

## BTX Lubricators and Systems

### Description

#### CAUTION

**These lubricators are to be used with mineral and synthetic greases. The use of alternate products can cause damage to components.**

BTX Systems are configured starting with the base lubricator models shown in **Figure 1**. All models are designed to dispense up to NLGI-2 grease to remote machine ports

#### BTX Lubricators

The reservoir contains a pressure relief valve and a lubrication fitting. The fitting allows the reservoir to be filled with a grease gun or pump.

Behind the fitting is a serviceable filter to keep out contaminants that can damage components of the pump and divider blocks in the centralized system.

The bottom cover is equipped with:

- indicator lights that inform the user of the lubricator status (with optional remote alarm connection)
- a lever for immediate single shot dispensing of grease

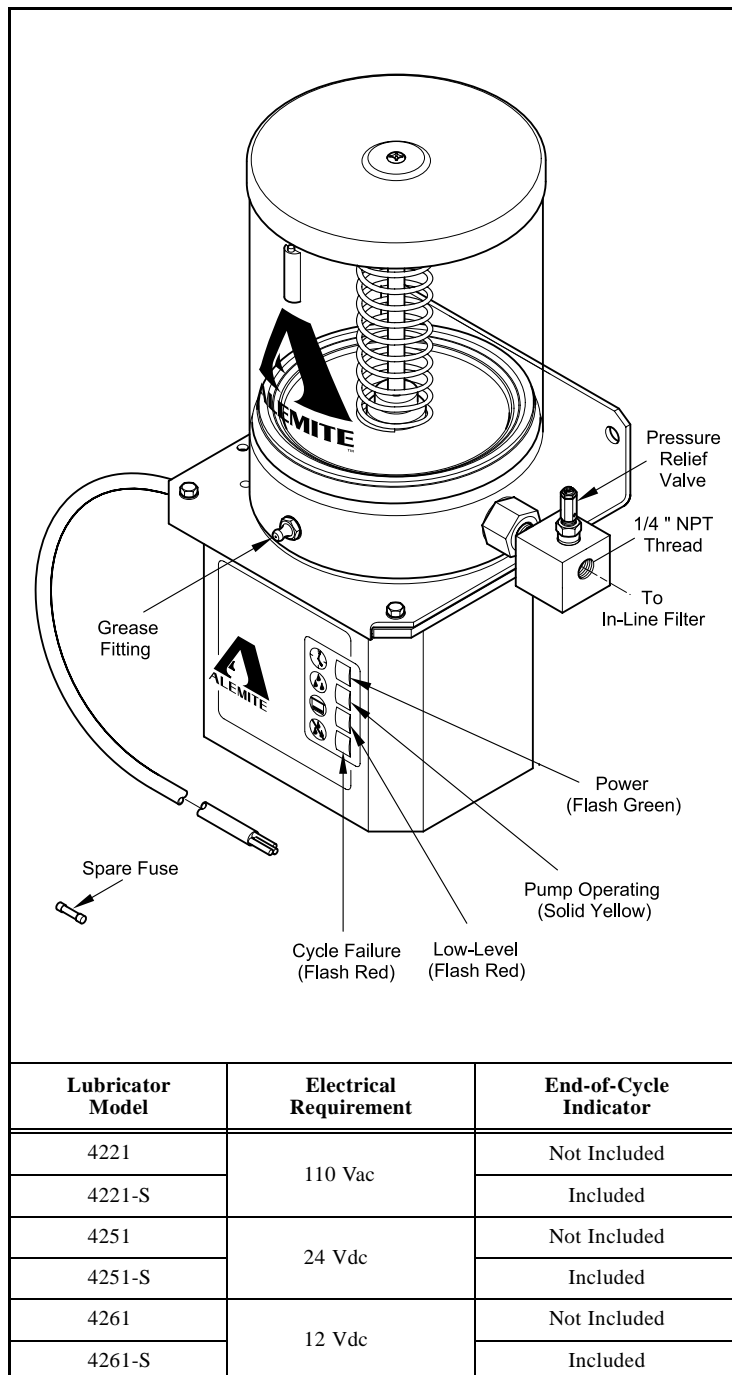
#### Additional Components and Accessories

Fittings and divider blocks necessary for completing centralized grease systems are shipped loose. Accessories include:

- smaller DPS divider blocks (with and without end-of-cycle sensors (EOCS))
- larger sized DPX divider blocks (with and without EOCS)
- metering screws both for DPS divider blocks (3 sizes) and DPX divider blocks (3 sizes)

Additional accessories available are:

- in-line grease filters and fault indicator kits
- plugs to replace tube fittings
- blowout fitting with rupture discs
- shunt kits to reroute in system configurations
- compression fittings for steel tubing



**Figure 1** Lubricator Model 4221 Series, 4251 Series, and 4261 Series

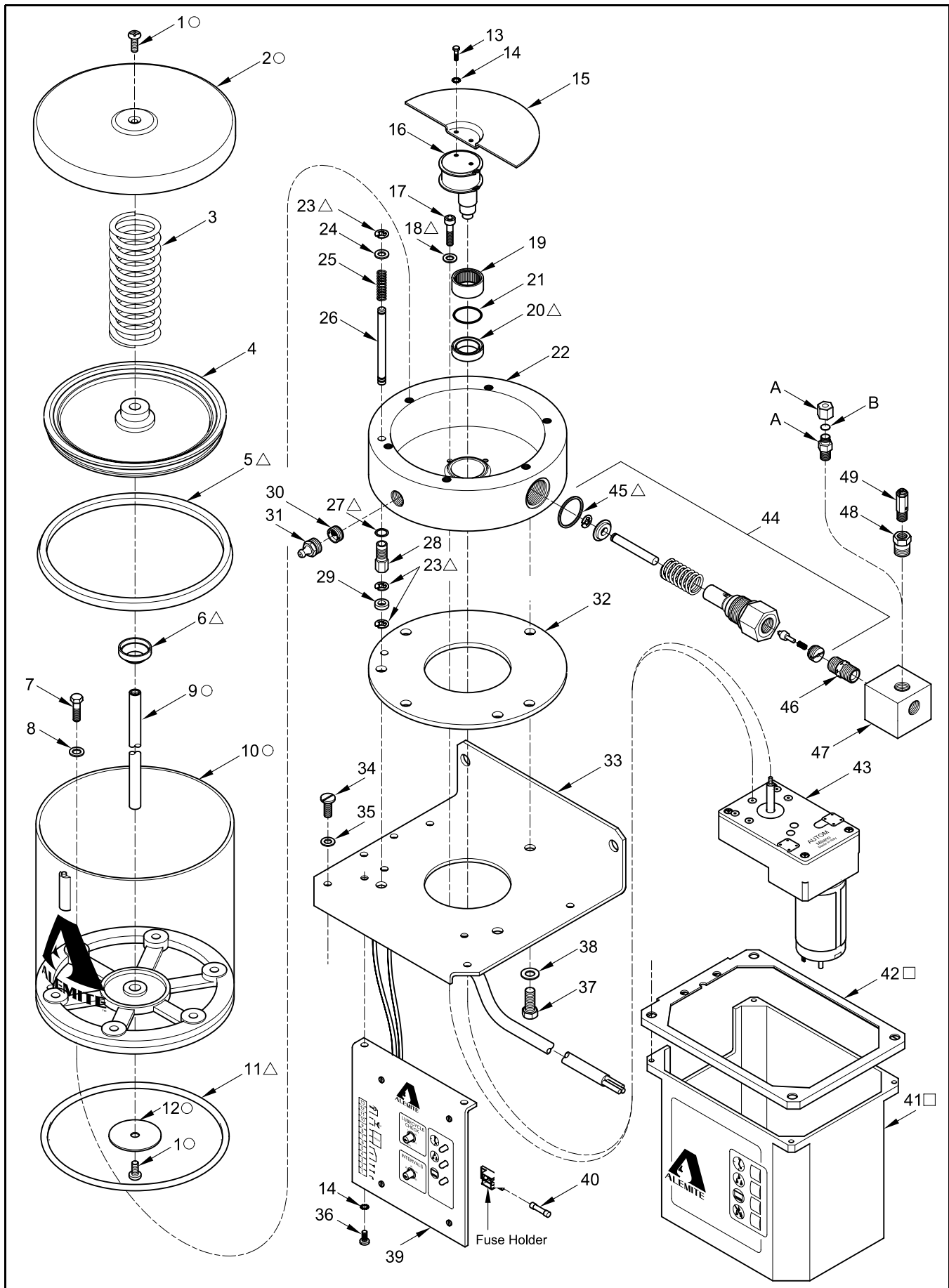


Figure 2 Lubricator Model 4221 Series, 4251 Series, and 4261 Series - Exploded View

| Item No.                                   | Part No. | Description and Model                         | Qty            | Notes | Numeric Order Part # (Item #)       |                     |             |
|--|----------|---|----------------|-------|-------------------------------------|---------------------|-------------|
| 1  |          | Screw, M6 x 16                                | 2              | ○     | (1)                                 |                     |             |
| 2  |          | Cover, Top                                    | 1              | ○     | (2)                                 |                     |             |
| 3  |          | Spring, Follower Plate                        | 1              |       | (3)                                 |                     |             |
| 4  |          | Plate, Follower                               | 1              |       | (4)                                 |                     |             |
| 5  |          | Scraper, Outer                                | 1              | △     | (5)                                 |                     |             |
| 6  |          | Scraper, Inner                                | 1              | △     | (6)                                 |                     |             |
| 7  |          | Screw, M16 x 18                               | 6              |       | (7)                                 |                     |             |
| 8  |          | Washer  | 6              |       | (8)                                 |                     |             |
| 9  |          | Post, Center                                  | 1              | ○     | (9)                                 |                     |             |
| 10   |          | Reservoir                                     | 1              | ○     | (10)                                |                     |             |
| 11   |          | O-Ring  | 1              | △     | (11)                                |                     |             |
| 12   |          | Washer  | 1              | ○     | (12)                                |                     |             |
| 13   |          | Screw, M4 x 8                                 | 2              |       | (13)                                |                     |             |
| 14   |          | Washer, Serrated                              | 4              |       | (14)                                |                     |             |
| 15   |          | Plate, Swash                                  | 1              |       | (15)                                |                     |             |
| 16   | 339726   | Cam Assembly, Motor                           | 1              |       | (17)                                |                     |             |
| 17   |          | Screw, M4 x 20                                | 3              |       | (18)                                |                     |             |
| 18   |          | Washer  | 3              | △     | (20)                                |                     |             |
| 19   | 339727   | Bearing, Needle                               | 1              |       | (21)                                |                     |             |
| 20   |          | Seal  | 1              | △     | (22)                                |                     |             |
| 21   |          | Ring, Seal Retainer                           | 1              |       | (23)                                |                     |             |
| 22   |          | Housing                                       | 1              |       | (24)                                |                     |             |
| 23   |          | Ring, Retaining                               | 3              | △     | (25)                                |                     |             |
| 24   |          | Washer  | 1              |       | (26)                                |                     |             |
| 25   |          | Spring  | 1              |       | (27)                                |                     |             |
| 26   |          | Rod, Level Switch                             | 1              |       | (28)                                |                     |             |
| 27   |          | O-Ring  | 1              | △     | (29)                                |                     |             |
| 28   |          | Coupling                                      | 1              |       | (32)                                |                     |             |
| 29   |          | Magnet  | 1              |       | (33)                                |                     |             |
| 30   | 339715   | Filter, 100 Micron                            | 1              |       | (34)                                |                     |             |
| 31   | 1627-B   | Fitting, Grease                               | 1              |       | (35)                                |                     |             |
| 32   |          | Gasket  | 1              |       | (36)                                |                     |             |
| 33   |          | Bracket                                       | 1              |       | (37)                                |                     |             |
| 34   |          | Screw, M4 x 16                                | 4              |       | (38)                                |                     |             |
| 35   |          | Washer  | 4              |       | (40)                                |                     |             |
| 36   |          | Screw, M4 x 6                                 | 2              |       | (43)                                |                     |             |
| 37   |          | Screw, M6 x 14                                | 3              |       | (45)                                |                     |             |
| 38   |          | Washer  | 3              |       | (46)                                |                     |             |
| 39   | 393746   | Face Panel and PCB Assembly (12 Vdc / 24 Vdc) | 4251-S, 4261-S | 1     | Includes Item 40<br>(Quantity of 1) | (48)                |             |
|  | 393747   | Face Panel and PCB Assembly (110 Vac)         | 4221-S         | 1     |                                     | 1627-B (31)         |             |
|  | 393759   | Face Panel and PCB Assembly (12 Vdc / 24 Vdc) | 4251, 4261     | 1     |                                     | 339715 (30)         |             |
|  | 393760   | Face Panel and PCB Assembly (110 Vac)         | 4221           | 1     |                                     | 339717 (43)         |             |
| 40   |          | Fuse, 2 Amp (250 Volt)                        |                | 2     | 339718 (43)                         |                     |             |
| 41   | 340287   | Cover, Bottom                                 | All            | 1     | □                                   | Replaces all Models | 339724 (49) |
| 42   | 340288   | Gasket, Cover                                 |                | 1     | □                                   |                     | 339726 (16) |
| 43   | 339718   | Motor and Gear Assembly (110 Vac)             | 4221, 4221-S   | 1     |                                     |                     | 339727 (19) |
|  | 339717   | Motor and Gear Assembly (24 Vdc)              | 4251, 4251-S   | 1     |                                     |                     | 340287 (41) |
|  | NPN      | Motor and Gear Assembly (12 Vdc)              | 4261, 4261-S   | 1     |                                     |                     | 340288 (42) |
| 44   | 393748   | Pump Assembly, Piston                         |                | 1     |                                     | Includes Item 45    | 393746 (39) |
| 45   |          | Gasket  |                | 1     | △                                   |                     | 393747 (39) |
| 46   |          | Adapter, 1/4 NPTF (m) x 1/4 " NPTF (m)        | All            | 1     |                                     |                     | 393748 (44) |
| 47   | 710143   | Tee, Square                                   |                | 1     |                                     |                     | 393759 (39) |
| 48   |          | Bushing, 1/4 NPT (m) x 1/8 " NPTF (f)         |                | 1     |                                     |                     | 393760 (39) |
| 49   | 339724   | Valve, Pressure Relief                        |                | 1     |                                     |                     | 710143 (47) |
| Optional Blowout Fitting and Rupture Discs |          |   |                |       |                                     | 710251 (B)          |             |
| A  | 715594   | Fitting, Blowout                              | All            | 1     |                                     |                     | 710301 (B)  |
| B  | 710251   | Disc, Rupture (Pink)                          |                | 1     |                                     | 2500 psi (172 bar)  | 710351 (B)  |
|  | 710301   | Disc, Rupture (Blue)                          |                | 1     |                                     | 3000 psi (207 bar)  | 715594 (A)  |
|  | 710351   | Disc, Rupture (Purple)                        |                | 1     |                                     | 3500 psi (241 bar)  |             |

**Legend:**  
 Part numbers left blank (or in *italics*) are not available separately  
 △○□ designates a repair kit item

**Repair Kits**

| Part No. | Kit Symbol | Description       |
|----------|------------|-------------------|
| 393758   | △          | Kit, Repair       |
| 393755   | ○          | Kit, Reservoir    |
| 340286   | □          | Kit, Bottom Cover |

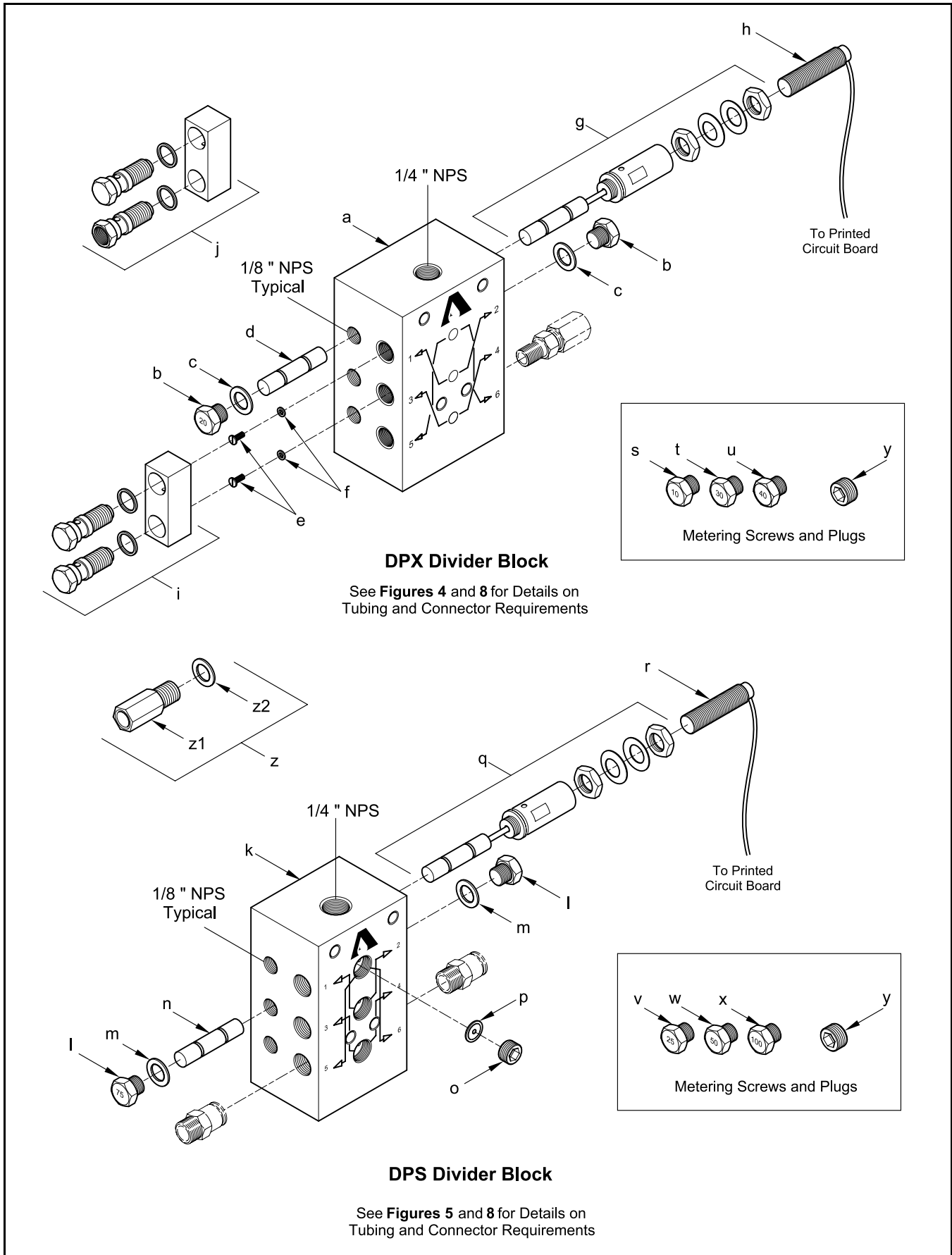
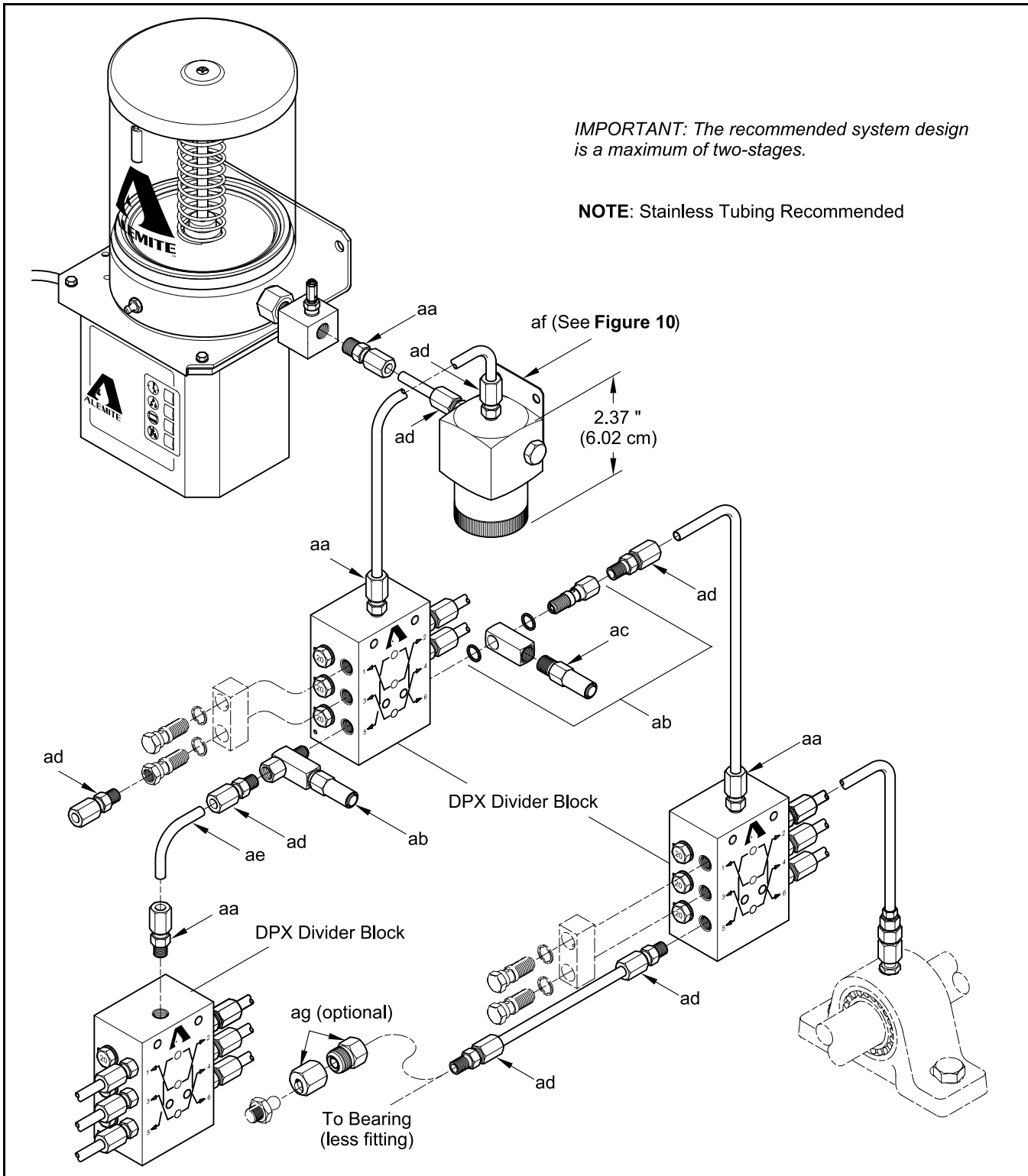


Figure 3 DPX Divider Blocks and DPS Divider Blocks and Accessories

| Item No.   | Part No.   | Description                                | Qty  | Notes                | Numeric Order Part # (Item #) |
|--|------------|--|--|----------------------|-------------------------------|
| <b>DPX Divider Blocks</b>                            |            |  |  |                      |                               |
|  | 339781     | Block Assembly, Divider, 6-Point (NEOCS)   | AR   | Includes Items a - f | (a)                           |
|  | 339782     | Block Assembly, Divider, 8-Point (NEOCS)   |  |                      | (d)                           |
|  | 339783     | Block Assembly, Divider, 10-Point (NEOCS)  |  |                      | (e)                           |
|  | 339784     | Block Assembly, Divider, 12-Point (NEOCS)  |  |                      | (f)                           |
|  | 339981     | Block Assembly, Divider, 6-Point (EOCS)    | AR   | Includes Items a - h | (g)                           |
|  | 339982     | Block Assembly, Divider, 8-Point (EOCS)    |  |                      | (k)                           |
|  | 339983     | Block Assembly, Divider, 10-Point (EOCS)   |  |                      | (n)                           |
|  | 339984     | Block Assembly, Divider, 12-Point (EOCS)   |  |                      | (o)                           |
| a  |            | Block, Divider, 6-Point                    | 1  |                      | (p)                           |
|  |            | Block, Divider, 8-Point                    | 1  |                      | (q)                           |
|  |            | Block, Divider, 10-Point                   | 1  |                      | 339705                        |
|  |            | Block, Divider, 12-Point                   | 1  |                      | 339706                        |
| b  | 339768-200 | Screw, Metering, 20 (0.0122 cu. in.)       | Quantity is Dependent on the Divider Block Model |                      | 339707                        |
| c  | 339786     | Gasket                                     |  |                      | 339721                        |
| d  |            | Piston, Metering                           |  |                      | (r)                           |
| e  |            | Screw                                      |  |                      | 339734-025                    |
| f  |            | Gasket (Aluminum)                          |  | AR                   | (v)                           |
| g  |            | Housing Assembly, Limit Switch [EOCS Only] | 1  |                      | 339734-050                    |
| h  | 339964     | Switch, Limit (End-of-Cycle) [EOCS Only]   | 1  |                      | (w)                           |
| i  | 393751     | Kit, Shunt                                 | AR   |                      | 339734-075                    |
| j  | 393752     | Kit, Blind Shunt                           | AR   |                      | (l)                           |
| <b>Divider Blocks</b>                                |            |  |  |                      |                               |
|  | 339705     | Block Assembly, Divider, 6-Point (NEOCS)   | AR   | Includes Items k - p | 339734-100                    |
|  | 339706     | Block Assembly, Divider, 12-Point (NEOCS)  |  |                      | (x)                           |
|  | 339707     | Block Assembly, Divider, 18-Point (NEOCS)  |  |                      | (m)                           |
|  | 339763     | Block Assembly, Divider, 6-Point (EOCS)    | AR   | Includes Items k - r | 339740                        |
|  | 339764     | Block Assembly, Divider, 12-Point (EOCS)   |  |                      | (i)                           |
|  | 339765     | Block Assembly, Divider, 18-Point (EOCS)   |  |                      | (j)                           |
| k  |            | Block, Divider, 6-Point                    | 1  |                      | 339751                        |
|  |            | Block, Divider, 12-Point                   | 1  |                      | 339752                        |
|  |            | Block, Divider, 18-Point                   | 1  |                      | (y)                           |
| l  | 339734-075 | Screw, Metering, 75 (0.0046 cu. in.)       | Quantity is Dependent on the Divider Block Model |                      | 339761                        |
| m  | 339740     | Gasket                                     |  |                      | 339763                        |
| n  |            | Piston, Metering                           |  |                      | 339764                        |
| o  |            | Screw                                      |  |                      | 339765                        |
| p  |            | Disc                                       |  |                      | 339768-100                    |
| q  |            | Housing Assembly, Limit Switch [EOCS Only] |  | 1                    | (s)                           |
| r  | 339721     | Switch, Limit (End-of-Cycle) [EOCS Only]   |  | 1                    |                               |
| <b>Plug Accessories</b>                              |            |  |  |                      |                               |
| s  | 339768-100 | Screw, Metering, 10 (0.0061 cu. in.)       | AR   | DPX Divider Blocks   | (b)                           |
| t  | 339768-300 | Screw, Metering, 30 (0.0183 cu. in.)       |  |                      |                               |
| u  | 339768-400 | Screw, Metering, 40 (0.0244 cu. in.)       |  |                      |                               |
| v  | 339734-025 | Screw, Metering, 25 (0.0015 cu. in.)       |  |                      |                               |
| w  | 339734-050 | Screw, Metering, 50 (0.0031 cu. in.)       |  |                      |                               |
| x  | 339734-100 | Screw, Metering, 100 (0.0061 cu. in.)      |  |                      |                               |
| y  | 339761     | Plug, 1/8 " NPT                            |  |                      |                               |
|  |            |  |  |                      |                               |
| <b>Check Valve Kit</b>                               |            |  |  |                      |                               |
| z  | 340369     | Kit, Check Valve                           | AR   |                      | 339768-400                    |
| z1   |            | Valve, Check                               | 1  | Included w/ Item z   | (c)                           |
| z2   |            | Washer                                     | 1  |                      | (h)                           |
| <b>Legend:</b>                                       |            |  |  |                      |                               |
| Part numbers left blank are not available separately |            |  |  |                      |                               |
| AR = As Required                                     |            |  |  |                      |                               |
| EOCS = End-of-Cycle Sensor                           |            |  |  |                      |                               |
| NEOCS = No End-of-Cycle Sensor                       |            |  |  |                      |                               |

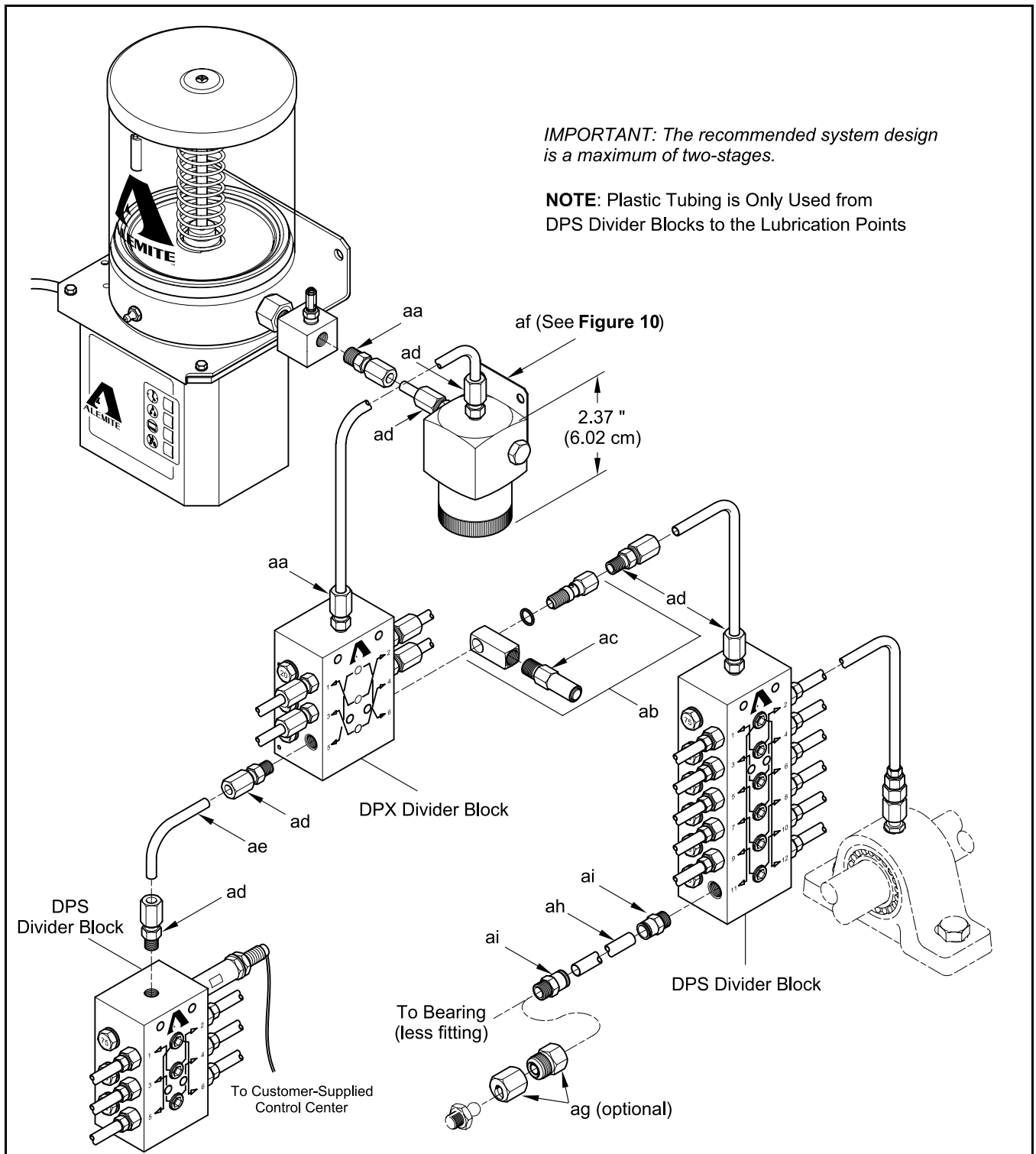
**IMPORTANT:** The recommended system design is a maximum of two-stages.

**NOTE:** Stainless Tubing Recommended



| Item No.   | Part No. | Description          | Qty | Item No. | Part No. | Description              | Qty |
|--|----------|----------------------|-----|----------|----------|--------------------------|-----|
| aa   | 339813   | Connector, 1/4 " NPT | AR  | ae       |          | Tubing, 1/4 " OD         | AR  |
| ab   | 393750   | Kit, Fault Indicator | AR  | af       | 339777   | Filter Assembly, In-Line | AR  |
| ac   | 339775   | Indicator, Fault     | 1   | ag       | 339708   | Fitting, Zerk-Mate       | 1   |
| ad   | 339738   | Connector, 1/8 " NPT | AR  |          |          |                          |     |
| AR = As Required      Part numbers left blank are not available separately |          |                      |     |          |          |                          |     |

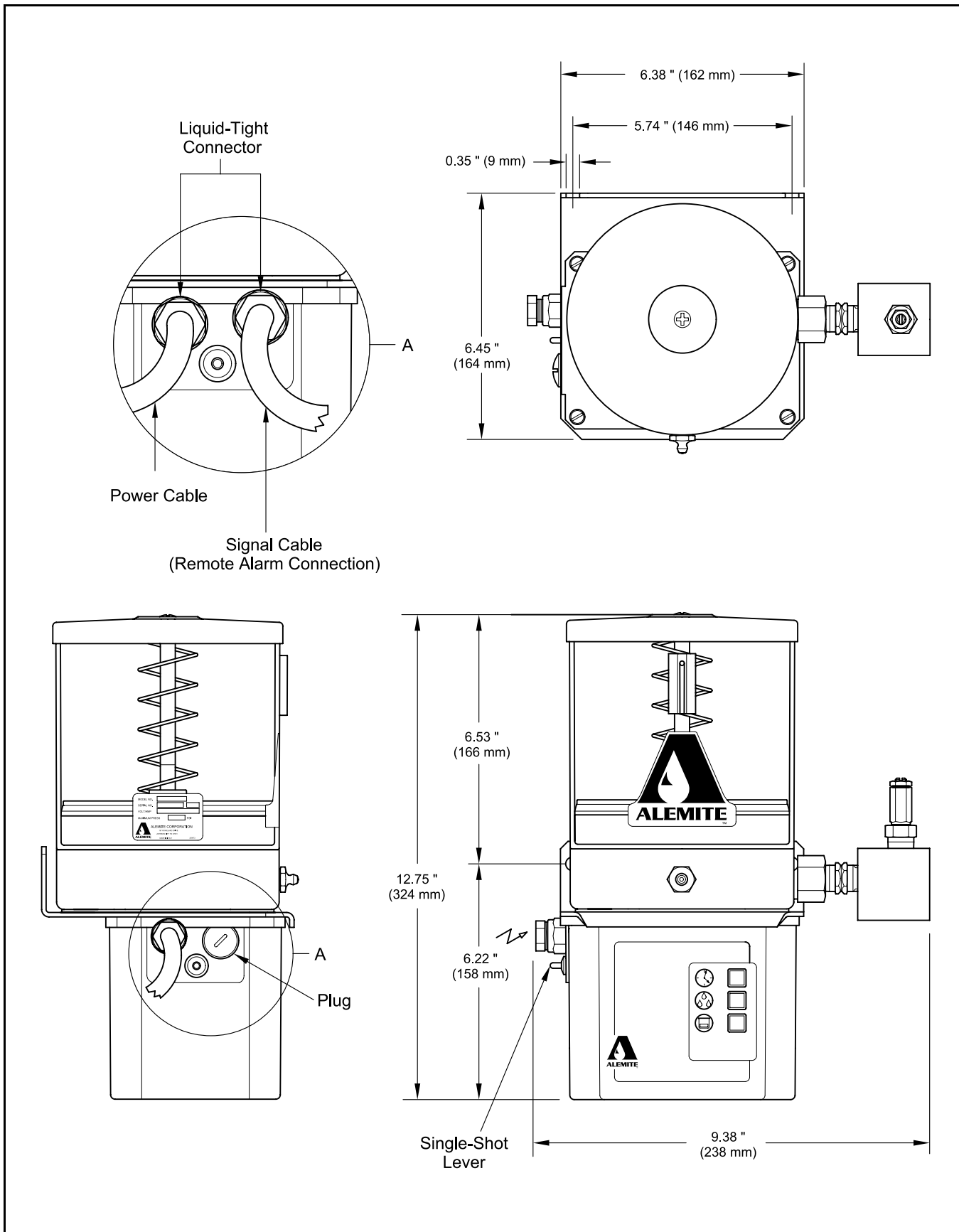
**Figure 4** Lubricator Accessories - Typical for DPX Divider Block(s) to Additional DPX Divider Block(s)



| Item No. | Part No. | Description          | Qty | Item No. | Part No.   | Description                | Qty |
|----------|----------|----------------------|-----|----------|------------|----------------------------|-----|
| aa       | 339813   | Connector, 1/4 " NPT | AR  | af       | 339777     | Filter Assembly, In-Line   | AR  |
| ab       | 393750   | Kit, Fault Indicator | AR  | ag       | 339708     | Fitting, Zerk-Mate         | AR  |
| ac       | 339775   | Indicator, Fault     | 1   | ah       | 339762-50  | Tubing, Plastic (50 feet)  | AR  |
| ad       | 339738   | Connector, 1/8 " NPT | AR  |          | 339762-150 | Tubing, Plastic (150 feet) | AR  |
| ae       |          | Tubing, 1/4 " OD     |     | ai       | 339760     | Fitting, Tube, 1/8 " NPT   | AR  |

AR = As Required      Part numbers left blank are not available separately

**Figure 5** Lubricator Accessories - Typical for DPX Divider Block(s) to DPS Divider Block(s)



**Figure 6** Lubricator Model 4221 Series, 4251 Series, and 4261 Series - Overall Dimensions



## Progressive Systems

Both grease lubricator models are progressive systems. The total progressive system consists of a pump package and a distribution network of divider blocks. See **Figures 3 - 5**.

Each model delivers at each divider block outlet a precise amount of lubricant sequentially to multiple lubrication points. The amount of lubrication delivered is determined by the size of the metering screws installed on the divider block.

### DPX and DPS Divider Blocks

Any system may be comprised of:

- a mix of DPX and DPS divider blocks (where steel and plastic tubing are utilized)
- only DPX models (where only steel tubing can be used.)

As long as lubricant under pressure is applied to the divider blocks, they will continuously divide and deliver precise amounts through each port.

### The Master DPX Divider Block

The master divider block, or first tier in the system, receives the full flow of the pump. It divides the flow to the secondary divider blocks according to the size of the metering screws on the block. The secondary divider blocks then re-divide the lubricant according to the size of the block's metering screws and distribute it to the bearing points. By combining two or more Divider Block outputs (using Shunt Kits with DPX Blocks), a variety of system configurations can be designed.

The actual amount of grease delivered at the lubrication point will vary from the precise amount at the block outlet. This variation is caused by the back-pressure created by the volume of grease in the feed tube and the tendency of the tubing to expand under pressure. It is therefore important that:

- each system be installed only by qualified personnel
- the feed tubes be kept as short as possible
- the amount of grease delivered be measured at the lubrication point

## How the Progressive System Works

As the first Metering Piston (**d, n**) [inside the divider block] moves due to pump pressure, it opens a passageway to supply pressure that moves the adjacent Metering Piston.

Blockage inside the divider block may cause any one metering piston to jam. This prevents movement of the remaining Metering Pistons in the sequence constituting a blockage in the system. This blockage and any other type of blockage, such as a crimp in any feed Tube (between the Pump, the Divider Block and the lubrication point) will result in the system pressure exceeding the factory set pressure limit on the Pressure Relief Valve (**49**).

Consequently, the Pressure Relief Valve will open and release grease to the outside as a visual warning of a failed system. It is therefore important that each pump be installed for easy:

- access
- visual monitoring

## Factory Settings

### DPS Divider Blocks

The DPS divider block is factory equipped with Metering Screws (**l**) [identified as 75] that deliver 0.0046 cu. in. of product at each cycle. These Screws can be replaced with any accessory Metering Screw (**v, w, and/or x**) as required.

End-of-Cycle Limit Switch (**r**) is also a metering screw for outlet position No. 2. It is factory set to deliver 0.0046 cu. in. of product and cannot be changed.

### DPX Divider Blocks

The DPX divider block is factory equipped with Metering Screws (**b**) [identified as 20] that deliver 0.0122 cu. in. of product at each cycle. These Screws can be replaced with any accessory Metering Screw (**s, t, and/or u**) as required.

### Timers

The factory set points for the **Intervals** (pause time) and **Lube Cycle Check** (lubricating time) are at the minimum (5 minutes and 1 minute respectively).

**NOTE:** The **Lube Cycle Check** determines the run time for the pump to feed the divider blocks. The **Lube Cycle Check** time must always be set at a value that is greater than the time required to lubricate the farthest point in the system.

## System Set Up

**IMPORTANT:** Series Progressive Divider Systems should be designed to use **ONLY** one or two stages. The use of a third tier of divider blocks is **NOT** recommended.

## System Design Process

1. Conduct a machine survey to determine the location and size of bearings. Group Bearings as convenient.
2. Design divider block configurations working backwards from the bearings to the secondary blocks to the master blocks and to the pump.

## Distribution Points

### CAUTION

**Never substitute plugs (w) into outlets ports that align with one another, e.g. No.'s 1 and 2, No.'s 3 and 4, or No.'s 5 and 6. The lubricator will not function properly.**

A situation can occur during system installation when all of the distribution points (outlet ports) on any divider block are not required. It may also be necessary to combine outputs for the purposes of obtaining a higher output to a particular delivery point.

### Using DPS Divider Block

**EXAMPLE 1:** The DPS Divider Block shown in **Figure 7** has six outlets but only four tube fittings are needed. The user must reconfigure the divider block.

In this example, plugs are installed in outlet positions No. 1 and No. 3.

### Flipping the Disc

**NOTE:** Disc (p) must be reversed anytime either of the tube fittings (in line with that Disc) are not required for dispensing. See **Figure 8**.

1. Remove Screw (o) that secures Disc (p) within the divider block.

**HINT:** Grip the center tip of the Disc with tweezers or needle nose pliers.

2. Remove the Disc from the divider block.
3. Flip the Disc and reinstall into the divider block.
4. Install the Screw and tighten securely to 96 – 105 in. lbs (11-12 Nm).

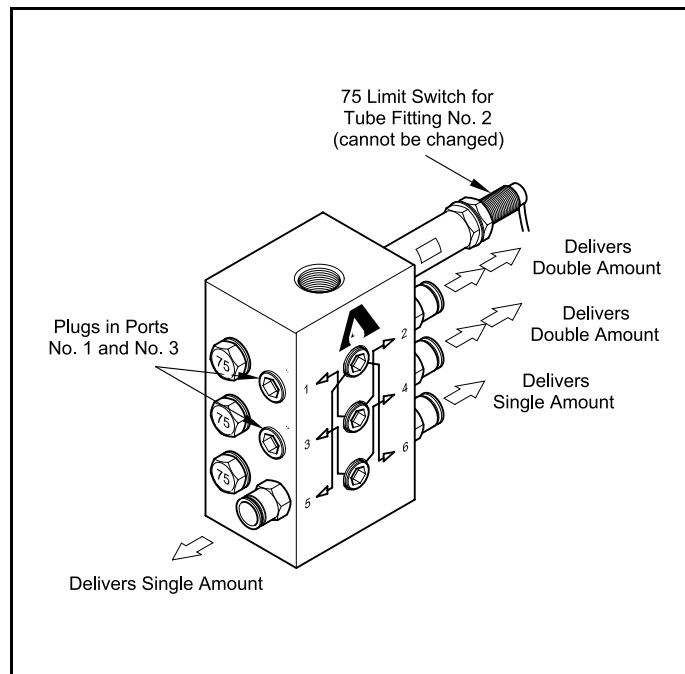
### Using DPX Divider Block

**EXAMPLE 1:** The DPX Divider Block shown has eight outlets, but only four tube fittings are needed. The user must reconfigure the divider block. See **Figure 8**.

In this example, a Shunt Kit is installed to connect outlet positions No. 2 and No. 4. Also, a Blind Shunt Kit is installed to connect outlet positions No. 3 and No. 5.

### Removing the Screw

**NOTE:** Remove Screw (e) and Gasket (f) anytime either of the Divider Block outlets are not required for dispensing or it is required to combine outputs. The Screw should be stored for future use in case the system configuration requires reversal.



**Figure 7** Divider Block Metering Screws Delivery (4-Point Configuration) [DPS Divider Block Shown]

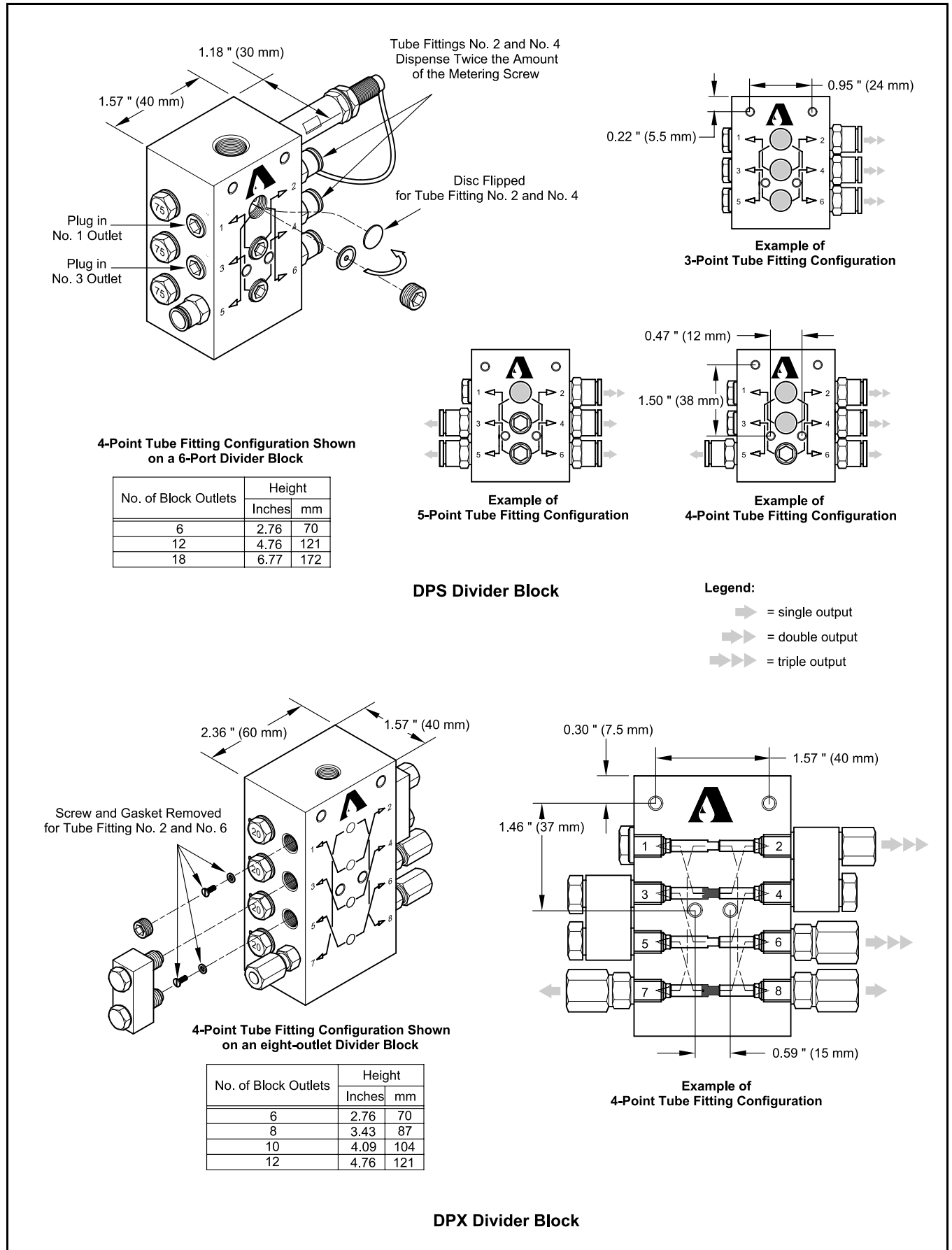


Figure 8 DPS and DPX Divider Block Accessories

## Metering Screw Replacement

### DPS Divider Blocks

The user may require to replace the factory installed metering screw (identified as 75) with an alternative. It is important to remember that any new configuration dispenses an equal amount of lubricant at the corresponding dispensing level tube fittings. See **Figure 9** for complete details.

### DPX Divider Blocks

The user may require to replace the factory installed metering screw (identified as 20) with an alternative. The same rule applies as with the DPS blocks.

## Remote System Monitoring

### Optional Signal Cable and Connector

Each centralized lubrication pump is equipped with 15 feet (4.6 m) of black power cable [already connected]. Shipped loose is 15 feet of 3-wire gray signal cable (with liquid-tight connector).

When connected to the printed circuit board (See **Figure 6**) this cable transmits system status to a remote control center. The signal can be used to illuminate a lamp and/or energize an audio alarm\* to inform the user of the following conditions.

- no alarms (system operational)
- low-level of lubricant in reservoir

\* Maximum customer-supplied power of 2 Amps at 250 Volts.

## Mounting

**IMPORTANT:** Mount the lubricator:

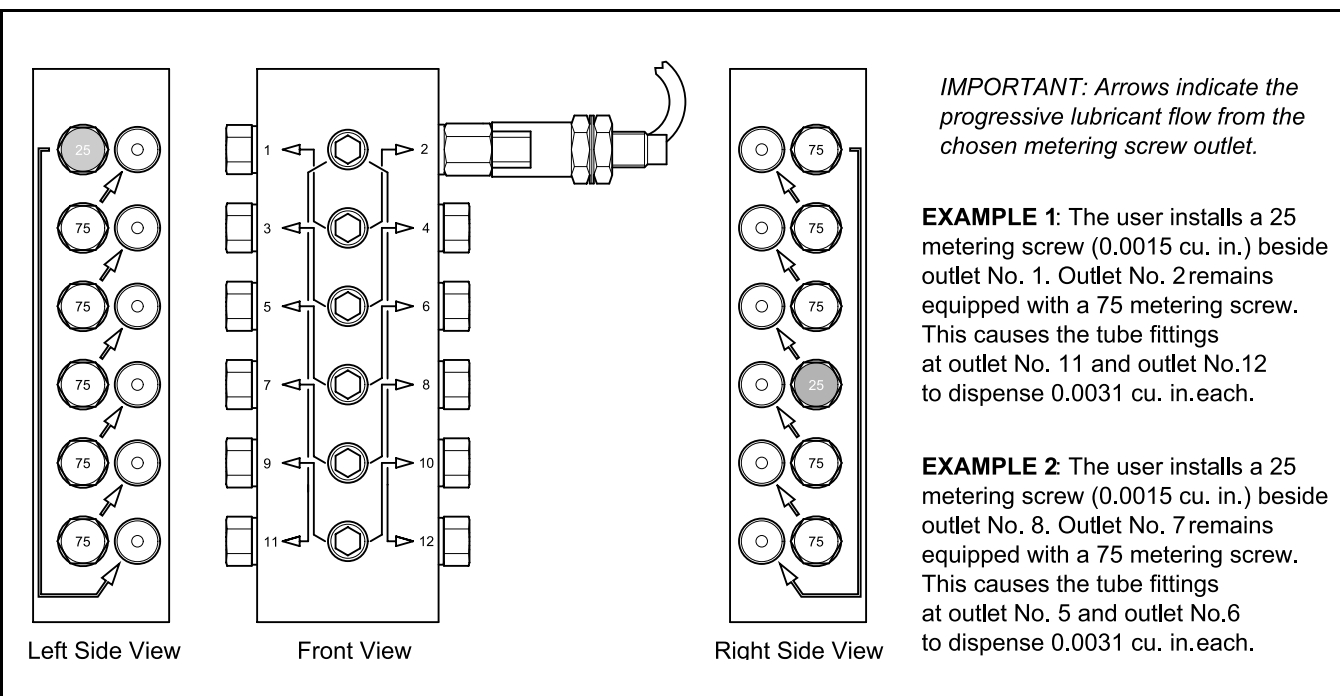
- in a protected area away from sources of heat
- close to the machine's fittings (feed lines must be as short as possible)

Make sure to provide access to the reservoir and visibility to monitor the indicators.

1. Mount the lubricator to a wall or the machine with screws.
2. Connect the power cord in tandem with the machines On switch when possible.
  - This ensures the lubricator's **Intervals** time is a direct correlation with machine operation.

**NOTE:** The brown and blue wires are power. The striped wire is ground.

**IMPORTANT:** Do not connect the Limit Switch to the PCB in the Lubricator. The connection must be made at the remote control center. See **Figure 5**.



**Figure 9** Metering Screw Replacement and Corresponding Lubricant Path (12-Point DPS Divider Block Shown)

### Prior to Startup

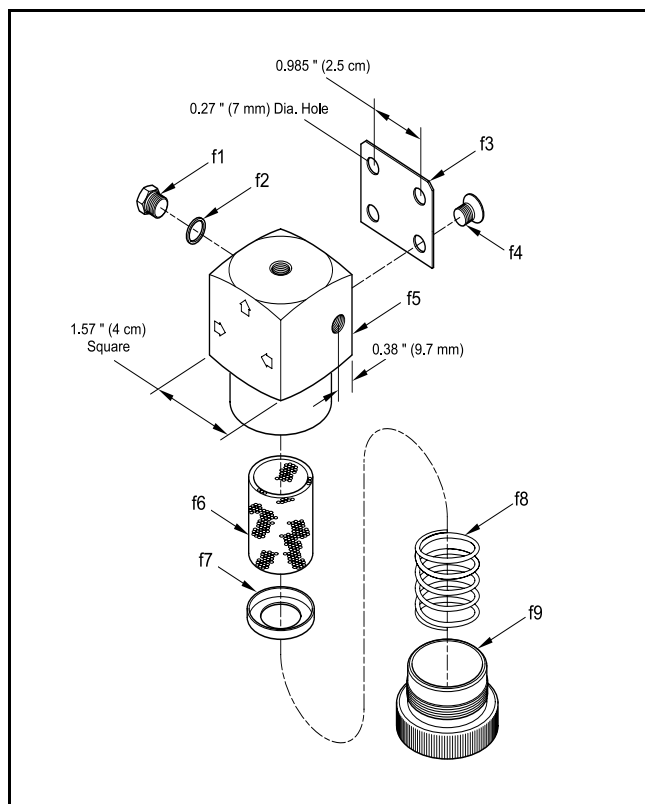
**NOTE:** The following procedure is written for a configuration that utilizes DPS Divider Blocks. See **Figure 5**.

#### Install and Prime the In-Line Filter

### CAUTION

**The source of grease must be clean. Damage to equipment can occur.**

1. Mount the Filter securely with screws.



| Item No. | Part No. | Description     | Qty |
|----------|----------|-----------------|-----|
| f1       |          | Screw           | 1   |
| f2       |          | Washer          | 1   |
| f3       |          | Plate, Mounting | 1   |
| f4       |          | Screw           | 2   |
| f5       |          | Body            | 1   |
| f6       | 339776   | Element, Filter | 1   |
| f7       |          | Cup             | 1   |
| f8       |          | Spring          | 1   |
| f9       |          | Cap             | 1   |

Part numbers left blank are not available separately

**Figure 10** *In-Line Filter - Exploded View*

2. Attach Connector (**aa**) to the:
  - chosen inlet port and outlet port of the Filter
  - outlet port of the Lubricator
3. Prime the Filter until grease emerges from the Connectors.
4. Cut Tubing (**ae**) to the proper length and prime with grease.
5. Attach the Tubing to each Filter Connector.

#### Install and Prime the DPX Divider Block

1. Mount Divider Block (**a**) securely to its source with screws.
2. Attach Connector (**ad**) to the required outlet ports on the Divider Block.
  - Install Fault Indicator (**ac**) as required.
3. Prime the Divider Block until grease emerges from the Connectors.
4. Cut Tubing (**ae**) to the proper length and prime with grease.
5. Attach the Tubing to the Divider Block Connectors.
6. Attach the Filter to the Divider Block.

#### Install and Prime the DPS Divider Block

1. Mount each Divider Block (**i**) securely to its source with screws.
2. Attach Tube Fitting (**ai**) to the required outlet ports on the Divider Block.
3. Prime the Divider Block until grease emerges from the Tube Fittings.
4. Cut Tubing (**ah**) to the proper length and prime with grease.
5. Attach the Tubing to the Divider Block Tube Fittings.
6. Attach the DPX Divider Block to the DPS Divider Block.
7. Operate the Lubricator manually until grease appears at all lubrication point fittings.
  - See the section entitled Operation, Manual Dispensing for details.
8. Attach each lubrication point fitting to the machine.

## Fill the Reservoir

### CAUTION

**Do not overpressurize the reservoir. Grease will escape from the weep hole.**

1. Wipe Reservoir Grease Fitting (31) with a clean cloth.
  - See **Figure 2**.
2. Attach a grease gun or pump, with the type grease to be dispensed, to the Grease Fitting.
3. Fill the reservoir until the Follower Plate assembly reaches the maximum level mark.

## Set the Timers

1. Remove Screws (34) and Washers (35) that secure the Reservoir, Housing, and Bracket assembly to Bottom Cover (41).
  - Separate the Bottom Cover from the assembly using care not to stress the wires to Printed Circuit Board (39).
2. Turn the timer knobs to the required set point for both times **Lube Cycle Check** (on time) and **Intervals** (pause time).
  - See **Figure 11**.
3. Align the Bottom Cover to the Reservoir, Housing, and Bracket assembly.
  - Make sure Gasket (42) is positioned properly.
4. Install Screws (34) and Washers (35) that secure the assembly to the Bottom Cover.
  - Do not overtighten the Screws.

## Operation

### Automatic Dispensing

Start the machine.

- The lubricator's **Power** indicator flashes.

The lubricator automatically dispenses grease to each Tube Fitting once the **Intervals** time expires.

During dispensing the **Pump Operating** indicator illuminates and the **Power** indicator deactivates.

Once dispensing is complete, the **Pump Operating** indicator deactivates and the cycle is complete. The **Power** indicator flashes once again.

### Manual Dispensing

#### Single-Shot

The lubricator can be manually operated to energize the dispensing cycle.

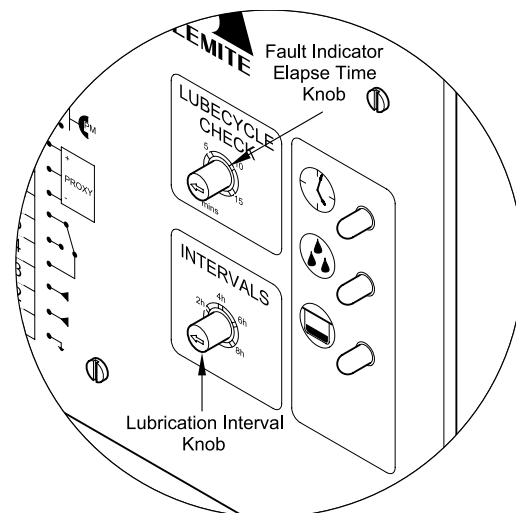
Press the single-shot lever up or down.

See **Figure 6**.

- The **Pump Operating** indicator illuminates.
- The **Power** indicator deactivates.

The lubricator distributes grease to each Tube Fitting.

Once dispensing is complete, the **Pump Operating** indicator deactivates and the cycle is complete. The **Power** indicator flashes once again.



**Figure 11** *Lube Time and Interval Timers*

## Maintenance

*Prior to performing any maintenance procedure, the following safety precautions must be observed. Personal injury may occur.*



### WARNING

Release all pressure within the system prior to performing any procedure.

- Disconnect the power cord from the machine or its electrical source.
- Discharge remaining pressure within the assembly by loosening Pressure Relief Valve (49).

Read each step of the instructions carefully. Make sure a proper understanding is achieved before proceeding.

## Remove and Replace

**NOTE:** These procedures address the most common maintenance made to the lubricator.

### Reservoir Filter Screen

1. Remove Fitting (31) from Housing (23).
2. Unscrew Filter (30) from the Housing.
3. Clean the Filter and blow dry with compressed air.
4. Screw the Filter and Fitting into the Housing securely.

### Pump Assembly

1. Unscrew Connector (aa) from Tee (47).
2. Unscrew Adapter (46) [with attached components] from Pump Assembly (44).
3. Unscrew the Pump Assembly from the Housing.
  - Make sure to remove the Pump's Gasket.
4. Install a new Gasket onto the Pump Assembly.
5. Screw the Pump Assembly into the Housing.
  - Tighten the Pump Assembly securely to properly crush the Gasket.
6. Screw the Adapter (with attached components) into the Pump Assembly.
  - Tighten the Adapter assembly securely and align.
7. Screw the Connector into the Tee securely.

## Overhaul

**NOTE:** The following procedures consider the lubricator removed from its mounting source and on a workbench.

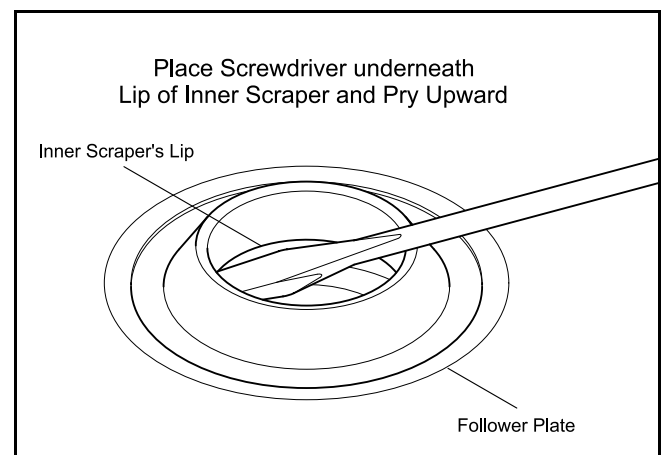
## Disassembly

### Reservoir

### WARNING

Top Cover (2) is under spring pressure. Use care during removal. Personal injury can occur.

1. Remove Screw (1) that secures Top Cover (2) to Center Post (9).
2. Remove the Cover and Spring (3) from the Reservoir.
3. Remove Fitting (31) and Filter (30) from the Pump Housing.
4. Apply compressed air with an appropriate nozzle to force Follower Plate (4) to the top.
5. Remove Outer Scraper (5) from Follower Plate (4) as required.
6. Pry Inner Scraper (6) from the center of the Follower Plate with a flat-blade screwdriver.
  - See **Figure 12**.
7. Remove as much product from Reservoir (10) as possible.
  - Use a spatula.
8. Remove Screws (7) and Washers (8) that secure the Reservoir to Housing (22).
  - Remove the Reservoir and O-Ring (11) from the Housing.



**Figure 12** Inner Scraper Removal

9. Remove Screw (1) and Washer (12) that secures the Center Post to the Reservoir.
  - Remove the Center Post from the Reservoir.

#### Printed Circuit Board Assembly

10. Loosen the screws that secure the wire connections of the following components to the Printed Circuit Board.
  - Limit Switch
  - Single-Shot Dispensing Lever
  - Motor and Gear Assembly (43)
  - Power Cord
11. Remove Screws (36) that secure Printed Circuit Board Assembly (39) to the Bracket.
  - While guiding the power wire from the Bracket, remove the Printed Circuit Board Assembly.
12. Remove Screws (37) and Washers (38) that secure the Bracket to the Housing.
13. Remove Gasket (32) from the Bracket as required.

#### Motor Assembly

14. Remove Cam Assembly (16)[with Swash Plate (15), Screws (13), and Washers (14)] as an assembly from Motor and Gear Assembly (43).
  - Break the connection with a quick counterclockwise twisting motion on the Swash Plate.
15. Remove the Screws and Washers that secure the Swash Plate to the Cam Assembly as required.
  - Separate the Swash Plate from the Cam Assembly.
16. Remove Screws (34) and Washers (35) that secure Bracket (33) to Bottom Cover (41).
  - Separate the Bottom Cover from the Bracket.
17. Remove the wire connections from the Motor and Gear Assembly.
18. Remove Screws (17) and Washers (18) that secure the Motor and Gear Assembly to the Housing.
  - Separate the Motor and Gear Assembly from the Bracket and Housing.
19. Remove Gasket (42) from the Bottom Cover.
20. Remove Needle Bearing (19) from the Housing as required.

---

## CAUTION

**Do not remove Seal (20) from the Housing. Damage to the sealing surface of the Housing will occur.**

---

#### Low-Limit Switch

21. Position Housing (22) upside down on the workbench.
22. Remove Retaining Ring (23) that secures Magnet (29) to Rod (26).
  - Remove the Magnet and additional Retaining Ring (23) from the Rod.
23. Unscrew Coupling (28) from the Housing.
24. Pull the Rod partially from the Housing and reinstall. This dislodges O-Ring (27) from the Housing.
25. Remove the Rod [with upper Retaining Ring (23), and Washer (24)] and Spring (25) from the Housing.
26. Remove the Retaining Ring and Washer from the Rod as required.

## Clean and Inspect

1. Clean all metal parts in cleaning solvent. The solvent should be environmentally safe.
2. Inspect all parts for wear and/or damage.
  - Replace as necessary.



## Assembly

### Housing Low-Limit Switch

1. Install O-Ring (27) onto Rod (26).
2. Install the Rod assembly into the bottom of the Housing until the O-Ring seats.
3. Screw Coupling (28) into the Housing.
  - Tighten the Coupling securely.
4. Install Retaining Ring (23), Magnet (29), and additional Retaining Ring (23) onto the Rod.
5. Install Spring (25) and Washer (24) onto the Rod.
6. Secure the Rod components with upper Retaining Ring (23).

### Printed Circuit Board and Bracket

7. Install the wire connections from the Limit Switch to Printed Circuit Board (39).
8. Guide the power wire through the coupling of the Bracket as required.
9. Install Screws (36) that secure the Printed Circuit Board Assembly to Bracket (33).

*IMPORTANT: See Figures 13 and 14 for wiring color codes.*

10. Install the wire connections of the following components to the Printed Circuit Board.
  - Limit Switch (7, 8, and 9)
  - Single-Shot Dispensing Lever (10 and 11)
  - Motor and Gear Assembly (43) [12 and 13]
  - Power Cord (1, 2, and 3)
11. Tighten the Printed Circuit Board screws securely.
12. Install Gasket (32) onto the Bracket.
13. Install the Housing onto the Bracket assembly.
14. Install Screws (37) and Washers (38) that secure the Bracket to the Housing.
  - Tighten the Screws securely.
15. Install and seat Needle Bearing (19) into the Housing.
16. Position Motor and Gear Assembly (43) onto the Housing.
  - Check to ensure the mounting holes are in alignment.
17. Install Screws (17) and Washers (18) that secure the Motor and Gear Assembly to the Housing.
  - Tighten the Screws securely.

### Motor and Cam Assembly

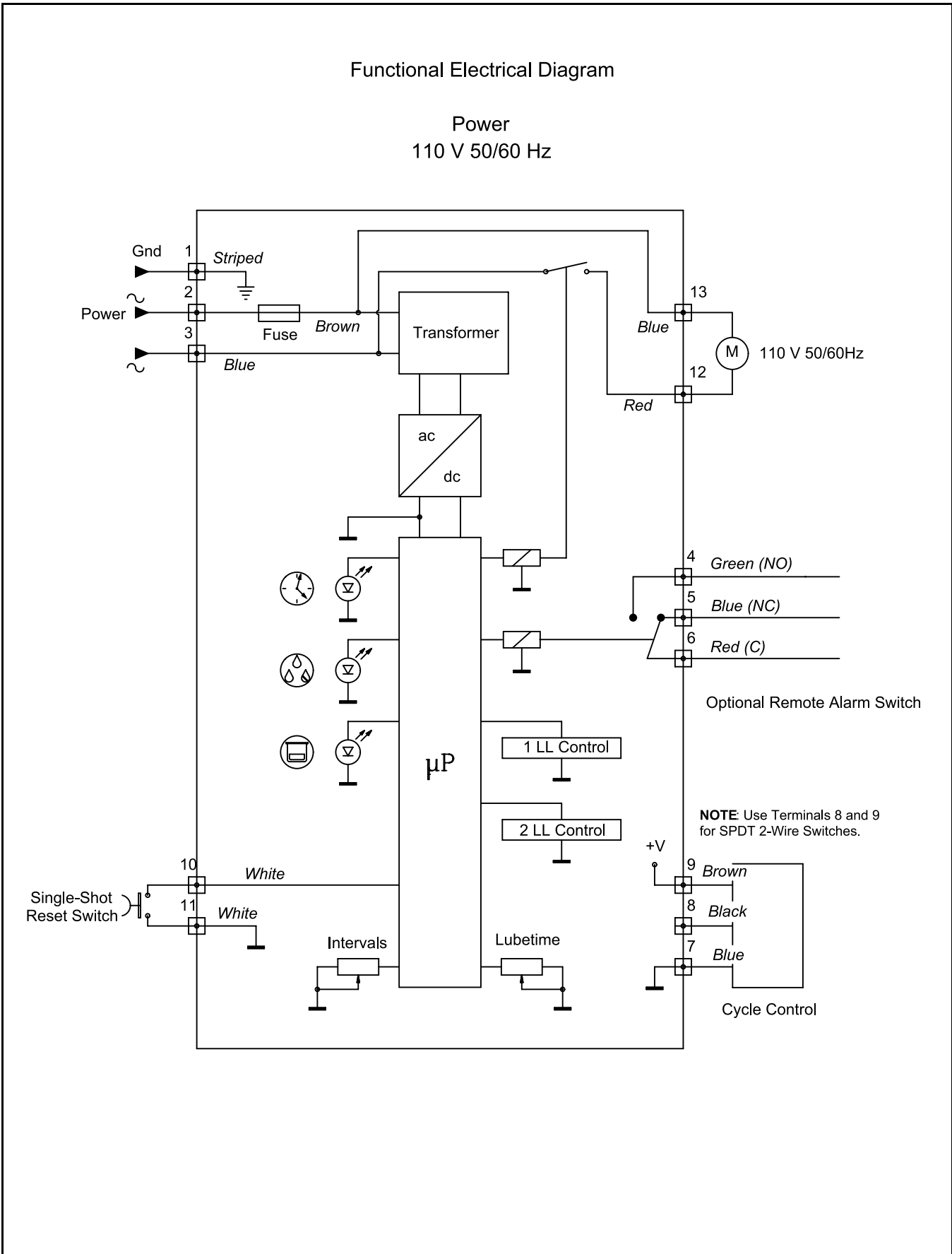
18. Install the motor's Printed Circuit Board wire connections to the Motor and Gear Assembly (either terminal).
19. Fit Gasket (42) onto Bottom Cover (41).
  - See Figure 2 for proper orientation.
20. Align the Bottom Cover assembly to Bracket (33).
21. Install Screws (34) and Washers (35) that secure the Bottom Cover to the Bracket.
  - Tighten the Screws securely.
22. Install Screws (13) and Washers (14) that secure Swash Plate (15) to Cam Assembly (16).
  - Tighten the Screws securely.
23. Screw the Swash Plate and Cam Assembly to the Motor and Gear Assembly.
  - Tighten the connection with a quick clockwise twisting motion.

### Reservoir

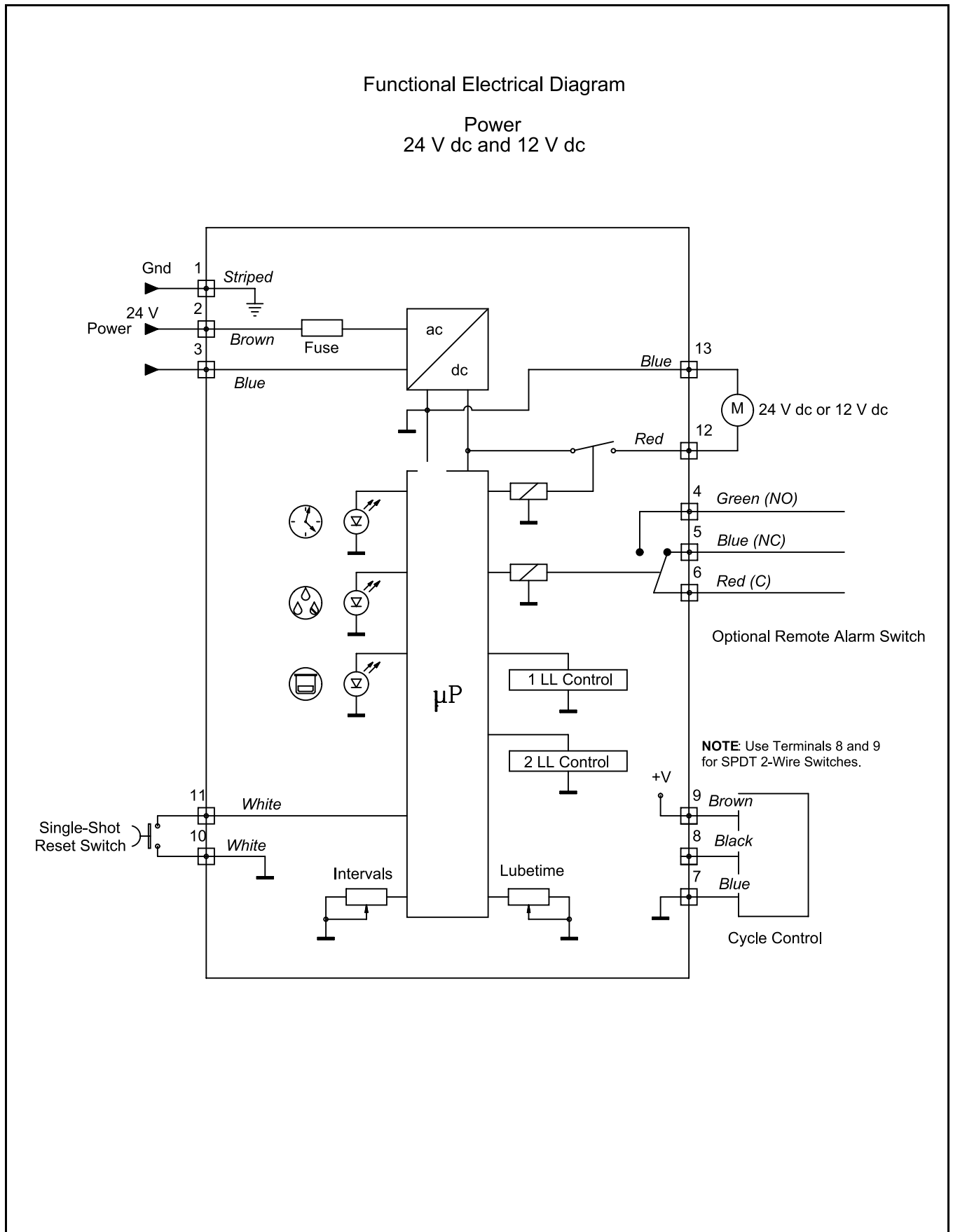
24. Install Screw (1) and Washer (12) that secures Center Post (9) to the Reservoir.
25. Install O-Ring (11) into the groove of Reservoir (10).
26. Install the Reservoir and O-Ring assembly onto the Housing.
  - Align the notch with the low-limit switch assembly.
27. Install Screws (7) and Washers (8) that secure the Reservoir to the Housing.
  - Tighten the Screws securely.
28. Install Outer Scraper (5) onto Follower Plate (4).
29. Push Inner Scraper (6) [lips first] into the Follower Plate.
30. Install the Follower Plate assembly onto the Center Post.
31. Install Spring (3) onto the Follower Plate assembly.
32. Install Top Cover (2) onto the Reservoir.

While maintaining constant pressure on the Cover:

33. Install Screw (1) that secures the Cover to the Center Post.
  - Tighten the Screw securely.



**Figure 13** Lubricator Models 4221 and 4221-S - 110 Vac Wiring Diagram



**Figure 14** Lubricator Models 4251 and 4251-S - 24 Vdc Wiring Diagram and Lubricator Models 4261 and 4261-S - 12 Vdc Wiring Diagram

# Specifications

**NOTE:** All data is dependent on temperature, pressure, and operating voltage.

|                              |                                    |
|------------------------------|------------------------------------|
| Maximum Pump Pressure .....  | 2900 psi (200 bar)                 |
| Maximum System Pressure..... | 1680 psi (120 bar)                 |
| Pressure Relief Valve .....  | 2300 - 2500 (159 - 172 bar)        |
| Operating Temperature .....  | -10 °F to 160 °F (-25 °C to 70 °C) |
| Pump Output per Minute ..... | 0.147 cu. in (2.4 cc)              |
| Reservoir Capacity.....      | 92 cu. in (1.5 liters)             |
| Lubricant .....              | Up to NLGI-2                       |
| Protection.....              | IEC IP 55                          |

**Optional Rupture Discs (Use with Blowout Fitting)**

|                             |                    |
|-----------------------------|--------------------|
| Rupture Disc (Pink) .....   | 2500 psi (172 bar) |
| Rupture Disc (Blue).....    | 3000 psi (207 bar) |
| Rupture Disc (Purple) ..... | 3500 psi (241 bar) |

## Electrical Data

### 4221

|                          |           |
|--------------------------|-----------|
| Operating Voltage .....  | 110 Vac   |
| Operating Amperage ..... | 1.80 Amps |

### 4251

|                          |           |
|--------------------------|-----------|
| Operating Voltage .....  | 24 Vdc    |
| Operating Amperage ..... | 0.50 Amps |

### 4261

|                          |           |
|--------------------------|-----------|
| Operating Voltage .....  | 12 Vdc    |
| Operating Amperage ..... | 0.50 Amps |

**NOTE:** The pump's motor voltage is protected against reverse polarity.

*IMPORTANT: The pump is suitable for intermittent operation only. Intermittent periodic duty must not exceed 25% of the total period.*

*Example: The Total Cycle Time is 80 seconds. Therefore the maximum Lube Cycle Check (On Time) is 20 seconds (80 x 0.25 = 20). The Intervals (Pause Time) is equivalent to 60 seconds.*

## Timer Settings

|                                  |                  |
|----------------------------------|------------------|
| Lube Cycle Check (On Time) ..... | 1 to 15 Minutes  |
| Intervals (Pause Time) .....     | 5 to 480 Minutes |

## Torques

|                        |                                 |
|------------------------|---------------------------------|
| Metering Screw .....   | 124 - 142 in. lbs. (14 - 16 Nm) |
| Plug (y) .....         | 133 in. lbs. (15 Nm)            |
| Tube Fitting (ai)..... | 105 in. lbs. (12 Nm)            |
| Screw (o) .....        | 96 - 105 in. lbs. (11 - 12 Nm)  |

## Plastic Tubing

|                           |                              |
|---------------------------|------------------------------|
| Size .....                | 1/4 inch OD x 0.05 inch wall |
| Minimum Bend Radius ..... | 1 in. (25 mm)                |
| Burst Pressure .....      | 3050 psi (210 bar)           |
| Minimum Temperature.....  | -10 °F (-25 °C)              |

## Troubleshooting Chart

| Pump Indications                               | Possible Problems   | Solution  |
|--|---|---|
| Pump does not deliver product                  | <ol style="list-style-type: none"> <li>1. Reservoir (10) is almost empty. The Low-Level indicator flashes red.</li> <li>2. Pump has lost prime.</li> <li>3. Air pockets in product.</li> <li>4. Pump (44) clogged.</li> <li>5. Pump Piston worn and/or damaged.</li> <li>6. Pump Check Valve Assembly worn and/or damaged.</li> <li>7. Divider Block is blocked.</li> <li>8. Feed Tubing is blocked.</li> </ol> | <ol style="list-style-type: none"> <li>1. Attach a grease gun or pump to Grease Fitting (31) and fill Reservoir (10).</li> <li>2. Press the single-shot lever to initiate the dispense cycle. Repeat as needed.</li> <li>3. Press the single-shot lever to initiate the dispense cycle. Repeat as needed.</li> <li>4. Remove pump, disassemble, and clean with an environmental safe solvent.</li> <li>5. Replace Pump Assembly (44).</li> <li>6. Replace Pump Assembly (44).</li> <li>7. Remove and replace the Divider Block Assembly.</li> <li>8. Disconnect Tubing and purge with the use of a grease gun.</li> </ol> |
| Pump does not cycle (motor does not energize)  | <ol style="list-style-type: none"> <li>1. Power from Printed Circuit Board (39) to Motor and Gear Assembly (43) interrupted.</li> <li>2. Defective Motor and Gear Assembly (43).</li> <li>3. Defective Printed Circuit Board (39).</li> </ol>   | <ol style="list-style-type: none"> <li>1. Check Motor and Gear Assembly (43) wires.</li> <li>2. Replace Motor and Gear Assembly (43).</li> <li>3. Replace Printed Circuit Board (39)</li> </ol>   |
| Cycle Failure indicator flashes red.           | Piston (d, n) fails to move.  | <p>Disconnect each feed Tube one at a time from the machine. Observe Tube Fitting [or Zerk-Mate Fitting (ag)] for lubricant. Should any Tube release lubricant, disconnect and purge with the use of a grease gun.</p> <p>Inspect the machine's lubrication point.</p>  |
| Grease escapes from Pressure Relief Valve (49) | Blockage in feed Tube between Divider Block and lubrication point   | Disconnect feed Tube from each lubrication point and check for blockage.  |

**Changes Since Last Printing**  
 Added Check Valve Kit 340369

