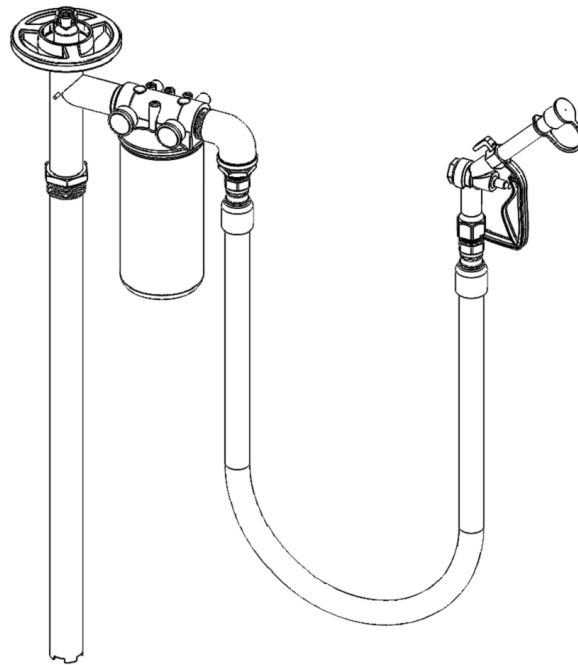




Drum Pump Filtration Unit Part #30035

Setup and Operating Instructions



Rev D, March 2024



1235 Hickory Street | Pewaukee, WI 53072
For Customer Support: 800-558-7008

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INTRODUCTION

The Low Viscosity (LV) Drum Pump filtration system has been designed to handle lubricants that have a viscosity of 1250 cSt (5500 SUS) and below, directly filtering and dispensing lubricant from a standard 55-gallon drum. **Exceeding the viscosity limits of this system can cause damage to the motor.** All parts are made from high quality stainless steel and aluminum. Before purchasing this unit, the customer should be aware of any specific requirements and/or hazards of their lubricant and ensure that the fluid being filtered and dispensed is compatible with the filter media and hose material.

REQUIRED ITEMS

Drum Pump motor – A motor is required to drive the pump shaft which attaches to the drive coupler. It is interchangeable with different Trico Drum Pump designs. Only one motor is needed and can be interchanged with multiple drum pumps.

30018 – Drum Pump Electric Motor, 1.1Hp, 110-120V, 50/60 Hz

30021 – Drum Pump Electric Motor, 1.1Hp, 220-230V, 50/60 Hz

30019 – Drum Pump Pneumatic Motor, 3/4 HP

INCLUDED COMPONENTS

Remove the Drum Pump components from the shipping container and inspect components for any signs of damage.

Included Components:

- (1) LV Drum pump assembly
- (1) Hose Assembly
- (1) Hand Wheel
- (1) 3" Retaining ring
- (1) Motor Drive Coupler
- (1) Filter w/ gasket
- (1) 2" MNPT Drum adapter

Tools required for assembly:

- Large flat headed screwdriver
- (2) x 2.5" adjustable wrenches
- Filter Wrench/ Strap Wrench

If items are damaged contact the shipper. Trico Corporation provides a manufacturing warranty against product defects and workmanship up to 1 year of purchase, proof of purchase required. It does not cover damage due to mishandling by shipper or customer nor damages caused by misuse.

INSTALLATION AND OPERATION VIDEO



Scan this QR Code to see a series of videos on installing and operating the Drum Pump Filtration System.



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WARNING

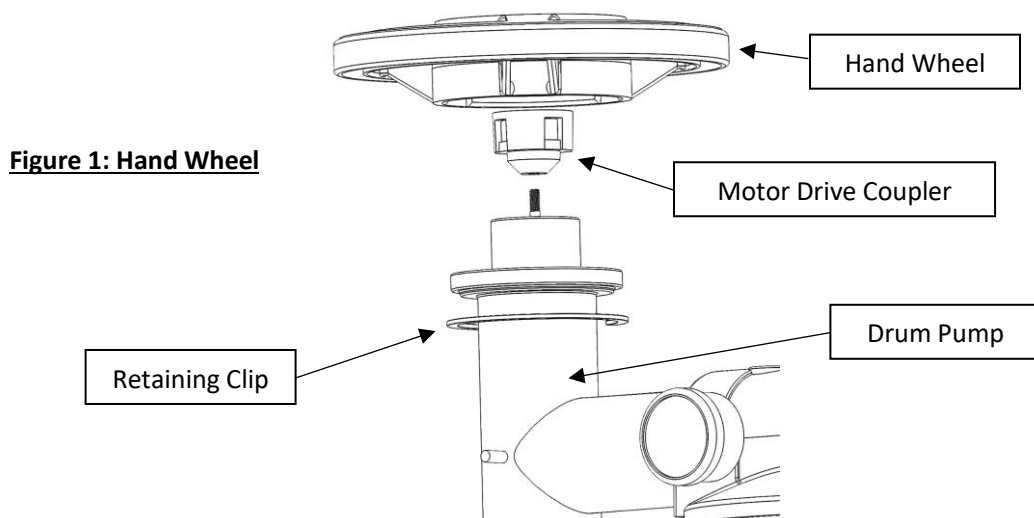
- Do not use with flammable liquids or in areas where there is presence of large amounts of flammable fumes. Failure to comply may cause an explosion. Always take precautions when working around open fuel sources.
- When filtering higher viscosity oils, such as **ISO 460 and ISO 680** gear oils, the use of a drum heating blanket is required to reduce the viscosity to under 1250 cSt (5500 SUS).
- The minimum allowable micron level for higher viscosity oil is 10 microns. Hydraulic oils may be filtered down to 3 microns at room temperature.

CAUTION

Bonding and ground safety procedures must be used when operating in hazardous duty environments or when there is a danger of static discharge. See national Fire Protection Code 77 for proper grounding and bonding procedures. It is the responsibility of the operator to properly inspect and ground equipment before use.

DRUM PUMP ASSEMBLY

1. Place LV drum pump assembly on a worktable long enough to support the entire unit.
2. Thread the Motor Drive Coupler onto the shaft and hand tighten.
3. Place 3" Retaining Clip over the top of the LV drum pump assembly and slide over the pump head to the top of tube filter connection.
4. Place Hand Wheel on drum pump assembly with retaining ring groove facing down toward pump foot.
5. While holding the Hand Wheel onto the pump head, slide one end of the retaining ring into the groove on the Hand Wheel.
6. Use a flat headed screw driver to push the rest of the retaining ring into the groove.
7. Test the Hand Wheel operation by turning it in either direction making sure it moves freely.



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8. Attach the 2" MNPT Drum adapter onto the drum.
9. Place some lubricant on the foot of the Drum Pump to help slide it past the O-ring when inserting into the Drum adapter on the drum.
10. Lift the unit and slide the pump foot into the drum adapter, guiding it until the foot contacts the bottom of the drum.
11. Using thread sealant, thread the hose onto the elbow connector and tighten (Figure 2)
12. Place the filter gasket onto the groove on the filter head.
13. Thread the filter onto the head and hand tighten.
14. Use a strap wrench, place it at the top of the filter and tighten the filter ¼ turn to seat the gasket
15. Assemble the short grounding lead with clamp to the Drum pump side ensuring the fastener is securely tightened.
16. Use the additional supplied leads to bond the consecutive drums together; making sure that one lead is connected to a grounded source. See NFPA 77.

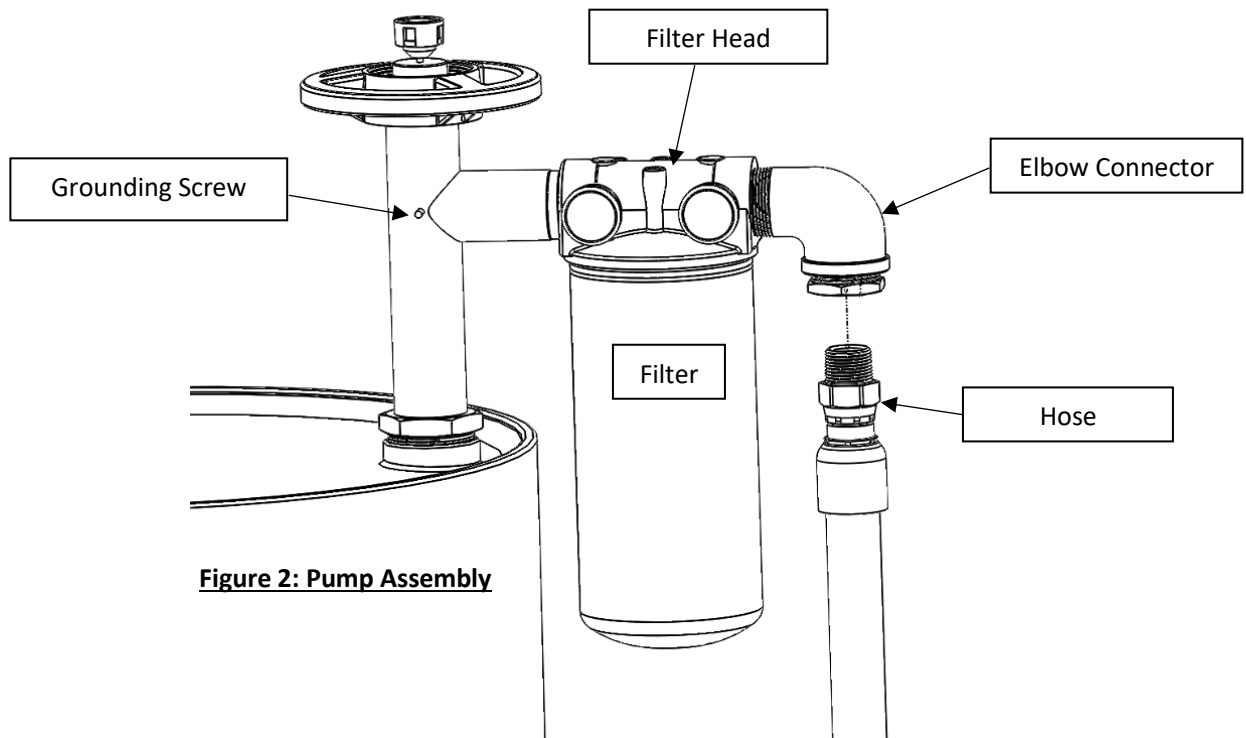


Figure 2: Pump Assembly



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OPERATION

1. Ensure the filter and all connections have been tightened before operation.
2. Place the motor onto the drive coupling on the top of the pump and secure it by threading the handwheel onto the motor.
3. Ensure that the smaller drum plug has been removed or that the drum is fitted with a breather to prevent the drum from collapsing during operation
4. Before connecting the pump motor to the power or air supply, be sure the switch is in the off position "0" or that the regulated air supply is not above 100 psi.
5. Plug the motor into the correct power outlet as specified on the motor tag and or connect an airline to the pneumatic motor.
6. Remove the dust cap from the end of the fill nozzle.
7. Turn the electrical switch to the on position indicated on the handle of the motor or squeeze the trigger of the pneumatic motor to begin pumping.
8. Place the nozzle into the container or equipment in which you desire to fill.
9. Squeeze the hand trigger on the nozzle to allow lubricant to flow out of the tip.
10. While in operation, check around the filter gasket for leaks. If the filter is leaking stop the unit and tighten an additional $\frac{1}{4}$ turn.
11. To stop the flow, release the nozzle hand trigger and then turn the motor off.

WHEN TO CHANGE THE FILTER AND PROCEDURE

The filter head is outfitted with two pressure gauges. The first gauge nearest to the pump indicates the pressure being produced by the pump. The second gauge near the hose indicates the pressure after the filter element. To determine when the filter element is at its maximum holding capacity, calculate the differential pressure by subtracting the higher pressure from the lower pressure to get the total differential pressure. Differential pressure is a more accurate means of determining filter usage. The filter should be changed at **40 psi** differential.

Example:

P1 (Pressure Produced by Pump)= 43 psi

P2 (After Filter)= 35 psi

Differential Pressure= $P1 - P2 = 43\text{psi} - 35\text{psi} = 8\text{psi}$ (filter still has remaining life)

To change the filter:

1. Remove motor from the top of the drum pump by unthreading the handwheel and lifting the motor upwards off the coupler.
2. Place an oil catch pan beneath the filter to catch remaining oil in the filter and head that will come out during the filter change.
3. Using a strap wrench at the top of the filter, turn the filter counter clockwise and unthread the filter from the head.



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4. Dispose of remaining oil in the filter and the used filter in accordance to local environmental laws and practices.
5. Remove the old gasket from the filter head and wipe excess oil residue from the head.
6. Remove the new filter from its packaging and insert the new gasket provided with the filter into the gasket groove of the head.
7. Thread the new filter onto the head turning it counterclockwise and hand tighten.
8. Using the strap wrench, place the strap near the top of the filter to prevent collapsing and turn the filter ¼ turn to tighten.
9. Place the motor back on the pump and turn on.
10. Dispense fluid from the nozzle and observe the filter gasket checking for leaks.
11. If the leaking is noticed around the filter gasket, tighten the filter another ¼ turn with the strap wrench and repeat the procedure.

Replacement Part	Part Number
Particulate Filter - 3 Micron Microglass Spin On Beta \geq 200 Absolute	36972
Particulate Filter - 10 Micron Microglass Spin On Beta \geq 200 Absolute	36973
Particulate Filter - 20 Micron Microglass Spin On Beta \geq 200 Absolute	36974
Water Filter - 10 Micron Nominal Spin On	36975
Water Filter - 25 Micron Microglass Spin On Beta \geq 200 Absolute	36995



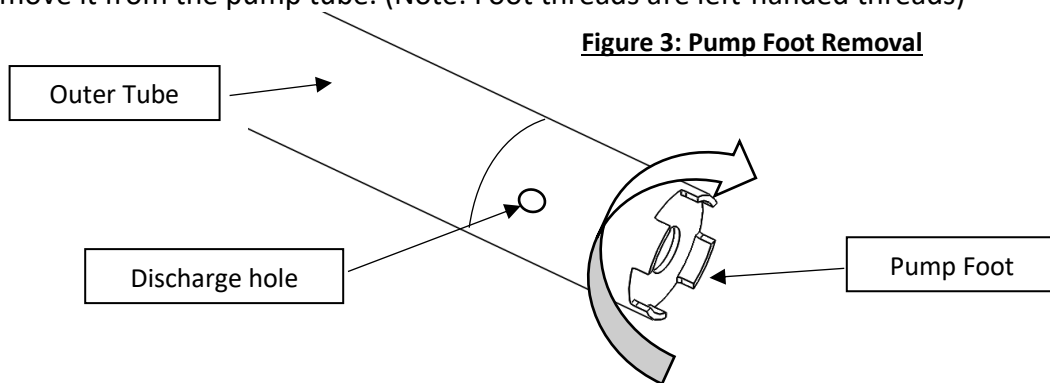
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REPLACING THE DRIVE COUPLER

The motor drive coupler is designed to break if foreign material is accidentally ingested into the drum pump foot, preventing damage to the impeller, shaft and motor. If the drive coupler breaks, follow this procedure to remove and install a new motor drive coupler.

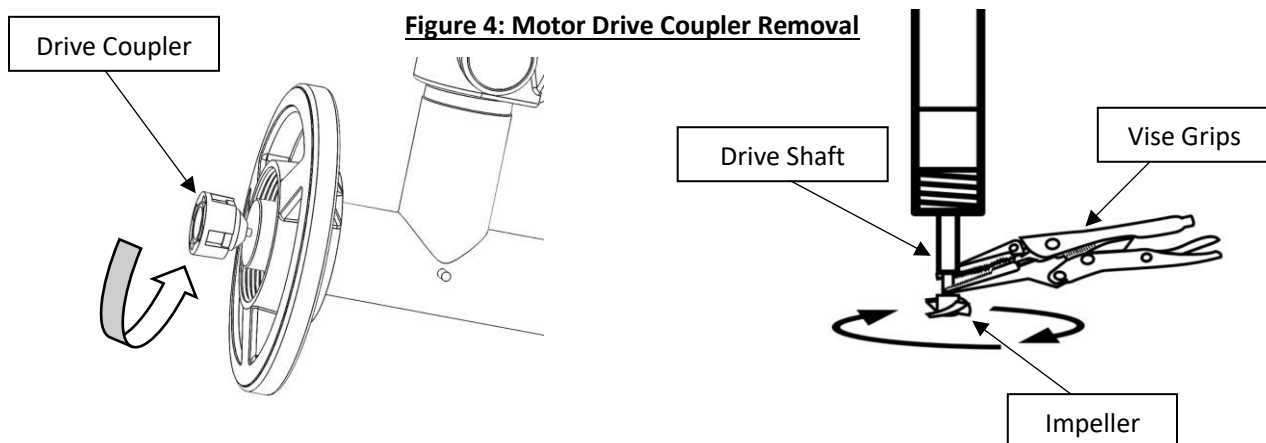
1. Remove the drum pump from the drum and place it onto a table large enough to support the unit
Note: Handling the unit may be easier if the hose is removed at the elbow connection.
2. Remove the pump foot to expose the impeller and shaft by placing the shaft of a long screwdriver between the tangs on the foot bottom and turning the foot clockwise to remove it from the pump tube. (Note: Foot threads are left-handed threads)

Figure 3: Pump Foot Removal



3. Place vise grips on the drive shaft above the impeller to hold the shaft while removing the motor drive coupler.
4. Use a pliers on the motor coupler and turn clockwise to remove from drive shaft.
5. Thread the new coupler (P/N 10367) onto the shaft and hand tighten.
6. Remove the vise grips and thread the foot back onto the pump tube turning counterclockwise to tighten.
7. Place a screwdriver into the discharge hole on the side of the outer tube and tighten the foot using the shaft of a long screwdriver placed between the tangs on the foot bottom.

Figure 4: Motor Drive Coupler Removal

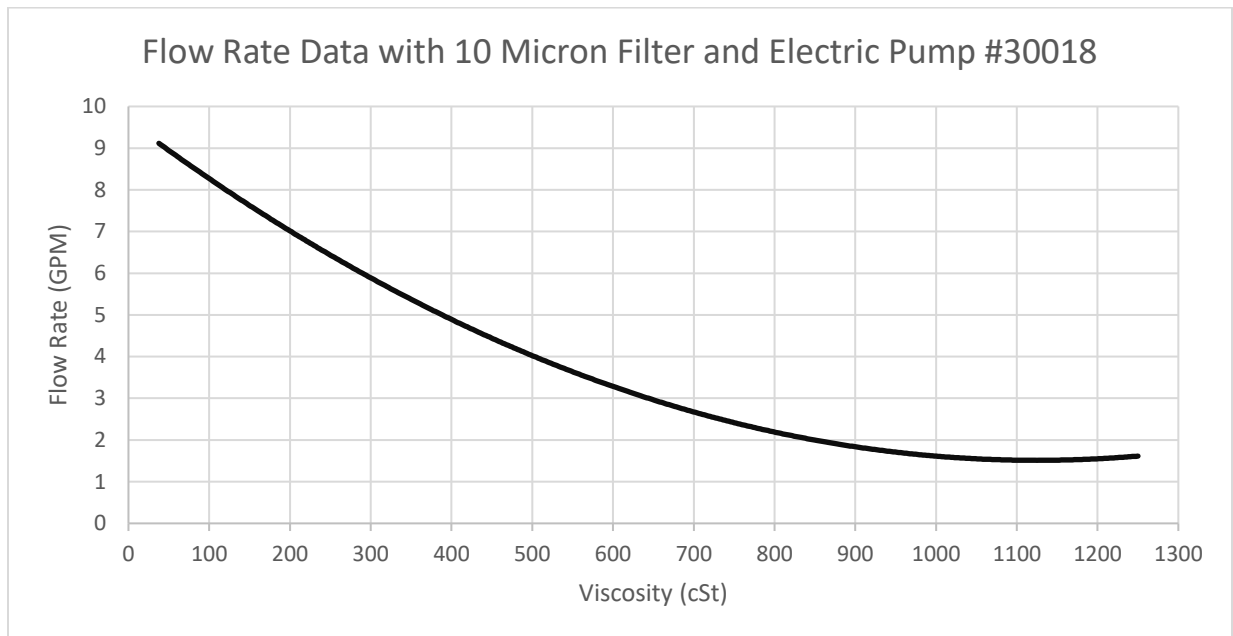


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DRUM PUMP SPECIFICATIONS

When filtering higher viscosity oils that exceed **1250 cSt (5500 SUS)**, such as gear oils, the use of a drum heating blanket is required to reduce the viscosity by heating the contents to 100°F (40°C) or below 1250 cSt (5500 SUS). The minimum allowable micron level for higher viscosity oil is 10 microns. Hydraulic oils may be filtered down to 3 microns at room temperature.

- Viscosity range = 0 – 1,250 cSt (0-5,500 SUS)
- Max Flow rate (181 cSt, ISO 68 @70F)= 7.25 GPM
- Max Viscosity = 1,250 cSt (5,500 SUS)
- Min Flow rate @ 1,250 cSt = 1.75 GPM



Average flow rates at room temp, 70°F (21.1°C), with 10 micron particle filter:

	ISO 68 (188 cSt)	ISO 100 (302 cSt)	ISO 220 (797 cSt)	ISO 320 (1250 cSt)
Electric Pump #30018	7.25 GPM	5.75 GPM	2.25 GPM	1.75 GPM
Pneumatic Pump #30019	6.0 GPM	5.25 GPM	1.75 GPM	0.91 GPM

MOTORS:

PN	Voltage	Amps	Watts	HP	Phase	Hz	ENC	Haz. Duty	Wt. Lbs(Kg)
30018	110V	8.5	825	1	1	50-60	TEFC (IP54)	NO	12.7 (5.7)
30021	220V	5	825	1	1	50-60	TEFC (IP54)	NO	12.7 (5.7)

PN	HP	Max Press.	Min Hose	Max dBA	Airline	Air Consumption	Wt. Lbs(Kg)
30019	3/4	100 psi	3/8"	87	¼ NPT	28 CFM	3.4 (1.5)



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WARNING

The Electric Drum Pump motor 30018 and 30021 are totally enclosed fan cooled motors (TEFC) with a thermal overload switch. Do not use these motors in conjunction with flammable materials or in hazardous duty areas. Do not submerge motors or let motors contact liquids. If motor stops running, turn the power switch to the off position "0" and allow at least 10 minutes for the motor to cool. Check the viscosity of lubricant being pumped to remain within limitations and resume operations. Electric motors cannot be operated continuously and should not be operated for more than 30 minutes without cooldown.

CAUTION

The Pneumatic Drum Pump motor 30019 has a recommended operating pressure of 90 psi @ 28 CFM. Do not exceed an inlet pressure of 100 psi. Always use a Filter Lubricator Regulator (FLR) to remove water from the air supply and to lubricate the necessary components, use SAE 10 weight oil.



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ISO CLEANLINESS RATING

Lubricating oils stored in bulk containers may contain contaminants. Ordinarily it has been thought lubricants stored in drums prior to use were contaminant-free; however, it is beneficial to filter lubricants even prior to its use as the original container may impart impurities to the lubricants prior to its first use. Most rotating equipment is manufactured to a class 2 or class 3 fit typical of most industrial operations. Hydraulic components and rotary screw compressors tend to have tighter tolerances in the sliding and rotating elements. Clearances in components are used to establish cleanliness requirements. The best source for cleanliness requirements is from the equipment manufacturer. In general, as the viscosity of the oil increases the cleanliness level decreases. Below is a general guideline for cleanliness levels.

ISO Oil Grade Classification	Cleanliness Code (R4/R6/R14)
32	16/14/11
46	16/14/11
68	17/14/12
100	18/15/13
150	18/15/13
220	19/16/14
320	19/16/14
460	19/16/14
680	20/18/14

Determining the ISO Cleanliness level of equipment requires analysis of the running lubricating oil. Trico's oil analysis laboratories can provide an accurate indication of the ISO Cleanliness level of lubricating oil before and after filtration. Each number in the ISO code represents the micron range of particulate in which the count lies within (R₄ microns/ R₆ microns/ R₁₄ microns).

Example: 19/16/14, the 19 code shows that count of 4 micron particle lies between 5,000 and 2,500 per ml of fluid.

ISO Number	Particle Count per ml of fluid		
25	160,000	to	320,000
24	80,000	to	160,000
23	40,000	to	80,000
22	20,000	to	40,000
21	10,000	to	20,000
20	5,000	to	10,000
19	2,500	to	5,000
18	1,300	to	2,500
17	640	to	1,300
16	320	to	640
15	160	to	320
14	80	to	160
13	40	to	80
12	20	to	40
11	10	to	20
10	5	to	10
9	2.5	to	5
8	1.3	to	2.5

ISO 320
19/16/14

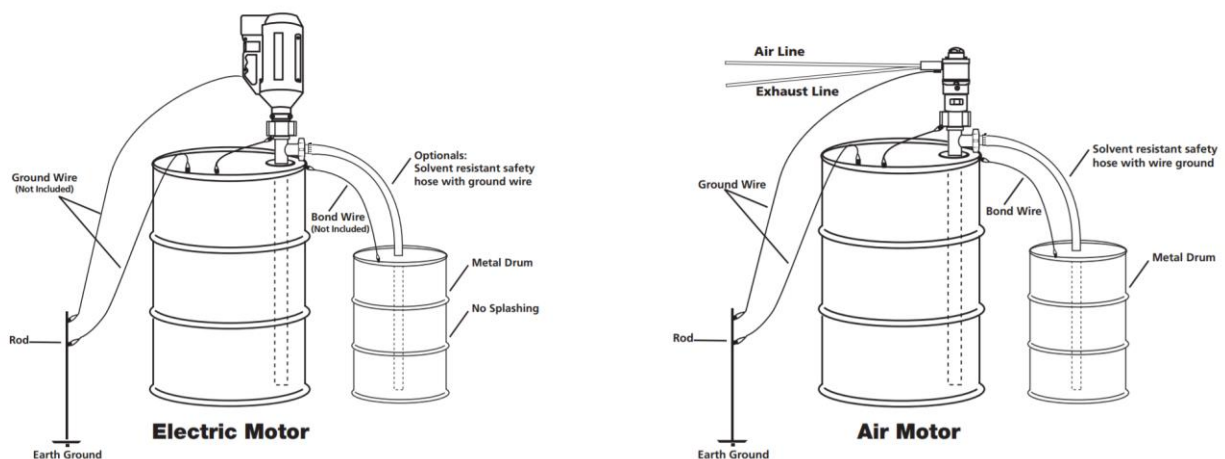


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GROUNDING AND BINDING

The Drum Pump Filtration System is not rated for a hazardous duty environment due to possible static discharge, use proper bonding and grounding per NFPA 77. A **Bonding** system connects various pieces of conductive equipment together to keep them at the same potential. Static sparking cannot take place between objects that are the same potential. **Grounding** is a special form of bonding in which conductive equipment is connected to an earthing electrode, or to the building grounding system, to prevent sparking between conductive equipment and grounded structures.

Grounding is an electrical connection between a metal vessel, pump, motor and a constant ground; i.e. a metal rod driven into the earth. Failure to bond and ground properly can cause a discharge of static electricity resulting in fire, injury or death. If in doubt, do not start the pump! Be sure bonding and grounding wires are secure before starting operation. (Ground and bond wires **must have less than one-ohm resistance** for safe usage. Check continuity before starting.) Always check with a safety engineer when any question arises and periodically check safety procedures with a safety engineer.



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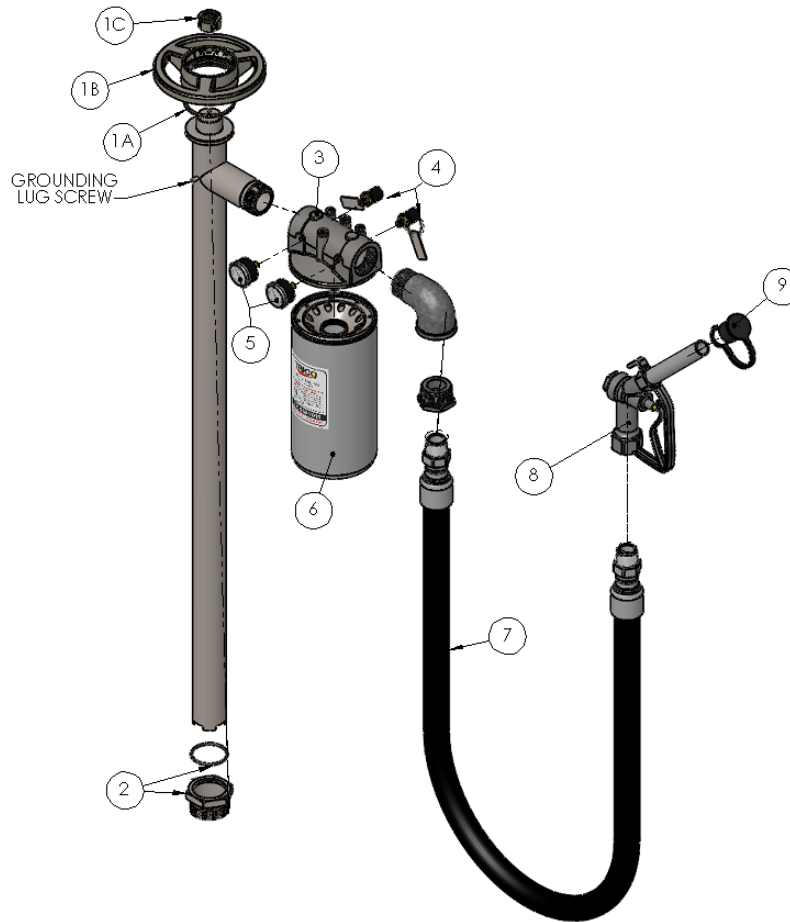
TROUBLE SHOOTING

Symptom	Possible Cause(s)	Corrective Action
Pump system does not prime	Suction tube is above liquid	Ensure open end of suction tube remains completely below surface of liquid
	Clogged suction tube/ discharge line and/or filter	Clean suction tube/ discharge line and/or replace filter
	Damaged/worn pump impeller	Remove pump foot and inspect impeller, replace if damaged
	Motor adapter worn, damaged or detached	Inspect adapter for wear and/or damage, replace if necessary
Insufficient flow	Clogged filter	Check differential pressure between gages, if 40 psi or greater, change filter element
	Clogged/ kinked discharge line or nozzle	Remove and flush discharge line and nozzle, inspect for damage
	Fluid viscosity exceeds recommended viscosity for motor	Check viscosity of fluid at temperature. If viscosity exceeds 1250 cSt (5500 SUS), fluid must be warmed to reduce viscosity
	Air supply for Pneumatic motor low	Check air supply and ensure inlet pressure is 90 psi
Fluid Leaking from filter area	Loose filter and or connections	Check tightness of filter element to ensure proper seal, check hose connections
Fluid Leaking from Top of pump	TFE Seal worn	Remove motor adapter, hand Wheel and bearing assembly and replace TFE seal
Pneumatic motor turns slowly or does not function	Air supply low	Check air supply and ensure pressure is 90 psi
	Pneumatic motor improperly lubricated and or corroded	Ensure a FLR is installed in line of air supply, use SAE 10 weight oil
	Fluid viscosity exceeds recommended viscosity for Pneumatic motor	Check viscosity of fluid at temperature. If viscosity exceeds 1250 cSt (5500 SUS), fluid must be warmed to reduce viscosity
Electric motor does not function or stops working while filtering	Power On/Off switch not fully switched	Check On/Off switch
	No power to receptacle	Check outlet for power and breaker
	Unit has overheated tripping internal overload breaker	Turn unit power to the off position, allow motor to cool, turn back to "on" position and resume filtering
	Unit generates excessive heat >140°F	Fluid viscosity exceeds maximum recommended viscosity. When filtering ISO 460 and ISO 680 gear oils, use a 55-gallon drum heating blanket to heat the oil to reduce viscosity to under 1250 cSt (5500 SUS)



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TRICO DRUM PUMP FILTRATION SYSTEM CONFIGURATION



NO.	PART	DESCRIPTION	QTY
1A	10371	Snap Ring For Drum Pump Hand Wheel	1
1B	36940	Hand Wheel - Drum Pump	1
1C	10367	Pump Coupling Replacement Drum Pump Filtration System	1
2	20-00560R	Drum Pump Large Bung Adapter with O-Ring	1
3	20-00558	Hydraulic Filter Head, Single Large Filter	1
4	36100	1/8 MNPT Sample Port	2
5	16183	Filter Cart - Gauge Replacement	2
6	See Below	Large Replacement Filter - See chart Below	1
7	20-00566	1-1/4 Hydraulic Swivel Hose – 1" NPT Ends, 72" Length	1
8	20-00602	Nozzle, Drum Pump 1" NPT, 15/16 OD	1
9	16073	1/2" Vinyl Dust Cap	1

Large Replacement Filter	Part Number
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