LIGHTNING

PROPANE RIDE-ON FLOOR SCRAPER

Rev 02.2019

OPERATIONS AND MAINTENANCE MANUAL
MUST BE READ BEFORE OPERATING SCRAPER



TABLE OF CONTENTS

LIGHTNING

SECTION 1 **GENERAL DESCRIPTION**

SECTION 2 **SPECIFICATIONS**

SECTION 3 **SAFETY AND PRECAUTIONS**

SECTION 4 **INSTRUMENTS AND CONTROLS**

SECTION 5 **START-UP AND BREAK-IN**

SECTION 6 **MACHINE OPERATION**

SECTION 7 **PREVENTIVE MAINTAINANCE**

SECTION 8 **ENGINE**

SECTION 9 **FRAME & COWLINGS**

SECTION 10 **HYD AND DRIVE COMPONENTS**

SECTION 11 **STEERING JOYSTICK AND CABLES**

SECTION 12 **PROPANE PARTS**

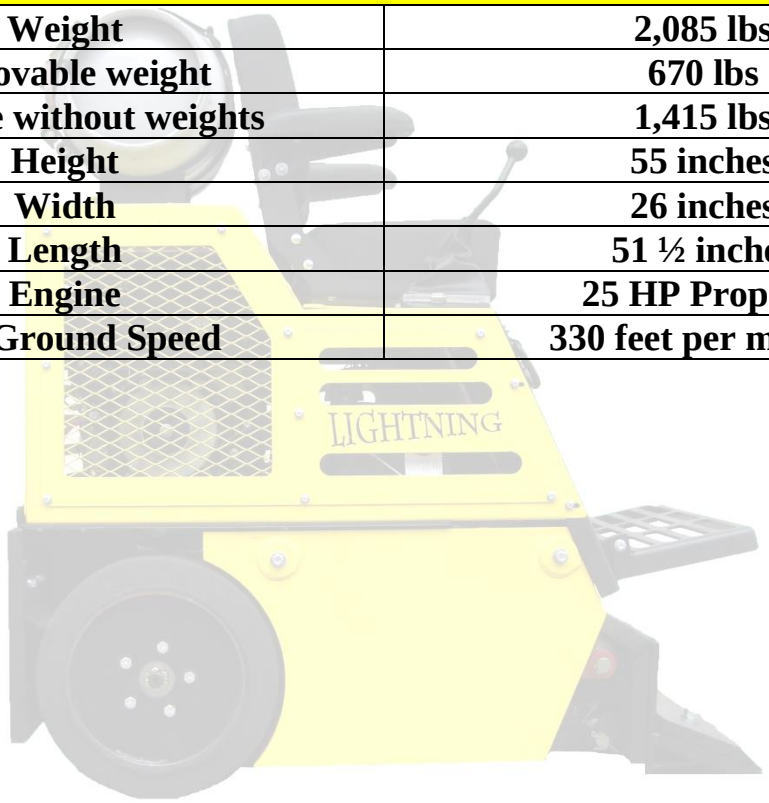
SECTION 1

GENERAL DESCRIPTION
Lightning

A Kohler propane engine powers the Lightning, driving a tandem hydrostatic pump system, creating a (skid-steer) zero turn radius drive train. Surface covering and coatings are removed by lowering a weighted blade onto the surface and moving forward under a high torque drive system. A flexible sharpened blade conforming to the floor surface then removes the surface coating. The weight of the machine holds the blade firmly to the floor and does not allow the blade to lift or ride over well-adhered surface coating material, thus lifting the floor coating.

SECTION 2

SPECIFICATIONS	
Weight	**2,085 lbs**
Removable weight	**670 lbs**
Machine without weights	**1,415 lbs**
Height	**55 inches**
Width	**26 inches**
Length	**51 ½ inches**
Engine	**25 HP Propane**
Max Ground Speed	**330 feet per minute**



SAFETY WARNING

CARBON MONOXIDE can cause severe nausea, fainting or death. Do not operate engine in closed or confined area without proper ventilation! A CO (Carbon Monoxide) monitor is recommended when operating scraper inside.

SECTION 3

SAFETY AND PRECAUTIONS

Before operation of the **Lightning** please read the entire operation and safety manual with complete understanding of the safety section. If you have any questions on safety and precautions please call 1-866-636-7763.

There are several advantages to an effective safety program that include: lower operating costs, lower workers' compensations, less work time lost, high employee morale, and overall less problems. No one can work safely without knowing what precautions to take to insure personal safety. Operators must know what equipment to wear, which job practices are safe and which are not, and must be aware of what hazards are possible in the work area. A regular schedule of Preventive Maintenance on your equipment is the best protection against unpleasant surprises that slow production and sometimes result in injuries. Here are a few suggested safety tips.

1. The first step before any maintenance or inspection takes place should be: stop the engine and disconnect the battery terminals.
2. Wear proper eye and ear protection and heavy-duty work gloves at all times.
3. Practice good Preventive Maintenance.
4. Practice good housekeeping.
5. Allow the **Lightning** to come to a complete stop, turn off engine, and chock rear wheels before performing any maintenance procedures.
6. Replace worn parts when necessary.
7. Do not reach into blade or control arm areas while machine is in operation.
8. Do not attempt to open any access door until the machine has come to a complete stop and the engine and propane are turned off.
9. Be sure a qualified electrician does all electrical inspections or changes.
10. Loose surface coating can cause dangerous footing. Always be alert and careful.
11. After replacing parts, be sure all tools used are removed from the machine. Be sure all bolts and nuts are tight. The loose connection of a rotating part could cause the part to fly off with explosive force, causing serious damage to the equipment and possible injury to the operator.
12. Always lower blade to the ground when the machine is unoccupied by the operator. Serious bodily injury may result if arms are not in the lowered position when not occupied.
13. Never allow unauthorized personnel or the general public into the work area.
14. The work area should be barricaded off to adequately keep all untrained persons out of the work site. If an unauthorized person enters the work area, stop the machine immediately and do not restart the machinery until they have left the work area.
15. Always allow a 200-foot buffer safety zone around all surface preparation activity.
16. Always run the **Lightning** in a well-ventilated area, with an approved OSHA air-monitoring system in place at all times.

17. Read and obey all safety labels placed on the machinery at all times. If safety labels have been destroyed or removed, call 1-866-636-7763 for free replacement prior to operating the machinery.
18. The **Lightning** is **not a toy.** All operators must be over 18 years of age, must have read and reviewed the safety and procedures manual before operating the machinery.
19. The **Lightning** is designed for surface preparation *ONLY.* It is not intended for towing, pushing, or any other procedure not described in this manual.
20. Propane systems should be checked and documented twice yearly by a certified propane professional for leaks or damaged parts. If a propane leak is detected, leave the machine immediately and seek assistance from a propane professional. Do not use or restart machinery until it is determined safe.
21. Horseplay and or high speed cornering is not allowed with this machine and could cause rollover resulting in injury or death.
22. No smoking or open flame is allowed while machinery is running or within 50 feet of the machine.
23. Operator must be sober, not under the influence of drugs or medication, and under full control of all bodily senses while operating this or any machinery.
24. When transporting the **Lightning** it is recommended to use transport dolly. This procedure spreads the weight of the machine over a larger surface area.
25. All **Lightning** operators must receive safety training before performing any functions with the machine. **OEM Products** offers a free safety, maintenance, and orientation seminar at its facility in Oklahoma City, OK.

New owners and operators are advised to call 1-866-636-7763 for an appointment.

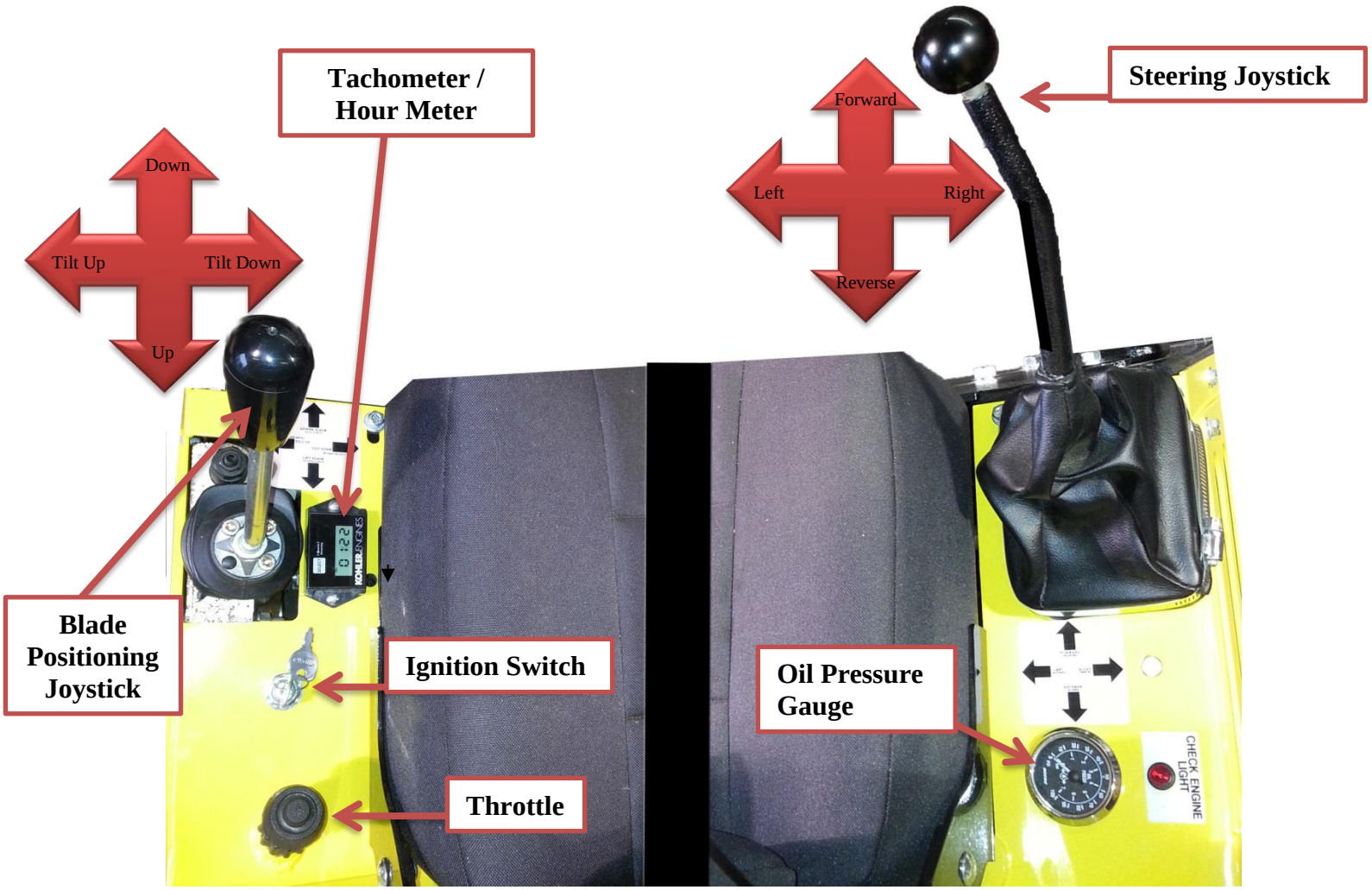
SECTION 4

Instruments and Controls

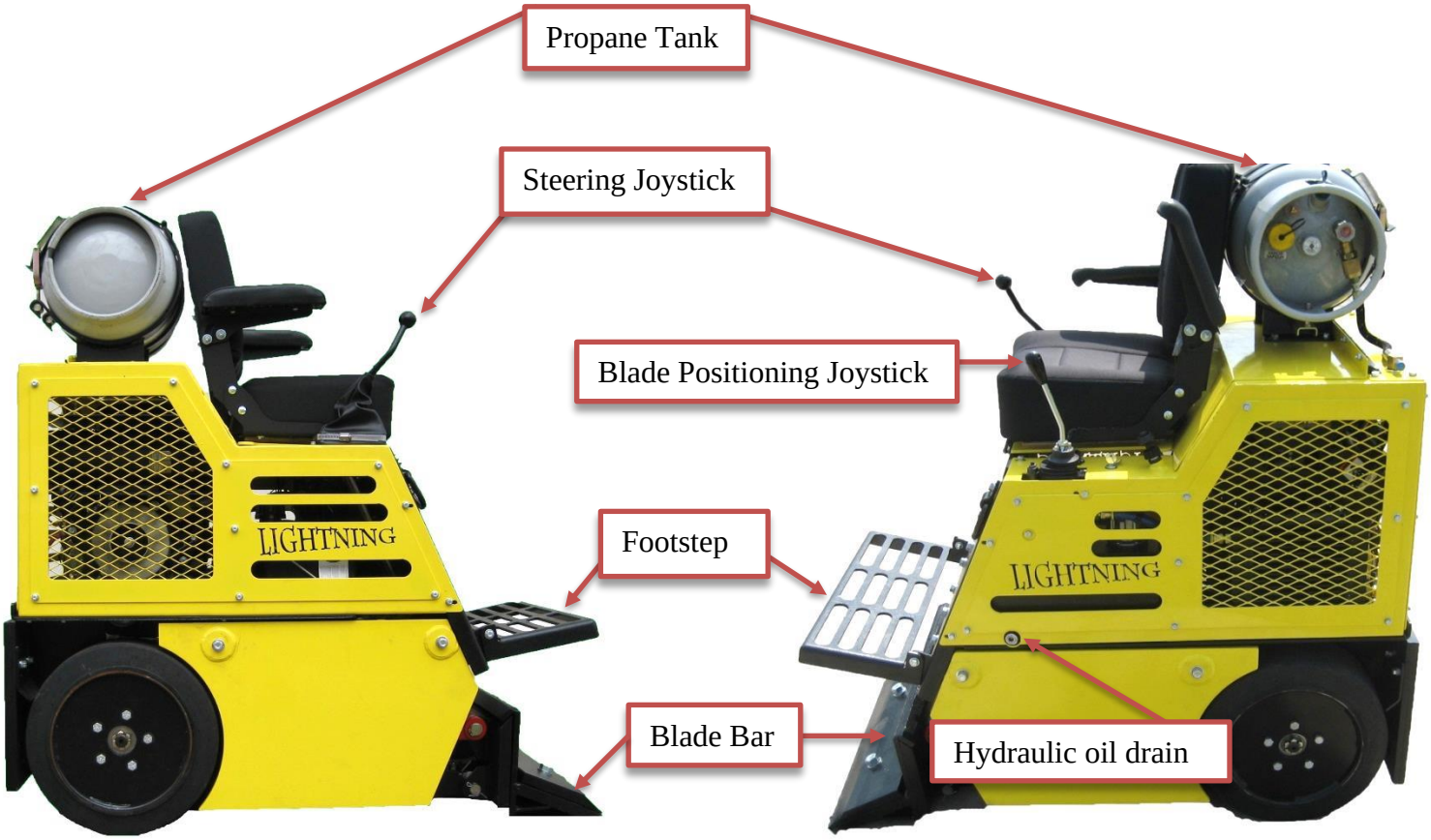
View # 1 – In-seat view of Lightning controls and gauges

View # 2 - Left and Right side view of Lightning machine

View #1 In-seat view



VIEW #2
LEFT AND RIGHT SIDE DETAIL



SECTION 5

Lightning
START-UP AND BREAK-IN

The **Lightning** has been safety tested and run at our factory prior to shipping. The factory topped off all fluid levels; however, the propane tank shipped empty. Here is a recommended checklist of things to do before operating the **Lightning**:

1. Raise engine covers and check oil level.
2. Check air cleaner filter element for snug fit.
3. Check all battery cable connections for tightness.
4. Inspect for major hydraulic oil leaks. Snug hydraulic fittings using two wrenches. Use caution not to over tighten.
5. Fill propane tank.
6. Mount propane bottle in brackets, be sure bracket alignment pin corresponds with alignment slot on bottle.
7. Attach propane hose to bottle by attaching to the handle valve. Snug fit the female connector attached to the hose and slowly turn valve on. You should hear gas briefly enter the propane hose. Immediately check for propane leaks with soapy water solution. If leak persists after retightening the knurled female connector: **STOP**, turn off the bottle at valve and seek assistance from a certified propane professional. Serious damage and or an explosion could occur.
8. Check lug bolt torque: 85-100 ft. lbs. Check axle nut (center nut between the lug bolts) torque: 200 ft. lbs.
9. Return all engine guards to proper position.
10. **Operator must be in seat before engine will start**
11. Crank the engine by turning the key to the on position. The engine will crank for 3 to 5 seconds while the propane enters the carburetor. If the engine does not start, turn the key off, wait 1 minute and try again. If again unsuccessful, check propane valve to be sure it is open. If still unsuccessful, turn off propane valve and seek assistance or call 1-866-636-7763.
12. Operation of the machine can continue when the engine is warm and running with the operator safely in the seat.



Please turn to Section VI for Machinery Operation.

SECTION 6

MACHINERY OPERATION

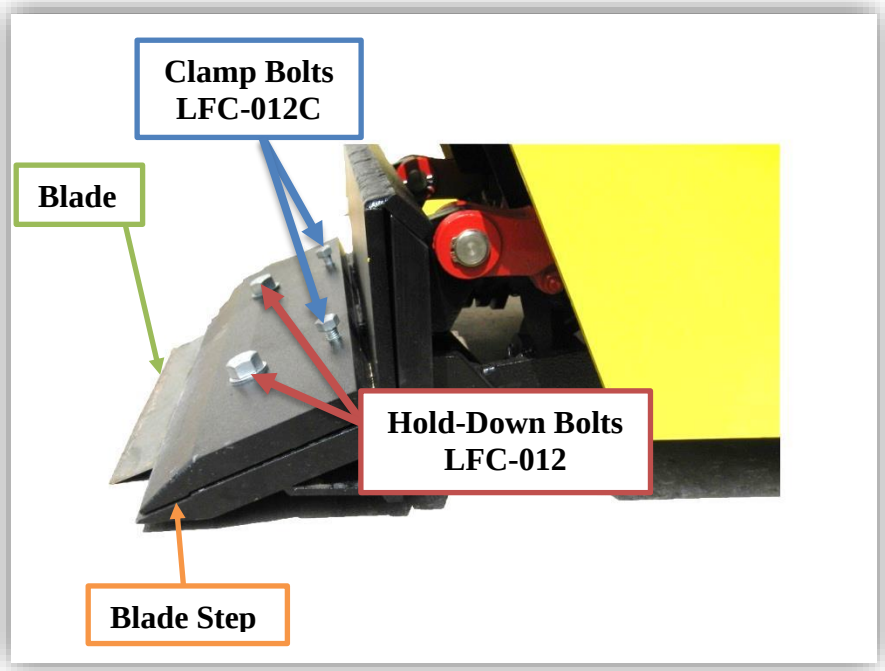
Before reading the machinery operation section, new operators should familiarize themselves with VIEW#1 **In-seat view** and VIEW#2 **Left and Right side detail**. These pictures show the basic parts of the Lightning.

To move the machine: Using the right hand, slowly move the **Steering Joystick** in the desired direction. Forward and left moves the machine to the left, backward and right reverses the machine to the right. It is just that simple to drive. The amount of movement on the joystick, and the level of the throttle, controls the speed of the **Lightning**.

Throttle control is on the left side of the seat, taking the unit from idle to 3400 RPM. The optimum RPM is 2600 to 3200 RPM. To change the RPM of engine turn throttle knob clockwise to lower RPM and counterclockwise to raise RPM.

The left joystick lever positions the blade to the surface. Moving the lever forward and backward moves the blade up and down. Left and right movement changes the blade pitch.

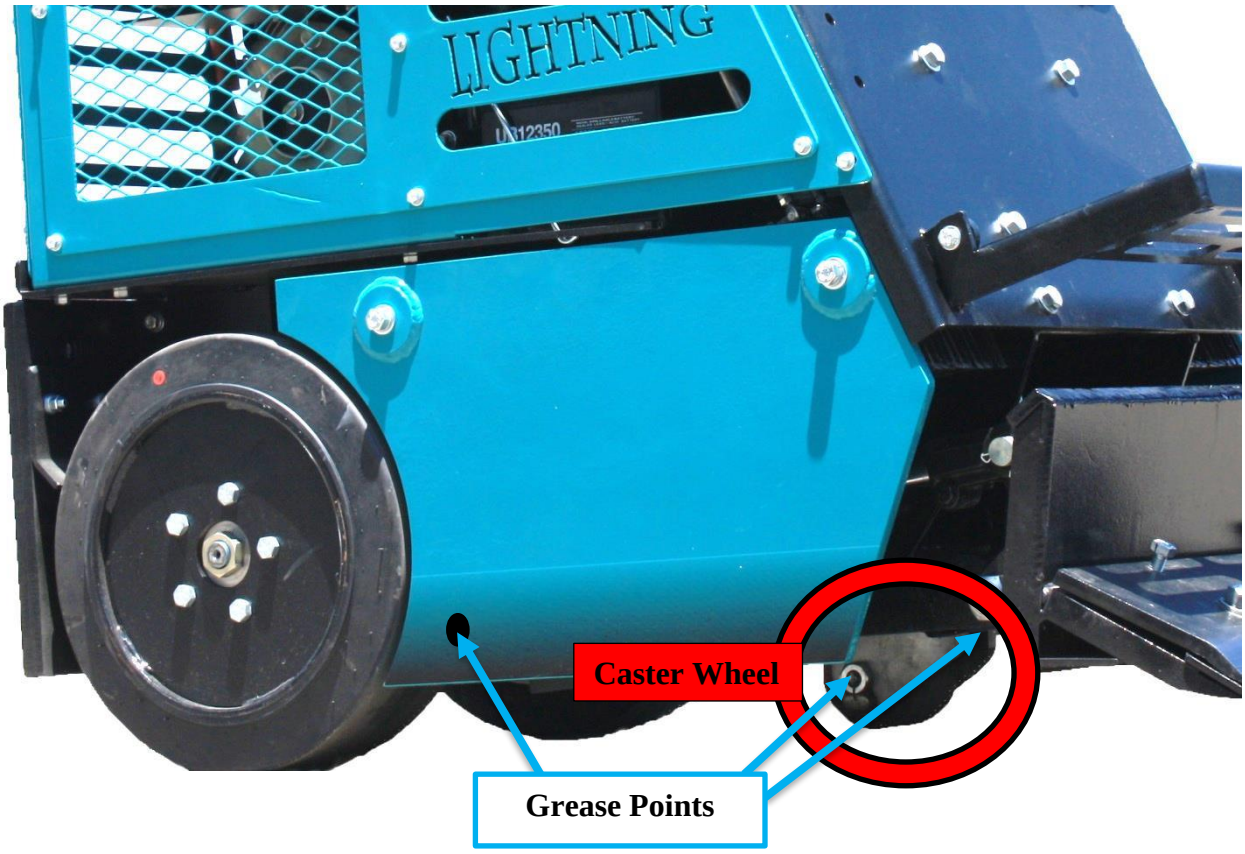
To access the hydraulic reservoir: Lift up on the bottom of the seat



To change scraping blades: Stop engine. Loosen the smaller **Clamp Bolts** at the rear of the blade holder using a ¾" open-end wrench. Slide the dull blade out. Loosen the **Hold-Down Bolts** if necessary to fit the replacement blade against the **Blade Step**. Retighten the **Hold-Down Bolts** by hand and then retighten **the Clamp Bolts** with your wrench. Lower the blade and resume scraping. With a little practice, you should be able to change the blades in 15 seconds. Dull blades may be sharpened and reused many times.

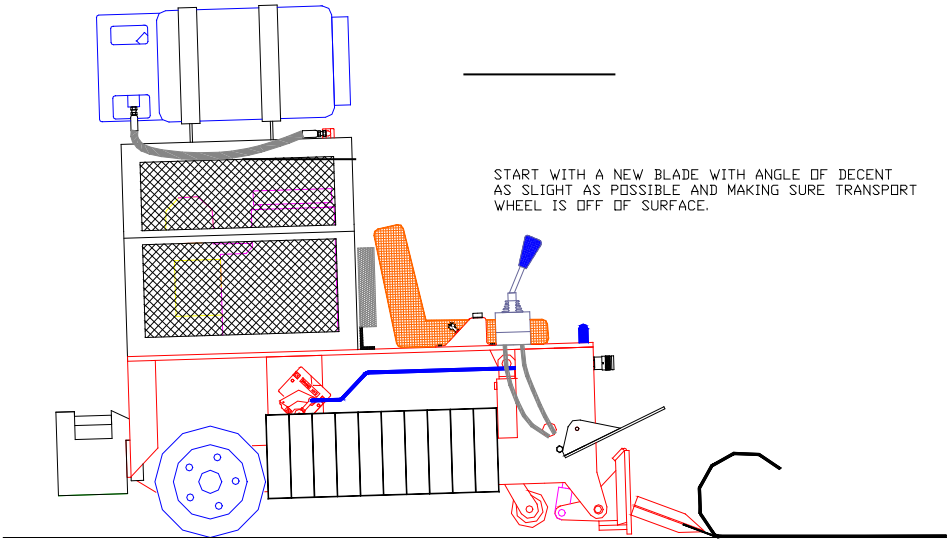
Operators should lower the blade by pressing the left hand lever forward each time they get off the machine. This safety practice eliminates possible bodily injury from running into the blade or lowering of the blade by unauthorized operators.

The **Caster Wheel** should not be in contact with the floor while scraping. The caster wheel will lift off the floor when the blade is lowered. Caster contact with the floor while scraping will negatively affect scraper productivity and steering. Caster wheel contact with hard debris while scraping can damage the caster wheel and shorten its life.

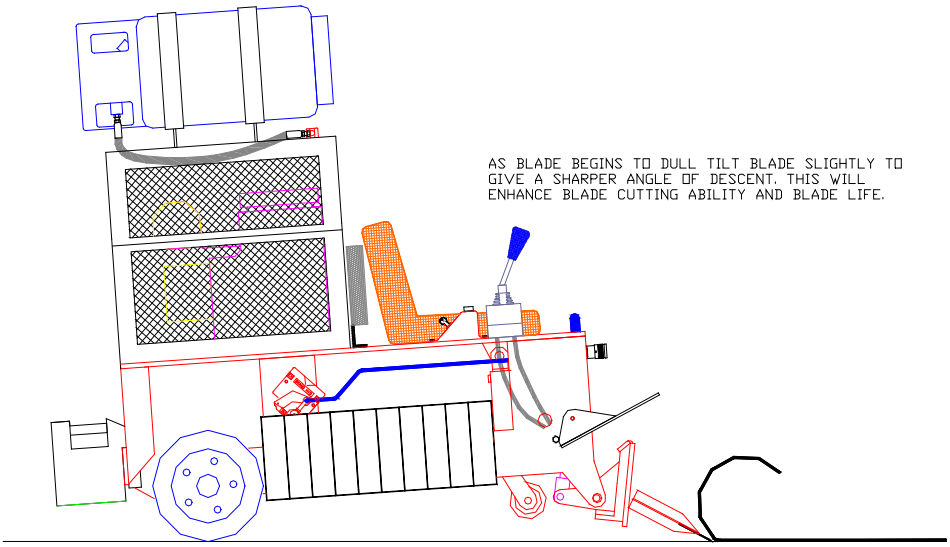


There are a 4 important grease points on the Lightning. A newer model Lightning will have a hole in the side weight cover for access to the grease zerk on the Lightning arms. If your Lightning does not have the access hole then simply remove the 2 bolts holding the side cover on for easy access. The other 2 points are on the caster assembly.

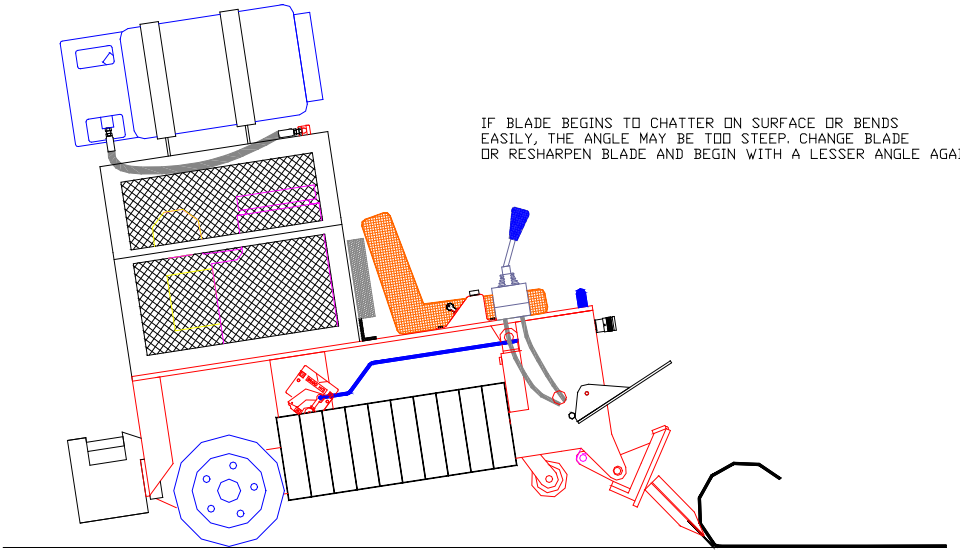
BLADE POSITIONING



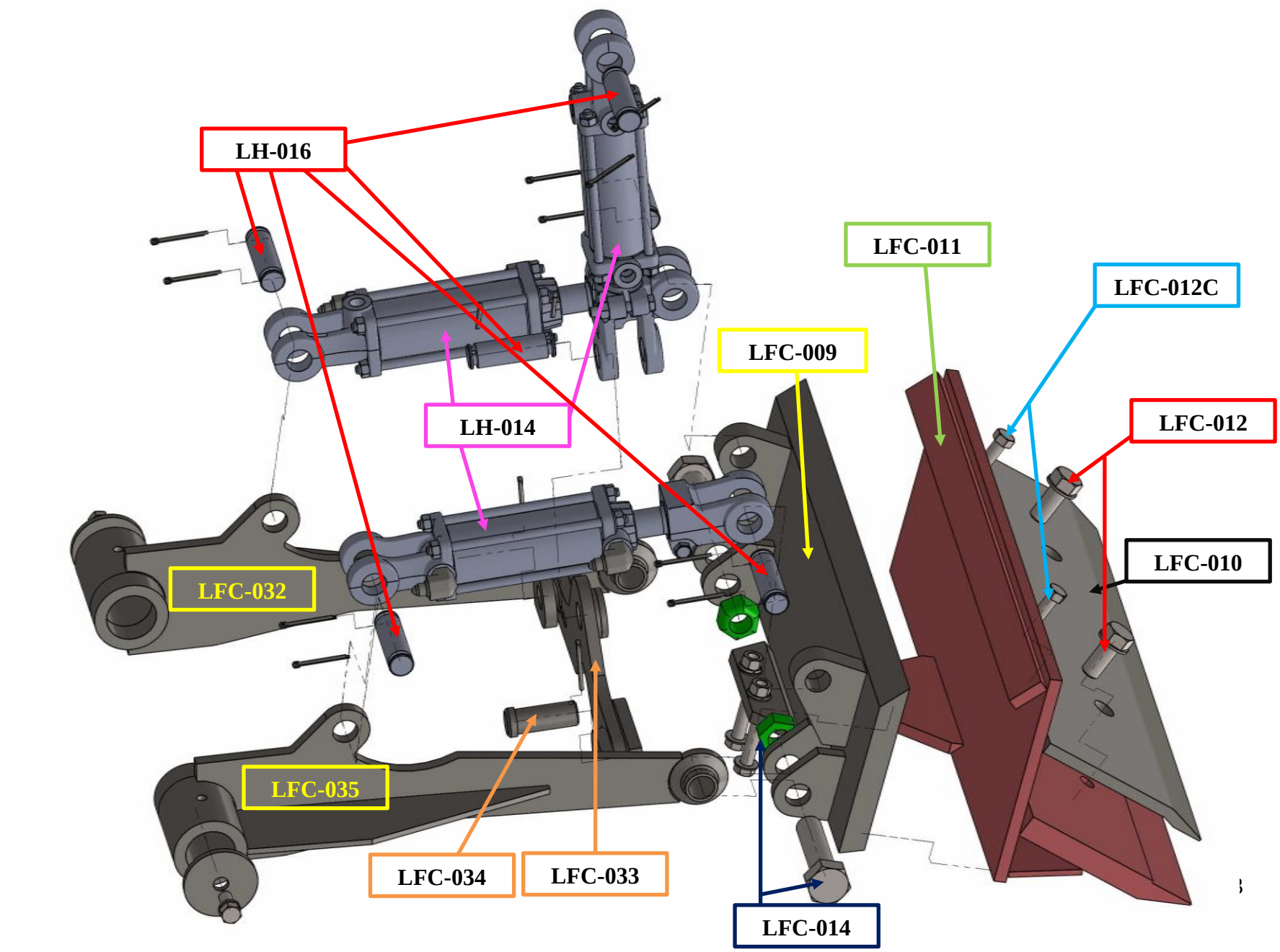
START WITH A NEW BLADE WITH ANGLE OF DECENT AS SLIGHT AS POSSIBLE AND MAKING SURE TRANSPORT WHEEL IS OFF OF SURFACE.



AS BLADE BEGINS TO DULL TILT BLADE SLIGHTLY TO GIVE A SHARPER ANGLE OF DESCENT. THIS WILL ENHANCE BLADE CUTTING ABILITY AND BLADE LIFE.



IF BLADE BEGINS TO CHATTER ON SURFACE OR BENDS EASILY, THE ANGLE MAY BE TOO STEEP. CHANGE BLADE OR RESHARPEN BLADE AND BEGIN WITH A LESSER ANGLE AGAIN.


LH-016
LFC-011
LFC-012C
LFC-009
LH-014
LFC-012
LFC-010
LFC-032
LFC-035
LFC-034
LFC-033
LFC-014

SECTION 7

Preventive Maintenance

FOLLOW KOHLER SUGGESTED SCHEDULE FOR ENGINE MAINTENANCE

DAILY MAINTENANCE

- **CHECK HYDRAULIC OIL**
- **INSPECT FOR HYDRAULIC OIL LEAKS**
- **INSPECT FOR PROPANE SYSTEM LEAKS**
- **SERVICE ENGINE AIR CLEANER**
- **RETORQUE WHEEL LUG BOLTS AND AXLE NUT**

20 HR MAINTENANCE

- **REPLACE ENGINE AIR CLEANER**

100 HR MAINTENANCE

- **GREASE CASTER BEARINGS**
- **INSPECT ALL BOLTS AND NUTS AND TIGHTEN IF NEEDED**

400 HR MAINTAINANCE

- **CHANGE HYDRAULIC OIL WITH:**
  - **A Synthetic 15w-50 Motor Oil**
- **CHANGE HYDRAULIC OIL FILTERS**

SECTION 8
ENGINE COMPONENTS LIST

DESCRIPTION	PART NUMBER
ENGINE	LE-001
GASKET, BREATHER	LE-002
ENGINE DIPSTICK TUBE KIT	LE-003
COOLING FAN, EXTERNAL, WHITE	LE-004
ENGINE FLYWHEEL	LE-005
FLYWHEEL FAN	LE-006
STATOR ASSEMBLY	LE-007
THROTTLE LINKAGE ASSEMBLY	LE-008
AIR CLEANER COVER	LE-009
ENGINE AIR FILTER WITH PRE-CLEANER	LE-010
PRE-CLEANER FOR AIR FILTER	LE-011
ENGINE OIL FILTER, KOHLER PROPANE	LE-012
OIL PRESSURE SWITCH	LE-013
KIT, GOVERNOR GEAR W/PIN	LE-014
EXHAUST PURIFIER	LE-015
IGNITION SWITCH	LE-016
WIRING HARNESS	LE-017
ENGINE TACHOMETER	LE-018
MUFFLER BRACKET	LE-019
ENGINE SPARK PLUG	LE-020
ENGINE STARTER	LE-021
EXHAUST GASKET	LE-022
IDLER PULLEY	LE-023
BELT SET OF 3PC (3VX500)	LE-024
PULLEY, 3 GROOVE FRONT PUMP DRIVE	LE-025
FRONT HYDROSTAT QD BUSHING	LE-026
1-1/8” QD BUSHING	LE-027
BATTERY	LE-028
BLACK (-) BATTERY CABLE 24”	LE-029
RED (+) BATTERY CABLE 36”	LE-030
BATTERY CABLE LUGS ¼” (2 ea)	LE-031
BATTERY CABLE LUGS 5/16” (2 ea)	LE-032
BELT TENSIONER ASSEMBLY	LE-033
BELT TENSIONER BACK PLATE	LE-034
BELT TENSIONER CONTROL ARM	LE-035
BELT TENSIONER PULLEY ARM	LE-036
BELT TENSIONER LINKAGE ROD	LE-037
BELT TENSIONER LK ROD ENDS	LE-038
ENGINE OIL CASE DRAIN HOSE	LE-039
IGNITION COIL	LE-040
SAM MODULE	LE-041

IGNITION KEYS	**LE-042**
IDLER PULLEY SPACER	**LE-043**
BELTS (SET OF 2)	**LE-044**
REAR HYDROSTAT QD BUSHING	**LE-046**
THROTTLE CABLE CLAMP	**LE-047**
GEAR PUMP DRIVE BELT	**LE-048**
2 GROOVE 3V5.00 ENGINE DRIVE PULLEY	**LE-049**
GEAR PUMP QD BUSHING	**LE-051**
1 GROOVE PULLEY	**LE-052**
REGULATOR RECTIFIER	**LE-053**
PROPANE FUEL FILTER KIT	**LE-054**

SECTION 9
FRAME AND COWLINGS

KEY	DESCRIPTION	QTY	PART NUMBER
1.	TIRE/WHEEL – BLACK	2	LFC-001B
2.	TIRE/WHEEL (NON-MARKING) - WHITE	2	LFC-001
3.	LUG BOLTS	10	LFC-002
4.	WHEEL HUB	2	LFC-003
5.	1” 2-BOLT FLANGE BEARING	2	LFC-004
6.	CASTER ASSEMBLY (Front wheel with frame)	1	LFC-005
7.	BATTERY HOLD DOWN BRACKET		LFC-006
8.	FRONT WEIGHTS		LFC-007F
9.	SIDE WEIGHTS		LFC-007S
10.	TRANSPORT DOLLY		LFC-008
11.	BLADE BAR (24”) MOUNT PLATE		LFC-009
12.	BLADE BAR (24”) TOP		LFC-010
13.	BLADE BAR (24”) BOTTOM		LFC-011
14.	BLADE HOLD-DOWN BOLTS		LFC-012
15.	BLADE BAR TOP CLAMP BOLTS		LFC-012C
16.	WEIGHT HANGER		LFC-013
17.	BLADE BAR PIVOT PINS WITH LOCK NUT		LFC-014
18.	SEAT	1	LFC-015
19.	SEAT MOUNTING PLATE		LFC-016
20.	SEAT MOUNTING PLATE HINGE		LFC-017
21.	FRONT PLATE		LFC-018
22.	FOOTREST		LFC-019
23.	TIE DOWN D-RINGS	3	LFC-020
24.	REAR PLATE		LFC-021
25.	REAR COWLING		LFC-022
26.	TOP COWLING HINGE		LFC-023
27.	TOP COWLING		LFC-024
28.	FRAME, RIGHT SIDE		LFC-025

29.	COWLING, RIGHT SIDE		LFC-026
30.	WEIGHT COVER, RIGHT SIDE		LFC-027
31.	FRAME, LEFT SIDE		LFC-028
32.	COWLING, LEFT SIDE		LFC-029
33.	WEIGHT COVER, LEFT SIDE		LFC-030
34.	FRAME, RIGHT SIDE		LFC-031
35.	LEFT ARM		LFC-032
36.	CROSSOVER ARM		LFC-033
37.	CROSSOVER ARM PIN		LFC-034
38.	RIGHT ARM		LFC-035
39.	THROTTLE CABLE HEAT SHIELD		LFC-036
40.	SCRUBBER HEAT SHIELD		LFC-037
41.	FIRE SLEEVE, THROTTLE CABLE		LFC-038
42.	THROTTLE CABLE	1	LFC-039
43.	CENTER FRONT CASTER “WHEEL ONLY”	1	LFC-040
44.	BATTERY HOLD DOWN BOLTS		LFC-041
45.	HYDRAULIC COOLER MOUNTING PLATE		LFC-042
46.	BLADE BAR (8”) ASSEMBLY (TOP AND BOTTOM)		LFC-043
47.	BLADE BAR (8”) TOP ONLY		LFC-044
48.	BLADE BAR (8”) BOTTOM ONLY		LFC-045
49.	BLADE ARM SPACER		LFC-046
50.	BLADE ARM RETAINING WASHER		LFC-047
51.	WHEEL SCRAPER		LFC-048

SECTION 10
HYDRAULIC COMPONENTS

DESCRIPTION	QTY	PART NUMBER
PISTON PUMP – REAR		LH-002
GEAR PUMP		LH-003
PISTON PUMP –FORWARD		LH-005
HYDRAULIC TANK		LH-007
TANK FILLER CAP		LH-008
FILTER HEAD	2	LH-009
FILTER	2	LH-010
WHEEL MOTOR		LH-011
LIFT/TILT CYLINDER		LH-014
LIFT/TILT CYLINDER CLEVIS		LH-015
LIFT/TILT CYLINDER PIN		LH-016
HYDRAULIC COOLER		LH-017
OIL COOLER ADAPTER		LH-018
OIL COOLER PLUG		LH-019
HYDRAULIC HOSE KIT		LH-020

HOSE – Left wheel motor	**2**	**LH-021**
HOSE – Valve to tilt cylinder forward tee		**LH-022**
HOSE – Valve to right tilt cylinder front tee		**LH-023**
HOSE – Left tilt cylinder front port to tee		**LH-024**
HOSE – Valve to tilt cylinder rear tee		**LH-025**
HOSE – Rear tee to right tilt cylinder rear		**LH-026**
HOSE – Rear tee to left cylinder clevis (9-1/2")		**LH-027**
HOSE – Valve to lift cylinder bottom port (13")		**LH-028**
HOSE – Valve to lift cylinder top port (19")		**LH-029**
HOSE – Valve to gear pump (26")		**LH-030**
HOSE – Right wheel motor	**2**	**LH-031**
HOSE – Engine Oil Drain Hose		**LH-039**
HOSE – Gear pump suction	**1**	**LH-043**
BLADE CONTROL JOYSTICK BOOT		**LH-040**
BLADE CONTROL JOYSTICK HANDLE		**LH-041**
BLADE CONTROL HYDRAULIC VALVE		**LH-042**
BLADE CONTROL VALVE REPAIR KIT		**LH-042R**

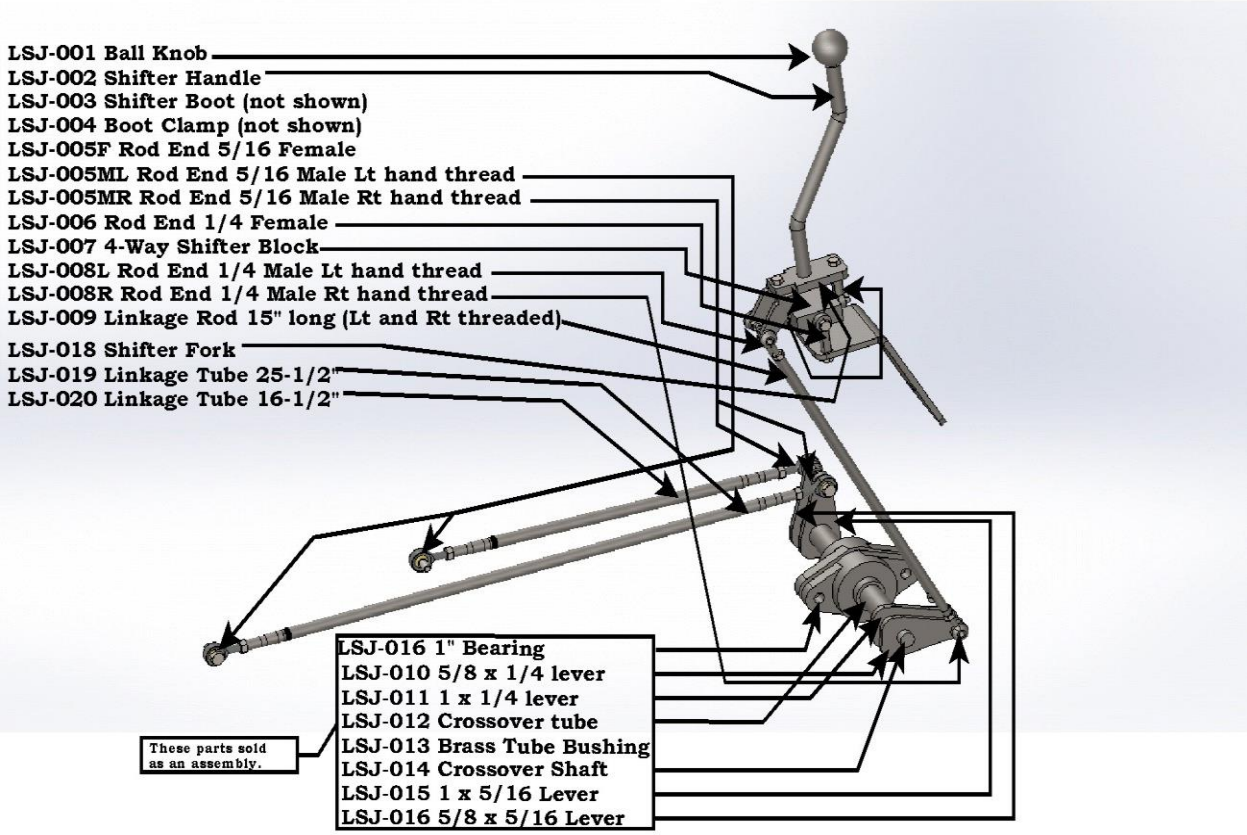
SECTION 11



STEERING JOYSTICK ASSEMBLY

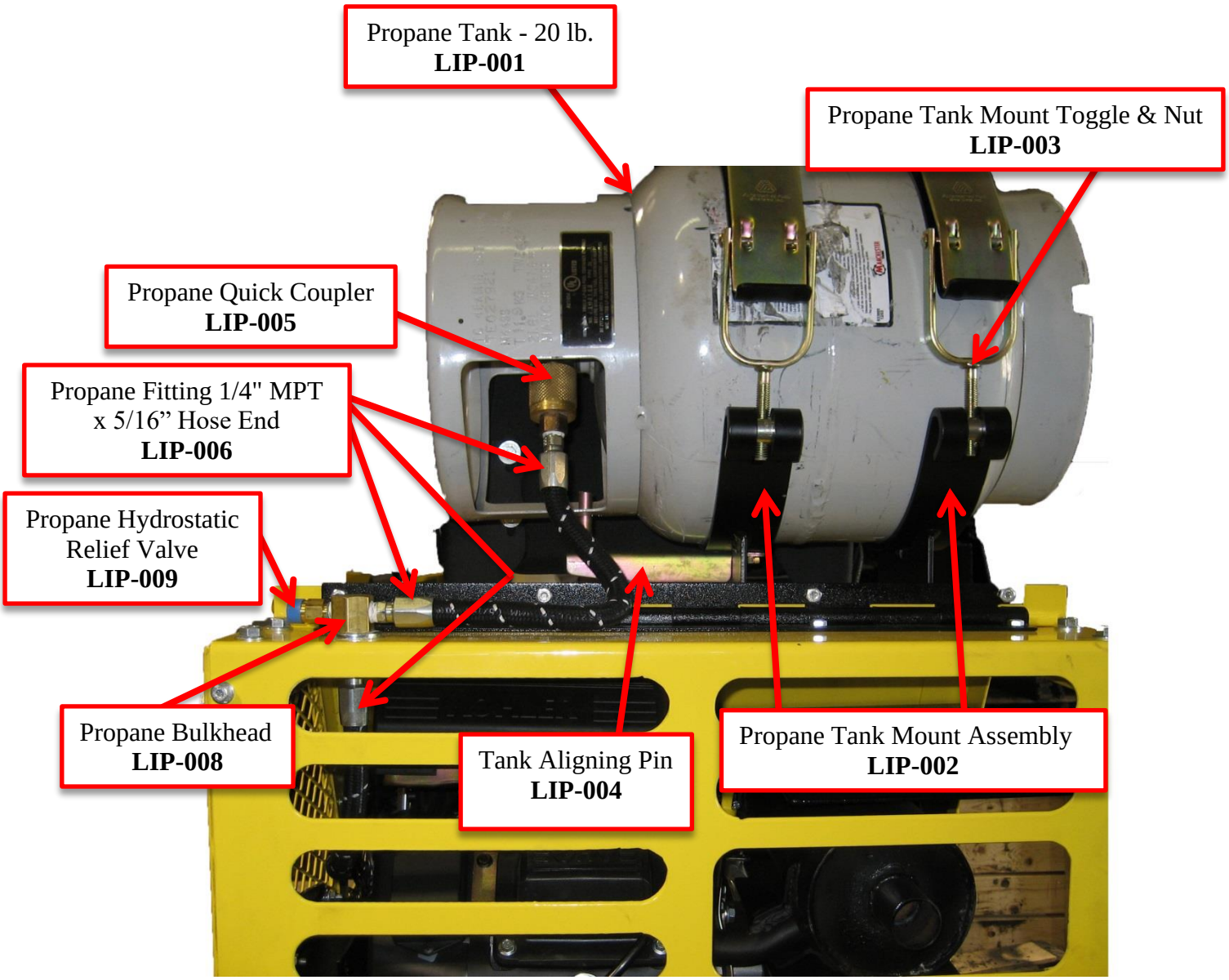
KEY	DESCRIPTION	QTY	PART NUMBER
	SHIFTER ASSEMBLY WITH BEARINGS	**1**	**LSJ-021**
	BALL KNOB	**1**	**LSJ-001**
	HANDLE	**1**	**LSJ-002**
	BOOT	**1**	**LSJ-003**
	CLAMP, JOYSTICK BOOT	**1**	**LSJ-004**
	LEFT HAND ROD END, 5/16	**2**	**LSJ-005-ML**
	RIGHT HAND ROD END, 5/16	**2**	**LSJ-005-MR**
	¼"-28 FEMALE ROD END (NO STUD)	**4**	**LSJ-006**
	4 WAY SHIFTER PIVOT BLOCK		**LSJ-007**
	LEFT HAND ¼" MALE ROD END w/STUD	**4**	**LSJ-008L**
	RIGHT HAND ¼" MALE ROD END w/STUD	**4**	**LSJ-008R**
	TAPPED LINKAGE ROD 15" LONG		**LSJ-009**
	5/8" X ¼" CONTROL LEVER		**LSJ-010**
	1" X ¼" CONTROL LEVER		**LSJ-011**
	CROSSOVER TUBE		**LSJ-012**
	CROSSOVER TUBE BUSHING	**2**	**LSJ-013**
	CROSSOVER SHAFT (5/8 OD)		**LSJ-014**
	ONTROL LEVER "A" (1" ID)		**LSJ-015**
	TRUNION CONTROL LEVER "B" (5/8" ID)		**LSJ-016**

1” ID, 2 BOLT FLANGE BEARING	**LSJ-017**
SHIFTER FORK	**LSJ-018**
TRUNION LINKAGE ROD “A” 24-1/2”	**LSJ-019**
TRUNION LINKAGE ROD “B” 15-1/2”	**LSJ-020**
JOYSTICK BASE	**LSJ-022**



SECTION 12
PROPANE PARTS

TANK 20 lb,	**LIP-001**
TANK MOUNT ASSEMBLY	**LIP-002**
TANK MOUNT TOGGLE & NUT	**LIP-003**
TANK ALIGNING PIN	**LIP-004**
QUICK COUPLER	**LIP-005**
FITTING ¼" MPT x 5/16" hose end	**LIP-006**
HOSE, Tank to bulkhead 12"	**LIP-007**
BULKHEAD	**LIP-008**
HYDROSTATIC RELIEF VALVE	**LIP-009**
HOSE, Bulkhead to lock-off solenoid	**LIP-010**
FITTING, 5/16" hose end x 3/8" flare	**LIP-011**
FITTING, ¼" MPT x 3/8" Flare 90	**LIP-012**
LOCK-OFF SOLENOID	**LIP-013**
FITTING ¼" MPT X 1/4" FPT 45	**LIP-014**
PROPANE VAPORIZER	**LIP-015**
REGULATOR	**LIP-017**
REGULATOR MOUNTING BRACKET	**LIP-018**
LOAD BLOCK	**LIP-020**
REGULATOR REPAIR KIT	**LIP-022**


Propane Tank - 20 lb.
LIP-001
Propane Tank Mount Toggle & Nut
LIP-003
Propane Quick Coupler
LIP-005
Propane Fitting 1/4" MPT x 5/16” Hose End
LIP-006
Propane Hydrostatic Relief Valve
LIP-009
Propane Bulkhead
LIP-008
Tank Aligning Pin
LIP-004
Propane Tank Mount Assembly
LIP-002