



Promaster 144Z / 148Z / 152Z / 160Z

Owner/Operator Manual

Models

992042 19HP PM144Z	992081 25HP PM152Z
992043 21HP PM148Z	992082 25HP PM160Z
992044 23HP PM152Z	992083 17HP PM144Z
992051 23HP PM160Z	992092 19HP PM144Z
992054 25HP PM152Z	992093 21HP PM148Z
992055 25HP PM160Z	992094 23HP PM152Z
992064 17HP PM144Z	992095 23HP PM160Z
992077 19HP PM144Z	992096 25HP PM152Z
992078 21HP PM148Z	992097 25HP PM160Z
992079 23HP PM152Z	992310 19HP PM144Z
992080 23HP PM160Z	992311 21HP PM148Z

US Patent 6,301,864



GB ENGLISH

F FRANÇAIS

E ESPAÑOL



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EC DECLARATION OF CONFORMITY ISSUED BY THE MANUFACTURER – DÉCLARATION DE CONFORMITÉ CE ÉMISE PAR LE FABRICANT – EU-ÜBEREINSTIMMUNGSERKLÄRUNG DES HERSTELLERS – VERKLARING VAN OVEREENSTEMMING VOOR DE EU, AFGEGEVEN DOOR DE FABRIKANT – EF OVERENSSTEMMELSESERKLÆRING UDSTEDT AF FABRIKANTEN – DICHIARAZIONE DI CONFORMITÀ CE RILASCIATA DAL PRODUTTORE – DECLARACIÓN DE CONFORMIDAD CE EMITIDA POR EL FABRICANTE – EF-SAMSVARSERKLÆRING FRA PRODUSENTEN – EG-DEKLARATIONEN OM ÖVERENSSTÄMMELSE UTFÄRDAD AV TILLVERKAREN – VALMISTAJAN ANTAMA EY-VAATIMUSTENMUKAISUUSVAKUUTUS – DEKLARACJA ZGODNOŚCI Z PRZEPISAMI EC WYDANA PRZEZ PRODUCENTA – DECLARAÇÃO DE CONFORMIDADE CE EMITIDA PELO FABRICANTE –

We the undersigned, ARIENS COMPANY, certify that: Nous, soussignés ARIENS COMPANY, certifions que : Der Unterzeichnete, ARIENS COMPANY, bescheinigt, dass: Wij, de ondergetekenden, ARIENS COMPANY, verklaren dat: Undertegnede, ARIENS COMPANY, attesterer, at: La sottoscritta società ARIENS COMPANY certifica che: Nosotros, los abajo firmantes, ARIENS COMPANY, certificamos que: Undertegnede, ARIENS COMPANY, bekrefter at: Undertecknad, ARIENS COMPANY, intygar att: Allekirjoittanut, ARIENS COMPANY, vakuuttaa, että: My, nižej podpisani, ARIENS COMPANY, oświadczamy, że: Nós, abaixo assinados, certificamos em nome da ARIENS COMPANY, que:

Type: Type : Typ: Type: Type: Tipo: Tipo: Type: Typ: Tyypit: Typ: Tipo:	Riding Rotary Lawn Mower – Tondeuse à gazon autoportée rotative – Aufsitz-Sichelmäher – Rijdende roterende grasmaaier – Havetraktor med roterende knive – Trattorino con unità di taglio rotativa – Tractor cortacésped giratorio – Plentraktor med rotorklipper – Rotoråkräsklippare – Ajoleikkuri – Samobieżna rotacyjna kosiarka trawnikowa – Tractor Cortador de Relva –		
Trade Name: Appellation commerciale : Handelsbezeichnung: Handelsnaam: Firmanavn: Nome commerciale: Nombre comercial: Handelsnavn: Handelsbeteckning: Kauppanimi: Nazwa handlowa: Nome da Marca:	Gravelly		
Model: Modèle : Modell: Model: Model: Modello: Modelo: Modell: Modell: Malli: Model: Modelo:	992310	992311	
Cutting Width (cm): Largeur de coupe (cm) : Schnittbreite (cm): Maaibreedte (cm): Klippebredde (cm): Larghezza di taglio (cm): Ancho de corte (cm): Klippebredde (cm): Klippbredd (cm): Leikkuuleveys (cm): Szerokość cięcia (cm): Largura de corte (cm):	112 cm	122 cm	

Conforms to: Est conforme à : Mit den Anforderungen der folgenden Richtlinien übereinstimmt: Voldoet aan: Er i overensstemmelse med: È conforme a: Cumples con: Er i samsvar med: Överensstämmer med: Täyttää seuraavat vaatimukset: Jest zgodny z: De acordo com:

98/37/EC, 89/336/EEC;

2000/14/EC Conformity Assessment Annex VI.

Annexe VI de l'évaluation de conformité. Konformitätsbewertung, Anhang VI. Bijlage VI voor beoordeling van overeenstemming.

Vurdering af overensstemmelse Annex VI. Annesso VI della valutazione di conformità. Anexo VI de la evaluación de la conformidad.

Samsvarsvurdering etter vedlegg VI. Bedömning av överensstämmelse Bilaga VI. Vaatimustenmukaisuuden arviointi, liite VI. Dodatek VI, Ocena zgodności. Anexo VI da Avaliação de Conformidade.

Representative Measured Sound Power Level (L _{wa}) – Niveau de puissance acoustique représentatif mesuré (L _{wa}) – Repräsentativer gemessener Geräuschpegel (L _{wa}) – Representatief gemeten geluidsniveau (L _{wa}) – Repræsentativt, målt støjefektniveau (L _{wa}) – Livello di potenza sonora rappresentativo rilevato (L _{wa}) – Nivel de potencia acústica representativo medido (L _{wa}) – Representativt målt lydeffektnivå (L _{wa}) – Representativt uppmätt ljudnivå (L _{wa}) – Tyypillinen mitattu äänitehotaso (L _{wa}) – Zmierzony reprezentatywny poziom mocy akustycznej (L _{wa}) – Nivel de Potência de Som Medido Representativo (L _{wa})	Guaranteed Sound Power Level (L _{wa}) – Niveau de puissance acoustique garanti (L _{wa}) – Garantierter Geräuschpegel (L _{wa}) – Gegarandeerd geluidsniveau (L _{wa}) – Garanteret støjefektniveau (L _{wa}) – Livello di potenza sonora garantito (L _{wa}) – Nivel de potencia acústica garantizado (L _{wa}) – Garantert lydeffektnivå (L _{wa}) – Garanterad uppmätt ljudnivå (L _{wa}) – Taattu äänitehotaso (L _{wa}) – Gwarantowany reprezentatywny poziom mocy akustycznej (L _{wa}) – Nivel de Potência de Som Garantido (L _{wa}) –
992310: 99 dB _A 992311: 104 dB _A	992310: 100 dB _A 992311: 105 dB _A

Notified Body – Organisme notifié – Zertifizierungsstelle – Aangemelde instantie – Bemyndiget organ – Organismo notificato – Organismo notificado – Teknisk kontrollorgan – Anmäلت organ – Ilmoitettu laitos – Organ zaświadcujący – Organismo Certificador –	SNCH 11, Route de Luxembourg L-5230 Sandweiler
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Fred J. Moreaux Quality and Conformance Manager (Keeper of Technical File) Responsable de la qualité et de la conformité des produits (Dépositaire de la fiche technique) Manager Qualitätssicherung und Konformität (Archivar der technischen Akte) Kwaliteits- en normalisatiemanager (Beheerder van technische bestand) Chef for kvalitet og overensstemmelse (Indehaver af tekniske data) Responsabile della qualità e della conformità del prodotto (Depositario del file tecnico) Gerente de calidad y conformidad (Depositario del archivo técnico) Kvalitet- og samsvarsansvarlig (innehaver av teknisk fil) Chef för kvalitet och produktöverensstämmelse (Innehavare av tekniska data) Laadusta ja vaatimustenmukaisuudesta vastaava johtaja (Teknisen tiedoston haltija) Kierownik do spraw jakości i zgodności (Przechowujący Dokumentację Techniczną) Gestor de Qualidade e Conformidade (Zelador de Arquivos Técnicos)	 Ariens Company Brillion, WI 54110-0157 USA Signature Signature Unterschrift Handtekening Underskrift Firma Firma Signatur Namnteckning Allekirjoitus Podpis Assinatura	11/1/2004 Date Date Datum Datum Dato Data Fecha Dato Datum Päiväys Data Data
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CE Sound and Vibration – Bruits et vibrations CE – CE Geräusch- und Vibrationswerte – CE Geluid en trilling – CE støj og vibration – Livello sonoro e vibrazioni CE – Sonido y vibración CE – CE-lyd og -vibrasjon – CE Ijudnivå och vibrationer – CE, melu ja tärinä – CE Dźwięku i Wibracji – Som e Vibração CE – (Ref. EN836-2001)

Model: Modèle : Modell: Model: Model: Modello: Modelo: Modell: Modell: Malli: Model: Modelo:	992310	992311
Oper. Ear Sound Pressure (L_{pa}) in dB_A – Pression acoustique aux oreilles de l'opérateur (L_{pa}) en dB_A – Geräuschpegel am Ohr des Bedieners (L_{pa}) in dB_A – Geluidsdruk bij het oor van de gebruiker (L_{pa}) in dB_A – Strøjttryk ved brugerens øre (L_{pa}) målt i dB_A – Pressione sonora all'orecchio dell'operatore (L_{pa}) in dB_A – Presión de sonido en el oído (L_{pa}) in dB_A – Lydtrykk ved førerens øre (L_{pa}) inn dB_A – Ljudeffekt vid förarens öron (L_{pa}) i dB_A – Kuljettajan korvaan kohdistuva äänenpaine (L_{pa}), dB_A – Robocze ciśnienie akustyczne na ucho (L_{pa}) w decybelach $_A$ – Oper. Pressão do Som no Ouvido (L_{pa}) em dB_A –	90	92
Vibration Measure (m/sec^2) at Operator Mesure des vibrations (m/s^2) au niveau de l'opérateur Vibration (m/s^2) an des Bedieners Gemeten trilling bij (m/sec^2) Vibrationsmålinger (m/s^2) ved brugerens Vibrazioni percepite dall'operatore (m/sec^2) Medida de vibración (m/seg^2) en el operador Vibrasjonsmåling (m/s^2) ved førerens Vibrationsmått (m/s^2) vid förarens Tärinä (m/s^2) kuljettajan Pomiar wibracji (m/sec^2) u operatora Medida de Vibração ($m/seg.^2$) no Operador		
Hands – Mains – Hände – De handen van de gebruiker – Hænder – Mani – Manos – Hender – Händer – Käsissä – Reçe – Mãos –	X Y Z	<2.5 <2.5 <2.5
Feet – Pieds – Füße – De voeten van de gebruiker – Fødder – Piedi – Pies – Føtter – Fötter – Jaloissa – Stopy – Pés –	X Y Z	<2.5 <2.5 <2.5
Seat – Siège – Sitz – De bestuurdersplaats – Sæde – Sedile – Asiento – Sete – Säte – Istuimella – Siedzenie – Assento –	X Y Z	<2.5 <2.5 <2.5

TABLE OF CONTENTS

Safety	5	Storage	25
Assembly	10	Troubleshooting	26
Controls and Features	11	Accessories	27
Operation	12	Service Parts	27
Maintenance Schedule	15	Specifications	28
Service and Adjustments	17	Warranty	31

INTRODUCTION

THE MANUAL

Before operation of unit, carefully and completely read your manuals. The contents will provide you with an understanding of safety instructions and controls during normal operation and maintenance.

All reference to left, right, front, or rear are given from operator sitting in the operation position and facing the direction of forward travel.

SERVICE AND REPLACEMENT PARTS

When ordering publications, replacement parts, or making service inquiries, know the Model and Serial numbers of your unit and engine. Numbers are located on the product registration form in the literature package. They are printed on a serial number label, located on the frame of your unit (Figure 1).

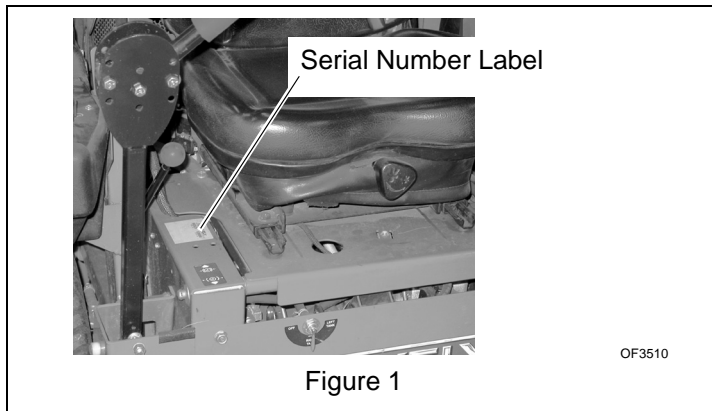


Figure 1

- Record Unit Model and Serial numbers here.

- Record Engine Model and Serial numbers here.

PRODUCT REGISTRATION

The Gravelly dealer must register the product at the time of purchase. Registering the product will help the company process warranty claims or contact you with the latest service information. All claims meeting requirements during the limited warranty period will be honored, whether or not the product registration card is returned. Keep a proof of purchase if you do not register your unit.

Customer Note: If dealer does not register your product, please fill out, sign and return the product registration card to Gravelly or go to www.gravelly.com on the internet.

UNAUTHORIZED REPLACEMENT PARTS

Use only Gravelly replacement parts. The replacement of any part on this equipment with anything other than a Gravelly authorized replacement part may adversely affect the performance, durability, and safety of this unit and may void the warranty. Gravelly disclaims liability for any claims or damages, whether regarding warranty, property damage, personal injury or death arising out of the use of unauthorized replacement parts.

NOTE: To locate your nearest Gravelly dealer, call 1-920-756-4664 or go to www.gravelly.com on the internet.

DISCLAIMER

Gravelly reserves the right to discontinue, change, and improve its products at any time without public notice or obligation to the purchaser. The descriptions and specifications contained in this manual were in effect at printing. Equipment described within this manual may be optional. Some illustrations may not be applicable to your unit.

DEALER DELIVERY

Dealer should:

1. Test brakes after unit is assembled to be sure adjustment has not been disturbed in shipment (See *Adjust the Parking Brake* on page 21). Wheel brakes are properly adjusted at factory.

2. Check the safety interlock system to make sure that it is functioning properly. With operator on seat, unit must not start unless steering levers are in neutral (N) and Power Takeoff (PTO) is disengaged (Off). Engine must stop if operator leaves seat when steering levers are in any drive position or PTO is engaged (On). See *Safety Interlock System* on page 12.
3. Fill out Original Purchaser Registration Card and return the card to Gravely.
4. Explain Gravely Limited Warranty Policy.

5. Explain recommended lubrication and maintenance. Advise customer on adjustments. Instruct customer on controls and operation of unit. Discuss and emphasize the Safety Precautions. Give customer Owner/Operator, Parts, and Engine Manuals. Advise customer to thoroughly read and understand them.

Customer Note: Your Dealer has been provided complete setup and preparation instructions which must be completed prior to you taking delivery of this unit. The dealer is required to review important information in this manual with you before or upon delivery of the unit or attachment.

SAFETY



WARNING: This cutting machine is capable of amputating hands and feet and throwing objects. Failure to observe the safety instructions in the manuals and on decals could result in serious injury or death.

Slopes are a major factor related to loss-of-control and tip-over accidents. Operation on all slopes requires extra caution.

Tragic accidents can occur if the operator is not alert to the presence of children. Never assume that children will remain where you last saw them.

Gasoline is extremely flammable and the vapors are explosive, handle with care.

Disengage attachment, stop unit and engine, remove key, engage parking brake, and allow moving parts to stop before leaving operator's position.

SIGNAL WORDS

The safety alert symbols above and signal words below are used on decals and in this manual.

Read and understand all safety messages.



DANGER: IMMINENTLY HAZARDOUS SITUATION! If not avoided, WILL RESULT in death or serious injury.



WARNING: POTENTIALLY HAZARDOUS SITUATION! If not avoided, COULD RESULT in death or serious injury.



CAUTION: POTENTIALLY HAZARDOUS SITUATION! If not avoided, MAY RESULT in minor or moderate injury. It may also be used to alert against unsafe practices.



SAFETY ALERT SYMBOL

These are safety alert symbols. They mean:

- ATTENTION!
- YOUR SAFETY IS INVOLVED!

When you see this symbol:

- BECOME ALERT!
- OBEY THE MESSAGE!



NOTATIONS

NOTE: General reference information for proper operation and maintenance practices.

IMPORTANT: Specific procedures or information required to prevent damage to unit or attachment.

PRACTICES AND LAWS

Practice usual and customary safe working precautions, for the benefit of yourself and others. Understand and follow all safety messages. Be alert to unsafe conditions and the possibility of minor, moderate, or serious injury or death. Learn applicable rules and laws in your area, including those that may restrict the age of the operator.

REQUIRED OPERATOR TRAINING

Original purchaser of this unit was instructed by the seller on safe and proper operation. If unit is to be used by someone other than original purchaser (loaned, rented or sold), ALWAYS provide this manual and any needed safety training before operation.

SAFETY DECALS AND LOCATIONS

ALWAYS replace missing or damaged Safety Decals. Refer to Figure 2 for Safety Decal locations.

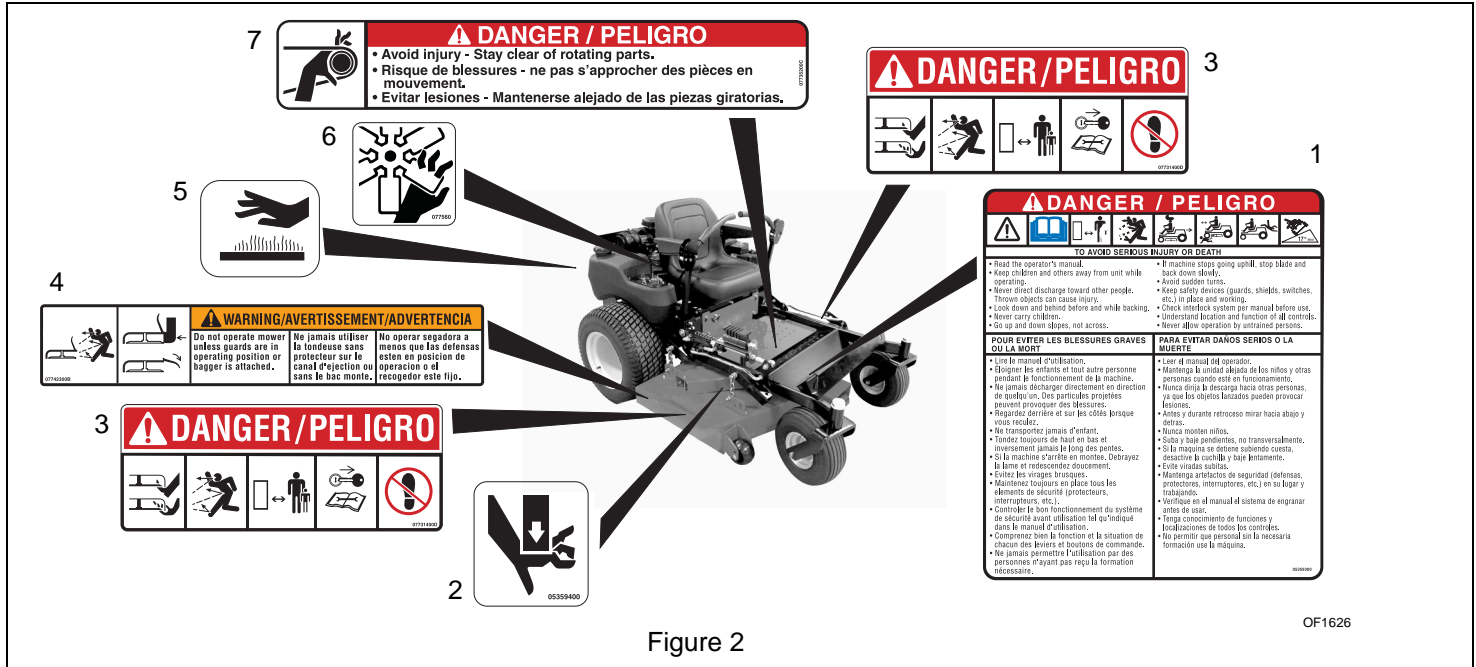


Figure 2

OF1626

1. DANGER! TO AVOID SERIOUS INJURY OR DEATH



OL1801

Read Owner/Operator Manual.



OL4370

Keep children and others away from unit while operating.



OL0910

Never direct discharge toward other people. Thrown objects can cause injury. Remove objects that could be thrown by the blade.



OL4460

Look down and behind before and while backing.



OL4470

Keep children out of work area and under watchful care of a responsible adult.



OL4480

NEVER CARRY CHILDREN.



OL4450

Go up and down slopes, not across. DO NOT operate on slopes over 17°.

- If machine stops going uphill, stop blade and back down slowly.
- Avoid sudden turns.
- Keep safety devices (guards, shields, switches, etc.) in place and working.
- Check interlock system per manual before use.
- Understand location and function of all controls.
- Never allow operation by untrained persons.

2. PINCH POINT (992042, 043, 044, 051, 054, 055, 077, 078, 079, 080, 081, 082, 310, 311)



OF3330

Avoid pinch points.

3. DANGER! ROTATING PARTS



OL3030

Always keep feet and hands away from rotating parts.



OL0910

Always stand clear of discharge area. Do not direct discharge toward other people.



OL3292

Keep people away from unit while operating.



OL4010

Shut off engine, remove key, read manual before you adjust or repair unit.



OL4420

NO STEP! Always keep feet away from rotating parts.

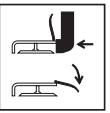
4. WARNING!

Do not operate mower unless guards are in operating position or bagger is attached.



OL4430

Always stand clear of discharge area.



OL3320

Do not operate mower unless bagger is attached or guards are in operating position.

5. HOT SURFACES!



OS0731

DO NOT touch parts which are hot from operation. ALWAYS allow parts to cool.

6. ROTATING PARTS



OF3450

AVOID INJURY. Stay clear of rotating parts.

7. DANGER!



OL4730

AVOID INJURY. Stay clear of rotating parts.

SAFETY RULES

Read, understand, and follow all safety practices in Owner/Operator Manual before beginning assembly. Failure to follow instructions could result in personal injury and/or damage to unit.

ALWAYS remove key and/or wire from spark plug before assembly. Unintentional engine start up can cause death or serious injury.

Complete a walk around inspection of unit and work area to understand:

- Work area
- Your unit
- All safety decals

Determine which attachments are needed and can be used safely.

Inspect unit before each use for: missing or damaged decals and shields, correctly operating safety interlock system, and deterioration of grass catchers. Replace or repair as needed.

ALWAYS check overhead and side clearances carefully before operation. ALWAYS be aware of traffic when operating along streets or curbs.

Keep children and people away.

Keep children out of work area and under watchful care of a responsible adult.

Keep area of operation clear of all toys, pets, and debris. Thrown objects can cause injury.

Check for weak spots on docks, ramps or floors. Avoid uneven work areas and rough terrain. Stay alert for hidden hazards or traffic.

DO NOT operate near drop-offs, ditches, or embankments. Unit can suddenly turn over if a wheel is over the edge of a cliff or ditch, or if an edge caves in.

Data indicates that operators, age 60 and above, are involved in a larger percentage of riding mower related injuries. These operators should evaluate their ability to operate the riding mower safely enough to protect themselves and others from serious injury.

Read the entire Owner/Operator manual and other training material. If the operator or the mechanic cannot read the manual, it is the owner's responsibility to explain it to them. Only the user can prevent and is responsible for accidents or injuries occurring to themselves, other people or property.

Only trained adults may operate or service unit. Training includes actual operation.

Local regulations may restrict the age of the operator.

NEVER allow children to operate or play on or near unit. Be alert and shut off unit if children enter area.

NEVER operate unit after or during the use of medication, drugs or alcohol. Safe operation requires your complete and unimpaired attention at all times.

DO NOT wear loose clothing or jewelry and tie back hair that may get caught in rotating parts.

Wear adequate outer garments.

NEVER wear open sandals or canvas shoes during operation. Wear adequate safety gear, protective gloves and footwear.

Wear proper footwear to improve footing on slippery surfaces.

Always wear safety goggles or safety glasses with side shields when operating mower.

Moving parts can cut or amputate fingers or a hand. Wrap blade(s) or wear gloves to service. On multiblade mowers, rotation of one blade will cause all blades to rotate.

NEVER place your hands or any part of your body or clothing inside or near any moving part while unit is running.

ALWAYS keep hands and feet away from all rotating parts during operation. Rotating parts can cut off body parts.

ALWAYS keep body and hands away from pin holes or nozzles which eject hydraulic fluid under pressure.

DO NOT touch parts which are hot. Allow parts to cool.

ALWAYS keep hands and feet away from all pinch points.

Fumes from the engine exhaust can cause death or serious injury. DO NOT run engine in an enclosed area. Always provide good ventilation.

Read, understand, and follow all instructions in the manual and on the machine before starting.

Understand:

- How to operate all controls
- The functions of all controls
- How to STOP in an Emergency
- Braking and steering characteristics
- Turning radius and clearances

Keep safety devices or guards in place and functioning properly. NEVER modify or remove safety devices.

Do not operate without either entire grass catcher or the discharge guard in place.

Stop engine before removing grass catcher or unclogging chute.

Ensure Safety Interlock System is functioning properly. DO NOT operate unit if safety interlock is damaged or disabled.

Start and operate unit only when seated in operator's position. Steering control levers must be in neutral, PTO disengaged and parking brake set when starting engine.

Use care when approaching blind corners, shrubs, trees or other objects that may obscure vision.

Dust, smoke, fog, etc. can reduce vision and cause an accident. Mow only in daylight or good artificial light.

Avoid slippery surfaces. Always be sure of your footing.

DO NOT mow on wet grass. Reduced traction could cause sliding and effect the machine's stability.

Watch for traffic when operating near or crossing roadways.

Never carry passengers.

DO NOT try to stabilize the machine by putting your foot on the ground.

Never direct discharge towards persons or property that may be injured or damaged by thrown objects. Use extreme caution on gravel surfaces.

Always stand clear of the discharge area.

ALWAYS disengage PTO, stop unit and engine, remove key, engage parking brake and allow moving parts to stop before leaving operator's position.

Never engage PTO while raising attachment or when attachment is in raised position.

DO NOT operate at too fast a rate. DO NOT change engine governor settings or over-speed engine. Slow down before turning.

DO NOT operate in reverse unless absolutely necessary. ALWAYS look down and behind before and while backing.

Stop and inspect equipment if you strike an object or if there is an unusual vibration. Repair, if necessary, before restarting. Never make adjustments or repairs with the engine running.

Mower blades are sharp and can cut you. Wrap the blade(s) or wear gloves, and use extra caution when servicing them. NEVER weld or straighten mower blades.

Rotation of one blade may cause rotation of the other blades.

Take all possible precautions when leaving unit unattended. Shut off engine. Remove wire from spark plug and secure it away from spark plug.

ALWAYS remove key to prevent unauthorized use.

Know the weight of loads. Limit loads to those you can safely control and the unit can safely handle.

Disengage PTO when attachment is not in use. ALWAYS turn off power to attachment when travelling, crossing driveways, etc.

Mow up and down slopes, not across them.

DO NOT operate on slopes of more than 17 degrees.

Use of a Rollover Protection System (ROPS) is recommended for slope operation. See Attachments and Accessories.

Always wear a seat belt when operating unit using a Rollover Protection System (ROPS).

Keep all movements on the slope *slow* and *gradual*. Do not make sudden changes in speed or direction.

Avoid starting or stopping on the slope. If tires lose traction, disengage the blades and proceed slowly *straight* down the slope.

If you cannot back up a slope or you feel uneasy on it, do not mow it.

DO NOT park on slopes unless necessary. When parking on slope always chock or block wheels. Always set parking brake.

Use a slow speed. Tires may lose traction on slopes even though the brakes are functioning properly.

Do not bypass transmission when on a slope.

Tow only with a machine that has a hitch designed for towing. Do not attach towed equipment except at the hitch point.

Follow the manufacturer's recommendations for weight limits for towed equipment and towing on slopes.

NEVER allow children or others in or on towed equipment.

On slopes, the weight of the towed equipment may cause loss of control.

Travel slowly and allow extra distance to stop.

Use extra care when loading or unloading unit onto trailer or truck.

Secure unit chassis to transport vehicle. NEVER secure from rods or linkages that could be damaged.

DO NOT transport machine while engine is running.

ALWAYS turn off power to attachment and shut off fuel when transporting unit.

Keep unit free of debris. Clean up oil or fuel spills.

This product is equipped with an internal combustion type engine. DO NOT use unit on or near any unimproved, forest-covered or brush covered land unless exhaust system is equipped with a spark arrester meeting applicable local, state or federal laws. A spark arrester, if it is used, must be maintained in effective working order by operator.

Fuel is highly flammable and its vapors are explosive. Handle with care. Use an approved fuel container.

NO smoking, NO sparks, NO flames. ALWAYS allow engine to cool before servicing.

NEVER fill fuel tank when engine is running or hot from operation.

NEVER fill or drain fuel tank indoors.

Replace fuel cap securely and clean up spilled fuel.

Never fill containers inside a vehicle or on a truck or trailer bed with a plastic liner. Always place containers on the ground away from your vehicle before filling.

When practical, remove gas-powered equipment from the truck or trailer and refuel it on the ground. If this is not possible, then refuel such equipment on a trailer with a portable container, rather than from a gasoline dispenser nozzle.

Keep the nozzle in contact with the rim of the fuel tank or container opening at all times until fueling is complete. Do not use a nozzle lock-open device.

If fuel is spilled on clothing, change clothing immediately.

Avoid Electric Shock. Objects contacting both battery terminals at the same time may result in injury and unit damage. DO NOT reverse battery connections.

Reverse connections may result in sparks which can cause serious injury. Always connect positive (+) lead of charger to positive (+) terminal, and negative (-) lead to negative (-) terminal.

ALWAYS disconnect negative (-) cable FIRST and positive (+) cable SECOND. ALWAYS connect positive (+) cable FIRST, and negative (-) cable SECOND.

Explosive Gases from battery can cause death or serious injury. Poisonous battery fluid contains sulfuric acid and its contact with skin, eyes or clothing can cause severe chemical burns.

No flames, No sparks, No smoking near battery.

ALWAYS wear safety glasses and protective gear near battery. Use insulated tools.

DO NOT TIP battery beyond a 45° angle in any direction.

ALWAYS keep batteries out of reach of children.

Battery posts, terminals and related accessories contain lead and lead compounds, chemicals known to the State of California to cause cancer and reproductive harm. Wash hands after handling.

ALWAYS block wheels and know all jack stands are strong and secure and will hold weight of unit during maintenance.

Release pressure slowly from components with stored energy.

NEVER attempt to make any adjustments to unit while engine is running (except where specifically recommended). Stop engine, remove key or spark plug wire and wait for all moving parts to stop before servicing or cleaning.

Check parking brake operation frequently. Adjust and service as required.

ALWAYS maintain unit in safe operating condition. Damaged or worn out muffler can cause fire or explosion.

Maintain or replace safety and instruction labels, as necessary.

NEVER store unit with fuel in fuel tank, inside a building where any ignition sources are present.

Shut off fuel and allow engine to cool completely before storing in closed area or covering unit.

Clean grass and debris from unit, especially from around muffler and engine, to help prevent fires.

For extended storage, shut off fuel and clean unit thoroughly. See engine manual for proper storage.

Lower cutting deck unless a positive mechanical lock is used.

Use only attachments or accessories designed for your unit.

Check all hardware at regular intervals, especially blade attachment bolts. Keep all hardware properly tightened.

Check attachment components frequently. If worn or damaged, replace with manufacturer's recommended parts.

ASSEMBLY



WARNING: AVOID INJURY. Read and understand entire *Safety* section before proceeding.

UNIT ASSEMBLY

Package Contents:

Unit, Mower Deck and Literature Pack

Unpack Unit

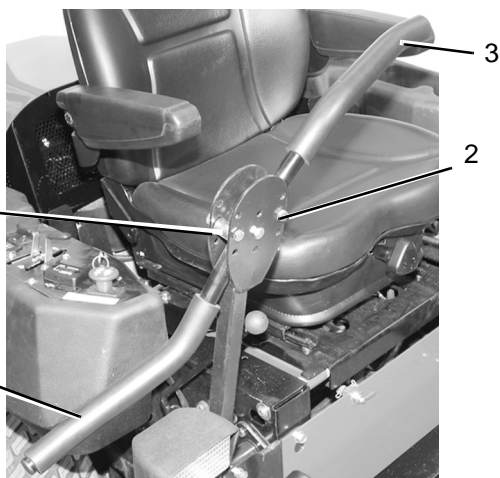
Remove unit and all other components from shipping container. Open bypass valves (see *MOVING THE UNIT WITH THE ENGINE OFF* on page 15). Push unit from container onto a level surface. Close bypass valves.

Check Tire Pressure

See *SPECIFICATIONS* on page 28.

Position Steering Levers

Remove bolts and spacers from steering levers. Flip the steering levers into operating position. Reinstall spacers, bolts and nuts. Tighten hardware securely. See Figure 3.



1. Steering Lever in Shipping Position
2. Spacers and Hardware
3. Steering Lever in Operation Position

Figure 3

OF3520

Connect Battery

Connect negative (-) battery cable to battery (see *Replace Battery* on page 19 and perform steps 2 through 3 in the installation section).

Check Engine Oil

Refer to Engine Manual.

Check Hydraulic Oil

See *HYDRAULIC FLUID* on page 17.

Position Deflector - 60-Inch Decks



WARNING: Discharge chute must pivot freely. DO NOT over tighten the pivot bolts.

Remove, reverse, and reinstall discharge chute and mounting bracket.

Fill Fuel Tank

See *FILLING FUEL TANK* on page 14.

Hardware

Check for loose hardware.

Check Safety Interlock System



WARNING: Safety interlock system failure and improper operation of unit can result in death or serious injury. Test this system each time unit is operated. If this system does not function as described, do not operate until repairs are made.

See *Safety Interlock System* on page 12.

Level Mower Deck

See *Leveling the Mower Deck* on page 24.

Check Function of All Controls

Ensure unit runs and performs properly.



WARNING: FAILURE OF CONTROLS could result in death or serious injury.

CONTROLS AND FEATURES

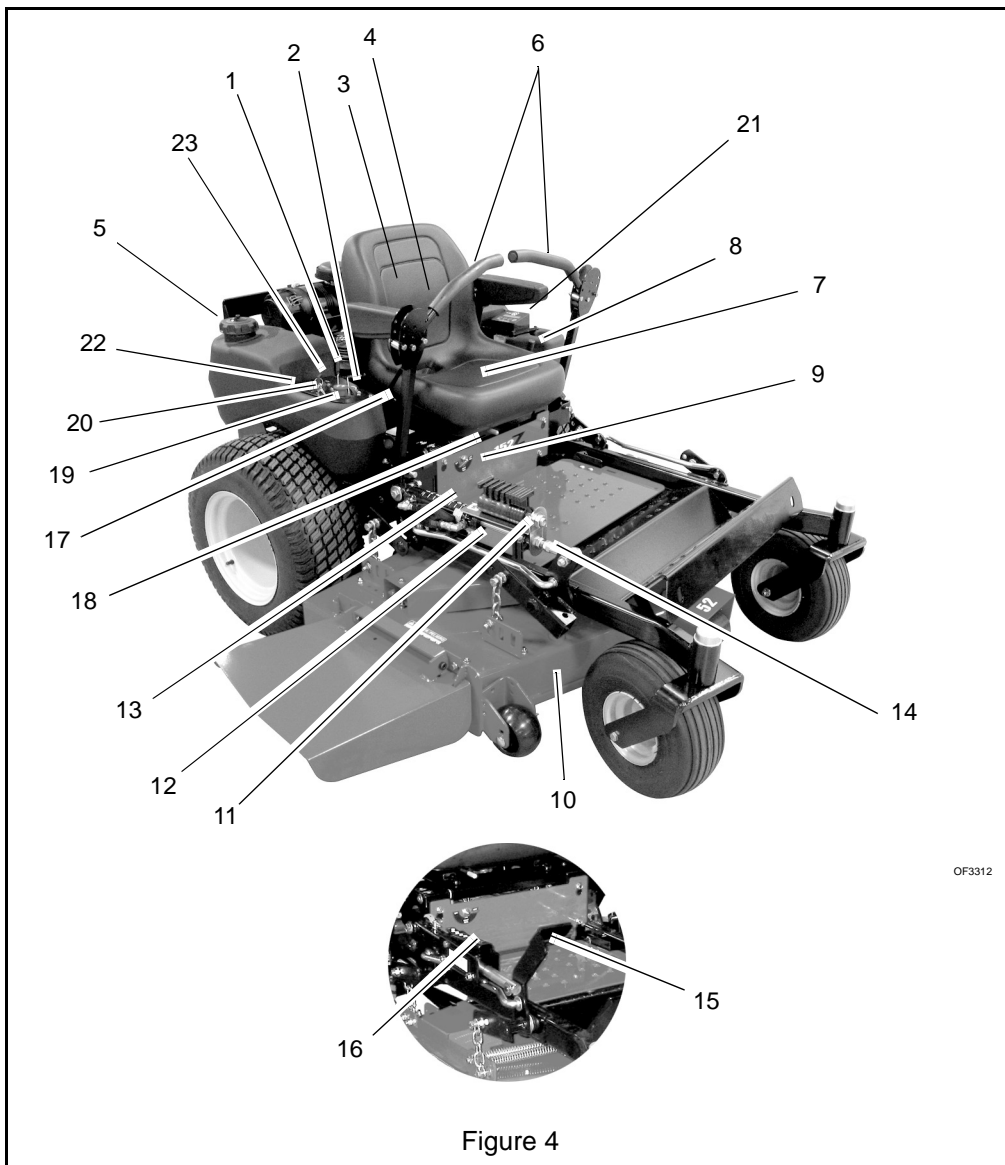


Figure 4

OF3312

1. Choke Control
2. Throttle Lever
3. Wing Knob
4. Hydraulic Oil Reservoir
5. Fuel Tanks and Caps
6. Steering Levers
7. Battery
8. Mower Lift Lever
(992042, 043, 044, 051, 054, 055, 077, 078, 079, 080, 081, 082, 310, 311)
9. Fuel Shut Off Valve
10. Mower Deck with Chute Deflector
11. Cylinder Stops
12. Height of Cut Indicator
13. Foot Board Latch
14. Cylinder Stop Storage Post
15. Mower Lift Pedal
(992064, 083, 092, 093, 094, 095, 096, 097)
16. Mower Lift Lock (992064, 083, 092, 093, 094, 095, 096, 097)
17. Parking Brake
18. Seat Adjustment Lever
19. Power Take Off (PTO) Switch
20. Ignition Switch
21. Eye-Q™ (992077, 078, 079, 080, 081, 082, 083 and 992310 and 311 with serial number range greater than 3,000)
22. Oil Pressure Indicator
23. Hour Meter (992042, 043, 044, 051, 054, 055, 064, 092, 093, 094, 095, 096, 097)

OPERATION

WARNING: AVOID INJURY. Read and understand entire *Safety* section before proceeding.

CONTROLS and FEATURES

See Figure 4 for Controls and Features locations.

Safety Interlock System

WARNING: Safety interlock system failure and improper operation of unit can result in death or serious injury. Test this system each time the unit is operated. If this system does not function as described, do not operate until repairs are made.

Perform the following tests to ensure the safety interlock system is working properly. If the unit does not perform as stated, contact your Gravely dealer for repairs.

IMPORTANT: With the parking brake engaged, the steering levers must be locked in neutral.

IMPORTANT: With the parking brake disengaged, the engine must not start and the engine must shut off if the operator leaves the seat.

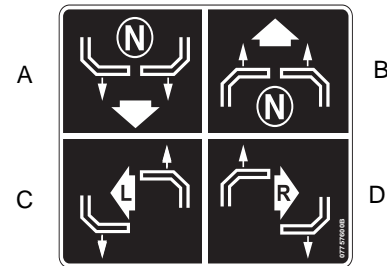
Test	Steering Levers	PTO	Parking Brake	Engine
STARTING INTERLOCK				
1	Neutral	Off	Engaged	Starts
2	Neutral	On	Engaged	Doesn't Start
3	Neutral	Off	Disengaged	Doesn't Start
OPERATING INTERLOCK (ENGINE ON)				
4*	Neutral	On	Engaged	Shuts Off
5*	Neutral	Off	Disengaged	Shuts Off
* Operator lifts off seat.				

Eye-Q™ (992077, 078, 079, 080, 081, 082, 083 and 992310 and 311 with serial number range greater than 3,000)



Monitors equipment performance, operator performance, and equipment maintenance. See Eye-Q Owner's Manual for how to access these features.

Steering Levers



The steering levers control speed and direction. In addition, they will stop the unit.

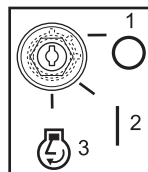
- For reverse travel, pull both steering control levers backward.
- For straight forward travel, push both steering control levers forward.
- To turn left, pull the left back or push the right steering control lever forward or a combination of both.
- To turn right, pull the right back or push the left steering control lever forward or a combination of both.

To stop, return both steering levers to neutral.

NOTE: The steering controls are mechanically locked in neutral whenever the parking brake is engaged.

NOTE: Aggressive turning can scuff or damage lawns. ALWAYS keep both wheels rotating when making sharp turns. DO NOT make turns with inside wheel completely stopped. To obtain minimum turning radius, slowly reverse inside wheel while moving outside wheel slowly forward.

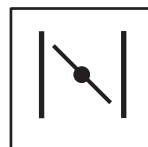
Ignition Switch



OF1750

Operate the ignition switch with the removable key. The switch has three positions: Off (1), On (2) and Start (3). To start the engine, turn the key to Start, then release to On. To stop the engine, turn the key to Off.

Choke Control



Push the choke lever forward to start a cold engine. Pull the choke lever to the rear when the engine gets warm.

Throttle Lever



Changes the engine speed.
Fast (1) – Increases engine speed.

Slow (2) – Decreases engine speed.

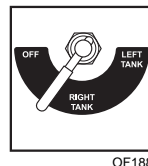
Mower Lift Pedal (992064, 083, 092, 093, 094, 095, 096, 097)



To Transport: Push mower lift pedal (1) all the way forward until lift lock (2) engages.

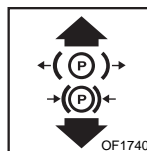
To Set Cutting Height: Put cutting height adjustment pin in desired hole. Push mower lift pedal (1) forward and hold while pushing down on the lift lock (2). Slowly lower mower lift pedal (1) until deck lift contacts cutting height adjustment pin.

Fuel Shut-Off Valve



Control fuel flow from left or right fuel tank.
Open the valve to operate the engine. Turn the valve to Off when storing or transporting the unit.

Parking Brake Lever



1. Pull lever up to engage parking brake.
2. Push lever down to disengage parking brake.

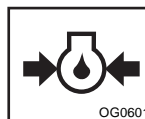
Seat Adjustments

WARNING: Make all seat adjustments with unit stationary, parking brake on and engine shut off.

To adjust seat forward or backward:

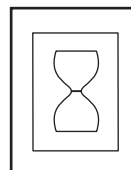
1. While seated, pull seat adjustment lever outward and slide seat into desired position.
2. Release lever and slide seat forward or back to lock seat into position.

Engine Oil Pressure Indicator



Indicator lights up Red if the oil pressure is low. Check oil level and add if necessary. Refer to engine manual.

Hour Meter

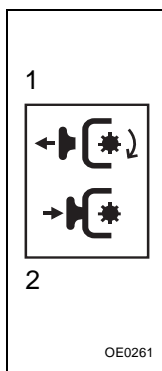


Records total number of hours the engine has been run.

IMPORTANT: Keep a record of Hour Meter readings for recommended Lubrication and Maintenance intervals.

NOTE: For accurate readings be sure Ignition Switch is OFF when unit is not in operation.

Power Take Off (PTO) Switch

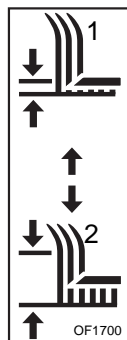


Power take off (PTO) switch engages and disengages the mower blades.

Pull the power take off (PTO) switch to On position to engage mower blades (1).
Push the power take off (PTO) switch to Off position to disengage mower blades (2).

NOTE: The engine will not start unless the steering control levers are in the neutral position, the PTO switch is in the Off position and parking brake is set.

Mower Lift Lever (992042, 043, 044, 051, 054, 055, 077, 078, 079, 080, 081, 082, 310, 311)



Raises and lowers the mower deck.
To lower (1) – Move mower lift lever forward.

To raise (2) – Move mower lift lever rearward.
Release lever to hold the mower deck in selected position.

Cylinder Stops



CAUTION: AVOID PINCH POINTS. Always use the T-portion of the cylinder stop when removing or installing the cylinder stops.

Ensure the same cutting height after raising the deck to clear an obstacle. Store the stops on the post behind the hydraulic lift cylinder. The stops come in two (2) sizes, 11/32 in. (8.73 mm) and 11/16 in. (17.5 mm).

1. Remove the cylinder stops from the post and snap onto the lift cylinder rod.
2. Push the lift lever forward until the cylinder rests against the cylinder stops.

FILLING FUEL TANK



WARNING: AVOID INJURY. Read and understand entire *Safety* section before proceeding.

Add fuel to Fuel Tank as needed. See your Engine Manual for correct type and grade of fuel.

To add fuel to the fuel tank:

1. Place unit in an open or well-ventilated open area.
2. Stop the engine.
3. Clean the fuel cap and the area around the fuel cap to prevent dirt from entering the fuel tank. Remove the cap from the fuel tank.
4. Fill the fuel tank to within 1 in. (25 mm) below bottom of filler neck.
5. Replace fuel cap and tighten.
6. Clean up any spilled fuel.

PRE-START



CAUTION: Make sure all hardware is tight, all safety devices are in place and all adjustments are made correctly.

1. Check Safety Interlock System

If this system does not function as described do not operate until repairs are made.

2. Check Air Cleaner

Check air filter for dirt. Clean as required. Follow Engine Manual Maintenance Schedule.

3. Check Engine Fuel and Crankcase Oil

Check and add fuel if required. Check that engine crankcase oil is full. Follow Engine Manual Maintenance Schedule.

4. Check Tire Pressure

5. Check Hydraulic Fluid Level

6. Adjust Seat

Be sure all controls can be reached safely from operator's position.

7. Set Cutting Height

Make sure the deck is set to the correct cutting height.

STOPPING IN AN EMERGENCY

The unit can be stopped immediately at any time by turning the ignition key to the Off position.

STARTING AND SHUT OFF



CAUTION: Read entire Owner/Operator Manual, Clutch Manual, and Engine Manual first. DO NOT attempt to start engine at this time.

NOTE: DO NOT operate starter more than 15 seconds per minute, as overheating and damage can occur. If engine will not start, see *TROUBLESHOOTING* on page 26 or refer to Engine Manual.

NOTE: The engine will not start unless the steering control levers are in the neutral position, the PTO switch is in the off position, and parking brake is engaged.

To start:

1. If the engine is cold, move the choke control to the On position. If the engine is warm or hot, do not use choke.
2. Move the throttle to 3/4 Fast position. See Engine Manual for detailed instructions.
3. Put the ignition key in the switch and turn it to the Start position.
4. As soon as the engine starts, release the key.
5. Move the choke control to the Off position from the Choke position. Wait until the engine is running smoothly before operation.

To shut off:

1. Bring the steering levers to neutral. Disengage the PTO and engage the parking brake.
2. Move the throttle lever to the Slow position.
3. Turn the ignition key to the Off position.

OPERATING MOWER

1. Start engine.
2. Move throttle lever 3/4 Fast position.

IMPORTANT: Never engage the PTO if the mower is plugged with grass or other material.

3. Engage PTO to engage mower blades.
4. Move throttle lever to fast.
5. Release parking brake.



WARNING: Move the steering control levers slowly and keep the throttle control lever at slow speed until you learn how to operate the unit.

6. Use steering levers to move the unit.
7. Disengage PTO to stop mower blades.

PARKING

To park the unit:

1. Bring the steering levers to neutral. Turn off PTO.
2. Move the throttle lever to the Slow position.
3. Engage the parking brake.
4. Lower the attachment.

5. Turn the ignition key to the Off position and remove the key.

MOVING THE UNIT WITH THE ENGINE OFF

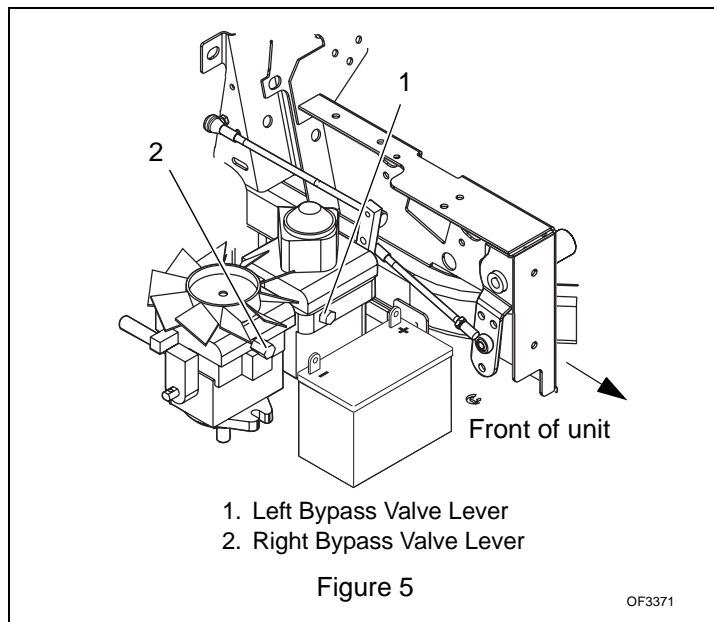
IMPORTANT: Never tow unit.

1. Shut OFF engine.
2. Place seat in the service position (See *SERVICE POSITION* on page 17).
3. Turn right and left bypass valve levers counterclockwise 1/2 turn (Figure 5).



WARNING: Do not bypass transmission when on a slope.

4. Disengage parking brake.
5. Push unit to desired location.
6. Engage parking brake.
7. Turn bypass valve levers clockwise 1/2 turn.



TRANSPORTING UNIT

ALWAYS shut off engine, set parking brake, and remove key when transporting unit on a truck or trailer. Tie unit down securely. Do not tie down by linkages, guards, cables or other parts that may be damaged.

FOR BEST PERFORMANCE

Cut grass when it is dry.

Keep mower blades sharp.

Keep mower deck properly leveled.

Adjust anti-scalp rollers to prevent scalping.

Do not set height of cut too low. For very tall grass, mow twice.

Do not travel too fast.

Mow with the engine set at full throttle.

When mulching, only remove 1/3 of grass length per cutting.

Discharge clippings into areas already cut.

Vary cutting pattern with each mowing.

Do not allow grass or debris to collect inside of mower deck. Clean after each use.


MAINTENANCE SCHEDULE



WARNING: AVOID INJURY. Read and understand entire *Safety* section before proceeding.

Proper maintenance can prolong the life of unit. The following charts show the recommended service schedule. More frequent service may be required due to working conditions (heavy loads, high ambient temperatures, dusty conditions, or airborne debris).

See the maintenance instructions in the Engine Manual for additional information.

Interval	Task	Action
Each Use	Check Safety Interlock System Check Parking Brake Check Hydraulic Oil Level Check Tires Clean Unit Follow Engine Maintenance Schedule	 WARNING: Safety interlock system failure and improper operation of unit can result in death or serious injury. Test this system each time the unit is operated. If this system does not function as described, do not operate until repairs are made. See <i>Safety Interlock System</i> on page 12. Engage parking brake. Push unit. If unit rolls, adjust parking brake (see <i>PARKING BRAKE ADJUSTMENT</i> on page 21). See <i>Check Hydraulic Fluid Level</i> on page 17. See <i>SPECIFICATIONS</i> on page 28 for correct tire pressure. Clean engine, battery, seat, mower deck, etc. of dirt and debris. Do not use solvents, hard cleaners, or abrasives. NOTE: Protect painted surfaces with automotive type wax. Perform scheduled engine maintenance. Refer to Engine Manual for detailed instructions.
Every 25 Hours	Check Mower Blades	Ensure mower blade hardware is tightened to 115 – 125 lbf-ft. (156 – 169 N•m). Check mower blades for wear. Sharpen or replace mower blades as needed (see <i>Sharpen the Mower Blades</i> on page 18).
Every 50 Hours	Lubricate Front Axle and Pivot Points	Oil all pivot points, pin connections, and apply grease to front axle grease zerk (see <i>LUBRICATE UNIT</i> on page 19).
Every 100 Hours	Clean Battery Check Fasteners Check All Belts	Keep battery and battery terminals clean (see <i>Clean Battery</i> on page 19). Check mower blade mounting hardware and all other fasteners. Replace missing or damaged fasteners. Tighten all nuts and bolts to their correct torque value. Replace worn or deteriorated belts. <ul style="list-style-type: none"> • Check mower drive belt. See <i>Replacing Mower Belts</i> on page 22 for belt location. • Check PTO belt. See <i>Replacing Mower Belts</i> on page 22 for belt location. • Check transmission belt. See <i>Replacing the Hydro Pump Belt</i> on page 22 for belt location.
Every 400 Hours	Grease Front Axle Castor Pivots	Repack front axle castor pivots (see <i>LUBRICATE UNIT</i> on page 19).
Every 500 Hours	Change Hydraulic Oil and Filter	See <i>Change Hydraulic Fluid and Filter</i> on page 17.

SERVICE AND ADJUSTMENTS

Gravely Dealers will provide any service which may be required to keep your unit operating at peak efficiency. Should engine service be required, it can be obtained from a Gravely Dealer or the engine manufacturer's authorized service center.

WARNING: AVOID INJURY. Read and understand entire *Safety* section before proceeding.

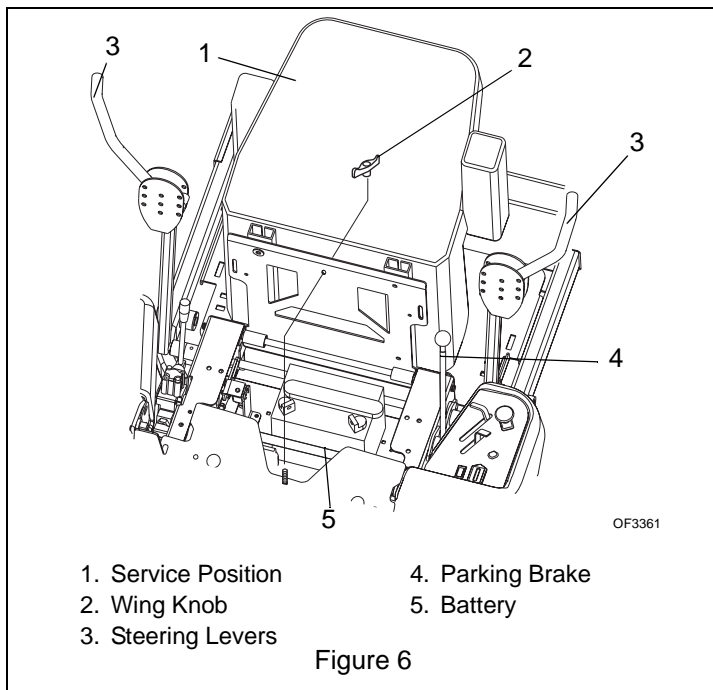
CAUTION: HOT SURFACES may result in injury. DO NOT touch engine or drive parts which are hot from operation. Allow parts to cool before servicing.

SERVICE POSITION

1. Place unit on a flat level surface. ALWAYS stop engine. Ensure unit is secure and will not tip over. Strap and clamp onto lift if used.
2. Place steering levers in neutral and engage parking brake.
3. Remove wing knob or hex nut (992310, 311).
4. Tip seat forward (Figure 6).

CAUTION: Be sure footing is secure to accommodate weight shift of seat when rotating it into service position.

5. When service is complete, lower seat and secure with wing knob or hex nut.



HYDRAULIC FLUID

WARNING: HYDRAULIC FLUID can result in severe burns. Fluid in hydraulic system can penetrate skin and result in serious injury or death.

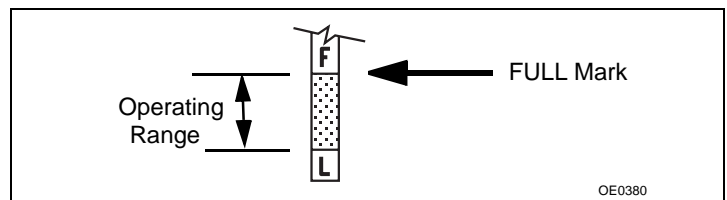
Be sure to stop the engine before doing any work on hydraulic parts.

Keep body and hands away from pin holes or nozzles which expel hydraulic fluid when under pressure. Use paper or cardboard, not hands, to search for leaks.

Ensure all hydraulic fluid connections are tight and all hydraulic hoses and lines are in good condition before applying pressure to system.

FOREIGN FLUID INJECTED INTO BODY can result in gangrene. Fluid must be surgically removed within a few hours by a doctor familiar with this form of injury.

Check Hydraulic Fluid Level



1. Start the unit and run it to operating temperature (about 10 minutes).
2. Cycle the control levers forward and backward two or three times.
3. For units equipped with a hydraulic deck lift, raise and lower the deck completely two or three times.
4. Shut OFF engine. Engage parking brake. Remove the ignition key.
5. Put seat in service position. See *SERVICE POSITION* on page 17.
6. Remove any dirt that may be around the cap/dipstick on the hydraulic reservoir.
7. Remove cap/dipstick.
8. Check hydraulic oil level mark on cap/dipstick.
9. Add 15W50 synthetic oil as needed. Do not overfill.

Change Hydraulic Fluid and Filter

Change the hydraulic oil filter and hydraulic oil every 500 hours. Use Mobil 1 15W50 synthetic oil for best component life.

1. Clean around dipstick cap and dipstick. Remove dipstick.
2. Place container under oil filter to catch oil.
3. Remove oil filter.
4. Allow tank to drain.

- Lubricate rubber gasket on new oil filter with clean hydraulic oil.
- Spin new oil filter onto filter housing until it makes contact. Tighten oil filter another 1/2 turn.
- Add new oil to the oil tank. It will take about 4 quarts. Use Mobil 1 15W50 synthetic oil for best pump and wheel motor life.
- Properly dispose of waste oil.

MOWER BLADES

Remove



CAUTION: Use sturdy gloves or padding to protect hands when working with mower blades.

- Turn the engine off. Remove the ignition key. Remove the ignition wire from the spark plugs.
- Block mower blades to prevent rotation.
- Remove the bolts, washers, and blades from the spindle shafts.

992042, 044, 054,
064, 077, 079, 081,
083, 092, 094, 096

992051, 055, 080, 082,
095, 097, 310, 311

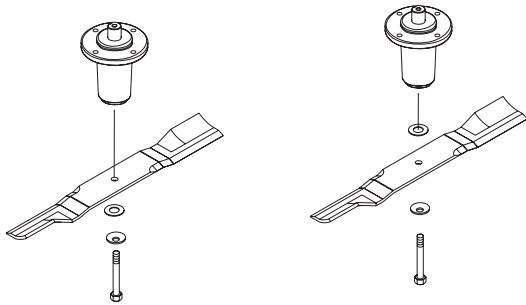


Figure 7

Replace

- Replace the blades, washers and bolts on the spindle shafts.
- Tighten the bolts to a torque of 115-125 lbf-ft (156-169 N•m).
- Replace the ignition wire on the spark plugs.

Sharpen the Mower Blades



CAUTION: DO NOT sharpen mower blades while on unit. An unbalanced mower blade will cause excessive vibration and eventual damage to unit. Check mower blade balance before reinstalling blades.

NEVER weld or straighten bent blades.

- Remove mower blade from unit.

Discard mower blade if:

- More than 1/2 in. (1.27 cm) of metal is removed.
- Air lifts become eroded.

- Blade is bent or broken.

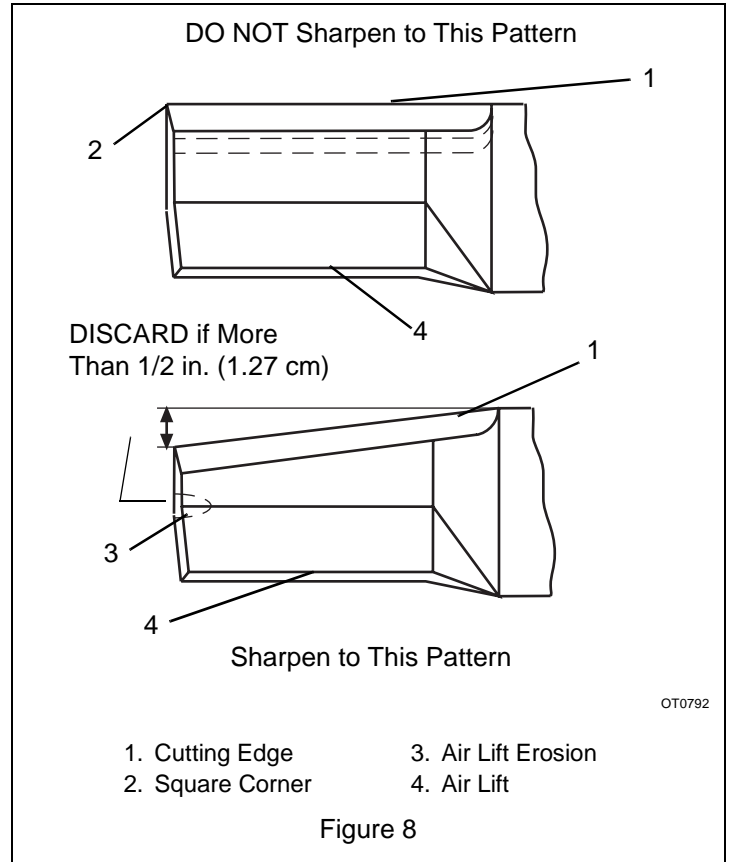
2. Sharpen mower blade by removing an equal amount of material from each end of mower blade. DO NOT change angle of cutting edge or round the corner of the mower blade.

3. Check mower blade balance.

Slide mower blade on an unthreaded bolt. A balanced blade should remain in a horizontal position. If either end of mower blade moves downward, sharpen the heavy end until blade is balanced.

4. Install mower blade(s) on unit.

5. Tighten the bolts to a torque of 115-125 lbf-ft (156-169 N•m).



BATTERY



WARNING: AVOID INJURY. Read and understand entire *Safety* section before proceeding.



WARNING: Battery posts, terminals and related accessories contain lead and lead compounds, chemicals known to the State of California to cause cancer and reproductive harm. Wash hands after handling.

Unit comes equipped with a maintenance-free battery that requires no regular maintenance except cleaning the terminals.

Remove Battery

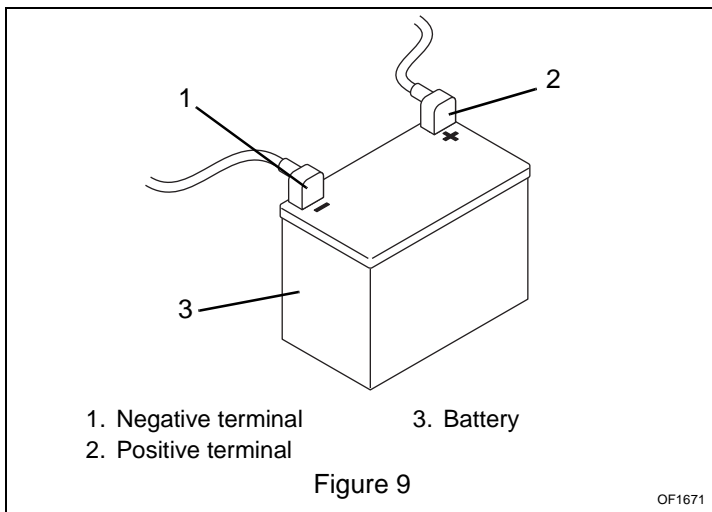
1. Place seat in the service position (See *MAINTENANCE SCHEDULE* on page 15).
2. Disconnect negative (-) cable first, then positive (+) cable (Figure 9).
3. Remove holddown and remove battery.

Replace Battery

1. Replace battery and secure with battery holddown.
2. Connect positive (+) cable first, then negative (-) cable.
3. Coat terminals with dielectric grease or petroleum jelly.
4. Return seat to operating position.


Clean Battery

Keep battery and its terminals clean. Inspect every 100 operating hours or monthly for best performance.



1. Remove battery from unit. See *Remove Battery* on page 19.
2. Clean terminals and battery cable ends with wire brush.
3. Coat terminals with dielectric grease or petroleum jelly.
4. Replace battery. See *Replace Battery* on page 19.

Charging the Battery

 **WARNING: FROZEN BATTERIES CAN EXPLODE** and result in death or serious injury. DO NOT charge a frozen battery. Let battery thaw before charging.

Battery Electrolyte First Aid

Follow First Aid directions for contact with battery fluid.

- External Contact: Flush with water.
- Eyes: Flush with water for at least 15 minutes and get medical attention immediately!
- Internal Contact: Drink large quantities of water. Follow with Milk of Magnesia, beaten egg or vegetable oil. Get medical attention immediately!

In case of internal contact, DO NOT induce vomiting!

IMPORTANT: DO NOT fast charge. Charging at a higher rate will damage or destroy battery. ONLY use an automatic charger designed for use with your battery.

ALWAYS follow information provided on battery by battery manufacturer. Contact battery manufacturer for extensive instructions to charge battery.

1. Remove battery from unit. See *Remove Battery* on page 19.
2. Place battery on bench or other well-ventilated place.
3. Connect positive (+) lead of charger to positive (+) terminal, and negative (-) lead to negative (-) terminal.
4. Charge battery according to the instructions from battery charger manufacturer and battery manufacturer.
5. Replace battery. See *Replace Battery* on page 19.

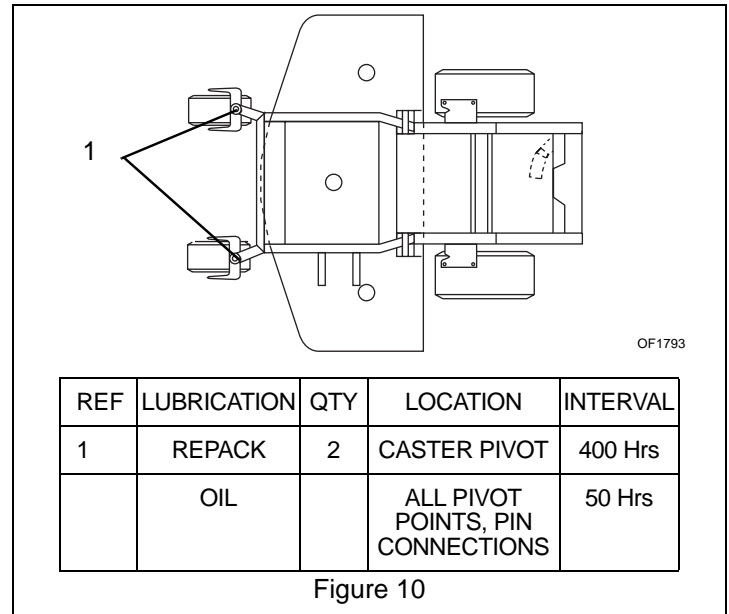
Jump-Starting

Gravely does not recommend jump-starting your unit. Jump-starting can damage engine and electrical system components. See your engine manual for more detailed information.

LUBRICATE UNIT

NOTE: Use Stens Mix Hi-Temp Grease or equivalent (part number 00036700).

Apply oil at all pivot points and pin connections.

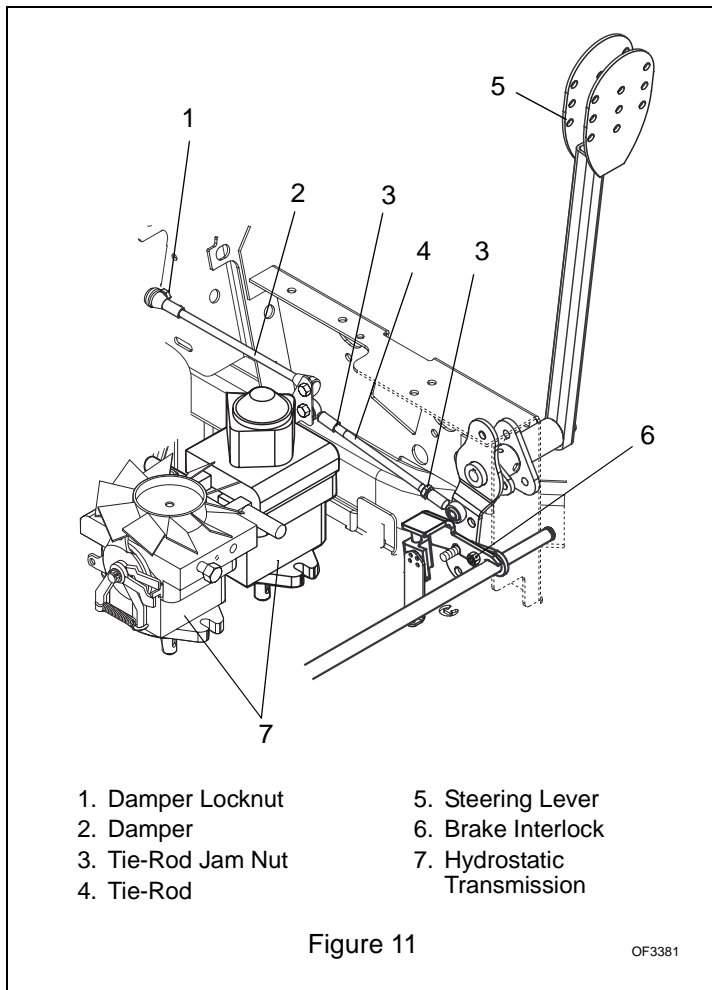


STEERING CONTROL NEUTRAL ADJUSTMENT

If the steering levers do not line up (match) or the unit has excessive creeping when the steering levers are in neutral, adjust as follows.

Adjusting the Steering Levers to Line Up (Match) (Figure 11)

1. Shut OFF engine. Engage parking brake. Remove the ignition key.
2. Place seat in the service position (See *SERVICE POSITION* on page 17).
3. Loosen damper locknut on the same side as the steering lever to be adjusted.
4. Loosen brake interlock on the same side as steering lever to be adjusted.
5. Loosen tie rod jam nut and turn tie rod until steering levers are aligned.
6. Tighten jam nut on tie rod, tighten brake interlock and tighten damper locknut.



Eliminating Excessive Creeping of the Unit (Figure 11)



WARNING: This adjustment requires operating the engine. Use extreme care to avoid contact with moving parts and hot surfaces. Be sure rear of unit is well-supported and secure before starting engine.

1. If hydraulic system is cold, run unit for a minimum of five minutes, then shut OFF engine.
2. With the unit up to and facing a wall, jack the unit up so that both drive wheels are off the ground.
3. Start the engine and release the parking brake.
4. Move the steering levers from Forward to Reverse several times to make sure controls are free. Then return steering levers to neutral position.
5. Check wheel(s) for movement.
6. Shut OFF engine.

NOTE: The right and left steering levers are adjusted the same way. To access the tie-rod, place seat in service position. See *SERVICE POSITION* on page 17.

7. Adjust tie-rod(s):

If the wheel is moving in a forward direction:

- a. Loosen the jam nut on each end of the tie-rod.
- b. Turn tie-rod counterclockwise (lengthening the distance between the steering lever and hydrostatic transmission) several times.

If the wheel is moving in a reverse direction:

- a. Loosen the jam nut on each end of the tie-rod.
- b. Turn tie-rod clockwise (decreasing the distance between the steering lever and hydrostatic transmission) several times.

8. Return seat to operating position.
9. Start engine.
10. Move steering levers from Forward to Reverse several times. Then return steering levers to neutral position.
11. Shut OFF engine.
12. If wheel is not moving, tighten jam nuts on tie-rod. The adjustment is complete.
13. If wheel is still moving, repeat steps 7 through 12.

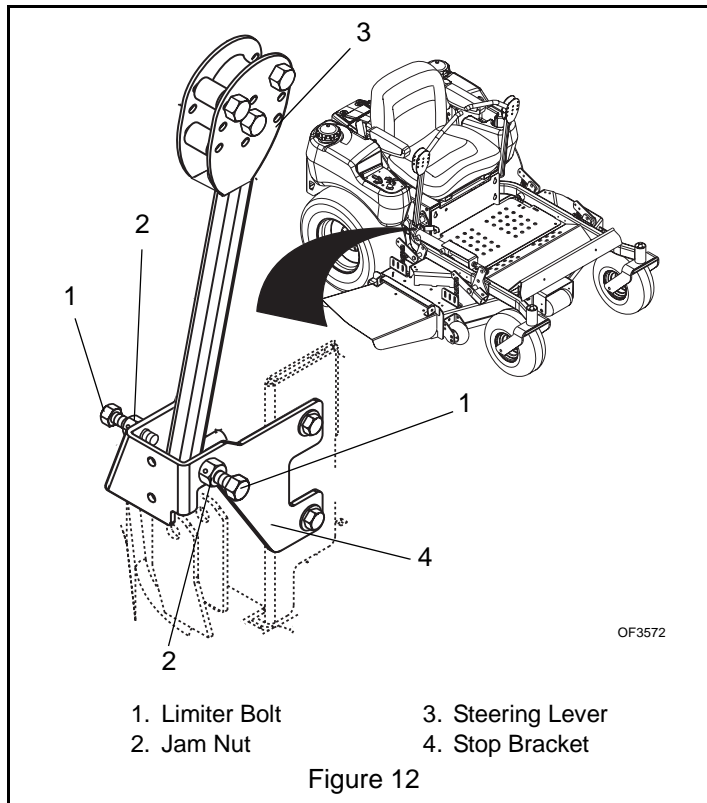
ADJUSTING THE UNIT TO TRACK STRAIGHT



WARNING: Prior to adjusting the tracking of the unit, shut off engine, engage parking brake, and remove the ignition key.

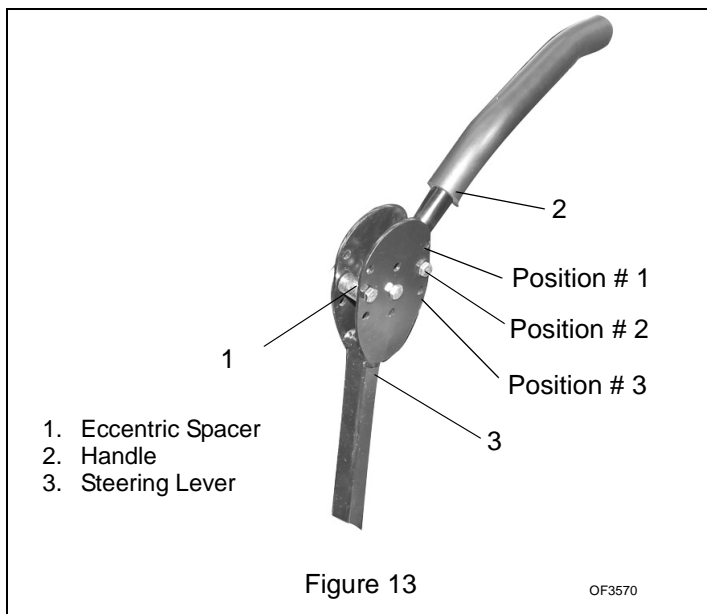
Check and adjust tire pressure. Increase pressure on side unit tracks to. DO NOT exceed maximum recommended tire pressure (See *SPECIFICATIONS* on page 28).

If tire pressure adjustment does not solve tracking problem, adjust the limiter bolts on the stop bracket (Figure 12). Front bolts adjust forward and rear bolts adjust reverse. Lengthen the limiter bolt (move closer to lever) on side which is too fast.



ADJUSTING THE HEIGHT OF THE STEERING LEVER HANDLES

The handles have three height positions (Figure 13).



1. Remove the spacer, handle, and eccentric spacer from the steering lever.

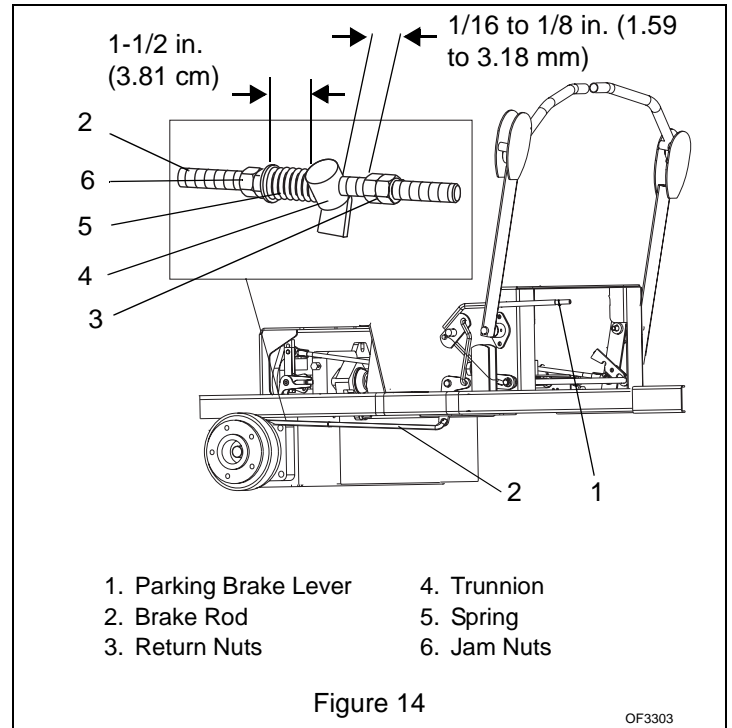
NOTE: Position the right and left handles at the same height position.

2. Install the spacer, handle, and eccentric spacer in the appropriate height position. Do not tighten the nut holding the eccentric spacer.
3. Turn the eccentric spacer until the right and left handles are the same height. Tighten nut.

PARKING BRAKE ADJUSTMENT

The parking brake might need adjustment over time and after new brake pads have been installed.

NOTE: After installing new brake pads in the calipers, they must be burnished by driving for a short distance (about 100 feet) with the brake on. To do this, bring the parking brake lever part-way up while driving in a straight line. This quickly breaks-in the pads for maximum effectiveness



Check Adjustment

NOTE: Be sure to check the parking brake on both sides of the unit (Figure 14).

With the parking brake engaged, the spring length should measure 1 1/2 in. (3.81 cm) between the jam nuts and the trunnion and the clearance between the return nuts and trunnion should measure 1/16 to 1/8 in. (1.59 to 3.18 mm). If either of these measurements is off, adjust the parking brake appropriately.

Adjust the Parking Brake

1. Engage the parking brake.
2. Turn the jam nuts clockwise to compress the spring or counterclockwise to extend the spring until there is 1-1/2 in. (3.81 cm) clearance between the jam nuts and trunnion.
3. Tighten jam nuts together.

- Turn the return nuts clockwise to decrease the distance or counterclockwise to increase the distance until there is 1/16 to 1/8 in. (1.59 to 3.18 mm) between the return nuts and trunnion.
- Tighten return nuts together.

- Arrange new mower belt(s) on deck (mower drive belt first). Retighten short mower belt idler pivot bolt. Install belts on sheaves. Put belts onto center sheave last.
- Replace belt covers and return foot board to closed position.

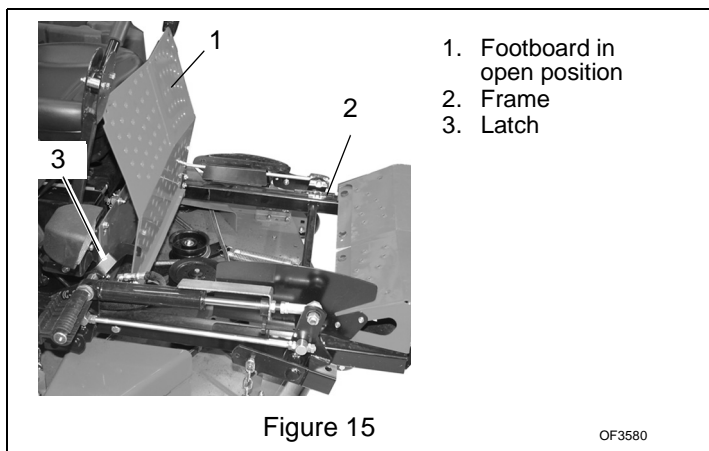
BELTS

WARNING: MOVING PARTS can cut or amputate body parts. ALWAYS wait for moving parts to stop before performing maintenance or service.

CAUTION: DAMAGED OR WORN BELTS may result in injury and/or damage to unit. Check belts for excessive wear or cracks often.

Belt Access

- Properly stop and park unit (See *OPERATION* on page 12).
- Lower the mower deck.
- Place seat in most rearward position.
- Remove belt covers.
- Place foot board in open position (Figure 15).
- Secure raised footboard with latch.

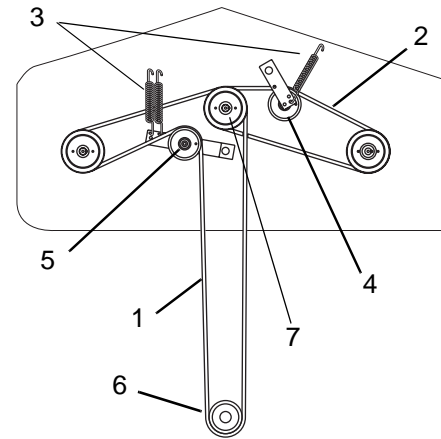


Replacing Mower Belts

NOTE: Long PTO mower belt must be removed from blade spindle pulleys prior to removing short mower drive belt.

CAUTION: Use care when releasing idler spring tension. Keep body parts well away from idlers when performing this operation.

- Slowly release the tension on the PTO mower belt idler until all the tension is removed from the springs.
- Remove PTO mower belt from left blade spindle and remove from deck.
- Slowly release the tension on the mower drive belt idler until all the tension is removed from the springs.
- Remove mower drive belt from right blade spindle and from deck. Idler pivot bolt must be loosened slightly to gain clearance to remove belt from under idler pulley (Figure 16).



- PTO Mower Belt
- Mower Drive Belt
- Springs
- Mower Drive Belt Idler
- PTO Belt Idler
- PTO Clutch Sheave
- Center Sheave

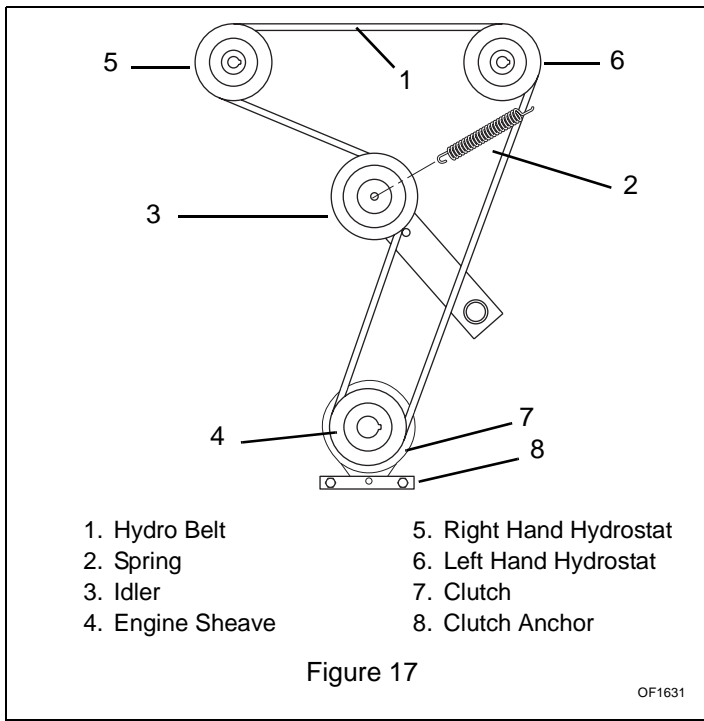
Figure 16

Replacing the Hydro Pump Belt

- Properly stop and park unit (See *OPERATION* on page 12).
- Remove the PTO mower belt from the PTO clutch sheave (See *Replacing Mower Belts* on page 22).

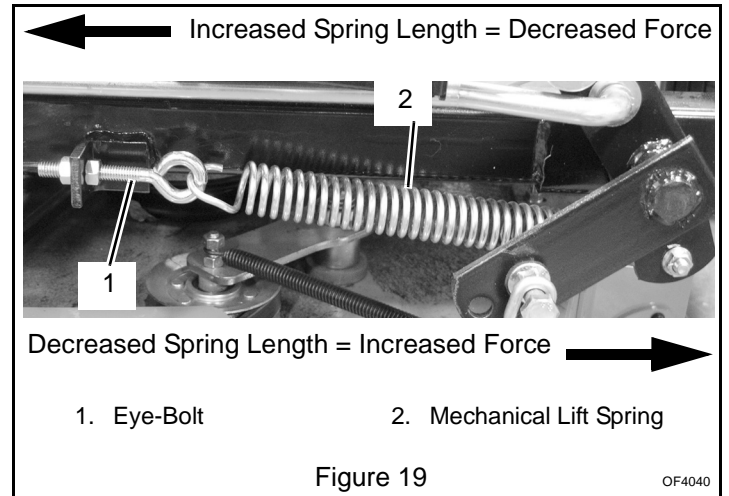
CAUTION: Use care when releasing idler spring tension. Keep body parts well away from idlers when performing this operation.

- Remove clutch anchor.
- Slowly release the tension on the hydro pump belt idler until all the tension is removed from the springs.
- Remove old hydro pump belt from right hand hydrostat sheave first (Figure 17).
- Install new hydro pump belt by positioning belt on sheaves. Put belt onto right hand hydrostat sheave last.
- Replace clutch anchor.
- Replace PTO mower belt on PTO clutch sheave. See *Replacing Mower Belts* on page 22.



IMPORTANT: Adjust the mechanical lift spring on each side of the unit to the same length.

- Adjust the eye-bolt to increase the length of the mechanical lift spring which will decrease the amount of force required to lift the mower deck.
- Adjust the eye-bolt to decrease the length of the mechanical lift spring which will increase the amount of force required to lift the mower deck.



Removing the Mower Deck

NOTE: Only remove PTO belt from electric clutch.

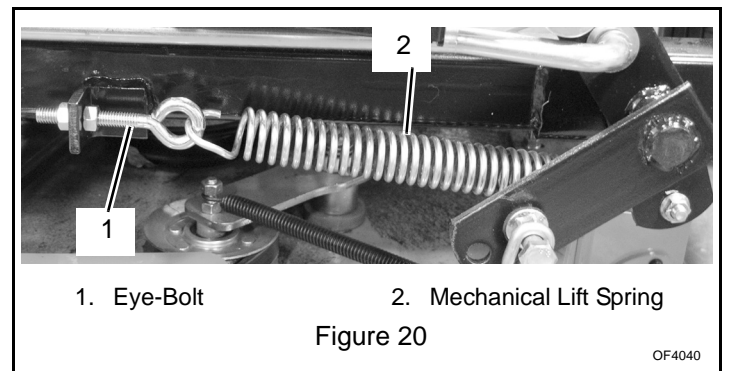
1. Remove PTO belt from electric clutch (see *Replacing Mower Belts* on page 22).

NOTE: Perform steps 2 and 3 for mechanical lift mower decks only (992064, 083, 092, 093, 094, 095, 096, 097).



CAUTION: Use care when releasing mechanical lift spring tension. Keep body parts well away from springs when performing this operation.

2. Raise mower deck to transport position (see *Mower Lift Pedal* (992064, 083, 092, 093, 094, 095, 096, 097) on page 13).
3. Remove mechanical lift spring from each side of unit (Figure 20).



4. Lower mower deck all the way down.
5. Remove link chains from mower lift arms. Note hole location on mower lift arms for replacement.
6. Remove mower mounting arms from frame.
7. Slide mower deck out from under unit.

MOWER DECKS

Anti-scalp Roller Adjustment

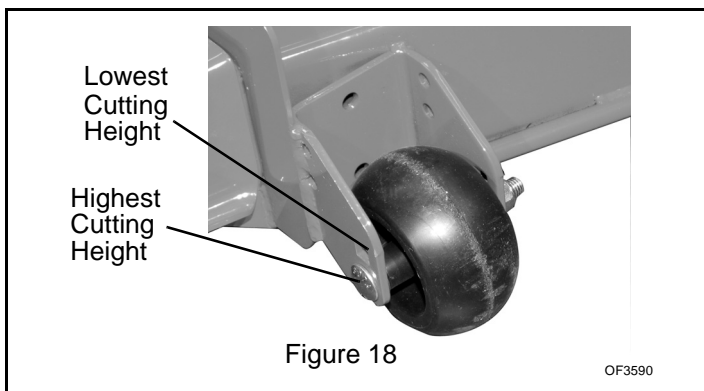
The anti-scalp rollers are set at the factory for typical mowing height, but can be adjusted for high or low cutting conditions (Figure 18).

Anti-Scalp rollers are intended to prevent lawn scalping, not to control cutting height.

For a very high cutting height, set the anti-scalp rollers in the lowest position on the bracket.

For a very low cutting height, set the anti-scalp rollers in the highest position on the bracket.

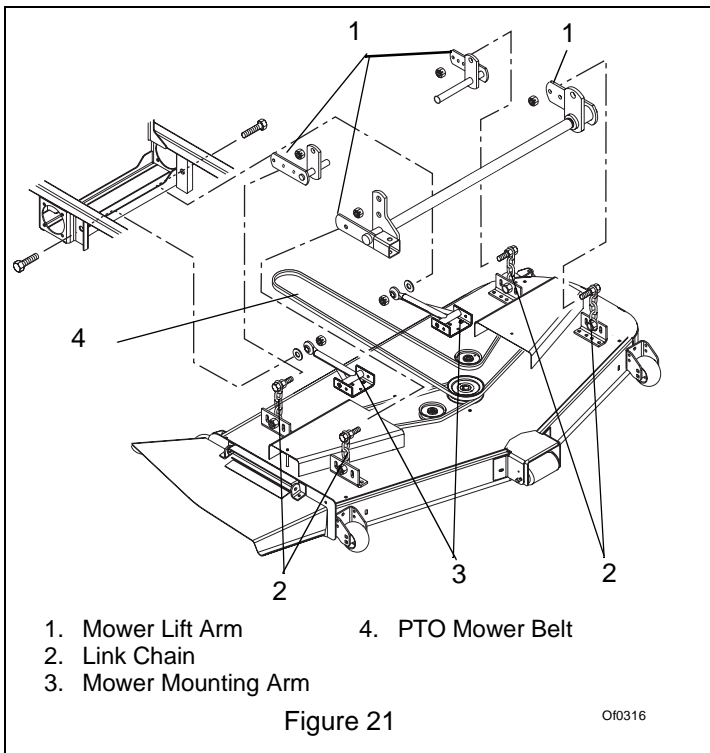
All anti-scalp rollers should be set at the same height.



MOWER LIFT PEDAL ADJUSTMENT

The mower lift pedal can be adjusted to decrease or increase the amount of force required to lift the mower deck.

NOTE: Decreasing the amount of force required to lift the mower deck will increase the mower deck's bouncing. Increasing the amount of force required to lift the mower deck will decrease the mower deck's bouncing.



Installing the Mower Deck (Figure 21)

1. Slide mower deck under unit.
2. Install mower mounting arms on frame.
3. Install link chains on the mower lift arms in the same holes they were removed from.

NOTE: Perform steps 4 and 5 for mechanical lift mower decks only (992064, 083, 092, 093, 094, 095, 096, 097).

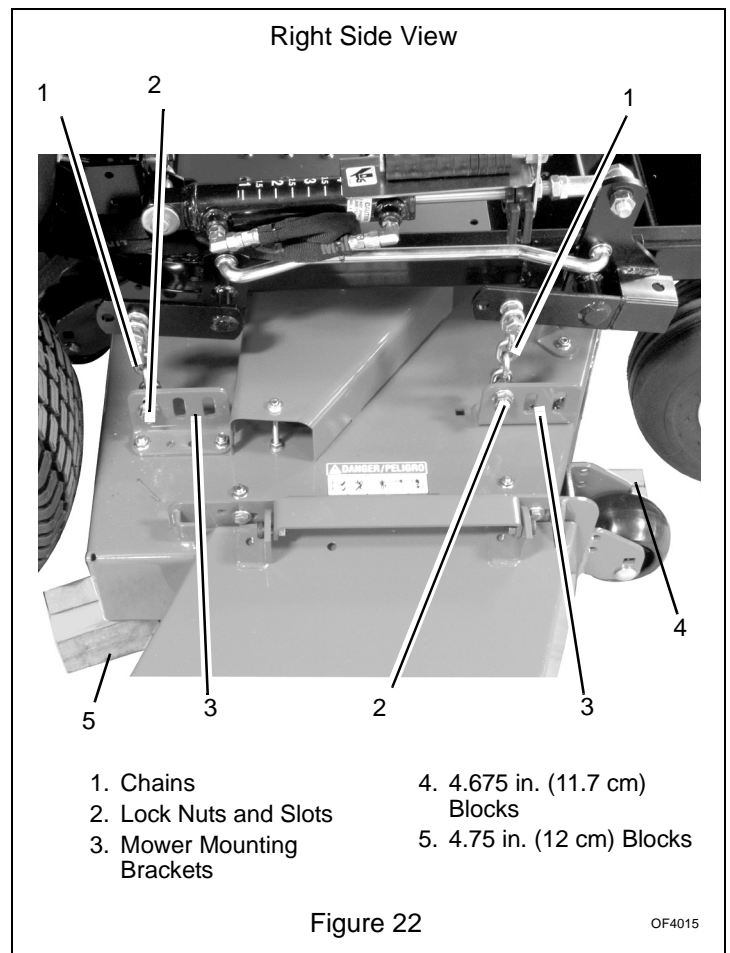
4. Raise mower deck to transport position (see *Mower Lift Pedal* (992064, 083, 092, 093, 094, 095, 096, 097) on page 13).
5. Install mechanical lift spring on each side of unit (Figure 21).
6. Install PTO belt on electric clutch (see *Replacing Mower Belts* on page 22).
7. Level mower deck (see *Leveling the Mower Deck* on page 24).

Leveling the Mower Deck

These adjustments should be made on a level surface with the tires inflated to the correct air pressure.

Level the mower with the slots where 4 chains fasten to the mower mounting brackets (Figure 22).

1. Shut off engine. Engage parking brake. Remove the ignition key.
2. Raise mower deck to its highest position and place 4.75 in. (12.1 cm) tall blocks at each rear corner and 4.625 in. (11.7 cm) tall blocks at each front corner.
3. Lower deck onto the blocks.
4. Loosen the locknuts on the side where the chains are slack and slide the bolt down the slot until the chains are tight.
5. Tighten the locknuts.
6. Lift mower and remove blocks.
7. Measure height of deck at each side. Measurements must be within 3/16 in. (4.76 mm) of each other.
8. If measurements are out of range, fix by adjusting chains on low side of deck.
9. Once deck is level side to side, measure height of deck at middle of front and on both sides of rear. Front of deck should be 1/8 in. +/- 1/8 in. (3.18 mm +/- 3.18 mm) lower than rear.



STORAGE



WARNING: AVOID INJURY. Read and understand entire *Safety* section before proceeding.

SHORT TERM

NEVER spray unit with high pressure water or store unit outdoors.

Inspect unit for visible signs of wear, breakage or damage.

Keep all nuts, bolts and screws properly tightened and know unit is in safe working condition.

Store unit in a cool, dry protected area.

LONG TERM

Clean unit thoroughly with mild soap and low pressure water and lubricate (See *LUBRICATE UNIT* on page 19 in *Maintenance*). Touch up all scratched painted surfaces.

Remove weight from wheels by putting blocks under frame or axle.

When storing unit for extended periods of time, remove all fuel from tank and carburetor (run dry). Refer to Engine Manual.

Clean and charge the battery. Charge battery every three to four weeks when storing unit.

To Take the Unit Out of Storage

1. Refer to the engine service manual to prepare the engine for service.
2. Put fresh, clean fuel in the fuel tank.
3. Begin the maintenance schedule.
4. Charge and install the battery.

TROUBLESHOOTING

PROBLEM	PROBABLE CAUSE	CORRECTION
Engine does not crank.	<ol style="list-style-type: none"> 1. PTO engaged. 2. Parking brake disengaged. 3. Loose or corroded battery cables. 4. Discharged battery. 5. Faulty starter. 	<ol style="list-style-type: none"> 1. Disengage PTO. 2. Engage parking brake. 3. Clean and tighten battery cables (see <i>Clean Battery</i> on page 19). 4. Charge battery (see <i>Charging the Battery</i> on page 19). 5. See your Gravely Dealer.
Engine cranks but does not start.	<ol style="list-style-type: none"> 1. Fuel tank empty. 2. Faulty spark plug. 3. Air cleaner is plugged or dirty. 4. Fuel filter is dirty. 5. Faulty engine. 	<ol style="list-style-type: none"> 1. Fill fuel tank (see <i>FILLING FUEL TANK</i> on page 14). 2. Replace spark plug. Refer to Engine Manual. 3. Clean or replace air cleaner. Refer to Engine Manual. 4. Clean or replace fuel filter. Refer to Engine Manual. 5. Refer to Engine Manual or see your Gravely Dealer.
Battery light does not light up when starting engine.	<ol style="list-style-type: none"> 1. Discharged battery. 	<ol style="list-style-type: none"> 1. Charge battery (see <i>Charging the Battery</i> on page 19).
Oil pressure light is on.	<ol style="list-style-type: none"> 1. Oil pressure is low. 	<ol style="list-style-type: none"> 1. Refer to Engine Manual.
Engine continues to run when ignition key is in the off position.	<ol style="list-style-type: none"> 1. Ignition ground wire disconnected. 2. Ignition switch failure. 	<ol style="list-style-type: none"> 1. Connect ground wire to clean metal surface. 2. Replace ignition switch (see your Gravely Dealer).
PTO or mower blades do not engage or shut off.	<ol style="list-style-type: none"> 1. Operator presence switch not depressed. 2. Faulty PTO switch. 	<ol style="list-style-type: none"> 1. Depress operator presence switch by sitting on seat. 2. Check the electrical system to the clutch for damage or wear. See your Gravely Dealer.
Unit does not drive.	<ol style="list-style-type: none"> 1. Parking brake engaged. 2. Transmission bypass levers open. 3. Hydraulic oil level low. 4. Faulty hydraulic drive system. 	<ol style="list-style-type: none"> 1. Disengage parking brake. 2. Close transmission bypass levers (see <i>MOVING THE UNIT WITH THE ENGINE OFF</i> on page 15). 3. Add hydraulic oil (see <i>Check Hydraulic Fluid Level</i> on page 17). 4. See your Gravely dealer.

ACCESSORIES

Part No.	Description
78805300	44 in. Mulching Kit
78803400	48 in. Mulching Kit
78803500	52 in. Mulching Kit
79200300	60 in. Mulching Kit
78805400	44 in. Bahia/Tall Grass Baffle Kit
78803800	48 in. Bahia/Tall Grass Baffle Kit
78803900	52 in. Bahia/Tall Grass Baffle Kit
79201600	60 in. Bahia/Tall Grass Baffle Kit
79202800	44 in., 48 in., 52 in. Discharge Cover
79200400	60 in. Discharge Cover
79202600	60 in. Striper Kit
79200700	52 in., and 60 in. True Power Wheel / Tire Kit
78804100	44 in. and 48 in. Double Blade Kit
79202200	Liftmaster Kit (Not for 992064, 083, 092, 093, 094, 095, 096, 097)
79202300	Hitch Kit
79202700	Headlight Kit
79202900	Counterweight Kit
79203100	44 in., 48 in., 52 in. Lawn Striper Kit
89201400	Rollover Protection System
89202200	60 in. Bagger
89202300	44 in., 48 in., 52 in. Bagger
78804300	Grass Catcher (48 in. and 52 in. Models)
78804400	Leaf Collector (48 in. and 52 in. Models)
79205500	Suspension Seat
79204000	Eye-Q™ Engine RPM Sensor Kit (992042, 043, 044, 051, 064, 077, 078, 079, 080, 083, 092, 093, 094, 095, 310, 311)
79204100	Eye-Q™ RF ID Kit
79204200	Eye-Q™ GPS Kit — For 100 Series Gravely Units (42" Harness)
79204300	Eye-Q™ Accelerometer Kit
79204400	Eye-Q™ Temperature Sensor Kit
79204600	Eye-Q™ Scan-Mate™ and Job Efficiency Reporting Software
79204700	Eye-Q™ Accessory Wire Harness Kit — Required for any optional sensors, accelerometers, or GPS
79204800	Eye-Q™ Retrofit Kit (992042, 043, 044, 051, 054, 055 and 992310 and 311 with serial number range less than 2,499)
79204900	Eye-Q™ Guard Kit
79205400	Eye-Q™ Ready Kit (992042, 043, 044, 051, 054, 055, 092, 093, 094, 095, 096, 097 and 992310 and 311 with serial number range 2,500 and higher)

SERVICE PARTS

Part No.	Qty	Description
01554800	1	Battery
21537000	1	Air Filter Outer Element
21536900	1	Air Filter Inner Element
21538200	1	Air Filter Paper Element (17 hp)
21538300	1	Air Filter Foam Element (17 hp)
21535800	1	Engine Oil Filter - Kawasaki
21397200	1	Engine Oil Filter - Kohler
09246900	1	Hydraulic Oil Filter
21536100	2	Spark Plug - Kawasaki
21533600	2	Spark Plug - Kawasaki (17 hp)
21525900	1	Spark Plug - Kohler
21410800	1	Fuel Filter - Kawasaki
21538400	1	Fuel Filter - Kawasaki (17 hp)
21539500	1	Fuel Filter - Kohler
07241100	1	PTO (Engine to Deck) Belt (52 in.)
07241000	1	PTO (Engine to Deck) Belt (48 in.)
07239300	1	PTO (Engine to Deck) Belt (60 in.)
07202900	1	Mower Drive Belt (44 in. and 48 in.)
07222300	1	Mower Drive Belt (52 in.)
07235000	1	Mower Drive Belt (60 in.)
07218000	1	Traction (Hydro Pump) Belt
04919100	1	Blade (44 in. and 48 in.)
04920600	1	Mulch Blade (44 in. and 48 in.)
04936000	1	Blade (992310, 311)
04916400	1	Blade (52 in.)
04917900	1	Mulch Blade (52 in.)
09246600	1	Blade (60 in.)
08899100	1	Mulch Blade (60 in.)

SPECIFICATIONS

Model Number	992042	992043	992044	992051	992054	992055	992064	992077
Model	PM144Z	PM148Z	PM152Z	PM160Z	PM152Z	PM160Z	PM144Z	PM144Z
Eye-Q	Optional							Standard
Engine								
Engine	Kawasaki				Kohler		Kawasaki	
Engine Model Number	FH601V	FH641V	FH680V		CV730		FH500V	FH601V
Engine Power – hp (kW) at Maximum RPM	19 (14.1)	21 (15.7)	23 (17.1)		25 (18.7)	25 (18.7)	17 (12.2)	19 (14.1)
Governed RPM (May be different from maximum RPM)	3600 ± 100		3550 ± 50	3600 ± 100	3550 ± 50	3600 ± 100		
Cooling Capacity	Air Cooled							
Speed								
Forward Maximum – mph (km/h)	10 (16)							
Reverse Maximum – mph (km/h)	4.5 (7.2)							
Turning Radius	0							
Brakes	Hydro/Dynamic Drum – Parking							
Electrical								
Starter	Electric							
Battery	12-Volt Maintenance Free							
Power Take-Off	Electric PTO Clutch/Brake							
Fuel								
Fuel Type	Refer to Engine Manual							
Fuel Tank Capacity – gal. (L)	10 (37.8)							
Transmission								
Type	Hydrostatic Drive							
Transmission Oil	Mobil 1 15W-50 Synthetic							
Hydraulic System Capacity – qt (L)	4.8 (4.5)							
Hydraulic Oil Filter	Yes							
Size and Weight								
Length – in. (cm)	72.5 (184.2)			75 (190.5)	73.5 (186.7)	73 (185)	72.5 (184.2)	
Width – in. (cm)	57 (145)	61 (155)	65 (165)	73 (185)	65 (165)	73 (185)	57 (145)	
Height – in. (cm)	42 (106)							
Height with ROPS – in. (cm)	75 (190)							
Weight – lbs (kg)	946 (430)	951 (432)	961 (437)	1040 (472.7)	961 (437)	1040 (472.7)	930 (422)	946 (430)
Tires								
Front Tire Size – in. (cm)	15 x 6 -6 (38 x 15 -15)							
Rear Tire Size – in. (cm)	23 x 9.5 -12 (58.4 x 24-30.5)	23 x 10.5 - 12 (58.4 x 26.7-30.5)					23 x 9.5 -12 (58.4 x 24-30.5)	
Front Tire Pressure – psi (kPa)	20 -25 (138 - 172)							
Rear Tire Pressure – psi (kPa)	12 -15 (83 -103)							
Mower Deck								
Mower Deck Lift	Hydraulic						Mechanical	Hydraulic
Cutting Width – in. (cm)	44 (112)	48 (122)	52 (132)	60 (152)	52 (132)	60 (152)	44 (112)	
Cutting Height – in. (cm)	1 - 5 (2.5 - 12.7)							
Cutting Height Increments – in. (cm)	1 to 5 (2.5 to 12.7)						0.5 (1.25)	1 to 5 (2.5 to 12.7)
Maximum Towing Capacity – lbs (kg)	500 (227)							
Maximum Tongue Weight – lbs (kg)	50 (23)							

SPECIFICATIONS

Model Number	992078	992079	992080	992081	992082	992083	992092	992093
Model	PM148Z	PM152Z	PM160Z	PM152Z	PM160Z	PM144Z	PM144Z	PM148Z
Eye-Q	Standard						Optional	
Engine								
Engine	Kawasaki			Kohler		Kawasaki		
Engine Model Number	FH641V	FH680V		CV730		FH500V	FH601V	FH641V
Engine Power – hp (kW) at Maximum RPM	21 (15.7)	23 (17.1)		25 (18.7)		17 (12.2)	19 (14.1)	21 (15.7)
Governed RPM (May be different from maximum RPM)	3600 ± 100	3550 ± 50	3600 ± 100	3550 ± 50	3600 ± 100			
Cooling Capacity	Air Cooled							
Speed								
Forward Maximum – mph (km/h)	10 (16)							
Reverse Maximum – mph (km/h)	4.5 (7.2)							
Turning Radius	0							
Brakes	Hydro/Dynamic Drum – Parking							
Electrical								
Starter	Electric							
Battery	12-Volt Maintenance Free							
Power Take-Off	Electric PTO Clutch/Brake							
Fuel								
Fuel Type	Refer to Engine Manual							
Fuel Tank Capacity – gal. (L)	10 (37.8)							
Transmission								
Type	Hydrostatic Drive							
Transmission Oil	Mobil 1 15W-50 Synthetic							
Hydraulic System Capacity – qt (L)	4.8 (4.5)							
Hydraulic Oil Filter	Yes							
Size and Weight								
Length – in. (cm)	72.5 (184.2)	72.5 (184.2)	75 (190.5)	72.5 (184.2)	75 (190.5)	72.5 (184.2)	72.5 (184.2)	72.5 (184.2)
Width – in. (cm)	61 (155)	65 (165)	73 (185)	65 (165)	73 (185)	57 (145)	57 (145)	61 (155)
Height – in. (cm)	42 (106)							
Height with ROPS – in. (cm)	75 (190)							
Weight – lbs (kg)	1050 (476)	1125 (510)		1050 (476)		1125 (510)		1050 (476)
Tires								
Front Tire Size – in. (cm)	15 x 6 -6 (38 x 15 -15)							
Rear Tire Size – in. (cm)	23 x 10.5 - 12 (58.4 x 26.7-30.5)					23 x 9.5 -12 (58.4 x 24-30.5)		23 x 10.5 - 12 (58.4 x 26.7-30.5)
Front Tire Pressure – psi (kPa)	20 -25 (138 - 172)							
Rear Tire Pressure – psi (kPa)	12 -15 (83 -103)							
Mower Deck								
Mower Deck Lift	Hydraulic						Mechanical	
Cutting Width – in. (cm)	48 (122)	52 (132)	60 (152)	52 (132)	60 (152)	44 (112)	44 (112)	48 (122)
Cutting Height – in. (cm)	1 - 5 (2.5 - 12.7)							
Cutting Height Increments – in. (cm)	1 to 5 (2.5 to 12.7)						0.5 (1.25)	
Maximum Towing Capacity – lbs (kg)	500 (227)							
Maximum Tongue Weight – lbs (kg)	50 (23)							

SPECIFICATIONS

Model Number	992094	992095	992096	992097	992310	992311
Model	PM152Z	PM160Z	PM152Z	PM160Z	PM144Z	PM148Z
Eye-Q	Optional				Standard	
Engine						
Engine	Kawasaki		Kohler		Kawasaki	
Engine Model Number	FH680V		CV730		FH601V	FH641V
Engine Power – hp (kW) at Maximum RPM	23 (17.1)		25 (18.7)		19 (14.1)	21 (15.7)
Governed RPM (May be different from maximum RPM)	3550 ± 50	3600 ± 100	3550 ± 50	3600 ± 100	2800 ± 50	3300 ± 50
Cooling Capacity	Air Cooled					
Speed						
Forward Maximum – mph (km/h)	10 (16)					
Reverse Maximum – mph (km/h)	4.5 (7.2)					
Turning Radius	0					
Brakes	Hydro/Dynamic Drum – Parking					
Electrical						
Starter	Electric					
Battery	12-Volt Maintenance Free					
Power Take-Off	Electric PTO Clutch/Brake					
Fuel						
Fuel Type	Refer to Engine Manual					
Fuel Tank Capacity – gal. (L)	10 (37.8)					
Transmission						
Type	Hydrostatic Drive					
Transmission Oil	Mobil 1 15W-50 Synthetic					
Hydraulic System Capacity – qt (L)	4.8 (4.5)					
Hydraulic Oil Filter	Yes					
Size and Weight						
Length – in. (cm)	72.5 (184.2)	75 (190.5)	73.5 (186.7)	75.4 (191.5)	73.5 (186.7)	
Width – in. (cm)	65 (165)	73 (185)	65 (165)	73 (185)	57 (145)	61 (155)
Height – in. (cm)	42 (106)					
Height with ROPS – in. (cm)	75 (190)					
Weight – lbs (kg)	1050 (476)	1125 (510)		1050 (476)		1125 (510)
Tires						
Front Tire Size – in. (cm)	15 x 6 -6 (38 x 15 -15)					
Rear Tire Size – in. (cm)	23 x 10.5 - 12 (58.4 x 26.7-30.5)				23 x 9.5 -12 (58.4 x 24-30.5)	23 x 10.5 - 12 (58.4 x 26.7-30.5)
Front Tire Pressure – psi (kPa)	20 -25 (138 - 172)					
Rear Tire Pressure – psi (kPa)	12 -15 (83 -103)					
Mower Deck						
Mower Deck Lift	Mechanical				Hydraulic	
Cutting Width – in. (cm)	52 (132)	60 (152)	52 (132)	52 (132)	44 (112)	48 (122)
Cutting Height – in. (cm)	1 - 5 (2.5 - 12.7)					
Cutting Height Increments – in. (cm)	0.5 (1.25)				1 to 5 (2.5 to 12.7)	
Maximum Towing Capacity – lbs (kg)	500 (227)					
Maximum Tongue Weight – lbs (kg)	50 (23)					



Gravely Division of Ariens Company
655 West Ryan Street
P.O. Box 157
Brillion, WI 54110-0157
920-756-2141
Fax 920-756-2407
www.gravely.com

2-Year Limited Warranty

Gravely Division of Ariens Company (Gravely) hereby warrants to the original consumer purchaser that all Gravely Two-Wheel, Professional G, Pro, and ProMaster products will be free from defects in material and workmanship for a period of two (2) years from the date of purchase or 1000 hours, whichever comes first.

Protection Plan

Gravely will repair or replace any part found upon examination by Gravely to be defective. Such repair or replacement will be free of charge to the purchaser (labor and parts), except as noted below.

This warranty is subject to the following exceptions, conditions, and limitations:

Usage Requirement

The duration of this warranty shall be ninety days or 1000 hours, whichever comes first, if the product is rented or leased.

Purchaser's Responsibilities

- The purchaser must perform maintenance and minor adjustments per the operator's manual.
- The purchaser must notify Gravely or an authorized Gravely service representative of the need for warranty service.
- The purchaser must transport the product to and from the place of warranty repair.

Product Registration

- Returning the product registration card to Gravely will enable the company to contact the registrant with repair or replacement part information.

Service Parts and Accessories

- Service parts and accessories not purchased with the product covered by this warranty are warranted to be free of defects for a period of ninety (90) days following the date of purchase, and will be replaced free of charge (except for labor).

Service

- Warranty service must be done by an authorized Gravely dealer. To find an authorized Gravely service representative, contact Gravely at the website, number or address above.

Battery Warranty Prorated

- One to three months - Free replacement
- Four to twelve months - Prorated over 12 months

Exclusions (No Warranty)

- Normal maintenance, services, and normal replacement items, such as spark plugs, oil, oil filters, air filters, mufflers, belts, tires, shoes, runners, scraper blades, shear bolts, mower blades, mower vanes, headlights, light bulbs, knives, etc. are not covered by this warranty.
- Any equipment which has been altered, misused, misassembled, improperly adjusted, neglected, or damaged by accident is not covered by this warranty.
- Service completed by someone other than an authorized Gravely dealer is not covered by this warranty.
- Any attachment not approved by Gravely nor any parts that are not genuine Gravely service parts are not covered by this warranty.
- Engines and engine accessories are covered only by the warranty made by the engine manufacturer, and are not covered by this warranty.
- If the product is equipped with a Hydro-Gear transmission and/or Hydro-Gear drive components, the Hydro-Gear transmission and/or drive components are covered only by the warranty made by Hydro-Gear, and are not covered by this warranty.
- This warranty applies only to products purchased in the United States (including Puerto Rico) and Canada. In all other countries, contact place of purchase.

Gravely may from time to time change the design of its products. Nothing contained in this warranty shall be construed as obligating Gravely to incorporate such design changes into previously manufactured products, nor shall such changes be construed as an admission that previous designs were defective.

LIMITATION OF REMEDY AND DAMAGES

Gravely's liability under this express warranty, and under any implied warranty that may exist, is limited to repair or replacement of any defective part. In no event shall Gravely be liable for incidental, special, or consequential damages (including lost profits). This warranty gives you specific legal rights. You may also have other rights which vary from state to state. Some states do not allow the exclusion of incidental or consequential damages, or limitations on how long an implied warranty lasts, so the above limitations and exclusions may not apply to you.

DISCLAIMER OF FURTHER WARRANTY

Gravely makes no warranty other than what is expressly made in this warranty. If the law of your state provides that an implied warranty of merchantability, or an implied warranty of fitness for a particular purpose, applies to Gravely, any such implied warranty is limited to the duration of this express warranty.

Form: GLW2-122002



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 **WARNING** 

The engine exhaust from this product contains chemicals known to the State of California to cause cancer, birth defects or other reproductive harm.

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