INSTRUCTIONS–PARTS LIST

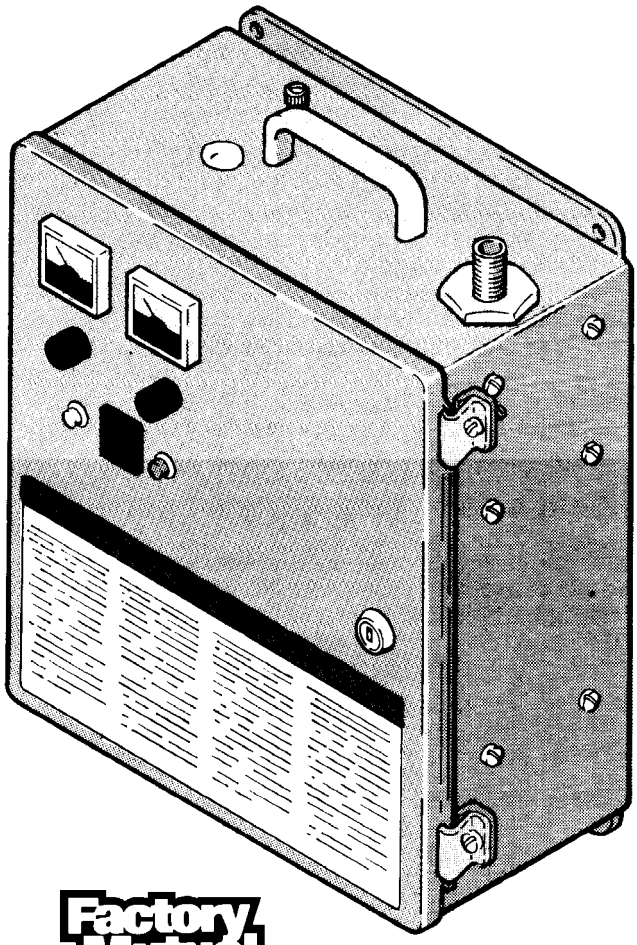
307–568
Rev. G
Supersedes F

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

Model HR135

135 KV
HIGH–RANGE POWER SUPPLY

Part Number 226–983 Series B
115 VAC, 50/60 Hz



Factory Mutual System
Approved

CONTENTS

TERMS

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

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

NOTE Identifies essential procedures or helpful information.

GRACO INC. P.O. BOX 1441 MINNEAPOLIS, MN 55440–1444

SAFETY WARNINGS

SERIOUS BODILY INJURY, EXPLOSION, FIRE, OR ELECTRIC SHOCK CAN OCCUR IF THE PRECAUTIONS BELOW ARE NOT FOLLOWED.

READ AND UNDERSTAND ALL INSTRUCTION MANUALS, TAGS, AND WARNING LABELS BEFORE OPERATING EQUIPMENT.

ELECTROSTATIC EQUIPMENT SHALL ONLY BE USED BY TRAINED, QUALIFIED PERSONNEL WHO SHALL BE FULLY CONVERSANT WITH THE REQUIREMENTS STATED WITHIN THIS INSTRUCTION MANUAL.

EQUIPMENT MISUSE HAZARD

General Safety

ALWAYS follow the **Pressure Relief Procedure**, at right, before servicing any system equipment.

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.

To avoid permanent cable indentations and cable failures caused by unnecessary stress to the cable, be sure to take the following precautions:

1. Support the cable overhead to avoid people walking on it and vehicles driving over it.
2. DO NOT clamp the cable too tightly at supports.
3. Avoid sharp kinks and bends in the cable.
4. NEVER use a damaged cable.

Pressure Relief Procedure

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

1. **Turn off the high voltage power supply.**
2. Turn off the air and fluid supply to the gun.
3. Trigger the gun into a grounded metal waste container to relieve fluid pressure.
4. Open the pump drain valve, having a waste container ready to catch the drainage.
5. Leave the pump drain valve open until you are ready to spray again.

HAZARDOUS FLUID HAZARD

Improper handling of hazardous fluids or inhaling vapors can cause extremely serious bodily injury, even death, due to splashing in the eyes, ingestion, inhalation, or bodily contamination. Know what fluid you are pumping and its specific hazards. Store hazardous fluids in approved containers. Dispose of any waste fluid according to all Local, State and Federal regulations pertaining to the disposal of hazardous wastes. Observe all precautions when handling known or potentially hazardous fluids, including, but not limited to, the following.

1. Always wear appropriate, protective clothing and equipment, such as eye protection, respiratory protection, and gloves.
2. Provide for the safe piping and disposal of all exhaust air.
3. Provide proper ventilation in accordance with accepted industry standards and governmental regulations. Refer to **Ventilate the Spray Booth**, on page 4.

FIRE OR EXPLOSION HAZARD

To reduce the risk of fire or explosion, which may result from electrical discharge, it is essential that:

- All parts of the electrostatic system are properly grounded.
- All personnel in or close to the spray area are properly grounded.
- All electrically conductive objects or devices in the spray area, including paint containers, wash cans and tools, are properly grounded.

When operating the electrostatic device, any ungrounded objects in the spray area (such as people, containers, tools, etc.) can become electrically charged. Arcing may occur if these objects then come in contact or close to ground. Arcing of sufficient energy levels can ignite the fluid being sprayed, fumes from solvents, dust particles, and other flammable substances. This can cause a fire or explosion and result in serious bodily injury and property damage.

Static electricity can also be generated by the flow of fluid through the pump, hose, gun, and nozzle, but it is dissipated through proper grounding as described in **Grounding** below.

If you experience any arcing or feel even a slight shock, **STOP SPRAYING IMMEDIATELY**. Check for proper grounding of the entire system. Be sure you have corrected the problem before starting to spray again.

Grounding

The following are minimum requirements for grounding a basic electrostatic system. Your system may include other equipment or objects which must also be grounded. Always check your local electrical code for detailed grounding instructions. Be sure your system is connected to a true earth ground.

1. *Pump:* ground by using a ground wire and clamp as described in your separate pump instruction manual.
2. *Air compressors:* ground according to the manufacturer's recommendations.
3. *High voltage power supplies:* must be properly grounded and located outside the spray area. Ground the power supply as instructed on page 4.
4. *High voltage cable:* obtain grounding through connection of an undamaged cable to a properly grounded power supply.
5. *All electric cables* going to the power supply must be properly grounded.
6. *Spray gun:* obtain grounding through connection to properly grounded high voltage cable.
7. *Object being sprayed:* keep the work piece hangers clean and grounded at all times. Contact points must be sharp points or knife edges.
8. *All electrically conductive objects or devices* in the spray area, including paint containers and wash cans, must be properly grounded.
9. *All persons entering the spray area:* shoes must have conductive soles, such as leather, or personal grounding straps must be worn. Rubber or plastic soles are not conductive. The operator must not wear gloves which insulate the hand from the spray gun.
10. *The floor of the spray area* must be electrically conductive and grounded. Do not cover the floor with cardboard or any non–conductive material which would interrupt grounding continuity.
11. *Flammable liquids* in the spray area must be kept in approved, grounded containers. Do not store more than the quantity needed for one shift.
12. *All solvent pails:* use only grounded metal pails, which are conductive. Do not place the pail on any non–conductive surface, such as cardboard or paper, which would interrupt grounding continuity.

Flushing and Cleaning Safety

To reduce the risk of static sparking or splashing, always follow the **Pressure Relief Procedure** on page 2 before flushing.

Be sure the high voltage power supply is off before flushing or cleaning any part of the spray system.

Use the lowest possible pressure to flush. Trigger the gun into a grounded metal waste container.

To flush or purge equipment, ALWAYS use solvents with a flash point equal to or greater than that of the fluid being sprayed.

To clean the exterior of the equipment, ALWAYS use solvents with a flash point of higher than 1005 F (385 C).

ALWAYS remove all solvent from the system before reactivating the spray gun.

Use only non–sparking tools to clean residue from the booth and hangers.

Ventilate the Spray Booth

To prevent hazardous concentrations of toxic and/or flammable vapors, spray only in a properly ventilated spray booth.

The high voltage power supply MUST be electrically interlocked with the ventilators to prevent operation of the power supply unless ventillating fans are operating.

NEVER operate the spray gun unless the ventilating fans are operating.

Check and follow all National, State and Local codes regarding air exhaust velocity requirements. Check and follow all local safety and fire codes and OSHA standard 1910–107(b)(5)(i).

IMPORTANT

United States Government safety standards have been adopted under the Occupational Safety and Health Act. These standards—particularly the General Standards, Part 1910.107 and any other appropriate regulations—should be consulted in connection with the installation, operation, and maintenance of electrostatic spray painting equipment.

WARNING

Check and follow all local safety and fire codes and OSHA standard 1910–107(b)(5)(i).

Be sure your installation complies with National, State and Local codes for the installation of electrical apparatus in a Class 1, Group D, Divisions 1 and 2 Hazardous Location.

Warning Signs

Mount warning signs in the spray area where they can easily be seen and read by all operators.

Ventilate the Spray Booth

WARNING

To prevent hazardous concentrations of toxic and/or flammable vapors, spray only in a properly ventilated spray booth. The High Voltage Power Supply must be electrically interlocked with the ventilators to prevent operation of the power supply unless the ventilation fans are operating. NEVER OPERATE THE SPRAY GUN UNLESS VENTILATION FANS ARE OPERATING.

Check and follow all National, State and Local codes regarding air exhaust velocity requirements.

NOTE: High velocity air exhaust will decrease the operating efficiency of the electrostatic system. Air exhaust velocity of 100–150 ft/min (31–46 linear meters/minute) should be sufficient.

WARNING

Installing and servicing this equipment requires access to parts which may cause electric shock or other serious bodily injury if the work is not performed properly. **DO NOT install or service this equipment or perform any of the following installation and adjustment procedures unless you are trained and qualified**.

Connect and Ground the Power Supply

Electric service for the power supply must be 115 volts, 50/60 Hz AC. It is fused for 2.5 amps. The power supply must be electrically interlocked with the spray booth ventilators to prevent operation of the power supply unless the ventilating fans are operating.

NOTE: DO NOT interlock the assembly line or conveyor line to the power supply 115 VAC input power.

Locate the power supply outside the hazardous (spray) area. Mount it up off the floor on a building column or wall. DO NOT subject the power supply to excessive vibration.

WARNING

To reduce the risk of serious bodily injury or property damage, which could result from fire, explosion, or electric shock, the **power supply MUST be grounded and located outside the hazardous (spray) area**. Ground the power supply as instructed below.

Connect a ground wire (A) from the power supply case (B) to a true earth ground (C). See Fig 1.

KEY

A Ground Wire
B Power Supply
C True Earth Ground

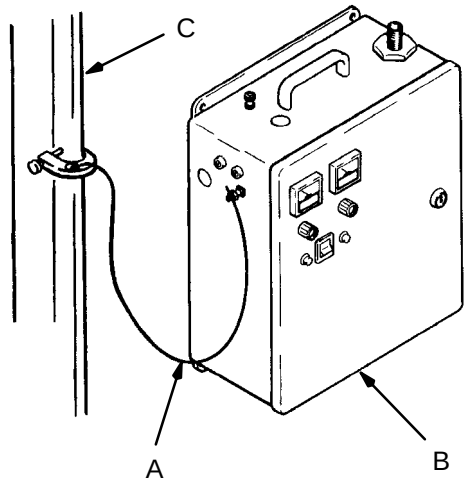


Fig 1

Connect the Gun's Air and Fluid Lines

WARNING

To reduce the risk of inadvertently turning on the spraying voltage, all air line connections from the power supply to the gun must be leak–free.

1. Install an air line filter to ensure a clean, dry air supply to the gun. Dirt and moisture in the air line can ruin the appearance of your finished work piece, and cause the power supply to malfunction.
2. Connect the air supply lines (D) to the gun. Refer to Fig 2.
3. Connect the fluid line (E) to the gun fluid inlet.

Connect the High Voltage Cable

WARNING

To reduce the risk of electric shock or other serious bodily injury, make sure the power supply is turned off when you connect the spray gun's high voltage cable to the power supply.

1. Insert the high voltage cable (F) into the insulator tube of the gun and tighten the cable with the retaining nut.
2. Route the high voltage cable (F) from the gun to the power supply cable connection (G). See Fig 2. To avoid permanent cable indentations and cable failures caused by unnecessary stress to the cable, be sure to take the following precautions:
   a. Support the cable overhead to avoid people walking on it and vehicles driving over it.
   b. DO NOT clamp the cable too tightly at supports.
   c. Avoid sharp kinks and bends in the cable.

CAUTION

Before connecting the gun's high voltage cable (F) to the high voltage cable connection (G), fill the cable connection with 16 cc of transformer oil (Part No. 218–018, supplied). Refer to Fig 2. **Failure to do so will cause severe damage of the power supply.** Check the level of oil every three months, minimum. Fill as needed.

3. Lubricate the cable o–rings with petroleum jelly. Make sure the cable connection is filled with oil.
4. Plug the gun's high voltage cable (F) into the high voltage cable connection (G) on the power supply. Hand tighten the connector nut.

For further information, see the instruction manual included with your electrostatic air spray gun.

KEY

A Ground Wire
D Air Line
E Fluid Line
F High Voltage Cable
G High Voltage Cable Connection

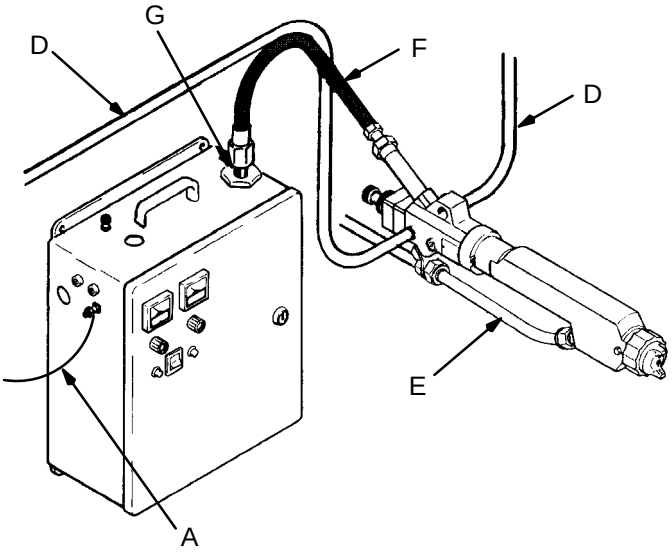


Fig 2

Check the Electrical Grounding

WARNING

Proper electrical grounding of every part of your system is essential. For your safety, read the warning section, **FIRE OR EXPLOSION HAZARD**, on page 3. Ground the system as explained there. Ground the Power Supply as explained on page 4. Check the electrical grounding as explained below.

To check for proper grounding, turn off the line power switch and use the ohmmeter (H) to measure the resistance between the actuator of the gun (J) and a true earth ground (C). See Fig 3.The resistance should be less than 30 ohms. If the resistance is more than 30 ohms, check the connections of all wires and other connectors and check the individual components of your system for proper grounding.

KEY

C True Earth Ground
H Ohmmeter
J Gun

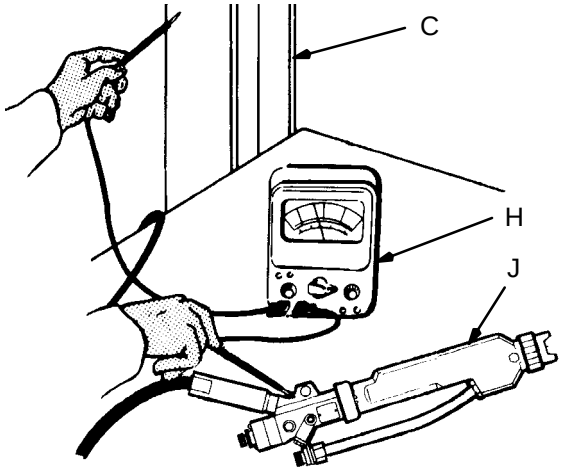


Fig 3

Set the Internal Adjustment Jumper

The internal adjustment jumper is initially set to position 1 for a solvent base fluid and a 15.2 meter (50 foot) cable.

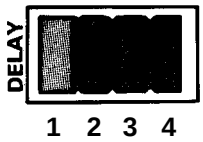
The internal adjustment jumper is located above connector J4 on the printed circuit board. See Fig 4. Connect the jumper vertically to the position that corresponds with your cable length and spraying fluid. See Fig 5.

If the system does not stay on when the spraying voltage is first turned on, the jumper setting may be increased by one position.

CAUTION

Increasing the jumper setting by more than one position may result in damage to the power supply.

If a greater turn–on delay is needed, there is a system malfunction. Refer to the **TROUBLESHOOTING CHARTS**.



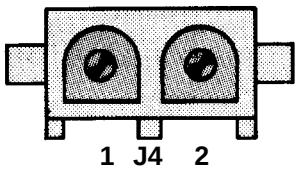


Fig 4

Cable Length	Spraying Fluid	Jumper Position
25 to 75 ft (7.6 to 23 m)	Solvent base	1
25 to 75 ft (7.6 to 23 m)	Water base	2
100 to 150 ft (30 to 46 m)	Solvent base	2
100 to 150 ft (30 to 46 m)	Water base	3

Fig 5

Check the Gun, Power Supply and System

NOTE: Do not add fluid to the system yet.

Procedure:

1. Set the sensing current control (N) on the power supply to the maximum position by turning it clockwise. See Fig 6.

2. Set the spraying voltage control (M) on the power supply to the maximum position by turning it clockwise.

3. Turn on all system components to actuate the remote power supply interlock, the remote line power switch circuits, and the remote spraying voltage reset circuit.

4. Turn on the line power switch (Q). If the power supply and system are operating properly, the line power on light (P) will glow. Any other lights connected to the remote line power circuit will also glow.

5. Turn on the spraying voltage by triggering the gun. If the power supply and system are operating properly, the spraying voltage on light (R) will glow. Any other lights connected to the remote spray voltage light circuit will also glow.

NOTE: The spraying current meter (L) should read no more than 100 microamps. The spraying voltage meter (K) should read between 100 and 140 kilovolts. If not, refer to the **TROUBLESHOOTING CHARTS**.

6. Turn off the power supply and all system components.

7. Touch the charging electrode of the gun to a grounded object during steps 8 and 9.

8. Turn on the power supply and the spraying voltage.

NOTE: The spraying current meter on the power supply should read between 100 and 180 microamps. The spraying voltage meter should read less than 90 kilovolts. If not, refer to the **TROUBLESHOOTING CHARTS**.

9. Turn off the power supply and all system components.

NOTE: The spraying fluid can now be added to the system.

Adjust the Spraying Voltage Control

Adjust the spraying voltage to the desired level while the system is spraying. Turn the spraying voltage control (M) on the power supply clockwise to increase the voltage and counterclockwise to decrease it. Refer to Fig 6.

The voltage reading will drop as fluid flows through the system, drawing more current from the power supply.

KEY

K	Spraying Voltage Meter	**P**	Line Power On Light (white)
L	Spraying Current Meter	**Q**	Line Power Switch
M	Spraying Voltage Control	**R**	Spraying Voltage On Light (green)
N	Sensing Current Control		

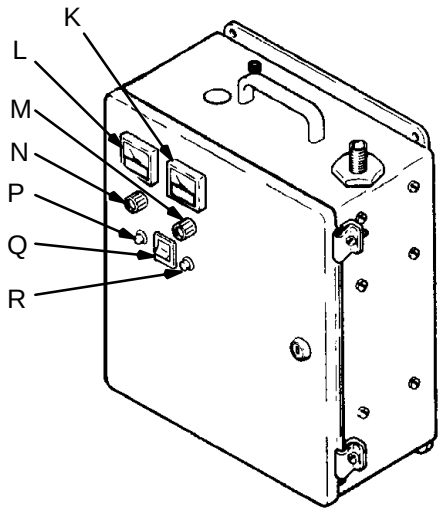


Fig 6

Adjust the Sensing Current Control

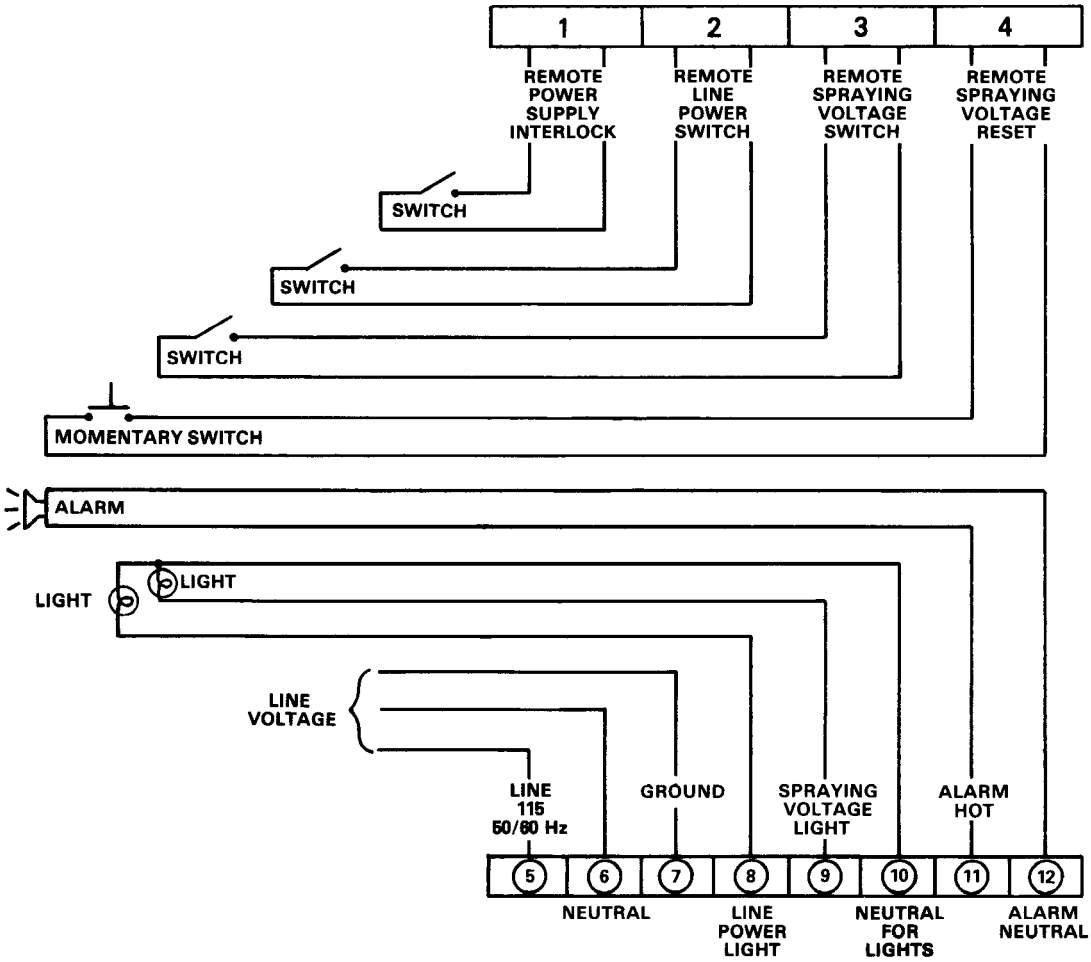
The sensing current control (N) is a device for shutting off the spraying voltage. Turn the control clockwise to decrease the sensitivity and counterclockwise to increase it. Refer to Fig 6. To adjust the control, follow these steps:

1. Set the sensing current control (N) to the maximum current by turning it clockwise.
2. While the gun is spraying, adjust the spraying voltage control (M) until the spraying voltage meter (K) is set for the desired spraying voltage.
3. While the gun is spraying, read the spraying current meter (L) and record the highest reading.
4. Stop spraying and hold the gun at a fixed distance from the work piece to be sprayed.
5. Turn on the spraying voltage by triggering the gun. Slowly move the gun closer to the work piece until spraying current meter reads about 40 microamps more than the highest reading in step 3.
6. Hold the gun steady to maintain this current and slowly turn the sensing current control counterclockwise until the spraying voltage on light (R) goes out.
7. If connected, the alarm should sound and other system components connected to the alarm circuit should turn on.
8. Now, with the gun spraying fluid, check the adjustment. The spraying voltage should turn on and off as before and the meters should read as in steps 2 and 3.

The sensing current control is now adjusted to turn off the spraying voltage if an over–current condition occurs.

NOTE: Readjust the sensing current control if the fluid, spraying distance, spraying voltage, or any other variable that affects the spraying current is changed.

Connection Diagram for Electrostatic System



WARNING

Serious bodily injury, explosion, fire or electric shock can occur if the precautions below are not followed.

1. Always wear appropriate, protective clothing and equipment, such as eye protection and respiratory protection.
2. All persons entering the spray area must be grounded. Shoes with conductive soles, such as leather, or personal grounding straps must be worn. Rubber or plastic soles are not conductive. The operator must not wear gloves that insulate the hand from the spray gun handle.
3. Always follow the **Pressure Relief Procedure** on page 2 before flushing, checking, adjusting, cleaning or repairing the gun or any part of the system.
4. Always turn off the power supply before cleaning or servicing equipment.
5. Keep the spray area clean at all times. Remove all refuse from the spray area immediately.
6. Use only non–sparking tools to clean residue from the booth and hangers.
7. Do not cover the floor with cardboard or any non–conductive material which would interrupt grounding continuity.
8. When flushing, always turn the power supply off, use the lowest fluid pressure possible, and use a grounded metal waste container. Remove all solvent from the system before reactivating the spray gun.

How the HR135 Power Supply Operates

The automatic air spray gun uses a *remote switch* connected to the *remote spraying voltage switch circuit*, built into the power supply. When the remote switch is actuated, the remote spraying voltage switch circuit turns on the high voltage to the gun.

Operating the Power Supply

1. Turn on the line power switch (Q). When the white light (P) glows, you can begin spraying. See Fig 7.
2. When the gun is triggered, the green light (R) glows, indicating that the spraying voltage is on.
3. Whenever you stop spraying, turn off the line power switch (Q).

Adjusting the Power Supply

WARNING

Making adjustments to the power supply may require access to parts which can cause electric shock or other serious bodily injury if the work is not performed properly. **DO NOT adjust** the power supply settings, either internally or externally, **unless** you are **trained and qualified** to do so.

If you change to a different length of high voltage cable, the internal adjustment jumper must be reset. See page 6.

KEY

P Line Power On Light (white)
Q Line Power Switch
R Spraying Voltage On Light (green)

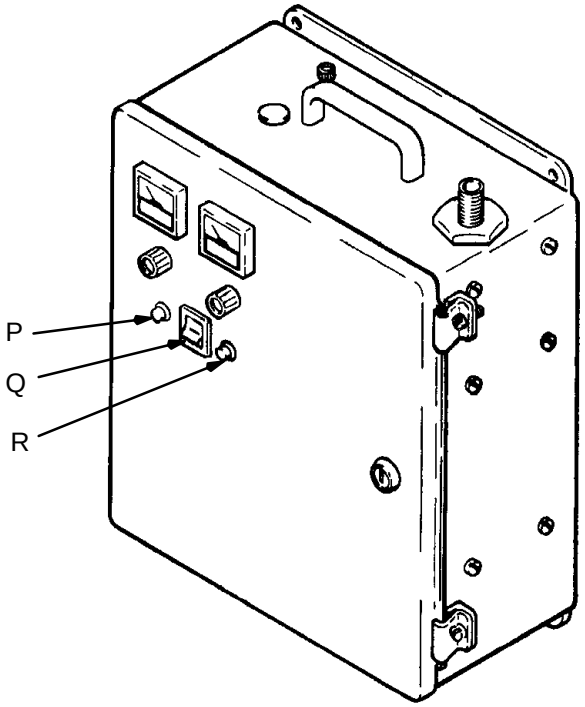


Fig 7

If you change the spraying fluid, spraying distance, spraying voltage, or any other variable that affects the spraying current, the sensing current control may need readjustment. See page 8.

TROUBLESHOOTING CHART

WARNING

Installing and servicing this equipment requires access to parts which may cause electric shock or other serious bodily injury if the work is not performed properly. Do not install or service this equipment unless you are trained and qualified. Always turn off the main power switch for the system before cleaning or servicing equipment.

To reduce the risk of serious bodily injury, including splashing fluid or solvent in the eyes or on the skin, always follow the **Pressure Relief Procedure** on page 2 before checking, adjusting, cleaning or repairing any part of the system.

NOTE: For any problems not listed in the following Troubleshooting Charts, return the power supply to an authorized Graco Service Depot for repair.

PROBLEM	CAUSE	SOLUTION
Line power light is on, spraying voltage light is on, meter readings normal, gun voltage normal, no or low electrostatic effects	Spraying fluid too conductive	Adjust controls for new spraying fluid (refer to page 8) or change fluid formulation to be less conductive
	Spraying conditions changed (such as distance between gun and work piece)	Correct or change spraying conditions and adjust controls (refer to pages 7–8)
Line power light is on, spraying voltage light is on, meter readings abnormal but steady	Spraying voltage control not adjusted for desired spraying voltage	Adjust spraying voltage control (refer to page 7)
	Spraying fluid conductivity changed	Adjust controls for new spraying fluid (refer to page 8) or change fluid formulation to be less conductive
	Spraying conditions changed (such as distance between gun and work piece)	Correct or change spraying conditions and adjust controls (refer to pages 7–8)
	Power supply or work piece poorly grounded	Ground power supply and work piece (refer to pages 3, 4 & 6)
	Gun failed (electrical breakdown)	Repair gun (see gun manual)
	Gun cable shield not grounded or gun cable failed	Check and/or replace gun cable
Line power light is off, spraying voltage light is off, no meter readings, no voltage at gun	Power supply is off	Turn on line power switch
	Remote power supply interlock circuit or remote line power switch circuit open	Close circuits
	Electrical power source off	Turn on electrical power source
	Power supply fuse or fuses blown	Replace fuse or fuses (17)
	Loose wire harness connections	Check component wire harness connectors and connections at circuit board and tighten
	Faulty line power switch	Replace line power switch (8)
Line power light is on, spraying voltage light will not go off,meter readings normal, gun voltage normal	Remote spraying voltage switch circuit closed	Open circuit
	Air leaks in system	Check for air leaks in lines, connections and gun
	Air flow switch leaking (if used)	Clean, repair, or replace air flow switch (check for air leaks)

Continued on next page.

TROUBLESHOOTING CHART

PROBLEM	CAUSE	SOLUTION
Line power light is on, spraying voltage light is off, no meter readings, no voltage at gun	Remote spray voltage switch circuit or remote spraying voltage reset circuit open	Close circuits
	No air flow through air flow switch	Turn on air supply
	Air flow switch leaking (if used)	Clean, repair, or replace air flow switch (check for air leaks)
	Air spray gun air valve trigger mechanism not functioning	Repair air valve trigger mechanism (see gun manual)
Line power light will not go off,spraying voltage light is off, no meter readings, no voltage at gun	Faulty line power switch	Replace line power switch (8)
Line power light is on, spraying voltage light is on only momentarily	Sensing current control not adjusted to desired sensing current	Adjust sensing current control (refer to page 8)
	Spraying fluid too conductive	Adjust controls for new spraying fluid (refer to page 8) or change fluid formulation to be less conductive
	Gun failed (electrical breakdown)	Repair gun (see gun instruction manual)
	Gun cable shield not grounded or gun cable failed	Check and/or replace gun cable
	Internal cable adjustment incorrectly set	Set internal adjustment jumper to corre–spond with cable length being used (refer to page 6)
Line power light is on, spraying voltage light is on, meter readings erratic, gun voltage erratic	Power supply or work piece poorly grounded	Ground power supply and work piece (refer to pages 3, 4 & 6)
	Gun failed (electrical breakdown)	Repair gun (see gun instruction manual)
	Gun cable shield not grounded or gun cable failed	Check and/or replace gun cable
Line power light is off, spraying voltage light is on, meter readings normal, gun voltage normal	Faulty line power on light	Replace line power on light (9)
	Loose wire harness connections	Check component wire harness connec–tors and connections at circuit board and tighten
Line power light is on, spraying voltage light is off, meter readings normal, gun voltage normal	Faulty spraying voltage on light	Replace spraying voltage on light (7)
	Loose wire harness connections	Check component wire harness connec–tors and connections at circuit board and tighten
Line power light is on, spraying voltage light is on, no meter readings, no voltage at gun	Spraying voltage control not adjust–ed for desired spraying voltage	Adjust spraying voltage control (refer to page 7)
	Loose wire harness connections	Check component wire harness connec–tors and connections at circuit board and tighten
Line power light is on, spraying voltage light is on, meter readings normal, gun voltage normal, spraying voltage does not turn off when over–current condition occurs	Sensing current control not adjusted to desired sensing current	Adjust sensing current control (refer to page 8)
	Loose wire harness connections	Check component wire harness connec–tors and connections at circuit board and tighten

Continued on next page.

TROUBLESHOOTING CHART

PROBLEM	CAUSE	SOLUTION
Line power light is on, spraying voltage light is on, spraying current meter reading normal, spraying voltage meter reading abnormal or erratic, gun voltage normal	Loose wire harness connections	Check component wire harness connec–tors and connections at circuit board and tighten
	Faulty spraying voltage meter	Replace spraying voltage meter (10)
Line power light is on, spraying voltage light is on, spraying current meter reading abnormal or erratic, spray–ing voltage meter reading normal, gun voltage normal	Loose wire harness connections	Check component wire harness connec–tors and connections at circuit board and tighten
	Faulty spraying current meter	Replace spraying current meter (11)
	Air lines, fittings, or gun leaking	Repair gun, air lines, or tighten fittings
	Air flow switch leaking (if used)	Clean, repair, or replace air flow switch (check for air leaks)
	Air spray gun air valve trigger mechanism not functioning	Repair air valve trigger mechanism (see gun instruction manual)
Line power light is on, spraying voltage light is off, circuit board (1) red LED light glows, alarms sound (if any are connected to alarm circuit)	Faulty high voltage cable, gun or power supply (causing an over–current condition)	Repair or replace cable, gun or power supply*

**To determine which system component is the cause of the problem, follow the procedure below.*

1. Turn off the line power switch (Q). See Fig 6.
2. Disconnect the high voltage cable (F) from the connection (G). See Fig 2.
3. Turn the spraying voltage control (M) counterclockwise to the minimum voltage setting. See Fig 6. Leave the sensing current control (N) set at its normal operating position for your installation.
4. Turn on the line power switch (Q). See Fig 6.
5. Turn the spraying voltage on.
6. Slowly turn the spraying voltage control (M) clockwise to the maximum voltage setting.
7. With the spraying voltage control (M) at maximum, turn the spraying voltage on and off several times.
8. If the red LED light glows during steps 6 and 7, the power supply must be repaired or replaced.
9. If the red LED light does not glow during steps 6 and 7, the gun and/or the high voltage cable must be repaired or replaced.

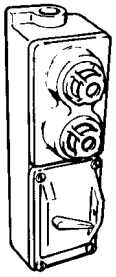
After correcting the cause of the over–current, the high voltage cable, gun, and power supply system must be checked out again, and the spraying voltage and sensing current must be readjusted. Follow the instructions given on pages 7 and 8.

ACCESSORIES

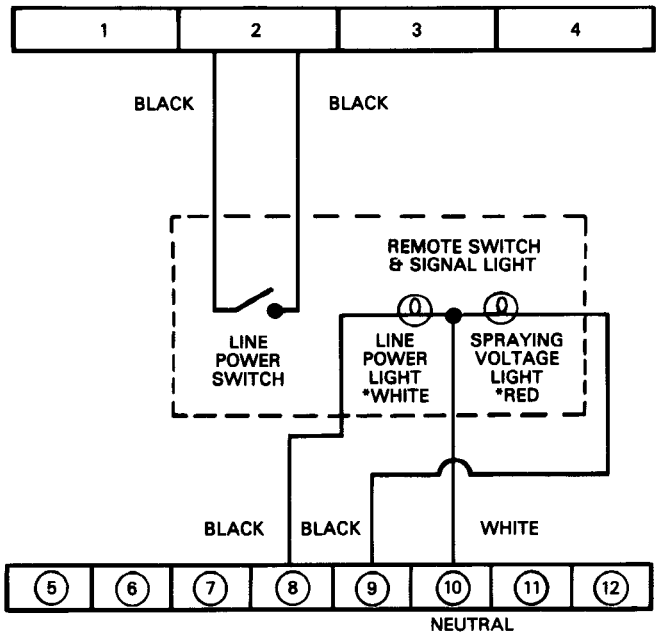
Accessories must be purchased separately.
Use only **GENUINE GRACO PARTS AND ACCESSORIES.**

Remote Switch & Signal Light 728–386

See connection diagram below.



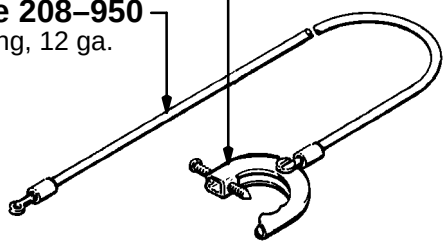
Connection Diagram for 728–386



Grounding Clamp 103–538

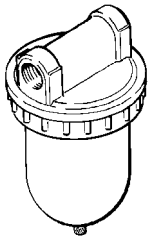
Ground Wire 208–950

25 ft. (7.6 m) long, 12 ga.

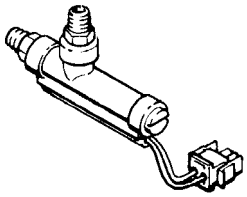


Air Filter & Moisture Separator 106-148

250 psi (17.5 bar) MAXIMUM WORKING PRESSURE
For cleaning and drying air in air spray system.
20 micron element, 5 oz. bowl capacity,
3/8 npt(f) inlet and outlet

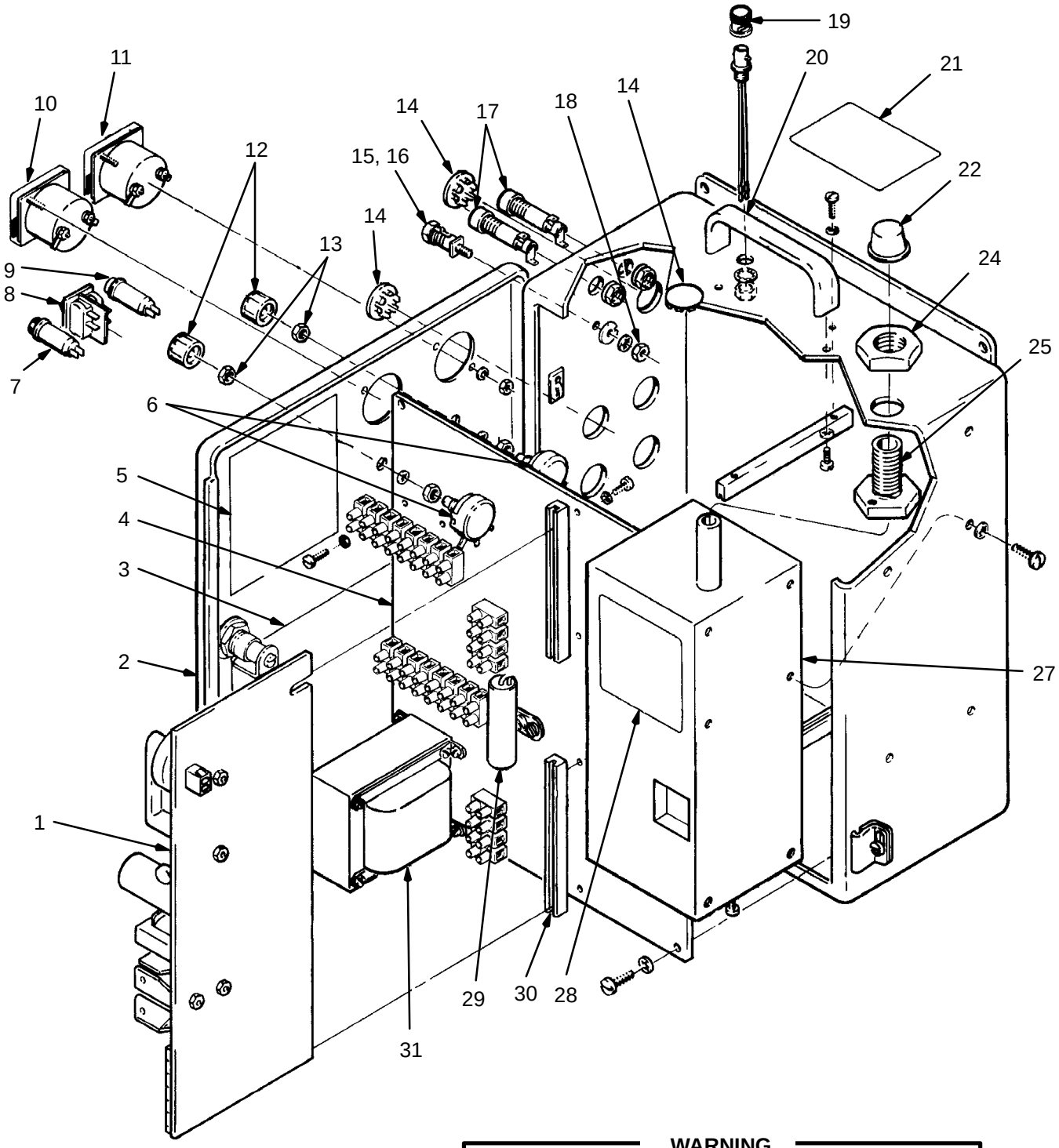


Air Flow Switch Kit 217–274



PARTS DRAWING

Part No. 226–983, Series B, Power Supply

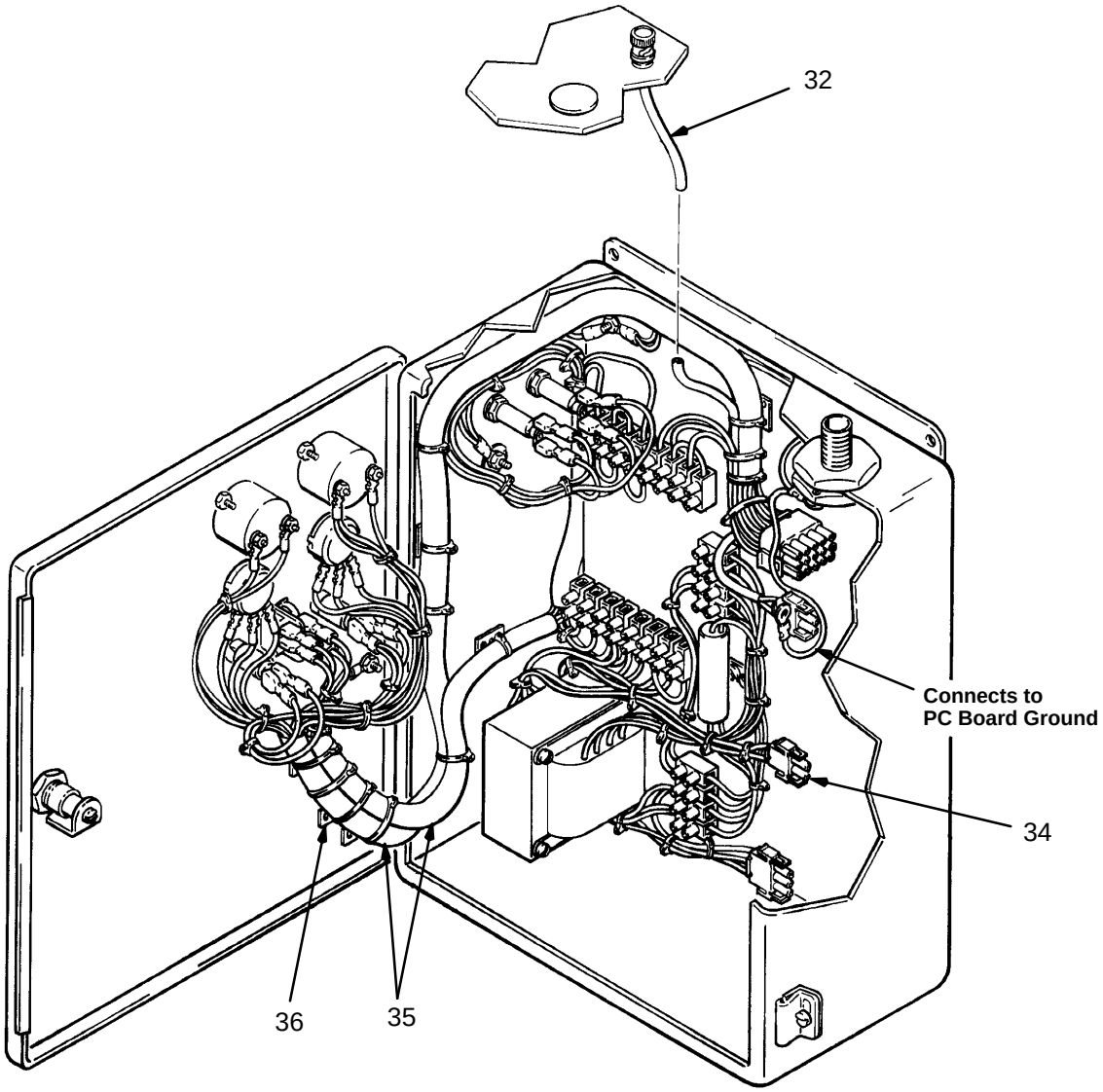


WARNING

When servicing use only genuine Graco replacement parts. Use of other parts could alter the grounding continuity of the power supply, which could cause fire and explosion and result in property damage and serious bodily injury.

Order parts by name and series letter of the assembly for which you are ordering.

PARTS DRAWING



PARTS LIST

REF NO.	PART NO.	DESCRIPTION	QTY
1		BOARD, printed circuit	1
2	177–748	LABEL, warning	1
3	178–358	LABEL, connection	1
4	178–359	LABEL, instruction	1
5	178–365	LABEL, caution	1
6		POTENTIOMETER	2
7	105–821	LIGHT, indicator	1
8	105–823	SWITCH, rocker	1
9	105–820	LIGHT, indicator	1
10	105–815	METER, kilovolt	1
11	105–816	METER, microamp	1
12	105–819	KNOB, control	2
13	105–929	NUT, mach, hex	2
14	105–814	PLUG, hole	6
15	104–029	CLAMP, gnd, elec	1
16	104–582	WASHER, tab lock	1
17	106–433	FUSE, 2.5 amps	2
18	104–147	NUT, full hex	1
19	106–172	COVER, connector	1
20	106–380	HANDLE	1
21	177–749	LABEL, warning	1
22	106–283	PLUG, cap	1
24	178–398	NUT, retainer	1
25	178–399	NUT, retainer	1
27		MULTIPLIER, 75 KV	1
28	178–357	LABEL, warning	1
29		FILTER, suppression	1
30	178–355	GUIDE, PC board	4
31		TRANSFORMER, power	1
32		HARNESS, wiring	1
34	105–837	SOCKET, contact	19
35		HARNESS, wiring	1
36	104–575	CLAMP, cable	7
37	172–049	SIGN, warning (not shown)	1
38	178–704	LABEL, designation (not shown)	1
39	180–272	LABEL, warning (not shown)	1
40	218–018	OIL, transformer; 16 cc (not shown)	1

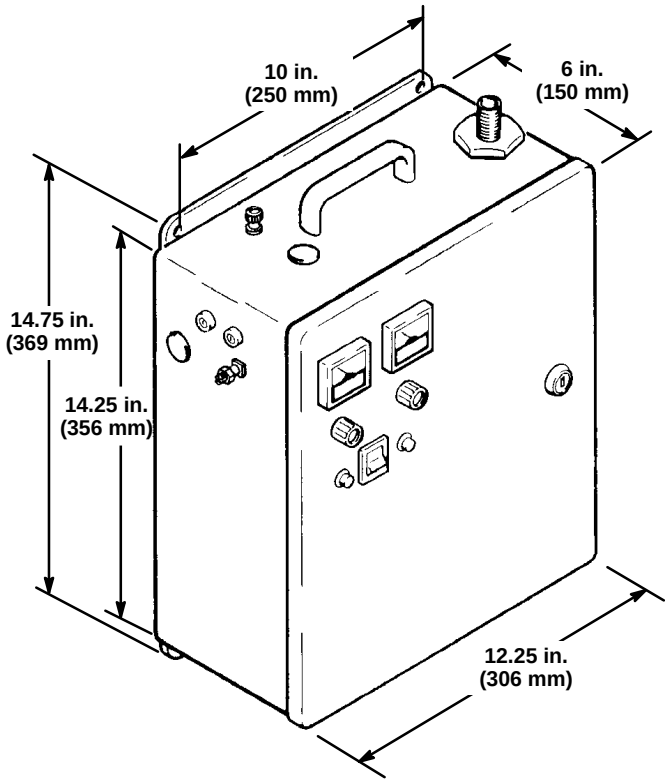
TECHNICAL DATA

Weight . . . . . 40 lb (18 Kg)
Voltage Operating Range . . . . . 0–135 KV
Current Operating Range . . . . . 0–140 microamps
Electrical Service . . . . . 115 volts, 50/60 HZ AC
Fuse . . . . . 2.5 Amps

SERVICE INFORMATION

Revised to update text in manual.

DIMENSIONAL DRAWING



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 from the date 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 for examination by Graco to verify 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.

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 PRODUCT 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.

Factory Branches: Atlanta, Dallas, Detroit, Los Angeles, West Caldwell (N.J.)
Subsidiary and Affiliate Companies: Canada; England; Switzerland; France; Germany; Hong Kong; Japan

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PRINTED IN U.S.A. 307–568 8–82 Revised 10–88