

## Palmer Mixers Standard Features:

- Rugged – heavy-duty construction designed for years of use and abuse with minimal maintenance.
- Simple design – easy to operate/maintain
- Quick access mixing chamber doors. No tools required
- Tungsten carbide tipped mixing blades for increased life. Twice the thickness of others
- Precision chemical pumps
- Test run in our facility prior to shipment to ensure proper operation before it hits your dock
- Supplied 100% complete and fully assembled for easy, quick installation
- Many options available – mixer can be custom fitted to match the application's exact requirements
- Replacement parts available from Palmer or from high quality industrial supply houses in your area. Standard off-the-shelf components are used wherever possible so that parts availability is good and affordable.
- One-year warranty

**Mixing Chamber** – All Palmer mixing chambers feature ultra-heavy construction. The regenerative sand lining protects the primary fabrication while imparting the highest mixing efficiency possible. Heavy gage steel chambers with turned, ground, and polished mixer shafts are standard. Direct drive system – no gearboxes, belts, or chains.

**Mixing Blades** – All Palmer blades feature tungsten carbide tipped mixing blades. These blades offer extremely long life. Our 1/4" thick carbide is twice as thick as others.

**Sand Metering** – All Palmer mixers utilize fixed orifice sand metering devices for the ultimate in process consistency.

**Pumping System** – All Palmer mixers feature as standard magnetically coupled pumps. Palmer's resin delivery system ensures consistent resin flow and greatly reduced effects of resin viscosity changes as compared to others. A PLC is used to control all critical mixer timing functions to ensure useable first and last sand.

**Air Jets** – All Palmer mixers feature easily removable resin delivery jets. Using the slip fit jet, the operator can easily calibrate at the actual point of resin entry, not a remote ball valve as others do. A low flow air assist keeps the resin ports open and aid in the up front blending of resin onto the sand.

**Control System** – All Palmer mixers are fitted with a high quality electrical control system featuring standard OEM components and complete control integration. A PLC is used to control all critical mixer timing functions to ensure useable first and last sand.



## MIXING CHAMBER/MOTOR HEAD ASSEMBLY

The mixing chamber is a direct drive design that eliminates all maintenance associated with timing belt and gear drive systems. The mixing chamber is made from heavy walled tubing that is externally reinforced for maximum rigidity and stiffness.

The mixing chamber doors feature heavy-duty quick release knobs that allow for simple, easy access to the interior of the chamber. The doors are hinged at the bottom and swing down to allow complete access to the mixing blades and driveshaft. The hinged doors eliminate all ergonomic problems associated with the removal of fabricated components from the mixer.

The heavy-duty driveshaft is made from ground and polished-stress proofed steel shafting and is direct coupled to the main drive motor.

The mixing blades are faced with 1/4" thick tungsten carbide and are a fixed position blade with predetermined angles and head heights. This greatly simplifies the replacement process and eliminates the need for constant blade inspection and adjustment found with other blade designs.

The mixing blades are overlapping and sized to allow a build up of resinous material that creates the lining of the inside of the mixing chamber. This lining provides an optimum relationship between the end of the blade and the interior diameter of the chamber. It is constantly maintained by each blade wear as it occurs. With this lining as an intentional part of the mixing chamber, the daily cleaning consists of only removing the build up on the mixing blades and driveshaft.

The mixing chamber is designed to be as rugged yet simple as possible. The fixed position mixing blades, close tolerance regenerative lining, and high speed rotation provide an extremely intense blending action with a minimum amount of cleaning and maintenance.

# PALMER M-SERIES CONTINUOUS SAND MIXERS

## CONTROLS

All main electrical components are housed in a NEMA 12 dust tight disconnect enclosure. All components are thoughtfully arranged for ease of operation and maintenance.

A small enclosure is located at the operator station and contains the control switches needed for automatic mixer operation.

The control system has a master safety relay with mixing door safety switch and emergency stop pushbuttons on both the machine cabinet and the operator station.

### There are two modes of mixer operation:

**“HAND”** – This is a manual mode of operation which any or all aspects of the mixer are operated via two virtual position switches, located on the HML on the door of the enclosure.

**“AUTO”** – In this mode of operation, all aspects of the mixer are run from a remote panel located at the operator’s station.

A single three phase electrical service is required. An internal KVA transformer provides the 120-volt control power.

The pump has a digital DC speed controller that eliminates speed fluctuations due to voltage spikes in the supply voltage. Four speed settings are included. Speed setting is quick and easy for each level.

Timer functions are controlled by the PLC: pump on/off delays, slidegate on/off delays, calibration timer, etc.

- Main enclosure – NEMA 12 Disconnect
- Main control components – High quality
- Control transformer – High quality
- Main voltage requirements – 60 Amp 240/480 3 Ph 60 Hz
- Control voltage – 120 volt

## PUMPING SYSTEM

The pumping system is housed in a separate enclosure to protect the components from the plant environment. The system will consist of:

- Two magnetically coupled pumps
- Two fast action stainless steel air actuated 3-way valves
- Optional piston type catalyst metering pump for 3 part PUNB systems

The pump motors provide consistent output RPM across the operating range.

The pumps are direct coupled to the drive motors to eliminate the inaccuracy found in chain, belt, and gear reduction couplings. The direct in-line coupling also eliminates all side load on pump bearings and packing extending the life of the pump.

Fast response air actuated 3-way ball valves provide instant routing of chemicals to the mixing chamber.

A low pressure air jet system provides a low CFM air flow to help introduce the chemicals into the mixing chamber and keep the mixing chamber resin ports clear. The air jet system is fully adjustable via flow controls located in the electrical enclosure.

### Standards

#### Recirculating Pumps

- The resin pumps run continuously and the 3-way ball valves divert to the mixing chamber when called on. This system is helpful in maintaining resin temperature.

#### Calibration Timer with Remote Start / Stop Buttons

- The calibration timer is included with the PLC system. The PLC controls: pump on/off delay timer, slide gate on/off timer, purge timer, etc. This system has proven itself to be very reliable and easy to use.

### Mixer Specifications

Feature	M50XLD
Capacity (Based on Silica Sand)*	15 - 75 Pounds Per Minute
Capacity (Based on Silica Sand)*	0.45 - 2.25 Tons Per Hour
Standard Mounting	Fixed Position
Standard Electrical and Pump Enclosure Location	Back Plate Mount
Mixing Chamber Doors	Dual Bottom Hinged Doors with Quick Access Knobs
Mixing Chamber Length	25"
Mixing Chamber Inside Diameter	4.25"
Mixing Chamber Wall Thickness	.25"
Sand Metering Device	Fixed Orifice Slide gate
Standard Drive Motor Sizing	3 HP - 1750 RPM
Standard Mixing Blade Style	Pinned (threaded available)
Driveshaft Diameter	1.25"
Standard Electrical Service Required	30/20 Amp 240/480 Volts - 3 Phase Supply

\* Based on new, clean, silica sand with 3 part phenolic urethane no-bake resin with a max addition rate of 1.5% based on sand weight.

### Mixer Specifications

Feature	M100XLD
Capacity (Based on Silica Sand)*	50 - 150 Pounds Per Minute
Capacity (Based on Silica Sand)*	1.5 - 4.5 Tons Per Hour
Standard Mounting	Fixed Position
Standard Electrical and Pump Enclosure Location	Back Plate Mount
Mixing Chamber Doors	Dual Bottom Hinged Doors with Quick Access Knobs
Mixing Chamber Length	31"
Mixing Chamber Inside Diameter	4.8"
Mixing Chamber Wall Thickness	.375"
Sand Metering Device	Fixed Orifice Slide gate
Standard Drive Motor Sizing	5 HP - 1150 RPM
Standard Mixing Blade Style	Pinned (threaded available)
Driveshaft Diameter	1.75"
Standard Electrical Service Required	30/20 Amp 240/480 Volts - 3 Phase Supply

### Mixer Specifications

Feature	M200XLD
Capacity (Based on Silica Sand)*	70 - 250 Pounds Per Minute
Capacity (Based on Silica Sand)*	2.1 - 7.5 Tons Per Hour
Standard Mounting	Fixed Position
Standard Electrical and Pump Enclosure Location	Back Plate Mount
Mixing Chamber Doors	Dual Bottom Hinged Doors with Quick Access Knobs
Mixing Chamber Length	41"
Mixing Chamber Inside Diameter	5.6"
Mixing Chamber Wall Thickness	.43"
Sand Metering Device	Fixed Orifice Slidegate
Standard Drive Motor Sizing	5 HP - 1150 RPM
Standard Mixing Blade Style	Pinned (threaded available)
Driveshaft Diameter	2.5"
Standard Electrical Service Required	30/20 Amp 240/480 Volts - 3 Phase Supply

### Mixer Specifications

Feature	M300XLD
Capacity (Based on Silica Sand)*	150 - 600 Pounds Per Minute
Capacity (Based on Silica Sand)*	4.5 - 18 Tons Per Hour
Standard Mounting	Fixed Position
Standard Electrical and Pump Enclosure Location	Back Plate Mount
Mixing Chamber Doors	Dual Bottom Hinged Doors with Quick Access Knobs
Mixing Chamber Length	59"
Mixing Chamber Inside Diameter	7.625"
Mixing Chamber Wall Thickness	.5"
Sand Metering Device	Fixed Orifice Slide gate
Standard Drive Motor Sizing	10 HP - 1150 RPM
Standard Mixing Blade Style	Pinned (threaded available)
Driveshaft Diameter	3"
Standard Electrical Service Required	30/20 Amp 240/480 Volts - 3 Phase Supply

\* Based on new, clean, silica sand with 3 part phenolic urethane no-bake resin with a max addition rate of 1.5% based on sand weight.

### Mixer Specifications

Feature	M500XLD
Capacity (Based on Silica Sand)*	300 - 1000 Pounds Per Minute
Capacity (Based on Silica Sand)*	12 - 33 Tons Per Hour
Standard Mounting	Fixed Position
Standard Electrical and Pump Enclosure Location	Back Plate Mount
Mixing Chamber Doors	Four Bottom Hinged Doors with Quick Access Knobs - No Tools Required
Mixing Chamber Length	84"
Mixing Chamber Inside Diameter	9.563"
Mixing Chamber Wall Thickness	.594
Sand Metering Device	Fixed Orifice Slide gate
Standard Drive Motor Sizing	15 HP - 870 RPM
Standard Mixing Blade Style	Pinned (threaded available)
Driveshaft Diameter	5"
Standard Electrical Service Required	60 Amp 480 Volts - 3 Phase Supply

### Mixer Specifications

Feature	M1000XLD
Capacity (Based on Silica Sand)*	400 - 1700 Pounds Per Minute
Capacity (Based on Silica Sand)*	21 - 51 Tons Per Hour
Standard Mounting	Fixed Position
Standard Electrical and Pump Enclosure Location	Back Plate Mount
Mixing Chamber Doors	Four Bottom Hinged Doors with Quick Access Knobs - No Tools Required
Mixing Chamber Length	84"
Mixing Chamber Inside Diameter	11.374"
Mixing Chamber Wall Thickness	.688"
Sand Metering Device	Fixed Orifice Slidegate
Standard Drive Motor Sizing	20-40 HP - 870 RPM - Horsepower Determined by Resin System
Standard Mixing Blade Style	Pinned (threaded available)
Driveshaft Diameter	5"
Standard Electrical Service Required	60 Amp 480 Volts - 3 Phase Supply

### Mixer Specifications

Feature	M2000XLD
Capacity (Based on Silica Sand)*	1000 - 3000 Pounds Per Minute
Capacity (Based on Silica Sand)*	30 - 90 Tons Per Hour
Standard Mounting	Fixed Position
Standard Electrical and Pump Enclosure Location	Back Plate Mount
Mixing Chamber Doors	Four Bottom Hinged Doors with Quick Access Knobs - No Tools Required
Mixing Chamber Length	84"
Mixing Chamber Inside Diameter	12.50"
Mixing Chamber Wall Thickness	.75"
Sand Metering Device	Fixed Orifice Slide gate
Standard Drive Motor Sizing	30-50 HP - 870 RPM - Horsepower Determined by Resin System
Standard Mixing Blade Style	Pinned (threaded available)
Driveshaft Diameter	5"
Standard Electrical Service Required	100 Amp 480 Volts - 3 Phase Supply

\* Based on new, clean, silica sand with 3 part phenolic urethane no-bake resin with a max addition rate of 1.5% based on sand weight.

**Mixer Specifications**

<b>Feature</b>	<b>M3000XLD</b>
<b>Capacity (Based on Silica Sand)*</b>	<b>2000 - 5000 Pounds Per Minute</b>
<b>Capacity (Based on Silica Sand)*</b>	<b>60 - 150 Tons Per Hour</b>
<b>Standard Mounting</b>	<b>Fixed Position</b>
<b>Standard Electrical and Pump Enclosure Location</b>	<b>Back Plate Mount</b>
<b>Mixing Chamber Doors</b>	<b>Four Bottom Hinged Doors with Quick Access Knobs - No Tools Required</b>
<b>Mixing Chamber Length</b>	<b>108"</b>
<b>Mixing Chamber Inside Diameter</b>	<b>14.312"</b>
<b>Mixing Chamber Wall Thickness</b>	<b>.844</b>
<b>Sand Metering Device</b>	<b>Fixed Orifice Slide gate</b>
<b>Standard Drive Motor Sizing</b>	<b>50-100 HP - 1750 RPM VFD Controlled - HP Determined by Resin System</b>
<b>Standard Mixing Blade Style</b>	<b>Pinned (threaded available)</b>
<b>Driveshaft Diameter</b>	<b>6"</b>
<b>Standard Electrical Service Required</b>	<b>200 Amp 480 Volts - 3 Phase Supply</b>

\* Based on new, clean, silica sand with 3 part phenolic urethane no-bake resin with a max addition rate of 1.5% based on sand weight.