PDT-1-240

User Manual



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Registered in England No: 03969985 VAT No: 760 821 731 Certification No. UK002838

Filtertechnik

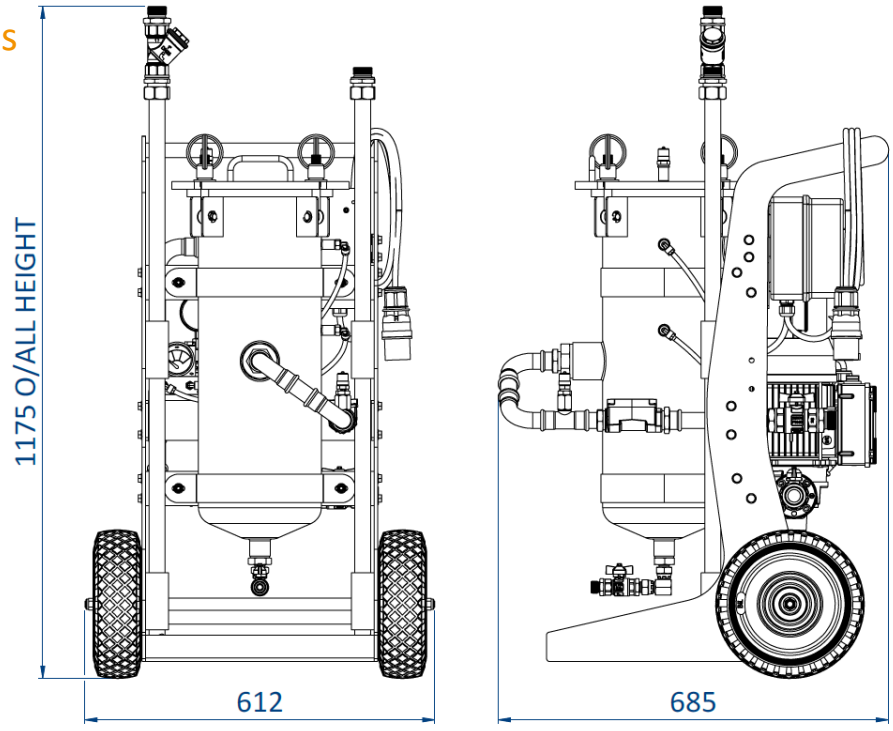
Table of Contents

Specifications 1
Dimensions 1
Typical Applications 2
Health, Safety & Environmental Considerations 2
Basic Description 3
Best Efficiency 3
Precautionary Measures 3
Fluid Compatibility 3
Achieving ISO Cleanliness Codes 4
Component Identification 6
Starting & Stopping – DOL (Direct-On-Line) 7
Filter Cell Housing 8
    Changing a Filter Cell 8
Cleaning the Magnet (Optional) 9
    Differential Pressure Gaug 10
Purging Air from the Filter Housing 11
Replacement Elements 12
Taking a Sample 13
Isolation Valves 14
Digital Turbine Flow Meter (Optional) 14
    Battery Replacement 14
E120-P ump 15
    Features 15
    Pump Curve 15
Hoses & Lances 16
    Suction Strainer 16
Warranty Statement 17
EC Declaration of Conformity 18

Specifications

Specification	Detail		
	PDT-1-240	PDT-1-110	PDT-1-415
Dimensions	(w612 mm x (d)685mm x (h)1175mm (o/all)		
Weight	50kg		
Frame	Mild Steel		
Finish	Powder Coated RAL 5004 (Black Blue) Satin		
Voltage	240VAC 1P	110VAC	415VAC 3P
Frequency	50 Hz (+/-2%)		
Current	6 Amps	8 Amps	2 Amps
Power	.75kW	.75kW	.83kW
Pump type	Self-Priming Vane Type Pump		
Flow rate (max)	Up to 100 ltr/min		
Fluid Type	Diesel Fuel		
Viscosity range	2 to 50 cSt		
Duty Cycle	Continuous		
Filtration	1 x size 1 Bag Filter Housing		
Filter blocked indicator	Differential Pressure Gauge		
Filter bypass	N/A		
Connections	1" BSP male hydraulic		
Suction hose	3m long x 1" BSP female swivel hydraulic (with strainer)		
Discharge hose	3m long x 1" BSP female swivel hydraulic		
Ambient temperature	-10°C to +55°C		
Maximum humidity	90% relative humidity, non-condensing		
Environment	IP55		

Dimensions



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Typical Applications

Typical applications for the filtration unit include:

- Filtering the fluid in a diesel fuel reservoir periodically as a supplement to continuous filtration by system filters.
- Cleaning up your system before restarting the system following component failure.
- Reclaiming contaminated fluid.

Health, Safety & Environmental Considerations

- This equipment should only be used for its intended purpose by competent and authorised persons, inappropriate use could cause serious injury or death.
- Prolonged contact with diesel can cause damage to the skin. Appropriate PPE (personal protective equipment) should be worn when operating the unit e.g. protective gloves, safety glasses, safety shoes etc. Always observe local health and safety requirements.
- The unit should only be used on a flat, even surface and be attended at all times.
- Do not operate switches with wet hands.
- The unit must always be disconnected from the mains supply before carrying out any routine maintenance or repairs.
- Electrical cables and hoses should be checked for any signs of damage before starting the unit.
- Ensure a spill kit is available in case of any accidental spills.
- Used filters must be disposed of in accordance with local environmental requirements.

Basic Description

The PDT-1-240 portable filtration unit is a compact, self-contained filtration system, equipped with high efficiency, high-capacity filter elements capable of removing particulate contaminants and water quickly, conveniently and economically. It is designed for on-site preventative maintenance and is fitted with two standpipes and hoses for efficient fluid transfer. The suction standpipe is fitted with a strainer to trap any large contaminants and protect the pump.

Best Efficiency

When used for recirculation filtration (as opposed to transfer filtration) position the ends of both the inlet and outlet standpipe as far apart as possible inside the reservoir in order to ensure proper recirculation and cleaning.

Operate the filtration cart until the total volume of the system fluid passes through the filtration cart. For recirculation filtration, cycle the reservoir fluid through the filter cart six to eight times to ensure the total system fluid is filtered completely.

Precautionary Measures

- Never start up or run a dry pump. This will cause galling, seizing or destructive wear.

Fluid Compatibility

- Ultra-low Sulphur Diesel (ULSD15)
- Low Sulphur Diesel (LSD500)
- Biodiesel Blends Up to B100
- Synthetic (GTL) and renewable Diesel Fuel (HVO)

CAUTION - DO NOT USE THE UNIT WITH THE FOLLOWING FLUIDS:

Fluids not to be used	Related dangers
Gasoline	Fire / Explosion
Inflammable liquids with PM <55°C	Fire / Explosion
Water	Oxidation
Corrosive chemicals	Oxidation / Injury to persons
Solvents	Fire / Explosion / Damage to gaskets

Achieving ISO Cleanliness Codes

Filtertechnik has a wide range of elements available to effectively achieve the required cleanliness level for the intended system. Maintaining the fluid at the required cleanliness level is a cost effective way of extending the service life of system components. The tables below can be used to determine the required micron rating of the filter to achieve the desired cleanliness code, understand the ISO 4406 contamination scale, conversion between the various cleanliness standards and understanding how the ISO 4406 scale relates to the NAS contamination scale.

Desired Cleanliness Level (ISO Code)	Recommended Filtration Media
20/18/15 – 19/17/14	25 µm
19/17/14 – 18/16/13	10 µm
18/16/13 – 15/13/10	5 µm
15/13/10 – 14/12/9	3 µm
14/12/9 – 13/11/8	1 µm

Table 1 – Filter Media Selection Guide

Number of Particles per 1ml of Fluid		ISO Scale Number
More Than	Up to and Including	
1,300,000	2,500,000	28
640,000	1,300,000	27
320,000	640,000	26
160,000	320,000	25
80,000	160,000	24
40,000	80,000	23
20,000	40,000	22
10,000	20,000	21
5,000	10,000	20
2,500	5,000	19
1,300	2,500	18
640	1,300	17
320	640	16
160	320	15
80	160	14
40	80	13
20	40	12
10	20	11
5	10	10
2.5	5	9
1.3	2.5	8
0.64	1.3	7
0.32	0.64	6
0.16	0.32	5
0.08	0.16	4
0.04	0.08	3
0.02	0.04	2
0.01	0.02	1
0.00	0.01	0

Table 2 – ISO 4406 Contamination Scale

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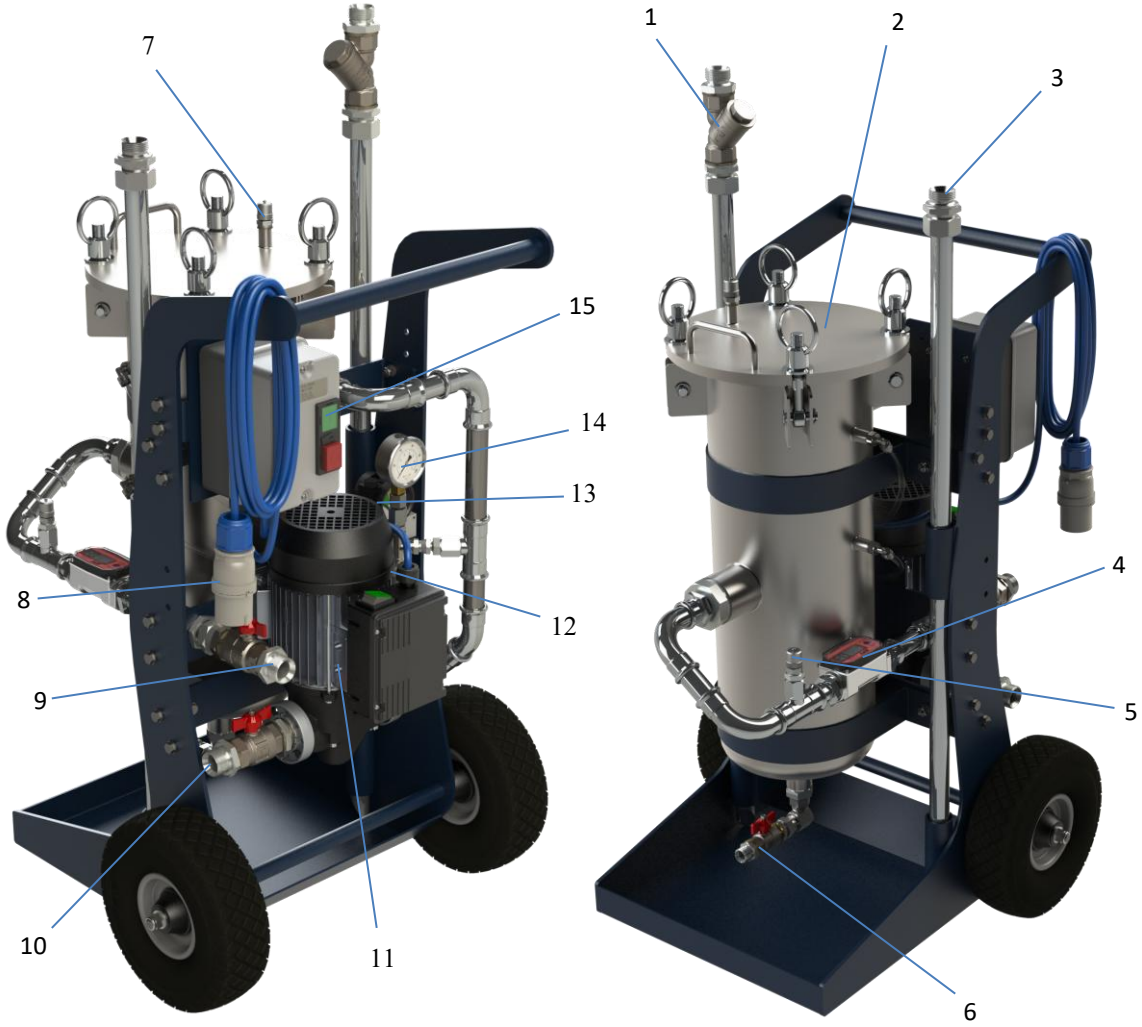
ISO 4406 Code 4µm / 6µm / 14µm	Mil Std. NAS 1638	Mil Std. 1246A	ACFTD Gravimetric Level mg/L	SAE Level
21/19/16	10			
20/18/15	9			6
19/17/14	8	300		5
18/16/13	7		1	4
17/15/12	6			3
16/14/12		200		
16/14/11	5			2
15/13/10	4		0.1	1
14/12/9	3			0
13/11/8	2			
12/10/8		100		
10/10/7	1			
12/10/6			0.01	
11/9/6				

Table 3 – Cleanliness Standards Conversion

Equivalent ISO 4406 Code (approx.)	NAS Code	Size Range in Microns (µm)				
		5-15	15-25	25-50	50-100	>100
-	00	125	22	4	1	0
-	0	250	44	8	2	0
10/12/7	1	500	89	16	3	1
13/11/8	2	1,000	178	32	6	1
14/12/9	3	2,000	356	63	11	2
15/13/10	4	4,000	712	126	22	4
16/14/11	5	8,000	1,425	253	45	8
17/15/12	6	16,000	2,850	506	90	16
18/16/13	7	32,000	5,700	1,012	190	32
19/17/14	8	64,000	11,400	2,025	360	64
20/18/15	9	128,000	22,800	4,050	720	128
21/19/16	10	256,000	45,600	8,100	1,440	256
22/20/17	11	512,000	91,200	16,200	2,880	512
23/21/18	12	1,024,000	182,400	32,400	5,760	1,020

Table 4 – ISO 4406 vs NAS 1638 Contamination

Component Identification

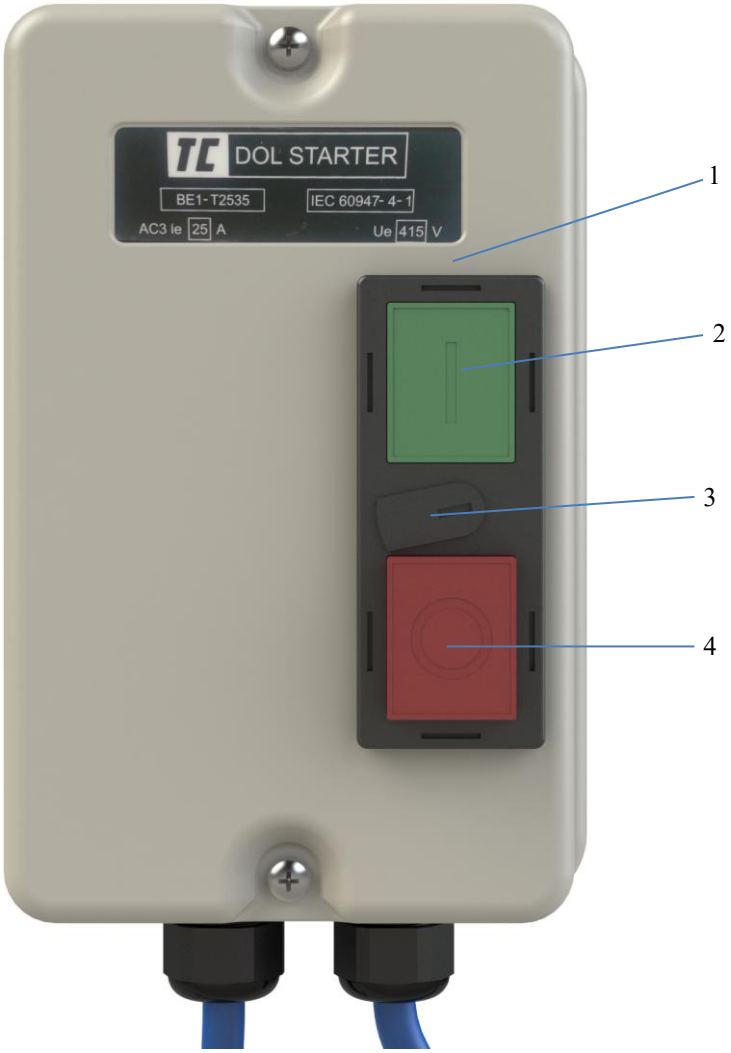


Key:

1.) Suction lance (with strainer) 1” BSPM	9.) Outlet port (1” BSP) c/w Ball Valve
2.) Size 2 Bag Filter Vessel	10.) Inlet port (1” BSP) c/w Ball Valve
3). Discharge Lance 1” BSPM	11.) 100 L/min Vane Type Pump
4.) Optional Digital Flow meter	12.) Sample point 1 (Pre-filtration)
5.) Sample point 2 (Post-filtration)	13.) Differential Pressure Gauge
6.) Filter Drain Port ½” BSP c/w Ball Valve	14.) System Pressure Gauge
7.) Filter Vessel Vent Port-Minimess Testpoint	15.) DOL starter box (Direct-On-Line)
8.) Mains plug 240 VAC c/w 3 Mtr Cable	

Starting & Stopping – DOL (Direct-On-Line)

To start the unit make sure it's plugged into a fused supply (with RCD when used outdoors) of the correct voltage rating and that the inlet and outlet hoses have been correctly attached. Before switching on the unit ensure hoses are connected to the fuel supply pipework and/or lances are securely inserted into the barrel/tank.



Key:

1.) D.O.L starter box case	3.) Off button locking tab
2.) "On" push button	4.) "Off" push button

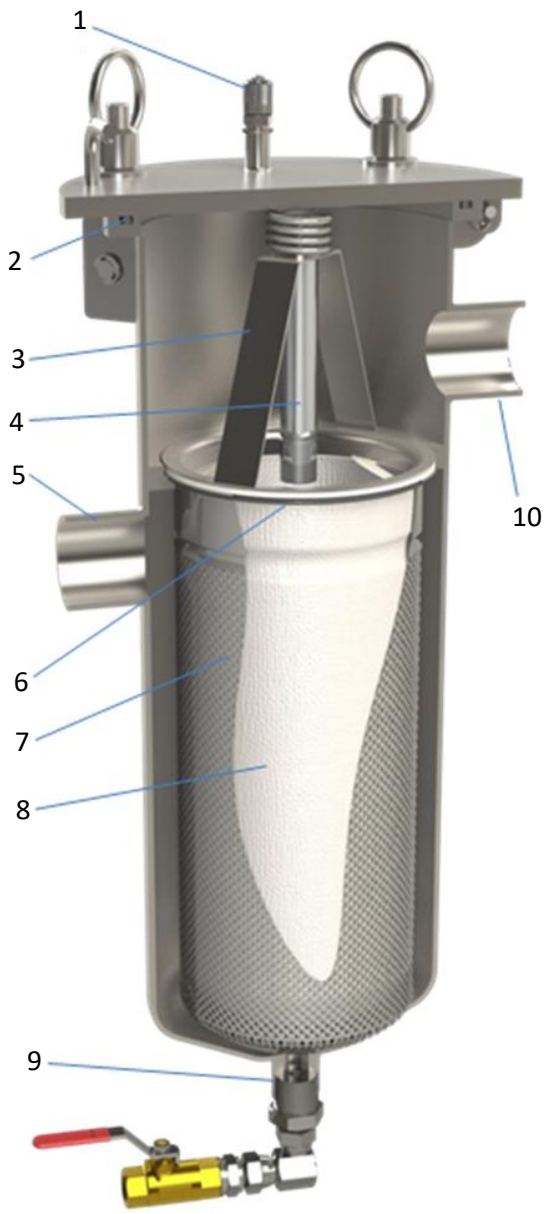
The unit is supplied with a DOL (Direct-On-Line) starter box. Once connected to the mains supply the unit can be switched on and off via the two push buttons. If for any reason the power supply cuts out, the internal contactor will unlatch to prevent accidental spillage once power is restored.

Filter Cell Housing

Changing a Filter Cell

As a guideline the following procedure can be used for changing a filter cell:

1. Ensure inlet and outlet pipework has been closed off to present siphoning
2. Relieve any excess pressure by briefly opening the drain valve or vent.
3. Loosen the 4 swing bolts and open the lid.
4. Remove the filter securing bracket (if the optional magnet is included, clean off any rust).
5. Lift out the filter cell via the strap handle. It is likely the filter basket will also come out.
6. Remove the filter cell from the basket and replace with a clean filter.
7. Refit the filter basket, making sure the basket O-ring is still in place and correctly seated.
8. Refit the filter securing bracket, making sure the spring is attached.
9. Close the lid, making sure the lid O-ring is correctly seated.
10. Gradually tighten each of the 4 swing bolts in a typical star/cross sequence to allow even seating of the lid onto the O-ring seal.



Key:

1.) Vent (1620 test point)	6.) Filter basket O-ring
2.) Lid O-ring	7.) Filter basket
3.) Filter securing bracket	8.) Filter cell
4.) Magnet (optional)	9.) Drain port
5.) Outlet port	10.) Inlet port

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Cleaning the Magnet (Optional)

An optional magnet can be installed into the filter housing bracket clamp for removal of ferromagnetic material, extending the useful life of the filter cell.



Removal of ferromagnetic material can be carried out using a suitable tool as shown above (Filtertechnik part number FT-RRT01).

The tool is to be located at the top of the magnet and downward force applied to push the material off the magnet. This waste material can then be disposed of or recycled.

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Differential Pressure Gaug

The filter cell is monitored by a visual differential pressure indicator, displaying the filters condition via a green, yellow and red traffic light system.



Colour	Pressure Range	Notes
Green	0-15 psid	Indicates a clean and healthy filter
Yellow	16-22 psid	Indicates the filter is starting to become blocked and requires more frequent monitoring
Red	23-30psid	Indicates the filter is now fully blocked and requires changing

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Purging Air from the Filter Housing

When starting the system for the first time or after a filter cell change air will be trapped within the upper section of the filter housing and requiring purging. Failure to remove all the air can result in aeration of the fuel and reduced filtration performance.



When the system is turned on the sampling / vent tube and be screwed onto the vent port, where the remaining air will be pushed out of the filter housing. The end of the tube should be inserted into a sample bottle or cloth to prevent any fluid from spraying towards the operator.

Once all the air has been removed make sure the sampling / vent tube is disconnected to prevent siphoning or spillage of fluid.

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Replacement Elements

Description	Part Number
1 µm disposable polypropylene	FT-19PP001-1GYEP
5 µm disposable polypropylene	FT-19PP005-1GYEP
10 µm disposable polypropylene	FT-19PP010-1GYEP
25 µm disposable polypropylene	FT-19PP025-1GYEP
50 µm disposable polypropylene	FT-19PP050-1GYEP
100 µm disposable polypropylene	FT-19PP100-1GYEP
200 µm disposable polypropylene	FT-19PP200-1GYEP
10 µm recleanable nylon	FT-19NM010-1GYEP
25 µm recleanable nylon	FT-19NM025-1GYEP
50 µm recleanable nylon	FT-19NM050-1GYEP
75 µm recleanable nylon	FT-19NM075-1GYEP
100 µm recleanable nylon	FT-19NM100-1GYEP
200 µm recleanable nylon	FT-19NM200-1GYEP
300 µm recleanable nylon	FT-19NM300-1GYEP
400 µm recleanable nylon	FT-19NM400-1GYEP
600 µm recleanable nylon	FT-19NM600-1GYEP
800 µm recleanable nylon	FT-19NM800-1GYEP
1 µm high efficiency disposable polypropylene	FT-19HE001-1GYEP
5 µm high efficiency disposable polypropylene	FT-19HE005-1GYEP
FiltaSorb2 high performance water removal cell	FT-FA-01-002
Filtertechnik 1 µm Absolute Filter Element	FT-CE-01-Z01

Taking a Sample

The filtration cart is fitted with Minimess test points for taking fuel samples before and after the filtration process.

Have a sample bottle ready to receive the fuel and remove the testpoint cap, attach the supplied microbore hose to the desired sample point ensuring that the hose end is securely tightened onto the test point.

The sample bottle will fill quite quickly so be ready to disconnect the microbore hose when you have sufficient fluid for analysis.









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Isolation Valves

Isolation ball valves are fitted to inlet/outlet ports. These should be closed off when the system is not in use, or when the cells are being changed out. It is also advisable to cap off the ends of the pipework to prevent contaminants from entering the system.



Digital Turbine Flow Meter (Optional)

Units can be equipped with a digital turbine flow meter for displaying batch and accumulative totals for fluid transfer operations. The flow meter will automatically turn on when fluid flow is detected and displays units in litres. Alternatively, the display can be turned on by pressing the display button for reading current stored values.



Pressing the display button switches between TTL1 (batch total) and TTL2 (cumulative total). TTL1 can be reset to zero by pressing and holding the display button for three seconds. TTL2 cannot be reset, but when it reaches the maximum reading of 9999 it will automatically reset to zero.

If not used for approximately one minute the meter will turn off to conserve battery power.

Battery Replacement

The digital flow meter is powered by two AAA alkaline batteries, which can be replaced while the meter is installed. When batteries are removed the batch and cumulative totals will reset to zero, but the factory calibration is retained.

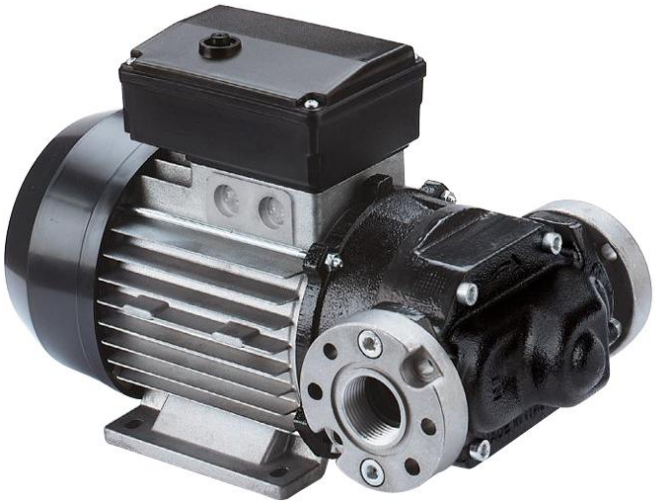
If the screen becomes dim or blank replace the batteries as follows:

1. Remove the four Philips- head screws and lift out the faceplate from the turbine body.
2. Remove the old batteries and clean off any corrosion from the terminals.
3. Fit the new batteries ensuring correct alignment.
4. Check the display turns on before reassembling.
5. Reassemble ensuring the seal is correctly seated to prevent damage from water ingress.

E120-P ump

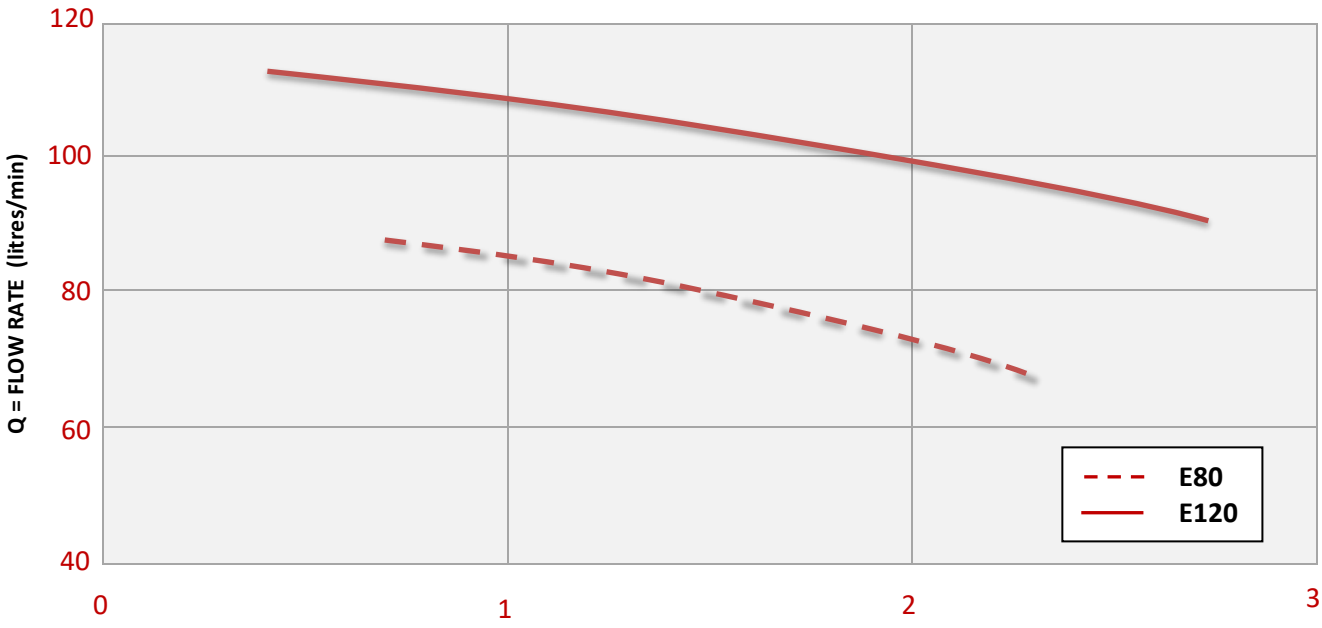
Features

- Versatility
- Sturdy Structure
- Long Lasting
- Easy to Use
- Thermal Protection



The PIUSI E80 and E120 are self-priming rotary electric vane pumps, compact and easy to install, suitable to meet all those use requirements needing a high-performance and long-lasting product. The sturdy structure along with the thermal protection and the top-quality components allow its use at low working temperatures.

Pump Curve



TYPE OF FLUID	DEISEL
TEMPERATURE	15 °C

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Hoses & Lances

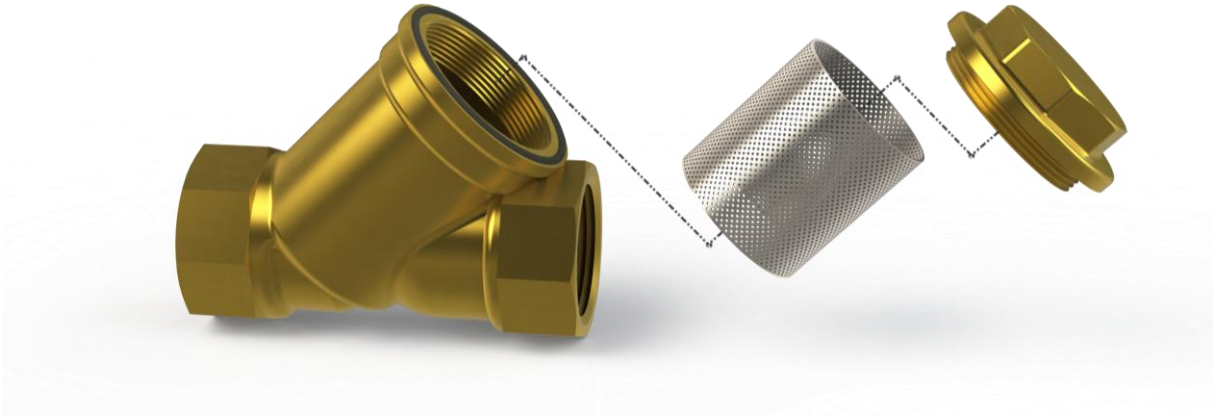
The unit is supplied with two 1" lances, a suction lance with strainer to protect the pump and a discharge lance. Each lance is 1000mm long.

When not in use it is advisable to plug the hoses and cap off the lances to prevent ingress of dust or other contaminants.

Lances should be cleaned prior to inserting in the tank/barrel being cleaned.



Suction Strainer



The suction strainer will periodically need cleaning by unscrewing the cap, removing the mesh strainer and cleaning this out with a fluid suited for the units intended purpose e.g. hydraulic oil.

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Warranty Statement

All products manufactured or distributed by Filtertechnik Ltd are subject to the following, and only the following, Limited Express Warranties, and no others:

For a period of one (1) year from and after the date of delivery of a new Filtertechnik product, Filtertechnik warrants and guarantees only to the original purchaser/user that such a product shall be free from defects of materials and workmanship in the manufacturing process. The warranty period for pumps and motors is specifically limited to ninety (90) days from the date of delivery. A product claimed to be defective must be returned to the place of purchase. Filtertechnik, at its sole option, shall replace the defective product with a comparable new product or repair the defective product. This express warranty shall be inapplicable to any product damaged or impaired by external forces or used for any purpose other than that for which it was originally sold.

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EC Declaration of Conformity

Filtertechnik
Filtration, Purification & Separation Solutions

EC DECLARATION OF CONFORMITY

Machinery Description

Machine Type	PDT-1-240
Serial Number	

Applicable Directives

Low voltage Directive 73/23/EEC (as ammended by 93/68/EEC)
Electromagnetic Compatibility Directive 2004/108/EC
Machinery Directive 98/37/EC

Declaration

We, Filtertechnik Limited, decalre that the above referenced product(s), to which the declaration relates, is in conformity with the provisions of the Directives listed above

IMPORTANT

This declaration is only valid when the machinery has been installed, operated and maintained in accordance with the applicable Installation, Operation and Maintenance Instructions and safety guidelines contained within as well as instructions supplied for equipment assembled with or intended for use with this equipment.

The technical construction file for this product is maintained at the address given below.

Mr D Whittaker, Engineering Director
Filtertechnik Limited, 1 Central Park, Lenton Lane, Nottingham, NG7 2NR
England.