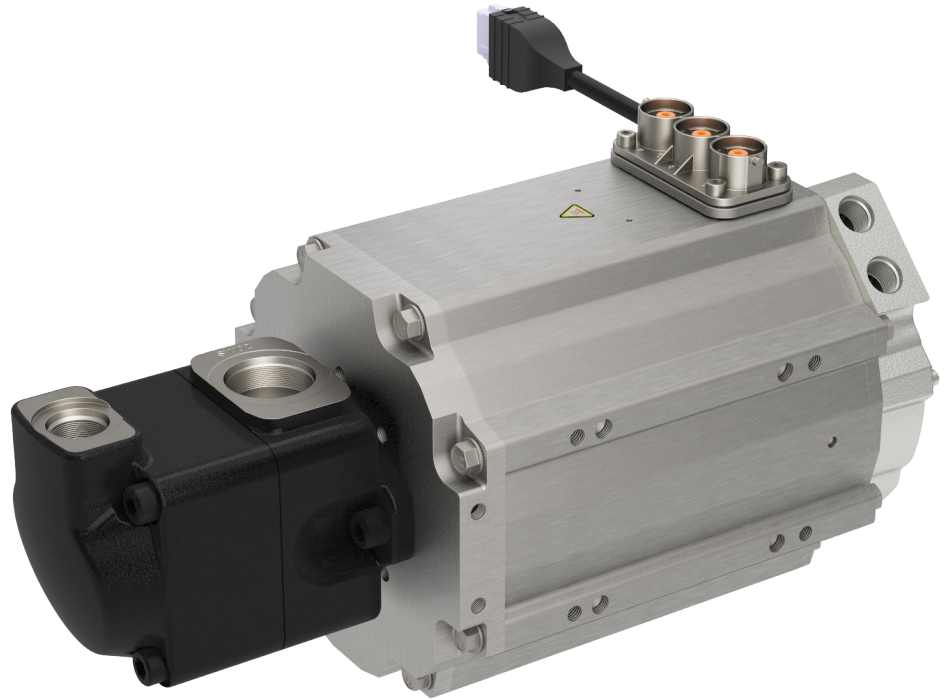




MFP
AUTOMATION
ENGINEERING



Configured ePumps

Electro-Hydraulic Pumps (EHPs) for
Construction, Truck, Mining, Material Handling,
Agriculture and Forestry Applications



ENGINEERING YOUR SUCCESS.

WARNING - USER RESPONSIBILITY

FAILURE OR IMPROPER SELECTION OR IMPROPER USE OF THE PRODUCTS AND/OR SYSTEMS DESCRIBED HEREIN OR RELATED ITEMS CAN CAUSE DEATH, PERSONAL INJURY AND PROPERTY DAMAGE.

- This document and other information from Parker Hannifin Corporation, its subsidiaries and authorized distributors provide product and/or system options for further investigation by users having technical expertise.
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- The products described herein, including without limitation, product features, specifications, designs, availability and pricing, are subject to change by Parker Hannifin Corporation and its subsidiaries at any time without notice.



WARNING

This product can expose you to chemicals including nickel and nickel compounds, which are known to the State of California to cause cancer. For more information go to www.p65warnings.ca.gov

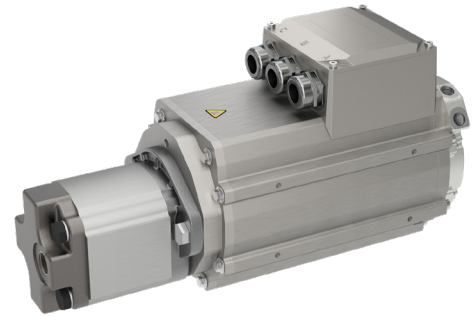
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Configured ePump

Parker's global expertise in hydraulic, electric motor, and inverter technologies is combined into the Configured ePump, creating an optimized and customizable system for hybrid electric and all fully electric mobile applications.

Parker's Configured ePumps are an integral product offering of our Smart Electrification solutions, which maximize system efficiency, integrate electric and hydraulics and connect machinery for a cleaner tomorrow. Parker's Configured ePumps consist of an electric motor, directly coupled to a hydraulic pump (EHP Series) and controlled by a high performance mobile hardened inverter (GVI Series). Our Configured ePumps provide the lowest possible installed cost and highest efficiency, while still maintaining superior reliability in the most demanding applications.



In addition to our wide range of Configured ePumps, our Smart Electrification portfolio also includes an Electric Power Take-Off (ePTO), consisting of our GVI Series Inverter and GVM Series electric motor.

Motor type	GVM Permanent Magnet AC synchronous motor (PMAC)
Hydraulic Pump Type	Vane, Axial Piston, Bent Axis, Gear Pumps
Rated voltage	24 to 800 VDC
Hydraulic power	up to 260 kW
Flow range	up to 350 l/min
Pressure range	up to 450 bar
Protection (motor + pump)	IP6K9K as standard with GVM servomotors

Markets

- Construction
- Mining
- Material Handling
- Trucks
- Bus
- Agriculture and Forestry

Applications

- **Electro-Hydraulic systems and circuits**
 - Street sweepers
 - Construction
 - Material handling
 - Refuse trucks
 - Agricultural equipment
- **Electric power steering**
 - Buses and coaches
 - Vocational vehicles

Benefits

- Highly reliable components (inverters, motors, and pumps that are perfectly matched without the need for extra adaptors) providing greater assurance
- A wide range of motor/pump combinations adaptive to every battery pack providing greater flexibility
- Reduced energy consumption and emissions through flow on demand
- Longer runtime due to higher, overall efficiency
- Reduced noise pollution
- Simplified sourcing with a multi-technology Parker solution

		GVM motor code					Pump code	Parker code
Order example	EHP	210	H	BT	R	G	T7ASE11	00000

Series name

EHP Electro Hydraulic Pump

Lubrication

G Greased

Pump code

Align pump code and Parker defined fields with fields on the left

Parker defined unique code

00000

GVM motor code

Frame size (outer width) of GVM motor in millimeters

142

210

310

Magnetic stack length

		GVM142	GVM210	GVM310
B	050	✓	✓	
C	075	✓		
D	100	✓	✓	
E	125			✓
F	150		✓	
H	200		✓	✓
K	250			✓
M	300		✓	
S	400		✓	

Winding letters Related to voltage & current requirements (consult Parker)

xx

Feedback

R Resolver
S SinCos encoder

Standard motor features:

- Liquid cooled GVM

- Thermal switch:

KTY + PTC 142 frame

2 x PT1000 210 frame

2 x PT1000 310 frame

- Power connection:

Terminal box (142 frame)

Amphenol Powerlok connector (210 & 310 frames)

- Sensor connector:

Souriau connector (142 frame)

Pigtail 12 pins (210 & 310 frames)

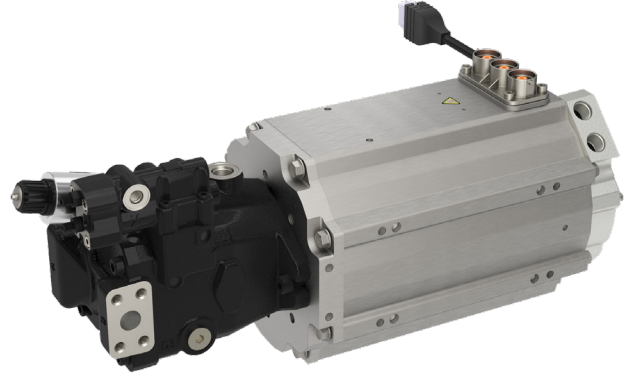
Variable Displacement Pump

Variable displacement piston pumps provide the ability to optimise performance based on specific requirements, including, torque control, pressure, for allowing a smaller motor size.

Axial Piston ePump

The P1M Series Mobile Open Circuit Medium Pressure Axial Piston Pumps deliver higher speeds and efficiency that increases machine productivity, reduces costs, and extends pump life in a robust, compact envelope.

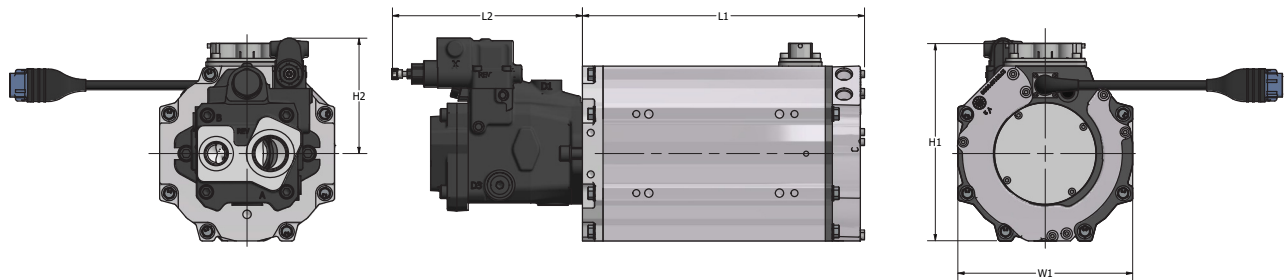
- Patented inlet design reduces erosion, cavitation, & pressure ripples
- Compact package allows a fit into tighter spaces
- Best-in-class power density due to higher pressure ratings, speeds, and efficiency
- Extensive/modular control options enable complete circuit customization
- Nine piston design reduces pressure ripples
- Standard dual shaft seals for wet PTO mounting



Product series⁽¹⁾	P1M
Displacement range (cc/rev)	28 to 105
Max operating pressure¹⁾ (bar)	250 to 280
Max operating speed⁽²⁾ (RPM)	2700 to 3300
Min operating speed⁽²⁾ (RPM)	100

⁽¹⁾ Other product Series available P2/P3, VP1 Series, please contact us

⁽²⁾ Size & pressure dependent



Motor size	210-100	210-150	210-200	210-300	210-400	310-125	310-200	310-250
L1 [mm]	285	335	385	548	585	320	402	452
W1 [mm]	210	210	210	210	210	310	310	310
H1 [mm]	261 max.	261 max.	261 max.	261 max.	261 max.	381 max.	381 max.	381 max.
Weight [kg]	38	48	58.5	79	99	97	132	157

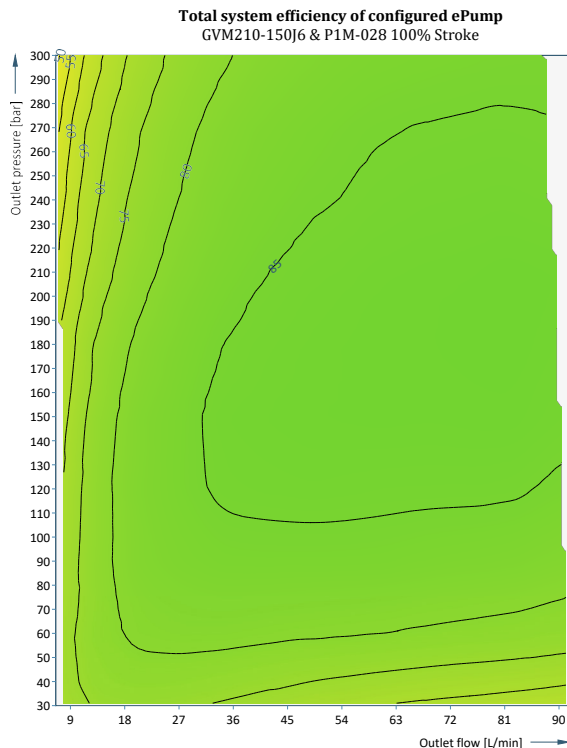
Default orientation as shown

Pump size	28	45	54	65	73	85	105
L2 [mm] - L Control	212	222	222	244	244	256	268
L2 [mm] - D Control	237	245	245	256	256	266	282
H2 [mm]	133	139	139	143	143	151	158
Weight [kg]	16.8	20.5	20.6	28.1	28.1	30.1	38.0

Efficiency Map Examples

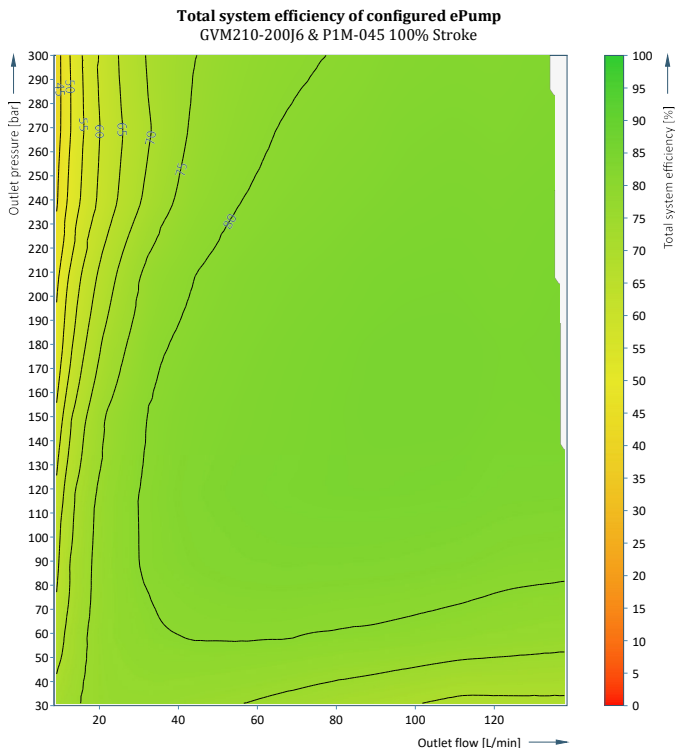
Configured ePump system efficiency

Hydraulic efficiency at 32 cSt inlet viscosity



Configured ePump system efficiency

Hydraulic efficiency at 32 cSt inlet viscosity



		GVM motor code					Pump code	Parker code
Order example	EHP	210	H	BT	R	G	PM045D11S	00000

Pump code	1	2	3	4	5	6
	PM	045	L	1	1	S

Pump series	
PM	P1M
Displacement in cc	
028, 045, 054, 065, 073, 085 or 105	
Control options - Control Pad	
L	Load sense
D	EDC
B	Load sense + EDC
Additional Control Information	
1	12V min default no sensor
2	24V min default no sensor
3	12V max default no sensor
4	24V max default no sensor
5	12V min default displ sensor
6	24V min default displ sensor
7	12V max default displ sensor
8	24V max default displ sensor
Port standard	
1	SAE threaded
2	SAE flanged
3	Metric threaded
4	Metric flanged

6	Port block
S	Side Ports, no thru drive
E	End Ports, no thru drive
A	SAE-A 2 bolt Thru Drive, 9T coupling
H	SAE-A 2 bolt Thru Drive, 11T coupling
B	SAE-B 2 bolt Thru Drive, 13T coupling
Q	SAE-B 2 bolt Thru Drive, 15T coupling
C	SAE-C 2/4 bolt Thru Drive, 14T coupling
N	SAE-C 2/4 bolt Thru Drive, 17T coupling
T	Thru Drive with Cover, no coupling

Standard seals are FKM
Pump is painted as standard

Fixed Displacement Pump

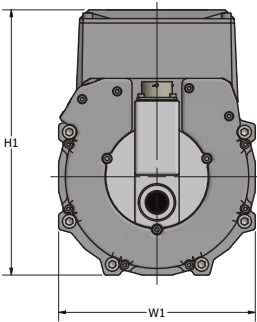
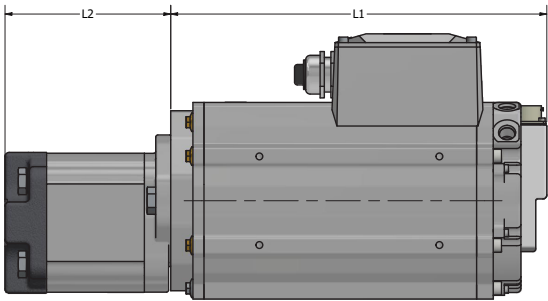
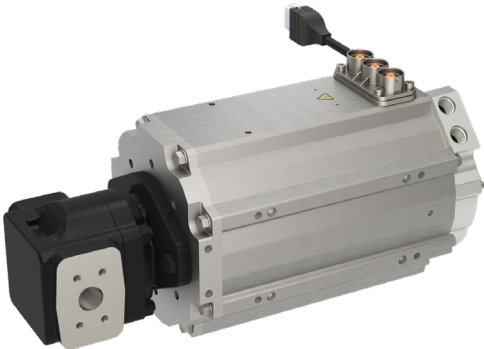
Fixed displacement pumps with a variable speed motor offer the lowest cost option for the required flow. Parker’s fixed displacement range offers a wide variety of specifications and provides the highest efficiency with our bent axis pump, the lowest noise level with our vane pump, and the cost-effectiveness of our gear technology.

External Gear ePump

Benefits

- Good efficiency
- Lowest cost

Product series	PGP
Displacement range (cc/rev)	0.8 to 80
Max operating pressure (bar)	170 to 300
Max operating speed (RPM)	2300 to 4000
Min operating speed (RPM)	500



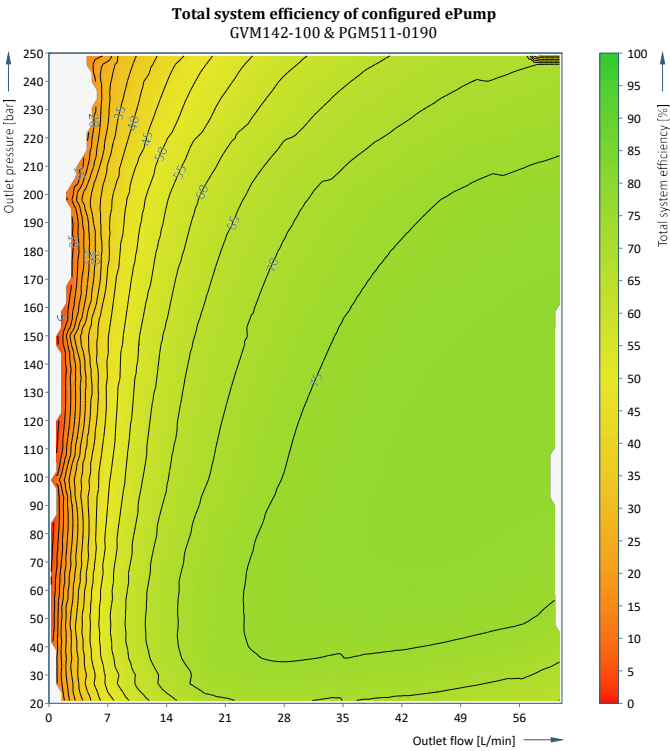
Motor size	142-050	142-075	142-100	210-050	210-100	210-150
L1 [mm]	225	250	275	235	285	335
W1 [mm]	142	142	142	210	210	210
H1 [mm]	192 max.	192 max.	192 max.	261 max.	261 max.	261 max.
Weight [kg]	16	18.5	20.5	27.5	38	48

Default orientation as shown

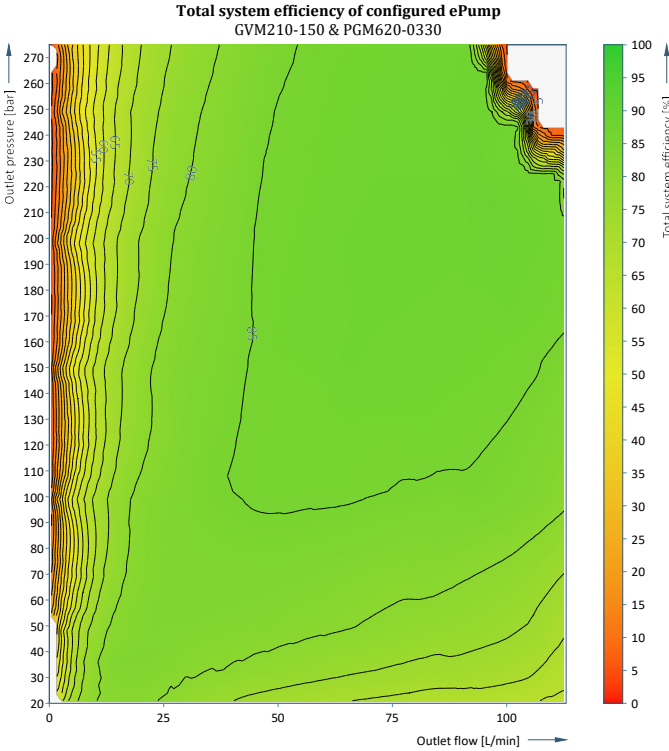
Pump series	511				517				620			
Displ. [cm3/rev]	8	11	19	23	16	23	28	38	19	23	29	37
L2 [mm]	53.3	58	70.6	76.9	70.3	77.4	82.4	92.5	123.5	127.9	134.5	143.3
Weight [kg]	3.5	3.6	3.9	4.1	8	8.3	8.5	8.9	12.1	12.2	12.6	12.9

Efficiency Map Examples

Configured ePump system efficiency
Hydraulic efficiency at 32 cSt inlet viscosity



Configured ePump system efficiency
Hydraulic efficiency at 32 cSt inlet viscosity



		GVM motor code					Pump code	Parker code
Order example	EHP	142	D	ZQ	R	G	PGP62023	00000

Pump code	1	2	3
Pump code	PGP	620	23

1	Pump type	
	PGP	PGP external gear design
2	Pump series	
	620	Cast iron Painted
	517	Aluminum Unpainted
	511	Aluminum Unpainted
3	Displacement in cc	
	19, 23, 29 or 37	for 620 Pump Series
	16, 23, 28 or 38	for 517 Pump Series
	08, 11, 19 or 23	for 511 Pump Series

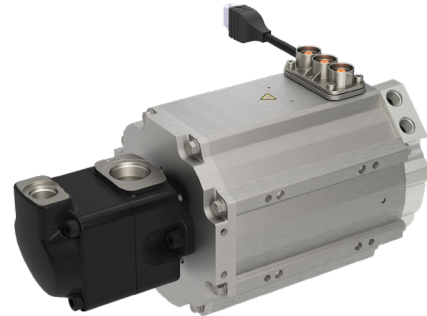
Standard porting orientation is side ports
Standard port type is SAE
Standard seals are FKM

Vane ePump

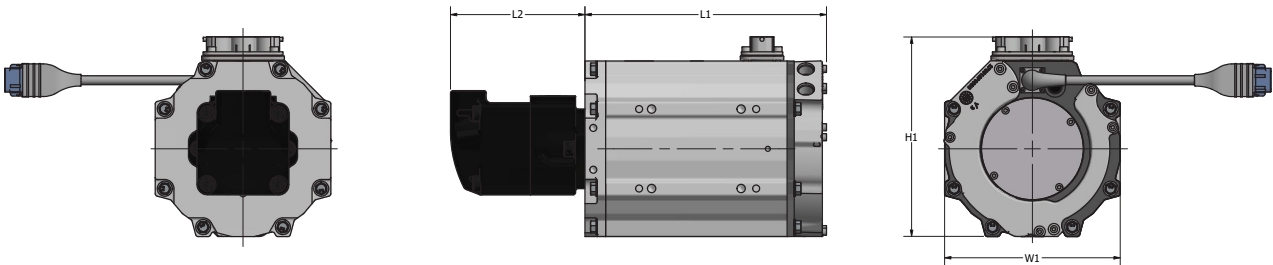
Parker vane pumps are especially suited to variable speed applications. They enable very quick changes in pressure at a very high flow rate reproducibility and at a low noise level. It is particularly modification and service friendly. The wide range of designs (displacement, connections, etc.) offers the best preconditions for individual solutions tailored to a customer's requirements.

Benefits

- High efficiency (can even be used at low speeds)
- High pressure capabilities up to 300 bar, in a small size envelope, reducing installation costs and delivering an extended service life
- Wide speed range (up to 3000 min⁻¹)
- Specially designed to be quiet in operation reducing overall noise levels from the vehicle
- Very long service life with constant performances
- Very low inertia (dynamic response to fit the application demand)



Product series	T7
Displacement range (cc/rev)	17 to 137
Max operating pressure (bar)	300 to 320
Max operating speed (RPM)	3000
Min operating speed (RPM)	150 to 300



Motor size	142-050	142-075	142-100	210-050	210-100	210-150	210-200	210-300	210-400	310-125	310-200	310-250
L1 [mm]	225	250	275	235	285	335	385	548	585	320	402	452
W1 [mm]	142	142	142	210	210	210	210	210	210	310	310	310
H1 [mm]	192 max.	192 max.	192 max.	261 max.	261 max.	261 max.	261 max.	261 max.	261 max.	381 max.	381 max.	381 max.
Weight [kg]	16	18.5	20.5	27.5	38	48	58.5	79	99	97	132	157

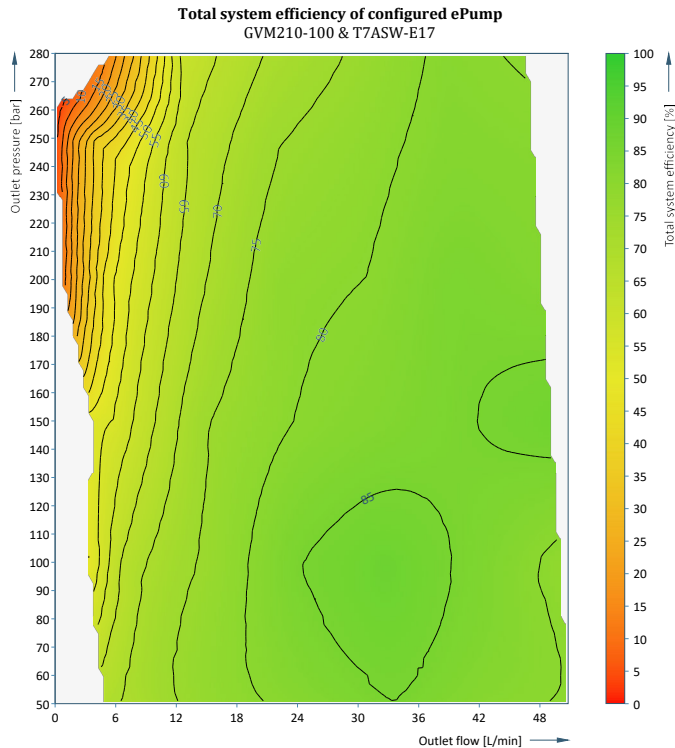
Code	T7A	T7B	T7D
Displ. [cc/rev]	17-25	28-50	66-137
L2 [mm]	138.5	168.5	184.9
Weight [kg]	9.5	23	26

Default orientation as shown

Efficiency Map Examples

Configured ePump system efficiency

Hydraulic efficiency at 32 cSt inlet viscosity



		GVM motor code				Pump code		Parker only
Order example	EHP	142	D	ZQ	R	G	TB15B14	00000

	1	2	3	4	5	6	7
Pump code	T	B	15	B	14	00	00

1	Pump series
T	Vane pump
2	Cartridge size
A	
B	
D	
3	Displacement in cc
17, 20, 22, 25	for A cartridge
28, 35, 41, 50	for B cartridge
66, 90, 113, 137	for D cartridge
4	Cartridge size
Blank OMIT	
A	
B	
D	
5	Displacement in cc
Blank OMIT	
17, 20, 22, 25	for A cartridge
28, 35, 41, 50	for B cartridge
66, 90, 113, 137	for D cartridge

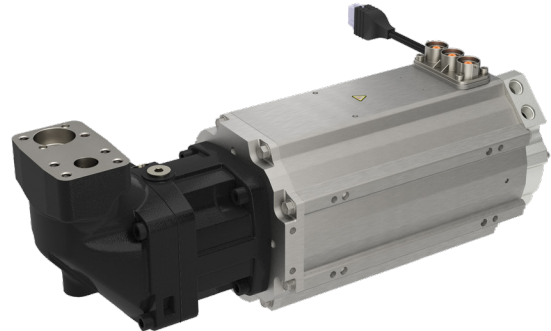
Standard porting orientation is suction and pressure on the the same side (00 option in T7 catalog)
Standard port type is SAE
Standard seals are FKM
Pump is painted as standard

Bent Axis Piston ePump

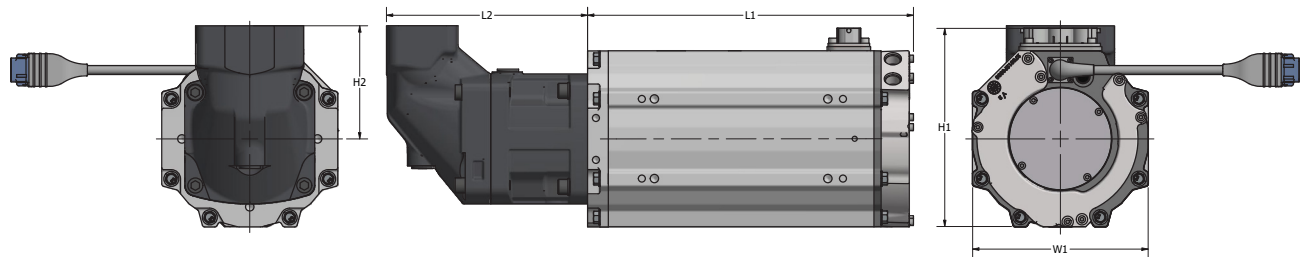
The high efficient Parker bent axis design pumps, with unique spherical piston concept gives thermal shock resistance. The well proven gear synchronization and double tapered bearing concept gives a very robust and reliable pump in demanding applications, applicable for both open and closed loop systems. Combined with our well proven track record of durable pumps, we have an outstanding uptime.

Benefits

- High overall efficiency
- Wide temperature range
- High pressure rating
- High speed capability
- Great durability
- High power to weight ratio
- Low speed capability
- High starting torque



Product series	F1, F10, F11, & F12
Displacement range (cc/rev)	10 to 90
Max Operating pressure (bar)	350 to 500
Max operating speed (RPM)	1500 to 5000
Min Operating speed (RPM)	50



Motor size	142-050	142-075	142-100	210-050	210-100	210-150	210-200	210-300	210-400	310-125	310-200	310-250
L1 [mm]	225	250	275	235	285	335	385	548	585	320	402	452
W1 [mm]	142	142	142	210	210	210	210	210	210	310	310	310
H1 [mm]	192 max.	192 max.	192 max.	261 max.	261 max.	261 max.	261 max.	261 max.	261 max.	381 max.	381 max.	381 max.
Weight [kg]	16	18.5	20.5	27.5	38	48	58.5	79	99	97	132	157

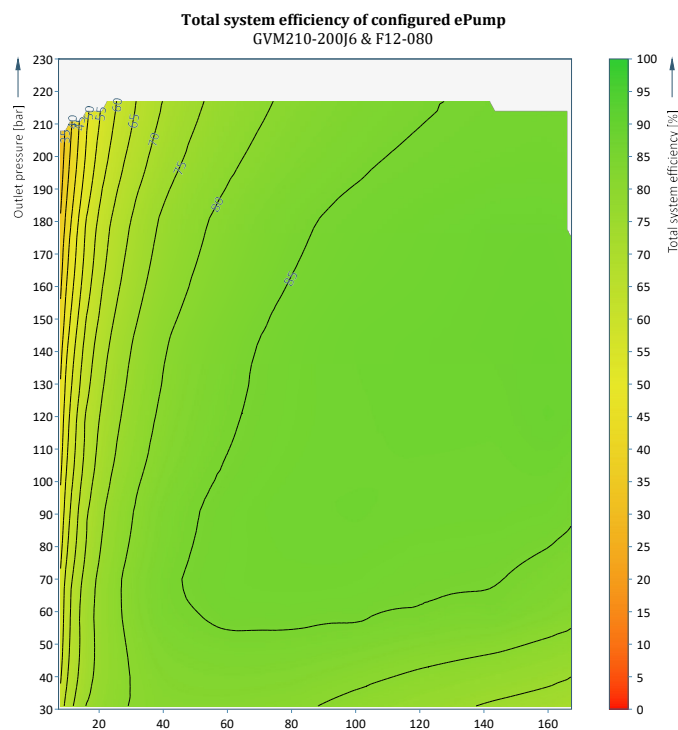
Code	F1	F10			F11				F12		
Displ. [cc/rev]	25, 41, 51 & 61	30 & 37	56	80	10	12	14	19	40	60	80 & 90
L2 [mm]	206	189.5	197	214	156	158	158	181	197	214	240
H2	130	100	110	125	79	102	102	88	110	125	135
Weight [kg]	18.7	11.5	15.7	18.6	4.7	7.5	7.5	11.0	15.7	18.6	25.7

Default orientation as show

Efficiency Map Examples

Configured ePump system efficiency

Hydraulic efficiency at 32 cSt inlet viscosity



		GVM motor code					Pump code	Parker code
Order example	EHP	142	D	ZQ	R	G	F12080HA	00000

	1	2	3	4	5
Pump code	F	12	80	H	A

1 Pump technology

F Bent axis pump

2 Pump series

1	<350 bar Truck pump	Unpainted
10	<350 bar Medium duty	Painted
11	<420 bar Small displacement	Painted
12	<500 bar Heavy Duty	Painted

3 Displacement in cc

10, 12, 14, 19	for F11
25, 41, 51, 61	for F1
30, 37, 56, 80	for F10
40, 60, 80, 90	for F12

4 Main ports

B	BSP threads	for F1, F11
H	SPS* Optimized	for F12-60, 80 & 90
S	SAE 6000 psi flange	for F10, F12
U	SAE UN threads	for F1, F11

Standard seals are FKM

5 Option

Blank OMIT	No option	Only for F10, F11 & F12-40
A	Suction fitting Straight	for F1 & F12-60H, 80H & 90H
B	Suction fitting 45°	for F1 & F12-60H, 80H & 90H
S	Suction fitting 90°	for F1 & F12-60H, 80H & 90H
D	Suction fitting 145°	for F1 & F12-60H, 80H & 90H

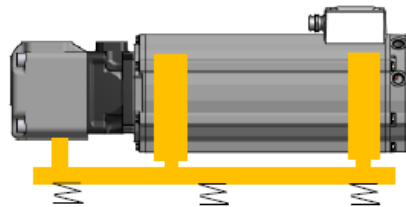
*Self priming speed

Mounting Instructions

EHP mounting environment

Ideally mount EHP:

- In a location away from, or shielded from other vehicle heat sources such as exhaust, or catalytic converters etc.
- In a location that will benefit from air flow while the vehicle is in motion
- In location that is protected from flying rocks, debris, road salt, or other contaminants that could damage cabling and connections



EHP mounting

Electro Hydraulic Pumps (EHP) are designed for horizontal mounting, and must be properly supported. For alternative mounting positions, please contact Parker.

It is better to place the EHP on a flat surface that will be able to support the GVM motor and the pump. The maximum overhang mass supported by the GVM depends on the weight and centre of gravity of the pump as well as the shock and vibration level it will be submitted to. To reduce the noise level, this flat surface can be insulated from the vehicle chassis using damping material. For more information on how to reduce vibration and noise, please visit <https://discover.parker.com/noiseandvibration>.

The EHP will be factory assembled by Parker, including greasing of the pump to motor spline. Re-greasing intervals depend on the application, please contact Parker.

Global Vehicle Inverter (GVI)

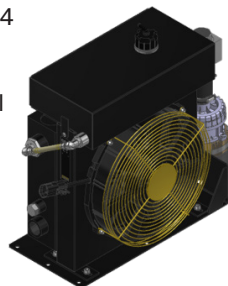
With functional safety at its very core, the second generation GVI mobile inverter provides a single-family solution for both traction and work function applications, on and off-road. All three sizes are rated up to IP6K9K and are designed for ISO26262 and EN13849 functional safety standards. Plug and socket connections on the front face simplify installation, and the comprehensive configuration software tool combined with both CAN open and J1939-76 support give system design flexibility.



	Low voltage	High voltage
Nominal voltage	24 / 48 / 80 / 96 Vdc	650 Vdc
Peak current	700 Arms	500 Arms
Peak power	68 kVA	300 kVA
Safety	-	Motor torque off and HVIL
Protection	IP65	IP6K9K
Control type	Speed or torque control	
Feedback	Sin/Cos encoder	Resolver
Communication	CAN J1939, CAN Open, Parker IQAN compatible	
Cooling	Cold plate	WEG liquid cooled
Conformance	IEC60068, EN61000-4, EN1175-1, IEC60529, EN55022	ISO20653:2006, ISO16750-4, ISO16750-3 EN60068-2, CISPR25 Ed.4 Class 3, ISO11452-4, ISO11452-8, ISO7637-2

Thermal Management Cooling

The QDC cooler range, whether 24 VDC or 600 VDC ties in perfectly with Parker inverters and motors ensuring greatest efficiency for all electrified applications.



Controllers & Softwares

IQAN by Parker offers a complete range of control products from the most basic valve driver application to a complete control system.



Electrification Testing Capabilities

Parker's electrification testing has been a key focus with an investment in a new and dedicated electrical load test rigs. Our electrification testing includes two areas of focus, traction and work functions:

World Class Traction Dyno Testing Capabilities

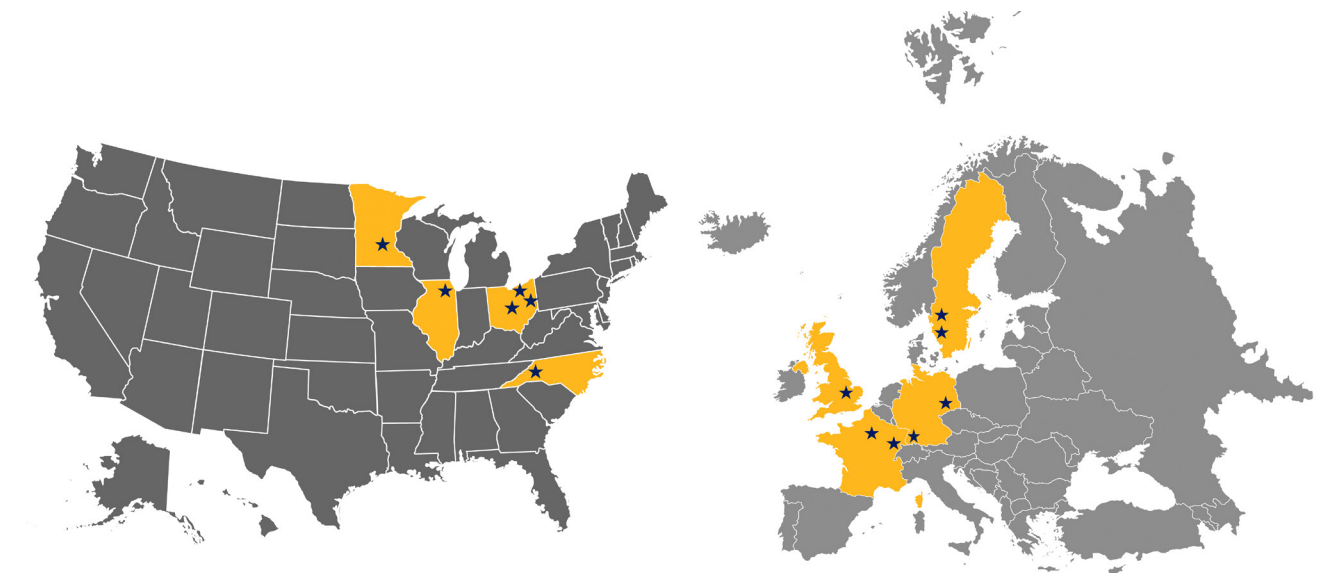
- Performance
- Endurance
- Efficiency Improvement
- Drive Cycle Simulation
- Customer Validation Testing System

Electro-Hydraulic Work Function Testing Capabilities

- Performance
- Endurance
- Efficiency
- Application Simulation
- Life Improvement Validation

Global Testing Capabilities

Parker offers global testing capabilities at a variety of production sites and Global Mobile Systems' field testing locations.



Thirteen worldwide testing centers with six located in the US and seven throughout Europe.

Notes

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.



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