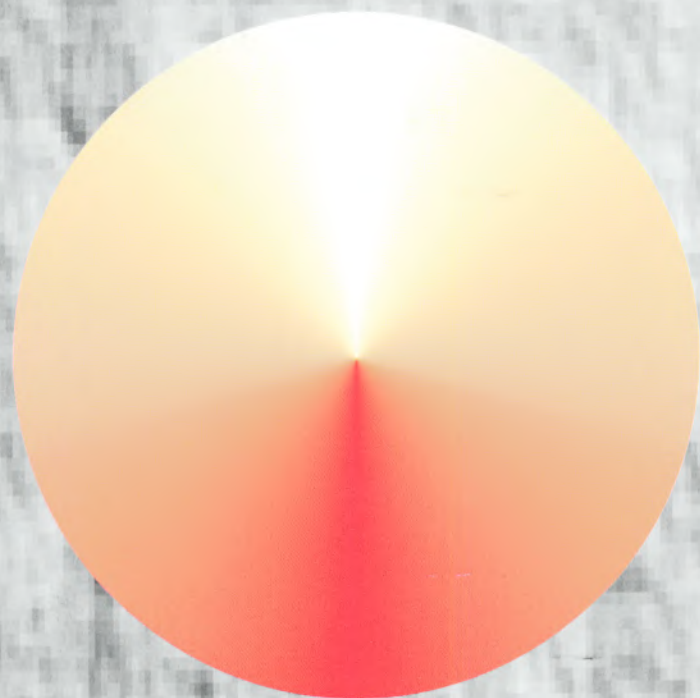


BC



**MACHINES
FOR DYEING
YARNS**





BC

The evolution in dyeing machines has brought about a variety of structural solutions in recent years.

While the technology of the machine itself remains essentially universal in nature, its physical form depends increasingly on where it is positioned, the extent to which the system has been automated, and the use for which it is primarily intended.

Basically, there are two possible choices:

A vertical lay-out of the machine, designed to include the more modern technologies, but similar in principle to the traditional machine.

A horizontal lay-out of the machine, which has only recently entered the market, and which incorporates some interesting features from the applicative point of view.

These two large families of **POZZI** machines both embody all the most advanced technologies, with the aim of guaranteeing absolutely reliable results:

● Control of the bath ratio for great flexibility

The ability to function with a reduced bath ratio, either with full bath or reduced level using air pressurisation, further enhances the excellent qualities of flexibility of the machine.

● Pumps redesigned to ensure safety in all working conditions

Certain and reliable delivery, adequate for any of the current requirements, and already designed for more demanding future applications. The wide range of pumps produced by **POZZI** covers virtually every possible dyeing requirement.

● Reduction of the risk factor in dyeing

Every uncontrolled variable in the dyeing system involves an increased risk of error.

The latest machines tend to control a greater number of variables: capacities, pressures, chemical environment, etc., thus minimizing operating uncertainties.

● Simplicity of operation

The new controlling microprocessors, more sophisticated but easy to use, have made it much easier to train those who will be operating the machinery. The various optionals available, such as the automatic chemical dispensing systems, guarantee reliable and easily obtainable results.

● Respect for the environment

The new **POZZI** pumps have extremely low noise emission levels, compatible with the new European standards for the creation of a friendlier and less stressful working environment. Air pressurisation reduces energy consumption and does away with the need to recycle the bath.

● A wide variety of configurations

On the request of the client a wide range of optional elements can be mounted on all models, either vertical or horizontal.

Examples of these optionals are:

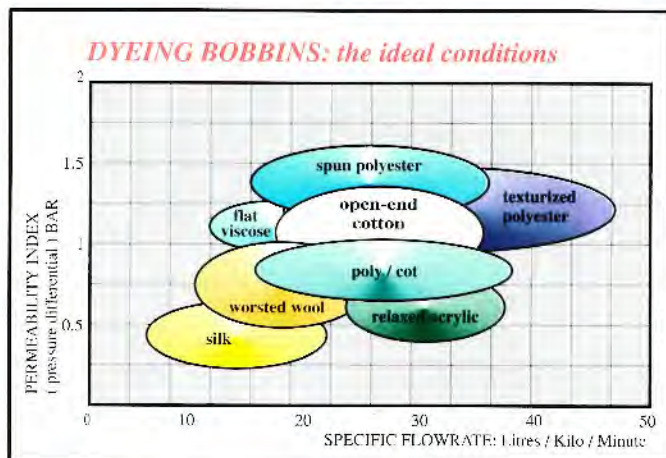
- Automatic measurement and control of the pressure differential.
- Automatic measurement and control of the bath flowrate.
- Pump control by means of an inverter.
- Coupling devices for several machines.
- Automatic chemical dispensing systems.
- High temperature drainage systems.
- Pressurised drainage using main pump, to reduce drain times.
- Dewatering by compressed air.
- Automatic colour kitchen.
- Tanks for the preparation and recovery of the bath.
- Fully automated loading and unloading.





POZZI Dyeing machines

the reasons for a variable delivery pump



Each dyeing application has very precise ranges of ideal operation.

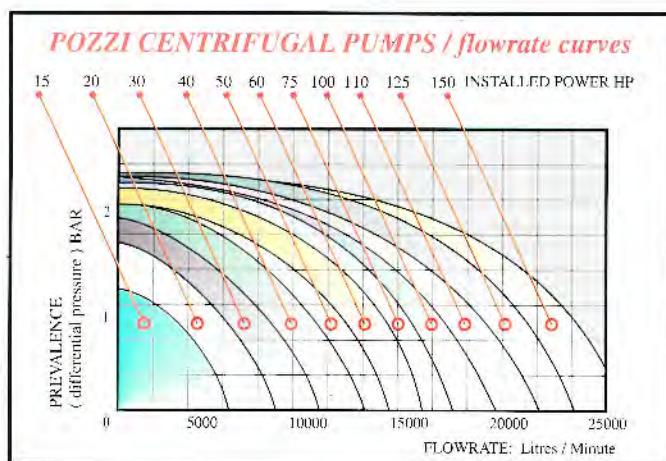
The task of the dyer is to match the speed to the quality characteristics required by the package undergoing treatment.

The dyeing speed will depend proportionately on the number of bath recycles required for each package.

Naturally, the greater the pump delivery, the shorter the treatment time.

However, it is not always possible to apply this principle to the characteristics of the material to be treated.

In the illustration the coloured areas represent the specific delivery conditions and the ideal head for the dyeing of some fibres.



If specific deliveries of 40 litres/min for every kilo of material are desirable when dyeing textured polyester, the same working conditions employed for the dyeing of wool or silk would give disastrous results.

All **POZZI** pumps are tested and certified and the relative curves presented to the client together with the technical documentation relating to the apparatus.

However, without any positive control over delivery, the only way to adaptation of pressure curves is through the choice of pump installed. Delivery will vary with variations in the permeability of the load, following the pump characteristic curve.

The simplest way to regulate the head in a **POZZI** machine is by installing an adjustment valve in the body of the pump.

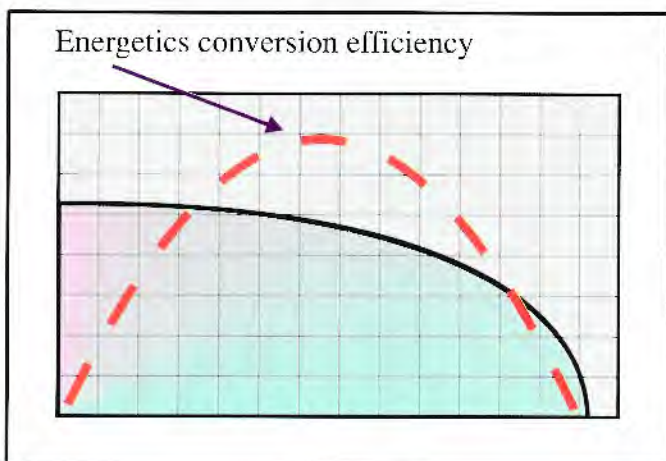
This will limit the values of the flowrate passing through the material while leaving pump performance unaltered.

Every fixed speed pump converts the energy supplied to it as pressure and flowrate, according to a well-defined characteristic.

The further one moves away from the point of maximum efficiency, the greater the amount of energy that will be wasted.

If, on the other hand, an inverter command is adopted, the flowrate can be adapted by modifying the pump curve itself, in such a way that the hydraulic efficiency is in any case maximized.

In both cases pump control can, as a choice, be controlled automatically through the metering of the differential pressure or through measurement of the actual delivery.





BC/V - Vertical machines for dyeing yarns

• PRO

- Machine takes up less surface room.
- Low cost.
- Easy loading.
- High load flexibility.
- Universal nature of load (suitable for warp beams and materials in staples, tops and bumps).

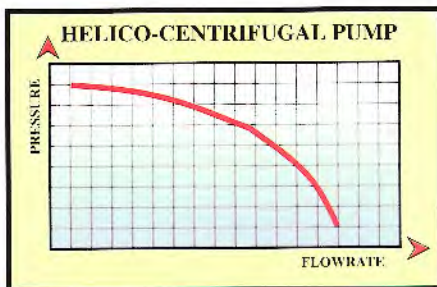
• CON

- Lifting tackle needed.
- Pit needed for the larger machines.
- Considerable height needed for the hook that extracts the material carrier.

The "BC" type vertical machines are the natural evolution of experience gained in more than one hundred years production of dyeing machines.

There are two main versions:

Machines fitted with a helical centrifuge pump



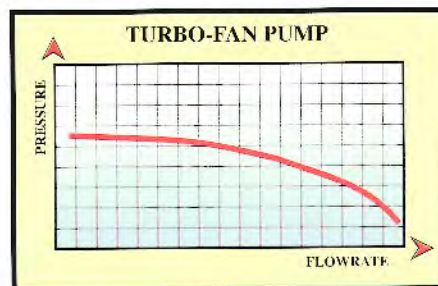
This is the ideal choice for the cotton-mill sector, where in addition to reel dyeing, they incorporate all the basic characteristics needed for dyeing warp beams or other packages peculiar to yarn.

The pump characteristics make it possible to achieve an extremely high head, thus guaranteeing more than adequate delivery even with low permeability material.

The way in which the pump is constructed facilitates the coupling of several machines with "in series" circulation guaranteed.



Machines fitted with turbo-fan pumps



These have been designed to achieve the deliveries required for rapid dyeing with permeable materials suitable for this treatment.

In either case the characteristics of the machine include:

- **Operation with the material completely covered by the bath:** pressurisation can be achieved as desired by means of a static or

air-cushion pump.

In the latter case it is possible to adjust the filling level of the machine to follow the height of the load and to optimise the bath ratios by varying the capacity. By this means consumption can also be influenced by reducing the amount of energy needed to maintain the continuous recycling of the bath.

- **Reversible circulation:** internal/external - external/internal. The inversion feature considerably increases the range of application of the machine.
- **Large surface heating system:** for rapid dyeing the idle times must be reduced. The coils of **POZZI** machines are capable of achieving heating speeds of 5° C / minute.



BC/O - Horizontal machines for dyeing yarns



● PRO

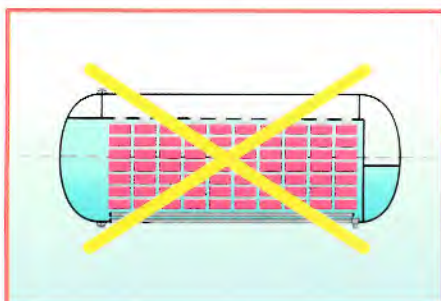
- Assembly totally above ground, no need for a pit.
- Easy interfacing with automation and handling systems.
- No need for lifting hoist.
- Can be installed in buildings with limited height.
- Dyeing operations can be carried out in a completely flooded chamber using the air-cushion pressurisation system.

● CON

- More expensive.
- Less load flexibility.
- Occupies a larger floor area.
- Limitation as regards the type of packages for dyeing (no warp beams, no loose fibres).

The horizontal "BC/O" machine. Designed to minimise the bath ratio without compromising simplicity of use.

It is a known fact that with badly designed horizontal machines using a reduced bath, problems can arise due to the presence of air in the pressurisation chamber.



In certain working conditions this air penetrates into the bath flow, giving rise to dangerous emulsions.

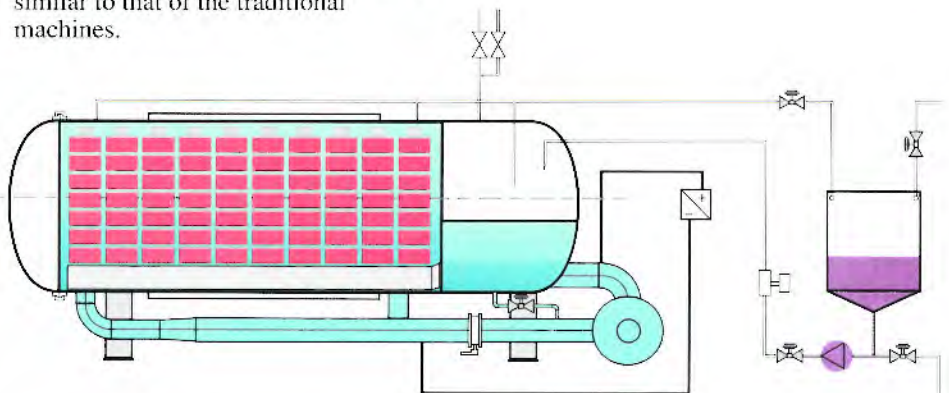
In order to avoid this problem the autoclave containing the material is totally flooded in the **POZZI "BC/O"** machines.

The volume needed to pressurise the air is, in fact, a separate chamber obtained by sealing off the rear part of the autoclave with a wall.

By this means the expansion capacity of the bath is ensured in a manner very similar to that of the traditional machines.

mixing pumps.

An "in series" circulation route is thus maintained, being the only one that guarantees perfect uniformity of the dyeing results.



This set up reduces the risks of emulsion without suffering the energy costs involved in external recirculation, and without relinquishing the full functionality of reversible circulation. Furthermore, in order to limit the dimensions of the treatment chamber, the normally convex front cover has been replaced by a flat ribbed wall, thus economising on several hundreds of litres of bath.

In its present form this machine is easily coupled to others, with no need to add



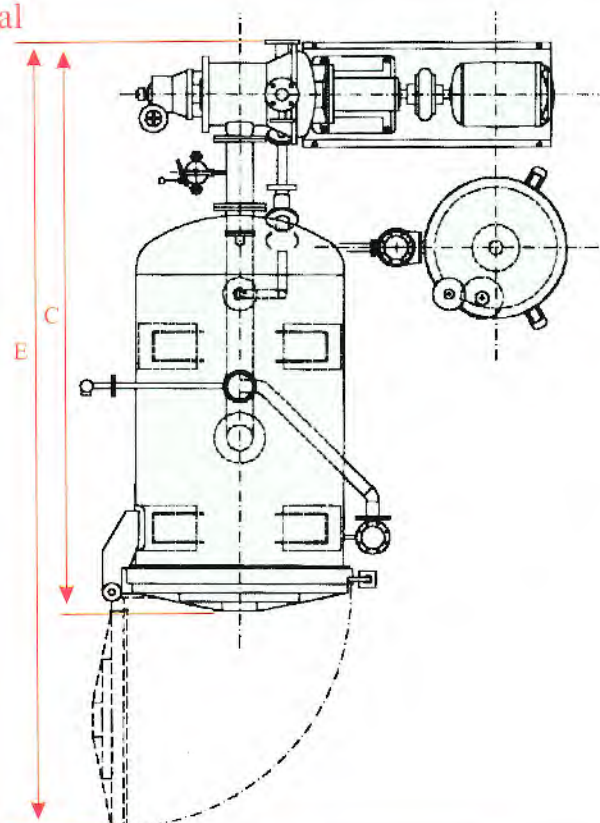
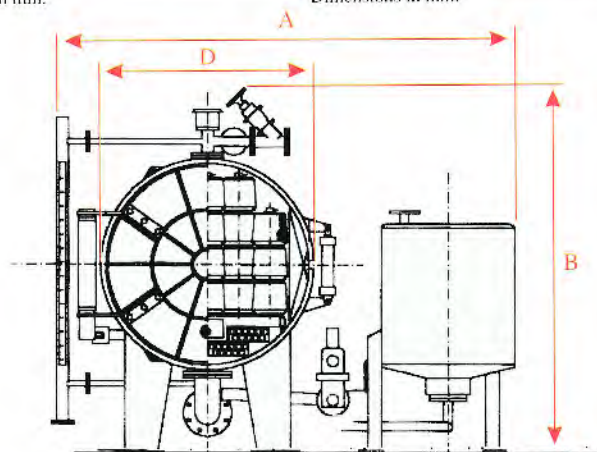
BC/O - horizontal

BC/O - 1						
ØD	850	1000	1300	1450	1700	1900
Kg	50	100	160	200	300	400
A	2300	2500	2500	2800	3200	3500
B	1800	2000	2200	2500	2800	3000
C	2700	2800	3000	3300	3700	3700
E	3500	3800	4000	4800	5200	5400
HP	15	20	30	40	50	60

Dimensions in mm.

BC/O - 2						
ØD	850	1000	1300	1450	1700	1900
Kg	100	200	320	400	600	800
A	2300	2500	2500	2800	3200	3500
B	1800	2000	2200	2500	2800	3000
C	4100	4200	4400	4700	5100	5100
E	4900	5200	5400	6200	6600	6800
HP	20	40	50	60	75	100

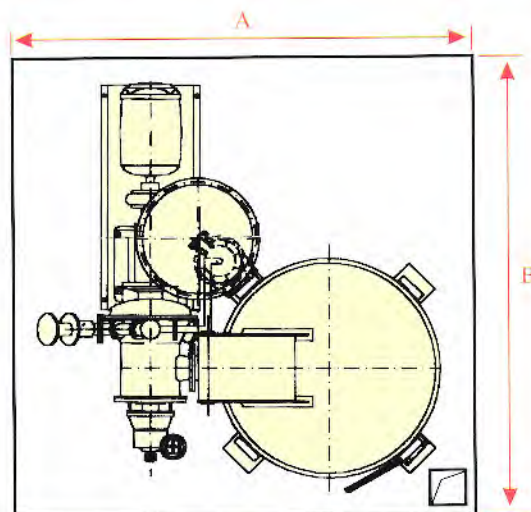
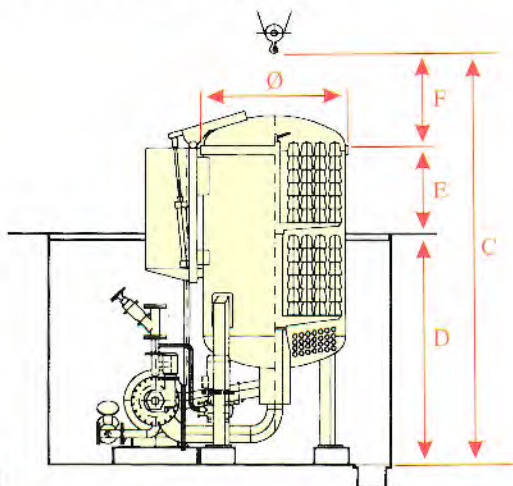
Dimensions in mm.



BC/V - vertical

BC/V - 1											
Ø	520	600	700	800	1000	1120	1250	1400	1600	1750	1900
A	2000	2400	2800	3000	3000	3300	3800	3800	4300	4300	4500
B	1800	2200	2300	2500	2700	2700	3000	3000	3300	3600	3800
C	3600	3600	3700	3700	3700	4000	4100	4400	4400	4500	4600
D	1200	1200	1300	1300	1300	1500	1500	1800	1800	1900	1900
E	800	800	800	800	800	800	800	800	1000	1000	1000
F	1600	1600	1600	1600	1600	1700	1800	1800	1800	1800	1800
Kg*	25	30	50	60	80	125	150	225	300	350	500
HP	7.5	7.5	10	15	20	25	25	40	50	60	75
Kg**	500	550	600	800	800	1000	1000	1500	2000	2500	3000

Dimensions in mm. / * Material load / ** Hoist capacity



BC/V - 2									
Ø	800	900	1000	1120	1250	1400	1600	1750	1900
A	2700	2700	3500	3500	3800	4000	4200	4200	5000
B	2500	2600	3000	3000	3200	3200	3500	3700	4000
C	5400	5400	5700	5700	6100	6400	6900	7000	7100
D	2000	2000	2200	2200	2500	2800	3000	3100	3200
E	800	800	800	800	800	800	1000	1000	1000
F	2600	2600	2700	2700	2800	2800	2900	2900	2900
Kg*	120	150	180	250	330	450	600	750	1000
HP	20	25	30	40	50	60	75	100	125
Kg**	1000	1500	1500	1500	2000	2500	3000	3500	4000

Dimensions in mm. / * Material load / ** Hoist capacity



DYEING MACHINES AND HEAT RECOVERY SYSTEMS

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