

DELAVAN[®]
Spray Technologies



SPRAY NOZZLES AND SHOWERS

FOR THE PULP AND PAPER INDUSTRY

Product Guide

ALL YOU NEED TO KNOW

about

delavan

in the

pulp

and paper industry

**Sapphire
Nozzle**



As a world expert on spray technology, Delavan can supply everything you need to ensure optimum spray nozzle system performance in your Pulp & Paper Mill.

Operating from dedicated manufacturing and design facilities in the UK and USA Delavan supplies more than 30,000 different spray nozzles and accessories.

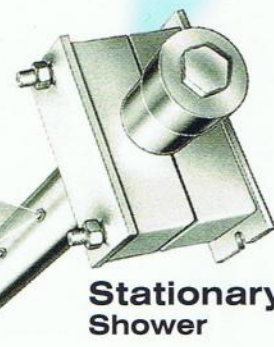
Whichever Delavan nozzle or shower you choose, you can be sure of its quality. Delavan's quality control procedures ensure that everything, from incoming materials to outgoing orders is continuously and routinely checked to ensure rigorous quality standards, including ISO 9001, are met.

The expert knowledge of our sales engineers has been built up over many years. What is more, all of our sales engineers are qualified, enabling them to understand precisely how to ensure that you receive the most efficient, cost-effective and reliable service from your Delavan nozzle system.

This guide is designed to help you identify the most suitable nozzles you will need for the various stages involved in the paper making process, including showers and the more common applications in the finishing and converting end of the mill. Should you need further information in selecting the right system for your particular job, please do not hesitate to contact our Customer Service Team or your local Technical Sales Engineer.



**Pinjet
Nozzle**



**Stationary
Shower**

Contact our customer service team or your local distributor for further details
Tel: +44 (0)151 424 6821 or alternatively e-mail: sales@delavan.co.uk

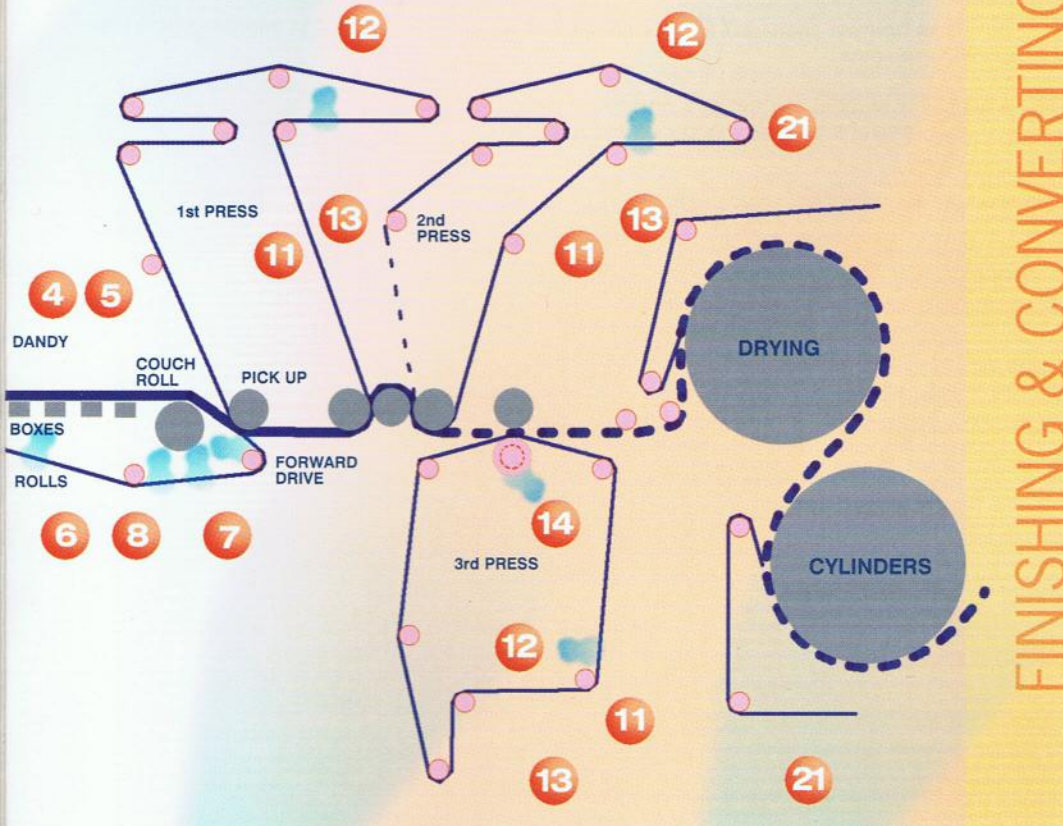
**ACS
Nozzle**



**ED
Nozzle**



SPINNING MACHINE



shower and nozzle locations

- 1** Headbox Shower
- 2** Backslice Shower
- 3** Breast Roll Showers
- 4** Dandy Roll Shower
- 5** Deckle Edge Crosscutter
- 6** Suction Couch Shower
- 7** Forward Drive & Wire Return Knock Off Showers
- 8** Wire Return & Trim Knock Off Showers
- 9** Wire Return Roll Showers
- 10** Wire Cleaning HP Shower
- 11** Felt Conditioning HP Showers
- 12** Felt Washing Showers
- 13** Vacuum Box Lubricating Showers
- 14** Grooved Press Cleaning Shower
- 15** Mould Cleaning HP Shower
- 16** Extractor Roll HP Shower
- 17** Felt Conditioning HP Shower
- 18** Felt Washing Showers
- 19** Felt Sluicing Showers
- 20** Felt Washing Showers
- 21** Dryer Screen Conditioning Showers



**Disc
Nozzle**



**AC
Nozzle**

If it involves
spraying
call Delavan

spray nozzles

Selecting the right nozzle for the job...

Delavan provides a vast range of spray nozzles with many variations on each basic type. Featured within the following pages is a selection of information that will help you to identify the spray nozzles and showers most commonly used throughout the paper making process.

Remember we are here to help you to choose the best spray products for your Pulp and Papermaking process and comprehensive information relating to all of the spray nozzles depicted in this brochure is available in our main "Total Control" Specifiers Guide or on relevant Delavan data sheets.

If you require further information or advice, then Delavan engineers and technical staff are always available to answer your questions and to provide solutions to specific problems.

For improved paper quality, increased productivity and the support of a worldwide group, choose Delavan - the best on paper and leaders in spray nozzles technology.

typical applications

	Applications	Nozzles Used
PULP PREPARATION		
WOOD ROOM	DEBARKING	AZ
	DUST CONTROL	WG
	WASHING MUD FROM LOGS	AZ, AC, TJ
	MOISTENING LOGS	BI, BN, MCN
	PULP WASHING	SHOWERS
	PULP BLEACHING	CIP, AC, AN
PAPER MAKING		
WET END	CLEANING FELT AND FABRIC	PINJET, SAPPHIRE, DISC NOZZLE, AL, AC
	FOAM CONTROL	BI, BN
	WASH WALLS OF HEAD BOX	CIP, ED
	PRE-WETTING	AL, WG, LF, AE, AF
	CLEANING SUCTION AND DANDY ROLLS	PINJET, SAPPHIRE, DISC NOZZLE
FOURDRINIER	CLEANING WIRES	DISC NOZZLE, LF, ACS
	CLEANING FELTS	AC, LF, TJ, ED
	LUBRICATION	AL
	TRIMMING PAPER WEB	PENCIL JET, AC
FINISHING & CONVERTING		
DRY END	RE-MOISTURISING	AL, VCN
	SLIT PAPER TO WIDTH	PENCIL JET
	HUMIDIFICATION	AL
	SPRAYING STARCH	AE, AF, VCN
	COOLING, DRYING, BLOW OFF	AJ 150
FINISHING & CONVERTING PLANT		



Pinjet

Precise straight stream with profile resisting to clogging.



MCN

The type MCN is a cone spray nozzle available in a variety of spray angles. These nozzles permit maximum liquid throughput for a given pipe size and the free passage design minimises clogging.



ED Nozzles

When space is an issue, the Delavan ED flat spray nozzle can be flush mounted onto shower pipes.



ACS

Precise straight stream (0° angle).



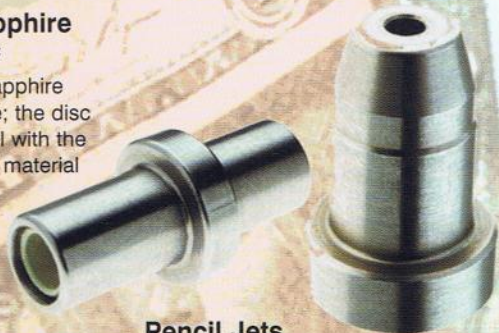
Disc Nozzle

The Disc Nozzle is a flat fan spray nozzle available in a variety of spray angles. The disc is made from Stainless Steel. The disc fits standard size nozzle body.



Sapphire Disc

The type Sapphire Disc is a straight jet spray nozzle; the disc is manufactured in stainless steel with the sapphire tip insert. The sapphire material is more wear resistant to ruby; this gives a more smooth, cleaner and better performance through the orifice. The sapphire tip has two fixing methods into the disc this prevents any problems with leakage from the nozzle. Replacement nozzle for our shower range.



Pencil Jets

Our pencil jet offers a precise, clean cut pin-like solid stream from its ceramic insert. Used in accurate paper trimming applications. Orifice size 0.4 to 2.6mm.



LF Tips

Produces a uniform flat fan spray pattern for general use in the mill.



AC Flat Fan

Standard AC flat fan for general cleaning, wash down on wire or felt applications. Available in brass or stainless steel.



spray nozzles



1/4 0° AC

This will give effective 0° angle at low pressure. Available in wide range of sizes.

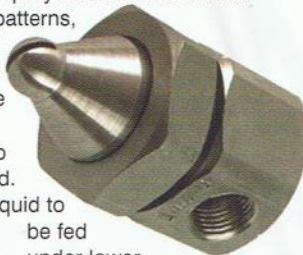


Tank Cleaning - FIXED & ROTATING HEADS

Various types of fixed and rotating sprayheads are available and are ideal for washing or rinsing tanks of various sizes.

AL (Air Atomising)

AL air atomising spray nozzles offer a wide variety of spray patterns, flow rates and atomisation. The AL series use the energy of a pressurised air to atomise the liquid. This allows the liquid to



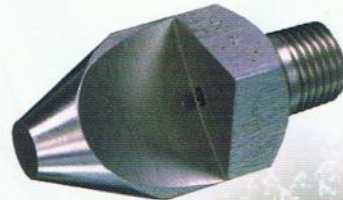
be fed under lower pressure and still achieve fine atomisation.

VCN

When total control is essential, Delavans Variable Coating Nozzle (VCN) design allows the width of the spray, the atomising air and the flow of the liquid all to be controlled independently and remotely.

TJ

This high impact nozzle produces a flat spray pattern, giving maximum impact for any given pressure due to deflector design. The circular orifice with tapered inlet reduces plugging. You will find this commonly used on deckle-edge showers.



WG

Produces the finest possible atomisation using liquid pressure. The nozzle tips are precision machined to ensure most perfect spray available at low throughputs. Typically used for remoisturising applications. Produces a hollow cone spray pattern.



AZ

High impact precision machined nozzle suitable for stock preparation.



AE/AF

Delavan AE and AF nozzles produce finely atomised hollow cone spray patterns. This is a two piece design with no internal vanes. Can be used with white water.



AN

The AN nozzle produces a wide flat spray pattern with low atomisation. The round orifice and tapered inlet minimises clogging.



BI/BN

The BI nozzles produce uniform distribution of droplets in a solid cone pattern, whilst the BN produces the solid cone in a much wider angle. This design is a one piece body.



AJ 150

For all applications where a flat pattern of high impact compressed air is required - can be mounted side by side to produce an effective air curtain.

accessories

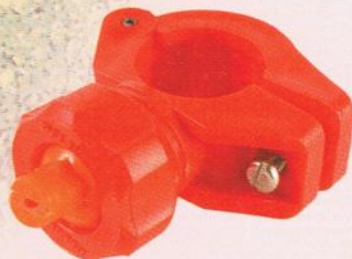


Hand Gun

Heavy duty impact resistant handguns. Different models available at different pressures between 1000 and 3000 psi (available with lance).

Eyelets

The Ball Swivel Eyelets are designed to clamp around a plastic or metal pipe. The large cap allows the nozzle to be locked into the desired position by hand.



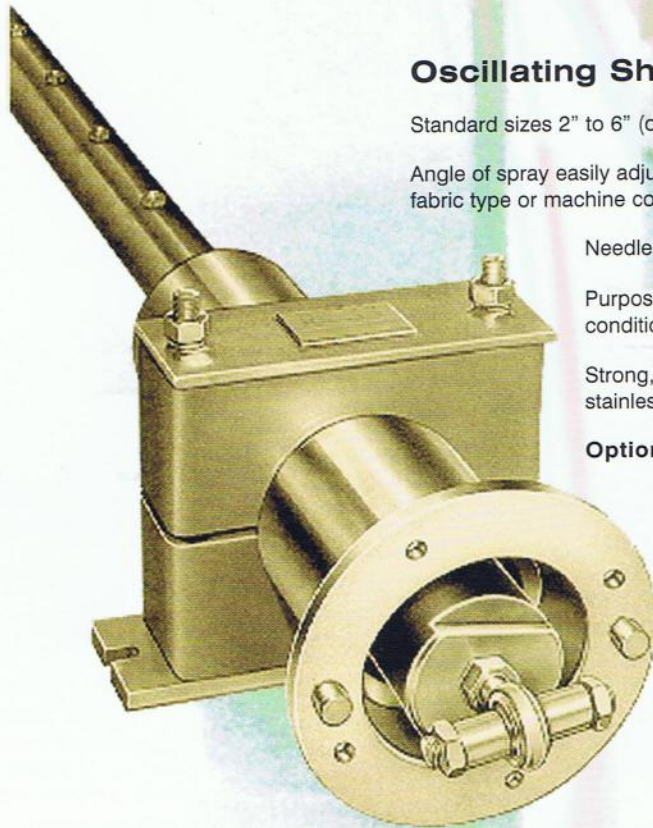
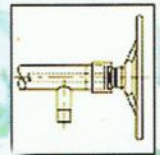
Adjustable Joint

The adjustable joints are designed to allow the nozzle to be locked into a desired position. Is fixed to the main feed pipe by a thread connection.

showers

The Delavan Shower models offer Tissue, Paper and Board mills a fully comprehensive range, including stationary, oscillating and brush types. The range which is manufactured to the **ISO 9001** Quality Standard, provides mills with an efficient engineered product covering shower applications with minimum maintenance.

Later in this brochure you will find a shower specification sheet for you to complete and fax back for a detailed assessment of your requirements. Should you require detailed information on a specific matter, our engineering staff are always available to assist in the selection and specification of showers to meet particular needs.



Oscillating Shower

Standard sizes 2" to 6" (other diameters by request)

Angle of spray easily adjustable in machine direction to suit change of fabric type or machine conditions

Needle Jets or Fan Jets to suit application

Purpose built to suit fabric type and production conditions

Strong, substantial polypropylene brackets with stainless steel reinforcement for added strength

Options:

- Stiffening and/or prebowing on wide machine installations*
- Built in brush*
- Drive side inlet branch*
- Self-purge nozzles*
- Manual or motorised cleaning brushes*

Stationary Shower

Standard sizes 2" to 6" (other diameters upon request)

Angle of spray is easily adjustable in machine direction to suit change of fabric run, fabric type or other machine conditions

Wide range of available nozzle types, diameters and angles to suit any application

Smooth shower internals with designed spray discs. Ideally suited to internal brush applications, such as when using clarified backwater

Continuous discharge nozzle available to prevent fibre accumulating and thereby reducing potential nozzle blockage

Options: *Manual cleaning brush
Available with travel
Motorised cleaning brush
Stiffening and/or prebowing on wide machine installations
Support brackets (as shown)
Clean out valve
Hexagonal spray disc holder
Sequence timer panel for motorised brush system*

Electro - Mechanical Oscillator

Slow movement - minimises random effect

Available as a conversion unit on existing oscillating showers

Built in fail safe system

Remote control facility

Stainless steel body

Compact Construction

AC inverter drive with PLC control

Shower speed readout with speed control

Standard speed 60 - 90 mm/min

Fixed speed 12 or 60 mm/min (at 50 Hz)

Options: *Fixed or variable speed
Sizes to suit application
Speed control linked to machine speed
Customised PLC programs
Stroke adjustment and alarm function
Machine speed readout
Interface with customer DCS
Multi - system in customised cabinets*



Double Tube Oscillating Shower

Standard sizes 2", 3", 4" (other diameters available on request)

Carrier tube remains in place on the machine when the shower is removed for nozzle cleaning, without waiting for a machine shutdown

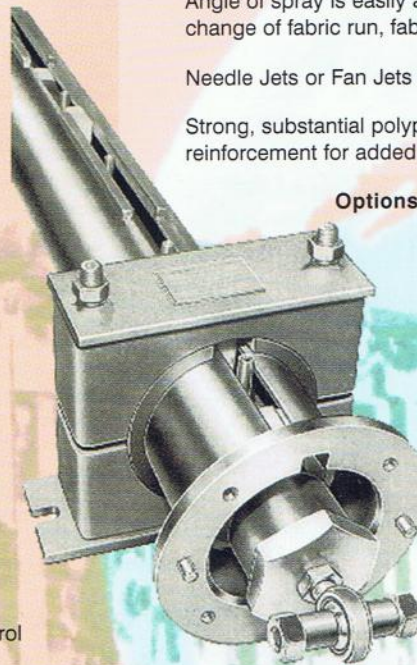
Shower securely guided in carrier to ensure positive nozzle location

Angle of spray is easily adjustable in machine direction to suit change of fabric run, fabric type or other machine conditions

Needle Jets or Fan Jets to suit application

Strong, substantial polypropylene brackets with stainless steel reinforcement for added strength

Options: *Stiffening and/or prebowing on wide machine installations
Drive side inlet branch
Manual or motorised cleaning brushes
Quick release drive pin connections*



Shower Specification Sheet

Faxback

ON +44 (0)151 495 1043 (OR TO YOUR LOCAL DISTRIBUTOR)

Please remember, if you require assistance at any time do not hesitate to contact one of our engineers!

Date: _____ Company: _____

Contact Name: _____ Address: _____

Phone No: _____

Fax No: _____ E-mail _____

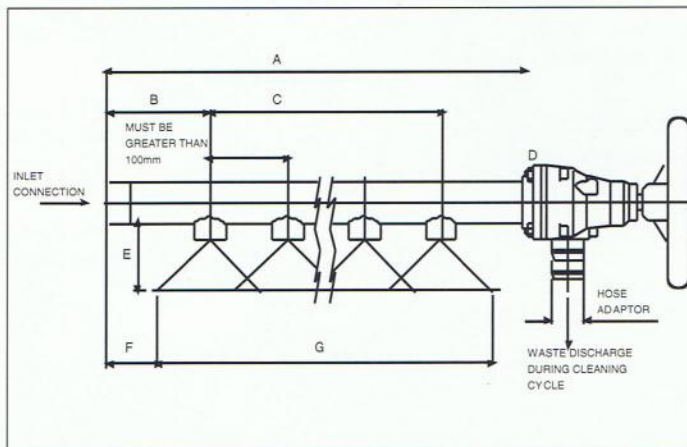
Key

A) Length of pipe required

B) Distance required from the end of inlet to centreline of first nozzle

C) Distance required from centreline of first nozzle to centreline of last nozzle

D) Spacing between nozzles required



E) Required shower height

F) Distance required from the end of the inlet to the edge of the sprayed surface

G) Required total coverage distance

No of Nozzles required _____ Orifice Size _____ Spray Angle _____

Type of shower required (please tick where applicable)

Operating Pressure _____ Total Flowrate/Shower _____

Stationary No Brush Manual Brush Motorised Brush
(Number required:-)

Oscillating Single Tube Double Tube
(Number required:-)
No Brush Manual Brush Motorised Brush

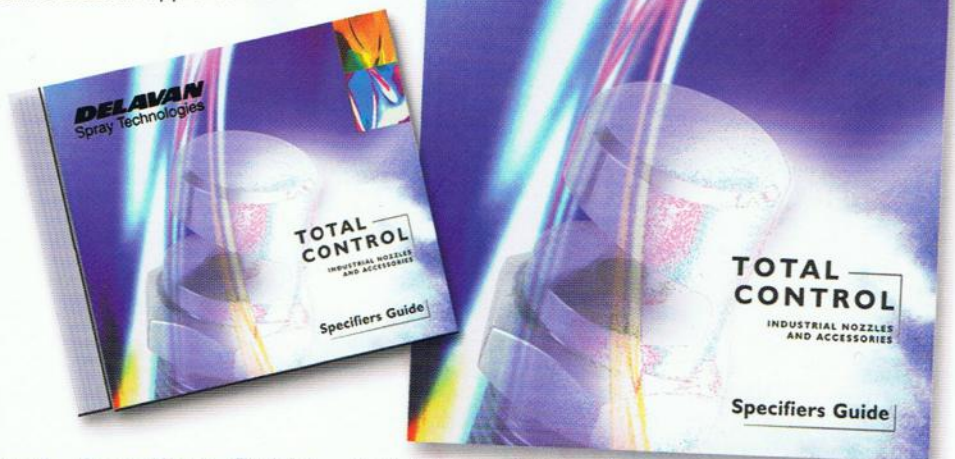
Electro-Mechanical Fixed Speed Variable Speed
Oscillator (number required:-)

Any other comments

Everything you'll ever need to know about nozzles...

As well as being the UK's largest manufacturer of spray nozzles, Delavan's 65 years of experience makes us the Spray Nozzle Experts. Our advanced manufacturing systems enable us to offer you unparalleled prices and delivery and absolute commitment to solving your spraying problems.

We will give you the best advice through either our customer service team, our office based applications engineers, our Field Sales Engineers or our worldwide network of Delavan approved distributors.



Total Control - Specifiers Guide available in book or CD format.

This 256 page guide features: **A wide selection of our standard Industrial, Spray Drying and Clean in Place nozzles. An in-depth guide to nozzle technology. An application guide.**

OTHER
literature
available



Short Form Catalogue

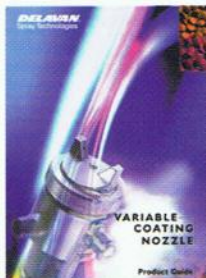
A brief overview of Delavan, the markets and applications we serve and the products we supply. Available in:

English Spanish
French Italian
German Chinese
Dutch



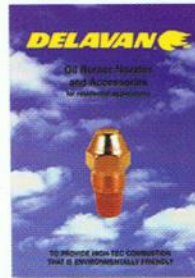
Safety Showers & Eyebaths

A 20 page guide of our comprehensive range of emergency safety showers, eyebaths and associated products.



Variable Coating Nozzle

This guide gives a brief overview of our new VCN nozzles, showing its use in a wide variety of applications.



Oil Burner Guide

A new guide to Delavan's extensive range of oil burner nozzles.



Spray Drying Product Guide

This guide includes an introduction to spray drying technology as well as Delavan's comprehensive range of Spray Drying nozzles.

New literature

We are currently updating and adding to our range of literature. We expect to have two more specialist guides available within the next few months.

Visit our website @www.delavan.co.uk for further details

Contact our customer service team or your local distributor for further details
Tel: +44 (0)151 424 6821 or alternatively e-mail: sales@delavan.co.uk

Dealer Stamp

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GOODRICH