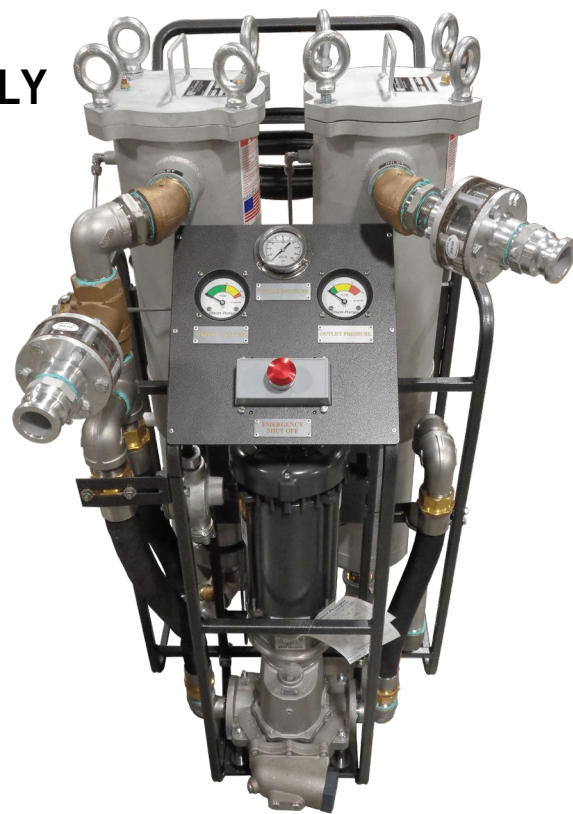


PRODUCT:

TCU SERIES – TANK CLEANING – 2-WHEEL DOLLY

QUICK SPECIFICATIONS

PUMP SIZE	1.5 inch FNPT
HP	1.5 HP
PUMP	Dixon Pumps – Tri-Lobe – AL – Viton Seals
PUMP SPEED / FLOW RATE	420 RPM / 35 GPM
BYPASS SETTING	50 psi
SYSTEM EP RATING	Explosion-Proof
INLET SIZE/TYPE	1½" Male Camlock Fitting
OUTLET SIZE /TYPE	1½" Male Camlock Fitting
FILTER HOUSING - INLET	8" x 38" Aluminum – Bag Filter Housing
FILTER HOUSING - OUTLET	8" x 38" Aluminum – Coalescer/Water Separator Housing
POWER CORD	50 ft.-SOOW-3C-12AWG-600V
POWER CORD PLUG	None supplied



TCU SERIES - Standard 2-Wheel Dolly
Tank Cleaning Unit

SAFETY DATA



This is a safety alert symbol. When you see this symbol in this manual or on the product, look for one of the following signal words and be alert to the potential for personal injury, death, or major property damage.



DANGER

Warns of hazards that **WILL** cause serious personal injury, death or major property damage.



WARNING

Warns of hazards that **CAN** cause serious personal injury, death or major property damage.



CAUTION

Warns of hazards that **CAN** cause personal injury or property damage.



WARNING

Hazardous pressure can cause personal injury or property damage



Disconnecting fluid or pressure containment components during operation can cause serious personal injury, death, or major property damage.



WARNING

Hazardous machinery can cause serious personal injury.



Failure to disconnect and lockout electrical power or engine drive before attempting maintenance can cause severe personal injury or death.



WARNING

Hazardous voltage can shock, burn, or cause death



Failure to disconnect and lockout electrical power before attempting maintenance can cause shock, burns, or death.



WARNING

Hazardous or toxic fluids can cause serious injury.



If pumping hazardous or toxic fluids, system must be flushed and decontaminated, inside and out, prior to performing service or maintenance.



CAUTION

Heavy machinery can tip over and cause serious injury.



Mobile equipment should be moved on flat stable surfaces, with minimal inclines/declines. Excess inclines/declines should be avoided by use of appropriate lifting devices.



WARNING

Flammable fluids can ignite and cause serious injury.



If pumping flammable fluids, the system must be flushed and decontaminated, inside and out, prior to performing service or maintenance.



WARNING

Hazardous pressure can cause personal injury or property damage



Failure to relieve system pressure prior to performing service or maintenance can cause serious personal injury or property damage.



DANGER

Flammable fluids can explode, causing serious injury, death, or property damage.



If pumping flammable liquids, failure to properly ground the system could cause a static discharge spark and explosion, resulting in serious personal injury, death, or property damage.

PRODUCT OVERVIEW

APPLICATION AND INTENDED USE

The Dixon Tank Cleaning Unit (TCU) is a complete mobile tank cleaning and fuel filtration solution for cleaning underground and aboveground storage tanks with up to 30,000 gallons storage capacity. The TCU provides a full 360° cleaning of the entire internal surface area of the tank walls, and filtering the contaminated product inside the dirty tank. This eliminates product loss due to contamination.

PUMP END

Our systems feature patented Tri-Lobe positive displacement impeller technology that provides dry-run, dry suction lift, and flow performance like no other positive displacement pump in the industry.

1500 Series	
PUMP	
Pump Technology	Patented Dixon Pumps Positive Displacement Tri-Lobe Impeller Technology
Inlet Size and Type	1.5 in. FNPT
Outlet Size and Type	1.5 in. FNPT
Pump Shaft Material	Carbon Steel
Impeller/Vane Material	Proprietary Engineered Resin
Pump Housing Material	Aluminum
Wetted O-Ring and Shaft Lip Seal	Viton®
Bypass Options*	50 psi
Maximum Particle Size Clean Fluids	300 micron / 50 mesh / .297 mm / .0117 in
Maximum Particle Size Debris Removal	74 micron / 200 mesh / .074 mm / .0029 in
Maximum Differential Pressure	125 psi / 8.6 bar
Maximum Viscosity	3,000 cSt
Maximum time in Bypass	5 min

* Bypass limits determined by power source overload limits

** Particle size tolerance depends on duration and volume of exposure. Larger particles can be tolerated during intermittent and incidental exposure. Long-term exposure when removing dirty oil and debris, or during tank cleaning can damage the pump, requiring filtration or screening to smaller particle size.

GEAR REDUCER

This unit utilizes a gear reducer between the power unit and the pump end. The gear reducer changes the rotation of the pump speed through reduction gearing in the gear reducer housing. This unit can come in the following gear reducer variations:

GEAR REDUCER		
Gear Reducer Ratio	Shaft Speed	
	Motor	Pump End
4.0 to 1	1,725	431

POWER UNIT

This unit is powered by a high quality blue chip Marathon motor designed and manufactured specifically for Dixon Pumps. The power specifications are as follows:

POWER UNIT DATA	
Power Type	AC Electric Motor
HP	1.5 HP
Phase	Single
Voltage	115/230 V
Hz	60
Motor Shaft Speed (60 Hz)	1725 RPM
On/Off Switch	Internal
Speed Control	None
Power Cord	50 ft. – 4 Wire – AWG 600V SO Cord
Power Cord Connector	None

PERFORMANCE – FLOW AND PRESSURE

Flow and pressure performance depends on the speed of the pump shaft and the available horsepower provided by the power unit. Higher pump shaft speed results in higher flows, and higher HP results in higher pressures. The flow and pressure performance specifications for this unit are as follows:

PERFORMANCE DATA (Flow Rate For 3 cSt Fluid At 80% of Bypass Pressure Setting)														
		PUMP SIZE: 1.5"					FLOW (GPM) / BYPASS PRESSURE (PSI)							
		EP	PH	Hz	HP	GR	1.6 : 1	2.0 : 1	2.5 : 1	3.0 : 1	4.1 : 1	5.0 : 1	7.2 : 1	7.5 : 1
AC Motor		YES	1	60	1.5						35/50			

EP = Explosion-Proof, PH = Phase, Hz = Herz, HP = Horse Power

PERFORMANCE – SUCTION LIFT AND CAVITATION

Suction lift performance depends on many factors. The vapor pressure of the fluid is a key factor in whether or not a pump will lift fluid from below the intake of the pump. High vapor pressure fluids are more difficult to lift from below the pump intake. Additionally, since atmospheric pressure is the key driver of suction lift performance, elevation of the pumping location must be considered. It will be easier to lift fluid through the pump at sea level than at higher elevations.

Cavitation occurs when the liquid in a pump turns to a vapor at low pressure. It occurs because there is not enough pressure at the suction end of the pump, or insufficient Net Positive Suction Head available (NPSHa). When cavitation takes place, air bubbles are created at low pressure. As the liquid passes from the suction side of the impeller to the delivery side, the bubbles implode. This creates a shockwave that hits the impeller and creates pump vibration and mechanical damage, possibly leading to complete failure of the pump at some stage.

In order to prevent cavitation, the user should calculate the NPSHa for the application to ensure that $NPSHa > NPSHr$

VACUUM (in Hg) AND DRY-LIFT (in Ft.)

Pump RPM:	1500 Series (1.5")					
	200	400	600	800	1000	1200
Vacuum (Inches of Hg)	3.6	9.8	14.5	17.5	19.2	19.8
Dry Lift of Water in Feet (SG=1)	4.1	11.2	16.4	19.9	21.7	22.4
Dry Lift of Gasoline in Feet (SG=.73)*	5.6	15.3	18.0	18.0	18.0	18.0
Dry Lift of Diesel in Feet (SG=.88)	4.7	12.7	18.7	22.6	24.7	25.5

NOTE: Dry lift capability varies, depending on the vapor pressure of the fluid

* Summer Fuel, RVP - 9 psi, at sea level

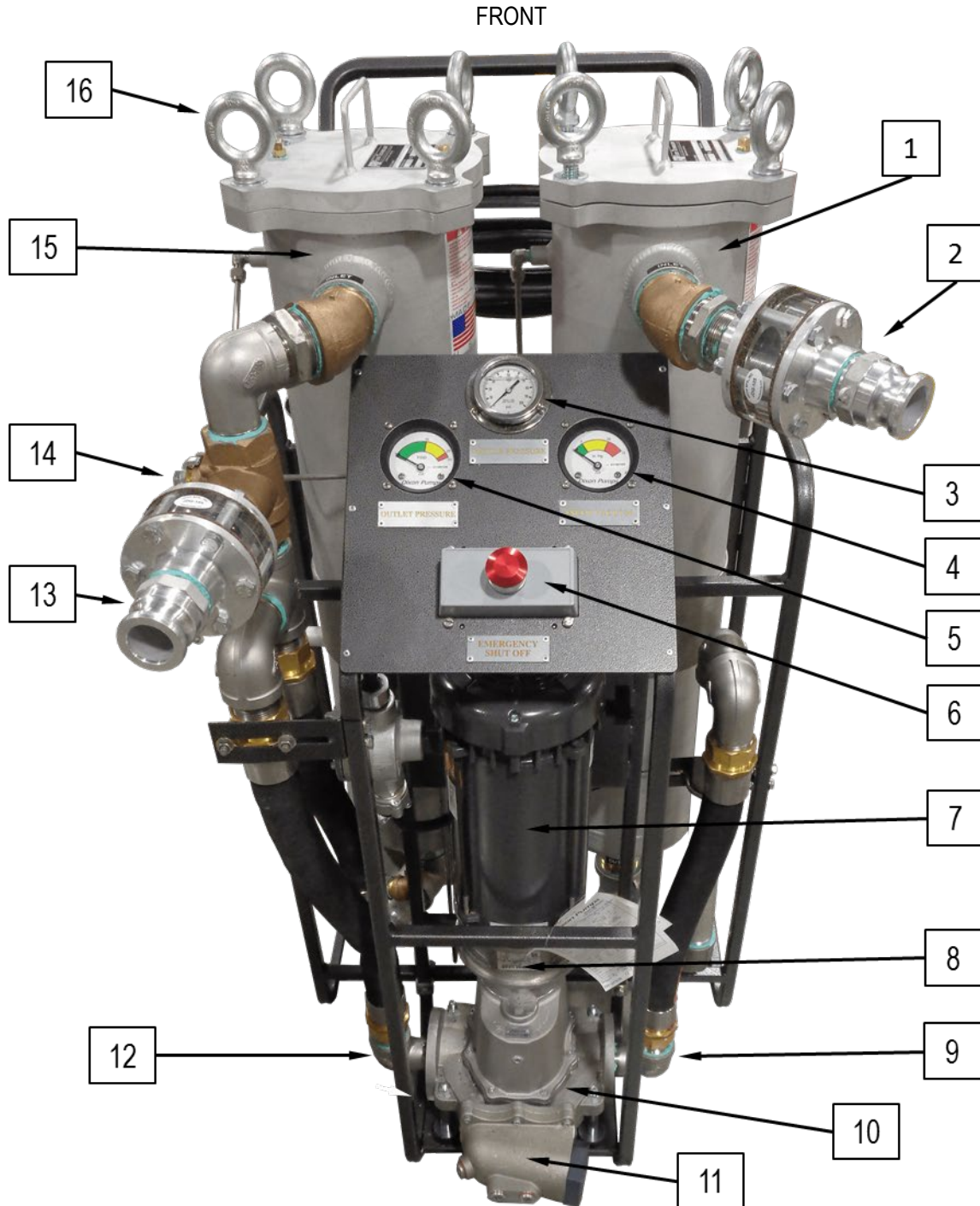
NET POSITIVE SUCTION HEAD REQUIRED (NPSHr)

Pump RPM:		450	575	700	800	900	1000	1100	1200
Inlet	Unit								
1.5"	Water (ft.)	18.0	18.1	18.4	19.0	19.4	19.6	19.8	20.0
1.5"	Diesel (ft.)	20.0	20.1	20.4	21.1	21.6	21.8	22.0	22.2

PERFORMANCE – FLUIDS

The Dixon TCU is designed for use in explosive environments (U.L. /C.S.A., CLASS 1. DIVISION 1. GROUP D, CLASS 2, GROUP F AND G). The TCU is intended for handling petroleum fluids (including gasoline, diesel, bio-diesel and most lubricants), and cleaning solvents.

COMPONENTS



- 1 - P2 Size Bag Filter Housing
- 2 - Suction Intake with Sight Glass
- 3 - Jet Head Pressure Gauge
- 4 - Vacuum Differential Gauge (Inlet Filter)
- 5 - Pressure Differential Gauge (Outlet Filter)
- 6 - Emergency Shut-off
- 7 - Motor
- 8 - Gear Reducer

- 9 - Pump Inlet/Suction
- 10 - Pump End
- 11 - Bypass Housing
- 12 - Pump Outlet/Discharge
- 13 - Discharge Outlet with Sight Glass
- 14 - 2-Way Valve for Isolating Coalescing Housing
- 15 - Coalescer/Water Separator Housing
- 16 - Housing Lid Eye Bolt

COMPONENTS



ACCESSORIES – Hoses, Fittings, Drop Pipes, Nozzles

- Hose kits – 10ft, 20ft, and 30 ft, sections with FxM Camlock fittings for easy extension add-ons
- 1.5" Mechanical Nozzle with Camlock fitting (**No. 1**)
- 1.5", 3 ft. Drop Pipe with Camlock fitting
- 1.5", 7 ft. Drop Pipe with Camlock fitting (**No. 2**)
- 1.5", 7 ft. Debris Wand (**No. 3**)
- Gamma Jet GJ9.2
- Gamma Jet GJ10
- Gamma Jet 9.2 Assembly with Bung Mount Feature (**No. 4**)
- Gamma Jet 1.5" Hose Assembly with Bell Cover and Stopper Fitting (**No. 5**)
- Grounding rod (**No. 6**)



1



5



4



3

2



6

ACCESSORIES – Gamma Jet GJ10

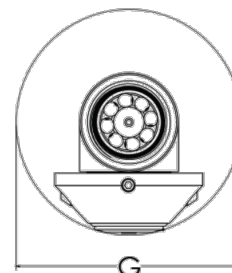
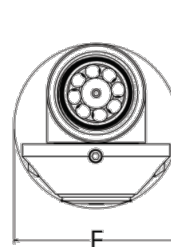
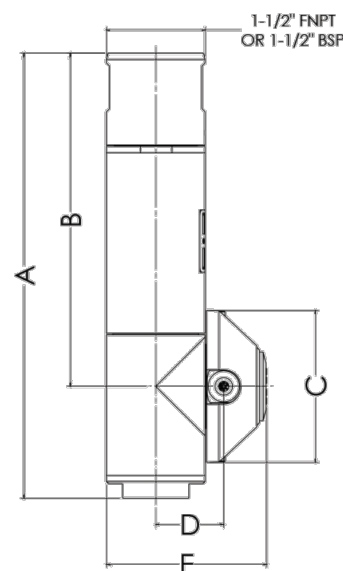
The Gamajet GJ10 is a fluid-driven (turbine-driven) 360° rotary nozzle machine designed for cleaning the interior surfaces of a wide variety of process vessels with a minimum opening of 4.00 inches (101.6 mm) in diameter. It is powered entirely by the cleaning solution and it requires no electricity, compressed air or lubricant for operation. The Gamajet X is designed for both portable and CIP (Clean In Place) applications. If the Gamajet X is permanently mounted inside a tank, we strongly recommend inspecting the unit every few hundred hours of operation.

The Gamajet tank cleaning device fits through a 10.16 cm (4") opening and is capable of cleaning a 113.56 liter (30,000 gal) underground fuel storage tank with one insertion. This device blasts away contaminants and breaks up dirt and sludge in minutes. It easily converts the contaminant-laden sludge into a solution which allows for complete liquid extraction and thorough tank cleaning.

SPECIFICATIONS AND DIMENSIONS

Material	1.4404 (316SS), PPS, FKM			
Max. Working temperature	203°F (95°C)			
Max. Ambient temperature	284°F (140°C)			
Weight	9.5 lbs.(4.3 kg)			
Connections	1½" NPT			
Flow Range	20 to 80 GPM			
Pressure Range	50 to 120 PSI			
Min. Full Wash Cycle	8 to 15 Minutes			
Clearance Min.	4.0" Passageway I.D.			
Spray Nozzle Size		3/8"	5/16"	1/4"
Max. Wetted Distance (at 50 psi)	@ 50 psi	42 ft.	46 ft.	52 ft.
Max. Impact Cleaning Distance	@ 50 psi	25 ft.	27 ft.	30 ft.

Dim (in.)	
A	10.7
B	8.0
C	3.7
D	1.7
E	3.9
G	5.4
F	3.9

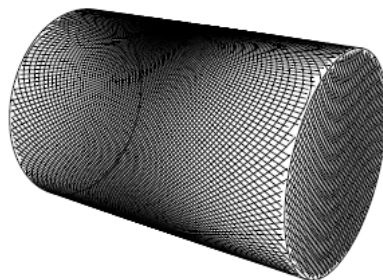
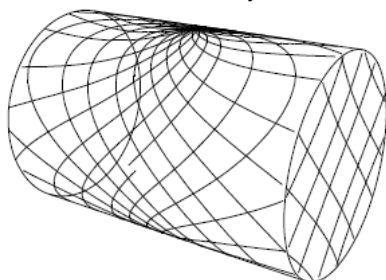


CLEANING PATTERN

The drawings below show the cleaning pattern achieved on a cylindrical horizontal vessel. The difference between the first cycle and the full pattern represents the number of additional cycles available to increase the density of the cleaning pattern ensures the entire tank interior is cleaned, every time.

First Cycle

Full Pattern



ACCESSORIES – Gamma Jet GJ9.2

The Alfa Laval Gamajet 9.2 tank cleaning jet fits through a 2.0" (50 mm) opening and is capable of cleaning AST and UST fuel storage tanks with capacities up to 3,000 gallons. This device blasts away contaminants and breaks up dirt and sludge in minutes. Diesel fuel can be used as the cleaning agent, which saves time and mitigates contamination and waste disposal. The device combines pressure and flow to create high impact cleaning jets. Cleaning occurs at the point at which the concentrated stream impacts the surface. It is this impact and the tangential force that radiates from that point which blasts contaminants from the surface, scouring the tank interior. In conjunction with this impact, the device is engineered to rotate in a precise, repeatable and reliable, 360° pattern. This full-coverage, global indexing pattern ensures the entire tank interior is cleaned, every time.

SPECIFICATIONS AND DIMENSIONS

Material	1.4404 (316SS), PPS, FKM		
Max. Working temperature	203°F (95°C)		
Max. Ambient temperature	284°F (140°C)		
Weight	2.5 lbs.(5.5 kg)		
Connections	3/4" FNPT		
Flow Range	18 to 20 GPM		
Pressure Range	50 to 60 PSI		
Min. Full Wash Cycle	6 to 7 Minutes		
Clearance Min.	2.0" Passageway I.D.		
Spray Nozzle Size	0.125"	0.150"	0.200"
Max. Wetted Distance (at 50 psi)	@ 50 psi		
Max. Impact Cleaning Distance	@ 50 psi		

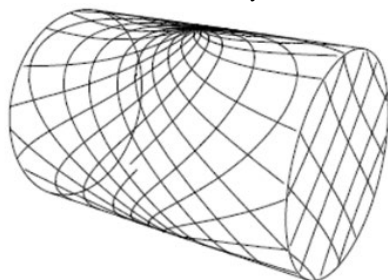
Dim (in.)	
A	20.0
B	18.3
C	1.5
D	0.8
E	2.0
F	2.0
G	2.6



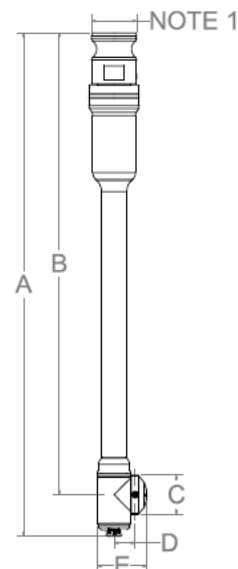
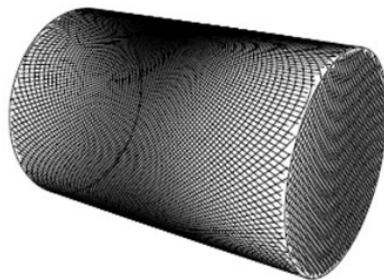
CLEANING PATTERN

The drawings below show the cleaning pattern achieved on a cylindrical horizontal vessel. The difference between the first cycle and the full pattern represents the number of additional cycles available to increase the density of the cleaning pattern ensures the entire tank interior is cleaned, every time.

First Cyle



Full Pattern



INSTALLATION

INLET AND OUTLET CONNECTIONS

Inlet and outlet connections are equipped with Male camlock fittings.

ELECTRICAL CONNECTIONS

The unit is equipped with a 50 ft. length of 4 conductor, 14 AWG jacketed power cord. A connector plug is not attached to the end of the power cord to allow users options for adding the appropriate connector for the application.



DANGER

Flammable fluids can explode,
causing serious injury, death, or
property damage.

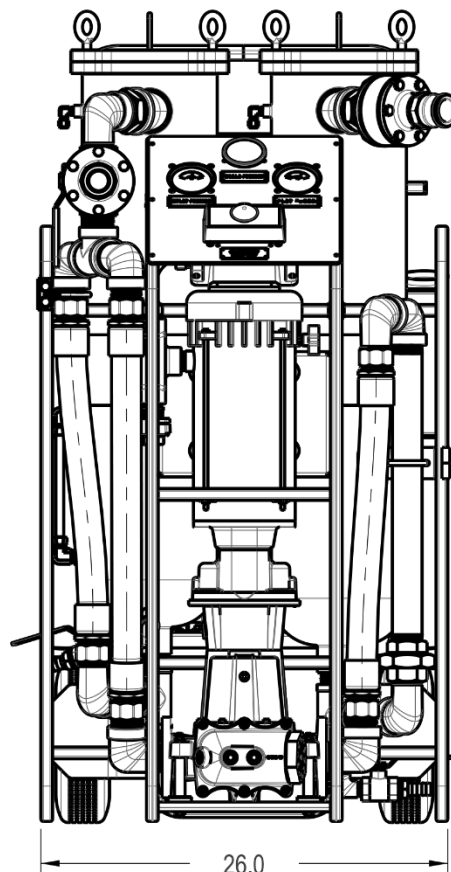
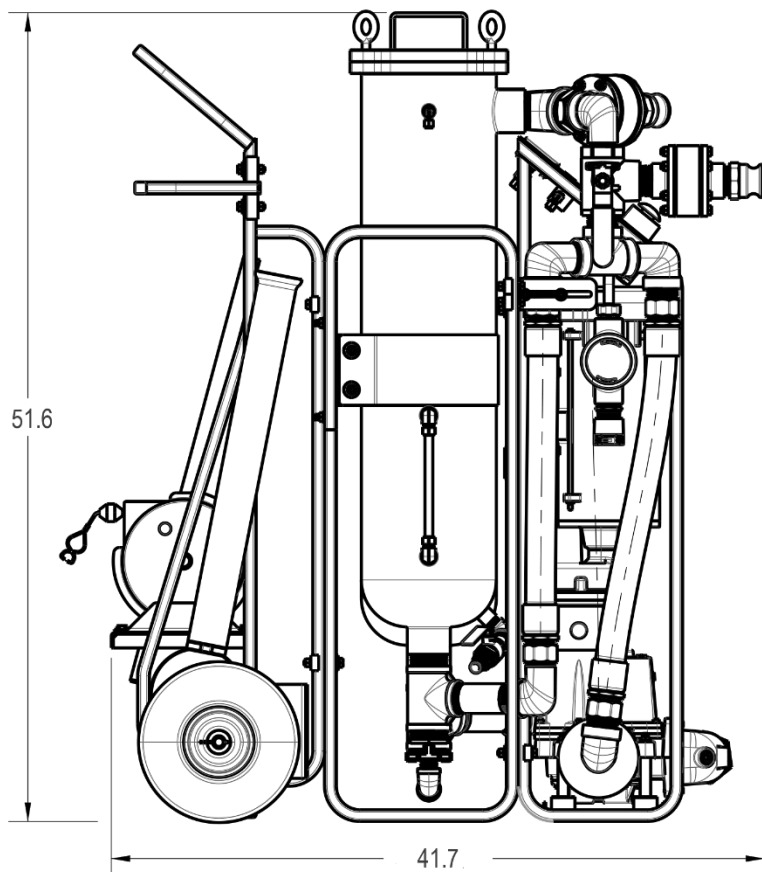


WHEN OPERATING THIS PRODUCT WITH FLAMMABLE
LIQUIDS, CONNECT THE AC POWER OUTSIDE THE
HAZARDOUS AREA.

WEIGHT

Without accessories and hose: 415 lbs.

DIMENSIONS



OPERATION – PRODUCT

	CAUTION
THE DIXON PUMPS TANK CLEANING UNIT SHOULD BE OPERATED ONLY BY EXPERIENCED PERSONNEL WHO ARE FAMILIAR WITH THE OPERATING PROCEDURES AND HAVE READ THESE INSTRUCTIONS!	

	DANGER
Flammable fluids can explode, causing serious injury, death, or property damage.	
ALL SAFETY PRECAUTIONS FOR HANDLING FLAMMABLE FLUIDS MUST BE OBSERVED AND FOLLOWED AT ALL TIMES! TO AVOID STATIC DISCHARGE, THE TCU MUST BE GROUNDED USING THE GROUNDING SYSTEM PROVIDED WITH THIS UNIT!	

	WARNING
DIXON PUMPS RECOMMENDS ADDITIONAL TRAINING PRIOR TO OPERATION OF THIS CLEANING UNIT. OBTAIN THE CLEANING AND FILTRATION FUEL MANUAL FROM YOUR DIXON REPRESENTATIVE!	

	DANGER
DIXON RECOMMENDS APPROVED SAFETY TRAINING PRIOR TO OPERATION OF THIS EQUIPMENT. THE OSHA HAZWOPER 40-HOUR COURSE CAN BE TAKEN ONLINE AND FOUND AT WWW.OSHA.COM/COURSES/HAZWOPER.HTML	

	DANGER
Flammable fluids can explode, causing serious injury, death, or property damage.	
FLAMMABLE FLUIDS INCLUDING GASOLINE CANNOT BE RUN THROUGH THIS MACHINE WHEN GAMAJET IS CONNECTED. NFPA CLASS II AND CLASS III FLUIDS (WITH FLASH POINT AT OR ABOVE 100° F) ARE ACCEPTABLE, INCLUDING DIESEL FUEL.	

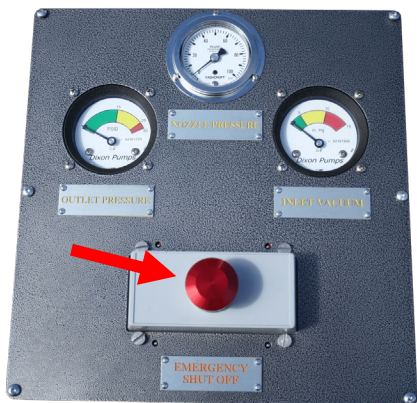
START / STOP

This unit is equipped with an explosion-proof switch that is installed in the motor.



On/Off Switch located directly on the motor

The Emergency Shut-off Switch should remain in the on position at all times unless an emergency stop must be made.



PUMP SPEED AND HORSEPOWER

This unit is equipped with a gear reducer that turns the pump shaft at a reduced speed relative to the motor shaft. This unit is equipped with a 4 to 1 gear reducer, resulting in a pump shaft speed of about 430 RPM. Additionally, the unit is equipped with a 1.5 HP motor. Be sure to take this into consideration when verifying the applicability of this unit for pumping/tank cleaning applications.

INSTALLATION, OPERATION AND MAINTENANCE INSTRUCTIONS

Save These Instructions

PUMP BYPASS FEATURE

The pump end on this unit is a Dixon Pumps positive displacement pump. Positive displacement pumps require a bypass mechanism to relieve the pressure in the system when there is a blockage, valve, or nozzle on the discharge side of the pump.



WARNING

WHEN USING A SHUT-OFF NOZZLE, THE PUMP WILL OPERATE IN THE BY-PASS MODE (FLUID WILL CIRCULATE AROUND INSIDE THE PUMP THROUGH THE BYPASS FLOWPATH) IF THE NOZZLE IS IN THE "OFF" (CLOSED) POSITION. THE PUMP SHOULD NOT BE OPERATED FOR MORE THAN 5 MINUTES IN FULL BY-PASS MODE FOR NFPA CLASS II AND CLASS III LIQUIDS.



DANGER

Flammable fluids can explode, causing serious injury, death, or property damage.



WHEN PUMPING FLAMMABLE FLUIDS SUCH AS GASOLINE (NFPA CLASS I LIQUIDS), DO NOT ALLOW THE PUMP TO STAY IN BYPASS FOR LONGER THAN 1 MINUTE. USE OF A SHUT-OFF NOZZLE SHOULD NOT BE USED WHEN PUMPING FLAMMABLE FLUIDS.



DANGER

Flammable fluids can explode, causing serious injury, death, or property damage.



WHEN PUMPING FLAMMABLE LIQUIDS, ALL HOSE COUPLINGS MUST BE EXPLOSION PROOF RATED. ALL HOSE MUST HAVE A STATIC WIRE, AND MUST ALSO BE UL LISTED FOR CLASS 1, DIV 1, GROUP D, CLASS 2, GROUP F AND G (CANADA: MUST BE CSA LISTED)

HOSE CONNECTIONS

Use of high quality camlock fittings with locking levers is recommended to avoid hazardous spills.

REVERSE ROTATION

The TCU SERIES systems are not designed to be operated in reverse rotation.

FILTER HOUSINGS – FILTER ELEMENT ACCESS

Each filter housing is equipped with a removable lid that is secured with four eye bolts. After relieving pressure in the system, the housing lid can be removed by loosening all four bolts and completely removing three of them. One of the eye bolts can be left in place to hold the lid as it is rotated out of the way.



CAUTION

WHEN CHANGING FILTERS, TIGHTEN FILTER HOUSING LIDS BY HAND. DO NOT USE TOOLS ON FILTER HOUSING EYE BOLTS. OVERTIGHTENING CAN RESULT IN DEFORMATION OF THE CANISTER LID AND FAILURE OF LIQUID-TIGHT SEAL!



WARNING

Hazardous pressure can cause personal injury or property damage



WHEN REPLACING FILTER ELEMENTS, MAKE SURE THE PUMP IS OFF AND THE PRESSURE IS RELIEVED BEFORE OPENING THE FILTER HOUSING LID.

BAG FILTER HOUSING PREPARATION

Determine which bag filters will be used. Prior to installing bag filter, make certain the bag filter basket is installed. Make sure the o-ring is installed on the basket prior to setting it in the housing. Bag filters should be fitted into housing so the bottom of the bag is pressed down all the way into the filter basket and the retainer ring seats completely against the top of the basket so that no particulates blow by the filter.



Bag Filter Housing without Basket or Filter Installed



Bag Filter Housing with Filter Backer Basket Installed



Bag Filter Housing with Bag Filter Inserted

If a stainless steel mesh basket is to be used in place of a bag filter, remove the bag backer basket and replace it with the mesh basket. Double-check to make sure the o-ring is installed on this basket prior to setting it in the housing. Keep in mind that a maximum of 74

microns is allowed. Also remember that the lower the micron the better the fuel quality and the fewer cartridge filters that will be required.

Once bag filter or stainless steel mesh basket is installed, close housing. Make sure the housing o-ring is in place and contains no pinched or broken areas. If pinched or broken, replace before using the TCU. To close, line up lid and housing; insert eye bolts; hand tighten bolts only.



CAUTION

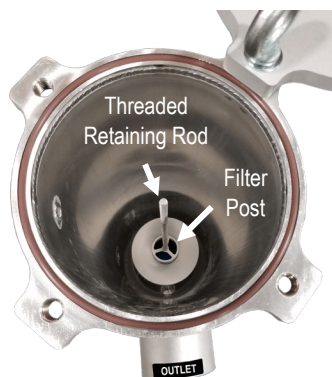
FAILURE TO PROPERLY SEAT THE FILTER ONTO THE FILTER BASKET COULD RESULT IN PARTICLES GETTING PAST THE FILTER AND INTO THE PUMP, WHICH COULD RESULT IN PUMP DAMAGE AND/OR RESULT IN INADEQUATE CLEANING!

CARTRIDGE HOUSING PREPARATION

Two-Stage Process (Coalescing and Water Separation)

The most efficient water removal process is the two stage process of coalescing and water separation. This housing can clean fuel and remove water using this method as well as absorption.

If using the two-stage water removal process, two filters will need to be installed in the filter housing. During installation you will place the coalescer filter in the housing first, pressing it down around the filter mounting post inside the housing. Once this has been done, the water separator is placed over the coalescer so that the filter post bolt fits through the top of the water separator filter and a black washer/gasket is inserted down onto the rod. Finally, the supplied large filter retention wing nut is screwed onto the rod to connect with the washer/gasket, securing the water separator and coalescing filter in place. Hand-tighten the wingnut.



Cartridge Housing without
Coalescer Cartridge



Cartridge Housing – Insert
Coalescer Cartridge



Cartridge Housing with
Coalescer Cartridge – Insert
Water Separator Filter



Cartridge Housing with Coalescer
Cartridge and Water Separator Filter
in place with Retaining Washer

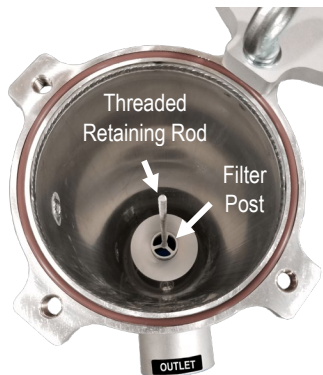


Cartridge Housing with Coalescer
Cartridge and Water Separator Filter
secured with Retaining Nut

CARTRIDGE HOUSING PREPARATION

Single-Stage Process (Debris Removal or Water Absorption)

When using a single-stage process with one cartridge filter for fine filtration of clean fluids, insert the cartridge filter down onto the filter post and ensure it is seated properly onto the post. Place the filter retaining cap over the retaining rod and onto the top of the cartridge filter. Use the supplied large filter retention wing nut to secure the filter onto the post. Hand tighten the wing nut.



Cartridge Housing without
Cartridge



Cartridge Housing with
Cartridge, no Retaining Cap



Cartridge Housing with Cartridge and
Retaining Cap with Retaining Nut



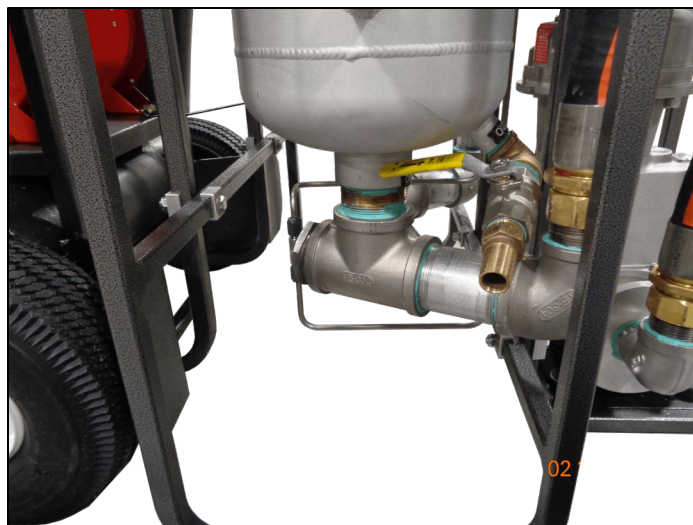
CAUTION

NEVER USE A WRENCH OR OTHER TOOL TO TIGHTEN THE WINGNUT. OVER-TIGHTENING WILL DAMAGE THE FILTERS AND POTENTIALLY ALLOW CONTAMINANTS TO PASS THROUGH DURING FILTRATION.

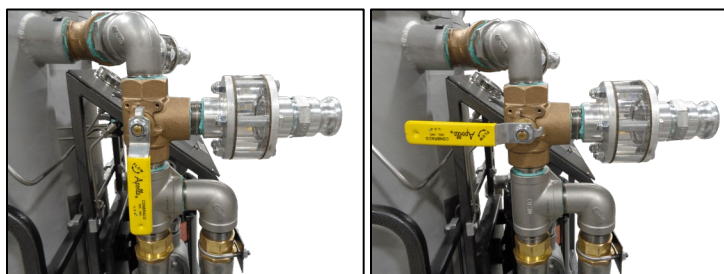
CONTROLLING FLOW TO THE COALESCER/WATER SEPARATOR HOUSING (BYPASSING):

During free water and contaminant pump-outs, tank cleaning with jet, or gross particulate removal, the coalescer/water separator housing should be removed from the flow stream using the coalescer/water separator housing bypass valve (No. 14 in the "Components diagram above), and filter elements should be removed from the housing.

After the initial process of pumping out large particles, sludge and free water, the coalescer/water separator housing can be added to the flow stream using the bypass valve (see below for valve positioning). Insert the desired filter elements in the coalesce/water separator housing to produce fine filtration. Lift the suction drop pipe off the bottom of the tank about 6 inches to fill the housing with cleaner fluid prior to filtering of larger particles from the bottom.



Coalescer/Water Separator Filter Housing in the Closed Position

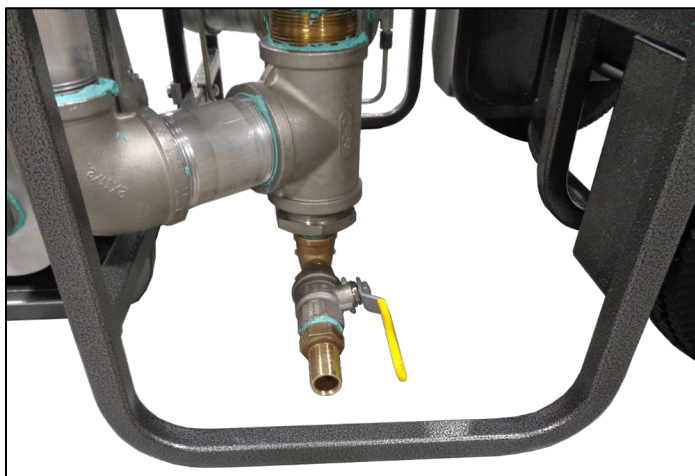


Secondary Housing is Engaged –
Flow is through both housings

Coalescer/Water Separator
Housing Bypassed - Flow is only
through the Bag Filter Housing.

DRAINING THE FILTER HOUSINGS:

Each housing comes equipped with a drain valve. The valve is open at the 90° angle position. It may be necessary to connect the provided clear tubing to the valve in order to drain housing into a bucket.



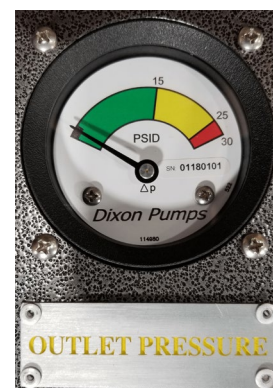
Bag Filter Housing Drain

THE CONTROL PANEL:

The control panel comes equipped with three gauges and one emergency shut-off switch. The nozzle pressure gauge is used during tank cleaning and reads the system pressure when the jet is operational. The gauge will read between 45 and 60 psi during jet cleaning. If the pressure is below 40 psi, troubleshooting may be necessary.



The Differential Pressure Gauge (Outlet Filter) reads the difference between the inlet and outlet pressure of a filter housing referred to as differential pressure and is represented by the symbol ΔP or Delta P. This gauge measures the pressure in the coalescing/water separator housing. When fuel encounters resistance the pressure will drop – the measurement of the drop is ΔP . The high pressure reading is on the inlet side and the low



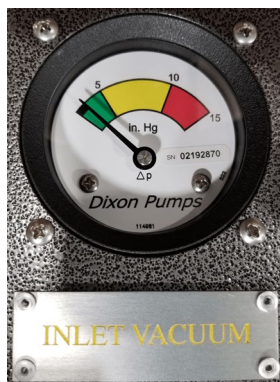
pressure reading is outlet side. It is important to measure ΔP as it is the indication of the filter's condition.

There are a few major factors that affect ΔP :

- A filter will increase ΔP . However, a clean filter regardless of type should read no more than 2 or 3 psi of ΔP
- Water contamination will slow the flow and increase ΔP .
- Particulate contamination increases ΔP .
- Microbial contamination increases ΔP
- A bypassed filter (i.e. hole in filter) will cause a fall in ΔP . It should be remembered filters NEVER get better over time. The ΔP will always rise with use.
- Higher flows can create higher pressure drop.

Differential pressure should rise slowly and steadily over time until it reaches its limit. The standard ΔP limit of a filter is 25 psi. As the ΔP moves closer to the limit, it can quickly rise. This is due to contaminants clogging the filter pores and creating pressure. Sudden premature rises in ΔP should be investigated. In line contamination monitoring can help to identify issues and problems associated with ΔP .

The Vacuum Gauge measures the vacuum pressure in the bag filter housing. As the filter collects particulates, the gauge moves indicating a dirty filter. Once it reaches the red zone, it is time to remove and replace it with a new bag.



The Emergency Shut-off Switch should remain in the on position at all times unless an emergency stop must be made. The TCU motor has an operational on/off switch which should be used for the normal operation of the unit.



E-Stop: "ON" Position

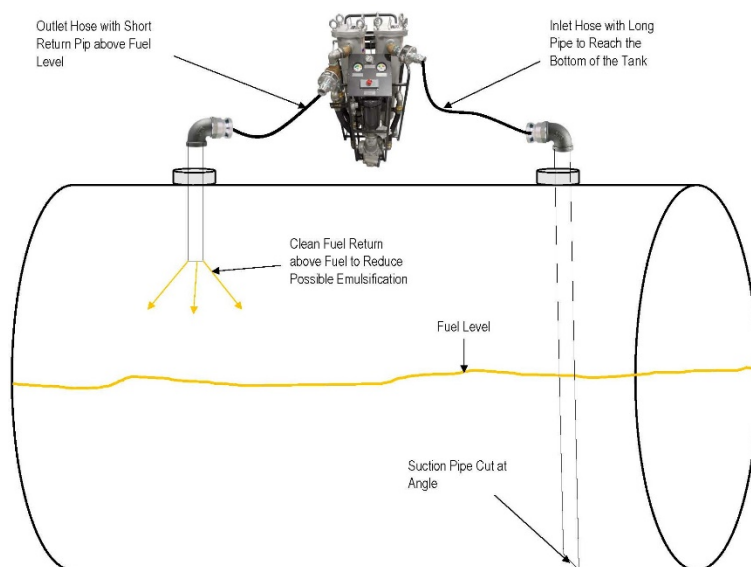


E-Stop: "OFF" Position

OPERATION – TANK CLEANING AND FILTRATION PROCESS

THE FILTRATION PROCESS

The diagram below shows a typical set-up for filtration. When filtering fuel, it is important to remove any heavy contaminants including water found on the bottom of the tank before filtration begins. Once contaminants are removed and properly disposed, filtration can begin. There are several steps in the filtration process as well as important factors to understand for quality results.



There are basic steps to every filtration job. These are meant to be set-up guidelines for a typical filtration job. Every fuel system is different and may require a set-up variation. The below steps are meant to serve as a simple guideline:

1. Set-up site for safety. Dixon Pumps recommend each technician take the OSHA Hazwoper training course prior to using a Dixon product for safe field operation.
2. Access tank area once safety barriers are in place and notify the site operator.
3. Set out two fire extinguishers – one in containment pool once setup and one off to the side but still within the worksite area
4. Use of a Dixon Spill Containment Pool and Emergency Spill Kit is advised. Set up the portable containment pool and position the spill kit within easy reach but out of the way so as not to be a trip hazard. See pool and spill kit below:



CONTAINMENT POOL

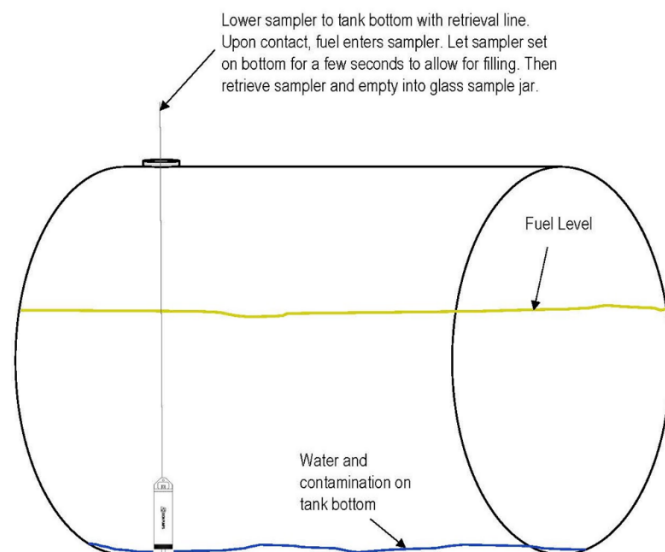


SPILL KIT

5. Setup TCU as close to tank access as possible. Place the TCU in the center of the containment pool.
6. Take a bottom sample of fuel at each available access point using a Dixon Pumps Fuel Sampler. It is important to take samples from several locations, as contaminants will migrate to the lowest part of the tank. Save the samples for photographic record once job is complete.



Dixon Pumps
Fuel Sampler



7. Place suction pipe at the lowest access point in the tank. This is determined by identifying the access point in the tank that has the highest level of contamination on the bottom.
8. Connect suction hose to suction pipe and the intake coupling on the TCU.
9. Place return pipe into your supplied PCW (petroleum contact water) or contaminant storage container and connect the discharge hose to both the TCU and the return pipe. The amount of contamination measured while sampling will determine the amount of storage required. Make sure you have enough prior to beginning.
10. Attach ground wires from TCU to tank or drop tube. When cleaning a portable tank that is not properly grounded, use a grounding rod. Hammer into ground and attach second grounding cable to rod prior to use. In dry conditions, wet the ground touching the rod for better conductivity.



WARNING

WHEN USING THE GROUND ROD, FOLLOW SAFE PROCEDURES TO ENSURE THERE IS NO UNDERGROUND ELECTRICAL WIRING OR PIPING THAT COULD BE PUNCTURED BY THE ROD.



DANGER

Flammable fluids can explode, causing serious injury, death, or property damage.



IMPROPER GROUNDING OF THE UNIT COULD RESULT IN A STATIC DISCHARGE (SPARK) THAT HAS THE POTENTIAL TO IGNITE VAPORS WHEN USING THE UNIT WITH FLAMMABLE FLUIDS SUCH AS GASOLINE (NFPA CLASS1 LIQUIDS).

11. Pump out and properly dispose of water and biomass contamination at the bottom of the tank. Once done, thoroughly drain discharge hose and return pipe in preparation for relocating it to tank.
12. Place return pipe in the opposite end of the tank, farthest away from the suction pipe. The farther the spread, the better.



CAUTION

DOUBLE-CHECK SYSTEM CONNECTIONS AND SAFETY BARRICADES. ALWAYS REMAIN AWARE OF YOUR SURROUNDINGS. SAFETY FIRST!

13. Connect the discharge hose to the return pipe.
14. Double-check system connections and safety barricades. Always remain aware of your surroundings. **Safety First!**
15. Begin filtering fuel. Watch gauges on the system housing(s) and change filters as needed. If using two stage coalescing and water separation, remember to keep an eye on the coalescer sight tube for water. Water and contaminants can collect in the bottom of the housing, so periodically drain a small amount of fluid from housing to make sure water and contaminants are adequately removed.
16. Bottom sample fuel several times from all access points during the filtration process to determine progress and final fuel quality. Keep an eye on the inlet and outlet sight glasses to verify fuel quality as it passes through the system.
17. Once fuel appears clear from all access points, take a final bottom sample.
18. Record photo results against a Fuel Clarity Bar Chart like the one shown below.



19. Close up tank access points.
20. Clean workspace.
21. Pack up all equipment.
22. Report results to site operator and provide detailed work order.

THE TANK CLEANING PROCESS

While the tank cleaning process is different, it will likely include filtration. The following are the basic steps to cleaning a diesel fuel tank with fuel present. Optimally, there should be between 9 and 12 inches of fuel which will be used to jet clean the tank walls. Make certain to remove water and biomass contaminants found at the bottom of the tank prior to jetting.



DANGER

Flammable fluids can explode, causing serious injury, death, or property damage.



NEVER ATTEMPT TO USE A TANK CLEANING SPRAY NOZZLE TO CLEAN A TANK FILLED WITH GASOLINE OR OTHER NFPA CLASS I LIQUIDS.

Tank cleaning nozzle jets should only be used with high flash point liquids like diesel fuel or approved cleaning chemical.

1. Follow steps 1-11 from the Filtration Section above.
2. Connect Gamajet to the bung mount assembly or tank cleaning hose assembly as instructed in the GAMAJET set-up sheet. Make sure to position it as close to the center of the tank as possible. If positioned to one end of a large tank, it may be necessary to complete two cleaning cycles from opposite ends of the tank depending on the access points available.
3. Connect the Gamajet assembly to the tank cleaning system's discharge hose.
4. Double-check system connections and safety barricades.

Save These Instructions

5. The coalescer/water separator housing should be isolated from the flow stream using the valve (No. 14 in "Components" diagram above), and filter elements should be removed from the housing. See also "**CONTROLLING FLOW TO THE COALESCE/WATER SEPARATOR HOUSING (BYPASSING)**" section above.
6. Start TCU and allow to run for 30-minutes. This is enough time for one full cycle – 15-30 minutes depending on the model of jet used. Watch gauges on the system housing(s) and change filters if needed. It may be necessary to swap the suction and discharge locations on larger tanks, which will require an additional cleaning cycle to complete the process.
7. Once the tank cleaning cycle has finished, disconnect the Gamajet assembly, replace with discharge hose and the return pipe.
8. Place desired filter elements in the coalesce/water separator housing and re-engage the housing into the flow stream by using the coalesce/water separator filter bypass valve.
9. Lift the suction drop pipe off the bottom of the tank about 6 inches to fill the housing with cleaner fluid prior to filtering of larger particles from the bottom.
10. Lower the suction drop pipe and start filtering fuel.
11. Bottom sample fuel several times from all access points during the filtration process to determine progress and final fuel quality.
12. Once fuel is clear from all access points, take a final bottom sample.
13. Record photo results against a Fuel Clarity Bar Chart.
14. Close up tank access points.
15. Clean workspace.
16. Pack up all equipment.
17. Report results to site operator and provide detailed work order.

When cleaning a gasoline tank or any tank containing a low flash point liquid (NFPA Class I liquids), the liquid must be removed prior to cleaning with a jet. A water and chemical cleaner can be used to clean the tank once the fuel is removed. The steps are similar to the above except you are not using the fuel to clean the tank, you do not filter the fuel and you will be removing all water/chemical used in the cleaning process once complete. Getting the tank as dry as possible is very important. When gasoline is placed back into the cleaned tank, Dixon recommends filtering the gasoline following the Filtration Process to remove any residual water used during tank cleaning and any particulates that may have remained during cleaning. Ensuring a clean and dry fuel is of utmost importance.



DANGER

Flammable fluids can explode, causing serious injury, death, or property damage.



IF YOU ARE CLEANING A GASOLINE TANK (OR A TANK CONTAINING ANOTHER NFPA CLASS I LIQUID), YOU MUST REMOVE ALL GASOLINE PRIOR TO CLEANING THE TANK WITH A GAMAJET. USE OF AN ENCAPSULATER PRODUCT IS RECOMMENDED DURING CLEANING TO ALLEVIATE EXPLOSIVE VAPORS.

FILTER SELECTION AND APPLICATION

Choose filters according to the desired quality of the fuel. Always use a bag filter or Dixon's optional stainless steel 74 micron filter basket to eliminate particulates that could damage the pump. Concentrations of particles can damage the pump, so the Bag Filter Housing must have at least a 74 micron filter or basket installed to remove large particulates from the fluid stream.

Achieve finer filtration by using progressively smaller filter mesh sizes according to the desired quality of the fuel or ISO requirement. Using a smaller mesh bag filter in the Bag Filter Housing will lengthen the life of the cartridge or coalescer filters installed in the Coalescer/Water Separator Housing. Dixon's TCU can be used for tank cleaning and fuel filtration including water removal. Choose from the below filtration options for the required fuel standard.

BAG FILTERS AND STRAINERS

APPLICATION	FILTER							RATING (Micron)											NOTES
	All Cartridge Filters	Absorption Cartridge Filter	All Coalescer Filters	Absolute Teflon-Coated Water Separator	Pro Series Felt Bag	Extended Life Series Felt Bag	Stainless Steel Mesh Strainer baskets	Nom.										Abs.	
								0.5	1	2	3	5	6	10	50	74	200	150	
Dirt and Particle Removal	X		X		X	X	X	X	X		X	X	X	X		Maximum particle filtration based on micron size and filter rating (nominal or absolute)			
Dirt, Particle, and Colloidal Removal	X		X							X	X	X				Includes both nominal and absolute rated filters with varying efficiency ratings			
Dirt, Particle, Colloidal, and Water Removal		X									X					Made from microglass and water-absorbing polymers for the removal of water and colloids, including low level acids - Not recommended for Ethanol-blended fuels.			
Water Separation / Removal				X											X	Separator intended to be used with coalescer filter in 2-stage systems			

Pro Series Bag Filters

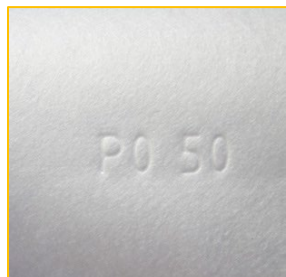
Dixon Pro Series bags are made from the leading nonwoven media produced from the highest quality liquid filtration felts. Our polyester filtration media surface is treated to prevent downstream fiber migration. They are silicone free, perfect for hydrocarbon and paint applications. The Pro Series bag comes standard with a polyseal retainer that is flexible to fit most filter housings and chemically resistant. The retainer has an integral handle for ease of installation and removal. Our bags are all fully welded using the most advanced thermal bonding technology. The process provides strength, durability and worry free filtration. The bonded seams eliminate the use of threads and the opportunity for bypass caused by needle holes created with the traditional sewn seams. This results in a stronger more efficient bag filter.



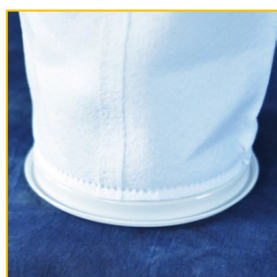
BAG FILTERS AND STRAINERS (Cont.)

Pro+ Series Bag Filter

The Dixon Pro+ Series is designed for longer service life. The high performance felt consists of a unique blend of fine fibers combined to create a thicker, loftier felt media with greater dirt loading capacity. The result – a bag filter capable of holding 2 to 4 times the amount of contaminants than the standard felt bag filter. Longer service life translates into lower operating costs and downtime. Like the Pro Series, the surface is treated to prevent downstream fiber migration and is silicon free. It comes with an engineered retainer and is thermally bonded. See the thickness difference between the standard Pro and the Pro+ felt in the picture to the right. The depth of the media allows for greater holding capacity.



Embossed
micron size



Fully welded,
thermal bonding



Steel Ring
Retainer



Applications

- Petroleum
- Lubricants
- Coolants
- Automotive

FILTER DIMENSIONS

	Dimension		Maximum Flow Rate	
	Inches	mm	GPM	m ³ /h
P1	7.0 x 16.5	178 x 419	80 GPM	18 m ³ /h
P2	7.0 x 32.0	178 x 813	150 GPM	34 m ³ /h

FILTER BAG DESIGN DATA

	Length		Surface Area		Flow Rate		Volume		Maximum Flow Rate	
	Inches	cm	ft ²	cm ²	GPM	Liters/s	Gallons	Liters	GPM	m ³ /h
P1	7.0	17.8	16.5	41.9	2.5	2341	80	5	1.8	6.8
P2	7.0	17.8	32.0	81.3	4.9	4540	150	9.5	4.0	15.1

Stainless Steel Mesh Basket Strainers

The Dixon Mesh Baskets are made of 304 stainless steel and can be used with or without a bag filter. The 200 mesh basket strainer is equivalent to a 74µm bag and can be used to substitute for a bag when heavy particulates are expected, as a cost effective measure.

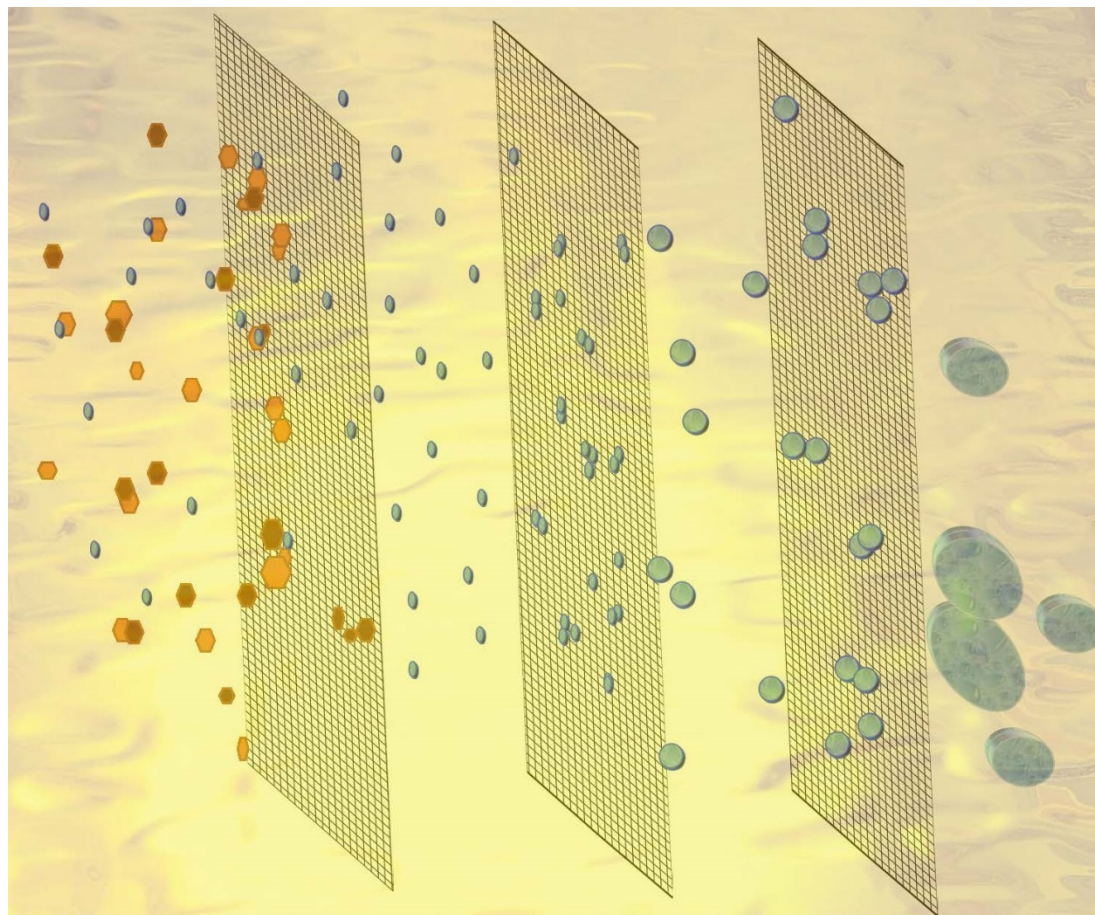
Strainer baskets come in P1 and P2 sizes. They are designed with a handle for easy installation and removal. An O-ring is provided to ensure a proper seal, but is not meant to take the place of an Omega Spring.



COALESCING AND WATER SEPARATION FILTERS

Particulate and Water Removal Process

A two stage filtration system should be used where the maximum amount of water removal is required. The system also allows for fine contaminant removal. Clean and dry fuel is a must and it is accomplished by coalescing the fine droplets of water found in fuels and separates them from the product stream.



FILTRATION

COALESCENCE

SEPARATION

The image above illustrates the progression of the product stream through a coalescer media. The emulsion is broken apart, filtering the solids, then forcing the minute water particles to coalesce (to consolidate or join up) into larger droplets. Gravity pulls the larger droplets to the bottom of the filter housing allowing it to be drained off during filtration. This is the first of two phases.

The second phase involves separation. A Teflon coated water separator filter is used to repel fine droplets of water that happen to remain from coalescence. This second stage acts as a secondary back-up forcing the water out of the product flow – not allowing it to pass through with the fuel. It works because Teflon is hydrophobic (literally, fear of water). The water repels off of the coated separator and falls down to the bottom of the filter housing.

Coalescence

Coalescer filters are designed to filter solids and separate two immiscible liquids (liquids that do not form a homogenous mixture – do not mix well). In this case, separating water from fuel. Dixon coalescing filters are made of filtration layers designed to remove dirt particles prior to coalescence, thereby increasing filter life. Inner and outer layers are made of fiberglass impregnated with phenolic resin for added strength and bonding. Situated between these layers is a coalescing layer made of borosilicate microglass. Coalescer filters are commonly used in two stages along with a water separator to remove free and emulsified water from fuel and various types of oil.

COALESCING AND WATER SEPARATION FILTERS (Cont.)

Separation

In order to prevent carryover of small water particles pushed through during coalescence, a second filtration stage is used to ensure water removal. The separator is a cartridge placed between the coalescer and the outlet. The screen on the separator is a hydrophobic Teflon coated woven synthetic material which can be cleaned periodically.

Standard Series Coalescer

The Dixon standard coalescer series filters are constructed of three layers. The inner and outer layer are an impregnated phenolic resin layer which acts as a built-in particulate filter and an outer jacket sock. The middle layer is the coalescing layer made of borosilicate microglass. Both the 5 and 2 micron are nominally rated with a 93% - 99% efficiency range. The open end elements have tin plated end caps with heat cured plastisol adhesive. The maximum operating temperature is 225°F and a collapse pressure rating of 75 PSID.



Beta 1000 Series Coalescer

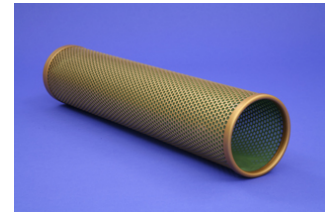
Increase your flow rates and dirt holding capacity with the Beta 1000 Series coalescer filter. The perfect filter for heavy-duty applications where critical water removal is required. More surface area than the Standard Series filter which equals longer life cycles and less downtime. The superior filter media – Beta 1000 rating – means maximum particulate filtration. This is an absolute rated filter with a B3 = 1000 rating and an efficiency of 99.9%. The four layer construction contains layers of fiberglass, impregnated absolute rated microglass, wire mesh, synthetic jacket and a metal support tube with a collapse pressure rating of 100 PSID.



Water Separator

The Dixon Teflon coated screen separator filter is used as the final stage of water removal. These absolute rated filters are closed top and open bottom with an aluminum endcap. They are a lasting solution to water removal and are meant to provide a long life when properly maintained.

DO NOT DISPOSE OF THESE WHEN CHANGING COALESCING FILTERS! They are a maintainable filter with a long life.



Teflon Coated Separator Cartridge Maintenance

Follow the below procedures for installation, maintenance and removal:

1. During installation, maintenance and removal, avoid touching the Teflon coated screen portion of the filter with bare hands. It is best to use clean, powder free nitrile gloves.
2. To periodically clean separators already in service, remove the cartridge from the housing, submerge it in clean fuel and gently scrub the entire screen surface with a soft brush.
3. During cleaning, inspect the filter surface. Look for visible cuts or abrasions. If found, they can usually be patched.



4. Before installing cleaned separator, perform a water test. With a fuel-wetted filter, gradually pour water over the entire surface. Be sure to hold a slow flow stream no further than 3" from the screen. If the water beads roll off the surface, then the filter is performing properly and can be reinstalled. If water seeps into the screen pores like the photo below shows, the cartridge has failed and may either need to be cleaned again or properly disposed of. Reclean and test again. Sometimes hot water can be used for stubborn areas. If it fails, throw it away.



Note: If the separator passes, rinse with clean fuel and allow to air dry prior to reinstalling.

5. If the separator has cuts or abrasions, patching is possible. If the damaged area(s) are no larger than 1/8th inch use a two-part epoxy base putty. We recommend Loctite Plastics Bonding System which is compatible with Teflon. Clean the area with isopropyl alcohol before applying epoxy. Allow to dry overnight before using.



CARTRIDGE FILTERS

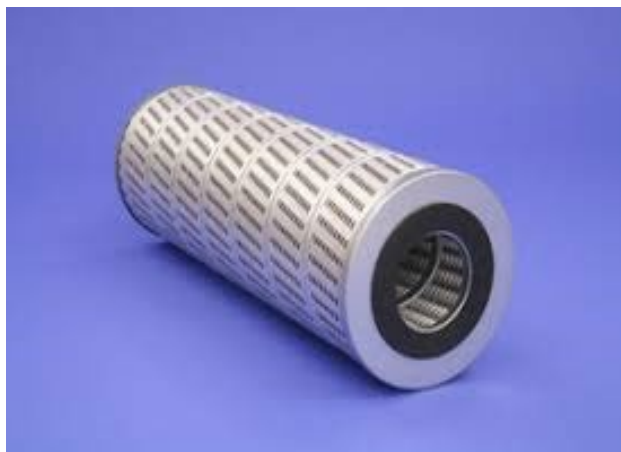
Pleated Paper Cartridge Filters

Dixon pleated filters are high efficiency, nominally rated cartridges designed to effectively remove particulate contamination from fuels, oils, coolants, paints and solvents. The filters are made for high flow rates, low initial pressure, high fatigue strength and long life cycles. They come in a variety of sizes and micron ratings. These filters are a low cost, high quality product.



Pleated Microglass Cartridge Filters

Pleated microglass filters are designed to remove fine contaminants from hydraulic oils, lube oils, coolants, solvents and fuels. They are manufactured of multi-layered media for high strength, high flow rates, low pressure drops and extremely fine filtration. The filters are constructed with the demanding requirements of industrial fine filtration in mind and are Beta 200 rated with an efficiency of 99.5%. Pleated microglass is highly resistant to variable operating pressures and flow rates due to their high dirt-holding capability and efficiency.



Absorption Cartridge Filters

While coalescer filters are highly cost effective in separating and removing emulsified water, additives and surfactants in fuels and lubricants can impair their separation capability. Water absorbing cartridges are a combination of pleated paper filtration and water absorbing polymers. Dixon absorption cartridges are made for maximum dirt-holding capacity and water hold capacity. The perforated metal reinforcement tube provides structural rigidity accounting for a 75 PSID collapse pressure rating. This filter is not compatible with ethanol enriched fuels or jet fuel containing deicing agent.



Filter Summary with Part Numbers

Filter Type	Part Number	Micron Size (µm)	Efficiency Rating	Differential Pressure Change Out	GPM Rating	Max Operating Temperature (F)	Size	Construction
Pro Series Bag Filter	BAG1FELT0005	0.5	Nominal	25 psi/1.72 bar	80	275°	P1	Silicone free, nonwoven, fiber-free polyester felt; Chemically resistant plastic retainer ring with handle; Fully welded - thermally bonded seams
	BAG1FELT0010	1	Nominal	25 psi/1.72 bar	80	275°	P1	
	BAG1FELT0050	5	Nominal	25 psi/1.72 bar	80	275°	P1	
	BAG1FELT0100	10	Nominal	25 psi/1.72 bar	80	275°	P1	
	BAG1FELT0500	50	Nominal	25 psi/1.72 bar	80	275°	P1	
	BAG2FELT0005	0.5	Nominal	25 psi/1.72 bar	150	275°	P2	
	BAG2FELT0010	1	Nominal	25 psi/1.72 bar	150	275°	P2	
	BAG2FELT0050	5	Nominal	25 psi/1.72 bar	150	275°	P2	
	BAG2FELT0100	10	Nominal	25 psi/1.72 bar	150	275°	P2	
	BAG2FELT0500	50	Nominal	25 psi/1.72 bar	150	275°	P2	
Extended Life Bag Filter	BAG1HE10	10	Nominal	25 psi/1.72 bar	80	275°	P1	Silicone free, nonwoven, fiber-free polyester felt; Chemically resistant plastic retainer ring with handle; Fully welded - thermally bonded seams; Made with increased fine fibers for a thicker, loftier felt with greater void space and increased dirt holding capacity
	BAG2HE10	10	Nominal	25 psi/1.72 bar	150	275°	P2	
Stainless Steel Mesh Basket Strainers	SS1MESH200	200 Mesh/74µm	Nominal	25 psi/1.72 bar	80	275°	P1	Designed to replace bag filters in the Dixon 8" flex bag housing. Made of layers of stainless steel wire cloth, bonded to form a rigid porous metal structure. One piece construction with a handle for easy removal and installation.
	SS2MESH200	200 Mesh/74µm	Nominal	25 psi/1.72 bar	150	275°	P2	
Coalescer	COA6182N	2	Nominal	15 psid	75	225°	6"x18"	Our multi-layer coalescer filter has a Beta rating of B3 = 1000 and is 99.9% efficient. It is constructed four layers: 2 wire mesh layers, 1 fiberglass layer and 1 absolute micro-glass layer with a high strength 100 PSI collapse metal support tube and a synthetic jacket. Made to remove emulsified water and damaging particulate contaminants from hydrocarbon fluids in critical applications. Used as the first stage element in the Dixon two stage filtration housings. This filter offers more surface area for longer life cycles and less downtime.
	COABETA1000-6X18	3	Absolute	15 psid	150	250°	6"x18"	
Water Separator	WS720150AT		Absolute	20 psid	150	225°	7.7"x20"	Filters are cleanable and reusable. They perform a superior water barrier as the second stage filter in Dixon's two stage filtration housings. Made of durable teflon, hydrophobic media and stainless steel to resist corrosion.
Pleated Paper Cartridge	CAR6182NPP	2	Nominal	20 psid	120	225°	6"x18"	Pleated paper cartridge, electroton plated outer jacket, high flow rates, long life cycles and high fatigue strength. Designed to filter lubricants, oils, coolants, all fuels, solvents and paints. Maximum collapse rating 100 PSID.
	CAR6185NPP	5	Nominal	20 psid	120	225°	6"x18"	
	CAR61810NPP	10	Nominal	20 psid	120	225°	6"x18"	
Pleated Microglass Cartridge	CAR6183AMG	B3=200	Absolute	50 psid	120	250°	6"x18"	Pleated microglass cartridge filter which is absolute rated with a 99.5% efficiency rating. Perfect fine filtration of all fuels and lubes. Maximum collapse pressure is 100 PSID.
	CAR6186AMG	B6=200	Absolute	50 psid	120	250°	6"x18"	
Absorption Cartridge	CAR61810NABS	10	Nominal	20 psid	120	250°	6"x18"	Made from microglass and water absorbing polymers. Designed to remove water from lubricants, oils, diesel fuel, kerosene, phosphate esters and conventional gasoline. Maximum collapse pressure is 75 PSID.

Save These Instructions

MAINTENANCE

1) Pump - The Dixon pump requires minimal maintenance, but the following maintenance procedures are required for maximum performance:

- a) Every 2,000 hours of operation, the gear chamber should be drained and replaced with 12-14 ounces of synthetic lubricant. The recommended lubricant type is Mobil SHC-626
- b) Periodically, all nuts and bolts should be checked and tightened securely to ensure maximum performance of the pump unit.

4) Couplings and Hoses – Couplings and hoses should be checked periodically for leakage and wear. As excess wear appears, the components should be replaced to prevent any accidental spillage.

 WARNING	
Hazardous or toxic fluids can cause serious injury.	
CAUTION! WHEN PUMPING ANY TOXIC, CORROSIVE OR PRODUCTS THAT WILL LEAVE A FILM OR DEPOSIT OF ANY KIND, THE PUMP SHOULD BE FLUSHED IMMEDIATELY AFTER USE.	

2) Gear Reducer – The pump unit on the TCU comes with a “Grove TXQ” gear reducers that require very minimal maintenance.

- a) The mounting bolts should be checked for tightness every 50 hours of operation.
- b) The standard compounded lubricants (non-synthetic) should be changed every 6 months or 2,500 operating hours.
- c) All standard reducer from Grove Gear are filled with Mobil Glygoyle 460 Polyglycol (PAG) lubricant designed to operate with -10° to 120° F ambient temperature range. The gear reducer should not become hot enough to cause breakdown in the synthetic lubricant. Should there be any questions or concerns, contact Dixon Pumps for further details and technical support.

3) Dolly

- a) Dolly wheels – The bearings on the dolly wheels need to be greased periodically to lubricate the ball-bearings. You will find a grease-zerk in the inside of each wheel for adding lubricant to the ball-bearings. Recommended tire pressure is 30 P.S.I.
- b) Containment tank - When the containment tank on the dolly is full, it should be drained. Move the pump unit over a product drain area and tilt pump unit back until the pump unit is vertical. There is one petcock on the bottom of the

containment tank. Turn the petcock on the bottom of the containment tank clockwise to open, and drain the excess product. When the containment tank is completely drained, turn the petcock counter clockwise until it is securely tightened.

TROUBLESHOOTING

SYMPTOM	PROBABLE CAUSE	REMEDY
Pump will not prime or lift	Trying to self-prime over 6 feet of vertical lift	Reduce vertical lift distance or install a check valve at the end of the inlet line.
	Pump has not yet filled with fluid	Fill inlet housing with fluid to be pumped.
	Pump impellers are not sealing properly	Fill inlet housing with fluid to be pumped.
	Line plugged or filter clogged	Flush the blockage out of the line and clean the filter
	Suction line flush on bottom of drum or tank	Suction line needs minimum 1 inch clearance on all sides
	Loose, unsealed fittings	Check all fittings for proper sealing
	Loose bands or pin holes in the hoses	Check banding and hose for proper sealing
	By-Pass valve stuck open	Remove ends on by-pass valve and check for any lodged objects in the spring or valve seat
Motor tripping circuit breaker or overload protector shutting motor off.	Circuit breaker too small or overloaded	The pump motor requires 12.4 amps 110 Volts/220 volts 6.2 amps., check power outlet to make sure that the pump is supplied with the proper voltage and amperage
	Outlet hose or pipe too long, creating too much head pressure maximum head pressure	This unit can only create 30 P.S.I. maximum head pressure
	Outlet plumbing too small.	The outlet should NOT BE ANY SMALLER THAN 1½ INCHES
	The fluid being pumped is too viscous.	Make sure you have the correct Dixon Pumps model for your application
Pump is not producing the proper volume of product flow	By-pass is opening (if the pump is equipped with a by-pass kit)	The by-pass valve will open with 50 psi head pressure.
	The inlet and/or outlet hose diameter has been reduced.	The flow rate will decrease if the inlet or outlet hose diameter has been reduced. Use 1 ½" diameter hose/piping/pipe fittings.

Warranty Statement

Dixon Pumps

For the benefit of the original purchaser, DIXON PUMPS warrants all Products of its manufacture to be free from defects in workmanship and materials for a period of two years from date of purchase. DIXON PUMPS does not warrant hoses, or hose couplings. Purchaser shall give DIXON PUMPS prompt notice of any warranty claims, and shall return any defective parts (shipping and insurance prepaid) to DIXON PUMPS for inspection at its plant in Bonita Springs, Florida. DIXON PUMPS will either repair or replace, without charge, F.O.B. factory, any part(s) or Product(s) found to have been defective. NO REIMBURSEMENT SHALL BE ALLOWED FOR ANY EXPENSES INCURRED FOR REPAIRS OR ALTERATIONS MADE BY OTHERS WITHOUT OUR PRIOR WRITTEN AUTHORIZATION FROM DIXON PUMPS.

This warranty does not cover any Product failures arising from abnormal use, improper application or installation, neglect or accident. Any non-factory alteration or modification of any DIXON PUMPS Product automatically voids this warranty. DIXON PUMPS pumps are not designed for all known substances. If the material being transferred with a DIXON PUMPS pump has corrosive, polymerizing, or other properties that may result in unsatisfactory or dangerous operation, please contact DIXON PUMPS at 1-800-874-8976 before attempting to transfer the material.

THE FOREGOING EXPRESS WARRANTY AND REMEDY ARE EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES PROVIDED BY LAW. ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE AND ALL DAMAGES FOR BREACH OF WARRANTY ARE SPECIFICALLY EXCLUDED. THIS WARRANTY EXPRESSLY EXCLUDES ANY CONTINGENT LIABILITY AND COSTS ASSOCIATED WITH PRODUCT DEFECT OR FAILURE.

Any equipment manufactured by others included in this sale is sold only with such warranties as may be provided by the original manufacturer.

Any Products(s) or part(s) returned for warranty inspection and/or repair must have a RETURNED MERCHANDISE AUTHORIZATION (RMA), prior to shipment.

Out-of-Warranty repairs will be charged at this established factory per hour rate, plus any components needed for replacement.

Shipping Address: **DIXON PUMPS**
25190 Bernwood Dr.
Bonita Springs, FL 34135
Toll Free: 800.874.8976
Phone: 239.390.8157
Email: dixon@dixonpumps.com
Website: www.dixonpumps.com



INSTALLATION, OPERATION AND MAINTENANCE INSTRUCTIONS

Save These Instructions

System Part Number: _____

System Serial Number: _____

Pump End Serial Number: _____



Shaw-Dixon LLC dba Dixon Pumps

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