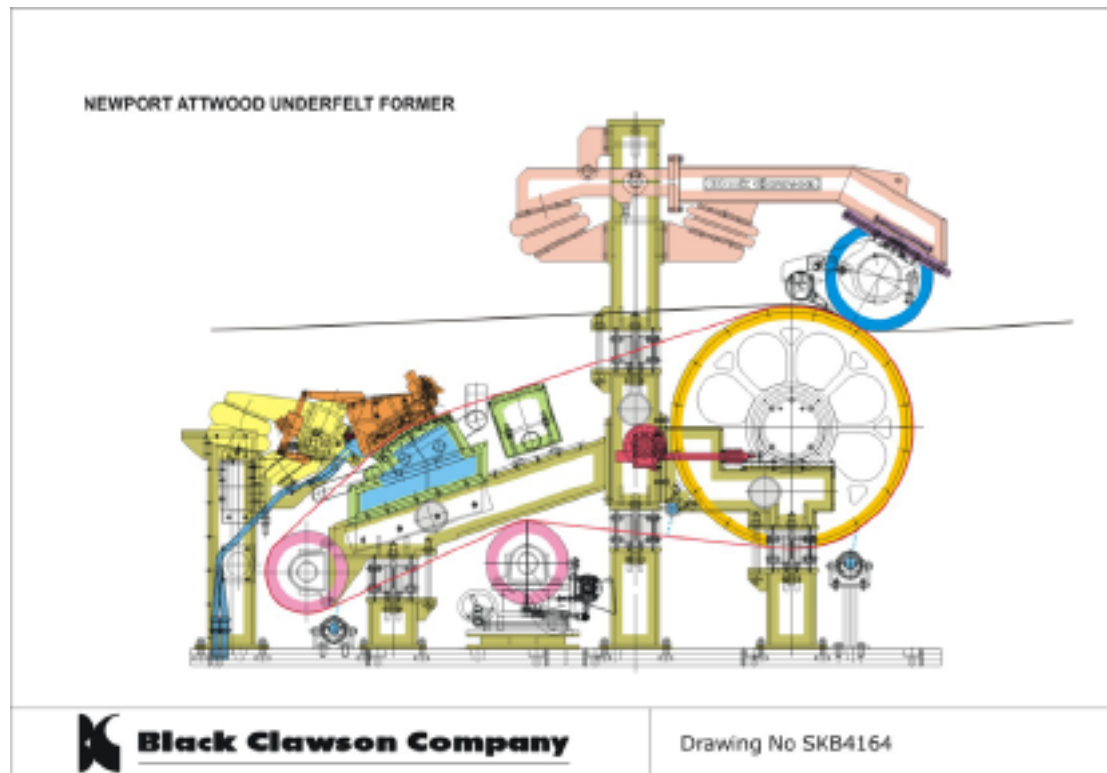


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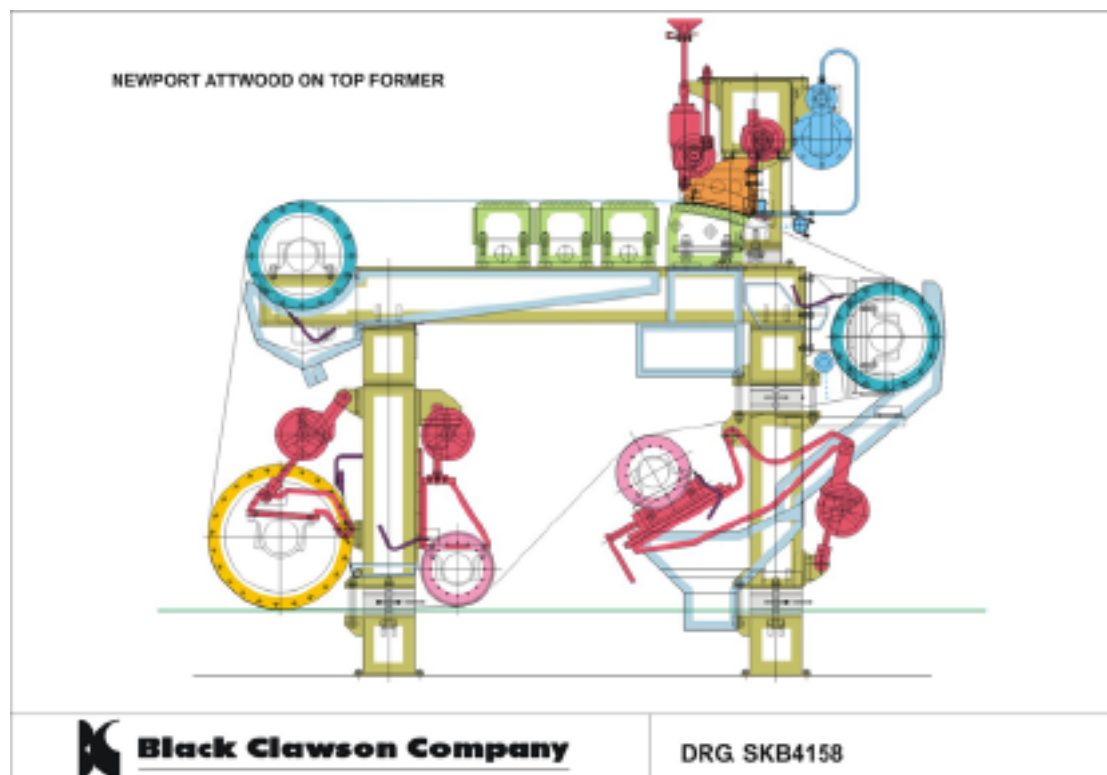
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What is a Black Clawson Newport Attwood Pressure Former?



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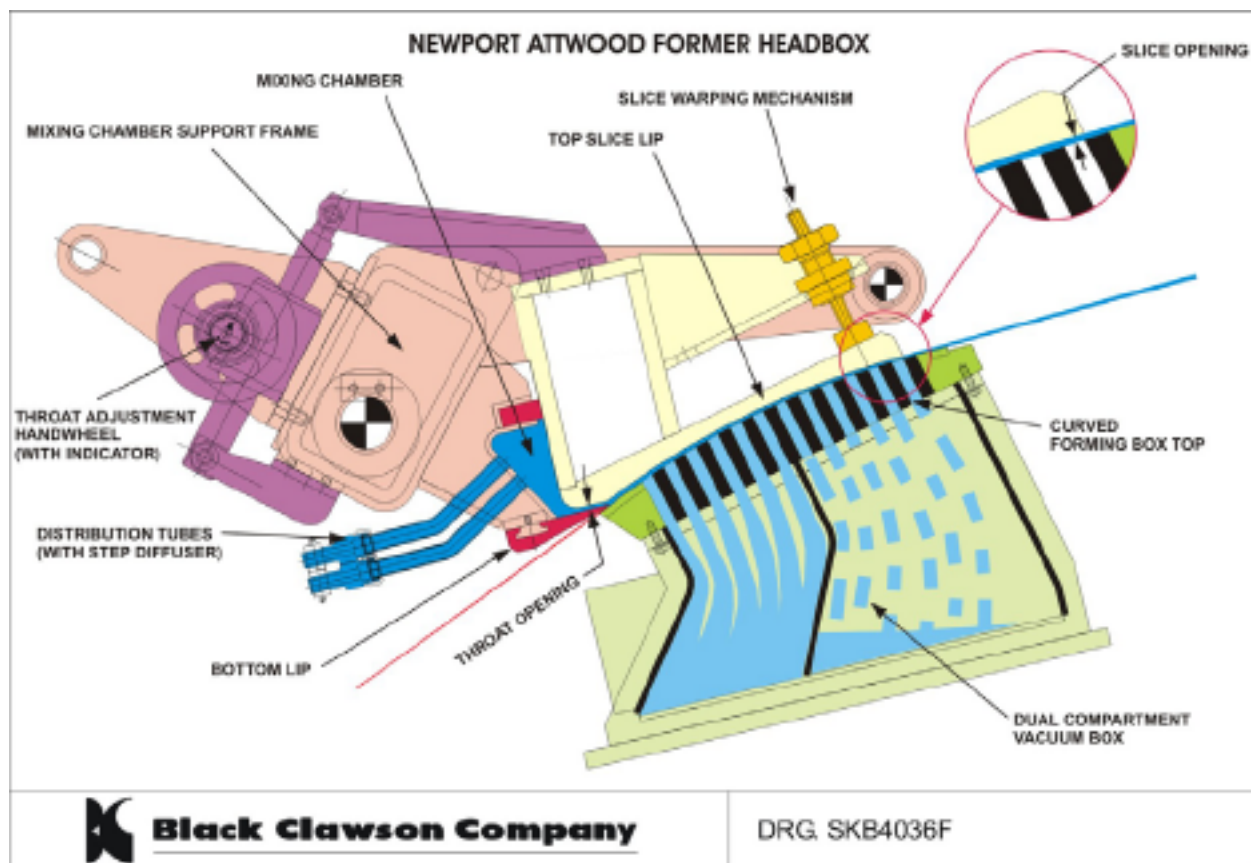
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The Newport Attwood Former

Black Clawson could see that the life in terms of speed was limited for cylinder mould forming. With the continued development of the Bristol Former by removing it from a cylinder mould and placing it in its own wire hop the Newport Attwood Former was born. This new technology was developed and made suitable for both Underfelt machines and Fourdrinier type machines.



How the Newport Attwood Former operates.

The pressure forming process can be described as a filtering process where drainage with stock dispersion takes place under controlled conditions in an enclosed space and can be considered as a flow box incorporating some pre forming.

Flow distribution system.

Typically thick stock is added to the white water then it is pumped through a screen into a distributor (taper header or Octopus) and fed through supply pipes to the head box. The Black Clawson Octopus header comes complete with a facility for adding a water dilution system capable of being used for cross machine basis weight control for the total sheet.

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Distribution Pipes

The Newport Former has a double row of flexible supply pipes that will allow the head box to be raised off the wire for cleaning unloaded for operation. Each distribution tube is fitted with a step diffuser to give additional dispersion of fibres directly before entry into the mixing chamber.

The Mixing Chamber

The mixing (explosion) chamber has been developed through pilot plant studies on the effect of shear forces on fibrous suspensions. The relationship between the size of the mixing chamber and its distribution tubes relative to the flow through the head box have a large influence on the distribution of fibres.

Bottom Lip

The bottom lip forms the base of the mixing chamber and provides the stability to provide a controlled throat gap whilst also making light contact with the moving wire as it passes over the curved forming box. This bottom lip is a wear item that is manufactured from high density polyethylene and designed to be removed easily from the machine during maintenance shuts.

Top Slice Lip

The top slice lip is a fabricated beam that has been accurately machined and polished to a very high standard and forms part of the triangle that is described as the mixing chamber. The dimensional stability of this parabolic curved lids of paramount importance, that is why the lip is 1-½ inches thick and over 16 inches long and acts as a heat sink whilst also resisting the hydraulic pressures of the head box. The gap between the top lip and the bottom lip is called the Throat gap.



Final Inspection of a Newport Attwood Former Top Lip Assembly.

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Throat Gap

The throat gap is adjustable from 0.25 to 1 inch and provides a major tool for the papermaker. This gap controls the velocity of the stock passing through the head box onto the wire and will determine the efflux ratio and therefore greatly influences the final sheet properties. The throat gap can be adjusted whilst the machine is running by using the indicator hand wheel at the front side of the machine.

Curved Forming Box

The making wire carries the stock over the curved ceramic forming box. This is the heart of the Newport Attwood Head box and the point at which dewatering starts.

Note: The stock starts dewatering whilst still inside the head box.

The curved top slice lip provides the upper boundary whilst the lower boundary is determined by the curved box top, as the difference between the two constantly reduces in size the stock is forced (under the back pressure produced) to dewater in to the curved box, leaving the fibre deposited on the wire.

The amount of open area available in the forming box for dewatering can be altered with the addition of full width fingers that would restrict drainage and effectively change the top slice lip length and thus impart different properties to the web being formed.

In addition the drainage through the dual compartment curved box can be vacuum assisted with the vacuum being increased as the web is formed.

Slice Gap

The slice gap is measured under the top slice lip at the point that the formed web exits the head box. The gap produced between the machined and polished top slice lip and the curved ceramic box will be very accurate across the full width of the machine, therefore the profiling of the slice gap will not be necessary. The opening or closing of this gap can be done whilst the machine is running by using the indicator hand wheel at the front side of the machine. As the size of this opening will affect the drainage rate and back pressure of the head box this will provide the paper maker with a powerful tool.

The Formed Web

The formation of the web is now complete upon leaving the slice gap.

Further dewatering can take place over the vacuum assisted flat box and by controlling the amount of vacuum in the flat box the dry line can be established.

Some additional dewatering will occur with the action of ply bonding at the couch roll during the transfer of the web from the making wire.

Run-ability

The Newport Attwood Former is easy to control and operate. Start up and shut down times can be extremely short which includes achieving the required web characteristics.

In addition the machine is easy to keep clean and maintain and as a consequence time lost to machine breaks is kept low.

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Product Range

The range of products that can be made with the Newport Attwood Former include: gypsum board, test liner, foldingboxboard, chip board and core board.

Furnishes can vary from waste paper through to virgin pulp.

Freeness range from 80 to 650° CSF.

Consistencies at the Newport Former can range from 0.3% to 2%.

MD : CD ratio ranges from 1.9 : 1 to 3.6 : 1

Basis weight per Underfelt Newport from 4 lbs/1000ft² to 28 lbs/1000ft².

Basis weight per On Top Newport up to 40 lbs/1000ft² with additional upward dewatering wire.

Known machine speeds up to 1600 ft/minute.

Controls are:

- a) Lift and load control (lowers former for operation or lifts for shutdown or cleaning).*
- b) Total flow of thin stock through head box.*
- c) Consistency of stock in head box.*
- d) Speed of machine.*
- e) Throat gap adjustment for rush / drag control (can be done whilst the machine is operating).*
- f) Slice gap adjustment for controlling dewatering through the head box (can be done whilst the machine is operating).*
- g) Amount of open area available for drainage in curved box.*
- h) Amount of vacuum assisted drainage in curved box.*
- i) Amount of vacuum assisted drainage in flat box (used to control the dry line).*
- j) Couch roll loading (used to control ply bonding).*

for BLACK CLAWSON LIMITED

R.Wiltshire.

Paper & Board Machine Sales Department.