ENKOFORM VMK

Timber beam formwork

// Versatile and polyvalent system for any vertical geometry

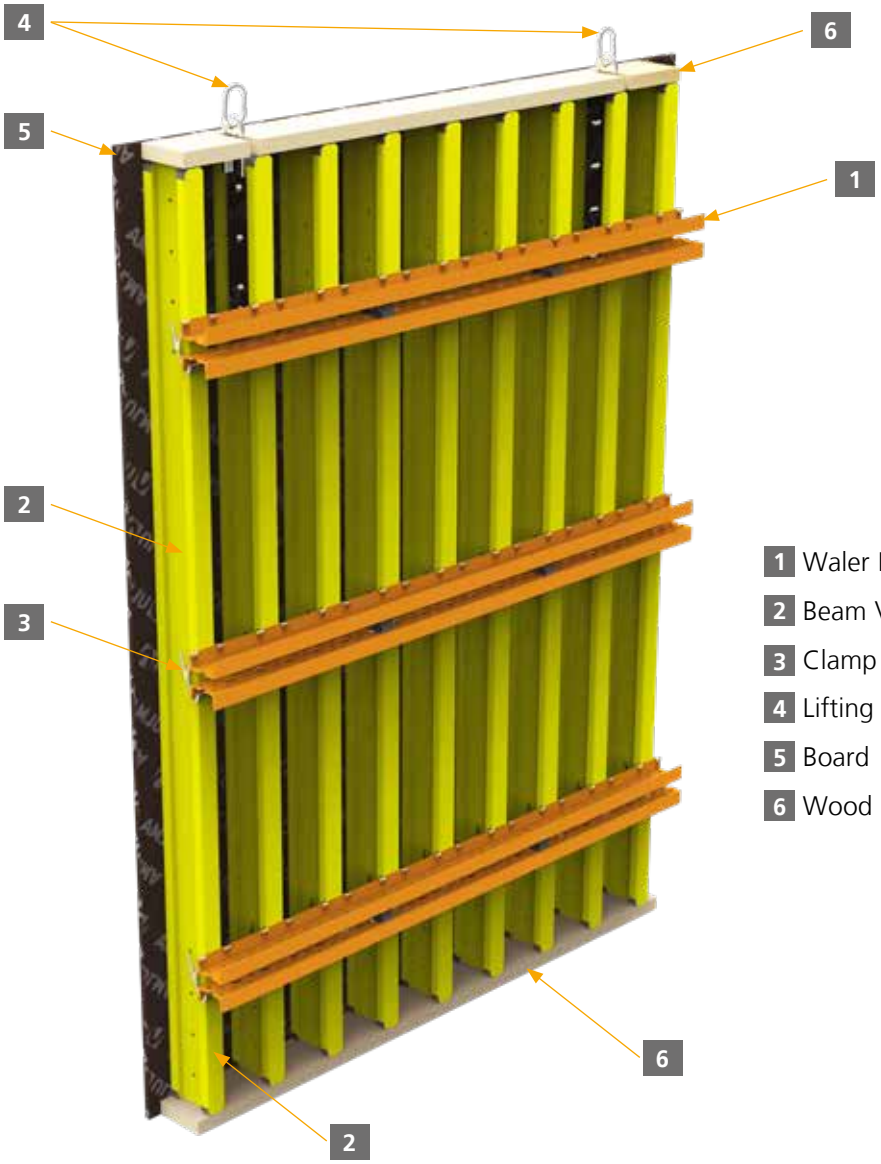
// Table of contents

ULMA

- **Formwork system for vertical structures** in civil engineering and building construction.
- Excellent finishes and great performances in the construction of walls, piers, abutments, columns...
- Formwork adapted to the defined concrete pressure.
- The panels are pre-assembled consisting of MK walers and timber beams as board support.
- Based on the MK system, **the panels are shaped to measure according to needs.**

System Components:

- The unit element of the system is the **panel**. The placement of some panels next to each other will make possible to adjust to the required geometry of the wall.



1. Waler MK-120 (1st arrangement beam)
2. Beam VM 20 (2nd arrangement beam)
3. Clamp RVM20 2T (joint between the 2 beams)
4. Lifting brackets E V-100
5. Board
6. Wood plank

// Featuress

Unlimited flexibility

- The panels are designed and assembled according to the requirements of the project:

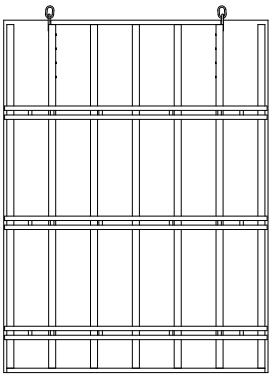
- **Geometry:** customized panels with the needed dimensions, built with standard parts.

  It is not necessary to previously confront the panels to introduce the ties, therefore the position of the tie holes on the panels can be customized.

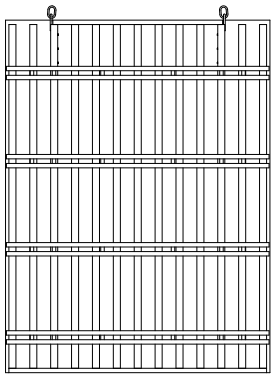
▸ Made to measure panel for required geometry

- **Concrete pressure:** formwork optimised according to the defined concrete pressure.

  It is possible to get even larger concrete pressure resistances than with the modular formworks.



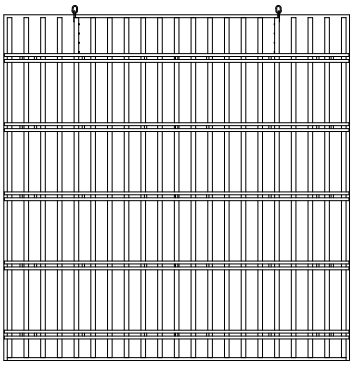
▸ Panel configured for concrete pressure of 30 kN/m^2.



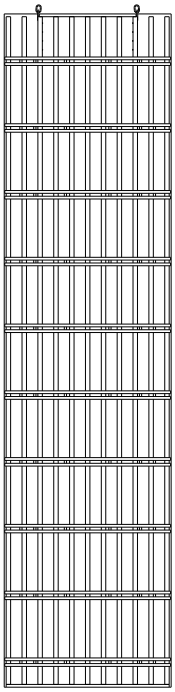
▸ Panel configured for concrete pressure of 90 kN/m^2.

- **Size:** panel height and width according to customer requirements. Maximum panel area: 25 m^2

  Any panel sized from 10 m height and 2.5 width to 5 m height and 5 width can be built.



▸ Panel of 5x5 m



▸ Panel of 2.5x10 m

- **Concrete finish:** easily replaced panel board eases the reuse of panels and ensures a perfect concrete finish

▸ Panel reuse by replacing the board

// Benefits

▸ High performance

- Saves time in assembling, thanks to the easy joining between MK walers and wooden beams.
- Sending the material disassembled to the jobsites means smaller transportation volume.
- Panel joints are simple, adjustable and watertight; the requirement for fillers between panels is minimal

▸ Pre-assembled panels

▸ Joint for MK waler with with the beam VM20

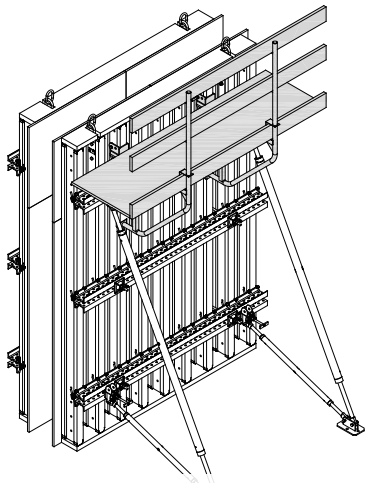
▸ High flexibility

- The solutions for corners, pilasters and closures are easier than in modular panels, because both sides do not need to be the same.
- Possibility of adjust as much as possible to both the wall geometry and concrete pressure.
- It uses common standard accessories of other ULMA vertical formwork systems shuch as push-pull props, climbing brackets, anchors, etc.

▸ Guaranteed security

- Simple and convenient attachment of safety items to the panels guarantees safe handling.
- Use of push-pull props to **stabilise the panels.**
  - It prevents the formwork from possible drop due to strong winds that may occur.
  - It facilitates the placing and positioning of formwork.
- E V-100 **working platforms** that can be incorporated into the panels, provide a stable and safe working area for carrying out work at heights (bracing, concrete pouring...).

▸ Column formwork with push-pull props



▸ Panel with working platform and push-pull props

- **Secure lifting** of panels using the Lifting bracket E V-100, which it has the "CE" mark corresponding to the European Directive 98/37/CE on machinery. The maximum working load for each Lifting bracket E V-100 is 1300 kg (13 kN).

▸ Placing the lifting bracket on the beam web

▸ Identification plate detail

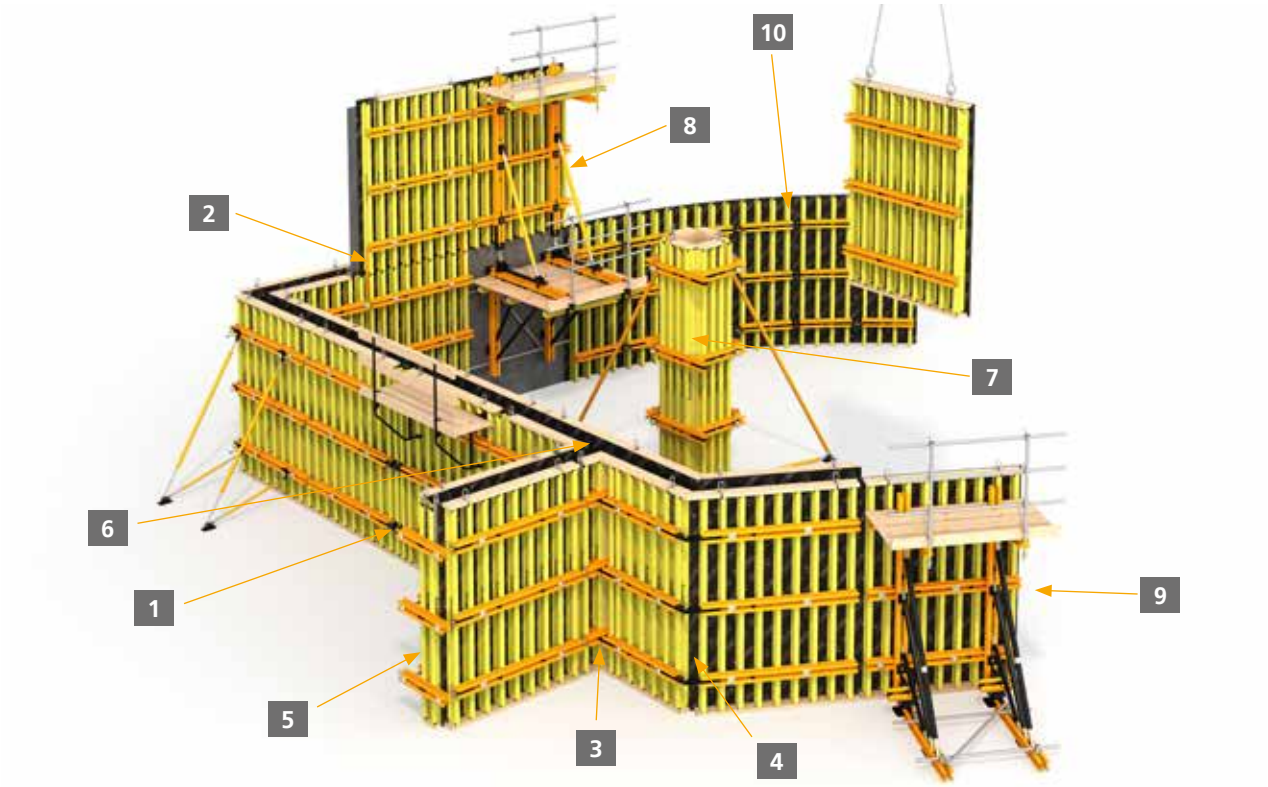
▸ Lifting panel with crane

▸ Excellent finshes

- It provides excellent results for arquitectural fair-faced-concrete surfaces and predefined wall pattern of form ties.

// Solutions

▸ Thanks to the **versatility and polivalency offered by the system**, it can be adjusted to various geometries.



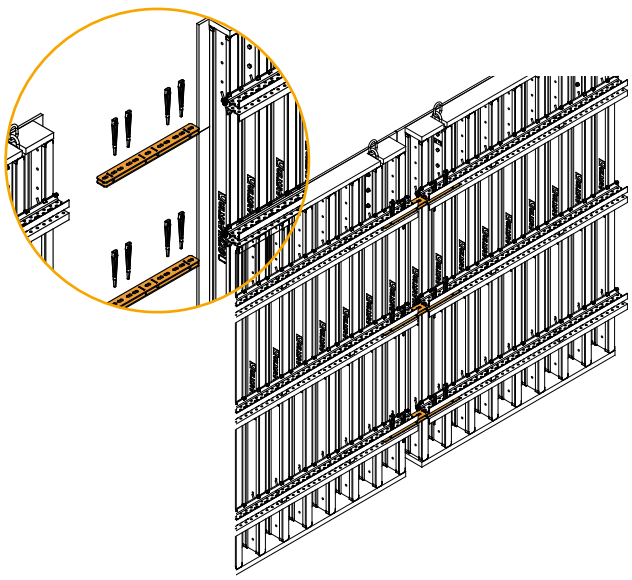
1 Joint between panels
2 Longitudinal joint VM20
3 90° corners
4 Corner making an angle other than 90°
5 Bulkheads
6 Pilasters - T wall intersections
7 Column formwork
8 Climbing formwork
9 Single-sided wall formwork
10 Circular formwork

Joint between panels

Joint without fillers:

The component used to join two PANELS together (with no filler between them) is the **panel connector MK**. This type of joint makes it possible to:

- bring the panels over and link them together hermetically when positioning them in their right place. It warranties the hermetic nature of the joint.
- correct possible assembling errors of the panels.

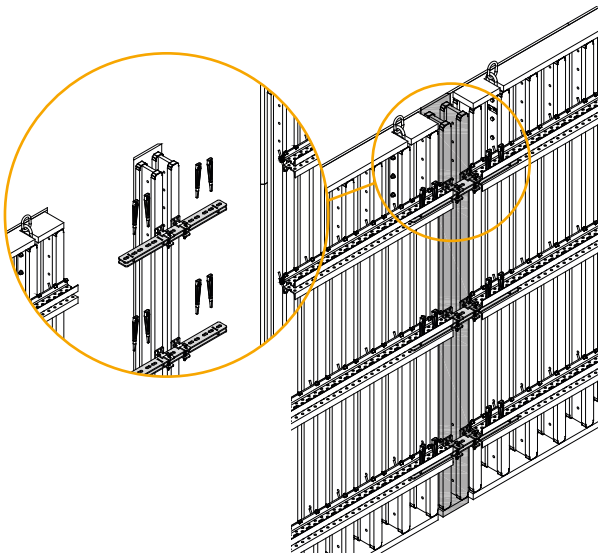


Joint with fillers:

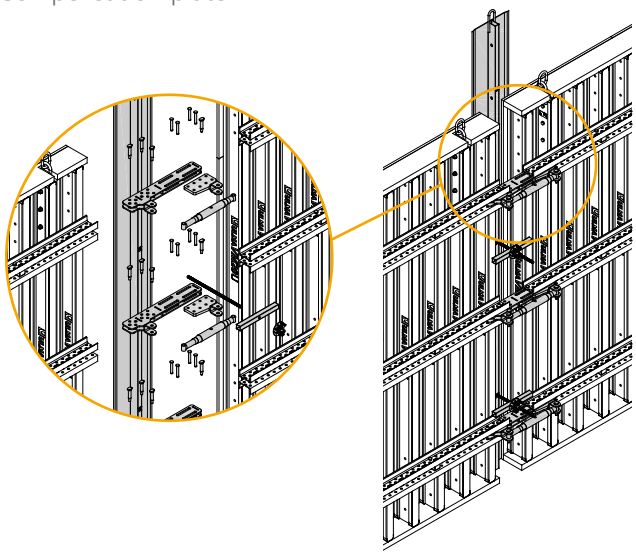
Joining the panels with fillers can be made through the **filler panel** or with the **compensation plate**. This type of joining makes the following possible:

- connect 2 panels with a gap between them.
- correct possible errors that may be made in the assembly of the panels.

/ Filler panel:



/ Compensation plate:



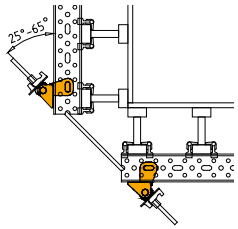
Wall geometry

90° corners:

In 90° corners, the outer and inner parts will be solved in different ways:

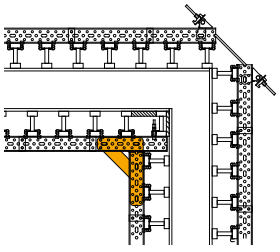
▸ **Outside:**

/ Outside corner head MK:

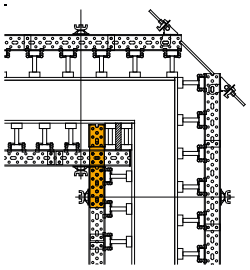


▸ **Inside:**

/ Corner connector MK:



/ Waler extension MK:

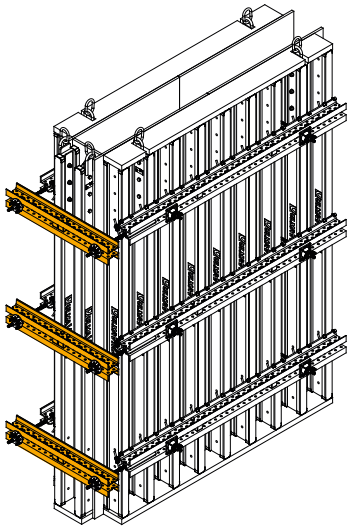


Corner making an angle other than 90°:

Bulkheads:

Easy and practical solution for bulkheads, placing a **bulkhead panel** perpendicularly between the 2 panels.

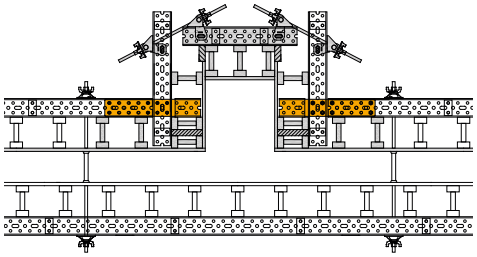
▸ Stripping of wall with bulkhead panel



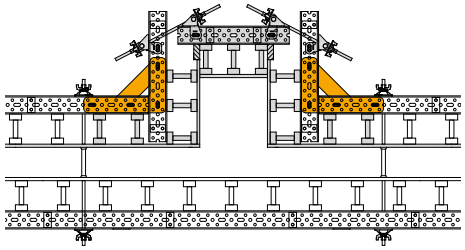
Pilasters - T wall intersections:

Pilasters formwork or T wall intersections can be resolved using the solution with **waler extension MK** or the solution with **corner connector MK**.

/ Solution with waler extension MK:

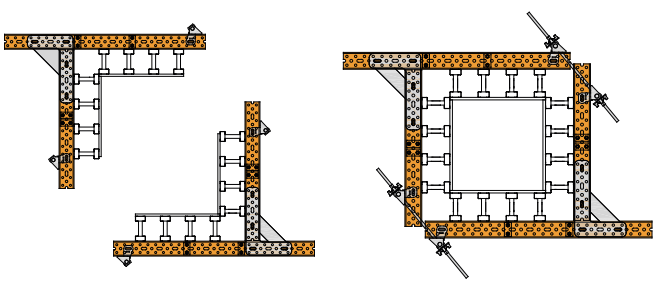


/ Solution with corner connector MK:



Column formwork

The column formwork consists of two column panels joined to each other by means of the outside corner head MK, wedges MK, tie rods 15 and plate nuts 15.



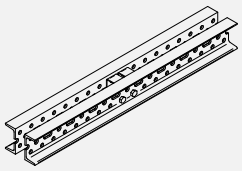
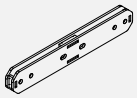
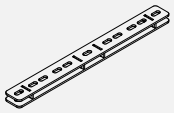
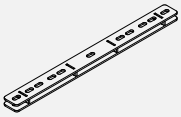
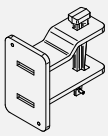
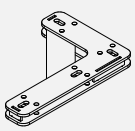
▸ Temorary scaffolding system for columns

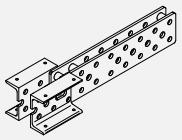
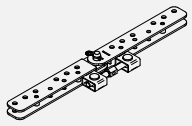
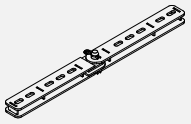
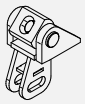
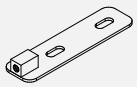
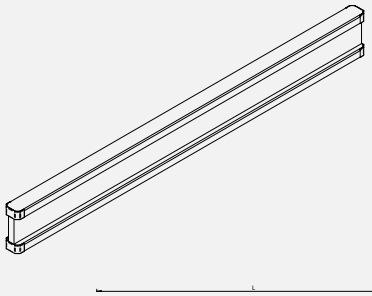
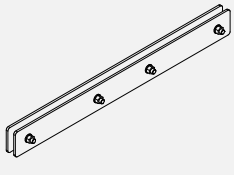
Climbing formwork

Circular formwork

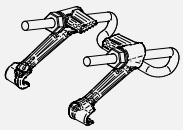
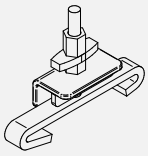
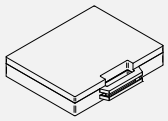
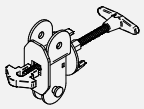
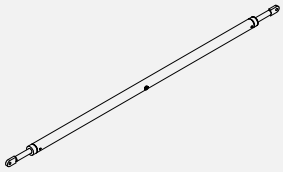
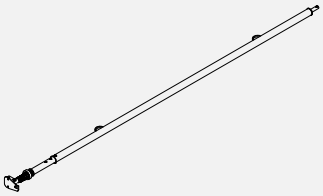
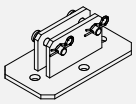
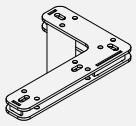
Single-sided wall formworks

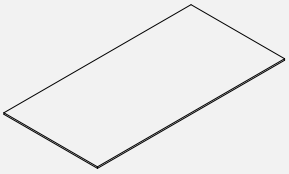
ENKOFORM VMK Basic components

		kg
WALERS MK-120		
WALER MK-120/1.125	1990209	29.3
WALER MK-120/1.375	1990211	35
WALER MK-120/1.625	1990213	41.7
WALER MK-120/1.875	1990215	47.9
WALER MK-120/2.125	1990217	54
WALER MK-120/2.375	1990219	60
WALER MK-120/2.625	1990221	68
WALER MK-120/3.125	1990225	81
WALER MK-120/3.625	1990229	93
WALER MK-120/4.125	1990233	107
WALER MK-120/4,625	1990237	120
WALER MK-120/4.875	1990239	126
WALER MK-120/5.625	1990245	146
		
LIFTING-JOINT ELEMENTS		
LIFTING BRACKET E V-100	1960220	10.2
		
WALER CONNECTOR MK	1990700	12.2
		
WEDGE MK	1990801	1.2
		
PANEL CONNECTOR MK	1990800	9.5
		
ADJUSTABLE CONNECTOR MK	1990810	11.1
		
C-VM20 COUPLING MK	1990811	1.8
		
CORNER CONNECTOR MK	1990890	16.5
		

		kg
LIFTING-JOINT ELEMENTS		
WALER EXTENSION MK	1990895	10,3
		
ARTICULATED ADJ. CONNECTOR MK	1990730	15.8
		
ARTICULATED CONNECTOR MK	1990830	12.9
		
OUTSIDE CORNER HEAD MK	1990845	3.1
		
BULKHEAD HEAD MK	1990850	1.4
		
TIMBER BEAMS VM 20		
TIMBER BEAM VM 20 / 1.9	1940172	9.5
TIMBER BEAM VIGA VM 20 / 2.15	1940197	10.8
TIMBER BEAM VIGA VM 20 / 2.45	1950129	12.3
TIMBER BEAM VIGA VM 20 / 2.65	1940196	13.3
TIMBER BEAM VIGA VM 20 / 2.9	1940144	14.5
TIMBER BEAM VIGA VM 20 / 3.3	1950130	16.5
TIMBER BEAM VIGA VM 20 / 3.6	1940146	18
TIMBER BEAM VIGA VM 20 / 3.9	1950112	19.5
TIMBER BEAM VIGA VM 20 / 4.9	1950113	24.5
TIMBER BEAM VIGA VM 20 / 5.9	1940149	29.5
		
BEAM VM20 CONNECTION PLATE	1960305	13.2
		

ENKOFORM VMK Basic components

		kg
TIMBER BEAMS VM20		
WALER-VM20 CLAMP 2T	1960375	0.86
		
WALER-VM20 ANGULAR CLAMP	1960345	1.3
		
TOOLKIT CASE	1960450	2.3
		
PUSH-PULL PROPS		
CABEZAL TENSOR ESTABILIZADOR	1960275	4.16
		
PUSH-PULL PROP 5-6	1900147	51
PUSH-PULL PROP 3.6-4.8	1908168	43.3
PUSH-PULL PROP 2.4-3.5	1900123	24.1
PUSH-PULL PROP 1.1-1.7	1900134	7.7
		
PUSH-PULL PROP 6-10	1900207	101.4
		
PUSH-PULL PROP SHOE	1900144	5.95
		
CORNER CONNECTOR MK	1990890	16.5
		

		kg
PLYWOODS		
PLYWOOD 2.5x1.25x0.018 BIRCH	1940155	38.2
PLYWOOD 2.5x1.25x0.021 BIRCH	1940151	44.6
PLYWOOD 1.25x2.5x0.018 BETO	1940198	34.9
PLYWOOD 1.25x2.5x0.021 BETO	1940166	40.7
PLYWOOD 0.5x2x0.021 BETO	2211064	12.6
PLYWOOD 1.05x2x0.021 BETO	2211065	26.5
PLYWOOD 1.25x2x0.021 BETO	2211066	31.5
PLYWOOD 0.5x2.5x0.021 BETO	2211067	15.75
PLYWOOD 1.05x2.5x0.021 BETO	2211068	33.1
		
PLATES AND TIE RODS		
TIE ROD 15/1	0230100	1.7
TIE ROD 15/1,2	0230120	2
TIE ROD 15/1,5	0230150	2.2

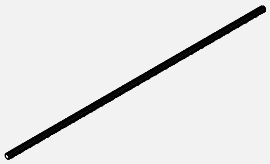



PLATE WASHER NUT 15	1900256	1.4

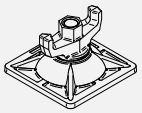
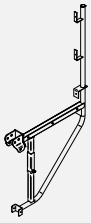
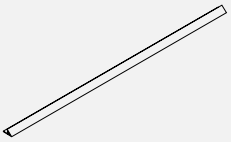
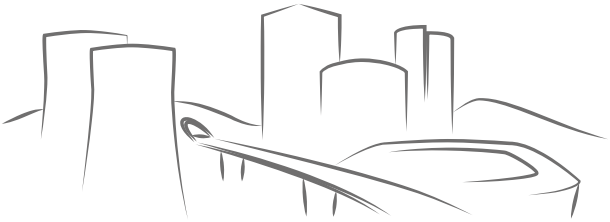



PLATE NUT 15	7238000	0.73
		
HEXAGONAL NUT 15	7238001	0.21
		
WORKING PLATFORM		
WALKWAY BRACKET E V-100	1960255	16.2
		
CONSUMABLES		
CHAMFER STRIP 20x20 (50 ml)	7238029	0.40
		



From the beginning of your projects

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