

OY TRIAL AB

Oy Trial Ab a workshop founded 1972. We have produced different washing solutions for the pulp- and paper industry for over three decades. The basis for our operation is professional staff, a customer friendly way of thinking and a long experience of the Finnish and international paper industry.

We are a 100% Finnish company and we use mainly Finnish raw materials from selected suppliers.

Our main products – shower pipes and nozzles – we produce ourselves from the beginning to the end at our workshop in Lohja, Finland.

We offer a comprehensive solution for our customer's needs, from problem analysis and planning to installation and operating training. Shower pipes and nozzles planned appropriately for their purpose are a macro economically significant part of the process. They directly affect the quality of the final product, prolong the lifetime of fabrics and felts and reduce production stops and water consumption.

You can find Oy Trial Ab's products in almost all Finnish pulp-, paper- and cardboard industries. Further more 46% of our turnover (year 2003) comes from export to Scandinavia, Middle Europe, Russia, South Africa and Asia.

Know how, an effective organisation and long-standing relationships to the raw material suppliers enable a flexible, tailor-made planning, short delivery time and a rapid spare part and maintenance service.



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Tank and channel washers

Advantages of using Trialoy- washers:

Prevents the slime build-up and clod formation in tanks and channels during operation

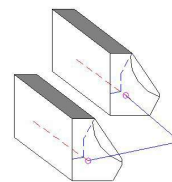
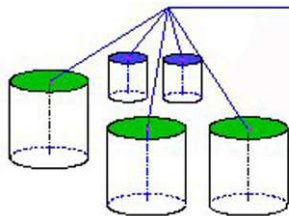
Prevents dried build-ups from falling in to the pulp

Continuous washing is efficient - no extra washing needed under shutdowns

No need to empty the tanks for occasional washing

Prevents the hardening and moulding of the pulp

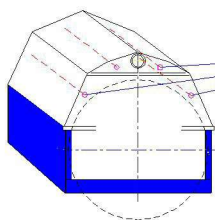
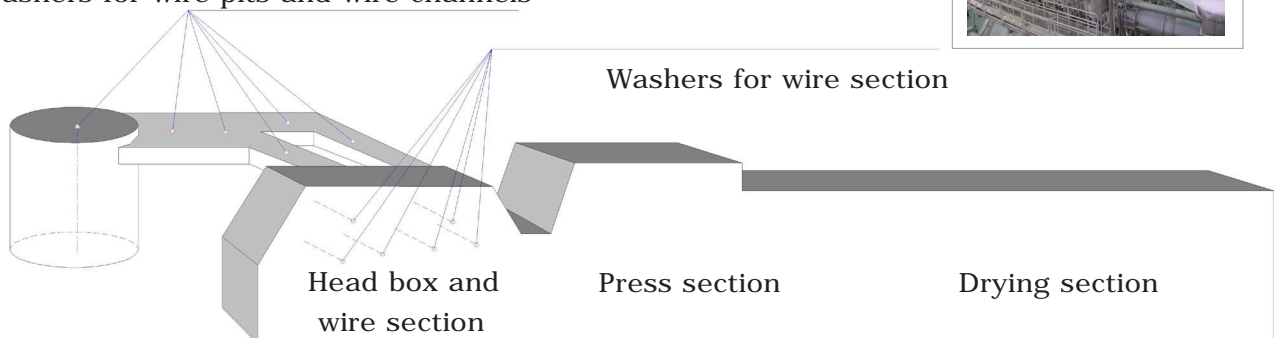
Machine tanks, mixing tanks
and dosing tanks etc.



Bow screens



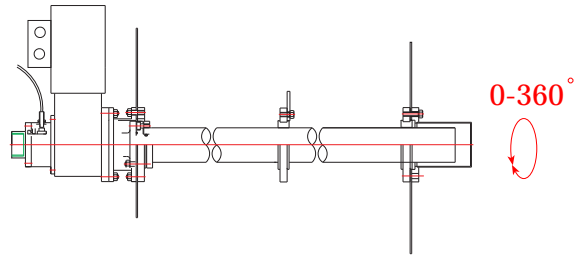
Washers for wire pits and wire channels



Disc filters, drum
filters etc.



Tank and channel washers



The washers can be programmed to rotate between 0 -360 degrees around its own axis.

- TWO WASHER MODELS No.7 AND No.4
- No.7 IS MAINLY FOR HORIZONTAL WASHERS IN FILTERS AND CHANNELS, BUT CAN ALSO BE USED FOR OTHER APPLICATIONS
- No.4 IS THE SMALLER ONE MAINLY FOR VERTICAL WASHERS IN TANKS AND CHANNELS.
- EACH WASHER HEAD IS SPECIALLY DESIGNED FOR EVERY APPLICATION, THE AMOUNT OF WATER IS DETERMINED BY THE AMOUNT OF NOZZLES AND THE WATER PRESSURE. THE DESIGN AND SHAPE IS DETERMINED BY THE OBJECT IN QUESTION.
- THE NOZZLES AND THE PRESSURES ARE OPTIMIZED NOT TO DISTURBE THE WATER BALANCE OF THE SYSTEM.
- A LOT OF ENERGY AND WATER CAN BE SAVED BY RUNNING THE WASHERS AFTER ONE AND OTHER AND NOT AT THE SAME TIME.



WASHER 7



WASHER 4



Shower pipes

OPTIMIZED WATER FLOW

LIGHT SELF BEARING CONSTRUCTION

WITH MANUAL OR AUTOMATIC BRUSHING SYSTEM

TRIAL OY - LOW PRESSURE SHOWER BARS

Paper, Board and Drying Machines

- Lubrication and washing showers for:
 - Wires
 - Felts
 - Rolls and
 - Doctor Blades
- Knock-off Showers
- Edge Washing Showers
- Breast Roll Showers

Showers for spreading of starch and chemicals

Disc Filters

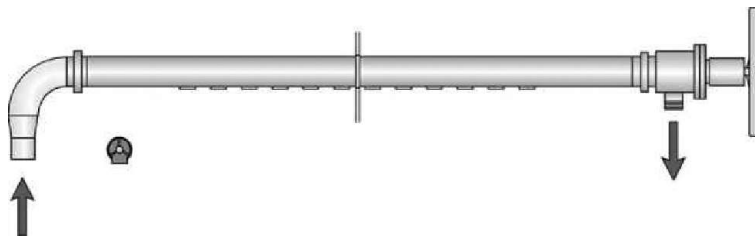
- Brushable Knock-off Showers
- Brushable and oscillating
- Disc Washing Showers

Drum Filters

- Brushable showers
- Pulp Washing Showers

Twin Wire Presses

- Wire Washing Showers



Ground Wood Mills

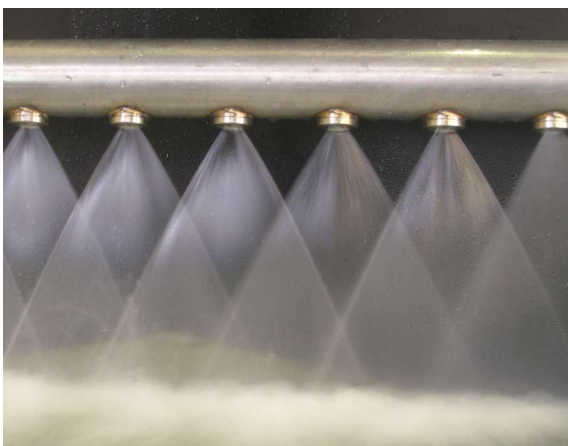
Grinder Stone Washing and Cooling Showers

Special showers e.g.

- Extinguishing Showers
- Bow Screens

Filter Presses

- Filter Washing Showers



- FOR PRESSURES 0,5 - 20 bar
- BRUSHABLE 1,2 - 6,0 mm
FLAT SPRAY NOZZLES 15° - 80°
- NOZZLE PITCH AND SPRAYING
ANGLE FOR SPECIFIED PURPOSE

Shower pipes

TRIAL OY- OSCILLATING HIGH PRESSURE SHOWER BARS

Wire Section

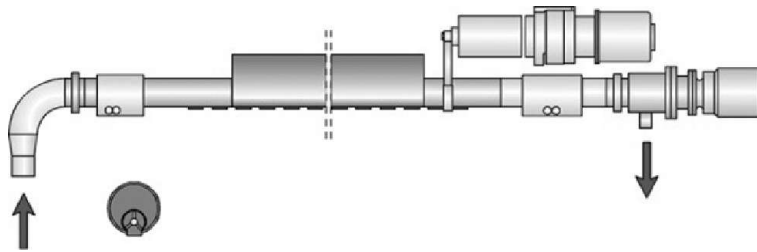
- HP- Showe for:
 - All wet wires
 - Rolls

Press Section

- HP- Showers for all Press Felts

Dryer Section

- HP- Showers for all Dryer Wires



Special Showers

- Objects needing high impact washing e.g. different organic sediments and build-ups

Thickeners

- HP- Showers for Thickener Wires



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- SELFSUPPORTING CONSTRUCTION
- LIGHT MOVEMENT ON SPECIAL BEARING SUPPORTS
- PRESSURE SCALE 10 - 60 bar
- BRUSHABLE 0,6 - 1,0 mm NEEDLE JET NOZZLES
- NOZZLE PITCH AND STROKE FOR SPECIFIED PURPOSE

The manufacturer reserves the right to technical changes.

 **TRIAL**

Electromechanical Brushing Device

To clean the nozzles automatically under the paper making process

For all tight or dirty places where manual brushing is impossible or difficult to arrange and where there is a high risk for nozzle plugging

Reliable

Easy to mount and service

Light and durable structure – no bearing support needed

Superior quality even under severe conditions



Electromechanical Brushing Device

TECHICAL DATA

1½" flushing valve with pneumatic actuator

10...36DC* inductive limit switch

3-phase cyclo gear motor:

230/400V* / 50Hz / 0,12kW

Gear ratio 1/143

Protection class IP66

Rotation speed of the brush 10 r/min

*other voltages optional



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 **TRIAL**

Hasegawa

Shower oscillator with self alignment

HASEGAWA

SL-3 B SERIES

Spherical bearing support system greatly reduces power consumption

Small 120W motor saves energy and space

Demonstrates superior durability even under severe conditions

For removing wire and felt contaminations with high pressure shower pipes

Increases operation efficiency for paper making machines

Ideal durability

TECHNICAL DATA

Standard stroke 260mm*

Standard speed 39mm/min at 50Hz

With a 3-phase cyclogear motor:

230/400V* / 50Hz / 0,12kW

Gear ratio 1/1247

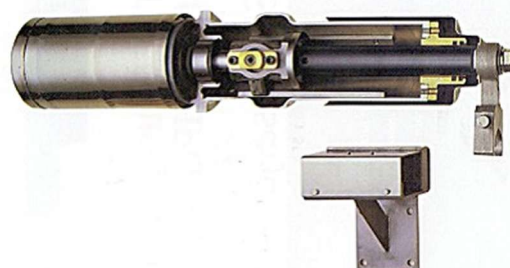
Protection class IP66

*other strokes or voltages optional

Available as option:

Control system to match the speed of the stroke to the speed of the paper machine.

HASEGAWA



Hasegawa

Shower oscillator with self alignment



Original spherical bearing support system

The oscillating body and drive unit are protected from abnormal load, like shower pipe strain, vibration, and possible changes in the installation points, by the spherical bearing support. This eliminates oscillator breakdown and increases service life.

Easy alignment to shower pipes

There is four standard directions (up, down, left and right) to install the oscillator on the shower pipe. The low friction pipe receivers with rollers are durable and easy to mount.

Designed to save energy and space

Due to the superior low friction mechanism, the oscillator enables use of a high performance low output small scale motor. Compared with conventional oscillators, the small size and light weight of this device permits installation in very small spaces.

Reliable oil bath lubrication system

The lubrication for the drive unit is completely sealed to prevent any oil leakage. Superior wear resistance of the ceramic coating at the oscillating rod surface holds down rod wear.

Also, a stainless cover over the rod prevents external water and dust from adhering to the rod surface. This assures complete reliability.

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Esteri

Pneumatic Shower Oscillator



Reliable and maintenance free

External parts Aisi 316L

Smooth movement

Fast return - function

Returning to the reference point

Manual or electric remote speed control

Oscillator speed synchronization to the speed of the paper machine



Esteri

Pneumatic Shower Oscillator

OPERATION

There are a 5/2-main valve and two impulse valves in the controller. The impulse valves recognise the reversing point mechanically and control the main valve. Speed adjustment can be done manually by adjusting a screw or automatically. Motion control is performed with a linear sensor or an impulse sensor.

PRODUCT RANGE

Force N / 6bar	Cylinder Ø	Stroke length, mm	Adjustment range of reference point, mm	Speed, mm/s	Order code of the basic version
6800	125	150	-3.....+2	0,2.....15	SHO-L-125/32-Stroke-20002
6800	125	300	-3.....+2	0,2.....15	SHO-P-125/32-Stroke-20097

TECHNICAL DATA

Cylinder type	Dual-acting, pneumatic cylinder with hydraulic speed adjustment
Valves	Control valve located in the bottom surface of the intermediate end cap. Other valves and adjustment parts are integrated to the end caps.
Motion control	1-20Hz pulse sensor or linear sensor 4-20mA
Medium / Pressure area	Compressed air or neutral gases, 2 - 10 bar, filtered 20 µm or lubricated
Optional fast return	By an adjusting knob, also controlling the speed of the fast return
Operating temperature	+ 5°C ... +120°C
Materials	All external parts AISI 316L. Seals: Viton / PTFE
Speed adjustment	Remote controlled 2-5 bar or by a knurled-head screw from the top of the oscillator
Stopping at reference point	Possible to stop the cylinder rod at the retracted position
Thrust force	6800N / 6 bar
Stroke length	150 or 300 mm (or optional)
Speed	0.2 - 5 mm/s (standard), max. 15 mm/s (optional), max. 20 mm/s rapid return

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SHO-L: Equipped with a linear sensor
SHO-P: Equipped with a pulse sensor

If the oscillator is synchronized to the speed of the paper machine, version SHO-L must be used. Remote controller equipped with an I/P converter is used for regulation of speed.

Flat Spray Nozzles

Flat spray nozzles for different low pressure washing applications

Multiple lifetime compared to a standard steel nozzle



All our nozzles are specially designed for shower pipes with a manual brush or an automatic brushing device. We also manufacture high precision nozzles by our customer's demands.

TECHNICAL DATA

Spraying angle: 15°, 30°, 60° or 75°

Nozzle materials: SS = Aisi 316L, SMO = 254 SMO

Outer diameter Ø26mm or external thread R1/8" and R1/4"

and high pressure shower pipes

WASHING SHOWERS
LUBRICATION SHOWERS
MOISTENING SHOWERS
KNOCK-OFF SHOWERS
...AND MANY MORE



Spraying angle

2560 - SS

Size

Material



Spraying angle

External
thread size

2560 - SS - 1/8

Size

Material

Flat Spray Nozzles

Spraying angle (3bar)	Nozzle code	Size	Waterflow (l/min)						
			1 bar	2 bar	3 bar	4 bar	6 bar	8 bar	10 bar
75°	1275	1,2	0,6	0,9	1,3	1,5	1,6	1,8	2,4
	1575	1,5	1	1,4	1,7	2	2,4	2,8	3,3
	2075	2	1,8	2,5	3	3,5	4,5	5	5,8
	2575	2,5	2,8	4	5	5,5	7	8	9
	3075	3	4,5	6,3	8	9	11	12,5	14,4
	3575	3,5	5,7	8	10	11,5	14	16	27
	4075	4	7,2	10,1	12,5	14,5	17,5	20	36
	5075	5	11,2	15,8	20	24	29	33	47
	6075	6	17,8	25	33	38	46	53	72
60°	1260	1,2	0,6	0,9	1,3	1,5	1,6	1,8	2,4
	1560	1,5	1	1,4	1,7	2	2,4	2,8	3,3
	2060	2	1,8	2,5	3	3,5	4,5	5	5,8
	2560	2,5	2,8	4	5	5,5	7	8	9
	3060	3	4,5	6,3	8	9	11	12,5	14,4
	3560	3,5	5,7	8	10	11,5	14	16	27
	4060	4	7,2	10,1	12,5	14,5	17,5	20	36
	5060	5	11,2	15,8	20	24	29	33	47
	6060	6	17,8	25	33	38	46	53	72
30°	1230	1,2	0,6	0,9	1,3	1,5	1,6	1,8	2,4
	1530	1,5	1	1,4	1,7	2	2,4	2,8	3,3
	2030	2	1,8	2,5	3	3,5	4,5	5	5,8
	2530	2,5	2,8	4	5	5,5	7	8	9
	3030	3	4,5	6,3	8	9	11	12,5	14,4
	3530	3,5	5,7	8	10	11,5	14	16	27
	4030	4	7,2	10,1	12,5	14,5	17,5	20	36
	5030	5	11,2	15,8	20	24	29	33	47
	6030	6	17,8	25	33	38	46	53	72
15°	1215	1,2	0,6	0,9	1,3	1,5	1,6	1,8	2,4
	1515	1,5	1	1,4	1,7	2	2,4	2,8	3,3
	2015	2	1,8	2,5	3	3,5	4,5	5	5,8
	2515	2,5	2,8	4	5	5,5	7	8	9
	3015	3	4,5	6,3	8	9	11	12,5	14,4
	3515	3,5	5,7	8	10	11,5	14	16	27
	4015	4	7,2	10,1	12,5	14,5	17,5	20	36
	5015	5	11,2	15,8	20	24	29	33	47
	6015	6	17,8	25	33	38	46	53	72

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TRIAL

Needle Jet Nozzles

For high pressure cleaning in the pulp- and paper industry



PREMIUM QUALITY

VERY LAMINAR AND STRAIGHT FLOW

OPTIMAL DESIGN KEEPS THE NOZZLES CLEAN

NOZZLE ORIFICE A VERY HARD AND DURABLE SYNTHETIC RUBY

THE RUBY INSERT IS FITTED SAFELY AND WITHOUT TENSIONS

MULTIPLE LIFETIME COMPARED TO A STANDARD STEEL NOZZLE

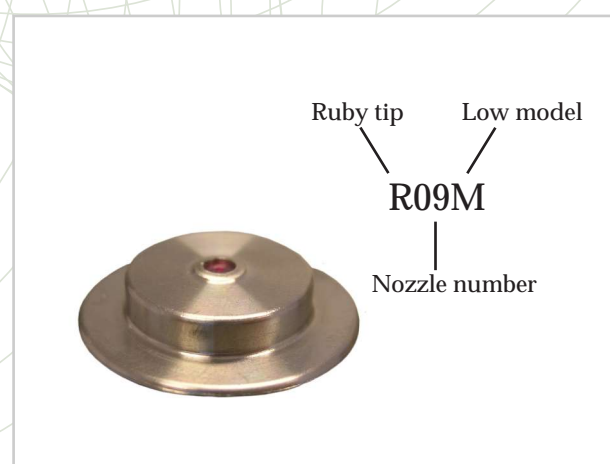
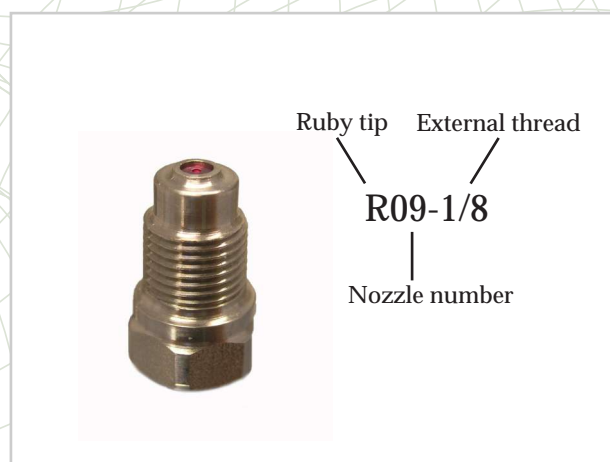
RUBY NOZZLES

Orifice sizes from 0,6 to 1,00mm

Body material Aisi316L

Nozzles outer diameter ø26mm or external thread R1/8"

Right design and size to all nozzle holders and high pressure shower pipes



Needle Jet Nozzles

For high pressure cleaning in the pulp- and paper industry



STEEL NOZZLES

Same sizes and models as above (also with external thread R1/4 “), but without the ruby tip. Orifice dia. sizes from 0,8mm to 3mm.

Nozzle number	Orifice diameter, mm	Waterflow (l/min)				
		10 bar	15 bar	20 bar	30 bar	40 bar
06	0,60	0,56	0,68	0,79	0,96	1,05
07	0,70	0,76	0,93	1,07	1,31	1,46
08	0,80	0,98	1,29	1,39	1,7	1,97
09	0,90	1,24	1,52	1,76	2,15	2,51
10	1,00	1,54	1,88	2,18	2,66	3,16

All our nozzles are specially designed for shower pipes with a manual brush or with an automatic brushing device. We also manufacture high precision nozzles by our customer's demands.



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