



TK-240 INSTRUCTION, OPERATING, AND MAINTENANCE MANUAL

Ultra Compact Mobile Fuel Polishing Systems



1.239.690.9589
1.877.425.4239 Toll Free
www.AXI-International.com

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AXI TK-240 XT

INTERNATIONAL Ultra Compact Mobile Fuel Polishing System

The TK-240 Mobile Fuel Polishing System is designed to efficiently and safely clean and restore fuel to pristine condition. The TK-240 incorporates a multi-stage filtration process that reconditions, stabilizes, and decontaminates diesel and biofuels. The TK-240 system is specifically designed for tanks with contaminated fuel that require the removal of water, sediment and sludge accumulation. The TK-240 ultra-compact design is ideal for use on small tanks with limited access ports.



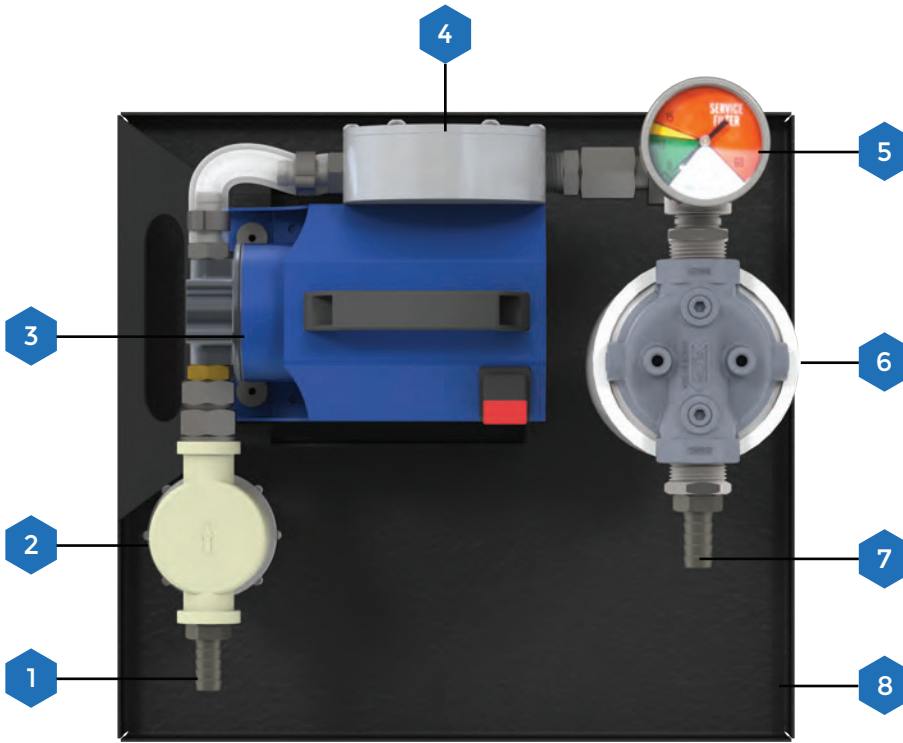
TK-240 XT SPECIFICATIONS

Flow Rate	4 GPM/240 GPH (15.1 LPM/908.5 LPH)
T-Strainer	50 Mesh
Secondary Filter	3 μ Water Block, or 10 μ Fine Filter
Fuel Conditioner	LG-X 500 Inline Conditioner
Pump	Gear Pump
Power	12V 10A
Port Size	1/2" In 1/2" Out
Clear Suction Hose	1/2", 15 ft (4.6 m)
Discharge Hose	1/2", 15 ft (4.6 m)
Dimensions	13" x 12" x 12" (H x W x D) (33 x 30 x 30 cm)
Weight	≈ 26 lbs (11.8 kg)
Not for use with fluids that have a flash point below 100°F (37.8°C).	

TK SERIES FEATURE:

- Compact Industrial Lightweight Design
- Quick Connect Power Connection
- Spill Containment Tray
- Convenient Carrying handle

TK Systems are designed around a self-priming 240 GPH nickel-plated brass gear pump. Quality filtration components are connected using corrosion-resistant stainless steel plumbing. A pressure gauge is installed on the filter housing to ensure optimal filter usage by showing remaining filter life. Available filter elements include stainless steel screens, particulate and water block elements.



1. Inlet Port
2. Inline Mesh Strainer
3. Nickel-plated Brass Gear Pump
4. LG-X 500 Fuel Conditioner
5. Pressure Gauge
6. Water Block Cartridge
7. Discharge Port
8. Spill Containment Tray

TK-240 XT OPTIONS:

- AC to DC Universal Power Converter (110 to 220V, 50 to 60 Hz Input-12V DC Output)
- 10 μ Fine Filter
- 3 μ Water Block Filter

REPLACEMENT FILTER OPTIONS:

Fine Filter	Part No.	Waterblock Filter	Part No.
10 μ Filter Element	FFS-10	3 μ Water Block Filter	WBS-3

AFC 705/710 FUEL ADDITIVE:

A unique and powerful broad spectrum concentrate for use in diesel, gasoline, bio-fuel, kerosene, and HFO. Benefits include:

- Extended Engine Life
- Extended Filter Life
- Removes / Prevents Carbon Build Up
- Prevents Corrosion
- Cleans Injection System
- Tier 4 Compliant (710 only)
- Stabilized Fuel up to 12 mo.
- Added Lubricity
- Improved Combustion
- Lower Emissions
- Improved Fuel Economy



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General Overview

TK-240 Specifications

Flow Rate	4 GPM/240 GPH (15.1 LPM/908 LPH) 1,920 gallons (7,268 liters) per 8 hour shift 5,760 gallons (21,804 liters) per 24 hours
Outline Dimensions (Enclosure)	13" x 12" x 12" (33 x 30 x 30 cm) (H x W x D)
System Weight	≈ 26 lbs (11.8 kg)
Operating Temperature	41 - 104°F (5 - 40°C)
Electrical	12V 10A
Pump	Helical Spur Gear Pump
Suction Capability (Primed)	5 ft (1.5 m) suction vertical (lines > 1/2", primed)
Fuel Conditioner	LG-X 500
Strainer	TK-070
Max. allowed discharge pressure	28 PSI (1.8 bar)
Inlet	1/2" Hose barb
Outlet	1/2" Hose barb

Note: The TK-240 is designed to meet environmental standards for safe operation. (Not for use with fluids that have a flash point below 100°F (37.8°C), e.g. gasoline, alcohol, etc.)

System Operation



!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.

Start-Up

1. Connect the positive pole of your battery with the red wire connector of the TK-240 first, then the black wire to the negative battery pole
2. After the initial hook up, check system operation to ensure the pump is running in the right direction
3. If the motor is running in the opposite direction, or is not running at all, reverse the two electrical leads
4. Prime the pump and strainer
5. Insert the suction hose 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)
6. Circulate the fuel through the TK-240 system back to the tank until the appearance of the fuel is “Clear & Bright”

In most instances, circulating the fuel through a combination of LG-X Fuel Conditioner and fuel filter 2-4 times will do the job. For tanks with heavy particulate, we recommend to use the cleanable wire mesh TK-083/TK-084 element for initial tank cleaning. Final polishing should be done with the WBS-3 3 micron water blocking filter element.

In marine applications, the TK-240 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, 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.

Note: The TK 240 is not designed for permanent installation.


Stabilizing and Optimizing Fuel Quality


The application of a “Water Block” filter element (e.g. WBS-3) will remove emulsified water from your fuel. The use of the Fuel Catalyst, AFC-710, will accelerate the tank cleaning process. AFC-710 should be applied after free water and sludge have first been removed from the tank. Use proper quality approved fuel line materials with at least 1/2” inner diameter and up to 15 ft (4.6m) in length for the suction hose to connect TK-240 to accessories and/or tanks. For more viscous fluids, the hose length should be shortened and hose inner diameter (ID) increased. Fuel lines that are too long, or have an ID that is too small, will place excessive load on the pump motor and may shorten its life.


Note: The TK 240 is designed to meet environmental standards for safe operation. Larger capacity systems available.

The use of AFC-710 is an essential part of any fuel maintenance plan to quickly and efficiently decontaminate and clean the entire fuel system. AFC-710 will decontaminate compartments of the tank that are out of reach of the suction line. Depending on the condition of the fuel, and the amount of sludge build-up, it is recommended to initially use a double dose of one to twenty-five hundred (1:2500 or 1 oz : 20 gallons of fuel), instead of the normal maintenance ratio of one to five thousand (1:5000 or 1 oz : 40 gallons of fuel).

This has proven to be very helpful to enhance and accelerate the tank cleaning process by breaking down and dissolving tank sludge. AFC-710 contains detergent, dispersant, corrosion inhibitor, lubricity enhancer, fuel stabilizer, and combustion catalyst. It does NOT contain biocides. AFC-710 should always be used periodically to stabilize fuel stored for 90 days or more.

 **!WARNING! DO NOT USE WITH GASOLINE.** This system is not meant for use with gasoline nor with 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 explosion and fire hazards. Motor is NOT explosion proof. Do not use within 20 ft (6m) of hazardous locations where explosive vapors may be present.

 **!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 may occur. Only run the system when you are able to supervise it. Unattended operating of the TK-240 is NOT recommended.

 **!WARNING!** Some fuels may have been treated with biocides. Biocides are extremely toxic and may enter the body through the skin. Use adequate protection and avoid contact.

Note: Water, fuel, and sediments removed from the tank should be handled and disposed in accordance with Federal, State, and Local regulations.

Troubleshooting

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
7. Intake or outlet valve closed
8. Check valve installed backwards

Insufficient fuel delivered

1. Air leak at inlet
2. Defective pressure relief valve or check valve
3. Excessive lift
4. Pump worn
5. Inoperative foot valve
6. Piping improperly installed or dimensioned
7. Primary filter/water separator 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

Noisy operation

1. Insufficient fuel supply
2. Air leaks in the inlet pipe
3. Air or gas in fuel on the suction side
4. Pump and motor out of alignment
5. Worn out spider coupling
6. Pump coupler out of balance

Pump requires frequent re-priming

1. Inoperative foot valve
2. Inoperative check valve
3. Inoperative solenoid valve (optional)
4. Pump cavitations
5. Plumbing air leaks
6. Lift too high
7. Leaking pump seal

Pump leaks fuel

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

Replacement Filter Chart

MTC SERIES FILTERS

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

CARTRIDGE FILTERS						SPIN-ON FILTERS							
	10μ	15μ WB	30μ	40μ SS	60μ SS	80μ SS	1μ B100/B10	3μ	3μ WB	10μ	10μ WB	25μ	3μ X-GLASS
TK-240	TK-081	TK-082		TK-083		TK-084			WBS-3	FFS-10			
MTC-500							FF-1	FF-3	WB-3	FF-10	WB-10	FF-25	FFZ-3
MTC-1000							FF-1	FF-3	WB-3	FF-10	WB-10	FF-25	FFZ-3
MTC-3000							FF-1	FF-3	WB-3	FF-10	WB-10	FF-25	FFZ-3
MTC-X							FF-1	FF-3	WB-3	FF-10	WB-10	FF-25	FFZ-3

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 deficiencies 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, fire, freezing, lightning, earth-quakes, 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 | Internet: 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
Internet: www.axi-international.com

Please provide the following information:

Serial Number of your TK-240, the required part numbers and quantity. The drawings / parts list included in this manual are the most accurate source of part numbers for your TK-240.

Replacement Filter Elements

Fine Filter:

FFS-10 - 10 μ spin-on filter cartridge (not water blocking)
WBS-3 - 3 μ water blocking
TK-070 - Strainer

TK-240 SYSTEM IDENTIFICATION

Serial Number: _____ (e.g. B070010-240)

Voltage:

12V 10A

Fine Filter(s):

- FFS-10 - 10 μ spin-on filter (not water blocking)
 WBS-3 - 3 μ water blocking

Inspected By: _____ Date: _____

AXI International, industry leaders in Intelligent Fuel Management Solutions, has specialized in complete fuel system management and control technologies for over twenty years. Our growth and continued success rides on our ability to adapt to the needs of our customers, opening up opportunities to expand our product offering. To the benefit of our customers and the AXI network, we've become very efficient at doing so - faster than any other company in the industry.



Mission Critical



Fuel Storage



Marine



Government



Military



Mining



Agriculture



Power Gen



Railway



On-Road

Our current line of solutions include enclosed, mobile, and compact fuel management systems, partial and fully enclosed day tanks, pump sets, fill stations, Tier 4 fuel additives, centralized system monitoring, and other total fuel system management solutions. These high quality, innovative solutions are engineered to exceed industry standards for customers worldwide.

AXI also designs, engineers, and manufactures custom built complete fuel management systems– working side by side with customers, architects, engineering firms, and facility management companies to create innovative solutions that meet the highest of standards and specifications. From concept and design consultation, to specification review, development, and start-up, our in-house engineering professionals excel in transforming challenging projects into innovation opportunities.

AXI International Intelligent Fuel Management Systems – experience the power of ultra clean fuel.



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