INSTRUCTIONS–PARTS LIST

307–863

Rev. K
Supersedes J and PCN K

INSTRUCTIONS

This manual contains important warnings and information.
READ AND RETAIN FOR REFERENCE

3.5 HORSEPOWER, GASOLINE-POWERED

GM 3500 Airless Paint Sprayer

3000 psi (210 bar) Maximum Working Pressure

Model 222–028, Series F
Basic Sprayer with Lo–Boy Cart

Model 231–077
Same as 222–028, with hose and gun, RAC IV® Dripless™ Tip Guard, and 517 size SwitchTip™

Model 221-040, Series F
Basic Upright Sprayer

Model 231-057
Same as 221–040, with hose and gun, RAC IV® Dripless™ Tip Guard, and 517 size SwitchTip™

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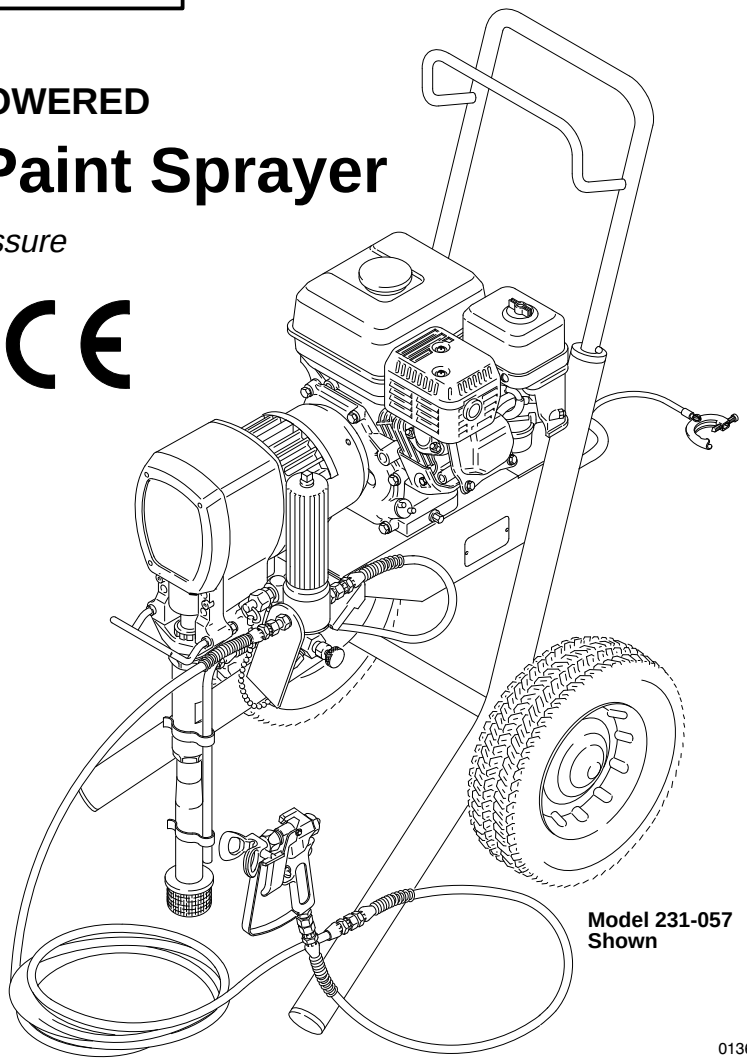


Model 231-057 Shown

0136B

NOTE: This is an example of the DANGER label on your sprayer. This label is available in other languages, free of charge. See page 38 to order.

DANGER

FIRE AND EXPLOSION HAZARD	SKIN INJECTION HAZARD
Spray painting, flushing or cleaning equipment with flammable liquids in confined areas can result in fire or explosion. Use outdoors or in extremely well ventilated areas. Ground equipment, hoses, containers and objects being sprayed. Avoid all ignition sources such as static electricity from plastic drop cloths, open flames such as pilot lights, hot objects such as cigarettes, arcs from connecting or disconnecting power cords or turning light switches on and off. Failure to follow this warning can result in death or serious injury.	Liquids can be injected into the body by high pressure airless spray or leaks – especially hose leaks. Keep body clear of the nozzle. Never stop leaks with any part of the body. Drain all pressure before removing parts.Avoid accidental triggering of gun by always setting safety latch when not spraying. Never spray without a tip guard. In case of accidental skin injection, seek immediate “Surgical Treatment”. Failure to follow this warning can result in amputation or serious injury.

READ AND UNDERSTAND ALL LABELS AND INSTRUCTION MANUALS BEFORE USE

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

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 any one or at any part of the body. NEVER put your 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,** below, and then remove the spray tip to clean it.

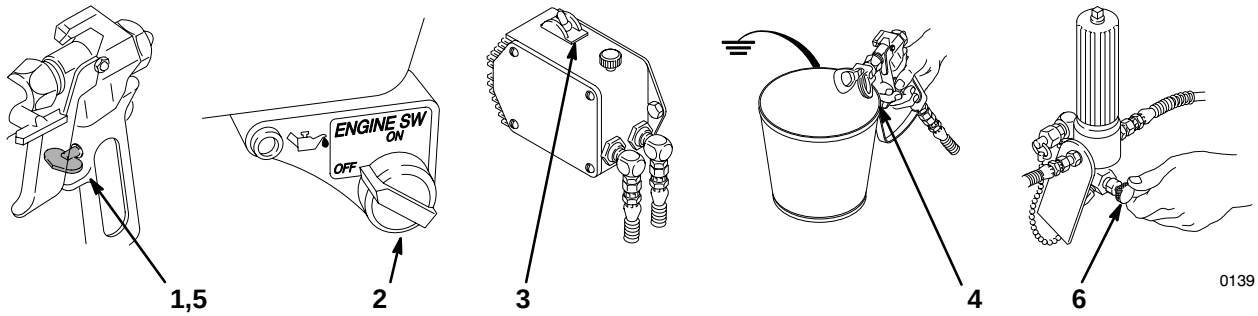
NEVER wipe off build–up around the spray tip until the pressure is fully relieved and the gun safety is engaged.

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 to relieve pressure gradually, then loosen completely. Now clear the tip or hose.



EQUIPMENT MISUSE HAZARD

General Safety

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 injury, fire, explosion or property damage.

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

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

Always wear protective eyewear, gloves, clothing and respirator as recommended by the fluid and solvent manufacturer. Wear ear–noise protection when working near the sprayer when the engine is operating.

System Pressure

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

Fluid and Solvent Compatibility

All chemicals used in the sprayer must be chemically compatible with the wetted parts shown in the **TECHNICAL DATA** on page 39. Consult your chemical supplier to ensure compatibility.

Do not use 1,1,1-trichloroethane, methylene chloride, other halogenated hydrocarbon solvents or fluids containing such solvents in this equipment, which contains aluminum and/or zinc parts. 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.

HOSE SAFETY

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

All fluid hoses must have strain reliefs on both ends! The strain reliefs help protect the hose from kinks or bends at or close to the coupling which can result in hose rupture.

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

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

Handle and route hoses carefully. Do not pull on hoses to move equipment. Keep hoses clear of moving parts and hot surfaces of the pump and gas engine. Do not use fluids or solvents which are not compatible with the inner tube and cover of the hose. DO NOT expose Graco hoses to temperatures above 180° F (82° C) or below –40° F (–40° C).

Hose Grounding Continuity

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

Always read the chemical 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**. Do not use the system until the problem is identified and corrected.

Grounding

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

1. *Sprayer:* connect a ground wire and clamp (supplied) to a true earth ground.
2. *Fluid hoses:* use only grounded hoses with a maximum of 500 ft (150 m) combined hose length to ensure grounding continuity. See **Hose Grounding Continuity** above.
3. *Spray gun:* obtain grounding through connection to a properly grounded fluid hose and sprayer.
4. *Object being sprayed:* follow local code.
5. *Fluid supply container:* follow local code.
6. *All solvent pails used when flushing,* follow 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 on page 12.

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 9.

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

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 2 before checking or servicing any part of the sprayer, to prevent it from starting accidentally.

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.

MESURES DE SECURITE CONCERNANT LES TUYAUX FLEXIBLES

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 sou 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 le 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 sure 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 le 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 MÉDICAUX D'URGENCE.** NE Pas Soigner Cette Blessure Comme Une Simple Coupure.

Avis au médecin: *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 esthétiques ou un chirurgien spécialisé dans la reconstruction des mains.*

Dispositifs de sécurité du pistolet

Avant chaque utilisation, bien s'assure 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.

Diffuseur

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 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 gâchette 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 let contribue à réduire, mai 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 due remplacement des ajutages du pulvérisateur. Si l'ajutage se bouche pendent la pulvérisation, mettre immédiatement le verrou de sécurité du pistolet. TOUJOURS bien observe la **Marche à Suivre Pour Détendre la Pression** puis enlever l'ajutage du pulvérisateur pour le nettoyer.

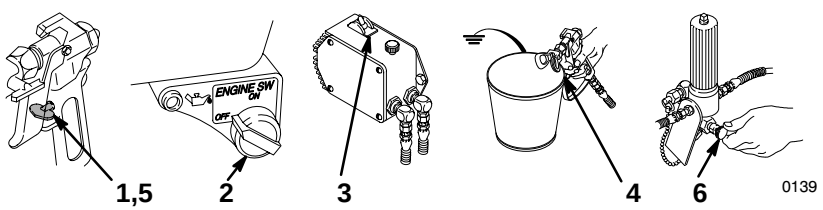
NE JAMAIS essuyer ce qui s'est accumulé autour de l'ajutage du pulvérisateur avant que la pression ne soit complètement tombée et que le verrou de sécurité du pistolet ne soit engagé.

MARCHE A SUIVRE POUR DÉTENDRE LA PRESSION

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

Si 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 MATERIAL

Consignes générales de sécurité

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

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

Pression

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

Compatibilité chimique des corps

BIEN S'ASSURER que tous les corps des solvants utilisés sont chimiquement compatibles avec les parties mouillées indiquées dans les "Données techniques", à page 39. Toujours lire soigneusement les documents et brochures du fabricant des fluides et solvants utilisés avant de s'en servir dans ce pulvérisateur.

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

Tous les tuyaux flexibles doivent avoir des ressorts spirale de protection aux 2 bouts! Les spirales de protection contribuent à éviter la formation de pliures, de boucles ou de nœuds sur les tuyaux qui pourraient entraîner la rupture du tuyau à l'endroit du raccord ou à son voisinage.

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

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

Manipuler les tuyaux avec precaution et choisir soigneusement leur chemin. Ne pas déplacer le fluide en tirant sur le tuyau. Ne pas utiliser de fluides ou de solvants que ne sont pas compatibles avec l'enveloppe intérieur ou extérieure de tuyau. NE PAS exposer le tuyau à fluides des températures supérieures à 82°C (180°F) ou inférieures à –40°C (–40°F).

Continuité de la mise à la terre des tuyaux

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

RISQUES D'INCENDIE OU D'EXPLOSION

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

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

Mise à la terre ou à la masse

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

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

Mesures de Sécurité concernant le Rinçage

Pour réduire les risques de blessures par pénétration de la peau et les risques dûs aux étincelles d'électricité statique ou aux éclaboussures, observe la marche à suivre pour le rinçage donnée à la page 12 de ce manuel.

RISQUES DUS AUX MOTEURS A ESSENCE

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

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

ADVERTENCIA

EL ROCIADO a ALTA PRESIÓN PUEDE CAUSAR GRAVES LESIONES.
SOLO PARA USO PROFESIONAL. RESPETE LOS AVISOS DE ADVERTENCIA.
Lea y entienda todo el manual de instrucciónes antes de manejar el equipo.

PELIGRO DE INYECCION DE FLUIDO

Seguridad general

Este equipo general 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 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 cua fluido fue.

Aviso al médico: *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 sumar 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

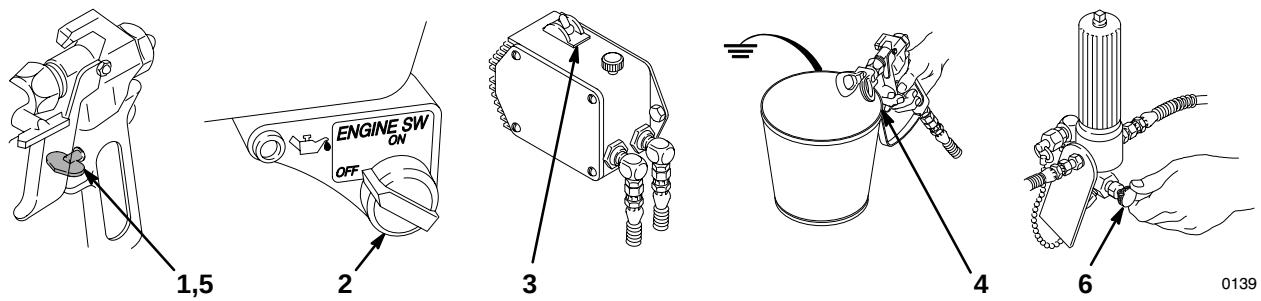
NUNCA limpiar la acumulación de pintura alrededor de la boquilla antes de que se haya descargado por completo la presión y el pestillo esté enganchado.

PROCEDIMIENTO DE DESCARGA DE PRESION

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 renención del protector de lay 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 sobre presurización, modificación de piezas, uso de materiales y productos químicos incompatibles, o utilización de piezas dañadas o desgastadas, puede hacen que se rompan y causen la inyección de fluido u otras lesiones corporales graves, incendio, explosión o daños a la propiedad.

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

Presión del sistema

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

Compatibilidad de fluido

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

PELIGRO POR MAL USO DEL EQUIPO

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

¡Todas las mangueras para fluidos tienen que tener guardas de resorte en ambos extremos! Estas protegen las mangueras contra dobleces o retorceduras en los acoplamientos o cerca de ellos, los que podrían traducirse en roturas de la manguera.

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

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

Manejar y pasar cuidadosamente las mangueras. No tirar de las mangueras para mover el equipo. No usar fluidos o solventes que sean incompatibles con el tubo interno y la cubierta de la manguera. NO exponer las mangueras a temperaturas sobre 82⁰ C (180°F) o bajo -40°C (-40° F).

Continuidad del circuito de puesta a tierra de la manguera

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

PELIGRO DE INCENDIO O EXPLOSION

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

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

Puesta a tierra

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

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

Seguridad durante el lavado

Para reducir el riesgo de que se inyecte o salpique fluido en la piel, o que ocurra una descarga de electricidad estática, siempre seguir las INSTRUCCIONES PARA EL LAVADO, dadas en la página 12. Seguir el **Procedimiento de Descarga de Presión** en la página 6, y quitar la *boquilla de metal* y usar le presión más baja posible de fluido durante el lavado.

PRECAUCIONES PARA LOS MOTORES DE GASOLINA

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

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

Setup

WARNING

If you supply 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) Maximum 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.

CAUTION

To avoid damaging the pressure control, follow these precautions.

1. Always use nylon spray hose at least 50 ft. (15.2 m) long.
2. Never use a wire braid hose; it is too rigid to act as a pulsation dampener.
3. Never install a ball valve or shutoff device between the filter and the 50 ft. (15 m) hose.
4. Always use the main filter outlet for one gun operation. Never plug this outlet.

1. **Connect hose and gun.** Remove the plastic cap plug from the 1/4 npsm(m) outlet nipple (57). Assemble the 50 ft. (15 m) hose (121), 3 ft. (0.9 m) whip hose (12) and gun (123), and connect them to the outlet nipple.
2. DO NOT use thread sealant on the hose and gun connections. DO NOT install the spray tip until the system is primed.
3. **Two gun hookup.** Unscrew the cap (56) from the secondary hose outlet. Connect an accessory hose and gun to the 1/4 npsm(m) nipple.
4. **Fill the packing nut/wet–cup (216)** 1/3 full with Graco Throat Seal Liquid (TSL), supplied, and keep it filled, to help extend the pump life.

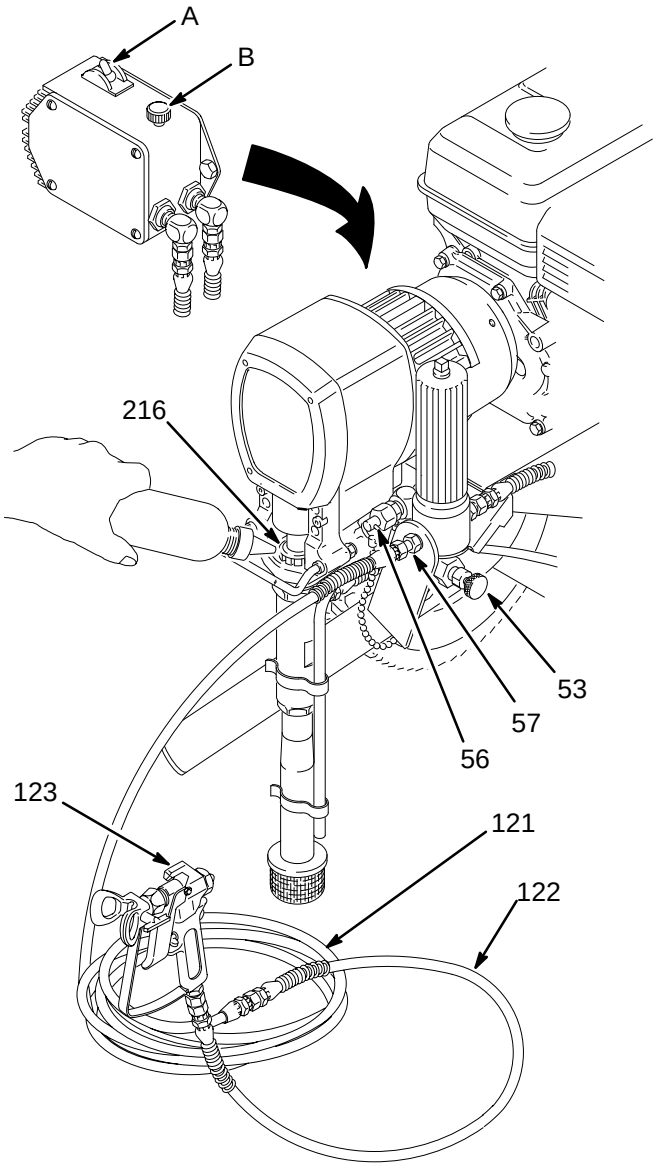


Fig. 1

Setup

5. **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; (C) the oil should be almost overflowing. See Fig. 2. 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 breaking–in a new engine.

6. **Be sure your system is properly grounded before operating it.** Read and follow the warning section, **Fire Or Explosion Hazard**, page 3. Use the ground wire (47) provided.

7. **Fill the gas tank.** See the **Fueling** section, below.

8. **Flush the pump** to remove the lightweight oil which was left in the pump to protect it from rust. Refer to the **Flushing**, page 12.

9. **Prepare the paint** according to the manufacturer’s recommendations. Remove any skin that may have formed. Stir the paint to mix pigments.

10. **Strain the paint** through a fine nylon mesh bag (available at most paint dealers) to remove particles that could clog the filter or spray tip. This is probably the most important step toward trouble–free spraying.

11. **Keep the sprayer upright and level** during operation and whenever it is being moved. Read the last **CAUTION** on page 10.

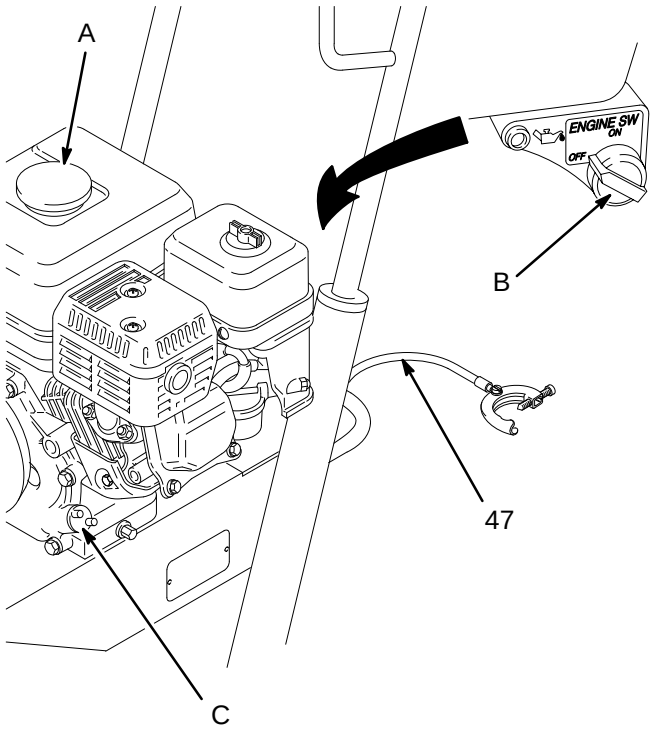


Fig. 2

Fueling

WARNING

Gasoline is extremely flammable and explosive under certain conditions. To reduce the risk of a fire or explosion:

- Always shut off the engine (B) before refueling.
- Refuel in a well–ventilated area.
- Do not smoke or allow flames or sparks in the area where the engine is refueled or where the gasoline is stored.
- Do not overfill the tank. Make sure the filler cap is securely closed after refueling.
- Be careful not to spill fuel when fueling. Fuel vapor or spilled fuel can ignite. If any fuel is spilled, make sure the area is dry before starting the engine.

1. **Fuel specifications.** Use automotive gasoline with a pump octane number of 86 or higher. If the engine knocks or pings, use a higher octaine gasoline. Unleaded fuel minimizes combustion chamber deposits.

2. **Gasolines containing alcohol (gasohol).** Do not use gasohol which contains methanol, if the gasohol does not contain cosolvents and corrosion inhibitors for methanol. Even if it does contain such additives, do not use the gasohol if it contains more than 5% methanol.

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

3. **General.** Do not use oil and gasoline mixtures or contaminated gasoline. Avoid getting dirt, dust or water in the fuel tank.

4. **Tank Capacity.** 0.66 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 (A) firmly.**

Startup

NOTE: Refer to Fig. 3 as you start the sprayer.

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

1. **Be sure the gas tank is full.** Open the black fuel shutoff lever (K).
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 glows as you pull the starter rope.

3. **Place the suction tube (30) into the paint container.**
4. **Turn the pressure control switch (A) to OFF.**
5. **Open the black fuel shutoff lever (K)** by pushing it in the direction of the arrow.
6. **Be sure the spark plug cable (L) is firmly pushed onto the spark plug.**

CAUTION

Never attempt to start the engine unless fluid pressure is relieved and the pressure control is turned OFF. Attempting to start the engine when it is pressurized will damage the recoil system.

7. **To start the engine:**
   a. **Turn the pressure adjusting knob (B)** all the way counterclockwise to the lowest pressure setting.
   b. **Pull the metal throttle lever (H) away from the fuel tank** to the maximum position (fully left).
   c. **If the engine is cold,** close the gray choke lever (J), located beneath the air cleaner.

      If the engine is warm, close the choke only half way or not at all.
   d. **Turn the engine switch to ON.**

WARNING

A rope which recoils too quickly may hit someone and cause serious bodily injury. The rope could also jam in the recoil assembly.

   e. **Grasp the starter rope (E).** Holding the frame of the sprayer 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.
   f. **Open the choke (J).** In cold weather, 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.
8. **Disengage the gun safety latch.**
9. **To start the pump:**
   a. Open the pressure drain valve (53).
   b. Turn the pressure control switch (A) to ON.
   c. Slowly increase the pressure knob (B) until the pump starts to cycle slowly. Cycle the pump slowly until fluid is flowing smoothly from the pressure drain valve, indicating the pump is fully primed.
   d. Close the pressure drain valve (53).
   e. Hold a metal part of the gun firmly against a grounded metal container, squeeze the trigger until fluid is flowing smoothly from the gun.
   f. Release the trigger and engage the gun safety latch.

WARNING

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

10. **Install the spray tip.** Refer to the instruction manual supplied with the tip (307–848 if you are using a RAC IV).
11. **Adjust the engine speed and pump pressure.** Trigger the gun onto a test paper to check the spray pattern and atomization. Turn the pressure adjusting knob (B) until you get a good pattern. Then slowly lower the throttle (H) setting as far as you can without changing the spray pattern.

CAUTION

Always use the lowest needed fluid pressure and the lowest needed throttle (H) setting, to increase the life of the sprayer. Higher settings cause excessive clutch cycling, premature tip wear and premature pump wear.

CAUTION

Close the fuel valve (K) when 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 start up very difficult.

Startup

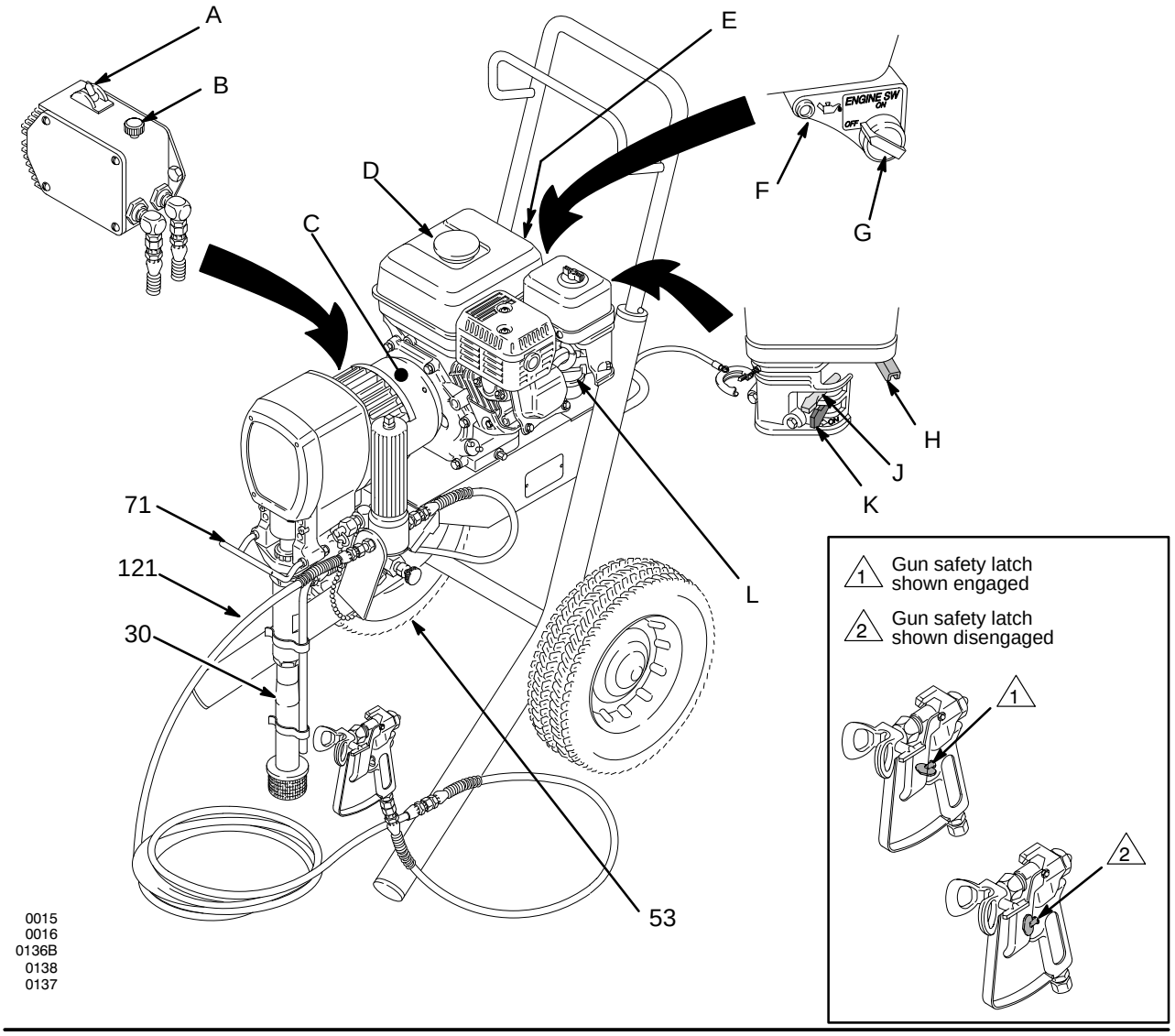


Fig. 3

Maintenance

WARNING

To reduce the risk of serious bodily injury always follow the **Pressure Relief Procedure Warning** on page 2 before checking, adjusting, cleaning or shutting down the sprayer.

CAUTION

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

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

DAILY: Check and fill the gas tank.

AFTER THE FIRST 20 HOURS OF OPERATION AND EACH 100 HOURS THEREAFTER: Change the oil.

WEEKLY: Remove the air filter cover and clean the element. In very dusty environments, check the filter daily. Replace the element as needed. Replacement elements can be purchased from your local HONDA dealer.

WEEKLY: Check the level of the TSL in the displacement pump packing nut. Fill the nut, if necessary. Keep TSL in the nut to help lubricate the pump packings.

SPARK PLUG: Use only a (NGK) BP6ES or BPR6ES plug. Gap the plug to 0.025 to 0.030 in. (0.7 to 0.8 mm). Always use a spark plug wrench.

Flushing

NOTE: Several flushes are often required to thoroughly clean the system and prepare it for the next fluid to be sprayed, or to store the sprayer. Use this chart to determine the required flushing order for the fluid you are using, and then follow the procedure below for flushing.

*Use this category for flushing a brand new sprayer and flushing after storage.

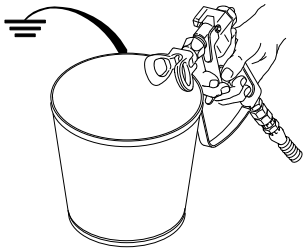
System has this fluid in it:	Next fluid to be sprayed.	Flushing order:			Before you spray or store sprayer:
		Flush 1	Flush 2	Flush 3	
*Oil-based solvent or paint	Oil-based paint – new color	Mineral spirits	none	none	Prime with oil-based paint
Oil-based solvent or paint	Water-based paint	Mineral spirits	Warm soapy water	Clean water	Prime with water-based paint
Oil-based solvent or paint	Prepare for storage	Mineral spirits	none	none	Relieve pressure, Leave drain valve open
Water or water-based paint	Water-based paint – new color	Warm soapy water	Clean water	none	Prime with water
Water or water-based paint	Oil-based paint	Warm soapy water	Clean water	Mineral spirits	Prime with oil
Water or water-based paint	Prepare for storage	Warm soapy water	Clean water	Mineral spirits	Relieve pressure, Leave drain valve open

CAUTION

NEVER allow water to freeze in the pressure control. Doing so prevents the sprayer from being started and causes serious damage to the pressure control. Pump the water out with mineral spirits.

WARNING

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



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1. Follow the illustrated **Pressure Relief Procedure** on page 2. Engage the gun safety latch.
2. Turn the pressure adjusting knob fully counter-clockwise to the minimum pressure.
3. Remove the spray tip from the gun. Remove the filter bowl (A) and screen (B); see manual 307–273. Clean the screen separately and install the bowl without the screen to flush it. See Fig. 4.
4. Put the suction tube into a grounded metal pail with 1/2 gallon of compatible solvent.
5. Start the sprayer. See page 10. To save the fluid in the sprayer, trigger the gun into another container until the next fluid appears, then trigger the gun back into the fluid you are pumping. Circulate the flushing fluid to thoroughly clean the system.
6. Remove the strainer (and suction tube, if used) and clean separately to remove all paint sediment.
7. Do not run the pump dry for more than 30 seconds to avoid damaging the pump packings!
8. Follow the illustrated **Pressure Relief Procedure** on page 2. Engage the gun safety latch.
9. Unscrew the filter bowl and reinstall the clean screen. Install the bowl and hand tighten. Install the suction tube assembly.

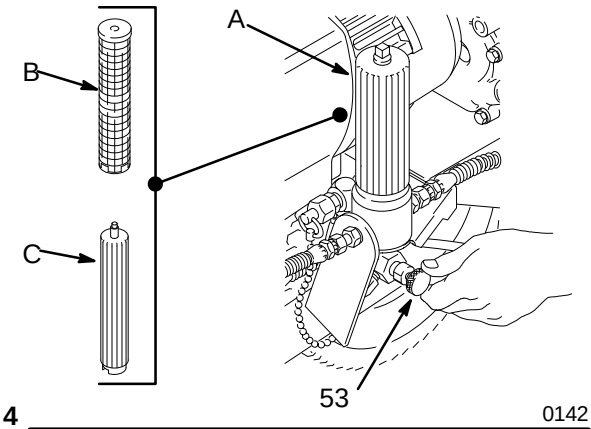

Fig. 4

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Troubleshooting

WARNING

To reduce the risk of serious bodily injury always follow the **Pressure Relief Procedure Warning** on page 2 before checking, adjusting, cleaning or shutting down the sprayer.

Check everything in the chart before disassembling the sprayer. *(Continued on page 14)*

PROBLEM	CAUSE	SOLUTION
Engine/sprayer won't start	Engine switch not on	Turn on.
	Out of gas	Replenish
	Engine oil level low	Try starting engine. If light on rear of engine glows, replenish oil.
	Spark plug cable disconnected or spark plug damaged	Connect cable on top of engine or replace spark plug. See Fig. 3, page 11.
	Water frozen in pressure control	Return pressure control to authorized Graco dealer for repair.
Engine won't "pull over"	Oil seepage into combustion chamber	Remove spark plug. Pull starter rope 3 or 4 times. Clean and replace plug. Try to start. Keep sprayer upright to avoid oil leakage. See last **CAUTION** on page 10.
Engine operates, but displacement pump doesn't	Pressure control switch turned OFF	Turn on.
	Pressure setting too low	Increase pressure.
	Displacement pump outlet filter dirty	Clean filter.
	Tip or tip filter clogged	Clean tip or tip filter.
	Displacement pump rod seized by dry paint	Service pump. See page 18.
	Connecting rod worn or damaged	Replace. See page 20.
	Drive housing worn or damaged	Replace. See page 21.
	Electrical power not energizing field	Check wiring connections. See page 16. With pressure control switch ON and pressure turned to MAXIMUM, use a test light to check continuity across black and white wires from pressure control. Have pressure control checked by authorized Graco dealer.
	Clutch worn or damaged	Service. See page 24.
	Pinion assembly worn or damaged	Service. See page 22.

Troubleshooting

PROBLEM	CAUSE	SOLUTION
Displacement pump output low on upstroke	Pump inlet screen clogged	Clean.
	Piston ball check not seating	Service piston ball check. See page 18.
	Piston packings worn or damaged	Replace packings. See page 18.
	Sleeve gasket in displacement pump worn or damaged	Replace. See page 18.
Displacement pump output low on downstroke or both strokes	Pump inlet screen clogged	Clean.
	Piston packings worn or damaged	Replace packings. See page 18.
	Intake valve ball check not seating properly	Clean and service. See page 18.
	Engine RPM too low	Increase throttle setting. See **Startup**, Step 11, page 10.
	Clutch worn or damaged	Replace. See page 24.
Paint leaks into wet–cup	Loose wet–cup	Tighten just enough to stop leakage.
	Throat packings worn or damaged	Replace packings. See page 18.
	Displacement rod worn or damaged	Replace rod. See page 18.
Low fluid delivery	Pump inlet screen clogged.	Clean.
	Pressure setting too low	Increase pressure. See **Startup**, Step 11, page 10.
	Engine RPM too low	Increase throttle setting. See **Startup,** Step 11, page 10.
	Dirty outlet filter, tip filter or tip	Clean.
	Large pressure drop in hose	Use larger diameter hose.
Spitting from gun	Air in fluid pump or hose	Check for loose connections at pump intake and tighten. Them prime the pump. See **Startup**, page 10.
	Tip partially clogged	Clear.
	Fluid supply is low or empty	Refill and prime the pump. See **Startup**, page 10. Check fluid supply often to prevent running the pump dry.

Pressure Control Replacement

WARNING

To reduce the risk of serious bodily injury always follow the **Pressure Relief Procedure Warning** on page 2 before checking, adjusting, cleaning or shutting down the sprayer.

1. Disconnect both hoses (59) at the pressure control (63), while holding the elbows firmly. See the **CAUTION** below. Note the original location of each hose to be sure you reassemble them correctly at the end of this procedure. See Fig. 5.

CAUTION

DO NOT allow the elbow (314 or 322) 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. **For the Upright cart**, remove the three nuts (61) and lockwashers (9) from the capscrews (62). **For the Lo–boy cart**, remove the two screws (62) and washers (9). See Fig. 6.
3. Remove the wire clamp (32). Remove the pressure control. See Fig. 6.
4. Remove the pressure control cover (76) and the mounting bracket (67). See Fig. 5.

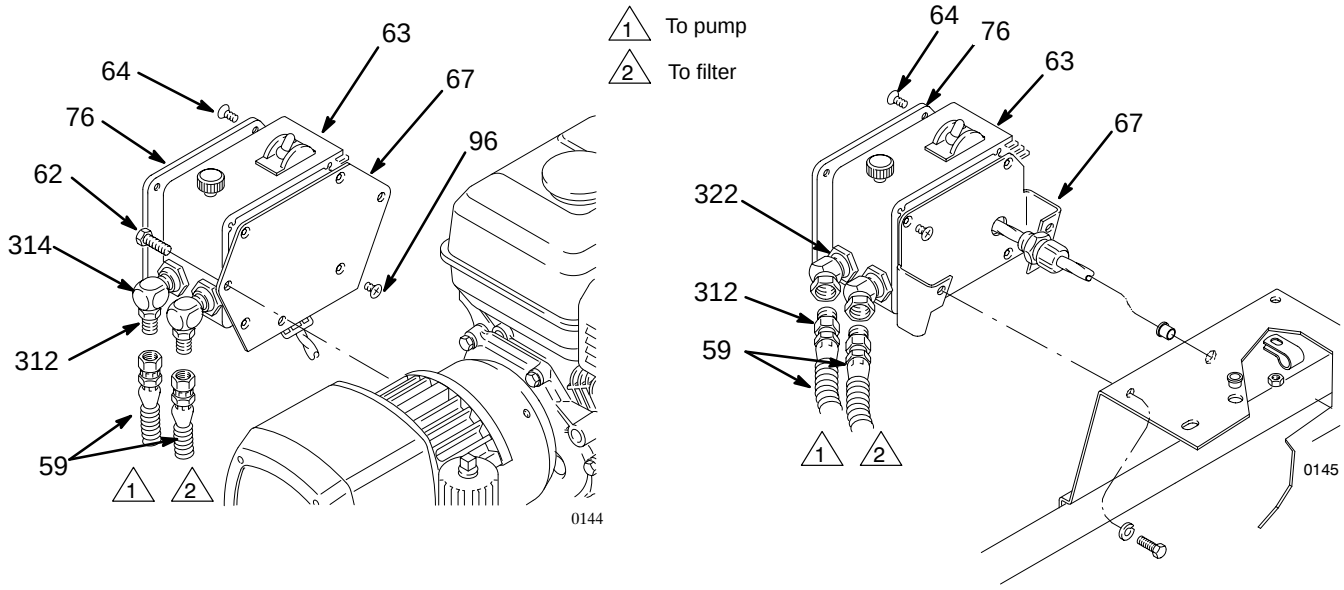


Fig. 5 **Mounting For Upright Cart Shown** **Mounting For Lo–boy Cart Shown**

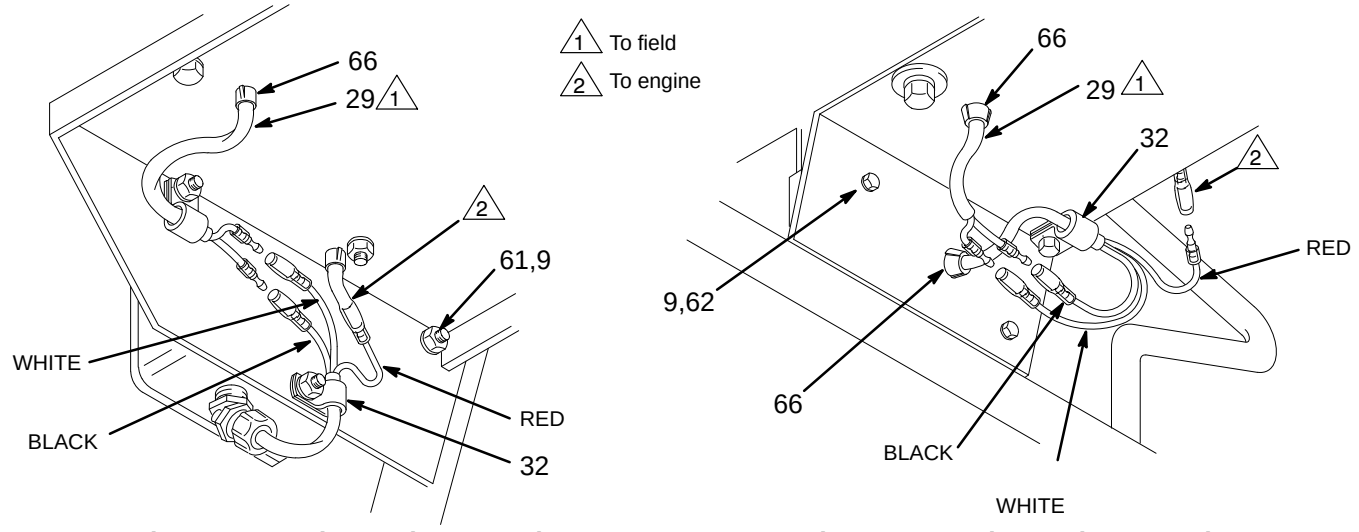


Fig. 6 **View From Under Engine Mounting Plate On Upright Cart** **View From Under Engine Mounting Plate On Lo–boy Cart**

Pressure Control Replacement

NOTE: See Fig. 7 except where noted.

1. Disconnect the red, black and white wires from the rectifier (307) which are sheathed with the conductor (309). Unscrew the connector (313 or 105) from the control box, pulling the conductor and wires out with it.

2. **For the upright sprayer**, remove the nipple (312) from the elbow (314).

3. Use a wrench to hold the hex of the adapters (A) while removing the elbows (314 or 322).

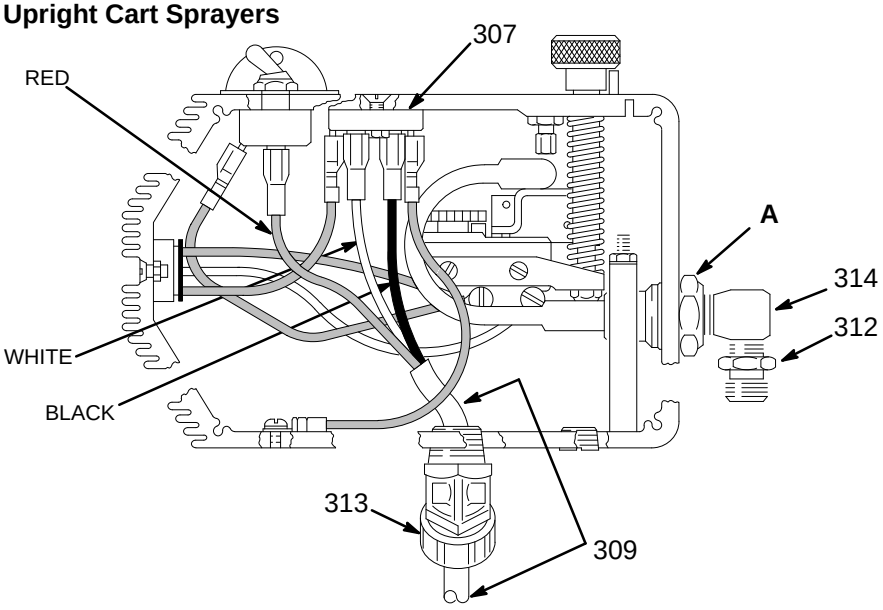
4. Reassemble in the reverse order.

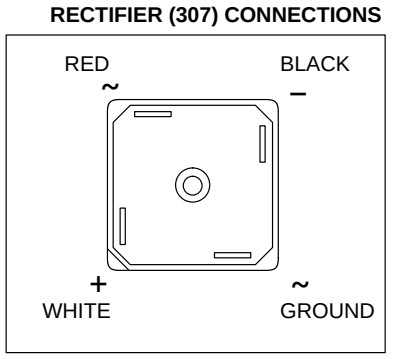
   For the Upright carts, guide the new pressure control wires through the wire clamps (32). Fasten the wire clamps to the cart with the same screws, lockwashers, and nuts (62, 9, 61) which hold the bracket (67) to the cart. See Fig. 6, on page 15.

   For the Lo–boy carts, guide the pressure control wires through the single wire clamp (32), and install the screws (62) and washers (9) to hold the bracket (67) to the cart. See Fig. 6, on page 15.

5. Perform the **Pressure Control Adjustment** on page 17 before regular operation of the sprayer.

For Upright Cart Sprayers





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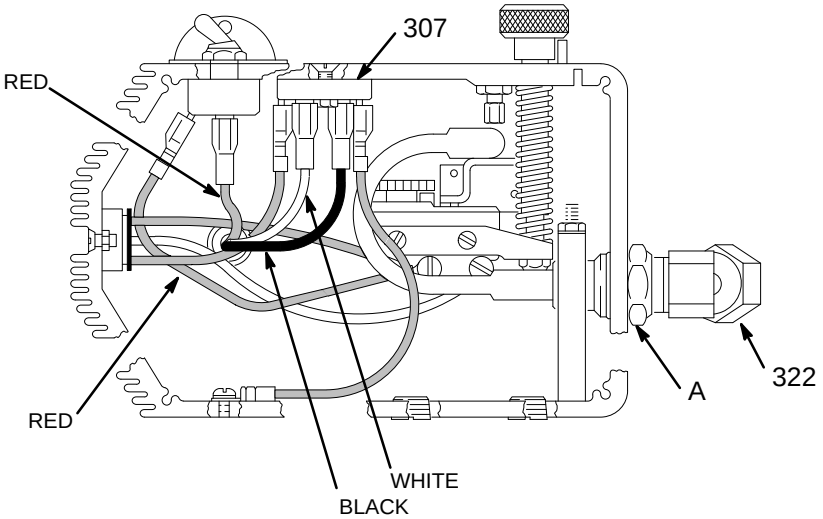
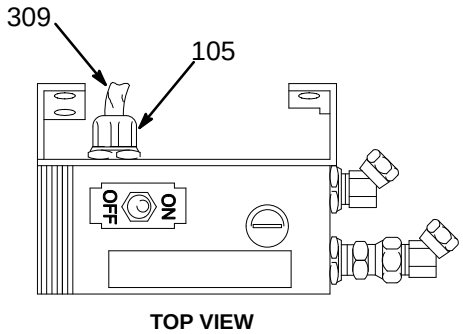
For Lo–boy Cart Sprayers





0165A
0150

Fig. 7

Pressure Control Calibration

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.

Perform this procedure 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 over–pressurize 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.

Service Tools Needed:

- 0–5000 psi (0–350 bar) fluid–filled pressure gauge (A), Part No. 102–814
- Swivel (B), Part No. 156–823
- Tee (C), Part No. 104–984
- Nipple (D), Part No. 162–453
- **NEW** 50 foot (15.2 m), 3000 psi (210 bar), flexible nylon airless spray hose (E), Part No. 223–541
- **NEW** spray tip, size 0.025 to 0.029
- 3/8 in. ignition wrench or nut driver
- 5 gallon pail of water or mineral spirits

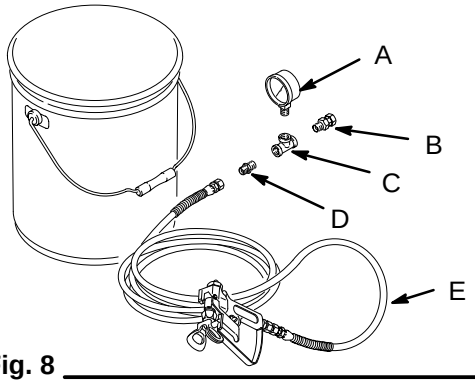


Fig. 8 01201

Set Up

1. Follow the **Pressure Relief Procedure Warning** on page 2.
2. Set up the system as shown in Fig. 8.

Set the Dead Band (Pressure Differential)

NOTE: Do not alter this adjustment if the wheel is already set as shown in Fig. 9.

1. Remove the pressure control cover.
2. Set the white differential wheel (A) on the microswitch. Turn the wheel so the letter **F** is concealed behind the switch and the letter **A** is the first letter seen. See Fig. 9.

Pressure Up

1. Start the sprayer and prime it.
2. Adjust the pressure to 2600 psi (180 bar).
3. Shut off the engine. If the pressure drops, replace the pump packings before proceeding. See page 18.

Adjust the Pressure

See Fig. 10

1. Remove the plug (320) in the bottom of the pressure control.
2. Turn and hold the pressure control knob (B) at the maximum pressure setting.
3. Engage the nut (C): insert the nut driver through the pressure control hole or use the ignition wrench from the front of the presure control.
   a. Loosen the nut just until you hear a click. Stop.
   b. Slowly tighten the nut just until another click is heard. Stop.
4. Replace the plug (320) and pressure control cover.

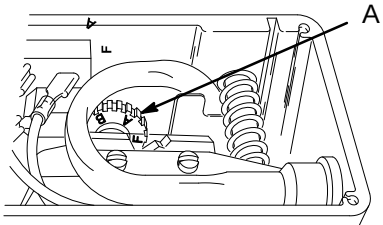


Fig. 9 **Inside pressure control looking up at bottom of differential wheel** 01202

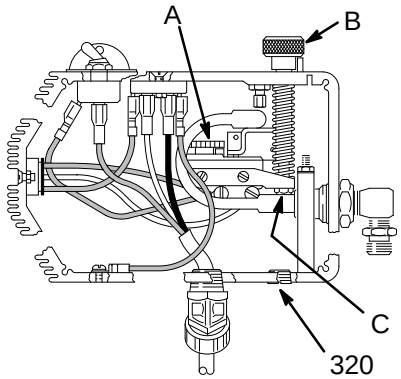


Fig. 10 0148

Displacement Pump

WARNING

To reduce the risk of serious bodily injury always follow the **Pressure Relief Procedure Warning** on page 2 before checking, adjusting, cleaning or shutting down the sprayer.

Removing the pump

See Fig. 11.

1. Flush the pump. Relieve pressure.
2. Hold the intake valve (223) with a wrench and unscrew the suction tube (30). Remove the hose (59). **For upright carts**, remove the spring clips (101,103) and drain hose (102).
3. Push the retaining spring (26) up. Push the pin (25) out the rear.
4. Loosen the locknut (27). Unscrew the pump.

Disassembling the pump

1. Unscrew the intake valve (223) and remove all parts. See Fig. 11.
2. Remove the plug (205). Unscrew the packing nut (216). See Fig. 12.
3. Tap the piston rod (224) down and then pull it out the bottom of the cylinder (219). See Fig. 12.
4. Remove the throat packings. See Fig. 12.
5. Clamp the flats of the piston rod (224) in a vise. Loosen the piston (222). Unscrew the nut (211) from the piston. Remove the piston packings.

WARNING

To reduce the risk of serious bodily injury from pump rupture, use ***only*** tool 222–586 to remove the sleeve. If the sleeve is stuck, send the cylinder to your Graco distributor for removal.

6. Remove the sleeve whenever your service the pump. Use special tool, Part No. 222–586 only. Screw the nut (H) into the cylinder (219). Screw down the rod (J) to push the sleeve out. See Fig. 13.

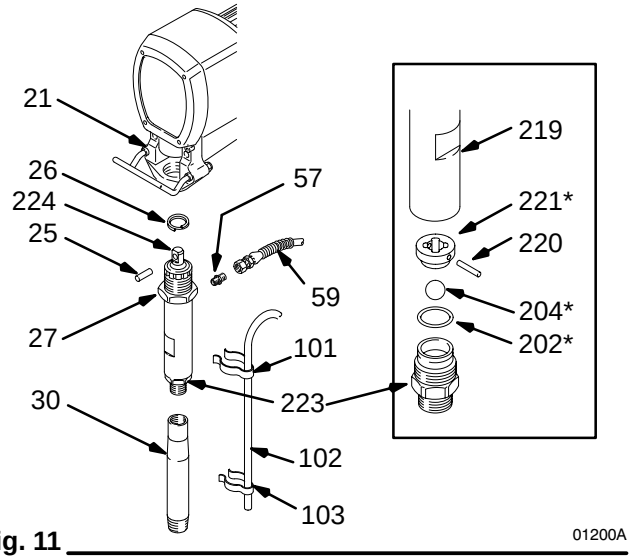


Fig. 11 01200A

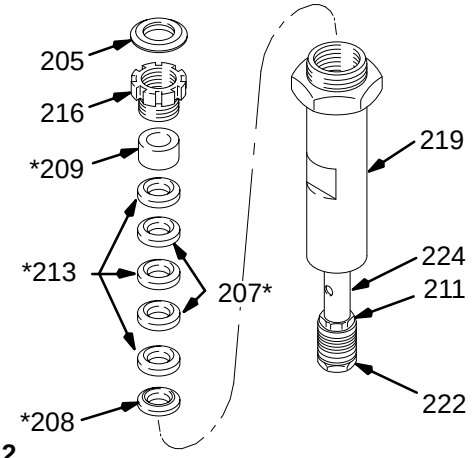


Fig. 12 0026

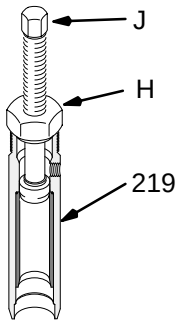


Fig. 13 0028

Displacement Pump

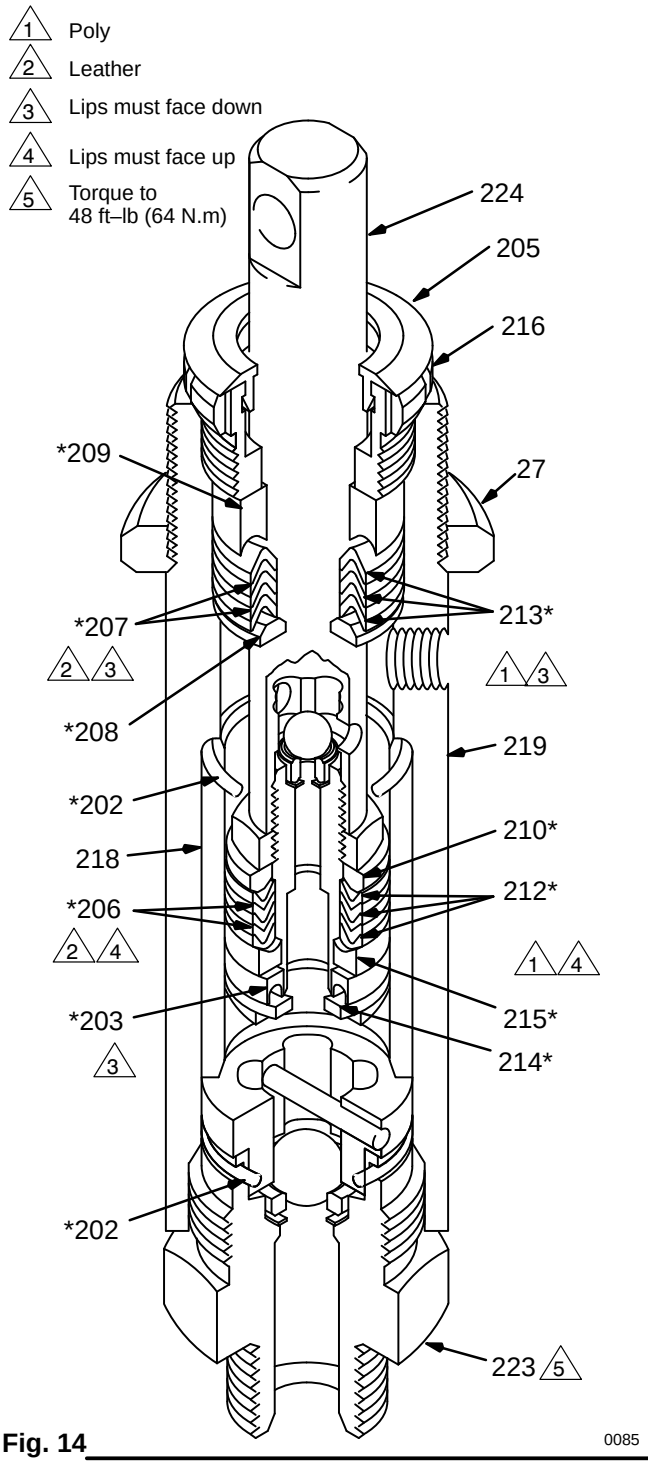


Fig. 14 0085

Assembling the pump

NOTE: Use all the parts in repair kit 222–588 for the best results. Parts included in the kit are marked with an asterisk, (201*), in the text and drawings.

NOTE: Soak the packings in oil, and coat the rod and inside of the cylinder with oil to prevent damage during assembly.

NOTE: Alternate leather and plastic v–packings and be sure their lips as face the direction shown in Fig. 14. Incorrect installation damages the packings and results in pump leakage.

1. Check the piston rod (224) and the inside of the sleeve (218) for scoring or scratches. If these parts are damaged, new packings will not seal properly.
2. Stack the piston packings onto the piston (222) as shown in Fig. 14.
3. Tighten the piston nut (211) against the piston to 10.5 in–lb (1.2 N.m.) to seat the packings, and then back off and finger tighten.

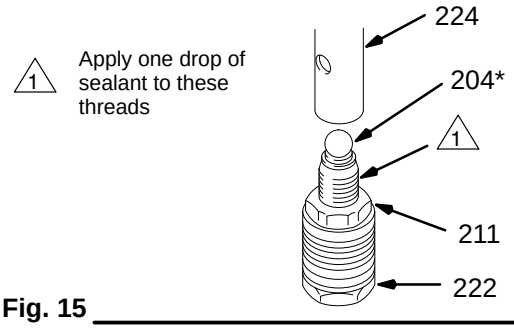


Fig. 15 0029

4. **Note the alignment** of the piston (222) to the piston nut (211) and maintain this alignment through Steps 4, 5 and 6.
5. Apply **ONE** drop of adhesive, supplied with the repair kit, to the piston threads. Place the ball (225*) on the piston. Hand tighten the piston into the rod (224) just until the nut (211) contacts the rod. Place the flats of the rod in a vise.
6. Tighten the nut (211) onto the rod (224) to 19 ft–lb (25 N.m). Use two wrenches to maintain the alignment as mentioned in Step 3.
7. Stack the throat packings into the top of the cylinder (219). Install the packing nut (216) loosely.
8. Insert the piston rod assembly into the **top of the sleeve.** Install the gasket (202) on the sleeve. Slide the sleeve assembly into the **bottom of the cylinder**. Note that the tapered end of the sleeve is the bottom. See Fig. 16.

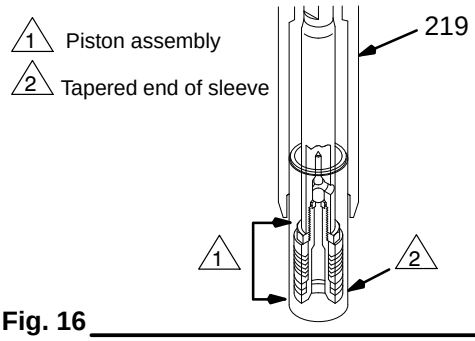


Fig. 16 0030

9. Assemble and install the intake valve. Use a **new** gasket (202*). Tighten the valve to 67 ft–lb (90 N.m). See Fig. 11.

Installing the pump

WARNING

Seat the retaining spring (26) firmly in the conecting rod groove to prevent the pin (25) from working loose due to vibration.

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

1. Screw the pump 3/4 of the way into the bearing housing (21). Hold the pin (25) up to the pin hole in the connecting rod (22) and continue screwing in the pump until the pin slides easily into the hole.
2. Align the top threads of the pump cylinder flush with the face of the bearing housing and so the outlet nipple (57) is straight back.
3. Push the retaining spring (26) into the groove of the connecting rod, all the way around. Tighten the locknut (27) very tight – 70 ft–lb (95 N.m).
4. Tighten the packing nut (216) only enough to stop leaking. Fill the nut 1/2 full with Graco TSL.
5. Assemble the remaining parts.

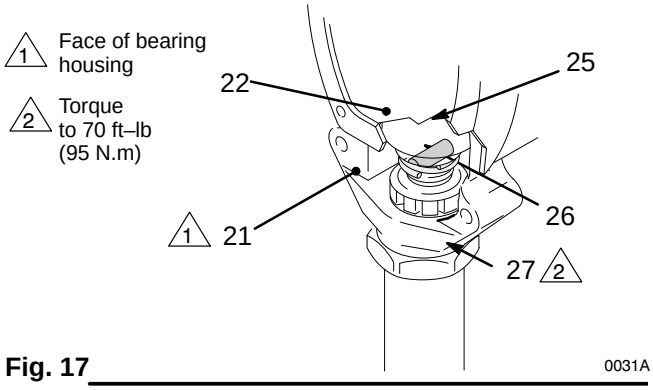


Fig. 17 0031A

Bearing Housing & Connecting Rod

WARNING

To reduce the risk of serious bodily injury always follow the **Pressure Relief Procedure Warning** on page 2 before checking, adjusting, cleaning or shutting down the sprayer.

NOTE: Steps 1 to 10 refer to Fig. 18.

1. Remove the pump. See page 18.
2. Remove the four screws (73) and lockwashers (74) from the bearing housing (21).
3. While pulling the connecting rod assembly (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 off the drive housing.
4. Inspect the crank (A) for excessive wear and replace parts as needed.
5. 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.
6. Assemble the connecting rod (22) and bearing housing (21).
7. Clean the mating surfaces of the bearing and drive housings.
8. Align the connecting rod with the crank (A). Align the locating pins (F) 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.

CAUTION

Use only the locating pins (F) to align or seat the bearing housing (21) with the drive housing (20).

9. Install the screws (73) and lockwashers (74) on the bearing housing. Tighten the screws evenly to 175 in–lb (20 N.m).
10. Install the pump. See above.

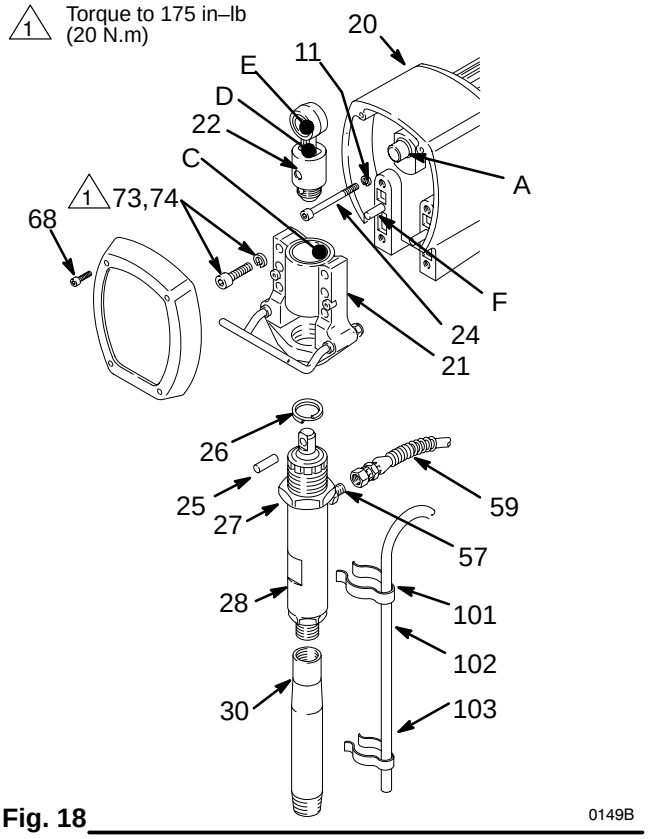


Fig. 18 0149B

Drive Housing

WARNING

To reduce the risk of serious bodily injury always follow the **Pressure Relief Procedure Warning** on page 2 before checking, adjusting, cleaning or shutting down the sprayer.

NOTE: Refer to Fig. 19 for this procedure.

1. Remove the front cover (23).
2. Disconnect the hose (59) from the pump nipple (57). **For the upright carts only**, detach the drain hose (102) from the pump.
3. Remove the four screws (73) and lockwashers (74) from the bearing housing (21).
4. Lightly tap the back of the bearing housing with a plastic mallet. Pull the pump, bearing housing and connecting rod away from the drive housing as one assembly.
5. Remove the two screws (24) and lockwashers (11). Remove the four screws (10) and lockwashers (11).
6. Lightly tap around the drive housing (20) with a plastic mallet to loosen it from the pinion housing (19n).

CAUTION

DO NOT drop the gear cluster (18) when removing the drive housing (20). The gear cluster is easily damaged. The gear may stay engaged in either the drive housing or the pinion housing.

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

7. Liberally apply bearing grease (20d, supplied) to the gear cluster (18). Be sure the thrust balls (20c and 19j) 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 (B).
9. Starting at Step 5, work backwards to reassemble the sprayer. Or, move ahead to the next section in this manual if further service is needed.

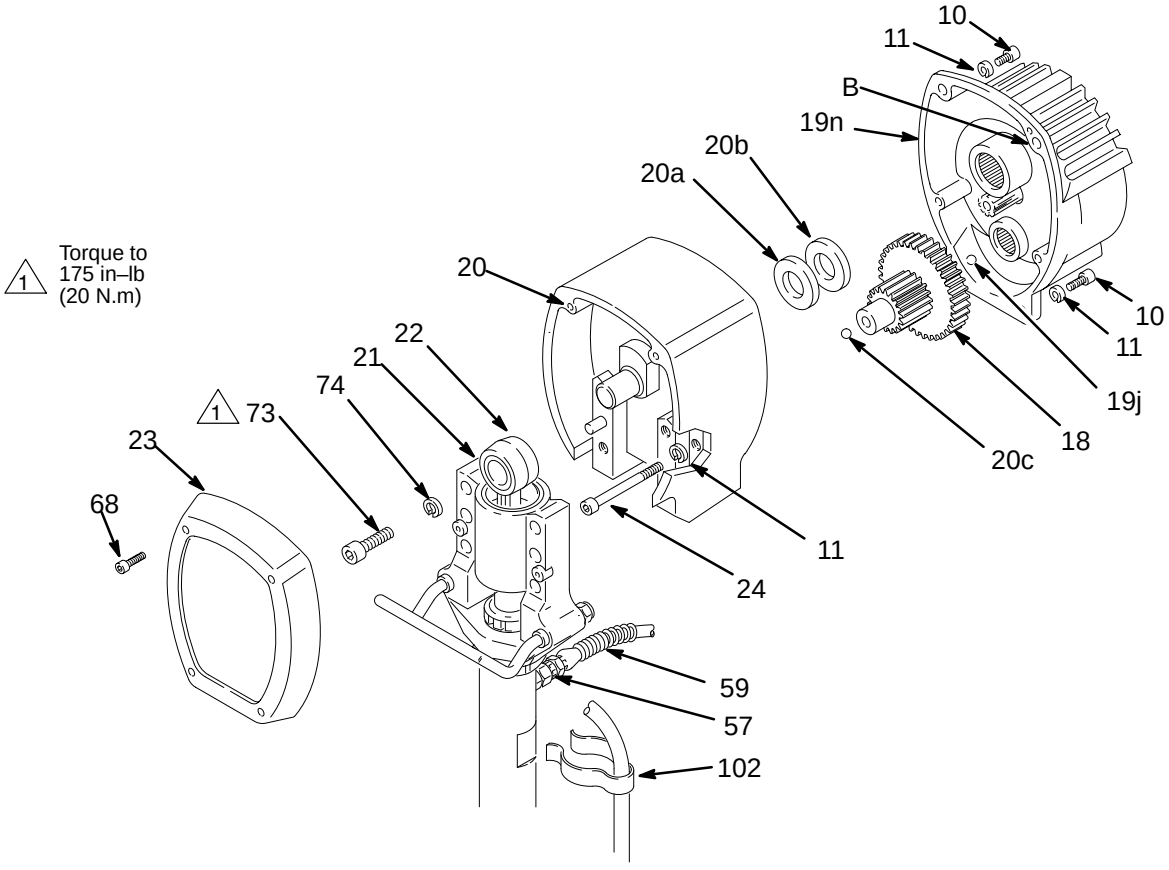


Fig. 19 0170A

Pinion, Clutch, Clamp, Field & Engine

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

If starting from the pinion housing, first follow Steps 1 to 6 of **Drive Housing**, on page 21, and then continue with the procedure below.

If starting from the clutch, see page 24.

Pinion Housing

Removing the Pinion Housing

WARNING

To reduce the risk of serious bodily injury always follow the **Pressure Relief Procedure Warning** on page 2 before checking, adjusting, cleaning or shutting down the sprayer.

NOTE: Refer to Fig. 20 for Steps 1 to 3, except where noted.

1. Remove the two bottom screws (10) first, and then remove the top three screws (10).
2. Pull the pinion housing (19n) away from the clutch housing (2). The armature (4a) will come with it.
3. Pull out the armature (4a).

CAUTION

Do not lose the thrust ball (19j). Refer to the **CAUTION** on page 21 for more information.

NOTE: To disassemble the pinion, continue with **Repairing the Pinion**, page 23. To disassemble more of the sprayer, go to page 24. To reassemble the sprayer from this point, skip ahead to **Reassembly**, page 29, Step 7.

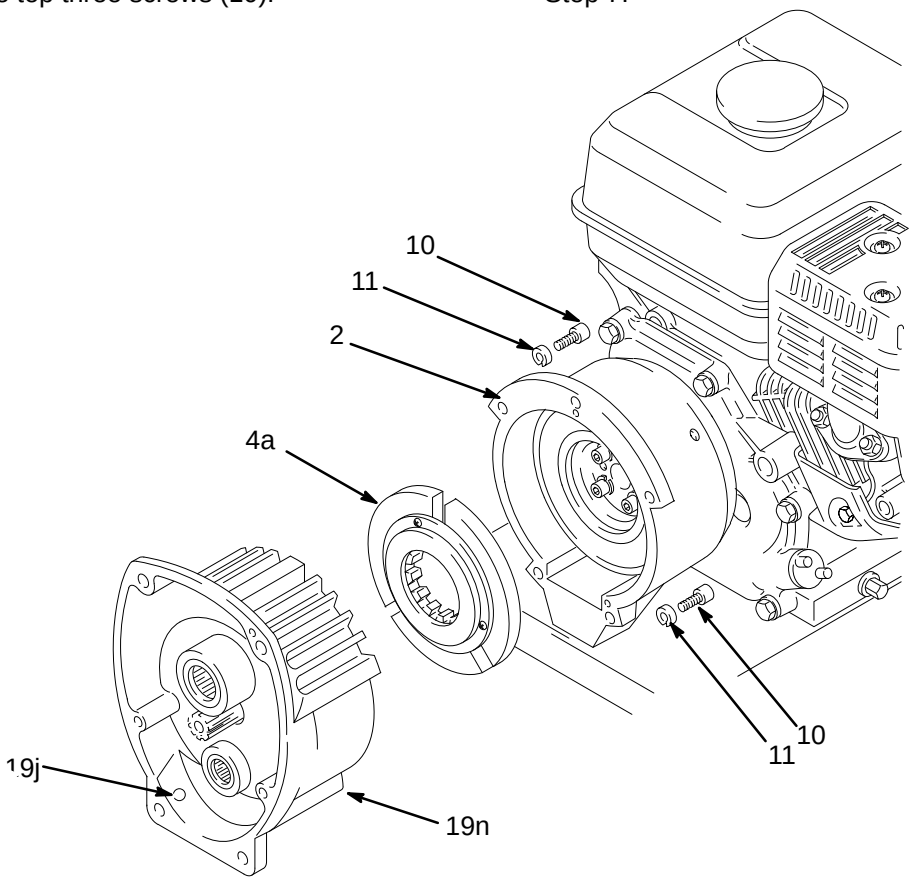


Fig. 20 01199

Pinion Housing

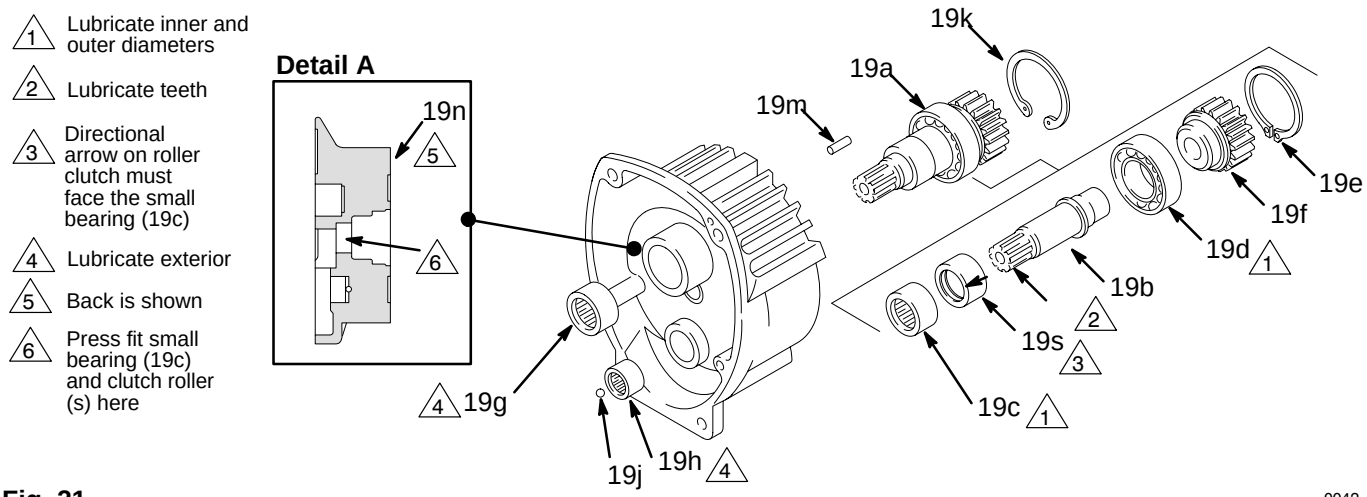


Fig. 21 0042

Repairing the Pinion

NOTE: Use a hydraulic press if you purchase the pinion parts individually. Otherwise, use Repair Kit No. 223–189, which includes the shaft and bearings pre–assembled and lubricated.

NOTE: Refer to Fig. 21 except where noted.

If using Repair Kit 223–189, follow Steps 1 to 6, below.

1. Remove the small ring (19e) from the hub (19f) and the large ring (19k) from the bearing recess of the housing (19n).
2. Push on the front of the shaft (19b) to force the bearing and hub assembly out of the housing (19n).
3. Press the small bearing (19c) out of the pinion housing (19n). Remove the new bearing from the shaft of the kit and press it into the housing. See Detail A.
4. Install the shaft assembly (19a), pushing it to the shoulder of the housing (19n).
5. Install the rings (19e and 19k).
6. Go to **Reassembly**, page 29, Step 7, or continue on page 24.

If you purchased parts separately, follow steps 1 to 9, below. Disassemble only as far as needed for the parts being replaced.

NOTE: The old bearing (19d) will be damaged as it is removed. Have one on hand if you need to remove it for any reason.

1. If replacing the small bearing (19c) or roller clutch (19s), press the old ones out of the pinion housing (19n).
2. Remove the small ring (19e) from the hub (19f). Remove the snap ring (19k) from the bearing recess of the housing (19n).

KEY
- A Round steel bar to push on shaft (19b)
- B Hydraulic press
- C Steel bar stock
- D Two steel blocks
- E Press platform

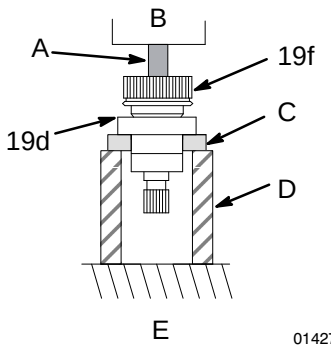


Fig. 22 01427

3. Push on the front of the shaft (19b) to force the bearing and hub assembly out of the housing (19n).
4. ***Using a hydraulic press,*** place pieces of steel bar stock on the inner race of the large bearing (19d) and press the shaft through the hub and bearing. See Fig. 22.
5. Apply lubricant to the parts as shown in Fig. 21.
6. Press fit the following parts:
   - Small bearing (19c) and then the roller clutch (19s), <u>with the directional arrow facing the samll bearing</u>, into the rear of the housing (19n). See Detail A in Fig. 21.
   - Large bearing (19d) to shoulder of the shaft (19b).
   - Hub (19f) onto the shaft (19b) all the way to the large bearing (19d).
7. Install the shaft assembly (19a), pushing it to the shoulder of the housing (19n).
8. Install the rings (19e and 19k).
9. Skip ahead to **Reassembly**, page 29, Step 7, or continue on page 24.

Clutch

NOTE: The clutch assembly (4) includes the armature (4a) and rotor (4b). The armature and rotor must be replaced together so 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 2.

2. Disconnect the hose (59) from the displacement pump. **For the upright carts only**, detach the drain hose (102) from the pump.

3. Remove the bottom two screws (10) from the clutch housing (2) and then the top three screws.

4. Tap lightly on the back of the bearing housing (21) with a plastic mallet to loosen the assembly (D) from the clutch housing (2). Pull the assembly away; the armature (4a) will come with it. Remove the armature from the pinion shaft.

5. Remove the four capscrews (16). Install two of the screws in the threaded holes in the rotor (4b). Alternately tighten the screws until the rotor comes off. See Fig. 23.

6. Skip ahead to **Reassembly,** page 28, Step 6, or continue on the next page.

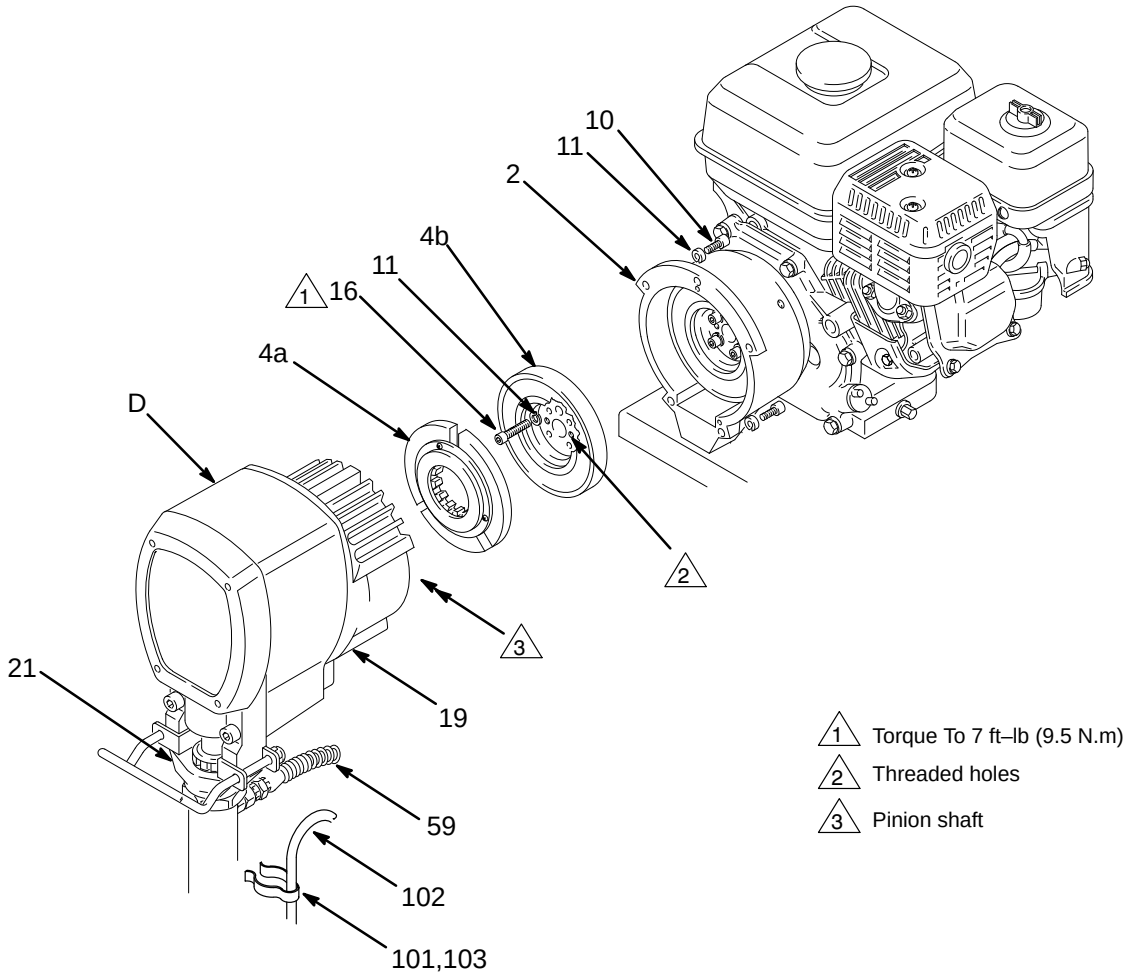


Fig. 23 0157A

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), lockwasher (80) and washer (34) which hold the clutch housing (2) to the cart. See Fig. 24.

2. Still working under the mounting plate, remove the two locknuts (61 or 100) and lockwashers (9), and then pull the screws (14) out of the base of the engine. Disconnect the red wire from the engine lead (B). Disconnect the black and white wires (29) from the field. Pull the wires carefully through the grommets (66) before removing the engine. See Fig. 24 and 25.

3. Lift the engine carefully and place it on a work bench.

4. Remove the **Field and Wiring Harness, Clamp** and **Clutch Housing**, as instructed on pages 26 and 27.

5. Skip ahead to **Reassembly,** page 28, Step 1.

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

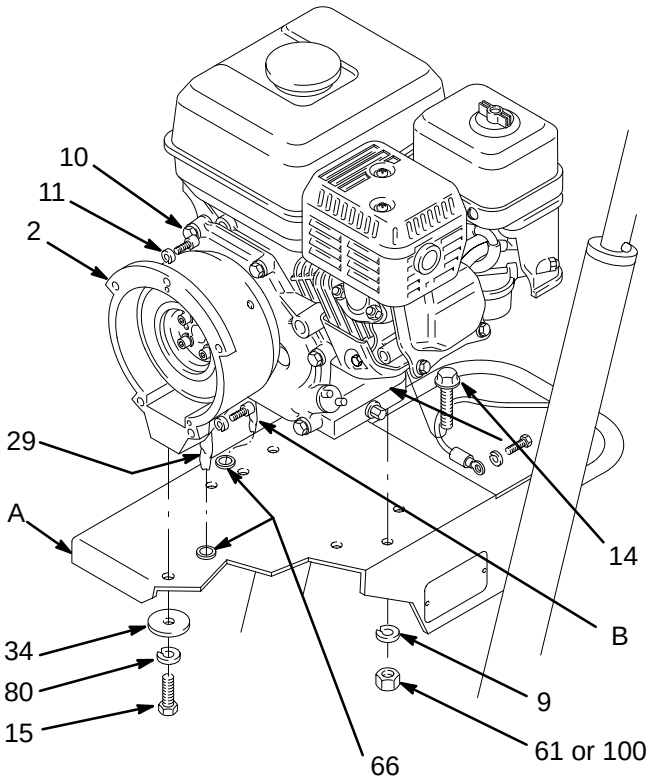
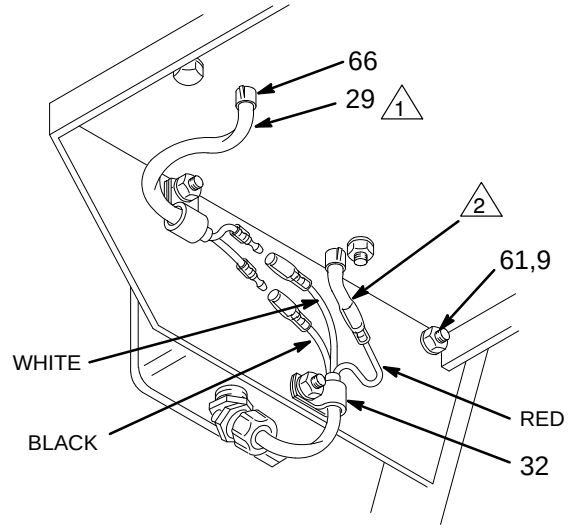


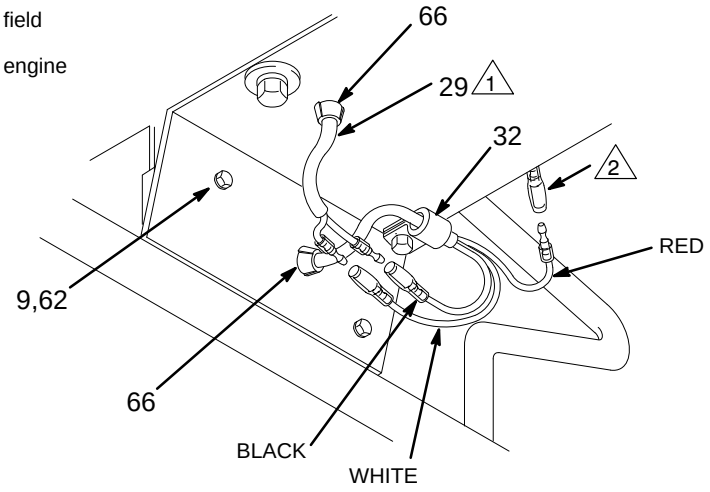
Fig. 24



View from under engine mounting plate on upright cart

0146

1 To field
2 To engine



View from under engine mounting plate on lo–boy cart

0147

Fig. 25

Field & Wiring Harness

NOTE: Refer to Fig. 26.

1. Remove the engine from the cart. See page 25.
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 (29).
4. Pull off the field.
5. Skip ahead to **Reassembly,** page 28, Step 4.

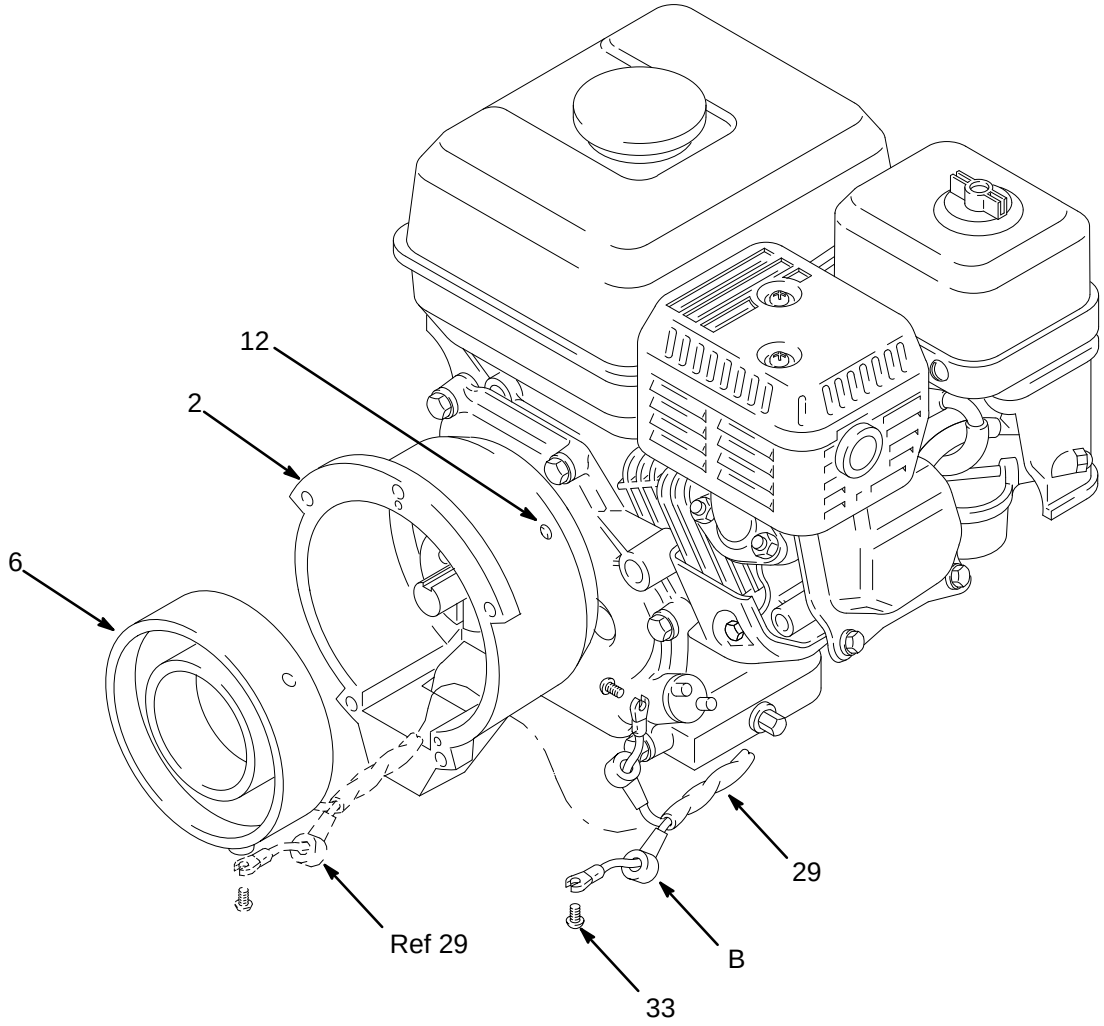


Fig. 26 0046

Clamp

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

NOTE: Refer to Fig. 27.

1. Loosen the two screws (16) on the clamp (3), working through the slot at the bottom of the clutch housing (2).
2. Install two screws (B) of the tool (A) in two of the threaded holes in the clamp. Tighten the screws (C) until the clamp comes off.
3. Skip ahead to **Reassembly,** page 28, Step 3, or continue to the right.

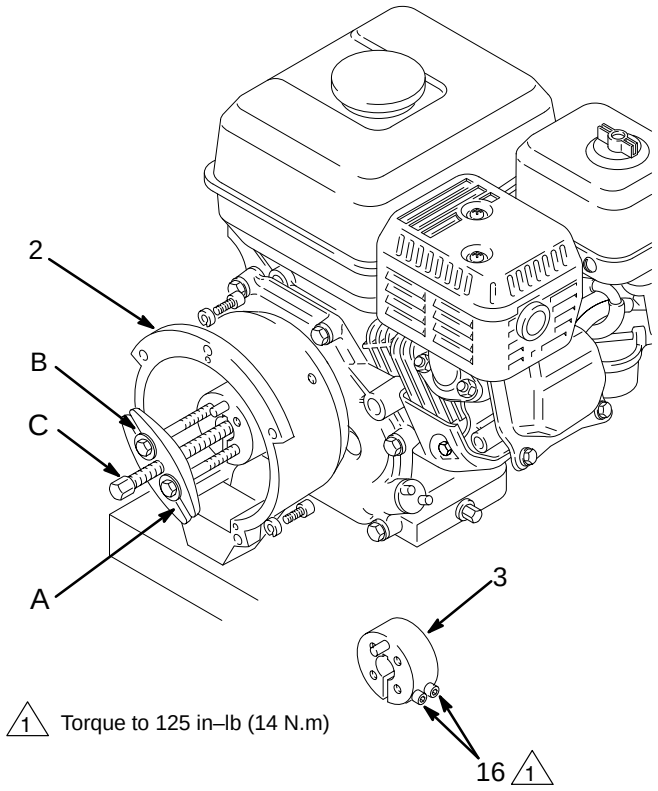


Fig. 27 0155

Clutch Housing

NOTE: Refer to Fig. 28.

1. Remove the four capscrews (8) and lockwashers (48) which hold the clutch housing (2) to the engine (1).
2. Remove the engine key (13).
3. Pull off the clutch housing (2).
4. Skip ahead to **Reassembly,** page 28, Step 1, or continue on page 30.

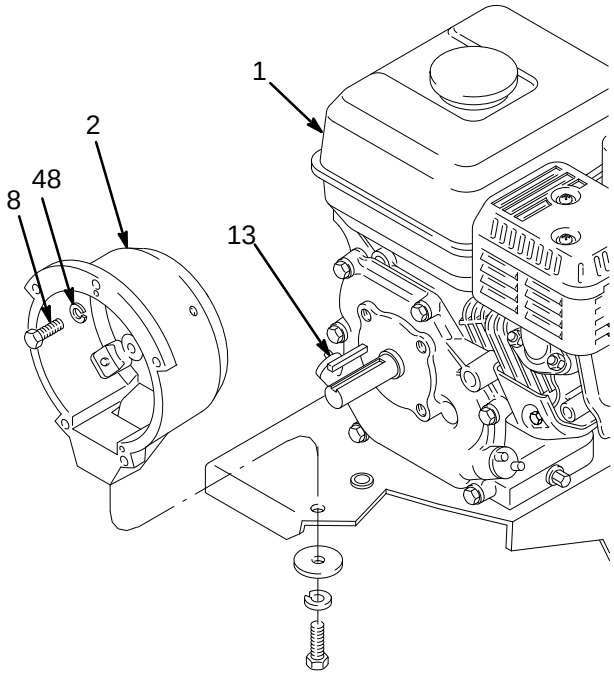


Fig. 28 0156

Reassembly

1. Install the **clutch housing (2)**, capscrews (8) and lockwashers (48) on the engine. See Fig. 29.
2. Install the engine shaft **key (13).** See Fig. 29.
3. Press the **clamp (3)** onto the engine shaft. Maintain the 1.41 in. +/– 0.01 (35.8 mm) dimension shown in Fig. 30.
4. To check the dimension, place a rigid, straight steel bar (B) across the face of the clutch housing (2). Use an accurate measuring device to measure the distance between the bar and the face of the clamp. Adjust the clamp as necessary. Torque the two screws (16) to 125 in–lb (14 N.m).
5. Connect the wires of the harness (29) to the screws (33) in both places on the field. Pull the plastic caps (C) up and snap them over the screws. Guide the wires of the harness (29) through the slot in the clutch housing. Slide the **field (6)** into the clutch. Align the setscrew holes in the field and the clutch housing (2). Tighten the setscrews (12) oppositely and evenly, to 25 in–lb (2.8 N.m). See Fig. 29.
6. Place the **engine (1)** assembly on the cart. Align the mounting holes. Guide the engine wire (D) and wiring harness (29) from the field through the appropriate grommets (66) in the mounting plate (E). Install the serrated flange screws (14), lockwashers (9) and nuts (61) and torque to 15 ft–lb (20.4 N.m). Install the capscrews (15), lockwashers (80) and washer (34) from under the engine mounting plate to secure the clutch housing (2). Connect the engine wire (A) to the red wire, and connect the black and white wires as shown in the Detail A, Fig. 29.

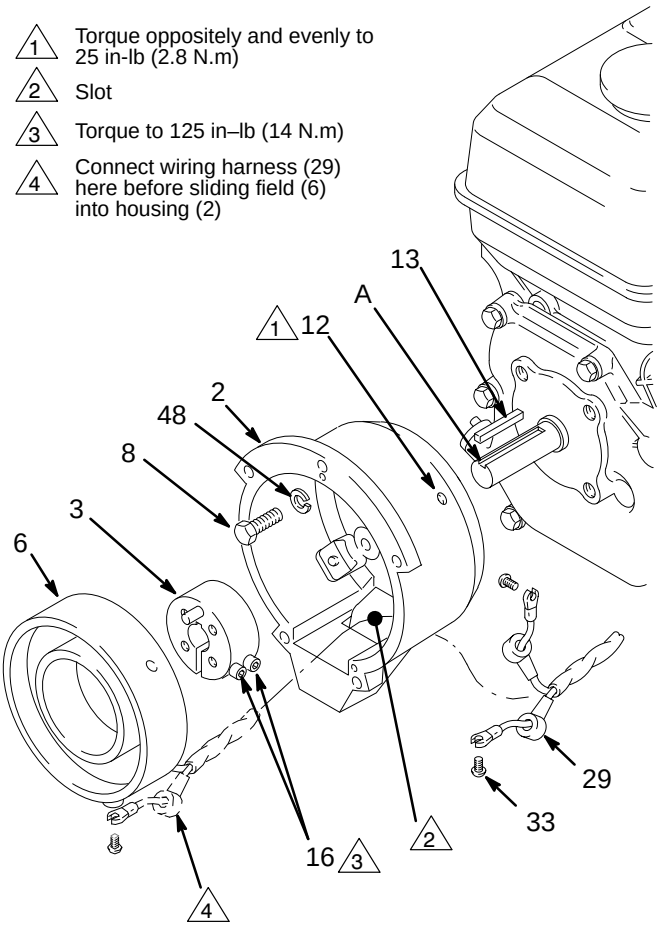


Fig. 29 0049

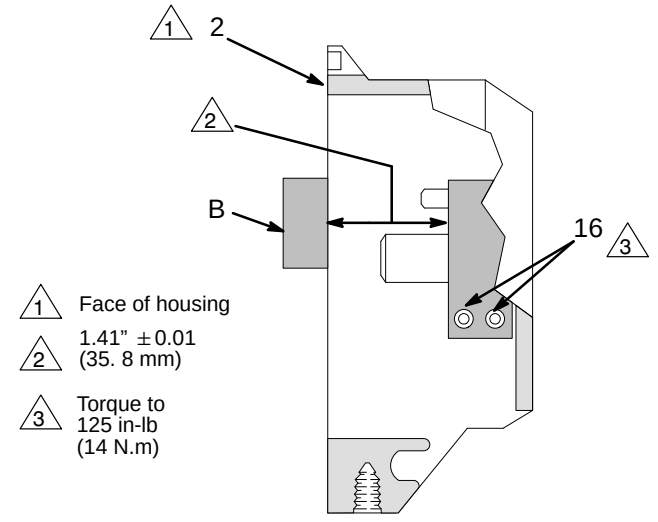


Fig. 30 **Side cutaway view of clutch housing** 0501

Reassembly

7. Be sure the face of the **rotor (4b)** and the field is free of all oil and contaminants. Install the rotor, lockwashers (11) and capscrews (16). Torque the capscrews to 7 ft–lb (9.5 N.m). See Fig. 31.

8. Pull the engine recoil rope to assure the engine turns freely, and there is no friction between the rotor (4b) and the field (6). If there is friction, losen the setscrews (12) and repostiion the field as necessary. Tighten the setscrews oppositely and evenly to 25 in-lb (2.8 N.m). Also make sure there are no burrs on the outside edge of the rotor.

NOTE: With the autogap style armature, the gap between the rotor and the armature is critical for proper operation. The clutch kits with an autogap style armature include a cardboard spacer (p/n 186–857) to set the proper gap. This spacer is for use **only** during installation.

9. Clean the face of the **armature (4a)**. With the flat side of the armature facing the rotor (4b), slide the armature onto the hub (F) in the drive/pinion assembly just until the chamfered end of the hub (19f) protrudes through the armature. See Detail B, Fig. 31. There will be significant resistance. Attach the cardboard spacer, supplied with the clutch kit, to the face of the armature. Engage the tabs on the spacer with the slots in the armature.

   Brace the cart against a wall to keep it from rolling. Push the drive/pinion assembly onto the clutch housing (2). There will be significant resistance. When the mating surfaces of the drive/pinion assembly and the clutch housing (2) are flush, remove the drive/pinion assembly. **Remove the cardboard spacer.**

10. Assemble the **pinion housing (19)** to the clutch housing (2), using the capscrews (10) and lockwashers (11). See Fig. 31.

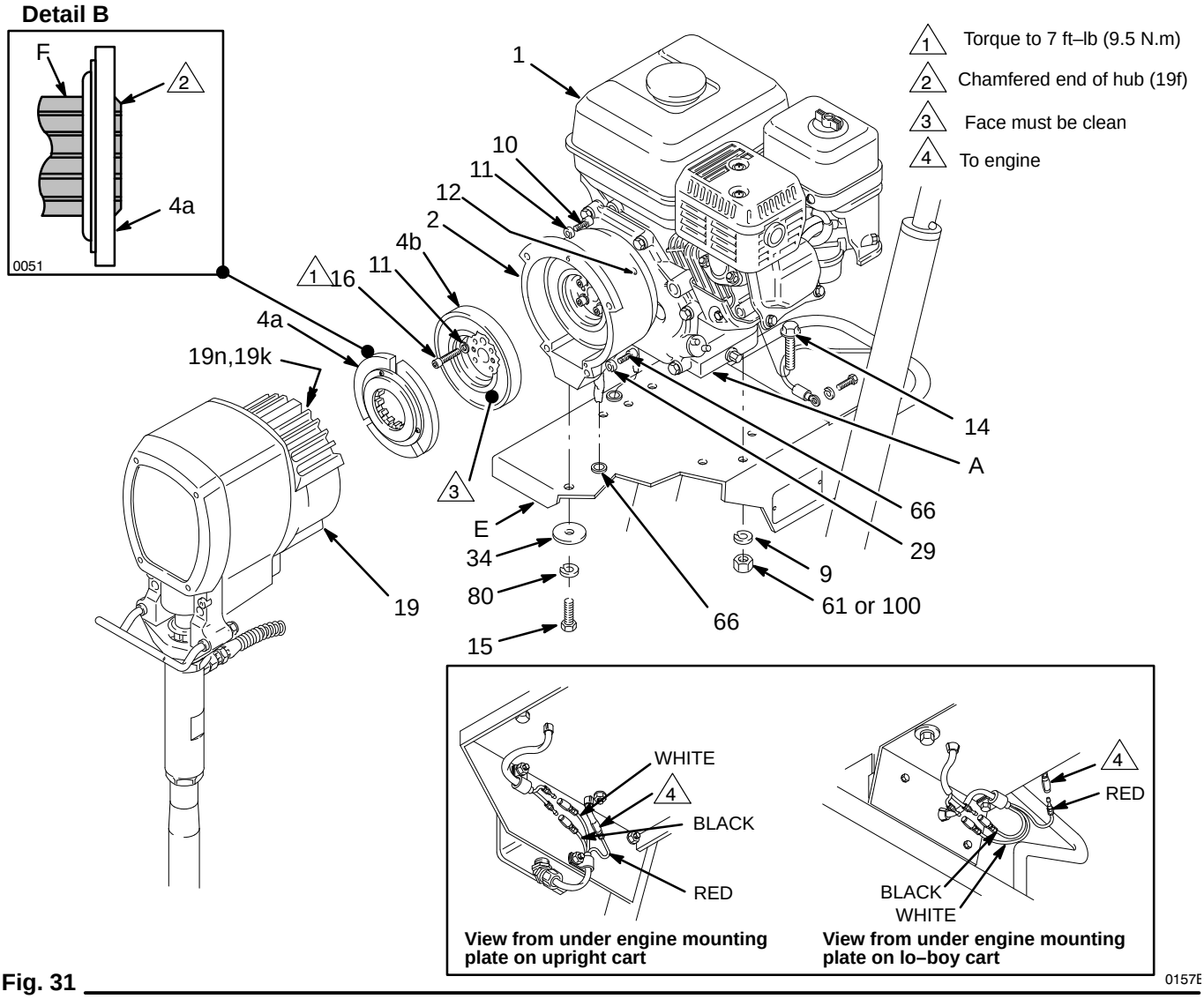
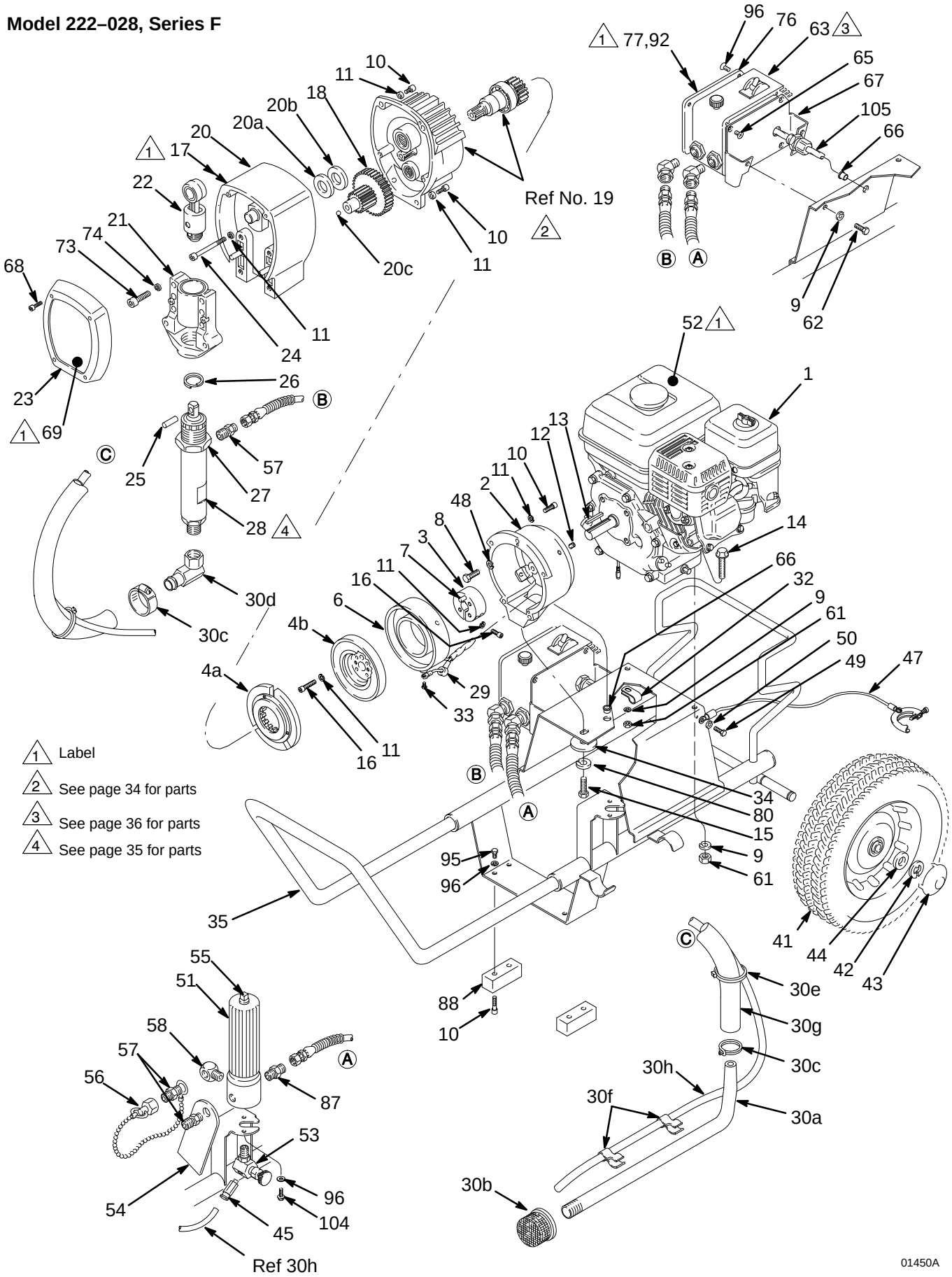


Fig. 31

Parts – Basic Lo–Boy Cart

Model 222–028, Series F



Parts – Basic Lo–Boy Sprayer

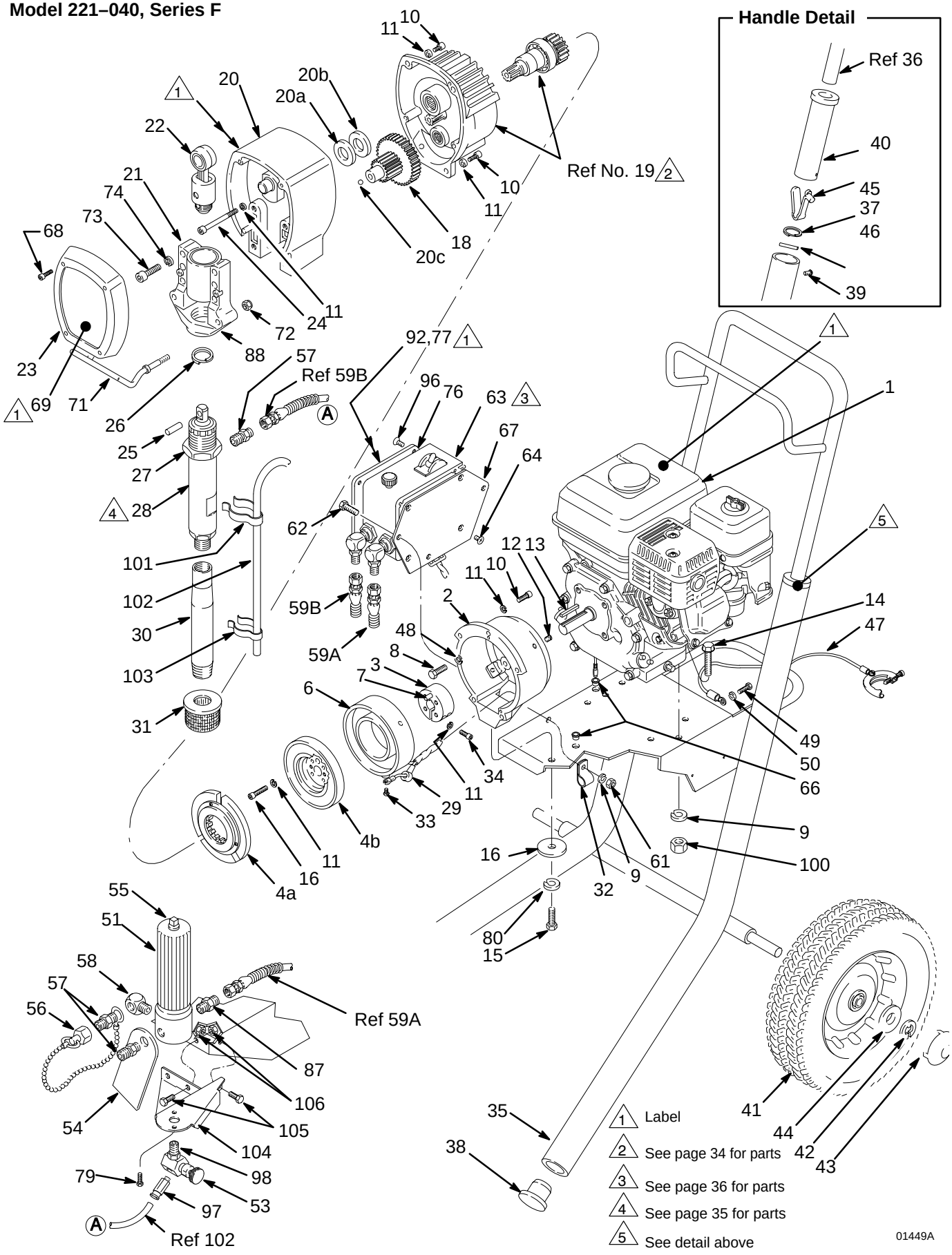
Model 222–028, Series F

Ref No.	Part No.	Description	Qty
1	108–879	ENGINE, gasoline	1
2	183–512	HOUSING, clutch	1
3	183–517	CLAMP, mounting, rotor	1
4	221–044	CLUTCH ASSEMBLY	
		Includes items 4a and 4b	1
4a		.ARMATURE	1
4b		.ROTOR	1
6	185–529	FIELD	1
7	108–800	PIN, dowel, 5/16 x 1”	1
8	109–031	CAPSCREW,1/2 sch, 5/16–24 x 1”	4
9	100–214	LOCKWASHER, 5/16”	5
10	100–644	CAPSCREW, sch, 1/4–20 x 3/4”	13
11	105–510	LOCKWASHER, spring, 1/4”	17
12	108–801	SETSCREW, 1/4”	4
13	183–401	KEY, parallel, 3/16” sq x 7/8”	1
14	110–837	SCREW, serrated flange, hex hd, 5/16–18 x 1–1/2”	2
15	100–469	CAPSCREW, hex hd, 3/8–16 x 3/4”	1
16	108–803	CAPSCREW, hex sch, 1/4–28 x 1.0”	6
17▲	185–953	LABEL, DANGER *on drive housing*	1
18	221–042	GEAR REDUCER	1
19	223–188	PINION	
		See parts on page 34	1
20	218–032	DRIVE HOUSING KIT	
		Includes items 20a to 20d	1
20a	178–967	.WASHER, bronze	1
20b	107–089	.WASHER, silver	1
20c	100–069	.BALL, sst	1
20d	110–293	.GREASE	1
21	218–035	BEARING HOUSING	1
22	218–034	CONNECTING ROD	1
23	179–899	COVER, housing	1
24	107–218	CAPSCREW, sch, 1/4–20 x 2.75”	2
25	176–818	PIN	1
26	176–817	SPRING, retaining	1
27	178–941	NUT, hex	1
28	222–580	DISPLACEMENT PUMP	
		See page 35 for parts	
		See ACCESSORIES for repair kit	1
29	221–183	CONDUCTOR, electrical	1
30a	183–769	TUBE, suction, 5 gal, 3/4” pipe	1
30b	187–190	STRAINER	1
30c	103–927	CLAMP, hose	2
30d	110–229	UNION, adapter, 3/4 nps(f) swivel x 3/4” tube	1
30e	103–473	STRAP, tie	3
30f	178–342	CLIP, spring	2
30g	176–920	HOSE, suction, nylon, 36” (0.9 m)	1
30h	183–281	TUBE, by–pass	1
32	108–868	CLAMP	1
33	109–033	SCREW, slotted, bdgh 6–32 x 3/16”	2
34	108–851	WASHER, plain, type “B”, 3/8”	1
35	222–612	CART	1
41	106–062	WHEEL, semi–pneumatic	2
42	101–242	RING, retaining	2
43	104–811	HUBCAP	2
44	154–636	WASHER, 5/8” size, 16 ga	4
45	108–982	CONNECTOR, tube	1
47	222–011	GROUNDING CLAMP & WIRE	1
48	104–008	LOCKWASHER	4
49	100–078	SCREW, pan hd, No. 8 x 5/16”	1
50	157–021	LOCKWASHER, internal, No. 8	1
51	214–570	FLUID FILTER	
		Includes one each of items 55 & 57	
		See 307–273 for parts	1
52▲	181–867	LABEL, WARNING *on engine*	1
53	221–077	VALVE, pressure drain	1
54▲	178–034	TAG, WARNING *at filter*	1
55	100–040	PLUG	1
56	220–285	CAP	1
57	162–453	NIPPLE, hex, 1/4 npsm x 1/4 npsm x 1/4 nps, 1–3/16” long	3
58	100–840	ELBOW, street, 1/4–18 (m x f)	1
59	223–768	HOSE, 1/4” ID, cpld 1/4 npsm (fbe), 29” (737 mm), spring guard both ends	2
61	110–838	LOCKNUT, heavy hex, 5/16–18	2
62	100–001	CAPSCREW, hex hd, 5/16–18 x 5/8”	3
63	222–369	PRESSURE CONTROL ASSEMBLY	
		See page 36 for parts	1
64	110–037	SCREW, pan, thd frmg, No. 10–24 x 1/2”	4
65	106–078	SCREW, type fh, thd frm, 10–24 x 3/8”	4
66	109–099	BUSHING, snap	2
67	183–765	BRACKET, mounting	1
68	107–209	SCREW, filh, 8–32 x 1”	4
69	183–519	LABEL, identification	1
73	107–210	CAPSCREW, sch, 3/8–16 x 1–1/2”	4
74	106–115	LOCKWASHER, spring, 3/8”	4
76	183–995	COVER, pressure control	1
77	183–518	LABEL, identification, *outside pressure control cover*	1
80	100–133	LOCKWASHER, spring, 3/8”	1
86	206–994	THROAT SEAL LIQUID, 8 oz (0.27 liter) *not shown*	1
87	164–672	NIPPLE, pipe, 3/8 npt(m) 3/8 npsm(m)	1
88	109–059	PAD, rubber	2
92▲	177–762	LABEL, WARNING *inside pressure control cover*	1
95	100–015	NUT, hex, mscr, 1/4–10	4
96	100–016	LOCKWASHER, spring, 1/4”	4
104	110–997	SCREW, serrated flange, hex hd, 1/4–20 x 5/8”	2
105	109–078	BUSHING, strain relief	1

▲ *Replacement Danger and Warning labels, tags and cards are available at no cost.*

Parts – Basic Upright Sprayer

Model 221–040, Series F



Parts – Basic Upright Sprayer

Model 221–040, Series F

Ref No.	Part No.	Description	Qty
1	108–879	ENGINE, gasoline	1
2	183–512	HOUSING, clutch	1
3	183–517	CLAMP, mounting, rotor	1
4	221–044	CLUTCH ASSEMBLY	
		Includes items 4a and 4b	1
4a		.ARMATURE	1
4b		.ROTOR	1
6	185–529	FIELD	1
7	108–800	PIN, dowel, 5/16 x 1”	1
8	109–031	CAPSCREW,1/2 sch, 5/16–24 x 1”	4
9	100–214	LOCKWASHER, 5/16”	5
10	100–644	CAPSCREW, sch, 1/4–20 x 3/4”	9
11	105–510	LOCKWASHER, spring, 1/4”	17
12	108–801	SETSCREW, 1/4”	4
13	183–401	KEY, parallel, 3/16” sq x 7/8”	1
14	110–837	SCREW, serrrated flange, hex hd, 5/16–18 unc–2a x 1.5”	2
15	100–469	CAPSCREW, hex hd, 3/8–16 x 3/4”	1
16	108–803	CAPSCREW, hex sch, 1/4–28 x 1.0”	6
17▲	185–953	LABEL, DANGER *on drive housing*	1
18	221–042	GEAR REDUCER	1
19	223–188	PINION	
		See parts on page 34	1
20	222–203	DRIVE HOUSING	
		Includes items 20a to 20d	1
20a	178–967	.WASHER, bronze	1
20b	107–089	.WASHER, silver	1
20c	100–069	.BALL, sst	1
20d	110–293	.GREASE	1
21	218–035	BEARING HOUSING	1
22	218–034	CONNECTING ROD	1
23	179–899	COVER, housing	1
24	107–218	CAPSCREW, sch, 1/4–20 x 2–3/4”	2
25	176–818	PIN	1
26	176–817	SPRING, retaining	1
27	178–941	NUT, hex	1
28	222–580	DISPLACEMENT PUMP	
		See page 35 for parts	1
29	221–183	CONDUCTOR, electrical	1
30	180–573	TUBE, suction, 5 gal, 3/4” pipe	1
31	187–147	STRAINER	1
32	108–868	CLAMP	2
33	109–033	SCREW, slotted, 6–32 x 3/16”	2
34	108–851	WASHER, plain, type “B”, 3/8”	1
35	223–410	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, recess pnh, self–tap “F”, No. 10–24 x 1/4”	4
40	183–194	SLEEVE	2
41	106–062	WHEEL, semi–pneumatic	2
42	101–242	RING, retaining	2
43	104–811	HUBCAP	2
45	179–777	BUTTON, snap	2
46	108–068	PIN, spring, straight, 3/16”	2
47	222–011	GROUNDING CLAMP & WIRE	1
48	104–008	LOCKWASHER	4
49	100–078	SCREW, pan hd, No. 8 x 5/16”	1
50	157–021	LOCKWASHER, internal, No. 8	1
51	214–570	FLUID FILTER	
		Includes one each of items 55 and 57	
		See 307–273 for parts	1
52▲	181–867	LABEL, WARNING *on engine*	1
53	221–077	VALVE, pressure drain	1
54▲	178–034	TAG, WARNING *at filter*	1
55	100–040	PLUG	1
56	220–285	CAP	1
57	162–453	NIPPLE, hex, 1/4 npsm x 1/4 npsm x 1/4 nps, 1–3/16” long	3
58	100–840	ELBOW, street, 1/4–18 (m x f)	1
59	223–766	HOSE, 1/4” ID, cpld 1/4 npsm (fbe), 29” (715 mm), spring guard both ends	2
61	100–188	NUT, heavy hex, 5/16–18 UNC–2a	3
62	101–344	CAPSCREW, hex hd, 5/16–18 UNC–2a x 5/8”	3
63	222–369	PRESSURE CONTROL ASSEMBLY	
		See page 36 for parts	1
64	106–078	SCREW, fh, thd frmg, No. 10–24 x 3/8”	4
66	108–805	BUSHING, snap	2
67	183–392	BRACKET, mounting	1
68	107–209	SCREW, filh, 8–32 UNC–2a x 1”	4
69	183–519	LABEL, identification	1
71	189–918	HANGER, pail	1
72	112–746	NUT, retainer	2
73	107–210	CAPSCREW, sch, 3/8–16 x 1–1/2”	4
74	106–115	LOCKWASHER, spring, 3/8”	4
76	183–995	COVER, pressure control	1
77	183–518	LABEL, identification, *outside pressure control co*ver	1
79	110–997	SCREW, serrated flange, hex hd, 1/4–20 x 5/8”	2
80	100–133	LOCKWASHER, spring, 3/8”	1
86	206–994	THROAT SEAL LIQUID, 8 oz (0.27 liter) *not shown*	1
87	164–672	ADAPTER, 1/4–18 npsm x 3/8 npt	1
88	183–035	BRACKET	2
92▲	177–762	LABEL, WARNING *inside presure control cover*	1
96	110–037	SCREW, pan, thd frmg, No. 10–24 x 1/2” Type “C”	4
97	108–982	CONNECTOR, tube	1
98	187–189	NIPPLE, reducing, 1/4 to 1/8 npt	1
100	110–838	LOCKNUT, heavy hex, 5/16–18	2
101	186–494	CLIP, spring	1
102	186–495	TUBE, bypass	1
103	181–102	CLIP, spring	1
104	186–638	BRACKET, mounting, filter	1
105	110–963	SCREW, serrated flange, hex hd, 5/16 x 3/4”	3
106	110–996	NUT, serrated flange, hex, 5/16–18	3

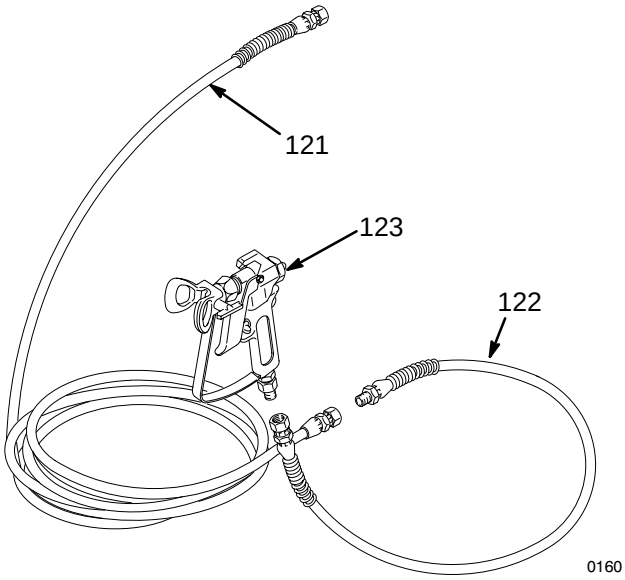
▲ *Replacement Danger and Warning labels, tags and cards are available at no cost.*

Parts – Complete Sprayers

Model 231–057
Sprayer with Upright Cart
Includes items 120 to 123

Model 231–077
Sprayer with Lo–Boy Cart
Includes items 121 to 124

Ref No.	Part No.	Description	Qty
120	221–040	GM3500 Basic Upright Sprayer See parts list on page 33	1
121	223–541	HOSE, grounded, nylon, 1/4" ID, cpld 1/4 npsm(f), 50 ft (15 m),' spring guards both ends	1
122	214–701	HOSE, grounded, nylon, 3/16" ID, cpld 1/4 npsm(f), 3 ft (0.9 m), spring guards both ends	1
123	220–955	"CONTRACTOR" SPRAY GUN Includes RAC IV® DripLess™ Tip Guard and 517–size SwitchTip™ See 307–614 for parts	1
124	222–028	GM3500 Basic Lo–Boy Sprayer See parts list on page 31	1



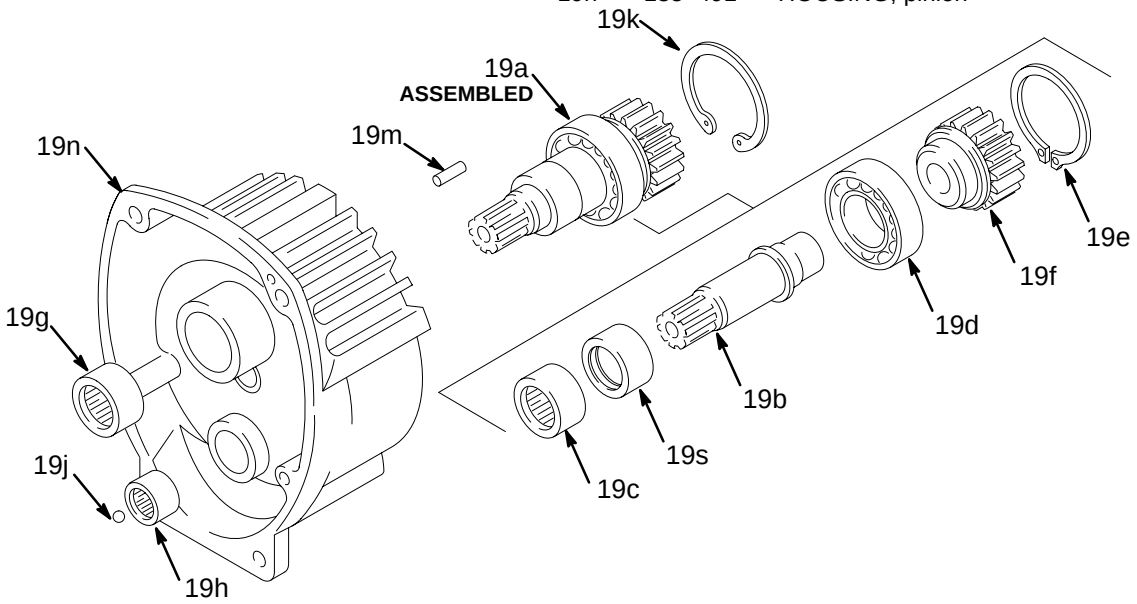
Parts – Pinion Assembly

Ref No. 19

Pinion Housing
Includes items 19a to 19f and 19s

Ref No.	Part No.	Description	Qty
19a	223–189	PINION SHAFT ASSEMBLY Includes items 19b to 19f and 19s	1
19b	183–681	.SHAFT, pinion	1
19c	109–001	.BEARING, needle	1
19d	109–002	.BEARING, ball	1
19e	108–880	.RING, retaining, external	1
19f	183–515	.HUB, armature	1
19s	110–607	CLUTCH, roller	1

Ref No.	Part No.	Description	Qty
NOTE: Items 19g to 19n are not included in a kit. Order them separately as needed.			
19g	105–684	BEARING, ball, large	1
19h	107–088	BEARING, ball, small	1
19j	100–069	BALL, sst	1
19k	109–000	RING, retaining, internal	1
19m	105–489	PIN, dowel	2
19n	185–491	HOUSING, pinion	1



Parts – Displacement Pump

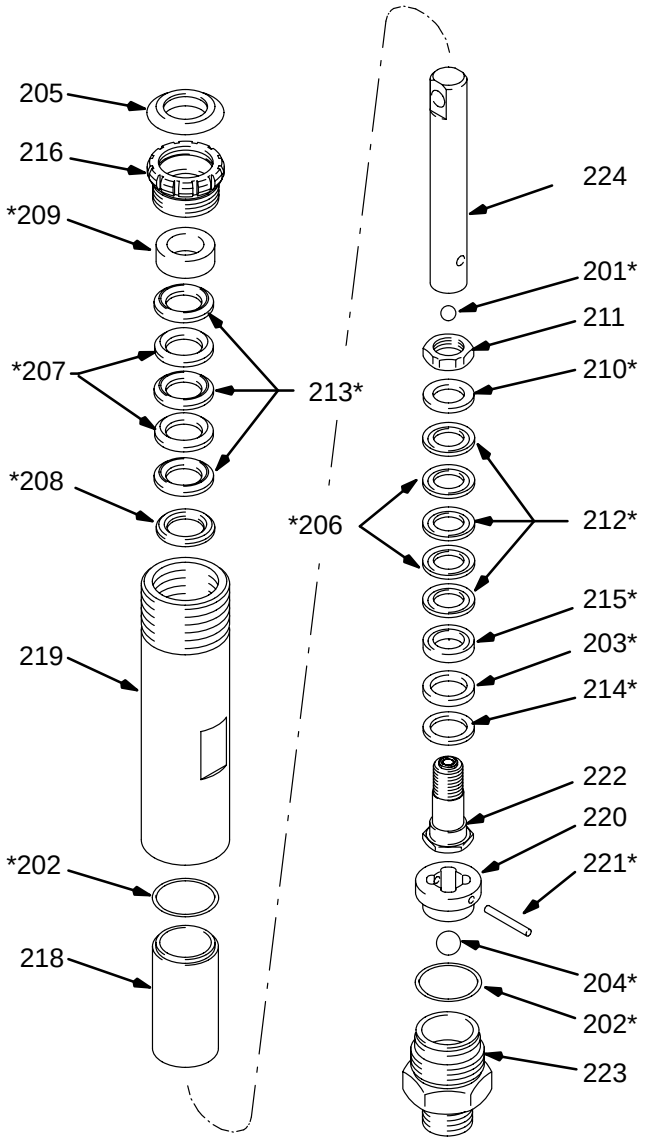
Model 222–580, Series A

Includes items 202 to 225

Ref No.	Part No.	Description	Qty
202	108–526*	PACKING, o–ring	2
203	107–093*	SEAL, u–cup, poly	1
204	105–445*	BALL	1
205	179–810	PLUG	1
206	178–939*	V–PACKING, leather	2
207	178–940*	V–PACKING, leather	2
208	178–942*	GLAND, male	1
209	178–943*	GLAND, female	1
210	178–944*	GLAND, male	1
211	178–945	NUT, hex, retaining	1
212	178–964*	V–PACKING, poly	3
213	178–965*	V–PACKING, poly	3
214	181–338*	WASHER, backup	1
215	178–969*	GLAND, female	1
216	179–809	NUT, packing	1
218	185–213	SLEEVE, cylinder	1
219	185–211	CYLINDER	1
220	185–214	GUIDE, ball	1
221	178–938*	PIN, ball stop	1
222	218–036	VALVE, piston	1
223	222–437	VALVE, intake	1
224	222–438	ROD, piston	1
225	105–444*	BALL	1

* *These parts are also included in **Repair Kit 222–588** which may be purchased separately. Keep a repair kit on hand to reduce down time.*

Use Sleeve Removal Tool, 222–586, to remove the sleeve. (Order tool separately.)



Parts – Pressure Control

Part No. 222–369 – Replacement Pressure Control forAll GM3500 Sprayers

Part No. 222–369 includes all items marked with a †. It does not include unmarked items.

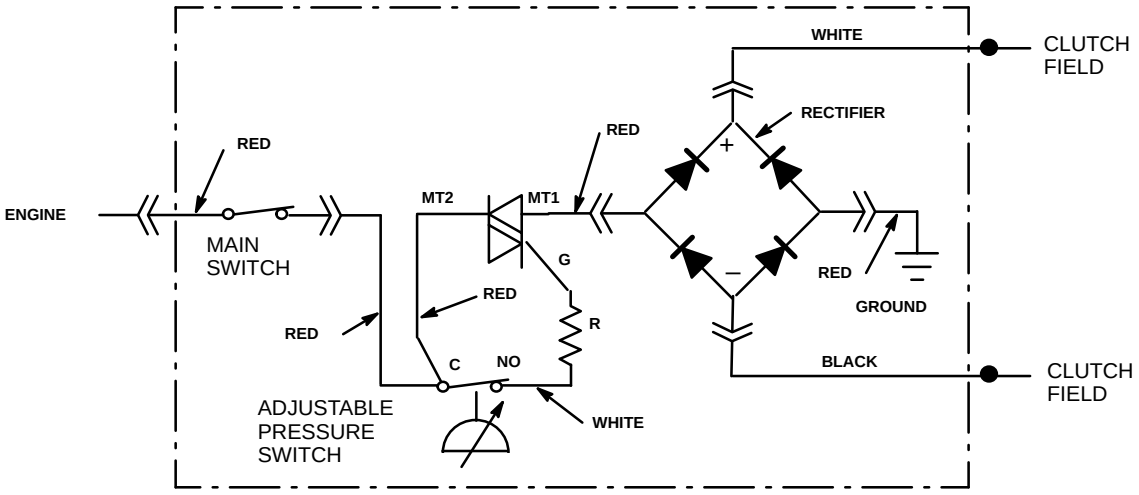
For Upright sprayers, order the Basic Control, 222–369, and/or items 309, 312, 313, and 314 as needed.

For the Lo–Boy sprayers, order the Basic Control, 222–369, and items 309 and/or 322 as needed.

Ref No.	Part No.	Description	Qty
300	222–380†	PRESSURE CONTROL *Includes items 302 to 304*	1
301▲	183–466†	LABEL, warning	1
302	105–679†	ON/OFF SWITCH	1
303	105–659†	BOOT, switch	1
304	107–255†	GUARD, locking	1
305	157–021†	LOCKWASHER, No. 8, internal	2
306	100–284†	NUT, hex, msc 8–32 UNC–2a	1
307	108–219†	RECTIFIER, bridge	1
308	220–979†	CONDUCTOR, red	2
309	220–978	CONDUCTOR, red, white,black	1
310	100–035†	SCREW, mach, slotted pan hd, No. 8 x 5/16”	1
311	108–783†	SCREW, mach, flat hd; 8–32 x 0.812”	1
312	162–453	NIPPLE, hex, 1/4–18 npsm	2
313	108–852	CONNECTOR, 45°	1
314	100–840	ELBOW, str, 1/4–18 npt(m x f)	2
316	222–352†	TRIAC	1
317	107–070†	SCREW, flat head	2
318	100–072†	NUT, hex	2
319	103–181†	LOCKWASHER	2
320	101–754†	PLUG, pipe	1
322	109–106	UNION, swivel, 45°	2
324	101–754†	PLUG	1

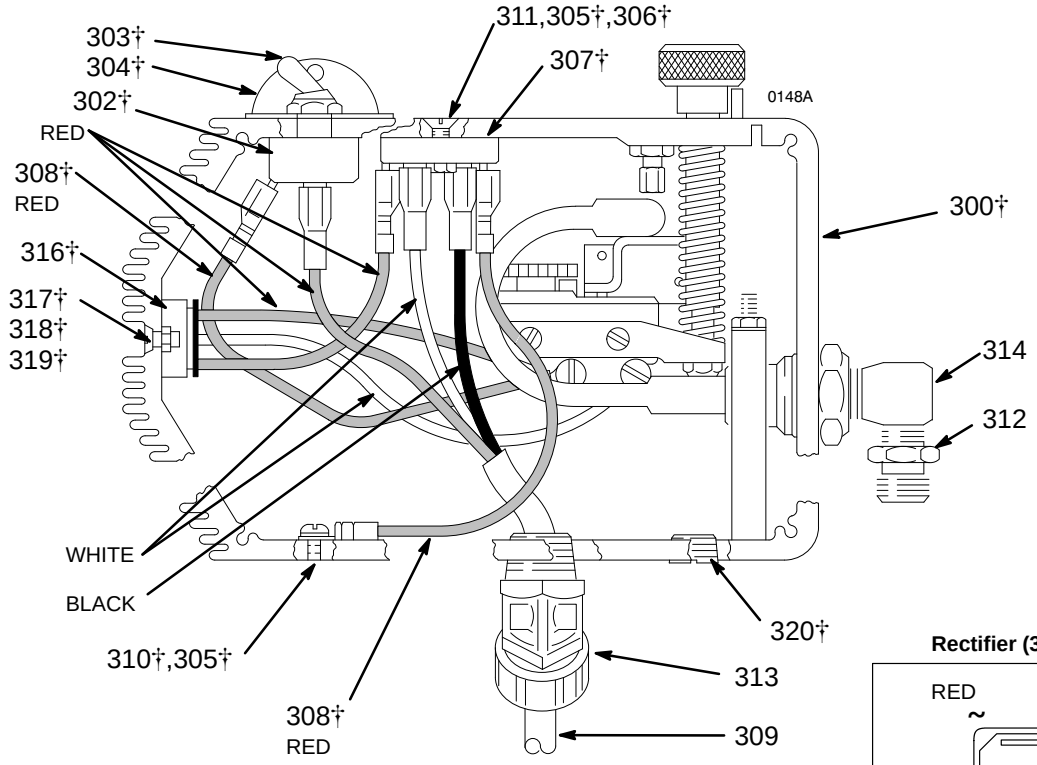
▲ *Replacement Danger and Warning labels, tags and cards are available at no cost.*

WIRING SCHEMATIC

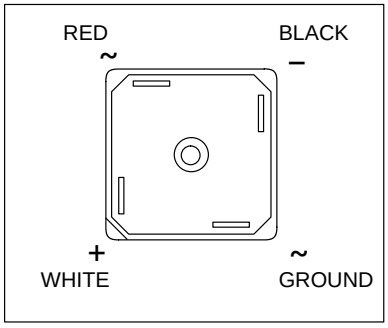


0054

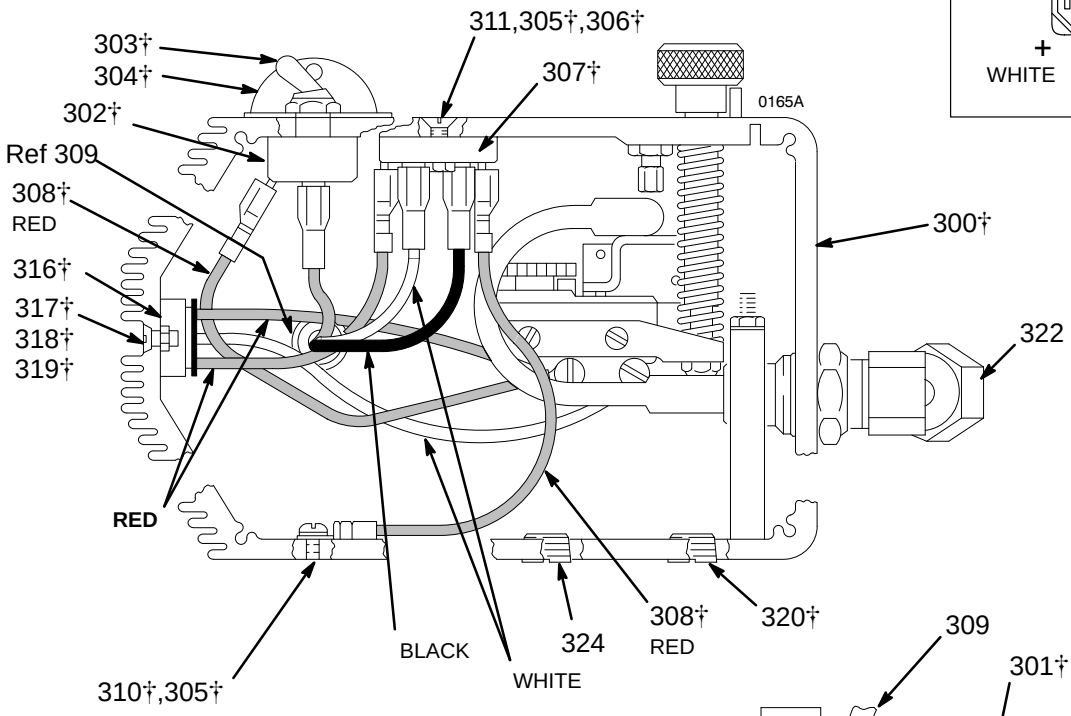
Pressure Control For Upright Sprayers

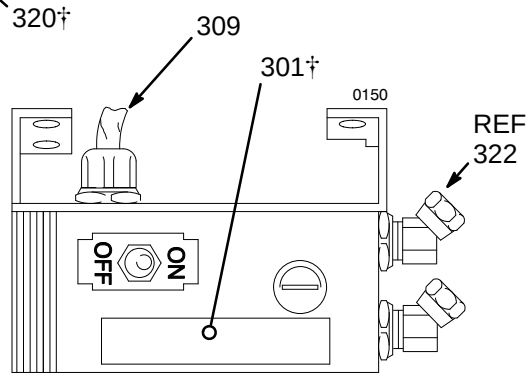


Rectifier (307) connections



Pressure Control for Lo–Boy Sprayers





Top view of pressure control on lo–boy cart

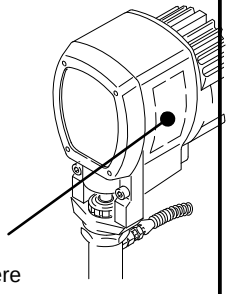
Accessories

USE ONLY GENUINE GRACO PARTS AND ACCESSORIES

DANGER LABELS

The English language DANGER label shown on page 1 is also on your sprayer. If you have painters who do not read English, order one of the following labels to apply to your sprayer. The drawing below shows the best placement of these labels for good visibility.
Order the labels directly from Graco, free of charge. Toll Free: 1–800–328–0211

French	**185–956**
Spanish	**185–961**
German	**186–041**
Greek	**186–045**
Korean	**186–049**
English	**185–953**

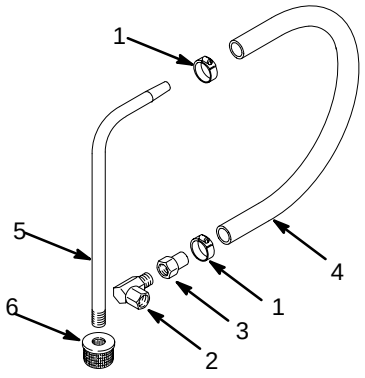


0505

SUCTION TUBE KIT 208–920

5 gallon (19 liter) size, For Upright Cart Sprayers Includes:

Ref No.	Part No.	Description	Qty
1	101–818	CLAMP, hose	2
2	160–327	UNION, 90° 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

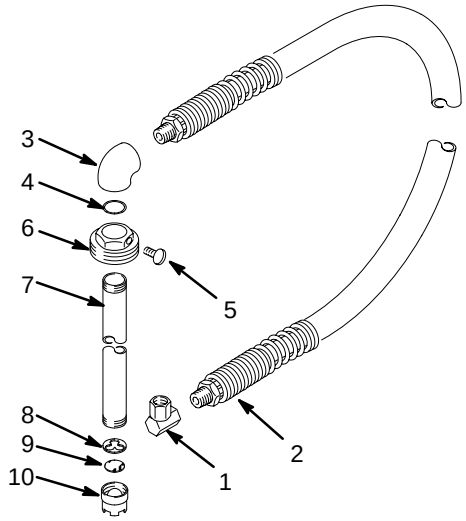


0161

SUCTION TUBE KIT 208–259

55 gallon (200 liter) size, For Upright Cart Sprayers Includes:

Ref No.	Part No.	Description	Qty
1	156–589	UNION, 90° ADAPTER, 3/4 npt(f) x 3/4 np(f) swivel	1
2	214–961	HOSE, coupled 3/4 npt(mbe) 3/4” ID; nylon, 6 ft (1.8 m); spring guard one end	1
3	156–591	ELBOW, 90°; 3/4 npt x 1–1/2 – 24 NS	1
4	156–593	PACKING, o–ring, nitrile rubber	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



0161

DISPLACEMENT PUMP REPAIR KIT 222–588

See contents on page 35. Repair instructions are included with the kit.

SLEEVE REMOVAL TOOL 222–586

Required for removing the sleeve of the displacement pump during service.

THROAT SEAL LIQUID

Non–evaporating liquid for the wet–cup. Helps prevent buildup of paint on the rod and throat packings, to reduce premature wear.

206–994	8 oz.
206–995	1 quart
206–996	1 gallon

Technical Data

Engine . . . . . 3.5 Horsepower, Honda

Maximum Working Pressure . . . . . 3000 psi (210 bar)

Noise Level
Sound Power . . . . . 103 dbA
Sound Pressure . . . . . 95 dbA @ 1 meter under maximum operating conditions per ISO–3744

Cycles/Gallon (liter) 200 (53)

Maximum Delivery . . . . . 0.85 gpm (3.2 liter/min)

Fuel Tank Capacity . . . . . 0.66 gallons (2.5 liter)

Maximum Tip Size . . . . . 1 gun with 0.031 tip
2 guns with 0.021 tip

Inlet Paint Strainer . . . . . 16 mesh (1190 micron) Stainless Steel screen, reusable

Outlet Paint Filter . . . . . 60 mesh (250 micron) Stainless Steel screen, reusable

Pump inlet Size . . . . . 3/4 npt (m)

Fluid Outlet Size . . . . . 1/4 npsm from fluid filter

Wetted Parts
Displacement Pump . Carbon Steel, Plastic, Leather
Filter . . . . Aluminum, Carbon Steel, Stainless Steel

NOTE: For information on converting your sprayer to one that can safely pump fluids containing halogenated hydrocarbons, contact Graco Product Service, at 1–800–328–0211.

Dimensions

Model 220–040
Upright Cart without hose or gun

Weight (dry, without packaging) . . . . . 109 lb (49 kg)
Height . . . . . 30.25 in. (768 mm)
Length . . . . . 29.5 in. (749 mm)
Width . . . . . 22.25 in. (565 mm)

Model 222–028
Lo–Boy Cart without hose or gun

Weight (dry, without packaging) . . . . . 95 lb (43 kg)
Height . . . . . 22.5 in. (571mm)
Length . . . . . 32.0 in. (813 mm)
Width . . . . . 18.5 in. (470 mm)

Manual Change Summary

This sprayer now complies with the European Community Directives that are required in order to use the CE mark which is shown on the cover of this manual. To comply with the directive, text has been added to the Warnings section regarding wearing ear– noise protection when working near the sprayer when the engine is operating. In addition, the following information was added to the Technical Data section.

Noise Level
Sound Power . . . . . 103 dbA
Sound Pressure . . . . . 95 dbA @ 1 meter under maximum opearting conditions per ISO–3744

Graco Phone Numbers

TO PLACE AN ORDER, contact your Graco distributor, or call this number to identify the distributor closest to you: **1–800–328–0211 Toll Free.**

FOR TECHNICAL ASSISTANCE, service repair information or assistance regarding the application of Graco equipment: **1–800–543–0339 Toll Free**

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

Graco makes no warranty, and disclaims all implied **warranties of merchantability and fitness for a particular purpose**, with respect to accessories, equipment, materials, or components sold but not manufactured by Graco. These items sold, but not manufactured by Graco (such as electric motor, switches, hose, etc.) are subject to the warranty, if any, of their manufacturer. Graco will provide purchaser with reasonable assistance in making any claim for breach of these warranties.

Sales Offices: Atlanta, Chicago, Dallas, Detroit, Los Angeles, Mt. Arlington (N.J.)
Foreign Offices: Canada; England; Korea; Switzerland; France; Germany; Hong Kong; Japan

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

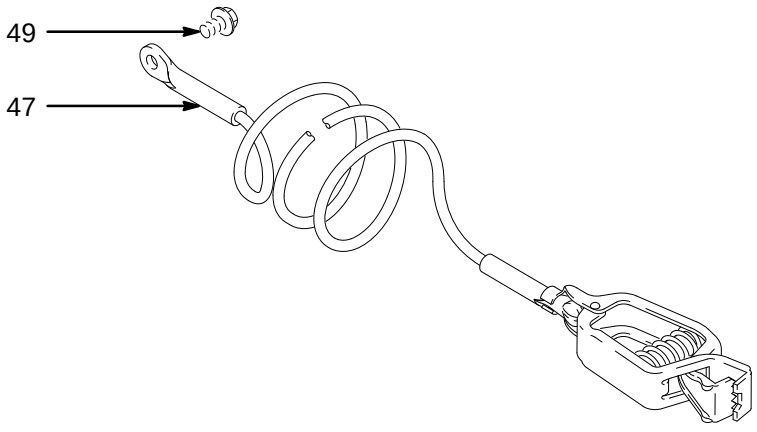
PRINTED IN U.S.A. 307–863 2/88 Revised 11/94

Parts Change Notice

Some parts in Rev. K of manual 307–863 have changed but have not yet been changed in the instruction manual. Please note the changes below and mark them in your manual or keep this sheet with your manual.

Assembly No.	Series Letter Change	Part That Changed	Ref No.	Part Description	Description of Change
Model 222–028 and 221–040	–	221–077	53	VALVE, pressure drain	Replaced by 237–677
		222–011	47	GROUNDING CLAMP & WIRE	Replaced by 237–686
		100–078	49	SCREW, mach, hex washer head, No. 8 x 3/8”	Replaced by 112–798
		157–021	50	LOCKWASHER, internal, No. 8	Deleted

Other Changes



06489

Page 20: In Fig. 17, change Note 1:

from: Torque: 70 ft–lb (90 N.m)

to: Torque: 90 ft-lb (115 N•m)

Page 29: In step 8., change:

from: Pull the engine recoil rope to assure the engine turns freely, and there is no friction between the rotor (4b) and the field (6). If there is friction, loosen the setscrews (12) and reposition the field as necessary. Tighten the setscrews oppositely and evenly to 25ft–lb (2.8 N.m). Also make sure there are no burrs on the outside edge of the rotor.

to: After installing the rotor (4b), check the clearance between the outside diameter of the rotor and the inside diameter of the field (6). The clearance must be .006 in. (.15 mm) minimum all the way around. Use a piece of .006 in. brass shim stock to check. If necessary, loosen the field setscrews (12), adjust the position of the field and then tighten the setscrews.

Page 39: In the **Technical Data** section, change:

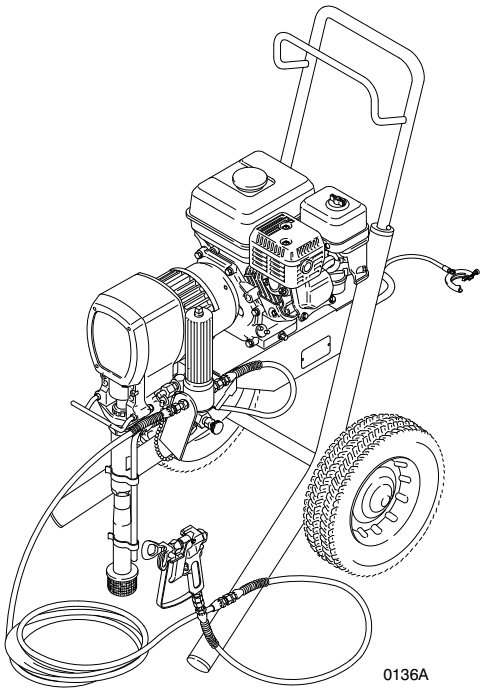
from: Engine . . . . . 3.5 Horsepower, Honda

to: Engine . . . . . 4.0 Horsepower, Honda

from: Maximum delivery . . . . . 0.85 gpm (3.2 liter/min)

to: Maximum delivery . . . . . 1.0 gpm (3.8 liters/min)

E-Z REFERENCE GM 3500



Upright Cart – Model 221–040, Basic sprayer
Model 231–057, Complete sprayer*

LoBoy Cart – Model 222–028, Basic sprayer
Model 231–077, Complete sprayer*

Model 231–057 shown

** Complete sprayers include 50 ft (15 m) 1/4 in. I.D. hose, 3 ft (0.9 m) 3/16" I.D. whip hose, and Contractor gun with RAC IV DripLess™ Tip Guard and 517 SwitchTip™*

Technical Data

Maximum Working Pressure . . . . . 3000 psi (210 bar)
Gasoline Engine . . . . . 4 HP industrial grade
Sound Data
Sound Pressure Level . . . . . 95 dB(A)*
Sound Power Level . . . . . 103 dB(A)*
** Measured at 3.1 ft. (1 m) under maximum operating conditions per ISO 3744.*

Fuel Tank Capacity . . . . . 0.66 gal (2.5 liter)
Delivery . . . . . 1.0 gpm (3.8 lpm)
Cycles Per Gallon (liter) 200 (53)
Tip Size . . . . . one gun to .0.031 tip
two guns to 0.021 tip
with latex at 2000 psi (138 bar)
Fluid Inlet . . . . . 3/4 npt(m)
Inlet Paint Strainer . . . . . 16 mesh (1190 micron) reusable stainless steel screen
Fluid Filter Outlet Size . . . . . 1/4 npsm(m)
Fluid Filter Material . . . . . aluminum, stainless steel, carbon steel, 60 mesh (250 micron) reusable SST screen
Pump Material . . . . . stainless steel, carbon steel, polyurethane, Delrin®
Packing Material . . . . . leather, UHMWPE
Spray Hose Requirements . . . . . grounded, 50 ft (15 m) minimum, 1/4 in. I.D., non-wire braid, spring guards on both ends

Application

Sprays fluids from light specialty coatings to latex and block fillers. **Do not** use with solvents such as methylene chloride or other HHCs.

For information on converting your sprayer to one that can safely pump fluids containing halogenated hydrocarbons, contact Graco Product Service, at 1–800–328–0211.

U.S. patent pending.

Dimensions

	Upright	Loboy
Height	30.25 in. (768 mm)	22.5 in. (572 mm)
Length	29.5 in. (749 mm)	32 in. (813 mm)
Width	22.25 in. (565 mm)	18.5 in. (470 mm)
Weight	109 lb (49.4 kg)	95 lb (43 kg)

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

PRINTED IN U.S.A. 3Z7–863 August 1995

***TO PLACE AN ORDER*, call**
1–800–367–4023 Toll Free

***FOR TECHNICAL ASSISTANCE*, call**
1–800–543–0339 Toll Free

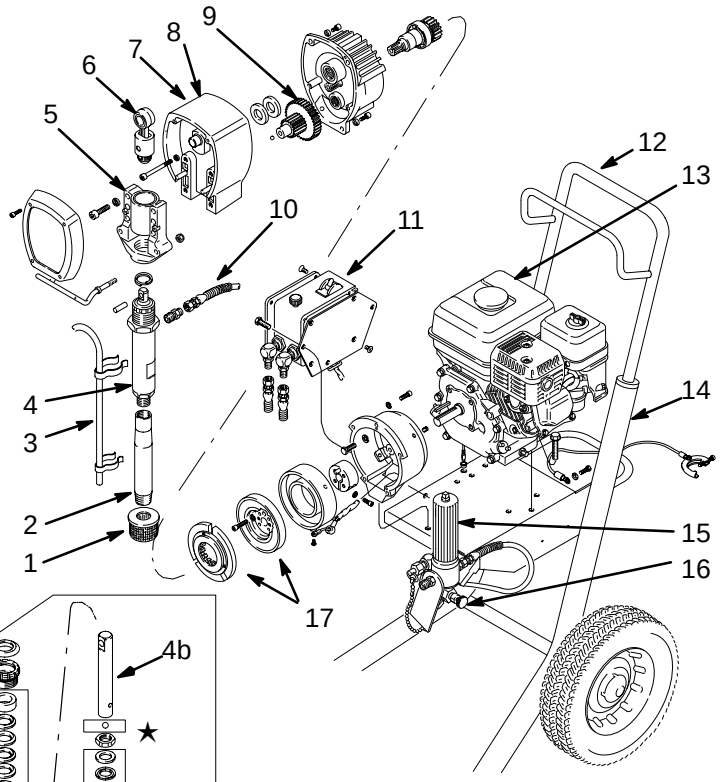
3Z7–863
Rev. B

E-Z REFERENCE

Supplement to instruction manual 307–863.

GM3500

Airless Paint Sprayer



⚠ WARNING

INSTRUCTIONS

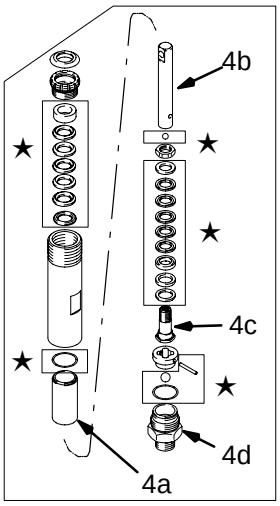
INJECTION HAZARD
This form is only a quick reference to the features and frequently ordered parts of this sprayer. To reduce the risk of serious injury, including fluid injection, while operating or repairing this sprayer, follow the warnings and instructions in manual 307–863.

Model 222–028, Series F,
Basic sprayer with LoBoy cart

Model 231–077,
Complete sprayer with LoBoy cart

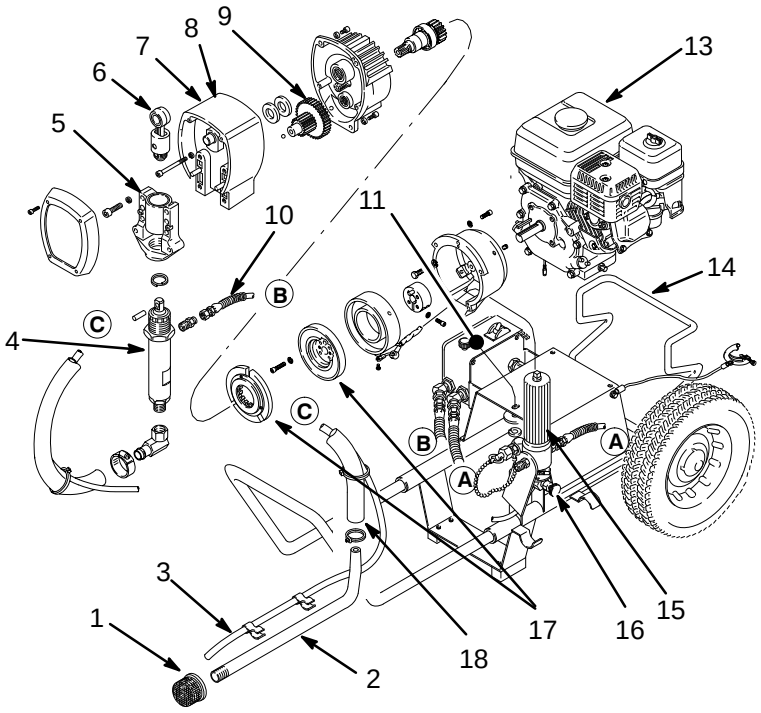
Model 221-040, Series F,
Basic sprayer with upright cart

Model 231-057,
Complete sprayer with upright cart



Ref No	Upright Part No.	LoBoy Part No.	Description
1	187–147	187–190	Strainer
2	180–573	183–769	Suction Tube
3	186–495	183–281	Bypass Tube
4	222–580	Same	Displacement Pump
4a	185–213	Same	.Sleeve
4b	222–438	Same	.Piston Rod
4c	218–036	Same	.Piston
4d	222–437	Same	.Intake Valve
5	218–035	Same	Bearing Housing
6	218–034	Same	Connecting Rod
7	222–203	218–032	Drive Housing
8 ▲	185–953	Same	Danger Label
9	221–042	Same	Gear Reducer
10	223–766	223–768	Hose
11	222–369	Same	Pressure Control
12	220–918	None	Handle & Hose Rack
13	108–879	Same	Engine
14	223–410	222–612	Cart
15	214–570	Same	Fluid Filter
16	222–198	Same	Pressure Drain Valve
17	221–044	Same	Clutch
18	None	176–920	Suction Hose

▲ *Extra danger labels are available for free.*



Packing Repair Kit 222–588
Includes all items marked with a ★

Sleeve Removal Tool 222–586
Required for removing pump sleeve