

L-Head

312753E
EN

For dispensing controlled ratio shots of resin and isocyanate.

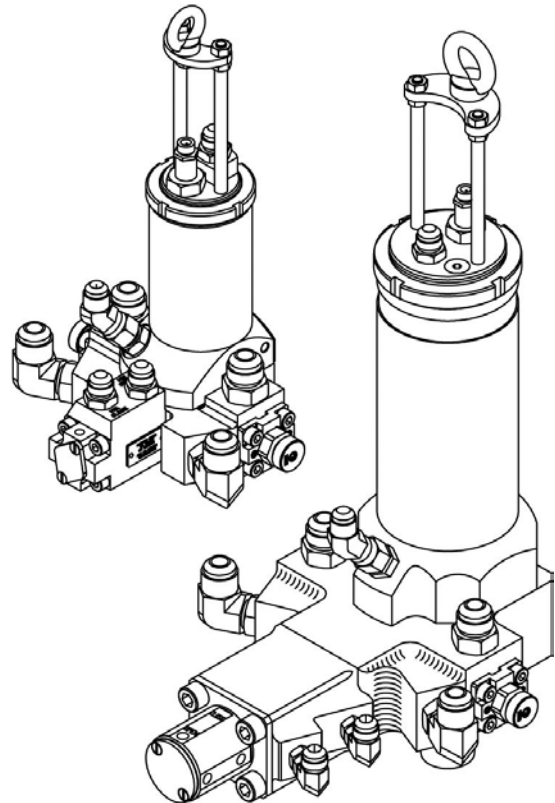
3000 psi (20.6 MPa, 206 bar) Maximum Working Pressure



Important Safety Instructions

Read all warnings and instructions in this manual.
Save these instructions.

See page 2 for model information.



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Models

Model	CE Approved	Impingement Chamber ID (mm)	Exiting Chamber ID (mm)	Number of Streams	Maximum Working Pressure psi (MPa, bar)
20.20.5/8	✓	5	8	2	3000 (20.6, 206)
20.20.6/10	✓	6	10	2	3000 (20.6, 206)
20.20A.6/10		6	10	2	3000 (20.6, 206)
20.20.10/14	✓	10	14	2	3000 (20.6, 206)
20.20.13/20	✓	13	20	2	3000 (20.6, 206)
20.20.16/25	✓	16	25	2	3000 (20.6, 206)






Warnings

The following warnings are for the setup, use, grounding, maintenance, and repair of this equipment. The exclamation point symbol alerts you to a general warning and the hazard symbol refers to procedure-specific risk. Refer back to these warnings. Additional, product-specific warnings may be found throughout the body of this manual where applicable.

 WARNING	
	<p>TOXIC FLUID OR FUMES HAZARD</p> <p>Toxic fluids or fumes can cause serious injury or death if splashed in the eyes or on skin, inhaled, or swallowed.</p> <ul style="list-style-type: none"> • Read MSDS's to know the specific hazards of the fluids you are using. • Store hazardous fluid in approved containers, and dispose of it according to applicable guidelines. • Always wear impervious gloves when spraying or cleaning equipment.
	<p>PERSONAL PROTECTIVE EQUIPMENT</p> <p>You must wear appropriate protective equipment when operating, servicing, or when in the operating area of the equipment to help protect you from serious injury, including eye injury, inhalation of toxic fumes, burns, and hearing loss. This equipment includes but is not limited to:</p> <ul style="list-style-type: none"> • Protective eyewear • Clothing and respirator as recommended by the fluid and solvent manufacturer • Gloves • Hearing protection
	<p>SKIN INJECTION HAZARD</p> <p>High-pressure fluid from dispense valve, hose leaks, or ruptured components will pierce skin. This may look like just a cut, but it is a serious injury that can result in amputation. Get immediate surgical treatment.</p> <ul style="list-style-type: none"> • Do not point dispense valve at anyone or at any part of the body. • Do not put your hand over the end of the dispense nozzle. • Do not stop or deflect leaks with your hand, body, glove, or rag. • Follow Pressure Relief Procedure in this manual, when you stop spraying and before cleaning, checking, or servicing equipment.
	<p>FIRE AND EXPLOSION HAZARD</p> <p>Flammable fumes, such as solvent and paint fumes, in work area can ignite or explode. To help prevent fire and explosion:</p> <ul style="list-style-type: none"> • Use equipment only in well ventilated area. • Eliminate all ignition sources; such as pilot lights, cigarettes, portable electric lamps, and plastic drop cloths (potential static arc). • Keep work area free of debris, including solvent, rags and gasoline. • Do not plug or unplug power cords, or turn power or light switches on or off when flammable fumes are present. • Ground all equipment in the work area. See Grounding instructions. • Use only grounded hoses. • Hold gun firmly to side of grounded pail when triggering into pail. • If there is static sparking or you feel a shock, stop operation immediately. Do not use equipment until you identify and correct the problem. • Keep a working fire extinguisher in the work area.

 WARNING	
	<p>EQUIPMENT MISUSE HAZARD</p> <p>Misuse can cause death or serious injury.</p> <ul style="list-style-type: none"> • Do not operate the unit when fatigued or under the influence of drugs or alcohol. • Do not exceed the maximum working pressure or temperature rating of the lowest rated system component. See Technical Data in all equipment manuals. • Use fluids and solvents that are compatible with equipment wetted parts. See Technical Data in all equipment manuals. Read fluid and solvent manufacturer’s warnings. For complete information about your material, request MSDS forms from distributor or retailer. • Check equipment daily. Repair or replace worn or damaged parts immediately with genuine manufacturer’s replacement parts only. • Do not alter or modify equipment. • Use equipment only for its intended purpose. Call your distributor for information. • Route hoses and cables away from traffic areas, sharp edges, moving parts, and hot surfaces. • Do not kink or over bend hoses or use hoses to pull equipment. • Keep children and animals away from work area. • Comply with all applicable safety regulations.
	<p>ELECTRIC SHOCK HAZARD</p> <p>Improper grounding, setup, or usage of the system can cause electric shock.</p> <ul style="list-style-type: none"> • Turn off and disconnect power at main switch before disconnecting any cables and before servicing equipment. • Connect only to grounded power source. • All electrical wiring must be done by a qualified electrician and comply with all local codes and regulations.
	<p>MOVING PARTS HAZARD</p> <p>Moving parts can pinch or amputate fingers and other body parts.</p> <ul style="list-style-type: none"> • Keep clear of moving parts. • Do not operate equipment with protective guards or covers removed. • Pressurized equipment can start without warning. Before checking, moving, or servicing equipment, follow the Pressure Relief Procedure in this manual. Disconnect power or air supply.

Isocyanate Hazard

						
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Spraying materials containing isocyanates creates potentially harmful mists, vapors, and atomized particulates.

Read material manufacturer's warnings and material MSDS to know specific hazards and precautions related to isocyanates.

Prevent inhalation of isocyanate mists, vapors, and atomized particulates by providing sufficient ventilation in the work area. If sufficient ventilation is not available, a supplied-air respirator is required for everyone in the work area.

To prevent contact with isocyanates, appropriate personal protective equipment, including chemically impermeable gloves, boots, aprons, and goggles, is also required for everyone in the work area.



- Keep the ISO lube pump reservoir filled with Graco Throat Seal Liquid (TSL), Part 206995. The lubricant creates a barrier between the ISO and the atmosphere.
- Use moisture-proof hoses specifically designed for ISO, such as those supplied with your system.
- Never use reclaimed solvents, which may contain moisture. Always keep solvent containers closed when not in use.
- Never use solvent on one side if it has been contaminated from the other side.
- Always park pumps when you shutdown.
- Always lubricate threaded parts with ISO pump oil or grease when reassembling.

Keep Components A and B Separate

NOTICE

To prevent cross-contamination of the equipment's wetted parts, **never** interchange component A (isocyanate) and component B (resin) parts.

Material Self-ignition

						
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Some materials may become self-igniting if applied too thickly. Read material manufacturer's warnings and material MSDS.

Foam Resins with 245 fa Blowing Agents

New foam blowing agents will froth at temperatures above 90°F (33°C) when not under pressure, especially if agitated. To reduce frothing, minimize preheating in a circulation system.

Moisture Sensitivity of Isocyanates

Isocyanates (ISO) are catalysts used in two component foam and polyurea coatings. ISO will react with moisture (such as humidity) to form small, hard, abrasive crystals, which become suspended in the fluid. Eventually a film will form on the surface and the ISO will begin to gel, increasing in viscosity. If used, this partially cured ISO will reduce performance and the life of all wetted parts.

 The amount of film formation and rate of crystallization varies depending on the blend of ISO, the humidity, and the temperature.

To prevent exposing ISO to moisture:

- Always use a sealed container with a desiccant dryer in the vent, or a nitrogen atmosphere. **Never** store ISO in an open container.
- When changing materials, flush the equipment multiple times to ensure it is thoroughly clean.
- Always clean the fluid inlet strainers after flushing.
- Check with your material manufacturer for chemical compatibility.
- Most materials use ISO on the A side, but some use ISO on the B side.
- Epoxies often have amines on the B (hardener) side. Polyureas often have amines on the B (resin) side.

Component Identification

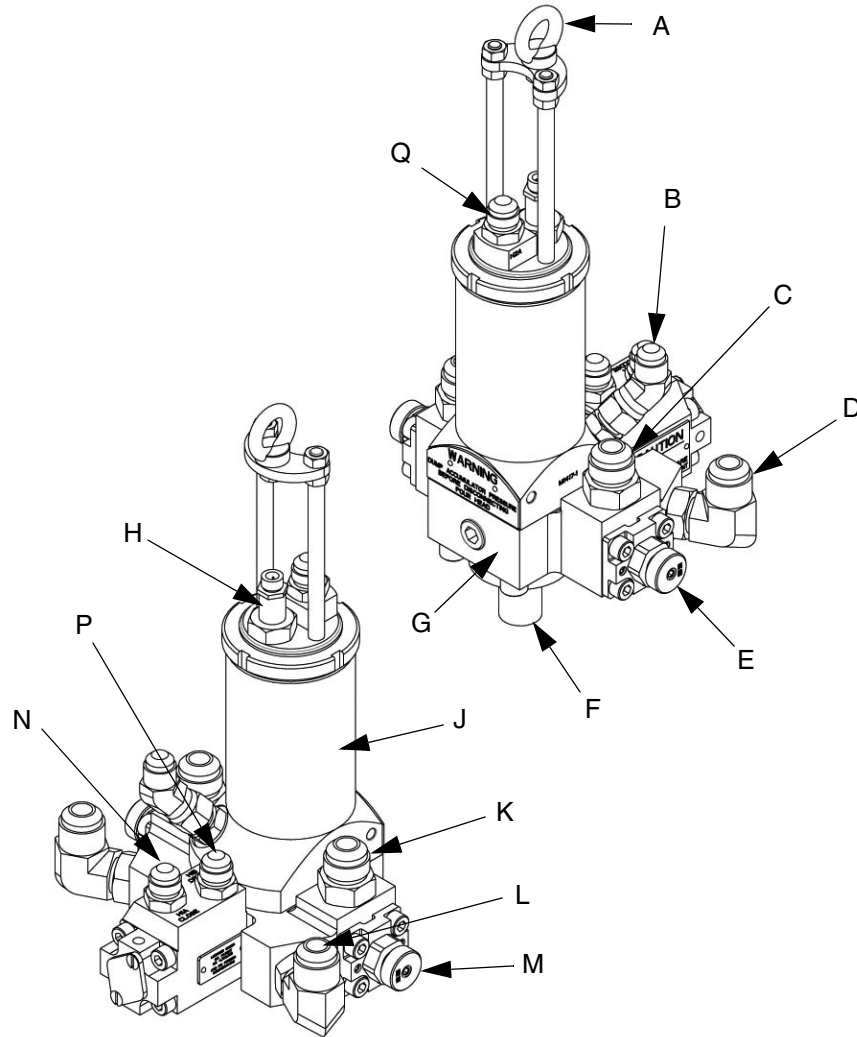



FIG. 1: L-Head

Key:





- | | | | |
|---|-------------------------------|---|-----------------------------------|
| A | Eye Bolt | H | Cleanout Plunger Proximity Switch |
| B | Cleanout Plunger Open Fitting | J | Cleanout Cylinder Housing |
| C | Resin Close Fitting | K | Iso Close Fitting |
| D | Resin Open Fitting | L | Iso Open Fitting |
| E | Resin Nozzle Grip Assembly | M | Iso Nozzle Grip Assembly |
| F | Pour Nozzle | N | Material Plunger Close Fitting |
| G | MixHead Body | P | Material Plunger Open Fitting |
| | | Q | Cleanout Plunger Close Fitting |

Installation

 When hoisting the MixHead from an overhead position, always lift by the top eyebolt.

Handle the MixHead with care. The internal moving parts are precisely machined for proper alignment. Any disturbance of this alignment may result in MixHead failure.

Hydraulic & Chemical Hose Installation

						
Do not come into contact with Isocyanate. See Isocyanate Hazard on page 5.						

NOTICE
The person performing the installation must understand the operation of the MixHead hydraulic power source and chemical flow system.
Before disconnecting a chemical fitting or nozzle grip assembly, turn off the proportioner, bleed the chemical pressure to ZERO, and allow the fluid to cool.

Before Disconnecting Hydraulic Fitting or Proximity Switch

- Turn off the hydraulic pump
- Depressurize the hydraulic system
- Allow the fluid to cool


Before Disconnecting a Chemical Fitting or Nozzle Grip Assembly

- Turn off the proportioner
- Bleed the chemical pressure to ZERO
- Allow the fluid to cool

Install Hydraulic Hose



The fittings are identified on the MixHead body and the hoses are color-coded to aid in identification and proper installation.

When connecting the hoses, do not allow any dirt or foreign matter to enter the lines.

 See FIG. 1 on page 6.

After mounting the MixHead, install the hydraulic and chemical hoses as follows:

1. Install the hydraulic hoses for the cleanout plunger to the fittings on the MixHead as follows:
 - a. Install the “close” hose to the Cleanout Plunger Close Fitting (Q).
 - b. Install the “open” hose to the Cleanout Plunger Open Fitting (B).
2. Install the hydraulic hoses for the material plunger to the hydraulic fittings on the MixHead as follows:
 - a. Install the “close” hose to the Material Plunger Close Fitting (N).
 - b. Install the “open” hose to the Material Plunger Open Fitting (P).

						
Follow hydraulic fluid lines air purging procedure carefully to avoid skin injection hazard.						

3. Purge all air from the hydraulic fluid lines using the procedure in the **Bleeding Air from Hydraulic Fluid Lines** section on page 8.
4. Manually cycle the cleanout plunger back and forth to check for proper operation. Check for hydraulic leaks and retighten fittings as required. Make sure the proximity switch is securely tightened and making contact, and then return the cleanout plunger to the “retract” position.

- Manually cycle the material plunger back and forth to check for proper operation. Check for hydraulic leaks and retighten fittings as required. Make sure the proximity switch is securely tightened and making contact, and then return the material plunger to the closed/recirculation position.

NOTICE





Before connecting the chemical hoses, make sure the hydraulic hoses are properly connected and the cleanout plunger and material plunger have been tested for proper operation. Failure to do so may result in chemical cross-contamination of the MixHead and proportioning system.

- Install the chemical hoses to the fittings on the Mix-Head as follows:
 - Install the isocyanate “close” hose to the Iso Close Fitting (K).
 - Install the isocyanate “open” hose to the Iso Open Fitting (L).
 - Install the resin “close” hose to the Resin Close Fitting (C).
 - Install the resin “open” hose to the Resin Open Fitting (D).
- Recirculate both chemical lines until the pressures stabilize.
- Pressurize the MixHead and check for chemical leaks.

Bleeding Air from Hydraulic Fluid Lines

- Start the hydraulic fluid motor to build pressure in the hydraulic lines.
- Turn off the hydraulic fluid motor.
- Open the manual unloading valve all the way.

- Use a bucket to catch the hydraulic fluid, and lay down a drop cloth to catch spilled hydraulic fluid.

						
<p>The hydraulic fluid motor must be off and the manual unloading valve must be completely open before proceeding to the next step to avoid high pressure spraying of hydraulic fluid.</p>						

- At the “close” port of the material plunger (N), loosen the hydraulic hose very slowly, allow all pressurized air to escape, then tighten the hose.
- Move the cleanout plunger to the “extend” position. At the “close” port of the cleanout plunger (Q), loosen the hydraulic hose very slowly, allow all pressurized air to escape, then tighten the hose.
- Move the cleanout plunger to the “retract” position. At the “open” port of the cleanout plunger (B), loosen the hydraulic hose very slowly, allow all pressurized air to escape, and then tighten the hose.





Install Chemical Hose



An assistant is required for the following steps.

- With the cleanout plunger in the “retract” position, open the material plunger by manually energizing the hydraulic directional valve.
- Have an assistant bleed out any air at the “open” port of the material plunger (P).
- Hold the material plunger in the open/pour position until the “open” port has been completely bled of air and the hydraulic hose has been securely tightened, then return the material plunger to the closed position.

Maintenance

						
All maintenance must be done with pressure relieved and the power switched off and locked out, unless otherwise noted.						

Maintenance Schedule

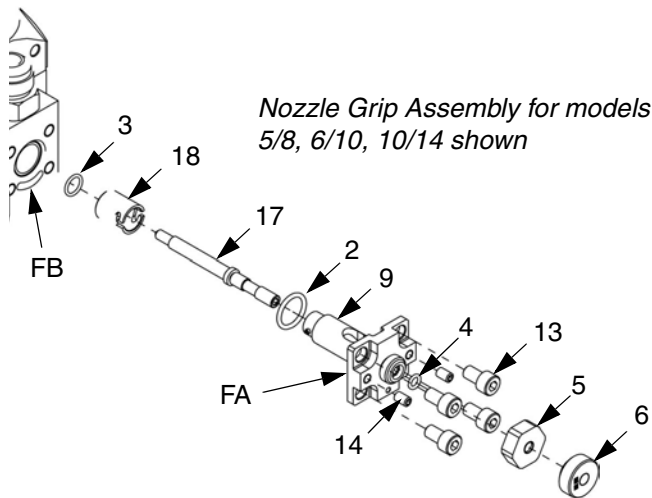
Service	Action	Frequency	Reference
Apply cleanout plunger lubrication	Flush mesamoll into the cleanout bore	Daily	See page 20
Inspect for hydraulic and chemical leaks	Replace seals as needed	Daily	See page 7
Inspect proximity switch wires for open exposure	Replace cord set/switch as needed	Weekly	See pages 12, 14
Inspect pour nozzle bore	Clean as needed	Weekly	See page 20
Inspect adjustment stem, injection nozzle, and nozzle grip for blockage and erosion	Replace parts as needed	Weekly	See page 10

Nozzle Grip Assembly Removal and Cleaning



The nozzle grip assembly must be removed, disassembled and cleaned whenever disconnecting the chemical hoses, replacing the internal o-rings, and/or changing the injection nozzle and adjustment stem. It is advisable to maintain a supply of spare nozzle grips, adjustment stems, hex o-ring seats, locknuts, and the necessary screws and o-rings.

See **Parts List** on page 25.



Key:

- FA Roll Pin (pressed into nozzle grip, not shown)
- FB Slot for roll pin

FIG. 2:

Tools Required

See **Additional Tools and Accessories** on page 29.

- Nozzle ejector
- 5/32 in. hex key
- M3 hex key for M6 set screws
- 1 in. open-end wrench
- Torque wrench with M6 hex for M8 SHC screws

Nozzle Grip Removal

1. Bleed all chemical pressures to zero.
2. Remove one of the M8 socket head cap screws (13) from the nozzle grip assembly and reinsert it at least two full turns.

This screw is a safety stop for the nozzle grip should any pressure be left in the system.

3. Unscrew the other three M8 screws (13) from the nozzle grip. Try pulling and pushing the assembly in and out of its bore to ensure that no pressure exists.
 - a. If it will not come out, turn the two M6 set screws (14) contained in the nozzle grip clockwise to separate it.
 - b. If the nozzle grip assembly will not come out with the set screws fully extended into the Mix-Head body, replace the M6 set screws (14) with longer M6 cap screws, and continue to move the nozzle grip assembly out of the MixHead body with the cap screws until the nozzle grip assembly can be removed by hand.

NOTICE

Whenever a chemical hose is disconnected, immediately remove its associated nozzle grip assembly and flush all chemical from the assembly and the MixHead bore. Exposure to atmospheric moisture will cause the remaining chemical in the nozzle grip assembly to harden, making removal from the MixHead difficult.


4. Using a clockwise twisting motion, pull the entire nozzle grip assembly out of the MixHead body.
5. If the injection nozzle will not come out with the nozzle grip assembly, use the nozzle ejector tool to remove the injection nozzle. See **Additional Tools and Accessories** on page 29.
6. With the roll pin (FA) on the nozzle grip (9) in place and lined up with the slot (FB) in the MixHead body, insert the nozzle grip into the MixHead body.
7. Install the four M8 screws (13) hand tight.
8. Use a torque wrench to alternately tighten each screw 1/2 turn at a time to 180 in-lb of torque.

Nozzle Grip Cleaning

6. Flush remaining chemical and dirt from the nozzle grip bore and mating surface of the MixHead body.
7. Disassemble the nozzle grip assembly and soak the metal parts in solvent.
8. Clean the parts thoroughly,
9. Inspect for damage and/or wear and replace as required.
10. Inspect the three o-rings (2, 3, 4) and replace as required.


Nozzle Grip Assembly Installation



 See FIG. 2 on page 10.

With all parts clean and dry, assemble and install the nozzle grip assembly as follows.

1. Lightly coat the injection needle (17) with Lubriplate grease. Screw the injection needle (17) into the nozzle grip (9) until the shoulder of the injection needle bottoms out in the nozzle grip counterbore.
2. Lightly coat the medium o-ring (3) with Lubriplate grease and install on the end of the injection nozzle (18).
3. Mount the injection nozzle (18) on the nozzle grip (9).
4. Lightly coat the large o-ring (2) with Lubriplate grease and install on the nozzle grip (9).
5. Lubricate the nozzle grip (9) with Lubriplate grease.
9. Thread the two set screws (14) into the nozzle grip until the screws contact the MixHead body.
10. Apply Lubriplate grease to the small o-ring (4) and insert it into the nozzle grip (9).
11. Install and tighten down the hex o-ring seat (5) onto the nozzle grip (9).
12. Install and hand tighten the locknut (6).
13. Recirculate all chemical lines until the pressures stabilize.
14. Pressurize the MixHead and check for chemical leaks.
15. Set the desired impingement pressure.
 - a. Loosen the locknut.
 - b. Turn the adjustment stem until the desired impingement pressure is achieved.
 - c. Retighten the locknut.

 The roll pin in the nozzle grip allows only one method of insertion, ensuring that the chemical openings in the nozzle grip and MixHead body will be correctly aligned. Do not insert a nozzle grip without the roll pin in place, or the nozzle grip may be installed upside down in the body, causing the chemical entering the MixHead to accumulate at the nozzle grip and clog it.

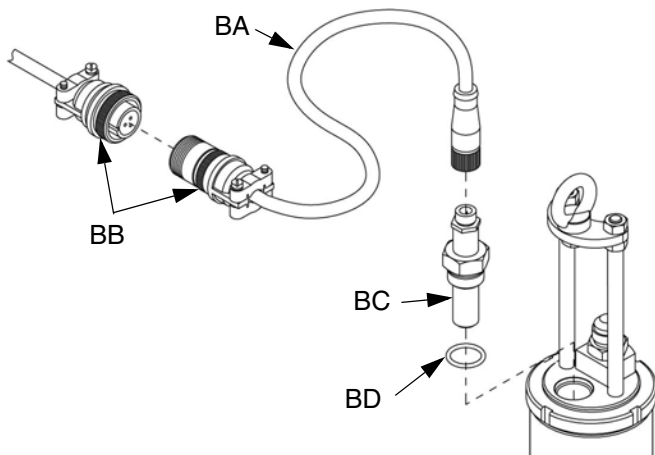
Cleanout Plunger Proximity Switch Replacement

<ul style="list-style-type: none"> Do not operate the MixHead unless all proximity switches are in place and the proximity switch alarm is operational and armed. A shock hazard or unpredictable machine operation could occur if the proximity switch is separated from its mating cord set, or if either the proximity switch or its mating cord set are used with a different switch or cord set. 						

The proximity switch on the cleanout plunger is a high-pressure switch that extends directly into the hydraulic fluid. The quick-disconnect feature on the switch allows easy replacement of a failed or damaged switch or cord set.

Tools Required

- 1 in. open-end wrench



Key:

- BA Proximity Switch Cord Set
- BB Amphenol® Connector
- BC Cleanout Plunger Proximity Switch
- BD O-ring

FIG. 3

Cord Set Replacement

See FIG. 3 on page 12.

1. Disconnect the cord set (BA) from the machine at the Amphenol connector (BB).
2. Unscrew the knurled knob at the end of the cord set (BA) and disconnect the cord set from the proximity switch (BC) on the MixHead.
3. Match up the keys on the cord set (BA) with the keyways on the proximity switch (BC), insert the cord set into the proximity switch, and tighten the knurled knob.
4. Connect the cord set (BA) to the machine at the Amphenol connector (BB).






Proximity Switch Replacement



See FIG. 3 on page 12.


1. Turn OFF the hydraulic fluid motor, bleed the hydraulic pressure to zero and allow the fluid to cool.
2. Disconnect the cord set (BA) from the machine at the Amphenol connector (BB).
3. Unscrew the knurled knob at the end of the cord set (BA) and disconnect the cord set from the proximity switch (BC) on the MixHead.
4. Unscrew the proximity switch (BC) from the MixHead using the open-end wrench.
5. The replacement proximity switch will have an o-ring (BD) already in position. Be sure to install the switch (BC) with the o-ring (BD) in place.
6. Carefully screw the replacement proximity switch (BC) back into the MixHead by hand and tighten with the wrench.
7. Ensure the o-ring (BD) forms a leak-proof seal.
8. Match the keys on the cord set with the keyways on the proximity switch, insert the cord set into the proximity switch and tighten the knurled knob.
9. Connect the cord set (BA) to the machine at the Amphenol connector (BB).
10. Purge all air from the hydraulic fittings. See step 3 on page 7.

Material Plunger Proximity Switch Replacement

						
Do not operate the MixHead unless all proximity switches are in place and the proximity switch alarm is operative and armed.						

Tools Required


- M2.5 hex key for M4 flat head screws
- Metric wrench (13mm)
- Proximity Switch gauge
 - Gauge M1978-1: Models 5/8, 6/10, 10/14
 - Gauge MU1140: Models 13/20, 16/25

 See FIG. 4 on page 15 for models 5/8, 6/10, and 10/14. See FIG. 5 on page 16 for models 13/20 and 16/25.

1. Turn OFF the hydraulic fluid motor and chemical motor.
2. Disconnect the old proximity switch (CA, DA) from the machine at the Amphenol connector.
3. Remove the two M4 flat head screws from the cover plate on the material plunger housing (CH) or sensor cap (DH), depending on which model you have. Remove the cover plate. Wipe the inside bore clean of any dirt and hydraulic oil.
4. The position of the material plunger (CG, DF) can be determined by observing its relationship to the proximity switch within the material plunger housing/sensor cap. The material plunger will be in a sensing position for the open/pour position, and in a non-sensing position for the closed/recirculation position.
5. While holding the conduit (CB, DB) of the old proximity switch stationary with one hand, loosen the adapter (CC, DC) from the jam nut (CE, DD) with the other hand. Loosen the jam nut and lock-washer (CD, DE) on the proximity switch from the material plunger housing/sensor cap. Remove the proximity switch by unscrewing it from the tapped hole.


6. Insert the sensor gauge (CF, DG) into the material plunger housing/sensor cap.
7. Install the replacement proximity switch into the appropriate threaded hole in the material plunger housing/sensor cap as follows.

Models 5/8, 6/10, 10/14:

 See FIG. 4 on page 15.

- a. Thread the replacement proximity switch (CA) until it contacts the flat cutout on the sensor gauge (CF).
- b. Maintain this position by tightening the lock-washer (CD) and jam nut (CE) on the threads of the proximity switch against the material plunger housing (CH), with the lock-washer between the jam nut and the material plunger housing.
- c. While holding the conduit (CB) stationary, tighten the adapter (CC) by hand until it contacts the jam nut (CE).
- d. Remove the sensor gauge (CF) from the material plunger housing (CH).
- e. This step will ensure a clearance of 0.010-0.015 in. (0.254-0.381 mm) between the material plunger (CG) and proximity switch (CA).

Models 13/20 and 16/25:

 See FIG. 5 on page 16.

- a. Thread the replacement proximity switch (DA) into the sensor cap (DH) until it contacts the outer diameter of the sensor gauge (DG).
- b. Maintain this position by tightening the lock washer (DE) and jam nut (DD) on the threads of the proximity switch against the sensor cap, with the lock washer between the jam nut and the sensor cap.

- c. While holding the conduit (DB) stationary, tighten the adapter (DC) by hand until it contacts the jam nut (DD).
 - d. Remove the sensor gauge (DG) from the sensor cap (DH).
 - e. This step will ensure a clearance of 0.010-0.015 in. (0.254-0.381 mm) between the material plunger (DF) and proximity switch (DA).
8. Reinstall the cover plate to the material plunger housing/sensor cap using the two M4 flat head screws.
 9. Connect the proximity switch to the machine at the Amphenol connector.

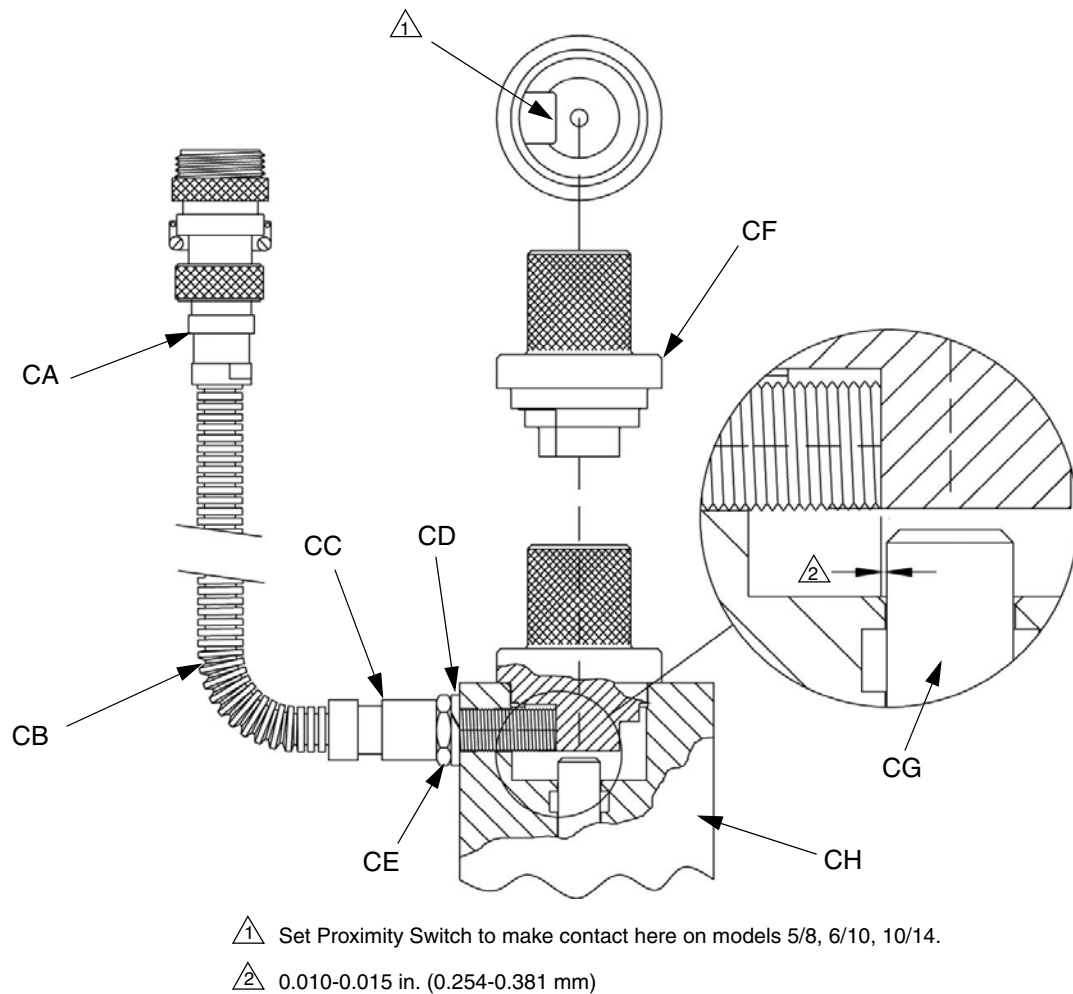


FIG. 4: Material Proximity Switch - Models 5/8, 6/10, 10/14

Key:

- CA Proximity Switch
- CB Conduit
- CC Adapter
- CD Lock-washer
- CE 8 mm Jam Nut

- CF Sensor Gauge M1978-1
- CG Material Plunger
- CH Material Plunger Cylinder Housing

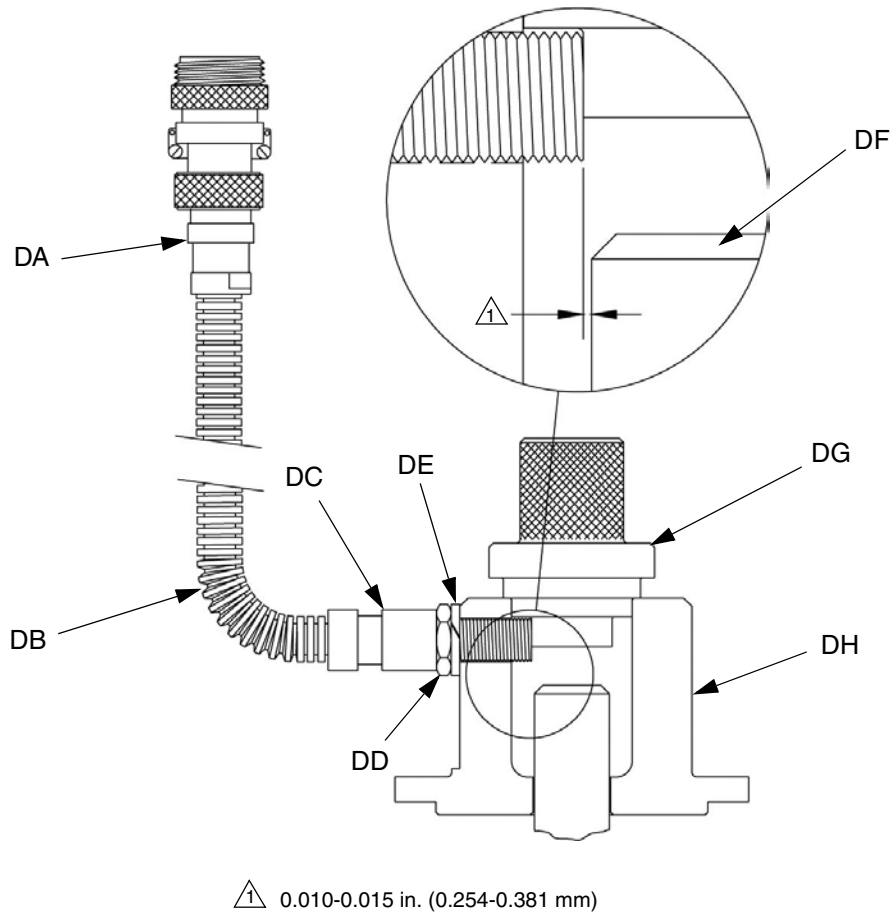


FIG. 5: Material Proximity Switch - Models 13/20 and 16/25.

Key:

- DA Proximity Switch
- DB Conduit
- DC Adapter
- DD 8 mm Jam Nut
- DE Lock-washer
- DF Material Plunger
- DG Sensor Gauge MU1140
- DH Sensor Cap

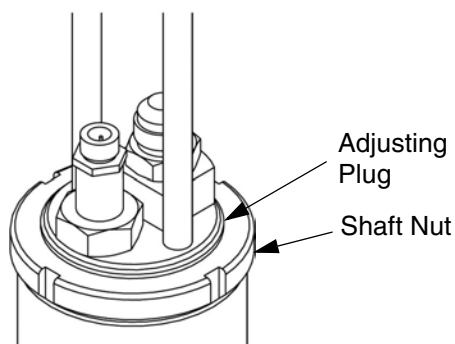
Cleanout Plunger Stroke Adjustment



The cleanout plunger stroke is properly set during factory assembly so that the cleanout plunger completely clears the impingement chamber during a pour. Usually, no adjustment is needed. However, for some applications where the chemical flow is on the lower end of the MixHead flow range, improved mixing may be achieved by adjusting the cleanout plunger so that it partially blocks the impingement chamber leading into the exiting chamber.

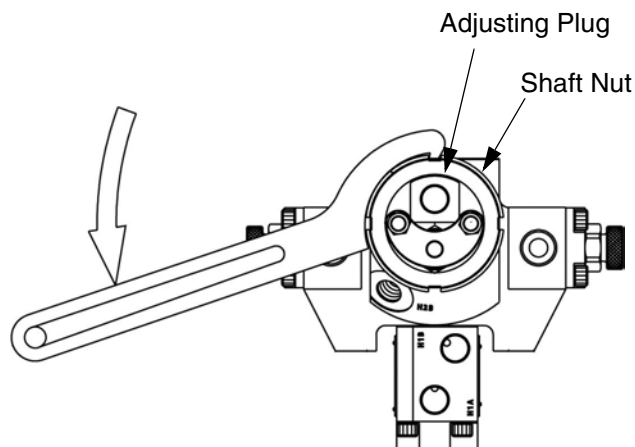
Tools Required

- Steel rod
 - Hook spanner wrench
 - Wrench MU1063: Models 5/8, 6/10, 10/14
 - Wrench MU1080: Models 13/20 and 16/25
1. Relieve hydraulic pressure to zero and allow the fluid to cool.
 2. Record the original position of the adjusting plug in relationship to the cylinder housing. This is done to establish a reference point for restoring the cleanout plunger to its original setting and for determining the position of the cleanout plunger relative to the impingement chamber.
 - a. Accurately measure and record the distance that the adjusting plug extends above the shaft nut.
 - b. Record the number of exposed threads of the adjusting plug.



In the following step, there must be no hydraulic pressure in the system when loosening the shaft nut from the cylinder housing.

3. Loosen the shaft nut from the cylinder housing by turning counterclockwise with the proper hook spanner wrench.



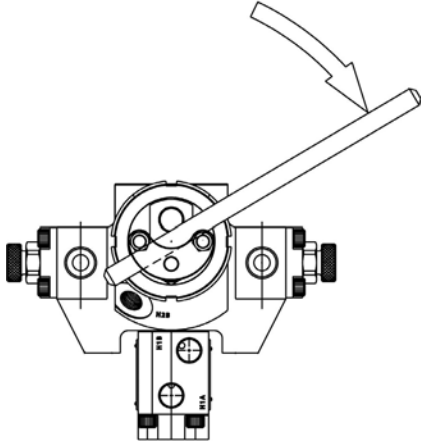
NOTICE

In the following step, do not exceed the following number of complete revolutions of the adjusting plug from its original factory setting:

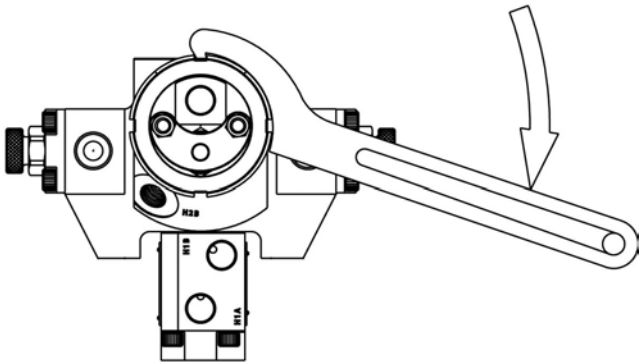
- Models 20.20.5/8 and 20.20.6/10: One
- Models 20.20.10/14: Two
- Models 20.20.13/20: Three
- Models 20.20.16/25: Four

Exceeding the above limits may result in chemical cross-contamination of the MixHead due to complete blockage of the impingement chamber.

4. Place the steel rod between the two tie rods on top of the adjusting plug and carefully turn the adjusting plug clockwise to a desired position within the range listed above. One complete turn moves the adjusting plug 0.078 in. (1.9812 mm).



5. Lock the adjusting plug into position by tightening the shaft nut against the cylinder housing with a hook spanner.



6. Purge all air from the hydraulic fittings. See step 3 on page 7.

Pour Nozzle Maintenance



With proper maintenance, the L-Head is capable of performing thousands of pours without the need for removing and cleaning the pour nozzle. However, the use of fast-reacting chemicals will require more frequent pour nozzle removal and cleaning. The faster the chemical reaction, the more frequent the need to clean the pour nozzle. This is due to hardening of the chemicals before the cleanout plunger can clean the bore. A sticking cleanout plunger is a good indication that the pour nozzle must be cleaned. Use the following maintenance practices to help minimize cleanout plunger sticking:

Cleanout Plunger Lubrication

If the MixHead is to be left idle for any period of time, the cleanout plunger should be lubricated before leaving.

1. Retract the cleanout plunger to the open/pour position.
2. Run a fine-grade wire brush up and down the cleanout bore to remove any loose foam.
3. Bring the cleanout plunger to the closed position, and completely submerge the pour nozzle in a cup of mesamoll plasticizer.
4. Cycle the cleanout plunger.
5. The mesamoll will be sucked up into the MixHead, providing the lubrication between the cleanout plunger and the bore it rides in.
6. Cycle the cleanout plunger several more times to ensure that all of the remaining foam is removed, and then leave the cleanout plunger in the open/pour position.

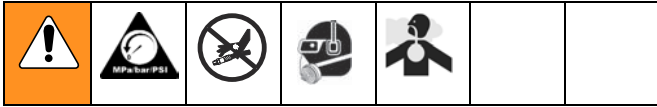
Cleanout Plunger Retract Routine

During operation, periodic lubrication with mesamoll may be all that is required to prevent sticking. However, in cases where sticking is a continual problem, the cleanout plunger retract routine may be utilized.

In the retract routine, the cleanout plunger is retracted as soon as it is permissible after each shot, to ensure that the scraper seal has a chance to remove the foam from the cleanout plunger while the foam is still wet.

Contact Graco technical service to learn more about the cleanout plunger retract routine. Some modifications to the software timing are required to incorporate this procedure.

Pour Nozzle Removal and Installation



Tools Required

- Torque wrench with M6 and M8 sockets
 - Fine-grade wire brushes on air tool
1. Cycle the cleanout plunger to the open/pour position.
 2. Remove the socket head cap screws holding the pour nozzle to the MixHead body, and remove the nozzle. If there is resistance, lightly tap the nozzle with a soft hammer until it breaks free from the Mix-Head body.
 3. Thoroughly clean the external surface and the bore of the pour nozzle of all foam and foreign matter using fine grade wire brushes. Soak the nozzle in solvent if necessary.
 4. Thoroughly clean the external mounting surface of the MixHead body using fine grade wire brushes. Cycle the cleanout plunger forward to the closed/non-pour position.
 5. Carefully install the pour nozzle onto the cleanout plunger and into position on the MixHead body. Install and finger-tighten the screws. Cycle the cleanout plunger several times to ensure proper alignment of the pour nozzle. Leave the cleanout plunger in the closed/non-pour position after cycling.

NOTICE

Proper alignment of the cleanout plunger within the bore of the pour nozzle is critical to the life of the Mix-Head.

6. Using a torque wrench, alternately tighten the three socket head cap screws a half-turn at a time to 180 in-lb.

Step Seal and Scraper Seal Replacement







NOTICE

Do not attempt to replace the step seal and/or scraper seal yourself.

Replacement of the step seal and the scraper seal should be considered only when a hydraulic leak develops out of the pour nozzle, or when an excessive amount of foam is getting into the hydraulics of the cleanout plunger.

MixHeads requiring step seal and/or scraper seal replacement must be returned to Graco for rebuilding.

Troubleshooting

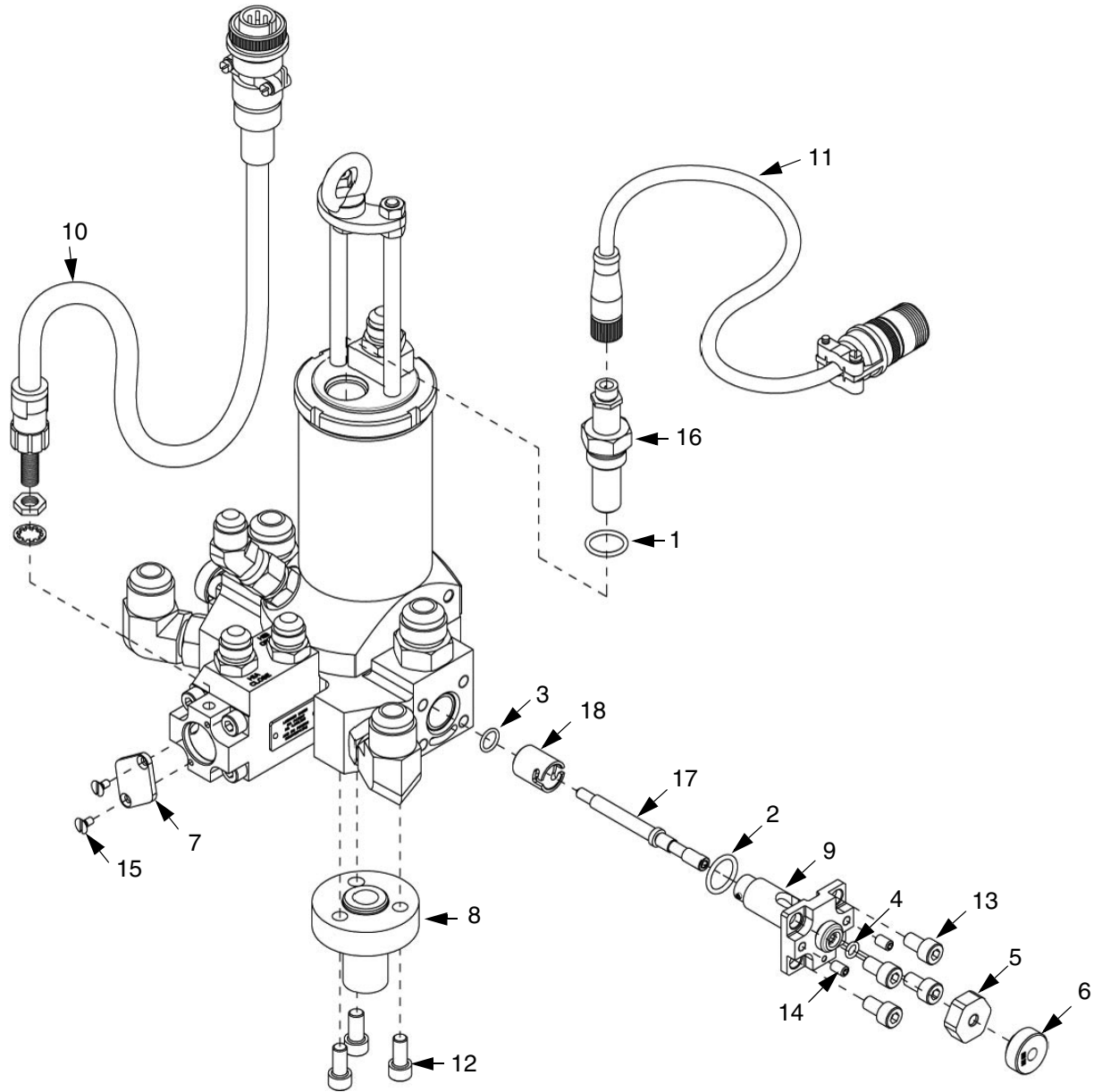
						
<p>Any individual working with the equipment must be knowledgeable in the necessary safety procedures.</p> <p>Unless otherwise noted, all electrical troubleshooting must be done with the incoming power switched off and locked out at the source.</p>						

Symptom	Probable Cause(s)	Corrective Actions	Reference
Chemical Crossover	Seal failure on Material Plunger	Send in MixHead for repair	
	Fracture of Material Plunger	Send in MixHead for repair	
	Cleanout Plunger did not retract during pour	Send in MixHead for repair	
	Improper customer adjustment on stroke of Cleanout Plunger	Send in MixHead for repair	
Hydraulic leak out of Pour Nozzle	Galled Cleanout Plunger	Send in MixHead for repair	
	Worn Step Seal	Send in MixHead for repair	
Chemical leak out of Pour Nozzle	Worn Seal on Material Plunger	Send in MixHead for repair	
	Fractured Tip on Material Plunger	Send in MixHead for repair	
Cleanout Proximity Switch not working	Damaged Switch	Remove and test Switch Replace as needed	See page 12
	Damaged Cord Set	Remove and test Cord Set Replace as needed	See page 12
Material Proximity Switch not working	Damaged Switch	Remove and test Switch Replace as needed	See page 14
	Improper clearance between Switch and Material Plunger	Reset clearance using sensor gauge	See page 14
Cleanout Plunger sticks in bore	Poor lubrication maintenance of Cleanout Plunger	Lubricate Cleanout Plunger on a daily basis	See page 20
	Build-up of foam in Pour Nozzle	Remove and clean Pour Nozzle	See page 20
	Galled Cleanout Plunger	Send in MixHead for repair	
	Foam is curing on Cleanout Plunger before scraper seal can remove it	Try Plunger Retract Routine	Contact Graco

Symptom	Probable Cause(s)	Corrective Actions	Reference
Hydraulic leak around Cleanout Plunger Proximity Switch	Damaged o-ring	Replace o-ring	See page 12
	Proximity Switch not tightened down onto Adjusting plug	Tighten Proximity Switch against Adjusting Plug to compress seal	See page 12
Hydraulic leak out of sensing area of Material Plunger	Improper sealing	Replace with Polypak seal and modify Sensor Cap	Contact Graco
Chemical leak out of Nozzle Grip Assembly	Loose Hex o-ring Seat	Replace o-ring	See Maintenance, page 9.
	Damaged o-ring Seat	Replace o-ring(s)	See Maintenance, page 9.
Cleanout Plunger falls out	Fractured Cleanout Plunger	Send in MixHead for repair	
Excessive amount of foam in hydraulics	Worn Scraper Seal	Send in MixHead for repair	
	Badly scored or galled Cleanout Plunger	Send in MixHead for repair	
Chemical pressure rise during pour- one side only	Incorrect orifice size of Injection Nozzle	Replace with proper orifice size(s)	See page 10
	Partial blockage in orifice of Injection Nozzle	Remove blockage	See page 10
	Partial blockage in Nozzle Grip	Remove blockage	See page 10
	Incorrect Injection Nozzle/Adjustment Stem size combination	Use matching Nozzle and Stem sizes	See Technical Data , page 31
Chemical pressure rise during pour- both sides	Cleanout Plunger partially blocking impingement chamber	Adjust Cleanout Plunger stroke to clear impingement chamber	See page 17
	Runner and/or Aftermixer too small	Enlarge Runner and/or Aftermixer	
Chemical pressure drop during pour- one or both sides	Restriction exists in return loop from MixHead to Tank	Remove restriction in return loop	
Injection Nozzle stuck in body	Exposure to air has hardened chemical remaining around Injection Nozzle	Remove Injection Nozzle using nozzle ejector tool	See page 10
Mounting Holes stripped out of body	Incorrect mounting of Mix-Head	Send in MixHead for repair	
Chemical or hydraulic leak around fitting	Damaged o-ring	Replace o-ring	
	Damaged fitting	Replace fitting	
Erosion of Adjustment Stem Tip and Orifice of Injection Nozzle	Chemical attack of steel parts or wear by abrasive	Replace with Carbide Adjustment Stems and Injection Nozzles	See page 10, and Technical Data on page 31
Poor quality foam at lower output	Incorrect Orifice size of Injection Nozzle	Replace with smaller Orifice size	See page 24
	Approaching lower limit of MixHead throughput	Adjust stroke of Cleanout Plunger	See page 24

Parts

Models 5/8, 6/10, 10/14



Parts List

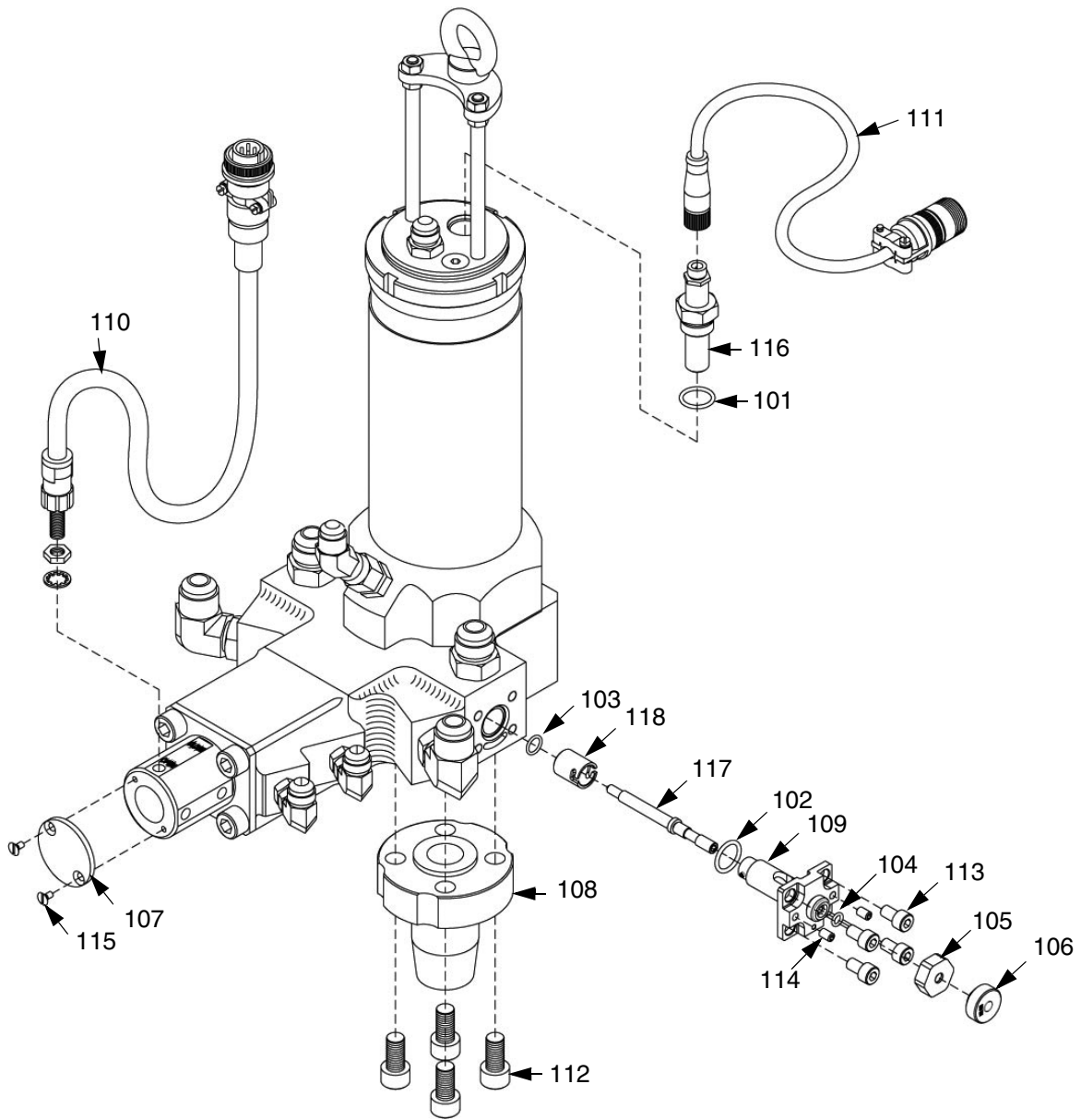
Ref.	Part No.	Description	Qty
1	0135-910	O-RING	1
2*†	---	O-RING	1
3*†	---	O-RING	1
4*†	---	O-RING	1
5	M0450	SEAT, hex o-ring	1
6	M0454-2	LOCKNUT	1
7	M362-3	COVER, sensor	1
8	---	NOZZLE, pour (20.20.5/8)	1
	---	NOZZLE, pour (20.20.6/10)	1
	---	NOZZLE, pour (20.20A.6/10)	1
	---	NOZZLE, pour (20.20.10/14)	1
9	M1051-1	GRIP, nozzle	1
10	M24017	SWITCH, material plunger proximity	1
11	M24022	CORD SET, cleanout plunger proximity switch	1
12	MA1009	SCREW, socket head cap	3
13	MA1755	SCREW, socket head cap	4
14	MA1759	SCREW, socket head cap	2
15	MA1769	SCREW, flat head machine	2
16	MS4086	SWITCH, cleanout plunger proximity	1
17†	---	NEEDLE, injection, L style	1
18†	---	NOZZLE, L Injection	1

* Part included in Nozzle Grip Assembly Seal Kit MK1490, which can be purchased separately.

† Part included in Orifice Kits listed on page 28.

--- Parts not available for individual sale.

Models 13/20 and 16/25



Parts List

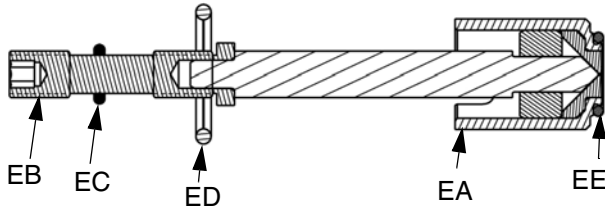
Ref	Part No.	Description	Qty
101	0135-910	O-RING	1
102*	† ---	O-RING	1
103*	† ---	O-RING	1
104*	† ---	O-RING	1
105	M0450	SEAT, hex o-ring	1
106	M0454-2	LOCKNUT	1
107	M375-3	COVER, sensor	1
108	---	NOZZLE, pour (13/20)	1
	---	NOZZLE, pour (16/25)	1
109	M1051-1	GRIP, nozzle	1
110	M24017	SWITCH, material plunger proximity (male)	1
	M24018	SWITCH, material plunger proximity (female)	1
111	M24022	CORD SET, cleanout plunger proximity switch	1
112	MA1800	SCREW, socket head cap	4
113	MA1755	SCREW, socket head cap	4
114	MA1759	SCREW, socket head cap	2
115	MA1769	SCRW, flat head machine	2
116	MS4086	SWITCH, cleanout plunger proximity	1
117†	---	NEEDLE, injection, L style	1
118†	---	NOZZLE, L Injection	1

* Parts included in Nozzle Grip Assembly Seal Kit MK1490, which can be purchased separately.

† Part included in Orifice Kits listed on page 28.

--- Parts not available for individual sale.

Orifice Kits



Key:

- EA L-injection Nozzle
- EB L-style Injection Needle
- EC O-ring
- ED O-ring, fluoroelastomer
- EE O-ring, fluoroelastomer

FIG. 6: L-Head Orifice Kit

Kit Numbers

Orifice size (mm)	Kit
Calibrate	M0934A-4
0.25	247761
0.45	247762
0.5	247763
0.75	247764
0.80	247765
0.85	247766
1.00	247767
1.10	247811
1.20	247848
1.25	247858
1.30	247859
1.40	247860
1.50	247861
1.60	247862
1.65	247863
1.70	247864
1.75	247865
1.80	247866
1.90	247867
2.00	247868
2.40	247869
3.20	247870
3.60	247871
4.20	247872
5.00	247873
5.60	247874

Orifice Selection

This section is provided to give an approximate orifice size needed for a given application. There is no guarantee that this formula will give you the correct orifice.

To help choose the correct orifice for your application, use the following equation to find a suggested 'effective' orifice size.

$$D = \sqrt{(F/0.324)} \times \sqrt{(P \times Sg \times 62.4)}$$

D = Orifice Diameter (mm)

F = Flow through orifice (pounds / second)

P = Dispensing Pressure for Chemical (psi)

Sg = Specific Gravity of Chemical

The calculated "D" is the suggested orifice size in millimeters. Round to the nearest available orifice size to get the suggested orifice for the application.

Additional Tools and Accessories

Part No.	Description	Qty
MU1079	EJECTOR, nozzle	1
M1978-1*	GAUGE, sensor (5/8, 6/10, 10/14)	1
MU1140†	GAUGE, sensor (13/20, 16/25)	1
MU1063*	WRENCH, hook spanner (5/8, 6/10, 10/14)	1
MU1080†	WRENCH, hook spanner (13/20, 16/25))	1
MU1064*†	HEX L-KEY, 3 mm, long arm	1
MU1066*†	HEX L-KEY, 6mm, long arm	1
MU1069*†	HEX KEY, 5/32 in., 6 in.	1
MU1154*†	HEX L-KEY, 3/8 in., long arm	1
MU1155*†	WRENCH, open end, 1 in., 15 deg	1
MU1067†	HEX L-KEY, 8 mm, long arm	1

* Included in L-Head Tool Kit MK1184 for models 5/8, 6/10, and 10/14. Kit can be purchased separately

† Included in L-Head Tool Kit MK1223 for models 13/20 and 16/25. Kit can be purchased separately

Technical Data

Proximity Switch Electrical Requirements	<i>Cleanout Piston:</i> 50 mA @24VDC <i>Material Piston:</i> 60 mA @ 16 VDC
Fittings (See FIG. 1 on page 6)	<i>Iso Close Fitting (K):</i> 1/2 BSPP X 1-1/16 JIC CONNECT, 1-1/16-12 F JIC x 3/4-16 JIC <i>Resin Close Fitting (C):</i> 1/2 BSPP X 1-1/16 JIC CONNECT, 1-1/16-12 F JIC x 7/8-14 JIC <i>Iso Open Fitting (L):</i> 1/2 BSPP x 1-1/16-12 ELBOW, 1-1/16-12 F JIC x 3/4-16 JIC <i>Resin Open Fitting (D):</i> 1/2 BSPP x 1-1/16-12 ELBOW, 1-1/16-12 F JIC x 7/8-14 JIC <i>Cleanout Plunger Open Fitting (B):</i> 3/8 BSPP x 3/4-16 JIC NIPPLE, 3/4-16 JIC x 3/4-16 JIC (SW) 45
Max Weight.	43 lb (19.5 kg)
Wetted Parts.	Stainless Steel, Trivalent Chromium Plated Carbon Steel, PTFE, Perfluorinated and EPDM O-rings

Graco Standard Warranty

Graco warrants all equipment referenced in this document which is manufactured by Graco and bearing its name to be free from defects in material and workmanship on the date of sale to the original purchaser for use. With the exception of any special, extended, or limited warranty published by Graco, Graco will, for a period of twelve months from the date of sale, repair or replace any part of the equipment determined by Graco to be defective. This warranty applies only when the equipment is installed, operated and maintained in accordance with Graco's written recommendations.

This warranty does not cover, and Graco shall not be liable for general wear and tear, or any malfunction, damage or wear caused by faulty installation, misapplication, abrasion, corrosion, inadequate or improper maintenance, negligence, accident, tampering, or substitution of non-Graco component parts. Nor shall Graco be liable for malfunction, damage or wear caused by the incompatibility of Graco equipment with structures, accessories, equipment or materials not supplied by Graco, or the improper design, manufacture, installation, operation or maintenance of structures, accessories, equipment or materials not supplied by Graco.

This warranty is conditioned upon the prepaid return of the equipment claimed to be defective to an authorized Graco distributor for verification of the claimed defect. If the claimed defect is verified, Graco will repair or replace free of charge any defective parts. The equipment will be returned to the original purchaser transportation prepaid. If inspection of the equipment does not disclose any defect in material or workmanship, repairs will be made at a reasonable charge, which charges may include the costs of parts, labor, and transportation.

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Original instructions. This manual contains English. MM 312753

Graco Headquarters: Minneapolis

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