

TECHNICAL DESCRIPTION

SOLNA C300



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General description of the Solna C300 press range

The Solna C300 is a single circumference, single width web offset press with a horizontal web lead, designed for short and medium size runs on coated stock.

The C300 has a choice of three folders, the F301, F302 and the F303. They are all equipped with jaw folder mechanism for accurate folding.

The press is available in four different cut-off sizes in combination with the F301 and F302 folders and in two cut-off sizes in combination with the F303 folder.

An installation can be made up of any number of units up to a maximum of eight. Each unit is designed on the modular principle so that additions are introduced into the press line with the minimum of interference.

Printing units

The Solna C300 press is built up by the four cylinder unit (1+1). Each unit is an independent module of low overall height with two printing couples opposed vertically but with cylinders staggered to give support to a horizontal passing web.

Frame and gear train

As optional, the lower portion of the frame can serve as a stand for a paper reel. It can be equipped with a pneumatic brake, including a dancer roller, to control the web tension, and a pneumatic reel lifting device. As an alternative, it is also possible to install a built-in automatic splicer, the SIR. For runs on coated stock, it is recommended to use a free-standing splicer, suitable for this kind of paper.

The side frames are made of high grade cast iron interconnected by a series of cross members to form a rigid structure that is bolted directly to prepared floor positions. The upper frame supports a superstructure that can contain guide rollers to carry printed webs overhead to the folder. A vertical stabilizing frame is mounted on the drive side of the printing units to further strengthen the stability of the unit to improve the printing quality.

The plate and blanket cylinder journals run in precision bearings mounted within eccentrics in the frame sides. The plate eccentrics have a special profile and are mechanically assisted to maintain a firm contact with the housing to eliminate any relative movement. The eccentrics of the blanket cylinder can be moved under the impression pressure control to accommodate any thickness of stock without alteration to the blanket cylinder diameters.

Spiral bevel gears pick up from the mid-level main drive shaft and drive the upper blanket cylinder via a unit isolating clutch. All cylinder gears are of helical cut for smooth power transmission and quiet operation. A train of steel spur gears drives the inking and dampening systems from each plate cylinder.

The removable drive side cover is oil tight to the cascade lubrication of the gear train.

The covers are sound absorptive and the bottom frames are also surrounded by covers on which there is a platform with a small ladder.

Oil lubrication

The gear train on the outside of the drive side frame is continuously lubricated by a cascade system of recirculating oil. All bearings in the side frames are individually lubricated. An oil sump is cast as part of the lower frame on the drive side and each unit has its own mechanical pump and full flow oil filter. Any pressure failure will be indicated by a flashing lamp at the operators console and at the printing unit where the failure is located.

Grease nipples for the eccentrics are conveniently grouped together.

For presses used for long runs and at high speed, it is recommended to use an optional oil cooler. This equipment chills the oil to a temperature which keeps the viscosity of the oil at a constant level. The oil cooler is placed in the oil sump on the drive side of the units and folder and has to be supplied with tempered water.

Plate cylinders

The plate cylinders are manufactured from solid steel and nickel plated for corrosion prevention.

A 0.30 (0.012") printing plate is fitted directly on the cylinder, no underpacking being necessary. The leading and trailing edges are formed on the plate bender supplied and inserted into full width plate clamps which are adjustable at either side through ± 0.5 mm (0.020") for cocking purposes. One or two half width plates can also be used. When two half width plates are used they are individually tightened but engagement of a central clutch reverts this system to a one piece clamp.

The plate cylinders are provided with facilities for lateral registration on the run of ± 3 mm (1/8") and the same amount, ± 3 mm (1/8"), in the circumferential direction. The register movements are controlled by handwheels conveniently placed on the operators side of the unit. Whilst the circumferential register range is sufficient for normal operation it is possible to reset the drive coupling 4 mm (5/32") either side of the usual position and still retain the original movement.

Circumferential and lateral register movement can be remote-controlled as optional equipment. The system is controlled from the operators console and the design allows very precise movements. An automatic colour-to-colour register system can be installed in order to control the register motors automatically.

Blanket cylinders

The blanket cylinders are manufactured from solid steel and nickel plated for corrosion prevention.

The press is designed to take a normal compressible blanket of 1.95 mm (0.077") with a single underpacking of 0.25 mm (0.010"). The combined totals are therefore 2.20 mm (0.087"). Blankets with glued aluminium bars may be purchased from suppliers. The leading edge is locked into the cylinder recess and the blanket tightened by rotating the trailing edge blanket clamp in the cylinder. The gap edges are shaped to minimise cylinder bounce.

The gap in the cylinder is 13.8 mm (9/16"). The effective printing circumference is reduced by about 16.5 mm (approx. 5/8") taking into account the full swing of the plate cylinder register movement.

Neither plate nor blanket cylinders have bearers. Printing pressure is altered on-the-run by fine adjustment of the eccentrics which regulate the distance between the blanket cylinders. Compensation for different thickness of stock can thus be made without disturbing the relationship of cylinder diameters. These have been chosen to give a true representation of the dot structure, no matter on what stock the print is made. Alterations are made using the graduated handwheel on the operators side of the press which resets the blanket cylinder eccentric positions. The datum position can always be rechecked using the setting gauge supplied with the press.

Impression and control sequences

The eccentrics of all blanket cylinders are rotated in unison by a pneumatically operated mechanical link system.

Simultaneous control of impressions by push-buttons can be made from the free-standing operators console or individually from each unit and likewise the tripping action.

The on and off movement of the ink form rollers is separated and pneumatically operated and controlled from the operators console. This means that the printer, when starting up the press, can put on the damper roller which is also pneumatically operated, and the impression and make sure that the web tension is correct before he puts on the ink form rollers and the ink feed rollers. This way the start-up is made easier and the risk of web breaks is essentially reduced.

There is also a sequential start-up; the above operations are made automatically and in a predestinated order. For a press equipped with the optional alarm display, the start sequences can be changed individually.

Unless the plate dampeners have been lowered prior to the impression button being pushed, an electrical interlock prevents the impression coming on. Conversely, the impression-off button releases the impressions, ink form rollers and ink feed but the dampeners remain on the plates until released by push-button from the operators console.

Any stop button however, throughout the press, controls the release of all elements of ink, water and impression. A similar situation occurs when the press is stopped by the action of a web break detector.

Inking units

The ink fountain roller is motorized to assure a precise setting of the speed and the amount of ink transferred to the inking system. The speed is variable and proportional to the press speed. The speed of each fountain roller is controlled from the printing unit.

The drive of the other rollers is taken from each plate cylinder. Ink is fed from the fountain roller via a feed roller with a specially designed surface pattern. This feed roller is kept at a preset distance to transfer a film of ink. However, this distance may be varied according to the properties of the ink employed. The lateral movement of the rilsan covered oscillating rollers which is adjustable in two steps of 10 or 30 mm ($3/8$ " or $1\ 3/16$ "") is taken from the same drive.

Transfer of ink is continuous and a film of ink is metered into the ink train without the use of a vibrator. This eliminates any shock transfer normally felt when a conventional vibrator is employed.

Each inking unit consists of:

- 2 rubber covered ink form rollers
- 1 rilsan surfaced rider roller
- 2 rilsan surfaced oscillating rollers
- 2 rubber covered ink transfer rollers
- 1 chromium plated steel metering roller
- 1 steel fountain roller

The upper inking unit has an additional rubber covered ink transfer roller. The plate inkers and the ink feed roller are lifted automatically when the impression is tripped.

For cleaning purposes the ink fountain can be tilted backwards. Each inking unit is also fitted with a wash-up device together with a drip tray.

The ink fountain is provided with a shut-off device which moves the whole length of the duct blade and presses it against the fountain roller. This seals the ink fountain so ink may be left in the press for long periods without any danger of leakage.

The ink fountain is as standard fitted with levers to adjust the duct blade. They are mounted at 32 mm ($1\ 1/4$ "") intervals and numbered to enable rapid adjustments. The position of the levers give the operator a visual picture how the duct blade is adjusted.

All rollers of the inking unit are supported in roller bearings. The rubber rollers can be taken out and replaced without disturbing the settings.

The inking units can be equipped with remote-controlled fountains as optional. The control system is designed in two levels. In the first level the functions are controlled by push-buttons on the master console. The second level is a high precision presetting and press function control system.

The master console gives remote control of ink quantity settings.

On the second level the presetting system contains, besides the master console above, PC computer, terminal, keyboard and plate reader.

The plate reader is a part of the presetting system and is used for fast scanning of offset litho plates to determine specific ink requirements. The scanned information can be used to obtain instant and accurate settings of the ink fountains. The information will be stored in the computer until required, even while the press is printing other jobs.

This system significantly reduces the makeready time and material waste.

It is important that the tack, viscosity etc. of the printing ink is adjusted for the press and the printing speed. Higher speed may require another body of the ink. Contact your ink supplier before the commissioning of the press.

Dampening units

The water fountain roller is driven by an electric motor with an infinitely variable speed. The speed can be controlled at the appropriate printing unit and from the operators console. In the latter case, all water fountain rollers are controlled simultaneously and depending on the press speed.

At maximum setting from the console all fountain rollers will rotate at the same speed providing that the individual unit controls are also set at maximum speed. Each unit control however, can be set to a desired value reducing this maximum to the set amount. Thereafter movement of the water feed control from the operators console alters each unit speed proportionally.

Each dampening unit has a “flood” button which overfeeds water to the dampers. The individual fountains are separately prepiped for connection to a water circulation system.

Each dampening unit consists of:

- 1 rubber covered plate roller with 3M sleeve
- 1 chromium plated oscillating roller
- 1 rubber covered feed roller with stockinette sleeve
- 1 chromium plated fountain roller

In the standard performance of the press the dampening system is supplied with water from a water circulating unit consisting of a tank with a filter and a pump.

The water circulating system can be extended with an optional automixer which, when correctly adjusted, automatically mixes the water and fountain solution to the correct pH value. Each water circulating unit will in this case be supplied with float valves which keep the water in the tanks at a preset level.

The press can also be equipped with a refrigerated water circulating system as an option. The system includes a central refrigerated water tank, filters, pumps and one automixer.

A spray dampening system can be delivered as an optional equipment on special request.

Dampening water and additives

Corrosion in an offset press is very dependent on the constitution of the dampening fluid, where e.g. a high percentage of salts implies a higher receptivity to corrosion.

The pH-value of the dampening fluid is generally within the range of 4.8 – 6.0, obtained by stabilizing substances, acids and alkalines keeping in balance (buffering). The manufacturer's directions for dosing must be strictly followed.

Note that, if not otherwise restricted to the printing process, the pH-value may well be over 6.0, but must not be lower than 4.8.

The dampening fluid substances below should be restricted to the following, if not, the Solna warranty on parts will not apply.

Halogenides esp. chlorides	max. 25 mg/l
Sulphates	max. 50 mg/l
Nitrates	max. 20 mg/l

Unit controls

The operating side frame cover is the principal regulating area on the printing unit, displaying both electrical and mechanical controls. The basic electrical controls are duplicated in two positions, one on the inward and one on the outward face of the unit, with respect to paper travel. They contain a stop button, an inch forward and an inch reverse button (hold-to-run) and are placed to be within easy reach for working across the back or the front of the unit. In addition the outward facing station has a control for impression movement and also a run button.

On the side frame cover is a control box containing controls for the dampening fountain roller, the ink fountain roller, the movement of the inking form rollers, the dampening form roller, the ink metering roller and the printing impression, a stop button and warning lamps.

On the operators side of the unit are also handwheels with indicators for setting the circumferential and lateral registers as well as for the impression pressure.

The printing unit is equipped with lamps placed on the bottom frames which light up the lower inking and dampening units.

The optional web break detectors are of an infra-red type.

Interlocked safety guards are in accordance with European safety regulations, for instance that, when a guard is opened, the press can be inched forwards or backwards, when the hold-to-run button is pressed, only from that particular place. The safety guards cover the inking and dampening rollers.

Printing unit superstructure

The superstructure of the Solna C300 is designed to carry optional web lead rollers in the case, more webs than one are supposed to be run.

The superstructure carries trunks on both sides of the press. The trunk on the operators side contains the pipes for air supply and the drive side trunks contain the electrical cables.

Standard equipment – Printing units

- Plate locking device accepting full and half width plates
- Manual adjustable on-the-run circumferential and lateral plate register
- While running printing pressure adjustments
- Tilt away lever operated ink fountains
- Infinitely variable driven ink fountain roller speed
- Infinitely variable driven water fountain roller speed
- Pneumatically operated ink/dampening form rollers and ink feed rollers
- Film dampening system and set of 3M sleeves
- Sound absorptive covers
- Basic safety guards
- Safety guards covering ink and dampening rollers
- Washing-up device per colour deck
- Complete set of ink and damper rollers
- Complete set of rubber blankets
- Light fittings
- Internal electrical system
- Rider roller on second ink form roller

Additional equipment – Printing units

- Pneumatically operated disc brake and dancer roller
- Pneumatic reel loading device
- Air expanding reel shaft
- Reel insert device for reel trolley
- Built-in automatic splicer including 2 reel shafts
- Motorized circumferential and lateral plate register
- Ink agitators
- Oil cooling device
- Web break detector
- Remote-controlled ink fountains
- Presetting system for remote-controlled ink fountains
- Automatic colour-to-colour register
- Set of 3M sleeves

Folders

F300 folders

The F300 is a combination jaw folder for maximum four webs with a tabloid cross fold and with chopper length fold (quarter fold) and a provision for an additional cylinder cross fold (double parallel). The ratio of the cylinder diameter including the double parallel cylinder is 1:2:2:1.

For the Solna C300 there are two different models, F302 and F303.

Folding mechanisms – F302 folder

The knife cylinder, cutting once per revolution, is fitted with sound absorbing cheek wood material, reducing the overall folder noise level.

The folding and jaw cylinders are twice the diameter of a printing cylinder. The cut signature is held on pins and pushed into steel jaws by a tucker blade forming the tabloid fold. The position of the tucker blades and jaws may be altered to provide a maximum lap of 10 mm (3/8").

The signature can now be released directly to the delivery or stripped from the jaw cylinder by a set of fingers and transported between tapes to the quarter fold front stops. Here a rotating blade forces the signature down between rollers to form a second length fold, the quarter page fold. One movement of a lever operates the stripping fingers and engages the quarter page fold.

The whole of the quarter page folding mechanism can be moved sideways to allow the fold to remain central with a narrower web, corresponding to a minimum web width of 740 mm (29 1/8"). By the same means an overlap or underlap of 10 mm (3/8") can be made to the signature. The minimum web width will then be limited to 760 mm (29 7/8").

An optional folding cylinder can be installed above the jaw cylinder to provide a double parallel fold to the signature. Here again, a 10 mm (3/8") maximum lap can be made on the product.

Superstructure – F302

The superstructure of the F302 folder is equipped with one integrated motorized cut-off compensator as standard for the first web. Additional cut-off compensators for the rest of the webs are placed on each printing unit. The cut-off compensators are controlled from the operators console. A second cut-off compensator can be installed in the folder superstructure as an option, suitable for a commercial press running with a maximum of two webs.

The draw roller section is an “S” wrap arrangement of two rollers per web of which one is driven. The draw roller section is mounted in an angle pointing upwards, to accommodate an easier web lead.

The design of the superstructure allows a maximum of four webs to enter the left side of the folder.

The draw rollers are driven by timing belts and the surface of the rollers is slightly overspeed, which imparts a degree of tension to the paper. The individual webs meet at the R.T.F. (Roller, Top of Former), a full width slightly overspeed roller. The forwarding effect given to the webs is modified by the individually adjustable pressure from three truck rollers which are engaged pneumatically from the operators console. The centre truck roller can be replaced by a slitting or perforating wheel.

Perforating possibilities – F302 folder

As a standard feature both longitudinal and transverse perforations are available.

If it is desired to perforate the spine of a broadsheet product this is done on the R.T.F. by replacing the centre truck roller with a perforating wheel. For the spine of a tabloid product the tucker blades on the folding cylinder are replaced by dual purpose perforating blades. These engage in a hardened rubber buffer mounted diagonally opposite to the blade on the knife cylinder. The perforator blades are normally used when running quarter folded products. The perforation will then appear in the head of the quarter fold product. As an option it is possible to replace the standard perforator blades by a special perforator blade which slits and opens the head of the quarter folded product. The purpose with this, as with all perforations, is to open up the product so that the air inside the product can get out thus avoiding shrinks and achieving a better accuracy in the fold.

A third alternative available on option is a longitudinal perforation made in the lower part of the folder. It employs a perforating wheel or wheels in the same manner as on the R.T.F., cutting against a nip roller. Up to three wheels can be used together over a maximum width of 25 mm (1"). Different styles of wheel, for instance, enable a spine perforation to be combined with tear out pages on either side of the quarter folded product.

Standard equipment – F302 folder

- Jaw folder mechanism for broadsheet and tabloid products
- Quarter folder mechanism
- Motorized cut-off compensators and draw roller section
- Pneumatically operated nip rollers on R.T.F. roller
- Commercial former (long) for up to four webs
- Slitter and perforator wheel on R.T.F. roller
- Cross perforation in tabloid fold
- Delivery table
- Safety guards
- Light fittings
- Internal electrical system

Additional equipment — F302 folder

- Longitudinal perforation of quarter fold products
- Additional cylinder for double parallel folding
- Arrangement to cut double parallel products
- Two-stream delivery
- Cross perforation device below former for perforation in tabloid or double parallel fold
- Cross perforation knife with slitting
- Air in former bars
- Alternative short former, prepared for stitcher, for up to eight webs
- Mechanically driven delivery table
- Stream kicker, every 25 copies, not in combination with stacker/bundler
- Tape grinding and splicing kit
- Postal folder mechanism
- Stitcher for tabloid products
- Automatic print-to-cut register
- Glue applicator for broadsheet products
- Glue applicator for quarter fold products
- Oil cooling device

Intermediate section

The first longitudinal fold (the spine of a broadsheet) is given to the paper as it travels down the former. The adjustable guide rollers at the bottom of the former influence the behaviour of the paper on the way down.

The sides of the former have holes drilled at intervals to allow low pressure air from a blower to reduce friction and set-off. The former nose is also drilled, receiving its high pressure air via a reducing valve from the press system.

Two pairs of adjustable nipping rollers maintain control of the paper to the moment that it is cut by the knife cylinder.

Folder F303

Standard features F303

- Combination jaw folder mechanism, 1:2:2(:1), with retractable folding knives for broadsheet and tabloid products
- Super structure with web lead rollers and draw rollers for maximum 4 webs
- Platform with ladder
- Individually driven (shaftless/variable speed) RTF roller with pneumatically operated nip rollers and slitter/perforator wheels
- Commercial former with air in former bars and nose including blower
- Pneumatically operated nip rollers below former
- Signature overlap adjustment on the run
- Optic anti-jamming device and web severer
- Delivery table with independently driven delivery belt
- Safety guards in accordance with the European Union Safety regulations (CE)
- Internal light fittings

Additional equipment F303

- Quarter folding mechanism with automatic timing of the folding blade
- Double parallel cylinder
- Longitudinal perforation device for the spine of the quarter fold product
- Cross perforation device for the head of the quarter folded product
- Extended delivery table
- Sound absorptive wall
- Automatic cut-off control
- Additional cut-off compensators for special web lead arrangements
- Gluing device for broadsheet and/or quarter folded products
- Stitching device for tabloid products

Delivery

All products are laid in a stream onto a single delivery belt at right angles to the press line (does not apply to the Swiss postal folder). The cross folded signatures are ejected into a set of rotating paddle blades, the delivery fan or flyer, from which they drop successively onto the belt, spine first.

A second set of paddle wheels is positioned below the quarter fold outlet. According to which way round the paddles are mounted the product can be made to come out spine towards or away from the operator standing at the control position. The head of the product is always leading.

Tabloid products from both folders come out spine first as an overlapping stream, with a 60 mm (2 3/8") separation in the case of the F302 and 40 – 120 mm (1 1/2" – 4 3/4") spacing for the F303. Height of the delivery end is about 270 mm (10 5/8").

The delivery table can be supplied with driven rollers as option to secure the accuracy of distance needed between the signatures when delivering to a conveyor system.

Stitching

A stitching attachment for the tabloid format is available as an extra for both the F302 and F303 folders (on special request with long delivery time) and is mounted above the nip rollers.

The position of the wire stitches or staples may be varied in their distance from the closed head of the signature and also in relation to each other.

Maintaining a minimum distance between staples of 200 mm (7 7/8") the first stitch can be 95 – 135 mm (3 3/4" – 5 5/16") and the second 300 – 370 mm (11 13/16" – 14 9/16") from the former nose position, all measurements being from the centres of the 15 mm staples.

Main drive and electrical system

The main drive shaft interconnects with each unit through spiral bevel gears, driving into the upper blanket cylinders. It is thus at mid press level, avoiding any vertical shafting. It is carried through to the folder at the same height from where it is driven by a D.C. motor, infinitely variable in speed, from crawl to the maximum of 35,000 cylinder revs/h. A toothed belt provides the link between the floor mounted motor and the drive shaft. The folder and any unit can be clutched out of engagement very simply. The modular design enables additional units to be coupled to the shaft without alteration to existing units, providing a main drive of sufficient power has been chosen initially.

The normal power supply is 400 V $\pm 10\%$, 50/60 Hz, three phase. An additional transformer is required for other voltages. Control and auxiliary circuits are standardized to operate on 24 V D.C. This and the power required to correspond with the motor driving the press, is supplied from an electrical cabinet at the main drive motor.

A fault in the press will be shown by trace indicator lights positioned on the operators console. For a press equipped with the optional "Alarm and trouble-location display" the information is shown in readable characters on a display at the operators console.

Within the integrated electrical system there are two different sizes of drive motor according to the load the full press imposes.

The press is equipped with a free-standing operators console from which all the main functions of the press can be operated. The starting-up procedure can be done from the operators console automatically by a sequence start-up device. The start sequences can be adjusted individually on a press with the optional alarm display mentioned above.

Through the control system the remotely controlled ink fountains, motorized circumferential and lateral registers, cut-off compensators etc. can be run from the operators console.

A set of prefabricated cables and cable trunks is available as optional equipment. The location of the operators console and the main electrical cabinet is then always fixed.

Standard equipment – Drive and control system

- Main drive motor and cabinet
- Main operators console

Additional equipment – Drive and control system

- Extra free-standing console for optional equipment
- Transformers
- Prefabricated cables
- Distribution cubicle for optional equipment
- Communication cubicle for master and slave cubicles
- Handlamp
- Movable push-button station at folder

Press equipment

Each press line is supplied with the necessary mechanical and electrical connection parts to combine the different parts of the press.

The printing units, folders, motors and drive stands are secured to the floor by grouted-in foundation bolts which are adjustable in height. The accurate location of the foundation bolts is achieved by a jig assembly. The foundation bolts shall be grouted in with a special non-shrinking cement (Embeco 885). The foundation bolts and the jig are supplied with the press as standard.

Each printing unit and folder is connected by a cardan shaft which is covered, for safety reasons. It is possible to open the cover lid for maintenance purposes when the press is stopped. The superstructure of the press includes the necessary web lead rollers to carry the web from each unit to the folder.

Trunks are mounted on each side of the superstructure and they contain pipes for air supply and electrical cables.

In addition to the above, the press equipment includes the following as standard:

- Plate bending device
- Set of tools
- Packing gauge for measuring blanket and underpacking
- Operators manual
- Spare parts manual
- Mechanical and electrical installation drawings
- A minor kit of spare parts for the commissioning period

Additional equipment

- Embeco cement
- Trolley for reel transport
- Special web lead arrangements
- Angle bar systems
- Platforms for units and folders
- Movable ladder for units
- Sound absorptive walls for units and folders
- Solna plate bender with pre-register system
- Complete pre-register system including paste-up punch, film punch, plate punch and electronic plate bender
- Water circulating system including automixer and refrigeration unit
- Compressor and air receiver
- Air dryer for compressed air
- Spare parts kits

Ancillary equipment for the Solna C300

A complete press installation is composed of a number of essential parts not all of which can be expected to be designed and manufactured by the builder of the printing press. Indeed, most of the supporting devices are of a specialist nature, best left in the hands of firms whose experience has been concentrated in these areas.

Of the equipment that would be expected to constitute a full press line the following are examples:

- Zero-speed or flying splicer for non-stop web joining
- Web guides before units and before folder
- Constant tension infeeds
- Ink pumping and levelling equipment
- Dryers and chill rolls, single or multi-pass
- Refrigerating systems
- Silicone applicators and blanket washing systems
- Print-to-cut and/or unit-to-unit register control
- In-line finishing equipment
- Stacker or stacker/bundling equipment

Not all of these require the direct involvement of the press manufacturer, but Solna would endeavour to suggest some avenues of approach.

Technical data for the Solna C300 press range

The following is the current specification at the time of printing this technical description. In the interests of product development we reserve the right to update this information without prior notice.

Printing units

Reel supply

		C300-K		C300-A		C300-B		C300-C	C300-D		
Integrated reel stand											
Maximum reel diameter	mm (inch)	1,067	(42)	1,067	(42)	1,067	(42)	Specification	1,067	(42)	
Maximum reel width	mm (inch)	825	(32 1/2)	915	(36)	915	(36)	on request	990	(39)	
Web tension	N/m	120–360		110–330		110–330			100–300		
	(lbf/inch)		(0.67–2.0)		(0.61–1.84)		(0.61–1.84)			(0.56–1.68)	
Lateral adjustment	mm (inch)	±25	(1)	±25	(1)	±25	(1)		±25	(1)	
Reel shaft for core diameter	mm (inch)	76	(3)	76	(3)	76	(3)		76	(3)	
Integrated automatic SIR splicer											
Maximum reel diameter	mm (inch)	1,067	(42)	1,067	(42)	1,067	(42)		1,067	(42)	
Minimum reel diameter (loading)	mm (inch)	800	(31 1/2)	800	(31 1/2)	800	(31 1/2)		800	(31 1/2)	
Maximum reel width	mm (inch)	800	(31 1/2)	890	(35)	890	(35)		990	(39)	
Maximum reel weight	kg	700		700		700			700		
Web tension	N/m	100–310		90–280		90–280			80–250		
	(lbf/inch)		(0.56–1.84)		(0.53–1.65)		(0.53–1.65)			(0.47–1.47)	
Lateral adjustment	mm (inch)	±10	(3/8)	±10	(3/8)	±10	(3/8)		±10	(3/8)	
Maximum splicing speed	m/min	320		330		340			370		
	(ft/min)		(1,050)		(1,090)		(1,120)			(1,220)	
Reel shaft for core diameter	mm (inch)	76	(3)	76	(3)	76	(3)		76	(3)	

Printing units

		C300-K		C300-A		C300-B		C300-C	C300-D	
Cylinder circumference	mm (inch)	546	(21 1/2)	560	(22 3/4)	578	(22 3/4)	Specification	630	(24 13/16)
Maximum printing length	mm (inch)	529.5	(20 13/16)	543.5	(21 3/8)	561.5	(22 3/32)	on request	613.5	(24 5/32)
Plate gap	mm (inch)	12.9	(1/2)	12.9	(1/2)	12.9	(1/2)		12.9	(1/2)
Maximum web width	mm (inch)	825	(32 1/2)	915	(36)	915	(36)		990	(39)
with SIR splicer	mm (inch)	800	(31 1/2)	890	(35)	890	(35)		990	(39)
Maximum printing width	mm (inch)	825	(32 1/2)	915	(36)	915	(36)		990	(39)
with SIR splicer	mm (inch)	800	(31 1/2)	890	(35)	890	(35)		990	(39)
Blanket gap	mm (inch)	13.8	(9/16)	13.8	(9/16)	13.8	(9/16)		13.8	(9/16)
Plate dimensions										
Length *)	mm (inch)	553	(21 3/4)	567	(22 5/16)	585	(23 1/32)		637	(25 1/16)
Width *)	mm (inch)	860	(33 7/8)	950	(37 3/8)	950	(37 3/8)		1,025	
			(40 3/8)							
Thickness	mm (inch)	0.30	(0.012)	0.30	(0.012)	0.30	(0.012)		0.30	(0.012)
Blanket dimensions										
Length, with bars	mm (inch)	600	(23 5/8)	614	(24 3/16)	632	(24 7/8)		684	(26 15/16)
Width	mm (inch)	845	(33 1/4)	935	(36 3/4)	935	(36 3/4)		1,010	
			(39 3/4)							
Thickness, compressible	mm (inch)	1.95	(0.077)	1.95	(0.077)	1.95	(0.077)		1.95	(0.077)
Underpacking	mm (inch)	0.25	(0.010)	0.25	(0.010)	0.25	(0.010)		0.25	(0.010)
Total	mm (inch)	2.20	(0.087)	2.20	(0.087)	2.20	(0.087)		2.20	(0.087)
Register adjustments										
Lateral	mm (inch)	±3	(1/8)	±3	(1/8)	±3	(1/8)		±3	(1/8)
Circumferential **)	mm (inch)	±3	(1/8)	±3	(1/8)	±3	(1/8)		±3	(1/8)
Diagonal (cocking)	mm (inch)	0.5	(0.020)	0.5	(0.020)	0.5	(0.020)		0.5	(0.020)

*) Plates should be square and strictly of these dimensions. The maximum allowable tolerance on length is +0 –1 millimetre.

**) The starting point for this circumferential movement may be displaced by ±4 mm (5/32") either side of the basic setting.

N.B. Imperial sizes have been rounded to the nearest sensible dimension.

Folders

Folder capacities – F302 folder

The F302 folder is available in the following cut-offs: 546 mm, 560 mm, 578 mm and 630 mm.

These correspond to: 21 1/2", 22 3/64", 22 3/4" and 24 13/16".

The standard folder will accept four webs, each of 0.1 mm (0.004") average thickness and in weight not greater than 250 g/m² in total, when delivering as a tabloid. The practical problem of creasing limits the number of webs.

Maxima of webs and paper weight for the F302 folder:

For a tabloid product	4 webs of 250 g/m ²
For a quarter page product	4 webs of 225 g/m ²
For a double parallel product	3 webs of 170 g/m ²

For a paper with high bulk it is recommended to reduce the total grammage.

It is not possible to give an absolute value to the performance of paper in any folder. So much depends upon its quality and the level of acceptance of the nature and position of creasing which is inevitable in these circumstances.

Folder capacities – F303 folder

The F303 folder is available in the following cut-offs: 578 mm (22 3/4") and 630 mm (24 13/16").

The F303 folder will accept up to eight webs of newsprint, each of 0.1 mm (0.004") average thickness and in weight not greater than 450 g/m² in total, when delivering as a tabloid. When delivering in a quarter page format the practical problem of creasing limits the number of webs to four, each of 0.1 mm (0.004") average thickness, the weight of all webs not to exceed 225 g/m². When the folder is equipped with a double parallel cylinder the maximum number of webs is two in double parallel, each of 0.13 mm (0.005") average thickness, the weight of both webs must not exceed 180 g/m².

Maxima of webs and paper weight for the F303 folder

Tabloid products	4 webs of 250 g/m ²
Quarter page products	4 webs of 225 g/m ²
Double parallel products	2 webs of 180 g/m ²

For a paper with high bulk it is recommended to reduce the total grammage.
It is not possible to give an absolute value of the performance of paper in any folder. So much depends on the paper quality and level of acceptance of the nature and position of creasing which is inevitable in these circumstances.

Speeds – F302 and F303 folders

		C300-K	C300-A	C300-B	C300-C	C300-D
Maximum geared speed	rph	35,000	35,000	35,000		35,000
Maximum web speed	m/min	315	325	335	Specification	365
	(ft/min)	(1,000)	(1,050)	(1,100)	on request	(1,200)
Maximum production speed F301/F302 *)						
broadsheet/tabloid	cph	30,000	30,000	30,000		30,000
quarter fold	cph	25,000	25,000	25,000		25,000
double parallel	cph	22,000	22,000	22,000		22,000
Maximum production speed F303 *)						
broadsheet/tabloid	cph			30,000		30,000
quarter fold	cph			30,000		30,000
double parallel	cph			30,000		30,000

*) Guaranteed production speed provided no other limitations are imposed by paper, ink or printing conditions.

Product sizes – F302 folders

			Spine		Width	
Broadsheet	F302-K	mm (inch)	546	(21 1/2)	200–412.5	(7 7/8–16 1/4) *)
	F302-A	mm (inch)	560	(22 3/64)	200–457.5	(7 7/8–18) *)
	F302-B	mm (inch)	578	(22 3/4)	200–457.5	(7 7/8–18) *)
	F302-D	mm (inch)	630	(24 13/16)	200–495	(7 7/8–19 1/2)
Tabloid	F302-K	mm (inch)	200–412.5	(7 7/8–16 1/4) *)	273	(10 3/4)
	F302-A	mm (inch)	200–457.5	(7 7/8–18) *)	280	(11)
	F302-B	mm (inch)	200–457.5	(7 7/8–18) *)	289	(11 3/8)
	F302-D	mm (inch)	200–495	(7 7/8–19 1/2)	315	(12 3/8)
Quarter page	F302-K	mm (inch)	273	(10 3/4)	185–206.2	(7 9/32–8 1/8) *)
	F302-A	mm (inch)	280	(11)	185–228.7	(7 9/32–9) *)
	F302-B	mm (inch)	289	(11 3/8)	185–228.7	(7 9/32–9) *)
	F302-D	mm (inch)	315	(12 3/8)	185–247.5	(7 9/32–9 3/4)
Double parallel	F302-K	mm (inch)	290–412.5	(11 13/32–16 1/4) *)	136.5	(5 3/8)
	F302-A	mm (inch)	290–457.5	(11 13/32–18) *)	140	(5 1/2)
	F302-B	mm (inch)	290–457.5	(11 13/32–18) *)	144.5	(5 11/16)
	F302-D	mm (inch)	290–495	(11 13/32–19 1/2)	157.5	(6 3/16)

*) The figures are valid for a press without built-in automatic splicer.

All sizes are untrimmed, without lap.

Pin marks are at a constant distance of 7.5 mm (5/16") from the leading edge.

An overlap movement of 10 mm (3/8") is possible on both the first and second cross folds – the tabloid and double parallel.

The quarter fold signature lap is ± 10 mm (3/8").

Where a lap on the tabloid is flush folded in the double parallel, the resulting lap protrusion is on the inside part of the fold and can therefore be gripped successfully in a saddle binder.

Product sizes – F303 folder

			Spine		Width	
Tabloid fold	F303-B	mm (inch)	175–457.5	(6 7/8–18)	289	(11 3/8)
	F303-D	mm (inch)	175–495	(6 7/8–19 1/2)	315	(12 3/8)
Quarter fold	F303-B	mm (inch)	289	(11 3/8)	115–229	(4 9/16–9)
	F303-D	mm (inch)	315	(12 3/8)	115–247.5	(4 9/16–9 3/4)
Double parallel fold	F303-B	mm (inch)	185–457.5	(7 1/4–18)	144.5	(5 11/16)
	F303-D	mm (inch)	185–495	(7 1/4–19 1/2)	157.5	(6 3/16)

All sizes are untrimmed, without lap.

Pin marks are at a constant distance of 7.5 mm (5/16") from the leading edge.

An overlap movement of 10 mm (3/8") is possible on both the first and second cross folds – the tabloid and double parallel.

The quarter fold signature lap is ± 10 mm (3/8").

Where a lap on the tabloid is flush folded in the double parallel, the resulting lap protrusion is on the inside part of the fold and can therefore be gripped successfully in a saddle binder.

Installation

A complete press is delivered in individual packing cases. For off-loading purposes the cases may be handled by slings in positions marked on the cases, or by forklift truck, using the pallet type base board.

Transportation; dimensions and weights

Encased for transportation (overall figures for the heaviest elements)

		Length	Width	Height	Weight (gross)
1+1 perfecting unit	mm (inch)	3,000 (9'10)	2,100 (6'11)	2,450 (8'1)	4,700 kg/10,360 lbs
F302 folder	mm (inch)	3,380 (11'1)	1,870 (6'2)	2,440 (8'0)	4,800 kg/10,580 lbs
F303 folder	mm (inch)	3,750(12'3 5/8)	2,100(6'10 5/8)	2,350(7'8 1/2)	5,700 kg/12,600 lbs

For units with SIR, add 1,200 kg (2,650 lbs) each.

The cases are non-returnable.

Mounted on pallet base board with plastic covers

		Length	Width	Height	Weight (gross)
1+1 perfecting unit	mm (inch)	2,850 (9'4)	2,080 (6'10)	2,400 (7'11)	4,300 kg/9,480 lbs
F302 folder	mm (inch)	3,330(10'11)	1,820 (6'0)	2,305 (7'7)	4,400 kg/9,700 lbs
F303 folder	mm (inch)	3,700(12'1 3/4)	2,050(6'8 3/4)	2,300(7'6 1/2)	5,500 kg/12,100 lbs

For units with SIR, add 1,200 kg (2,650 lbs) each.

Building entry

The minimum size of the building entry must be 2,200 mm (7'3") wide and 2,600 mm (8'7") high (see Transportation; dimensions and weights, above) to enable a smooth entry of the press.

Floor preparation

The floor and the system of joists, if any, must be in such condition that it is capable of carrying the loads of the press (see Floor loading, below). It is recommended that a constructional engineer is engaged in order to give a statement of the floor condition. If the building is used for other activities that are sensible to noise and vibrations, the foundation of the press should be of such design that it will not transmit vibrations to the rest of the building.

The press is in its standard performance secured to the floor with grouted-in foundation bolts (floor bolts). To fit the foundation bolts in the right position, Solna delivers with each press line a complete set of jigs.

The foundation bolts shall be grouted-in with Embeco 885 cement. If some other type of cement is used, it should have the following properties:

- Crushing strength, 75 MPa/cm² (765 kp/cm²) after 28 days
- Thin consistence
- Effective penetration of concrete into recess, minimum 95 per cent
- Non-shrinking
- Unaffected by vibrations

It is recommended to paint the floor around the bolts to avoid corrosion of the metal parts in the concrete (cement).

Air-Loc floor bolts are not to be recommended for a heatset press for high print quality. If the floor is not suitable for grouted-in foundation bolts, special foundation rails (no longer available from Solna) have to be used.

Floor loading

At each foundation bolt the floor structure should be capable of withstanding a load of approximately:

	Static load <i>without</i> SIR splicer		Static load <i>with</i> SIR splicer		Dynamic load	
1+1 perfecting unit	15,000 N	(3,370 lbf)	20,000 N	(4,500 lbf)	4,500 N	(1,010 lbf)
Drive pulley	9,000 N	(2,020 lbf)			2,000 N	(450 lbf)
Motor	8,000 N	(1,800 lbf)			3,000 N	(670 lbf)
F302 folder	20,000 N	(4,500 lbf)			8,000 N	(1,800 lbf)
F303 folder	26,000 N	(5,840 lbf)			10,000 N	(2,250 lbf)

Weight of paper reel is not included.

Dynamic coefficient and static (permanent) load are separate values and should not be added up.

1,000 N (Newton) = 102 kilopond = 224.8 lbf.

Compressed air installation

Water free, dried, high pressure air shall be supplied for the operation of pneumatic parts in the printing units and folder at 7.5 – 8 atmospheres (110 – 116 p.s.i.) and in volume 1.5 m³/min (53 cub.ft/min) free air at 8 atmospheres.

Water installation

A connection to the mains water supply will be needed for the water circulation system of the printing units.

According to the choice of cooling arrangements for the chill rolls and the oil cooling system a small quantity of make-up water will be needed at various points. The inlet water temperature should remain constantly at three degrees centigrade below the normal air temperature in the room.

Provision should be made in the planning of the machine room for adequate drainage for, although the modern cooling systems are often of the closed circulation type, there comes a time when considerable quantities of water may have to be drained away.

The quality of the water should be in accordance with W.H.O. 1984 “Guidelines for drinking water” limits.

Electrical installation

The electrical equipment is made for a voltage of 400 volt (three phase)/ 230 volt (one phase), 50/60 Hz with a voltage tolerance of ± 10 per cent.

In the case of other local voltages a transformer is required.

Control circuits operate on 24 volt D.C. The supply cables to the cubicle of the press shall be fused to suit the current demand of the installation.

The electrical system contains three different sizes of drive motors.

Motor size	Motor rating
1	67 kW
2	120 kW
3	138 kW

The ambient conditions under which the electrical equipment is designed to operate, is in a temperature range between +15 degrees centigrade and +40 degrees centigrade and a relative humidity of 40 – 75 per cent, not condensing. Ambient air temperature over + 30 degrees centigrade requires a redesign of the power cables.

How to choose size of motor and cabinet for the Solna C300

Number of 1+1 printing units	2	4	5	6	8
Size of motor	1	2	2	2	2
	1 web			2 webs	

Above figures include 1 folder, 1 or 2 infeeds, 1 or 2 chill rolls

Gas installation

If gas is to be the chosen energy source for drying and perhaps afterburning, a fundamental point, not always appreciated, at an early enough stage, is the necessity of discussing with the gas authorities whether a sufficient supply can be made available for the intended purposes.

Allied to this is the question, better broached at the outset, what restrictions the local authorities could impose upon the exhaust emissions from a dryer, as this may have a bearing on the total quantity of gas required for drying and exhaust treatment.

Early discussions regarding the dryer are thus advisable. The analysis of the locally available gas supply must be known before the burners and control equipment can be correctly designed. The provision of gas to the intake flange of the dryer together with any necessary safety equipment rests with the purchaser.

Dimensions – Printing units

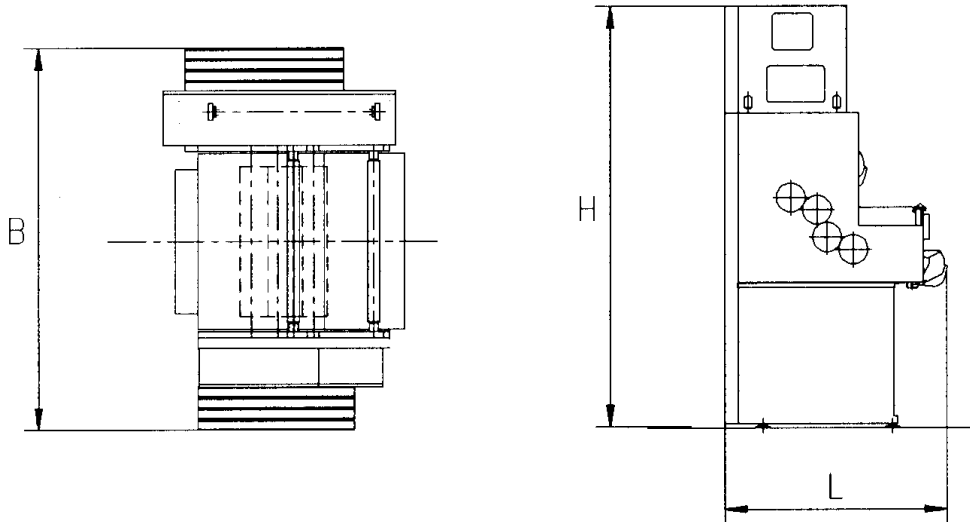
		Length		Width		Height		Weight	
1+1 unit – with integrated reel stand and superstructure									
C301-K	mm (inch)	1,380	(4'6 3/8)	2,430	(7'11 3/4)	2,800	(9'2 1/4)	4,100 kg	(9,040 lbs)
C301-A/B	mm (inch)	1,380	(4'6 3/8)	2,520	(8'3 1/4)	2,800	(9'2 1/4)	4,100 kg	(9,040 lbs)
C301-D	mm (inch)	1,510	(4'11 1/2)	2,620	(8'7 1/8)	2,900	(9'6 1/8)	4,350 kg	(9,590 lbs)

Dimensions – Folders

		Length		Width		Height		Weight	
F302 – with superstructure for 4 webs									
	mm (inch)	2,740	(8'11 7/8)	3,200	(10'6)	2,900	(9'6 1/8)	4,600 kg	(10,150 lbs)
F303 – with superstructure for 4 webs									
	mm (inch)	3,600	(11'10)	3,850	(12'7 1/2)	3,200	(10'6)	6,500 kg	(14,300 lbs)

Dimensioned drawings

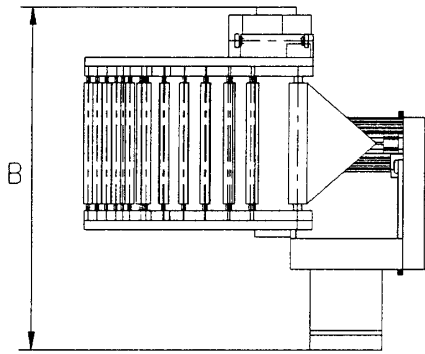
C300 Printing Unit



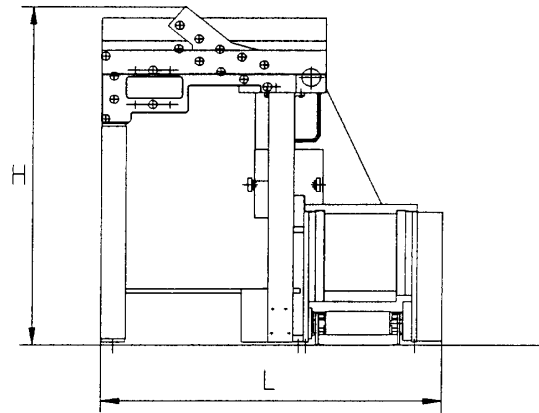
	L *)	B	H 1-8 banor / webs / Bahnen
C300-K	1 380 mm (4'6 3/8")	2 430 mm (7'11 3/4")	2 800 mm (9'2 1/4")
C300-A	1 380 mm (4'6 3/8")	2 520 mm (8'3 1/4")	2 800 mm (9'2 1/4")
C300-B	1 380 mm (4'6 3/8")	2 520 mm (8'3 1/4")	2 800 mm (9'2 1/4")
C300-C	1 510 mm (4'11 1/2")	2 620 mm (8'7 1/8")	2 900 mm (9'6 1/8")
C300-D	1 510 mm (4'11 1/2")	2 620 mm (8'7 1/8")	2 900 mm (9'6 1/8")

*)Without integrated splicer
 Utan inbyggd rullväxlare
 Ohne integrierten Rollenwechsler

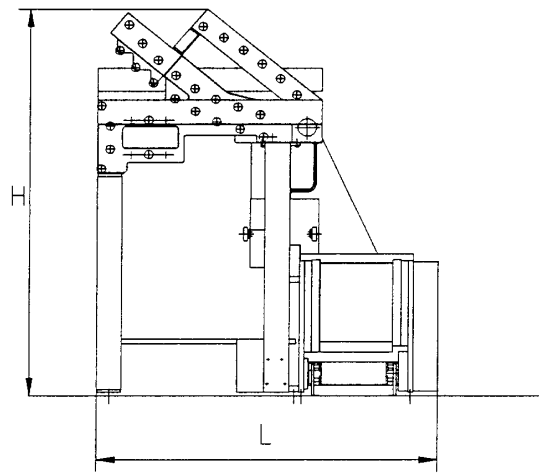
F302 Folder



F302 5 banor / webs / bahnen

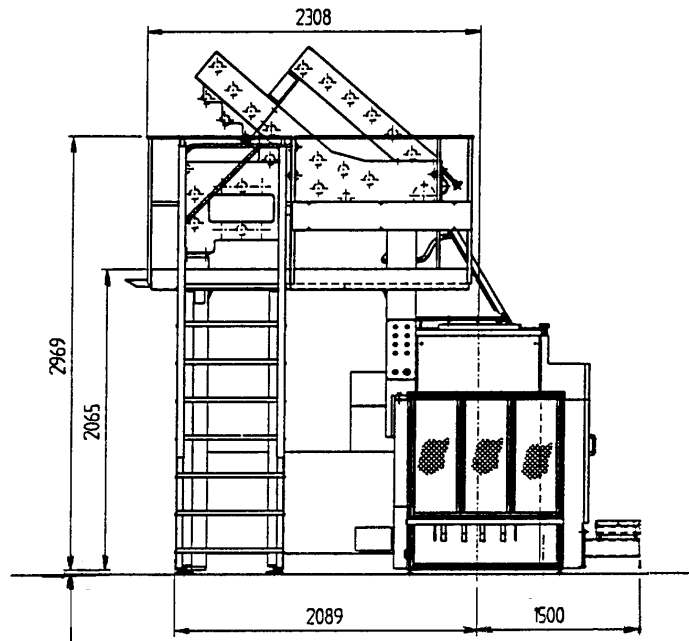


F302 8 banor / webs / bahnen

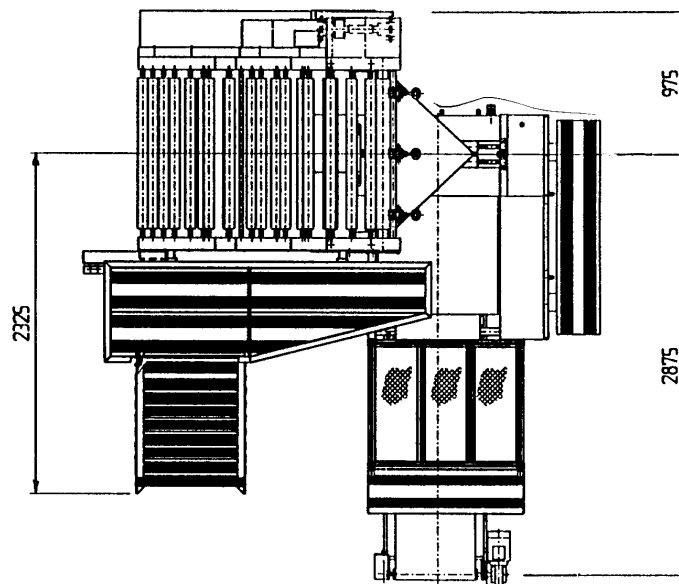


	L	B	H 5 webs	H 8 webs
F302-K	2 740 mm (8'11 7/8")	3 200 mm (10' 6")	2 900 mm (9'6 1/8")	3 300 mm (10' 10")
F302-A	2 740 mm (8'11 7/8")	3 200 mm (10' 6")	2 900 mm (9'6 1/8")	3 300 mm (10' 10")
F302-B	2 740 mm (8'11 7/8")	3 200 mm (10' 6")	2 900 mm (9'6 1/8")	3 300 mm (10' 10")
F302-C	2 740 mm (8'11 7/8")	3 200 mm (10' 6")	2 900 mm (9'6 1/8")	3 300 mm (10' 10")
F302-D	2 740 mm (8'11 7/8")	3 200 mm (10' 6")	2 900 mm (9'6 1/8")	3 300 mm (10' 10")

F303 Folder



Floor bolts / golvbultar / Ankerbolzen 30 mm Air-Loc 55 mm



Minimum ceiling height 4 100 mm
 Min. takhöjd 4 100 mm
 Min. Deckenhöhe 4 100 mm