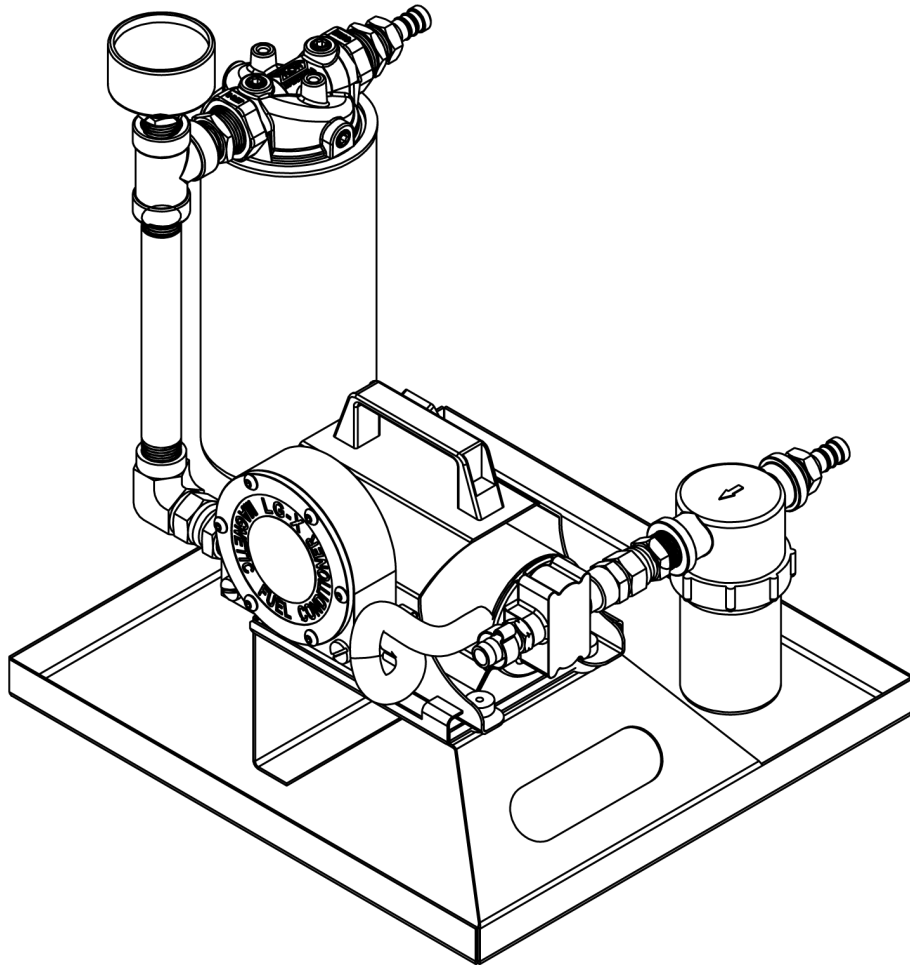




# **TK-240 XT Instruction, Operating, & Maintenance Manual**

**COMPACT MOBILE FUEL POLISHING SYSTEM**

*REV03030240010220*





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# General Overview

## TK-240 XT Specifications

Flow Rate.....	4 GPM/240 GPH (15.1 LPM/908.5 LPH) 1,920 gallons (7,268 liters) per 8-hour shift 5,760 gallons (21,804) per 24-hour shift
Primary Filter.....	10µ Particulate Fine Filter or 3µ Water Block
Strainer.....	50 Mesh T-Strainer
Fuel Conditioner.....	LG-X 500 Inline Magnetic Conditioner
Plumbing.....	Steel
Operating Temperature.....	41 - 104° (5 - 40°C)
Inlet Port.....	½" Hose barb
Outlet Port.....	½" Hose barb
Power.....	12V, 10A
Pump.....	Helical Spur Gear Pump
Suction Capability (Primed).....	5ft. vertical lift (lines > ½", primed)
Max allowed discharge pressure.....	28 PSI (1.8 bar)
Outline Dimensions (Enclosure).....	13" x 12" x 12" (33 x 30 x 30 cm) (H x W x D)
Weight.....	≈ 26 lbs. (11.8 kg)

**!WARNING! This system is not meant for use with gasoline or any other flammable liquids having a flash point less than 100°F (37.8° C). Use with gasoline or any flammable liquids at a temperature exceeding their flash point presents an immediate explosion and fire hazard.**



# System Components

## Control and Safety Devices

- Pressure Gauge

## Pump/Motor

- Helical Spur Gear Pump

## Strainer

- 50 Mesh T-Strainer

## Fuel Conditioner

- Inline Magnetic Fuel Conditioner

## Fine Filter

- Standard-issue 3 $\mu$  water block cartridge (other filter elements available)

## Plumbing

- Steel

# System Operation

## Pump Operation

1. Connect the positive pole of your battery with the red wire connector on the TK-240 XT.
2. Next, connect the black wire connector to the negative battery pole.
3. Insert the suction hose into the tank so that the end reaches the lowest point in the tank (this can also be achieved by using a straight pipe connected to the end of the hose).
4. Place the return hose so that the fuel will return to the tank after running through the polishing system.
5. Before starting up the system, ensure it is primed (see Priming the System section).
6. To startup up the pump/motor, press the red power switch located on the pump/motor.
7. Once running, ensure the pump is running in the right direction.
8. If the pump is running in the opposite direction, or is not running at all, reverse the two electrical leads
9. Prime the pump and t-strainer
10. Circulate the fuel through the TK-240 XT system back to the tank until the appearance of the fuel is “Clear & Bright”

For best practice, it is recommended to do 2-4 passes of the fuel through the fuel polisher for optimal cleanliness. For tanks with heavy contamination, use a 10 $\mu$  filter cartridge for the initial polishing runs. Then, finishing polishing with a 3 $\mu$  Water Block filter cartridge.

In marine applications, the TK-240 XT can be used in connection with the existing onboard primary filter/water-separator. Connected in this configuration the fuel can flow from the tank to the onboard primary filter, through the TK-240 XT, and then back to the tank, either through the return line, an inspection port, or the fill pipe. Please make sure the flow rate of your existing primary filter matches the flow rate of the TK-240 XT.

**!WARNING! Gear pumps are capable of developing extremely high pressure. Care must be taken not to operate the pump with either the suction (inlet) or discharge (outlet) lines closed or obstructed. If the pump is allowed to run without fuel, serious damage can occur. Only run the system when you are able to supervise it. Unattended operating of the TK-240 XT is NOT recommended.**



## Primary Inspection

Upon arrival, the system and accessories must be visually inspected before installation. Improper handling during shipping may cause physical or electrical problems. Immediately report or note any damages to the shipper.

### Checklist

- If the packaging shows signs of damage, inspect the system for damage.
- Check the entire system for damage that could indicate internal mechanical or electrical problems.
- Check pump/motor hardware and all plumbing connections for tightness.
- Check all electrical terminals and connections for tightness.

# System Assembly

The TK-240 XT is shipping in multiple assembly pieces. Please follow the system assembly instructions below upon receiving the system



**Step 1:** Attach the fine filter assembly (male to female connection)



**Step 2:** Attach the strainer assembly (male to female connection)



**Step 3:** Attach the clear suction hose to the strainer with clamp



**Step 4:** Attach the black discharge hose to the fine filter with clamp





## Priming the System

The pump supplied with the system is NOT automatically self-priming and must not be run dry.

**!WARNING! If the pump is allowed to run without fuel, pump damage can occur.**

### Priming Procedure

The pump head of the unit is shipped from the factory filled with oil to facilitate initial lubrication. This will not eliminate the necessity to prime the complete system. The system is primed through the suction line which have to be completely filled with fuel (no trapped air) prior to the initial system start-up.

# Maintenance

## Servicing the Fine Filter

Clogged filter elements restrict the flow of fuel, resulting in the system's pressure gauge indicating a pressure spike. The gauge is mounted between the pump and the fine filter. A pressure reading 15 PSI or when the needle reaches the red area on the pressure gauge will indicate when a filter change should be made on the system.

### Changing the Fine Filter:

1. Flip the red power switch on pump/motor to "OFF" position.
2. Place an appropriate container underneath the filter.
3. Remove the old spin-on filter with a filter wrench.
4. Apply a film of lubricating oil to the gasket of the new filter. Screw the new filter canister to the filter head until the gasket is tight and secure (rotate the element an additional 0.5-1.0 turn after the filter makes contact with the gasket).
5. Check for leaks when re-starting and pressurizing the system.

**Note:** Disposal of fuel, associated waste, and filters must be in accordance with all applicable federal, state, and local rules, laws, standards, and regulations.

**!WARNING!:** Some fuels may have been treated with biocides. Biocides are extremely toxic and may enter the body through the skin. It is recommended to use adequate protection and proper precautions if the fuel at-hand contains biocide type products.

## Serving the T-Strainer

Excessive debris in the T-Strainer will result in a vacuum spike. To service the strainer, follow the instructions below.

### Servicing the T-Strainer:

1. Flip the red power switch on pump/motor to "OFF" position.
2. Place an appropriate container below the T-Strainer
3. Twist off the clear housing on the T-Strainer
4. Remove the strainer basket, clean, and replace
5. Replace the clear housing on the bottom of the T-Strainer and tighten securely
6. Check for leaks when re-starting and pressurizing the system.

## Replacement Filter Chart

### TK-240 XT FILTERS

ALL FILTERS ARE ABSOLUTE, UNLESS OTHERWISE NOTED | WB: WATERBLOCK | SS: STAINLESS STEEL SCREEN

STRAINER BASKET	15 $\mu$ WB	40 $\mu$ SS	80 $\mu$ SS
	TK-240 XT	TK-082	TK-083

SPIN-ON FILTERS	
3 $\mu$ WB	10 $\mu$
WBS-3	FFS-10

# Troubleshooting

## Symptom Troubleshooting Guide

### No fuel delivery

1. Pump does not run
2. Pump is not primed
3. Fuel supply line blocked
4. Excessive lift
5. Air leak in fuel supply to pump
6. Pump rotation direction incorrect

### Insufficient fuel delivered

1. Air leak at inlet
2. Excessive lift
3. Pump worn
4. Piping improperly installed or dimensioned
5. Strainer plugged

### Rapid pump wear

1. Pipe strain on pump causing bind
2. Worn pump/motor coupler
3. Pump has been run dry or with insufficient fuel
4. Plumbing on inlet side not appropriately dimensioned

### Pressure gauge in red area or more than 20 – 25 PSI with clean or new filter element installed

1. Restriction on discharge side too high
2. Head (lift) on discharge side too high
3. Check filter for water saturation (WB only)
4. Discharge line clogged

### Pump requires too much power

1. Air in plumbing lines
2. Liquid too viscous
3. Bent pump shaft, binding rotor
4. Misalignment of pump/motor coupler

### Noisy operation

1. Insufficient fuel supply
2. Air leaks in the inlet pipe
3. Air or gas in fuel on the suction side
4. Excessive pump load (vacuum > 15"HG)

### Pump requires frequent re-priming

1. Pump cavitation
2. Plumbing air leaks
3. Lift too high
4. Leaking pump seal

### Motor does not turn or turns intermittently

1. Control power not available
2. Motor thermal overload condition
3. Pump failed and seized
4. Motor failure

### Pump leaks fuel

1. Loose pump plumbing fittings
2. Worn pump shaft seal
3. Fuel leak elsewhere and fuel dripping or running towards the pump
4. Excessive head from overhead storage tank
5. Worn pump O-rings or seals

# AXI International Limited Warranty

AXI International makes every effort to assure that its products meet high quality and durability standards and expressly warrants the products described herein against defects in material and workmanship for a period of one (1) year from the date of purchase. This warranty is not intended to supplant normal inspection, care and service of the products covered by the user, and shall not obligate AXI International to provide free service during the warranty period to correct breakage, maladjustment, or other difficulties arising out of abuse, misuse, or improper care and maintenance of such products. Our express warranty is subject to the following terms and conditions:


This warranty shall only extend to and is only for the benefit of original purchaser(s), or end customer(s) who use the products covered hereby and subject to the terms and conditions herein. This warranty is not an on-site warranty. Travel requests will be at the discretion of AXI International. Defective systems and ancillary products will require a return authorization number and shipping to AXI International's factory in Fort Myers, FL. Any warranty claim received by AXI International after one (1) year from the date of purchase will not be honored even if it is claimed that the defect occurred prior to one (1) year from the date of purchase. Claims outside of this one (1) year period, and for claims not listed within, payment, repair, or service will be awarded at the sole and exclusive discretion of AXI International.

## **This Warranty shall NOT apply to the following:**

1. Damage or deterioration caused by normal wear and tear.
2. Failures caused by any external cause or act of God, such as accident, collision, theft, vandalism, riots, wars, re, freezing, lightning, earthquakes, windstorms, hail, volcanic eruptions, floods, tornados or hurricanes.
3. Failures due to alterations, adjustments, unauthorized changes to the product(s), neglect or improper storage, repair and/or maintenance.
4. Failures due to abuse or application of the product(s) for uses other than for which it/they are designed or intended by AXI International, including but not limited to, improper installation or location in a harsh, corrosive or saltwater environment.
5. Failures resulting from attachments, accessory items, and parts not sold by AXI International.
6. Repairs by any party other than those authorized by AXI International.
7. Failures resulting from user's delay in making the product available for inspection by AXI International after notifying AXI International of a potential product problem.
8. Cosmetic damage, discoloration, rusting, corrosion or scratches from applied paint.
9. Replacement of consumables such as, but not limited to, fuses, lamps, filters, etc.
10. Additional expenses for repair after normal business hours, i.e., overtime or holiday labor rates.
11. Expenses for rental of equipment during downtime and/or performance of warranty repairs.
12. Expenses related to investigating performance complaints and/or troubleshooting where no manufacturing defect is found.

In addition to the limitations above, this warranty shall not apply to products (1) which have been tampered with, altered or repaired by anyone other than AXI International without the express prior written consent of AXI International (2) which have been installed improperly or subject to misuse, abuse, accident, negligence of others, improper operation or maintenance, neglect or modification, or (3) which have had the serial number altered, defaced or removed.

The liability of AXI International under this warranty is limited to the repair or replacement of the defective product. AXI International assumes NO LIABILITY for labor charges or other costs incurred by any purchaser incidental to the service, adjustment, repair, return, removal or replacement of products. AXI INTERNATIONAL ASSUMES NO LIABILITY FOR ANY GENERAL, SPECIAL, INCIDENTAL, CONSEQUENTIAL, CONTINGENT OR OTHER DAMAGES UNDER ANY WARRANTY, EXPRESS OR IMPLIED, OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR OTHERWISE, WITH THE RESPECT TO THE PRODUCTS COVERED BY THIS WARRANTY POLICY, EXCEPT AS EXPRESSLY PROVIDED FOR HEREIN. AXI INTERNATIONAL ASSUMES NO LIABILITY FOR ANY GENERAL, SPECIAL, INCIDENTAL, CONSEQUENTIAL, CONTINGENT OR OTHER DAMAGES EVEN IF SUCH DAMAGES ARE A DIRECT RESULT OF AXI INTERNATIONAL'S NEGLIGENCE. NO EMPLOYEE, AGENT, REPRESENTATIVE OR DISTRIBUTOR IS AUTHORIZED TO MAKE ANY WARRANTY ON BEHALF OF AXI INTERNATIONAL OTHER THAN THE EXPRESS WARRANTY PROVIDED FOR HEREIN.



AXI International reserves the right at any time to make changes in the design, material, function and specifications of its products. Any such changes shall not obligate AXI International to make similar changes in such products that were previously manufactured.

To the fullest extent permitted by law, any claims against AXI International are limited to the remedies as expressly set forth in this warranty and any other further claims, such as but not limited to, compensation for any damage incurred other than to the AXI International product, are hereby excluded.

## Warranty Claim Procedure

To make a claim under this warranty, please call AXI International at +1-239-690-9589 or 1-877-425-4239, and provide: Name and location where unit was purchased, the date and receipt of purchase, model number, serial number, and a detailed explanation of the problem you are experiencing. The Customer Service Representative may, at the discretion of AXI International, arrange for a Field Engineer to inspect your system. If the inspection reveals a defect covered by its limited warranty, AXI International will either repair or replace the defective parts or products. AXI International assumes no liability, if upon inspection, AXI International or its representative determines that there is no defect or that the damage to the system resulted from causes not within the scope of this limited warranty and customer shall be responsible standard rates incurred by AXI International, as established from time to time by AXI International.

For service and sales, please contact AXI International:

AXI International | 5400 Division Drive Fort Myers, FL 33905  
Tel: +1-239-690-9589 | Toll Free: +1-877-425-4239 | Fax: +1-239-690-1195  
Email: [info@axi-international.com](mailto:info@axi-international.com) | Internet: [www.axi-international.com](http://www.axi-international.com)



# Technical Assistance and Ordering

Please write, fax, email or call:

AXI International  
5400 Division Drive  
Fort Myers, FL 33905  
Tel: +1-239-690-9589  
Fax: +1-239-690-1195  
Email: [info@axi-international.com](mailto:info@axi-international.com) Internet: [www.axi-international.com](http://www.axi-international.com)

**Please provide the following information:**

Serial Number of your system, the required part numbers and quantity. The drawings/parts list included in this manual are the most accurate source of part numbers.

## Replacement Filter Elements

**Fine Filter:**

FF-10 - 10 $\mu$  spin-on filter cartridge (not water blocking)  
WB-3 - 3 $\mu$  water blocking

**Strainer Basket:**

TK-070 - Strainer

## System Identification

**Serial Number:** \_\_\_\_\_ (e.g. B090010-TK240XT)

**Inspected By:** \_\_\_\_\_ **Date:** \_\_\_\_\_