COUNTRY CLIPPER
ZERO TURN MOWER

CHALLENGER D505

SERIAL RANGE: 19274001 - _____

PRODUCT MANUAL

Model Numbers & Serial Numbers

Manuals

- Country Clipper Operators Manual
- Country Clipper Parts Manual
- Kawasaki Engine Owner Manuals
- Kohler Engine Owner Manuals

Warranty

- Country Clipper Warranty
- Kawasaki Engine Warranty
- Kohler Engine Warranty
- Hydro-Gear Warranty
- Battery Warranty

Additional Information

- Country Clipper Product Specifications

Notes/Service Records

P-13434 (04/20)

Safety Instructions & Operation

COUNTRY CLIPPER®

ZERO TURN MOWER

XLT C305

CHALLENGER D505

SERIAL RANGE: 19274001 - _____

Congratulations for buying a ***Country Clipper*** product. Your ***Country Clipper*** Zero Turn Radius Riding Mower was designed and built to provide long and trouble free service. Keep in mind that it, like any other mechanical device, can be potentially dangerous if used improperly, and hazard control and accident prevention are dependent upon the awareness, concern, prudence, and proper training of personnel involved in the operation, transport, maintenance, and storage of the equipment. Study this manual and pay special attention to the important Safety Precautions on pages 3-4. Following these instructions will help you continue to enjoy the trouble-free performance expected of the ***Country Clipper*** product.

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MODEL NUMBER'S & SERIAL NUMBER'S

Date of Purchase: _____

Mower Model Number: _____

Mower Serial Number: _____

Engine Spec Number: _____

Hydro Serial Number (RH): _____

Hydro Serial Number (LH): _____

SAFETY

ACCIDENT PATTERNS TO AVOID

I. **CONTACT WITH THE ROTATING BLADE --** This accident usually happens when the operator is clearing the discharge chute of grass, (especially when the grass is wet), or when the operator adjusts the machine without turning it off and waiting for the blades to completely stop.

II. **PROPELLED OBJECTS --** Sticks, rocks, wires, and other objects can be propelled out through the discharge chute or from under the mower housing. Bystanders are particularly vulnerable.

III. **GRASS CATCHER OR GUARD --** The mower shall not be operated without either the entire grass catcher or guard in place.

IV. **OVERTURNING --** This happens when riding mowers are used on steep slopes, embankments or hills. The operator in these cases can come in contact with the blades or sustain injuries during a fall.

V. **MOWER RUNNING OVER THE VICTIM --** This usually happens when a riding mower is driven in reverse. The accident victims are most often young children whom, unseen by the operator of the mower, were in the area being mowed.

AT ***COUNTRY CLIPPER***, WE SHARE YOUR DESIRE TO PROTECT YOURSELF, YOUR FAMILY, YOUR FRIENDS AND YOUR NEIGHBORS FROM ACCIDENTAL INJURY. OBSERVING AND ENFORCING THE FOLLOWING GUIDELINES WILL HELP TO ENSURE THE SAFETY OF EVERYONE.

PLEASE BE CAREFUL!

SAFETY INSTRUCTIONS AND RECOMMENDATIONS

1. **PEOPLE WHO OPERATE, SERVICE, OR ARE OTHERWISE ASSOCIATED** with the ***Country Clipper*** Zero Turn Radius Mower should be trained in its proper use and warned of its dangers. Before operating, adjusting, or servicing the ***Country Clipper*** Zero Turn Radius Mower they should read and understand this entire manual and the engine owner's manual.
2. **AVOID CONTACT WITH MOVING PARTS.** Keep hands and feet from under mower deck and away from blades at all times. Turn engine (motor) off if you must unclog the chute.
3. **AVOID HILLS AND SLOPES.** Use extreme caution when mowing up or down slopes. NEVER mow across the face of a slope. If a slope must be ascended, back up the slope; drive forward when descending. Reduce speed and use caution to start, stop and maneuver. To prevent loss of control on a slope avoid sharp turns, sudden changes in direction, and sudden stops and starts.
4. **DISENGAGE POWER TO MOWER BEFORE BACKING UP.** Do not mow in reverse unless ABSOLUTELY necessary and then only after turning around and observing the entire area behind the mower. Go slowly. Most "running over victim" accidents occur in reverse.
5. **BEGINNING OPERATORS SHOULD LEARN HOW TO STEER** the ***Country Clipper*** Zero Turn Radius Mower before attempting to mow. Start with slow engine speed and drive without the blades engaged in an open area until comfortable with the machine.
6. **KNOW HOW TO STOP QUICKLY.** Know the location and operation of every control, especially how to brake and how to disengage the mower blades.
7. **DO NOT MOVE THE JOYSTICK OR TWINSTICK CONTROL LEVER(S)** from forward position to reverse position or reverse position to forward position rapidly. The speed and/or direction of travel is affected instantly by movement of the Control Lever(s).
8. **DO NOT ALLOW CHILDREN TO OPERATE MOWER.** Do not allow others who have not had instruction to operate mower.
9. **ALWAYS TURN ENGINE OFF AND REMOVE KEY** before leaving the mower to prevent children and inexperienced operators from starting the engine. Never leave the mower unattended with engine running. Always wait for all moving parts and all sounds to stop before leaving operator's seat.
10. **WEAR STURDY, ROUGH-SOLED WORK SHOES AND CLOSE-FITTING SLACKS AND SHIRTS.** Never operate mower in bare feet, sandals or sneakers.
11. **KNOW THE AREA YOU ARE TO MOW.** Watch for hidden danger such as rocks, roots, sticks, holes, bumps, and drop-offs, etc. Before mowing, pick up all debris in area to be mowed. Sharp and hard objects can be propelled at a high speed and can act like shrapnel. Walk through tall grass BEFORE MOWING to make sure there are no hidden dangers. Mow higher than desired in tall grass to expose any hidden objects and/or obstacles, clean the area, and then mow to the desired height.
12. **NEVER REFUEL A MOWER INDOORS.** Allow the engine time to cool before refueling. Unseen vapors may be ignited by a spark. Always clean up spilled gasoline. Never run the engine indoors in a garage or any other closed building. Allow engine to cool before storing in any enclosure. The engine exhaust and gasoline fumes are dangerous.
13. **DISENGAGE BLADES BEFORE DRIVING ACROSS WALKS** or exposed objects.
14. **NEVER REMOVE THE FUEL CAP** or add gasoline to a running or hot engine that has not been allowed to cool for several minutes after running. Always make sure the gas cap is in place.
15. **NEVER CARRY PASSENGERS.**
16. **DO NOT SMOKE AROUND THE MOWER** or the gasoline storage container. Gasoline fumes can easily ignite.
17. **KEEP GASOLINE IN A WELL-VENTILATED AREA** away from your living quarters and in tightly-capped safety cans. Never store mower with gasoline in the

tank inside a building where fumes may reach open flame or spark.

18. **DISENGAGE BLADES, STOP ENGINE AND REMOVE IGNITION KEY** before any servicing. Be sure all moving parts and all sounds have stopped. Let engine cool and disconnect the spark plugs so the engine cannot start by accident. A SLIGHT ROTATION OF THE BLADES COULD START THE ENGINE.
19. **KEEP ALL NUTS, BOLTS, AND SCREWS TIGHT** to be sure equipment is in safe working condition, especially blade mounting bolts.
20. **MOWER SHOULD BE STOPPED AND INSPECTED FOR DAMAGE** after striking a foreign object and the damage should be repaired before restarting and operating the equipment. Stop immediately and check for damage or loose parts if mower should start vibrating.
21 **KEEP SAFETY DEVICES AND GUARDS IN PLACE.** If any of the safety switches become inoperable, have them repaired immediately.
22. **DO NOT STEP OR STAND ON THE MOWER HOUSING.** Step or stand only on the foot deck.
23. **WATCH OUT FOR TRAFFIC** near roadways and when crossing roads.
24. **DO NOT USE MOWER WHEN GRASS IS WET OR SLIPPERY.**
25. **THIS MACHINE IS NOT MEANT FOR HIGHWAY OR STREET USE.** It is not a recreational vehicle and it should not be operated as such.
26. **ALWAYS DISENGAGE THE MOWER BLADE CLUTCH** when transporting.
27. **KEEP ALL SAFETY LABELS IN LEGIBLE CONDITION.** Remove grease, dirt, grass, etc. that may cover safety labels. Replace any safety label that is missing or damaged.
28. **WEAR PERSONAL PROTECTIVE EQUIPMENT.** Eye, ear, feet and head protection is recommended.
29. **ONLY USE COUNTRY CLIPPER APPROVED ACCESSORIES.**
30. **DO NOT CHANGE THE ENGINE GOVERNOR SETTING** or over speed the engine.
31. **BEWARE OF MOWER DISCHARGE DIRECTION** and do not point it at anyone.
32. **DO NOT OPERATE THE MOWER UNDER THE INFLUENCE OF ALCOHOL OR DRUGS.**
33. **USE CARE WHEN LOADING OR UNLOADING MACHINE INTO A TRAILER OR TRUCK.**
34. **USE CARE WHEN APPROACHING BLIND CORNERS,** shrubs, trees, or other objects that may obscure vision.
35. **CLEAN ALL GRASS AND DEBRIS FROM MACHINE TO PREVENT FIRES.** Remove spilled oil or gasoline.
36. **KEEP HANDS AND FEET AWAY FROM MOVING PARTS.** If possible do not make adjustments with the engine running.
37. **NEVER MOW WHEN OTHER PEOPLE OR PETS ARE IN THE AREA.**
38. **CAREFULLY RELEASE PRESSURE FROM COMPONENTS WITH STORED ENERGY.**
39. **USE CARE WHEN REPLACING BLADES.** Wrap the blade(s) or wear gloves, and use caution when servicing them. Only replace blade(s). Never straighten or weld blade(s).
40. **USE JACK STANDS TO SUPPORT COMPONENTS** when required.

SAFETY INTERLOCK SYSTEM

Your ***Country Clipper*** Zero Turn Radius Mower is equipped with switches interlocked for your safety.

ON JOYSTICK MODELS GROUND DRIVE NEUTRAL IS WHEN THE JOYSTICK (CONTROL LEVER) IS IN THE **"DOWN"** POSITION.

ON TWINSTICK MODELS GROUND DRIVE NEUTRAL IS WHEN BOTH CONTROL LEVERS ARE IN THE **"OUT"** POSITION.

1. The mower blades must be disengaged and the Control Lever(s) must be in the neutral position before the engine will start.
2. The engine will stop if the mower blade clutch is engaged when the operator leaves the driver's seat.
3. The engine will stop if the Control Lever(s) are not in the neutral position when the operator leaves the driver's seat.
4. The engine will stop if the brake is **"SET"** and the Control Lever(s) are not in the neutral position.
5. The engine will stop if the brake is **"SET"** and the mower blade clutch is engaged.

DO NOT OPERATE MOWER IF SAFETY SWITCHES AND GUARDS ARE NOT OPERATING PROPERLY

START UP AND OPERATION

CHECKLIST BEFORE OPERATION

1. Make sure fuel tank is full. Use regular unleaded gasoline (see engine owner's manual for more details).

WARNING

HANDLE GASOLINE WITH CARE -- IT IS HIGHLY FLAMMABLE. DO NOT SMOKE. ENGINE SHOULD BE OFF AND COOL. USE APPROVED GAS CONTAINER. NEVER FILL TANK INDOORS. WIPE UP ANY SPILLS. REPLACE CAP TIGHTLY.

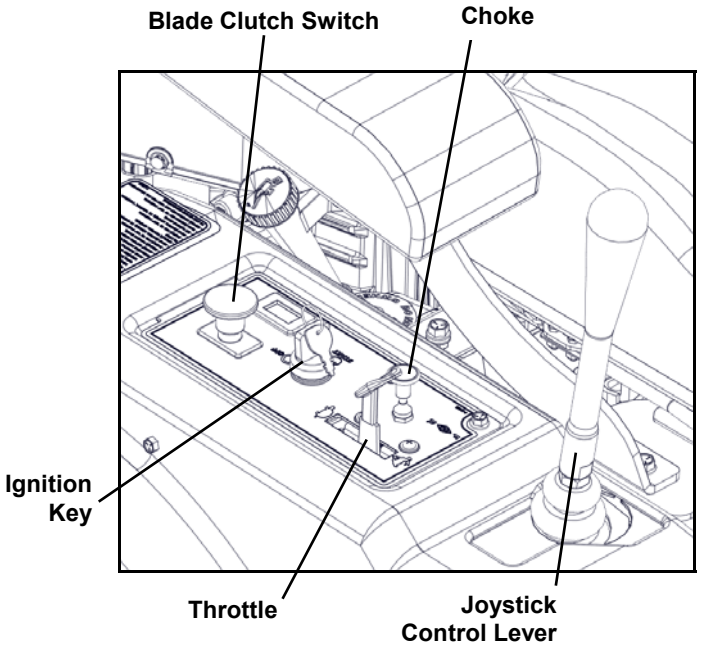
2. Make sure dirt and foreign matter is kept out of gas tank. Use a clean funnel and gas can.
3. Do not mix oil with gasoline.
4. Do not use white, high test or premium gasoline. Do not use deicers, carburetor cleaners, or other such additives (Use fuel recommended by Engine Manufacturer)
5. Check the crankcase oil level. Make sure the engine is off. The mower should be parked on a level area. Do not overfill. (See your engine manual for more detailed instruction.)
6. Inspect V-belts.
7. Check tire pressure.
8. Make sure underside of mower deck is free of grass.
9. Make sure mower blades are sharp and secured tightly.
10. Clean the air intake screen on the engine if necessary.
11. Perform any other maintenance as it becomes necessary. (See the "Maintenance" section of this manual.)

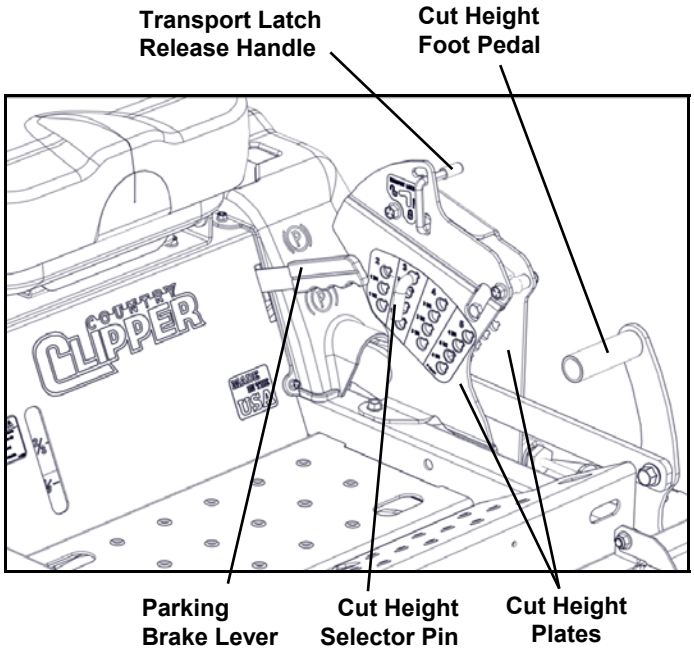
IMPORTANT:

Before cutting grass, clutch must be broken-in as follows: With engine at full RPM engage deck until blades come to full speed and then disengage until blades come to a complete stop. Repeat 10 times to "break-in" the clutch properly.

CONTROL LOCATIONS

JOYSTICK MODELS





WARNING

AVOID INHALING EXHAUST FUMES! CARBON MONOXIDE GAS IS COLORLESS, ODORLESS AND CAN CAUSE UNCONSCIOUSNESS AND IS POTENTIALLY LETHAL. DO NOT RUN LAWN MOWER IN GARAGE OR OTHER CONFINED AREAS.

OPERATION

JOYSTICK MODELS

1. **MOVE JOYSTICK CONTROL LEVER** to neutral "DOWN" position.
2. **SET PARKING BRAKE**. Pull up to set.
3. **DISENGAGE MOWER BLADE CLUTCH** by moving clutch switch to "OFF" position.
4. **PULL ENGINE CHOKE CONTROL** to full position for cold starts.
5. **SET ENGINE THROTTLE TO 1/2 THROTTLE.**
6. **TURN IGNITION KEY to "START"** position and release to "RUN" as soon as engine starts. NOTE: Prolonged cranking will damage starter motor and shorten the battery life
7. **ADJUST ENGINE THROTTLE** for desired engine smoothness and speed. However, use full throttle while mowing.
8. **RELEASE PARKING BRAKE.** Push brake lever down to release.

IMPORTANT:

Until the operator is familiar with the ***Country Clipper*** Zero Turn Radius Mower, he/she should follow these recommendations: **1)** Disengage the mower blades. **2)** Go very slowly until thoroughly familiar with the machine. **3)** Keep away from fences, buildings, and other obstructions. **4)** Move the Joystick Control Lever smoothly and slowly. **5)** Practice until operation is smooth and efficient.

9. **TO DRIVE:**
   - **A.** Move the Joystick Control Lever to the "UP" position.
   - **B.** Move the Joystick Control Lever forward to move forward. Increasing forward movement of the Joystick Control Lever will increase the speed of travel.
   - **C.** To reverse the direction, pull the Joystick Control Lever slightly back.
   - **D.** To turn, move the Joystick Control Lever toward the direction you want to turn.
   - **E.** To turn on a zero radius axis, go slowly and move the Joystick Control Lever to the side you wish to turn and slightly to the rear at the same time.

⚠ CAUTION ⚠

FOR SMOOTH, SAFE OPERATION, MOVE THE JOYSTICK CONTROL LEVER IN A GENTLE, SLOW MOTION. NEVER PULL OR PUSH THE JOYSTICK CONTROL LEVER RAPIDLY, ESPECIALLY ON GRADES.

10. **BRAKING:** To brake mower, gently move the Joystick Control Lever in the direction opposite to travel. Note: If the parking brake is engaged with the Joystick Control Lever in the "UP" position the engine will stop.
11. **CUTTING HEIGHT ADJUSTMENT:** Apply adequate pressure to the Cut Height Foot Pedal to allow free movement of the Cut Height Selector Pin. Rotate the Cut Height Selector Pin to align with the key slots in the Cut Height Plates. Remove Cut Height Selector Pin and move the Cut Height Foot Pedal to desired height of cut. Re-install the Cut Height Selector Pin to desired cut height.
12. **ENGAGE MOWER BLADE CLUTCH:** Set engine throttle to 1/2–3/4 throttle, engage the Blade Clutch Switch to the "ON" position, set throttle to full. Note: The engine will not start with the blade clutch switch in the "ON" position. Engine will stop if the clutch switch is "ON" and the Operator is not in the seat.

⚠ CAUTION ⚠

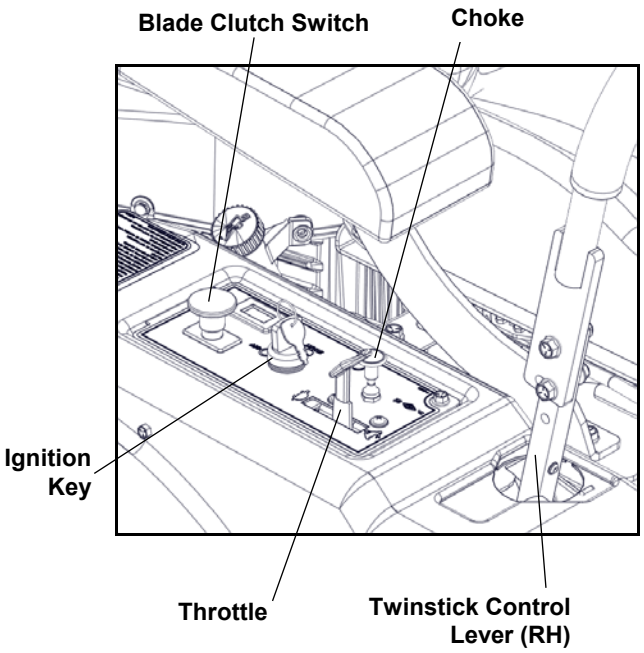
AVOID HILLS AND SLOPES. USE EXTREME CAUTION WHEN MOWING UP OR DOWN SLOPES. NEVER MOW ACROSS THE FACE OF A SLOPE. IF A SLOPE MUST BE ASCENDED, BACK UP THE SLOPE; DRIVE FORWARD WHEN DESCENDING.

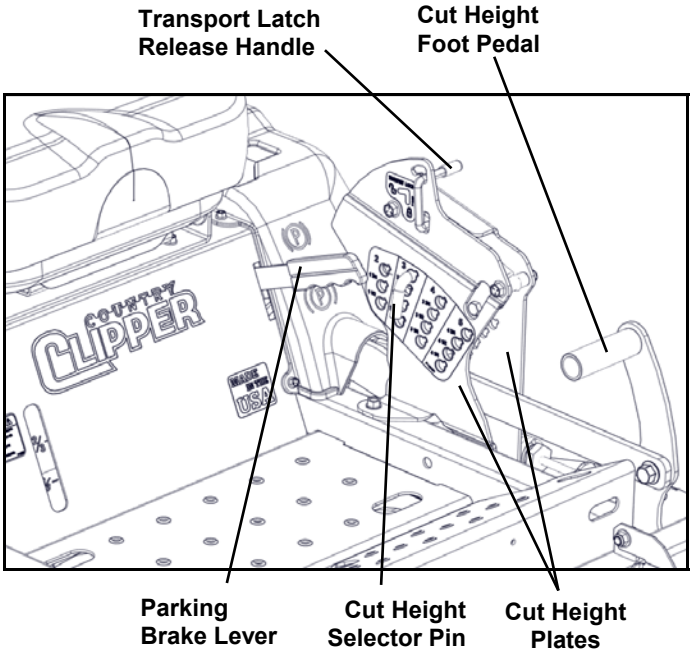
13. **TO STOP:**
   - **A.** Move Joystick Control Lever to neutral position and then to the "DOWN" position.
   - **B.** Disengage the mower blade clutch by moving the clutch to the "OFF" position.
   - **C.** Set the parking brake.
   - **D.** Turn ignition key to "OFF" position.
   - **E.** Remove the key and wait for all movement and sound to cease before dismounting.

⚠ CAUTION ⚠

WHEN LEAVING THE MOWER UNATTENDED, ALWAYS REMOVE THE KEY AND SET THE PARKING BRAKE, EVEN IF JUST FOR A FEW MOMENTS. HELP PROTECT CHILDREN AND OTHER UNAUTHORIZED PERSONS FROM ACCIDENTS.

CONTROL LOCATIONS
TWINSTICK MODELS





⚠ WARNING ⚠

AVOID INHALING EXHAUST FUMES -- CARBON MONOXIDE GAS IS COLORLESS AND ODORLESS, AND CAN CAUSE UNCONSCIOUSNESS, AND IS POTENTIALLY LETHAL. DO NOT RUN LAWN MOWER IN GARAGE OR OTHER CONFINED AREA.

OPERATION
TWINSTICK MODELS

1. **MOVE TWINSTICK CONTROL LEVERS** to neutral "OUT" position.
2. **SET PARKING BRAKE.** Pull up to set.
3. **DISENGAGE MOWER BLADE CLUTCH** by moving clutch switch to "OFF" position.
4. **PULL ENGINE CHOKE CONTROL** to full position for cold starts.
5. **SET ENGINE THROTTLE TO 1/2 THROTTLE.**
6. **TURN IGNITION KEY** to "START" position and release to "RUN" as soon as engine starts. NOTE: Prolonged cranking will damage starter motor and shorten the battery life.
7. **ADJUST ENGINE THROTTLE** for desired engine smoothness and speed. However, use full throttle while mowing.
8. **RELEASE PARKING BRAKE.** Push brake lever down to release.

IMPORTANT:

Until the operator is familiar with the ***Country Clipper*** Zero Turn Radius Mower, he/she should follow these recommendations: **1)** Disengage the mower blades. **2)** Go very slowly until thoroughly familiar with the machine. **3)** Keep away from fences, buildings, and other obstructions. **4)** Move the Twinstick Control Levers smoothly and slowly. **5)** Practice until operation is smooth and efficient.

9. **TO DRIVE:**
   - **A.** Move the Twinstick Control Levers to the "IN" position.
   - **B.** Move the Twinstick Control Levers forward to move forward. Increasing forward movement of the Twinstick Control Levers will increase the speed of travel.
   - **C.** To reverse the direction, pull the Twinstick Control Levers slightly back.
   - **D.** To turn, move one Twinstick Control Lever slightly ahead of the other.
   - **E.** To turn on a zero radius axis, go slowly and move one Twinstick Control Lever forward and one Twinstick Control Lever rearward. (For a right hand turn the left hand Twinstick Control Lever will be ahead of the right hand Twinstick Control Lever. For a left hand turn the right hand Twinstick Control Lever will be ahead of the left hand Twinstick Control Lever.)

⚠ CAUTION ⚠

FOR SMOOTH, SAFE OPERATION, MOVE THE TWINSTICK CONTROL LEVER(S) IN A GENTLE, SLOW MOTION. NEVER PULL OR PUSH THE TWINSTICK CONTROL LEVER(S) RAPIDLY, ESPECIALLY ON GRADES.

10. **BRAKING:** To brake mower, gently move the Twinstick Control Levers in the direction opposite to travel. NOTE: If the parking brake is engaged with the Twinstick Control Lever(s) in the "IN" position the engine will stop.
11. **CUTTING HEIGHT ADJUSTMENT:** Apply adequate pressure to the Cut Height Foot Pedal to allow free movement of the Cut Height Selector Pin. Rotate the Cut Height Selector Pin to align with the key slots in the Cut Height Plates. Remove Cut Height Selector Pin and move the Cut Height Foot Pedal to desired height of cut. Re-install the Cut Height Selector Pin to desired cut height.
12. **ENGAGE MOWER BLADE CLUTCH:** Set engine throttle to 1/2–3/4 throttle, engage the Blade Clutch Switch to the "ON" position, set throttle to full. Note: The engine will not start with the blade clutch switch in the "ON" position. Engine will stop if the clutch switch is "ON" and the Operator is not in the seat.

⚠ CAUTION ⚠

AVOID HILLS AND SLOPES. USE EXTREME CAUTION WHEN MOWING UP OR DOWN SLOPES. NEVER MOW ACROSS THE FACE OF A SLOPE. IF A SLOPE MUST BE ASCENDED, BACK UP THE SLOPE; DRIVE FORWARD WHEN DESCENDING.

13. **TO STOP:**
    - **A.** Move Twinstick Control Levers to neutral position and then to the "OUT" position.
    - **B.** Disengage the mower blade clutch by moving the clutch to the "OFF" position.
    - **C.** Set the parking brake.
    - **D.** Turn ignition key to "OFF" position.
    - **E.** Remove the key and wait for all movement and sounds to cease before dismounting.

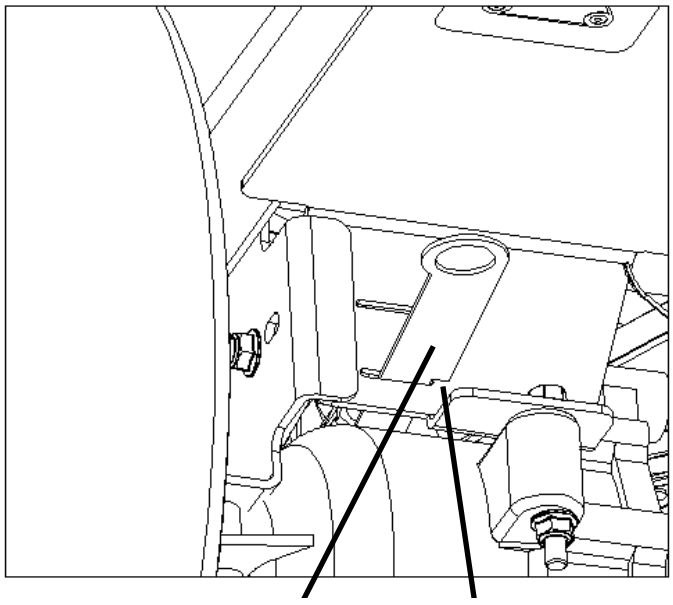
⚠ CAUTION ⚠

WHEN LEAVING THE MOWER UNATTENDED, ALWAYS REMOVE THE KEY AND SET THE PARKING BRAKE, EVEN IF JUST FOR A FEW MOMENTS. HELP PROTECT CHILDREN AND OTHER UNAUTHORIZED PERSONS FROM ACCIDENTS.

OPERATION

FREE WHEEL

1. **TO FREE WHEEL:**
    - **A.** Unlocking the transmissions: Pull each Transmission Release Tab rearward and move it in, away from the tire, to "hook" it in the pulled out position. Both sides must be unlocked. This will allow the mower to be rolled around a shop or towed at slow speeds (less than 2 mph) for a short distance without damaging the transmissions.
    - **B.** To re-engage the transmissions unhook both Transmission Release Tabs from the pulled-out position.
    - **C.** The Transmission Release Tabs are located just under the main frame inside each tire toward the back of the mower.



NOTE: The tractor should never be pulled at more than 2 miles per hour or for any appreciable distance.

CAUTION

NEVER OPERATE MOWER WITHOUT DISCHARGE CHUTE IN PLACE.

MOWING RECOMMENDATIONS

1. **Keep mower blades sharp.**
2. **Make sure deck and discharge are clean.**

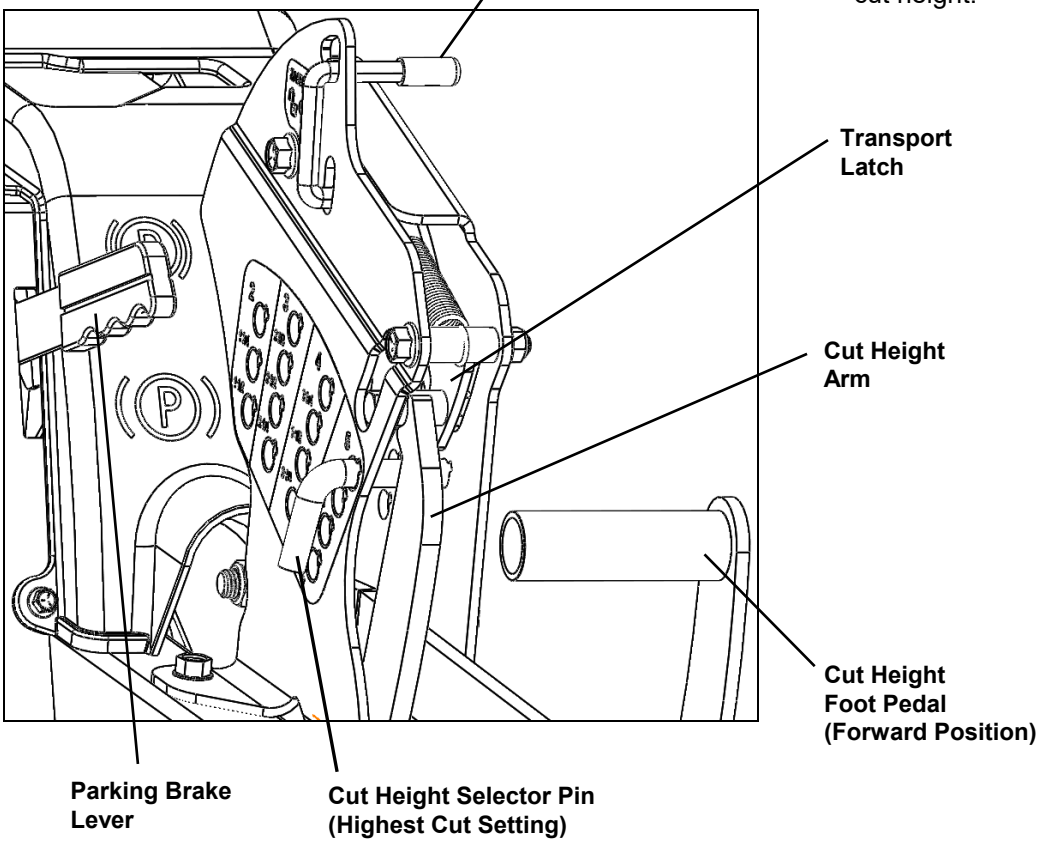
CAUTION

TURN ENGINE OFF AND WAIT FOR ALL MOVING PARTS TO STOP BEFORE CLEANING DISCHARGE CHUTE.

3. **When mowing tall grass**, make two passes. Mow off ½ of the desired cut on the first pass, and then the desired height the second pass. Check for hidden dangers.
4. **Go slowly for trimming.**
5. **Always cut grass with the engine at full throttle speed.**

NOTE: Operating the engine at full throttle assures that the cutting blades are operating at optimum cutting speed. Control ground speed with the Control Lever(s).

6. **Vary ground speed to suit conditions** (i.e. go slower in tall thick grass, on hills, wet conditions, etc.).



MOWER TRANSPORT RECOMMENDATIONS

1. SECURING THE DECK IN TRANSPORT POSITION:
   - **A.** Move the Transport Latch Release Handle forward to the LOCK position.
   - **B.** Push the Cut Height Foot Pedal to the most Forward Position and release. This allows the Cut Height Arm to lock onto the Transport Latch.
   - **C.** Place the Cut Height Selector Pin in the highest cut setting.
2. ENGAGE PARKING BRAKE:
3. SECURE MOWER:
   - **A.** It is recommended that you tie off the rear and the front of the mower to Transport Vehicle.
4. RELEASING THE DECK FROM TRANSPORT POSITION:
   - **A.** Place the Cut Height Selector Pin in the desired cut height.
   - **B.** Push the Cut Height Foot Pedal to the most Forward Position. This allows the Cut Height Arm to unlock from the Transport Latch.
   - **C.** Move the Transport Latch Release Handle rearward to the UNLOCK position.
   - **D.** Release the Cut Height Foot Pedal to desired cut height.

MAINTENANCE

CAUTION

BEFORE PERFORMING ANY MAINTENANCE, TURN OFF ENGINE REMOVE KEY AND DISCONNECT SPARK PLUGS. USE EXTREME CARE WHEN WORKING ON MACHINERY. DO NOT WEAR WATCHES OR JEWELRY. DO NOT WEAR LOOSE FITTING CLOTHES, AND OBSERVE ALL COMMON SAFETY PRACTICES WITH TOOLS.

MAINTENANCE SCHEDULE

Maintenance Service Interval	Maintenance Procedure
Before Each Use or Daily	☐ Check Engine Oil Level. ☐ Check Mower Blades. ☐ Check Operator Presence Control System. ☐ Check for Loose Hardware. ☐ Clean Engine Cooling System. ☐ Remove Debris From Engine. ☐ Remove Debris Build-Up Hydrostatic Transmission
After Each Use or Daily	☐ Clean Grass Build-Up from Deck Cutting Chamber.
After First 5 Hours	☐ Change Engine Oil. ☐ Check Wheel Lug Nuts. 75 ft/lbs / (102 Nm)
After First 75 Hours	☐ Change Hydrostatic Transmission Oil & Filter (see pg. 15)
Every 10 Hours	☐ Check Tire Pressure. 12-15 Psi / (83-103 kPa) ☐ Check Battery Fluid ☐ Sharpen Mower Blades
Every 25 Hours	☐ Service Air Cleaner. (Increase Frequency under Severe Conditions. See Engine Owner's Manual for additional information.) ☐ Check Wheel Lug Nuts. 75 ft/lbs / (102 Nm)
Every 50 Hours	☐ Check Hydraulic Oil Level. ☐ Check Drive Belt Condition. ☐ Check Engine RPM (3300-3500 rpm)
Every 100 Hours	☐ Change Engine Oil & Filter. (Increase Frequency under Severe Conditions. See Engine Owner's Manual for Additional Information.) ☐ Remove Engine Shrouds & Clean Cooling Fins. ☐ Check Spark Plug ☐ Grease Front Caster Wheel Bearings
Every 400 Hours	☐ Change Hydrostatic Transmission Oil & Filter (see pg. 15)
Every 500 Hours Or Annually	☐ Replace Air Filter Element ☐ Check Spark Plugs ☐ Service Battery

Replace Safety decals when illegible. Write factory for free replacement.

MAINTENANCE INSTRUCTIONS

1. ENGINE:

For complete maintenance and operating information for your engine, please refer to your engine operating and maintenance instructions furnished by the engine manufacturer and included in your ***Country Clipper*** Zero Turn Radius Mower information packet.

NOTE: Air intake screen must be kept clean. If plugged, engine may be seriously damaged by overheating.

2. BATTERY:

CAUTION

BATTERY ELECTROLYTE IS A POISONOUS AND CORROSIVE SULFURIC ACID SOLUTION. AVOID SPILLING ON SKIN, EYES, AND CLOTHING.

Keep the electrolyte level above the plates in each cell by adding distilled water as it becomes necessary. Add water just before operating the mower to mix the water with the solution. Be careful not to overfill the battery -- the electrolyte solution is corrosive and can cause damage to surrounding metal parts if it should spill. When taking the battery out of the mower for servicing, make sure to connect the cables to the battery exactly as they were prior to removal. Always disconnect the ground (**-**) wire **first** and always reconnect the ground (**-**) wire **last.**

Keep the battery clean. Remove the corrosion around the battery terminals by applying a solution of one part baking soda to four parts water. Coat all exposed terminal surfaces with a light layer of grease or petroleum jelly to prevent corrosion.

NOTE: At temperatures below 32 degrees F (0 degrees C) the full charge state must be maintained to prevent cell electrolyte from freezing and causing permanent battery damage.

3. TIRES:

Correct tire pressure is essential for efficient operation of the mower. Check tire pressure as requested in the maintenance schedule. Inflate tires to the pressures listed below:

Model	Front tires	Rear tires
All Models	12-15 psi 83-103 kPa	12-15 psi 83-103 kPa

Lug nuts should be torqued to 75 ft/lbs and checked regularly for tightness.

4. MOWER BLADES:

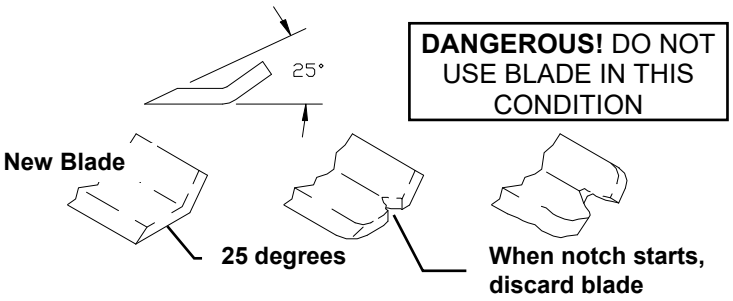
Check sharpness of mower blades after every 10 hours of operation. To sharpen blades proceed as follows:

CAUTION

STOP ENGINE, REMOVE IGNITION KEY AND SPARK PLUGS FOR SAFETY.

A. Remove bolt and blade washer mounting blade on shaft. Remove blade.

B. Blades should be discarded when worn excessively.



C. Sharpen blades with a hand file, electric grinder or blade sharpener. Wear gloves and eye protection when sharpening. Grind blade at original 25 degree bevel.

D. Check balance of blade by positioning the blade on a nail or blade balance pedestal. Grind the blade on the end that is heavier until both sides balance.

E. Install blade, blade washer and bolt. Make sure to torque bolt to 100 ft-lbs.

5. V-BELTS:

All belts should be checked every 50 hours. Replace any belts found to be in poor condition. All belts are equipped with spring loaded belt tighteners and do not require tightening adjustments.

6. LUBRICATION:

A. Engine: Follow engine manufacturer's recommendation.

B. Front Casters: Lubricate front caster wheel bearings with several pumps of multi-purpose grease from a grease gun periodically. (See Maintenance Schedule)

7. PARKING BRAKE ADJUSTMENT:

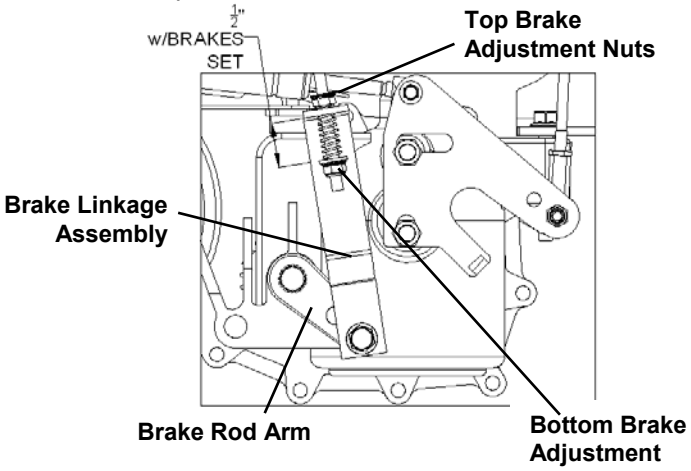
A. Move Parking Brake Lever to the "OFF" position.

B. Adjust the top Adjustment Nut down or up so that the Brake Rod Arm is fully extended downward.

C. Move Parking Brake Lever to the "ON" position.

D. Adjust the Bottom Adjustment Nut so that the compression spring is compressed to 1/2".

E. Repeat for the other side.



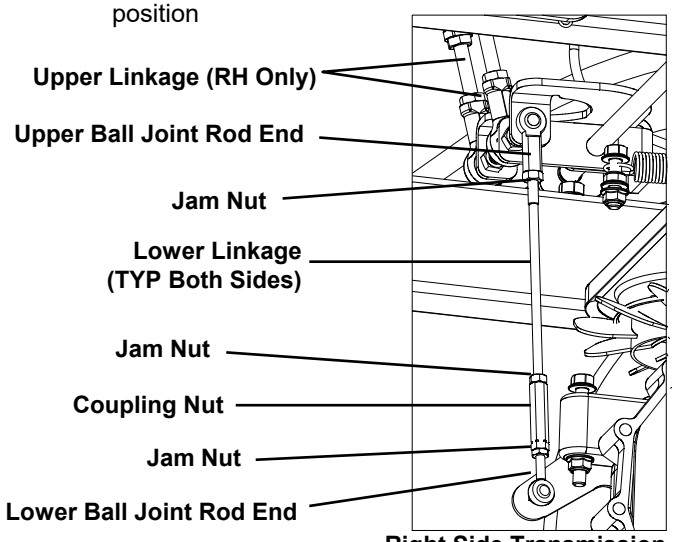
JOYSTICK ADJUSTMENT

1. SETTING TRACKING AND FORWARD SPEED:

A. The initial setting is done with the engine TURNED OFF.

B. The Joystick assembly contains two sets of ball joint linkages. The upper linkages that are connected to the Joystick are factory set and do not change. The lower linkages that attach to the transmission control arms will be adjusted to set the full speed and tracking. First loosen the jam nuts on both ends of the coupling nut and back the jam nut away from the coupling nut. Note: one of the jam nuts has left hand thread.

C. Next lengthen both lower linkages by turning the coupling nut several turns to make sure that the transmission cannot bottom out in the adjustment slot when the Joystick is in the full speed forward position

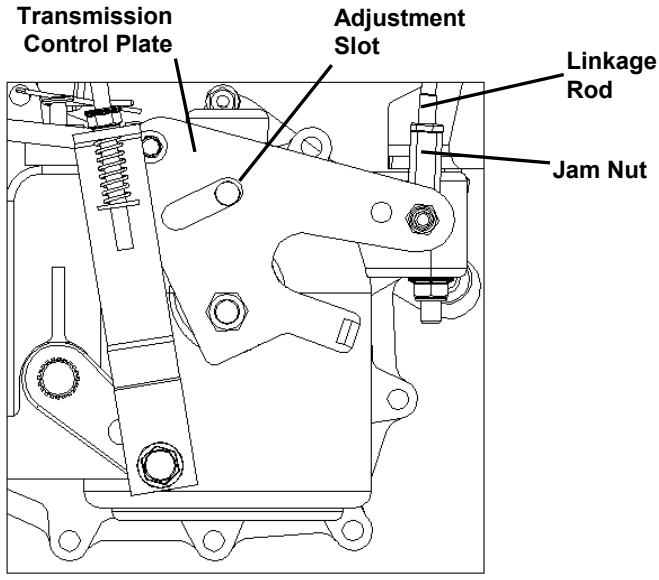


Right Side Transmission

D. While holding the Joystick Control Lever firmly in the full speed forward position shorten the linkage to the right side transmission by rotating the coupling nut until the transmission control plate just contacts the end of the slot, then lengthen the linkage by exactly one full turn. (See illustration. This may require the help of a second person)

IMPORTANT:

Use two wrenches (one on the nut and one on the coupling nut or rod end housing) when loosening or tightening jam nuts to prevent damaging the rod end ball joints!



Right Side Transmission

E. The jam nuts on the right side lower linkage may now be tightened. Make sure the rod ends remain square with the plates they are mounted to and do not bind.

F. Next hold the Joystick control lever firmly in the full speed forward position and shorten the linkage to the left side transmission by rotating the Coupling Nut until the transmission control plate just contacts the end of the slot, then lengthen the linkage by exactly one full turn. (Again, this may require the help of a second person).

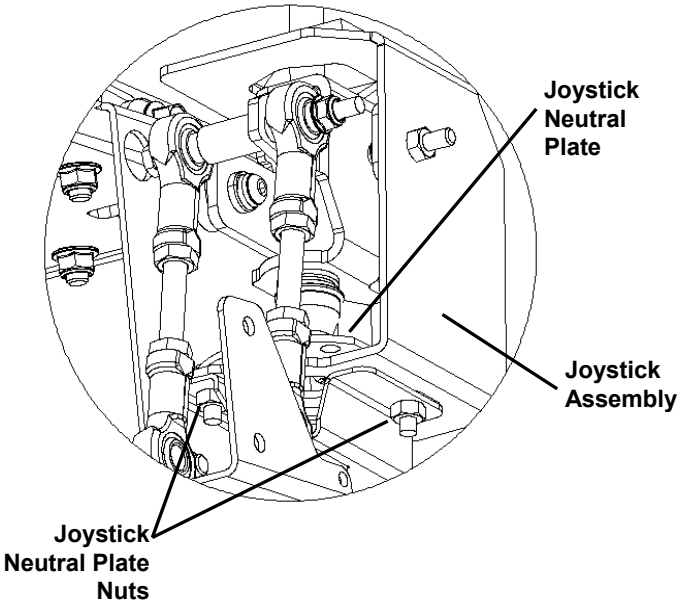
G. The jam nuts on the left side lower linkage may now be tightened. Make sure the rod ends remain square with the plates they are mounted to and do not bind.

H. To verify that forward tracking of the transmissions is straight at full speed drive the unit in a large open area free from close obstacles. Since the adjustments made to forward speed may have caused the neutral setting to change be alert to possible movement immediately upon starting the mower for this test. If tracking adjustments are needed lengthen the linkage rod on the faster transmission using small adjustments of about ¼ turn.

2. SETTING NEUTRAL:

If, with the Joystick Control Lever in the DOWN ("Neutral") or start position and the engine running the mower moves or travels, it is necessary to adjust neutral. Raise the drive wheels off the ground, secure the mower on blocks or jack stands and proceed as follows:

A. Loosen the two nuts on the bottom of the Joystick Neutral Plate just enough so that the plate can move freely.



B. Start the engine. With the Joystick Control Lever still in the down position move the Joystick Handle until both wheels stop rotating.

C. Tighten the two nuts on the bottom of the Joystick Neutral Plate, being careful not to shift it out of position.

D. Recheck neutral before placing the mower back on the ground. Then shut off the engine and remove the mower from the blocks.

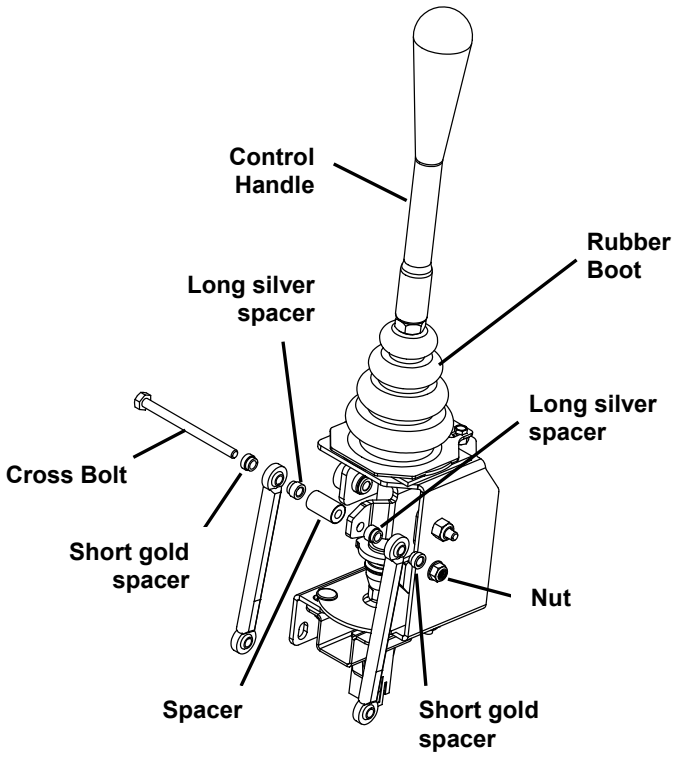
3. JOYSTICK CONTROL LEVER SENSITIVITY ADJUSTMENT:

To change the sideways turning response, adjust as follows:

A. Remove the right hand fender exposing the Joystick Control Lever assembly.

B. Remove the cross bolt, nut, & spacers.

C. For quicker reacting steering place the long, silver colored spacers toward the inside of the rod end ball joints and the shorter, gold colored spacers on the outside of the ball joints. For slower reacting steering place the short, gold colored spacers on the inside and the longer, silver colored spacers on the outside. All 4 spacers must be used when reassembling.



TWINSTICK ADJUSTMENT

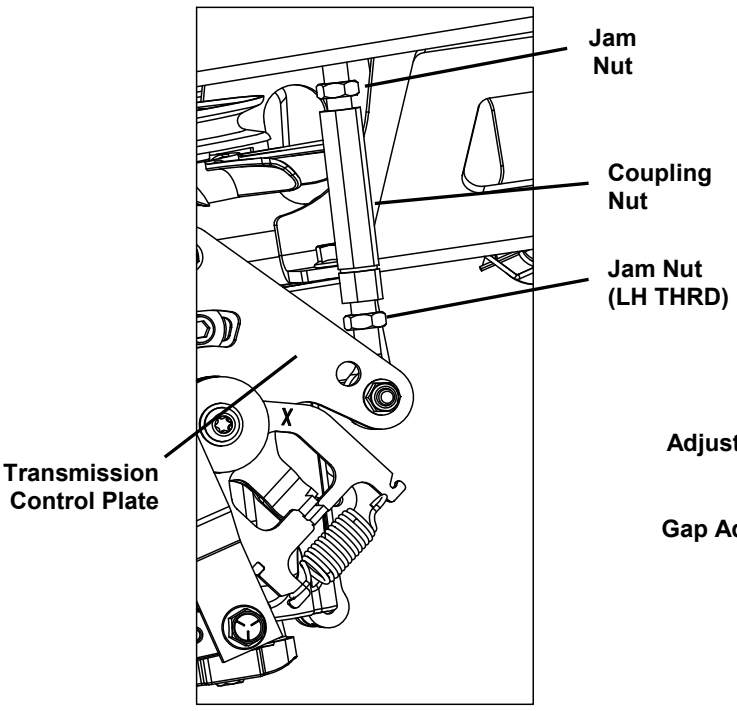
1. SETTING NEUTRAL:

A. Each twin lever control is linked directly to the transmission control plate via an adjustable length ball joint rod-end linkage. Adjustment of these linkages is only required if the mower creeps with the twin lever control handles locked in the neutral position (out) while the engine is running and the park brake is off.

B. To set neutral raise the drive wheels off the ground and stabilize the mower on blocks or jack stands.

C. On the side that needs adjusting loosen the jam nuts on either end of the coupling nut that is on the lower end of the linkage and spin the jam nuts back a couple of turns. (Note that the bottom jam nut has left-hand treads.)

D. Now start the engine and rotate the coupling nut until the wheel stops turning. Turn off the engine and retighten the jam nuts, then re-check with the engine running.



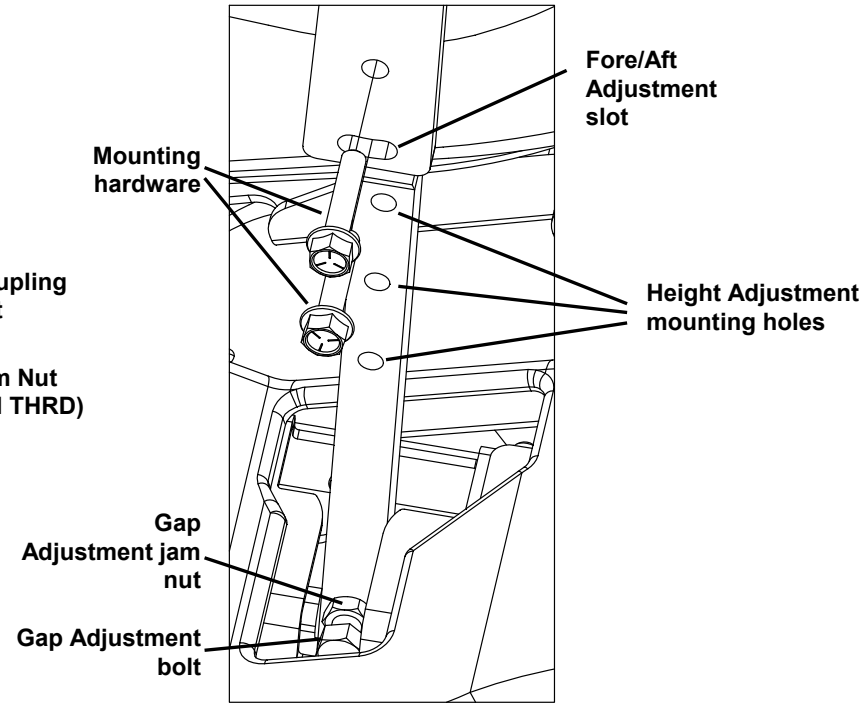
NOTE: It can help to fine tune the neutral setting by turning the coupling nut until the wheel just starts turning forward and again in reverse and then set it half way between the two points.

2. SETTING THE OPERATOR HANDLES:

A. There are three positional adjustments for the operator hands. The length or height of the handles has two available positions. Mount the handles in the upper set of holes or the lower set of holes for maximum operator comfort.

B. Adjust the handles fore and aft position before tightening the handle mounting bolts. The fore/aft position of the handles should be set such that they are aligned with each other while in the neutral position.

C. Adjust the gap between the handles by rotating the adjustment bolt inside the twin lever control box. Loosen the jam nut and rotate the bolt so that there is about an inch gap between the ends of the operator handles when they are “in” (driving positon). Make the height of the handles the same, or in line with each other. This may require adjusting both sides.

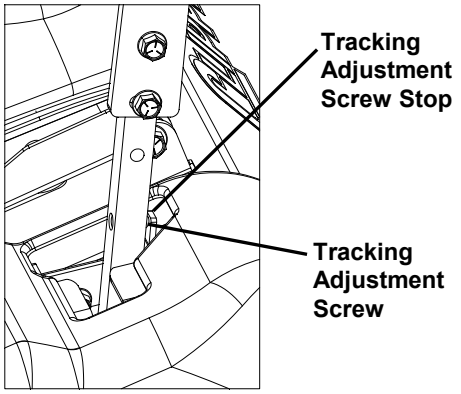


3. SETTING THE FORWARD TRACKING:

In a large open area, actuate the Twinstick Control levers into the full forward position. If the mower veers in either direction left or right, some adjustment is necessary. If the mower veers to the right, then the left transmission needs to be slowed down. If the mower veers to the left, then the right transmission needs to be slowed down.

A. Stop the machine and shut off the engine.

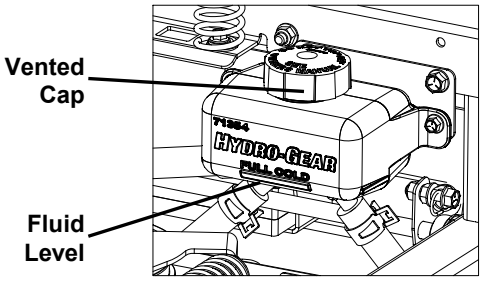
B. On the wheel that needs adjusted, turn the Tracking Adjustment Screw in until it contacts the stop, then turn screw ½ turn (slowing speed) increments, until the mower track straight.



HYDROSTATIC TRANSMISSION

Before each use, check to be sure that the cooling surfaces of the hydrostatic transmissions are clean. Excessive accumulation of oil, dirt, or trash may cause the transmissions to overheat.

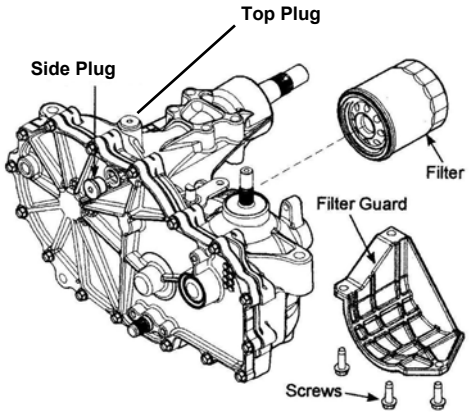
NOTE: NEVER WASH ACROSS THE VENTED CAP OR SHAFT SEAL AREA.



It is essential that the unit exterior be free from debris prior to doing any fluid maintenance.

1. HYDROSTATIC TRANSMISSION FLUID CHANGE:

SAE 20W-50 engine oil has been selected for use by the factory and is recommended for normal operating temperatures. Each transmission holds a maximum of 74 oz. of oil.



A. Thoroughly clean the Transmissions around the fill plugs and the oil filter before removing.

B. Set the park brake.

C. Open the by-pass valve (Set to “Free Wheel”). See pg.10

D. Remove the oil filter (Drains Fluid).

E. Remove the top plug on the right side transmission (Torque to 180 in-lbs)

F. Remove the side plug on the left side transmission (Torque to 180 in-lbs)

G. After all the oil is drained out, replace the filter (use part # H-2567 when ordering from Country Clipper).Wipe off the filter base surface, apply a film of new oil to the gasket of the new filter and hand tighten ¾ to one full turn after the filter gasket contacts the filter base surface.

H. Refill the transmission with the recommended oil through the expansion tank. When the oil level in the transmission reached the top or side plug port reinstall the plug and continue filling until the “Full Cold” line is reached on the expansion tank. Refilling each transmission will take approximately 2 quarts of oil.

NOTE: Due to the effect air has on efficiency in hydrostatic drive, it is critical that it be purged from the system.

These purge procedures should be performed any time a hydrostatic system has been opened for maintenance or oil has been added to the system.

IMPORTANT:

Failure to purge system properly may cause one or all of these symptoms: **1)** noisy operation. **2)** Lack of power or drive after short term operation. **3)** High operation temperature and excessive expansion of oil.

2. PURGING PROCEDURES

Oil Hydrostatic Transmission

NOTE: Before starting procedure make sure the transmission is at the proper oil level. If it is not, fill to specifications.

The following procedures should be performed with the vehicle drive wheels off the ground then repeated under normal operating conditions.

A. With the transmission in Free Wheel mode (see page 10 for details) and engine running, slowly move the directional control in both forward and reverse directions 5 to 6 times. As air is purged from the unit, the oil level will drop.

B. Re-engage the transmission and with the engine running, slowly move the directional control in both forward and reverse directions (5 to 6 times). Check the oil level, and add oil as required after stopping engine.

C. It may be necessary to repeat Steps A & B until all air is completely purged from the system. When the transaxle moves forward and reverse at a normal speed purging is complete.

PROCEDURE FOR RAISING AND LOWERING THE DECK FOR SERVICING

1. RAISING THE DECK TO THE SERVICING POSITION:

A. Position the front caster wheels so they are away from the deck (such as the tractor would be traveling in reverse).

B. Move the Transport Latch Release Handle rearward to the UNLOCK position.

C. Remove the Cut Height Selector Pin, then lower the deck and force the Cut Height Foot Pedal to the most Rearward Position, so the Cut Height Arm is passed the lowest cut height and pinned down with the Cut Height Selector Pin (lowest cut setting) as shown. This process unhooks (disengages) the Rear Deck Hangers from the Deck Clevis Pins.

WARNING

NEVER ATTEMPT TO STAND THE DECK UP TO THE SERVICE POSITION WITHOUT THE CUT HEIGHT FOOT PEDAL ALL THE WAY REARWARD AND THE CUT HEIGHT SELECTOR PIN PINNED IN FRONT OF THE CUT HEIGHT ARM!!!

D. Flip up front step (if equipped).

E. Release the deck belt tension by carefully rotating the Deck Belt Tension Lever on the deck. Now slide the engine-to-deck belt off from the clutch pulley under the engine

F. Lift the nose of the deck using the Deck Lift Handle until the deck is fully upright. Lifting the deck can be made easier if another person puts downward pressure on the rear of the mower

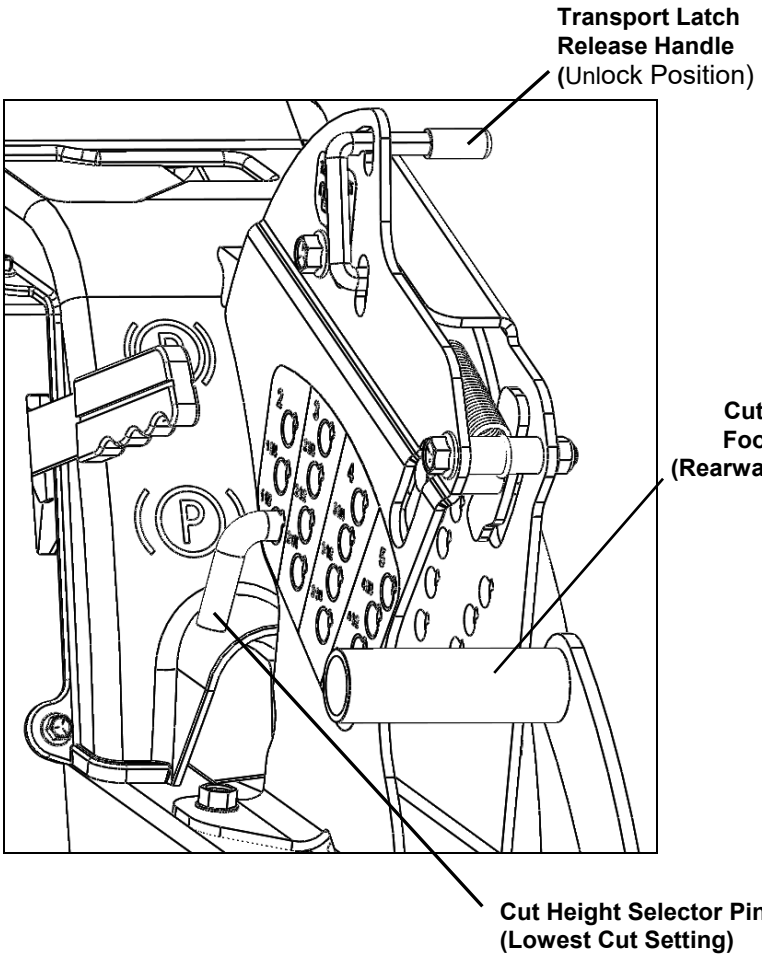
2. LOWERING THE DECK TO THE OPERATING POSITION:

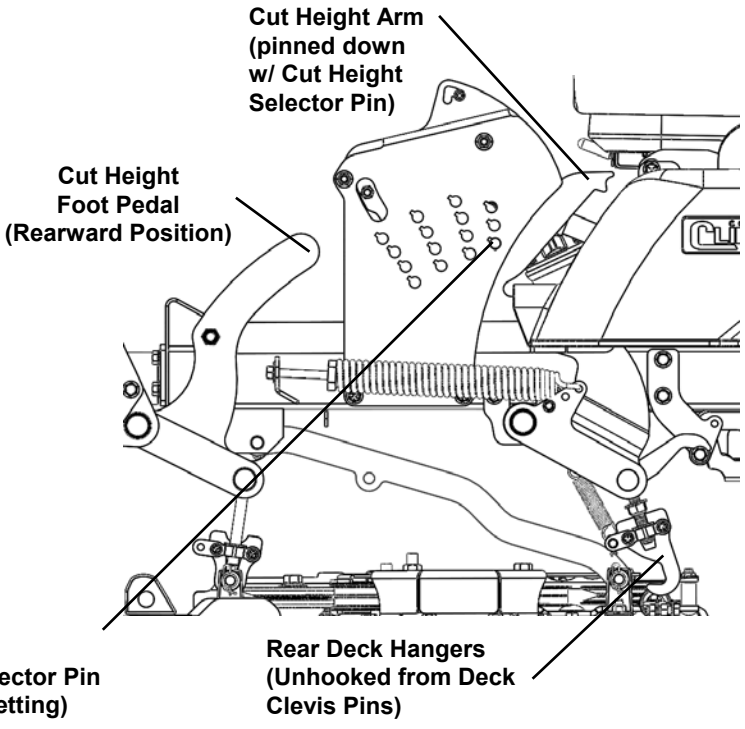
A. Push the bottom (back) of the deck towards the rear of the tractor, and lower the deck until it rests on the ground.

B. Place the engine-to-deck belt back on the clutch pulley. Check to make sure that the belt clears the frame and transmissions and that it runs above the Transmission Brace and is not caught on or hooked over something. Also ensure the belt is properly installed on all the deck pulleys and idlers.

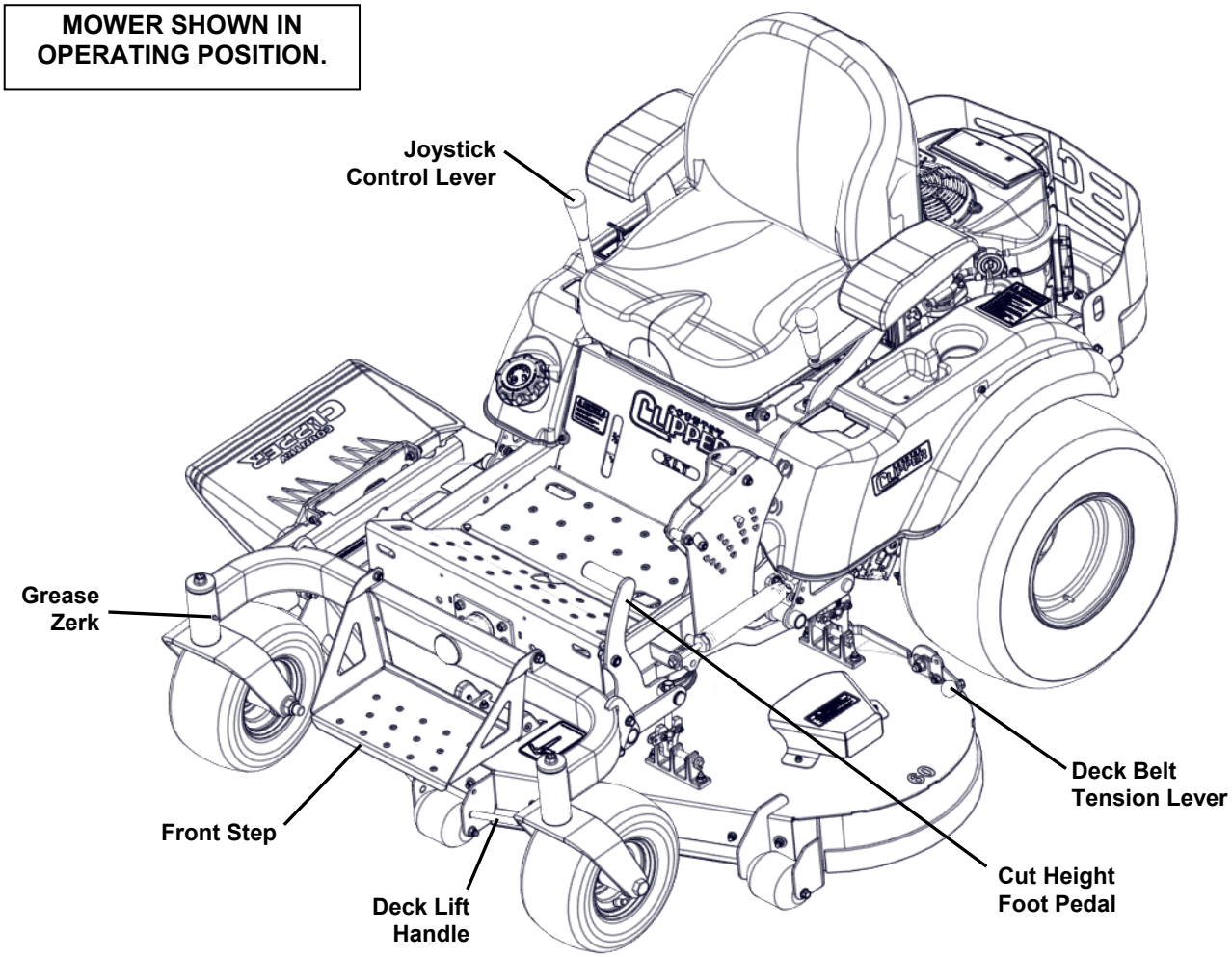
C. Re-apply the belt tension by carefully rotating the Deck Belt Tension Lever.

D. Apply pressure to the Cut Height Foot Pedal to allow removal of the Cut Height Selector Pin and unpin the Cut Height Arm. Move the Cut Height Foot Pedal forward to the desired cut height position, making sure that both Rear Deck Hangers hook (engage) to the Deck Clevis Pins and re-install the Cut Height Selector Pin.

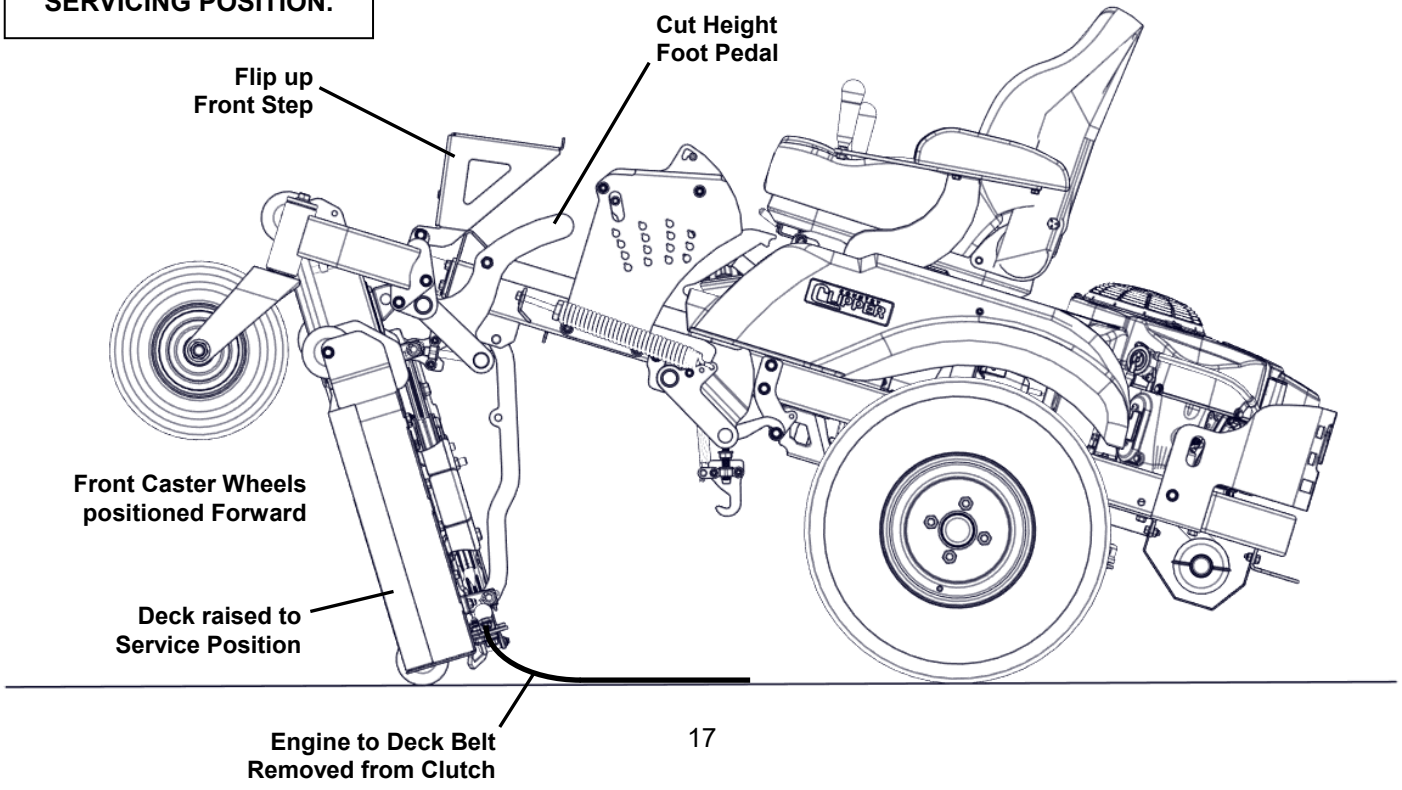




MOWER SHOWN IN OPERATING POSITION.



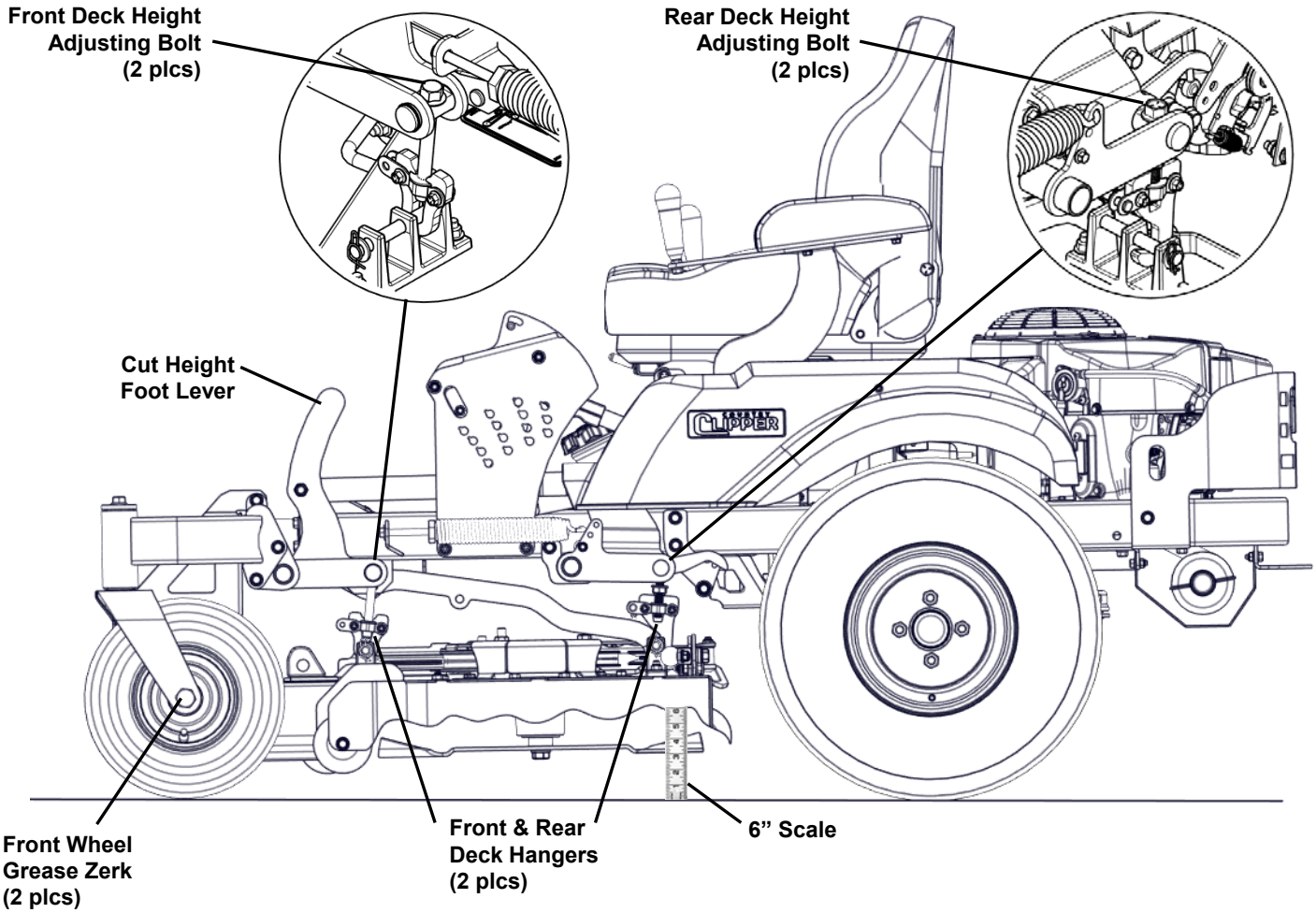
MOWER SHOWN IN SERVICING POSITION.



LEVELING THE DECK

NOTE: *The Deck has been leveled at the Factory.*
If leveling is needed, use the following procedures.

1. Move the tractor to a hard, flat surface (i.e. concrete or blacktop), set Parking Brake.
2. Set the tire pressure on each of the four tires to 12-15 psi / (83-103 kPa) (make sure all four tires are equal).
3. Set the deck cutting height to the highest position and rotate the two outside blades by hand until one end of each outside blade points forward (toward the front of tractor).
4. Measure from the ground to the front blade tip of each outside blade. These measurements should be within 1/8" of each other. (NOTE: To simplify this measuring, an optional Blade Measuring Tool, part number 629-374A is available from your local "Country Clipper dealer).



IMPORTANT:

Do not attempt to set the deck cut height higher or lower than specified.
This could cause failure of the deck drive system.

5. If adjustment is needed, set the Cut Height Arm in the 3" cut height position.
6. Tighten or loosen the Front Deck Height Adjusting Bolts to move the front leading point of the two outside blades to the blade height of 3". Make sure the left and right side measurements are within 1/8" of each other. Now measure the rear blade tip height from the ground.
7. Tighten or loosen the Rear Deck Height Adjusting Bolts so that the rear measurement is 1/8" to 1/4" higher than the front measurement on each side.
8. Recheck all measurements. NOTE: Deck should be hanging on all 4 Deck Hangers when properly adjusted.
9. Set deck to the desired cut height position.

TROUBLE SHOOTING CHECK LIST

1. ENGINE WON'T TURN OVER:
- Mower blades engaged ---------- disengage blades
- Drive not in neutral ---------- move Control Lever(s) to neutral position
- Blown fuse ---------- replace fuse
- Dead battery ---------- charge or replace
- Solenoid ---------- consult dealer
- Ignition switch ---------- consult dealer
- Starter ---------- consult dealer

2. ENGINE WILL TURN OVER BUT WON'T START:
- No gas ---------- refuel clean or replace fuel filters
- Over or under choked ---------- adjust choke
- Spark plug not firing ---------- check spark plug condition and reset gap*
- Carburetor maladjustment ---------- reset carburetor adjustment*
- Ignition switch ---------- consult dealer
- Operator Presence Switch ---------- consult dealer

3. HARD TO START ENGINE:
- Fuel line clogged ---------- clean fuel line and check fuel filter
- Faulty fuel pump ---------- consult dealer
- Spark plug wire loose or grounded ---------- check spark plug wires
- Spark plug(s) faulty or improperly gapped ---------- check spark plug condition and reset gap*
- Electronic ignition defective ---------- consult dealer
- Dirty or maladjusted carburetor ---------- readjust carburetor*
  consult dealer for carburetor service

4. ENGINE STARTS BUT CUTS OUT:
- Water in gasoline ---------- drain old gasoline and replace with new gasoline clean carburetor bowl
- Clogged fuel line ---------- check fuel filter, clean fuel line
- Faulty fuel pump ---------- consult dealer
- Maladjusted carburetor ---------- readjust carburetor*
- Engine dies when Control Lever(s) is move from "neutral" ---------- parking brake set, release brake

5. ENGINE KNOCKS:
- Low oil level ---------- check and add oil
- Ignition timing off ---------- consult dealer
- Fuel octane too low ---------- drain and replace with higher octane gasoline
- Overheated engine ---------- shut off engine and allow to cool

6. ENGINE SOMETIMES SKIPS AT HIGHER SPEEDS:
- Incorrect Ignition Timing ----------consult dealer
- Carburetor maladjusted ----------readjust carburetor
- Faulty spark plugs ----------check spark plug condition and reset gap*
- Bouncing off seat safety switch ----------slow down on rough terrain

7. ENGINE OVER HEATED:
- Air intake screen or fins clogged ----------clean intake screen and fins
- Fuel mixture too lean ----------readjust carburetor*
- Oil level too low or too high ----------adjust oil level
- Improper ignition timing ----------consult dealer
- Running engine too slow ----------run engine faster (NOTE: Always mow at full throttle setting.)

8. ENGINE IDLES POORLY:
- Carburetor maladjustment ----------readjust carburetor
- Improper spark plug gap ----------check and re-gap plug*

9. ENGINE BACKFIRES:
- Carburetor maladjustment ----------readjust carburetor*

10. ENGINE RUNS BUT MOWER WON'T MOVE FORWARD:
- Transmission locks in free wheel position ----------put in lock position (see pg. 8)
- Drive belt broken or slipping ----------replace drive belt
- Shift linkage disconnected ----------reconnect
- Transmission oil low ----------consult dealer
- Bad transmission ----------consult dealer

***** See engine manual for engine adjustments.

TROUBLE SHOOTING CHECK LIST CON'T

11. TRANSMISSION LOSES POWER OR TRANSMISSIONS OVER HEATS:
- Transmission damage ----------consult dealer

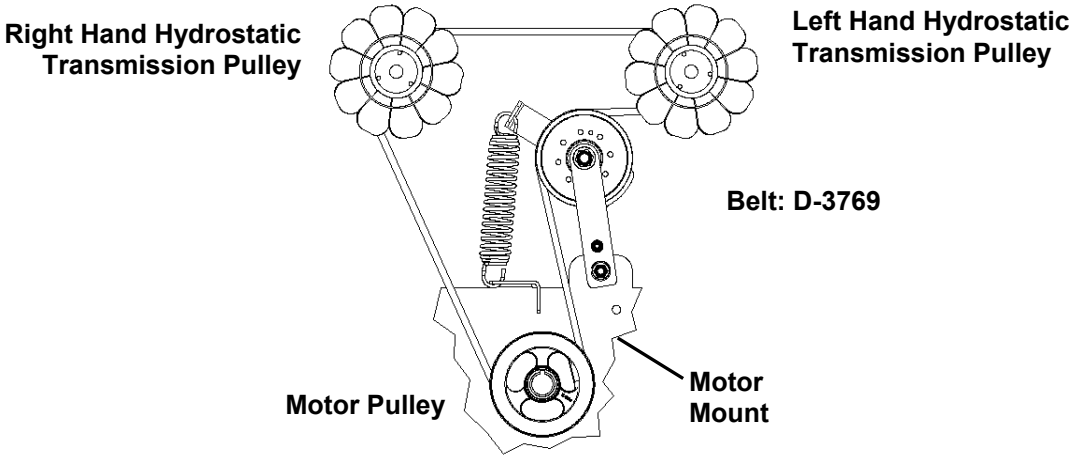
12. MOWER TRANSMISSION DOES NOT ENGAGE RIGHT AND/OR LEFT HAND:
- Transmission Free Wheel engaged----------disengage Free Wheel
- Loose or damage Control Linkage ----------consult dealer
- Low Transmission oil ----------consult dealer

13. ENGINE STALLS WHEN BLADES ARE ENGAGED:
- Operator not on seat ----------sit on seat
- Faulty interlock system ----------consult dealer
- Bad blade spindle bearing ----------consult dealer
- Deck drive belt not properly routed ----------reroute
- Blades blocked by foreign material ----------clean under deck

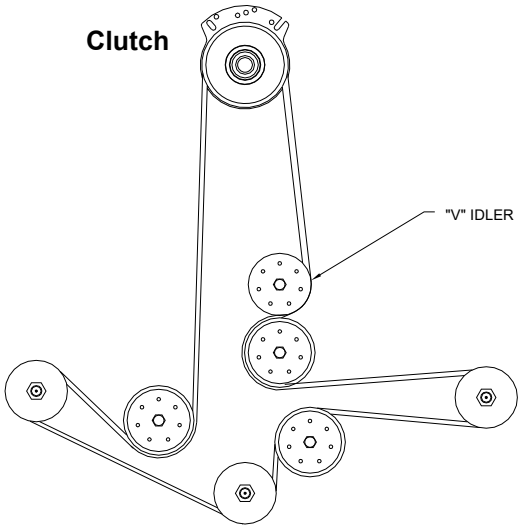
14. DECK BLADES WILL NOT ENGAGE:
- Blown fuse----------replace fuse
- Faulty wiring ----------consult dealer
- Faulty electric clutch ----------consult dealer

BELT ROUTINGS

Hydrostatic Transmission Drive Belt
(Viewed from ground looking up)



XLT / CHALLENGER DECK BELTS:
48" – D-3775-W
52" – D-3951
60" – D-3776-W



Repair Parts

COUNTRY CLIPPER

ZERO TURN MOWER

XLT C305

CHALLENGER D505

SERIAL RANGE: 19274001 - _____

COUNTRY CLIPPER
XLT-C305 & CHALLENGER-D505
SERIAL RANGE 19274001 - _____
ZERO TURN RADIUS MOWER
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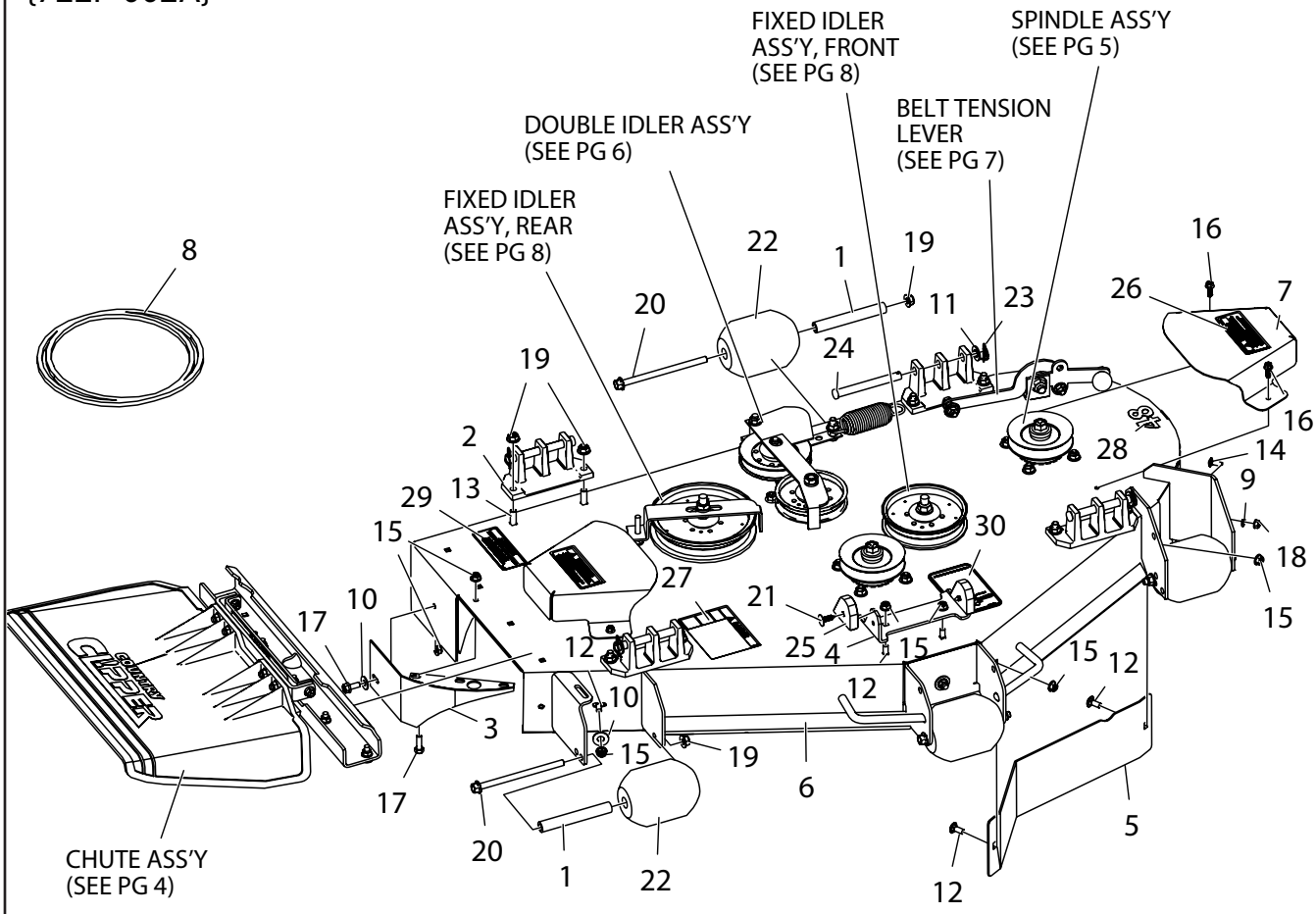
34. WIRE HARNESS SCHEMATIC – JOYSTICK
35. WIRE HARNESS SCHEMATIC – TWIN LEVER

Country Clipper Division Shivvers Manufacturing Inc. 613 W English St. Corydon, IA 50060-0467 Ph. 641-872-2544 Fax. 641-872-1593

48" DECK ASSEMBLY

{722F-002A}

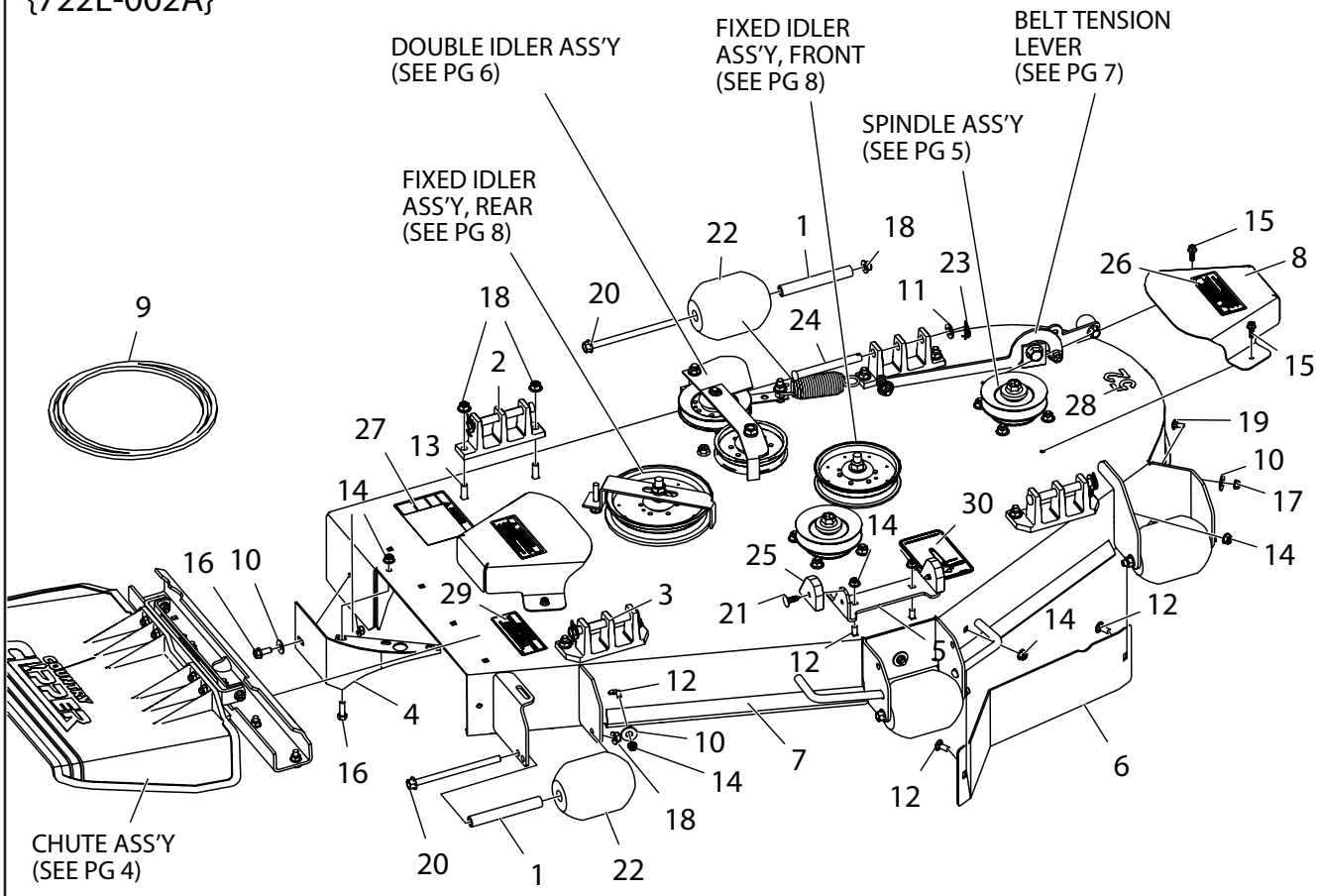


ITEM #	QTY	PART #	DESCRIPTION
1	5	609-183P	BUSHING
2	4	651-009W	DECK HANGER, WIDE BASE
3	1	686-080W	SPLITTER, DISCHARGE
4	1	722-034P	DECK STOP
5	1	722-041P	DEFLECTOR PLATE
6	1	722-045A	48" DECK W/ DECALS
7	2	722-048A	PULLEY COVER W/ DECALS
8	1	D-3775-W	BELT B-158" KEVLAR WRAPPED
9	1	F-1009-01	FLAT WASHER, 1/4", YZ
10	3	F-1009-02	WASHER, FLAT
11	4	F-1521	WASHER, 1/2" CUSTOM, YZ
12	6	F-1671	CARRIAGE BOLT,5/16-18 X 3/4", YZ, GR5
13	8	F-1672	BOLT, CARRIAGE, 3/8-16 X 1-1/4", YZ, GR5
14	1	F-1823	BOLT, CARRIAGE, 1/4-20 X 3/4
15	9	F-2063	NUT, 5/16-18, NYLOC, FLANGED, YZ
16	4	F-2119	FHCS, 1/4-20 X 3/4", YZ, GR5, LOCK PATCH

ITEM #	QTY	PART #	DESCRIPTION
17	3	F-2120	FHCS, 5/16-18 X 3/4", YZ, GR5
18	1	F-2132	NUT, 1/4-20 NYLOC, FLANGED, YZ
19	13	F-2151	NUT, 3/8-16 NYLOC, FLANGED, YZ
20	5	F-2161	FHCS, 3/18-16 X 6" YZ, GR5
21	2	F-2250	CLIP, FIR TREE, 1/4" X 1", BLACK NYLON
22	5	H-1948	ROLLER, 3-3/4 DIA
23	4	H-2239	1/2" RUE RING
24	4	H-2240	1/2" X 4-1/2" CLEVIS PIN
25	2	H-3091	WEAR PAD
26	2	P-10935	DECAL, "WARNING ROTATING DRIVE"
27	1	P-10941	DECAL, DANGER
28	1	P-11950	DECAL, DECK SIZE, 48
29	1	P-12706	WARNING DECAL, DISCHARGE CHUTE
30	1	P-12837	DECAL, DECK BELT ROUTING

52" DECK ASSEMBLY

{722E-002A}

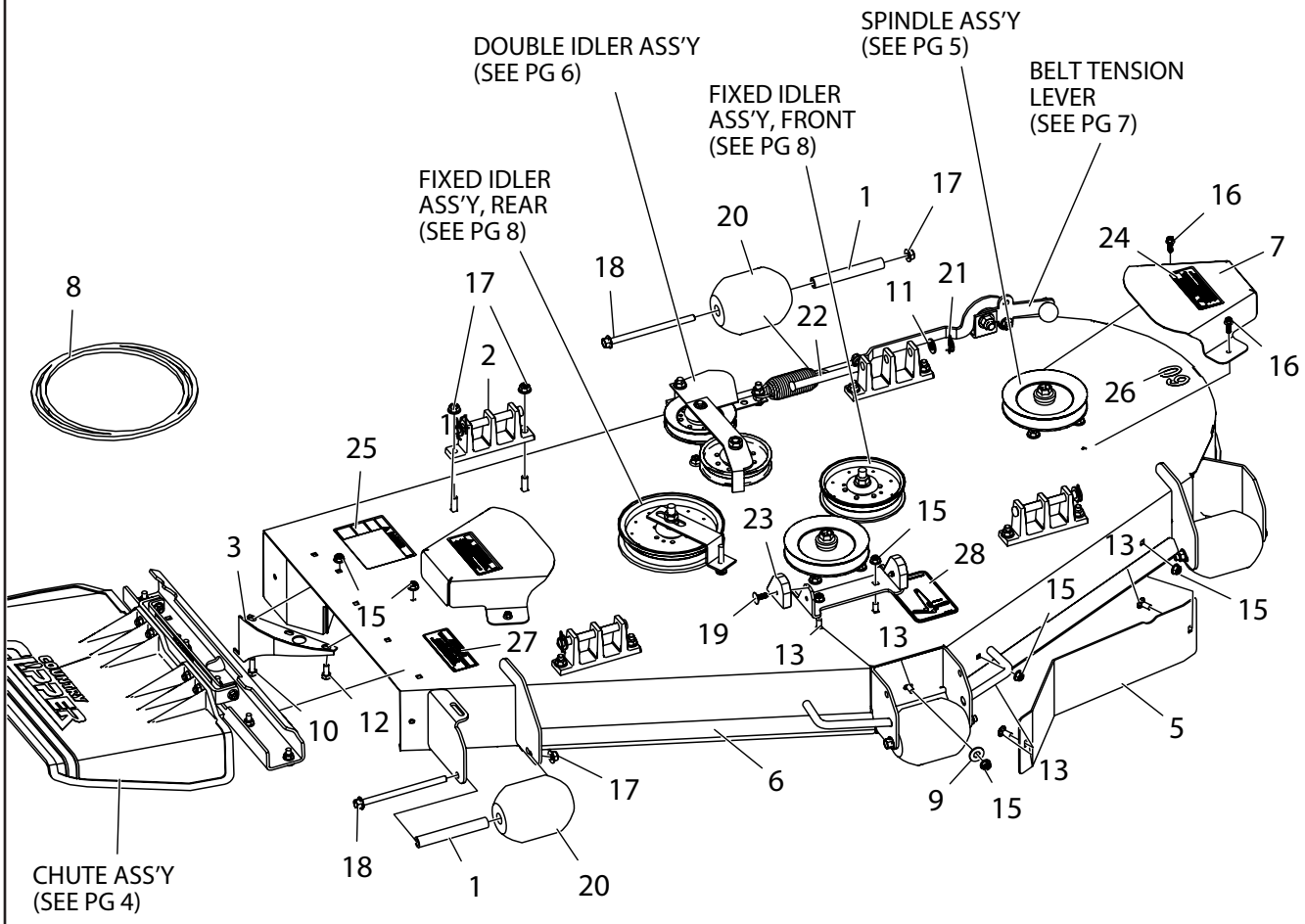


ITEM #	QTY	PART #	DESCRIPTION
1	5	609-183P	BUSHING
2	2	643-016W	DECK HANGER, NARROW BASE
3	2	651-009W	DECK HANGER, WIDE BASE
4	1	686-080W	SPLITTER, DISCHARGE
5	1	722-034P	DECK STOP
6	1	722-041P	DEFLECTOR PLATE
7	1	722-046A	52" DECK W/ DECALS
8	2	722-048A	PULLEY COVER W/ DECALS
9	1	D-3951	BANDL BELT B-166
10	4	F-1009-02	WASHER, FLAT
11	4	F-1521	WASHER, 1/2" CUSTOM, YZ
12	6	F-1671	CARRIAGE BOLT,5/16-18 X 3/4", YZ, GR5
13	8	F-1672	BOLT, CARRIAGE, 3/8-16 X 1-1/4", YZ, GR5
14	9	F-2063	NUT, 5/16-18, NYLOC, FLANGED, YZ
15	4	F-2119	FHCS, 1/4-20 X 3/4", YZ, GR5, LOCK PATCH
16	3	F-2120	FHCS, 5/16-18 X 3/4", YZ, GR5

ITEM #	QTY	PART #	DESCRIPTION
17	1	F-2132	NUT, 1/4-20 NYLOC, FLANGED, YZ
18	13	F-2151	NUT, 3/8-16 NYLOC, FLANGED, YZ
19	1	F-2155	BOLT, CARRIAGE, 1/4-20 X 5/8", YZ, GR5
20	5	F-2161	FHCS, 3/18-16 X 6" YZ, GR5
21	2	F-2250	CLIP, FIR TREE, 1/4" X 1", BLACK NYLON
22	5	H-1948	ROLLER, 3-3/4 DIA
23	4	H-2239	1/2" RUE RING
24	4	H-2240	1/2" X 4-1/2" CLEVIS PIN
25	2	H-3091	WEAR PAD
26	2	P-10935	DECAL, "WARNING ROTATING DRIVE"
27	1	P-10941	DECAL, DANGER
28	1	P-11951	DECAL, DECK SIZE, 52
29	1	P-12706	WARNING DECAL, DISCHARGE CHUTE
30	1	P-12837	DECAL, DECK BELT ROUTING

60" DECK ASSEMBLY

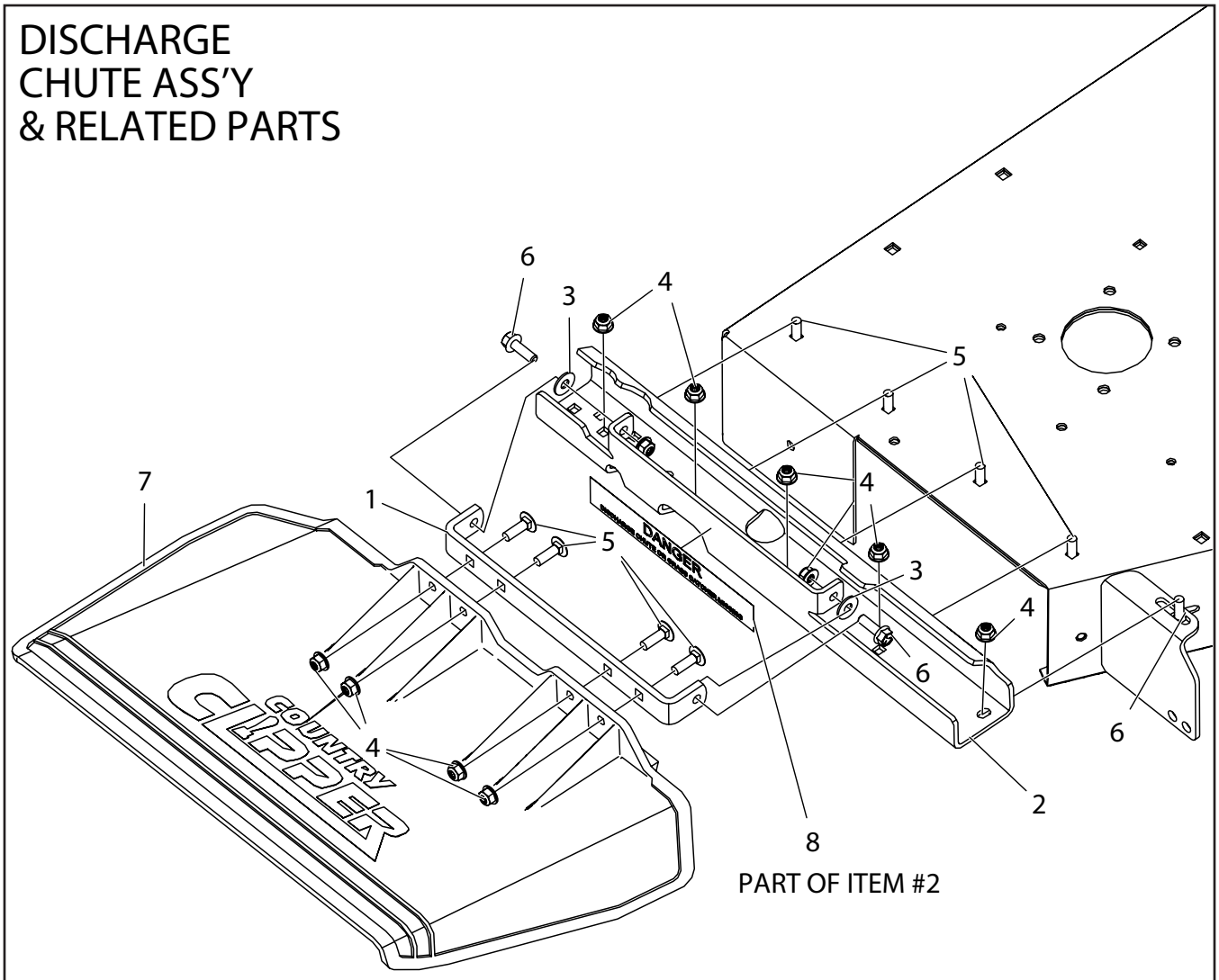
{722D-002A}



ITEM #	QTY	PART #	DESCRIPTION
1	5	609-183P	BUSHING
2	4	643-016W	DECK HANGER, NARROW BASE
3	1	686-006W	SPLITTER WELDMENT
4	1	722-034P	DECK STOP
5	1	722-041P	DEFLECTOR PLATE
6	1	722-047A	60" DECK W/ DECALS
7	2	722-048A	PULLEY COVER W/ DECALS
8	1	D-3776-W	BELT B-180"
9	2	F-1009-02	WASHER, FLAT
10	1	F-2148	FHCS, 5/16-18 X 1", YZ, GR5
11	4	F-1521	WASHER, 1/2" CUSTOM, YZ
12	1	F-2120	FHCS, 5/16-18 X 3/4"
13	6	F-1671	CARRIAGE BOLT,5/16-18 X 3/4", YZ, GR5
14	8	F-1672	BOLT, CARRIAGE, 3/8-16 X 1-1/4", YZ, GR5
15	8	F-2063	NUT, 5/16-18, NYLOC, FLANGED, YZ

ITEM #	QTY	PART #	DESCRIPTION
16	4	F-2119	FHCS, 1/4-20 X 3/4", YZ, GR5, LOCK PATCH
17	13	F-2151	NUT, 3/8-16 NYLOC, FLANGED, YZ
18	5	F-2161	FHCS, 3/18-16 X 6" YZ, GR5
19	2	F-2250	CLIP, FIR TREE, 1/4" X 1", BLACK NYLON
20	5	H-1948	ROLLER, 3-3/4 DIA
21	4	H-2239	1/2" RUE RING
22	4	H-2240	1/2" X 4-1/2" CLEVIS PIN
23	2	H-3091	WEAR PAD
24	2	P-10935	DECAL, "WARNING ROTATING DRIVE"
25	1	P-10941	DECAL, DANGER
26	1	P-11952	DECAL, DECK SIZE, 60
27	1	P-12706	WARNING DECAL, DISCHARGE CHUTE
28	1	P-12837	DECAL, DECK BELT ROUTING

DISCHARGE CHUTE ASS'Y & RELATED PARTS



PART OF ITEM #2

ITEM #	QTY	PART #	DESCRIPTION
1	1	643-110P	CHUTE HINGE
2	1	643-135A	OUTLET STIFFENER W/DECALS, SMALL
3	2	F-1009-02	WASHER, FLAT
4	11	F-2063	NUT, 5/16-18, NYLOC, FLANGED, YZ
5	8	F-2066	BOLT, CARRIAGE, 5/16-18 X 1", YZ, GR5
6	3	F-2148	FHCS, 5/16-18 X 1", YZ, GR5
7	1	H-2723	CHUTE, DISCHARGE, SMALL
8	1	P-12496	DECAL, CHUTE MISSING

DECK SPINDLE ASSEMBLY {D-4020}

BLADE PART NUMBERS

48" DECK

H-2882 HIGH LIFT W/O FUSION (STANDARD)
H-2659 LOW LIFT
H-2665 GATOR

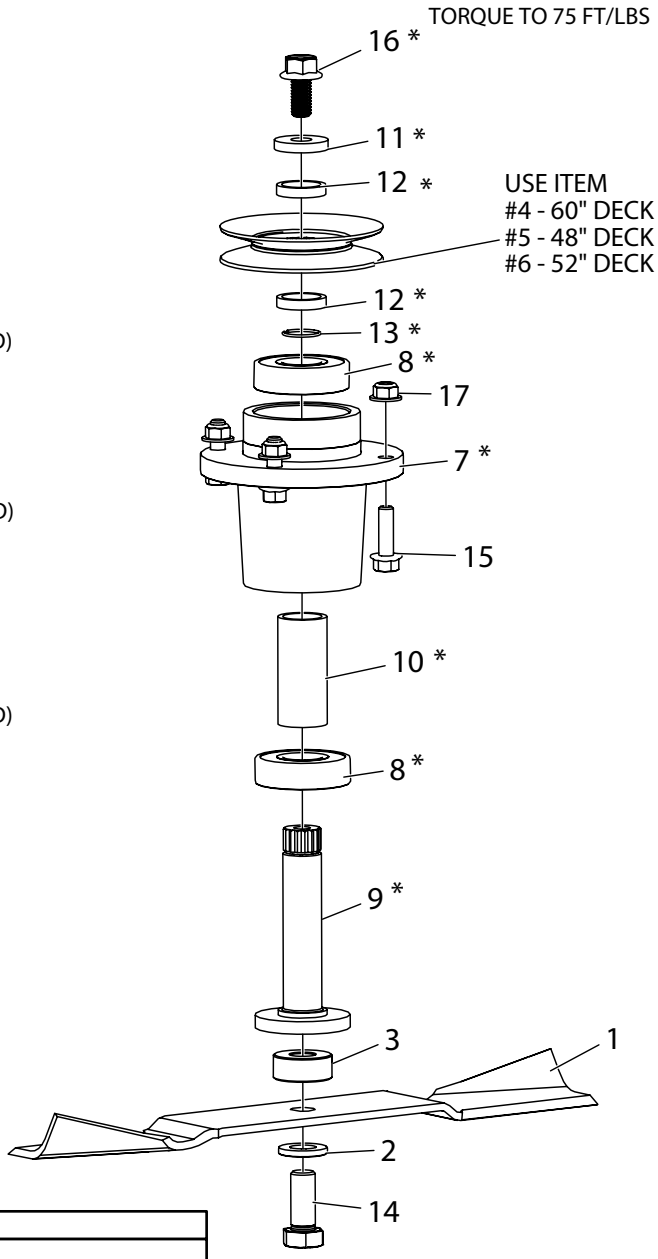
52" DECK

H-2883 HIGH LIFT W/O FUSION (STANDARD)
H-2884 HIGH LIFT W/ FUSION
H-2660 LOW LIFT
H-2666 GATOR

60" DECK

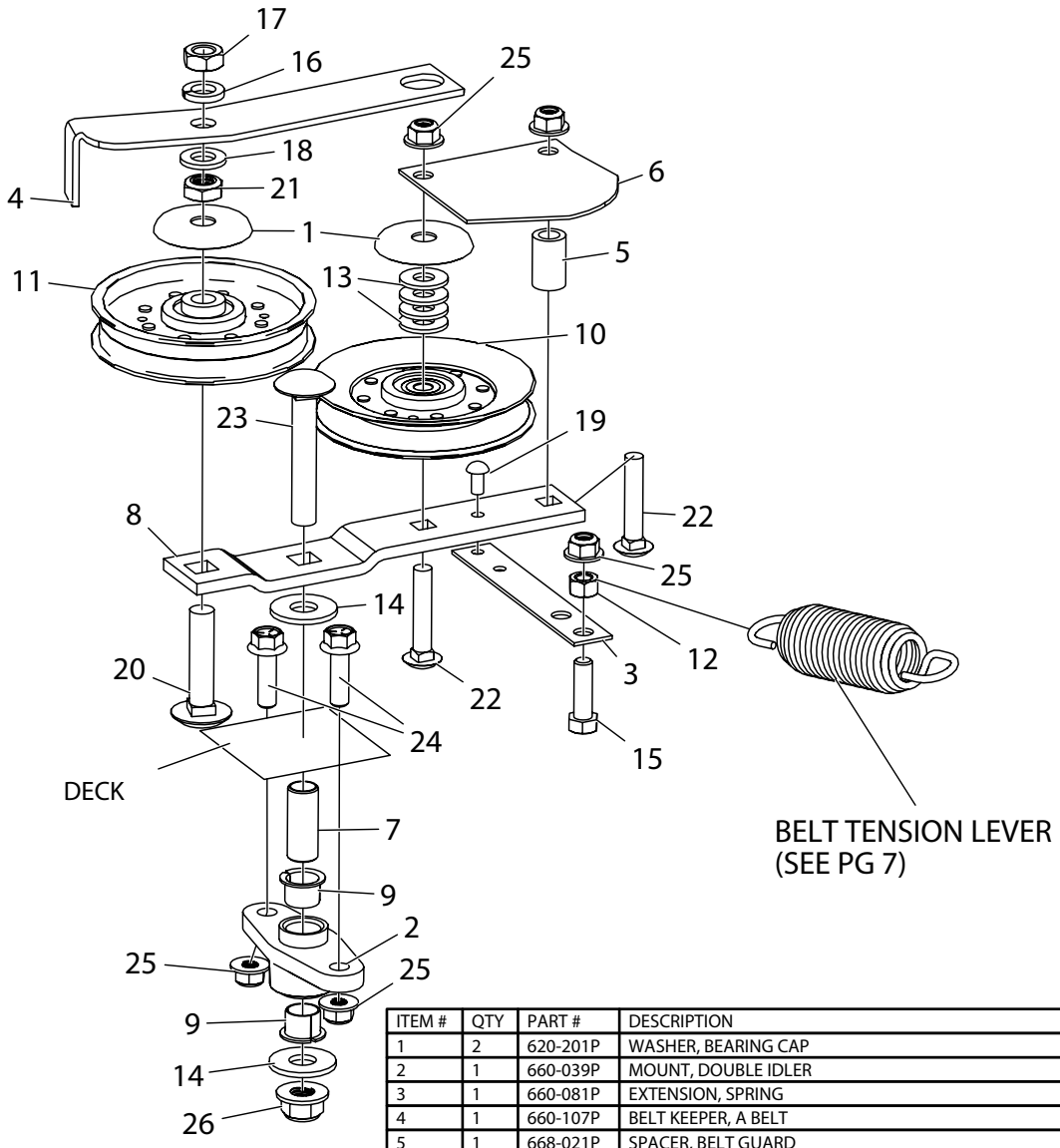
H-2885 HIGH LIFT W/O FUSION (STANDARD)
H-2886 HIGH LIFT W/ FUSION
H-2661 LOW LIFT
H-2667 GATOR

PARTS MARKED "*" ARE PART
OF COMPLETE ASSEMBLY D-4020



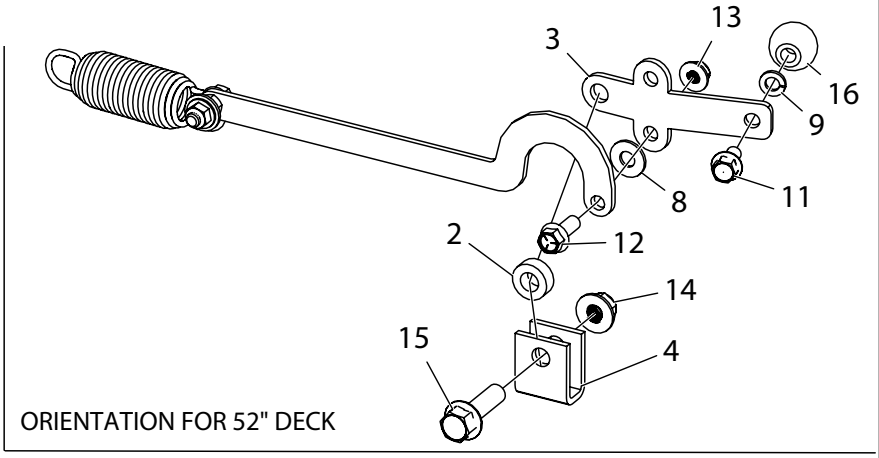
ITEM #	QTY	PART #	DESCRIPTION
1	1	(SEE LIST)	BLADE
2	1	660-099P	WASHER, BLADE, 5/8
3	1	660-206P	SPINDLE SPACER
4	1	D-3918	PULLEY, 5.195, A-B, DECK
5	1	D-3919	PULLEY, 4.039, A-B, DECK
6	1	D-3920	PULLEY, 4.513, A-B, DECK
7	1	----	SPINDLE HOUSING, MEDIUM DUTY
8	2	D-4020-2	BEARING, HCH 6305-2RS1
9	1	D-4020-3	SPINDLE SHAFT, MEDIUM DUTY
10	1	----	SPINDLE SPACER
11	1	D-4020-5	SPINDLE HARD WASHER
12	2	D-4020-6	PULLEY ALIGNMENT SPACER
13	1	D-3991	RETAINING RING
14	1	F-1650	HHCS, 5/8-11 X 2", GR5, YZ
15	4	F-2125	FHCS, 3/8-16 X 1-1/4", YZ, GR5
16	1	F-2143	FHCS, 1/2-13 X 1", YZ, GR5
17	4	F-2151	NUT, 3/8-16 NYLOC, FLANGED, YZ

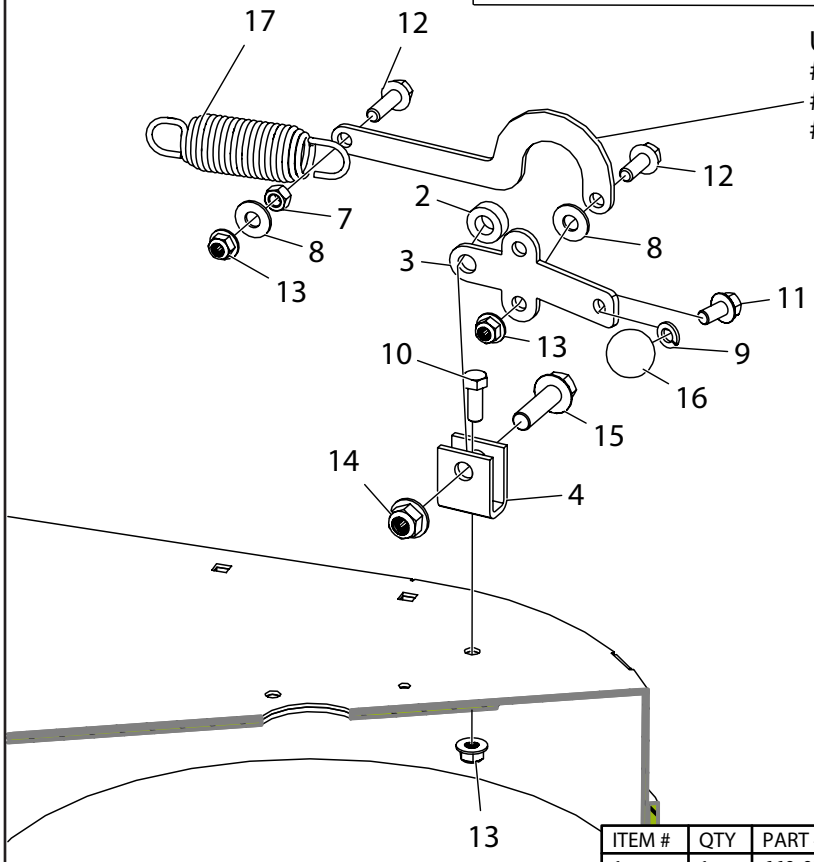
DOUBLE IDLER
DRIVE BELT IDLER



ITEM #	QTY	PART #	DESCRIPTION
1	2	620-201P	WASHER, BEARING CAP
2	1	660-039P	MOUNT, DOUBLE IDLER
3	1	660-081P	EXTENSION, SPRING
4	1	660-107P	BELT KEEPER, A BELT
5	1	668-021P	SPACER, BELT GUARD
6	1	714-183P	BELT GUARD, 54''
7	1	722-031P	MOUNTING PIN
8	1	722-032P	IDLER ARM
9	2	D-3730	BUSHING, DU 5/8 DIA X 1/2 LG
10	1	D-3923	PULLEY, V-IDLER, 4.59OD, AB, NTN
11	1	D-3924	PULLEY, FLAT IDLER, 4.25 OD, NTN, DBL INSERT
12	1	F-1005-03	NUT, 3/8-16, CENTERLOCK, YZ, GR5
13	4	F-1009-03	WASHER, FLAT, 3/8, YZ
14	2	F-1009-05	WASHER, FLAT STD, 1/2" NOMINAL, YZ
15	1	F-1394	HHCS, 3/8-16 X 1", YZ, GR5
16	1	F-1464	LOCKWASHER, 1/2"
17	1	F-1489	NUT, HEX, JAM, 1/2-13, YZ
18	1	F-1521	WASHER, 1/2" CUSTOM, YZ
19	1	F-1733	DRIVE SCREW, 1/4" X 1/2", RND HD
20	1	F-1822	BOLT, CARRIAGE, 1/2-13 X 2-1/4", YZ, GR5
21	1	F-1966	NUT, THIN, 1/2-13, NYLOC, YZ
22	2	F-1976	BOLT,CARRIAGE, 3/8-16 X 2", YZ, GR5
23	1	F-1927	CARRIAGE BOLT, 1/2-13 X 2-3/4" ZINC/YELLOW DICHROMATE FULL THREAD
24	2	F-2125	FHCS, 3/8-16 X 1-1/4", YZ, GR5
25	5	F-2151	NUT, 3/8-16 NYLOC, FLANGED, YZ
26	1	F-2152	NUT, 1/2-13 NYLOC, FLANGED, YZ

BELT TENSION LEVER

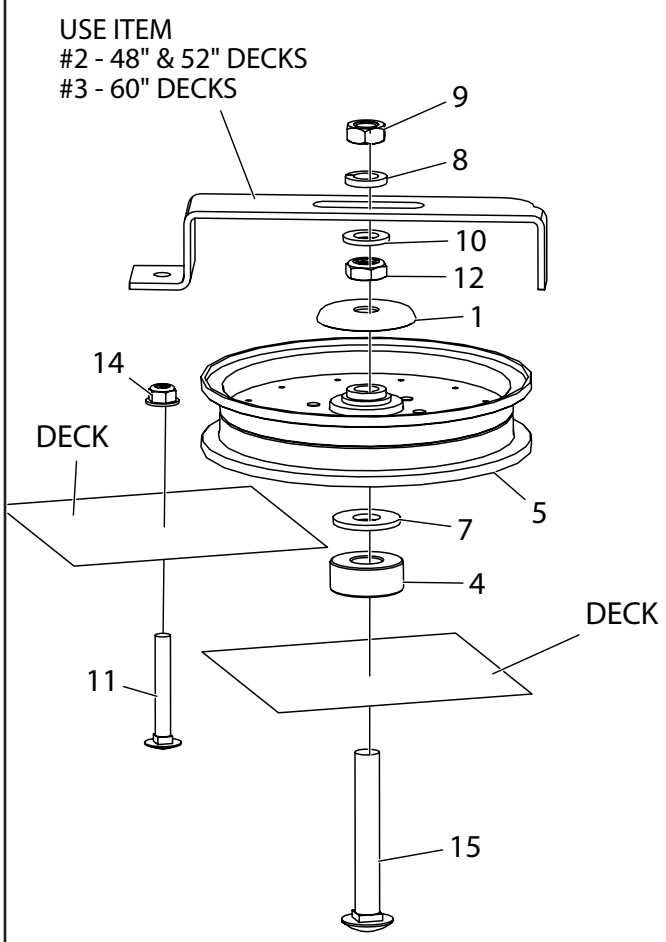




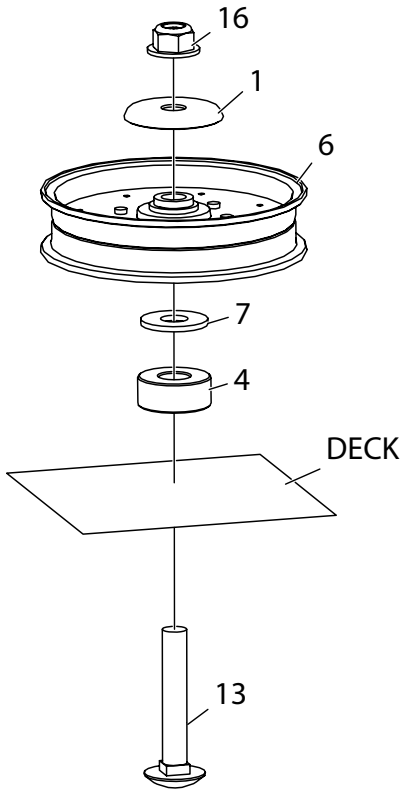
ITEM #	QTY	PART #	DESCRIPTION
1	1	660-031P	BELT TIGHTENER ARM
2	1	660-038P	SPACER, 3/8" WIDE
3	1	660-184P	HANDLE, BELT TENSIONER
4	1	661-015P	SHACKLE
5	1	722-040P	BELT TIGHTENER ARM
6	1	722-044P	BELT TIGHTENER ARM
7	1	F-1005-03	NUT, 3/8-16, CENTERLOCK, YZ, GR5
8	2	F-1009-03	WASHER, FLAT, 3/8, YZ
9	1	F-1019-03	LOCKWASHER, HVY, 3/8, YZ
10	1	F-1394	HHCS,3/8-16NC X 1",GR.5, YELLOW PLATED
11	1	F-2124	FHCS, 3/8-16 X 3/4", YZ, GR5
12	2	F-2141	FHCS, 3/8-16 X 1", YZ, GR5
13	3	F-2151	NUT, 3/8-16 NYLOC, FLANGED, YZ
14	1	F-2152	NUT, 1/2-13 NYLOC, FLANGED, YZ
15	1	F-2154	FHCS, 1/2-13 x 1-3/4", YZ, GR5
16	1	H-2405	BALL, 1-1/4"
17	1	H-2619	SPRING, 5 X 1-1/2, TAPERED ENDS

FIXED IDLER ASSEMBLIES

REAR

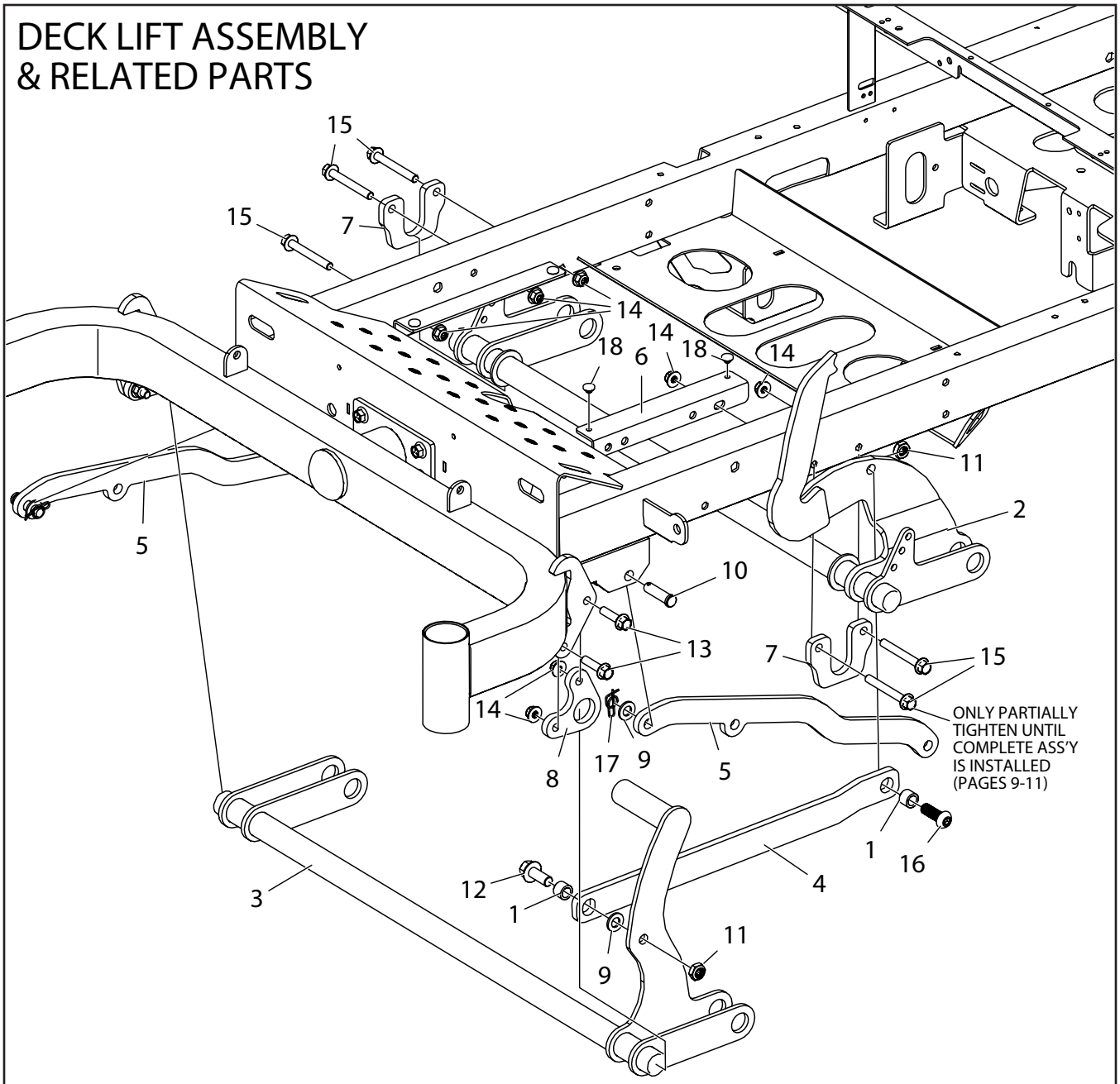


FRONT



ITEM #	QTY	PART #	DESCRIPTION
1	2	620-201P	WASHER, BEARING CAP
2	1	660-112P	BELT KEEPER
3	1	660-114P	BELT KEEPER, SINGLE END
4	2	660-206P	SPINDLE SPACER
5	1	D-3903	PULLEY, FLAT IDLER, 6" (NTN)
6	1	D-3904	PULLEY, FLAT IDLER, 5"
7	2	F-1009-05	WASHER, FLAT STD, 1/2" NOMINAL, YZ
8	1	F-1464	LOCKWASHER, 1/2"
9	1	F-1489	NUT, HEX, JAM, 1/2-13, YZ
10	1	F-1521	WASHER, 1/2" CUSTOM, YZ
11	1	F-1707	CARRIAGE BOLT, 5/16-18 X 2-1/4 ZINC PLATED
12	1	F-1966	NUT, THIN, 1/2-13, NYLOC, YZ
13	1	F-1927	CARRIAGE BOLT, 1/2-13 X 2-3/4"
14	1	F-2063	NUT, 5/16-18, NYLOC, FLANGED, YZ
15	1	F-2047	CARRIAGE BOLT, 1/2-13 X 3" , YZ
16	1	F-2152	NUT, 1/2-13 NYLOC, FLANGED, YZ

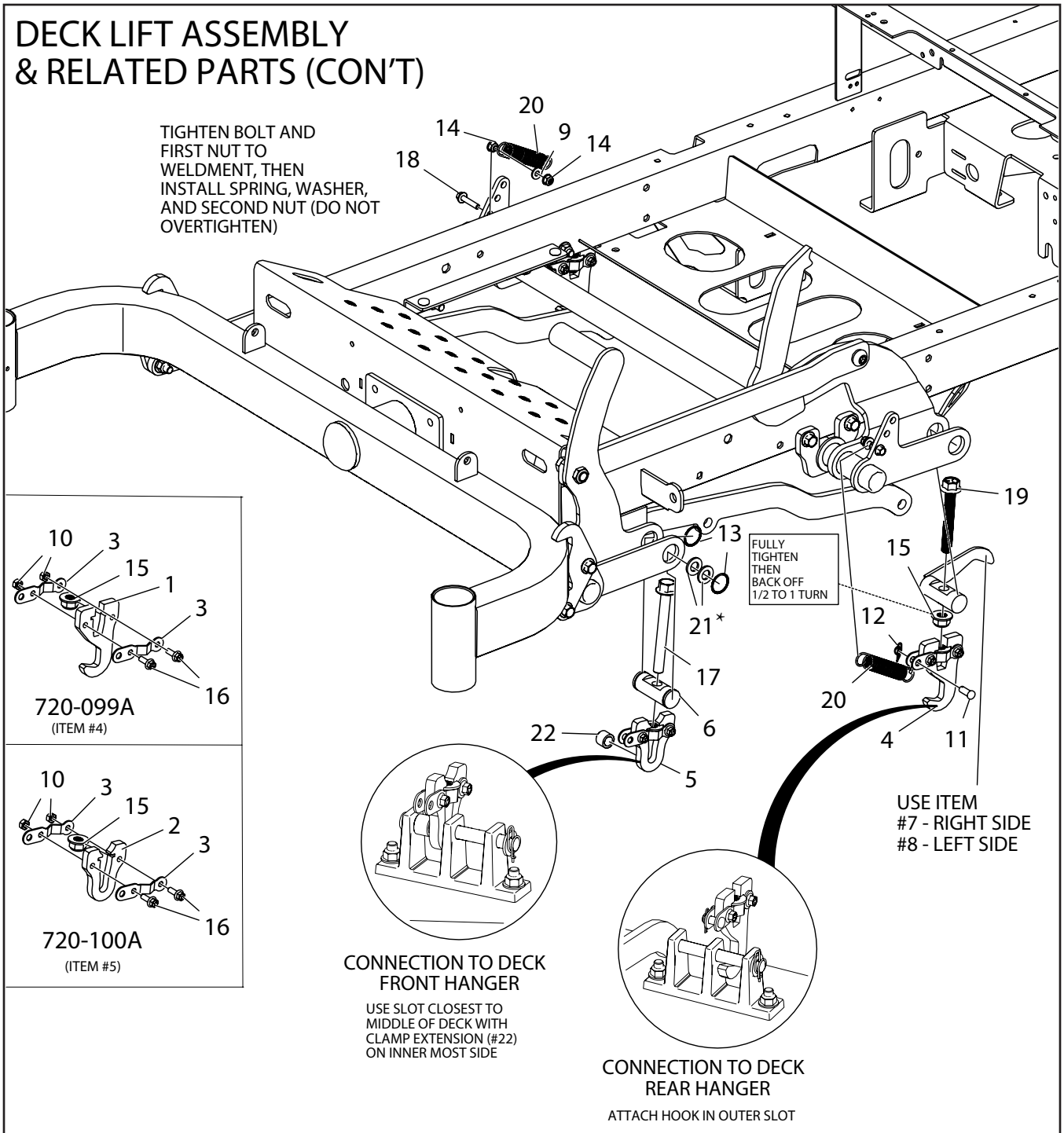
DECK LIFT ASSEMBLY & RELATED PARTS



ITEM #	QTY	PART #	DESCRIPTION
1	2	720-010P	CLAMP EXTENSION
2	1	720-079W	WLDT, DECK LIFT, REAR
3	1	720-084W	WLDT, DECK LIFT, FRONT
4	1	720-090P	DECK LIFT LINK
5	2	720-093P	DRAG BAR
6	2	720-094P	FLOOR PAN SUPPORT
7	2	724-032P	DECK PIVOT MOUNT PLATE
8	2	724-033P	DECK SUSPENSION FRONT PLATE
9	3	F-1521	WASHER, 1/2" CUSTOM, YZ
10	2	F-1896	CLEVIS PIN, 1/2 X 1-3/4", YZ

ITEM #	QTY	PART #	DESCRIPTION
11	2	F-1966	NUT, THIN, 1/2-13, NYLOC, YZ
12	1	F-2127	FHCS, 1/2-13 X 1-1/4", YZ, GR5
13	4	F-2147	FHCS, 3/8-16 X 1-1/2", YZ, GR5
14	9	F-2151	NUT, 3/8-16 NYLOC, FLANGED, YZ
15	5	F-2180	FHCS, 3/8-16 x 3", YZ, GR5
16	1	F-2278	BUTTON SHCS, 1/2-13 X 1-1/2, YZ
17	2	H-2239	1/2" RUE RING
18	4	H-2461	RUBBER BUMPER

DECK LIFT ASSEMBLY & RELATED PARTS (CON'T)

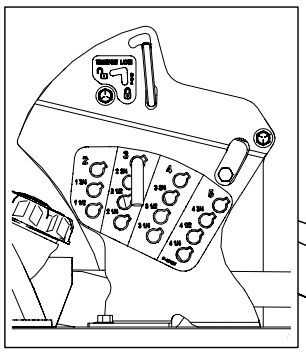


ITEM #	QTY	PART #	DESCRIPTION
1	2	720-115P	DECK HANGER, REAR
2	2	720-097P	DECK HANGER, FRONT
3	8	720-098P	NUT RETAINER
4	2	720-099A	ASS'Y, DECK HANGER, REAR
5	2	720-100A	ASS'Y, DECK HANGER, FRONT
6	2	724-052P	HANGER PIN, FRONT
7	1	724-091W	HANGER PIN WLDT, REAR LH
8	1	724-092W	HANGER PIN WLDT, REAR RH
9	2	F-2097	WASHER, FENDER, 1/4" X 7/8"
10	8	F-1158	NUT, CENTERLOCK, 1/4-20, YZ, GR5
11	2	F-1443	CLEVIS PIN, 5/16 X 7/8"
12	2	F-1492	RUE RING, 5/16

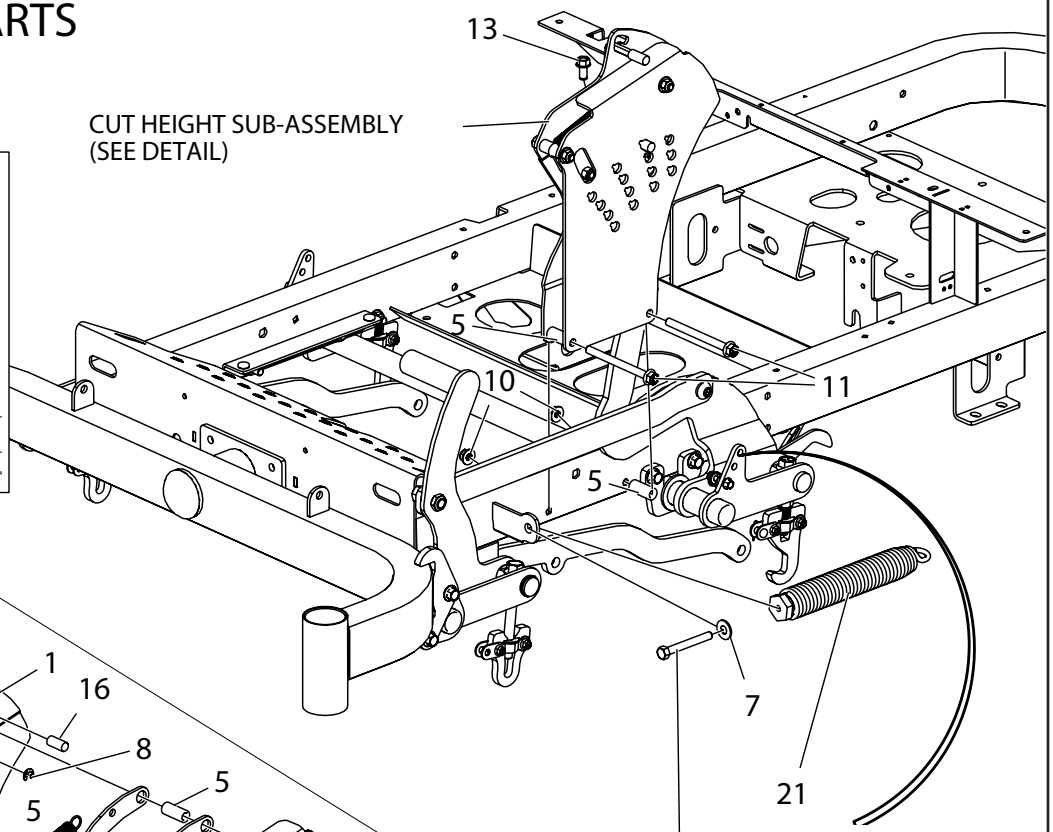
ITEM #	QTY	PART #	DESCRIPTION
13	4	F-1998	SPIROL RING 1"
14	4	F-2132	NUT, 1/4-20 NYLOC, FLANGED, YZ
15	6	F-2152	NUT, 1/2-13 NYLOC, FLANGED, YZ
16	8	F-2162	FHCS, 1/4-20 X 3/4", YZ, GR5
17	2	F-2181	FHCS, 1/2-13 X 4.50, YZ, GR8
18	2	F-2182	FHCS, 1/4-20 X 1-1/4", YZ, GR5
19	2	F-2277	FHCS 1/2-13 X 3-1/2, GR5, YZ, FULL THREAD
20	2	H-1635	SPRING, EXT, 3/4" OD X 4" OAL
21	4	F-2290	WASHER, 1" FLAT
22	2	720-010P	CLAMP EXTENSION

ITEM # 21 ONLY USED WITH SERIAL NUMBERS PRIOR TO 20090016

CUT HEIGHT ASSEMBLY & RELATED PARTS



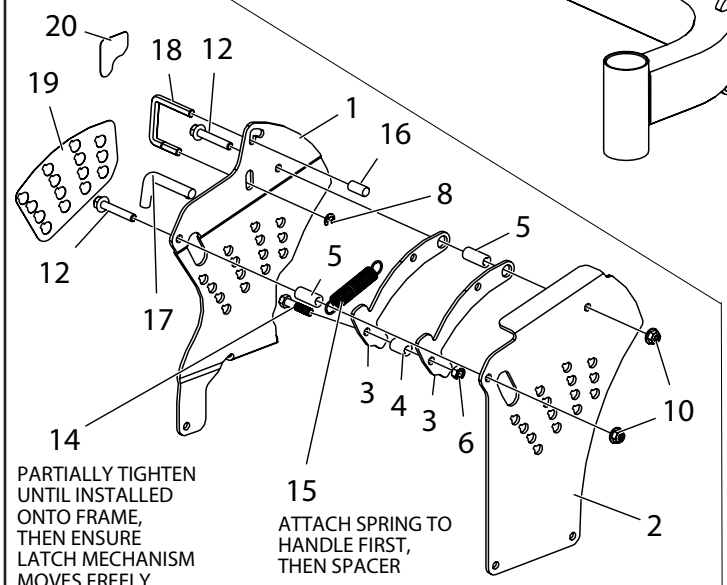
INSIDE VIEW OF CUT HEIGHT SUB-ASSEMBLY, SHOWING DECALS



HOOK SPRING (WITH HOOK ON TOP) IN BOTTOM HOLE - 48" DECK TOP HOLE - 52" & 60" DECKS

9

WITH DECK CONNECTED, TIGHTEN UNTIL GAP BETWEEN TAB ON FRAME AND SPRING IS APPROXIMATELY
1" - 48" & 52" DECKS
0.5" - 60" DECK



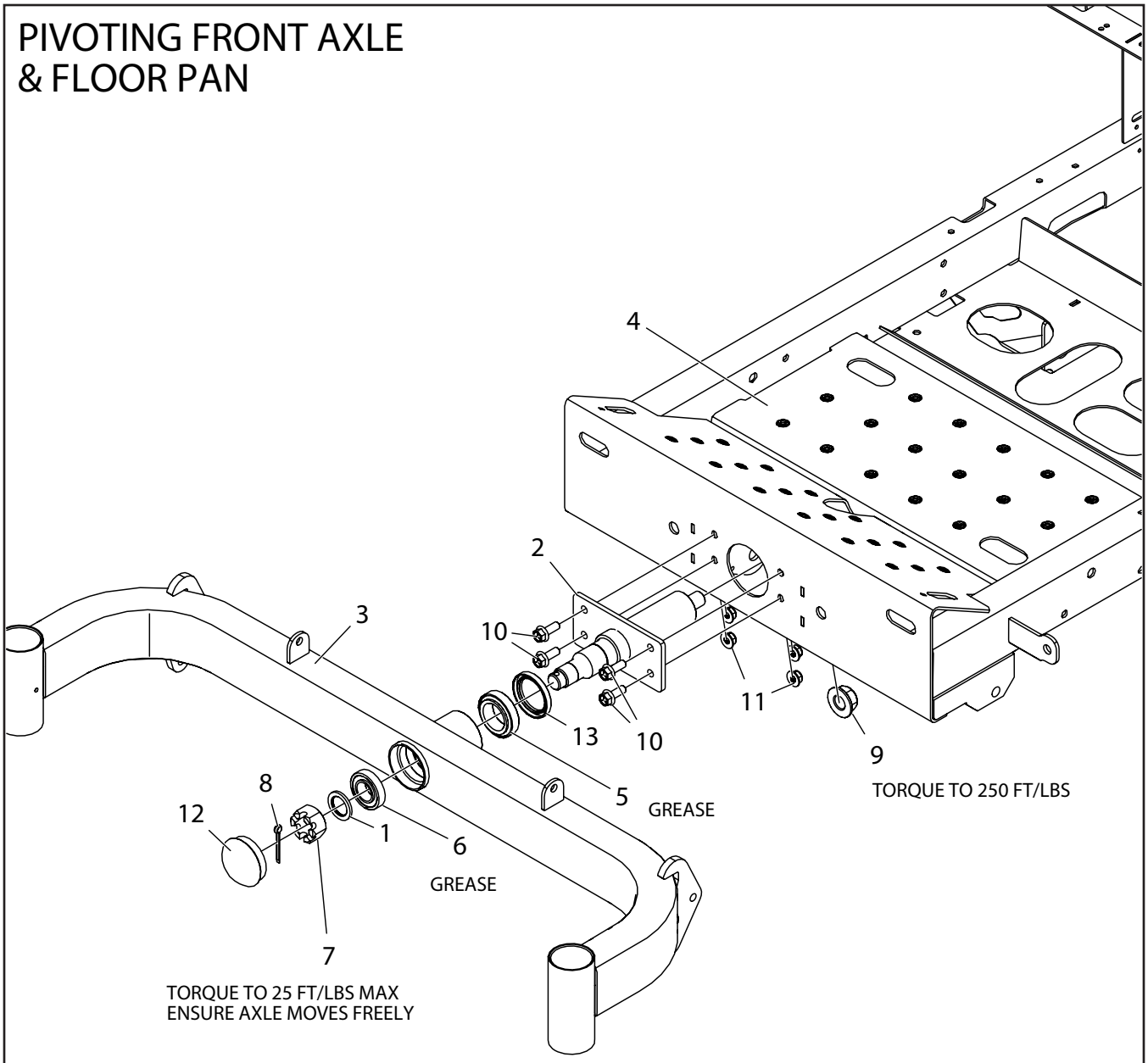
PARTIALLY TIGHTEN UNTIL INSTALLED ONTO FRAME, THEN ENSURE LATCH MECHANISM MOVES FREELY

ATTACH SPRING TO HANDLE FIRST, THEN SPACER

CUT HEIGHT SUB-ASSEMBLY

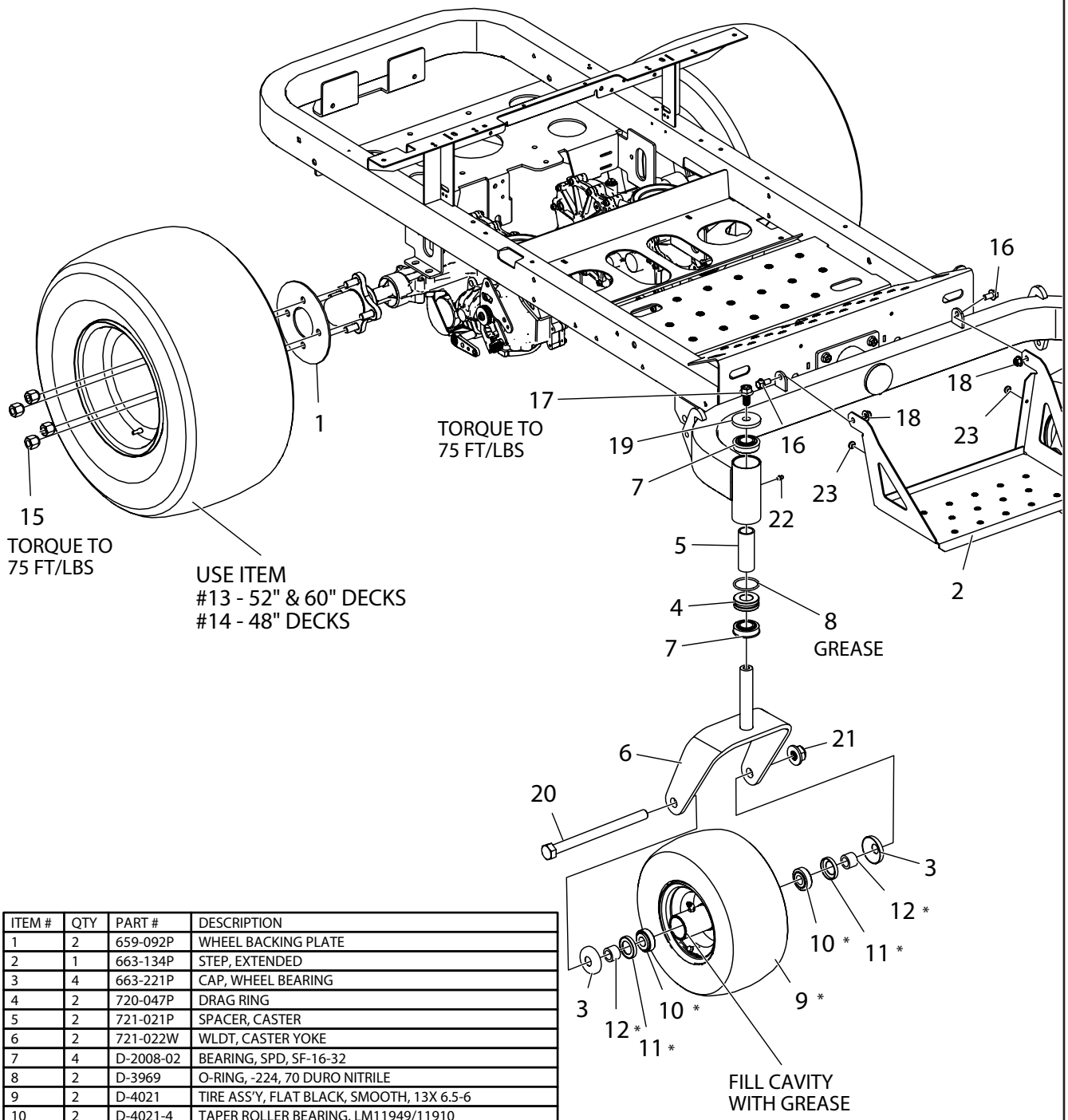
ITEM #	QTY	PART #	DESCRIPTION
1	1	720-104P	PLATE, CUT HEIGHT - INNER
2	1	720-105P	PLATE, CUT HEIGHT - OUTER
3	2	724-042P	CATCH PLATE
4	1	724-079P	SPACER, CATCH PLATE
5	4	724-080P	SPACER, CUT HEIGHT PLATE
6	1	F-1005-03	NUT, 3/8-16, CENTERLOCK, YZ, GR5
7	1	F-1009-03	WASHER, FLAT, 3/8, YZ
8	1	F-1080	SNAP RING TRUARC #5144-37 3/8 HEAVY E-RING
9	1	F-1329	SCREW,3/8-16 X 3 GR5 FULL THREADED, PLATED
10	4	F-2151	NUT, 3/8-16 NYLOC, FLANGED, YZ
11	2	F-2160	FHCS, 3/8-16 X 4-1/2", YZ, GR5
12	2	F-2218	FHCS, 3/8-16 X 2-1/4", YZ, GR5
13	1	F-2219	HFCS, 3/8-16 X 3/4", CZ, THD FORMING
14	1	F-2260	HHCS, 3/8-16 X 1-3/4, YZ, GR8
15	1	H-1635	SPRING, EXT, 3/4" OD X 4" OAL
16	1	H-2327	3/8 DIA X 1"LONG END CAP
17	1	H-3013	DECK HEIGHT PIN
18	1	H-3120	TRANSPORT LATCH RELEASE HANDLE
19	1	P-13421	DECAL, CUT HEIGHT
20	1	P-13437	DECAL, TRANSPORT LATCH
21	1	H-3117	EXTENSION SPRING, 1.585 O.D. x (9.8) LONG, W/THREADED PLUG

PIVOTING FRONT AXLE & FLOOR PAN



ITEM #	QTY	PART #	DESCRIPTION
1	1	606-303P	WASHER, 10GA GALVANIZED
2	1	720-052W	WLDT, PIVOT SHAFT
3	1	720-077W	WLDT, FRONT AXLE
4	1	720-095P	FLOOR PAN
5	1	D-3825	BRG, TAPERED, SET, L68149-L68110
6	1	D-3826	BRG, TAPERED, SET, L44643-L44610
7	1	F-1724	NUT, HEX, SLOTTED, 1-14, YZ
8	1	F-1728	COTTER PIN, 3/16 X 2", YZ
9	1	F-2078	NUT, 3/4-16, TOP LOCK, GR-GT, YZ
10	4	F-2141	FHCS, 3/8-16 X 1", YZ, GR5
11	4	F-2151	NUT, 3/8-16 NYLOC, FLANGED, YZ
12	1	H-1924	GREASE CAP PLATED
13	1	H-2812	SEAL, SHAFT, 1.75, 2.38, 0.313

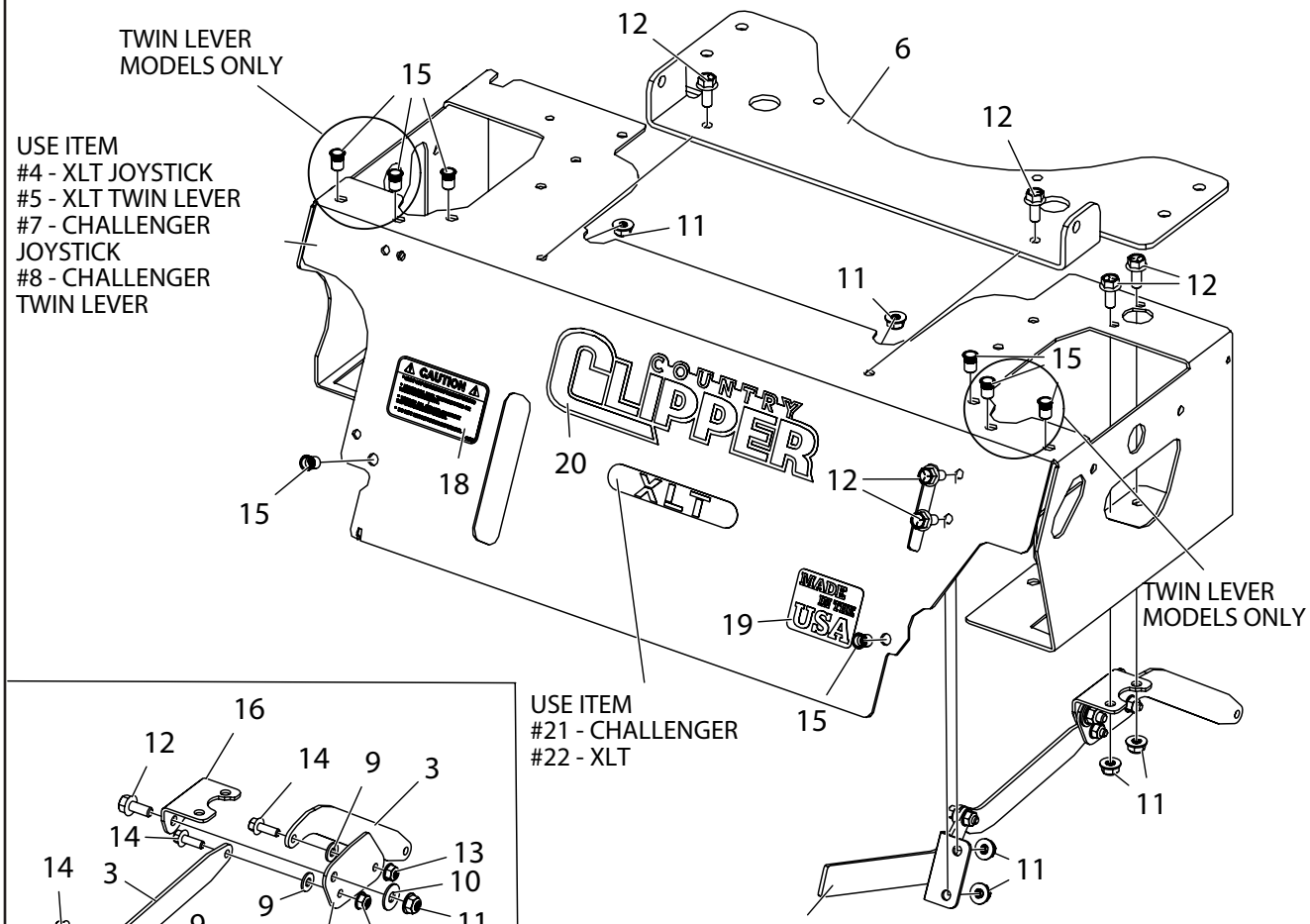
TIRES & FRONT STEP

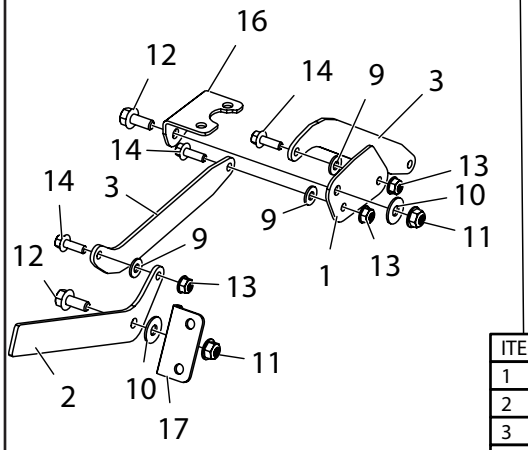


ITEM #	QTY	PART #	DESCRIPTION
1	2	659-092P	WHEEL BACKING PLATE
2	1	663-134P	STEP, EXTENDED
3	4	663-221P	CAP, WHEEL BEARING
4	2	720-047P	DRAG RING
5	2	721-021P	SPACER, CASTER
6	2	721-022W	WLDT, CASTER YOKE
7	4	D-2008-02	BEARING, SPD, SF-16-32
8	2	D-3969	O-RING, -224, 70 DURO NITRILE
9	2	D-4021	TIRE ASS'Y, FLAT BLACK, SMOOTH, 13X 6.5-6
10	2	D-4021-4	TAPER ROLLER BEARING, LM11949/11910
11	2	D-4021-5	GREASE SEAL, S17828001
12	2	D-4021-6	SPACER, SPCR005
13	2	D-4033	TIRE ASS'Y, 22 X 11-10, TURF, FLAT BLACK
14	2	D-4034	TIRE ASS'Y, 22 X 9.5-10, FLAT BLACK
15	8	F-1499	LUG NUT, 1/2-20, YZ
16	2	F-2124	FHCS, 3/8-16 X 3/4", YZ, GR5
17	2	F-2143	FHCS, 1/2-13 X 1", YZ, GR5
18	2	F-2151	NUT, 3/8-16 NYLOC, FLANGED, YZ
19	2	F-2179	WASHER, CASTER, .531 ID X 2.25 OD X .25THK, YZ
20	2	F-2194	HHCS, 3/4-10 X 9-1/2",YZ, GR5
21	2	F-2195	NUT, FLANGE NYLOC, YZ
22	2	H-1056	1/4" GREASE FITTING
23	2	H-2461	RUBBER BUMPER

PARTS MARKED "*" ARE
INCLUDED IN ITEM # 9

FRONT PANEL ASS'Y & RELATED PARTS

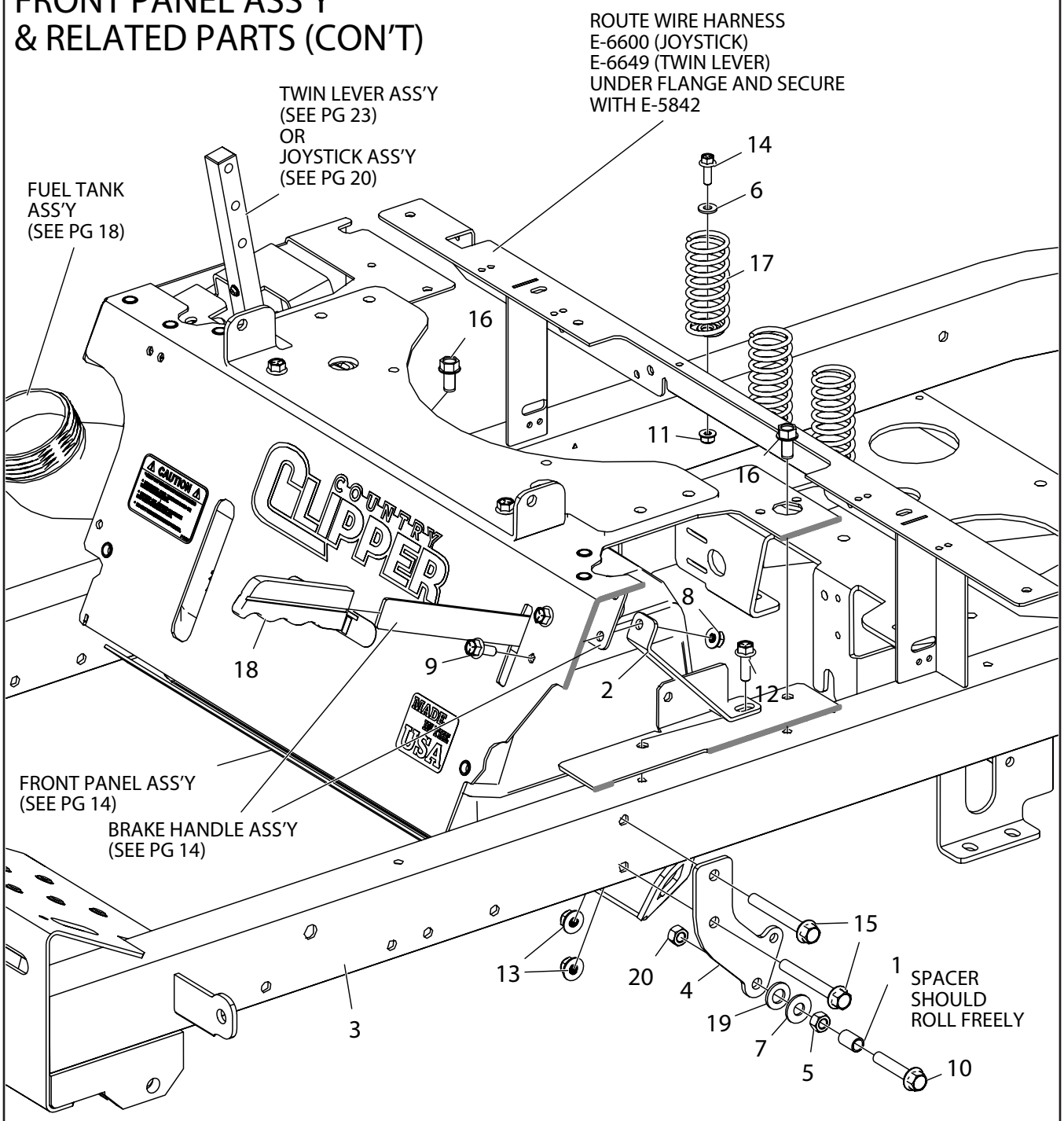




BRAKE HANDLE ASS'Y

ITEM #	QTY	PART #	DESCRIPTION
1	1	714-345P	CRANK PLATE, PARK BRAKE
2	1	714-346P	HANDLE, PARK BRAKE
3	2	714-349P	BAR, LINK, PARK BRAKE
4	1	720-110A	FRONT PANEL W/ DECALS, XLT, JS
5	1	720-111A	FRONT PANEL W/ DECALS, XLT, TS
6	1	720-113P	BASE PLATE, SEAT MOUNT
7	1	721-112A	FRONT PANEL W/ DECALS, CHALLENGER, JS
8	1	721-113A	FRONT PANEL W/ DECALS, CHALLENGER, TS
9	3	F-1009-01	FLAT WASHER, 1/4", YZ
10	2	F-1009-02	WASHER, FLAT
11	8	F-2063	NUT, 5/16-18, NYLOC, FLANGED, YZ
12	8	F-2120	FHCS, 5/16-18 X 3/4", YZ, GR5
13	3	F-2132	NUT, 1/4-20 NYLOC, FLANGED, YZ
14	3	F-2162	FHCS, 1/4-20 X 3/4", YZ, GR5
15	8	F-2229	NUT, RIVET, 1/4-20, OPEN END, .027-.165 MAT'L THK
16	1	H-2934	PIVOT, BRAKE CRANK
17	1	H-2935	PLATE, BRAKE HANDLE
18	1	P-12557	DECAL, "CAUTION FUEL"
19	1	P-13000	DECAL, MADE IN THE USA
20	1	P-13312	DECAL, LOGO, CHROME w/BLK, LG
21	1	P-13316	DECAL, CHALLENGER
22	1	P-13365	DECAL, XLT

FRONT PANEL ASS'Y & RELATED PARTS (CON'T)

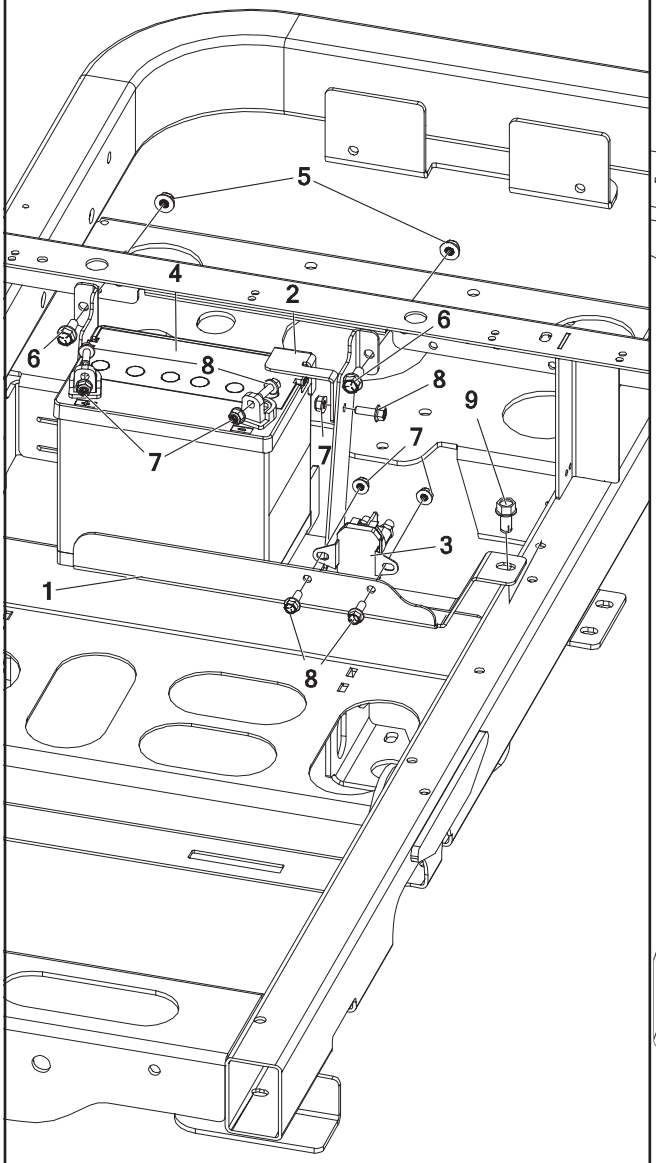


ITEM #	QTY	PART #	DESCRIPTION
1	2	707-073P	STAND-OFF, LINKAGE MOUNT
2	1	714-351P	BRACE, FRONT PANEL
3	1	720-073W	WLDT, FRAME
4	2	724-028P	DISCONNECT BRACKET
5	2	F-1011-03	NUT, 3/8-16, UNC-2B
6	3	F-1009-01	FLAT WASHER, 1/4", YZ
7	2	F-1009-03	WASHER, FLAT, 3/8, YZ
8	1	F-2063	NUT, 5/16-18, NYLOC, FLANGED, YZ
9	1	F-2120	FHCS, 5/16-18 X 3/4", YZ, GR5
10	2	F-2126	FHCS, 3/8-16 X 2",YZ, GR5
11	3	F-2132	NUT, 1/4-20 NYLOC, FLANGED, YZ

ITEM #	QTY	PART #	DESCRIPTION
12	1	F-2219	HFCS, 3/8-16 X 3/4", THR FORMING, YZ GR5
13	4	F-2151	NUT, 3/8-16 NYLOC, FLANGED, YZ
14	3	F-2162	FHCS, 1/4-20 X 3/4", YZ, GR5
15	4	F-2180	FHCS, 3/8-16 x 3", YZ, GR5
16	2	F-2219	HFCS, 3/8-16 X 3/4", CZ, THD FORMING
17	3	H-1920	SPRING, SEAT
18	1	H-1926	1/4" X 1" HANDLE GRIP
19	2	H-3039	WASHER, SPECIAL, 1/2" X 1-1/4" X 8GA
20	2	F-1005-03	NUT, 3/8-16, CENTERLOCK, YZ, GR5

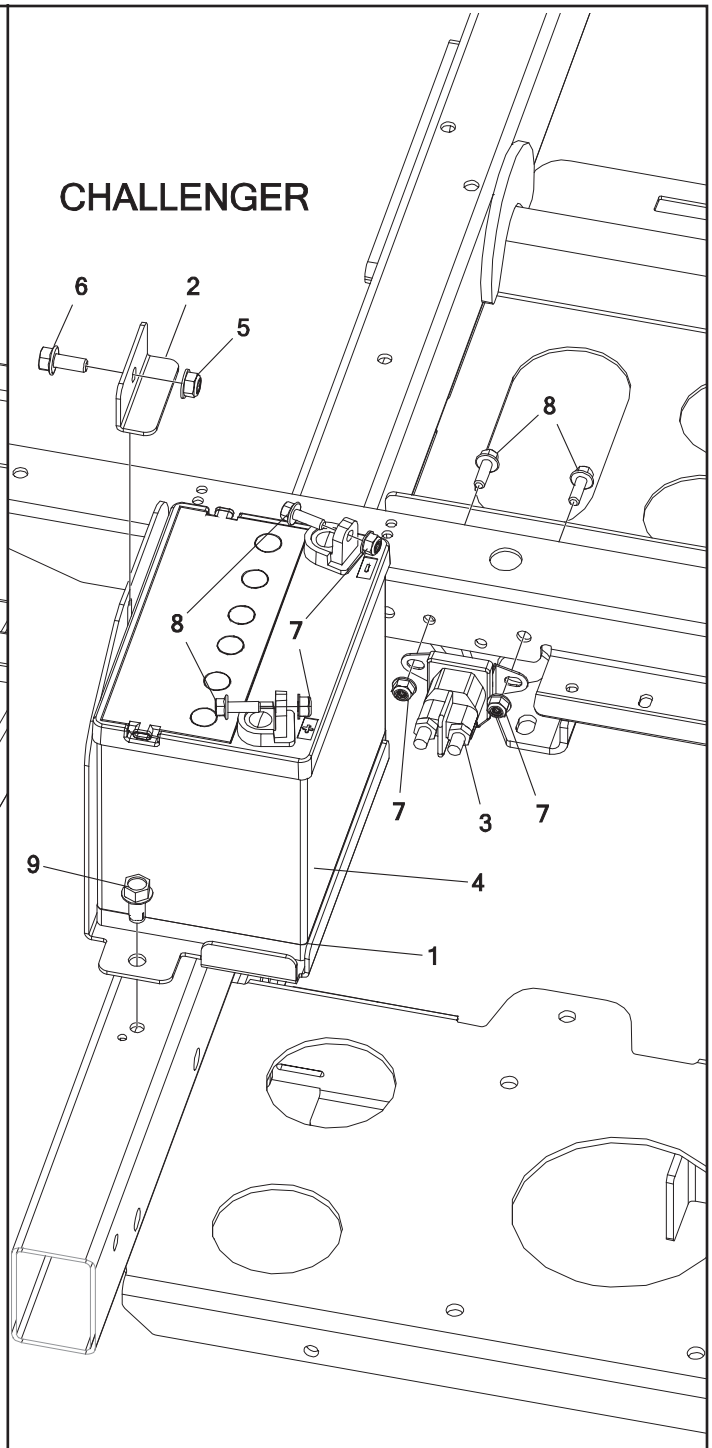
BATTERY BOX

XLT



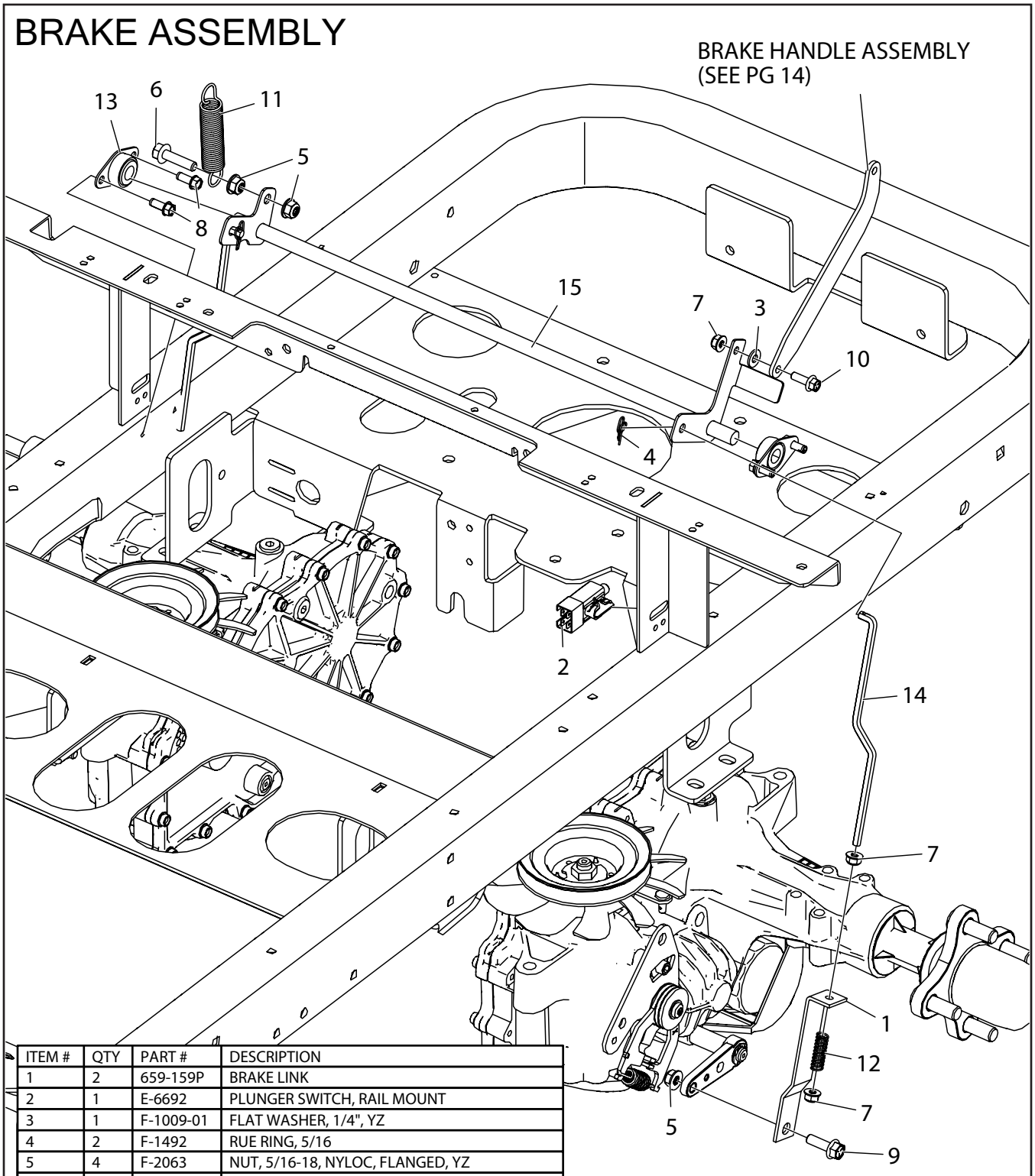
ITEM #	QTY	PART #	DESCRIPTION
1	1	714-034P	BOX, BATTERY
2	1	714-430P	PLT, BATTERY HOLD DOWN
3	1	E-6054	SOLENOID 12VOLT
4	1	E-6659	BATTERY, YPS 35
5	2	F-2063	NUT, 5/16-18, NYLOC, FLANGED, YZ
6	2	F-2120	FHCS, 5/16-18 X 3/4", YZ, GR5
7	5	F-2132	NUT, 1/4-20 NYLOC, FLANGED, YZ
8	5	F-2162	FHCS, 1/4-20 X 3/4", YZ, GR5
9	1	F-2219	HFCS, 3/8-16 X 3/4", CZ, THD FORMING

CHALLENGER



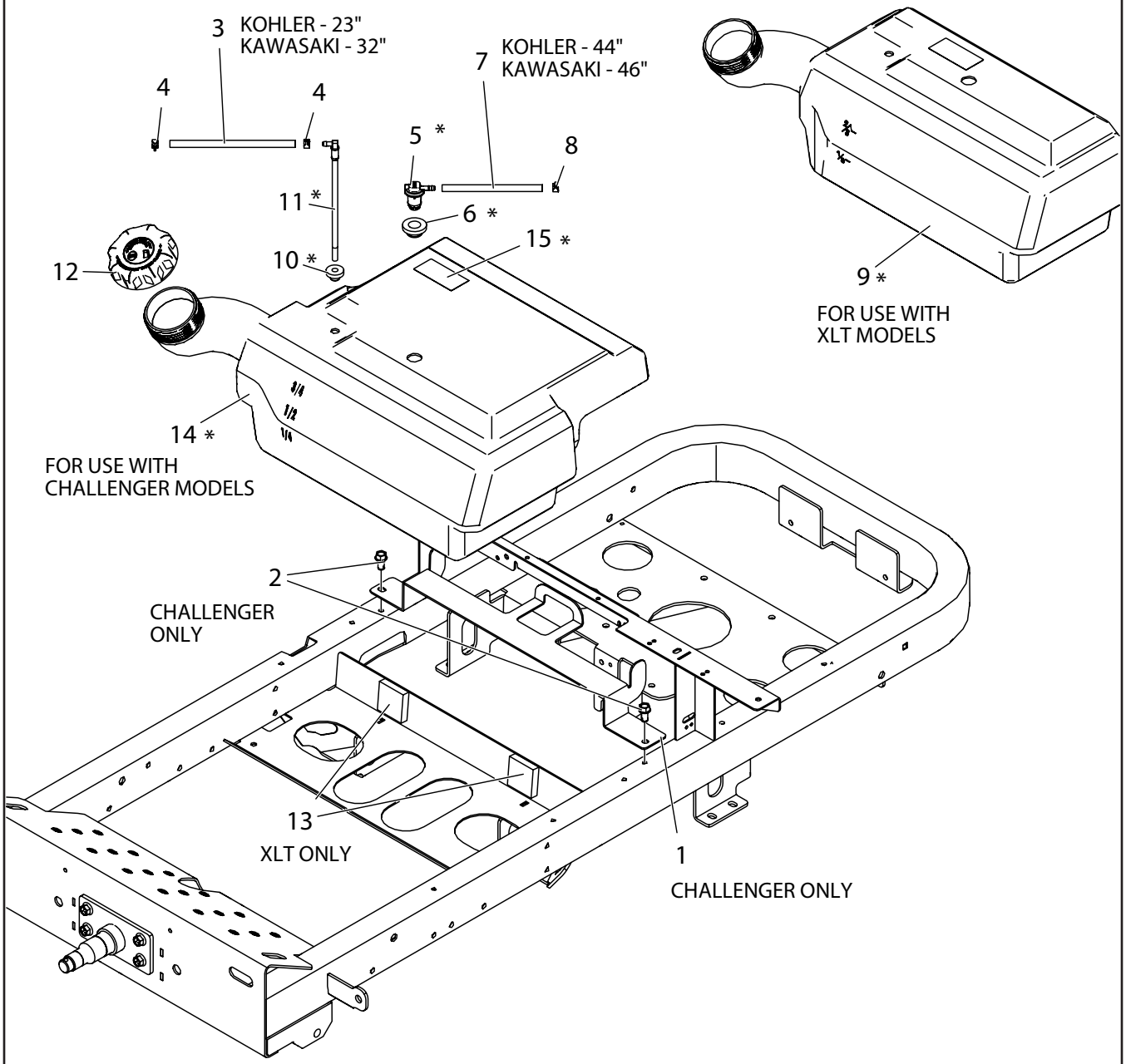
ITEM #	QTY	PART #	DESCRIPTION
1	1	721-030P	BOX, BATTERY
2	1	721-031P	CLAMP, BATTERY
3	1	E-6054	SOLENOID 12VOLT
4	1	E-6659	BATTERY, YPS 35
5	1	F-2063	NUT, 5/16-18, NYLOC, FLANGED, YZ
6	1	F-2120	FHCS, 5/16-18 X 3/4", YZ, GR5
7	4	F-2132	NUT, 1/4-20 NYLOC, FLANGED, YZ
8	4	F-2162	FHCS, 1/4-20 X 3/4", YZ, GR5
9	2	F-2219	HFCS, 3/8-16 X 3/4", CZ, THD FORMING

BRAKE ASSEMBLY



ITEM #	QTY	PART #	DESCRIPTION
1	2	659-159P	BRAKE LINK
2	1	E-6692	PLUNGER SWITCH, RAIL MOUNT
3	1	F-1009-01	FLAT WASHER, 1/4", YZ
4	2	F-1492	RUE RING, 5/16
5	4	F-2063	NUT, 5/16-18, NYLOC, FLANGED, YZ
6	1	F-2122	FHCS, 5/16-18 X 1-1/4", YZ, GR5, FULL THD
7	5	F-2132	NUT, 1/4-20 NYLOC, FLANGED, YZ
8	4	F-2134	HFCS, 1/4-20 X 0.625", YZ, SELF TAPPING
9	2	F-2148	FHCS, 5/16-18 X 1", YZ, GR5
10	1	F-2162	FHCS, 1/4-20 X 3/4", YZ, GR5
11	1	H-1635	SPRING, EXT, 3/4" OD X 4" OAL
12	2	H-1637	COMPRESSION SPRING, .045 X .420 X 1.25
13	2	H-2921	FLANGE BEARING-0.500"
14	2	H-2924	BRAKE LINK ROD
15	1	H-2953	WLDT, PARK BRAKE

FUEL TANK ASSEMBLY

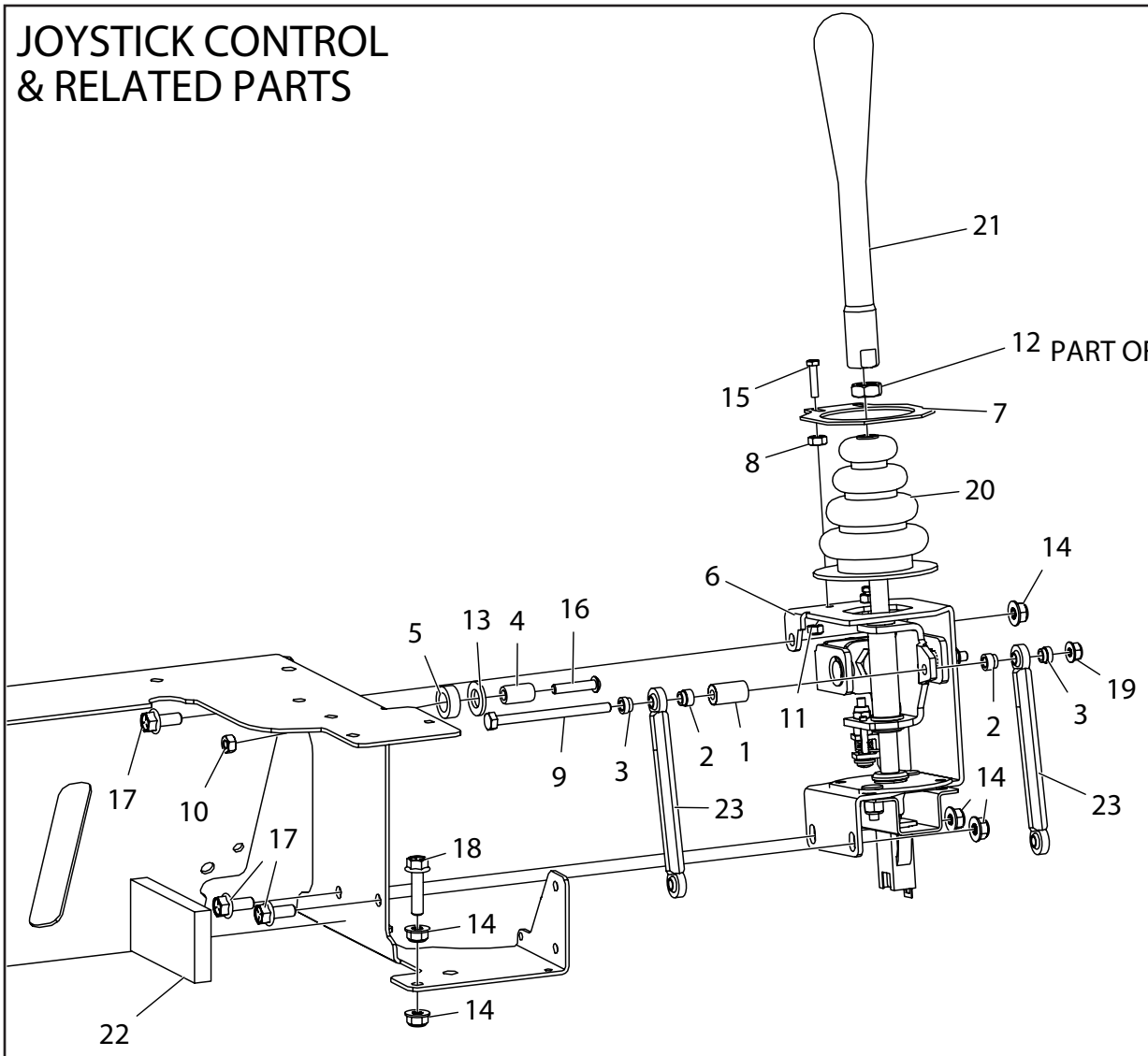


ITEM #	QTY	PART #	DESCRIPTION
1	1	721-019P	PLT, TANK SUPPORT
2	2	F-2219	HFCS, 3/8-16 X 3/4", CZ, THD FORMING
3	1	H-1648	FUEL LINE, 1/2" O.D., 1/4" I.D.
4	2	H-1687	1/2 O.D. HOSE SPRING CLAMP
5	1	H-2678	KELCH REMOTE VENT
6	1	H-2679	KELCH REMOTE VENT GROMMET
7	1	H-2697	HOSE, FUEL LINE .188 ID X .406 OD
8	1	H-2698	CLAMP, .406 OD FUEL LINE
9	1	H-2724	ASSEMBLY, FUEL TANK, SMALL
10	1	H-2741	GROMMET, PICK UP TUBE (DAPCO #12240)
11	1	H-2742	PICK UP TUBE (DAPCO INDUSTRIES)
12	1	H-2743	RATCHET CAP, W/TETHER, 3.5 DIA
13	2	H-2990	WEATHER-RESISTANT NEOPRENE FOAM (ADHESIVE) 1/2"
14	1	H-3081	FUEL TANK ASSEMBLY
15	1	P-12922	VENDOR SUPPLIED EPA CERT. LABEL

IF A TANK IS REQUIRED,
IT CAN ONLY BE
PURCHASED AS A
COMPLETE ASSEMBLY
H-2724 - XLT
H-3081 - CHALLENGER

(PARTS MARKED "*" ARE
INCLUDED IN ASS'Y)

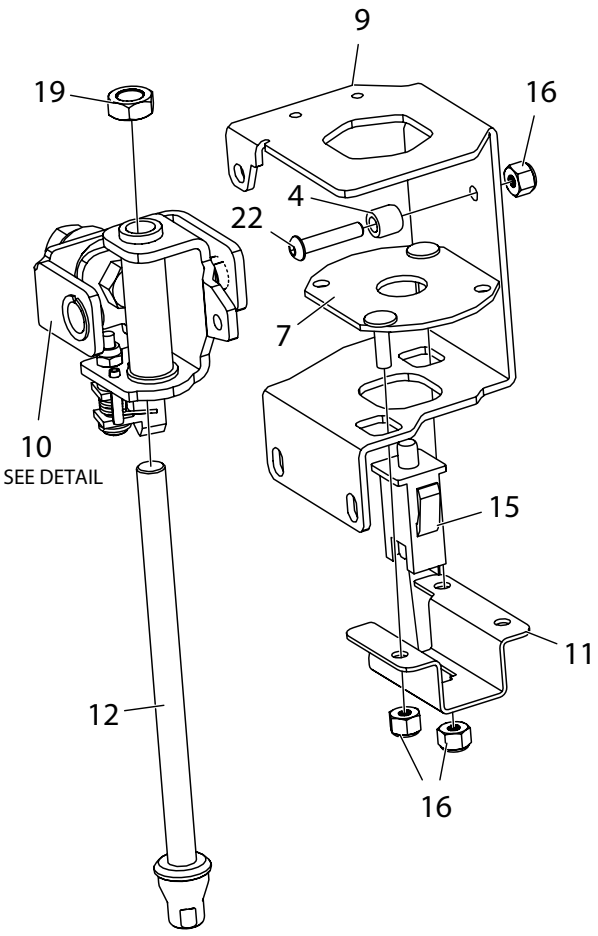
JOYSTICK CONTROL & RELATED PARTS

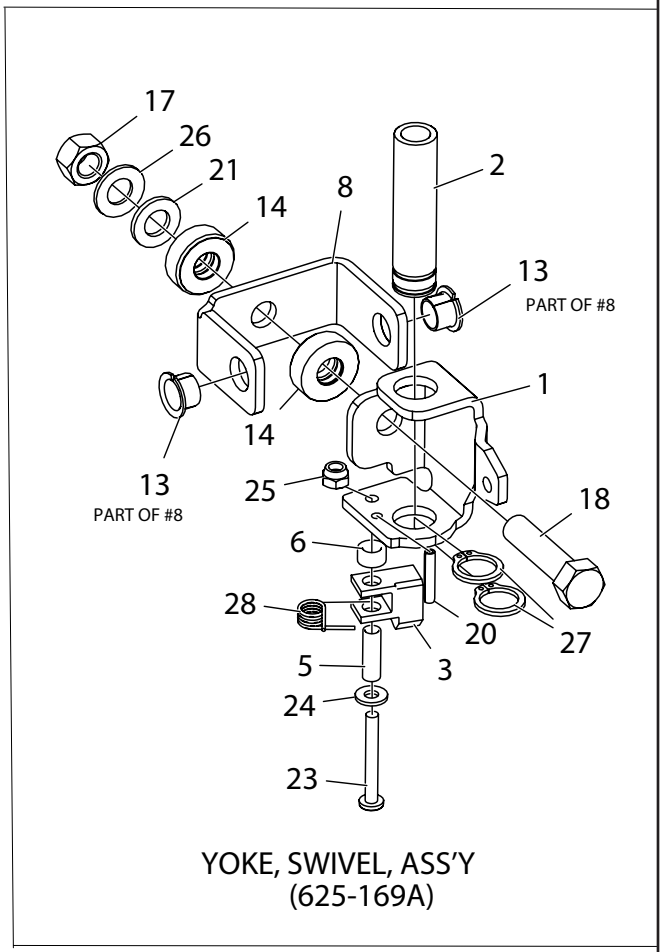


INSTALL AFTER BOLTS (ITEM # 17) ARE SECURED TO PANEL

ITEM #	QTY	PART #	DESCRIPTION
1	1	625-100P	TUBE, PIVOT, JOYSTICK
2	2	625-107P	BUSHING, .375 ROD END
3	2	625-116P	BUSHING, .375 ROD END, SHORT
4	1	625-119P	PIN, PIVOT, JS, LONG
5	1	625-126P	SPACER, JOYSTICK PANEL
6	1	625-171A	JOYSTICK ASS'Y, SHORT
7	1	720-038P	PLT, BOOT RETAINER
8	2	F-1011-01	NUT,HEX, 1/4-20 UNC-2B YELLOW PLATED
9	1	F-1020-01	CAPSCREW, 1/4-20 X 3-1/2", YZ, GR5
10	1	F-1158	NUT, CENTERLOCK, 1/4-20, YZ, GR5
11	2	F-1448	LOCKNUT, 10-32 NYLOC YELLOW PLTD
12	1	F-1462	JAM NUT, 1/2-20, RH, YZ
13	1	F-1521	WASHER, 1/2" CUSTOM, YZ
14	5	F-2063	NUT, 5/16-18, NYLOC, FLANGED, YZ
15	2	F-2100	HHMS, 10-32 X 7/8", CZ
16	1	F-2103	SHCS, BUTTON HD, 1/4-20 X 1", CZ
17	3	F-2120	FHCS, 5/16-18 X 3/4", YZ, GR5
18	1	F-2122	FHCS, 5/16-18 X 1-1/4", YZ, GR5, FULL THD
19	1	F-2132	NUT, 1/4-20 NYLOC, FLANGED, YZ
20	1	H-1991	JOY STICK BOOT
21	1	H-2964	HANDLE, JOYSTICK
22	1	H-2990	WEATHER-RESISTANT NEOPRENE FOAM (ADHESIVE) 1/2"
23	2	H-3025	LINKAGE: UPPER: 1/4-28 X 5

JOYSTICK ASSEMBLY
{625-171A}



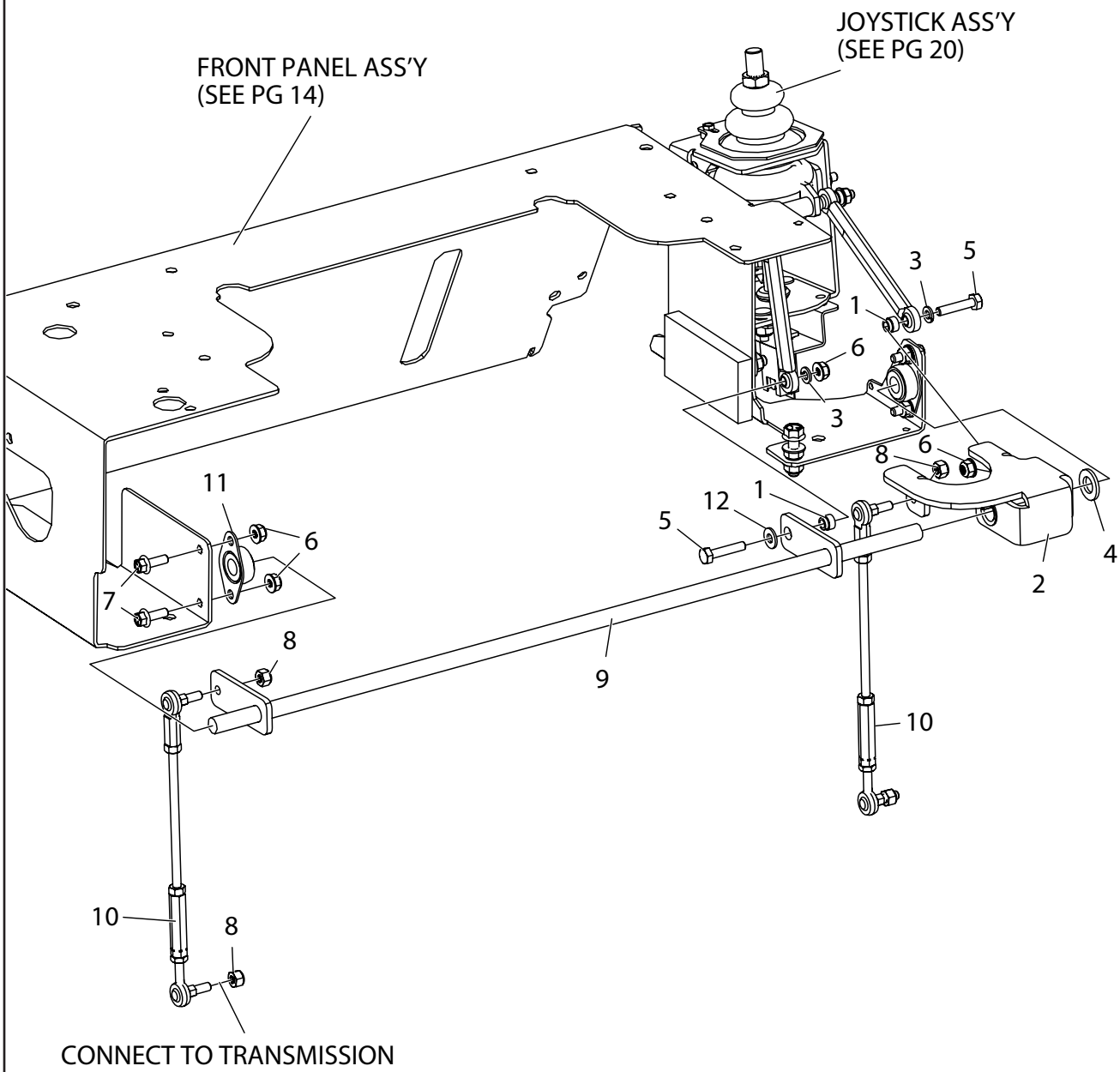


YOKE, SWIVEL, ASS'Y
(625-169A)

ITEM #	QTY	PART #	DESCRIPTION
1	1	625-096P	YOKE, SWIVEL, JOYSTICK
2	1	625-099P	TUBE, GUIDE, CONTROL ROD
3	1	625-103P	TAB, CAM DETENT
4	1	625-106P	PIN, PIVOT, JS
5	1	625-124P	TUBE-SPACER, DETENT CAM
6	1	625-125P	SPACER, CAM DETENT
7	1	625-127W	NEUTRAL PLATE WELDMENT
8	1	625-128A	PIVOT ASSEMBLY
9	1	625-154P	HOUSING, JOYSTICK
10	1	625-169A	YOKE, SWIVEL ASSEMBLY
11	1	659-285P	MOUNT, SWITCH
12	1	709-169A	ROD ASSEMBLY, SHORT, 1/2"
13	2	D-3784	BUSHING, DU 1/2 DIA X 3/8 WIDE
14	2	D-3931	THRUST BEARING
15	1	E-6474	SWITCH, SNAP MOUNT

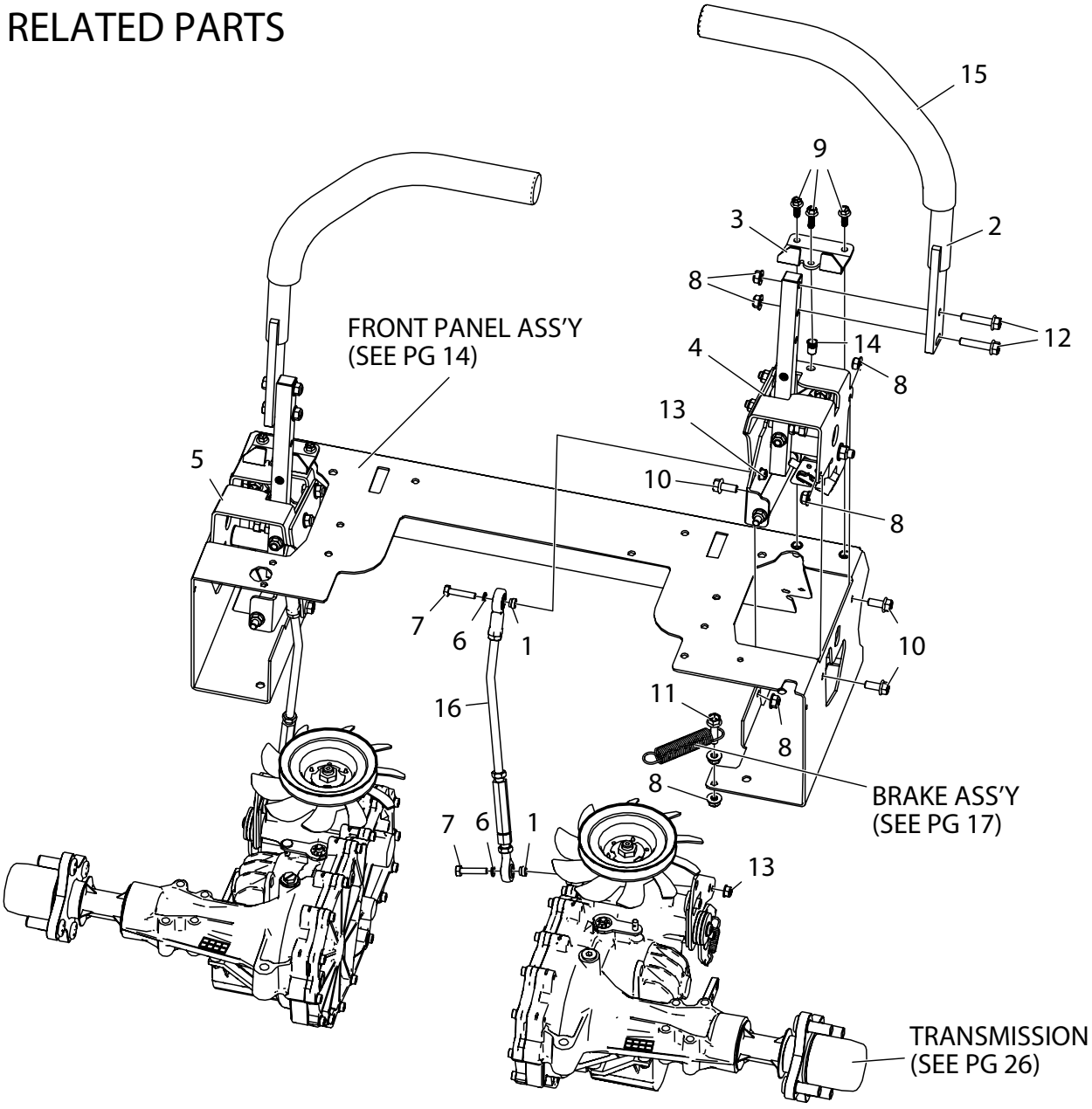
ITEM #	QTY	PART #	DESCRIPTION
16	3	F-1005-01	NUT, 1/4-20 w/NYLOC, YZ
17	1	F-1005-05	NUT, 1/2-13, CENTERLOCK, YZ, GR5
18	1	F-1293	HHCS, 1/2-13 X 2", YZ, GR5
19	1	F-1462	JAM NUT, 1/2-20, RH, YZ
20	1	F-1503	PIN,SPIROL 3/16 DIA X 1 X .010 THK
21	1	F-1521	WASHER, 1/2" CUSTOM, YZ
22	1	F-2103	SHCS, BUTTON HD, 1/4-20 X 1", CZ
23	1	F-2135	SCREW, PANHEAD, PHILLIPS #12-24 X 1.75 CZ
24	1	F-2136	WASHER, FLAT, #12 PLAIN, CZ
25	1	F-2137	NUT, #12-24, NYLOCK
26	1	H-2704	SPRING, BELLEVILLE, .50 X 1 X .073
27	2	H-2705	RING, RETAINING, .75 EXT.
28	1	H-2710	SPRING, DETENT, JOYSTICK

JOYSTICK ASSEMBLY MOUNTING & RELATED PARTS



ITEM #	QTY	PART #	DESCRIPTION
1	2	625-107P	BUSHING, .375 ROD END
2	1	714-084A	ASSEMBLY, PIVOT PLATE
3	2	F-1019-01	WASHER, LOCK, 1/4, YZ
4	1	F-1521	WASHER, 1/2" CUSTOM, YZ
5	2	F-1539	HHCS, 1/4-20 X 1-1/4", YZ, GR5
6	6	F-2132	NUT, 1/4-20 NYLOC, FLANGED, YZ
7	4	F-2162	FHCS, 1/4-20 X 3/4", YZ, GR5
8	4	F-2202	NUT, 1/4-20, NYLOC, YZ
9	1	H-2954	WLDT, JS PIVOT SHAFT
10	2	H-3021	LINKAGE, CONTROL LOWER
11	2	H-3031	SIDE FLANGE BRG., 0.500, BRONZE
12	1	F-1009-01	FLAT WASHER, 1/4", YZ

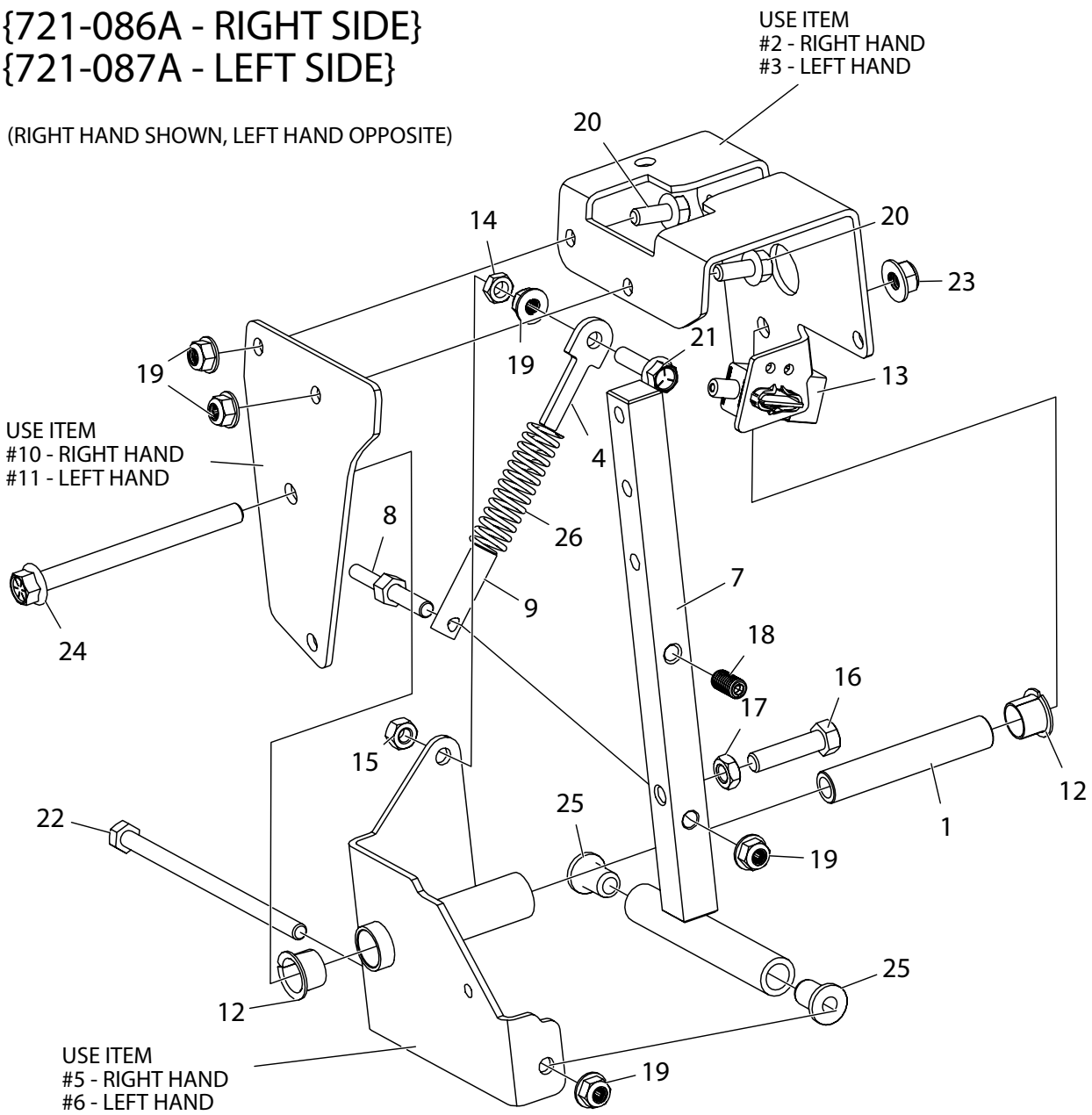
TWIN LEVER CONTROL & RELATED PARTS



ITEM #	QTY	PART #	DESCRIPTION
1	4	625-116P	BUSHING, .375 ROD END, SHORT
2	2	659-375W	WLDT, DUAL LEVER
3	2	720-053P	PLT, TWIN LEVER SUPPORT
4	1	721-086A	ASSY, TS CONTROL, R
5	1	721-087A	ASSY, TS CONTROL, L
6	4	F-1019-01	WASHER, LOCK, 1/4, YZ
7	4	F-1539	HHCS, 1/4-20 X 1-1/4", YZ, GR5
8	12	F-2063	NUT, 5/16-18, NYLOC, FLANGED, YZ
9	6	F-2119	FHCS, 1/4-20 X 3/4", YZ, GR5, LOCK PATCH
10	6	F-2120	FHCS, 5/16-18 X 3/4", YZ, GR5
11	1	F-2122	FHCS, 5/16-18 X 1-1/4", YZ, GR5, FULL THD
12	4	F-2129	FHCS, 5/16-18 X 1-1/2", YZ, GR5
13	4	F-2132	NUT, 1/4-20 NYLOC, FLANGED, YZ
14	2	F-2229	NUT, RIVET, 1/4-20, OPEN END, .027-.165 MAT'L THK
15	2	H-2739	GRIP, 15", CLOSED END
16	2	H-3037	LINKAGE, OUTER, JS

TWIN LEVER ASSEMBLY
{721-086A - RIGHT SIDE}
{721-087A - LEFT SIDE}

(RIGHT HAND SHOWN, LEFT HAND OPPOSITE)

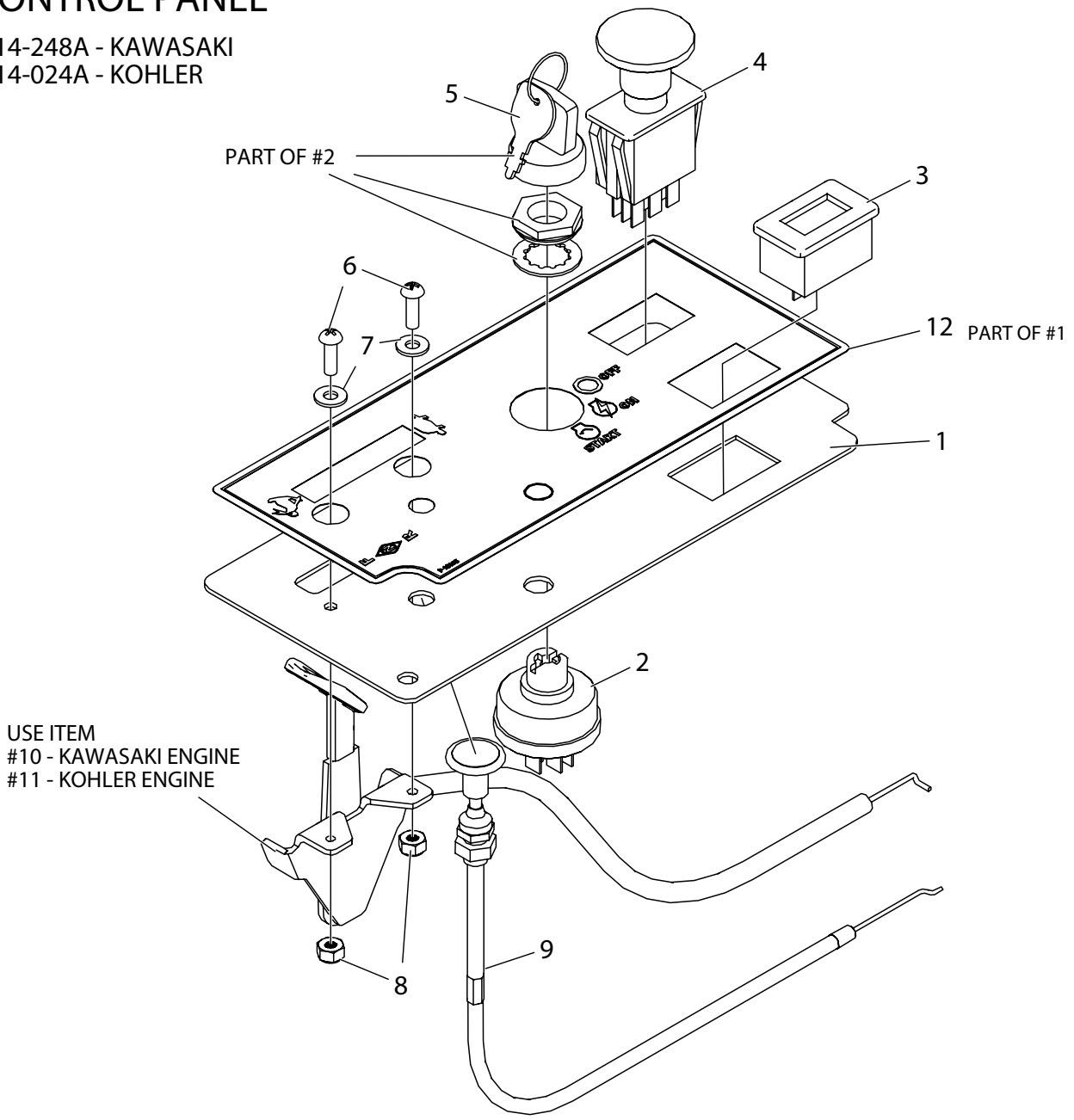


ITEM #	QTY	PART #	DESCRIPTION
1	1	714-074P	PIN, PIVOT, TWIN LEVER
2	1	714-266P	HOUSING, TWIN LEVER, R
3	1	714-269P	HOUSING, TWIN LEVER, L
4	1	721-006P	SPRING GUIDE, TS
5	1	721-088W	WLDT, TWIN LEVER PIVOT, R
6	1	721-089W	PIVOT WELDMENT FOR OVER-CENTER
7	1	721-090W	WLDT, HANDLE BASE
8	1	721-093P	PIN, SPRING OVER-CENTER
9	1	721-094P	SPRING GUIDE, TS OVER-CENTER
10	1	721-103P	PLT, TS HOUSING, R
11	1	721-104P	PLT, TS HOUSING, L
12	2	D-3730	BUSHING, DU 5/8 DIA X 1/2 LG
13	1	E-6692	PLUNGER SWITCH, RAIL MOUNT
14	1	F-1011-02	NUT, HEX 5/16-18

ITEM #	QTY	PART #	DESCRIPTION
15	1	F-1125	NUT, CENTERLOCK, 5/16-18, YZ, GR5
16	1	F-1306	HHCS, 3/8-16 X 1-1/2", FULL THRD, CZ, GR5
17	1	F-1486	NUT, JAM, 3/8-16, YZ
18	1	F-1903	SETSCREW, 3/8-16 X 3/4" W/ NYLON
19	5	F-2063	NUT, 5/16-18, NYLOC, FLANGED, YZ
20	2	F-2120	FHCS, 5/16-18 X 3/4", YZ, GR5
21	1	F-2122	FHCS, 5/16-18 X 1-1/4", YZ, GR5, FULL THD
22	1	F-2145	HHCS, 5/16-18 X 6", YZ, GR8
23	1	F-2151	NUT, 3/8-16 NYLOC, FLANGED, YZ
24	1	F-2160	FHCS, 3/8-16 X 4-1/2", YZ, GR5
25	2	H-3009	BUSHING, 0.313, NYLON, FLANGED
26	1	H-3079	SPRING, TS OVER CENTER

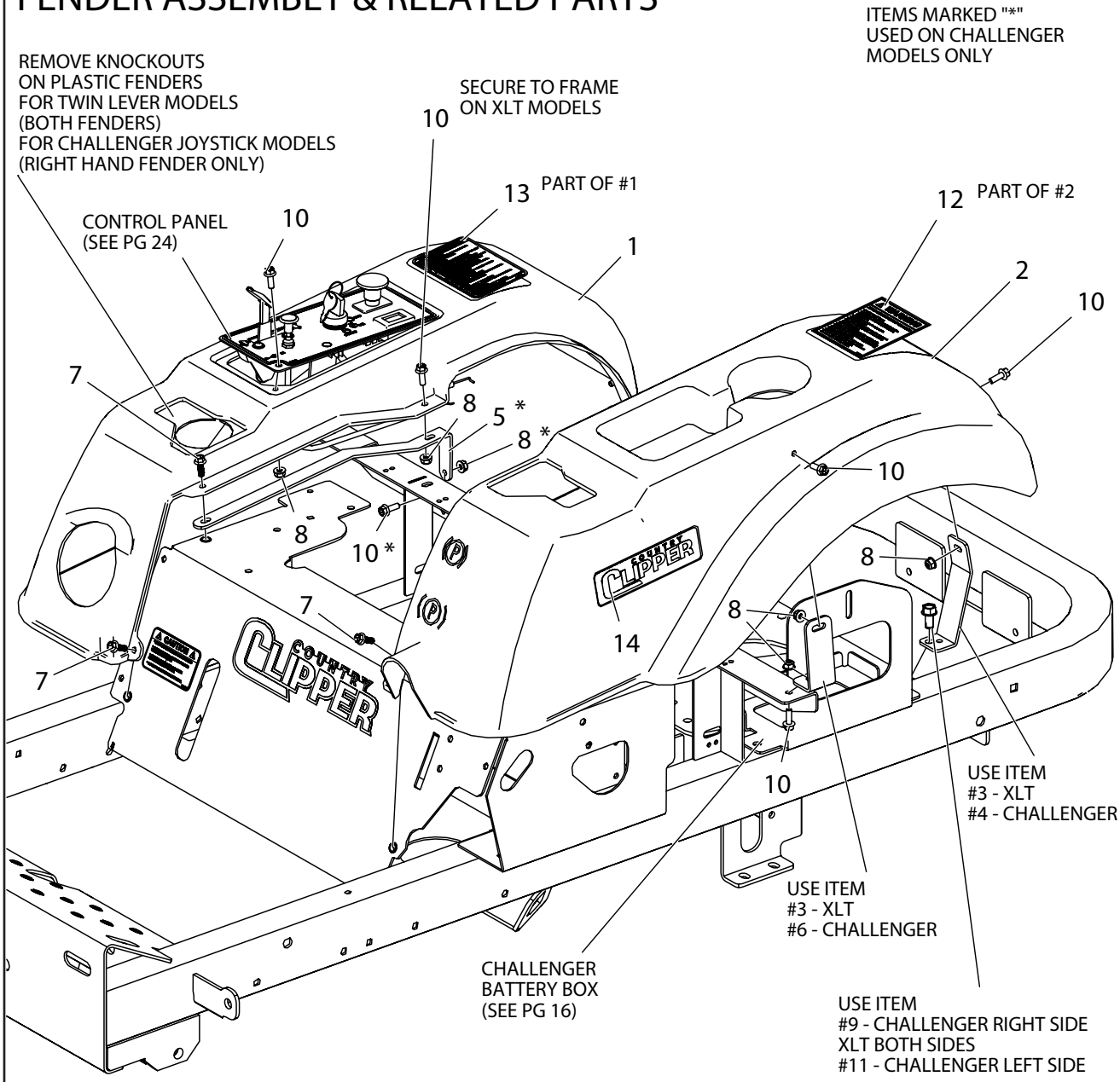
CONTROL PANEL

714-248A - KAWASAKI
714-024A - KOHLER



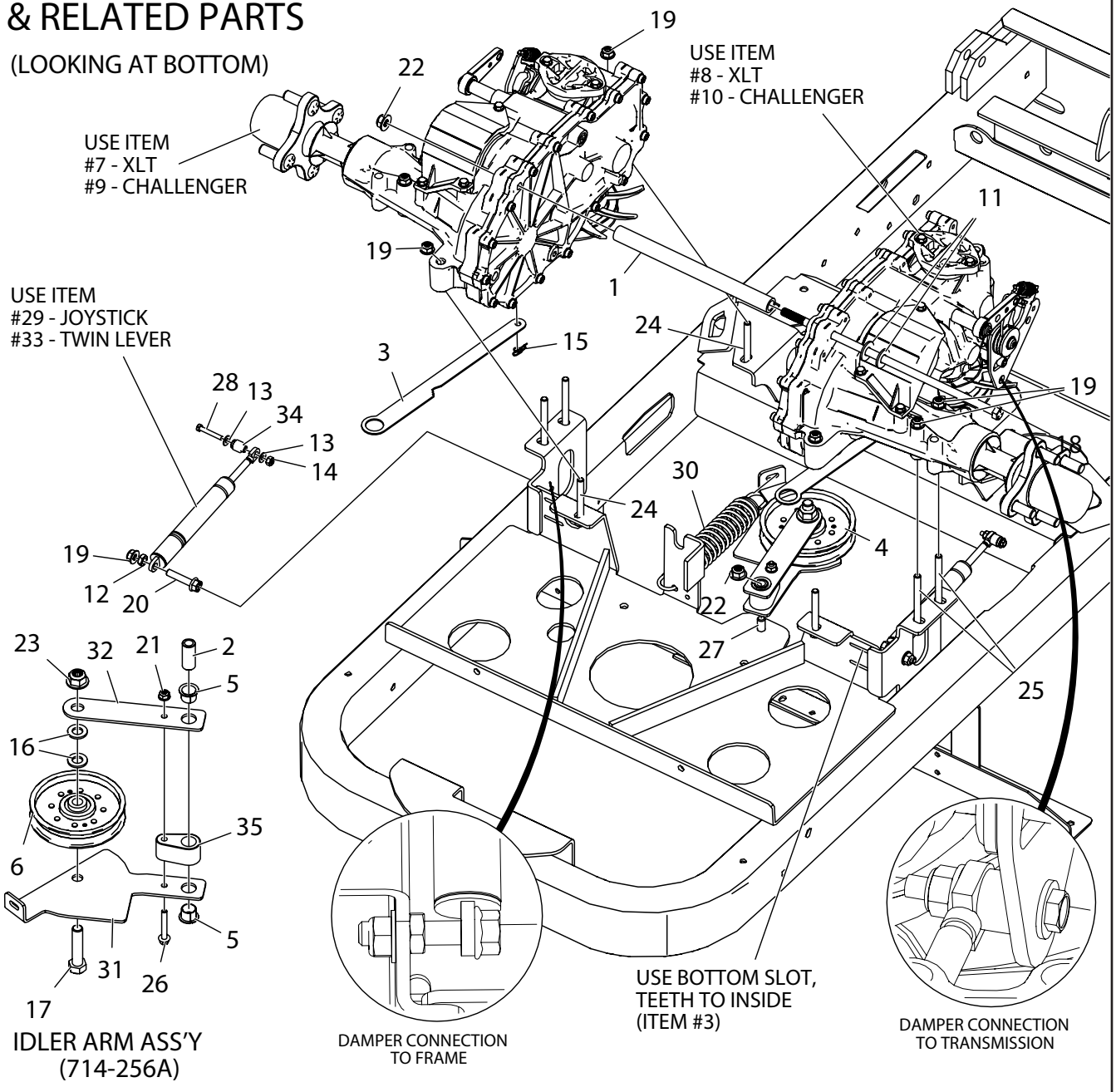
ITEM #	QTY	PART #	DESCRIPTION
1	1	714-031A	CONTROL PLATE W/ DECAL
2	1	E-5873	KEY ASSEMBLY, 3 POSITION
3	1	E-5878	HOUR METER
4	1	E-6403	PTO SWITCH
5	1	E-6445	KEY SET OF TWO
6	2	F-1022-26	MACHINE SCREW,RND, 10-32 X 5/8, SLOTTED, CZ
7	2	F-1071	WASHER, FLAT #10, ZINC PLATED #10 SAE FLAT WASHER
8	2	F-1448	LOCKNUT, 10-32 NYLOC YELLOW PLTD
9	1	H-2287	CHOKE CABLE, 43-1/2"
10	1	H-2610	THROTTLE CABLE, 38"
11	1	H-2611	THROTTLE CABLE, 57"
12	1	P-13195	DECAL, CONTROL PANEL, AVE & BLVD

FENDER ASSEMBLY & RELATED PARTS



ITEM #	QTY	PART #	DESCRIPTION
1	1	714-037A	FENDER w/DECALS, RH
2	1	714-038A	FENDER w/DECALS, LH
3	4	714-323P	TAB, FENDER MOUNT
4	2	721-046P	BRACKET, FENDER, REAR
5	2	721-047P	BRACKET, FENDER
6	2	721-048P	BRACKET, FENDER, MID
7	4	F-2119	FHCS, 1/4-20 X 3/4", YZ, GR5, LOCK PATCH
8	11	F-2132	NUT, 1/4-20 NYLOC, FLANGED, YZ
9	2	F-2134	HFCS, 1/4-20 X 0.625", YZ, SELF TAPPING
10	11	F-2162	FHCS, 1/4-20 X 3/4", YZ, GR5
11	1	F-2219	HFCS, 3/8-16 X 3/4", CZ, THD FORMING
12	1	P-11370	DECAL, WARNING
13	1	P-13188	DECAL, INSTRUCTIONS
14	2	P-13366	DECAL, C/C LOGO, SM, VINYL

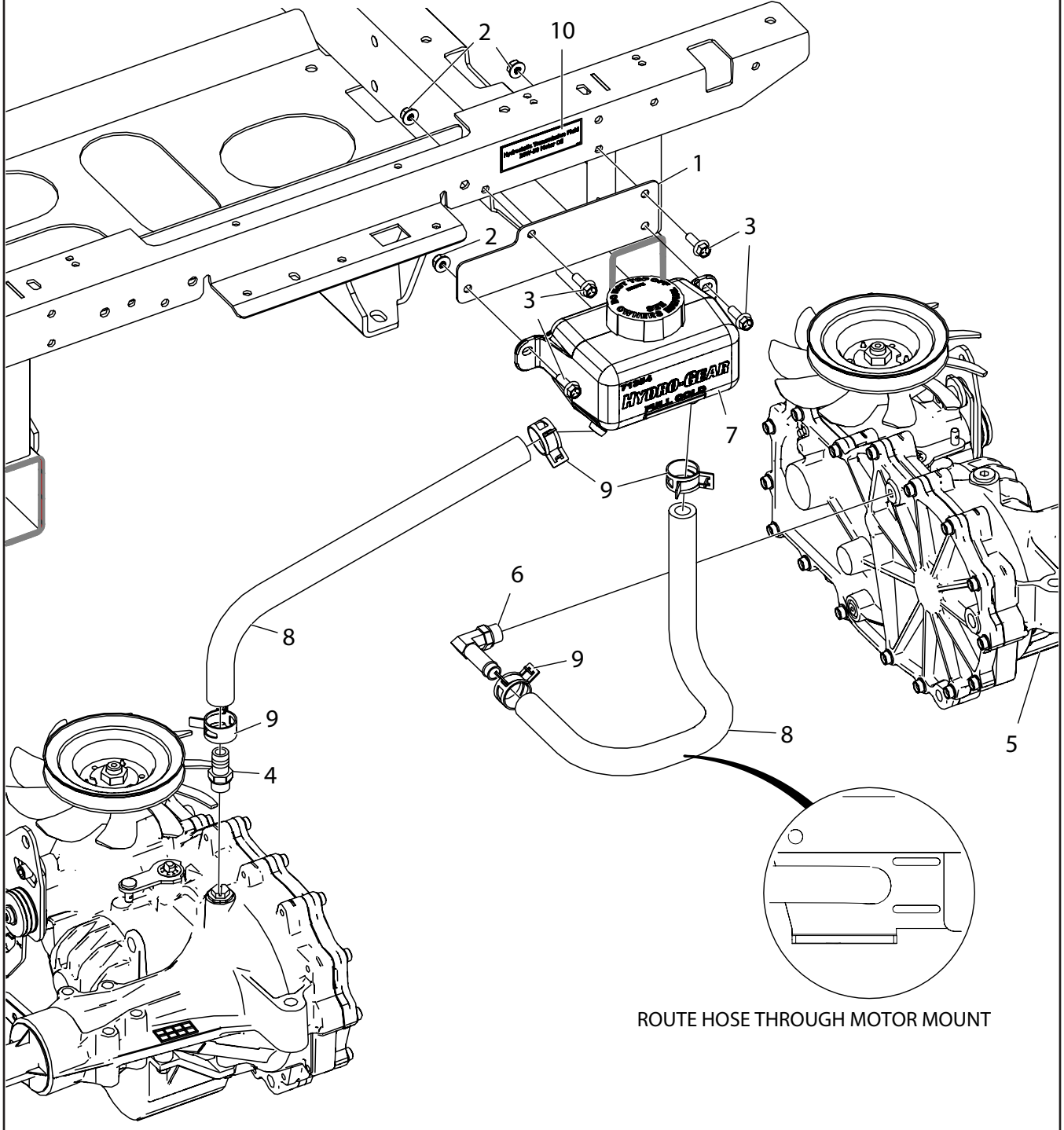
TRANSMISSION ASSEMBLY & RELATED PARTS



ITEM #	QTY	PART #	DESCRIPTION
1	1	659-173P	HYDRO BRACE ZT2800
2	1	714-058P	PIN, IDLER PIVOT
3	2	714-098P	TAB, DUMP VALVE
4	1	714-256A	ASS'Y, IDLER ARM
5	2	D-3730	BUSHING, DU 5/8 DIA X 1/2 LG
6	1	D-3924	PULLEY, FLAT IDLER, 4.25 OD, NTN, DBL INSERT
7	1	D-3968-01	TRANSAXLE,ZT-3100 w/RTN, RH
8	1	D-3968-02	TRANSAXLE, ZT-3100 w/RTN, LH
9	1	D-3992-01	TRANSAXLE, ZT-3400, RH
10	1	D-3992-02	TRANSAXLE, ZT-3400, LH
11	2	F-1009-03	WASHER, FLAT, 3/8, YZ
12	2	F-1011-02	NUT, HEX 5/16-18
13	4	F-1071	WASHER, FLAT #10, ZINC PLATED #10 SAE FLAT WASHER
14	2	F-1448	LOCKNUT, 10-32 NYLOC YELLOW PLTD
15	2	F-1492	RUE RING, 5/16
16	2	F-1521	WASHER, 1/2" CUSTOM, YZ
17	1	F-1664	HHCS, 1/2-13 X 2-1/4", YZ, GR5
18	1	F-2007	HHCS 3/8-16 X 12.50 GR5 Z&Y

ITEM #	QTY	PART #	DESCRIPTION
19	10	F-2063	NUT, 5/16-18, NYLOC, FLANGED, YZ
20	2	F-2129	FHCS, 5/16-18 X 1-1/2", YZ, GR5
21	1	F-2132	NUT, 1/4-20 NYLOC, FLANGED, YZ
22	2	F-2151	NUT, 3/8-16 NYLOC, FLANGED, YZ
23	1	F-2152	NUT, 1/2-13 NYLOC, FLANGED, YZ
24	4	F-2177	FHCS, 5/16-18 X 2-1/2, YZ, GR5
25	4	F-2178	FHCS, 5/16-18 X 3", YZ, GR5
26	1	F-2216	FHCS, 1/4-20 X 1-3/4, YZ, GR5
27	1	F-2218	FHCS, 3/8-16 X 2-1/4", YZ, GR5
28	2	F-2221	HHMS, 10-32 X 1-1/4"
29	2	H-2896	DAMPER, NC300
30	1	H-2907	SPRING,5.43 X 1-1/2", TAPERED ENDS
31	1	H-2942	PLT, IDLER ARM, TOP
32	1	H-2943	PLT, IDLER ARM, BOTTOM
33	2	H-2958	DAMPER, NC600
34	2	H-2961	BUSHING, DAMPLER MOUNT
35	1	H-2962	SPACER, IDLER

TRANSMISSION ASSEMBLY & RELATED PARTS CONT'

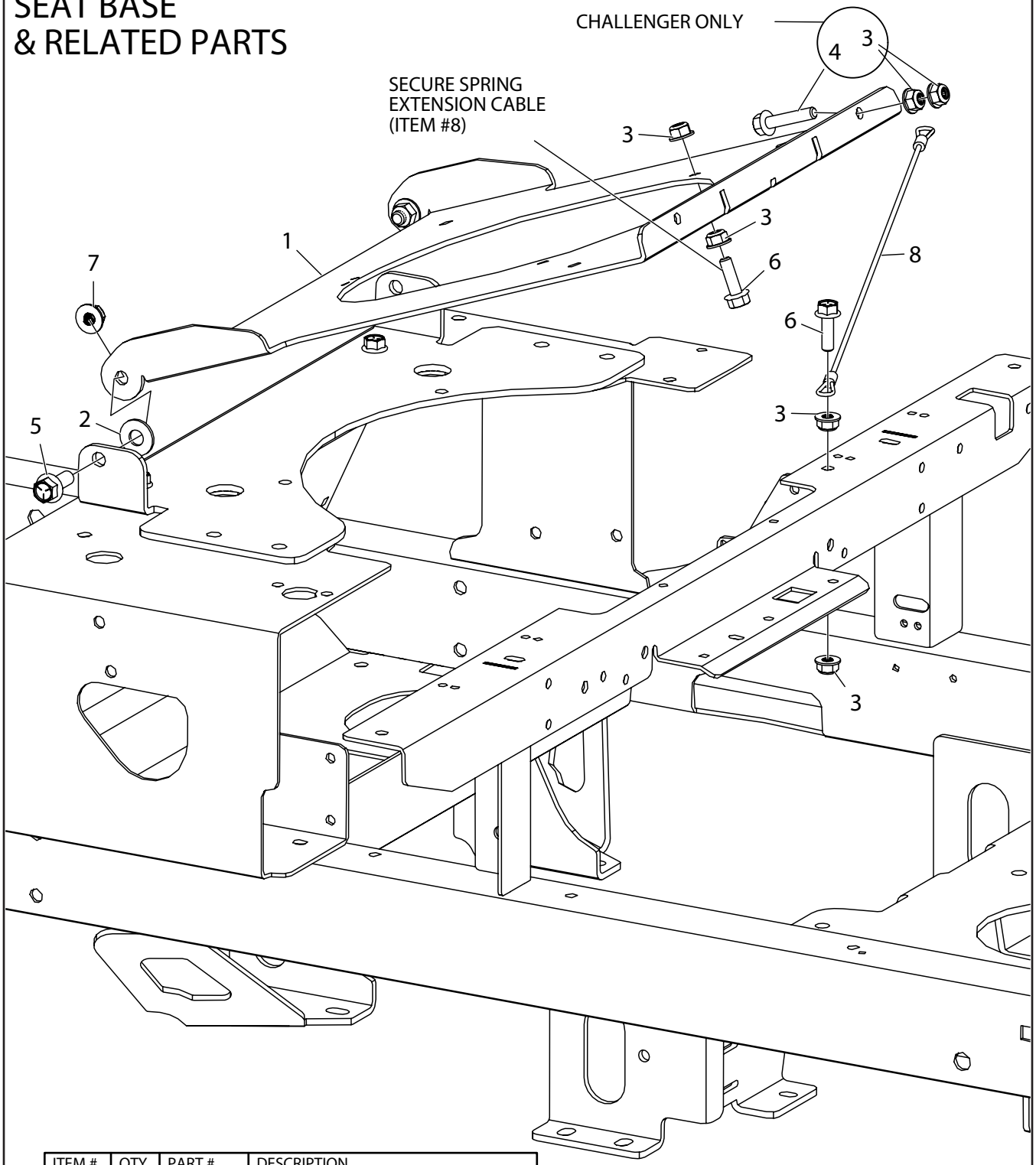


ROUTE HOSE THROUGH MOTOR MOUNT

ITEM #	QTY	PART #	DESCRIPTION
1	1	721-029P	PLT, TANK MOUNT
2	4	F-2132	NUT, 1/4-20 NYLOC, FLANGED, YZ
3	4	F-2162	FHCS, 1/4-20 X 3/4", YZ, GR5
4	1	H-2517	VENT TUBE ADAPTER
5	2	H-2567	TRANSAXLE OIL FILTER
6	1	H-2762	VENT TUBE ADAPTER

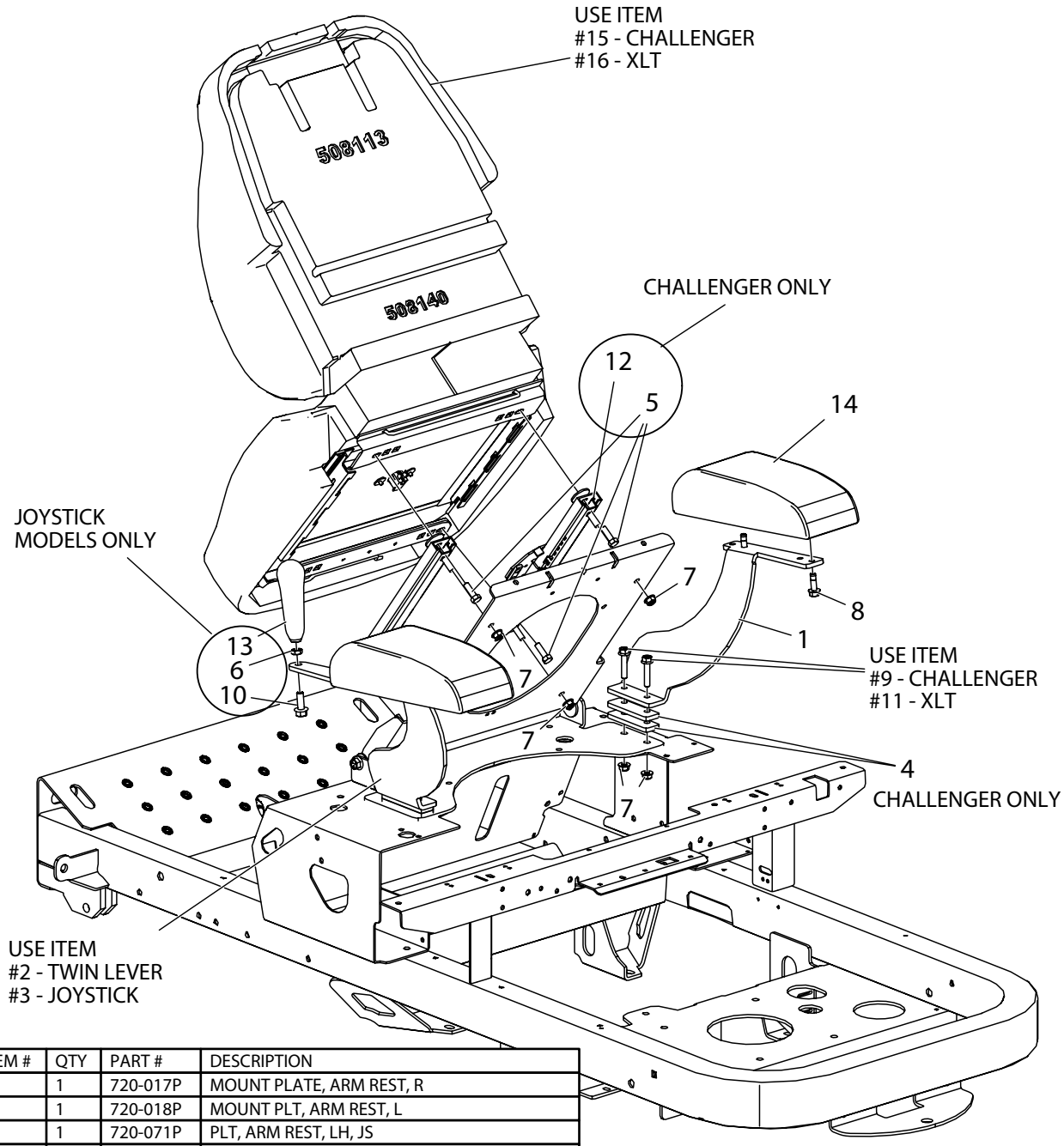
ITEM #	QTY	PART #	DESCRIPTION
7	1	H-3033	HYDRO TANK ASSEMBLY
8	2	H-3084	HOSE, 1/2" DIA X 16-1/2"
9	4	H-3089	HOSE CLAMP, 0.78" HOSE O.D.
-	4	H-3155	HOSE CLAMP, 0.88" HOSE O.D.
10	1	P-11052	DECAL, "TRANSMISSION OIL..."

SEAT BASE & RELATED PARTS



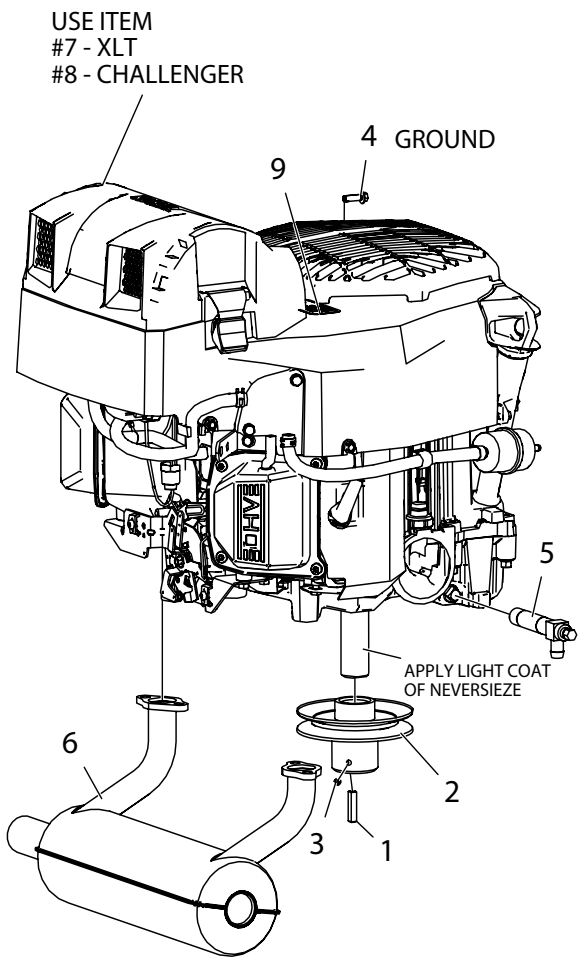
ITEM #	QTY	PART #	DESCRIPTION
1	1	721-013P	PLT, SEAT MOUNT, LOW
2	2	F-1009-03	WASHER, FLAT, 3/8, YZ
3	6	F-2063	NUT, 5/16-18, NYLOC, FLANGED, YZ
4	1	F-2129	FHCS, 5/16-18 X 1-1/2", YZ, GR5
5	2	F-2141	FHCS, 3/8-16 X 1", YZ, GR5
6	2	F-2148	FHCS, 5/16-18 X 1", YZ, GR5
7	2	F-2151	NUT, 3/8-16 NYLOC, FLANGED, YZ
8	1	H-2460	SPRING EXTENSION CABLE

SEAT BASE
& RELATED PARTS (CON'T)



ITEM #	QTY	PART #	DESCRIPTION
1	1	720-017P	MOUNT PLATE, ARM REST, R
2	1	720-018P	MOUNT PLT, ARM REST, L
3	1	720-071P	PLT, ARM REST, LH, JS
4	4	721-061P	PLATE, SPACER
5	4	F-1015-15	HHCS, 5/16-18 X 1", YZ, GR5
6	1	F-1486	NUT, JAM, 3/8-16, YZ
7	8	F-2063	NUT, 5/16-18, NYLOC, FLANGED, YZ
8	4	F-2121	FHCS, 5/16-18 X 1", LOCK PATCH, YZ, GR5
9	4	F-2129	FHCS, 5/16-18 X 1-1/2", YZ, GR5
10	1	F-2141	FHCS, 3/8-16 X 1", YZ, GR5
11	4	F-2148	FHCS, 5/16-18 X 1", YZ, GR5
12	1	H-2760	TRACK KIT, HD, 6" TRAVEL
13	1	H-2764	HANDLE, JOYSTICK
14	2	H-2799	PAD, ARM REST
15	1	H-3087	SEAT ASS,Y, w/N.C. SWITCH, 1211
16	1	H-3129	SEAT ASS'Y, XLT

ENGINES

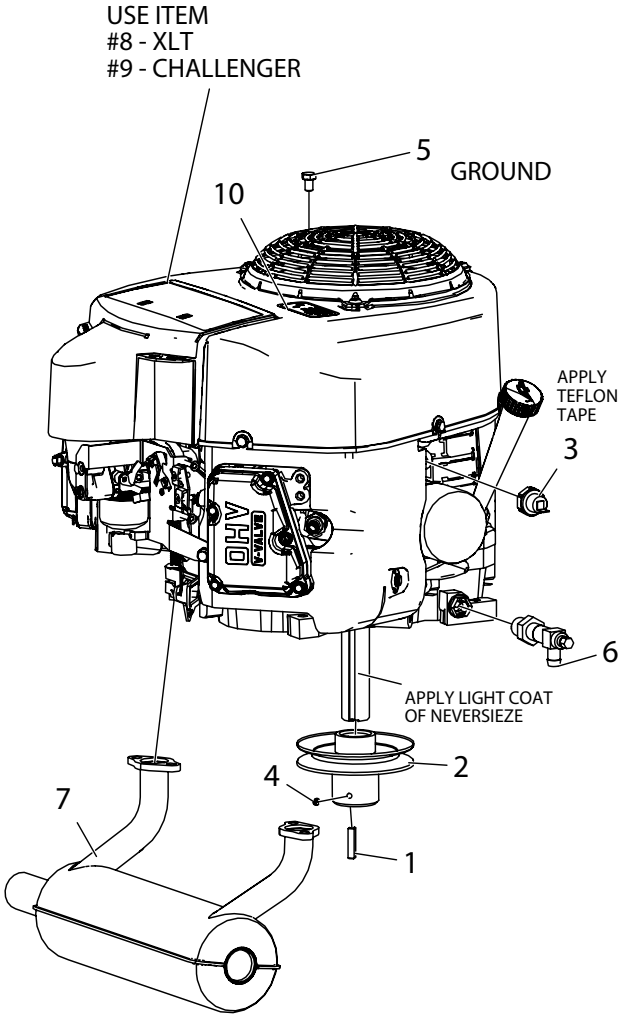


KOHLER

XLT - 26 HP KT745
CHALLENGER - 25 HP ZT740

(USE THROTTLE CABLE H-2611
& CHOKE CABLE H-2287)

ITEM #	QTY	PART #	DESCRIPTION
1	1	621-113P	SQUARE KEY 1/4 X 1/4 X 1-1/4
2	1	D-3974	MOTOR, PULLEY, 4.51 W/ 1-1/8'' SHAFT
3	1	F-1228	SET SCREW, SOCKET, 1/4-20 X 1/4", W/NYLOC
4	1	F-2049	M6-1 X 20 H.F. FORM SCREW
5	1	H-2589	OIL DRAIN VALVE (KOHLER)
6	1	H-3034	MUFFLER, KOHLER ZT740
7	1	M-5417	ENGINE, KOH, 26HP KT745, 3400RPM
8	1	M-5418	ENGINE, KOH, 25HP ZT740, 3400RPM
9	1	P-10077-11	DECAL, "PERIODIACALLY CLEAN"



KAWASAKI

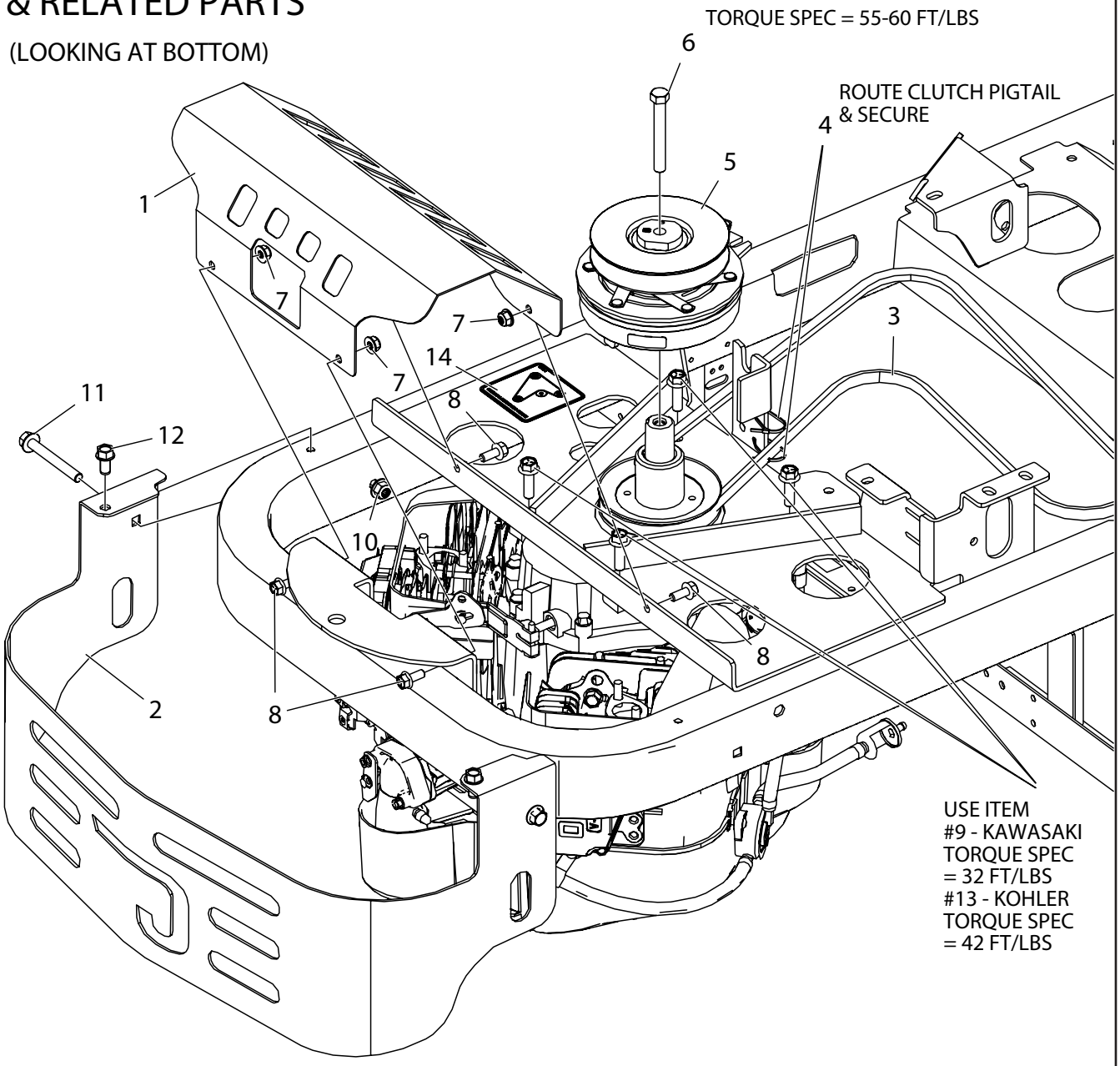
XLT - 24 HP FR730
CHALLENGER - 24 HP FS730

(USE THROTTLE CABLE H-2610
& CHOKE CABLE H-2287)

ITEM #	QTY	PART #	DESCRIPTION
1	1	621-113P	SQUARE KEY 1/4 X 1/4 X 1-1/4
2	1	D-3974	MOTOR, PULLEY, 4.51 W/ 1-1/8'' SHAFT
3	1	E-6307	OIL PRESSURE SWITCH
4	1	F-1228	SET SCREW, SOCKET, 1/4-20 X 1/4", W/NYLOC
5	1	F-2243	HHCS, M8-1.25 X 12, YZ, GR8
6	1	H-2590	OIL DRAIN VALVE (KAWASAKI)
7	1	H-3020	MUFFLER. KAWASAKI FR730
8	1	M-5419	ENGINE, KAW, 24HP FR730, 3400RPM
9	1	M-5420	ENGINE, KAW, 24HP FS730, 3400RPM
10	1	P-10077-11	DECAL, "PERIODIACALLY CLEAN"

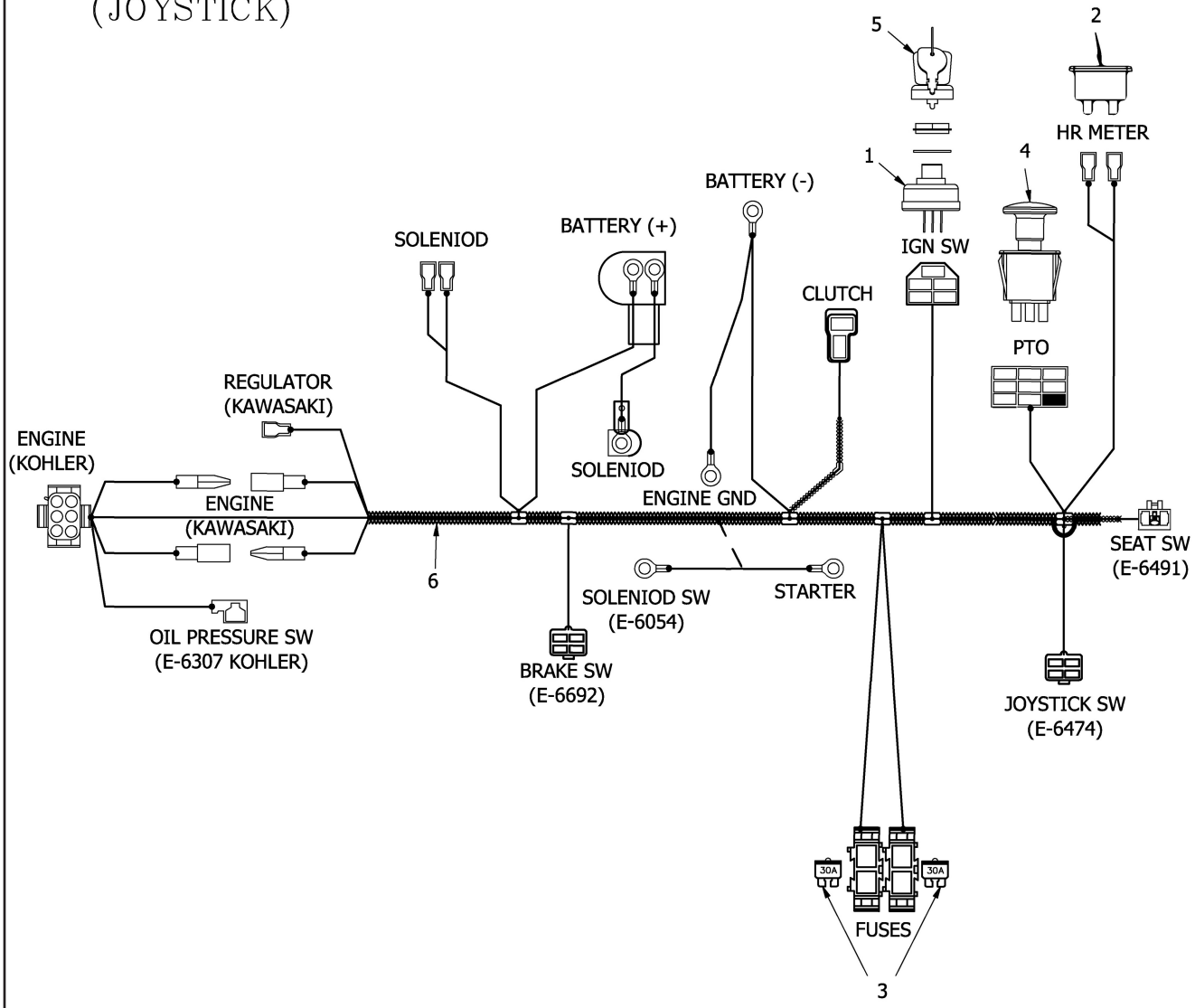
ENGINE & CLUTCH MOUNTING & RELATED PARTS

(LOOKING AT BOTTOM)



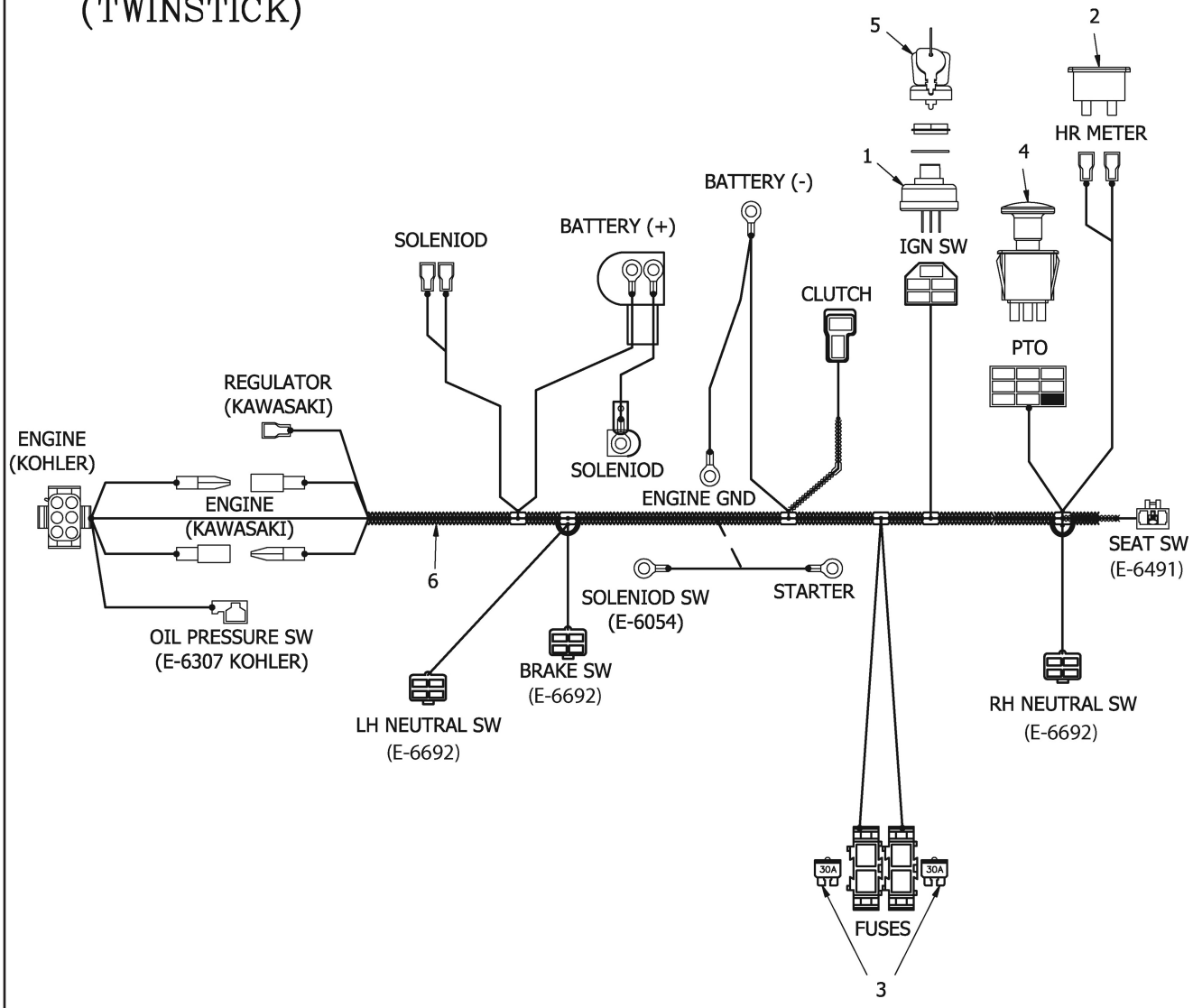
ITEM #	QTY	PART #	DESCRIPTION
1	1	714-398P	GUARD, MUFFLER
2	1	721-075P	GUARD, REAR ENGINE, LIGHT
3	1	D-3769	V BELT A-67 KEVLAR
4	2	E-5842	WIRE TIE
5	1	E-6660	CLUTCH, 175 FT/LBS, 1-1/8" BORE, EXT PULLEY
6	1	F-1766	HHCS, 7/16-20 X 3-1/4", YZ, GR8
7	4	F-2063	NUT, 5/16-18, NYLOC, FLANGED, YZ
8	4	F-2120	FHCS, 5/16-18 X 3/4", YZ, GR5
9	4	F-2125	FHCS, 3/8-16 X 1-1/4", YZ, GR5
10	2	F-2151	NUT, 3/8-16 NYLOC, FLANGED, YZ
11	2	F-2180	FHCS, 3/8-16 x 3", YZ, GR5
12	2	F-2219	HFCS, 3/8-16 X 3/4", CZ, THD FORMING
13	4	F-2238	HFCS, 3/8-16 X 1-1/4", CZ, THD FORMING
14	1	P-12918	DECAL, HYDRO BELT ROUTING

WIRE HARNESS & RELATED PARTS (JOYSTICK)

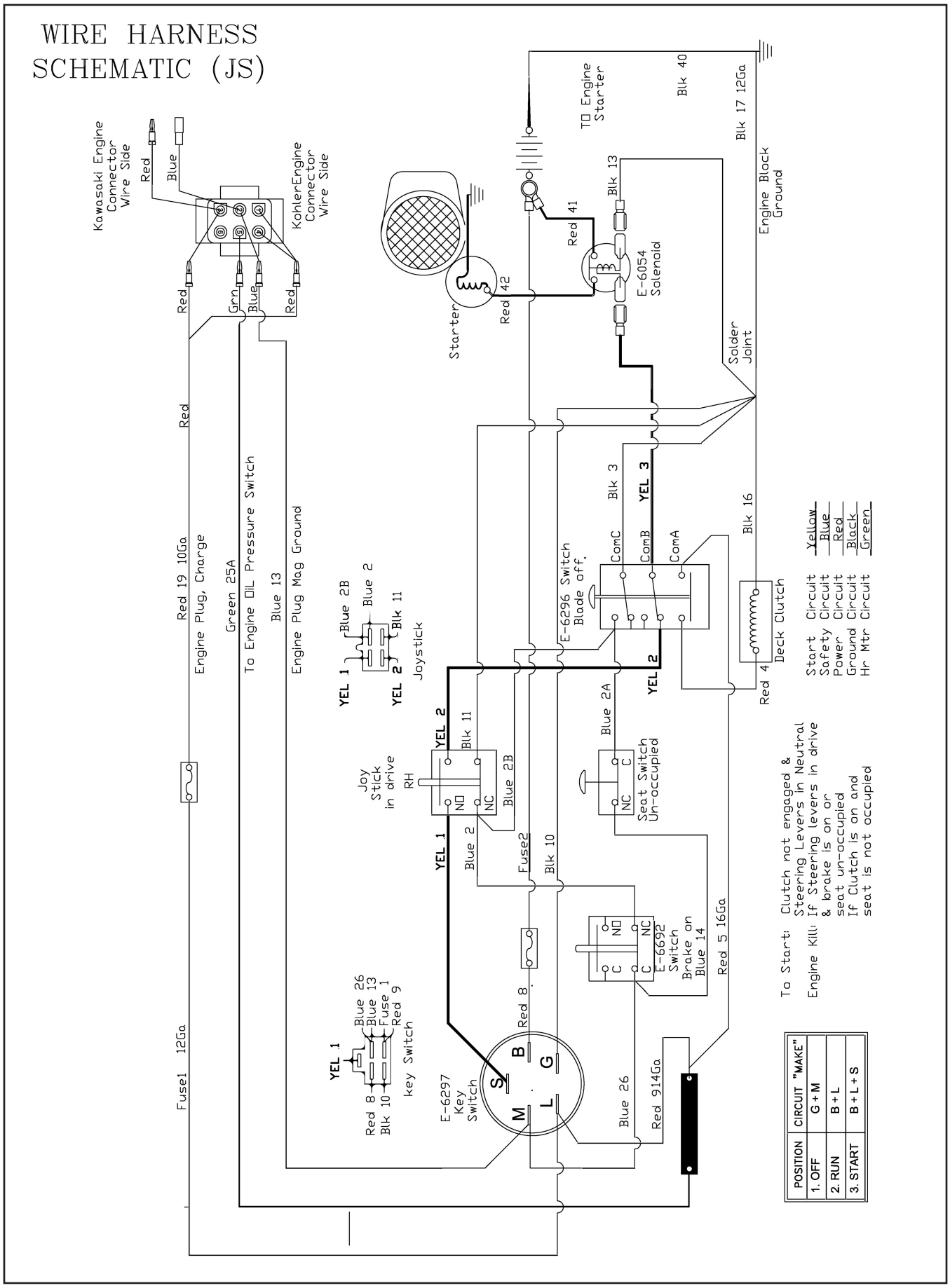


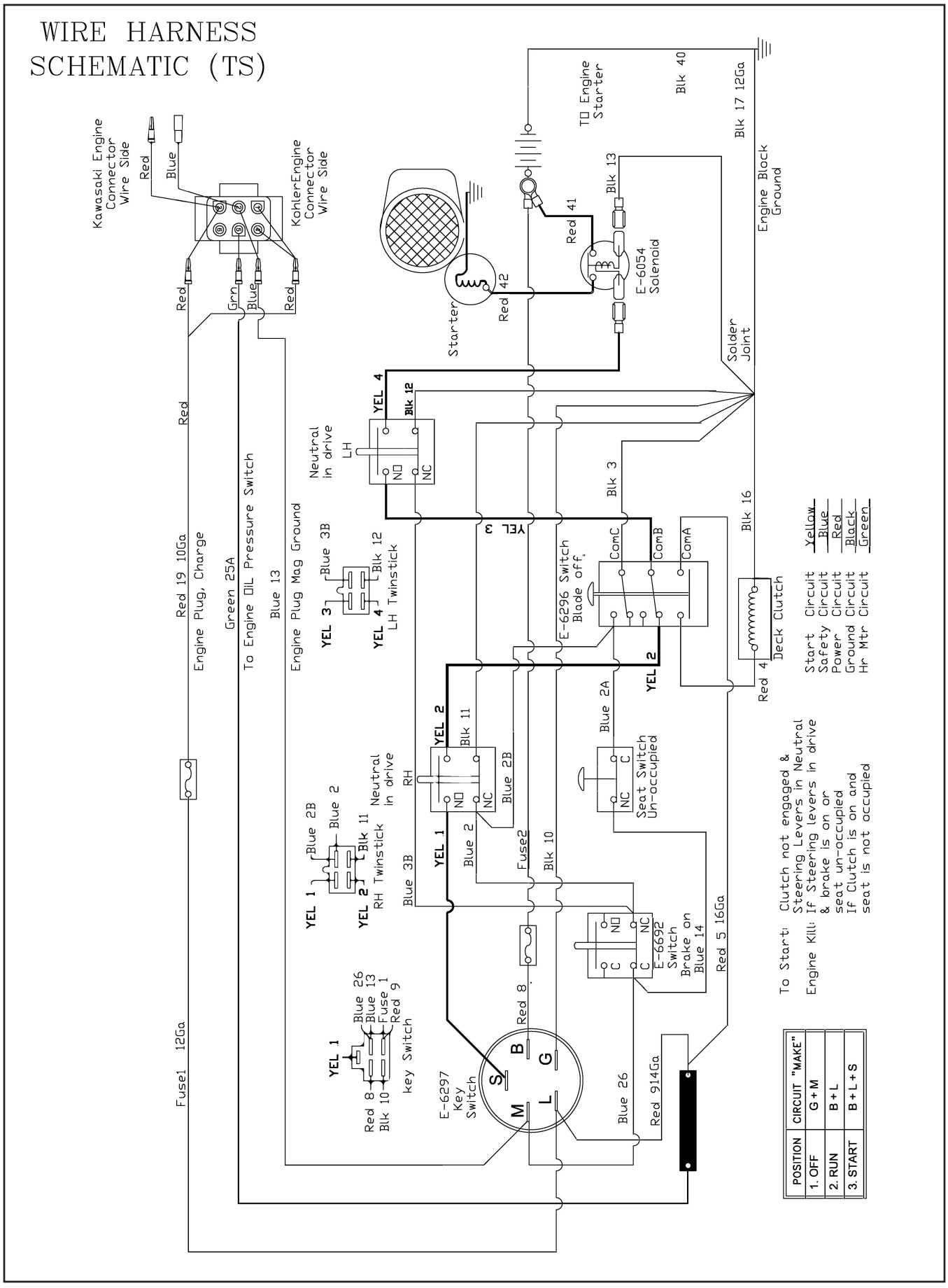
ITEM #	PART #	DESCRIPTION
1	E-5873	KEY SWITCH (INCLUDES #5)
2	E-5878	HOUR METER
3	E-6207	FUSE, #ATC-30
4	E-6403	PTO SWITCH
5	E-6445	KEY SET (INCLUDED IN #1)
6	E-6600	WIRE HARNESS, JS

WIRE HARNESS & RELATED PARTS (TWINSTICK)



ITEM #	PART #	DESCRIPTION
1	E-5873	KEY SWITCH (INCLUDES #5)
2	E-5878	HOUR METER
3	E-6207	FUSE, #ATC-30
4	E-6403	PTO SWITCH
5	E-6445	KEY SET (INCLUDED IN #1)
6	E-6649	WIRE HARNESS, TS


WIRE HARNESS
SCHEMATIC (JS)
Kawasaki Engine
Connector
Wire Side
Red
Blue
Kohler Engine
Connector
Wire Side
Red
Grn
Blue
Red
Red
Red 19 10Ga
Engine Plug, Charge
Green 25A
To Engine OIL Pressure Switch
Blue 13
Engine Plug Mag Ground
Fuse1 12Ga
Starter
Red 42
Red 41
TO Engine
Starter
Blk 40
Blk 17 12Ga
Engine Block
Ground
Blk 13
E-6054
Solenoid
Solder
Joint
Blk 3
YEL 3
ComC
ComB
ComA
E-6296 Switch
Blade off,
Blk 16
Deck Clutch
Red 4
YEL 2
Blue 2A
Seat Switch
Un-occupied
NC
C
Blue 2B
Blk 11
YEL 2
Joy
Stick
in drive
RH
NO
NC
YEL 1
Blue 2
Fuse2
Blk 10
Blue 2B
Blue 2
Blk 11
YEL 2
YEL 1
Joystick
E-6692
Switch
Brake on
Blue 14
Red 5 16Ga
Red 8
Blue 26
Blue 13
Fuse 1
Red 9
YEL 1
Red 8
Blk 10
key Switch
E-6297
Key
Switch
S
B
M
L
G
Blue 26
Red 914Ga
To Start: Clutch not engaged &
Steering Levers in Neutral
Engine Kill: If Steering levers in drive
& brake is on or
seat un-occupied
If Clutch is on and
seat is not occupied
Yellow
Blue
Red
Black
Green
Start Circuit
Safety Circuit
Power Circuit
Ground Circuit
Hr Mtr Circuit
POSITION
CIRCUIT "MAKE"
1. OFF
G+M
2. RUN
B+L
3. START
B+L+S


WIRE HARNESS
SCHEMATIC (TS)
Kawasaki Engine Connector Wire Side
KohlerEngine Connector Wire Side
Red
Blue
Grn
Red 19 10Ga
Engine Plug, Charge
Green 25A
To Engine OIL Pressure Switch
Blue 13
Engine Plug Mag Ground
Fuse1 12Ga
Starter
Red 42
Red 41
TO Engine Starter
E-6054 Solenoid
Blk 13
Blk 40
Blk 17 12Ga
Engine Block Ground
Solder Joint
Neutral in drive
LH
RH
YEL 4
Blk 12
YEL 3
Blue 3B
YEL 2
Blk 11
Blue 2B
Blue 2
Blue 2A
Blue 3B
YEL 1
Fuse2
Blk 10
Blk 3
Blk 16
E-6296 Switch Blade off
ComC
ComB
ComA
Deck Clutch
Red 4
Seat Switch Un-occupied
E-6692 Switch Brake on
Blue 14
Red 5 16Ga
Red 8
Blue 26
Blue 13
Fuse 1
Red 9
Blk 10
Red 914Ga
E-6297 Key Switch
key Switch
S
B
M
L
G
To Start: Clutch not engaged & Steering Levers in Neutral
Engine Kill: If Steering levers in drive & brake is on or seat un-occupied If Clutch is on and seat is not occupied
Start Circuit Yellow
Safety Circuit Blue
Power Circuit Red
Ground Circuit Black
Hr Mtr Circuit Green
POSITION | CIRCUIT "MAKE"
1. OFF | G + M
2. RUN | B + L
3. START | B + L + S

FS651V
FS691V
FS730V

4-Stroke Air-Cooled V-Twin Gasoline Engine
Motor gasolina de 4 tiempos, V-gemelo y refrigerado por aire

OWNER'S MANUAL
MANUAL DEL PROPIETARIO

Kawasaki

ENGLISH

General-purpose Engine Owner's Manual

SAFETY AWARENESS

Whenever you see the symbols shown below, heed their instructions! Always follow safe operating and maintenance practices.

⚠ WARNING

This warning symbol identifies special instructions or procedures which, if not correctly followed, could result in personal injury, or loss of life.

CAUTION

This caution symbol identifies special instructions or procedures which, if not strictly observed, could result in damage to, or destruction of equipment.

NOTE

○ *This note symbol indicates points of particular interest for more efficient and convenient operation.*

READ THE OPERATING INSTRUCTIONS OF THE EQUIPMENT THIS ENGINE POWERS.

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Aug. 2016 (1) (M)

READ THIS FIRST

For your safety, read this Owner's Manual and understand it thoroughly before operating this ENGINE.

⚠ WARNING

DO NOT run the engine in a closed area. Exhaust gas contains carbon monoxide, an odorless and deadly poison.
Gasoline is extremely flammable and can be explosive under certain condition.
Stop engine and allow the engine to cool before refueling.
DO NOT smoke. Make sure area is well ventilated and free from any source of flame or sparks including the pilot lamp of any appliance while refueling, servicing fuel system, draining gasoline and/or adjusting carburetor.
DO NOT fill the tank so the fuel level rises into the filler neck or level surface of level gauge. If the tank is overfilled, heat may cause the fuel to expand and overflow through the vents in the tank cap.
Wipe off any spilled gasoline immediately.
To prevent fire hazard:
Keep the engine at least 1 m (3.3 ft) away from buildings, obstructions and other burnable objects.
DO NOT place flammable objects close to the engine.
DO NOT explose combustible materials to the engine exhaust.
DO NOT use the engine on any forest covered, brush covered or grass covered unimproved land unless spark arrester is installed on the muffler.
To avoid getting an electric shock, DO NOT touch spark plugs, plug caps or spark plug leads during engine running.
To avoid a serious burn, DO NOT touch a hot engine or muffler. The engine becomes hot during operation. Before you service or remove parts, stop engine and allow the engine to cool.
DO NOT place hands or feet near moving or rotating parts. Place a protective cover over pulley, V belt or coupling.
DO NOT run engine at excessive speeds. This may result in injury.
Always remove the spark plug caps from spark plugs when servicing the engine to prevent accidental starting.

Read warning labels which are on the engine and understand them. If any label is missing, damaged, or worn get a replacement from your Kawasaki engine dealer and install it in the correct position.

EMISSION CONTROL INFORMATION

Fuel Information

THIS ENGINE IS CERTIFIED TO OPERATE ON UNLEADED REGULAR GRADE GASOLINE ONLY. A minimum of 87 octane of the antiknock index is recommended. The antiknock index is posted on service station pumps in the U.S.A.

Emission Control Information

To protect the environment in which we all live, Kawasaki has incorporated an exhaust emission control system in compliance with applicable regulations of the United States Environmental Protection Agency and the California Air Resources Board. Also, depending on when your engine was produced, it may have an assigned emissions durability period. *See below for the engine emissions durability period that may apply to your engine.

Exhaust Emission Control System

The exhaust emission control system applied to this engine consists of a fuel system and an ignition system having optimum ignition timing characteristics. The fuel system has been calibrated to provide specific air/fuel mixture characteristics and optimum fuel economy with a suitable air cleaner and exhaust system.

A sealed-type crankcase emission control system is also used to eliminate blow-by gasses. The blow-by gasses are led to a breather chamber through the crankcase and from there to the air cleaner.

Engine Emissions Compliance Period

California	All Other States
Engines Greater Than or Equal To 225 cc	**Engines Greater Than or Equal To 225 cc**
Model Year – 2015 and later	Model Year – 2015 and later
Durability Period – 500 hours	Durability Period – 500 hours (Category B)

If your engine has an assigned emissions durability period it will be located on the certification label attached to the engine (IMPORTANT ENGINE INFORMATION).

High Altitude Performance Adjustment Information

To improve the EMISSIONS CONTROL PERFORMANCE of engines operated above 1000 meters (3300 feet), Kawasaki requires the following Environmental Protection Agency (EPA) and California Air Resources Board (CARB) approved modifications. High altitude adjustment requires replacement of carburetor main jets. Installation of these optional parts may be performed an authorized Kawasaki engine dealer or equally qualified service facility, or the consumer, following repair recommendations specified in the appropriate Kawasaki Service document or parts catalog.

Operating with the wrong configuration at an altitude may increase its emissions and decrease fuel efficiency and performance.

NOTE

- *When properly performed, these specified modifications only are not considered to be emissions system "tampering" and engine performance is generally unchanged as a result.*
- *Engine models with fuel injection do not require high altitude performance adjustment.*

Maintenance and Warranty

Proper maintenance is necessary to ensure that your engine will continue to have low emission levels. This Owner's Manual contains those maintenance recommendations for your engine. Those items identified by the Periodic Maintenance Chart are necessary to ensure compliance with the applicable standards.

As the owner of the engine, you have the responsibility to make sure that the recommended maintenance is carried out according to the instructions in this Owner's Manual at your own expense.

The Kawasaki Limited Emission Control System Warranty requires that you return your engine to an authorized Kawasaki engine dealer or equally qualified service facility for remedy under warranty. Please read the warranty carefully, and keep it valid by complying with the owner's obligations it contains.

Tampering with Emission Control System Prohibited

Federal law and California State law prohibit the following acts or the causing thereof: (1) the removal or rendering inoperative by any person other than for purposes of maintenance, repair, or replacement, of any device or element of design incorporated into any new engine for the purposes of emission control prior to its sale or delivery to the ultimate purchaser or while it is in use, or (2) the use of the engine after such device or element of design has been removed or rendered inoperative by any person.

Among those acts presumed to constitute tampering are the acts listed below:
Do not tamper with the original emission related parts:

- Carburetor or DFI system, and their internal parts
- Spark Plug
- Magneto or electronic ignition system
- Fuel filter element
- Air cleaner elements
- Crankcase
- Cylinder heads
- Breather chamber and internal parts
- Intake pipe and tube
- Muffler or any internal portion of the muffler

FOREWORD

This Owner's Manual provided to aid you in the safe and reliable operation of your Engine. READ AND UNDERSTAND IT THOROUGHLY BEFORE OPERATING YOUR ENGINE.

READ THE OPERATING INSTRUCTIONS OF THE EQUIPMENT THIS ENGINE POWERS.

To ensure a long, trouble-free life for your Engine, give it proper care and maintenance in accordance with this Owner's Manual.

Please note that the photographs and illustrations shown in this manual are made based on Model FS730V as a typical example among other similar models.

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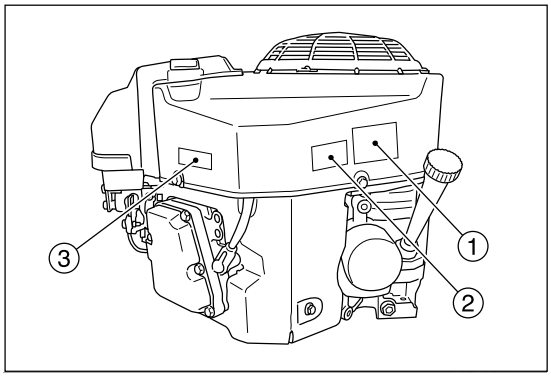
GENERAL INFORMATION

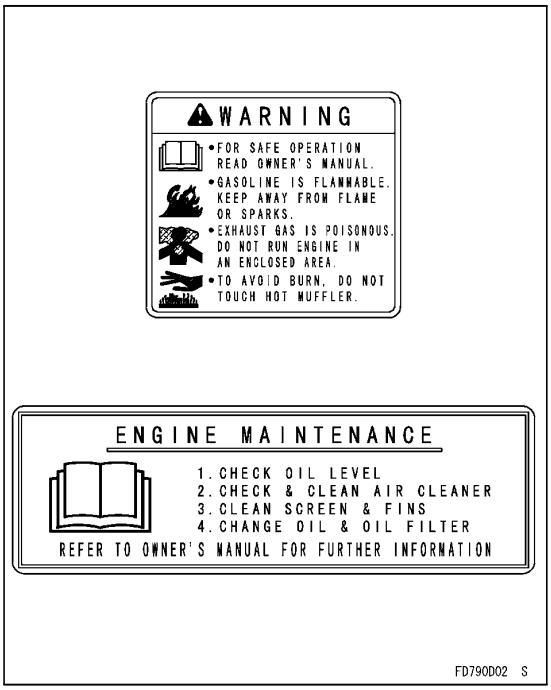
Label Location



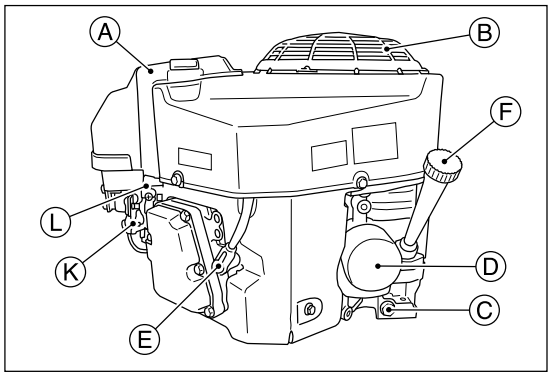
1. Warning Label
2. Important Engine Information Label
3. Engine Serial Number Label

The engine serial number is your only means of identifying your particular engine from others of the same model type.

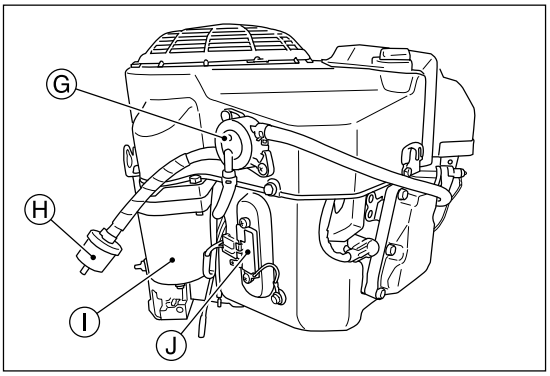
This engine serial number is needed by your dealer when ordering parts.



Parts Location

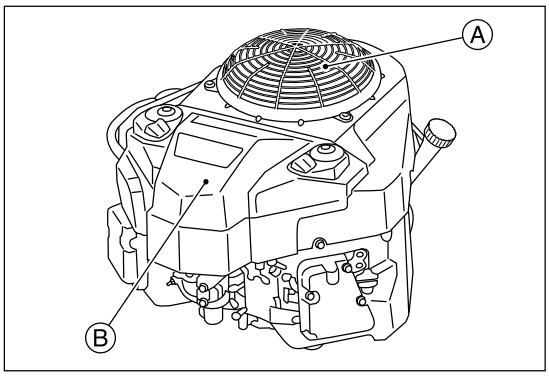


A. Air Cleaner
B. Air Inlet Guard
C. Oil Drain Plug
D. Oil Filter
E. Spark Plugs/Spark Plug Caps
F. Oil Gauge
K. Control Panel
L. Carburetor

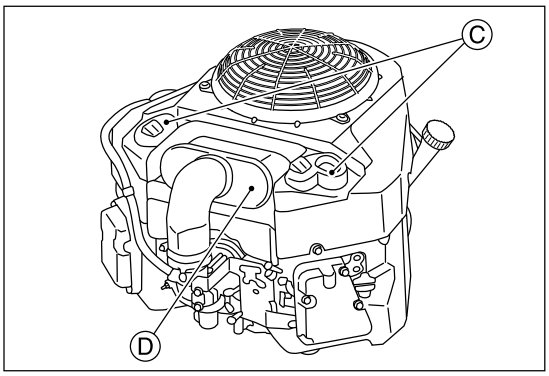


G. Fuel Pump
H. Fuel Filter
I. Electric Starter
J. Voltage Regulator

Inspection Port Model



A. Inlet Cover
B. Air Cleaner Cover



C. Inspection Ports
D. Air Cleaner Element

Tune-up Specifications

ITEM	Specifications
Ignition Timing	Unadjustable
Spark Plugs: Gap	NGK BPR4ES 0.75 mm (0.030 in)
Low Idle Speed	1 550 r/min (rpm)
High Idle Speed	3 600 r/min (rpm)
Valve Clearance	In 0.10 ~ 0.15 mm (0.004 ~ 0.006 in) Ex 0.10 ~ 0.15 mm (0.004 ~ 0.006 in)
Other Specifications	No other adjustment needed

NOTE

○ *High and low idle speeds may vary depending on the equipment on which the engine is used. Refer to the equipment specification.*

Engine Oil Capacity

Engine Oil Capacity

FS651V FS691V FS730V	1.8 L (1.9 US·qt) [when oil filter is not removed]
	2.0 L (2.1 US·qt) [when oil filter is removed]

FUEL AND OIL RECOMMENDATIONS

Fuel

Use only clean, fresh, unleaded regular grade gasoline.

CAUTION
Do not mix oil with gasoline.

Octane Rating

The octane rating of a gasoline is a measure of its resistance to “knocking”. Using a minimum of 87 octane by the antiknock index is recommended. The antiknock index is posted on service station pumps in the U.S.A.

Antiknock Index: (RON + MON)/2

RON = Research Octane Number

MON = Motor Octane Number

NOTE

○ *If “knocking or pinging” occurs, use a different brand of gasoline or higher octane rating.*

Oxygenated Fuel

Oxygenates (either ethanol or MTBE) are added to the gasoline. If you use the oxygenated fuel be sure it is unleaded and meets the minimum octane rating requirement.

The following are the EPA approved percentages of fuel oxygenates.

ETHANOL: (Ethyl or Grain Alcohol)

You may use gasoline containing up to 10% ethanol by volume.

MTBE: (Methyl Tertiary Butyl Ether)

You may use gasoline containing up to 15% MTBE by volume.

METHANOL: (Methyl or Wood Alcohol) 5% by volume

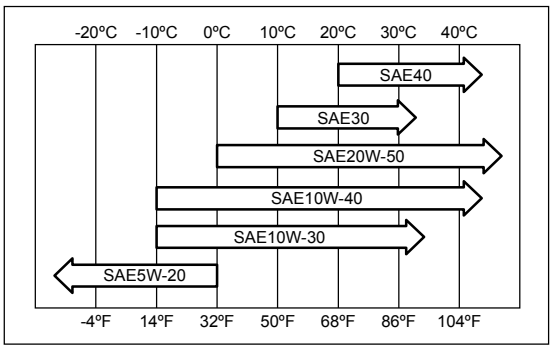
You may use gasoline containing up to 5% methanol by volume, as long as it also contains cosolvents and corrosion inhibitors to protect the fuel system. Gasoline containing more than 5% methanol by volume may cause starting and/or performance problems. It may also damage metal, rubber, and plastic parts of your fuel system.

Engine Oil

The following engine oils are recommended.
API Service Classification: SF, SG, SH, SJ or SL.

Oil Viscosity

Choose the viscosity according to the temperature as follows:



NOTE

○ *Although 10W-40 engine oil is the recommended oil for most conditions, the oil viscosity may need to be changed to accommodate atmospheric conditions. Using 20W-50 oil in higher ambient temperatures may reduce oil consumption.*

PREPARATION

Fuel

⚠ WARNING

Gasoline is extremely flammable and can be explosive under certain conditions.
Before refueling, turn the engine switch to "OFF" position. Do not smoke. Make sure the area is well ventilated and free from any source of flame or sparks, including any appliances with a pilot lamp.
Never fill tank so that fuel level rises into the filler neck. If tank is overfilled, heat may cause fuel to expand and overflow through vents in tank cap.
After refueling make sure tank cap is securely closed.
If gasoline is spilled, wipe it up immediately.

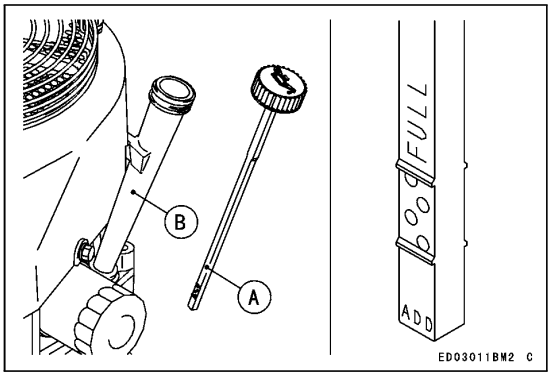
Engine Oil

Check the engine oil daily before starting the engine otherwise shortage of the engine oil may cause serious damage to the engine such as seizure.

- Place the engine on level surface. Clean area around the oil gauge before removing it.
- Remove the oil gauge (A) and wipe it with a clean cloth.
- Pour the oil slowly to "FULL" mark on the oil gauge.
- Insert the oil gauge into tube (B) WITHOUT SCREWING IT IN.
- Remove the oil gauge (A) to check the oil level. The level should be between "ADD" and "FULL" marks. Do not overfill.
- Install and tighten the oil gauge (A).

CAUTION

Do not fill above the "FULL" mark. Excess oil will cause a smoking condition, and may cause the engine to overheat.



CAUTION

The engine is shipped without engine oil.

STARTING

Starting the Engine

⚠ WARNING

Exhaust gases contain carbon monoxide, a colorless, odorless, poisonous gas.
Do not operate the unit in enclosed areas. Provide adequate ventilation at all times.

⚠ WARNING

Engine exhaust may ignite combustible materials and cause a fire.
Keep the area around the exhaust outlet clear. Locate the unit so that the exhaust outlet points toward an open area and is located at least one meter (3.3 feet) from any obstructions.

NOTE

○ *Be aware of the following in order to start the engine easily in cold weather.*

○ Use proper oil for expected temperature (See "FUEL AND OIL RECOMMENDATIONS" chapter).
Use fresh gasoline.
Protect the engine or the equipment from direct exposure to weather when not in operation.

NOTE

○ *Follow the operating instructions of the equipment this engine powers.*

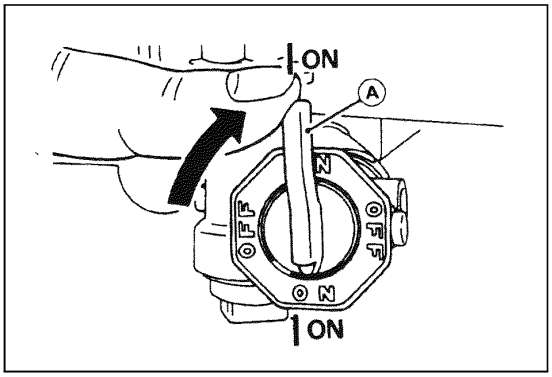
● Before starting the engine, disconnect all possible external loads.
Open the fuel valve (A) on the equipment.
Move throttle lever on dash to half throttle position.
Use full choke when the engine is cold, but in hot weather or when the engine is already warm, use half choke or leave the choke fully open.
Put the switch key into the engine switch.
Turn the switch key to the START position on the equipment. Usually engine will start within 3 seconds.

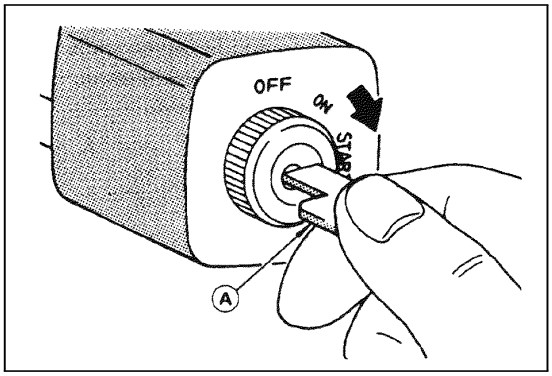
CAUTION

Do not run the electric starter continuously for more than 5 seconds, otherwise the battery may discharge quickly. If the engine does not start right away, wait 15 seconds and try again.

NOTE

○ *When the engine is very warm, or when the engine does not start immediately, DO NOT keep trying to start it with the choke closed as this will cause flooding and make starting more difficult.*
○ *Instead, fully open the choke and start the engine.*





CAUTION

Whenever you start engine, make sure warning lamp is not illuminated after engine starts. If warning lamp comes on, stop engine immediately and check oil level (If equipped).

- After starting the engine, gradually return the choke lever to the fully open position.

OPERATING

Warming Up

After the engine starts, move the throttle lever (A) on the equipment to halfway between “FAST” and “SLOW”.

To warm up the engine, run it for 3 to 5 minutes with the throttle lever in the same load position (halfway) before putting the equipment under load. Then, move the throttle lever (A) on the equipment to its “FAST” position.

CAUTION

Allow engine to warm up sufficiently (3 to 5 minutes at idle) before applying a load. This will allow oil to reach all engine parts, and allow piston clearance to reach design specifications.

CAUTION

While warming up the engine, make sure the warning lamp (oil pressure) on dash is not on. The warning lamp must not be illuminated during engine operation (if equipped).

Engine Inclination

This engine will operate continuously at angles up to 25° in any direction.

Refer to the operating instructions of the equipment this engine powers. Because of equipment design or application, there may be more stringent restrictions regarding the angle of operation.

CAUTION

Do not operate this engine continuously at angles exceeding 25° in any direction. Engine damage could result from insufficient lubrication.

STOPPING

Stopping the Engine

⚠ WARNING

Always remove Engine Key from switch when leaving equipment unattended or when equipment is not in use.

Ordinary Stop

- Move the throttle lever (A) to **"slow"** position.
- Lower the engine speed to the idle speed. Keep running at the idle speed for about one minute.

CAUTION

Engine damage can occur from run-on or after-burning if engine is stopped suddenly from high speed loaded operation. Reduce engine speed to idle for one minute before shutting engine off.

- Turn the engine switch or the switch key to "OFF" position.

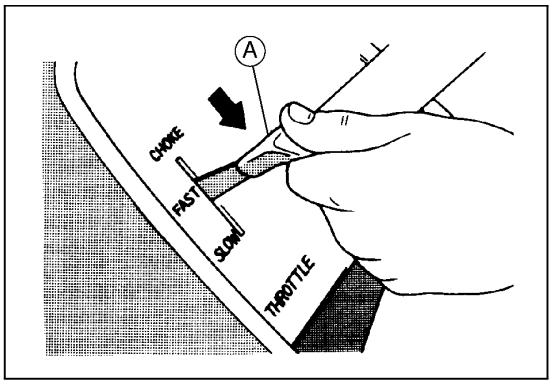
For Control Panel Switch Type, move the throttle lever against its low speed end to turn the ignition off.

Emergency Stop

- Immediately turn the engine switch or the switch key to "OFF" position.

Close the fuel valve on the equipment.

For Control Panel Switch Type, move the throttle lever on the equipment to its low speed end. Moving the lever to its low speed end turns ignition off.



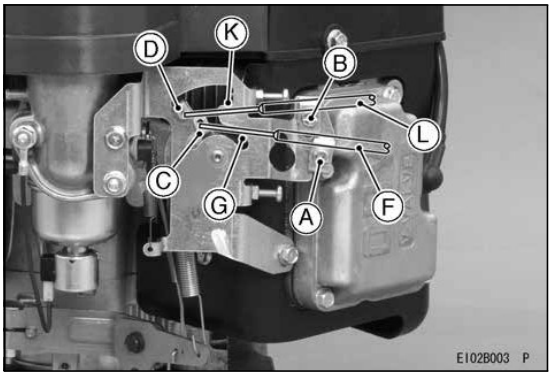
ADJUSTMENT

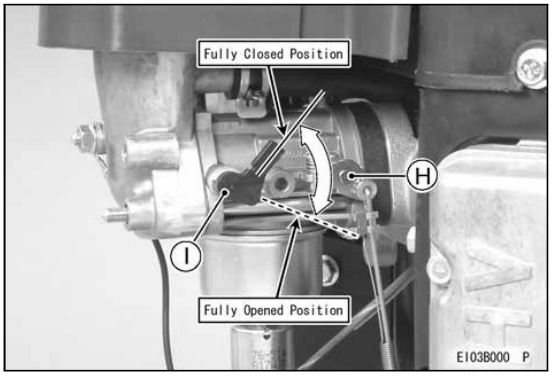
Throttle Cable Installation, Adjustment

- Link the throttle cable (G) to the speed control lever (C) and loosely clamp the throttle cable outer housing (F) with the cable clamp bolt (A).
  Move the throttle lever to "FAST" position.
  Pull up the outer housing (F) of the throttle cable until the inner wire (G) has almost no slack, and tighten the cable clamp bolt (A).
  Move the throttle lever to "SLOW" position. Make sure that the carburetor throttle valve (H) is moved smoothly.

Choke Cable Installation, Adjustment

- Link the choke cable (K) to the choke control lever (D), and loosely clamp the choke cable outer housing (L) with the cable clamp bolt (B).
  Move the equipment choke control to "OPEN" position. Make sure that the carburetor choke valve (I) is fully opened.
  Pull up the outer housing (L) of the choke cable until the inner wire (K) has almost no slack, and tighten the cable clamp bolt (B).
  Move the equipment choke control to "CHOKE" position. Make sure that the carburetor choke valve (I) is completely closed.
  Make sure that the choke valve turns from fully closed position to fully opened position when actuating the equipment choke control.





Engine Speed Adjustment

NOTE

○ *Do not tamper with the governor setting or the carburetor setting to increase the engine speed. Every carburetor is adjusted at the factory and a cap or stop plate is installed on each mixture screw.*

○ *If any adjustment is necessary, it must be performed by an authorized Kawasaki engine dealer or equally qualified service facility.*

MAINTENANCE

Maintenance, replacement, or repair of the emission control devices and systems may be performed by any nonroad engine repair establishment or individual.

Periodic Maintenance Chart

⚠ WARNING

Always remove the spark plug caps from spark plugs when servicing the engine to prevent accidental starting.

NOTE

○ *The service intervals can be used as a guide. Service more frequently as necessary by operating conditions.*

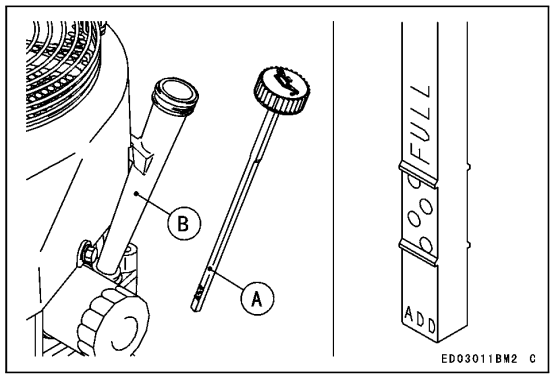
♦ : Service more frequently under dusty conditions.
◇ : Service to be performed by an authorized Kawasaki dealer or equally qualified service facility.

MAINTENANCE	INTERVAL							
	Daily	Every 25 hr.	Every 50 hr.	Every 100 hr.	Every 200 hr.	Every 250 hr.	Every 300 hr.	Every 500 hr.
Check and add engine oil.	●							
Check for loose or lost nuts and screws.	●							
Check for fuel and oil leakage.	●							
Check battery electrolyte level.	●							
♦ Check or clean air inlet screen.	●							

MAINTENANCE	INTERVAL							
	Daily	Every 25 hr.	Every 50 hr.	Every 100 hr.	Every 200 hr.	Every 250 hr.	Every 300 hr.	Every 500 hr.
♦ Clean air cleaner foam element.		●						
♦ Check inspection ports and clean.		●						
♦ Clean air cleaner paper element.				●				
♦ ◇ Clean dust and dirt from cylinder and cylinder head fins.				●				
Tighten nuts and screws.				●				
Change engine oil.				●				
Clean and regap spark plugs.				●				
Change oil filter.					●			
♦ Replace air cleaner paper element.					●			
◇ Clean combustion chamber.							●	
◇ Check and adjust valve clearance.							●	
◇ Clean and lap valve seating surface.							●	

Oil Level Check

Check oil level daily and before each time of operation. Be sure oil level is maintained. See “PREPARATION” chapter.



Oil Change

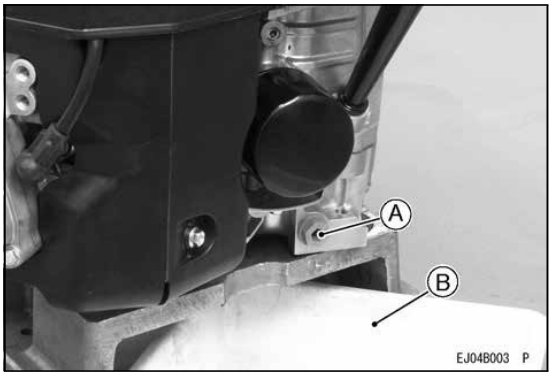
Change oil every 100 hours.

- Run the engine to warm oil.
  Be sure the engine (equipment) is level.
  Stop the engine.
  Remove the oil drain plugs (A) and drain the oil into suitable container while engine is warm.

⚠ WARNING

Hot engine oil can cause severe burns. Allow engine temperature to drop from hot to warm level before draining and handling oil.

- Install the oil drain plugs.
  Remove oil gauge and refill with fresh oil (See "FUEL AND OIL RECOMMENDATIONS" chapter).
  Check the oil level (See "PREPARATION" chapter for oil level check).



A. Oil Drain Plug
B. Suitable Container

⚠ WARNING

Engine oil is a toxic substance. Dispose of used oil properly. Contact your local authorities for approved disposal methods or possible recycling.

Oil Filter Change

- Change the oil filter every 200 hours of operation.

⚠ WARNING

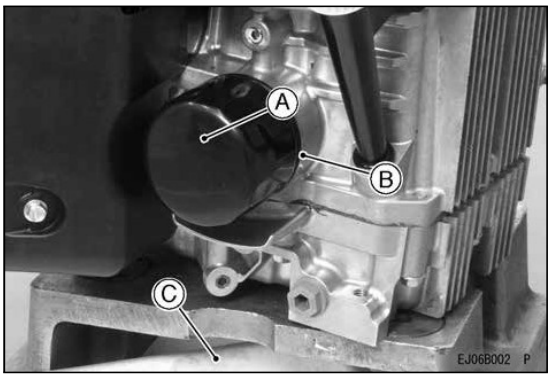
Hot engine oil can cause severe burns. Allow engine temperature to drop from hot to warm level before attempting to remove oil filter.

- Drain engine oil into a suitable container (C).

CAUTION

Before removing the oil filter, place suitable pan under filter connection.

- Rotate the oil filter (A) counterclockwise to remove it.
  Coat a film of clean engine oil on seal of new filter. Install new filter rotating it clockwise until seal contacts mounting surface (B). Then rotate filter 3/4 turn more by hand.
  Supply engine oil as specified.
  Run the engine for about 3 minutes, stop engine, and check oil leakage around the filter.
  Add oil to compensate for oil level drop due to oil filter capacity (See "PREPARATION" chapter for oil level check).



A. Oil Filter
B. Mounting Surface
C. Suitable Container

⚠ WARNING

Engine oil is a toxic substance. Dispose of used oil properly. Contact your local authorities for approved disposal methods or possible recycling.

Air Cleaner Service

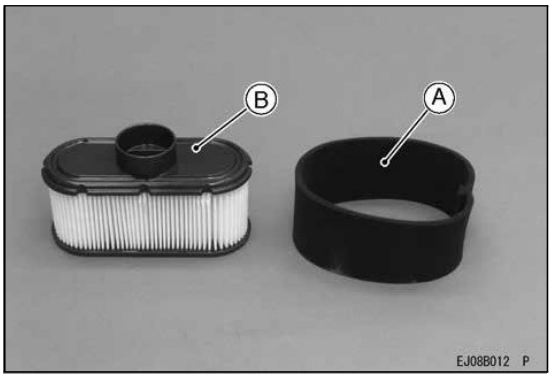
CAUTION

To prevent excessive engine wear, do not run the engine with the air cleaner removed.

Foam Element

Clean the foam element (A) every 25 hours.

- Wash the element in detergent and water, and dry it thoroughly.



Paper Element

Clean the paper element (B) every 100 hours.

- Clean the paper element by tapping gently to remove dust. If very dirty, replace the paper element with a new one.

Replace with a new paper element yearly or 200 hours. Whichever comes first.

NOTE

○ *Operating in dusty condition may require more frequent maintenance than above.*

CAUTION

Do not wash paper element.
Do not oil foam or paper element.
Do not use pressurized air to clean paper element.

Spark Plug Service

⚠ WARNING

Hot engine components can cause severe burns.
Stop engine and allow it to cool before checking spark plugs.

Clean or replace the spark plugs and reset spark plug gap (A) every 100 hours of operation.

- Disconnect the spark plug caps from the spark plugs and remove the spark plugs.

Clean the electrodes (B) by scraping with a wire brush to remove carbon deposits.

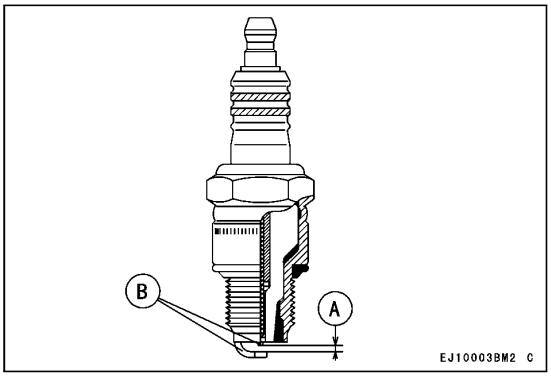
Inspect for cracked porcelain or other wear and damage. Replace the spark plug with a new one if necessary.

Check the spark plug gap and reset if necessary. The gap must be 0.75 mm (0.030 in). To change the gap, bend only the side electrode, using a spark plug tool.

Install and tighten the spark plugs to 22 N·m (2.2 kgf·m, 16 ft·lb). Connect the spark plug caps.

RECOMMENDED SPARK PLUG

NGK BPR4ES



A. Spark Plug Gap
B. Electrodes

Fuel Filter and Fuel Pump Service

⚠ WARNING

Improper use of solvents can result in fire or an explosion.
Do not use gasoline or low flash-point solvents to clean the fuel filter and/or the fuel pump.
Clean only in a well ventilated area away from sources of sparks or flame, including any appliances with a pilot lamp.

- The fuel filter can not be disassembled. If the fuel filter gets clogged, replace it with a new one.
  The fuel pump can not be disassembled. If the fuel pump fails, replace it with a new one.

Cooling System Cleaning

Before each use, check that the air inlet (rotary) screen (inside A) is free from grass and debris and clean if necessary. When checking or cleaning the air inlet screen, remove air inlet guard (A).

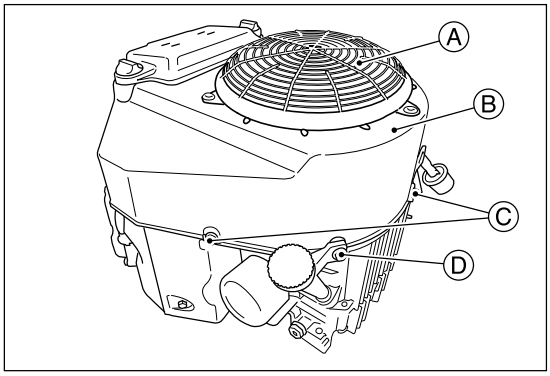
(For Inspection Port Model)
Every 25 hours of operation, detach air cleaner cover and check inside shroud through the inspection ports. Clean or blow inside debris or dust if needed. Every 100 hours of operation, check and clean the cooling fins and inside of engine shrouds to remove grass, chaff or dirt clogging the cooling system and causing overheating. When cleaning, remove the air cleaner (inside E), loosen the bolts (C), (D), and then, remove the fan housing (B).

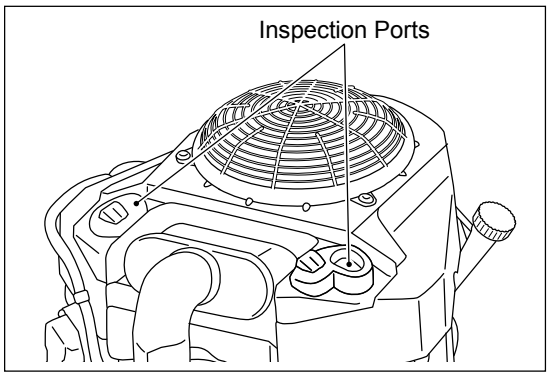
CAUTION

Do not run engine before all cooling system parts are reinstalled to keep cooling and carburetion as intended.

[Bolts Size, Tightening Torque]

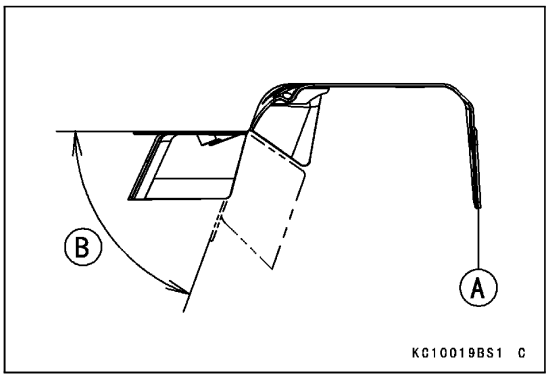
Bolts	Size	Length	Tightening Torque
C	M6	16 mm	8.8 N·m (0.9 kgf·m, 78 in·lb)
D	M6	22 mm	8.8 N·m (0.9 kgf·m, 78 in·lb)





CAUTION

Bend the engine shroud (regulator side) [A] only within the shown range [B] (70°).



[B] = 70°

STORAGE

Fuel System Draining

When not operating your Kawasaki engine more than 30 days, add fuel stabilizer to fuel tank and run engine for 5 minutes then drain the fuel tank.

After drain the fuel tank, run the engine at low idle until engine stalled.

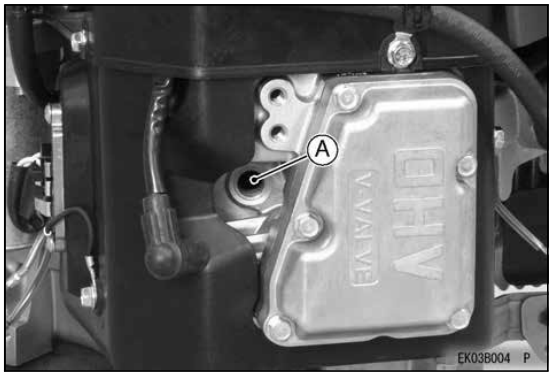
⚠ WARNING

Gasoline is extremely flammable and can be explosive under certain conditions.
Drain fuel before storing the equipment for extended periods.
Drain fuel in a well-ventilated area away from any source of flame or sparks, including any appliances with a pilot lamp. Store fuel in an approved container in safe location.

- Clean every part of the engine.
  Be sure that the engine switch or switch key is positioned at "OFF".
  Close the fuel valve and remove the sediment bowl.
  Put a pan under the fuel valve to receive the drained fuel, and open the fuel valve to drain the fuel from fuel tank completely.
- Install the sediment bowl and open the fuel valve.
- To remove the fuel from the carburetor, run the engine to use up the fuel in the carburetor.
- Remove the spark plugs and pour approx. 1 ~ 2 mL (0.06 ~ 0.1 cu. in.) of engine oil through the spark plug holes (A) and then screw the spark plugs in after turning the engine a few times. Slowly turn the engine until you feel compression and then leave it there. This blocks the air inside the cylinder and prevents rust inside the engine.
  Wipe the body with oily cloth.
  Wrap the engine with plastic sheeting and store it in a dry place.
  Change engine oil for next use after period of storage (refer to "Oil Change" section in "MAINTENANCE" chapter).

⚠ WARNING

Gasoline is a toxic substance. Dispose of gasoline properly. Contact your local authorities for approved disposal methods.



A. Spark Plug Hole

TROUBLESHOOTING GUIDE

If the engine malfunctions, carefully examine the symptoms and the operating conditions, and use the table below as a guide to troubleshooting.

Symptom		Probably Cause	Remedy
Engine won't start or output is low	Insufficient compression	Faulty pistons, cylinders, piston rings, and head gaskets	◇
		Faulty valves	
		Loose spark plugs	Tighten properly
		Loose cylinder head bolts	
	No fuel to combustion chamber	No fuel in fuel tank	Fill fuel tank
		Fuel valve not in "ON" position	Open fuel valve lever.
		Blocked fuel filter or tube	Change fuel filter or fuel tube
		Blocked air vent in tank cap	Clean fuel tank cap
		Faulty carburetor	◇
	Spark plugs fouled by fuel	Over rich fuel/air mixture	Open choke. Rotate engine with spark plugs removed to discharge excess fuel. Clean spark plugs.
		Clogged air cleaner	Clean
		Faulty carburetor	◇
		Incorrect grade/type of fuel	Change fuel
		Water in fuel	

Symptom		Probably Cause	Remedy
	No spark or weak spark	Faulty spark plugs	Replace spark plugs
		Faulty ignition coil	◇
		Engine switch left in “OFF” position	Turn engine switch to “START” position (See **M**)
Low output	Engine overheats	Clogged air cleaner	Clean
		Air inlet screen or cooling air path clogged with dirt	
		Insufficient engine oil	Replenish or change oil
		Carbon build-up in combustion chamber	◇
		Poor ventilation around engine	Select a better location
	Engine speed won’t increase	Faulty governor	◇

◇: Service to be performed by an authorized Kawasaki engine dealer or equally qualified service facility.
M: For Control Panel Switch Type, move the throttle lever on the equipment away from its low speed end to turn the engine switch to “START” position.

ENVIRONMENTAL PROTECTION

To protect our environment, properly discard used batteries, engine oil, gasoline, coolant, or other components that you might dispose of in the future.

Consult an authorized Kawasaki engine dealer or equally qualified service facility or local environmental waste agency for their proper disposal procedure.

SPECIFICATIONS

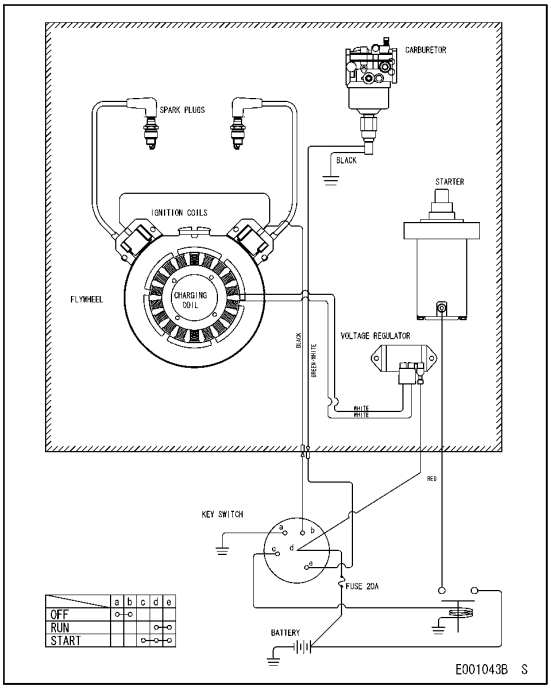
	FS651V, FS691V, FS730V
Type	Air-cooled, 4-stroke OHV, V-twin cylinder, gasoline engine
Bore × Stroke	78 × 76 mm (3.07 × 2.99 in.)
Displacement	726 mL (44.3 cu.in)
Ignition System	Solid-state ignition
Direction of Rotation	Counterclockwise facing the PTO Shaft
Starting System	Electric starter
Dry Weight : kg (lbs)	41 (90.4)

NOTE

- *Specifications are subject to change without notice.*
- *Dry weight excludes that of fuel tank and muffler.*

WIRING DIAGRAM

Wiring Diagram



NOTE

- *Portion Surrounded by hatching Shows Kawasaki Procurement Parts.*

⚠ WARNING

For electrical safety, always remove cable from negative (–) side of battery before attempting any repair or maintenance.

Battery Capacity Recommended

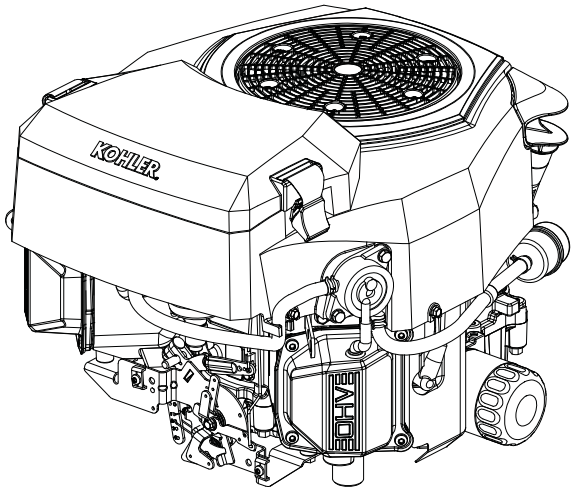
Battery Capacity
12 V 550 CCA Class

KOHLER. Confidant

EN
ESS
FRC

ZT710-ZT740

Owner's Manual



IMPORTANT:

Read all safety precautions and instructions carefully before operating equipment. Refer to operating instruction of equipment that this engine powers.

Ensure engine is stopped and level before performing any maintenance or service.

Warranty coverage as outlined in warranty card and on KohlerEngines.com. Please review carefully as it provides your specific rights and obligations.

To maintain compliance with applicable emission regulations, exhaust system backpressure may not exceed limits which can be found on KohlerEngines.com. Search by Model No., then select Specs tab.

Kohler Engines has published CO2 values on KohlerEngines.com website.

Record engine information to reference when ordering parts or obtaining warranty coverage.

Engine Model _____

Specification _____

Serial Number _____

Purchase Date _____

Safety Precautions

⚠ WARNING: A hazard that could result in death, serious injury, or substantial property damage.

⚠ CAUTION: A hazard that could result in minor personal injury or property damage.

NOTE: is used to notify people of important installation, operation, or maintenance information.

⚠ WARNING

Explosive Fuel can cause fires and severe burns.

Do not fill fuel tank while engine is hot or running.

Gasoline is extremely flammable and its vapors can explode if ignited. Store gasoline only in approved containers, in well ventilated, unoccupied buildings, away from sparks or flames. Spilled fuel could ignite if it comes in contact with hot parts or sparks from ignition. Never use gasoline as a cleaning agent.

⚠ WARNING

Carbon Monoxide can cause severe nausea, fainting or death.

Avoid inhaling exhaust fumes. Never run engine indoors or in enclosed spaces.

Engine exhaust gases contain poisonous carbon monoxide. Carbon monoxide is odorless, colorless, and can cause death if inhaled.

⚠ WARNING

Accidental Starts can cause severe injury or death.

Disconnect and ground spark plug lead(s) before servicing.

Before working on engine or equipment, disable engine as follows: 1) Disconnect spark plug lead(s). 2) Disconnect negative (–) battery cable from battery.

⚠ WARNING

Rotating Parts can cause severe injury.

Stay away while engine is in operation.

Keep hands, feet, hair, and clothing away from all moving parts to prevent injury. Never operate engine with covers, shrouds, or guards removed.

⚠ CAUTION

Electrical Shock can cause injury.

Do not touch wires while engine is running.

⚠ WARNING

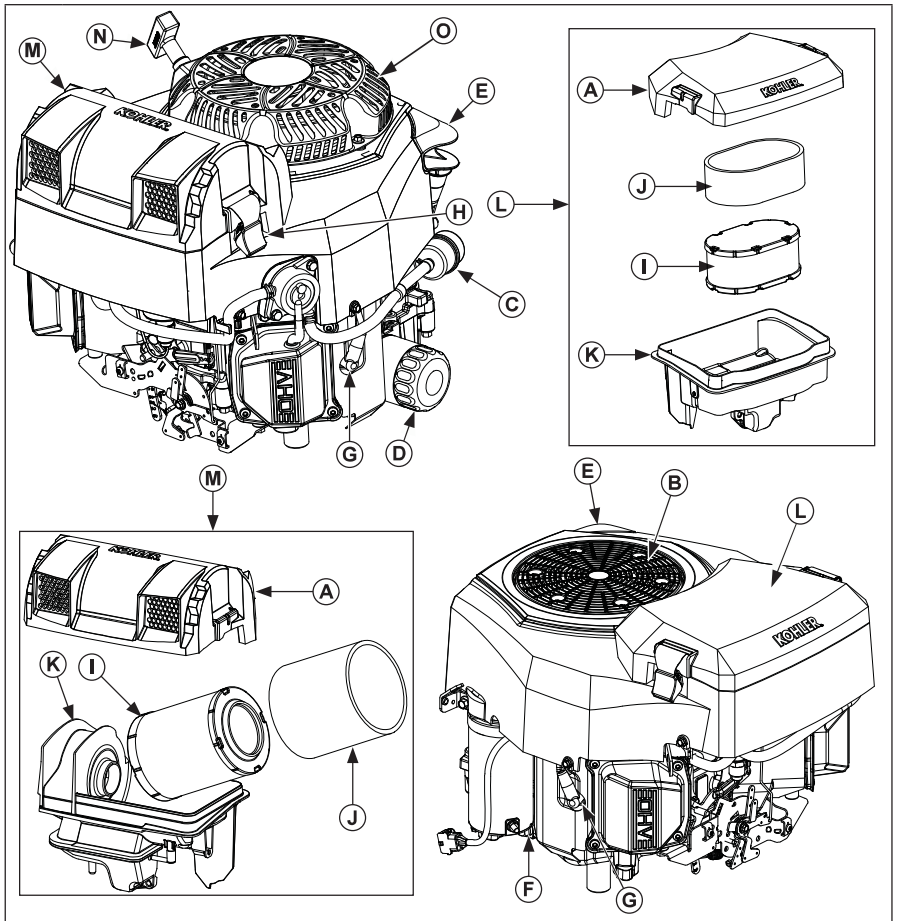
Hot Parts can cause severe burns.

Do not touch engine while operating or just after stopping.

Never operate engine with heat shields or guards removed.

⚠ WARNING: This product can expose you to chemicals including carbon monoxide and benzene, which are known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

EN



A	Air Cleaner Cover	B	Debris Screen	C	Fuel Filter	D	Oil Filter
E	Oil Fill/Dipstick	F	Oil Drain Plug	G	Spark Plug	H	Bail
I	Paper Element	J	Precleaner	K	Air Cleaner Base	L	Low-Profile Air Cleaner
M	Heavy-Duty Air Cleaner	N	Starter Handle	O	Retractable Starter		

Visit KohlerEngines.com for service parts information and purchasing options.

Pre-Start Checklist

1. Check oil level. Add oil if low. Do not overfill.
2. Check fuel level. Add fuel if low. Check fuel system components and lines for leaks.
3. Check and clean cooling areas, air intake areas and external surfaces of engine (particularly after storage).
4. Check that air cleaner components and all shrouds, equipment covers, and guards are in place and securely fastened.
5. Check spark arrestor (if equipped).

Starting

⚠ WARNING

Carbon Monoxide can cause severe nausea, fainting or death.

Avoid inhaling exhaust fumes. Never run engine indoors or in enclosed spaces.

Engine exhaust gases contain poisonous carbon monoxide. Carbon monoxide is odorless, colorless, and can cause death if inhaled.

⚠ WARNING

Rotating Parts can cause severe injury.

Stay away while engine is in operation.

Keep hands, feet, hair, and clothing away from all moving parts to prevent injury. Never operate engine with covers, shrouds, or guards removed.

NOTE: Extend starter cord periodically to check its condition. If cord is frayed have it replaced immediately by a Kohler authorized dealer.

NOTE: If using retractable start, slowly pull starter handle until just past compression-STOP! Return starter handle; firmly pull straight out to avoid excessive rope wear from starter rope guide.

Standard Choke System

- **Above 32°F (0°C)**

Refer to operating instructions of equipment this engine powers for specific starting instructions.

- **32°F (0°C) and Below**

1. Refer to operating instructions of equipment this engine powers for specific starting instructions.
2. Refer to Cold Weather Starting Hints within this manual.

eChoke$_{TM}$

- **Above 32°F (0°C)**

1. This feature will automatically make system adjustments to engine on start up with throttle in any position.
2. If engine does not start on first attempt, wait 3-5 seconds (do not turn key to OFF position) and try again. If no start after third attempt, wait 1 minute and try again.
3. If engine does not start consistently by fifth attempt, turn key to OFF position, pause briefly, turn key to RUN position, pause briefly again and then turn key to START position, attempting to start engine. If engine still does not start, consult Kohler authorized dealer for assistance.

- **32°F (0°C) and Below**

1. This feature will automatically make system adjustments to engine on start up with throttle in any position. Winter blend fuel is recommended.
2. If engine does not start on first attempt, wait 3-5 seconds (do not turn key to OFF position) and try again. If no start after third attempt, wait 1 minute and try again.
3. If engine does not start consistently by fifth attempt, turn key to OFF position, pause briefly, turn key to RUN position, pause briefly again and then turn key to START position, attempting to start engine. If engine still does not start, consult Kohler authorized dealer for assistance.

Cold Weather Starting Hints

1. Use proper oil for temperature expected.
2. Disengage all possible external loads.
3. Use fresh winter grade fuel. Winter grade fuel has higher volatility to improve starting.
4. Make sure battery has a full charge.

Stopping

1. If possible, remove load by disengaging all PTO driven attachments.
2. Position throttle control between half and full throttle; stop engine.
3. Do not allow engine/application to be left unattended with key ON (RUN position) for long periods (30 minutes or longer). If left in such a condition, operator must turn key completely OFF before attempting a restart to reset system.

Angle of Operation

Refer to operating instructions of equipment this engine powers. Do not operate this engine exceeding maximum angle of operation; see specification table. Engine damage could result from insufficient lubrication.

Engine Speed

NOTE: Do not tamper with governor setting to increase maximum engine speed. Overspeed is hazardous and will void warranty.

High Altitude Operation

If this engine is operated at an altitude of 4000 ft. (1219 meters) or above, a high altitude carburetor kit is required. To obtain high altitude carburetor kit information or to find a Kohler authorized dealer, visit KohlerEngines.com or call 1-800-544-2444 (U.S. and Canada).

This engine should be operated in its original configuration below 4000 ft. (1219 meters).

Operating this engine with the wrong engine configuration at a given altitude may increase its emissions, decrease fuel efficiency and performance, and result in damage to the engine.

Maintenance Instructions

⚠ WARNING

Accidental Starts can cause severe injury or death. Disconnect and ground spark plug lead(s) before servicing.

Before working on engine or equipment, disable engine as follows: 1) Disconnect spark plug lead(s). 2) Disconnect negative (–) battery cable from battery.

Normal maintenance, replacement or repair of emission control devices and systems may be performed by any repair establishment or individual; however, warranty repairs must be performed by a Kohler authorized dealer found at KohlerEngines.com or 1-800-544-2444 (U.S. and Canada).

Maintenance Schedule

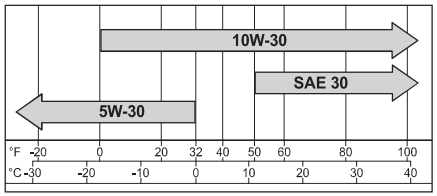
Every 25 Hours[1]
• Service/replace precleaner.
• Replace air cleaner element (if not equipped with precleaner).
Every 100 Hours[1]
• Replace air cleaner element (if equipped with precleaner).
• Change oil and filter.
• Remove cooling shrouds and clean cooling areas.
Every 100 Hours
• Check that all fasteners are in place and components are properly secured.
• Replace fuel filter.
Every 500 Hours[2]
• Have valve lash checked/adjusted.
Every 500 Hours
• Replace spark plugs and set gap.

[1] Perform these procedures more frequently under severe, dusty, dirty conditions.

[2] Have a Kohler authorized dealer perform this service.

Oil Recommendations

We recommend use of Kohler oils for best performance. Other high-quality detergent oils (including synthetic) of API (American Petroleum Institute) service class SJ or higher are acceptable. Select viscosity based on air temperature at time of operation as shown in table below.



Check Oil Level

NOTE: To prevent extensive engine wear or damage, never run engine with oil level below or above operating range indicator on dipstick.

Ensure engine is cool. Clean oil fill/dipstick areas of any debris.

1. Remove dipstick; wipe oil off.
2. Reinsert dipstick into tube; press completely down.
3. Remove dipstick; check oil level. Level should be at top of indicator on dipstick.
4. If oil is low on indicator, add oil up to top of indicator mark.
5. Reinstall and secure dipstick.

Change Oil and Filter

Change oil while engine is warm.

1. Clean area around oil fill cap/dipstick. Remove drain plug and oil fill cap/dipstick. Allow oil to drain completely.
2. Clean area around oil filter. Place a container under filter to catch any oil and remove filter. Wipe off mounting surface. Reinstall drain plug. Torque to 10 ft. lb. (13.6 N·m).
3. Place new filter in shallow pan with open end up. Fill with new oil until oil reaches bottom of threads. Allow 2 minutes for oil to be absorbed by filter material.
4. Apply a thin film of clean oil to rubber gasket on new filter.
5. Refer to instructions on oil filter for proper installation.
6. Fill crankcase with new oil. Level should be at top of indicator on dipstick.
7. Reinstall oil fill cap/dipstick and tighten securely.
8. Start engine; check for oil leaks. Stop engine; correct leaks. Recheck oil level.
9. Dispose of used oil and filter in accordance with local ordinances.

Oil Sentry™ (if equipped)

This switch is designed to prevent engine from starting in a low oil or no oil condition. Oil Sentry™ may not shut down a running engine before damage occurs. In some applications this switch may activate a warning signal. Read your equipment manuals for more information.

Fuel Recommendations

⚠ WARNING

Explosive Fuel can cause fires and severe burns.

Do not fill fuel tank while engine is hot or running.

Gasoline is extremely flammable and its vapors can explode if ignited. Store gasoline only in approved containers, in well ventilated, unoccupied buildings, away from sparks or flames. Spilled fuel could ignite if it comes in contact with hot parts or sparks from ignition. Never use gasoline as a cleaning agent.

NOTE: E15, E20 and E85 are NOT approved and should NOT be used; effects of old, stale or contaminated fuel are not warrantable.

Fuel must meet these requirements:

- Clean, fresh, unleaded gasoline.
- Octane rating of 87 (R+M)/2 or higher.
- Research Octane Number (RON) 90 octane minimum.
- Gasoline up to 10% ethyl alcohol, 90% unleaded is acceptable.
- Methyl Tertiary Butyl Ether (MTBE) and unleaded gasoline blend (max 15% MTBE by volume) are approved.
- Do not add oil to gasoline.
- Do not overfill fuel tank.
- Do not use gasoline older than 30 days.

Fuel Line

Low permeation fuel line must be installed on carbureted Kohler Co. engines to maintain EPA and CARB regulatory compliance.

Spark Plugs

⚠ CAUTION

Electrical Shock can cause injury.

Do not touch wires while engine is running.

Clean out spark plug recess. Remove plug and replace.

1. Check gap using wire feeler gauge. Adjust gap, see specification table for adjustment.
2. Install plug into cylinder head.
3. Torque plug to 20 ft. lb. (27 N·m).

Air Cleaner

NOTE: Operating engine with loose or damaged air cleaner components could cause premature wear and failure. Replace all bent or damaged components.

NOTE: Paper element cannot be blown out with compressed air.

Move bails on air cleaner cover up; remove latches from cover; remove cover.

Precleaner (if equipped):

1. Remove precleaner from paper element.
2. Replace or wash precleaner in warm water with detergent. Rinse and allow to air dry.
3. Lightly oil precleaner with new engine oil; squeeze out excess oil.
4. Reinstall precleaner over paper element.

Paper Element:

1. Separate precleaner from element; service precleaner and replace paper element.
2. Install precleaner over new paper element and install on base.

Reinstall cover; place latches onto cover; pull down bails to secure cover.

Breather Tube

Ensure both ends of breather tube are properly connected.

Air Cooling

⚠ WARNING

Hot Parts can cause severe burns.

Do not touch engine while operating or just after stopping.

Never operate engine with heat shields or guards removed.

Proper cooling is essential. To prevent over heating, clean screens, cooling fins, and other external surfaces of engine. Avoid spraying water at wiring harness or any electrical components. See Maintenance Schedule.

Repairs/Service Parts

We recommend that you use a Kohler authorized dealer for all maintenance, service, and engine parts. To find a Kohler authorized dealer visit KohlerEngines.com or call 1-800-544-2444 (U.S. and Canada).

Storage

If engine will be out of service for 2 months or more follow procedure below.

1. Add Kohler PRO Series fuel treatment or equivalent to fuel tank. Run engine 2-3 minutes to get stabilized fuel into fuel system (failure due to untreated fuel are not warrantable).
2. Change oil while engine is still warm from operation. Remove spark plug(s) and pour about 1 oz. of engine oil into cylinder(s). Replace spark plug(s) and crank engine slowly to distribute oil.
3. Disconnect negative (–) battery cable.
4. Store engine in a clean, dry place.

Troubleshooting

Do not attempt to service or replace major engine components, or any items that require special timing or adjustment procedures. This work should be performed by a Kohler authorized dealer.

Problem	Possible Cause							
	No Fuel	Improper Fuel	Dirt In Fuel Line	Dirty Debris Screen	Incorrect Oil Level	Engine Overloaded	Dirty Air Cleaner	Faulty Spark Plug
Will Not Start	•	•	•		•	•	•	•
Hard Starting		•	•		•	•	•	•
Stops Suddenly	•		•	•	•	•	•	•
Lacks Power		•	•	•	•	•	•	•
Operates Erratically		•	•	•		•	•	•
Knocks or Pings		•		•		•		•
Skips or Misfires		•	•	•			•	•
Backfires		•	•			•	•	•
Overheats		•	•	•	•	•	•	
High Fuel Consumption						•	•	•

Engine Specifications

Model	Bore	Stroke	Displacement	Oil Capacity (Refill)	Spark Plug Gap	Maximum Angle of Operation (@ full oil level)*
ZT710	3.27 in. (83 mm)	2.6 in. (67 mm)	44.2 cu. in. (725 cc)	2.0 U.S. qt. (1.9 L)	0.030 in. (0.76 mm)	25°
ZT720						
ZT730		2.7 in. (69 mm)	45.6 cu. in. (747 cc)			
ZT740						

*Exceeding maximum angle of operation may cause engine damage from insufficient lubrication.

Additional specification information can be found in service manual at KohlerEngines.com.

Any and all horsepower (hp) references by Kohler are Certified Power Ratings and per SAE J1940 & J1995 hp standards. Details on Certified Power Ratings can be found at KohlerEngines.com.

Emission Control System

Exhaust Emission Control System for models ZT710-ZT740 is EM for U.S. EPA, California, and Europe.

NOTE: Tampering with the engine and its emission control system voids the EPA Certificate of Conformity, ARB Executive Order, and EU type-approval.

COUNTRY CLIPPER LIMITED WARRANTY

Models: Challenger, Charger, Boss XL

Effective October 1, 2017

Consumer Limited Warranty

Country Clipper, a Division of Shivvers Mfg., Inc. will Warrant on the terms and conditions herein, that we will repair, adjust, or replace parts found by examination by the factory or by an authorized Country Clipper dealer to be defective in material, workmanship, or both, and operated and maintained as shown by Country Clipper's instructions and manuals for a period of 5 years of Residential use* from the date of original purchase. The first two years will include parts and labor. The third year will be parts only. The fourth and fifth year will be parts only on the mower deck weldment and frame weldment due to structural defect.

*Residential use is defined as use of the equipment on property the same as your primary residence or farmstead. If the equipment is used on more than one property, this is considered Commercial use, and the Commercial Warranty will apply. If usage exceeds industry norms for Residential mowing, validation of usage maybe required to retain the Consumer Limited Warranty.

Commercial Limited Warranty

When used for Commercial, business, production agriculture, horticultural or non-profit institutional use, the Limited Warranty term is 5 years from date of purchase. The first 2 years will provide allowance for parts and labor. The third year will be parts only for deck spindles, mower deck weldment and frame weldment. The fourth and fifth year will be parts only on the mower deck weldment and frame weldment due to structural defect. Mowers used for Rental purposes are not Warranted.

The Warranty applies to Country Clipper Challenger, Charger, Boss XL and subsequent revisions to these models sold in the United States and Canada until said warranty is revised. This Warranty applies to the original purchaser only and is non-transferable.

Warranty Exceptions

Normal service parts are Warranted for 90 days from the original purchase date for defects in materials or workmanship (Belts, Tires, Deck Rollers, Mower Blades, Deck Chute, and Plastic/Cloth Seat Components).

Batteries have a 6 month Warranty by the battery manufacturer.

Related accessories are Warranted for 1 year from their original date of purchase.

The engine Warranty is covered by the engine manufacture and is not Warranted by Country Clipper. The engine manufacturer’s Warranty statement is included in the literature packet.

The transmission Warranty is covered by the transmission manufacture and is not Warranted by Country Clipper. The transmission manufacturer's Warranty statement is included in the literature packet.

Items and Conditions Not Covered by this Warranty

Items and conditions not covered include:

- Pickup and delivery charges to and from authorized Country Clipper dealer.
- Repair or replacement caused by accident, misuse, neglectful or improper maintenance, improper repairs performed or parts installed, use of After Market parts, unauthorized alteration or modification, and/or normal wear and deterioration for turf equipment.
- Routine maintenance services, adjustments, cleaning and / or expendables (i.e. mower blades, lubricants, fuel, fuel filters, spark plugs, oil, oil filters, and air filters)
- Damaged incurred due to a natural disaster or exposure to the elements.
- Repairs required due to use of incompatible parts, accessories, or supplies used on the equipment other than recommended in the operator's manual or other instructional guides provided by Country Clipper.

Replacement Parts

Replacement parts for Residential and Commercial use mowers that have exceeded the Warranty period are Warranted for 90 days from the date of replacement against defects in material and workmanship. A proof of purchase, of the replacement part, is required at the time the claim is submitted. Labor on replacement parts is not Warranted. Replacement parts on mowers used for Rental operation are not Warranted.

There are no other express Warranties for this product in effect during this time period.

An authorized Country Clipper dealer must perform all Warranty work using Country Clipper approved parts.

Obtaining Warranty Service

A completed Warranty registration must be submitted within 10 days of the date of purchase. If the dealer does not register the product, the customer is responsible to complete the product registration card in the literature package and return it to Country Clipper. The servicing dealer will require a proof of purchase if the product has not been registered.

Customer Responsibility

- The owner is responsible for delivery of the mower to the Country Clipper approved servicing dealer, within the Warranty period, and its return after Warranty work is completed.

- The owner is responsible for maintaining and adjusting the equipment as outlined in the owner's manual.
- Prompt notification to an Authorized Country Clipper Dealer or Country Clipper representative of the need for warranty repair.
- Having the warranty work performed by an authorized Country Clipper Dealer.
- Contacting the desired Country Clipper servicing dealer to arrange the service through their shop.

Contact the desired Country Clipper servicing dealer to arrange the service through their shop. Use our dealer locator at www.countryclipper.com or U.S. and Canada customers can call 800-344-8237 to locate their nearest dealer.

General Conditions

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

All implied Warranties, including those of merchantability and fitness for a particular purpose are, unless specifically required by the law of the jurisdiction, hereby excluded. Where implied Warranties are required by law, including those of merchantability and fitness for a particular purpose, they are, where allowed by the law of the State, limited to the above stated term of this Warranty. Liability for consequential damages, under any and all Warranties, both express and implied are hereby excluded unless specifically required by the statutory law of the jurisdiction. No claim of breach of Warranty shall be cause for cancellation or rescission of the contract of sale of Country Clipper equipment.

This Warranty gives you specific legal rights, and you may also have other rights, which vary from region to region.

To obtain the nearest servicing dealer:

Dealer locator: www.countryclipper.com
Email: service@countryclipper.com
Phone: 800-344-8237 or 641-872-2544

Mail: Country Clipper a Division of
Shivvers Manufacturing Inc.
613 West English St.
Corydon, IA 50060

KAWASAKI LIMITED WARRANTY
FOUR-CYCLE ENGINE

Kawasaki Motors Corp., U.S.A., P.O. Box 888285, Grand Rapids, MI 49588-8285 (hereinafter "Kawasaki") warrants to the initial purchaser of each new Kawasaki four-cycle engine purchased in any of the following regions: North, Central or South America, Caribbean, Australia, New Zealand, and all territories of the United States of America (collectively, the "Purchase Area") that it will repair or replace, free of charge, any engine parts found to be defective, under normal use and proper maintenance, for a period of thirty-six (36) months, subject to the following conditions, exclusions, obligations and limitations. If you have questions about warranty coverage in your region, please contact the local Kawasaki dealer.

1. COVERAGE.

a. Any factory-installed engine part found to be defective by Kawasaki within the thirty-six (36) month warranty term shall be repaired or replaced without charge for parts or labor at any authorized Kawasaki engine dealer located within the purchase area.

2. **OWNER'S OBLIGATIONS.** The following obligations must be fulfilled by owner to maintain the validity of the Kawasaki limited warranty:

a. Owner must deliver the four-cycle engine to an authorized Kawasaki engine dealer or equally qualified service facility for inspection, maintenance services and adjustments according to the Periodic Maintenance Chart contained in the owner's manual. The inspection, maintenance services and adjustments are to be performed at owner's expense.

b. Owner must present proof of initial retail purchase date to an authorized Kawasaki engine dealer at the time warranty repairs are performed on the four-cycle engine.

3. **LIMITATIONS.** This limited warranty shall not apply to or include any of the following:

a. Repair or replacement required as a result of (i) accident, (ii) misuse or neglect, (iii) lack of reasonable and proper maintenance, (iv) repairs improperly performed or replacements improperly installed, (v) use of replacement parts or accessories not conforming to Kawasaki specifications which adversely affect performance and/or durability, (vi) alterations or modifications not recommended or approved in writing by Kawasaki, and/or (vii) wear and deterioration occasioned by the use of the four-cycle engine.

b. Routine maintenance services, adjustments, cleaning and/or expendables such as spark plugs, lubricants, oil filters, air filters, and fuel filters.

4. **LIMITED LIABILITY**.

a. The liability of Kawasaki under the thirty-six (36) month warranty is limited solely to the remedying of defects in factory-installed engine parts by an authorized Kawasaki engine dealer at its place of business during customary business hours. This warranty does not cover inconvenience or loss of use of the four-cycle engine or transportation of the four-cycle engine to and from the Kawasaki dealer. KAWASAKI SHALL NOT BE LIABLE FOR ANY OTHER EXPENSE, LOSS OR DAMAGE, WHETHER DIRECT, INCIDENTAL, CONSEQUENTIAL OR EXEMPLARY ARISING IN CONNECTION WITH THE SALE OR USE OF OR INABILITY TO USE THE KAWASAKI FOUR-CYCLE ENGINE FOR ANY PURPOSE. SOME STATES DO NOT ALLOW THE EXCLUSION OR LIMITATIONS OF ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATION OR EXCLUSION MAY NOT APPLY TO YOU.

b. NO EXPRESS WARRANTY IS GIVEN BY KAWASAKI WITH RESPECT TO THE KAWASAKI FOUR-CYCLE ENGINE EXCEPT AS SPECIFICALLY SET FORTH HEREIN. ANY WARRANTY IMPLIED BY LAW, INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, IS EXPRESSLY LIMITED TO THE THIRTY-SIX (36) MONTH WARRANTY TERM SET FORTH HEREIN. THE FOREGOING STATEMENTS OF WARRANTY ARE EXCLUSIVE AND IN LIEU OF ALL OTHER REMEDIES. SOME STATES DO NOT ALLOW LIMITATIONS ON HOW LONG AN IMPLIED WARRANTY LASTS, SO THE ABOVE LIMITATIONS MAY NOT APPLY TO YOU.

c. No distributor, dealer or other four-cycle engine reseller is authorized to modify this Kawasaki Limited Four-Cycle Warranty.

5. **LEGAL RIGHTS.** THIS WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS, AND YOU MAY ALSO HAVE OTHER RIGHTS WHICH VARY FROM STATE TO STATE .

Effective 9/1/2017 P/N 99969-6443

EMISSION CONTROL SYSTEM WARRANTY STATEMENT

This warranty statement outlines the emission warranty coverage provided by Kawasaki Motors Corp. U.S.A. ("Kawasaki") for small off-road engines sold in the U.S. and its territories, as well as the 13 provinces and territories of Canada. This warranty statement is divided into two parts. Part I warrants that a new Kawasaki small off-road engine complies with U.S. EPA and Environment Canada emissions regulations. Part II warrants that a new Kawasaki small off-road engine certified for sale in California also complies with the State of California's emissions regulations.

Part I: United States and Canada

Your Warranty Rights and Obligations

Your new small off-road engine must be designed, built and equipped to meet the U.S. EPA emission standards for small off-road engines with maximum engine power at or below 19 kilowatts or an engine displacement less than 1 liter. Kawasaki must warrant the emission control system on your small off-road engine for the period of time listed below, provided there has been no abuse, neglect, or improper maintenance of your small off-road engine. Where a warrantable condition exists, Kawasaki will repair your small off-road engine at no cost to you including diagnosis, parts, and labor.

Your emission control system may include such parts as the carburetor or fuel injection system, the ignition system, and catalytic converter. Also included may be hoses, connectors, and other emission-related assemblies. For a list of the emission control system parts covered under this warranty, please contact your nearest Kawasaki Dealer or contact Kawasaki directly at 877-364-6404.

Warranty Coverage

Kawasaki warrants to the original retail purchaser, and each subsequent purchaser, that the small off-road engine, including all parts of its emission control system, is:

1. designed, built, and equipped to conform to the U.S. EPA and Environment Canada emission standards at the time of sale to the original retail purchaser; and
2. free from defects in materials and workmanship that may keep it from meeting the requirements under these emission standards.

This warranty begins on the date the small off-road engine is delivered to the original retail purchaser and extends for a period of three years. This warranty covers all components whose failure would increase the emissions of any regulated pollutant. This warranty does not cover components whose failure would not increase the engine's emissions of any regulated pollutants.

Owner's Warranty Responsibility

As the small off-road engine owner, you are responsible for the performance of the required maintenance listed in your owner's manual. Kawasaki recommends that you retain all receipts covering maintenance on your small off-road engine, but Kawasaki cannot deny warranty coverage solely for the lack of receipts or for your failure to ensure the performance of all scheduled maintenance.

As the small off-road engine owner, you should, however, be aware that Kawasaki may deny you warranty coverage if your small off-road engine or a part has failed due to abuse, neglect, improper maintenance, or unapproved modifications.

You are responsible for presenting your small off-road engine to a Kawasaki dealer as soon as a problem exists. The emission related warranty repairs should be completed in a reasonable amount of time, not to exceed 30 days.

If you have any questions regarding your emission warranty rights and responsibilities, you should contact:

Kawasaki Motors Corp. U.S.A.
Consumer Services Department 5080 36th Street S.E.
Grand Rapids, MI 49512
Telephone: (877) 364-6404 Email: kawpower-website@kmc-usa.com

To Obtain Warranty Service

You must, at your own expense, take your Kawasaki small off-road engine or the product on which it is installed, along with proof of original purchase date, to any Kawasaki Dealer who is authorized by Kawasaki to sell and service that Kawasaki product during the Dealer's normal business hours. Claims for repair or adjustments found to be caused solely by defects in material or workmanship will not be denied because the engine was not properly maintained and used.

If however, you reside more than 100 miles from an authorized service center in the contiguous states, excluding certain high-altitude areas, Kawasaki will either pay for shipping costs to and from an authorized service center, provide for a service technician to come to the owner to make the warranty repair, or pay for the repair to be made at a local non-authorized service center. If you are unable to obtain emission warranty service or are dissatisfied with the warranty service you received, contact the owner of the dealership involved. However, if you require further assistance, contact Kawasaki directly via the contact information above.

Exclusions

Failures other than those resulting from defects in material or workmanship are not covered by this warranty.

This warranty does not extend to emission control systems and parts that are affected or damaged by owner abuse, misuse, neglect, improper maintenance or repairs, misfueling, improper storage, collision, the use of unsuitable attachments, or the unauthorized alteration of any part.

This warranty does not cover replacement of parts or other services and adjustments necessary for required maintenance at and after the first scheduled replacement point.

Disclaimer of Consequential Damages and Limitation of Implied Warranties

Kawasaki Motors Corp. disclaims responsibility for incidental or consequential damages such as loss of time or the use of the power equipment, or any commercial loss due to the failure of the equipment; and any implied warranties are limited to the duration of this written warranty. This warranty is applicable only where the California, U.S. EPA, or Environment Canada emission control system warranty regulation is in effect.

Part II: CALIFORNIA EMISSIONS CONTROL WARRANTY STATEMENT

Your Warranty Rights and Obligations

The California Air Resources Board and Kawasaki are pleased to explain the emission control system warranty on your model year 2016/2017 small off-road engine. In California, new small off-road engines must be designed, built, and equipped to meet the State's stringent anti-smog standards. Kawasaki must warrant the emission control system on your small off-road engine for the periods of time listed below provided there has been no abuse, neglect or improper maintenance of your small off-road engine.

Your emission control system may include such parts as the carburetor or fuel injection system, the ignition system, and catalytic converter. Also included may be hoses, belts, connectors, and other emission-related assemblies.

Where a warrantable condition exists, Kawasaki will repair your small off-road engine at no cost to you including diagnosis, parts and labor.

Manufacturer's Warranty Coverage

The 1995 and later small off-road engines are warranted for three years. If any emission-related part on your small off-road engine is defective, the part will be repaired or replaced by Kawasaki.

Owner's Warranty Responsibility

As the small off-road engine owner, you are responsible for the performance of the required maintenance listed in your owner's manual. Kawasaki recommends that you retain all receipts covering maintenance on your small off-road engine, but Kawasaki cannot deny warranty coverage solely for the lack of receipts or for your failure to ensure the performance of all scheduled maintenance.

As the small off-road engine owner, you should however be aware that Kawasaki may deny you warranty coverage if your small off-road engine or a part has failed due to abuse, neglect, improper maintenance, or unapproved modifications.

You are responsible for presenting your small off-road engine to a Kawasaki distribution center as soon as a problem exists. The warranty repairs should be completed in a reasonable amount of time, not to exceed 30 days.

If you have any questions regarding your warranty rights and responsibilities, you should contact:

Kawasaki Motors Corp. U.S.A.
Consumer Services Department 5080 36th Street S.E.
Grand Rapids, MI 49512
Telephone: (877) 364-6404 Email: kawpower-website@kmc-usa.com

General Emissions Warranty Coverage

Kawasaki warrants to the ultimate purchaser and each subsequent purchaser that the small off-road engine is:

1. designed, built, and equipped so as to conform with all applicable regulations adopted by the Air Resources Board pursuant to its authority in Chapters 1 and 2, Part 5, Division 26 of the Health and Safety Code; and
2. free from defects in materials and workmanship that cause the failure of a warranted part to be identical in all material respects to the part as described in Kawasaki's application for certification.

The warranty period begins on the date the engine or equipment is delivered to an ultimate purchaser or first placed into service. The equipment or engine owner will not be charged for diagnostic labor that is directly associated with diagnosis of a defective, emission-related warranted part, provided that such diagnostic work is performed at a Kawasaki warranty station.

Engine parts outlined in the Periodic Maintenance Chart found in the Owners Manual provided with this engine, are warranted as follows:

1. Any warranted part that is not scheduled for replacement as required maintenance in the Periodic Maintenance Chart, is warranted for the warranty period stated above. If any such part fails during the warranty period, the part will be repaired or replaced by Kawasaki at no charge to the owner provided the repair or replacement is performed at a warranty station. Any such part repaired or replaced under the warranty will be warranted for the remaining warranty period.
2. Any warranted part that is scheduled only for regular inspection in the Periodic Maintenance Chart is warranted for the warranty period stated above. Any such part repaired or replaced under warranty will be warranted for the remaining warranty period.
3. Any warranted part that is scheduled for replacement as required maintenance in the Periodic Maintenance Chart is warranted for the period of time before the first scheduled replacement date for that part. If the part fails before the first scheduled replacement, the part will be repaired or replaced by Kawasaki at no charge to the owner provided the repair or replacement is performed at a warranty station. Any such part repaired or replaced under warranty will be warranted for the remainder of the period prior to the first scheduled replacement point for the part.

Kawasaki is liable for damages to other engine components proximately caused by a failure under warranty of any warranted part.

Throughout the engine's warranty period defined above, Kawasaki will maintain a supply of warranted parts sufficient to meet the expected demand for such parts. Any replacement part may be used in the performance of any warranty maintenance or repairs and will be provided without charge to the owner. Such use will not reduce the warranty obligations of Kawasaki.

Add-on or modified parts, as defined in Section 1900(b)(1) and (b)(10), Title 13, that are not exempted by the Air Resources Board may not be used. The use of any non-exempted add-on or modified parts by the ultimate purchaser will be grounds for disallowing a warranty claim made in accordance with this article. Kawasaki will not be liable under this article to warrant failures of warranted parts caused by the use of a non-exempted add-on or modified part.

To Obtain Warranty Service

Notwithstanding the provisions herein, warranty services or repairs will be provided at all Kawasaki distribution centers that are franchised to service the subject engines.

You must, at your own expense, take your Kawasaki small off-road engine or the product on which it is installed, along with proof of original purchase date, to any Kawasaki Dealer who is authorized by Kawasaki to sell and service that Kawasaki product during the Dealer's normal business hours. Claims for repair or adjustments found to be caused solely by defects in material or workmanship will not be denied because the engine was not properly maintained and used.

If you are unable to obtain emission warranty service or are dissatisfied with the warranty service you received, contact the owner of the dealership involved. However, if you require further assistance, contact the Kawasaki office in your region:

Kawasaki Motors Corp., U.S.A.
9950 Jeronimo Road
Irvine, CA 92618
Telephone: (949) 770-0400 Email: kawpower-website@kmc-usa.com

Exclusions

(1) The repair or replacement of any warranted part otherwise eligible for warranty coverage as stated above may be excluded from such warranty coverage if Kawasaki demonstrates that the engine has been abused, neglected, or improperly maintained, and that such abuse, neglect, or improper maintenance was the direct cause of the need for repair or replacement of the part.
(2) Kawasaki warrants your engine only for the warranty period specified above.
(3) Except as provided above, any adjustment of a component that has a factory installed, and properly operating, adjustment limiting device (such as an idle limiter cap or plug) is eligible for warranty coverage as stated above.

Disclaimer of Consequential Damage and Limitation of Implied Warranties:

Kawasaki Motors Corp. disclaims responsibility for incidental or consequential damages such as loss of time or the use of the power equipment, or any commercial loss due to the failure of the equipment; and any implied warranties are limited to the duration of this written warranty. This warranty is applicable only where the California, U.S. EPA, or Environment Canada emission control system warranty regulation is in effect.

Warranted Parts List:

The following is the emission warranty parts list for your small off-road engine:

(i) Fuel Metering System
  (A) Carburetor and internal parts (and/or pressure regulator or fuel injection system)
  (B) Cold start enrichment system
  (C) Intake valve(s)
(ii) Air Induction System
  (A) Intake manifold
  (B) Air filter
(iii) Ignition System
  (A) Spark plugs
  (B) Magneto or electronic ignition system
  (C) Spark advance/retard system
  (D) Ignition coil and/or control module
(iv) Lubrication System
  (A) Oil pump and internal parts
(v) Positive Crankcase Ventilation (PCV) System
  (A) PCV valve
  (B) Oil filler cap
(vi) Catalyst or Thermal Reactor System
  (A) Catalytic converter
  (B) Exhaust manifold
  (C) Exhaust valve(s)
(vii) Miscellaneous Items Used in Above Systems
  (A) Hoses, clamps, fittings, tubing, sealing gaskets or devices, and mounting hardware
  (B) Pulleys, belts and idlers
  (C) Vacuum, temperature, check, and time sensitive valves and switches
  (D) Electronic Controls

Emissions related parts may vary from model to model. Certain models may not contain all of those parts and certain models may contain functionally equivalent parts.

LIMITED WARRANTY, CONFIDANT

Kohler Co. warrants to the original retail consumer that each new engine will be free from manufacturing defects in materials or workmanship for the applicable coverage period as set forth below, beginning on date of purchase; provided the engine is operated and maintained in accordance with Kohler Co.'s instructions and manuals.

Type of use

Residential	3 Years
Commercial/Rental	3 Years

Our obligation under this warranty is expressly limited, at our option, to the replacement or repair of such part or parts as inspection shall disclose to be defective at Kohler Co., Kohler, Wisconsin 53044, or at a service facility designated by Kohler Co.

EXCLUSIONS:

Mufflers on engines used commercially (non-residential) are warranted for one (1) year from date of purchase, except catalytic mufflers, which are warranted for two (2) years.
The following items are not covered by this warranty.

- Damage caused as a result of an accident or casualty.
- Failures caused by faulty repairs made by others.
- Failures caused by use of non-Kohler replacement service parts.
- Transportation charges in connection with the repair or replacement of defective parts.
- Repairs caused from improper storage, old or contaminated fuel left within the fuel system (tanks, fuel lines or carburetor).
- Damage caused from unreasonable use or neglect, normal wear, or premature wear from improper maintenance.

Engine accessories such as fuel tanks, clutches, transmissions, power drive assemblies, and batteries, unless supplied or installed by Kohler Co. These are subject to the warranties, if any, of their manufacturers.

IMPLIED OR STATUTORY WARRANTIES, INCLUDING WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, ARE EXPRESSLY LIMITED TO THE DURATION OF THIS WRITTEN WARRANTY. WE MAKE NO OTHER EXPRESS WARRANTY, OR IS ANYONE AUTHORIZED TO MAKE ANY ON OUR BEHALF. KOHLER CO. AND/OR THE SELLER SHALL NOT BE LIABLE FOR SPECIAL, INDIRECT, INCIDENTAL, OR CONSEQUENTIAL DAMAGES OF ANY KIND.

Some states or countries do not allow limitations on how long an implied warranty lasts, or 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 country to country, or state to state within U.S.A.

TO OBTAIN WARRANTY SERVICE:
Original retail consumer must bring the engine to an authorized Kohler dealer found by visiting www.KohlerEngines.com or telephone 1-800-544-2444 (U.S.A. and Canada).

Warranty Conditions-Australia

The benefits given to you under this warranty are in addition to other rights and remedies that you have under Australian law in relation to the goods.
All costs associated with claiming under this warranty must be borne by the consumer, including transport costs incurred in the repair or replacement of any defective part. Our goods come with guarantees that cannot be excluded under the Australian Consumer Law. You are entitled to a replacement or refund for a major failure and for compensation for any other reasonably foreseeable loss or damage. You are also entitled to have the goods repaired or replaced if the goods fail to be of acceptable quality and the failure does not amount to a major failure.

Kohler Co. Service Agent in Australia:
EPG Engines
31 Powers Road
Seven Hills, NSW, 2147
61 2 9830 2295
61 1800 069 399
www.epgengines.com.au
ENGINE DIVISION, Kohler Co., Kohler Wisconsin

B) CALIFORNIA AND FEDERAL EXHAUST AND EVAPORATIVE EMISSIONS CONTROL WARRANTY STATEMENT YOUR WARRANTY RIGHTS AND OBLIGATIONS

The California Air Resources Board, US Environmental Protection Agency (“US EPA”) and Kohler Co. are pleased to explain the exhaust and evaporative emissions control systems warranty on your 2018-2020 Small Off-Road Engine (“SORE”) and engine powered equipment as applicable. In California and the USA, new equipment that use SORE must be designed, built and equipped to meet California and US EPA stringent anti-smog standards. Kohler Co. must warrant the emission control systems on your SORE and engine powered equipment for the period listed below provided there has been no abuse, neglect or improper maintenance of your SORE or engine powered equipment leading to the failure of the emission control systems.

Your exhaust emission control systems may include parts such as carburetors, fuel-injection systems, the ignition system, and catalytic converters. Also included may be an evaporative emission control system which may include parts such as fuel tanks, fuel lines (for liquid fuel and vapors), fuel caps, valves, carbon canisters, clamps, connectors, and other associated components.

MANUFACTURER'S WARRANTY COVERAGE:

The 1995 and later SORE exhaust and evaporative emission control systems are warranted for three years. If any exhaust or evaporative emission-related part on your SORE or engine powered equipment is defective, the part will be repaired or replaced by Kohler Co.

OWNER'S WARRANTY RESPONSIBILITIES:

As the SORE or engine powered equipment owner, you are responsible for the performance of the required maintenance listed in your owner's manual. Kohler Co. recommends that you retain all receipts covering maintenance on your SORE or engine powered equipment, but Kohler Co. cannot deny warranty coverage solely for the lack of receipts. As the SORE or engine powered equipment owner, you should however be aware that Kohler Co. may deny you warranty coverage if your SORE or engine powered equipment or a part has failed due to abuse, neglect, improper maintenance or unapproved modifications.

You are responsible for presenting your SORE or engine powered equipment to a Kohler Co. distribution or service center as soon as a problem exists. The warranty repairs should be completed in a reasonable amount of time, not to exceed 30 days. If you have a question regarding your warranty coverage, you should contact a Kohler Dealer at 1-800-544-2444 or visit www.kohlerengines.com.

GENERAL EMISSIONS WARRANTY COVERAGE

The warranty period begins on the date the engine or equipment is delivered to an ultimate purchaser. Kohler Co. warrants to the ultimate purchaser and each subsequent purchaser that the engine is: Designed, built, and equipped so as to conform with all applicable regulations adopted by the Air Resources Board and US EPA; and free from defects in materials and workmanship that cause the failure of a warranted part to be identical in all material respects to the part as described in the engine manufacturer’s application for certification for the warranty period stated above.

The warranty on emissions-related parts is as follows:

(1) Any warranted part that is not scheduled for replacement as required maintenance in the owner’s manual supplied, is warranted for the warranty period stated above. If any such part fails during the period of warranty coverage, the part will be repaired or replaced by Kohler Co. at no charge to the owner. Any such part repaired or replaced under the warranty will be warranted for the remaining warranty period.
(2) Any warranted part that is scheduled only for regular inspection in the owner’s manual supplied, is warranted for the warranty period stated above. Any such part repaired or replaced under warranty will be warranted for the remaining warranty period.
(3) Any warranted part that is scheduled for replacement as required maintenance in the owner’s manual supplied, is warranted for the period of time prior to the first scheduled replacement point for that part. If the part fails prior to the first scheduled replacement, the part will be repaired or replaced by Kohler Co. at no charge to the owner. Any such part repaired or replaced under warranty will be warranted for the remainder of the period prior to the first scheduled replacement point for the part.
(4) Add-on or modified parts that are not exempted by the Air Resources Board may not be used. The use of any non-exempted add-on or modified parts by the ultimate purchaser will be grounds for disallowing a warranty claim. The manufacturer will not be liable to warrant failures of warranted parts caused by the use of a non-exempted add-on or modified part.

PARTS COVERED BY WARRANTY

Listed below are the parts (if equipped) covered by the Federal and California Emission Control Systems Warranty. Some parts listed below may require scheduled maintenance and are warranted up to the first scheduled replacement point for that part.

- Oxygen sensor
- Intake manifold
- Exhaust manifold
- Catalytic muffler
- Thermal reactor muffler
- Spark advance module
- Crankcase breather
- Air Injection System
  - -Air pump or pulse valve assembly
  - -Control/distribution valve
  - -Distribution manifold
  - -Air hoses
  - -Vacuum lines
- Ignition module(s) with high tension lead
- Gaseous fuel regulator
- Electronic control unit
- Carburetor or fuel injection system
- Fuel metering valve
- Air filter, fuel filter, and spark plugs (only to first scheduled replacement point)
- Evaporative System
  - -Carbon canister and carbon canister mounting bracket
  - -Carbon canister filter
  - -Purge port/orifice connector
  - -Fuel tank
  - -Fuel cap and fuel cap gasket
  - -Primer bulb canister
  - -Fuel line (for liquid fuel and fuel vapors), fuel line fittings and clamps
  - -Carburetor purge port connector

Limitations

This Emission Control Systems Warranty shall not cover any of the following:

a. Consequential damages such as loss of time, inconvenience, loss of use of the engine or equipment, etc.
b. Diagnosis and inspection fees that do not result in eligible warranty service being performed.

HYDRO-GEAR®

FORWARD MOTION THROUGH FORWARD THINKING

All Models

Warranty

Policies and Procedures

BLN-50225_P18
Revision March, 2019

Hydro-Gear® Warranty Policies and Procedures

Limited Warranty

BLN-50225_P18 March, 2019

Hydro-Gear Limited Partnership (hereinafter referred to as "Hydro-Gear") warrants to the original equipment manufacturer (OEM), authorized distributor, or authorized servicing dealer purchasing a Hydro-Gear product or replacement parts (such purchaser is hereinafter referred to as "Buyer") that the product or replacement parts will be free from defects in material and workmanship at the time of shipment from Hydro-Gear, and will conform to such drawings and specifications as are applicable to the product or replacement parts under Hydro-Gear's sales agreement with Buyer.

The duration of this limited warranty is as set forth in the section below under the heading "WARRANTY PERIODS." During the applicable period of warranty, Hydro-Gear shall repair or replace at its option those products or their parts which are found by Hydro-Gear to be defective in material or workmanship at time of shipment, provided that Hydro-Gear or its authorized representative is first advised in writing of Buyer's contention of such defect (during such warranty period) and provided further, that the product or, if applicable, the replacement part in question is made available for inspection by Hydro-Gear or its authorized representative. To facilitate inspection, Hydro-Gear may request return of the product and/or part which Buyer contends to be defective. Product or parts failures or malfunctions which are not attributable to defects in material and/or workmanship, and which are not covered by the said warranty include, but are not limited to:

* Inadequate, contaminated, or improper fluid.
* Accident, abuse, improper maintenance, or neglect.
* Stripped keyways, or splines stripped or worn on external shaft end.
* Improper mounting of external pulleys, gears, couplings, etc.
* Improper electrical connection or power supply.
* Corrosion, or other damage, resulting from battery acid leakage.
* Operating above those speeds, weights limits, pressures, or temperatures recommended by Hydro-Gear.
* Use of the product in a manner or for a purpose not originally intended for by Hydro-Gear or failure to use in strict accordance with Hydro-Gear's written instructions.
* Repairs or installation by personnel other than as authorized by Hydro-Gear.
* Transportation.
* Use of parts other than Genuine Hydro-Gear Parts or other parts authorized in writing by Hydro-Gear.
* Misdiagnosis of component failure.
* Maintenance items such as filters, oil, etc.

THE WARRANTIES SET FORTH HEREIN ARE IN LIEU OF AND TO THE EXCLUSION OF ALL OTHER WARRANTIES, WHETHER EXPRESS, IMPLIED, OR STATUTORY, INCLUDING BUT NOT BY WAY OF LIMITATION, WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

HYDRO-GEAR'S LIABILITY, WHETHER OF WARRANTY, NEGLIGENCE, OR OTHERWISE, IS LIMITED TO THE REPAIR OR REPLACEMENT AS HEREIN PROVIDED OR, AT HYDRO-GEAR'S SOLE OPTION, TO A REFUND OF THE PURCHASE PRICE. **THIS SHALL BE HYDRO-GEAR'S SOLE AND MAXIMUM LIABILITY AND UNDER NO CIRCUMSTANCES SHALL HYDRO-GEAR BE LIABLE FOR LIQUIDATED, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES.**

If Buyer grants warranty on Hydro-Gear products of greater scope than the warranties provided by Hydro-Gear, or extends any warranty period beyond the applicable period described in **"WARRANTY PERIODS,"** Buyer does so at its sole risk and expense and Buyer will indemnify and hold Hydro-Gear harmless from any claims of any party based on such greater warranty or period, and any expenses incurred in the defense of such claims. This warranty only applies to OEM's, authorized distributors, authorized servicing dealers, and by its terms does not extend to any person buying the product from such OEM, authorized distributor, or authorized servicing dealer, for personal, family, or household use. If Buyer makes available the benefits of this warranty to its customer, and if the Magnuson-Moss Warranty Improvement Act (Pub. L. 93-637) or similar state laws should apply, Buyer assumes all responsibility for compliance with such laws and any expenses incurred in the defense of any such claims, thereunder.

All Models	Hydro-Gear® Warranty Policies and Procedures
Warranty Periods	BLN-50225_P18 March, 2019

Note: Proof of purchase must be available if requested to assist in determining commencement of the warranty period. If proof of purchase is not available, the Hydro-Gear Serial Number will determine the commencement of the warranty period.

I. ORIGINAL (OEM) INSTALLED PRODUCTS[Δ]

A. REVIEWED TWO YEAR NONCOMMERCIAL* USAGE *(See Figure 1, Hydro-Gear Warranty Time Frames)*
The warranty period shall be limited to the earlier of:
(i) 24 consecutive months (2 years) from the date of first sale** of the product, or
(ii) 24 consecutive months (2 years) from the date of manufacture if proof of purchase is not available upon request, and is subject to a limitation of 48 consecutive months (4 years) from the date of manufacture.***

B. REVIEWED ONE YEAR COMMERCIAL USAGE *(See Figure 1, Hydro-Gear Warranty Time Frames)*
The warranty period shall be limited to the earlier of:
(i) 12 consecutive months (1 year) from the date of the first sale of the product, or
(ii) 90 days from the date of the first sale of the product on Rental applications; or
(iii) 12 consecutive months (1 year) from the date of manufacture if proof of purchase is not available upon request, and is subject to a limitation of 48 consecutive months (4 years) from the date of manufacture.

C. REVIEWED TWO YEAR COMMERCIAL USAGE *(See Figure 1, Hydro-Gear Warranty Time Frames)*
The warranty period shall be limited to the earlier of:
(i) 24 consecutive months (2 years) from the date of the first sale of the product, or
(ii) 90 days from the date of the first sale of the product on Rental applications; or
(iii) 24 consecutive months (2 years) from the date of manufacture if proof of purchase is not available upon request, and is subject to a limitation of 48 consecutive months (4 years) from the date of manufacture.

II. REPLACEMENT PARTS AND UNITS[Δ]

A. HYDRO-GEAR REPLACEMENT PARTS
(i) All parts shall be warranted for 90 days from the date of first sale, or the balance of the original product warranty, whichever is longer.
(ii) This warranty is subject to a limitation of 48 consecutive months (4 years) from the date of manufacture.

B. HYDRO-GEAR REPLACEMENT UNITS
(i) Replacement units shall be warranted for 180 days from the date of first sale, or the balance of the original product warranty, whichever is longer.
(ii) Nevertheless, the warranty period for replacement units in Rental applications is limited to 90 days from the date of first sale.
(iii) These warranties for replacement units are subject to a limitation of 48 consecutive months (4 years) from the date of manufacture.

Δ All Product repairs and replacements must be performed by an authorized dealer or service center to prevent Hydro-Gear's warranty from being voided.

* Noncommercial - any vehicle not reviewed for commercial use by Hydro-Gear.

** First sale - is considered the date a vehicle, replacement part or replacement unit is first sold by Buyer (OEM, authorized distributor, or authorized servicing dealer).

*** 48 consecutive months (4 years) from the date of manufacture – Any warranty period listed herein will remain in effect for its entire duration on any sale of the product by Buyer occurring up to 48 consecutive months (4 years) from the date of manufacture by Hydro-Gear. Hydro-Gear will not reimburse Buyer on warranty claims pertaining to products sold by Buyer more than 48 consecutive months (4 years) from the date of manufacture by Hydro-Gear. In the latter case, any warranty offered by Buyer is at the sole risk and expense of Buyer. In such case, Buyer will indemnify and hold Hydro-Gear harmless from the claims of any party based on such warranty, and from any expenses incurred in the defense of such claims.

Warranty Claims Procedure

A. Claims submitted to Hydro-Gear will require a Hydro-Gear, OEM, Outdoor Power Equipment Institute (OPEI) or equivalent claim form from the servicing dealer. Dealer claims must provide all pertinent information typical on OPEI claim forms, i.e.., owner's name, servicing dealer, Hydro-Gear Serial Numbers, symptoms, repair date, and type of use, etc.
B. Complete Hydro-Gear product Model Number and Serial Number must be provided.
C. All claims must be filed within 45 days of unit failure.
D. Warranty claims will be processed in accordance with: BLN-51371 for the United States and Canada; BLN-51373 for Europe, and BLN-51374 for Australia.
E. Hydro-Gear reserves the right to reduce or reject a warranty claim which does not comply with the stated procedures.
F. Warranty labor rate(s) will be set by Hydro-Gear.
G. Labor rate time guidelines will be as follows:

Hydraulic Units	
Hydraulic Unit Replacement	Up to Two hours maximum
Hydraulic External Repair	Up to One hour maximum
Hydraulic Internal Repair	Up to Three hours maximum

Electric Units	
Electric Unit (Transaxle) Replacement	Up to Two hours maximum
Electric Unit (Transaxle) External Repair	Up to One hour maximum
Electric Unit (Transaxle) Internal Repair	Up to Three hours maximum
Electric Component Replacement or Repair	Up to One hour maximum

	Hydro-Gear Warranty Time Frames		
Hydraulic Product Group	**2 Year Noncommercial Usage**	**1 Year Commercial Usage**	**2 Year Commercial Usage**
ZT-1800 / ZT-2100 / ZT-2200 (EZT) ZT-2800	Yes	No	No
ZT-3100 / ZT-3200	Yes	Yes	No
ZT-3400 / ZT-3600 / ZT-3800 / ZT-4400 / ZT-5400	Yes	-	Yes
SST	Yes	No	No
RT-310	Yes	Yes	No
T1 / T2 / T3	Yes	No	No
310-0510 / 310-0610 / 310-0710	Yes	No	No
310-2000 / G700 / 310-3000 / 310-3500	Yes	No	No
Pumps (PC)	Yes	Yes	No
Pumps (PJ, PE, PL, PG, PK, PR, PW, PY)	Yes	-	Yes
Piston Motor (HGM-H, PRM)	Yes	-	Yes

Figure 1: Hydraulic Warranty Time Frames

	Smartec Warranty Time Frames		
Electric Product Group	**2 Year Noncommercial Usage**	**1 Year Commercial Usage**	**2 Year Commercial Usage**
Electric Drive - ZT	Yes	No	No
Electric Drive - LT	Yes	No	No

Figure 2: Smartec Warranty Time Frames

a) All warranty times listed in Figures 1 & 2 are for products originally installed in a machine by an OEM manufacturer.
b) See sections I(B), I(C), II(A) and II(B) on the **Warranty Periods** page for Rental Application, Replacement Part, and Replacement Unit warranty information.

Interstate Batteries' Limited Warranty (effective on batteries purchased May 1, 2012, or later)

This limited warranty applies unless you return your battery within 30 days of purchase.

Important: Keep this Limited Warranty and sales receipt in glove compartment.

READ CAREFULLY: This limited warranty contains mandatory and binding individual arbitration and class-action waiver provisions, and other provisions that limit your legal rights.

Any implied warranty of merchantability or fitness for a particular purpose is limited to the duration of this limited warranty. Some States do not allow limitations on how long an implied warranty lasts, so the above limitation may not apply to you.

What Batteries Are Covered

Interstate Batteries® (IB) provides this limited warranty to (1) the original retail purchaser, (2) of the Interstate Batteries branded battery models listed below, (3) when purchased from an IB Authorized Dealer or an All Battery Center Store in the 50 States of the United States or the District of Columbia.

IB's Performance Warranty

IB warrants that your battery is free of defects in material and workmanship for the duration of the warranty periods listed for your battery model in the Chart below. IB's Performance Warranty has a Free Replacement Period, and some battery models have an additional Discount Period. If your battery fails due to a defect during the Free Replacement Period, you may obtain a free replacement battery. The free replacement period for the SP-30 & SP-40 battery is six (6) months from the date of the original purchase.

You will still need to pay any taxes and legislatively imposed fees on your replacement battery, and you may also need to pay labor and installation charges. Any warranty coverage that remains on your original battery (when you return it for a replacement battery under this Performance Warranty) will carry over to your replacement battery. Your replacement battery will not have any new or separate warranty coverage.

What You Must Do

To obtain a replacement battery, you must present your original battery to an IB Authorized Warranty Dealer or All Battery Center Store that has an appropriate replacement battery in stock. That dealer will have a reasonable time to test your original battery and, if defective, replace it according to the terms of this limited warranty. To find the IB Authorized Warranty Dealer or All Battery Center Store nearest you, and to get the phone number of that dealer or store, visit www.interstatebatteries.com, or call 800-CRANK IT (800-272-6548) for Automotive, Commercial, and Marine/RV batteries or 888-772-3600 for all other Starting, Lighting, and Ignition (SLI) batteries.

Date of Purchase

Your Performance Warranty begins on your date of purchase and extends for six (6) months. You may establish your date of purchase by presenting the receipt for the purchase of your original battery. Otherwise, your dealer will estimate your date of purchase.

Warranty Exclusions and Limitations of Remedy

This limited warranty does not cover batteries that are merely discharged, or that are damaged due to abuse, neglect, misuse, fire, accident, collision, explosion, freezing, theft, overcharging, alteration, improper installation, use of special additives, unauthorized attempt to repair, or failure to keep the battery properly maintained. IB's liability is limited to the replacement of the battery according to the terms of this limited warranty. IB will not be liable for any punitive, consequential, or incidental damages, such as the cost of installation, towing, electrical system tests, charging a battery, rental vehicles, labor, loss of time, loss of use of a vehicle, lost profits, or damage to property other than the battery. Some States do not allow the exclusion or limitation of these incidental or consequential damages, so the above limitations or exclusions may not apply to you.

SPECIFICATIONS

CHALLENGER – Joystick Steering

MODEL	2552KOJ-D505	2560KOJ-D505	2452KAJ-D505	2460KAJ-D505
Engine	25 H.P. Kohler ZT740 (747cc)		24 H.P. Kawasaki FS730 (726cc)	
Hydrostatic Transmissions	Hydrogear ZT-3400 w/RTN Spring			
Steering Control	Single Joystick			
Fuel Capacity	7 Gallons			
Tires, Rear	22x11-10			
Tires, Front	13X6.5-6			
Turning Radius	Zero-Turn			
Ground Speed Forward Reverse	9 MPH (infinitely variable) 5 MPH (infinitely variable)			
Length	79”			
Height,	31½” (Seat Cushion), 51” (Seat Back)			
Width, Tractor (outside rear tires)	49”			
Width, Deck (with deck chute up) (with deck chute down)	53” 65”	61” 73”	53” 65”	61” 73”
Cutting Width	52”	60”	52”	60”
Blade Length (3 per deck)	18 3/8”	21”	18 3/8”	21”
Cutting Height	1-1/2” to 5” (¼” increments)			
Weight (actual)	813#	823#	824#	834#
Standard Features	Hour Meter, Electric Start, Deluxe Adjustable Seat, Sewn Arm Rest, Cup Holder, Pivoting Front End, Locking Front Casters, Front Step			

CHALLENGER – Twinstick Steering

MODEL	2452KAT-D505	2460KAT-D505
Engine	24 H.P. Kawasaki FS730 (726cc)	
Hydrostatic Transmissions	Hydrogear ZT-3400 w/RTN Spring	
Steering Control	Twinstick Controls	
Fuel Capacity	7 Gallons	
Tires, Rear	22x11-10	
Tires, Front	13x6.5-6	
Turning Radius	Zero-Turn	
Ground Speed Forward Reverse	9 MPH (infinitely variable) 5 MPH (infinitely variable)	
Length	79”	
Height,	31½” (Seat Cushion), 51” (Seat Back)	
Width, Tractor (outside rear tires)	49“	
Width, Deck (with deck chute up) (with deck chute down)	53” 65”	61” 73”
Cutting Width	52”	60”
Blade Length (3 per deck)	18 3/8”	21”
Cutting Height	1-1/2” to 5” (¼” increments)	
Weight (actual)	829#	839#
Standard Features	Hour Meter, Electric Start, Deluxe Adjustable Seat, Sewn Arm Rest, Cup Holder, Pivoting Front End, Locking Front Casters, Front Step	

Specifications subject to change without prior notice

NOTES / SERVICE RECORDS:

DATE	SERVICE WORK COMPLETED

NOTES / SERVICE RECORDS:

DATE	SERVICE WORK COMPLETED

PRODUCT MANUAL

CHALLENGER D505

Country Clipper Division
Shivvers Manufacturing, Inc.
613 W. English St.
Corydon, IA 50060-0467
Ph. 641-872-2544
Fax. 641-872-1593

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