Pressure Distribution

PRESS DISTRIBUTION IN NIP ZONE

PAPER WEB
ROLL
FELT
ROLL

FABRIC OR VENTANIP

PRESSURE DISTRIBUTION CURVE

FIBRE STRUCTURE PRESSURE CURVE

HYDRAULIC PRESSURE CURVE

HYDRAULIC PRESSURE CURVE FELT

TIME OR NIP LENGTH

WATER TRANS MECHANISMS

COMPRESSION CAP FORCES TWO-PHASE FLOW

THICKNESS OF PAPER WEB IN THE NIP

H_MIN
H_0
H_MAX
H_MIN POINT OF MAX DRYNESS

H_0 SATURATED THICKNESS

H_MIN
H_MAX
H_OUT

1 2 3 4
PHASE

1 2 3 4

NIP CURVE
Plain Press nip
(unsaturated)
Plain Press nip (saturated)
Suction Press
Grooved Press
Double felted
Double grooved press
ENP Extended Nip Press

- Top press roll
- Press shoe
- Yankee dryer
- Pistons
- Press sleeve
- Clamping ring
- Static supporting beam
- Lub/Cooling oil shower
- Supporting beam
- Blade
- Press shoe
- Top press roll
ENP Extended nip press
ENP Extended nip press
**ENP press impulse vs. standard**

![Graph showing ENP press impulse vs. standard with Nip Distance (mm) on the x-axis and Nip Pressure (Mpa) on the y-axis. The graph includes two curves: one for Standard nip and another for ENP. Key pressures marked are 90 kN/m, 240 kN/m, and 90 kN/m.]
ENP trade marks

- ENP (Beloit)
- ENP-C (Beloit)
- NipcoFlex (Voith)
- TissueFlex (Voith)
- Sym-Belt (Metso)
Location of suction boxes, showers and guide rolls gives rise to risk of splashing on sheet.
Location of conditioning system

More suitable felt run.
The angle of wrap of the felt across the guide roll must be at least 25°.
The distance $a + b$ must be at least equal to the width of the felt. The distance $b$ must be at least $1/3$ of the width of the felt.
Press configurations

Pre-pressing in a solid press
Press configurations

Air bleed in a suction press
Single-felted soft tissue machine with a long suction zone in the first hot press
Press configurations

: Suitable run with blind-drilled first press roll.
Recommended felt-sheet run for venta nip press in high speed machines.
Press configurations

Suitable felt run in double-felted press.
Adjustable guide roll before the nip in a double-felted press.
The pick-up angle against the wire should be sharp so as to give a satisfactory transfer. a illustrates an unsuitable felt run.
Press configurations

Different sheet runs when pressing pulp sheets against plastic wire.
Press configurations

Effect of outgoing felt angle on adhesion of sheet to felt.
Press configurations

Blowing before second press in a double press with a centre roll
Felt run after grooved press to prevent water throw-off on felt.
Suitable felt run after first suction hot-press (with short suction zone) to prevent water throw-off to felt
Press fabric run after 2nd press

Felt and wire accompany each other after the nip in the 2nd press. Considerable rewetting to felt.

Felt and wire are separated after the nip in the 2nd press. The wire retains the water which has been squeezed out.
Outgoing angle and double felted nip

A- The Sheet accompanies the bottom felt after the nip
B- The Sheet accompanies the top felt after the nip
Outgoing angle and double felted nip

Separation and dewatering of top felt between two presses.
Outgoing angle and double felted nip

Recommended alteration to felt angles in high speed newsprint machines.