

Hydraulic Fluid Controls

308395D

EN

Regulates hydraulic pressure and flow when used with Graco's Dyna-Star™ and Power-Star™ hydraulic-powered lubricant pumps. For professional use only.

Model 236864

Used with Dyna-Star™
1500 psi (10.5 MPa, 105 bar) *Maximum Working Pressure*
3 gpm (11 liters/min) *Maximum Flow Rate*


Model 236865

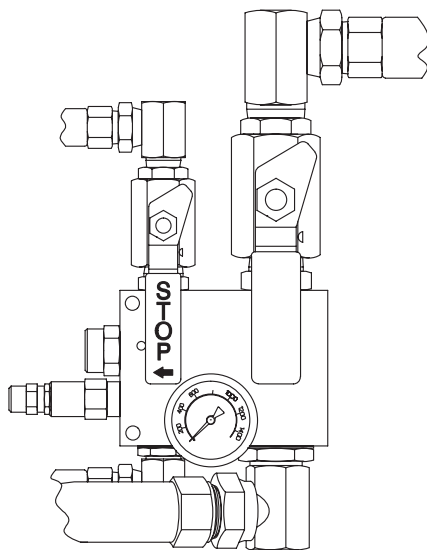
Used with Power-Star™
1500 psi (10.5 MPa, 150 bar) *Maximum Working Pressure*
12 gpm (45 liters/min) *Maximum Flow Rate*



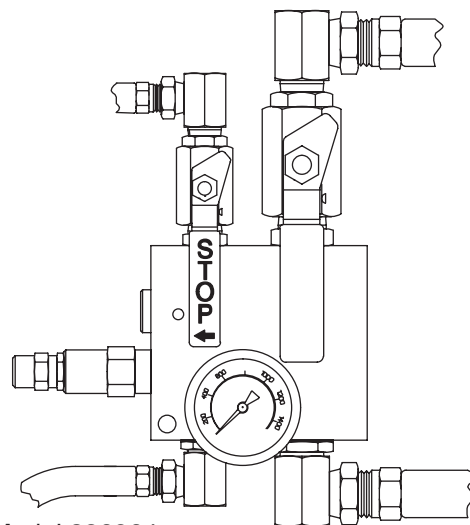
Important Safety Instructions

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

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



Model 236865






Model 236864

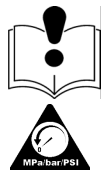


Warnings

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 symbols refer to procedure-specific risks. When these symbols appear in the body of this manual or on warning labels, refer back to these Warnings. Product-specific hazard symbols and warnings not covered in this section may appear throughout the body of this manual where applicable.

 WARNING	
	<p>FIRE AND EXPLOSION HAZARD</p> <p>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:</p> <ul style="list-style-type: none"> • 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. • Do not plug or unplug power cords or turn lights on or off when flammable fumes are present. • Ground all equipment in the work area. • Use only grounded hoses. • Stop operation immediately if static sparking occurs or you feel a shock. Do not use equipment until you identify and correct the problem. • Keep a working fire extinguisher in the work area.
	<p>SKIN INJECTION HAZARD</p> <p>High-pressure fluid from dispensing device, 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 dispensing device at anyone or at any part of the body. • Do not put your hand over the fluid outlet. • Do not stop or deflect leaks with your hand, body, glove, or rag. • Follow the Pressure Relief Procedure when you stop dispensing and before cleaning, checking, or servicing equipment. • Tighten all fluid connections before operating the equipment. • Check hoses and couplings daily. Replace worn or damaged parts immediately.

! WARNING



EQUIPMENT MISUSE HAZARD

Misuse can cause death or serious injury.

- 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 from distributor or retailer.
- Do not leave the work area while equipment is energized or under pressure.
- Turn off all equipment and follow the **Pressure Relief Procedure** when equipment is not in use.
- Check equipment daily. Repair or replace worn or damaged parts immediately with genuine manufacturer's replacement parts only.
- Do not alter or modify equipment. Alterations or modifications may void agency approvals and create safety hazards.
- Make sure all equipment is rated and approved for the environment in which you are using it.
- 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.







TOXIC FLUID OR FUMES HAZARD

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

- Read MSDSs 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 chemically impermeable gloves when spraying, dispensing, or cleaning equipment.

Installation

Grounding

						
<p>The equipment must be grounded to reduce the risk of static sparking and electric shock. Electric or static sparking can cause fumes to ignite or explode. Improper grounding can cause electric shock. Grounding provides an escape wire for the electric current.</p>						

Pump: use ground wire and clamp (supplied). Loosen grounding lug locknut (W) and washer (V). Insert one end of a 12 ga (1.5 mm²) 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.

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

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

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.

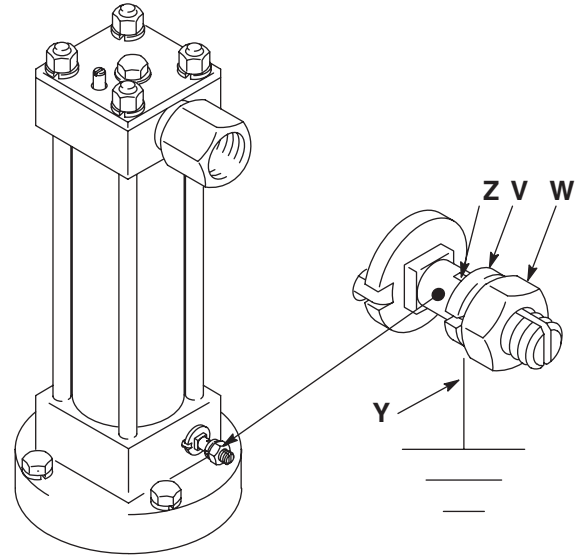
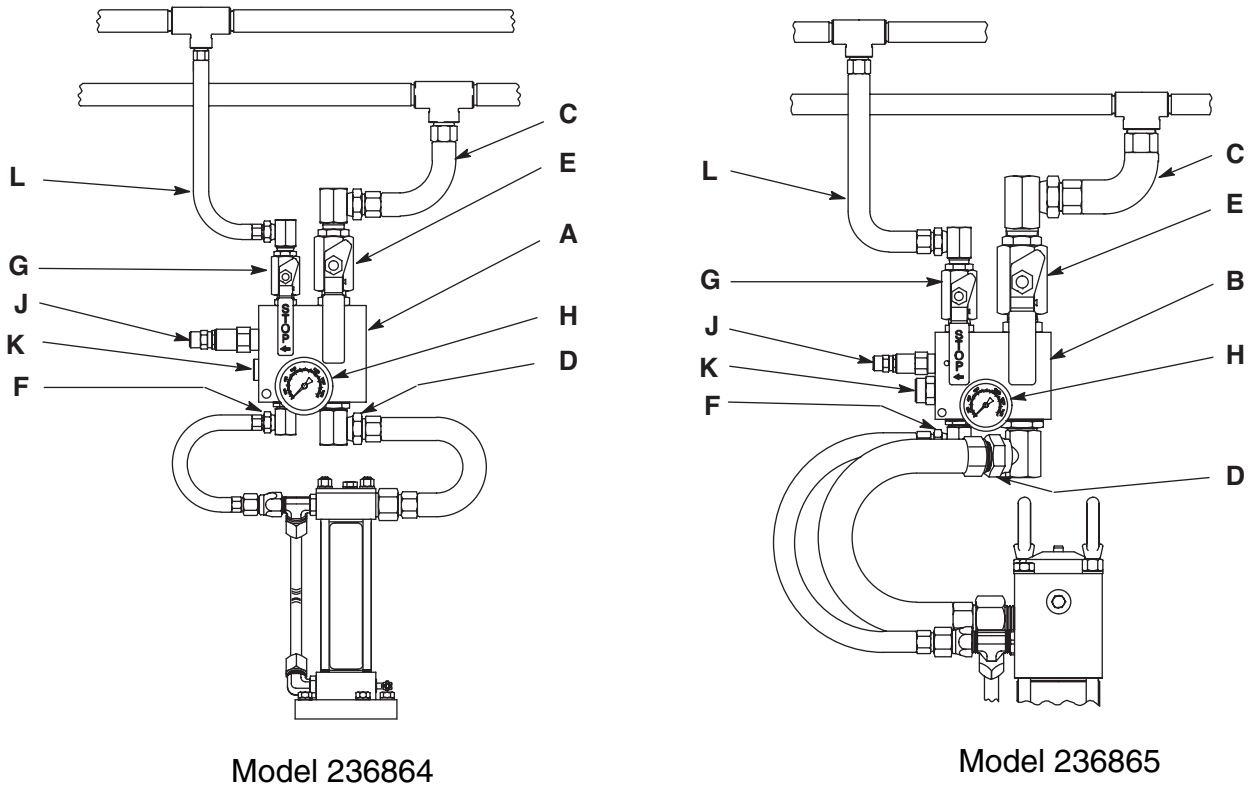


FIG. 1

Typical Installation



Model 236864

Model 236865

FIG. 2: Typical Installation

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
- J Pressure Reducing Valve
- K Flow Control Valve
- L 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 as 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 (J) reduces the hydraulic oil pressure to the operating pressure required for application.

Flow Regulation: The hydraulic fluid control valve (K) 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 and 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 source.



Installation Notes

NOTICE



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 the air again before connecting the lines to the reciprocator.

Hydraulic Power Supply

						
<p>To reduce the risk of over pressurizing the hydraulic reciprocator, which could cause a rupture and serious injury, including fluid injection, the hydraulic power 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 (10.5 MPa, 105 bar) for the Dyna-Star™ and 10 gpm (37 liter/min) at 1500 psi (10.5 MPa, 105 bar) for the Power-Star™.</p>						

Hydraulic Components

						
<ul style="list-style-type: none"> • Always turn off the supply side valve (G) to avoid possible serious injury or component damage. See the Typical Installation on page 5. <p>Maximum Working Pressure of Accessories</p> <ul style="list-style-type: none"> • 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 1500 psi (10.5 MPa, 105 bar) maximum working pressure and those to the pump fluid outlet side must have at least a 375 psi (2.6 MPa, 26 bar) maximum working pressure for Dyna-Star™ and 1500 psi (10.5 MPa, 105 bar) for the Power-Star™. 						

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

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.
- See Technical Data on page 12 for hydraulic oil working temperatures.

Operation

Pressure Relief Procedure



Follow the Pressure Relief Procedure whenever you see this symbol.



This equipment stays pressurized until pressure is manually relieved. To help prevent serious injury from pressurized fluid, such as skin injection, splashing fluid and moving parts, follow the Pressure Relief Procedure when you stop spraying and before cleaning, checking, or servicing the equipment.

1. Close the supply line shutoff valve (G), and then return line shutoff valve (E).
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 Starting the Pump

When starting up the hydraulic system, open the return line shutoff valve (E) first.

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.

Starting the Pump



- Never exceed 1500 psi (10.5 MPa, 105 bar) Maximum Hydraulic Pressure to the control.
 - Never exceed 375 psi (2.6 MPa, 26 bar) Maximum Outlet Pressure from the control when used with a 1/4:1 Dyna-Star™ pump.
 - Never exceed 1500 psi (10.5 MPa, 105 bar) 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 1500 psi (10.5 MPa, 105 bar) maximum working pressure and all of those for the pump fluid outlet side of the control have at least 375 psi (2.6 MPa, 26 bar) maximum working pressure for Dyna-Star™ and 1500 psi (10.5 MPa, 105 bar) for Power-Star™.
1. Turn on hydraulic power supply.
 2. Open the return line shutoff valve (E) first and slowly open the hydraulic supply shutoff valve (G).
 3. Remove the cap on the pressure reducing valve to reveal the cap screw adjustment.
 4. Adjust the hydraulic inlet pressure from 50 to 1500 psi (0.3 to 10.5 MPa, 3 to 105 bar) with an allen wrench inserted in the regulator pressure control adjustment on the pressure reducing valve (J). Increasing the inlet pressure (clockwise) increases the pump outlet pressure. Decreasing the inlet pressure (counter clockwise) decreases the pump outlet pressure.
 5. Always use the lowest pressure possible to obtain the desired results. This reduces pump wear.

Shutdown



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

Repair



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

Pressure Control Repair

1. Relieve pressure, see page 7.
2. Remove the pressure reducing valve (J).
3. Clean the pressure reducing valve (J) with a compatible solvent.
4. Install the pressure reducing valve in the control.
5. Try the system with the clean valve. Follow the Starting the Pump procedure on page 7.
6. If the control still does not regulate the pressure properly, replace the valve.

Flow Control Repair

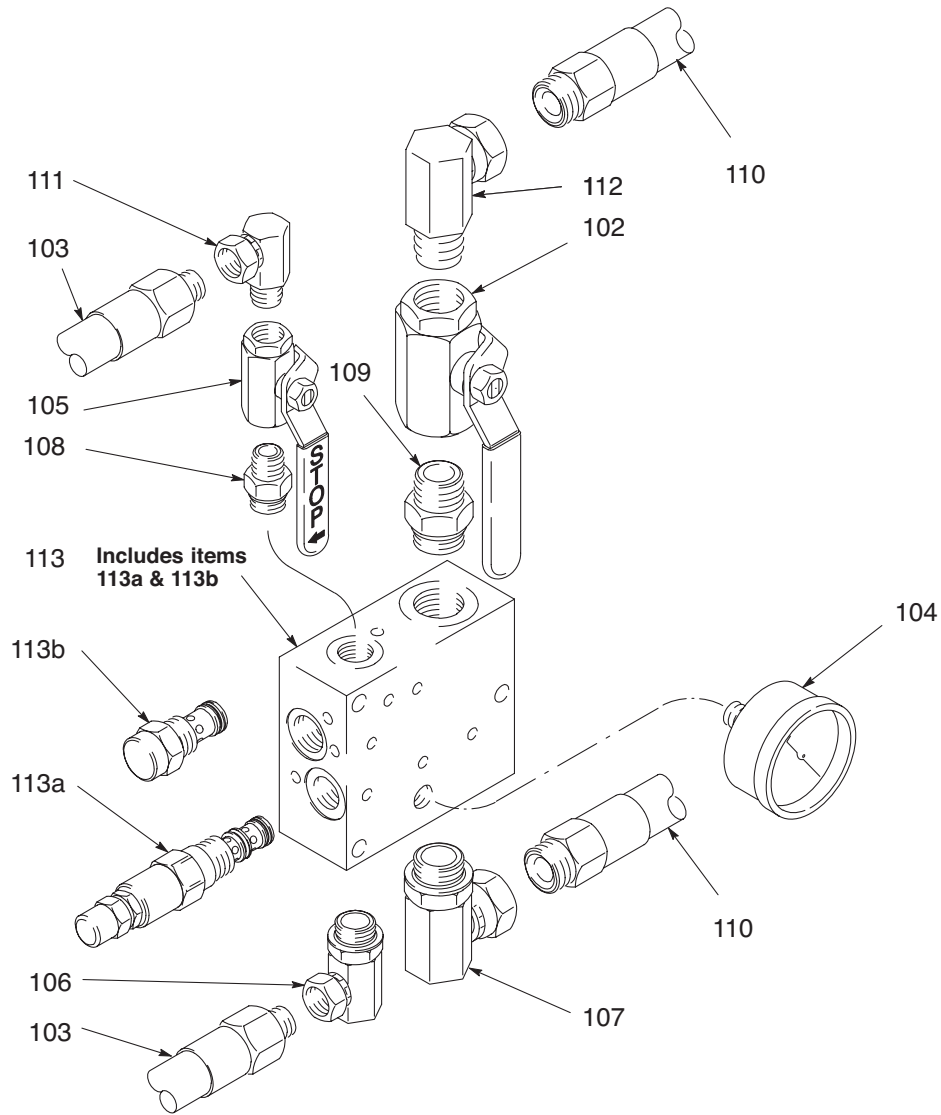
1. Relieve pressure, see page 7.
2. Remove the flow control valve (K).
3. Clean the flow control valve (K) with compatible solvent.
4. Install the flow control valve in the control.
5. Try the system with the clean valve. Follow the Starting the Pump procedure on page 7.
6. If the control still does not control the flow properly, replace the valve.

Troubleshooting



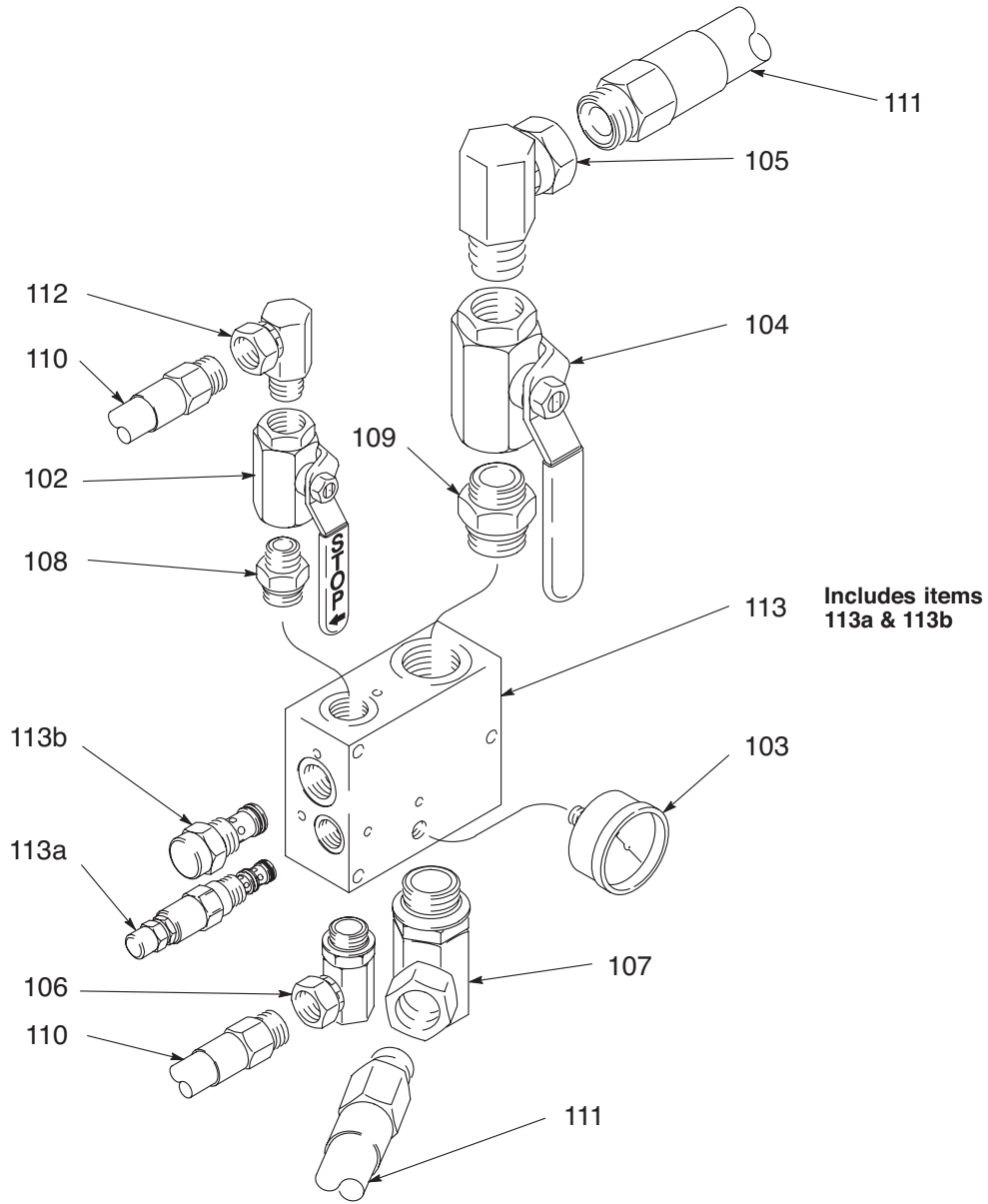
Problem	Cause	Solution
No pressure on gauge, or low pressure on gauge	Hydraulic power supply malfunction or mis-adjustment	Adjust the hydraulic power supply. If the problem remains, refer to the hydraulic power supply instruction manual.
	Pressure reducing valve is backed out	Adjust the pressure reducing 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 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 gauge.
Pump runs away	Contaminated flow control valve	Remove and clean the flow control valve.

Parts



Model 236864 Hydraulic Fluid Control

Ref.	Part	Description	Qty.	Ref.	Part	Description	Qty.
102	108537	VALVE, ball	1	111	155494	UNION, swivel, 90°	1
103	112714	HOSE, coupled, 3 ft	2	112	160327	UNION, swivel, 90°	1
104	112567	GAUGE, pressure, fluid	1	113	189837	MANIFOLD, 3 gpm, includes replaceable items 113a and 113b	1
105	112578	VALVE, ball	1	113a	119902	VALVE, pressure reducing	1
106	112581	SWIVEL, union, 90°	1	113b	112712	VALVE, flow regulating, 3 gpm	1
107	112705	SWIVEL, union, 90°	1				
108	112707	ADAPTER, male	1				
109	112708	ADAPTER, male	1				
110	112715	HOUSE, couple, 3 ft	2				



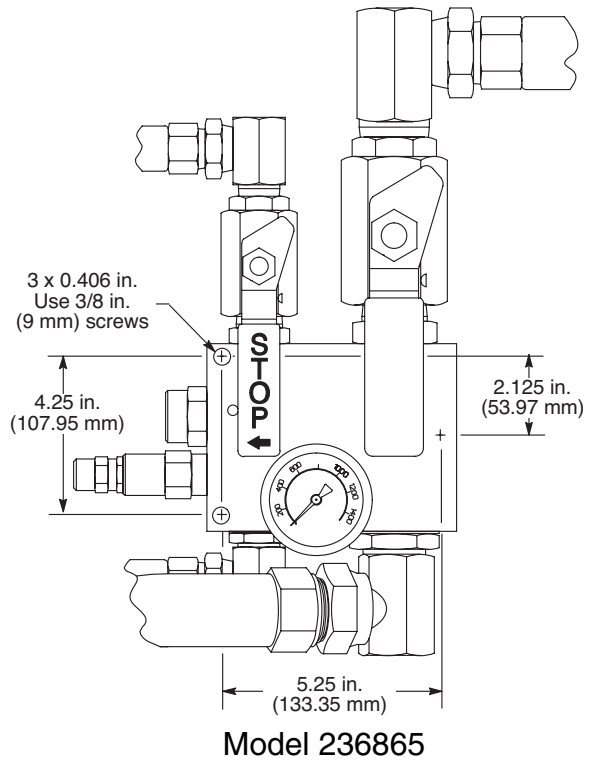
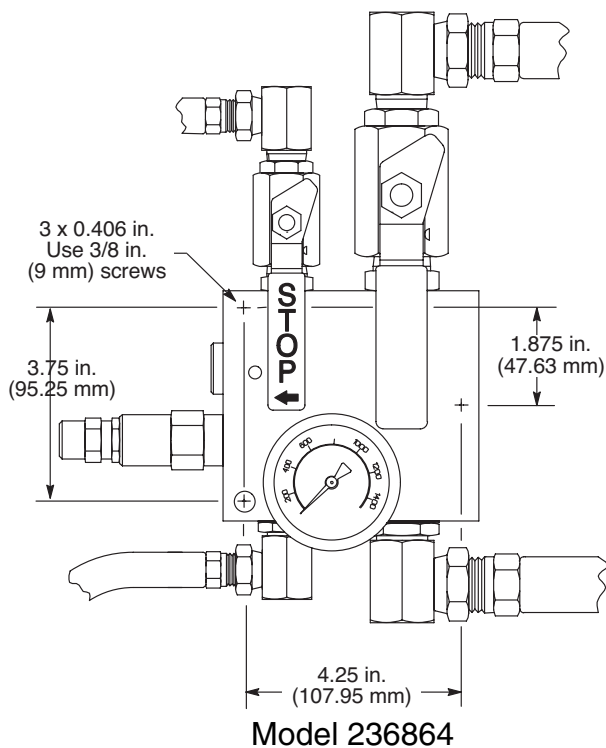
Model 236865 Hydraulic Fluid Control

Ref.	Part	Description	Qty.	Ref.	Part	Description	Qty.
102	108537	VALVE, ball	1	111	112716	HOSE, coupled, 3 ft	2
103	112567	GAUGE, pressure, fluid	1	112	160327	UNION, swivel, 90°	1
104	112579	VALVE, ball	1	113	189838	MANIFOLD, 12 gpm, includes items 113a and 113b	1
105	112580	SWIVEL, union, 90°	1	113a	119903	VALVE, pressure reducing	1
106	112705	SWIVEL, union, 90°	1	113b	112713	VALVE, flow regulating, 12 gpm	
107	112706	SWIVEL, union, 90°	1				
108	112708	ADAPTER, male	1				
109	112709	ADAPTER, male	1				
110	112715	HOSE, coupled, 3 ft	2				

Technical Data

Hydraulic Fluid Controls: Dyna-Star™		
	US	Metric
Maximum fluid working pressure	1500 psi	10.5 MPa, 105 bar
Pressure adjusting range	500-1500 psi	3.5-10.5 MPa, 35-105 bar
Flow setting	3 gpm	11 lpm
Maximum fluid temperature	130°F	55°C
Weight	11 lb	5 kg
Wetted materials	Aluminum, steel, nitrile	
Sound Pressure	< 70 dB(A)	
Dimensions	See Below	
Hydraulic Fluid Controls: Power-Star™		
Maximum fluid working pressure	1500 psi	10.5 MPa, 105 bar
Pressure adjusting range	300-1500 psi	2.0-10.5 MPa, 20-105 bar
Flow setting	12 gpm	45 lpm
Maximum fluid temperature	130°F	55°C
Weight	22 lb	10 kg
Wetted materials	Aluminum, steel, nitrile	
Sound Pressure	< 70 dB(A)	
Dimensions	See Below	

Dimensions



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.

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.

In no event will Graco be liable for indirect, incidental, special or consequential damages resulting from Graco supplying equipment hereunder, or 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.

FOR GRACO CANADA CUSTOMERS

The Parties acknowledge that they have required that the present document, as well as all documents, notices and legal proceedings entered into, given or instituted pursuant hereto or relating directly or indirectly hereto, be drawn up in English. Les parties reconnaissent avoir convenu que la rédaction du présente document sera en Anglais, ainsi que tous documents, avis et procédures judiciaires exécutés, donnés ou intentés, à la suite de ou en rapport, directement ou indirectement, avec les procédures concernées.

Graco Information

For the latest information about Graco products, visit www.graco.com.

TO PLACE AN ORDER, contact your Graco distributor or call to identify the nearest distributor.

Phone: 612-623-6928 or **Toll Free:** 1-800-533-9655, **Fax:** 612-378-3590.

*All written and visual data contained in this document reflects the latest product information available at the time of publication.
Graco reserves the right to make changes at any time without notice.*

For patent information, see www.graco.com/patents.

Original instructions. This manual contains English. MM 308395

Graco Headquarters: Minneapolis
International Offices: Belgium, China, Japan, Korea

GRACO INC. AND SUBSIDIARIES • P.O. BOX 1441 • MINNEAPOLIS MN 55440-1441 • USA

Copyright 1994, Graco Inc. All Graco manufacturing locations are registered to ISO 9001.

www.graco.com

Revised November 2012