



## PRODUCT METERING FILLING STATION

MODEL:  MFS



### Cleveland Standard Features

- Air operated Piston Pump with volume adjustment from 20 to 128 oz. per stroke
- Adjustable speed control in both directions
- Air operated product dispensing valve assures accurate portion control
- Cabinet with hinged doors, permitting full access for cleaning and service.
- Cabinet top with sink and lift-off grid
- Two 8" wheels and two 5" locking swivel casters with brakes for stability during pumping
- Narrow design - only 24" wide for easy mobility and storage
- Mounting bridge for clipper, label dispenser or label printer
- Label dispenser
- Two (2) - 3-foot long sections of 3" diameter food hose
- Removable receptacles for casings
- One eight (8) foot-long flushing hose for easy clean-up
- Spare parts kit (gaskets, wrenches, etc.)
- Brush set for easy cleaning
- Accepted for use in USDA inspected facilities

### Options & Accessories

- Casing Clipper
- Label Printer
- Ring stand for hand filling
- Spare product hose with fittings (specify length)
- Pan Filler Assembly

ITEM NUMBER \_\_\_\_\_

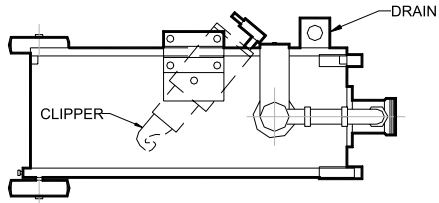
JOB NAME / NUMBER \_\_\_\_\_



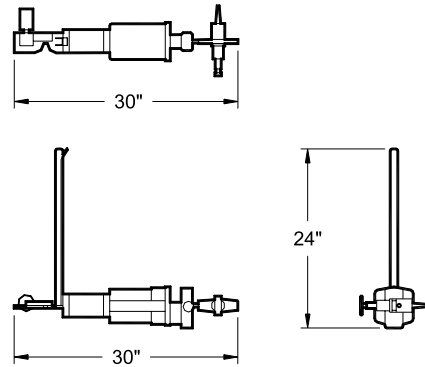
Unit shown with optional casing clipper

### Short Form Specifications

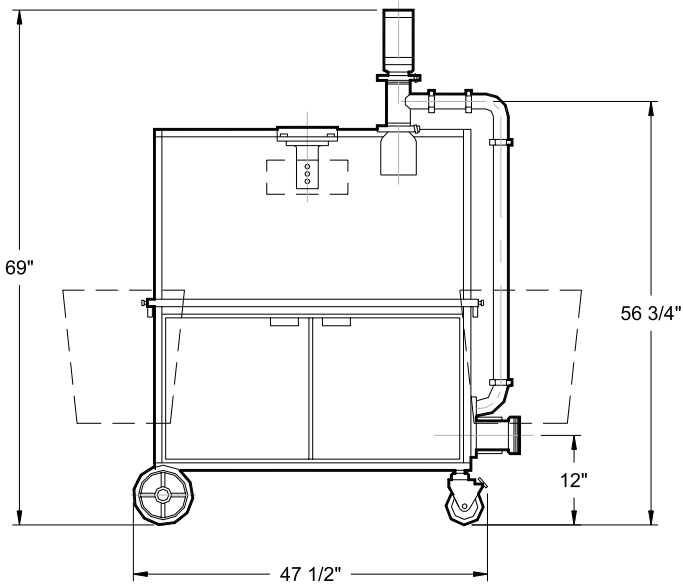
Shall be CLEVELAND Model: MFS-\_\_: Product Metering Filling Station with; selector switch for single stroke and continuous operation; air operated positive displacement piston style pump with adjustable speed controls and stroke from 20 to 128 oz; air controlled product dispensing valve; cabinet with hinged doors, sink with drain and lift-off wire grid for easy clean-up. Unit comes with two 3 foot long food hoses, label dispenser, spare part kit and cleaning brush set.



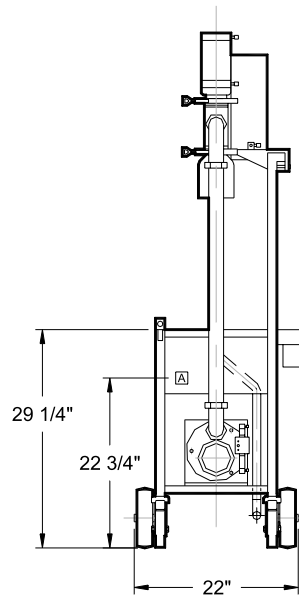
**TOP VIEW**



**OPTIONAL CASING CLIPPER  
Z-4100HL**



**FRONT VIEW**



**SIDE VIEW**

MODEL	AIR	ELECTRICAL
	A	⚡
MFS (without Clipper)	15 CFM, 90 to 110 PSI	NONE
MFS (with Clipper)	25 CFM, 90 to 110 PSI	NONE

**NOTE: AIR MUST BE DRY, CLEAN AND FREE OF OIL**



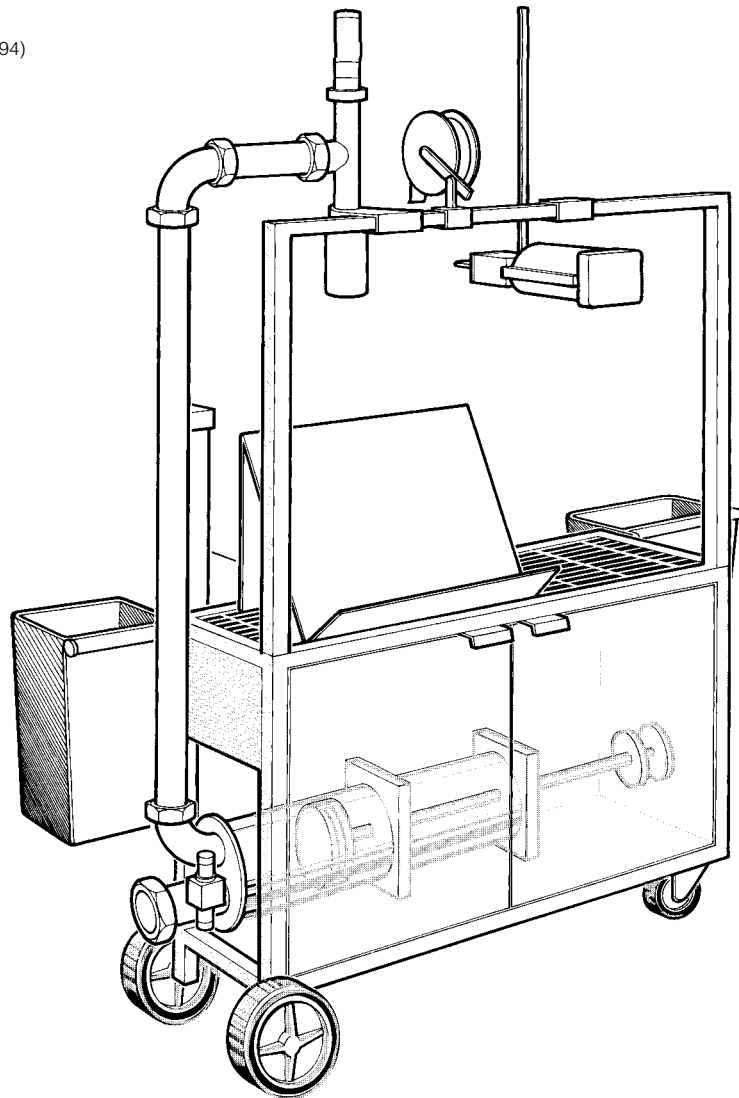
# Operators Manual

Installation, Operation & Service

## Metering Filling Station

**MODEL:** MFS

(for Models built after June, 1994)



Enodis

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SE95019 Rev.4

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# **INSTALLATION**

## **INSPECTION**

Before unpacking visually inspect the unit for evidence of damage during shipping.

If damage is noticed, do not unpack the unit, follow shipping damage instructions.

## **SHIPPING DAMAGE INSTRUCTIONS**

If shipping damage to the unit is discovered or suspected, observe the following guidelines in preparing a shipping damage claim.

- 1.** Write down a description of the damage or the reason for suspecting damage as soon as it is discovered. This will help in filling out the claim forms later.
- 2.** As soon as damage is discovered or suspected, notify the carrier that delivered the shipment.
- 3.** Arrange for the carrier's representative to examine the damage.
- 4.** Fill out all carrier claims forms and have the examining carrier sign and date each form.

## **PACKAGED ITEMS**

Packaged items that are shipped loose with the unit include:

- (1) 2" Wrench
- (1) 3" Wrench
- (2) Trash Containers
- (1) Assortment of spare "O" Rings
- (1) Air Hose Assembly
- (2) Food Hose Assemblies
- (1) Food Grade Grease
- (1) Spring
- (1) Bolt
- (1) Cleaning Hose
- (1) Brush Kit
- (1) 3" 90° Elbow
- (1) Lug Nut Wrench

## **ASSEMBLY**

The Metering Filling Station is a mobile unit that requires no assembly to complete unless a clipper has been shipped with the unit.

It does however ship with a number of loose items that are required for its use.

These items should be stored in a convenient location.

## **CLIPPER**

If a clipper is supplied with the unit, it must be mounted. Remove it from the box and connect it to the mounting bar using part #FA11509 bolt (supplied). Connect one end of the short air hose (supplied) to the clipper and the other end to the male quick connect on the end of the MFS.

## **INSTALLATION REQUIREMENTS**

### ***Compressed Air***

This unit requires a constant 25 c.f.m. (cubic feet per minute) at 90 to 100 p.s.i. (pounds per square inch).

The air must be filtered of oil, moisture and dirt.

The dew point of the supply air must be less than 65°F. The Metering Filling Station is equipped with its' own air oiler system, therefore, no oil should be added to the supply air. We recommend the compressed air system be equipped with a drier, filter, and automatic water dump on the air compressor receiver tank. If the distance between the tank and the unit is less than 100 feet then a minimum line size of 3/4" is required. A distance of 100 to 300 feet requires a minimum 1" line.

Connect one end of air line (supplied) to the metering filling station and the other end to the kettle air outlet fitting.

If you do not have a Cleveland kettle with air connection built-in then you must attach the female quick connect (supplied) to your air supply.

### ***Electrical***

No electrical connection is required unless the unit comes equipped with a Thermal Assurance Package (TAP) option. This requires a 115V. 1PH. grounded outlet.

## INSTALLATION CHECKS

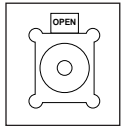
(see General Parts Drawing, page 3)

### AIR PRESSURE

Complete the following steps with the 3" dia. Food Product Hose (**15**) not connected:

1. Connect supply air to metering filling station.
2. Open front Access Doors (**17**) on metering filling station.
3. Set Stroke Selection Switch on Control Panel (**1**) for "CONSTANT PUMPING".
4. Hold Trigger Lever (**10**) and read Pressure Gauge (**21**) as pump is operating. Pressure should not drop less than 90 psi or exceed 110 psi.
5. Adjust Pressure Regulator Dial (**20**) or supply pressure if required.

**Note:** If there is no air to unit check:



Air Quick Connect on Mixer Kettle

**A/** The kettle's Air Quick Connect is pushed upward to the "OPEN" position.

**B/** Open the back Access Doors (**17**) and check that the Main Air Shut Off Valve (**22**) is pressed inwards.

### SINGLE STROKE

**Note:** Use 3" gaskets in all hex nut couplings on food hose.

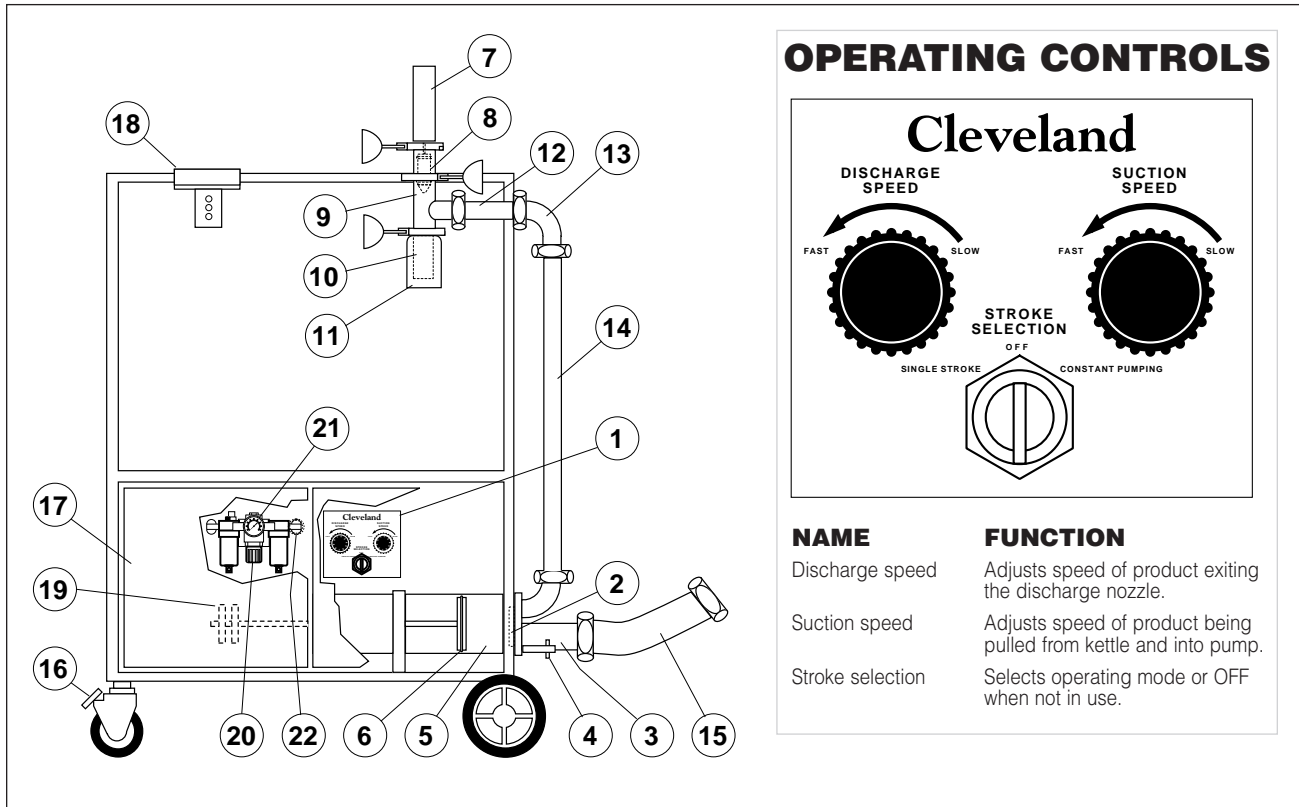
- ⇒ First, hand-tighten.
- ⇒ Then, snug with wrench.

1. Using 3" gasket, connect the 3" dia. Food Product Hose (**15**) to metering filling station and kettle.
2. Add water to kettle and open kettle's product discharge valve.
3. Open front Access Doors (**17**) of metering filling station.
4. Set Stroke Selection Switch on Control Panel (**1**) for "SINGLE STROKE".
5. Place bag over Discharge Nozzle (**11**).
6. Pull and hold Trigger Lever (**10**).
7. Product piston should go all the way forward, then return and stop.
8. Release Trigger Lever (**10**).
9. Repeat test two to four times, product will start to discharge into bag.

### CLIPPER

Refer to clipper operating instruction manual for safety and operating procedures.

# OPERATING INSTRUCTIONS



General Parts Drawing

ITEM #	DESCRIPTION	FUNCTION
1.	Control Panel . . . . .	Includes: A/ speed adjusters for suction and discharge. B/ stroke selection switch.
2.	Flapper Valve . . . . .	Changes direction of product flow.
3.	Piston Head	
4.	Large Lug Nuts . . . . .	Holds product head to product cylinder.
5.	Product Cylinder . . . . .	Cylinder product is drawn into and discharged from.
6.	Product Piston . . . . .	Moves product within the cylinder.
7.	Product Discharge Valve . . . . .	Air cylinder that opens and closes discharge opening by moving plunger.
8.	Plunger . . . . .	Opens and closes product discharge opening.
9.	Discharge Valve Body	
10.	Trigger Lever . . . . .	Activates pumping action.
11.	Discharge Nozzle . . . . .	Directs the flow of discharge product.
12.	2" dia. Short Connector Pipe	
13.	2" Elbow	
14.	2" dia. Long Connector Pipe	
15.	3" dia. Food Product Hose . . . . .	3" dia. hose to connect Metering Filling Station hose to kettle.
16.	Brake . . . . .	Locks pump in position.
17.	Access Doors	
18.	Clipper Bracket . . . . .	Mounting bracket for optional clipper.
19.	Adjusting Wheels . . . . .	Used for setting desired pumping volume.
20.	Pressure Regulator Dial . . . . .	Used to regulate air pressure.
21.	Pressure Gauge . . . . .	Shows operating pressure.
22.	Main Air Shut Off Valve . . . . .	Disconnects air supply to unit. (Back side of Metering Filling Station)

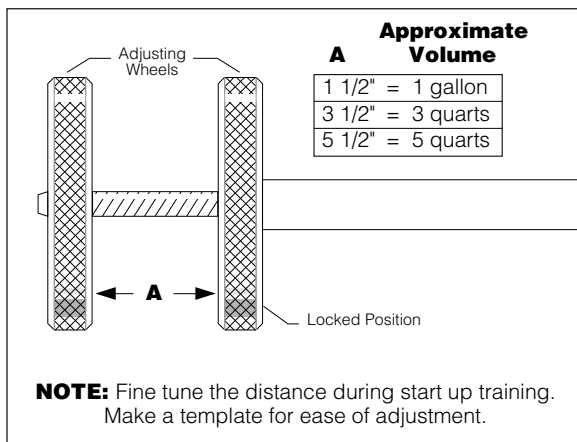
**AS A SAFETY FEATURE THE DISCHARGE NOZZLE (11) WILL AUTOMATICALLY CLOSE AND THE PUMP WILL REVERSE ANY TIME YOU RELEASE THE TRIGGER LEVER (10).**

## PUMPING

**Note:** Use 3" gaskets in all hex nut couplings on food hose.

- ⇒ First, hand-tighten.
- ⇒ Then, snug with wrench.

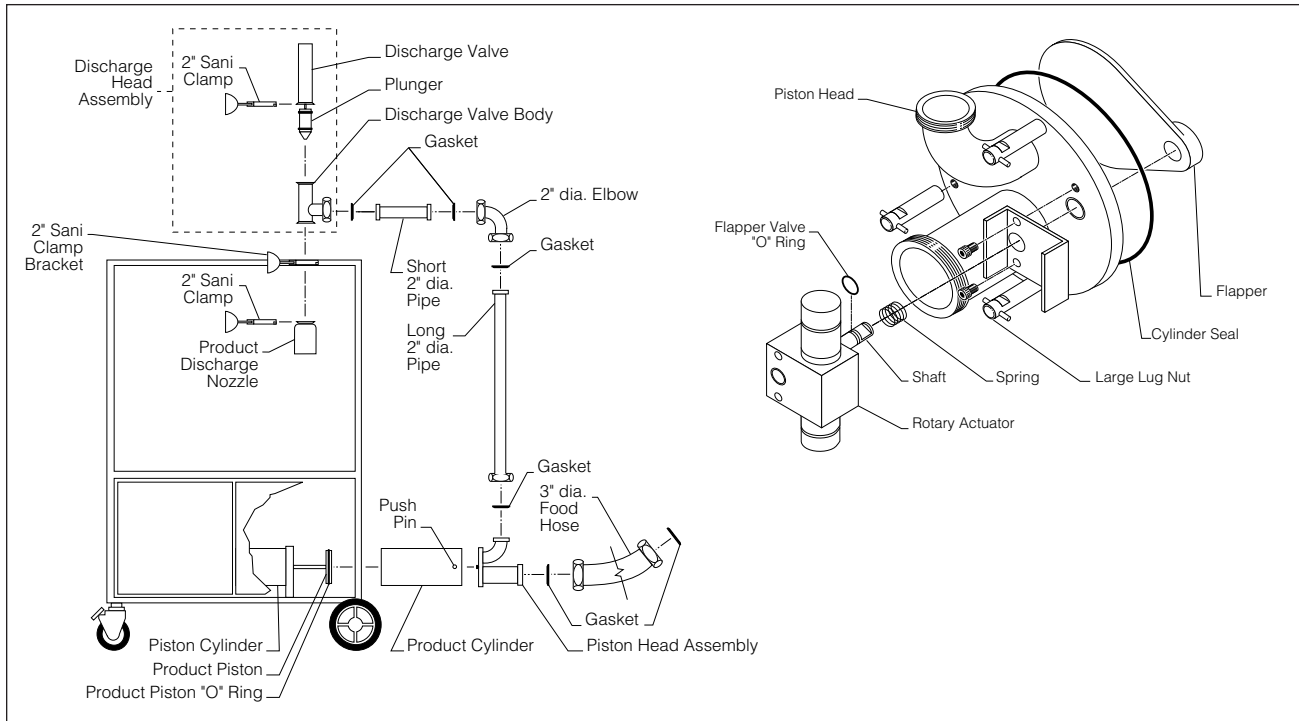
1. Using 3" gasket, connect one end of the 3" dia. Food Product Hose (15) to kettle.
2. Position metering filling station for ease of operation and connect other end of 3" dia. Food Product Hose (15) - if required use 3" 90° elbow.
3. Connect air hose to kettle and metering filling station.
4. Open the back Access Doors (17) and check that the Main Air Shut Off Valve (22) is pressed inwards.
5. Open front Access Doors (17) of metering filling station.
6. Set Stroke Selection Switch on Control Panel (1) for "SINGLE STROKE".
8. Open product discharge valve on kettle.
9. Place bag over Discharge Nozzle (11).
10. With Stroke Selection Switch on Control Panel (1) set on "SINGLE STROKE", pull and hold Trigger Lever (10) against Discharge Nozzle (11) until pump has stopped; if a second stroke is required, repeat process.
11. Move bag over to clipper and clip closed (refer to clipper operating instruction manual).
12. Pump a couple of bags to check volume and speed.
  - ⇒ To adjust volume, measure between Adjusting Wheels (19) for correct setting.
  - ⇒ To adjust speed, turn Discharge Speed or Suction Speed on Control Panel (1) as required.
  - ⇒ Adjust pump speed faster for thinner products and slower for thicker.
13. Continue pumping until all product has been emptied from kettle.



Approximate Volume Setting Instructions

7. Using a ruler, set desired quantity by measuring between Adjusting Wheels for correct setting.

# CLEANING INSTRUCTIONS



## PREPRODUCTION SANITIZING PROCEDURE

**NOTE:** The metering filling station must be sanitized prior to the daily production run.

1. Fill kettle to hemisphere and start the agitator.
2. Add 5.25% bleach to make a 50 ppm solution - refer to chart.

Amount of water in the kettle	Amount (5.25%) of bleach to add
20 gal / 76L. . . .	5 tbsp / 75ml
30 gal / 114L. . . .	7 1/2 tbsp / 113ml
40 gal / 151L. . . .	10 tbsp (5/8 cup) / 150ml
50 gal / 190L. . . .	12 1/2 tbsp. (3/4 cup + 1 tbsp) / 188ml
60 gal / 227L. . . .	1 cup / 225ml

Sanitizing Solution Chart

3. Bring the temperature to 80°F (max.- 100°F) or lukewarm.
- NOTE:** Do **NOT** allow solution to get hot.
4. Attach the metering filling station to the kettle

and pump on "CONTINUOUS" setting for one minute.

5. Finish emptying the kettle by disconnecting the 3" dia. Food Product Hose and letting the contents of the Metering Filling Station and kettle drain. Make sure the 3" dia. Food Product Hose does not drag on the floor.

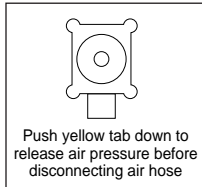
## FLUSHING Between Recipes

1. To clean between batches of product, flush kettle and Metering Filling Station with a warm water and mild detergent solution from kettle to loosen and remove food particles.
2. Remove product Discharge Nozzle and replace it with cleaning hose.
3. Place end of cleaning hose over a drain.
4. Switch stroke selector switch to "CONSTANT PUMPING".
5. Pull and hold trigger lever against discharge valve nozzle until kettle has been emptied.
6. Add clean water to kettle, and repeat process to rinse units.

## DISASSEMBLY

**Note:** Remove "O" rings using a wooden or plastic picker; do **NOT** use a sharp object.

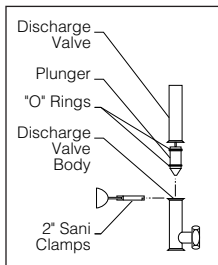
**Note:** Prepare a properly diluted solution of authorized cleaning solution in a plastic soak bucket taken from a freshly filled sink to receive small parts, gaskets, and "O" rings.



Air Quick Connect on Mixer Kettle

**1.** Move slide valve on kettle's air quick connect to down position to vent air from metering filling station.

- 2.** Disconnect main air line from Metering Filling Station.
- 3.** Remove air lines (quick-disconnect fittings) from Discharge Valve.
- 4.** Undo 2" Sani-Clamp, and remove Discharge Nozzle.
- 5.** With 2" wrench, loosen nut on Discharge Valve Body and remove Discharge Head Assembly; place 2" gasket in warm water to soak.



Discharge Head Assembly

**6.** To disassemble Discharge Head Assembly, follow in order;

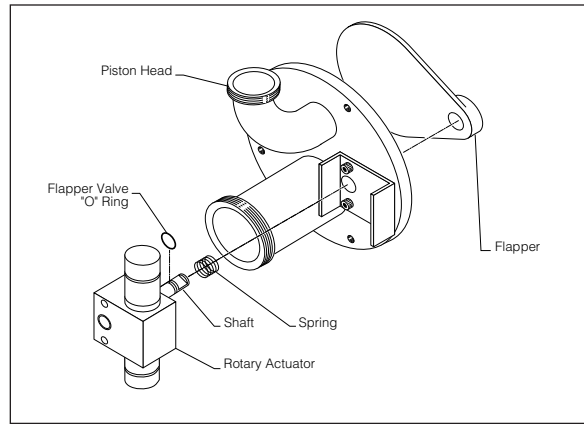
⇒ Remove 2" Sani-Clamp that holds Discharge Head Assembly together.

⇒ Separate parts by pulling them apart.

⇒ Using a wooden or plastic picker, remove "O" Rings from plunger.

⇒ Put "O" Rings in warm water to soak; do **NOT** submerge discharge valve.

- 7.** With 2" wrench, remove Short 2" dia. Pipe, 2" dia. Elbow and Long 2" dia. Pipe. Place all gaskets in soak bucket.
- 8.** Remove two air lines from Rotary Actuator on Piston Head Assembly.
- 9.** Using lug wrench, unscrew three Large Lug Nuts, and remove Piston Head Assembly.
- 10.** Dismantle Piston Head Assembly as follows in order;



Piston Head Assembly

⇒ Push Rotary Actuator toward Piston Head to remove Flapper, place Flapper in soak bucket.

⇒ Remove Rotary Actuator, placing small spring in soak bucket.

⇒ Do **NOT** submerge Rotary Actuator.

- 11.** Pull product cylinder off product piston.
  - ⇒ Do **NOT** use pliers or any other tool that could damage the inside wall of the cylinder.
- 12.** Using plastic or woden picker, remove "O" ring from Product Piston.

## CLEANING

**WARNING:** Do not submerge Discharge Valve or Rotary Actuator in water, damage to air cylinders will result.

⇒ Always turn off equipment power before using water.

⇒ Never use steel wool for cleaning; particles may become embedded and rust.

⇒ Clean unit in the following order:

**A/** Warm water and mild detergent solution.

**B/** Clear rinse.

**C/** Properly diluted sanitizing solution (see Sanitizing Solution Chart) to sanitize after cleaning.

⇒ Do **NOT** use chloride cleaners; they may damage stainless steel surface.

⇒ For difficult cleaning applications, one of the following can be used: alcohol, baking soda, vinegar, or a solution of ammonia in water.

- 1.** Clean all parts (except Discharge Valve and

Rotary Actuator) with hot soapy water or run them through the dish washer.

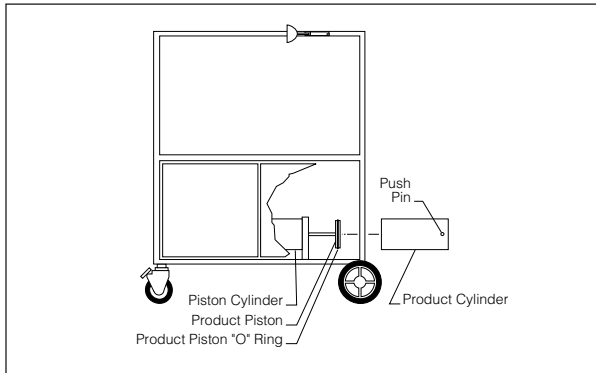
2. Clean the interior of the 2" inch pipes and the 3" dia. food product hose using the brushes provided.
3. Inspect "O" rings and gaskets for cuts, distortion, or wear, replace if required.
4. Leave part disassembled overnight.

## ASSEMBLY

**NOTE:** To eliminate any chance of recontamination of unit, wear sanitary disposable gloves during reassembly after cleaning.

This startup procedure assumes the unit is fully disassembled.

1. *Attach Product Cylinder to Piston Cylinder as follows:*

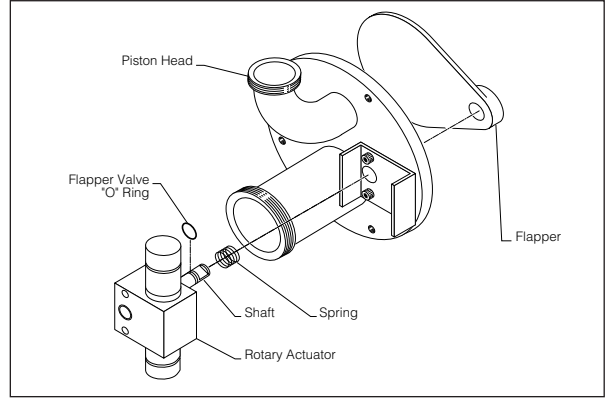


Product Piston/Cylinder Assembly

⇒ Inspect Product Piston "O" Ring (replace if worn) on Product Piston - lubricate with food grade grease.

⇒ Push Product Cylinder over Product Piston and seat firmly in groove (push pin must be located as illustrated).

2. *Assemble Piston Head Assembly as follows in order:*



Piston Head Assembly

⇒ Inspect Flapper Valve "O" ring on rotary actuator (replace if worn).

⇒ Lubricate "O" ring with food grade grease and put on shaft.

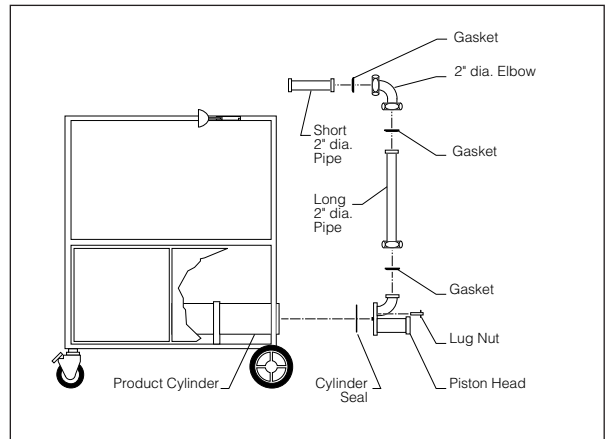
⇒ Put Spring on Shaft.

⇒ Slide Rotary Actuator Shaft thru hole in Piston Head.

⇒ Mount Flapper to Shaft.

3. *Assemble piston and piping as follows in order:*

**Note:** Use 2" gaskets in all hex nut couplings.

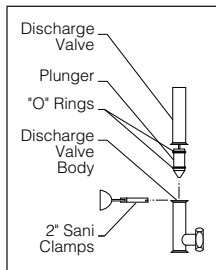


2" Piping Assembly

⇒ Put Cylinder Seal in place. Lubricate exposed portion of Cylinder Seal then mount Piston Head to Product Cylinder, and fasten in place with large Lug Nuts using lug wrench for final tightening.

⇒ Attach two 1/4" air lines to Rotary Actuator (black line on top).

⇒ Reassemble 2" piping (Long 2" dia. Pipe, 2" dia. Elbow and Short 2" dia. Pipe) on Piston Head as illustrated using gaskets shown.



Discharge Head Assembly

**4. Assemble discharge head assembly in order as follows:**

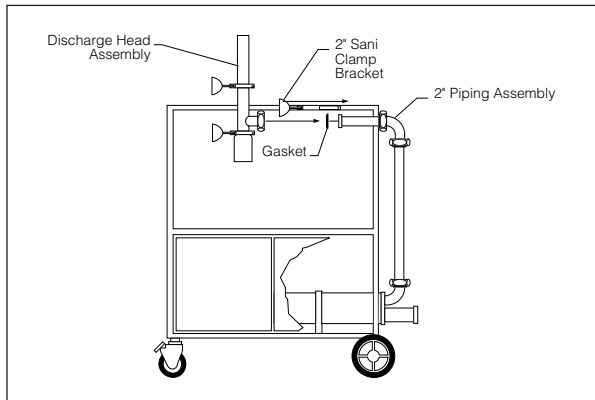
⇒ Inspect and install "O" Rings (replace if worn) on Plunger - larger one in top groove - smaller one in bottom groove.

⇒ Push Plunger into Discharge Valve Body.

⇒ Attach Discharge Valve to Discharge Valve Body using 2" Sani-Clamp.

⇒ Attach Discharge Nozzle to Discharge Valve Body using 2" Sani-Clamp.

**5. Attach Discharge Head Assembly as follows:**



Discharge Head/2" Piping Assembly

⇒ Mount Discharge Head Assembly on Short 2" diameter Pipe (use Gasket).

⇒ Rotate Discharge Head Assembly into 2" Sani-Clamp Bracket and fasten clamp.

⇒ Attach two 1/4" air lines to Discharge Valve (black on top).

## SANITIZING

You are now ready to do the preproduction sanitizing procedure as discussed on page 5 of this manual.

⇒ Do **NOT** leave "O" rings in cleaner or sanitizer.

⇒ When worn, replace "O" rings.

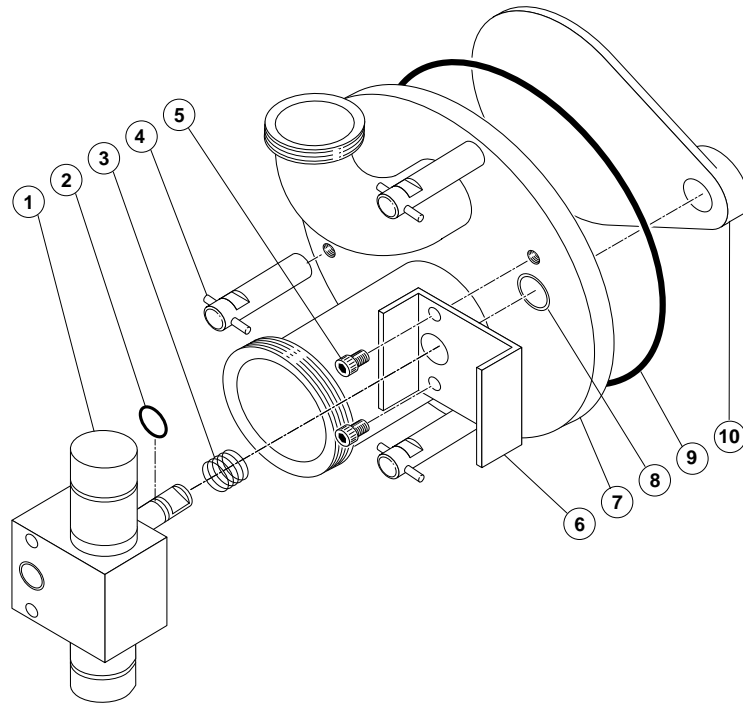
# SERVICE PARTS

## WARRANTY

Our Company supports a worldwide network of Maintenance and Repair Centers. Contact your nearest Maintenance and Repair Centre for replacement parts, service, or information regarding the proper maintenance and repair of your cooking equipment

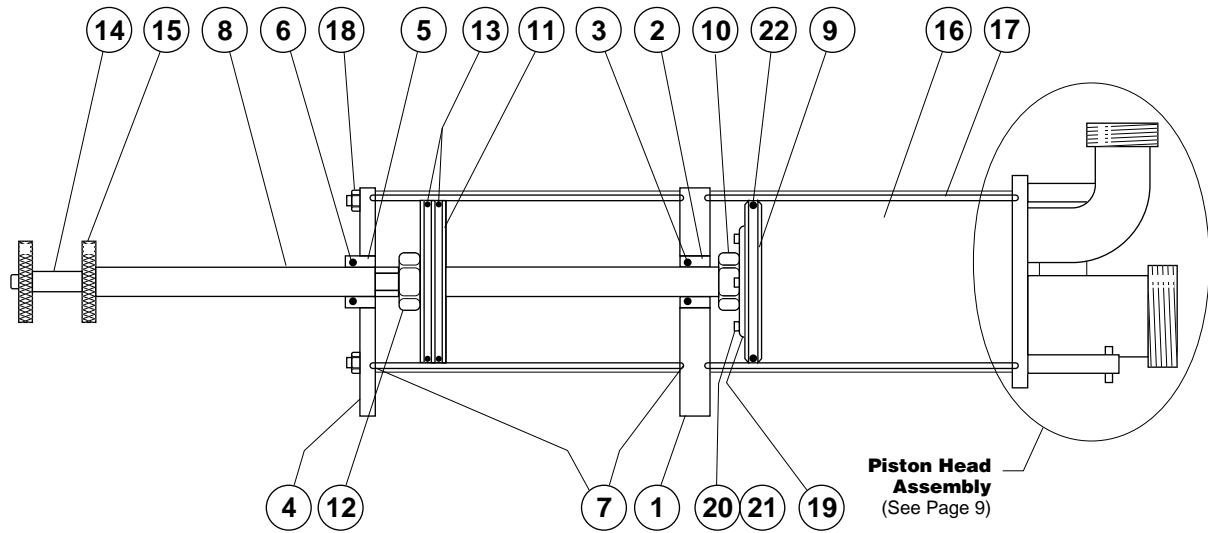
In order to preserve the various agency safety certification (UL, NSF, ASME/Ntl. Bd., etc.), only factory-supplied replacement parts should be used. The use of other than factory supplied replacement parts will void warranty.

## PISTON HEAD ASSEMBLY



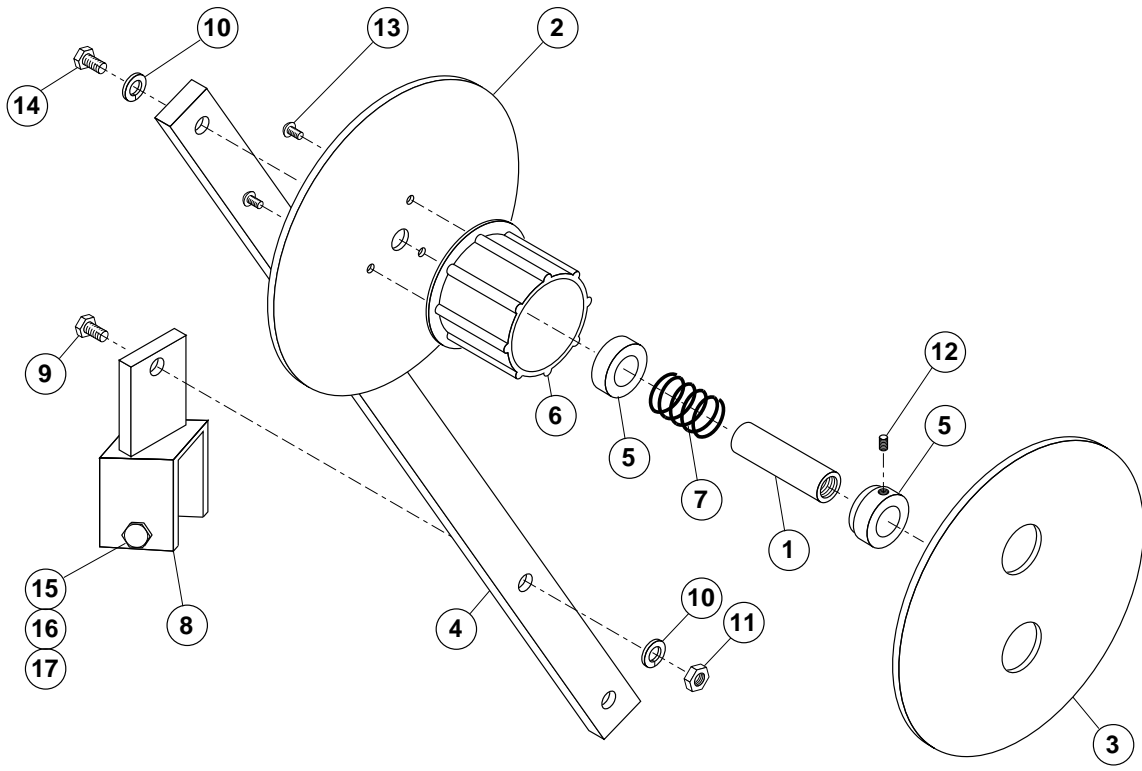
ITEM ON.	PART NO.	DESCRIPTION	QTY.
1. - 10.	SE00068-1	Pump head assembly	.1
1.	KE53014-1	Rotary actuator	.1
2.	FA05002-24	"O" Ring, cylinder	.1
3.	KE53056	Spring	.1
4.	KE01302	Lug nuts	.3
5.	FA11322-1	Hex cap screws	.2
6.	KE53659-1	Bracket	.1
7.	KE53038-1	End plate	.1
8.	KE53016	Bearing	.1
9.	FA05001-2	"O" Ring, pump head	.1
10.	KE53015-1	Valve Paddle	.1

# PUMP ASSEMBLY



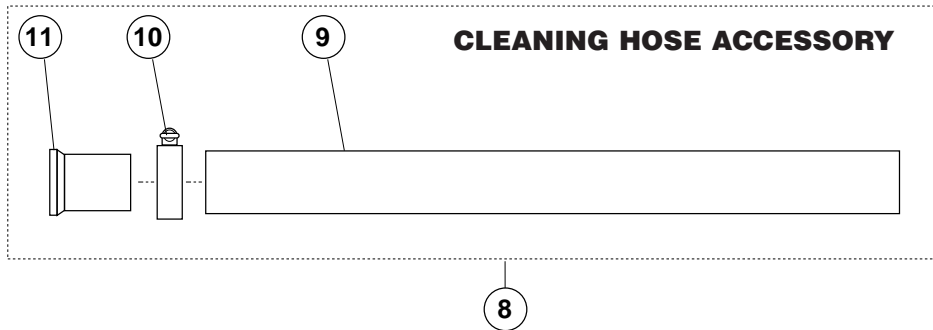
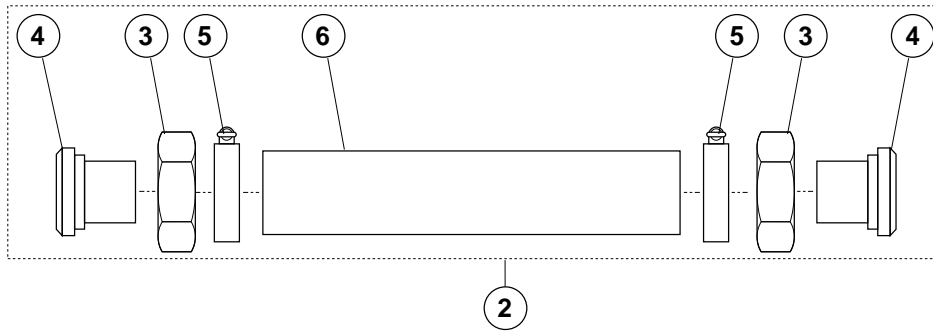
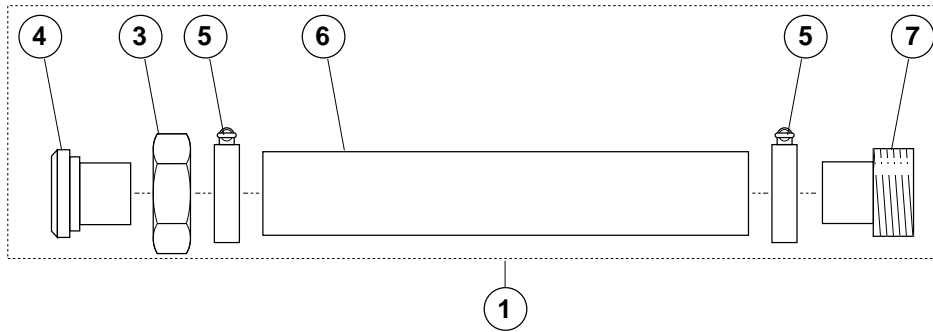
ITEM ON.	PART NO.	DESCRIPTION	QTY.
1.	KE53037	Centre Plate . . . . .	1
2.	KE53035	Piston Rod Bearing (Centre Plate) . . . . .	1
3.	FA05002-6	"O" Ring . . . . .	1
4.	KE53036	Pneumatic End Plate . . . . .	1
5.	KE53034	Piston Rod Bearing . . . . .	1
6.	FA05002-1	"O" Ring . . . . .	1
7.	FA05002-2	"O" Ring . . . . .	2
8.	KE01305	Piston Rod Assembly . . . . .	1
9.	KE53031	Product Piston . . . . .	1
10.	KE54404	Locknut, 1 1/4-7 . . . . .	1
11.	KE53030	Pneumatic Piston . . . . .	1
12.	FA22501	Locknut, 1 5/8-12 . . . . .	1
13.	FA05002-26	"O" Ring . . . . .	2
14.	KE01301	Adjustment Rod Weldment . . . . .	1
15.	KE53051	Adjustment Lock Ring . . . . .	1
16.	KE53039	Cylinder . . . . .	1
17.	KE53043	Reach Rod . . . . .	6
18.	FA21026	Hex Nut, 3/8-16 . . . . .	3
19.	KE54401	Backing Plate . . . . .	1
20.	FA11258	Hex. Head Bolt, 1/4-20 . . . . .	6
21.	FA32008	Tooth Lockwasher . . . . .	6
22.	FA05002-5	"O" Ring . . . . .	1

# ***LABEL DISPENSER***



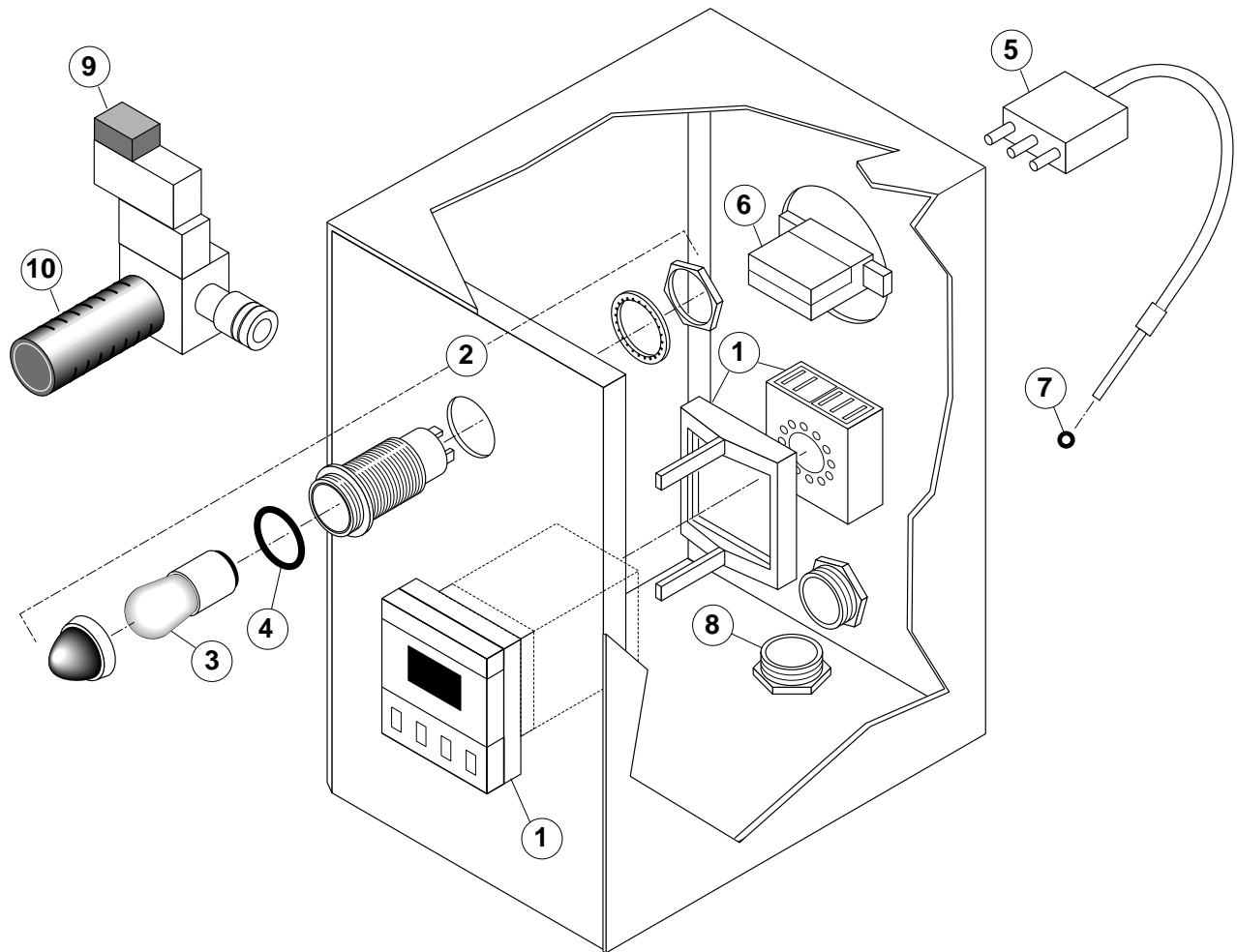
<b><i>ITEM ON.</i></b>	<b><i>PART NO.</i></b>	<b><i>DESCRIPTION</i></b>	<b><i>QTY.</i></b>
1-17	KE01387	Label Dispenser Assembly	1
1.	KE53186	Hub Mounting Shaft	1
2.	KE53187	Labeller Back Plate	1
3.	KE01386	Labeller Front Plate Assembly	1
4.	KE53268	Bar	1
5.	KE54139	Bushing	1
6.	KE53265	Core Holder	1
7.	KE53266	Spring	1
8.	KE01383	Labeller Mount	1
9.	FA11258	Hexhead Screw	1
10.	FA31029	Lock washer	2
11.	FA21008	Hex Nut, #1/4-20	1
12.	FA19500	Hex Socket	1
13.	FA11056	Binding Head Screw, #6-32x1/2" lg.	3
14.	FA11260	Hexhead Screw, #1/4-20x1" lg.	1
15.	FA11328	Hex Head Screw	1
16.	FA31030	Lock Washer	1
17.	FA21024	Hex Nut	1

# HOSE ASSEMBLIES



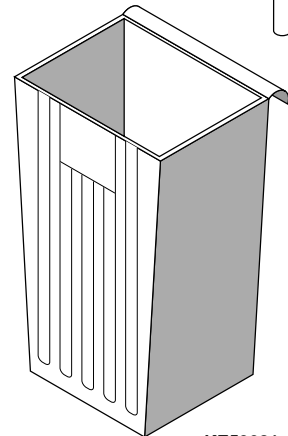
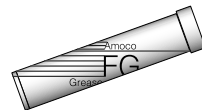
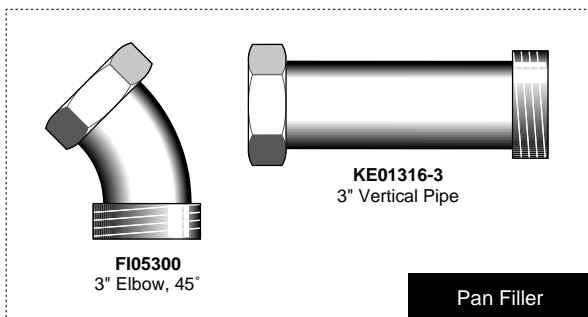
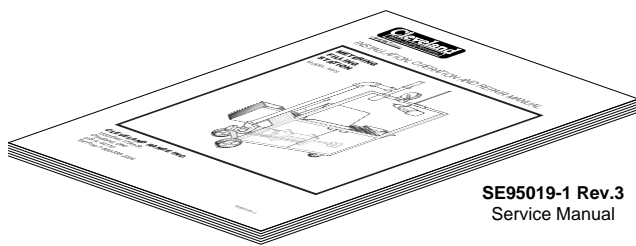
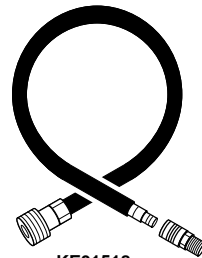
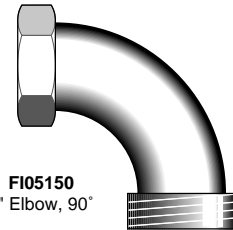
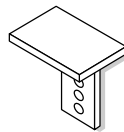
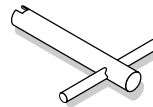
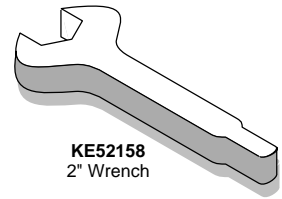
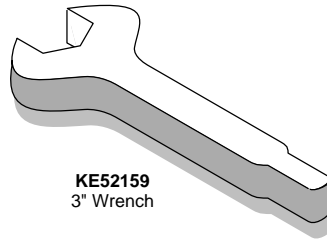
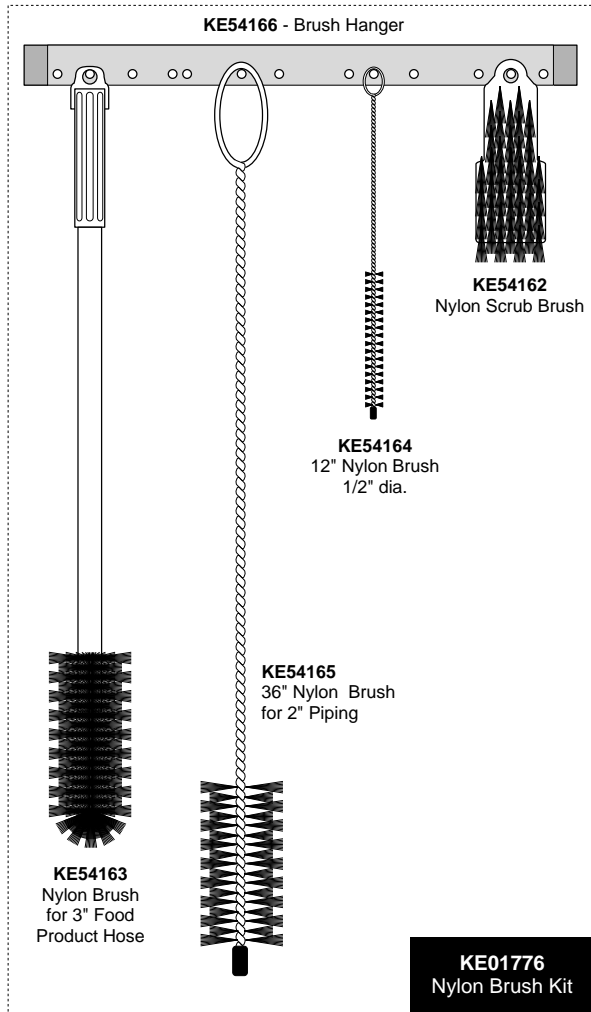
ITEM ON.	PART NO.	DESCRIPTION	QTY.
1.	KE01749-1	Food Hose Assembly, 3' . . . . .	1
2.	KE01749	Food Hose Assembly, 3' . . . . .	1
3.	KE52399	Acme nut 3" . . . . .	see drw.
4.	KE52398	Hose Adapter 3" . . . . .	see drw.
5.	KE54762	Hose Clamp . . . . .	2
6.	KE52164	Food Hose . . . . .	1
7.	FI05083	Threaded Hose Adapter 3" . . . . .	see drw.
8.	KE01333	Cleaning Hose Assembly . . . . .	1
9.	KE53099	Cleaning Hose . . . . .	1
10.	FI05057	Hose Clamp . . . . .	1
11.	FI05255	Hose Adapter 2" . . . . .	1

# THERMAL ASSURANCE PACKAGE (OPTION)



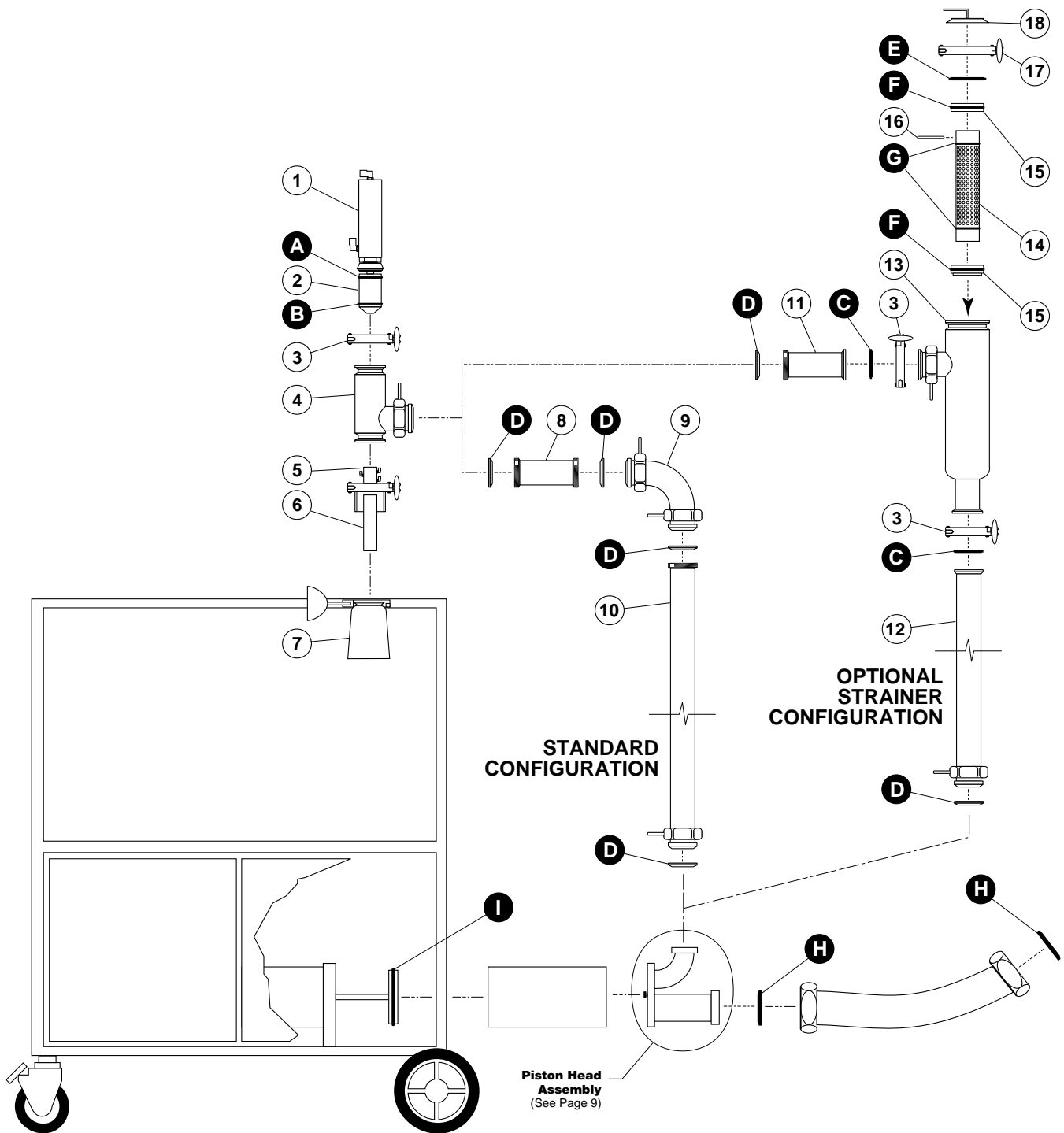
ITEM ON.	PART NO.	DESCRIPTION	QTY.
1.	KE53479	Temperature Controller .....	1
2.	KE53200	Dialight Assembly (does not include bulb-) .....	1
3.	KE53208	Bulb .....	1
4.	FA05002-33	"O" Ring .....	1
5.	KE53206	RTD Sensor .....	1
6.	KE53207	Single Circuit Panel, 3 pin .....	1
7.	FA05002-28	"O" Ring .....	1
8.	KE54721-2	Watertight Connector .....	3
9.	KE53203	Clipper Lockout .....	1
10.	KE53210	Muffer .....	1
(not shown)	KE01420	RTD Sensor Adapter Assembly .....	1

# MISCELLANEOUS PARTS



# PIPING ASSEMBLIES, "O" RINGS, GASKETS & SEALS

(see pages 17-18 for actual size illustrations of "O" Rings)



## PIPING ASSEMBLIES

ITEM ON.	PART NO.	DESCRIPTION	QTY.
1.	KE53270	Air Cylinder	1
2.	KE53250	Plunger	1
3.	KE52087	Sani-clamp, 2"	Standard Configuration . . . . .1 Optional Strainer Configuration . . . . .3
4.	KE01385	Discharge Valve Body	1
5.	KE54287	Start Switch	1
6.	KE00905	Actuator Assembly	9
7.	KE01384	Discharge Nozzle	1
8.	KE00920	Short Connector Pipe, 2"	Standard Configuration . . . . .1
9.	KE01974	Elbow, 2"	1
10.	KE01316-1	Long Connector Pipe, 2"	Standard Configuration . . . . .1
11.	KE00920-1	Short Connector Pipe, 2"	Optional Strainer Configuration . . . . .1
12.	KE01316-2	Long Connector Pipe, 2"	Optional Strainer Configuration . . . . .1
13.	SE50415	Strainer Housing	1
14.	SE50413	Strainer Assembly	1
15.	SE50414	End Assembly	2
16.	SE50412	Pin	1
17.	KE52344	Sani-clamp, 4"	1
18.	SE50411	Cap	1

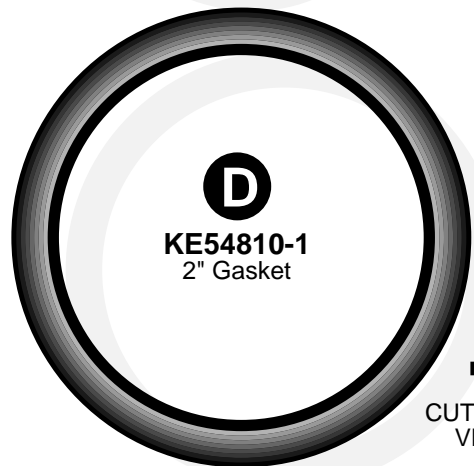
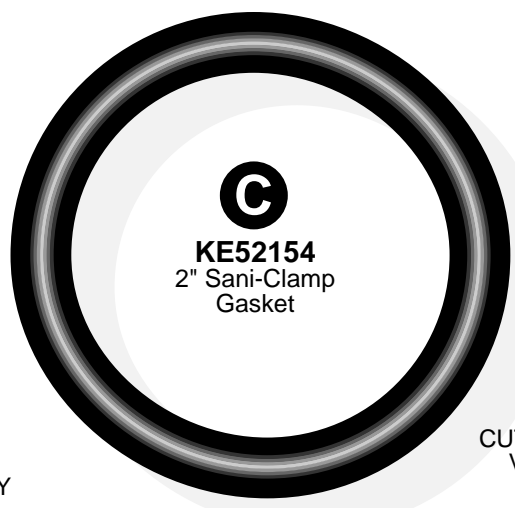
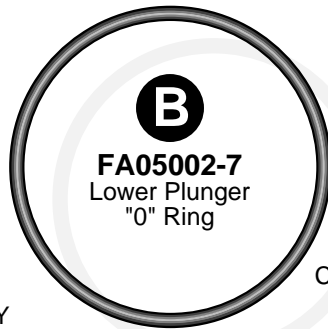
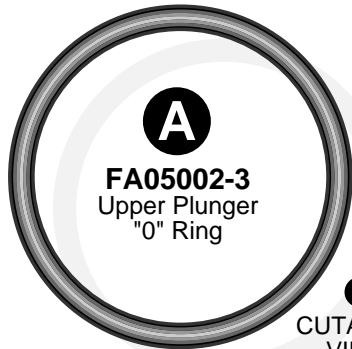
## "O" RINGS, GASKETS & SEALS

(see pages 17-18 for actual size illustrations)

ITEM ON.	PART NO.	DESCRIPTION	QTY.
A.	FA05002-3	Upper Plunger "O" Ring	1
B.	FA05002-7	Lower Plunger "O" Ring	1
C.	KE52154	Sani-Clamp Gasket, 2"	2
D.	KE54810-1	Gasket, 2"	Standard Configuration . . . . .4 Optional Strainer Configuration . . . . .2
E.	KE52347	Sani-Clamp Seal, 4"	1
F.	FA00340	Housing "O" Ring	2
G.	FA00334	Strainer "O" Ring	2
H.	KE54810-3	Gasket, 3"	2
I.	FA05002-26	Product Piston "O" Ring	1

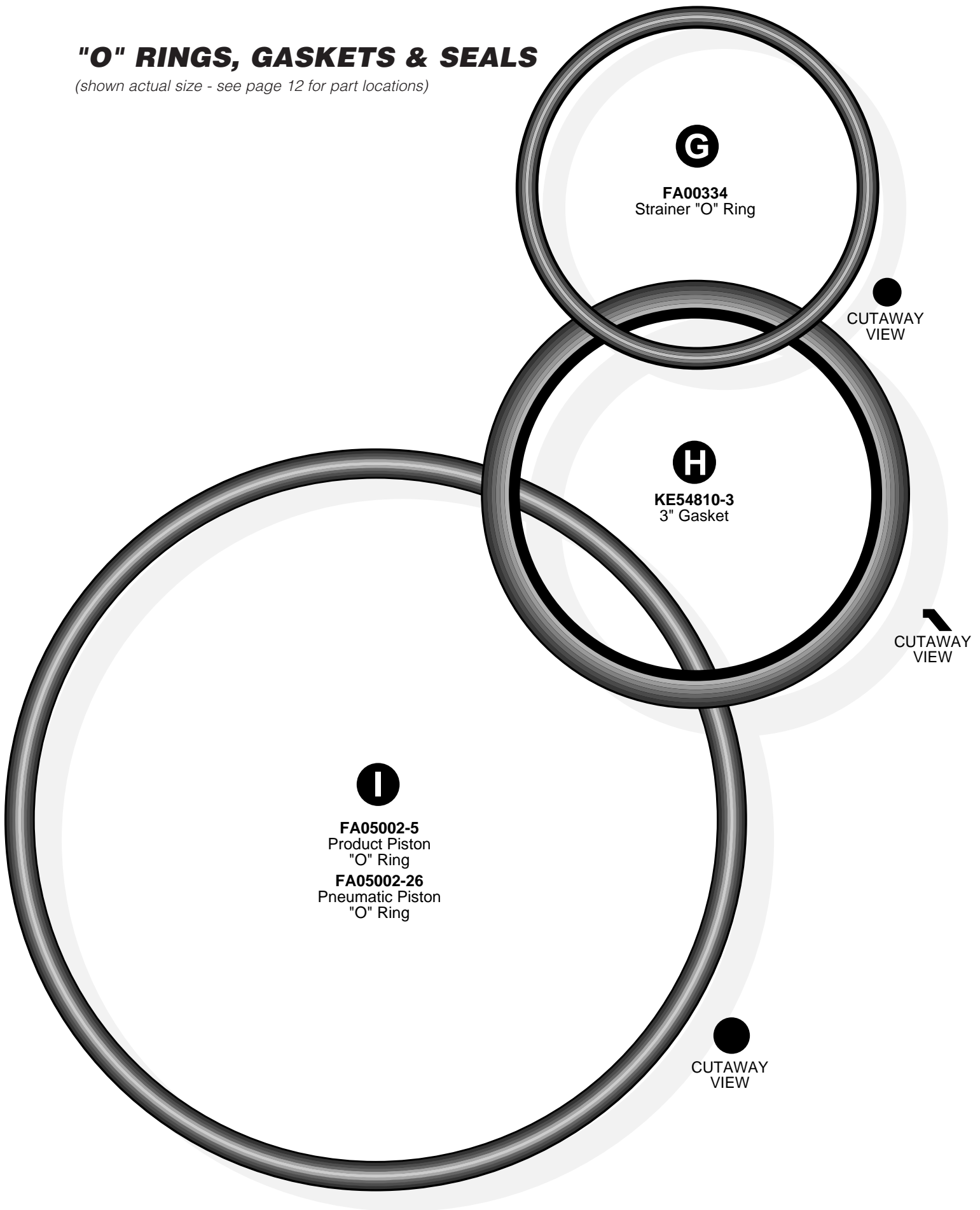
# "O" RINGS, GASKETS & SEALS

(shown actual size - see page 12 for part locations)

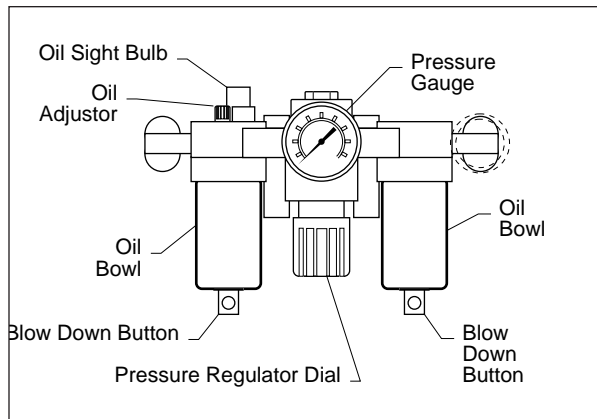


# "O" RINGS, GASKETS & SEALS

(shown actual size - see page 12 for part locations)



# MAINTENANCE

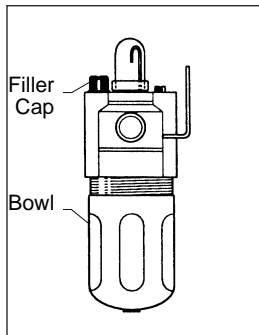


Air Regulator

## AIR PRESSURE

1. Adjust air regulator or line pressure so that air pressure gauge reads 90 - 100 psi when unit is running on continuous cycle (stroke selector switch is set on "constant pumping").

## OIL FILLING PROCEDURE

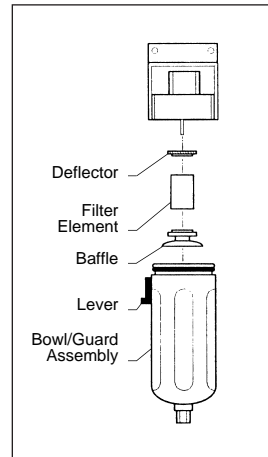


Lubricator

The lubricator puts one drop of oil into the air lines for every ten to fifteen cycles of the product piston. This ratio should be checked weekly and the oil level should be checked daily.

1. Drip Adjustment-
  - ⇒ Observe the sight bulb on the top of the oiler. One drop of oil into the lines for every ten to fifteen cycles of the product piston.
  - ⇒ If adjustment is necessary turn the adjustment knob next to the sight bulb clockwise for more oil, counter clockwise for less oil.
2. Adding Oil-
  - Use only mineral oil in the oiler.
  - ⇒ Remove air supply from unit.
  - ⇒ Remove oiler cage and bowl. Fill to line and replace.

## AIR FILTER REPLACEMENT PROCEDURE



Filter

The air filter is designed to separate a small amount of dirt and water from the supply air. This filter is NOT designed to clean air straight from the compressor. You must install a separate filter and drier in the supply line to deliver air with a dew point of less than 65° F.

1. Check for water accumulation daily. If water is present, push button at the bottom of bowl and allow the water to spray out.

**NOTE:** If the bowl has to be drained regularly (more than once a week) then the supply air has not been sufficiently dried.

2. If the air cartridge is dirty then it should be replaced.
  - ⇒ Remove air connection from unit.
  - ⇒ Remove cage and bowl.
  - ⇒ Turn disk to the left to remove.
  - ⇒ Install new cartridge.

## PISTON TIMING

The amount of delay between the time the product piston reaches the end of a half stroke and the reversing of direction can be adjusted.

1. Remove the back panel.
2. The two flow controls are located to the left of the large shuttle valve on the right.

**NOTE:** The left flow control controls the delay after the discharge stroke is completed. The right flow control controls the the delay after the suction stroke is completed.

3. Loosen locking nut.
4. Set selector switch to continuous and have someone hold the tripper switch as you adjust the delay.
5. Retighten the locking nut.

## ADJUSTMENT & SETTING OF AIR CUSHION EQUIPPED PUMP HEADS

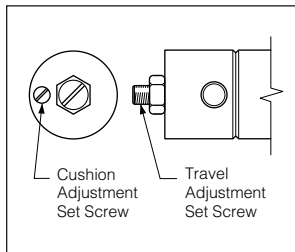


Figure 1

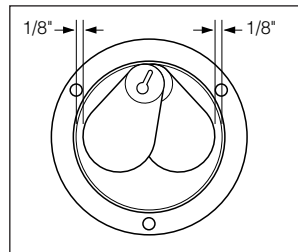


Figure 2

### SECTION 1 - Adjustment of Valve Paddle Travel

**NOTE:** When looking at the pump head (paddle side), left side paddle travel is affected by the right side air cylinder travel adjustment set screw and vice versa.

1. Back off 9/16" lock nut on 3/8" dia. set screw as shown in Figure 1.
2. Adjust set screw until valve paddle is 1/8" away from inside O-ring land edge as shown in Figure 2.
3. Secure lock nut.
4. Recheck 1/8" distance between paddle and edge.
5. This side is now set. Follow the same procedure for the other side.

### SECTION 2 - Setting of Air Cushion

**NOTE A:** Again left side paddle cushioning is affected by the right side air cylinder cushion set screw (3/16" dia.) and vice versa as shown in Figure 1.

**NOTE B:** Turning set screw in increases air cushion action and vice versa.

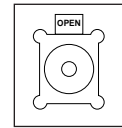
**CAUTION:** Avoid fingers around paddle travel area, personal injury may result.

1. Support the head assembly securely and connect the air lines to the rotary actuator air cylinders. Activate air to start rotary action.
2. Observe air cushion action at the end of each swing. Optimum cushion action can best be described as a controlled deceleration of the paddle at the end of the swing with complete elimination of rotational momentum in the shortest time possible. Adjust set screw to achieve results on both sides.

## TROUBLE SHOOTING GUIDE

(reference drawings at back of manual)

1. If there is no air to unit check:



Air Quick Connect on Mixer Kettle

**A/** Check that the kettle's Air Quick Connect is pushed upward to the "OPEN" position.

- B/** Open the back access doors and check that the 3 way spool valve (item 16 on page 23-24) is pressed inwards.
  2. Make sure the air regulator (large black knob on back of panel) is turned on for pressure to enter system. To be sure enough pressure is in system, check for min. 60 PSI, otherwise valves might not shift.
  3. Recommended operating pressure is 90 to 100 PSI.
  4. If the unit seems to be covered in oil or the oil is dripping out of the mufflers, then turn lubricator output down. Correct setting is 1 drop every 10-15 strokes.
  5. If the pump valve (item 68 on page 23-24 - the large Airtec valve) does not shift during operation or is slow in shifting, make sure the two Legris flow controls are not adjusted right in. If so, then back them off.
  6. If pump cylinder is too slow then adjust large Aro flow controls (item 12 on page 23-24) to desired speed.
  7. If a leak develops around the air valve 5 bank manifold (item 16 on page 23-24), tighten the screws on top of valve and tighten manifold socket head bolts as these can loosen over time.
- NOTE:** Be careful with socket head bolts - do not tighten too much or clamps will bend on manifold increasing the leak.
8. If cylinder cycles one way but not back, check that the limit valves (item 53 on page 23-24) are hitting to make sure contact is made and signal is sent to either port 19 or 26 of the 5 station valve bank.
  9. If cylinder still does not cycle, check or replace control valve assembly (item 67 on page 23-24 - top and middle valve) of the 5 station valve bank.

# **PNEUPAK TROUBLE SHOOTING GUIDE**

- 1.** No air, then turn red sleeve valve on.
  - 2.** Make sure that the air regulator (large black knob on back of panel) is turned on for pressure to enter system. To be sure enough pressure is system, check for min. 60 PSI, otherwise valves might not shift.
  - 3.** Recommend 80 to 90 PSI operating pressure.
  - 4.** If the unit seems to be covered in oil, or the oil is dripping out of the mufflers, then turn lubricator output down.
  - 5.** Problems within the complete system can result if too much oil is in the air lines and valves. This could cause the valves not to shift completely. Recommended oil to be used as lubricant is a Tellus 32 or ISO32. If oil is incompatible with Buna-N seals, the seals may swell and cause the valves and cylinders to stick.
  - 6.** If the pump valve (large Airtec valve) does not shift during operation or is slow in shifting; make sure that the two Legris flow controls are not adjusted right in. If so, then back off.
  - 7.** If pump cylinder is too slow then adjust large Aro flow controls to desired speed.
  - 8.** If a leak develops around the air valve 5 bank manifold; tighten the screws on top of valve and tighten manifold socket head bolts as these may loosen over time.
- NOTE:** Be careful with socket head bolts --- Do not tighten too much or clamps will bend on manifold increasing the leak.
- 9.** If pump cylinder cycles one way but not back; check that the limit valves are actuated to make sure contact is made and signal is sent to either port 19 or 26 of the 5 station valve bank.
  - 10.** If cylinder still does not cycle, check or replace valve 1 & 3 (top and middle valve) of the 5 station valve bank.
  - 11.** If leakage is detected around the selector switch then check to see if debris is hindering proper valve actuation. If this is not the case, then replace the selector switch.

## **BASIC OPERATION**

### **Single Cycle Operation**

Turn the selector switch to the single cycle. It will then do the following when the start switch is hit:

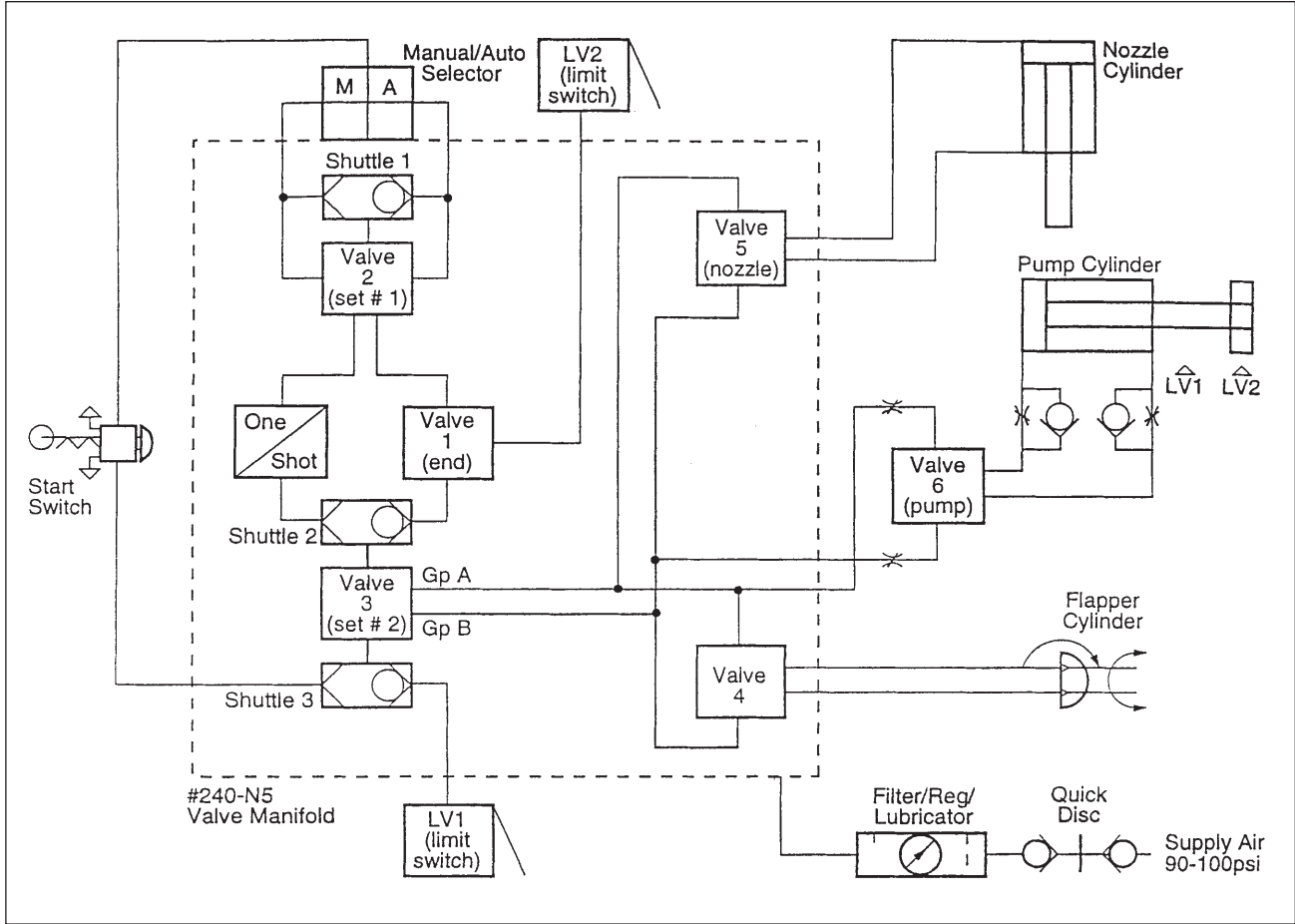
- Shifts valve No. 2 second from the top which turns off valve No. 1 and takes the signal away from Pt. 24.
- Single cycle valve is now turned on. It gives a one shot of air to valve No. 3 which shifts, and turns on Group A.
- The pump valve now shifts (Airtec Valve) Pt. 1 and valve No. 4 & 5 shifts Pt. 11 & 12. This actuates Air Cylinder & Rotary Actuator.
- When the pump reaches its full stroke, it hits LV1. This shifts valve No. 3 back through Pt. 19 which turns on Group B which shifts the pump valve (Airtec Valve) at Pt. 2 and shifts the valves NO. 4 & 5 back through Pt. 22 & 23 which actuates the Air Cylinder and Rotary Actuator to complete the single cycle.

### **Constant Pumping Path:**

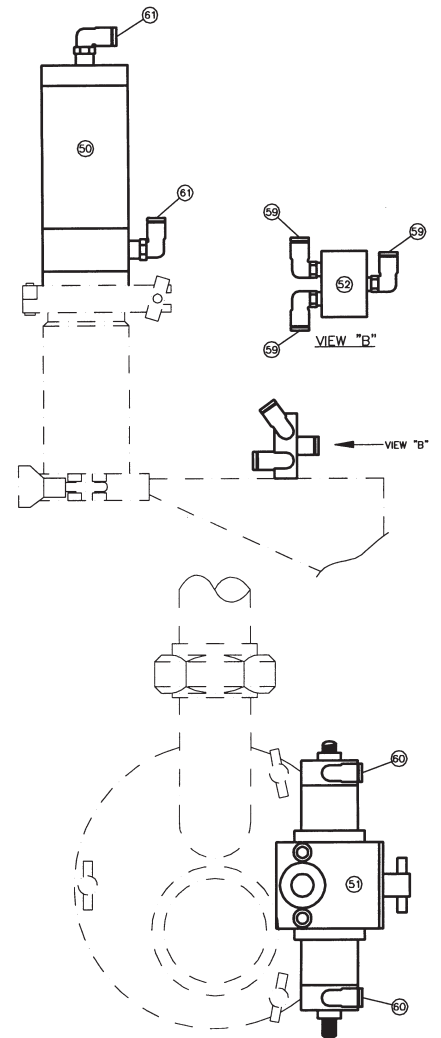
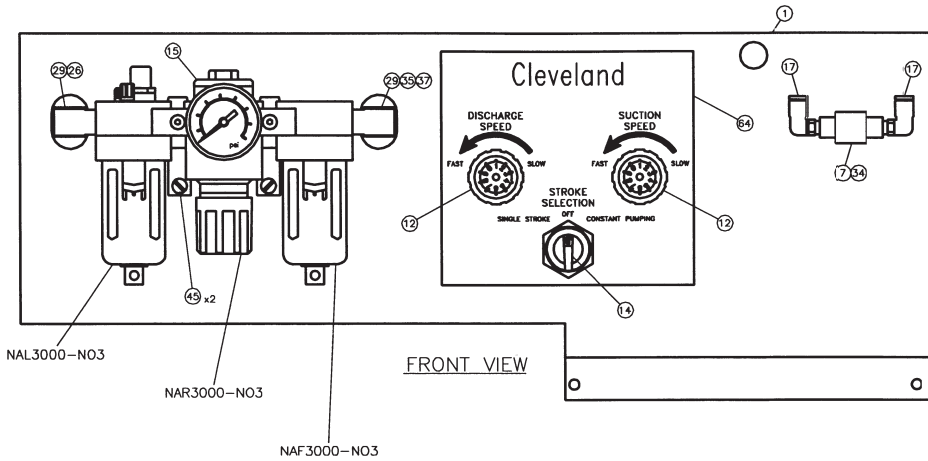
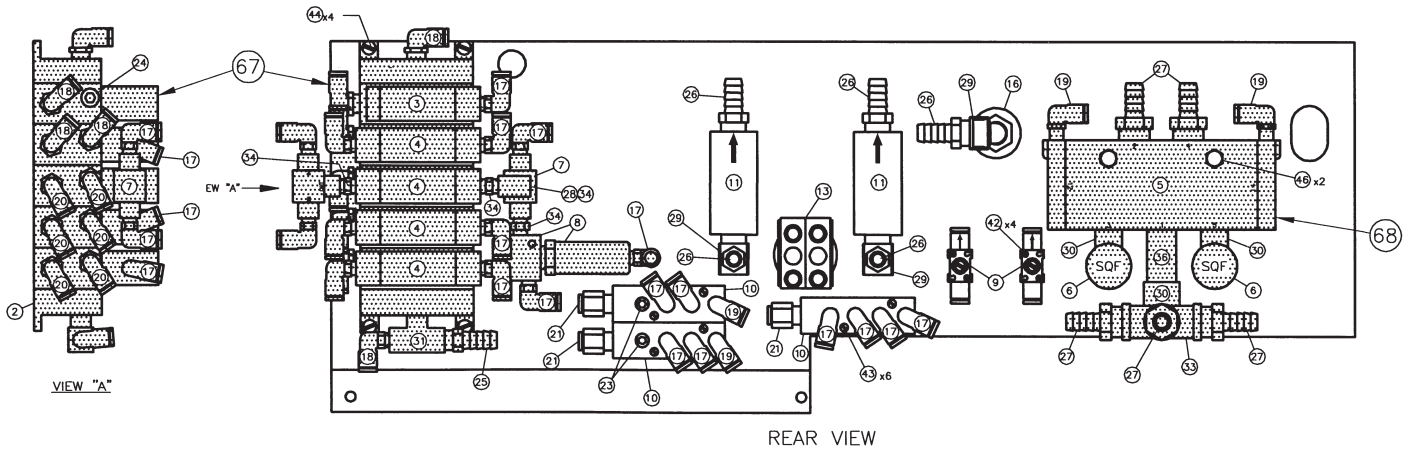
Turn the selector switch to constant pumping cycle. It will then do the following when the start switch is hit:

- Valve No. 2 shifts which in turn shifts valve No. 1 through Pt. 31. This turns on valve No. 3 through Pt. 24 if LV2 is actuated which turns on Group A.
- The pump valve now shifts (Airtec Valve) Pt. 1 and valve No., 4 & 5 shifts Pt. 11 & 12 to actuate Air Cylinder and Rotary Actuator.
- When pump reaches the full stroke it hits LV1. This shifts back Valve No. 3 through Pt. 19 which turns on Group B which shifts pump valve (Airtec Valve) at Pt. 2 and shifts back valve No. 4 & 5 through Pt. 22 and Pt. 23 which actuates the Air Cylinder and Rotary Actuator.
- When the pump completes the first cycle, LV2 is hit again and turns valve No. 1 back on and shifts valve No. 3 again through Pt. 24 and starts another cycle all over again.
- This will continue until the selector switch is turned off which turns off the air to valve No. 2 and stops supplying valve No. 1, which will not turn on valve No. 3 to start another cycle.

# PNEUMATIC SCHEMATIC



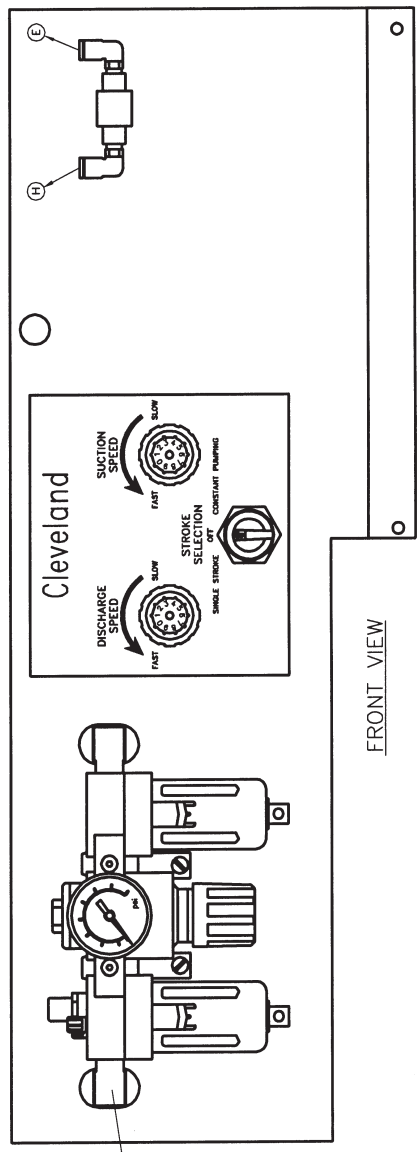
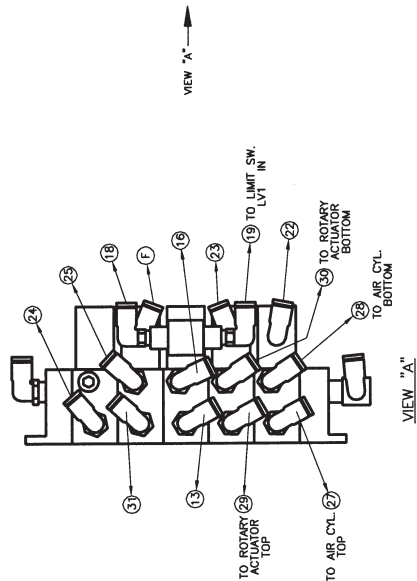
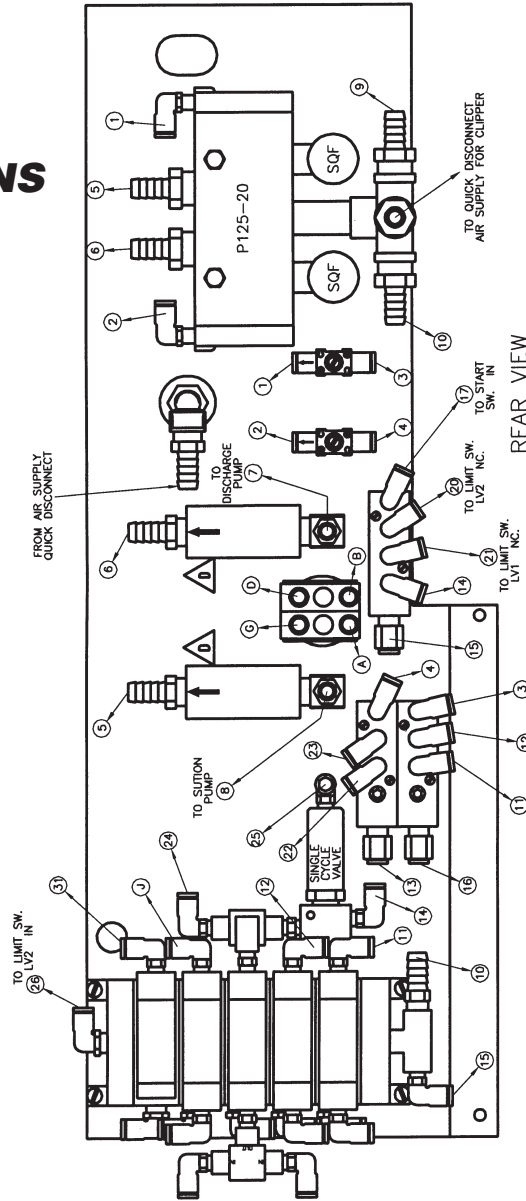
# AIR PACKAGE PARTS DRAWING



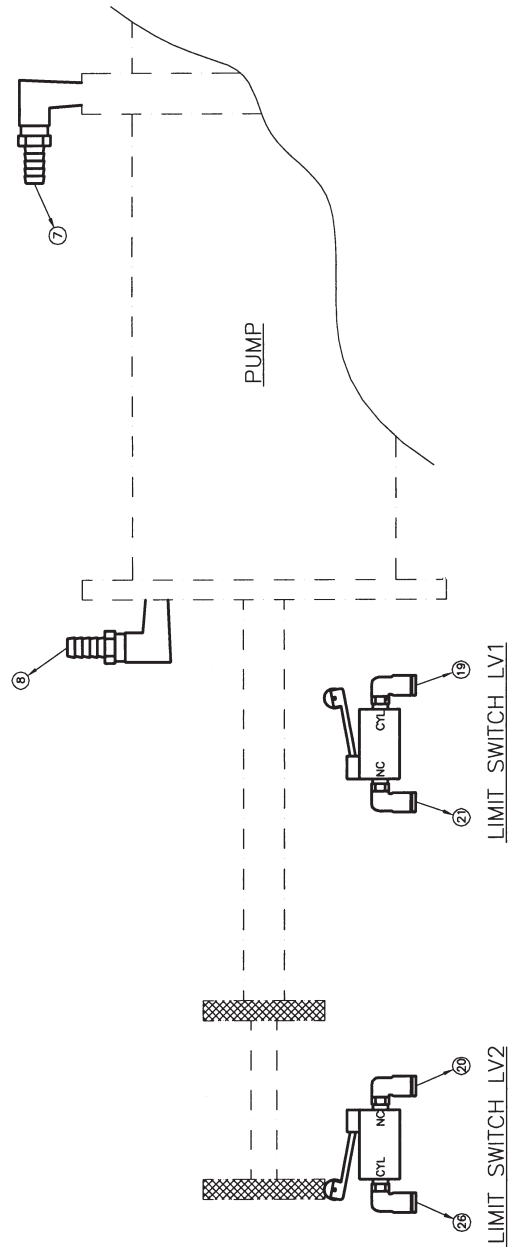
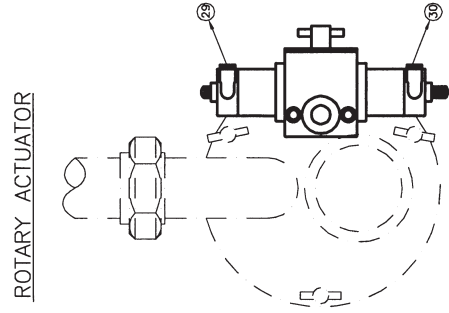
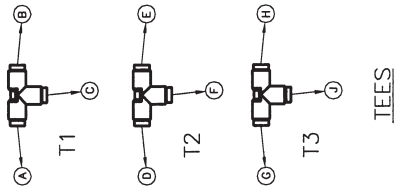
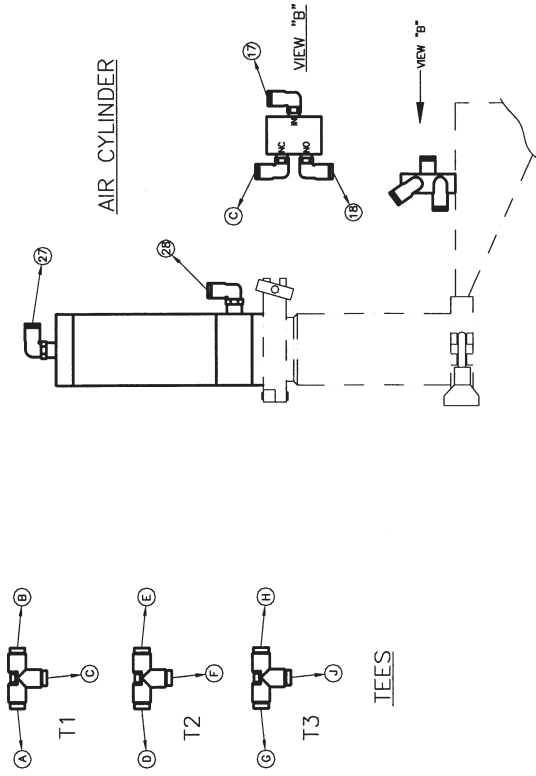
# AIR PACKAGE PARTS DRAWING LEGEND

ITEM #	PARTS #	DESCRIPTION	MANUFACTURE #	QTY.
1	KE53042	PNEUMATIC COMPONENTS MOUNTING PLATE	.	1
2	KE54343	5 STATION VALVE MANIFOLD	H240-M5A-HCR017-1	1
3	KE54289	VALVE #1 (CONTROL VALVE)	HA-240-4A	1
4	KE54290	VALVE #2,3,4,5 (SELECTOR1, SELECLTOR2, FLAPPER, NOZZLE)	HA-240-4A2	4
5	KE54291	VALVE #6 (PUMP VALVE)	P125-20	1
6	KE54346	MUFFLER	SQF-4	2
7	KE54288	SHUTTLE VALVE	S-125	3
8	KE54292	ONE SHOT VALVE	31-P + 341-AR	1
9	KE54344	IN LINE PILOT FLOW CONTROL	7770-56-00	2
10	KE54293	AIR MANIFOLD	3305-11-14	3
11	KE54295	PUMP CYLINDER FLOW CONTROL	FO-3	2
12	KE54296	MOUNTING NUTS FOR PUMP CYLINDER FLOW CONTROL	104094	2
13	KE54297	SELECTOR VALVE (MAN.- AUTO)	59065	1
14	KE54299	3 POSITION ACTUATOR FOR SELECTOR VALVE	59066-16	1
15	KE54281	3/8" F.R.L. C/W GAUGE	NAC-3000-NO3-G	1
16	KE54345	3 WAY SPOOL VALVE	0669-10-18-MF	1
17	FI05274	5/32" TUBE TO 1/8" NPT MALE PUSH-IN FITTING (ELBOW)	3109-04-11	22
18	FI05275	5/32" TUBE TO 1/4" NPT MALE PUSH-IN FITTING (ELBOW)	3109-04-14	7
19	FI05276	1/4" TUBE TO 1/8" NPT MALE PUSH-IN FITTING (ELBOW)	3109-56-11	4
20	FI05277	1/4" TUBE TO 1/4" NPT MALE PUSH-IN FITTING (ELBOW)	3109-56-14	6
21	FI05279	5/32" TUBE TO 1/4" NPT MALE PUSH-IN FITTING (STRAIGHT)	3175-04-13	3
22	FI05280	5/32 x 5/32 x 5/32 TUBE PUSH-IN FITTING (TEE)	3104-04-00	3
23	KE53359	1/8" BRASS HEX PLUG	118-A	2
24	KE53360	1/4" BRASS HEX PLUG	118-B	1
25	KE53363	3/8" I.D. HOSE BARB TO 1/4" MALE NPT. BRASS COUPLER	125-6B	1
26	FI05219	3/8" I.D. HOSE BARB TO 3/8" MALE NPT. BRASS COUPLER	125-6C	6
27	FI05267	3/8" I.D. HOSE BARB TO 1/2" MALE NPT. BRASS COUPLER	125-6D	5
28	KE53351	1/8" EXTRUDED 90° BRASS ELBOW	100-A	1
29	FI05268	3/8" EXTRUDED 90° BRASS STREET ELBOW	116-C	5
30	FI05282	1/2" EXTRUDED 90° BRASS STREET ELBOW	116-D	3
31	FI05270	1/4" EXTRUDED MALE BRANCH BRASS TEE	106-B	1
32	.	.	.	.
33	FI05214	1/2" FORGED BRASS CROSS	102-D	1
34	FI05272	1/8" BRASS HEX NIPPLE	122-A	5
35	FI05271	3/8" BRASS HEX NIPPLE	122-C	1
36	FI00597	1/2" NPT x 2" LG. BRASS NIPPLE	113-DX-1 1/2	1
37	FI05270	3/8" BRASS HEX COUPLING	103-C	1
38	KE54342	5/32" POLYURATHANE TUBE (CLEAR)	1098-U-54-00-CL	AS REQUIRED
39	KE54301	1/4" POLYURATHANE TUBE (CLEAR)	1098-U-56-00-CL	AS REQUIRED
40	F079110-1	3/8" CLEAR BRAID AIR HOSE	3150-3/8"	AS REQUIRED
41	FI05220-1	HOSE CLAMP	MAH-4	10
42	FA11020	4-40 x 3/4" LG. MACHINE SCREW	.	4
43	FA11058	6-32 x 7/8" LG. MACHINE SCREW	.	6
44	FA11145	10-32 x 3/8" LG. MACHINE SCREW	.	4
45	FA11256	1/4-20 x 1/2" LG. MACHINE SCREW	.	2
46	FA11263	1/4-20 x 1 3/4" LG. HEX HEAD BOLT	.	2
47	KE54342-1	5/32" POLYURATHANE TUBE (BLACK)	1098-U-54-00-BLK	AS REQUIRED
48	KE54301-1	1/4" POLYURATHANE TUBE (BLACK)	1098-U-56-00-BLK	AS REQUIRED
49	.	.	.	.
***** ITEMS LISTED BELOW ARE LOOSE PARTS (PNEU-PAK-04-KIT) *****				
50	KE53270	AIR CYLINDER	4D-3	1
51	KE53014	ROTARY ACTUATOR	PT-098-090-A1	1
52	KE54287	START SWITCH	41-P	1
53	KE54286	AIR LIMIT SWITCH WITH ACTUATOR	31-P + 34-C	2
54	KE53366	3/8" BULKHEAD FITTING	1495-C	2
55	FI05262	QUICK DISCONNECT BODY	DC-2103	1
56	FI05262-1	QUICK DISCONNECT PLUG	DCP-2144	1
57	FI05281	REDUCING STREET ELBOW	116-CB	2
58	FI05219	3/8" I.D. HOSE BARB TO 3/8" MALE NPT. BRASS COUPLER	125-6C	4
59	FI05274	5/32" TUBE TO 1/8" MALE NPT PUSH-IN FITTING FOR LIMIT SW.	3109-04-11	7
60	FI05276	1/4" TUBE TO 1/8" MALE NPT PUSH-IN FITTING FOR FLAPPER CYL.	6520-04-02	2
61	FI05277	1/4" TUBE TO 1/4" MALE NPT PUSH-IN FITTING FOR NOZZLE CYL.	6520-04-04	2
62	.	.	.	.
63	FI05220-1	HOSE CLAMP	MAH-4	8
64	KE95453	FLOW CONTROL LABEL	.	1
65	.	.	.	.
66	.	.	.	.
67	SE00090	CONTROL VALVE ASSEMBLY (FOR SERVICE PURPOSE ONLY)	.	1
68	SE00091	PUMP VALVE ASSEMBLY (FOR SERVICE PURPOSE ONLY)	.	1
69	.	.	.	.

# POINT TO POINT AIR TUBING CONNECTIONS



# POINT TO POINT AIR TUBING CONNECTIONS (continued)



# SPARE PARTS LIST

ITEM ON.	DESCRIPTION	QTY. DOMESTIC	QTY. OVERSEAS
<b><u>Consumables</u></b>			
KE54810-3	Gasket, 3", Food Hose	10	50
KE54810-1	Gasket, 2", Piping Assembly	10	50
KE53056	Spring, Pump Head	2	10
KE54167	Food Grade Grease	1	10
FA05002-24	"O" Ring, Flapper Valve	5	20
FA05002-3	"O" Ring, Upper Plunger Seal	10	50
FA05002-2	"O" Ring, Pump Head	10	50
FA05002-7	"O" Ring, Lower Plunger Seal	10	50
FA05002-26	"O" Ring, Product Piston Head	10	50
<b><u>Spare Parts</u></b>			
FA05002-6	"O" Ring, Rear Seal	1	2
FA05002-1	"O" Ring, Front Seal	1	2
KE01302	Lug Nut	1	2
KE54278	Removable Panel Stop	1	2
KE53266	Spring, Label Dispenser	1	2
KE53014-1	Rotary Actuator	---	1
KE01712	Air Cylinder, Discharge Head	---	1
KE01518	Hose for Clipper	---	1
KE01750	Hose for MFS to Kettle	---	1
KE54286	Air Limit Switch	---	1
KE54295	Air Flow Control	---	1
SE00090	Control Valve Assembly	---	1
SE00091	Pump Valve Assembly	---	1

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## OPTIONAL STRAINER PARTS

<b><u>Consumables</u></b>			
FA05002-28	End Assembly	5	10
FA00334	"O" Ring	5	10
KE52347	Gasket, 4", Sani-Clamp	5	10
KE52154	Gasket, 2", Sani-Clamp	5	10
<b><u>Spare Parts</u></b>			
SE50412	Pin	1	2
KE52087	Sani-Clamp, 2"	1	2
KE52344	Sani-Clamp, 4"	1	2

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## OPTIONAL THERMO ASSURANCE PACKAGE PARTS

<b><u>Consumables</u></b>			
FA00008	"O" Ring	5	20
<b><u>Spare Parts</u></b>			
KE53206	RTD Sensor	1	1
KE53200	Bulb	1	2
KE53203	Clipper Lockout Valve	---	1