

LIQUID BLENDING SYSTEM



LBS-120TM

EAGLE ENGINEERING CO.
ALPENA, MICHIGAN
www.eaglecompanies.com



PROGRAMMABLE LIQUID DISPENSER

The **LIQUID BLENDING SYSTEM-120** exemplifies the latest in liquid dispensing technology, with its combination of microprocessor based control and high quality components. Faced with the fact that industry demands the most flexible, accurate, and cost effective equipment available, the **LBS-120** has evolved to meet the current and future needs of industry.

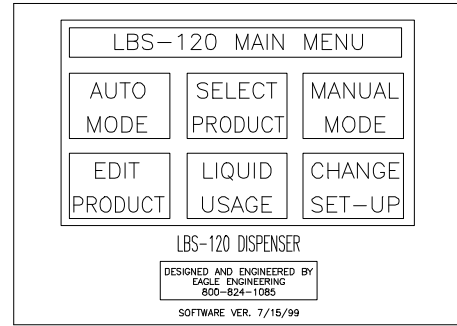
For many years the typical dispenser was operated on the volumetric principal. The operator would have to convert the weight of the liquid to a volume, then set a depth probe to a height based upon the calculation. These types of dispensers are in wide use around the world today and still prove to be fairly accurate in many applications. However, the time has arrived for a new computerized, state of the art dispenser, known as the **Liquid Blending System 120**.

Designed with 20 years of experience building standard volumetric dispensers, the **LBS-120** is a dispenser that delivers liquid on a basis of weight, rather than volume. The **LBS-120** maintains greater accuracy and repeatability than the volumetric dispenser because of its very sensitive weighing system and adjustable pumping capabilities. The **LBS-120** with its powerful computers, and operating parameters that are adjustable by simply touching the color screen, provides flexibility and adaptability to a vast range of manufacturing operations.



EAGLE ENGINEERING CO.
ALPENA, MICHIGAN

TOUCH VIEW SCREEN CONTROL



Most functions are accessed and performed by simply touching the face of the Touch View Screen. The Touch View Screen, like the rest of the dispenser, is built to rugged industrial standards (NEMA4/NEMA12).

AUTOMATIC / SEMIAUTOMATIC MANUAL OPERATION

AUTO		PRODUCT NUMBER: 120	DESCRIPTION:		
STATUS:					SUPPLY LEVELS RESET FILL DISCHARGE BLEND SELECT TOLERANCE ACCEPT PAUSE
BLEND INFO:					
BLEND WEIGHT:		BLEND WEIGHT:	BLENDING:		
DESCRIPTION		ACTUAL WEIGHT	ACTUAL WEIGHT		
PREWET	WATER	000.00	000.00		
LIQUID 1		000.00	000.00		
LIQUID 2		000.00	000.00		
LIQUID 3		000.00	000.00		
LIQUID 4		000.00	000.00		
MAIN MENU					

The host machine (batching system) normally controls all of the dispensing operations in the automatic mode. However, the dispenser can also be operated in the semiautomatic mode, or the operator can have complete manual control of all the dispenser functions.

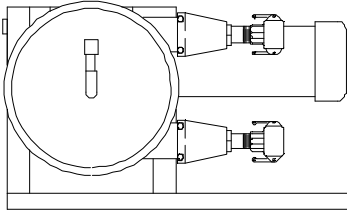
FORMULA STORAGE (PRODUCT)

SELECT PRODUCT TO RUN			
RUNNING PRODUCT: 100		DESCRIPTION: WATER MULTICOLOR	
PROD. #	DESCRIPTION	PROD. #	DESCRIPTION
1.		11.	
2.		12.	
3.		13.	
4.		14.	
5.		15.	
6.		16.	
7.		17.	
8.		18.	
9.		19.	
10.		20.	

MAIN MENU PREV PAGE NEXT PAGE EDIT PRODUCT

The dispenser will store 120 different product formulas. The formulas can be programmed by the operator by touching the screen. Each product may consist of up to four blends and each blend can consist of up to four base liquids.

PUMPS



The dispenser is equipped with peristaltic (hose) pumps. The pump drive motors are one-horsepower, 90 volt DC, variable speed with a reversing option installed on the drive controller. These pumps are capable of pumping (base liquids) up to 25 feet vertical and 75 feet horizontal.

MULTI-BLEND OPERATION MARBLEIZING, MULTICOLOR

The multi-blend finished product can have up to four different blends, which can be dispensed in rotating sequence. This feature is especially useful when producing alternating products.

ALARMS

Various alarms alert the operator to unusual or out of tolerance conditions. The software checks for weighing errors, under or over liquid amounts, and numerous other factors that can lead to bad batches. In addition, the dispenser will signal the host machine that the fill and the discharge cycles have been completed.

BATCH RECORD

An optional printer can be connected to the *LBS-120* dispenser to print the data from each batch produced in the automatic mode. The batch is identified by a batch number, product number, time and date. If this feature is enabled, a printed copy will be generated after each batch automatically.

INVENTORY CONTROL

The *LBS-120* accumulates totals of all weights dispensed in the automatic mode. Also, a count of the of batches produced are accumulated along with monitoring of the bulk storage containers. These totals can be viewed, or reset to zero when appropriate. A printout of the total usage of liquid color and number of batches can also be printed, by just touching the button on the screen.

THEORY OF OPERATION

Several protections have been built into the LBS-100 to prevent the dispensing of incorrect amounts of liquid, and to prevent damage being caused to the dispenser. Many of the parameters controlling these functions are variable and can be changed by accessing the CHANGE SETUP screen. Prior to the initial addition of the first liquid, the dispenser checks the weight in the chamber to insure that a batch is not already in process. It is normal to have some weight on the scale before addition of liquid begins. This weight can be a positive or negative and is the result of water or other foreign material on the scale. It can also be caused by changes in hose stiffness. The setup parameter limiting this initial weight is called EMPTY TOLERANCE. The EMPTY TOLERANCE should be set high enough for the dispenser to ignore these normal empty weight variations, yet low enough so that the dispenser will not allow a “double batch” to be introduced into the chamber. Empty tolerance setting is 0.10 to 0.30 pounds.

FILL CYCLE

To insure maximum production rates, it is necessary to fill the Weigh Chamber as rapidly as possible and yet maintain the required accuracy of the final weight of the blend components and consequently, the weight of the total blend. For the most exacting requirements, the *LBS-100* is equipped with the fast/slow pumping feature. This feature pumps the majority of a blend component using a FAST FILL speed. At a preset cutoff weight, the unit pumps at a SLOW FILL speed until the preset shut off point is reached. The input for this fast/slow pumping feature may be entered into the dispenser using the EDIT PRODUCT screen. For each pump, the SLOW PRACT and the PRACT entries are to be used.

SLOW PRACT

SLOW PRACT sets the weight amount at which the pumping rate switches from FAST FILL to SLOW FILL. The recommended initial setting for this feature is 0.50 pounds for each color. This means that the FAST FILL rate will be switched to SLOW FILL at a weight 0.50 pounds less than the final desired weight.

PREACT

PREACT operates in the same manner as SLOW PREACT, except that PREACT switches the pumping rate from SLOW FILL to shut off. THE PREACT setting compensates for the amount of liquid in transit from the fill entry port to the liquid surface at the instant of liquid shut off. After each liquid is added, the dispenser hesitates for a short time to allow the scale to stabilize. After each liquid has been added and the stabilization time has elapsed, the dispenser checks the weight of the liquid just added. If it is within the tolerance set for that pump, the dispenser continues. If it is outside the allowable tolerance, the dispenser halts the cycle and sounds an alarm. The tolerance should be set wide enough to prevent nuisance shut downs of the dispenser, but small enough to insure a quality product. Generally, tolerances between 0.05 and 0.30 pounds are acceptable.

DISCHARGE CYCLE

The finished blend (or single liquid) is discharged using air pressure. The rate of discharge is controlled by the discharge air pressure. This air pressure can be adjusted using the discharge air pressure regulator knob over a range of approximately 20 to 50 pounds. The time for the discharge cycle may be set using the CHANGE SETUP screen. The value (in seconds) entered under DISCHARGE TIME, must be set long enough to allow the chamber to empty before the wash cycle starts. This timer starts once the weight in the chamber falls below five (5) pounds. The chamber discharge cycle is followed by the water flush cycle. This water flush is pulsated on and off to remove the liquid remaining on the walls and in the bottom of the chamber. The duration of this cycle may be set using the CHANGE SETUP screen. The entry for this function is FLUSH TIME. The last step in the discharge cycle is DISCHARGE DELAY. This timer enables the liquid blend and water to clear the chamber and the lines. This delay time may be set using the CHANGE SETUP screen. This timer starts after the wash cycle and is normally set between 15 and 30 seconds. If the optional printer is connected to the LBS-100 Dispenser a batch report will be printed with base color weights for all the pumps used along with the batch number, time and date.

LBS-120 CHARACTERISTICS

Accuracy	.01 lb. or .01 kg
Number of stored formulas	120
Multiple blends	Four per formula
Formula names	User programmed
Pump names	User programmed
Inventory control	User defined
Batch printer	Optional
Control System	PLC (A/B SLC 5/03)
Operator interface	Color touch screen
Control	Automatic/manual
Weigh chamber	Transparent
Maximum capacity	50, 100, 175 lbs* (22, 45, 78 kgs.)
Typical cycle time 10 lb. batch	50 seconds
Typical cycle time 60 lb. batch	135 seconds
Alarms	Local, remote
Pumps	Peristaltic reversing
Number of pumps	Up to four
Dual mixer operation	Optional
Electrical protection	Circuit breakers,
Operating voltage	120 volt, 50/60 Hz.

*Based on 15 lb. per gallon of liquid.

Available in lb. or kg. configurations

Application Support & Training

Eagle Engineering provides factory applications and technical assistance. Personnel quickly respond to customer needs, troubleshooting problems, analyzing system operations, and coordinating component repair or replacement. Eagle Engineering provides on-site startup and training, worldwide, for our complete line of dispensing equipment.

For information on how you can get the **LBS-120** installed in your manufacturing facility, call **1-800-824-1085**



EAGLE ENGINEERING & SUPPLY
101 N. INDUSTRIAL HWY.
ALPENA, MI. 49707
FAX 1-517-354-8386
www.eaglecompanies.com