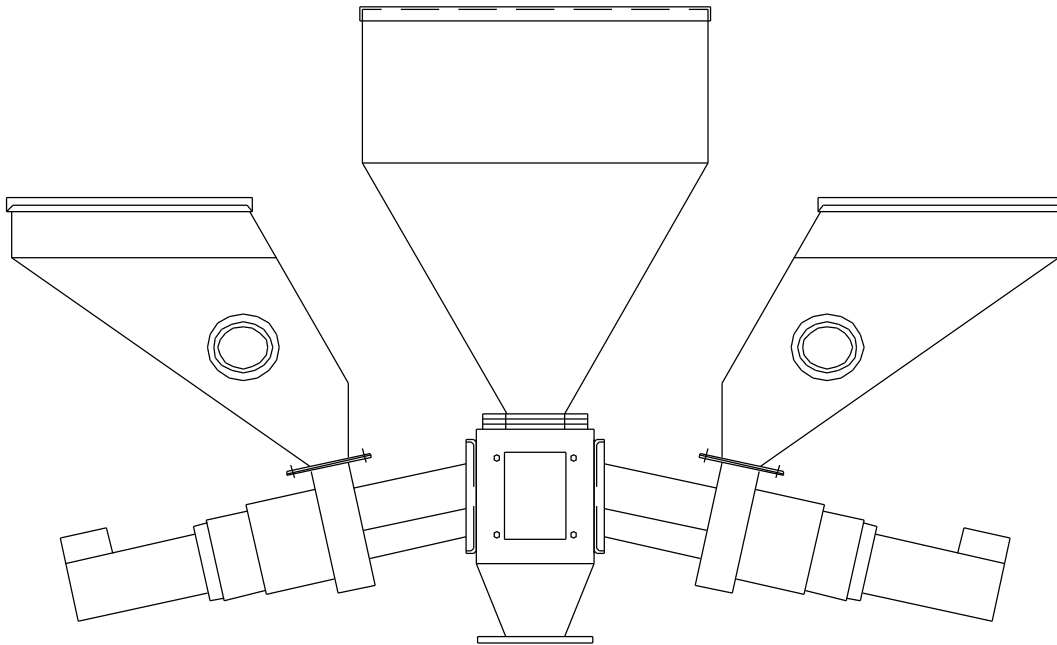


Thoreson-McCosh MC Color Unit



INSTRUCTION MANUAL

IB200206

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Thoreson-McCosh Inc

FORWARD

The information contained in this Instruction Manual is provided to you for the maintenance of your Thoreson-McCosh equipment.

Also included in this manual are operating instructions, a service parts list, and wiring diagrams. Please file this manual for future use.

For additional information, please contact:

THORESON-McCOSH Inc. 1885 Thunderbird Street Troy, MI 48084 Phone: (248) 362-0960 Facsimile: (248) 362-5270 sales@thoresonmccosh.com

CUSTOMER RECORDS

Upon receipt of your Thoreson-McCosh equipment, it is very important that you complete the table below. The information will be needed to best serve you when you call the Thoreson-McCosh Service Department with questions or to order replacement parts. The information is located on the Serial Tag on the unit and inside the door of the control box.

Model Name _____

Serial No. _____

Wiring Diagram No. _____

Insert No. _____

Program No. _____

Layout No. _____

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SECTION 1: THORESON-MCCOSH PRODUCT WARRANTY

Thoreson-McCosh warrants each product of its manufacture to be free from defects in material and workmanship for a period of 12 months from the date of delivery to the original purchaser. Thoreson-McCosh's obligation under this warranty is limited to repairing or replacing any part returned to the Thoreson-McCosh factory with transportation charges prepaid, and which, on examination by Thoreson-McCosh, shall disclose to Thoreson-McCosh's satisfaction to have been defective.

The purchaser must notify Thoreson-McCosh of such defects and promptly deliver the defective part(s) in accordance with Thoreson-McCosh's shipping instructions, delivery prepaid. Parts will be replaced F.O.B. Thoreson-McCosh factory, by Thoreson-McCosh, and will be invoiced to the purchaser with "credit on return of defective part", if the part is returned within fifteen (15) days after shipment of replacement part. Thoreson-McCosh is not liable for installation or cost to install the replacement part or removal of the defective part.

Thoreson-McCosh is not responsible for any failure of its product due to improper use, installation, or operation. Thoreson-McCosh shall not assume any expense or liability for repairs made to any Thoreson-McCosh unit or equipment outside Thoreson-McCosh's own factory unless specifically agreed to in writing by Thoreson-McCosh.

Equipment and accessories furnished by us, but manufactured by others, are guaranteed to the extent of the original manufacturer's guarantee to Thoreson-McCosh, if that guarantee exceeds one (1) year.

It is expressly understood that Thoreson-McCosh is not responsible for damage and/or injury caused to buildings, contents, products, or persons by reason of installation or use of any of our products. Thoreson-McCosh shall not be liable for loss, damage or expenses arising directly or indirectly from, or being consequential or incidental to, the use of its products or from any other cause.

The above warranty supersedes, and is in lieu of all other warranties expressed or implied; and no person, agent, representative or dealer is authorized to give any warranties on behalf of Thoreson-McCosh, not to assume for Thoreson-McCosh any other liability in connection with Thoreson-McCosh products.

SECTION 2: INTRODUCTION

2.1: MC (MULTI-COLOR) UNIT

Your Thoreson-McCosh MC (Multi-Color) Metering Unit provides a simple and effective method of introducing color or regrind into your virgin material in a constant & accurate proportion.

Several models allow the user to introduce varying amounts of color or regrind, into the material flow.

2.2: INSTALLATION

The MC Unit control box can be mounted to any suitable location on your processing machine, providing it is close enough to the auger motor to plug in. The control box is powered up with any 115 vac power source.

Two wires need to be connected from the molding machine control relay or screw solenoid to energize a control relay in the control box. This voltage may be other than 115 vac and will terminate at the terminal block in the control box.

NOTE: *Field wiring specifications may differ depending on your area. Check local electrical codes before wiring.*

2.3: CALIBRATION PROCEDURE

Because concentrate pellets may vary from one supplier to another, in size, density and flow characteristics, it is recommended that you establish a calibration chart for your particular needs. For the custom processor who experiences many short run jobs, a calibration chart comes in very handy to estimate a motor speed setting for your desired percentage of color.

Calibration can be performed with the metering unit either on or off your processing machine. In both cases, this is achieved by weighing the throughput of concentrate over a fixed period of time. Set a suitable container beneath the calibration port, and open the calibration port by loosening the knob and rotating then sliding the inner tube to the calibrate position. Set the control switch to calibrate and run test batches over a period of one minute each. After several of these trials, you can accurately determine the correct control settings for your color requirements.

For the processor with frequently changing products and colorant requirements, different inserts and augers are available from Thoreson-McCosh, which are interchangeable with your existing motor.

3.0: VOLTAGE FOLLOWING OPTION

3.1: CALIBRATION OF VOLTAGE FOLLOWER (KBSI-240)

First, you need to know what the molding machine screw max output voltage will be. With a D.C. voltmeter, measure the molding machine screw output voltage when the screw is at its maximum speed. Select the voltage setting that best fits your output.

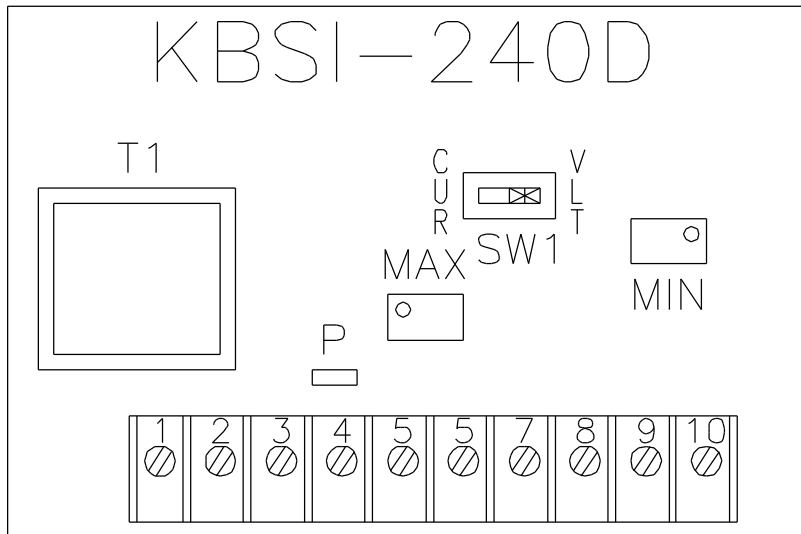
0 – 25vdc use terminals 5 & 6

0 – 120vdc use terminals 5 & 7

0 - 550vdc use terminals 5 & 8

Connect the screw voltage output wires to the correct terminal block terminals. Next, disconnect the wires at terminal 9 and 10 on the KBSI-240 board and put a 10vdc voltmeter across the terminals. With the control box turned on, (put all motors in the off position) and the screw voltage at 0 volts, adjust the min pot on the KBSI-240 board to read as close to zero as you can get it without going to a negative value. Next bring the screw voltage up slowly and adjust the max pot on the KBSI-240 board to 6.5 vdc. **NOTE: if the voltage at terminal 9 and 10 goes below 0 or above 10 vdc, the pots won't adjust.** When the screw voltage has reached its maximum output, adjust the voltage at terminal 9 and 10 to 6.5 vdc. Reconnect the wires at terminal 9 and 10, your unit is now calibrated to the machine screw.

NOTE: If you have an external D.C. power source, this can be used to simulate the screw voltage



SECTION 4: OPERATION

Providing the unit has been installed and wired as outlined, operation is very simple. Fill the concentrate hopper and set the control switch to “auto”. The metering unit will now cycle on and off with the processing machine plasticizer screw, supplying colorant according to demand.

4.1: DETERMINING THE SPEED RATE OF MC-UNIT

- 1: Determine weight of color per cycle
 - a) Determine shot size
 - b) Calculate weight of color from percent of color and shot size
- 2: Determine molding machine recovery time, this is the amount of time the MC Unit will run.
- 3: Convert grams of color per shot (from 1. b)
- 4: Used calibration procedure to determine what pot setting to use

Example

FORM 1. DETERMINE THE SPEED RATE OF MC-UNIT

- 1.a) 2 ounce shot $\frac{1 \text{ pound}}{16 \text{ ounces}}$ x $\frac{454 \text{ grams}}{\text{pound}}$ = 56.75 grams per shot
 - b) For 2% color $56.75 \times 0.02 = 1.135$ grams of color
2. Example time: 7 seconds
3. We need to feed 1.135 grams of color every 7 seconds
 $\frac{1.135 \text{ grams}}{7 \text{ seconds}} \times \frac{60 \text{ seconds}}{\text{minute}} = 9.73$ grams per minute
4. Test unit to determine correct pot setting to achieve 9.73 grams per minute by running the MC unit at one minute with variations potentiometer setting

FORM 1. DETERMINING SPEED RATE
(To be used with previous page)

1. a.) _____ OUNCES $\frac{1 \text{ POUND}}{16 \text{ OUNCES}}$ X $\frac{454 \text{ GRAMS}}{\text{POUNDS}}$ = _____ GRAMS PER SHOT

b.) _____ FROM 1a) GRAMS PER SHOT X _____ % OF COLOR X 0.01 = _____ GRAMS OF COLOR

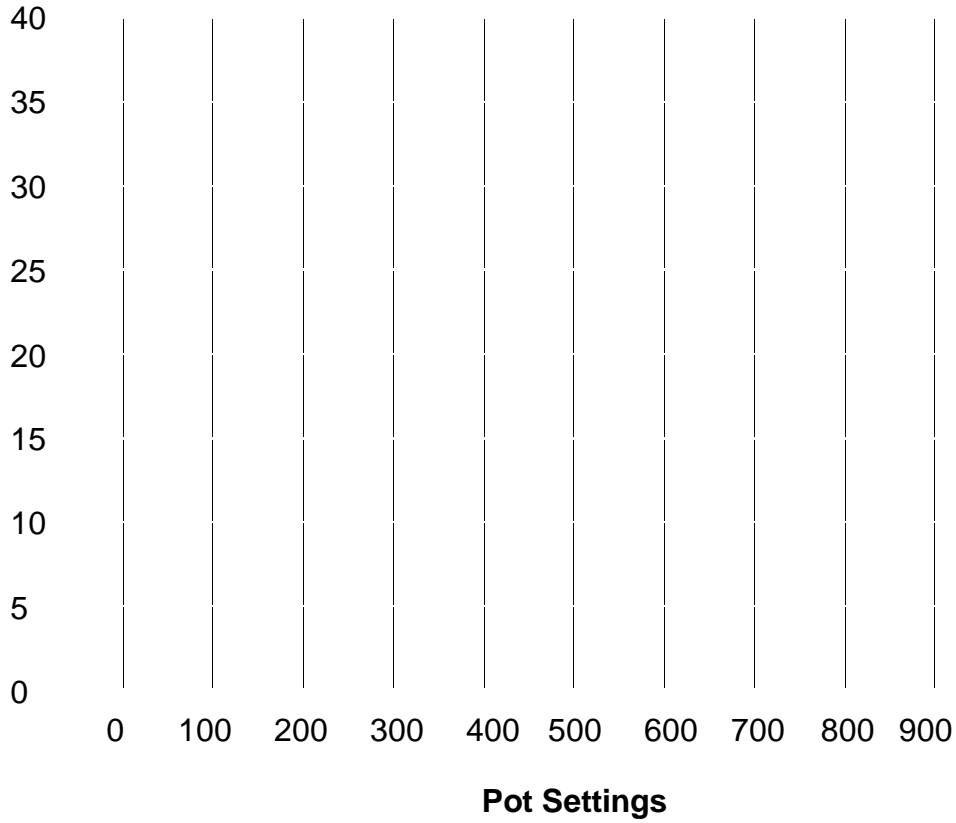
2. DETERMINE MOLDING MACHINE (RECOVERY TIME) _____ SECONDS

3. WE NEED TO FEED _____ (GRAMS OF COLOR) EVERY _____ SECONDS
(RECOVERY TIME)

$\frac{\text{GRAMS OF COLOR}}{\text{RECOVERY TIME}}$ 1.b) _____ x 60 SECONDS =
2. _____ MINUTE _____ GRAMS PER MINUTE

MC Calibration Chart

**Feed Rate
(gm/min)**



Recovery Time _____ Seconds

METRIC EQUIVALENTS

VOLUME	CUBIC CENTIMETER	0.061	CUBIC INCHES
	CUBIC INCH	16.39	CUBIC
CENTIMETERS	CUBIC METER	1.308	CUBIC YARDS
	CUBIC YARD	0.7646	CUBIC METERS
	LITER	1.056	QUARTS LIQUID
	QUART LIQUID	0.9453	LITERS

WEIGHT	GRAM	0.03527	OUNCES
	OUNCE	28.35	GRAMS
	KILOGRAM	1.2046	POUNDS
	POUND	0.4536	KILOGRAMS

Section 5: Determination of Variation in feed Rates

- 1, Select a time interval and number of samples. Example sample time 1 minute. Number of samples 10

2. Run the 10 samples at 1 minute intervals and record throughput weights for each sample.

- 3 Add the 10 sample weights and divide by 10 to determine average sample

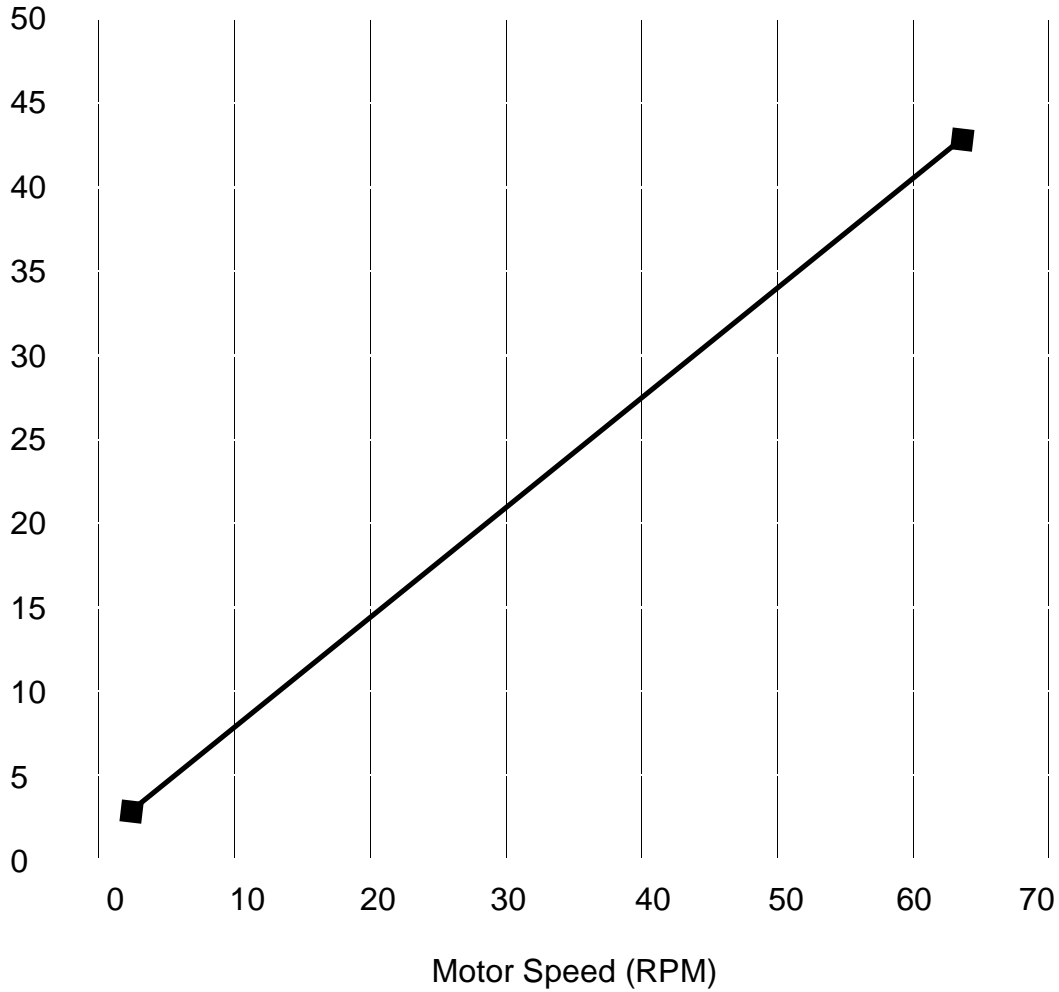
4. Determine the difference in weight between the lowest weight sample and the average sample. Divide this difference by the average weight to determine the low variation in percent

NOTE: Longer sample times and more samples increase accuracy of test.

MC1 Chart

MC Unit with 0.5" Auger, 0.87" Insert

Feed Rate
(gm/min)

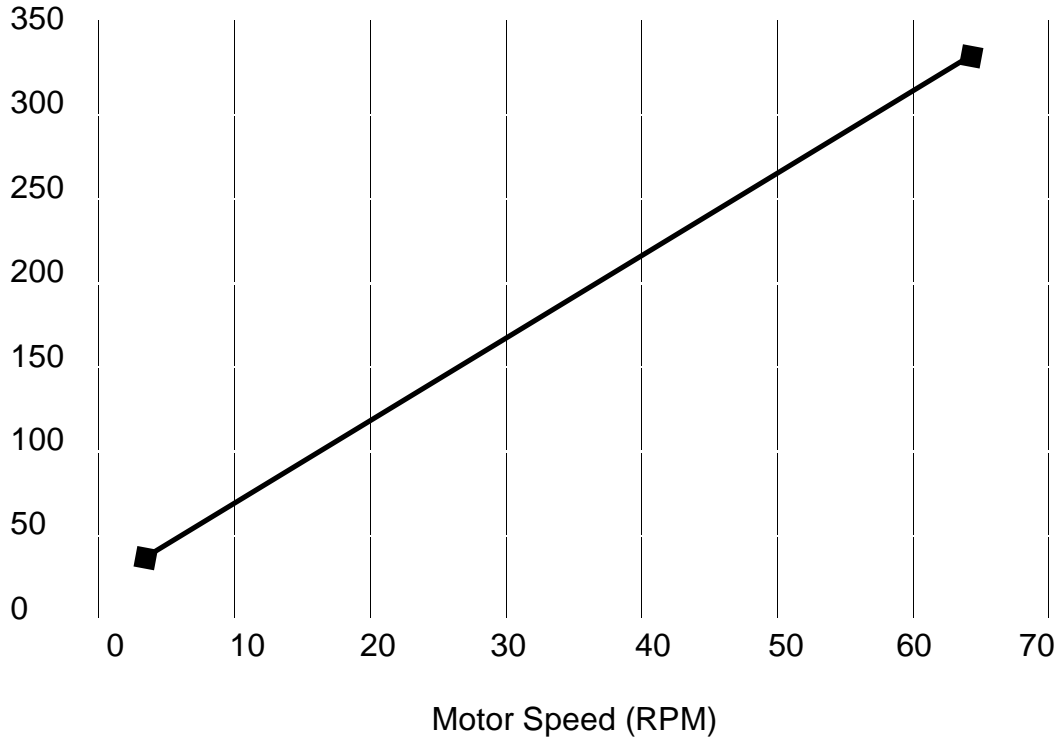


NOTE: MAXIMUM MOTOR RPM IS 64

MC2 Chart

MC Unit with 1" Auger, 1.5" Insert

Feed Rate
(gm/min)



NOTE: MAXIMUM MOTOR RPM IS 64

SECTION 6: MAINTENANCE

D.C. permanent magnet type wit relatively long brush life. Brushers and any other service parts you may require are available from Thoreson McCosh

