Instructions – Parts List

Parts

Hydraulic Fluid Controls

308395 Rev.C

Regulates hydraulic pressure and flow when used with Graco's Dyna–Star ™ and Power–Star ™ hydraulic–powered lubricant pumps.

Model 236864

Used with Dyna–Star™

500–1500 psi (35–105 bar, 3.5–10.5 MPa) Maximum Working Pressure
3 gpm (11 liters/min) Maximum Flow Rate

Model 236865

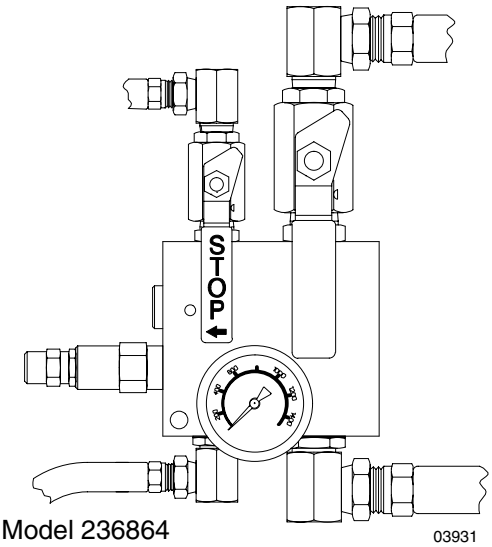
Used with Power–Star™

300–1500 psi (21–105 bar, 2.1–10.5 MPa) Maximum Working Pressure
12 gpm (45 liters/min) Maximum Flow Rate

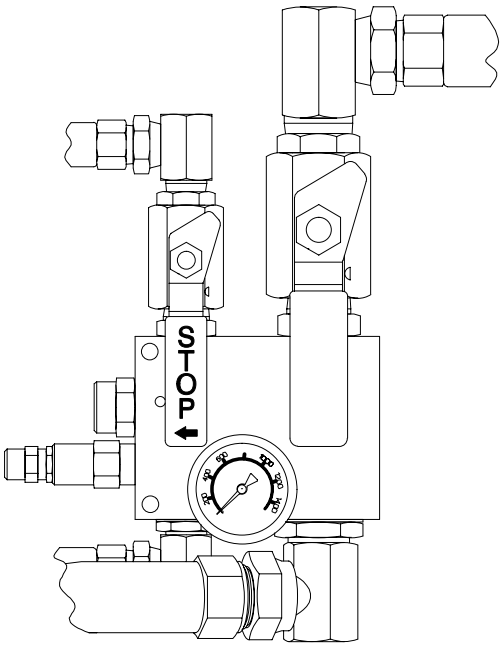
Important Safety Instructions.
Read all warnings and instructions in this manual.
Save these instructions.

⚠ WARNING

Hydraulic fluid controls are designed to control hydraulic fluids only in a hydraulic power system. Any other fluids can cause unsafe operating conditions and result in component rupture, fire, or explosion which could result in serious injury, including fluid injection.



Model 236864 03931



Model 236865 03932

PROVEN QUALITY. LEADING TECHNOLOGY.

CE

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Symbols

Warning Symbol

⚠ WARNING

This symbol alerts you to the possibility of serious injury or death if you do not follow the instructions.

Caution Symbol

⚠ CAUTION

This symbol alerts you to the possibility of damage to or destruction of equipment if you do not follow the instructions.

⚠ WARNING

FIRE AND EXPLOSION HAZARD

When flammable fluids are present in the work area, such as gasoline and windshield wiper fluid, be aware that flammable fumes can ignite or explode. To help prevent fire and explosion:

- Use equipment only in well ventilated area.
- Eliminate all ignition sources, such as cigarettes and portable electric lamps.
- Keep work area free of debris, including rags and spilled or open containers of solvent and gasoline.
- Ground equipment.
- Use only grounded hoses.
- 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 fire extinguisher in the work area.

INJECTION HAZARD

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.**

- Do not point the 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 the **Pressure Relief Procedure** on page 7 when you stop spraying and before cleaning, checking or servicing equipment.

⚠ WARNING

EQUIPMENT MISUSE HAZARD

Misuse can cause death or serious injury.

- 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 the equipment wetted parts. See **Technical Data** in all equipment manuals. Read the fluid and solvent manufacturer's warnings.
- Check equipment daily. Repair or replace worn or damaged parts immediately.
- Do not alter or modify this equipment.
- For professional use only.
- Use equipment only for its intended purpose. Call your Graco distributor for information.
- Do not kink or over bend hoses or use hoses to pull equipment.
- Comply with all applicable safety regulations.

TOXIC FLUID OR FUMES HAZARD

Toxic fluids fumes can cause serious injury or death if splashed in the eyes or on skin, inhaled, or swallowed.

- Read MSDS's to know the specific hazards of the fluid you are using.
- Store hazardous fluid in approved containers and dispose of it according to applicable guidelines.
- Always wear protective eyewear, gloves, clothing and respirator as recommended by the fluid and solvent manufacturer.

Installation

General Information

NOTE: Reference numbers and letters in parentheses in the text refer to the callouts in the Installation and Parts drawings.

NOTE: Always use Genuine Graco Parts and Accessories, available from your Graco distributor.

Grounding

⚠ WARNING

FIRE AND EXPLOSION HAZARD
Before operating the pump, ground the system as explained below. Also read the section **FIRE OR EXPLOSION HAZARD** on page NO TAG.

1. *Pump:* use a ground wire and clamp. Loosen the grounding lug locknut (W) and washer (X). Insert one end of a 12 ga (1.5 mm^2) minimum ground wire (Y). into the slot in lug (Z) and tighten the locknut securely. Connect the other end of the wire to a true earth ground. Order Part No. 237569 Ground Wire and Clamp.

2. *Hydraulic Hoses and Fluid Outlet Hoses:* use only electrically conductive hoses.

3. *Hydraulic Power Supply and Air Compressor:* follow manufacturer's recommendations.

4. *Any pails used when flushing.* Use only metal grounded pails when flushing. Make firm metal-to-metal contact between a metal part of the dispense valve and the pail. Use the lowest possible pressure.

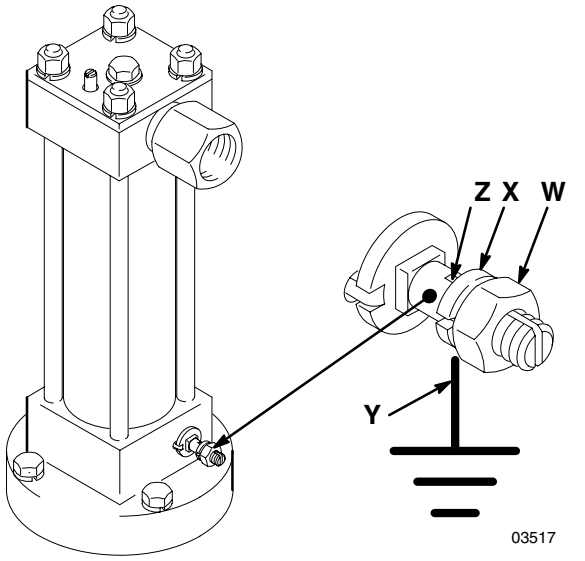
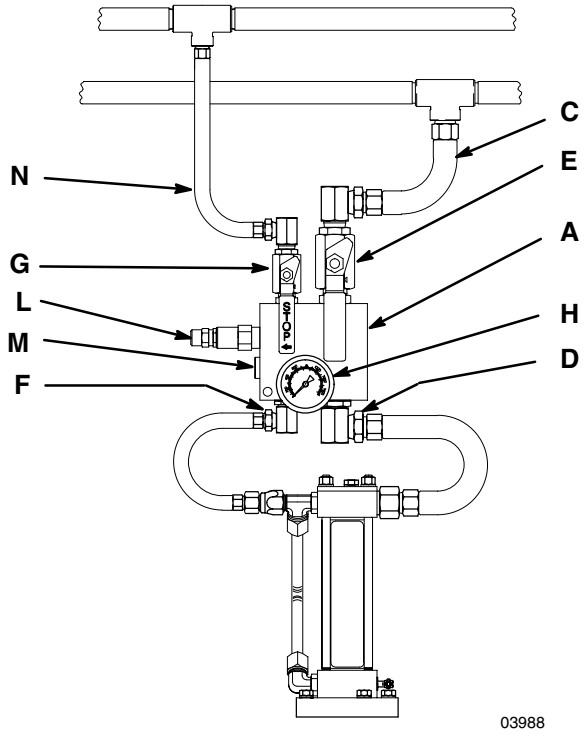


Fig. 1

Installation

Typical Installation



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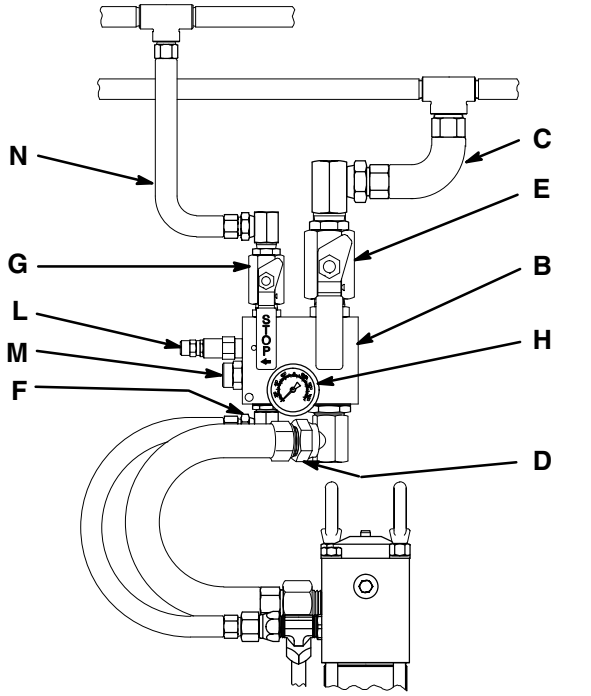

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KEY

A Hydraulic Control, 236864

B Hydraulic Control, 236865

C Hydraulic Return Line

D Hydraulic Outlet, 3/4 npsm (**A**), 1 1/4 npsm (**B**)

E Return Line Shutoff Valve

F Hydraulic Inlet, 3/8 npsm (**A**), 3/4 npsm (**B**)

G Supply Line Shutoff Valve

H Pressure Gauge

L Pressure Reducing Valve

M Flow Control Valve

N Hydraulic Supply Line (Use only GRACO hydraulic power supply)

Hydraulic Fluid Control The hydraulic fluid control provides pressure regulation, flow regulation, and pump isolation. See the Typical Installation above. The installation shown is only a guide. For assistance in designing a system to suit your needs, contact your Graco representative.

Pressure Regulation:

The hydraulic fluid control pressure reducing valve (L) reduces the hydraulic oil pressure to the operating pressure required for the application.

Flow Regulation:

The hydraulic fluid control flow control valve (M) limits the maximum amount of oil flow to the motor to keep the hydraulic motor within the recommended cycle rate limit. This prevents pump runaway. The limit on the Dyna-Star™ is 60 cpm. The limit on the Power-Star™ is 66 cpm.

Pump Isolation:

The hydraulic fluid control (A & B) has ball valves on the supply and return sides of the manifold. The ball valves isolate the hydraulic fluid control and pump for servicing without stopping the hydraulic power supply.

Installation

⚠ CAUTION

Keep the Hydraulic System Clean

The hydraulic supply system must be kept clean at all times to reduce the risk of damaging the reciprocator hydraulic power supply. Blow out all hydraulic lines with air, flush thoroughly with solvent, and then blow out with air again before connecting the lines to the reciprocator.

Always plug the hydraulic inlets, outlets and lines when disconnecting them for any reason to avoid introducing dirt and other contaminants into the system.

Carefully follow the manufacturer's recommendations on reservoir and filter cleaning, and periodic changes of hydraulic fluid.

Hydraulic Power Supply

⚠ WARNING

To reduce the risk of overpressurizing the hydraulic reciprocator, which could cause a rupture and serious injury, including fluid injection, the hydraulic power supply must have a means to limit the incoming fluid flow to the reciprocator to a maximum of 3 gpm (11 liter/min) at 1500 psi (105 bar, 10.5 MPa) for the Dyna-Star™ and 10 gpm (37 liter/min) at 1500 psi (105 bar, 10.5 MPa) for the Power-Star™.

Hydraulic Components

⚠ WARNING

Always turn off the supply side valve (G) to avoid possible serious injury or component damage. See the Typical Installation on page 5.

⚠ WARNING

Maximum Working Pressure of Accessories

To reduce the risk of serious injury including fluid injection and splashing in the eyes or on the skin, which may be caused if a component ruptures, all accessories added to the reciprocator power supply side must have at least a 1500 psi (105 bar, 10.5 MPa) maximum working pressure and those to the pump fluid outlet side must have at least a 375 psi (26 bar, 2.6 MPa) maximum working pressure for the Dyna-Star™ and 1500 psi (105 bar, 10.5 MPa) for the Power-Star™.

1. Do not kink hoses. Adjust swivel connections if necessary.
2. Always use permanently coupled electrically conductive hoses.
3. Refer to the application data from Graco to make determinations as to the location and height to mount the control.

Operation

Pressure Relief Procedure

⚠ WARNING

INJECTION HAZARD
Fluid under high pressure can be injected through the skin and cause serious injury. To reduce the risk of an injury from injection, splashing fluid, or moving parts, follow the **Pressure Relief Procedure** whenever you:

- are instructed to relieve the pressure,
- shut off the pump,
- check or service any of the system equipment,
- install, change, or clean the dispensing valve nozzles.

1. Close the supply line shutoff valve, and then the return line shutoff valve.

2. Hold open the dispensing valve to relieve pressure.

3. Place a container under the drain valve to catch any drainage. Open the pump outlet drain valve.

4. Leave the drain valve open until you are ready to pump again.

If you suspect that the dispensing valve nozzle, or hose is completely clogged, or that pressure has not been fully relieved after following the steps above, VERY SLOWLY loosen the hose end coupling and relieve pressure gradually, then loosen completely, now clear the obstruction.

Emergency Stop Procedure

Close the red-marked supply line shutoff valve (marked STOP).

Before You Start the Pump

⚠ CAUTION

Recommended Hydraulic Oil

Use Graco-approved Hydraulic Oil or a premium, ISO grade 46 petroleum-based hydraulic oil containing rust and oxidation inhibitors and anti-wear agents.

Before using any other type of oil in this control, contact your Graco distributor. Unauthorized use of lesser grade oil or substitutes may void the warranty.

Hydraulic Oil Working Temperature

The recommended hydraulic oil operating temperature is 80–115° F (27–45° C). The control seals will wear faster and leakage will may occur if the pump is operated at higher oil temperatures.

If the hydraulic oil temperature approaches 130° F (54° C), check the hydraulic fluid supply cooling system, filter, etc. and clean or repair as needed.

Hydraulic Fluid Level Check

Check the hydraulic fluid level in the hydraulic power supply before each use, and add fluid as necessary to fill the lines.

⚠ WARNING

How to Relieve Pressure

To reduce the risk of serious injury whenever you shut off the pump, check, service, clean, or repair any part of the system, always follow the Pressure Relief Procedure at left.

Be sure you always shut off the hydraulic supply line shutoff valve (G) first, and then the return line shutoff valve (E). This is to prevent overpressurizing the motor or its seals. When starting up the hydraulic system, open the return line shutoff valve (E) first.

Operation

To Start the Pump

⚠ WARNING

Maximum Working Pressures

To reduce the risk of serious injury including fluid injection and splashing in the eyes or on the skin, which may be caused if a component ruptures:

Never exceed 1500 psi (105 bar, 10.5 MPa) Maximum Hydraulic Pressure to the control.

Never exceed 375 psi (26 bar, 2.6 MPa) Maximum Outlet Pressure from the control when used with a 1/4:1 Dyna-Star™ pump.

Never exceed 1500 psi (105 bar, 10.5 MPa) Maximum Outlet Pressure from the control when used with a 1:1 Power-Star™ pump.

Be sure all accessories added to the reciprocator power supply side of the control are capable of at least a 1500 psi (105 bar, 10.5 MPa) maximum working pressure and all of those for the pump fluid outlet side of the control have at least a 375 psi (26 bar, 2.6 MPa) maximum working pressure for Dyna-Star™ and 1500 psi (105 bar, 10.5 MPa) for Power-Star™.

Turn on the hydraulic power supply.

Open the return line shutoff valve (E) first and slowly open the hydraulic supply shutoff valve (G).

Remove the cap on the pressure reducing valve to reveal the capscrew adjustment.

Adjust the hydraulic inlet pressure from 50 to 1500 psi (3 to 105 bar, 0.3 to 10.5 MPa) with an Allen wrench inserted in the regulator pressure control adjustment on the pressure reducing valve (L). Increasing the inlet pressure (clockwise) increases the pump outlet pressure. Decreasing the inlet pressure (counterclockwise) decreases the pump outlet pressure.

Always use the lowest pressure possible to obtain the desired results. This reduces pump wear.

Shutdown and Care

⚠ WARNING

To reduce the risk of serious injury whenever you are instructed to relieve pressure, always follow the **Pressure Relief Procedure** on page 7.

Always shut off the supply line shutoff valve (E) first, and then the return line shutoff valve (G). This is to prevent overpressurizing the reciprocator or its seals. When starting the hydraulic system, open the return line shutoff valve (G) first. See page 5.

Troubleshooting

⚠ WARNING

To reduce the risk of serious injury whenever you are instructed to relieve pressure, always follow the **Pressure Relief Procedure** on page 7.

Before servicing this equipment, always make sure to **Relieve the Pressure.**

NOTE: Check all possible problems and solutions before disassembling the pump.

Problem	Cause	Solution
No pressure on gauge, or low pressure on gauge	Hydraulic power supply malfunction or misadjustment	Adjust the hydraulic power supply. If problem remains, refer to the hydraulic power supply instruction manual.
	Pressure reducing valve is backed out	Adjust the pressure reducing valve.
Can't adjust pressure with the pressure reducing valve.	Clogged valve	Clean the pressure reducing valve.
	Insufficient hydraulic power supply pressure	Adjust the hydraulic power supply pressure. If problem remains, refer to the the hydraulic power supply instruction manual.
Gauge will not re-zero with the hydraulic supply and return line shutoff valves closed.	Leak in the supply line shutoff valve (G).	Open the return line shutoff valve (E) to remove pressure.
	Damaged gauge	Replace the gauge.
Pump runs away	Contaminated flow control valve	Remove and clean the flow control valve.

Service

There are two basic repairs to the hydraulic fluid control; pressure control repair and flow control repair.

Pressure Control Repair

⚠ WARNING

To reduce the risk of serious injury whenever you are instructed to relieve pressure, always follow the **Pressure Relief Procedure** on page 7.

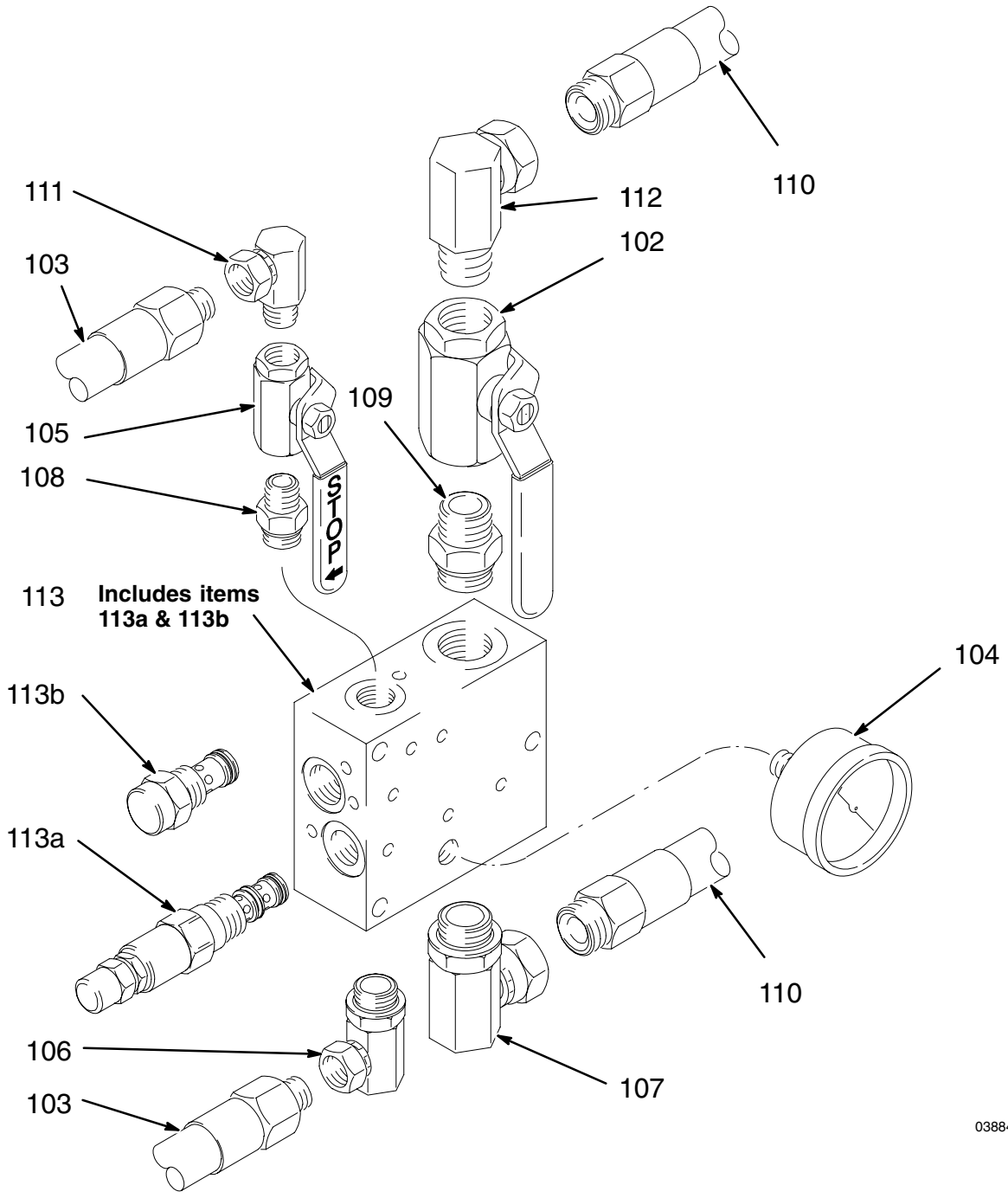
1. **Relieve the Pressure.**
2. Remove the pressure reducing valve (L).
3. Clean the pressure reducing valve (L) with a compatible solvent.
4. Install the pressure reducing valve in the control.
5. Try the system with the clean valve. Follow the **To Start the Pump** procedure on page 8.
6. If the control still does not regulate the pressure properly, replace the valve.

Flow Control Repair

1. **Relieve the Pressure.**
2. Remove the flow control valve (M).
3. Clean the flow control valve (M) with a compatible solvent.
4. Install the flow control valve in the control.
5. Try the system with the clean valve. Follow the **To Start the Pump** procedure on page 8.
6. If the control still does not control the flow properly, replace the valve.

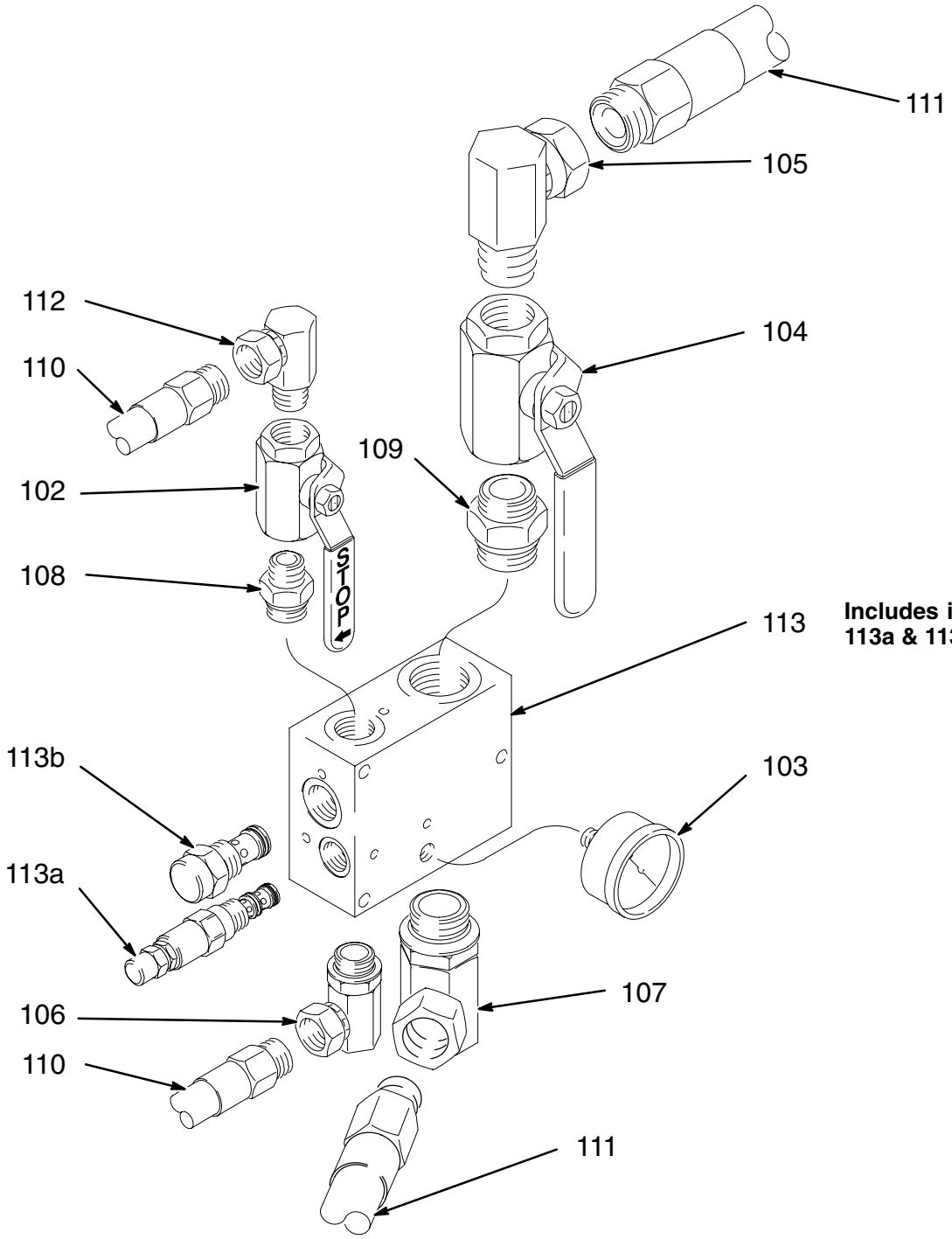
Model 236864 Hydraulic Fluid Control – Parts

REF NO.	PART NO.	DESCRIPTION	QTY
102	108537	VALVE, ball	1
103	112714	HOSE, coupled, 3.0 ft	2
104	112567	GAUGE, pressure, fluid	1
105	112578	VALVE, ball	1
106	112581	SWIVEL, union, 90°	1
107	112705	SWIVEL, union, 90°	1
108	112707	ADAPTER, male	1
109	112708	ADAPTER, male	1
110	112715	HOSE, coupled, 3.0 ft	2
111	155494	UNION, swivel, 90°	1
112	160327	UNION. swivel, 90°	1
113	189837	MANIFOLD, 3 gpm; Includes replaceable items 113a, &113b	1
113a	119902	· VALVE, pressure reducing	1
113b	112712	· VALVE, flow regulating, 3 gpm	1

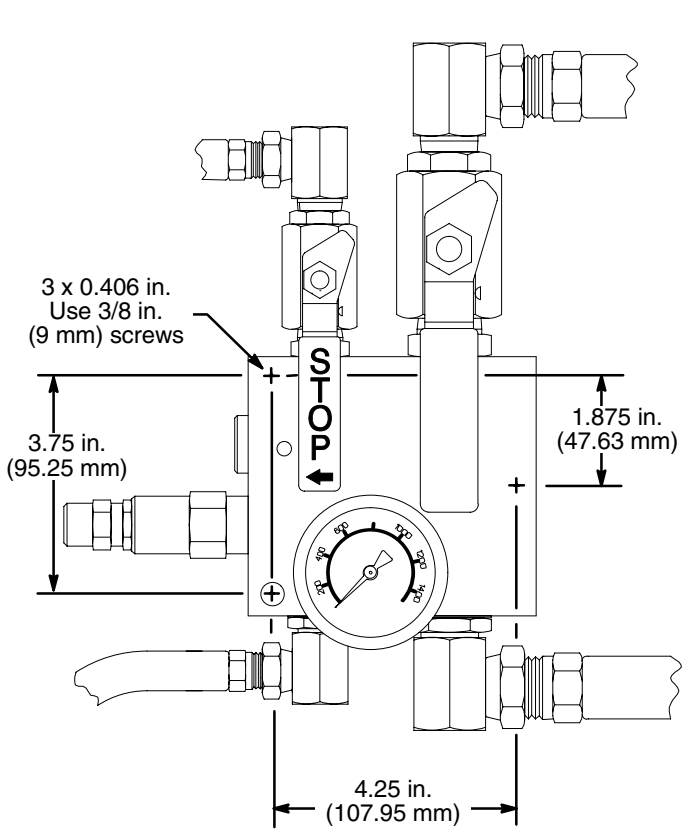


Model 236865 Hydraulic Fluid Control – Parts

REF NO.	PART NO.	DESCRIPTION	QTY
102	108537	VALVE, ball	1
103	112567	GAUGE, pressure, fluid	1
104	112579	VALVE, ball	1
105	112580	SWIVEL, union, 90°	1
106	112705	SWIVEL, union, 90°	1
107	112706	SWIVEL, union, 90°	1
108	112708	ADAPTER, male	1
109	112709	ADAPTER, male	1
110	112715	HOSE, coupled, 3.0 ft	2
111	112716	HOSE, coupled, 3.0 ft	2
112	160327	UNION, swivel, 90°	1
113	189838	MANIFOLD, 12 gpm	1
		Includes items 113a & 113b	
113a	119903	· VALVE, pressure reducing	1
113b	112713	· VALVE, flow regulating, 12 gpm	1



Dimensional Drawings



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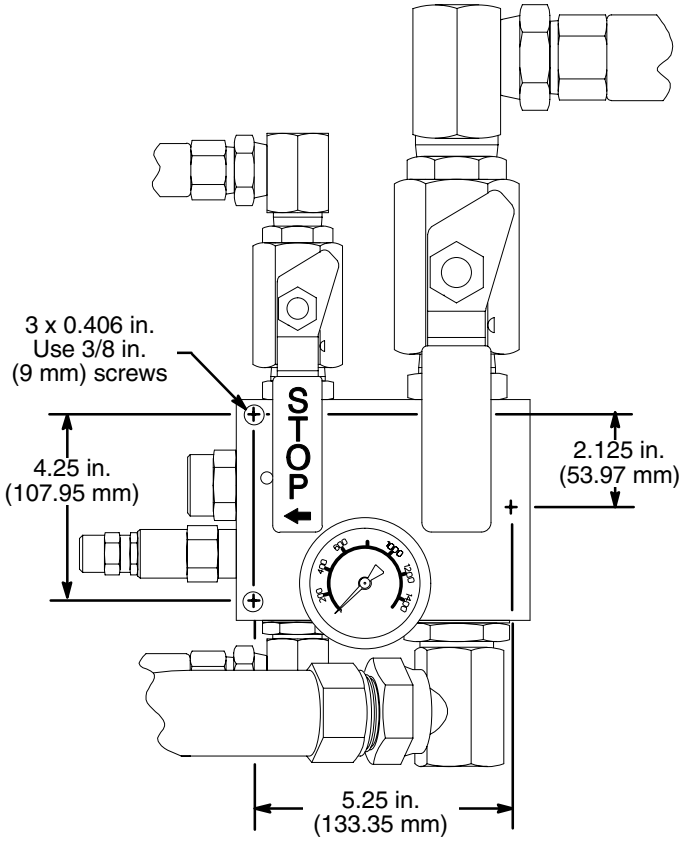

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Technical Data

Model	**Dyna-Star**	**Power-Star**
Maximum working pressure	1500 psi (105 bar)	1500 psi (105 bar)
Pressure adjusting range	500–1500 psi (35–105 bar)	300–1500 psi (20–105 bar)
Flow setting	3 gpm (11 lpm)	12 gpm (45 lpm)
Maximum fluid temperature	130°F (55°C)	130°F (55°C)
Weight	11 lb (5 kg)	22 lb (10 kg)
Wetted materials	aluminum, steel, nitrile	aluminum, steel, nitrile
Sound Pressure	<70 dB(A)	<70 dB(A)

Graco Warranty and Limitation of Liability

WARRANTY

Graco warrants all equipment listed in this manual 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. 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.

THIS WARRANTY IS EXCLUSIVE, AND IS IN LIEU OF ANY OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO WARRANTY OF MERCHANTABILITY OR WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE.

Graco's sole obligation and buyer's sole remedy for any breach of warranty shall be as set forth above. The buyer agrees that no other remedy (including, but not limited to, incidental or consequential damages for lost profits, lost sales, injury to person or property, or any other incidental or consequential loss) shall be available. Any action for breach of warranty must be brought within two (2) years of the date of sale.

GRACO MAKES NO WARRANTY, AND DISCLAIMS ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE IN CONNECTION WITH ACCESSORIES, EQUIPMENT, MATERIALS, OR COMPONENTS SOLD BUT NOT MANUFACTURED BY GRACO. These items sold, but not manufactured by Graco (such as electric motors, switches, hose, etc.) are subject to the warranty, if any, of their manufacturer. Graco will provide purchaser with reasonable assistance in making any claim for breach of these warranties.

For Sales to Canadian Customers:

Except as expressly stated herein, Graco makers no representations, warranties or conditions, express, implied or collateral, concerning any goods or services sold, and **GRACO SHALL NOT BE LIABLE IN ANY MANNER FOR** any other representation, warranty or condition of any kind, whether arising by operation of law or otherwise, including but not limited to, **WARRANTIES OF MERCHANTABLE QUALITY OR FITNESS FOR A PARTICULAR PURPOSE.**

LIMITATION OF LIABILITY

In no event will Graco be liable for indirect, incidental, special or consequential damages resulting from Graco supplying equipment hereunder, or for the furnishing, performance, or use of any products or other goods sold hereto, whether due to a breach of contract, breach of warranty, the negligence of Graco, or otherwise.

Graco Information

TO PLACE AN ORDER, contact your Graco distributor or call to identify the nearest distributor:
Phone: 642–623–6928 **or Toll Free:** 1–800–5337–9655. **Fax:** 612–378–3590

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Graco reserves the right to make changes at any time without notice.

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GRACO INC. P.O. BOX 1441 MINNEAPOLIS, MN 55440–1441
PRINTED IN U.S.A. 308395 07/1994, Revised 04/2005