

OSRound

UNIVERSAL SCAFFOLDING

Load class 2-6

Assembly instruction



General

The scaffolding has been examined by SP Swedish testing and research institute for load classes two to six according to AFS 1990; 12, certificate no SC0844-09. Calculations and tests have been carried out according to SP method 40264026. All components are punch marked with QSR and manufacturing year.

Product description

The universal scaffolding system QSRound is constructed by prefabricated steel components. Standards, ledgers, U-transoms and diagonal braces that can be connected horizontally and vertically. Assembly rings are attached to the standards at a distance of 0.50 m with eight connection points for assembly of ledgers and U-transoms. The standards have the length of 0.5m to a maximum of 4.0m. Scaffolding bays come in length 3.07m, 2.57m, 2.07m and 1.57m. Horizontals are made in the same lengths and U-transoms are 0.3m, 1.09m and 1.40m wide. All dimensions are based on centre c/c between standards.

Caution

Individuals with required professional skill and experience may only carry out assembly of scaffolding. When installing, dismantling and using QSRound the local laws and regulations must be followed. Scaffolding components must be regularly maintained and damaged components removed and replaced.

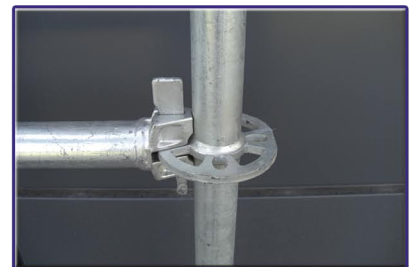
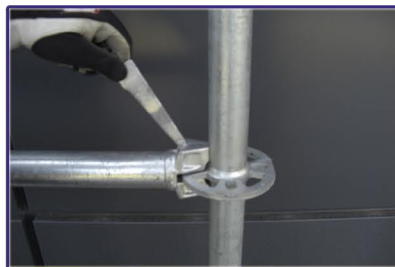
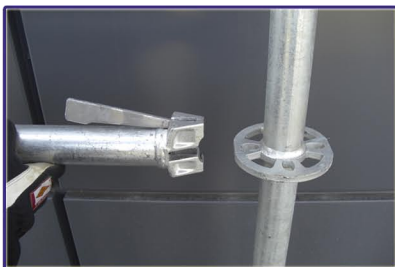
The scaffolding must be anchored to a fixed construction at every 4m in height as described in the assembly instruction and as close to a U-transom as possible. The anchor must be checked to take pull strength of minimum 3.5kN. At extreme weather conditions or covered scaffolding requires a larger number of anchors to the fixed construction and a shorter distance between these. At extreme wind conditions, snowfall and similar conditions is extreme caution is advised.

Assembly of connection point

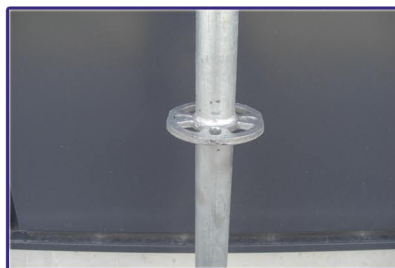
The connection standard to horizontal is based on the wedge lock principle. This way the scaffolding reaches a 90° angle even with a loosely fixed wedge. By hammering the wedge a secure locking position is created. The upper and lower surface of the wedge clamp connects press against the standard tube creating an extremely rigid connection. (Referring to pictures 1-3).

The wedge clamp on the ledger moves over the assembly ring. The wedge lies on top of the ledger.

By fixing the wedge into one of the holes on the assembly ring and hammering the wedge a stable connection is created.



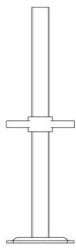
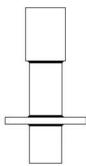


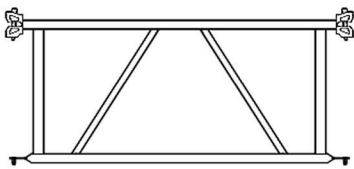
The connection ring has four small holes at a 90° angle in relation to each other. In the holes the U-transoms and ledgers are fixed when a right angle is required. The right angle is automatically reached when hammering the wedge.




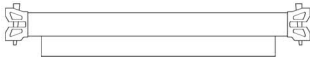

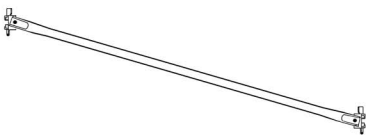
Larger holes are positioned between the smaller ones making it possible for connections of a 45° angle. For diagonal bracing and for plan bracing it also makes it possible to make constructions around circular or triangular objects.

Angles between horizontal members can be reached between 45° to 315°.

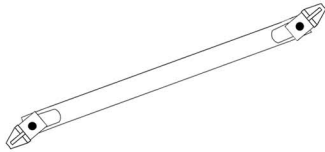
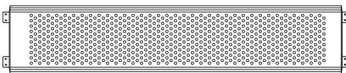



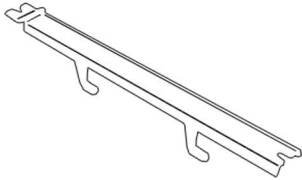
Basic Components

Description		Length	Weight	Item no
Adjustable Base Jack		0.7 m	4.5 kg	90070
Base Start Unit		0.25 m	1.8 kg	10025
Vertical Standard		0.5 m	2.8 kg	10050
		1.0 m	5.5 kg	10100
		1.5 m	7.8 kg	10150
		2.0 m	10.0 kg	10200
		3.0 m	14.7 kg	10300
		4.0 m	19.1 kg	10400
Ledger		0.73 m	3.4 kg	11073
		1.09 m	4.7 kg	11109
		1,40 m	6.1 kg	11140
		1.57 m	6,5 kg	11157
		2.07 m	8.4 kg	11207
		2.57 m	10.1 kg	11257
		3.07 m	11.8 kg	11307
Double Guard Rail		0,73 m	6.1 kg	31073
		1.09 m	7.6 kg	31109
		1.40 m	9.3 kg	31140
		1.57 m	10.3 kg	31157
		2.07 m	13.0 kg	31207
		2.57 m	14.8 kg	31257
		3.07 m	16.6 kg	31307

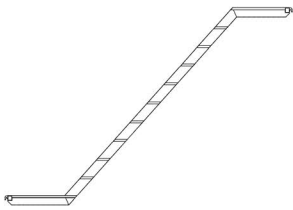
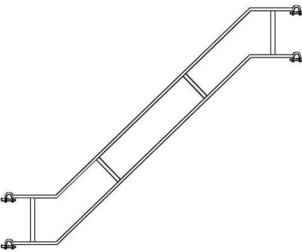
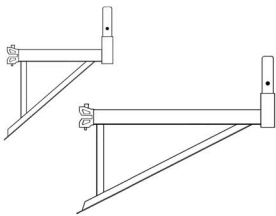

Basic Components

Description		Length	Weight	Item no
U-Transom		0.73 m	2.8 kg	12073
U-Transom reinforced		1.09 m	5.9 kg	12109
		1.40 m	7.7 kg	12140
U-Ledger Beam		1.57 m	9.8 kg	12157
		2.07 m	12.8 kg	12207
		2.57 m	18.5 kg	12257
		3.07 m	19.4 kg	12307
Diagonal Brace		0.73x2.0m	7.8 kg	13073
		1.09x2.0m	8.7 kg	13109
		1.40x2.0m	10.1 kg	13316
		1.57x2.0m	10.4 kg	13317
		2.07x2.0m	11.8 kg	13318
		2.57x2.0m	13.1 kg	13319
		3.07x2.0m	14.4 kg	13320
		1.09x1.5m	7.6 kg	13509
		1.57x1.5m	9.4 kg	13517
		2.57x1.5m	11.6 kg	13527
		3.07x1.5m	12.2 kg	13537

Basic Components

Description		Length	Weight	Item no
Plan Brace		3.07x0.73m	11.3 kg	13301
		3.07x1.09m	11.6 kg	13302
		3.07x1.40m	11.9 kg	13303
		2.57x1.09m	10.2 kg	13201
		2.57x1.40m	10.6 kg	13202
Steel Plank		0.73 m	6.5 kg	19073
		1.09 m	9.5 kg	19109
		1.40 m	11.5 kg	19140
		1.57 m	12.8 kg	19157
		2.07 m	16.6 kg	19207
		2.57 m	20.4 kg	19257
		3.07 m	24.1 kg	19307
Alu-Plank		0.73 m	4.0 kg	10244
		1.09 m	5.6 kg	10243
		1.40 m	7.0 kg	10242
		1.57 m	7,8 kg	10241
		2.07 m	10.0 kg	10240
		2.57 m	12.2 kg	10239
		3.07 m	14.3 kg	10219
Toe Board Clip			1.5 kg	20001
Toe Board		0.73 m	2.0 kg	20073
		1.09 m	2.7 kg	20109
		1.40 m	3.6 kg	20140
		1.57 m	4.1 kg	20157
		2.07 m	5.1 kg	20207
		2.57 m	6.5 kg	20257
		3.07 m	7.5 kg	20307
Non-uplift Device		0.73 m	1.5 kg	21073
		1.09 m	2.2 kg	21109
		1.40 m	2.5 kg	21140
		1.57 m	3.0 kg	21157
		2.07 m	5.1 kg	21207
		2.57 m	6.5 kg	21257
		3.07 m	8.2 kg	21307

Basic Components

Description		Length	Weight	Item no
Alu-Stair		3.07x2.0m	28.6 kg	18307
		2.57x2.0m	24.5 kg	18257
Stairway Handrail		3.07x2.0m	16.6 kg	31001
		2.57x2.0m	14.7 kg	31002
Stage Bracket		0.39 m	3.9 kg	14039
		0.73 m	6.4 kg	14073
Wall Tie		0.50 m	2.8 kg	70050
		0.80 m	3.6 kg	70080
		1.20 m	4.5 kg	70120
Wedge/Tube Coupler		90°	1.2 kg	70001
		SW	1.4 kg	70002
Double Coupler		90°	1.2 kg	60001
		SW	1.4 kg	60002

Assembly of scaffolding Bottom section

Place the adjustable base jacks in pairs at a measured distance in length and crossway. Placing the ledgers along the object can check the distance.

Start assembling on highest ground level. Any downward slope and uneven ground to be adjusted by the 0.50cm treaded adjustment base jack.

If necessary place suitable wooden plank under the base jack to cover both inner and outer standards in one piece to distribute the load. Ground below wooden packing needs to be packed to create a stable ground condition and if necessary wooden a wedge have to be used to make correct level.



The maximum distributed load from base jacks to ground shall be dimensioned at 27kN.

On the treaded base jacks start units are assembled and connected with ledgers and U-transoms.

Before the wedges are fixed the horizontal items must be checked and levelled. After hammering the wedges the exact bottom structure of the scaffolding is ready to be continued in height and length.



Height assembly

Place standards onto start units. Assemble U-transoms and ledgers for next lift.

The maximum distance between lifts are 2.0m. Select U-transom and secure the plank or platform against wind uplift.



Diagonal and plan bracing

When using stage brackets on the inside of the scaffolding the space between the main platform and platform at stage bracket must be covered or provided with a ledger.

Dismantling

Start dismantling at top lift by knocking the wedges of the horizontals and U-transoms, remove tow board and tow board clip.

When horizontals and tow boards are dismantled and removed from top lift continue to dismantle the lift below in following order; planks or platforms, U-transoms, standards, diagonal braces, ledgers and anchoring.

Dismantle lift by lift according to this description until the bottom section.

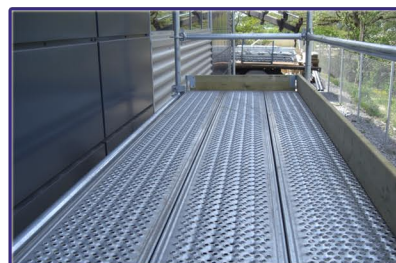
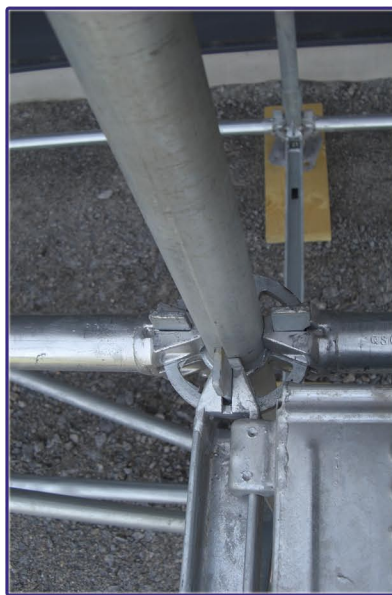
Leave ledgers and U-transoms fixed in start units of bottom section and remove the standards out of start units. Dismantle the remaining bottom section items.

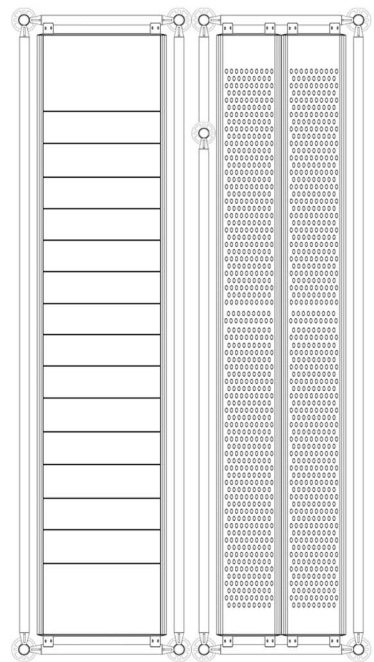
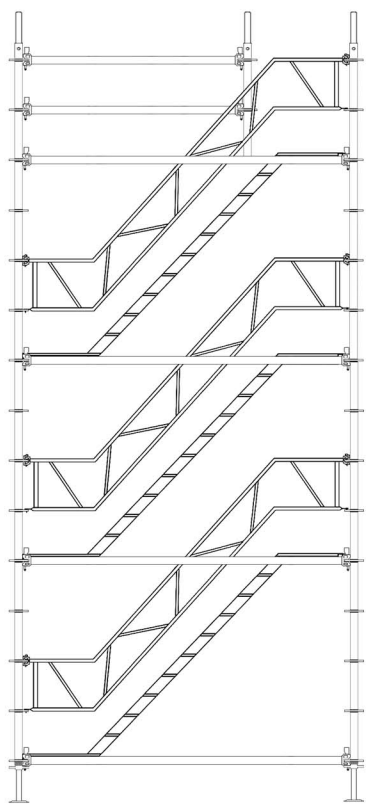
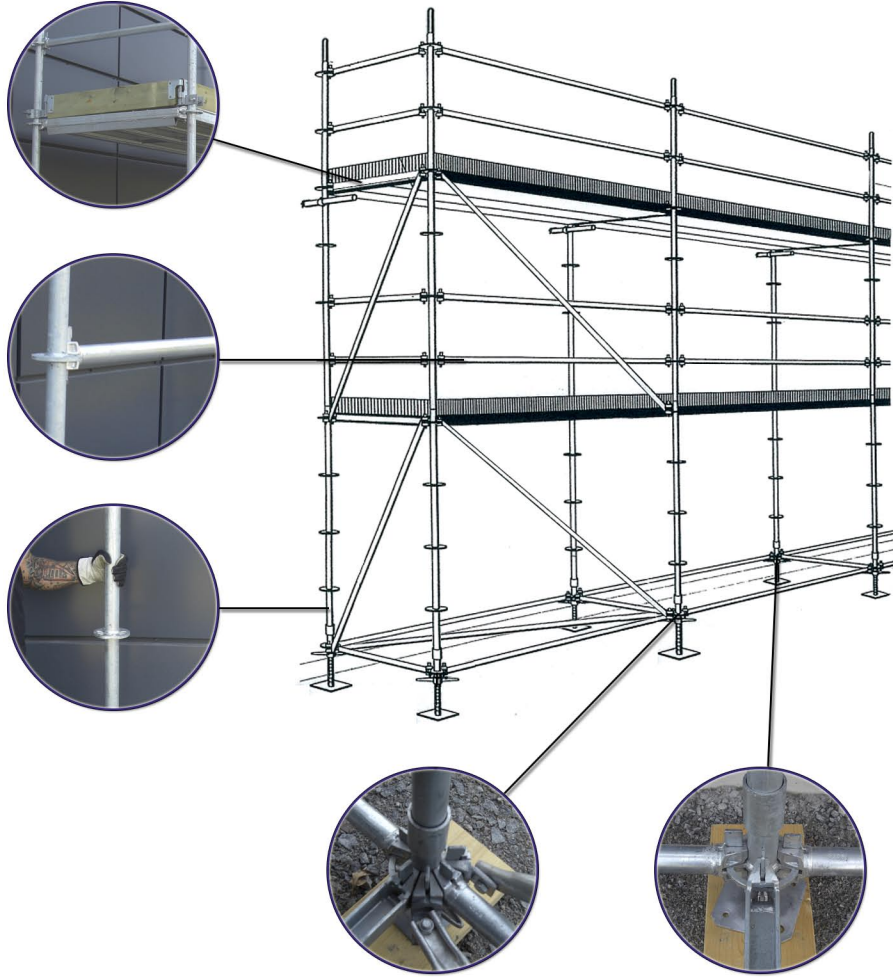
Layout of scaffolding

Scaffolding contains inner and outer standards in pairs, connected by ledgers in length and crossway by U-transoms. These U-transoms carries the working platform. The outer standard is braced vertically by a diagonal brace, fixed in every fifth scaffolding bay and always in the end scaffolding bay. Bracing between inner and outer standard horizontally a so-called plan brace should be assembled in every fifth bay on the bottom start section.

Platforms of aluminium platforms, aluminium or steel plank to be assembled in U-transoms along the scaffolding. Without inbuilt locking device for securing against uplift all planks and platforms must be secured by a deck retainer. Normal steel and aluminium plank are made to suit load class four in full length 3.07m. Extruded aluminium plank are stronger and take load class five. When calculating self weight scaffolding and planks of steel and aluminium it is important to pay attention to the height extra weight of steel plank which can influence the load capacity of standards.

Every scaffolding lift must be issued with double horizontals at 0.5m and 1.0m above platform level as guardrails. Toe boards on each working level.





Assembly of stairway

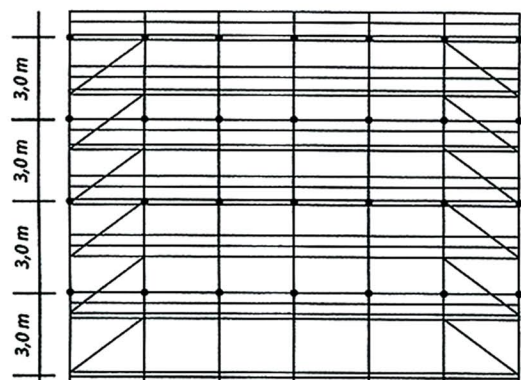
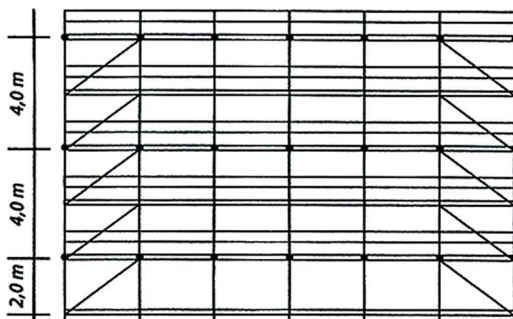
Access to the scaffolding consists of aluminium stair with podest that normally is installed at the outside, connected to a 3.07m scaffolding bay. On the outer standards a 0.73m wide U-transom is assembled. That way an outside bay is created connected to the facade scaffolding. The stair is assembled to the bottom U-transoms at the start unit level thereafter ledgers at level 0.5m and 1.0m as well a two board. The staircase is provided with an outside double handrail in level of the podest and the boarded scaffolding. On the inside of the stairway there is an inner double handrail and on the top of the stairway towards the scaffolding top platform there is a short guardrail post and a double 2.07m ledgers at level 0.5m and 1.0m. This way the entrance between the scaffolding and the stairway has a safe crossing. This way when combining outer standards of the scaffolding and the inner standards of the stair tower requires an extra calculation of the leg load of combined standards. However a separate stair tower assembled on four standards on its own can without problem be assembled to the same full height as the scaffolding assuming that anchoring at the same height as the main scaffolding.

Anchoring

Inner standard of each pair of legs must be anchored to the wall or to a fixed construction at maximum 4.0m between each other in height. The lowest anchor can be assembled maximum 4.6m over ground level. Every fifth anchor on each anchoring level must double in right angle to resist horizontal forces. The anchor must be dimensioned to resist a pulling force of 3.4kN in right angle to the faced and 5.6kN as V-anchoring as well as 3.7kN along the façade. Covered scaffolding demands increased number of anchoring and the end standards need to be anchored at every lift level.

When covering scaffolding with plastic make sure the ties between the scaffolding and the plastic is not stronger than it can be realised from the scaffolding at extreme wind conditions.

Distance Wall Tie	Lift height	Permissible leg load
4.0 m	2.0 m	14.2 kN
3.0 m	2.0 m	19.8 kN
2.0 m	2.0 m	24.6 kN
1.5 m	1.5 m	28,9 kN



Loading Capacity

Loading conditions	Plank all lifts	One working height	
Modular size	2,57 x 1.40 m	3.07 x 1.40 m	3.07 x 1.09 m
Lift height	2.0 m	2.0 m	2.0 m
Steel Plank	24.0 m load class 4	24.0 m load class 3	24.0 m load class 4
Alu-Plank Extruded	24.0 m load class 6	24.0 m load class 5	24.0 m load class 5

U-Ledger Beam	Permissible spread load kN/m	Load class pl 1.57 m	Load class pl 2.07 m	Load class pl 2.57 m	Load class pl 3.07 m	Permissible point load #50 mm kN
1.57 m	24.1	6	6	6	5	12.1
2.07 m	13.4	5	5	4	4	9.7
2.57 m	8.9	4	4	3	3	7.5
3.07 m	6.2	3	3	3	2	6.9

U-Transom	Permissible spread load kN/m	Load class pl 1.57 m	Load class pl 2.07 m	Load class pl 2.57 m	Load class pl 3.07 m	Permissible point load #50 mm kN
0.73 m	40.6	6	6	6	6	18.5
1.09 m reinf.	28.8	6	6	6	6	13.7
1.40 m reinf.	22.5	6	5	5	4	10.3

Steel and Alu-plank Width 320 mm	L=1.57 m	L=2.07 m	L=2.57 m	L=3.07 m
Steel Plank 1.5x7.6 mm	6	6	5	4
Alu-Plank 3.0x90 mm	6	5	5	4
Alu-plank extruded 1.7x70	6	6	6	5

Bracket	Permissible load kN	Load class 3.07 m
0.39 m	7.3	5
0.73 m	8.1	4

Storage and handling

To simplify handling, transport and storing the scaffolding items should be packed in steel pallets. After dismantling and at the same time as placing the items in the pallets it's advisable to carefully check each item for possible damages.

Its also advisable to clean the items from debris such as concrete.

Before the assembly check any movable parts such as wedges and treaded parts that the function is fully functional. Damaged items must be separated and cannot be used before a more careful inspection has been done and small defects have been settled. Load baring items with permanent damage must be removed from use.

Miscellaneous

- * Maximum assembly height without a stage bracket 24 m. Taller in height needs to be calculated to each object.
- * Covered scaffolding must be issued with extra wall anchor and recalculated in each individual case.
- * Scaffolding couplers for anchoring, tying in and reinforcing the structure must be EN74 B-type coupler.
- * Stairway items, lattice beams and other accessories must be certified and approved items.
- * All items are marked QSR for brand and manufacturing year, such as QSR-10.
- * For technical support please contact Rapidscaff Oy,
Helsinki, Finland +358 10 6666190 info@rapidscaff.com www.rapidscaff.com or
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