



QUOTATION  
No. 1290082

08.05.2012

**Factory Group**

**Paraguay**

Your reference: Enquiry 19th of April

Dear Sir,

Referring to your inquiry we have the pleasure to offer you precast plant as follows.

**Subject of the quotation**

The subject of this quotation comprises the machinery and equipment as listed in attached Equipment List (Appendix 1), technical specifications (Appendix 2) and layout drawing for the factory building (Appendix 3).

Supervision services are estimated to follow-up the machinery installation and start-up of the production. The need for this remains to be discussed and not included yet.

Prices are Ex Works Finland unless otherwise stated.

**Delivery time**

The **Ex Works** delivery time is approx. 4 months after receiving the down payment and opening of the L/C in acceptable form for Elematic Oy Ab.

Delivery time is counted from the receipt of down payment and an accepted L/C.

**Delivery terms**

**ExWorks, Finland**, according to Incoterms 2010

**Terms of payment**

The prices are based on the payments below;

- |      |  |
|------|--|
| 30 % | of the total price by TT-transfer at the moment of signing the contract, to the Seller's bank account IBAN FI36 5000 0120 2369 96 in Pohjola Bank PLC Finland, SWIFT code OKOYFIHH |
| 70%  | of the total price through an irrevocable Letter of Credit payable against shipping documents  |

The Buyer shall open an irrevocable Letter of Credit confirmed by the Seller's bank in favour of the Seller for seventy (70) % of the total price not later than 30 days after signing the purchase agreement. The bank charges outside of Finland shall be paid by the Buyer. The Letter of Credit shall be payable in Finland. The L/C is subject to Seller's acceptance.

The terms of the Letter of Credit shall allow trans-shipment, partial shipment and deck freight.

The price does not include customs duties, or sales, use, excise or any similar taxes, fees or governmental assessments which may apply to Equipment in the Buyer's land, all of which costs, charges, premiums, fees, duties or taxes will be the responsibility of Buyer and for Buyer's account.

**Validity**

This quotation is valid 60 days.

**Price**

**Total price is EUR 2 064 240,-** , detailed prices are listed in Appendix 1. All prices are in EUR.

**General conditions**

Elematic Oy Ab reserves the right to change equipment and mold prices in the offer if steel price (LME Steel Billet, Cash Buyer) changes more than  $\pm 3\%$  from the date of offer. Mold prices will be adjusted with 50% of the percentual change in steel price and equipment price will be adjusted with 30 % of the percentual change in steel price.

ELEMATIC General Terms and Conditions and ORGALIME General Conditions for the Supply of Mechanical, Electrical and Electronic Products – S 2000 are integral parts of this quotation.

Yours faithfully,

ELEMATIC OY AB

Petri Vesa  
Sales Director

Encl.	Appendix 1	List of equipment with price summary
	Appendix 2	Technical specifications
	Appendix 3	Lay-Out Drawing
	Appendix 4	ELEMATIC General Terms and Conditions

**QUOTATION:** Sep 1290082  
**CUSTOMER:** Factory Group

**Provided Locally by customer = X**

Line	Item	Description	Qty	Price EUR
<b>1.</b>		<b>BATCHING AND MIXING PLANT</b>		
1.1.	100 0501	Modular B&M Plant ELE 2000	1 unit	327 925
<b>Pos. 1</b>		<b>TOTAL</b>		<b>327 925</b>
<b>2.</b>		<b>CONCRETE TRANSPORTATION</b>		
2.1.1	241 5401	Concrete Distribution Shuttle EB 405 E / 2.0	2 pc(s)	89 643
2.1.2	242 5700	Four wheel drive for shuttle EB 405 E	2 set(s)	11 702
2.2.1	244 1300	Concrete Distribution Track EB 415 / 300	293 m	75 037
2.2.2	244 2103	Curve of Concrete Distribution Track EB 418 / 300	2 pc(s)	5 867
2.2.3	246 2200	End Stopper EB 421	2 pc(s)	736
2.2.4	244 1010	Track system for concrete distribution	1 unit	21 183
2.3.1	246 2100	Bracket	34 pc(s)	<b>X</b>
2.3.2	246 1200	A-frame EB 424	11 pc(s)	<b>X</b>
2.4.1	245 2300	Shuttle Washing Station EB 460	1 set(s)	7 051
2.4.2	245 2350	Pump for washing station	1 pc(s)	2 100
2.5.1	240 8120	Current conductor rails of concrete transport track	305 m	29 208
2.5.2	240 8110	Power supply of concrete distribution track	4 set(s)	4 654
2.6.1	240 8205	Automation of Concrete Distribution System ES404B	1 set(s)	22 120
2.6.2	240 8240	Concrete Distribution System ES 404, moving	2 pc(s)	10 374
2.6.3	240 8230	Concrete Distribution System ES 404, next	1 pc(s)	1 135
<b>Pos. 2</b>		<b>TOTAL</b>		<b>280 810</b>
<b>3.</b>		<b>HOLLOW CORE SLAB PRODUCTION</b>		
<b>3.1.</b>		<b>CONCRETE DISTRIBUTION</b>		
3.1.1	231 1520	Overhead Bucket Gantry EB 810 / 10, span appr.8,0 m	1 pc(s)	94 780
3.1.2	220 8740	Automation for Gantry EB 810	1 pc(s)	12 395
3.1.3	240 8140	Current conductor rails 60 A, enclosed, ES 151	142 m	9 176
3.1.4	240 8141	Current collector set 60 A, enclosed, ES 151 / C	1 pc(s)	417
<b>3.1.5</b>	<b>220 5211</b>	<b>Track EB 870 / 6-22 / track (half portal)</b>	<b>142 m</b>	<b>X</b>
<b>3.2.</b>		<b>CASTING BEDS AND PRESTRESSING</b>		
3.2.1	561 1000	Casting bed EL 120/ m (3 x 132 m)	396 m	178 448
3.2.2	132 1337	Channel between Casting Beds 4 x 132 m)	528 m	<b>X</b>
3.2.3	565 2250	Stressing Abutment EL 220 / 300, 1 pair	3 pair(s)	65 170

**QUOTATION:** Sep 1290082  
**CUSTOMER:** Factory Group

**Provided Locally by customer = X**

Line	Item	Description	Qty	Price EUR
3.2.4	565 3300	Single Stressing Device EL 253 / 16 t / 500 mm	1 pc(s)	21 551
3.2.6	586 1001	Maturity Control Device EL 490	1 set(s)	12 969
3.2.7	586 1002	Maturity Control Pump System EL 490	3 set(s)	10 478
<b>3.3.</b>	<b>ACCESSORIES</b>			
3.3.1	565 5110	Anchor Grip EL 290 / active / 1/2"	100 pc(s)	1 481
3.3.2	565 5120	Anchor Grip EL 290 / passive / 1/2"	100 pc(s)	3 148
3.3.3	565 5210	Anchor Grip EL 290 / active / 3/8"	100 pc(s)	1 481
3.3.4	565 5220	Anchor Grip EL 290 / passive / 3/8"	100 pc(s)	3 333
3.3.5	565 6100	Strand Container EL 300	6 pc(s)	X
3.3.7	584 1000	1-Place Service Platform EL 311	1 pc(s)	X
3.3.8	510 6300	Start Plate EL 828	3 pc(s)	2 785
3.3.9	561 1430	Strand Comb EL 203, 5 / 265, pair	3 pc(s)	4 451
<b>3.4.</b>	<b>BEDMASTERS</b>			
3.4.1	581 3000	BedMaster EL 400 / LPG	1 pc(s)	69 962
<b>3.6.</b>	<b>EXTRUDERS E9</b>			
3.6.1	519 1000	Extruder Power Unit E9	1 pc(s)	87 523
3.6.2	519 2100	Automatic Compaction Control E9	1 pc(s)	13 535
3.6.3	550 1300	Cable Drum EL 822 (motor) for max 160 m cable	1 pc(s)	8 817
3.6.4	550 1410	Flexible Cable 3*25 + 3*6 / l.m	142 m	4 947
3.6.5	519 5265	Nozzle Module E9-5/265	1 pc(s)	103 213
3.6.6	519 3200	Maintenance Tools for Extruder E9	1 set(s)	3 338
3.6.7	900 5190	Extruder E9, Operator's Training	1 set(s)	4 698
<b>3.7.</b>	<b>HC-CUTTING SAWS</b>			
3.7.1	551 2000	Slab Saw EL 1100 (0-180 deg.)	1 pc(s)	125 190
3.7.2	550 1300	Cable Drum EL 822 (motor) for max 160 m cable	1 pc(s)	8 817
3.7.3	550 1420	Flexible Cable 3*35 + 3*6 / l.m	142 m	6 249
3.7.4	550 2101	Water Hose Drum (without hose) for 160 m hose	1 pc(s)	7 485
3.7.5	550 2110	Water Hose	142 m	1 776
3.7.6	550 3100	Diamond Saw Blade EL 590, DIA 800 mm	1 pc(s)	2 117
<b>3.8.</b>	<b>LIFTING EQUIPMENT</b>			

QUOTATION: Sep 1290082  
CUSTOMER: Factory Group

Provided Locally by customer = X

Line	Item	Description	Qty	Price EUR
3.8.1	571 1300	Lifting Beam EN 886 / 12	1 pc(s)	32 681
3.8.2	571 2300	Lifting Beam/sites EN 902 / 12 - one for stockyards - one for site	2 pc(s)	12 755
<b>3.9.</b>		<b>COVERING EQUIPMENT</b>		
3.9.1	582 2000	HC-slab Cover Roller EL 662 / 1.9, manual - including one cover roll	1 pc(s)	4 057
3.9.2	582 2100	HC-Slab Cover EL 381 / 1.9, l.m	396 m	6 798
3.9.3	582 2200	HC-slab Cover Roll	2 pc(s)	1 151
<b>3.10.</b>		<b>SLAB TRANSPORTATION EQUIPMENT</b>		
3.10.1	447 1100	Pulling device for transport wagon, EN 875	1 pc(s)	21 222
3.10.2	447 1300	Steel Wire for Pulling Device / m, dia 16 mm	440 m	2 586
3.10.3	447 1500	Radio Control for Pulling Device	1 pc(s)	1 684
3.10.4	431 1410	Track for Precast Unit Transport Wagons	210 m	X
3.10.5	576 1200	Transport Wagon EN 871 / 2.4 pair	4 pc(s)	21 418
<b>Pos. 3</b>		<b>TOTAL</b>		<b>974 082</b>

#### 4. BEAM AND COLUMN PRODUCTION

##### 4.1. CONCRETE DISTRIBUTION

4.1.1	231 1585	Casting Machine EB 2301 / 11 SKELETON	1 pc(s)	168 470
4.1.2	220 8745	Automation for SKELETON Casting Machine	1 set(s)	11 425
4.1.3	240 8140	Current conductor rails 60 A, enclosed, ES 151	100 m	6 462
4.1.4	240 8141	Current collector set 60 A, enclosed, ES 151 / C	1 pc(s)	417
4.1.5	220 5211	Track EB 870 / 6-22 / track (half portal)	100 m	X

##### 4.3. BEAM PRODUCTION

4.3.1	621 5010	Casting Bed for beams, B=1,4 m	48 m	32 602
4.3.2	621 5110	Basic Side Form H=600 mm, L=12 m - on both sides	4 pair(s)	37 304
4.3.3	090 0913	Middle side form H=600 mm, L= 12 m - including fastening magnets 3 pcs / 6 m	4 pc(s)	32 038
4.3.4	621 5510	Support triangle for fastening of Side Forms, 0-350	24 pair(s)	7 523

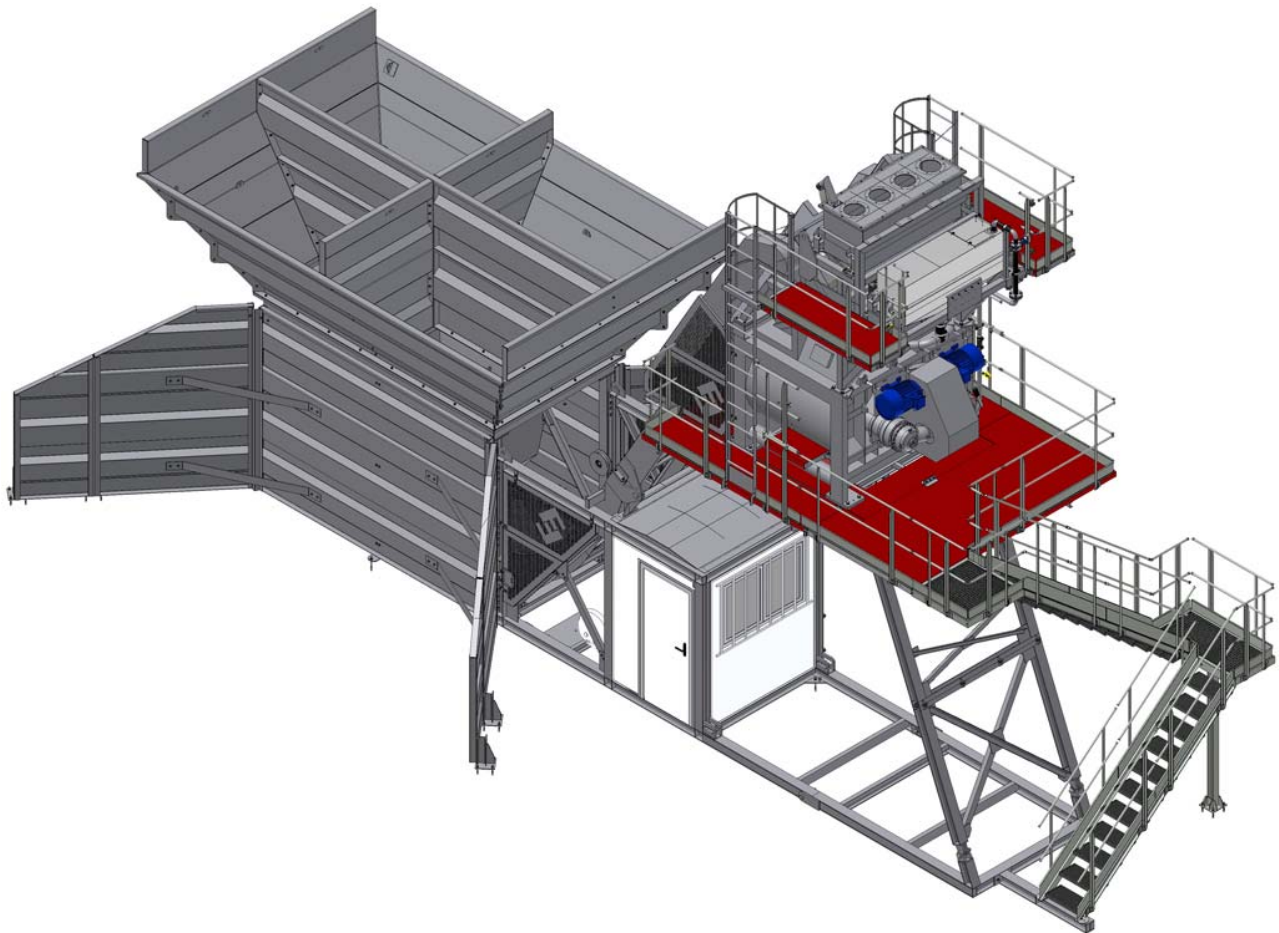
**QUOTATION:** Sep 1290082  
**CUSTOMER:** Factory Group

**Provided Locally by customer = X**

Line	Item	Description	Qty	Price EUR
4.3.5	565 2450	Stressing Abutment EL 233 / 750 SKELETON	1 pair(s)	42 674
4.3.6	586 1002	Maturity Control Pump System EL 490	1 set(s)	3 493
<b>4.4.</b>		<b>COLUMN PRODUCTION</b>		
4.4.1	621 5010	Casting Bed for beams, B=1,4 m	36 m	24 451
4.4.2	090 1221	Basic Side Form H=900 mm, L=12 m - on both sides	3 pair(s)	35 384
4.4.3	090 0913	Middle side form H=600 mm, L= 12 m - including fastening magnets 3 pcs / 6 m	3 pc(s)	24 028
4.4.4	621 5520	Support triangle for fastening of Side Forms, 0-350	18 pair(s)	4 749
4.4.5	586 1002	Maturity Control Pump System EL 490	1 set(s)	3 493
<b>4.5.</b>		<b>TRANSPORTATION EQUIPMENT</b>		
4.5.1	447 1100	Pulling device for transport wagon, EN 875	1 pc(s)	21 222
4.5.2	447 1300	Steel Wire for Pulling Device / m, dia 16 mm	440 m	2 586
4.5.3	447 1500	Radio Control for Pulling Device	1 pc(s)	1 684
<b>4.5.4</b>	<b>431 1410</b>	<b>Track for Precast Unit Transport Wagons</b>	<b>210 m</b>	<b>X</b>
4.5.5	576 1200	Transport Wagon EN 871 / 2.4 pair	4 pc(s)	21 418
<b>Pos. 4</b>		<b>TOTAL</b>		<b>481 423</b>
		<b>GRAND TOTAL (EXW)</b>	<b>EUR</b>	<b>2 064 240</b>

**MODULAR CONCRETE MIXING PLANT ELE 2000**

**Item 100 0501**



**DESCRIPTION**

- ELE 2000 is a small, mobile and modular concrete mixing plant.
- Easy for erection and dismant.
- Modular for facilitate transportation from site to site.
- Assembly in few days with low cost of installation and fast for starting up.
- ELE 2000 was developed and designed in one main unit, just wired and prepared for being assembled with the other components only connecting them.
- Aggregates storage capacity: 30 m<sup>3</sup> (4 aggregates).
- Skip weigher.
- Twin shaft mixer (double horizontal axles): 2.0 m<sup>3</sup>.
- Cabin for operator is in the principal unit of the plant.
- Electric control board and Control System are equipping this plant.
- Both, cement and water weigher are included.
- **2 Cement silos of 55 tons. (Provided by customer)**
- ELE 2000 allows to prepare a high quality concrete in great outputs and low cost.

**TECHNICAL DETAILS**

Required building area	7.1 x 25 m
Connection power	128kW
Power supply	3P+N+PE, 400 V, 50 Hz
Water connection	DN32,
equipped with own pump	
Batch size	max.2.0 m <sup>3</sup>
Capacity (theoretical)	max.60 m <sup>3</sup> /h
<b>Binding agent silos (by customer)</b>	<b>2 x 55 tons</b>
Aggregate silos	40 m <sup>3</sup>
Transport dimensions (LxWxH)	14.3x2.55x3.4 m





## **TECHNICAL SPECIFICATIONS**

### **COMPACT SET FOR PLANT ELE 2000**

#### **AGGREGATE STORAGE HOPPERS.**

4 hoppers in a square with a total capacity of 40 m<sup>3</sup>

Dimensions of the set :

Length : 6,300 mm

Width : 4,000 mm

Set equipped with two electric vibrators in sand compartments.

Set for installation of damp measurement system.

#### **AGGREGATE WEIGHING AND LIFTING SYSTEM**

Aggregate lifting skip with weighing system

Weighing platform suspended by extensometric cells, supported on stabilised floating blocks.

Self-braking motor reducer in lifting skip.

Limit switches and anti-fall safety system.

#### **CEMENT WEIGHING SYSTEM**

Weighing hopper with maximum load capacity of 1,000 kg.

Weighing system fitted with load cells.

Hopper equipped with pneumatic vibrator.

Cement discharge through butterfly gate with pneumatic operation.

Flexible hose cement mixer truck connection.

#### **WATER WEIGHING AND BATCHING**

Weighing hopper with maximum load capacity of 500 litres.

Weighing system fitted with load cells.

Water discharge through 4" pneumatic butterfly gate.

Water feed system with pump + pressure control adjustment system.



## MIXING SET

Horizontal double-axle mixer

Useful vibrated concrete capacity: 2,000 litres per cycle.

Discharge system centred on tank base.

8 mixing arms and 2 scraping arms per axle.

Cast iron panel linings.

Centralised grease lubrication equipment for seals.

Manual auxiliary pump for emergencies.

380 V electrical installation with junction box.

Maintenance gate with electrical safety limit switch.

Mixer discharge cone.

## COMPRESSED AIR INSTALLATION

7.5 HP compressor with 500-litre capacity.

Sealed cabinet for pneumatic electrovalve unit.

Maintenance access from main structure.

Pneumatic system with filtration and lubrication unit.

## MAIN STRUCTURE FOR TRANSPORTATION AND INSTALLATION

Compact set for truck transportation.

Built with structural forms and steel laminated profiles.

Folding design with intermediate hinge.

Access steps from ground level to batching and mixing level, with steps and intermediate landing platforms. Folding perimeter walkways for access to maintenance areas.

Carrier guides for lifting skip displacement.

Safety guards in skip access area.



## SUPPORT WALLS FOR LOAD RAMPS FOR ACCESS TO HOPPER SET

Positioned to allow hopper set to be fed from both sides.

Foldable, modular construction.

## BATCHING BOOTH

Designed to house station management and control equipment.

Dimensions: 2150x1750x2250 mm.

Window with protective grills.

Electrical installation for power and lighting outputs.

## POWER AND CONTROL PANEL

Sealed cabinet located in dosing shed.

Control pushbuttons and display on cabinet doors.

Automatic and manual operation.

## COMPUTER SYSTEM FOR AUTOMATION AND MANAGEMENT

### FEATURES OF EQUIPMENT

Dynamic control of production flows.

Automatic activation of vibrators and fluidisers.

Auto resetting to zero of weights.

Weight safety control in scales.

Dynamic cycle corrections.

Recording of manual actions in the console.

Quick batching of products for consignment.

Modification of formulas and primary keys.

Generation of orders and printing of dispatch notes.

Control of movements in the warehouse.



## **55 T CEMENT STORAGE SILO (DEMOUNTABLE) PROVIDED BY CUSTOMER**

Capacity: 55 T (45.8m<sup>3</sup>).

Fabricated in two demountable flanged sections to facilitate its transportation.

Diameter of section I: 2,320 mm

Diameter of section II: 2,240 mm

Total silo height (without barriers): 14,710 mm.

Measurement between centre of legs on the floor: 1,870 mm.

Floor clearance at discharge chute: 2,000 mm.

Demountable silo pillars for transportation.

Bracing between silos' pillars in L60x60.

Cylinder and cone built with 3 mm sheet steel.

A vertical access ladder, in two sections with intermediate landing and barrier, common to both silos.

Safety barrier on upper part.

Silo with roof mounted inspection hatch.

Manual butterfly opening/closing system.

Centred discharge cone. 60° inclination.

Filling pipes with a diameter of 3.5".

Filling curve in 4" diameter cast steel with bolted flanges.

Set of 4 fluidisers and electrovalve in silo's cone.

Safety valve mounted on the roof of the silo.

## **UPPER WALKWAY FOR INTERCONNECTION OF SILOS' ROOFS**

Floor in chequer plate.

Safety barriers and base bar.



### **CARTRIDGE-TYPE FILTER FOR CEMENT ON SILO'S ROOF**

Cartridge-type filter in aluminium and polystyrene with cartridges in corrugated synthetic material to obtain a highly filtering surface with minimum dimensions.

With a pneumatic cleaning system that uses timed pulses of compressed air.

Filtering surface area: 24.5 m<sup>2</sup>.

Electronic control panel.

Voltage: 220/380 V.

Working pressure: 6-7 bar.

Support frame for installation on silo.

Connection pipe between silos.

### **SCREW CONVEYOR FOR CEMENT TRANSPORTATION**

Diameter: 275 mm

Length: 13,300 mm

15kw, 240 r.p.m. geared motor, connected directly to axle.

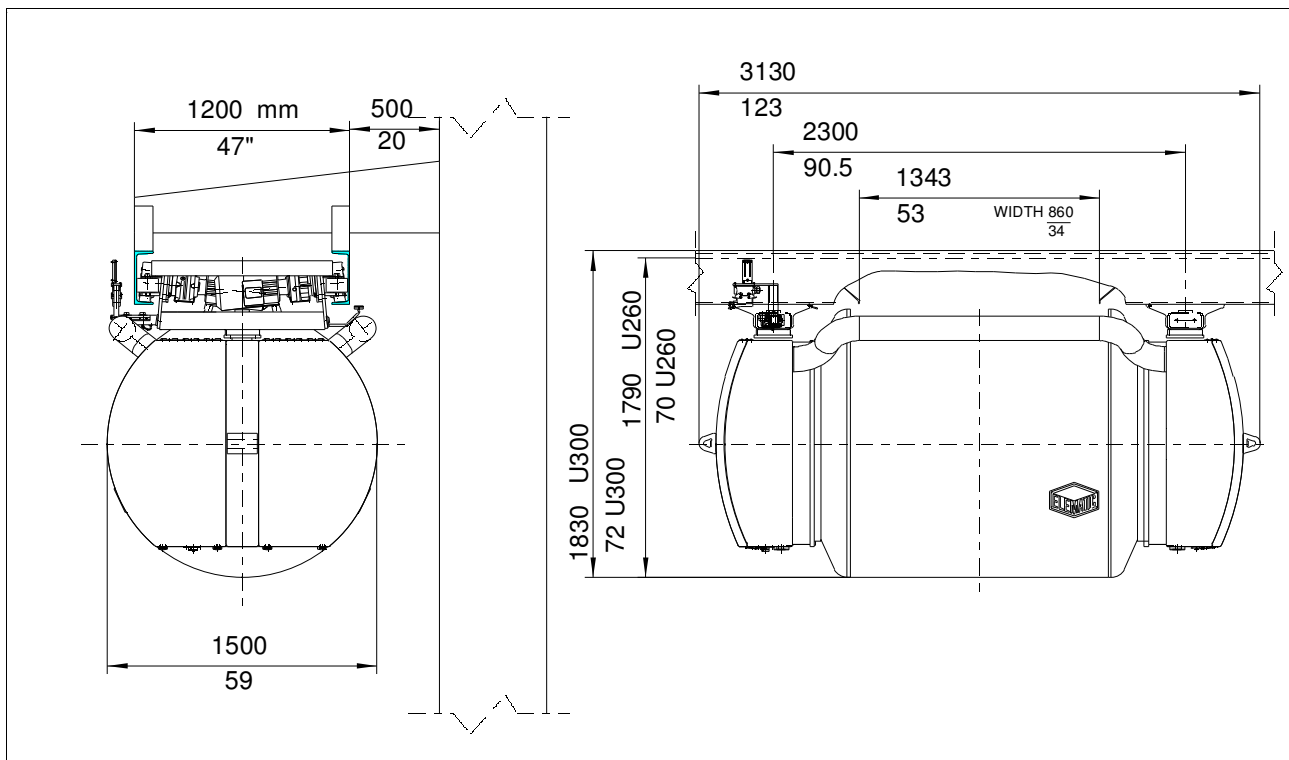
Production: 80 T/h.

Sleeve and clamps for the discharge.

## TECHNICAL SPECIFICATION SHEET

Concrete distribution shuttle EB 405 E / 2.0

ITEM 241 5401



The concrete distribution shuttle has been designed for concrete distribution on a two-rail track from the batching and mixing plant to an intermediate silo or to a casting machine. The concrete distribution shuttle is suitable for straight and curved tracks.

The shuttle has polyurethane wheels and either two-wheel or four-wheel drive.

The travelling motors of the shuttle are inverter-controlled. The shuttle bucket is discharged by turning it upside down by means of an inverter-controlled gear motor. The turning speed can be customised.

The shuttle is provided with programmable logic control and sensors that respond to the counter plates of the track. The shuttle travel on the track is controlled by the PLC, and the shuttle receives instructions from the current rails at the stopping places. It can also be manually operated by remote control.

The mantle of the shuttle bucket is made of wear-resistant steel. To secure fluent operation even in heavy working conditions, the shuttle construction is protected against damages caused by water and concrete.

### TECHNICAL DETAILS

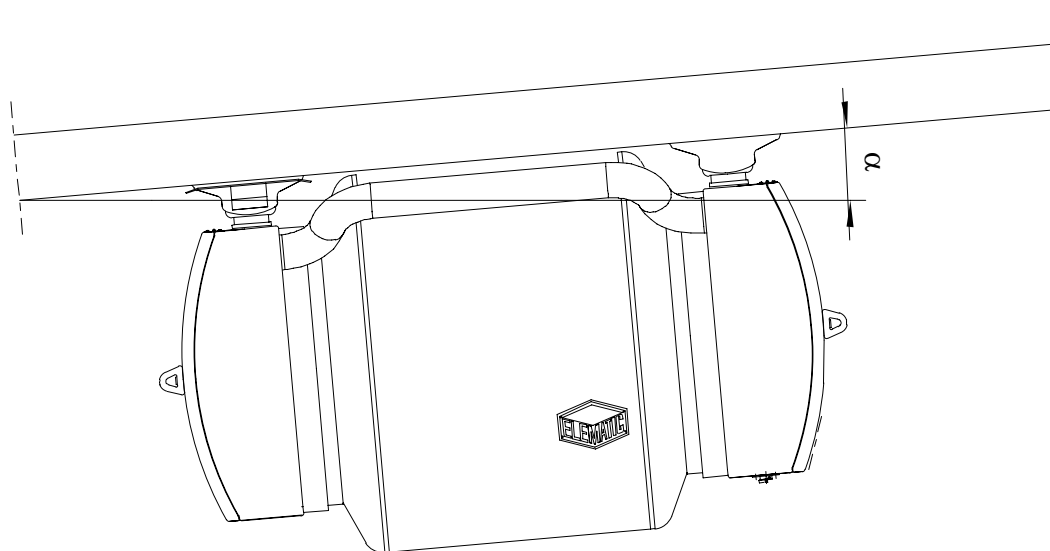
Compacted concrete	2000 l
Water volume	2800 l
Speed max.	see ITEM 242 5700
Connection power, 2-wheel drive	6 kW
Power supply	3P+PE 400 V, 50 Hz
Power supply/USA	3P+PE 480 V, 60 Hz
Current collector set	included
Transport trestle	included

### OPTIONAL

Four-wheel drive, see ITEM 242 5700  
 Connection power, 4-wheel drive 12kW  
 Cast iron wheel  
 Polyurethane coating for mantle of the shuttle bucket

## FOUR WHEEL DRIVE FOR SHUTTLE EB 405 E

Item 242 5700



## DESCRIPTION

## SPEED TABLE FOR SHUTTLE EB 405 E

<b>Volume:</b>	1.0 m <sup>3</sup>	1.5 m <sup>3</sup>	2.0 m <sup>3</sup>
<b>Inclination angle <math>\alpha</math> 0 degrees:</b>			
2-wheel drive			
- urethane wheels	2.3 m/s	2.0 m/s	1.8 m/s
- steel wheels	1.8 m/s	1.6 m/s	1.5 m/s
4-wheel drive			
- urethane wheels	3.2 m/s	3.0 m/s	2.7 m/s
- steel wheels	2.3 m/s	2.1 m/s	2.0 m/s
<b>Inclination angle <math>\alpha</math> up to 2 degrees (3.5%):</b>			
2-wheel drive			
- urethane wheels	2.3 m/s	2.0 m/s	1.8 m/s
- steel wheels	1.8 m/s	1.6 m/s	1.5 m/s
4-wheel drive			
- urethane wheels	3.2 m/s	3.0 m/s	2.7 m/s
- steel wheels	2.3 m/s	2.1 m/s	2.0 m/s
<b>Inclination angle <math>\alpha</math> up to 5 degrees (7%):</b>			
4-wheel drive (uphill)			
- urethane wheels	3.0 m/s	2.4 m/s	2.0 m/s
- steel wheels	2.3 m/s	2.0 m/s	1.6 m/s
4-wheel drive (on horizontal track section)			
- urethane wheels	3.2 m/s	3.0 m/s	2.7 m/s
- steel wheels	2.3 m/s	2.1 m/s	2.0 m/s

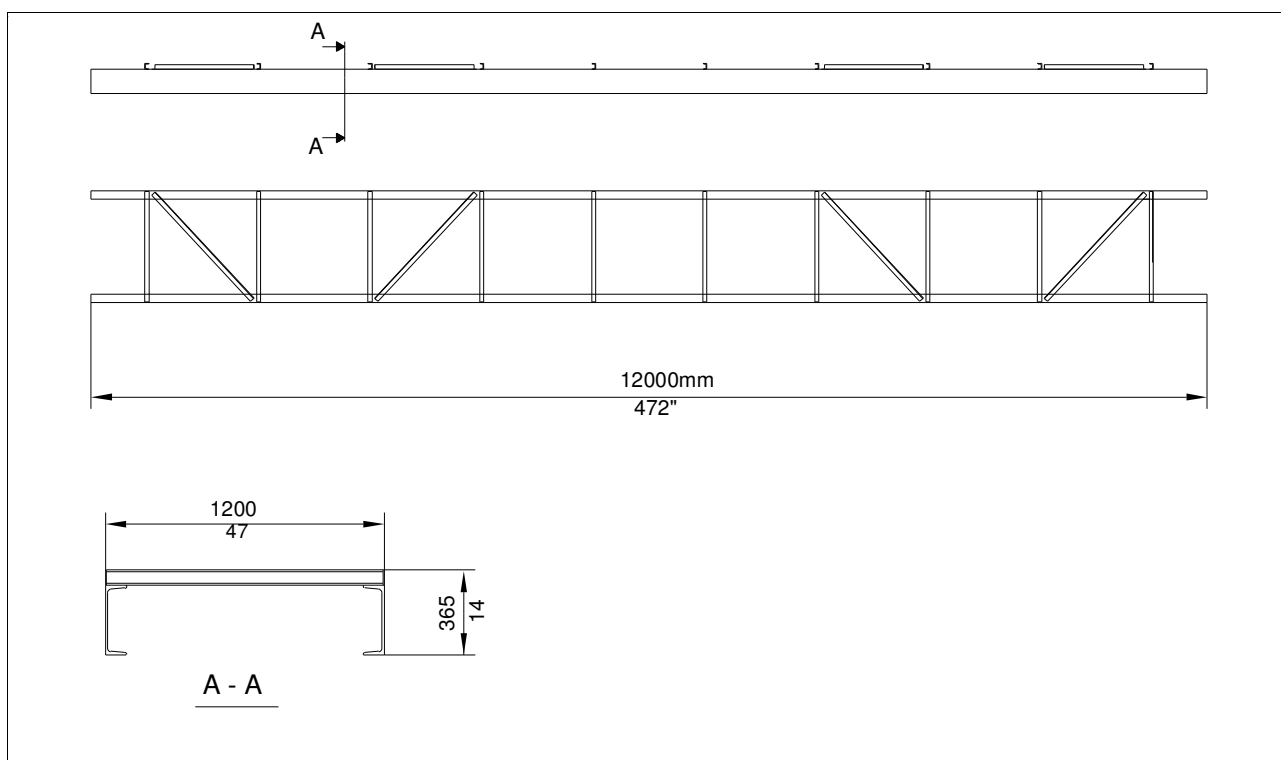
<b>Volume:</b>	1.0 m <sup>3</sup>	1.5 m <sup>3</sup>	2.0 m <sup>3</sup>
<b>Inclination angle <math>\alpha</math> up to 9 degrees (16%):</b>			
4-wheel drive (uphill)			
- urethane wheels	1.7 m/s	1.3 m/s	1.0 m/s
4-wheel drive (on horizontal track section)			
- urethane wheels	3.2 m/s	3.0 m/s	2.4 m/s
<b>Inclination angle <math>\alpha</math> up to 13 degrees (23%), gear rack:</b>			
4-wheel drive (uphill)			
- steel wheels	1.1 m/s	0.9 m/s	0.75 m/s
4-wheel drive (on horizontal track section)			
- steel wheels	2.6 m/s	2.1 m/s	1.8 m/s

For inclination of more than 5 degrees a gear ratio corresponding to the inclination is always used in the gear box: the bigger the gear ratio is, the bigger is the torque of the driving wheels. Thus, the climbing power is higher but at the same time the speed is lower.

## TECHNICAL SPECIFICATION SHEET

Concrete Distribution Track EB 415 / 300

ITEM 244 1300



The track consists of a steel construction welded of two U-profiles and reinforced with cross and diagonal bracing.

The track is equipped with current rail suspensions.

The counter plates to which limit switches for deceleration, acceleration, waiting and discharge places respond, are fastened to the track as needed in each individual case.

The track shall be delivered in 12-m long units.

### TECHNICAL DETAILS

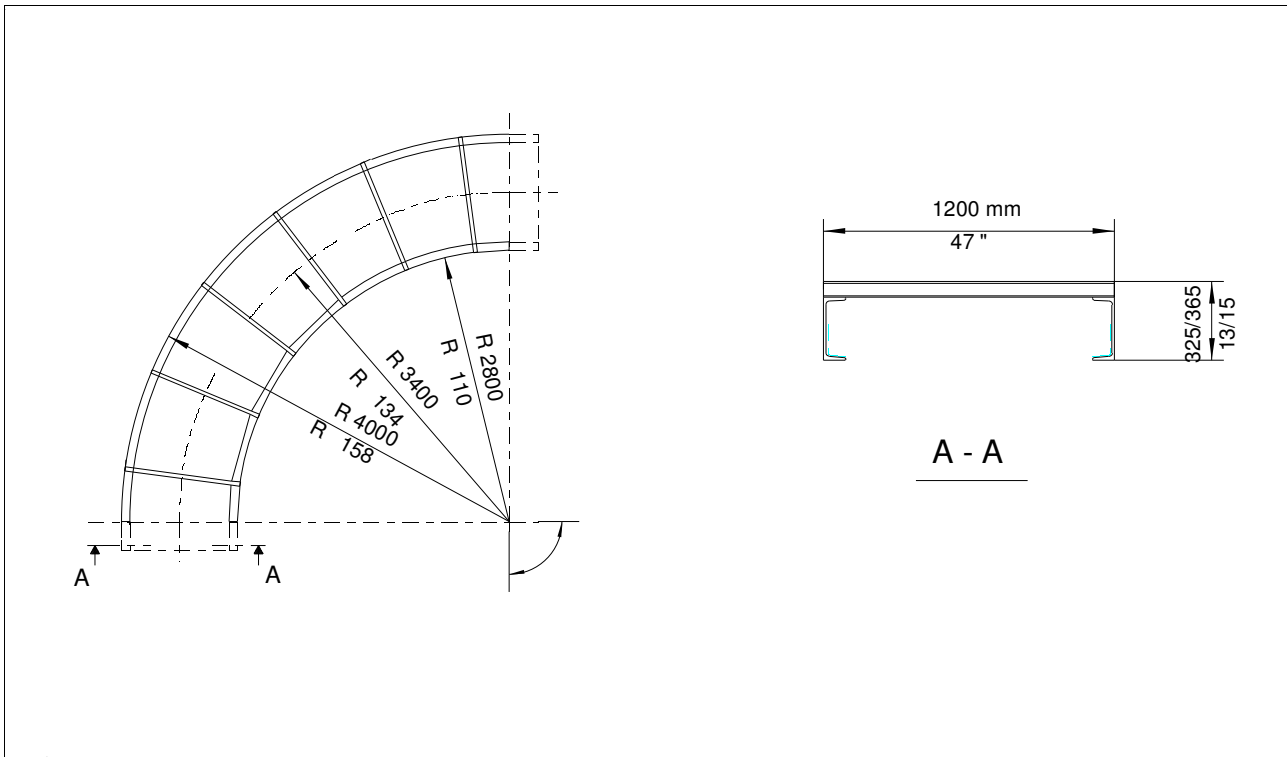
Height of track element	365 mm
Width of track element	1200 mm
Weight of track element	95 kg/m
Rail	U-300
Max. span EB 405 E/1.5	10 m
Max. span EB 405 E/2.0	8 m



## TECHNICAL SPECIFICATION SHEET

Curve of Concrete Distribution Track EB 418 / 300

ITEM 244 2103



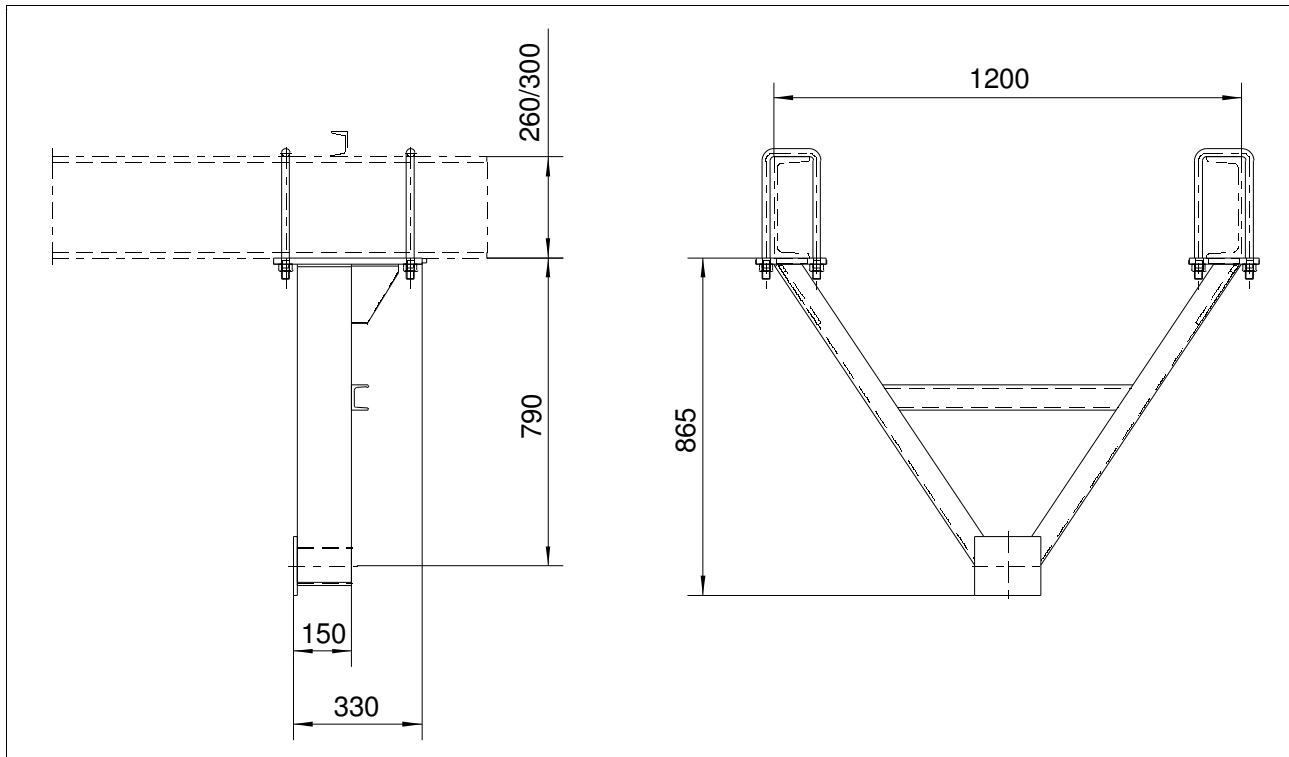
The track consists of a welded steel construction of two U-profiles reinforced with cross and diagonal bracing.

The curve element is equipped with current rail suspensions.

The curve unit has been designed for an angle of 90 degrees. If required, also other curve angles are available.

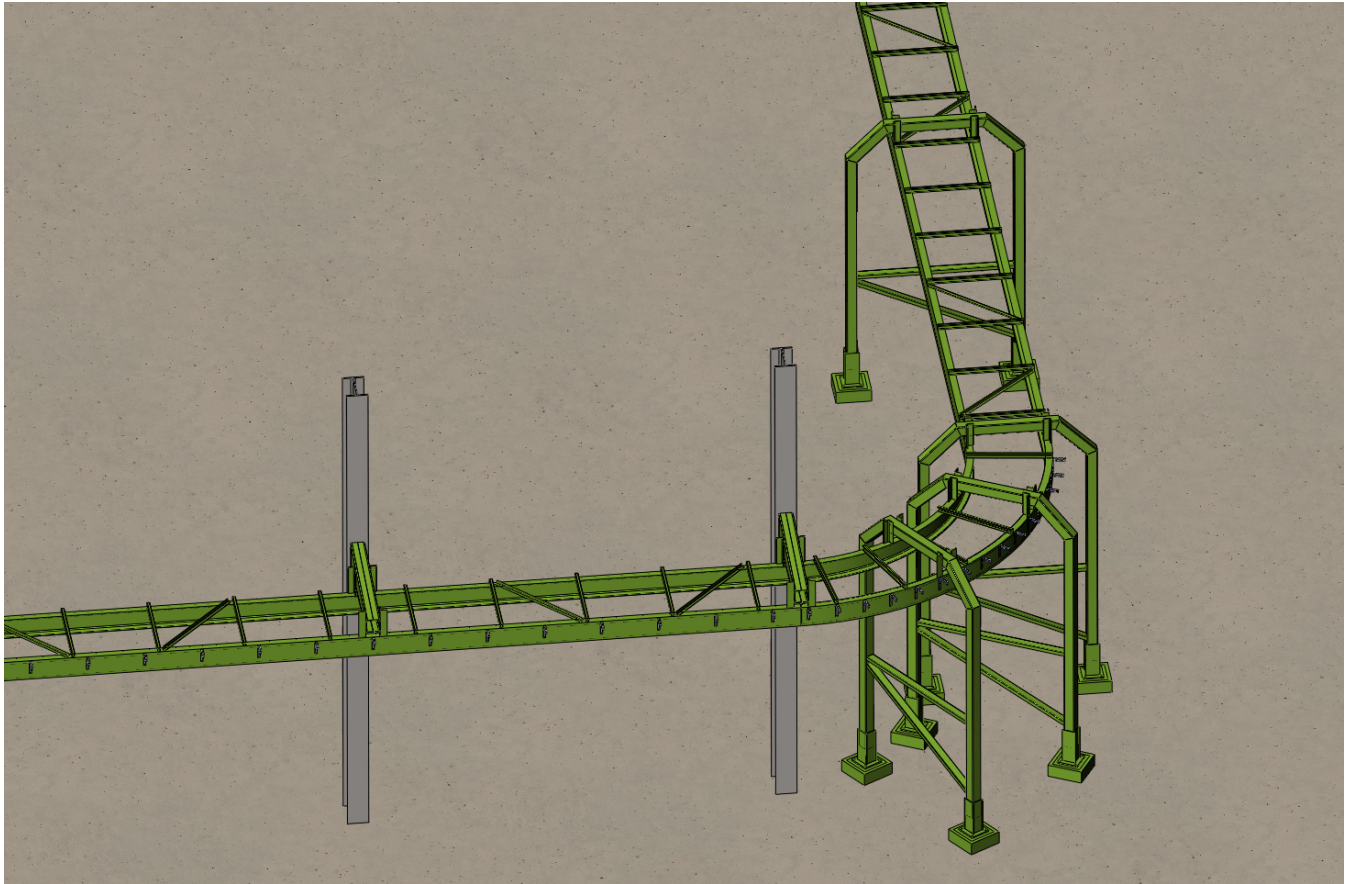
### TECHNICAL DETAILS

Height of curve element	365 mm
Weight of curve element	560 kg
Rail	U-300



The end stopper for concrete distribution track EB 415 consists of a welded steel construction.

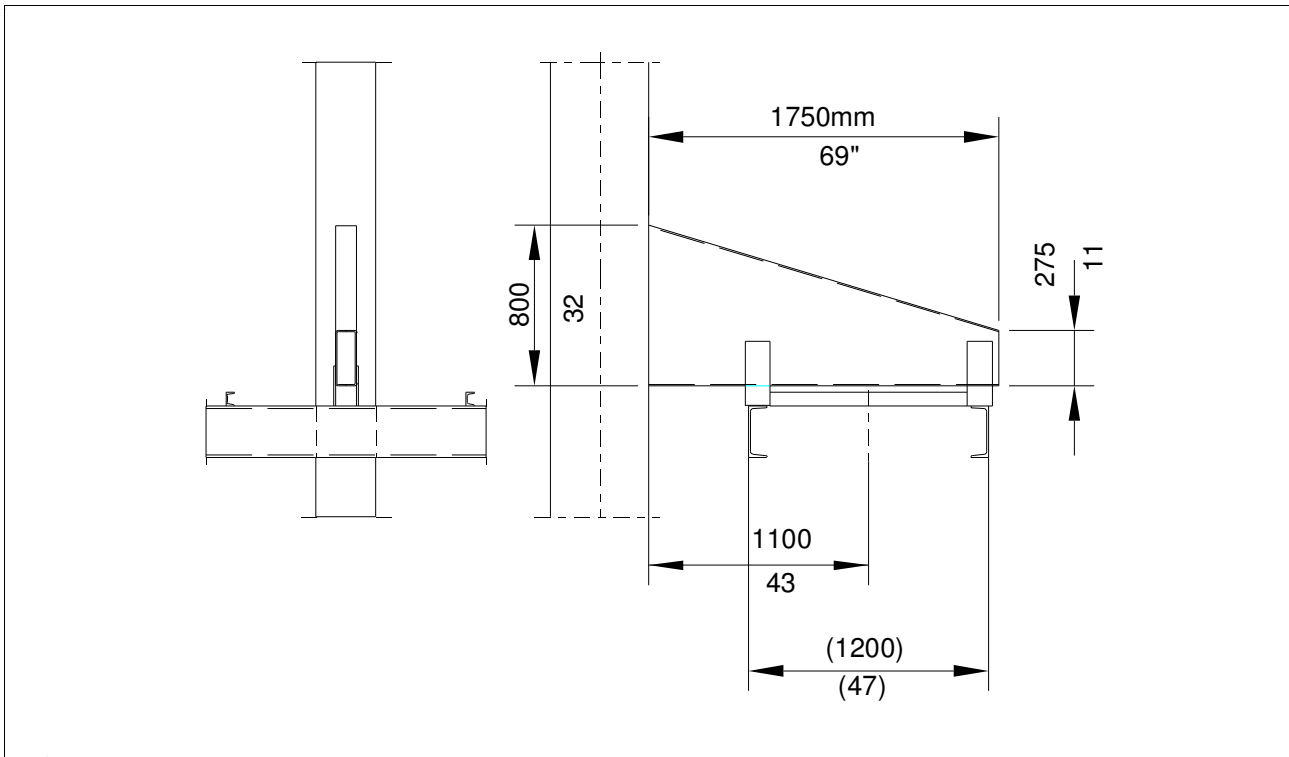
It is fastened on track by bolts.

**TRACK SYSTEM FOR CONCRETE DISTRIBUTION****Item 244 1010****DESCRIPTION**

Track system for concrete distribution contains design of the concrete distribution track which is specified in production hall layout drawing. Track system includes:

- Assembly drawings for concrete distribution track and track supports
- Manufacturing drawings for track supports
- Design of concrete distribution shuttle stopping and waiting areas
- Design of concrete transport automation
- Design of concrete distribution track and batching and mixing plant connections
- Optimization of concrete transport speed

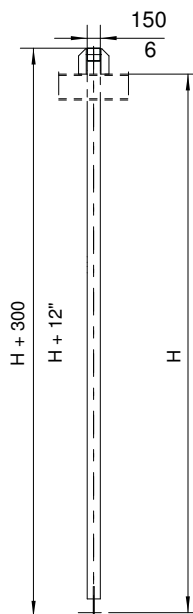
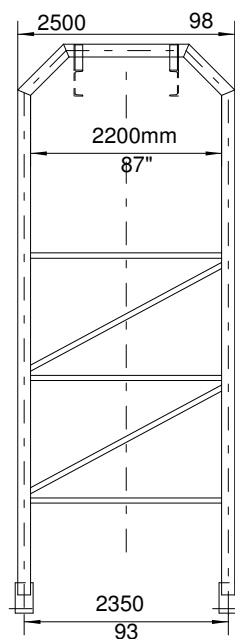
SPECIFICATIONS ARE SUBJECT  
TO CHANGE WITHOUT NOTICE



For supporting the concrete transport track,  
the consoles are fastened on columns by  
welding

**A-FRAME EB 424**

**Item 246 1200**



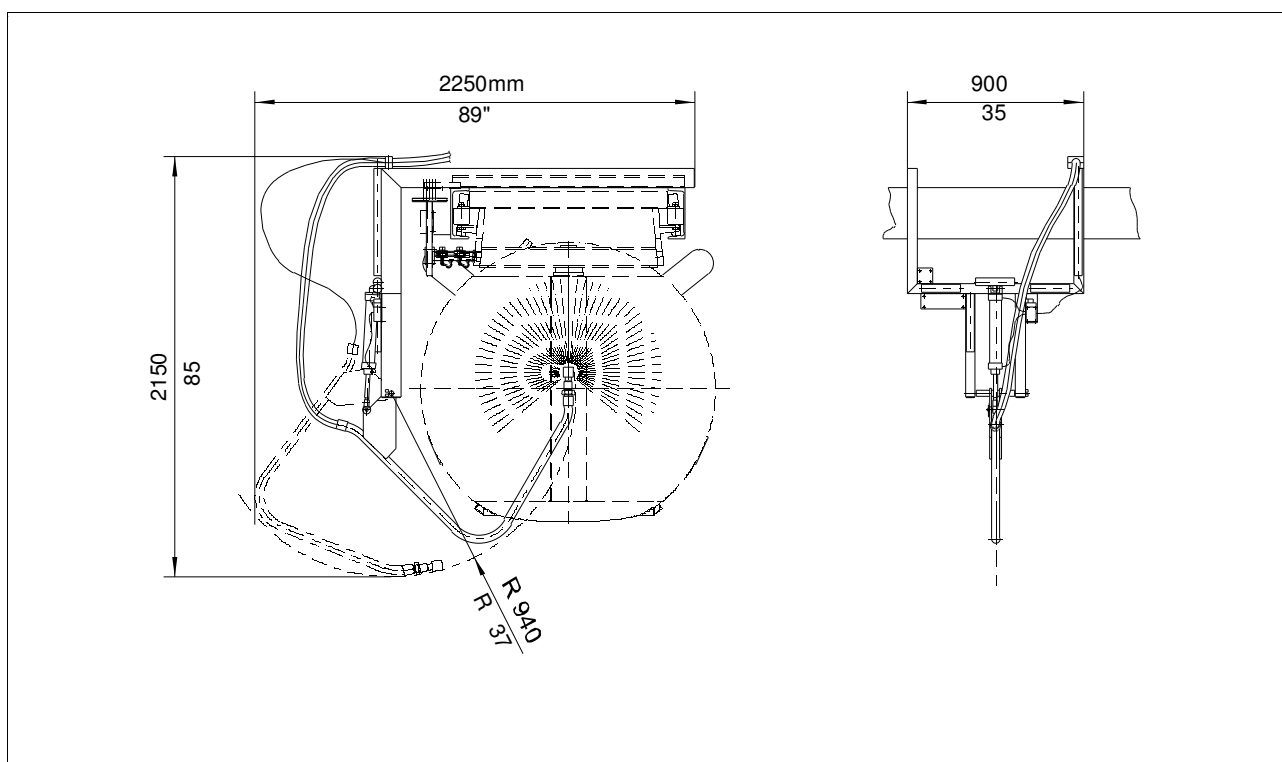
**DESCRIPTION**

- The A-frames are support legs of profiled steel, for concrete distribution track. They are fastened by bolts on foundations.
- Height H of A-frame is according to track.

## TECHNICAL SPECIFICATION SHEET

### Shuttle Washing Station EB 460

ITEM 245 2300



The washing station is designed for washing of concrete distribution shuttle.

The washing station has a pneumatically turning wash arm with rotating water spraying nozzle.

Includes the electrification and programming necessary for integrating the shuttle washing station to ELiDIST Concrete Distribution system.

#### TECHNICAL DETAILS

Water amount	4.5 l/s
Water pressure	4-6 bar
Water connection	R1 1/4"
Compressed air	6 bar, DN12

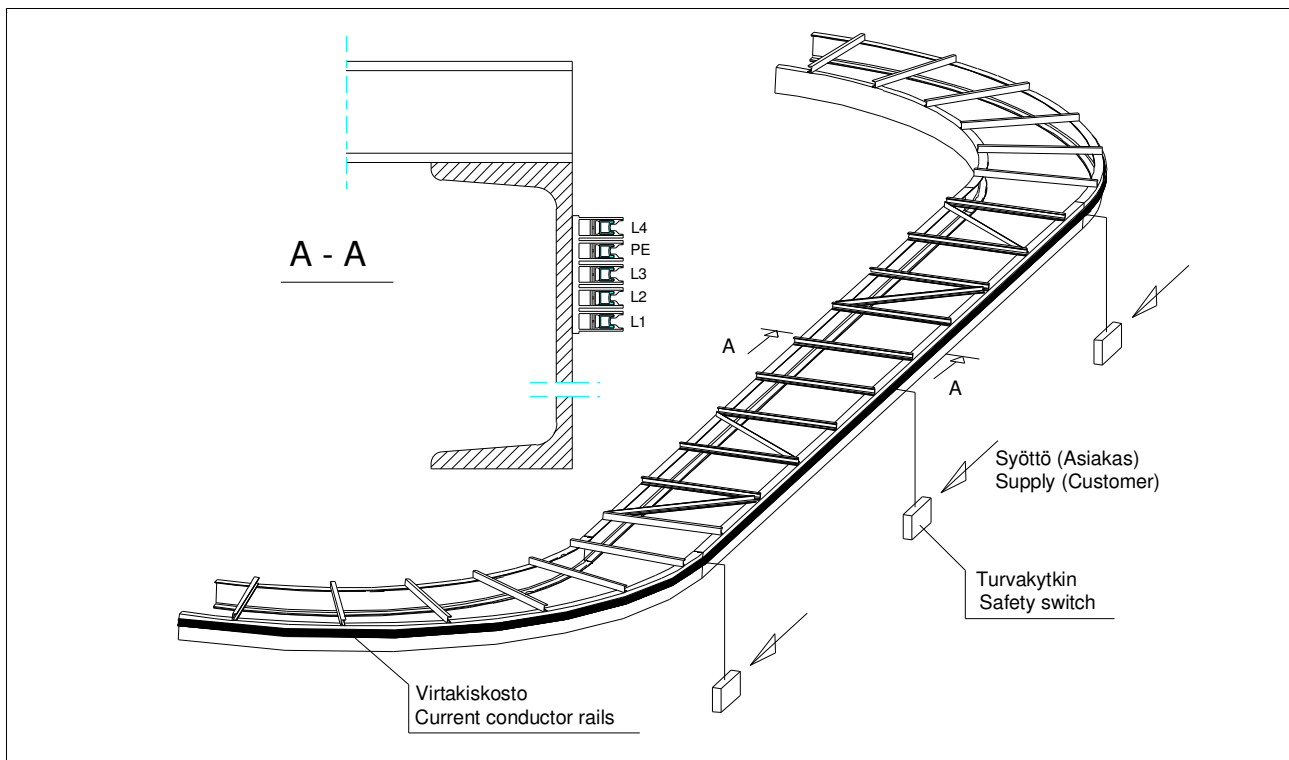
#### OPTIONAL

Water pump	
- Connection power	3 kW
- Supply (3P+PE)( V/Hz)	400/50

## TECHNICAL SPECIFICATION SHEET

### Current conductor rails of concrete distribution track

ITEM 240 8120



The current conductor rails supply energy to the concrete distribution shuttle. The rail system is dimensioned according to the power requirement and the length of the track. The rails are fastened to the track constructions.

When designing the current conductor rails of the concrete distribution track, voltage losses, thermal expansion, possible need of extra protection, and other ambient conditions are taken into account.

Current conductor rail system with five separate rails (3P+PE+Control). Rails are insulated and protected against accidental contact.

Nominal current 100 A.

Conductor material copper (100 A).

#### TECHNICAL DETAILS

Current rating for rail	100 A
Temperature range	0...+55 °C

#### OPTIONAL

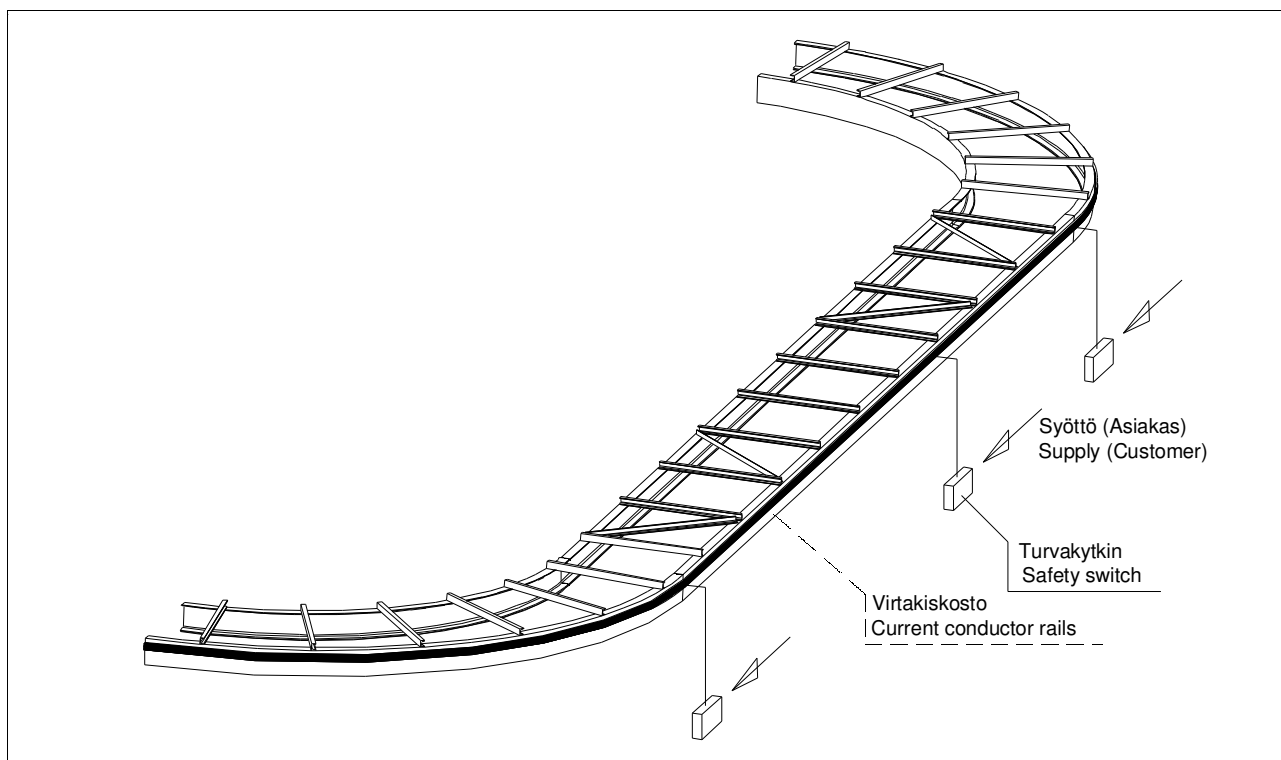
Heating of conductor rail.  
(For more details see item 240 8150)

Temperature range 0...+55 °C.

## TECHNICAL SPECIFICATION SHEET

### Power supply of concrete distribution track

ITEM 240 8110



One feed point is needed for each track part. The division of the track into parts can be made from the maintenance point of view and/or according to the location. Target of the division is to form units that are clear to control, maintain and operate.

The power supply of the concrete distribution system is designed acc. to the size and power requirement of the concrete distribution system taking into account voltage losses, thermal expansion and other ambient conditions.

### TECHNICAL DETAILS

Electric power of the concrete distribution track is supplied for each hall and distribution line separately through local and remote-controlled safety switch.

The customer takes the supply to safety switches, to places marked in the drawing showing the power supply points.

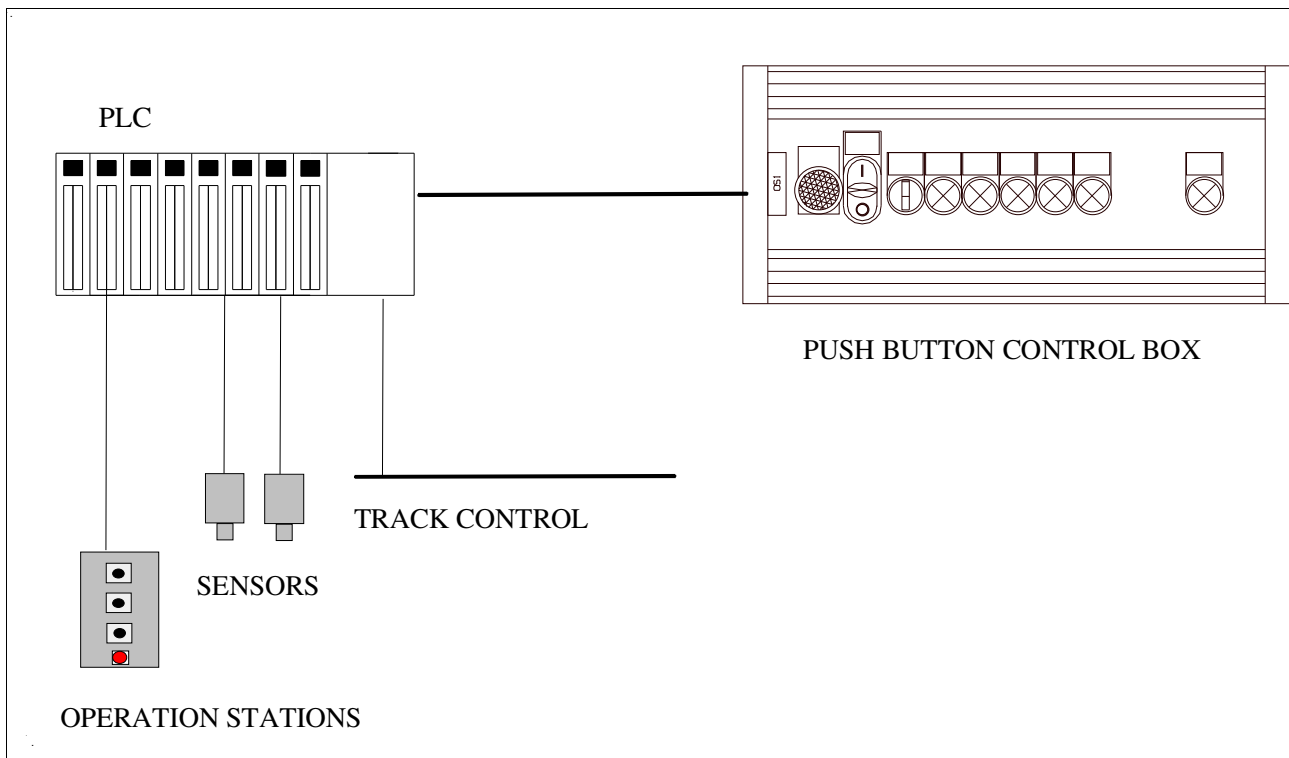
Operating ambient temperature (°C) 0 ...+55



## TECHNICAL SPECIFICATION SHEET

Automation of Concrete Distribution System ES 404 B

ITEM 240 8205



The concrete distribution system has been designed to distribute concrete from the batching and mixing plant to the equipment located on the precast concrete production lines.

### Construction

The control system has been built to control ELEMATIC concrete distribution shuttles. Energy to the concrete distribution shuttle is led via the current conductor system. The ELEMATIC control system is used for the transmission of the control commands from the PLC of the track to the PLC of the concrete distribution shuttle.

### Control unit

The concrete distribution has its own control unit; programmable controller, voltage sources and a programmable user interface. An individual control program according to the track layout has been installed in the programmable controller.

### Driving

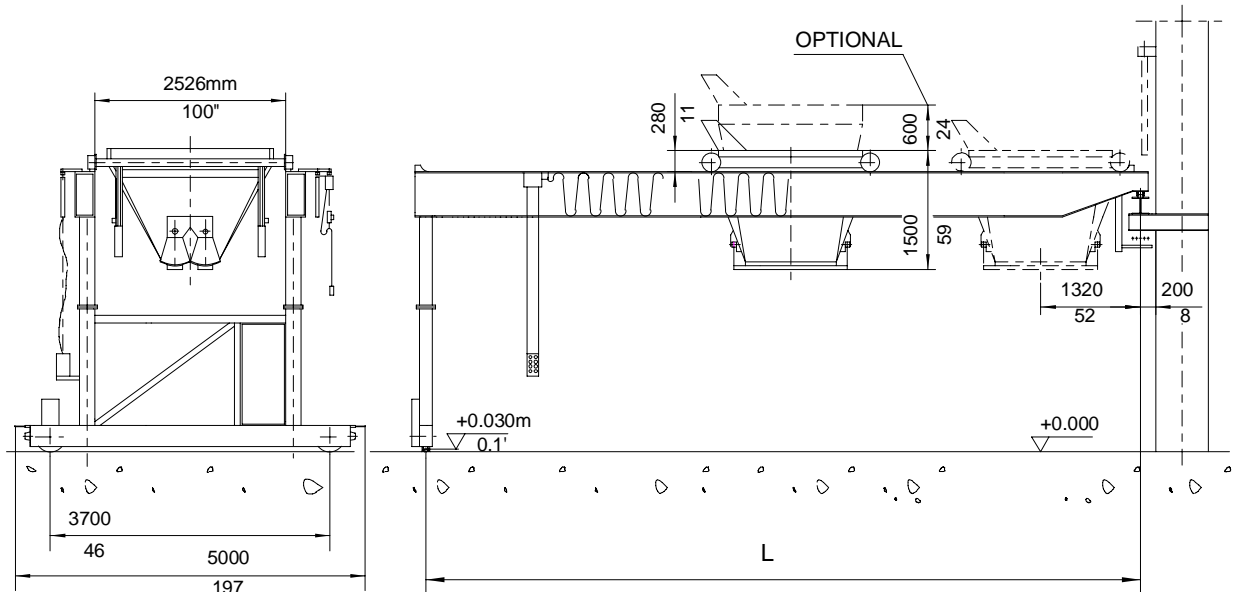
The concrete distribution shuttle is sent to a station by pressing the push button for the station in question. The concrete distribution shuttle starts driving towards the desired station and will automatically adjust its driving speed according to the distribution track. When the concrete distribution

shuttle arrives at the desired station, it stops automatically.

### Discharge and waiting stations

The operator of the discharge station has discharge and return push buttons at his disposal. By these push buttons the operator discharges the concrete distribution shuttle. The discharge stations have been provided with EMERGENCY-STOP push buttons that cut off the current feed to the concrete distribution track sector in question. The push button should be used if any menacing danger is detected.

The waiting station is the so-called home base of the concrete distribution shuttle. It is the place where the concrete distribution shuttle stays waiting for distribution commands and where to the concrete distribution shuttle comes back when it is returned from the hall.

**OVERHEAD BUCKET GANTRY EB 810 / 10**
**Item 231 1520**

**DESCRIPTION**

The overhead bucket gantry is a half portal that serves as intermediate concrete storage between the concrete transport line and the extruder.

The hopper is discharged through double sector gates:

**TECHNICAL DETAILS**

The water volume of the mix hopper is 2.9 m<sup>3</sup>.

Width of the discharge opening adjustable between 0 to 600 mm

Length 1200 mm

The travelling speed of the gantry steplessly adjustable from 0.1 to 0.5 m/s (6...30 m/min)

The travelling speed of the hopper 0.1...0.4 m/s (6...24 m/min)

Connecting power 8 kW

Power supply 3P+PE, 400V, 50Hz

Power supply/USA 3P+PE, 480V, 60Hz

**OPTIONAL**

Travelling rails

Power supply cables, trolleys etc. or current feed rails

Power supply to the extruder ( $P_{max} = 50$  kW)

Automatic control

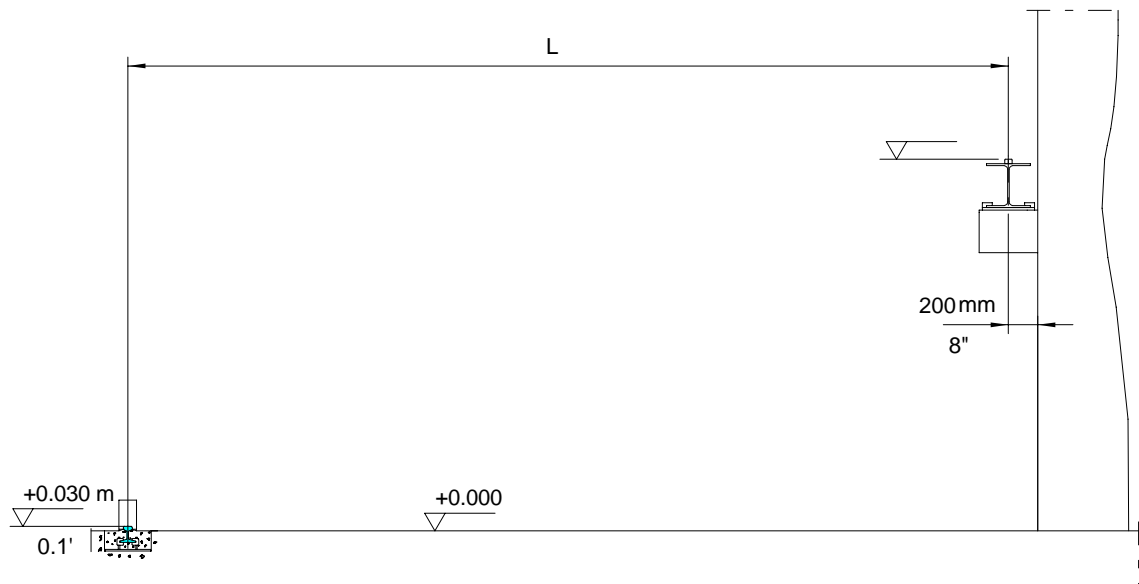
Hydraulic lifting machinery and chains for moving the casting machine from one pallet to another

The lifting height is 600 mm and the lifting force 100 kN when the hopper is empty

The lifting speed is 1 m/min

**TRACK EB 870 / 6-22 TRACK M (HALF PORTAL, SUPPORT DIST.6)**

**Item 220 5211**



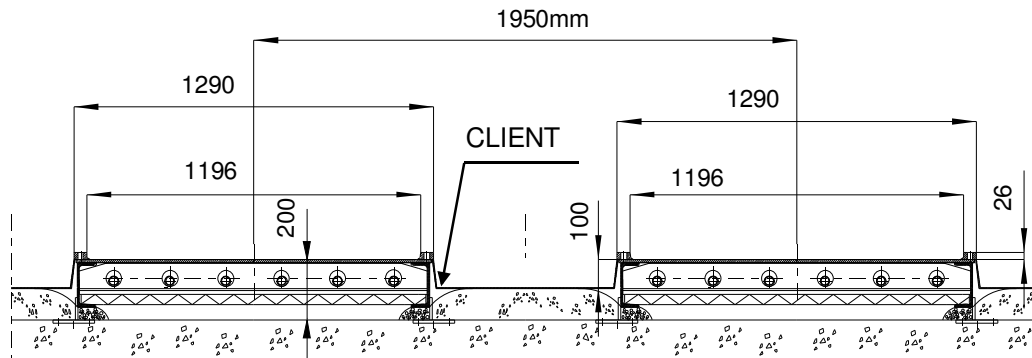
**DESCRIPTION**

- Track for a half-portal type casting machine and overhead bucket gantry with the track gauge L of 6-22 m.
- The height of the track is case sensitive.
- The distance between track supports is max. 6 m (the distance between the columns).
- The rail is installed on the floor.

## TECHNICAL SPECIFICATION SHEET

Casting Bed EL 120/ m

ITEM 561 1000



### DESCRIPTION

- The casting beds are designed for hollow core slab production with ELEMATIC-extruders.
- They have been equipped with rails on which most of the production machines are operating.
- The casting beds have been designed in such a way as to facilitate the removal of the slabs from the casting beds.
- The casting beds are made of stable steel constructions, and they are mounted onto base plates.
- The lengths of casting beds are determined according to the customers' requirements.
- The casting bed surface is made of straight rolled steel sheet and welded to the frame construction.
- The casting beds have longitudinal 160-mm U-profiles.
- The casting beds take a maximum load of 660 kg/m<sup>2</sup>.

- Heating pipes are installed under the surface of the casting beds. The heating is done by hot water. The heating pipe-ends have flexible hoses to allow heat extension of the pipes.
- Moreover the casting beds are to be provided with a 45-mm rock wool or polystyrene insulation.
- The casting beds are delivered in 12-m sections.

### TECHNICAL DETAILS

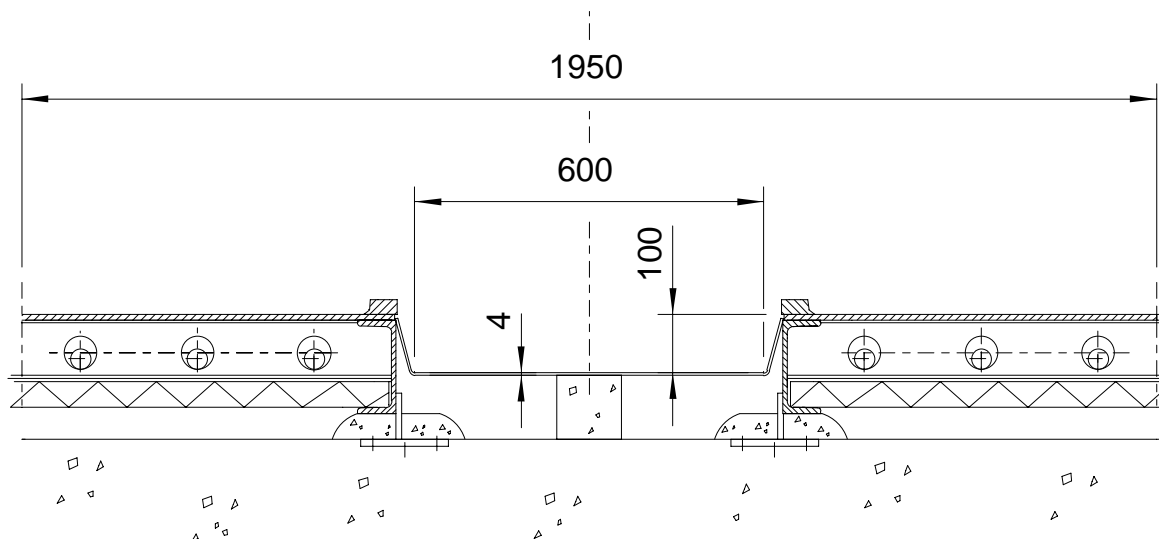
Width	1290 mm
Height	200 mm
Weight, approx.	185 kg/m

### OPTIONAL

Maturity Control Pump System	(Item 586 1002)
Chute between Casting Beds	(Item 132 1337)

CHUTE BETWEEN CASTING BEDS

Item 132 1337



DESCRIPTION

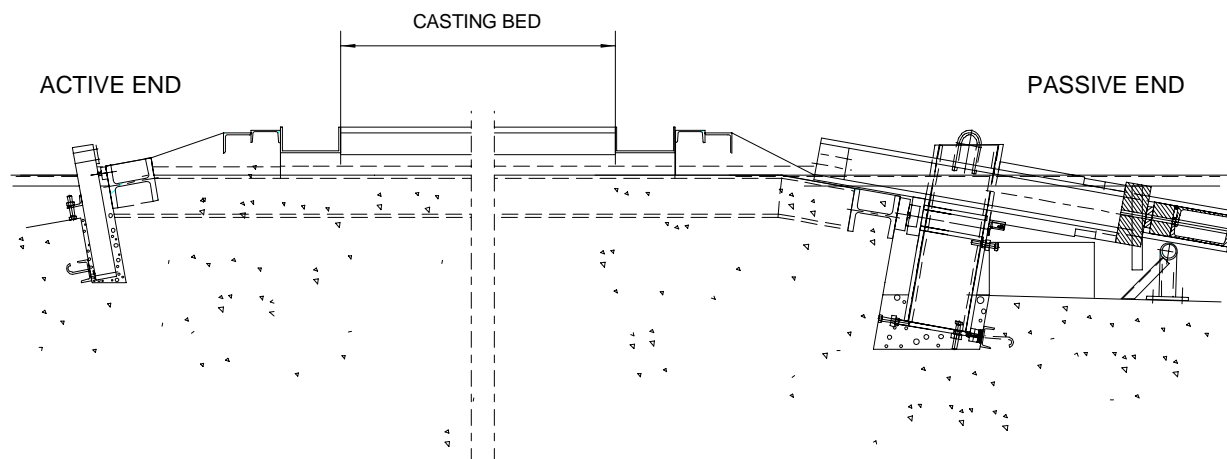
- The chute is installed between hollow-core slab casting beds and fastened by intermittent welding.
- It serves for collection of loose waste and sludge.
- Cleaning of the chute can be carried out either by ELEMATIC dispatcher or manually.

TECHNICAL DATA

Effective length	600 mm
Free height	100 mm
Lengths of modules	6 m and 12 m

OPTION

Hot galvanised

**STRESSING ABUTMENT EL 220 / 300, 1 PAIR**
**Item 565 2250**

**DESCRIPTION**

- Stressing abutment is designed for holding stressing strands of the hollow core slabs during stressing.
- A pair of stressing abutments is needed for each casting bed.
- Abutments at opposite ends of a casting bed (so called active and passive ends) are of different construction.
- Abutments are to be mounted in concrete foundations.
- The maximum prestressing force that the abutments can take is 300-ton.
- The abutments are equipped with necessary fittings and detensioning cylinders.
- Stressing abutments are suitable for the use of single stressing devices.
- Detensioning can be carried out with aid of detensioning cylinders located at the passive end. A separate hydraulic unit is required for detensioning (See Optional).

**TECHNICAL DETAILS**
**Active end**

- Length 200 mm
- Width 1200 mm
- Height 650 mm
- Weight 650 kg

**Passive end**

- Length 2000 mm
- Width 1300 mm
- Height 1000 mm
- Weight 2000 kg

**OPTIONAL**

- |   |                 |
|---|-----------------|
| Hydraulic unit for the detensioning cylinders | (Item 565 2251) |
| Single stressing device                       | (Item 565 3300) |

**SINGLE STRESSING DEVICE EL 253 / 16 T / 500 MM**
**Item 565 3300**

**DESCRIPTION**

- The single stressing device stresses each strand separately against stressing abutment.
- If the stressing distance is long, the strand is stressed with several pulling cycles.
- Operating power to the stressing cylinders is delivered by a hydraulic unit that is equipped with manometer, by which the stressing force can be monitored.
- The hydraulic unit has wheels and a support pole for stressing cylinder.
- Connection to the mains by a plug.
- The delivery includes:
  - Stressing cylinder
  - Hydraulic unit
  - Spring balancer
  - Control box

**TECHNICAL DETAILS**

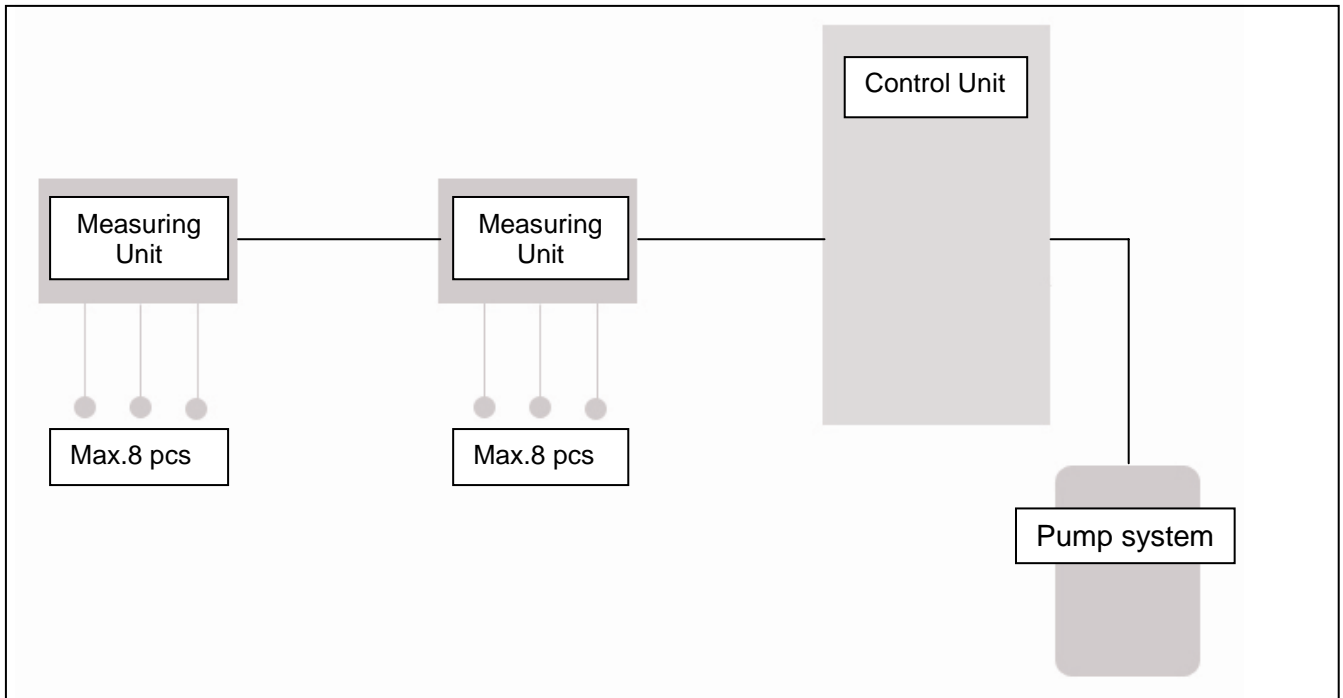
Prestressing force	160 kN
Stroke	500 mm
Strand size	9.2 – 12.7 mm
Weight	n. 350 kg
Connection power	5.5 kW
Voltage	3P+PE, 400 V, 50 Hz
Voltage /USA	3P+PE, 480 V, 60 Hz

**OPTIONAL**

Digital tension meter	(Item 565 3800)
-----------------------	-----------------

**MATURITY CONTROL DEVICE EL 490**

**Item 586 1001**



**DESCRIPTION**

- The maturity control equipment is used for the calculation of the temperature-hour accumulation in order to define the optimal energy-economic stripping time for a pallet or mould.
- The automatic maturity control consists of a programmable logic installed in an enclosure and a user interface as well as connection points for sensors and control devices.
- The desired maximum temperature (°C[°F]) for the system, the allowed temperature tolerances and allowed speed of temperature rise (°C[°F] / h) can be defined by means of the user interface.
- The desired temperature-hours °C[°F]h or time for each casting line are set by means of the user interface. The automatic control adjusts then the optimal temperature for the casting line. The maturity situation, temperature, starting and finishing time and alarms can be seen on the user interface.
- With the maturity control device is always needed the maturity control pump system (item 586 1002).

**TECHNICAL DETAILS**

Max. number of casting lines	8
Max. distance from measuring point	30 m
Connecting power	max. 5 kW
Voltage	3P+PE 380-480VAC 50/60Hz

**CONTENTS OF THE DELIVERY**

The main control unit including:

- Connections to the pump
- User interface
- Connections to the valves
- Software

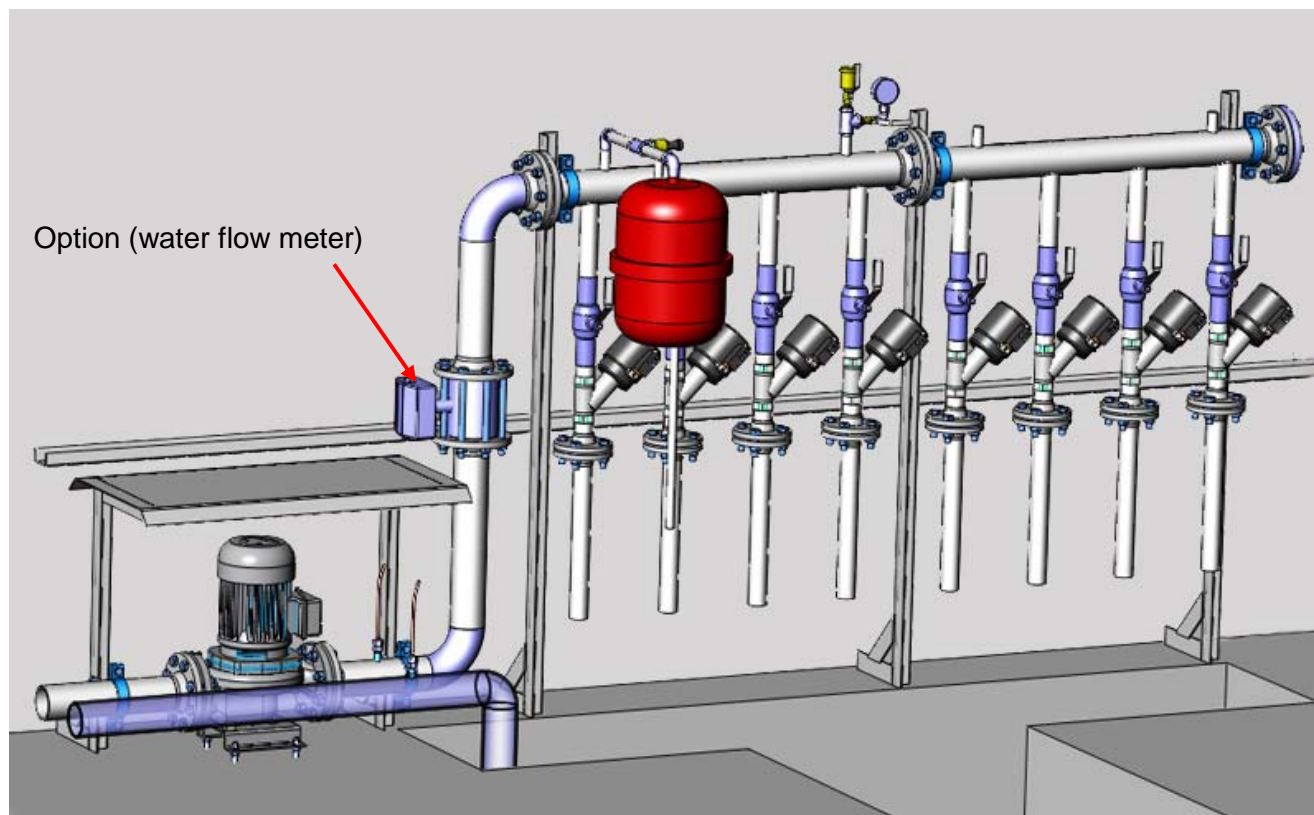
Auxiliary measuring units including:

- Connections to the measuring points

**OPTIONAL**

ELiMAT



**MATURITY CONTROL PUMP SYSTEM EL 490**
**Item 586 1002**

**DESCRIPTION**

- This package includes accessories of the maturity control unit for 1-8 casting lines (6 in simultaneous working circuit) (Item 586 1001):
- A temperature sensor measures the product temperature. It is installed in a hole made in the pallet or in the mould. The sensor is fitted with an amplifier.
- Manual open / shut-off valves for maintenance purposes.
- Circulation water pump for the heating water circulating in the pallets. Intermittent heating by closing the valves.
- The measuring sensors and valves must be ordered according to the number of casting lines (Item 586 1002).
- With the maturity control pump system is always needed the maturity control device (item 586 1001).

**TECHNICAL DETAILS AND CONTENTS OF THE DELIVERY**

Sensor	2 pc/pallet
Sensor cabling max.	30 m
Recommended distance between measuring terminals	80 m
Circulating water pump	1 pc/8 pallets
Water pump cabling max.	30 m
Ball valve	1 1/4", 1 pc/pallet
Pneumatic water valve	1 pc/pallet
Fittings for manifold	1 set/ manifold
Max. distance between 1. measuring terminal and user interface	80 m

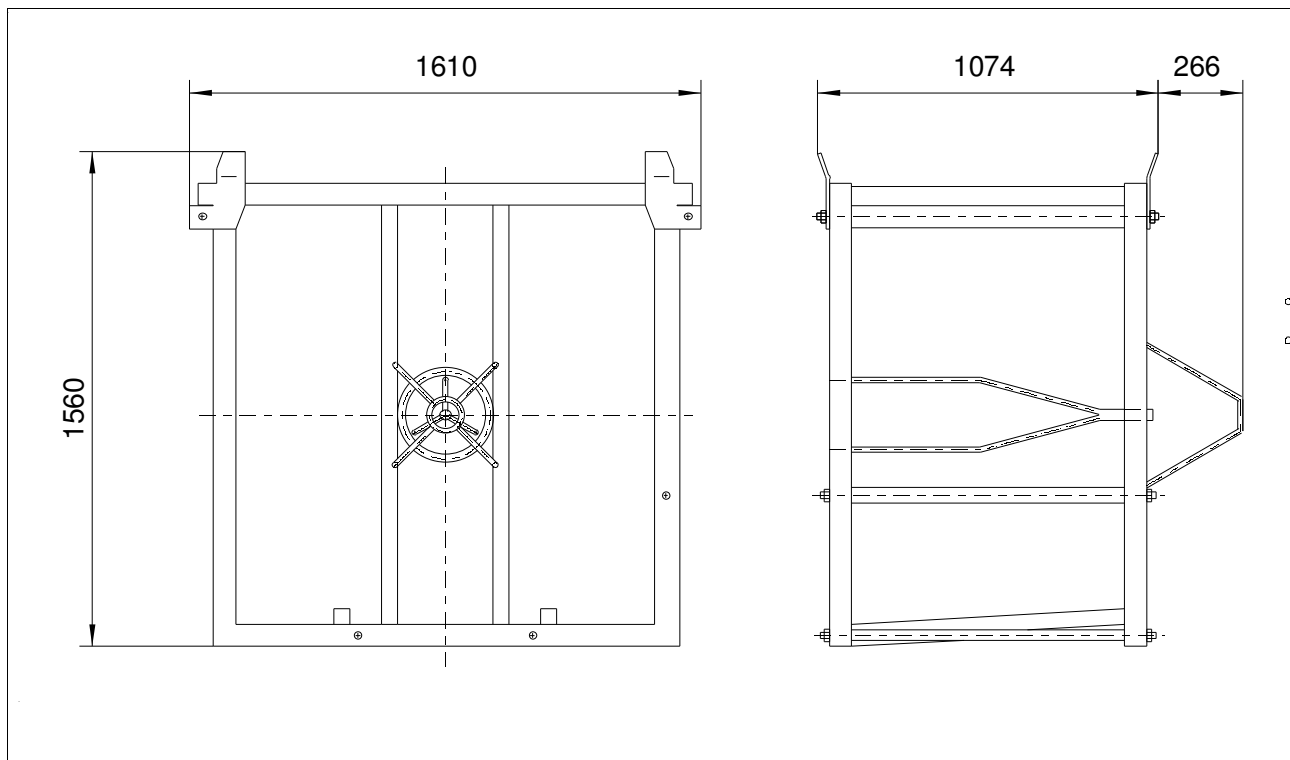
**OPTIONAL**

Water flow meter

## TECHNICAL SPECIFICATION SHEET

Strand Container EL 300

ITEM 565 6100



### DESCRIPTION

- The prestressing strand coils are stored in the containers specially designed for this purpose.
- The containers prevent the strands from unrolling and enable smooth feed of the strands to the casting bed.

### DIMENSIONS AND WEIGHT

Length	1610 mm
Width	1340 mm
Height	1560 mm
Weight	220 kg

- The steel profiles of the container have been jointed by welding.

### TECHNICAL DETAILS

Max. diameter of strand reel	1400 mm
Width	800 mm

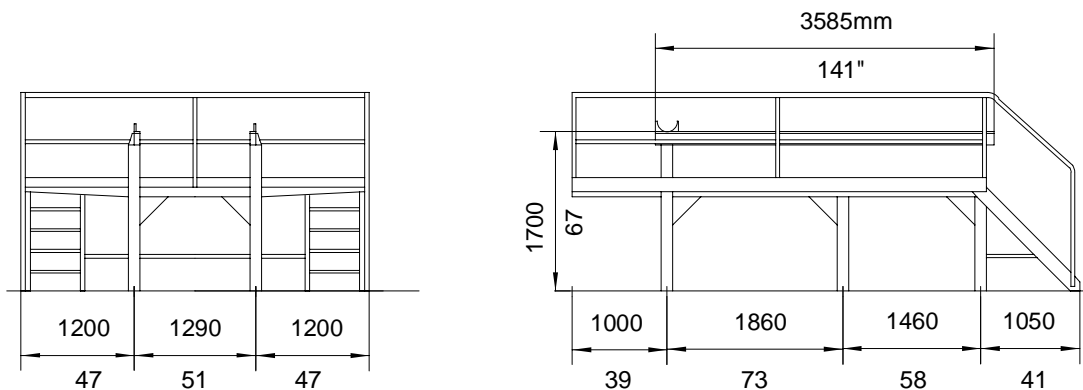
- The container is constructed of steel profiles.
- A running ring is fitted onto the front side.
- The containers are equipped with two lifting loops and four stacking guide supports.

### OPTIONAL

Other reel sizes.

**1-PLACE SERVICE PLATFORM EL 311**

**Item 584 1000**



**DESCRIPTION**

The platform is designed for cleaning and maintaining of ELEMATIC hollow-core slab extruders or other equipment of the casting line.

The rails enable exact positioning of the parts.

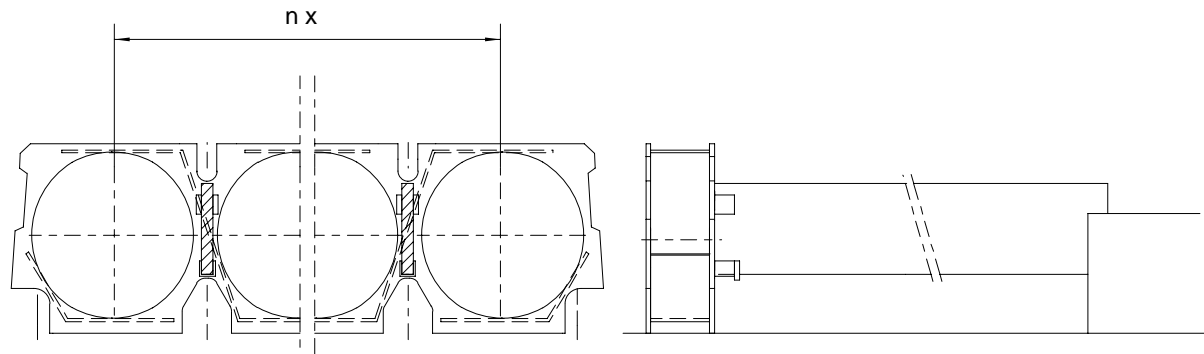
The platform is of steel construction equipped with hand rails and stairs.

**TECHNICAL DETAILS**

For one extruder  
 Weight approx. 1100 kg  
 Width 3700 mm  
 Length 5400 mm  
 Height 2100 mm  
 Same type of rails as on casting bed.

**OPTIONAL**

Power supply cable, connecting box and plug  
 Working lights  
 Grease feeding system  
 Waste wagon

**START PLATE EL 828**
**Item 510 6300**

**DESCRIPTION**

The start plate for the starting ends of hollow-core slabs is a system designed for reducing of concrete waste at the starting end of the casting bed.

The cross-section of the start plate is similar to the hollow-core slab itself. A fastening mechanism is delivered together with the start plate. The plate acts as a shutter, when the concrete is forced back by the screw conveyors. Each different individual slab cross section needs a start plate of its own.

Usually there is also needed a start mechanism, which holds the casting machine in place until required force is obtained and then gradually releases the force as the casting machine moves forwards. The standard torque device of the extruder EL900E can be used as a deceleration device in the beginning of casting. When using other casting machines a separate deceleration device can be used if required.

Prior to starting the extrusion, the start plate is lifted onto the casting bed and supported properly. After this the extruder is lifted onto the casting bed and the discharge pipes are pushed through the corresponding hollows in the start plate.

When the start mechanism has been installed and the braking force has been adjusted, the extrusion can be started.

This system ensures the correct dimensions and strength of the slab from the very beginning, and cutting off a waste slab is avoided.

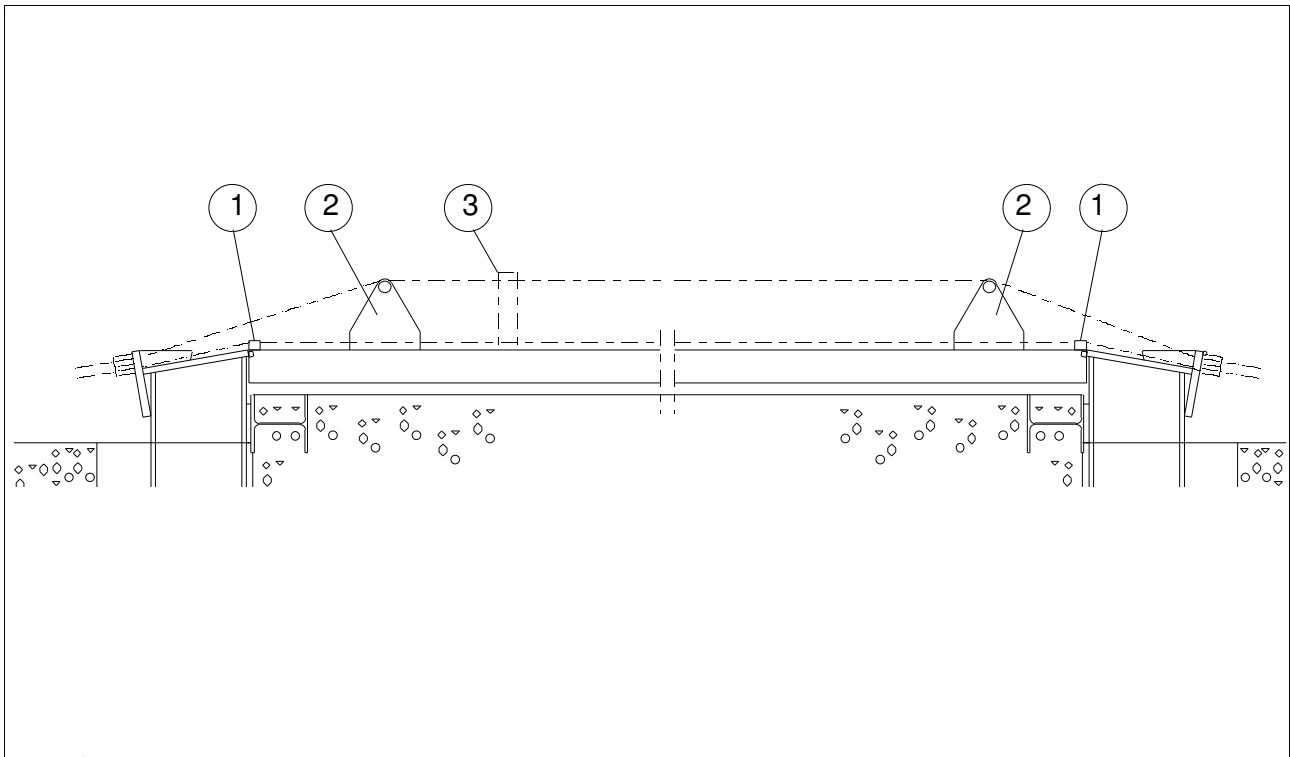
**Savings achieved by the manufacturer of hollow-core slabs:**

- No waste concrete in the starting end of the slab
- Less wasted reinforcement in the starting end of the slab
- No handling and dumping costs incurred by waste slab in the starting end
- Length of casting bed used more efficiently.

## TECHNICAL SPECIFICATION SHEET

Strand Comb EL 203, 5 / 265, pair

ITEM 561 1430



The strand comb serves for correct positioning of the stressing stands. The strand combs are located at both ends of the casting bed. The distance from the end of the casting bed depends on the height level of the upper strands (check angle of the strands). The comb for lower strands is located straight at the end of the bed.

The upper and the lower strands have normally their own (separate) comb halves. The application of the start plates may have an effect on the construction of the strand comb.

Each different slab cross section needs a pair of strand combs of its own (different strand positions).

The number of the needed strand comb pairs for one slab type is the same as the number of casting beds on which that specific slab type is produced before stripping the previous ones. The strand combs are removed when detensioning the strands.

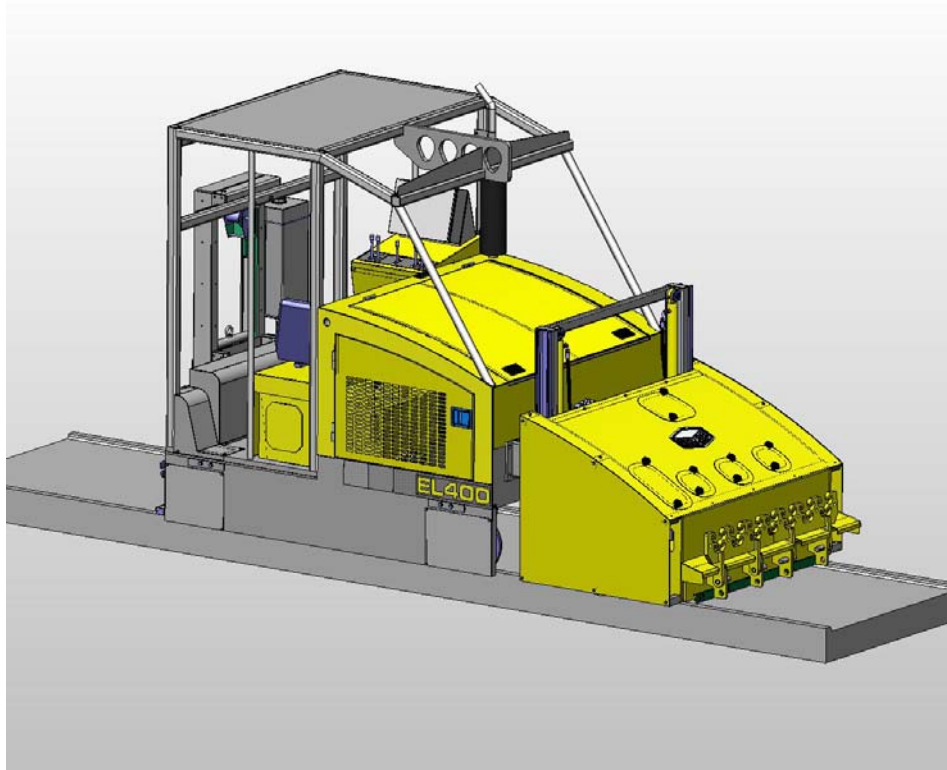
The strand comb consists of the part 1 and the part 2 (pair)

1. Strand comb for lower strands (pair)
2. Strand comb for upper strands (pair)

### OPTIONAL

Strand combs that allow the extruder to drive over.

3. Start plate EL 838 (item 510 6300)

**BEDMASTER EL 400 / LPG**
**Item 581 3000**

**DESCRIPTION**

- Cleans the casting bed
- Pulls the prestressing strands from the strand containers to the passive end.
- Oils the casting bed.
- Driven by a LPG engine.
- Gas is taken in liquid form from a motor gas bottle (propane). Delivery doesn't include gas bottles, safety valves and gas filter.
- Operations are hydraulic and controlled by valves. Delivery doesn't include hydraulic oil.
- Pulling beam for prestressing strands.
- Oil paddle for bed oiling (manual use).
- Bed surface scraper.

**TECHNICAL DETAILS**

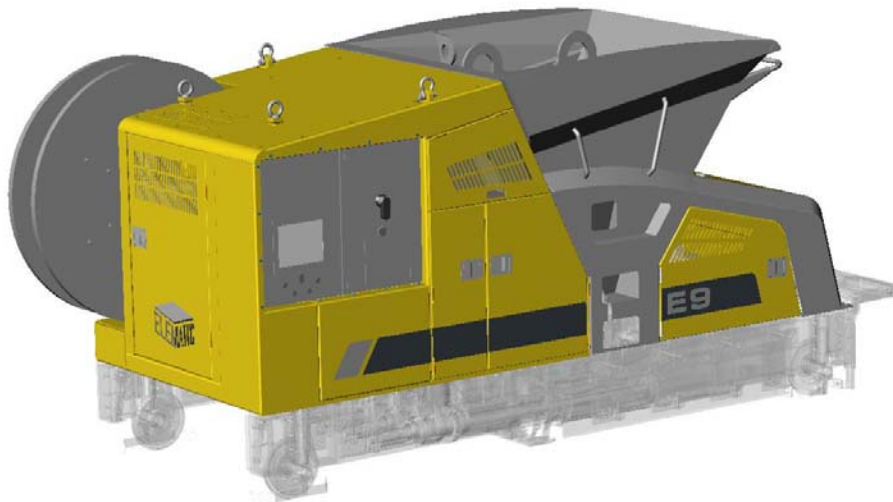
Free travelling speed	1m/s	3ft/s
Brushing / strand pulling speed	0.5m/s	1.5ft/s
Oil spreading speed (appr.)	1m/s	3ft/s
Volume of the form oil tank	30 l	8gal.
Clearance under dispatcher	430mm	16.9in.
Brush dia.	500mm	19.7in.
Brush width	1300mm	51.2in.
Height	2285mm	90in.
Width	1685mm	66.3in.
Length	3800mm	150in.
Weight approx.	2950kg	6500lb
LPG engine	20kW	
Fuel LPG acc. To ASI spec.	HD5	

**OPTIONAL**

- Gutter brush for cleaning the space between beds (both sides, manual turn).  
(Item 581 4001)
- Water spraying system (for dust blocking).  
(Item 581 4002)

**EXTRUDER POWER UNIT E9**

**Item 519 1000**



**DESCRIPTION**

The power unit contains one concrete hopper, from where concrete is fed into the feeding screws of the nozzle module and operating unit which includes main operating motors and control panel. The power unit is compatible with all E9 type nozzle modules.

- The hopper can be easily removed for maintenance.
- The water volume of the hopper is 1.8 m<sup>3</sup>.
- The power supply for the feeding screws is made with electric motors controlled by frequency converters.
- Power is transmitted from the motors to reducing gears by belt drives.
- The change from one nozzle module to another takes less than one hour.

Included:

- Automatic start and stop is used to control the casting. When the concrete level in the hopper lowers, the extruder stops automatically and starts again after getting more concrete.
- Central lubrication is used to guarantee good lubrication and ensures that all critical points are continuously greased during the casting.
- Compaction control assistance is used to slow down or to pull the extruder in order to achieve the best compaction and quality of the slab surface.

**TECHNICAL DETAILS for Power Unit E9**

Length without cable drum	appr. 4350 mm
Length with cable drum	appr. 4800 mm
Width	appr. 1670 mm
Height	appr. 1625 mm
Total weight varies according to options	appr. 2200-2800kg
Connecting power	appr. 40 kW
Connecting voltage	3P+PE, 400 V, 50 Hz
Power supply/USA	3P+PE, 460 V, 60Hz

**OPTIONAL**

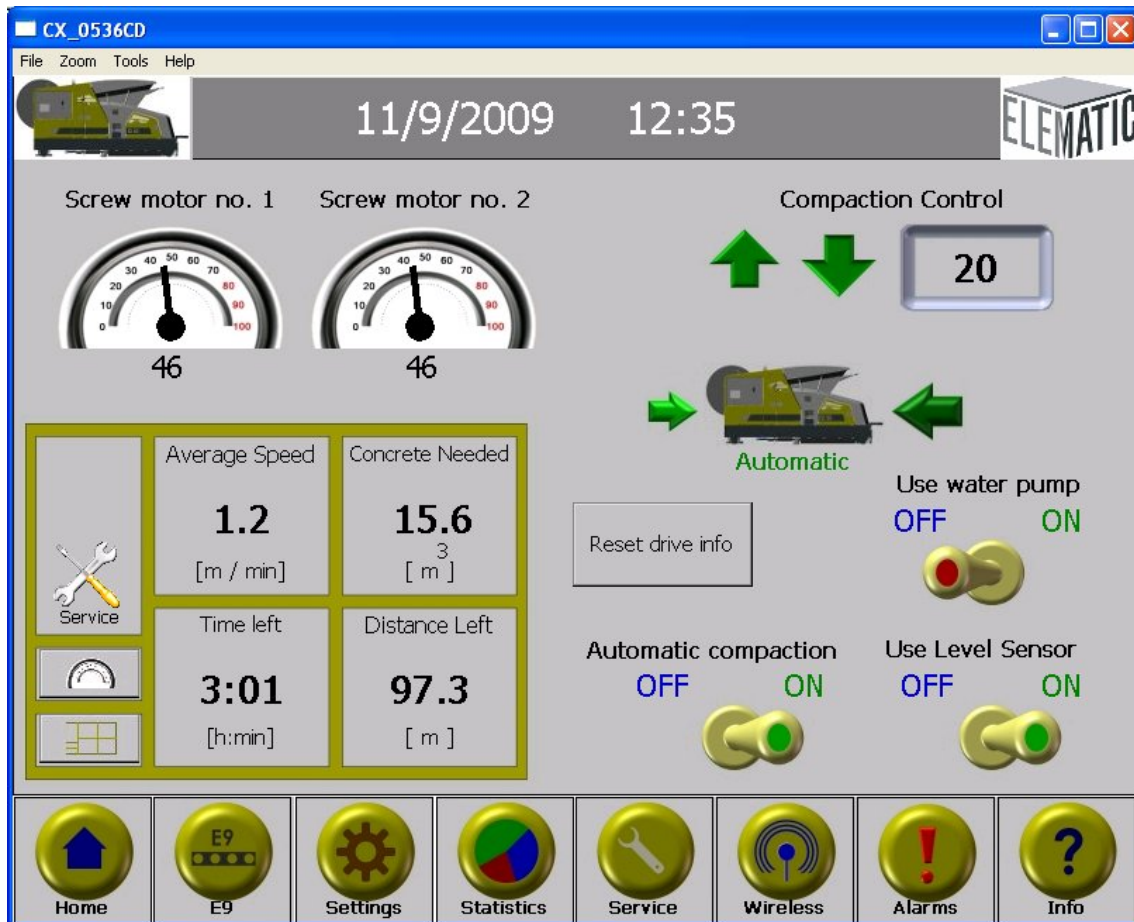
Cable drum for max 160 m cable	550 1300
Cable drum for max 200 m cable	550 1320
Flexible cable for power input	550 1410
Fixed male plug	550 1500
Water feeding system	519 1100
Extension part for concrete hopper	519 1200
Automatic compaction control	519 2100
Extended usability package	519 2200

**SPECIFICATIONS ARE SUBJECT  
TO CHANGE WITHOUT NOTICE**



## AUTOMATIC COMPACTION CONTROL

Item 519 2100



### DESCRIPTION

The Automatic compaction control is used to improve and maintain the quality of the slab.

The Automatic compaction control observes the compaction level of the extruder during the casting. It adjusts the control values automatically when it is necessary.

The automatic compaction control can be launched from the main screen of the user interface. At the beginning of the cast it is activated independently. It adds or reduces the resistance of the compaction if needed.

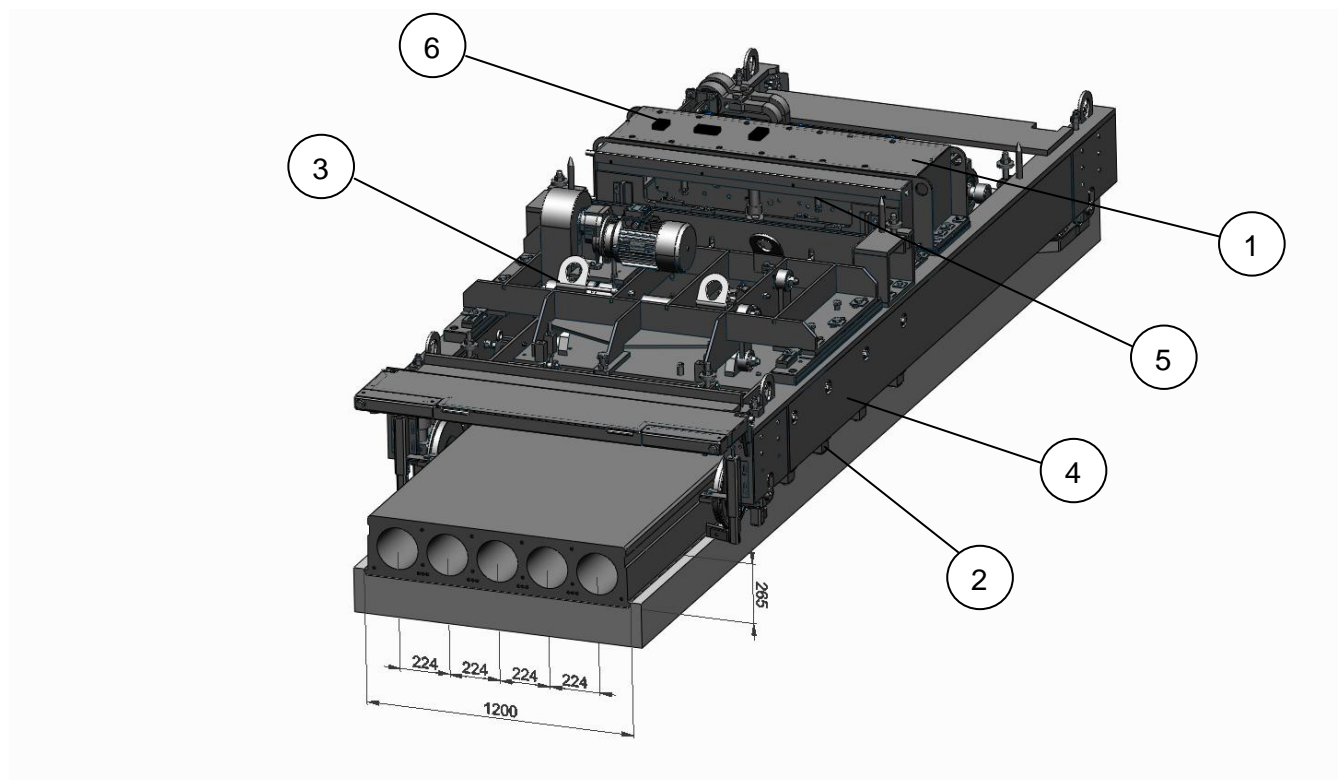
Slab dependent values can be saved any time by the user. The automatic compaction control uses these values as the target.

When the nozzle module is changed, the power unit identifies the module. The automatic compaction control automatically selects the control values which were saved last time to this module.



**NOZZLE MODULE E9-5/265**

**Item 519 5265**



**DESCRIPTION**

The nozzle module defines the number and the shape of the voids and also the height of the slab.

The nozzle module is compatible with all E9 type power units.

Every unit consists of the following items:

- Nozzle unit. (1)
- One set of side plates, to ensure the quality of the slab sides. (2)
- One set of levelling beams, to ensure good quality for the upper surface of the slab. (3)
- Main chassis on wheels. (4)
- Strand guides enabling top reinforcement guides in case these are required. (5)
- Central lubrication. (6)
- Fastening screws for attaching the nozzle to the power unit.

Nozzle module is delivered with one set of wear parts to one slab cross-section.

**TECHNICAL DETAILS**

Length	4350 mm
Width	1670 mm
Height	950 mm
Weight	4500 kg
Connecting power approx.	4 kW
Power supply through power unit E9	

**Available Slab Profiles:**

Alternative 1:	
Elematic Dwg. No.	P651464
Standard	EN 1168 +A1
Fire resistance up to	REI 120
Area of cross section	0.1741 m <sup>2</sup>
Theoretical calculated weight	348 kg/m <sup>2</sup>

Alternative 2:	
Elematic Dwg. No.	P651467
Standard	EN 1168 +A1
Fire resistance up to	REI 120
Area of cross section	0.1625 m <sup>2</sup>
Theoretical calculated weight	325 kg/m <sup>2</sup>

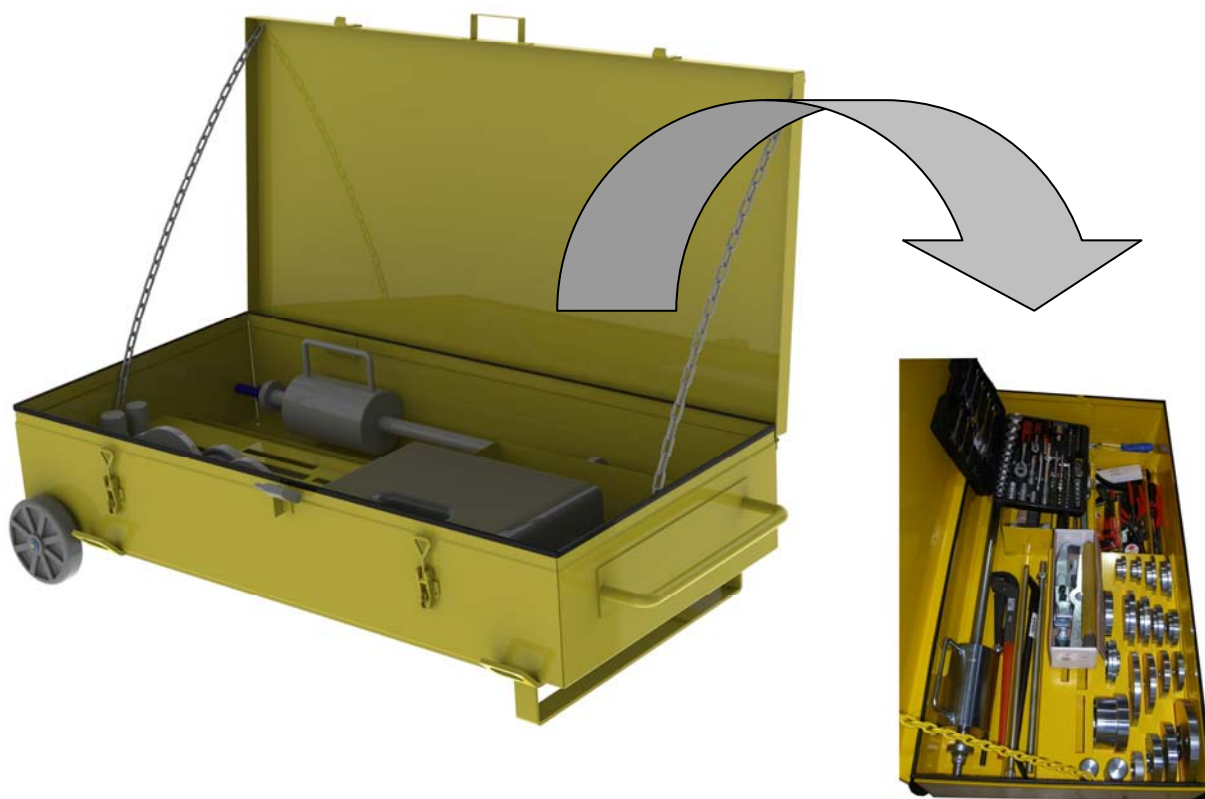
**OPTIONAL**

Shear Key Device	519 3100
Start Plate EL 828	510 6300
Strand Comb EL 203	561 1430
Other Slab Profiles	

SPECIFICATIONS ARE SUBJECT  
TO CHANGE WITHOUT NOTICE

MAINTENANCE TOOLS FOR EXTRUDER E9

Item 519 3200



DESCRIPTION

A maintenance tool set for basic maintenance and repair of E9 extruder.

In addition to standard tools, the set includes special tools for mandrels and mounting tools for bearings and gaskets.

The tool set fits for power unit and all nozzle modules.

The tools are supplied in a wheeled metal box.

TECHNICAL DETAILS

Number of articles	180 pcs
Weight	175 kg
Width	710 mm
Length	1300 mm
Height	320 mm

OPTIONAL

Operator's training	900 5190
Service platform light	584 0100
Service platform 1-place	584 1000

**OPERATOR'S TRAINING FOR E9 EXTRUDER**

**Item 900 5190**



**DESCRIPTION**

- Operator's training for Extruder E9 is divided in two types of training, theoretical and practical.
- Grade of the training is Main User.
- Training is planned for max. 4 trainees
- Theoretical part of the training includes:
  - General information
  - Safety information
  - Start-Up information
    - Construction and Controls
    - Mechanical adjustments
    - Before casting
  - Operation
    - Control system
    - User interface
    - Casting preparations
    - Strand guide
    - Optional equipments
    - Casting
    - Automatic compaction control (optional)
    - Cast ending
    - Washing and service
  - Maintenance actions and follow-up
  - Main user operations
  - Trouble shooting
- In the practical part of the training trainees get to know the extruder and its operations more closely.
- Trainees operate the extruder under guidance of the trainer.
- Subjects learned in the theoretical part of the training are carried out in production.
- Each trainee who passes training acceptably will get a personal Elematic Operator's Licence. This is a certificate that proofs the card owner is qualified to use Elematic machinery in question.
- Customer will get a list of trained personnel. Elematic will keep a record of the qualified operators.

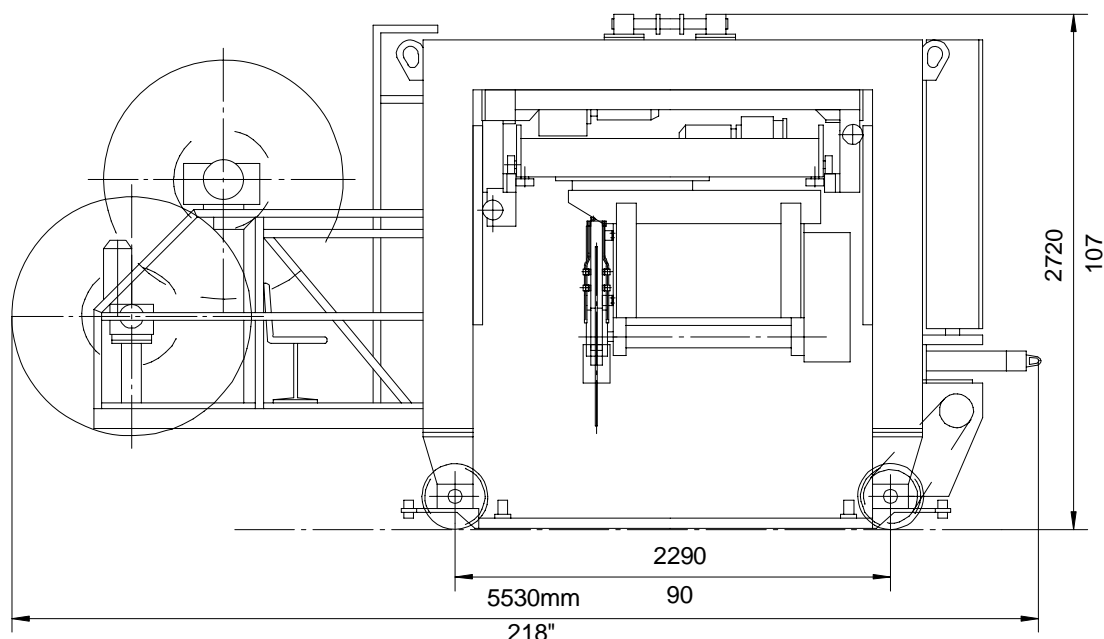
**DETAILS**

- Duration 3 days (theoretical 1,5 days + practical 1,5 days)
- Test
- Training material and Operator's Licences
- In English

**NOTE!** Trainer's travel and accommodation cost are not included in the price.

**OPTIONAL**

- Extra trainees
- Extra practical training day, necessary if there are more than 4 trainees
- Training material in another language
- Concrete mix optimization, 2 days

**SLAB SAW EL 1100 (0-180 DEG.)**
**Item 551 2000**

**DESCRIPTION**

- For cutting of hollow-core slabs and T-beams.
- Slab dimensions. Width max 1250mm (50"), height max 430mm (17").
- Cutting blade, diameter 800mm – 1100mm (32"-44").
- Cross (90°), diagonal (0°-180°) and longitudinal (0° or 180°) cuts.
- Four (4) different automatic cutting cycles for crosscuts (90°) according to the slab types.
- Stepless speed control.
- Water nozzles for slab surface washing.
- Water nozzle for operator's window washing.
- Blade cooling water control .
- Blade motor load and rotation control.
- Travelling on the side rails of the casting bed.
- Blade line indication with laser light.
- User interface with an informative multilanguage touch-screen display.

**TECHNICAL DETAILS**

Blade dia alternatives up to	1100mm	44 in.
Saw transport speed, stepless	0...0.67m/s	..2,2ft/s
Width	1650mm	65 in.
Weight without drums	5000kg	11243 lb
Water pressure at saw min.		2 bar

Power supply	3P+PE, 400 V, 50 Hz
Connecting power	61 kW
Blade motor	55 kW

Power supply	3P+PE, 480 V, 60 Hz
Connecting power	73 kW
Blade motor	66 kW

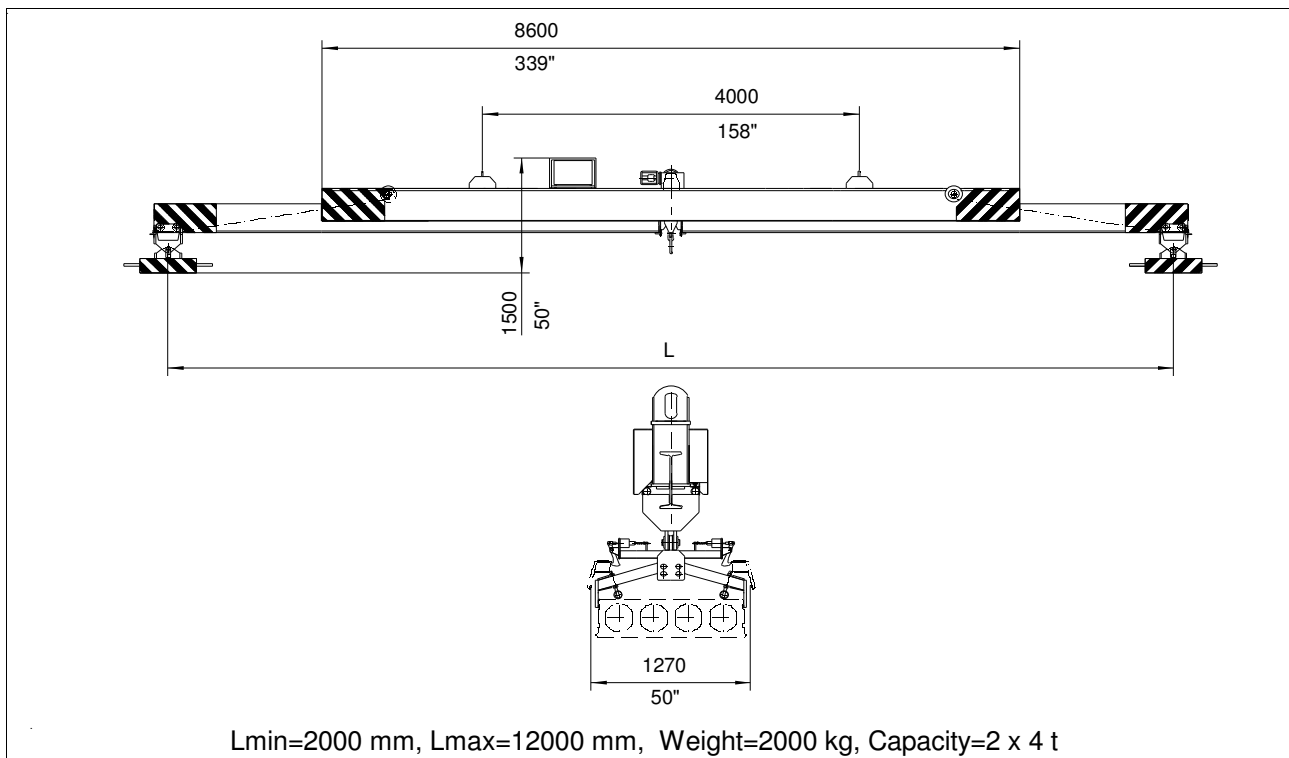
**OPTIONAL**

- Cable drum for max. 180m (590ft) cable (Item 550 1380)
- Power cable, length as request (Item 550 1420)
- Water hose drum for max. 180m (590ft) hose (Item 550 2102)
- Water hose, length as request (Item 550 2110)
- Diamond tipped blade

## TECHNICAL SPECIFICATION SHEET

Lifting Beam EN 886 / 12

ITEM 571 1300



The lifting beam has been designed to transfer the hollow core slabs from the pallets inside the plant.

The best way to transfer slabs from pallets onto transport cars is to use an overhead crane. The crane should have two hoists, with the distance between them 4.0 m and with the minimum lifting capacity of 2 x 6 t.

The construction of the lifting beam is based on a telescope structure and brackets moving electrically.

Narrow slabs (less than 1.2 m) or short waste slabs can be lifted by aid of lifting bars. The bars are included.

Telescope parts are shortened and lengthened mechanically by the aid of the clamps.

Elematic delivers the beam ready to use.

Connecting power	1.5 kW
Power supply	3P+PE, 400V, 50Hz
Power supply/USA	3P+PE, 480V, 60Hz
Clamp magnets	24 VDC

### TECHNICAL DETAILS

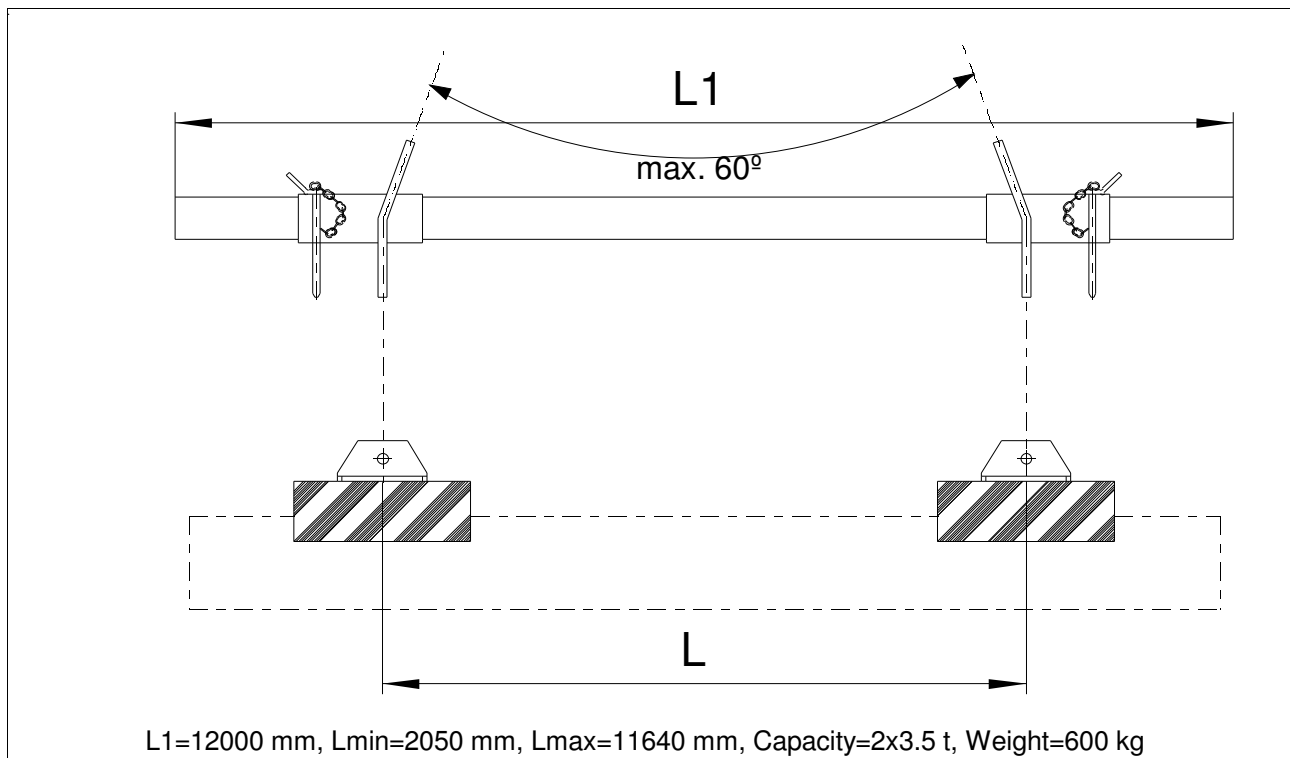
Distance between lifting clamps adjusted steplessly.

Under the lifting beam, there is a one-point lifting hanger for a maximum load of 7 t.

The beam includes two lifting clamps. Lifting clamps grip the slab mechanically. They move electrically and simultaneously.

### OPTIONAL

Remote control  
Electric connection for remote control.  
Power and control cables  
Control boxes



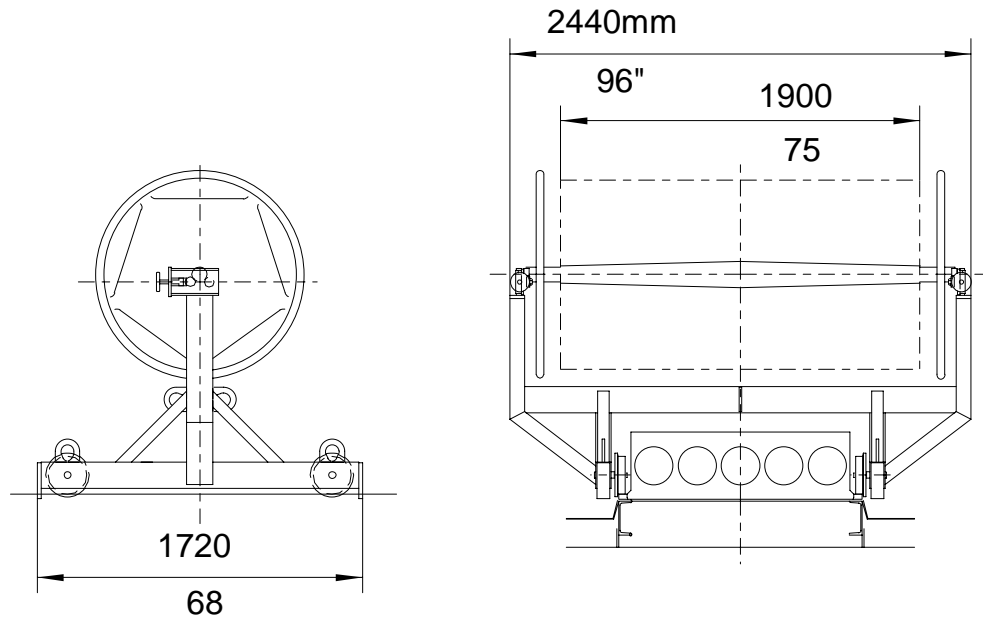
The lifting beam has been designed to transfer the hollow core slabs in construction sites.

#### TECHNICAL DETAILS

Distance between lifting points is adjusted by steps.

The beam includes two lifting clamps equipped with safety chains. They are moved manually.

Elematic delivers the beams ready to use.

**HC-SLAB COVER ROLLER EL 662 / 1.9, MANUAL**
**Item 582 2000**

**DESCRIPTION**

The cover roll makes the handling of the HC-slab cover easier.

A steel construction.

**TECHNICAL DETAILS**

Length	2300 mm
Diam.	D=1100 mm
Core diam.	150 mm
Weight	235 kg
Cover length, max.	1900 mm

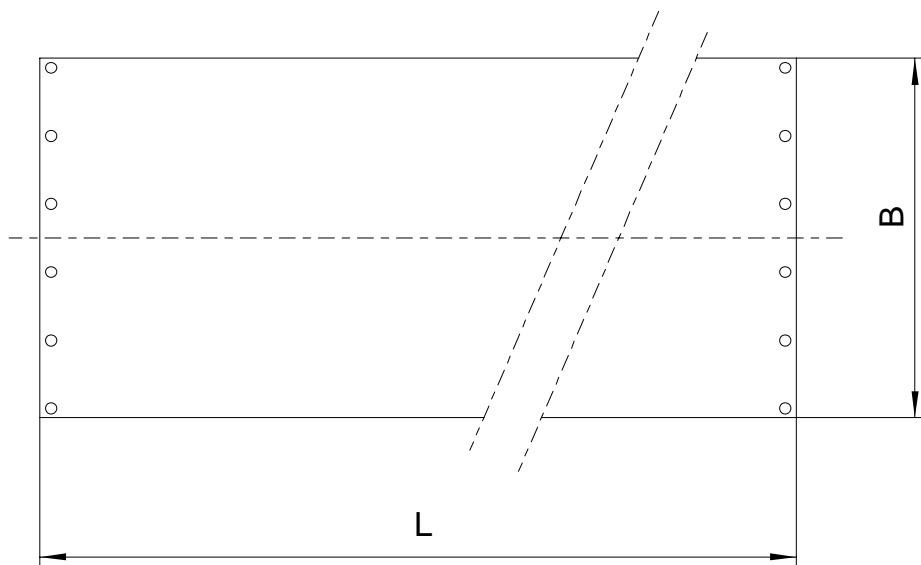
**OPTIONAL**

Rolls for other widths



HC-SLAB COVER EL 381 / 1.9, L.M

Item 582 2100



DESCRIPTION

The cover spreaded on top of the extruded slab prevents moisture and heat losses. This accelerates the heating process and reduces surface cracks.

Fastening holes are made at both ends of the cover.

Length of the cover should be 2 m longer than the casting bed.

TECHNICAL DETAILS

Width of the cover	1900 mm
(sufficient for slabs with height up to 400 mm)	
Material	PVC-based
Weight	550 g/m <sup>2</sup>
Thickness	0.5 mm

OPTIONAL

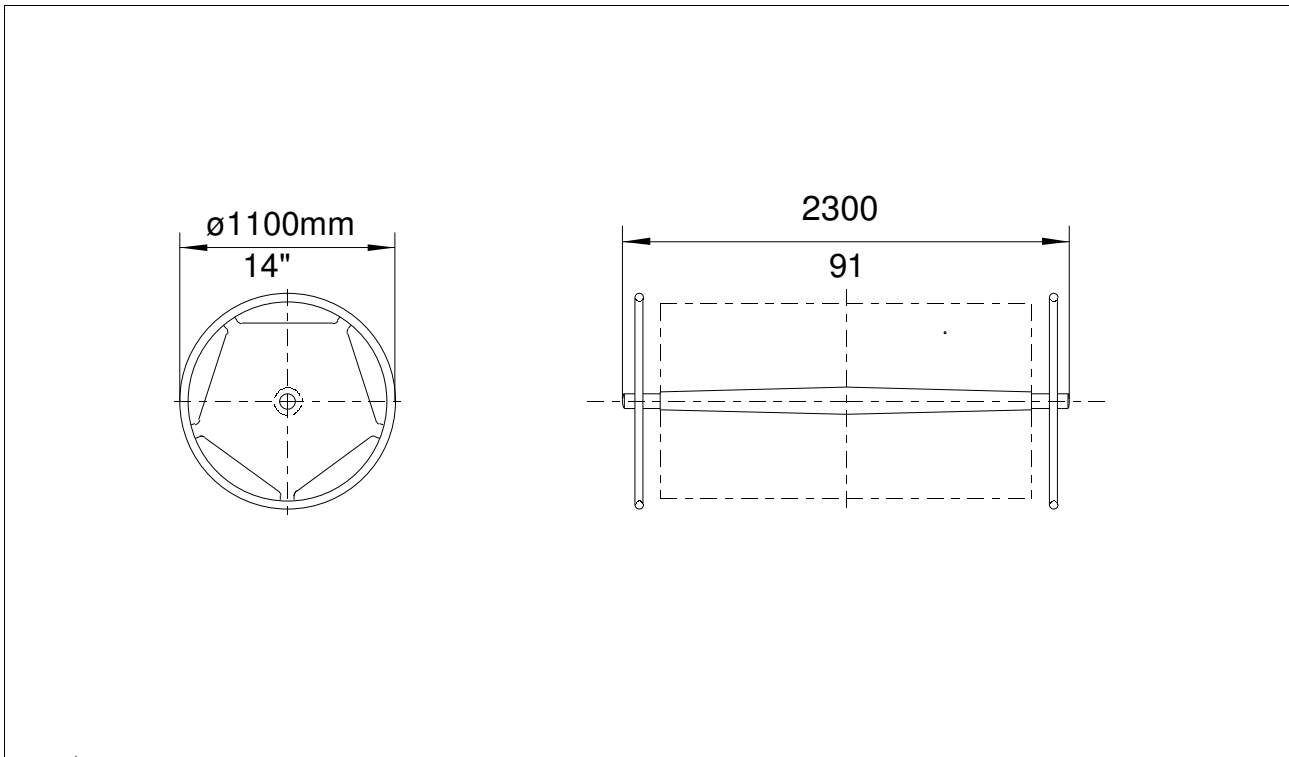
Other widths





**TECHNICAL SPECIFICATION SHEET**  
**HC-slab Cover Roll**

**ITEM 582 2200**



The cover roll makes the handling of the HC-slab cover easier.

A steel construction.

**TECHNICAL DETAILS**

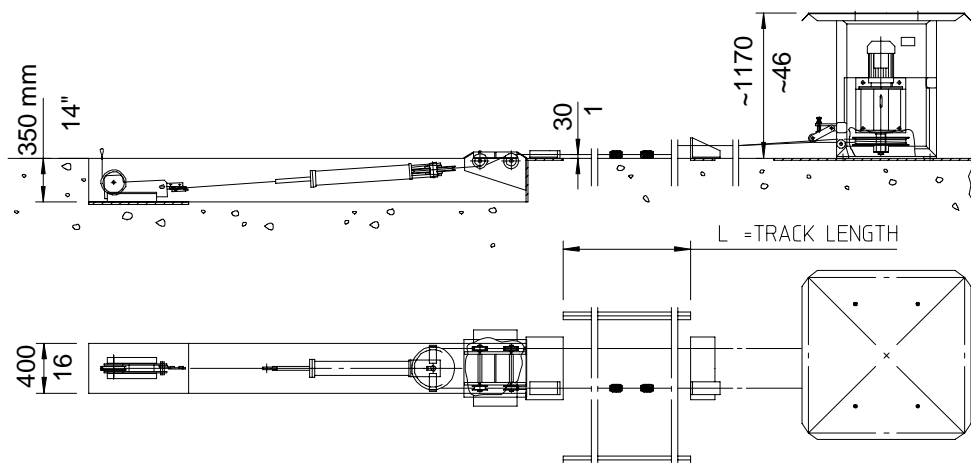
Length	2300 mm
Diam.	D=1100 mm
Core diam.	150 mm
Weight	235 kg
Cover length, max.	1900 mm

**OPTIONAL**

Rolls for other widths

## PULLING DEVICE FOR TRANSPORT WAGON, EN 875

Item 447 1100



## DESCRIPTION

- The pulling device for transport wagon has been designed for pulling the wagons loaded with precast units out of the production hall to the storage area and for returning the empty wagons back to the hall. The pulling device is radio controlled.
- The transport movement of the waggons follows by aid of two pulling connectors fastened to the steel wire. The steel wire can be driven in two directions.
- The return pulling speed is double compared with working speed proper. The access of the pulling connector to the driving pulley and to the bend pulley has been prohibited by mechanical stoppers.
- The gear motor driven pulling device has been placed outdoors in the storage area. The steel wire-tightening device, equipped with a bend pulley, has been placed in a pit in the production hall floor.

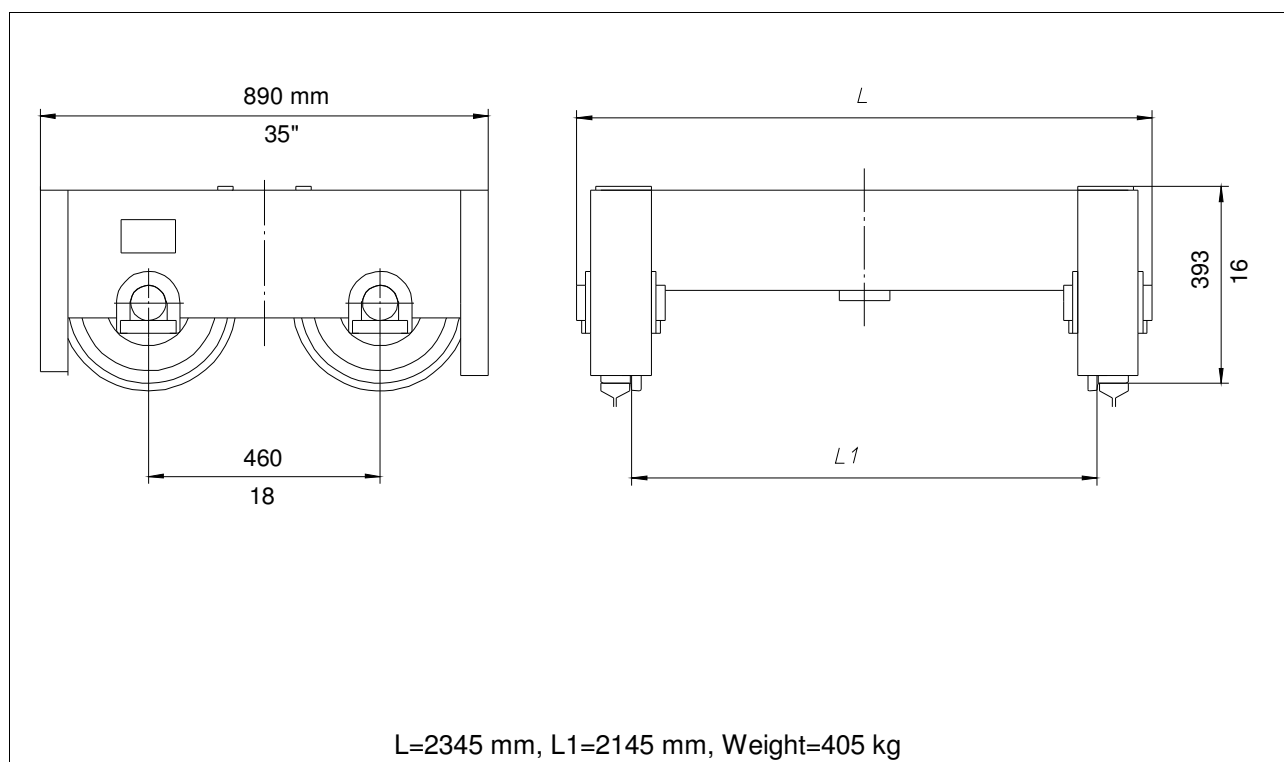
## TECHNICAL DETAILS

Pulling speed approx.	0.27 m/s
Returning speed approx.	0.54 m/s
Max momentary pulling power	20 kN
Max continuous pulling power	13 kN
Pulling wire diameter	16 mm
Connecting power	5.5 kW
Power supply	3P+PE, 400 V, 50 Hz
Power supply/USA	3P+PE, 480 V, 60 Hz

# TECHNICAL SPECIFICATION SHEET

Transport Wagon EN 871 / 2.4 pair

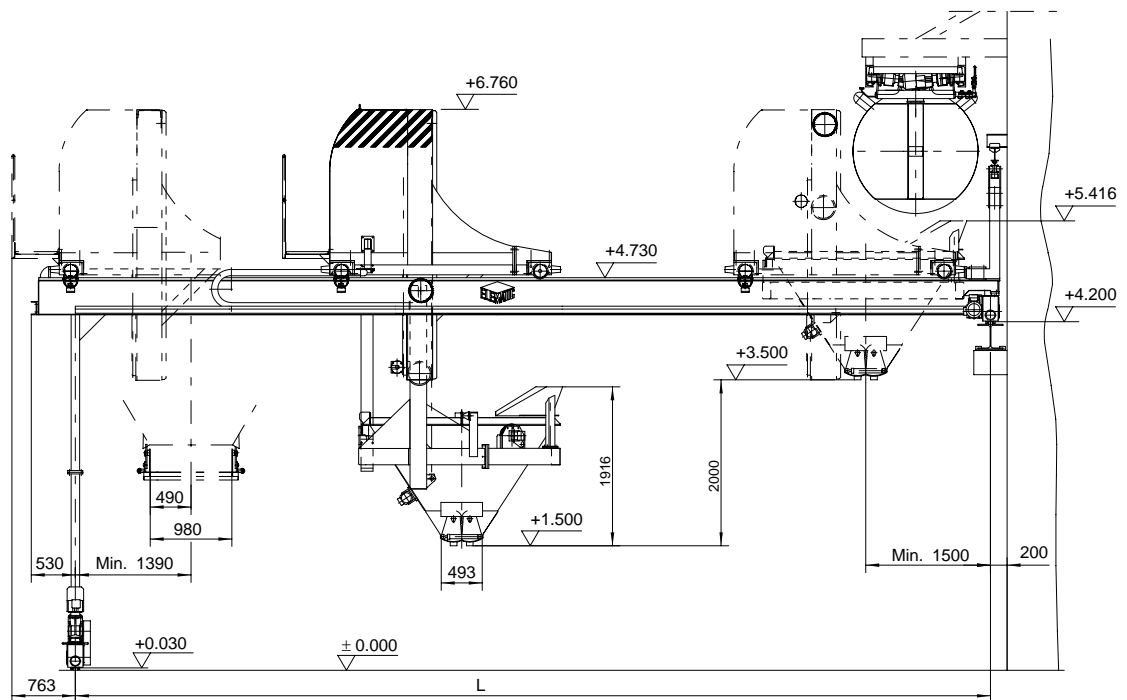
ITEM 576 1200



The transport wagons are used for transporting of precast units from the hall to the storage area.

A steel construction equipped with four wheels. The wheels are equipped with bearings.

The carrying capacity of a pair of transport wagons is 50 t.

**CASTING MACHINE EB 2301 / 11 SKELETON**
**Item 231 1585**

**DESCRIPTION**

- The half-portal type casting machine provided with sector gates has been designed for dosing of concrete into beam molds and for intermediate storing of concrete between the concrete transport line and the extruder.
- The sector gates are hydraulically operated.
- Lifting and rotating of casting bucket are hydraulically operated.
- The casting bucket has been provided with a vibration motor.

Lifting speed of casting bucket	0.09 m/s
Concrete discharge opening	490 x 980 mm
Rotation of casting bucket	90°
Rotation speed of casting bucket	90°/10 s
Bridge traveling speed	max. 0.5 m/s
Traveling speed of bucket	max. 0.5 m/s
Connecting power	16 kW
Power supply	3P+PE, 400V, 50 Hz
Power supply/USA	3P+PE, 480V, 60 Hz
Radio controlled	

**OPTIONAL**

Automation of skeleton casting machine Item 220 8745  
 Power supply to the extruder ( $P_{\max} = 50$  kW) Item 220 8750  
 Power supply cables, trolleys, etc. or current conductor rails  
 Traveling rails

**TECHNICAL DETAILS**

Capacity, compacted concrete	2.0 m <sup>3</sup>
Water volume of casting bucket	2.9 m <sup>3</sup>
Span length (L)	11 000 mm
Lifting movement of casting bucket	2000 mm
Weight	9 000 kg

**AUTOMATION FOR SKELETON CASTING MACHINE  
EB2301 AND EB2321**

**Item 220 8745**



**DESCRIPTION**

- Automation of the skeleton casting machine makes the use of skeleton casting machine possible with automatic extruder operation.
- Automatic functions:
  - fetching of concrete from the shuttle
  - dosing of concrete into Elematic extruder or slipformer
  - following-up of extruder or slipformer (one casting direction)
  - the amount of concrete in the hopper of the casting machine is defined by means of a load cell
- The delivery includes:
  - proto cells for following up of extruder
  - equipment for measuring of concrete surface level in the extruder hopper
  - limit switches for identification of casting beds
  - safety frame in lower part of concrete hopper
  - load cell of concrete hopper
  - needed cables and programs

**TECHNICAL VALUES**

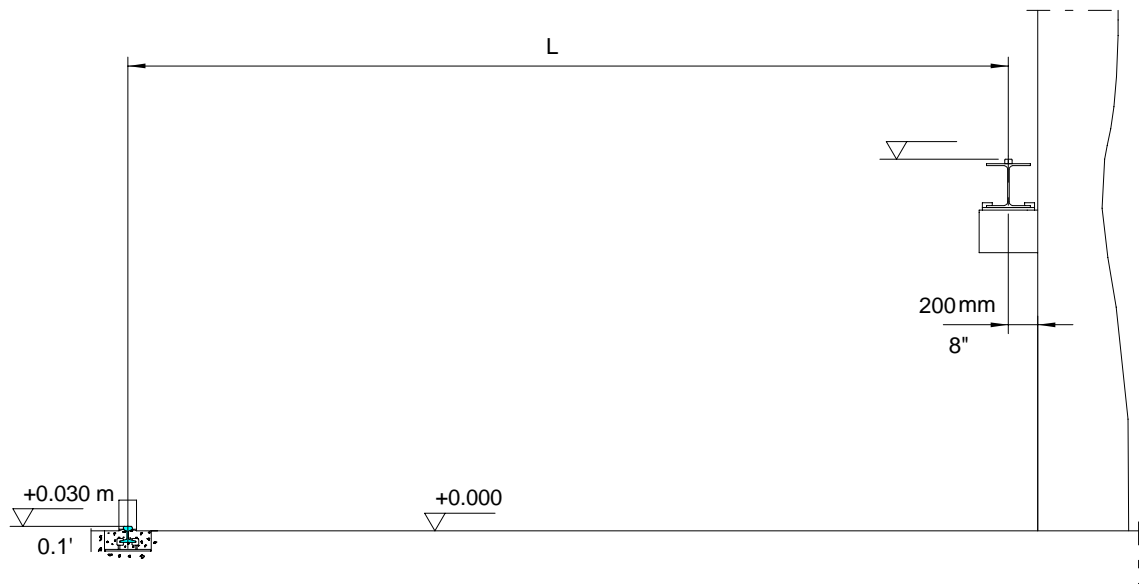
Power supply	3P+PE, 400V, 50Hz
Power supply/USA	3P+PE, 480V, 60Hz

**OPTIONAL**

Power supply for extruder ( $P_{\max} = 50 \text{ kW}$ )  
Item 220 8750

**TRACK EB 870 / 6-22 TRACK M (HALF PORTAL, SUPPORT DIST.6)**

**Item 220 5211**

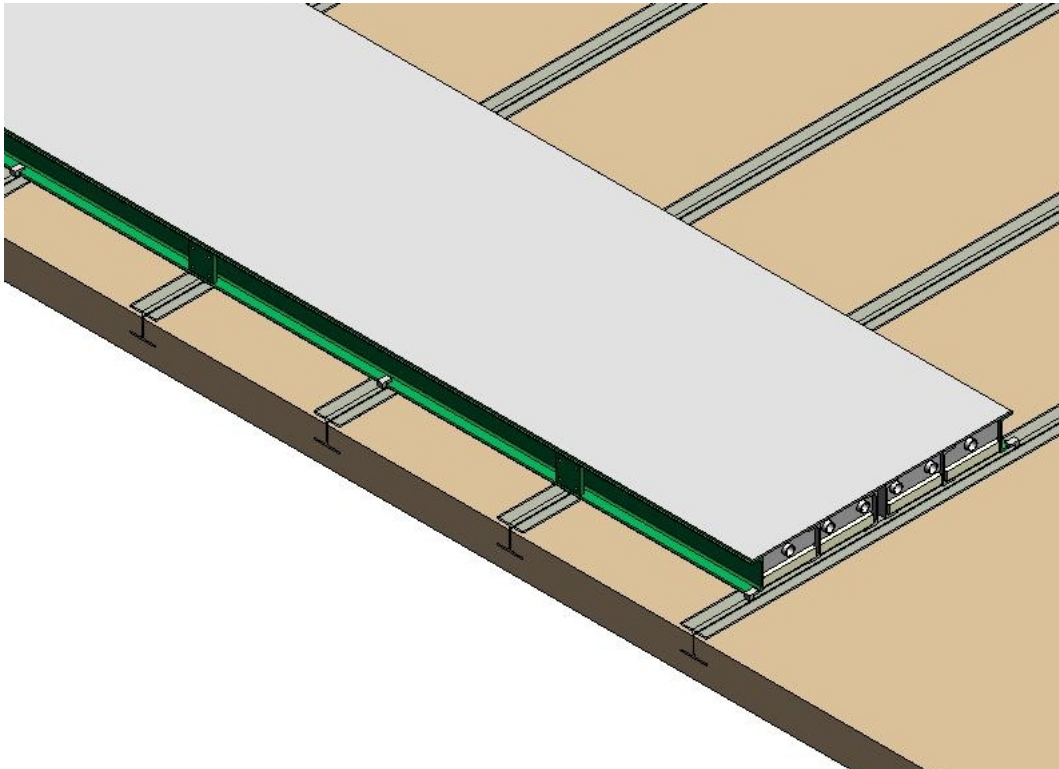


**DESCRIPTION**

- Track for a half-portal type casting machine and overhead bucket gantry with the track gauge L of 6-22 m.
- The height of the track is case sensitive.
- The distance between track supports is max. 6 m (the distance between the columns).
- The rail is installed on the floor.

## CASTING BED FOR BEAMS

Item 621 5010



### DESCRIPTION

- The bed is designed for the production of columns and beams that can be either prestressed or reinforced.
- At both ends of the bed there are prestressing abutments (option).
- Sliding fastening is used for fixing the bed to the beams located on the hall floor.
- Length of the bed is determined according to the customers' requirements.
- Bed surface is made of straight rolled steel sheet and welded to the frame construction.
- The bed has longitudinal U-profiles.
- Fastening plates for fastening of side forms are attached to the outer surface of the edge beams of the bed. The c/c spacing of the plates is 2000 mm.
- Thickness of the surface plate is 10 mm.
- The maximum load of the bed for HI and I beam production is 1200 kg/m.
- The maximum width of the product to be cast is 1200 mm
- Heating pipes are installed under the surface of the casting bed. Heating medium is by hot water.
- The bed shall be provided with a 45-mm mineral wool or polystyrene insulation.
- The bed is delivered in 12-m long sections.

### TECHNICAL DETAILS

Width	1410 mm
Height	170 mm
Weight	approx. 274 kg/m

### OPTIONAL

Prestressing abutments EL233/750 t, pair  
(Item 565 2450)  
Basic side forms H=600 mm, L=12 m, pair  
(Item 621 5110)  
Basic side forms H=800 mm, L=12 m, pair  
(Item 621 5160)

Heightening side forms H = 200 mm, L = 12 m. pair  
(Item 621 5190)

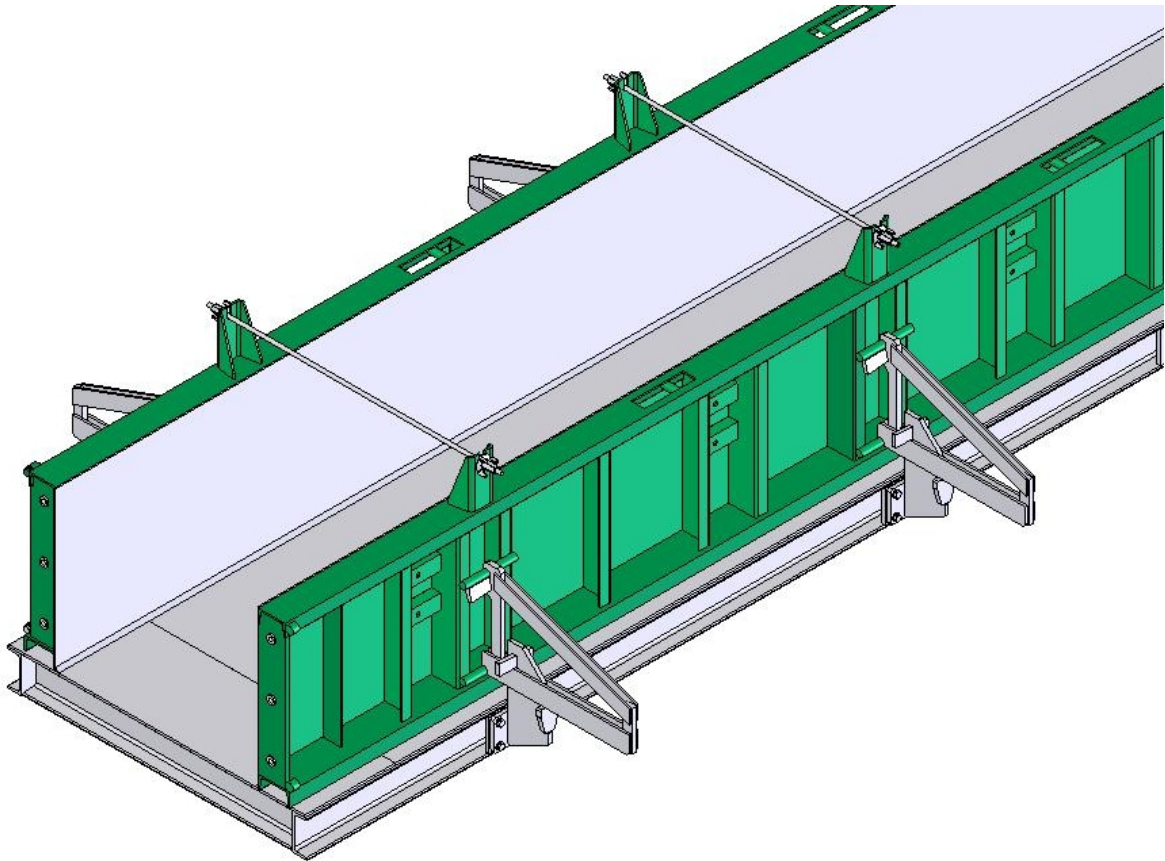
Corbel box H=600, L=2 m, pair  
(Item 621 5310)  
Corbel box H=800, L=2 m, pair  
(Item 621 5310)

Blockout box H=400, B=200mm, L = 12 m, pair  
(Item 621 5220)

Support triangle for fixing of side forms, pair 0 - 350  
(Item 621 5510)  
Support triangle for fixing of side forms, pair 0 - 200  
(Item 621 5520)

SPECIFICATIONS ARE SUBJECT  
TO CHANGE WITHOUT NOTICE



**BASIC SIDE FORM H=600 mm, L=12 m, PAIR**
**Item 621 5110**

**DESCRIPTION**

- Concrete beams of different heights can be cast on a casting bed for beams or on a skeleton casting bed by means of basic side-forms.
- Basic side-forms are attached to the casting bed with support triangles (Item 621 5510), and locked in place with wedges.
- Side forms are stripped before removing the precast products and refurbishing the mold.
- L-beams, inverted T-beams or corbelled columns can be cast when blockout boxes or corbel boxes are attached to the basic side forms.
- Basic side-forms can be heightened by mounting heightening side-forms on top of them.
- Basic side-form has chamber fillet in its bottom edge and the top edge can be chamfered by means of a magnetic fillet available as option.
- The delivery includes a pair of basic side-forms, connecting bars of the upper edge and their fastening lugs.

**TECHNICAL DETAILS**

Height	600 mm
Length	12000 mm
Width	146 mm
Weight, approx.	170 kg/m / pair

**OPTIONAL**

Basic side forms H=600 mm L=2 m, pair  
(Item 621 5120)

Basic side forms H=600 mm L=6 m, pair  
(Item 621 5130)

Support triangle for fixing of basic forms, 0 - 350  
(Item 621 5510)

Support triangle for fixing of basic forms, 0 - 200  
(Item 621 5520)

Corbel box H=600, L=2 m, pair (Item 621 5210)

Heightening side forms H = 200 mm, L = 12 m. pair  
(Item 621 5190)

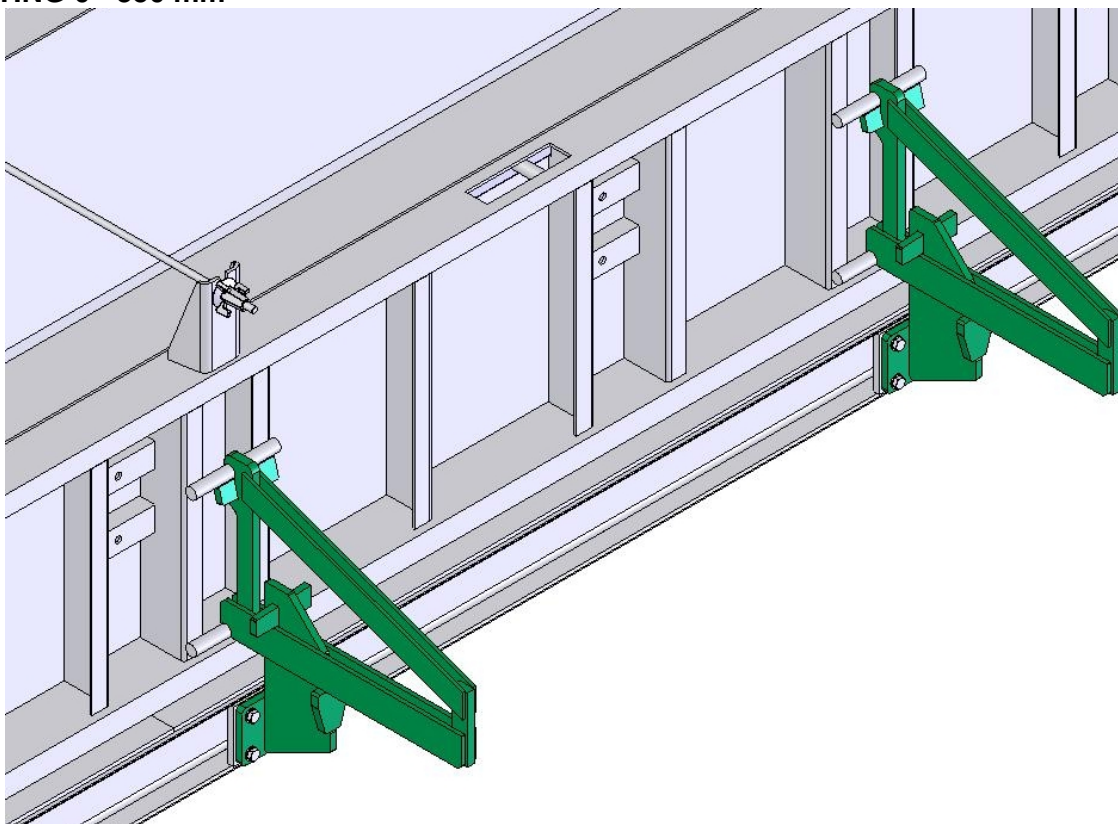
Blockout box H=400, B=200mm, pair (Item 621 5310)  
Magnetic chamfer fillet 15 x 15 (Item U261058)

**SPECIFICATIONS ARE SUBJECT  
TO CHANGE WITHOUT NOTICE**



**SUPPORT TRIANGLE FOR FASTENING OF SIDE FORMS  
ADJUSTING 0 - 350 mm**

**Item 621 5510**



**DESCRIPTION**

- The support triangle serves for fixing of basic side-forms to the casting bed for beams or skeleton casting bed.
- Basic side-forms can be laterally adjusted by 0 - 350 mm/side by means of the support triangles.
- Fastening plates for fixing of support triangles, spaced at c/c 2000 mm, are attached to the outer edges of the casting beds.
- Locking of side forms with taper pins.
- Counter parts of the support triangles are welded to the basic side-forms.

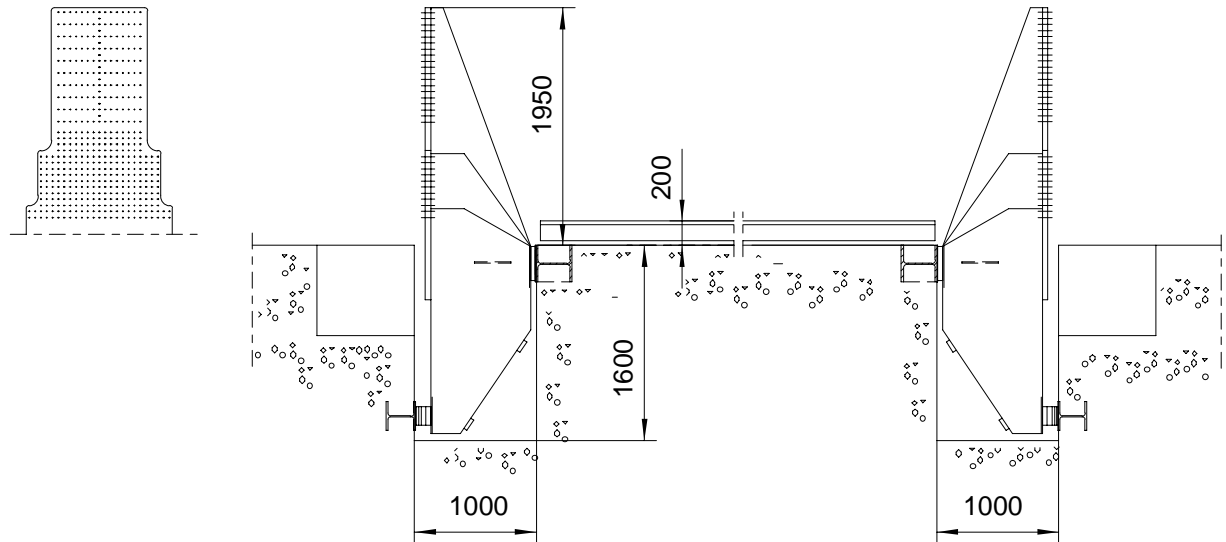
**TECHNICAL DETAILS**

Width	660 mm
Height	660 mm
Lateral adjustment range (infinite)	350 mm
Weight, approx.	28 kg/pc

**OPTIONAL**

**STRESSING ABUTMENT EL 233 / 750 SKELETON, 1 PAIR**

**Item 565 2450**



**DESCRIPTION**

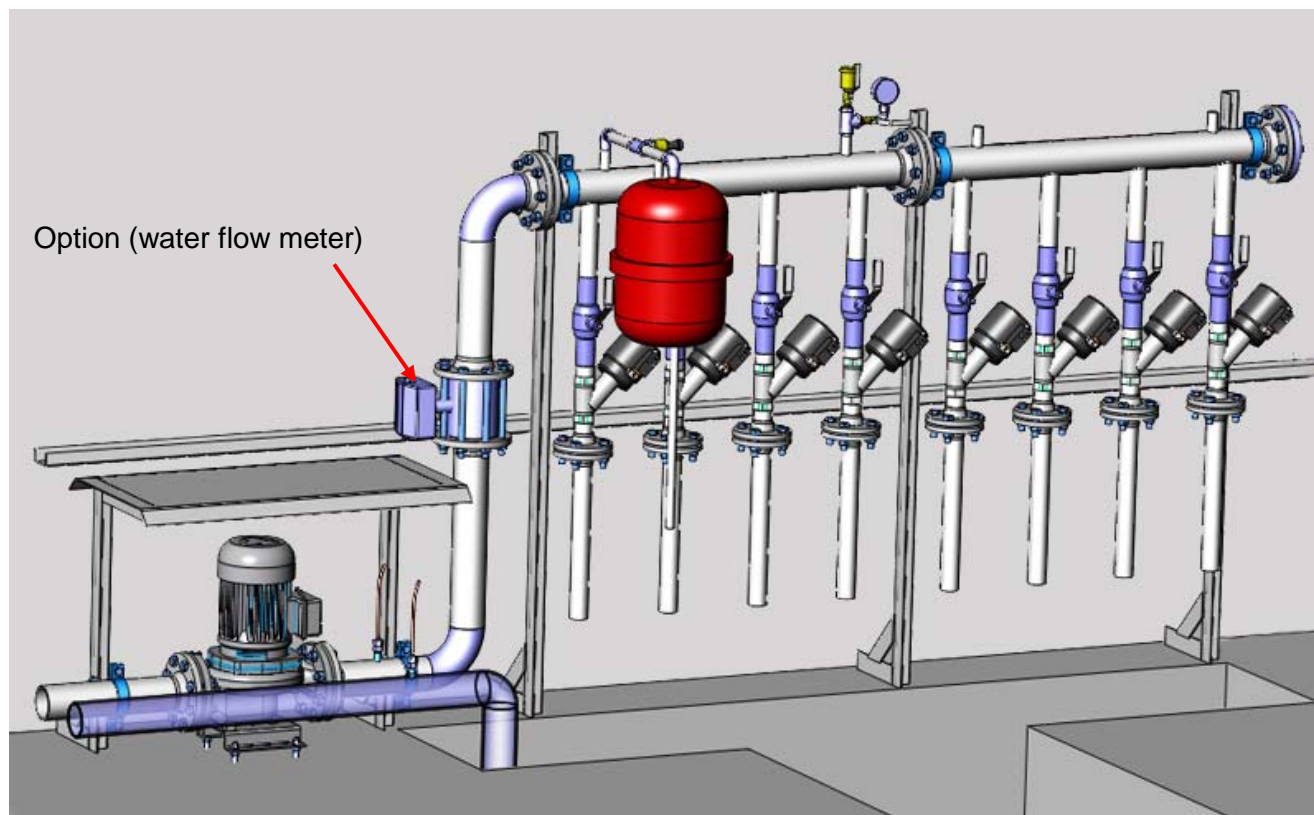
- The stressing abutment is designed for holding the stressing strands of the hollow core slabs and beams.
- One pair of stressing abutments is needed for each casting bed.
- The abutments at both ends of a casting bed (so called active and passive ends) are of same construction.
- The abutments are mounted in a concrete foundation.
- The abutments can take a 750-ton maximum prestressing force.
- The abutments are equipped with necessary fittings.
- Stressing abutments are suitable for a single stressing device.

**TECHNICAL DETAILS**

Length	870 mm
Width	1110 mm
Height	3500 mm
Weight, pair	7180 kg

**OPTIONAL**

Single Stressing Device	(Item 565 3300)
-------------------------	-----------------

**MATURITY CONTROL PUMP SYSTEM EL 490**
**Item 586 1002**

**DESCRIPTION**

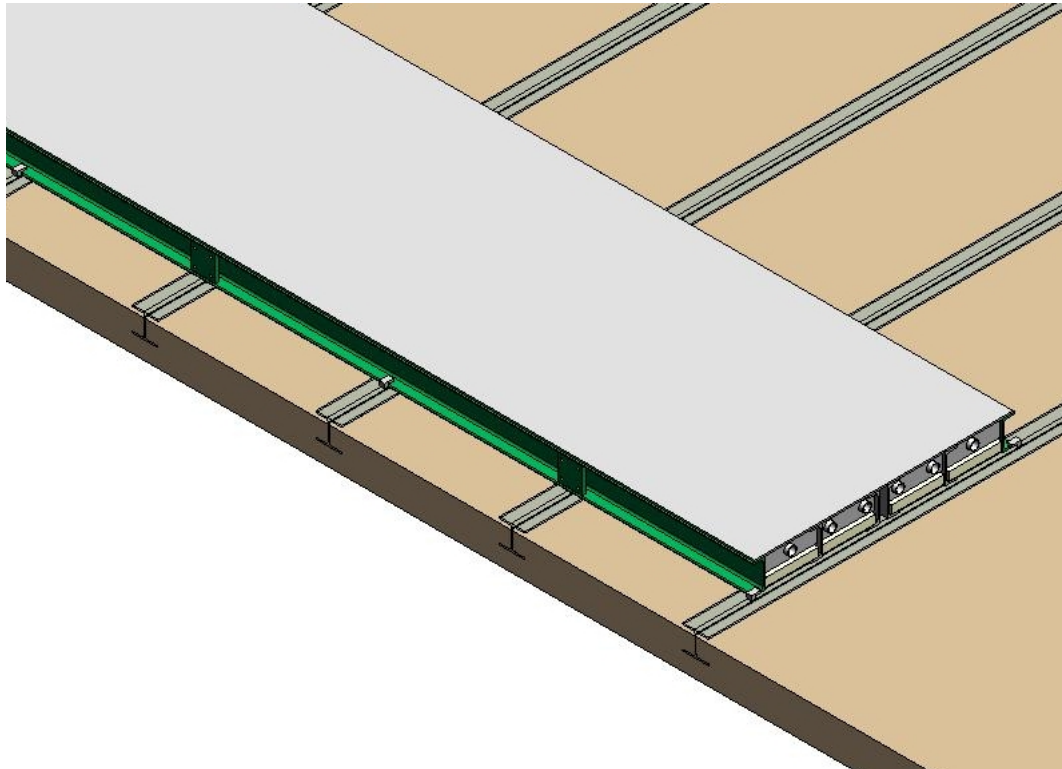
- This package includes accessories of the maturity control unit for 1-8 casting lines (6 in simultaneous working circuit) (Item 586 1001):
- A temperature sensor measures the product temperature. It is installed in a hole made in the pallet or in the mould. The sensor is fitted with an amplifier.
- Manual open / shut-off valves for maintenance purposes.
- Circulation water pump for the heating water circulating in the pallets. Intermittent heating by closing the valves.
- The measuring sensors and valves must be ordered according to the number of casting lines (Item 586 1002).
- With the maturity control pump system is always needed the maturity control device (item 586 1001).

**TECHNICAL DETAILS AND CONTENTS OF THE DELIVERY**

Sensor	2 pc/pallet
Sensor cabling max.	30 m
Recommended distance between measuring terminals	80 m
Circulating water pump	1 pc/8 pallets
Water pump cabling max.	30 m
Ball valve	1 1/4", 1 pc/pallet
Pneumatic water valve	1 pc/pallet
Fittings for manifold	1 set/ manifold
Max. distance between 1. measuring terminal and user interface	80 m

**OPTIONAL**

Water flow meter

**CASTING BED FOR BEAMS**
**Item 621 5010**

**DESCRIPTION**

- The bed is designed for the production of columns and beams that can be either prestressed or reinforced.
- At both ends of the bed there are prestressing abutments (option).
- Sliding fastening is used for fixing the bed to the beams located on the hall floor.
- Length of the bed is determined according to the customers' requirements.
- Bed surface is made of straight rolled steel sheet and welded to the frame construction.
- The bed has longitudinal U-profiles.
- Fastening plates for fastening of side forms are attached to the outer surface of the edge beams of the bed. The c/c spacing of the plates is 2000 mm.
- Thickness of the surface plate is 10 mm.
- The maximum load of the bed for HI and I beam production is 1200 kg/m.
- The maximum width of the product to be cast is 1200 mm
- Heating pipes are installed under the surface of the casting bed. Heating medium is by hot water.
- The bed shall be provided with a 45-mm mineral wool or polystyrene insulation.
- The bed is delivered in 12-m long sections.

**TECHNICAL DETAILS**

Width	1410 mm
Height	170 mm
Weight	approx. 274 kg/m

**OPTIONAL**

Prestressing abutments EL233/750 t, pair (Item 565 2450)  
 Basic side forms H=600 mm, L=12 m, pair (Item 621 5110)  
 Basic side forms H=800 mm, L=12 m, pair (Item 621 5160)

Heightening side forms H = 200 mm, L = 12 m. pair (Item 621 5190)

Corbel box H=600, L=2 m, pair (Item 621 5310)  
 Corbel box H=800, L=2 m, pair (Item 621 5310)

Blockout box H=400, B=200mm, L = 12 m, pair (Item 621 5220)

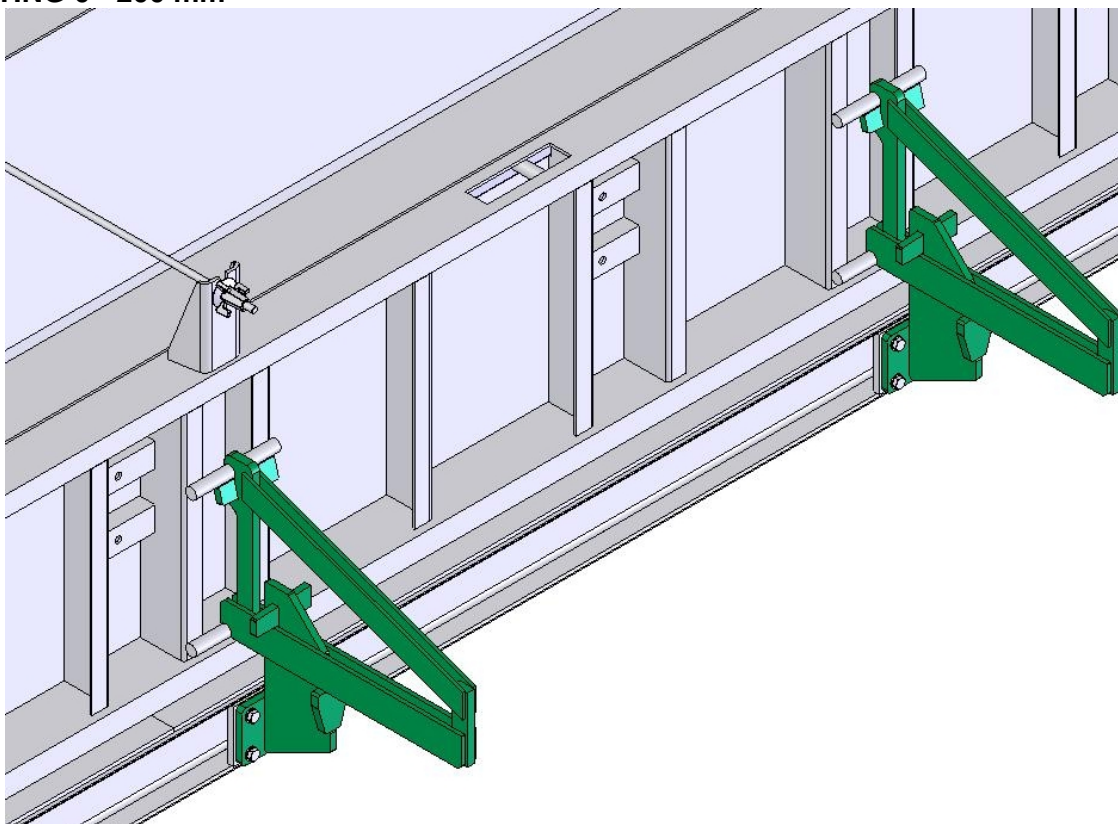
Support triangle for fixing of side forms, pair 0 - 350 (Item 621 5510)  
 Support triangle for fixing of side forms, pair 0 - 200 (Item 621 5520)

SPECIFICATIONS ARE SUBJECT  
 TO CHANGE WITHOUT NOTICE



**SUPPORT TRIANGLE FOR FASTENING OF SIDE FORMS  
ADJUSTING 0 - 200 mm**

**Item 621 5520**



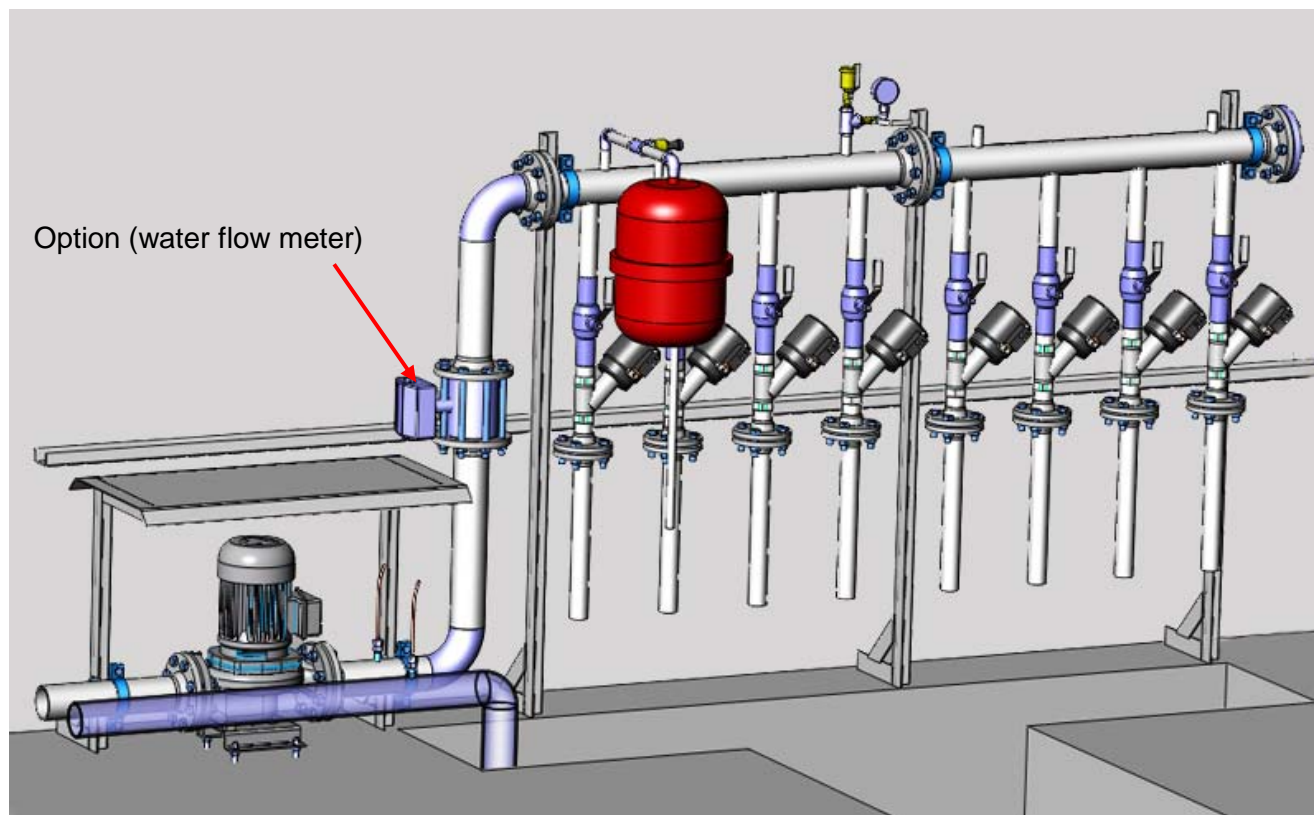
**DESCRIPTION**

- The support triangle serves for fixing of basic side-forms to the casting bed for beams or skeleton casting bed.
- Basic side-forms can be laterally adjusted by 0 - 200 mm/side by means of the support triangles.
- Fastening plates for fixing of support triangles, spaced at c/c 2000 mm, are attached to the outer edges of the casting beds.
- Locking of side forms with taper pins.
- Counter parts of the support triangles are welded to the basic side-forms.

**TECHNICAL DETAILS**

Width	510 mm
Height	660 mm
Lateral adjustment range (infinite)	200 mm
Weight, approx.	25 kg/pc

**OPTIONAL**

**MATURITY CONTROL PUMP SYSTEM EL 490**
**Item 586 1002**

**DESCRIPTION**

- This package includes accessories of the maturity control unit for 1-8 casting lines (6 in simultaneous working circuit) (Item 586 1001):
- A temperature sensor measures the product temperature. It is installed in a hole made in the pallet or in the mould. The sensor is fitted with an amplifier.
- Manual open / shut-off valves for maintenance purposes.
- Circulation water pump for the heating water circulating in the pallets. Intermittent heating by closing the valves.
- The measuring sensors and valves must be ordered according to the number of casting lines (Item 586 1002).
- With the maturity control pump system is always needed the maturity control device (item 586 1001).

**TECHNICAL DETAILS AND CONTENTS OF THE DELIVERY**

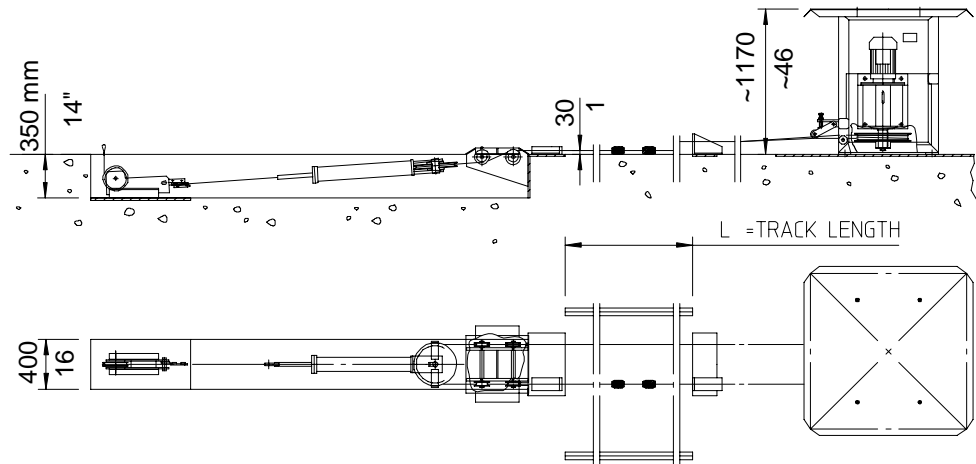
Sensor	2 pc/pallet
Sensor cabling max.	30 m
Recommended distance between measuring terminals	80 m
Circulating water pump	1 pc/8 pallets
Water pump cabling max.	30 m
Ball valve	1 1/4", 1 pc/pallet
Pneumatic water valve	1 pc/pallet
Fittings for manifold	1 set/ manifold
Max. distance between 1. measuring terminal and user interface	80 m

**OPTIONAL**

Water flow meter

**PULLING DEVICE FOR TRANSPORT WAGON, EN 875**

**Item 447 1100**



**DESCRIPTION**

- The pulling device for transport wagon has been designed for pulling the wagons loaded with precast units out of the production hall to the storage area and for returning the empty wagons back to the hall. The pulling device is radio controlled.
- The transport movement of the waggons follows by aid of two pulling connectors fastened to the steel wire. The steel wire can be driven in two directions.
- The return pulling speed is double compared with working speed proper. The access of the pulling connector to the driving pulley and to the bend pulley has been prohibited by mechanical stoppers.
- The gear motor driven pulling device has been placed outdoors in the storage area. The steel wire-tightening device, equipped with a bend pulley, has been placed in a pit in the production hall floor.

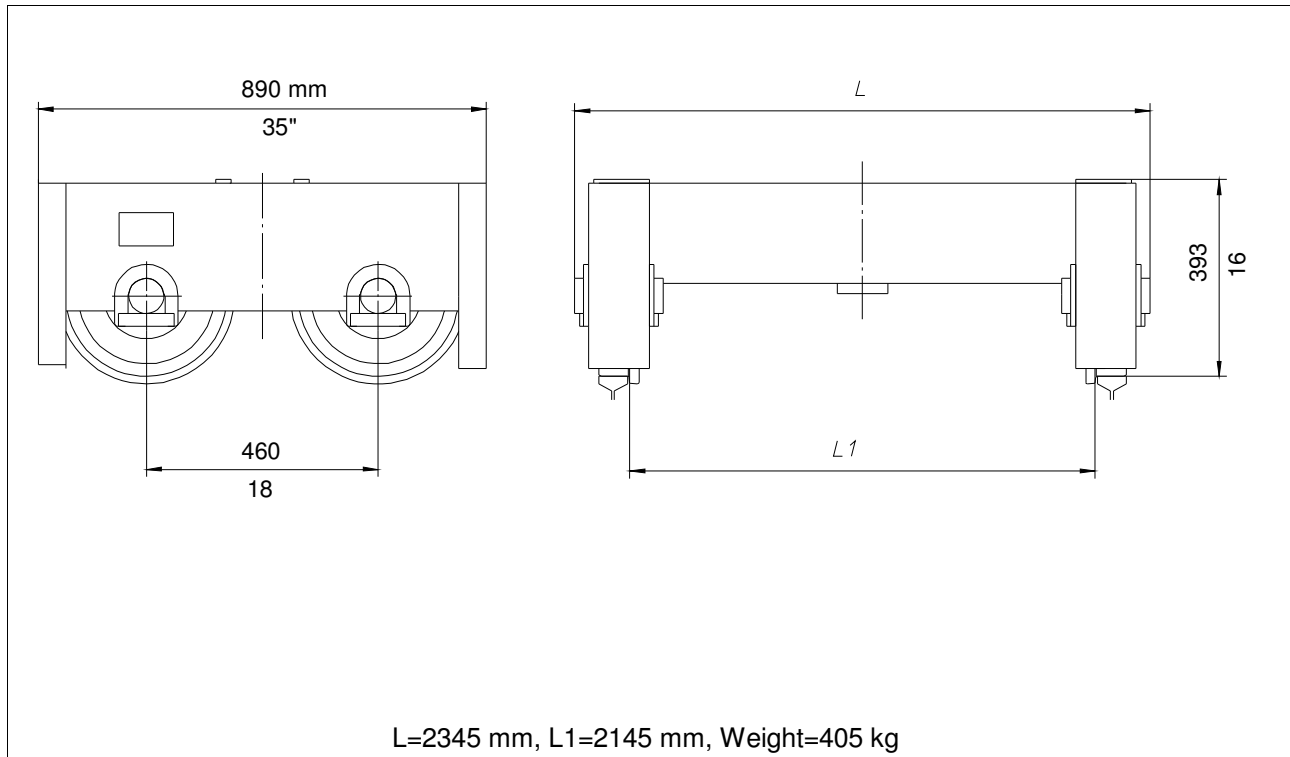
**TECHNICAL DETAILS**

Pulling speed approx.	0.27 m/s
Returning speed approx.	0.54 m/s
Max momentary pulling power	20 kN
Max continuous pulling power	13 kN
Pulling wire diameter	16 mm
Connecting power	5.5 kW
Power supply	3P+PE, 400 V, 50 Hz
Power supply/USA	3P+PE, 480 V, 60 Hz

## TECHNICAL SPECIFICATION SHEET

Transport Wagon EN 871 / 2.4 pair

ITEM 576 1200



The transport wagons are used for transporting of precast units from the hall to the storage area.

A steel construction equipped with four wheels. The wheels are equipped with bearings.

The carrying capacity of a pair of transport wagons is 50 t.



## Appendix 4

**ELEMATIC GENERAL TERMS AND CONDITIONS**

These General Terms and Conditions shall form part of the Agreement and shall be read in context with the Main Agreement and its other Appendices.

**1. Third Party Suppliers**

In order to meet its delivery obligations hereunder, ELEMATIC may procure, at its discretion, any portion of the Equipment from any third party supplier. Even in such case ELEMATIC shall be liable for all portions of Equipment it has purchased from a third party supplier.

**2. Limitation of Liability**

ELEMATIC's liability with respect to any claim relating to the Agreement shall be limited to repair or replacement of the Equipment. Buyer shall be entitled to no other remedy regardless of the form of claim or cause of action, whether based on contract, negligence, strict liability or otherwise.

In no event shall ELEMATIC be liable for any special, punitive, incidental, indirect, consequential, collateral or other damages, including any lost profits of Buyer in connection with delays in performance or the failure of equipment to meet specifications or the terms of this agreement. It is specifically stated that in no event will ELEMATIC have any liability whatsoever for use or loss of consumable materials.

ELEMATIC's aggregate liability with respect to the equipment, or damages or defects arising from or relating to the equipment, shall be limited to the monies paid by Buyer to ELEMATIC for the Equipment manufactured by ELEMATIC.

ELEMATIC will not reimburse Buyer for any expenses incurred by Buyer in repairing or replacing defective Equipment, except for those incurred with the prior, written permission of ELEMATIC.

Any and all duties, taxes, fees or other governmental charges required to be paid in connection with the activities undertaken pursuant to the Agreement will be borne by the Party whose principle place of business resides in that country levying said duty, tax, fee or governmental charge. In no case will ELEMATIC have any liability for any income taxes outside Finland in relation to the implementation of the Agreement.

Buyer acknowledges that ELEMATIC is responsible only for the supply of certain Equipment described in Appendix 1 of the Agreement and that ELEMATIC shall not be responsible for such other requirements as bringing the Equipment into operation, including but not limited to erection of Equipment, construction works and structural design and construction of possible new parts of the building and possible alterations of the existing buildings, including foundations and any inserts therein.

### **3. Assignment**

Neither party shall be entitled to assign or transfer this Agreement and/or any rights or obligations arising therefrom to any third party without the prior written consent of the other Party. Despite the foregoing, ELEMATIC shall have the right to assign and transfer this Agreement to a company pertaining to the same group of companies.

### **4. Severance**

Should any Paragraph of the Agreement be held unenforceable or invalid under the laws of Sweden or under the laws of the country of Buyer or any political subdivision thereof, then such Paragraph will be deemed modified to the extent necessary to render it lawful and enforceable, or if such modification is not possible without materially altering the intention of the parties hereto, then such Paragraph will be deemed severed here from and the validity of the remaining Paragraph will remain unaffected thereby.

### **5. Integration**

The Agreement summarizes the negotiations of the parties and constitutes the full understanding and entire Agreement between them superseding any and all prior and written understandings or Agreements related to the equipment, parts and services referred to.

### **6. Amendments**

No term, condition, understanding or Agreement hereafter purporting to modify or vary this Agreement will be binding unless made in writing and signed by an authorized representative of the party it binds.

### **7. Captions**

The captions and headings contained in the Agreement are for convenience only and are not part of the Agreement.

### **8. Calendar**

All calendar references herein are to the Gregorian calendar unless otherwise indicated.

## **9. Design Criteria for Equipment**

All the design of Equipment shall be made according to Seller's design criteria by following the European Union norms. All measurements shall be according to SI-measurement norms.

## **10. Secrecy**

No party will disclose or publicize, except to a government or government agency at its written demand, the commercial terms of the Agreement without the prior written approval from the other party.

Buyer undertakes not to make any unauthorized disclosure of any Confidential Information regarding ELEMATIC or the Equipment.

Confidential Information shall mean any information, technical, commercial or of any other kind, especially however the technology of the Equipment, whether written or oral, except such information, which is or will be publicly known or which has come to or will come to the public knowledge in any way other than through the Buyer's breach of this secrecy undertaking.

Also non-intentional or non-negligent acts or omissions shall be considered as breaches of contract under this secrecy clause.

This clause shall remain in force for 5 years from the date of the Agreement.

## **11. Patents of ELEMATIC**

Buyer acknowledges that several patents of ELEMATIC have been taken advantage of in the Equipment. Buyer undertakes to in every way respect the patent rights of ELEMATIC.

## **12. Waiver**

Failure by either party to the Agreement to assert any of its rights upon breach of the Agreement will not be deemed a waiver of such rights either with respect to that breach or any subsequent breach, nor will any waiver be implied from the acceptance of any payment or service. No written waiver of any right will extend to or affect any other right such party may possess, nor will such written waiver extend to any subsequent similar or dissimilar breach.

## **13. Arbitration and Applicable Law**

This Agreement will be governed by and constructed in accordance with the laws of Sweden, excluding its choice of law provisions and without regard to the United Nations Convention of Contracts for the International Sales of Goods.

Buyer shall have right to only the remedies specifically stated in this Agreement. No remedy, whatsoever, including, but not limited to any adjustment, reduction, set-off, compensation for losses or alike in connection with the Agreement or any other remedy whatsoever available under the Swedish Sale of Goods Act (1990:931 or its updates), including, but not limited to the right to rescind the agreement shall be available to the Buyer.

Disputes arising out of or any way relating to this Agreement or arising otherwise from the delivery of ELEMATIC under this Agreement will be finally settled by one-man arbitration in accordance with the rules of the Arbitration Institute of the Stockholm Chamber of Commerce. The arbitration shall be conducted in Stockholm. The language of the arbitration shall be English.

#### **14. Language of the Agreement**

The language of the Agreement shall be English. All correspondence and documentation relating to the Agreement shall be drafted in English unless explicitly otherwise agreed.

#### **15. Warranty**

This warranty covers defects which appear within a period of six (6) months from the date of approval of the test run or ten (10) months from the date the equipment has been announced to be ready for shipment whichever period ends first. If the equipment has been used more intensively than 8 hours per day, these periods shall be reduced proportionally.

In case ELEMATIC has repaired or replaced the equipment under this warranty, ELEMATIC shall be liable for defects in such repaired or replaced parts of the equipment for an additional period of six (6) months under the terms and conditions of this general warranty.

Under any circumstances this warranty expires after twelve (12) months from the date of approval of the test run or from the date the equipment has been announced to be ready for shipment or from the date of delivery to the Buyer whichever period ends first.

This warranty covers defects resulting from faulty design, materials or workmanship. This warranty does not cover wearing parts, which shall be replaced from time to time in normal use. ELEMATIC shall not be liable for any other defects.

**16. Force majeure**

This delivery is subject to force majeure. Therefore circumstances beyond Seller's control, such as industrial disputes, fire, mobilization, requisition, embargo, currency restrictions, insurrection, war, shortage of transport, general shortage of material and restrictions in the use of energy, shall free the Seller from responsibility for non-fulfillment.

**17. Local taxes, dues and fees**

All local taxes, dues and fees imposed upon any equipment services or act include in this delivery are to be carried by the Buyer.

**18. Packing**

Suitable export packing is included in our prices. If/when needed, large units are dismantled to suitable units for transport. Reassembly at site is not included to our quotation.

**19. Furnishing limits of delivery**

Our delivery includes, besides the specified machinery and equipment, the additional information to be included in our delivery:

- electric wiring diagrams of machinery and equipment
- hydraulic diagrams for machinery and equipment
- service and maintenance manuals in English
- spare part lists

**20. Supervision of installation, start-up and training**

Normal working hours for ELEMATIC's technicians are 10 hours per day incl. local travelling, 6 days per week following local holidays. Flight tickets from Finland to Buyer's country are not included to the supervision & training price.

Buyer is responsible for arranging and paying for ELEMATIC Technicians' accommodation in a good 4-star European level hotel or in a well-equipped apartment in a compound. Also local transportation and other possible local costs will be paid by the Buyer.

All additional services shall be charged at ELEMATIC's customary rates, which are subject to change by ELEMATIC from time to time.

All of the necessary raw materials, labor, consumables, power, fuel, hauling equipment and operators are to be provided by Buyer and made available at no cost to ELEMATIC for test runs and other reasonable actions during the start-up period.

Before installation work can start, factory foundation must be ready, overhead cranes must be installed, power supply generators must be working, local man power & tools for the installation must be ready at site etc.

