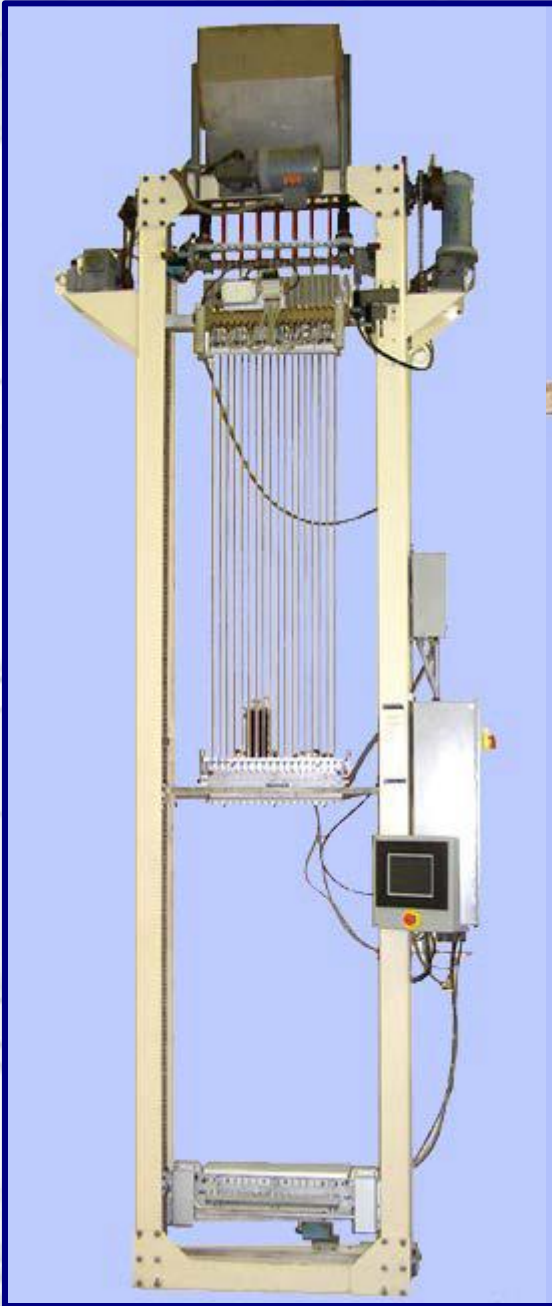




Machine Features

- **VERY FAST FILL SPEEDS**
8.0mm (.312") = 380mm (15") PER MINUTE
9.5mm (.375") = 508mm (20") PER MINUTE
12.7mm (.500") = 635mm (25") PER MINUTE
- **FILL LEVEL IS EXTREMELY CONSISTENT AND ALSO ADJUSTABLE**
- **ALMOST ZERO MGO LOSS**
- **ABILITY TO TURN FILL SPINDLES ON AND OFF INDIVIDUALLY BY MEANS OF THE TOUCH SCREEN**
- **TOUCH SCREEN CAN BE SUPPLIED IN VARIOUS LANGUAGES**
- **PLC CONTROL AND TOUCH SCREEN INTERFACE MAKE MACHINE OPERATION VERY SIMPLE**
- **TRAVELING MECHANICAL VIBRATOR PROVIDES CONSISTENT VIBRATION RESULTING IN UNIFORM DENSITY AND VERY QUIET OPERATION**
- **FULLY AUTOMATIC LENGTH ADJUSTMENT**
- **OPTIMUM CENTERING OF THE COIL IN THE ELEMENT**
- **CAN BE LOADED AND UNLOADED WITH PNEUMATIC RACK**
- **12, 18, 24, 36, AND 48 POSITION MACHINES ARE AVAILABLE TO SUIT CUSTOMER'S PRODUCTION REQUIREMENTS**
- **ELECTRICAL ADJUSTMENT OF THE UPPER TERMINAL PIN EXTENSION**
- **CAN BE SUPPLIED FOR ELEMENT LENGTHS UP TO 9.145 METERS (30 FT.)**
- **CONVERSIONS ARE AVAILABLE TO RETROFIT EXISTING MACHINES**





The most important feature of our new Jetless fill system is the ability to dramatically increase fill speeds. For example, 5/16" (8.0mm) tubes are typically filled at speeds of 15" (380mm) per minute; 3/8" (9.5mm) tubes are filled at speeds of 20" (500mm) per minute; and 1/2" (12.7mm) tubes are filled at speeds of 25" (635mm) per minute.

The machine produces a very consistent fill level in all of the tubes being filled. This level is also adjustable so that you can create the proper cavity in the tube for your particular upper plug without having to either spill or add MgO.

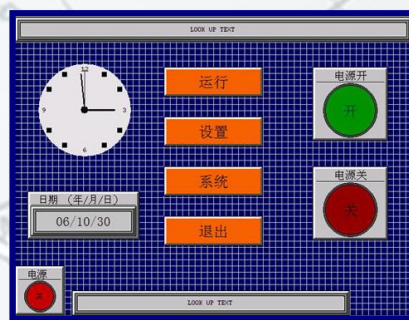
The machine also reduces the amount of MgO spillage or loss to a bare minimum. The cost savings in MgO can be considerable.

Another important feature of the machine is the ability to individually program the positions on the machine that you wish to use for filling. No element tubes have to be placed in the stations that are not being used. With this feature you can run any quantity of elements you desire from 1 to the maximum number of stations on the machine.

We can also supply any of these machines tooled to fill 2 or more tube diameters without having to change any tooling. For example, on an 18 position machine, we could supply 9 positions tooled for 9.5mm (3/8") and 9 positions tooled for 12.7mm (1/2"), or we could supply 6 positions tooled for 3/8" (9.5mm); 6 positions tooled for 7/16" (11.0mm); and 6 positions tooled for 1/2" (12.7mm). While this would limit the production of any one diameter on the machine, it would eliminate the need to change the tooling on the machine each time you wish to fill tubes of a different diameter. For customers who are making small quantities of different element diameters, this can be a huge time-saving feature.

The machine also incorporates all of the major features of our standard fast fill machine including a traveling mechanical vibrator, automatic length control, electrical adjustment of the upper terminal pin extension, and the capability for rack loading and unloading. The hand wheel for lowering the clutch has also been eliminated.

The machine is supplied with a programmable logic controller (PLC) and with a touch screen operator interface. The operator can set all of the machine parameters with this interface such as the element length, the fill speed, the stations to be operated, and the vibration speed. The interface also simplifies the operation of the machine by supplying step by step instructions for the operator to follow. We can also provide the touch screen interface in various languages. Currently we offer it in English, Spanish, French, Chinese, Czech, and Japanese.



Main Menu Touch Screen in Chinese

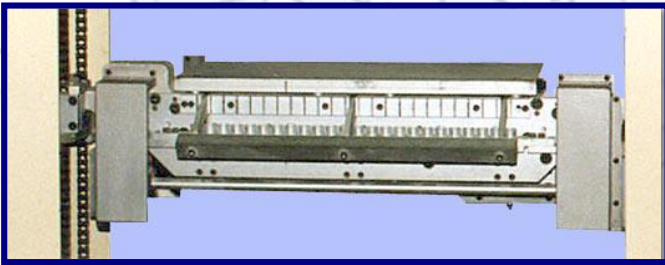
The mechanical vibrator has two simple adjustments to control vibration. An eccentric cam determines the travel of the vibrator bar or the amplitude of vibration. The second adjustment is a variable-speed motor that controls the rotational speed of the cam or the vibration frequency. The speed of the vibrator is programmed on the touch screen. You can obtain a precise degree of vibration to best suit any particular element. By providing better control and regulation of the vibration level, customers can achieve more consistency in fill levels as well as improved density.



Mechanical Vibrator

Fully Automatic Length Adjustment

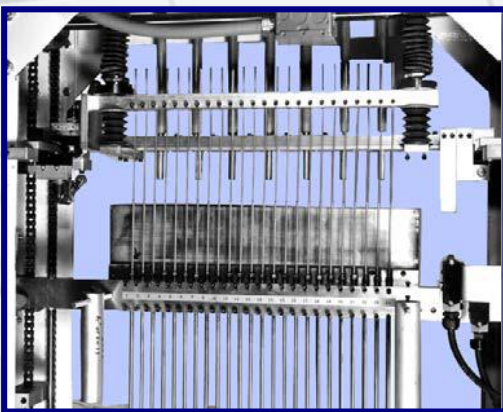
The machine can be reset for a new element length by simply programming the desired length on the touch screen and then pressing the Adjust Length button on the screen. The length can be programmed in millimeters, or inches. For elements up to 2.5 meters (78.75"), the entire process takes less than 30 seconds and guarantees the accuracy and repeatability of length setups. This is a great advantage for customers who must change lengths frequently on their machines. To accomplish this automatic length adjustment, we have combined the older clamp and anvil bars into a single assembly. The anvil bar now has its own chain drive and pivots below the clamp mechanism when not in use.



Combined Clamp & Anvil Assembly

Electrical Upper Pin Extension Adjustment

The hook rod bar is motorized and allows you to adjust the hook position on all of the stations on the machine at one time. Raise and Lower Hook Rod pushbuttons on the touch screen are used to make this adjustment. The hook rods move up or down slowly allowing you to easily set the upper pin extension exactly where desired. This feature is very valuable if you change the pin extension of your upper terminal pin on a fairly frequent basis.



Hook Rod Bar with Acme Screws

Rack Loading and Unloading

The addition of the disappearing clip retainer bar has made it possible to use our Pneumatic Rack to load and unload all previously mentioned fill machine models. Either 18 or 24 tubes can be simultaneously loaded with the pneumatic rack by simply snapping the tubes into the retaining clips. After the tubes have been loaded into the machine and raised enough so that they engage the special centering tip, the spring clip retainer bar is retracted so it will not interfere with the remaining sequence of the machine. At the end of the fill cycle, when the filled elements have been removed, the spring clip bar is brought to the forward position so it will be ready to receive the next load. Use of the pneumatic rack reduces handling times and thus increases the productivity of the machine. Please note, however, that the use of the spring clip feature and the pneumatic rack for loading require that your element tubes have consistently open and burr-free inner diameters so that all of the tubes can be simultaneously raised over the centering tips.



Pneumatic Rack Being Used to Insert 24 Tubes into Spring Clip Retainer Bar



Three 24 Position Fast Fill Machines shown installed in a pit with a catwalk around the machines to facilitate loading MgO into the bulk hoppers and to provide access to the machine for changeover and maintenance. Also pictured are our pneumatic racks and our loading and unloading magazines.

Machine Specifications

Model:	12 Pos.	18 Pos.	24 Pos.	36 Pos.	48 Pos.
Length:	1524mm (60")	1524mm (60")	1524mm (60")	1981mm (78")	1981mm (78")
Width:	All Models: 724mm (28.5")				
Height:	All Models: 2 times Maximum Element Length & 1422mm (56")				
Weight: 1830mm (6 ft.) Per 300mm (12") add:	794 kg. (1750 lbs.) 34 kg. (75 lbs.)	794 kg. (1750 lbs.) 34 kg. (75 lbs.)	794 kg. (1750 lbs.) 34 kg. (75 lbs.)	1057 kg. (2330lbs.) 41 kg. (90 lbs.)	1057 kg. (2330lbs.) 41 kg. (90 lbs.)
Electric Supply:	All Models: 220/380/440v—3ph—50/60hz				
Air Supply:	All Models: 5.6 bar (80 psi)				
Min. Tube Diameter.	All Models: 5.5mm (.216")				
Max. Tube Diameter:	22mm (.875")	16mm (.625")	12.7mm (.500")	16mm (.625")	10mm (.394")
Min. Tube Length:	All Models: 216mm (8.5")				
Max. Tube Length:	9144mm (30 ft.)	9144mm (30 ft.)	9144mm (30 ft.)	3962mm (13 ft.)	3962mm (13 ft.)
Fill Rate:	All Models: 0-900mm (0-35.4") per minute				
Avg. Handling Time:	2 minutes	2.5 minutes	2.5 minutes	3.5 minutes	3.5 minutes
Hourly Production:	180 pcs.	240 pcs.	320 pcs.	392 pcs.	523 pcs.

Note: 1: Hourly production figures above are based upon filling a 9.5mm (.375") diameter element with a length of 1000mm (40") and presuming the operator will be using the pneumatic rack for loading and unloading the machine.

Note 2: When using the pneumatic rack, the minimum element length is increased to 250mm (10").