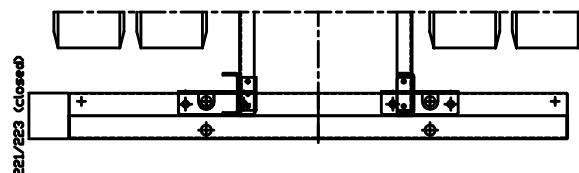
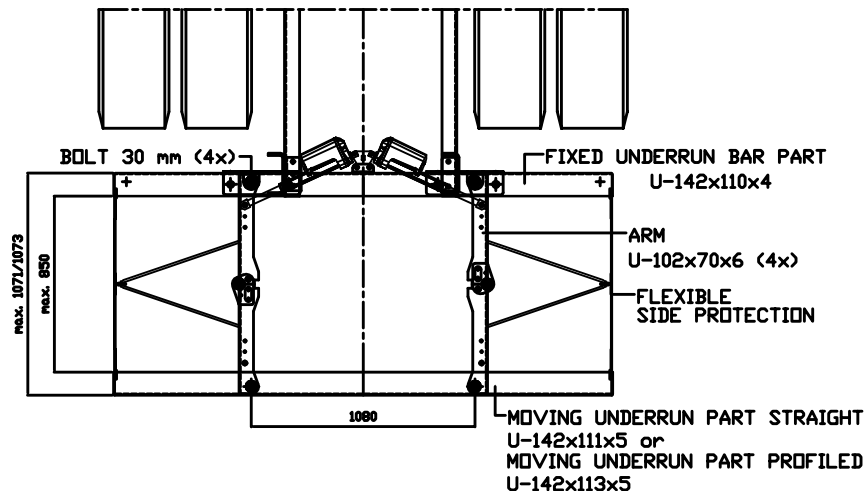
CUT THROUGH MOVING UNDERRUN BAR PROFILED

E4-58R-020392 Ext.00

MOUNTING BRACKET 142x110x6 ON UNDERRUN BAR  
6 BOLTS PER SIDE M16 10.9

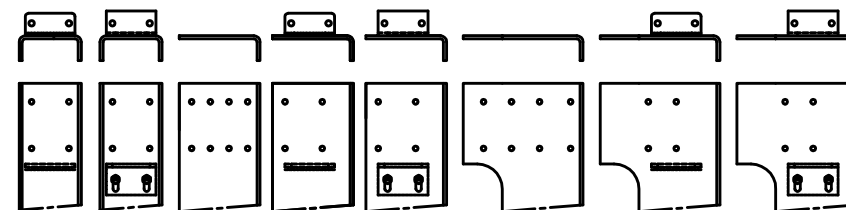
PAGE NR. 8 u.t.a.l. NR. 14 > ALTERNATIVE MOUNTINGS, ADD ONLY WHICH USED  
PAGE NR. 5 u.t.a.l. NR. 7 > CHASSIS MOUNTING, ADD ONLY WHICH IS USED  
PAGE NR. 4 TYPES OF MOUNTING PROFILES, ADD ALWAYS

All edges R>2.5	Stamp Factory	Stamp R.D.W.	CHANGING DATE:	NAME:	EXTENTABLE UNDERRUN BAR	DRAWN BY: F.Josten
All weldings C02 or electrical minimum welding a= 0,6x thinnest material thickness. All parts welded completely around.			DIMENSIONS: mm	TYPE: TER-850-HY-V	FOR ALL VEHICLES	CHECKED BY: F.Josten
			DATE: 06-02-2014			VIN NUMBER:
			SCALE:	COPYRIGHT PROTECTED BY LAW		
			PROJECTION METHOD	<b>TERBERG</b> <b>TECHNIEK BV BAARLO</b>		NR. OF 14 PAGES
VIN number: x						PAGE 2 NR. A4
						DRAWING NUMBER: S14-8100-2-E

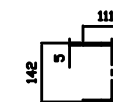
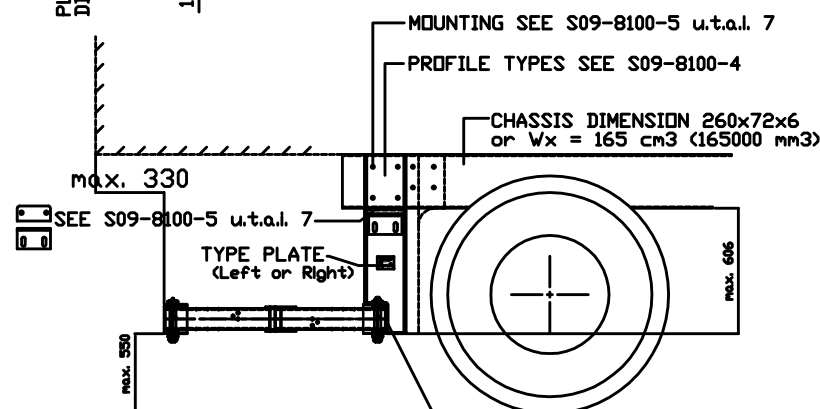
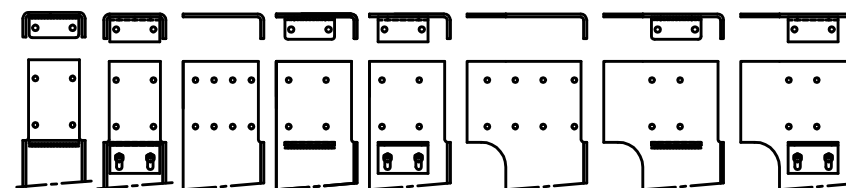


## CHASSIS MOUNTINGS:

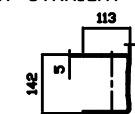
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B-B (2:1)



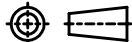

CUT THROUGH MOVING PART STRAIGHT



CUT THROUGH MOVING UNDERRUN BAR PROFILED

E4-58R-020392 Ext.00

PAGE NR. 8 u.t.a.l. NR. 14 > ALTERNATIVE MOUNTINGS, ADD ONLY WHICH USED  
PAGE NR. 5 u.t.a.l. NR. 7 > CHASSIS MOUNTING, ADD ONLY WHICH IS USED  
PAGE NR. 4 TYPES OF MOUNTING PROFILES, ADD ALWAYS

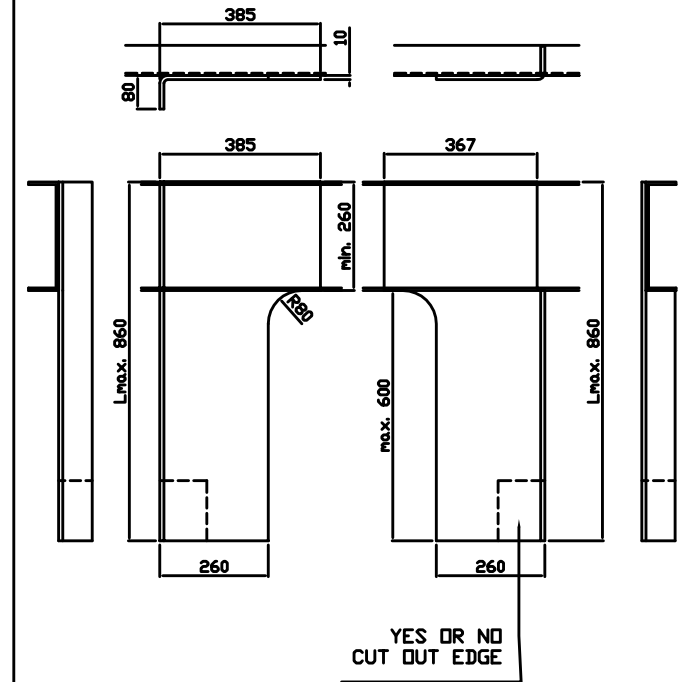
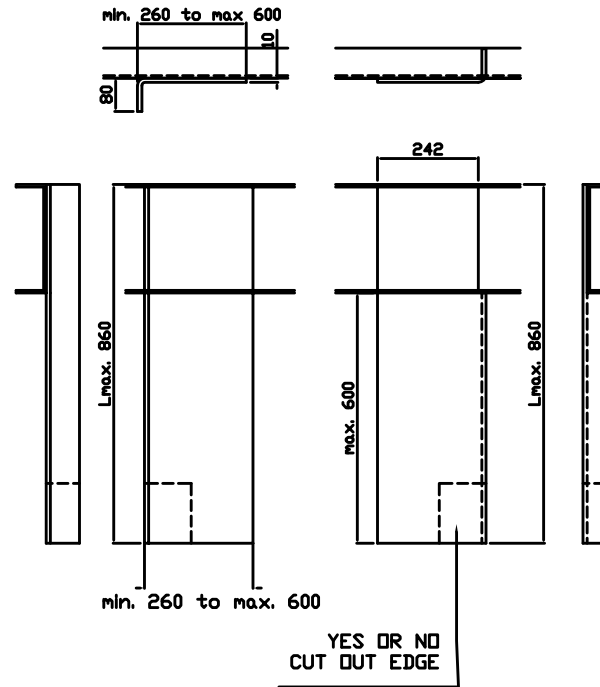
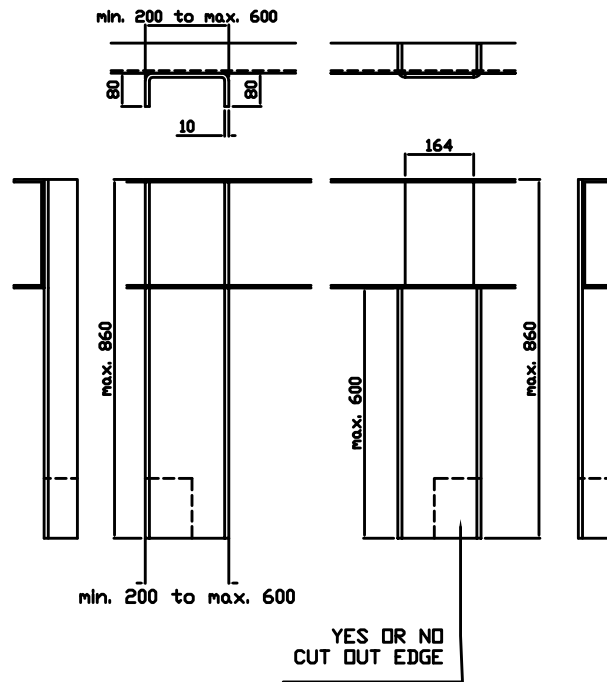
All edges R>2.5  All weldings C02 or electrical minimum welding a= 0,6x thinnest material thickness. All parts welded completely around.	Stamp Factory     VIN number: x	Stamp R.D.W.     x	CHANGING DATE: DIMENSIONS: mm DATE: 06-02-2014 SCALE: PROJECTION METHOD 	NAME: EXTENTABLE UNDERRUN BAR TYPE: TER-850-EL-V FOR ALL VEHICLES  COPYRIGHT PROTECTED BY LAW 	DRAWN BY: F.Josten CHECKED BY: F.Josten VIN NUMBER:  NR. OF 14 PAGES PAGE 3 NR. A4 DRAWING NUMBER: S14-8100-3-E
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# PROFILE 1: U-BEAM 80x....x80x10

# PROFILE 2: L-BEAM 260x80x10

# PROFILE 3: L-BEAM 385/260x80x10



E4-58R-020392 Ext.00

All edges R>2.5

All weldings CO2 or electrical  
minimum welding a= 0,6x  
thinnest material thickness.  
All parts welded completely  
around.

Stamp Factory

Stamp R.D.W.

CHANGING DATE:

DIMENSIONS: mm

DATE: 06-02-2014

SCALE:

PROJECTION METHOD



NAME: EXTENDABLE UNDERRUN BAR  
TYPE: TER-850-ME/HY/EL-V  
ALL SORTS OF MOUNTING PROFILES

COPYRIGHT PROTECTED BY LAW



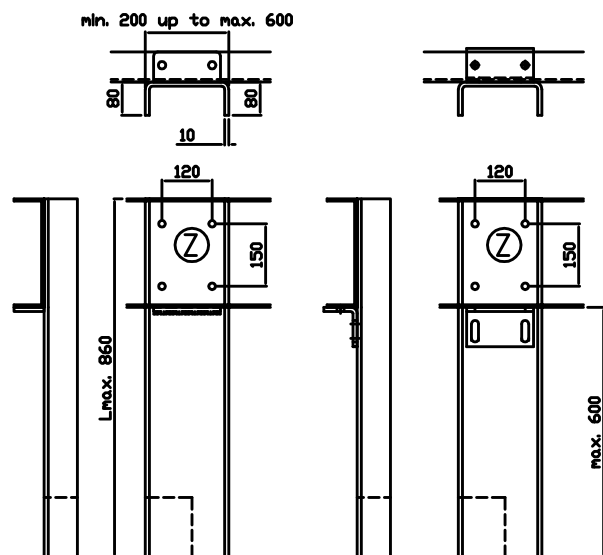
DRAWN BY: F.Josten

CHECKED BY: F.Josten

VIN NUMBER:

NR. OF 14 PAGES  
PAGE 4  
DRAWING NUMBER:  
S14-8100-4-E

# CHASSIS MOUNTING U-BEAM PROFILE L=860 mm:

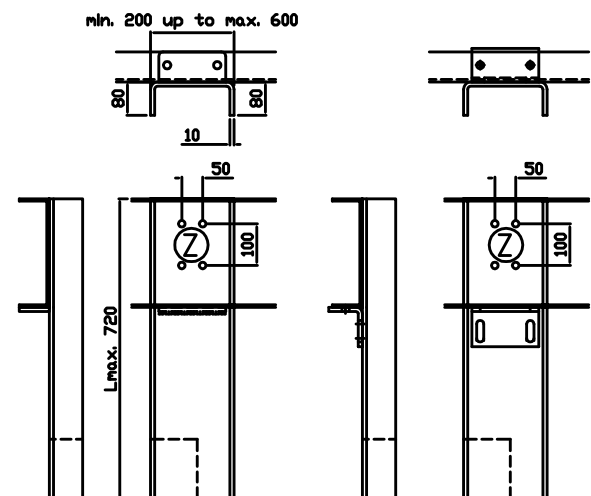


MOUNTING OUTSIDE 1:  
SIDE MOUNTING TO CHASSIS:  
4 BOLTS PER SIDE  
M16 10.9 WITH SHAFT  
HOLE PATTERN 120x150 MM

UNDERSIDE CHASSIS:  
OR PLATE 160x72x10  
2 BOLTS M16 10.9  
OR L-BRACKET 80x95x160/400  
4 BOLTS M16 10.9

EDGE CUT OUT; YES/NO

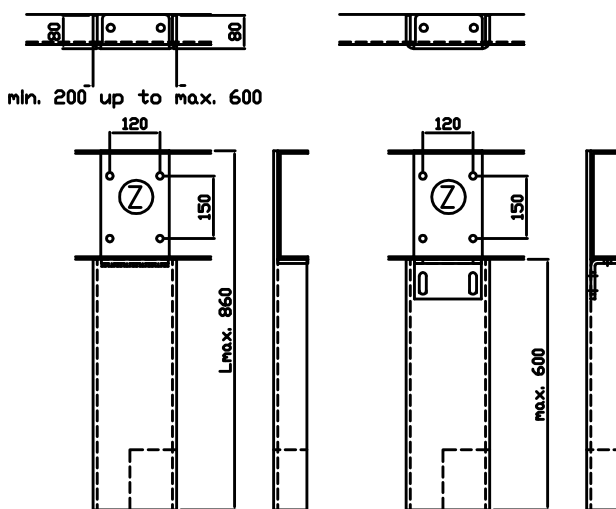
# CHASSIS MOUNTING U-BEAM PROFILE L=720 mm:



MOUNTING OUTSIDE 2:  
SIDE MOUNTING TO CHASSIS:  
4 BOLTS PER SIDE  
M16 10.9 WITH SHAFT  
HOLE PATTERN 50x100 MM

UNDERSIDE CHASSIS:  
OR PLATE 160x72x10  
2 BOLTS M16 10.9  
OR L-BRACKET 80x95x160/400  
4 BOLTS M16 10.9

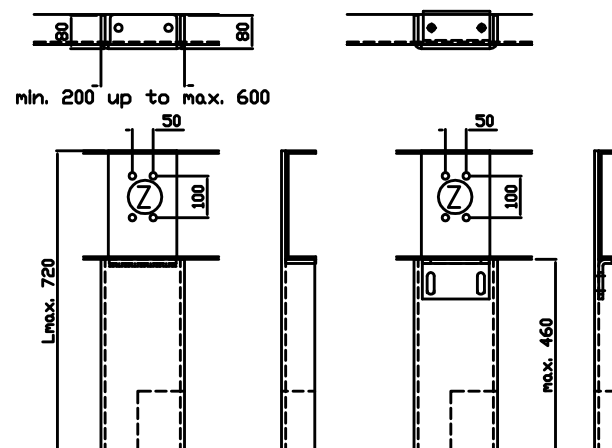
EDGE CUT OUT; YES/NO



MOUNTING INSIDE 1:  
SIDE MOUNTING TO CHASSIS:  
4 BOLTS PER SIDE  
M16 10.9 WITH SHAFT  
HOLE PATTERN 120x150 MM

UNDERSIDE CHASSIS:  
OR PLATE 160x72x10  
2 BOLTS M16 10.9  
OR L-BRACKET 80x95x160/400  
4 BOLTS M16 10.9

EDGE CUT OUT; YES/NO



MOUNTING INSIDE 2:  
SIDE MOUNTING TO CHASSIS:  
4 BOLTS PER SIDE  
M16 10.9 WITH SHAFT  
HOLE PATTERN 50x100 MM

UNDERSIDE CHASSIS:  
OR PLATE 160x72x10  
2 BOLTS M16 10.9  
OR L-BRACKET 80x95x160/400  
4 BOLTS M16 10.9

EDGE CUT OUT; YES/NO

E4-58R-020392 Ext.00

Ⓩ = HEART TO HEART DISTANCE OF THE HOLES ARE THE MINIMUM MEASUREMENTS

All edges R>2.5

All weldings CO2 or electrical  
minimum welding a= 0,6x  
thinnest material thickness.  
All parts welded completely  
around.

Stamp Factory

Stamp R.D.W.

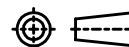
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DIMENSIONS: mm

DATE: 06-02-2014

SCALE:

PROJECTION METHOD



NAME:

EXTENDABLE UNDERRUN BAR  
TYPE: TER-850-ME/HY/EL-V  
CHASSIS MOUNTING U-PROFILE

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DRAWN BY: F.Josten

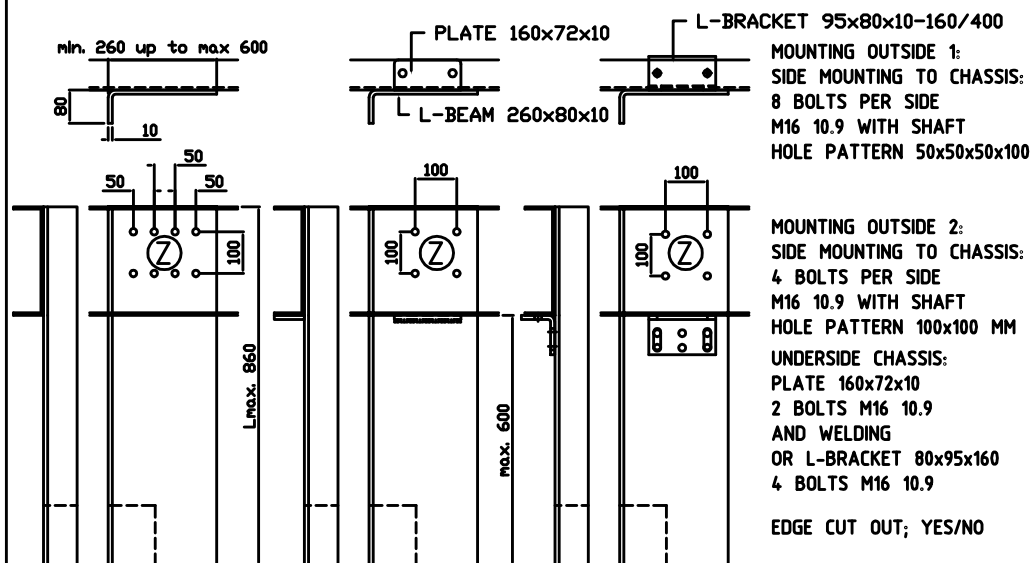
CHECKED BY: F.Josten

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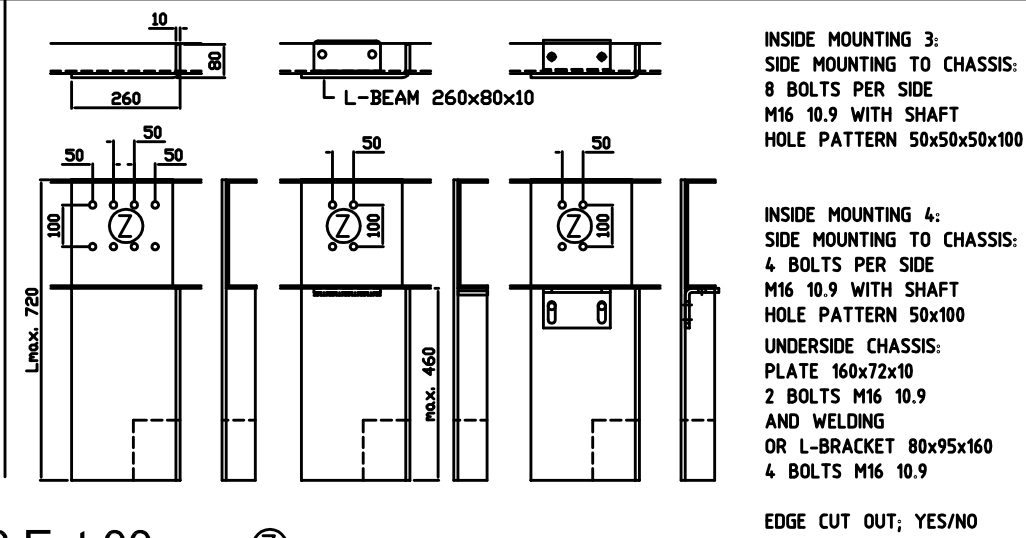
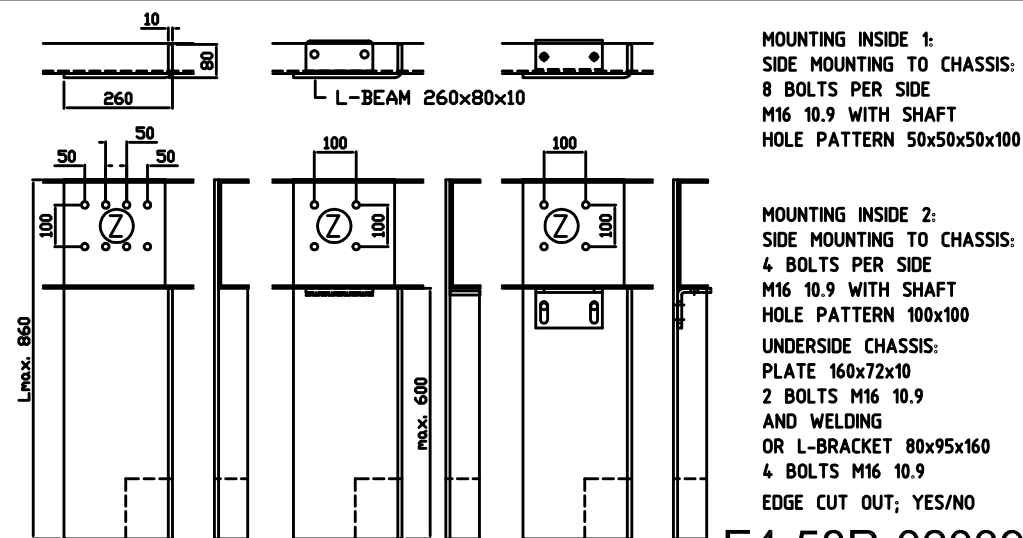
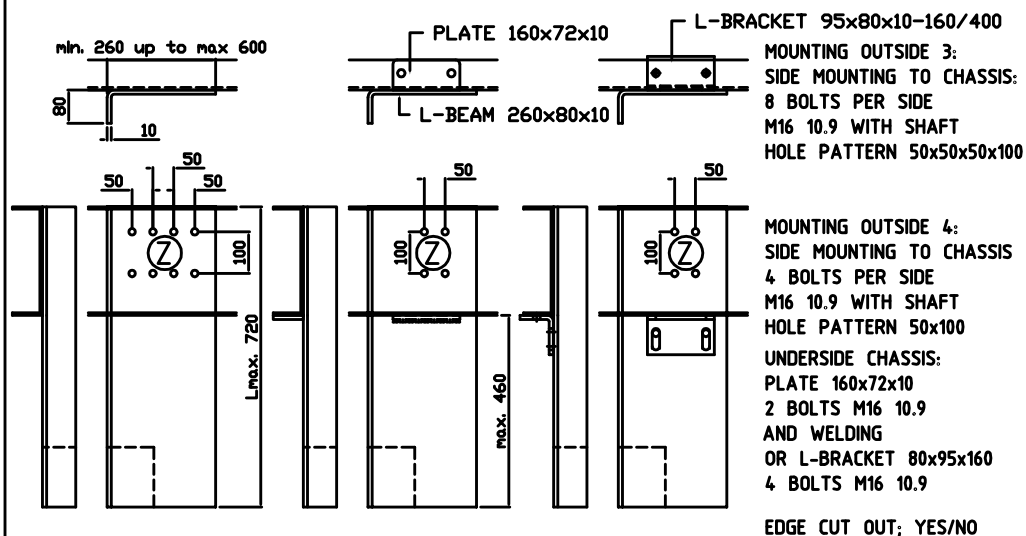
NR. OF 14 PAGE 5 A4

DRAWING NUMBER:  
S14-8100-5-E

# CHASSIS MOUNTING L-BEAM PROFILE 260x80x10 L=860 mm:



# CHASSIS MOUNTING L-BEAM PROFILE 260x80x10 L=720 mm:

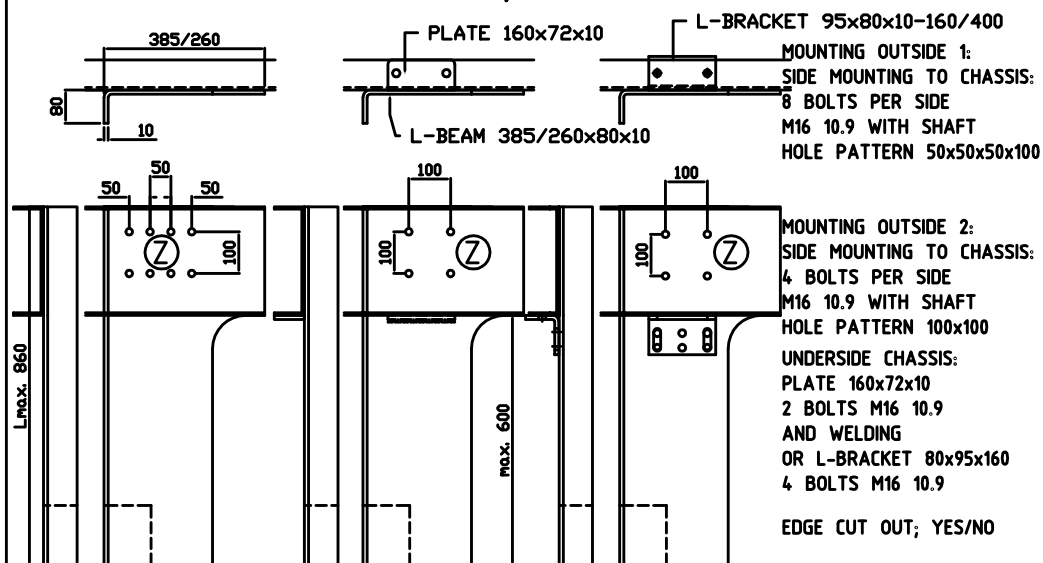


E4-58R-020392 Ext.00

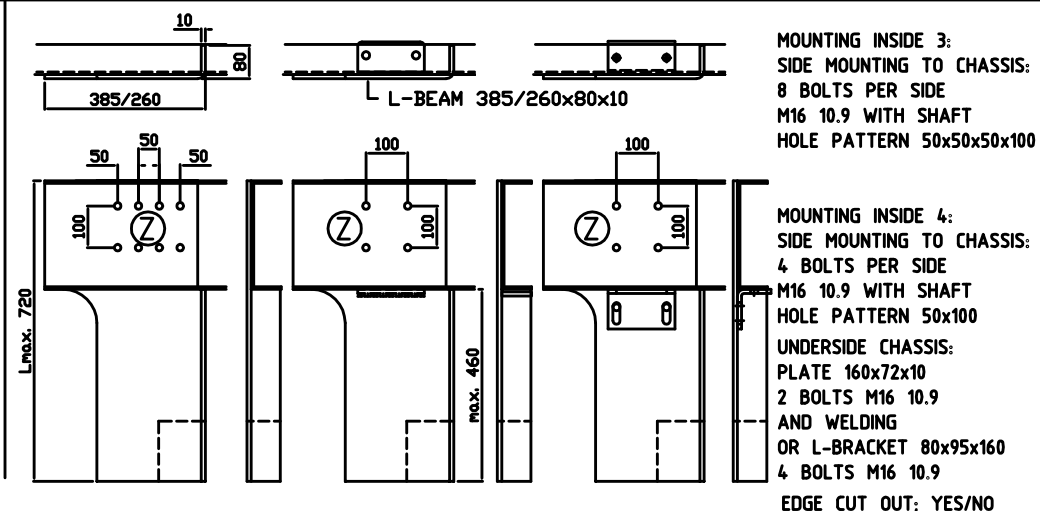
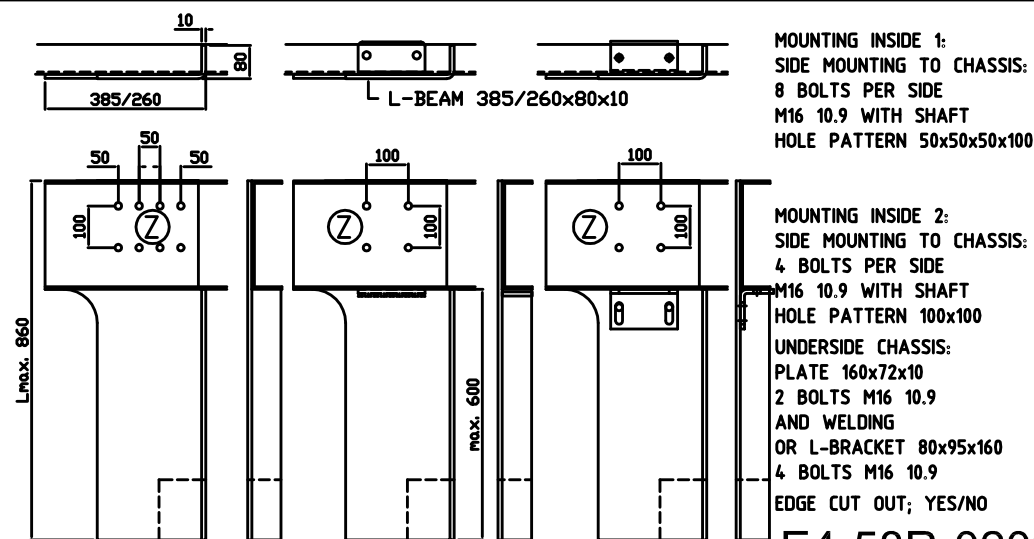
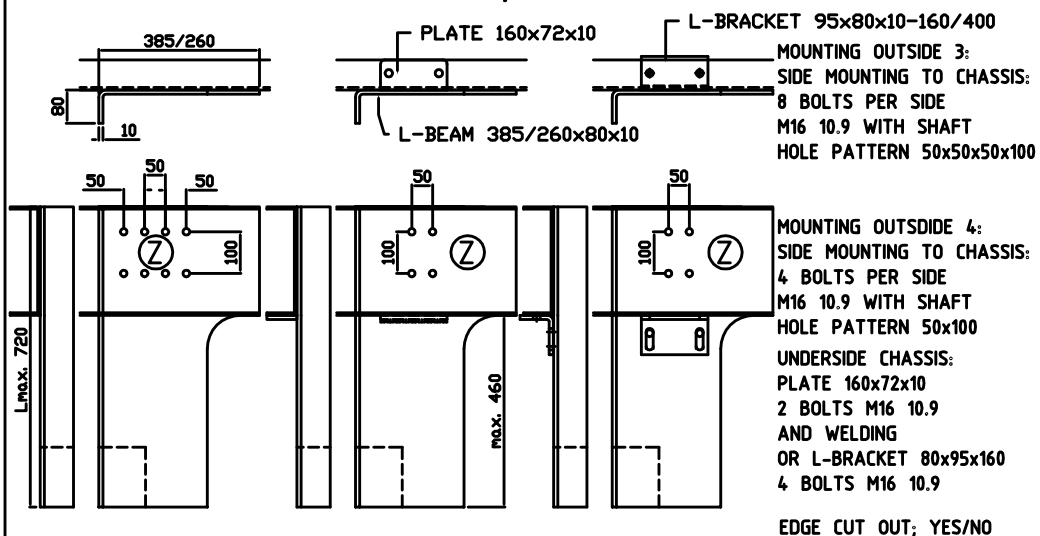
⊗ = HEART TO HEART DISTANCE OF THE HOLES ARE THE MINIMUM MEASUREMENTS

<p>All edges R&gt;2.5</p> <p>All weldings CO2 or electrical minimum welding a= 0,6x thinnest material thickness. All parts welded completely around.</p>	<p>Stamp Factory</p>	<p>Stamp R.D.W.</p>	<p>CHANGING DATE:</p> <p>DIMENSIONS: mm</p> <p>DATE: 06-02-2014</p> <p>SCALE:</p> <p>PROJECTION METHOD</p>	<p>NAME: EXTENDABLE UNDERRUN BAR</p> <p>TYPE: TER-850-ME/HY/EL-V</p> <p>CHASSIS MOUNTING L-PROFILE 260x80x10</p> <p>AUTEURSRECHT VOORBEHOUDEN INGEVOLGD NEDERLANDSE WET</p> <p><b>TERBERG</b></p> <p>TECHNIEK BV BAARLO</p>	<p>DRAWN BY: F.Josten</p> <p>CHECKED BY: F.Josten</p> <p>VIN NUMBER:</p> <p>NR. OF 14 PAGES</p> <p>PAGE 6</p> <p>DRAWING NUMBER: S14-8100-6-E</p>
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**CHASSIS MOUNTING L-BEAM 385/260x80x10 L=860 mm:**



**CHASSIS MOUNTING L-BEAM 385/260x80x10 L=720 mm:**



E4-58R-020392 Ext.00

⑦ = HEART TO HEART DISTANCE OF THE HOLES ARE THE MINIMUM MEASUREMENTS

**All edges  $R > 2.5$**

All weldings CO2 or electrical  
minimum welding a= 0,6x  
thinnest material thickness.  
All parts welded completely  
around.

Stamp Factory

Stamp R.D.W.

**CHANGING DATE:**

**DIMENSIONS:**      mm

DATE: 06-02-2014

**SCALE:**

PROJECTION METHOD
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NAME:	EXTENDABLE UNDERRUN BAR
TYPE:	TER-850-ME/HY/EL-V
CHASSIS MOUNTING	L-BEAM 385/260x80x10

DRAWN BY: F.Josten

CHECKED BY: F. Josten

VIN NUMBER:

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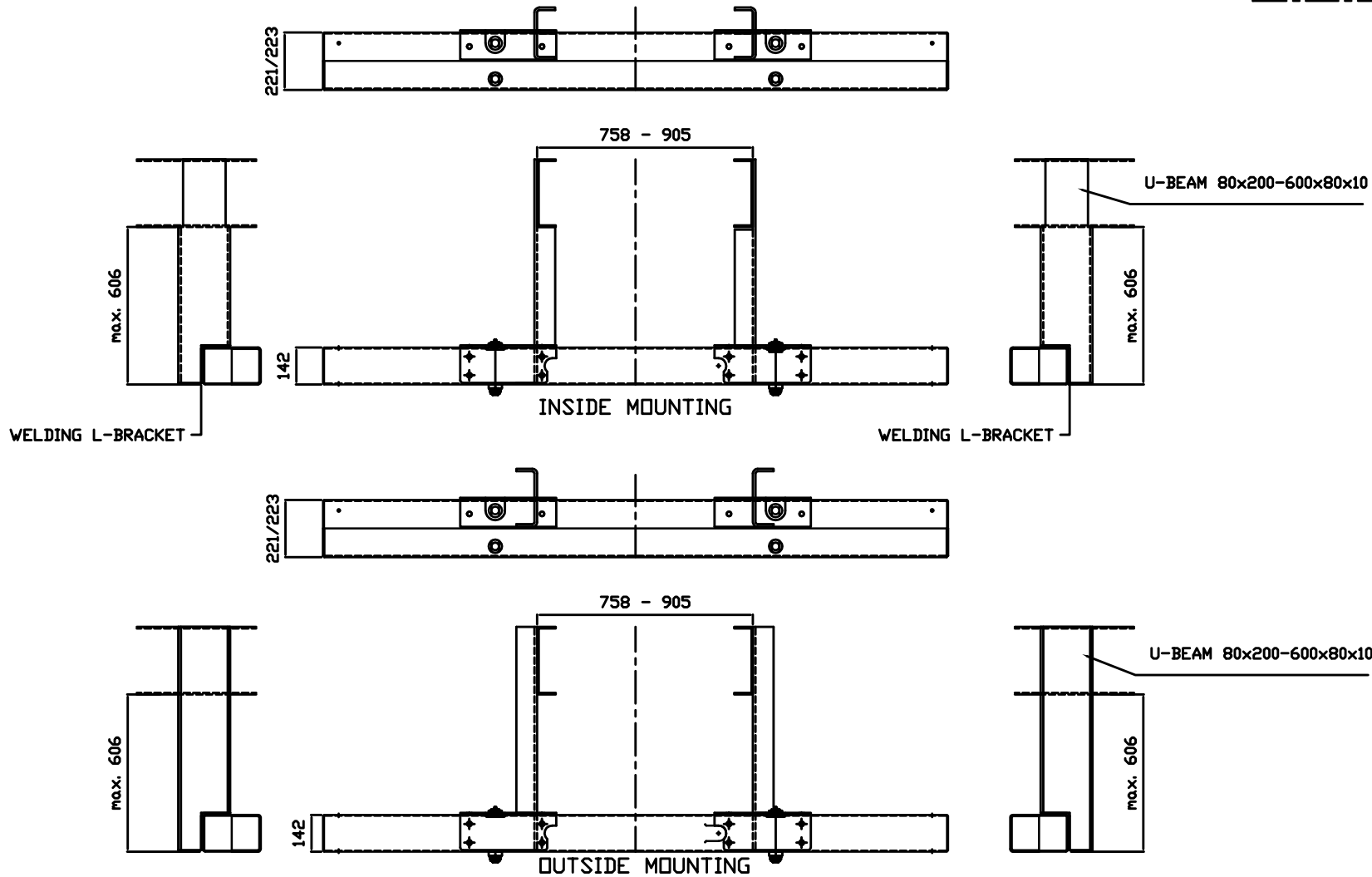


NR. OF PAGES	14	PAGE NR.	7	A4
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**DRAWING NUMBER:**  
S14-8100-7-E



OPTION 1 - MOUNTING UNDERRUN BAR INSIDE U-BEAM PROFILE 80x200-600x80x10 (SOLID)

u.t.a.i. = up to and including



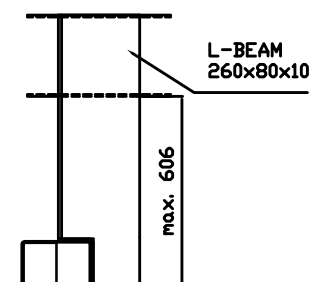
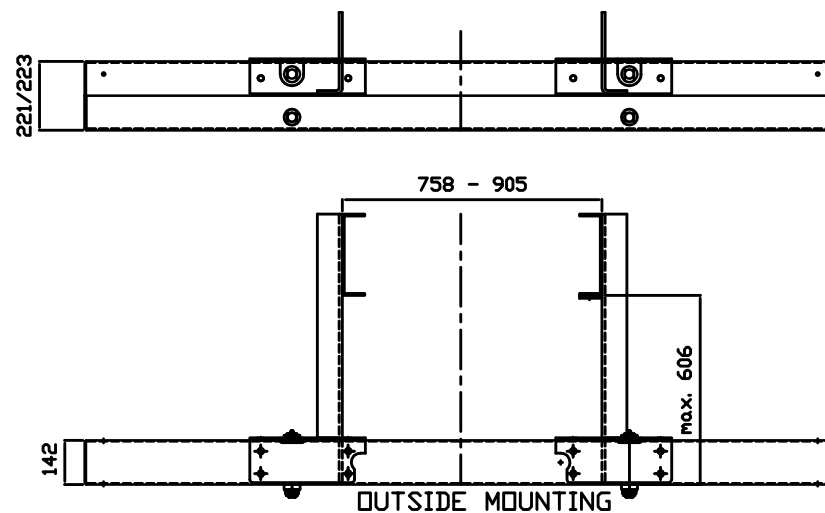
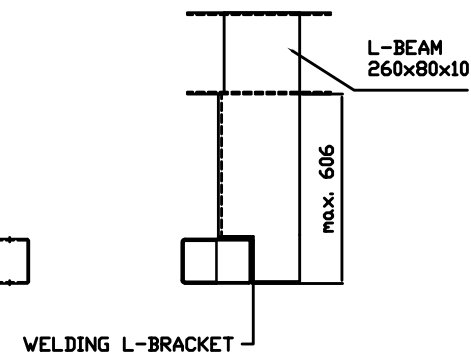
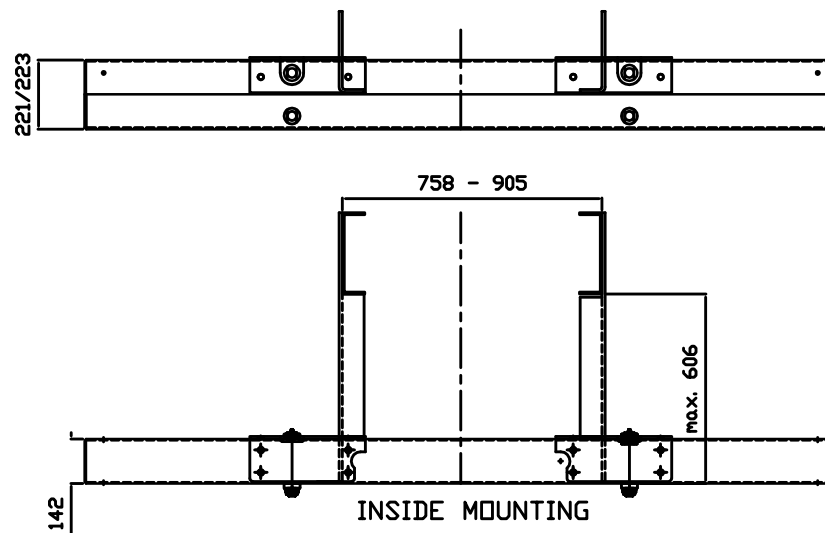
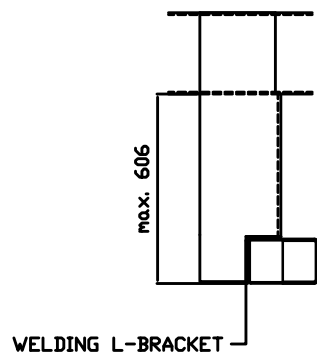
MOUNTING PROFILES TO CHASSIS ACCORDING S09-8100-5 u.t.a.i. 7  
A COMBINATION OF DIFFERENT MOUNTING PROFILES IS ALSO POSSIBLE

E4-58R-020392 Ext.00

All edges R>2.5	Stamp Factory	Stamp R.D.W.	CHANGING DATE:	NAME: EXTENDABLE UNDERRUN BAR TYPE: TER-850-ME/HY/EL-V UNDERRUN BAR MOUNTING IN U-BEAM PROFILE	DRAWN BY: F.Josten		
DIMENSIONS: mm			CHECKED BY: F.Josten				
DATE: 06-02-2014			VIN NUMBER:				
SCALE:			COPYRIGHT PROTECTED BY LAW				
PROJECTION METHOD			NR. OF 14 PAGES PAGE 8 A4				
				DRAWING NUMBER: S14-8100-8-E			

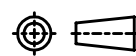

# OPTION 2 - MOUNTING UNDERRUN BAR IN L-BEAM PROFILE 260-600x80x10 (SOLID)

u.t.a.i. = up to and including



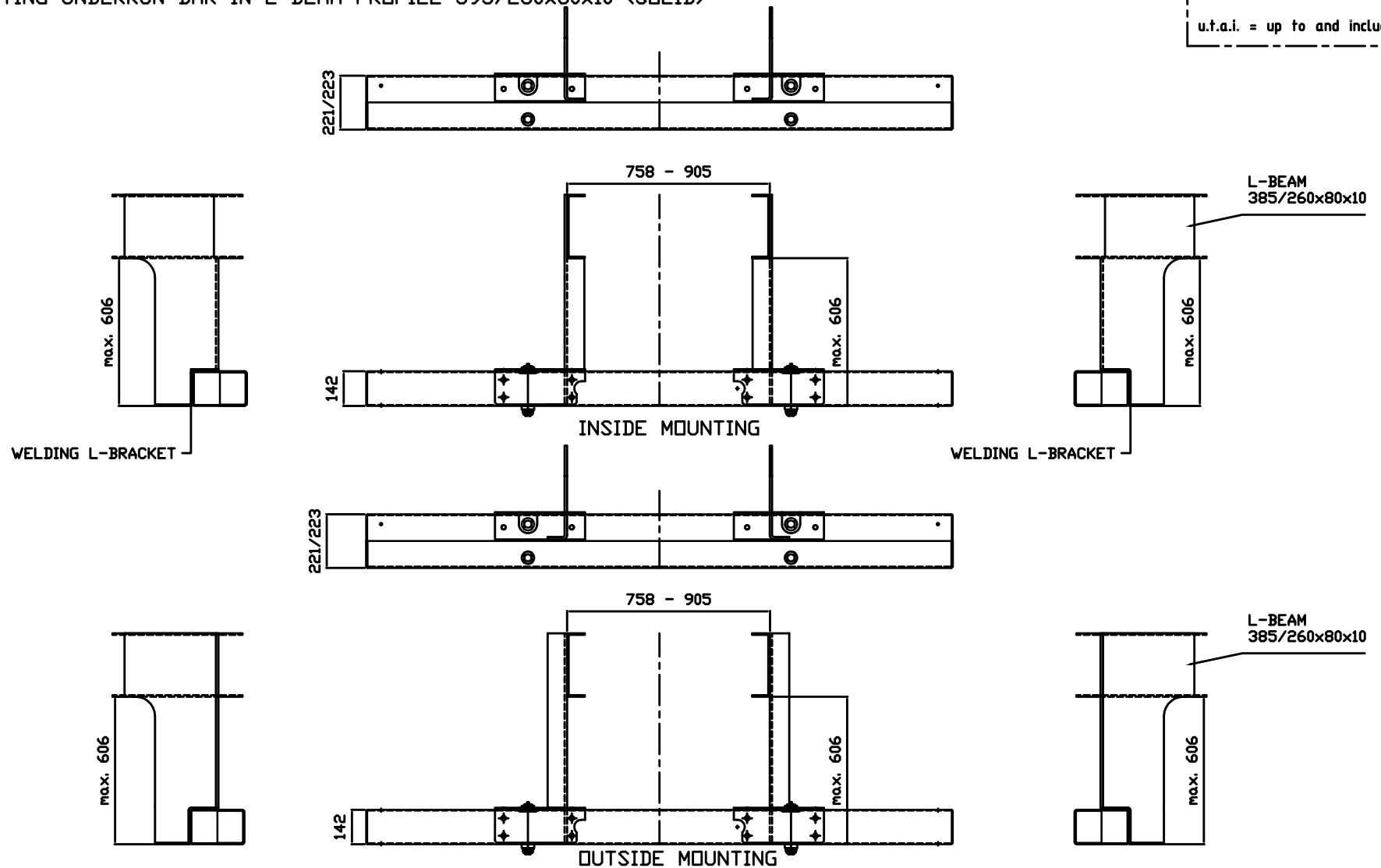
MOUNTING PROFILES TO CHASSIS ACCORDING S09-8100-5 u.t.a.i. 7  
A COMBINATION OF DIFFERENT MOUNTING PROFILES IS ALSO POSSIBLE

E4-58R-020392 Ext.00

<p>All edges R&gt;2.5</p> <p>All weldings C02 or electrical minimum welding a= 0,6x thinnest material thickness. All parts welded completely around.</p>	<p>Stamp Factory</p>	<p>Stamp R.D.W.</p>	<p>CHANGING DATE:</p> <p>DIMENSIONS: mm</p> <p>DATE: 06-02-2014</p> <p>SCALE:</p> <p>PROJECTION METHOD</p> 	<p>NAME: EXTENDABLE UNDERRUN BAR</p> <p>TYPE: TER-850-ME/HY/EL-V UNDERRUN BAR MOUNTING IN L-BEAM PROFILE</p> <p>COPYRIGHT PROTECTED BY LAW</p> 	<p>DRAWN BY: F.Josten</p> <p>CHECKED BY: F.Josten</p> <p>VIN NUMBER:</p> <p>NR. OF 14 PAGES: 9</p> <p>DRAWING NUMBER: A4</p> <p>S14-8100-9-E</p>
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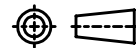

# OPTION 3 - MOUNTING UNDERRUN BAR IN L-BEAM PROFILE 395/260x80x10 (SOLID)

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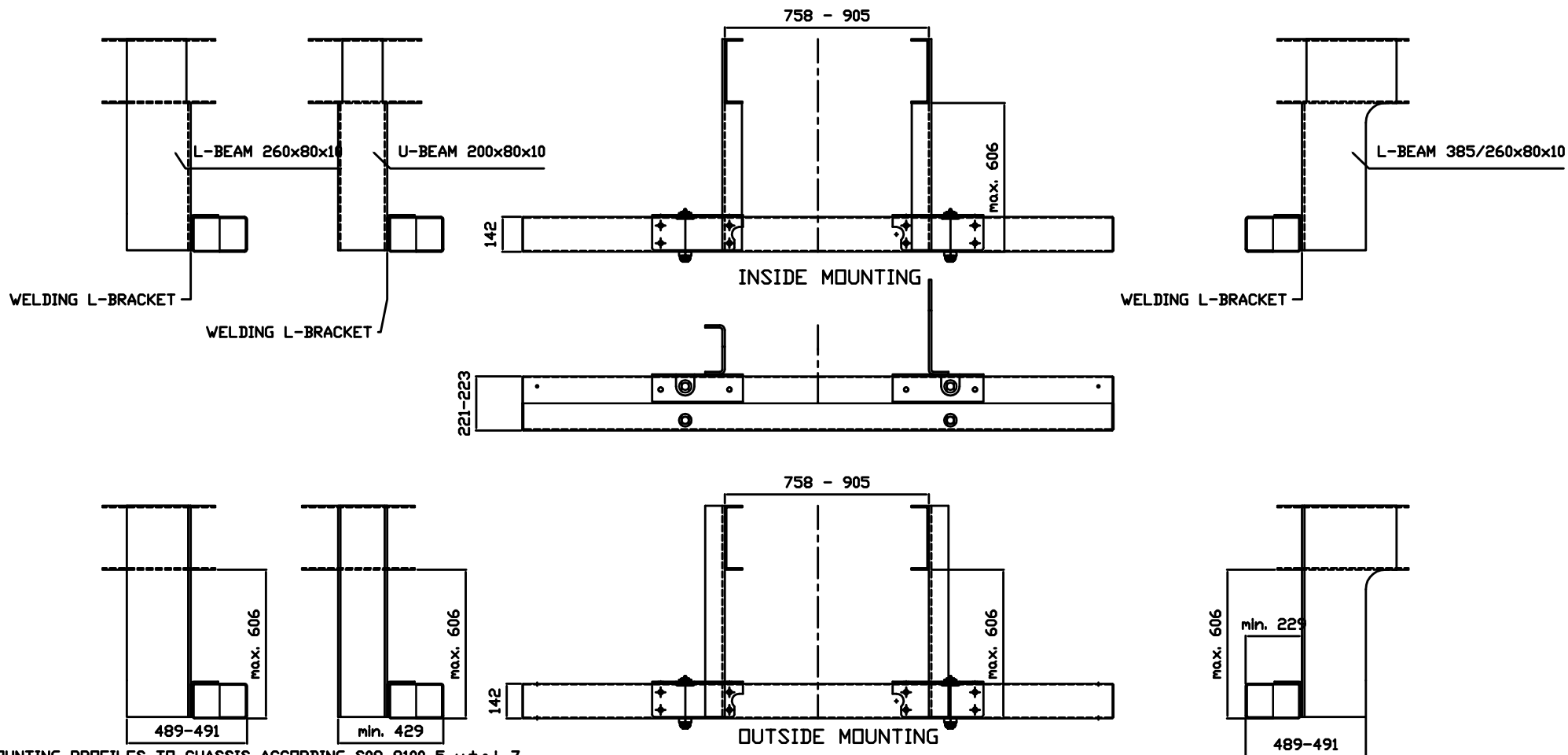
MOUNTING PROFILES TO CHASSIS ACCORDING S09-8100-5 u.t.a.i. 7  
A COMBINATION OF DIFFERENT MOUNTING PROFILES IS ALSO POSSIBLE

E4-58R-020392 Ext.00

<p>All edges R&gt;2.5</p> <p>All weldings CO2 or electrical minimum welding a= 0,6x thinnest material thickness. All parts welded completely around.</p>	<p>Stamp Factory</p>	<p>Stamp R.D.W.</p>	<p>CHANGING DATE:</p> <p>DIMENSIONS: mm</p> <p>DATE: 06-02-2014</p> <p>SCALE:</p> <p>PROJECTION METHOD</p> 	<p>NAME: EXTENDABLE UNDERRUN BAR</p> <p>TYPE: TER-850-ME/HY/EL-V UNDERRUN BAR MOUNTING IN L-BEAM PROFILE</p> <p>COPYRIGHT PROTECTED BY LAW</p> 	<p>DRAWN BY: F.Josten</p> <p>CHECKED BY: F.Josten</p> <p>VIN NUMBER:</p> <p>NR. OF 14 PAGES: 10</p> <p>DRAWING NUMBER: S14-8100-10-E</p>
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OPTION 4 - MOUNTING BUMPER AGAINST U-BEAM PROFILE OR  
L-BEAM PROFILE (SOLID)

u.t.a.i. = up to and including



MOUNTING PROFILES TO CHASSIS ACCORDING S09-8100-5 u.t.a.i. 7  
A COMBINATION OF DIFFERENT MOUNTING PROFILES IS ALSO POSSIBLE

E4-58R-020392 Ext.00

<p>All edges R&gt;2.5</p> <p>All weldings C02 or electrical minimum welding a= 0,6x thinnest material thickness. All parts welded completely around.</p>	<p>Stamp Factory</p>	<p>Stamp R.D.W.</p>	<p>CHANGING DATE:</p> <p>DIMENSIONS: mm</p> <p>DATE: 06-02-2014</p> <p>SCALE:</p> <p>PROJECTION METHOD</p> 	<p>NAME: EXTENDABLE UNDERRUN BAR</p> <p>TYPE: TER-850-ME/HY/EL-V UNDERRUN BAR MOUNTING AGAINST U-&amp; L-BEAM PROFILE</p> <p>COPYRIGHT PROTECTED BY LAW</p> <p><b>TERBERG</b> TECHNIEK BV BAARLO</p>	<p>DRAWN BY: F.Josten</p> <p>CHECKED BY: F.Josten</p> <p>VIN NUMBER:</p> <p>NR. OF 14 PAGES PAGE 11 NR. A4</p> <p>DRAWING NUMBER: S14-8100-11-E</p>
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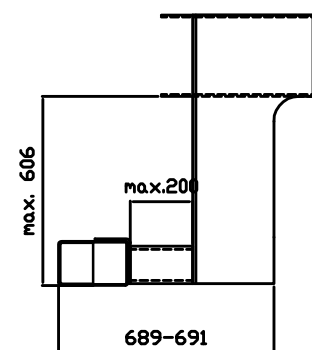
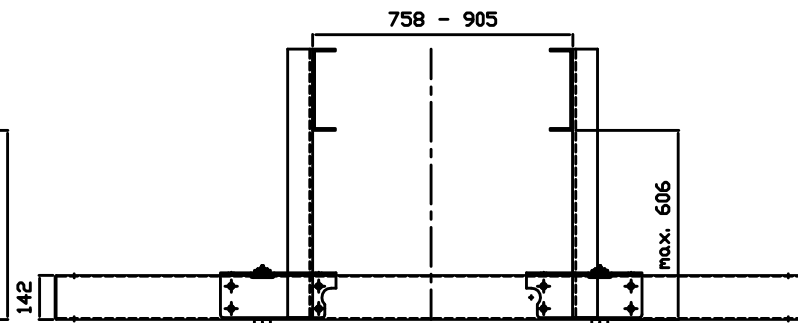
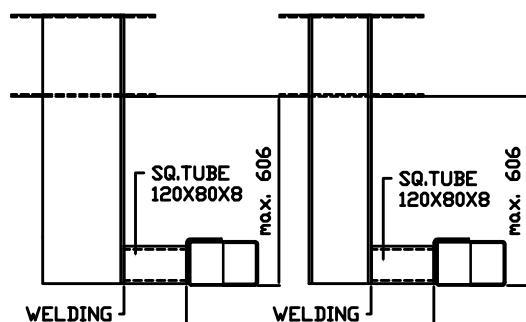
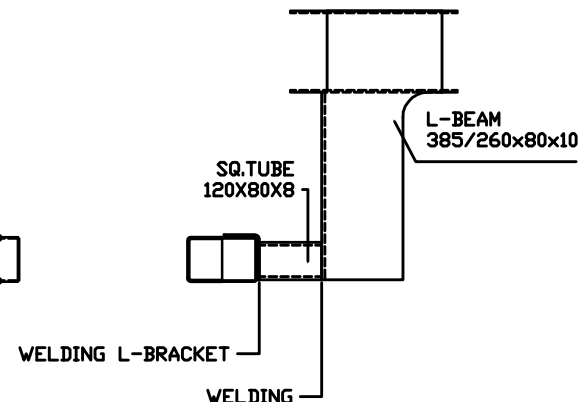
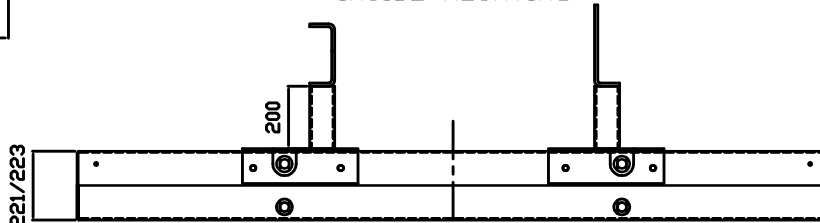
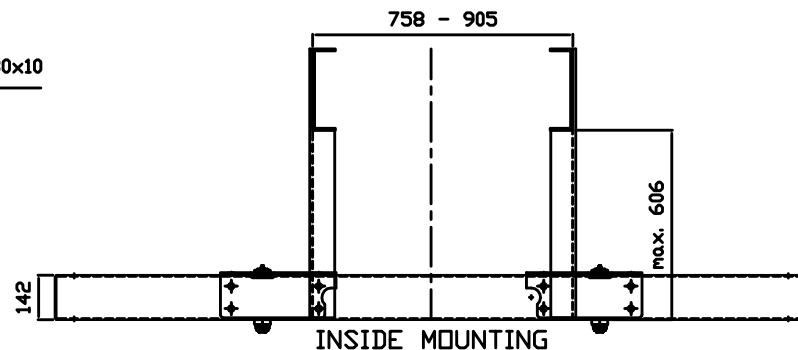
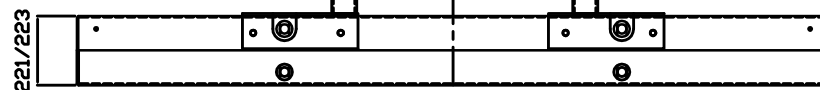
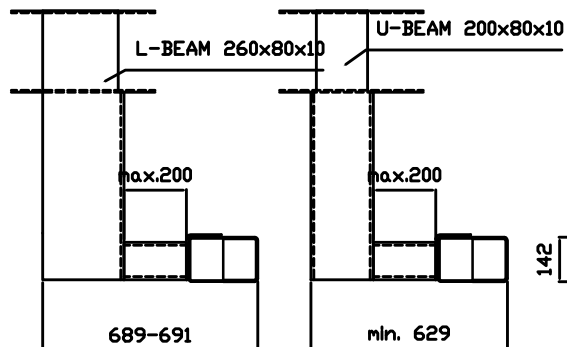
SQ.TUBE = SQUARE TUBE  
u.t.a.i. = up to and including



**DRAWING NUMBER:**  
S14-8100-12-E

OPTION 6 - MOUNTING UNDERRUN BAR WITH DISTANCE BLOCK  
AGAINST U- AND L-BEAM PROFILE (SOLID)

SQ.TUBE = SQUARE TUBE  
u.t.a.i. = up to and including



WELDING L-BRACKET WELDING L-BRACKET

E4-58R-020392 Ext.00

All edges R>2.5

Stamp Factory

Stamp R.D.W.

All weldings C02 or electrical  
minimum welding  $a = 0,6x$   
thinnest material thickness.  
All parts welded completely  
around.

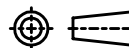
CHANGING DATE:

DIMENSIONS: mm

DATE: 06-02-2014

SCALE:

PROJECTION METHOD



NAME: EXTENDABLE UNDERRUN BAR  
TYPE: TER-850-ME/HY/EL-V UNDERRUN  
BAR MOUNTING TO U-& L-BEAM PROFILE

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**TERBERG**  
TECHNIEK BV BAARLO

DRAWN BY: F.Josten

CHECKED BY: F.Josten

VIN NUMBER:

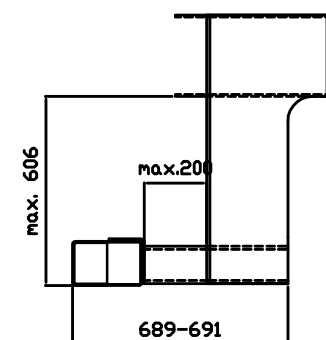
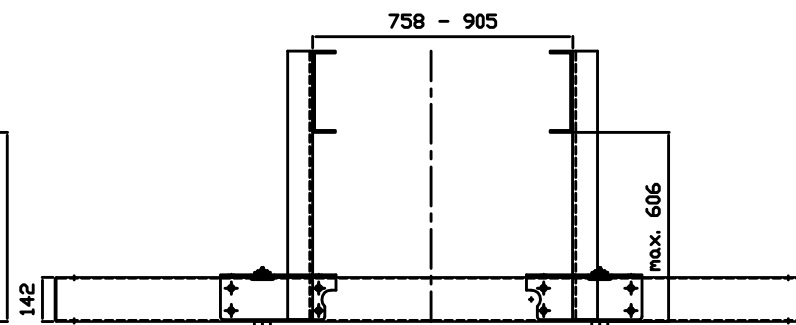
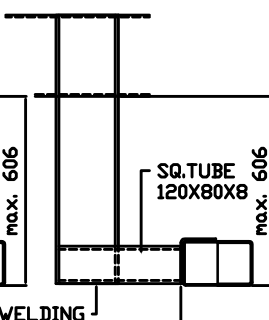
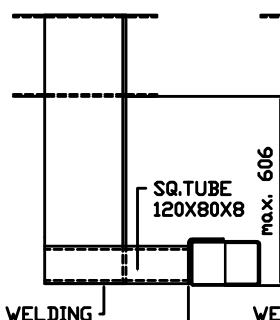
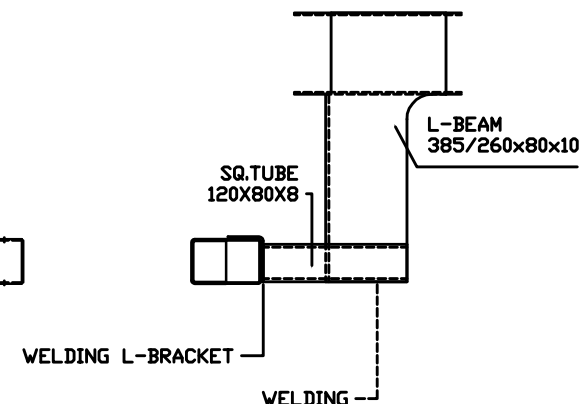
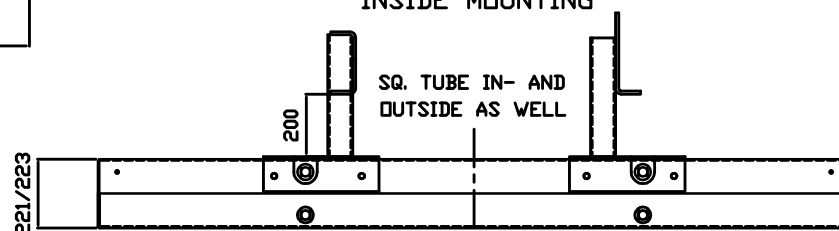
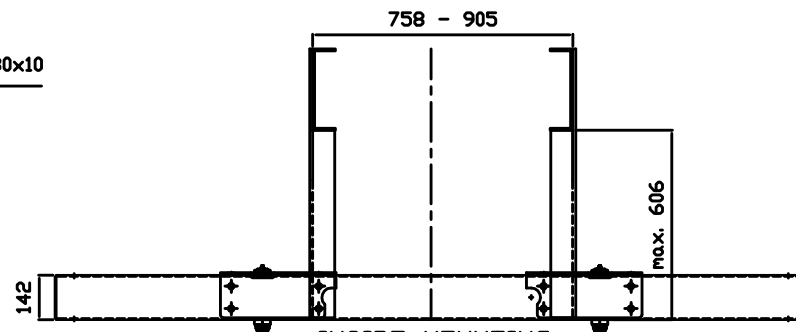
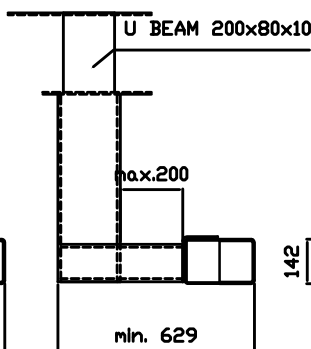
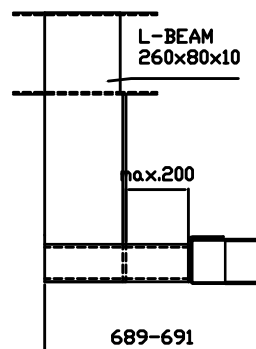
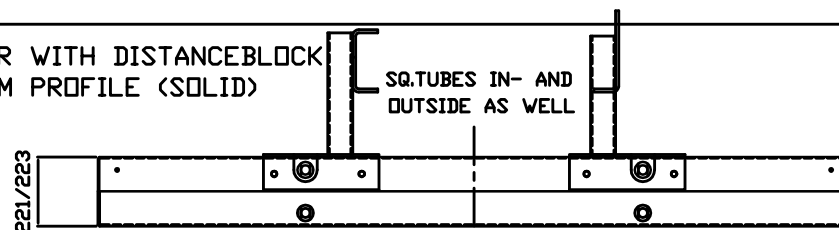
NR. OF 14 PAGES PAGE 13 NR. A4

DRAWING NUMBER:  
S14-8100-13-E

MOUNTING PROFILES TO CHASSIS ACCORDING S09-8100-5 u.t.a.i. 7  
A COMBINATION OF DIFFERENT MOUNTING PROFILES IS ALSO POSSIBLE

OPTION 7 - MOUNTING UNDERRUN BAR WITH DISTANCEBLOCK  
AGAINST U- AND L-BEAM PROFILE (SOLID)

SQ.TUBE = SQUARE TUBE  
u.t.a.i. = up to and including



WELDING L-BRACKET

WELDING L-BRACKET

INSIDE MOUNTING  
SQ. TUBE IN- AND  
OUTSIDE AS WELL  
OUTSIDE MOUNTING  
E4-58R-020392 Ext.00

WELDING L-BRACKET

WELDING

All edges R>2.5

Stamp Factory

Stamp R.D.W.

All weldings C02 or electrical  
minimum welding a= 0,6x  
thinnest material thickness.  
All parts welded completely  
around.

CHANGING DATE:

DIMENSIONS: mm

DATE: 06-02-2014

SCALE:

PROJECTION METHOD



NAME: EXTENDABLE UNDERRUN BAR  
TYPE: TER-850-ME/HY/EL-V UNDERRUN  
BAR MOUNTING TO U-& L-BEAM PROFILE

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**TERBERG**  
TECHNIEK BV BAARLO

DRAWN BY: F.Josten

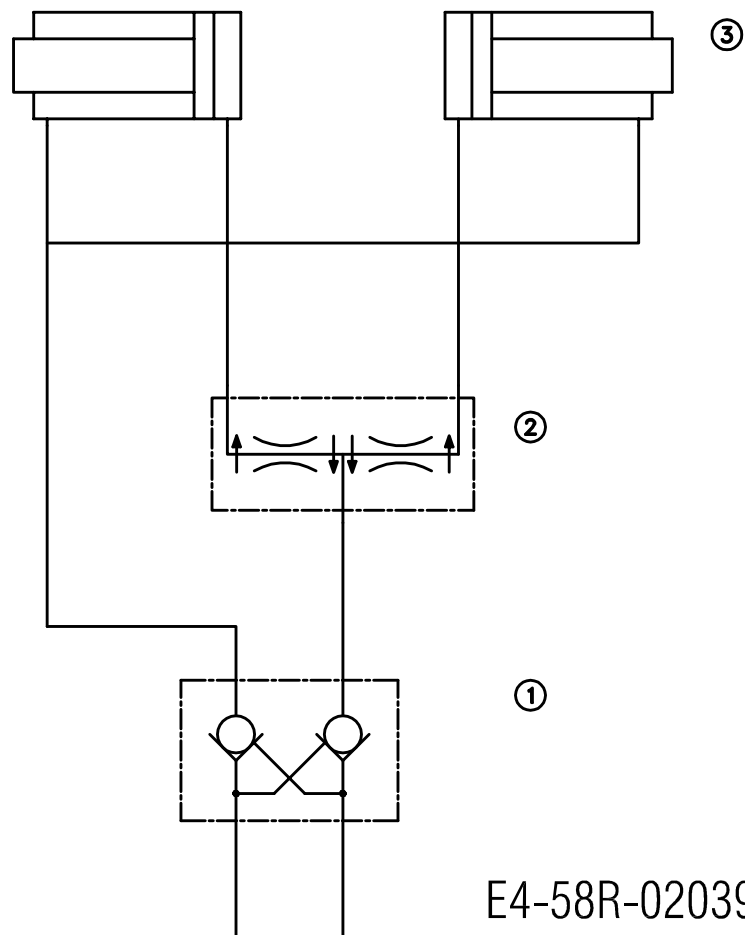
CHECKED BY: F.Josten

VIN NUMBER:

NR. OF 14 PAGE 14 A4


DRAWING NUMBER:  
S14-8100-14-E

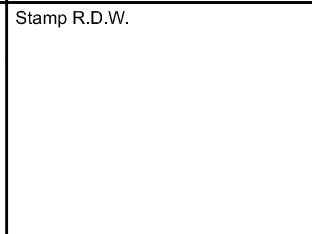
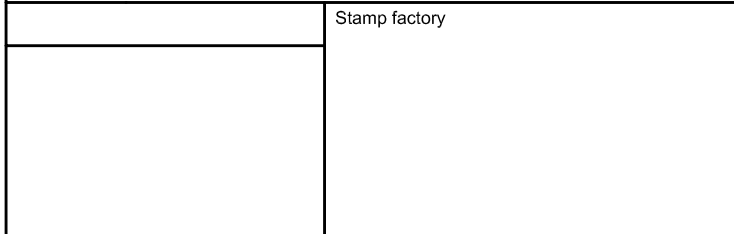
MOUNTING PROFILES TO CHASSIS ACCORDING S09-8100-5 u.t.a.i. 7  
A COMBINATION OF DIFFERENT MOUNTING PROFILES IS ALSO POSSIBLE



E4-58R-020392 Ext.00

3	2	Hydraulic cylinder			
2	1	Flow divider			
1	1	Double pilot check valve			
POS. NR.	NUMBER	NAME	MEASUREMENTS	MATERIAL	REMARK

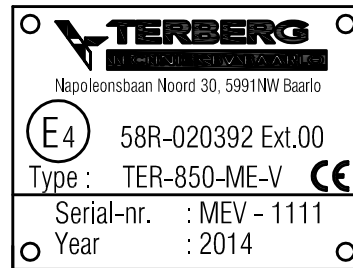
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			MEASUREMENT: mm	TYPE: TER-850-HY-S/V		CHECK: F. Josten
			DATE: 04-02-2014	Hydraulic plan		VIN NUMBER:
			SCALE:	COPYRIGHT PROTECTED BY LAW		
			PROJECTION METHOD	 <b>TERBERG</b> <b>TECHNIEK BV BAARLO</b>		Nr. of pages 1   Page 1   A4 DRAWING NUMBER <b>S14-8000-E</b>



<b>10</b>	2	Push button 3/2, spring return			
<b>9</b>	2	Pressure switch			
<b>8</b>	1	Main relays			Option
<b>7</b>	1	Connection rail			
<b>6</b>	1	Switch 3 positions, spring return			
<b>5</b>	1	Battery			
<b>4</b>	1	Fuse			
<b>3</b>	1	Fuse			
<b>2</b>	2	Actuator			
<b>1</b>	1	Module			Alt. 4x Relays

CHANGE:	NAME: EXTENDABLE UNDERRUN BAR	NAME: <b>F. Josten</b>
UNITS: mm	TYPE: TER-850-EL-S/V	CHECK: <b>F. Josten</b>
DATE: 06-02-2014	Elektrical plan Version 1	VIN NUMBER:
SCALE:	COPYRIGHT PROTECTED BY LAW	PAGES 1 TOTAL
PROJECTIONS METHODE	 <b>TERBERG</b> <b>TECHNIEK BV BAARLO</b>	PAGE 1 NR.
 		A4 DRAWING NUMBER S14-8001-E

E4-58R-020392 Ext.00



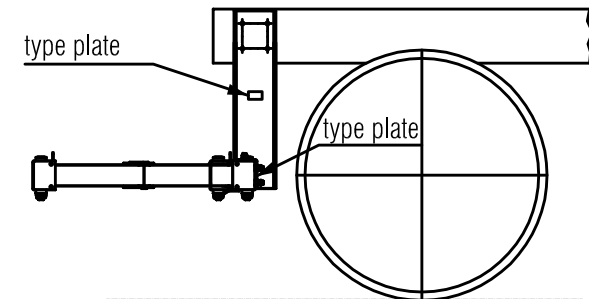
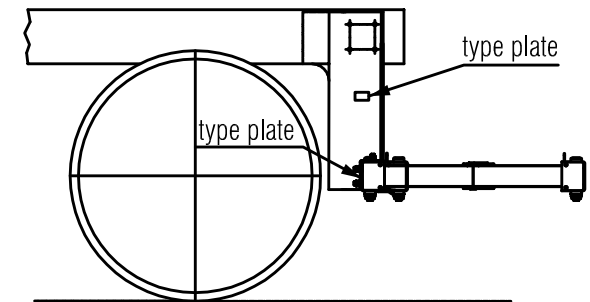
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(year is sample)



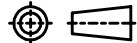

(serial number is sample)  
(year is sample)



(serial number is sample)  
(year is sample)



TYPE PLATE: MOUNT ON U-BEAM OR L-BEAM  
ON THE RIGHT OR LEFT SIDE OR ON UNDERRUN BAR PROFILES  
ON LEFT OR RIGHT SIDE

<p>All edges <math>R &gt; 2.5</math></p> <p>All weldings CO2 or electrical, minimum welding <math>a = 0,6x</math> the thinnest material thickness All parts welded around.</p>	<p>Stamp Factory</p>	<p>Stamp R.D.W.</p>	<p>CHANGE:</p> <p>UNITS: mm</p> <p>DATE: 06-02-2014</p> <p>SCALE:</p> <p>PROJECTION METHOD</p> 	<p>NAME: EXTENDABLE UNDERRUN BAR</p> <p>TYPE: TER-850-ME-V, TER-850-HY-V TER-850-EL-V (type plates for underrun bar)</p> <p>COPYRIGHT PROTECTED BY LAW</p> 	<p>NAME: F.Josten</p> <p>CHECK: F.Josten</p> <p>VIN NUMBER:</p> <p>Nr. of 1 Page 1 A4</p> <p>Drawing nr. S14-8002-E</p>
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# Extendable Underrun Bar



With flexible sidebands

Technical Specifications	TER-850-ME-V/S	TER-850-HY-V/S	TER-850-EL-V/S
Operation	hand-operated	hydraulic	electric
Flexible sidebands with Conspicuity Markings	Yes	Yes	Yes
Length adjustment (mm)	(400-670-850)	(400-670-850)	(400-670-850)
Dimensions (closed) LxWxH (mm)	2408x221x142	2408x221x142	2408x221x142
Dimensions (open) LxWxH (mm)	2408x1071x142	2408x1071x142	2408x1071x142
Weight (fully installed) (kg)	145	160	160
Truck chassis width (mm)	785-905	758-905	758-905
According to UN REGULATION 58	Yes	Yes	Yes



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