

# SCAG<sup>®</sup>

## POWER EQUIPMENT

# *OPERATOR'S MANUAL*



## **Liberty Z**

**Models: SZL48-22KT  
SZL52-24KT**

Congratulations on owning a Scag mower! This manual contains the operating instructions and safety information for your Scag mower. Reading this manual can provide you with assistance in maintenance and adjustment procedures to keep your mower performing to maximum efficiency. The specific models that this book covers are listed on the inside cover. Before operating your machine, please read all the information enclosed.



# WARNING

## **FAILURE TO FOLLOW SAFE OPERATING PRACTICES MAY RESULT IN SERIOUS INJURY OR DEATH.**

- Read this manual completely as well as other manuals that came with your mower.
- DO NOT operate on steep slopes. To check a slope, attempt to back up it (with the cutter deck down). If the machine can back up the slope without the wheels slipping, reduce speed and use extreme caution.
- Under no circumstances should the machine be operated on slopes greater than 15 degrees. ALWAYS FOLLOW OSHA APPROVED OPERATION.
- Stay two cut widths away from slopes, drop offs, ditches and retaining walls.
- DO NOT mow on wet grass. Wet grass reduces traction and steering control.
- Keep all shields in place, especially the grass discharge chute.
- Before performing any maintenance or service, stop the machine and remove the spark plug wire and ignition key.
- If a mechanism becomes clogged, stop the engine before cleaning.
- Keep hands, feet and clothing away from power-driven parts.
- Keep others off the mower (only one person at a time).

## **REMEMBER - YOUR MOWER IS ONLY AS SAFE AS THE OPERATOR!**

**HAZARD CONTROL AND ACCIDENT PREVENTION ARE DEPENDENT UPON THE AWARENESS, CONCERN, PRUDENCE, AND PROPER TRAINING OF THE PERSONNEL INVOLVED IN THE OPERATION, TRANSPORT, MAINTENANCE, AND STORAGE OF THE EQUIPMENT.**

**This manual covers the operating instructions and illustrated parts list for:**

**SZL48-22KT**

**with a serial number of**

**K7100001 to K7199999**

**SZL52-24KT**

**with a serial number of**

**K7200001 to K7299999**

**Always use the entire serial number listed on the serial number tag when referring to this product.**

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# GENERAL INFORMATION

## 1.1 INTRODUCTION

Your mower was built to the highest standards in the industry. However, the prolonged life and maximum efficiency of your mower depends on you following the operating, maintenance and adjustment instructions in this manual.

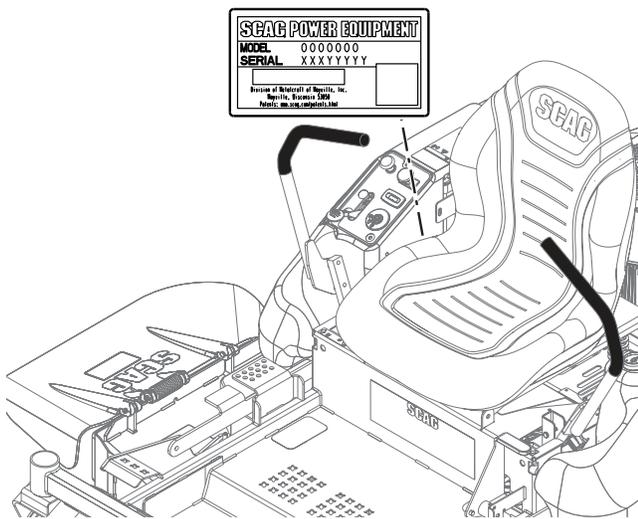
If additional information or service is needed, contact your Scag Power Equipment Dealer.

We encourage you to contact your dealer for repairs. All Scag dealers are informed of the latest methods to service this equipment and provide prompt and efficient service in the field or at their service shop. They carry a full line of Scag service parts.

**THE REPLACEMENT OF ANY PART ON THIS PRODUCT BY OTHER THAN THE MANUFACTURER'S AUTHORIZED REPLACEMENT PART MAY ADVERSELY AFFECT THE PERFORMANCE, DURABILITY OR SAFETY OF THIS PRODUCT.**

**USE OF OTHER THAN ORIGINAL SCAG REPLACEMENT PARTS WILL VOID THE WARRANTY.**

When ordering parts, always give the model and serial number of your mower. The serial number plate is located on the right side on the frame. Lift the seat to locate the serial number plate. See Figure 1-1.



**Figure 1-1. Mower Serial Number Plate Location**

**USE ONLY SCAG APPROVED ATTACHMENTS AND ACCESSORIES.**

Attachments and accessories manufactured by companies other than Scag Power Equipment are not approved for use on this machine. See Section 8, Paragraph 8-1.

## **WARNING**

**For pictorial clarity, some illustrations and figures in this manual may show shields, guards or plates open or removed. Under no circumstances should your mower be operated without these devices in place.**

All information is based upon product information available at the time of approval for printing. Scag Power Equipment reserves the right to make changes at any time without notice and without incurring any obligation.

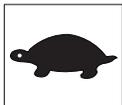
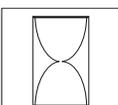
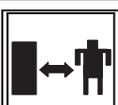
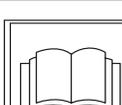
## 1.2 DIRECTION REFERENCE

The “Right” and “Left”, “Front” and “Rear” of the machine are referenced from the operator’s right and left when seated in the normal operating position and facing the forward travel direction.

## 1.3 SERVICING THE ENGINE AND DRIVE TRAIN COMPONENTS

The detail servicing and repair of the engine, hydraulic pumps and gearboxes are not covered in this manual; only routine maintenance and general service instructions are provided. For service of these components during the limited warranty period, it is important to contact your Scag dealer or find a local authorized servicing agent of the component manufacturer. Any unauthorized work done on these components during the warranty period may void your warranty.

### 1.4 SYMBOLS

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	Choke		Transmission
	Parking Brake	 <small>48071S</small>	Spinning Blade
	On/Start		Spring Tension on Idler
	Off/Stop		Oil
	Falling Hazard		Thrown Object Hazard
	Fast		Slow
	Continuously Variable - Linear		Cutting Element - Basic Symbol
 <small>481039S</small>	Pinch Point		Cutting Element - Engage
	Hour meter/Elapsed Operating Hours		Cutting Element - Disengage
	Keep Bystanders Away		Read Operator's Manual

## SAFETY INFORMATION

### 2.1 IMPORTANT SAFETY PRACTICES FOR RIDE-ON MOWERS

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

### 2.2 INTRODUCTION

Your mower is only as safe as the operator. Carelessness or operator error may result in serious bodily injury or death. Hazard control and accident prevention are dependent upon the awareness, concern, prudence, and proper training of the personnel involved in the operation, transport, maintenance and storage of the equipment. Make sure every operator is properly trained and thoroughly familiar with all of the controls before operating the mower. The owner/user can prevent and is responsible for accidents or injuries occurring to themselves, other people or property.

**READ, UNDERSTAND AND FOLLOW ALL INSTRUCTIONS ON THE MACHINE AND IN THIS OPERATOR'S MANUAL BEFORE ATTEMPTING TO START YOUR MOWER.**

A replacement manual is available from your authorized Scag Service Dealer or by contacting Scag Power Equipment, Service Department at P.O. Box 152, Mayville, WI 53050 or contact us via the Internet at [www.scag.com](http://www.scag.com). The manual for this machine can be downloaded by using the model and serial number or use the contact form to make your request. Please indicate the complete model and serial number of your Scag product when requesting replacement manuals.

### 2.3 SIGNAL WORDS



This symbol means **“Attention! Become Alert! Your Safety is Involved!”** The symbol is used with the following signal words to attract your attention to safety messages found on the decals on the machine and throughout this manual. The message that follows the symbol contains important information about safety. To avoid injury and possible death, carefully read the message! Be sure to fully understand the causes of possible injury or death.

#### SIGNAL WORD:

It is a distinctive word found on the safety decals on the machine and throughout this manual that alerts the viewer to the existence and relative degree of the hazard.

The signal word “DANGER” denotes that an extremely hazardous situation exists on or near the machine that could result in high probability of death or irreparable injury if proper precautions are not taken.

The signal word “WARNING” denotes that a hazard exists on or near the machine that can result in injury or death if proper precautions are not taken.

The signal word “CAUTION” is a reminder of safety practices on or near the machine that could result in personal injury if proper precautions are not taken.

Your safety and the safety of others depends significantly upon your knowledge and understanding of all correct operating practices and procedures of this machine.

### 2.4 CHILDREN

Tragic accidents can occur if the operator is not alert to the presence of children. Children are often attracted to the machine and mowing activity. They don't understand the dangers of rotating blades or the fact that the operator is unaware of their presence. Never assume that the children will remain where you saw them.

1. NEVER allow children to operate this riding mower.
2. Do not mow when children and/or others are present. Keep children indoors, out of the mowing area and in the watchful care of a responsible adult, other than the operator, when the mower is being operated.

3. Be alert and turn machine off if a child or other person enters the area.
4. DO NOT allow children to ride or play on the machine, it is not a toy.
5. Instruct all operators not to give children a ride on machine or attachment.
6. NEVER carry children on a machine or attachment, even with the blades off.
7. DO NOT tow children in a cart or trailer. They can fall off and be seriously injured or interfere with safe machine operation.
8. Children who have been given rides in the past may suddenly appear in the mowing area for another ride and be run over or backed over by the machine.
9. NEVER use the machine as a recreational vehicle or to entertain children.
10. Use extreme care when approaching blind corners, shrubs, trees, or other objects that may block your view of a child.
11. Before and while backing, look behind and down for small children.

### 2.5 BEFORE OPERATION CONSIDERATIONS

#### **WARNING**

**Check all hydraulic connections for tightness. Inspect all hydraulic hoses and / or lines to insure they are in good condition before operating.**

1. Data indicates operators age 60 years 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.
2. Maintain or replace safety and instruction labels as necessary.
3. Only allow responsible adults who are familiar with the instructions to operate the machine.
4. Be sure area is clear of bystanders before operating. Stop the machine if anyone enters the area.
5. Clear the area to be mowed of objects that could be picked up and thrown by the cutter blades such as rocks, wire, toys, etc.

6. DO NOT carry passengers.
7. DO NOT operate the machine under the influence of alcohol or drugs.
8. If the operator(s) or mechanic(s) cannot read English, it is the owner's responsibility to explain this material to them.
9. DO NOT wear loose fitting clothing. Loose clothing, jewelry or long hair could get tangled in moving parts. Do not operate the machine wearing shorts; always wear adequate protective clothing including long pants. Wearing safety shoes and a helmet is advisable and is required by some local ordinances and insurance regulations.

#### **WARNING**

**Always wear eye and hearing protection when operating. Operating this machine over prolonged periods of time can cause loss of hearing.**

10. Keep the machine and attachments in good operating condition. Keep all shields and safety devices in place. If a shield, safety device or decal is defective or damaged, repair or replace it before operating the machine.
11. Check grass catcher components and discharge guard frequently and replace with manufacturer's recommended parts only, when necessary.
12. Never interfere with the intended function of a safety device or reduce the protection provided by the safety device. Check their proper operation regularly.

#### **WARNING**

**This machine is equipped with an interlock system intended to protect the operator and others from injury. This is accomplished by preventing the engine from starting unless the deck drive is disengaged, the steering control levers are in the neutral position and the operator is in the seat. The system shuts off the engine if the operator leaves the seat with the deck drive engaged and/ or the steering control levers are not in the neutral position and the parking brake is not engaged. Never operate equipment with the interlock system disconnected or malfunctioning.**

## Section 2

13. Test the operation of the safety interlock system. See Section 4.2, Page 13.
14. Be sure the interlock switches are functioning correctly.
15. Equipment must comply with the latest requirements per SAE J137 and/or ANSI/ASAE S279 when driven on public roads.

**- NOTE -**

*If the mower is driven on public roads, it must comply with state and local ordinances as well as SAE J137 and/or ANSI/ASAE S279 requirements. Contact your local authorities for regulations and equipment requirements.*

16. Do not operate without the side discharge chute installed and in the down position or with an optional grass catcher or mulch plate completely installed.
17. Check the blade mounting bolts at frequent intervals for proper tightness.
18. Make sure all hydraulic fluid connections are tight and all hydraulic hoses and lines are in good condition before starting the machine.

### 2.6 SAFE HANDLING OF GASOLINE

To avoid personal injury or property damage, use extreme care in handling gasoline. Gasoline is extremely flammable and the vapors are explosive.

1. See Section 7.4 ENGINE FUEL SYSTEM for fueling procedure.
2. Fuel is flammable; handle it with care. Clean up any spilled fuel immediately. If fuel spills on clothing, change clothing immediately. If fuel is spilled near the machine, DO NOT attempt to start the engine but move the machine away from the area of spillage. Avoid creating any source of ignition until fuel vapors have dissipated.
3. Prevent fire and explosion caused by static electric discharge. Static electric discharge can ignite fuel vapors in an ungrounded fuel container.
4. Never store the machine or fuel container where there is an open flame, spark, or pilot light such as a water heater or other appliances.
5. Extinguish all cigarettes, cigars, pipes, and other sources of ignition.
6. Keep flammable objects (cigarettes, matches, etc.), open flames and sparks away from the fuel tank and fuel container.

7. Use only approved containers. Use only non-metal, portable fuel containers approved by the Underwriter's Laboratory (U.L.) or the American Society for Testing & Materials (ASTM).

### 2.7 OPERATION CONSIDERATIONS

1. Know the function of all controls and how to stop quickly.
2. NEVER operate the machine in a closed area.
3. Keep hands and feet away from cutter blades. Contact can injure.
4. DO NOT put hands or feet near rotating parts or under the machine.
5. Keep clear of the discharge opening.
6. Follow the manufacturer's recommendations for wheel weights and counterweights.



## WARNING

**DO NOT operate on steep slopes. To check a slope, attempt to back up it (with the cutter deck down). If the machine can back up the slope without the wheels slipping, reduce speed and use extreme caution. Under no circumstances should the machine be operated on slopes greater than 15 degrees. See Figure 2-1, Page 7 to determine approximate slope of area to be mowed. ALWAYS FOLLOW OSHA APPROVED OPERATION.**

7. Reduce speed and exercise extreme caution on slopes and in sharp turns to prevent tipping or loss of control. Be especially cautious when changing directions on slopes.
8. Stay two cut widths away from slopes, drop offs, ditches and retaining walls.
9. To prevent tipping or loss of control, start and stop smoothly, avoid unnecessary turns and travel at reduced speed. Use caution when operating the mower on an incline with the optional grass catcher installed.
10. Immediately apply the parking brake if you lose steering control while operating. Inspect the machine and correct the problem before continuing to operate.
11. Never direct the discharge of material toward anyone. Avoid discharging material against a wall or obstruction. Material may ricochet back toward operator.

12. Before attempting to start the engine, with the operator in the seat, disengage power to the cutter deck, place the steering control levers in the neutral position and engage the parking brake.
13. Shut off the engine, remove the ignition key, and wait for all movement to stop before cleaning the machine, removing grass catcher or unclogging the discharge guard.

### **WARNING**

**DO NOT use your hand to dislodge the clogged discharge chute. Use a stick or other device to remove clogged material after the engine has stopped running and the blades have stopped turning.**

14. Be alert for holes, rocks, roots and other hidden hazards in the terrain. Keep away from any drop-offs. Beware of overhead obstructions (low limbs, etc.) and underground obstacles (sprinklers, pipes, tree roots, etc.). Cautiously enter a new area. Be alert for hidden hazards.
15. Disengage power to cutter deck before backing up. Do not mow in reverse unless absolutely necessary and then only after observation of the entire area behind the mower. If you must mow in reverse, maintain a constant lookout to the rear of the machine and mow slowly.
16. DO NOT turn sharply. Use care when backing up.
17. Disengage power to cutter deck before crossing roads, walks or gravel drives.
18. Watch for traffic when operating near or crossing roadways.
19. Mow only in daylight or good artificial light.
20. NEVER raise the deck with the blades engaged.
21. NEVER leave the machine running unattended.
22. Disengage the mower, lower the attachments, set the parking brake, stop the engine, and remove the key before dismounting.
23. Disengage power to the attachments when transporting or when not in use.

24. The machine and attachments should be stopped and inspected for damage after striking a foreign object, and damage should be repaired before restarting and operating the machine.

### **CAUTION**

**Do not touch the engine or the muffler while the engine is running or immediately after stopping. These areas may be hot enough to cause a burn.**

### **DANGER**

**DO NOT run the engine inside a building or a confined area without proper ventilation. Exhaust fumes are hazardous and contain carbon monoxide which can cause brain injury and death.**

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

## 2.8 TRANSPORTING THE MOWER

1. Transport the mower using a heavy duty trailer or truck. Insure the trailer or truck has all of the necessary lighting and markings as required by laws, codes, and ordinances. Secure a trailer with a safety chain.
2. Be cautious when loading and unloading onto trailers or trucks. Use only a full width ramp. Ramp angle should be no more than 15 degrees. Back up the ramp and drive down forward.
3. When transporting the mower, make sure the park brake is engaged, the steering control levers are in the neutral position, the engine is off with the key removed, and the wheels have been blocked.
4. Tie the mower down securely using straps, chains, cable, or ropes. Both front and rear straps must be directed down and outward from machine.

## Section 2

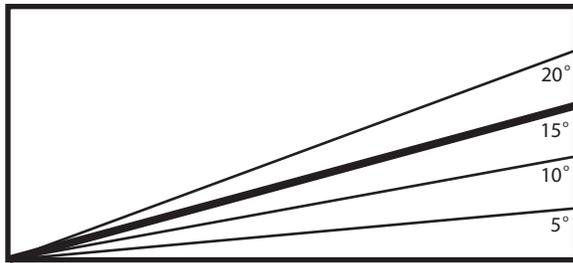


Figure 2-1.

### **WARNING**

**Be cautious when loading and unloading onto trailers or trucks.**

**Use only a full width ramp.**

**Ramp angle should be no more than 15 Degrees. See Figure 2-1 to help determine approximate slope.**

**Back up the ramp and drive down forward.**

### 2.9 MAINTENANCE CONSIDERATIONS & STORAGE

1. Never make adjustments to the machine with the engine running unless specifically instructed to do so. If the engine is running, keep hands, feet, and clothing away from moving parts.
2. Disengage drives, lower implement, set parking brake, stop engine and remove key or disconnect spark plug wire to prevent accidental starting of the engine when servicing or adjusting the machine. Wait for all movement to stop before adjusting, cleaning or repairing.
3. Disconnect battery or remove spark plug wire before making any repairs. Disconnect the negative terminal first and the positive last. Reconnect the positive first and the negative last.
4. Keep all nuts, bolts and screws tight, to ensure the machine is in safe working condition. Check blade mounting bolts frequently to be sure they are tight.
5. Do not change the engine governor settings or overspeed the engine. See the engine operator's manual for information on engine settings.

6. To reduce fire hazard, keep the cutting units, drives, muffler and engine free of grass, leaves, excessive grease, oil and dirt. Clean up oil or fuel spillage and remove any fuel soaked debris. Allow the machine to cool before storing.
7. Park the machine on level ground and engage the parking brake.
8. NEVER allow untrained personnel to service the machine.
9. Use care when checking blades. Use a Blade Buddy, wrap the blade(s) or wear gloves and USE CAUTION when servicing blades. Only replace blades. NEVER straighten or weld blades.
10. Keep all parts in good working condition. Replace all worn or damaged decals.
11. Use jack stands to support components when required.
12. Carefully release pressure from components with stored energy.

### **WARNING**

**Hydraulic fluid is under high pressure and can penetrate skin causing injury. If hydraulic fluid is injected into the skin, it must be surgically removed within a few hours by a doctor or gangrene may result.**

**Keep body and hands away from pinholes or nozzles that eject hydraulic fluid under high pressure. Use paper or cardboard and not hands to search for leaks.**

**Safely relieve all pressure from the hydraulic system by placing the control levers in the neutral lock position and shutting off the engine before performing any work on the hydraulic system.**

**If you need service on your hydraulic system, please see your authorized Scag dealer.**

13. Let the engine cool before storing.
14. DO NOT store the machine near an open flame.
15. Shut off fuel while storing or transporting.
16. DO NOT store fuel near flames or drain indoors.

17. Charge batteries in an open, well ventilated area, away from spark and flames. Unplug charger before connecting or disconnecting from battery. Wear protective clothing and use insulated tools.

## **2.10 USING A SPARK ARRESTOR**

The engine in this machine is not equipped with a spark arrestor muffler. It is in violation of California Public Resource Code Section 4442 to use or operate this engine on or near any forest covered, brush covered or grass covered land unless the exhaust system is equipped with a spark arrestor meeting any applicable local or state laws. Other states or federal areas may have similar laws. Check with your state or local authorities for regulations pertaining to these requirements.

## **2.11 SPARK IGNITION SYSTEM**

This spark ignition system complies with Canadian ICES-002.

## Section 2

### 2.12 SAFETY DECAL LOCATION

**START/DRIVE PROCEDURE**

- Engage parking brake
- Disengage mower deck drive
- Move control handles to neutral Lock position
- Start engine
- Release parking brake
- Select forward or reverse with hydro control handles

**WARNING**

**AVOID SERIOUS INJURY OR DEATH**

- Read the Operator's Manual
- Solicite el etiquetado en español a un distribuidor Scag
- Operate only on slopes you can back up and never on slopes greater than 15 degrees
- If machine stops going uphill, stop blades and back down slowly
- Avoid sudden turns
- Do not mow when children or others are around
- Never carry children even with blades off
- Look down and behind before and while backing
- Keep safety devices (guards, shields, switches, etc.) in place and working
- Remove objects that could be thrown by the blades
- Trained operators only 483443

**IMPORTANT ADJUSTMENT PROCEDURES** READ OPERATOR'S MANUAL FOR MORE DETAILS

Check tire pressure - Drive tires - 8 psi  
Caster tires - 25 psi

**FREE WHEEL OPERATION**

To move machine without running engine, pull both dump valve bars back and over to latch, pull bars over and push forward to re-engage wheels for normal operation.

**HYDRAULIC FLUID LEVEL**

Check hydraulic fluid level while fluid is cool. Fluid level should be up to "FULL COLD" line with 20W50 motor oil only.

**IMPORTANT**

Do not overfill. Room for oil fluid expansion must be allowed or resulting expansion may cause leaks in the system.

**TRACKING ADJUSTMENT**

Control Lever

Stop Bolt

If machine pulls to right, adjust LH control stop bolt (R threaded) to slow left wheel down. If machine pulls to left, adjust RH control stop bolt (L threaded) to slow right wheel down.

485371

**DANGER**

**SPINNING BLADES**

**KEEP CLEAR**

**BLADE CONTACT & THROWN OBJECTS CAN INJURE**

483505

483505

**WARNING**

**INSTALL BELT COVER BEFORE OPERATING MACHINE**

READ OPERATOR'S MANUAL 483402

483402

**DANGER**

**SPINNING BLADES**

**KEEP CLEAR**

**BLADE CONTACT & THROWN OBJECTS CAN INJURE**

483505

483505

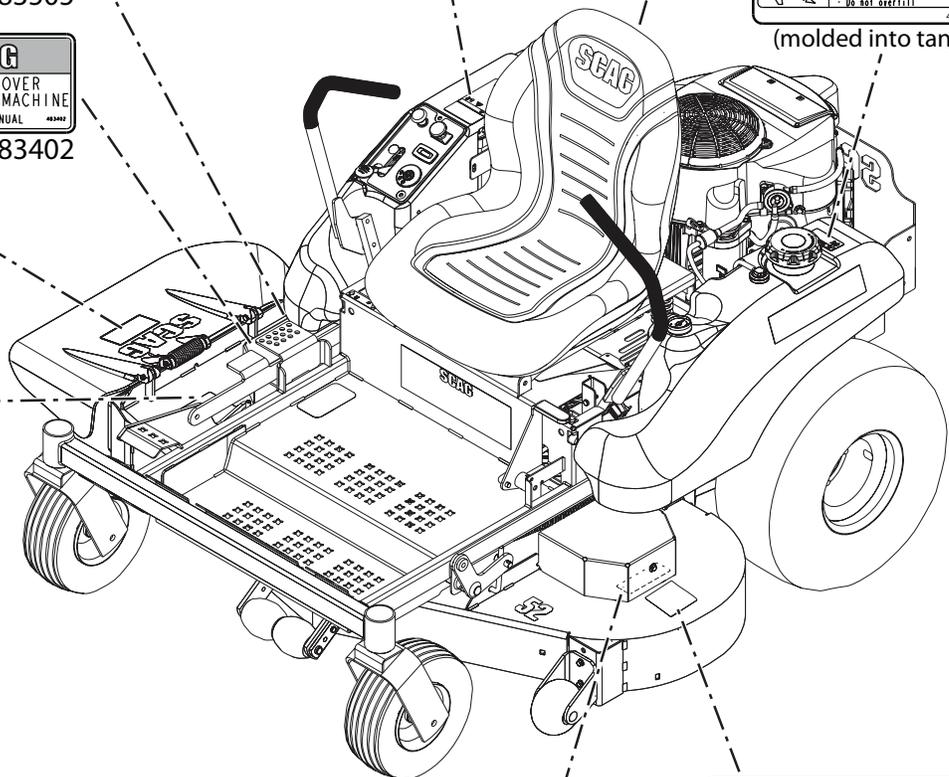
**WARNING**

**ROTATING BLADES AND BELTS**

- Keep hands, feet & clothing clear
- Keep all guards in place
- Shut off engine & disengage blade clutch before servicing
- Use caution in directing discharge
- Read instruction manual before operating

**DO NOT OPERATE UNLESS GRASS CATCHER, MULCHING KIT OR DISCHARGE CHUTE IS INSTALLED**

483406



**DANGER**

Avoid injury from burns

- Shut off engine
- Allow to cool several minutes
- Remove cap slowly
- Do not overfill!

485667

(molded into tank)

**WARNING**

**INSTALL BELT COVER BEFORE OPERATING MACHINE**

READ OPERATOR'S MANUAL 483402

483402

**DANGER**

**SPINNING BLADES**

**KEEP CLEAR**

**BLADE CONTACT & THROWN OBJECTS CAN INJURE**

483505

483505

### SPECIFICATIONS

#### 3.1 ENGINE

General Type .....	Heavy Duty Industrial/Commercial Gasoline
Model:	
Scag Model SZL48-22KT .....	Kohler KT725
Scag Model SZL52-24KT .....	Kohler KT735
Displacement:	
Kohler KT725 / KT735 .....	725cc
Type .....	4 Cycle Gasoline, Twin Cylinder, Vertical Shaft
Cylinders.....	2 with Cast Iron Sleeves
Governor.....	Mechanical Type with Variable Speed Control Set At 3600 RPM
Idle Speed:	
Kohler .....	1750 RPM
Fuel Pump .....	Integral Fuel Pump with In-Line Fuel Filter
Fuel.....	Non-Leaded Gasoline with a Minimum Octane Rating of 87
Oil Pump.....	Positive Displacement Gerotor™
Starter.....	Electric Starting with Bendix Shift Starter
Belts.....	Kevlar cord. Self-adjusting, Self-tightening

#### 3.2 ELECTRICAL

Battery .....	12 Volt
Charging System.....	Alternator
Charging Output:	
Kohler .....	12 Volt, 12 Amp
System Polarity.....	Negative Ground
Starter.....	12 Volt Electric Ring Gear Type, Key Operated
Interlock Switches.....	Seat, Neutral Control, Mower Engagement (BBC), Parking Brake
Instrument Panel .....	Key Switch, Throttle Lever, Manual Choke, PTO Switch, Hourmeter
Fuses.....	Two (2) 20 Amp

#### 3.3 MOWER

Drive System .....	Hydraulic Drive with Two Hydro-Gear™ Integrated Zero-Turn Axles
Scag Models (SZL48-22KT, SZL52-24KT).....	Hydro-Gear™ ZT-2800
Steering/Travel Control .....	Twin Lever Fingertip Steering Control
	with Individual Control to Each Wheel with Gas Spring Dampers
Parking Brake .....	Lever Actuated Linkage to Brakes on Both Drive Wheel Axles
Wheels:	
(2) Front Caster .....	11 X 4 - 5 Two-Ply
(2) Drive - .....	20 X 10-8 Four-Ply Pneumatic Tubeless, Radius Edge
Tire Pressure:	
Front Caster.....	25 PSI
Drive .....	8 PSI
Fuel Tank .....	Single 5-1/2 Gallon High Density Polyetholene Tank with Large Opening and Fuel Cap
Seat .....	Padded, Thick Cushion with Extra Spring Support
Travel Speed:	
Forward .....	0 up to 7 MPH
Reverse .....	0 up to 4 MPH
-NOTE- The machine will travel up to 8 mph for transport purposes. For best cutting performance the forward travel speed should be adjusted depending upon the cutting conditions.	

## Section 3

### 3.4 CUTTER DECK

Type .....	Floating, Adjustable, Anti-Scalping, Hybrid Design Combines Out-Front and Belly-Mount Designs	
Construction .....	10-Gauge top with 11-Gauge reinforcement throughout the spindle area, 10-Gauge skirt for strength and longevity	
True Cutting Width:		
48 .....		48" (122.0 cm)
52 .....		52" (132.0 cm)
Cutting Height Adjustment.....	Foot-Operated Lever Adjustment from Operator's Seat, 1.5" to 4.5" in 1/4" increments	
Cutter Blades.....	0.197 in. Thick, Milled Edge, Wear Resistant Marbain™	
Blade Engagement.....	Electric Blade Engagement Clutch with Control Panel Switch Connected to the Cutter Deck through a Belt.	
Discharge Opening.....	Extra Wide Discharge Opening with Spring-Loaded Discharge Chute	
Discharge Chute.....	Black, Polypropylene (Plastic), Flexible	
Spindles.....	Heavy-Duty Spindle Shaft, Cast Aluminum Housing, Sealed Ball Bearing, Maintenance-Free	
Spindle Pulleys.....	Split Steel	
Cutter Deck Belts.....	B-section with Kevlar Cord. Self-Adjusting, Self-Tightening	
Electric Clutch Type .....	Ogura Heavy Duty PTO Clutch Brake	

### 3.5 HYDRAULIC SYSTEM

Hydraulic Oil Filter .....	40 Micron Spin-on Element Type
Hydraulic Expansion Reservoir .....	Nylon

### 3.6 WEIGHTS AND DIMENSIONS

	<b>48</b>	<b>52</b>
Length.....	67.4"	67.4"
Tracking Width .....	47.5"	47.5"
Overall Width w/chute down .....	60.5"	64.5"
Overall Width w/chute up.....	49"	53"
Overall Height.....	43"	43"
Operating Weight.....	610#	640#

### 3.7 PRODUCTIVITY

	<b>48</b>	<b>52</b>
Cutting Width .....	48"	52"
Acres Per Day.....	18.6	20.2

The preceding chart will aid you in determining how many acres your Scag mower will cut per day. The chart is an estimate based on 8 hours per day cutting time at 6 MPH with a 20% allowance for overlap and turns.

### OPERATING INSTRUCTIONS

#### **WARNING**

Do not attempt to operate this mower unless you have read this manual. Learn the location and purpose of all controls and instruments before you operate this mower.

#### 4.1 CONTROLS AND INSTRUMENT IDENTIFICATION

Before operating the mower, familiarize yourself with all mower and engine controls. Knowing the location, function and operation of these controls is important for safe and efficient operation of the mower.

- 1. Ignition Switch (Figure 4-1).** The ignition switch is used to start the engine and has three positions; OFF, ON, and START.
- 2. Mower Deck Switch (Figure 4-1).** Used to engage and disengage the mower drive system. Pulling up on the switch will engage the deck drive. Pushing down on the switch will disengage the deck drive.
- 3. Engine Choke Control (Figure 4-1).** Used to start a cold engine.
- 4. Engine Throttle Control (Figure 4-1).** Used to control the engine speed. Pushing the lever forward increases engine speed. Pulling the lever back decreases engine speed. Full back position is the IDLE position. Full forward is the cutting position.

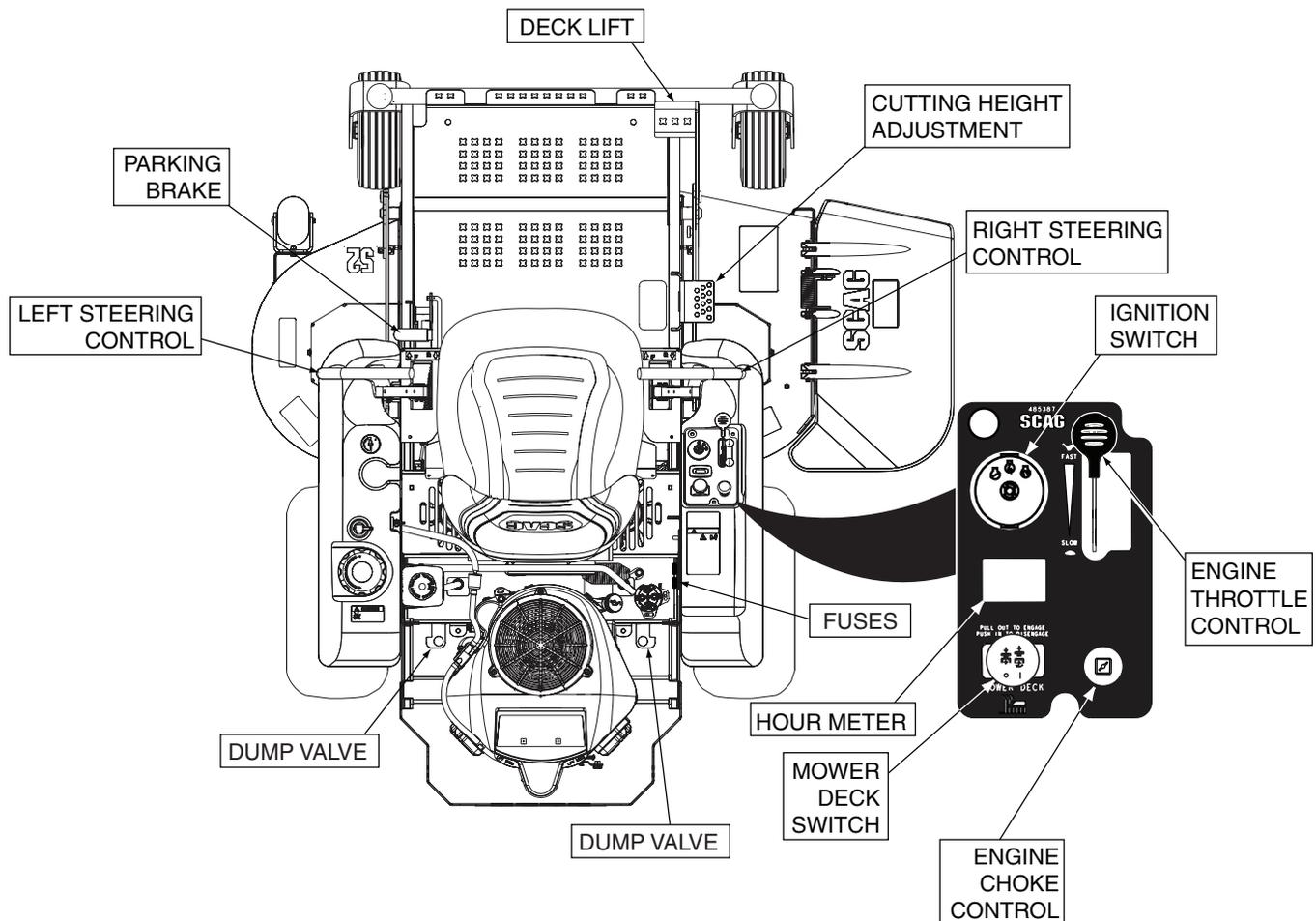
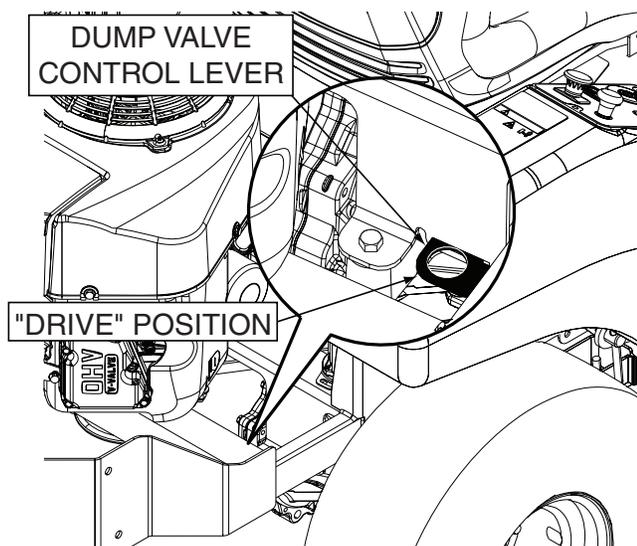


Figure 4-1. Controls and Instruments

## Section 4

5. **Hourmeter (Figure 4-1).** Indicates the number of hours the engine has been operated. It operates whenever the engine is running. Has preset maintenance reminders for engine and hydraulic system oil changes. Will start flashing scheduled maintenance 2 hours before preset time and continue flashing until 2 hours after. Automatically resets.
6. **Fuse Holders (Figure 4-1).** Two 20-amp fuses protect the mower's electrical system. To replace fuses, pull fuse out of the socket and install a new fuse.
7. **Left Steering Control (Figure 4-1).** Used to control the mower's left wheel when traveling forward or reverse.
8. **Right Steering Control (Figure 4-1).** Used to control the mower's right wheel when traveling forward or reverse.
9. **Parking Brake Control (Figure 4-1).** Used to engage and disengage the parking brakes. Pull the lever back to engage the parking brakes. Push the lever forward to disengage the parking brakes.
10. **Dump Valve Control Levers (Figure 4-2).** Located on the left and right side at the back of the unit, used to "free-wheel" the mower. Pushing the levers forward (towards the front of the mower) allows the unit to move under hydraulic power. Pulling the levers backward and locking in the notch (towards the rear of the mower and inward) allows the mower to be moved by hand (free-wheeling).



**Figure 4-2. Dump Valve Control**

11. **Deck Lift Foot Lever (Figure 4-1).** Used to raise and lower the cutter deck.
12. **Cutting Height Adjustment (Figure 4-1).** Used to set the cutter deck at the desired cutting height.

### 4.2 SAFETY INTERLOCK SYSTEM

The mower is equipped with a safety interlock system that prevents the engine from starting unless the deck drive is disengaged, the steering control levers are in the neutral position and the operator is in the seat. The interlock system shuts off the engine if the operator leaves the seat with the steering control levers not in the neutral position and/or the cutter blades engaged and the parking brake not engaged.

## ⚠ WARNING

**Never operate the mower with the interlock system disconnected or malfunctioning. Do not disengage or bypass any switch; injury to yourself and others or property damage could result.**

Test the safety interlock system before you use the machine each time. If the safety interlock system does not operate as described below, contact your local Scag Power Equipment Dealer immediately for repair of the safety interlock system.

1. While sitting on the seat, with the control levers in the neutral lock position, engage the deck drive by pulling the yellow switch.
2. Try starting the engine; the engine should not crank.
3. While sitting in the seat, disengage the deck drive by pushing the yellow switch to OFF.
4. Move either steering control lever to the center and out of the neutral lock position.
5. Try starting the engine; the engine should not crank.
6. Repeat steps 4 and 5 with the other steering control lever.
7. While sitting in the seat, move the deck drive switch to OFF, lock the steering control levers in the neutral position and engage the parking brake.
8. Start the engine.

9. While the engine is running, move either steering control lever to the center and out of the neutral lock position.
10. The engine should STOP. Repeat steps 7 through 9 with the other steering control lever.
11. While sitting in the seat, move the deck drive switch to OFF, lock the steering control levers in the neutral position and engage the parking brake.
12. Start the engine.
13. While the engine is running, release the parking brake, and rise slightly from the seat.
14. The engine should STOP.
15. While sitting in the seat, move the deck drive switch to OFF, lock the steering control levers in the neutral position and engage the parking brake.
16. Start the engine.
17. While the engine is running, move the steering control levers to the center and out of the neutral lock position, engage the deck drive by pulling the yellow switch, and rise slightly from the seat.
18. The engine should STOP.

### 4.3 INITIAL RUN-IN PROCEDURES

#### FIRST DAY OF USE OR APPROXIMATELY 20 HOURS

1. Check all belts for proper alignment and wear at 2, 4 and 8 hours.
2. Change the engine oil and oil filter after the first 20 hours of operation. (See Section 7.4.)
3. Check hydraulic oil level in reservoir. (See Section 7.3.)
4. Check for loose hardware. Tighten as needed.
5. Check interlock system for proper operation. (See Section 4.2.)
6. Check tire pressure. Adjust pressure if necessary. (See Section 7.10.)

### 4.4 STARTING THE ENGINE

#### CAUTION

**DO NOT USE STARTING FLUIDS. Use of starting fluids in the air intake system may be potentially explosive or cause a “runaway” engine condition that could result in engine damage and/or personal injury.**

1. Be sure the fuel shutoff valve, located behind and to the left of the operator's seat, is completely open.
2. Sit in the operator's seat and place the steering control levers in the neutral position.
3. Engage the parking brake.
4. Place the PTO switch in the disengaged position.
5. If the engine is cold, choke the engine as needed.
6. Move the engine throttle control to about half engine speed.
7. Turn the ignition key to the START position and release the key as soon as the engine starts. Do not hold the key in the START position for more than 15 seconds at a time. Allow at least 60 seconds between each cranking attempt to prevent overheating of the starter motor. Prolonged cranking can damage the starter motor and shorten battery life.
8. Allow engine to warm before operating the mower.

### 4.5 GROUND TRAVEL AND STEERING

#### **- IMPORTANT -**

*If you are not familiar with the operation of a machine with lever steering and/or hydrostatic transmissions, the steering and ground speed operations should be learned and practiced in an open area, away from buildings, fences, or obstructions.*

*Learn the operation on flat ground before operating on slopes.*

*Start practicing with a slow engine speed and slow forward travel.*

*Learn to feather the steering controls to obtain a smooth operating action.*

## Section 4

Practice operating the mower until you are comfortable with the controls before proceeding to mow.

### FORWARD TRAVEL

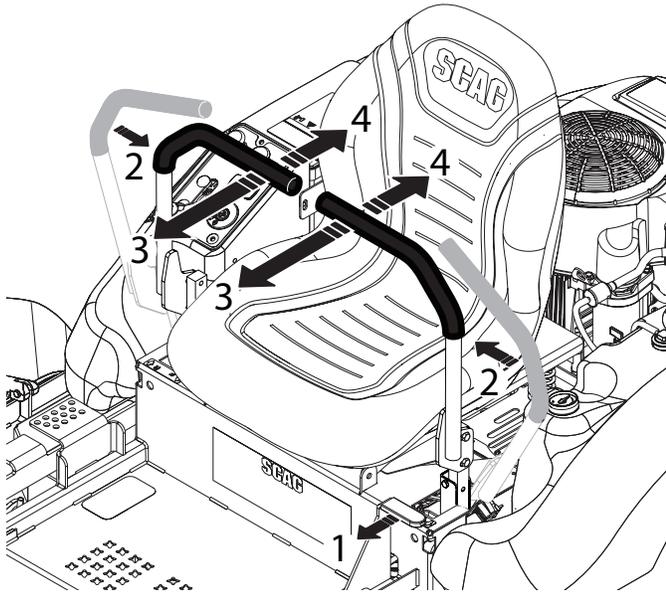


Figure 4-3. Travel Controls

1. Release parking brake.
2. Move control handles out of neutral.
3. Forward travel.
4. Reverse travel.

To travel forward with the mower, slowly push the steering control levers forward an equal distance. The further the steering control levers are pushed forward the greater the forward speed will be. To increase the speed, push the steering control levers further forward and to decrease the speed, pull the steering control levers back.

To stop the forward travel, pull the steering control levers back to the neutral position.

To steer the mower left while traveling forward, pull the left steering lever back. The further the lever is pulled back, the quicker the mower will turn left.

To steer the mower right while traveling forward, pull the right steering control lever back. The further the lever is pulled back, the quicker the mower will turn right.

### - NOTE -

Smooth operation of the steering levers will produce smooth mower operation. While learning the operation of the steering controls, keep the travel speed low.

### - IMPORTANT -

Do not travel forward over a curb. The mower will hang up on the curb. Raise the deck and travel backwards over the curb at a 45 degree angle. (See Figure 4-1 item 12 for cutter deck raising description.)

### REVERSE TRAVEL

## ⚠ CAUTION

Disengage power to the mower before backing up. Do not mow in reverse unless absolutely necessary and then only after observation of the entire area behind the mower.

## ⚠ CAUTION

Before backing up, observe the rear for persons and obstructions. Clear the area before backing up. Possible injury or property damage could occur.

To travel in reverse, pull levers inward out of the neutral lock position and pull both handles back. Keep the travel speed low while traveling in reverse.

### - NOTE -

The mower may not travel straight in reverse. Slight adjustments may need to be made using the steering controls.

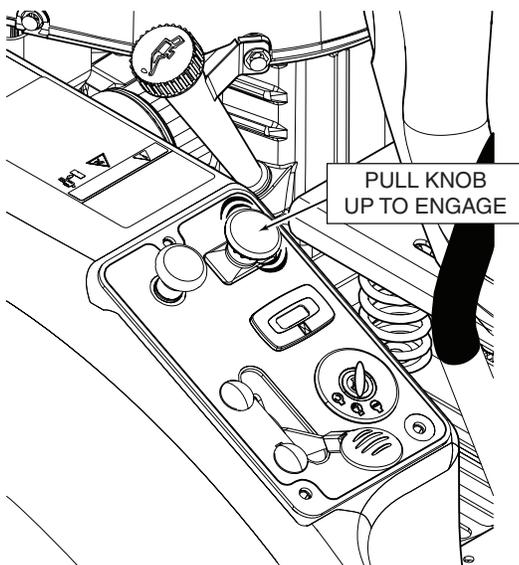
To steer left while traveling in reverse, allow the left steering control lever to move forward. The further the control is allowed to move forward, the quicker the mower will turn left.

To steer right while traveling in reverse, allow the right steering control lever to move forward. The further the control is allowed to move forward, the quicker the mower will turn right.

To stop the reverse travel, allow the steering control levers to return to the neutral position. If the mower is to be parked, place the handles in the neutral lock position and engage the parking brake.

### 4.6 ENGAGING THE DECK DRIVE (CUTTER BLADES)

1. Set the throttle at about 3/4 speed. Do not attempt to engage the deck drive at high speed as this shortens the electric clutch life — use only moderate engine speed when engaging the deck drive.
2. Engage the deck drive by pulling out on the yellow switch, located on the instrument panel, to the engage position. See Figure 4-4.



**Figure 4-4. Cutter Engage Switch**

**- NOTE -**

*A squealing noise may be heard when engaging or disengaging the deck drive. It is caused by the electric clutch plates meshing as the mower comes up to speed. This is normal.*

3. To disengage the deck drive, push the switch in to the disengage position.
4. Always operate the engine at full throttle to properly maintain cutting speed. If the engine starts to lug down, reduce the forward speed and allow the engine to operate at maximum RPM.

### 4.7 SLOPE OPERATION

Slopes are a major factor related to loss of control and tip over accidents, which can result in severe injury or death. Operation on all slopes requires extra caution. If you can not back up a slope or feel uneasy, do not mow it.

## **WARNING**

**DO NOT operate on steep slopes. To check a slope, attempt to back up it (with the cutter deck down). If the machine can back up the slope without the wheels slipping, reduce speed and use extreme caution. Under no circumstances should the machine be operated on slopes greater than 15 degrees. See Figure 2-1, Page 7 to help determine approximate slope of area to be mowed. ALWAYS FOLLOW OSHA APPROVED OPERATION.**

1. This mower has been designed for good traction and stability under normal mowing conditions. However, caution must be used when traveling on slopes, especially when the grass is wet.
2. DO NOT mow wet grass. Wet grass reduces traction and steering control.
3. Stay two cut widths away from slopes, drop offs, ditches and retaining walls.
4. Watch for holes, ruts, bumps, rocks, or other hidden objects. Uneven terrain could overturn the machine. Tall grass can hide obstacles.
5. Mow up and down slopes, not across.
6. Choose a low ground speed so you will not have to stop while on a slope.
7. Some areas may need to be mowed with a walk-behind mower or string trimmer.
8. To prevent tipping or loss of control, do not start or stop suddenly, avoid unnecessary turns and travel at reduced speed. If tires lose traction, disengage blades and proceed slowly off the slope.
9. Avoid sudden starts when mowing uphill. Sudden starts may cause the machine to tip backwards.
10. Keep all movement on slopes slow and gradual.
11. DO NOT make sudden changes in speed or direction, which could cause the machine to roll over.

## Section 4

12. Loss of traction may occur when traveling down hill. Weight transfers to the front of the machine and may cause the drive wheels to slip causing loss of braking or steering.
13. Keep tires properly inflated.
14. Use caution when operating the mower on an incline with the optional grass catcher or other attachments installed. They can affect the stability of the machine. Do not use on steep slopes.
15. DO NOT stabilize the machine by putting your foot on the ground.

### WARNING

**Reduce speed when turning, operating on slopes, slick or wet surfaces. Allow extra distance to stop.**

**DO NOT mow near drop-offs, ditches or embankments. The machine could suddenly roll over if a wheel goes over the edge or if the edge caves in.**

**Operate the machine smoothly, no sudden turns, starts or stops on a slope.**

**NEVER tow on slopes. The weight of the towed equipment may cause loss of traction and loss of control.**

**DO NOT permit untrained personnel to operate the machine.**

**Be cautious when loading and unloading onto trailers or trucks.**

**Use only a full width ramp.**

**Ramp angle should be no more than 15 degrees. See Figure 2-1 to help determine approximate slope.**

**Back up the ramp and drive down forward.**

### 4.8 PARKING THE MOWER

1. Park the machine on a flat, level surface only. Do not park the machine on an incline.
2. Place the steering control levers in the neutral position.
3. Disengage the cutter blades.
4. Slow the engine to idle speed.
5. Engage the parking brake.
6. Turn the ignition key to the OFF position and remove the key.

### 4.9 AFTER OPERATION

1. Wash the entire mower after each use. Do not use high pressure spray or direct the spray onto electrical components.

#### **- IMPORTANT -**

*Do not wash a hot or running engine. Cold water will damage the engine. Use compressed air to clean the engine if it is hot.*

2. Keep the entire mower clean to inhibit serious heat damage to the engine or hydraulic oil circuit.
3. Check the drive belts for proper alignment and any signs of wear. Correct and adjust if necessary.

### DANGER

**To avoid injury from burns, allow the mower to cool before removing the fuel tank cap and refueling.**

4. After the mower has cooled down, fill the fuel tank with fresh, clean fuel at the end of every day of operation. See Engine Owner's Manual for proper octane requirements.
5. Check the tire pressure. Adjust pressure if necessary.

### 4.10 REMOVING CLOGGED MATERIAL



## DANGER

### ROTATING BLADES

**NEVER PUT YOUR HANDS INTO THE DISCHARGE CHUTE FOR ANY REASON!**

**Shut off the engine and remove the key and only then use a stick or similar object to remove material if clogging has occurred.**

1. If the discharge chute becomes clogged, shut off the engine and remove the ignition key. Using a stick or similar item, dislodge the clogged material. Then resume normal mowing.

### 4.11 MOVING MOWER WITH ENGINE STOPPED

To “free-wheel” or move the mower around without the engine running, place the dump valve levers in the FREE-WHEEL position. See Figure 4-2, page 13. Disengage the parking brake and move the mower by hand. When the machine is in the desired position, engage the parking brake and place the dump valve levers in the DRIVE position. The dump valve levers must be returned to the DRIVE position to drive the mower.

### 4.12 RECOMMENDATIONS FOR MOWING

1. Do not mow with dull blades. A dull blade will tear grass, resulting in poor lawn appearance and reduced mowing power.



## WARNING

**DO NOT operate without Discharge Chute, Mulching Kit, or entire Grass Catcher properly installed.**

2. The discharge chute must not be removed and must be kept in the lowest position to deflect grass clippings and thrown objects downward. Direct the side discharge away from sidewalks or streets to minimize cleanup of clippings. When mowing close to obstacles, direct the discharge away from the obstacles to reduce the chance of property damage by thrown objects.
3. Cut grass when it is dry and not too tall. Do not cut grass too short (cut off 1/3 or less of existing grass for best appearance). Mow frequently.
4. Keep mower and discharge chute clean.
5. When mowing wet or tall grass, mow the grass twice. Raise the mower to the highest setting for the first pass and then make a second pass to the desired height.
6. Use a slow travel speed for trimming purposes.
7. Operate the engine at full throttle for best cutting. Mowing with a lower RPM causes the mower to tear the grass. The engine is designed to be operated at full speed.
8. Use the alternate stripe pattern for best lawn appearance. Vary the direction of the stripe each time the grass is mowed to avoid wear patterns in the grass.

### 4.13 ADJUSTING CUTTING HEIGHT

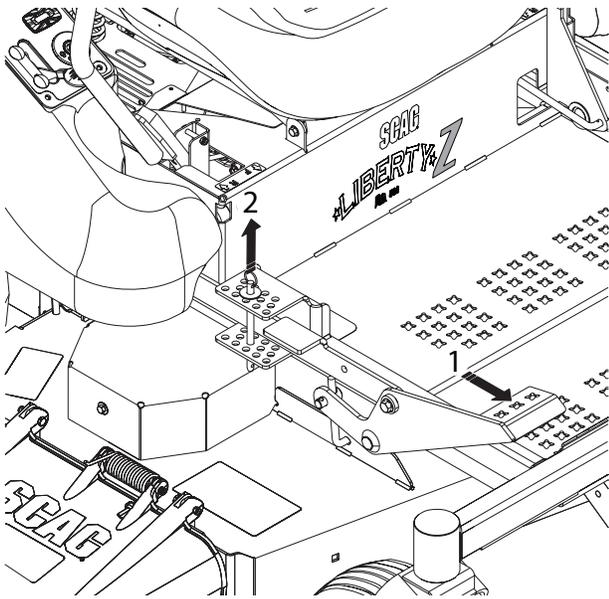
The mower deck can be adjusted from a height of 1-1/2 inches to 4-1/2 inches at 1/4-inch intervals. To adjust the cutting height:



## WARNING

**DO NOT adjust the cutting height with the mower blades rotating. Disengage the power to the cutter blades and then adjust cutting height.**

1. Disengage the power to the cutter blades.
2. Push the cutting height adjustment foot pedal all the way forward using your right foot. See Figure 4-5.



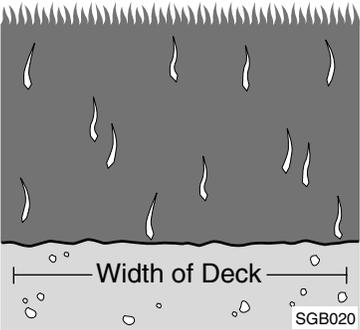
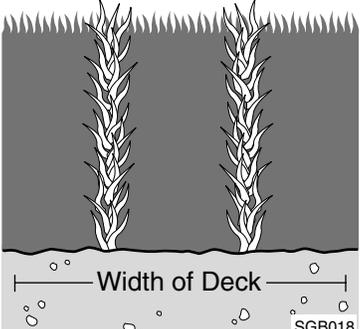
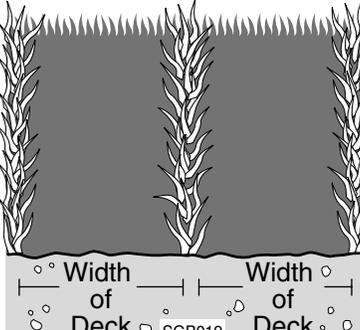
**Figure 4-5. Adjusting Cutting Height**

3. Lift the pin and insert into the cutting height index at the desired cutting height. See Figure 4-5. Slowly release the foot pedal. A deck height decal is located next to the cutting height index as an aid in adjusting the deck to the desired height.

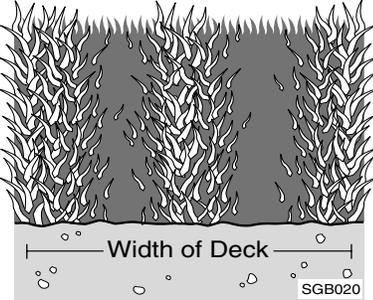
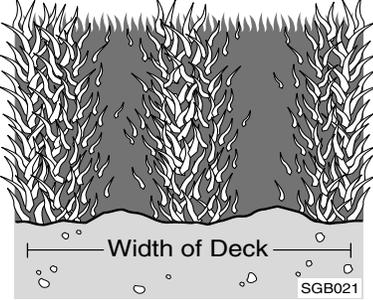
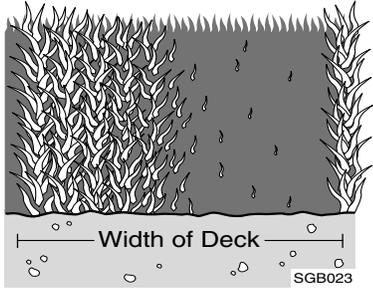
#### **4.14 TOWING (OPTIONAL HITCH ACCESSORY)**

1. NEVER allow children or others in or on towed equipment.
2. Tow only with a machine that has a hitch designed for towing. Do not attach towed equipment except at the hitch point.
3. Follow manufacturer's recommendations for weight limit for towed equipment. 250/lbs. maximum towing weight.
4. NEVER TOW ON SLOPES. The weight of the towed equipment may cause loss of traction and loss of control.
5. Travel slowly and allow extra distance to stop.
6. Zero-turning with a trailer attached could cause damage to the trailer or mower.

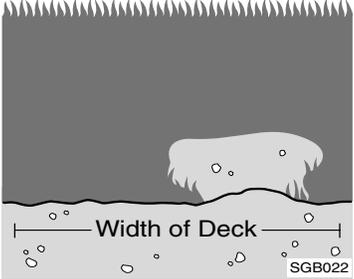
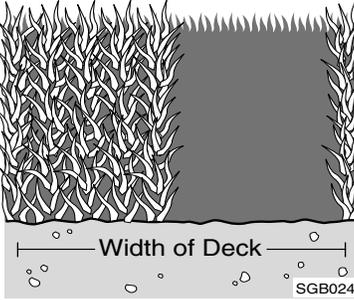
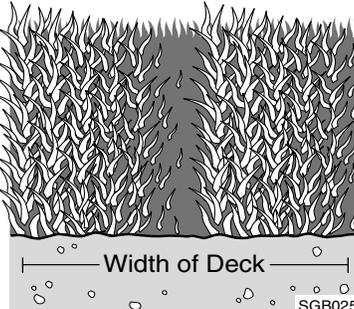
## TROUBLESHOOTING CUTTING CONDITIONS

CONDITION	CAUSE	CURE
<b>STRINGERS - OCCASIONAL BLADES OF UNCUT GRASS</b> 	Low engine RPM	Run engine at full RPM
	Ground speed too fast	Slow speed to adjust for conditions
	Wet grass	Cut grass after it has dried out
	Dull blades, incorrect sharpening	Sharpen blades
	Deck plugged, grass accumulation	Clean underside of deck
	Belts slipping	Adjust belt tension
<b>STREAKING - STRIPS OF UNCUT GRASS IN CUTTING PATH</b> 	Dull, worn blades	Sharpen blades
	Incorrect blade sharpening	Sharpen blades
	Low engine RPM	Run engine at full RPM
	Belt slipping	Adjust belt tension
	Deck plugged, grass accumulation	Clean underside of deck
	Ground speed too fast	Slow speed to adjust for conditions
	Wet grass	Cut grass after it has dried out
	Bent blades	Replace blades
<b>STREAKING - STRIPS OF UNCUT GRASS BETWEEN CUTTING PATHS</b> 	Not enough overlapping between rows	Increase the overlap of each pass

**TROUBLESHOOTING CUTTING CONDITIONS (CONT'D)**

CONDITION	CAUSE	CURE
<p><b>UNEVEN CUT ON FLAT GROUND - WAVY HIGH-LOW APPEARANCE, SCALLOPED CUT, OR ROUGH CONTOUR</b></p>  <p style="text-align: right;">SGB020</p>	Lift worn from blade	Replace blade
	Blade upside down	Mount with cutting edge toward ground
	Deck plugged, grass accumulation	Clean underside of deck
	Too much blade angle (deck pitch)	Adjust pitch and level
	Deck mounted improperly	See your authorized SCAG dealer
	Bent spindle area	See your authorized SCAG dealer
	Dull blade	Sharpen blade
<p><b>UNEVEN CUT ON UNEVEN GROUND-WAVY APPEARANCE, HIGH-LOW SCALLOPED CUT, OR ROUGH CONTOUR</b></p>  <p style="text-align: right;">SGB021</p>	Uneven ground	May need to reduce ground speed, raise cutting height, and/or change direction of cut
<p><b>SLOPING RIDGE ACROSS WIDTH OF CUTTING PATH</b></p>  <p style="text-align: right;">SGB023</p>	Tire pressures not equal	Check and adjust tire pressure
	Wheels uneven	Check and adjust tire pressure
	Deck mounted incorrectly	See your authorized SCAG dealer
	Deck not level side-to-side	Check for level and correct

### TROUBLESHOOTING CUTTING CONDITIONS (CONT'D)

CONDITION	CAUSE	CURE
<p><b>SCALPING - BLADES HITTING DIRT OR CUTTING VERY CLOSE TO THE GROUND</b></p> 	Low tire pressures	Check and adjust pressures
	Ground speed too fast	Slow speed to adjust for conditions
	Cutting too low	May need to reduce ground speed, raise cutting height, change direction of cut, and/or change pitch and level
	Rough terrain	May need to reduce ground speed, raise cutting height, and/or change direction of cut
	Ground speed too fast	Slow speed to adjust for conditions
	Wet grass	Cut grass after it has dried out
<p><b>STEP CUT - RIDGE IN CENTER OF CUTTING PATH</b></p> 	Blades not mounted evenly	Adjust pitch and level
	Bent blade	Replace blade
	Internal spindle failure	See your authorized SCAG dealer
	Mounting of spindle incorrect	See your authorized SCAG dealer
<p><b>SLOPE CUT - SLOPING RIDGES ACROSS WIDTH OF CUTTING PATH</b></p> 	Bent spindle mounting area	See your authorized SCAG dealer
	Internal spindle failure	See your authorized SCAG dealer
	Bent deck housing	See your authorized SCAG dealer

## ADJUSTMENTS

### 6.1 PARKING BRAKE ADJUSTMENT

#### **WARNING**

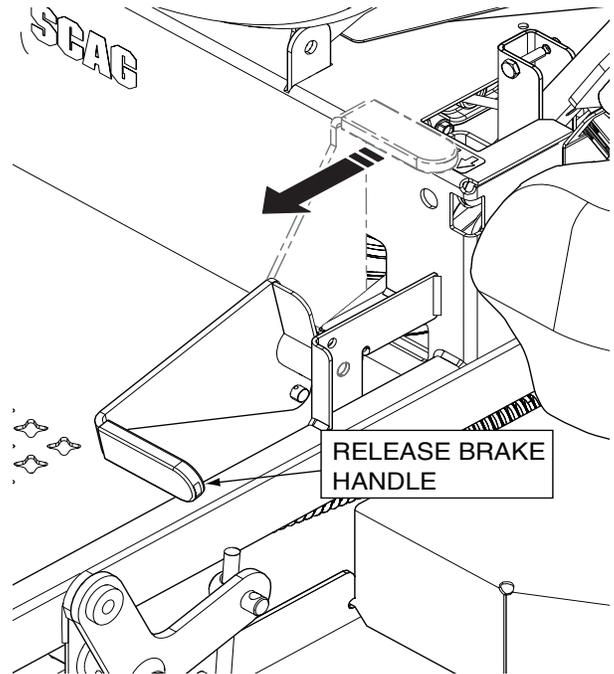
Do not operate the mower if the parking brake is not operable. Possible severe injury could result.

The parking brake linkage should be adjusted whenever the parking brake lever is placed in the “ENGAGE” position and the parking brake will not prevent the mower from moving. If the following procedures do not allow you to engage the parking brake properly, contact your Scag dealer for further brake adjustments.

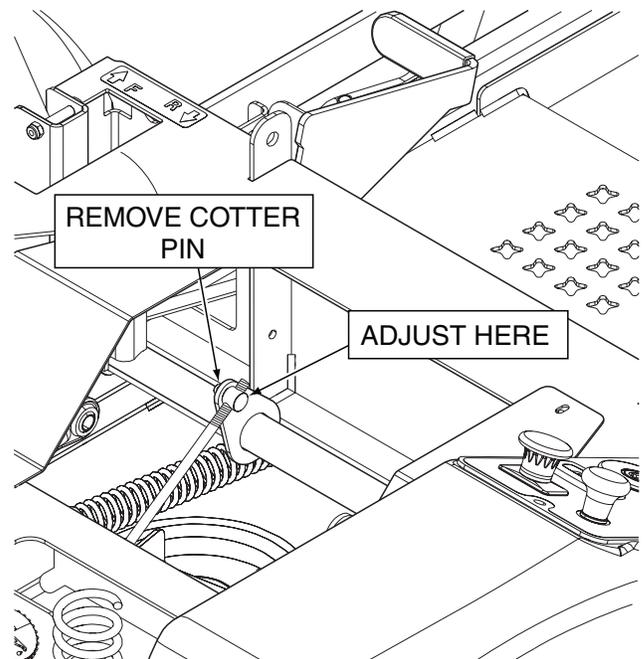
1. Park the machine on a flat surface and block the caster wheels to prevent the machine from moving. Remove the ignition key.
2. Disengage the parking brake. See Figure 6-1.
3. Tilt the seat forward to gain access to the brake control linkage.
4. Remove the cotter pin securing the pivot to the brake control linkage. See Figure 6-2.
5. Push down on the brake control rod until it stops to disengage the parking brake.
6. Adjust the pivot until it meets the mounting hole. Insert the pivot into the brake control linkage and secure with the cotter pin.
7. Repeat steps 4 thru 6 on the other side of the machine.
8. Test the parking brake.

**- NOTE -**

*If this procedure does not achieve proper brake adjustment, please contact your authorized Scag dealer.*



**Figure 6-1. Brake Adjustment**



**Figure 6-2. Brake Rod Adjustment**

### 6.2 TRACKING ADJUSTMENT

#### CAUTION

Stop the engine and remove the key from the ignition before making any adjustments. Wait for all moving parts to come to a complete stop before beginning work.

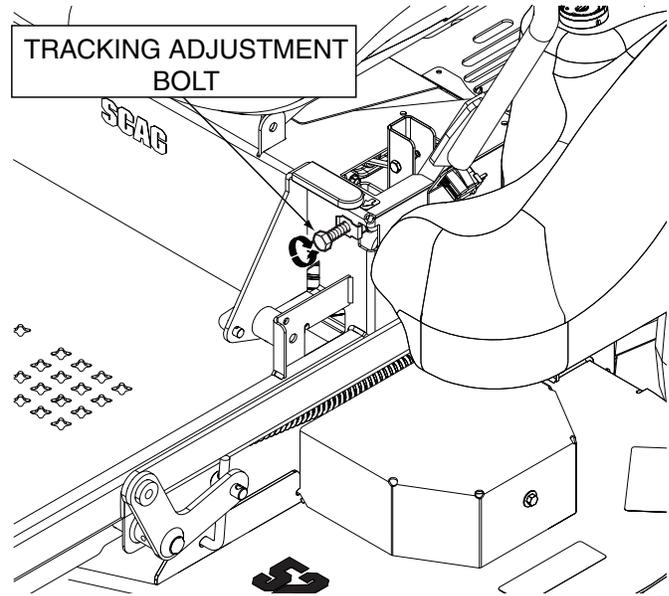
#### CAUTION

The engine and drive unit can get hot during operation causing burn injuries. Allow engine and drive components to cool before making any adjustments.

**- NOTE -**

*Before proceeding with this adjustment, be sure that the caster wheels turn plus pivot freely and that the tire pressure in the drive wheels is correct. If the tire pressure is not correct, the machine will pull to the side with the lower pressure.*

1. If at full speed the mower pulls right, it is an indication that the left wheel is turning faster than the right wheel. To adjust this condition, proceed as follows:
  - A. Stop the machine and place the steering control levers in the neutral position. Turn the tracking adjustment bolt for the LH pump inward (clockwise). This will cause the control rod to stroke the LH pump less, slowing down the LH wheel. See Figure 6-3.
2. If at full speed the mower pulls left, it is an indication that the right wheel is turning faster than the left wheel. To adjust this condition, proceed as follows:
  - A. Stop the machine and place the steering control levers in the neutral position. Turn the tracking adjustment bolt for the RH pump inward (clockwise). This will cause the control rod to stroke the RH pump less, slowing down the RH wheel. See Figure 6-3.



**Figure 6-3. Tracking Adjustment Bolt**

**- NOTE -**

*If making the adjustment as outlined do not correct the tracking or neutral needs to be adjusted, contact your local Authorized Scag Power Equipment Dealer.*

### 6.3 THROTTLE CONTROL AND CHOKE ADJUSTMENTS

These adjustments must be performed by your Authorized Scag Power Equipment Dealer to ensure proper and efficient running of the engine. Should either need adjustment, contact your authorized Scag service center.

### 6.4 BELT ADJUSTMENT

#### WARNING

**Before removing any guards, shut the engine off and remove the ignition key.**

All drive belts are spring loaded and self-tensioning, however after the first 2, 4, 8 and 10 hours of operation, the belts should be checked for proper alignment and wear. Thereafter, check the belts after every 40 hours of operation or weekly, whichever occurs first.

### **WARNING**

If the pump drive belt fails, steering control will be lost which could result in serious injury or death. Replace the pump drive belt as needed or every 400 hours / 2 years, whichever occurs first.

### 6.5 BELT ALIGNMENT

Belt alignment is important for proper performance of your Scag mower. If you experience frequent belt wear or breakage, see your authorized Scag service center for belt adjustment.

### 6.6 CUTTER DECK ADJUSTMENTS

Cutter deck level, pitch and height are set at the factory. However, if these adjustments should ever need to be made, the following procedures will aid in obtaining the proper cutter deck adjustment.

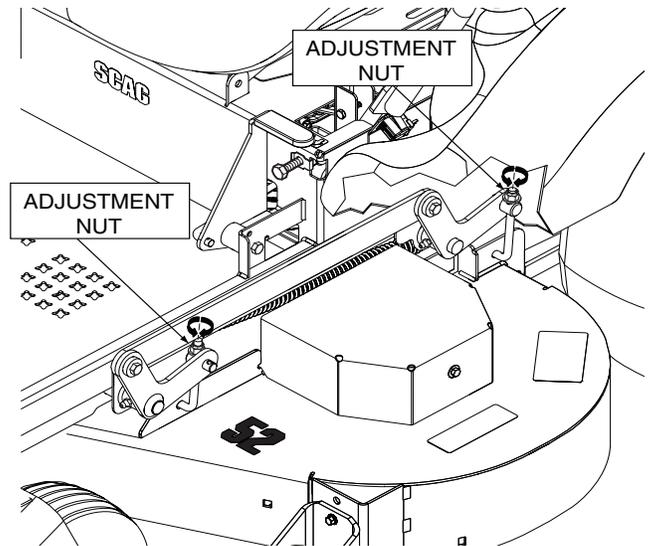
#### - NOTE -

*Before proceeding with the cutter deck adjustments, be sure that all tires are properly inflated. If any of these procedures do not achieve proper cutter deck level, pitch or height, please contact your authorized Scag dealer.*

#### CUTTER DECK LEVEL

The cutter deck should be level from side-to-side for proper cutting performance. To check for level, be sure that the mower is on a flat, level surface, the tires are properly inflated and the cutter deck is set at the most common cutting height that you will use. On the RH side of the machine, check the distance from the top of the cutter deck to the floor. Next check the distance from the top of the cutter deck to the floor on the LH side of the machine. Both measurements should be the same. If the two measurements are different, the cutter deck level must be adjusted as follows:

1. If the cutter deck is lower on one side, locate the elastic stop nuts on the front and rear of the lower side of the cutter deck. See Figure 6-4.



**Figure 6-4. Cutter Deck Level Adjustment**

2. Turn the elastic stop nuts on the front and rear deck level links clockwise until the cutter deck is level between both sides. See Figure 6-4
3. Tighten the two (2) elastic stop nuts to secure the cutter deck in the proper position.

#### CUTTER DECK PITCH

The pitch of the cutter deck should be equal between the front and rear of the cutter deck for proper cutting performance. To check for proper deck pitch, be sure that the mower is on a flat, level surface and the tires are properly inflated.

Check the distance from the top of the cutter deck to the floor at the rear RH side of the cutter deck directly behind the cutter deck hanging link. Next check the distance from the top of the cutter deck to the floor at the front RH side of the cutter deck directly in front of the cutter deck hanging link. The measurement at the front of the cutter deck should be the same as the rear of the deck. Make these measurements at the LH side of the cutter deck also. If the measurement at the front of the deck is not the same, the cutter deck pitch must be adjusted as follows:

1. Loosen the elastic stop nuts securing the deck level links on the front of the cutter deck on both sides. See Figure 6-5 and 6-6.

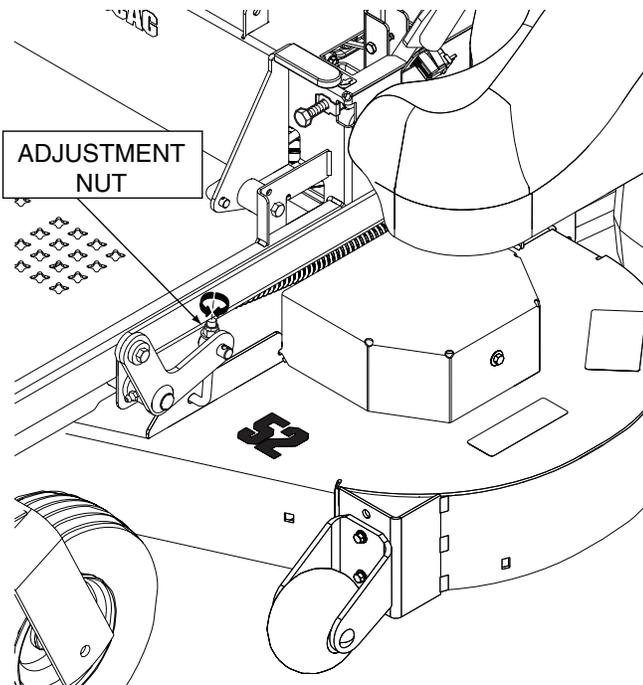
**- NOTE -**

To prevent the cutter deck from teetering, all four (4) cutter deck hanging links must have tension on them. If all four links do not have tension on them and the deck teeters, you must readjust the cutter deck as outlined in the procedures above. All measurements should be taken from the top edge of the deck as the deck has an uneven bottom edge.

### CUTTER DECK HEIGHT

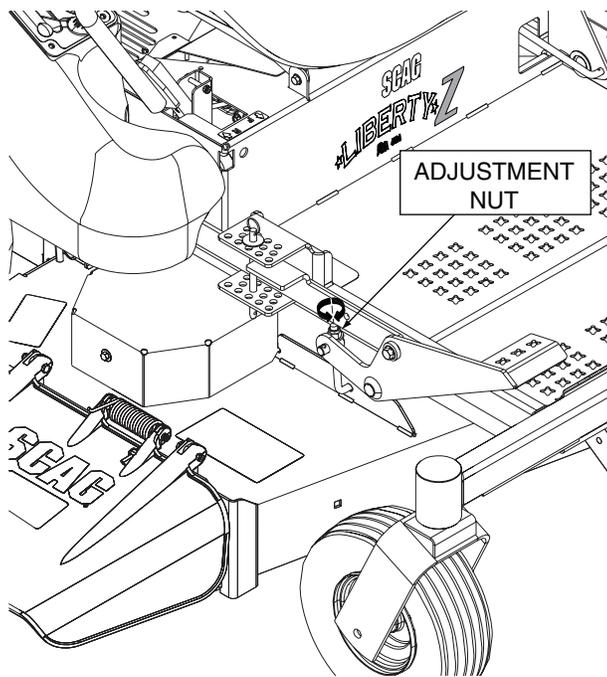
The cutter deck height adjustment is made to ensure that the cutter deck is cutting at the height indicated on the cutting height index gauge. To check for proper deck height, be sure that the mower is on a flat, level surface and the tires are properly inflated.

1. Push on the cutter deck foot pedal, place the cutter deck in the 3" cutting position and lower the cutter deck.
2. Check the measurement from the floor to the cutter blade tip. If the measurement is not 3", an adjustment can be made using the deck hangers.

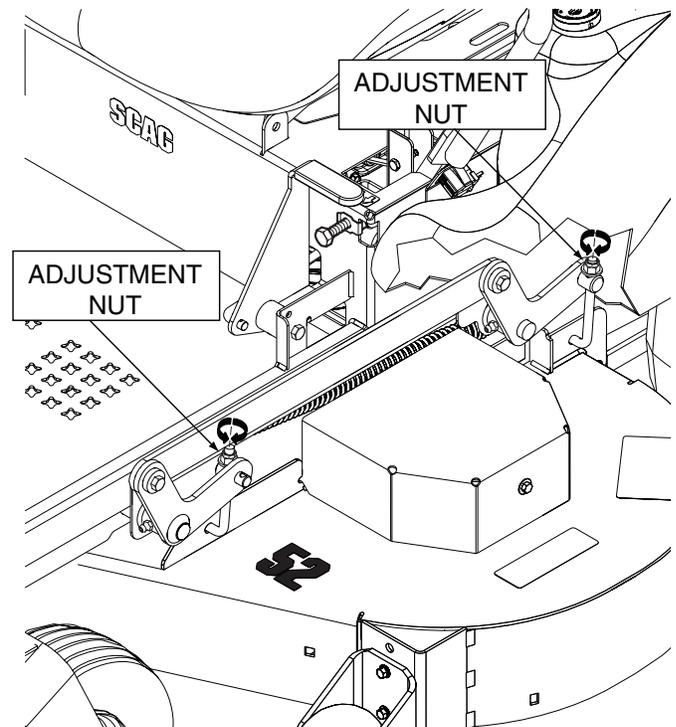


**Figure 6-5. Cutter Deck Pitch Adjustment**

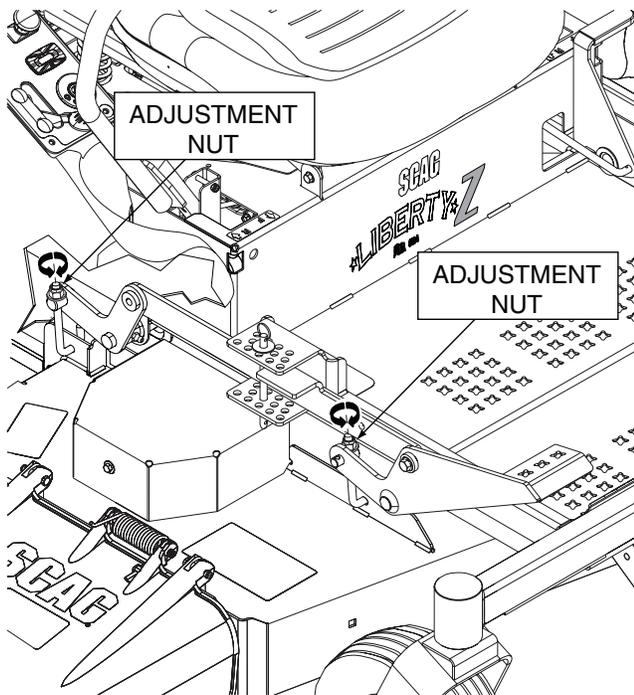
2. Turn the adjustment bolts on both sides either clockwise to raise or counter-clockwise to lower the front of the cutter deck until the measurements are equal. Tighten the elastic stop nuts.



**Figure 6-6. Cutter Deck Pitch Adjustment**



**Figure 6-7. Cutter Deck Height Adjustment - Left Side**

**Section 6**

**Figure 6-8. Cutter Deck Height Adjustment - Right Side**

3. Turn the elastic stop nuts an equal amount of turns either clockwise to raise or counter-clockwise to lower the cutter deck until the measurement at the cutter blade is 3" on both sides of the machine. See Figure 6-7 for the left side and 6-8 for the right side.

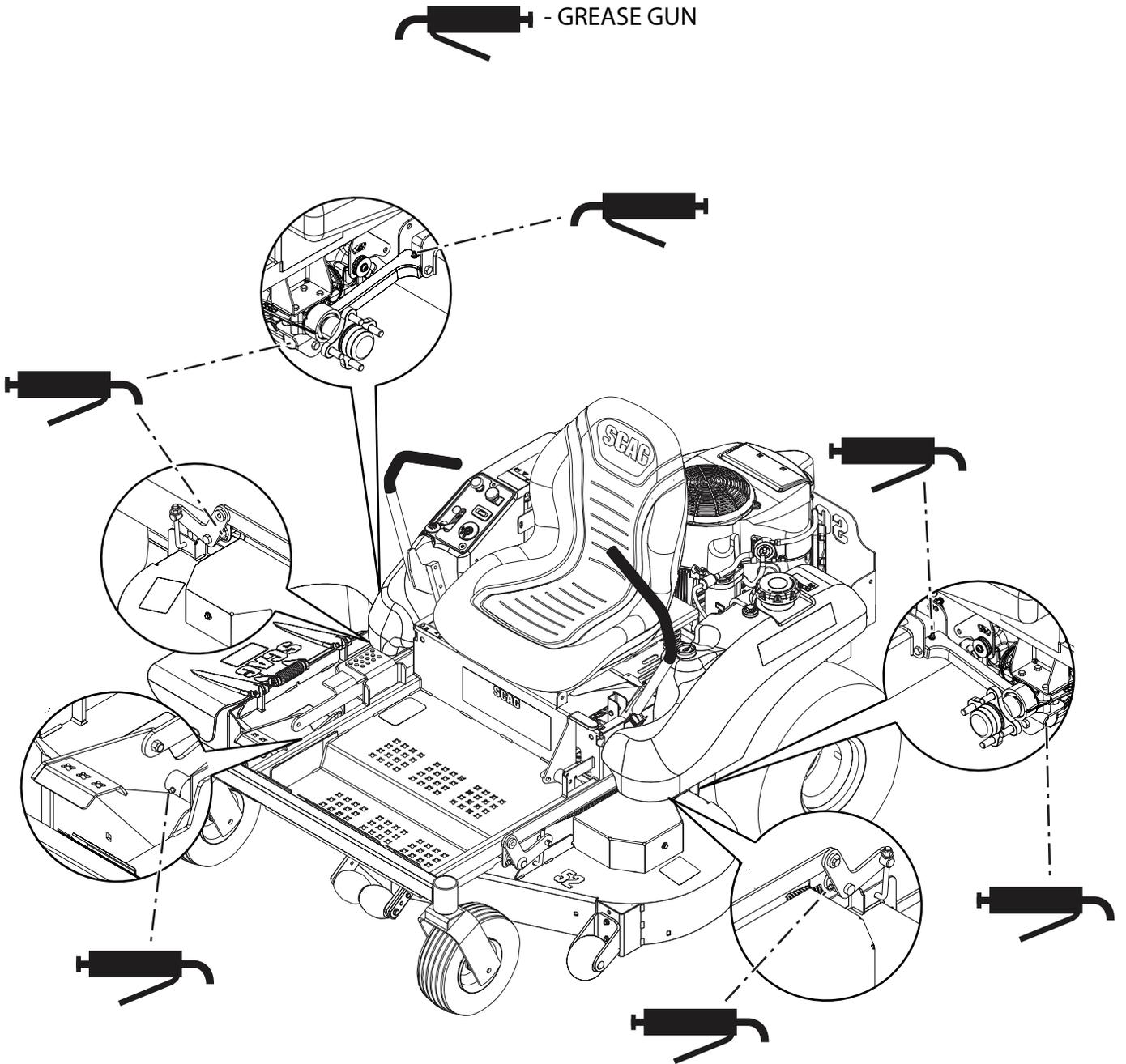
### MAINTENANCE

#### 7.1 MAINTENANCE CHART - RECOMMENDED SERVICE INTERVALS

BREAK-IN (FIRST 10)	HOURS						PROCEDURE	COMMENTS
	8	20	40	100	200	400		
X							Check all hardware for tightness	
X							Check hydraulic oil level	See paragraph 7.3
X							Check all belts for proper alignment	See paragraph 7.8
	X						Check engine oil level	See paragraph 7.4
	X						Check hydraulic hoses for leaks	Use extreme caution when checking the hydraulic hoses. See paragraph 2.3
	X						*Clean mower	See paragraph 7.11
	X						Check condition of blades	See paragraph 7.9
	X						Check tire pressure	See paragraph 7.10
	X						Check safety interlock system	See paragraph 4.2
		X					Change engine oil and filter	See paragraph 7.3
			X				Check battery, clean battery posts and cables	See paragraph 7.7
			X				Inspect pump drive belt. Replace every 400 hours or 2 years, whichever occurs first.	See paragraph 6.4 & 7.8
			X				Check belts for proper alignment	See paragraph 7.8
				X			Check condition of fuel lines	
				X			Grease cutter deck bellcranks and pusharms	See paragraph 7.2
				X			Change engine oil	See paragraph 7.4
				X			Drain hydraulic system, replace hydraulic oil and filters	Use SAE 20W50 Motor Oil. See paragraph 7.3
				X			*Clean air cleaner element	See paragraph 7.6
					X		Check all hardware for tightness	
					X		Change engine oil and filter	See paragraph 7.4
					X		Check hydraulic oil level	See paragraph 7.3
						X	Replace engine fuel filter	See paragraph 7.5
						X	Drain hydraulic system, replace hydraulic oil and filters	Use SAE 20W50 Motor Oil. See paragraph 7.3
						X	Replace pump drive belt	See paragraph 7.8

\* Perform these maintenance procedures more frequently under extreme dusty or dirty conditions

7.2 GREASE FITTING LOCATION CHART



### 7.3 HYDRAULIC SYSTEM

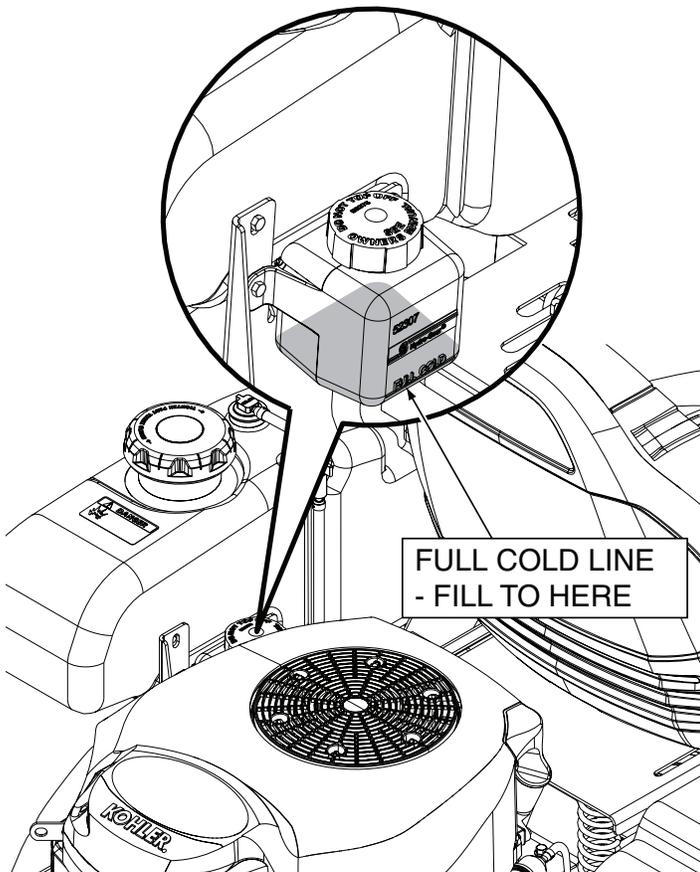
#### A. CHECKING HYDRAULIC OIL LEVEL

The hydraulic oil level should be checked after the first 10 hours of operation. Thereafter, check the oil after every 200 hours of machine operation or monthly, whichever occurs first.

**- IMPORTANT -**

*If the oil level is consistently low, check for leaks and correct immediately.*

1. Wipe dirt and contaminants from around the reservoir cap. Remove the cap from the hydraulic oil reservoir.
2. When the machine is "cold" (before operation), visually check the level of the hydraulic system oil. Hydraulic system oil level should be up to the FULL COLD line on the reservoir. See Figure 7-1. DO NOT overfill; (overfilling the oil reservoir may cause oil seepage).
3. Clean the fill cap and install it onto the reservoir.



**Figure 7-1. Hydraulic System Oil Level**

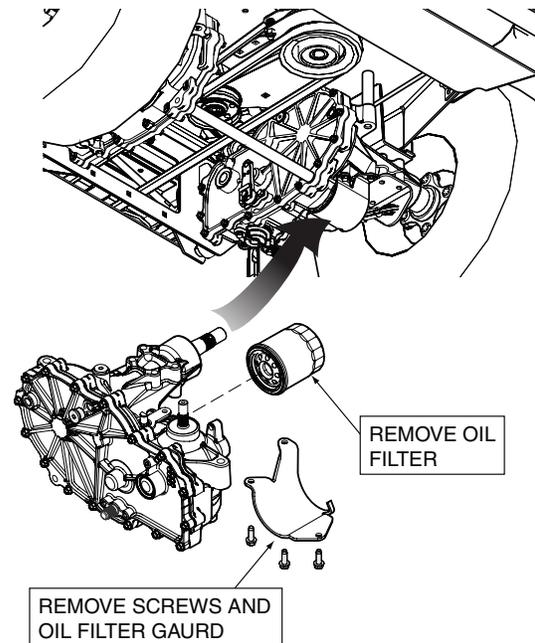
#### B. CHANGING HYDRAULIC OIL

The hydraulic system oil should be changed after the first 120 hours of machine operation and every 400 hours or annually thereafter, whichever occurs first. The oil should also be changed if the color of the fluid has become black or milky. A black color and/or a rancid odor usually indicates possible overheating of the oil, and a milky color usually indicates water in the hydraulic oil.

**- IMPORTANT -**

*The hydraulic system oil should be changed if you notice the presence of water or a rancid odor to the hydraulic oil.*

1. Park the mower on a level surface and stop the engine.
2. Remove the three 1/4" filter guard screws and filter guard from both axles. See Figure 7-2. Clean any loose debris around the perimeter of the filter.

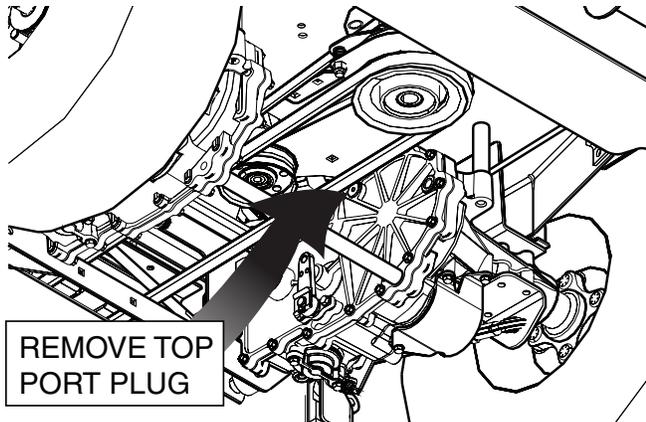


**Figure 7-2. Hydraulic Oil Filter and Drain Plug**

3. Place a suitable container under the hydraulic oil filters. Remove the cover from the left side tank to gain access to the hydraulic expansion reservoir. Remove the fill cap from the reservoir.
4. Remove the hydraulic filters from both axles and allow the fluid to drain into the container. Properly discard the oil when the system has drained completely. See Figure 7-2.

## Section 7

5. Once the hydraulic system has drained, install new hydraulic oil filters to both axles by hand, turn 3/4 to one complete turn after filter gasket contacts the filter base.
6. Reinstall the filter guards and torque the screws to 65 in/lbs.
7. Remove the top port plug from both axles before filling with oil. See Figure 7-3.



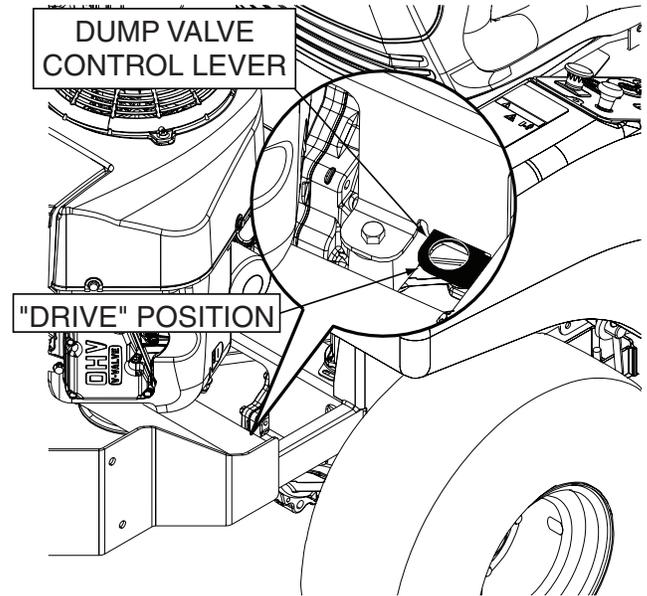
**Figure 7-3. Top Port Plug Location**

8. Fill the hydraulic expansion reservoir with 20w50 motor oil until the oil just appears at the bottom of each axle top port. Approximately 5 quart capacity. Reinstall the top port plugs and torque to 180 in/lbs.

**-NOTE-**

*The left side axle will fill with oil first using approximately 4 quarts of oil. Reinstall the top port plug in the left axle and continue to fill the hydraulic system through the expansion reservoir. The right side axle should fill up to the bottom on the top port plug after adding an additional one quart of oil. Reinstall the top port plug on the right axle and fill the hydraulic expansion reservoir to the proper level as explained in Section 7.2.*

9. Reinstall the hydraulic expansion reservoir cap.
10. The hydraulic system will need to be purged of all air. Raise the rear of the machine so the drive wheels are off the ground. Use jackstands and block the front caster wheels to prevent the machine from moving.
11. Move the dump valve controls to the "freewheel" position by pulling the levers backward and locking in the notch (towards the rear of the mower). See Figure 7-4.



**Figure 7-4. Dump Valve Control Lever**

12. While in the operator's position, start the engine and disengage the parking brake.
13. Run the engine at 1/2 throttle and move the steering control levers to full forward and reverse 5 to 6 times.
14. Engage the parking brake. Move the dump valve control levers to the "drive" position. See Figure 7-4.
15. While in the operator's position, run the engine at 1/2 throttle. Release the parking brake, move the steering control levers to full forward and reverse 5 to 6 times. It may be necessary to repeat steps 12 to 15 until the air is completely purged from the system.
16. Check the hydraulic system oil level as explained in Section 7.2.

## 7.4 ENGINE OIL

### A. CHECKING ENGINE CRANKCASE OIL LEVEL

The engine oil level should be checked after every 8 hours of operation or daily as instructed in the Engine Operator's Manual furnished with this mower.

### B. CHANGING ENGINE CRANKCASE OIL

After the first 20 hours of operation, change the engine crankcase oil and replace the oil filter. Thereafter, change the engine crankcase oil after every 100 hours of operation or yearly, whichever occurs first. Refer to the Engine Operator's Manual furnished with this mower for instructions.

### C. CHANGING ENGINE OIL FILTER

After the first 20 hours of operation, replace the engine oil filter. Thereafter, replace the oil filter after every 100 hours of operation or yearly, whichever occurs first. Refer to Engine Operator's Manual for instructions.

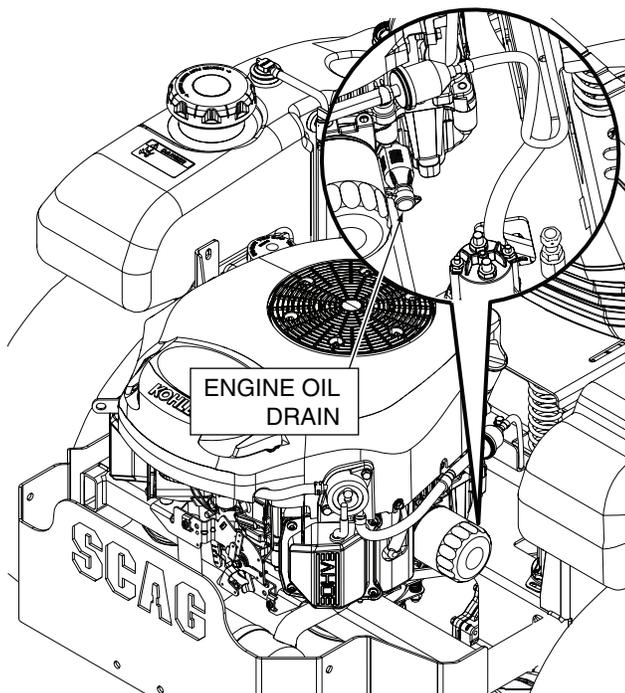
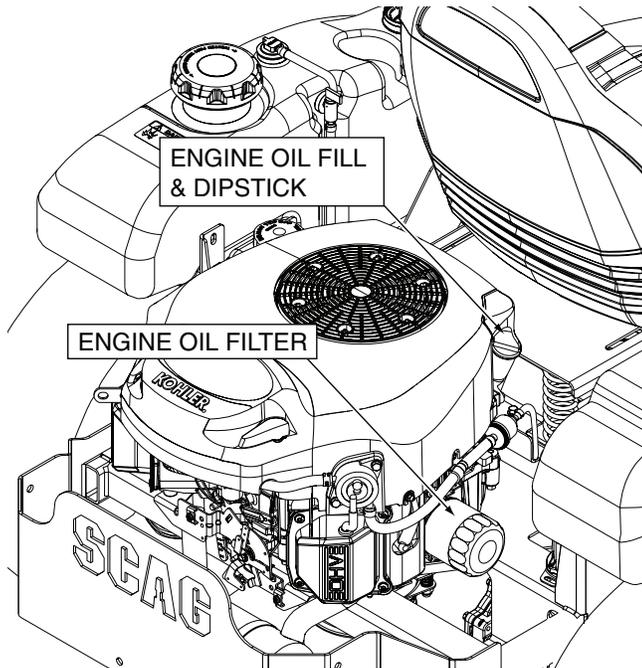


Figure 7-5. Oil Fill / Dipstick, Oil Filter, Oil Drain

### 7.5 ENGINE FUEL SYSTEM

#### DANGER

To avoid injury from burns, allow the mower to cool before removing the fuel tank cap and refueling.

#### A. FILLING THE FUEL TANK

Use clean, fresh unleaded gasoline with a minimum octane rating of 87 and a maximum of 10% Ethanol.

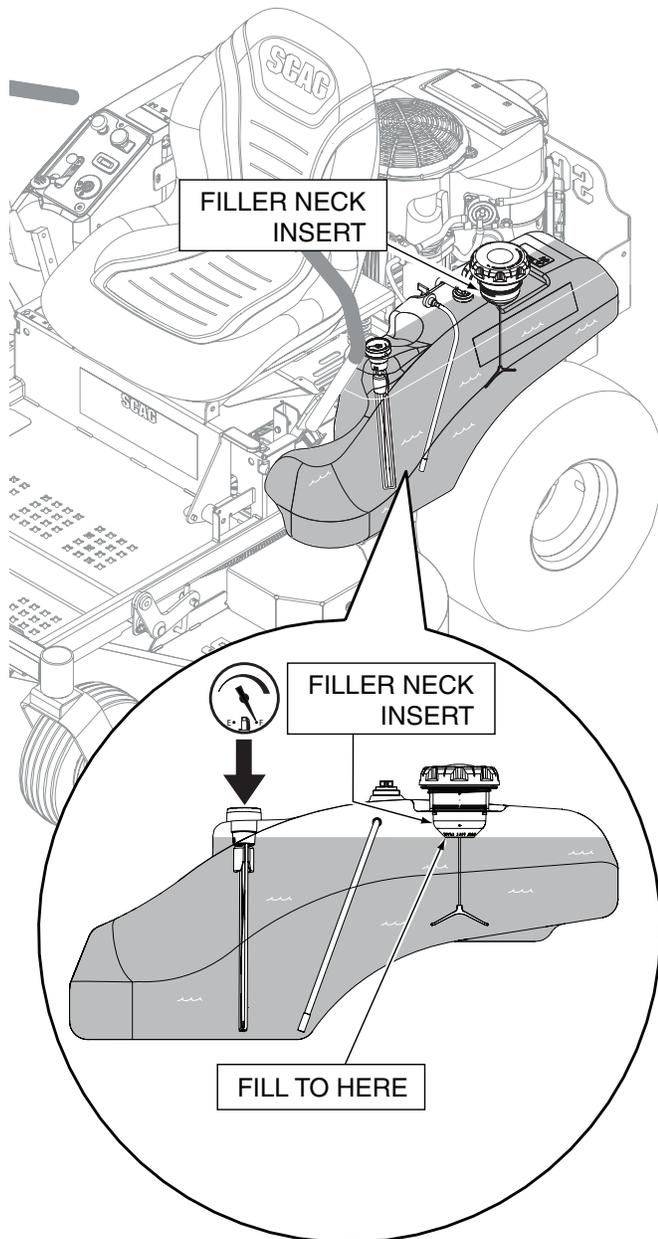
Fill to the bottom of the filler neck insert (approximately 5-1/2 gallons at the beginning of each operating day. See Figure 7-6.

DO NOT over fill. The empty space in the fuel tank allows the fuel to expand. Overfilling the fuel tank may result in fuel leakage, damage to the engine and/or damage to the machine's emissions system.

DO NOT use E85 Fuel. Using E85 Fuel will cause severe damage to the engine.

To avoid personal injury or property damage, use extreme care in handling gasoline. Gasoline is extremely flammable and the vapors are explosive.

Extinguish all cigarettes, cigars, pipes and other sources of ignition.



**Figure 7-6. Fuel Tank Fill Level**

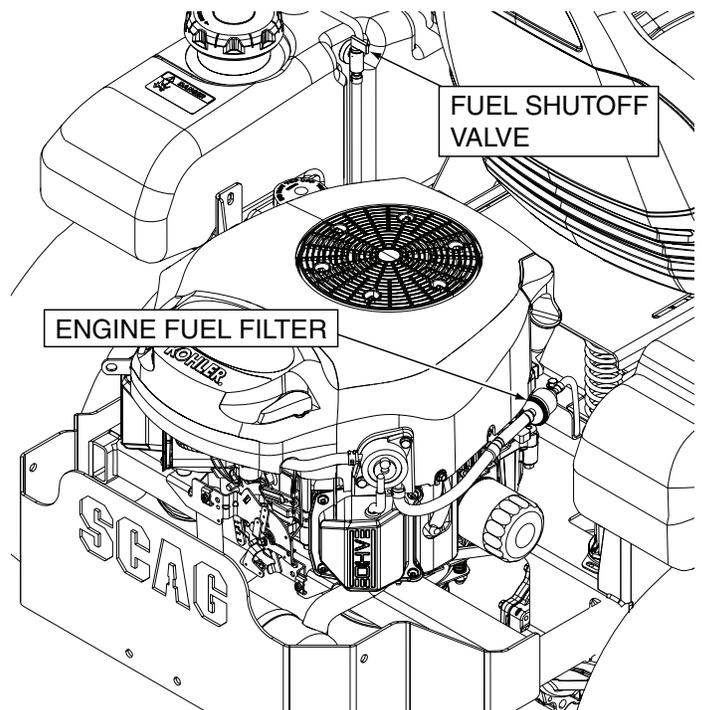
1. Use only an approved gasoline container.
2. NEVER remove the gas cap or add fuel with the engine running. Allow the engine to completely cool before fueling.
3. NEVER fuel the machine indoors or in an enclosed trailer.
4. NEVER store the machine or fuel container where there is an open flame, spark or pilot light such as on a water heater or other appliances.

5. 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.
6. Remove the machine from the truck or trailer and fuel on level ground. If this is not possible, then refuel the machine with a portable container, rather than from a gasoline dispenser nozzle.
7. 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.
8. If fuel is spilled on clothing, change clothing immediately and wash affected skin.
9. NEVER over fill the fuel tank. Replace gas cap and tighten the fuel cap until it ratchets.

## B. REPLACING IN-LINE FUEL FILTER ELEMENTS

The engine fuel filter should be replaced after every 100 hours of operation or annually, whichever occurs first. See Figure 7-7.

1. Close the shut-off valve.
2. Remove and replace the engine fuel filter. Open the fuel shut-off valve.



**Figure 7-7. Fuel Filter**

## 7.6 ENGINE AIR CLEANER

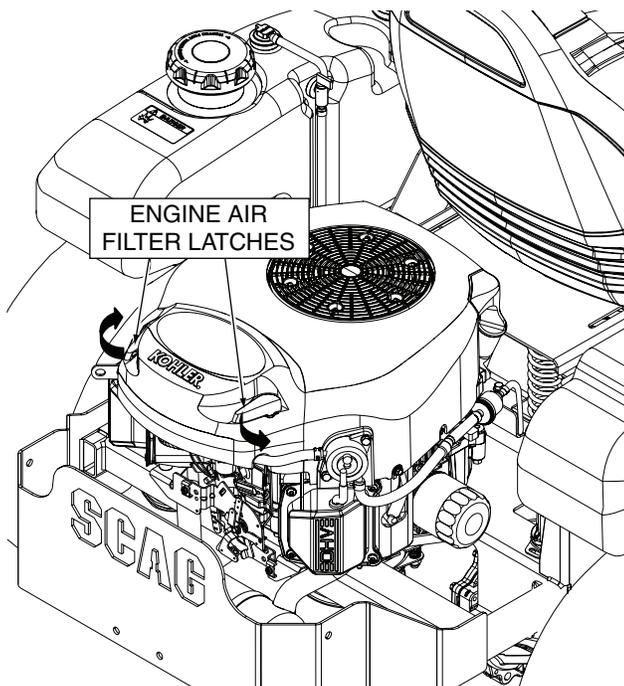
### A. CLEANING AND/OR REPLACING AIR CLEANER ELEMENT

For any air cleaner, the operating environment dictates the air cleaner service periods. Inspect and clean or replace the pre-cleaner after every 25 hours of operation. Replace the air cleaner element after every 100 hours of operation.

**- NOTE -**

*In extremely dusty conditions it may be necessary to check the element once or twice daily to prevent engine damage.*

1. Loosen the two latches securing the air cleaner cover to the air cleaner assembly and remove the cover. See Figure 7-8. Set aside.
2. Remove the pre-cleaner and inspect.
3. Clean or replace the foam pre-cleaner as recommended by the engine manufacturer.
4. Inspect the air filter. Replace as recommended by the engine manufacturer.
5. Replace the air cleaner cover and secure.



**Figure 7-8. Engine Air Filter**

## 7.7 BATTERY

### **WARNING**

Lead-acid batteries produce flammable and explosive gases. To avoid personal injury when checking, testing or charging batteries, **DO NOT** use smoking materials near batteries. Keep arcs, sparks and flames away from batteries. Provide proper ventilation and wear safety glasses.

### **WARNING**

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

### **WARNING**

Electric storage battery fluid contains sulfuric acid which is **POISON** and can cause **SEVERE CHEMICAL BURNS**. Avoid contact of fluid with eyes, skin, or clothing. Use proper protective gear when handling batteries. **DO NOT** tip any battery beyond 45° angle in any direction. If fluid contact does occur, follow first aid suggestions below.

**BATTERY ELECTROLYTE FIRST AID**

**External Contact** — Flush with water.

**Eyes** — Flush with water for at least 15 minutes and get medical attention immediately.

**Internal** — 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** give fluids that would induce vomiting.

## Section 7

### A. CHARGING THE BATTERY

Refer to the battery charger's manual for specific instructions.

Under normal conditions the engine's alternator will have no problem keeping a charge on the battery. If the battery has been completely discharged for a long period of time, the alternator may not be able to recharge the battery, and a battery charger will be required.

DO NOT charge a frozen battery. It may explode and cause injury. Let the battery warm before attaching a charger.

Whenever possible, remove the battery from the mower before charging and make sure the electrolyte covers the plates in all cells.

 <h2 style="margin: 0;">WARNING</h2>
<p><b>BATTERIES PRODUCE EXPLOSIVE GASES. Charge the battery in a well ventilated space so gases produced while charging can dissipate.</b></p>

Charging rates between 3 and 50 amperes are satisfactory if excessive gassing or spewing of electrolyte does not occur or the battery does not feel excessively hot (over 125°F). If spewing or gassing occurs or the temperature exceeds 125°F, the charging rate must be reduced or temporarily stopped to permit cooling.

### B. JUMP STARTING

1. The booster battery must be a 12 volt type. If a vehicle is used for jump starting, it must have a negative ground system.
2. When connecting the jumper cables, connect the positive cable to the positive battery post, then connect the negative cable to the negative battery post.

### 7.8 DRIVE BELTS

All drive belts are spring-loaded and self-tensioning, however after the first 2, 4, 8 and 10 hours of operation, the belts should be checked for proper alignment and wear. Thereafter, check the belts after every 40 hours of operation or weekly, whichever occurs first.

### - NOTE -

*If you experience frequent belt wear or breakage, see your authorized Scag service center for belt adjustment.*

 <h2 style="margin: 0;">WARNING</h2>
<p><b>If the pump drive belt fails, steering control will be lost which could result in serious injury or death. Replace the pump drive belt as needed or every 400 hours / 2 years, whichever occurs first.</b></p>

### 7.9 CUTTER BLADES

#### A. BLADE INSPECTION

1. Remove the ignition key before servicing the blades.
2. Raise the mower deck to the highest position. Place the lanyard pin in the highest cutting height position to prevent the cutter deck from falling.

 <h2 style="margin: 0;">WARNING</h2>
<p><b>Mower blades are sharp. Always wrap blades, wear proper hand and eye protection when working with cutter blades.</b></p>

3. Check the cutter blades for straightness. If the cutter blades appear bent, they will need to be replaced.
4. Check the cutter blades for wear. If any part of the cutter blade is worn to 1/2 its original thickness, replace the cutter blade.

 <h2 style="margin: 0;">WARNING</h2>
<p><b>Do not attempt to straighten a bent blade, and never weld a broken or cracked blade. Always replace it with a new blade to assure safety.</b></p>

5. If a blade cutting edge is dull or nicked, it should be sharpened. Remove the blades for sharpening. See "Blade Replacement."

**- NOTE -**

Keep the blades sharp. Cutting with dull blades not only yields a poor mowing job, but slows the cutting speed of the mower and causes extra wear on the engine and the blade drive by pulling hard.

### B. BLADE SHARPENING

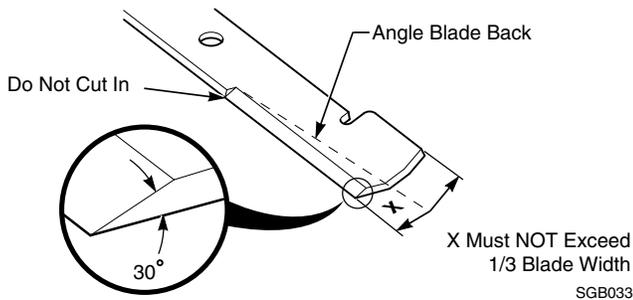
**- NOTE -**

If possible, use a file to sharpen the blade. Using a wheel grinder may burn the blade.

**- NOTE -**

DO NOT sharpen the blades beyond 1/3 of the width of the blade. See Figure 7-9.

1. Sharpen the cutting edge at the same bevel as the original. See Figure 7-9. Sharpen only the top of the cutting edge to maintain sharpness.



**Figure 7-9. Blade Sharpening**

2. Check the balance of the blade. If the blades are out of balance, vibration and premature wear can occur. The cutter blades should be balanced to 1-1/2 oz-in. See your authorized Scag dealer for blade balancing or special tools, if you choose to balance your own blades.

### C. BLADE REPLACEMENT

## WARNING

Mowers blades are sharp. Always wrap blades, wear proper hand and eye protection when working with cutter blades.

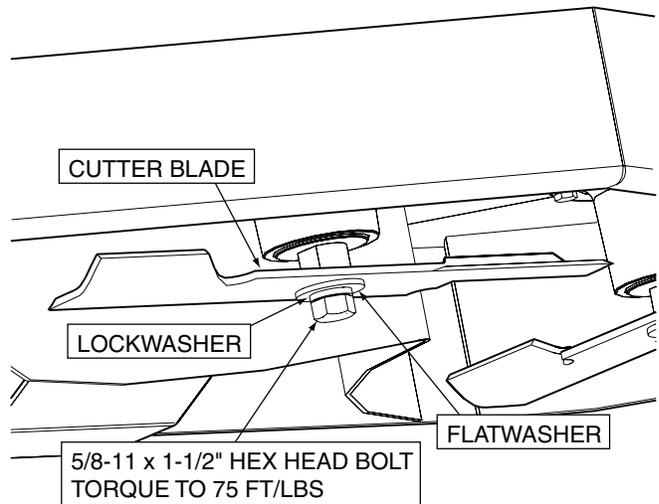
1. Remove the ignition key before replacing the blades.

2. Raise the mower deck to the highest position. Place the lanyard pin in the highest cutting height position to prevent the cutter deck from falling.
3. Secure the cutter blades to prevent them from rotating, (use the optional Blade Buddy tool P/N 9212, to assist in securing the cutter blades), remove the blade attaching bolt. Remove the cutter blade, bolt, lockwasher and flatwasher from the spindle shaft. See Figure 7-10.

## CAUTION

Inspect the cutter blade spacer(s) and washer for wear and/or cupping. Replace the worn parts. Worn spacer(s) and/or washer will not allow proper tightening of the cutter blade and can lead to cutter blade failure, personal injury or property damage.

4. To install the new cutter blade, put the lockwasher and flatwasher onto the blade bolt and slide the bolt into the hole in the cutter blade.



**Figure 7-10. Blade Replacement**

**- NOTE -**

Be sure that the blade is installed with the lift wing toward the top.

5. Install the cutter blade onto the cutter spindle shaft. Secure the blades from rotating and torque to 75 ft/lbs. See Figure 7-10.

## Section 7

### 7.10 TIRES

Check the tire pressures after every 8 hours of operation or daily.

Caster Wheels	25 PSI
Drive Wheels	8 PSI

### 7.11 BODY, DECK, AND UPHOLSTERY

#### **CAUTION**

**Do not wash any portion of the equipment while it is hot. Do not wash the engine; use compressed air.**

1. After each use, wash the mower and cutter deck. Use cold water and automotive cleaners. Do not use pressure cleaners.
2. Do not spray electrical components.
3. Use a mild soap solution or a vinyl/rubber cleaner to clean the seat.
4. Repair damaged metal surfaces using Scag touch-up paint available from your authorized Scag dealer. Wax the mower for maximum paint protection.

## **ILLUSTRATED PARTS LIST**

### **8.1 SCAG APPROVED ATTACHMENTS AND ACCESSORIES.**

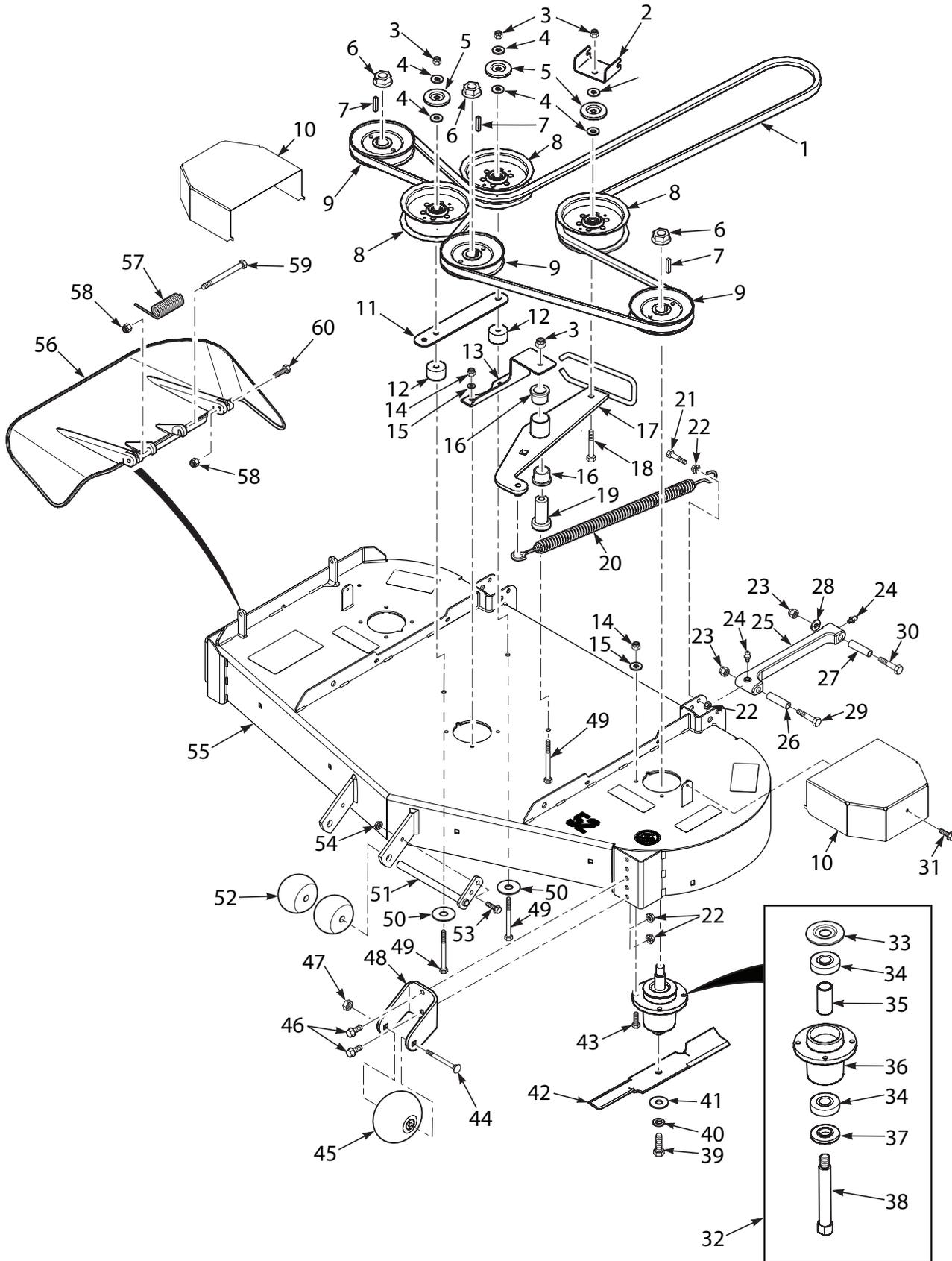
Attachments and accessories manufactured by companies other than Scag Power Equipment are not approved for use on this machine.

Scag approved attachments and accessories:

- GC-SFZ/SZL (p/n 901C, requires p/n 9069 (48") or 9070 (52") baffle kit)
- Mulch Plate (p/n 9298, 9299)
- Hurricane Mulch (p/n 9293, 9294)
- Hitch (p/n 9242)
- Striper (p/n 921R, requires 922Q SZL-48/52 Striper Install Kit)
- GC-F4 (p/n 9075)
- Blade Buddy (p/n 9212)
- SZL Lights (p/n 922R)
- 8" Chrome Wheel Covers (set of 2) (p/n 920H)

NOTES

### 48 & 52 CUTTER DECKS



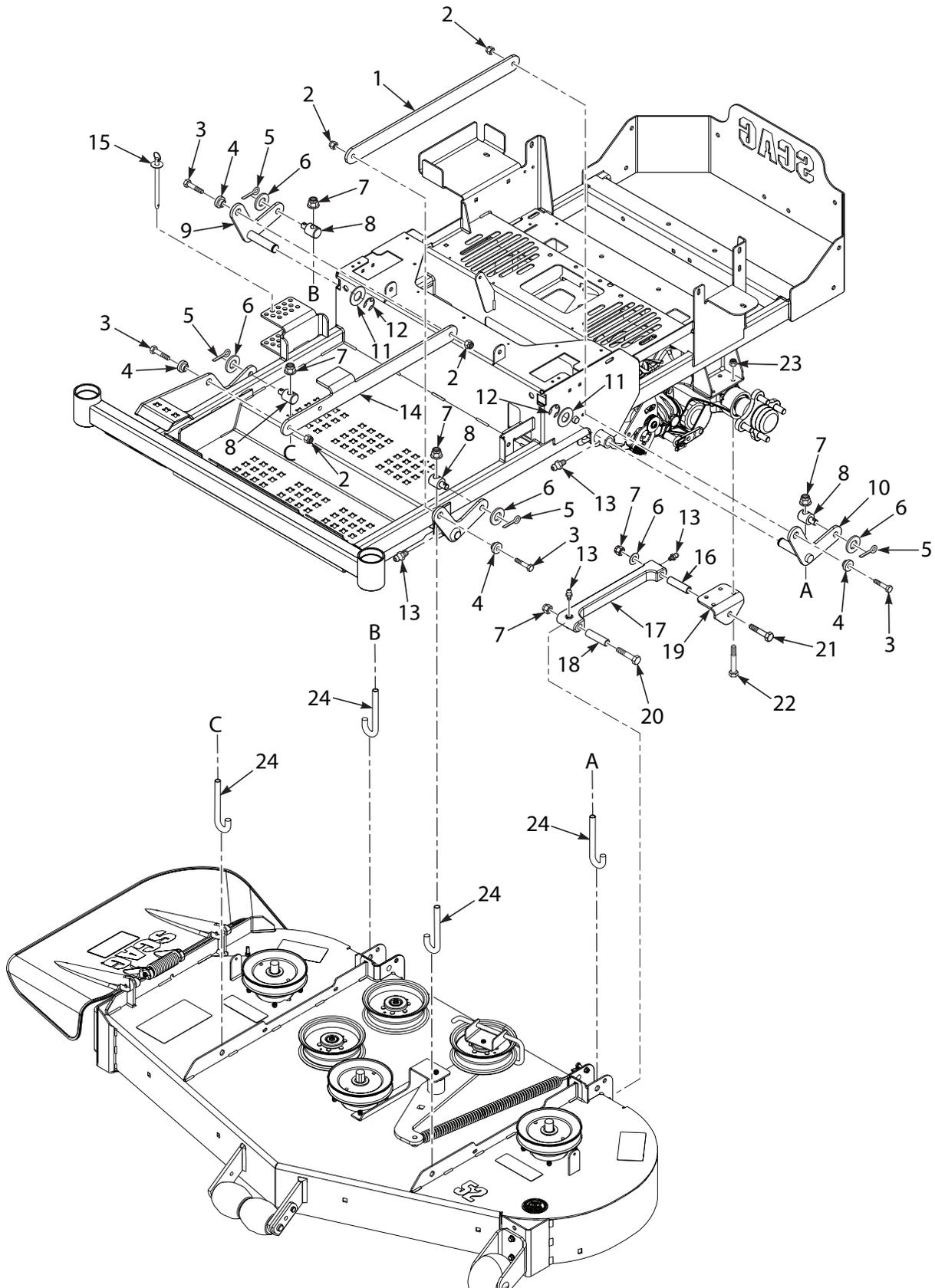
## Section 8

### 48 & 52 CUTTER DECKS

	Part No.	Qty	Description	48	52
1	485350	1	Belt, Cutter Deck -48	x	
	485424	1	Belt, Cutter Deck - 52		x
2	424615	1	Bracket, Belt Guide	x	x
3	04021-09	4	Nut, 3/8-16 x 16 Elastic Stop	x	x
4	04043-04	6	Flatwasher, 3/8-.391 x .938 x .105	x	x
5	424367	3	Dust Shield	x	x
6	04112-06	3	Nut, 3/4-16 Spiral Lock	x	x
7	04063-01	3	Key, 1/4 x 1/4 x 1-1/4"	x	x
8	483422	3	Pulley, 5" Idler	x	x
9	483323	3	Pulley, 5.13" OD - 25mm Bore	x	
	483324	3	Pulley, 5.73" OD - 25mm Bore		x
10	426729	2	Belt Cover, SZL	x	x
11	424479	1	Brace, Pulley	x	x
12	43711	2	Spacer	x	x
13	424548	1	Support, Idler Pivot - 48	x	x
	424547	1	Support, Idler Pivot - 52	x	x
14	04021-22	12	Nut, 5/16-18 Elastic Stop Grade 8	x	x
15	04030-03	12	Lockwasher, 5/16"	x	x
16	483453-03	2	Bearing, 1" ID	x	x
17	462037	1	Idler Arm Assembly (incl. 16)	x	x
18	04001-31	1	Bolt, Hex Head 3/8-16 x 2-1/2"	x	x
19	43708	1	Pivot, Idler	x	x
20	483375	1	Spring, Cutter Deck Idler	x	x
21	04001-136	1	Bolt, Hex Head 3/8-16 x 1-1/2" Gr.8	x	x
22	04019-04	4	Nut, 3/8-16 Serrated Flange	x	x
23	04021-07	4	Nut, 1/2-13 Elastic Stop	x	x
24	48114-04	4	Grease Fitting, 1/4-28 Self Tap	x	x
25	462769	1	Pusharm Assembly, LH (incl. 24)	x	x
	462770	1	Pusharm Assembly, RH (incl. 24)	x	x
26	43985	2	Spacer, Pusharm - Deck	x	x
27	43986	2	Spacer, Pusharm - Axle	x	x
28	04040-07	2	Flatwasher, 1/2-.531 x 1.062 x .095	x	x
29	04001-145	2	Bolt, Hex Head 1/2-13 x 3-1/2"	x	x
30	04001-52	2	Bolt, Hex Head 1/2-13 x 2-1/2"	x	x
31	04011-29	2	Screw, 1/4-20 x .375"	x	x
32	461950	3	Spindle Assembly	x	x
33	483304	1	Debris Shield	x	x
34	483303	2	Bearing	x	x
35	43693	1	Spacer	x	x

	Part No.	Qty	Description	48	52
36	462014	1	Spindle Housing (incl. 34, 35)	x	x
37	43694	1	Protector, Bearing	x	x
38	43695	1	Shaft, Spindle	x	x
39	04001-121	3	Bolt, Hex Head 5/8-11 x 1-1/2"	x	x
40	04030-07	3	Lockwasher, 5/8"	x	x
41	04043-06	3	Flatwasher, 5/8-.688 x 1.75 x .134 HD	x	x
42	482877	3	Cutter Blade, 16-1/2"	x	
	482878	3	Cutter Blade, 18"		x
43	04001-175	12	Bolt, Hex Head 5/16-18 x 1-1/2" Gr.8	x	x
44	04003-26	1	Bolt, Carriage 3/8-16 x 4"		x
45	481632	1	Wheel, Anti-Scalp		x
46	04017-27	2	Bolt, Hex Head Serr. Flange 3/8-16 x 1"		x
47	04021-05	1	Nut, 3/8-16 Center Lock		x
48	422478	1	Bracket, Anti-Scalp		x
49	04001-77	3	Bolt, Hex Head 3/8-16 x 3-1/2"	x	x
50	04041-38	2	Flatwasher, 3/8-.406 x 2.250 x .188	x	x
51	451926	1	Shaft Weldment, Guide Roller	x	x
52	482295	2	Wheel, Anti-Scalp	x	x
53	04001-09	1	Bolt, Hex Head 5/16-18 x 1"	x	x
54	04117-01	1	Nut, 5/16-18 Flange Elastic Stop	x	x
55	462794	1	Cutter Deck w/Decals	x	
	462795	1	Cutter Deck w/Decals		x
56	462031	1	Discharge Chute	x	
	462032	1	Discharge Chute		x
57	482245	1	Spring, Discharge Chute	x	x
58	04021-10	2	Nut, 5/16-18 Elastic Stop	x	x
59	04001-154	1	Bolt, Hex Head 5/16-18 x 4-3/4"	x	x
60	04001-12	1	Bolt, Hex Head 5/16-18 x 1-3/4"	x	x

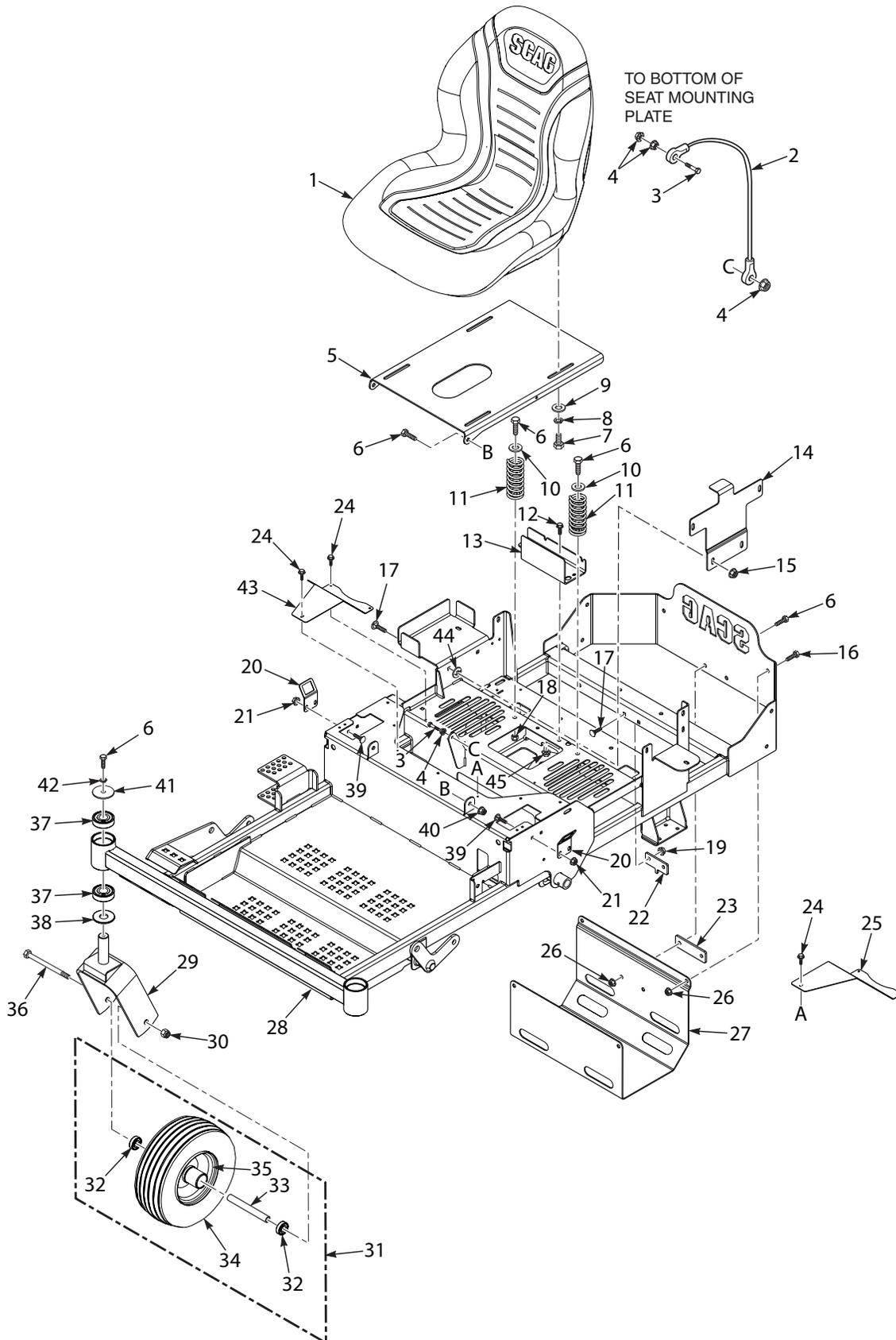
### CUTTER DECK CONTROLS



## CUTTER DECK CONTROLS

Ref. No.	Part No.	Qty	Description
1	426675	1	Link, Deck Lift - LH
2	04117-02	4	Nut, 3/8-16 Elastic Stop
3	04001-32	4	Bolt, Hex Head 3/8-16 x 1-1/4"
4	43086	4	Bushing
5	04061-07	4	Cotter Pin, 3/16 x 1"
6	04040-07	6	Flatwasher, 1/2-.531 x 1.062 x .095
7	04021-07	8	Nut, 1/2-13 Elastic Stop
8	43982	4	Joint, Swivel
9	452624	1	Lift Bellcrank Weldment, RH
10	452623	1	Lift Bellcrank Weldment, LH
11	04041-08	2	Flatwasher, 3/4-.769 x 1.250 x .0598
12	04050-02	2	Retaining Ring, .750 "E"
13	48114-04	8	Grease Fitting, 1/4-28 Self Tap
14	426665	1	Link, Deck Lift - RH
15	485351	1	Pin Assembly, Deck Height
16	43986	2	Spacer, Pusham - Axle
17	462769	1	Pusharm Assembly, LH (incl. 13)
	462770	1	Pusharm Assembly, RH (incl. 13)
18	43985	2	Spacer, Pusharm - Deck
19	424489	2	Bracket, Pusharm
20	04001-145	2	Bolt, Hex Head 1/2-13 x 3-1/2"
21	04001-52	2	Bolt, Hex Head 1/2-13 x 2-1/2"
22	04001-49	8	Bolt, Hex Head 5/16-18 x 3"
23	04021-10	8	Nut, 5/16-18 Elastic Stop
24	44220	4	Rod, Deck Lift

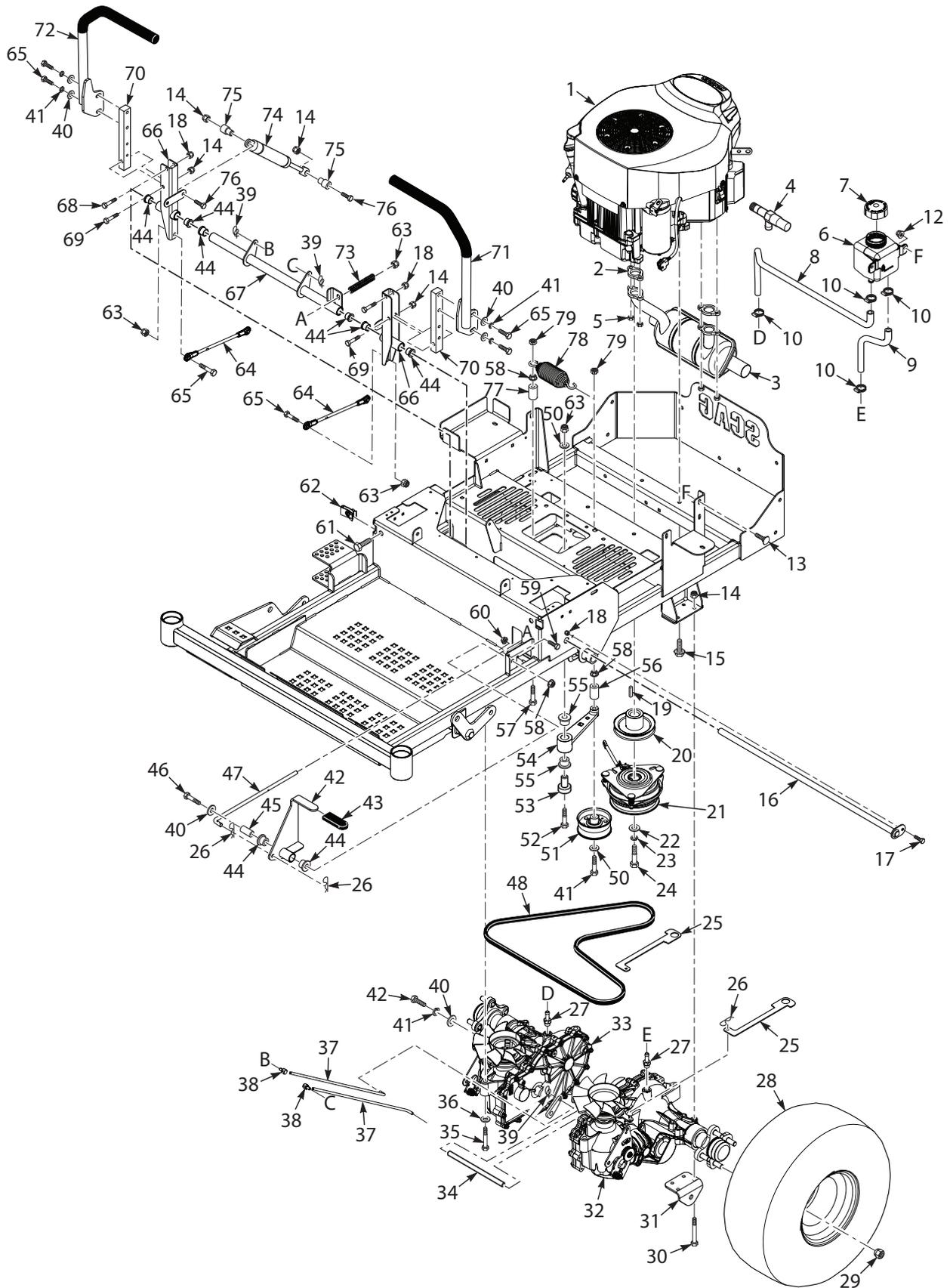
### SHEET METAL COMPONENTS



## SHEET METAL COMPONENTS

Ref. No.	Part No.	Qty	Description
1	485361	1	Seat, SZL
2	483559	1	Cable, Seat Stop
3	04001-59	2	Bolt, Hex Head 1/4-20 x 1-1/4"
4	04019-02	4	Nut, 1/4-20 Serrated Flange
5	462791	1	Seat Plate w/Decal
6	04001-19	8	Bolt, Hex Head 3/8-16 x 1"
7	04001-08	4	Bolt, Hex Head 5/16-18 x 3/4"
8	04030-03	4	Lockwasher, 5/16"
9	04040-15	4	Flatwasher, 5/16-.375 x .875 x .083
10	04041-07	2	Flatwasher, 3/8-.391 x .938 x .105
11	483372	2	Spring, Seat
12	04017-16	2	Bolt, Hex Head 5/16-18 x 3/4" Serrated Flange
13	426768	1	Channel, Hose
14	426766	1	Battery Hold Down
15	04117-01	2	Nut, 5/16-18 Flange Elastic Stop
16	04001-18	4	Bolt, Hex Head 3/8-16 x 3/4"
17	04003-12	4	Bolt, Carriage 5/16-18 x 3/4"
18	04021-09	2	Nut, 3/8-16 Elastic Stop
19	04117-01	2	Nut, 5/16-18 Flange Elastic Stop
20	426727	2	Bracket, Switch
21	04117-03	4	Nut, 1/4-20 Flange Elastic Stop
22	426726	1	Plate, Anti-Rotation
23	426843	1	Plate, Spacer
24	04011-11	6	Screw, #10-32 x .56
25	426767	1	Guard, Belt - LH
26	04019-04	6	Nut, 3/8-16 Serrated Flange
27	426828	1	Skid Plate, SZL
28	462771	1	Mainframe w/Decals - SZL
29	451845	2	Yoke Weldment, Caster
30	04021-07	2	Nut, 1/2-13 Elastic Stop
31	485207	2	Caster Wheel Assembly (incl. 32, 33, 34, 35)
32	485243	2	Bearing
33	43794	1	Spacer, Wheel Bearing
34	483417	1	Tire, 11 x 4
35	485242	1	Rim Assembly (incl. 32, 33)
36	04001-80	2	Bolt, Hex Head 1/2-13 x 6-1/2"
37	483466	4	Bearing
38	424636	2	Spacer, Yoke
39	04003-02	4	Bolt, Carriage 1/4-20 x 3/4"
40	04117-02	2	Nut, 3/8-16 Flange Elastic Stop
41	04041-38	2	Flatwasher, 3/8-.406 x 2.25 x .188
42	04030-04	2	Lockwasher, 3/8"
43	424785	1	Guard, Belt - RH
44	04024-03	1	U-Nut, 5/16 Push-On
45	04019-03	1	Nut, 5/16-18 Serrated Flange

### DRIVE SYSTEM COMPONENTS

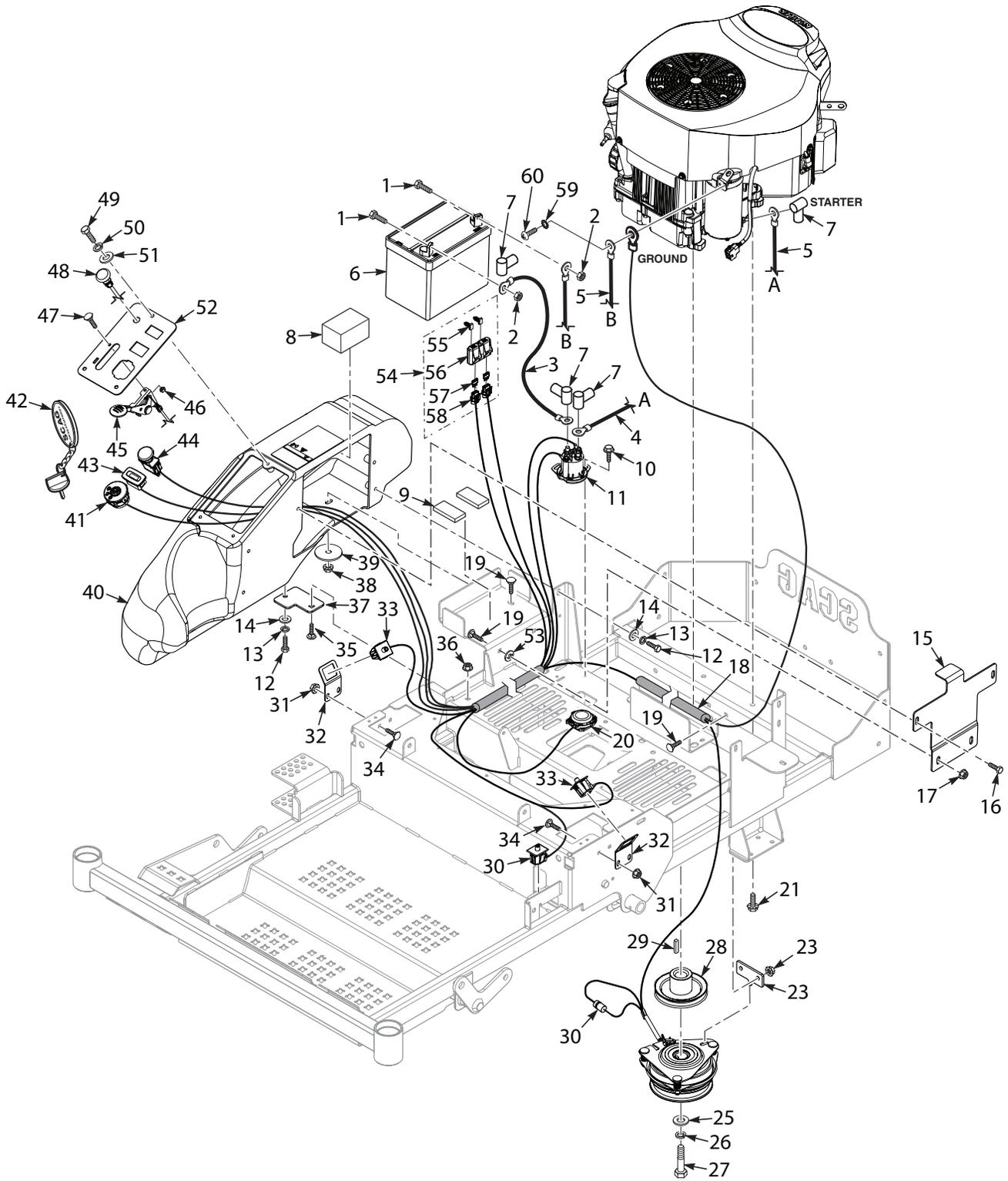


## DRIVE SYSTEM COMPONENTS

	Part No.	Qty	Description		Part No.	Qty	Description
1	*485338	1	Engine, Kohler - 22KT	46	04001-31	1	Bolt, Hex Head 3/8-16 x 2-1/2"
	*485341	1	Engine, Kohler - 24KT	47	44219	1	Rod, Upper Brake Linkage
2	*	2	Gasket, Exhaust	48	485349	1	Belt, Transmission -SZL
3	485336	1	Muffler, Kohler KT	49	04001-51	1	Bolt, Hex Head 3/8-16 x 3-3/4"
4	482510	1	Oil Drain	50	04043-04	2	Flatwasher, 3/8-.391 x .938 x .105 HD
5	04121-01	4	Nut, M6-1.0 Hex Flange	51	483638	1	Pulley, 3-1/2" Idler
6	483438	1	Reservoir Assembly (incl. 7)	52	04001-54	1	Bolt, Hex Head 3/8-16 x 3"
7	483514	1	Cap	53	43715	1	Shaft, Pivot Idler Arm
8	485402	1	Hose, RH Transmission	54	462122	1	Idler Arm Assembly (incl. 55)
9	485401	1	Hose, LH Transmission	55	483453-02	2	Bearing
10	48136-05	2	Clamp, .87 Max. Dia.	56	43720	1	Spacer, Pump Idler
11	48136-13	2	Clamp, .69 Max. Dia.	57	04001-45	1	Bolt, Hex Head 3/816 x 2"
12	04117-03	2	Nut, 1/4-20 Flange Elastic Stop	58	04019-04	3	Nut, 3/8-16 Serrated Flange
13	04003-02	2	Bolt, Carriage 1/4-20 x 3/4"	59	04001-14	1	Bolt, Hex Head 1/4-20 x 1"
14	04021-10	18	Nut, 5/16-18 Elastic Stop	60	04019-02	1	Nut, 1/4-20 Serrated Flange
15	04011-07	4	Bolt, 3/8-16 x 1-1/4" Serrated Flange Self Tap	61	04107-05	2	Bolt, Hex Head 3/8-16 x 2-1/2" Soocial Lock
16	452620	1	Shaft Weldment, Control Arm	62	04110-03	2	U-Nut, 3/8-16
17	04001-06	1	Bolt, Hex Head 1/4-20 x 5/8"	63	04021-09	6	Nut, 3/8-16 Elastic Stop
18	04021-08	3	Nut, 1/4-20 Elastic Stop	64	485312	2	Linkage, Pump
19	04063-01	1	Key, 1/4 x 1/4 x 1-1/4"	65	04001-32	4	Bolt, Hex Head 3/8-16 x 1-1/4"
20	484595	1	Pulley, 4-1/2" - 1" Bore	66	462797	2	Control Arm Assembly (incl. 44)
21	462715	1	Clutch, GT1	67	462742	1	Bellcrank Assembly (incl. 44)
22	04041-28	1	Flatwasher, 7/16-.496 x 1.75 x .25	68	04001-02	2	Bolt, Hex Head 1/4-20 x 1-3/4"
23	04030-05	1	Lockwasher, 7/16"	69	04001-12	2	Bolt, Hex Head 5/16-18 x 1-3/4"
24	04102-06	1	Bolt, 7/16-20 x 3" w/Patch	70	422372	2	Bar, Control Lever
25	426592	2	Lever, Dump Valve	71	462740	1	Handlebar w/Grip
26	04062-02	4	Hair Pin Cotter, .080 x 1.19		484376	1	Grip, Control Lever
27	482800-02	2	Fitting, O-Ring x 3/8" Hose	72	462741	1	Handlebar w/Grip
28	483390	2	Wheel Assembly		484376	1	Grip, Control Lever
	481868	1	Rim w/Valve Stem	73	483538	1	Spring, Brake
	483389	1	Tire, 20 x 10-8	74	484193	2	Damper, Steering
29	04028-02	8	Wheel Nut, 1/2-20 x 13/16	75	43602	4	Spacer, Damper
30	04001-49	8	Bolt, Hex Head 5/16-18 x 3"	76	04001-11	4	Bolt, Hex Head 5/16-18
31	424489	2	Bracket, Pusharm	77	43674	1	Spacer
32	485339	1	Transaxle, LH - SZL	78	483087	1	Spring, Transmission Drive
33	485340	1	Transaxle, RH - SZL	79	04021-05	2	Nut, 3/8-16 Center Lock
34	43984	1	Spacer				
35	04001-39	4	Bolt, Hex Head 5/16-18 x 2-1/4"				
36	04040-15	6	Flatwasher, 5/16-.375 x .875 x .083				
37	44218	2	Rod, Brake				
38	43876	2	Joint, Swivel				
39	04069-01	4	Pin, Rue Cotter - 3/8"				
40	04041-07	7	Flatwasher, 3/8-.391 x .938 x .105				
41	04030-04	6	Lockwasher, 3/8"				
42	462739	1	Brake Lever Assembly (incl. 43, 44)				
43	482102	1	Grip, Brake Handle				
44	483453-05	8	Bearing				
45	43969	1	Pivot, Brake Lever				

\* Available through individual engine manufacturer.

## ELECTRICAL SYSTEM



## ELECTRICAL SYSTEM

	Part No.	Qty	Description
1	04001-44	2	Bolt, Hex Head 1/4-20 x 1/2"
2	04020-02	2	Nut, 1/4-20 UNC
3	48029-06	1	Cable, Battery - 18" Red
4	48029-13	1	Cable, Battery - 25" Red
5	48029-15	1	Cable, Battery - 36" Black
6	*485212	1	Battery, 12v - 230CCA
7	48126	4	Rubber Boot
8	485506	1	Pad, Battery - Rubber
9	485505	2	Pad, Battery - Rubber
10	04011-13	2	Screw, 1/4-20 x 3/4" Shakeproof
11	483278	1	Solenoid, Sealed
12	04001-08	3	Bolt, Hex Head 5/16-18 x 3/4"
13	04030-03	3	Lockwasher, 5/16"
14	04040-15	3	Flatwasher, 5/16-.375 x .875 x .083
15	426766	1	Battery Hold Down
16	04017-15	2	Bolt, Hex Head 5/16-18 x 1/2" Serrated Flange
17	04117-01	2	Nut, 5/16-18 Elastic Stop
18	485360	1	Wire Harness
19	04003-12	5	Bolt, Carriage 5/16-18 x 3/4"
20	483474	1	Switch, Double Pole - Twist
21	04011-07	4	Screw, Hex Head 3/8-16 x 1-1/4" Self Tap
22	04117-01	2	Nut, 5/16-18 Elastic Stop
23	426726	1	Plate, Anti-Rotation
24	462715	1	Clutch, GT1
25	04041-28	1	Flatwasher, 7/16-.496 x 1.75 x .25
26	04030-05	1	Lockwasher, 7/16"
27	04102-06	1	Bolt, Hex Head 7/16-20 x 3" w/Patch
28	484595	1	Pulley, 4-1/2" Dia. - 1" Bore
29	04063-01	1	Key, 1/4 x 1/4 x 1-1/4"
30	483589	1	Diode (part of wire harness)

	Part No.	Qty	Description
31	04117-03	4	Nut, 1/4-20 Flange Elastic Stop
32	426727	2	Bracket, Switch
33	483473	3	Switch, Double Pole - Plunger
34	04003-02	4	Bolt, Carriage 1/4-20 x 3/4"
35	04003-04	1	Bolt, Carriage 5/16-181 x 1"
36	04019-03	1	Nut, 5/16-18 Serrated Flange
37	426579	1	Mounting Bracket, Fuel Tank Front
38	04019-03	1	Nut, 5/16-18 Serrated Flange
39	04041-38	1	Flatwasher, 3/8-.406 x 2.25 x .188
40	485331	1	Console Tank, SZL
41	483472	1	Ignition Switch
42	462069	1	Key Fob Assembly
	483609	1	Key w/Shroud Only
43	485216	1	Hourmeter
44	483957	1	Switch, PTO
45	483434	1	Throttle Cable
46	04021-26	2	Nut, #10-24 Elastic Stop
47	04003-43	2	Bolt, Carriage #10-24 x 1/2"
48	483435	1	Choke Control
49	04001-44	3	Bolt, Hex Head 1/4-20 x 1/2"
50	04030-02	3	Lockwasher, 1/4"
51	04040-14	3	Flatwasher, 1/4-.312 x .750 x .065
52	462793	1	Instrument Panel w/Decal
53	04024-03	2	Nut, 5/16 Push-On
54	483642	1	Double Fuse Assembly (incl. 45, 56, 57, 58)
55	482588	2	Clip, Wire
56	483571	1	Cover, Double
57	48298	2	Fuse, 20 Amp
58	483629	2	Fuse Holder
59	04031-03	1	Lockwasher, 5/16" Ext.
60	04128-01	1	Screw, M6-1.00 X 16 Shakeproof

\* Not available through Scag Power Equipment. Purchase locally.

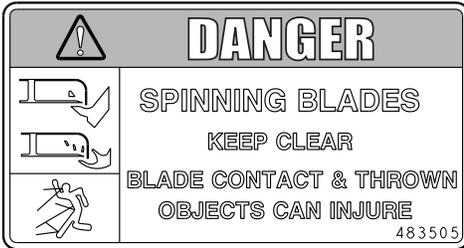


## FUEL SYSTEM

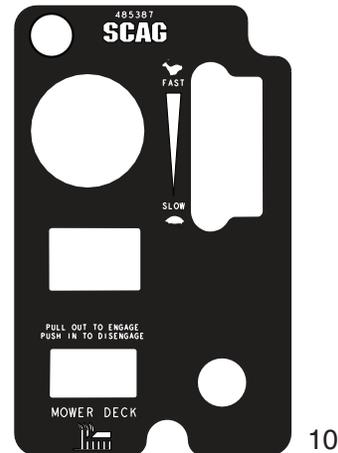
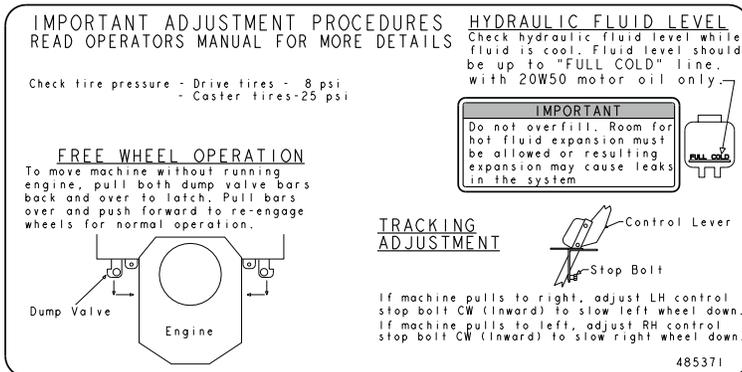
Ref. No.	Part No.	Qty	Description
1	484286	1	Fuel Cap
	*484297		Fuel Cap, C.A.R.B.
2	485670	1	Fuel Neck Insert
3	484333	1	Remote Vent, No Valve
4	484285	1	Grommet, Kelch
5	485393	1	Fuel Gauge (requires #6)
6	485394	1	Grommet, Fuel Gauge
7	485391	1	Valve, Fuel Shut Off
8	482571	1	Bushing, .56 Dia. Viton
9	462850	1	Fuel Tank Assembly (incl. 1, 2, 3, 4, 5, 6, 7, 8)
10	04001-08	4	Bolt, Hex Head 5/16-18 x 3/4"
11	04030-03	4	Lockwasher, 5/16"
12	04040-15	4	Flatwasher, 5/16-.375 x .875 x .083
13	426759	1	Mounting Bracket, Fuel Tanks Front
14	04019-03	1	Nut, 5/16-18 Serrated Flange
15	04003-04	1	Bolt, Carriage 5/16-18 x 1"
16	48059-01	2	Clamp, Fuel Hose 1/4"
17	483617	30	Hose, Non-perm Fuel - 1/4" Dia. (order by inch)
18	04003-02	2	Bolt, Carriage 1/4-20 x 3/4"
19	48059-02	2	Clamp, Fuel Hose 7/32" ID
20	484347	2	Hose, 1/4" Vapor Return (order by inch)
21	484343-01	1	Mender, 1/4 x 3/16 w/.02 Hole
22	48059-05	2	Clamp, Vapor Hose -3/16"
23	484345	50	Hose, Vapor (order by inch)
*24	484345	18	Hose, Vapor (order by inch)
*25	484345	29	Hose, Vapor (order by inch)
*26	48059-05	2	Clamp, Vapor Hose - 3/16"
*27	484287	1	Carbon Cannister, 400cc
	484366		Dust Filter (not shown. Incl. with #27)
*28	48136-17	17	Clamp, 3-1/2" Max. Dia.
*29	426326	1	Bracket, Cannister Mount
*30	04019-02	1	Nut, 1/4-20 Serrated Flange

\* California Only

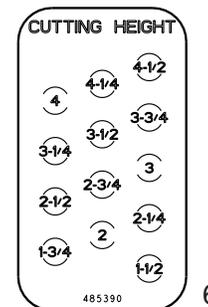
### REPLACEMENT DECALS AND INFORMATION PLATES



# 48



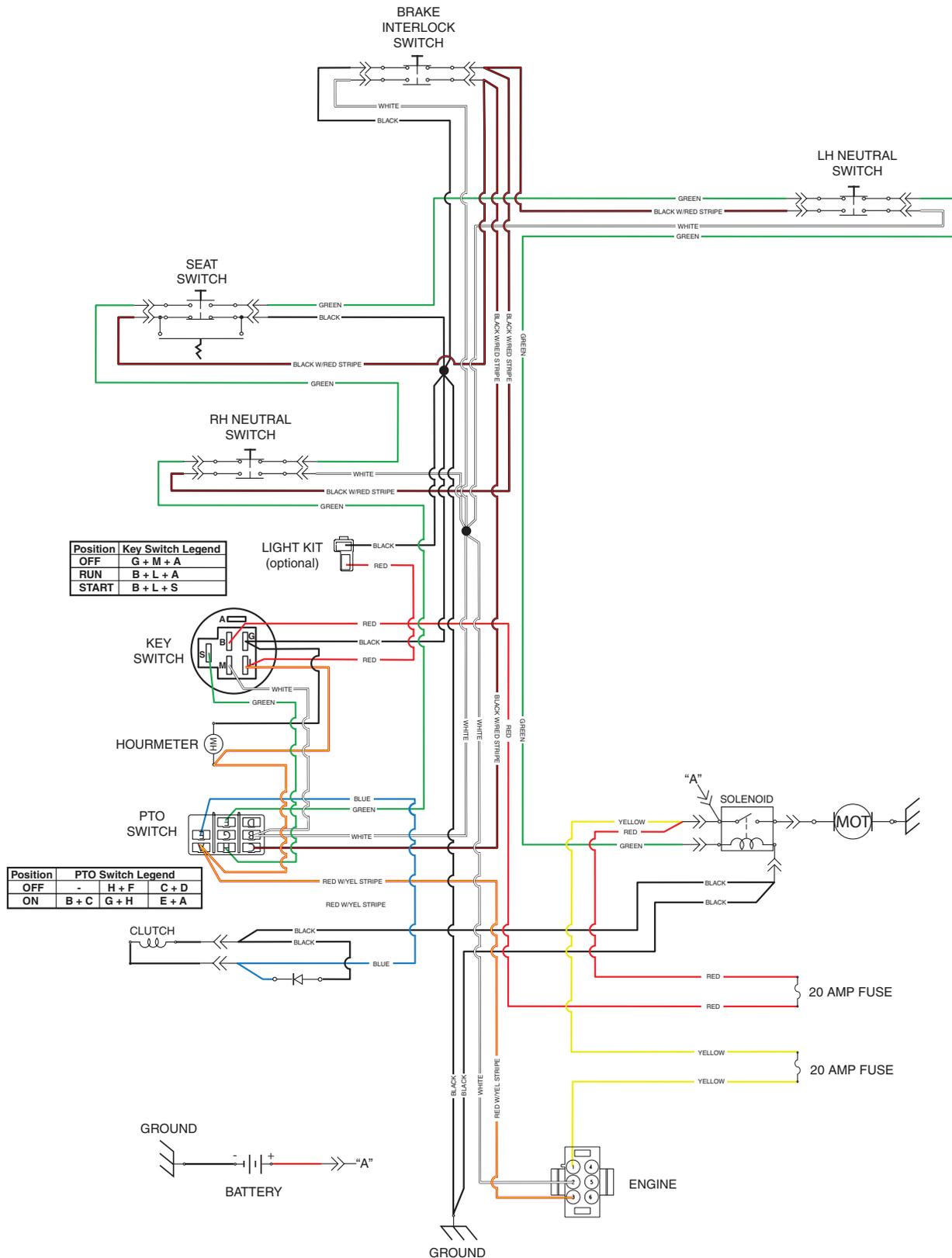
# SCAG



## REPLACEMENT DECALS AND INFORMATION PLATES

Ref. No.	Part No.	Qty	Description
1	483402	2	Decal, Belt Cover
2	483405	1	Decal, Warning
3	485432	1	Decal, Liberty Z - Bumper
4	483505	2	Decal, Spinning Blades
5	482100	2	Decal, Traction Control
6	485390	1	Decal, Height of Cut
7	48318	1	Decal, 48
	48319	1	Decal, 52
8	483406	1	Decal, Knives
9	485371	1	Decal, Adjustments - SZL
10	485387	1	Decal, Instrument Panel - SZL
11	485374	1	Decal, Liberty Z
*	483900	1	Decal, Warning Spark Arrestor (California Only) - Not Shown

### ELECTRICAL SCHEMATIC



# LIMITED WARRANTY - SZL

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Any part of the Scag mower manufactured by Scag Power Equipment and found, in the reasonable judgment of Scag, to be defective in materials or workmanship, will be repaired or replaced by an Authorized Scag Service Dealer without charge for parts and labor during the periods specified below. This warranty is limited to the original purchaser provided the product was purchased from an Authorized Scag Power Equipment Dealer and is not transferable. Proof of purchase will be required by the dealer to substantiate any warranty claims. All warranty work must be performed by an Authorized Scag Service Dealer.

This non-commercial warranty is limited to the following specified periods from the date of the original retail purchase for defects in materials or workmanship:

- Wear items including drive belts, blades, hydraulic hoses and tires are warranted for ninety (90) days.
- Batteries are covered for ninety (90) days.
- Frame and structural components including the oil reservoir are warranted for five (5) years / 750 hours (whichever comes first) (Parts and labor) for non-commercial use.
- Cutter decks are warranted against cracking for a period of five (5) years / 750 hours (whichever comes first). First and second year of the warranty covers parts and labor and years three (3) to five (5) covers parts or labor to repair for non-commercial use. The repair or replacement of the cutter deck will be at the option of Scag Power Equipment. We reserve the right to request components for evaluation. This warranty does not cover any mower that has been subject to misuse, neglect, negligence, or accident, or that has been operated in any way contrary to the operating instructions as specified in the Operator's Manual.
- Engines and electric starters are covered by the **engine manufacturer's warranty period**.
- Major drive system components are warranted for five (5) year / 750 hour (whichever comes first) (Parts and labor) for non-commercial use by Scag Power Equipment (warranty excludes fittings, hoses, drive belts). The repair or replacement of the hydraulic axles will be at the option of Scag Power Equipment. This warranty does not cover any mower that has been subject to misuse, neglect, negligence, or accident, or that has been operated in any way contrary to the operating instructions as specified in the Operator's Manual.
- Electric clutches have a Limited Warranty for five (5) year / 750 hours (whichever comes first) (Parts and labor) for non-commercial use.
- Spindle assemblies have a Limited Warranty for five (5) years / 750 hours (whichever comes first). First and second year of the warranty covers parts and labor and years three (3) to five (5) covers parts only for non-commercial use.
- Any Scag Liberty Z (SZL) used for Commercial or Rental purposes is not covered under this warranty.

The Scag mower, including any defective part must be returned to an Authorized Scag Service Dealer within the warranty period. The expense of delivering the mower to the dealer for warranty work and the expense of returning it to the owner after repair will be paid for by the owner. Scag's responsibility is limited to making the required repairs and no claim of breach of warranty shall be cause for cancellation or rescission of the contract of sale of any Scag mower. "Non-Commercial" use is defined as a single property owner, where the single property is the residence of the owner of the mower. If the mower is cutting more than the owners single property, it is deemed commercial use and the warranty does not apply. Scag Power Equipment reserves the right to deny and / or void the non-commercial warranty if it believes it to be in commercial use.

**This warranty does not cover any mower that has been subject to misuse, neglect, negligence, or accident, or that has been operated in any way contrary to the operating instructions as specified in the Operator's Manual.** The warranty does not apply to any damage to the mower that is the result of improper maintenance, or to any mower or parts that have not been assembled or installed as specified in the Operator's Manual. The warranty does not cover any mower that has been altered or modified, changing performance or durability. In addition, the warranty does not extend to repairs made necessary by normal wear, or by the use of parts or accessories which, in the reasonable judgment of Scag, are either incompatible with the Scag mower or adversely affect its operation, performance or durability.

**Scag Power Equipment reserves the right to change or improve the design of any mower without assuming any obligation to modify any mower previously manufactured.** All other implied warranties are limited in duration to five (5) years / 750 hours for non-commercial use. Accordingly, any such implied warranties including merchantability, fitness for a particular purpose, or otherwise, are disclaimed in their entirety after the expiration of the five (5) year / 750 hour warranty period. Scag's obligation under this warranty is strictly and exclusively limited to the repair or replacement of defective parts and Scag does not assume or authorize anyone to assume for them any other obligation. Some states do not allow limitations on how long an implied warranty lasts, so the above limitation may not apply to you.

Scag assumes no responsibility for incidental, consequential or other damages including, but not limited to, expense for gasoline, expense of delivering the mower to an Authorized Scag Service Dealer and expense of returning it to the owner, mechanic's travel time, telephone or other communication charges, rental of a like product during the time warranty repairs are being performed, travel, loss or damage to personal property, loss of revenue, loss of use of the mower, loss of time or inconvenience. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

