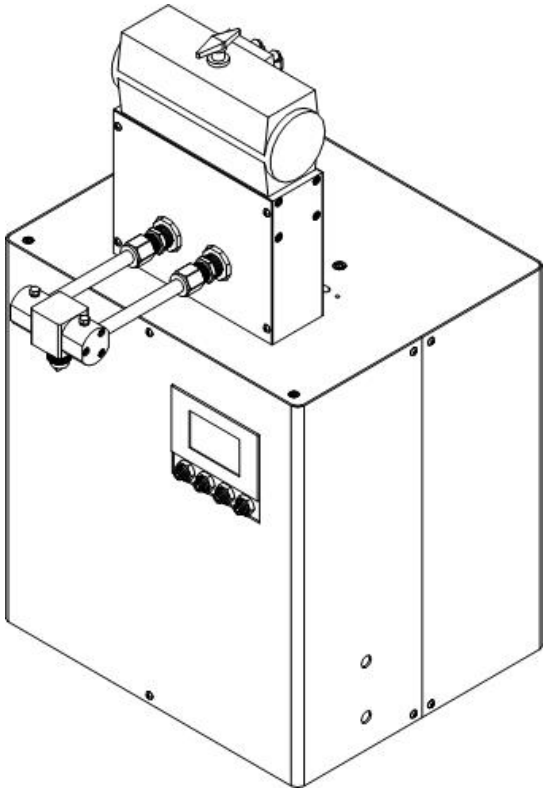
LOCTITE®

EQUIPMENT
Operation Manual



Loctite® DuraPump Meter Mix System

Part Numbers
1041649
1041644
1041639
1041638
1041635

Henkel

Table of Contents

1 Please Observe The Following

1.1 Emphasized Sections

⚠ **Warning!**
Refers to safety regulations and requires safety measures that protect the operator or other persons from injury or danger to life.

! Caution!
Emphasizes what must be done or avoided so that the unit or other property is not damaged.

☞ **Notice:**
Gives recommendations for better handling of the unit during operation or adjustment as well as for service activities.

1.2 For Your Safety

⚠ For safe and successful operation of the unit, read these instructions completely. If the instructions are not observed, the manufacturer can assume no responsibility.

⚠ Do not use the Unit to dispense flammable products.

⚠ Do not expose the connecting cable to heat, oil, or sharp edges.

⚠ Make sure the Unit sits stable and secure.

⚠ Use only original equipment replacement parts.

⚠ Do not operate the Unit in excess of 20 cycles per minute.

⚠ Always disconnect the power supply before servicing the unit.

⚠ Observe general safety regulations for the handling of chemicals such as Loctite® adhesives and sealants. Observe the manufacturer's instructions as stated in the Material Safety Data Sheet (MSDS).

☞ *While under warranty, the unit may be repaired only by an authorized Loctite service representative.*

1.3 Unpacking and Inspection

Carefully unpack the Loctite® DuraPump Meter Mix Machine and examine the items contained in the carton. Inspect the unit for any damage that might have occurred in transit. If such damage has occurred, notify the carrier immediately. Claims for damage must be made by the consignee to the carrier and should be reported to the manufacturer.

1.4 Items supplied

- Meter-Mix Dispense System
- Night cap and nut assembly
- Ratio check and nut assembly
- Footswitch
- Machine manual

1.5 Features

- Touch-screen control
- Linear position encoder
- Pneumatic or electric cycle start
- Inlet feed pressure to 1500 PSI

1.6 Usage

- Use with bulk (non-cartridge packaged) 2-part adhesives such as epoxies, and urethanes

2 Description

The Loctite® DuraPump Meter Mix System is a bench style, Two-part adhesive dispenser. It can effectively dispense epoxy, urethane, and silicone products. The system is based on Rod metering; whereas, precision rods displace a volume of product during a cycle. A full stroke of the metering rods can yield 28cc (1:1). Depending on the product, dose shots as small as 0.4cc can be achieved. The unit can be connected to receive product from a number of different feed types and can accept pressures up to 1,500 PSI.

The system PLC controls all dispense functions; available between single dose, incremental and continuous modes. A linear encoder provides selectable, precision dispensing of adhesive volumes. The system is designed to be cycled by electric or a remote triggered pneumatic hand –held valve. The system can also be actuated by a signal from a remote control system, and features a Ready/Busy output signal to interface with other dispense/control equipment.

3 Technical Data

Dimensions (L x H x W):	approx. 12 1/2” W x 15” D X 27” H
Total weight:	85 lbs.
Operating voltage:	110-230 VAC 50/60Hz
Power consumption:	1 Amp
Product inlet port	½ NPT (f)
Power Cord:	Standard 120VAC
Pneumatic inlet:	1/4” NPT

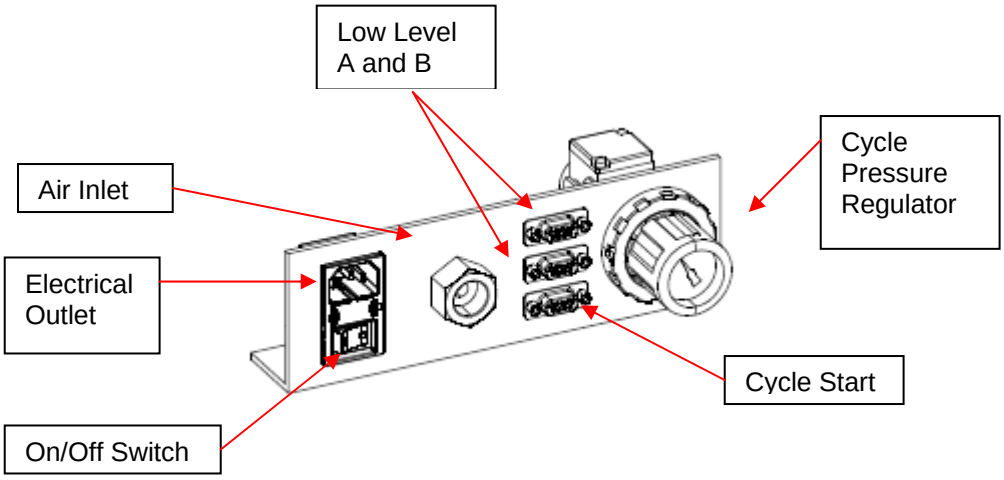
Metered Volume

Ratio	Full Stroke
1:1	28 ml
2:1	21.7 ml
4:1	18 ml
10:1	15.6 ml

4 Installation

! Before using the dispense system for the first time check it carefully for signs of external damage. If any shipping damage is found DO NOT USE THE MACHINE - return it to your supplier immediately.

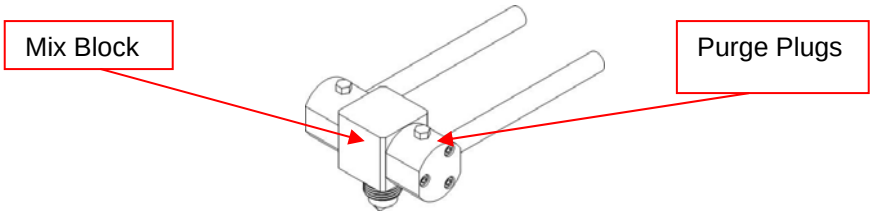
1. Place the MMD machine on a bench or other stable location appropriate for the dispense system. Ensure the machine is on a sturdy surface and can handle the weight and process actions required of the dispense unit. Use the leveling feet of the machine as necessary.
2. Connect a pneumatic supply to the pneumatic inlet fitting at the rear of the machine. Ensure a steady supply of 80 PSI minimum.
3. A product feed system can be now connected to the unit.
4. Connect the electrical plug of the MMD machine to an available 120 VAC outlet.



5 Operation

Prepare the machine for use:

1. Use the optional product mix-block (1167586) or attach the desired dispense valve (with hoses). The mix-block assembly can be used with product viscosities of 2,000 cps and higher.

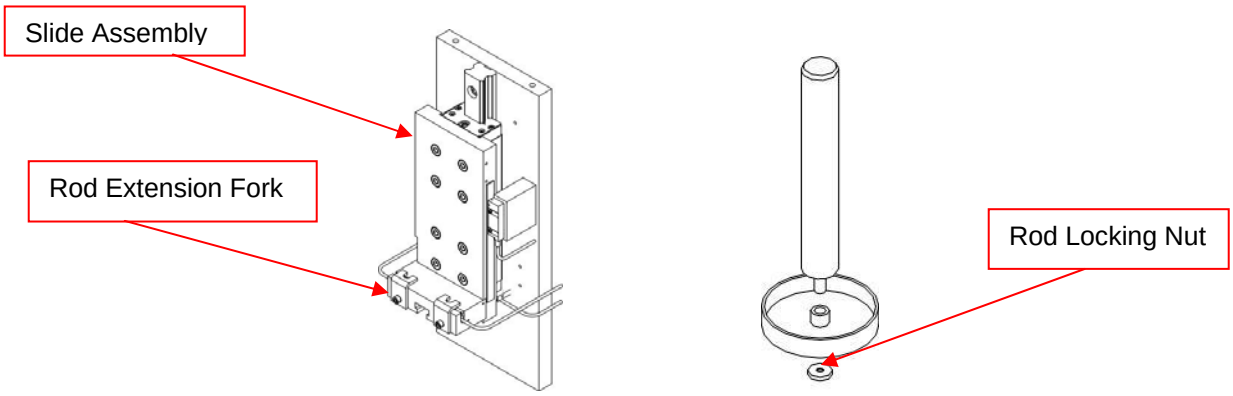


2. Connect the feed systems to the MMD machine.

3. Pour or pressurize the products to the MMD machine. Check for any leaks and repair connections if necessary.

☞ Fill the Metering Pump's grease reservoir to extend the life of the pump seals and maintain an air tight seal. Grease frequently when using filled materials or abrasives. Use a standard grease gun and a inert, silicone, or Loctite Food Grade grease.

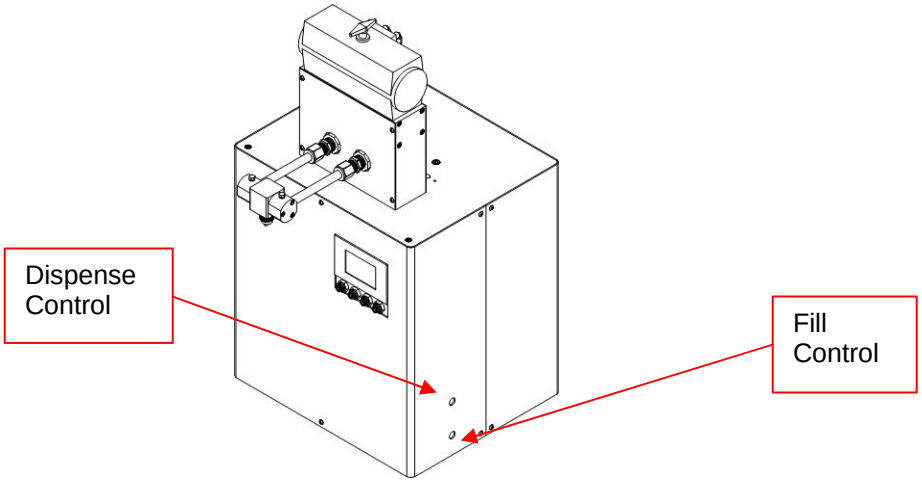
4. Rod Extension Forks are installed on all machines. If product A or B are (sufficiently) pressurized (around 250 PSI, about 125 PSI if using MMA seals), the 'Fork' can be removed. This fork is used to pull down the Displacement Rod during a re-charge. Removing the Fork allows the product pressure to extend the 'metering' rod and thus prevent cavitation or air entrapment (see caution section 7.1).



Do not allow the machine to cycle dry (without product). Excessive ball valve wear or damage could result.

5. Place the machine in RUN Mode and select the dispense parameters (see section 5.1 and 5.4). Have a waste cup ready. Cycle the machine until product begins to come out of the dispense nozzle.
6. Adjust the overall cycle rate with the pressure regulator at the rear of the machine.
7. Use a flat tip screwdriver to adjust the DISPENSE rate by turning the top flow control on the Main Actuator (CW for slower; CCW for faster); accessible via panel holes on the right side of the machine.

Do not allow the machine to recharge at a faster rate than the product can feed into the pumps. Excessive recharge rates could cause air pockets and out off ratio conditions.



8. Adjust the pumps Fill (re-charge) rate by adjusting the bottom flow control on the main actuator (CW for slower; CCW for faster); accessible via panel holes on the right side of the machine.
9. Once the purge procedure is completed, perform a ratio check procedure.

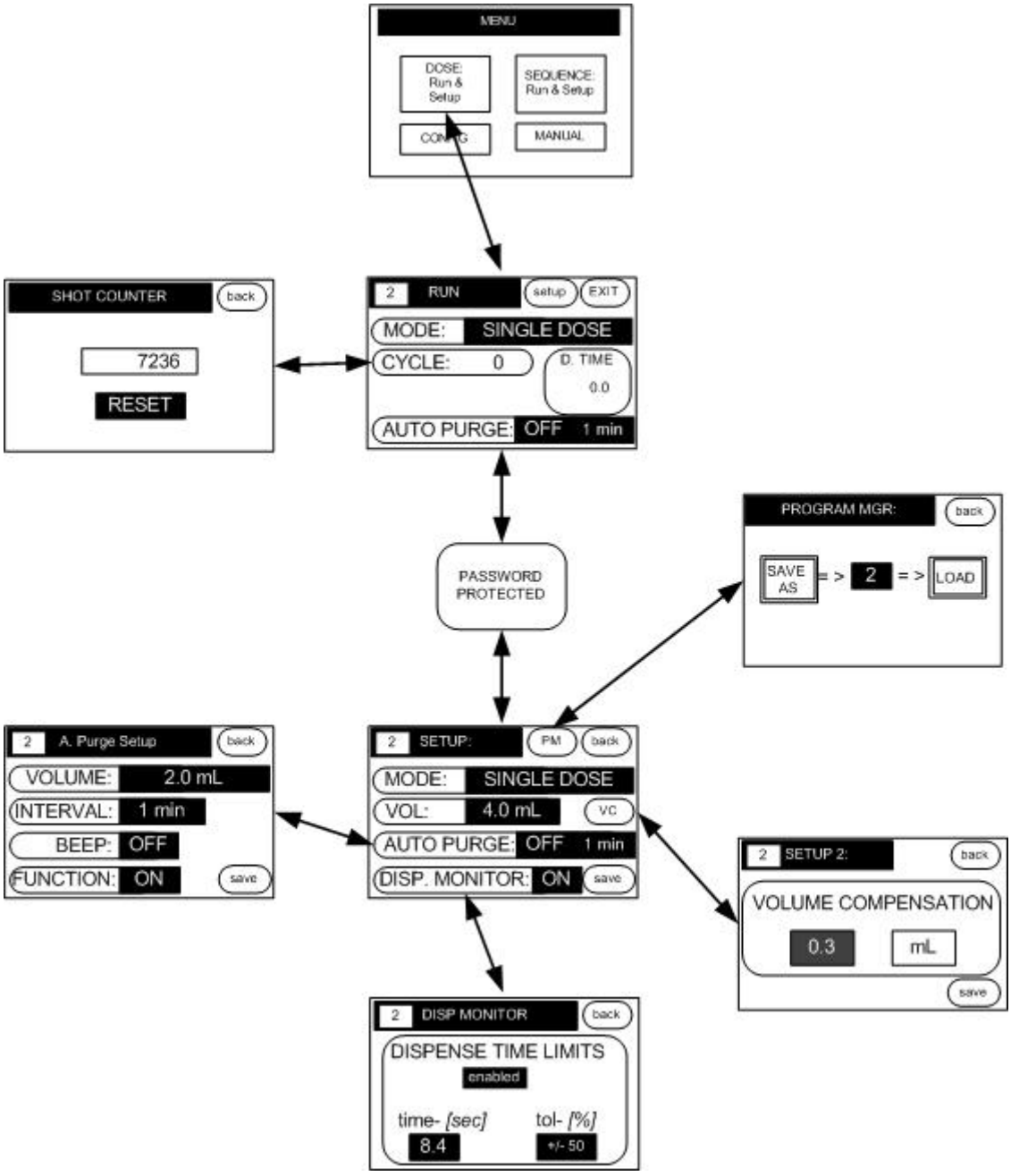
10. If your machine is using the Rod Extension Forks (mentioned in item 4) do not install a static mix nozzle on the machine until the ratio is validated. This is to ensure that product is flowing properly into (and out of) the metering pumps.
11. The machine is ready for use.

☞ **Use the incremental run mode whenever possible. Recommended when the dispense dose is less than half of the machine's full stroke amount (see Technical Section for ratio/volume metrics. This will reduce the wear and tear of the machine. Do not use incremental mode if either Part A or B products have a viscosity less than 2,000 cps and you are not using an actuated dispense valve.**

☞ **Maintain the adhesive two components separate from each other at all times. Keep the nozzle area clean after each use to prevent curing.**

5.1 Getting acquainted with the control screens

The DuraPump has 4 main user screens to operate the machine. Two user screens are for programs and sequences. Two other screens are available for machine servicing: Manual (for servicing) and Configuration for initial ratio or remote operation designation. Most 'blacked-out' areas are active key locations, touch the area to bring-up a keypad (or toggle) to change the value and press the Enter (⏎) key. A description of these screens follow:



1. The RUN Screen comes into view during normal operation. A number at the top left corner of the screen indicates the program the machine is currently running. The active program will be the last program the machine was running. This screen gives access to the setup screen. Touch the Dose box to reset the cycles counter.

    a. The RUN screen contains a feature that permits the monitoring of the dispense time during a machine cycle. This feature can be enabled during setup (of the program number), and then given an expected

percentage above and below a “good” dispense dose. If a dispense cycle takes longer or shorter than the allotted time, and ERROR screen will appear alerting of the incident.

b. To enable the Monitor; go to the program setup screen and tap the Dispense Monitor Bar. Tap the disable block and enter a tolerance. The last dispense time is already displayed on the left side of the screen (as reference).
c. On error, the RUN screen will change to a red screen alerting an Out of Range condition. The machine will beep and continue to do so, until the user resets by tapping the screen.

2. The SETUP screen is used to select the desired operating mode and dispense parameters. This screen also leads to the program manager to store and recall programs and set the Auto Purge mode parameters. In addition, this screen leads to setup#2 which is where volume compensations can be made.

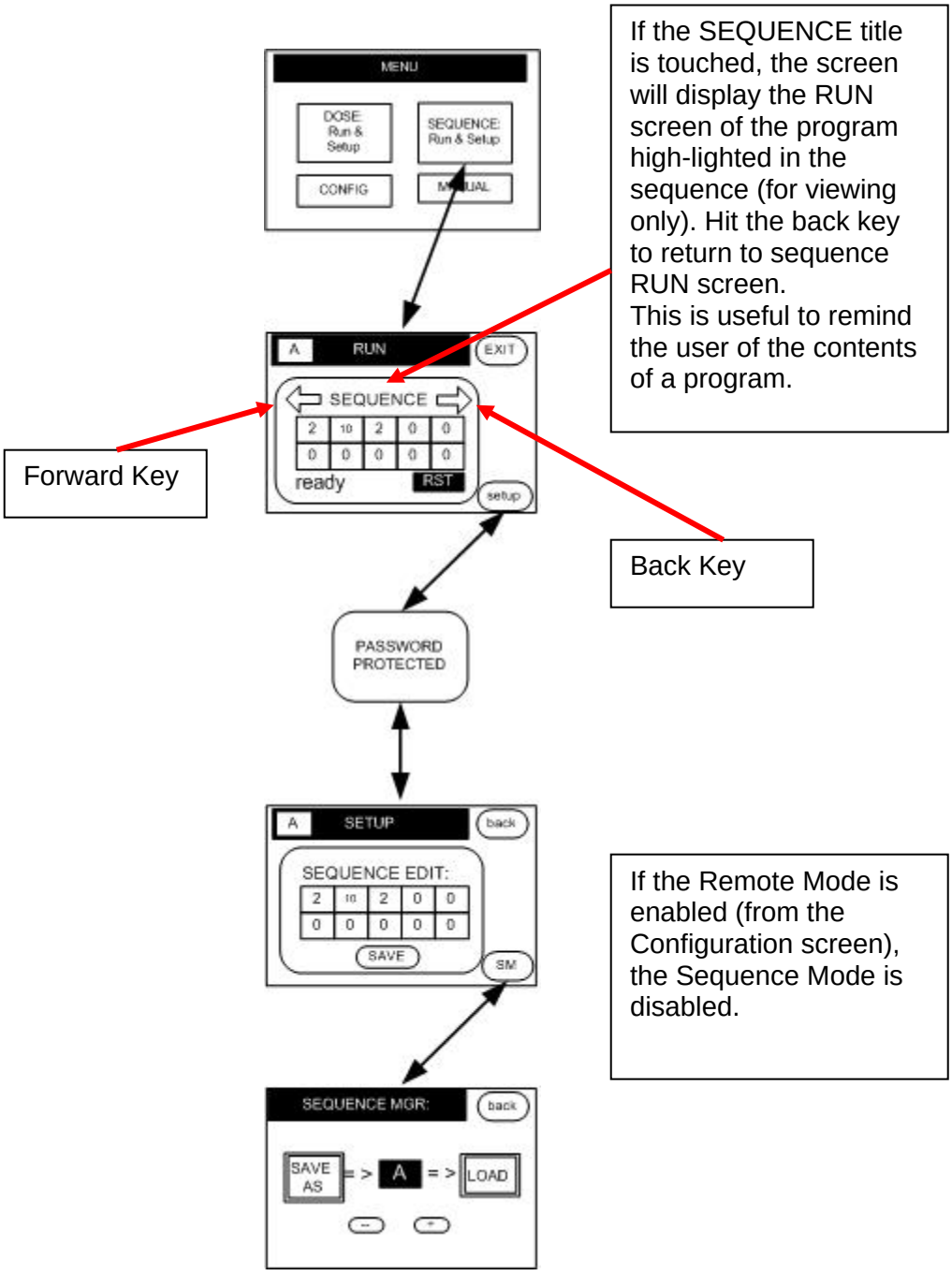
    a. To access the Setup screen from the Run mode, touch the setup key at the top of the Run screen. A supervisory ‘lock-out’ pop-up screen will appear. To enter the setup mode, touch the lower left hand corner of that lock-out screen. A ‘beep’ will sound; hold this position for a second and the machine will go into setup mode. Supervisory lock-out will occur every time the setup key is pressed.
    b. In Single, and Incremental Modes, enter a desired dose volume. Select Auto Purge mode function on or off as required.

3. SETUP 2 is a means to get closer to the actual volume that is being dispensed versus what is manually keyed in; see section 5.5.

4. PROGRAM MANAGER is utilized to load or recall a previously loaded (used) program. A program can also be copied using SAVE AS. The copied program can then be loaded and edited with new changes if so desired.

5. AUTO PURGE screen permits automatic dispensing of a selectable volume of material at a specified time interval (of machine idleness) in order to prevent curing or viscosity increase in the static mix nozzle.

6. SEQUENCE RUN is a feature that allows a series of (up to 10) programs to run consecutively (or serially). Up to 16 different sequences can be stored in the machine (A to P). Programs can be arranged in any manner, including repeating programs.



7. SEQUENCE SETUP allows a (serial) sequence of programs to be loaded in up to 10 positions. A zero is seen as a reset (back to the start of the sequence).

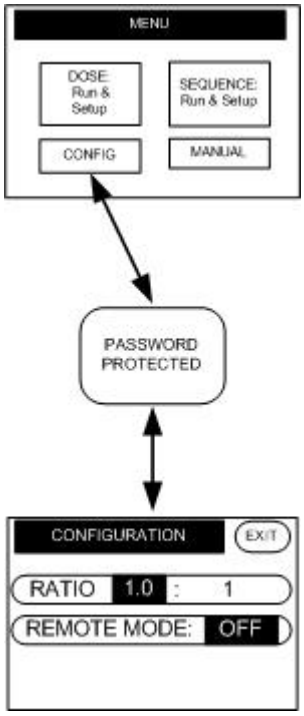
    a. The sequence is loaded using the sequence setup screen. The programs selected to run in a sequence should have already been setup and tested.
    b. The machine waits for a cycle start signal. The 1st program of the sequence is performed after the cycle (start) signal is detected.
    c. The machine waits for another trigger; the second program in the sequence is performed, and so on, until the sequence runs into a (0)

zero—this means to go back to the beginning of the sequence or runs the last of the 10 positions on the sequence.

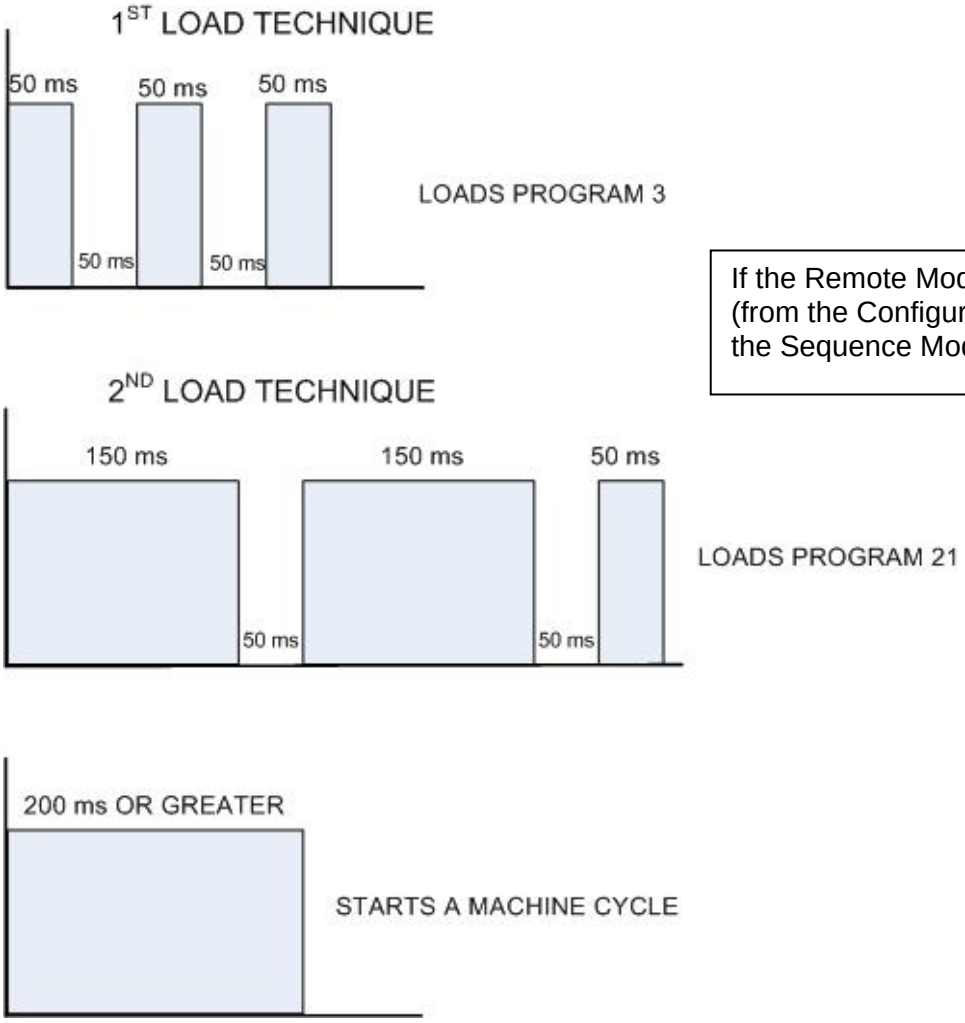
d. During idle periods, the user may jog back to a particular sequence program number (by using the (Forward and Back arrow keys on the sequence RUN screen), if a particular program needs to be run again or skipped. When the next start trigger is received, the highlighted program number will be performed.

8. REMOTE mode allows a PLC connection to the 9-pin sub-D connector for program loading and program execution from a remote control device—typically a PLC.

    a. This function has to be enabled by entering the SERVICE mode during power-up.
    b. Pins 1 and 9 on the connector (typical footswitch connection) are used to load (a program) and cycle-start the machine (contact closure creates the pulse).
    c. Any pulse that is longer than 200 ms is considered a cycle start (on whichever program happens to be loaded on the machine).
        i. There are 2 techniques to load programs.
        ii. Single count loading uses 50 ms pulses, followed by 50 ms of NO pulse to count to the desired program. Three pulses (with 50 ms no signal in between) loads program #3.
        iii. Decimal count loading uses 50 ms (short pulses= units) and 150 ms (long pulses= tenths). Program 21 loads with 1 short pulse and 2 long pulses (with 50 ms NO pulse in between all pulses.
        iv. The machine is always in read mode (when not in cycle); it will continue adding up pulses (even after a long idle period). The adding of pulses ends after a long (200 ms pulse) is received.



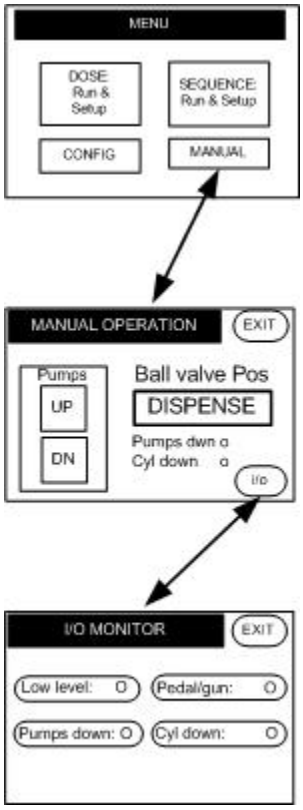
REMOTE LOAD/CYCLE



If the Remote Mode is enabled (from the Configuration screen), the Sequence Mode is disabled.

☞ The machine is ALWAYS in READ mode (after a cycle). Even if counts were received 10 minutes ago and 5 hours later more counts are received, the machine will continue to add the counts. ONLY a long pulse (200 ms or greater) will load (the final count) and run the program.

9. The MANUAL screen is used for machine service and troubleshooting. This feature is also useful to cycle the Pump Actuator and 3-Way Ball Valve when removing pumps for servicing or looking at the status of inputs to the machine.



5.2 Ratio Check Procedure

This procedure is to ensure that the dispensed material is mixing at the proper ratio, to ensure that when the product goes through the mix nozzle, the adhesive will set and maintain proper bond strength.

Ensure that both Part A and B are products are entering the metering pumps. If necessary remove lines or hoses from the DuraPumps's product outlet ports (or remove mixing valve) and check machine cycling to ensure smooth and even flow of product when the machine is cycled. If the machine is cycling faster than the pumps can be filled, an off-ratio condition will occur.

1. Install a ratio check cap on the dispense nozzle. If your valve type does not permit installing a ratio cap; you may be required to remove the valve and take samples at the end of the lines or hoses.
2. Use two small cups or dishes (one for each part) to capture the dispense volume. Weigh each empty cup and record.
3. Perform a single dose cycle on the MMD machine and capture the dispense amounts on the cups.
4. Weigh each cup. Calculate the actual weight of the product on the cups.

5. Divide the weight of Part A by the specific gravity of Part A product; do the same for Part B—this is the volume dispense for each.
6. Divide Part A volume by Part B volume—this is your ratio.

5.3 Purging the Dispense System

Purging becomes necessary when using the machine for the first time, the dispense path has been disconnected, or air has been introduced into the system. Purging is also a means to 'zero-in' on the dispense ratio if the calculated ratio is slightly off from where it needs to be.

1. The machine should be ready for normal cycling.
2. Remove the static mix nozzle from the dispense valve.
3. Set the machine to Continuous Mode.
4. Have a waste cup on hand to capture the dispensed product.
5. Cycle the machine until an uninterrupted (no air, burping) of product occurs.
6. The purging will vary depending on the application, length of dispense hoses, and the length of product feed lines. Estimate the amount of product purge required according to the manner in which your MMD machine product path is connected.

☞ **If an off-ratio condition exists, it may be necessary to purge the mix-block assembly or dispense valve and hoses (as applicable).**

1. Remove the pipe plugs at the top of each end cap on the mix block assembly (be prepared to capture product (both from the mix-block and from the purge holes at the top of the mix block).
2. Reduce the cycle rate of the machine (excessive recharge rate can cause off ratio condition).
3. Cycle the machine until no air bubbles can be seen coming out of the top of the purge hole.
4. Re-install the plugs, perform a ratio check and setup the machine for production if the ratio is good.

5.4 Machine Cycling

This MMD machine is capable of operating in three (run) modes (green screens) and two maintenance modes (red/orange screens). To change any operating mode, SETUP must be selected (refer to 5.1), change operating mode; then press exit. The machine will operate with the parameters that are active when exiting the setup mode.

1. Single Dose
   This mode will cause the machine to cycle for the volume of product selected and then re-charge (refill) the pumps. In this mode, it is

possible to select a volume larger than a full stroke. For example, an 80 ml dose can be selected and the machine will cycle the number of times required to achieve the volume (and then returns to the Home position).

☞ **Use the incremental run mode whenever possible. Recommended when the dispense dose is less than half of the machine's full stroke amount. This will reduce the wear and tear of the machine. Do not use incremental mode if either Part A or B products have a viscosity less than 2,000 cps and you are not using an actuated dispense valve.**

2. Incremental

   This mode will cause the machine to cycle for the volume of product selected and the metering rods will remain at that position to wait for another cycle. The machine will automatically re-charge when the rods reach a position that will not yield a full output of the selected volume.

   For both Single Dose and Incremental, select SETUP and Enter the dispense volume desired. Ensure that the ratio displayed is correct, otherwise adjust as needed. Touch the exit key to go to RUN mode.

3. Continuous

   This mode will cause the machine to cycle for as long as the dispense signal is present. If the machine is in mid-stroke cycling and the dispense signal is removed, the pump actuator will retract and go to the home position.

4. Auto Purge

   This feature causes the machine to automatically cycle when it has been idle for a specified time. The dispense volume is also pre-selected by the user. This function prevents the static mixer from curing.

      a. From the Run Mode, select SETUP and then choose AUTO PURGE. Select ON for function. Enter the volume to be purged and the time interval that the machine will purge if idle. You may also select a BEEP to hear an interval alarm a minute before the machine will actually cycle. Return to the Run Mode by pressing exit.

5. Manual

   This mode allows for manual machine cycling for purging, setup or troubleshooting of the machine. From this screen an I/O screen is selectable to view the status of inputs and outputs of the machine.

☞ The machine will not allow the pump actuator to go down (DN) with the ball valve in the DISPENSE position. Likewise, it will not allow PUMP UP when the ball valve position is in FILL position. The machine will 'beep' in these instances until the user (manually) changes the position of the ball valve.

5.5 Volume Compensation

Performance depends on the product being used. Due to the dynamics of products, static nozzle, and application dispense rate, the volume dispense may vary from the programmed amount. Volume compensation should be checked, entered and saved for each program (do not assume that error is linear).

☞ When taking volume measurements, ensure that the product has not been idle in the static mix nozzle long enough to affect the viscosity of the material in the mixer.

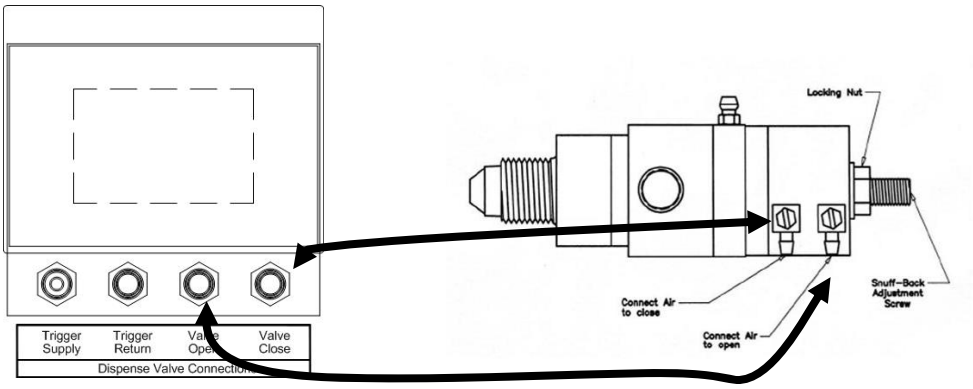
1. To ensure that the dispensed volume for the application is being met, cycle the machine (at the appropriate dispense volume) a couple of times.
2. Have a small dish to capture samples and a gram scale.
3. Cycle the machine and capture the dispense amount on a dish or cup.
4. Weigh the sample and record the measurement; repeat this another 3 times.
5. Obtain the volume by dividing the weight by specific gravity of the mixed material.
6. Use simple math to acquire the amount of material that you have in excess or are lacking. For example if the selected amount is 10 ml, and you are actually getting 9.7 ml, compensate as follows:
    a. Go to the (program dose) SETUP screen.
    b. Tap the 'next' button on the screen to get to SETUP2 screen.
    c. Tap the center square below volume compensate and a numeric keypad will 'pop-up;' Enter 0.3 (↵).
    d. Volume compensation is complete, exit to the Run screen.
7. Take another volume sample to ensure that the compensation has had the desired effect.

☞ The machine **will** accept a negative number. For example, if the desired dose size is 10 ml and the actual amount is 10.3 ml; then –0.3 would be the error to compensate for. However, the machine will **NOT cycle** with a negative number for volume. For example, if the desired dose size is 5 ml; and –6 ml is entered as compensation (error); the resultant is a –1 ml (dose size) and the machine will not cycle.

5.6 Connecting a Machine Mounted Valve to the DuraPump

☞ **Ensure that inlet air and product inlet pressure is OFF**

1. Remove the mix-block assembly from the machine.
2. Attach the required product feed hoses to the valve.
3. Remove the valve OPEN and valve CLOSED port plugs on the front of the machine.
4. Connect a 5/32 air line from the ‘closed’ remote valve port to the closed pneumatic port on the valve. Do the same for the ‘open’ port.
5. The remote valve will cycle when the footswitch is actuated.



6. To pneumatically cycle the machine, place an air pulse on the Trigger Return port at the Dispense Valve Connections.

5.7 Connecting a Hand Held Dispense Valve to the DuraPump

☞ **Ensure that inlet air and product inlet pressure is OFF**

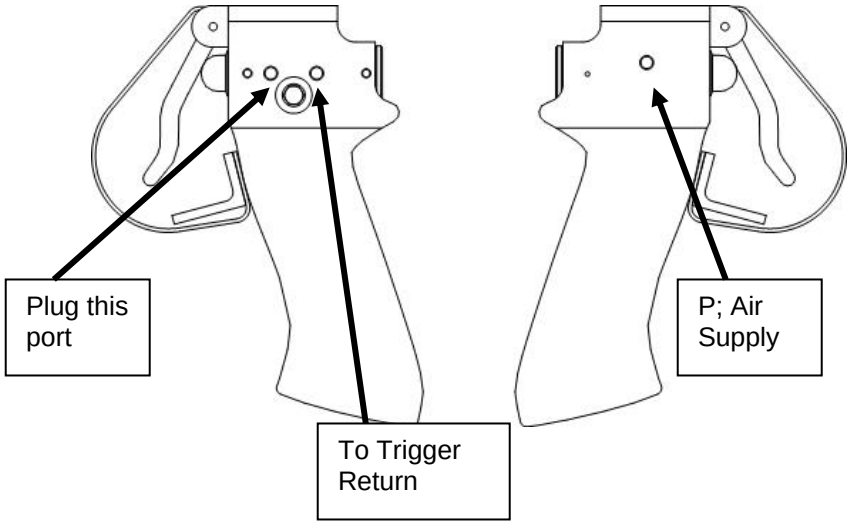
1. Connect an air line from the Trigger Supply port on the front of the machine to the dispense valve’s pilot or constant air supply (single port side on grip handle).

2. Install a line to the OPEN (A) side of the gun handle. Run the line back to the Trigger Return port on the machine. Plug the CLOSED port on the handle.

3. Run a line for each; the open and closed ports on the machine to the open and closed ports on the dispense valve (as illustrated in 5.6).

4. The machine will be cycled by the gun trigger.

This arrangement will permit remote valve operation controlled by the machine cycling.



5.8 Machine Shut Down

After the final cycle of day, de-pressurize the product feed systems and turn off the pneumatic supply. Remove the static mix nozzle and clean the nozzle area. Spread some silicone grease on the night-cap and install on the dispense nozzle. The silicone grease will seal and keep moisture out.

The machine will continue to operate without adhesive curing problems so long as the adhesive lines, pumps and dispense points are kept sealed and free of contamination.

6 Program Storage and Recall

This feature allows the user to store up to 63 machine setups, and recall any one of them at any time. The machine will store all setup parameters that are currently displayed in the run mode, and will also store any volume compensation that was last completed. It will store the run mode, dose size, ratio, auto purge settings, and volume compensation.

☞ If you are using multiple programs, it is best to record the stored programs on a production sheet, note pad, or other means to make reference to the programs in order to keep track of them and their contents. The machine will not list the programs that are stored.

6.1 Storing a Program

1. After all 'setup parameters' have been entered as desired (including auto purge and volume compensate), go the Setup screen, and then touch the PGM button (top of screen).
2. Touch the square in the center of the screen and type the program number using the pop-up numeric keyboard (and then press the Enter key ⏎).
3. Touch the SAVE AS button to store the program.
4. To place active the program that was just entered, press the LOAD key and then touch EXIT; and then exit setup to go to RUN mode.

6.2 Recalling a Program

To enable a previously stored Run program, proceed as follows:

1. Go to the (program dose) Setup screen.
2. Tap on the PGM button
3. Touch the square on the center of the screen. Type-in the program number when the 'pop-up' numeric keypad appears.
4. Touch the LOAD key, and then touch the EXIT key; then exit setup.
5. The machine will show the program number in the top left corner of the RUN screen.

☞ This machine will load a program that is keyed-in regardless if it had been previously stored or not; the loaded program will be a default program.

7 Troubleshooting

⚠ **Before proceeding with any repair or maintenance operation, turn OFF the power and the pneumatic supply to the machine. Ensure that any pressure build-up in the product lines or control system has been relieved.**

To help with troubleshooting cycling problems, this machine features a MANUAL mode that permits cycling of actuators, and monitoring the inputs to the machine. This kind of work should only be done by qualified technical personnel that are familiar with and understand the machine's components and functions. See section 5.1.

7.1 Machine is off-ratio

The metering pumps are precision made for the chosen product ratio. Off-ratio condition is primarily attributed to air in the system. The machine must be purged until air in the system is removed.

On machines that are using Rod Extension Forks (to re-charge the pumps), care must be taken that the recharge is adjusted so that it allows time for product to enter the metering pumps (depends on viscosity; typically affects thicker viscosity products). If the re-charge is too fast, a vacuum can be created each time the machine re-charges; this will cause an off-ratio condition each time the machine cycles—see section 5.2

Off-ratio condition can also occur when part A and part B have viscosities that are at a 6 to 1 or greater difference, and a high viscosity differential style mix block manifold (or valve) is not being used. For example, if part A is 75 cps and part B is 800 cps. There is slightly over 10 times the difference in viscosities between the two products.

☞ **Do not allow the feed system to run low on product or air will be introduced into the system.**

Another way that the machine could be dispensing 'off-ratio' is if the machine is leaking product from one or both metering pumps. Inspect the metering pumps and ensure that if there is seepage, that it is not excessive. Excessive leakage is an indication that the seals, the metering rod, or both may require replacing.

7.2 The machine will not go to the SETUP screen

This is caused by a metering rod micro switch that is open. The machine needs to be idle for it to go to setup. If the machine is in the middle of a

cycle or completed a cycle but a rod or home switch remains open, the machine will not cycle.

Use the I/O screen to troubleshoot an open switch. Also, SETUP is always locked-out to await supervisor approval (red screen); section 5.1.

7.3 Cycling is too slow or too fast

If the machine had been cycling correctly, and suddenly begins to recharge at a faster rate, air is getting into the pumps. Air is typically introduced through the product feed system: check product reservoir, or for loose connections.

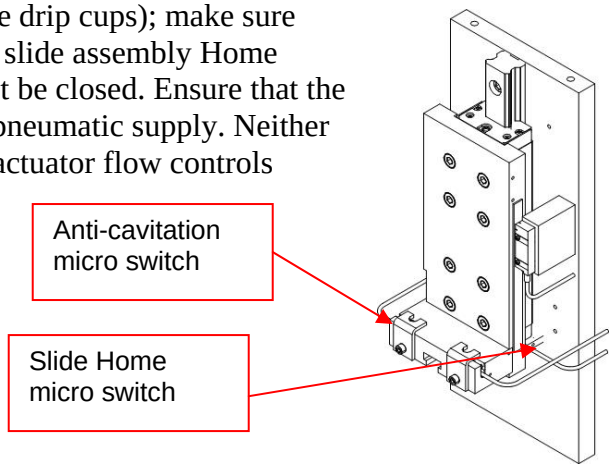
If the machine's recharge rate begins to decrease, the product viscosity may have increased. The pumps seals could also have reacted with the product and swollen in size causing greater friction between the rod and seals; the seals may need replacement.

7.4 Pumps are leaking material

Some amount of leakage from the rods (depending on material) is normal. Most of the product accumulating on the rods is grease (if the reservoirs are greased). If the leakage is excessive (a large drop forming in less than 1,000 cycles), the seals may be worn. Premature seal wear is due to abrasives in the product, foreign particles in the product, chemical incompatibility, or operating the unit with abrasive products and not greasing the reservoir at regular intervals.

7.5 Machine will not cycle

If the machine will not cycle, make sure that the metering rods are fully extended (fill position). The Rod extended position is monitored by micro switches (located under the drip cups); make sure these are closed. Also, the slide assembly Home position micro switch must be closed. Ensure that the pump actuator has ample pneumatic supply. Neither of the main drive (pump) actuator flow controls should be fully closed.



If the 3-way ball valve does not actuate, the machine will not cycle. Check the ball valve for air, and that the solenoid is being actuated.

The machine will also not cycle if the volume entered (and compensated for) equals a negative value.

FOR ANY REPAIRS OR ADJUSTMENTS – OTHER THAN THOSE DETAILED IN THIS MANUAL – PLEASE CONTACT 1-800-LOCTITE (562-8483).

8 Care and Maintenance

- In the initial first few weeks of operating the machine, check the drip cups at the end of the metering rods every two days. Clean the cups if necessary. Establish a maintenance schedule (daily, weekly, monthly) depending on observations made during the break-in period.

- When shutting the machine down, remove the static mixer and clean the end of the nozzle with a solvent like IPA. Put a bit of silicon grease on the night cap and install on the nozzle to keep air and moisture out.

- Keep the dispense nozzle and thread area clean to prevent adhesive build-up. This is done by wiping the nozzle with clean paper or cloth; with a solvent such as isopropyl alcohol or acetone (do not use acetone on painted surfaces or on plastics or seals).

- Re-lube the grease reservoir until grease comes out of the reservoir relief port. Typically, a once a week re-lubing will be all that is required. Monitor the metering rods for dryness as an indication that lubing may be necessary. Greasing helps to maintain an air tight seal and in keeping the seals from drying out thus reducing wear due to high friction. Greasing should be conducted more frequently when using moisture sensitive products and filled or abrasive materials. Use a mineral base grease such as Loctite Food Grade Grease (item 51252; 14.5 oz cartridge), or use a silicone base grease for this servicing.

8.1 Replacing a Pump

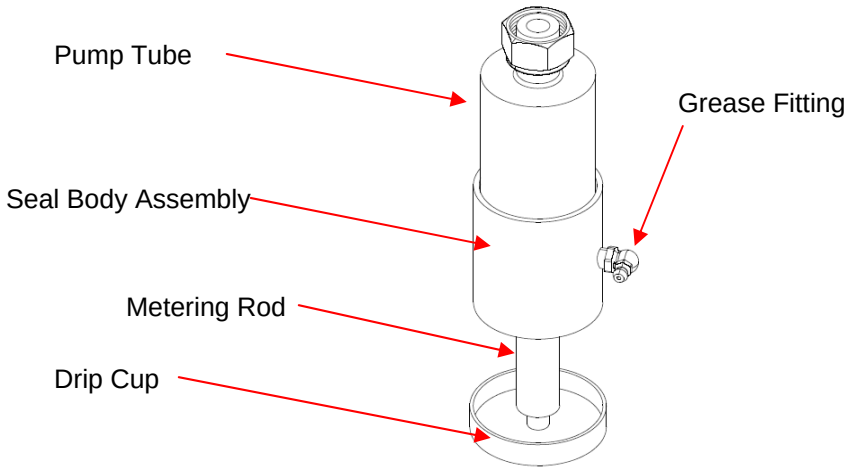
☞ Ensure that the product feed system is not pressurized. Always wear protective clothing and eye protection when servicing the machine.

1. Remove the machine’s front cover.

2. In MANUAL mode, move the main (Pump) actuator up about midway of the stroke. If the Rod Extension Forks are installed—remove the one to the applicable pump. Then use the manual screen to retract the (main) pump actuator. This will leave the rod inserted inside the pump about midway.
3. If using gravity feed to this pump, use the Manual Mode to place the 3-way ball valve in the 'dispense' position. This will prevent product flowing when the valve is removed.
4. Have some wipes ready when the Pump Assembly (shown below) is removed to catch oozing product (from the 3-way ball valve).

☞ **Make sure that the ball valve is in the dispense position; otherwise when the pump is removed, product will continue to flow out of the valve.**

Pump Assembly



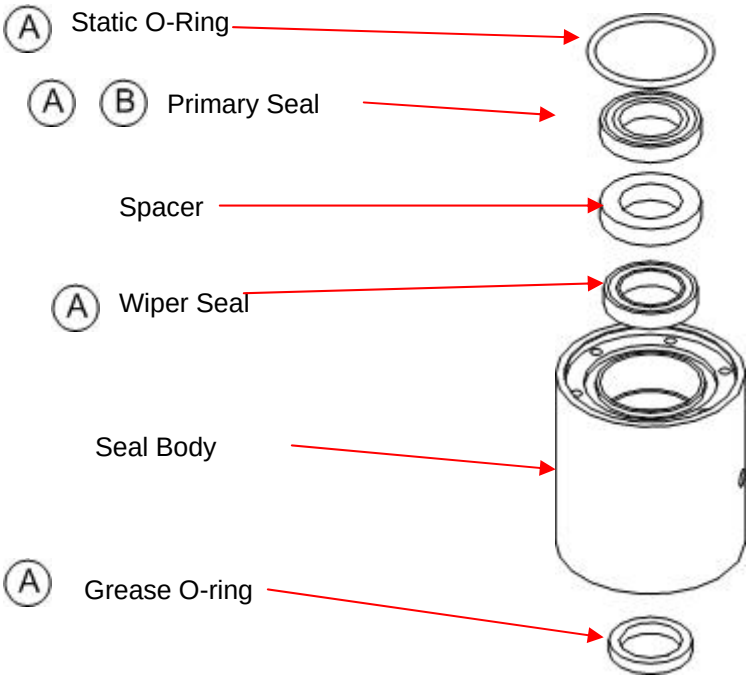
4. Use a long handle 1-1/8"open-end wrench and loosen the compression fitting on the metering pump; pull the pump down and remove from the machine.
5. Place paper or cloth wipes beneath the metering pump to catch any product drip from the bottom of the 3-way ball valve.

8.2 Replacing the Pump Seals

☞ **Exercise care when removing the seals and seal spacer. Do not score or mar the inside diameter surface of the seal assembly or seal spacer; product leakage will occur.**

1. Remove the required pump from the machine.

2. Pull out the metering rod and wipe clean using isopropyl alcohol or acetone.
3. Remove six hex screws from the bottom of the Metering Pump.
4. Take the lower part of the pump and clean the adhesive off the top.
5. Remove the static o-ring, and the primary seal.
6. Carefully remove the seal spacer [Do Not use a sharp object]. The spacer should slip out. You may also try to tap the seal assembly against a table or in some cases it may be necessary to gently tap the spacer from the bottom (grease o-ring) side with a blunt tool.
7. With the spacer removed, then remove the wiper seal.
8. Installation is in the reverse order. Lightly lubricate the seals with silicone grease before installing the pump in the machine.



(A) Available in Seal Kit (see section 9 Accessories and Spare Parts)

(B) Available in Primary Seal (see section 9 Accessories and Spare Parts)

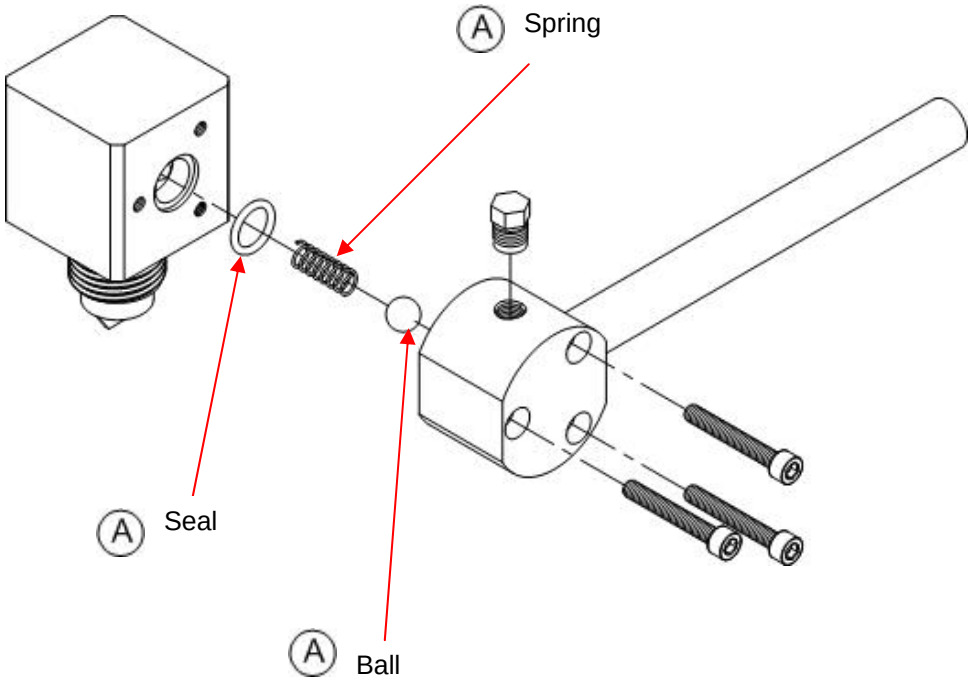
8.3 Mix Block Repair Kit Replacement

The Mix-Block has a spring and ball arrangement that act as a check valve to allow product to move in one direction only—out towards the dispense nozzle. In this manner, product cannot be forced back into the product flow path (towards the pumps). This also prevents one adhesive component from making its way into the other component's product path. A seal prevents

product leakage at the interface point between the mix-block and the end caps.

⚠ **Ensure that the feed system is depressurized, and that a cycle start cannot be initiated.**

- The mix-block seal kit is comprised of two stainless steel balls, two springs and two seals.
- Remove three hex screws (either side) from the end cap assembly (the one side requiring the change).
- Remove the ball and spring and insert the new (replacement) set. Replace the seal on the side of the mix block.
- Re-install the end cap assembly to the mix-block assembly.
- Perform a purge to ensure product flow and air removal from the system.



Ⓐ Available as Mix Block Manifold Seal Kit item # 1069945

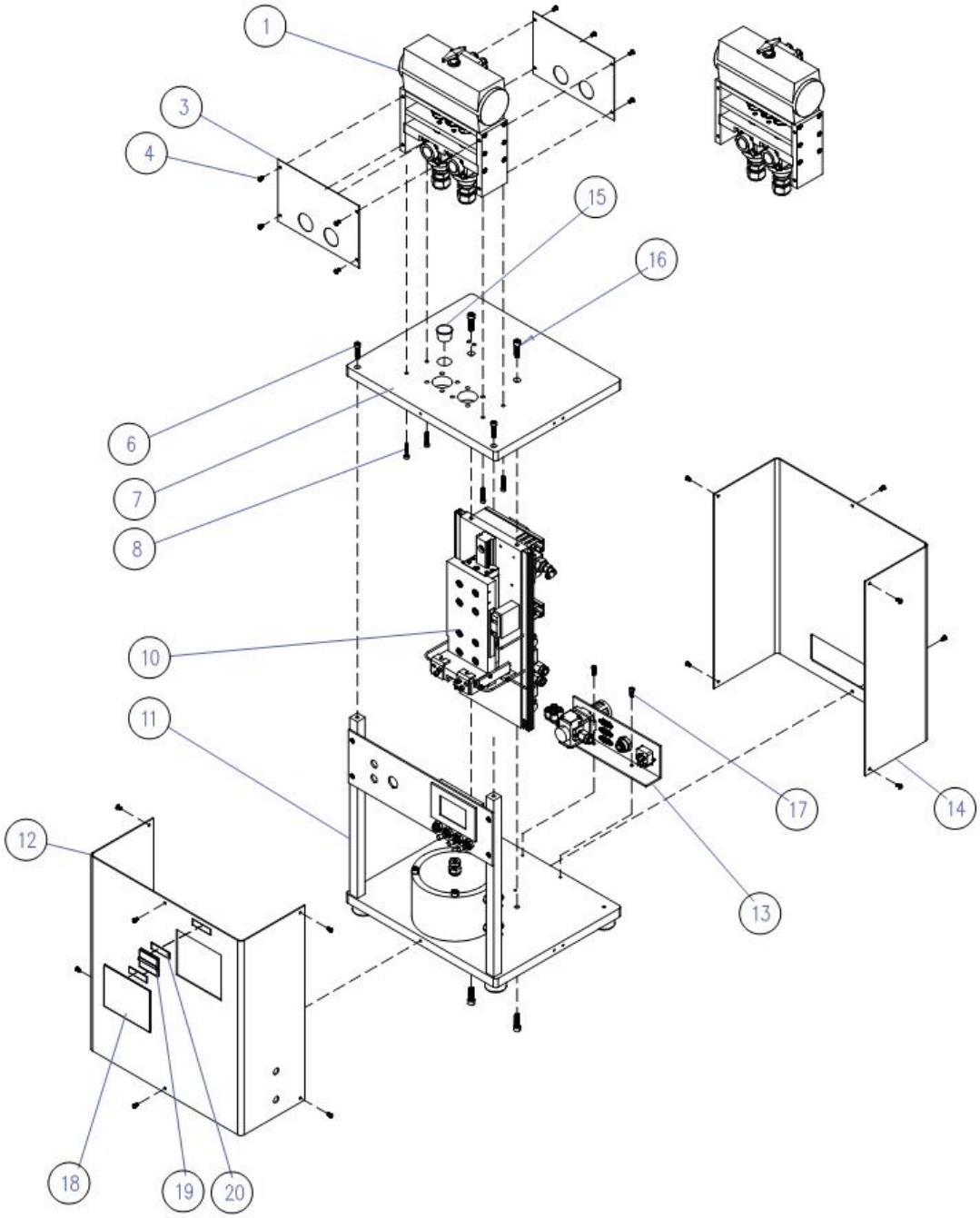
9 Accessories and Spare Parts

Description	Item Num#
9.5 L Tank Gravity Feed Reservoir Kit Includes Tank, fittings, tubing and mounting hardware	1051660
7 L Gallon Nickel Plated Steel Gravity Feed Reservoir Includes: Lid, tubing, and fittings	1051659
Gravity Tank Stand (for either 9.5 or 7 liter, can hold 2 tanks)	1051651
Low Level Sensor and Bracket for 9.5 L Tank	1051629
Low Level Sensor and Adapter for 7 L Tank	1051630
Agitator Assembly (electric)	1051655
Tank Heater Assembly (for 7 liter tank)	1051654
Night Cap with Nut	1053260
Ratio Cap with Nut	1053261
High Viscosity Differential Valve, General Purpose	1079254
High Viscosity Differential Valve, MMA	1079256
Orifice Kit, High Viscosity Differential Valve	1079255
Electric Footswitch	97201
Disposable Desiccant Breather	1051567
Precision Flow Rate Controller	1051695
Stainless steel dispense mix-block manifold	1069947
Mix Block Manifold Seal Kit (includes seals, balls and springs)	1069945
Mix Block Assembly (8901168 complete)	1167586
3-Way Ball Valve Repair Kit, for 8901166	1069944
3-Way Ball Valve Repair Kit, for 8901587	1130327
19.1 mm Seal, Primary, General Purpose	1061920
13.5 mm Seal, Primary, General Purpose	1061919
9.5 mm Seal, Primary, General Purpose	1061918
6.0 mm Seal, Primary, General Purpose	1061917
Custom, General Purpose Primary Seal (must specify size)	1176436
19.1 mm Seal, Primary, MMA	1062436
6.0 mm Seal, Primary, MMA	1061916
Custom, MMA Primary Seal (must specify size)	1176438
19.1 mm Seal kit, General Purpose	1061915
13.5 mm Seal Kit, General Purpose	1061914
9.5 mm Seal Kit, General Purpose	1061913
6.0 mm Seal Kit, General Purpose	1061912
Custom, General Purpose Seal Kit (must specify size)	1176437
19.1 mm Seal Kit, MMA	1061911
6.0 mm Seal Kit, MMA	1061900
Custom, MMA Seal Kit (must specify size)	1180635
19.1 mm Pump Assembly, General Purpose	1046192
13.5 mm Pump Assembly, General Purpose	1046191
9.5 mm Pump Assembly, General Purpose	1046170
6.0 mm Pump Assembly, General Purpose	1046169
19.1 mm Pump Assembly, MMA	1046161
6.0 mm Pump Assembly, MMA	1046166
Custom Pump Assembly, General Purpose (must specify size)	1046168
Custom Pump Assembly, MMA (must specify size)	1046165

For parts not listed on this list, please contact 1-800-LOCTITE

10 Exploded Diagram Parts List

8901179 Programmable Base

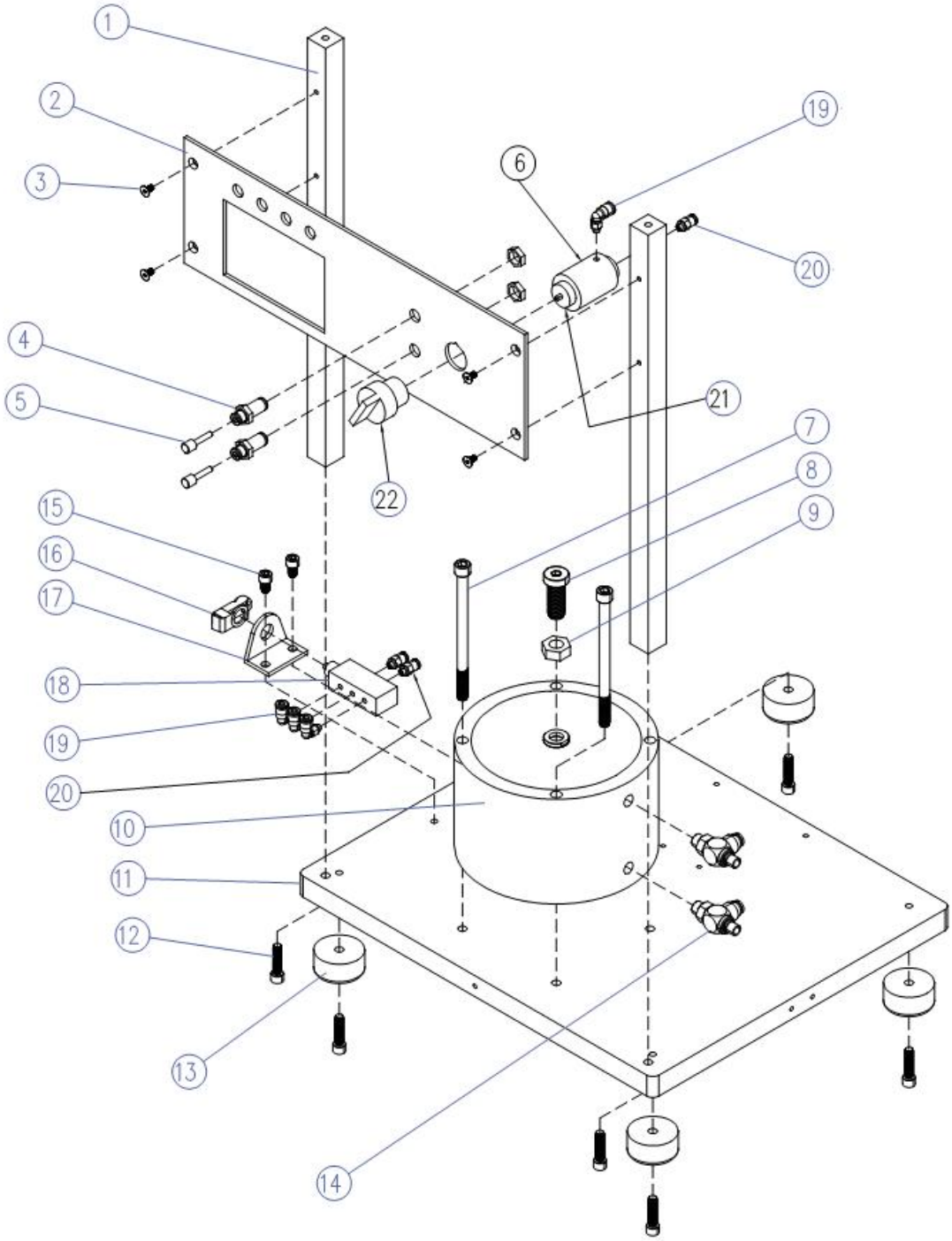


DURAPUMP PROGRAMMABLE BASE
EXPLODED VIEW & BOM

8901179

ITEM	QTY.	DESCRIPTION	PART NUMBER
		PARTS LIST	
20	2	FOAM TAPE, 1/2" X 1 3/4 LONG, CLEAR, CUT TO LENGTH	8901374
19	1	ACRYLIC HINGE 1 1/2 X 1 3/4	8901375
18	1	POLYCARBONATE DOOR 3 1/2 X 4 1/2 X 1/16	8901376
17	2	SOCKET HEAD CAP SCREW #10-24 X 3/8, BLACK OXIDE	8901215
16	4	SOCKET HEAD CAP SCREW 5/16-18 X 1, STAINLESS STEEL	980883
15	1	HOLE PLUG (FOR 3/4 NPT)	8901162
14	1	DURAPUMP REAR COVER	8901174
13	1	DURAPUMP REAR PORT ASSEMBLY, PROGRAMMABLE VERSION	8901173
12	1	DURAPUMP FRONT COVER WITH ARTWORK	8901171
11	1	DURAPUMP BASE ASSEMBLY EXPLODED VIEW, PROGRAMMABLE VERSION	8901170
10	1	DURAPUMP SLIDE ASSEMBLY EXPLODED VIEW	8901169
9	1	PNEUMATIC DIAGRAM	8901439
8	4	SOCKET HEAD CAP SCREW #10-24 X 1, ALLOY STEEL	984738
7	1	DURAPUMP TOP PLATE	8901175
6	2	SOCKET HEAD CAP SCREW 1/4-20 X 1, STAINLESS STEEL	981703
5			
4	20	BUTTON HEAD SOCKET SCREW #8-32 X 1/4, STAINLESS STEEL	8901164
3	2	DURAPUMP VALVE DRIVE COVER	8901167
2	1	ELECTRICAL SCHEMATIC	8901336
1	1	DURAPUMP VALVE DRIVE ASSEMBLY EXPLODED VIEW	8901165

8901307 Durapump Base Assembly

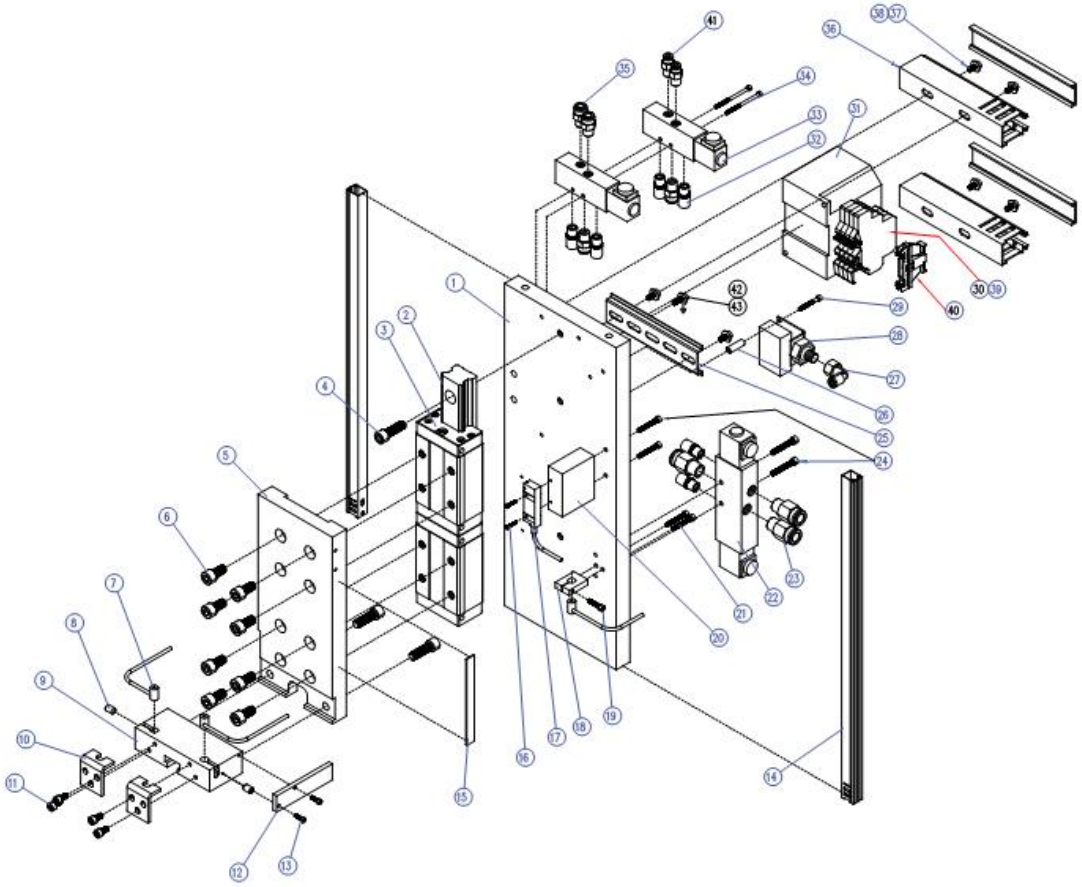


DURAPUMP BASE EXPLODED VIEW
PNEUMATIC VERSION

8901307

22	1	MANUAL ACTUATOR, 90 DEGREE TWIST, MAINTAINED	8901339
21	1	VALVE ADAPTOR FOR PUSHBUTTONS	8901338
20	3	FITTING, MALE CONNECTOR, 5 /32 TUBE X #10-32	8901333
19	4	FITTING, MALE ELBOW, 5/32 TUBE X #10-32	8900555
18	1	SPOOL VALVE, 4 WAY, PLUNGER ACTUATED	8901342
17	1	VALVE MOUNTING BRACKET	8901341
16	1	ROLLER CAM ACTUATOR	8901340
15	2	SOCKET HEAD CAP SCREW 1/4-20 X 3/8, BLACK OXIDE	982591
14	2	FLOW CONTROL, 1/4 TUBING X 1/8 NPT	8901243
13	4	RUBBER FEET WITH STEEL WASHER	8901242
12	6	SOCKET HEAD CAP SCREW, 1/4-20 X 1", BLACK OXIDE	981474
11	1	BASE PLATE	8901244
10	1	CYLINDER, 5" BORE, DOUBLE ACTING	8901241
9	1	REGULAR HEX JAM NUT 1/2-13, ZINC PLATED	8901236
8	1	LOW HEAD SOCKET CAP SCREW, 1/2-13 X 1 1/4, BLACK OXIDE	8901238
7	2	SOCKET HEAD CAP SCREW 5/16-18 X 4 1/2, BLACK OXIDE	8901237
6	1	POPPET VALVE, 3 WAY	985338
5	2	FITTING PLUG, 5/32 TUBING	8901240
4	4	BULKHEAD FITTING, 5/32 TUBING	8901239
3	4	FLAT HEAD SOCKET SCREW, #8-32 X 5/16, BLACK OXIDE	987958
2	2	BASE ASSEMBLY CONTROL PLATE	8901246
1	2	BASE ASSEMBLY POST	8901245
ITEM	QTY.	DESCRIPTION	PART NUMBER
PARTS LIST			

8901169 Linear Slide Assembly



8901169 Linear Slide Assembly BOM

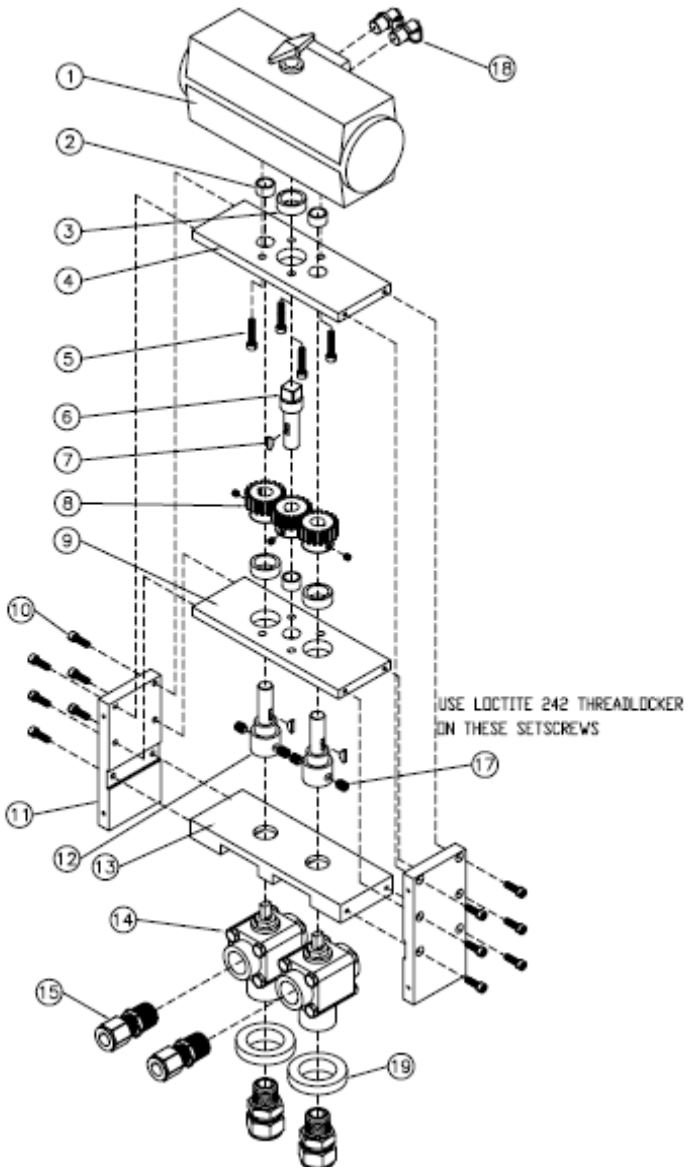
DURAPUMP SLIDE ASSEMBLY EXPLODED

8901169

ITEM	QTY.	DESCRIPTION	PART NUMBER
43	1	FLAT WASHER11/64 X 3/8 X 1/32, STAINLESS STEEL	8901378
42	1	SOCKET HEAD CAP SCREW #8-32 X 1/2, STAINLESS STEEL	980884
41	2	MALE CONNECTOR FITTING, 5/32 TUBE X 1/8 NPT	983660
40	1	TERMINAL BLOCK END STOP	988306
39	6	TERMINAL BLOCK JUMPER	8901304
38	6	#8 SAE FLAT WASHER	983859
37	6	SOCKET HEAD CAP SCREW #8-32 X 3/8, BLACK OXIDE	982804
36	2	WIRE DUCT 1 X 1 1/2, CUT LENGTH TO 5 1/2"	8901302
35	4	MALE CONNECTOR FITTING, 1/4 TUBE X 1/8 NPT	983666
34	2	SOCKET HEAD CAP SCREW #4-40 X 1 3/4, BLACK OXIDE	8901218
33	1	4 WAY VALVE, 2 POSITION, SINGLE SOLENOID	8901223
32	6	MUFFLER, 1/8 NPT	8901224
31	1	PROGRAMMABLE LOGIC CONTROLLER	8901227
30	4	TERMINAL BLOCK	8901303
29	1	SOCKET HEAD CAP SCREW #4-40 X 1, STAINLESS STEEL	8901217
28	1	PRESSURE SWITCH	8901226
27	1	FEMALE ELBOW FITTING, 5/32 TUBING X 1/8 NPT	983688
26	1	ROUND STANDOFF, 1/4 OD X 1 LONG	8901225
25	1	DIN RAIL 35MM, CUT LENGTH TO 5"	988313
24	4	SOCKET HEAD CAP SCREW #8-32 X 1, BLACK OXIDE	992439
23	3	MALE CONNECTOR FITTING, 1/4 TUBE X 1/4 NPT	983663
22	1	4 WAY VALVE, 3 POSITION, DOUBLE SOLENOID	8901222
21	2	SOCKET HEAD CAP SCREW #6-32 X 1, BLACK OXIDE	985633
20	1	MAGNETIC TRANSDUCER MOUNTING BLOCK	8901234
19	1	SOCKET HEAD CAP SCREW #6-32 X 5/8, BLACK OXIDE	992832
18	1	HOME SWITCH MOUNTING BRACKET	8901233
17	1	MAGNETIC TRANSDUCER	8901221
16	2	SOCKET HEAD CAP SCREW #2-56 X 1/2, BLACK OXIDE	8901235
15	1	MAGNETIC TAPE STRIP 3" LONG	8901220
14	2	WIRE DUCT 1/2 X 5/8, CUT LENGTH TO 15"	8901301
13	2	SOCKET HEAD CAP SCREW #4-40 X 3/8, BLACK OXIDE	998722
12	1	HOME SENSOR CONTACT PLATE	8901232
11	4	SOCKET HEAD CAP SCREW #10-24 X 3/8, BLACK OXIDE	8901215
10	2	HORIZONTAL SLIDE PLATE FORK BRACKET	8901231
9	1	HORIZONTAL SLIDE PLATE	8901230
8	2	CUP POINT SOCKET SET SCREW 1/4-20 X 3/8, BLACK OXIDE	981371
7	3	DRIP PROOF SENSOR	8901219
6	8	SOCKET HEAD CAP SCREW M8 X 1.25 X 16MM LG, BLACK OXIDE	8901214
5	1	VERTICAL SLIDE MOUNTING PLATE	8901229
4	6	SOCKET HEAD CAP SCREW 5/16-18 X 1, BLACK OXIDE	999864
3	2	LINEAR SLIDE BLOCK	8901212
2	1	LINEAR SLIDE RAIL	8901213
1	1	MAIN VERTICAL PLATE	8901228

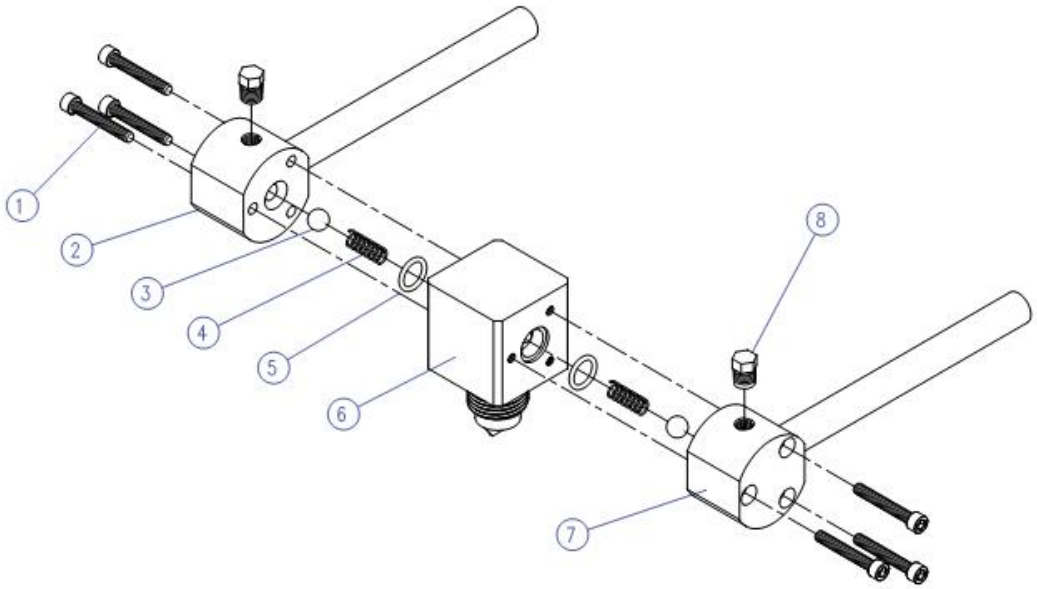
PARTS LIST

8901165 Valve Drive Assembly



8901165 Valve Drive Assembly BOM

ITEM	QTY.	DESCRIPTION	PART NUMBER
19	2	BALL VALVE SPACER	8901588
18	2	FITTING, QUICK CONNECT ELBOW 1/4 TUBE X 1/4 NPT	983667
17	4	DOG POINT SOCKET SET SCREW 5/16–18 X 3/8	982334
16	2	MALE CONNECTOR FITTING, 3/4 TUBE X 1/2 NPT	8901201
15	2	MALE CONNECTOR FITTING, 1/2 TUBE X 1/2 NPT	8901200
14	2	3 WAY BALL VALVE, 1/2 NPT	8901587
13	1	VALVE MOUNTING PLATE	8901204
12	2	VALVE DRIVE SHAFT	8901182
11	2	VALVE DRIVE SIDE PLATE	8901184
10	12	SOCKET HEAD CAP SCREW #10–24 X 5/8 LONG	8901144
9	1	VALVE DRIVE BOTTOM PLATE	8901185
8	3	VALVE DRIVE GEARS, 16 PITCH, 20 TEETH, 14.5° PRESSURE ANGLE	8901143
7	3	WOODRUFF KEY #3 (USA 404)	8901145
6	1	VALVE DRIVE ACTUATOR SHAFT	8901183
5	4	SOCKET HEAD CAP SCREW 1/4–20 X 5/8 LONG	995661
4	1	VALVE DRIVE TOP PLATE	8901181
3	3	BRONZE SLEEVE BEARING .750 X 1.000 X .375	8901147
2	3	BRONZE SLEEVE BEARING .500 X .625 X .375	8901146
1	1	VALVE ACTUATOR	8901180

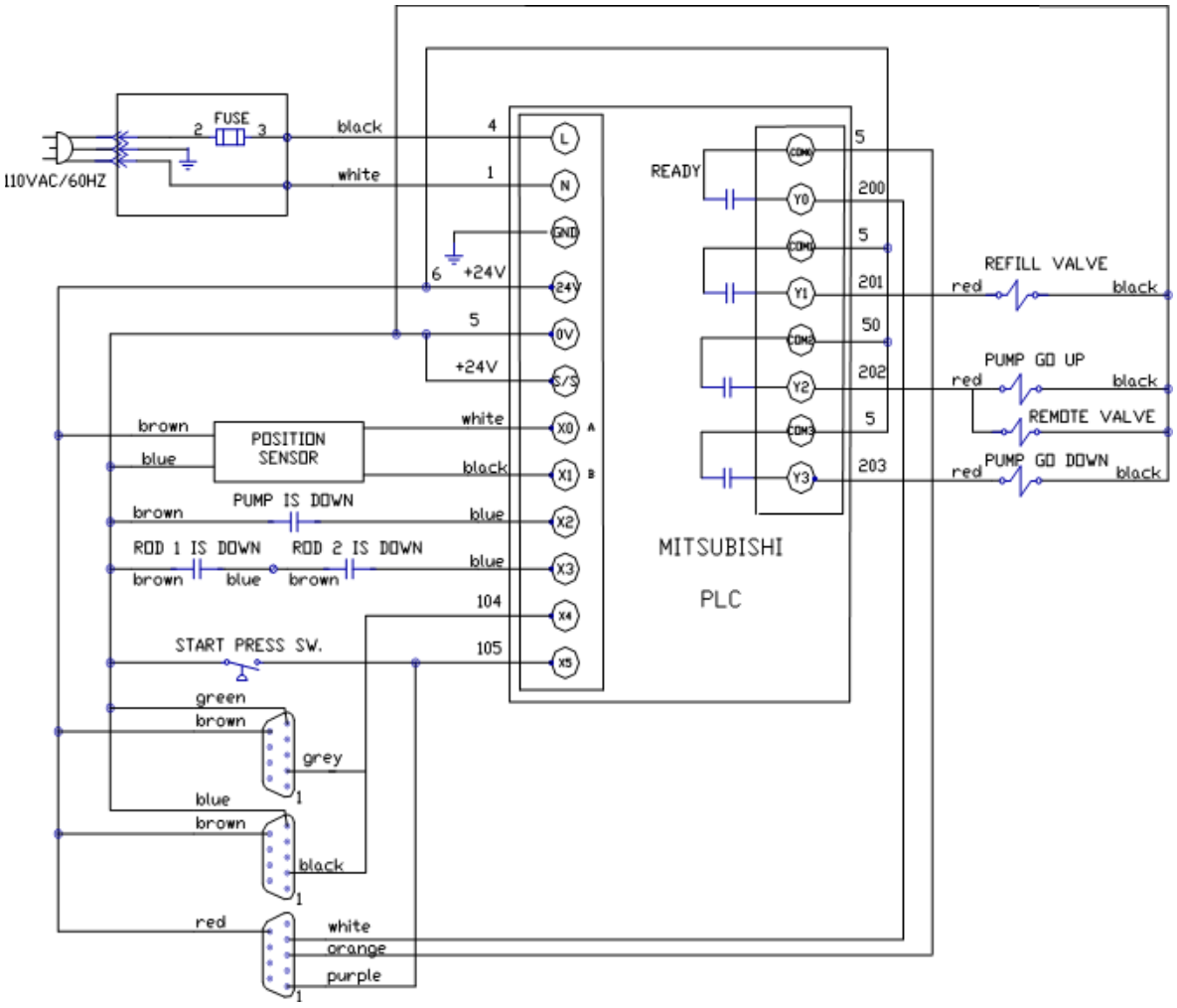


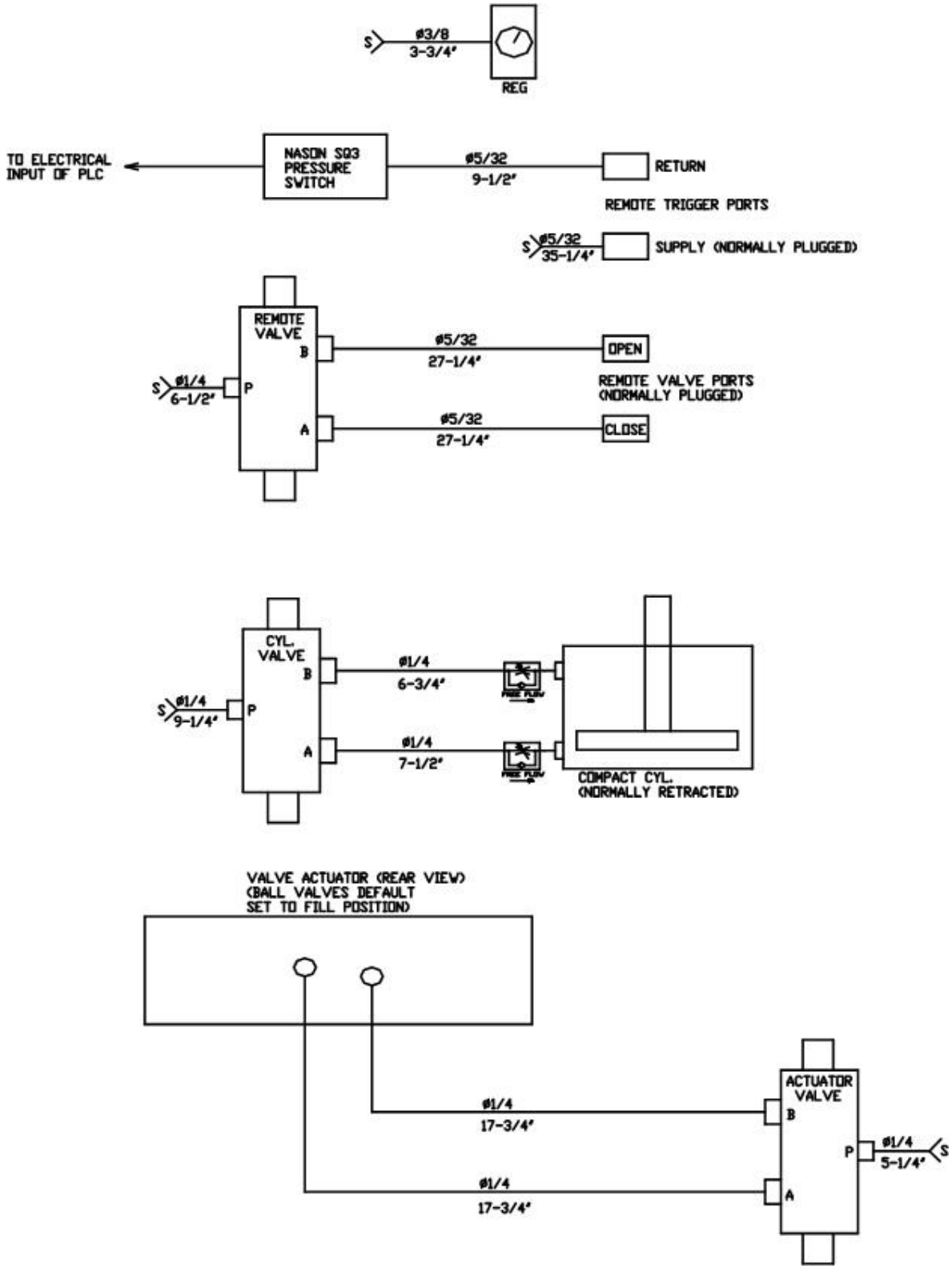
MIX BLOCK ASSEMBLY EXPLODED

C-8901168

ITEM	QTY.	DESCRIPTION	PART NUMBER
		PARTS LIST	
8	2	HEX HEAD PLUG 1/16 NPT, STAINLESS STEEL	8901110
7	1	RIGHT END CAP ASSEMBLY	8901207
6	1	MIX BLOCK	8901208
5	2	O-RING #2-013, PTFE	8901140
4	2	COMPRESSION SPRING, .240 OD X .024 WIRE X 3/4	8901141
3	2	BALL, 5/16 DIAMETER	8901142
2	1	LEFT END CAP ASSEMBLY	8901206
1	6	SOCKET HEAD CAP SCREW #8-32 X 1 1/8 LONG, STAINLESS STEEL	8901148

11 Electrical & Pneumatic Diagrams




S
ø3/8
3-3/4"
REG
TO ELECTRICAL
INPUT OF PLC
NASON SQ3
PRESSURE
SWITCH
ø5/32
9-1/2"
RETURN
REMOTE TRIGGER PORTS
S
ø5/32
35-1/4"
SUPPLY (NORMALLY PLUGGED)
REMOTE
VALVE
B
A
P
S
ø1/4
6-1/2"
ø5/32
27-1/4"
OPEN
ø5/32
27-1/4"
CLOSE
REMOTE VALVE PORTS
(NORMALLY PLUGGED)
CYL.
VALVE
B
A
P
S
ø1/4
9-1/4"
ø1/4
6-3/4"
ø1/4
7-1/2"
COMPACT CYL.
(NORMALLY RETRACTED)
VALVE ACTUATOR (REAR VIEW)
(BALL VALVES DEFAULT
SET TO FILL POSITION)
ACTUATOR
VALVE
B
A
P
ø1/4
17-3/4"
ø1/4
17-3/4"
ø1/4
5-1/4"
S

12 Warranty

Henkel expressly warrants that all products referred to in this Instruction Manual for (Henkel DuraPump Meter Mix Dispense System) (hereafter called "Products") shall be free from defects in materials and workmanship. Liability for Henkel shall be limited, as its option, to replacing those Products which are shown to be defective in either materials or workmanship or to credit the purchaser the amount of the purchase price thereof (plus freight and insurance charges paid therefor by the user). The purchaser's sole and exclusive remedy for breach of warranty shall be such replacement or credit.

A claim of defect in materials or workmanship in any Products shall be allowed only when it is submitted in writing within one month after discovery of the defect or after the time the defect should reasonably have been discovered and in any event, within (12) months after the delivery of the Products to the purchaser. This warranty does not apply to perishable items (such as seals, fuses, filters, lights, etc.). No such claim shall be allowed in respect of products which have been neglected or improperly stored, transported, handled, installed, connected, operated, used or maintained. In the event of unauthorized modification of the Products including, where products, parts or attachments for use in connection with the Products are available from Henkel, the use of products, parts or attachments which are not manufactured by Henkel, no claim shall be allowed.

No Products shall be returned to Henkel for any reason without prior written approval from Henkel. Products shall be returned freight prepaid, in accordance with instructions from Henkel.

NO WARRANTY IS EXTENDED TO ANY EQUIPMENT WHICH HAS BEEN ALTERED, MISUSED, NEGLECTED, OR DAMAGED BY ACCIDENT.

EXCEPT FOR THE EXPRESS WARRANTY CONTAINED IN THIS SECTION, HENKEL MAKES NO WARRANTY OF ANY KIND WHATSOEVER, EXPRESS OR IMPLIED, WITH RESPECT TO THE PRODUCTS.

ALL WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, AND OTHER WARRANTIES OF WHATEVER KIND (INCLUDING AGAINST PATENT OR TRADEMARK INFRINGEMENT) ARE HEREBY DISCLAIMED BY HENKEL AND WAIVED BY THE PURCHASER.

THIS SECTION SETS FORTH EXCLUSIVELY ALL OF LIABILITY FOR HENKEL TO THE PURCHASER IN CONTRACT, IN TORT OR OTHERWISE IN THE EVENT OF DEFECTIVE PRODUCTS.

WITHOUT LIMITATION OF THE FOREGOING, TO THE FULLEST EXTENT POSSIBLE UNDER APPLICABLE LAWS, HENKEL EXPRESSLY DISCLAIMS ANY LIABILITY WHATSOEVER FOR ANY DAMAGES INCURRED DIRECTLY OR INDIRECTLY IN CONNECTION WITH THE SALE OR USE OF, OR OTHERWISE IN CONNECTION WITH, THE PRODUCTS, INCLUDING, WITHOUT LIMITATION, LOSS OF PROFITS AND SPECIAL, INDIRECT OR CONSEQUENTIAL DAMAGES, WHETHER CAUSED BY NEGLIGENCE FROM HENKEL OR OTHERWISE.

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Manual P/N: 8901401 Rev E, 04/2009