



FHU01 Owner's Manual



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Dear valued customer,

Thank you for purchasing a White Knight FHU01 filter housing.

Our dedicated team designs products to meet your exacting specifications with a demonstrated commitment to quality that goes beyond mere words and fancy slogans.

Our patented designs offer a variety of size and material options to meet stringent requirements of high-pressure chemical delivery systems, high-temperature re-circulation processes, chemical reclaim and bulk transport applications, slurry systems, and more. Our safe, reliable products offer superior performance, optimized efficiency, and simplified maintenance.

White Knight is able to provide the highest quality fluid handling products through controlled, consistent in-house engineering and manufacturing. Through continued significant investments in engineering and manufacturing, we lead the industry with new technologies and products.

White Knight has received numerous awards for innovation and manufacturing programs. We rigorously manage our quality assurance processes to ensure consistency and reliability. Our quality controls include strict cleanliness procedures and consistent manufacturing processes. For example, high-purity product assembly, testing, and packaging is performed in a Class 100 cleanroom.

Please peruse this manual before installing your White Knight product. It details installation requirements and setup instructions, and provides additional information and accessories for enhanced functionality.

Our team has gone to great lengths to ensure our products serve your needs and meet your requirements.

Further, we provide the highest quality products at the best value, and we back them up with excellent warranties and world class support.

Thank you for your confidence and trust in White Knight products.

Sincerely,

Tim White, CEO
White Knight Fluid Handling





1. Product Information

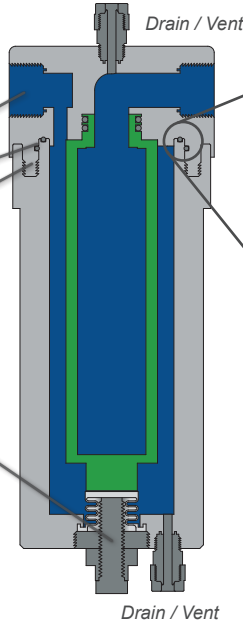
1.1 Overview

FHU01 filter housings fit standard filter cartridges offered by major suppliers. They provide high-flow performance, and reliable sealing that can be tightened after initial compression loads. These PTFE/PFA housings are nonmetal and enable changing filters without disconnecting liquid lines. They are capable of up to 210°C (410°F) fluid temperatures.

Advanced Technologies

- Fits major filter cartridges
- Low pressure drop (1-in flow path)
- Reliable, adjustable O-ring seals
- Synchro-Thread™ allows for fluids up to 210°C (410°F)
- Greater filtration surface area with up to 3.2-in diameter filters
- Easy to install in any orientation
- Adjustable pin maintains placement of filter when in inverted position
- Various fitting options

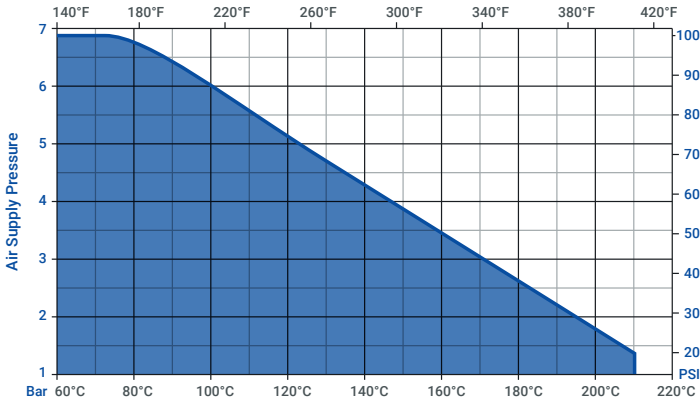
**Filter not provided by White Knight*



Sealing Technology

Two O-rings ensure reliable seals to prevent leaks, improve reliability, and eliminate costly downtime and expensive cleanup. Sealing pressure is adjustable beyond initial compression loads.

1.2 Temperature Limits

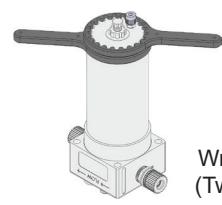
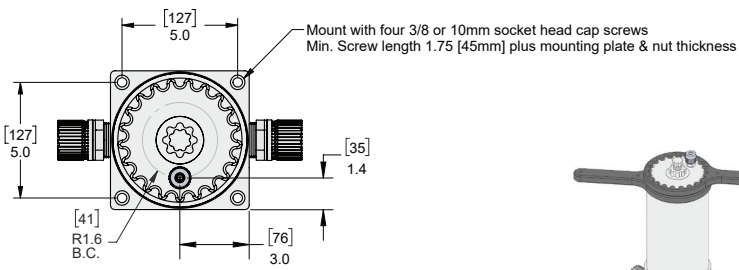
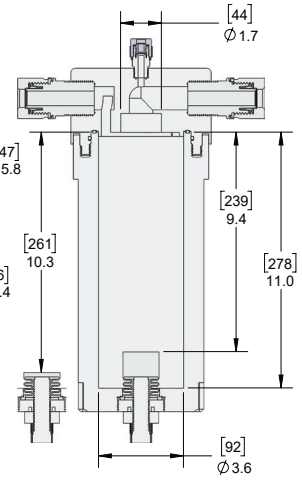
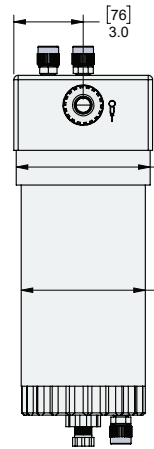
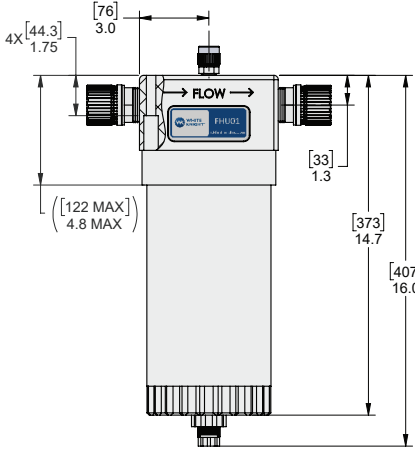
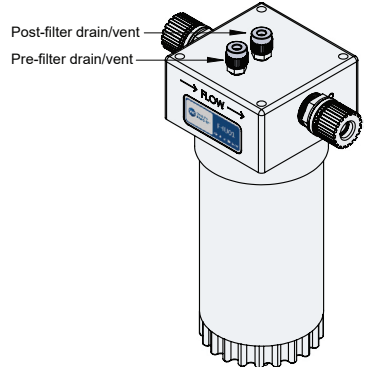
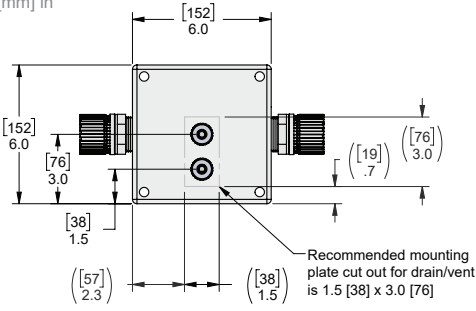




1.3 Dimensions

FHU01 (Standard Model)

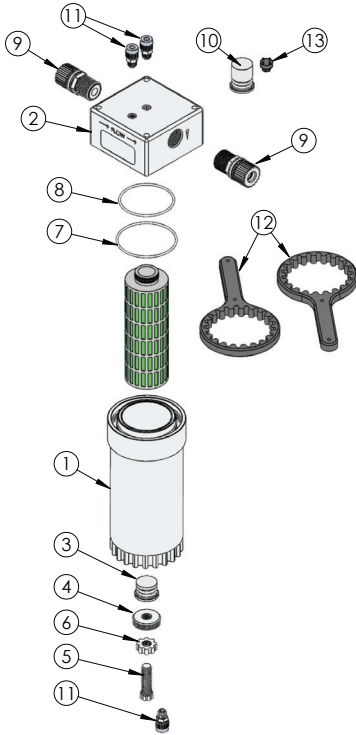
[mm] in



Wrench Tool (Two shown)

Part# 12100-PV-0022



**1.4 Bill of Materials**

Part Number	Description	Qty
1	11100-TE-0008 Filter Housing Body	1
2	11100-TE-0009 Inverted Base	1
3	11100-MP-0001 Bellows Screw-short	1
4	10040-TE-0001 Bellows Cap	1
5	10010-TE-0012 Bellows Screw	1
6	10010-TE-0011 Bellows Screw Nut	1
7	10080-XX-244 -244 FEP Encapsulated O-ring	1
8	10080-XX-241 -241 FEP Encapsulated O-ring	1
9	14570-PF-0006 30 gpm, 3/4 Prime Lock Fitting Assembly	2
10	11100-MP-0002 Bellows screw-long	1
11	14530-PF-0010 3/8"-04 Super Pillar 300 Fitting Assembly	3
12	12100-PV-0022 Spanner Wrench	2
13	12100-PV-0042 Top check plug torque wrench adapter	1

Liquid Fittings			Assemblies	Body Inlet Only (Nut not included)
Flaretek Compatible	1/2 in.	F08	14510-PF-0011	7200-PF-0015
	3/4 in.	F12	14510-PF-0008	7200-PF-0009
	1 in.	F16	14510-PF-0009	7200-PF-0010
	1-1/4 in.	F20	14510-PF-0010	7200-PF-0011
Pillar S-300	1/2 in.	P08	14530-PF-0011	7400-TE-0019
	3/4 in.	P12	14530-PF-0006	7400-TE-0006
	1 in.	P16	14530-PF-0007	7400-TE-0007
	1-1/4 in.	P20	14530-PF-0008	7400-TE-0008
PrimeLock	1-1/2 in.	P24	14530-PF-0026	7400-TE-0035
	3/4 in.	L12	14570-PF-0006	7800-TE-0006
	1 in.	L16	14570-PF-0007	7800-TE-0007
Tube Out	1-1/4 in.	L20	TBD	7800-TE-0008
	3/4 in.	T12	7120-PF-0007	
	1 in.	T16	7120-PF-0008	
FNPT	1-1/4 in.	T20	7120-PF-0009	
	1-1/2 in.	T24	7120-PF-0010	
	3/4 in.	N12	7100-TE-0009	
Weldable	1 in.	N16	7100-TE-0005	
	1-1/4 in.	N20	7100-TE-0010	
	3/4 in.	W12	7300-PF-0005	
Synchro-Flare	1 in.	W16	7300-PF-0006	
	1/2 in.	S08	TBD	7010-TE-0008
	3/4 in.	S12	14520-TE-0008	7010-TE-0007
Plugged	1 in.	S16	14520-TE-0007	7010-TE-0009
		B00	7130-TE-0005	7130-TE-0005

Drain/Vent Fittings			Assemblies	Body Inlet Only (Nut not included)
Flaretek Compatible	1/4 in.	F4	14510-PF-0012	7200-PF-0012
	3/8 in.	F6	14510-PF-0013	7200-PF-0013
Pillar S-300	1/8 in.	P2	14530-PF-0024	7400-TE-0013
	1/4 in.	P4	TBD	TBD
	3/8 in.	P6	TBD	TBD
FNPT	1/4 in.	N4	7100-TE-0011	
	3/8 in.	N6	7100-TE-0016	
PrimeLock	1/4 in.	L4	TBD	7800-TE-0009
	3/8 in.	L6	TBD	7800-TE-0010
Plugged		B0	7130-TE-0006	





2. Installation Instructions

1. Prepare the cabinet wall or other mounting panel by installing inserts for 3/8-UNC or 10mm socket head cap screws into the dimensions specified on the accompanying page. Recommended installation of the FHU01 is with the writing from the base in upright position, viewable from the front. Holes drilled and tapped in plastic are not sufficient, considering the assembly weight of 19 lbs. (not including liquid or filter) and forces of tightening and loosening the housing bowl (1).

2. Install base (2) using four 3/8-UNC (or 10mm), minimum length of 1.75-in (45mm) plus mounting plate and nut thickness, stainless steel socket head cap (hex key/Allen wrench type) screws.

3. Hook up inlet and outlet tubing as well as out gassing vent lines as desired. If inlet and outlet tubing connectors are not of the type desired, do not attempt to modify or attempt to screw male NPT tubing connectors into the filter housing base. Irreparable damage to the base will occur. If a female NPT connection is desired, adapters are available from White Knight. If fittings are removed/replaced torque to the following values:

- Inlet & Outlet - 80 in/lbs
- Drain/Vent Fittings - 12.5 in/lbs.

4. Loosen bellows nut (6) on screw (5) and turn screw outward until bellows (3) can be completely compressed without seating on the screw.

5. Insert filter into the FHU01 base (2).

6. Check for proper placement of the diameter sealing encapsulated O-ring (9) in FHU01 base (2).

7. Place face sealing encapsulated O-ring (10) in O-ring groove located on the top of the FHU01 bowl (1).

8. Turn FHU01 bowl (1) into the base (2). Take care to not cross thread them. Torque with wrench tools (12100-PV-0022) until O-rings are compressed – the top of the base (2) will be Maximum of 4.8 inches (122mm) from the 5.8-in (147mm) diameter step on the bowl (1). The assembly may tighten before O-rings compress, especially after thermal cycling. PTFE parts may deform when thermal cycled. FHU synchronized threads fix this issue by forcing the parts back into shape during re-assembly. If this is required, the threads may be tight and/or difficult to start, especially over time.

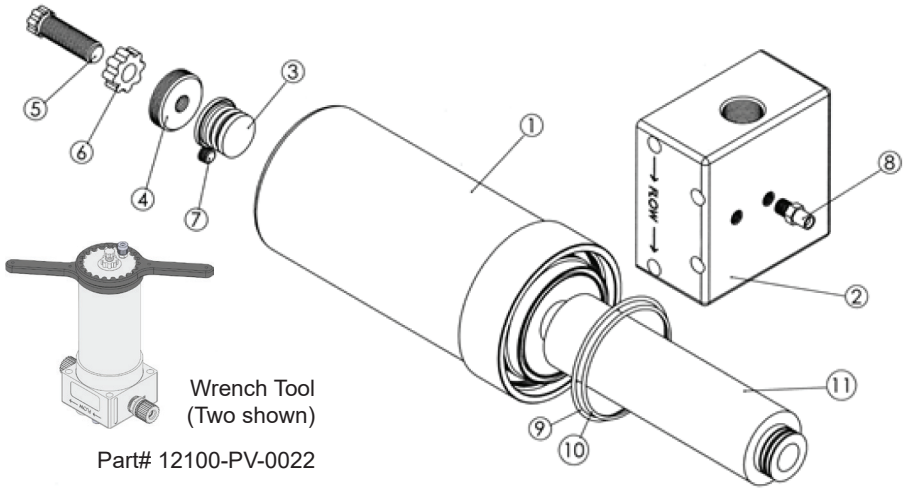
9. Install drain line connection in bottom of housing bowl if not already installed.

10. Turn in the screw (5) until bellows (3) seats against filter. This ensures the filter does not fall out of the cap if thermal cycling causes cap expansion or contraction. Do not overextend bellows. If the pre-installed bellows screw is not compatible with your filter, use the alternate bellows screw provided. Loosen and remove the bellows screw (5) and nut (6). Then, unscrew the bellows cap (4) with the top check plug torque wrench adapter (11). Remove the pre-installed bellows (3) and replace it with the alternate bellows (7). If the bellows does not drop out it may be necessary to unscrew the housing body and press it out from the inside.

11. After seating the screw (5), twist the screw nut (6) upward, and finger tighten against the bowl (1). This will prevent the screw from vibrating loose.

12. When changing filters in the FHU01, the first step should always be to loosen the screw nut and screw. Removal of the screw will not cause a leak because the bellows acts as a seal. Filter lengths can vary, therefore take care to accommodate filter size by the outward adjustment of the bellows screw. This ensures that upon



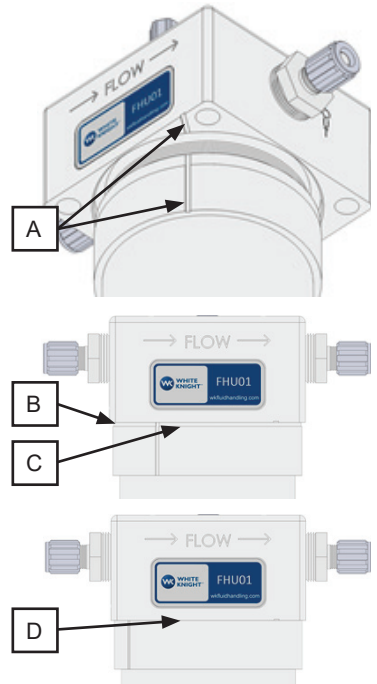


reinstallation of the bowl into the base after a filter change, that the O-rings are compressed before the bellows contacts the filter. After installing and tightening the bowl into the base, the screw must then be twisted inward until the bellows contacts the filter (length variation between filters are accommodated by flex in the bellows). The screw nut must then be twisted and tightened against the bowl to prevent the screw from vibrating loose.

Prevent Cross Threading

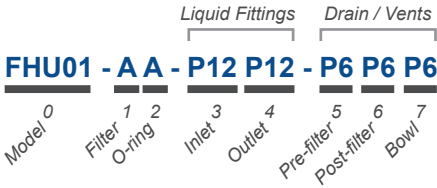
Markings were added to the head and body in 2021 to help users ensure their connection is threaded properly.

- A. Threads on the base and body start at markings. Align the two markings before tightening to avoid cross-threading.
- B. When tightened correctly, this gap will be closed.
- C. Tighten the base until it reaches this line.
- D. When the base is tightened to the body line and the gap is fully closed, the housing is tightened correctly. Do not overtighten.





3. Ordering Instructions

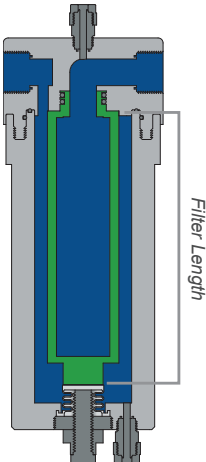


All options are required.

Standard options are highlighted

0. Model	
High-Temperature Filter Housing	FHU01
1. Filter	
Set by Length Range See example below	
9.9-10-in Cartridge	A
9.9-8-in Cartridge	B
2. O-ring Type	
FEP Encapsulated Viton	A

Example Filter Length



Liquid Fittings		3. Inlet 4. Outlet
 Flaretek Compatible	1/2 in.	F08
	3/4 in.	F12
	1 in.	F16
	1-1/4 in.	F20
 Pillar S-300	1/2 in.	P08
	3/4 in.	P12
	1 in.	P16
	1-1/4 in.	P20
 Primelock	1-1/2 in.	P24
	3/4 in.	L12
	1 in.	L16
 Tube Adapter	1-1/4 in.	L20
	3/4 in.	T12
	1 in.	T16
 FNPT	1-1/4 in.	T20
	1-1/2 in.	T24
	3/4 in.	N12
 Weldable	1 in.	N16
	1-1/4 in.	N20
	3/4 in.	S08
 Synchro	1 in.	S12
	3/4 in.	S12
	1 in.	S16

Drain / Vents	5. Pre-filter 6. Post-filter 7. Bowl	
 Flaretek Compatible	1/4 in.	F4
	3/8 in.	F6
 Pillar S-300	1/8 in.	P2
	1/4 in.	P4
	3/8 in.	P6
 Primelock	1/4 in.	L4
	3/8 in.	L6
 FNPT	1/4 in.	N4
	3/8 in.	N6

Revision	
No revision	blank
<p>Contact White Knight support for revision level or copy exact code activation details. Configurations are not Copy Exact Part Numbers. Email: support@wkfluidhandling.com Phone: 435.783.6040</p>	





4. Warranty

White Knight follows strict manufacturing, assembly and testing procedures to ensure consistency and reliability.

White Knight warrants FHU01 filter housings and components are free from defects in materials and workmanship for one year from our shipment date or your installation date if provided within 90 days of shipment from our facility.

Failures due to normal wear, misuse, abuse or unauthorized disassembly nullify this warranty.

White Knight does not guarantee the suitability of products for specific applications. White Knight is not liable for any damage or expense resulting from use or misuse of its products in any application. Responsibility is limited solely to repair or replacement of defective products or components.

Prior written, faxed or emailed approval must be obtained from White Knight before returning any product or component for warranty consideration. All determinations regarding cause of failure are made by White Knight, and all decisions regarding warranty fulfillment or nullification are made by White Knight.

THE FOREGOING WARRANTY IS EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES EXPRESSED OR IMPLIED, INCLUDING ANY GUARANTEE OF SUITABILITY FOR ANY PURPOSE. NO VARIATIONS OF THIS WARRANTY SHALL BE HONORED NOR CONSIDERED LEGALLY BINDING, EXCEPT WRITTEN AGREEMENTS SIGNED BY THE CEO OF WHITE KNIGHT FLUID HANDLING.

Brian Callahan, President
White Knight Fluid Handling





5. Service

Follow decontamination instructions when returning a product for service.

DO NOT REMOVE PAGE FROM MANUAL.

Copy page from manual or download at <https://wkfluidhandling.com/support/rma/>.

Decontamination Instructions

PRINT COMPLETED DECONTAMINATION CERTIFICATION. IT MUST BE INCLUDED IN YOUR RMA SHIPMENT.

White Knight products are designed for use with caustic and otherwise dangerous liquids. Handle every product as if it contains dangerous chemicals whether or not it actually does.

- Only those with adequate safety training should attempt to handle used products.
- Wear adequate safety gear appropriate for chemicals that have been in the product.
- Review relevant Material Safety Data Sheets (MSDS) before handling the product.
- Review emergency numbers for use in event of an accident.
- Prepare Ph papers, showers, antidotes, clean-up equipment, neutralizers, and other safety devices used to detect, neutralize or minimize effects of chemicals described in appropriate MSDS documents.

Rinse with DI Water

Circulate DI water through product for twenty minutes before disassembly and/or double bagging for shipment. If product is nonfunctional, force DI water from inlet through outlet for 40 minutes before shipment preparations.

Remove Product from Station:

1. Disconnect liquid tubing connectors from front of product (opposite shuttle valve).
2. Plug NPT fittings with PTFE plug, Flare fittings with flare nose cover and cap, or other plug or cap as recommended by connector supplier.
3. Disconnect air supply tubing from face of shuttle valve.
4. Loosen mount screw from base plate. (Note: do not remove screw from base plate).
5. Remove base plate using proper tool for the fastening devices (e.g. Allen wrench or screw driver).
Note: Base plate may stay if needed for replacement product to be used.
6. Return all removed parts to the product.

Return Product to White Knight:

1. Rinse product with DI water as described above after removing it from its station.
2. Drain remaining DI water from the product inlet and outlet liquid tubing connectors.
3. Plug liquid outlets as described in the Remove Product from Station section above.
4. Dry the product, double bag it, and seal it in thick polyethylene bags.
5. Return the product to its original packaging.
6. Include MSDS for the chemical that the product was handling in the box with the product.
7. Obtain RMA number from White Knight and write it on the outside of the box.
8. Ship to White Knight following all rules, regulations and laws regarding shipment of dangerous materials. Ship freight pre-paid. No collect shipments will be accepted. Unauthorized use of White Knight shipping accounts will result in the adding of freight to the bill in addition to a service charge.

Include All Components:

Products returned to White Knight for evaluation, service or repair must be complete with all components, including but not limited to base plate, mount screws, tubing connectors, tubing connector caps, flare noses, shuttle valves, mufflers, and tubing. Missing parts will be added to the product and charged to the customer.





DO NOT REMOVE PAGE FROM MANUAL.

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Decontamination Certification

COMPLETE AND PRINT THIS FORM. IT MUST BE INCLUDED IN YOUR RMA SHIPMENT.

I, the undersigned employee of _____, certify that all decontamination and safety procedures described in Decontamination Instructions section have been followed for return of product below.

RMA#: _____

(We cannot process returns without an RMA number.)

Serial#: _____

(We cannot process returns without a product serial number.)

Metal Exposure:

(Check all that apply. Write in other metals if necessary.)

Product was used in a Metal Process. Yes No

Product was used in a Copper Metal Process. Yes No

Product was used with:

- Aluminum Cobalt Gold Lead Nickel Platinum Silver Tin Titanium
- Tungsten Zinc Other: _____

Chemical Exposure:

(Check all that apply. Write in other chemicals if necessary.)

Product was **NOT** used in chemicals (DI Water only).

Product was used in chemicals.

- Ammonia Ammonium Hydroxide Hydrochloric Acid Hydrofluoric Acid Hydrogen Peroxide IPA
- Nitric Acid Phosphoric Acid Sulfuric Acid Other: _____

Shipping Information:

Please indicate metal processes to which the product has been exposed by clearly and conspicuously labeling the outside of the return package with the metal.

Products exposed to Metal Processes must be sent to the following address:

White Knight Fluid Handling
187 East 670 South, Suite B
Kamas, UT 84036

Products NOT exposed to Metal Processes must be sent to the following address:

White Knight Fluid Handling
187 East 670 South, Suite C
Kamas, UT 84036

Print Name: _____

Signature: _____

Date: _____





**WHITE
KNIGHT®**

.....*engineer approved™*

White Knight Support

187 E. 670 S.
Kamas, UT 84036

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Part No. 18200-LM-0089



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