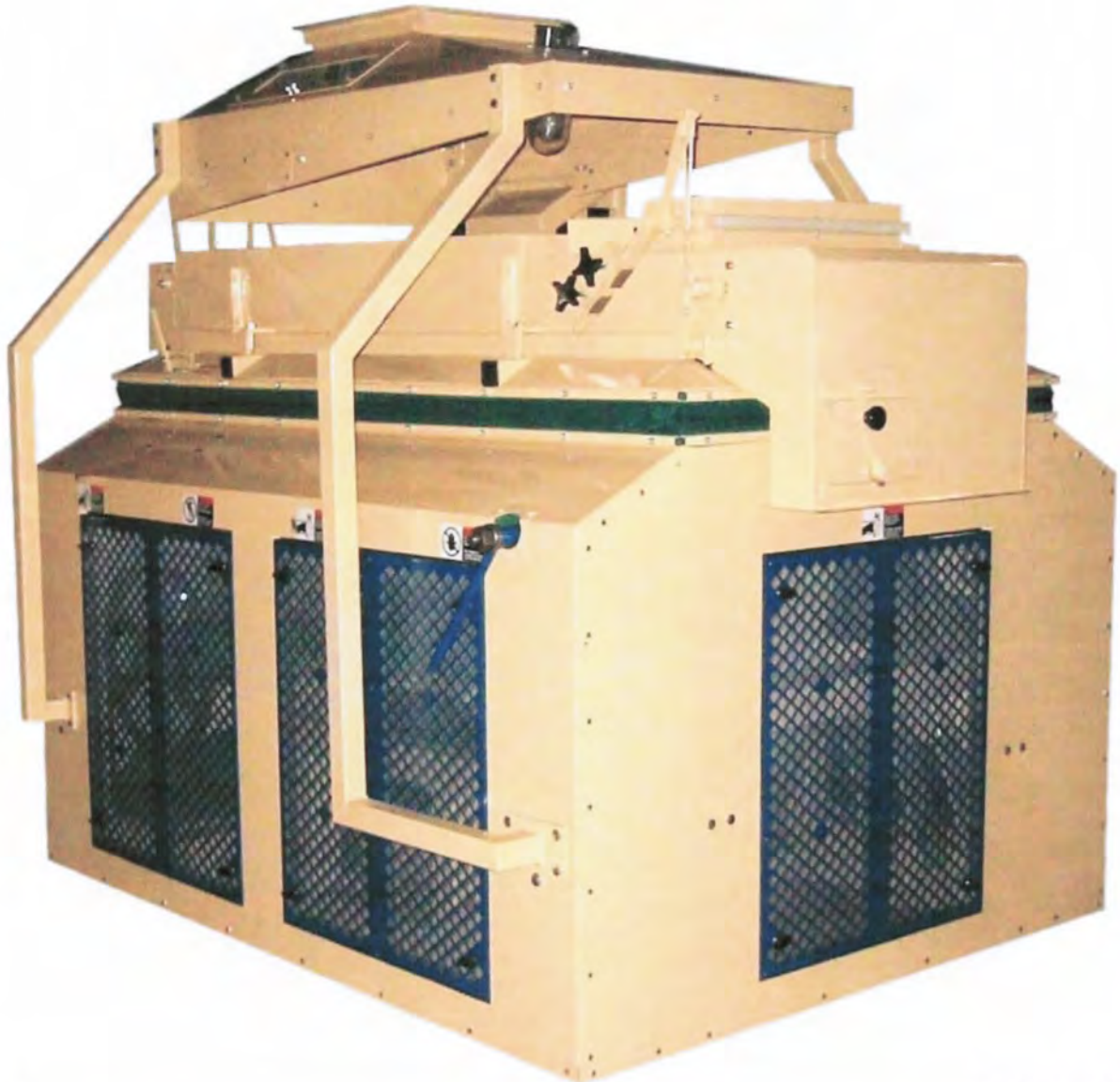


# LMC GRAVITY MANUAL



## GRAVITY SEPARATORS

LMC has been building equipment for over 50 years and understands that no two applications are the same. Therefore, when it comes to your particular application, LMC builds a piece of equipment for your individual needs. Since LMC equipment is not manufactured on an assembly line basis, special attention is given to each piece of equipment.

The gravity table can have either a left-hand or a right-hand discharge and infeed. Prior to installation it is necessary to specify the feed suitable for your installation. If your installation requires a closed air system, this can be adapted to LMC equipment, the words right and left used in the description of parts should be taken as seen facing the direction of product through the equipment. Product flow is from back to front.

Exact, distinct product separation at high capacity and maximum reliability is offered combined in one system by only LMC. With great pride, we refer to this system as Total Gravity Separation. All models are constructed according to the same strict specifications and are equipped with the same exclusive features, which make the total product separation possible. Each model differs only in size and capacity. Of course, you would expect any gravity separator to separate products according to specific gravity, but the important point is the completeness of separation. With an LMC Separator, and only LMC, total, exact, distinct product separation is routine.

Among the features, which make the LMC Gravity Separator superior to all other gravity, separators are the step deck and air bellows.

The LMC deck, rather than having a flat surface, has a step surface. Consequently, the deck does not lose its ability to carry product because of slickness or build-up. Instead, the LMC deck maintains carrying capabilities unequaled by the standard woven or perforated decks characteristic of other gravity separators.

The second outstanding feature of the LMC is its air bellows. The bellows sustains a constant bed thickness by detecting air pressure through the bed. As the amount of product coming into the equipment decreases, the amount being discharged decreases equally keeping a constant bed thickness at all times. As a result, frequent adjustments are not needed.



## INSTALLATION

Locating the LMC Separator in the right spot is important for a number of reasons: getting product to the equipment and what to do with the product from each discharge.

There are several ways to feed the equipment; however, a constant feed is recommended. The best way to obtain a constant feed is to install a surge hopper in front of the equipment and use the aspirated feeder to transfer the product from the hopper to the LMC. After selecting proper feed, the discharges must be considered. These are the heavy, accepts, middling, and light. While the accepts will go to the finished product, we must consider the other three. The heavy discharge is, in most cases, run across a small stoner where the good product comes off and goes in with the finished product. The middling cut can be closed so that when good seed is processed, the seed can go with the accepts, or when processing, the middling can be opened so the seed here can be sent back for further processing. The light discharge depends upon the application. The manufacturer would be happy to make recommendations for correct application of your product.

The foundation also plays an important role. It is preferred the foundation be either a rigid concrete slab or a structural steel base. A raised steel structure is favorable for getting under the equipment for cleaning purposes. Be sure to place machine so the deck can be readily taken out for cleaning.

After the LMC Gravity has been mounted and all electrical work completed, check the rotation of drive and fan motors. Rotational arrows on the equipment have been provided.

Because separation varies with each product due to the shape, size, and specific gravity, it is difficult to say what adjustments are most suitable for each product. Watching the bed and sampling the input and output are the most effective ways to decide the necessary adjustments.

Prior to introducing product into the equipment, make these preliminary adjustments as follows:

Raise deck about  $\frac{3}{4}$  of way up. Set fan speed at 900 RPM. Set eccentric shake at 300 RPM. Set lights gates in highest position. Check the bellows making sure it is in a closed position. The gate should also be in closed position. To determine this, put hand in discharge spout and feel the gate position. When slowly lifting the bellows to open position, you should be able to feel the gate opening toward the discharge. Lower bellows at this point, gate should be in a vertical position; if not, loosen setscrews and position gate in vertical position when bellows is closed. Tighten setscrews.

Once all preliminary adjustments have been made, start equipment and allow equipment to run for a short period of time to check for any loose parts, pieces of metal, nuts and bolts that may have come through the system from construction.

## OPERATIONS

Introduce product on deck. Hold bellows arm down so discharge gate will stay closed until deck screen is fully covered with product. Release bellows arm. Product will begin discharging. Observe product bed.

If product bed is too thick and heavy on #1 discharge end, there are four adjustments or a combination of all four that can be made to correct this.

1. Lack of air through the bed
2. Lack of tilt on the deck
3. Thickness in bed
4. Wrong deck speed

In most cases, the air or deck tilt may be the problem. To correct this, speed fan up and force more air through the bed. Observe the deck closely. The proper airflow should result in a fluid bed. Do not make any more adjustments for at least 5 minutes, to allow bed to adjust. If, after 5 minutes, you get the same results, raise deck.

If the problem still persists, the bed may be overloaded, to eliminate this, adjust the weight on the bellows by sliding the weight back toward shaft. The flow from the #1 discharge will increase at first, so do not be alarmed. Once the flow adjusts itself, it will slow down. If it does not, you may be overloading the machine. Check the flow rates and compare them to the recommended rates. Having done this, if machine is still not functioning properly, you may have to cut back on the air or possibly lower the deck. Observe the deck as before; wait a few minutes before making any adjustments. These adjustments should correct the problem.

The second problem is the reverse of the first. Product bed too thin and too much turbulence on #1 discharge end. If this condition occurs, you should do the opposite from the first condition mentioned.

Set lights gates so as to let discards dribble off as needed.

Located to the right of lights discharge spout on side of gravity is a positive air relief gate control. If condition of product being processed is such that there is an excessive amount of turbulence on the lights end of the deck, this valve can be opened to calm this turbulence.

Now that you have set your LMC Gravity to the product you will be running through the machine, you may have to make very few adjustments again. If adjustments are needed, in most cases only one adjustment can correct it. Move the bellows adjustment weight up or down on the slide depending on what conditions you have. If this does not correct it, check your other adjustments. If all attempts fail, the deck could be blinding. See the next section on cleaning and maintenance.



### CLEANING

Cleaning is essential for maintaining high efficiency of the equipment. The three main areas to consider are the intake filter, the deck surface and the air bellows. The intake filter located at the rear of the equipment should be removed every day and blown out with an air hose. This will prevent frequent adjustments to the air controls and it only requires a few minutes.

Since separation of product is made on the deck, it is essential that the deck is kept clean. Maintaining a constant air flow through the deck also prevents frequent adjustments. How often the deck is cleaned will depend upon the application. However, it is wise to blow air through the deck from the top at least once a week. If possible, remove the access panel in front of equipment and vacuum any build up of dust and lint. Some of the smaller models do not have an access panel. At least once every two to three months, the deck should be removed from the equipment and thoroughly steam cleaned. To remove the deck, remove the bolts around the deck that hold the deck in place. This will free the deck for removal. Once the deck has been cleaned, place back in equipment. Follow the same steps for removal except in reverse.

If shut down time is critical for removing deck and steam cleaning, it might be more practical to purchase a second deck so that once the uncleaned deck has been removed, the second deck may be inserted without any timely delays.

### LUBRICATION AND PREVENTATIVE MAINTENANCE

Before the LMC machine leaves the manufacturing company, all bearings are checked and greased; therefore, it is not necessary to grease bearings for a period of two to six months depending upon application. A good grade of grease should be used and pumped in slowly until a slight bead forms around the seal.

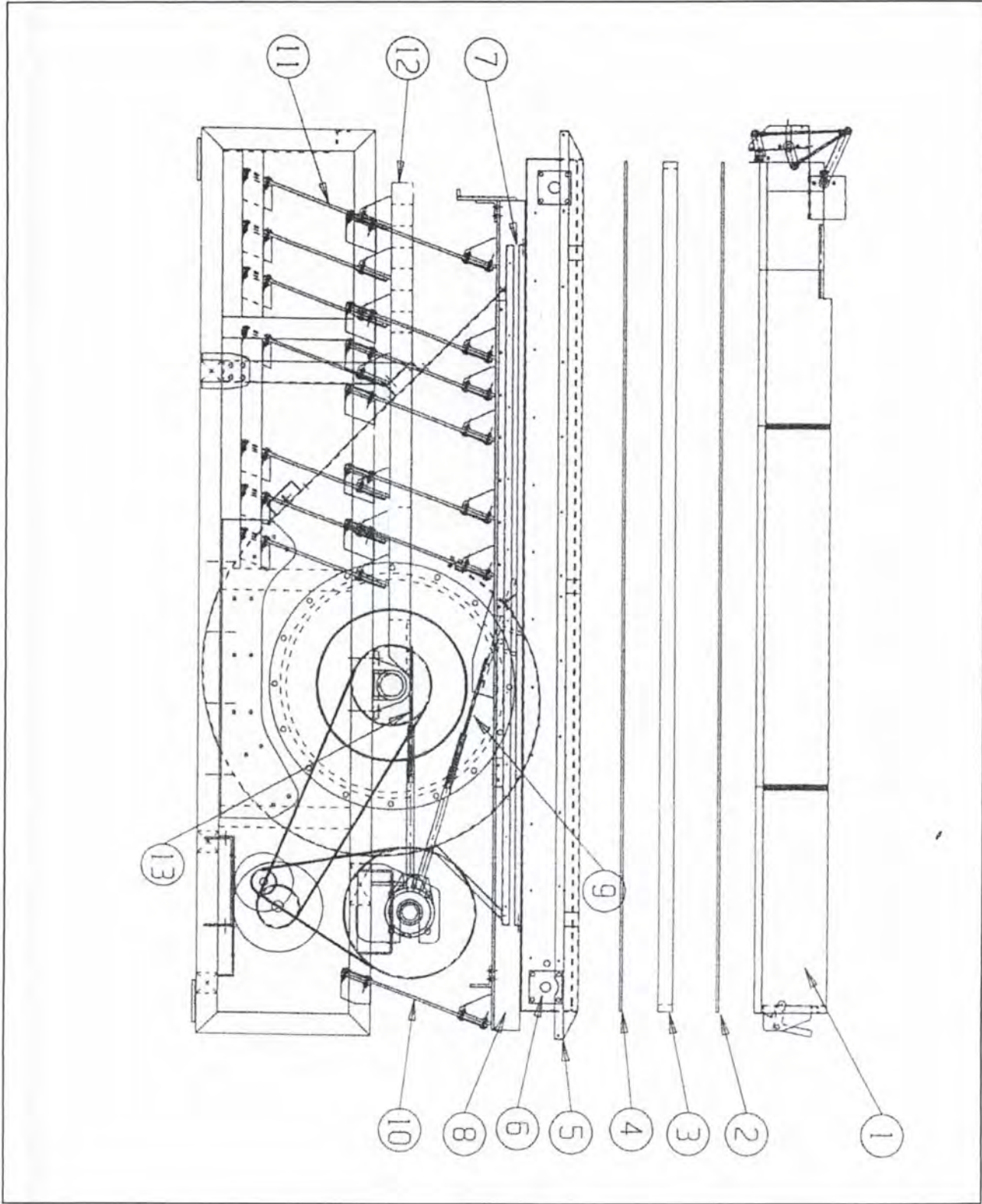
All of the controls (i.e. the air bellows, deck tilt) should be greased periodically. Grease used for these controls should be a lightweight, lithium grease. The air bellows, in particular, requires free movement to work efficiently. As a consequence, it is essential to pay closer attention to it.

Other items for concern are the V-belts. If these belts become slick or worn, it affects the speed of the deck and fan; consequently causing an inconsistency in the RPMs which make adjustments difficult. The belt should be replaced when this occurs.

Also, all bolts should be checked periodically, especially the foundation bolts and the deck pivot bolts. Should the foundation bolts come loose, a vibration will be created within the equipment, which may cause additional problems. If deck pivot bolts are not tight, damage to the deck may result, as well as changes in deck characteristics causing unnecessary adjustments.

**MARC SERIES  
DRIVE SECTION**

<u>Item No.</u>	<u>Description</u>
1.	Deck Cap
2.	Rippled Screen
3.	Screen Frame
4.	Diffusion Plate
5.	Subdeck
6.	Deck Pivot Assembly
7.	Inside Duct (Subdeck to Plenum)
8.	Deck Frame
9.	Fiberglass Drive Connector to Deck Frame
10.	Fiberglass Legs for Deck Frame
11.	Fiberglass Legs for Counterweight
12.	Counterweight
13.	Fiberglass Drive Connector to Counterweight
Not Shown	Outside Duct (Subdeck to Body)
14.	Accepts and Mids Discharge
15.	Lifting Rack
16.	Reject Discharge
17.	Positive Air Relief Valve

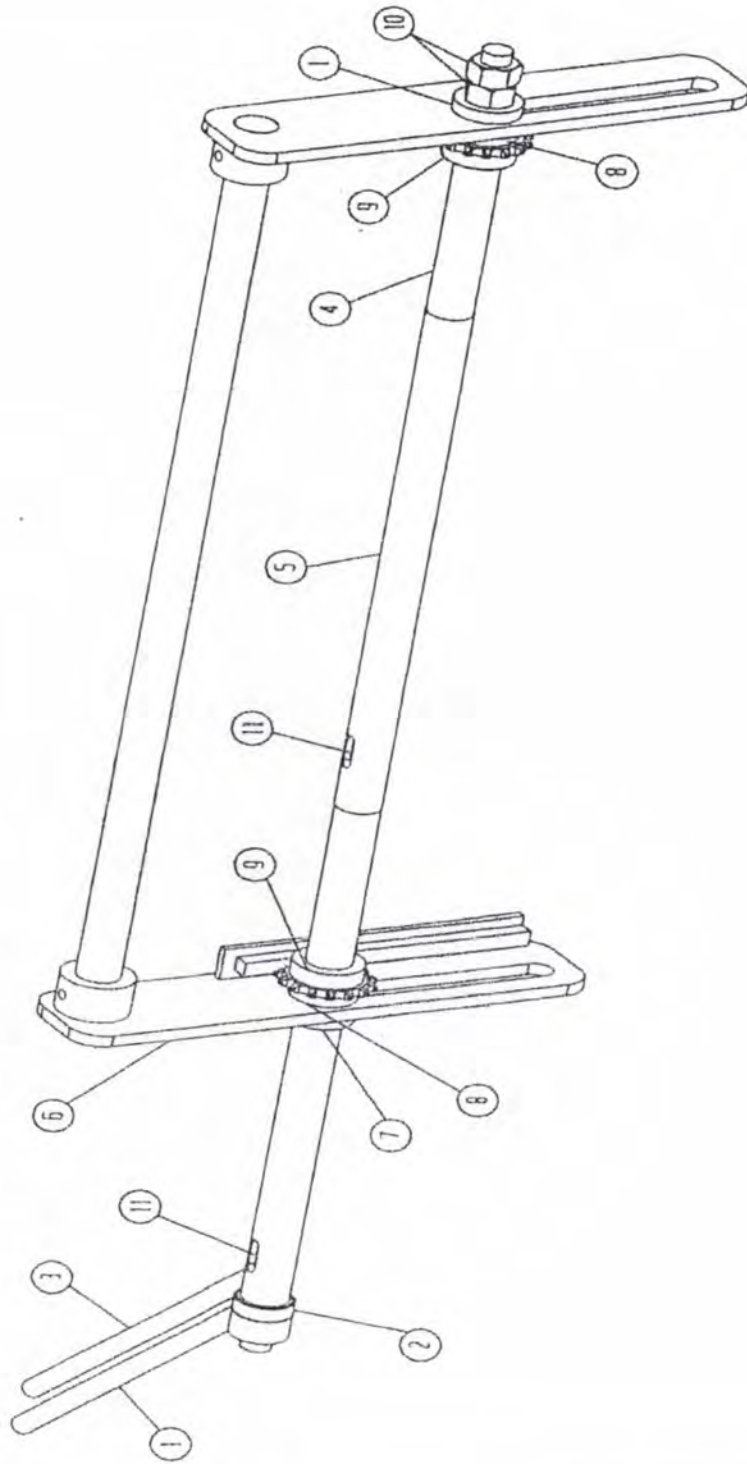




## DECK LIFT ASSEMBLY

<u>No.</u>	<u>Description</u>	<u>No. Required</u>
1.	Lift Control Nut and Handle	1
2.	Thrust Bearing	1
3.	Lift Control Handle	1
4.	Tubing 1-1/16 ID	1
5.	Lift Control Rod	1
6.	Lifting Rack	1 pr.
7.	1/2" Spacer	2
8.	Spacer (Welded to Sprocket)	2
9.	Sprocket	2
10.	Nuts	2
11.	3/8 Bolt with Nylock Nuts	2

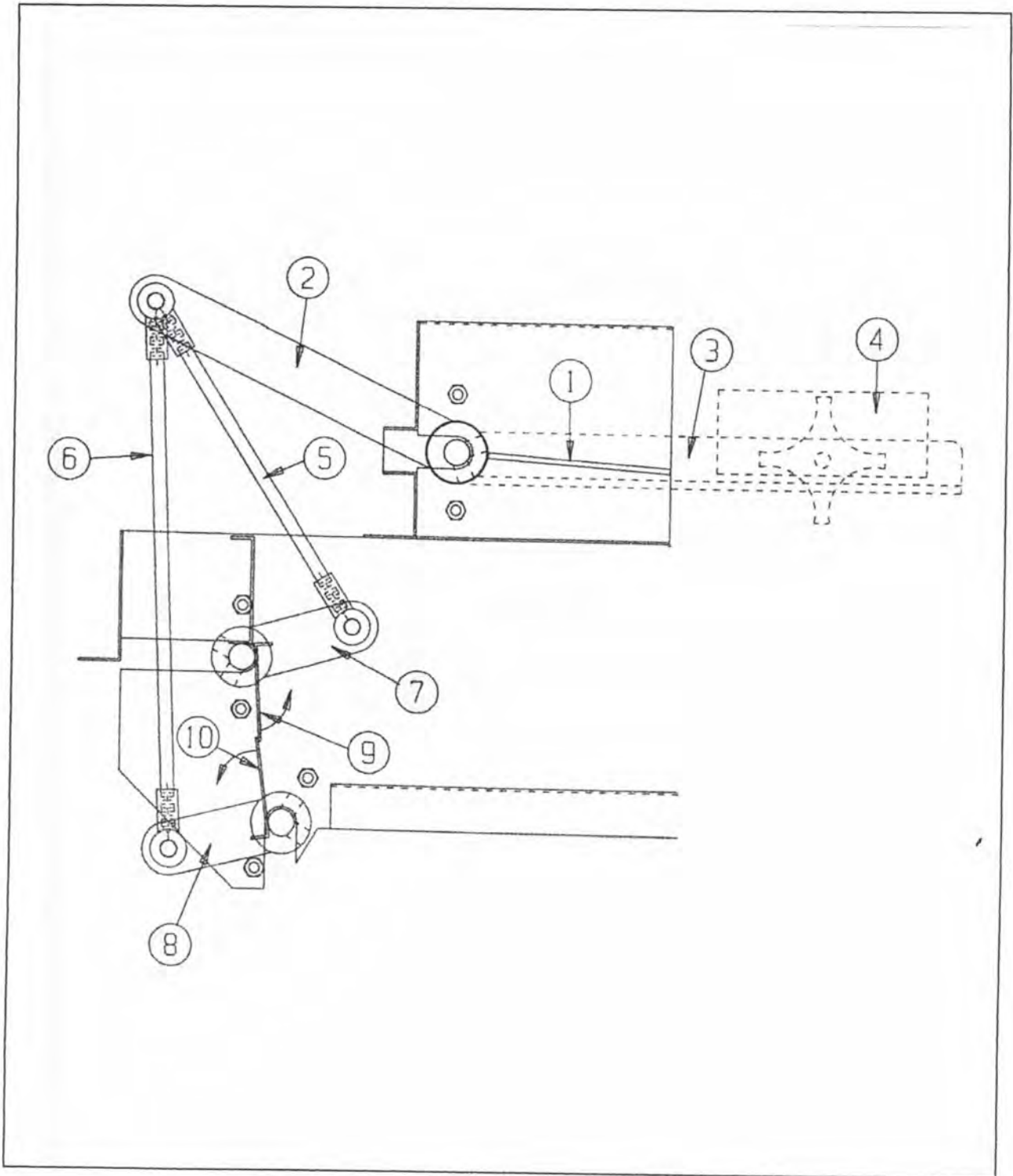




**GATE AND BELLOWS ASSEMBLY**

<b>No.</b>	<b>Description</b>
1.	Bellows
2.	Bellows Control Arm
3.	Weight Arm (opposite side)
4.	Weights
5.	Linkage Rod From Bellows to Top Gate
6.	Linkage Rod From Bellows to Bottom Gate
7.	Top Gate Linkage Arm
8.	Bottom Gate Linkage Arm
9.	Top Gate
10.	Bottom Gate

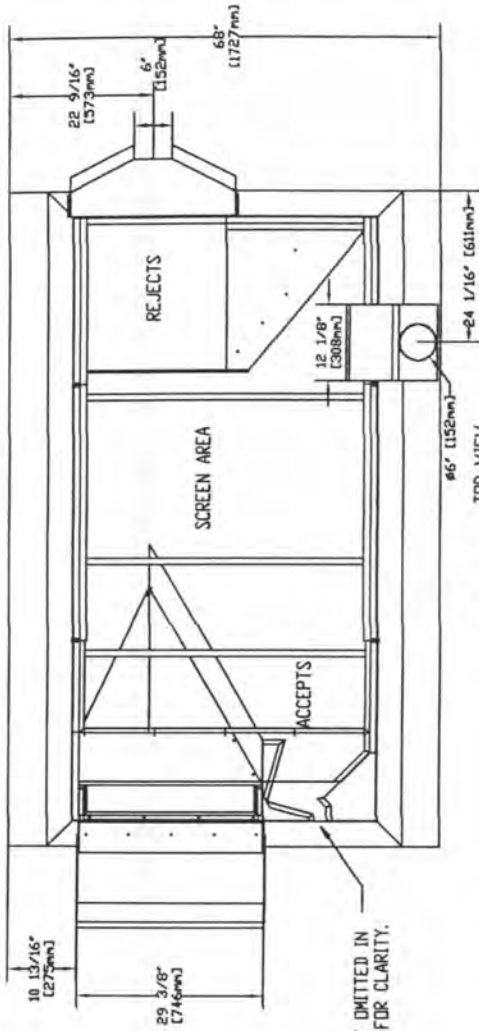




**GRAIN AND SEED CATEGORIES  
NOVEMBER 1, 1995**

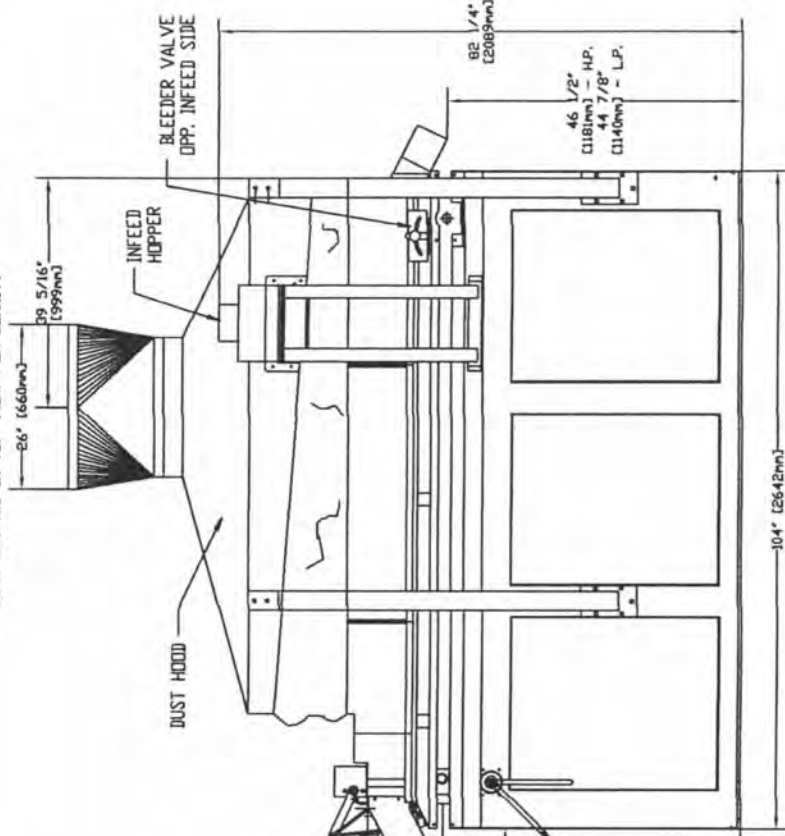
<u>Large</u>	<u>Medium</u>	<u>Lights &amp; Small</u>	<u>Misc.</u>
Almonds	Barley	Aeschynomene	Ground Rubber
Beans (Coffee)	Cantaloupe	Alfalfa	Compost
Beans/Peas	Cucumber	Bahia	Plastics
Corn	Honeydew	Canola	Ground Metals
Delinted Cottonseed	Lintels	Centipede	
Peanuts (Inshell)	Oats	Clover	
Peanuts (Shelled)	Rice (Seed)	Fescue	
Peanuts (Split)	Rye	Flax	
Popcorn	Sunflower (Hulled)	Lespedeza	
Soybeans	Watermelon	Lettuce	
Sunflower (Inshell)	Wheat	Millet	
Onion			
Primrose			
Radish			
Sesame			
Sorghum			
Timothy			



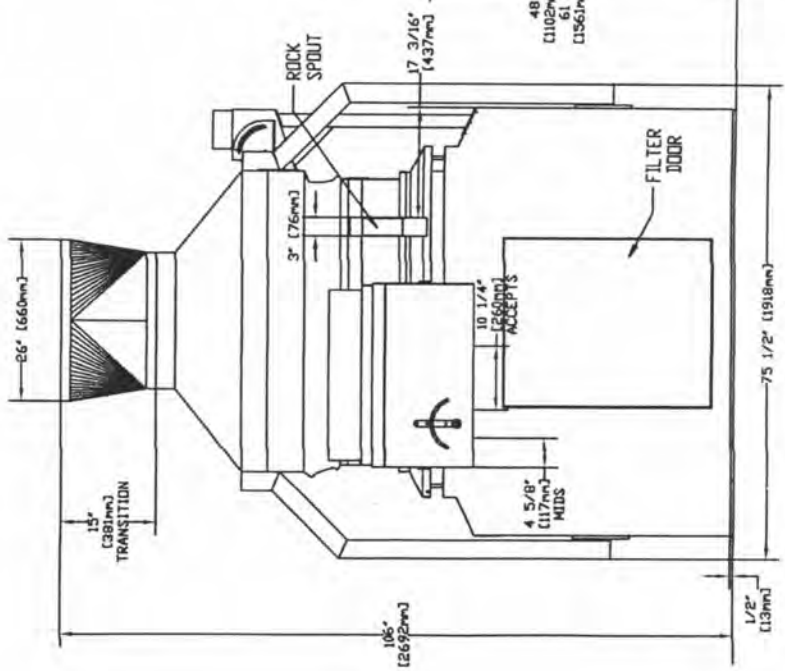


NOTE: ROCK SPOUT OMITTED IN TOP VIEW FOR CLARITY.

TOP VIEW  
DUST OMITTED IN TOP VIEW FOR CLARITY



LEFT SIDE VIEW



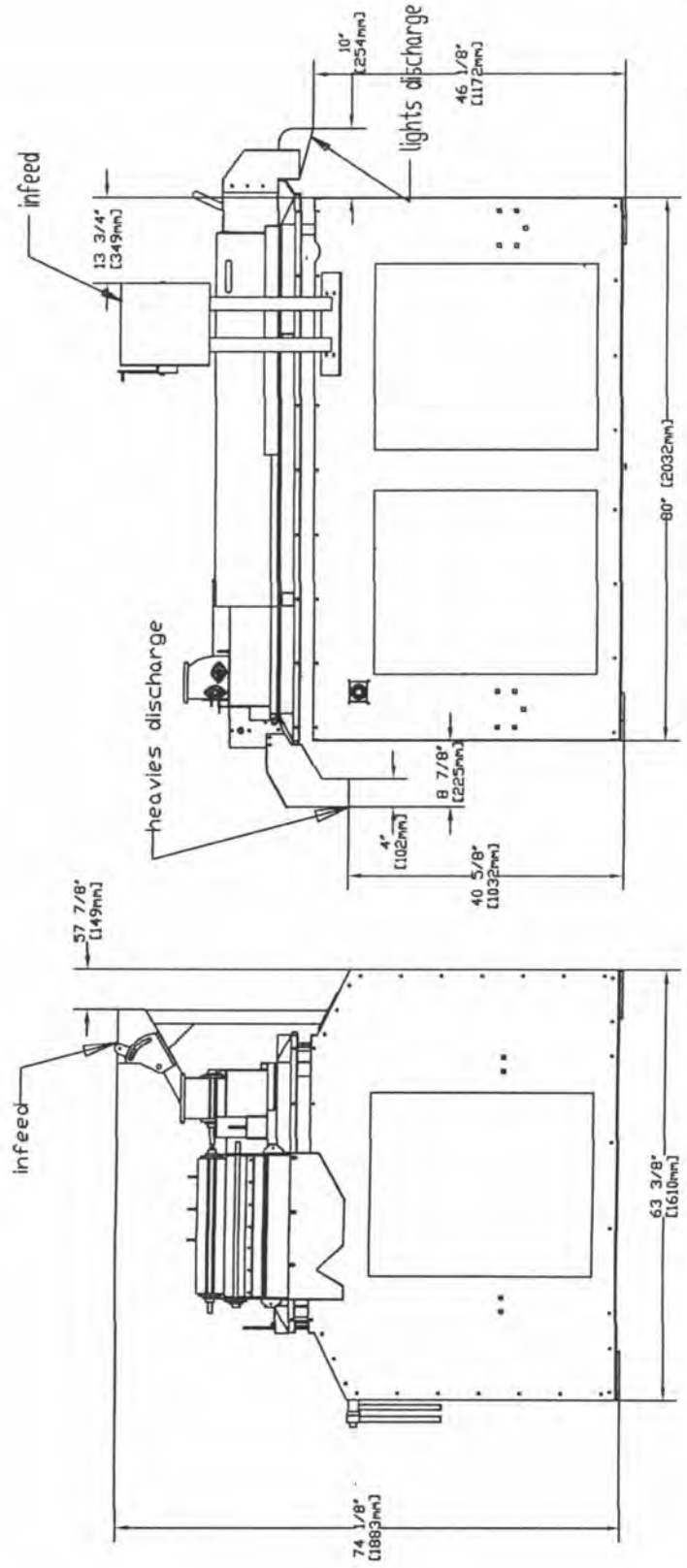
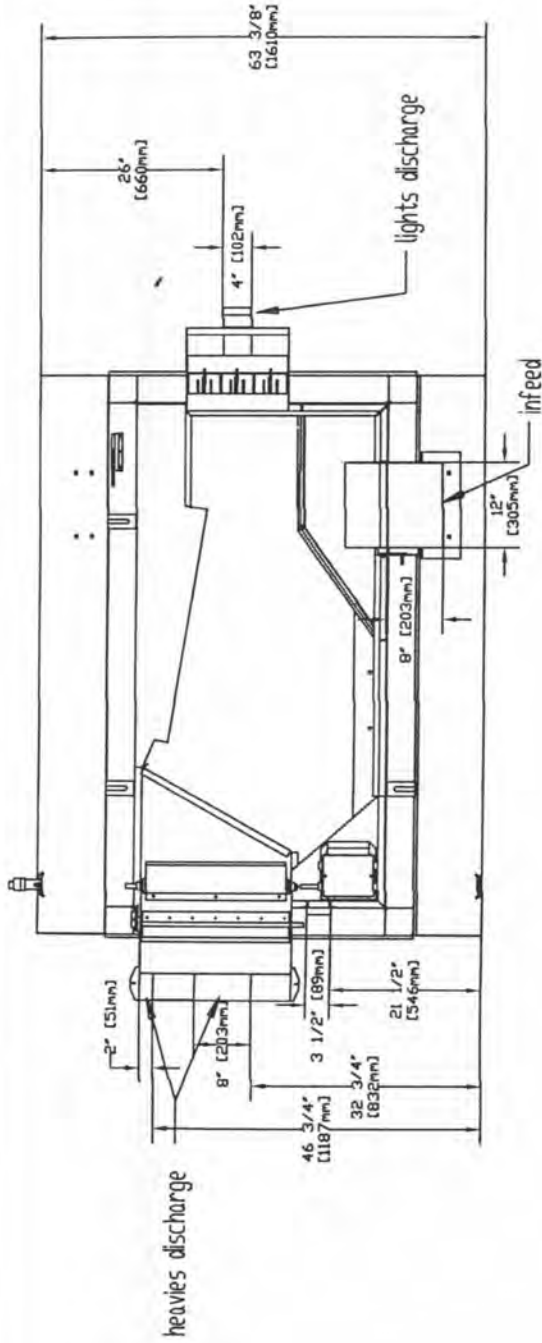
FRONT VIEW

LMC Marc 400 is available with or without dust hood

**LMC** Lewis M. Carter Mfg. (Canada) Ltd.  
 835 5th Street East  
 Saskatoon, SK S7K 6X5 800/667-6924

Complete  
 DATE MARCH 9, 2002

**LMC Marc 400 Gravity**  
 SHEET 1 OF 1



LMC Marc 200 is available with or without dust hood

**LMC**  
 Lewis M. Carter Mfg.  
 (Canada) Ltd.

635 5th Street East  
 Saskatoon, SK, S7K 6X5 800/667-6924

LMC Marc 200 Gravity

Complete

DATE

MARCH 9, 2002

SHEET

1 OF 1



## WARRANTY

LMC, as manufacturer, warrants its products against defective parts in workmanship and material, for a period of twelve consecutive months from the date of retail to the original purchaser, but does not warrant in any way other attachments or accessories manufactured by other companies which may be attached to and therefore becoming a part of the product manufactured and sold by LMC, such as other attachments and accessories are in general covered by the warranty or warranties of the company which manufactured them.

Under no circumstances will it cover any merchandise or components thereof, which, in the opinion of the company, has been subjected to misuse, unauthorized modifications, alterations, an accident or if repairs have been made with parts other than those obtained through LMC.

LMC in no way warrants engines, batteries, tires, electronics, or trade accessories since their respective manufacturer warrants these items separately.

Our obligations under this warranty shall be limited to repairing or replacing, free of charge to the original purchaser, any part that, in our judgement, shall show evidence of such defect, provided further that such part shall be returned within thirty (30) days from date of failure to LMC, routed through the dealer and distributor from whom the purchase was made, *transportation charges prepaid*.

This warranty shall not be interpreted to render LMC liable for injury or damages of any kind or nature to person or property. This warranty does not extend to the loss of crops, loss of production, loss because of delay in harvesting, or any expense or loss incurred for labor, substitute machinery, rental or for any other reason.

Except as set forth above, LMC shall have no obligation or liability of any kind on account of any of its equipment and shall not be liable for special or consequential damages. LMC makes no other warranty, expresses or implied, and, specifically, LMC disclaims any implied warranty or merchantability or fitness for a particular purpose. Some states or provinces do not permit limitations or exclusions or implied warranties or incidental or consequential damages, so the limitations or exclusions in this warranty may not apply.

This warranty is subject to any existing conditions of supply that may directly affect our ability to obtain materials or manufacture replacement parts.

LMC reserves the right to make improvements in design or changes in specifications at any time, without incurring any obligation to owners of units previously sold.

No one is authorized to alter, modify or enlarge this warranty nor the exclusion, limitations and reservations.

Lewis M. Carter Mfg. Co., Inc.  
835-58<sup>th</sup> Street East  
SASKATOON SK S7K 6X5