



# MX-1 Series Mixers

## OWNERS MANUAL

### Warranty

Our products are guaranteed against defective materials and workmanship, we will repair or replace such items as may prove defective at our option. Warranty period is one year on items manufactured by INDCO. On items not manufactured by INDCO, the manufactures warranty applies. All component parts of our products are covered by this warranty, except for normal wear items such as belts or impellers. We cannot be responsible for damage or abuse to equipment caused by improper installation or operation. Warranties can also be voided by unauthorized disassembly of equipment. For warranty repairs, equipment is returned to INDCO at the customer's expense; we will repair and return to customer at our expense. Under no circumstances will we allow labor charges or other expense to repair defective merchandise. This warranty is exclusive and is in lieu of all other warranties, whether express or implied. INDCO shall not be liable for any other damages, whether consequential, indirect, or incidental, arising from the sale or use of its products.



### MX-1 SERIES MIXERS 1 - horsepower units

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**Model:** \_\_\_\_\_

**Serial No.:** \_\_\_\_\_

**Date:** \_\_\_\_\_

**Order No.:** \_\_\_\_\_

## Safety

Please read this complete manual before trying to operate your mixer. Failure to follow these instructions could result in serious bodily injury or death.

- Never move the unit without a suitable lifting device.
- Have a qualified individual bring power to your unit.
- Always ground the unit. Never use an extension cord.
- Never run the unit in open air.
- Never adjust the speed without the unit running.
- Always lockout the power when working on the unit.
- Always use the container holder to restrain the container during operation.

### **Electric Motor Safety:**

Motors should be installed, protected and fused in accordance with latest issue of National Electrical Code, NEMA Standard Publication No. MG 2 and local codes.

Rotating parts such as pulleys, couplings, unusual shaft extensions should be permanently guarded. Keep hands and clothing away from moving parts. Trained, qualified personnel should make electrical repairs only.

### **Air Motor Safety:**

The air motor is designed to be driven by compressed air and under no circumstances be driven with any other gases. Fluids, particles, solids or any substance mixed with air, particularly combustible substances likely to cause explosions, must not drive air motor.

- Do not drive with flammable or explosive gases.
- Air motor is designed for air only. Do not allow corrosive gases or particulate material to enter motor. Water vapor, oil-based contaminants, or other liquids must be filtered out.
- Do not use a hammer or force coupling or drive pulley onto shaft when installing drive onto air motor. This causes end thrust that could damage air motor.
- Ambient temperature should not exceed 250°F.
- Solid or liquid material exiting unit can cause eye or skin damage. Keep away from air stream.
- Always disconnect air supply before servicing.
- Do not allow air motor to "run free" at high speeds with no loads. Excessive internal heat build-up, loss of internal clearances and rapid motor damage will result.
- Some models may exceed 85dB(A) sound level. Hearing protection should be worn when in close proximity to these models.

## General

The MX-1 series mixers are designed for bench top use to process batches up to five-gallons. They are ideal for use in labs, pilot plants, or small-scale production.

Standard features:

- Speed range:
  - 175rpm fixed speed.
  - DC variable speed, 0 - 175rpm available.
  - Air motor model speed range: 0 - 300rpm.
- Shaft: 1" diameter - 316SS.
- Impellers: TWO, 10" diameter, 3-blade axial flow turbines.
- Hydraulic jack -or- pneumatic cylinder lift mechanism.
- Container holder with capacity for up to five-gallon pail.
- TEFC, Explosion-Proof and Air Motor models.

## Installation

### **Receiving:**

*Before removing any packing, visually inspect the exterior of the shipment for any sign of damage. Should there be any damage, bring it to the attention of the delivering UPS or truck line and note the same on the receiving ticket. Should there be damage you must place a claim with the truck line. They are the only ones who will pay for the damage done and you are the only one who can place that claim.*

### **Mounting:**

Ensure the unit is securely bolted to your bench top, floor, etc. and is level, square, and plumb. Leave space around the unit for cleaning, inspection and maintenance.

### **Pre-Start Up Check List:**

1. Are all mounting bolts tight?
2. Has electric motor been wired according to the diagram on the motor label? Is motor grounded?
3. Bump motor and check rotation, looking down into the container, shaft should rotate clock-wise. If direction is incorrect reverse motor as explained on the motor label.

# Operation

## Caution:

- Never run mixer without an impeller.
- Never run the impeller in open air, outside container.
- Variable Speed Models: Always stop and start the mixer in the lowest variable speed setting.

## Electronic Speed Control:

- DC Variable speed models -

- Turn control knob to zero, fully Counter-Clockwise.
- Turn power switch on and slowly advance control knob Clockwise while observing impeller shaft to check for satisfactory operation throughout the speed range.
- Turn control knob to zero, fully Counter-Clockwise, turn power switch off.

NOTE: Always start and stop your mixer in the slowest speed setting.

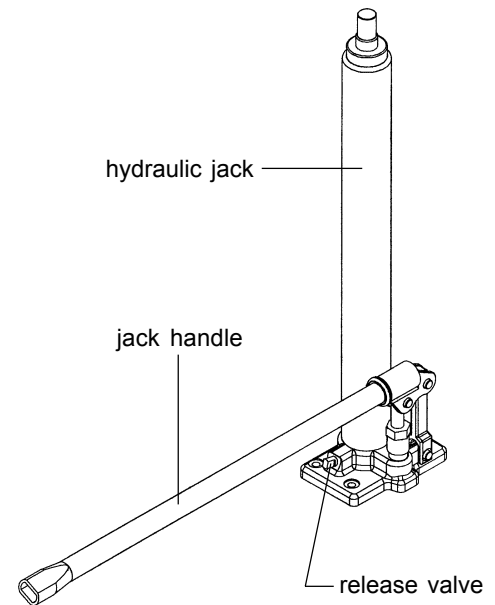
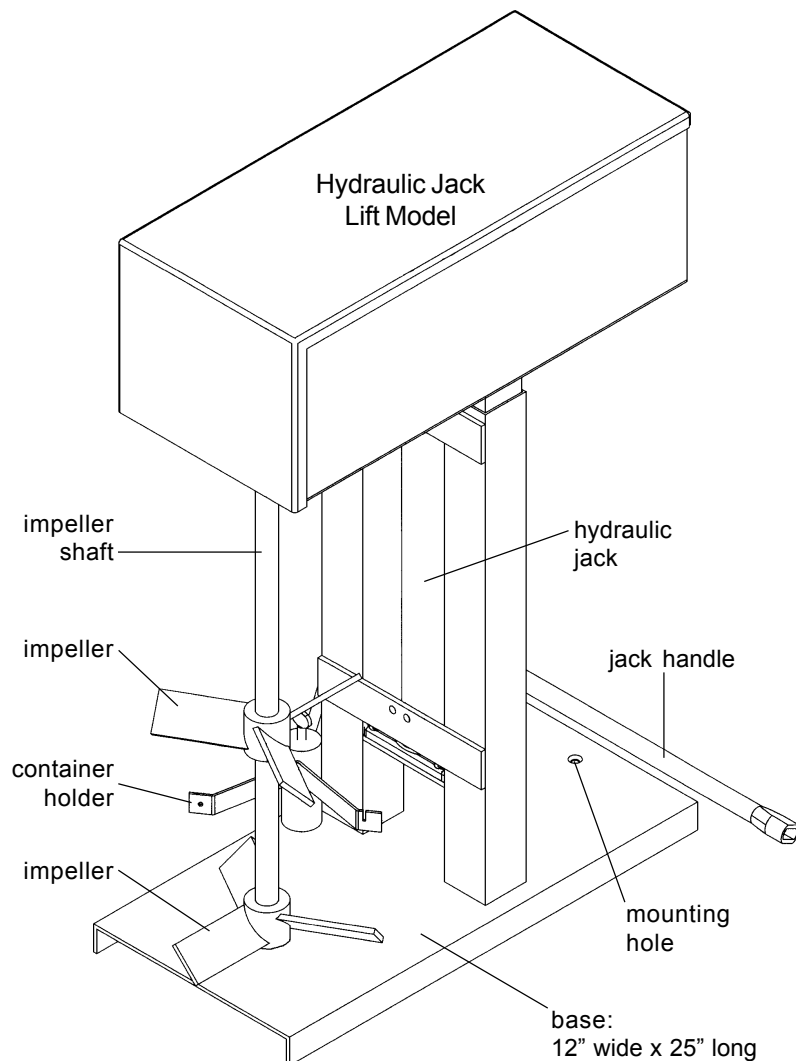
## Hydraulic Jack Operation:

### • Lifting:

1. Insert the handle onto the release valve and turn clockwise until the valve is firmly closed.
2. Place handle into jack handle sleeve "receptacle".
3. Actuate the jack handle up and down to raise the impeller to the desired height.

### • Lowering:

1. Insert the handle onto the release valve and slowly turn the handle counter-clockwise.



## Operation (continued)

### Air Cylinder Operation:

Before connecting your air supply make sure the lift control valve is in the center (off) position. Connect your air supply to the quick connector at the 3-position air valve. Maximum air pressure is 100 PSI. Note: air pressure is used to both raise and lower the cylinder.

**CAUTION:** After the air line is installed and before operating the machine for the first time, move the lift control valve to the downward position. This will charge the air cylinder and prevent surging when the lift control valve is moved to the upward position.

#### Lifting:

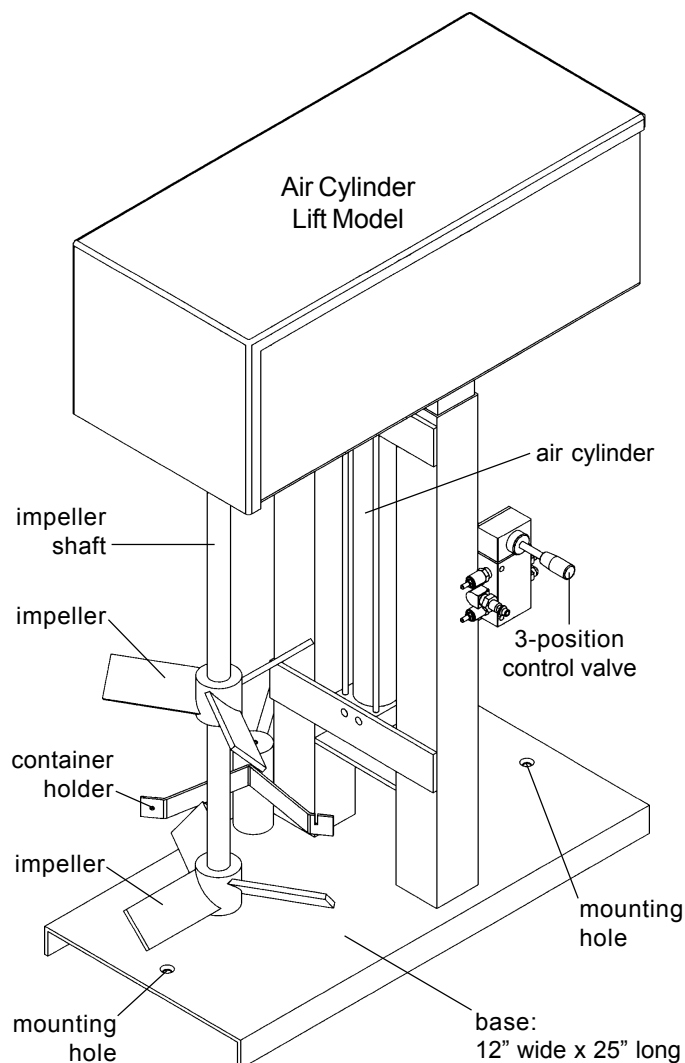
Move the lift control valve to the up position. To stop upward motion move valve to center (off) position.

#### Stop ~ Hold:

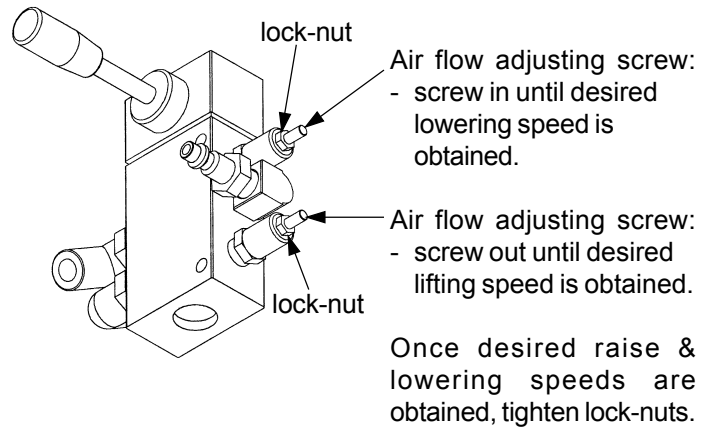
To hold the impeller at any height move the lift control valve to the center (off) position.

#### Lowering:

Move the lift control valve to the down position. To stop downward motion move valve to center (off) position.



- Air Valve ~ Cylinder speed control adjustment:



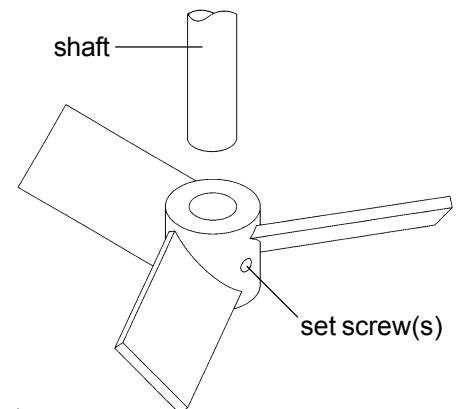
## Maintenance

**General:** Maintaining your mixer is not difficult if you follow these guidelines:

- The Bearing Housing Assembly has sealed bearings that do not require lubrication.
- Keep the mixer clean.
- Ensure all bolts, nuts and set-screws are tight.
- Check all wiring on a regular basis and repair as needed.
- Unit fails to start: Check power source to unit, plug in -or- reset breaker. If problem continues, disconnect power and have a qualified person make proper repairs.

### Changing: Impellers

The standard impellers are 3-bladed axial flow Turbines. To install the Turbine, back off the set screw(s) as far as possible without removing them. Insert mixing shaft into the bore and tighten the set screw(s) firmly to secure the Turbine to the shaft.

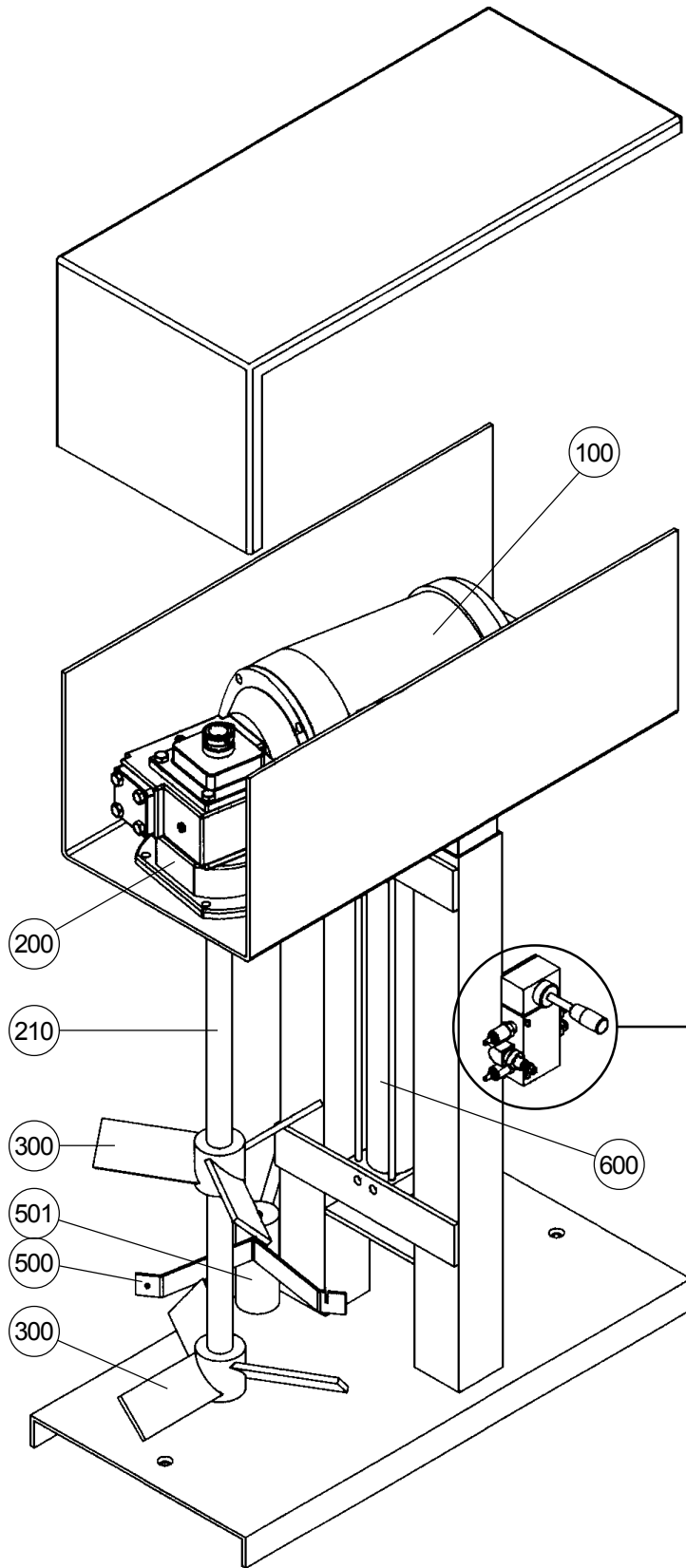


### Impeller Placement

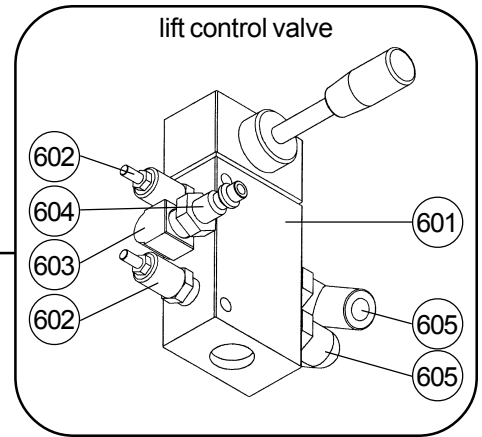
For mixers with ONE impeller, mount it 1 to 2 impeller diameters distance off the bottom of mixing container. For mixers with TWO or more impellers, mount the lowest impeller 1 to 2 impeller diameters distance off the bottom of mixing container. Mount the other impellers 1 to 2 impeller diameters apart. The uppermost impeller should be positioned approximately 1 impeller diameter under the surface of the liquid.

The above guide-lines are "rules of thumb" and may not be the best for your situation. Experimenting with impeller placement may provide your best results.

# Parts List



Air Cylinder Lift Model Shown



## Parts List

Item	Description	Part No.	Qty.
<u>ELECTRIC MOTORS</u>			
100.	1-HP, TEFC, 115/230VAC, 1-phase	MTR-1-56C-1-TEFC	1
101.	Switch, ON - OFF (not shown)	SWT-DP-TOGGLE	1
102.	Switch guard (not shown)	SWT-GUARD	1
103.	Cord, 14/3, with 3-prong plug (not shown)	CPG-14/3	1
100.	1-HP, Explosion-Proof, 115/230-VAC, 1-phase	MTR-1-56C-1-EP	1
100.	1-HP, Variable Speed, TEFC, 115-VAC to 90-VDC, 1-phase	MTR-108022	1
101.	DC motor controller, variable speed - 1/3 thru 2HP (not shown)	MTR-DC-CONTROL	1
102.	Cord, 14/3, with 3-prong plug (not shown)	CPG-14/3	1
<u>AIR MOTOR</u>			
100.	1.5 HP, (4AM-NRV-50C) - 56C face mount, bi-rotational Repair Kit (4AM-NRV-50C)	MTR-1.5-56C-AIR N-K206A	1 1
101.	Muffler, metal (not shown)	N-AC980	1
102.	Ball valve, brass - 1/4" (not shown)	HDW-BRS025	1
103.	Air hose, 18" long with 1/4" MNPT ends (not shown)	N-AH418	1
104.	Elbow, street, brass - 1/4" NPT (not shown)	HDW-25-SEB	2
105.	Quick release coupling, male x 1/4" MNPT (not shown)	HDW-1/4-M-QCPLUG	1
<u>DRIVE COMPONENTS</u>			
200.	Gear Reducer, 10:1 ratio - 175rpm models	HDW-GB-917MDSF-DR-56	1
210.	Shaft, 1" diameter, 316 stainless steel	SHF-1	32"
300.	Turbine, 10" diameter, 3-blade, 316ss, 1" bore with set-screws	STI-10	2
<u>CONTAINER HOLDER</u>			
500.	Container holder	HDW-CH-14	1
501.	Mount, container holder	HDW-CH006	1
502.	Chain, 32" (not shown)	HDW-CH-CHAIN	1
503.	Spring (not shown)	HDW-E42C	1
<u>HYDRAULIC JACK LIFT (not shown)</u>			
600.	Hydraulic jack w/ handle - 18" travel	HDW-JHL-15	1
<u>AIR CYLINDER LIFT (model shown)</u>			
600.	Air Cylinder - 15" travel	HDW-HSD-ACYL	1
601.	3-Position spool valve	HDW-E2181-1000	1
602.	Brass muffler for spool valve	HDW-SPCMUF	2
603.	Elbow, 90-deg., 1/4" street	HDW-2202P-4-4	1
604.	Quick release coupling, 1/4" MNPT x male connection	HDW-1/4-M-QCPLUG	1
605.	Push-connect, 90-deg., elbow, 1/4" MNPT x 1/4" tube	HDW-W369ML-4-4	2
606.	Push-connect, 90-deg., elbow, 3/8" MNPT x 1/4" tube (not shown)	HDW-W369ML-4-6	2
607.	Air line tube, 1/4" black (not shown)	HDW-EB-43-050	24"