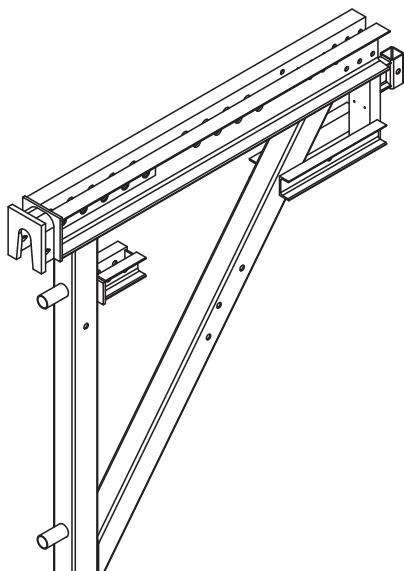


Climbing solutions for any
geometry

Climbing Systems CONVENTIONAL

Conventional climbing systems are formwork support structures used to pour high walls in several casting steps.



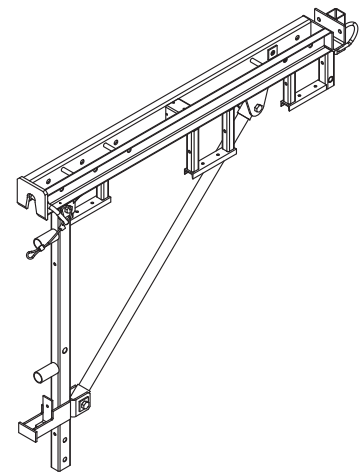
CONVENTIONAL Climbing Systems

▶ CLIMBING BRACKETS



Climbing bracket used in building and civil engineering

To cast every wall step, the formwork and bracket set are lifted with crane and placed on the anchors previously left in the concrete wall.



System advantages

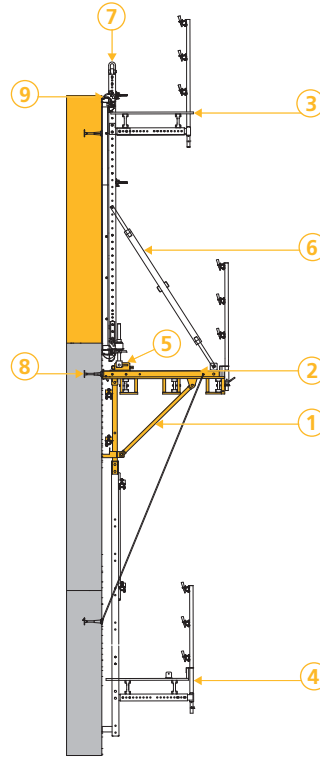
- Compatible with all ULMA Construcción wall formworks.
- The sets made up of brackets and formwork panels are moved to the next pouring step with a single crane movement.
- Adaptable to any geometry, including straight, inclined and circular walls.
- It is possible to build working platforms at different levels, including front and side handrails. The access to the platforms is provided by safety ladders.
- Allows overcoming hollows in the wall.
- All brackets include all the connectors to fix handrails, push-pull props and other accessories.
- Some climbing brackets allow rolling-back the formwork panels using a system, formed by a carriage and a rack, incorporated in these brackets.
- Formwork's vertical adjusting and plumbing is done with levelling screw jacks and push-pull props.
- Bracket are anchored to the wall with cone-ring system.



► BF-170 CLIMBING BRACKET - Light climbing bracket

Main features:

- Scope: non residential and residential buildings.
- Platform width: 1.7 m.
- Formworks surface: up to 20 m² per two brackets set.
- Anchorage on wall by cone: AWF, DW15.
- Till-back system for formwork stripping or releasing.



BF-170 brackets with ORMA vertical formwork

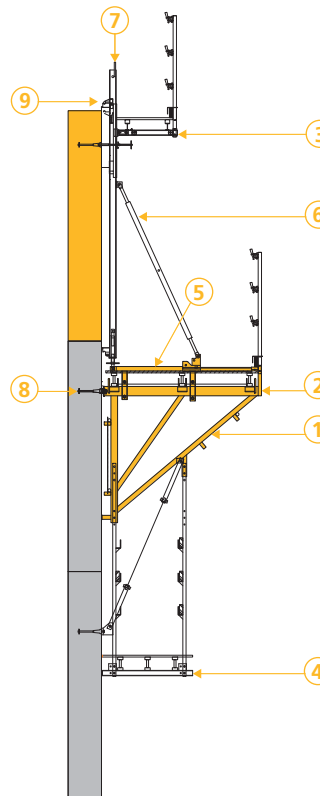
System components:

- | | |
|---|------------------------|
| 1 | BF-170 bracket |
| 2 | Main platform |
| 3 | Pouring platform |
| 4 | Cone recovery platform |
| 5 | Stripping system |
| 6 | Push-pull prop |
| 7 | Vertical waler |
| 8 | Anchorage |
| 9 | Formwork |

► CM-220 CLIMBING BRACKET - Light duty climbing bracket with roll-back carriage

Main features:

- Scope: residential and non residential buildings.
- Platform width: 2.2 m.
- Formwork area: up to 25 m² per two brackets set.
- Anchorage on wall by cone: AWF, DW15.
- Roll-back system: 70 cm with carriage and rack system.



CM-220 brackets with ORMA vertical formwork

System components:

- | | |
|---|-------------------------|
| 1 | Climbing bracket CM-220 |
| 2 | Main platform |
| 3 | Pouring platform |
| 4 | Cone recovery platform |
| 5 | Roll-back system |
| 6 | Push-pull prop |
| 7 | Vertical waler |
| 8 | Anchorage |
| 9 | Formwork |

CONVENTIONAL Climbing Systems

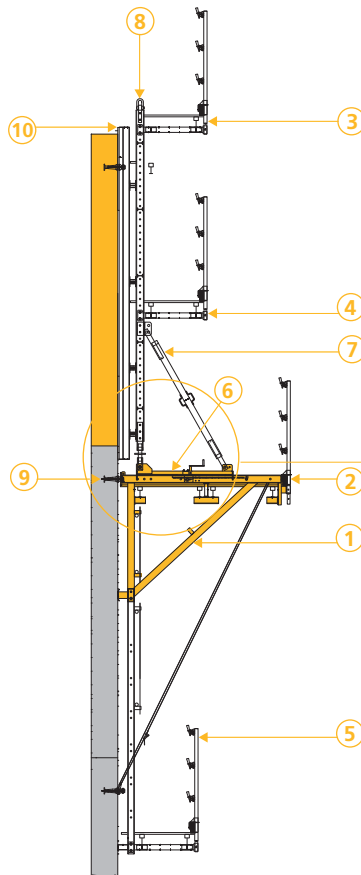
► CR-250 CLIMBING BRACKET - Climbing bracket for great formwork sets

Main features:

- Scope: civil engineering and non residential building.
- Platform width: 2.5 m.
- Formwork area up to 35 m² per two brackets set.
- Anchorage on wall: DW20 (possibility to use DW15).
- Roll-back system: 70 cm with carriage and rack system or 5 cm with tilt-back system.

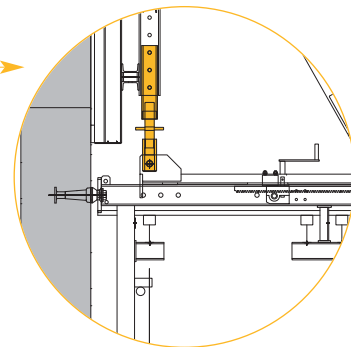


CR-250 brackets in pier execution with pouring, intermediate, main and cones recovery platforms. The access is provided by BRIO scaffolding ladder



System components:

1	CR-250 bracket
2	Main platform
3	Pouring platform
4	Intermediate platform
5	Cone recovery platform
6	Roll-back system
7	Push-pull prop
8	Vertical waler
9	Anchorage
10	Formwork



Detail of formwork vertical regulation using bottom screw jack: This regulation can be done without releasing the clamps connecting vertical walers and formwork.





► **MK BRACKETS - Highly versatile brackets for all types of climbing applications**

MK Brackets are made up of standard MK Walers and other accessories together with some specific items for the brackets.

Standard MK Walers offer great versatility with a low number of parts.

The MK Brackets can adopt different configurations and therefore can be used even for inclined and circular walls.

Since MK brackets are made of bolted independent walers, they can be dismantled to minimize transport material volume.

Two standard configurations have been defined, being possible to place both configurations face to face:

► **BMK-240 BRACKET**

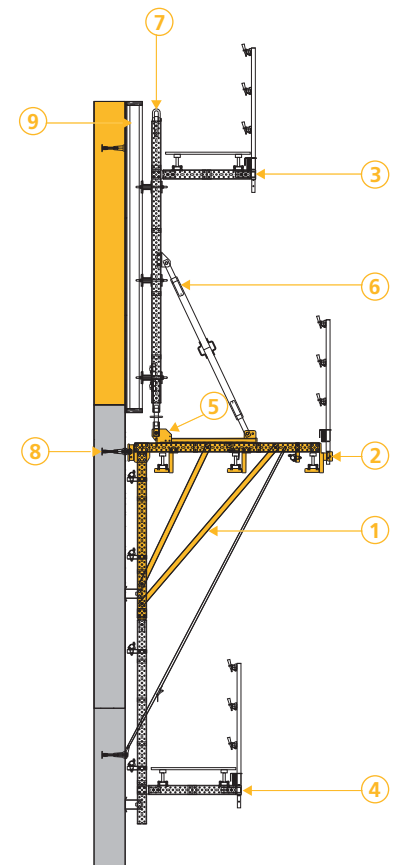
Main features:

- Scope: civil engineering and non residential building.
- Platform width: 2.4 m.
- Formwork area: up to 35 m² per two brackets set.
- Anchorage on wall: DW15, DW20.
- Roll-back system: 70 cm with carriage and rack or 5 to 15 cm with tilt-back system.
- Bracket adapted to inclined walls.

► **BMK-170 BRACKET**

Main features:

- Scope: building and civil engineering.
- Platform width: 1.70 m.
- Formwork area: up to 35 m² per two brackets set.
- Anchorage on wall: DW15, DW20.
- Tilt-back system for formwork stripping or releasing, 5-15 cm.
- Bracket adapted to inclined walls.



System components:

1	BMK bracket
2	Main platform
3	Pouring platform
4	Cone recovery platform
5	Roll-back system
6	Push-pull prop
7	Vertical waler
8	Anchorage
9	Formwork

CONVENTIONAL Climbing Systems

▶ SINGLE-SIDED CLIMBING BRACKETS



There are two possible configurations: Tilt-back bracket SBF-185 and a Roll-back bracket SBM-240:

▶ SBF-185 BRACKET

Main features:

- Scope: civil engineering, mainly dams, and non residential buildings.
- Platform width: 1.85 m.
- Anchorage on wall: DW26.
- Tilt-back system to release the panel when stripping.

This type of brackets are used to cast single sided vertical and inclined walls, e.g. in dams, canals, cooling towers and tunnels.

As no tie rods are used in these applications, the brackets are designed to carry the loads coming from the concrete pressure. The brackets are made up of welded high strength profiles and are compatible with MK Brackets and MK system.

As with conventional double sided climbing, the formwork-can be lifted simultaneously with the brackets and working platforms.

The brackets also allow casting highly inclined walls while having completely horizontal working platforms that enable safe working at every moment.

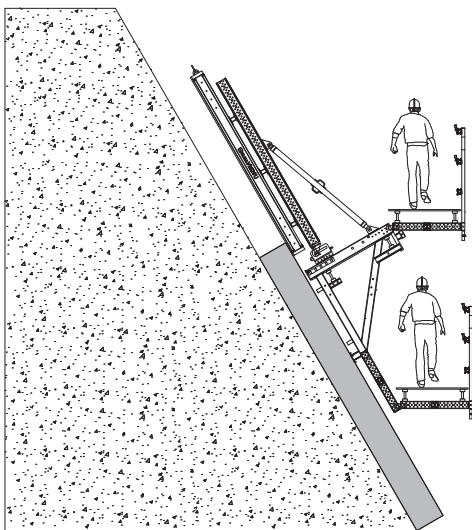




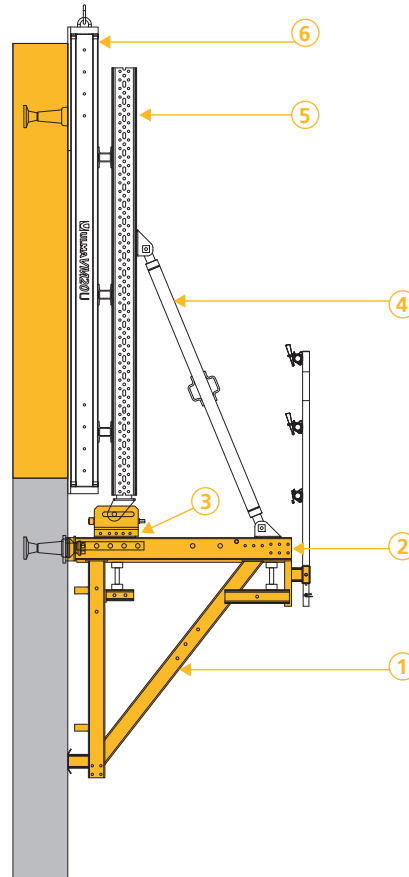
► SBM-240 BRACKET

Main features:

- Scope: civil engineering and non residential building.
- Platform width: 2.4 m.
- Anchorage on wall: DW26.
- Roll-back: 65 cm with carriage and rack.
- Standard walers can be used as vertical walers.



Application on single-sided inclined wall with horizontal working platforms



Application on single sided vertical wall

System components:

1	Bracket
2	Main platform
3	Stripping system
4	Push-pull prop
5	Vertical waler
6	Formwork

► KSP SHAFT PLATFORMS - Formwork support for hollow shafts

System advantages

- The KSP platforms are made of with totally standard and modular items, mainly walers and timber beams, able to reach any shaft dimension.
 - The Gravity pawl is adaptable to all type of ULMA Construcción standard walers and adjustable to get different waler lengths.
 - The various formwork types are easy to adjust.
- Based on the type of anchors used, two main solutions are possible:
- Gravity pawl with box-out: Used mainly in civil engineering to solve hollow piers and hollow shafts. The pawl rests on the hollow left on the wall by the internal box-out.
 - Folding bracket with bracket support: Used mainly in buildings construction and for internal fair face walls. In this case, no cavity is required on the wall, and the bracket support rests on the folding bracket, which is fixed to the wall by means of a DW15 Cone.



CONVENTIONAL Climbing Systems

▶ PERIMETER WORKING PLATFORMS - Safe and stable areas for works at big heights

Perimeter Working Platforms are used in order to carry out the works at the slab edge. They are lifted to the upper floor with the crane.

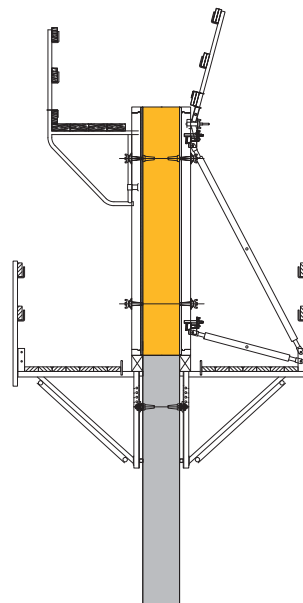
They can be used as formwork support and for subsequent jobs such as wall enclosure or repairing.

Formwork and platforms are lifted separately.

▶ ORMA BRACKET

Main features:

- Scope: building construction.
- Platform width: 1.3 m.
- Maximum formwork height: 3.9 m.
- Working load: Class 2 (1.5 kN/m²) following EN-18211 standard.
- Anchorage on wall with cone: AWF, DW15.



▶ BF-170 PERIMETER PLATFORM

BF-170 platforms allow to safely perform works at the slab edge. All necessary elements are included in the platform.



Main features:

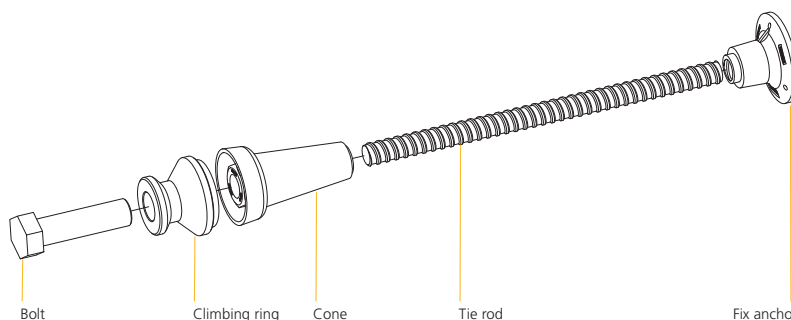
- Scope: building construction.
- Platform width: 1.7 m.
- Maximum formwork height: 3.9 m.
- Working load: Class 5 (4.5 kN/m²) following EN-18211 standard.
- Anchorage on wall with cone: AWF, DW15.
- Allows overcoming hollows in the wall.

▶ ANCHORAGE SYSTEMS - Safe support of climbing systems

The anchorage systems are elements which, embedded in the concrete, provide support for the wall climbing systems and Perimeter Working Platforms.

Most of the elements are retrievable and can be used in the following pouring step.

The anchor types are: DW15, DW20 and DW26. The cone AWF is especially suitable for fair face walls.



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