

# OPERATION MANUAL



## ***ESSICK* SERIES**

### **MODEL PRO20**

### **HYDRAULIC PLASTER/MORTAR MIXER**

### **(VANGUARD 18HP GASOLINE ENGINE)**

Revision #1 (09/09/19)

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**THIS MANUAL MUST ACCOMPANY THE EQUIPMENT AT ALL TIMES.**

# PROPOSITION 65 WARNING

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## SILICOSIS/RESPIRATORY WARNINGS

### **WARNING**



#### **SILICOSIS WARNING**

Grinding/cutting/drilling of masonry, concrete, metal and other materials with silica in their composition may give off dust or mists containing crystalline silica. Silica is a basic component of sand, quartz, brick clay, granite and numerous other minerals and rocks. Repeated and/or substantial inhalation of airborne crystalline silica can cause serious or fatal respiratory diseases, including silicosis. In addition, California and some other authorities have listed respirable crystalline silica as a substance known to cause cancer. When cutting such materials, always follow the respiratory precautions mentioned above.

### **WARNING**



#### **RESPIRATORY HAZARDS**

Grinding/cutting/drilling of masonry, concrete, metal and other materials can generate dust, mists and fumes containing chemicals known to cause serious or fatal injury or illness, such as respiratory disease, cancer, birth defects or other reproductive harm. If you are unfamiliar with the risks associated with the particular process and/or material being cut or the composition of the tool being used, review the material safety data sheet and/or consult your employer, the material manufacturer/supplier, governmental agencies such as OSHA and NIOSH and other sources on hazardous materials. California and some other authorities, for instance, have published lists of substances known to cause cancer, reproductive toxicity, or other harmful effects.

Control dust, mist and fumes at the source where possible. In this regard use good work practices and follow the recommendations of the manufacturers or suppliers, OSHA/NIOSH, and occupational and trade associations. Water should be used for dust suppression when wet cutting is feasible. When the hazards from inhalation of dust, mists and fumes cannot be eliminated, the operator and any bystanders should always wear a respirator approved by NIOSH/MSHA for the materials being used.

### PRO20 Hydraulic Mixer

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#### **NOTICE**

Specifications are subject to change without notice.



## SAFETY INFORMATION

Do not operate or service the equipment before reading the entire manual. Safety precautions should be followed at all times when operating this equipment. Failure to read and understand the safety messages and operating instructions could result in injury to yourself and others.



### SAFETY MESSAGES

The four safety messages shown below will inform you about potential hazards that could injure you or others. The safety messages specifically address the level of exposure to the operator and are preceded by one of four words: **DANGER**, **WARNING**, **CAUTION** or **NOTICE**.

### SAFETY SYMBOLS

#### **DANGER**

Indicates a hazardous situation which, if not avoided, **WILL** result in **DEATH** or **SERIOUS INJURY**.

#### **WARNING**

Indicates a hazardous situation which, if not avoided, **COULD** result in **DEATH** or **SERIOUS INJURY**.






#### **CAUTION**

Indicates a hazardous situation which, if not avoided, **COULD** result in **MINOR** or **MODERATE INJURY**.

#### **NOTICE**

Addresses practices not related to personal injury.

Potential hazards associated with the operation of this equipment will be referenced with hazard symbols which may appear throughout this manual in conjunction with safety messages.

Symbol	Safety Hazard
	Lethal exhaust gas hazards
	Explosive fuel hazards
	Burn hazards
	Rotating parts hazards
	Hydraulic fluid hazards

# SAFETY INFORMATION

## GENERAL SAFETY

### ⚠ CAUTION

- **NEVER** operate this equipment without proper protective clothing, shatterproof glasses, respiratory protection, hearing protection, steel-toed boots and other protective devices required by the job or city and state regulations.



- Avoid wearing jewelry or loose-fitting clothes that may snag on the controls or moving parts as this can cause serious injury.

- **NEVER** operate this equipment when not feeling well due to fatigue, illness or when on medication.



- **NEVER** operate this equipment under the influence of drugs or alcohol.



- **ALWAYS** clear the work area of any debris, tools, etc. that would constitute a hazard while the equipment is in operation.

- **ALWAYS** check the equipment for loosened threads or bolts before starting.

- **NEVER** use the equipment for any purpose other than its intended purposes or applications.

## NOTICE

- This equipment should only be operated by trained and qualified personnel 18 years of age and older.

- Whenever necessary, replace nameplate, operation and safety decals as they become difficult to read.

- Manufacturer does not assume responsibility for any accident due to equipment modifications. Unauthorized equipment modification will void all warranties.

- **NEVER** use accessories or attachments that are not recommended by Multiquip for this equipment. Damage to the equipment and/or injury to user may result.

- **ALWAYS** know the location of the nearest fire extinguisher.



- **ALWAYS** know the location of the nearest first aid kit.



- **ALWAYS** know the location of the nearest phone or **keep a phone on the job site**. Also, know the phone numbers of the nearest **ambulance, doctor** and **fire department**. This information will be invaluable in the case of an emergency.



# SAFETY INFORMATION

## MIXER SAFETY

### DANGER

- **NEVER** operate the equipment in an explosive atmosphere or near combustible materials. An **explosion or fire** could result causing **severe bodily harm or even death**.



- **NEVER** mix **flammable** or **explosive** substances.

### WARNING

- **NEVER** place your hands inside the drum while starting or operating this equipment.
- **NEVER** disconnect any **emergency or safety devices**. These devices are intended for operator safety. Disconnection of these devices can cause **severe injury, bodily harm or even death**. Disconnection of any of these devices will void all warranties.



- Before operating the mixer, ensure that the safety grate is in position and correctly fitted.

- If applicable, **NEVER** use your hand to find hydraulic leaks. Use a piece of wood or cardboard. Hydraulic fluid injected into the skin must be treated by a knowledgeable physician immediately or **severe injury or death** can occur.



### CAUTION

- **NEVER** lubricate components or attempt service on a running machine.

### NOTICE

- **ALWAYS** keep the machine in proper running condition.
- **ALWAYS** ensure the mixer is on level ground before mixing.
- Fix damage to the machine and replace any broken parts immediately.
- **ALWAYS** store equipment properly when it is not being used. Equipment should be stored in a clean, dry location out of the reach of children and unauthorized personnel.
- **ALWAYS** deploy stabilizer jack stands prior to use.

## ENGINE SAFETY

### DANGER

- Engine fuel exhaust gases contain poisonous carbon monoxide. This gas is colorless and odorless, and can cause **death** if inhaled.
- The engine of this equipment requires an adequate free flow of cooling air. **NEVER** operate this equipment in any enclosed or narrow area where free flow of the air is restricted. If the air flow is restricted it will cause injury to people and property and serious damage to the equipment or engine.



### WARNING

- **NEVER** place hands or fingers inside the engine compartment while the engine is running.
- **NEVER** operate the engine with heat shields or guards removed.
- **NEVER** remove the engine oil drain plug while the engine is hot. Hot oil will gush out of the oil tank and severely scald any persons in the general area of the mixer.

### CAUTION

- **NEVER** touch the hot exhaust manifold, muffler or cylinder. Allow these parts to cool before servicing the equipment.
- Make certain the operator knows how to and is capable of turning the engine **OFF** in case of an emergency.



### NOTICE

- **NEVER** run the engine without an air filter or with a dirty air filter. Severe engine damage may occur. Service the air filter frequently to prevent engine malfunction.
- **NEVER** tamper with the factory settings of the engine or engine governor. Damage to the engine or equipment can result if operating in speed ranges above the maximum allowable.

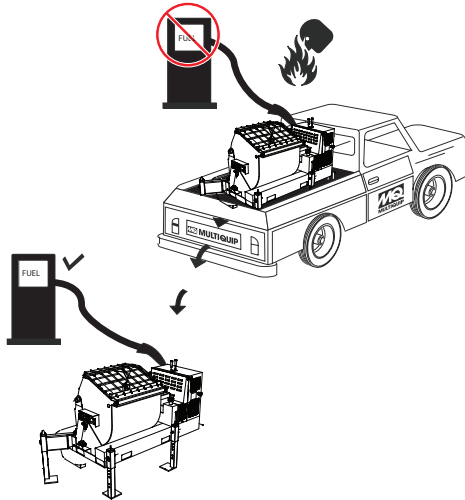


# SAFETY INFORMATION

## FUEL SAFETY

### DANGER

- **DO NOT** add fuel to the equipment if it is placed inside a truck bed with a plastic liner. The possibility exists of **explosion or fire** due to static electricity.



- **NEVER** start the engine near spilled fuel or combustible fluids. Fuel is **extremely flammable** and its vapors can cause an **explosion** if ignited.
- **ALWAYS** refuel in a well-ventilated area, away from sparks and open flames.
- **ALWAYS** use **extreme caution** when working with **flammable** liquids.
- **NEVER** fill the fuel tank while the engine is running or hot.
- **DO NOT** overfill the tank, as spilled fuel can ignite if it comes into contact with hot engine parts or sparks from the ignition system.
- Store fuel in appropriate containers, in well-ventilated areas and away from sparks and flames.
- **NEVER** use fuel as a cleaning agent.
- **NEVER** smoke around or near the equipment. **Fire or explosion** could result from fuel vapors or if fuel is spilled on a hot engine.



## TRANSPORTING SAFETY

### CAUTION

- **NEVER** allow any person or animal to stand underneath the equipment while it is being lifted.

### NOTICE

- **ALWAYS** make sure forklift forks are inserted as far as possible into the forklift pockets when lifting the mixer.
- **ALWAYS** shut down the engine before transporting.
- **NEVER** lift the equipment while the engine is running.
- Tighten the fuel tank cap securely and close the fuel cock to prevent fuel from spilling.
- **NEVER** lift the machine to unnecessary heights.
- **ALWAYS** secure the equipment during transport by tying down the equipment with rope.
- **NEVER** tip the engine to extreme angles during lifting as this may cause oil to enter the cylinder head, making the engine difficult to start.

## ENVIRONMENTAL SAFETY/DECOMMISSIONING

### NOTICE

Decommissioning is a controlled process used to safely retire a piece of equipment that is no longer serviceable. If the equipment poses an unacceptable and unrepairable safety risk due to wear or damage, or is no longer cost effective to maintain (beyond life-cycle reliability) and is to be decommissioned (demolition and dismantlement), be sure to follow the rules below.

- **NEVER** pour waste or oil directly onto the ground, down a drain, or into any water source.
- Contact your country's Department of Public Works or a recycling agency in your area and arrange for proper disposal of any electrical components, waste or oil associated with this equipment.
- When the life cycle of this equipment is over, remove the battery (if equipped) and bring it to an appropriate facility for lead reclamation. Use safety precautions when handling batteries that contain sulfuric acid.
- When the life cycle of this equipment is over, it is recommended that the mixer frame and all other metal parts be sent to a recycling center.



Metal recycling involves the collection of metal from discarded products and its transformation into raw materials to use in manufacturing a new product.

Recyclers and manufacturers alike promote the process of recycling metal. Using a metal recycling center promotes energy cost savings.

## EMISSIONS INFORMATION

### NOTICE

The gasoline engine used in this equipment has been designed to reduce harmful levels of carbon monoxide (CO), hydrocarbons (HC) and nitrogen oxides (NOx) contained in gasoline exhaust emissions.

This engine has been certified to meet US EPA evaporative emissions requirements in the installed configuration.

Attempts to modify or make adjustments to the engine emission system by unauthorized personnel without proper training could damage the equipment or create an unsafe condition.

Additionally, modifying the fuel system may adversely affect evaporative emissions, resulting in fines or other penalties.

### Emission Control Label

The emission control label is an integral part of the emission system and is strictly controlled by regulation(s).

The label must remain with the engine for its entire life.

If a replacement emission label is needed, please contact your authorized engine distributor.

[illegible]

**Table 1. Mixer Specifications**

Capacity	20.0 ft. <sup>3</sup> (566 liters)
Bag Capacity	6–7 bags
Shipping Weight	2,004 lb. (909 kg)
Maximum Aggregate Size	1 in. (25.4 mm)
Adjustable Drum Discharge Height	24.0–42.5 in. (584–1,092 mm)
Drive System	Hydraulic
Dump Action	Hydraulic

**Table 2. Engine Specifications**

Model	Briggs & Stratton Vanguard
Type	Air-cooled, four-stroke, horizontal shaft, gasoline engine
Bore × Stroke	2.83 in. × 2.76 in. (72 mm × 70 mm)
Displacement	34.7 in. <sup>3</sup> (570 cm <sup>3</sup> )
Compression Ratio	8.2:1
Max. Output	18.0 hp (13.4 kW) @ 3,600 rpm
Fuel Tank Capacity	Approx. 3.0 US gallons (11.4 liters)
Fuel Type	Min. 87 octane unleaded gasoline
Lube Oil Capacity	48 oz. (1.4 liters)
Speed Control Method	Centrifugal flyweight type
Starting Method	Electric start

# DIMENSIONS

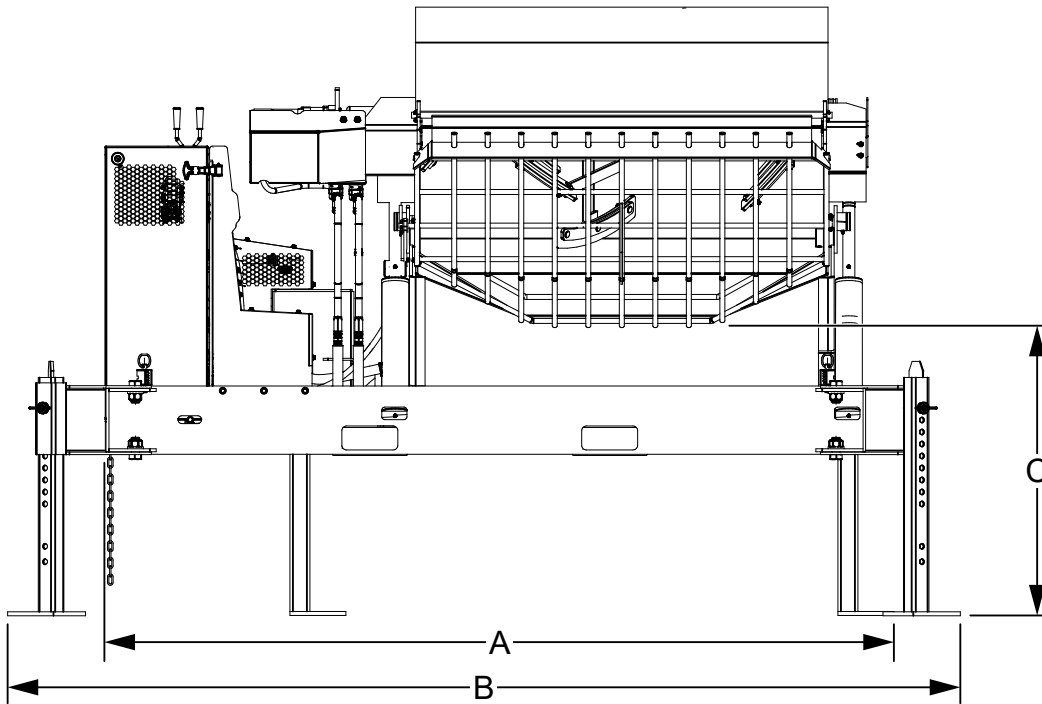
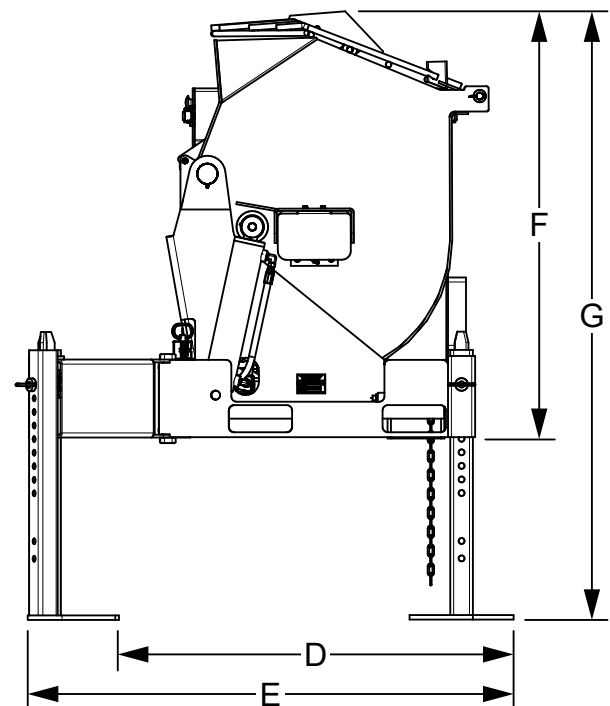


Table 3. Mixer Dimensions		
Designator	Dimension	in. (mm)
A	Length (Legs Retracted)	95.7 (2,431)
B	Length (Legs Extended)	125.5 (3,188)
C	Height (Dump Position)	43.5 (1,105)
D	Width (Legs Retracted)	44.9 (1,142)
E	Width (Legs Extended)	50.5 (1,283)
F	Height (Legs Retracted)	48.0 (1,219)
G	Height (Legs Extended)	67.3 (1,709)



**Figure 1. Mixer Dimensions**



### APPLICATION

The Multiquip PRO20 hydraulic mixer is shipped completely assembled, factory tested, and ready for use. With a drum capacity of 20 cubic feet (566 liters), the PRO20 has a batch capacity of 6 to 7 bags.



#### WARNING

The PRO20 is intended **only** for the mixing of plaster and mortar. The mixer must be used for its intended purpose and **is not suitable for mixing flammable or explosive substances. The mixer must not be used in an explosive atmosphere.**

### FEATURES AND BENEFITS

The PRO20 hydraulic mixer includes:

- A thick, 1/4-inch drum wrap with 3/8-inch ends to resist abrasion.
- A high-torque hydraulic motor with integral relief.
- Over-center dumping and adjustable height which enables loading at waist level, reducing operator fatigue.
- A built-in spill plate which directs excess material back into the tub, minimizing waste.
- Convenient access forklift pockets that are approachable from any side of the mixer.
- Readily accessible drive and dump controls located above the engine cowl.

### ENGINE

The PRO20 mixer is powered by an 18-horsepower, Briggs & Stratton Vanguard gasoline engine. Refer to Table 2 for engine specifications.

For basic engine maintenance, refer to the engine maintenance section in this manual. For more detailed engine maintenance, refer to the engine owner's manual supplied with the engine.

### STABILIZERS

The PRO20 is equipped with four adjustable stabilizer jack stands, including two swivel jack stands that swivel outward to provide additional support and stability. **ALWAYS** deploy the stabilizer jack stands prior to use.

## COMPONENTS (MIXER)

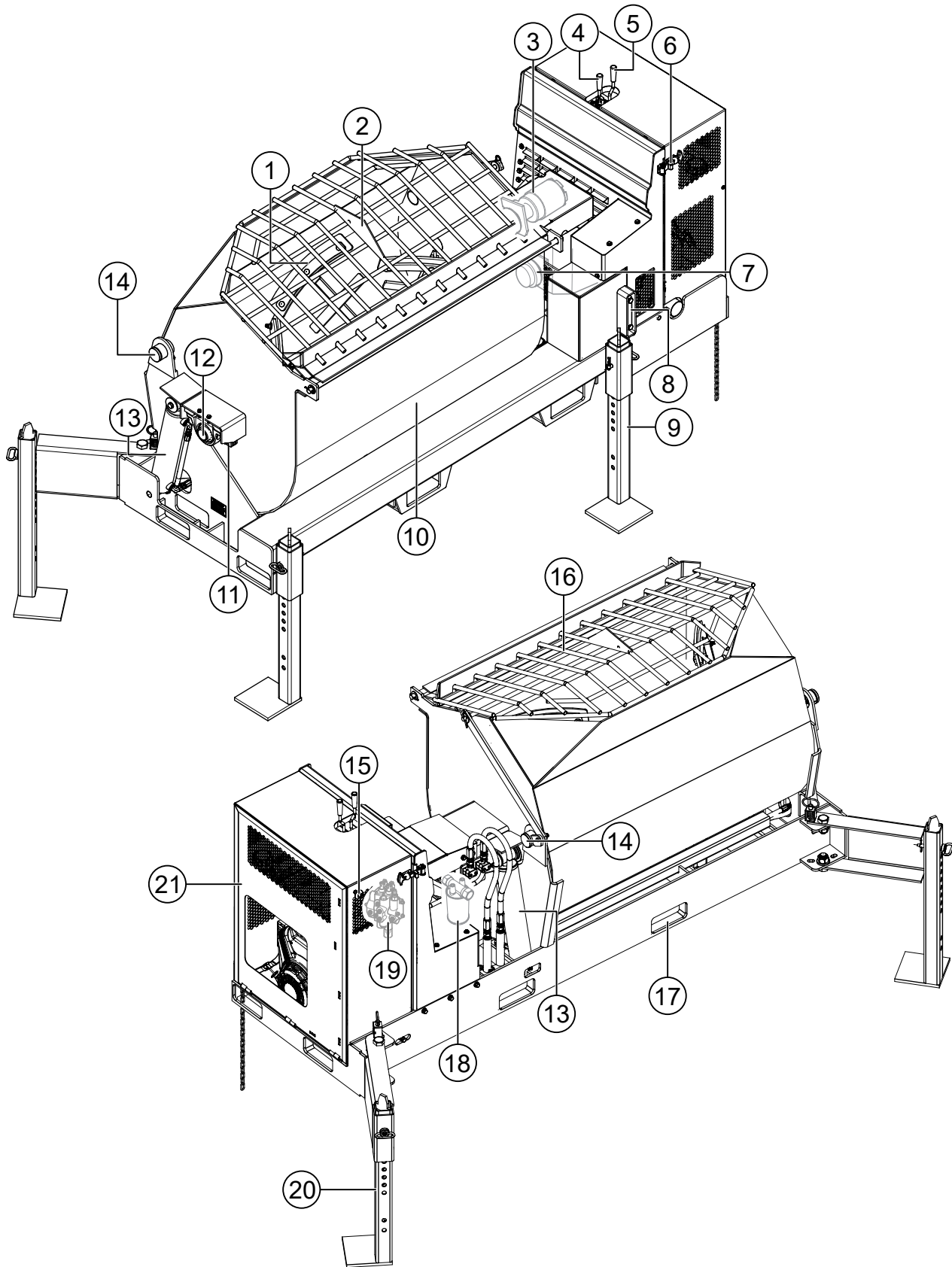


Figure 2. Mixer Components

## COMPONENTS (MIXER)

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1. **Mixing Paddles** — This mixer is equipped with rubber mixing blades for the mixing of plaster and mortar. **ALWAYS** clean the paddles after each use.
2. **Bag Cutter** — This feature allows mixing bags to be opened easily, allowing the contents of the bag to fall directly into the mixing drum.
3. **Hydraulic Motor** — Bidirectional hydraulic motor is used in conjunction with the directional control valve to operate the hydraulic dump cylinder and paddle shaft.
4. **Hydraulic Paddle Control Lever** — Push this three-position lever inward for clockwise rotation of the paddle blades. Place in the center position for no rotation (neutral/off).
5. **Hydraulic Dump Lever** — Push this lever inward to activate the dump cylinders.
6. **Latch** — Use this latch to secure the engine compartment enclosure.
7. **Hydraulic Pump** — Supplies hydraulic fluid to the hydraulic control valve.
8. **Hydraulic Oil Sight Gauge** — This gauge indicates the level and temperature of the hydraulic oil. For normal operation, the oil level should be visible at the midpoint on the sight gauge.
9. **Adjustable Stabilizer Jack Stands** — Use these jack stands to adjust the mixer to the desired height.
10. **Mixing Drum** — Drum capacity is 20 cubic feet (566 liters). Mixing materials such as mortar and plaster are placed into this drum for mixing. **ALWAYS** clean the drum after each use.
11. **Shaft Seals** — There is a Zerk grease fitting at each end of the mixing drum. These grease fittings lubricate the paddle shaft seals. Fittings require daily greasing with lithium-based EP grease.
12. **Drum Bearing** — There is a pillow block bearing on each end of the mixing drum. Bearings require daily greasing with lithium-based EP grease.
13. **Hydraulic Dump Cylinder** — When activated, these cylinders will cause the mixing drum to rotate to the dump position.
14. **Pivot Point/Zerk Fitting** — There is a Zerk grease fitting on each end of the mixing drum. These fittings lubricate the dumping mechanism. Lubricate both fittings at least twice a week.
15. **Emergency Stop Switch** — This switch is located on the side of the engine cover. When activated, it will shut down the engine.
16. **Safety Grill** — Provided for operator safety. This safety grill is designed to keep hands and solid objects out of the mixing drum when in use. This grill should be closed at all times while the mixer is in use. **DO NOT** remove the grill or grill opening bar. Keep the grill clean by washing it down daily.
17. **Forklift Pockets** — When lifting of the mixer is required, use these forklift pockets to lift the mixer. Remember to insert the forks of the forklift a minimum of 24 inches into the forklift pockets.
18. **Hydraulic Oil Filter** — 10-micron hydraulic filter. Filters out small particles that are harmful to the hydraulic system.
19. **Hydraulic Valve** — Directional hydraulic control valve. Controls the direction of hydraulic fluid supplied to the dump cylinder and paddle shaft.
20. **Swivel Jack Stands** — These jack stands swivel out to support the mixer.
21. **Engine Cover** — Lift this cover to gain access to the engine.

## COMPONENTS (ENGINE)

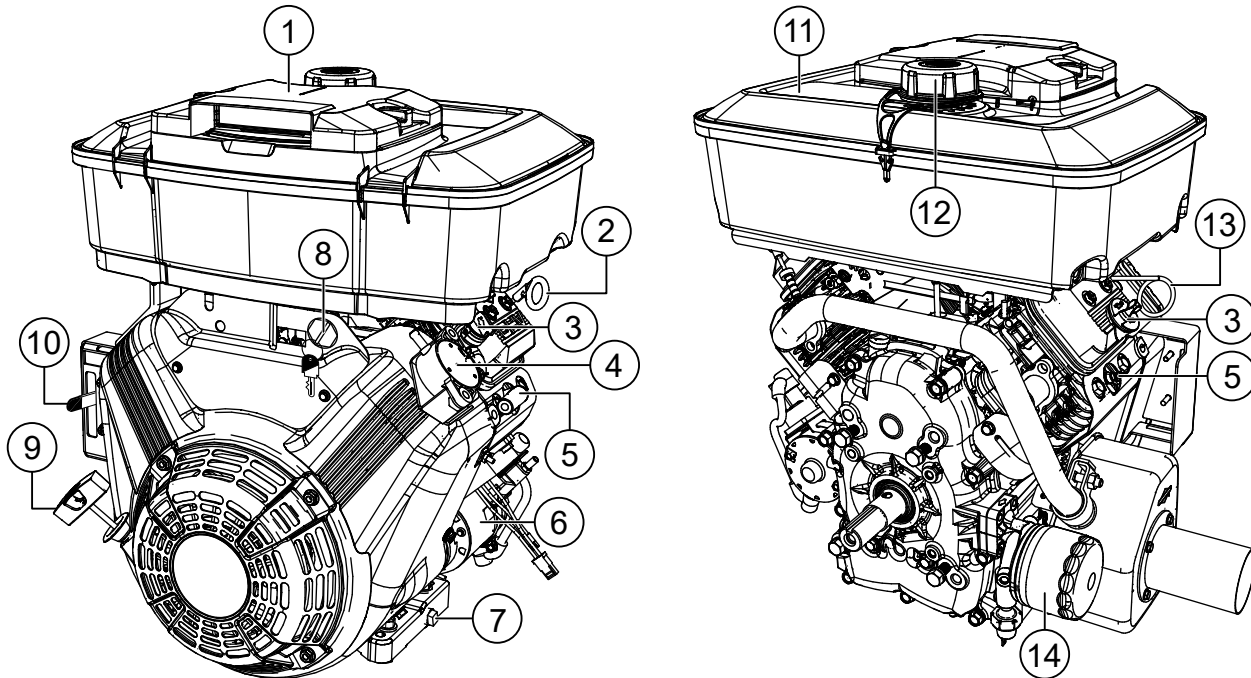


Figure 3. Engine Components

1. **Air Cleaner** — Prevents dirt and other debris from entering the fuel system. Turn the knobs on the sides of the air cleaner cover to gain access to the filter element.

### NOTICE

Operating the engine without an air filter or with a damaged or worn air filter will allow dirt to enter the engine, causing rapid engine wear.

2. **Oil Dipstick** — Remove to check the amount and condition of oil in the crankcase.
3. **Oil Filler Cap** — Remove to add the recommended type of oil listed in Table 4. Make sure the cap is tightened securely. **DO NOT** overfill.
4. **Fuel Pump** — Draws fuel from the fuel tank into the engine.
5. **Spark Plug** — Provides spark to the ignition system. Set the spark plug gap to 0.030 in. (0.76 mm). Clean the spark plug once a week.
6. **Electric Starter** — Starts the engine when the ignition key is rotated to the **ON** position.
7. **Oil Drain Plug** — Remove to drain oil from the crankcase.

8. **Ignition Switch/Keys** — Insert the ignition key here to start the engine. Turn the key clockwise to the **ON** position, then continue turning clockwise to the **START** position and release when the engine starts. To stop the engine, turn the key fully counterclockwise to the **STOP** position.
9. **Recoil Starter** — Manual starting mechanism. Pull the starter grip slowly until resistance is felt, then pull briskly and smoothly to start the engine.
10. **Throttle Lever** — Adjusts engine speed (RPM). Place the lever in the **UP** (rabbit) position for **FAST** speed. Place the lever in the **DOWN** (turtle) position for **SLOW** speed.
11. **Fuel Tank** — Holds up to 12.0 quarts (11.4 liters) of unleaded gasoline. Refer to the manufacturer's engine manual for additional information.
12. **Fuel Filler Cap** — Remove to add unleaded gasoline to the fuel tank. Make sure the cap is tightened securely. **DO NOT** overfill.
13. **Choke Lever** — Used in the starting of a cold engine, or in cold weather conditions. The choke enriches the fuel mixture.
14. **Oil Filter** — Prevents dirt and other debris from entering the engine. Service the oil filter as recommended in the maintenance section of this manual.

# PADDLE BLADE ADJUSTMENT

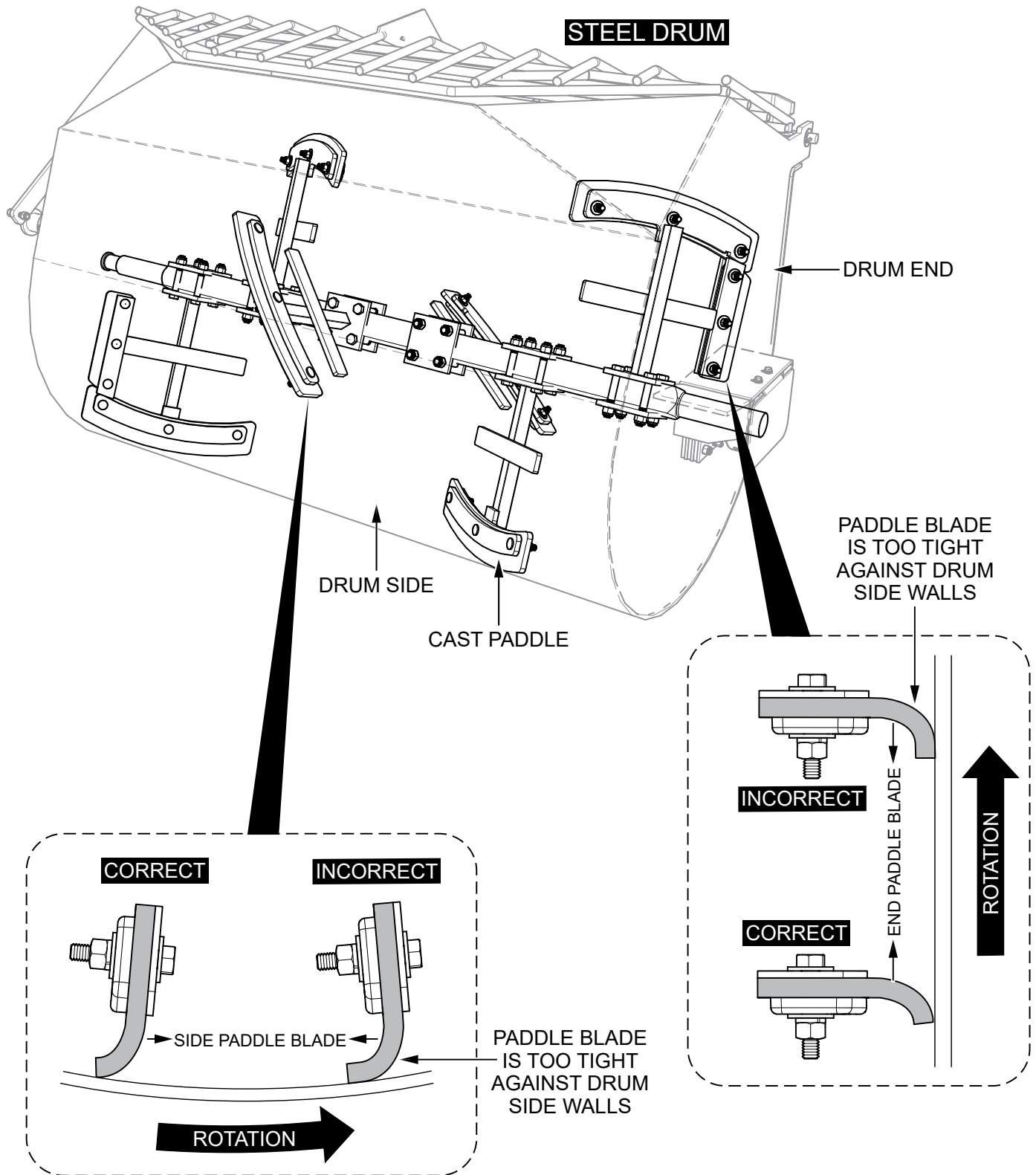


Figure 4. Paddle Blade Adjustment

## BEFORE STARTING

1. Read the safety instructions at the beginning of this manual.
2. Clean the mixer, removing dirt and dust—particularly the engine cooling air inlet, carburetor, and air cleaner.
3. Check the air filter for dirt and dust. If the air filter is dirty, replace it with a new one as required.
4. Check the carburetor for external dirt and dust. Clean with dry compressed air.
5. Check fastening nuts and bolts for tightness.



## HARDWARE

Check all hardware on the mixer before starting. Periodically inspect all hardware. Loose hardware can contribute to early component failure and poor performance. Keep all mixer hardware components tight.

## ENGINE OIL

1. Place the mixer on secure, level ground with the engine stopped.
2. Remove the engine oil dipstick (Figure 5) from the engine and wipe it clean.

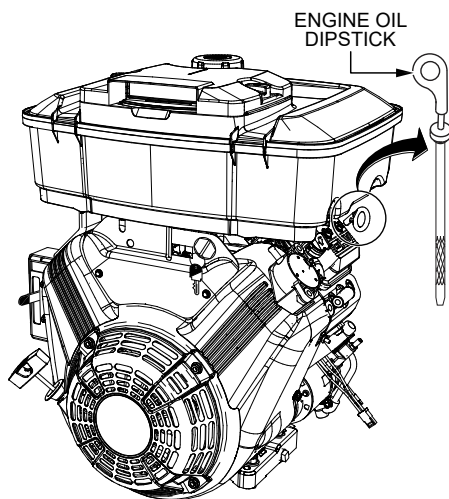


Figure 5. Engine Oil Dipstick

3. Reinsert the dipstick back into its holder, then remove it again. Check the oil level (Figure 6) shown on the dipstick.

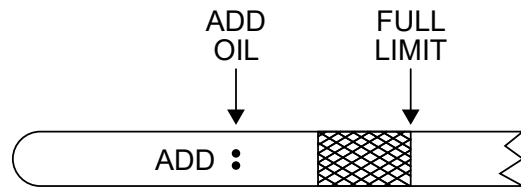


Figure 6. Engine Oil Level

4. If the oil level is low, remove the oil filler cap (Figure 7) and fill to the edge of the oil filler hole with the recommended oil type listed in Table 4. **DO NOT** overfill. Maximum oil capacity is 48 oz. (1.4 liters).

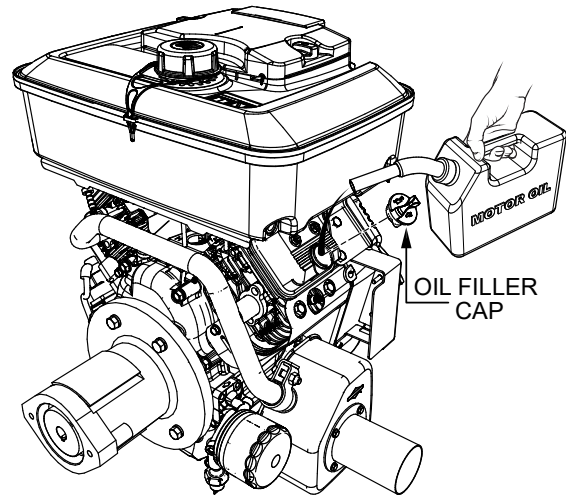


Figure 7. Oil Filler Cap

Table 4. Oil Type

Season	Temperature	Oil Type
Summer	25°C or higher	SAE 10W-30
Spring/Fall	25°C–10°C	SAE 10W-30/20
Winter	0°C or lower	SAE 10W-10



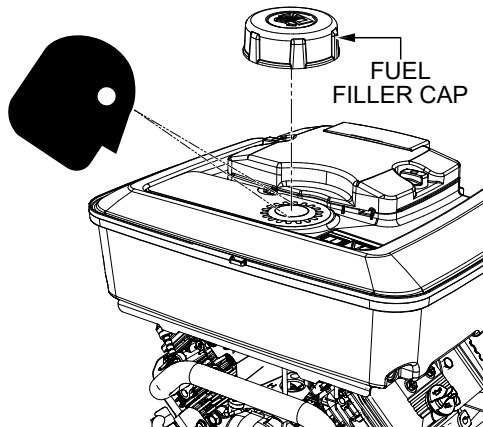
## FUEL

### DANGER



Motor fuels are **highly flammable** and can be dangerous if mishandled. **DO NOT** smoke while refueling. **DO NOT** attempt to refuel the pump if the engine is **hot or running**.

1. Remove the fuel filler cap (Figure 8) located on top of the fuel tank.



**Figure 8. Fuel Inspection**

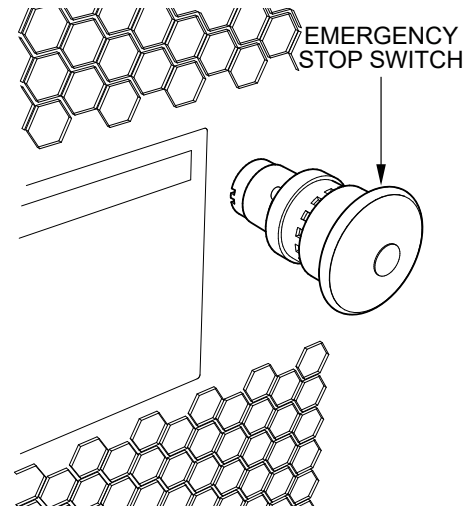
2. Visually inspect the fuel level inside the fuel tank. If fuel is low, replenish with unleaded gasoline. Be sure to use a strainer for filtration while refueling.

### DANGER

**DO NOT** top off fuel. Wipe up any spilled fuel **immediately**.

## EMERGENCY STOP SWITCH

The engine **emergency stop switch** (Figure 9) should be tested every time the engine is started.



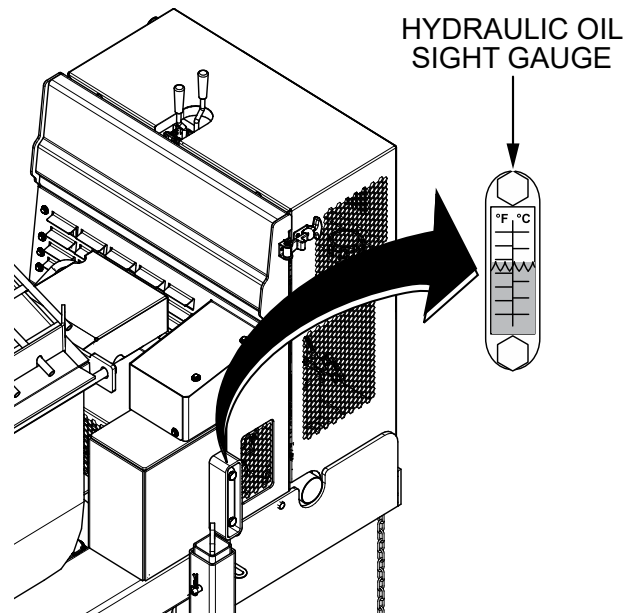
**Figure 9. Emergency Stop Switch**

### CAUTION

**NEVER** disable or disconnect the **emergency stop switch**. It is provided for operator safety. Injury may result if it is disabled, disconnected or improperly maintained.

## HYDRAULIC OIL

Check the hydraulic oil sight gauge (Figure 10) to ensure that the hydraulic oil is at the midway level.



**Figure 10. Hydraulic Oil Sight Gauge**

## HYDRAULIC HOSES

Check hydraulic hoses to make sure they are not worn, frayed or defective.

## GREASE FITTINGS (SHAFT SEALS)

Check the Zerk grease fittings (Figure 11) at each end of the mixing drum. These grease fittings lubricate the paddle shaft seals. Grease daily with lithium-based EP grease, preferably at the end of the day. Grease until visible inside the drum to ensure that the cavity area is free of contamination.

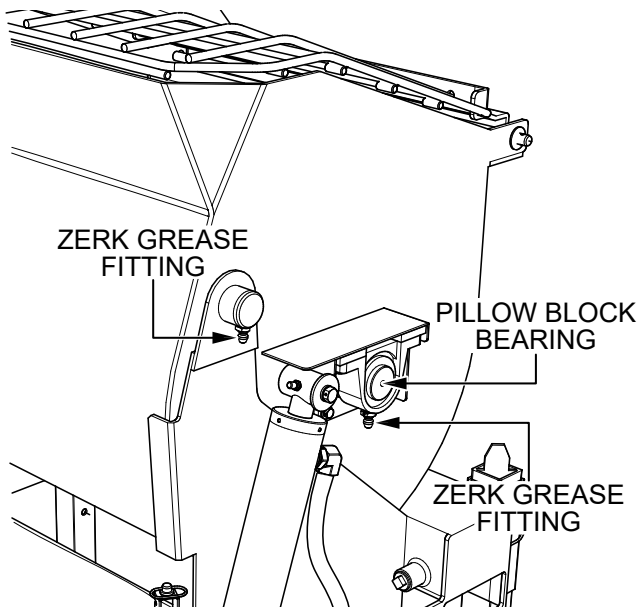


Figure 11. Grease Fittings (Bearings and Seals)

## GREASE FITTINGS (PILLOW BLOCK BEARINGS)

Check the Zerk grease fittings underneath each of the pillow block bearings (Figure 11). Grease daily with two shots of lithium-based EP grease.

## GREASE FITTINGS (DUMP CYLINDERS)

Check the Zerk grease fittings on each of the dump cylinders (Figure 12). These grease fittings lubricate the hydraulic dumping mechanism. Grease with one shot of lithium-based EP grease every week.

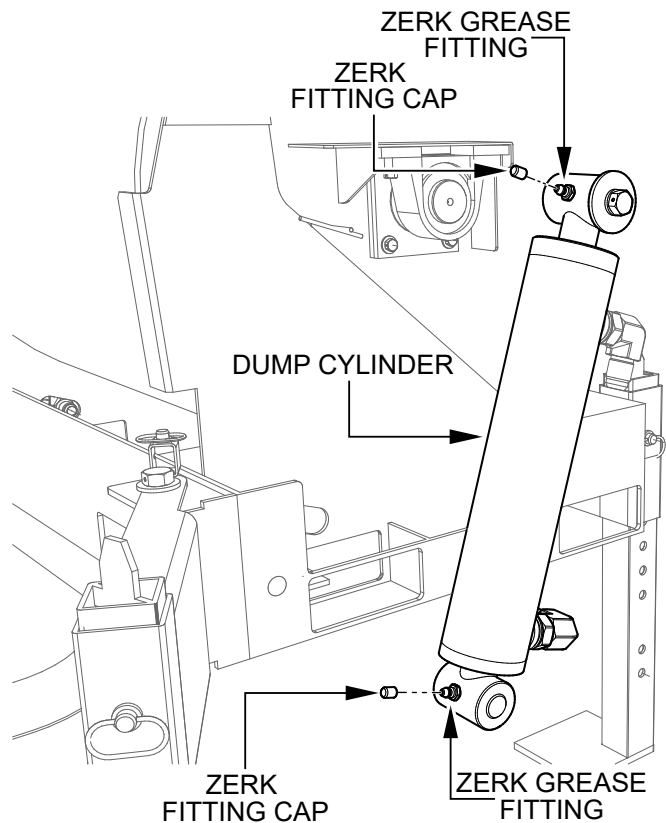


Figure 12. Grease Fittings (Dump Cylinders)



## STARTING THE ENGINE

### CAUTION

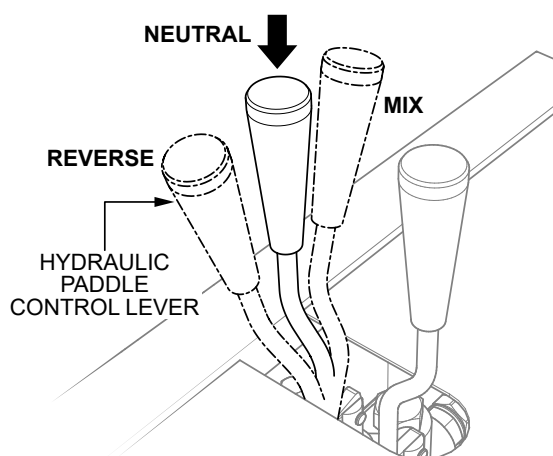


**DO NOT** attempt to operate the mixer until the **Safety Information**, **General Information**, and **Inspection** sections of this manual have been read and thoroughly understood.

This section is intended to assist the operator with the initial start-up of the mixer. It is extremely important that this section be read carefully before attempting to use the mixer in the field.

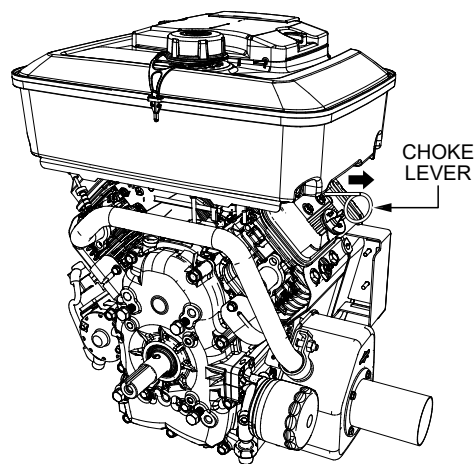
### Electric Start Method

1. Make sure the hydraulic paddle control lever (Figure 13) is in the **neutral** position.



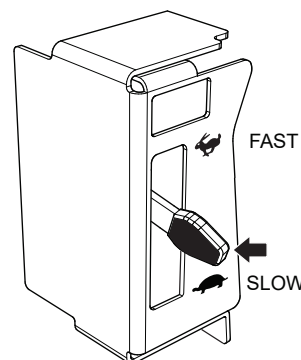
**Figure 13. Hydraulic Paddle Control Lever (Neutral Position)**

2. Pull the choke lever (Figure 14) outward to the **CHOKE** or **START** position.



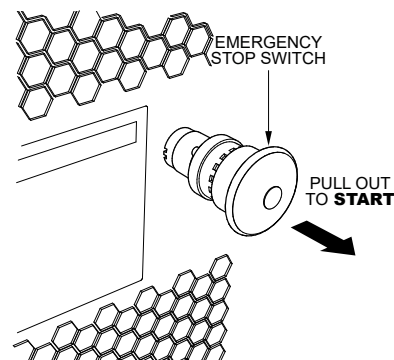
**Figure 14. Choke Lever (START)**

3. Move the throttle lever (Figure 15) to the midway point between the **FAST** and **SLOW** position.



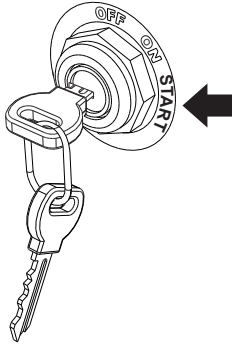
**Figure 15. Throttle Lever (Midway Position)**

4. Locate the emergency stop switch (Figure 16) on the engine cover. Pull the switch outward to the **START** position.



**Figure 16. Emergency Stop Switch (START Position)**

5. Insert the engine ignition key (Figure 17) into the ignition switch. Turn the ignition key to the **START** position and hold it until the engine starts. Release the key when the engine starts, allowing it to return to the **ON** position.

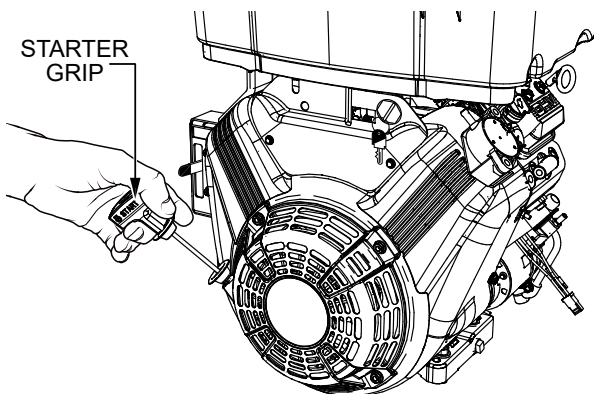


**Figure 17. Ignition Key (START)**

6. Allow the engine to warm up. If the weather is warm, **slowly** move the choke lever to the **RUN** or **OFF** position.
7. Run the engine for several minutes. Check for fuel leaks and noises that could be associated with a loose component.
8. To begin mixing, place the throttle lever in the **FAST** (rabbit) position.

## Manual (Recoil) Start Method

1. Follow steps 1 through 4 of the **Electric Start Method** procedure.
2. Slowly pull the recoil starter grip (Figure 18) until resistance is felt, then pull briskly and smoothly to start the engine. Gently return the starter grip to its original position.

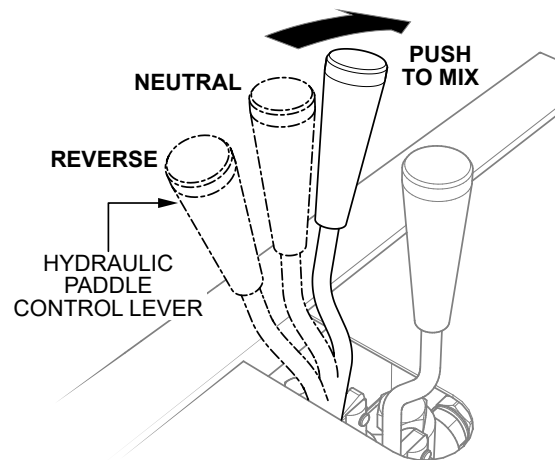


**Figure 18. Recoil Starter Grip**

3. Allow the engine to warm up. If the weather is warm, slowly move the choke lever to the **RUN** or **OFF** position.
4. Run the engine for several minutes. Check for fuel leaks and noises that could be associated with a loose component.
5. To begin mixing, place the throttle lever in the **FAST** (rabbit) position.

## MIXING

1. Push the hydraulic paddle control lever (Figure 19) forward for clockwise mixing rotation of the paddle blades.



**Figure 19. Hydraulic Paddle Control Lever (Mix Position)**

2. The paddle shaft inside the drum should be rotating at this time.
3. Add a small amount of water to the mixing drum.
4. Lift the mixing bag compound onto the steel safety grate over the bag cutter and let the contents fall into the drum. Add more water if desired and mix the compound to the desired consistency.

## DUMPING

1. Push the hydraulic dump lever (Figure 20) forward to place the drum in the dump position (Figure 21).

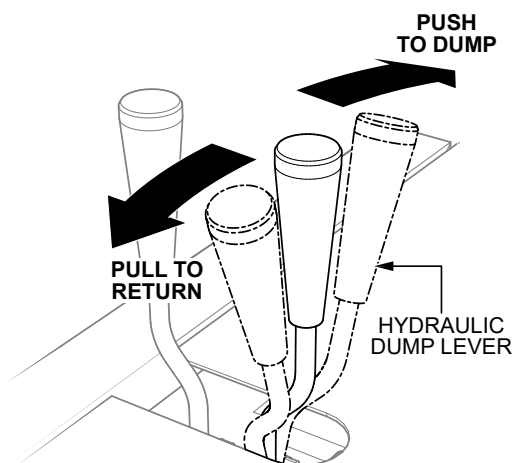


Figure 20. Hydraulic Dump Lever

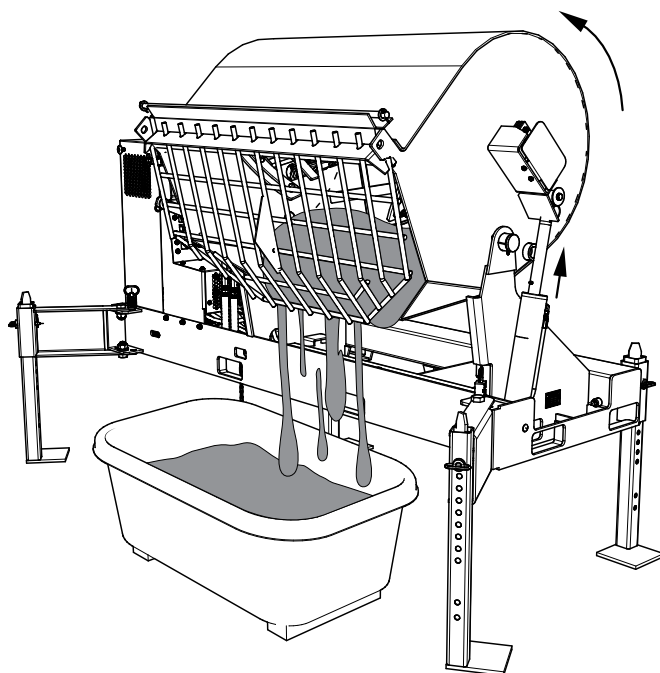
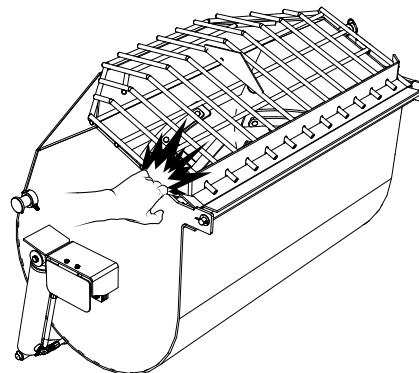


Figure 21. Mixer Drum (Dump Position)

2. Pull the hydraulic dump lever backward to return the drum to the upright position.

## WARNING

When rotating the mixing drum from the dump position to the upright position, keep hands clear of the safety grate. The possibility exists of hands or fingers being crushed.



## STOPPING THE ENGINE

## WARNING

**NEVER** use the choke lever to stop the engine. Backfire, fire, or engine damage could occur.

## Normal Shutdown

1. Place the hydraulic paddle control lever in the neutral position to stop rotation of the paddle blades.
2. Place the throttle lever in the **SLOW** (turtle) position and run the engine for three minutes at low speed.

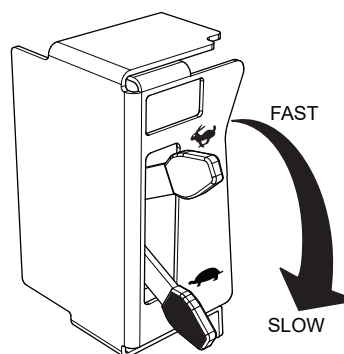
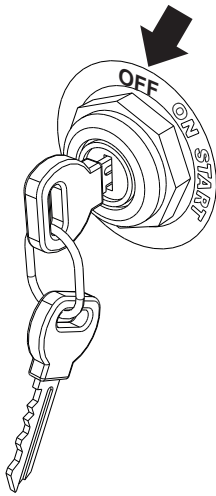


Figure 22. Throttle Lever (SLOW)

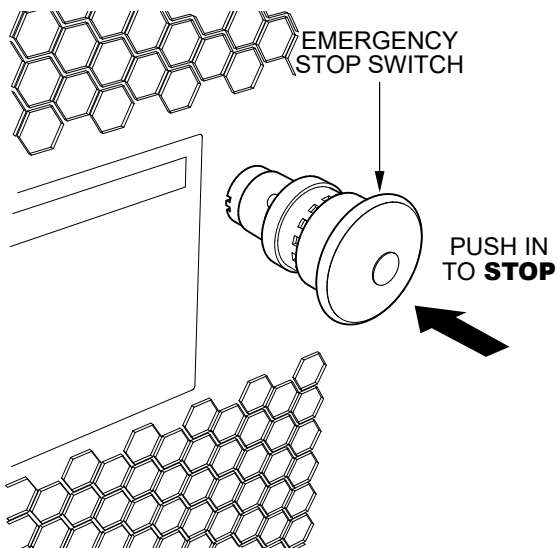
3. After the engine cools, turn the ignition key to the **OFF** position (Figure 23). Remove the ignition key and store it in a safe location.



**Figure 23. Ignition Key (OFF)**

## Emergency Shutdown

Push the emergency stop switch inward to the **STOP** position.



**Figure 24. Emergency Stop Switch (STOP Position)**

# MAINTENANCE

Schedule engine maintenance procedures as indicated in Table 5.

Table 5. Engine Maintenance Schedule							
Description (3)	Operation	Before Each Use	First Month or 25 Hours	Every 40 Hours	Every 6 Months or 100 Hours	Every Year or 300 Hours	Every 2 Years or 500 Hours
Engine Oil	Check	X					
	Change		X		X		
Engine Oil Filter	Replace	Every 100 hours					
Air Cleaner	Check	X					
	Clean		X (1)				
	Replace				X		X (*)
Spark Plugs	Check/Adjust				X		
	Replace					X	
Cooling Fins	Clean				X		

\* Replace the paper filter element only.

(1) Service more frequently when used in **dusty** areas.

(2) These items should be serviced by your service dealer, unless you have the proper tools and are mechanically proficient. Refer to the Briggs & Stratton service manual for service procedures.

(3) For commercial use, log hours of operation to determine proper maintenance intervals.

## NOTICE

Refer to the engine manufacturer's manual for specific servicing instructions.

Table 6. Mixer Maintenance Schedule				
Description	Operation	Daily	Weekly	Every 500 Hours
Bearings	Grease	X		
Shaft Seals	Grease	X		
Cylinder Pivot	Grease		X	
Hydraulic Oil	Inspect	X		
	Replace			X

Perform engine maintenance as indicated below:

## Daily

1. Thoroughly remove dirt and oil from the engine and control area.
2. Clean or replace the air cleaner elements as necessary.
3. Check and retighten all fasteners as necessary.

## Weekly

1. Remove the fuel tank cap and clean the inside of the fuel tank.
2. Remove and clean the spark plug (Figure 25). Adjust the spark plug gap to 0.03 inch (0.76 mm). Replace the spark plug if the electrode is burned or worn.

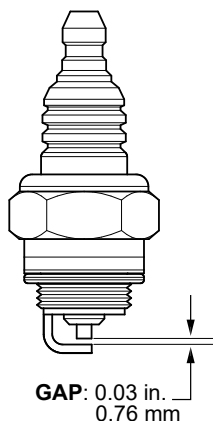


Figure 25. Spark Plug

## ENGINE OIL

### NOTICE

Always drain the engine oil while the oil is **warm**.

1. Remove the oil drain plug and sealing washer (Figure 26) and allow the oil to drain into a suitable container.

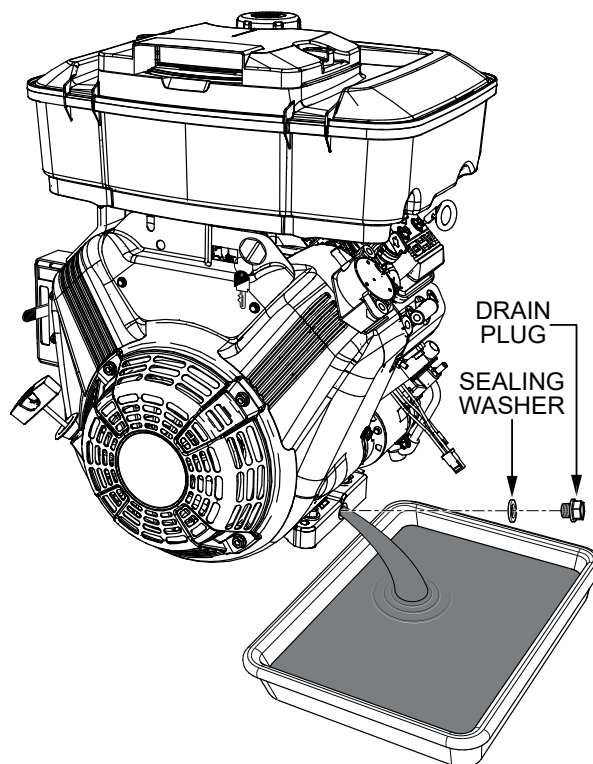
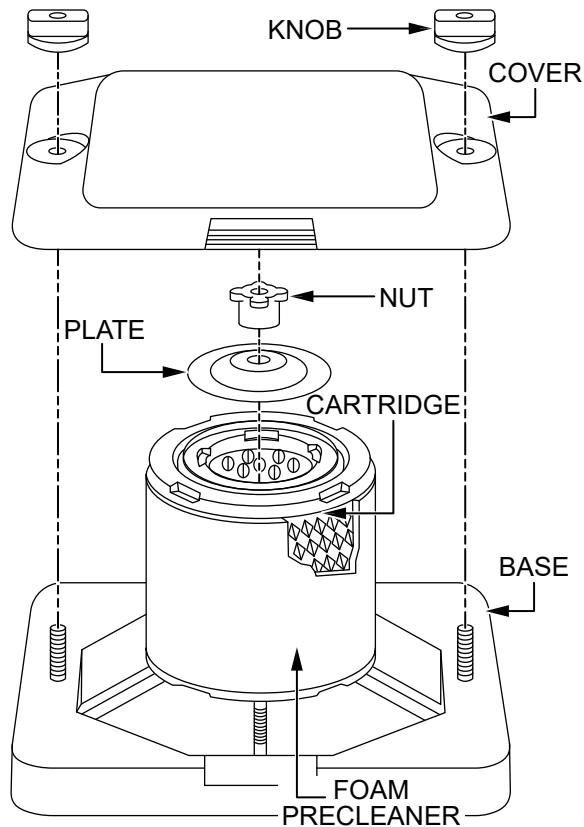


Figure 26. Draining Engine Oil

2. Reinstall the oil drain plug with sealing washer and tighten securely.
3. Replace engine oil with the recommended oil type listed in Table 4. Engine oil capacity is approximately 1.5 quarts (1.4 liters). **DO NOT** overfill.

## ENGINE AIR CLEANER

1. Remove the air cleaner cover and air cleaner assembly (cartridge and foam precleaner) as shown in Figure 27.



**Figure 27. Engine Air Cleaner Assembly**

2. Lightly tap the air cleaner cartridge (Figure 27) several times on a hard surface to remove dirt. **NEVER** brush off dirt. Brushing will force dirt into the fibers. Replace the cartridge if it is excessively dirty.

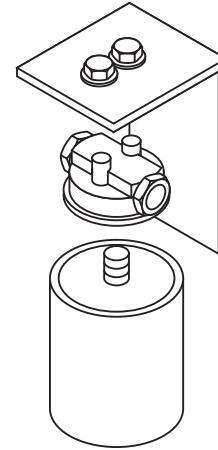
### NOTICE

**DO NOT** use solvents or pressurized air to clean the cartridge. Pressurized air can damage the cartridge, and solvents will dissolve the cartridge.

3. Clean the foam precleaner (Figure 27) in liquid detergent and water. Rinse and squeeze dry thoroughly.
4. Reinstall the air cleaner assembly firmly into the air cleaner base (Figure 27). Reinstall the cover and tighten the knobs securely.

## HYDRAULIC OIL FILTER

Replace the hydraulic oil filter (Figure 28) every 500 hours. Hydraulic tank capacity is 12 gallons (45 liters). Refill with Shell Tellus 46 hydraulic oil or equivalent.



**Figure 28. Hydraulic Oil Filter**

## MIXER CLEANING

### NOTICE

It is important that the drum interior is kept free of dried material. Obstructions can cause the paddle blades to lock against the drum.

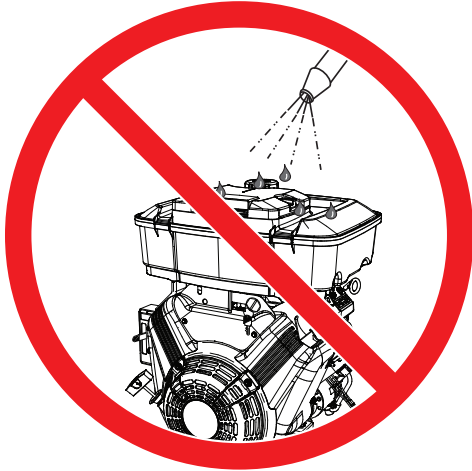
1. Stop the engine. Follow the **normal shutdown** procedure in the **Maintenance** section.
2. Place the hydraulic paddle lever in the neutral position to disengage.
3. **ALWAYS** disconnect the spark plug wire before cleaning the inside of the drum.
4. Place a **Do Not Operate** tag on the mixer.
5. Make sure the rear section of the safety grate is connected to the mixing drum.
6. At the end of each day's operation, place the mixer drum in an upright position and spray the inside of the tub immediately with water. This will prevent lumps of dried mortar or plaster from forming and contaminating future batches. **DO NOT** allow a buildup of materials to form on the blades or anywhere inside the drum.
7. Rotate the mixer drum to the dump position and remove debris.



8. Thoroughly clean the entire mixer, cabinet and frame.

### NOTICE

**NEVER** pour or spray water over the engine (Figure 29).



**Figure 29. No Spraying of Water**

9. When cleaning of the entire mixer is complete, return the mixing drum to the upright position.

### LONG-TERM STORAGE

For storage of the mixer for over 30 days, the following is recommended:

1. Drain the fuel tank completely, or add STA-BIL® to the fuel.
2. Run the engine until the fuel is completely consumed.
3. Completely drain used oil from the engine crankcase and fill with fresh, clean oil, then follow the procedures described in the engine manual for engine storage.
4. Clean the entire mixer and engine compartment.
5. Place the mixing drum in the inverted position (mouth facing downward).
6. Cover the mixer and place it in a clean, dry area that is protected from harsh elements.



# TROUBLESHOOTING (ENGINE)

Practically all breakdowns can be prevented by proper handling and maintenance inspections, but in the event of a breakdown, please take remedial action following the diagnosis based on the troubleshooting tables. If the problem cannot be remedied, please leave the unit as is and consult our company's service department.

Troubleshooting (Engine)		
Symptom	Possible Problem	Solution
Difficult to start, fuel is available, but no spark at spark plug.	Spark plug bridging?	Check gap, insulation or replace spark plug.
	Carbon deposit on spark plug?	Clean or replace spark plug.
	Short circuit due to deficient spark plug insulation?	Check spark plug insulation, replace if worn.
	Improper spark plug gap?	Set to proper gap.
	Spark plug is red?	Check transistor ignition unit.
	Spark plug is bluish white?	If insufficient compression, repair or replace engine. If injected air leaking, correct leak. If carburetor jets clogged, clean carburetor.
	No spark present at tip of spark plug?	Check if transistor ignition unit is broken, and replace defective unit. Check if voltage cord cracked or broken and replace. Check if spark plug if fouled and replace.
	No oil?	Add oil as required.
	Oil pressure alarm lamp blinks upon starting? (if applicable)	Check automatic shutdown circuit, "oil sensor". (if applicable)
Difficult to start, fuel is available, and spark is present at the spark plug.	ON/OFF switch is shorted?	Check switch wiring, replace switch.
	Ignition coil defective?	Replace ignition coil.
	Improper spark gap, points dirty?	Set correct spark gap and clean points.
	Condenser insulation worn or short circuiting?	Replace condenser.
	Spark plug wire broken or short circuiting?	Replace defective spark plug wiring.
Difficult to start, fuel is available, spark is present and compression is normal.	Wrong fuel type?	Flush fuel system, replace with correct type of fuel.
	Water or dust in fuel system?	Flush fuel system.
	Air cleaner dirty?	Clean or replace air cleaner.
	Choke open?	Close choke.
Difficult to start, fuel is available, spark is present and compression is low.	Suction/exhaust valve stuck or protruded?	Reseat valves.
	Piston ring and/or cylinder worn?	Replace piston rings and/or piston.
	Cylinder head and/or spark plug not tightened properly?	Torque cylinder head bolts and spark plug.
	Head gasket and/or spark plug gasket damaged?	Replace head and spark plug gaskets.
No fuel present at carburetor.	No fuel in fuel tank?	Fill with correct type of fuel.
	Fuel cock does not open properly?	Apply lubricant to loosen fuel cock lever, replace if necessary.
	Fuel filter/lines clogged?	Replace fuel filter.
	Fuel tank cap breather hole clogged?	Clean or replace fuel tank cap.
	Air in fuel line?	Bleed fuel line.

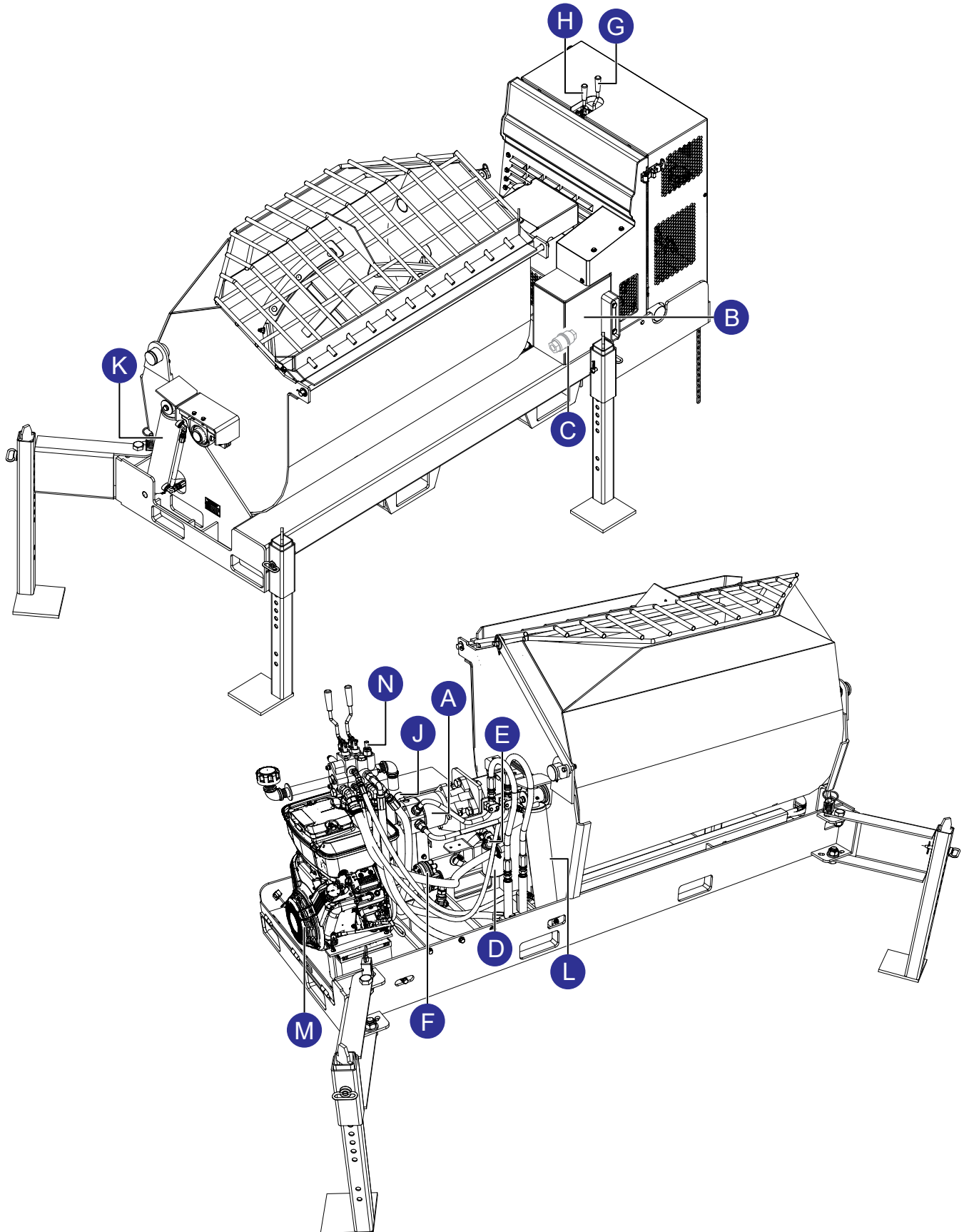
## TROUBLESHOOTING (ENGINE)

Troubleshooting (Engine) - continued		
Symptom	Possible Problem	Solution
Weak in power, compression is proper and does not misfire.	Air cleaner dirty?	Clean or replace air cleaner.
	Improper level in carburetor?	Check float adjustment, rebuild carburetor.
	Defective spark plug?	Clean or replace spark plug.
	Improper spark plug?	Set to proper gap.
Weak in power, compression is proper but misfires.	Water in fuel system?	Flush fuel system and replace with correct type of fuel.
	Dirty spark plug?	Clean or replace spark plug.
	Ignition coil defective?	Replace ignition coil.
Engine overheats	Wrong type of fuel?	Replace with correct type of fuel.
	Cooling fins dirty?	Clean cooling fins.
	Intake air restricted?	Clear intake of dirt and debris. Replace air cleaner elements as necessary.
	Oil level too low or too high?	Adjust oil to proper level.
Rotational speed fluctuates.	Governor adjusted incorrectly?	Adjust governor.
	Governor spring defective?	Replace governor spring.
	Fuel flow restricted?	Check entire fuel system for leaks or clogs.
Recoil starter malfunctions. (if applicable)	Recoil mechanism clogged with dust and dirt?	Clean recoil assembly with soap and water.
	Spiral spring loose?	Replace spiral spring.
Starter malfunctions.	Loose, damaged wiring?	Ensure tight, clean connections on battery and starter.
	Battery insufficiently charged?	Recharge or replace battery.
	Starter damaged or internally shorted?	Replace starter.
Burns too much fuel.	Over-accumulation of exhaust products?	Check and clean valves. Check muffler and replace if necessary.
	Wrong spark plug?	Replace spark plug with manufacturer's suggested type.
Exhaust color is continuously "white".	Lubricating oil is wrong viscosity?	Replace lubricating oil with correct viscosity.
	Worn rings?	Replace rings.
Exhaust color is continuously "black".	Air cleaner clogged?	Clean or replace air cleaner.
	Choke valve set to incorrect position?	Adjust choke valve to correct position.
	Carburetor defective, seal on carburetor broken?	Replace carburetor or seal.
	Poor carburetor adjustment, engine runs too rich?	Adjust carburetor.
Will not start, no power with key "ON". (if applicable)	ON/OFF device not activated ON?	Turn on ON/OFF device.
	Battery disconnected or discharged?	Check cable connections. Charge or replace battery.
	Ignition switch/wiring defective?	Replace ignition switch. Check wiring.

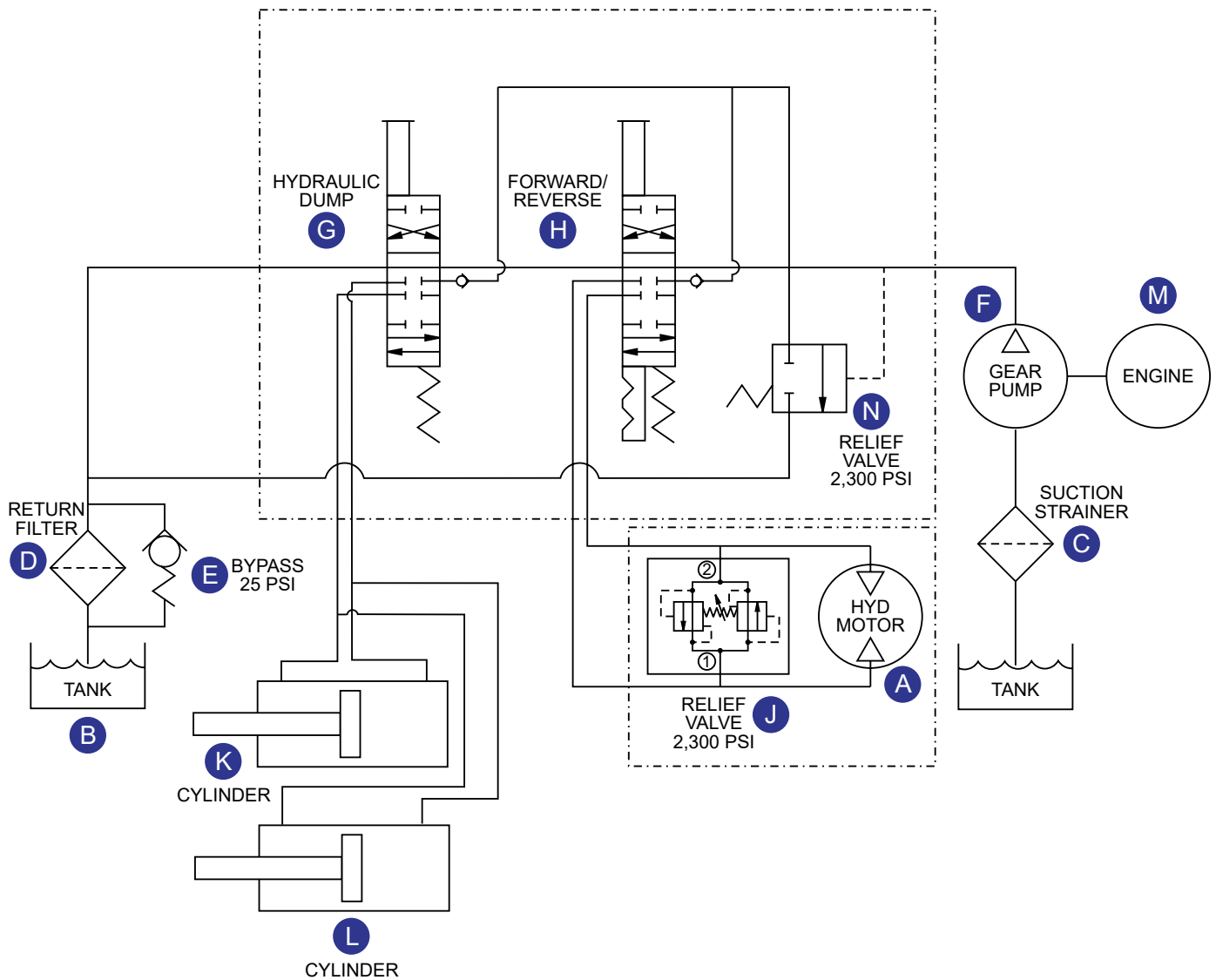
## TROUBLESHOOTING (MIXER)

Troubleshooting (Mixer)		
Symptom	Possible Problem	Solution
Blades will not rotate.	Contaminated relief cartridge?	Inspect relief pressure (2,300 psi).
	Material load too heavy, exceeding mixer capability?	Reduce amount of material being mixed.
	Object stuck inside mixing drum, jamming paddle rotation?	Stop engine. Empty out drum contents. Remove obstruction.
	Improper engine speed?	Check and adjust engine speed.
Material leaking from drum ends.	Worn or defective paddle shaft seals?	Replace seals.

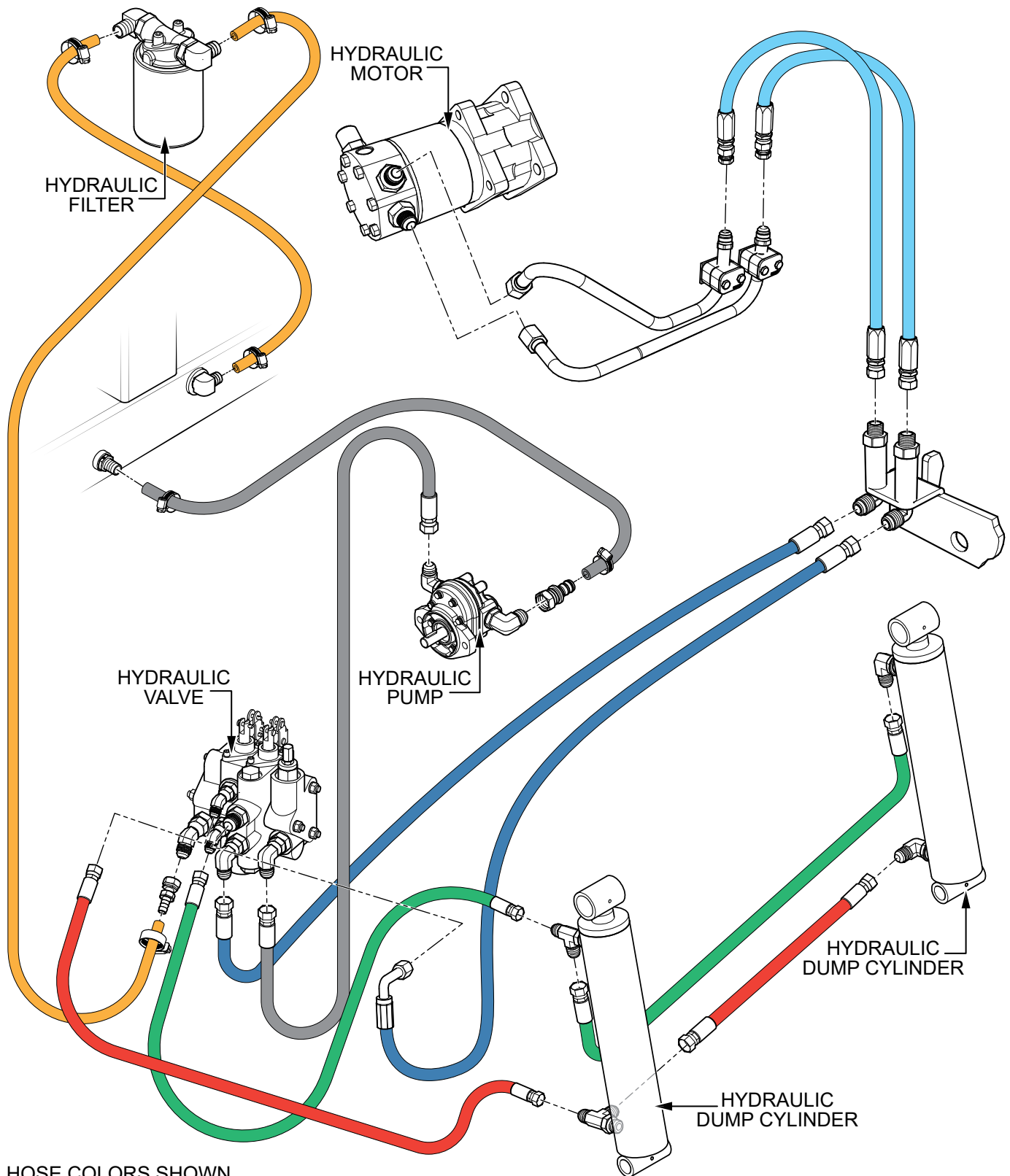
# HYDRAULIC SYSTEM LOCATOR



# HYDRAULIC SYSTEM DIAGRAM



# HYDRAULIC HOSE CONNECTIONS



[illegible]

# OPERATION MANUAL

## HERE'S HOW TO GET HELP

PLEASE HAVE THE MODEL AND SERIAL  
NUMBER ON-HAND WHEN CALLING

### UNITED STATES

#### ***Multiquip Inc.***

(310) 537- 3700  
6141 Katella Avenue Suite 200  
Cypress, CA 90630  
E-MAIL: [mq@multiquip.com](mailto:mq@multiquip.com)  
WEBSITE: [www.multiquip.com](http://www.multiquip.com)

### CANADA

#### ***Multiquip***

(450) 625-2244  
4110 Industriel Boul.  
Laval, Quebec, Canada H7L 6V3  
E-MAIL: [infocanada@multiquip.com](mailto:infocanada@multiquip.com)

### UNITED KINGDOM

#### ***Multiquip (UK) Limited Head Office***

0161 339 2223  
Unit 2, Northpoint Industrial Estate,  
Globe Lane,  
Dukinfield, Cheshire SK16 4UJ  
E-MAIL: [sales@multiquip.co.uk](mailto:sales@multiquip.co.uk)

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