User Manual - Trash Pump

FSM Action Research Project



Operation and Maintenance Guide

This manual provides instructions on the safe and proper operation of a trash pump, including setup, use, cleaning, and maintenance.

https://fsmaction.org

Trash Pump



A Trash/Water Pump is an engine-powered pump used to transfer large volumes of watery faecal sludge, wastewater, and liquids containing solids.

CapEx	USD300–600, depending on the model and accessories
OpEx	Petrol or diesel, engine oil, and periodic servicing.
Operators	Best operated by two people—one manages the engine and pump while the other monitors the suction hose and collection containers
Add-ons	Containment drums/IBC tanks, transport system, hoses

How it works

The Pump uses an engine to spin an impeller inside the pump. As the impeller rotates, it creates suction that pulls watery sludge through the suction hose. The sludge then passes through the pump and is pushed out under pressure through the discharge hose into a drum, tank, or transfer point. Before operation, the pump must be filled with water (primed) to create suction. The pump works best with watery sludge and wastewater and may struggle with thick sludge or large amounts of trash

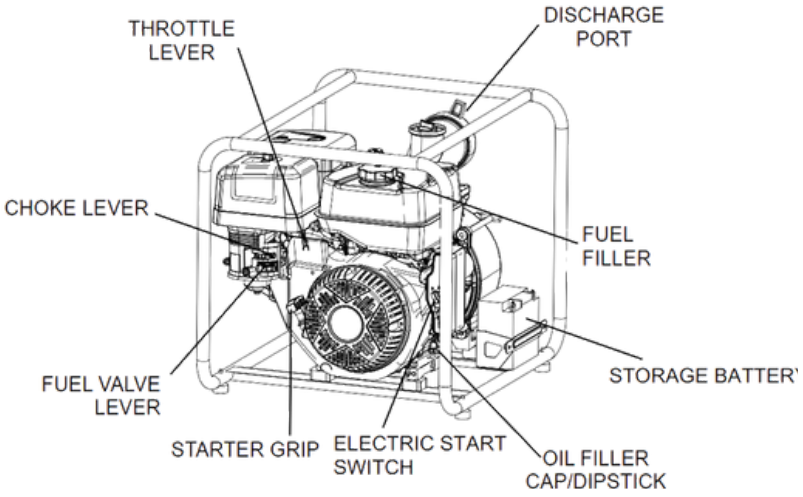
Advantages

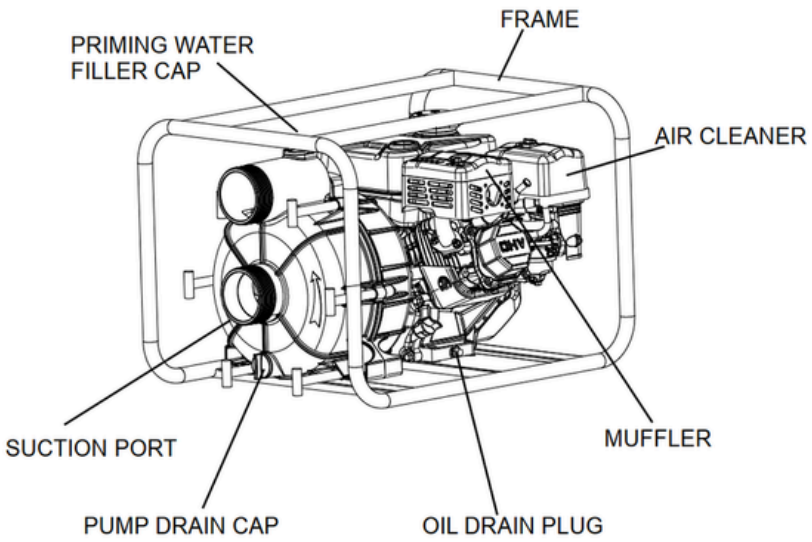
- Easy to transport and operate
- Lower capital and operational cost
- Can pump large volumes of watery sludge quickly
- Can be used for emptying, sludge transfer, and drainage
- Easy to maintain and repair

Limitations

- Works best with watery sludge and cannot handle thick sludge
- Can block if large trash enters the pump
- Sand and grit can cause faster wear of pump parts

Components and parts







Suction Hose

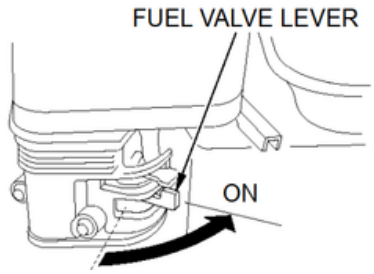


Delivery Hose

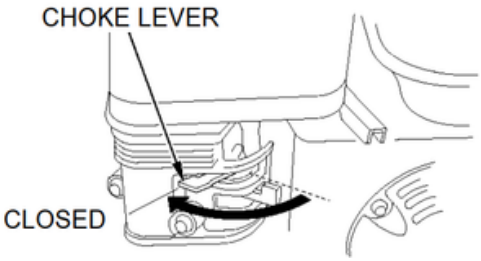
Step-by-Step Operating Procedures

Starting the Engine

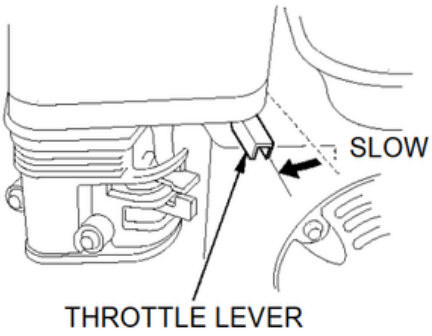
Step by Step



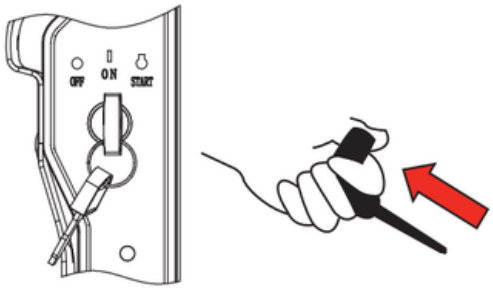
Prime the pump
Move the fuel valve lever to the ON position.



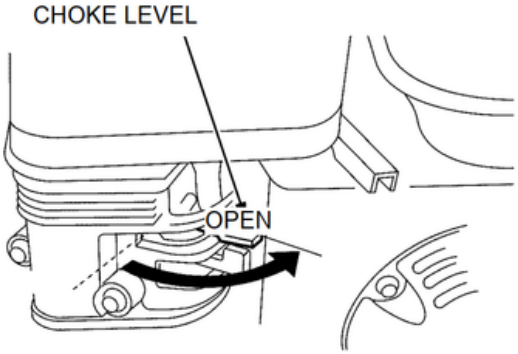
To start a cold engine, move the choke lever to the CLOSED position. To restart a warm engine, leave the choke lever in the OPEN position.



Move the throttle lever away from the SLOW position about 1/3 of the way toward the FAST position



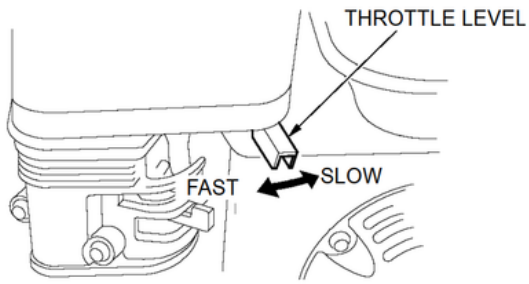
To perform a recoil start, turn the ignition key to the "ON" position and pull the handle.To avoid kickback, pull the handle slowly until resistance is felt and then pull rapidly.



If the choke lever was moved to the CLOSED position to start the engine, gradually move it to the OPEN position as the engine warms up.

Step-by-Step Operating Procedures

Setting the Engine Speed

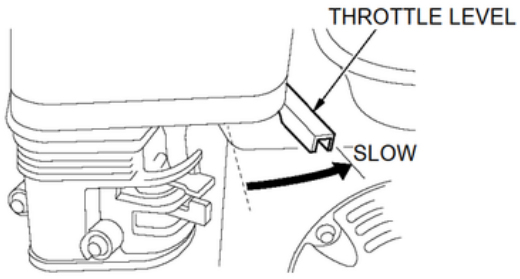


After starting the engine, move the throttle lever to the FAST position for self-priming, and check pump output.

Pump output is controlled by adjusting engine speed. Moving the throttle lever in the FAST direction will increase pump output, and moving the throttle lever in the SLOW direction will decrease pump output

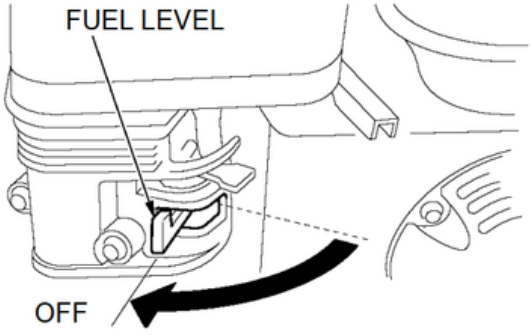
Stopping the Engine

To stop the engine in an emergency, simply turn the ignition switch to the OFF position. Under normal conditions, use the following procedure.



Move the throttle lever to the SLOW position

Turn the ignition switch to the OFF position.



Turn the fuel valve lever to the OFF position.

Operations

Safety	• Always wear PPE (gloves, gumboots, overalls,). • Never operate the pump indoors or in enclosed spaces. • Keep children and bystanders away from the work area. • Never refuel the pump while the engine is running or hot. • Avoid direct contact with sludge and wastewater. • Clean any spillages immediately and disinfect the area. • Wash hands thoroughly after completing the job.
Maintenance	• Clean the pump, hoses, and strainer after every job. • Check fuel and engine oil levels before use. • Inspect hoses, clamps, and connections for leaks or damage. • Clean the air filter regularly. • Replace worn or damaged parts promptly. • Store the pump in a clean, dry place when not in use
IMPORTANT TIPS	• The Trash Pump works best with watery sludge. • It does not work well with thick sludge or large amounts of trash. • Always prime the pump with water before starting. • Never run the pump dry, as this can damage the pump. • If flow reduces, stop pumping and check for blockages or add water to dilute the sludge. • Leave the toilet and work area clean after the job. Clean and disinfect any spillages immediately.

Preventive Maintenance

Daily Checks

Check	Action
Check and top up engine oil	Use correct grade; never run dry
Check and top up engine fuel	Do not overfill; use recommended grade
Check belt condition and tension	Adjust or replace if worn or slack
Inspect all couplings and clamps	Tighten; replace worn O-rings
Clean suction filter	Remove debris; check mesh integrity
Flush hoses and pump casing after use	Prevents residual sludge drying and blocking
Inspect suction and discharge hoses for cracks, holes, or abrasion	Replace immediately if damage found

Preventive Maintenance

Weekly Checks

Check	Action
Lubricate all grease nipples and moving joints	Use manufacturer-recommended grease
Tighten all bolts and fittings on chassis & engine mount	Check after every 20 hours of operation
Clean or replace air filter element	Replace if heavily soiled or damaged
Inspect fuel filter (if fitted)	Replace if blocked or discoloured
Check wheel bearings (if wheeled unit)	No excessive play or noise
Inspect all hoses along full length	Look for UV degradation, internal cracking
Test all coupling seals under operation	Check for weeping or drips during use

Monthly Checks

Check	Action
Change engine oil	Per manufacturer interval; typically every 50–100 hours
Full mechanical inspection of pump and engine	All components; document findings
Inspect and test impeller (if accessible)	Check for wear, cracking, or imbalance
Replace hoses if showing significant wear	Do not operate with cracked or stiff hoses
Inspect pump seal / mechanical seal	Replace if dripping or showing wear
Clean and inspect spark plug (petrol engine)	Adjust gap or replace per spec
Drain and clean fuel tank if contamination suspected	Treat for water ingress
Review and update maintenance and job records	Ensure all logs are complete and signed

Troubleshooting Guide

Problem	Possible Cause	Recommended Solution
Engine will not start	No fuel; fuel valve closed; choke incorrect; low oil safety shut-off triggered	Check fuel, open valve, set choke to start; check oil level; retry start sequence
Engine starts but stalls immediately	Choke not moved to run position; dirty fuel filter; low fuel	Move choke to open; replace or clean fuel filter; refuel
Pump does not prime — no flow within 2 minutes	Pump casing not filled (not primed); suction hose not submerged; air leak in suction hose	Stop engine; refill priming port; check submersion; inspect all suction couplings for air leaks
Weak or intermittent flow	Partial suction hose blockage; strainer clogged; suction hose not fully submerged; air entering system	Remove and clear blockage in strainer; check hose submersion; inspect all couplings
No discharge despite pump running	Discharge hose kinked or blocked; impeller clogged with solid waste	Stop, disconnect discharge hose and clear blockage; flush impeller with clean water
Pump loses prime and stops discharging mid-operation	Suction hose lifted out of liquid (sludge level too low); air entering suction side	Lower suction hose further; add water to pit if sludge level is low; check all couplings
Reduced pump performance — lower flow rate than usual	Impeller wear; partial clog; engine running below full speed; worn pump seal	Check throttle is at full speed; inspect impeller; check seal condition
Excessive vibration during operation	Impeller damaged or unbalanced; loose engine mounting bolts; debris caught in impeller	Stop engine; check impeller for damage; tighten all mounting bolts
Hose coupling leaking	Worn O-ring or gasket; coupling not tightened fully	Replace O-ring; re-couple and tighten; test before resuming