

# Bahner Pre-Fulling Machine VW 216 Type 7-216

(05/2019)

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With

- 2 lines of rollers
- Feed Table – First Fulling Machine
- Transfer Table – Second Fulling Machine
- Outlet- and Reverse Run
- Centrifugal Pump with Water Container and Water Guiding Sheets
- Automatic Reverse Run Device for the hat bodies

Universal for Settling and Middle Fulling (Final Fulling as well). Best Fulling results – Greatest Economy.

1. There are many possibilities for achieving the highest number of favourable fulling results. Through careful consideration of the present state of technics and the latest ideas in the fulling department, we have chosen those which are the most effective. Fulling speed, fulling quality, and simplicity of mechanical operation are harmoniously matched with each other and assure highest rentability.
2. The Pre-Fulling Machine VW 216 has 2 machines of 13 working rollers each, connected via a transfer table, 26 working rollers all together. The working rollers of the upper row of rollers as well as the lower one oscillates on axes – that means they jig. These rollers jiggling in opposite directions can work hat bodies which have been fed in evenly placed lines on their lower surface as well as on their upper one. You can also stop the axial jiggling (the oscillation) of the rollers if desired e.g. with the first passages.
3. When starting the fulling it is extremely important to supply the felt hat bodies with sufficient fulling liquid or in stretchable / shrinkable condition, i.e. wet and hot. Hat bodies which are supplied evenly with fulling liquid, shrink together much better and the result is of a higher quality. You can always supply the fulling band with sufficient fulling liquid as the working rollers are arranged in two lines.
4. The lower line of rollers and the upper one oscillates independently. The frequency of the oscillation can be adjusted by a Frequency controller. Three kinds of frequency are adjustable: slow, middle, high speed. By adjusting the eccentric the amplitude of the oscillation (the length of the jiggling distance) can be adjusted.
5. The distance between the rollers is adjusted once with the Pre-Fulling Machine VW 216. The upper line of rollers presses its total weight onto the two lines of felt hat bodies passing underneath during the fulling operation. The distance of the

Thus, the demands which are absolutely essential for producing hat bodies of uniform appearance and high quality.

upper line rollers from the lower line of rollers is adjusted by means of hands wheels and can be read on a relative reading device.

6. At the feed-in there is the original rotating conveyor belt, 1200 mm / 47-inch-wide, which runs over a table, about 2 meters / 81-inch-long and on which the hat bodies can be crozed by hand (croze-feed-in table). This conveyor belt feed the hat bodies automatically into the machine. The hat bodies are transported automatically to the feed-in table, underneath the rollers, by a second, long conveyor belt. That means, the transporting is all done automatically by the machine itself. The crozing only is still carried out by hand.
7. The working width of 1200 mm / 47 inch (1400 mm / 55 inch on demand) is sufficient to feed two lines of hat bodies – big ones as well – and in any position requested.
8. An improvement in quality and a better uniformity of the hat bodies is reached on the Pre-Fulling Machine VW 216 by the conveyor belt system. The feed-in spacing and with it the thickness of the lap are uniform, as the hat bodies are led automatically and in uniform time intervals to the crozing personnel.
9. If the hat bodies are fed into the machine in two lines, and if they are crozed after each passage, as it is done normally when settling, you will work with two operators, whereby each person will croze the line showing

towards him, as it is shown on illustration 2.

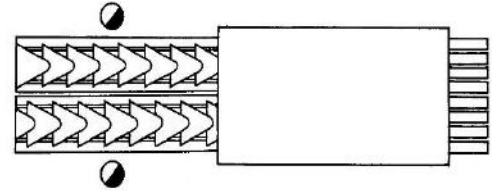


Bild 2

This method is generally used when setting.

But, you also can croze each row after each second passage, if quality considerations do not prohibit. Then, one operator will be sufficient. This will croze line 1 first, then, will go over to the other side of the machine and croze line 2, while line 1 passes the machine for the second time, without being crozed, and so on (please see illustration 3).

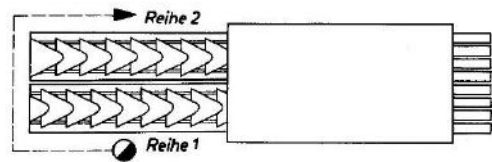


Bild 3

This method is employed for the middle fulling and final fulling.

All technical particularities and characteristics of our fulling machines are based on the idea that a few people as possible are needed.

Theoretically, you can also work and full in a way that the hat bodies are only crozed after the third, fourth, or after still more passages. Then, one operator could use several machine

combinations. We would like to draw your attention to the fact in any case that with our multirollers and multirollers-combinations only the crozing necessitates the expense of salaries. For this reason, the number of crozing during each fulling operation should be kept as low as possible. All our fulling machines, in their present design, offer the possibility to make the most out of this and also to achieve the desired results.

10. In our experience this Pre-Fulling Machine VW 216 works best for settling. Each of the two fed lines of hat bodies moves 10 meters during one fulling operation:
- About 0,6 m – 1. Passage = 1. Fulling Machine (Multiroller)
  - About 0,8 m – transport by the connecting table
  - About 0,6 m – 2. Passage = 2. Fulling Machine (Multiroller)
  - About 6.0 m – transport trough run-out and run-back
  - About 2,0 m – feed table
  - About 10,0 m – total rotating length

This combination of fulling phases (working phases) and transport phases (rest phases) combined with the soft fulling done with our Pre-Fulling Machines only allows moderately fulling hat bodies to be used. Thus, less expense is

necessary for the fulling and hardening operations.

11. The fulling liquid is caught right underneath the two lines of rollers and is led back the shortest way to the fluid reservoir. Thus, the conveyor belt running back underneath the machine is not moistened again with fulling liquid. While being transported back, the hot hat bodies cool off. They reach the operator evenly placed and smooth, only moderately moist, and not too hot. Due to this the operator can work more easily, with hat bodies which are not too hot and too wet. The operating conditions, therefore, are more favourable.
12. Hair and felt particles which have been torn off are drawn away by the fulling liquid and are caught by a sieve which is fixed on top of the fluid reservoir. In the case of multirollers which have 3 lines of rollers, the felt particles which had been planked off by the top line of rollers can be fulling again in the lower one. If the rollers are arranged in 2 lines, this is not possible.

#### Economy / Service:

1. The design of the machine is made simple on purpose so that the costs of investment are kept relatively low, so that a calculation of rentability will always show a quick amortization, especially when one considers that the machine can be used by only one person. This machine, therefore,

is very interesting economically for all hat bodies factories, as a new investment as well as a replacement.

2. The machine makes hardly any noise, which not only saves the operator's nerves, but it is also good for the machine itself. Thus, it will have a longer lifetime.
3. The passing speed (the conveyor speed) is fully adjustable to any value desired, between 2 to 10 meters / min. with the Pre-Fulling Machine VW 216. In this way, the speed can be adjusted exactly to suit the prevailing factory conditions, whereby an optimum in output of the hat bodies and their quality can be reached.

The passing speed  $v$  which must be adjusted, is as follows reckoned mathematically:

whereby  $E$  means the crozing output (hat bodies / min)

$$v = 10 \frac{E}{S}$$

and  $S$  the quantity of hat bodies fed in in one line

4. By turning the drive V-belts on both machines the jiggling frequency is adjusted: slow – middle – high speed. You choose a slow jiggling frequency for big hat bodies, and a rapid jiggling frequency for smaller hat bodies.
5. The length of the jiggling movements (the jiggling speeds) can be regulated by adjusting the two-jiggling eccentric in 10 variations from 0 to 12 mm. Generally, people adjust a high

jiggling speed (a long jiggling movement) for big, slightly planked hat bodies. A small jiggling speed (a small jiggling movement) ist adjusted for half-planked, already shrunk hat bodies.

6. We use a special quality rubber which is well-proved, with a hardness of 80 Shore and a hight friction coefficient for the roller set. With our special roller-set, we reach a very good fulling speed for all fulling phases, in spite of a relatively smooth roller surface. On purpose, we have absolutely avoided a strongly checkered or rippled surface for the working rollers, because this reduces the quality of the hat bodies which one could otherwise achieve. The loss of hair fibres also is kept low, the loss of weight of the hat body is thus very small.
7. The machine is delivered ready for connection. Our delivery includes not only the complete electrical installation with switch-box, the complete water – retention including water reservoir and circulation pump, but also an automatically operating water temperature control, which works without auxiliary energy. That means the purchaser does not have any additional costs in order to put the machine into operation.
8. The machine does not cause any regular repairs and does not require any continuous replacement of expensive parts which have been worn out. So, operating costs are low. The machine is highly operation-



proof, and therefore, there will not be any expense from a possible break-down of a machine

### Machine the Maintenance:

1. The Pre-Fulling Machine (the Pre-Fulling Multiroller) VW 216 is largely maintenance-free. The main gears run in grease and oil. The drive elements run in ball-bearings, roller-bearings, and glide bearings and thus are maintenance-free. All bearings are of large enough dimensions to guarantee a practically unlimited life-time. The number of bronze-glide-bearings and greasing spots that must be greased once a day or once to twice a week, is kept very small.
2. The machine is built according to international ISO-standards in the metric system. All parts are constructed exchangeable. The complete electrical installation is produced by European brands, which maintain agencies in every continent. The motors and wires are protected by safety relays that react to short-circuit and overcharge
3. All machine parts and supply devices are mounted on the machine in a standard system. They are easily accessible. All elements which lead and distribute the fulling liquid (pipings, valves, collecting sheets, catching drains, etc.) are made of rust-free steel of V4A (Quality No. 1.4571), so that there will not be hardly any wear and tear.
4. When designing the machine, ease of cleaning was taken into consideration. Therefore, all pipes that lead the fulling liquid back into the fulling liquid container, all catching sheets, and all drains, can be pulled out or are easily accessible.
5. Fulling machines (multirollers) do work under extraordinarily unfavourable conditions, but must, nevertheless, remain usable over a long operation time. All technical particulars have been designed with a view to this. There is no fluid container underneath the machine, but a catching sheet arranged above the return conveyor band. Thus, the machine is not exposed more than necessary to steam and other aggressive vapours. Therefore, all machine parts remain comparatively dry. The machine lives longer. The fulling liquid container is positioned at the side of the machine, and thus, is easily accessible.
6. The electrical control of the machine has been centralized in one switch-box. The complete installation can be switched on and off with one single button. But it is also possible to switch on each of the 6 motors separately: conveyor-belt motor, drive motors for the first and second machine, pump motor, oscillation motors for the first and second machine.
7. We maintain a stock of wear and tear parts to that you can get replacement parts ex stock, if required.

## Technical Data

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|--|--------------------------|
| <b>Measurements</b>                          |                          |
| Length                                       | 5000 mm / 196,9 inch     |
| Width  | 2350 mm / 92,6 inch      |
| Height                                       | 1740 mm / 68,5 inch      |
| <b>Measurements of Case:</b>                 |                          |
| Machine 1                                    | 2400 x 1450 x 1460 mm    |
|  | 94,5 x 57,1 x 57,5 inch  |
| Machine 2                                    | 2400 x 1680 x 1580 mm    |
|  | 94,5 x 66,1 x 62,2 inch  |
| Feeder                                       | 2680 x 1970 x 2000 mm    |
|  | 105,5 x 77,6 x 78,8 inch |
| <b>Weight</b>                                |                          |
| Net  | 4700 kg / 10.361,73 lbs  |
| gros (seaworthy packed)                      | 6000 kg / 13.227,74 lbs  |
| <b>Installed Power:</b>                      |                          |
| 1 Motor                                      | 1.1 kW - 1.5 kW          |
| 1 Motor                                      | 0.7 kW - 0.8 kW          |
| 1 Motor                                      | 0.7 kW - 0.8 kW          |
| 1 Motor                                      | 0.55 kW                  |
| 1 Motor                                      | 0.75 kW                  |
| <b>Total:</b>                                | 3.8 kW - 4.0 kW          |
| <b>Standard working width of the rollers</b> | 1200 mm / 47,2 inch      |
| <b>Standard length of one passage</b>        | 10.000 mm / 393,7 inch   |

