



MINI-STRIKER

Owner's Manual



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Important Safety Instructions

It is recommended that all information provided in this manual be carefully read and understood before performing any operation of or maintenance to the pump.

The procedures listed in this manual are general operating and maintenance procedures. They should be taken in addition to any procedures, policies and guidelines established by the authority having jurisdiction or the apparatus manufacturer. Where conflicts arise, all parties (authority having jurisdiction, the apparatus manufacturer, and *WATERAX* Inc.) will need to be contacted to determine the best resolution. The solution will need to address the safety of the operator along with the proper performance and life expectancy of the unit.

Personal Safety Advisory

READ YOUR ENGINE MANUAL FIRST!

Before proceeding further, locate and read the engine manufacturer's manual. It contains very important safety information that **MUST** be read, understood and followed to safeguard you and your equipment from harm, as well as specific information on the proper use and care of your engine.

READ THIS MANUAL BEFORE OPERATING YOUR PUMP!

The improper use of the *WATERAX* pump could result in serious injuries as well as damage to the pump. Any operator should familiarize himself with the apparatus and its capabilities before trying to operate the equipment in an emergency. Please read this entire manual before using your *WATERAX* pump and follow all Personal Safety Advisories.

Warnings



- Always wear eye and ear protection when operating the pump unit.
- Do not operate if mentally or physically fatigued.
- Always inspect hoses and piping to avoid burst injuries.
- Use only pipe, hose, and fittings that are rated at or above the maximum pressure rating of the pump shown below, or according to what maximum pressure the system was designed for, whichever is lower.
 - Maximum Allowable Pressure: 100 PSI (6.9 bar)
- No modifications and/or alterations may be made to the pump. Any such modifications not only void the pump warranty but can make the unit dangerous to anyone operating the pump.
- Do not operate the pump higher than the maximum rated pressure. Always run the unit at the lowest pressure required for the application to enhance operator and equipment safety.
- Slowly close valves and use slow close valves wherever possible to prevent danger to other line operators and to prevent water hammer which could damage the pump and its piping components.
- Relieve all system pressure before doing any service work on the pump.
- Never run the pump in a closed or confined area. Exhaust gas contains carbon monoxide which is poisonous to humans. Avoid inhalation of exhaust gas.
- Refuel engine with care. Gasoline and diesel are flammable, and gasoline vapor can explode. Refuel in a well-ventilated area, with the engine stopped.
- Be alert and never touch any part of the engine exhaust system (muffler, shield, header pipes, etc.) while the engine is running. Always allow enough time, after stopping the unit, for proper cooling of the muffler and surrounding parts.

- Do not ground the battery (if applicable) through the pump's frame members; always ground to a bare metal (unpainted) part of the engine block to ensure proper ground.

Preventing Damage to Equipment

The following recommendations will help avoid damage to your equipment:

- Flush the pump with fresh water if the pump has been used to pump salty, brackish, high mineral content water, water containing debris, or foam injected water. Check that debris is cleared before using pump again.
- Always draft water using a suction hose strainer.
- During freezing weather, drain the pump, manifolds, and lines of all water. You can also pour some antifreeze into the pump and circulate it through the pump and plumbing system.
- Let the engine warm up before using the unit at full speed.
- Always use the proper unleaded gasoline or diesel fuel as recommended in the engine manufacturer's manual.
- Always check for enough oil quantity in the engine crankcase before use (see engine manual for details on checking the oil level, as well as for the type of oil to use).
- If applicable, always check for enough coolant quantity in the engine radiator before use (see engine manual for details on checking the coolant level, as well as for the type of coolant to use).
- Pumps should not be operated without water for any extended period or without discharging water. Operating the pump in such a manner can overheat the pump causing damage to seals, or pump internals.
- It is recommended that all fasteners be replaced with genuine *WATERAX* parts.
- When mounting manifolds to the pump, the manifolds must be self-supporting and coupled to the pump by means of a flex coupling such as a Victaulic® coupling or flex hose.
- When hoisting the pump onto an apparatus, take care when using lifting hooks (if applicable) and avoid any contact with components adjacent to the fixation points.
- Never disconnect the battery (if applicable) while the engine is running, as this may damage the control panel's electrical components.

Introduction

About this Manual

This manual contains general operation, care and servicing procedures for the *WATERAX* MINI-STRIKER portable pump consisting of a single-stage pump end paired with a Honda GXH50 2.5 HP gasoline-powered engine.

These instructions cover most wildland and municipal pump applications. If the application the pump is being used for does not fall into these general guidelines, consult *WATERAX* Inc. for any additional safeguards, operating, or maintenance considerations that may be required.

For full service and maintenance instructions regarding the pump, please refer to the Service section. For maintenance instructions regarding the engine, as well as for oil and fuel recommendations, refer to the engine manufacturer's manual.

Please see www.waterax.com additional documentation related to this product such as the *WATERAX* product guide, technical notes, links to the engine manufacturer's manuals, news and other updates about *WATERAX* and its goods and services.

Abbreviations and Terms

The following terms and abbreviations are used in this manual:

Cavitation	Formation of air bubbles in a liquid inside a centrifugal pump, causing low pressure points and loss of pump capacity.
Dead heading	Also called shut-off. Leaving the pump running with all the discharge valves closed. The pump should not be left in this mode for more than a minute since the pump can overheat and become damaged. To avoid this, a re-circulation line (if provided) should be opened or a discharge line left slightly open to allow fresh water to continue to enter the pump.
Drafting	Process of using vacuum (suction) to take water from a stream or impoundment.
NH	National Hose. This is a type thread specified in NFPA 1963. Formerly known as NST (National Standard Thread).
NPSH	National Pipe Straight Hose. This is a type of thread that is slightly smaller in diameter than NH, with more threads per inch than the same nominal size of NH thread. NPSH is also called IPT (Iron Pipe Thread).
RPM	Revolutions Per Minute.

About the MINI-STRIKER Series

Features

For full specifications and performance curves, see the Product Data Sheet for your pump end model.

Applications of the *WATERAX* MINI-STRIKER series include:

- Attack line firefighting
- Entry-level slip-on units
- Sprinkler operations
- Tandem pumping over long distances

Features and Benefits of the *WATERAX* MINI-STRIKER series include:

- Lightweight aluminum alloy pump components for lighter weight
- Portable and compact
- Compatible with foam applications
- Comprehensive manuals
- EPA Certified

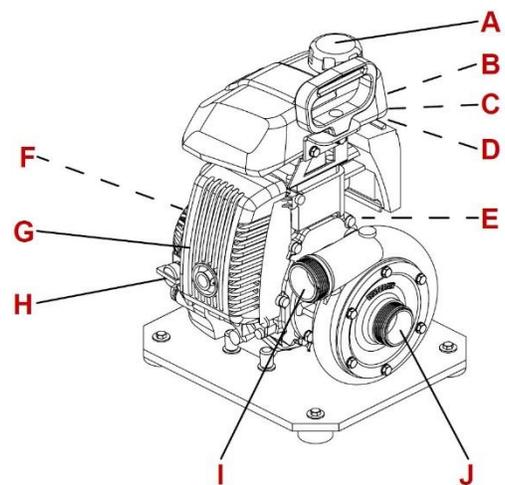
Configurations

The MINI-STRIKER series is used for a variety of wildland and municipal firefighting applications. Your model may be configured as a **portable**, standalone pump installed on a base with a carry handle, or it may be purchased in the **vehicle-mount** configuration which includes four industrial isolators affixed directly to the engine base to fasten the pump onto a fire apparatus.

Pump designation	Engine used
MSTR-P	Honda GXH50 2.5 HP gasoline engine
MSTR-V	Honda GXH50 2.5 HP gasoline engine

Parts Identification

- A. Fuel cap
- B. Fuel valve (not shown)
- C. Choke (not shown)
- D. Throttle (not shown)
- E. Oil filler dipstick (not shown)
- F. Recoil starter (not shown)
- G. Muffler
- H. Ignition switch
- I. Pump discharge
- J. Pump intake (suction)



Note: Model MSTR-P portable pump shown. Also available as a vehicle-mount unit.

Installation

Depending on your model and configuration ordered, you may require additional accessories from *WATERAX* or from third-party vendors, for example, control panels, batteries, and fuel lines. You will also require hoses and nozzles as well as other fire apparatus plumbing which can be purchased through your *WATERAX* representative. Follow the instructions and heed all warnings in any documentation that you receive with the accessories you purchase.

Plumbing

When mounting manifolds to the pump, the manifolds must be self-supporting and coupled to the pump by means of a flex coupling such as a Victaulic® coupling or flex hose.

Pump End Mounting

The pump end can be rotated to aid with the apparatus piping connections. The quick release pump clamp securely holds the pump end in the desired position. Always ensure that the water can be drained from the pump end to keep it from cracking in freezing weather. A drain valve is available from *WATERAX* (item no 801104).

Fastening to Truck/Apparatus

WATERAX provides certain accessories used in vehicle-mount configurations. Model MSTR-V of the MINI-STRIKER series is equipped with four industrial isolators mounted directly to the engine base with M6 x 1.0 female thread.

When adding any equipment to a vehicle, follow all instructions and heed all warnings provided by manufacturers of the apparatus and any third-party accessories. Follow all documentation that ships with any accessories you have ordered such as vibration mounts or rails. Your company's internal policies and guidelines must also be followed.

Before installing the pump in a vehicle, plan for adequate access to any fill caps such as those for oil, fuel as well as any other part of the pump or engine that is frequently accessed or inspected (valves, panels, primers, filters, etc.). Make note of components that become hot when operating such as mufflers and engine blocks, and always ensure a safe clearance around them.

Operating MINI-STRIKER Series Pumps

Pre-Operation Checklist

Before using your pump, follow this verification procedure:

1. Visually inspect product

When you first receive your MINI-STRIKER pump, inspect the product and check for any damage. Notify the supplier if any damage is found.

2. Check all fluid levels regarding the pump and any related equipment. Before first use, you must prepare the engine which is shipped dry. Before each subsequent use, check levels and top up as needed.

- Engine/apparatus fuel level
- Engine/apparatus oil level

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

3. Check that all suction and discharge hoses are structurally sound and do not leak.

4. Inspect all safety features and verify that they are in good order before using the pump.

5. Each time you plan to use the pump, check for damage that may have occurred during previous use. Notify your manager that the equipment requires repair. Remember that damaged equipment can expose you to safety hazards.

Drafting

Before you draft

Pumps should not be run dry, and therefore the pump ends require priming prior to operation. Use this procedure if you are drafting water from an open tank or natural water source.

To maintain optimum performance from your pump, follow these recommendations for selecting and installing your suction hose or pipe:

- Use the shortest length possible, i.e., place the pump as close to the water as possible.
- Select reinforced crush resistant (non-collapsible) hose or pipe.
- Make sure that all pipes have airtight fittings.
- To avoid air locks, flexible hose should rise gently from the water source to the suction/inlet port without excessive dips, bumps, sharp angles or rise in its lay.
- Pipes should be equal to or larger than the diameter of the suction/inlet port.
- Suction strainers should be fitted to prevent foreign matter from entering the pump.
- Where practicable, the installation and use of a suction float will aid in the performance of your pump, by keeping suction away from the debris on the bottom of the dam or river.
- Ensure that the suction hose is completely submersed.

Limitations

Several factors can affect the pump's ability to efficiently draft water. The following limitations should be considered.

- Water temperatures above 35 °C (95 °F) can cause noticeable loss in pump performance.

- Barometric pressures below 98 kPa (29 in of Hg) can also cause noticeable loss in pump performance (specifically elevations >2000 feet above sea level).
- Pump performance curves are based off a 5-foot lift (top of water source to impeller center). Lifts greater than 5 feet will decrease the pump's performance.
- Hose and strainer sizes that are too restrictive can significantly decrease the pump's performance.
- Intake hose runs in excess of 10 feet can also reduce pump performance.

Drafting connections

1. Connect a suction line to the pump intake.
2. Install a footvalve suction strainer on the other end of the suction hose and place in the water source.

Note:

To provide proper operation of the pump, the suction hose/strainer should be submerged a minimum of 4 to 6 times the hose diameter into the water source.

DO NOT allow footvalve strainer to rest on bottom of lake or riverbed. Check strainer frequently to make sure that it is not clogged with moss, leaves, etc.

DO NOT lift strainer from water while the pump is operating. Use a rope or other means to keep strainer at proper height, approximately 1 foot (30 cm) below water surface. If strainer is too close to the water surface, it will draw air and pump may lose prime.

Priming the Pump

Before priming the pump, discharge hoses should be installed. Several options are available to prime a pump when you are drafting water, depending on the priming equipment you have.

Note:

The priming line must be connected to a port on the pump that allows the eye of the impeller to completely fill with water. A shut off valve should also be placed between the pump and the primer to shut off the priming line once the pump has been primed.

- Connect hand primer to discharge port and pump until water is drawn into the pump.
- Pump can also be primed by "jerking" the suction hose until water flows from the pump's discharge port.

Startup and Discharge

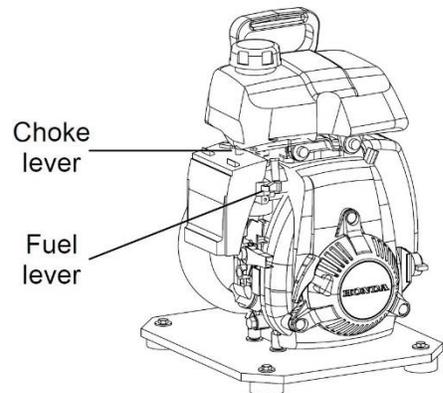
1. Fill fuel tank with recommended fuel grade.

Fill tank and securely replace cap.

2. Start the engine (automatic rewind type starter).

With all valves closed, move the engine's fuel valve lever to the ON position.

- a. Close/engage choke, if engine is cold.
- b. Increase throttle past the idle position.
- c. Position the electric switch to the ON position.
- d. Give starter rope a quick, steady pull until engine starts.
- e. Open/disengage choke.
- f. Allow the engine to warm up for at least 2 minutes before using full throttle.



Note: Leaving the pump running with all the discharge valves closed is called **deadheading** the pump. The pump should not be left in this mode for more than a minute. Leaving in this condition for any length of time will cause the pump to overheat and damage the pump. To avoid overheating the pump, a re-circulation line (if provided) should be opened or a discharge line left slightly open to allow fresh water to continue to enter the pump.

3. Discharge water.

Once the pump is primed, and with the engine running, you can begin to discharge water.

- a. Slowly open the discharge valve. If pressure does not build in the discharge hose, the pump has not been fully primed. The valve should be closed, and the pump primed again.
- b. Adjust the pump performance by throttling the engine up or down, or opening or closing discharge valves at various positions, or any combination of the two.

Note: If the engine throttle is increased and the engine RPM increases without an increase in pump pressure, the pump may be cavitating. Refer to the limitations listed at the beginning of this section and see the troubleshooting section for a verification checklist and possible solutions.

Shutdown

1. After completing the pump operation, gradually reduce the engine speed to idle by slowly moving the throttle lever to the MIN. position, and slowly close the discharge valves (preferably in the order listed).
2. Whenever the unit has been run at full throttle for most of the operation, allow the discharge valves to remain slightly open and run the engine at idle for approximately 2 minutes before shutting down the unit.
3. If the pump was last run with foam or water that is salty, brackish or high in mineral content, flush the pump with fresh water for a minimum of 2 minutes or until the water is clear.
4. Close off the hydrant or water supply to the pump.
5. Move the fuel valve lever to the OFF position and wait for engine to stop.
6. Set the ignition switch to the OFF position.
7. Open all valves to relieve any pressure left in the system.

Cold Weather Operation

The pump can be run in below freezing temperatures if certain precautions are taken to avoid the formation of ice in the pump.

1. After priming the pump, the unit should be run at low speed for a short period of time to allow all components to warm up before continuing with the remaining operating procedures.
2. Unless wrapped in a heater, drain the pump of all water if it is stopped for any length of time. The engine/drive unit should be turned over a few revolutions to make sure all water has been removed from the pump. Drain the pump priming line if a primer has been used.
3. After use, drain the pump, manifolds, and lines of all water. You can also pour some antifreeze into the pump and circulate it through the pump and plumbing system.

Basic Care and Storage

The basic care described in this section does not require any disassembly of the pump. For any servicing procedures that require removing any part of the pump to access a component, please see the Service section.



WARNING: Before doing any maintenance to the pump, always ensure that the equipment cannot be accidentally started. Follow any apparatus and/or departmental procedures or guidelines in regard to locking out the equipment.

Regular maintenance

After each use:

1. Visually inspect the pump unit.
2. Make sure the mechanical rotary seal is not leaking.
3. Check the pump for external leaks.
4. Check the engine for leaks.
5. Clean any dirt or debris from the pump unit. If necessary, a mild soap and water solution can be used.
6. Note and report any performance irregularities or any abnormal mechanical sounds.
7. Check all fluid levels and add as needed.
8. Make sure all necessary tools, spares, and accessories are with the pump.

Long-term storage

1. Completely drain the pump of all water.
2. Drain the carburetor. The engine can be run with the fuel valve lever in the OFF position to drain the system.
3. Drain the fuel tank.
4. Close all valves and plug all openings.
5. Follow any other products, components, apparatus, and departmental procedures and/or guidelines before placing the unit in storage.

Troubleshooting

This section provides brief troubleshooting instructions for verifying the set-up and operation of the pump. Each section describes a condition and lists possible causes along with a list of items to check to identify the source of the problem and resolve it.

Pump Loses Prime or Will Not Prime

- Air Leaks** Attempt to locate and correct the air leaks by isolating each system component.
- Disconnect the pump priming system and test. Check that the priming system is pulling its rated vacuum.
 - Cap the pump discharge and prime the pump. If the pump primes, the leak is in the pump discharge components. If the pump does not prime, the leak may be in the pump, or the pump intake system.
 - Cap the pump intake and discharge and then perform a vacuum test on the pump (15 to 30 in Hg). If the prime holds, then the leak is in the pump intake components. If the pump does not hold prime, leakage could come from a port or drain line attached to the pump.
 - Before repeating the test above, disconnect the drain line from the pump and plug. If the pump holds vacuum, the leak is in the drain line or drain valve. If the pump does not hold prime, leakage could be from another component attached to a port in the pump.
 - Before repeating the test above one last time, remove any other component connection from the pump and plug. Re-test the pump under vacuum. If the pump holds prime, leakage was in one of the components removed. If the pump does not hold prime, leakage is in the pump.
-

- Air Trapped in Suction (Pump Intake) Line**
- Check that no part of the suction hose or piping is higher than the pump intake. Pump suction hose and piping must be laid out with a continuous decline to the water source from the pump intake.
 - If the pump intake piping above the pump intake cannot be avoided, priming taps must be added to the raised section of piping for the removal of trapped air.
 - If the suction hose cannot be laid out in a manner to avoid raised sections in the hose, wiggle and raise the hose while priming to allow the entrapped air to work its way from the raised region.
 - Check the priming port location. If the port is not located in a position that will allow the eye of the impeller to fill with water, it will need to be moved to a location that will do so.
-

- Blocked or Restricted Intake Hose or Strainer**
- Remove blockage from the intake hose or strainer.
 - Strainer should not be sitting at the bottom of the water source where debris can be picked up. Clean off the strainer and raise to a position that is off the bottom of the water source (floating strainers are available).
 - If the strainer is new, check that the strainer hole size is not too restrictive for the demands of the pump.
-

- Pump Suction Lift Requirements are Too High**
- DO NOT attempt pump lifts exceeding 22 feet (6.7 meters) except at elevations lower than 2000 feet above sea level.
 - As elevation increases above 2000 feet above sea level, maximum lift heights will diminish. Check that the lift for the elevation the pump is being required to operate at is achievable.
-

- Inoperative Priming System**
- Check and service the priming system as outlined in the documentation from the priming system's supplier.

Pump Does Not Meet Performance

Incompatible Installation	<ul style="list-style-type: none"> ■ Piping size and configuration may be too restrictive. Contact a <i>WATERAX</i> Inc. representative if assistance is needed in evaluating the unit's piping.
Gauge or Instrument Failure	<ul style="list-style-type: none"> ■ Check that all gauges are calibrated, and that all equipment is in proper condition. Nozzles with dented edges and bent or damaged pitot tubes will produce faulty readings.
Blockage	<ul style="list-style-type: none"> ■ Check all hoses, tank, piping, etc. Remove any obstructions found. ■ Check for debris wedged or caught in the impeller or diffusers. Remove any obstructions found.
Insufficient Power to the Pump	<ul style="list-style-type: none"> ■ Check engine compression and complete engine repairs if required. ■ An engine tunes up may be needed to bring engine back to peak performance. ■ An engine will lose approximate 3.5% of its power per every 1000 feet above sea level. If the elevation of operation was not considered when the unit was selected, a unit of higher horsepower may be required to make the needed performance.
Restriction	<ul style="list-style-type: none"> ■ If a new strainer and/or intake hose was purchased, check that they provide adequate supply to the pump to meet the performance desired. ■ If the pump was purchased used, check that the actual configuration will achieve the desired performance. A <i>WATERAX</i> Inc. representative can be contacted for assistance. ■ Check pump lift. Refer to "Pump Loses Prime or Will Not Prime: Suction Lift Too High" section.

Pump Cavitating

Lift Too High	<ul style="list-style-type: none"> ■ Move pump closer to water source. ■ Decrease pump's intake hose length. ■ Increase pump's intake hose size (inner diameter).
Water Temperature	<ul style="list-style-type: none"> ■ Water temperature may be too high. Water temperatures approaching 35°C (95°F) or higher are likely to cavitate the pump. Decrease engine speed and/or gate the discharge valve to decrease pump flow until the cavitating stops. ■ Locate a cooler water source.
Restrictions	<ul style="list-style-type: none"> ■ Refer to "Restrictions" in the "Pump Does Not Make Performance" section. ■ Check that the bottom of the suction hose is at a minimum of 2 feet (0.6 meters) from the bottom of the water source and correct if necessary. ■ Check that the bottom of the suction hose/strainer is 4 to 6 times the hose diameter below the water supply surface level and correct if necessary.

Engine Speed Too High for Required Capacity and Pressure

Air Leaks	<ul style="list-style-type: none"> ■ Refer to "Pump Loses or Will Not Prime: Air Leak" section.
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Service

This section includes instructions for overhaul and maintenance requiring disassembly of the WATERAX single-stage pump end integrated in the MINI-STRIKER series pumps. It *does not* include engine maintenance. For maintenance instructions regarding the engine, as well as for oil and fuel recommendations, please refer to the engine manufacturer's manual.

Note: It is recommended that all fasteners be replaced with genuine WATERAX parts.

Parts Breakdown

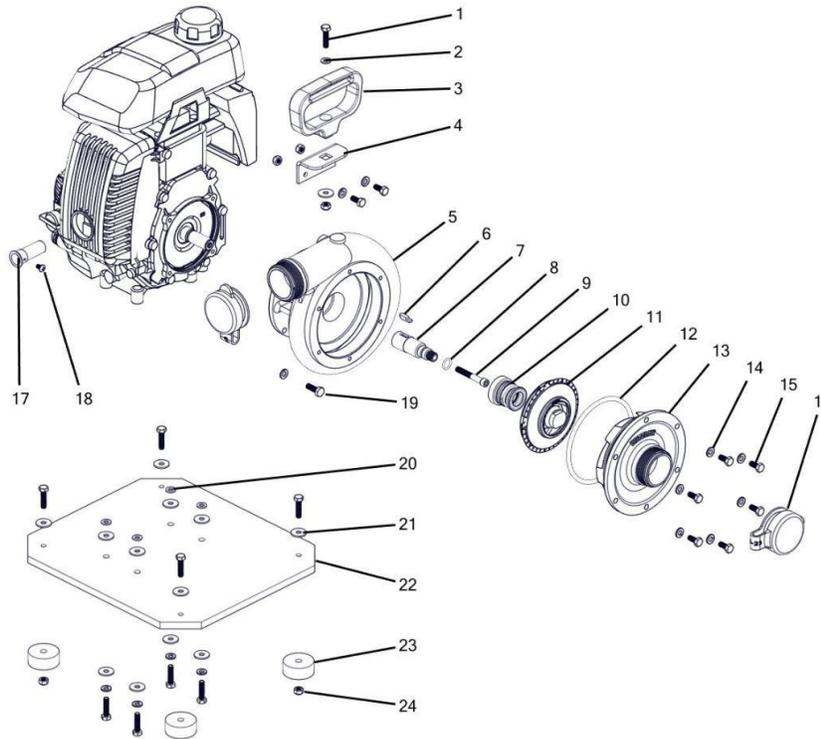


Figure 1: Exploded view of MINI-STRIKER (portable).

ID	ITEM NO	DESCRIPTION	QTY
1	800525	FAST-21 SCREW M6X1.0X25 HEX CAP ZINC	9
2	800549	FAST-510 WASHER M6 FLAT ZINC	1
3	600140	A-7441 PLASTIC HANDLE MACHINED FOR MINI-STRIKER®	1
4	600148	A-7434 STEEL BRACKET FOR MINI-STRIKER®	1
5	600062	B-7438 PUMP BODY MINI-STRIKER®, ALU. ANODIZED	1
6	600141	A-7437 KEY 3/16 SQUARE FOR MINI-STRIKER®, S.S.	1
7	700081	A-7436 PUMP SHAFT FOR MINI-STRIKER®, S.S.	1
8	700475	COR-8-013 O-RING #013 NITRILE	1
9	800516	FAST-44 SCREW 1/4-28X1-3/4 HEX SOCKET SS	1
10	700002	C-6970-5 SEAL TYPE 21 CUP SEAT	1
11	700045	B-6977 IMPELLER FOR MINI-STRIKER®	1
12	800450	12-26 O-RING #243, NITRILE, 70 DURO	1

ID	ITEM NO	DESCRIPTION	QTY
13	600034	B-6974 SUCTION COVER MINI-STRIKER®, ALU. ANODIZED	1
14	800360	12-38 LOCKWASHER 1/4 SPLIT SS	16
15	800529	FAST-18 SCREW M6X1.0X14 HEX CAP ZINC	8
16	700023	A-5536 PROTECTIVE CAP FOR 1-1/2" DISCHARGE	2
17	800178	HONDA-18350-ZM7-801 SPARK ARRESTER MINI-STRIKER®	1
18	800185	HONDA-93903-24110 SCREW SPARK ARRESTER MINI-STRI	1
19	800515	FAST-46 1/4-28X3/4 HEX CAP SS	4
20	800522	FAST-516 WASHER M6 FLAT NYLON	4
21	800543	R-151 WASHER 1/4 FLAT ZINC	13
22	700082	A-7435 MOUNTING BOARD FOR MINI-STRIKER®, HDPE	1
23	800420	C-6650- 10 RUBBER MOUNT	4
24	800544	R-150 NUT M6X1.0 HEX FUJI LOCK ZINC	7

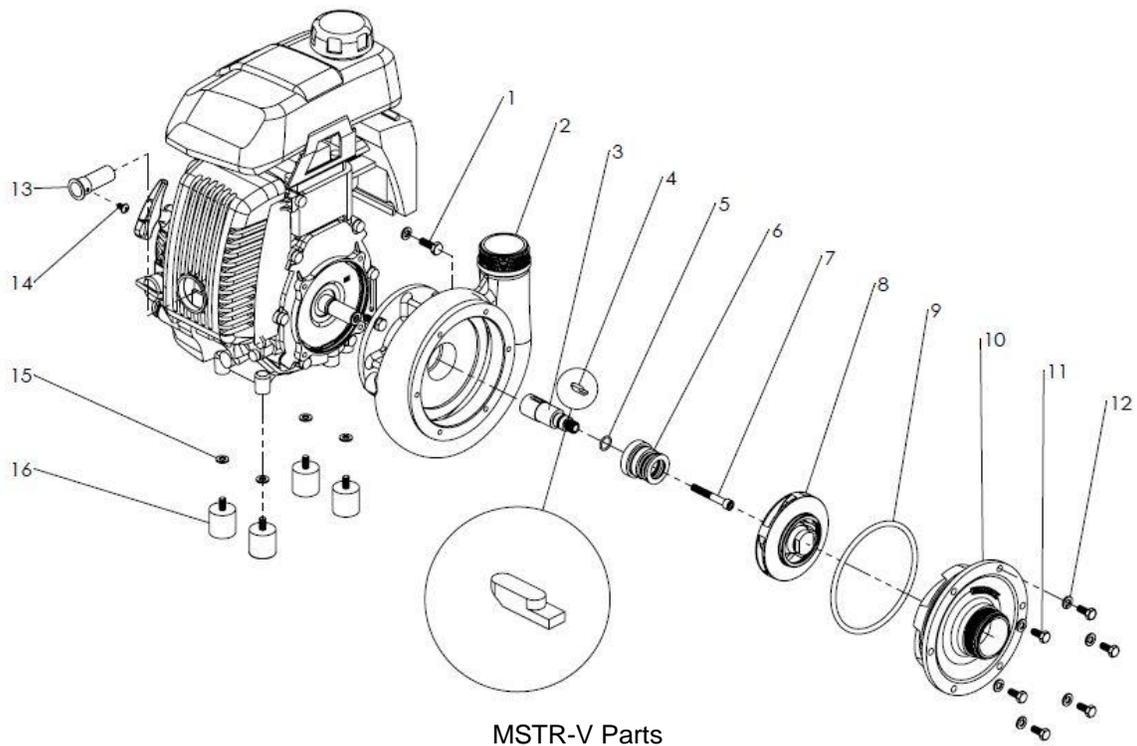


Figure 2: Exploded view of MINI-STRIKER (vehicle).

ID	ITEM NO	DESCRIPTION	QTY
1	800515	FAST-46 1/4-28X3/4 HEX CAP SS	4
2	600062	B-7438 PUMP BODY MINI-STRIKER®, ALU. ANODIZED	1
3	700081	A-7436 PUMP SHAFT FOR MINI-STRIKER®, S.S.	1
4	600141	A-7437 KEY 3/16 SQUARE FOR MINI-STRIKER®, S.S.	1
5	700475	COR-8-013 O-RING #013 NITRILE	1
6	700002	C-6970-5 SEAL TYPE 21 CUP SEAT	1
7	800516	FAST-44 SCREW 1/4-28X1-3/4 HEX SOCKET SS	1
8	700045	B-6977 IMPELLER FOR MINI-STRIKER®	1
9	800450	12-26 O-RING #243, NITRILE, 70 DURO	1
10	600034	B-6974 SUCTION COVER MINI-STRIKER®, ALU. ANODIZED	1
11	800529	FAST-18 SCREW M6X1.0X14 HEX CAP ZINC	6
12	800360	12-38 LOCKWASHER 1/4 SPLIT SS	10
13	800178	HONDA-18350-ZM7-801 SPARK ARRESTER MINI-STRIKER®	1
14	800185	HONDA-93903-24110 SCREW SPARK ARRESTER MINI-STRI	1
15	800522	FAST-516 WASHER M6 FLAT NYLON	4
16	800752	PART-310 ANTI-VIBRATION MOUNTS RNCH	4

Disassembly and Assembly of the Pump End

Before Disassembly or Assembly

- Read and follow all instructions thoroughly and carefully.
- Ensure shaft, bores, screws, etc. are free of burrs and lubricant.

Tools Required

- SAE Socket wrench with the following socket:
 - 10 mm
 - 15/16"
- SAE Wrench key:
 - 7/16" (ratchet)
 - 3/4"
 - 15/16"
- SAE Allen key:
 - 3/16"
- Pipe Wrench

Disassembly Procedure for MINI-STRIKER Pump End

The following steps refer to figure 2

1. Remove the 6 screws #11 and lockwashers #12 on the suction cover #10.
2. Remove suction cover #10.
3. Remove O-ring #9.
4. Unscrew impeller #8.
5. Remove the mechanical rotary seal #6.
It is recommended to replace the mechanical rotary seal at each maintenance disassembly.
6. Remove screw #7.
7. Remove 3/16 key #4 from the shaft #3.
8. Remove shaft #3 and O-ring #5.
9. Remove pump body #2 from the engine by removing screws #1 and lockwashers #12.
10. Press out the stationary part of the mechanical rotary seal #6 from the pump body #2.

Assembly Procedure for MINI-STRIKER Pump End

The following steps refer to figure 2

1. Install the stationary part of the mechanical rotary seal #6 in the pump body #2.

Protect precision lapped faces of new seal from **damage, dirt** and **finger marks**.
NEVER use grease or heavy oil as an installation lubricant. Any oil or grease on the seal faces may cause the seal to leak.

- a. **Carefully** install the stationary part of the seal inside the pump body. Make sure the seal is well seated at the bottom of the seal seat in the pump body. The silicone carbide face should be facing the top of the pump body.
 - b. Clean the sealing face of the seal with a lint free tissue and alcohol to remove any contaminant.
2. Install 3/16 key #4 and shaft #3 onto engine shaft. Refer to Figure 2 for correct orientation of the key.
 3. Install O-ring #5.
 4. Apply Loctite 290 (or equivalent) on screw #7 and install.
 5. Install the pump body #2 on the engine using the screws #1 and lockwashers #12.
 6. To avoid the soap from drying, proceed quickly with the next steps. Apply a light amount of diluted liquid dish soap (e.g., DAWN®) solution on the impeller outside shaft surface and seal bellows and install the rotating part of the seal #6 on the impeller #8. Gently press down to compress the spring. The seal should move up and down freely. Carbon face should face engine.
 7. Carefully apply a light coat of anti-seize on the shaft threads and install impeller #8 onto shaft #3.
 8. Install O-ring #9 onto suction cover #10.
 9. Install suction cover #10 onto pump body. Install screws #11 and lockwashers #12. **Recommended torque: 10 Nm (7.4 lb-ft).**

Spark Arrester Maintenance

The following steps refer to figure 2

1. While the muffler is cold, remove bolts and muffler protector.
2. Remove screw #14 from the spark arrester #13.
3. Brush off the carbon deposits from spark arrester screen. Be careful to avoid damaging the screen.
4. Check muffler for carbon deposits. If necessary, remove muffler and tap outer flange with a plastic hammer. Do not tap on seal flange. If seal flange has dents or damage, replace muffler.

Warranty

WHEREAS subject to the following general and specific terms and conditions, WATERAX Inc. (the “**Seller**”) hereby warrants to the original purchaser of the products from WATERAX, (the “**Purchaser**”) that its products, including any pump parts products manufactured by WATERAX (the “**Products**”) sold under Seller’s brands will be free of defects in material and workmanship for the applicable Warranty Period (as set out in full at www.waterax.com/eng/warranty).

Product	Warranty Period	Coverage
4-Stroke Powered Pumps	Two (2) Years	Limited
2-Stroke Powered Pumps	Earlier of One (1) Year or One hundred (100) run hours	Limited
Backpack Pumps	One (1) Year	Limited
Skid Units	One (1) Year	Limited
Control Panels, Electronics Manifolds	One (1) Year	Limited
Genuine Parts	Ninety (90) Days	Limited

1. Limitations, exclusions and other terms and conditions applicable for all Products:

- a. The Warranty shall be voided upon the occurrence of any of the following events: (a) the Product is used for an application, with products or in a manner other than the application, products and manner for which such Product is designed and intended; (b) the Product is subjected to a use, service, condition or environment other than a use, service, condition or environment for which such Product is designed and intended; (c) the Product is not properly installed by the Purchaser or its agent or representative; (d) the Product is not properly tested and maintained in accordance with Seller’s product manuals and supplemental instructions and guidelines, applicable industry standards and guidelines, and applicable legal and regulatory requirements; (e) the Product is altered, modified, serviced (with the exception of routine maintenance performed in accordance with the Seller’s product manuals and supplemental instructions as set out in full at www.waterax.com/eng/warranty, and industry accepted standards and guidelines), or repaired by a person other than the Seller or a person authorized by the Seller to make such alteration or modification or perform such service or repair; (f) the Seller is not paid the full amount of the purchase price for the Product when due; (g) any bad faith invocation of a warranty claim or breach of a purchase agreement by the Purchaser.
- b. The following are excluded from Warranty coverage: (a) non-defective parts worn, exhausted or consumed through normal usage of the Product; (b) any consumable parts normally subject to routine replacement, including but not limited to pump packing, O-rings, gaskets, intake screens, anodes or filters; (c) routine maintenance as specified and in accordance with the Seller’s product manuals and supplemental instructions and guidelines as set out in full at www.waterax.com/eng/warranty; (d) failure due to compliance with a specification or design provided or required by Purchaser; (e) failure due to improper operation, excess pressure, excess voltage, abuse, misuse, negligence or accidents or other similar causes; (f) failure due to operator error; (g) damage during or after shipment and failure attributable thereto or resulting there from; (h) failure attributable to or resulting from the failure or substandard, inadequate or improper performance of any part, component or equipment not supplied by the Seller; (i) failure attributable to or resulting from the failure or substandard, inadequate or improper performance of any third party part, component, product or equipment, whether or not combined, packaged, incorporated, installed or used with a Seller brand part, component, product or equipment.

2. Claim Procedure. The claim procedure applicable under this warranty, including any applicable notice and documentation requirements, are set out in full at www.waterax.com/eng/warranty and constitute an essential term of this Warranty.

3. Repaired and Replacement Product. If requested to do so by the Purchaser the Seller may, at its sole option and in its sole discretion, supply a replacement Product or part to the Purchaser prior to making a final determination as to whether Warranty Coverage is available.

If the Seller ultimately determines that no Warranty Coverage is available for a Product claimed to be defective, the Purchaser shall have the option of either (a) having the Product returned to it freight collect without repair or replacement; or (b) if Seller determines that the Product is repairable, have the Product repaired by Seller or another party designated by it on a time and materials basis at Seller’s then current standard charges for non-warranty repairs and then returned to Purchaser freight collect. The Seller reserves the right to use reconditioned parts for Warranty repairs and to use reconditioned Products for Warranty replacements. Repaired Product and replacement Product shall be warranted only for the remainder of the original Warranty Period.

4. Limitation of Liability: SELLER’S WARRANTY AS SET FORTH HEREIN IS SELLER’S SOLE AND EXCLUSIVE WARRANTY AND IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, ALL WARRANTIES OF MERCHANTABILITY, QUALITY, COURSE OF DEALING, USAGE OF TRADE, FITNESS FOR A PARTICULAR PURPOSE AND NON-INFRINGEMENT. THE RIGHTS AND REMEDIES SET FORTH HEREIN ARE THE SOLE AND EXCLUSIVE RIGHTS AND REMEDIES AGAINST SELLER, EXCEPT FOR THE SPECIFIC LIABILITIES AND OBLIGATIONS PROVIDED HEREIN, SELLER SHALL HAVE NO LIABILITY OR OBLIGATION WITH RESPECT TO ANY PRODUCT CLAIMED TO BE DEFECTIVE IN ANY MANNER.



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