E-Zee NuPulse

Installation & Operation Manual

for

P/N's #10173NP, 10179NP, 10180NP, 10181NP, 10197NP, 41000NP & 41010NP

1/4 HP & 3/4 HP Mini Milker

I M P O R T A N T

READ FIRST

BEFORE USING PUMP, PLEASE NOTE IT IS CRITICAL NOT TO ALLOW THE MILK BUCKET TO OVERFLOW DURING MILKING OR WASHING AS LIQUID MAY GET INTO THE PUMP.

INTERNAL DAMAGE TO THE PUMP DUE TO ANY LIQUID

IS NOT COVERED UNDER WARRANTY,

BUT IS REPAIRABLE AT A COST TO THE CUSTOMER.

WHEN PUMP IS NOT IN USE, WE RECOMMEND COVERING OR STORING IN AN AREA FREE FROM DUST, DIRT, GRASS/STRAW OR MOISTURE. PLEASE SEE INSTRUCTIONS INSIDE MANUAL FOR PREPARING YOUR UNIT BEFORE STORING.

A 1-YEAR MANUFACTURER'S WARRANTY COMES WITH THIS PUMP. *NOTE THE WARRANTY DOES NOT COVER NEGLIGENCE OR MISUSE OF PUMP WHICH INCLUDES MILK, WATER, CHEMICAL, DUST, DIRT OR ANY OTHER ENVIRONMENT-RELATED ITEMS GETTING INSIDE THE PUMP.*

COST OF REPAIRS TO CLEAN AND CORRECT DAMAGE WILL BE CUSTOMER'S RESPONSIBILITY.

ASSEMBLY

3/4 HP Mini Pump with 65 lb. NuPulse Bucket Milker for cows

1/4 HP Mini Pump with 35 lb. NuPulse Bucket Milker for goats

1. Assemble vacuum pump onto the vacuum tank by placing pump on top of the tank so the inlet and outlet ports of the pump are over the vacuum tank inlets. Next place the carrying handle around the pump so that the mounting holes line up with the motor mounting holes at the pump end of the motor. The carrying handle may have to be bent slightly to get the holes to line up. Insert the bolt though the holes so the threads face up. Use a flat washer, lock washer and nut to secure the four mounting bolts.

2. Screw the manifold assembly into the right hand port on top of the pump (across from the muffler). Tighten the manifold assembly so the hose port is located over and facing the same way as the ports on the vacuum tank.

3. Attach one end of the 2' clear tubing over the copper adapter on the manifold assembly, and the other end of the tubing to the top inlet of the vacuum tank.

4. Assemble the milker unit by inserting the inflations into the shells. Pull the inflation through the end cap of the shell until the ring at the bottom of the inflation barrel is on the outside of the shell.

BE CAREFUL NOT TO TWIST THE INFLATION WHILE PULLING IT THROUGH THE SHELL.

5. Attach the short rubber air tubes to the nipple on the shell **(warming the tubes in hot water will make assembly easier)**. Next slip the inflations onto the claw base inlets and the short air tubes on the middle section inlets.

6. Slide the snap clamp onto the 3' section of black rubber milk hose and position it approximately **8"** from the end. Place that end of the hose on the claw outlet.

7. Make sure the 8" lid gasket is in position on the underside of the lid and place the lid on the pail. Lock it in place with the bucket handle. Attach the free end of the black milk hose to the pail lid inlet (without the checkball).

8. Repeat steps 4 - 7 if you have an additional bucket unit.

9. Attach the 9' piece of clear tubing to the other pail inlet (with the checkball).

10. Attach the other end of the 9' piece of clear tubing to one of the two lower inlets on the pump canister. If using only one bucket unit, place the flip-up rubber closure on unused nipple on pump canister.

Note: If these milker units are being used for Grade A milking, you may need to use a "Vacuum Check Valve" in the vacuum line. To order use part #10217NP

IMPORTANT!!

DO NOT CLEAN THIS UNIT WITH CHEMICALS CONTAINING **CHLORINE DIOXIDE** WHILE USING THE VACUUM PUMP; SUCH AS WITH A CLEAN IN PLACE (CIP) SYSTEM. DUE TO THE GASEOUS NATURE OF THIS CHEMICAL, THE VAPORS CAN PASS FROM THE BUCKET INTO THE PUMP AND MOTOR, CORRODING THE INSIDE AND CAUSING THE PUMP AND MOTOR TO SEIZE UP. THIS DOES NOT APPLY IF YOU ARE HAND WASHING IN THE SINK.

START-UP

1. Close the Snap Clamp on the milk hose to shut the vacuum off to the milker unit.

2. Plug the vacuum pump power cord into a 110V outlet. The vacuum pump should start running.

IF THE PUMP FAILS TO START, REFER TO THE VACUUM PUMP OPERATION AND MAINTENANCE INSTRUCTIONS.

3. Within approximately **10 seconds**, the pump should build up a vacuum in the tank and the vacuum regulator should open to admit air. This will be indicated by an audible hiss. The vacuum gauge should read between **10** and **15** inches of mercury. If the pump is running, but the above doesn't happen, check the following:

(a) Plexi cover on end of vacuum tank is not sealed. Push cover firmly against tank.

(b) Pail lid not sealing properly. Check lid gasket and positioning on pail.

(c) Vacuum not turned off to milker units. Close snap clamps.

(d) Vacuum regulator open too far. Turn adjusting nut inward while holding the adjusting screw with a screwdriver.

(e) Air leaks. Check all hose connections on vacuum pump, etc., to be sure of tight fit with no air leaks.

(f) Motor RPM too low. Refer to vacuum pump operating and maintenance instructions.

START-UP (Continued)

4. With vacuum pump operating properly, adjust the vacuum regulator to obtain a gauge reading of **12-1/2** inches of mercury for **Cows**. **(NOTE:** For **Goats** and **Sheep**, vacuum regulator should read **10-1/2** inches of mercury.) To adjust, hold the regulator screw rigid with a screwdriver and loosen the lock nut. To increase the vacuum level turn the inner adjusting nut **clockwise**. To decrease the vacuum level turn the inner nut **counter- clockwise**. When the desired vacuum setting is attained, tighten the lock nut against the adjusting nut - this will prevent the setting from changing due to vibration.

5. With the vacuum level set at **12-1/2 (Cows),** or **10-1/2 (Goats/Sheep)**, open the snap clamp to turn on the vacuum to the milker unit. Place red inflation plug in each of the inflations and check the pulsation rate. The recommended pulsation rate with the unit in the non-milking **(static)** condition is:

   Cows: 54-56 pulsations per minute
   Goats: 75-85 pulsations per minute
   Sheep: 120 pulsations per minute

   The pulsation rate on the NuPulse Milker Claw is adjusted by means of the adjusting cam on the pulsator diaphragm . To **speed up** the pulsation rate, turn the cam **counter-clockwise** which raises the adjusting pin. To **slow down** the pulsation rate, turn the cam **clockwise**.

6. If you have two milker units, repeat Step #5 for the second unit.
7. Disconnect power to the vacuum pump to shut it off.

NuPulse Cow Unit on 65 lb. Bucket

NuPulse Goat Unit on 35 lb. Bucket

CAUTION

THIS IS A DRY, OIL-LESS VACUUM PUMP—NEVER LUBRICATE IT.
The carbon vanes and grease-packed motor bearings **DO NOT** require oil.

OPERATION

1. All milk contact surfaces should be washed and sanitized in an approved solution. Washing should be done immediately after milking is completed. Sanitizing should be done just prior to milking.

2. After the pump is turned on and before milking is begun, the operator should check the following:

   (a) Vacuum gauge reads: **12-1/2 (Cows)** or **10-1/2 (Goats/Sheep)**.
   (b) Pulsation rate is approximately:

   Cows: 54-56 per minute
   Goats: 75-85 per minute
   Sheep: 120 per minute

   (c) Insert thumb into one inflation on each unit and check that it is opening and closing.
   (d) Inspect short air tubes for holes, tears, splits, etc. and replace if any faults are found.

3. Prepare a cow by washing her udder with an approved udder washing solution and dry udder thoroughly with individual paper towels.

4. Attach milker unit to udder being careful not to admit excessive air while attaching teat cups.

5. Pulsation rate will change during milking as the claw adjusts to the milk flow. **This is normal**.

6. Shut vacuum off by means of the snap clamp and remove milker units as soon as cow is milked out. **Do not** leave units on for long periods of time as over milking can injure delicate teat tissue.

7. Dip teats in an approved teat dip.

8. Repeat Steps **3**, **4**, **5**, **6** and **7** for all cows in herd.

9. Wash milking equipment with an approved solution. Rinse thoroughly and allow both milker unit and bucket to dry.

EACH DAY AFTER USE, RUN PUMP A FEW MINUTES WITH THE CLEAR HOSE DISCONNECTED TO HELP DRY OUT ANY MOISTURE LEFT INSIDE. DO NOT STORE PUMP WITHOUT DOING THIS AS RUST MAY FORM AND VOID YOUR WARRANTY.

MAINTENANCE

NOTE

The normal recommendation for replacement of NuPulse Inflations, Milk Hose and Repair Kits is based on number of milkings. However, for family farms with just a few animals, we recommend changing the Rubberware and Repair Kits annually to ensure optimal performance of your milker units.

1. Change NuPulse inflations at approximately 3000 cow milkings or more often if cracked or split.
2. Change short air tubes as needed when holes, splits, etc. are detected.
3. Change milk hoses at approximately 3 years or more often if cracked or split.
4. Install NuPulse pulsator repair kits at approximately 6000 cow milkings or more often if components are deteriorated.
5. Transparent claw body - replace if broken, as necessary.
6. All other rubber gaskets, hoses, etc. - replace when cracks or splits are detected.
7. Vacuum pump - refer to vacuum pump operating and maintenance instructions.

MAINTENANCE (continued)

3/4 HP Mini Pump

The outer end plate, body, rotor and mounting bracket are all cast iron. Consequently any moisture that accumulates in the pump will tend to corrode the interior - especially if it stands idle.

The vanes are made of hard carbon and are precision ground. The vanes should last between **5,000** and **10,000** hours depending upon the degree of vacuum at which the pump is run.

PUMP START-UP AFTER STORAGE

If the motor fails to start or hums, pull the plug and check the current rating shown on the motor nameplate. If the pump is extremely cold, bring to room temperature before starting. If anything appears to be wrong with the motor, contact your Dealer. DO NOT disassemble the pump and motor as that will void any warranty that remains.

1/4 HP Mini Pump

All dual voltage motors shipped from E-Zee/NuPulse are set for **LOW** voltage—UNLESS OTHERWISE SPECIFIED AT THE TIME OF THE ORDER.

MAINTENANCE (continued)

WARNING!!
MOTORS ARE THERMALLY PROTECTED AND CAN AUTOMATICALLY RESTART WHEN THE PROTECTOR RESETS. ALWAYS DISCONNECT POWER SOURCE BEFORE SERVICING.

FLUSHING

Flushing is necessary to remove foreign particles, moisture or milk vapor deposits that could collect on the vanes causing them to break prematurely. Flushing the pump should remove these materials.

Flushing is accomplished by removing the two End Caps with O Rings and the Filter Felts (See Page 16) and then re-install the two End Caps with the O Rings. Remove the Muffler and also the clear hose from the Vacuum Gauge Manifold Assembly. Place a rag over the exhaust hole in the Pump. With the Pump still running, spray Flushing Solvent into the Manifold Hose Barb, while continuing to hold the rag over the exhaust Muffler hole. Keep spraying off and on until it looks clean on the rag.

You can purchase Flushing Solvent (E-Zee NuPulse #P00111NP) from your Dealer or purchase a can of non-flammable/non-combustible brake pad cleaner* from an auto parts store. (NOTE: DO NOT spray an oil-based product such as WD40 or Liquid Wrench into the pump as these products will damage the Pump and is not covered under warranty.) The solvents we recommend are quick dissolving and leave no residue in the Pump.
* ***Brake Pad Cleaner may not be available in CA or NJ.***

The Flushing procedure is recommended if you are going to store the Pump and not use it for a while. However, running the Pump a few minutes with the clear hose disconnected will also help dry out any moisture that's left inside the Pump before storage and should be done daily after use.

WEAR EYE PROTECTION AND FLUSH IN A WELL VENTILATED AREA

CAUTION!!
DO NOT USE KEROSENE OR OTHER COMBUSTIBLE SOLVENTS OR OPERATE PUMP IN EXPLOSIVE AMBIENCE.

FILTERS

Dirty filters restrict air flow and, if not corrected, could lead to possible motor overload, poor performance and early pump failure. Check filters periodically and clean when necessary by removing felts and washing in Flushing Solvent. Dry with compressed air and replace.

DISASSEMBLY

WARNING!!
IF YOUR UNIT IS STILL UNDER THE WARRANTY PERIOD, YOU MUST CALL 800-233-6878 TO RECEIVE AUTHORIZATION TO PROCEED WITH ANY DISASSEMBLY. NOT GETTING PREAUTHORIZATION FROM OUR OFFICE WILL VOID ANY WARRANTY.

Please be sure to look over the Troubleshooting Guide on Page 12 for options before beginning any disassembly. If flushing does not eliminate the problem, remove the six bolts holding the end plate to the body. Now remove the end plate and the four vanes. **Do not remove the rotor or loosen electric motor through bolts.** The vanes could be worn or require further cleaning. The top clearance (between rotor and body) may be adjusted by **LIGHTLY** tapping on the pump body while turning the rotor to assure that all points on the rotor clear the body.

DANGER!!

TO PREVENT EXPLOSIVE HAZARD, DO NOT PUMP COMBUSTIBLE LIQUIDS OR VAPORS WITH THESE UNITS.

TROUBLESHOOTING GUIDE

PROBLEM	SOLUTION
Pump runs, but overheats and shuts down several minutes after startup.	• Remove the Muffler and turn Pump on to see if it runs normal. If yes, clean any debris from Muffler that may be blocking airflow and reinstall. Muffler may need to be replaced if it cannot be cleaned. • Remove the black End Caps & check the Filter Felts according to Page 11 under Filters.
Pump runs, but does not produce vacuum.	Check and set the Regulator (Brass Relief Valve) as described in Step #4 on Page 6.
Pump hums but will not turn over when powered on. Two things will cause unit to hum: 1. Is Fan locked up? 2. Has debris gotten onto starter contacts?	• With Pump turned off, check to see if Pump Fan is locked up by inserting flat screwdriver in side ventilation slots where fan is and push on fan blades to see if it rotates freely (see Illustration #1 below). If YES, move to Step #2. If locked up, see Page 11 for Disassembly instructions. **BEFORE DISASSEMBLING, PLEASE NOTE WARNING REGARDING WARRANTY.** • Starter contacts are mounted on a white plate inside the electric motor and can be seen and accessed through the vent slots on side of pump to right of power cord (see Illustration #2 below). Take a can of compressed air and direct air to try to blow any debris off those contact points. Note if you have "stickier deposits" on the contacts, you can also use a quick-dissolving electronic spray obtained from an electronics store which will help remove those types of deposits.
See Pages 17 & 18 for Troubleshooting tips	

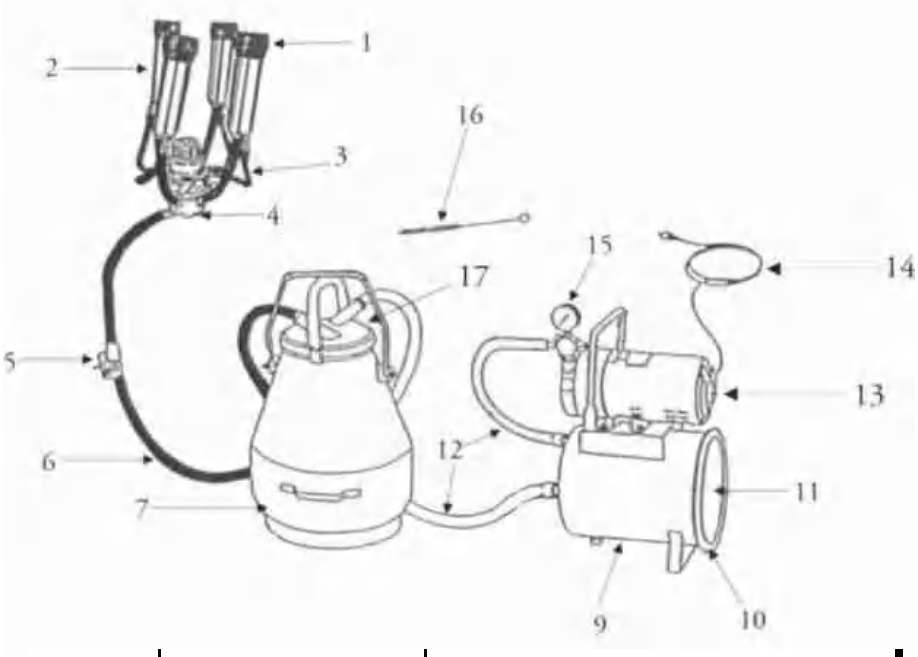
Illustration #1

Insert flat screwdriver into side ventilation slots and push fan blades to see if fan rotates freely.

Illustration #2

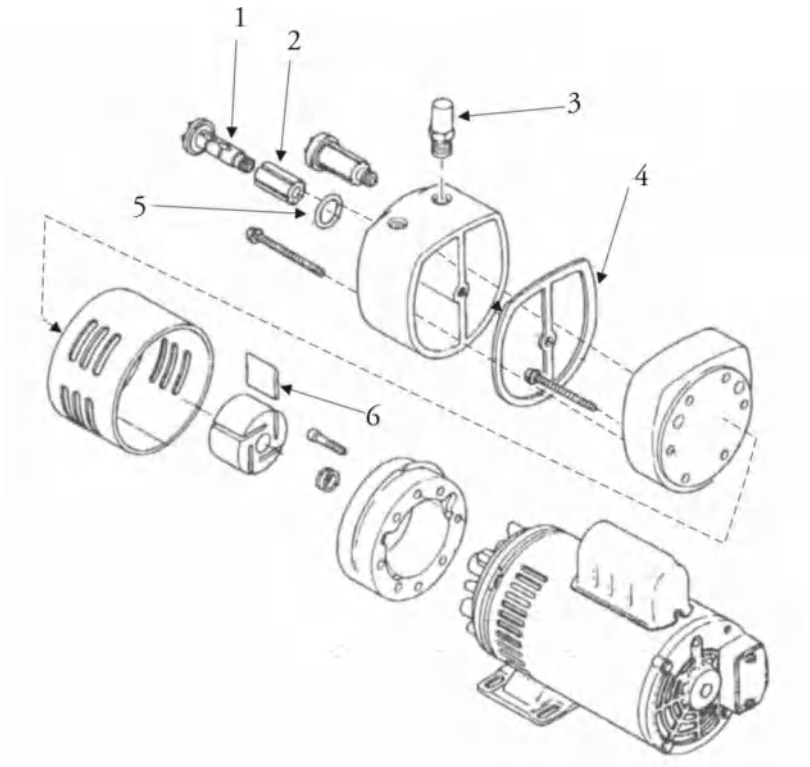
Spray compressed air at the contact points inside pump to clear any debris from them.

MINI MILKER SYSTEM BREAKDOWN (FOR COW)



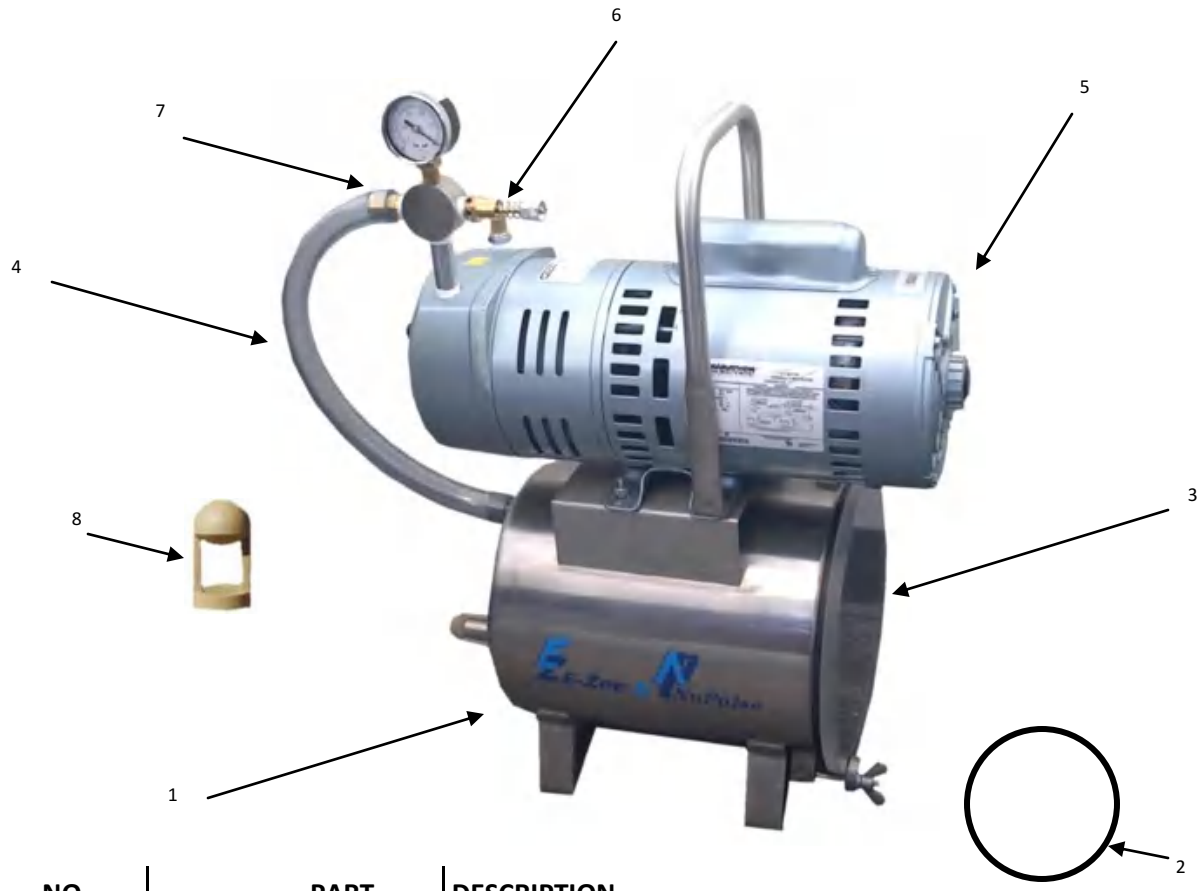
NO.	PART	DESCRIPTION
1	MZ10057NP	Super Inflations
2	MZ20705NP	Stainless Heavy Shells
3	MZ10045NP	Short Air Tubes
4	10001NP	Standard Claw
5	21905	Shut Off Clamp
6	MZ13162NP	Premium Milk Hose (3 feet)
7	30165	65 lb. S.S. Milk Pail w/Short Handle
9	P41015NP	Mini Vacuum Tank
10	20299	Gasket for Plexi Lid
11	P41016NP	Plexi Lid
12	25235	5/8” Clear Tubing
13	P01199NP P01195NP	3/4 HP Mini Pump & Motor 1/4 HP Mini Pump & Motor
14	P01236NP	Cord with 3 prong plug
15	67224	Vacuum Gauge
16	A40519NP	Brush for Pail Lid Inlet
17	34310	Lid & Gasket for SS Lid w/Ball & Cage
	25195	Replacement Gasket for SS Lid
Optional	10217NP	Vacuum Check Valve

PUMP & MOTOR BREAKDOWN



NO.	PART No. 3/4 HP Pump	Part No. 1/4 HP Pump	DESCRIPTION
1	P41021NP	P41021NP	End Cap for Mini Pump
2	P41022NP	P41022NP	Filter Felt for Mini Pump
3	P41050NP	P41051NP	New Style Black Muffler for Mini Pump
	P41023NP	A03171NP	Old Style Brass Muffler for Mini Pump
4	P41028NP	P41038NP	Housing Gasket for Mini Pump
5	P41025NP	P41025NP	'O' Ring for Mini Pump
6	P41020NP	P41030NP	Vane for Mini Pump
Also available	P41026NP	P41026NP	1/4" 2" #20 Socket Head Body Bolt (2 Req'd)
	P41029NP	P41029NP	1/4" 2-3/4" #20 Hex Muffler Bolt (5 Req'd)
	P41031NP	P41031NP	1/4" 2-3/4" #20 Hex Endplate Bolt (6 Req'd)
Also available	P41024NP	P41034NP	Service Kit—includes 4 x Vanes, 1 x Gasket, 2 x O Ring, 2 Filter Felts

1/4HP & 3/4HP MINI PUMP COMPLETE

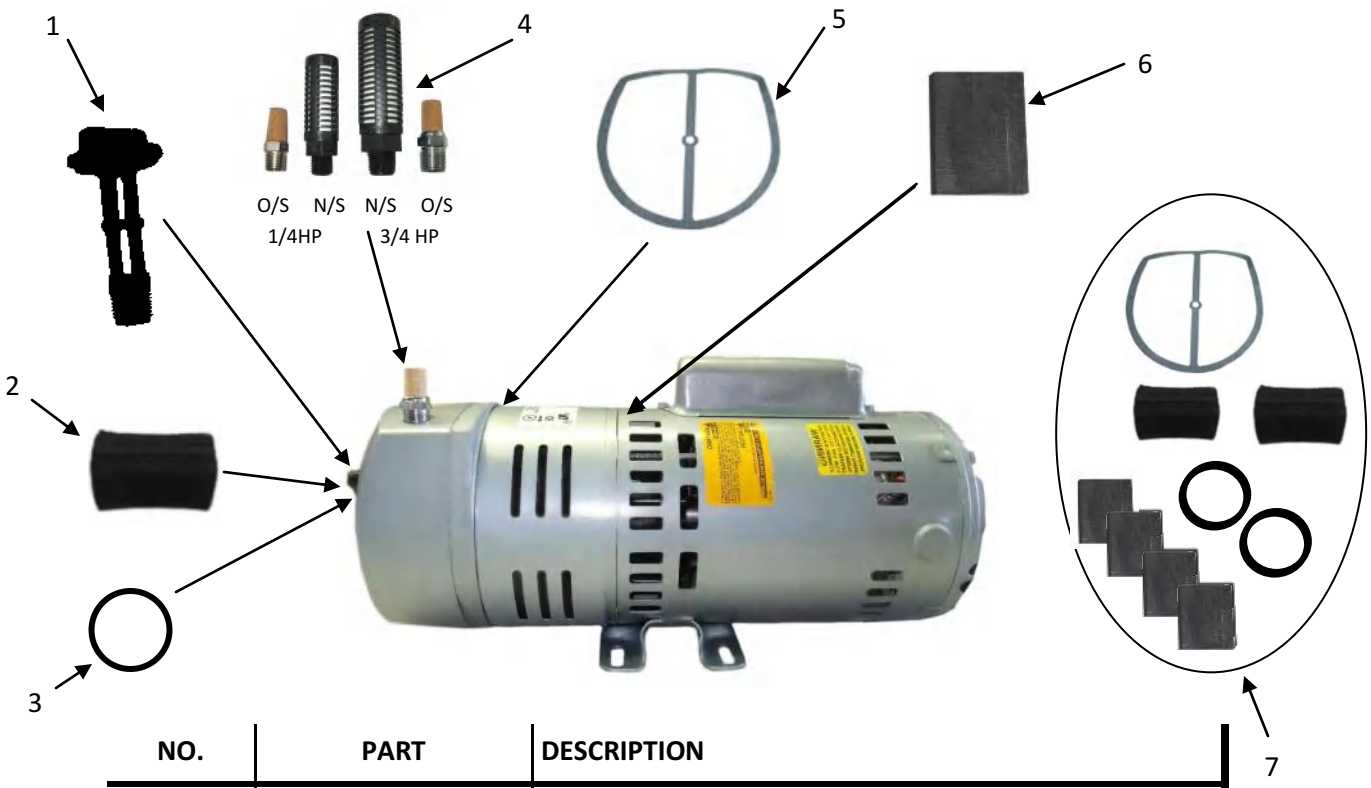


NO.	PART	DESCRIPTION
1	P41015NP	Mini Vacuum Tank Complete with lid, gasket, clip & handle
2	20299	Gasket for Plexi Lid—10”
3	P41016NP	Plexi Lid
4	25235	5/8” Clear Tubing (2 ft)
5	P01199NP	3/4 HP Mini Pump & Motor Only
	P01195NP	1/4 HP Mini Pump & Motor Only
6	P41011NP	Brass Relief Valve
7	67224	Vacuum Gauge
8	56375	5/8” Flip Up Rubber Closure
Optional	10217NP	Vacuum Check Valve (Used on 1/4HP Units)
N/S	P01236NP	Cord with 3 prong plug

MINI PUMP & MOTOR

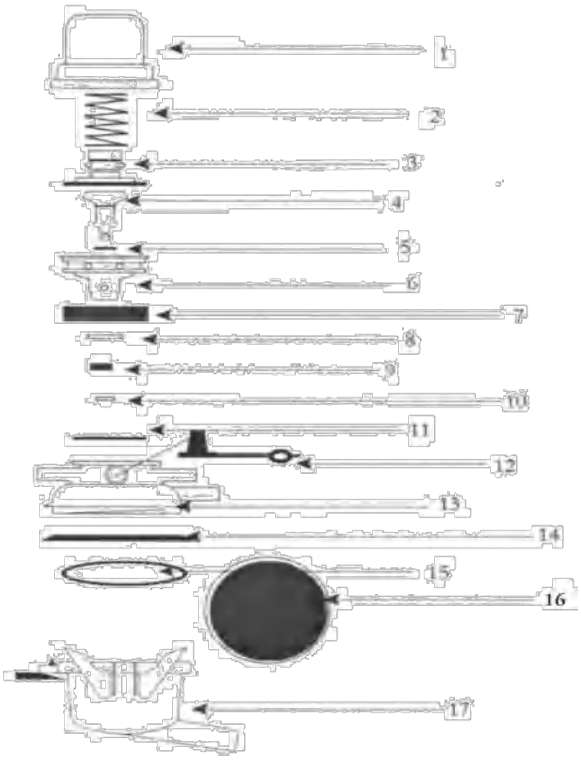
1/4 HP Pump & Motor
P01195NP

3/4 HP Pump & Motor
P01199NP



NO.	PART	DESCRIPTION
1	P41021NP	End Cap for Mini Pump
2	P41022NP	Filter Felt for Mini Pump
3	P41025NP	'O' Ring for Mini Pump
4	P41023NP	Old Style Brass Muffler for 3/4 HP Mini Pump
	P41050NP	New Style Large Black Muffler for 3/4 HP Mini Pump
	A03171NP	Old Style Brass Muffler for 1/4 HP Mini Pump
	P41051NP	New Style Black Muffler for 1/4 HP Mini Pump
5	P41028NP	Housing Gasket for 3/4 HP Mini Pump
	P41038NP	Housing Gasket for 1/4 HP Mini Pump
6	P41020NP	Vane for 3/4 HP Mini Pump
	P41030NP	Vane for 1/4 HP Mini Pump
7	P41024NP	Service Kit for 3/4HP Mini Pump
	P41034NP	Service Kit for 1/4 HP Mini Pump

ORIGINAL STANDARD & MLX CLAW



NO.	PART	DESCRIPTION
1	MZ10006NP	Dome
2	MZ10007NP	Pulsator Spring
3	MZ10005NP	Diaphragm Complete
4	MZ10022NP	Bobbin Only
5	MZ10009NP	Bobbin 'O' Ring
6	MZ10010NP	Bobbin Housing
7	MZ10028NP	Air Filter
8	MZ10015NP	Bobbin Housing Seal
9	MZ10011NP	Bobbin Valve
10	MZ10012NP	Bobbin Clip
11	MZ10014NP	Middle 'O' Ring
12	MZ10002NP	Wash Plug
13	MZ10016NP MZ10068NP	Standard Middle MLX Middle (shown)
14	MZ10030NP	Claw Protector Seal
15	MZ10017NP	Base 'O' Ring
16	MZ10069NP	MLX Diaphragm
17	MZ10013NP MZ10070NP	Standard Super Bowl MLX Super Bowl

OPERATION

To obtain the maximum performance from your NuPulse Milker, here are some helpful points.

1. Recommended vacuum levels are:
   a) High Line: Standard Unit - 14" Hg - MLX Unit 14" to 15" Hg
   b) Medium Lines and Weight Jars: 13" to 13.5" Hg
   c) Low Lines and Bucket Milkers: 12" to 12.5" Hg
   NOTE: Add 1" when using tube type milk meters.
2. Pulsation rate should be set at **54-56** pulsations per minute for Standard Units and **56-60** pulsations per minute for MLX Units in static mode (non-milking). To **increase** the pulsation rate, turn the cam counterclockwise. To **decrease** the pulsation rate, turn the cam clockwise.
   NOTE: There is a (+) and a (-) molded into the top of the cam knob for reference.
3. Clean the air filter regularly.
4. Use hose hangers in stanchion barns to properly position the milker under the cow.
5. Keep the milk hose as short as possible.
6. Check the diaphragm, bobbin valve, bobbin 'O' ring and bobbin vacuum hole regularly for cleanliness and proper operation.

CLEANING

Wash water temperature should not drop below 110°F during recirculation cycle, and should have a Ph of 11.5 or higher.

C.I.P. Cleaning using Jetters

1. Put teat cups on Jetters.
2. Insert jetter tube adapters into claw wash port.
3. Manually clean the pulsator parts weekly or as needed.
4. For maximum MLX diaphragm life, it is recommended the units pulsate while washing.

CAUTION
Do not over tighten the claw parts when reassembling.
Let the 'O' rings do their job.

TROUBLESHOOTING

Units Falling Off
1) Over milking
2) Wet, soapy teats
3) Worn rubberware
4) Vacuum level too low
5) Line flooding

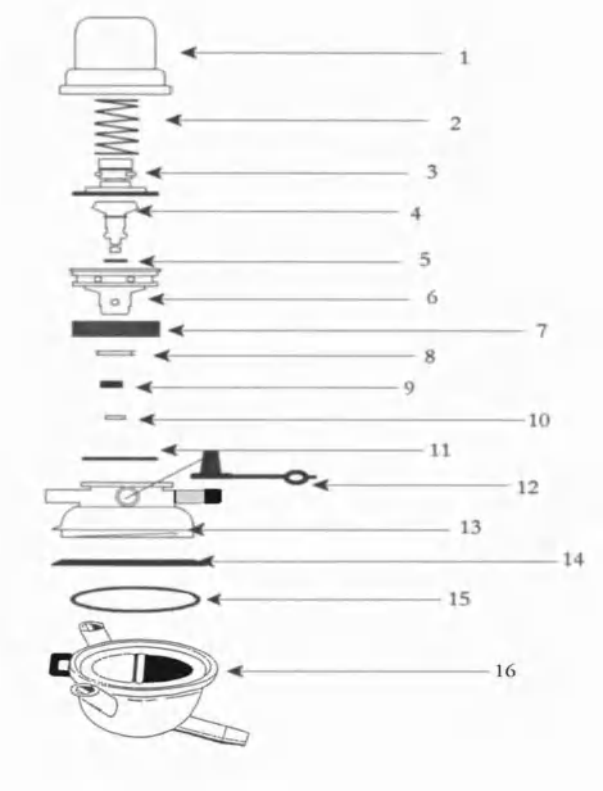
Cows Kicking
1) Vacuum set too high
2) Pulsator malfunction
3) Stray voltage
4) Over milking
5) Sore teats

Pulsators Slow Down or Stop
1) Milk or vacuum hose kinked
2) Air leaks in claw
3) Bobbin hole plugged
4) Dirty air filter
5) Damaged or missing 'O' ring
6) Damaged diaphragm rubber

Units Speed Up
1) This is normal during heavy milk flow

Slow Milking
1) Vacuum too low
2) Worn inflations
3) Vacuum leaks
4) Clogged bowl vent (MLX)
5) Over milking
6) Milk hose or inlet valve undersized
7) Pulsator rubberware worn out
8) Line flooding—too many units per slope, milk inlets lower 2/3 of pipeline

GOAT CLAW



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6	MZ10010NP	Bobbin Housing
7	MZ10028NP	Air Filter
8	MZ10015NP	Bobbin Housing Seal
9	MZ10011NP	Bobbin Valve
10	MZ10012NP	Bobbin Clip
11	MZ10014NP	Middle 'O' Ring
12	MZ10002NP	Wash Plug
13	MZ10100NP	Goat Middle
14	MZ10030NP	Claw Protector Seal
15	MZ10017NP	Base 'O' Ring
16	MZ10106NP	Goat Base

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   NOTE: There is a (+) and a (-) molded into the top of the cam knob for reference.
3. Clean the air filter regularly.
4. Use hose hangers in stanchion barns to properly position the milker under the goat.
5. Keep the milk hose as short as possible.
6. Check the diaphragm, bobbin valve, bobbin 'O' ring and bobbin vacuum hole regularly for cleanliness and proper operation.

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Wash water temperature should not drop below 110°F during recirculation cycle, and should have a Ph of 11.5 or higher.

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1. Put teat cups on Jetters.
2. Insert jetter tube adapters into claw wash port.
3. Manually clean the pulsator parts weekly or as needed.

CAUTION
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1) Over milking
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1) Vacuum set too high
2) Pulsator malfunction
3) Stray voltage
4) Over milking
5) Sore teats

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6) Damaged diaphragm rubber

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1) This is normal during heavy milk flow

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2) Worn inflations
3) Vacuum leaks
4) Clogged bowl vent (MLX)
5) Over milking
6) Milk hose or inlet valve undersized
7) Pulsator rubberware worn out
8) Line flooding—too many units per slope, milk inlets lower 2/3 of pipeline

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