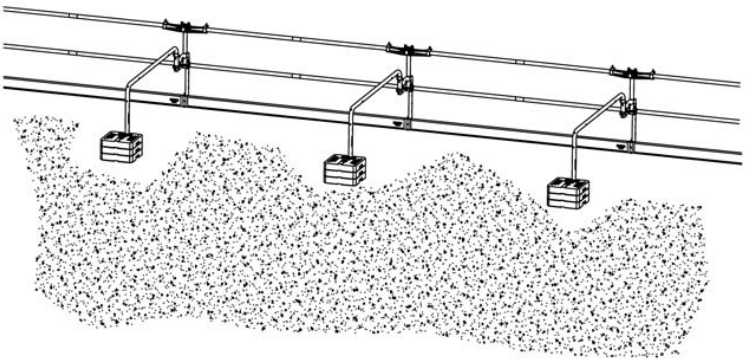
Honeywell

COMBISAFE®

Counterweight System



USER INSTRUCTIONS

CONTENTS

General

The Combisafe Counterweight System is a free standing edge protection used where no penetration is allowed on the working surface or other fixation to the structure is possible, providing stability by counterweights instead. Minimal up-stand need to be present.
The system uses scaffold Ledgers available in different lengths and the Counterweights are made of recycled rubber. For easy and quick assembly/disassembly, all connections between parts consist of wedge couplers or quick release pins.
Available as options are a Toe Board when required and a Load Distribution Plate for delicate surfaces.
A Trolley is available for transporting the Counterweights on the site and to easily move the Counterweights mounted on the system if work access is required below. This eliminates all manual lifting of the Counterweights.
The system is compliant with EN 13374-A within its recommended working span with slopes between 0 and 5 degrees and when minimal up-stand is present.
All parts come packed in kits of 27 linear metres.

Safety instructions

Always check products and equipment before use

Check all component parts of the Combisafe Counterweight System before installation.
Never use damaged or rusty materials as this can affect safety.

Always use personal fall arrest equipment

Personal fall arrest equipment must always be worn during assembly and dismantling when a risk of falling exists. This also applies to MEWPs (Mobile Elevating Working Platforms).

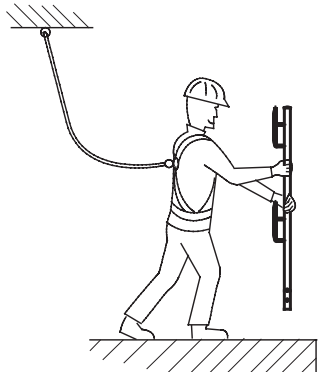


Figure 1. *Personal fall arrest equipment*

Remember

- Only use safety-controlled products.
- Cordon off below and around the assembly area in connection with the installation so that unauthorized personnel are not injured if, for example, you should drop tools or materials.
- Use tools designed for the type of work to be carried out.
- Tighten screws properly and check that split pins/wedges lock correctly.
- Keep threads clean and lubricated.
- Keep the installation area in order.
- A safe workplace is an agreeable workplace.
- Many fall accidents occur from a low height.

Technical Data

10073072/10071572 Ledger 3,072/1,572 m

Description:
c/c 3,072 or 1,572m steel Ledger.

System.....COMBISAFE COUNTERWEIGHT SYSTEM
Surface treatment.....Hot dip galvanized

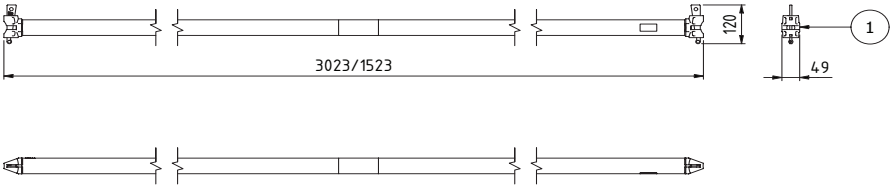


Figure 2. *Ledger*

Item	Quantity	Part no.	Description	Weight
1	-	10073072/ 10071572	Ledger 3,072/1,572	11,5/5,9 kg

11291 Hub

Description:
Steel Hub for connecting Ledgers and Lever Arm.

System.....COMBISAFE COUNTERWEIGHT SYSTEM
Surface treatment.....Hot dip galvanized

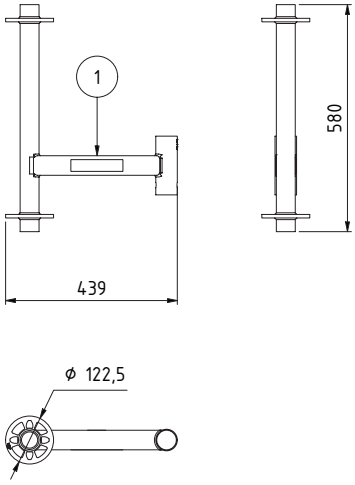


Figure 3. *Hub*

Item	Quantity	Part no.	Description	Weight
1	-	11291	Hub	5,0 kg

11317 Lever Arm Assembly

Description:
Steel Lever Arm connecting the Counterweight to the guardrail.
System.....COMBISAFE COUNTERWEIGHT SYSTEM
Surface treatment.....Hot dip galvanized

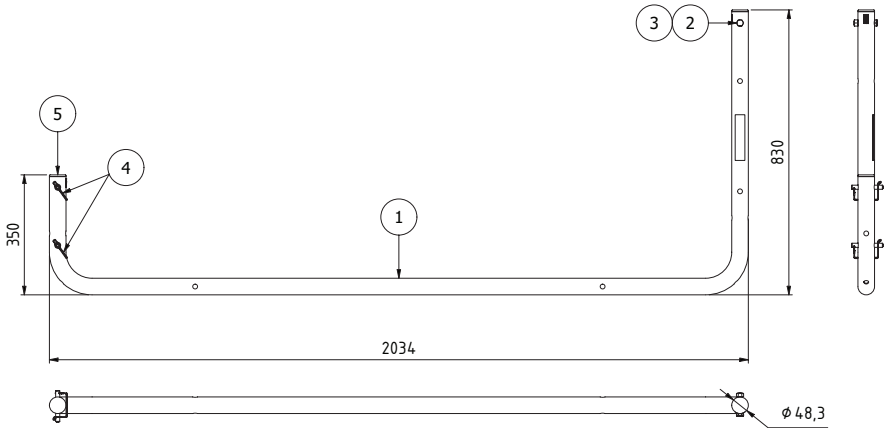


Figure 4. *Lever Arm Assembly*

Item	Quantity	Part no.	Description	Weight
1	1	11318	Lever Arm	10,0 kg
2	1	100024	Screw, ISO 2014 M12x60	0,07 kg
3	1	100090	Nut, ISO 4032-M12	0,02 kg
4	2	30091270	Quick Release Pin -Ø 12x70	0,09 kg
5	2	100212	Plastic Plug	0,01 kg

11310 Counterweight Assembly

Description:
Counterweights of recycled rubber mounted onto a steel holder.
System.....COMBISAFE COUNTERWEIGHT SYSTEM
Surface treatment.....None/Hot dip galvanized

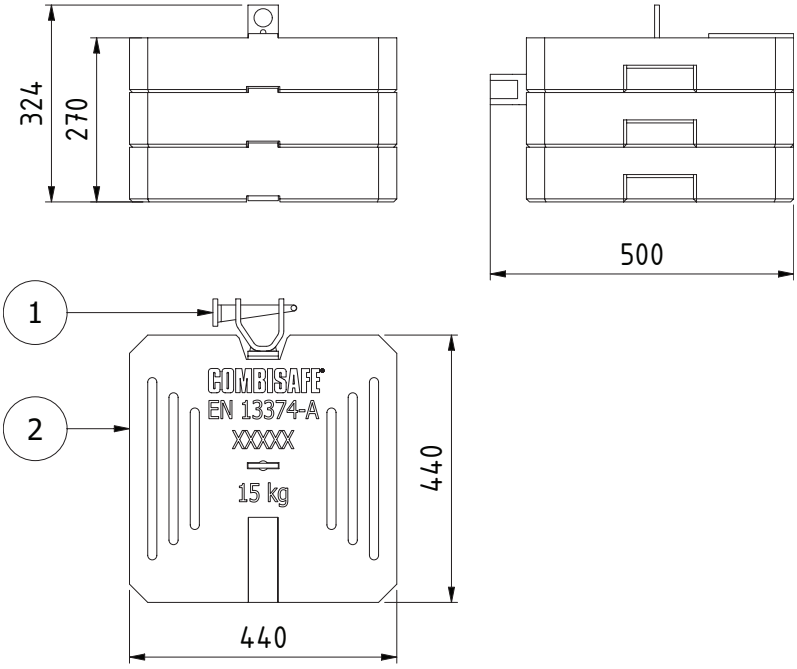


Figure 5. *Counterweight Assembly*

Item	Quantity	Part no.	Description	Weight
1	1	11303	Weight Holder	3,0 kg
2	3	11311	Counterweight	15,0 kg

11286 Stiffener

Description:
Stiffening unit to be mounted on the top Ledgers. One unit is required when and where the support is removed. Optional at other connections.
System.....COMBISAFE COUNTERWEIGHT SYSTEM
Surface treatment.....Hot dip galvanized

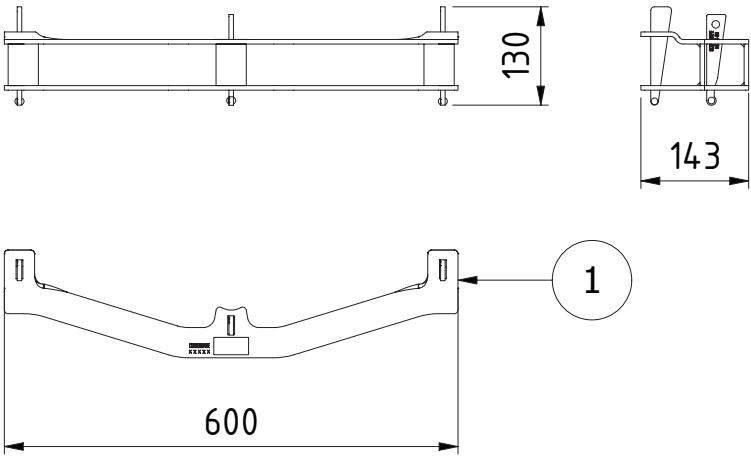


Figure 6. *Stiffener*

Item	Quantity	Part no.	Description	Weight
1	-	11286	Stiffener	3,4 kg

11295 Support Leg

Description:
Steel Support Leg mounted onto the Hub to support the guardrail.
System.....COMBISAFE COUNTERWEIGHT SYSTEM
Surface treatment.....Hot dip galvanized

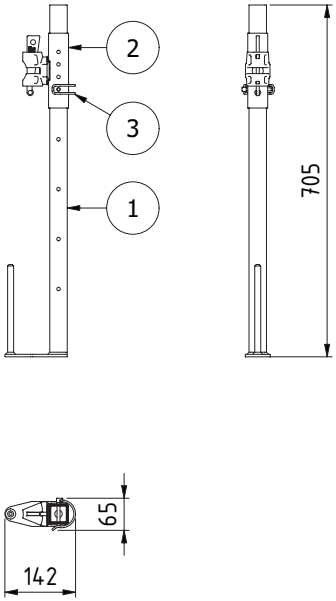


Figure 7. *Support Leg*

Weight: 26 kg

Item	Quantity	Part no.	Description	Weight
1	1	11296	Support Leg Base	1,8 kg
2	1	11300	Support Leg Adjustment Unit	0,9 kg
3	1	100165	Shaft Locking Pin	0,04 kg

11345 Toe Board (Optional)

Description:
Steel sheet metal Toe Board to use on flat slabs with up-stands lower than 150mm.
System.....COMBISAFE COUNTERWEIGHT SYSTEM
Surface treatment.....Hot dip galvanized

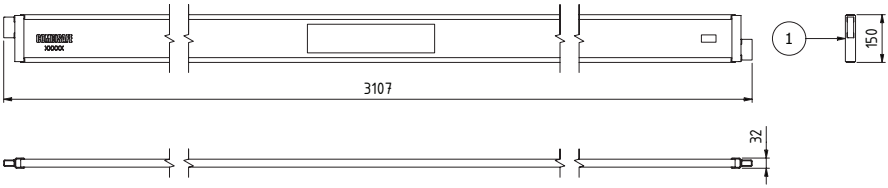


Figure 8. *Toe Board*

Item	Quantity	Part no.	Description	Weight
1	-	11345	Tea Board	8,1 kg

11312 Load Distribution Plate (Optional)

Description:
Plywood/steel Load Distribution Plate mounted on the Lever Arm or Support Leg to distribute the load more evenly on delicate surfaces.
System.....COMBISAFE COUNTERWEIGHT SYSTEM
Surface treatment.....None/Hot dip galvanized

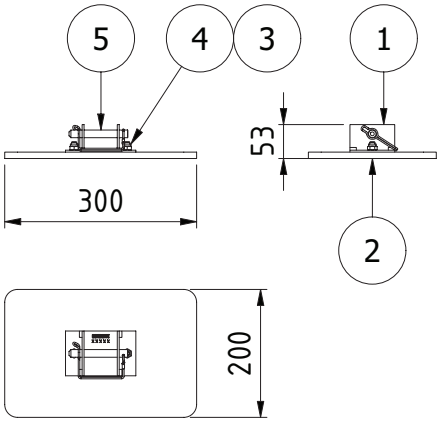


Figure 9. *Load Distribution Plate*

Item	Quantity	Part no.	Description	Weight
1	1	11313	Load Distribution Plate Attachment	0,3 kg
2	1	11316	Plywood Board	0,4 kg
3	2	100462	Countersunk Head Screw, ISO 10642 M8x25	0,01 kg
4	2	100126	Hex Nut with Torque part, ISO 7040 M8	0,01 kg
5	1	30091270	Quick Release Pin -ø 12x70	0,09 kg

11324 Trolley

Description:
Trolley for loading/unloading and transport of Counterweights on site.
System.....COMBISAFE COUNTERWEIGHT SYSTEM
Surface treatment.....Hot dip galvanized
Total weight.....14 kg
Maximum tyre pressure.....2,5 bar

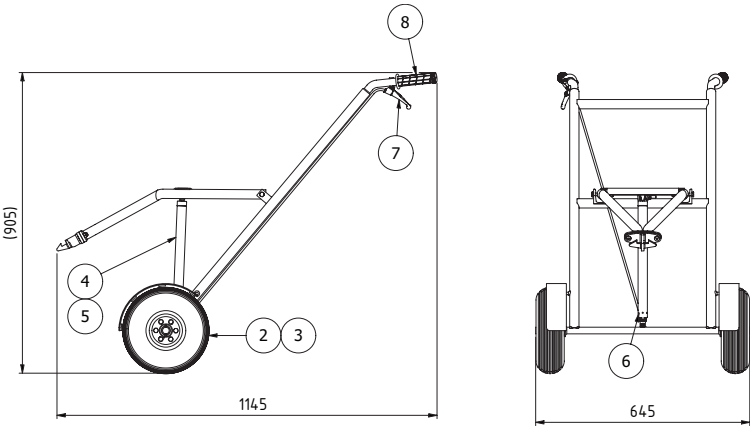


Figure 10. *Trolley*

Item	Quantity	Part no.	Description	Weight
1	1	11340	Lifting Arm	2,2 kg
2	2	100467	Wheel 260x85 mm	1,7 kg
3	2	100469	Split Pin for Wheel Axle	0,005 kg
4	1	100466	Gas Spring	0,24 kg
5	1	100465	Control Head	0,006 kg
6	1	100468	Control Cable	0,04
7	1	100464	Control Handle	0,05
8	2	100248	Rubber Handle	0,04

For remaining components contact Combisafe.

Design and Function

The Combisafe Counterweight System is a free standing edge protection used where no penetration is allowed on the working surface or other fixation to the structure is possible, providing stability by counterweights instead.
It can be used on a number of different surface types with up-stand on the edge: concrete, rubber membrane, gravel, roofing felt and sheet metal roofing.

WARNING!

The temporary edge protection system is not designed for exposure to static or dynamic loads resulting from ice and snow. Always keep edge protection free from ice and snow. Do not use the system without up-stand or on surfaces covered with ice or snow due to reduced friction. Pay extra attention if surfaces are wet.

The system uses scaffold Ledgers (normally 3 or 1,5m length) connected to a Hub. The Counterweights (3x15kg) are connected to the rest of the edge protection system by a Lever Arm. For easy and quick assembly/ disassembly all connections between parts consist of wedge couplers or quick release pins.
The system also comprises a Stiffener unit for the Ledgers and a Support Leg.
Available as options are a Toe Board and a Load Distribution Plate for sensitive surfaces.
A Trolley is available for transporting the Counterweights on the site and to easily move the Counterweights mounted on the system if work access is required below. This eliminates all manual lifting of the Counterweights.
The system is compliant with EN 13374-A within its working span with slopes between 0 and 5 degrees. With up-stand on the edge of surface.
All parts come packed in kits of 27 linear metres. The height of the edge protection system is 1100 mm.

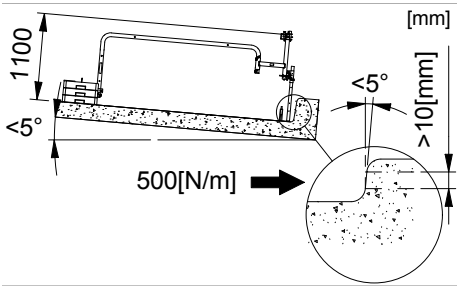


Figure 11. *General dimensions/boundary conditions*

Rigging

Delivery

The components are packed together in a kit with all the required parts. The weights and the Trolley come packed on a euro pallet and the rest of the components are packed in Multiboxes (Part no. 9540).

Rigging, Tools and Equipment

The following tools and personal protective equipment are recommended to assemble the Counterweight System:

- Gloves
- Hammer for securing the wedge couplers
- Measuring tape

NOTE

The edge protection system can withstand a wind velocity pressure of 600 N/m2. This is equivalent to a wind speed of approximately 32 m/s. Should the wind speed exceed this amount then the arrangement may need to be recalculated to determine its fitness for purpose. Adjustments may need to be made to the arrangement following calculations.

The edge protection systems can withstand a wind velocity pressure of 200 N/m2 under working conditions. This is equivalent to a wind speed of approximately 18 m/s.

Installing the Counterweight System

Start with placing the rubber Counterweight units out, using the Trolley (Part no. 11324). The coupler shall be positioned towards the slab edge. The Trolley has a lifting arm that can be set to different positions (infinitely variable) by the use of a gas spring which is controlled by a handle.
When the handle is not engaged the gas spring is locked in its current position.
The higher position of the lifting arm is typically used for unloading the top level of Counterweights from the euro pallet. The lower lift position is normally used for unloading the lower level of Counterweights and also transporting them out on the roof/working area.
Remember to press the handle slowly in order to get the smoothest lowering of the Counterweight.
Pay attention to the minimum edge distance of 2500 mm to make sure there is enough space for the system. Place the weights with the same centre/centre distance as the Ledgers that are used (3,072/1,572 m, Part no. 10073072/10071572).

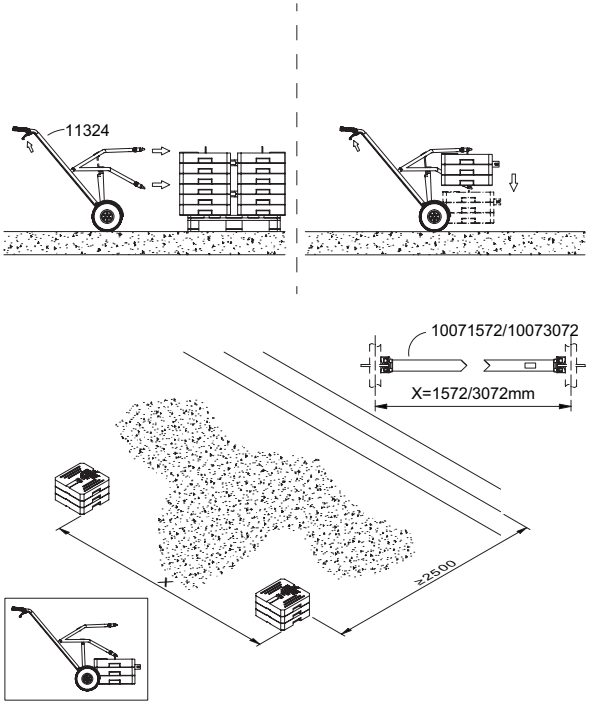


Figure 12. *Positioning the rubber weights*

Continue with assembling the Lever Arm (Part no. 11317), Hub (Part no. 11291) and the Support Leg (Part no. 11295) according to figure 13 below. It is recommended to use the position shown in figure 14 of the Lever Arm for best work accessibility and less pressure on the roof/ work surface, even though it is possible to mount it according figure 13. Position according figure 13 is only allowed position for installation upon up-stand.
Make sure the Quick Release Pins on the Lever Arm and the wedge locking the Support Leg are properly secured and that the M12 screw/ nut (Part no.100024/100090) are not missing. This screw/nut works as an extra locking security in case the coupler on the Counterweight package is for some reason not correctly secured to the Lever Arm.
Set the height of the Support Leg to 500 mm according to figure 14 if the system is mounted on a flat slab edge in front of up-stand. If the Support Leg is to be mounted upon an upstand, reduce the 500 mm dimension with the height of the up-stand (ref. dimension Y figure 13) in order to achieve the correct height of the system. Position of lever arm upside down is only allowed position for installation upon up-stand see figure 13.

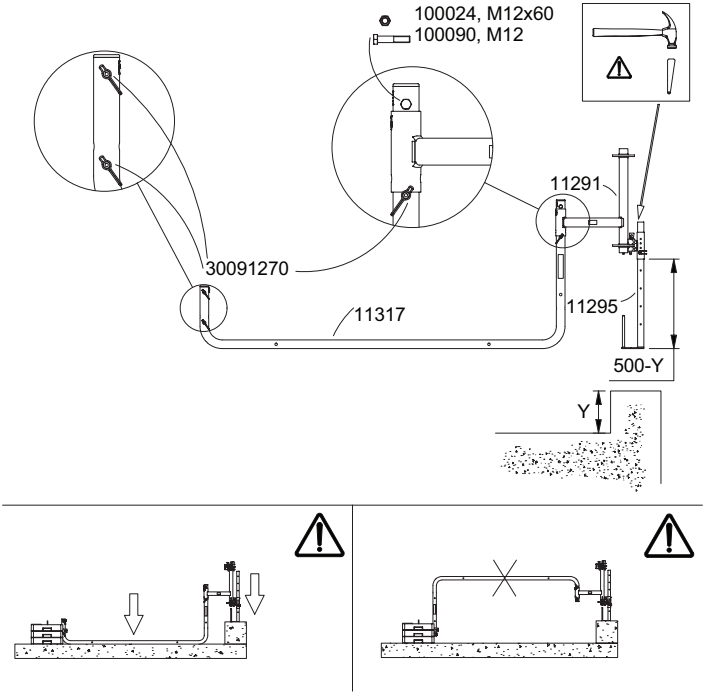


Figure 13. *Assembly of Lever Arm, Hub, Support Leg*

Mount the assembled unit onto the Counterweights, check so that the Lever Arm is horizontal and lock the wedge coupler on the weight holder by using a hammer. Also check so that each dimension marked “X” in figure 14 is equal, ensuring parallelism of the system.

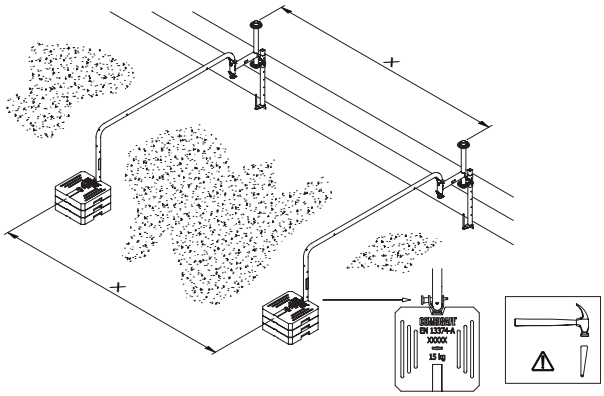


Figure 14. *Secure the assembled unit to the Counterweights*

Mount the Ledgers, make sure the wedge coupler connections are properly secured.

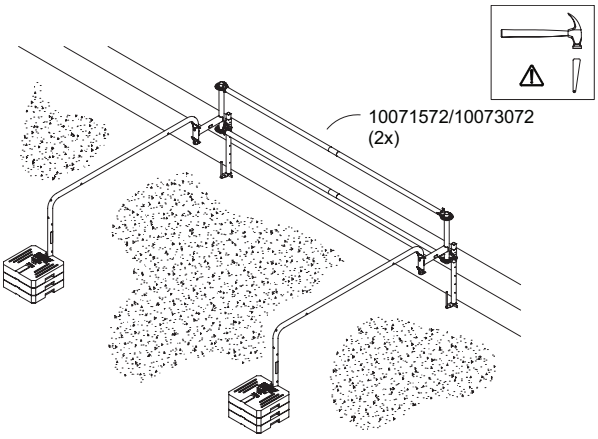


Figure 15. *Mount the Ledgers*

When the ledgers are assembled the Stiffener (Part no. 11286) can be mounted. This is increasing the rigidity of the system. It is recommended to install the Stiffener on the inside to reduce the risk of items falling to a lower level. Make sure all three wedges are properly secured. One Stiffener is required when and where the support is removed.

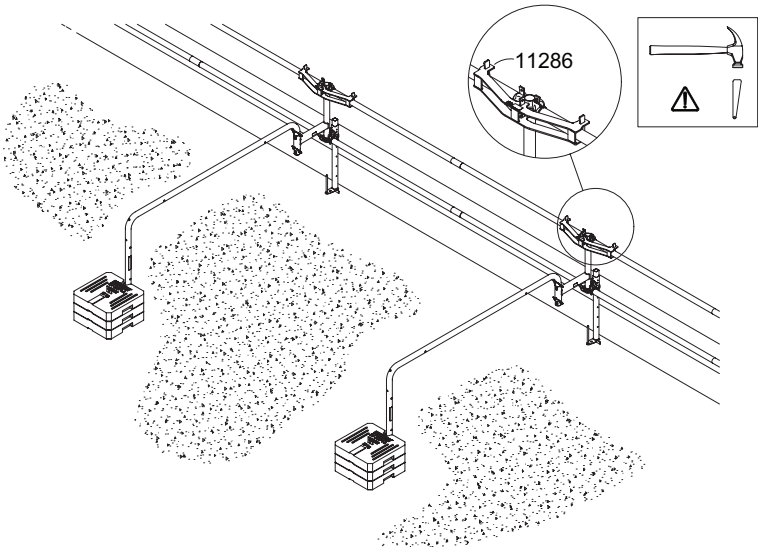


Figure 16. *Mount the Stiffener*

If a Toe Board (Part no. 11345) is used (optional), this is mounted on the vertical pins on the Support Legs. If the slab edge has an up-stand higher than 150 mm (STD EN 13374) the use of Toe Board is normally not necessary. The Toe Board is available in one length, for the 3072 mm c/c Ledgers. When using ledgers of different lengths it is possible to let the Toe Boards overlap, see figure 17.

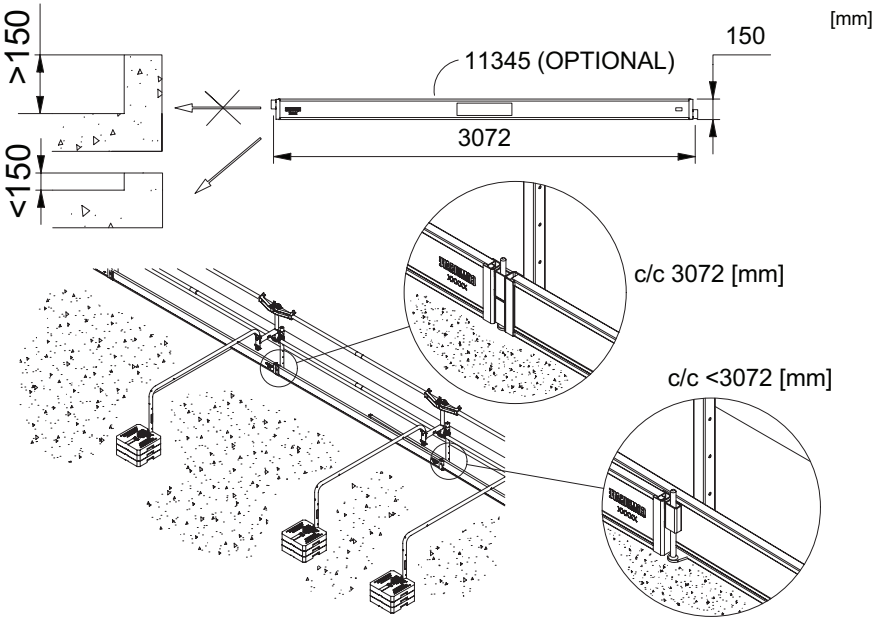


Figure 17. *Toe Board mounting alternatives*

Another option is the Load Distribution Plate (Part no.11312).
This is especially useful when having the Lever Arm mounted as in figure 18, particularly where the surface is delicate. The plates distribute the load from the Lever Arm evenly. Two Load Distribution Plates are mounted on each Lever Arm.
With the normal assembly position it is possible to use the Load Distribution Plate also on the foot of the Support Leg according to figure 19. This creates a very smooth footprint of the entire system.

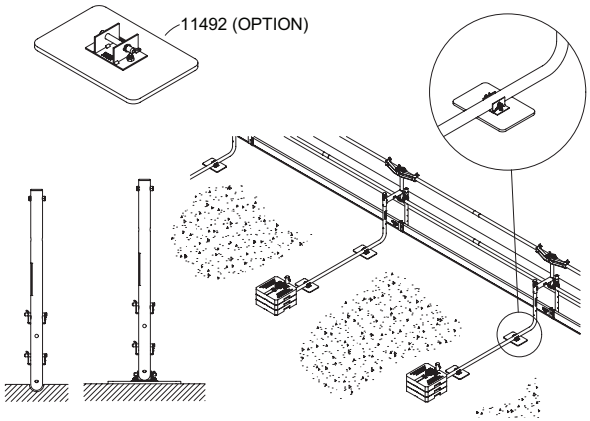


Figure 18. *Usage of Load Distribution Plate on Lever Arm*

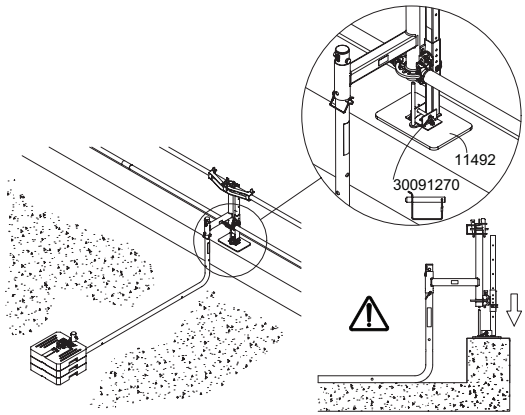


Figure 19. *Usage of Load Distribution Plate on Support Leg*

After assembling the whole system it is important to lock the two outermost units if they are supported only from one side. This can be done by attaching a fastener through the hole in the foot of the Support Leg (see upper right figure). The fastener must be able to take up a shear load of minimum 1000N.
If the Lever Arm is mounted according to figure 20, the outermost units can also be locked without any fastener by using a Support Leg. Simply rotate the Support Leg 180° in its sleeve when applicable. In this way the unit is prevented from sliding in both directions (see lower right figure).
Contact Combisafe Engineering Service if in doubt.

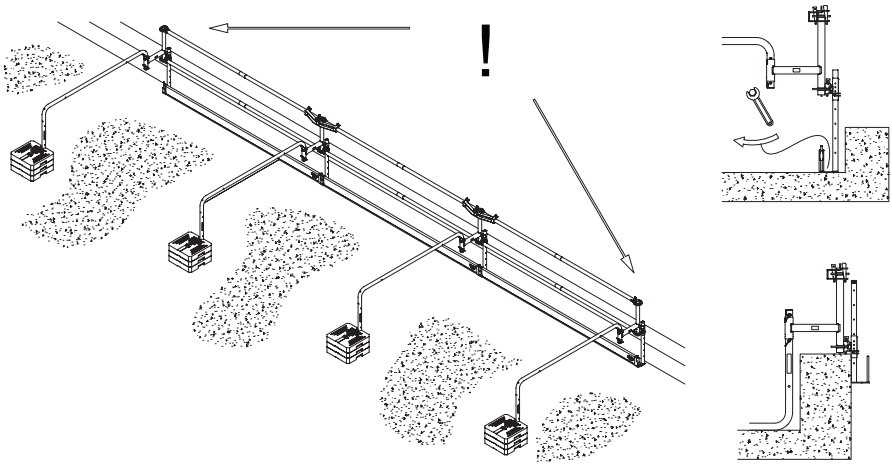


Figure 20. *Securing the outermost units*

Building Corners

The Hub (Part no. 11291) has holes that allow various positions of the Ledgers, making it possible to build for example inner- and outer corners. Every second hole is longer to allow attachment of Ledgers at different angles.

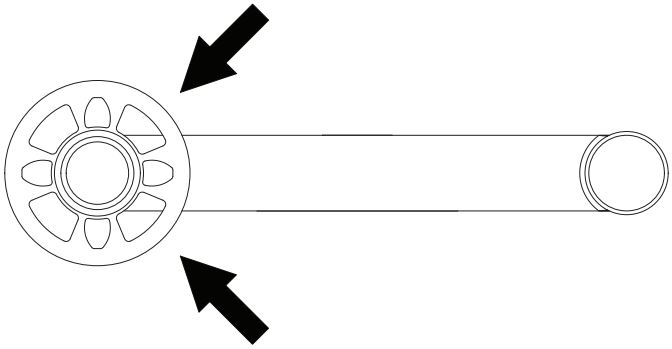


Figure 21. *Elongated holes for building corners*

It is important to remember that corners also need Counterweights, one example can be seen in figure 23, showing an outer 90° corner. However, Stiffener (Part no.11286) is not necessary in the corner.

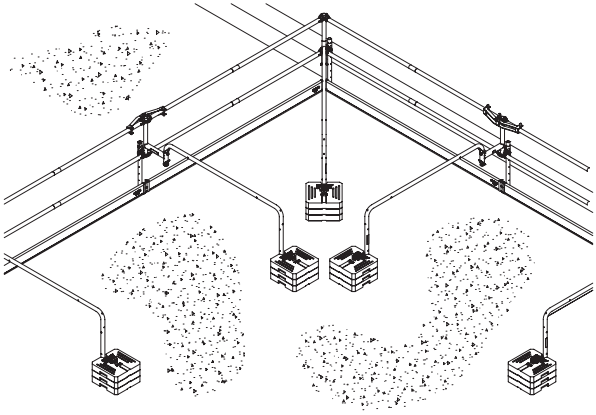


Figure 22. *Example of a 90° outer corner*

Using the Already Erected System

When working around the edge protection, it will sometimes be necessary to lift the Support Leg to get work access beneath it.
In those cases the Support Leg is lifted to a higher position using any of the openings in the hole pattern found to be best suitable.

WARNING!

Only one Support Leg at a time is allowed to be lifted. This means the maximum distance between two supports is two bays or 6m when using the longer Ledgers.

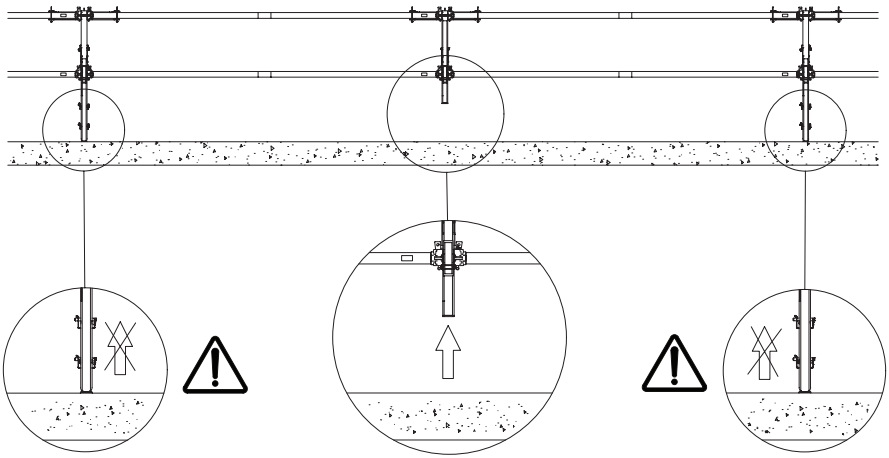


Figure 23. *Only one Support Leg at a time is allowed to be lifted*

It is also possible to move the Counterweight to gain work acess. It is easy to move using the Trolley to rotate it away from the area needed to be accessed.

WARNING!

Only move one Counterweight at a time and remember to always put it back into place before moving the next.

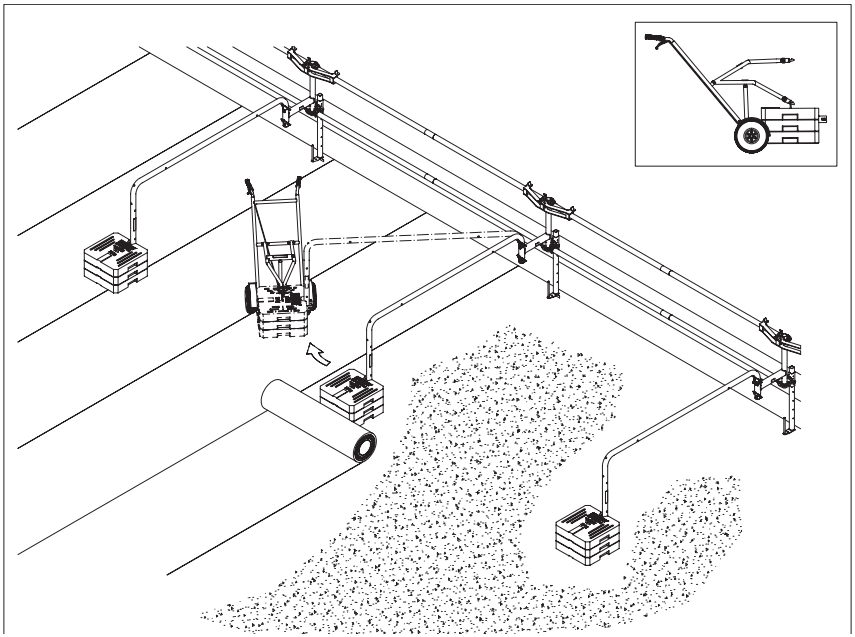


Figure 24. *Counterweight turned away for work access by using the Trolley*

If the Lever Arm is assembled in the opposite direction according to image 25, it is possible to lift the Lever Arm vertically to get work access beneath it. In this case it is necessary to disconnect the Lever Arm from the Counterweight.

WARNING!

A Stiffener is required when and where the support is disconnected. Only disconnect one Counterweight at a time and remember to always connect before disconnecting the next.

The Lever Arm can be moved out of the way by lifting it up and it remains in position due to friction and turning moment created by its own weight. For extra security however, the lower Quick Release Pin according to image 25 can be moved to secure the Lever Arm in its new position. For better access the Lever Arm can be folded against the guardrail.

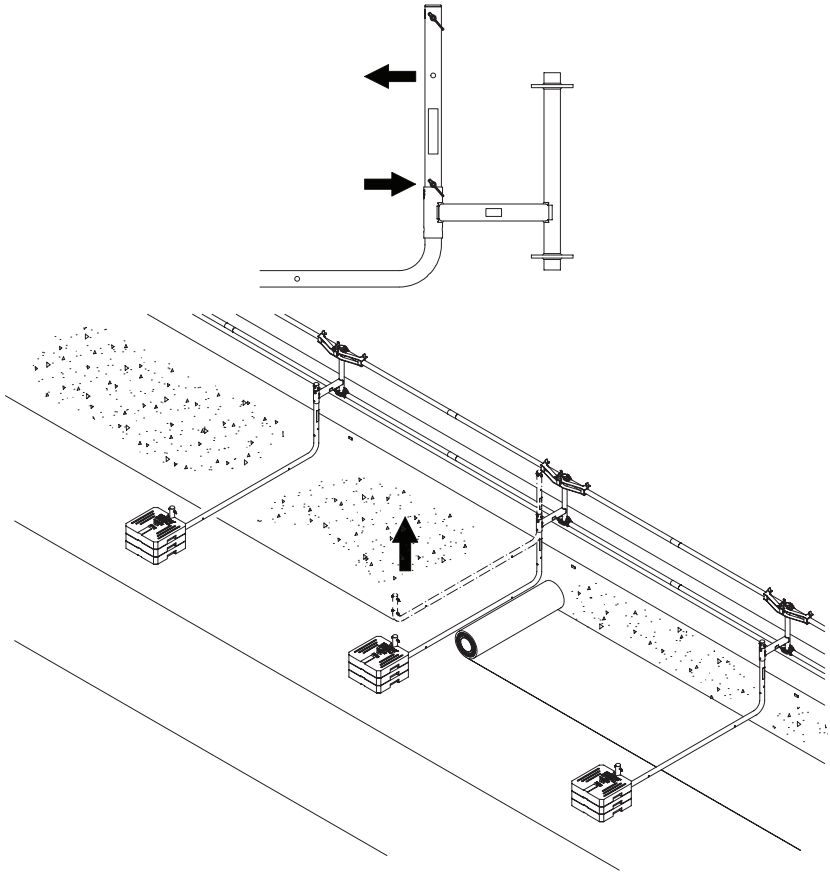


Figure 25. *Lever Arm lifted to get work access*

Packing Instructions

The weights and the Trolley are packed on a euro pallet and the rest of the components are packed in Multiboxes (Part no. 9540).
A general packing method cannot be described since it needs to be customized from time to time, depending on the amount of units that is required. Please contact your Warehouse if there are any questions.

Maintenance

Inspection/Safety Check

A safety check should be performed before use, after dismantling and before stocking the different parts.
The safety check should be performed by competent personnel. Combisafe recommends that only personnel that has been instructed by us should perform the safety checks.
Check that:

- No parts are cut or added.
- No parts are embossed or bent/damaged.
- No new drill holes have been made.
- No corrosion has occurred that can affect the strength.
- No cracks have occurred in the welding or the material, around holes etc.
- Parts fit together.
- The wedges can be moved easily and do not bind.
- The wedges lock properly where they are intended to be mounted.

Identification

All components are marked with a five character identification number stamped in the metal (one letter and four digits). This number can be of use during correspondence with Combisafe.

Disposal

Parts that no longer pass inspection can be recycled as steel.
Exceptions are:

- The Counterweights that can be recycled as rubber.
- The wooden part of the Load Distribution Plate.
- The gas spring on the Trolley can normally be recycled as steel as it is, check with your local recycler, however in some cases it is required to be depressurised before handing it in. In that case it is recommended to drill a 3mm hole approximately 20mm from the outer end of the cylinder. Use safety glasses, hearing protection and protective clothing as it might expose small amounts of oil and metal particles. Empty the oil by pushing/pulling the piston repeatedly and recycle the oil according to local regulations.

The Trolley also includes various plastic and rubber parts such as the wheel rims, tires, handles etc. Recycle these accordingly.
Contact Combisafe if in doubt.

Renovation

General

Some parts that have been sorted out at the safety check may be repaired according to conditions mentioned below.
The renovation must be carried out by competent personnel. Combisafe recommends that only personnel that has been instructed by us should perform the renovation.
Renovate according to following guidelines:

- *Clean the parts.*
- *Heating the parts is not allowed.*
- *Parts that after straightening show any indication of fracture may not be used but should be rejected.*
- *Replace damaged parts that cannot be renovated and parts that have been lost during handling.*
- *Replace labels if necessary.*

Specific

11324 Trolley

If the gas spring or any of its related components such as control head, wire or operating handle is damaged or does not work, replace the unit(s). Make sure the trolley wheels are filled with air and remove any debris from the tires that could potentially lead to puncture.

Storage

Store Combisafe products in a dry and ventilated area protected from the effects of the weather and from corrosive substances.

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