

Series MCF

AUTOMATIC SPEED CONTROL

Using digital input, the microprocessor detects and automatically compensates for changing cycle times, varying torque requirements and/or fluctuations in plant voltage. This eliminates the need for monitoring and adjustment. As an option, the controller may be remotely positioned up to 20 ft. from the processing machine.



SELECTION OF FEED RATES

Auger sizes of 1/2" and 1" are available with a selection of variable-speed motors ranging to a maximum of 130 RPM. Your part weight or maximum extrusion rate will determine the proper combination for your application.

STABLE, LOW PROFILE ADAPTOR FRAME

The 10" square adaptor frame with corner support angle iron provides a stable platform for your existing natural material hopper, while only raising it 3-1/2 inches. A wide range of bolt patterns can be accommodated. An 8" x 8" pattern is standard to match other items manufactured by Maguire Products.

REMOVABLE STAINLESS STEEL HOPPER

The concentrate hopper rests securely in a support channel without utilizing bolts or fasteners. To change colors, the entire assembly (including hopper, auger tube, and auger) is easily removed by the operator and carried back to the color container. No pellets are left to contaminate your next color, and not one pellet is spilled. All stainless steel construction assures ease of cleanup. The 0.5 cu. ft. hopper holds up to 30 pounds of concentrate and four sight glasses provide a clear view of the color level.

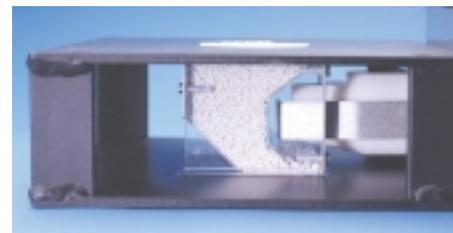
The lid is fitted to allow the addition of our Model ML color loader.



MCF Hopper being removed

MATERIAL FLOW BAFFLE CHAMBER

Shown below is the Maguire "material flow baffle chamber" on Series MCF feeders. The stainless steel sides are formed to produce a baffled flow of resin such that the color pellets are dropped into and evenly distributed throughout the flow of natural material. Acrylic panels provide a clear view of the resin and color flow.



Material Flow Baffle Chamber

PELLET SHUTOFF

A simple but very effective slide bar prevents pellets from spilling from the auger tube when the hopper is removed for color changes. This bar slides forward when the drive unit is engaged, allowing pellets to dispense properly. During hopper removal, the bar slides back to cover the open end of the auger tube.



Pellet shutoff closeup

Model	Auger Size	Max RPMs	Continuous Output lb/hr	
			MIN	MAX
4-18	1/2" [12mm]	30	.05 [0.02 kg]	4 [1.8 kg]
4-34	1/2" [12mm]	55	.1 [0.05 kg]	7 [3.2 kg]
8-34 STD	1" [25mm]	55	.7 [0.32 kg]	58 [26 kg]
8-94	1" [25mm]	130	1.6 [0.73 kg]	135 [61 kg]
16-50	2" [50mm]	90	8.0 [3.6 kg]	600 [272 kg]

How Maguire Feeders Work

The controller signal cord is plugged into an outlet that is energized only when the process machine screw runs. During each screw return cycle (or continuous for extrusion), the motor runs and color is metered into the throat of the process machine.

The digital counter located on the face of the controller provides the means for determining the exact degree of auger rotation and, therefore, the precise amount of color that will be added. For injection molders the motor will shut off when the preset count is reached during each cycle. For extruders, an optional digital tachometer feedback is available to ensure that motor speed is precisely regulated regardless of changing torque requirements or variations in plant voltage.

To determine the proper setting for the counter, a simple formula is used based on percentage of color required, a predetermined metering rate, and total shot weight in grams (or pounds per hour for extrusion applications).

The controller contains a 1/27 HP DC Permanent Magnet motor with variable speed control. In the standard configuration, the motor is close coupled to a heavy duty gearbox. As the motor turns, a "hall effect" pickup device on the motor sends 3 pulses per revolution to the microprocessor controlling it. The gearbox ratio of 53:1 provides 159 pulses (3 x 53) for each revolution of the motor output shaft.

The thumbwheel switch on the controller should be set to the exact number of pulses that the motor is going to run before stopping. The microprocessor in the controller automatically multiplies the setting by a factor of 10. A setting of 16 on the counter will allow the controller to receive 160 pulses or run approximately one revolution before stopping (regardless of how fast or slow the motor runs).

Series MLG

'LITTLE GUY' CONCENTRATE FEEDERS

These Maguire feeders are designed expressly for installation on small injection molding machines. The motor is positioned on one side and the hopper on the other to evenly balance the weight of the feeder over the feed throat of the machine.

REMOTE CONTROLS

A remote control configuration further reduces the weight of the equipment that is bolted to the throat.

REMOVABLE HOPPER

Similar to the MCF feeder, the "Little Guy" hopper, auger, and auger tube make up a complete assembly, easily removed without tools for ease of color change. Not a single pellet is left behind to contaminate your next color.

SEE-THROUGH BAFFLE CHAMBER

Stainless steel is used for all color contact surfaces including the hopper and flow chamber baffles. Removable acrylic windows on the flow baffle chamber permit a clear view of the resin and color flow and allow easy access to the chamber.



Model	Auger Size	Max RPMs	Continuous Output lb/hr	
			MIN	MAX
MLG-4-18	1/2" [12mm]	30	.05 [0.02 kg]	4 [1.8 kg]
MLG-4-34	1/2" [12mm]	55	.1 [0.05 kg]	7 [3.2 kg]

Series MPF Powder Feeders



The MPF powder feeder is designed to handle powders that do NOT flow well. The hopper features an integral bridge breaker bar that sweeps the bottom of the hopper once every 2 turns of the auger. This bridge breaker serves to keep the flights of the auger full and assures accurate metering. The hopper capacity is restricted to about 1/2 cu. ft. (about 10 pounds). Keeping the capacity low avoids compaction and helps with metering. The hopper is stainless steel and removable for easy cleanout. The bridge breaker bar is belt driven by the auger feeder motor.

Model	Auger Size	Max RPMs	Continuous Output lb/hr	
			MIN	MAX
MPF-4-18	1/2" [25mm]	30	0.04 [18 gm]	2.9 [300 gm]
MPF-8-34	1" [25mm]	55	.3 [14 kg]	23 [10.4 kg]

Series MRF Regrind Feeders

CONTROL REGRIND USAGE

Installed beneath existing natural material hoppers, these special feeders provide the means to easily and accurately use previously colored regrind while avoiding double-coloring. Regrind enters the flow of resin at the same height as the color feed. Baffles ensure even distribution and mix of materials.

MPF, MPA, MDA) which automatically compensate for the percent of regrind set for the mix. When regrind runs low, the regrind feeder will automatically shut off and full 100% coloring will be resumed.

SELECT % REGRIND DIRECTLY AND AVOID "DOUBLE" COLORING

A "% regrind" rotary switch is provided on the feeder controller for selecting the exact percentage of regrind to be added. Signal output from the regrind feeder is accepted by all Maguire standard feeders (Series MCF,

CLEAN OUT CHUTE

Complete emptying of the hopper is done rapidly and easily by way of a hinged cleanout chute located directly under the feed screw and hopper.



Model	Auger Size	Max RPMs	Continuous Output lb/hr		Dispense (One Cycle)
			MIN	MAX	
MRF-8-34	1" [25mm]	55	1.8 [82 gm]	58 [26.4 kg]	.05 cc
MRF-8-50	1" [25mm]	100	2.7 [1.2kg]	105 [47.7 kg]	.08 cc
MRF-16-50	2" [50mm]	100	5.3 [2.4 kg]	533 [242.3 kg]	.4 cc
MRF-16-94	2" [50mm]	188	10 [4.5 kg]	1000 [445.5 kg]	.8 cc
MRF-16-160	2" [50mm]	320	17 [7.7 kg]	1700 [772.7 kg]	1.3 cc

Series MSF Starve Feeders

The Model MSF starve feeder carefully regulates the volume of natural material supplied to the feed throat of the process machine. The Model MSF starve feeder, weighing less than 50 pounds, is compact and easy to install. It is mounted between the existing hopper and the feed throat of the machine adding only 8 inches to the height of your hopper. Your hopper remains directly over the feed throat of your machine and is not off-set as is the case with some competitors' units.



IMPROVES CONTROL OF VENTED SCREW

When used in conjunction with a vented screw the MSF starve feeder allows the operator to regulate the feed to the rear portion of the screw. If the front portion of the screw is unable to extrude plastic as rapidly as the rear portion, then the excess flow from the rear will be forced out the vent. This condition could result from:

- A. The use of back pressure during screw return time
- B. Worn screw flights in the forward zone
- C. Intentionally unbalanced temperatures over the length of the barrel, etc.

Use of a starve feeder allows careful regulation of the volume of material that is metered to the rear feed section of the screw, so an operator may override the tendency for material to escape from the vent.

IMPROVES MATERIAL PROCESSING

As plastic pellets are heated and plasticized, surface moisture and some volatiles will be driven off as vapor and steam. The vapor and steam that travel backwards will re-condense on the colder pellets in the feed zone and hopper, and then will be carried into the screw over and over again. "Starve feeding" does two things to help remedy this problem. First, a "starved" screw will have a continuous air passage directly behind the spiraling screw flight that will allow vapors to easily escape back through to the feed throat. Second, the starve feeder itself provides a vent to atmosphere so that vapors need not travel up through the cold resin in the hopper.

REDUCE DRIVE MOTOR TORQUE

Some granular forms of resin feed so efficiently at the feed section of the screw that the horsepower or torque available to drive the screw is not sufficient, and the drive motor becomes overloaded. Starve feeding will correct this problem by metering resin at a rate that does not exceed the horsepower or torque of the drive motor.

CONTROL SLIPPAGE

When the feed zone of a process machine is NOT cooled, the plastic pellets in the throat may preheat considerably if throughput rate is low and residence time in the throat is too long. This may cause premature melting in the barrel, resulting in screw slippage that will produce erratic and extended screw return times. Starve feeding eliminates residence

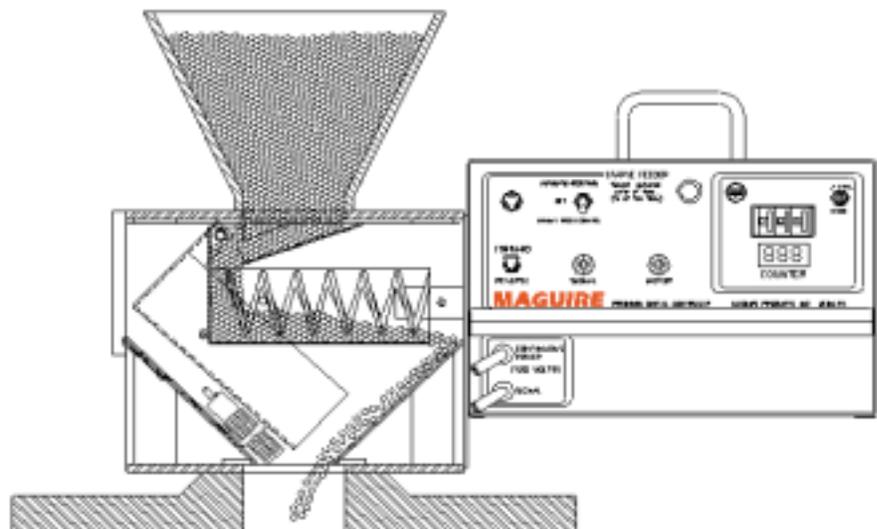
time and consequently prevents screw slippage. In these situations, starve feeding actually can produce a shorter screw return time than with "flood" feeding.

NO CALIBRATION REQUIRED

Your operator need only select the "percent" of full flow desired; such as 70% or 80%. The microprocessor will self-calibrate by first matching the extrusion rate and then automatically cutting back to the selected reduced "starve" rate of feed. No calibration of the system is ever necessary.

MANUAL BYPASS

A hinged flow plate allows conventional flood feed for manually bypassing the "starve" system.



MSF Assembly

Maguire Volumetric Controls



Automatic Speed Control

Maguire Products offered its first microprocessor-based automatic speed controller in 1981. More than 15,000 feeders have been sold and are operating today!

Automatic Speed control eliminates the need to manually adjust motor speed to properly control the rate of color or additive delivery. With automatic speed control, the operator sets only a digital counter for the exact amount of color that is to be added during each molding cycle.

For Injection Molders the microprocessor inside the controller measures the screw return time of each cycle. A proper motor speed is then calculated for the next cycle so that the exact amount of color requested by the counter setting is dispensed over the full time available. As screw return times change over hours of production, motor speed and metering rate adjust automatically.

For Extruders running in "continuous" mode, the counter setting will directly regulate motor speed. A digital tach feedback from the motor armature assures that motor speed is precisely held. Uniform dispensing and consistent coloring are assured: overcoloring is eliminated.

Calibration

It is only necessary to calibrate a given material one time. Once the machine is calibrated for a particular grade of material and the proper setting is calculated, the metering rate for that material is determined. For future reference the user should make note of the setting and use it when that material is run again. It is not necessary to recalibrate.

Employees have little time to monitor volumetric feeders

The actual production environment is not at all like a lab. Your employees have better things to do than constantly monitor your color feeders.

With many competitors' units you adjust color by adjusting motor speed. The only way to set the quantity of color that is going to be metered is to set the speed of the motor, and know how long it is going to run (screw return time). The speed of the motor will vary with the plant voltage, which will change throughout the day, generally increasing in the evening. The screw return time will change as temperature changes, with variations in the resin, and with adjustments to back pressure.

The only way to know how much color is being added per cycle is to actually take a sample and weigh it. You can be sure that if this were done every hour, an adjustment would be required every time. In actual practice, few processors calibrate equipment on a frequent basis. The workload on individuals in the factory is such that they do only those things necessary to make quality parts. Conservation of color is secondary. Putting in too little color will produce a rejected part, but an error on the plus side will not cause a noticeable problem. This error does, however, cost a lot of money.

Automatic speed control completely eliminates the need for motor speed adjustment.

No “double” coloring of regrind

All automatic speed control units are pre-programmed to accept signals from our regrind feeders. Should you purchase our MRF Regrind Feeder to meter regrind at-the-throat, our Color Controllers will automatically reduce metering to prevent over-coloring the regrind. Since color controllers are normally

set to color 100% natural material, the occasional introduction of regrind is usually done without thought to the cost of coloring it twice. Should you wish to address this problem in the future, our automatic speed control units are already equipped to interact with our Regrind Feeders.

Extrusion Following Option

With this option, a controller “follows” the speed of the extruder automatically. Any changes in extruder speed are sensed and followed exactly by the Controller output.

A tachometer that currently exists on your extruder provides either an AC or DC voltage output that varies with extruder RPM. This signal is fed into the Maguire extruder-voltage preprocessor. This signal is passed onto the main processor through an optical coupler.

A calibration pot allows each preprocessor to be exactly tuned for your particular extruder. Calibration is required only once. For correct operation, you simply need to set the digital counter for the proper controller metering rate at full extruder speed. Anything less than full speed will automatically be reflected in a corresponding reduced metering rate. Voltages from 1 to 500 can be tracked. Accuracy is held over the full range.

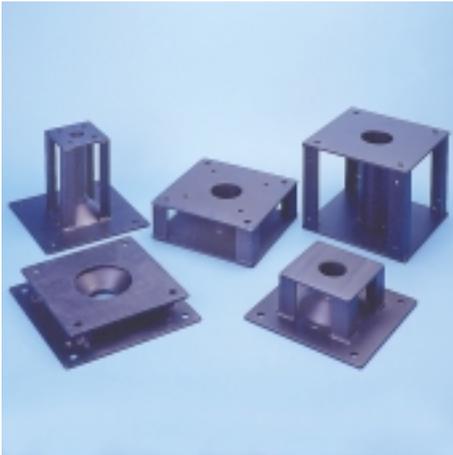
Direct-Entry Controller



The Direct-Entry Controller is a controller upgrade that greatly simplifies the operation of volumetric feeders for pellet, powder, or liquid additives. The unit, available as an option, eliminates the need for calculation and monitoring by the operator. Once the operator has set the desired colorant or additive level by using a simple thumbwheel, the controller automatically calculates the metering rate, compensates for color already present in regrind, and adjusts to variations in the molding or extrusion process.

Expanded electronic recording functions are also provided. Hard-copy output can be generated directly through a printer port that is standard in the controller. Processors can document work-orders, operator number, machine numbers, set-up parameters, and other data. To enhance inventory management the unit has the ability to document running totals of natural, regrind, color, and additive.

Cycle, continuous, and extrusion following modes are available on all models.

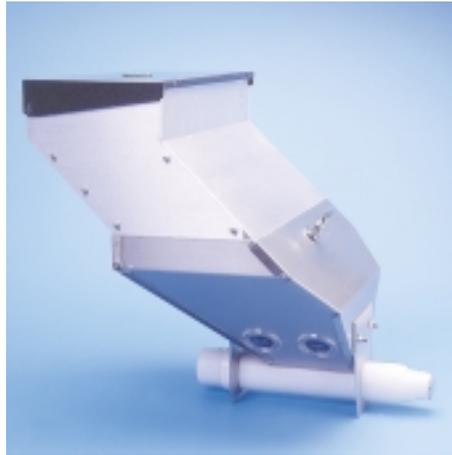


SPACER FRAMES

Model 844	3 1/2" high spacer frame
Model 845	8 1/4" high spacer frame
Model 844-6	Transition to 6" x 6" plate
Model 844-7	Transition to 4" x 4" plate
Model 844-12	Transition to 12" x 12" plate
Model 844-14	Transition to 14" x 14" plate

Maguire spacer frames allow you to easily raise your Maguire feeder above the feed throat of your process machine if clearance is a problem. The spacer frame mounts directly below the standard feeder adaptor frame, adding height to your feeder assembly.

Constructed of 1/4" thick 10"x10" steel plates, and four sturdy angle steel corner supports, these frames provide a stable platform for carrying heavy hopper loads.



EXTENDED HOPPER

The addition of this extension to our standard feeder hopper will increase capacity from about 22 pounds (10 kg) to 62 pounds (28 kg). This extra capacity reduces the frequency of refills whether hand-filling or loading automatically.

Keep in mind that this extension may interfere with your main natural material hopper. It will also add some weight to the hopper when you wish to remove it for color changes.

The side extensions are aluminum and pre-punched for easy assembly and attachment to any existing hopper. You may add this option yourself at any time should you decide later that you need the extra capacity.



AUGERS

ACA4	1/2" auger with coupling
ACA8	1" auger with coupling
ACA8p	1" powder (spring type) auger with coupling
ACA16	2" auger with coupling



AUGER TUBES

1808-4	1/2" auger tube
1808-8	1" auger tube
1808-8P	1" powder auger tube
1808-16	2" auger tube



SPARE CONTROLLER

ACA	Spare automatic speed controller
ACA-E	Spare automatic speed controller w/ Extrusion Following



SPARE DIRECT ENTRY CONTROLLER

ACA-D	Spare direct entry controller
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LOW LEVEL ALARM SYSTEM

Reduce monitoring requirements by floor personnel with the Series LLA alarm systems used to signal HIGH or LOW material-supply conditions. The easy-to-install solid-state sensor can detect pelletized, liquid, or powder material. A bright amber strobe light and an electronic beeper alert the user to an ALARM condition. A duplex outlet is provided to control a loading system. Power to this outlet is switched off when the sensor is covered. Single-station and multi-station (up to six) models are available.



SWIVEL PLATES

- ASW3 Swivel Plate with 3 1/2" high spacer frame
- ASW8 Swivel Plate with 8 1/4" high spacer frame

Maguire swivel plates allow for easy repositioning of your Maguire auger feeder. The swivel plate mounts directly under the auger feeder adaptor frame assembly and allows for full rotation of the feeder to any position you desire. Tightening the four hold-down clamps will prevent movement if you wish to maintain one fixed position.

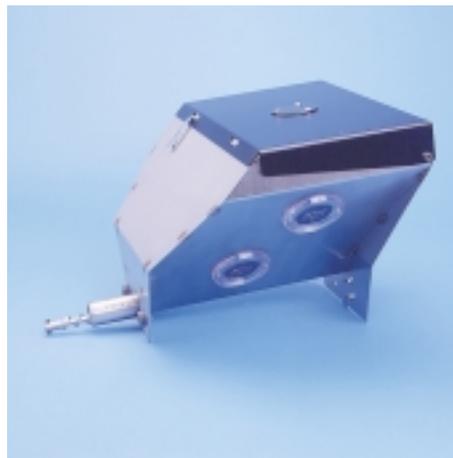


JUG STYLE HOPPER

This optional low hopper allows color to be dispensed directly from 5-gallon jugs into the color feed auger. With this system, 5-gallon containers are pre-filled with color or additive. This makes it easy to keep a variety of color pellets or additives within reach of each press for rapid changes.



MCF HOPPER/AUGER ASSEMBLY



MLG HOPPER/AUGER ASSEMBLY



MPF HOPPER/AUGER ASSEMBLY