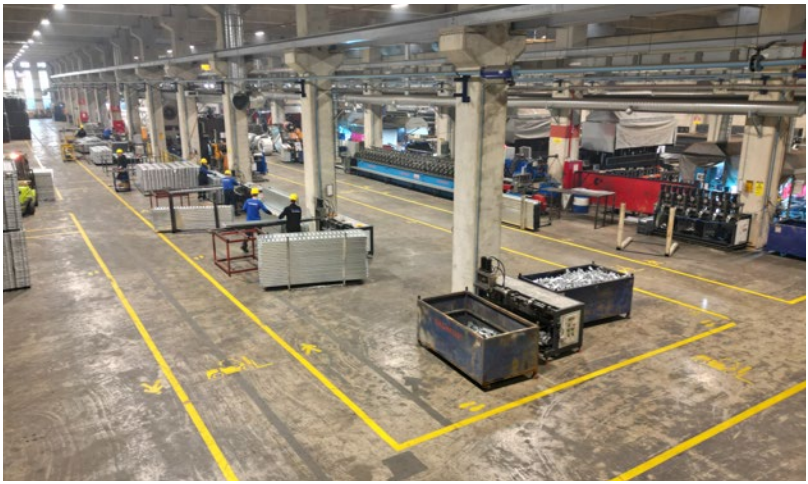
YAĞMUR®
SCAFFOLDING SYSTEMS

H TYPE SCAFFOLDING SYSTEM

PRODUCT MANUAL

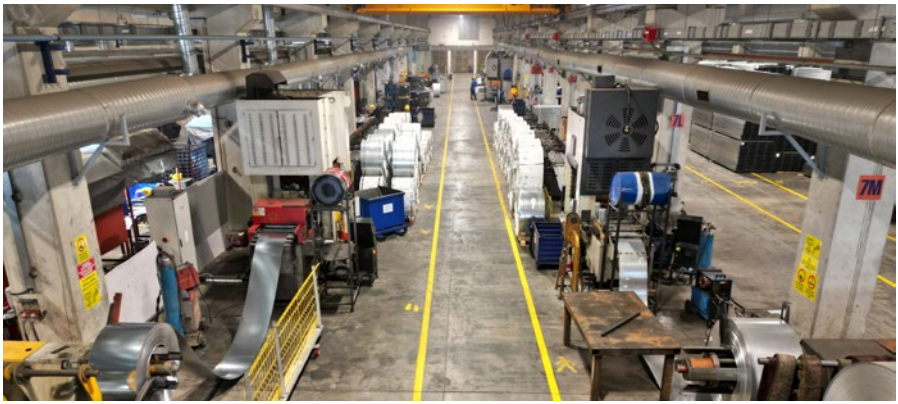
The preference of those who value their time...

ABOUT US



In 2007, our partners combined their experiences they have gained since 1997 under the roof of **YAĞMUR SCAFFOLDING SYSTEMS**. Today we operate in three different locations with a total area of 34.000 m², 16.000 m² of which is closed. Since its establishment, our company has not compromised on the principle of quality service and product.

We aim to develop a strong relationship with our customers that does not end with sales and to continue this relationship with technical consultancy after sales. Growing rapidly in a highly balanced and healthy structure our company stands out with its reliable services and has also reinforced its quality policy with the certificates it has received.



PRODUCTION

We produce our products in our own modern facility in Gebze and Dilovası. It is our main principle to provide our customers with high-quality products at the most affordable prices possible and on time, thanks to our high production capacity and permanent stock.

RENTAL & SALES

We will be pleased to offer you our H TYPE Scaffolding Systems for sale, rental, and buy-back options. You can consult our sales representatives to determine the most cost-effective procurement model for your project.

TECHNICAL SUPPORT

After the necessary load calculations are made by our technical team, your projects will be optimized and material quantities will be calculated. Scaffold installation plans and sections will be prepared in CAD environment and presented to you. The technical team will be on-site during the initial setup to provide necessary support.

QUALITY POLICY

To be always a pioneer in quality.
To increase customer and employee satisfaction by applying the philosophy of continuous improvement.
To increase the domestic and international market share by offering on-time, high quality and affordable products to the customers.
To use the latest technology for reducing the product costs and achieving the zero defect production target.
To ensure the adoptation of all personnel to the total quality philosophy and to continue on going training activities.
To support our suppliers to increase their quality levels based on the understanding that the customer satisfaction can be provided by supplying quality input.

1. H TYPE SCAFFOLDING SYSTEM

Our H- Type scaffolding system:

- Has a certificate of conformity approved by Gebze Technical University for installation at heights of up to 100 meters.
- Complies with standards UNE EN 12810-1 / UNE EN 12810-2 / UNE EN 12811-1 / UNE EN 12811-2 / UNE EN 12813-3.
- Two rear guardrails are provided at knee and waist height.
- Each level is equipped with double steel decks.
- Aluminum deck with ladder is used to ensure safe entry and exit.
- H Type scaffolding frames are manufactured from certified industrial pipes with a diameter of Ø48x3 mm, diagonal brace of Ø42x2.5 mm, and horizontal brace of Ø34x2 mm.
- Is galvanized against corrosion.

2. GENERAL INFORMATION ABOUT STANDARD

H Type Scaffolding Product Manual contains the information required for the design and usage of the safety scaffolding system in compliance with the UNE EN 12810-1 standard.

Each scaffolding area created for working purposes should be arranged to provide favorable conditions for the working place and also meet the following criteria:

- To protect worker from the risk of falling,
- To ensure the safe storage of the materials and equipment used,
- To protect workers at lower levels and those passing around the scaffolding against damage caused by objects that may fall from above.

The eaves should be created across the entire width of the working area and appropriate side protection should be provided before use. The connections between the joined parts must be sufficient and easily visible from the outside. These connections should be easy to install and there should be adequate fixing pins against accidental disconnection.

2.1 Width Classes

The clear opening between the vertical braces should be at least 600 mm and the clear width of the ladders should not be less than 500 mm.

The width determined in each working area, including the corners, must be maintained along the entire length of the deck in Table 1.

Width Class	W (m)
W06	0,6 ≤ w ≤ 0,9
W09	0,9 ≤ w ≤ 1,2
W12	1,2 ≤ w ≤ 1,5
W15	1,5 ≤ w ≤ 1,8
W18	1,8 ≤ w ≤ 2,1
W21	2,1 ≤ w ≤ 2,4
W24	2,4 ≤ w

Table 1 - Width classes

2.2 Head Clearance

The minimum net size of the head clearance dimension h_3 between the working areas should be 1.90 m.

The requirements regarding the head clearance for the height h_{1b} between the connections and the working areas or the height h_{1a} between the horizontal connections and the working areas are given in Table 2.

Class	Net Head Clearance		
	Between work areas h_3	Between the connections or horizontal connections and the working area h_{1a} h_{1b}	Minimum clear height at shoulder level h_2
H_1	$h_3 \geq 1{,}90$ m	$1{,}75\text{ m} \leq h_{1a} < 1{,}90$ m $1{,}75\text{ m} \leq h_{1b} < 1{,}90$ m	$h_2 \geq 1{,}60$ m
H_2	$h_3 \geq 1{,}90$ m	$h_{1a} \geq 1{,}90$ m $h_{1b} \geq 1{,}90$ m	$h_2 \geq 1{,}75$ m

Table 2 – Head clearance classes

2.3 Load Classes

This standard defines six load classes and seven width classes for the working areas to meet different working conditions. Service loads are shown in Table 3. The load class for the working areas depends on the intended use of the scaffolding.

Note - In exceptional cases where the scaffolding cannot be included in a single load class or is used in very heavy conditions, different parameters can be applied and determined after the analysis of the conditions of the scaffolding.

The specific tasks performed on the scaffolding should be considered. Below are some examples of the factors that should be considered:

a. Weight of all equipment and materials placed on the working area,
b. Dynamic effects caused by the machines operated with external power source used on the working area,
c. Loads from manually operated vehicles such as wheelbarrows.

The materials placed on the scaffoldings included in load class 1 are not included in the service loads given in Table 3.

Load Class	Uniformly distributed load q_1 kN / m²	Single Load Over 500 x 500 mm Area F_1 kN	Single Load Over 200 x 200 mm Area F_2 kN	Partial Area Load	
				q_2 kN/m²	Partial Area Coefficient a_p [1]
1	0,75[2]	1,50	1,00	-	-
2	1,50	1,50	1,00	-	-
3	2,00	1,50	1,00	-	-
4	3,00	3,00	1,00	5,00	0,4
5	4,50	3,00	1,00	7,50	0,4
6	6,00	3,00	1,00	10,00	0,5

Table 3 - Service loads on the working area

YAĞMUR SCAFFOLDING SYSTEMS HAS CERTIFICATE ACCORDING TO UNE EN 12810-4D-SW06/300-H2-A/B-LA STANDARD.

3. GENERAL PRINCIPLES OF H TYPE SCAFFOLDING SYSTEM

The scaffoldings consisting of wooden and prefabricated steel and aluminum alloy components to be used on the exteriors of building construction's;

- performance and design requirement calculations,
- structural arrangements for horizontal and vertical life lines,
- detailed drawings of connection points,

are performed by the relevant project designer. The calculations and detailed drawings of the facade scaffolding are submitted to the relevant administration within the static project by the building owner or their legal representatives to obtain a building license.

3.1 Responsibilities

The calculations and detailed drawings made by the manufacturer company are submitted to the contractor. Nevertheless, this does not relieve responsibilities of the contractor and the project designer.

3.2 Obligations

- In cases where the facade scaffolding height exceeds 13.50 m, the entire scaffolding should consist of steel and/or aluminum alloy components.
- Being limited to the road facing sides of the parcel where the building is located; it is obligatory that the outer surface of the scaffolding established within the approach distance of the building is completely covered with sack fabric, net, tarpaulin, plate or similar scaffolding cover that can perform the same function.

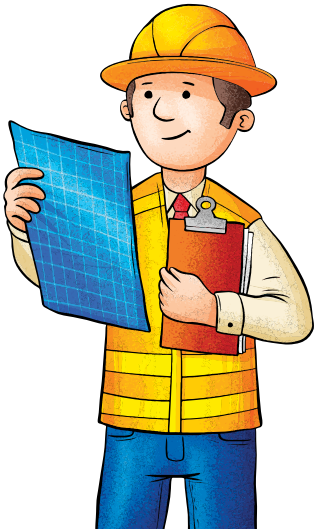
4. GENERAL EXPLANATIONS FOR INFORMATION AND DEMONSTRATION PURPOSES REGARDING THE DESIGN AND IMPLEMENTATION RULES OF SCAFFOLDINGS

Scaffoldings consisting of prefabricated steel and aluminum alloy components should be designed in accordance with UNE EN 12811-1 and UNE EN 12810-2 standards in a way that they will not accidentally move or collapse and can be used safely.

H TYPE scaffolding system installation instructions:

- The maximum weights that steel decks can carry should be written on the plates and hung on the appropriate and visible places of the scaffolding. Care should be taken to uniformly distribute these specified weights and loads exceeding these weights should not be loaded on the decks.
- In cases where night work is necessary and mandatory and daylight is insufficient, appropriate and sufficient lighting has to be provided, and electrical cables and devices have to be deployed in a way that they do not pose any danger to both the scaffolding and the workers.
- It should be ensured that the existing working areas and passages on the scaffolding do not become slippery due to natural factors such as ice, snow, rain and other factors such as dirt, rust, oil, by taking preventive measures and regular maintenance.

SHOULD NOT WORK ON SCAFFOLDINGS IN RAINY AND SNOWY WEATHER AND IN CASES WHERE THE WIND SPEED EXCEEDS 45 KM/HOUR.



- While calculating the system, the largest loads and working wind load should be applied separately perpendicular and also parallel to the facade.
- Horizontal stability of the scaffolding should be ensured by attaching the scaffolding to the adjacent building with anchors.
- Working areas should be as horizontal as possible, the slope should not exceed 20%.
- The dismantling of the scaffolding should start from the top floor and proceed to the bottom floor.
- Deformed and corroded components should not be used in scaffolding systems.
- The metal elements of the scaffolding system must be properly grounded against static electricity.
- If the height between the uppermost deck surface and the bottom edge of the baseplate is above 24 m, additional calculations should be made besides the standard system configurations.
- Head clearance between working areas must be at least 190 cm.
- Passages for scaffolding transitions should be at least 60 cm wide with appropriate guardrail systems on the edges.
- The main guardrail should be at least 1 m high from the deck, and resistant to a load of at least 125 kilograms from any direction.
- At least 15 cm high toe board should be installed directly adjacent to the deck.
- Intermediate guardrails shall be provided so that the clearance between the toe board and the main guardrail does not exceed 47 cm.
- All components to be used in the installation should be individually inspected. In case of any damage, such as those described above, those components should be replaced with new ones and the installation of the scaffolding should continue.
- Being limited to the road facing sides of the parcel where the building is located; it is obligatory that the outer surface of the scaffolding established within the approach distance of the building is completely covered with sack fabric, net, tarpaulin, plate or similar scaffolding cover that can perform the same function.

5. PROCEDURES TO BE FOLLOWED IN CASE OF TEMPORARY REMOVAL OF CONNECTIONS OR WHEN THE SCAFFOLDING HEIGHT EXCEEDS 25 METERS IN A H TYPE SCAFFOLDING SYSTEM

In the event that the wall connection kit of the scaffolding should be temporarily removed, this process should be carried out by removing only one wall connection kit at a time in order not to jeopardize the general rigidity of the scaffolding. After the process is completed and the wall connection kit is reassembled than the removal of the other one must be carried out. Otherwise, undesirable dangerous situations may occur on the scaffolding.

In cases where the scaffolding height exceeds 25 m or different application is required from the proposed project, the authorized technical personnel of the manufacturer should be contacted. Installation has to be made with different projects to be proposed by the technical personnel.

6. SAFETY MEASURES TO BE TAKEN ON SCAFFOLDINGS

In the installation of facade scaffoldings consisting of prefabricated components, it is ensured that the vertical and horizontal braces of the system are used completely and the system is reinforced with adequate diagonal braces.

For prefabricated facade scaffolding systems, the nominal outer diameter of circular vertical and horizontal braces shall be at least 48.3 millimeters, and the nominal wall thickness shall be appropriate with the material type and minimum yield strength.

Facade scaffoldings are installed as close as possible to the building, and when this is not possible, measures are taken to prevent the workers from falling between the building and the scaffolding.

7. CLASSIFICATION

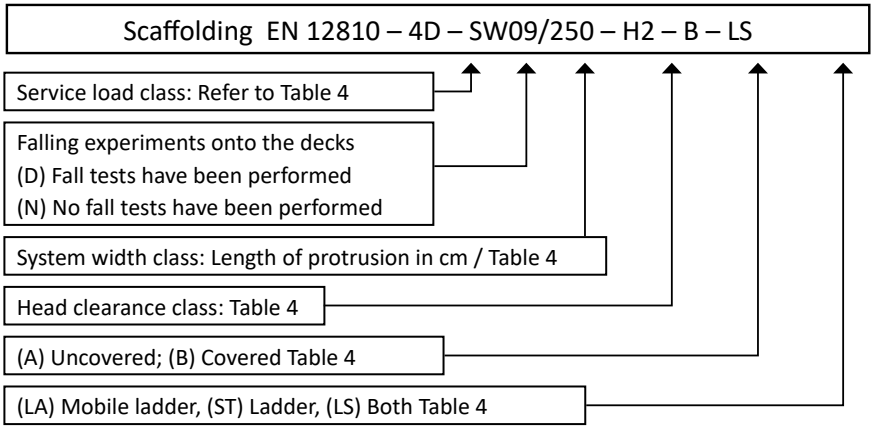
A scaffolding system must be classified in accordance with Table 4.

Classification criteria	Classes
Service load	2, 3, 4, 5, 6 in accordance with EN 12811-1 Table 3
Decks and supports	(D) Designed by fall test (N) Not designed by fall test
System width	SW06, SW09, SW12, SW15, SW18, SW21, SW24
Head clearance	H1 and H2 in accordance with EN 12811-1 Table 2
Covering	(B) Covered (A) Uncovered
Vertical movement method	(LA) Mobile ladder (ST) Ladder (LS) Both

Table 4 – Scaffolding System Classification

7.1 SHORT DISPLAY

A brief illustration of a scaffolding system should include the following parts in accordance with this standard.



W09/250: The system width is between 0.9 m and 1.2 m, and the protrusion length is 2.5 m.

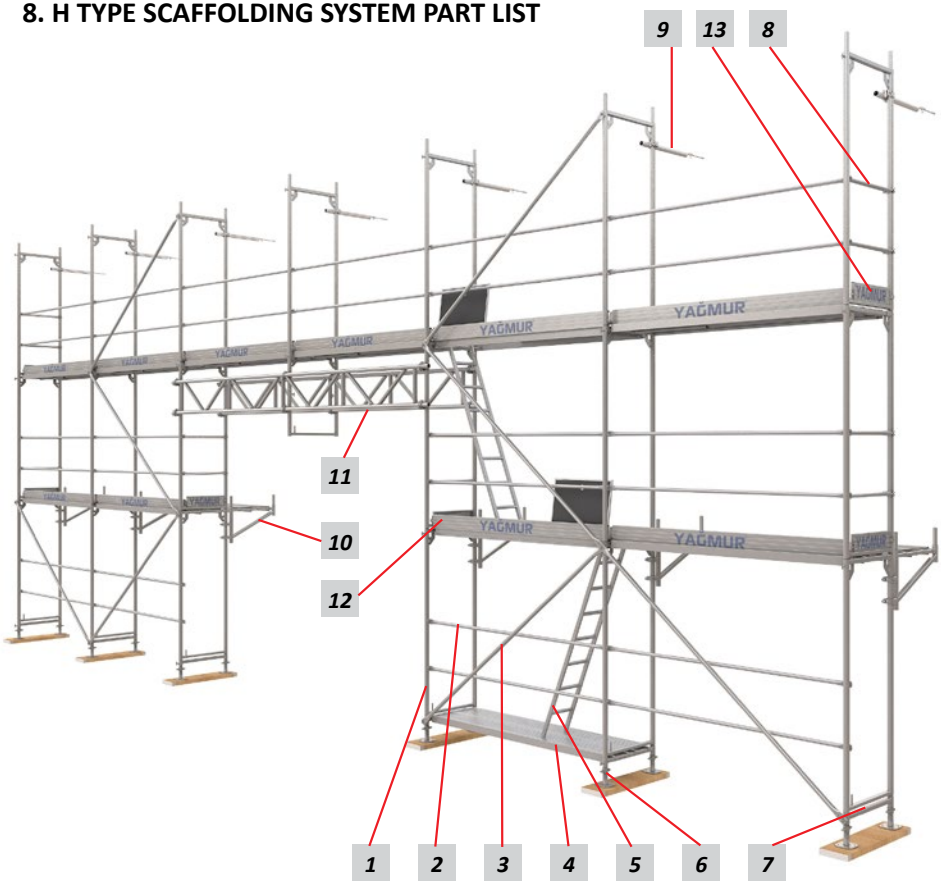
H2: The head clearance between the working area and horiztonal connections is at least 1.9 m.

B: Covered ladder.

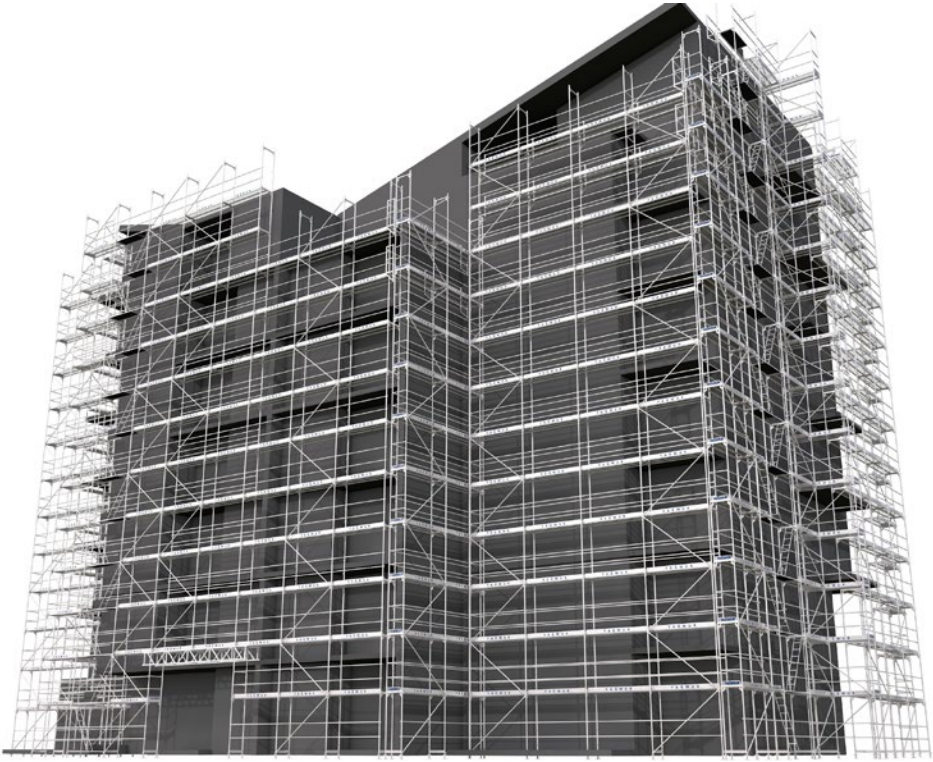
S: The scaffolding is accessed via both mobile and regular ladders.

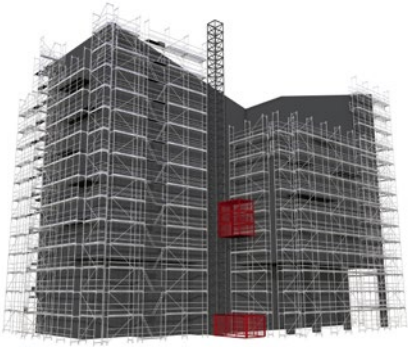
If a scaffolding system contains more than one load class or dimension, a separate short display line should be provided for each one.

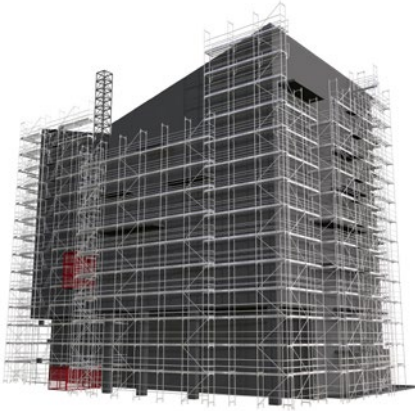
8. H TYPE SCAFFOLDING SYSTEM PART LIST

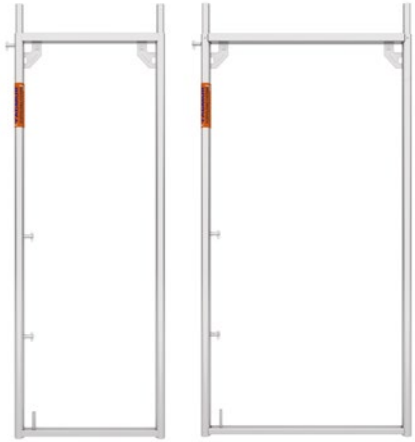


1	*Main Frame*	8	*End Guardrail*
2	*Horizontal Brace*	9	*Wall Connection Kit*
3	*Diagonal Brace*	10	*Console*
4	*Steel Deck*	11	*Lattice Beam*
5	*Aluminum Deck with Ladder*	12	*Steel Toe Board*
6	*Base Adjustment*	13	*Steel End Toe Board*
7	*Starting Member*		

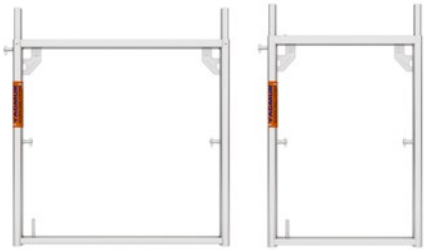


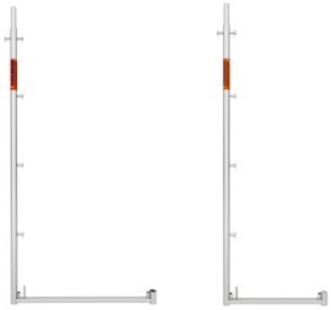


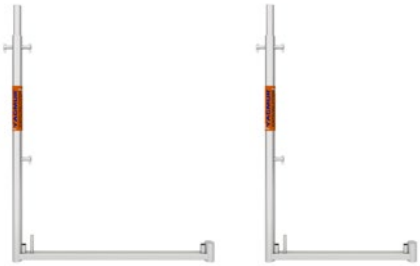


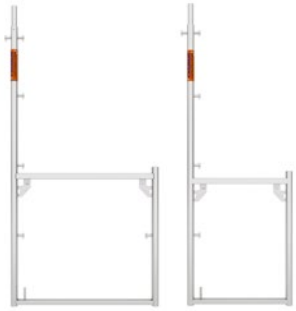
8.1.1 MAIN FRAME	CODE	DIMENSION (cm)	WEIGHT (kg)
	M.101.075.200	75X200	17,00
	M.101.105.200	105X200	18,20

The main frame is the main component of the safety scaffolding system. It has three pins as standard: two pins on the internal front side for connection of the horizontal braces and one pin on the external side for connection of the diagonal braces. The main frames are easily assembled with the help of the spigots on the top. The top profile of the main frame carries the platform and the lower profile provides fastening. The toe boards are easily attached and removed with the help of the bracket on the lower profile. Half frames are used when the main frame height is above standard. The half frames are used when there is not enough height for the main frame at the top of the scaffolding.

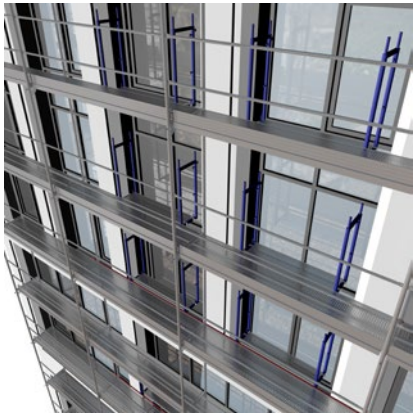
8.1.2 HALF FRAME	CODE	DIMENSION (cm)	WEIGHT (kg)
	M.101.075.100	75X100	10,50
	M.101.105.100	105X100	12,20

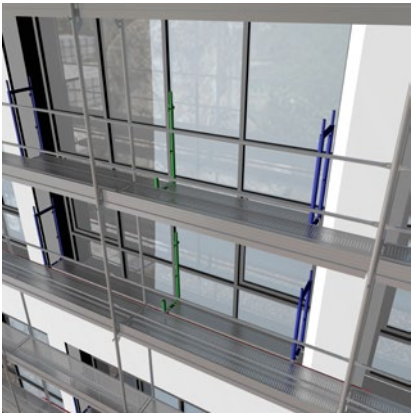
8.1.3 L FRAME	CODE	DIMENSION (cm)	WEIGHT (kg)
	M.102.075.200	75X200	8,60
	M.102.105.200	105X200	9,00

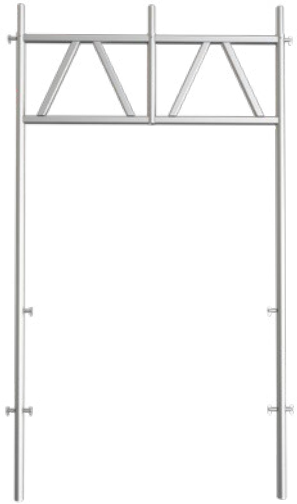
8.1.4 HALF L FRAME	CODE	DIMENSION (cm)	WEIGHT (kg)
	M.102.075.110	75X110	5,50
	M.102.105.110	105X110	6,10

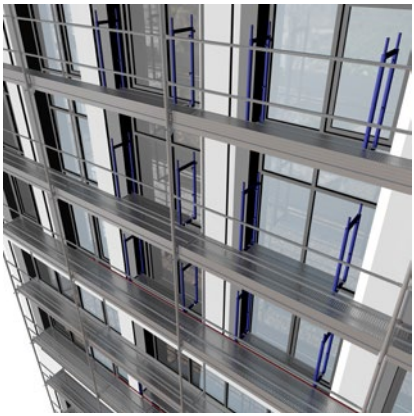
8.1.5 ASYMMETRIC FRAME	CODE	DIMENSION (cm)	WEIGHT (kg)
	M.103.075.200	75X200	13,20
	M.103.105.200	105X200	15,20

L Frame, Half L Frame and Asymmetric Frame is generally used at the top of scaffolding in situations where the main frames are unable to be used such as eaves etc. The horizontal and the diagonal braces and the toe boards can easily be mounted to these frames.

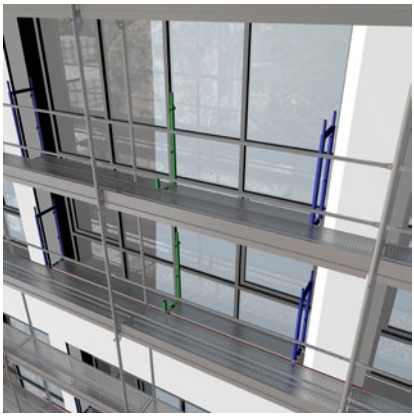




8.1.6 TRANSITION FRAME	CODE	DIMENSION (cm)	WEIGHT (kg)
	M.104.175.250	175X250	31,00



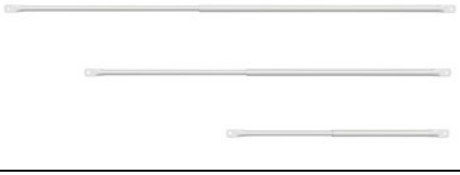
8.1.7.1



8.1.7.2

The transition frame is used on scaffolding assembled in areas with pedestrian traffic. With the help of the transition frame, the ground level of the scaffolding becomes suitable for pedestrian traffic, whereas the adaptor on the upper part allows the installation of the scaffolding to continue with the frames.

8.2.1 HORIZONTAL BRACE	CODE	DIMENSION (cm)	WEIGHT (kg)
	M.111.034.300	300	4,60
	M.111.034.250	250	3,80
	M.111.034.200	200	3,20
	M.111.034.150	150	2,30
	M.111.034.100	100	1,60

8.2.2 ADJUSTABLE HORIZONTAL BRACE	CODE	DIMENSION (cm)	WEIGHT (kg)
	M.116.034.350	250-350	7,30
	M.116.034.250	140-250	5,70
	M.116.034.140	85-140	3,00

8.2.1.1

8.2.1.2

The horizontal braces used as a rear guardrail for the safety of the workers on the scaffolding, are mounted on pins located on the internal side of the frame.

In cases where the scaffolding is installed more than 30 cm from the facade, additional horizontal braces are used to ensure protection against potential falls from the front side.

8.3 DIAGONAL BRACE	CODE	DIMENSION (cm)	WEIGHT (kg)
	M.121.042.364	364	8,50
	M.121.042.324	324	7,60
	M.121.042.286	286	6,70
	M.121.042.254	254	6,00
	M.121.042.227	227	5,30

8.3.1

8.3.2

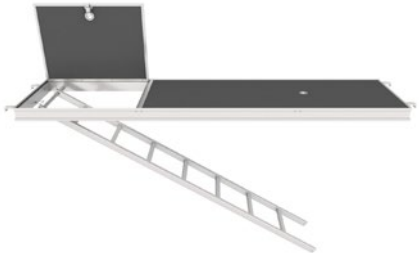
Diagonal braces which directly effect the scaffolding's stability are mounted on the pin, located on the external side of the top frame. They are installed with a change of direction in the vertical axis. The number of braces varies depending on the height of the construction to be assembled.

8.4 STEEL DECK	CODE	DIMENSION (cm)	WEIGHT (kg)
	M.139.030.300	300	18,70
	M.139.030.250	250	14,70
	M.139.030.200	200	12,20
	M.139.030.150	150	9,70
	M.139.030.100	100	7,00
	M.139.030.075	75	6,00

Steel decks providing a safe working environment for the workers, are placed on the upper profile of the main frames. The hooks of the steel decks are positioned between the lower profile of the frame placed on top and the upper profile of the frame at the bottom and thus the decks are locked against rotation.

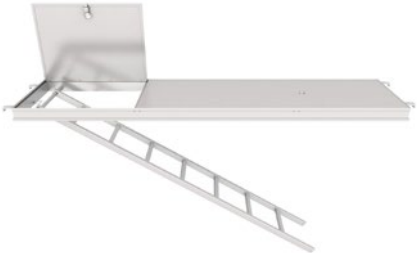
8.4.1

8.4.2

8.5.1 ALUMINUM DECK WITH LADDER	CODE	DIMENSION (cm)	WEIGHT (kg)
	T.461.060.300	60x300	26,50
	T.461.060.250	60x250	22,50
	T.461.060.200	60x200	19,50

8.5.2 ALUMINUM ACCESS DECK	CODE	DIMENSION (cm)	WEIGHT (kg)
	T.456.060.300	60x300	22,50
	T.456.060.250	60x250	18,50
	T.456.060.200	60x200	15,50
	T.456.060.185	60x185	14,50
	T.456.060.150	60x150	12,50
	T.456.060.135	60x135	11,50

8.5.3ALUMINUM DECK	CODE	DIMENSION (cm)	WEIGHT (kg)
	T.451.060.300	60x300	22,40
	T.451.060.250	60x250	18,40
	T.451.060.200	60x200	15,40
	T.451.060.185	60x185	14,40
	T.451.060.150	60x150	12,40

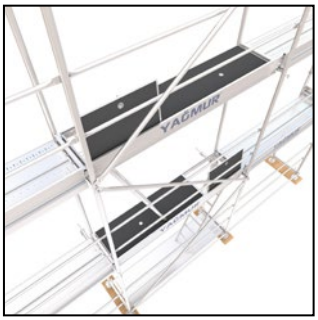
8.5.4 ALUMINUM DECK WITH LADDER (Aluminum Surface)	CODE	DIMENSION (cm)	WEIGHT (kg)
	T.462.060.300	60x300	27,00
	T.462.060.250	60x250	23,00
	T.462.060.200	60x200	19,80

8.5.5 ALUMINUM ACCESS DECK (Aluminum Surface)	CODE	DIMENSION (cm)	WEIGHT (kg)
	T.457.060.300	60x300	23,70
	T.457.060.250	60x250	19,50
	T.457.060.200	60x200	16,30
	T.457.060.185	60x185	15,20
	T.457.060.150	60x150	13,10
	T.457.060.135	60x135	12,00

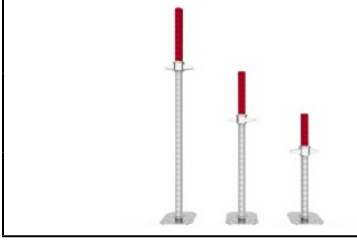
8.5.6 ALUMINUM DECK (Aluminum Surface)	CODE	DIMENSION (cm)	WEIGHT (kg)
	T.452.060.300	60x300	23,60
	T.452.060.250	60x250	19,40
	T.452.060.200	60x200	16,20
	T.452.060.185	60x185	15,10
	T.452.060.150	60x150	13,00

Aluminum decks with ladders are manufactured in a width of 60 cm. Without the need to build a ladder tower, it can be descended by opening the trapdoor or closed and worked on. In order not to prevent the operation, the end of the ladder that presses the surface is lifted and fixed to the bottom of the deck. The locking system at the bottom of the deck allows easy opening and closing of the ladder. In cases where the ladder is left locked, the hole in the deck surface allows the ladder to be unlocked from the upper floor.

8.5.1.1



8.5.1.2

8.6.1 BASE ADJUSTMENT	CODE	DIMENSION (cm)	WEIGHT (kg)
	M.601.038.100	100	4,40
	M.601.038.070	70	3,40
	M.601.038.050	50	2,80

8.6.2 ARTICULATED BASE ADJUSTMENT	CODE	DIMENSION (cm)	WEIGHT (kg)
	M.603.038.100	100	5,80
	M.603.038.070	70	4,50
	M.603.038.050	50	3,70

8.6.1.1

Base adjustments are manufactured by opening 8-pitch thread. It has a spherical cast iron nut that allows the adjustment. It has a stopper to prevent over extension for safety. The minimum section that must remain inside the pipe is painted in red color. The embossed base plate ensures even load distribution. Base adjustments are manufactured in various heights to meet all kinds of needs. Articulated base adjustments are used on inclined surfaces.

8.6.2.1

BASE ADJUSTMENT JACK RESISTANCE TABLE	
EXTENSION (cm)	VERTICAL LOAD (kN)
40	32,5
30	39
20	46
10	50

**Load safety coefficient 2.0*

**These values are given based only on vertical load conditions. In the event of horizontal loads on the base adjustment jack, the load-bearing capacity will decrease depending on the weight of the horizontal load.*

8.7 STARTING MEMBER	CODE	DIMENSION (cm)	WEIGHT (kg)
	M.158.048.105	100	3,00
	M.158.048.075	70	2,30

8.7.1

8.7.2

The starting member which has a pin for mounting the diagonal brace, is inserted between the frame and the adjustment bases.

8.8 END GUARDRAIL	CODE	DIMENSION (cm)	WEIGHT (kg)
	M.165.034.105	90	2,00
	M.165.034.075	65	1,40

End guardrails are used to ensure the safety of workers against falls on the exposed right and left edges of the scaffolding. One end is inserted into a pin on the frame, and the other end is fixed to the frame with a clamp.

8.8.1

8.9.1 WALL CONNECTION PIPE	CODE	DIMENSION (cm)	WEIGHT (kg)
	M.631.048.100	100	3,70
	M.631.048.090	90	3,35
	M.631.048.080	80	3,00
	M.631.048.070	70	2,65
	M.631.048.060	60	2,30
	M.631.048.050	50	1,95
	M.631.048.040	40	1,60

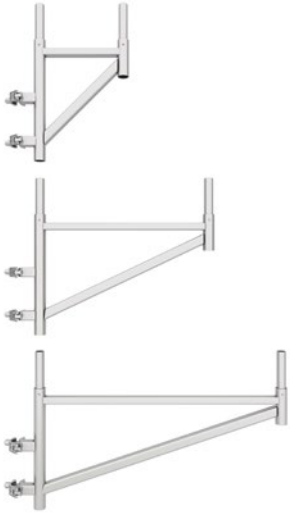
8.9.2 FIXED COUPLER	CODE	DIMENSION (cm)	WEIGHT (kg)
	T.641.048.048	Ø48XØ48	1,00

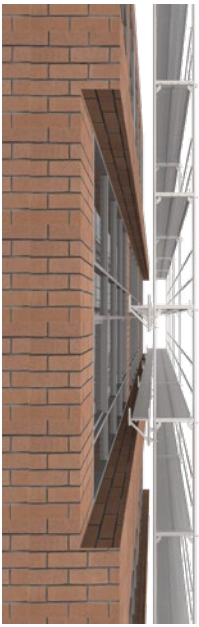
8.9.3 WALL FIXING BOLT	CODE	DIMENSION (cm)	WEIGHT (kg)
	M.632.012.021	21,5	0,20

8.9.4 WALL FIXING PEG	CODE	DIMENSION (cm)	WEIGHT (kg)
	T.622.012.050	M12	0,10

The wall connection kit is used to fix the H Type scaffolding to the building facade. The wall connection kit consists of connection pipe, fixed coupler, bolt and peg. Different lengths of connection pipes are used when the clearance between the façade and the H Type scaffolding varies.

A Ø16 hole with a minimum depth of 7 cm is drilled with a charged hand drill to coincide with the concrete parts of the structure (column, shear wall, beam or slab). An M12 drop-in peg is placed in the hole, the fixing bolt is mounted on the peg. The Z part of the Ø48x3.2 mm pipe welded to the Ø16 transmission rod, is mounted to the fixing bolt and its straight part is connected to the vertical brace with a fixed coupler.

8.10 CONSOLE	CODE	DIMENSION (cm)	WEIGHT (kg)
	M.261.048.105	105	9,80
	M.261.048.075	75	6,70
	M.261.048.045	45	5,60



The console is used for safely access to the special areas in the facade such as eaves and etc. It is attached to the main frames with the clamps.

8.11.1 LATTICE BEAM-H:30 cm	CODE	DIMENSION (cm)	WEIGHT (kg)
	M.171.030.820	30X820	79,00
	M.171.030.720	30X720	69,00
	M.171.030.620	30X620	59,00
	M.171.030.520	30X520	49,00
	M.171.030.420	30X420	39,00
	M.171.030.320	30X320	29,00

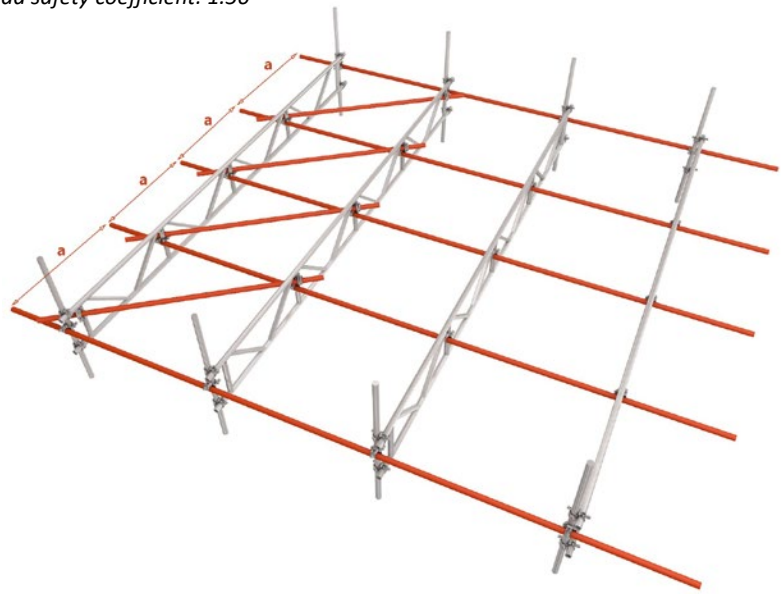
8.11.2 LATTICE BEAM-H:45 cm	CODE	DIMENSION (cm)	WEIGHT (kg)
	M.171.045.820	45X820	83,00
	M.171.045.720	45X720	72,50
	M.171.045.620	44X620	62,00
	M.171.045.520	45X520	51,50
	M.171.045.420	45X420	41,00
	M.171.045.320	45X320	30,50

Lattice beams are used to pass clearances between 3 m and 8 m where it is not possible to erect the standard scaffolding. Special lattice beams are produced for larger clearances thus savings are achieved by reducing the amount of scaffolding for such areas. The lattice beams are mounted to the vertical braces of the scaffolding with double couplers. In cases where the scaffolding must rise above the lattice beam, the vertical braces are attached to the lattice beam with a fixed coupler. A safe working area is formed on the steel decks laid on the lattice beams.

LATTICE BEAM RESISTANCE TABLE (30 cm)		
LENGTH (cm)	UNIFORMLY DISTRIBUTED LOAD (kN/m)	MEDIUM SINGLE LOAD (kN)
30x820	1,25	7,20
30x720	1,70	9,85
30x620	2,45	10,90
30x520	3,70	15,40
30x420	5,60	16,60
30x320	9,00	22,00

LATTICE BEAM RESISTANCE TABLE (45 cm)		
LENGTH (cm)	UNIFORMLY DISTRIBUTED LOAD (kN/m)	MEDIUM SINGLE LOAD (kN)
820	2,40	15,10
720	3,10	16,00
620	3,90	18,10
520	5,20	19,60
420	7,40	22,50
320	10,00	24,20

** Load safety coefficient: 1.50*

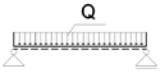
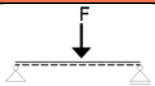


** The top of the lattice beam will be fully covered with steel decks and the deck locks will be locked, or the connection pipes to the lattice beam top pipe will be connected with couplers at a maximum distance of 1m to prevent buckling.*

** The switch subhead will be connected with pipes and clamps with a maximum distance of 1m to prevent sprain.*

8.11.3 ALUMINUM LATTICE BEAM-H:45 cm	CODE	DIMENSION (cm)	WEIGHT (kg)
	T.481.045.820	45X820	14,00
	T.481.045.720	45X720	18,00
	T.481.045.620	45X620	22,00
	T.481.045.520	45X520	26,00
	T.481.045.420	45X420	30,00
	T.481.045.320	45X320	34,00

Aluminum lattice beams are lighter than standard lattice beams and provide ease of installation. In this way, the load on the scaffolding is reduced. Lattice beams are used to pass clearances between 3 m and 8 m where it is not possible to install standard scaffolding. In this way, the amount of scaffolding is reduced and savings are achieved. A safe working area is created thanks to the steel decks laid on the lattice beams

ALUMINUM LATTICE BEAM RESISTANCE TABLE		
BOY (cm)	 DÜZGÜN YAYILI YÜK (kN/m)	 ORTA TEKİL YÜK (kN)
820	2,10	11,00
720	2,30	11,90
620	3,45	13,60
520	3,90	14,60
420	4,20	15,70
320	7,20	17,00

**Load safety coefficient:1,50*

8.12 STEEL TOE BOARD	CODE	DIMENSION (cm)	WEIGHT (kg)
	M.151.015.300	300	6,00
	M.151.015.250	250	5,00
	M.151.015.200	200	4,00
	M.151.015.150	150	3,00
	M.151.015.100	100	2,00

8.13 STEEL END TOE BOARD	CODE	DIMENSION (cm)	WEIGHT (kg)
	M.152.015.105	105	2,00
	M.152.015.075	75	1,50

8.12.1

8.12.2

The steel toe board is produced by giving form to the galvanized sheet metal in the roll-form line. These forms increase the strength of the toe board.

The steel toe boards prevent the unconscious workers from falling off the scaffolding by rolling over.

In addition, it protects the people on the ground from occupational accidents bypreventing the materials such as rubble, scrap, etc. and the hand tools used in the working area from falling from height.

The steel toe board is installed to the toe board bracket on the frame. One side of the steel end toe board is installed to the steel toe board bracket and the other side to the main frame.

8.14.1 Z LADDER	CODE	DIMENSION (cm)	WEIGHT (kg)
	M.282.090.300	90x300	77,00
	M.282.090.250	90x250	70,00
	M.281.060.300	60x300	65,00
	M.281.060.250	60x250	58,00

8.14.2 INNER GUARDRAIL for Z LADDER	CODE	DIMENSION (cm)	WEIGHT (kg)
	M.286.100.200	100x200	10,00

8.14.3 OUTER GUARDRAIL for Z LADDER	CODE	DIMENSION (cm)	WEIGHT (kg)
	M.287.100.300	100x300	21,00
	M.287.100.300	100x250	18,00

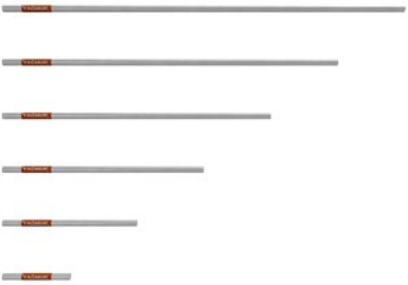
8.14.4 BOTTOM GUARDRAIL for Z LADDER	CODE	DIMENSION (cm)	WEIGHT (kg)
	M.288.050.150	50x150	6,00

8.14.5 ALUMINUM Z LADDER	CODE	DIMENSION (cm)	WEIGHT (kg)
	T.472.090.300	90x300	32,00
	T.472.090.250	90x250	28,00
	T.471.060.300	60x300	20,00
	T.471.060.250	60x250	17,00

8.14.6 INNER GUARDRAIL for ALUMINUM Z LADDER	CODE	DIMENSION (cm)	WEIGHT (kg)
	T.476.100.200	100x200	5,70

8.14.7 OUTER GUARDRAIL for ALUMINUM Z LADDER	CODE	DIMENSION (cm)	WEIGHT (kg)
	T.477.100.300	100x300	7,70
	T.477.100.250	100x250	6,70

8.14.8 BOTTOM GUARDRAIL for ALUMINUM Z LADDER	CODE	DIMENSION (cm)	WEIGHT (kg)
	T.478.050.150	50x150	3,50

8.15.1 PIPE	CODE	DIMENSION (cm)	WEIGHT (kg)
	M.611.048.600	600	17,20
	M.611.048.500	500	14,00
	M.611.048.400	400	12,80
	M.611.048.300	300	9,60
	M.611.048.200	200	6,40
	M.611.048.100	100	3,20

8.15.2 HORIZONTAL BRACE WITH COUPLERS	CODE	DIMENSION (cm)	WEIGHT (kg)
	M.181.048.300	300	8,00
	M.181.048.100	100	4,10
	M.181.048.070	70	3,20

8.15.3 SPIGOT ADAPTER CLAMP	CODE	DIMENSION (mm)	WEIGHT (kg)
	T.653.048.150	Ø48	1,10

8.15.4 ADJUSTMENT ADAPTER CLAMP	CODE	DIMENSION (cm)	WEIGHT (kg)
	M.605.038.100	100	3,90
	M.605.038.070	70	2,90
	M.605.038.050	50	2,30

8.15.5 FIXED COUPLER	CODE	DIMENSION (mm)	WEIGHT (kg)
	T.641.048.048	Ø48-Ø48	1,00

8.15.6 SWIVEL COUPLER	CODE	DIMENSION (mm)	WEIGHT (kg)
	T.642.048.048	Ø48-Ø48	1,10

8.15.7 GIRDER COUPLER	CODE	DIMENSION (m)	WEIGHT (kg)
	T.645.048.000	Ø48	1,40

8.15.8 PIN COUPLER	CODE	DIMENSION (m)	WEIGHT (kg)
	M.643.048.000	Ø48	0,70

8.15.9 TOE BOARD COUPLER	CODE	DIMENSION (mm)	WEIGHT (kg)
	M.644.048.000	Ø48	0,90

8.15.10 PUTLOG COUPLER	CODE	DIMENSION (mm)	WEIGHT (kg)
	T.647.048.000	Ø48	0,70

8.15.11 SLEEVE COUPLER	CODE	DIMENSION (mm)	WEIGHT (kg)
	T.646.048.048	Ø48-Ø48	1,00

8.15.12 INNER JOINT COUPLER	CODE	DIMENSION (cm)	WEIGHT (kg)
	T.646.038.150	15	0,70

8.15.13 STEEL LATTICE GIRDER	CODE	DIMENSION (cm)	WEIGHT (kg)
	T.659.038.450	50	3,40

8.15.14 JOINT COUPLER	CODE	DIMENSION (cm)	WEIGHT (kg)
	T.658.038.150	15	0,30

8.16.1 CONTAINER	CODE	DIMENSION (cm)	WEIGHT (kg)
	T.661.080.125	80x130	60,00

9. INSTALLATION STEPS

9.1 WOODEN PLANKS

Wooden planks transfer scaffolding loads from vertical, horizontal and diagonal members as well as from the base adjustment to the ground. They prevent the scaffolding from sinking and slipping.

For damaged and soft ground, larger base planks should be preferred.

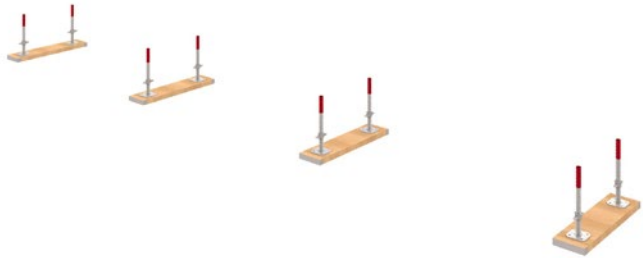
When applicable, long base planks extending along two vertical posts can also be used.

CONSIDERATIONS FOR WOODEN PLANKS INSTALLATION

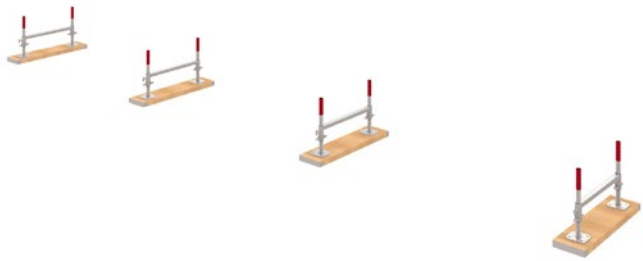
Wooden planks must be placed on a levelled surface. This prevents the scaffolding from sinking and shifting.

Wooden planks should not be placed on surfaces with cavities. Unstable and waste materials such as bricks, stones, and pieces of wood should not be used under starting member. These materials can easily break and crumble when subjected to the weight of the scaffolding.

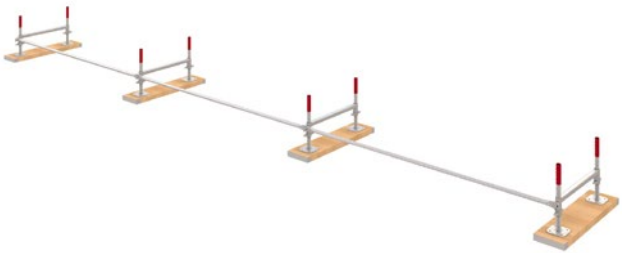
There should be no cavities or holes under wooden planks.



9.1.1 The ground to be scaffolded is leveled, if possible, leveling concrete is poured. Base adjustments are placed on wedges and placed at the points specified in the project.

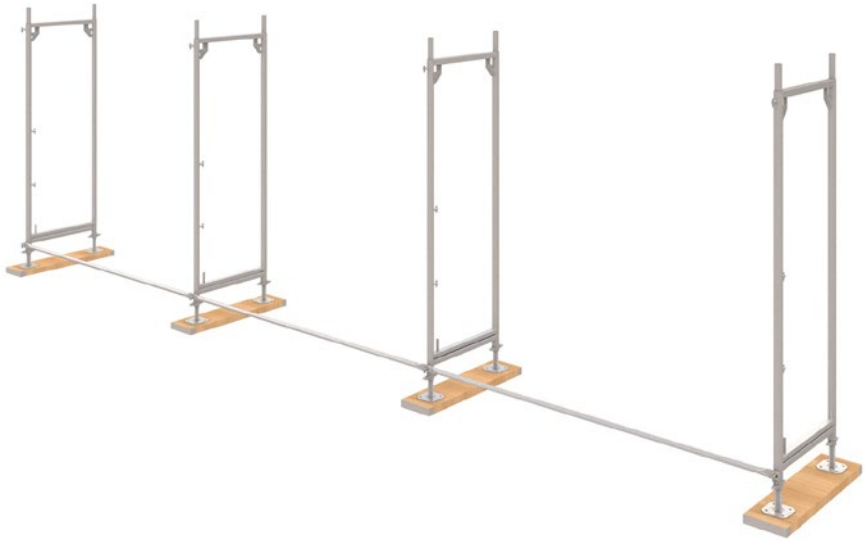


9.1.2 Starting members are mounted on the base adjustments.

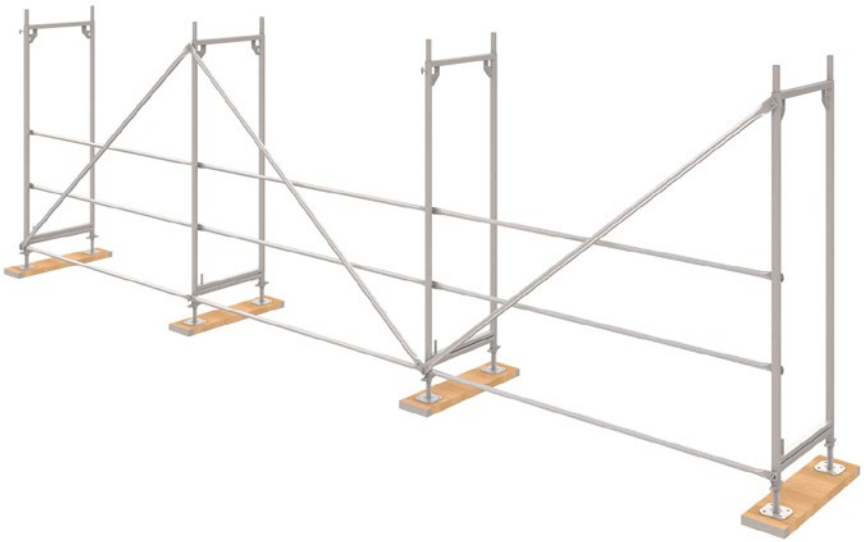


9.1.3 Horizontal braces are attached to the flanges on the starting members.

9.1.4 The scaffolding is taken to the scale and the system is brought to the square.



9.1.5 H Type scaffolding frames are mounted on the starting members.



9.1.6 Horizontal and diagonal braces are mounted on the frames.

9.1.7 Steel decks and deck with ladders are mounted on the top profile of the main frame. The upper floor is accessed by using a ladder.

9.1.8 The frames of the second floor are mounted on the frames of the first floor. H Type scaffolding is installed by repeating the same process on the first floor.

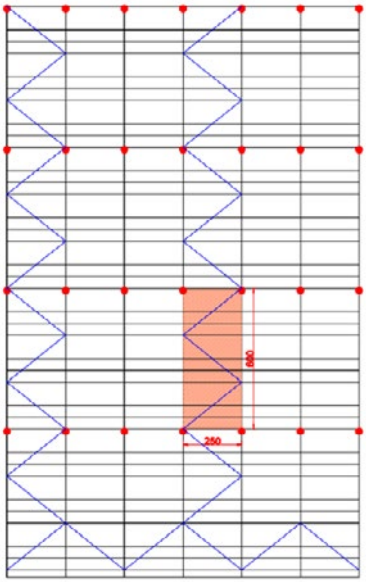
9.1.9 End guardrails are mounted on all starting and end frames during installation, except the bottom row. The toe boards are attached to the main frames except the ladder sections, end toe boards are attached to the main frames with the end guardrail. H Type scaffolding system is fixed to the construction with all connection kits fixed horizontally to the all frames, vertically to the intervals of 6 m for uncovered applications, of 4 m for mesh applications and of 2 m for tarpaulin applications.

10. DISMANTLING

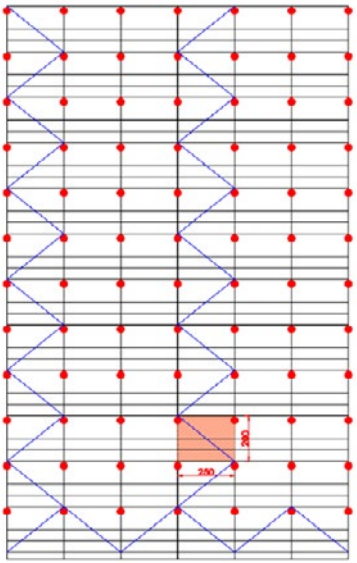
- Before dismantling, a sufficiently large area is prepared where the materials to be dismantled from the scaffolding can be stacked regularly. The application of the designated area for vehicle entry and exit is checked. Safety measures are taken on the access roads to the stacking area; against risks such as material falling, risks arising from work equipment, tripping, etc.
- Warning signs indicating that disassembly has been carried out are hung.
- Before dismantling, it is ensured that critical parts (wall connection, diagonals, buttress, etc.) for the stability of the scaffolding are intact.
- The suitability of the weather conditions for the dismantling process is checked.
- Other materials on the scaffolding decks (work-related building materials, residual materials, etc.) are removed from the scaffolding before dismantling.
- Damaged, unusable materials detected during dismantling are separated from solid materials.
- Protection systems have to be installed against the risk of falling from height. It is ensured that all workers have full body seat belts and related anchorages. Workers are provided with the proper use of full body safety belts in line with the training they receive and are warned not to remove them.
- Attention should be paid to the use of personal protective equipment such as helmets, steel toe shoes, gloves, etc.
- Before dismantling, none of the diagonal braces or supports should be taken from the scaffolding for any reason.
- The scaffolding should be dismantled starting from the top part with a sequence opposite to the assembly steps followed in the installation. The building connections of the scaffolding should be removed after the removal of the decks and in order from top to bottom.
- In the dismantled floor, end guardrails with the steel toe boards in the first stage, anchors in the second stage, horizontal connections and vertical braces in the third stage is done. The dismantling of the decks is done in the fourth stage from downstairs and the floor dismantling is completed. The deck with the ladder should be in the locked position before the dismantling stage.
- If there are coverings such as nets and tarpaulins on the scaffolding surface, the coverings of the dismantled floor are removed before the dismantling.
- The dismantled scaffolding parts should never be thrown down, they should be lowered safely with the help of appropriate equipment (pulley system, elevator, etc.).

11. H TYPE SCAFFOLDING SYSTEM ANCHORAGE DETAILS

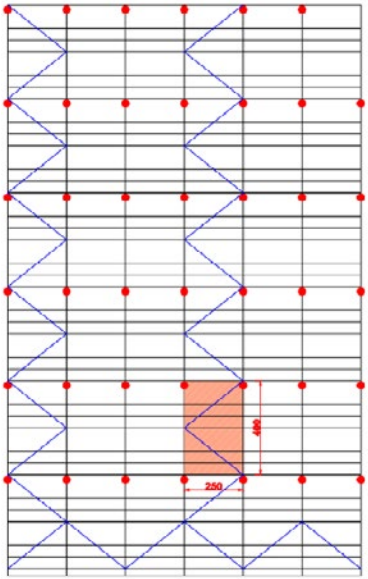
Wall connection kit and fixed couplers are used to fix the H Type Scaffolding System to the structure. A Ø16 hole with a minimum depth of 7 cm is drilled with a charged hand drill to coincide with the concrete parts of the structure (column, shear wall, beam or slab). An M12 drop-in peg is placed in the hole, the fixing bolt is mounted on the peg. The Z part of the Ø48x3.2 mm pipe welded to the Ø16 transmission rod, is mounted to the fixing bolt and its straight part is connected to the vertical brace with a fixed coupler.



Uncovered



Covered with tarpaulin

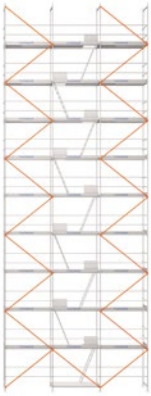


Covered with mesh

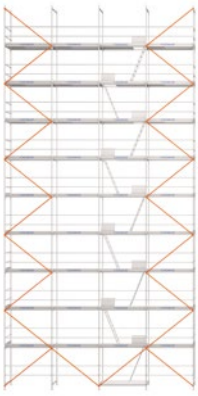
11.1 INSTALLATION EXAMPLES OF DIAGONAL BRACE

1 Module

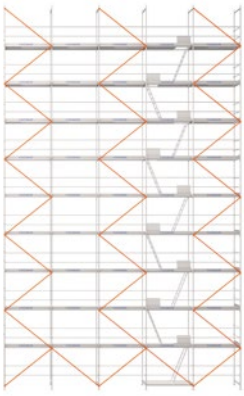
2 Module



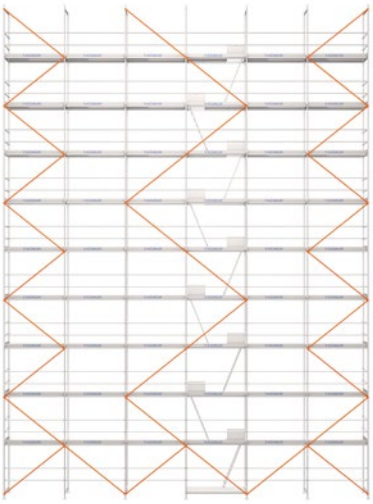
3 Module



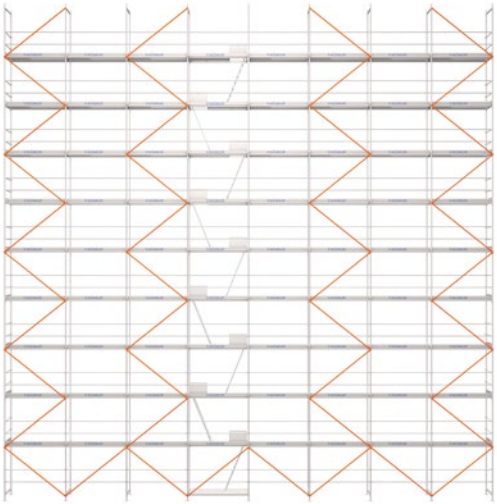
4 Module



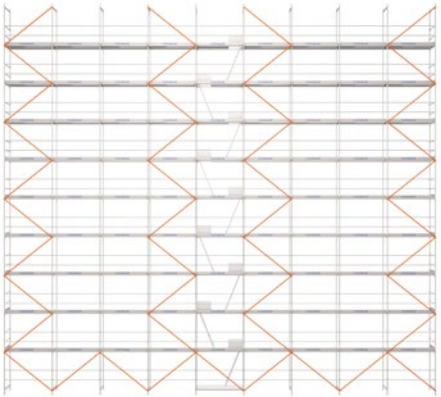
5 Module



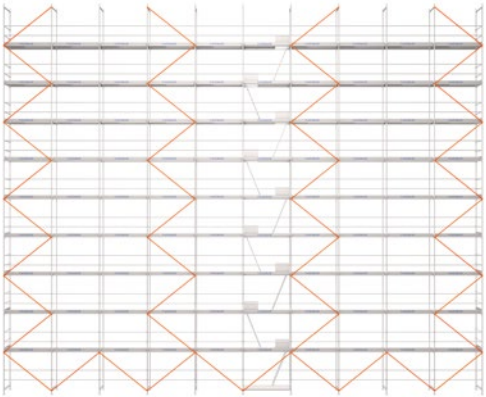
6 Module



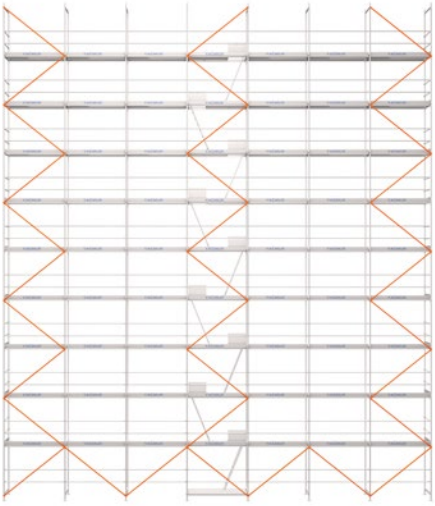
7 Module



8 Module



9 Module



10 Module

12. H TYPE SCAFFOLDING ELEMENTS DAMAGE INDICATOR

The fact that the elements of Yağmur H type scaffolding system are not used in the following damage situations is important in terms of the general rigidity of the scaffolding system and occupational safety.

These situations are:

- Deformation of the scaffolding frames,
- Permanent deformation of horizontal and diagonal braces,
- Being a tear on the steel deck, a breakage and bending on the hooks,
- Deformation of the steel deck with the ladder, breakage and bending on the hooks, unstable access deck and failure of the locking systems,
- Damage to the threads of the base adjustments, broken or cracked nut,
- Damage to the threads of the couplers,
- Deformation of the pipes in the wall connection kit, destruction of threaded materials,
- Permanent deformation of the steel toe boards, rupture or tear at theends,

in such cases, these elements should never be used.

Otherwise, there is a high probability of encountering irreversible accidents, especially in terms of occupational safety.

The elements to be used before installation should be reviewed one by one.

In case of the above reasons or similar destruction, the damaged elements should be replaced with new ones.

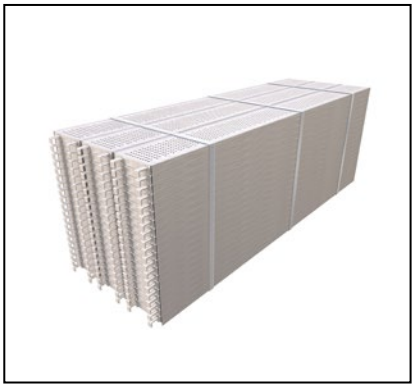
After the missing materials and accessories are provided, scaffolding installation should be started.

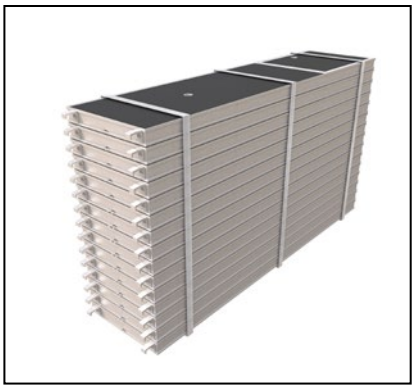
Never repair permanently deformed materials by welding or straightening.

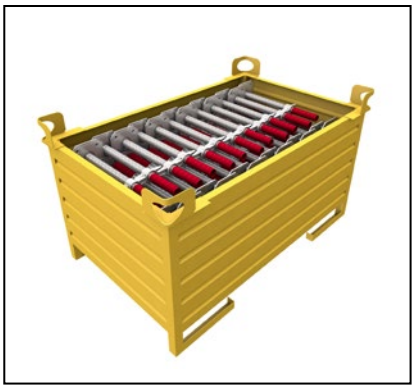
All parts must be sent to the manufacturer for repair; the technical team of Yağmur Scaffolding will decide whether the products can be repaired or not after performing the checks.

Products repaired under the supervision of the technical team will be returned to the customer.

13. H TYPE SCAFFOLDING SYSTEM STORAGE







PRODUCT NAME (cm)	QUANTITY	WIDTH (cm)	LENGTH (cm)	HEIGHT (cm)	"WEIGHT (kg)"
Main Frame 75x200	25	115	215	80	425
Large Main Frame105x200	25	115	215	110	455
Horizontal Brace 250	150	70	255	50	570
Diagonal Brace 324	75	60	329	40	570
Steel Deck 250	60	95	255	120	882
Access Deck with Ladder 250	15	65	255	100	337,5

PRODUCT NAM (cm)	PACKAGE TYPE	QUANTITY	WIDTH (cm)	LENGTH (cm)	HEIGHT (cm)	WEIGHT (kg)
Fixed Coupler	Container	700	75	127	83	760
Swivel Coupler	Container	700	75	127	83	830
Steel End Toe Board	Container	120	75	127	83	255
End Guardrail 65 cm	Container	250	75	127	83	380
Starting Member	Container	130	75	127	83	305
Base Adjustment 50 cm	Container	120	75	127	83	468
Base Adjustment 70 cm	Container	80	75	127	83	396
Base Adjustment 100 cm	Container	65	75	127	83	411
Galvanized Pipe 100 cm	Container	175	75	127	83	673
Wall Connection Pipe 40 cm	Container	355	75	127	83	681
Wall Connection Pipe 50 cm	Container	265	75	127	83	617
Wall Connection Pipe 60 cm	Container	265	75	127	83	709
Wall Connection Pipe 80 cm	Container	155	75	127	83	548
Wall Connection Pipe100 cm	Container	155	75	127	83	657
Wall Connection Brace 50 cm	Container	500	75	127	83	460

YAĞMUR®
SCAFFOLDING SYSTEMS

FACTORY - 1
OSB Mahallesi
5. Cadde No: 10 / 2
Dilovası / Kocaeli / TÜRKİYE

FACTORY - 2
Barış Mahallesi
Koşuyolu Caddesi No: 19
Gebze / Kocaeli

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www.yagmur.fr

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