



**PI 0034**  
For technical personnel only!  
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# PRODUCT INFORMATION

## ELECTRIC FUEL PUMPS

### FOR UNIVERSAL APPLICATIONS

Vehicle/application	Product	Pierburg No.
See catalogue, TecDoc CD, Motorservice App or catalog.ms-motorservice.com	Electric fuel pump	(E1F) 7.21440.51.0/.53.0/.63.0/.68.0/.78.0
		(E1S) 7.21088.62.0
		(E2T) 7.21287.53.0; 7.21538.50.0; 7.21565.70.0/.71.0
		(E3T) 7.21659.53.0/.70.0/.72.0
		(E3L) 7.00228.51.0; 7.22156.50.0/.60.0; 7.50012.50.0; 7.50051.60.0; 7.28242.01.0

Many of our customer enquiries are related to the technical data for our fuel pumps for small series or special applications. The following selection of pumps for universal use is intended as a decision-making aid for finding the suitable pump for the relevant requirements.

These pumps are a tried and tested solution for many applications:

- as a replacement for mechanical fuel pumps where the original pump is no longer available (old/young-timers)
- as a fuel pre-pump for diesel engines or petrol engines
- as a temporary solution for repairs where a special replacement is not available
- as an additional pump which is additionally switched on depending on demand (failure of the main fuel pump)
- as a refilling or supply pump in refilling systems, additional tanks or heating systems
- as an additional pump for tuning and racing applications



All content including pictures and diagrams is subject to change. For assignment and replacement, refer to the current catalogues or systems based on TecAlliance.



## MODELS

In the case of today's modern designs of electric fuel pumps, the pumping stage is seated directly on the shaft of the electric motor. The fuel passes through the fuel pump thereby simultaneously cooling and "lubricating" it.

### Advantages:

- Fewer moving parts
- Compact design
- Small outside dimensions

Depending on the way in which the fuel pump is accommodated in the vehicle, a difference is made between in-tank and in-line pumps. For the pumping stage there exist different designs. A rough differentiation is made between flow pumps and positive displacement pumps.

### FLOW PUMPS

In the case of flow pumps, the fuel is moved due to the centrifugal force of a rotor. Such pumps are capable of producing lower pressures only (0.2 to 3 bar) and are used either as the pre-stage in a two-stage pump, respectively as a pre-stage pump. The fuel passes through the flow pump without the need for flaps and valves. For this reason, during standstill of the pump, the fuel may potentially flow backwards through the flow pump. Flow pumps are not self-priming, i.e. they must always be placed below the liquid level within the fuel tank (maximum suction height 0 mm). Side channel pumps belong to the category of the flow pumps.

### POSITIVE DISPLACEMENT PUMPS

In positive displacement pumps, the fuel is pumped through sealed-off volumes. Such pumps are used in the case of higher system pressures (up to approximately 6.5 bar) that are found in conventional injection systems, for example. Except for design related leaks, the fuel cannot flow through the positive displacement pump in the reverse direction even when the pump is at standstill. Toothed ring pumps, sliding vane pumps, roller vane pumps and screw pumps belong to the category of positive displacement pumps. Positive displacement pumps are self-priming to a very limited extent, i.e. they should be mounted below the liquid level of the fuel tank (maximum suction height 500 mm).

### Please note:

The curves provided in the following are "typical" pump characteristics and serve only the purpose of providing a rough overview. The pumping characteristic of a pump must not precisely correspond to this curve. Typical pump characteristics will only be attained after a sufficient running-in time has elapsed.

### ⚠ ATTENTION:

For safety reasons, all work on the fuel system must only be done by suitably qualified personnel.

**E3TS**

01 02 03 04

**01** Electric fuel pump

**02** Motor model (pumps in mm)

1 = 38 mm

2 = 43 mm

3 = 43 mm performance boosted

**03** Main stage

**04** Pre-stage

**T**  
Toothed ring  
pumping  
stage

**F**  
Sliding vane  
pumping  
stage

**L**  
Screw  
pumping  
stage

**S**  
Side channel  
pumping  
stage

Pierburg codes for electric fuel pumps

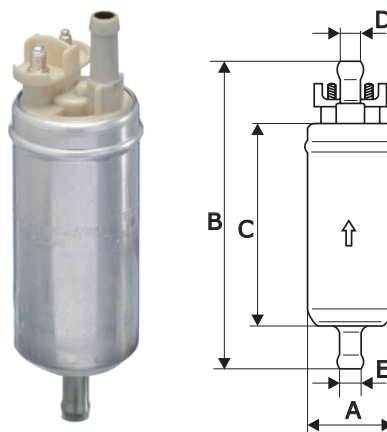
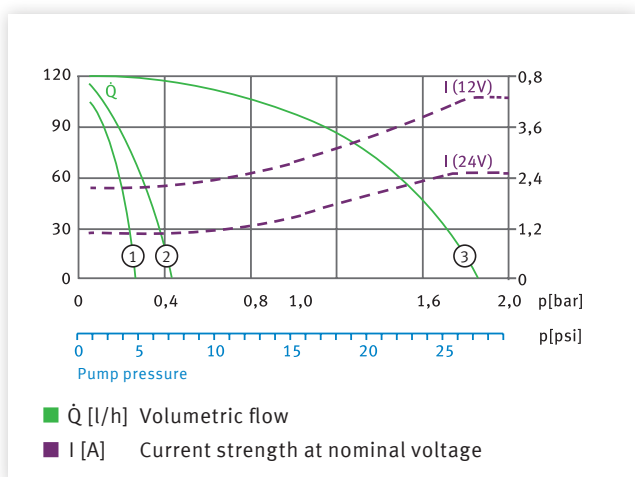


## ELECTRIC FUEL PUMPS TYPE E1F

A pump often used is the E1F. It is an inline positive-displacement pump with vane pump system and suited to system pressures of 0.1–1.0 bar. This pump is available for 12 and 24 Volt operation and is installed in the line. For 6 volt operation (e.g. for veteran cars), we recommend the Pierburg E1F no. 7.21440.53.0. In 6 Volt operation, the pressure and volumetric flow reduce to approx. half.

### ⚠ ATTENTION

Maximum suction head: 500 mm (with filled lines). When an electrical fuel pump is retrofitted, installation of a safety shut-off is mandatory.



Pierburg no.	Curve	Nominal voltage [V]	Stat. pressure at Q = 0 l/h [bar/(psi)]	Volumetric flow at [l/h]	System pressure at [bar/(psi)]	Installation and connection dimensions (see fig.) [mm]					Current consumption [A]
						Ø A	B	C	Ø D	Ø E	
7.21440.51.0	1	12	0.27–0.38 (4–5.5)	95	0.10 (1.5)	38	133.5	84.5	8	8	≤ 2.0
7.21440.53.0	2	12 <sup>*)</sup>	0.44–0.57 (6.3–8.3)	100	0.15 (2.2)	38	133.5	84.5	8	8	≤ 2.05
7.21440.63.0	2	24	0.44–0.57 (6.3–8.3)	100	0.15 (2.2)	38	134.2	84.5	8	8	≤ 1.35
7.21440.68.0	3	24	> 1.85 (> 26.8)	95	1.00 (14.5)	38	139.5	90.5	8	8	≤ 3.0
7.21440.78.0	3	12	> 1.85 (> 26.8)	95	1.00 (14.5)	38	141.5	91.0	8	12	≤ 4.3

<sup>\*)</sup> Also suitable for 6 volt operation



## ELECTRIC FUEL PUMPS TYPE E1S

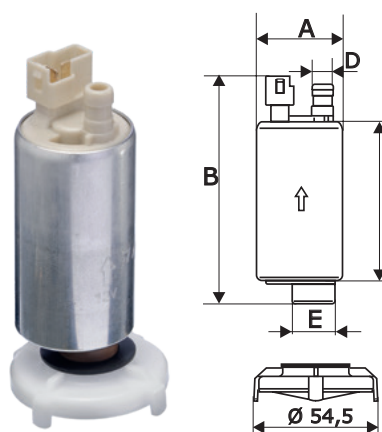
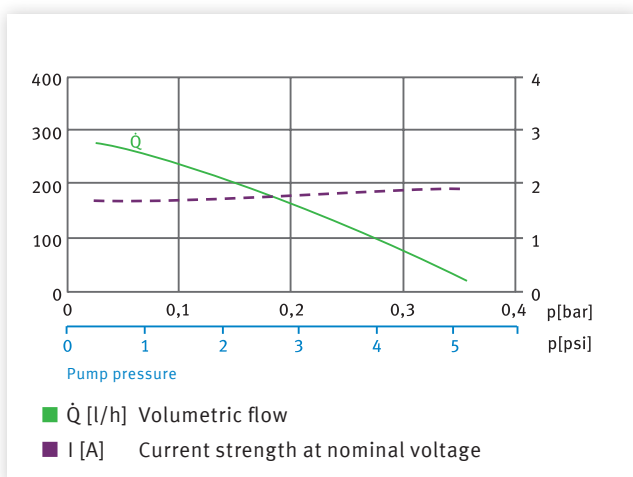
The E1S is provided for installation into a fuel tank. It is a flow pump with a side-channel pump system as a 12 Volt version. This pump is preferably used as pre-feeder pump. Pre-feeder pumps feed the flow medium to the main pump with low pressure. This prevents a vacuum forming on the suction side of the main pump which would lead to damage to the main pump due to cavitation.

### ⚠ ATTENTION

Maximum suction lift: 0 mm.

The pump must be installed in the flow medium.

Pumps of type E1S can be used as pre-feeder pump with a volumetric flow of up to approx. 220 l/h.



Pierburg no.	Nominal voltage	Stat. Pressure at $Q=0$ l/h	Volumetric flow at	System pressure at	Installation and connection dimensions (see fig.) [mm]					Current consumption	Max. suction lift
	[V]				[bar/(psi)]	[l/h]	[bar/(psi)]	$\varnothing$ A	B		
7.21088.62.0	12	0.35	75	0.24 (3.5)	38	100	75.3	8	19	3	0



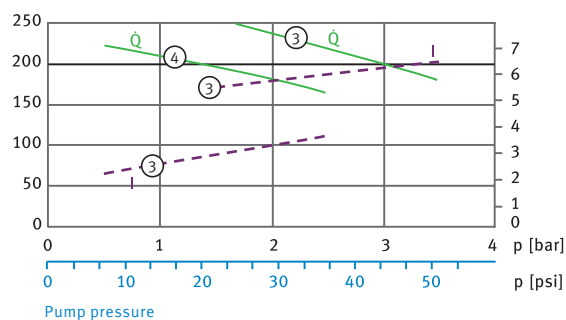
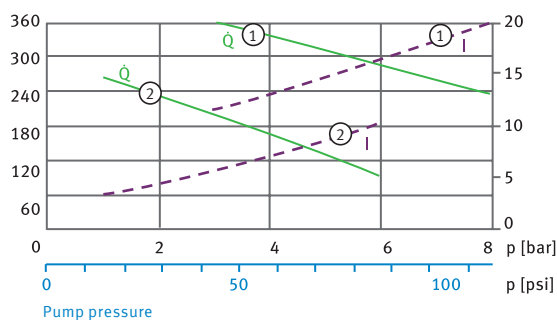
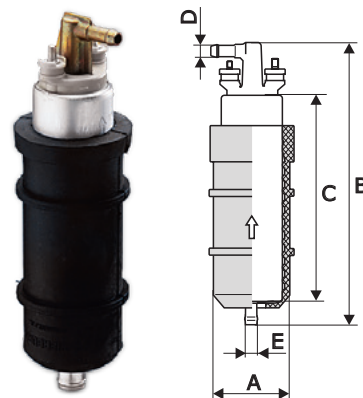
## ELECTRIC FUEL PUMPS TYPE E3L

Pumps of the type E3L are in-line pumps with screw pump unit. They are particularly powerful, low-noise and have a comparatively low current consumption even with higher pressures.



### ATTENTION

Maximum suction lift: 500 mm (with filled lines).



■  $\dot{Q}$  [l/h] Volumetric flow ■ I [A] Current strength with nominal voltage

Pierburg no.	Curve	Nominal voltage [V]	Volumetric flow at [l/h]	System pressure at [bar/(psi)]	Installation and connection dimensions (see fig.) [mm]					Current consumption [A]
					$\varnothing$ A	B	C	$\varnothing$ D	$\varnothing$ E	
7.00228.51.0	1	13.5	300-360	5 (72.5)	43.2	235	175	8	15	< 16
7.50012.50.0	1	13.5	300-360	5 (72.5)	43.2	235	175	M10x1	15	< 16
7.22156.50.0	2	13.5	150-190	...4 (...58)	43.2	214	156	8	15	< 9.4
7.22156.60.0 <sup>1)</sup>	2	13.5	150-190	...4 (...58)	52 <sup>2)</sup>	214	159 <sup>2)</sup>	8	15	< 9.4
7.50051.60.0 <sup>3)</sup>	3	12	180-270	1.0-5.0 (14.5-72.5)	43.5	199.5	156	8	8	4.8-9.5
7.28242.01.0	4	13.5	180-260	0.5 (7)	43.5	211	166	8	8	< 4.5

<sup>1)</sup> Straight screw connection <sup>2)</sup> Corresponds to 7.22156.50.0 with rubber coating <sup>3)</sup> Dimensions including rubber coating <sup>4)</sup> Approved for biodiesel EN 14214 (FAME)

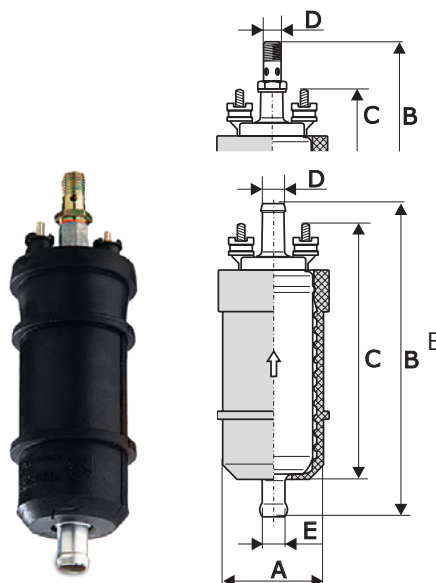
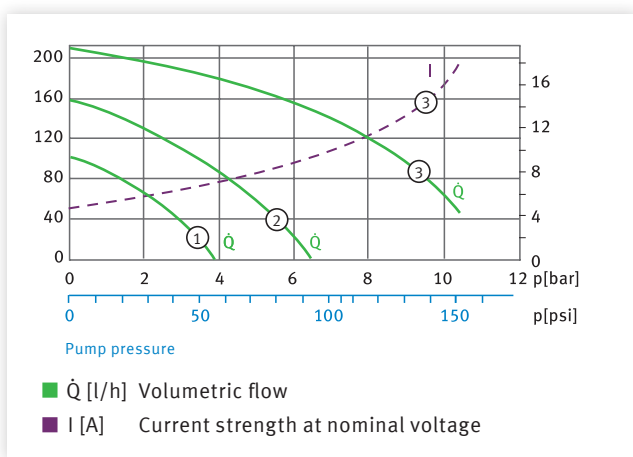


## ELECTRIC FUEL PUMPS TYPE E2T/E3T

Fuel pumps of the series E2T/E3T are naturally aspirated toothed ring pumps and designed for higher delivery rates. There is a pressure-holding valve on the outlet side, which depending on the pump design is integrated into the pump or housed in the replaceable screw connection. An integrated pressure limiting valve prevents an excessive rise in pressure and thus possible damage within the fuel system. The pressure limiting valve is a safety valve and not suited to pressure control!

### ⚠ ATTENTION

Maximum suction lift: 500 mm. The electric fuel pumps E2T/E3T have an outside diameter of 43 mm. In connection with the partly supplied rubber cover they are suitable for a replacement of fuel pumps from other manufacturers with outside diameters of 52 and 60 mm (see table, dimension "A"). The rubber cover additionally serves as noise absorber.

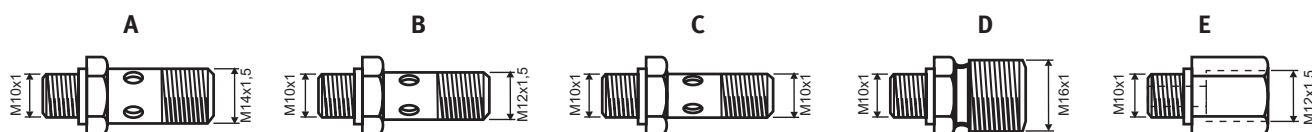


Pierburg no.	Curve	Nominal voltage [V]	Stat. pressure at Q=0 l/h [bar/(psi)]	Volumetric flow at [l/h]	System pressure at [bar/(psi)]	Installation and connection dimensions (see fig.) [mm]					Current consumption [A]
						Ø A	B	C	Ø D	Ø E	
<b>E2T</b>											
7.21538.50.0	1	12	2.7-5.7 (39-83)	80	1.2 (17)	43	160	110	8	12	< 4.5
7.21287.53.0	2	12	4.5-7.5 (68-109)	100	3.0 (43.5)	52 <sup>*)</sup>	160	115 <sup>*)</sup>	8	12	< 6
7.21565.70.0	2	12	4.5-7.5 (68-109)	100	3.0 (43.5)	52 <sup>*)</sup>	190	115 <sup>*)</sup>	M10x1, A, B	12	< 6
7.21565.71.0	2	12	4.5-7.5 (68-109)	100	3.0 (43.5)	52 <sup>*)</sup>	190	115 <sup>*)</sup>	M10x1, C, B	15	< 6
<b>E3T</b>											
7.21659.53.0	3	12	8.0-12.0 (116-174)	110	6.5 (94)	52 <sup>*)</sup>	178.5	129 <sup>*)</sup>	M10x1, B	15	< 12
7.21659.70.0	3	12	8.0-12.0 (116-174)	110	6.5 (94)	60 <sup>*)</sup>	178.5	129 <sup>*)</sup>	M10x1, D, E	12	< 12
7.21659.72.0	3	12	8.0-12.0 (116-174)	110	6.5 (94)	60 <sup>*)</sup>	178.5	129 <sup>*)</sup>	M10x1, E	15	< 12

### SCREW CONNECTIONS

Depending on the version, the fuel pumps have a connection with inner thread M10x1 on the thrust side. These fuel pumps are

supplied with one or more screw connections or are already pre-mounted (see table dimension "D" and breakdown below).



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**SUMMARY FOR A QUICK OVERVIEW**

Pierburg no.	Model	Nominal voltage	Volumetric flow at	System pressure at	Current consumption	Comment
		[V]	[l/h]	[bar/(psi)]	[A]	
7.21440.51.0	E1F	12	95	0.10 (1.5)	≤ 2.0	
7.21440.53.0	E1F	12	100	0.15 (2.2)	≤ 2.05	Also suitable for 6 Volt operation
7.21440.63.0	E1F	24	100	0.15 (2.2)	≤ 1.35	
7.21440.68.0	E1F	24	95	1.00 (14.5)	≤ 3.0	
7.21440.78.0	E1F	12	95	1.00 (14.5)	≤ 4.3	
7.21088.62.0	E1S	12	75	0.24 (3.5)	3	In-tank pump
7.21538.50.0	E2T	12	80	1.2 (17)	< 4.5	Including rubber coating
7.21287.53.0	E2T	12	100	3.0 (43.5)	< 6	
7.21565.70.0	E2T	12	100	3.0 (43.5)	< 6	Including rubber coating
7.21565.71.0	E2T	12	100	3.0 (43.5)	< 6	Including rubber coating
7.21659.53.0	E3T	12	110	6.5 (94)	< 12	Including rubber coating
7.21659.70.0	E3T	12	110	6.5 (94)	< 12	Including rubber coating
7.21659.72.0	E3T	12	110	6.5 (94)	< 12	Including rubber coating
7.00228.51.0	E3L	13.5	300-360	5 (72.5)	< 16	
7.50012.50.0	E3L	13.5	300-360	5 (72.5)	< 16	
7.22156.50.0	E3L	13.5	150-190	...4 (...58)	< 9.4	
7.22156.60.0	E3L	13.5	150-190	...4 (...58)	< 9.4	Including rubber coating
7.50051.60.0	E3L	12	205-275	1.8 (26)	2.8-6.8	
7.28242.01.0	E3L	13.5	180-260	0.5 (7)	< 4.5	