3

INSTRUCTIONS-PARTS LIST

This manual contains IMPORTANT
WARNINGS and INFORMATION
READ AND RETAIN FOR REFERENCE

307-847
Rev D
Supersedes B

5 HORSEPOWER, GASOLINE-POWERED

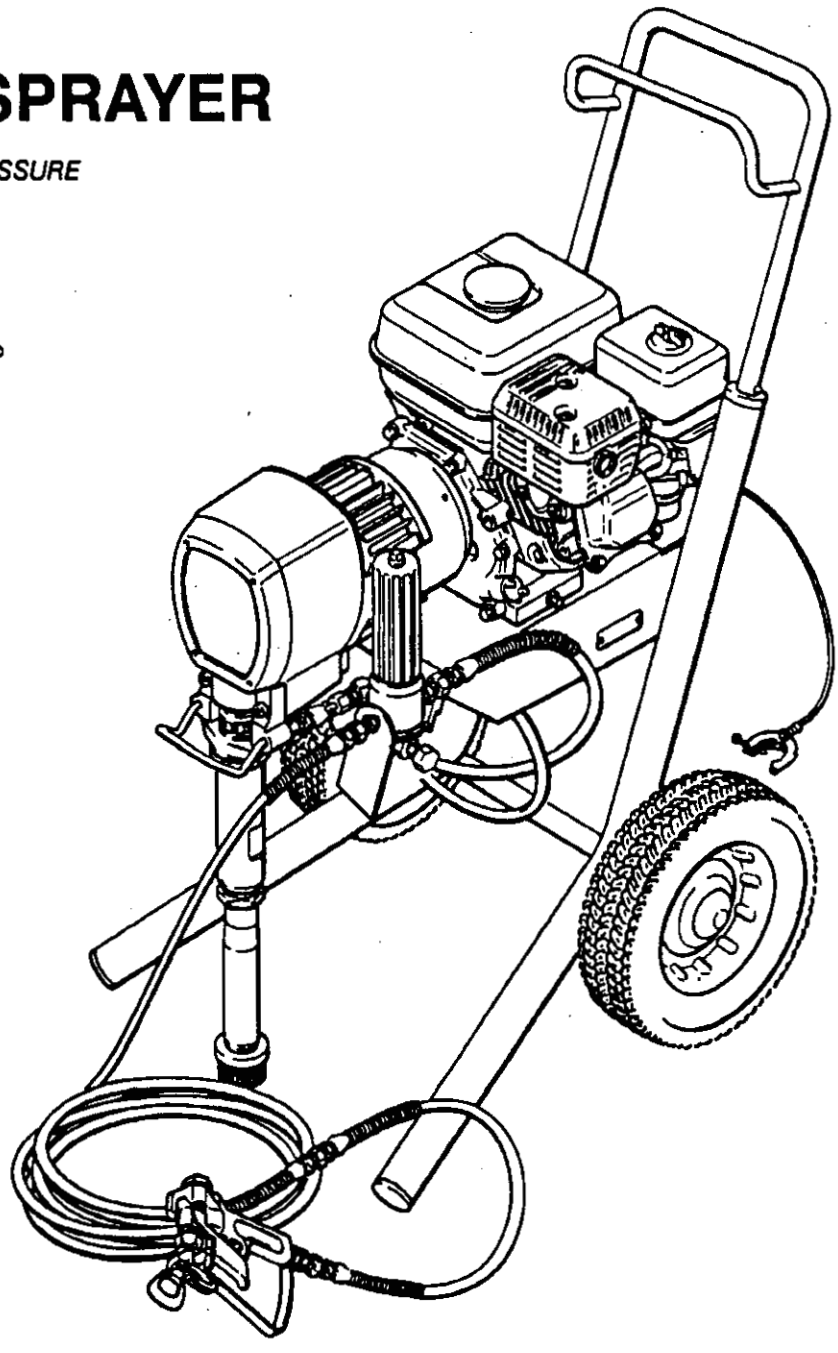
GM 5000

AIRLESS PAINT SPRAYER

3000 psi (210 bar) MAXIMUM WORKING PRESSURE

Model 220-886, Series B
Basic sprayer, without hose or gun

Model 231-052
Complete sprayer, with hose or gun, RAC IV® Dripless® Tip Guard, and 517 size SwitchTip®



WARNING

Hazard of Using Fluids Containing Halogenated Hydrocarbons
Never use 1,1,1-trichloroethane, methylene chloride, other halogenated hydrocarbon solvents or fluids containing such solvents in this equipment. Such use could result in a serious chemical reaction, with the possibility of explosion, which could cause death, serious bodily injury and/or substantial property damage.

Consult your fluid suppliers to ensure that the fluids being used are compatible with aluminum and zinc parts.

Refer to the Technical Data on page 39 for more information.

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

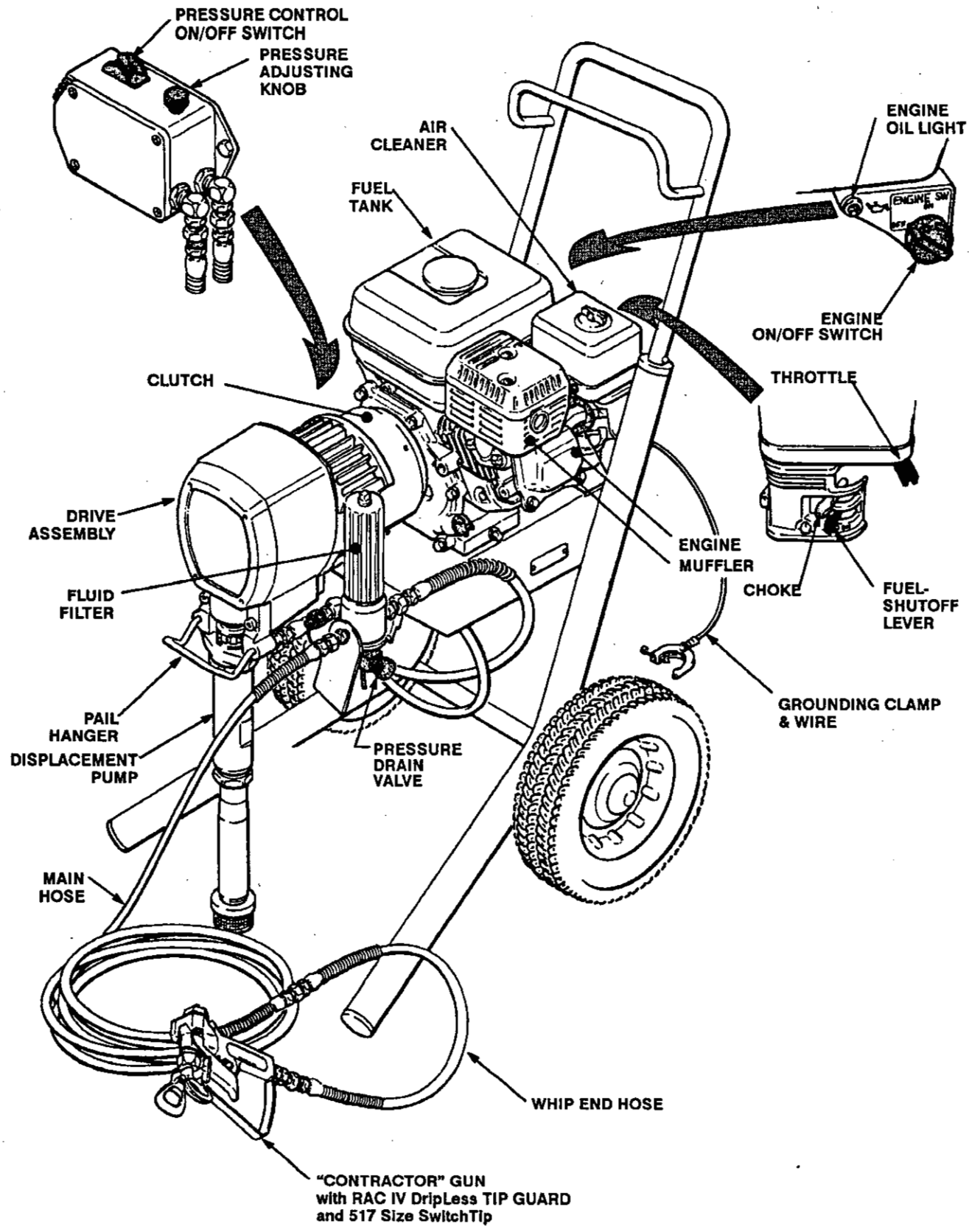

PRESSURE CONTROL ON/OFF SWITCH
PRESSURE ADJUSTING KNOB
AIR CLEANER
FUEL TANK
ENGINE OIL LIGHT
ENGINE ON/OFF SWITCH
CLUTCH
THROTTLE
DRIVE ASSEMBLY
ENGINE MUFFLER
FLUID FILTER
CHOKE
FUEL-SHUTOFF LEVER
GROUNDING CLAMP & WIRE
PAIL HANGER
DISPLACEMENT PUMP
PRESSURE DRAIN VALVE
MAIN HOSE
WHIP END HOSE
"CONTRACTOR" GUN with RAC IV DripLess TIP GUARD and 517 Size SwitchTip

Fig 3-1

MOVING PARTS HAZARD

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** on page 4 before checking or servicing any part of the sprayer, to prevent it from starting accidentally.

EQUIPMENT MISUSE HAZARD

General Safety

Any misuse of the spray equipment or accessories, such as overpressurizing, modifying parts, using incompatible chemicals and fluids, or using worn or damaged parts, can cause them to rupture and result in fluid injection, splashing in the eyes or on the skin, or other serious bodily injury, or 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.

Always wear protective eyewear, gloves, clothing and respirator as recommended by the fluid and solvent manufacturer.

System Pressure

This sprayer can develop 3000 psi (210 bar) *MAXIMUM WORKING PRESSURE*. Be sure all spray equipment and accessories used are rated to withstand the this pressure. DO NOT exceed the maximum working pressure of any component or accessory used in the system.

Fluid and Solvent Compatibility

All chemicals used in the sprayer are chemically compatible with the wetted parts shown in the **TECHNICAL DATA** on page 38. Always read the chemical manufacturer's literature before using them in this sprayer.

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 STRAIN RELIEFS ON BOTH ENDS! The strain reliefs 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 the 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. Keep hoses clear of moving parts and hot surfaces of the pump and gas engine. Do not use fluids or solvents which are not compatible with the inner tube and cover of the hose. DO NOT expose Graco hoses 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 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**, below.

FIRE OR EXPLOSION HAZARD

Static electricity is created by the 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 or using a gasoline engine. 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.

If you experience any static sparking or even a slight shock while using this equipment, **STOP SPRAYING IMMEDIATELY.** Check the entire system for 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. *Sprayer:* connect a ground wire and clamp (supplied) to a true earth ground.
2. *Fluid hoses:* use only grounded hoses with a maximum of 500 ft (150 m) combined hose length to ensure grounding continuity. See **Hose Grounding Continuity** on page 3.
3. *Spray gun:* obtain grounding through connection to a properly grounded fluid hose and sprayer.
4. *Object being sprayed:* according to local code.
5. *Fluid supply container:* according to local code.
6. *All solvent pails used when flushing,* according to local code. Use only metal pails, which are conductive. Do not place the pail on a non-conductive surface, such as paper or cardboard, which interrupts the grounding continuity.
7. *To maintain grounding continuity when flushing or relieving pressure,* always hold a metal part of the gun firmly to the side of a grounded metal pail, then trigger the gun.

Flushing Safety

Reduce the risk of fluid injection injury, static sparking, or splashing by following the flushing procedure given on page 14 of this manual. Follow the **PRESSURE RELIEF PROCEDURE** on page 4, and remove the spray tip before flushing. Hold a metal part of the gun firmly to the side of a grounded metal pail and use the lowest possible fluid pressure during flushing.

GASOLINE ENGINE HAZARD

NEVER fill the fuel tank while the engine is running or hot. Fuel spilled on a hot surface can ignite and cause a fire.

ALWAYS pour fuel in slowly to avoid spilling. Also read **FIRE OR EXPLOSION HAZARD**, above, and **FUELING** on page 6.

NEVER operate the engine in a closed building unless the engine exhaust is piped outside. The exhaust contains carbon monoxide, a poisonous, odorless and invisible gas which can cause serious illness and even death of inhaled.

IMPORTANT

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

RISQUES EN CAS DE MAUVAISE UTILISATION DU MATERIAL

Consignes générales de sécurité

toute utilisation anormale de l'appareil du pulvérisation ou des accessoires comme, par exemple, la mise sous une pression excessive, les modifications de pièces, l'utilisation de produits chimiques et de matières incompatibles et l'utilisation de pièces usées ou abîmées peut causer des dégâts à l'appareil ou des ruptures de pièces et entraîner une injection de liquide ou d'autres blessures sérieuses, un incendie, une explosion ou d'autres dégâts.

Toujours porter une protection pour les yeux, de gants, des vêtements protecteur et un dispositif pour la respiration correspondant aux recommandations des fabricants de fluides et solvants.

Pression

Ce pulvérisateur peut produire une *PRESSION MAXIMUM DE TRAVAIL 210 bar (3000 lb/po.²)* S'assurer que tous les éléments du pulvérisateur et ses accessoires sont conçus pour résister à la pression maximum de travail de ce pulvérisateur. NE PAS dépasser la pression maximum de travail d'aucun des éléments ou accessoires utilisés avec cet appareil.

Compatibilité chimique des corps

BIEN S'ASSURER que tous les corps des solvants utilisés sont chimiquement compatibles avec les parties mouillées indiquées dans les "Données techniques", au dos de la couverture. Toujours lire soigneusement les documents et brochures du fabricant des fluides et solvants utilisés avant de s'en servir dans ce pulvérisateur.

Le fluide à haute pression circulant dans les tuyaux peut être très dangereux. En cas de fuite sur le tuyau, de fissure, déchirure ou rupture à la suite de l'usure, de dégâts ou d'une mauvaise utilisation, les projections de fluide haute pression qui en proviennent peuvent entraîner des blessures graves par pénétration sous la peau ou par contact, ainsi que des dégâts matériels.

TOUS LES TUYAUX FLEXIBLES DOIVENT AVOIR DES RESSORTS SPIRALE DE PROTECTION AUX 2 BOUTS! Les spirales de protection contribuent à éviter la formation de pliures, de boucles ou de nœuds sur les tuyaux qui pourraient entraîner la rupture du tuyau à l'endroit du raccord ou à son voisinage.

SERRER FERMEMENT tous les raccords avant chaque utilisation. Le fluide sous pression peut faire sauter un raccord desserré ou produire un jet à haute pression s'échappant par le raccord.

NE JAMAIS utiliser un tuyau endommagé. NE PAS essayer de refaire le raccord d'un tuyau haute pression ni de réparer le tuyau avec du ruban adhésif ou par tout autre moyen. Un tuyau réparé ne peut pas résister au fluide sous pression.

MANIPULER LES TUYAUX AVEC PRECAUTION ET CHOISIR SOIGNEUSEMENT LEUR CHEMIN. Ne pas déplacer le fluide en tirant sur le tuyau. Ne pas utiliser de fluides ou de solvants que ne sont pas compatibles avec l'enveloppe intérieur ou extérieure de tuyau. NE PAS exposer le tuyau à fluides des températures supérieures à 82°C (180°F) ou inférieures à -40°C (-40°F).

Continuité de la mise à la terre des tuyaux

Une bonne continuité de la mise à la terre des tuyaux est essentielle pour maintenir la mise à la terre de l'ensemble de vaporisation. Vérifiez la résistance électrique de vos tuyaux à fluides et à air, au moines une fois par semaine. Si votre tuyau ne comporte pas d'étiquette qui précise la résistance électrique maximum, prenez contact avec le fournisseur de tuyaux ou la fabricant pour avoir les limites de résistance maximum. Utilisez un mètre de résistance de la gamme appropriée pour votre tuyau et vérifiez la résistance. Si celle-ci dépasse les limites recommandées, remplacez le tuyau immédiatement. Un tuyau sans mise à la terre ou avec une mise à la terre incorrecte peut entraîner des risques pour votre système. Lisez aussi **LES RISQUES D'INCENDIE OU D'EXPLOSION.**

RISQUES D'INCENDIE OU D'EXPLOSION

De l'électricité statique est produite par le passage du fluide à grande vitesse dans la pompe et dans les tuyaux. Si toutes les pièces de l'appareil de pulvérisation ne sont pas convenablement reliées ou à la masse ou à la terre, des étincelles peuvent se produire et l'appareil risques d'être dangereux. Des étincelles peuvent Également se produire à l'occasion du branchement ou du débranchement du cordon d'alimentation ou de l'utilisation d'un moteur à essence. Les étincelles sont suffisantes pour allumer les vapeurs de solvants et le fluide pulvérisé, les fines particules de poussière ainsi que d'autres substances inflammables, quand on pulvérisé à l'intérieur ou à l'extérieur, et elles peuvent causer un incendie ou une explosion, ainsi que des blessures graves et des dégâts matériels.

S'il se produit des étincelles d'électricité statique, ou si vous ressentez la moindre décharge, ARRETEZ IMMEDIATEMENT LA PULVERISATION. Vérifiez que le système avant que le problème soit identifié et corrigé.

Mise à la terre ou à la masse

Pour réduire les risques de production d'étincelles d'électricité statique, le pulvérisateur et tous les équipement utilisés ou se trouvant dans la zone de pulvérisation doivent être reliés à la terre ou à la masse. Pour connaître le détail des instructions de mise à la terre dans la région et le type particulier d'équipement, CONSULTER le code ou les réglementations électriques locales. S'ASSURER que tous le équipements de pulvérisation suivants sont bien reliés à la terre:

1. *Pulvérisateur:* Relier le file de masses et le collier (fourni) à une bonne terre.
2. *Pistolet:* Réaliser la mise à la terre en le raccordant à une tuyau flexible et à une pulvérisateur déjà convenablement reliés à la terre.
3. *Tuyaux flexibles:* Afin d'assurer la continuité de la mise à la terre, n'utiliser que des tuyaux comportant une mise à la terre et ayant une longueur maximum combinée de 150 m (1500 pieds). Se reporter également au paragraphe, **"Continuité du circuit de mis à la terre des tuyaux".**
4. *Récipient d'alimentation:* observer le code ou les réglementations locales.
5. *Objets, matériel ou surfaces recevant la pulvérisation:* observer le code ou les réglementations locales.
6. *Tous le seaux de solvant* utilisés pour le rinçage: observer le code ou les réglementations locales. *N'utiliser que des seaux métallique* conducteurs de l'électricité. Ne pas mettre le seau sur une surface non conductrice comme sur du papier ou du carton car cela interromprait la continuité de la mise à la terre.
7. *Pour conserver la continuité de la mise à la terre quand on rincé le matériel ou quand on libère la pression,* toujours maintenir une partie métallique du pistolet fermement appuyée contre le côté d'un seau *en métal* puis appuyer sur la détente du pistolet.

Mesures de Sécurité concernant le Rincage

Pour réduire les risques de blessures par pénétration de la peau et les risques dûs aux étincelles d'électricité statique ou aux éclaboussures, observe la marche à suivre pour le rinçage donnée à la page 14 de ce manuel.

RISQUES DUS AUX MOTEURS A ESSENCE

NE JAMAIS remplir le réservoir de carburant quand le moteur tourne ou quand il est chaud. Le carburant renversé sur une surface chaude peut s'enflammer et causer un incendie. TOUJOURS verse le carburant lentement pour éviter d'en renverser. Lire **RISQUES D'INCENDIE OU D'EXPLOSION.**

NE JAMAIS faire tourner un moteur dans un bâtiment fermé à moins que les gaz d'échappement ne soient dirigés au dehors. Les gaz d'échappement contiennent de l'oxyde de carbone, un gaz toxique, inodore et invisible qui peut entraîner des malaises graves ou même la mort se l'on le respiré.

PELIGRO POR MAL USO DEL EQUIPO

Seguridad general

Cualquier mal uso del equipo pulverizador o los accesorios, tal como sobre presurización, modificación de piezas, uso de materiales y productos químicos incompatibles, o utilización de piezas dañadas o desgastadas, puede hacen que se rompan y causen la inyección de fluido u otras lesiones corporales graves, incendio, explosión o daños a la propiedad.

Siempre usar gafas, guantes, vestimentas protectoras y un respiradero, tal como recomiendan los fabricantes del fluido y del solvente.

Presión del sistema

Esta pulverizadora puede desarrollar 210 barías (3000 psi) de *PRESION DE TRABAJO MAXIMA*. Asegurar que todo el equipo pulverizador y sus accesorios tienen la capacidad para aguantar la presión máxima de trabajo de ningún componente o accesorio de este sistema.

Compatibilidad de fluido

Siempre leer las instrucciones del fabricante del fluido y solvente antes de usarlos en esta pulverizadora.

SEGURIDAD EN EL USO DE LAS MANGUERAS

El fluido que escapa a alta presión por las mangueras puede ser muy peligroso. Si en la manguera se desarrola un escape, una rotura o rajadura debido a cualquier tipo de desgaste, daño o maltrato, el chorro a alta presión emitido por allí puede causar una lesión por inyección u otras lesiones corporales graves o daños a la propiedad.

¡TODAS LAS MANGUERAS PARA FLUIDOS TIENEN QUE TENER GUARDAS DE RESORTE EN AMBOS EXTREMOS! Estas protegen las mangueras contra dobleces o retorceduras en los acoplamientos o cerca de ellos, los que podrían traducirse en roturas de la manguera.

Antes de usarlas, APRETAR bien firmes todas las conexiones. El fluido a lata presión puede desalojar un acoplamiento suelto o dejar que pro él escape un chorro a alta presión.

NUNCA usar una manguera que está dañada. Siempre revisarla en busca de cortaduras, escapes, abrasión, cubierta abultada, o acoplamientos sueltos o dañados. Si llegara a encontrarse cualquiera de estas condiciones, reemplazar de inmediato la manguera. NO intentar reacoplar una manguera de alta presión o enmendarla con cinta adhesiva u otro material similar. Una manguera que ha sido remendada no aguante el fluido al alta presión.

MANEJAR Y PASAR CUIDADOSAMENTE LAS MANGUERAS. No tirar de las mangueras para mover el equipo. No usar fluidos o solventes que sean incompatibles con el tubo interno y la cubierta de la manguera. NO exponer las mangueras a temperaturas sobre 82° C (180°F) o bajo -40°C (-40° F).

Continuidad del circuito de puesta a tierra de la manguera

La continuidad del circuito de puesta a tierra apropiado es esencial para mantener conectado a tierra el sistema pulverizador. Es indispensable revisar la resistencia eléctrica máxima de las mangueras de aire y de fluido por lo menos una vez a la semana. Si la manguera no tiene una etiqueta en la cual se especifica la resistencia eléctrica máximum, ponerse en contacto con el proveedor o fabricante de la manguera para la información sobre los límites de resistencia. Usar un metro de resistencia en la gama apropiada para comprobar la resistencia; si excede los lites recomendados, reemplazarla de inmediato. Es muy arriesgado tener una manguera sin puesta a tierra o con la puesta a tierra en malas condiciones. Leer también la información sobre **RIESGO DE INCENDIO O EXPLOSION**, más arriba.

PELIGRO DE INCENDIO O EXPLOSION

El flujo a alta velocidad del fluido al pasar por la bomba y manguera crea electricidad estática. Si todas las partes del equipo pulverizador no tienen buena tierra, pueden ocurrir chispas, convirtiéndo al sistema en algo peligroso. También, pueden producirse chispas al enchufar o desenchufar el cordón eléctrico o al usar un motor de gasolina. Estas chispas pueden inflamar los vapores de los solventes y el chorro de fluido pulverizado, partículas de polvo y otras sustancias inflamables, sea al aire libre o bajo techo, lo que podría causar una explosión o incendio y graves lesiones corporales y daños a la propiedad.

Si ocurre una chispa de electricidad estática o incluso un ligero choque eléctrico mientras se usa el equipo, DEJAR DE PULVERIZAR DE INMEDIATO. Revisar todo el sistema en busca de una tierra apropiado. No usar de nuevo el sistema hasta haber identificado y solucionado el problema.

Puesta a tierra

Para reducir el riesgo de chispas estáticas, conectar a tierra la pulverizadora y todo el otro equipo de pulverizar que se use o se encuentre en el lugar que se va a rociar. CONSULTAR el código eléctrico de la localidad para las instrucciones sobre las conexiones a tierra exigidas para la zona y tipo de equipo. ASEGURAR de conectar a tierra todo este equipo pulverizador:

1. *Pulverizadora:* Conectar el alambre de tierra y la abrazadera (suministrada) a una buena conexión a tierra.
2. *Mangueras para fluidos:* usar solamente mangueras con puesta a tierra de una longitud combinada de 150 m (500 pies), para asegurar buena continuidad a tierra. Referirse también al párrafo sobre **continuidad a tierra de la manguera.**
3. *Pistola:* hacer la puesta a tierra conectándola a una manguera de fluido y pulverizadora bien conectadas a tierra.
4. *Suministrar un recipiente:* de acuerdo al código local. Usar *solamente baldes de metal,* que sean conductivos. No colocar el balde en una superficie no conductiva, como papel o cartón, que interrumpe la continuidad a tierra.
5. *Objeto que se está rociando:* de conformidad con el código local.
6. *Todos los baldes de solvente* usados durante el lavado, de conformidad con el código local.
7. *Para mantener la continuidad a tierra durante el lavado o descarga de presión,* siempre apoyar una parte metálica de la pistola bien firme contra el costado de *balde de metal*, después apretar el gatillo.

Seguridad durante el lavado

Para reducir el riesgo de que se inyecte o salpique fluido en la piel, o que ocurra una descarga de electricidad estática, siempre seguir las INSTRUCCIONES PARA EL LAVADO, dadas en la página 14. Seguir el **procedimiento de descarga de presión** en la página 8, y quitar la *boquilla de metal* y usar le presión más baja posible de fluido durante el lavado.

PRECAUCIONES PARA LOS MOTORES DE GASOLINA

NUNCA llenar el tanque de combustible mientras el motor está funcionando o caliente. El combustible derramado en una superficie caliente puede encenderse y provocar un incendio. SIEMPRE verter el combustible lentamente para evitar derrames. Leer **PELIGRO DE INCENDIO O EXPLOSION.**

NUNCA hacer funcionar el motor en un edificio cerrado sin encaminar los gases de escape hacia el aire libre. Los gases de escape contienen monóxido de carbono, un gas venenoso, sin olor e invisible que podría causar enfermedades graves, incluso la muerte, al inhalarse.

SETUP

5. **Be sure your system is properly grounded before operating it.** Read and follow the warning section, **FIRE OR EXPLOSION HAZARD**, on page 5.
6. **Fill the gas tank.** See the **FUELING** section, below.
7. **Flush the pump** to remove the lightweight oil which was left in the pump to protect it from rust.
   a. Before using water-base paint, flush with mineral spirits, followed by soapy water, and then flush with clean water.
   b. Before using oil-base paint, flush with mineral spirits, only.
   c. See **FLUSHING GUIDELINES**, on page 15, for the flushing procedure.
8. **Prepare the paint** according to the manufacturer's recommendations.
   a. Remove any skin that may have formed..
   b. Stir the paint to mix pigments.
   c. Strain the paint through a fine nylon mesh bag (available at most paint dealers) to remove particles that could clog the filter or spray tip. This is probably the most important step toward trouble-free spraying.
9. **Keep the sprayer upright and level** during operation and whenever it is being moved. See the last **CAUTION** on page 12.

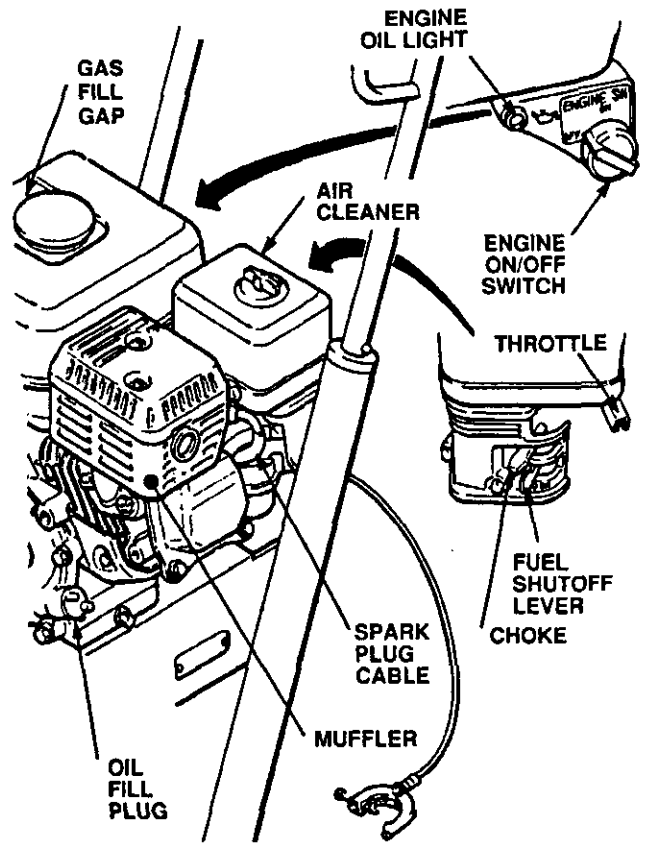


Fig 11-1

FUELING

WARNING

Gasoline is extremely flammable and explosive under certain conditions.

Always shut off the engine before refueling.

Refuel in a well-ventilated area.

Do not smoke or allow flames or sparks in the area where the engine is refueled or where the gasoline is stored.

Do not overfill the tank. Make sure the filler cap is securely closed after refueling.

Be careful not to spill fuel when fueling. Fuel vapor or spilled fuel can ignite. If any fuel is spilled, make sure the area is dry before starting the engine.

1. **Fuel specifications.** Use automotive gasoline with a pump octane number $\left(\frac{R+M}{2}\right)$ of 86 or higher, or a research octane number of 91 or higher. Unleaded fuel minimizes combustion chamber deposits.
2. **Gasolines containing alcohol (gasohol).** Do not use gasohol which contains methanol, if the gasohol does not contain cosolvents and corrosion inhibitors for methanol. Even if it does contain such additives, do not use the gasohol if it contains more than 5% methanol.

NOTE: The HONDA engine warranty does not cover damage resulting from the use of gasolines containing alcohol. See the HONDA engine manual for more information.

3. **General.** Do not use oil and gasoline mixtures or contaminated gasoline. Avoid getting dirt, dust or water in the fuel tank.
4. **Tank Capacity.** 0.95 gallons (3.6 liter). Always leave at least 1/2 in. at the top of the tank for expansion.
5. **Shut off the engine before refueling.**
6. **After refueling, tighten the fuel tank cap firmly.**

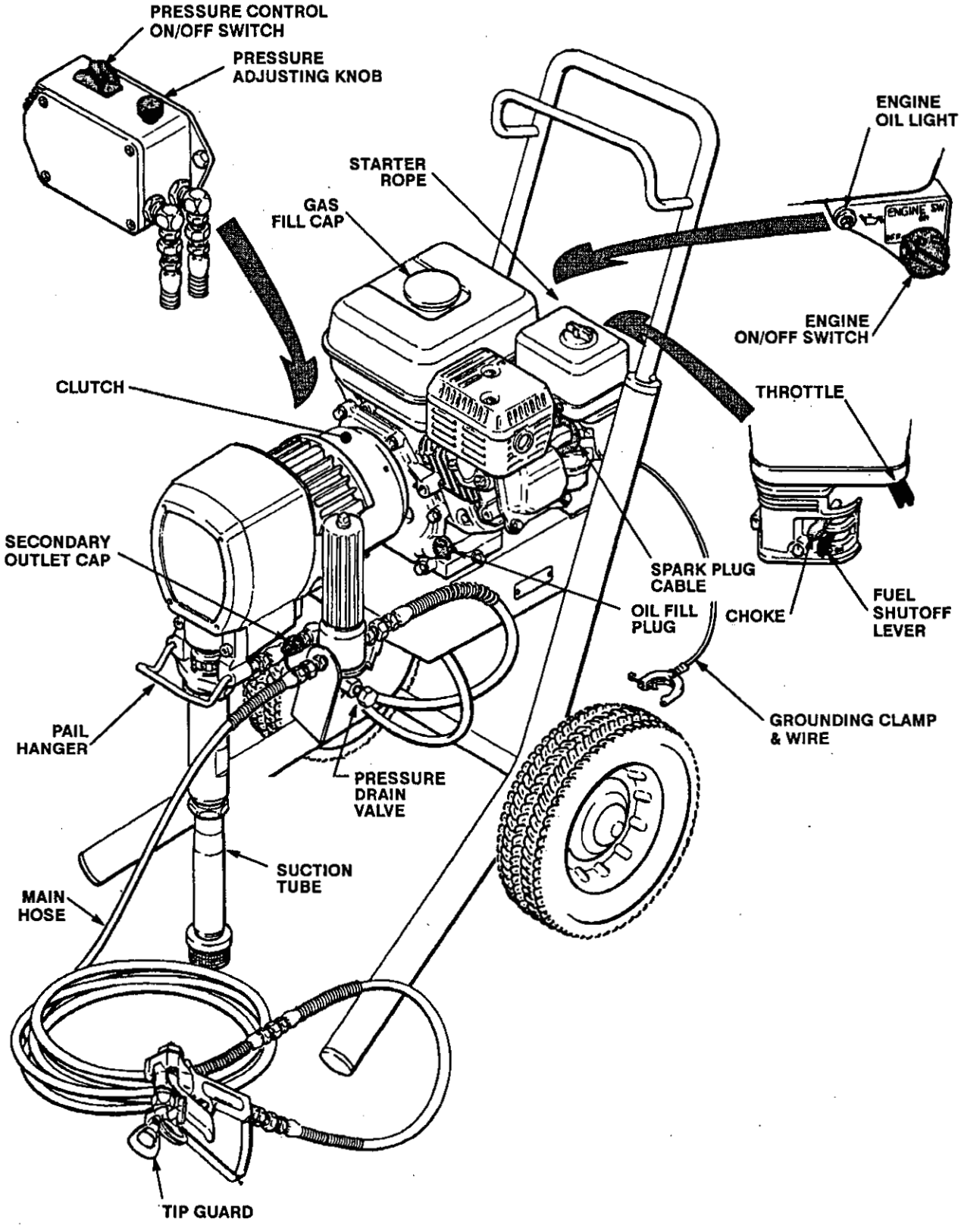

PRESSURE CONTROL ON/OFF SWITCH
PRESSURE ADJUSTING KNOB
ENGINE OIL LIGHT
STARTER ROPE
GAS FILL CAP
ENGINE ON/OFF SWITCH
CLUTCH
THROTTLE
SECONDARY OUTLET CAP
SPARK PLUG CABLE
OIL FILL PLUG
CHOKE
FUEL SHUTOFF LEVER
GROUNDING CLAMP & WIRE
PAIL HANGER
PRESSURE DRAIN VALVE
SUCTION TUBE
MAIN HOSE
TIP GUARD

Fig 13-1

FLUSHING GUIDELINES

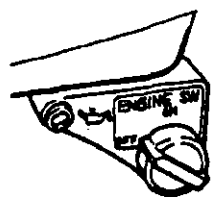
WARNING

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.

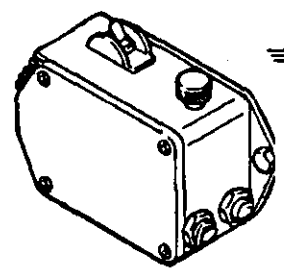
1. Engage the gun safety latch.
2. Turn the ON/OFF switch to OFF.
3. Flip the pressure control switch to OFF.
4. Disengage the gun safety latch. Hold a metal part of the gun firmly to the side of a grounded metal pail, and trigger the gun to relieve pressure.
5. Engage the gun safety latch.
6. Open the pressure drain valve, having a container ready to catch the drainage. Leave the valve open until you are ready to spray again.
7. Disconnect the spark plug cable.

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.

1,4,5

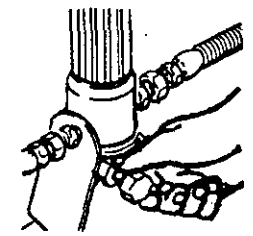


2



3

4



6

When To Flush

1. **New Sprayer.** Your new GM5000 sprayer was factory tested in lightweight oil,which was left in to protect the pump parts.

   Before using water-base paint, flush with mineral spirits, followed by a soapy water flush, and then a clean water flush.

   Before using oil-base paint, flush with mineral spirits, only.

2. **Changing Colors.** Flush with a compatible solvent such as mineral spirits or water.

3. **Changing from water-base to oil-base paint.** Flush with warm, soapy water, then mineral spirits.

4. **Changing from oil-base to water-base paint.** Flush with mineral spirits, followed by warm, soapy water, and then a clean water flush.

5. **Storage.**
   Water base paint: flush with water, then mineral spirits and leave the pump, hose and gun filled with mineral spirit. Shut off the sprayer, remove the spark plug cable, and open the pressure drain valve to relieve pressure. Leave the drain valve open.

CAUTION

NEVER leave water in the sprayer if there is the slightest change it could freeze. Push the water out with mineral spirits. Water left to freeze in the pressure control tube prevents the sprayer from being started, and causes serious damage to the pressure control.

6. **Startup after storage.**

   Before using water-base paint, flush out the mineral spirits with soapy water, and then with clean water.

   When using oil-based paint, flush out the mineral spirits with the paint to be sprayed.

Continued on page 16

TROUBLESHOOTING GUIDE

WARNING

Pressure Relief Procedure
To reduce the risk of serious bodily injury, including fluid injection, splashing in the eyes or on the skin, or injury from moving parts, always follow this procedure when you shut off the sprayer, when checking, adjusting or cleaning the system, and when changing spray tips.

1. Engage the gun safety latch.
2. Turn the engine stop lever to OFF.
3. Flip the pressure control switch to OFF.
4. Disengage the gun safety latch. Hold a metal part of the gun firmly to the side of a grounded metal pail, and trigger the gun.
5. Engage the gun safety latch.
6. Open the fluid pressure drain valve and leave it open until you start the sprayer again.
7. Disconnect the spark plug.

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

Check everything in the chart before disassembling the sprayer.

PROBLEM	CAUSE	SOLUTION
Engine/sprayer won't start	Engine switch not on	Turn on.
	Out of gas	Replenish
	Engine oil level low	Try starting engine. If light on rear of engine glows, replenish oil.
	Spark plug cable disconnected or spark plug damaged	Connect cable on top of engine or replace spark plug.
	Water frozen in pressure control	Return pressure control to authorized Graco dealer for repair.
Engine won't "pull over"	Oil seepage into combustion chamber	Remove spark plug. Pull starter rope 3 or 4 times. Clean and replace plug. Try to start. Keep sprayer upright to avoid oil seepage.
Engine operates, but displacement pump doesn't	Pressure control switch turned OFF	Turn on.
	Pressure setting too low	Increase pressure.
	Displacement pump outlet filter dirty	Clean filter.
	Tip or tip filter clogged	Clean tip or tip filter.
	Displacement pump rod seized by dry paint	Service pump. See 307-806.
	Connecting rod worn or damaged	Replace. See page 22.
	Drive housing worn or damaged	Replace. See page 24.
	Electrical power not energizing field	Check wiring connections. See page 20. With pressure control switch ON and pressure turned to MAXIMUM, use a test light to check continuity across black and white wires from pressure control. Have pressure control check by authorized Graco dealer.
	Clutch worn or damaged	Service. See page 28.
	Pinion assembly worn or damaged	Service. See page 25.

PRESSURE CONTROL REPLACEMENT

WARNING

To reduce the risk of serious bodily injury, including fluid injection or splashing in the eyes or on the skin, or injury from moving parts, always follow the **Pressure Relief Procedure Warning** on page 17 before checking, adjusting, cleaning or shutting off the sprayer. *Disconnect the spark plug!*

1. Disconnect both hoses at the pressure control (63), holding the hex of the nipple (311) firmly with a wrench to prevent turning the elbow. Take note of the original location of each hose to be sure you reassemble them correctly at the end of this procedure. See Fig 19-1.

CAUTION

DO NOT allow the elbow (312) to turn when removing or connecting the hoses. Turning the elbows can damage the sensitive bourdon tube.

2. Working under the engine mounting plate of the cart, disconnect the red, black and white wires. Then remove the three nuts (61) and lockwashers (9) from the capscrews (62), which hold the pressure control bracket (67) to the cart. Remove the pressure control. See Fig 19-2.
3. Remove the pressure control cover and screws (76, 64). Remove the four screws (65) holding the bracket (67) to the pressure control. See Fig 19-1.
4. Remove the wire clamp (97) from the pressure control wires.
5. Disconnect the wires from the rectifier (307). Remove the screw (314), nut (306) and lockwasher (305). See Fig 20-1.
6. Unscrew the connector (315) from the control box, pulling the wires out with it.
7. Use a wrench to hold the hex of the adapters (A) while removing the elbows (312).
8. Remove the screw (310) and lockwashers (305) from the ground wire (308).
9. Reassemble in the reverse order. Be sure to reinstall the wire clamp on the new pressure control wires. Fasten both clamps to the cart with the same screws, lockwashers, and nuts (62, 9, 61) which hold the bracket (67) to the cart.
10. Perform the **Pressure Control Calibration** procedure on pages 20 and 21 before regular operation of the sprayer.

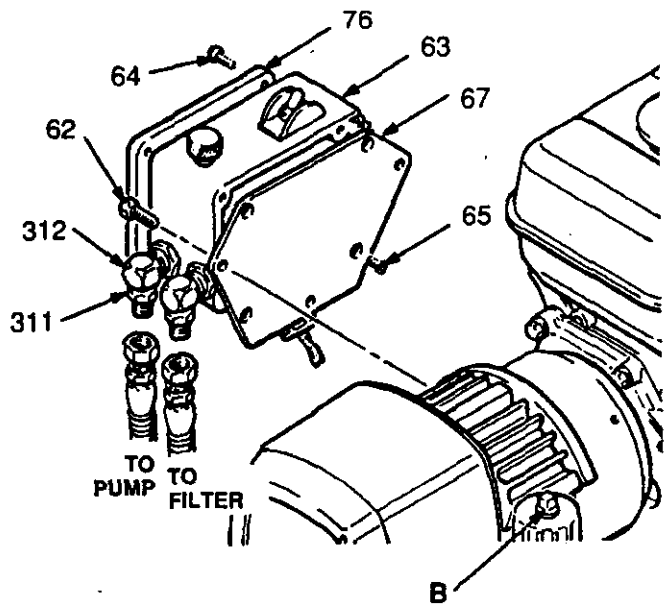
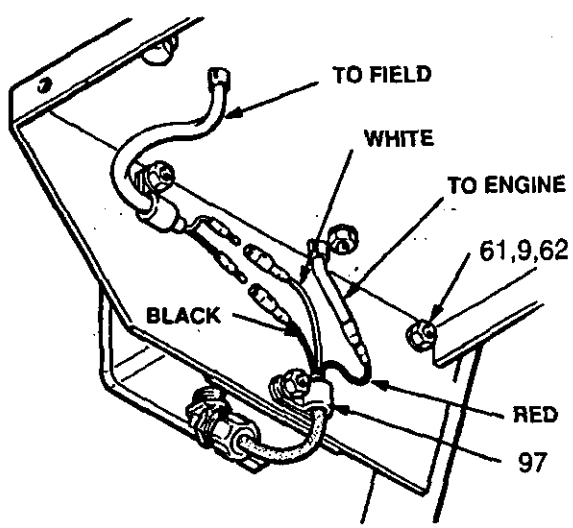


Fig 19-1



VIEW FROM UNDER ENGINE MOUNTING

Fig 19-2

PRESSURE CONTROL CALIBRATION

1. Follow the **Pressure Relief Procedure Warning** on page 17.

2. Connect the new 50 foot (15.2 m) spray hose to the sprayer outlet. On the other end of the hose, install the gun. Install the new spray tip (0.025 to 0.029 size) and tip guard on the gun. Install the fluid-filled pressure gauge in the top port (**B** – See Fig 19-1) of the fluid filter. Remove the pressure control cover.

3. With the gun safety latch engaged, start the engine (only). Use of 3/8" ignition wrench to turn the pressure adjusting nut (E) ***clockwise*** two full turns. See Fig 21-1. Turn the pressure control knob (D) to the minimum setting. Turn the sprayer switch ON.

   THE DISPLACEMENT PUMP SHOULD NOT CYCLE.

   If it does cycle, shut the sprayer switch OFF, disengage the gun safety latch, trigger the gun into a grounded metal waste container until pressure is relieved, and engage the gun safety latch again. Turn the sprayer on again to be sure *THE PUMP DOES NOT CYCLE.*

4. Increase the throttle setting and then the pressure control setting to the maximum while triggering the gun. Keep the gun triggered while observing the pressure at which the pump stalls, which should be approximately 3000 psi (210 bar).

NOTE: When the gun trigger is released, it is normal for the stall pressure to be 3100 to 3400 psi (217 to 238 bar) during this procedure.

If the pressure is not 3000 psi (210 bar), turn the adjusting nut (E) ***clockwise*** to reduce pressure and ***counterclockwise*** to increase pressure, to obtain exactly 3000 psi (210 bar) pressure.

Then note the pressure to which the gauge drops before the pressure begins to rise again.

If the pressure drops to below 2600 psi (182 bar), turn the differential wheel (A) ***clockwise*** to raise the pressure to 2600 psi (182 bar).

If the pressure stops dropping before 2600 psi (182 bar), turn the differential wheel (A) ***counterclockwise*** to decrease the pressure.

5. Follow the **Pressure Relief Procedure Warning** on page 17. Install the pressure control cover. Flush the water out with mineral spirits, relieve pressure again, and then **remove all the test equipment.**

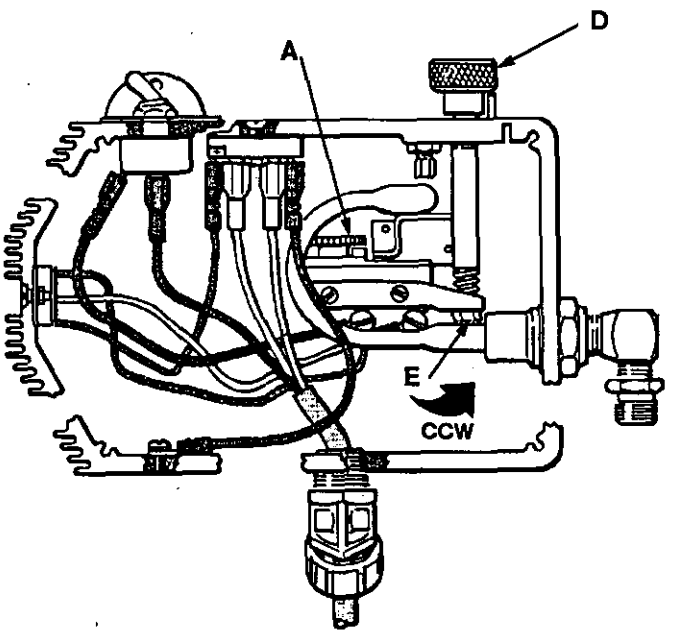


Fig 21-1

BEARING HOUSING & CONNECTING ROD

NOTE: Refer to Fig 23-1 for Step 14.

14. Screw the displacement pump about 3/4 of the way into the bearing housing (21). Hold the pin (25) up the pin hole in the connecting rod assembly (22) and continue screwing in the pump until the pin slides easily into the hole. Back off the pump until the top threads of the pump cylinder are flush with the face of the bearing housing and the outlet nipple (92) faces back. Push the retaining spring (26) into the groove all the way around the connecting rod. Tighten the locknut (27) to 65 to 75 ft-lb (90 to 100 N.m), using a 2-1/4 in. open end wrench and a light hammer.

WARNING

Be sure the retaining spring (26) is firmly in the groove, all the way around, to prevent the pin (25) from working loose due to vibration.

If the pin works loose, it or other parts could break off due to the force of the pump action. These parts could be projected through the air and result in serious bodily injury or property damage, including damage to the pump connecting rod and bearing housing.

15. Install the front cover and screws (23, 68). Connect the suction tube (30) and pump outlet hose (59). See Fig 22-1.

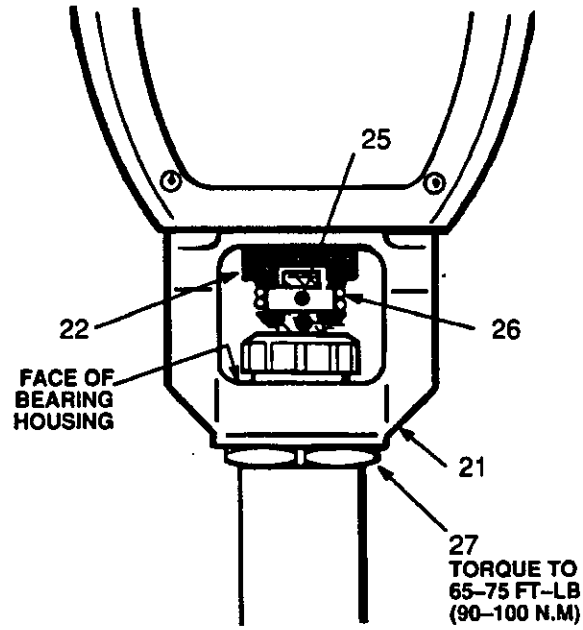


Fig 23-1

PINION, CLUTCH, CLAMP, FIELD & ENGINE

Disassembling these parts can start from the pinion housing, or from the clutch if no pinion service is needed.

If starting from the pinion housing, first follow Steps 1 to 6 of **DRIVE HOUSING**, on page 24, and then continue with the procedure below.

If starting from the clutch, see page 28.

PINION, CLUTCH, CLAMP, FIELD & ENGINE

Pinion Housing

WARNING

To reduce the risk of serious bodily injury, including fluid injection or splashing in the eyes or on the skin, or injury from moving parts, always follow the **Pressure Relief Procedure Warning** on page 17 before checking, adjusting, cleaning or shutting off the sprayer. *Disconnect the spark plug!*

NOTE: Refer to Fig 25-1 for Steps 1 to 3.

1. Remove the two bottom screws (29) and lockwashers (11) first, and then remove the three screws (12) and lockwashers (11) holding the pinion housing (19) to the clutch housing (2).
2. Pull the pinion housing away from the clutch housing. The armature (4a) will come with it.
3. Pull the armature (4a) off the hub (19j - *see Fig 27-1)* of the pinion housing.

CAUTION

Do not lose the thrust ball (19d). Refer to the **CAUTION** on page 24 for more information.

NOTE: To disassemble the pinion, go to page 26. To disassemble more of the sprayer, go to page 28. To reassemble the sprayer from this point, skip ahead to **Reassembly**, Step 7.

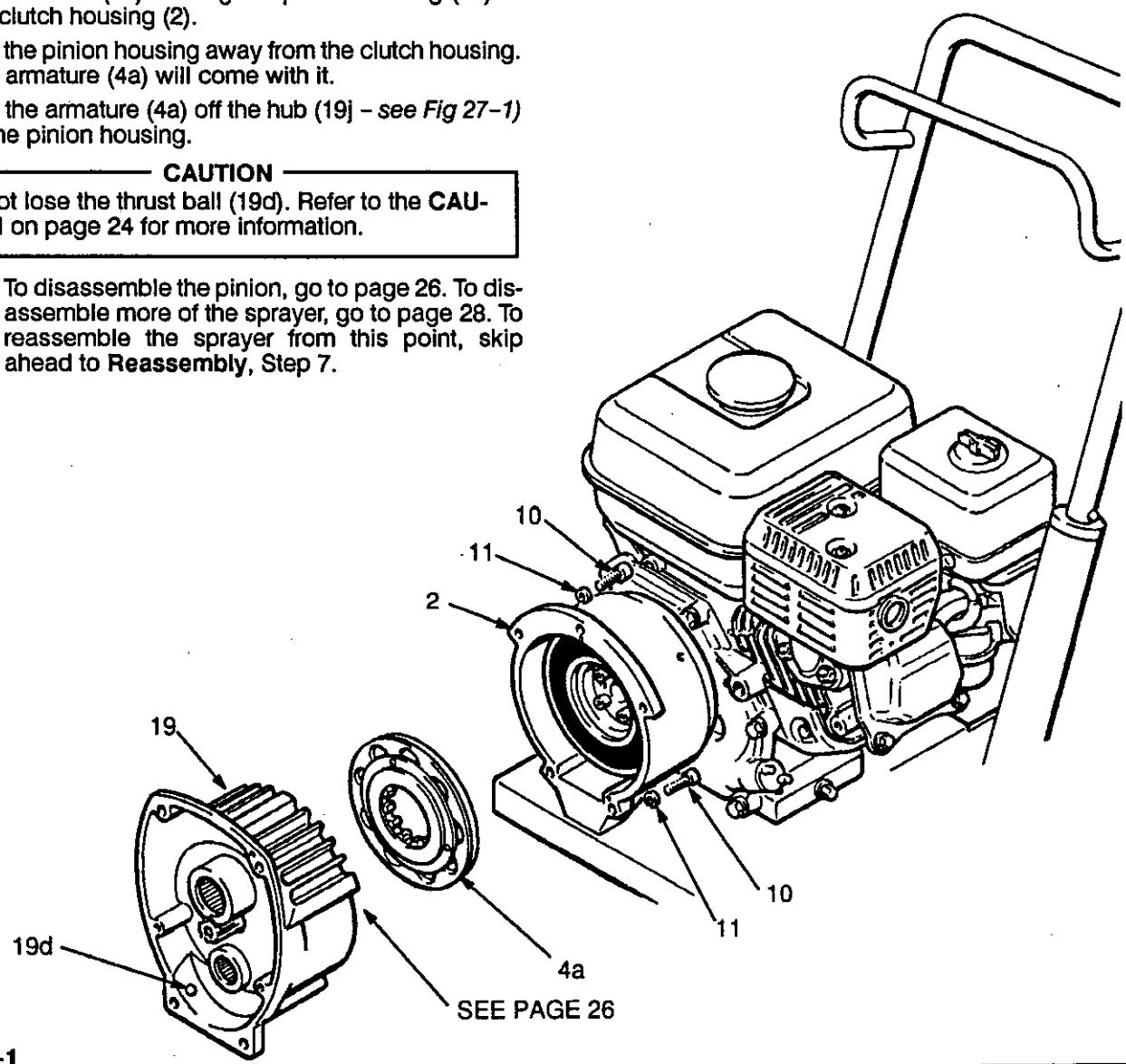


Fig 25-1

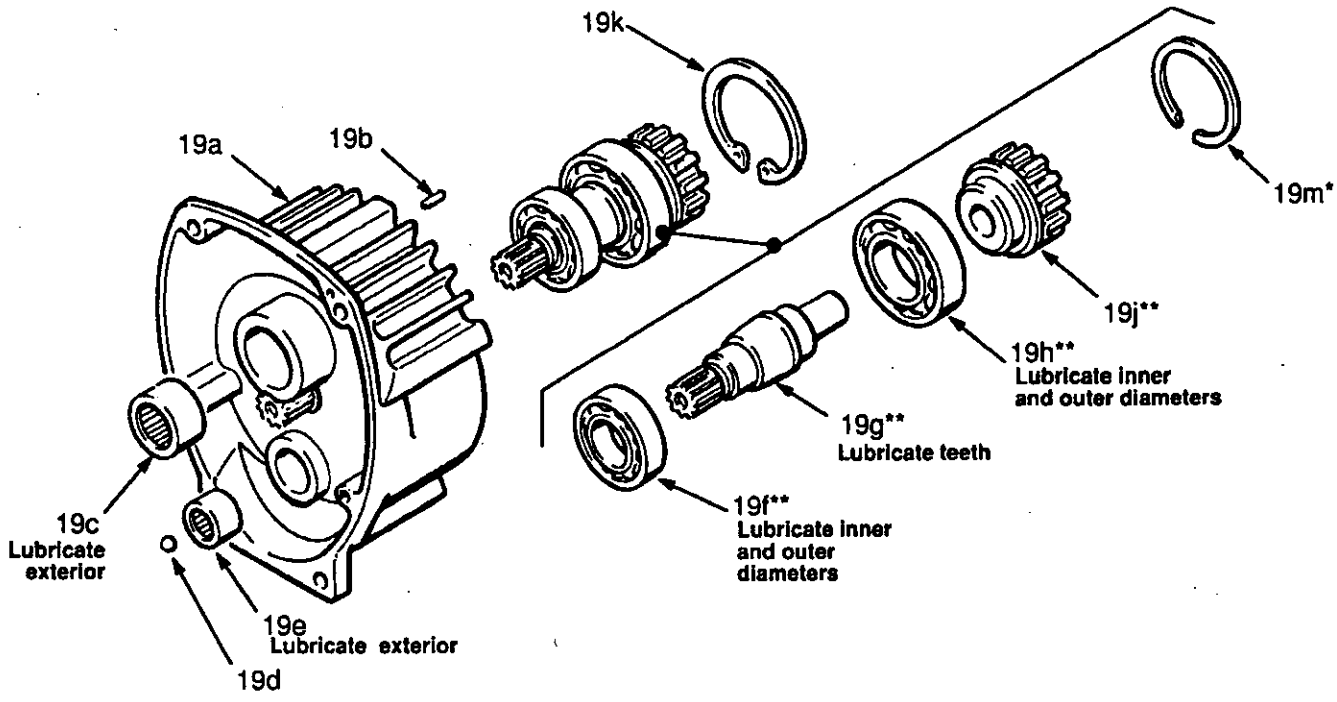
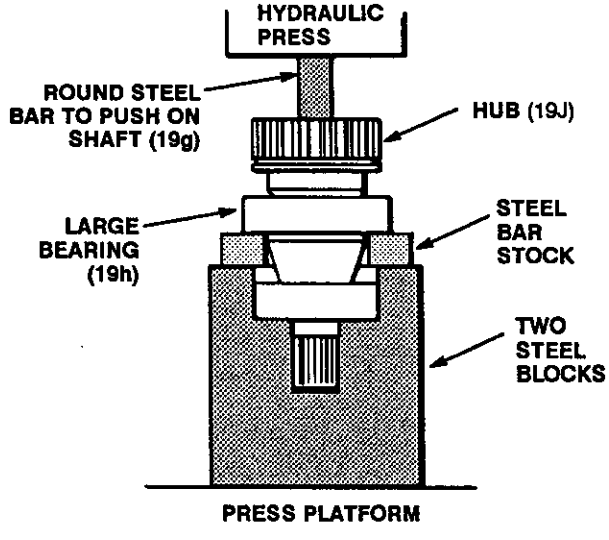


Fig 27-1



PLACEMENT OF STEEL BLOCKS WHEN
PRESSING OFF LARGE BEARING (19h)

Fig 27-2

NOTE: The engine must be removed before the Field, Clamp or Clutch Housing can be removed.

1. Working under the mounting plate (A) of the cart, remove the screw (15), lockwasher (80) and washer (99) which hold the clutch housing (2) to the cart. See Fig 29-1.
2. Still working under the mounting plate, remove the two nuts (61) and lockwashers (9), and then pull the screws (14) out of the base of the engine. Disconnect the red wire from the engine lead (B). Disconnect the black and white wires from the field. Pull the wires carefully through the grommets (66) before removing the engine. See Fig 29-1 and 29-2.
3. Lift the engine carefully and place it on a work bench.
4. Remove the **Field and Wiring Harness, Clamp** and **Clutch Housing**, as instructed on pages 30 and 31.
5. Skip ahead to **Reassembly,** page 32, Step 1.

NOTE: All service to the engine must be performed by an authorized HONDA dealer.

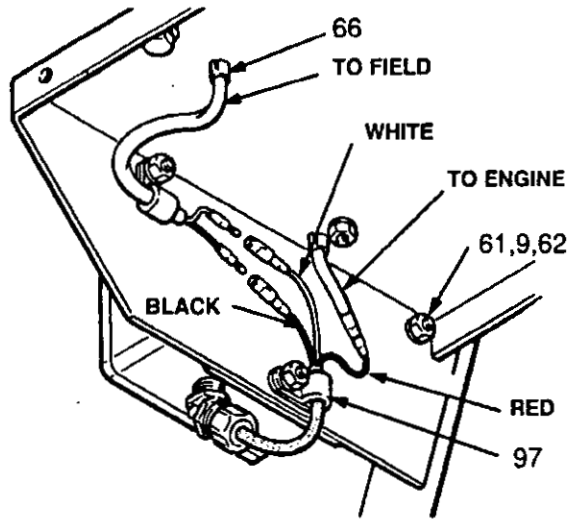


Fig 29-2

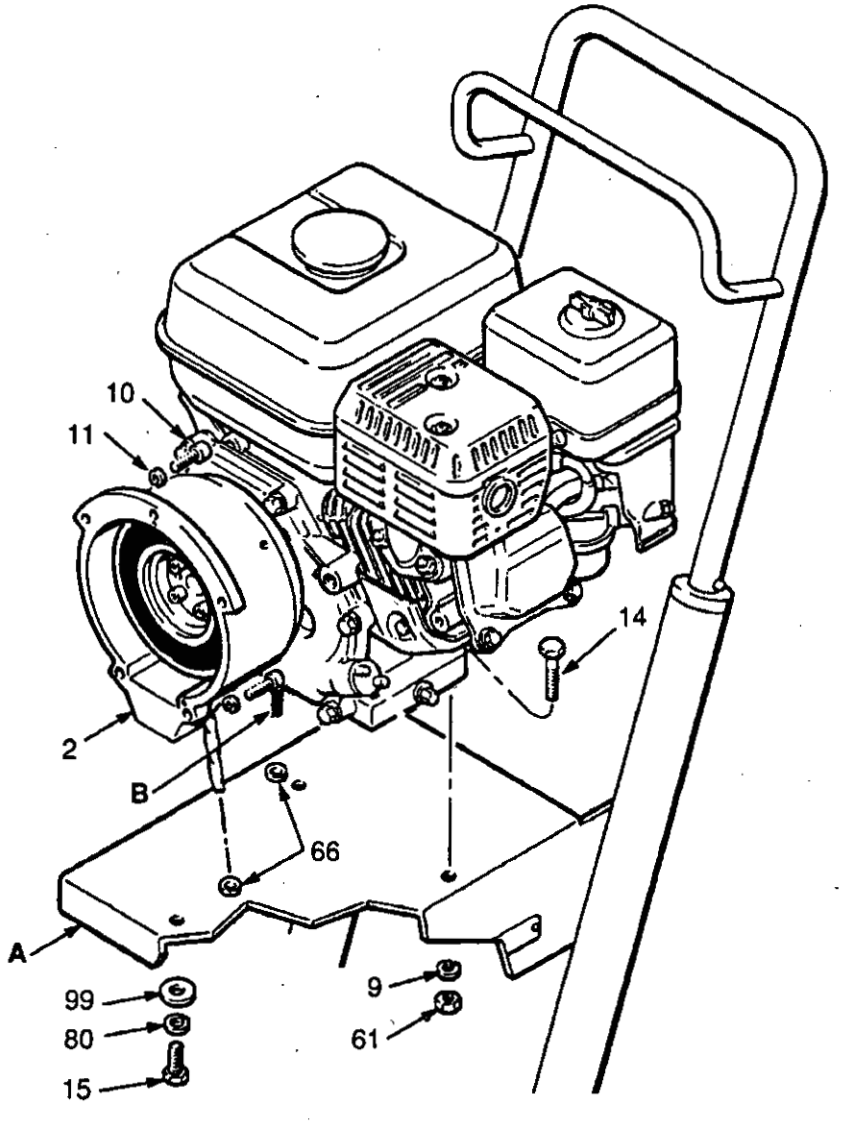


Fig 29-1

CLAMP

NOTE: A standard steering wheel puller is required to remove the clamp. Two 1/4-28 x 3 or 4 in. long screws are also needed.

NOTE: Refer to Fig 31-1.

1. Loosen the two screws (16) on the clamp (3), working through the slot at the bottom of the clutch housing (2).
2. Install two screws (B) of the tool (A) in two of the threaded holes in the clamp (3). Tighten the screws (C) until the clamp comes off.
3. Skip ahead to **Reassembly,** page 32, Step 3, or continue to the right.

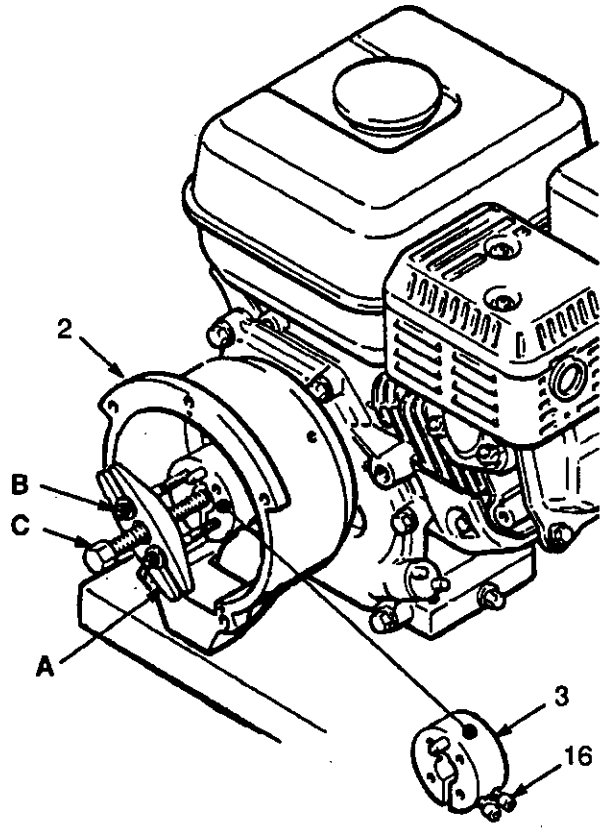


Fig 31-1

CLUTCH HOUSING

NOTE: Refer to Fig 31-1.

1. Remove the four capscrews (8) and lockwashers (9) which hold the clutch housing (2) to the engine.
2. Remove the capscrew (15), lockwasher (80) and washer (99) from beneath the mounting plate (D).
3. Remove the engine key (13).
4. Pull off the clutch housing (2).
5. Skip ahead to **Reassembly,** page 32, Step 1, or continue on page 32.

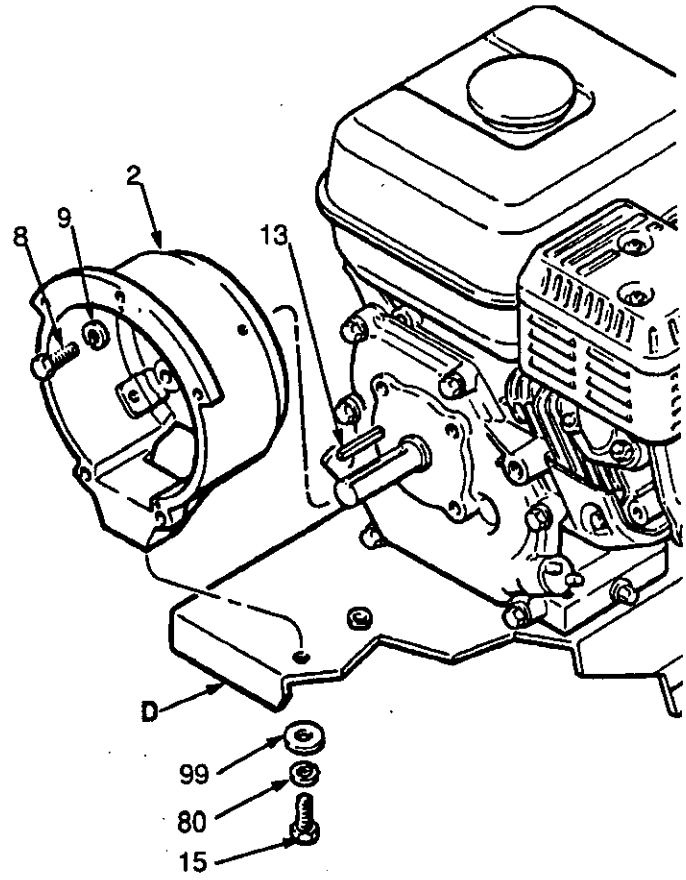


Fig 31-2

REASSEMBLY

5. Place the **engine (1)** assembly on the cart. Align the mounting holes. Carefully guide the engine wire (D) and wiring harness (96) from the field, through the appropriate grommets (66) in the mounting plate (E). Install the capscrews (14), lockwashers (9) and nuts (61). Install the capscrews (15), lockwashers (80) and washer (99) from under the engine mounting plate to the clutch (2). Connect the engine wire (A) to the red wire, and connect the black and white wires as shown in the Detail drawing in Fig 33-1.

6. Be sure the face of the **rotor (4b)** and the field is free of all oil and contaminants. Install the rotor, lockwashers (11) and capscrews (16). Torque the capscrews to 6.5 to 7.5 ft-lb (8.8 to 10 N.m). See Fig 33-1.

   After installing the rotor (4b), pull the engine recoil rope to assure the engine turns freely, and there is no friction between the rotor (4b) and the field (6). If there is friction, recheck the dimensions of the clamp as explained in Step 3, page 32.

7. Be sure the face of the **armature (4a)** is clean. Assemble the armature to the shaft in the pinion housing (19). A retaining ring located within the armature makes it difficult to assemble these parts. Follow this procedure for the best results. First, engage a few splines of both parts. While they are engaged, use a screwdriver to gently push the retaining ring into the armature, and finish engaging the splines. Push the armature onto the shaft until it contacts the ring (19m). See Fig 33-1.

8. Assemble the **pinion housing (19)** to the clutch housing, using the capscrews (10) and lockwashers (11). See Fig 33-1.

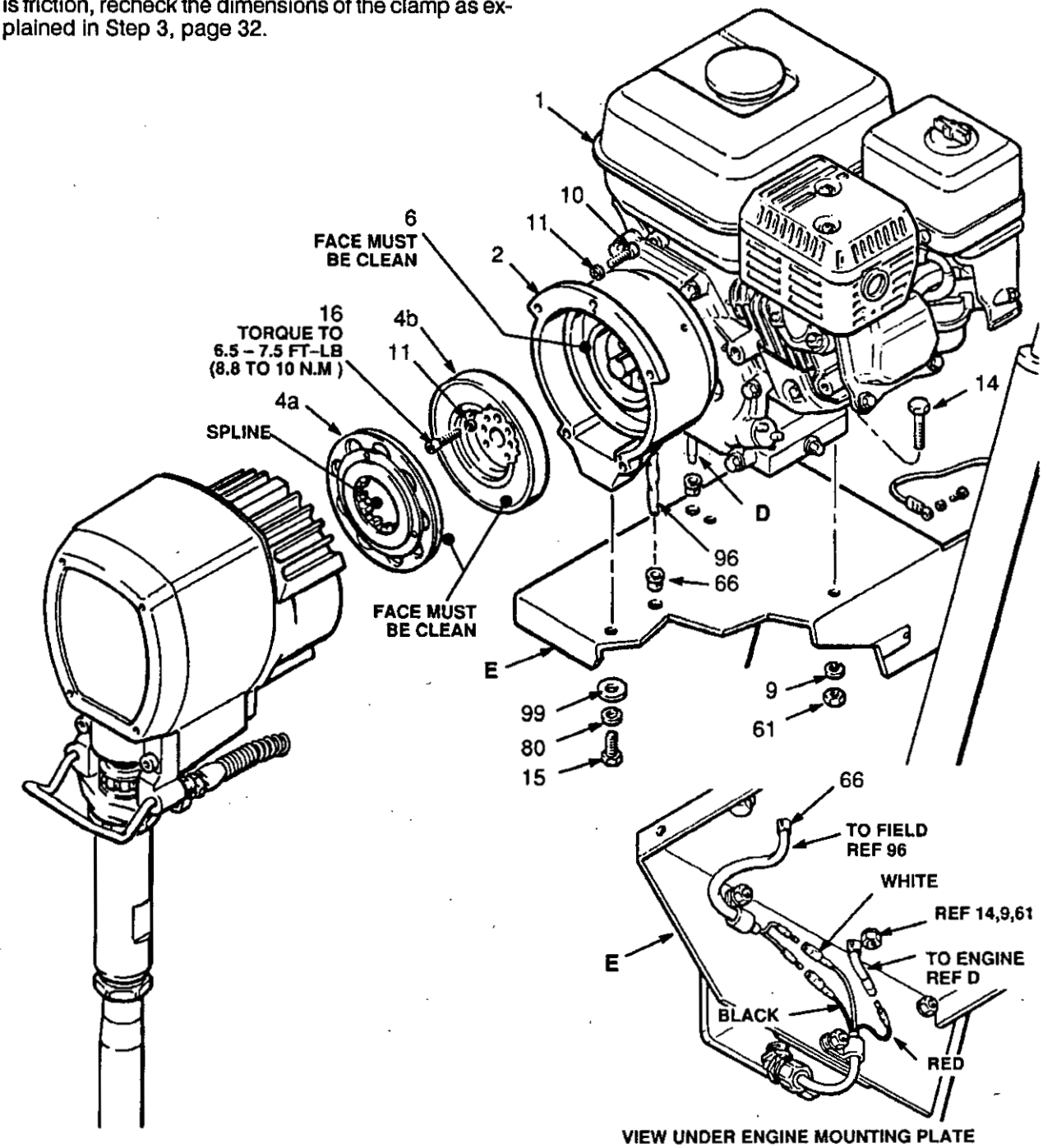


Fig 33-1

PARTS LIST - BASIC SPRAYER

REF NO.	PART NO.	DESCRIPTION	QTY
1	108-802	ENGINE, gasoline	1
2	183-397	HOUSING, clutch	1
3	183-398	CLAMP, mounting, rotor	1
4	221-031	CLUTCH ASSEMBLY Includes items 4a and 4b	1
4a		.ARMATURE	1
4b		.ROTOR	1
6	183-400	FIELD	1
7	108-800	PIN, dowel; 5/16 x 1"	1
8	108-842	CAPSCREW, hex hd; 5/16-24 UNF-2a x 0.75"	4
9	100-214	LOCKWASHER, 5/16"	9
10	100-644	CAPSCREW, sch; 1/4-20 UNC-3a x 0.75"	5
11	105-510	LOCKWASHER, spring, 1/4"	17
12	108-801	SETSCREW, 1/4"	4
13	183-401	KEY, parallel, 3/16" sq x 7/8"	1
14	102-547	CAPSCREW, hex hd; 5/16-18 UNC-2a x 0.875"	2
15	100-469	CAPSCREW, hex hd; 3/8-16 UNC-2a x 0.75"	1
16	108-803	CAPSCREW, hex sch; 1/4-28 x 1.0"	6
18	220-919	GEAR REDUCER	1
19	220-920	PINION See parts on page 36	1
20	220-879	DRIVE HOUSING Includes items 20a to 20d	1
20a	106-227	.WASHER, bronze	1
20b	183-209	.WASHER, silver	1
20c	100-069	.BALL, sst	1
20d	107-329	.TUBE, grease	1
21	220-639	BEARING HOUSING	1
22	220-640	CONNECTING ROD	1
23	183-168	COVER, housing	1
24	108-849	CAPSCREW, sch; 1/4-20 UNC-3a x 3"	2
25	183-210	PIN, straight, 3/8 x 1.125"	1
26	183-169	SPRING, retaining	1
27	183-170	NUT, hex; 3/8-16 UNC-2b	1
28	220-872	DISPLACEMENT PUMP See 307-806 for parts See ACCESSORIES for repair kit	1
30	183-423	TUBE, intake	1
31	181-072	SUCTION TUBE	1
35	220-917	CART FRAME	1
36	220-918	CART HANDLE & HOSE RACK	1
37	183-350	WASHER, plain	2
38	108-794	PLUG, tubing	2
39	108-795	SCREW, mach, pnh; 10-24 x 3/8"	4
40	183-391	SLEEVE	2
41	179-811	WHEEL, semi-pneumatic	2
42	101-242	RING, retaining	2
43	104-811	HUBCAP	2
44	154-636	WASHER, 5/8" size, 16 ga	2
45	179-777	BUTTON, snap	2
46	108-068	PIN, spring, straight; 3/16" x 1.25"	2
47	222-011	GROUNDING CLAMP & WIRE	1
49	100-078	SCREW, mach; slotted pan hd; No. 8 x 5/16"	1
50	157-021	LOCKWASHER, Internal, No. 8	1
51	214-570	FLUID FILTER See 307-253 for parts	1
53	221-077	VALVE, pressure drain	1
54	178-034	TAG, warning	1
55	100-040	PLUG, pipe, sq hd; 3/8 npt	1
56	220-285	CAP	1
57	162-453	NIPPLE, hex, 1/4 npsm x 1/4 npsm x 1/4 nps, 1-3/16" long	2
58	100-840	ELBOW, street, 1/4-18 (m x f)	1
59	220-849	HOSE, 3/8" ID, cpld 3/8 npsm (fbe); 29" (737 mm); spring guard both ends	2
61	100-188	NUT, heavy hex; 5/16-18 UNC-2a	5
62	101-344	CAPSCREW, hex hd; 5/16-18 UNC-2a	3
63	222-369	PRESSURE CONTROL ASSEMBLY See page 37 for parts	1
64	106-075	SCREW, mach, ovhd, thd frmg; No. 6-24 x 1/2" Type "C"	4
66	108-805	BUSHING, Snap	2
67	183-392	BRACKET, mounting	1
68	108-850	SCREW, mach, filh; 8-32 UNC-2a x 1.25"	4
69	183-414	LABEL, identification	1
71	183-037	HANGER, pail	1
72	108-662	NUT, retainer	2
73	107-210	CAPSCREW, sch; 3/8-16 UNC-3a x 1-1/2"	4
74	106-115	LOCKWASHER, spring, 3/8"	4
76	179-959	COVER, pressure control	1
77	183-415	LABEL, identification, outside cover	1
78	100-270	CAPSCREW, hex hd; 1/4-20 x 5/8"	2
79	104-123	LOCKWASHER, spring, 1/4"	2
86	206-994	THROAT SEAL LIQUID, 8 oz (0.27 liter)	1
87	162-485	NIPPLE, pipe; 3/8 npt(m) 3/8 npsm(m)	1
92	183-461	NIPPLE, 3/8-18 npsm x 1/4-18 npt	1
96	220-980	HARNESS, wiring	1
97	108-868	CLAMP, wire	2
98	108-860	SCREW, mach, bdgh, 8-32 x 0.25"	2
99	108-851	WASHER, plain, type B, 3/8"	1
100	177-762*	LABEL, warning	1
101	181-867*	LABEL, warning	1
102	179-885*	LABEL, warning	1

**Extra warning labels are available free.*

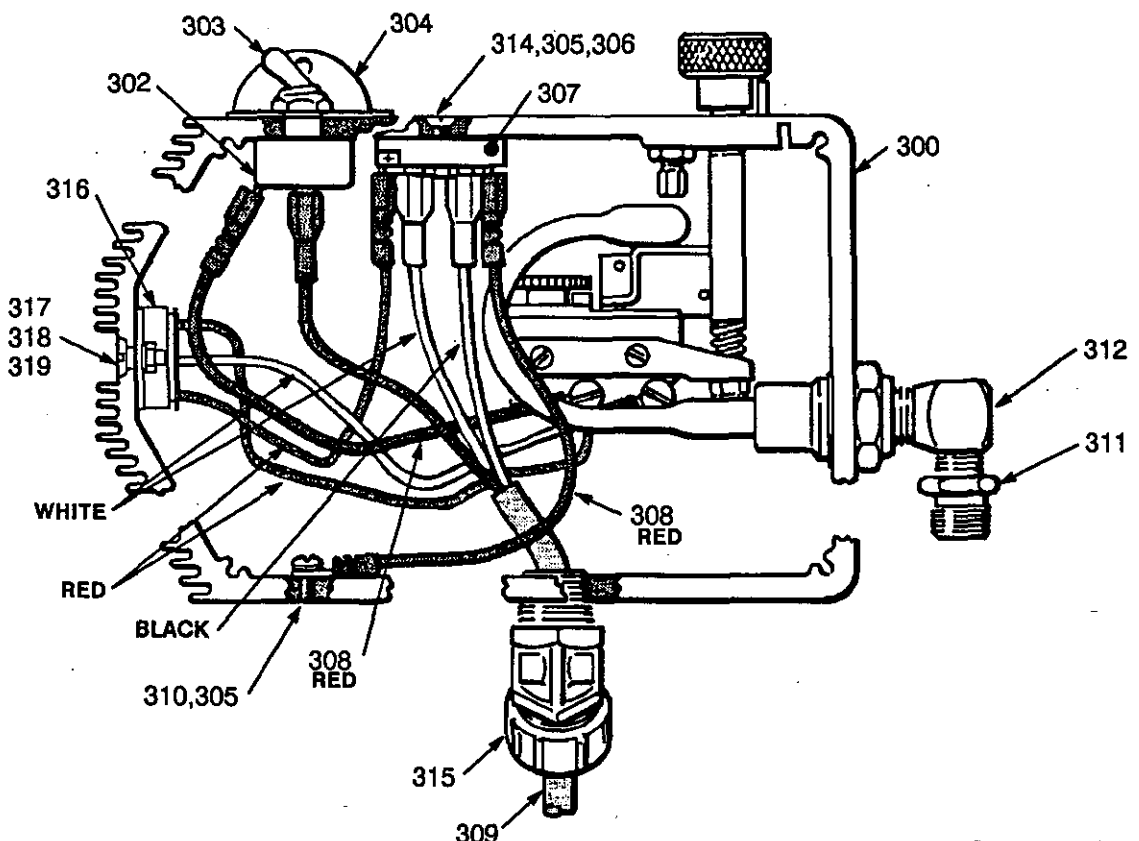
PARTS LIST & DRAWING - PRESSURE CONTROL

BARE PRESSURE CONTROL ASSSEMBLY 222-369

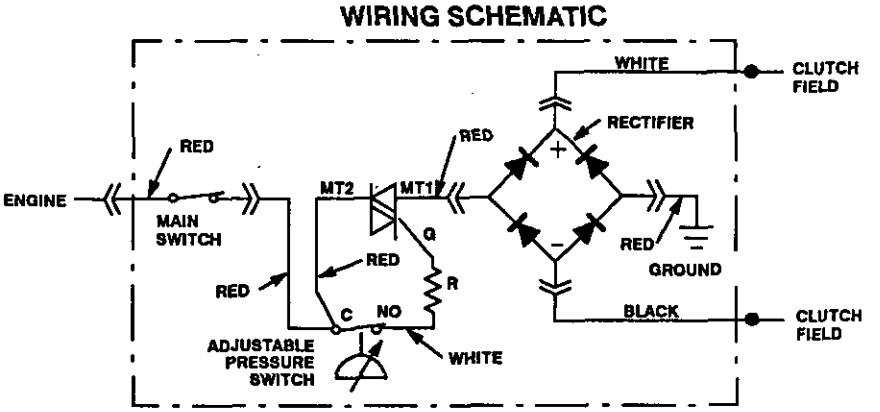
Includes items 300,301, 305, 306, 307, 314, 316-319
All other items are available for purchase separately.

REF NO.	PART NO.	DESCRIPTION	QTY
300	222-380	PRESSURE CONTROL Includes items 302 to 304	1
301	183-466*	LABEL, warning	1
302	105-679	ON/OFF SWITCH	1
303	105-659	BOOT, switch	1
304	107-255	GUARD, locking	1
305	157-021	LOCKWASHER, No. 8, internal	2
306	100-284	NUT, hex, msc 8-32 UNC-2a	1
307	108-219	RECTIFIER, bridge	1
308	220-979	CONDUCTOR, red	2
309	220-978	CONDUCTOR, red, white, black	3
310	100-035	SCREW, mach, slotted pan head; No. 8 x 5/16"	1
311	183-461	NIPPLE, hex; 3/8-18 npsm x 1/4-18	2
312	100-840	ELBOW, str, 1/4-18 npt (m x f)	2
314	108-783	SCREW, mach, frhd 8-32 UNC-2a x 0.812"	1
315	108-852	CONNECTOR, 45°	1
316	222-352	TRIAC ASSEMBLY	1
317	107-070	SCREW, flat head; csk hd	2
318	100-072	NUT, hex	2
319	103-181	LOCKWASHER	2

**Extra warning labels are available free.*



WIRING SCHEMATIC



TECHNICAL DATA

Engine	5 Horsepower, Honda
Maximum Working Pressure	3000 psi (210 bar)
Cycles/Gallon (liter)	200 (53)
Maximum Delivery	1.25 GPM (4.7 liter/min)
Fuel Tank Capacity	0.95 gallons (3.6 liter)
Maximum Tip Size	1 gun with 0.031 tip 2 guns with 0.021 tip
Inlet Paint Strainer	16 mesh (1190 micron) Stainless Steel screen, reusable
Outlet Paint Filter	60 mesh (250 micron) Stainless Steel screen, reusable
Pump Inlet Size	3/4 npt (m)
Fluid Outlet Size	1/4 npsm from fluid filter
Wetted Parts	
Displacement Pump	Carbon Steel, Polyurethane UHMW polyethylene, Delrin®, Leather
Filter	Aluminum, Carbon Steel, Stainless Steel

NOTE: For information on converting your sprayer to one that can safely pump fluids containing halogenated hydrocarbons, contact Graco Product Service, at 1-800-543-0339.

NOTE: Delrin® nt

DIMENSIONS

Model 220-040
Upright cart without hose or gun

Weight (dry, without packaging)	135 lb (61 Kg)
Height	31.6 in. (803 mm)
Length	30.5 in. (775 mm)
Width	22.5 in. (572 mm)

SERVICE INFORMATION

The pressure control has been changed. The new number is 222-369. See the parts list and drawing on page 37.