Instruction manual

SM8 multi-level system

MARCEGAGLIA
BUILDTECH

ISO 9001
Cert. n° 0725/0
Cert. n° 0726/0

CNAS L0684

IGQ P021
SQ PONTEGGI

SUPPLY	Various modes of supply are available: • sale • sale with buyback agreement • rent • rent with redemption All these modes of supply can be combined with the following services: • assembly • disassembly • service at the building site
MATERIAL	**ZC** hot dip galvanized steel **ZZ** Sendzimir galvanized steel **ZE** electro-galvanized steel **VR** painted steel **TR** tropicalized steel **LG** wood **AL** aluminium
REMARKS	The weight refers to nominal gage values * Production on request

Index

SM8 MULTI-LEVEL SYSTEM DESCRIPTION

INSTRUCTIONS FOR USE

ANCHORAGES

ERECTION SEQUENCE

CERTIFICATIONS

SM8 multi-level system description

SM8 multi-level system

Eight-connections node system for complex-designed provisional structures with efficiency requirement during erection and dismantling

The eight-connections, multi-level SM8 system is extremely versatile solution for the erection of temporary structures.
The SM8 system consists of vertical members, the uprights, onto which a node made of an octagonal plate is welded every 500 mm;
This node point is provided with eight shaped holes to receive fast-fitting joints welded on to the ends of ledgers, transoms and diagonals ledgers transoms and diagonals.
Characteristics: Great flexibility during erection • Short erection and dismantling times • Erection of service structures with 1800 mm, 2500 mm and 300 mm bay • Surface protection with hot dip galvanizing treatment.
Applications: Construction and maintenance scaffolding • Short structures and casting supports • Yard ladders • Service and promotional structures • Grandstand • Stages • Light housing tower.

MATERIAL

- Hot dipped galvanized steel S235JR, S355JR and S355MC

PROTECTION

- Hot-dip galvanizing: guaranteed min. coating thickness 55 micron (mean value)

CHARACTERISTICS

- Wedge junctures on 8-site punched plates welded to standards every 500 mm.
- Combinable to obtain 1.8 m, 2.5 m and 3.0 m mixed bays;
- Licensed for uniform building loads of 300 da N/mq (cl IV, EN12811).

DIMENSIONS

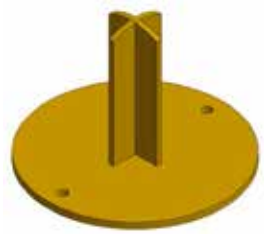
- Width: 810 mm and 1140 mm
- Span: 1800 mm for 2500 and 3000
- Module:
  - 2000 mm for standard scaffolding
  - adjustable height, 500 mm pitch, for special applications
- Upright and ledger tubing:
  Ø 48.3 - 3.2 thickness
- Guard rails tubing:
  Ø 48,3 - 3.2 thickness
- Diagonal braces tubing:
  Ø 40/48 - 2.0/3.2 thickness

Manufacturing standards

- Aut. Min. 15/VI/4967/14.03.01.01 del 11/03/2009
- Est. 32/0008858/MA001.A005 del 23/04/2014
- Decreto legislativo 9 Aprile 2008 n. 81
- D.M. 02/09/68
- D.M. 23/03/90 n. 115
- Circolari 44/90 e 156 AA.GG./STC.132 del 24/10/1991
- Disciplinare UNICMI sul marchio SQ

Multidirectional system SM8 - Components

Base plate



mm	material	cod	daN
48	TR	3030100006	0,92

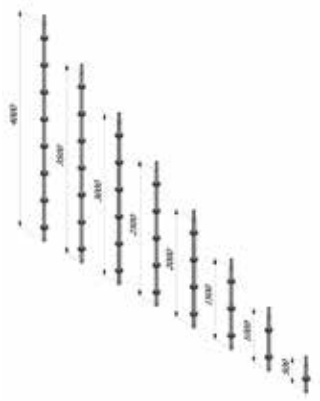
Adjustable base jack

mm	material	cod	daN
355	ZE	3040800902	2,42
405	ZE	-	-
1000	ZE	3040800901	-

Initial component

mm	material	cod	daN
-	ZC	3150100171	2,38

Upright with pin

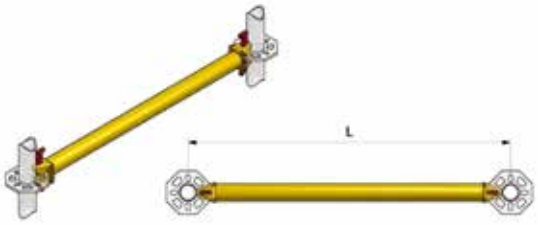


mm	material	cod	daN
500	ZC	3150100161	2,83
1000	ZC	3150100151	5,17
1500	ZC	3150100141	7,52
2000	ZC	3150100131	9,86
2500	ZC	3150100121	12,20
3000	ZC	3150100111	14,54
4000	ZC	3150100101	18,40

Spigot pin

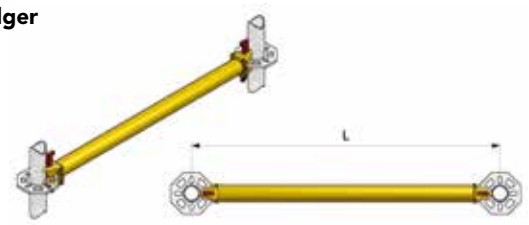
mm	material	cod	daN
10	TR	3040701006	0,12

Ledger



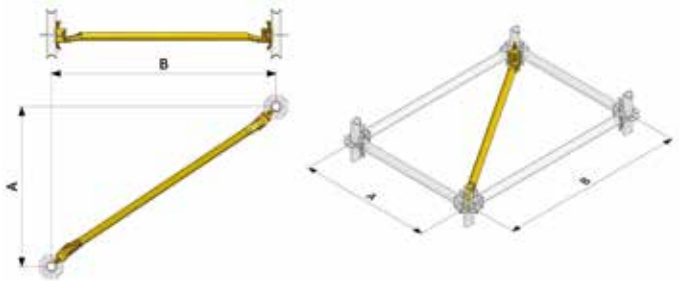
mm	material	cod	daN
424	ZC	3150200211	2,15
480	ZC	3150300371	2,34
810	ZC	3150700291	3,60
900	ZC	3150300241	3,94
1140	ZC	3150300201	4,80
1800	ZC	3150200251	7,35
2500	ZC	3150200271	10,00
3000	ZC	3150200541	11,88

Coupling ledger



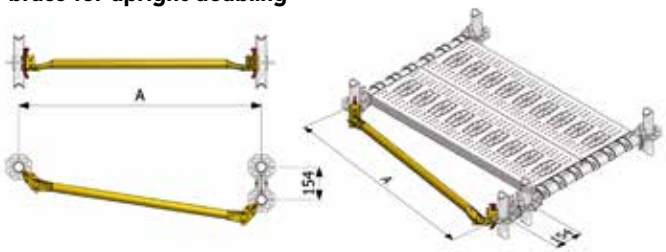
mm	material	cod	daN
500*	ZC	3150200601	2,43
660*	ZC	3150200551	3,02
700*	ZC	3150200581	3,18
1200*	ZC	3150200591	5,07
1360*	ZC	3150200561	5,65
1860*	ZC	3150200571	7,56

Horizontal diagonal brace



mm	material	cod	daN
810x810	ZC	3150400181	3,38
810x1140	ZC	3150400191	3,99
810x1800	ZC	3150400201	5,15
810x2500	ZC	3150400211	6,45
810x3000	ZC	3150400261	12,80
1140x1140	ZC	3150400131	4,40
1140x1800	ZC	3150400061	5,42
1140x2500	ZC	3150400051	6,68
1140x3000	ZC	3150400221	13,00
1800x1800	ZC	3150400111	6,26
2500x1800	ZC	3150400121	7,32
2500x2500	ZC	3150400101	8,21
3000x1800	ZC	3150400231	14,17
3000x2500	ZC	3150400241	15,68
3000x3000	ZC	3150400251	16,77

Horizontal diagonal brace for upright doubling

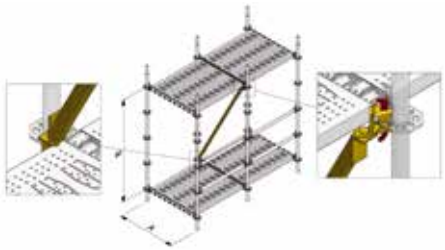


mm	material	cod	daN
154x1800	ZC	3150400071	4,83
154x2500	ZC	3150400081	6,17

Vertical diagonal brace

mm	material	cod	daN
1800x1000	ZC	3150500211	5,66
2000x810	ZC	3150500141	6,06
2000x1140	ZC	3150500131	6,28
2000x1360	ZC	3150500171	6,48
2000x1800	ZC	3150500121	6,96
2000x2500	ZC	3150500111	7,82
2000x3000	ZC	3150500151	14,82
2250x1500	ZC	3150500221	6,96

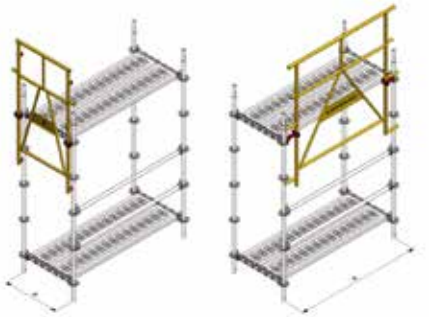
Transversal-diagonal



mm	material	cod	daN
810	ZC	3150500191	8,47
1140	ZC	3150500201	8,92

* Produzione su commessa / *Production on request / Produktion auf Bestellung / Production sur commande / Producción por encargo*

Aluminium temporary guardrail frame

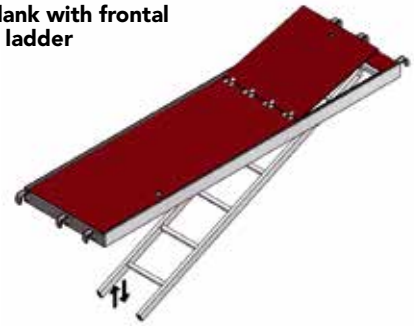


mm	material	cod	daN
810	AL	3150201049	7,95
1140	AL	3150201009	8,58
1800	AL	3150201019	10,70
2500	AL	3150201029	13,08
3000	AL	3150201039	14,54

Securdeck scaffold steel plank - CLASS 4 -

mm	material	cod	daN
1140x330x50	ZZ		7,43
1800x330x50	ZZ	3070102041	10,80
2500x330x50	ZZ	3070102051	14,38
3000x330x50	ZZ (class 3)	3070102161	16,75
3000x330x75	ZZ	3070102071	19,90

Aluminium-plywood plank with frontal opening trapdoor and ladder

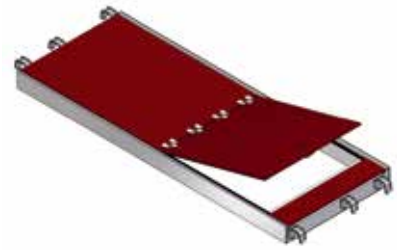


mm	material	cod	daN
2500x660	AL	3070101129	32,38
3000x660	AL	3070101069	38,06

Aluminium-plywood plank with side opening trapdoor

mm	material	cod	daN
1800x660	AL	3070101199	20,66
2500x660	AL	3070101189	26,37
3000x660	AL	3070101099	32,06

Aluminium-plywood plank with frontal opening trapdoor

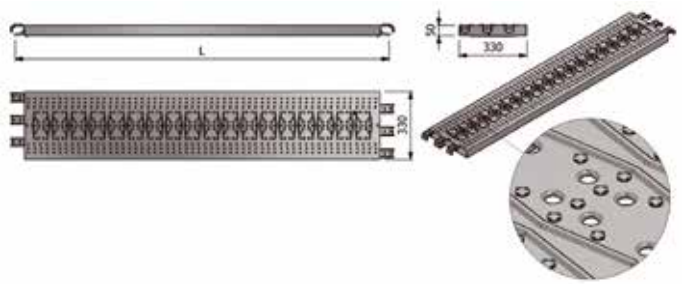


mm	material	cod	daN
1800x660	AL	3070101149	20,63
2500x660	AL	3070101139	26,35
3000x660	AL	3070101079	32,03

Aluminium-plywood plank with side opening trapdoor with ladder

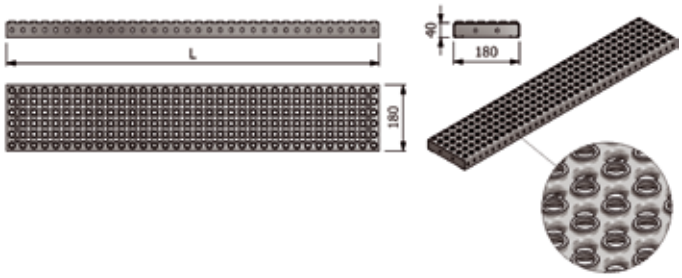
mm	material	cod	daN
2500x660	AL	3070101179	32,40
3000x660	AL	3070101089	39,80

Securdeck - IND



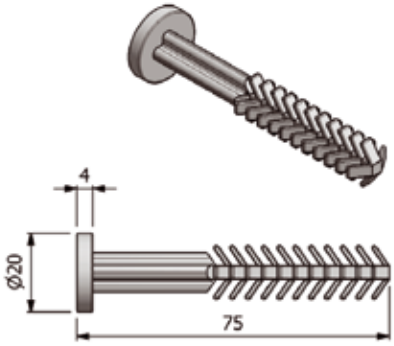
mm	material	cod	daN
1800x330x50	ZZ 200	3070102401	10,80
2500x330x50	ZZ 200	3070102411	14,38
3000x330x75	ZZ 200	3070102421	19,90
1800x330x50	ZZ 400	3070102431	10,80
2500x330x50	ZZ 400	3070102441	14,38
3000x330x75	ZZ 400	3070102451	19,90
1800x330x50	ZC	3070102461	10,80
2500x330x50	ZC	3070102471	14,38
3000x330x75	ZC	3070102481	19,90
1140x330x50	ZZ 200	3070102491	7,48
810x330x50	ZZ 200	3070102501	5,82
1140x330x50	ZZ 400	3070102511	7,55
810x330x50	ZZ 400	3070102521	5,88
1140x330x50	ZZ ZC	3070102531	7,70
810x330x50	ZC	3070102541	6,00

Industrial gap cover



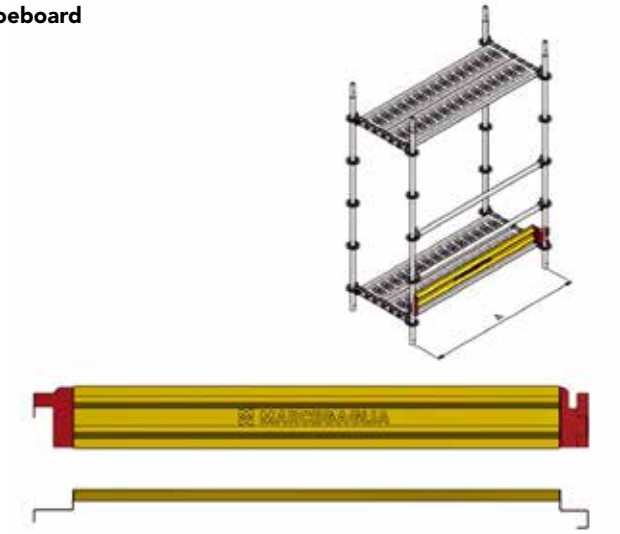
mm	material	cod	daN
1020x180x40x2	ZC	3070102591	4,90
1500x180x40x2	ZC	3070102601	7,10
2010x180x40x2	ZC	3070102611	9,38
2520x180x40x2,5	ZC	3070102621	14,60
1020x240x40x2	ZC	3070102631	6,00
1500x240x40x2	ZC	3070102641	8,61
2010x240x40x2	ZC	3070102651	11,40
2520x240x40x2,5	ZC	3070102661	17,60
1020x300x40x2	ZC	3070102671	6,96
1500x300x40x2	ZC	3070102681	9,98
2010x300x40x2	ZC	3070102691	13,20
2520x300x40x2,5	ZC	3070102701	27,06

Plastic pin for industrial gap cover



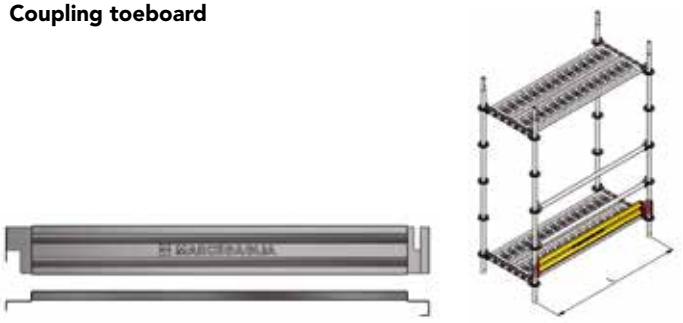
mm	material	cod	daN
		3070102759	0,01

Toeboard



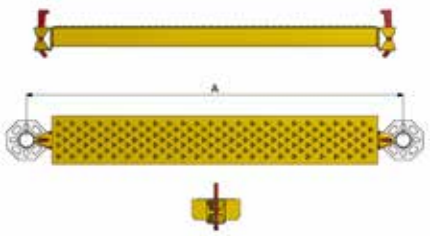
mm	material	cod	daN
424	ZC	3150200141	2,68
480	ZC	3150200531	2,80
810	ZC	3150200471	4,66
1140	ZC	3150200131	5,21
1800	ZC	3150200161	6,70
2500	ZC	3150200151	8,20
3000	ZC	3150200691	9,48

Coupling toeboard



mm	material	cod	daN
660	ZC	3150200691	4,33
1360	ZC	3150200701	5,87

Metal decking filler with clamp



mm	material	cod	daN
660*	ZC	-	-
810*	ZC	3150200501	5,09
1140*	ZC	3150200321	6,85
1360*	ZC	-	-
1800*	ZC	3150200301	10,36
2500*	ZC	3150200311	14,10
3000*	ZC	3150200761	16,77

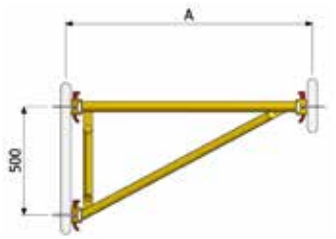
Ladder

mm	material	cod	daN
-	ZC	3070300131	7,35

Ladder handrail

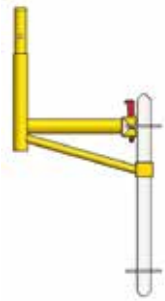
mm	material	cod	daN
-	ZC	3070300141	2,78

Bracket



mm	material	cod	daN
810	ZC	3150700281	6,58
1140	ZC	3150700261	7,68

Side bracket for 330 mm plank



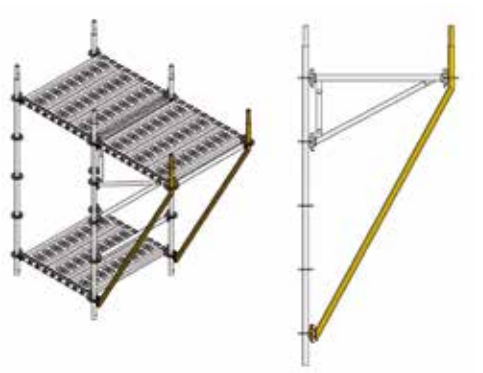
mm	material	cod	daN
424	ZC	3150700141	4,73

Intermediate bracket

mm	material	cod	daN
330	ZC	3150700931	2,95

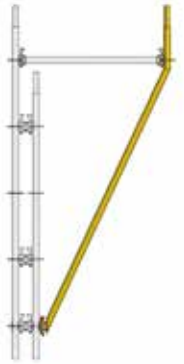
* Produzione su commessa / *Production on request / Produktion auf Bestellung / Production sur commande / Producción por encargo*

Bracket strut



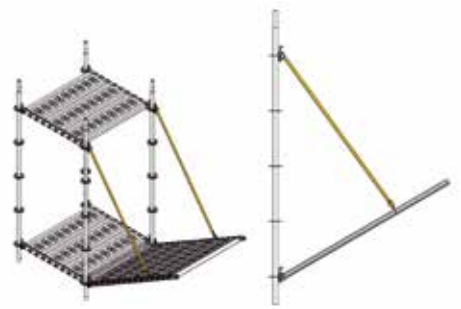
mm	material	cod	daN
810	ZC	3150700081	8,51
1140	ZC	3150700071	9,07

Strut for tapered end



mm	material	cod	daN
810x154	ZC	3150700031	10,52
810x480	ZC	3150700041	10,25
1140x154	ZC	3150700231	9,28
1140x424	ZC	3150700241	9,00
1140x480	ZC	3150700911	8,76

Street protection fan



mm	material	cod	daN
-	ZC	3150700051	9,24

Top end

mm	material	cod	daN
-	ZC	3150700211	1,49

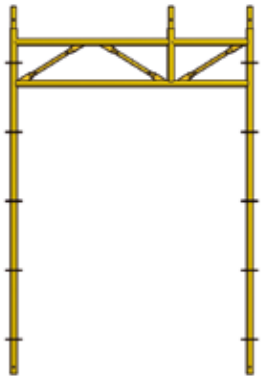
Anchorage (A type)

mm	material	cod	daN
840	ZC	3150700161	3,73

Anchorage (B type)

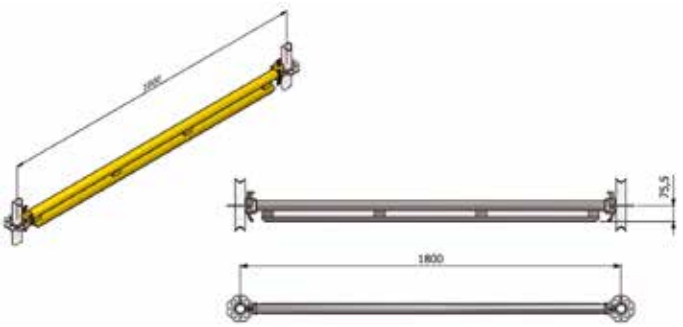
mm	material	cod	daN
1190	ZC	3150700171	4,89

Walkthrough passage



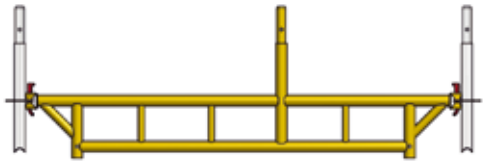
mm	material	cod	daN
1710	ZC	3150800151	42,58

Reinforced ledger



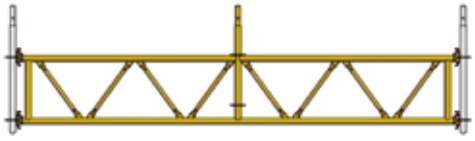
mm	material	cod	daN
1800	ZC	3150300831	14,31

Walkthrough passage



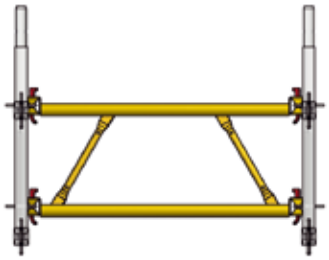
mm	material	cod	daN
1950	ZC	3150800261	19,2

Bridging ledger



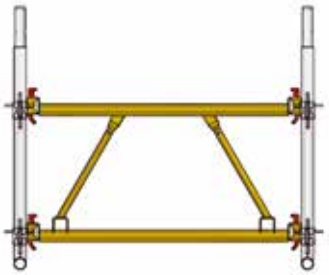
mm	material	cod	daN
3600x500	ZC	3150800221	40,13
5000x500	ZC	3150800201	52,96
3600x600	ZC	3150800231	45,41
5000x600	ZC	3150800241	58,48
6000x600	ZC	3150800271	67,30

Bridging ledger junction



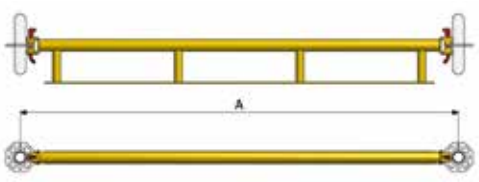
mm	material	cod	daN
810	ZC	3150800131	8,21
1140	ZC	3150800211	11,387

Bridging ledger junction H. 600 mm



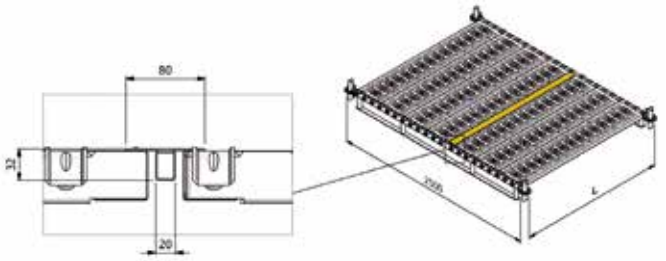
mm	material	cod	daN
810	ZC	3150800281	9,05
1140	ZC	3150800251	11,63

Lowered beam



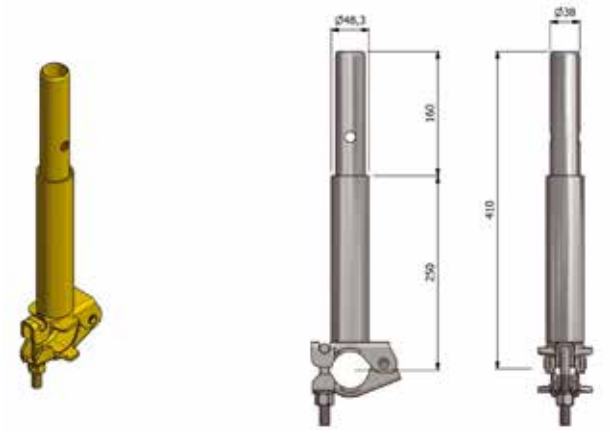
mm	material	cod	daN
1800	ZC	3150300301	13,27
2500	ZC	3150300401	17,46
3000	ZC	3150300501	21,28

Filler for 2500-mm beam



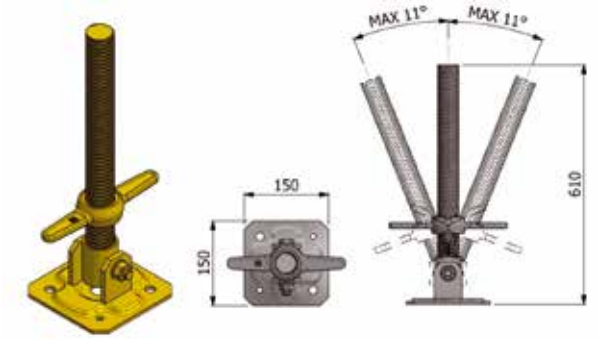
mm	material	cod	daN
1800	ZC	3150200361	4,29
2500	ZC	3150200331	6,03

Initial component SM8



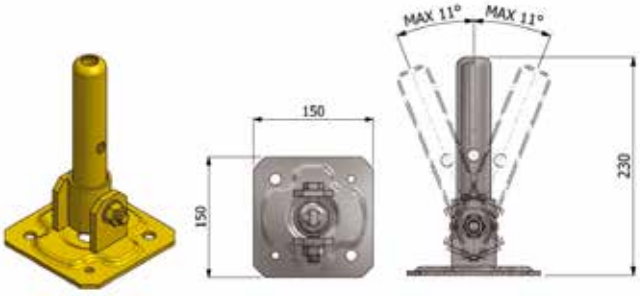
mm	material	cod	daN
	ZC	3150700401	2,10

Adjustable and inclinable base jack



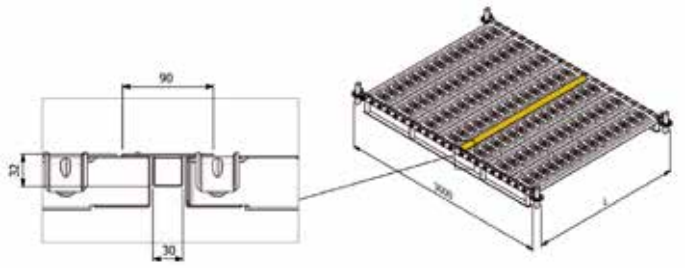
mm	material	cod	daN
	ZC	3150700351	4,36

Fix and inclinable base jack



mm	material	cod	daN
	ZC	3150700341	2,15

Filler for 3000-mm beam

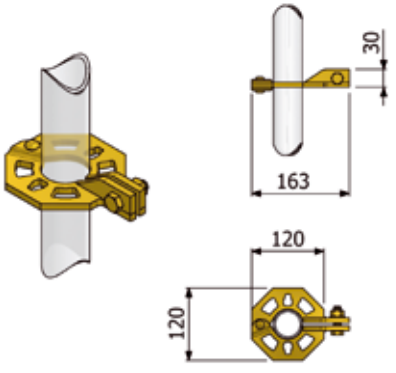


mm	material	cod	daN
1800	ZC	3150200841	5,01
2500	ZC	3150200851	7,04

Deck plug

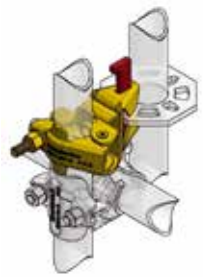
mm	material	cod	daN
-	ZC	3150700221	2,12

Eight-connections node



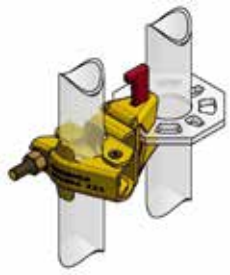
mm	material	cod	daN
-	ZC	3150700201	1,12

Clamp with rotating half coupler



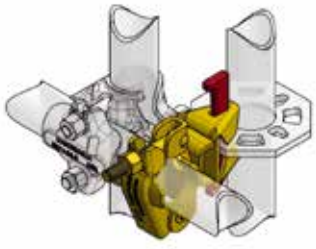
mm	material	cod	daN
-	ZC	3150700331	1,60

Clamp with perpendicular, flat-welded half coupler



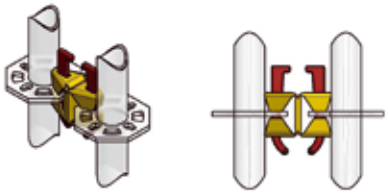
mm	material	cod	daN
-	ZC	3150700251	1,52

Clamp with vertical, flat-welded half coupler



mm	material	cod	daN
-	ZC	3150700321	1,52

Clamp for upright doubling



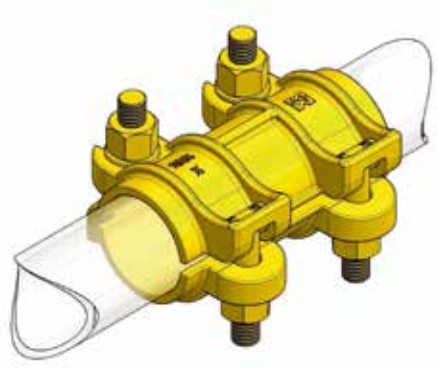
mm	material	cod	daN
-	ZC	3150700181	1,11

Tube-coupler system - Components

2-bolts right angle coupler

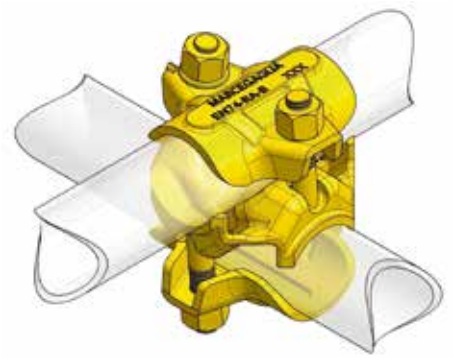
mm	material	cod.	daN
-	TR	3020600006	0,88

Simple 4-bolts coupler



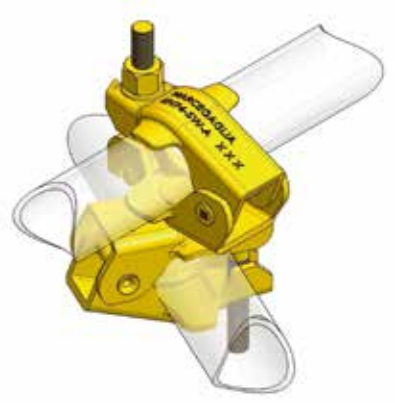
mm	material	cod.	daN
-	TR	3020200006	1,93

4-bolts right angle coupler



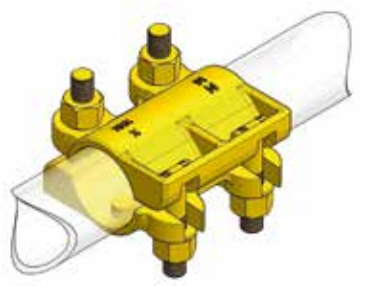
mm	material	cod.	daN
-	TR	3020300006	1,42

Swivel coupler



mm	material	cod.	daN
-	TR	3020400006	1,45

Pivot coupler



mm	material	cod.	daN
-	TR	3020000006	1,73

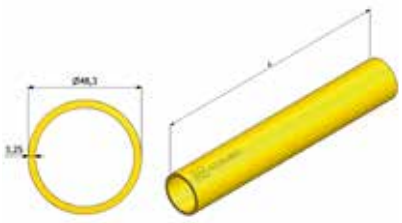
Simple coupler

mm	material	cod.	daN
-	TR	3020500006	0,69

Head coupler

mm	material	cod.	daN
-	TR	3020100006	0,94

Scaffold tube S235JRH



mm	material	cod.	daN
1000 STD	ZZ	3010800035	3,45/ml
1000 NO STD	ZZ	3010800045	3,45/ml

Pin

mm	material	cod.	daN
-	VR	3030000000	0,63

Anchoring screw

mm	material	cod.	daN
-	-	3030200000	1,68

Steel caster

mm	material	cod.	daN
-	VR	3030300000	10,00

Steel caster with rubber coating

mm	material	cod.	daN
-	VR	3030300010	9,55

Instructions for use

Pre-erection

CHECKING THE TECHNICAL DOCUMENTATION

The documentation described in the following sections must be available on the work site at all times.
Some of the documentation will be provided by the scaffolding manufacturer and some by the authorized technician from the Company making use of the scaffolding.

Project
Full details of the scaffolding must be given and detailed erection designs must be attached containing construction details-where applicable-detailing:

- anchorages
- structural nodes
- load distribution at the base
- specific information regarding the correct erection of the scaffolding in question

The project must respect the regulations of the countries where the scaffolding is to be erected. For non-standard configurations or configurations higher than 20 m, it is suggested that a project signed and stamped by the authorized technician be drawn up.

Technical Report
The report must contain all static verifications that fall outside those described in the Ministerial Authorizations or standard designs.
It must be signed and stamped by an authorized technician.

Instruction manual and Anchorage manual
These are documents provided by the manufacturer to ensure correct use of its products.

CHECKING THE MATERIAL TO BE USED

The quality and quantity of all materials that are to be used must be carefully checked prior to use on site as described below.

Correspondence between materials used and those that have been authorized
The materials listed on the specifications and those that are on the work site must be checked to ensure they match. Using parts from scaffoldings made by other manufacturers is not allowed.
Mixed use of couplings/tubes that integrate with the scaffolding system is permitted. Each part of the scaffolding can be mounted separately from an adjoining part within a single system and joined to non-structural tubes/couplings.

Personal safety
All personal safety devices required by law must be available on the work site and utilized by the workers. These devices are:

Safety belts
These must meet European regulation requirements, bear the CE marking and must have passed the prescribed technical testing.

Clothing
Working attire - overalls, gloves, shoes and all clothing must bear the CE mark and comply with EN 510 Cat.II. Standards.

Other provisions
A room or location should be set aside on the work site for first aid in the event of accidents. A first-aid kit must also always be on hand for immediate, preliminary assistance with injuries.

Material suitability
It is good practice on the work site to arrange for all parts of the scaffolding to be periodically examined to ensure that all is in working order.
For rented equipment, it is especially important that the end user company and the manufacturer of the rented equipment draw up a monitoring plan, paying particular attention to the following:
- *Checking the verticality of the uprights. Inclines greater than the manufacturer's declared dimensional tolerance are not acceptable.*

- *Checking the welding on prefabricated frames. Should a visual check raise concerns about the condition of a frame, use Magniflux or other similar penetrant liquid methods and/or discard the frame.*

- *Checking that the pawls and bushings for diagonal and transom couplings are working properly. Avoid using deformed and/or rebuilt elements.*

- *Checking the painted or galvanized surface protection. To ensure prolonged durability over time and depending on the location where being used, check all elements carefully to ensure there is no oxidation.*

- *Checking that the coupling grips (6 daNm) are tight, also checking the condition of the threads of the bolts being used.*
All nuts must always screw and unscrew perfectly.

- *Check that the metal ledger boards clamp together properly by making use of the device located on the planks for the purpose.*

- *Checking the straightness of the couplings used. Plastic deformations of any of the element that comprises the system are not acceptable.*

A compulsory check of the scaffolding soundness must be carried out after each major climatic event. This can also include materials that have not yet been erected.

Storage on the work site
An area on the work site should be set aside for storing the scaffolding material to facilitate movement and organize the loading and unloading of material in the best manner possible, thereby reducing operational costs and the risks of accidents that are a common occurrence in disorganized environments.
For tall buildings, partial storage of quota material is advisable by making use of loading areas duly set up that can then be used even after the scaffolding has been erected, thereby facilitating work on site. Materials should be stored in appropriate containers and storage chests.
It is essential that a covered area also be made available (shed or alternative) to bench-mount joints, or where checks can be carried out on materials.

Erection

During the erection stage, the mounting designs and the prescriptions issued by the Site Engineer must be scrupulously followed. As regards the stages of scaffolding erection, adhere to local regulations.
The main areas on which to focus attention during the erection stages follow.

STARTING POINT OF THE SCAFFOLDING

The elements described below must be carefully verified and checked.

Scaffolding bases

An outline of the scaffolding corresponding to the erection plan must be marked off.
The maximum distance from the building (20 m) must be respected and checked.
Should this not be possible, with the approval of the project designer or Works Director, add approach planks to the façade or guardrails even on the inner side.

Face

Before laying the bases, a suitable face must be prepared of coarse gravel and/or lean concrete if there are to be heavy loads at the foot, or, more generally, wooden approach planks must be laid out continuously, lengthways along the façade.

Controls at the foot of the scaffolding

It is good practice to at least carry out the following checks at the foot of the scaffolding:
• *Avoid placing more than 2 planks under the base.*

• *Always rivet the base plates to the planks.*

• *Check the screwing out of the base plates. Screwing out to a maximum of 20 cm is recommended. Greater screwing out is permitted as long as specific technical verifications have been carried out or additional cross bracings are added at the base of the scaffolding.*

• *Check that the faces are level and that they are centered in relation to the bases.*

• *Check the correct distribution of loads at the foot of the scaffolding, verifying the consistency, efficiency and proper placement of the distribution elements placed under the base plates (wooden planks, metal plates, concrete screw nuts, etc.).*

• *Check the correspondence between the start of the scaffolding uprights in use against those in the erection design and especially the designs found in the system Ministerial Authorization Booklet. Should they not correspond, the technical documentation must be modified by modifying the project or, if necessary, modifying the erection depending on choices made for the project.*

SCAFFOLDING STRUCTURE

It is important that periodic checks be scheduled for the following:

Verticality of the uprights

The verticality of the uprights must be checked periodically. Inclines other than those foreseen in the dimensional allowance designs of the system's elements are not permitted.
In the event that uprights are not parallel to a plumb line, they must be dismantled and erected again, if possible, or alternatively appropriate static verifications must be carried out that will guarantee that the specific scaffolding is suitable to fulfill the requirement for which it was initially intended.
Should dismantling and re-erection of the scaffolding not be possible, joints can be used to add a parallel reinforcing upright to the existing scaffolding.

Anchorages

Anchorages must be positioned every 22 square meters of scaffolding façade or, in special cases, in the number and in the positions shown in the erection plan. The type of anchorages, their functioning, the static verifications and the checks to be carried out are information that must be provided together with the technical documentation.

Access ladders

The rungs of the scaffolding ladders must conform to the requirements of the EN12811 standards, moreover the following must be checked:
• *The type of ladder must conform to regulation requirements and with what is described in the manufacturer's manual.*

• *A protective guardrail must always be installed.*

• *The ladders must be self-blocking and fitted with anti-slip feet.*

Wood planks

Wood planks must always conform with what is shown in the design plan and, in particular, the following points must be carefully checked:
• *The planks must be free of traversing knots and in any event, the reduction of the reagent section areas must not be more than 10%.*

• *Declared minimum thicknesses must always be respected.*

• *Planks with overlaps (corners or changes of direction)must be appropriately riveted, above all in scaffoldings where wooden joists are carrying the scaffold (for example on loading mounts).*

Connections

As a minimum, the following must be checked:
• *Plugs: Plugs must be present and properly inserted in all the joints in the frame and loose uprights, and in all the items listed in the manufacturers' manual.*

• *Gudgeon pins: Plugs must be present and properly inserted in longitudinal tube joints when using the tube-coupler system.*

• *Wedge couplings: in multi-level systems in which wedge coupling connections are used, the correct insertion of the wedge into the node plate must be verified before proceeding with the erection of the next piece*

Grip of the joints

It is imperative that the correct grip of the joints (6 daNm) be checked with a torque wrench of all the structures or parts of particularly important structures:
• *projecting parts*
• *truss beams*
• *hoisting connections*
• *anchorages*

The checks must be carried out periodically, even while the scaffolding is in use, at intervals to be determined according to the use being made, but not longer than 2 months.
In any case, a check must be carried out following a major climatic event.

Metal ledger boards

The correct erection of the metal ledger boards must be checked, as must their detachment prevention locks, using a suitable device (a triangular rod or wedge).

Loading mounts

In cases where loading mounts with wooden scaffolding are used, the following must be checked:
• *Adherence of the trusses to the project specifications regarding dimensions, number and position.*

• *In any case, position the trusses close to the structural nodes.*

• *Check the correct thickness and positioning of the wooden planks.*

• *Check that the planks are riveted to the trusses.*

• *Check that the work loads are compatible with those specified in the project.*

Service lifts to the scaffolding

When lifts are installed, the proper positioning of the anchorage must be checked and above all that such anchorages are completely separate from those of the scaffolding.
If this is not possible, the special anchorages to be used must be covered by a report on the calculations, and by a specific erection plan showing the loads to be borne.

Protective sheets

In cases where protective sheets are used the following must first be ascertained:
• *Determine the sheet permeability to wind; the information should be provided by the manufacturer; if it is not, ascertain wind permeability experimentally, empirically or theoretically.*

• *Verify that the permeability coincides with that indicated in the calculation report. Should it not, adjust verifications to the new loads and, if necessary, integrate the scaffolding and anchorage structures.*

• *In such event, pay particular attention to check that the erection and functioning of the anchorages correspond with the designs and verifications detailed in the designs*

Winches and Pulleys

When winches or pulleys – even temporary – are used, the parts of the scaffolding affected by such equipment must be checked.
The checks must be shown on the calculation report if the equipment is also to be used during work execution.
The carrying capacity of the winch or pulley must always be visible and adjustable. In the absence of specific information in this regard, the following formula may be used to determine the dynamic increment of the vertical load in suspension for carrying out correct static checks:

φ = coefficient of dynamic increase
V = speed of the load in movement expressed in m/sec
φ = 1 + 0,6 x V

PERSONNEL SAFETY DURING INTERMEDIATE ERECTION STAGES

In addition to the prescriptions stipulated by local regulations, the main areas on which to focus attention are described below.

Scaffolding workers

The scaffolding safety plan must have the names and specific responsibilities of the persons involved in organizing the work and erecting the scaffolding.

Holding and auxiliary cables

Check the correct positioning and use of the holding and auxiliary cables as prescribed by the regulations in force and check in detail the stipulations regarding their length and strength.

Use of personal safety devices

The correct use and efficiency of safety clothing having the characteristics already described in the 'Personnel safety' section must be checked periodically. The period is determined in relation to the duration of the work and of the personnel present on the work site.

Hoisting of materials

This is a dangerous phase of the works during which the following precautions must be taken:

• *Check the load capacity, the type and the correct functioning of the winch and the pulley. Also check the 'Winches and Pulleys' section regarding technical verifications.*

• *Organize the work in such a way that there are never loads suspended above the heads of workers mounting the equipment.*

• *Check that the bay on which the raised material is to be stacked is suitable for carrying the weight. Check the technical specifications and the calculation report to ascertain the projected technical capacities.*

Overlapping of personnel

Organize the erection teams in such a way that they are never positioned one above the other on the same part of the scaffolding.

While works are underway the scaffolding may undergo structural modifications due to the particular requirements of the work site not take into account during the planning stage.
It is important that the scaffolding be checked continually and that, as a minimum, the following are verified.

Overloads

In the event the end user requests unusual overloads, notices indicating the load capacity must be positioned on the scaffolding and checks that the assembled structure corresponds to the project design and the calculation report must be carried out.

Passive security elements

Periodically checks must be carried out to ensure that passive security devices have not been removed from the scaffolding; these include:
• *overhead and frontal guardrails*
• *frontal and overhead toeboards*

Planks with trapdoors must be shut if not in use.
The anchorages must never be removed unless such is called for under the work program and in the erection plan of the scaffolding.

Machinery present on the scaffolding

Unless otherwise prescribed, boring machinery, vibrators, compressors and whatever else could affect the stability of the scaffolding must not be used.
In the event the job calls for such type of machinery, check that the dynamic increase of the load has been taken into account in the calculation report.

Earthing

The presence and the type of earthing present on the scaffolding must be calculated in accordance with the regulations in effect.
In the same way the documentation relating to the machinery on the scaffolding must always be checked and brought up to date.

Dismantling

During dismantling, as during the erection stage, all precautions required by the regulations in force relating to safety equipment must be taken.
At the very least, the following areas must be checked.

Removal of passive safety devices

• *When dismantling the scaffolding floor by floor, check that in the transitory stage, and after the removal of the protective guardrails, no workers are present on that floor or at least that they are adequately protected with safety belts, holding and auxiliary cables on rigid parts of the structure such as done during the erection stage.*

• *During partial dismantling of the following piers, check that guardrails and the head toeboards are always reassembled.*

• *The movement of material disassembled from the scaffolding must always be organized in a closed and safe manner. Storage of materials on the scaffolding must be avoided at all times.*

Anchorages

• *Floor anchorages must only be disassembled after having dismantled the overhead structure.*

• *Always check that at all times - including the dismantling stage of the scaffolding - that no portions are higher than 4 m above the level of the last anchorage.*

• *Where there are projecting parts, the anchorages and the parts of the structure subject to pull must be dismantled working on the bay below.*

Storage

Set aside and display items which have been damaged or deformed.
On the ground, in an area of the work site that has been set aside (see 'Storage on the work site'), set aside all dismantled materials, organized by categories, tying them in bundles or putting them in their packaging to facilitate loading and transport.

Transport

Transport must be organized in detail analogous to the preceding phases and, as a minimum, paying particular attention the areas described below.

Supply

Transport must be staggered so that only the materials that are strictly necessary during the erection stage are on hand, thereby avoiding excessive stock piles within the worksite.
Check the size, the holding capacity of the delivery area as well as the rate at which the scaffolding is being erected (see 'Storage on the work site').

Materials

Check the correspondence between the projected supply quantity, the materials present on the worksite and those listed on the travel documents.

Returned materials

Returned material must be organized in containers by planks, frames and accessories so that the best use is made of available space and the number of journeys is kept to minimal.

Anchorages

General characteristics

JOINT CREEP STRENGTH

During static checks, creep strength must be considered and determined through crimp tests in officially and legally recognized laboratories:

- **Right-angle couplers with 4 bolts**

average resistance: Rm = 1915 daN

resistance at 5% fractile: R_5 = 1756 daN

permissible resistance: R = 1756/1,5 = 1170 daN

- **4-bolt right-angle coupler with holding joint**

average resistance: Rm = 2855 daN

resistance at 5% fractile: R_5 = 2717 daN

permissible resistance: R = 2717/1,5 = 1811 daN

CHARACTERISTICS OF THE MATERIALS USED

Materials having the geometrical and mechanical characteristics listed below are to be used:

Tube ∅ 48.3 x 3.2 in S235JRH steel

A = 4,59 cm^2
J = 11,69 cm^2
W = 4,85 cm^3
i = 1,59 cm
σ 1 = 1600 daN/cm^2
σ 2 = 1800 daN/cm^2

LOADS

Load bearings are determined orthogonally and longitudinally on the scaffolding façade and those acting on the single anchorages in accordance with the regulations in force and the project calculation designs.

Determine:

F_1 = orthogonal load acting on the scaffolding façade and on the single anchorage

F_2 = longitudinal load acting on the façade of the scaffolding and on the whole scaffolding

SPLIT RINGS

The extraction strength of the split rings must be provided by the manufacturer and in any case it is a good rule to apply a safety factor of ϒ=1,5.

Ring properties to be requested from the manufacturer:

A_t= area of the leg of the ring on the wedge insert

W_t= resistance module corresponding to area A

σ = 1600 daN/cm^2 salvo diversa prescrizione del produttore

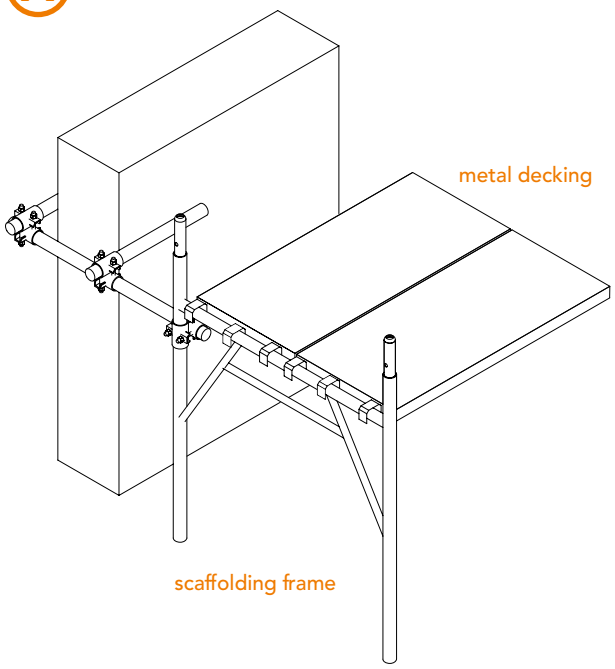
H= permissible resistance to the extraction of the ring using a safety factor of x 1.5 on the completed withdrawal value supplied by the manufacturer.

Tie anchorage

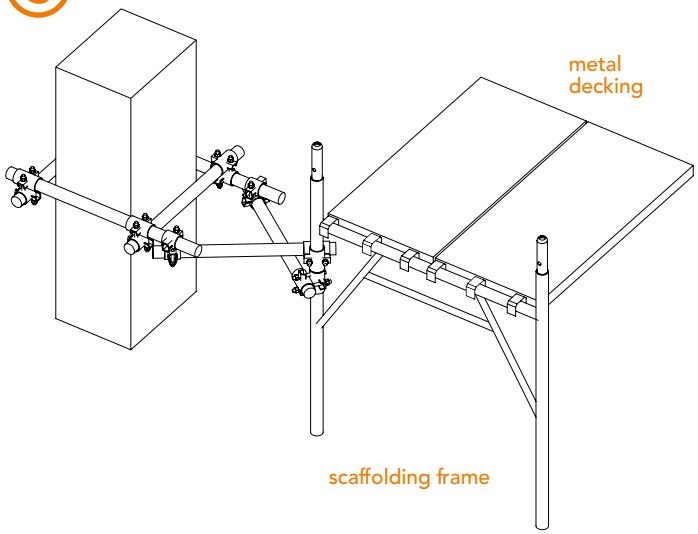
ERECTION PLAN

Effected according to the following layouts:

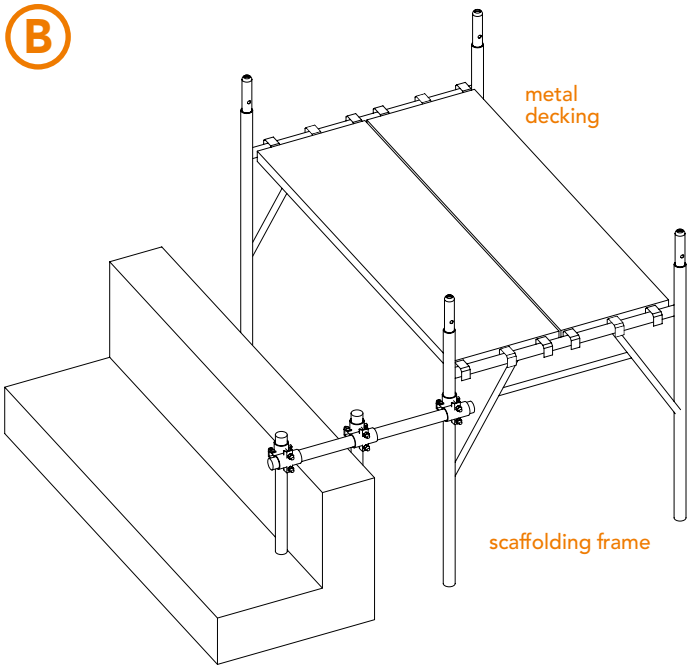
A



C



B



Tie anchorage

CHECKING THE ANCHORAGE SUBJECT TO AN F_1 LOAD

Checks to be carried out are the following:

• joint creep check:

$F_1 < R$

• tensile strength check of the anchorage tube:

$$\sigma = \frac{F_1}{A} < \sigma 1$$

• compression strength check of the anchorage tube

L = the free length of the anchorage tube

$$\lambda = \frac{L}{i}$$

The value of ω in relation to λ is determined according to regulations in force.

• instability check

$$\sigma = \omega \frac{F_1}{A} < \sigma 1$$

Should the instability check not pass the test, the anchorage tube must be sectioned making use of tube-couplers or the anchorage tube must be doubled.

CHECKING THE ANCHORAGE SUBJECT TO AN F_2 LOAD

The whole scaffolding's F_2 load can be absorbed by a number of C type anchorages strategically distributed on the scaffolding façade, but preferably, barring any obstacles, along the scaffolding outer piers.
Placing n the number of C type anchorages on the scaffolding, the acting load on each will be: $F^* = F_2/n$.

Load acting on a single anchorage tube with an inclination of α:

$$Fd = \frac{F^*/2}{\cos \alpha}$$

L= the free length of the anchorage tube

$$\lambda = \frac{L}{i}$$ from which is determined ω

$$\sigma = \omega \frac{F_d}{A} < \sigma 1$$

WARNINGS

When using tie anchorages, it is recommended to carry out the following:

• check the correct hold of the anchorage joints to ensure creep resistance;

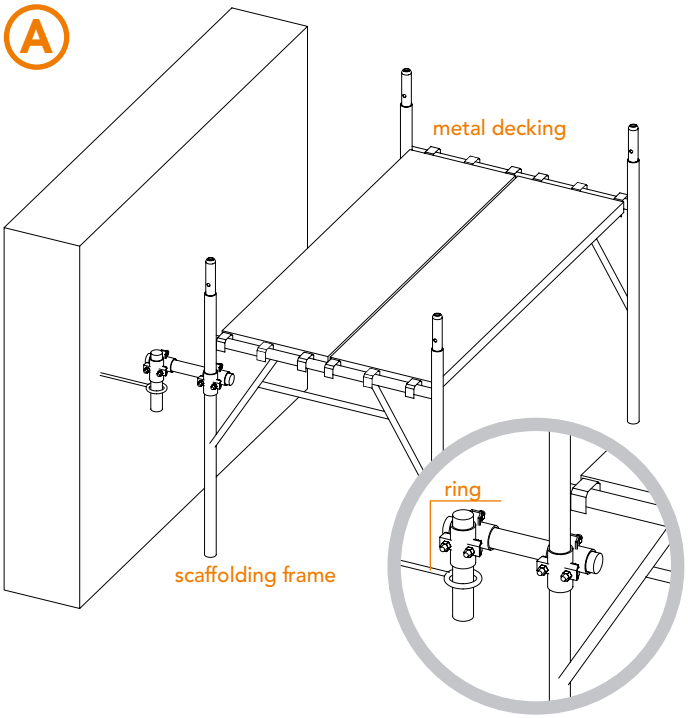
• connect the anchorage tubes in line with the structural nodes of the scaffolding;

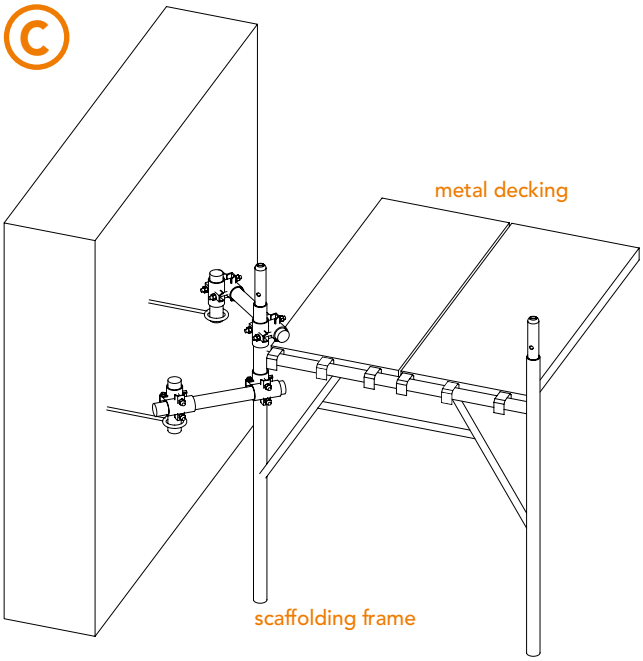
• insert wooden planks as load distributors between the tie anchorage tube side/edge and the structure of the building being worked on to avoid contact stress peaks (Hertzian pressure), which could otherwise be damaging to the structure.

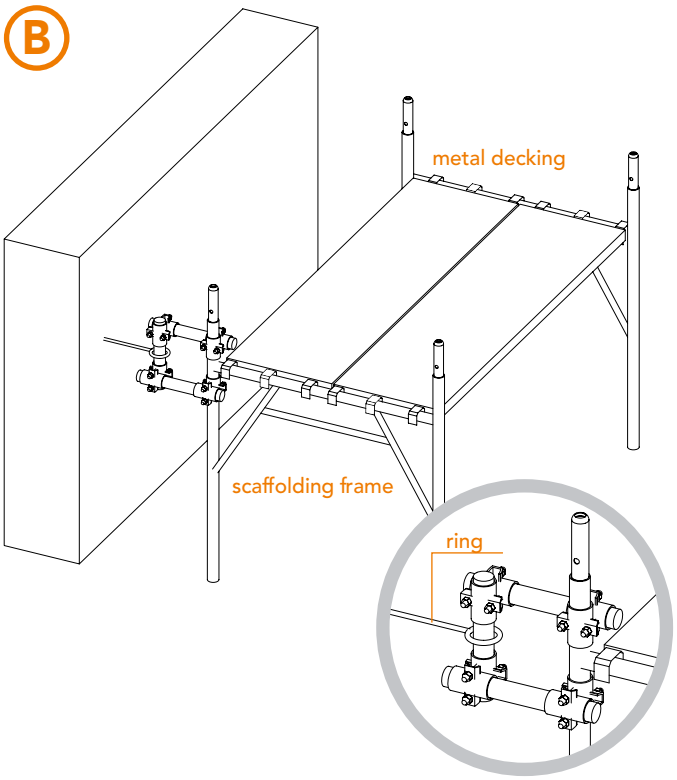
Ring anchorage

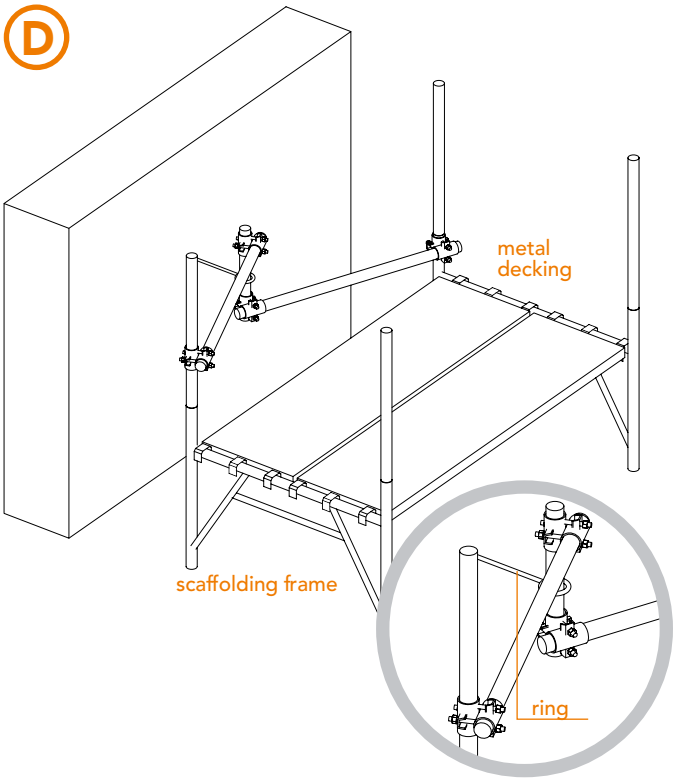
ERECTION PLAN

Effected according to the following layouts









Ring anchorage

CHECKING THE ANCHORAGE SUBJECT TO AN F_1 LOAD

The checks to be carried out are the following:

• joint creep check:

$F_1 < R$

• tensile strength check of the anchorage tube:

$$\sigma = \frac{F_1}{A} < \sigma^*$$

• tensile buckling of the anchor check:
consider a pull eccentricity on the anchor e=4 cm for A type anchorages.
Stress acting on the anchor:

Tensile stress: F_1

Bending moment: $M_1=F_1 \times e$
Verify:

$$\sigma = \frac{F_1}{A_t} + \frac{M_1}{W_t} < \sigma^*$$

• tensile stress check of the anchor
For symmetric type B anchorages, stress will be that of simple traction only:

$$\sigma = \frac{F_1}{A_t} < \sigma^*$$

• extraction check of the anchor

R_E= resistance to extraction as provided by the manufacturer of the anchors.

$$H = \frac{R_E}{1,5}$$ permissible resistance to extraction

Verify:

$F_1 < H$

CHECKING THE ANCHORAGE SUBJECT TO AN F_2 LOAD

F_2 loads as calculated in the 'Loads' section is divided on n number of C or D type anchorages.
Load acting on an individual anchorage:

$F^* = F_2/n$.

Load acting on single anchorage tube having an inclination of α:

$$Fd = \frac{F^*/2}{\cos \alpha}$$

• checking the anchorage tube:

L= the free length of the anchorage tube

$$\lambda = \frac{L}{i}$$ from which is determined ω

$$\sigma = \omega \frac{F_d}{A} < \sigma 1$$

• tensile buckling check of the anchor:

Tensile stress: F_d

Bending moment: $M = F_d \times e$
Verify:

$$\sigma = \frac{F_d}{A_t} + \frac{M_1}{F_d} < \sigma^*$$

WARNINGS

For ring anchors the following verifications are recommended:

• check the type and consistency of the wall and, according to the acting load, choose the most suitable type of anchor as supplied by the manufacturer.

• reduce the 'e' eccentricity of the joint between the anchorage tube and the anchor to the minimum possible.

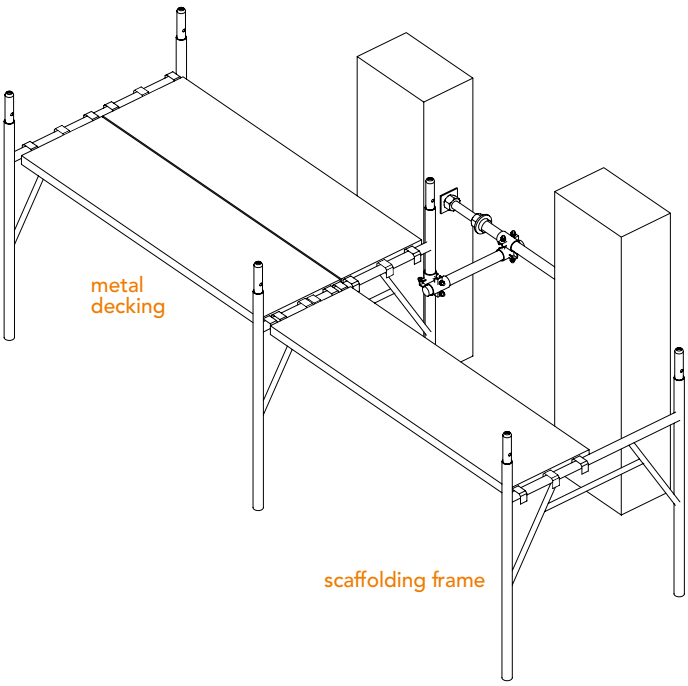
• check the correct hold of the joints.

• check the correct placing and working of the mounted anchors. In special cases, it is advised that extraction tests are carried out so that reliable values can be obtained of the actual resistance to extraction.

Anchorage with force screw

ERECTION PLAN

Effected according to the following layout



In special cases, when other types of anchorages are not permitted, force screws can be used, provided their working is checked and monitored while in use.
The risk in using these types of anchorages lies in the difficulty of determining the resistance that such anchorages can guarantee.

The resistance of the anchorage is in proportion to the force that the screw is able to ensure and to the friction coefficient lying between the wall and the force plate.
To correctly define the load of force, load cells placed the bases may be used. However, such a solution is costly and only justifiable for very particular types of work.

An alternative solution consists of determining whilst work is in progress the actual resistance RR on a trial anchorage and using a calculation of permissible resistance: $R_c=R_R/2$.

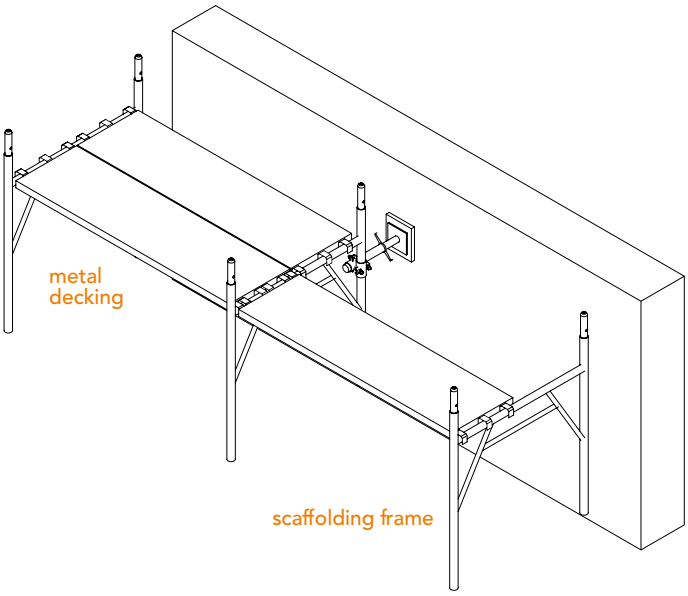
WARNINGS

It is recommended to connect the anchorage tube as near as possible to the force screw or at the extremity of the tube in order to avoid bending the tube itself.

Bracing anchorage

ERECTION PLAN

A monolateral constraint, resistant only to erected compression as laid out in the following diagrams.



LOADS

The bracing anchorage may only take orthogonal compression loads on the façade. The F_1 load acting on each orthogonal anchorage on the scaffolding façade is determined in accordance with the calculations detailed in the project and the regulations in force. The F_1 load can be made up of two addends:

$F_1 = F_{1a} + F_{1b}$

F_{1a}= compression component on the anchorage caused by orthogonal wind pressure on the scaffolding façade

F_{1b}= compression component on the anchorage arising from the structural geometry. For example, the horizontal component of the load carried by the brace of the jutty, shown in 'Erection plan - Bracing anchorage".

CHECKING THE ANCHORAGE SUBJECT TO AN F_1 LOAD

The checks to be carried out are the following:

- **joint creep check:**

$F_1 < R$

- **compressive strength check of the anchorage tube:**

L = free length of the anchorage tube

Bracing anchorage

$$\lambda = \frac{L}{i}$$ from which ω is derived from the tables of existing standards and regulations.

Checking instability

$$\sigma = \omega \times \frac{F_1}{A} < \sigma 1$$

• compressive strength check of the regulating screw
Limit the screwing out of the screw within a maximum of 15 ÷ 20 cm in order to omit factors of instability and only carry out resistance checks.

$$\sigma = \omega \times \frac{F_1}{A} < \sigma 1$$

• check the wooden planks distributors
Place a wooden plank underneath the base of the regulating screw to act as a load distributor

S = 5 cm plank thickness
A_L = 400 cm² 20 x 20 cm plank
σL = 60 daN/cm² permissible stress on the wooden plank

Resistance check:

$$\sigma = \frac{F_1}{Al} < \sigma_L$$

WARNINGS

For bracing anchorages, it is recommended to carry out the following:

• check the correct positioning, the quality and the efficiency of the wooden planks under the base acting as the load distributors

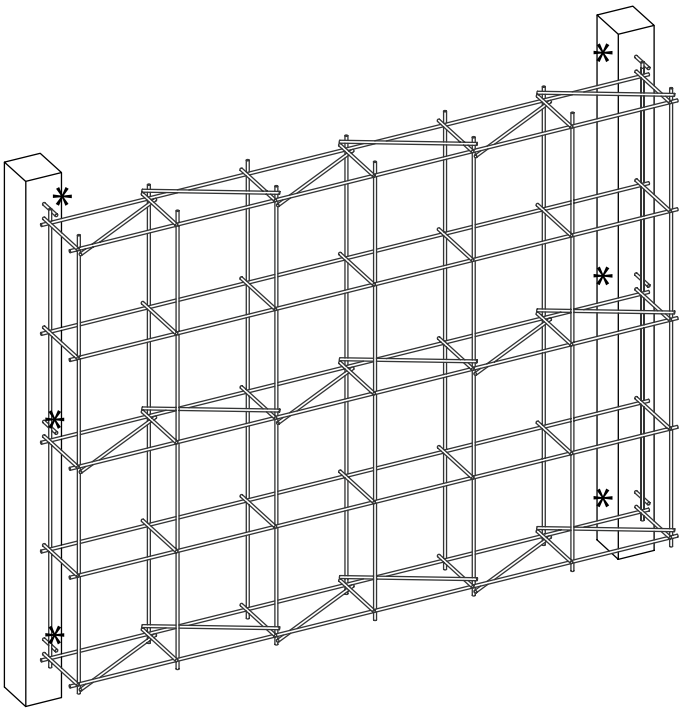
• limit the screwing out of the regulating screw to never exceed 20 cm

• check the proper dismantling of the joints so as to guarantee creep resistance.

Truss beam in tube-coupler anchorage

ERECTION PLAN OF HORIZONTAL BEAMS

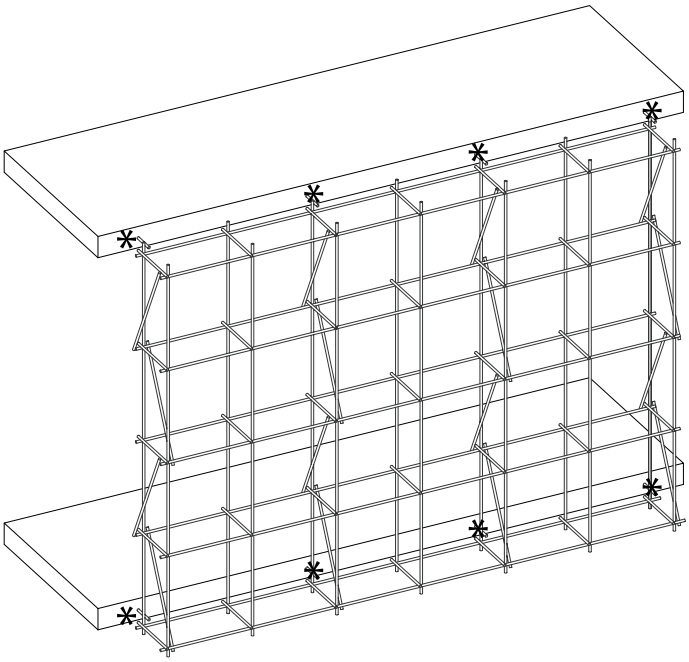
For buildings under construction with framed structures in reinforced concrete or steel, or for building maintenance with large areas of glass, it is not possible to distribute the anchorages uniformly on the façade of the scaffolding. In such cases, truss beams in tube-couplers can be used laid out horizontally or vertically on the inside of the scaffolding framework in such a way as to disperse the wind pressure on to the anchorages at the end of the truss beams only.



* Typical anchorage

ERECTION PLAN OF VERTICAL BEAMS

Truss beams can be erected on every bay or on alternate bays to act as loads.
Truss beams can be mounted on alternating piers or on all the piers to act as loads, and especially depending on whether or not metal ledger boards are present on each bay acting as braces and, therefore, as horizontal load distributors.



* Typical anchorage

Truss beam in tube-coupler anchorage

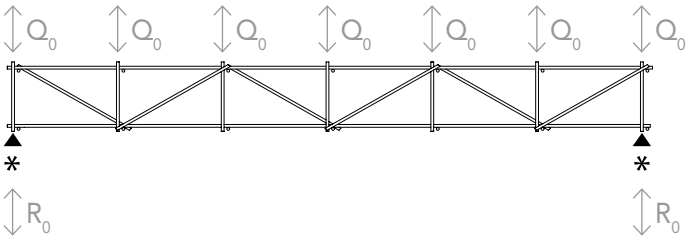
LOADS

The wind pressure (Pw) is calculated according to the regulations and standards in force and the project diagrams applicable to the scaffolding surface exposed to the wind. The nodal load acting on the truss beam anchorages must be calculated.

• **horizontal truss beam**
For example for diagram No. 1 in the 'Truss beam in tube-coupler anchorage' section, there must be 2 modules on every node.
The result is the following:

$Q_o = P_w \times 2S_w$

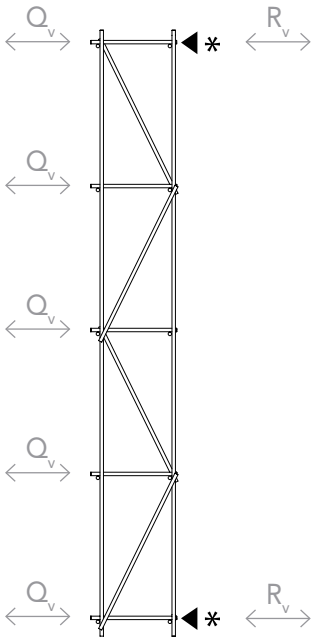
A static layout of horizontal truss beam anchorages:



• **vertical truss beam**
For example, in design no. 2 in the "Truss beam in tube-coupler anchorage' section, there must be 2 modules on every node. The result is the following:

$Q_v = P_w \times 2S_w$

Static diagram of the anchoring vertical truss beam



CHECKING THE TRUSS BEAMS

Having defined the acting loads and the static diagrams as explained in the previous section, proceed with defining the truss beams using the Ritter method or models utilizing finished elements or whatever other methods are available for the purpose of obtaining the maximum stress loads:

Tmax = maximum shear action
Mmax = maximum bending moment

• **horizontal anchorage beam**
Use tubes of ∅ 48.3 x 3.2 steel 235JRH for constructing the beams described in the previous sections.
Both the transoms and the diagonals of the beans are added to the scaffolding structure and immediately laid underneath the metallic decking which forms the work bays.
Such beam elements will therefore only be subject to loads arising from the results of the preceding sections.
Therefore resistance and instability checks are carried out on the transoms and diagonals most subject to stress.

• **vertical anchorage beams**
The diagonals are made of tubes ∅ 48.3 x 3.2 in S235JRH steel coupled to the transoms with swivel joints, while the beam transoms take advantage of the scaffolding uprights.
The resistance and instability checks of the scaffolding uprights must therefore take into account both the vertical loads of traditional scaffolding on the uprights and the loads consequent to the bending moment acting on the vertical truss beam.

ANCHORAGES OF THE EXTREMTIES

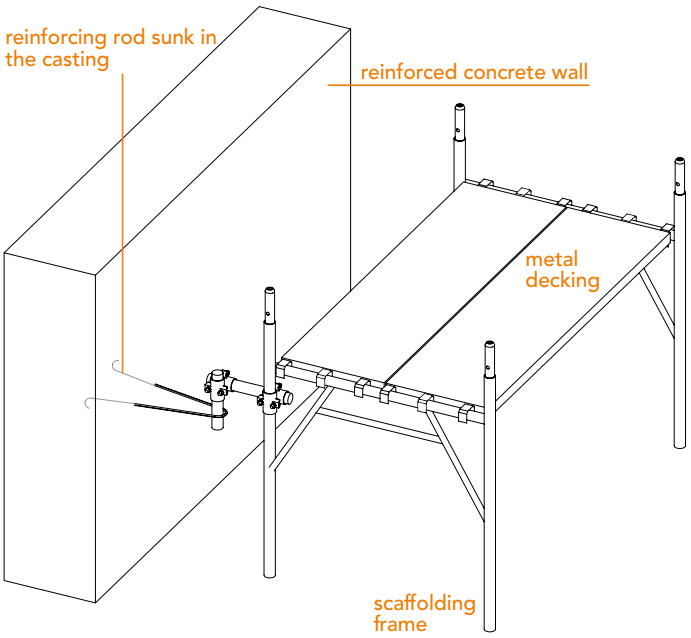
Every truss beam must be anchored to the part it is serving.
Refer to the anchorage types already described and see previous section for the checks that have to be carried out.

WARNINGS

It is recommended to check the following:
• check the tightening torque of the joints
• check for the presence of metal ledger boards on bays which act as horizontal load dividers
• depending on the type of anchorages placed on the end of the truss beams, see the applicable warnings that apply to each under 'Warnings'.

Anchorage with reinforced rod for reinforced concrete

ERECTION PLAN



CHARACTERISTICS OF THE MATERIALS USED

Materials having the geometrical and mechanical characteristics listed below are to be used:

Tube ∅ 48.3 x 3.2 in S235JRH steel

A = 4,59 cm²
J = 11,69 cm²
W = 4,85 cm³
i = 1,59 cm
σ 1 = 1600 daN/cm²
σ 2 = 1800 daN/cm²

Tonde ∅ 8 FEB44K steel reinforcing rod for reinforced concrete

σ A = 2.600 daN/cm²
σ A = 0,5 daN/cm²

LOADS

The type of anchorage is only capable of supporting orthogonal loads to the facade. For loads parallel to the façade, other types of anchorages must be used as described above.
F1 load are determined in accordance with the regulations in force and the calculation designs of the project.

CHECKING THE ANCHORAGE SUBJECT TO AN F_1 LOAD

The checks to be carried out are the following:
• **joint creep check:**

$F_1 < R$

• **tensile strength check of the anchorage tube**

$$\sigma = \frac{F_1}{A} < \sigma 1$$

• **reinforcing rod check**
The type of concrete and its characteristic Rbk resistance should be considered;
in the absence of such information, assume Rbk= 250 daN/cm²
Based on the Rbk, the regulations in force provide the value of the resistance to adhesion of the reinforcing rod (τco).
The resistance to adherence of the rod in the concrete (R_A):

∅ = reinforcing rod diameter

L' = length of each of the 2 sections of reinforcing rods present within the concrete casting

τco = concrete adherence resistance

$R_A = (\varnothing \times \pi \times L' \times 2) \times \tau$

• **adherence of the rod in the concrete check**
$F_1 < R_A$

• **strength check of the reinforcing rod**

$$\sigma = \frac{F_1}{2 \times A_A} < \sigma_A$$

WARNINGS

The following is recommended:

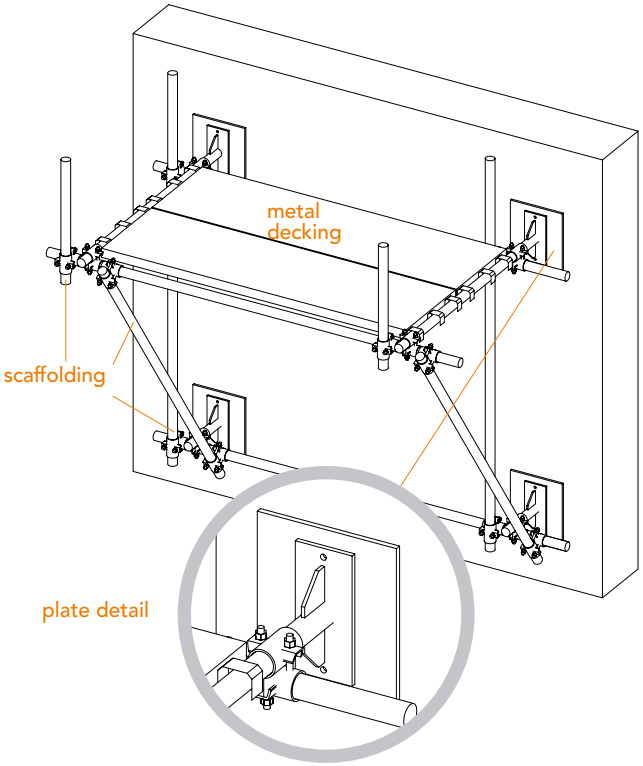
• check the correct positioning of the rod in the concrete and the technical/geometric properties (Φ ; A_A)

• check the correct hold of the joints.

Anchorage with structural steel plates

ERECTION PLAN

In the event of there being a particular geometry to the scaffolding (suspended bearing) and/or particularly high loads, a steel plate joined to the wall with mechanical anchors can be used.



CHARACTERISTICS OF THE MATERIALS USED

Materials having the geometrical and mechanical characteristics listed below are to be used:

Tube ∅ 48.3 x 3.2 in S235JRH steel
A = 4,59 cm^2
J = 11,69 cm^2
W = 4,85 cm^3
i = 1,59 cm
σ 1 = 1600 daN/cm^2
σ 2 = 1800 daN/cm^2

Anchorage with structural steel plate; S235JR steel
Should ribbing be found, the geometric/mechanical properties to be taken into consideration are:
Ap = reagent area of the ribbing section
Wp = resistant module of the ribbing section
σ 1 = 1600 daN/cm^2
σ 2 = 1800 daN/cm^2

LOADS

The acting load on the anchor plate is transmitted by the ledger or by the upright that is directly attached to it.

In general and in particular for the layout shown in 'Anchorage with structural steel plate', the vertical load applied by the scaffolding uprights must be added to the wind element.

CHECKING THE ANCHORAGE PLATE

With reference to the erection diagram and the 'Anchorage with structural steel plate' loads, carry out resistance checks on the plates acting as loads:

• **upper plate:**

$T = N_i$ $\quad N = N_i \times e$

resistance check

$$\sigma = \frac{M}{W_p} < \sigma 1$$

$$\tau = \frac{T}{A_p} < \pi 1$$

$$\sigma id = \sqrt{\sigma^2 + 3\pi^2} < \sigma 1$$

• **lower plate**

$T = N_e$ $\quad N = H$ $\quad M = N_e \times e$

verification of the anchors

$$\sigma = \frac{N}{A_p} + \frac{M}{W_p} < \sigma 1$$

$$\tau = \frac{T}{A_p} < \pi 1$$

$$\sigma id = \sqrt{\sigma^2 + 3\pi^2} < \sigma 1$$

• **verification of the anchors**

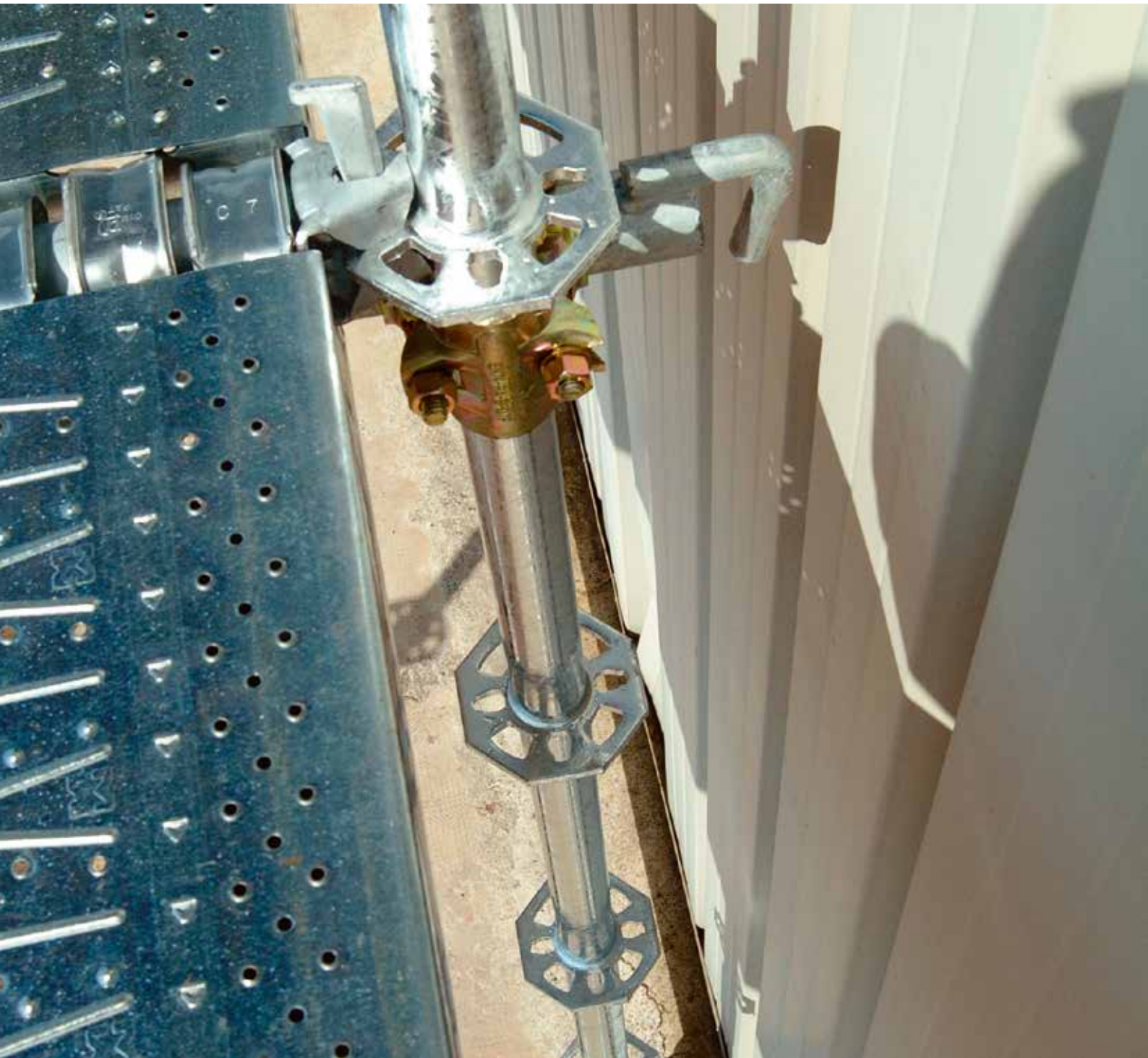
The loads acting on the single anchors are:

$$Tb = \frac{T}{2}$$ shear on the single anchor

$$Nb = \frac{M}{d}$$ shear on the single anchor

The Tb and Nb values must be compared with the bearing capacities of each anchor as supplied by the maker, reduced by the safety coefficient 2.2.

Erection sequence



SM8 multi-level system erection sequence

1 • positioning the base

2 • levelling the base

3 • ledger erection

4 • transom erection

5 • positioning the next section

6 • levelling the transverse

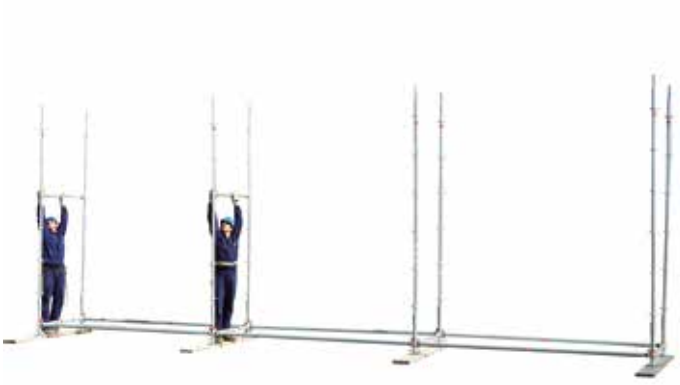
SM8 multi-level system erection sequence

7 • levelling the longitudinal

8 • checking the final level

9 • erecting the uprights

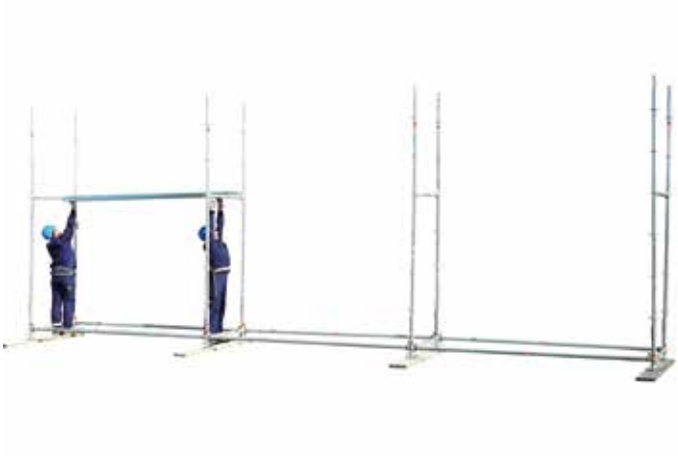
10 • erecting the uprights



11 • erecting the upper ledgers

12 • erecting the upper ledgers

SM8 multi-level system erection sequence



13 • erecting metal ledger planks

14 • erecting metal ledger planks

15 • wedge insertion

16 • erecting ledger board with trapdoor

17 • erecting diagonals

18 • erecting diagonals

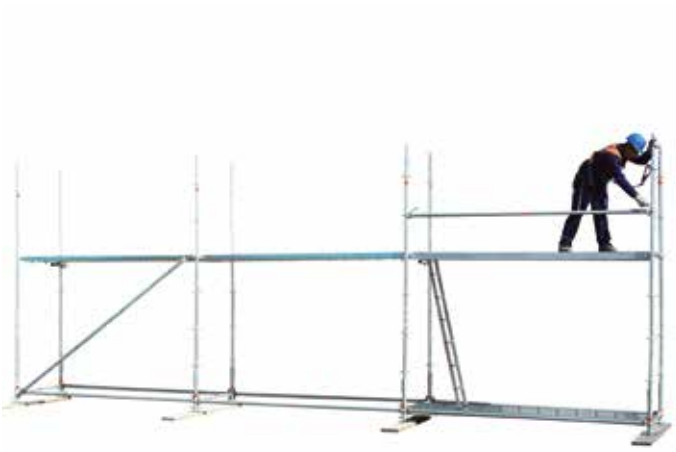
SM8 multi-level system erection sequence

19 • erecting diagonals

20 • anchorage

21 • passage to the upper level

22 • erecting level 1 guard rail



23 • erecting level 1 guard rail

24 • erecting level 1 guard rail

SM8 multi-level system erection sequence

25 • erecting side fencing structure

26 • erecting side fencing structure

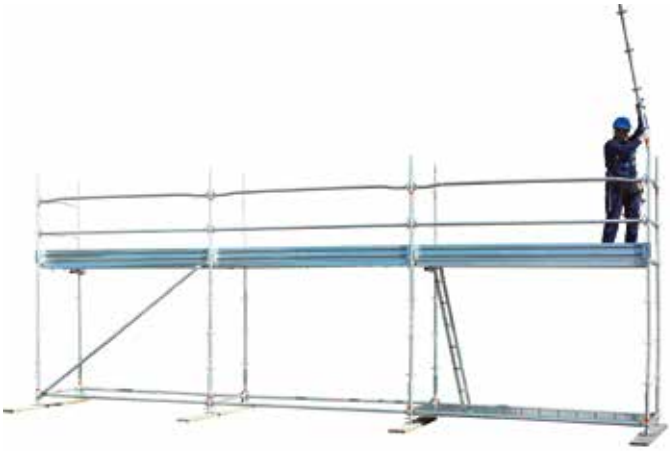
27 • erecting side fencing toeboard

28 • securing the toeboards

29 • erecting façade toeboard

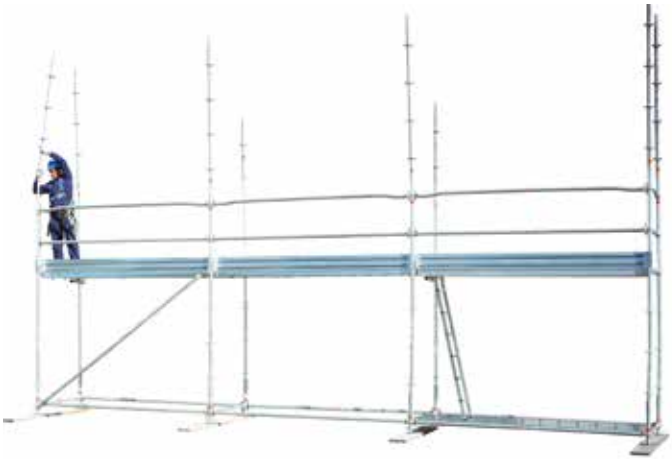
30 • erecting the upper uprights

SM8 multi-level system erection sequence



31 • erecting the upper uprights

32 • inserting spigot pin connector



33 • erecting uprights to project specification height

34 • erecting level 2 ledgers and guard rails

35 • erecting diagonals every 4 fields per floor

36 • erecting level 2 scaffolding

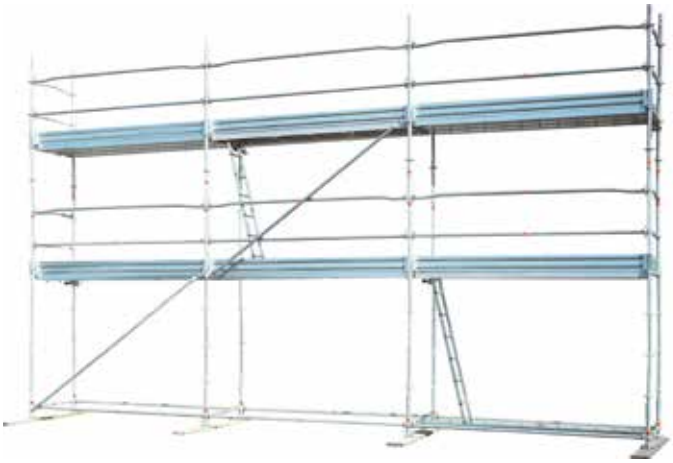
SM8 multi-level system erection sequence

37 • erecting level 2 scaffolding

38 • erecting plank with trapdoor

39 • erecting level 2 guard rails

40 • anchorages



41 • scaffolding completed

42 • typical layout

SM8 multi-level system erection sequence

43 • erecting bracket

44 • erecting overhanging plank

45 • inserting the wedge

46 • erecting street protection fan

47 • erecting street protection fan

48 • erecting street protection fan

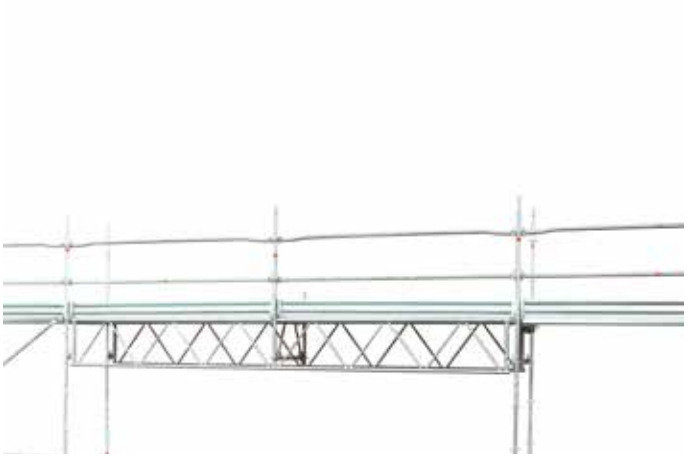
SM8 multi-level system erection sequence

49 • erecting street protection fan

50 • carriage beams

51 • erecting carriage beam couplings

52 • erecting carriage beam guard rail



53 • carriage beams

54 • pedestrian walkthrough

Certifications

Certifications

MARCEGAGLIA
BUILDTECH

to whom it may concern

Milan, 2016, October 31st

Subject: scaffolding system SM8 Europe

Dear Sirs,

concerning your request we officially inform you that the above mentioned scaffolding system complies the following specifications:

- European Norm EN 12810 and 12811 (ex HD1000).
- Italian Authorization:
  SM8 - 1140 n. 15/VI/4967/14.03.01.01 del 11/marzo/2009;
  n.32/0008858/MA001.A005 del 23/04/2014
  SM8 - 1800 n.32/0025756/MA001.A005 del 23 dicembre 2014

In addition we also confirm that our company is certified CISQ/ICIM following:

- UNI EN ISO 9001:2008 with certification Nr. 0725/5 for activity code EA: 17 - 28;
- ISO 9001:2008 with Registration Number IT - 3719

Yours faithfully

MARCEGAGLIA buildtech S.r.l.
Via G. della Casa n. 12 - 20151 Milano (MI)
C.F. 03779410376
P. IVA 01929950200

MARCEGAGLIA BUILDTECH construction equipment division
Sales offices:
via Giovanni della Casa, 12 • 20151 Milano - Italy
phone +39 . 02 30 704.1 • fax +39 . 02 33 402 706
cantieristica@marcegaglia.com • www.marcegaglia.com

Certifications

Certification body

ICECON CERT ORGANISM DE CERTIFICARE
CERTIFICATION BODY

acreditat pentru
CERTIFICARE
RENAR
SR EN ISO/CEI 17065:2013
CERTIFICAT DE ACREDITARE
PR 049

CERTIFICATE OF CONFORMITY

0837.1/07.07.2017

This certificate of conformity is certify that products

STEEL FAÇADE SCAFFOLDS

Type: SM8_EN 12810-4D-SW06/180-H1-B-LA,
SM8_EN 12810-4D-SW06/250-H1-B-LA,
SM8_EN 12810-4D-SW06/300-H1-B-LA,

Placed on the market and manufactured in the factory by

MARCEGAGLIA BUILDTECH SRL,

Head office: Via Giovanni della Casa, 12, 20151, MILAN, ITALY,
Phone: +39 02 30 7041, fax: +39 02 33 402 706,
Plant adress: Via S. Colombano, 63, 26813, GRAFFIGNANA, ITALY,
Phone: +39 0371 206 81, fax: +39 0371 206 830,

have been subjected by the manufacturer to periodical tests and production process control that including all measures necessary for fulfillment the maintenance and the requirements specified in reference documents.

ICECON CERT has performed periodical inspection of the production process and quality system, has assessed testing reports and will perform the continuous surveillance of the production process and the quality system.

This certificate attests that all requirements related to conformity assessment of the products as described in the reference standards

EN 12810-1:2003, EN 12811-1:2003

have been accomplished.

Applicable certification scheme: 5, according to EN ISO/CEI 17067:2013.

This certificate has been issued on **7th July 2017** and shall be valid until **6th July 2020**, as long as the products continue to comply with the requirements specified in the reference standards.

Uses: Service loads on working areas as specified in the table 3 of EN 12811-1:2003. Service loads include the weight of the workers also.

Initial cetification 29th April 2011

Surveillance stages

1st stage 30th June 2018

2nd stage 30th June 2019

3rd stage 30th May 2020

Executive Manager,
Eng. Genica ANTOHE

Bucharest, 7th July 2017

ICECON CERT is a RENAR attested certification body: attestation certificate No. PR 049/22.10.2013
ICECON CERT reserves the right to maintain, withdraw, cancel or suspend the validity of this certificate, if the initial certification conditions are not maintained.
Soc. Pantelimon, no. 266, sector 2, PO Box 3-33, 021652, BUCHAREST, phone: +4021 255 31 48,+4021 255 07 34, fax: +4021 255 31 49, +4021 255 14 20, www.icecon.ro gantohe@icecon.ro

Certifications

TÜV NORD Italia

I sistemi SM8-1140 e SM8-1800 soddisfano i requisiti della Direttiva 2014/34/UE Atex in riferimento alla dichiarazione di esclusione, in quanto i prodotti non hanno potenziali sorgenti di innesco proprie.
Rif. . n. PX/14298/15/L

sturdischiesa • September 2019 - EN

MARCEGAGLIA
BUILDTECH

Registered seat:
via Bresciani 16 • 46040 Gazoldo degli Ippoliti (MN) - Italy
phone + 39 . 0376 6851
www.marcegagliabuildtech.it

Main offices and plant:
MARCEGAGLIA Graffignana
via S. Colombano, 63 • 26813 Graffignana (LO) - Italy
phone + 39 . 0371 20681
cantieristica@marcegaglia.com