INSTRUCTIONS - PARTS LIST

684-028
Revision B

This manual contains **IMPORTANT**
WARNINGS and INSTRUCTIONS
READ AND RETAIN FOR REFERENCE

PRESET DISPENSE CONTROL

Model: **570-196 - 2 Fluid Ready**
570-213 - 5 Fluid Ready

WARNING

FIRE AND EXPLOSION HAZARD

To reduce the risk of fire and explosion:
- Operate in well ventilated areas only.
- Do not use near flammable materials or vapors.
- Equipment must be properly grounded.
- Read instruction manual.

Failure to follow this warning can result in death or serious injury.

WARNING

ELECTRIC SHOCK HAZARD

To reduce the risk of electric shock:
- Equipment must be properly grounded.
- Disconnect power source before servicing.
- Do not expose to rain. Store indoors.
- Read instruction manual.

Failure to follow this warning can result in death or serious injury.

WARNING

ELECTRICAL WIRING
All electrical wiring should be performed only by trained and qualified personnel, in compliance with all local codes and regulations.

GRACO INC. - EAS **P.O. Box 1441** **MINNEAPOLIS, MN 55440**

SAFETY WARNINGS

HIGH PRESSURE EQUIPMENT CAN CAUSE SERIOUS INJURY.
FOR PROFESSIONAL USE ONLY. OBSERVE ALL WARNINGS.
Read and understand all instruction manuals before operating equipment.

Fluid Injection Hazard

General Safety

This equipment generates very high fluid pressure. Spray from the gun, leaks or ruptured components can inject fluid through your skin and into your body and cause extremely serious bodily injury, including the need for amputation. Also, fluid injected or splashed into the eyes or on the skin can cause serious damage.

NEVER point the spray gun at anyone or at any part of the body.
NEVER put hand or fingers over the spray tip. NEVER try to "blow back" paint; this is NOT an air spray system.

ALWAYS have the tip guard in place on the spray gun when spraying.

ALWAYS follow the **Pressure Relief Procedure**, below, before cleaning or removing the spray tip or servicing any system equipment.

NEVER try to stop or deflect leaks with your hand or body.

Be sure equipment safety devices are operating properly before each use.

Medical Alert - Airless Spray Wounds

If any fluid appears to penetrate your skin, get **EMERGENCY MEDICAL CARE AT ONCE. DO NOT TREAT AS A SIMPLE CUT**. Tell the doctor exactly what fluid was injected.

Note to Physician: *Injection in the skin is a traumatic injury.* ***It is important to treat the injury surgically as soon as possible.*** *Do not delay treatment to research toxicity. Toxicity is a concern with some exotic coatings injected directly into the blood stream. Consultation with a plastic surgeon or reconstructive hand surgeon may be advisable.*

Spray Tip and Nozzle Safety

Use extreme caution when cleaning or changing spray tips/nozzles. If the spray tip/nozzle clogs while spraying, engage the gun safety latch/knob immediately. ALWAYS follow the **Pressure Relief Procedure** and then remove the spray tip to clean it.

NEVER wipe off build-up around the spray tip until pressure is fully relieved and the gun safety latch/knob is engaged.

Spray Gun and Dispensing Valve Safety Devices

Be sure all gun/valve safety devices are operating properly before each use. Do not remove or modify any part of the gun/valve; this can cause a malfunction and result in serious bodily injury.

Safety Latch

Whenever you stop spraying, even for a moment, always set the gun safety latch in the closed or "safe" position, making the gun inoperative. Failure to set the safety latch can result in accidental triggering of the gun/valve.

Diffuser (on spray guns only)

The gun diffuser breaks up spray and reduces the risk of fluid injection when the tip is not installed. Check diffuser operation regularly. Follow the **Pressure Relief Procedure**, below, then remove the spray tip. Aim the gun into a metal pail, holding the gun firmly to the pail. Using the lowest possible pressure, trigger the gun. If the fluid emitted is not diffused into an irregular stream, replace the diffuser immediately.

Tip Guard (on spray guns)

ALWAYS have the tip guard in place on the gun while spraying. The tip guard alerts you to the fluid injection hazard and help reduce, but does not prevent, the risk of accidentally placing your fingers or any part of your body close to the spray tip.

Trigger Guard

Always have the trigger guard in place on the gun when spraying to reduce the risk of accidentally triggering the gun if it is dropped or bumped.

Pressure Relief Procedure
To reduce the risk of serious bodily injury, including fluid injection, splashing fluid or solvent in the eyes or on the skin, or injury from moving parts or electric shock, always follow this procedure whenever you shut off the sprayer, when checking or servicing any part of the spray system, when installing, cleaning or changing spray tips, and whenever you stop spraying.

1. Engage the gun safety latch
2. Turn off the air to the motor
3. Close the bleed-type master air valve (required)
4. Disengage the gun safety latch.
5. Hold a metal part of the gun firmly to the side of a grounded metal pail, and trigger the gun to relieve pressure.
6. Engage the gun safety latch.
7. Open the pressure drain valve, having a container ready to catch the drainage. Leave the valve open until you are ready to spray again.
8. Leave the drain valve open until you are ready to spray again.

If you suspect that the spray tip or hose is completely clogged, or that pressure has not been fully relieved after following the steps above, wrap a rag around the tip guard retaining nut or hose end coupling and VERY SLOWLY loosen the part to relieve pressure gradually, then loosen completely. Now clear the tip or hose.

Equipment Misuse Hazard

General Safety
Any misuse of the spray equipment or accessories, such as overpressurizing, modifying parts, using incompatible fluids and chemicals, or using worn or damaged parts, can cause them to rupture and result in injection or other serious bodily injury, fire, explosion or property damage.

NEVER alter or modify any part of this equipment; doing so could cause it to malfunction.

CHECK all spray equipment regularly and repair or replace worn or damaged parts immediately.

Read and follow the fluid and solvent manufacturers recommendations regarding the use of protective clothing and equipment.

System Pressure
NEVER exceed the maximum air pressure to the motor as stated on the front cover, and NEVER exceed the stated maximum working pressure of the pump or of the lowest rated component in your system. Refer to your separate pump instruction manual.

Be sure that all spray equipment and accessories are rated to withstand the maximum working pressure of this system.

Fluid Compatibility
BE SURE that all fluids and solvents used are chemically compatible with the wetted parts shown in the Technical Data on the back cover. Always read the fluid and solvent manufacturer's literature before using them in this sprayer.

Fire or Explosion Hazard

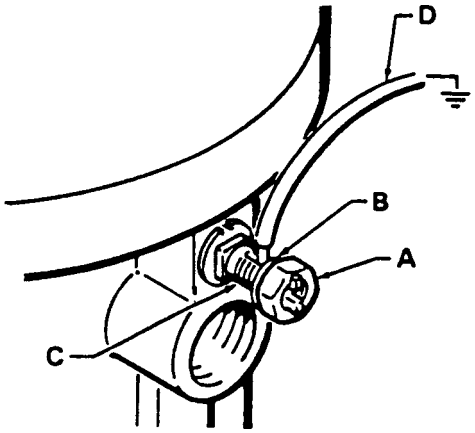
Static electricity is created by the high velocity flow of fluid through the pump and hose. If every part of the spray equipment is not properly grounded, sparking may occur, and the system may become hazardous. Sparking may also occur when plugging in or unplugging a power supply cord. Sparks can ignite fumes from solvents and the fluid being sprayed, dust particles and other flammable substances, whether you are spraying indoors or outdoors, and can cause a fire or explosion and serious bodily injury and property damage. Do not plug in or unplug any power supply cords in the spray area when there is any chance of igniting fumes still in the air.

If you experience any static sparking or even a slight shock while using this equipment, **STOP SPRAYING IMMEDIATELY**. Check the entire system proper grounding. Do not use the system again until the problem has been identified and corrected.

Grounding
To reduce the risk of static sparking, ground the sprayer and all other spray equipment used or located in the spray area. CHECK your local electrical code for detailed grounding instructions for your area and type of equipment. BE SURE to ground all of this spray equipment:

1. Pump: use a ground wire and clamp as instructed at the right.
2. Air hoses: use only grounded air hoses.
3. Fluid hoses: use only grounded fluid hoses.
4. Air compressor: follow manufacturer's recommendations.
5. Spray gun or dispensing valve: grounding is obtained through connection to a properly grounded fluid hose and pump.
6. Fluid supply container: according to your local code.
7. Object being sprayed: according to your local code
8. All solvent pails used when flushing: according to local code. Use only metal pails, which are conductive, placed on a grounded surface. Do not place the pail on a non-conductive surface, such as paper or cardboard, which interrupts the grounding continuity.
9. To maintain grounding continuity when flushing or relieving pressure: always hold a metal part of the gun/valve firmly to the side of a grounded metal pail, then trigger the gun/valve.

Moving Parts Hazard
The piston in the air motor, located behind the air motor plates, moves when air is supplied to the motor. Moving parts can pinch or amputate your fingers or other body parts. KEEP CLEAR of moving parts when starting or operating the sprayer. Follow the **Pressure Relief Procedure**, below, before checking or servicing the sprayer to prevent it from starting accidentally.



To ground the air motor, loosen grounding lug locknut (A) and washer (B). Insert one end of a 12 ga (1.5 mm^2) minimum ground wire (D) into slot in lug (C) and tighten locknut securely.

Connect the other end of the wire to a true earth ground. Always check your local code. See ACCESSORIES for an available ground wire and clamp.

Flushing Safety
Reduce the risk of fluid injection injury, static sparking, or splashing, follow the Pressure Relief Procedure and remove the spray tip (spray guns or spray valves only) before flushing. Hold a metal part of the gun firmly to the side of a metal pail and use the lowest possible fluid pressure during flushing.

Hose Safety
High pressure fluid in the hoses can be very dangerous. If the hose develops a leak, split or rupture due to any kind of wear, damage or misuse, the high pressure spray emitted from it can cause a fluid injection injury or other serious bodily injury or property damage.

ALL FLUID HOSES MUST HAVE SPRING GUARDS ON BOTH ENDS! The spring guards help protect the hose from kinks or bends at or close to the coupling which can result in hose rupture.

TIGHTEN all fluid connections securely before each use. High pressure fluid can dislodge a loose coupling or allow high pressure spray to be emitted from the coupling.

NEVER use a damaged hose. Before each use, check entire hose for cuts, leaks, abrasion, bulging cover, or damage or movement of the hose couplings. If any of these conditions exist, replace the hose immediately. DO NOT try to recouple high pressure hose or mend it with tape or any other device. A repaired hose cannot contain the high pressure fluid.

HANDLE AND ROUTE HOSES CAREFULLY. Do not pull on hoses to move equipment. Do not use fluids or solvents which are not compatible with the inner tube and cover of the hose. DO NOT expose Graco hose to temperatures above 180°F (82°C) or below -40°F (-40°C).

Hose Grounding Continuity

Proper hose grounding continuity is essential to maintaining a grounded spray system. Check the electrical resistance of your air and fluid hoses at least once a week. If your hose does not have a tag on it which specifies the maximum electrical resistance, contact the hose supplier or manufacturer for the maximum resistance limits. Use a resistance meter in the appropriate range for your hose to check the resistance. If the resistance exceeds the recommended limits, replace it immediately. An ungrounded or poorly grounded hose can make your system hazardous. Also read **FIRE OR EXPLOSION HAZARD**.

IMPORTANT

United States Government safety standards have been adopted under the Occupational Safety and Health Act. Theses standards-particularly the General Standards, Part 1910, and the Construction Standards, Part 1926 - should be consulted.

TERMS

WARNING: Alerts user to avoid or correct conditions that could cause bodily injury.

CAUTION: Alerts user to avoid or correct conditions that could cause damage to or destruction of equipment.

NOTE: Identifies essential procedures or extra information.

System Description

This Preset Dispense System (PDS) unit is designed for accurate metering, monitoring, and dispense a fluid. It can dispense up to five fluids simultaneously and independent of each other. A single fluid system consists of the PDS, a volumetric pulse flow meter, and a fluid solenoid or air solenoid valve.

The PDS operates as follows: the operator initiates a dispense by pressing the "DISPENSE START" push button, the flow meter counter resets to zero, the dispense valve opens until the counter reaches the target preset, or the "EMERGENCY STOP" push-button is pressed. When the "DISPENSE" selector switch is "ON", the unit will keep on dispensing until the switch is in "AUTO" position "EMERGENCY STOP" push-button is pressed. The operator can view and/or change K-Factor, display unit, target preset, etc. through the operator interface until and keypad. The operator can also monitor the current dispense, grand total, etc.

Features:

- Operator interface unit with 4 lines, 20 characters per line, and keypad
- Remote start/stop capability
- Dispense override capability
- Repeatable batch dispensing
- Scaling capability to desired unit (cc, liter, ounce, quart, or gallon)
- Adjustable preset dispense target
- Current dispense total
- Grand total
- Resettable batch total
- Printout of GTOTAL and BTOTAL with date and time via a serial printer
- RS485 network capability

Specifications:

Power Requirement: 110/120 VAC, 60 Hz, 3A
DC Power Outputs: 24 VDC, 1.2A (up to 2 fluids)
24 VDC, 3.6A (up to 5 fluids)
12 VDC, 1.2M
Dimensions: 16 x 16 x 6 inches

Control Feature Description

Display

The display unit is a liquid crystal alphanumeric display showing 4 lines of 20 characters. It is used to display run time data such as: Target, Actual, Grand Total, etc. It is also display setup data such as: K-Factor, Target Unit, Batch Alarm, etc.

Keypad

The display unit has 20 sealed keys.
Data entry keys (0-9, 0 and ENTER): The data entry keys are used to enter target values to be dispensed or for set up of programming values.

Function Keys (F1-F4):

The function keys are used to send commands to the controller. This includes changing screens, entering new data, etc.

Controller

The controller is a 16-bit microprocessor module. It contains all system programs stored on EPROM with battery-backed SRAM.

Operating Push Buttons/Switch

"DISPENSE START" Push Button

The green dispense push button starts the dispense cycle. It is a momentary push button and does not need to be held during the dispense cycle. The green light will remain illuminated during the dispense until the "TARGET" preset has been dispensed, or at any time the "DISPENSE" switch is set to "ON".

"DISPENSE" Switch

This is a maintained two position switch. When the switch is set to "AUTO" and the "DISPENSE START" push button is pressed, the dispense valve opens until it reaches the "TARGET" preset. When the switch is set to "ON", the dispense valve will open.

"EMERGENCY STOP" Push Button

This is a push-pull button and is designed to interrupt the output signal at any time. By pushing the "EMERGENCY STOP" push button during either the dispense cycle or the "DISPENSE ON" manual override, the output to the dispense valve will be disabled. To de-activate, pull out the push button. The dispense valve will be idle until the next dispense cycle (the dispense will always reset to zero after the "DISPENSE START" push button is pressed).

System Operation

To Dispense a Preset Volume of Fluid

1. Turn on power to the control box (plug in power cord).
2. Make sure the "EMERGENCY STOP" push button(s) are pulled out.
3. Access the "TARGET" option from main menu. Enter the amount of material to be dispensed into the "TARGET" register, for the desired fluid on the display unit. The factory has set the K-Factor for the flow meter (part number 624-880) to 4.73 cc/pulse (if a different flow meter is used, the K-Factor value must be edited to accommodate. See "Calibration" section for instructions). The factory setting for "TARGET" unit is cc. For different engineering unit refer to "TARGET UNIT" section for instructions.
4. Access the "RUN" option from the main menu. When ready to dispense, press the "DISPENSE START" push button. The controller initiates a dispense cycle and turns on the dispense valve (the green light will be illuminated).
5. When the controller has received enough pulses from the meter (reached the "TARGET" or preset amount, it will turn off the solenoid valve, stopping the dispense cycle (the green light will go out).
6. The cycle can be re-started immediately by pressing the "DISPENSE START" push button again. The "TARGET" will stay the same until a different value is entered in.
7. A "TARGET" value of "0" will not allow the dispense cycle to start (the green light will not illuminate.

Setting Target Unit

The **PRESET UNIT** or "TARGET" is the desired units to be used for the dispense cycle. If the controller can manage multiple fluids, each fluid can have a different unit of display. The options for the units are as follows:

Metric	English
cc	oz
liter	quart
	gallon

The Display Flow Chart Diagram shows the various display screens and how they relate to each other. Keep this flow chart handy for quick and easy reference until you are comfortable.

At the **MENU SCREEN F4-SETUP** will get you to the various set up screens. A password is required to reach these screens (factory default password is 123).

F2-PRESET UNIT allows for selection of a fluid and selection of Metric or English units. Follow the screens as shown in the flow chart for selecting the desired unit to dispense the fluid.

Meter Calibration

The meter used for a fluid should have a known cc/pulse value. If this is not available, the meter can be calibrated as shown below.

(Reference Display Flow Chart for operator sequence). At the **MENU SCREEN**, **F4-SETUP** will get you to the various set up screens. A password is required to reach these screens (factory default password is 123).

F1-Kf CALIBRATION allows for selection of a fluid to calibrate. Once a fluid is selected, the meter can be calibrated automatically by dispensing material to a calibrated container and entering the amount dispensed. The system will automatically calculate the proper cc/pulse Kf and enter it into the system.

To calibrate the meter, select **F1=TO START CALIB** after selecting the fluid. Position a calibrated container at the dispense point and select "Dispense On" to open the solenoid for the fluid selected. Turn the selector back to "Auto" when a measurable amount has been dispensed.

Press **F1** and the system will prompt for the amount of materials shown in the calibrated container.

Note: This calibration routine is done in cc (or ml, the same). Make sure the calibrated container measures in cc or the volume is converted to cc before entering into the system. The Kf is only calculated from cc's.

The KF can be entered manually if desired. Refer to the Flow Chart for procedure.

Password Selection

The factory default password = 123. Once entered, press **ENTER** on the display panel keypad. If the wrong password is entered, the controller will not proceed to the next screen.

Follow the procedures shown in the Display Flow Chart Diagram.

Once the password has been changed, be sure to record the new password properly for future reference.

Contact Graco EAS Technical Assistance for procedures if password has been lost. Graco EAS Technical Assistance is 1-612-379-3622.

Timeout

Refer to the Display Flow Chart Diagram for accessing the **DISPENSE TIMEOUT** screens.

The **DISPENSE TIMEOUT** should be set for the amount of time in seconds to shut off the dispense solenoid automatically if the dispense cycle does not complete. This time should always be set for a time greater than the typical time to finish a dispense cycle.

Once the **DISPENSE START** button is pressed, a timer will start and will shut off the solenoid valve for that fluid if the dispense cycle has not completed on its own (reached the **TARGET** or preset amount).

This alarm does not affect the operation of the system. It just adds it to the alarm list in the alarm screen.

The last three alarms can be viewed by accessing the alarm screen located at the end of the fluid run screens.

Overshoot Alarm

Refer to the Display Flow Chart Diagram for accessing the **OVERSHOOT ALARM** screens.

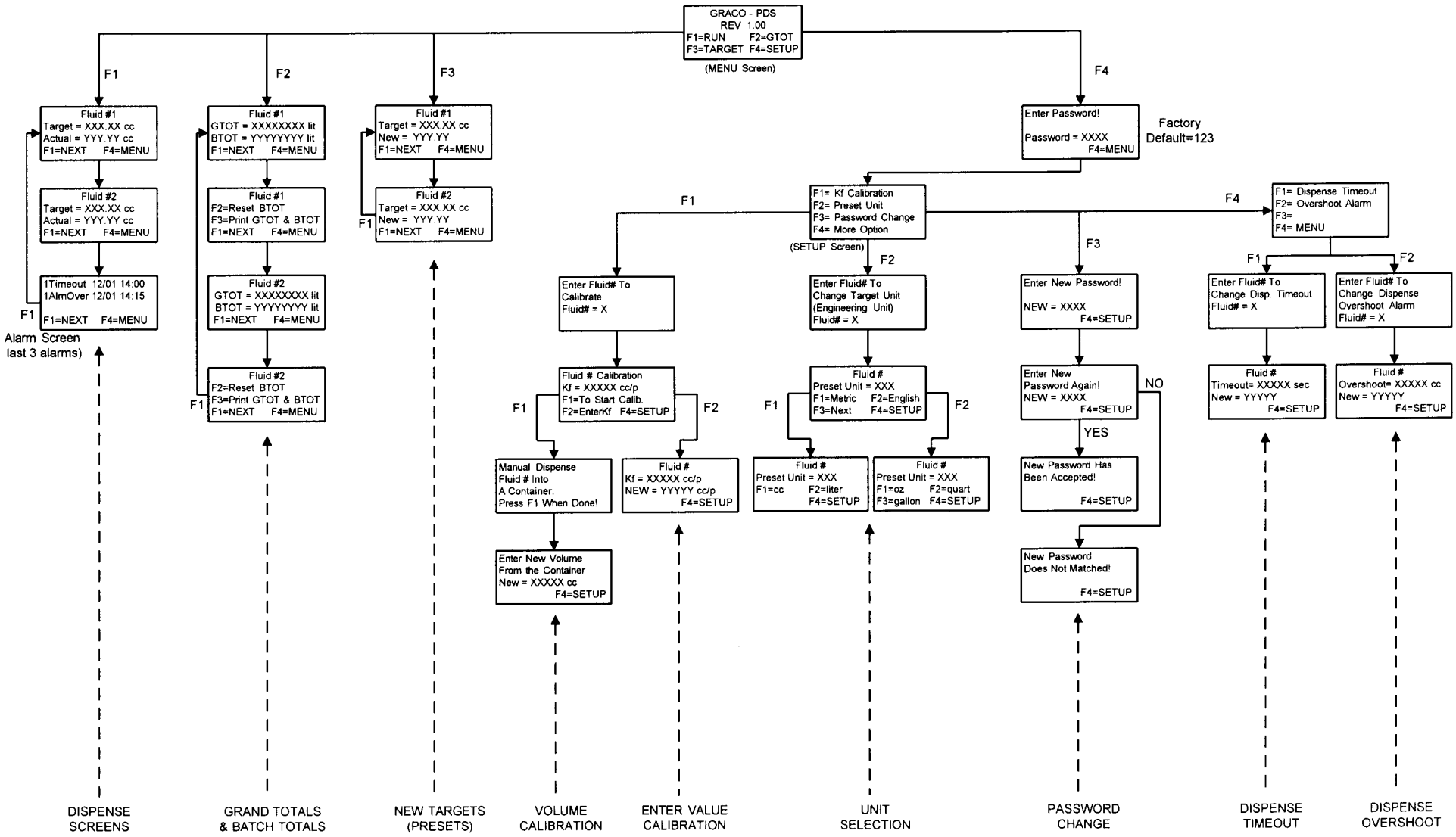
The OVERSHOOT ALARM will occur if the dispense cycle overshoots the Target or Preset amount for the fluid selected. The overshoot amount is in the units selected previously in the Setting Target Units Section discussed previously. If a dispense cycle dispenses more material of an amount greater than the Target or Preset amount, an alarm will occur.

This alarm does not affect the operation of the system. It just adds it to the alarm list in the alarm screen.

The last three alarms can be viewed by accessing the alarm screen located at the end of the fluid run screens.

GRACO'S PRESET DISPENSE SYSTEM

P/N 570-196
12/10/97



Meter (Kf) Factors

Description	Part Number	Min/Max Pressure	Min/Max Flow Rate	Pulses/Units
Oil/Grease Meter Oil specific flow meter NOTE: This meter is designed specifically for lubricants. Medium Resolution	624-880	100 to 1500 PSI	.12 to 12 GPM	(800 Pulses/Gal) 4.73 cc/Pulse
High Pressure Grease Meter Medium Resolution	235-589	10 to 3000 PSI	.1 to 5.5 GPM	(6527 Pulses/Gal) .5883 cc/Pulse
High Pressure Grease Meter High Resolution	514-153	10 to 3000 PSI	.001 to .25 GPM	(1212 Pulses/Oz) .0243 cc/Pulse
Water/Antifreeze Meter This meter is specifically designed for water and/or antifreeze only!!!	948-955	10 to 150 PSI	.15 to 13 GPM	(151 Pulses/Gal) 25 cc/Pulse
Diesel Fuel Meter This meter is specifically designed for Diesel Fuel Only! It is not rated for any other types of fuel.	514-927	10 to 150 PSI	2 to 20 GPM	(10 Pulses/Gal) 378 cc/Pulse

Troubleshooting the Preset Repeatable Lubrication Controller

The following section will help determine if there are any minor problems with the control and help during start-up of a system.

Symptom	***Possible Solution***
Panel Interface does not show menu screen	Be sure unit has 110 VAC at outlet available. Check fuse at power module input
Unit will not dispense fluid • Green dispense light is on	• Check fluid supply is available • Check for 24 VDC across solenoid terminals in control box for the fluid. • Check output at end of solenoid cable for 24 VDC • Check control valve is in working order • Check for clogged fluid lines
• Green dispense light does not light	• Ensure a non zero preset is entered for the fluid.
Unit will not stop dispensing fluid after preset is reached	• Make sure units selected are the desired units for the dispense.
• Green dispense light will not go out	• Re-verify preset value • Check for selector in “AUTO” dispense position.
• Green dispense light goes out	• Check for proper control valve operation. • Check for debris in fluid line causing fluid valve to remain open.
Improper amount of fluid being dispensed	• Make sure meter calibrated properly. • Verify proper fluid pressure required for flow meter operation
Unit will not count up to preset	• Verify proper fluid pressure required for flow meter operation • Check for fluid flow after flow meter to assure no debris has clogged meter • Verify proper meter calibration. • Check for 12 VDC at output of pulse meter cable

Technical Data

Power Input	110/120 VAC 60 hz, 3A
Operating Temperature	32 to 130°F
DC Power Outputs	24 VDC, 1.2A (up to 2 fluids)
	24 VDC, 4.2A (up to 5 fluids)
	12 VDC, .5A
Fuse Rating	2.5 amp, 5 x 20 mm
Pulse Meter Output/Input	High: 10.5 to 12 volt dc
	Low: 0 to 4.5 volt dc
Memory Type	EPROM, SRAM
Environment	Nema 12
Control Dimensions	16 x 16 x 6 inches
Weight	Approx. 4 lbs.
Display Size	4 lines x 20 characters

The Graco Warranty and Disclaimers

WARRANTY

Graco warrants all equipment manufactured by it and bearing its name to be free from defects in material and workmanship on the date of sale by an authorized Graco distributor to the original purchaser for use. As purchaser's sole remedy for breach of this warranty, Graco will, for a period of twelve months or two thousand hours of operation from time of sale, repair or replace any part of the equipment proven 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, 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 with Graco equipment of 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 claim. 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 includes the costs of parts, labor and transportation.

DISCLAIMERS AND LIMITATIONS

The terms of this warranty constitute purchaser's sole and exclusive remedy and are in lieu of any other warranties (express or implied), **including warranty of merchantability or warranty of fitness for a particular purpose**, and of any non-contractual liabilities, including production liabilities, based on negligence or strict liability. Every form of liability for direct, special or consequential damages or loss is expressly excluded and denied. In no case shall Graco's liability exceed the amount of the purchase price. Any action for breach of warranty must be brought within two (2) years of the date of sale.

EQUIPMENT NOT COVERED BY GRACO WARRANTY

Graco makes no warranty, and disclaims all implied **warranties of merchantability and fitness for a particular purpose**, with respect to accessories, equipment, materials, or components sold but not manufactured by Graco. These items sold, but not manufactured by Graco (such as electric motor, 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.

Graco Phone Number

FOR TECHNICAL ASSISTANCE, contact your Graco distributor or call Graco Technical Assistance at (612) 379-3622.

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