

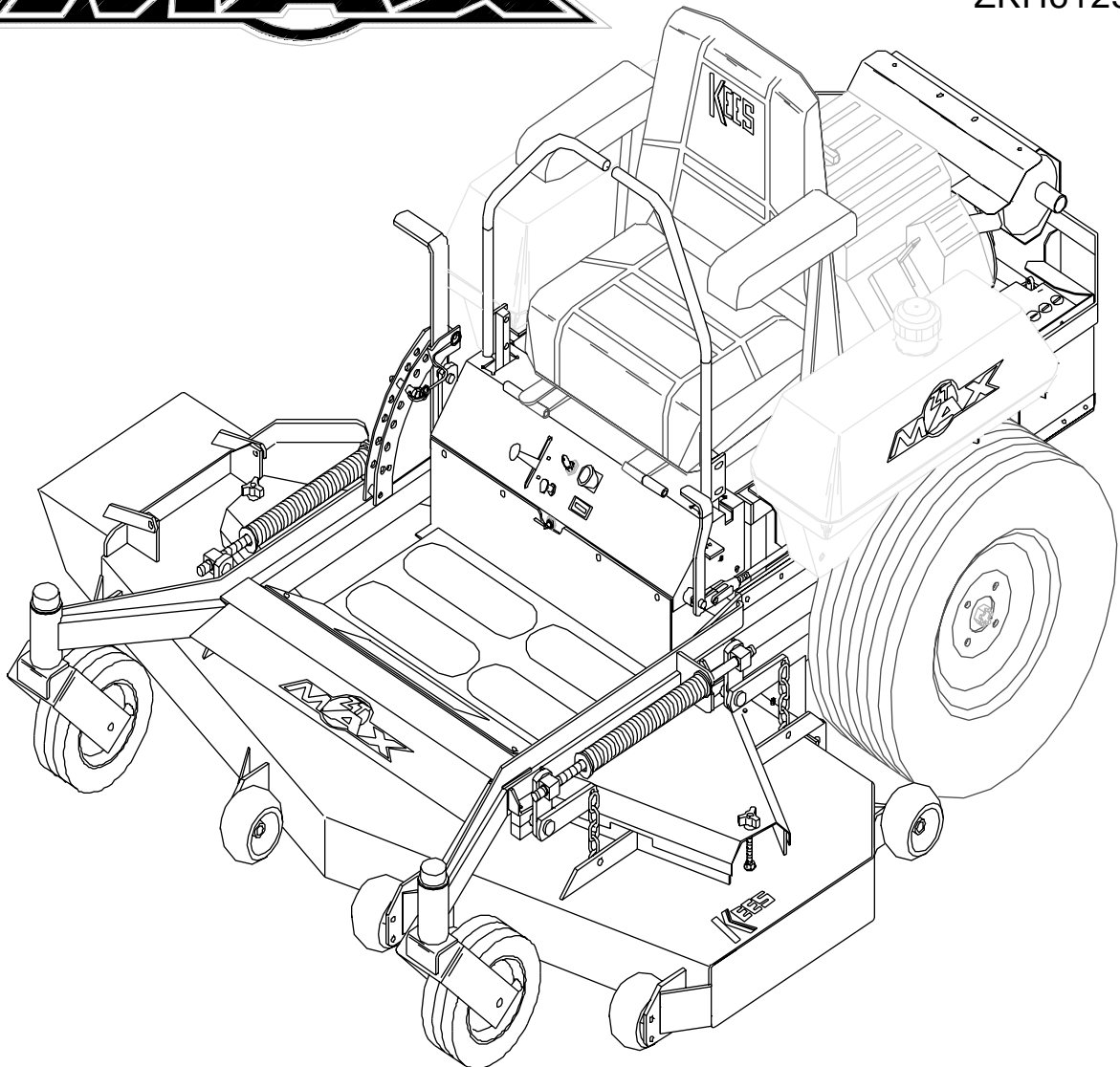


# COMMERCIAL MOWERS

## OPERATOR'S MANUAL FOR:



MODELS: ZKH52221  
ZKH52251  
ZKH61221  
ZKH61251



FD KEES POWER EQUIPMENT L.L.C.

700-800 PARK AVE. BEATRICE, NEBRASKA U.S.A. 68310

PRINTED IN USA

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MANUAL NO. 102936IR

REV. IR (9-1-97)

**Congratulations** on the purchase of your Kees mower. This manual has been prepared for the owners and operators of the ZT MAX™ 52" and 61" commercial mowers. Read, understand and follow the safety and operating instructions.

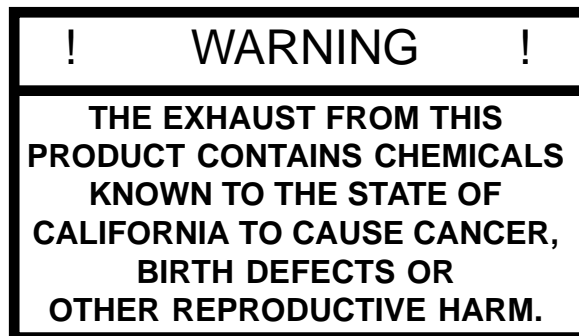
### **! WARNING**

Failure to follow cautious operating practices can result in serious injury to the operator or other persons. The owner must understand these instructions, and must allow only trained persons who understand these instructions to operate the mower. Each person operating the mower must be of sound mind and body and must not be under the influence of any mind altering substance.

**If you have any questions pertaining to your mower contact your dealer.**

### **! CAUTION**

1. Keep all shields, guards and safety devices in place and in proper working condition.
2. Stop engine and remove spark plug wires or remove key before adjusting, servicing, or performing maintenance.



Continuous dedication to improve our products require that specifications and design are subject to change without notice.

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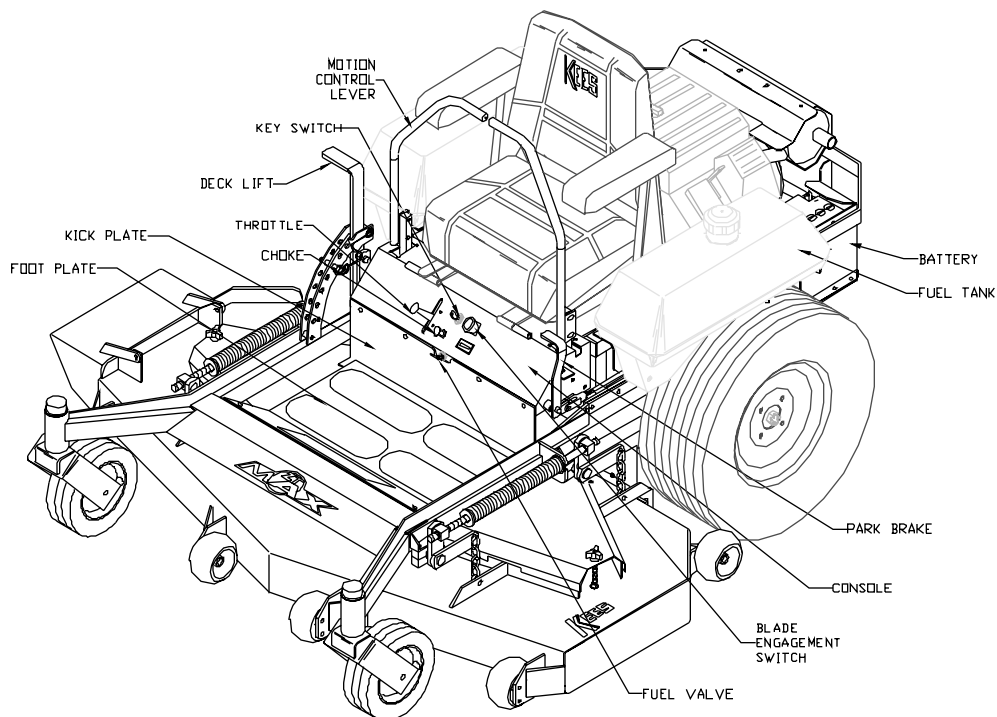
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## SAFETY

### TRAINING:

1. Read this manual carefully and question your dealer if something is not clear.
2. Be thoroughly familiar with the controls and proper use of the equipment.
3. Never allow children, teenagers, or people unfamiliar with these instructions to use the mower.
4. Do not mow while people, particularly children, or pets are nearby.

### PREPARATION:

1. The use of personal protective equipment such as (but not limited to) protection for the eyes, ears, feet and head is recommended.
2. Never operate the mower without proper guards, covers, safety switches and devices in place and properly functioning. Inspect these items daily for their condition and proper operation. If the condition or operation of any of these devices is questionable they must be replaced or repaired before using the mower.
3. Thoroughly inspect the area to be mowed and remove all stones, sticks, wire and other debris that may be thrown by the mower. Also note or mark other obstacles such as holes, stumps, etc..
4. Do not operate the mower when barefoot or wearing open shoes. Always wear substantial footwear and long pants.
5. Fill gas tank(s) before starting mower. DO NOT SMOKE near gasoline containers. Do not fill gas tank indoors or when engine is hot or running. Clean off any spilled gasoline before starting the mower.

### OPERATION:

1. Mow only in daylight or good artificial light.
2. Do not operate the mower in wet grass if possible.
3. Mow up and down slopes. Use extreme caution when mowing or turning on slopes. Always turn to the downhill side. **Do not** mow excessively steep slopes (**mower may tip over and cause injury or death**).
4. Use caution when backing up.
5. Stop the blades when crossing surfaces other than grass; or when traveling to and from the area to be mowed.
6. Never operate the mower with defective, broken or excessively worn parts. Keep all guards, shields, and safety devices in place and in proper working order.
7. Do not change the engine governor settings or over speed the engine. Operating the engine at excessive speeds will increase the hazard of injury and can severely damage your machine.
8. Keep hands, feet and clothing away from rotating parts when operating mower.
9. Stop the blades and engine and set park brake before leaving the operators position for any reason.
10. Never make adjustments to the mower while engine and/or blades are running.
11. After striking a foreign object, stop mower and remove key. Inspect the mower for any damage and repair it immediately before continuing to mow.
12. Never operate this equipment in an enclosed or confined area without proper ventilation of the engine exhaust.
13. Do not allow any passengers to ride on the mower. It is designed for the operator only. Keep others away from the mower when in operation.

## SAFETY

### TRANSPORTATION:

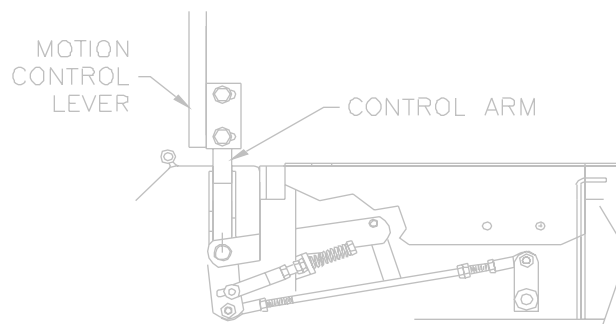
Use a heavy duty trailer to haul mower. Set park brake, turn off fuel valve and strap mower to trailer. NOTE: Park brake will not hold mower in place when transporting. Be sure to tie down the mower to the trailer. Always back onto the trailer to prevent possible tipover.

1. Keep all nuts, bolts and screws tight to keep mower in safe operating condition.
2. Engine maintenance should comply with engine manufactures specifications. See the engine manual for specifications.
3. Never store the mower with gas in the tank inside a building where fumes can reach an open flame or spark.
4. To reduce the risk of fire, keep the mower free of grass, leaves and excessive grease or oil.
5. Have your mower inspected and serviced each year by an authorized KEES dealer.
6. Use only authentic KEES replacement parts to insure the safety and quality of your mower is maintained.
7. Safety decals should be replaced if they are missing or illegible. Decals can be purchased from your KEES dealer.
8. The hydraulic system including all hoses and fittings should be checked frequently for wear or leaks. Never check for leaks with your hands, use a piece of cardboard or wood. Hydraulic oil under pressure could be injected into your body and must be surgically removed within a few hours.

## EQUIPMENT SETUP AND ADJUSTMENTS

1. Uncrate mower
2. Mount drive wheels using the four lug nuts installed on the hub.
3. Check tire pressure in all four tires. Pressure for all four tires is 15 psi
4. Remove the motion control levers and install on the outside of the control arms (See figure 1). Tabs on the motion control levers should be directed to the rear of the mower. Align the levers so they are even in the neutral position. (See figure 6)
5. Install seat rod to the seat frame with 5/16" hardware. Seat rod is located under the seat in the hydraulic pump area. Attach the rod to the tab on the seat frame.
6. Check engine oil with dip stick. Add if needed per engine manufactures specifications. (See Kohler engine manual or page 14 of this manual for Kohler engine specifications.) Normally filled with Quaker State 10W30 and ran in at the factory.
7. See enclosed literature for proper installation, care and charging of battery.
8. Loosen the discharge chute slightly and lower into position. Chute should be snug but still pivot freely.

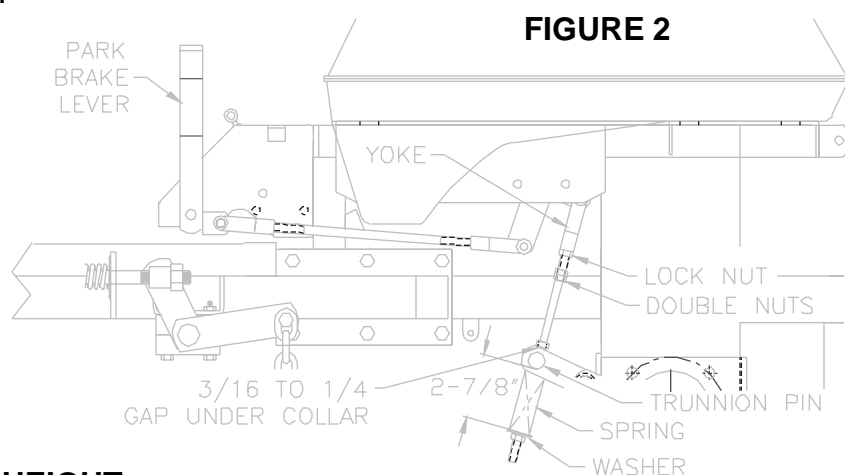
Figure 1



## ADJUSTMENTS

### PARK BRAKE:

1. Stop engine and remove key. Release park brake and measure the length of the spring. The distance between the washers on each end of the spring should be  $2\text{-}7/8$ " (See Fig 2).
2. If adjustment is needed, loosen the nut below the spring. Then rotate nut to desired position so the proper distance between the washers is obtained. Check other side for proper adjustment.
3. Engage the brake lever and measure the distance between the trunnion pin and the collar welded to the brake rod. Distance should be  $3/16$ " to  $1/4$ " (See Fig 2).
4. If adjustment is needed, loosen the lock nut directly below the yoke. Using a wrench, rotate the rod by turning the double nuts using the nuts below the yoke and the nut you just loosened, to obtain the  $3/16$ " to  $1/4$ " distance. Tighten nut against yoke and check other side for proper adjustment.



### CUTTING HEIGHT:

1. Stop the mower and disengage the blades.
2. Raise the deck height lever to the transport position.
3. Remove the height adjustment pin and place it in the desired cutting height hole. Move deck height lever down onto the pin and mow. NOTE: anti-scalp rollers must be in the proper position for maximum deck floatation. See the decal on the front deck.

### MOWER DECK LEVELING:

1. Position mower on a flat surface and stop engine.
2. Check the tire pressure of all four tires. Inflation should be 15 psi.
3. Place two 2x4's on edge under the cutting deck from front to rear and lower the deck down onto the 2x4's.
4. Adjust the four upper chain bolts to the center of the slot in the deck lift arms. NOTE: make sure deck lift blocks are tightly bolted to the frame (See Fig 3).
5. Return the deck height lever to the transport position (5" cutting height) and check the center to center distance of the swivels. Distance should be  $19\text{-}1/2$ "
6. Check the distance between the washers on the deck lift springs. Distance should be  $11\text{-}3/4$ " (See Fig 3).
7. Check chains for equal tension. If unequal, adjust upper chain bolt in slot.
8. Place deck in the 5" cutting height and measure from the cutting edge of the blade to a flat surface to check deck cutting height.

## ADJUSTMENTS

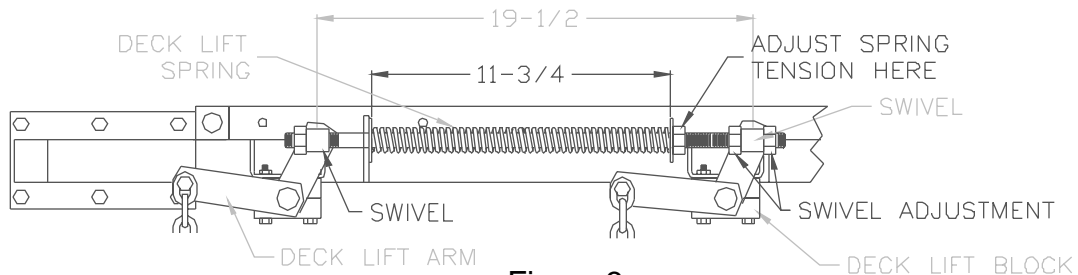


Figure 3

### MULE DRIVE BELT TENSION:

1. Stop engine and remove the key.
2. Check to make sure the bolt head in the spring loaded idler pulley, on the left side of the engine deck is positioned between the two alignment holes in the left support plate (See Fig 4).
3. If adjustment is necessary, loosen the adjustable idler pulley on the right hand side of the engine deck so it can move up and down in the slot. Place a wrench on the 3/8" nut in the center of the spring loaded idler pulley and rotate the idler upward to relieve the tension on the belt. Reposition the right side pulley in the slot and tighten. Recheck alignment of the bolt on the spring loaded idler.

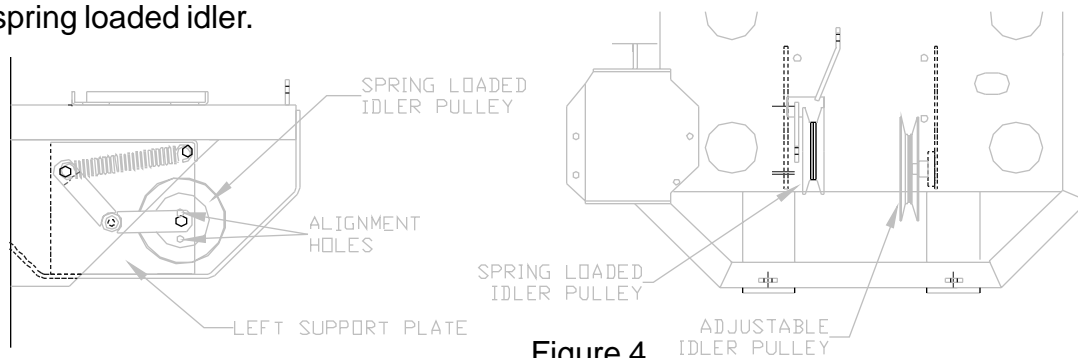


Figure 4

### THROTTLE LEVER TENSION:

1. Stop engine and remove key.
2. If throttle lever becomes loose, tension may be adjusted by tightening the pivot bolt. The pivot bolt holds the throttle arm to the throttle mounting bracket which is located under the console. Access is gained by removing the foot plate and the kick plate. See page 3.

### REVERSE SPRING DETENT ADJUSTMENT:

1. Stop engine and remove key.
2. Rotate seat latches out to release seat. Located at the bottom rear of seat. Put seat in rear slide position, tilt seat forward, remove seat stop rod bolt and nut, tilt seat forward to rest on front frame.
3. Start with either the right or left motion control lever. Move the motion control lever to the neutral position then pull the lever back until the clevis pin (on the arm below the pivot shaft) comes into contact with the end of the slot. At this point slight spring pressure should be felt ( See Fig 5a).
4. Check where motion control lever is relative to the neutral slot in the console. The lever should be centered to allow it to pivot outward into the neutral slot.

5. If adjustment is necessary, loosen the nut against the yoke. Apply slight rearward pressure to the motion control lever and turn the head of the adjustment bolt in the proper direction until the lever is centered in the neutral slot. **NOTE:** if properly adjusted the motion control levers will return to neutral from the reverse position and reverse motion will stop if levers are released.

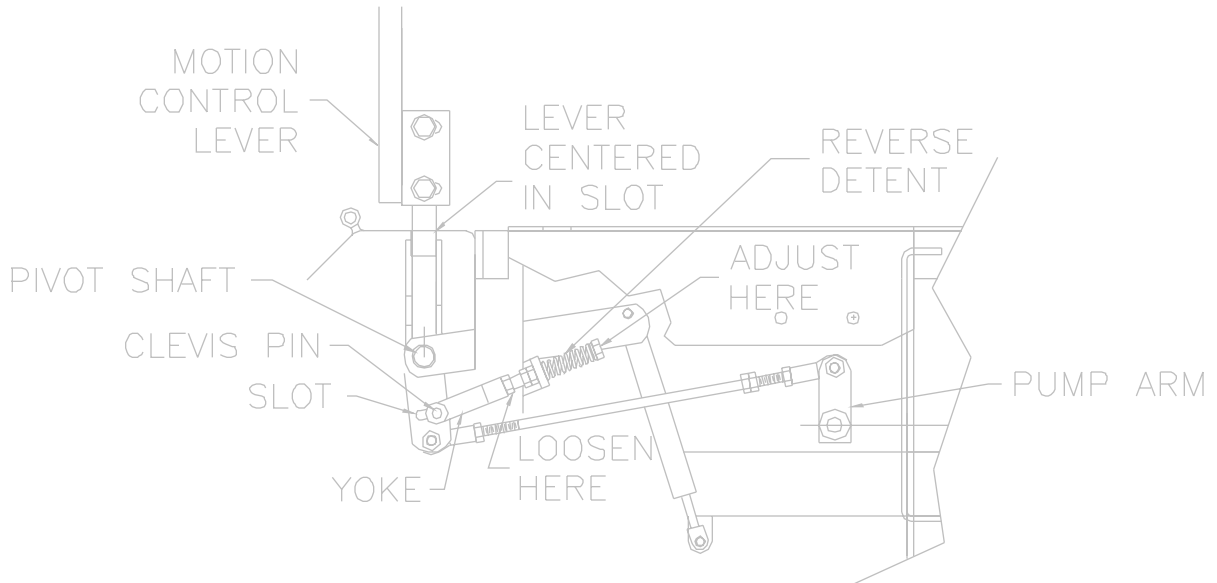


Figure 5A

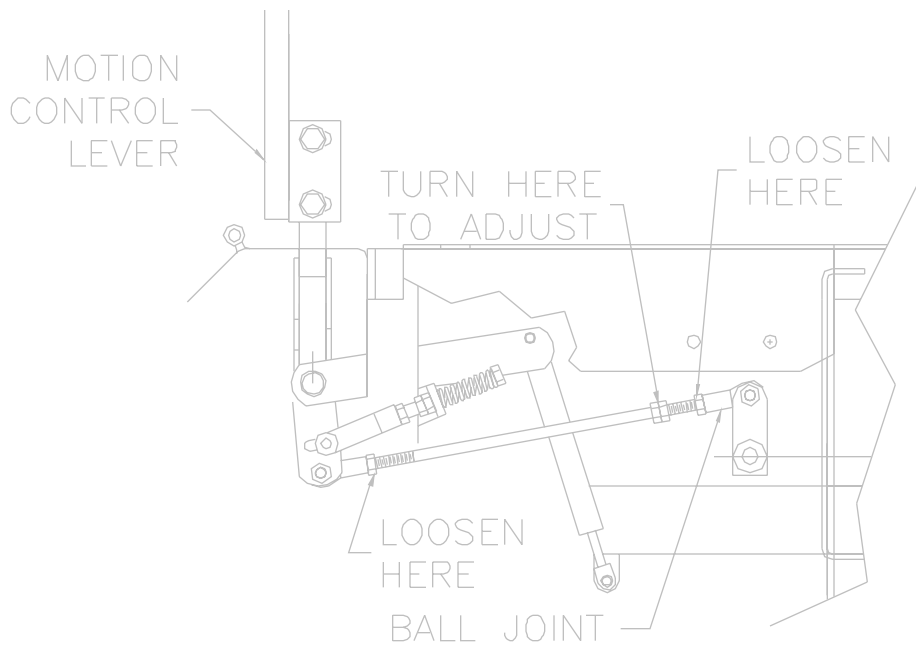


Figure 5B



## ADJUSTMENTS

### MOTION CONTROL LINKAGE ADJUSTMENT:

1. This adjustment must be made with the drive wheels rotating. Raise rear of the unit and block it up so the wheels are free to rotate. **CAUTION: Keep hands, feet and clothing away from rotating tires.**
2. Tilt seat forward and remove the seat rod from seat so the seat can rotate down onto the frame. Make sure the seat is adjusted toward the rear of the unit so it clears the controls on the console.
3. Place a 2x4 board approximately 10 to 12 inches long between the foot plate and the center of the seat to engage the seat safety switch. NOTE: You may want to cover the end of the 2x4 with a rag to protect the seat from marring.
4. The reverse spring detent must be adjusted correctly before the motion control linkages may be adjusted. (See reverse spring detent adjustment section.)
5. Loosen the nuts directly behind each ball joint on both rods that connect the pump arm to the motion control assemblies. (See Fig 5 )
6. Start the engine. The park brake must be engaged and the motion control levers must be in the neutral slot (See figure 6 page 10) to start the engine. Run engine at approximately 1/2 throttle.
7. Release park brake to allow wheels to rotate. **CAUTION: Keep hands, feet and clothing away from rotating tires.**
8. Begin with either side and put the motion control lever into the neutral position. Adjust the motion control linkage by rotating the double nuts on the rod in the proper direction until the wheel stops rotating (See Fig 5 ).  
Move the motion control lever forward then into the neutral position and place it into the neutral slot. The wheel must be stopped completely at this point. Now do the same in reverse and release the lever. The lever should return to neutral on its own. If not see reverse spring detent adjustment section.
9. Run engine at full throttle to make sure wheels do not rotate. Readjust if any rotation occurs.
10. Repeat on the opposite side and tighten nuts against ball joints.
11. Remove the 2x4 board and make sure the seat wiring is connected to the wiring harness. **WARNING: Seat must be connected for safety interlock system to properly function.**

## OPERATING INSTRUCTIONS

### CONTROLS:

1. Be thoroughly familiar with all controls their function and how to operate them before operating the mower.
2. Motion control levers located on each side of the console control direction of movement. The left lever controls the flow of oil from the left hydro pump to the left wheel motor. The right lever controls the flow of oil from the right hydro pump to the right wheel motor.

## OPERATING INSTRUCTIONS

NOTE: To begin motion the operator must be in the seat and the brake disengaged before the levers can be moved from the neutral slots or the engine will kill.

By moving the levers an equal amount forward or back the mower will move in a straight line in that direction.

Movement of the right lever forward will cause the right wheel to rotate in a forward direction. Movement of the left lever forward will cause the left wheel to rotate in a forward direction. To stop forward travel pull levers back into the neutral position.

To turn right while moving in a forward direction pull the right lever back towards the neutral position, this will slow the right wheel and cause the mower to turn in that direction. To turn left while moving in forward direction pull the left lever back towards the neutral position, this will slow the left wheel and cause the mower to turn in that direction.

To zero turn pull one lever back beyond neutral while holding the other slightly ahead of neutral. NOTE: The direction of the zero turn will be determined by which lever is pulled back beyond neutral. Thus, left lever back, left turn and opposite for right turn. **Use caution when using this maneuver unit can spin very rapidly if one lever is positioned too much ahead of the other.**

3. Blade engagement switch: Located on the console. Pull up on switch to engage blades, push down to turn blades off. See page 3

4. Choke control: Located on the console. Pull out on knob to set choke. Use when starting cold engine do not run choke when engine is warm. See page 3

5. Throttle control: Located on the console. Used to control engine RPM. See page 3

6. Park brake: Located at the left end of the console. Pull lever back to engage the park brake, push lever forward to release brake. NOTE: Use tie downs when transporting unit, the park brake is not enough to hold the unit in place in this situation. See page 3

7. Key switch: Located on the console. The operator must be in the seat, park brake on, motion control levers out in the neutral slots and blade switch off before engine will start. See page 3

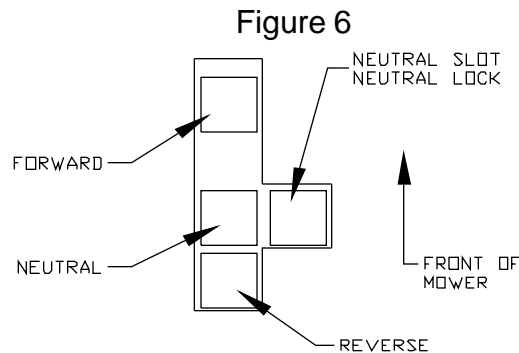
8. Fuel shut off valve: Located on the front of console at the top of the kick plate. The valve has three positions left tank, right tank and straight down is the off position. See page 3

9. Pump release valves: Located at the top left corner of the pumps. Used to release the system so unit may be moved by hand when not running. Tilt the seat up to gain access to the pumps. Rotate valve towards the front of the unit to release the system using a 5/8 wrench. NOTE: Only rotate about a 1/4 of a turn to release system.

## OPERATING INSTRUCTIONS

### STARTING AND OPERATION:

1. Operator must be sitting in the seat. Engage park brake, blades off and place the motion control levers in the neutral slots. (See figure 6)
2. Adjust throttle to 1/2 and set choke (if needed) turn key and release as soon as engine starts.
3. Release park brake.
4. Close motion control levers.
5. Engage blades and set RPM to maximum. NOTE: Be sure all persons are clear of area before engaging the blades. To prolong spindle bearing and belt life engage and disengage blades at approximately 1/2 throttle



## MAINTENANCE

1. Engine oil level: Check daily with engine cold and on a flat surface. Remove the dipstick and wipe clean. Reinsert the dipstick all the way. Remove the dipstick and check oil level. If oil level is low remove oil fill cap and add oil. Use engine manufacturers specs for type of oil.
2. Pump drive belt compartment: Stop engine and remove key. Tilt seat forward and lift rubber flap. Clean all debris from inside. Inspect rubber flap for proper fit and replace if needed. NOTE: Cleaning may need to be done more frequently in dry conditions.
3. Mower blades: Stop engine and remove key. Lift deck into the transport position and inspect blades. Sharpen or replace as needed. Check daily or more often if needed. The machine requires more power with dull blades and gives a poor cut. If blades get bent, replace them. Blades shouldn't have any notches from hitting objects. The air foil on top of the blade should be sufficient to raise the grass for cutting. If blades are in good condition, sharpen at an angle of 22 to 28 degrees about 2-1/2 inches in from the tips. Note: After sharpening, check blades for proper balance, if needed correct balance to prevent excessive vibration.
4. Safety interlock system: Check daily and never operate the mower if this system is not functioning properly. The starter should crank only when the operator is in the seat, the park brake set, blades off and the motion control levers in the neutral slots. If the mower starts with any of these controls on or in an operating position, turn the mower off and repair the system immediately.

## MAINTENANCE

5. Hardware: Stop engine and remove key thoroughly inspect the entire machine for any missing or loose hardware. Check daily.

6. Air cleaner: Stop engine and remove key. Remove plastic cover and loosen wingnut on the air cleaner. Remove the foam pre-cleaner and wash or replace if needed. Inspect paper filter and replace if dirty. Check every 25 hours, daily if in very dirty conditions. Fuel efficiency, engine RPM, and available power goes down rapidly if the air filter is dirty. Prolonged effects could damage the engine.

7. Engine oil: Change oil to manufacturers specifications. Stop engine and remove key. Drain oil when engine is warm. **Thoroughly clean around cap before removing.** Remove oil drain cap from the end of drain hose located at the right rear of unit allow to drain and replace drain cap. Remove oil filter and replace. Put a light coat of clean oil on the filter gasket before installing. Fill engine with oil using manufacturers specs, see specification sheet. The factory uses Quaker State Super Blend 10w-30. Start engine and idle slowly to allow the oil to recoat the interior of the engine and then inspect for leaks.

8. Hydraulic oil: Check daily. Stop engine and tilt seat forward. **Thoroughly clean around cap.** Remove cap. Oil level should be 1/4" to 1" below the neck of the tank. If not, add oil. NOTE: Use only 20w - 50 motor oil, see specification sheet.

9. Tire pressure: Check every 25 to 50 hours. All four tires require 15 psi.

10. Battery: Check every 25 hours. Check electrolyte level. If needed fill to the full line marked on the side of the battery. Fill with distilled water. Do not try starting the engine with a weak battery. Recharge or replace the battery. The engine condensers and electronic ignition can be damaged internally with less than or more than the required 12 volts.

11. Belts: Check every 25 hours. Stop engine and remove key. Check the condition of all belts. The pump belt located under the seat and rubber engine flap. The front deck belt and the mule drive belt.

12. Lubrication:

Front caster pivots - every 25 hours.

Front wheels - every 25 hours.

Deck lift blocks - every 25 hours.

Park brake assemblies - every 25 hours.

Struts - every 25 hours.

Deck lift pivot - every 25 hours.

(Clean grease zerk thoroughly before greasing)

## MAINTENANCE

13. Fuel filter: Replace annually or as needed.

14. Hydraulic filter and oil: Change every 500 hours or yearly. Stop engine and remove key. Tilt seat forward and clean around the filter and the fittings under the hydraulic tank. Remove the filter and allow any oil to drain from the filter head. Then replace with new filter. Use only KEES p/n 102606, filter which has a bypass valve it and the correct micron filter. Loosen hose from fitting under hydraulic tank and allow tank to drain, reinstall hose to fitting. Fill tank with 20w - 50 motor oil to 1/4" to 1" below neck of tank and replace cap. Block up the rear of unit until wheels will rotate freely and start engine at a slow idle, move the motion control levers forward and run for several minutes. Stop engine and recheck oil level. If wheels don't response an air lock has occured within the hydraulic system. Bleed air from lines, or let stand overnight to allow the air time to dissipate out of the oil. Retry responses & check the oil level. Note: Serious damage to the pumps and wheel motors can occur if the system is ran with an air lock. See the specification sheet for the correct kind of oil. The factory uses Quaker State Deluxe Motor Oil 20w-50.

15. Caster swivel nuts: Check at 250 hours for tightness. Remove cotter pin and tighten castle nut. Do not over tighten. Rotate nut back so a slot in the castle nut lines up with the hole in the spindle and install cotter pin.

## SPECIFICATIONS

ENGINE (REF. SEE KOHLER MANUAL)  
 POWER @3600  
   CH22 . . . . . 16.4 kW (22HP)  
   CH25 . . . . . 18.6 kW (25HP)  
 PEAK TORQUE  
   CH22 . . . . . 45 N\*m (33 ft.lb.)  
   CH25 . . . . . 53 N\*m (39.5 ft.lb.)  
 BORE  
   CH22 . . . . . 77 mm (3.03 in.)  
   CH25 . . . . . 83 mm (3.27 in.)  
 STROKE . . . . . 67 mm (2.64 in.)  
 DISPLACEMENT  
   CH22 . . . . . 624cc (38 cu.in.)  
   CH25 . . . . . 725cc (44 cu.in.)  
 COMPRESSION RATIO  
   CH22 . . . . . 8.5:1  
   CH25 . . . . . 9.0:1  
 DRY WEIGHT  
   CH22 . . . . . 41 kg (90 lb.)  
   CH25 . . . . . 43 kg (94 lb.)  
 OIL CAPACITY (WITH FILTER)  
   CH22 . . . . . 2.0 U.S. qt. (1.9 L)  
   CH25 . . . . . 2.1 U.S. qt. (2.0 L)  
 ANGLE OF OPERATION--MAXIMUM  
 (AT FULL OIL LEVEL) ALL DIRECTIONS  
 25 DEGREES.  
 IGNITION  
 SPARK PLUG TYPE (CHAMPION) . RC12YC  
 SPARK PLUG GAP . . . . 1.02 mm (0.40 in.)  
 SPARK PLUG TORQUE . . 24.4/29.8 N\*m  
                                   (18/22 ft. lb.)  
 OIL FILTER TORQUE . . 5.7/9.0 N\*m  
                                   (50/80 in.lb.)  
 ENGINE OIL TYPE  
 API (AMERICAN PETROLEUM INSTITUTE)  
 SERVICE CLASS SF,SG, OR SH.  
 VISCOSITY BASED ON AIR TEMPERATURE  
 10W-30 FROM 0-100+ DEGREES F.  
 FUEL TYPE  
 CLEAN, FRESH, UNLEADED GASOLINE  
 WITH AN OCTANE RATING OF 87 OR  
 HIGHER  
 CH22 PRECLEANER--KOHLER #24 083 02  
 CH25 PRECLEANER--KOHLER #24 083 05  
 CH22 AIR FILTER--KOHLER #47 083 03  
 CH25 AIR FILTER--KOHLER #24-083-03  
 OIL FILTER--KOHLER #12 050 01

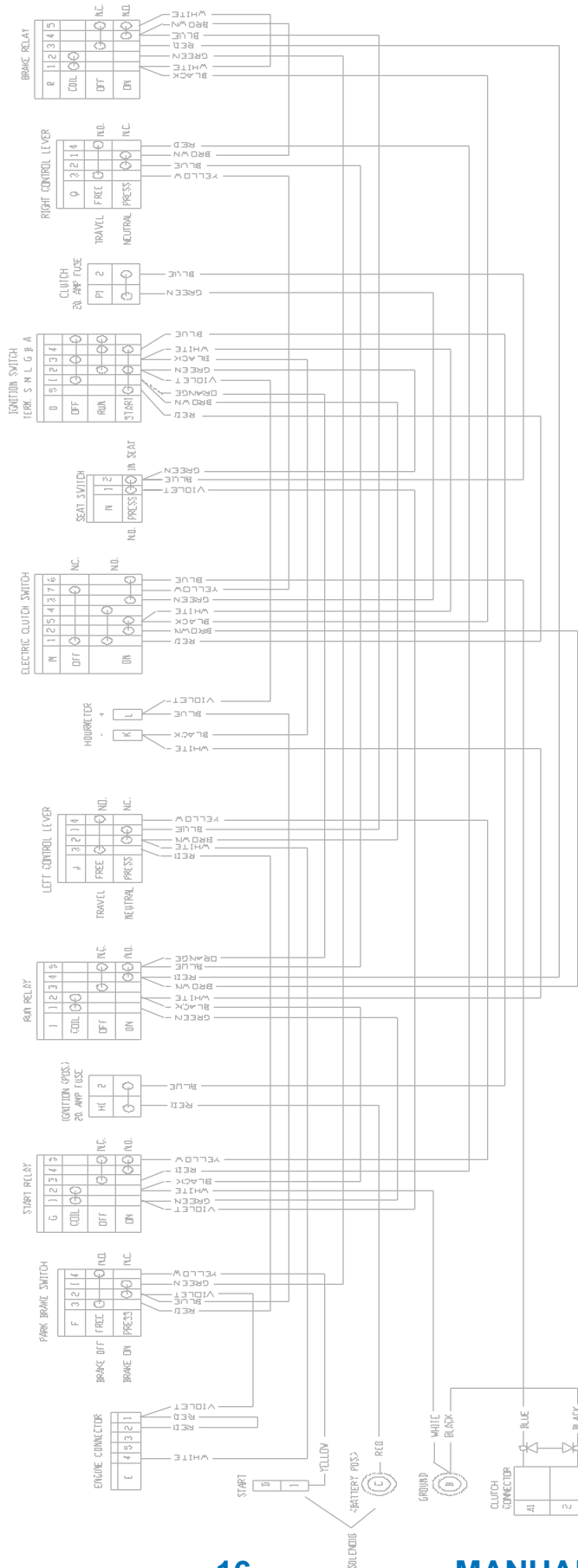
MOWER SPECIFICATIONS:  
 ENGINE: KOHLER COMMAND V-TWIN OHV  
 H.P. 22 OR 25  
 MODEL CH22S OR CH25S  
 DECKS: 52 OR 61  
 CUTTING HEIGHT: 1.5 TO 5.0 IN 1/2" INCREMENTS,  
 (38mm TO 127mm IN 13mm INCREMENTS)  
 BLADES: 52 = 18"  
           61 = 21"  
 DECK ENGAGEMENT: WARNER ELECTRO-MAGNETIC  
 MAINTENANCE FREE CLUTCH  
 HYDROSTATIC DRIVE: DUAL SUNSTRAND/HYDRO  
 GEAR PUMPS AND ROSS WHEEL DRIVE MOTORS  
 HYDRAULIC OIL CAPACITY: 2 GAL. (7.6 L)  
 10W-40 OIL, NYLON RESERVIOR  
 ELECTRICAL SYSTEM: 12 VOLT W/15 AMP  
 CHARGING SYSTEM  
 SPEED RANGE: INFINITE VARIABLE 0-9.0 MPH  
 (14.6 KPH) FORWARD, 0-4.0 MPH (6.4 KPH)  
 REVERSE  
 FUEL CAPACITY: 10 GAL. (38 LITERS)-TWIN 5  
 GAL. POLYETHYLENE SADDLE TANKS  
 FRONT CASTER TIRES: 4 PLY 13 X 5.00-6  
 TUBLESS PNEUMATIC  
 DRIVE TIRES: 4 PLY 23 X 10.5-12 TUBLESS  
 TURF PNEUMATIC  
 TREAD WIDTH: 41"  
 OVERALL HEIGHT: 43.5"  
 OVERALL LENGTH: 79"  
 OVERALL WIDTH 52 DECK = 53"  
   WITH CHUTE DOWN = 63"  
 OVERALL WIDTH 61 DECK = 62"  
   WITH CHUTE DOWN = 72"  
 WEIGHT WITH 52 DECK = 1045#  
 WEIGHT WITH 61 DECK = 1065#  
 STANDARD FEATURES: HYDRAULIC OIL COOLER  
                                   PARKING BRAKE  
                                   ENGINE HOUR METER  
 MODELS ZKH52220--22 HP 52" DECK  
           ZKH52250--25 HP 52" DECK  
           ZKH61220--22 HP 61" DECK  
           ZKH61250--25 HP 61" DECK  
 HYDRAULIC OIL SPECIFICATIONS: API 10W-40 SF  
 OR CD MOTOR OIL WITH A MINIMUM OF .125%  
 ZINC ANTI-WEAR ADDITIVE. VISCOSITY 50  
 SUS. MINIMUM OPERATING TEMPERATURE -20  
 DEGREES F., COMPATIBLE TO BUNA-N SEALS.

## TROUBLE SHOOTING

PROBLEM	POSSIBLE CAUSES
Engine won't start	<ol style="list-style-type: none"> <li>1. Blade switch on.</li> <li>2. Drive levers not in the neutral slots.</li> <li>3. Operator not in seat.</li> <li>4. Park brake disengaged.</li> <li>5. Dead battery or cable off. ....(Ignition switch left on)</li> <li>6. Fuel valve closed or in the wrong position.</li> <li>7. No fuel.</li> <li>8. Spark plug wires off.</li> <li>9. Bad spark plugs.</li> </ol>
Mower will not move or moves slowly or hard	<ol style="list-style-type: none"> <li>1. Park brake on.</li> <li>2. Pump bypass valves open.</li> <li>3. Pump drive belt loose or off.</li> <li>4. Hydraulic system failure.</li> <li>5. Air in the hydraulic system.</li> </ol>
Blades won't engage	<ol style="list-style-type: none"> <li>1. Blade belt off of pulleys or mule drive belt off.</li> <li>2. Clutch unhooked from harness. ...(wire ties need to allow room for clutch movement)</li> <li>3. Blade switch failure.</li> <li>4. Fuse burnt out.</li> </ol>
Uneven cut	<ol style="list-style-type: none"> <li>1. Deck not level.</li> <li>2. Tire pressure uneven. (15 psi all tires)</li> <li>3. Blades bent (check tip to tip one blade thickness)</li> <li>4. Air foil of blade worn or bent.</li> </ol>
Cut is ragged	<ol style="list-style-type: none"> <li>1. Blades dull.</li> <li>2. Ground speed too fast.</li> <li>3. Grass accumulation under deck.</li> </ol>
Mower moves when in neutral position	<ol style="list-style-type: none"> <li>1. Motion control linkage out of adjustment.</li> <li>2. Pump arms loose or out of adjustment.</li> <li>3. Park brake adjustment, brake pad worn, or brake mounting hardware loose.</li> </ol>
Mower pulls left or right	<ol style="list-style-type: none"> <li>1. Tire pressure uneven.</li> <li>2. Motion control linkage adjustment.</li> <li>3. Soft terrain.</li> <li>4. Slope too steep.</li> </ol>

**When a problem occurs, do not overlook the simple causes.  
For example, no fuel or battery disconnected when the engine will not start.**

# WIRING DIAGRAM









**MAINTENANCE**

5. Hardware: Stop engine and remove key thoroughly inspect the entire machine for any missing or loose hardware. Check daily.

6. Air cleaner: Stop engine and remove key. Remove plastic cover and loosen wingnut on the air cleaner. Remove the foam pre-cleaner and wash or replace if needed. Inspect paper filter and replace if dirty. Check every 25 hours, daily if in very dirty conditions. Fuel efficiency , engine RPM, and available power goes down rapidly if the air filter is dirty. Prolonged effects could damage the engine.

7. Engine oil: Change oil to manufacturers specifications. Stop engine and remove key. Drain oil when engine is warm. **Thoroughly clean around cap before removing.** Remove oil drain cap from the end of drain hose located at the right rear of unit allow to drain and replace drain cap. Remove oil filter and replace. Put a light coat of clean oil on the filter gasket before installing. Fill engine with oil using manufacturers specs, see specification sheet. The factory uses Quaker State Super Blend 10w-30. Start engine and idle slowly to allow the oil to recoat the interior of the engine and then inspect for leaks.

8. Hydraulic oil: Check daily. Stop engine and tilt seat forward. **Thoroughly clean around cap.** Remove cap. Oil level should be slightly below the neck of the tank. If not, add oil. NOTE: Use only 10w - 40 motor oil, see specification sheet.

9. Tire pressure: Check every 25 to 50 hours. All four tires require 15 psi.

10. Battery: Check every 25 hours. Check electrolyte level. If needed fill to the full line marked on the side of the battery. Fill with distilled water. Do not try starting the engine with a weak battery. Recharge or replace the battery. The engine condensers and electronic ignition can be damaged internally with less than or more than the required 12 volts.

11. Belts: Check every 25 hours. Stop engine and remove key. Check the condition of all belts. The pump belt located under the seat and rubber engine flap. The front deck belt and the mule drive belt.

12. Lubrication:

Front caster pivots - every 25 hours.

Front wheels - every 25 hours.

Deck lift blocks - every 25 hours.

Park brake assemblies - every 25 hours.

Struts - every 25 hours.

Deck lift pivot - every 25 hours.

Cutter Housings--Daily using **Shell Dolium R** High Temperature Grease Only

**(Other geases are not compatible)**

(Clean grease zerk thoroughly before greasing)