

OPERATOR'S MANUAL & PARTS LIST



**RIDING MOWER MODEL
623T**

THE GRASSHOPPER COMPANY
Moundridge, Kansas 67107 U.S.A.
(620) 345-8621
GRASSHOPPERMOWER.COM

Price \$7.00

Form 172182-190618
Printed in U.S.A.

INTRODUCTION

Congratulations on your selection of Grasshopper equipment. We believe you have exercised excellent judgment in the purchase of Grasshopper equipment. We are most appreciative of your patronage.

We recommend that you carefully read this entire manual before operating the unit. Time spent becoming fully acquainted with its performance features, adjustments and maintenance will add a longer and more satisfactory life to your Grasshopper.

The Grasshopper equipment you have purchased has been carefully engineered and manufactured to provide dependable and satisfactory use. Like all mechanical products it will require cleaning and upkeep. Lubricate it as specified in the manual. Observe all safety information in this manual and all safety decals on the tractor and attachments.

The illustrations and data used in this manual were current at the time of printing, but due to possible in-line production changes your machine may vary slightly in detail. The manufacturer reserves the right to make changes or add improvements to its products at any time without incurring any obligation to make such changes to products manufactured previously.

As with all lawn and grounds equipment, if handled carelessly this machine is a dangerous piece of equipment. **If used incorrectly this machine can cause severe injury.** You, the operator, are responsible when operating it. Therefore, safety is of the utmost importance.

Safety & Operation video
To view the video, scan the QR code or enter the web address

English	Spanish
	
English www.grasshoppermower.com/safeops	Spanish www.grasshoppermower.com/safeops_span

"EMISSION CONTROL INFORMATION"
THIS EQUIPMENT MEETS 2018 U.S.
EPA EVAP STANDARDS: 40 CFR PART 1060
FOR NONROAD EQUIPMENT.
EVAPORATIVE EMISSIONS FAMILY: JMRMPNHEQGH1
MFG'D BY: MORIDGE MANUFACTURING INC.

JAN	FEB	MAR	APR	MAY	JUN	2018
JUL	AUG	SEP	OCT	NOV	DEC	

165310

Part No. 165310

ATTENTION:

- Read the instructions and warnings carefully before using this machine.
- Read your Grasshopper warranty enclosed with the tractor manual. To validate warranty, fill in the required information and return the warranty form within 10 days of purchase to:

**THE GRASSHOPPER CO.
P.O. Box 637
Moundridge, Kansas 67107**

Use only genuine Grasshopper service parts. Substitute parts will void the warranty and may not meet standards required for safe and satisfactory operation. Record the model and serial number of your mower.

MODEL: _____

SERIAL NUMBER: _____
(Serial tag is located under seat on tractor frame by throttle.)

Provide this information to your dealer to obtain correct repair parts.

FindAGrasshopperDealer.com

IMPORTANT: This equipment is equipped with an evaporative emission control system (EECS) as required by the US Environmental Protection Agency (EPA). The EECS includes the carburetor, fuel tank(s), fuel hoses, fuel cap(s), valve(s), vapor hoses, filters, clamps, and connectors. These parts should be maintained properly and replaced as needed. **DO NOT** remove, or modify any part of the EECS.

IMPORTANT: This equipment **DOES NOT** meet the requirements of the California Air Resources Board (CARB) for evaporative emissions. **DO NOT** operate this equipment in the State of California.

IMPORTANT: This engine is not equipped with a spark arrester muffler. It is a violation of California Public Resource Code Section 4442 to use or operate the engine on any forest-covered, brush-covered or grass-covered land. Other states or federal areas may have similar laws.

The enclosed *Engine Owner's Manual* is supplied for information regarding the US Environmental Protection Agency (EPA) and the California Emission Control Regulation of exhaust emission systems, maintenance and warranty. Replacements may be ordered through the engine manufacturer.

WARNING

Engine exhaust, and certain components of this product contain or emit chemicals known to the state of California to cause cancer, birth defects and other reproductive harm. www.P65Warnings.ca.gov

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SPECIFICATIONS

623T

Engine	Kohler Command, two cylinder, 4 cycle, air cooled
Model No.	CH682
Displacement	42.3 cu. in. (694 cc.)
No-load r.p.m.	3600
Charging System	12 VDC 15 amp. negative ground
Starter	Electric
Electrical System	Safety interlocked

PTO	3100 r.p.m. (max.) Electric clutch
------------	---------------------------------------

Drive System	Tandem hydrostatic transmission direct drive
---------------------	--

Steering	Dual levers independently control speed and direction of travel Zero turning radius (center of machine is pivot point)
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Speed	
Forward (variable)	0 to 8.5 m.p.h. (13.7 km/h)
Reverse (variable)	0 to 6.0 m.p.h. (9.6 km/h)

Fuel Tank Capacity	4.0 U.S. gal. (15.1 liter)
---------------------------	----------------------------

Tire Sizes	
Front Drive Wheels	20 x 10 x 8
Tail Wheel	13 x 6.50 x 6 rib

Dimensions of Tractor	
Seat Back Height	44.5" (1.13 m.)
Seat Cushion Height	28" (.71 m.)
Tractor Width	47" (1.19 m.)
Tractor Length	75" (1.91 m.)
Wheel Base	46" (1.17 m.)

Weight - Uncrated	750 lbs. (340 kg.)
Weight - Crated	895 lbs. (406 kg.)

Hour Meter	Standard
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SAFETY SYMBOLS



This Safety Alert Symbol means **ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!**

Throughout this manual the term **IMPORTANT** is used to indicate that failure to observe can cause damage to equipment. The terms **CAUTION**, **WARNING** and **DANGER** are used in conjunction with the Safety Alert Symbol [a triangle with an exclamation mark] to indicate the degree of hazard for items of personal safety.

CAUTION

Is used for general reminders of good safety practices or to direct attention to unsafe practices.

WARNING

Denotes a specific potential hazard.

DANGER

Denotes the most serious specific potential hazard.

SAFETY DECALS

Replace Immediately If Damaged

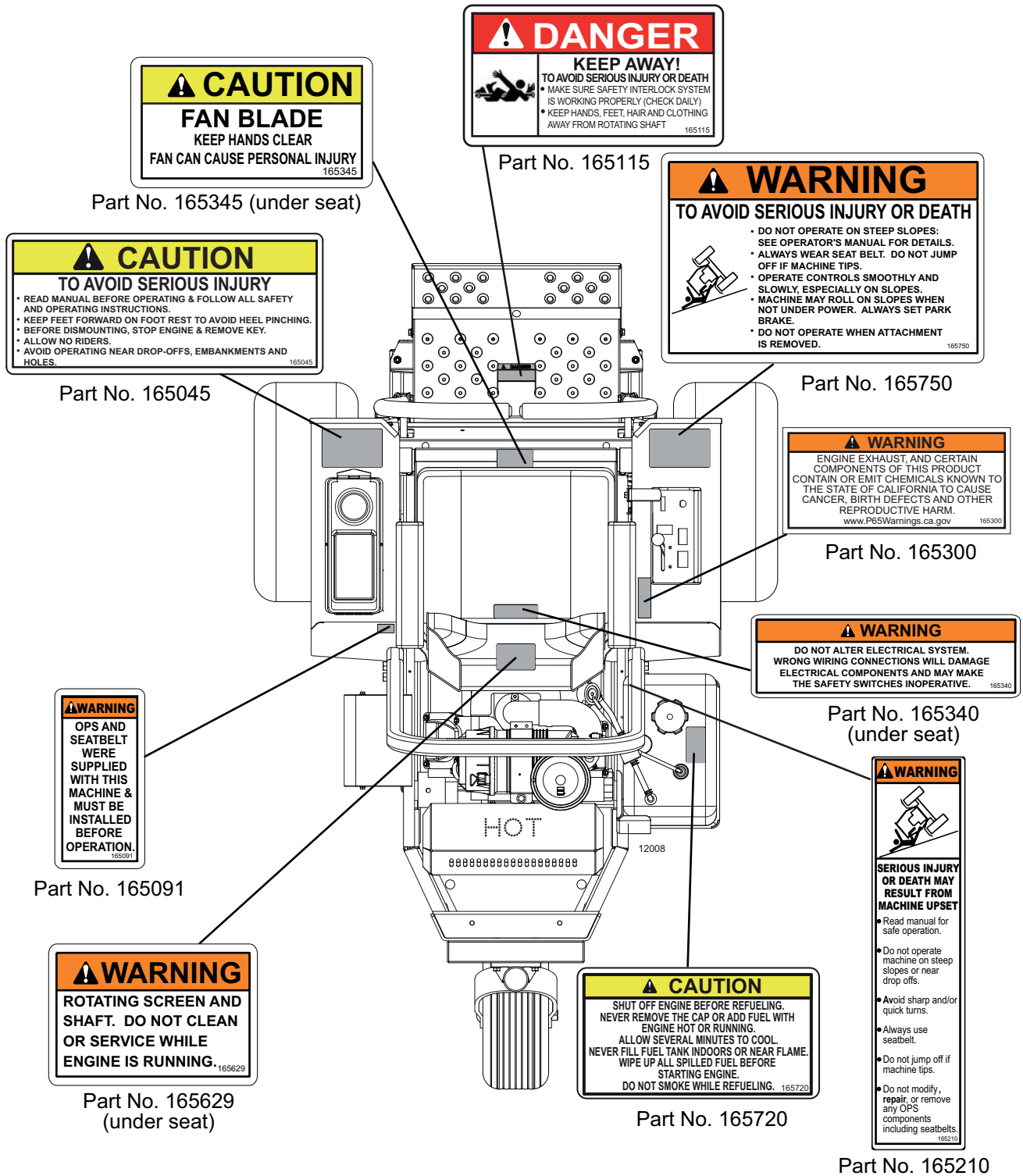


Fig. 1

WORK SAFELY - FOLLOW THESE RULES

CAUTION

The designed and tested safety of this equipment depends on it being operated within the limitations as explained in this manual. Read manual before operating.

TRAINING

- Safety instructions are important! **READ THIS MANUAL AND ALL SAFETY RULES.**
- Know your equipment's controls and how to stop tractor, engine and attachments quickly in an emergency.
- To avoid accident or injury, do not allow anyone to operate this equipment without proper instruction. Any person who operates this equipment **MUST** be instructed in and capable of the safe operation of the unit, its attachments and all controls.
- Do not allow children or unqualified individuals to operate equipment.

PREPARATION

- Always wear relatively tight and belted clothing to avoid entanglement in moving parts. Wear sturdy, rough soled work shoes. Never operate tractor or implements in bare feet, sandals or sneakers.
- This machine produces sound levels in excess of 85 dBA at the operator ear and can cause hearing loss through extended periods of exposure. Wear hearing protection when operating this machine.
- Walk around machine and visually inspect for damaged, loose, or missing components. Do not operate unless all components are properly mounted, adjusted and in good working condition.
- Ensure attachments are properly mounted, adjusted and in good operating condition.
- Make sure driveline spring-activated locking collar slides freely and is seated firmly in the tractor PTO groove.
- Ensure OPS is in good condition and installed properly. Never modify OPS with holes, notches or welding. If OPS is damaged, it must be replaced.

- Check brake action before you operate. Adjust or service brakes as necessary.
- Ensure all safety switches function properly. See Operation section for details.
- Remove accumulated debris from attachment and tractor to avoid fire hazard.
- Ensure all safety shielding is in good condition and properly installed.
- Ensure either the discharge shield, restriction plate, or complete vacuum attachment is installed.
- Ensure all safety decals are installed and in good condition.
- Use correct counterweights when certain attachments are installed (see specific accessory installation instructions).
- Inspect area to be cut removing stones, branches and other debris that might be thrown causing injury or damage.
- Evaluate the terrain to determine what accessories and attachments are needed to properly and safely perform the job.
- Low-hanging branches and similar obstacles can injure the operator or interfere with mowing operation. Before mowing, identify potential obstacles such as low-hanging branches, and trim or remove those obstacles.
- Never permit any person, other than the operator, to ride or board the tractor or implements at any time.
- Operate only in daylight or good artificial light.

FUEL HANDLING SAFETY

- In certain conditions, gasoline, ethanol, diesel and other types of fuel are extremely flammable and highly explosive. A fire or explosion from fuel can burn you and others and can damage property.
- Fill the fuel tank outdoors, in an open area, when the engine is cold. Wipe up any fuel that spills.
- Do not remove the fuel cap if the engine or fuel tank is hot. Allow several minutes to cool.
- Remove the fuel cap slowly to release any pressure from the fuel tank.
- Do not fill the fuel tank completely full. Add

fuel to the fuel tank until the level is .25" to .5" (6 mm to 13 mm) below the bottom of the filler neck. This empty space in the tank allows fuel to expand.

- Never smoke when handling fuel, and stay away from an open flame or where fuel fumes may be ignited by a spark.
- Store fuel in an approved container and keep it out of the reach of children. Never buy more than a 30-day supply of fuel.
- Never store antifreeze or oil in the fuel container.
- Always place fuel containers on the ground away from your vehicle before filling.
- Do not fill fuel containers inside a vehicle or on a truck or trailer bed because interior carpets or plastic truck bed liners may insulate the container and slow the loss of any static charge.
- When practical, remove equipment from the truck or trailer and refuel the equipment with its wheels on the ground.
- If this is not possible, then refuel such equipment on a truck or trailer from a portable container, rather than from a fuel dispenser nozzle.
- If a fuel dispenser nozzle must be used, keep the nozzle in contact with the rim of the fuel tank or container opening at all times until fueling is complete.
- Never use cellular phones or other portable electronic devices when handling fuel.

FILLING THE FUEL TANK

- Always fill the fuel tank with the machine parked on a hard LEVEL surface with the engine stopped, the park brake set, and the key removed from the ignition.
- Do not fill the fuel tank completely full. Air space is required in the full tank to allow the fuel to expand and contract with temperature changes. A valve is located in the top center of the tank to allow air to enter and exit the tank.
- Never fill the fuel tank when the engine is hot. Allow several minutes to cool.
- Filling the fuel tank, with the machine parked on a slope, can cause you to over fill the tank.

OPERATIONAL SAFETY

- Read "Operation" section of this manual before attempting to operate this unit.
- This machine is equipped with an Operator Protective Structure (OPS) and a seat belt. Do not operate this machine without the OPS installed and in good condition.
- Always wear the seat belt.
- Fenders serve as shields. Do not operate without them.
- Keep bystanders away from equipment while it is in operation.
- Keep children and pets a safe distance away. Never direct discharge toward anyone.
- Start engine from operator's seat after disengaging tractor power takeoff and placing steering levers into the neutral swing-out position.
- Keep hands and feet away from underneath mower while engine is running. Stay clear of all moving parts on tractor and attachments.
- Wear suitable hearing protection when operating this machine.
- Never allow anyone behind tractor or in front of implements when operating.
- Do not operate in reverse unless absolutely necessary and then only after careful observation of the entire area behind you.
- If operator must dismount to make adjustments the engine must not be running.
- Do not move steering levers from forward to reverse or reverse to forward position rapidly. The sudden change could cause loss of control and/or damage to equipment.
- Do not operate on steep slopes.
- Do not stop, start or change directions suddenly on slopes.
- Use extreme care and maintain minimum ground speed when traveling or operating on a hillside, over rough ground, or when operating close to ditches and fences.
- Reduce speed on slopes and sharp turns to minimize tipping and avoid loss of control. Be careful when changing directions on slopes.
- Stay alert for holes, rocks, roots and other

hidden hazards in the terrain. Keep away from drop-offs.

- Stop mower or other attachment and tractor immediately upon striking an obstruction. Turn engine off, inspect attachment and tractor. Repair any damage before resuming operation.
- Disengage power to attachment, stop engine, remove key and wait for all movement to stop before dismounting, making adjustments, cleaning, or unclogging the machine.
- Never transport attachments with PTO running.
- Watch for traffic when operating near or crossing roadways.
- This unit is not equipped for highway use, especially when safety lighting and marking is required. It is not a recreational vehicle.
- This unit is not equipped with a drawbar. Do not pull loads.
- Take all possible precautions when leaving tractor unattended: disengage PTO, lower attachment, place controls in neutral, set parking brake, stop engine and remove key from ignition.
- Move very slowly when attachment is removed. Never carry passengers.
- Do not run engine in an enclosed area without adequate ventilation. Exhaust gases contain carbon monoxide, an odorless and deadly poison.

MAINTENANCE SAFETY

- Always perform maintenance with the machine parked on a hard level surface; with the engine stopped and the PTO disengaged; with the park brake set; and with the key removed from the ignition.
- Always remove the grounded (-) clamp from the battery when performing maintenance on the engine, clutch, or any other electrical system.
- Never work under the machine without jack stands or other equivalent safety blocks. Do NOT rely solely on mechanical or hydraulic jacks or lifts for support. Always use adequate wheel chocks on

tires remaining on the ground.

- Never work under the attachment without holding it in the upright position with chains or straps or blocking underneath the deck. Do NOT rely solely on the electric or hydraulic system.
- Hydraulic hoses can fail due to physical damage, kinks, age, and exposure. Check hoses regularly. Replace damaged hoses.
- Escaping fluid under pressure can penetrate the skin causing serious injury. Avoid the hazard by relieving pressure before disconnecting hydraulic or other lines. Tighten all connections before applying pressure. If an accident occurs, see a doctor immediately. Any fluid injected into the skin must be surgically removed within a few hours or gangrene may result.
- Search for leaks with a piece of cardboard. Protect hands and body from high pressure fluids.
- If it is necessary to run an engine in an enclosed area, remove the exhaust fumes from the area with an exhaust pipe extension. If an exhaust pipe extension is not available, work near open doors and get outside air into the area.
- Waste products such as used oil, fuel, coolant, and batteries can harm the environment and people. Dispose of waste products properly.
- Never attempt to disconnect or alter any part of the safety interlock systems.
- Keep engine free of grass, leaves, or excess grease to reduce fire hazard and minimize engine overheating.
- Do not change engine governor settings.
- Keep tractor and attachments in good operating condition and all safety devices in place.
- Periodically tighten all bolts, nuts and screws. Check that all cotter pins are properly installed to ensure equipment is in a safe condition.
- Check brake operation frequently. Adjust and service as required.

STORING SAFELY

- Never store equipment with fuel in the tank inside a building where fumes may reach an open flame, spark or pilot light as on a furnace, water heater, clothes dryer, or other gas appliance. Allow engine to cool before storing in an enclosure.
- If engine is to be unused for 30 days or more, add a fuel stabilizer to the fuel system. Fuel stabilizer (such as STABIL[®]) is an acceptable additive in minimizing the formation of fuel gum deposits during storage. Add stabilizer to fuel in fuel tank or storage container. Always follow mix ratio found on stabilizer container. Run engine at least 10 minutes after adding stabilizer to allow it to reach the carburetor or injectors.
- If draining fuel tank, drain fuel into an approved container outdoors and away from open flame.
- Always provide adequate ventilation when running engine indoors. Exhaust gases contain carbon monoxide, an odorless and deadly poison.
- Remove attachments from tractor.
- Never store an attachment in the raised position without securing the attachment with chains or straps or blocking underneath the attachment. It is best to remove attachment from tractor. Remove all accumulated debris from attachments and tractor.
- Clean machine with air or cloths. DO NOT high pressure wash. Never clean hot components with cold water.
- Sand areas where paint is chipped and repaint to prevent rust. Lubricate all locations to prevent moisture damage during storage.

GENERAL INFORMATION

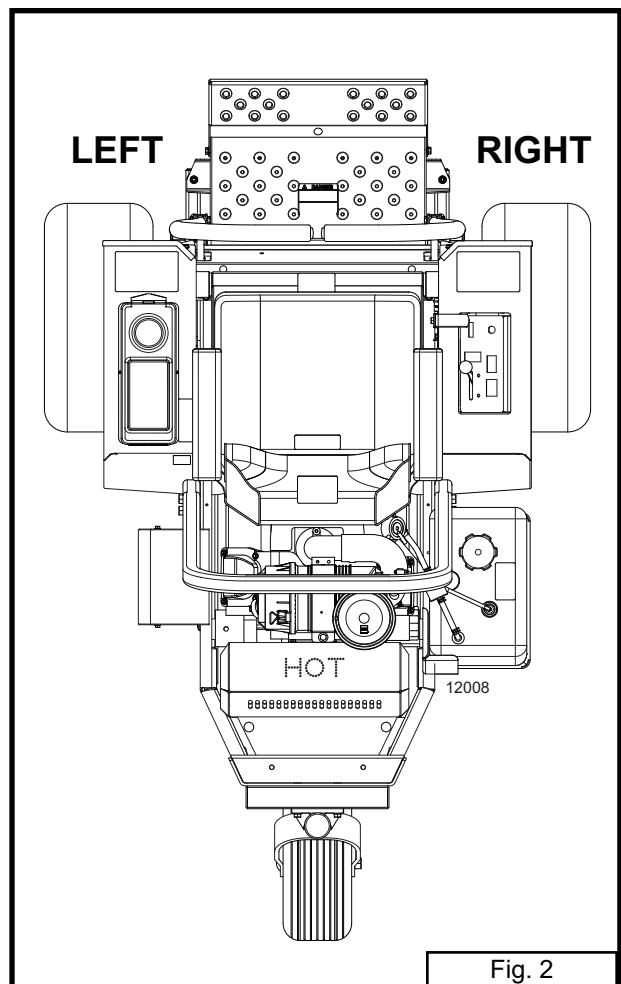
The purpose of this manual is to assist the operator in maintaining and operating **GRASSHOPPER** tractors. Read it carefully. It furnishes information and instructions that will help you achieve years of dependable performance.

These operating and maintenance instructions have been compiled from extensive field experience and engineering data. Some information may be general in nature due to unknown and varying conditions. However, through experience and these instructions you should be able to develop operating procedures suitable to your particular situation.

The illustrations and data used in this manual were current at the time of printing, but due to possible in-line production changes your machine may vary slightly in detail. **GRASSHOPPER** reserves the right to redesign and change the machine as necessary without notification.

WARNING

Some illustrations in this manual show the equipment with safety shields removed to provide a better view. The mower should never be operated with any safety shielding removed.



Throughout this manual, references are made to right and left directions. These are determined by standing at the rear of the equipment and facing the direction of forward travel.

Mower blade rotation is clockwise as viewed from the top of mower.

MEASUREMENT CONVERSION

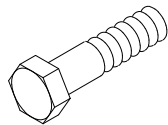
Measurements expressed in this manual are decimal values. Use the chart below if you are unsure of a measurement to obtain the fractional equivalent.

Conversion Table - Inches			
Decimal	Fraction	Decimal	Fraction
0.062	1/16	0.562	9/16
0.125	1/8	0.625	5/8
0.187	3/16	0.687	11/16
0.250	1/4	0.750	3/4
0.312	5/16	0.812	13/16
0.375	3/8	0.875	7/8
0.437	7/16	0.937	15/16
0.500	1/2	1.000	1

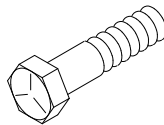
BOLT SIZE AND TIGHTENING RECOMMENDATIONS

The chart below lists the correct tightening torque for bolts used on Grasshopper equipment. When bolts are to be tightened or replaced refer to this chart to determine the grade of bolt and proper torque (*except when specific torque values are assigned in the manual text*).

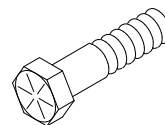
Bolt Head Markings



SAE Grade 2
(no dashes)



SAE Grade 5
(3 radial dashes)



SAE Grade 8
(6 radial dashes)

Recommended Torque in Foot Pounds				
Bolt Diameter in Inches				
Decimal	Fraction	SAE Grade 2	SAE Grade 5	SAE Grade 8
0.250	1/4	6	11	14
0.312	5/16	13	21	25
0.375	3/8	23	38	55
0.437	7/16	37	55	80
0.500	1/2	57	85	120
0.562	9/16	82	125	180
0.625	5/8	111	175	230
0.750	3/4	200	300	440
0.875	7/8	280	450	720
1.000	1	350	680	1035

OPERATION

The safe operation of this machine is the responsibility of the operator. The operator should be familiar with the tractor and all attachments that will be used before starting operation. Read all safety information on pages 6 through 11.

CONTROLS AND SWITCHES

Know your controls and how to stop tractor, engine and attachments quickly in an emergency.

- **Stop tractor** by moving steering levers to neutral position (*refer to section on steering lever operation, page 18-19*).
- **Stop engine** by turning key to “OFF” position.
- **Disengage power to attachments** by moving PTO switch to “OFF” (down) position.

Operating this unit is not difficult once you master the use of the controls. We recommend you equip the tractor with the attachment you will be using and practice in a flat open area at a medium throttle setting until you are comfortable with the controls.

WARNING

Before operating this machine be sure the operator-presence safety system works. Do not run the engine without an operator in the seat if the PTO switch is “ON” or either steering lever is in the run position.

Several safety switches are incorporated in the unit’s design to prevent it from being started out of neutral or with the PTO engaged. All controls must be in the “OFF” or neutral position before the unit can be started. There is a safety switch under the operator’s seat that will cause the engine to stop, should the operator leave the seat with any control engaged.

PRE-START CHECK LIST

- Place tractor on level surface.
- Check crankcase oil level (refer to “Engine Manual” for proper level and type of oil used).

CAUTION

Never attempt to check oil while engine is running.

- Clean rotating air intake screen. When mowing in dusty conditions, dry grass or long grass it may be necessary to frequently clean rotating air intake screen to prevent engine overheating.

WARNING

Never attempt to clean rotating air intake screen while engine is running.

- Check for grass wrapped around PTO shaft. When mowing long grass, turn off key and check for grass wrapped around PTO shaft every 30 minutes of operation.

WARNING

Remove spark plug wire to prevent accidentally starting engine before attempting to remove grass from around PTO shaft.

- Check air cleaner (refer to “Engine Manual”). When mowing in dusty conditions, dry grass or long grass it may be necessary to frequently clean the foam precleaner and paper cartridge.
- Check to be sure engine is free of dirt and debris.
- Check fuel level. Refer to “Engine Manual” for correct fuel for your requirements.
- For best results, use only clean, fresh, unleaded gasoline with an octane rating of 87 or higher ((R+M)/2 rating method).
- **Do Not** use ethanol blends of gasoline (such as E15 or E85) with more than 10% ethanol by volume. Performance problems and/or engine damage may result which may not be covered under warranty.
- **Do Not** use gasoline containing methanol.

 DANGER

Do not fill fuel tank while engine is running. Allow engine to cool several minutes before refueling. If fuel is spilled do not start engine; avoid creating any source of ignition until the fuel has evaporated.

- Check tire pressure (see page 21). Improper pressure will adversely affect traction, steering and level cutting height.
- Check that cooling fins on the hydrostatic transmissions are clean.

Test Safety Interlock System Daily

Action	Left Steering Lever	Right Steering Lever	PTO Switch	Parking Brake	Proper Result
Start Circuits					
Try starting engine	Out	Out	Off	On	Engine Cranks
Try starting engine	In	Out	Off	On	Engine will not crank
Try starting engine	Out	In	Off	On	Engine will not crank
Try starting engine	Out	Out	On	On	Engine will not crank
Kill Circuits (with engine running at 1/2 throttle)					
Raise off seat	Out	Out	Off	On	Engine does not stop
Raise off seat	In	Out	Off	Off	Engine Stops
Raise off seat	Out	In	Off	Off	Engine Stops
Raise off seat	Out	Out	On	On	Engine Stops
Move left steering lever in		Out	Off	On	Engine Stops
Move right steering lever in	Out		Off	On	Engine Stops

MOUNTING AND DISMOUNTING THE TRACTOR - WITH MOWER DECK

Always mount and dismount the mower from the left side, with the brake on, the PTO disengaged (down), the engine off, and the steering levers in their swung out (neutral lock) position. Mount the mower by stepping from the ground to the left side of the deck with your left foot, then step over the deck frame to the footrest with your right foot. Wait for all moving parts to stop before dismounting. Dismount the mower by standing up on the footrest, then turn to the left and step from the footrest, over the deck frame, to the left side of the deck with your right foot, and then step to the ground with your left foot. The left steering lever can be used to stabilize your movement; however, it is not strong enough to support all your weight. Never leave the mower unattended with the key in the ignition.

MOUNTING AND DISMOUNTING THE TRACTOR - WITH ALL OTHER ATTACHMENTS

Always mount and dismount the mower from the left side, with the brake on, the PTO disengaged (down), the engine off, and the steering levers in their swung out (neutral lock) position. Mount the mower by stepping from the ground to the footrest with your right foot. Wait for all moving parts to stop before dismounting. Dismount the mower by standing up on the footrest, then turn to the left, and step from the footrest to the ground with your right foot. The left steering lever can be used to stabilize your movement; however, it is not strong enough to support all your weight. Never leave the mower unattended with the key in the ignition.

STARTING THE ENGINE



Never start the engine in confined rooms. Exhaust gases contain carbon monoxide, an odorless and deadly poison.

Do not allow children to approach the machine while the engine is running.

Do not operate the machine around open flames, i.e., trash fires.

Do not operate the engine when an odor of fuel is present or other explosive conditions exist.

- Position yourself on the tractor seat.
- Place both steering levers in swing-out neutral position.
- Place electric clutch switch in "OFF" (down) position.
- Set the throttle at $\frac{1}{3}$ open.
- Insert the key into the ignition switch.
- Turn the key to "START" position. Choke as necessary to start. When engine starts release key immediately. Return choke to "OFF" position gradually until choke is completely "OFF" and engine is running smoothly.
- Warm the engine up at medium speed for several minutes.

You will enhance the starter life by using short starting cycles of several seconds. Engaging starter motor more than 15 seconds per minute can result in damage to starter.

COLD WEATHER STARTING TIPS

Use proper viscosity oil for temperature expected (see "Engine Manual").

Set throttle at half open.

A warm battery has better starting capacity than a cold one.

Use fresh winter grade fuel. It is better for winter starting than leftover summer grade fuel.

UNEVEN TERRAIN

WARNING

Do not operate on steep slopes. Operation on a steep slope could cause loss of control, machine to overturn and personal injury or death.

- Do not operate on steep slopes. This machine was not specifically designed to operate on steep slopes.
- The operator is responsible for safe operation on slopes. Only the operator can determine the stability of the machine on a given slope based on existing conditions like: machine speed and direction, slope variation, slipperiness, drop-offs, holes, obstacles, etc.
- To determine stability on a slope, start at the bottom and try to drive the machine up the slope slowly. If you cannot drive up the slope or if you feel uneasy on it, do not operate on it.
- Always start mowing at the bottom of slopes. Traveling up slopes, this machine has more traction traveling in reverse than forward. Be careful on slopes to avoid driving into a position where there is not enough traction to enable driving out or stopping.
- Tires may lose traction on slopes even though the brakes are functioning properly.
- Avoid sudden stops and deceleration when traveling forward downhill as mower may tip forwards.
- Do not mow slopes when grass is wet because slippery conditions will reduce traction and braking which in turn affects steering.
- Use caution when making turns. Slow the mower down before making sharp turns. Unit can spin very rapidly by positioning one lever too much ahead or behind the other.
- Look around you to be sure the area is clear before turning or backing up.
- Avoid starting or stopping on a slope. If tires lose traction, disengage the blades

and proceed slowly straight down the slope.

- Keep all movement on slopes slow and gradual. Do not make sudden changes in speed or direction.
- Pass diagonally through sharp dips and avoid sharp drops.
- Follow manufacturer's recommendation for counterweights for added stability when operating on slopes or using front or rear mounted attachments. Remove weights when not required.
- Use extra care with grass catchers or other attachments. These can change the stability of the machine. Do not use grass catcher on steep slopes.
- Check carefully for overhead clearances such as, branches, doorways, or electrical wires, before driving under any objects and do not contact them.

STOPPING THE ENGINE

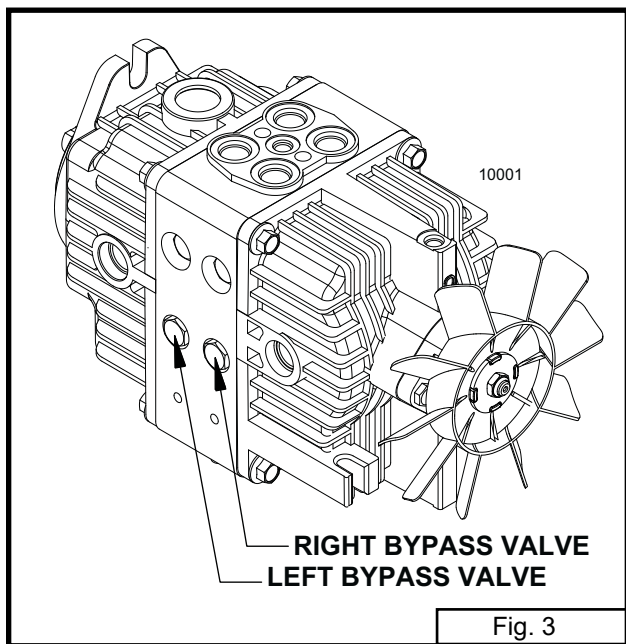
- Set the throttle at idle. Allow engine to idle for several minutes.
- Move throttle to half speed before turning engine off to prevent run-on.
- Turn ignition switch to "OFF" position and remove key.
- Never use the carburetor choke to stop engine.

CAUTION

Always remove key from ignition switch when leaving unit unattended or when not in use.

MOVING UNIT WITHOUT POWER

The tandem hydro pump is equipped with bypass valves that allow the unit to be moved without power by deactivating the pump. With the bypass valves in normal operating position, the fluid in the pump will make it difficult to move the unit (even with the steering levers in neutral position). The bypass valves are located on the right side of the pump. Activate each bypass valve by rotating one revolution counter-clockwise with a .625 inch socket. When BOTH bypass valves are activated the unit becomes “freewheeling”, allowing it to be moved. Before the hydro pump becomes operational, the bypass valves must be returned to their normal operating position. **Do not tighten above 120 in lbs (10 ft lbs) maximum.**



STEERING LEVER OPERATION

(refer to Fig. 4)

⚠ WARNING

Do not move steering levers from forward to reverse or reverse to forward position rapidly. The sudden change could cause loss of control or damage to equipment.

The Grasshopper tractor is very unstable without an attachment. Move very slowly when attachment is removed. Never carry passengers.

Steering levers control speed and direction of movement. Pushing the levers forward will move the tractor forward. Pulling levers to the rear will move tractor in reverse. The further forward or rearward the steering levers are moved, the faster the machine will move.

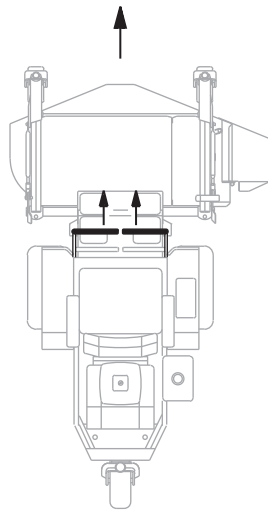
At half throttle move both steering levers from swing-out neutral inward. Move both steering levers forward. To turn right, advance left lever further forward than right lever. To turn left, advance right lever further forward than left lever. If you leave one steering lever in neutral and advance the other lever, the tractor will turn a complete circle. Move the levers to the rear and practice turning and maneuvering in reverse. Once you learn how the controls operate, practice until you become proficient and are comfortable with the unit before you begin operation with an attachment.

IMPORTANT

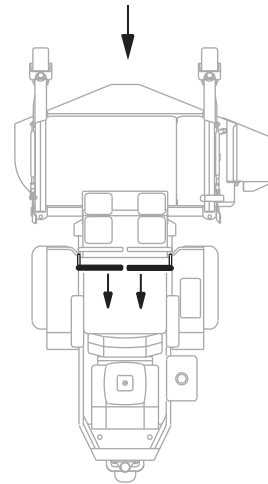
If you become confused during operation release both steering levers, they will automatically return to the centered neutral position and the tractor will stop.

STEERING LEVER OPERATION

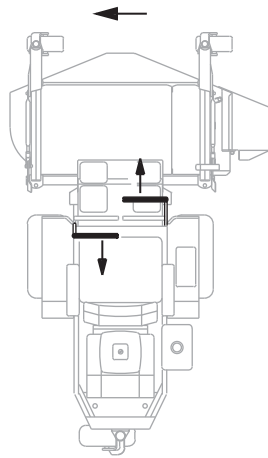
FORWARD



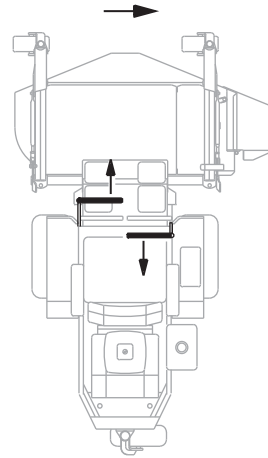
REVERSE



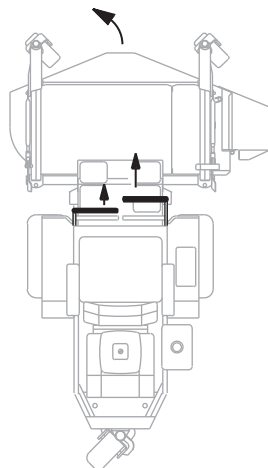
SHARP LEFT



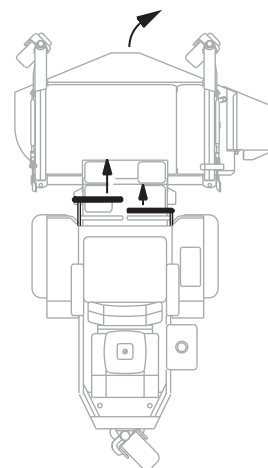
SHARP RIGHT



GENTLE LEFT



GENTLE RIGHT



94091A

Fig. 4

LOADING / TRANSPORTING MACHINE

front and rear straps must be directed down and outward from machine.

WARNING

Loading a machine onto a trailer or truck increases the possibility of tip-over and could cause serious injury or death.

Use a heavy-duty trailer to transport your machine. Trailer rating must exceed combined weight of machine and attachments. Trailer must have the necessary lights and signs required by law.

1. Park trailer on a hard level surface.
2. Push PTO switch down to the "OFF" position.
3. Drive FORWARD onto trailer with attachment raised.
 - Use extreme caution when operating machine on a ramp. Move Slowly.
 - Avoid sudden acceleration and deceleration when operating machine on a ramp.
 - Drive machine forward up ramp and reverse down ramp. **DO NOT** attempt to turn machine while on a ramp.
 - Use only a single, full width ramp; **AVOID** individual ramps for each side of the machine.
 - If it is not possible to use one full width ramp, use enough individual ramps tied together to simulate a full width continuous ramp.
 - **DO NOT** exceed a 15 degree angle between ramp and ground or between ramp and trailer or truck.
4. Position machine on trailer for optimal weight distribution (generally slightly forward of trailer axle). Follow tow vehicle and trailer manufacturer guidelines.
5. Lower attachment down to trailer platform.
6. Stop the engine, engage the park brake and remove the key.
7. Securely fasten machine to trailer with heavy-duty straps, chains or cables. Both

LUBRICATION AND MAINTENANCE

CAUTION

Always wear safety glasses and ear protection when performing any maintenance function that could cause injury to eyes or ears.

Read all safety information on pages 6 through 11.

WARNING

Lower attachment to ground, shut off tractor engine, remove key and wire to spark plug before performing any maintenance.

LUBRICATION

Do not let excess grease collect on or around parts, particularly when operating in sandy areas.

The chart gives the frequency of lubrication in operating hours based on normal operating conditions. Severe or unusual conditions may require more frequent lubrication.

Use an SAE multipurpose type grease for all locations shown. Clean fitting thoroughly before using grease gun.

For hydrostatic transmissions use CoolTemp Hydro-Max™ Extended-Life Hydrostatic Fluid (Grasshopper part no. 345044 for 1 quart [.94 l] container).

Lubricate Every 8 Hours of Usage	Lubricate Every 80 Hours of Usage
Rear Wheel Bearings (one fitting)	Clutch Power Shaft (two fittings)
Universal Half Shaft (one fitting)	

CAPACITIES

Fuel Tank 4.0 U.S. gal. (15.1 l)
 Drive System 2.7 quarts (2.6 l)

TIRE AIR PRESSURE

Drive Tires
 Standard 20x10x8 8 psi (55 kPa)
 Optional 21x11x8 8 psi (55 kPa)
 (Refer to decal on wheel for correct tire air pressure)
 Rear Tires 13x6.50x6.....12 to 15 psi (83 to 103 kPa)

HYDROSTATIC DRIVE SYSTEM

Fluid Change 1000 hours
 Filter Change 1000 hours

CRANKCASE OIL AND AIR FILTER

Refer to the “Engine Manual” for the time table for changing or service.

COOLING SYSTEM

Inspect the engine cooling fins periodically for buildup of grass and debris. Buildup on the cooling fins will cause the engine to overheat.

Removal of engine cowling may be required to clean the fins, especially if cleaned infrequently.

CAUTION

Do not use high pressure water or steam to clean the engine or drive compartment. Water and cleaning detergent may damage electrical components and terminals, possibly leading to component and safety circuit failure.

Use a vacuum cleaner or air blower to remove foreign material from the engine and drive compartment.

BATTERY MAINTENANCE

Follow the procedure below for battery maintenance and service.

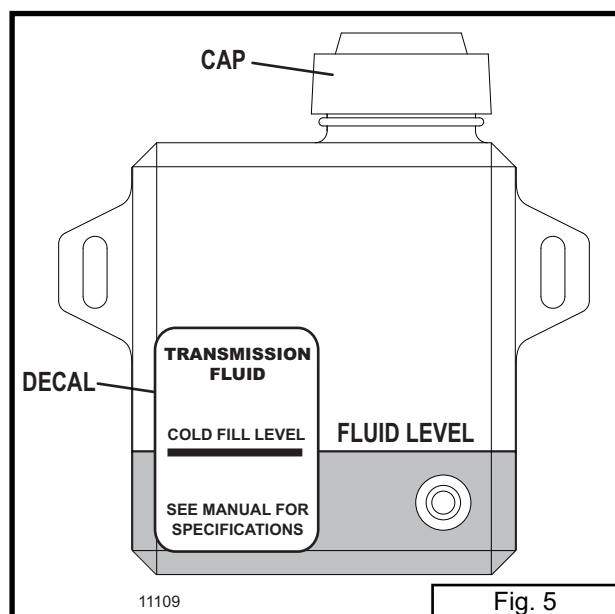
- Clean battery.
- Inspect cables for loose connection.
- Clean terminals.
- Inspect battery tray and hold-down.
- Inspect battery case for cracks or leaks.

WARNING

Batteries contain sulfuric acid. Avoid contact with skin, eyes, and clothing. Batteries produce a highly explosive hydrogen gas while being charged. Always keep cigarettes, sparks, open flame, and other sources of ignition away from battery. Always shield eyes and face from battery. In the event of accident, flush with water and call a physician immediately. Keep batteries and acid out of the reach of children.

CHECKING DRIVE SYSTEM FLUID LEVEL

Check fluid level with the engine turned off. The expansion tank is located on the right side under the seat. To check the fluid level, look through the side of the expansion tank. The fluid level should be equal to the full mark on the reservoir decal (Refer to Fig. 5). If fluid is required, make certain that expansion tank cap and the area around it is clean and free of any foreign matter before adding fluid. Use CoolTemp Hydro-Max™ Extended-Life Hydrostatic Fluid (Grasshopper part number 345044 for 1 quart [.94 l] container).



CHANGING DRIVE SYSTEM FLUID AND FILTER

(Refer to illustration page 31)

Change fluid and filter every 1000 hours. To drain fluid, remove drain plug from the bottom of tandem hydro pump. Allow fluid to drain completely. Reinstall plug and tighten.

To replace filter (item 3), which is located in the bottom of tandem hydro pump, make certain that the area around filter is clean and free of any foreign matter. Remove the filter and replace with a new filter (Grasshopper part number 130505).

To refill the system with fluid, make certain that the area around the expansion tank adapter (item 70) is clean and free of any foreign matter. Disconnect the hose (item 64) from the adapter and remove adapter from tandem hydro pump. Refill the pump with CoolTemp Hydro-Max™ Extended-Life Hydrostatic Fluid (Grasshopper part number 345044 for 1 quart [.94 l] container). Reinstall adapter in pump and reconnect hose to adapter. Refill expansion tank with CoolTemp Hydro-Max™ Extended-Life Hydrostatic Fluid to the proper level (Refer to Fig. 5). Run engine and check that fluid level in expansion tank is at the proper level.

Note: No air bleeding is necessary since the system is self-bleeding.

ADJUSTMENTS AND TROUBLESHOOTING

⚠ CAUTION

Never make adjustments with the engine running.

LOSS OF POWER IN THE DRIVE SYSTEM

Check the fluid level and be sure the proper amount of fluid is in the expansion tank. The cooling fins and fan blades should be clean and free of foreign matter.

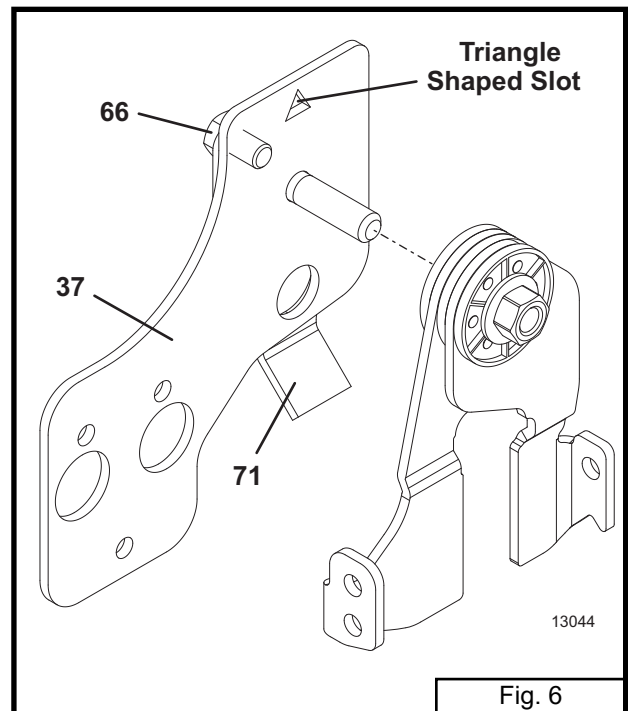
NO POSITIVE NEUTRAL POSITION

If drive wheels travel forward or backward when the steering lever is in swing-out position (neutral), adjustment is required.

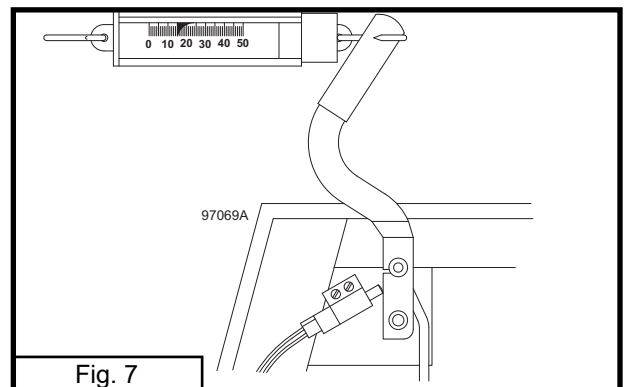
NEUTRAL ADJUSTMENT

(Refer to Fig. 6 and illustration page on 31)

1. Block up under tractor frame so both drive wheels are off the ground.
2. Make sure parking brake is released.
3. Remove linkage rod (item 28 or 29) from transmission control arm (item 17 or 18).
4. Place steering levers in the neutral swing-out position and start engine.
5. If either of the drive wheels turn, proceed with the following adjustment.
6. Locate the return mount (item 37) with the adjustment plate (item 71) bolted to it. The right plate adjusts the right side while the left plate adjusts the left side. Loosen the .312-24 x .5 bolt (item 66) located in the upper corner of plate. Insert a screwdriver into the triangle shaped slot and rotate adjustment plate until neutral is achieved. Tighten bolt.
7. Repeat procedure on other side transmission.
8. Reinstall linkage rod in control arm. If rod end (item 26) does not reinstall into control arm without moving the control arm, adjust length of linkage rod until it slides into control arm to assure neutral adjustment will be maintained when linkage is connected.
9. Test drive machine for straight line travel with both levers full forward. If travel is not in a straight line, adjust the steering lever



stop on the side that is the fastest i.e.: if machine goes to the left, adjust the right steering stop to slow down the right transmission until travel is straight ahead.



PARKING BRAKE ADJUSTMENT

(Refer to Fig. 7 and illustration on page 33)
Adjust the right and left brake individually. Disconnect the right brake linkage rod (item 25). Adjust the linkage pin (item 27) to the left brake until it takes 14 lbs of pull at the top of the hand lever to apply the parking brake. Adjustment of brake linkage rod (item 22) may also be required. Connect the right brake linkage.

Disconnect the left brake linkage rod and adjust the linkage pin attached to the right brake

until it takes 14 lbs. of pull at the top of the hand lever to apply the parking brake. Connect the left brake linkage.

With both brakes connected it should take 28 lbs. of pull at the top of the hand lever to apply the parking brake. Adjust the brake linkage rod (item 22) if necessary.

CLUTCH REMOVAL/ REPLACEMENT

(Refer to page 29)

- Remove two carriage bolts (item 21). Lift out weight cover and rear weights.

(Refer to page 36)

- Remove anti-rotation bracket (item 19).
- Using a 15/16 inch wrench, rotate the idler arm (item 23) with idler pulley (item 30) away from belts and remove drive belts (item 37).
- Unplug wires from clutch and remove center bolt (item 18). Slide clutch off engine crankshaft.
- Reverse order to install new clutch.
- Torque clutch bolt to 50 ft lbs. Run clutch 15 minutes, then torque to 50 ft lbs again.

CLUTCH/BRAKE BURNISHING IMPORTANT

A new clutch, or one that has not been used for three months, will require burnishing to dress drive surfaces. The clutch could fail if you do not accomplish the following procedure.

Place tractor in neutral and start engine. Turn clutch switch on 30 seconds and off 30 seconds, five times at half-throttle and repeat five times at full throttle. The time interval allows the clutch surface to cool.

ENGINE TROUBLESHOOTING

Should you experience trouble in starting the engine, use the following guide to locate possible causes.

Engine will not crank:

- Battery is discharged.
- Blown starter fuse.
- PTO switch is "ON".
- Steering levers are not out in neutral.
- Steering lever switches are out of adjustment (listen for the switch "click").
- A loose wire or connection.

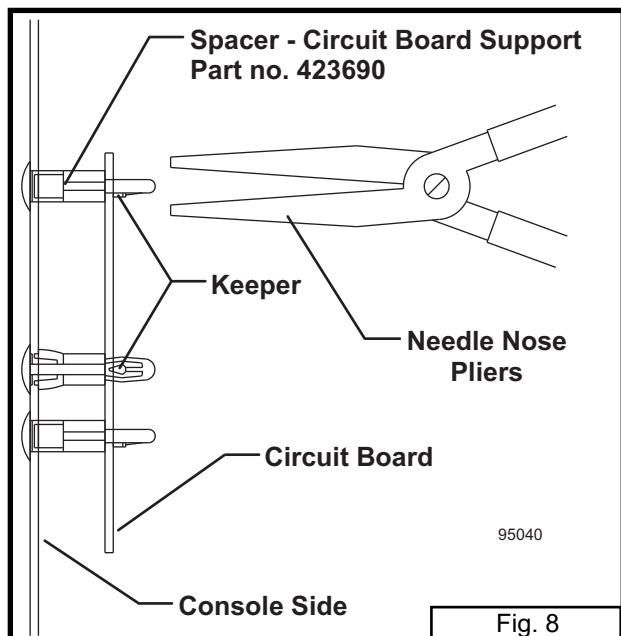
Engine cranks, but will not start:

- Fuel tank is empty.
- Restricted fuel line or fuel filter.
- A loose wire or connection.

If the above points do not locate the problem, contact your authorized Grasshopper dealer for repair.

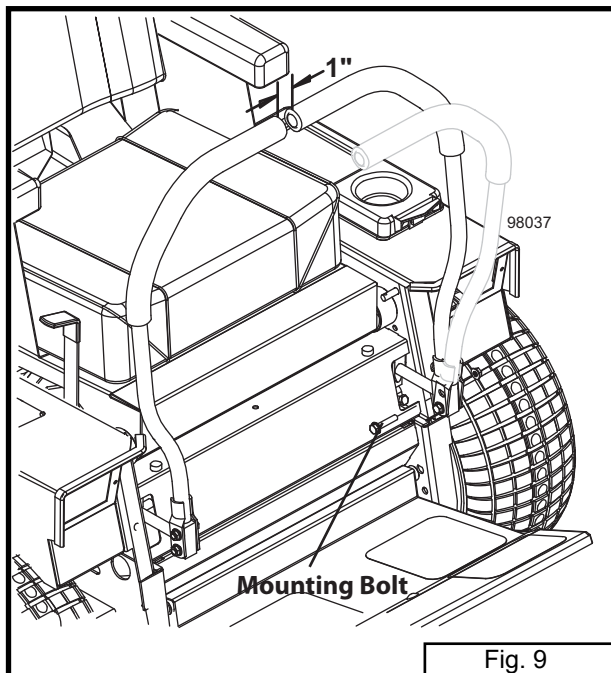
WIRING CIRCUIT BOARD REMOVAL

Remove the circuit board from the console by compressing the keeper in each of the three circuit board support spacers with needle nose pliers (refer to Fig. 8). Slide the board past each keeper when it is compressed.



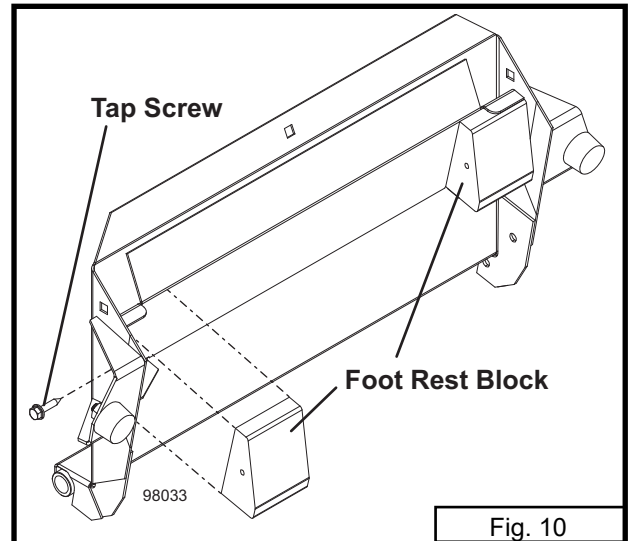
STEERING LEVER ADJUSTMENT

To adjust steering levers, loosen mounting bolts that secure the levers to the lever mounts. This allows the levers to be moved forwards or backwards (refer to Fig. 9). Set levers to a comfortable position for the operator. Hold levers in an outward position and tighten bolts. The levers must line up when in neutral position and maintain one inch of clearance between ends of levers. If the levers are allowed to lean toward the center when the mounting bolts are tightened, free play in the mounting holes may allow the levers to hit each other.



FOOTRESTBLOCKINSTALLATION

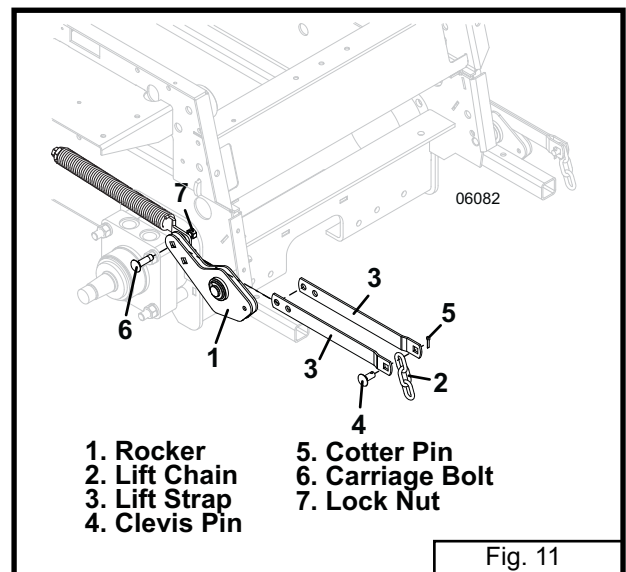
On 600T series tractor, always install foot rest block with the narrow end toward the front (refer to Fig 10).



ATTACHING SL96, SL98 OR 33 SERIES DECKS

(refer to Fig. 11)

- Install lift straps (item 3) in the rocker (item 1) where shown, securing with carriage bolt (item 6) and lock nut (item 7).
- Install lift chain (item 2) between lift straps and secure with clevis pin (item 4) and cotter pin (item 5).
- Refer to deck operators manual for additional attaching instructions.



TRACTION KIT INSTALLATION

⚠ CAUTION

Always wear safety glasses and ear protection when performing any service or maintenance function that could cause injury to eyes or ears.

Read all safety information on pages 6 through 11.

⚠ WARNING

Shut off tractor engine, remove key and wire to ignition coil before installing traction kit on tractor.

PREPARATION

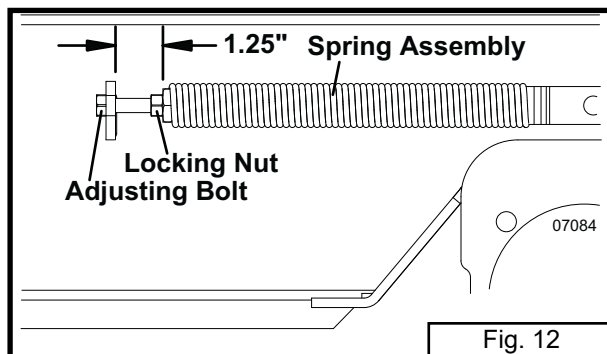
Remove mower deck from tractor. Remove both fenders and drive wheels from the tractor.

ADJUSTING TRACTION SPRING TENSION

⚠ WARNING

Do not over extend springs. Over extension will cause loss of weight to rear of tractor. This could cause operator to lose control of the machine, particularly while going down hill.

Set deck at a mid-height cutting position. Remove fender. Tighten adjusting bolt (refer to Fig. 12) until a distance of 1.25 inches is between spring bracket and end of spring assembly. This setting applies to all deck models. Tighten locking nut against end of spring and install wheel and fender. Repeat on other side.



REAR WEIGHT REQUIREMENTS

⚠ WARNING

Additional weight may be required on the rear of the Grasshopper tractor when certain attachments are used. See Weight Chart.

A counter weight is supplied with the traction kit and must be installed on the rear of the Grasshopper tractor when a traction kit is installed, if not using a grasscatcher.

REMOVING MOWER DECK FROM TRACTION KIT EQUIPPED TRACTOR

Refer to mower deck manual and reverse attaching procedure.

COUNTERWEIGHT REQUIREMENTS - 600 SERIES

COUNTERWEIGHT NOT REQUIRED ON UNITS EQUIPPED WITH COLLECTION SYSTEM

	Single Tail Wheel with Counter Weight	2 or 4 Tail Wheels
48" Bidirectional Broom	N/A	N/A
48" Fixed Angle Broom	N/A	100 lbs. (45.36 kg.)
48" Dozer Blade	50 lbs. (22.68 kg.)	50 lbs. (22.68 kg.)
48" Snowthrower	50 lbs. (22.68 kg.)	50 lbs. (22.68 kg.)
40" AERA-vator	N/A	100 lbs. (45.36 kg.)

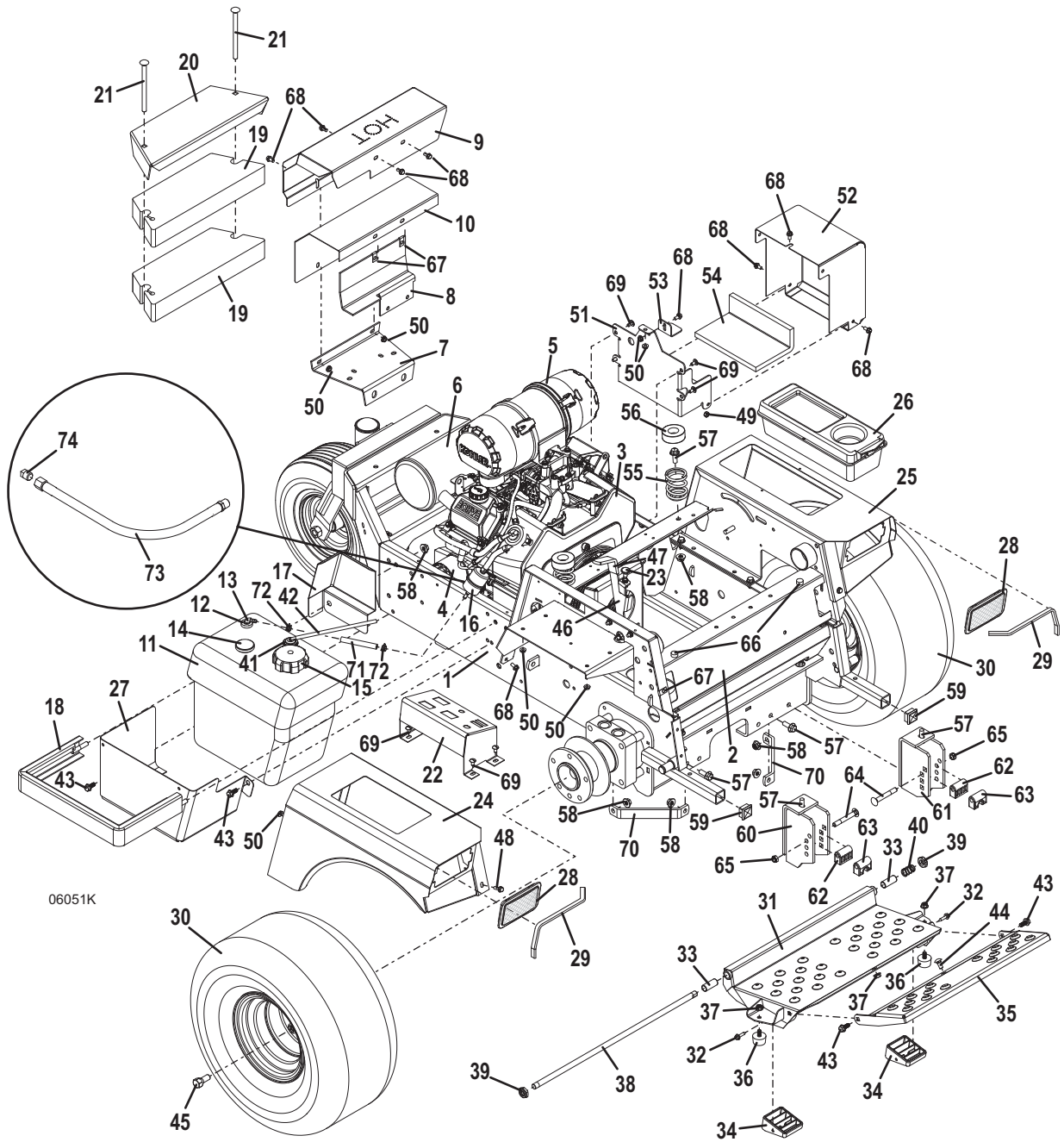
NOTE: When a collection system is in place on 600 Series, the counterweight is removed.
The counterweight must be replaced when removing the collection system.

Deck Tilt Assist Kit (98 Series): Requires 50 lbs. of counterweight.
Single tail wheel with 100 lbs. or more counterweight is not recommended.

TRACTOR ASSEMBLY

Item No.	Order No.	Description	Item No.	Order No.	Description
1	643873	Lower Frame	36	424052	Rubber Bumper
2	643874	Upper Frame	37	253035	Whiz Nut .312-18
3	100156	Engine 23 HP Twin Kohler OHV	38	780656	Pivot Rod
	900117	Engine Shim (as required)	39	253470	Nut .5-13 Nylon Insert
4	100802	Oil Filter	40	283312	Compression Spring
5	100936	Air Filter	41	606830	Fuel Tank Valve Kit
	100937	Air Filter Pre-cleaner	42	821757	Hose - Fuel Vapor .187 x 8
6	101216	Muffler	43	253192	Whiz Bolt .312-18 x .75
	101041	Exhaust Gasket	44	247130	Carriage Bolt .312-18 x .75
7	729270	Bracket – Lower Muffler	45	248565	Lug Bolt .5-20 x .875
8	605125	Bracket Assembly – Shield Mount (includes item 67)	46	605823	Throttle/Choke Mount Assembly (includes item 47)
9	722391	Shield – Muffler		323643	Cable Assembly – Throttle
10	722309	Inner Panel - Shield		722736	Throttle Stop – Heavy Duty
11	605792	Fuel Tank Assembly (includes item 12-15)	47	422150	Handle Grip
			48	253175	Whiz Bolt .25-20 x .75
12	101875	Bushing - Fuel Tube	49	253440	Nut .25-20 Nylon Insert
13	363925	Fuel Tube .25 Barb x 11.5	50	253025	Whiz Nut .25-20
14	141142	Gauge - Fuel	51	644099	Battery Box
	424275	Grommet - Fuel Gauge Mount	52	644162	Cover – Battery
15	100212	Fuel Cap - Sealed Tether	53	729001	Battery Clamp
16	101001	Fuel Filter	54	427273	Pad – Battery Tray
17	721502	Heat Shield – Fuel Tank	55	283516	Seat Spring
18	645826	Mounting Bracket – Fuel Tank	56	422127	Cap – Seat Spring
19	323933	Counterweight – 34#	57	253203	Whiz Bolt .375-16 x 1
20	729514	Weight Cover	58	253043	Whiz Nut .375-16
21	247325	Carriage Bolt .375-16 x 5.5	59	422065	Square Plug
22	693118	Console Panel w/Decal	60	643894	Deck Mount Rt.
23	142239	Mechanical Choke	61	643895	Deck Mount Lt.
24	693196	Fender w/Decals Rt.	62	282575	Deck Mount Bushing
25	693197	Fender w/Decals Lt.	63	282576	Deck Mount Bushing – Floating (Opt.)
26	422040	Tool Box	64	247280	Carriage Bolt .375-16 x 2.75
27	751350	Shield Tank	65	253460	Nut .375-16 Nylon Insert
28	422079	Worklamp Plug	66	424015	Rubber Bumper
29	822632	Fender Edge Trim	67	254431	Speed Nut .25-20
30	483922	Wheel & Tire 20 x 10 x 8	68	253173	Whiz Bolt .25-20 x .5 Hex
	483414	Wheel Without Tire 8 x 7.75	69	253176	Whiz Bolt .25-20 x .5 Truss
	482472	Tire 20 x 10 x 8	70	732824	Strap - Cross Member
	483926	Wheel & Tire 21 x 11 x 8	71	821710	Fuel Hose
		Bar Tread Rt. (Opt.)	72	280260	Hose Clamp .25
	483927	Wheel & Tire 21 x 11 x 8	73	424474	Drain Hose Assembly
		Bar Tread Lt. (Opt.)	74	365515	Plug .375
	482478	Tire 21 x 11 x 8 Bar Tread (Opt.)			
31	604348	Foot Rest (includes items 32-34)	Item not pictured:		
32	243026	Tap Screw .25 x 1		605357	Decal Set - 623T Tractor
33	422615	Nylon Bearing			
34	424100	Isolator Block			
35	643305	Foot Rest Extension			

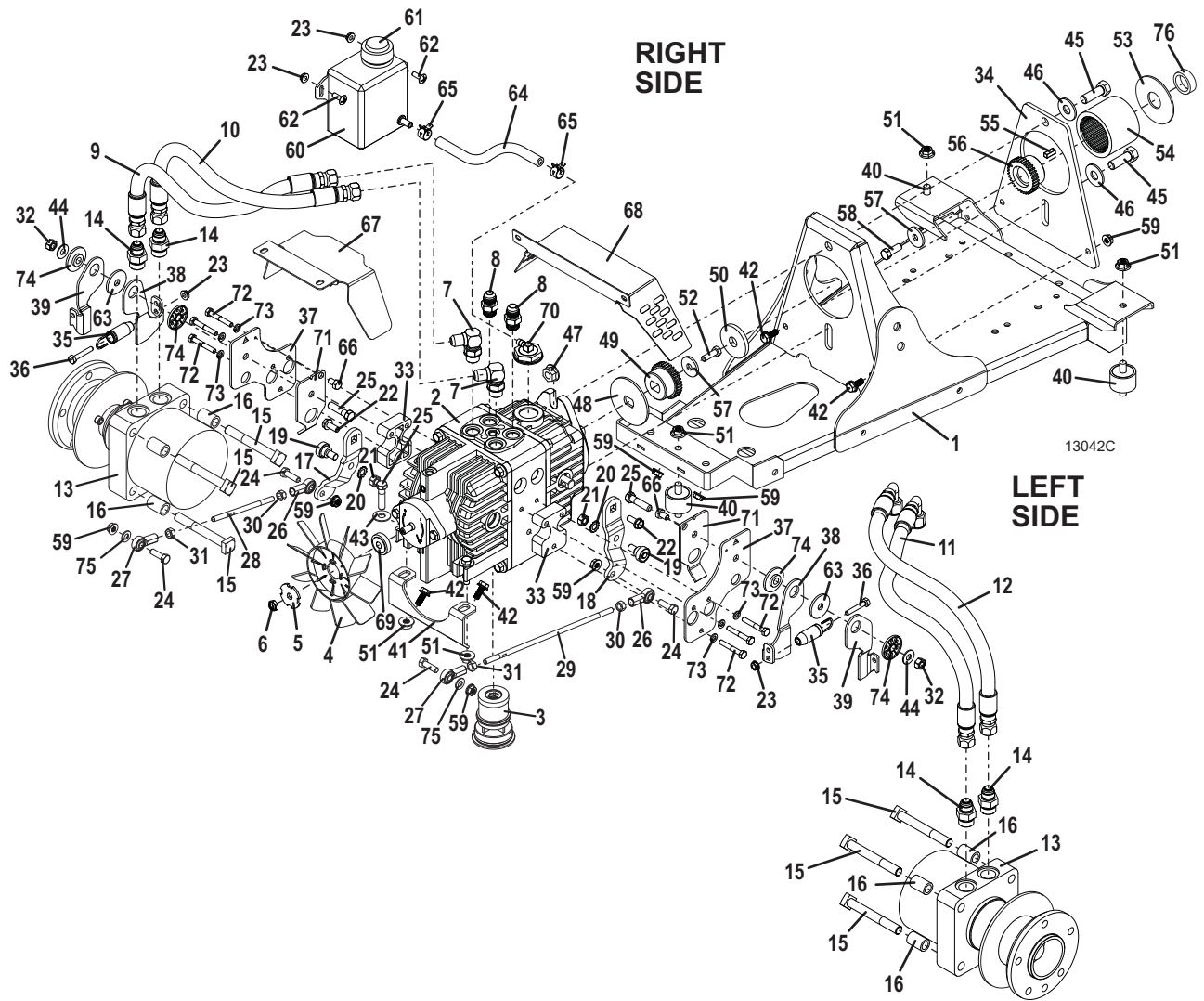
TRACTOR ASSEMBLY



DRIVE ASSEMBLY

Item No.	Order No.	Description	Item No.	Order No.	Description
1	643945	Mount – Drivetrain	39	766044	Arm – Neutral Return
2	391468	Hydro Pump - Tandem	40	424079	Vibration Isolator .375-16
3	130505	Filter	41	729529	Front Mount – Tandem Pump
4	130431	Fan	42	253192	Whiz Bolt .312-18 x .75
5	130432	Retainer – Fan	43	257040	Washer .375
6	253461	Nut – Nylon Insert	44	257030	Washer .312
7	360061	Adapter Fitting 8MB-8MJ 90°	45	243570	Bolt .5-13 x 1.5
8	360059	Adapter Fitting 8MB-8MJ	46	257060	Washer .5
9	424352	Hose Assembly .5 x 18	47	253066	Whiz Nut .5-13
10	424354	Hose Assembly .5 x 19	48	774175	Washer - DD
11	424353	Hose Assembly .5 x 20.5	49	388577	Coupler Hub – DD Bore
12	424346	Hose Assembly .5 x 22.5	50	424150	Stabilizer - Coupling
13	603613	Wheel Motor w/Hub	51	253043	Whiz Nut .375-16
14	360063	Adapter Fitting 8MB-10MJ	52	243206	Bolt .312-24 x 1
15	243622	Sq. Head Bolt .5-12 x 4	53	774176	Washer – 1 x 3
16	902299	Spacer – Wheel Motor	54	388560	Coupler Sleeve
17	726162	Neutral Return Arm Rt.	55	281580	Square Key .25 x .690
18	726163	Neutral Return Arm Lt.	56	388578	Coupler Hub 1”
19	603735	Roller Assembly – Opposed (includes items 20 & 21)	57	774020	Washer - .406 x 1.25
20	257410	External Star Washer	58	243330	Bolt .375-16 x 1
21	254450	Nut .375-16	59	253035	Whiz Nut .312-18
22	271021	Hex Flange Bolt 8M x 1.25 x 16	60	421981	Expansion Tank
23	253025	Whiz Nut .25-20	61	421991	Cap
24	243205	Bolt .312-18 x 1	62	253179	Whiz Bolt .25-20 x .75 Phil Truss
25	243340	Bolt .375-16 x 1.5	63	774292	Washer 1.5 x .406 x 10 Ga.
26	265650	Rod End .312-24 RH Female	64	821709	Hydraulic Hose
27	265651	Rod End .312-24 LH Female	65	280261	Clamp – Spring .312
28	780180	Rod Steering Lt/Rt 5.0	66	243186	Bolt .312-24 x .5
29	780181	Rod Steering Lt/Rt 10.5	67	722969	Shroud – Fan
30	254441	Nut .312-24 RH Thread	68	722968	Shield – Coupler
31	254444	Nut .312-24 LH Thread	69	130430	Fan Hub
32	253890	Lock Nut .375-16	70	130510	Expansion Tank Adapter
33	422049	Spacer - Return	71	766038	Adjustment Plate
34	775123	Spacer – Pump Mount	72	243038	Bolt .25-20 x 1.75
35	283823	Extension Spring	73	257392	Lock Washer .25
36	243035	Bolt .25-20 x 1.5	74	822304	Pivot Bearing – Neutral Return
37	766037	Mount – Neutral Return	75	257032	Washer .312 SAE
38	766043	Arm – Neutral Return	76	902537	Spacer 1 x .458

DRIVE ASSEMBLY

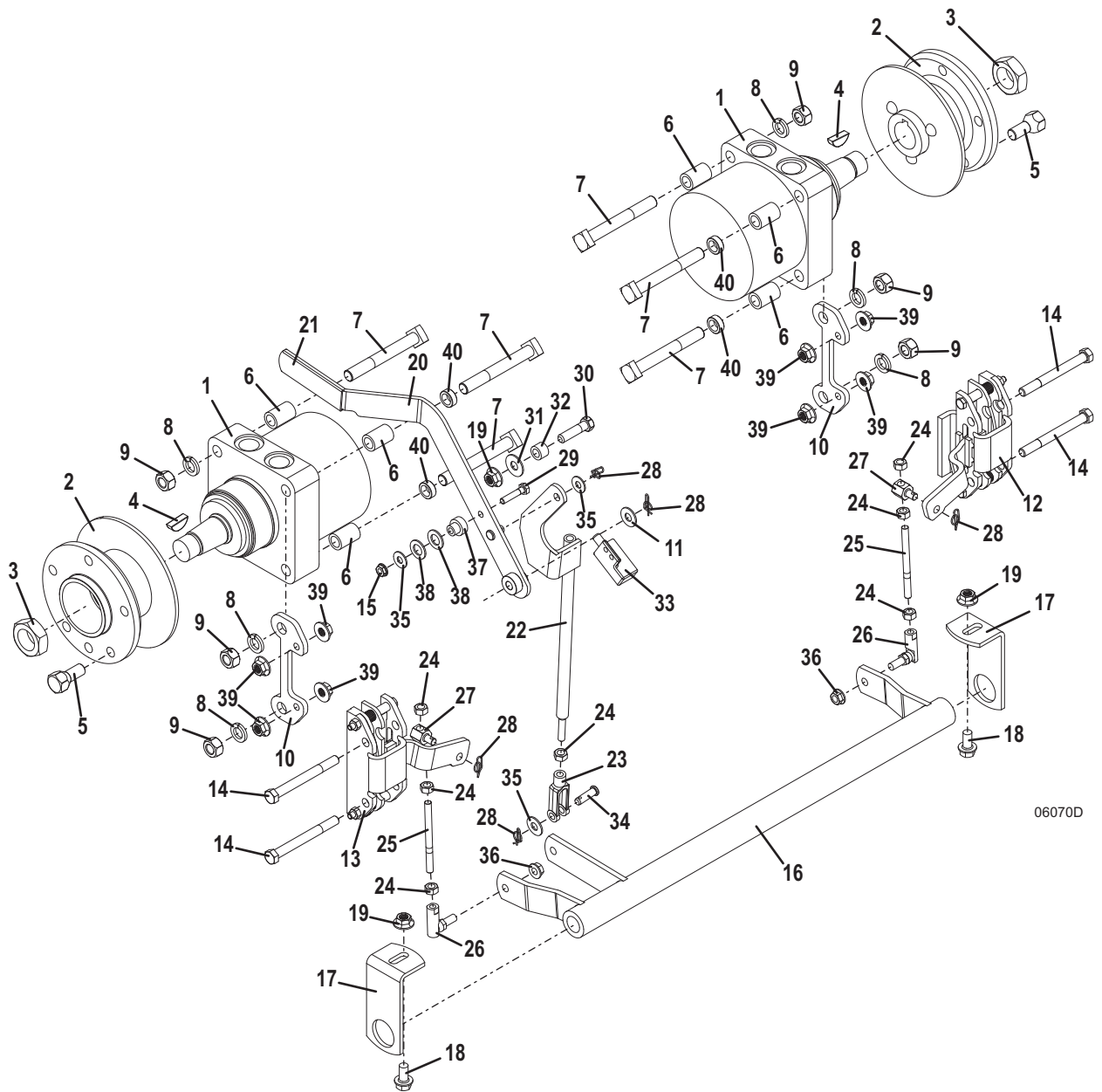


BRAKE ASSEMBLY

Item No.	Order No.	Description	Item No.	Order No.	Description
1	603613	Wheel Motor Assembly (includes items 2 - 4)	19	253043	Whiz Nut .375-16
2	604435	Hub & Rotor Assembly	20	644035	Brake Lever
3	254522	Jam Nut 1-20 w/Nylok	21	422150	Handle Grip
4	281860	Woodruff Key .312 x 1	22	644057	Arm – Brake Linkage
5	248565	Lug Bolt .5-20 x .875	23	265537	Clevis Yoke .312-24 x 2.5
6	902299	Spacer – Wheel Motor	24	254441	Nut .312-24
7	243622	Sq Head Bolt .5-13 x 4	25	780158	Linkage Rod – Brake
8	257432	Lock Washer .5	26	265615	Ball Joint .312-24 RH Thread
9	254470	Nut .5-13	27	880926	Linkage Pin – Brake
10	777505	Brake Mount	28	260606	Ring Cotter .047 x .312
11	257030	Washer .312	29	243030	Bolt .25-20 x 1.25
12	481142	Brake Assembly – CW*	30	243335	Bolt .375-16 x 1.25
	481160	Brake Pad Kit	31	257040	Washer .375
13	481143	Brake Assembly – CCW*	32	902280	Spacer
	481160	Brake Pad Kit	33	183894	Brake Switch
14	243382	Bolt .375-16 x 3.75 GR 8	34	261284	Clevis Pin .312-18 x 1
15	253025	Whiz Nut .25-20	35	257020	Washer .25
16	644594	Brake Pivot Tube	36	253038	Whiz Nut .312-24
17	732617	Mount – Brake Pivot	37	881130	Spacer – Brake Lever
18	253200	Whiz Bolt .375-16 x .75	38	257063	Nylon Washer .50 ID
			39	253044	Spirallock Flange Nut .375-16
			40	902293	Spacer

*To determine CW or CCW, hold the brake assembly in hand with the brake pad opening facing away from you and the lever in the disengaged position. The direction of rotation of lever, when engaging brake, determines CW or CCW.

BRAKE ASSEMBLY

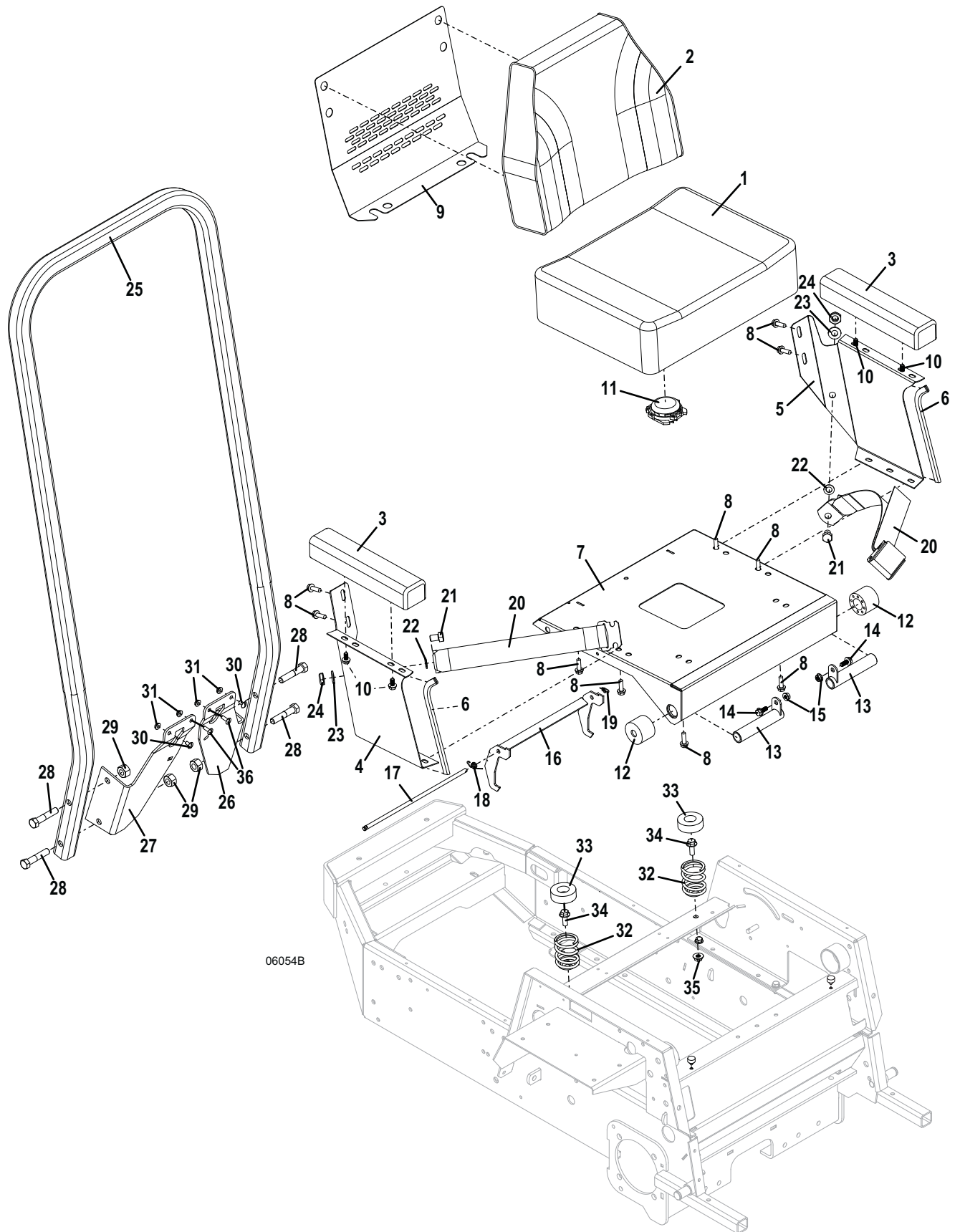


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OPS & SEAT ASSEMBLY

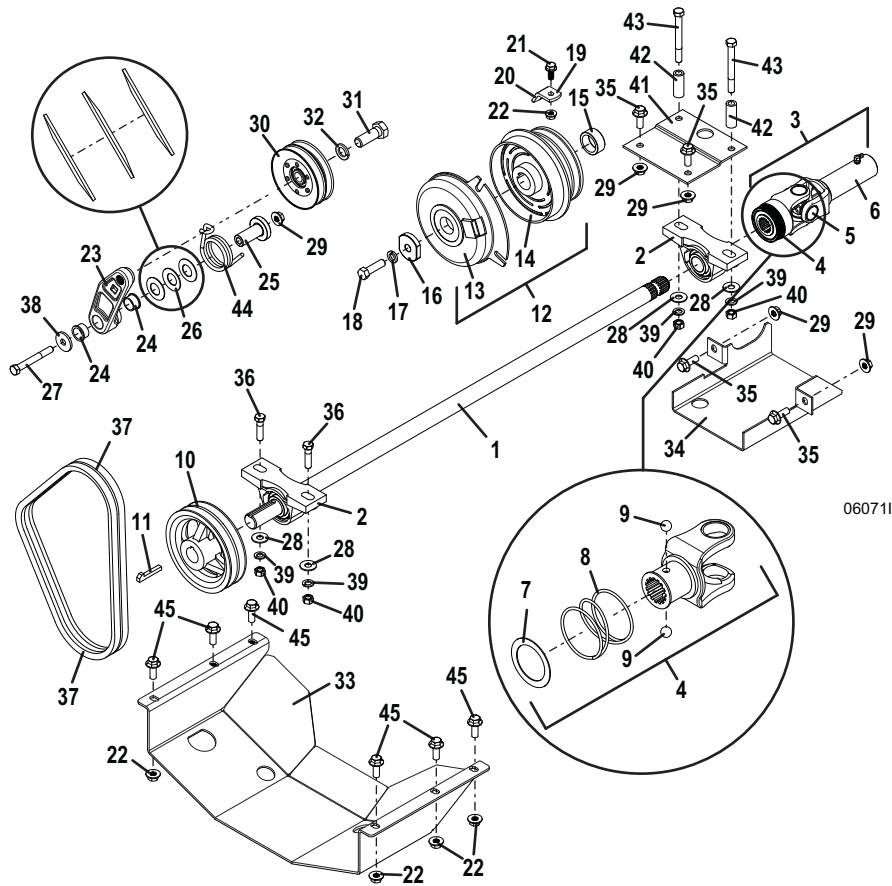
Item No.	Order No.	Description	Item No.	Order No.	Description
1	321529	Seat Cushion	20	324200	Seat Belt – Non Retract
2	321530	Back Cushion	21	243551	Bolt .5-13 x .75
3	321523	Arm Rest	22	257063	Nylon Washer .5
4	723433	Seat Side Raised – Rt.	23	257062	Washer .5 SAE
5	723434	Seat Side Raised – Lt.	24	253470	Nut .5-13 Nylon Insert
6	822630	Seat Edge Trim	25	324107	OPS Tube
7	643890	Seat Bottom	26	729358	Gusset – OPS Lt.
8	253193	Whiz Bolt .312-18 x 1	27	729359	Gusset – OPS Rt.
9	722884	Seat Reinforcement - Raised	28	243591	Bolt .5-13 x 2.5
10	253191	Whiz Bolt .312-18 x .625	29	253930	Lock Nut .5-13
11	183871	Seat Switch - Twist	30	253176	Whiz Bolt .25-20 x .5 Truss
12	424095	Seat Isolator	31	253025	Whiz Nut .25-20
13	644618	Seat Hinge Pin	32	283516	Spring – Compression
14	253192	Whiz Bolt .312-18 x .75	33	422127	Cap – Seat Spring
15	253035	Whiz Nut .312-18	34	253203	Whiz Bolt .375-16 x 1
16	754234	Dual Latch	35	253043	Whiz Nut .375-16
17	730230	Pivot Pin – Seat	36	253177	Whiz Bolt .25-20 x .75 Truss
18	284408	Torsion Spring			
19	260606	Ring Cotter .047 x .312			

OPS & SEAT ASSEMBLY



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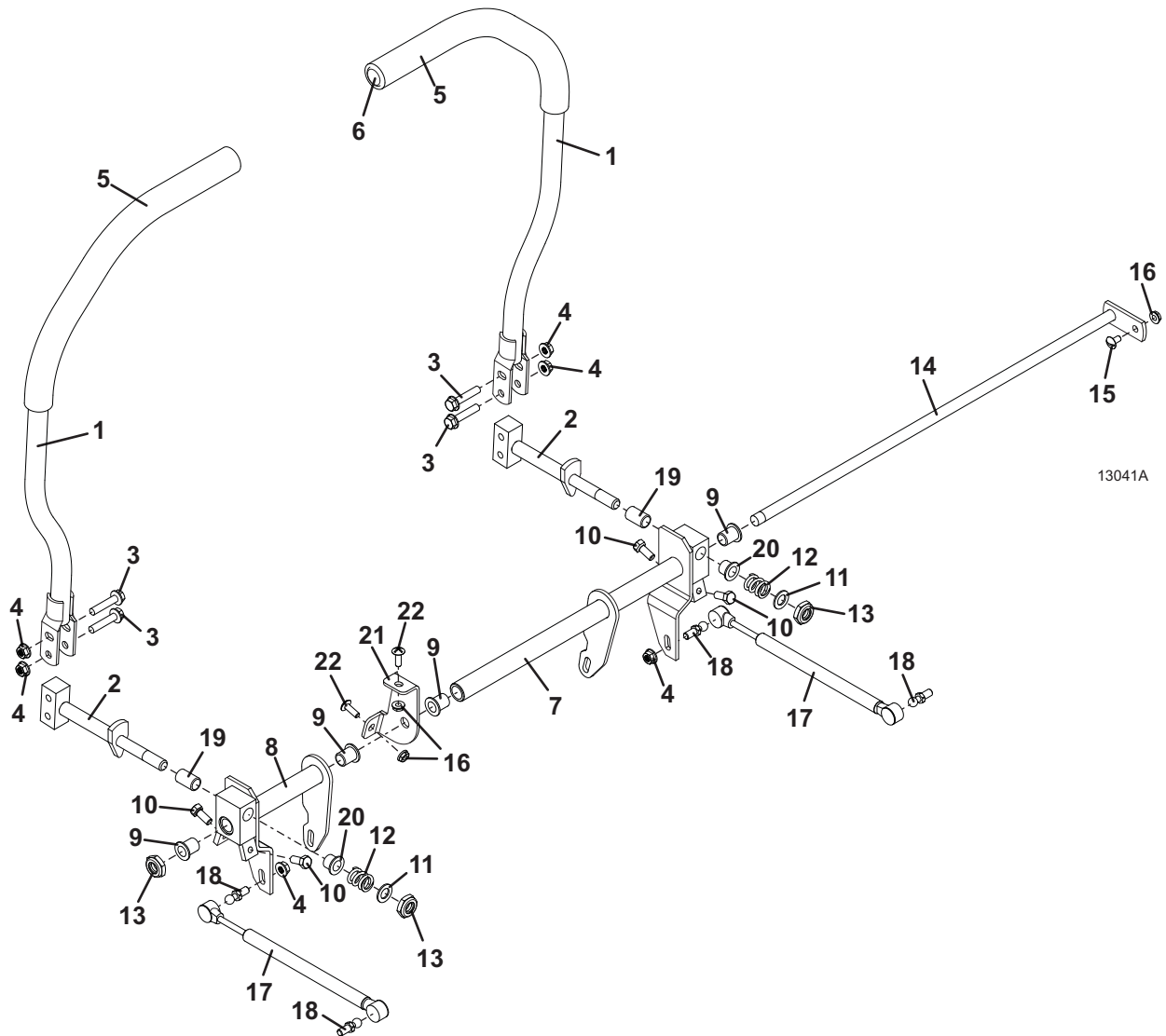
PTO SHAFT & CLUTCH ASSEMBLY



Item No.	Order No.	Description	Item No.	Order No.	Description
1	393758	Power Shaft	23	824467	Idler Arm (includes items 24-26)
2	122044	Pillowblock Bearing	24	121756	Flange Bearing - Oilite
3	398914	Universal Half Sleeve – QD (includes items 4 - 6)	25	121651	Bearing Pedestal
4	401019	Splined Yoke - Quick Disconnect (includes items 7 - 9)	26	257319	Washer - Spring
5	121010	Cross & Bearing	27	243360	Bolt .375-16 x 2.75
6	401017	Yoke with Sleeve	28	257040	Washer .375
7	263660	External Retainer	29	253043	Whiz Nut .375-16
8	283525	Compression Spring	30	415610	Idler Pulley
9	300014	Steel Ball	31	243805	Bolt .625-11 x 1.75
10	415650	Sheave	32	257452	Lock Washer .625
11	281588	Gib Key .25 x 1.5	33	644888	Sheave Guard
12	388771	Electric Clutch	34	729287	Shield – PTO Shaft
13	388875	Field Assembly w/Brake	35	253203	Whiz Bolt .375-16 x 1
14	388866	Armature & Rotor Assembly	36	243340	Bolt .375-16 x 1.5
15	902588	Spacer – 1.125 x .625	37	381914	Belt
16	257039	Washer 1.75 x 1.5 Double D	38	774020	Washer .406
17	257422	Lock Washer .437	39	257412	Lock Washer .375
18	243456	Bolt .437-20 x 1.5	40	254450	Nut .375-16
19	732407	Anti-Rotation Bracket	41	724910	Bearing Mount - Front
20	422087	Clutch Bracket Cover	42	902271	Spacer
21	253192	Whiz Bolt .312-18 x .75	43	243375	Bolt .375-16 x 3.5
22	253035	Whiz Nut .312-18	44	284428	Torsion Spring
			45	253193	Whiz Bolt .312-18 x 1

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STEERING ASSEMBLY

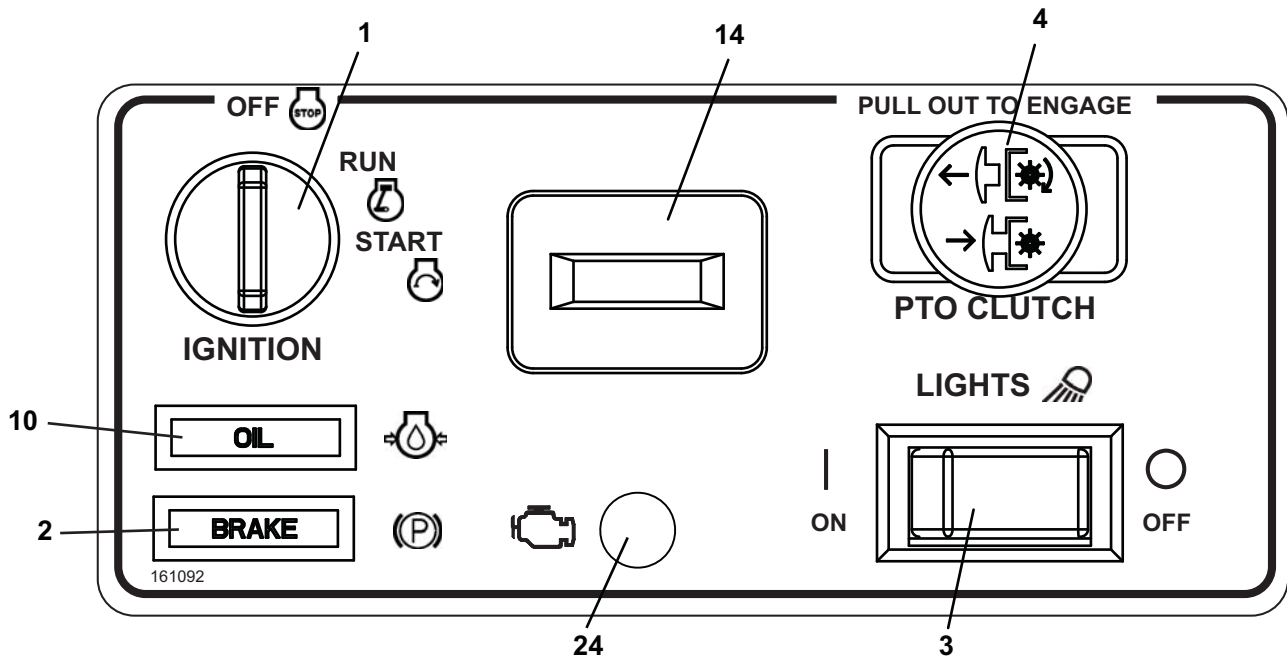


13041A

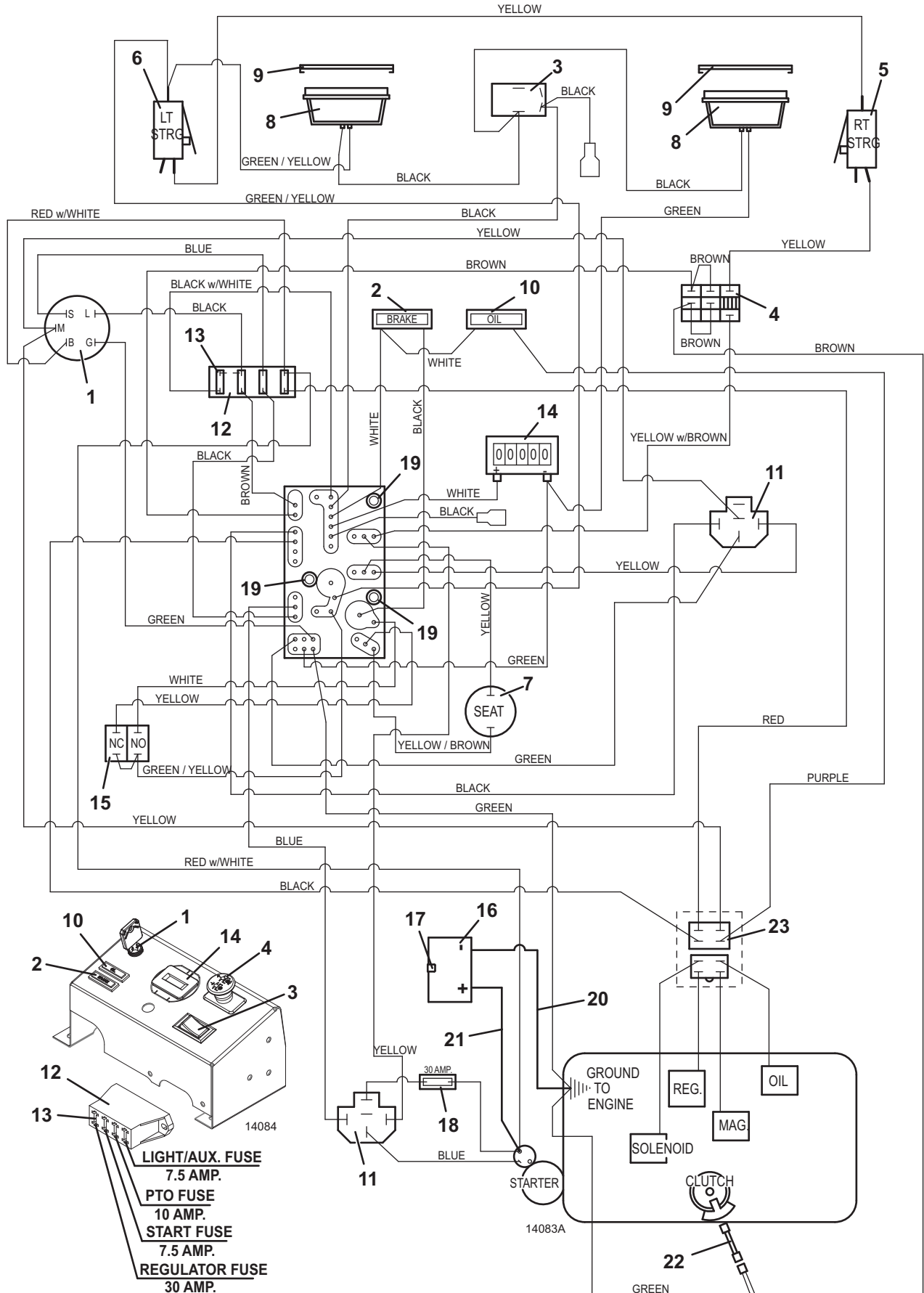
Item No.	Order No.	Description	Item No.	Order No.	Description
1	604777	Steering Lever Assembly (includes items 5 & 6)	10	243197	Stop Bolt .312-18 x .75
2	643926	Steering Lever Mount	11	257063	Nylon Washer
3	253195	Whiz Bolt .312-18 x 1.5 Hex	12	283324	Compression Spring
4	253035	Whiz Nut .312-18	13	253470	Nut .5-13 Nylon Insert
5	422179	Handle Grip - Foam	14	644589	Steering Pivot
6	422095	Vinyl Cap	15	253176	Whiz Bolt .25-20 x .5 Truss
7	604854	Pivot w/Stop & Bearings Rt. (includes items 9, 10, 19 & 20)	16	253025	Whiz Nut .25-20
8	604855	Pivot w/Stop & Bearings Lt. (includes items 9, 10, 19 & 20)	17	285032	Damper with Ball Socket
9	422559	Sleeve Bearing w/Flange	18	265680	Ball Stud
			19	422557	Sleeve Bearing
			20	422556	Sleeve Bearing w/Flange
			21	729701	Support - Steering Rod
			22	253179	Whiz Bolt .25-20 x .75 Phil Truss

WIRING DIAGRAM - 623T

Item No.	Order No.	Description	Item No.	Order No.	Description
	606857	Wiring Assembly - 623T	13	181470	Fuse 30 Amp Auto
	161092	Decal - Console		181462	Fuse 10 Amp Auto
1	183806	Ignition Switch		181460	Fuse 7.5 Amp Auto
	254498	Nylon Nut - Ignition Switch	14	141551	Hour Meter
2	182326	Indicator Light - Brake	15	183894	Brake Switch
3	184179	Light Switch (optional)	16	180125	Battery 12 Volt
4	183925	Clutch Switch		644099	Battery Box
5	183860	Safety Switch - Rt. Steering		644162	Battery Cover
	720160	Rt. Steering Switch Mount	17	729001	Battery Clamp
6	183860	Safety Switch - Lt. Steering	18	181735	Fuse Holder
	720161	Lt. Steering Switch Mount		181470	Fuse 30 Amp Auto
7	183871	Seat Safety Switch	19	423690	Spacer - PC Board Support
8	182261	Worklamp LED Flood (optional) (includes item 9)	20	180276	Battery Cable 16" Black
9	182251	Bezel (optional)	21	180315	Battery Cable 16" Red
				425219	Battery Terminal Boot
10	182327	Indicator Light - Oil	22	388840	Cable Assembly
11	184271	Relay w/Mount	23	184936	Connector - 4 Way
12	181722	Fuse Block	24	422072	Hole Plug
	162320	Fuse I.D. Decal			

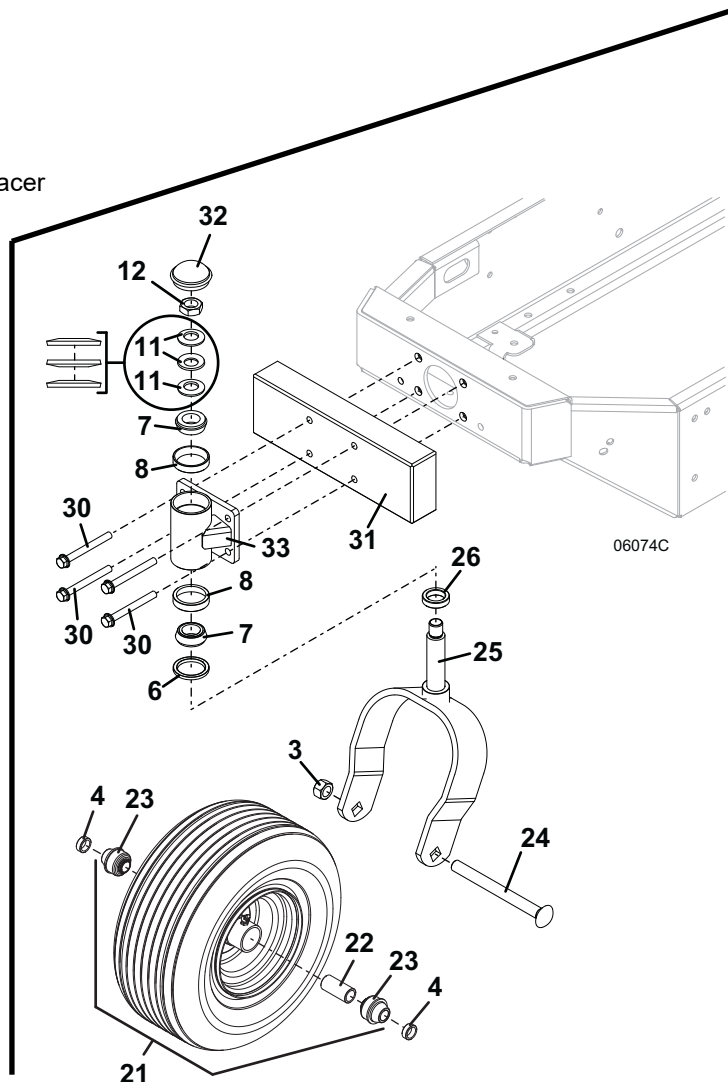


WIRING DIAGRAM - 623T



TAIL WHEEL OPTIONS

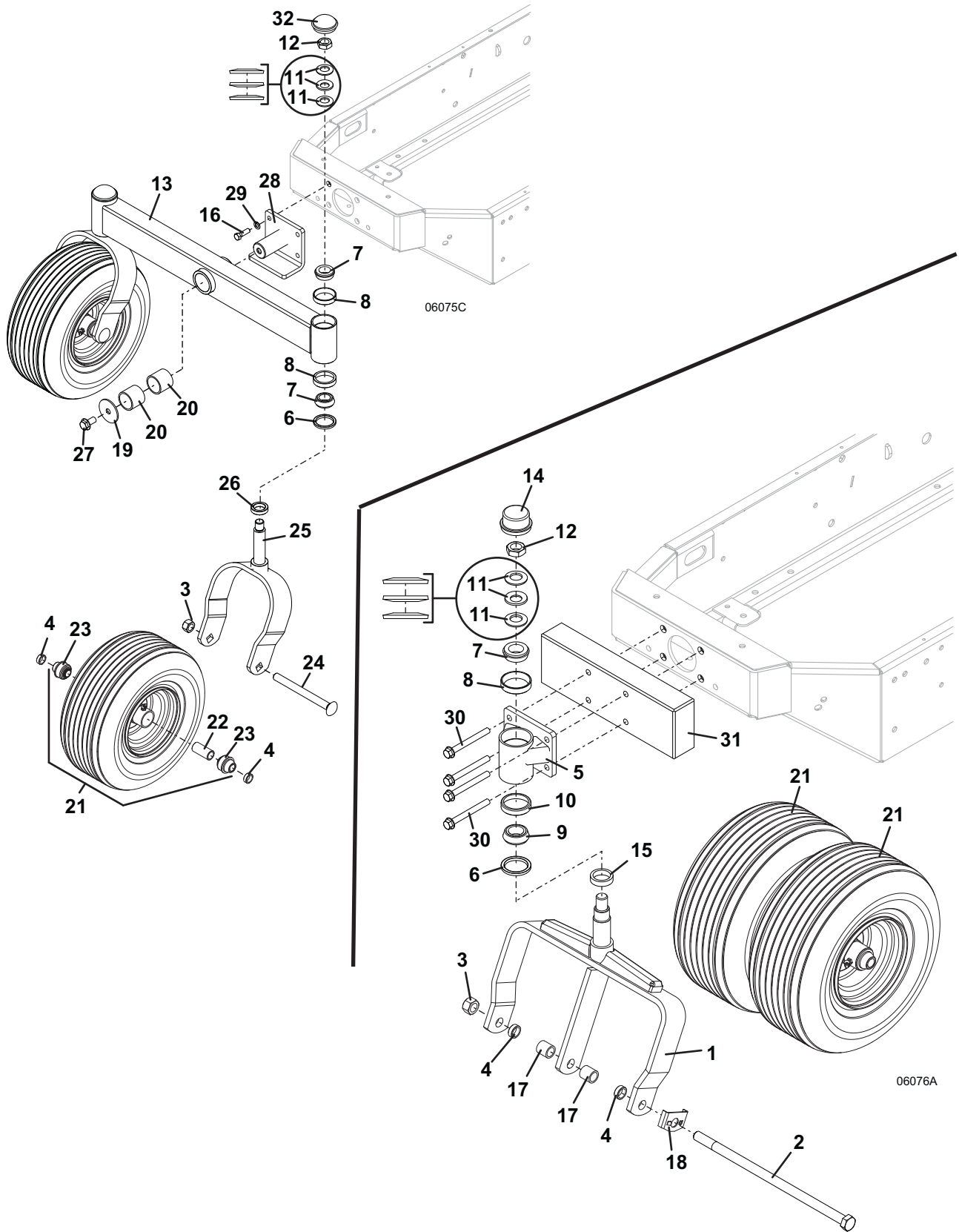
Item No.	Order No.	Description	Item No.	Order No.	Description
1	604366	Dual Fork With Nut	22	423750	Bearing Spacer
2	243922	Bolt .625-11 x 14	23	120048	Wheel Bearing
3	253970	Lock Nut .625-11	24	247726	Bolt .625 x 7 Carriage
4	902422	Axle Spacer	25	645221	Rear Fork
5	604595	Pivot Housing - Rear Dual Fork	26	282615	Spacer .375 x 1
6	125855	Seal	27	253243	Whiz Bolt .5-13 x 1
7	122522	Bearing Taper	28	604597	Rear Axle Pivot (includes items 16 & 29)
8	123522	Bearing Cup	29	257412	Lock Washer .375
9	122523	Bearing Taper	30	253212	Bolt .375-16 x 3.5
10	123521	Bearing Cup	31	783810	Counter Weight
11	257320	Washer - Spring	32	481434	Dust Cap - Domed
12	254505	Jam Nut .75-16 Nylon Toplock	33	604596	Pivot Housing Assembly (includes item 8)
13	824510	Axle Beam w/ Bushing			
14	481432	Dust Cap			
15	830420	Spacer .375 x 1.156			
16	243334	Whiz Bolt .375-16 x 1.25			
17	902425	Axle Spacer			
18	723008	Bolt Lock			
19	257061	Washer .5 x 2.25			
20	833275	Oilite Bearing Reamed			
21	603975	Wheel & Tire Assembly 13 x 6.5 x 6 w/Bearings & Spacer (includes items 22 & 23)			
	482355	Tire 13 x 6.5 x 6			
	483306	Wheel 6 x 4.5			



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Rev. 03-17

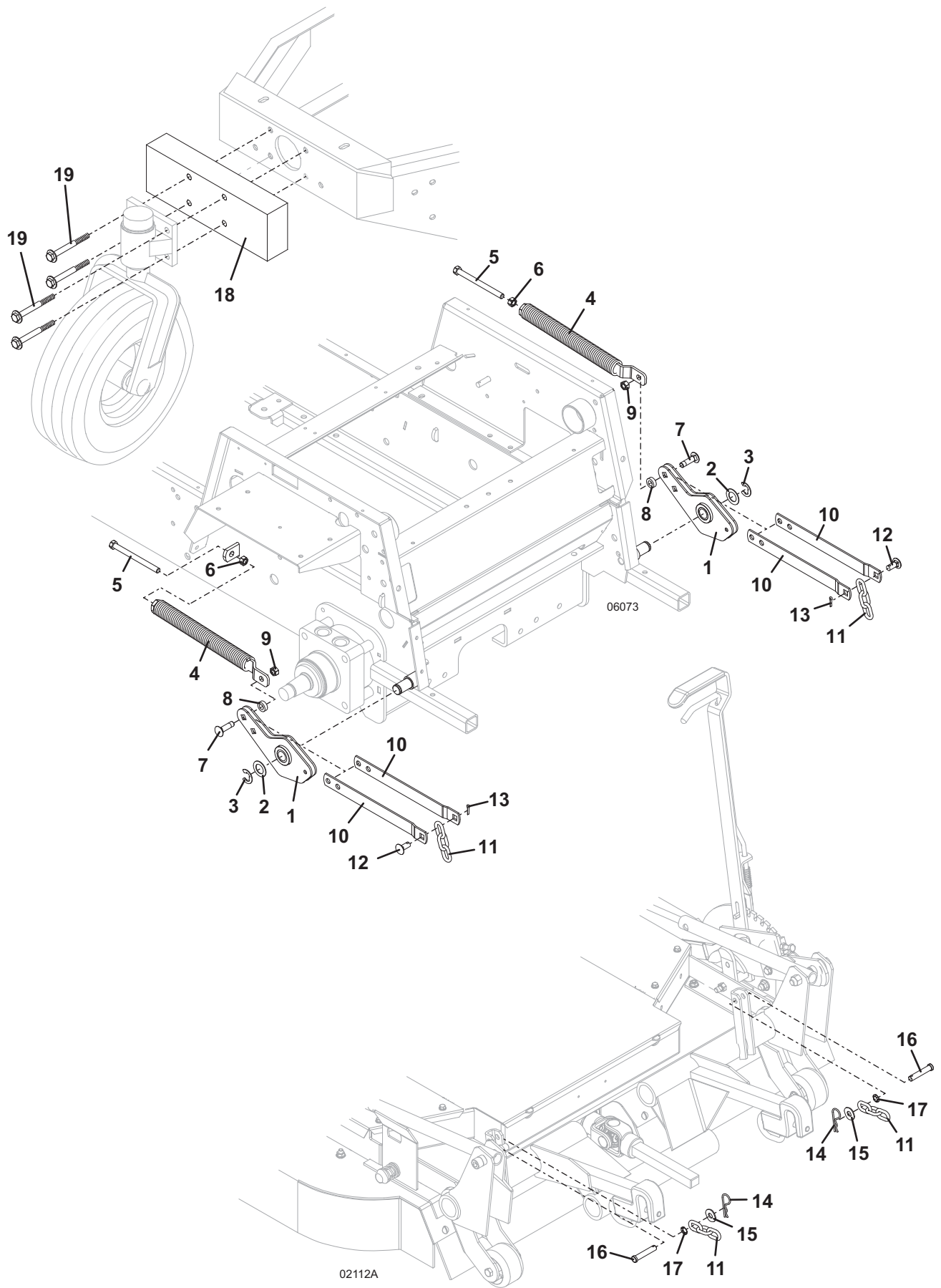
TAIL WHEEL OPTIONS



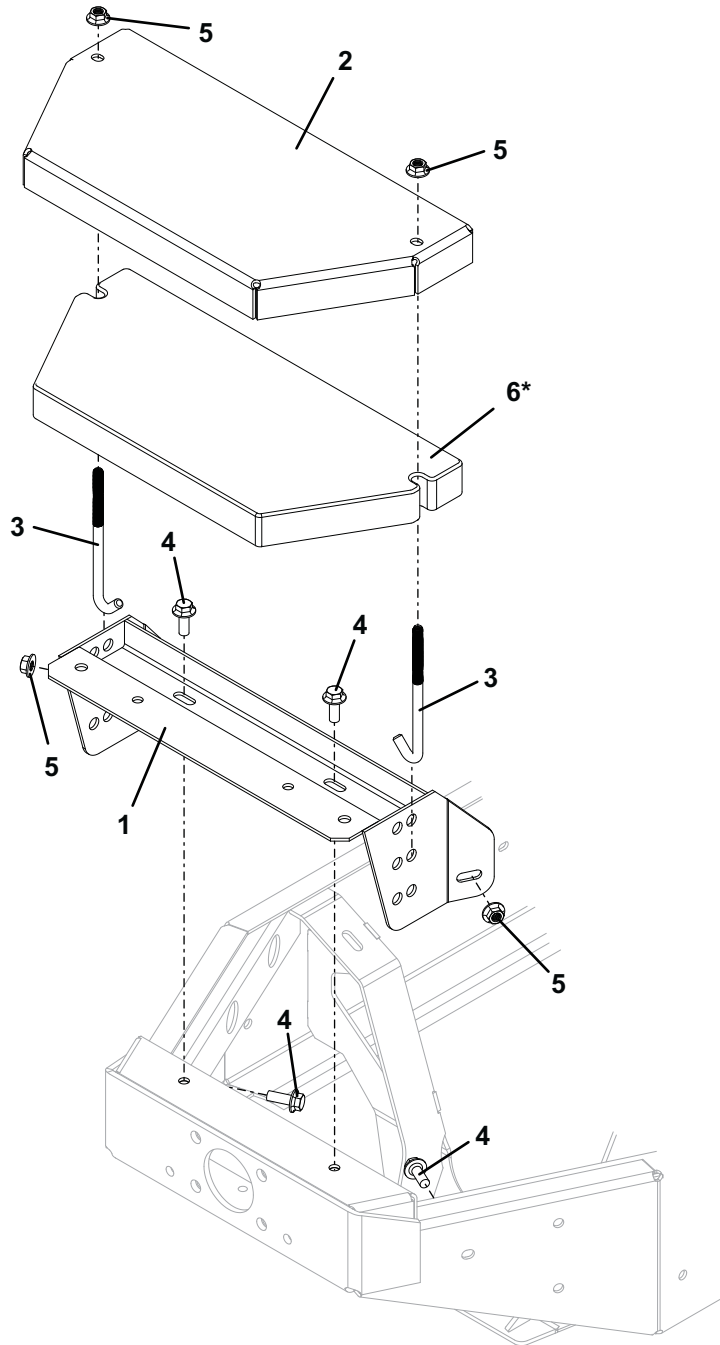
TRACTION KIT

Item No.	Order No.	Description	Item No.	Order No.	Description
1	603724	Rocker	11	820317	Lift Chain – 3 Links
	121764	Oilite Bearing	12	261339	Clevis Pin .375 x .875 Sq. Shank
2	257092	Washer .75 x 18 Ga.	13	260648	Cotter Pin .125 x .5
3	263529	Retainer - External	14	260523	Hair Pin .094 x 2
4	604804	Spring & Plug Assembly - Offset	15	257040	Washer .375
5	243395	Bolt .375-16 x 4.5 Full Thread	16	261362	Clevis Pin
6	254450	Nut .375-16	17	262950	Push-on Retainer
7	247254	Carriage Bolt .375 x 1.375 Special	18	783810	Counter Weight
8	881095	Spacer .25	19	253212	Whiz Bolt .375-16 x 3.5
9	253890	Lock Nut .375-16			
10	732410	Lift Strap			

TRACTION KIT



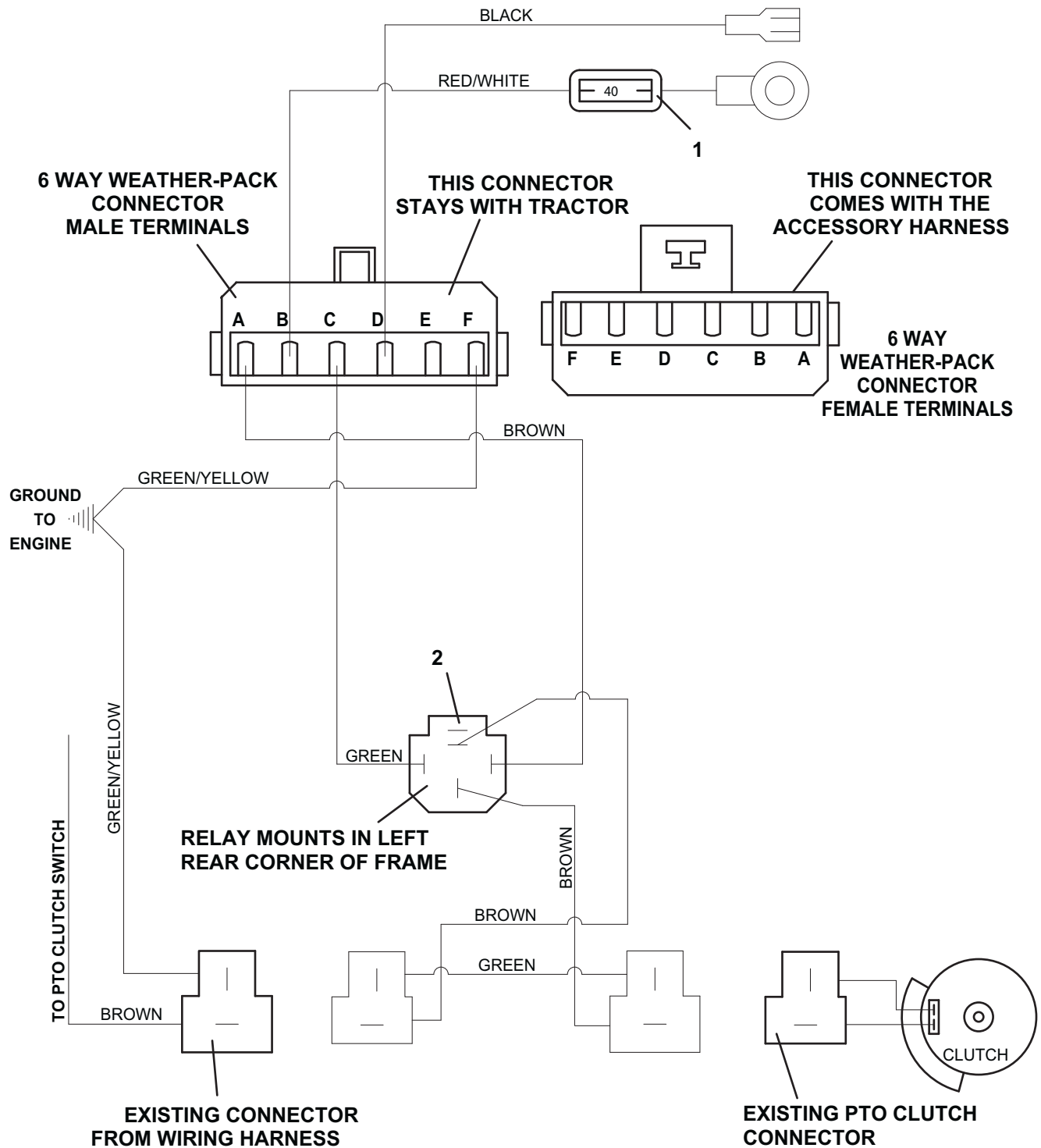
COUNTERWEIGHT MOUNT KIT



10133

Item No.	Order No.	Description	Item No.	Order No.	Description
	503220	Counterweight Mount Kit	4	253203	Whiz Bolt .375-16 x 1
1	644915	Weight Mount	5	253043	Whiz Nut .375-16 Lg Flange
2	729691	Weight Cover	*6	503218	Counterweight - 50#
3	240151	Hook Bolt .375-16 x 6			
			*		Not Included in Kit

OPTIONAL LIMITED UNIVERSAL HARNESS



05066

Item No.	Order No.	Description
	605847	Limited Universal Harness
1	181475	Fuse Auto - 40 Amp.
	184271	Relay

05066

