

# Polymaster™

POLYMER ACTIVATION AND BLENDING SYSTEM



Where Innovation Flows







Neptune™ Polymaster™ dilutes, mixes and thoroughly activates emulsion, dispersion and solution polymers, including new high-molecular-weight products.

Polymaster provides state-of-the-art polymer activation and blending through the use of the patented, motorized Gatlin Mixer and Distribution Head.

Polymaster is simple, automatic and economical, providing better mixing and a higher degree of activation than similar machines, while being easier to operate and maintain.

## BLENDING SOLUTIONS



## Polymaster

### FEATURES AND BENEFITS

- Patented Gatlin Mixer and Distribution Head
  - Provides maximum activation, with the degree of activation not affected by fluctuating water pressure
  - Eliminates the need for costly booster pumps
  - Contains no blades to damage fragile polymer chains
- Models available for up to 50 gpm (189 L/min) dilute solution at concentrations from 0.1% to 2.0%
- Single and post-dilution models available
- Manual Stroke Length Control
- Automatic 4-20 mA Speed Control
- Compact, lightweight, stainless-steel design allows portability if required
- Easy access to all components
- All electrical controls, pump controls, dilution water flow control and flow indication located on front panel
- Simple installation. Requires plug-in electrical connection plus connection to water and polymer supply lines and point of use
- Automatic shutdown and alarm on loss of dilution water
- Manual or automatic models. Automatic units adjust polymer pump flow rate by pacing the speed of the polymer pump to an external 4-20 mA signal

# Gatlin Mixer & Distribution Head

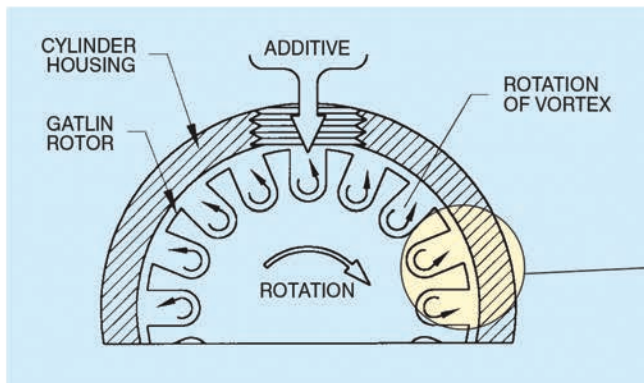
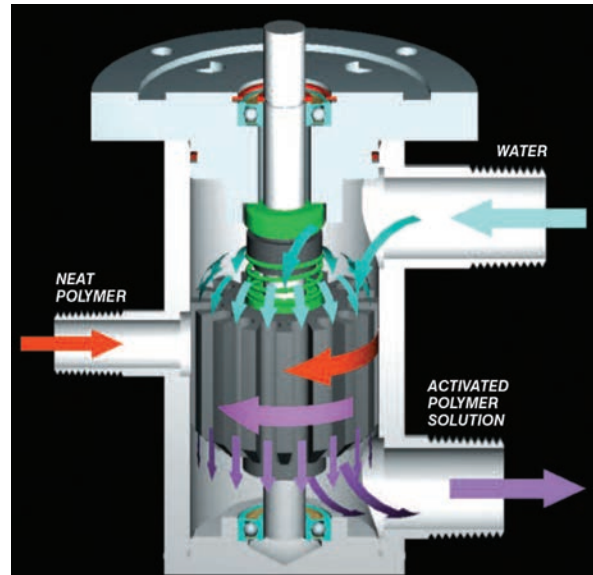
The patented, motorized Gatlin Mixer & Distribution Head hydraulically segments polymer into ultra-thin film platelets, maximizing the polymer surface area exposed to dilution water, providing maximum activation. Degree of activation is not affected by fluctuating water pressures or dilution-water ratio changes.

## HOW IT WORKS

The Gatlin Mixer provides a rapid, high-energy initial introduction of polymer to water followed by gentle, low-shear mixing in a multi-stage static mixer.

The rotating, slotted head operates at close tolerance to the inner wall of the mixing chamber. The clearance does not permit fish eyes or gels to form. The slotted rotor creates a series of high-velocity vortices without the use of turbine blades that can damage fragile polymer chains.

Superior performance proven repeatedly in side-by-side tests with other blending machines.



MICRO THIN PLATELETS

## HOW TO SIZE & SELECT: FOLLOW THESE EASY STEPS TO SELECT THE CORRECT POLYMASTERT UNIT:

1. Determine the amount of neat polymer required. This will determine the pump size.
2. Determine the correct dilution ratio at which the polymer is to be used. This will determine the Polymaster™ model.

**Example: 2.5 gph (9.5 L/h) of liquid polymer is required. The desired application rate is a 0.5% solution (200:1 dilution). Therefore, a pump 2.5 gph (9.5 L/h) or greater is required. The dilution water requirement is  $(200 \times 9.5)$  1,893 lph or  $(200 \times 2.5)$  500 gph.**

3. Select correct Polymaster and pump combination.

**Example: Decide if the unit is to be manual or automatic. Assuming an automatic model is desired, select an automatic Polymaster with greater than 500 gph (1,893 L/h) water capacity: the Model PAD-600 is selected.**

A. Select a pump with a capacity greater than 2.5 gph (9.5 L/h): the 4.5 gph (17 L/h) automatic pump Model 107804A is selected.

Order Polymaster Model PAD-600 with pump Model 107804A.

# Polymaster Standard Models Selection Chart

## STANDARD AUTOMATIC MODELS

The following models may be specified with any electronic metering pump from the chart below. Note: only electronic metering pumps may be used with standard units. Motor-operated diaphragm pumps, gear pumps or progressing cavity pumps must be used with remote units (see chart on following page).



### 4-20 mA PUMP CONTROL

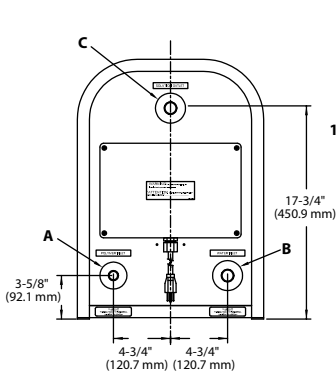
MODEL	MAX. WATER FLOW		DIMENSIONS INCHES (FNPT)		
	GPH	L/H	(A) POLYMER INLET	(B) DILUTION WATER INLET	(C) MIXED SOLUTION OUTLET
PAD-60	60	227	1/2	3/4	3/4
PAD-100	100	379	1/2	3/4	3/4
PAD-200	200	757	1/2	3/4	3/4
PAD-300	300	1,136	1/2	3/4	3/4
PAD-600	600	2,271	1/2	3/4	1
PAD-1200	1,200	4,453	1/2	1	1-1/2

### ELECTRONIC METERING PUMPS FOR USE WITH AUTOMATIC POLYMASTERS

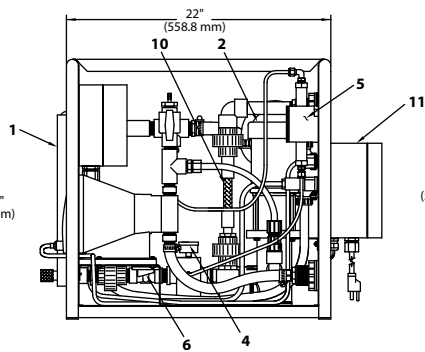
- Manual Stroke Length Control
- Automatic 4-20 mA Speed Control

MODEL	CAPACITY		MAX. PRESSURE	
	GPH	L/H	PSI	BAR
104717A	0.5	1.9	141	9.7
104718A	1	3.8	110	7.6
104719A	2	7.6	49	3.4
107804A	4.5	17.0	49	3.4
107805A	8	30.3	60	4.1

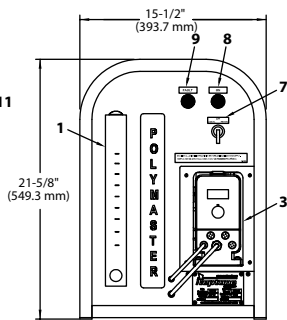
## DIMENSIONS



All Models



Models PAD/PMD-60 to PAD/PMD-1200



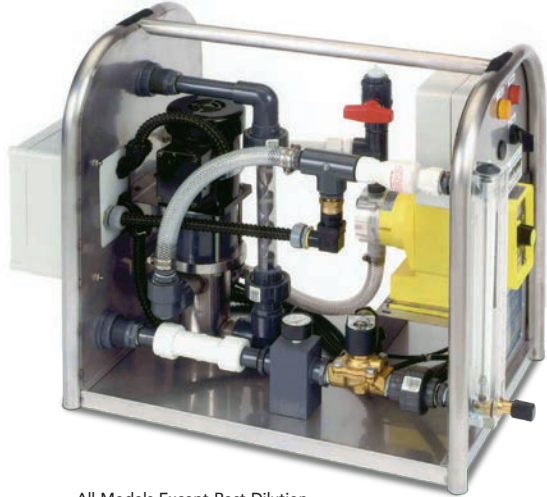
All Standard Models

1. Water Flow Meter w/Rate Set Valve
2. Gatlin Mixer & Distribution Head
3. Polymer Pump\*
4. Water Pressure Gauge
5. Water Pressure Switch
6. Water Solenoid Valve
7. Sector Switch, Main Power
8. Red Run Light
9. Amber Fault Light
10. Static Mixer
11. Junction Box Power & Signal

\*Motor-Speed Control for Remote Pump Units

## STANDARD MANUAL MODELS

The following models may be specified with any electronic metering pump from the chart below. Note: only electronic metering pumps may be used with standard units. Motor-operated diaphragm pumps, gear pumps or progressing cavity pumps must be used with remote units (see chart on following page).



All Models Except Post Dilution

## MANUAL PUMP CONTROL

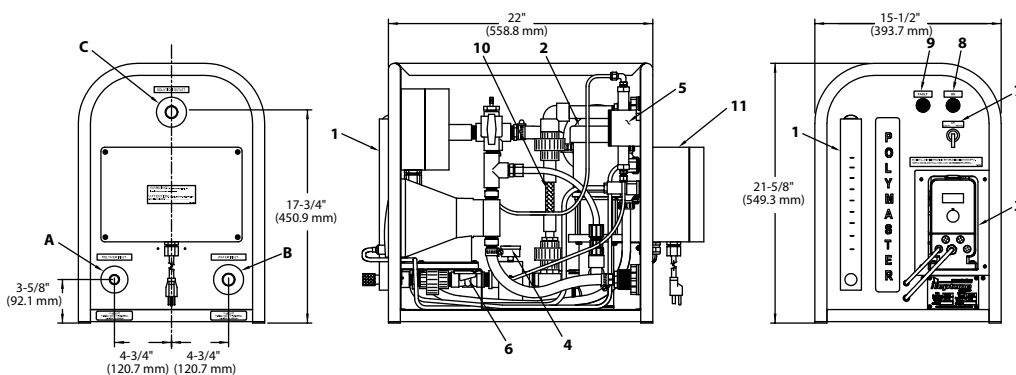
MODEL	MAX. WATER FLOW		DIMENSIONS INCHES (FNPT)		
	GPH	L/H	(A) POLYMER INLET	(B) DILUTION WATER	(C) MIXED SOLUTION OUTLET
PMD-60	60	227	1/2	3/4	3/4
PMD-100	100	379	1/2	3/4	3/4
PMD-200	200	757	1/2	3/4	3/4
PMD-300	300	1,136	1/2	3/4	3/4
PMD-600	600	2,271	1/2	3/4	1
PMD-1200	1,200	4,453	1/2	1	1-1/2

## ELECTRONIC METERING PUMPS FOR USE WITH MANUAL POLYMASTERS

- Manual Stroke Length Control
- Manual Speed Control

MODEL	CAPACITY		MAX. PRESSURE	
	GPH	L/H	PSI	BAR
104717M	0.5	1.9	141	9.7
104718M	1	3.8	110	7.6
104719M	2	7.6	49	3.4
107804M	4.5	17.0	49	3.4

## DIMENSIONS



All Models

Models PAD/PMD-60 to PAD/PMD-1200

All Standard Models

1. Water Flow Meter w/Rate Set Valve
2. Gatlin Mixer & Distribution Head
3. Polymer Pump\*
4. Water Pressure Gauge
5. Water Pressure Switch
6. Water Solenoid Valve
7. Sector Switch, Main Power
8. Red Run Light
9. Amber Fault Light
10. Static Mixer
11. Junction Box Power & Signal

\*Motor-Speed Control for Remote Pump Units





## Specifications

Minimum water pressure required: 25 psi (1.7 bar)  
 Maximum operating pressure: 100 psi (6.9 bar)  
 Pressure drop across unit less than: 15 psi (1 bar)

### TURNDOWN RATIO:

- **Water** 5:1
- **Polymer** 2:1 on stroke length (most models)  
 10:1 on speed  
 20:1 total

### WATER CONTROL INCLUDES:

- Rotameter for flow indication and adjustment
- Solenoid valve for on/off control
- Water pressure gauge
- Water differential pressure switch
- Water supply line strainer

### POLYMER CONTROL INCLUDES:

- Positive displacement metering pump with manual stroke length control and manual or automatic stroke speed control
- Polymer inlet line strainer
- Polymer injection check valve and back-pressure valve

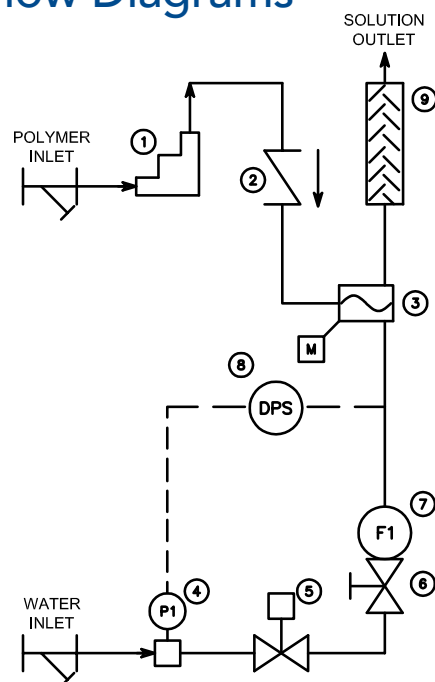
### STANDARD ELECTRICAL CONTROLS INCLUDE:

- NEMA 4X control enclosure and junction box
- Power cord and plug
- Terminal strip connection for 4-20 mA pacing signal (automatic units only)
- Local-off-remote selector switch and red running light
- Terminals for remote start/stop interlock
- Interlock for shutdown on loss of dilution water includes local amber fault light and remote alarm contact
- Local manual override of polymer flow rate

### POWER REQUIREMENTS:

- **Specify:** 1 phase, 115 volt, 60 Hz  
**OR** 1 phase, 220 volt, 50 Hz
- Solenoid pump models: 5 amps at 115 volt
- Motor-driven pump models: 15 amps at 115 volt

## Flow Diagrams



All Models

### LEGEND

1. Polymer Metering Pump
2. Injection/Check Valve
3. Gatlin Mixer and Distribution Head
4. Water Pressure Gauge
5. Solenoid Valve
6. Dilution Water Adjusting Valve
7. Flowmeter
8. Water Differential Pressure Switch
9. Static Mixer and Viewing Cylinder



## Additional Solutions by Neptune

### STAINLESS-STEEL SUPPORT STAND

Allows elevation of unit to convenient working height where shelf, table or pedestal mounting is not available. Lower shelf on stand provides convenient mounting location for heavier motorized metering pumps.

Model PST for all models

### DRUM MIXER

Mounts to 2" (51 mm) bung, allowing occasional mixing of 55-gallon (208 L) drums. Useful for remixing drums that have been stored or for mixing drums that are used in very low flow-rate applications.

### DRUM SUCTION WAND

Assembly mounts to 3/4" (19 mm) bung for convenient feeding from drums.

Model PSW75

### DESICCANT BREATHER

Mounts to 3/4" (19 mm) or 2" (51 mm) bung on 55-gallon (208 L) drum, preventing moisture-laden air from contaminating polymer. Particularly useful in low-feed-rate applications.

Model PB1

### MIXER/DESICCANT BREATHER ADAPTER

Allows mounting of both breather and drum mixer on the 2" (51 mm) bung, reserving the 3/4" (19 mm) bung for a polymer drum suction wand.

Model PMA

### CHEMICAL FEED SYSTEM

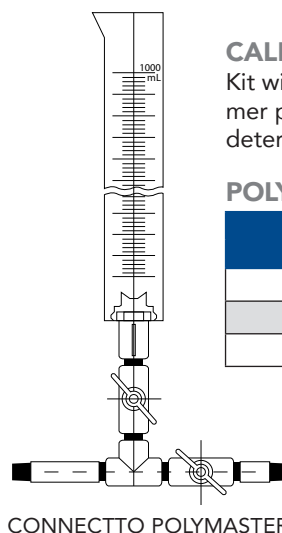
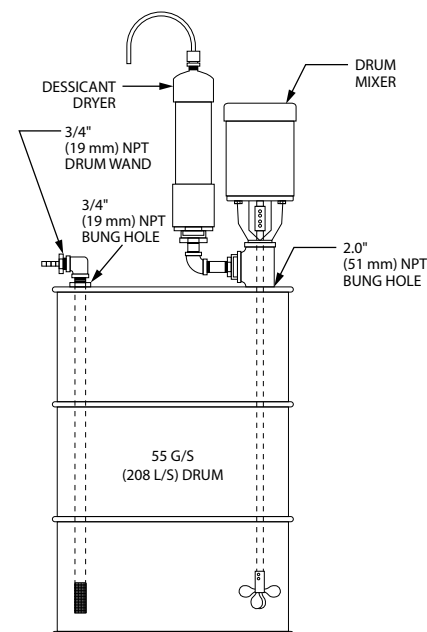
For a more complete wastewater application solution, Neptune offers packaged chemical feed systems.

### BACK PRESSURE & PRESSURE RELIEF VALVES

For optimal performance and to protect your equipment, Neptune offers back pressure and pressure relief valves.

### PULSATION DAMPENERS

Remove the pulsating flow caused by a pump's reciprocating action, ensuring a smooth, laminar flow.



### CALIBRATION COLUMN KIT

Kit with isolation valves mounts in polymer pump suction line to allow precise determination of polymer flow rate.

### POLYMASTER CALIBRATION KIT

PART NUMBER	RANGE	
	GPH	L/H
CK-100	0-3	0-11
CK-250	1-7	4-27
CK-1000	3-30	11-114

CONNECT TO POLYMER DRUM

CONNECT TO POLYMASTER

For more information on these additional solutions, visit us at [psgdoover.com/neptune](http://psgdoover.com/neptune)



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