TECHNICAL DESCRIPTION

SOLNA D380

Solna Offset AB
D380-TD-E6-05  91 507 22
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Solna D380 – General Description

Solna D380 is a single circumference, single width web offset press with a vertical web lead. It is designed specially for short and medium size runs of newspapers, magazines, brochures, directories, books and other commercial printing on uncoated stock.

The press is as standard equipped with a number of modern features for improved productivity. All printing units (1+1) have their own independent drive. The ink fountains have motorized ink zone adjustments, remote-controlled from the master console. The circumferential and lateral plate cylinder registers are motorised and adjustments are carried out remotely from the master console. Both plate and blanket cylinders are running without bearer contact, an essential for ideal dot transfer. The cylinder positioning system, is designed to maintain exact image transfer by accurately holding plate and blanket cylinders in place.

Solna D380 is a modular press system containing identical printing couples in whatever form the units are assembled. The system contains the following printing units and folders:

- The D380 4-high stacked arrangement is a single web perfecting assembly, printing all four process colours on both sides in a short web distance for excellent colour registration. This assembly can be prepared to accept two webs for a 2 x two-colour option. The 4-high arrangement is floor mounted and has to be combined with a free-standing reelstand or a free-standing automatic splicer.

- The D380 2-high stacked arrangement is a single web/two-colour perfecting assembly (or a 2 web/one-colour option). The 2-high arrangement is floor mounted and has to be combined with a free-standing reelstand or a free-standing automatic splicer.

- Any of the above stacked units are available in an add-on version for existing Solna D300 installations, particularly recommended when more four-colour is requested and the floor space is limited.

- Folder F302 is a heavy-duty jaw folder with two-around folding cylinder and two-around jaw cylinder. The folder has a capacity for up to 8 webs. A special folder version is the BAF201 with an upper former for two sections.

- Folder F400S is a heavy-duty jaw folder with two-around folding cylinder and two-around jaw cylinder. The folder has a capacity for up to 8 webs.

- Folder BAF340 is a heavy-duty balloon folder for two or three sections. It has a jaw folding mechanism for up to totally 8 webs.
General press specifications

Technical data for Solna D380 presses with Solna F-folders
including all types of D380 printing units in combination with Folder F302, BAF201, F400S or Folder BAF340

<table>
<thead>
<tr>
<th>Cut-off</th>
<th>21 1/2&quot;</th>
<th>22 3/64&quot;</th>
<th>22 3/4&quot;</th>
<th>24 13/16&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>546 mm (K)</td>
<td>560 mm (A)</td>
<td>578 mm (B)</td>
<td>630 mm (D)</td>
</tr>
<tr>
<td>Max. web width</td>
<td>35&quot;</td>
<td>35&quot;</td>
<td>35&quot;</td>
<td>39 3/8&quot;</td>
</tr>
<tr>
<td></td>
<td>890 mm</td>
<td>890 mm</td>
<td>890 mm</td>
<td>1000 mm</td>
</tr>
<tr>
<td>Max. printing width for unit with manual reelstand or free-standing splicer</td>
<td>34 1/2&quot;</td>
<td>34 1/2&quot;</td>
<td>34 1/2&quot;</td>
<td>39 3/8&quot;</td>
</tr>
<tr>
<td></td>
<td>876 mm</td>
<td>876 mm</td>
<td>876 mm</td>
<td>1000 mm</td>
</tr>
<tr>
<td>Max. printing length with blanket reel type lock-up</td>
<td>21&quot;</td>
<td>21 1/2&quot;</td>
<td>22 1/4&quot;</td>
<td>24 5/16&quot;</td>
</tr>
<tr>
<td></td>
<td>533 mm</td>
<td>547 mm</td>
<td>565 mm</td>
<td>617 mm</td>
</tr>
<tr>
<td>Max. geared speed</td>
<td>50,000 rph</td>
<td>50,000 rph</td>
<td>50,000 rph</td>
<td>50,000 rph</td>
</tr>
<tr>
<td>Max. guaranteed production speed *)</td>
<td>35,000 cph</td>
<td>35,000 cph</td>
<td>35,000 cph</td>
<td>35,000 cph</td>
</tr>
<tr>
<td>– F302 broadsheet/tabloid</td>
<td>35,000 cph</td>
<td>35,000 cph</td>
<td>35,000 cph</td>
<td>35,000 cph</td>
</tr>
<tr>
<td>– F400S broadsheet/tabloid</td>
<td>45,000 cph</td>
<td>45,000 cph</td>
<td>45,000 cph</td>
<td>45,000 cph</td>
</tr>
</tbody>
</table>

Paper basis range 35-65 gsm standard (other ranges on request)

<table>
<thead>
<tr>
<th>Plate size, length x width</th>
<th>21 3/4x35”</th>
<th>22 5/16x35”</th>
<th>23 1/32x35”</th>
<th>25 1/16x39 3/8”</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valid for excenter plate lock-up</td>
<td>553x889 mm</td>
<td>567x889 mm</td>
<td>585x889 mm</td>
<td>637x1000 mm</td>
</tr>
</tbody>
</table>

Plate thickness, std 0.30 mm (0.012”)

Blanket thickness 4-ply compressible blanket 1.95 mm (0.067”)

Packing underlay 0.3 mm (0.017”)

Total with underpacking 2.25 mm (0.084”)

For specification on SOLNA SIR splicer, see Technical Description SIR

*) Guaranteed production speed provided no other limitations are imposed by paper, ink or other printing conditions.
Standard and optional features Printing units

Printing units – Standard features

Side frames and cylinders
• Cast iron precision machined side frames, thickness 57 mm (2.25”).
• Solid steel nickel plated blanket and plate cylinders,
• Special cylinder journal design, Ø 82 mm (3.23”).
• Plate cylinder eccentric housed in a special bore sleeve.
• Plate lock-up system for full and half size plates (type D300) or slot system.
• Blanket cylinder eccentrics mounted with sets for preloaded tapered roller bearings.
• Heavy-duty impression linkage maintains consistent cylinder settings.
• Pneumatic control of impression on/off for remote operation.
• Motorised circumferential ±2.9 mm (±0.114”) and lateral ±3.0 mm (±0.118”) plate registers.
• Compressible blankets with bars, 4-ply.

Inking unit – ½ perfecting unit
• 8 rollers continuous inking system.
• Motorized remote controlled ink fountain which can be hinged downwards for easy cleaning (type D300).
• Motorized ink fountain roller, infinitely adjustable (type D300).
• Knurled steel metering roller, friction driven. Plastic covered steel.
• Two rubber covered ink transfer rollers, diameter 70 mm (2.75”).
• Two rilsan covered oscillating rollers, gear driven. Lateral movement ±9 mm (±0.35”).
• Two pneumatically controlled plate inkers, diameter 76 mm (3”) and 73 mm (2.87”). There is an individual pneumatic cylinder for each plate inker.

Dampening unit – ½ perfecting unit
• 4 rollers continuous film dampening system.
• Water fountain with individual inlet and outlet for each pan.
• Chrome plated water fountain roller, DC motor driven with infinitely variable speed.
• Friction driven sock covered rubber feed roller.
• Chrome plated oscillating roller, gear driven. Lateral movement ±9 mm (0.35”).
• Pneumatically controlled, friction driven plate dampener, rubber covered (bareback), diameter 70 mm (2.75”).
**Printing units – Standard features (cont’d)**

**Unit controls**
- Electrically interlocked safety guards.
- Operator Inch-Stop/Safe stations, one for the operator side/one for the drive side on each printing unit. Inch forward and backwards.
- Electric/pneumatic press function system with individual controls for ink metering rollers, plate inkers, plate dampeners and blanket cylinder impression.

**Unit drive**
- Each unit independently driven by electrical AC-motor through helical gear train.

**Oil lubrication**
- Oil bath gear housing with an electrically driven, pump fed, filtered oil circulation system on the drive side.

**Printing unit superstructure**
- Full four-sided platforming with stairs and railings for a 4-high arrangements.
- Standard height top iron (Christmas tree) for a swing compensator and for idlers for a maximum of four passing-by webs. Height 610 mm (two webs), 820 mm (three webs) and 1250 mm (five webs).
- Idlers in the superstructure for the specified number of webs.

**Printing units – Optional features**
- Spray dampening system.
- Unit superstructure (top iron) for low ceiling height. For one web only.
- Tilt away, lever operated ink fountain.
- Equipment for two webs in a 2-high, 3-high or 4-high.
- Colour lead roller assembly for specialised web configurations (for example two webs in a 2-high).
- Centralized grease system.
Folders

The Solna D300 press range includes three different types of folder mechanisms.

The **F300 folding mechanism** is a combination jaw folder for maximum 8 webs with a tabloid cross fold and with provision for an additional chopper length fold (quarter fold) and a cylinder cross fold (double parallel). The ratio of the cylinder diameter including the double parallel cylinder is 1:2:2:1. The F300 folding mechanism is available in four cut-off sizes, K (546mm), A (560mm), B (578mm) and D (630mm).

The **F300 folding mechanism** is used in two different combinations, F302 and BAF340.

The **F400S folding mechanism** is also a combination jaw folder, but designed for higher speed and higher folding accuracy. It has quarter fold and double parallel fold as optional equipment. The ratio of the cylinder diameter including the double parallel cylinder is 1:2:2:1. The F400S folding mechanism, can be combined with the F302 superstructure for up to 8 webs. The F400S folding mechanism is available in cut-off sizes, K (546mm), A (560mm), B (578mm) and D (630mm).

**F300 folding mechanism for F302 and BAF340 folders**

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 relation 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 as a tabloid or a cross folded broadsheet 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 by 85 mm (3 5/16”) 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.

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”) lap can be made on the product. (Not available in the BAF340).

**Superstructure for the F302 folder**

The superstructure for the F302 folder is equipped with one integrated motorised cut-off compensator as standard for the first web. The 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, an advantage when the press is equipped with a two-pass dryer or an angle bar system for two ribbons running centred over the former.
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 eight webs to enter the left side of the folder and a maximum of six webs to enter the right side of the folder when facing the operators side of the press. Altogether the number of webs must not exceed eight webs.

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.

**Superstructure for the BAF340**

The superstructure for the BAF340 balloon former is designed to give the possibility to run a broadsheet or tabloid folded newspaper as two individual sections (stitcher is necessary when running two tabloid sections).

The superstructure is mounted in a steel framework which makes the folder very rigid. The superstructure is surrounded by a platform to give access to the upper section. There are two draw roller sections, one for each section, the rollers are mounted in an S-wrap. The design of the superstructure makes it possible to enter the folder with a maximum of eight webs from the left and three webs from the right, when facing the operators side of the press. All together the number of webs must not exceed eight webs.

Section one, the outer section, is always run over the main lower former where up to eight webs can be handled. Section two is run over the upper former where up to four webs can be handled.

A third section can be installed as an option. Using a supplementary angle bar and bay window assembly, a half width web is bypassing the formers, thus forming a 4-page inserted tabloid product when collected with the other sections in the folding cylinders.

**Perforating possibilities F302 folders**

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. 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 24 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.

**Angle bar deck for F302 and F400S folders**

The normal product in a book size format from the double parallel fold is a 16 pps section, two up. A complete single section of 32 pps from one web can be produced if an optional angle bar deck for two ribbons is fitted.

This consists of a low level structure, positioned immediately before the folder, containing a slitter and two pairs of angle bars. The incoming web is slit in half, each half using a pair of angle bars to realign the ribbons one above the other. Subsequent former, tabloid and double parallel folds produce a single 32 pps signature.

**Postal folder**

Where this specialised mail fold is required, which is a cross fold in terms of web direction, a separate folding attachment is added which takes quarter folded signatures in a direction parallel and towards the printing units.

The unit makes a chopper type fold to the signatures which appear as a stream on a delivery parallel to the main one but nearer to the operator. This addition gives a limited accuracy of fold required only for distribution purposes and is limited in number of webs and in speed, for practical reasons.

**F400S folding mechanism**

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 retractable tucker blade forming the tabloid fold. The position of the tucker blades and jaws may be altered on-the-run to provide a maximum lap (stepless) 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. Here a rotating blade forces the signature down between rollers to form a second length fold, the quarter page fold. The folding position of the blade is electronically synchronised to the press speed, a feature only available on more advanced folders.

One movement of a lever operates the stripping fingers and engages the quarter page fold.
**Superstructure F400S folder**

The superstructure of the F400S folder is equipped with one integrated motorised cut-off compensator as standard for the first web. The cut-off compensators for the rest of the webs are placed on each printing unit. All 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 for a press running a maximum of two heatset webs or two ribbons via angle bars.

The draw roller section is an S-wrap arrangement of two rollers per web of which one is driven by a timing belt from the R.T.F. (Roller, Top of Former). 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 eight webs to enter the left side of the folder and a maximum of six webs to enter the right side of the folder when facing the operators side of the press. Altogether the number of webs must not exceed eight webs.

The individual webs meet at the R.T.F., a full width roller. The R.T.F., and by that the draw rollers, has a modern shaftless drive. This is an excellent way to control the variable speed of the R.T.F. and the draw rollers. The surface of the rollers is slightly overspeed, which imparts a degree of tension to the paper. The three truck rolls are engaged pneumatically from the operators console. The centre truck roll can be replaced by a slitting or perforating wheel.

**Perforating possibilities F400S folder**

Both longitudinal perforation in the spine of a broadsheet product and transverse perforation in the spine of a tabloid product is available as standard.

Longitudinal perforation is done on the R.T.F. by replacing the centre truck roll with a perforating wheel.

Longitudinal perforating after the former is available as option. The perforating is done in the quarter fold position. Different styles of wheels enable the longitudinal perforation to be combined with tear-out pages on either side in the quarter folded product. Up to three wheels can be used together over a width of 24 mm (1").

The transverse perforating device for the tabloid fold is standard. A perforator blade mounted in a cylinder engages in a hard rubber buffer mounted in an opposite cylinder. The position of the perforation can be adjusted on-the-run. The perforation will then appear in the tabloid fold and in the head of a quarter fold product.

Perforating in the double parallel fold is available in combination with the optional d/p folder. The position of the perforation can be adjusted on-the-run.
**Intermediate section all folders**

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 pneumatic press system.

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

**Delivery all folders**

All products are laid in a stream onto a single delivery belt at right angles to the press line (does not apply to the 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.

The distance between the spines in the overlapping stream is 60 mm (2 3/8") separation in the case of the F302. The distance is steplessly adjustable to a lap of 40–120 mm (1 9/16”–4 3/4") in the F400S. The height of the delivery end is about 290 mm (11 3/8") with the exception of the F400S, where it is about 180 mm (7 1/8").

**Stitching**

A stitching attachment for the tabloid format is available as an extra for the F302 and F400S folders and is mounted below the formers.

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 (9/16") staples.
Gluing

An optional gluing system is available to attach the spines of a broadsheet newspaper together. It consists of a number of applicator nozzles in the superstructure. The F302 and F400S folders can also be equipped with an optional gluing system to attach the spines of a quarter folded signature together. In this case it is necessary for grooves to be machined into surfaces to avoid contact with glue lines prior to the final quarter fold. The position of the grooves has to be confirmed at the time of ordering the machine as the position is dependent on the web width to be used. There are either continuous gluing or intermittent gluing alternatives; the latter is recommended for signatures to be trimmed, as there will be no glue at the position of the trimming knife.

Folding specifications

Folder capacities for the F302 Folder

The standard folder will accept 8 webs, 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. This makes possible the production of 32 broadsheet or 64 tabloid pages. When delivering in a quarter page format the practical problem of creasing limits the number of webs to four, though as many as seven webs of 0.07 mm (0.0027") newsprint can be folded with a limit of 3.9 mm (0.15") on the folded product.

Maxima of webs and paper weight for standard F302 folder (double parallel folding cylinder not fitted):

For a tabloid product 8 webs of 450 g/m² totally
For a quarter page product 4 webs of 225 g/m² totally
For a Swiss postal fold 5 webs of 45 – 49 g/m² per web

When fitted with a double parallel folding cylinder the following maxima of webs and paper weight are likely to apply:

For a tabloid product 4 webs of 250 g/m² totally
For a quarter page product 4 webs of 225 g/m² totally
For a double parallel product 3 webs of 170 g/m² totally

For a paper with high bulk it is recommended to reduce the number of webs and 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.

In principle, the above figures are valid also for the BAF201 and BAF340. Note that BAF340 is not available with double parallel cylinder.
Folder capacities for F400S folder

The F400S folder is available in the following cut-off sizes, K = 546 mm, A = 560 mm, B = 578 mm (22 3/4”) and D = 630 mm (24 13/16”).

The F400S folder will accept up to 8 webs, each of 0.1 mm (0.004") average thickness and in weight not greater than 450 g/m$^2$ in total, when delivered as a tabloid.

When delivering a signature in quarter page format the practical problem of creasing limits the number of webs to four with a total maximum weight of 225 g/m$^2$.

The maximum number of webs in double parallel is limited to two webs and the total weight to 180 g/m$^2$. For a paper quality with a high bulk you have to count on a lower number of webs and a lower total weight.

The minimum weight of a web that can run through the press is 30 g/m$^2$.

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. Perforating and softening normally reduce the creasing problem.
Standard and optional features Folders

Folders – Standard features

**F302 folder**
- Jaw folder mechanism for broadsheet and tabloid products
- Pneumatically operated steel nip rollers on R.T.F. roller
- Newspaper former (short) with air in former nose and bars including blower for air in former bars
- Slitter and perforator wheel on R.T.F. roller
- Cross perforation in tabloid fold
- Safety guards
- Light fittings
- Delivery table
- Motorised cut-off compensator for the first web in the F302 folder

**F400S folder**
- Jaw folder mechanism for broadsheet and tabloid signatures
- Short former with adjustable nose
- Air in former nose and bars including blower for air in former bars
- Variable speed R.T.F.
- Pneumatically operated truck rolls on the R.T.F., steel or rubber
- Slitter and perforator wheel on the R.T.F.
- Cross perforation in tabloid fold adjustable on-the-run
- Pneumatically operated nip rollers under the former
- Signature overlap adjustment on-the-run, delivery table with variable speed control
- Retractable tucker blades in tabloid folder
- Optic anti-jamming device
- Safety guards
- Web severing device
- Light fittings
- Platform on the operating side
Folders – *Standard features (cont’d)*

BAF340 folder

- Jaw folder mechanism for broadsheet and tabloid products
- Motorized cut-off compensator for the first web (cut-off compensators for web 2–8 are mounted in the printing unit superstructure)
- Pneumatically operated nip rollers on both R.T.F. rollers
- Two formers for the production of a two-section newspaper
- Air in former nose and bars including blower for air in former bars
- Slitter and perforator wheel on both R.T.F. rollers
- Cross perforation in tabloid fold
- Safety guards
- Light fittings
- Platform
- Delivery table
Folders – *Optional features*

**F302 folder**

- Quarter folder mechanism
- Longitudinal perforation of quarter fold products
- Additional cylinder for double parallel folding (in combination with a folder equipped with the quarter folder above)
- Arrangement to cut double parallel products
- Alternative long former for 1–2 webs (not in combination with stitching device)
- Alternative rubber nip rollers on R.T.F. roller
- Delivery table for handflying
- Special short delivery table for narrow space
- Mechanically driven delivery table
- Stream kicker, every 25 copies, to make picking up in batches by hand easier
- Oil cooling device (refrigerating unit not included)
- Tape grinding and splicing kit
- Postal folder mechanism
- Stitcher for tabloid fold
- Automatic print-to-cut register
- Glue applicator for broadsheet products
- Glue applicator for quarter fold products
- Cross perforation device below former for perforation in tabloid or double parallel fold
- Platform
- Motorized cut-off compensators for web 2–8 positioned in the superstructure of the printing units in combination with F302 folder
- Motorized cut-off compensator for a second web in the F302 folder for a press with a two-web dryer
Folders – *Optional features (cont’d)*

**F400S folder**

- Quarter folder mechanism with automatic timing of the quarter fold mechanism, on-the-run
- Double parallel folder and perforation in the spine of a double parallel folded signature, on-the-run
- Longitudinal perforation of quarter fold signatures
- Tear-out perforation
- Softening device for the quarter fold position
- Long former for up to 4 webs – recommended for improved folding accuracy in quarter and d/p fold
- Extended delivery belt with driven overhead tape and handfly table
- Tape splicing and grinding kit
- Stitching device for tabloid
- Automatic cut-off control
- Gluing device for broadsheet and quarter folded signatures, continuous or intermittent
- Additional motorized cut-off compensator and draw roller in the folder superstructure for a second web or ribbon, commercial performance
- Motorized cut-off compensators and draw rollers for up to 8 webs (webs 2–8 are positioned on top of the printing units)
- Draw rollers for a maximum of 6 webs from the right

**BAF340 folder**

- Quarter folder mechanism
- Angle bar arrangement for a third newspaper section
- Stream kicker, every 25 copies, to make picking up in batches by hand easier
- Longitudinal perforation of quarter fold products
- Stitcher for tabloid, positioned below the upper and lower former
- Synchronized clutch for upper stitcher
- Glue applicator for broadsheet products
- Tape grinding and splicing kit
- Oil cooling device (refrigerating unit not included)
Drive and Control System

SHAFTLESS DRIVE SYSTEM with one AC motor for each printing unit and folder with system cabinet.

SOLNA PRINTING PROCESS CONTROL, standard features

– Master console with PC computer and software, video screen with alarm display and sequential start to run the main press functions and the remote-controlled ink fountains, plate registers and dampening systems

– Press master console

Optional features

– Pre-setting interface to connect press control system to CTP or plate reader equipment

– Console for auxiliary equipment control
Control System

The control system consists of a PLC network. In a printing unit the press functions are controlled from a PLC in the main cabinet via several buses on different communication levels to remote I/O units and the drive units. The master in a press system is the PLC in the main console. This master has the press configuration stored in a non-volatile memory. A PC is used in the main console for press set-ups and supervision.

The remotely controlled ink fountain system is a part of the Solna Process and Printing Control System, which is a high precision presetting and press control function system. The plate scanner or a direct interface to the RIP or CTP for presetting of the ink zones is an additional equipment to further enhance quality and reduce make ready and waste. This system also has provisions for storing and recalling job information for repeat press runs. The system provides an electronic overnight fountain blade shut-off feature.

The emergency stop circuit consists of two independent stop channels. Only approved safety components are used. The emergency stop of the press is supervised by a safety module in the main cabinet.

Internal used control voltage is 24 V DC.

Maintenance and fault finding can be performed remotely, directly into the press control system, via an interface by Solna Sweden.

Plate up and maintenance, independently done in each printing couple.
Standard and optional features Press equipment

Press equipment – Standard features

- Independently driven printing units (1+1).
- Main operators console, DPC, with sequential start-up of press functions.
- Baldwin water circulating system 620 A and 640 A. Must be positioned below the floor level, about 700 mm (28”), when used in conjunction with a floor mounted 2-high or 4-high stacked arrangement.
- Operators manual and spare parts manual.
- Printing units are installed on AirLoc wedgemounts, VRC. Folders F302, BAF201 and BAF340 are installed on grouted-in floor bolts or AirLoc jacmounts (optional).
- Web break detectors, non-contact type. One set of detectors per stacked arrangement.
- Tool kit.

Press equipment – Optional features

- Prefabricated cables between press, console and main drive cubicle (fixed position).
- Plate bender with pre-register system and manual punch (system Protocol).
- Free-standing automatic Solna SIR splicer. Max. reel diameter 1067 mm (42”).
- Blanket height gauge (Cobra Mike).
- Cut-off circumference grater roller.
- Refrigerated water circulating system.
- Automix.
- Presetting system including console, standard PC and Solna plate reader.
- Extra console for optional equipment.
- Control equipment for spray dampening system.
- Water distribution system for spray dampening.
- Compressor and refrigerant dryer for compressed air.
- Transformer.
- Reel trolleys.
- Angle bar arrangements.
- An extra complete set (6 pcs for a printing couple or ½ of a unit) of inking and dampening rubber rollers with bearings and locking collars.
- Spare parts kits.
Dampening water and additives

General recommendations

Cleaners and water additives must be proved to have a low tendency to corrode. Corrosion in an offset press is very dependent on the constitution of the dampening fluid, where a high percentage of salts implies a higher receptivity to corrosion.

The pH-value of the dampening fluid generally falls within the range of 4.5–6. In order to keep the pH-value of the dampening fluid constant, even if the amount of water additives varies, the modern water additives contain special acids and alkalines (buffering). The manufacturer’s instructions for dosage must be strictly followed.

Note that, if not otherwise restricted by the printing process, the pH-value may well be over 6. In the case of nickel layered cylinders the pH-value should be over 4.8.

Restricted substances in the dampening water

If the concentration of these substances exceeds the recommended value, the Solna warranty is not valid.

<table>
<thead>
<tr>
<th>Substance</th>
<th>Maximal amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chlorides</td>
<td>40 mg/l</td>
</tr>
<tr>
<td>Sulphates</td>
<td>50 mg/l</td>
</tr>
<tr>
<td>Nitrates</td>
<td>20 mg/l</td>
</tr>
</tbody>
</table>

Note that these are the maximum values. The actual value may well be lower. Regular checks that these conditions are satisfied can significantly reduce the risk of corrosion caused by the dampening water.

The quality of water shall correspond to the established limits in W.H.O. 1984 “Guidelines for drinking water”.

Operating conditions

The Solna electrical equipment is designed to fulfil EN 60 204-1. Some of the most important conditions are given below:

**Electrical supply**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voltage</td>
<td>400VAC ± 10 %</td>
</tr>
<tr>
<td>Frequency</td>
<td>50/60 Hz ± 1 %</td>
</tr>
<tr>
<td>Voltage impulses</td>
<td>Not to exceed 1.5 ms in duration with a rise/fall time between 500 ns and 500 µs and a peak value not more than 200 % of the rated r.m.s. supply voltage.</td>
</tr>
</tbody>
</table>

**Ambient air temperature**

In the press room

- Within + 15°C to + 40°C.

In transport and storage

- Within – 25°C to + 55°C.

Power cables specified by Solna are designed for maximum +30°C ambient air temperature; ambient air temperature over +30°C requires a redesign of these power cables.

**Humidity**

- Within a relative humidity of 40 % to 75 %, non condensing.

*If an earth fault relay is intended to be used, it should be discussed with Solna in advance.*
Installation

Compressed air

Pneumatic functions in the press require compressed air with a minimum air pressure of 7 bars (100 psi) at the consumption point. Air consumption per perfector unit is 0.7 litres/sec (1.5 cubic feet per minute at 100 psi). The air consumption for an F302 folder is 3.3 litres/sec (7 cubic feet per minute).

A refrigerant dryer after the compressor is strongly recommended.

Water installation

Access to cold water supply will be required to fill the water circulating system for the dampening units, Baldwin water circulating system 620 A and 640 A. The circulating system must be positioned below the floor level, about 700 mm (28”), when used in conjunction with a floor mounted 2-high or 4-high stacked arrangement.

The optional spray dampening system has to be connected to a cold water supply. In this case a stable water pressure at 5 bar is required.

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

Floor structure – slab on ground

Generally the floor slab should be of a heavy-duty industrial type to withstand the material mass and the forces when running.

For a 4-high arrangement, load combinations from the point loads given in the installation directions or a maximum imposed point load (static plus dynamic) of 52,000 N could for design purposes be transformed to a maximum uniformly distributed (static plus dynamic) load of 26,000 N/sqm.

A qualified structural engineer should be consulted before the floor design with respect to the on-site conditions is finalized.

A double reinforced concrete slab of minimum 200 mm thickness with a top and bottom layer of 200 mm square mesh of 8 mm diameter can be recommended. Concrete shall meet the minimum requirement of RC30 MPa (300 kp/sqcm) cube strength.

It is important that load bearing capacities, textures and compactions of sub-base and sub-grades are examined. It is recommended that the load bearing capacity of any undisturbed sub-grade does not fall below 0.1 MPa.

The level of the floor must be within the limits shown on the Solna floor plan, and the surface of the floor should be dust proofed.
**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 structure). If the building is used for other activities that are sensitive to noise, the foundation of the press should be of such design that it will not transmit noise to the rest of the building.

The units are installed on AirLoc wedgemounts, type VRC without isolation pads. The F-folders are secured to the floor with grouted-in foundation bolts (floor bolts).

As an alternative to the grouted-in foundation bolts AirLoc jacmounts can be used (optional) for all F-folders.

Required number of AirLoc wedgemounts:

4-high arrangement 6 pcs

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).

**Press standard colours**

The printing units and the folders are as standard painted in Solna middle blue colour = RAL 5002 and Solna dark blue colour = RAL 5011.

**Power consumption**

Power consumption for D380 units and folder at a press speed of 40,000 rph:

<table>
<thead>
<tr>
<th>Arrangement</th>
<th>Power Consumption</th>
</tr>
</thead>
<tbody>
<tr>
<td>4-high arrangement</td>
<td>55.9 kW</td>
</tr>
<tr>
<td>2-high arrangement</td>
<td>25.4 kW</td>
</tr>
<tr>
<td>Stacked unit</td>
<td>15.4 kW</td>
</tr>
<tr>
<td>Folder F302</td>
<td>9 kW</td>
</tr>
<tr>
<td>Folder F400S</td>
<td>25 kW</td>
</tr>
</tbody>
</table>
# Weights and dimensions

## Weights

<table>
<thead>
<tr>
<th>Equipment Description</th>
<th>Approx. Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>D380 single perfecting unit</td>
<td>2,500 kg</td>
</tr>
<tr>
<td>D380 single perfecting unit with reelstand</td>
<td>3,200 kg</td>
</tr>
<tr>
<td>SIR splicer (without reel)</td>
<td>2,900 kg</td>
</tr>
<tr>
<td>D380 4-high arrangement</td>
<td>11,350 kg</td>
</tr>
<tr>
<td>F302 folder – bottom module</td>
<td>4,800 kg</td>
</tr>
<tr>
<td>F400S folder – bottom module</td>
<td>5,700 kg</td>
</tr>
</tbody>
</table>

## Floor loadings

- **D380 ABK**
- **D380 D**

**D380 4-high, Weight = 11350kg**

Floor loadings:
- Max load block 1: Static + Dynamic: $35000N + 17000N = 52000N$
- Max load block 2: Static + Dynamic: $23000N + 11000N = 34000N$
Drawings

Dimensioned drawings for a D380 4-high arrangement and for the folders, see pages 30–32.

Cylinder arrangement with inking and dampening roller train, see page 33.

Ceiling heights

The minimum ceiling height for a D380 4-high arrangement is 3,800 mm (12' 6"). If the 4-high has a standard top iron bracket (Christmas tree) for the swing compensator and for passing-by webs, the minimum ceiling height is 4,500 mm (14' 10").

The minimum ceiling height for a perfecting unit with reelstand and standard top iron is 2,800 mm (9' 2").

The minimum ceiling height for an F302 folder is 3,500 mm (11' 6") and for a BAF340 folder 4,500 mm (14' 10)

The minimum ceiling height for an F400S folder is 4,100 mm (13' 5").
**Glossary**

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Printing couple</td>
<td>The smallest working offset module including a plate and a blanket cylinder and an inking and a dampening unit.</td>
</tr>
<tr>
<td>4-high</td>
<td>An arrangement of four stacked units (up to 8 printing couples).</td>
</tr>
<tr>
<td>2-high</td>
<td>An arrangement of two stacked units (up to 4 printing couples).</td>
</tr>
<tr>
<td>2-high assembly</td>
<td>A 2-high arrangement with underbuilt reelstand or splicer.</td>
</tr>
<tr>
<td>Printing unit</td>
<td>Modular frame assembly containing one or two printing couple (1+0, 0+1 or 1+1).</td>
</tr>
<tr>
<td>Reelstand</td>
<td>A manual free-standing or integrated unit including a brake system, a reel loading device and a reel spindle carrying the paper reel. The press must be brought to a stop for reel changing.</td>
</tr>
<tr>
<td>Splicer</td>
<td>A free-standing or integrated unit for automatic splicing of the web, normally at full printing speed.</td>
</tr>
<tr>
<td>Integrated</td>
<td>This description denotes a reelstand or splicer integrated within the base of a printing unit. The reelstand or splicer will carry the weight of a perfecting unit or a 2-high arrangement, and is an integral part of the entire unit.</td>
</tr>
<tr>
<td>Full size plate</td>
<td>Also called panorama plate, covering 2 broadsheet pages or 4 tabloid pages.</td>
</tr>
<tr>
<td>Top iron</td>
<td>A superstructure on the top of a unit carrying idlers for the web leads and compensators.</td>
</tr>
<tr>
<td>Jaw folder</td>
<td>A folder where the first cross grain fold (tabloid fold) is made into a jaw equipped cylinder.</td>
</tr>
<tr>
<td>Negative former</td>
<td>Normally the former board is turned to the right, seen from the operating side of the press, positive former. If the former is turned to the left, it is then called a negative former. The pagination layout is different between a positive and a negative former.</td>
</tr>
<tr>
<td>R.T.F.</td>
<td>R.T.F. is the full width draw roller above the former.</td>
</tr>
</tbody>
</table>
Dimensioned drawings

Solna D380 4-high arrangement
Solna F302 folder

Heights include Solna foundation bolts. For AirLoc jacmounts, add 25 mm (1").

<table>
<thead>
<tr>
<th></th>
<th>L</th>
<th>B</th>
<th>H 5 webs</th>
<th>H 8 webs</th>
</tr>
</thead>
<tbody>
<tr>
<td>F302-K</td>
<td>2,740 mm (8'11 7/8&quot;)</td>
<td>3,200 mm (10' 6&quot;)</td>
<td>2,900 mm (9'6 1/8&quot;)</td>
<td>3,300 mm (10' 10&quot;)</td>
</tr>
<tr>
<td>F302-A</td>
<td>2,740 mm (8'11 7/8&quot;)</td>
<td>3,200 mm (10' 6&quot;)</td>
<td>2,900 mm (9'6 1/8&quot;)</td>
<td>3,300 mm (10' 10&quot;)</td>
</tr>
<tr>
<td>F302-B</td>
<td>2,740 mm (8'11 7/8&quot;)</td>
<td>3,200 mm (10' 6&quot;)</td>
<td>2,900 mm (9'6 1/8&quot;)</td>
<td>3,300 mm (10' 10&quot;)</td>
</tr>
<tr>
<td>F302-D</td>
<td>2,740 mm (8'11 7/8&quot;)</td>
<td>3,200 mm (10' 6&quot;)</td>
<td>2,900 mm (9'6 1/8&quot;)</td>
<td>3,300 mm (10' 10&quot;)</td>
</tr>
</tbody>
</table>
Solna F400S 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
Cylinder arrangement with inking and dampening roller train

<table>
<thead>
<tr>
<th>Drawing item no</th>
<th>Description</th>
<th>Diameter</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Ink fountain roller</td>
<td>100 mm (3.93&quot;)</td>
</tr>
<tr>
<td>2</td>
<td>Ink feed roller (metering roller)</td>
<td>76 mm (3.00&quot;)</td>
</tr>
<tr>
<td>3</td>
<td>Ink transfer roller</td>
<td>70 mm (2.75&quot;)</td>
</tr>
<tr>
<td>4</td>
<td>Ink oscillating roller</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Ink transfer roller</td>
<td>70 mm (2.75&quot;)</td>
</tr>
<tr>
<td>6</td>
<td>Ink oscillating roller</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Plate inker (ink form roller)</td>
<td>73 mm (2.87&quot;)</td>
</tr>
<tr>
<td>8</td>
<td>Plate inker (ink form roller)</td>
<td>76 mm (3.00&quot;)</td>
</tr>
<tr>
<td>10</td>
<td>Plate cylinder (designated item 10)</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Blanket cylinder (designated item 11)</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Blanket cylinder (designated item 12)</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Plate cylinder (designated item 13)</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Water fountain roller</td>
<td>82.5 mm (3.25&quot;)</td>
</tr>
<tr>
<td>16</td>
<td>Water feed (pick-up) roller</td>
<td>70 mm (2.75&quot;)</td>
</tr>
<tr>
<td>17</td>
<td>Water oscillating roller</td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>Plate dampener (water form roller)</td>
<td>70 mm (2.75&quot;)</td>
</tr>
</tbody>
</table>