CATALOGUE

ROTAX PLUS MODULAR SCAFFOLDINGS

ALTRAD Mostostal

Contents

Introduction

STRENGTH - MODERNITY - STABILITY

INSTYTUT MECHANIZACJI BUDOWNICTWA I GÓRNICTWA SKALNEGO

CERTYFIKAT BEZPIECZEŃSTWA
NR B/02/013/08

Nazwa i adres posiadacza certyfikatu/ Name and address of the certificate holder: ALTRAD – Mostostal Spółka z o.o. 08-110 Siedlce, ul. Starzyńskiego 1

Nazwa i adres producenta/Name and address of the manufacturer: ALTRAD – Mostostal Spółka z o.o. 08-110 Siedlce, ul. Starzyńskiego 1

Rodzaj wyrobu/Product description: Rusztowanie stojakowe

Model/typ wyrobu/Model/type of the product: Rotax-Plus

Wymagania bezpieczeństwa/Safety requirements: Kryteria IC0812-732/1/05 zawierające wymagania norm serii PN-EN 12810 i PN-EN 12811

Nazwa i adres laboratorium, które zbadało wyrób/Name and address of the laboratory which was testing the product: Laboratorium Badań Maszyn Roboczych i Górniczych, Instytut Mechanizacji Budownictwa i Górnictwa Skalnego 02-673 Warszawa, ul. Racjonalizacji 6/8

Numer i data sprawozdania/Number and date of the test report: Sprawozdanie nr 12136/MZ z marca 2008 r.

Okres ważności certyfikatu/Certificate validity: Od dnia 22 kwietnia 2008 r. do dnia 21 kwietnia 2011 r.

Prawa i obowiązki posiadacza certyfikatu są zawarte w/Rights and duties of the certificate holder are stated in: Umowa nr 013/08 o stosowaniu certyfikatu bezpieczeństwa z 22 kwietnia 2008 r.

Niniejszy certyfikat bezpieczeństwa upoważnia posiadacza do oznaczenia znakiem bezpieczeństwa „B" wyrobu wymienionego w certyfikacie. Znakiem bezpieczeństwa „B" można być oznaczone wyłącznie wyroby identyczne z egzemplarzem, który był badany/This certificate allows the holder to affix safety mark „B" on the product(s) mentioned in this certificate. The safety mark „B" can be affixed only on those products that are identical with tested item(s).

UWAGI:
1. Dane techniczne i projektowe oraz informacje o zakresie stosowania rusztowania stojakowego Rotax-Plus zawierają następujące dokumenty:
   - Rusztowania stojakowego „ROTAX-Plus" instrukcja montażu. Cz. I Montaż, eksploatacja, wykonał Zakład Produkcyjny Siedlce, styczeń 2008 r.,
   - Rusztowania stojakowego „ROTAX-Plus" katalog elementów. Cz.II Wyroby konstrukcyjne/ Dane do projektowania, Siedlce, styczeń 2008 r.
2. Niniejszy certyfikat potwierdza spełnienie wymagań Rozporządzenia Ministra Infrastruktury z dnia 6.02.2003 r. w sprawie bezpieczeństwa i higieny pracy podczas wykonywania robót budowlanych (Dz.U. Nr 47 z 2003 r., poz. 401), a w szczególności § 108, ust. 2 tego Rozporządzenia.

Jednostka certyfikująca/Certification body: Ośrodek Certyfikacji IMBiGS

GŁÓWNY INŻYNIER ds. JAKOŚCI I CERTYFIKACJI
inż. Czesław Ilcewicz

DYREKTOR INSTYTUTU
dr Stefan Góralczyk

Warszawa, dnia 22 kwietnia 2008 r.

TÜV NORD

CERTYFIKAT

Jednostka certyfikująca
TÜV NORD Polska Sp. z o.o.

zaświadcza, że organizacja

Altrad-Mostostal Spółka z o.o.
ul. Starzyńskiego 1,
PL / 08-110 Siedlce

wprowadziła i stosuje
system zarządzania jakością w zakresie:

Projektowanie, produkcja i sprzedaż rusztowań, szalunków i akcesoriów budowlanych oraz produkcja konstrukcji stalowych i aluminiowych.

Na podstawie przeprowadzonego auditu, potwierdza się spełnienie wymagań normy

PN-EN ISO 9001 : 2009

Certyfikat ten jest ważny do : 26-10-2012
Numer rejestracyjny : AC 090/975/3169/2009
Organizacja jest certyfikowana od 27-10-2006

Katowice, 05-10-2009

IAF

Thanks to many years of experience and high quality equipment ALTRAD-Mostostal became the leading brand among scaffolding supplier.
Products supplied by ALTRAD-Mostostal are valued by clients in Poland and abroad, they fulfill numerous requirements of construction industry, large real estate development companies and small construction businesses, and industrial applications.

ROTAX modular scaffolding system is a solution for renovation and construction works carried out at industrial facilities where scaffolding must be erected around buildings of sophisticated shapes.

ROTAX scaffoldings are also available as special structures: stages, stage sets, elevated work platforms, support structures, etc. In the façade setting the system is used for renovation, repair and construction works for all types of buildings.

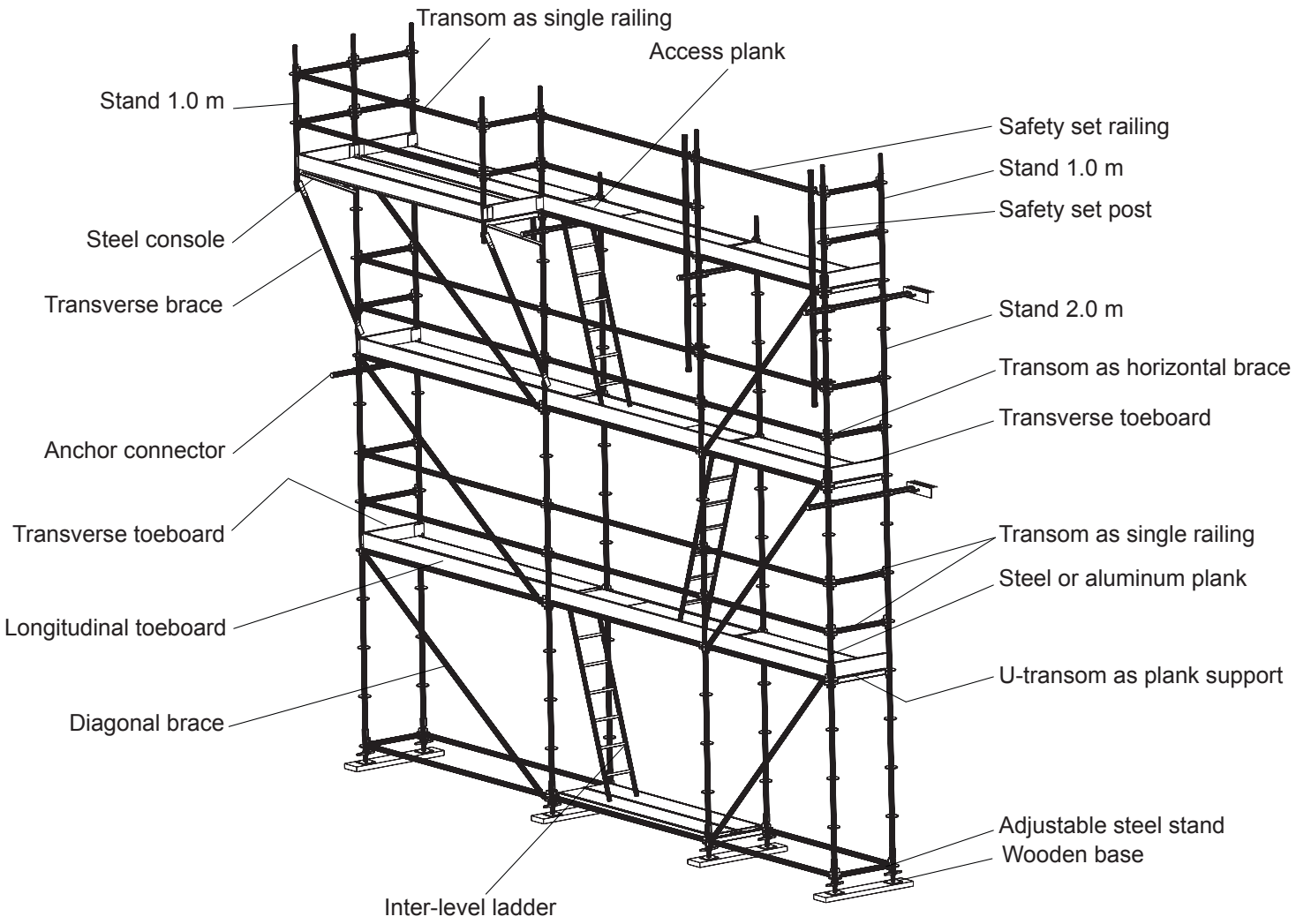
ROTAX scaffoldings can be used as working scaffoldings and as protective scaffoldings.

Mostostal Plus frame scaffolding system is intended for construction industry, especially for renovations, repairs, installing thermal insulation on buildings, painting and bricklaying. Façade scaffolding elements, just like modular scaffolding elements, can be used for building support or carrying structures for advertisement boards, TV camera stations and tribunes (stages, stage sets).

Mobile aluminum scaffoldings - MP MINI, MP 600, MP 800, MP 1000, MP 2000 - are intended for construction works carried out indoors and outdoors - where the scaffolding must be frequently and quickly moved. These scaffoldings are used for installation works, finishing works, application of anti-corrosion coatings, etc.

All scaffolding systems are certified by the Institute of Mechanised Construction and Rock Mining in Warsaw. The company received approval of welding procedures issued by SLV for manufacturing steel and aluminum products for the German market.
Furthermore, the manufacturing process complies with ISO 9001:2009.

Example of ROTAX Plus setup



ROTAX Plus modular scaffoldings
- general and technical information

General information

ROTAX Plus modular scaffoldings are intended for industrial facilities with a large number of installations and pipelines, such as power plants, chemical manufacturing plants, mining platforms and shipbuilding industry.

System quality is assured by optimum, ergonomic design and durability of used materials. Hot-galvanized, high-durability steel is used for manufacturing scaffolding elements. All pipes used for manufacturing stands, transoms and bracings have the diameter of 48.3 mm.

Frame scaffoldings are system scaffoldings with bay dimensions of: 3.07 m; 2.57 m; 2.07 m; 1.57 m; 1.09 m and 0.73 m. In vertical the position of elements can be adjusted every 0.5 m. Possibility of expanding the grid in all directions enables optimum use of ROTAX system potential, in comparison with other types of scaffoldings.

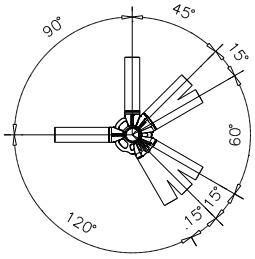
ROTAX system components are designed to be used for building both modular and frame scaffoldings (adjustable stands, couplings, planks, girders, etc.).

Modular scaffolding received the Safety Certificate B/02/013/07 issued by the Institute of Mechanised Construction and Rock Mining in Warsaw.

The certificate confirms that ROTAX users receive safe equipment that has been tested by the manufacturer for conformity with applicable design and material requirements specified in the criteria of product safety assessment (see: Ordinance of the Minister of Infrastructure from 06.02.2003, Journal of Laws 47/401, section 8, paragraph 108.2).

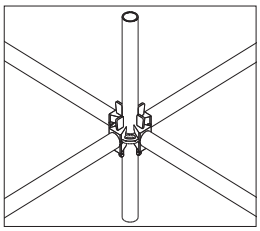
Construction - characteristics

ROTAX scaffolding construction is based on stands and transoms, which are the main carrying elements. On its entire length (every 50 cm) the stand is fitted with ROTAX joints, which enable fixing up to 8 couplings. The stands are supplied in two versions: basic and with bolted coupling - mainly for constructing suspended scaffoldings.



The stands, depending on the length of transoms and the direction and frequency of their placement, can carry loads from 35 kN to 45 kN for repeatable 2 meter high levels.

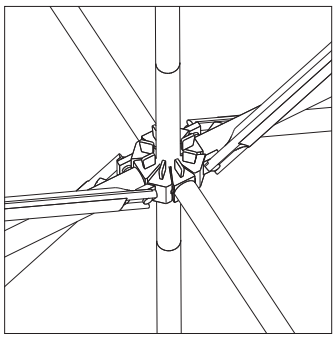
A key feature of ROTAX scaffoldings is the design of the joints. The aperture plate, which constitutes the base of the joint, enables installing up to 8 system elements: transoms and bracings. Additionally, the shape of plates facilitates storage.



Base for setting scaffoldings is created using the stands: standard steel stand, for setting scaffoldings that do not require height adjustment, adjustable steel stand for compensating terrain irregularities and adjustable, tiltable base jack for setting the scaffolding on sloped surfaces.

The primary elements are used for leveling the lowest scaffolding level and create a base for installing vertical stands.

U-transoms and pipe, normal and reinforced transoms for increased carrying capacity offered by ALTRAD-Mostostal, are important components of scaffolding structure and constitute the support for planks. They can also be used as safety railings. Carrying capacity of transoms, depending on structure type and dimensions, is between 2 kN and 16 kN (see Table 3, page 13). When determining the load acting on the structure, one must take into consideration the weight of elements themselves, e.g. weight of planks installed on transoms.



ROTAX Plus modular scaffoldings
- general and technical information

Construction - characteristics

Bracings are the basic elements stiffening the structure. The system contains full range of bracing elements for different heights and bays. The lengths of bracing elements and transoms are marked with color-coded labels. Vertical brace stiffens the scaffolding in the external plane. Vertical braces are installed at the distance of not more than 10 meters from each other. Horizontal brace - for different scaffolding bay sizes - is used for stiffening the scaffolding in horizontal plane for levels where no planks are used and in bays, in which vertical braces are installed.

Planks act as working stations, they carry the loads of workers, materials and tools necessary for the completion of given job, which are present on them. ROTAX scaffoldings are built using steel planks, the permissible load of which - depending on their size - is between 2 kN/m² and 6 kN/m² (loading class 3–6, as per PN-EN 12811-1) and aluminum planks the permissible load of 2 kN/m². Traffic between scaffolding levels is assured by access planks equipped with platform ladders. These types of planks are available in aluminum-plywood and composite versions. Additionally ALTRAD-Mostostal offers complementary planks for filling bays of non-standard sizes.

Steel and aluminum planks are available in two perforation versions: round or oval. Both perforation types assure same load carrying capacity.

Depending on the needs ROTAX systems allows using planks with two types of catches:

– with catches for the U-transom, which require additional element securing the planks against being lifted by wind (frame scaffolding system planks are also used);
– with catches for fixing on a pipe - O-transom (with preinstalled securing element).

Construction - characteristics

ROTAX system uses normal, rotating and longitudinal couplings for connecting pipes diameter of 48.3 mm. These elements have different load carrying capacity: normal coupling - 9.1 kN, rotary coupling - 5.9 kN, longitudinal coupling - 6.0 kN.

Wooden, aluminum or steel toeboards - installed on the plank's surface - secure the workers, tools and materials against falling of the scaffolding. The toeboards, according to Work Safety and Health regulations, are an obligatory element of scaffolding construction.

Anchoring of scaffoldings is necessary for assuring safety of work on the scaffolding. It constitutes the basic safety measure against accidents and tipping over of scaffoldings. Anchor coupling with a hook, distance anchor coupling and anchor lug bolts are used for anchoring the scaffoldings. For detailed information on anchoring please see the assembly manual!

An additional element that increases safety and comfort of work on scaffolding, during its assembly or disassembly is the Safety Set. The Safety Set secures installers entering the next level, before installing posts and transoms. Due to the light weight of the Safety Set, moving it to the following scaffolding level, once the works on the level below are completed, is convenient for the installers.

ROTAX Plus modular scaffoldings
- general and technical information

Applications

ROTAX Plus system scaffoldings are used as:

– spatial structures;
– scaffoldings of irregular shape;
– elevated work platforms;
– supporting (carrying) structures - support towers;
– mobile scaffoldings;
– suspended scaffoldings;
– façade scaffoldings.

Furthermore, ROTAX scaffoldings can be used as base for constructing external stairwells to assure traffic between levels. The stairwells can be built as single- or double-flight.

Stairwells can be constructed as stand-alone structures (anchored to the building) or erected at the scaffolding (permanently connected to it).

As a standard the stairwells are installed in 3.07 m or 2.57 m bays. Stairwells are built using standard system elements only adding aluminum stairs, outside and inside railings.

Stairwells facilitate access to appropriate building level, where boarding, pouring of concrete or other construction works are carried out.

ROTAX Plus scaffoldings can be installed as mobile, if the given platform will be fitted with guide beams and wheels. Such a solution is especially needed when carrying out construction, assembly and inspection works in locations where placing scaffolding for extended periods of time not possible or not necessary.

ROTAX Plus system can be optimally adjusted to structures and buildings of atypical and irregular shapes. This is possible thanks to such elements as steel and aluminum transoms, which enable:

– suspending planks, especially when building platforms (U-type transom);
– constructing passages under scaffoldings and suspending elements over structural elements of buildings.

Applications

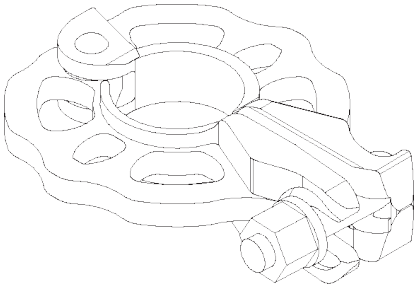
ROTAX Plus scaffoldings can be used for constructing support structures for ceiling boarding and as support towers. Together with installed heads, the stands constitute support for wooden transoms of ceiling boarding.

Support towers based on ROTAX scaffoldings can be assembled from different steel elements with support spacing from 0.73 x 0.73 m (other spacing can be obtained depending on transom length).

ROTAX tower design enables connecting any number of towers together. ROTAX tower allows assembling steel supports (0.36 m; 0.73 m; 1.09 m), for installing working platforms. The connection is made with ROTAX Plus joints.

The disc coupler is an additional element of the ROTAX scaffolding system. It enables installing an extra construction joint on ROTAX systems stand in any orientation. System's functionality is extended by the fact that the disc coupler can be adjusted. The disc coupler allows installing up to 6 additional elements, such as: transom, bracing or support. The disc coupler is a forged part, therefore its strength is comparable to the stand's original joint.

Additional and supplementary scaffolding elements, such as: scaffolding nets and canvas covers, pellets, nuts, hoisting inches and accessories are also available. Nets and canvas covers protect the workers working on the scaffoldings from atmospheric conditions and protect the passers-by.



ROTAX Plus modular scaffoldings
- general and technical information

ROTAX - Loads

Table 1. Maximum loads of stands in spatial scaffolding structures

	Side stands (outside)											
Bay length [m]	0.73		1.09		1.57		2.07		2.57		3.07	
Bracing method	X	Y	X	Y	X	Y	X	Y	X	Y	X	Y
Permissible vertical load [kN]	34.1	29.3	41.0	38.7	40.1	39.2	39.5	39.3	38.5	38.2	38.0	37.5

	Central stands (inside)											
Bay length [m]	0.73		1.09		1.57		2.07		2.57		3.07	
Bracing method	X	Y	X	Y	X	Y	X	Y	X	Y	X	Y
Permissible vertical load [kN]	34.1	29.3	43.0	38.7	45.0	43.0	45.2	43.9	44.5	43.2	43.2	40.5

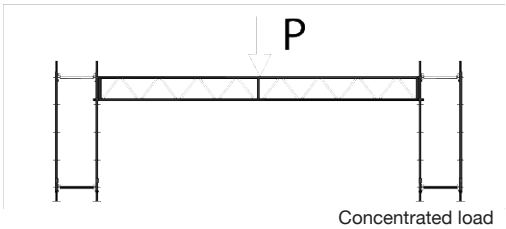
Table 2. Permissible loads for ROTAX Plus joint

Load type	Permissible value
Bending moment My, R, d [kNcm]	+/-94
Vertical transverse force Vz, R, d [kN]	+/-29.3
Bending moment Mz, R, d [kNcm]	+/-21.8
Horizontal transverse force Vy, R, d [kN]	+/-9.27
Twisting moment MT, R, d [kNcm]	+/-50.2
Normal force NR, d [kN]	+/-29.2

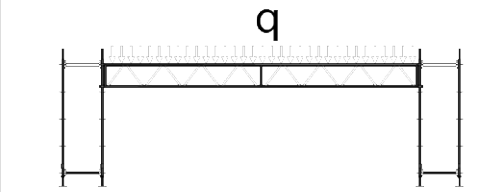
ROTAX - Loads

Table 3. Usable transom carrying capacity

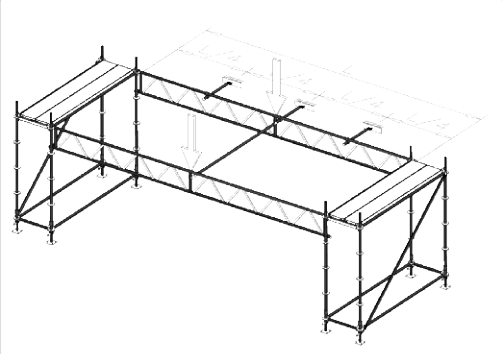
Element name	Length [m]	Index	Load concentrated (P) in the center of the bay [kN]	Even section load distribution (q) [kN/m]
O-transom	0.42	e371804	14.9	84.0
O-transom	0.73	e371807	7.29	19.9
O-transom	1.09	e371810	5.76	6.0
O-transom	1.4	e371814	4.58	4.9
O-transom	1.57	e371815	2.95	2.53
O-transom	2.07	e371820	2.24	1.44
O-transom	2.57	e371825	1.8	0.7
O-transom	3.07	e371830	1.51	0.65
U-transom	0.42	e372404	16.1	60.2
U-transom	0.73	e372407	9.1	16.65
O-transom, reinforced	1.09	e372210	8.96	10.9
U-transom, reinforced	1.09	e372410	11.18	13.7
U-transom, reinforced	1.4	e372414	8.7	8.28
U-transom, reinforced	1.57	e372415	7.74	6.53
O-transom, double	1.57	e373615	12.52	15.9
O-transom, double	2.07	e373620	9.51	9.17
O-transom, double	2.57	e373625	7.6	5.95
O-transom, double	3.07	e373630	6.4	4.17
U-transom, double	1.57	e373515	12.6	16.12
U-transom, double	2.07	e373520	9.6	9.28
U-transom, double	2.57	e373525	7.7	6.0
U-transom, double	3.07	e373530	6.4	4.22
ROTAX girder	0.5 x 2.57	e376725	15.5*	–
ROTAX girder	0.5 x 3.07	e376830	11.5*	–
ROTAX girder	0.5 x 2.57	e376725	27.5**	13.5 #
ROTAX girder	0.5 x 3.07	e376830	21.5**	11.0 #
ROTAX girder	0.5 x 4.14	e376841	17.3**	7.7 #
ROTAX girder	0.5 x 5.14	e376851	15.5**	5.3 #
ROTAX girder	0.5 x 6.14	e376861	10.8**	4.25 #



Concentrated load



Continuous load


Upper frame load

* Without transverse stabilization of girder on upper frame.
** Transverse stabilization of girder at middle of upper frame length.
# Transverse stabilization of girder with typical planks installed on entire length of upper frame.

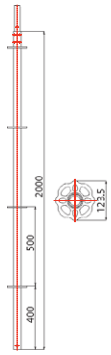
List of ROTAX elements

1. Primary element

Enables leveling the bottom scaffolding level and installing vertical stands. Fitted with an aperture disc for installing horizontal transoms. Can be used as scaffolding expanding element.

Index	Dimensions [m]	Weight [kg]
e371300	0.23	1.50
e371302	0.43	2.50

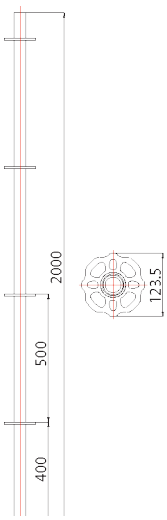
2. Stand



Main scaffolding bearing element. Made of pipes 48.3 mm in diameter. Aperture discs are installed every 0.5 m, along the entire length of the stand, for installing up to 8 connecting elements such as transoms and braces.

Index	Dimensions [m]	Weight [kg]
e371405	0.5	3.26
e371410	1.0	5.53
e371415	1.5	7.80
e371420	2.0	10.0
e371425	2.5	12.3
e371430	3.0	14.6
e371435	3.5	16.8
e371440	4.0	19.1
e371450	5.0	23.6

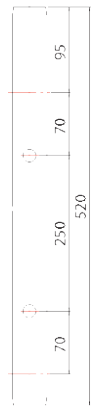
3. Stand without pin coupler



Scaffolding bearing element. Aperture discs are installed every 0.5 m, along the entire length of the stand, for installing up to 8 connecting elements such as transoms and braces.

Index	Dimensions [m]	Weight [kg]
e371505	0.5	2.27
e371510	1.0	4.54
e371515	1.5	6.81
e371520	2.0	9.97
e371525	2.5	11.34
e371530	3.0	13.61
e371540	4.0	18.15
e371560	6.0	25.43

4. Pin coupler



For connecting stands without pin coupler.

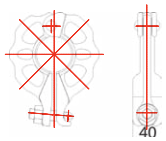
Index	Dimensions [m]	Weight [kg]
e371600	0.52	1.77

5. Stand with bolted coupler

Used for constructing suspended and support scaffoldings. Bolts enable connecting stands together.

Index	Dimensions [m]	Weight [kg]
e371605	0.55	4.43
e371610	1.0	6.71
e371620	2.0	11.2
e371625	2.5	13.5
e371630	3.0	15.7
e371635	3.5	18.0
e371640	4.0	20.3

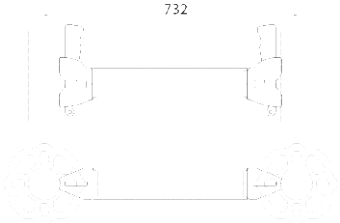
6. Disc coupler



Enables creating another construction joint on ROTAX system stands, in any orientation. The joint can be used for connecting up to 6 such elements as: transom, brace or support.

Index	Dimensions [m]	Weight [kg]
e371200	-	0.86

7. Horizontal transom

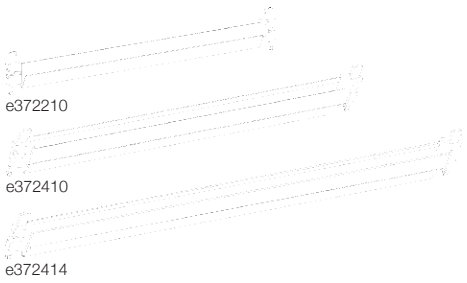


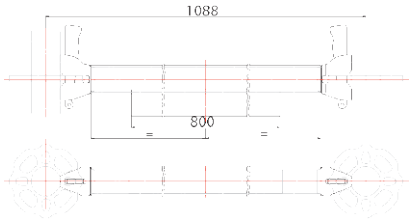
Element stiffening the scaffolding structure. Also performs the function of safety railings.

Index	Dimensions [m]	Weight [kg]
e371807	0.73	3.40
e371810	1.09	4.75
e371815	1.57	5.83
e371820	2.07	7.46
e371825	2.57	9.07
e371830	3.07	10.7

List of ROTAX elements

8. Reinforced transom. U-transom, transverse, reinforced. U-transom, reinforced

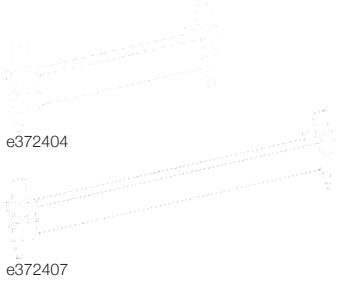




Reinforced transom is used to carry the required loads from the plank suspended on it.

Index	Dimensions [m]	Weight [kg]
e372210	1.09	6.46
e372410	1.09	6.19
e372414	1.4	7.90

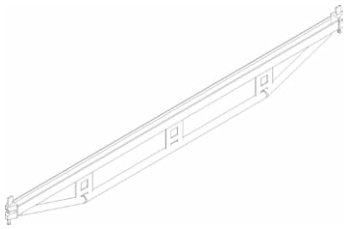
9. U-transom. U-transom transverse

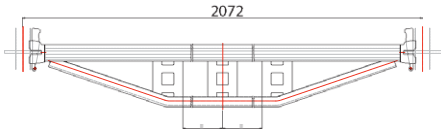


Bearing element, designed for installing standard planks on the U-section of the transom.

Index	Dimensions [m]	Weight [kg]
e372404	0.45	2.22
e372407	0.73	3.16

10. U-transom, double

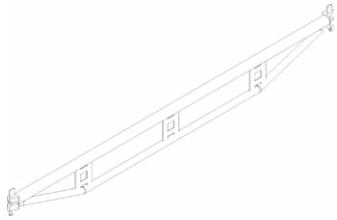




U-section transom, suitably reinforced, enables installing planks in case of wider stand span. Used for building platforms.

Index	Dimensions [m]	Weight [kg]
e373515	1.57	9.69
e373520	2.07	12.6
e373525	2.57	15.6
e373530	3.07	18.6

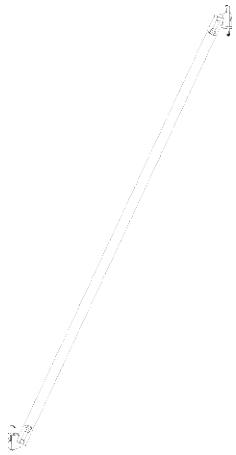
11. O-transom, double

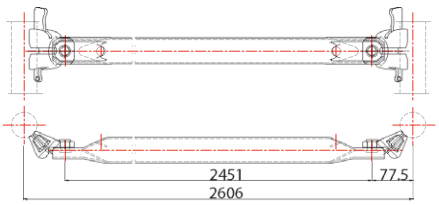


O-section transom, suitably reinforced, enables installing planks in case of wider stand span. Used for building platforms.

Index	Dimensions [m]	Weight [kg]
e373615	1.57	9.30
e373620	2.07	12.1
e373625	2.57	15.0
e373630	3.07	17.9

12. Vertical brace

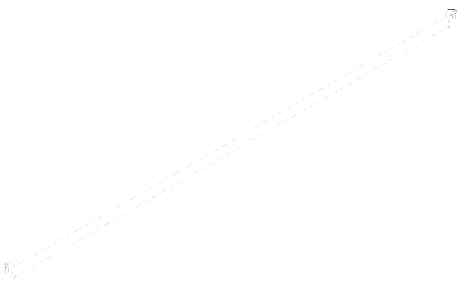


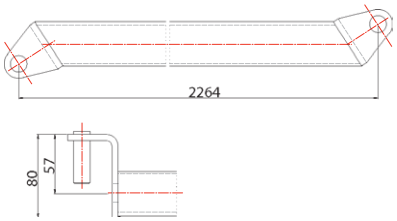


On both ends the brace is fitted with moving heads with fixed wedge, which is inserted into the disc aperture, designed for different scaffolding bay length. Element stiffening the scaffolding structure.

Index	Dimensions [m]	Weight [kg]
e373107	0.73x2.0	8.20
e373110	1.09x2.0	8.60
e373115	1.57x2.0	9.40
e373120	2.07x2.0	10.4
e373125	2.57x2.0	11.5
e373130	3.07x2.0	12.7
e373207	0.73x1.0	5.35
e373215	1.57x1.0	7.16
e373220	2.07x1.0	8.49
e373225	2.57x1.0	9.91
e373230	3.07x1.0	11.4

13. Horizontal brace

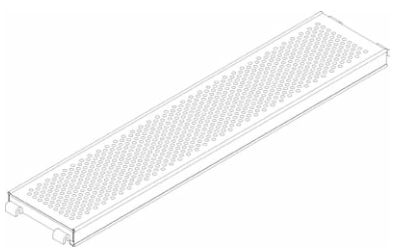


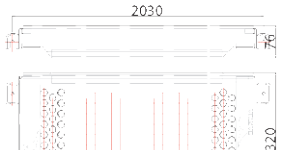


Stiffens the scaffolding in horizontal plane, in bays without planks and in bays with platform boards.

Index	Dimensions [m]	Weight [kg]
e373320	2.07x1.09	6.53
e373325	2.57x1.09	7.75
e373330	3.07x1.09	9.00
e373425	2.57x0.73	7.45
e373430	3.07x0.73	8.75

14. U-plank, steel



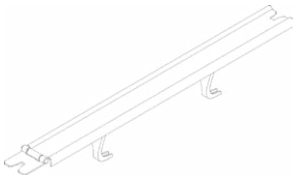


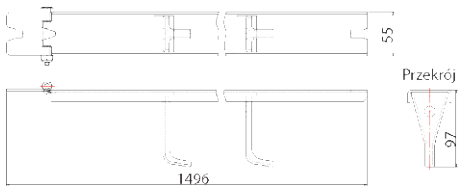
Perforated plank with non-slip surface, fitted with catches for U-sections. Universal plank for scaffoldings with frame width 0.73 m (2 planks) or 1.09 m (3 planks), also used as extension plank installed on a support.

Index	Dimensions [m]	Weight [kg]	Load [kN/m²]
e491307	0.32x0.73	5.81	5
e491310	0.32x1.09	8.05	5
e491315	0.32x1.57	11.1	5
e491320	0.32x2.07	14.2	5
e491325	0.32x2.57	17.4	5
e491330	0.32x3.07	20.5	5

List of ROTAX elements

15. Plank securing element

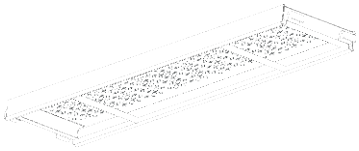


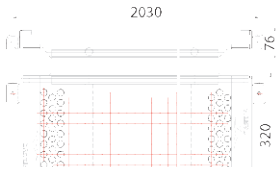


Secures plank against falling out of the U-transom.

Index	Dimensions [m]	Weight [kg]
e374503	0.36	0.60
e374507	0.73	1.33
e374510	1.09	1.96
e374515	1.57	3.08
e374520	2.07	4.00
e374525	2.57	4.93
e374530	3.07	5.87

16. Steel plank with crosspiece

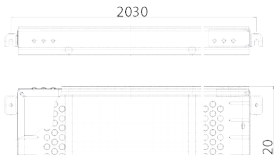




Perforated steel plank with ergonomic crosspieces, which provide an additional grip for the installer. Excellent solution in cases the scaffolding is frequently moved.

Index	Dimensions [m]	Weight [kg]	Load [kN/m²]
e491415	0.32x1.57	11.5	6
e491420	0.32x2.07	14.6	6
e491425	0.32x2.57	17.7	4.5
e491430	0.32x3.07	20.9	3

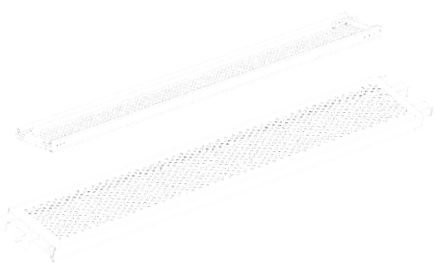
17. ECO steel plank with crosspiece

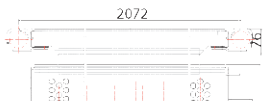


Clinched plank. The beam with welded catches is riveted to the drawpiece. Thanks to this solution ECO planks are lighter and less expensive, while maintaining same strength parameters as welded planks.

Index	Dimensions [m]	Weight [kg]	Load [kN/m²]
e491625	0.32x2.57	16.1	4.5
e491630	0.32x3.07	18.8	3

18. O-plank, steely

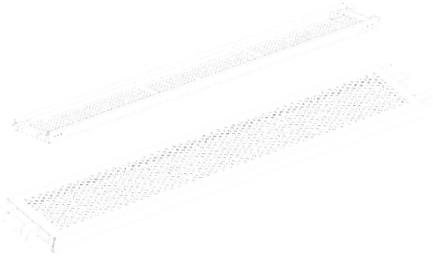


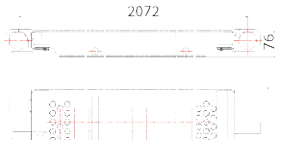


Non-slip plank, terminated with catches for fixing on O-transom.

Index	Dimensions [m]	Weight [kg]	Load [kN/m²]
e495607	0.32x0.73	6.34	6
e495610	0.32x1.09	8.57	6
e495615	0.32x1.57	11.6	6
e495620	0.32x2.07	14.7	6
e495625	0.32x2.57	17.9	4.3
e495630	0.32x3.07	21.0	3.0

19. O-plank, steel, with crosspiece

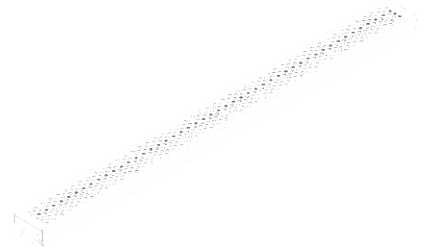


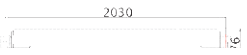


Non-slip plank, terminated with catches for fixing on O-transom. Ergonomic crosspieces facilitate assembly.

Index	Dimensions [m]	Weight [kg]	Load [kN/m²]
e495507	0.32x0.73	6.54	6
e495510	0.32x1.09	9.20	6
e495515	0.32x1.57	12.0	6
e495520	0.32x2.07	15.4	6
e495525	0.32x2.57	18.3	4.5
e495530	0.32x3.07	21.4	3

20. U-plank, steel - intermediate



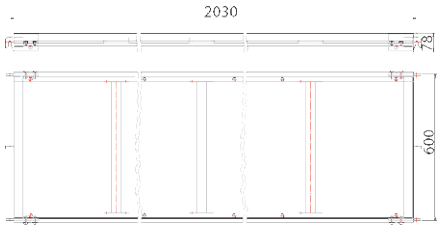


Plank with catches for fixing on U-sections, perforated, non-slip.

Index*	Dimensions [m]	Weight [kg]	Load [kN/m²]
e491210	0.16x1.09	6.20	2
e491215	0.16x1.57	9.00	2
e491220	0.16x2.07	11.6	2
e491225	0.16x2.57	14.3	2
e491230	0.16x3.07	16.9	2

* upon special order

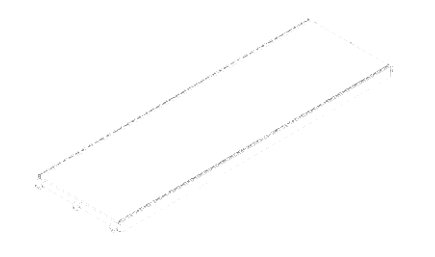
21. Full aluminum-plywood plank

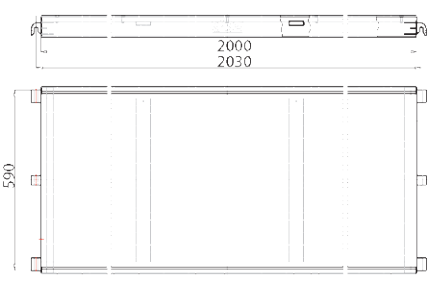


Plywood-aluminum plank with waterproof plywood and rough surface, on both ends fitted with catches that enable fixing the plank on U-section of the frame, assuring optimum safety level for the user.
Width plank corresponds to complete working platform for 0.73 m wide frames.

Index	Dimensions [m]	Weight [kg]	Load [kN/m²]
e491110	0.61x1.09	10.8	2
e491115	0.61x1.57	13.8	2
e491120	0.61x2.07	17.0	2
e491125	0.61x2.57	19.9	2
e491130	0.61x3.07	23.0	2

22. Full aluminum-plywood plank PLUS



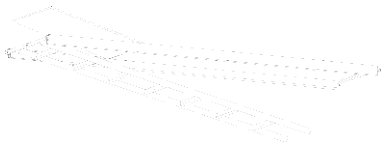


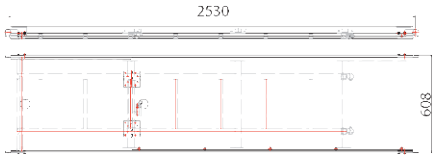
Plywood-aluminum plank with non-slip surface.

Index	Dimensions [m]	Weight [kg]	Load [kN/m²]
e491907	0.61x0.73	6.08	2
e491910	0.61x1.09	8.75	2
e491915	0.61x1.57	11.9	2
e491920	0.61x2.07	15.5	2
e491925	0.61x2.57	18.8	2
e491930	0.61x3.07	24.0	2

List of ROTAX elements

23. Aluminum-plywood access plank with a ladder

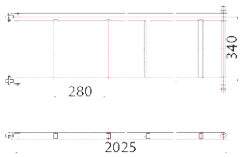




Ladder equipped with suspended plank ladders, which assure free traffic between scaffolding levels.

Index	Dimensions [m]	Weight [kg]	Load [kN/m²]
e492325	0.61x2.57	26.8	2
e492330	0.61x3.07	29.7	2

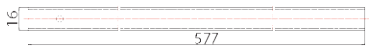
24. Ladder for planks



Aluminum ladder for aluminum plank with platform (e4923xx).

Index	Dimensions [m]	Weight [kg]
e492601	2.45x0.40	4.60

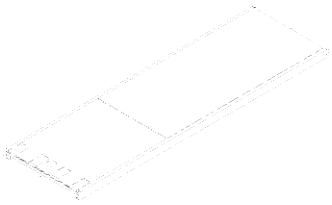
25. Pin



Pin for fixing ladders to plank's aluminum frame. Service element.

Index	Dimensions [m]	Weight [kg]
e492603	-	0.33

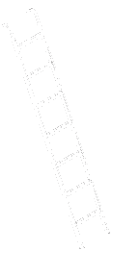
26. Aluminum-plywood plank with hatch without ladder



Non-slip plank, plank's surface filled with plywood, aluminum access hatch.

Index	Dimensions [m]	Weight [kg]	Load [kN/m²]
e492515	0.61x1.57	16.3	2
e492520	0.61x2.07	19.5	2
e492525	0.61x2.57	22.4	2
e492530	0.61x3.07	25.4	2

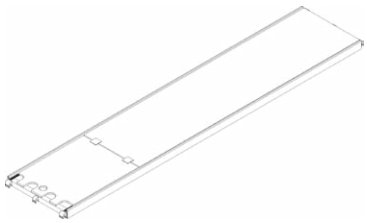
27. Ladder for platforms

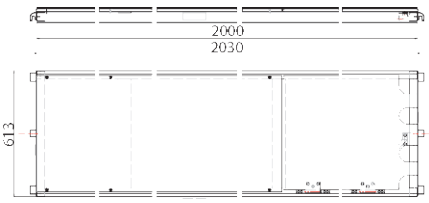


Aluminum ladder with spokes with non-slip perforation, used together with access planks.

Index	Dimensions [m]	Weight [kg]
e511600	2.14x0.34	11.1

28. PLUS access plank without ladder

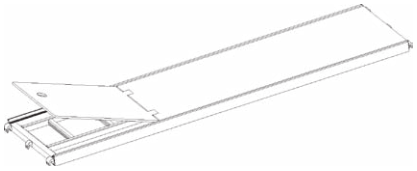


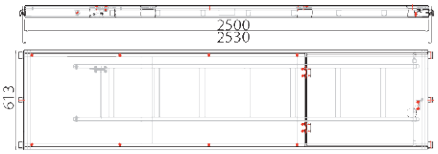


Used for creating vertical traffic paths.

Index	Dimensions [m]	Weight [kg]	Load [kN/m²]
e492020	0.61x2.07	16.0	2
e492030	0.61x3.07	24.2	2

29. Full aluminum-plywood plank PLUS

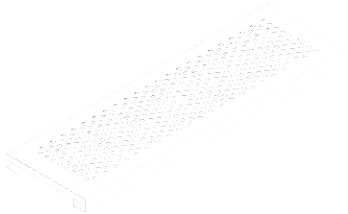


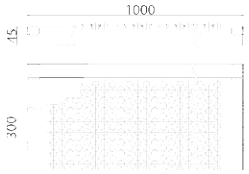


Used for creating vertical traffic paths, fitted with inter-level ladder.

Index	Dimensions [m]	Weight [kg]	Load [kN/m²]
e492125	0.61x2.57	23.8	2
e492130	0.61x3.07	29.1	2

30. Supplementary plank

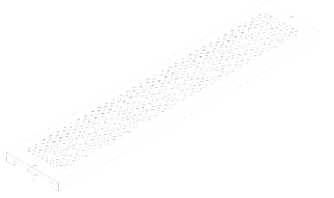


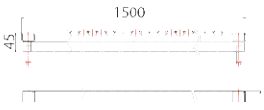


Used for filling non-standard bays. Crossover plank without safety elements.

Index	Dimensions [m]	Weight [kg]	Load [kN/m²]
e494010	0.3x1.0	6.40	6
e494015	0.3x1.5	9.20	6
e494020	0.3x2.0	12.0	6
e494025	0.3x2.5	14.8	4.5
e494030	0.3x3.0	17.6	3

31. Supplementary plank with securing element



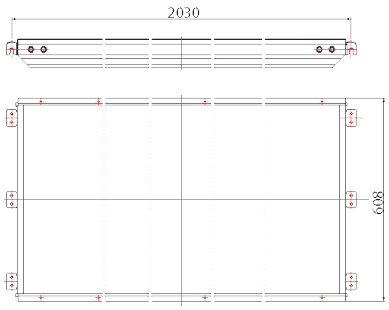


Used for filling non-standard bays. Crossover plank with safety elements.

Index	Dimensions [m]	Weight [kg]	Load [kN/m²]
e494110	0.30x1.0	6.50	6
e494115	0.30x1.5	9.30	6
e494120	0.30x2.0	12.1	6
e494125	0.30x2.5	14.9	4.5
e494130	0.30x3.0	17.7	3
e494210	0.19x1.0	4.8	6
e494215	0.19x1.5	7.00	6
e494220	0.19x2.0	9.20	6

List of ROTAX elements

32. Composite plank

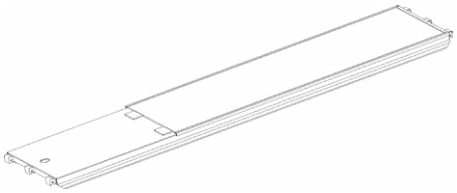


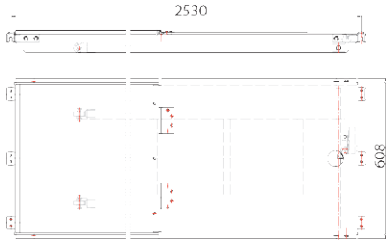
The plank is filled with composite element, covered with fiberglass mat soaked in epoxy resin. Non-slip surface is assured by a layer of quartz sand spread over its surface.

Index*	Dimensions [m]	Weight [kg]	Load [kN/m²]
e490515	0.61x1.57	11.7	2
e490520	0.61x2.07	14.4	2
e490525	0.61x2.57	16.4	2
e490530	0.61x3.07	19.3	2

* upon special order

33. Composite access plank



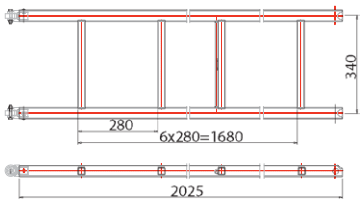


The plank is fitted with suspended ladders that enable vertical traffic within the scaffolding.

Index*	Dimensions [m]	Weight [kg]	Load [kN/m²]
e490625	0.61x2.57	25.6	2
e490630	0.61x3.07	27.6	2

* upon special order

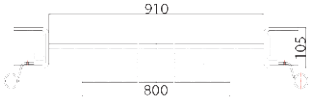
34. Aluminum ladder for access planks



Service element.

Index	Dimensions [m]	Weight [kg]
e492600	2.45x0.40	4.26

35. U-transom, special



Element suspended between planks using wedge clamps. Used for constructing scaffoldings around buildings of irregular shape.

Index	Dimensions [m]	Weight [kg]
e372507	0.64	4.28
e372510	0.96	7.09

36. Overlay transom

Laid on round sections for additional support when using planks made of wooden boards.

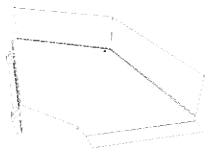
Index	Dimensions [m]	Weight [kg]
e372607	0.73	4.07
e372610	1.09	5.21

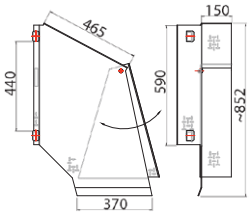
37. Aluminum stage plank

Aluminum-plywood for building stage set platforms on the base of ROTAX scaffoldings. Fixed on U-sections.

Index	Dimensions [m]	Weight [kg]
e499115	0.5x1.57	18.0
e499120	0.5x2.07	23.2
e499125	0.5x2.57	28.3
e499130	0.5x3.07	33.6
e499215	0.57x1.57	19.7
e499220	0.57x2.07	25.4
e499225	0.57x2.57	31.0
e499230	0.57x3.07	36.8

38. Corner plank, adjustable, 45 - 90°



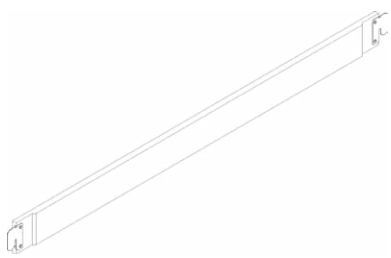


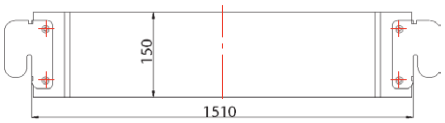
Used for connecting two scaffolding in the corner area

Index*	Dimensions [m]	Weight [kg]	Load [kN/m²]
e493700	-	19.4	2

* upon special order

39. ROTAX wooden toeboard





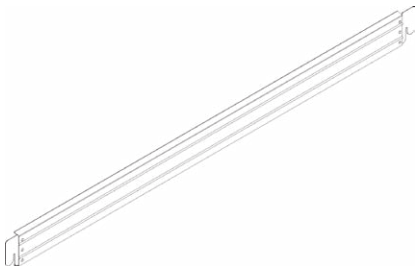
Safety element made of wood. Suspended on catches, between stand's vertical pipe and U-transom's wedge. Installed on platform height, protects against falling off the scaffolding.

Index*	Dimensions [m]	Weight [kg]
e375107	0.15x0.73	1.97
e375110	0.15x1.09	2.85
e375115	0.15x1.57	4.05
e375120	0.15x2.07	5.29
e375125	0.15x2.57	6.53
e375130	0.15x3.07	7.76

* upon special order - up to 0.20 m high

List of ROTAX elements

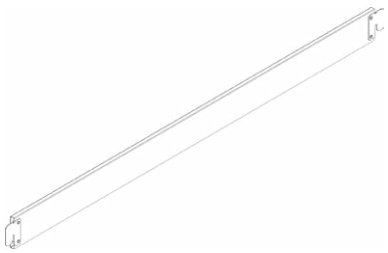
40. Steel toeboard

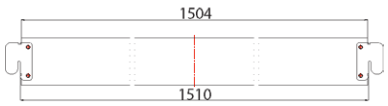


Safety element made of steel. Suspended on catches, between stand's vertical pipe and U-transom's wedge. Installed on platform height, protects against falling off the scaffolding.

Index	Dimensions [m]	Weight [kg]
e375207	0.15x0.73	2.05
e375210	0.15x1.09	2.08
e375215	0.15x1.57	3.83
e375220	0.15x2.07	4.89
e375225	0.15x2.57	5.95
e375230	0.15x3.07	7.01

41. Aluminum toeboard

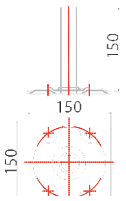




Safety element made of aluminum. Lighter than conventional toeboards. Easy assembly. Performs the same function as wooden and steel toeboards.

Index	Dimensions [m]	Weight [kg]
e375307	0.15x0.73	1.33
e375310	0.15x1.09	1.83
e375315	0.15x1.57	2.51
e375320	0.15x2.07	3.22
e375325	0.15x2.57	3.93
e375330	0.15x3.07	4.63

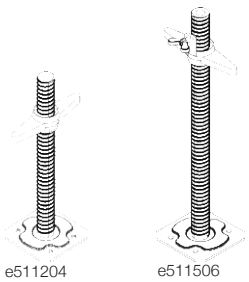
42. Standard base jack

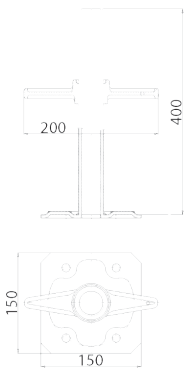


Used for correct setting of scaffolding that does not require height adjustment. 150 x 150 mm base, with pipe stem diameter of 36 mm.

Index	Dimensions [m]	Weight [kg]
e511200	0.15	1.30

43. Adjustable base jack. Adjustable base jack with a nut

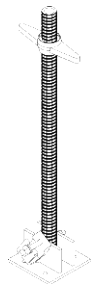


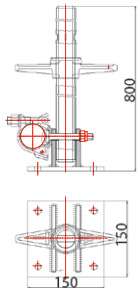


Base jacks of different height are used for leveling terrain irregularities.150 x 150 mm base, with threaded pipe stem diameter and a nut with pipe holder. Flattened thread assures the nut will not become loose.

Index	Dimensions [m]	Weight [kg]
e511204	0.40	3.40
e511206	0.60	4.40
e511208	0.80	5.30
e511313	1.50	9.80
e511506	0.60	4.30

44. Adjustable base jack, tiltable

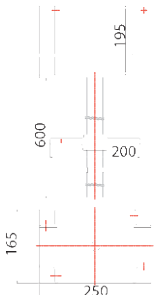




With threaded pipe stem installed in base jack the dimensions of 150 x 150 mm, with nit and clamp for pipe diameter of 48.3 mm. Used for setting stands on sloped surface.

Index	Dimensions [m]	Weight [kg]
e511408	0.80	7.81

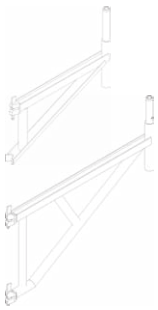
45. Cross-type threaded head

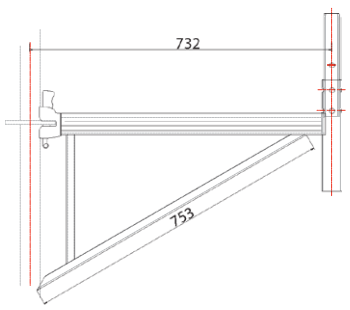


Used as support point for wooden girders of ceiling boarding. Utilized when ROTAX scaffoldings are used as support structure for ceiling scaffoldings, support towers and when constructing bridges and overpasses.

Index	Dimensions [m]	Weight [kg]
e642210	-	8.14

46. Support

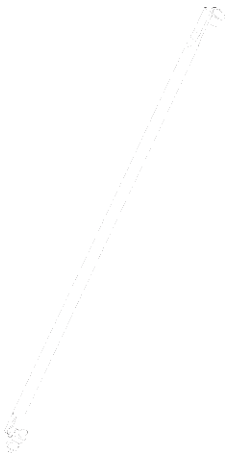


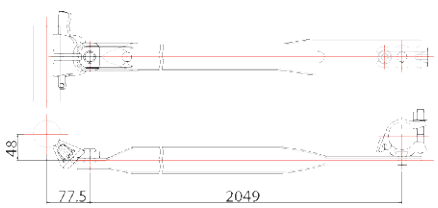


Enables extending the scaffolding's width by 0.36 m, 0.73 m or 1.09 m. Fixed to the stand using wedge coupler.

Index	Dimensions [m]	Weight [kg]
e374103	0.36	3.90
e374107	0.73	6.52
e374110	1.09	13.4

47. Vertical brace for support



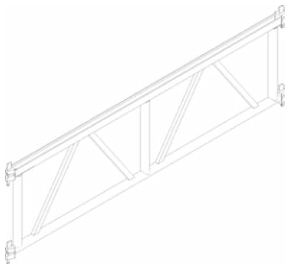


Used for bracing supports.

Index	Dimensions [m]	Weight [kg]
e372907	0.7	7.62

List of ROTAX elements

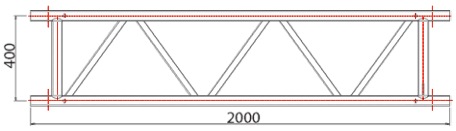
48. Girder, with U-section



Lattice girder, with additional U-section that enables suspending standard planks between girders. Used for building platforms.

Index	Dimensions [m]	Weight [kg]
e376720	2.07x0.50	25.5
e376725	2.57x0.50	28.7
e376730	3.07x0.50	33.7
e376751	5.14x0.50	54.9
e376761	6.14x0.50	64.8

49. Girder, steel, lattice



Used for building passages under scaffoldings, suspending elements over structural elements of buildings and different types of platforms. Girders can be connected to the stands using normal couplers.

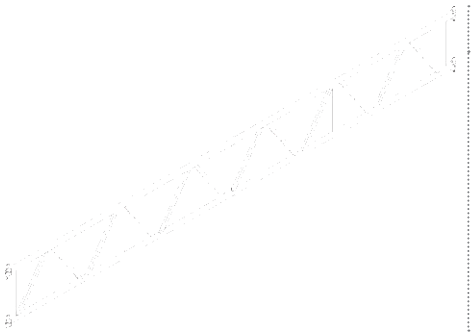
Index	Dimensions [m]	Weight [kg]
e503320	2.00x0.40	21.1
e503330	3.00x0.40	29.2
e503340	4.00x0.40	39.3
e503352	5.24x0.40	48.5
e503360	6.00x0.40	57.6
e503362	6.24x0.40	58.0
e503230	3.24x0.50	36.4
e503240	4.24x0.50	45.6
e503250	5.24x0.50	54.8
e503260	6.24x0.50	64.0

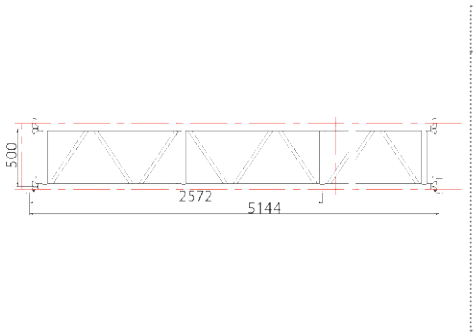
50. Girder, aluminum, lattice

Lighter alternative for the steel girder, which facilitates assembly and disassembly.
Lower strength than steel girder.

Index	Dimensions [m]	Weight [kg]
e501230	3.00x0.40	12.7
e501240	4.00x0.40	17.0
e501252	5.24x0.40	20.9
e501260	6.00x0.40	24.7
e501262	6.24x0.40	25.1
e501280	8.00x0.40	32.4
e501330	3.24x0.50	14.9
e501340	4.24x0.50	18.8
e501350	5.24x0.50	22.6
e501360	6.24x0.50	26.4
e501380	8.24x0.50	34.4

51. Girder with O-section

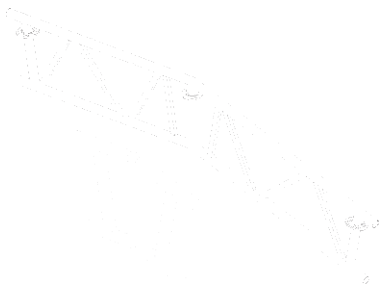


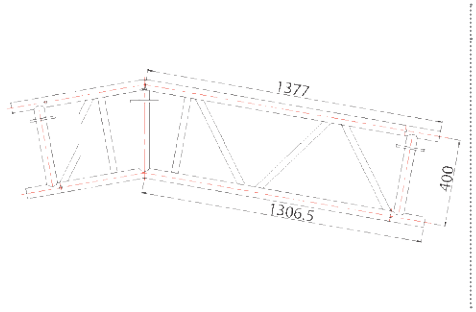


Lattice girder for connecting planks with catches for o-sections. Used for building platforms.

Index	Dimensions [m]	Weight [kg]
e376851	5.14	59.3

52. Lattice roof girder

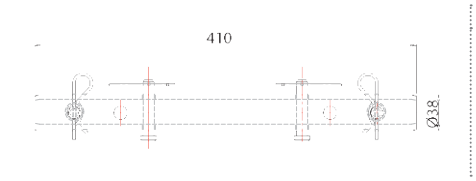




Element for connecting girders to system components when building roofs of halls and tents.

Index	Width [m]	Weight [kg]
e502140	0.40	8.20
e502240	0.40	30.1

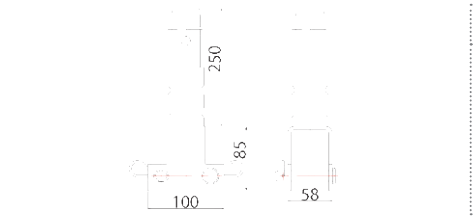
53. Girder coupler with fixtures



Enables connecting lattice girders.

Index	Length [m]	Weight [kg]
e502000	0.44	2.22

54. Girder pipe coupler

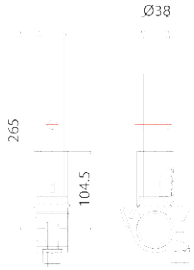


Element fixed to the U-section. Installed on girders to change bay length.

Index	Dimensions [m]	Weight [kg]
e376700	-	1.85

List of ROTAX elements

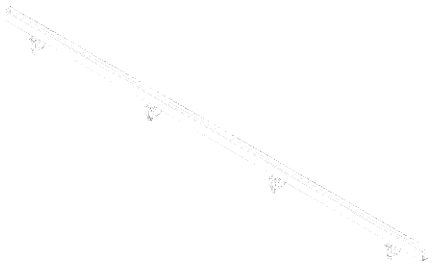
55. Pipe connector with coupler

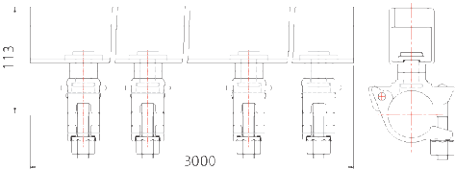


Element fixed to the U-section. Installed on girders to change bay length.

Index	Dimensions [m]	Weight [kg]
e581701	-	1.60

56. Aluminum plank cross-beam

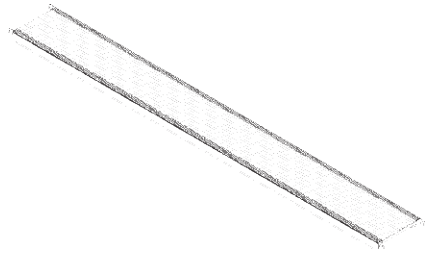




Element with U-section for 2, 3, 4, 5 or 6 planks the width of 0.32 m and 3 m, 4 m, 5 m, 6 m long girders, correspondingly. The cross-beam is fixed to the upper girder frame using the coupler. Used for building platforms of different sizes.

Index	Length [m]	Weight [kg]
e501006	0.60	2.76
e501009	0.90	3.37
e501012	1.20	3.86
e501016	1.60	5.25
e501019	1.90	5.80
e501030	3.00	8.52
e501040	4.00	10.2
e501050	5.00	12.7
e501060	6.00	15.2

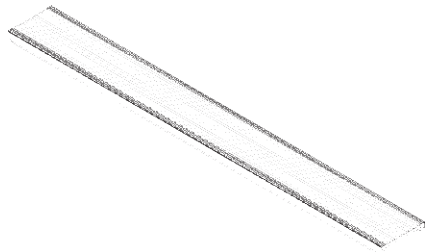
57. Aluminum platform with catches

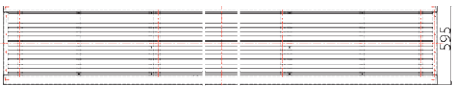


Enables constructing elevated work platforms, access platforms and inspection platforms.

Index	Dimensions [m]	Weight [kg]
e490960	6.0	48.9

58. Aluminum platform

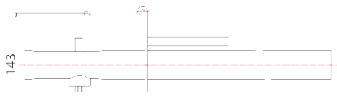




Enables constructing elevated work platforms, access platforms and inspection platforms.

Index	Dimensions [m]	Weight [kg]
e491042	4.25x0.59	32.7
e491052	5.20x0.59	39.0
e491061	6.10x0.59	46.0
e491071	7.10x0.59	52.5

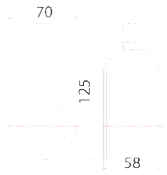
59. Aluminum railing post



Post, together with clamp and pipe diameter of 48.3 mm enables installing protective railings on aluminum platforms.

Index	Dimensions [m]	Weight [kg]
e491001	-	2.56

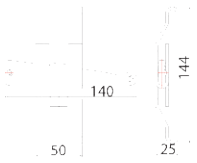
60. Steel railing clamp



Clamp, together with post and pipe diameter of 48.3 mm enables installing protective railings on aluminum platforms.

Index	Dimensions [m]	Weight [kg]
e491002	-	0.38

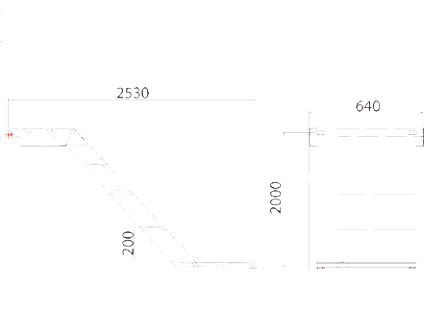
61. Clamp for aluminum platform



Used for connecting adjacent platform to widen the platform or traffic route.

Index	Dimensions [m]	Weight [kg]
e491003	-	0.36

62. Aluminum stairs

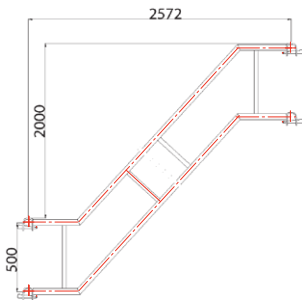


Assure easy access to scaffolding and material transportation.

Index	Dimensions [m]	Weight [kg]
e286225	2.57x0.64	25.1
e286230	3.07x0.64	29.9

List of ROTAX elements

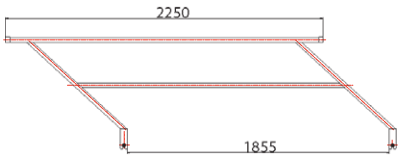
63. Outside railing for stairs



Safety element for people on the stairs. Fixed in the railing holder (e374800).

Index	Dimensions [m]	Weight [kg]
e374925	2.00x2.57	18.6
e374930	2.00x3.07	20.6

64. Inside railing for stairs



Used for as scaffolding safety element.

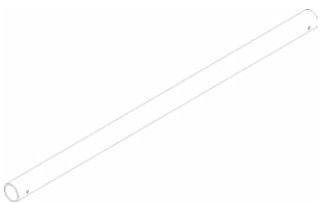
Index	Dimensions [m]	Weight [kg]
e286300	2.00x8.0	12.8

65. Railing holder

Used for fixing outside railing to stairs.

Index	Dimensions [m]	Weight [kg]
e374800	-	0.89

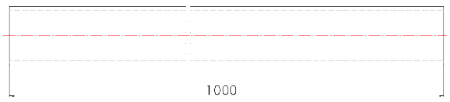
66. Universal steel pipe



Universal element, used for non-standard structures of different lengths.

Index	Length [m]	Weight [kg]
e440510	1.00	3.58
e440520	2.00	7.16
e440530	3.00	10.7
e440540	4.00	14.3
e440550	5.00	17.9
e440560	6.00	21.5

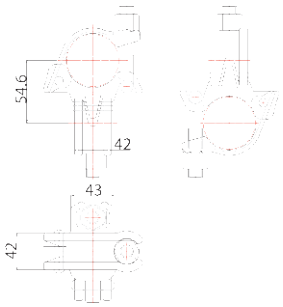
67. Universal aluminum pipe



Alternative for universal steel pipe - e4405xx.

Index	Length [m]	Weight [kg]
e440610	1.00	1.50
e440620	2.00	3.00
e440630	3.00	4.51
e440640	4.00	6.01
e440650	5.00	7.51
e440660	6.00	9.01

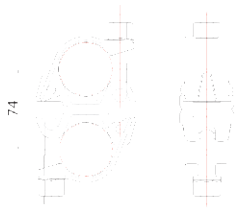
68. Normal coupling



Used for connecting two pipes diameter of 48.3 mm at the angle of 90°. Can be used for anchoring scaffolding to the building. Permissible load of normal coupling is 9.1 kN.

Index	Dimensions [m]	Weight [kg]
e581119	-	0.80

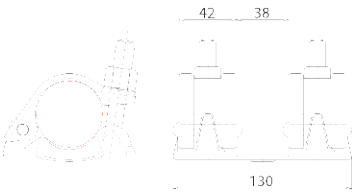
69. Rotary coupling



With flange nuts, used for connecting two pipes the diameter of 48 mm at any angle. Permissible load of rotary coupling is 5.9 kN.

Index	Dimensions [m]	Weight [kg]
e581319	-	1.20

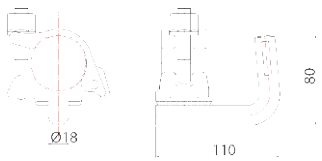
70. In-line coupling



Used for connecting two pipes the diameter of 48 mm in the longitudinal direction, while maintaining coaxiality. The in-line coupling must be used exclusively with the centering stud, fixed on the connection of both pipes. Permissible load of in-line coupling is 6 kN.

Index	Dimensions [m]	Weight [kg]
e581419	-	1.50

71. Anchor coupling

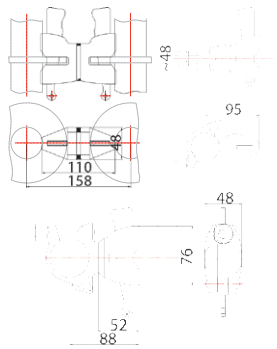


Used for anchoring the scaffolding with standard 48 mm diameter pipes and standard couplings. Used instead anchor connector.

Index	Dimensions [m]	Weight [kg]
e284610	-	0.90

List of ROTAX elements

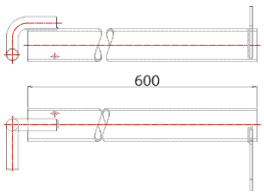
72. Double wedge coupling, normal, rotary



Used for connecting pipe diameter of 48.3 mm with disc coupler of the stand.

Index	Dimensions [m]	Weight [kg]
e373900	-	1.32
e373901	-	1.21
e373001	-	1.22

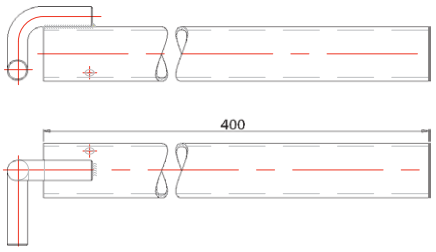
73. Anchor coupling with a hook



Fixed to the stand using one normal coupling, enables free adjustment of distance between scaffolding and the wall and transferring external load from scaffolding to the building.

Index	Dimensions [m]	Weight [kg]
e286606	0.60	2.70

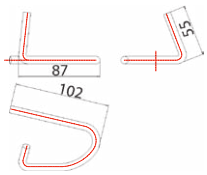
74. Distance anchor coupling with a hook



Long anchoring connectors (length of 1.30 m and 1.50 m) are fixed to both stands of vertical frames using two standard couplings. Short anchoring connectors (length of 0.40 m and 0.80 m) are fixed to just one frame stand, located near the wall, using one standard coupling.

Index	Length [m]	Weight [kg]
e286504	0.40	1.66
e286508	0.80	2.90
e286513	1.30	5.13
e286515	1.50	5.20

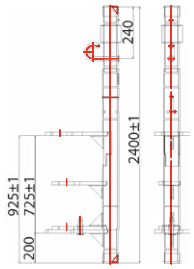
75. Securing pin



The pin protects vertical frames against disconnecting. It is drawn through the holes for connecting two frames.

Index	Length [m]	Weight [kg]
e511100	-	0.10

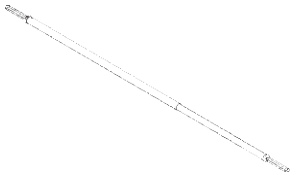
76. Installation post



Component of the Safety Kit. One set consists of two posts, which together with telescopic railing constitute a temporary safety feature for the installer during scaffolding assembly.

Index	Dimensions [m]	Weight [kg]
e206600	2.00	6.29

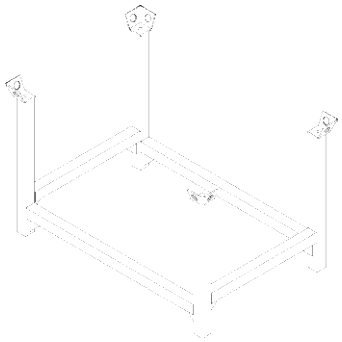
77. Telescopic railing for installation post

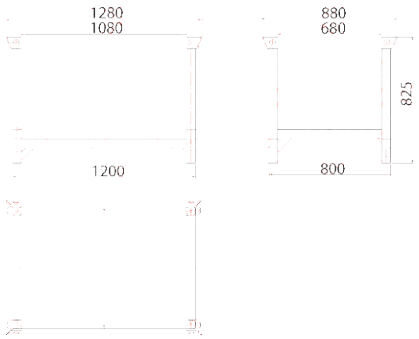


Component of the Safety Kit. Enables moving installation posts to following levels without disassembling the kit. Adjustment range 1.5 - 2.07 m or 2.07 - 3.7 m.

Index	Max. length [m]	Min. length [m]	Weight [kg]
e206700	2.07	3.70	4.24
e206800	1.50	2.07	3.18

78. Modul pallet

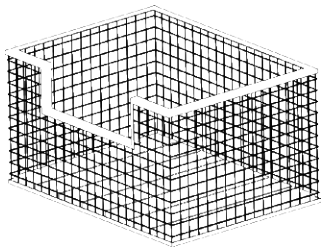


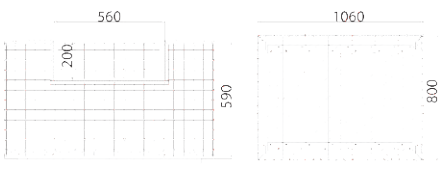


Perfect for space-efficient storage and transportation of scaffolding components. Can be moved using forklift or crane.

Index	Length [m]	Width [m]	Weight [kg]
e823800	1.28	0.88	29.0

79. Basket pallet



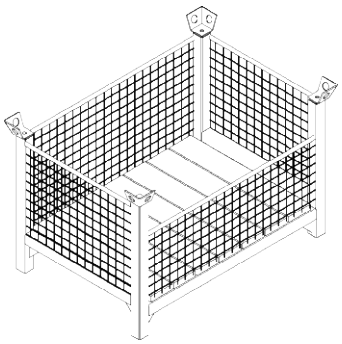


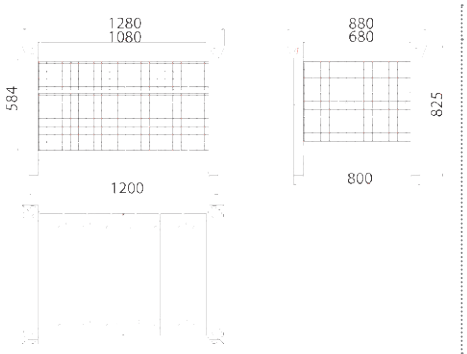
Comes together with Modul pallet, used for storing small scaffolding elements (couplings, stands, anchoring connectors, brackets).

Index	Length [m]	Width [m]	Weight [kg]
e822900	1.08	0.68	30.4

List of ROTAX elements

80. Pallet with welded basket

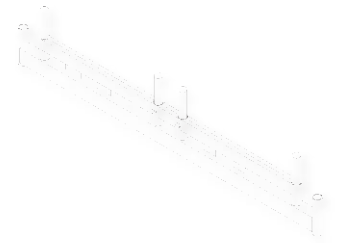


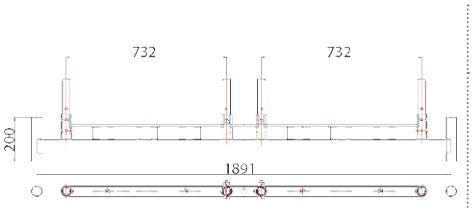


Perfect for space-efficient storage and transportation of scaffolding components.

Index	Length [m]	Width [m]	Weight [kg]
e823808	1.28	0.88	58.5

81. Mobile scaffolding guide beam

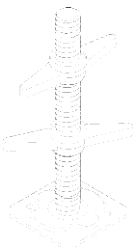


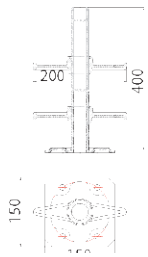


Designed for installing mobile scaffoldings using frame scaffolding elements. Used exclusively with e571175 and MP-116 and horizontal bracing.

Index	Length [m]	Width [m]	Weight [kg]
e571110	2.6	1.09	37.8
e571173	1.9	0.73	26.3

82. Base jack with two nuts

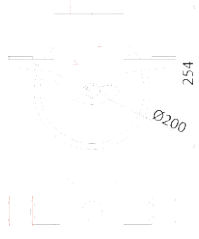




Designed for compensating surface irregularities. Used together with e571173 and e571110.

Index	Length [m]	Width [m]	Weight [kg]
e571175	0.40	-	4.10

83. Mobile scaffolding wheel



Used together with e571175. Operational load of a single wheel is 750 kg. The wheel is fitted with a lock.

Index	Diameter [mm]	Weight [kg]
MP-116	200	4.60

84. Plastic rawplug

Plastic rawplug the diameter of 14 mm for fixing eye bolts (e5110xx).

Index	Dimensions [m]	Weight [kg]
e511907	14 / 70	0.03
e511910	14 / 100	0.03

85. Anchor eye bolt

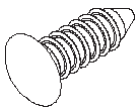
Bolt used for anchoring the scaffolding to a wall, used together with rawplug.

Index	Length [m]	Weight [kg]
e511012	0.12	0.20
e511016	0.16	0.25
e511019	0.19	0.30
e511023	0.23	0.40
e511028	0.28	0.50
e511030	0.30	0.55
e511035	0.35	0.60

86. Hole plug

Used for plugging holes created after removing anchoring bolts.

Index	Length [m]	Weight [kg]
e511800	-	0.01



87. Tee head bolt

Used together with the flange nut e581302. Service element.

Index	Dimensions [m]	Weight [kg]
e581301	-	0.10

88. Flange nut

Service element and component of all types of couplings and vertical bracings. Used together with tee head bolt SW 19.

Index	Dimensions [m]	Weight [kg]
e581302	-	0.04

89. Scaffolding net

Securing net reinforced with black-colored threads, with fixing holes every 10 cm on the entire length. Basis weight - approx 65 g/m^2. Wind permeability - 50-55%.

Index	Length [m]	Width [m]	Weight [kg]
e732025	10	2.50	1.60
	20	2.50	3.20
e732030	10	3.00	1.95
	20	3.00	3.90

90. Scaffolding canvas cover

Canvas cover coated on both sides (polyethylene - TEX 12x12 fabric). Basis weight approx 180 g/m^2.

Index	Length [m]	Width [m]	Weight [kg]
e733725	10	2.60	4.70
	20	2.60	9.40
e733730	10	3.10	5.60
	20	3.10	11.2

91. Reinforced scaffolding canvas cover

Canvas made of reinforced polyethylene, guarantees protection in any weather conditions. Fitted with additional reinforcing strips. Excellent resistance to sparks and fire. Basis weight approx 280 g/m^2.

Index	Length [m]	Width [m]	Weight [kg]
e733825	1.00	2.70	7.60
e733830	2.00	3.20	17.9

92. Electric hoisting winches

Mini 60S - Lifting capacity - 60 kg; 2 lifting speeds 23/69 m/min; power - 0.25/0.75 kW; supply - 230 V/50 Hz.

Mini 120S - Lifting capacity - 120 kg; 2 lifting speeds 20/60 m/min; power - 0.45/1.35 kW.; power supply - 230 V/50 Hz.

Mini 150S - Lifting capacity - 150 kg; 2 lifting speeds - 15/45 m/min; power - 0.45/1.35 kW.; power supply - 230 V/50 Hz.

Index	Dimensions [m]	Weight [kg]
e552606	with cable 51	50.0
e552606	with cable 81	56.0
e552612	with cable 51	60.0
e552612	with cable 81	65.0
e552615	with cable 51	60.0
e552615	with cable 81	65.0

93. Accessories for hoisting winches

Index	Weight [kg]	Nazwa
e552700	20.0	– Rotary outrigger.
e552701	0.5	– Hook.
e552714	2.3	– Holder for 5 hooks.
e552702	0.1	– Cable (5 mm in diameter, 35 cm length) for suspending several hooks.
e552705	4.0	– Hanger for 4 buckets
e552721	8.0	– Power supply cable 30 m
e552755	13.0	– Power supply cable 50 m
e552711	4.0	– Cable 51 m
e552703	6.8	– Cable 81 m

Mostostal Plus frame scaffoldings

General characteristics

Mostostal Plus frame scaffoldings are intended for such construction works as renovations, repairs, installing thermal insulation on buildings, painting, and bricklaying. Additionally, they are used as support or bearing structures for advertisement boards, building stage sets, etc.


INSTYTUT MECHANIZACJI BUDOWNICTWA I GÓRNICTWA SKALNEGO

CERTYFIKAT BEZPIECZEŃSTWA
NR B/02/014/08

Nazwa i adres posiadacza certyfikatu/ Name and address of the certificate holder: ALTRAD – Mostostal Spółka z o.o. 08-110 Siedlce, ul. Starzyńskiego 1

Nazwa i adres producenta/Name and address of the manufacturer: ALTRAD – Mostostal Spółka z o.o. 08-110 Siedlce, ul. Starzyńskiego 1

Rodzaj wyrobu/Kind of product: Rusztowanie ramowe

Modelltyp wyrobu/Model/type of the product: Mostostal-Plus

Wymagania bezpieczeństwa/Safety requirements: Kryteria K/0810-72/1/05 zawierające wymagania norm serii PN-EN 12810 i PN-EN 12811

Nazwa i adres laboratorium, które zbadało wyrób/Name and address of the laboratory which was testing the product: Laboratorium Badań Maszyn Roboczych i Górniczych; Instytut Mechanizacji Budownictwa i Górnictwa Skalnego 02-673 Warszawa, ul. Racjonalizacji 6/8

Numer i data sprawozdania/Number and date of the test report: Sprawozdanie nr 1213/4/MZ z marca 2008 r.

Okres ważności certyfikatu/Certificate validity: Od dnia 8 maja 2008 roku do dnia 7 maja 2011 roku

Prawa i obowiązki posiadacza certyfikatu: Umowa nr 014/08 o stosowaniu certyfikatu bezpieczeństwa z dnia 8 maja 2008 r.

Niniejszy certyfikat bezpieczeństwa upoważnia posiadacza do oznaczenia znakiem bezpieczeństwa „B" wyrobu wymienionego w certyfikacie. Znakiem bezpieczeństwa „B" mogą być oznaczone wyłącznie wyroby identyczne z egzemplarzem, który był badany/This certificate allows the holder to affix safety mark „B" on the product(s) mentioned in this certificate. The safety mark „B" can be affixed only on those products that are identical with tested item(s).

UWAGI:
1. Dane techniczne i projektowe oraz informacje o zakresie stosowania rusztowania ramowego typu Mostostal-Plus zawierają następujące dokumenty:
   - Rusztowanie ramowe „MOSTOSTAL PLUS". Instrukcja montażu cz. I. Montaż, eksploatacja, wykonanie, Siedlice, styczeń 2008,
   - Rusztowanie ramowe „MOSTOSTAL PLUS". Instrukcje montażu. Załącznik do cz. I. Typowe schematy, Siedlice, styczeń 2008,
   - Rusztowanie ramowe „MOSTOSTAL PLUS". Instrukcje montażu cz. II. Dane do projektowania oraz montażu na typowych rozstawach, Siedlice, styczeń 2008.
2. Niniejszy certyfikat potwierdza spełnienie wymagań Rozporządzenia Ministra Infrastruktury z dnia 06.02.2003 r. w sprawie bezpieczeństwa i higieny pracy podczas wykonywania robót budowlanych (Dz.U. Nr 47 z 2003 r., poz. 401), a w szczególności § 106, ust. 2 tego Rozporządzenia.

Jednostka certyfikująca/Certification body: Ośrodek Certyfikacji IMBiGS

GŁÓWNY INŻYNIER ds. JAKOŚCI I CERTYFIKACJI
inż. Czesław Ilcewicz

DYREKTOR INSTYTUTU
dr Stefan Góralczyk

Warszawa, dnia 8 maja 2008 r.

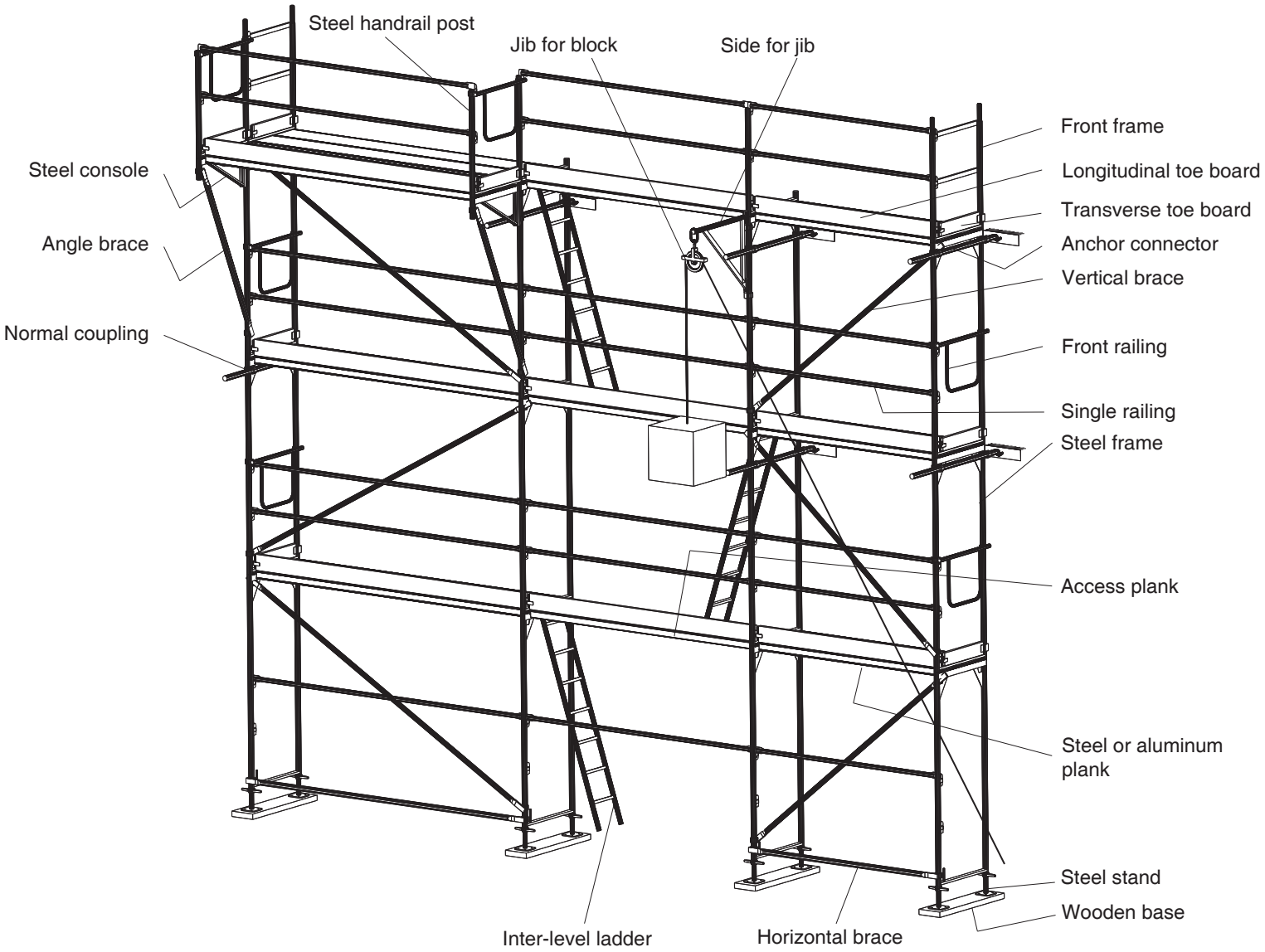
Frame scaffoldings are system scaffoldings with longitudinal frame span of: 3.07 m; 2.57 m; 2.07 m; 1.57 m and two standard spans of frame stands: 0.73 and 1.09 m. As standard, the framework construction allows installing planks ever 2.0 meters in vertical, and enables achieving different level heights using compensating frames and transverse transoms.

Frame scaffolding assure high stability and reliability thanks to the use of vertical and diagonal bracing elements and a system of anchors fixing the scaffolding to building's structure.

The system can be extended to over 34 m high, providing additional static calculations are performed.

Mostostal Plus scaffoldings received the Safety Certificate B/02/014/08 issued by the Institute of Mechanised Construction and Rock Mining in Warsaw.

Mostostal Plus scaffolding - example setup



MP mobile scaffoldings

General characteristics


INSTYTUT MECHANIZACJI BUDOWNICTWA I GÓRNICTWA SKALNEGO

CERTYFIKAT BEZPIECZEŃSTWA NR B/02/012/07

Nazwa i adres posiadacza certyfikatu/ Name and address of the certificate holder: ALTRAD Mostostal Spółka z o.o. ul. Starzyńskiego 1 08-110 SIEDLCE

Rodzaj wyrobu/Product description: Rusztowania przejezdne

Modele/typ wyrobu/Model/type of the product: MP MINI, MP 600, MP 800, MP 1000, MP 2000

Wymagania bezpieczeństwa/Safety requirements: Kryteria K/0812-7/2/99

Nazwa i adres laboratorium, które zbadało wyrób/Name and address of the laboratory which did testing the product: Laboratorium Badań Maszyn Roboczych i Górniczych Instytutu Mechanizacji Budownictwa i Górnictwa Skalnego 02-673 Warszawa, ul. Racjonalizacji 6/8

Numer i data sprawozdania/Number and date of the test report: Sprawozdania nr to 11620/MZ z sierpnia 2005 r. i 11660/MZ z października 2005 r.

Okres ważności certyfikatu/Certificate validity: Od dnia 30 maja 2007 r. do dnia 4 listopada 2010 r.

Prawa i obowiązki posiadacza certyfikatu są zawarte w/Rights and duties of the certificate holder are stated in: Umowa nr 811/0133/5100 o stosowaniu certyfikatów bezpieczeństwa z dnia 30 maja 2007 r.

Niniejszy certyfikat bezpieczeństwa upoważnia posiadacza do oznakowania znakiem bezpieczeństwa „B" wyrobu wymienionego w certyfikacie. Znakiem bezpieczeństwa „B" może być oznakowany wyłącznie wyrób identyczny z egzemplarzem, który był badany/This certificate entitles the holder to apply the safety mark „B" on the product(s) mentioned in this certificate. The safety mark „B" may be affixed only on those products which are identical with those tested

Jednostka certyfikująca/Certification body: Ośrodek Certyfikacji IMBiGS

GŁÓWNY INŻYNIER ds. JAKOŚCI I CERTYFIKACJI inż. Czesław Ilcewicz

DYREKTOR INSTYTUTU dr Stefan Góralczyk

Warszawa, dnia 30 maja 2007 r.

Thee MP MINI, MP 600, MP 800, MP 1000, MP 2000 mobile scaffoldings are used for installation and construction works carried out indoors and outdoors. This type of scaffolding is particularly well-suited for painting, corrosion protection, finishing and installation works.

Individual mobile scaffolding series uses typical system elements that enable expanding existing series of types. Thanks to used self-locking clamps the assembly, disassembly and rebuilding can be performed without additional tools - quickly and efficiently.

High-grade aluminum gives the entire group of mobile scaffolding lightness and exceptional durability. Mobile scaffoldings are fitted with ø 125 and 200 mm castors facilitates maneuvering. Once in position, the scaffolding is secured with a foot brake. Additionally, precise setting of structures can be achieved by adjustable stands that enable exact leveling of the scaffolding. Structure stability is assured by universal and extendable guide rails, ballasts and supports.

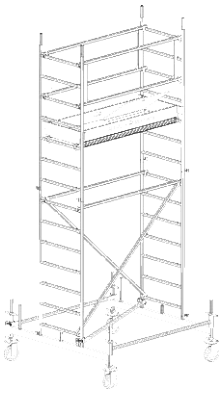
Aluminum frames are fitted with spokes. Ribbed spokes assure safety for installers entering the scaffolding. Frame design enables building platforms in 27.5 cm modules on the entire height of the scaffolding, which significantly facilitates working height adjustment. Once disassembled, scaffoldings take little space for storage and transportation.

Mobile scaffoldings received the Safety Certificate B/02/012/07, issued by the Institute of Mechanised Construction and Rock Mining in Warsaw.

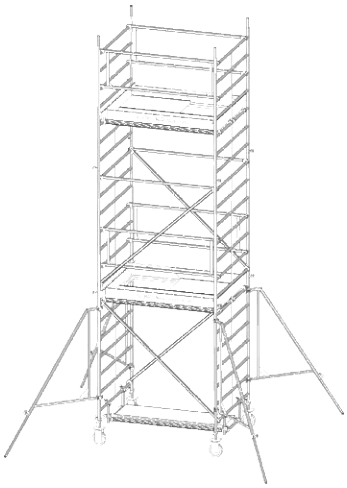
Scaffolding type	Platform dimensions [m]	Working platform height [m]	Usable load of working platform [kN/m²]
MP MINI	1.80x0.75	0.90-3.53	2
MP 600	1.80x0.75	2.32-5.07	2
MP 800	1.80x1.50	2.17-11.80	2
MP 1000	2.80x0.75	2.32-11.95	2
MP 2000	2.85x1.50	2.17-10.85	2

MP mobile scaffolding - example setup

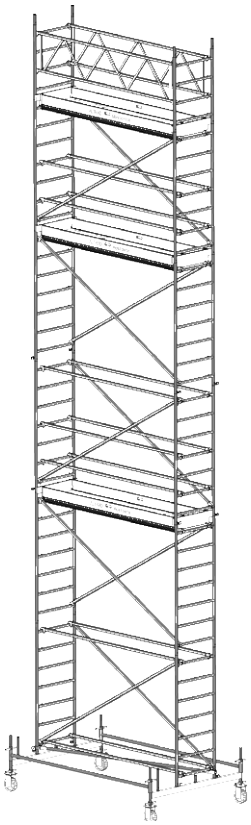
MP MINI 601



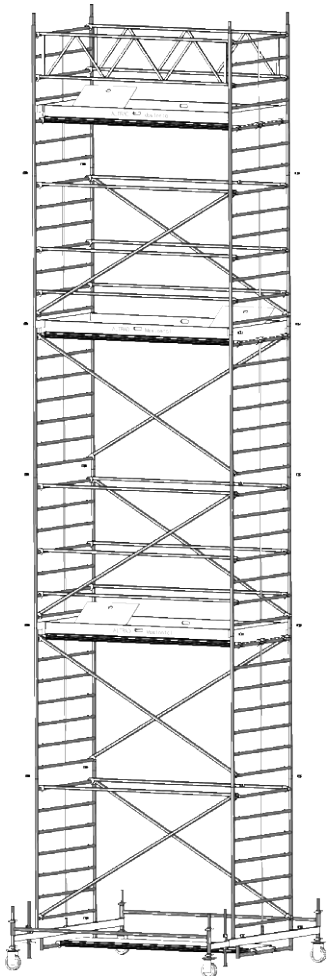
MP 603



MP 805



MP 1010



MP 2011

EXAMPLES OF APPLICATION

Zakłady Azotowe Pulawy

The ROTAX system is widely used in various branches of industry. As construction grid, it enables building scaffoldings around buildings of irregular and non-standard shapes, pipelines, installations, power cables, etc.

ROTAX modular scaffoldings were used for renovation works carried out on the liquid ammonia tank in Zakłady Azotowe Pulawy. The ROTAX spatial scaffolding was selected because of its multifunctional character. The first stage of scaffolding construction took it to the height of 12 m, the second stage - to the height of 20 m was more difficult because of the tank's shape and the fact that no anchoring could be used. ROTAX enabled extending the working platform at scaffolding's base up to 4 meters. With every scaffolding level the working platform was more and more narrow, until reaching the tank's middle points, when it started widening. Minimum width was 0.73 m at the middle of tank height. Scaffolding grid created a closed, round structure, which assured sufficient stability without anchoring. Only the last level of scaffolding was anchored using 6 m long aluminum girders, which were bolted at an angle of approx 30° to the inspection platform. Once connected, girders formed the last working level of the scaffolding.

Pipelines remained connected to the tank; the ROTAX system enabled fitting them into the grid.

Town Hall in Lwowek Slaski

Customers readily choose ROTAX scaffoldings of renovating and repairing historical buildings. Just like with Town Hall in Lwowek Slaski.

The historical town hall from 13th century is covered with 400 years old grapevine on three sides, which significantly hindered the installation works. The grapevine shoots must have remained intact, therefore, that had to be gently pulled away from the wall to a distance that would allow scaffolding installation and at the same time prevent any damage to the shoots.

Also, one of town hall tower's walls –adjoining lower part of the building - could only be encased with suspended scaffolding, installed from the top as it was impossible to set the scaffolding on the historical gable roof of building's lower part.

Upper part of the tower was encased in closed form, and the inside scaffolding base jack was used for connecting the adjacent bay. This created an octagonal grid. The town hall is located in the mountain area and exposed to level 3 wind loads. Thanks to the closed grid the scaffolding could have been protected with canvas covers.

Reaching the ball that is topping the tower's roof, which is located at the height of approximately 50 meters, required special solutions. The scaffolding diameter was gradually (every second level) decreased using girders.

EXAMPLES OF APPLICATION

Take-off ramps for water jumps

Universal design of ROTAX scaffolding makes it possible to use standard and//or special elements to build non-standard structures. Such as bicycle ramps, snowboard-jumping take-offs, non-standard structures, such as shapes of boats, towers, cascade stage sets, etc.

The take-off ramps for water jumps were very popular. One of such solutions was used by ALTRAD-Prymat in Szklarska Poreba during the Bicycle Festival. The take-off ramp was 6 m high and 23 m long (including 12 m approach) was build using modular and façade scaffolding elements.
Planks were placed on cross-beams bolted to aluminum girders.

ALTRAD-Mostostal also developed a solution for water-ski take-off for Norwegian customer. The take-off was constructed in the fiords and equipped with two access ways. Take-off height - 12 m, total length - 27 m. The slide part was covered with plywood and special fiberglass material, enabling water-ski jumps.

Lomonosov Moscow State University

Lomonosov Moscow State University is one of the biggest and oldest universities in Russia. It was established in 1755. The current university building, the height of 240 meters, was erected in 1953 on the top of a hill, approximately 75 meters above Moscow River level. When completed, it was the seventh tallest skyscraper in the world and the tallest building outside New York. The central tower, on which ROTAX scaffoldings were installed, is fitted with 57 meter high spire terminated with a star surrounded by wheat ears. The star with ears is 9 m in diameter and weights 12 tons.

Lomonosov Moscow State University building is certainly the most famous high-rise in Russia. ALTRAD-Mostostal delivered and installed ROTAX scaffolding at the height from 100 to 190 meters, to renovate the building's damaged central part and two clock towers. The building was decorated with numerous characteristic elements, such as emblems, figures, so-called ears, pyramids, etc; everything from a dozen to several dozens of meters tall. Therefore, this project involved many technical problems from the start. The first one was the height, as previously mentioned, on which the scaffolding was to be installed. Additional problem is presented by the harsh climate, because of which the scaffolding is subject to much higher stresses than in Poland. Furthermore, the scaffolding had to be set at a specific distance from the repaired elements, precisely defined by the conservators, so that the cleaning equipment would be able to move freely. To enable work in winter conditions the scaffolding was supplied with canvas cover.

Façade of the building constructed in 1950's was badly damaged. This made it impossible to use traditional anchoring to walls, thus chemical anchors were used.

EXAMPLES OF APPLICATION

Cathedral in Radom

ROTAX Plus scaffoldings are designed to be used in special applications, such as industrial plants, refineries, mining platforms, but are also often used for façade applications. ROTAX spatial scaffoldings in façade settings were used for renovating the façade and cornices of the cathedral in Radom, due to the specific shape of the building.

ROTAX scaffolding was selected for cathedral renovation because the working platform levels can be adjusted every 0.5 m (not every 2.0 m as is the case with frame scaffoldings). The contractor carrying out renovation works required access to selected building façade elements. ROTAX also enables suspending scaffolding elements, which significantly facilitated working around irregular elements of the façade (cornices, niches, window sills).

The Cathedral of the Protection of the Blessed Virgin Mary was erected in Neo-Gothic style between 1894 and 1911. The church was build to resemble the St. Florian Cathedral in Praga District of Warsaw and the towers were designed according to the Mariacki Church in Cracow. Both towers are approximately 72 meters high.

ROTAX elements - alphabetical index

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