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Overview

More than 50 years ago, John Dramm, Sr. invented a new way to water plants. The 400 AL Water breaker started a trend of innovation that continues today at the Dramm Corporation. From watering tools and irrigation systems to chemical application and environmental control, the Dramm Corporation has led with superior products designed specifically for growers.

While our product offering may seem disjointed and fragmented initially, further inspection will show that it is very complimentary. Dramm's focus for the future is "Integrated Plant Health." Each of the products we have selected to offer has a direct impact on plant health. There has been much discussion about Integrated Pest Management for several years. Dramm's approach to this is that everything in the greenhouse has an influence on plant health. Pest management is only one segment of this philosophy. Without proper environmental conditions, disease can flourish and insects can prey upon weakened plants. Improper watering and water management can also lead to increased disease pressure and plant stress. By focusing on each of these areas, Dramm is seeking to provide growers with more management tools and a better understanding of the total needs for plant health.

This marketing guide is designed to simplify the technical nature of our products and to target specific products to specific markets and market timing. Should you have any questions about the implementation of this program or should you require more information please contact Kurt Becker at Dramm for assistance.

Marketing Calendar

Below is our 2001 Marketing Calendar that provides an overview of our marketing efforts for the year. Included on the calendar is our promotional schedule as well as our advertising schedule. Our advertising schedule reflects our general marketing efforts as well as the promotional events scheduled for the calendar year. This is intended as a guide to timing the sales of Dramm products.

Marketing Plan - Commercial **2002**

Promotion Line Items	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Distributor Promotion		MSO	Therm	H2O Tools	PCAS	New Hyd	Show	Chem dose	AME	Auto fog	Therm	Quick conn
Marketing Push												
Sprayers												
Herbi												
Thermostats												
Irrigation												
Chemdose												
Fans												
Advertising												
100 Chem/1 Way	GT			GT			GT			GT		
Trust - full pg.												
Silicone	GPN,GG					GG		GPN				
Weight Loss				GT		GPN					GT	
1/3CF		GPN		GT					GM,GT			
1/3AF * redes mid yr				GPN		GT	GG		GT	GPN.GT	GM	
1/3MSO	GT, GPN			GT								
1/3 MSO Cart Redes *						GPN	GG					
1/3 MSO-55 *												
1/3 New Hyd Sprayer *						GT,GG,GPN		GG				
1/3PF	GT								GPN	GT		
Mammoth CF 1/3												
1/3 Herbi †	NM	AN	GG, AN	GT,GPN								
1/2 Herbi *												
Chemdose 1/3 †			GG				GPN	GT,GPN				
Chemdose CD-55 1/3*			GPN				GPN	GPN	GPN			
Fan 1/3 †	GG				GG	GT		GT,GG	GG			
Fan 1/2												
Thermostat 1/3		GG, GPN					GT	GT	GG,GT,GG,GT,GG,GT,GPN			
Climate Command 1/3												
Rain Command 1/3*		GG	GT		GPN		GM					GPN
Solenoid Valves 1/3 *			GT		GPN							GPN
PCAS 1/3 *		GT		GPN							GPN	
DT ad 1/3												
Nozzle 1/3						GM						
Dribble Rings 1/3*	NM											
480 1/3*	FI	FI	GG								GG	
1/3 Hooky *											GG	
Waterbreaker 1/3*												
Redhead 1/3	FI	FI	GG									
Watertools strip										FI		
Dribble Ring 1/6		GPN		AN	AN	AN						
MM Nozzle 1/6	GPN		AN	AN	AN	GB						
PP Nozzle 1/6	GPN					GB						
DT 1/6	GPN					GB						
GPN Pest/Disease Spon	GPN	GPN	GPN	GPN	GPN	GPN	GPN	GPN	GPN	GPN	GPN	GPN

See Appendix A for copies of all advertisements. Should you wish to use a Dramm advertisement in local publications or your own mailings please contact Nancy Vogel at Dramm (nvogel@dramm.com).

General Sprayers

The Dramm Corporation currently sells more than 30 types, shapes and sizes of chemical application equipment. It is our belief that no one sprayer is right for every greenhouse. Different layouts, greenhouse sizes, crops, and logistics all influence the style of sprayer best suited to a situation. Sprayers should be viewed as tools in a tool box. Each one being best suited to a particular job and particular problem. The following pages should provide some general guidelines to fitting a sprayer to a need. A table of contents for this section is provided below.

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GS.4 Seasonal reasons for choosing Dramm (Fall). pg

GS.5 Discussion of rates with low volume application. pg

GS.1 Dramm Chemical Applicator Descriptions.

Most chemical application equipment can be broken down into one of three categories: Standard Hydraulic Sprayers, Targetted Low Volume Sprayers, and Ultra Low Volume Sprayers. The characteristics of each of these is listed below:

Standard Hydraulic Sprayers:

Heavy, wet sprays.
Particle size generally between 200µ and 400µ
Flow rate generally between 2 and 4 gallons per minute
Operating pressure between 200 and 400 psi.

Targetted Low Volume Sprayers:

Low volumes of water used (typically 1 liter / 1000 sq ft)
Particle size between 30 and 70 µ

Lower flow rates
Operating pressure dependent upon style of system

Ultra Low Volume Sprayers:

Even less water used (1 liter / 10,000 sq ft)
Particle sizes below 25 µ
Billions of micro particles
Space treatment only. Area must be enclosed.

DRAMM Equipment Specifications:

Hydraulic Sprayers:

Dramm MS-O Heavy Duty Sprayer (MSO, MSO-CPL..,MSO-55)
500psi hydraulic sprayer. 0.5 gpm
for more deliberate spray. 100µ avg
particle size.

Dramm MSO-GAS2 Gasoline Powered Sprayer (MS-GAS2, MS-GAS2-55)
350psi Gas Powered hydraulic sprayer
0.5gpm. 125µ avg particle size.

NEW Dramm Large Hydraulic Sprayer - AVAILABLE LATE SPRING 2002

600 psi hydraulic sprayer. Up to 8 gpm
45 gallon tank, hose reel, variable hose length.
Rugged design, large wheel
Multiple nozzle and gun choices available.

Targetted Low Volume Sprayers:

MK-2 Ulvafan
Rotary disk atomizer. 50-60µ particle size.
Localized chemical application.
Battery operated.

TEF Electrafan
Rotary disk atomizer. 50-60µ particle size.
Localized chemical application.
AC powered.

GMF Motafan
Rotary disk atomizer. 50-60µ particle size.
Localized chemical application.
Gasoline powered.

Dramm Coldfoggers (600M,606S RRH, 613TM-4G)
3,000psi, 45µ particle size. High velocity.

Ultra Low Volume Sprayers.

Dramm Autofogs (MLVH-10A, SLVH-10A, LVH-10A)
Automatic space treatment. 5µ avg
particle size. Treats up to 70,000 sq. ft.

Dramm PulsFOG (K-10, K-22, K-3...)
High speed space treatment 12µ avg.
particle size. Treats up to 100,000 sq. ft.
in 15 minutes.

For more information regarding individual Dramm Chemical Applicators please see the individual brochures. These are available from Dramm or as PDF files on the enclosed CD or on our website (www.dramm.com).

GS.2 Typical application scenarios with different machines.

Dramm offers 30 types and configurations of its chemical application equipment. This offering stems from the belief that there is no one way to spray. In each situation several application methods may be applicable but one is normally the best choice when all factors are taken into account. Below is a list of things to consider when selecting the right machine for a customer.

- Size, shape, and number of greenhouse areas.
- Application equipment currently in use.
- Crop grown.
- Customer desire.
- Chemicals commonly used.

When selecting a sprayer matching the benefits of each machine to a particular situation will maximize the efficiency of the machine. For example, many customers like the idea of unattended chemical application. For this reason, the Autofogs is often the first choice of a grower. But, depending on the above criteria, an Autofog may not be the best choice. The grower may want an automatic sprayer but if he has 20 individual hoop houses, setting the machine up each night will still take 20 nights to spray the entire farm. In this instance a PulsFOG is the best solution. The PulsFOG is perfect for this scenario. The grower could stand in the doorway of each house and treat the entire space in minutes a house.

Another example where the Autofog or the PulsFOG would not be the first choice would be a retail garden center where the grower has edible crops next to color crops. In this instance, using a space treatment sprayer would limit the pesticide usage to only those labeled for the edible crop. For this situation, a Coldfogger would be a much better option. Additionally, anyone looking to spot treat an area of the greenhouse would be better off choosing one of the targetted low volume sprayers over a space treatment option.

In many situations, it is not clear cut. Most growers need more than one choice of weapons. One sprayer might suit them best initially but another would work almost as well. I.e.: in the example above, the retail garden center may benefit from the Autofog because of the time constraints and may wish to take another look a the way he lays out his crops early in the growing season. Once the plants are moved together for finishing and sale, the Coldfogger would be the best choice. Remember these situations because it is these growers that represent an opportunity for another sale in the future. If the grower is happy with his initial purchase of the Autofog, he will be much more likely to make the investment for a Coldfogger in a year or two.

GS.3 Seasonal reasons for choosing Dramm (Spring).

Each Dramm chemical applicator has its many uses throughout the entire year. However, there are some specific uses that may occur during certain seasons and with specific crops. Outlined below are details on these applications.

• Application of fungicides and insecticides to plugs:

The Dramm Coldfogger range is perfect for application of pesticides to plugs and cuttings. Because of the fine particle size and high turbulence, the fog spreads across the plug trays enveloping the plants without too much moisture. Additionally, the Dramm Coldfoggers can spray plugs and cuttings effectively at long ranges. Typically, even coverage is possible at up to 25 feet.

The Dramm Autofogs are also an excellent choice for these types of applications. Because they use very small droplets (5µ VMD) they also envelop the plant very effectively.

• Application of Plant Growth Regulators

Specific Dramm equipment has been selected specifically for the application of growth regulators. Because of the extreme need for even coverage with these types of products, specific equipment and techniques are required.

The Dramm MSO Heavy Duty Sprayer is well suited to growth regulator applications. Because of its very even particle size and high pressure, the MSO offers very even coverage of all plant surfaces without over wetting the plant. Variable pressure and variable pattern allow the grower to spray more selectively or with a more coarse spray if desired for growth regulators that need some soil penetration or "sprenching".

The Dramm BP-502 Battery Powered Backpack Sprayer is also ideally suited to growth regulator sprays. Again, as even spray is even more necessary for growth regulators, a battery powered unit is better than a pump up sprayer. Because pump up sprayers work on a declining pressure principle, that is pressure and flow rise and fall as the tank is pressurized and sprayed, they do not have a constant output. When spraying growth regulators, a constant flow is

necessary to ensure even coverage. If the flow rate changes throughout the application, the coverage will as well, resulting in variations in the growth regulator effect.

The Dramm Chemdose is another application system perfect for growth regulators. This machine is not typically described as a sprayer and is detailed later in this manual. The Chemdose applies a precise dose of solution directly to the pot. With an accuracy of +/- 1 ml, the Chemdose is precise enough for any growth regulator application. With early and late drenches of many potted, containerized and hanging plants becoming more common, the Chemdose can help by reducing the labor and increasing the accuracy of the application.

GS.4 Seasonal Reasons for choosing Dramm (Fall)

- Growth regulator applications.

As with spring production, Fall is characterized by several different growth regulator applications. Pansies, mums and poinsettias are all commonly sprayed or drenched with growth regulators. The sprayers described above work in the same manner on these crops. Growth regulator applications on poinsettias are especially effective and late drenches of Bonzi or Sumagic are common. The Chemdose is specifically designed for this application.

- Systemic pesticide applications.

The Chemdose is also very useful in applying products such as Marathon WSP to poinsettias. While overdosing is not as damaging to the plant, accuracy is desired to reduce the cost of the application as systemic pesticides are usually expensive due to their long term control.

- Calcium applications on poinsettias.

There has been a great deal of research done on the effect of calcium in reducing botrytis in poinsettias. It is common in many areas of the country to apply calcium as a spray to poinsettias to increase the concentration in the bracts. This is normally done as a wet spray. Unfortunately, this often leaves residue and sometimes edge burn as the large droplets run to the edges of the

leaf where they collect, dry and cause damage.

Over the past several years many growers have been applying calcium with ULV equipment. In several trials, application of calcium as a fog has proven more effective and less damaging than wet sprays. At the common rate of 1 lb per 100 gallons (convert to ULV rates before applying) both the Autofog and Coldfogger do an excellent job of applying calcium. In one trial, tissue sample were taken both before and after application with a hydraulic sprayer and an Autofog. The Autofog treated bracts had an average of 2-3 times more calcium when compared to the bracts that were sprayed once with calcium. There has been no burn associated with this application.

- Application of pesticides to poinsettias in color.

While many pesticides will damage bracts in color on poinsettias, Low Volume sprays have shown less damage than wet sprays. Many times each year a LV application for whitefly or botrytis has saved a crop before shipment. ***Check with the chemical manufacturer and Dramm before recommending any application to poinsettias in color.***

GS.5 Discussion of rates with low volume application.

Low volume applications of pesticides to greenhouse crops use higher concentrations of chemical and much less water that standard high volume sprays. In most instances the label will only have rates for hydraulic spraying. This is typically expressed as so many ounces or teaspoons per 100 gallon (100 L in Canada). These rates need to be converted into a low volume compatible rate when used in Dramm LV equipment.

Based on grower averages, the typical bedding plant greenhouse will use an average of 35 gallons to spray 10,000 square feet. We have based our equations on this average to ensure adequate efficacy in the greenhouse.

The standard formula for calculating the amount of chemical to use in Dramm LV equipment is as follows. This is to convert the 100 gallon label rate into an amount of chemical to use in 10,000 sq ft. To use in a smaller or larger area, you must multiply this calculated amount by the percentage of 10,000 sq ft to be

treated. (i.e if you are treating 6,000 sq ft, multiply by 60%. If you are treating 15,000 sq ft, multiply by 150%)

(100 gallon label rate) X .35 = Amount of chemical for 10,000 sq ft

Low volume sprays characteristically cover more surface area. Additional, LV applications will not cause run off. Because low volume chemical application is more efficient than hydraulic sprays the above rate is classified as the high rate. In most instances this rate can be reduced. Below is the formula for calculating the low rate for Dramm LV applications.

(100 gallon label rate) X .20 = Amount of chemical for 10,000 sq ft

Typically a grower will start at the high rate until comfortable with low volume application. They should then, gradually move toward the low rate multiplier of 0.20.

The amount of water to be used varies depending on the equipment used. A list of minimum amounts follows below:

Coldfogger Sprayers	10 liters/10,000 sq ft
AutoFog Aerosol Generators	2 liters/10,000 sq ft
PulsFOG Thermal Foggers	1.5 liters H20 +.5 liters VK-II or 1 liter of VK-I or 1.5 liters H20 + .25 liters NutriFOG

Additional information regarding chemical rates is available in the product manuals on the CD. Rate calculation PDFs are available on the CD. Finally, a spreadsheet to calculate chemical rates is included on the CD as well.

Herbi

The Dramm Microfit Herbi System is a low volume herbicide applicator. It has been described in a separate section because its sales cycle and general use is different from typical chemical applicators in the greenhouse industry.

The Dramm Corporation considers the Herbi to be another integrated pest management tool. Many greenhouses suffer from insect populations that survive on the weeds either inside the greenhouse or just outside.

The Herbi is the perfect tool for eradication of weeds both in the greenhouse and outside. It is perfect for spraying around the outer walls of the greenhouse, along fence lines, gravel walkways and driveways. It will treat very large areas with a relatively small tank with very little drift. The reason for this is that the Herbi produces an average particle size of 200µ (microns). The great advantage of the Herbi is that it has a very tight particle spectrum. There are very few particles larger that 220µ and smaller than 160µ. A back pack sprayer may also produce an average particle size of 200µ, but the spectrum will be much wider. The result is that the back pack sprayer will also produce many droplets of 50µ - 100µ. Particles this size will drift, causing herbicide damage. Additionally, back pack sprayers will also produce many droplets of 300µ - 400µ. These droplets run off the leaves and are wasted. Because of its tight particle spectrum, the Herbi is able to create the perfect sized particle for herbicides and, therefore, able to maximize on the application.

The Microfit Herbi is offered in several different packages. Each package consists of one power pack, which is the same for all configurations, and one lance. The lances are listed below:

Standard lance	4' diameter pattern
Herbiflex lance	4"-20" pie shaped pattern
Twin lance	Adjustable 5'-7' pattern

Each different configuration includes a 2.5 Liter tank. This tank can typically treat approximately 30,000 with one fill. This is about the same area as three 5 gallon back pack sprayer can treat. A 5 Liter back pack tank is also available and the Herbi can be adapted to larger tanks if necessary.

The Herbi uses 4 D Cell batteries that last approximately 40 hours.

The most common herbicide used in the Herbi is Glyphosate or other similar formulations. Most any herbicide will work in the Herbi.

Just like ofher low volume chemical applicators, the Herbi uses more concentrated spray solutions and less water than standard sprayers. To use glyphosate in the Herbi use the following ratio: 1 part glyphosate to 4 parts water. To fill the tank add 0.5 liters of glyphosate to 2 liters of water and spray.

The Herbi is also used differently that most sprayer. To ensure even coverage, you should cover approximately 1 yard of area in one second. To spray larger areas, walk at a rate of 1 yard per second while the Herbi is spraying.

Sales Cycle

While most Herbis are sold in the spring, sales will continue throughout the summer. The Herbi is a perfect item for distributor salepeople to carry along for demonstration to customers. It is often new to a customer and offers labor and chemical savings.

Dramm supports Herbi sales with advertisements throughout the spring and into the summer. Advertisement copies are at the back of this manual.

Sales Method

The Herbi is a time and chemical cost saver. Because the Herbi uses a precise spray, less is needed to treat a given area. Typically, the 2.5 liter bottle will treat approximately 30,000 sq ft. Where this area would normally be treated with three fills of a 5 gallon backpack sprayer.

Chemdose

With the increase in systemic pesticides and drenched growth regulators, the Chemdose was developed to aid growers with these applications. Designed to apply accurate amounts of chemical solution directly to the pot, the Chemdose offers accuracy and flexibility.

With both systemic pesticides and growth regulators, dosage accuracy is the key. Systemic pesticides are usually expensive because of their long residual control, accuracy is important because of cost. While it may not damage the plants, overdosing Marathon WSP is expensive. With growth regulators, accuracy is not based on cost but on plant response. With drenching of growth regulators, a change in dosage between plants can cause differences in height and future growth. As an even crop is most desirable, even dosages are important. Finally some systemic pesticides can cause damage when over applied, stunting growth or causing death.

The Chemdose makes these applications easy and accurate. A dial on the unit determines the amount of chemical applied in one dose. Another dial determines the length of time between doses. This allows the grower to establish a rhythm in moving from plant to plant.

The Chemdose gun has two buttons, one green and one red. Depressing the green button once gives a single dose. Holding the green button activates the Chemdose on an interval basis. The unit will apply dose after dose with the variable interval between doses until the button is released. When the red button is pressed and released it works the same as the green button, except that the button does not need to be held. This is perfect for application to large areas without thumb fatigue. To stop the dosing, press the red button again.

The Chemdose is available in two sizes: the CD-112 and the CD-55. The CD-112 is a 12 volt battery operated unit with a rechargeable battery. This unit has a maximum hose length of 25 feet as a result of the pump capacity. It is designed to be portable and fit down most greenhouse aisles. The CD-55 is a much larger version. It is 110v with a 55 gallon tank. The CD-55 has a hose length of 150 feet and has a reel and a separate agitation pump.

The Chemdose may seem like a luxury to most greenhouses at first glance, but its ability to save time and chemical costs makes payback on investment quick.

Many growers have found that using the Chemdose for late season growth regulator drenches improves accuracy and speed over other methods. Methods such as the "one one-thousand, two one-thousand" and the measuring cup and a bucket method are either not accurate or very time consuming. The Chemdose takes the variation out of the injector and counting method but allows the speed of that application.

Sales Method

The Chemdose should not be thought of as a sprayer but as an efficiency tool, like a seeder. It will be used infrequently but it will pay back quickly as it increases the efficiency of drenching applications.

To find potential customers for the Chemdose, start with your chemical sales. Gather a list of all of your customers that use Marathon WSP and Marathon Granular. These customers will benefit from the ease of the application as well as the accuracy. You will need to convert granular customers to a drench method, but using the Chemdose to apply an accurate drench will be less time consuming than scooping and shaking granules into each container. The WSP users will experience a high payback from the savings in the amount of Marathon used. By using the Chemdose instead of the "one-one thousand" method, a grower can expect to save at least 20% of his chemical due to accuracy and spillage.

The other potential savings is with drenched growth regulators such as Bonzi, Sumagic,and ARest. Here accuracy is the selling point. The Chemdose will remain accurate to +/- 1/30th of an ounce per dose. This is much more accurate than the "one-one thousand" method and even more accurate than the measuring cup and 5 gallon bucket method. Certainly the application is much easier than the latter method. One grower reported payback within one season based on labor savings. While growing poinsettias, the grower transplanted and placed plants in their final spacing, which included placement in hangers. These plants were then given a late Bonzi drench. In the past, the grower had first spaced all the plants tight to be able to drench them and then incurred all of the labor to space the poinsettias. With the Chemdose, the grower not only saved labor on the actual application but a tremendous amount on the spacing.

Video of the Chemdose operation is available on the CD along with the brochures and manuals.

Thermostats

Dramm Mechanical Thermostats offer unmatched accuracy and durability in a mechanical thermostat. The T-41 single stage thermostat and the T-42 two stage thermostat are accurate to 1˚ C, are corrosion resistant, and are easily recalibratable. They have flexible wiring to allow one thermostat to be used for multiple uses. Stainless steel coils instead of plastic coated copper coils give an accurate temperature read.

The superior accuracy and recalibration feature eliminate the "black mark" approach. Growers will no longer have to mark their thermostat with the correct set point as they age. A rugged PVC housing and sealed strain relief prevent the rusted housings that are common in greenhouses.

The T-41 and T-42 are competitively priced at just slightly more that the standard metal housed, copper coil thermostat.

Wiring diagrams and more information on the thermostats are available on the CD.

Pricing is based on quantity with better pricing offered on a booking program. Seasonal programs are available. You will receive communication about the upcoming Spring 2002 program shortly.

Sales Method

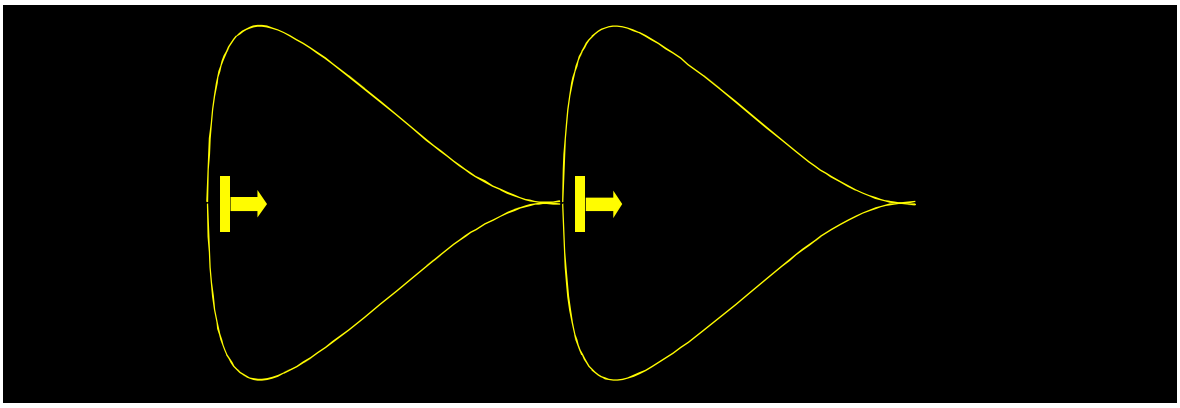
Any grower still using thermostats has no excuse for not using the best one available. To sell the Dramm Thermostats, distributor salespeople should note the number of thermostats at a grower's operation during a visit. On the next visit return with a Dramm sample to show the grower. Explain that, on average, each 1˚ of inaccuracy creates an inefficient boiler or heater and can be responsible for increased heating or cooling costs.

Remember: 10 thermostats is a $400 sale!

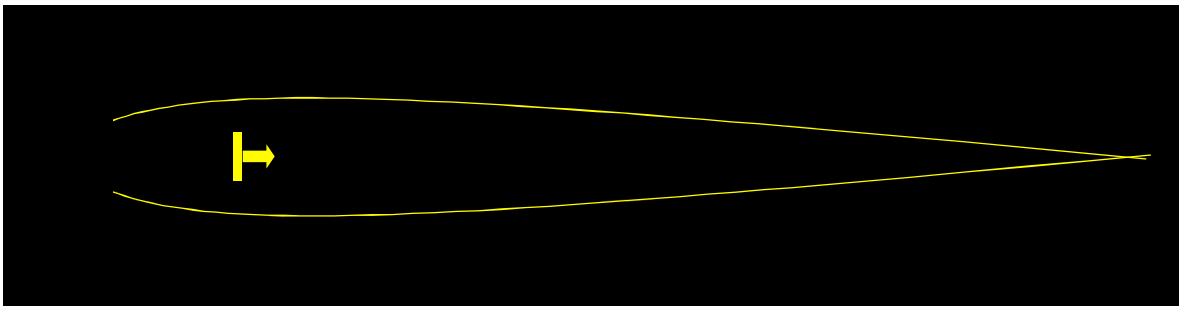
AME Horizontal Air Flow System

The Dramm AME Horizontal Air Flow system is the next step in air movement. Utilizing a shrouded fan with a sealed motor and variable speed control, the AME fans work together as a system with greater distances of throw, slower air speeds and fewer fans.

Dramm AME fans work in this manner because of the aerodynamics used in designing the fan. The shrouded design throws a forward and not out the sides like a basket fan does.



Typical basket fan air pattern



Dramm AME fan air pattern

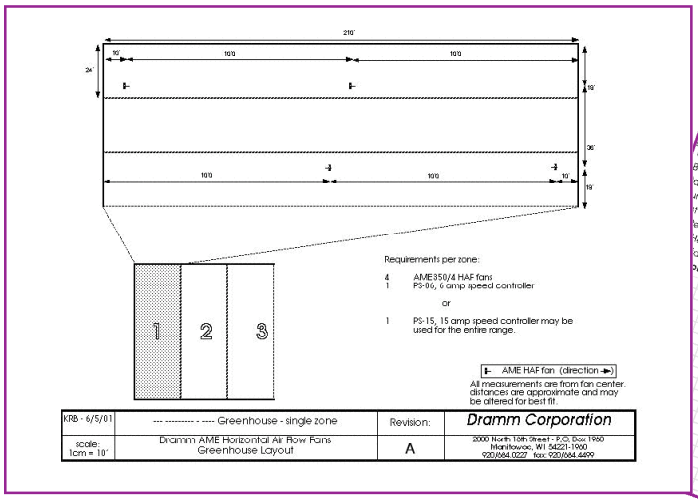
Above you can see the different air patterns that HAF fans produce. With nothing to direct the air flow besides the blade angle, i.e. no shroud, a basket fan throws much of its air out the sides and up and down. Additionally, with out a shroud, a basket fan does not pull air from behind it, producing a dead spot. Additionally, because you are creating several competing air patterns from each basket fan, when two or more are placed in series, you stop any forward

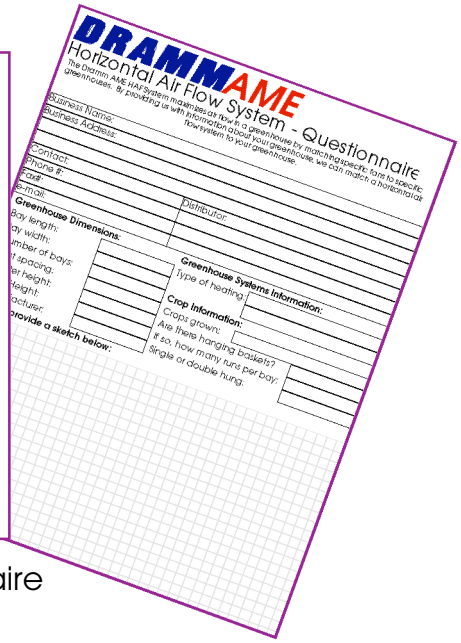
momentum when these air patterns collide. By shrouding the fan, the fan throws all of its air forward. Additionally, the shroud helps to create suction so that the fan actually draws air from up to 15 feet behind it. Because of this increased efficiency, we are able to use fewer fans to do a better job, with less turbulence.

Dramm AME fans are quieter that most greenhouse HAF fans and generally use less electricity. Speed controllers are available to control up to 22 fans on one controller and can be controlled by most greenhouse systems to offer automatic variation of speed based on different conditions.

In addition to offering a revolutionary system of air movement, Dramm also has changed the model of distribution and sales. Traditionally, distributors stock pallets of basket fans and customers purchase them as needed, with little or no guidance on how and where they should be installed. With the AME system, each purchase is reviewed by a Dramm technician. A layout is drawn based on many factors in the greenhouse such as dimensions, gutter height, heating strategy, basket layout and crop grown. An approved Dramm layout is then provided before the quote is given to the customer. On certain occasions, an electrical comparison can be made to other alternatives or existing HAF fans.

A copy of the AME HAF brochure and a questionnaire for preparing a layout are included on the CD.





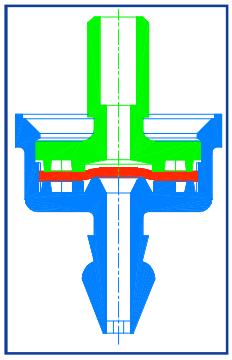
Dramm AME Layout sample and questionnaire

Irrigation Systems

With irrigation as the beginning of the Dramm Corporation, Dramm is refocusing on irrigation systems in upcoming years. Advances in the market have offered growers more precision in irrigation over the past several years. In keeping with our tradition of innovation, the Dramm Corporation has introduced some new products to take advantage of the new technology.

PCAS - Pressure Compensated Anti-Siphoning Drip System

The Dramm PCAS system is a pressure compensated system that offers superior design and materials. The PCAS emitters are available in 0.5, 1, and 2 gph flow rates. They are molded from polyamid plastics that hold up to the sun and greenhouse conditions. They use a silicone diaphragm instead of a rubber diaphragm. Silicone has a greater tolerance for fertilizers and acids used in greenhouse irrigation systems, ensuring accuracy over time. Additionally, silicone is more flexible, offering a greater range of pressure compensation and, consequently, longer run lengths. Finally, the Dramm PCAS system uses the familiar Dramm Zinc/Aluminum weight design. This weight is barbed to fit into standard drip polyethylene tubing. The shape of the weight won't catch on plant material during harvest, reducing plant damage and weight loss.



RainCommand - Irrigation Controller

The RainCommand is the culmination of 50 years of irrigation experience. The unit has been designed for flexibility. The base unit controls 8 valve but the RainCommand can be expanded to control up to 40 valves. The system allows both misting and irrigation simultaneously and makes no preset limit on the number of valves that can run at the same time.

The RainCommand offers a simple, accurate time based control with up to 42 start times per day. Additionally, it can operate using temperature, light or

another computer to start or influence the duration and interval of the irrigation cycles.

A PDF file brochure, manual, quick start operation guide and set up questionnaire have been included on the CD.

Solenoid Valves

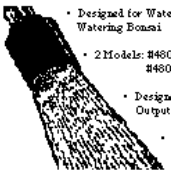
Dramm introduces the a new line of solenoid valves for use with the Dramm RainCommand irrigation controller. Dramm solenoid valves are 24 volt AC valves, offer flow control and come in a variety of sizes.

Appendix - Advertisements

Ultra Soft Shower

NEW

"480" Water Breaker™



- Designed for Watering the Edges of Plug & Cutting Trays or Watering Bonsai
- 2 Models: #480PL Red ABS Plastic 4" Water Width
  #480AL Gold Anodized Aluminum 6" Water Width
- Designed to be Used at 3GPM with a Maximum Output of 7 GPM
- Stainless Steel Disc–480 Holes
- Made in the USA

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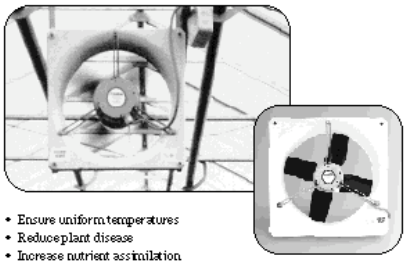
Air Movement Efficiency



- Ensure uniform temperatures
- Reduce plant disease
- Increase nutrient assimilation
- Increased uniformity when fogging pesticides

"Dramm AME fans and controllers keep you in step with efficient greenhouse environmental control."

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Automatic Chemical Application

Apply chemicals as ultra-fine fog particles–eliminating worker exposure and labor costs. Dramm Autofog™ chemical applicators will provide you with uniform, consistent chemical coverage.

Complete space fumigation and leaf deposition is achieved due to the extremely small particle size. There is no costly chemical run-off.

A variety of Autofog™ models are available. From the smallest to the largest greenhouse, there's an Autofog™ model designed for you.

Autofog™

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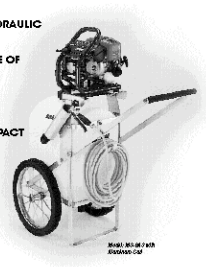
GASOLINE POWERED SPRAYER

- GAS POWERED HYDRAULIC SPRAYER
- APPLIES EVERY TYPE OF CHEMICAL
- HONDA 4-STROKE ENGINE
- POWERFUL & COMPACT
- UP TO 350PSI
- 20FT ADJUSTABLE SPRAY PATTERN
- OPTIONAL ALUMINUM CART



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ORGANIC PLANT FOOD

DRAMMATIC™
ORGANIC LIQUID FISH

Fresh Fish Ground Daily

100% ORGANIC
PURE LIQUID FISH
COMPLETE PLANT FOOD
HIGH LEVELS OF CALCIUM & FISH OIL

AVAILABLE SIZES: 1 GAL, 5 GAL, 55 GAL OR BULK

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GREENHOUSE IRRIGATION

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DRIBBLE TUBE

easy On/Off design or On Only styles available

For 4 to 10-inch pots

Color coded tubing for easy identification

8 tube lengths available

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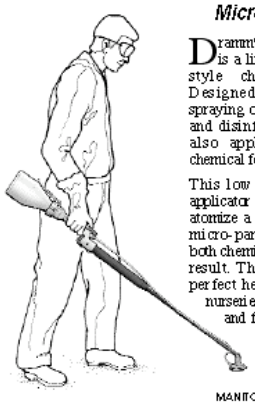
Easy Herbicide Application

Microfit Herbi System



Dramm's Microfit Herbi system is a line of component wand-style chemical applicators. Designed for the broadcast spraying of herbicides, fertilizers and disinfectants, the Herbi can also apply most other fluid chemical formulations.

This low volume, lightweight applicator utilizes a rotary disk to atomize a spray solution into fine micro-particles. A reduction in both chemical and application time result. The Dramm Herbi is the perfect herbicide applicator for nurseries, landscaping, farming and forestry.

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Precision Chemical Dosing

Save Money on Chemical and Labor

Chemdose™

- Precision chemical dosing–
  Applies chemical directly to the root zone.
- Variable dose & interval time between doses
- 3 Wands included: Bench, Ground & Basket

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Greenhouse Workhorse

The Dramm Heavy-Duty Sprayer is powerful and compact– perfect for pesticide applications. Model MSO is fully adjustable from 0 to 500 PSI. By simply twisting the spray gun knob you can adjust the pattern from a 20 foot stream to to an eight foot diameter mist.

For complete mobility, an optional aluminum sprayer cart with hose hanger and spray gun holster is available.

Let the Dramm Heavy-Duty Sprayer be your workhorse!

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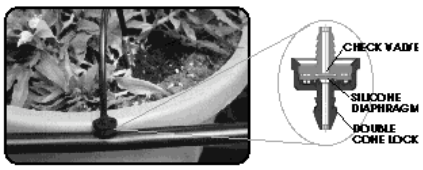
Appendix - Advertisements

9 out of 10 growers prefer SILICONE



- PRESSURE COMPENSATED, ANTI-SIPHONING DRIP SYSTEM
- SILICONE DIAPHRAGM OFFERS GREATER FLEXIBILITY & GREATER CHEMICAL RESISTANCE OVER RUBBER DIAPHRAGMS
- SILICONE EXPERIENCES LESS WEAR & DETERIORATION
- PRESSURE COMPENSATION OVER A WIDER RANGE ALLOWS FOR LONGER LATERAL LENGTHS
- SPECIALLY DESIGNED BARBS FOR MORE SECURE FIT
- IMPROVED WEIGHT DESIGN

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RAIN COMMAND

NEW AVAILABLE NOW!

- Flexible, Multifunction Irrigation Computer
- Misting & Irrigation Control from Same Unit
- 42 Individual, Programmable Start Times/Day per Valve
- Lightning Protected
- 8 · 16 · 24 · 32 · 40 Valve Units Available

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Ultra Soft Flower Shower

"Redhead" Water Breaker™

- Water plugs, seedlings, bonsai and even drench cuttings without harm to tender plants.
- Full Flow, *"Soft-Touch"* Watering
- Stainless Steel Disk– over 1000 micro holes
- Made in the U.S.A.

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pulsFOG®

Fast, Effective

Save time and money while reducing chemical exposure. pulsFOG® is 20 to 50 times faster than conventional spraying! pulsFOG® makes you *more* efficient while reducing the amount of time your workers are exposed to harmful chemicals. For over twenty years, pulsFOG® has proven itself in pest control and disinfection. Contact your Dramm distributor for a demo today!

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DRIBBLE RING

- Uniform watering
- For 6 to 25-inch pots
- Inexpensive
- Long lasting
- No Maintenance

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DRAMM SOLENOID VALVE

NEW

- Variable Flow Control
- Easy to Maintain and Operate
- Manual Shut-Off
- 3/4", 1", 1 1/2", 2"

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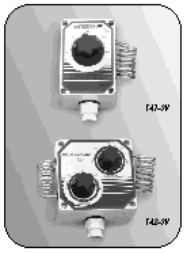
Rugged Accurate Temperature Control

Dramm mechanical thermostats are engineered for precision control in rough environments.

- Accurate to 1°C
- Sealed PVC Housing
- Stainless Steel Sensor Coils
- Unbeatable Durability
- Heating, Cooling, and Ventilation Control
- T41-SV Single Stage
- T42-SV Two Stage Thermostat



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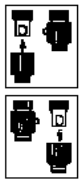
Quick Connection



To connect: Push up– turn right to lock

To disconnect: Push up– turn left to unlock

- Simply Push Together & Turn Right to Lock
- Made in the USA From Heavy-Duty Nylon
- External Mechanism
- Full Flow

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- Uniform Droplet Size
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- Lightweight & Easy to Use

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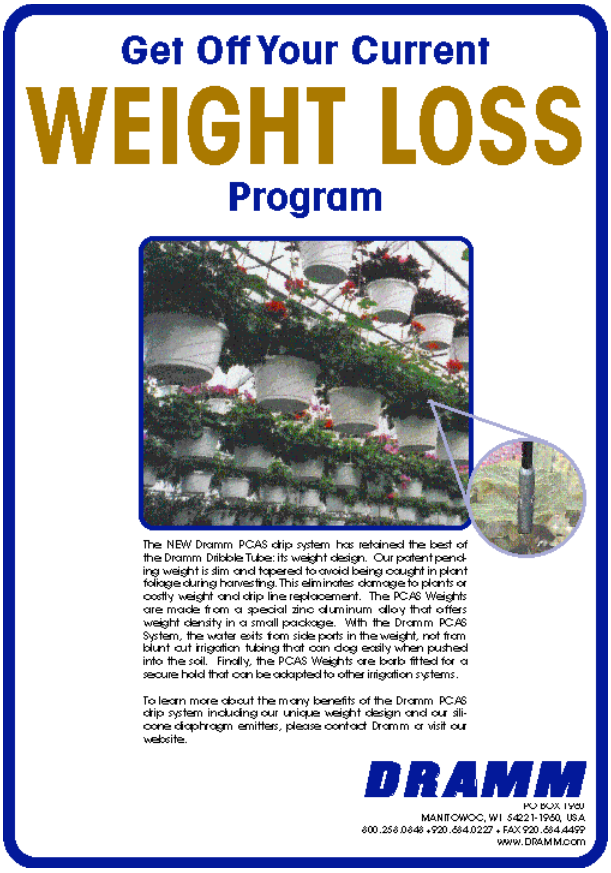
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