

INSTRUCTIONS-PARTS LIST



307-863

Rev. A

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

GM3500 SPRAYER

3000 psi (210 bar) *MAXIMUM WORKING PRESSURE*

Model 220-028, Series A

Lo-Boy Cart, Basic

Model 231-077

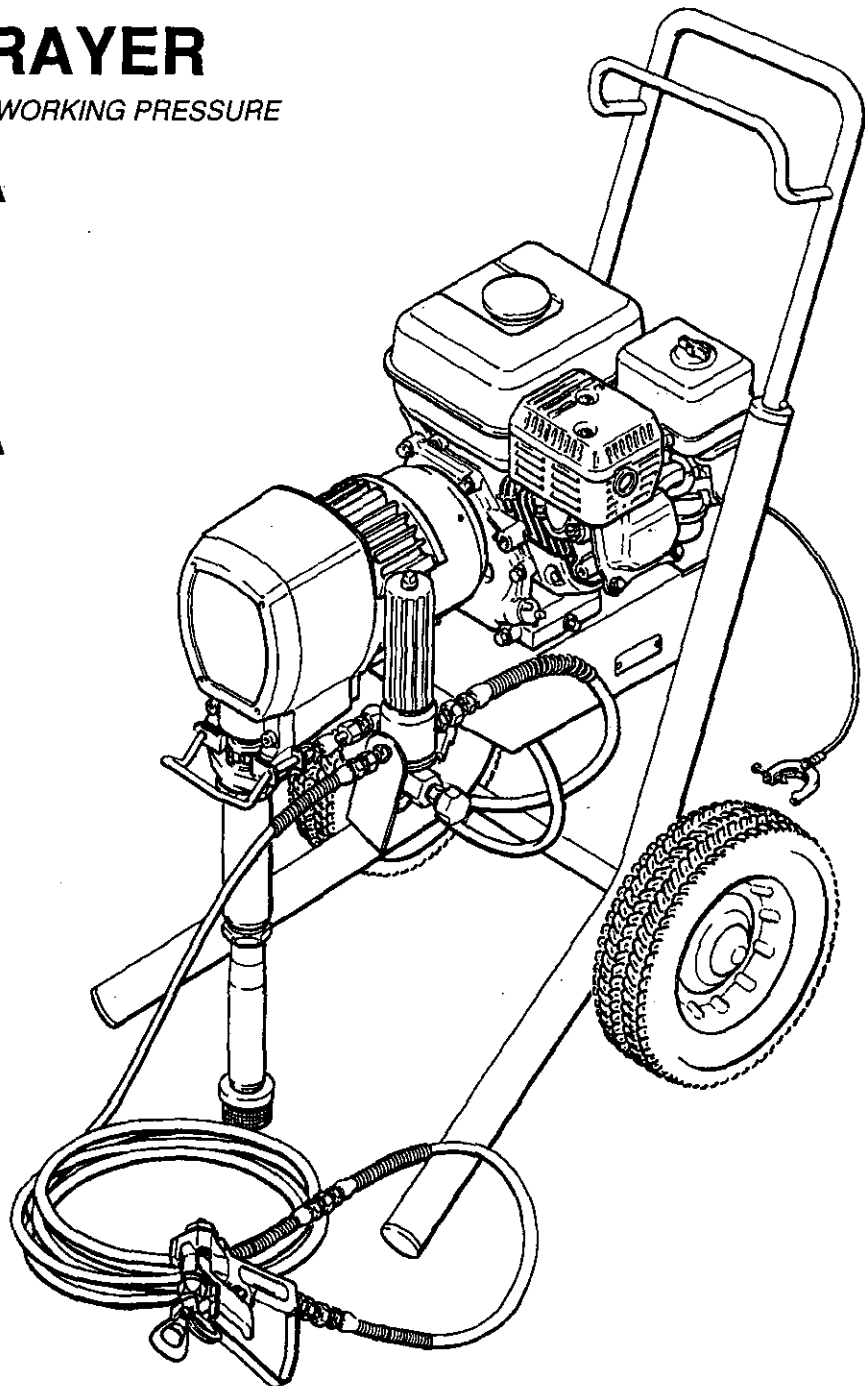
Lo-Boy Cart, Complete

Model 220-040, Series A

Upright Cart, Basic

Model 231-057

Upright Cart, Complete



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 42 for more information.

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INTRODUCTION

GM3500 BASIC COMPONENTS (Refer to Fig 3-1)

The GM3500 Sprayer functions and operates differently than other airless paint sprayers. Read this section to help you become familiar with the sprayer before operating it.

Pressure Control

The pressure control includes an ON/OFF switch for the sprayer, the pressure adjusting knob, and a pressure sensing device. The pressure control engages and disengages the clutch to control pressure.

Engine

The engine is a 3.5 horsepower, four stroke gasoline engine. Its function is to drive the displacement pump to supply paint. An adjustable throttle allows you to adjust engine speed for large or small orifice spray tips. When the oil level is too low, the engine shuts off automatically. If you try to start the engine without refilling the oil, a light illuminates to alert you to the problem and protect the engine from damage.

Clutch

The clutch is engaged by the electric power generated by the gasoline engine. The power is controlled by the pressure switch.

Drive Assembly

The permanently-greased drive assembly transfers power from the gas engine to the displacement pump.

Displacement Pump

The positive displacement, volume-balanced pump provides equal fluid delivery on both the up and down pump strokes. The pump has a wet-cup which, when filled with Graco Throat Seal Liquid, helps prevent damage to the throat packings and piston rod.

Fluid Filter

The fluid filter strains the paint to help avoid clogs in the hose and spray tip. The filter includes a reusable element and a pressure drain valve for relieving fluid pressure.

Hoses

The grounded, nylon spray hoses have spring guards on both ends. The 50 foot (15.2 m) hose has a 1/4 in. ID. The 3 foot (0.9 m), 3/16 in. ID whip hose allows flexible gun movement. The nylon hose material acts as a pulsation dampener to absorb pressure fluctuations.

Spray Gun & RAC IV DripLess Tip Guard

Graco high pressure spray guns have a trigger safety which prevents accidental triggering when the safety is engaged. See Fig 2-1. The Contractor gun provided with this sprayer also has a filter for final paint straining. The Graco SwitchTip™ uses high pressure fluid to remove clogs from the spray tip without removing it from the gun. The Reverse-A-Clean® IV DripLess™ tip guard is a safety feature which reduces the risk of fluid injection.

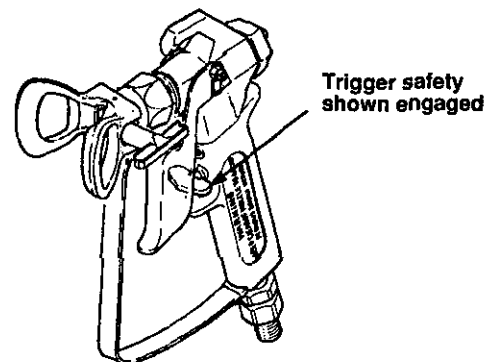


Fig 2-1

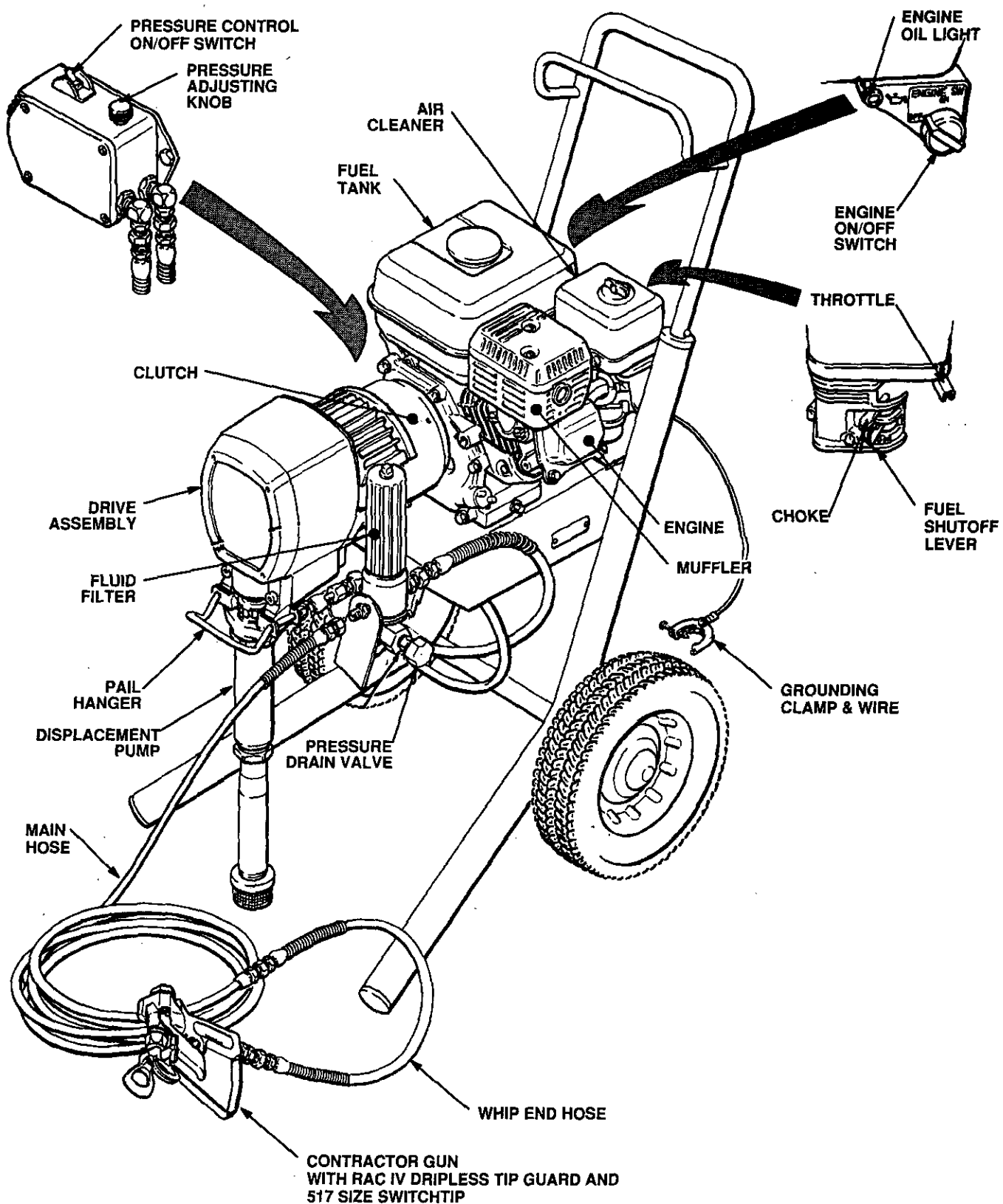


Fig 3-1

SAFETY WARNINGS

**HIGH PRESSURE SPRAY 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 Gun Safety Devices

Be sure all gun safety devices are operating properly before each use. Do not remove or modify any part of the gun; 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.

Diffuser

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

ALWAYS have the tip guard in place on the spray gun while spraying. The tip guard alerts you to the fluid injection hazard and helps 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.

Spray Tip Safety

Use extreme caution when cleaning or changing spray tips. If the spray tip clogs while spraying, engage the gun safety latch 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 is engaged.

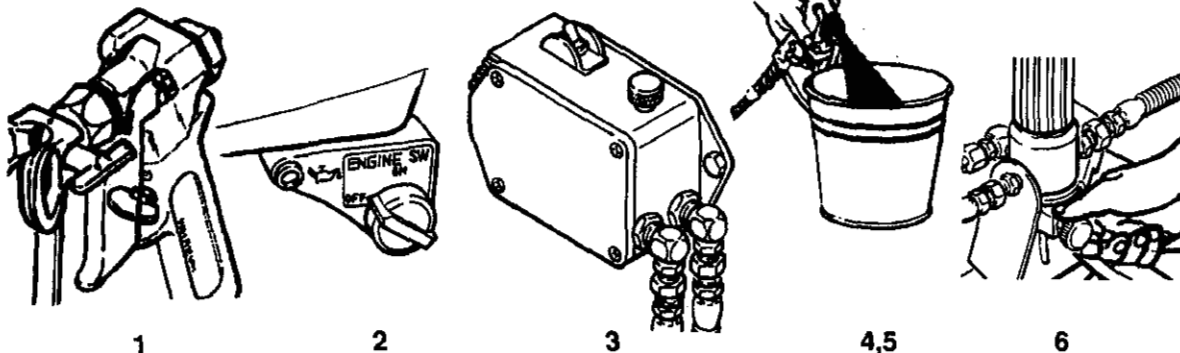
Pressure Relief Procedure

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 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, VERY SLOWLY loosen the tip guard retaining nut or hose end coupling and relieve pressure gradually, then loosen completely. Now clear the tip or hose.



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 that all spray equipment and accessories used are rated to withstand this pressure. **DO NOT** exceed the maximum working pressure of any component or accessory used in the system.

Fluid and Solvent Compatibility

BE SURE that all fluids and solvents used are chemically compatible with the wetted parts shown in the **TECHNICAL DATA** on page 42. 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 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.

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 11.

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 if inhaled.

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 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 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 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**.

2. *Fluid hoses*: use only grounded hoses with a maximum of 500 feet (150 m) combined hose length to ensure grounding continuity. See **Hose Grounding Continuity**.
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.

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.

AVERTISSEMENT

**La pulvérisation à haute pression peut causer des blessures très graves.
Réservé exclusivement à l'usage professionnel. Observer toutes les consignes de sécurité.
Bien lire et bien comprendre tous les manuels d'instructions avant d'utiliser le matériel.**

RISQUES D'INJECTION

Consignes générales de sécurité

Cet appareil produit un fluide à très haute pression. Le fluide pulvérisé par le pistolet ou le fluide sous pression provenant de fuites ou de ruptures peut pénétrer sous la peau ou à l'intérieur du corps et entraîner des blessures très graves, voir même une amputation. Même sans être sous pression, le fluide éclaboussant ou entrant dans les yeux peut aussi entraîner des blessures graves.

NE JAMAIS pointer le pistolet vers quelqu'un ou vers une partie quelconque du corps. NE JAMAIS mettre la main ou les doigts sur l'ajutage du pulvérisateur. NE JAMAIS essayer de "refouler" la peinture. Cet appareil N'est PAS un compresseur pneumatique.

TOUJOURS garder la protection de l'ajutage en place sur le pistolet pendant la pulvérisation.

TOUJOURS observer la **Marche à Suivre pour Détendre la Pression** donnée plus loin, avant de nettoyer ou d'enlever l'ajutage du pulvérisateur, ou d'effectuer un travail quelconque sur une partie de l'appareil.

NE JAMAIS essayer d'arrêter ou de dévier les fuites avec la main ou le corps.

Avant chaque utilisation, bien s'assurer que les dispositifs de sécurité fonctionnent correctement.

Soins médicaux

En cas de pénétration de fluide sous la peau: **DEMANDER IMMEDIATEMENT DES SOINS MEDICAUX D'URGENCE. NE PAS SOIGNER CETTE BLESSURE COMME UNE SIMPLE COUPURE.**

Avis au medecin: La pénétration des fluides sous la peau est un traumatisme. Il est important de traiter chirurgicalement cette blessure immédiatement. Ne pas retarder le traitement pour effectuer des recherches sur la toxicité. Certains revêtements exotiques sont dangereusement toxiques quand ils sont injectés directement dans le sang. Il est souhaitable de consulter un chirurgien esthétique ou un chirurgien spécialisé dans la reconstruction des mains.

Dispositifs de sécurité du pistolet

Avant chaque utilisation, bien s'assurer que tous les dispositifs de sécurité du pistolet fonctionnent correctement. Ne pas

enlever ni modifier une partie quelconque du pistolet; ceci risquerait d'entraîner un mauvais fonctionnement et des blessures graves.

Verrou de sécurité

A chaque fois que l'on s'arrête de pulvériser, même s'il s'agit d'un court instant, toujours mettre le verrou de sécurité du pistolet sur la position "fermée" ou "sécurité" ("safe") pour empêcher le pistolet de fonctionner. Si le verrou de sécurité n'est pas mis, le pistolet peut se déclencher accidentellement.

Diffuser

Le diffuseur du pistolet sert à diviser le jet et à réduire les risques d'injection accidentelle quand l'ajutage n'est pas en place. Vérifier le fonctionnement du diffuseur régulièrement. Pour cette vérification, détendre la pression en observant la **Marche à Suivre pour Détendre la Pression** donnée plus loin puis enlever l'ajutage du pulvérisateur. Pointer le pistolet dans un seau en métal, en le maintenant fermement contre le seau. Puis, en utilisant la pression la plus faible possible, appuyer sur la gachette du pistolet. Si le fluide projeté n'est pas diffusé sous forme de jet irrégulier, remplacer immédiatement le diffuseur.

Protection de l'ajutage

TOUJOURS maintenir la protection de l'ajutage en place sur le pistolet du pulvérisateur pendant la pulvérisation. La protection de l'ajutage attire l'attention sur les risques d'injection et contribue à réduire, mais n'évite pas le risque, que les doigts ou une partie quelconque du corps ne passent accidentellement à proximité immédiate de l'ajutage du pulvérisateur.

Consignes de sécurité concernant l'ajutage du pulvérisateur

Faire extrêmement attention à l'occasion du nettoyage ou du remplacement des ajutages du pulvérisateur. Si l'ajutage se bouche pendant la pulvérisation, mettre immédiatement le verrou de sécurité du pistolet. TOUJOURS bien observer la **Marche à Suivre pour Détendre la Pression** puis enlever l'ajutage du pulvérisateur pour le nettoyer.

NE JAMAIS essayer ce qui s'est accumulé autour de l'ajutage du pulvérisateur avant que la pression ne soit complètement tombée et que le verrou de sécurité du pistolet ne soit engagé.

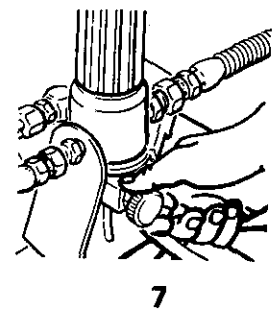
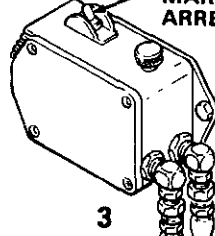
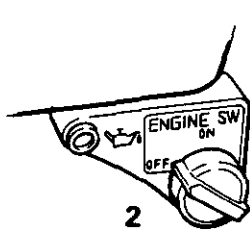
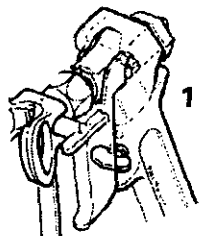
Marche à Suivre pour Détendre la Pression

Pour réduire les risques de blessures graves, y compris les blessures par projection de fluide ou celles causées par des éclaboussures dans les yeux ou sur la peau, par des pièces en mouvement, toujours bien observer cette marche à suivre chaque fois que l'on arrête le pulvérisateur, à l'occasion de la vérification, du réglage ou du nettoyage du système ou lors du changement des ajutages.

1. Engager le verrou de sécurité du pistolet.
2. Mettre le levier d'arrêt du moteur sur ARRET (OFF).
3. Basculer l'interrupteur de commande de pression sur ARRET (OFF).
4. Désengager le verrou de sécurité du pistolet. Tout en maintenant une partie métallique du pistolet fermement appuyé contre le côté d'un seau en métal, actionner le pistolet pour libérer la pression.

5. Engager le verrou de sécurité du pistolet.
6. Ouvrir la soupape de sécurité et la laisser ouverte jusqu'à ce que l'on soit prêt à se servir de nouveau du pulvérisateur.
7. Débrancher le fil de la bougie.

Di l'on soupconne que le tuyau ou l'ajutage est complètement bouché ou que la pression n'a pas été complètement libérée après avoir procédé aux opérations ci-dessus, desserrer TRES LENTEMENT un raccord de bout de tuyau ou l'écrou de retenue de la protection de l'ajutage et libérer progressivement la pression.



RISQUES EN CAS DE MAUVAISE UTILISATION DU MATERIEL

Consignes générales de sécurité

Toute utilisation anormale de l'appareil de 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, des gants, des vêtements protecteur et un dispositif pour la respiration correspondant aux recommandations des fabricants de fluides et solvants.

MESURES DE SECURITE CONCERNANT LES TUYAUX FLEXIBLES

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 noeuds 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.

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 à la masse ou à la terre, des étincelles peuvent se produire et l'appareil risque 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 pulvérise 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 entier est bien mis à la terre. Ne vous servez pas du 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 équipements 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, **CONSULTEZ** le code ou les réglementations électriques locales. **S'ASSUREZ** que tous les équipements de pulvérisation suivants sont bien reliés à la terre:

1. *Pulvérisateur:* Relier le fil de masses et le collier (fourni) à une bonne terre.

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** verser le carburant lentement pour éviter d'en renverser. Lire **RISQUES D'INCENDIE OU D'EXPLOSION.**

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.

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 qui ne sont pas compatibles avec l'enveloppe intérieure ou extérieure du tuyau. **NE PAS** exposer le tuyau à 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 moins 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** ci-dessus.

2. *Pistolet:* Réaliser la mise à la terre en le raccordant à un tuyau flexible et à un 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 mise 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 les seaux de solvants* utilisés pour le rinçage: observer le code ou les réglementations locales. *N'utiliser que des seaux métalliques* 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 rince 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 Rinçage

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

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 respire.

ADVERTENCIA

**EL ROCIADO A ALTA PRESION PUEDE CAUSAR GRAVES LESIONES.
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Lea y entienda todo el manual de instrucciones antes de manejar el equipo.

PELIGRO DE INYECCION DE FLUIDO

Seguridad general

Este equipo genera un fluido a una presión muy alta. El rociado de la pistola, los escapes de fluido o roturas de los componentes pueden inyectar fluido en la piel y el cuerpo y causar lesiones extremadamente graves, incluyendo a veces la necesidad de amputación. También, el fluido inyectado o salpicado en los ojos puede causar graves daños.

NUNCA apuntar la pistola hacia alguien o alguna parte del cuerpo. NUNCA colocar la mano o los dedos encima de la boquilla. NUNCA tratar de "hacer retornar la pintura"; este NO es un sistema de rociado de aire.

SIEMPRE tener colocado el protector de la boquilla en la pistola mientras se está pulverizando.

SIEMPRE seguir el **procedimiento de descarga de presión**, dado más abajo, antes de limpiar o sacar la boquilla o de dar servicio a cualquier equipo del sistema.

NUNCA tratar de parar o desviar los escapes con la mano o el cuerpo.

Asegurar que todos los aparatos de seguridad del equipo están funcionando bien antes de cada uso.

Tratamiento médico

Si pareciera que un poco de fluido penetró la piel, conseguir **TRATAMIENTO MEDICO DE URGENCIA DE INMEDIATO. NO TRATAR LA HERIDA COMO UN SIMPLE CORTE.** Decir al médico exactamente cual fluido fue.

Aviso al medico: Si se llega a inyectar este fluido en la piel se causa una lesión traumática. Es importante tratar quirúrgicamente la lesión a la brevedad posible. No demorar el tratamiento para investigar la toxicidad. La toxicidad es algo de suma importancia en algunas pinturas exóticas cuando se inyectan directamente al torrente sanguíneo. Sirá conveniente consultar a un especialista en cirugía plástica o reconstructiva de las manos.

Aparatos de seguridad de la pistola pulverizadora

Asegurar que todos los aparatos protectores de la pistola están funcionando bien antes de cada uso. No sacar ni modificar ninguna pieza de la pistola pues podría causar el malfuncionamiento de la misma con las consiguientes lesiones personales.

Pestillo de seguridad

Cada vez que se deje de pulverizar, aunque sea por un breve momento, siempre colocar el pestillo de seguridad en la posición "cerrada", lo que deja la pistola inoperante. El no hacerlo puede llevar al disparo imprevisto de la pistola.

Difusor

El difusor de la pistola dispersa el chorro pulverizado y reduce el riesgo de inyección cuando no está instalada la boquilla. Revisar con regularidad el funcionamiento del difusor. Seguir el **procedimiento de descarga de presión**, dado más abajo, y después sacar la boquilla. Apuntar la pistola a un balde metálico, sosteniéndola bien firme contra él. Utilizando la presión más bajo posible, disparar la pistola. Si el fluido emitido *no sale disperso* en un chorro irregular, reemplazar de inmediato el difusor.

Protector de la boquilla

SIEMPRE tener el protector de la boquilla colocado en la pistola mientras se está pulverizando. Este protector llama la atención contra el peligro de inyección y ayuda a reducir, pero no evita, la colocación accidental de los dedos o cualquier otra parte del cuerpo cerca de la boquilla.

Seguridad de la boquilla pulverizadora

Tener mucho cuidado al limpiar o cambiar las boquillas. Si llegara a obstruirse mientras está pulverizando, enganchar el pestillo de la pistola de inmediato. SIEMPRE seguir el **procedimiento de descarga de presión** y después sacar la boquilla para limpiarla.

NUNCA limpiar la acumulación de pintura alrededor de la boquilla antes de que se haya descargado por completo la presión y el pestillo esté enganchado.

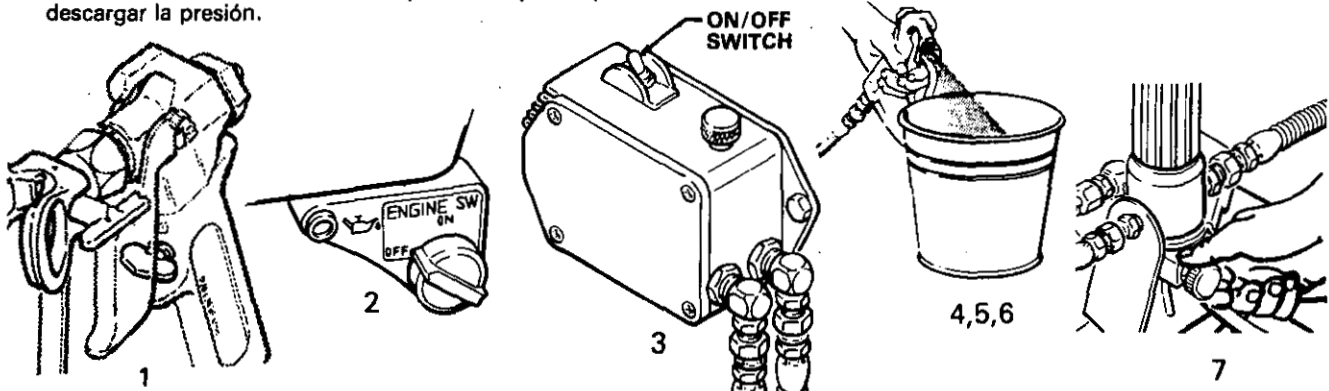
Procedimiento de descarga de presión

Para reducir el riesgo de sufrir graves lesiones corporales, incluyendo la inyección de fluidos, salpicaduras en los ojos o la piel, o lesiones causadas por piezas en movimiento, siempre seguir este procedimiento al apagar la máquina pulverizadora, al revisar, ajustar o limpiar el sistema, o al cambiar las boquillas.

1. Enganchar el pestillo de seguridad de la pistola.
2. Mover el interruptor de parada del motor a OFF.
3. Mover el interruptor de control de presión a OFF.
4. Desenganchar el pestillo de seguridad de la pistola. Mantener una parte metálica de la pistola firmemente contra el lado de un balde de metal y activar la pistola para descargar la presión.

5. Volver a enganchar el pestillo de seguridad de la pistola.
6. Abrir la válvula de alivio de presión y dejarla abierta hasta que se esté nuevamente listo para pulverizar.
7. Desconectar el cable de la bujía.

Si se sospecha que la boquilla o la manguera esté completamente obstruida, o que no se ha descargado por completo la presión después de haber seguido el procedimiento anterior, aflojar MUY LENTAMENTE un adaptador de extremo de la manguera o la tuerca de renovación del protector de la punta y descargar gradualmente la presión.



PELIGRO POR MAL USO DEL EQUIPO

Seguridad general

Cualquier mal uso del equipo pulverizador o los accesorios, tal como sobrepresurización, modificación de piezas, uso de materiales y productos químicos incompatibles, o utilización de piezas dañadas o desgastadas, puede hacer que se rompan y causen la inyección de fluido u otras lesiones corporales graves, incendio, explosión o daño 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 esta pulverizadora. NO exceder 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 desarrolla 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 alta presión puede desalojar un acoplamiento suelto o dejar que por 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 a 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 máxima, 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 límites 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.

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.

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, convirtiendo 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 apropiada. 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 de la localidad.
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. 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.
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, or 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 rociadora antes de lavar**. Apoyar una parte metálica de la pistola bien firme contra el costado de un **balde de metal** y usar la presión más baja posible de fluido durante el lavado.

SETUP

1. **Connect Hose and Gun.** Refer to Fig 10-1.
 - a. Remove the plastic cap plug from the filter outlet nipple and screw the 50 ft. (15.2 m) main fluid hose onto the nipple.
 - b. Connect the whip end hose between the fluid hose and the gun inlet connection.
 - c. Don't use thread sealant, and don't install the spray tip yet!

WARNING

If you are supplying your own hoses and spray gun, be sure the hoses are electrically conductive. That the gun has a tip guard and that each part is rated for at least 3000 psi (210 bar) Working Pressure. This is to reduce the risk of serious bodily injury caused by static sparking, fluid injection or over-pressurization and rupture of the hose or gun.

2. **Two Gun Hookup.** Refer to Fig 10-1. Remove the cap from the secondary hose outlet and attach an accessory hose and gun to the 1/4 npsm(m) nipple.

CAUTION

To avoid damaging the pressure control, which may result in poor equipment performance and component damage, follow these precautions:

1. Always use nylon spray hose at least 50 ft. (15.2 m) long.
 2. Never use a wire braid hose as it is too rigid to act as a pulsation dampener.
 3. Never install any shutoff device between the filter and the main hose. See Fig. 10-1.
 4. Always use the main filter outlet for one gun operation. Never plug this outlet.
3. **Fill Packing Nut/Wet-Cup.** See Fig 10-1. Fill the packing nut/wet-cup 1/3 full with Graco Throat Seal Liquid (TSL), supplied.
 4. **Check the engine oil level.** Refer to the Honda engine manual, supplied. This is a summary of the information: Remove one of the oil fill plugs; the oil should be almost overflowing. See Fig 11-1. Add oil as necessary.

Recommended lubrication oil. Use a high quality detergent oil, SAE 10W-40, classified "FOR SERVICE SE or SF", for regular use and for the breaking-in of a new engine.

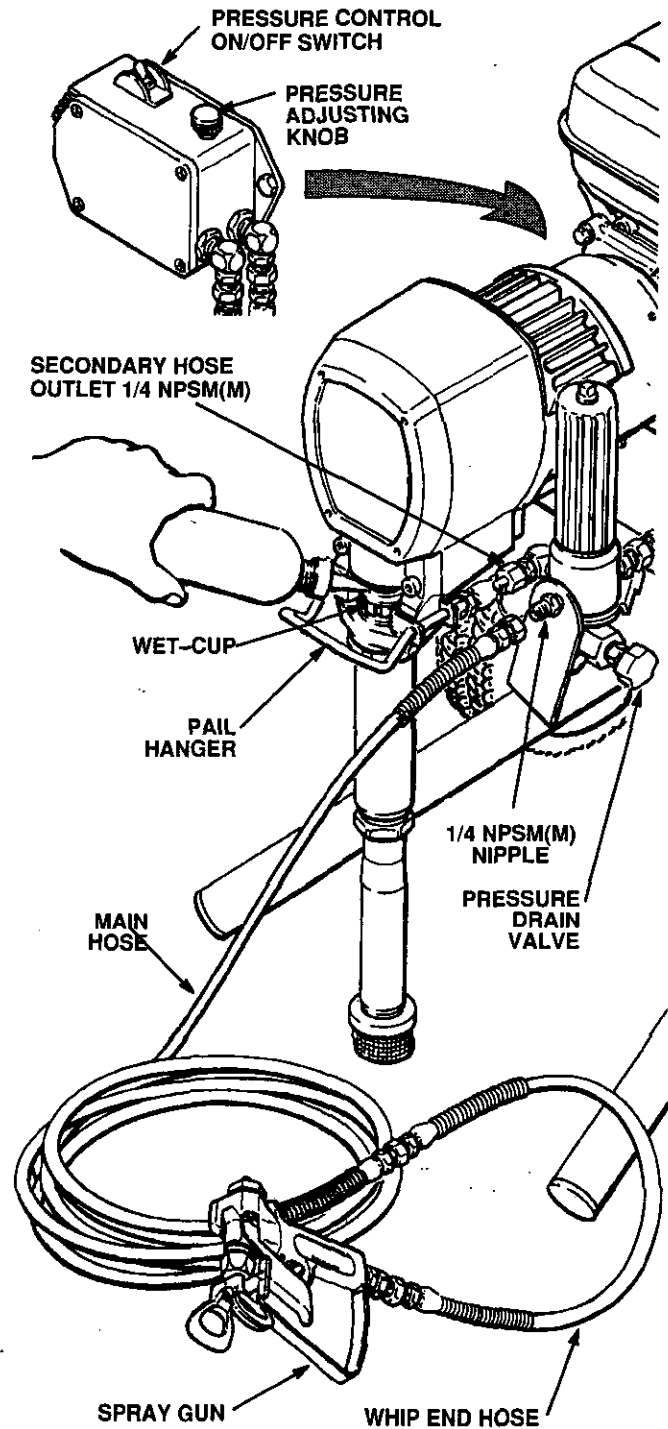


Fig 10-1

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 to protect pump parts after factory testing.
 - a. Before using water-base paint, flush with mineral spirits followed by soapy water, and then a clean water flush.
 - b. Before using oil-base paint, flush with mineral spirits only.
 - c. See **FLUSHING GUIDELINES** on page 15 for 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 spray painting.
9. **Keep the sprayer upright and level** during operation and whenever it is being moved.

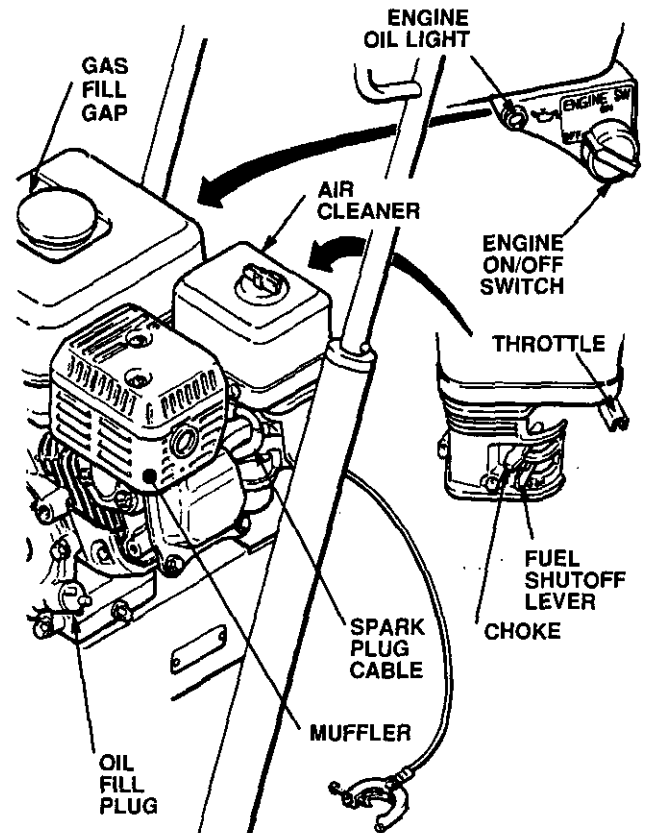


Fig 11-1

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 refueling. 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 ($\frac{R+M}{2}$) or 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 containing methanol if it contains no cosolvents and corrosion inhibitors for methanol. If it does contain such additives, still do not use it if it contains more than 5% methanol.

Do not use gasohol containing more than 10% ethanol.

Be sure the gasohol has octane ratings at least as high as stated in **Fuel Specifications**.
- 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:** 0.66 gallons (2.5 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.**

STARTUP

NOTE: Refer to Fig 13-1 as you start the sprayer.

Use this procedure each time you start the sprayer to help ensure the sprayer is ready to operate and that you start it safely.

NOTE: When starting a sprayer that IS NOT primed, remove the spray tip.

1. **Check the gas tank.** Open the fuel shutoff valve.
2. **Check the engine oil level.**

NOTE: The engine stops automatically if it is low on oil. If you try to start it again without adding more oil, a red light on the rear of the engine lights as you pull the starter rope.

3. **If a secondary hose and gun is not installed,** be sure the cap is securely plugging the nipple.
4. **Place the suction tube into the paint container.**
5. **Flip the pressure control switch to OFF.**
6. **Open the fuel shutoff lever** by pushing it in the direction of the arrow.
7. **Be sure the spark plug cable is firmly pushed onto the plug.**

CAUTION

Never attempt to start the engine unless fluid pressure is relieved and the pressure control ON/OFF switch is OFF. Trying to start the engine under load will damage the recoil system.

8. **Set the pressure adjusting knob** all the way counterclockwise to the lowest pressure setting.
9. **Pull the throttle lever away from the fuel tank** to maximum position (fully left).
10. **If the engine is cold,** completely close the gray engine choke lever, located beneath the air cleaner.

If the engine is warm, you may need to close the choke only half way or not at all.

11. **Turn the engine switch to ON.**
12. **Grasp the starter rope.** Holding the frame with one hand, pull the rope rapidly and firmly. Continue holding the rope as you let it return. Pull and return the rope until the engine starts.

WARNING

Letting the rope return too fast may cause serious bodily injury if the rope hits someone. It could also jam the rope in the recoil assembly.

13. **Open the choke.** In cold weather you may have to leave the choke closed for 10 to 30 seconds before opening it to keep the engine running. Otherwise, open the choke as soon as the engine starts.

14. **Disengage the gun safety latch.**

15. **To start the pump,** open the filter's pressure drain valve. Turn the pressure control switch to ON and slowly increase the pressure setting until the pump starts to cycle slowly. Cycle the pump slowly until fluid is flowing smoothly from the pressure drain valve, indicating that the pump is fully primed. Close the pressure drain valve. Holding a metal part of the gun firmly against and aimed into a grounded metal container, squeeze the trigger until fluid is flowing smoothly from the gun. Release the trigger and engage the gun safety latch.

16. **Install the spray tip in the gun.** See the separate tip manual, 307-848.

WARNING

To reduce the risk of serious bodily injury from fluid injection, NEVER operate the spray gun with the tip guard removed.

17. **Adjust the engine speed and pump pressure.** First set the throttle lever to the maximum RPM setting (fully left). Trigger the gun onto a test paper to check the spray pattern and atomization. Adjust the pressure adjusting knob until you get a good pattern. Then slowly lower the throttle setting as far as you can without changing the spray pattern.

CAUTION

Always use the lowest possible pressure and throttle setting to increase the life of the sprayer. Higher settings cause excessive clutch cycling as well as tip and pump wear.

CAUTION

Close the fuel valve whenever you are transporting the sprayer to prevent fuel from flooding the engine.

Keep the sprayer upright and level when operating it and when transporting it. This prevents crankcase oil from leaking into the combustion chamber which makes startup very difficult.

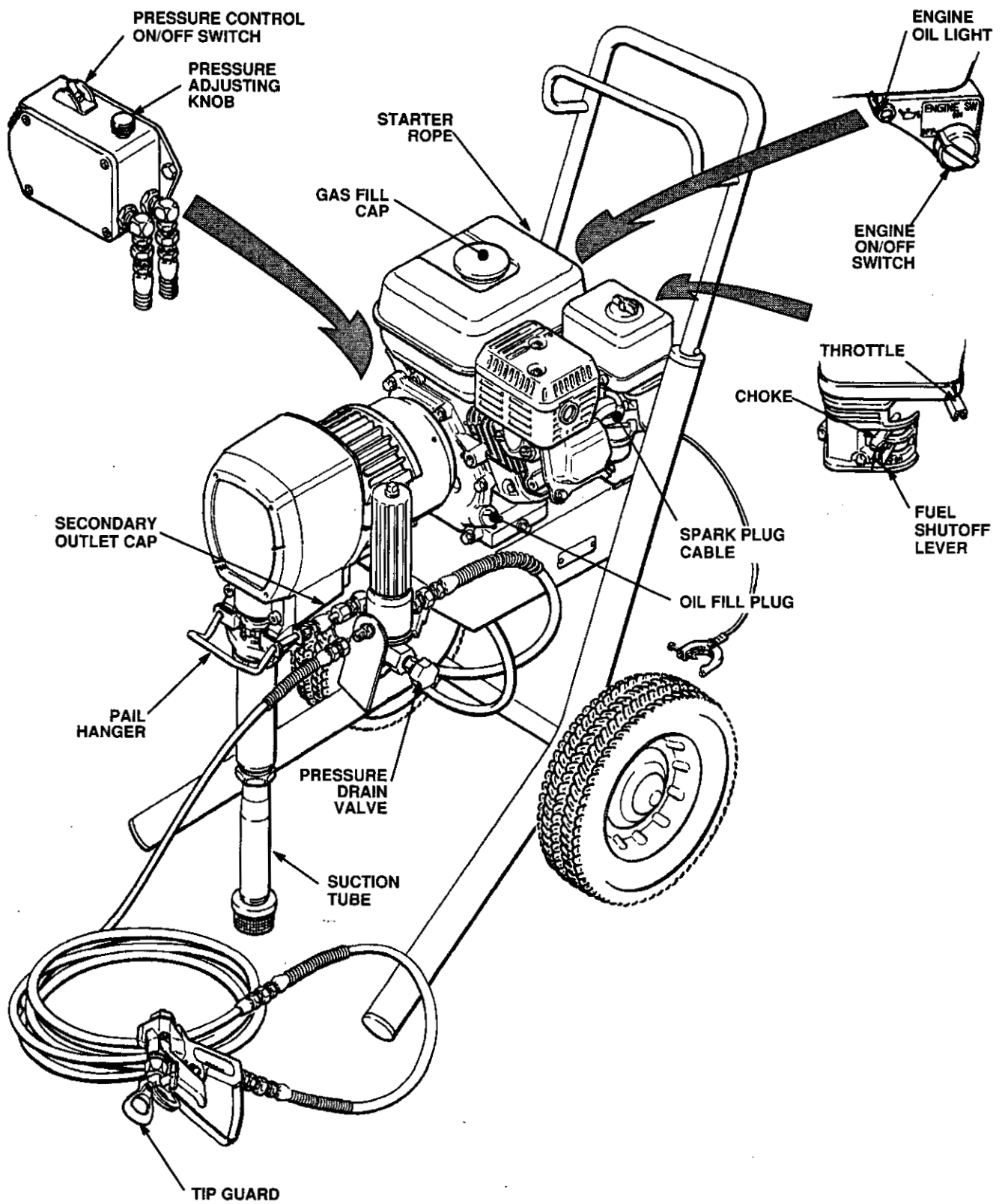


Fig 13-1

MAINTENANCE

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 15 before checking, adjusting, cleaning and shutting down the sprayer. Disconnect the spark plug.

DAILY: Check the engine oil level and fill as necessary.

DAILY: Check and fill the gas tank.

AFTER THE FIRST 20 HOURS OF OPERATION: Drain the oil and refill with clean oil.

WEEKLY: Remove the cover of the air filter and clean the element. Replace the element if necessary. If operating in an unusually dusty environment, check the filter daily and replace if necessary.

Replacement elements can be purchased from your local Honda dealer.

CAUTION

For detailed engine maintenance and specifications, refer to the separate engine manual, supplied.

WEEKLY: Check the level of the TSL in the displacement pump packing nut. Fill it if necessary. Keeping TSL in the nut helps lubricate the packings.

AFTER EACH 100 HOURS OF OPERATION: Change the oil.

SPARK PLUG: Use only a (NGK) BP6ES or BPR6ES plug. Gap the plug to 0.025–0.030 in. (0.7–0.8 mm). Be sure to use a spark plug wrench when installing and removing the plug.

FLUSHING GUIDELINES

WARNING

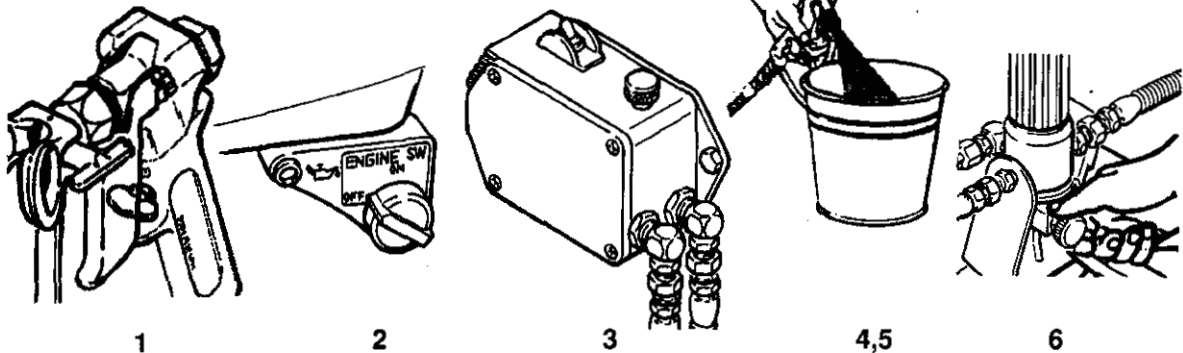
Pressure Relief Procedure

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 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, VERY SLOWLY loosen the tip guard retaining nut or hose end coupling and relieve pressure gradually, then loosen completely. Now clear the tip or hose.



When to Flush

1. **New Sprayer.** Your new GM3500 Sprayer was factory tested in lightweight oil which was left in to protect pump parts.

Before using water-base paint, flush with mineral spirits followed by soapy water, 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, 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 spirits. Shut off the sprayer, remove the spark plug cable, and open the pressure drain valve to relieve pressure and leave it open.

Oil-base paint: flush with mineral spirits. Shut off the sprayer, remove the spark plug cable, and open the pressure drain valve to relieve pressure and leave it open.

CAUTION

NEVER leave water in the sprayer if there is the slightest chance 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 mineral spirits with soapy water and then a clean water flush. When using oil-base paint, flush out the mineral spirits with the paint to be sprayed and the sprayer is ready to use.

Continued on page 16.

FLUSHING GUIDELINES

How to Flush

1. Follow the **Pressure Relief Procedure Warning** on page 15.
2. Remove the filter bowl and screen; see manual 307-273, supplied. Clean the screen separately and install the bowl without the screen to flush it. See Fig 16-1.

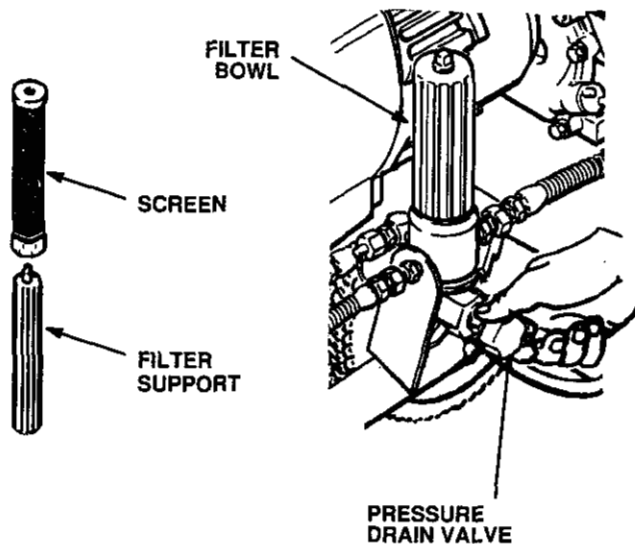


Fig 16-1

3. Close the filter's pressure drain valve.
4. Pour one-half gallon (2 liters) of compatible solvent into a grounded metal pail. Put the suction tube in the pail.
5. Remove the spray tip from the gun.

WARNING

To reduce the risk of static sparking and splashing, always remove the spray tip from the gun, and hold a metal part of the gun firmly to the side of and aimed into a grounded metal pail when flushing.

6. Disengage the gun safety latch. Point the spray gun into a metal waste container and with a metal part of the gun firmly touching the metal container, squeeze the gun trigger. See Fig 16-2. This procedure helps reduce the risk of static sparking and splashing. Start the sprayer, trigger the gun and slowly turn the pressure adjusting knob clockwise just until the pump starts. Keep the gun triggered until clean solvent comes from the nozzle. Release the trigger and engage the gun safety latch.
7. Check all fluid connections for leaks. If any leak, first follow the **Pressure Relief Procedure Warning** on page 15. Now tighten the connections, start the sprayer, and recheck the connections for leaks.
8. Remove the suction tube from the pail. Disengage the gun safety and trigger the gun to force solvent from the hose. Do not let the pump run dry for more than 30 seconds to avoid damaging the pump packings! Then follow the **Pressure Relief Procedure Warning** on page 15.
9. Leave the pressure drain valve open until you are ready to use the sprayer again. Unscrew the filter bowl and reinstall the clean screen. Reinstall the bowl, hand tight only.
10. If you flushed with mineral spirits and are going to use a water-base paint, flush with soapy water followed by a clean water flush. Then follow the **Pressure Relief Procedure Warning** on page 15.

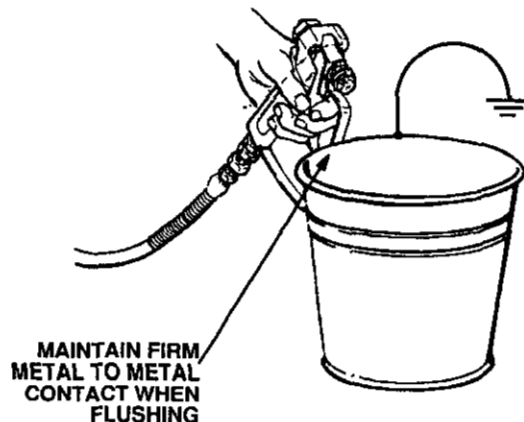


Fig 16-2

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, checking, adjust or clean the system, or change 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. Holding a metal part of the gun firmly to the side of a grounded metal pail, 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 cable.

If you suspect that the hose or tip is completely clogged or that pressure is not fully relieved after following the steps above, VERY SLOWLY loosen a hose end fitting or the tip guard retaining nut and relieve pressure gradually. Now clear the tip or hose.

Check everything in the guide before disassembling the sprayer.

PROBLEM	CAUSE	SOLUTION
Engine/sprayer won't start	Engine switch not ON Engine oil level low Spark plug cable disconnected or spark plug bad Out of gas Water frozen in pressure control.	Turn on. Try starting engine. If light on rear of engine glows, replenish oil. Connect cable on top of engine or replace spark plug. Replenish. Return pressure control to authorized Graco dealer for repair.
Engine won't pull over.	Oil seepage into combustion chamber.	Remove spark plug. Pull engine over 3 or 4 times. Clean and replace plug. Try to start. Keep sprayer upright to avoid seepage.
Gas engine operates but displacement pump doesn't operate	Pressure control switch turned OFF Pressure setting too low Displacement pump outlet filter dirty or clogged Tip or tip filter clogged Displacement pump rod seized by dry paint Connecting rod worn or damaged Drive housing worn or damaged Electrical power not energizing field Clutch worn or damaged Pinion assembly worn or damaged	Turn on. Increase pressure. Clean filter. Clean tip or tip filter. Service pump. See 307-806. Replace. See page 22. Replace. See page 24. Check wiring connections. See page 19. With pressure control switch ON and pressure turned to MAXIMUM, use a test light to check continuity across black and wire wires from pressure control. Have pressure control checked by authorized Graco dealer. Service. See page 28. Service. See page 25.

Continued on page 18

TROUBLESHOOTING GUIDE

PROBLEM	CAUSE	SOLUTION
Displacement pump output low on upstroke	Pump inlet screen clogged Piston ball check not seating Piston packings worn or damaged Displacement pump sleeve gasket worn or damaged	Clean. Service piston ball check. Replace packings. Replace.
Displacement pump output low on downstroke or both strokes	Pump inlet screen clogged Piston packings worn or damaged Intake valve ball check not seating properly Engine RPM too low Clutch worn or damaged	Clean. Replace packings. Clean and service. Increase throttle setting. See Startup, Step 17, page 12. Replace. See page 28.
Paint leaks into wetcup	Loose wet-cup Throat packings worn or damaged Displacement rod worn or damaged	Tighten just enough to stop leakage. Replace packings. See 307-793. Replace. See 307-793.
Low fluid delivery	Pump inlet screen clogged Pressure setting too low Engine RPM too low Dirty outlet filter, tip filter or tip Large pressure drop in hose	Clean. Increase pressure. See Startup, Step 17, page 12. Increase throttle setting. See Startup, Step 17, page 12. Clean. Use larger diameter hose.
Spitting from gun	Air in fluid pump or hose Tip partially clogged Fluid supply is low or empty	Check for loose connections at intake and tighten. Then prime the pump. See Startup, page 12. Clear. Refill and reprime the pump. See Startup, page 12. Check fluid supply often to prevent running dry.

Pressure Control Replacement

WARNING

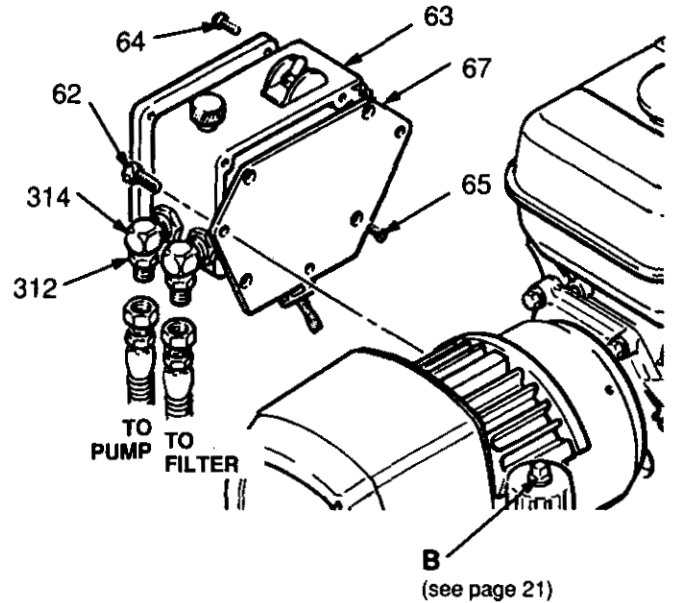
To reduce the risk of serious bodily injury, including fluid injection or splashing in the eyes or on the skin, or injury from moving parts, always follow the **Pressure Relief Procedure Warning** on page 17 before checking, adjusting, cleaning and shutting down the sprayer. Disconnect the spark plug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

1. Disconnect both hoses at the pressure control (63), holding the elbows firmly. See the **CAUTION** below. 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

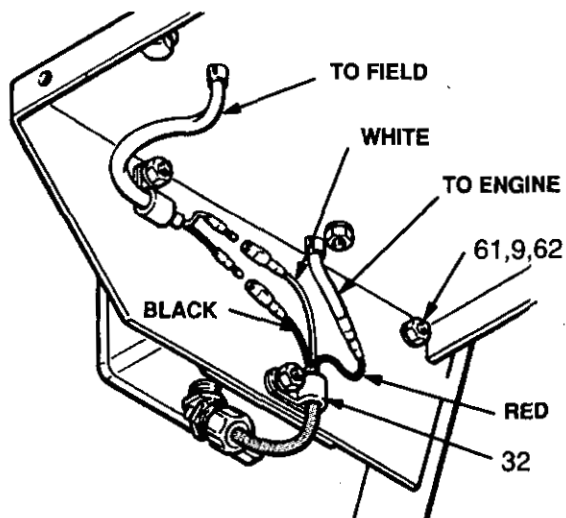
DO NOT allow the elbow (314 OR 315) to turn when removing or connecting the hoses. Turning the elbows can damage the sensitive bourdon tube.

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) and the four screws (65) holding bracket (67) to the pressure control. See Fig 19-1.
4. Remove the wire clamp (32) from the pressure control wires.



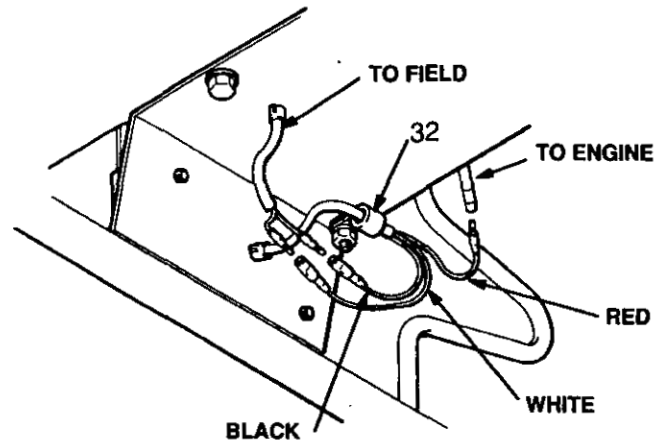
MOUNTING FOR UPRIGHT CART SHOWN

Fig 19-1



VIEW FROM UNDER ENGINE MOUNTING PLATE ON UPRIGHT CART

Fig 19-2



VIEW FROM UNDER ENGINE MOUNTING PLATE ON LO-BOY CART

REPAIR

5. Disconnect the wires from the rectifier (307). Remove the screw (311), nut (306) and lockwasher (305). See Fig 19-1.
6. Unscrew the connector (313 or 316) from the box, pulling the wires out with it.
7. Holding the hex of the adapters (A) at the control box with a wrench, remove the elbows (312 OR 315).
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 the next page before regular operation of the sprayer.

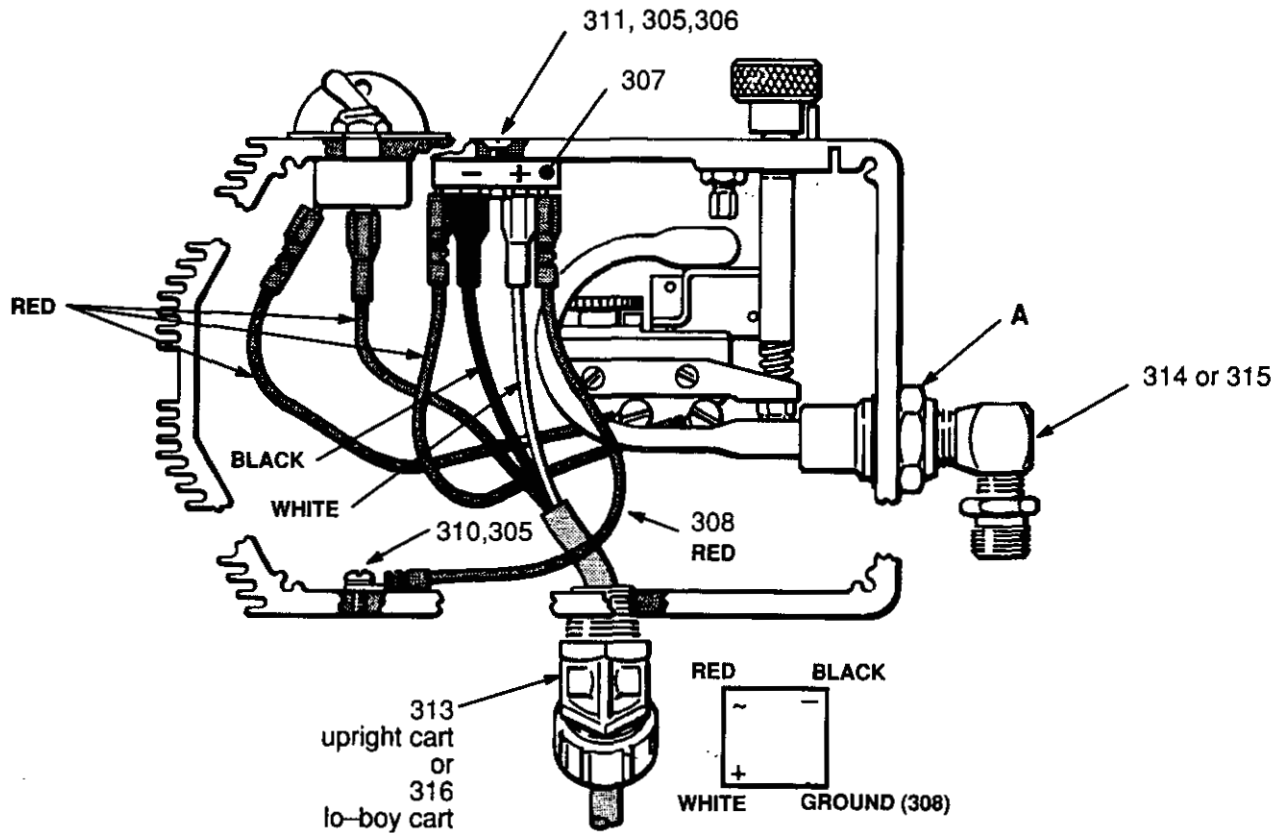


Fig 19-1

REPAIR

Pressure Control Calibration (See Fig 21-1)

WARNING

USE EXTREME CAUTION WHEN PERFORMING THIS CALIBRATION PROCEDURE to reduce the risk of a fluid injection injury or other serious bodily injury which can result from component rupture, electric shock, fire, explosion, or moving parts.

This procedure sets the sprayer to 2600–3000 psi (182–210 bar) **MAXIMUM WORKING PRESSURE**.

This procedure must be performed whenever the pressure control assembly is removed and reinstalled or replaced to be sure the sprayer is properly calibrated.

Improper calibration can cause the sprayer to overpressurize and result in component rupture, fire or explosion. It may also prevent the sprayer from obtaining the maximum working pressure, resulting in poor sprayer performance.

NEVER attempt to increase the fluid outlet pressure by performing these calibrations in any other way. **NEVER EXCEED 3000 psi (210 bar) MAXIMUM WORKING PRESSURE**. Normal operation of the sprayer at higher pressures could result in component rupture, fire or explosion.

ALWAYS use a *new* 50 foot (15.2 m) spray hose rated for at least 3000 psi (210 bar) **MAXIMUM WORKING PRESSURE** when performing this procedure. A used, under-rated hose could develop a high pressure leak or rupture.

AVOID touching the wire in the pressure control assembly when the control box cover is removed, to reduce the risk of electric shock.

Service Tools Needed:

- NEW 50 ft (15.2 m) 3300 psi (231 bar) flexible, nylon airless spray hose, Part No. 210-541
- New 0.023 size spray tip.
- 0–5000 psi (0–350 bar) fluid-filled pressure gauge, Part No. 102-814
- 5 gallon pail and water
- Mineral spirits

1. Follow the **Pressure Relief Procedure Warning** on page 17.
2. Install the new 50 ft (15.2 m) spray hose to the sprayer outlet. On the other end of the hose, install the gun and a new .023 size tip. 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). Using a 3/8" ignition wrench, turn the pressure adjustment nut (E) **clockwise** two full turns. See Fig 21-1. With the pressure control knob (D) turned 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 waste container until pressure is relieved, and engage the latch again. Turn the nut (E) a little further clockwise. 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).

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

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

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

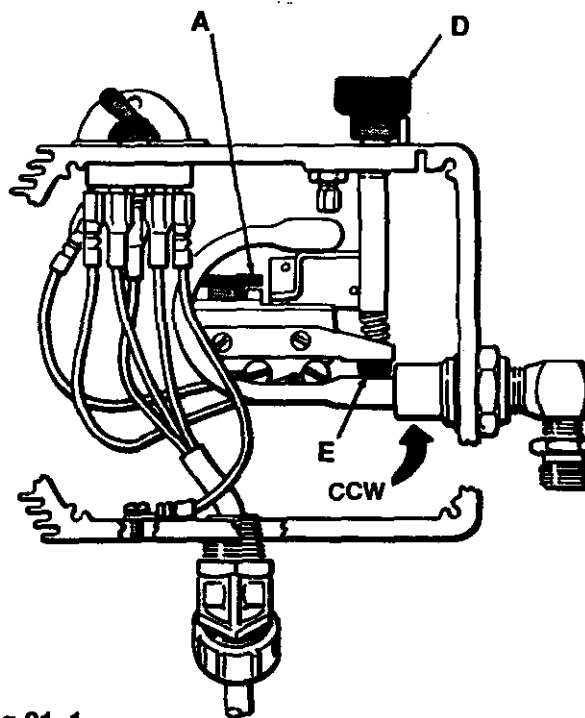


Fig 21-1

Bearing Housing & Connecting Rod

WARNING

To reduce the risk of serious bodily injury, including fluid injection, splashing fluid in the eyes or on the skin, or injury from moving parts, always follow the **Pressure Relief Procedure Warning** on page 17 before repairing any part of the sprayer. Disconnect the spark plug cable.

NOTE: Steps 1 to 13 refer to Fig 22-1.

1. Remove the front cover and screws (23,68).
2. Unscrew the suction tube (30) from the pump, holding a wrench on the pump intake valve (B) to keep the pump from loosening.
3. Disconnect the pump outlet hose (59) from the displacement pump outlet nipple (87).
4. Use a screwdriver to push aside the retaining spring (26) at the top of the pump. Push the pin (25) out the rear.
5. Loosen the jam nut (27) with an adjustable wrench. Unscrew and remove the displacement pump.
6. Use a hex key wrench to remove the four screws (73) and lockwashers (74) from the bearing housing.
7. While pulling the connecting rod (22) with one hand, lightly tap the lower rear of the bearing housing (21) with a plastic mallet to loosen it from the drive housing (20). Pull the bearing housing and the connecting rod assembly (22) off the drive housing.
8. Inspect the crank (A) from excessive wear and replace parts as needed.
9. Evenly lubricate the inside of the bronze bearing (C) in the bearing housing (21) and the inside of the connecting rod link (D) with high quality motor oil. Liberally pack the roller bearing (E) in the connecting rod assembly (22) with bearing grease.
10. Assemble the connecting rod (22) and bearing housing (21).
11. Clean the mating surfaces of the bearing and drive housings.
12. Align the connecting rod with the crank (A) and carefully align the locating pins (C) in the drive housing (20) with the holes in the bearing housing (21). Push the bearing housing onto the drive housing or tap it into place with a plastic mallet.

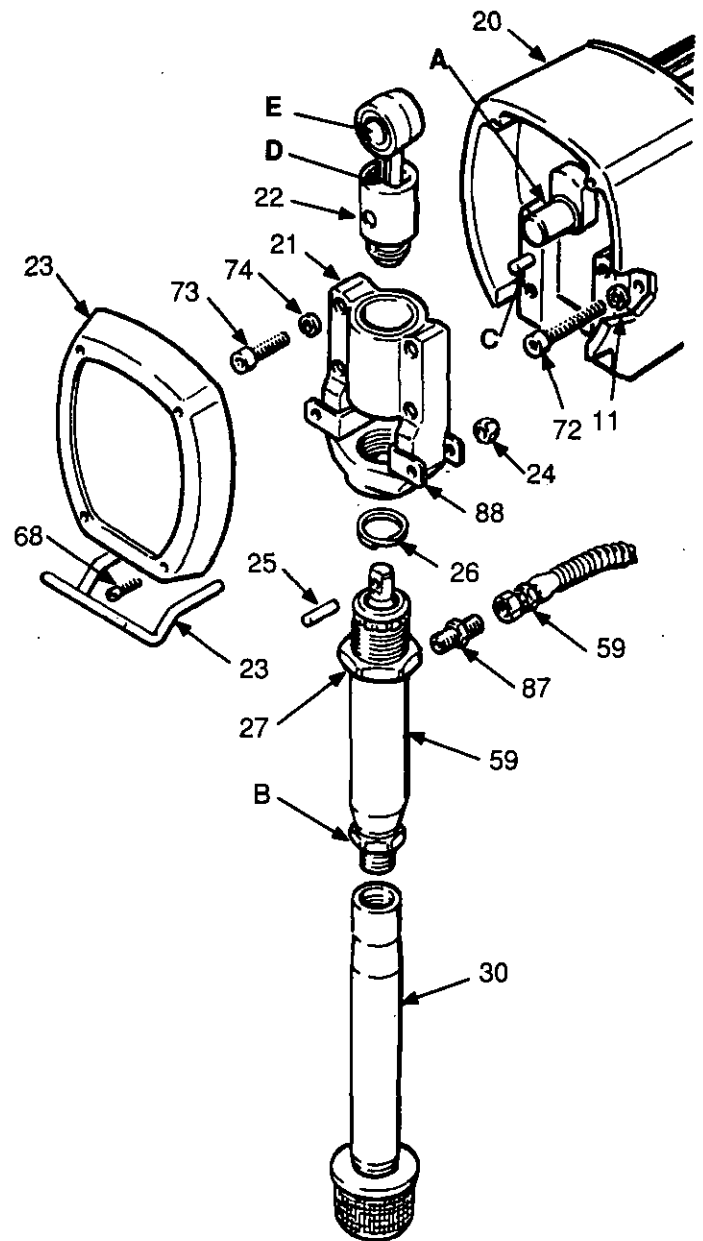


Fig 22-1

CAUTION

DO NOT use the bearing housing screw (73) to try to align or seat the bearing housing with the drive housing. These parts must be aligned using the locating pins (C) to help avoid premature bearing wear.

13. Install the screws (73) and lockwashers (74) on the bearing housing and tighten evenly to 15 in-lb (1.7 N.m).

REPAIR

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

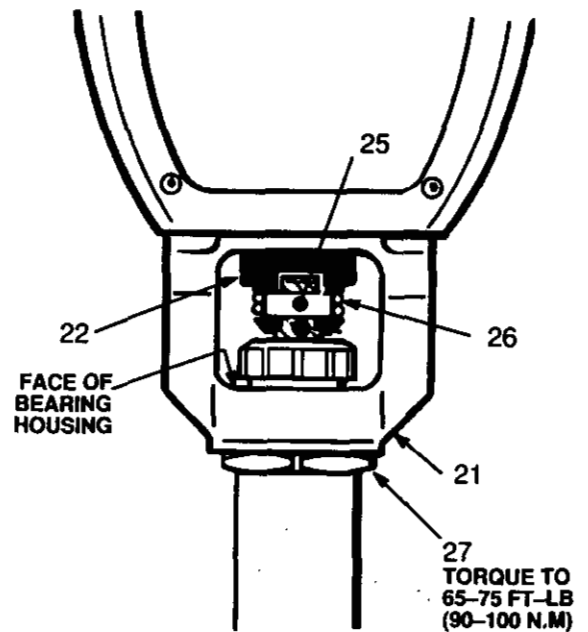
14. Screw the displacement pump about 3/4 of the way into the bearing housing (21). Hold the pin (25) up to the pin hole in the connecting rod assembly (22) and continue screwing in the pump until the pin slides easily into the hole. Back off the pump until the top threads of the pump cylinder are flush with the face of the bearing housing and the outlet nipple (87) is facing back. Push the retaining spring (26) into the groove all the way around the connecting rod. Tighten the locknut (27) very tight – about 65 to 75 ft-lb (90 to 100 N.m) – with a 2-1/4 in. open end wrench and a light hammer.

WARNING

To reduce the risk of the pin (25) being projected into the air and resulting in serious bodily injury, including injury to the eyes, or property damage, including damage to the pump connecting rod or bearing housing:

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.



15. Reinstall the front cover and screw (23,68). Reconnect the suction tube (30) and pump outlet hose (59). See Fig 22-1.

Fig 23-1

Drive Housing

WARNING

To reduce the risk of serious bodily injury, including fluid injection, splashing fluid in the eyes or on the skin, or injury from moving parts, always follow the **Pressure Relief Procedure Warning** on page 17 before repairing any part of the sprayer. Disconnect the spark plug cable.

CAUTION

DO NOT allow the gear cluster (18) to fall when removing the drive housing (20). It is **easily** damaged if dropped. The gear may stay engaged in either the drive housing or pinion housing.

DO NOT lose the thrust balls (20c or 19h) located at each end of the gear cluster, or allow them to fall between gears. The ball, which is heavily covered with grease, usually stays in the shaft recesses, but could be dislodged. If caught between gears and not removed, the balls will seriously damage the drive housing. If the balls are not in place, the bearings will wear prematurely.

NOTE: Refer to Fig 24-1 for this procedure.

1. Remove the front cover and screws (23,68).
2. Disconnect the pump outlet hose (59) from the displacement pump nipple (57).
3. Use a hex key wrench to remove the two screws (10) and lockwashers (11) from the bottom front of the pinion housing (19m). Then remove the top two screws (10) and lockwashers (11).
4. Working from the front of the drive housing, remove the two screws (73) and lockwashers (74).
5. Lightly tap around the drive housing with a plastic mallet to loosen it from the pinion housing.
6. While holding the connecting rod (22) with one hand, lightly tap the back of the bearing housing (21) to loosen the drive housing. Then pull the drive housing straight off the pinion housing.
7. Liberally apply bearing grease (20d, supplied) to the gear cluster (18). Check to be sure the thrust balls (20c and 19h) are in place.
8. Place the bronze-colored washer (20a) and then the silver-colored washer (20b) on the shaft protruding from the big bearing of the drive housing (20). Align the gears and push the new drive housing straight onto the pinion housing and locating pins.
9. Starting at Step 4 and working backwards, continue to reassemble the sprayer. Or, move ahead to the next section in this manual if further service is needed.

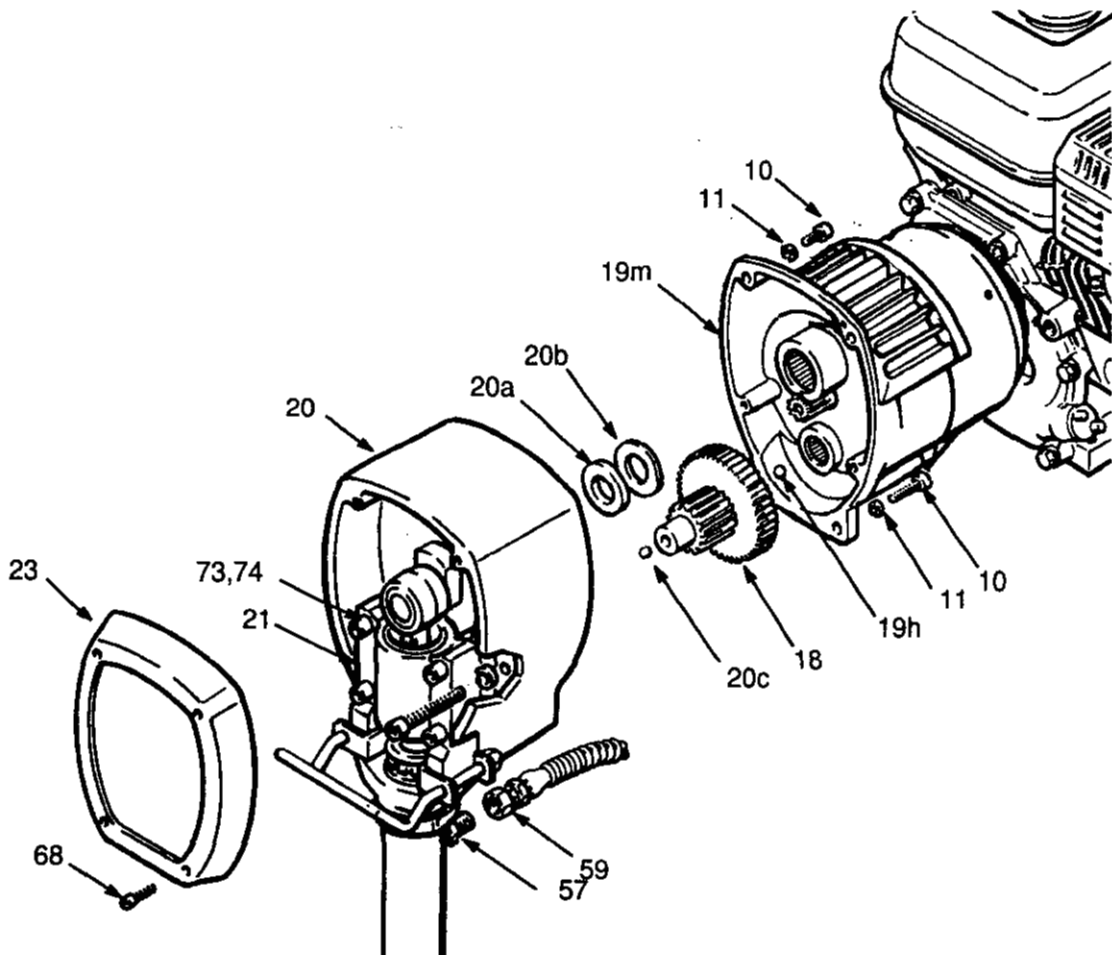


Fig 24-1

Pinion, Clutch, Clamp, Field and Engine

Disassembly of 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, then continue below.

If starting from the clutch, see page 28.

Pinion Housing Removal

WARNING

To reduce the risk of serious bodily injury, including fluid injection, splashing fluid in the eyes or on the skin, or injury from moving parts, always follow the **Pressure Relief Procedure Warning** on page 17 before repairing any part of the sprayer. Disconnect the spark plug cable.

NOTE: Refer to Fig 25-1 for Steps 1 to 3, except where noted.

1. Remove the two bottom screws (10) and lock-washers (11) first, and then remove the three screws (10) and lockwashers (11) holding the pinion housing (19m) 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 (19e - see Fig 27-1) of the pinion housing.

CAUTION

Do not lose the thrust ball (19h). 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.

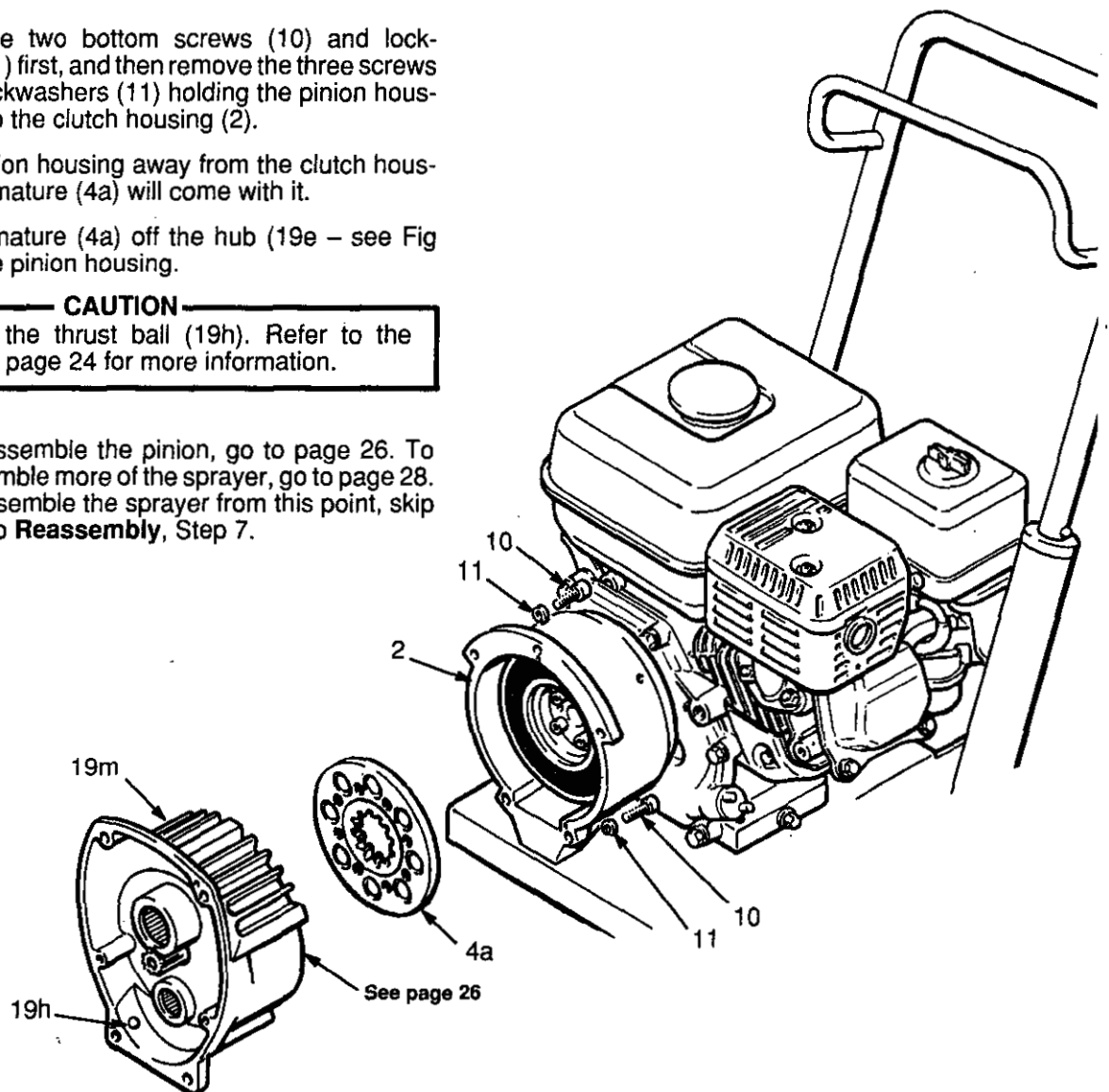


Fig 25-1

Repairing the Pinion

WARNING

To reduce the risk of serious bodily injury, including fluid injection, splashing fluid in the eyes or on the skin, or injury from moving parts, always follow the **Pressure Relief Procedure Warning** on page 17 before repairing any part of the sprayer. Disconnect the spark plug cable.

NOTE: Refer to Fig 27-1 unless otherwise instructed.

NOTE: A hydraulic press is required for disassembly and reassembly if you purchase the pinion parts individually. If you do not have such a press, use Repair Kit 221-043, which includes the shaft and bearings pre-assembled and lubricated.

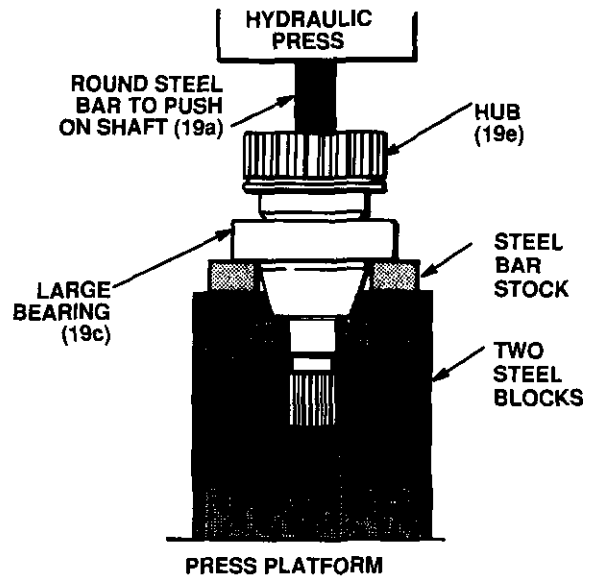
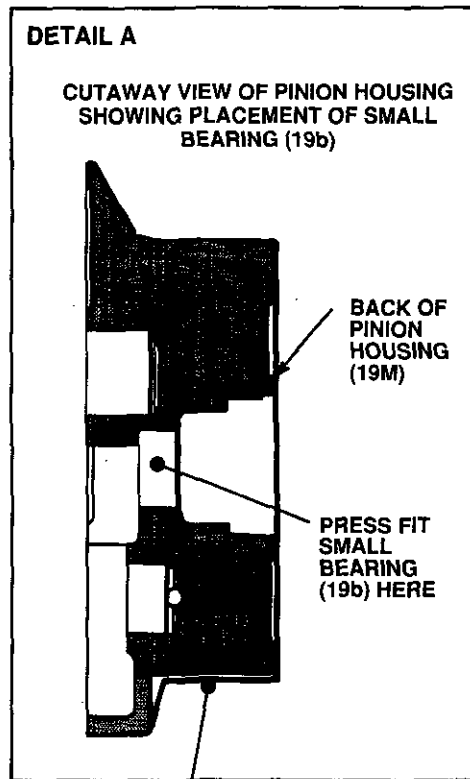
If you are using the Repair Kit, 221-043, follow Steps 1 to 4, below.

1. Remove the small ring (19d) from the hub and the large ring (19j) from the bearing recess.
2. Push on the front of the shaft (19a) to force the bearing and hub assembly out of the housing.
3. Press the small bearing (19b) out of the pinion housing (19m). Remove the new bearing from the shaft of the kit and press it into the housing. See DETAIL A in Fig 27-1.
4. Skip ahead to **Reassembly**, Step 7, or continue at the next section.

If you have purchased parts separately, use the following instructions, disassembling only as far as needed for the parts being replaced.

NOTE: The old large bearing (19c) will be damaged when removed. Have an extra one on hand if you need to remove it for any reason.

1. If replacing the small bearing (19b), press the old one out of the pinion housing (19m).
2. Remove the small ring (19d) from the hub and the large ring (19j) from the bearing recess.
3. Push on the front of the shaft (19a) to force the bearing and hub assembly out of the housing.
4. **Using a hydraulic press**, place pieces of steel bar stock on the inner race of the large bearing (19c) and press the shaft through the hub and bearing. See Fig 27-2.
5. Apply lubricant to the parts as shown in Fig 27-1.
6. Press fit the following parts:
 - Small bearing (19b) into rear of housing (19m). See DETAIL A in Fig 27-1.
 - Large bearing (19c) to shoulder of shaft (19a).
 - Hub (19e) onto the shaft (19b) all the way to the large bearing (19c).
 - Bearing/hub assembly (19c,19e) to the shoulder of the housing (19m).
7. Install the rings (19j and 19e).
8. Skip ahead to **Reassembly**, Step 7, or continue at the next section.



PLACEMENT OF STEEL BLOCKS AND BAR STOCK WHEN PRESSING OFF LARGE BEARING

Fig 27-2

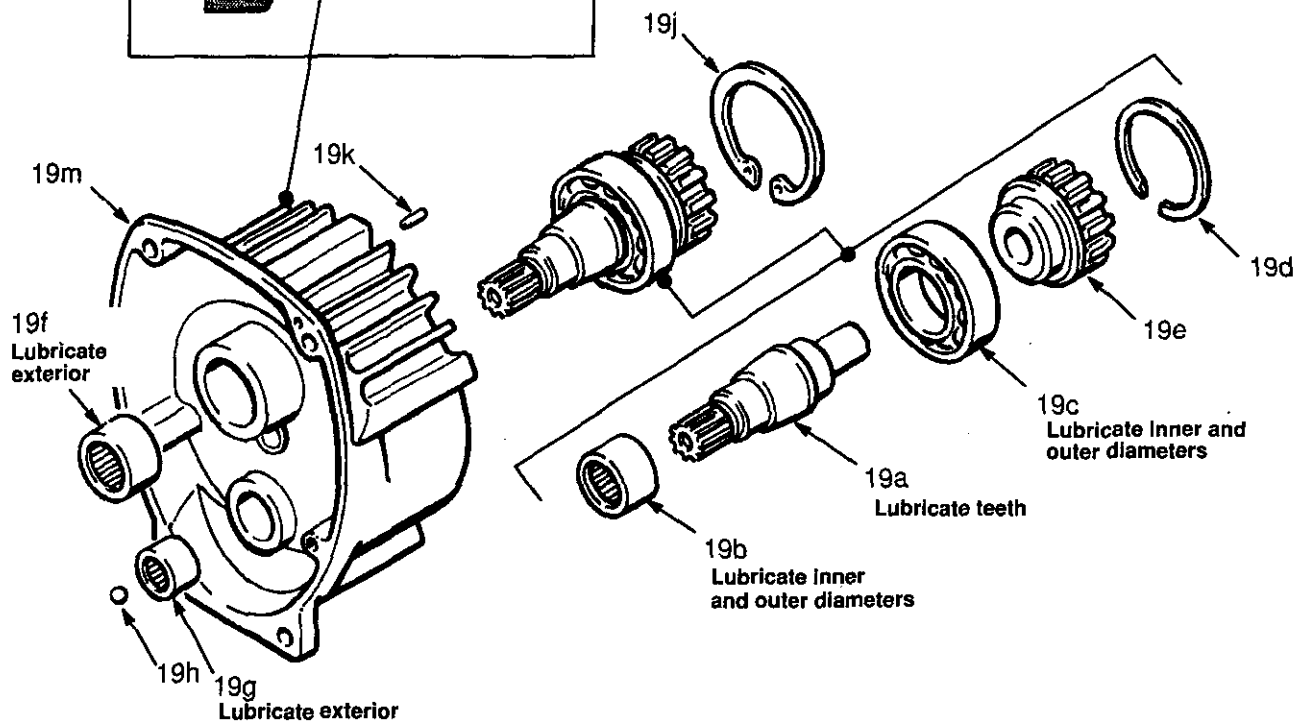


Fig 27-1

Clutch Assembly

NOTE: The clutch assembly (4) includes the armature (4a) and rotor (4b). The armature and rotor must be replaced together so that they wear evenly.

NOTE: If the pinion assembly (19) is not yet separated from the clutch housing, follow Steps 1 to 4. Otherwise, start at Step 5.

1. Follow the **Pressure Relief Procedure Warning** on page 17.
2. Disconnect the hose (59) from the displacement pump.
3. Removing the bottom two screws first, remove the five screws (10) and lockwashers (11) from the front of the clutch housing (2).
4. Tap lightly on the back of the bearing housing (21) with a plastic mallet to loosen the assembly (D) from the clutch housing. Pull the assembly away.

5. The armature (4a) was removed when pulling off the pinion housing. Remove the armature from the pinion shaft.
6. There are two ways to remove the rotor (4b).
 - a. Remove the four socket head capscrews (16) and lockwashers (11). Install two of the screws in the threaded holes in the rotor. Alternately tighten the screws until the rotor comes off. See Fig 28-1.
 - b. You can use a standard steering wheel puller. However, you need to provide two screws (B), size 1/4-28 x 3 or 4 in. long. Install the four screws and lockwashers (B) of the tool (A) in the threaded holes of the rotor. Tighten the capscrew (C) of the tool until the rotor comes off. See the detail in Fig 28-1.
7. Skip ahead to **Reassembly**, Step 6, or continue on the next page.

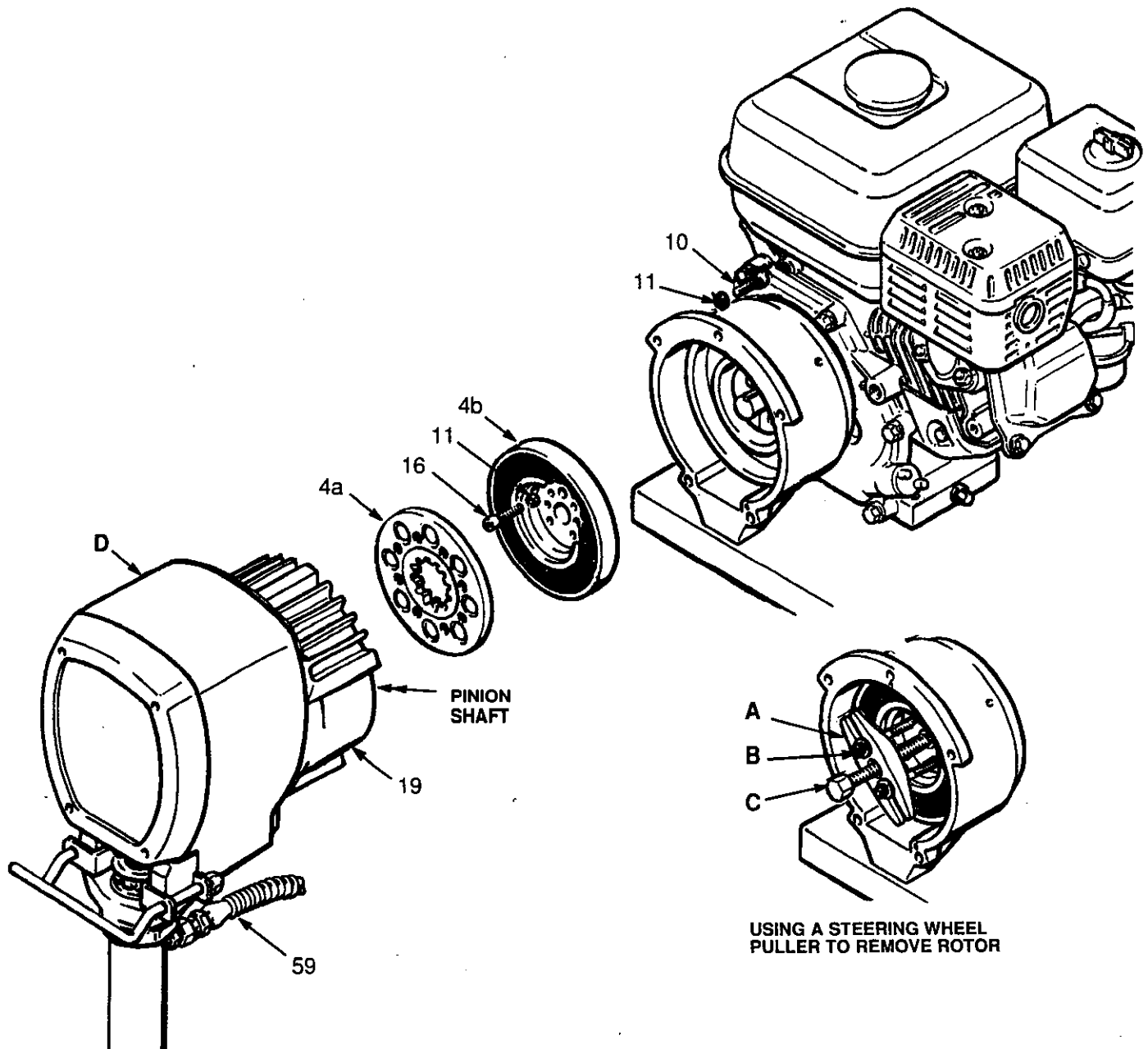


Fig 28-1

Engine

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), lock-washer (80) and washer (34) holding the clutch housing (2) to the cart. See Fig 29-1.
2. Still working under the mounting plate, remove the two nuts (61) and lock-washers (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 wire 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**. See pages 30 and 31.
5. Skip ahead to **Reassembly**, Step 1.

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

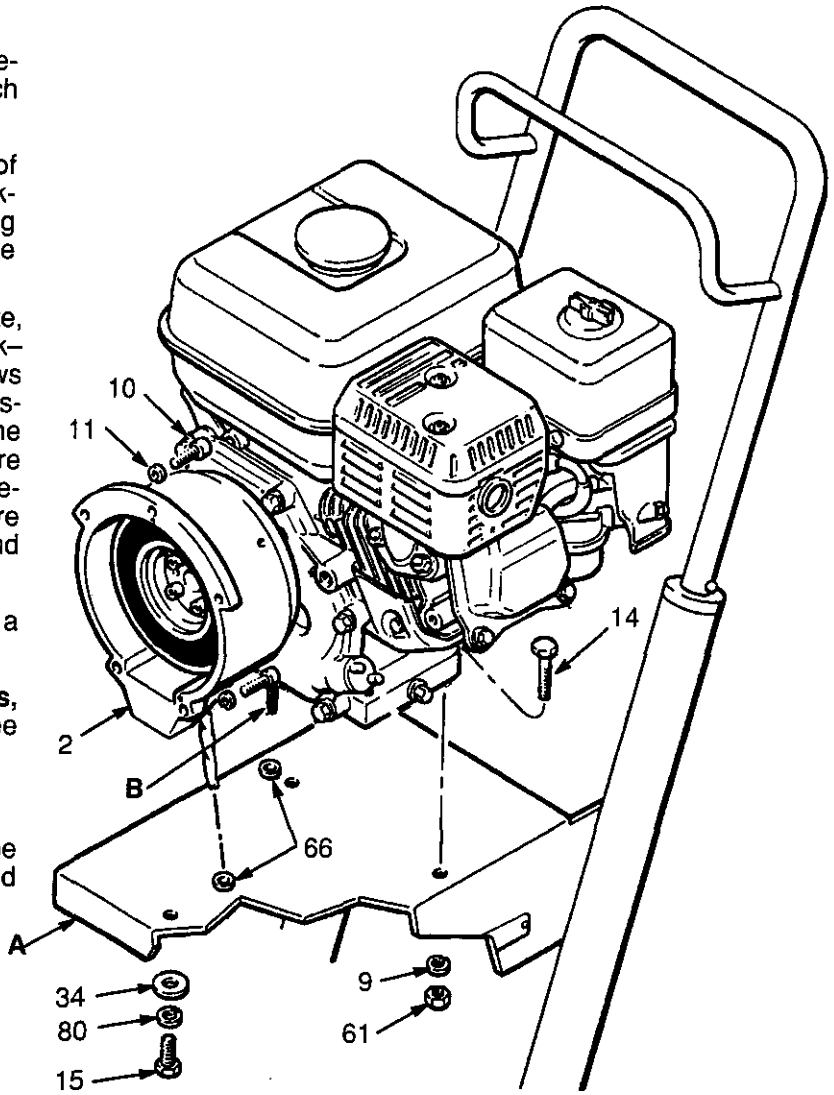
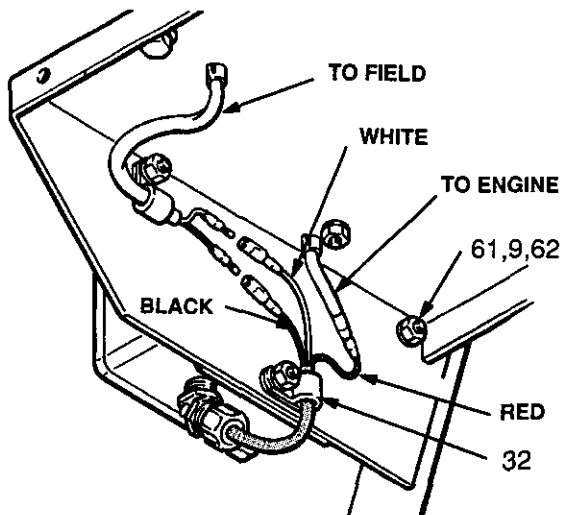
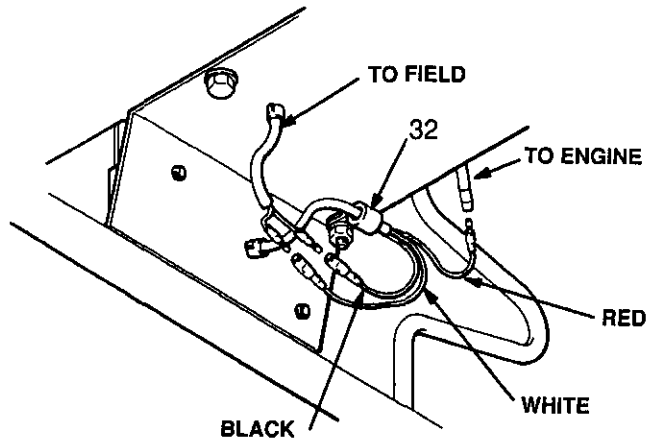


Fig 29-1



VIEW FROM UNDER ENGINE MOUNTING PLATE ON UPRIGHT CART



VIEW FROM UNDER ENGINE MOUNTING PLATE ON LO-BOY CART

Fig 29-2

Field and Wiring Harness

NOTE: Refer to Fig 30-1.

1. Remove the engine from the cart. See page 29.
2. Loosen the four setscrews (12) holding the field (6) to the clutch housing (2) and pull out the field.
3. Pull the plastic caps (B) off the wire screws (33) in both places on the field. Loosen the screws and release the wires. See Fig 30-1.
4. Skip ahead to **Reassembly**, Step 4.

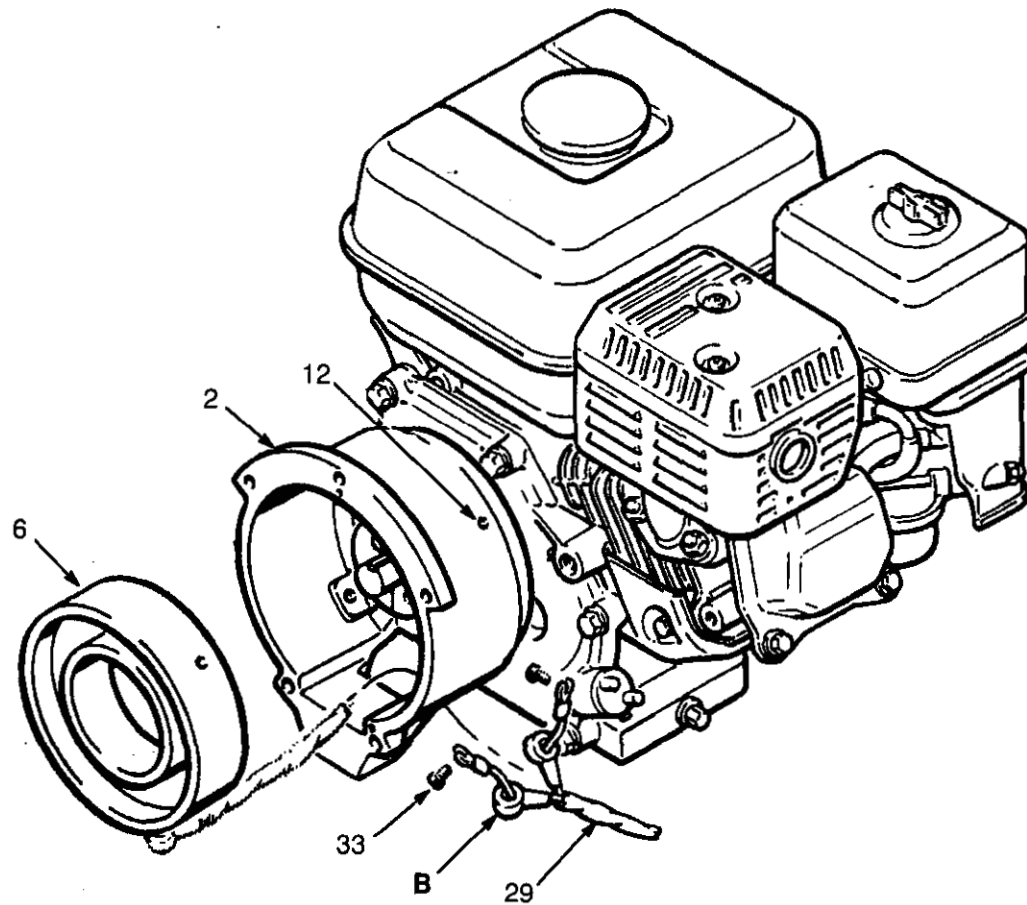


Fig 30-1

Clamp

NOTE: Removing the clamp requires a standard steering wheel puller. However, you will need to provide two screws (B), size 1/4-28 x 3 or 4 inches long.

NOTE: Refer to Fig 31-1.

1. Loosen the two screws (16) on the clamp (7), 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. Tighten the screw (C) until the clamp comes off.
3. Skip ahead to **Reassembly**, Step 3, or continue to the right.

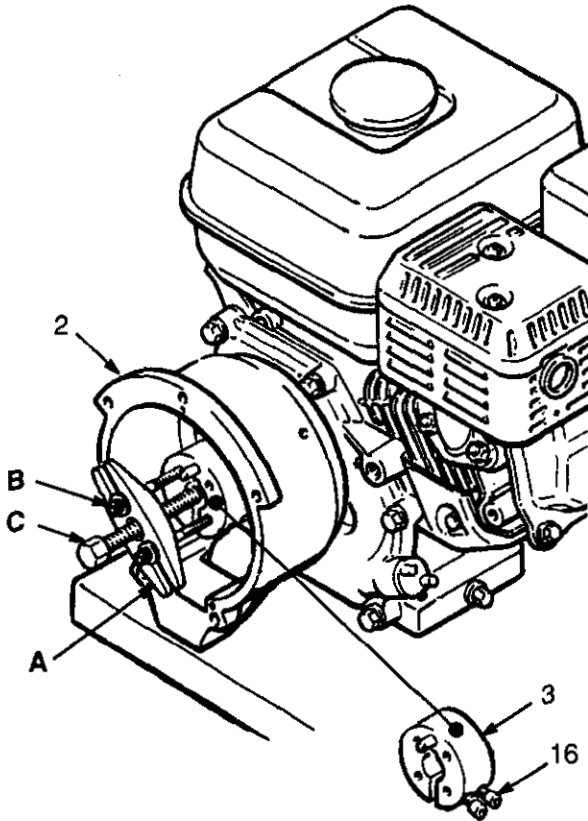


Fig 31-1

Clutch Housing

NOTE: Refer to Fig 31-2.

1. Remove the four capscrews (8) and lockwashers (9) holding the clutch housing (2) to the engine.
2. Remove the capscrew (15), lockwasher (80) and washer (34) from below the mounting plate (D).
3. Remove the engine key (13).
4. Pull off the clutch housing (2).
5. Skip ahead to **Reassembly**, Step 1, or continue on the next page.

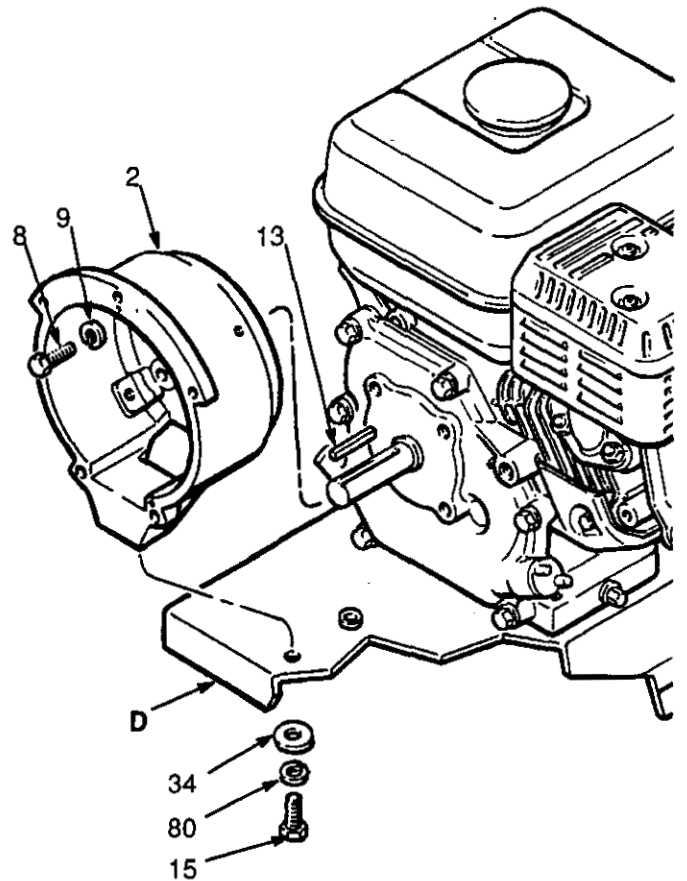


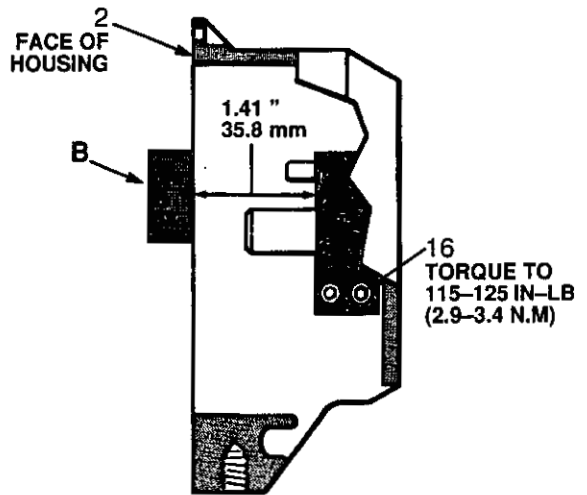
Fig 31-2

Reassembly

1. Install the **clutch housing (2)**, capscrews (8) and lockwashers (9) on the engine. See Fig 32-1.
2. Install the engine shaft **key (13)**. See Fig 32-1.
3. Press the **clamp (3)** onto the engine shaft, making sure you maintain the 1.41 in. \pm 0.01 (35.8 mm) dimension shown in Fig 32-2.

To check the dimension, place a rigid, straight steel bar (B) across the face of the clutch housing (2). Using an accurate measuring device, check the distance between the bar and the face of the clamp. Adjust the clamp as necessary, and then torque the two screws to 115-125 in-lb (13-15 N.m).

4. Connect the wires (29) to the screws (33) in both places on the field. Pull the plastic caps (C) up and snap over the screws. Guide the wires of the harness (96) through the slot in the clutch housing. Slide the **field (6)** in the clutch housing (2). Make sure the setscrew holes in the field and the clutch housing (2) align, and then tighten the setscrews (12) oppositely and evenly, torquing to 25-30 in-lb (2.9 to 3.4 N.m). See Fig 32-1.



SIDE CUTAWAY VIEW OF CLUTCH HOUSING

Fig 32-2

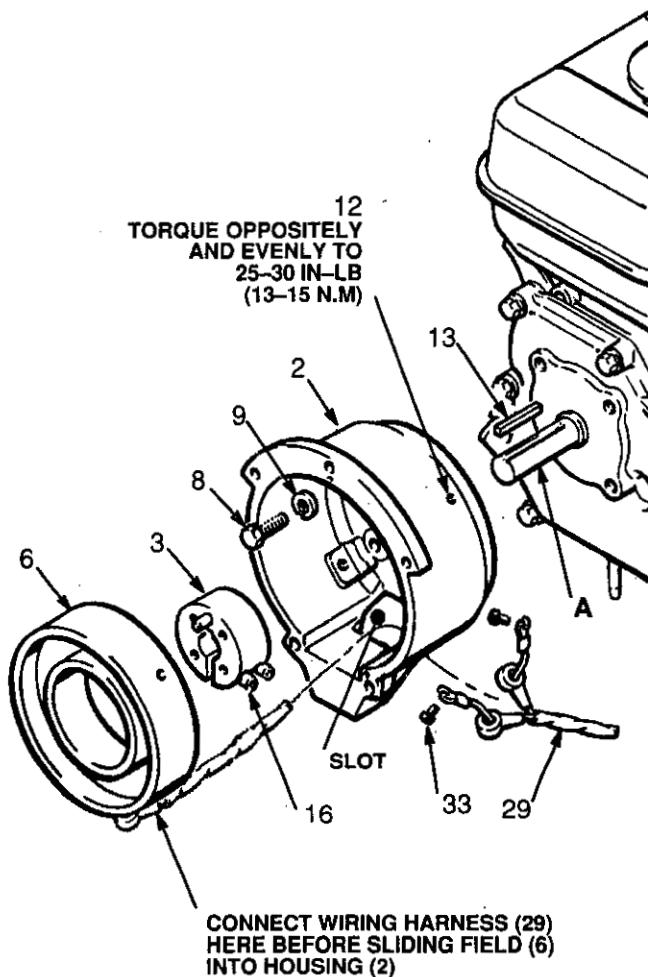


Fig 32-1

REPAIR

5. Place the **engine (1)** assembly on the cart, aligning the mounting holes, and carefully guiding the engine wire (D) and wiring harness (29) from the field, through the appropriate grommets (66) in the mounting plate (E). Secure the engine with the capscrows (14), lockwashers (9) and nuts (61). Secure the clutch housing (2) with the capscrows (15), lockwasher (80) and washer (34). Under the mounting plate, connect the engine wire to the red wire and connect the black and white wires. See Fig 33-1.
6. Making sure the face of the **rotor (4b)** and the field is free of all oil and contaminants, install the rotor, lockwashers (11) and capscrows (16). Torque the capscrows to 6.5 to 7.5 ft-lb (8.8 to 10 N.m). See Fig 33-1.
7. Making sure the face of the **armature (4a)** is clean, assemble the armature to the shaft in the pinion housing (19) until the armature contacts the ring (19j). See Fig 33-1.
8. Assemble the **pinion housing (19)** to the clutch housing using capscrows (10) and lockwashers (11). See Fig 33-1.

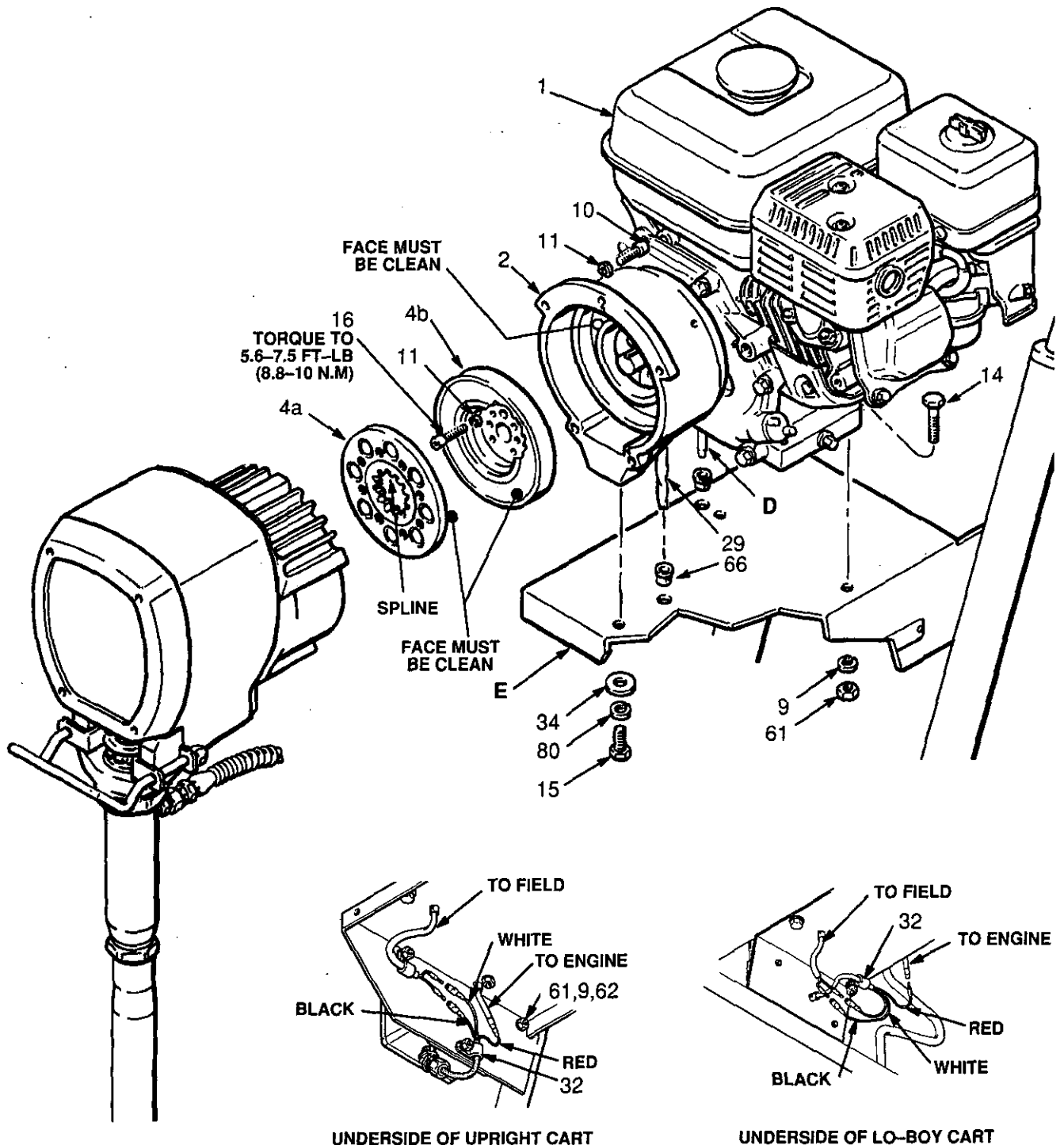
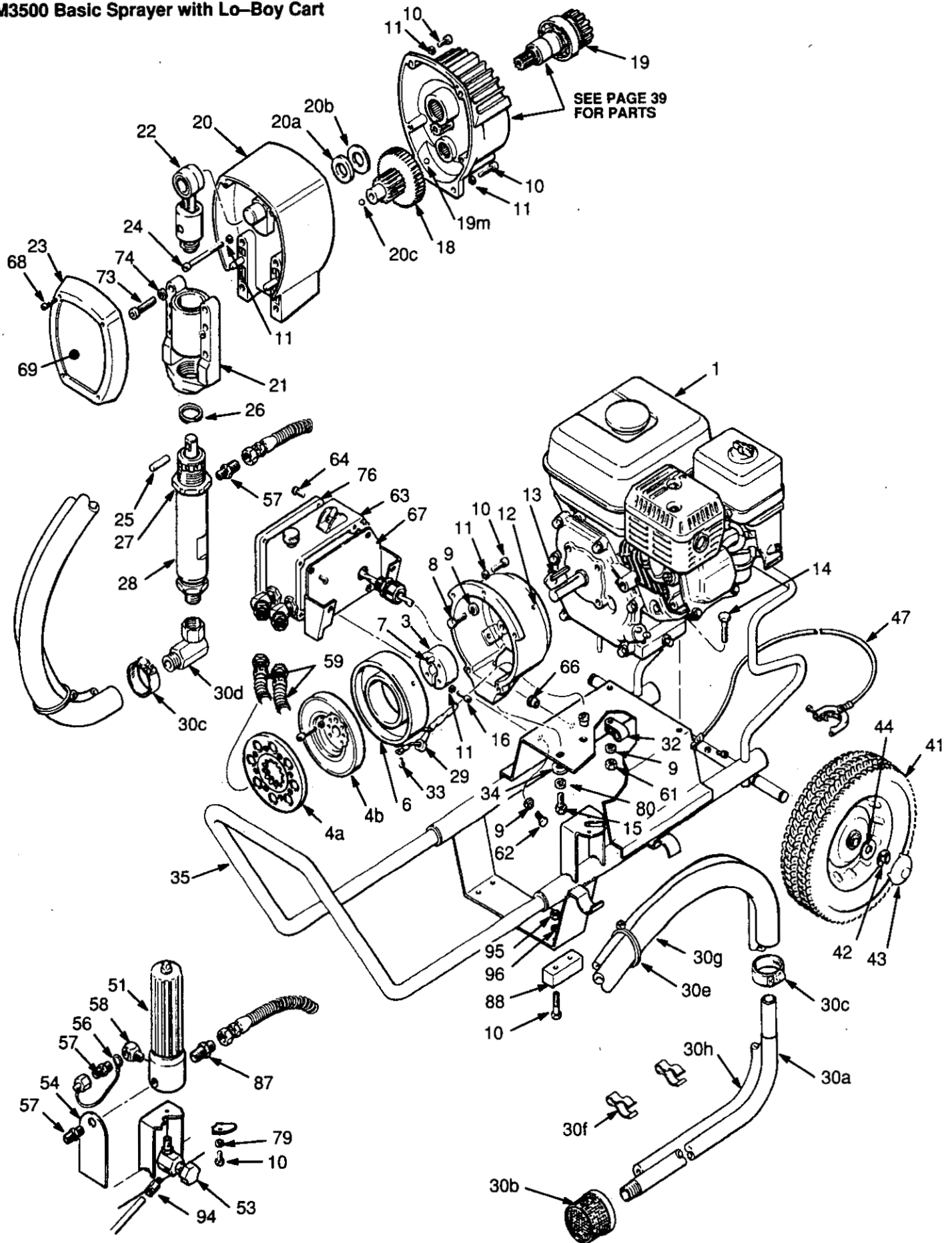


Fig 33-1

PARTS DRAWING

Model 220-028, Series A GM3500 Basic Sprayer with Lo-Boy Cart



PARTS LIST

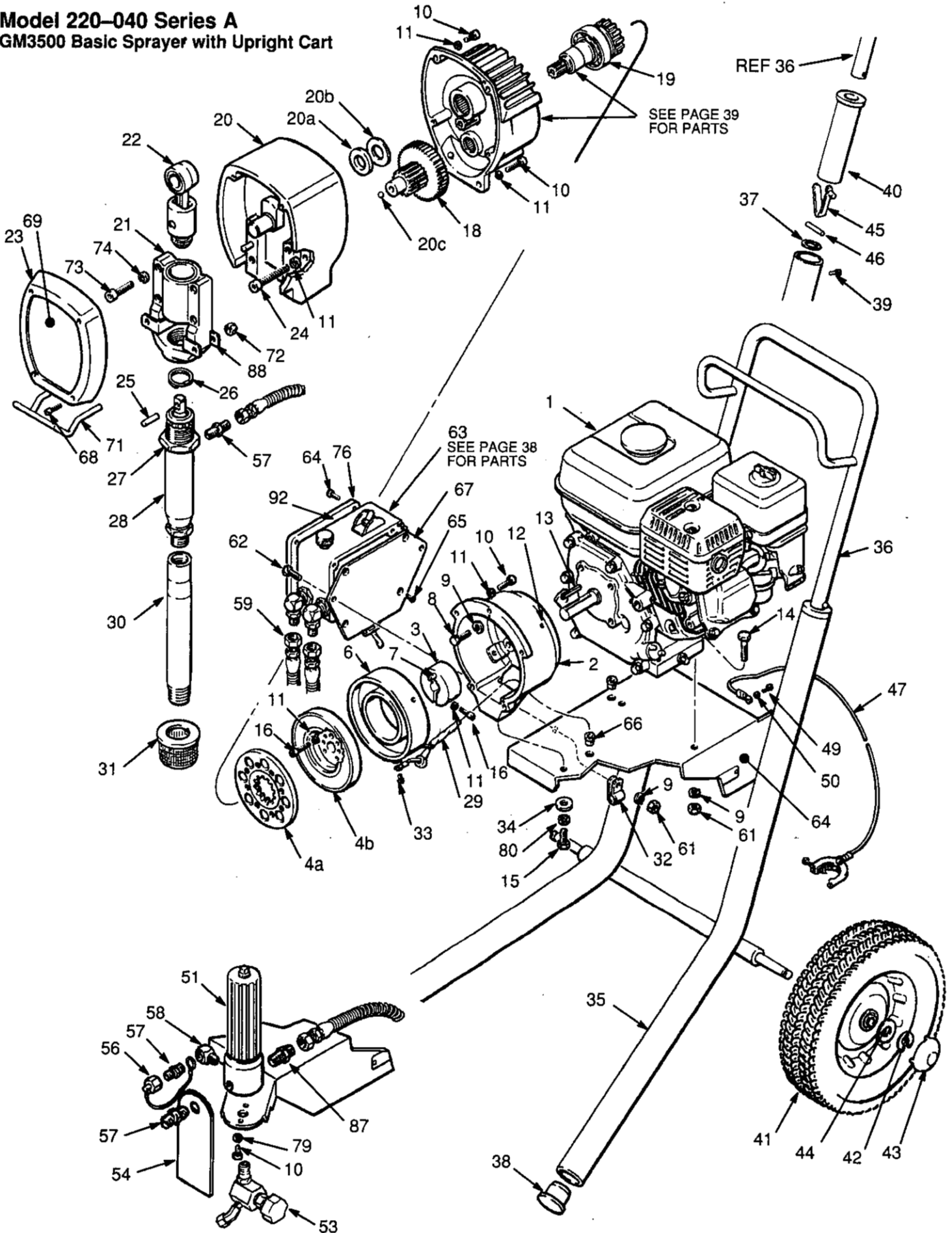
Model 220-028, Series A
GM3500 Basic Sprayer with Lo-Boy Cart
 Includes items 1 to 99

REF NO.	PART NO.	DESCRIPTION	QTY	REF NO.	PART NO.	DESCRIPTION	QTY
1	108-879	ENGINE, GASOLINE, 3.5 HP	1	33	109-033	SCREW, MACH, SLOTTED, BDGH 6-32 X 3/16"	2
2	183-512	HOUSING, CLUTCH	1	34	108-851	WASHER, PLAIN; TYPE "B"; 3/8"	1
3	183-517	CLAMP, MOUNTING, ROTOR	1	35	222-088	CART	
4	221-044	CLUTCH KIT INCLUDES ITEMS 4a & 4b	1	41	106-062	WHEEL	2
4a		ARMATURE	1	42	101-242	RING, RETAINING	4
4b		ROTOR	1	43	104-811	HUBCAP	2
6	183-513	FIELD	1	44	154-636	WASHER, 5/8" SIZE; 16GA	4
7	108-800	PIN, DOWEL; 5/16 X 1"	1	45	108-982	CONNECTOR, TUBE	1
8	109-031	CAPSCREW, 1/4" SCH; 5/16-24 X 1"	4	47	222-011	CLAMP, GROUNDING; 25 FT (7.6 M) WIRE	1
9	100-214	LOCKWASHER, 5/16"	5	49	100-078	SCREW, HX WSHR HD MACH; NO. 8-32 X 0.38"	1
10	100-644	CAPSCREW, SCH; 1/4-20 UNC-3A X .75"	15	50	157-021	LOCKWASHER, INTERNAL	1
11	105-510	LOCKWASHER, SPRING; 1/4"	17	51	214-570	FLUID FILTER SEE 307-273 FOR PARTS	1
12	108-801	SETSCREW, 1/4"	4	52	181-867*	LABEL, WARNING	1
13	183-401	KEY, PARALLEL; 3/16" SQ X 7/8"	1	53	221-077	PRESSURE DRAIN VALVE	1
14	102-547	CAPSCREW, HEX HD; 5/16-18 UNC-2A X .875"	2	54	178-034*	TAG, WARNING	1
15	100-469	CAPSCREW, HEX HD; 3/8-16 UNC-2A X .75"	1	56	220-285	CAP	1
16	108-803	SCREW, HEX SOC HD;	6	57	162-453	NIPPLE, HEX; 1/4 NPSM X 1/4 NPT, 1-3/16" LONG	2
17	183-767*	LABEL, WARNING, HP	1	58	100-840	ELBOW, STREET, 1/4-18 (M X F)	1
18	221-042	GEAR REDUCER	1	59	222-096	HOSE, FLUID, GROUNDED, NYLON; 1/4" ID; 29" (715 MM); CPLD	
19		PINION & HOUSING SEE PARTS LIST ON PAGE 39	1			SPRING GUARD BOTH ENDS	2
20	222-203	DRIVE HOUSING, INCLUDES REPLACEABLE PARTS 20a TO 20c	1	61	100-188	NUT, HEX, 5/16-18	2
20a	178-967	WASHER, BRONZE	1	62	100-001	CAPSCREW, HEX HD; 5/16-18 UNC-2A X .625"	3
20b	107-089	WASHER, SILVER	1	63	222-027	SWITCH, PRESSURE CONTROL SEE PARTS LIST ON PAGE 38	1
20c	107-327	GREASE, 10 OZ TUBE	1	64	106-075	SCREW, MACH, OVHD, THD FRMG; NO 6-24 X 1/2", TYPE "C"	4
21	218-035	BEARING HOUSING,	1	66	109-099	BUSHING, SNAP	2
22	218-034	CONNECTING ROD	1	68	107-209	SCREW, MACH, FILH; NO. 8-32 X 1"	4
23	179-899	COVER, HOUSING	1	69	183-519	LABEL, ID, GM3500, FRONT	1
24	107-218	CAPSCREW, SCH; 1/4-20 X 2.75"	2	70	102-556	RIVET, BLIND; 0.125" DIA.	2
25	176-818	PIN	1	73	107-210	CAPSCREW, SCH; 3/8-16 UNC-3A X 1-1/2"	4
26	176-817	SPRING, RETAINING	1	74	106-115	LOCKWASHER, SPRING; 3/8"	4
27	178-941	NUT, HEX	1	76	179-959	COVER, PRESSURE CONTROL	1
28	217-570	DISPLACEMENT PUMP SEE 307-793 FOR PARTS SEE PAGE 41 FOR REPAIR KIT	1	77	183-518	LABEL, ID, GM3500, SIDE	1
29	221-183	CONDUCTOR, ELECTRICAL	1	80	100-133	LOCKWASHER, SPRING; 0.375"	1
30	222-055	SUCTION KIT INCLUDES ITEMS 30a to 30h	1	86	206-994	THROAT SEAL LIQUID, 8 OZ.	1
30a	183-769	TUBE, SUCTION, 5 GAL.; 3/4" PIPE	1	88	109-059	PAD, RUBBER	2
30b	183-770	STRAINER	1	92	177-762	LABEL, WARNING	1
30c	103-927	CLAMP	2	94	108-982	CONNECTOR	1
30d	221-101	UNION, ADAPTER, 3/4 NPS (F) SWIVEL X .75" TUBE	1	95	100-015	NUT, HEX; MSCR; 1/4-10 UNC-2A	4
30e	103-473	STRAP, TIE	2	96	100-016	LOCKWASHER, SPRING; 0.25"	6
30f	178-342	CLIP, SPRING	2	98	183-843	TUBE, BY-PASS	1
30g	176-920	HOSE, SUCTION, NYLON; 36" (.9 M)	1	99	164-672	ADAPTER, 1/4-18 NPSM X 3/8 NPT	1
30h	183-281	TUBE, BY-PASS	1				
32	108-868	CLAMP	1				

*Extra warning labels available free of charge.

PARTS DRAWING

Model 220-040 Series A
GM3500 Basic Sprayer with Upright Cart



PARTS LIST

Model 220-040, Series A
GM3500 Basic Sprayer with Upright Cart
 Includes items 1 to 92

REF NO.	PART NO.	DESCRIPTION	QTY	REF NO.	PART NO.	DESCRIPTION	QTY
1	108-879	ENGINE, GASOLINE, 3.5 HP	1	40	183-194	SLEEVE	2
2	183-512	HOUSING, CLUTCH	1	41	106-062	WHEEL	2
3	183-517	CLAMP, MOUNTING, ROTOR	1	42	101-242	RING, RETAINING	2
4	221-044	CLUTCH KIT		43	104-811	HUBCAP	2
		INCLUDES ITEMS 4a & 4b	1	44	154-636	WASHER, 5/8" SIZE; 16GA	2
4a		.ARMATURE	1	45	179-777	BUTTON, SNAP	2
4b		.ROTOR	1	46	108-068	PIN, SPRING, STRAIGHT, 3/16"	2
6	183-513	FIELD	1	47	222-011	CLAMP, GROUNDING; 25 FT (7.6 M) WIRE	1
7	108-800	PIN, DOWEL; 5/16 X 1"	1	49	100-078	SCREW, HEX WASHER HD; MACH; NO. 8-32 X 0.38"	1
8	109-031	CAPSCREW, 1/4" SCH; 5/16-24X 1"	4	50	157-021	LOCKWASHER, INTERNAL	1
9	100-214	LOCKWASHER, 5/16"	5	51	214-570	FLUID FILTER	
10	100-644	CAPSCREW, SCH; 1/4-20 UNC-3A X .75"	11			SEE 307-273 FOR PARTS	1
11	105-510	LOCKWASHER, SPRING; 1/4"	17	52	181-867*	LABEL, WARNING	1
12	108-801	SETSCREW, 1/4"	4	53	221-077	PRESSURE DRAIN VALVE	1
13	183-401	KEY, PARALLEL; 3/16" SQ X 7/8"	1	54	178-034*	TAG, WARNING	1
14	102-547	CAPSCREW, HEX HD; 5/16-18 UNC-2A X .875"	2	56	220-285	CAP	1
15	100-469	CAPSCREW, HEX HD; 3/8-16 UNC-2A X .75"	1	57	162-453	NIPPLE, HEX; 1/4 NPSM X 1/4 NPT, 1-3/16" LONG	2
16	108-803	SCREW, HEX SOC HD	6	58	100-840	ELBOW, STREET, 1/4-18 NPT (M X F)	1
17	179-885	LABEL, WARNING, HP	1	59	218-083	HOSE, FLUID, GROUNDED, NYLON; 1/4" ID CPLD 1/4 NPSM(F); 29" (715 MM); SPRING GRDS BOTH ENDS	2
18	221-042	GEAR REDUCER	1				
19		PINION & PINION HOUSING		61	100-188	NUT, HEX, 5/16-18	5
		SEE PARTS LIST ON PAGE 39	1	62	101-344	CAPSCREW, HEX HD; 5/16-18 UNC-2A X .625"	3
20	222-203	DRIVE HOUSING		63	221-039	PRESSURE CONTROL SWITCH	
		INCLUDES ITEMS 20a & 20b	1			SEE PARTS LIST ON PAGE 40	1
20a	178-967	.WASHER, BRONZE	1	64	106-075	SCREW, MACH, OVHD, THD FRMG; NO 6-24 X 1/2", TYPE "C"	8
20b	107-089	.WASHER, SILVER	1	66	109-099	BUSHING, SNAP	2
20c	107-327	.GREASE, 10 OZ TUBE	1	67	183-392	BRACKET, MOUNTING	1
21	218-035	BEARING HOUSING	1	68	107-209	SCREW, MACH, FILH; NO. 8-32 X 1"	4
22	218-034	CONNECTING ROD	1	69	183-519	LABEL, ID, GM3500, FRONT	1
23	179-899	COVER, HOUSING	1	70	102-556	RIVET, BLIND	2
24	107-218	CAPSCREW, SCH; 1/4-20 X 2.75"	2	71	183-037	HANGAR, PAIL	1
25	176-818	PIN	1	72	108-662	NUT, RETAINER	2
26	176-817	SPRING, RETAINING	1	73	107-210	CAPSCREW, SCH; 3/8-16 UNC-3A X 1-1/2"	4
27	178-941	NUT, HEX	1	74	106-115	LOCKWASHER, SPRING; 3/8"	4
28	217-577	DISPLACEMENT PUMP		76	179-959	COVER, PRESSURE CONTROL	1
		SEE 307-793 FOR PARTS		77	183-518	LABEL, ID, GM3500, SIDE	1
		SEE PAGE 41 FOR REPAIR KIT	1	79	100-016	LOCKWASHER, SPRING, 1/4"	2
29	221-183	CONDUCTOR, ELECTRICAL	1	80	100-133	LOCKWASHER, SPRING; .375"	1
30	180-573	TUBE, SUCTION, 5 GAL.; 3/4" PIPE	1	86	206-994	THROAT SEAL LIQUID, 8 OZ.	1
31	181-072	STRAINER	1	87	164-672	ADAPTER, 1/4-18 NPSM X 3/8 NPT	1
32	108-868	CLAMP	2	88	183-035	BRACKET	2
33	109-033	SCREW, MACH, SLOTTED, BDGH; 6-32 X 3/16"	2	92	177-762	LABEL, WARNING	1
34	108-851	WASHER, PLAIN; TYPE "B"; 3/8"	1				
35	222-018	CART	1				
36	220-918	HANDLE & HOSE RACK	1				
37	183-350	WASHER, PLAIN, 0.90"	2				
38	108-691	PLUG, TUBING	2				
39	109-032	SCREW, MACH, TYPE 11; RECESS PNH; SELF-TAP "F" NO. 10-24 X 1/4"	4				

*Extra warning labels available free of charge.

PARTS LIST

Model 231-057

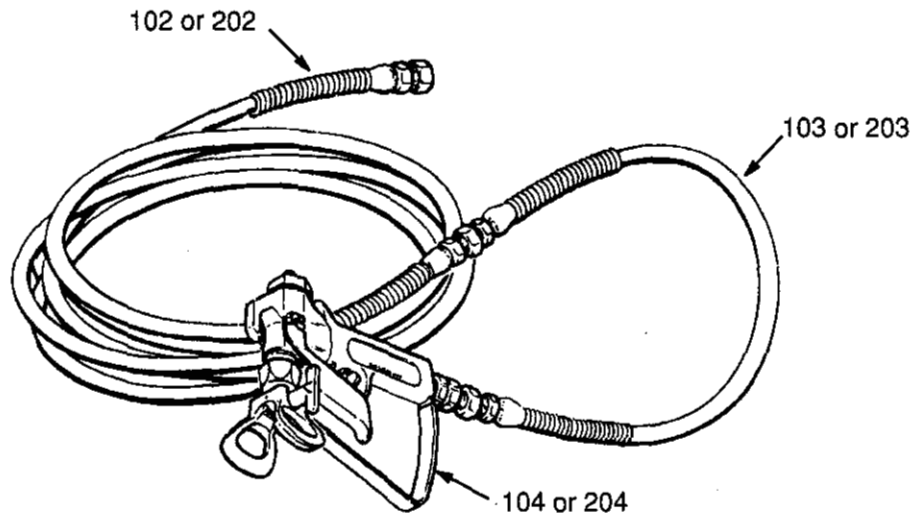
GM3500 Sprayer with Upright Cart and Hose Kit
Includes items 101 and 104

REF NO.	PART NO.	DESCRIPTION	QTY
101	221-040	BASIC SPRAYER SEE PARTS ON PAGE 37	1
102	210-541	HOSE, GROUNDED, NYLON; 1/4" ID; CPLD 1/4 NPSM(FBE); 50 FT (15 M); SPRING GUARDS BOTH ENDS	1
103	214-701	HOSE, GROUNDED, NYLON; 3/16" ID; CPLD 1/4 NPSM(F); 3 FT (0.9 M); SPRING GUARDS BOTH ENDS	1
104	220-955	CONTRACTOR SPRAY GUN; INCLUDES RAC IV DRIPLESS TIP GUARD AND 517 SIZE SWITCHTIP	1

Model 231-077

GM3500 Sprayer with Low Boy Cart and Hose Kit
Includes items 201 and 204

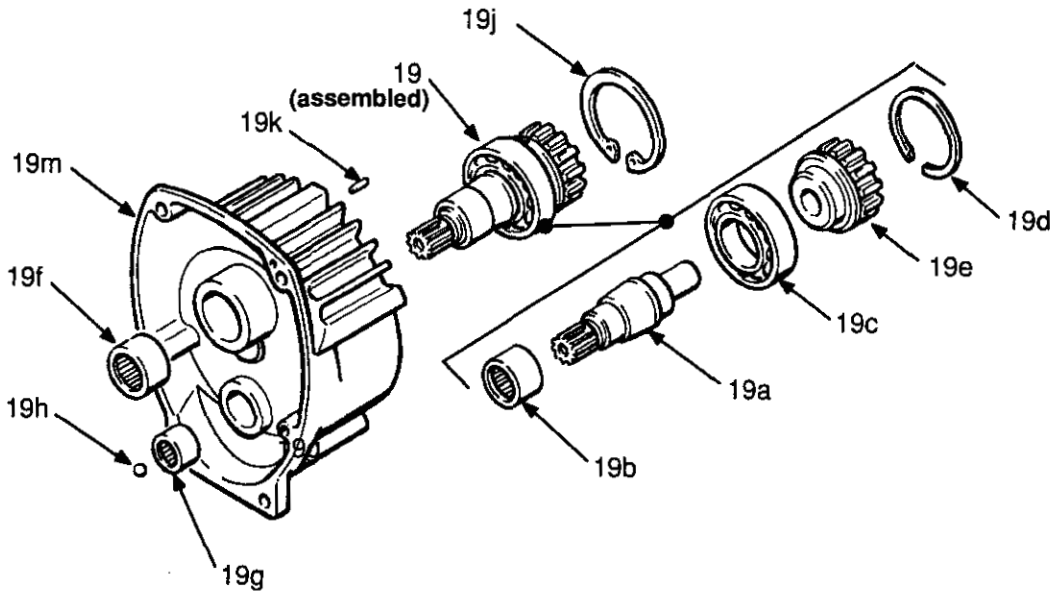
REF NO.	PART NO.	DESCRIPTION	QTY
201	221-028	BASIC SPRAYER SEE PARTS ON PAGE 35	1
202	210-541	HOSE, GROUNDED, NYLON; 1/4" ID; CPLD 1/4 NPSM(FBE); 50 FT (15 M); SPRING GUARDS BOTH ENDS	1
203	214-701	HOSE, GROUNDED, NYLON; 3/16" ID; CPLD 1/4 NPSM(F); 3 FT (0.9 M); SPRING GUARDS BOTH ENDS	1
204	220-955	CONTRACTOR SPRAY GUN; INCLUDES RAC IV DRIPLESS TIP GUARD AND 517 SIZE SWITCHTIP	1



PARTS LIST

Ref No. 19
Pinion Assembly
Parts listed below

REF NO.	PART NO.	DESCRIPTION	QTY	REF NO.	PART NO.	DESCRIPTION	QTY
19	221-043	PINION SHAFT ASSEMBLY INCLUDES ITEMS 19a - 19e	1	NOTE: Items 19f to 19m are not included in a kit. Order them separately as needed.			
19a	183-681	.SHAFT, PINION	1	19f	105-684	BEARING, BALL, LARGE	1
19b	109-001	.BEARING, NEEDLE	1	19g	107-088	BEARING, BALL, SMALL	1
19c	109-002	.BEARING, BALL	1	19h	100-069	BALL, SST	1
19d	108-880	.RING, RETAINING, EXTERNAL	1	19i	109-000	RING, RETAINING, INTERNAL	1
19e	183-515	.HUB, ARMATURE	1	19k	105-489	PIN, DOWEL	2
				19m	183-516	HOUSING, PINION	1



PARTS LIST

Part No. 221-039

For Upright Sprayer, Model 220-040
Includes items 300 to 314

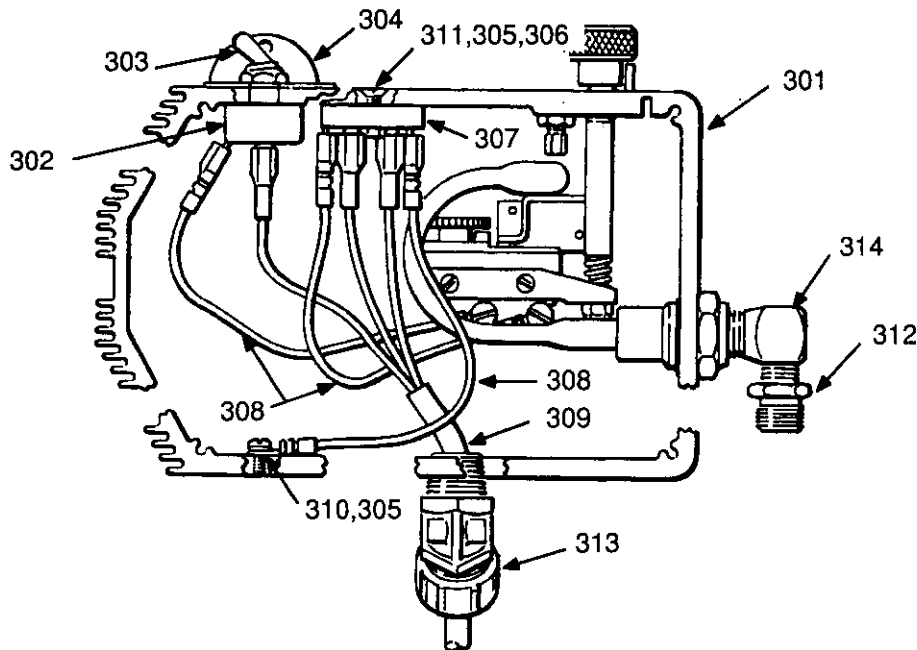
Part No. 222-027

For Lo-Boy Sprayer, Model 220-028
Includes items 302 to 311. and 315,316

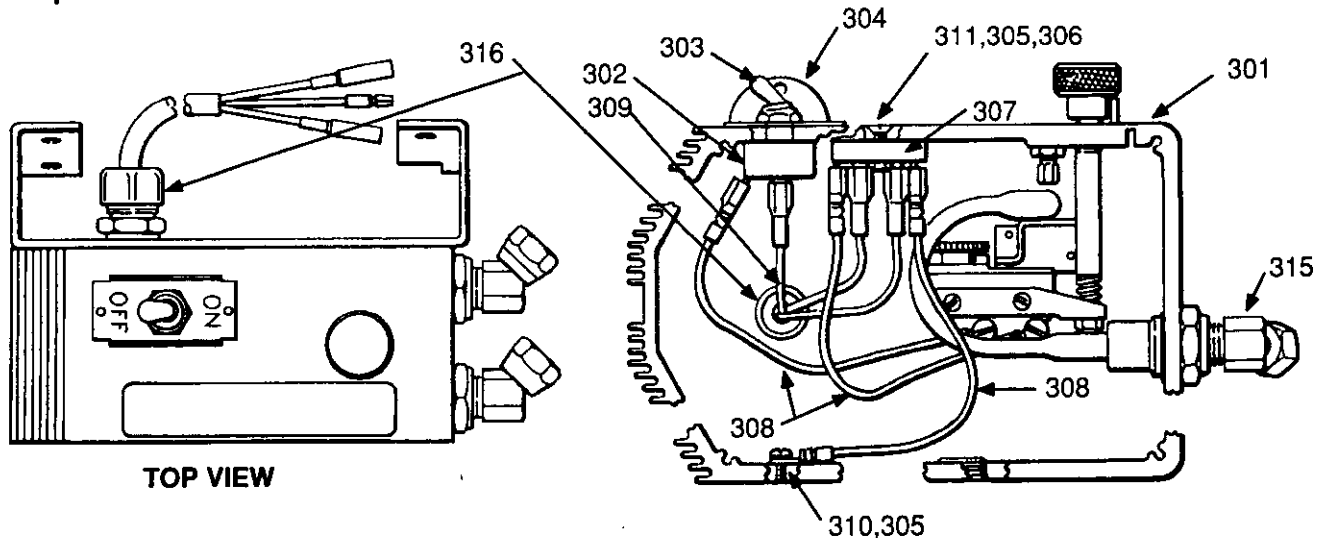
REF NO.	PART NO.	DESCRIPTION	QTY	REF NO.	PART NO.	DESCRIPTION	QTY
300	220-921	BARE PRESSURE CONTROL INCLUDES ITEMS 301 TO 304	1	310	100-035	SCREW, MACH, SLOTTED PAN HD; NO. 8 X 5/16"	1
301	183-466*	.LABEL, WARNING	1	311	108-783	SCREW, MACH, FLAT HD NO. 8-32 UNC-2A X .812"	1
302	105-679	.ON/OFF SWITCH	1	312	162-453	NIPPLE, HEX; 1/4 NPSM X 1/4 NPT, 1-3/16" LONG	2
303	105-659	.BOOT, ON/OFF SWITCH	1	313	108-852	CONNECTOR, 45 DEG	1
304	107-255	.GUARD, LOCKING	1	314	100-840	ELBOW, STR, 1/4-18 NPT (M X F)	2
305	157-021	LOCKWASHER, NO. 8, INT.	2	315	109-106	UNION, 45 DEG	1
306	100-284	NUT, HEX, MSC, 8-32 UNC-2A	1	316	109-078	ADAPTER, STR	1
307	108-219	RECTIFIER, BRIDGE	1				
308	220-979	CONDUCTOR, ELECTRICAL, RED	3				
309	220-978	CONDUCTOR, ELECTRICAL RED, WHITE, BLACK	1				

*Extra warning labels available free.

Complete Pressure Control 221-039 shown below



Complete Pressure Control 222-027 shown below



ACCESSORIES

DISPLACEMENT PUMP REPAIR KIT 220-366

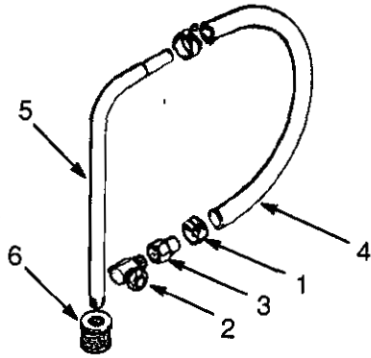
Repair instructions included.

SUCTION TUBE KITS

For Upright cart GM3500 Sprayers

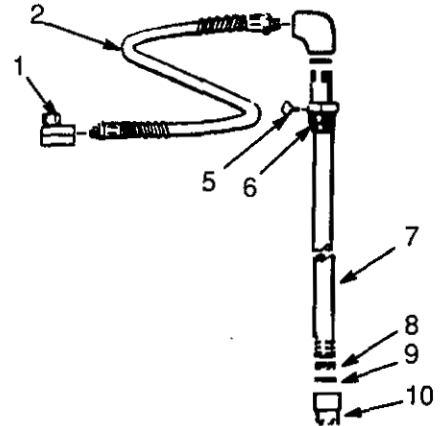
208-920 5 gallon (19 liter) size
Includes:

REF NO.	PART NO.	DESCRIPTION	QTY
1	101-818	CLAMP, HOSE	1
2	160-327	UNION, 90 DEG SWIVEL; 3/4 NPT(M X F)	1
3	170-705	ADAPTER, INTAKE	1
4	170-706	HOSE, 1" ID X 48"; NYLON	1
5	170-957	TUBE, SUCTION	1
6	181-072	STRAINER	1



208-259 55 gallon (200 liter) size
Includes:

REF NO.	PART NO.	DESCRIPTION	QTY
1	156-589	UNION, 90 DEG ADAPTER; 3/4 NPT(F) X 3/4 NPT(F) SW	1
2	214-961	HOSE, CPLD 3/4 NPT(MBE); 3/4 ID; NYLON; 6 FT (1.8 M); SPRING GUARD ONE END	1
3	156-591	ELBOW, 90 DEG; 3/4 NPT X 1-1/2 - 24 NS	1
4	156-593	PACKING, O-RING, NITRILE	1
5	100-220	THUMBSCREW, 5/16-18 X 1"	1
6	176-684	ADAPTER, BUNG	1
7	156-592	TUBE, RISER	1
8	159-100	RETAINER, SCREEN	1
9	161-377	SCREEN, FILTER	1
10	159-101	NUT, SCREEN RETAINER	1



TECHNICAL DATA

Engine	3.5 horsepower, Honda
Maximum Working Pressure	3000 psi (210 bar)
Fuel Tank Capacity	0.66 gallons (2.5 liter)
Maximum tip Size	1 gun with 0.031 tip 2 guns with 0.021 tips
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:	
<i>Displacement Pump</i>	Carbon steel, Polyurethane, UHMW polyethylene, Delrin®, Leather
<i>Filter</i>	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® is a registered trademark of the I Company.

DIMENSIONS

MODEL 220-028

Lo-Boy Cart, without hose or gun

Weight (dry w/o packaging)	95 lb (43 kg)
Height	22.5 in. (571 mm)
Length	32.0 in. (813 mm)
Width	18.5 in. (470 mm)

MODEL 220-040

Upright Cart, without hose or gun

Weight (dry w/o packaging)	109 lb (49 kg)
Height	30.25 in. (768 mm)
Length	29.5 in. (749 mm)
Width	22.25 in. (565 mm)

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 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 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

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