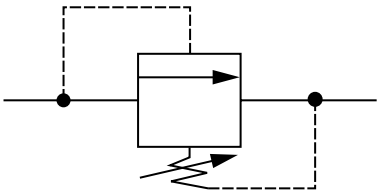
Pressure relief valve / adjustable internal vent

Introduction:

Parker`s valve program was developed in response to requests from OEM customers to reduce the number and total cost of components on their machines. We addressed this challenge by integrating the valves required for machine functions into our hydraulic pumps and motors.

This integration has reduced the number of purchased components, eliminated many of the hydraulic hoses and associated fittings (and potential leak points), and reduced assembly labor cost on the production line.

PGP 502 PGP 505 PGP 511			**PGP 517 PGP 620 PGP 625**	
CODE	**Pressure bar**		**CODE**	**Pressure bar**
RDAA	10		RDPA	10
RDAB	20		RDPB	20
RDAC	30		RDPC	30
RDAD	40		RDPD	40
RDAE	50		RDPE	50
RDAF	60		RDPF	60
RDAG	70		RDPG	70
RDAH	80		RDPH	80
RDAJ	90		RDPJ	90
RDAK	100		RDPK	100
RDAL	110		RDPL	110
RDAM	120		RDPM	120
RDAN	130		RDPN	130
RDAP	140		RDPP	140
RDAQ	150		RDPQ	150
RDAR	160		RDPR	160
RDAS	170		RDPS	170
RDAT	180		RDPT	180
RDAU	190		RDPU	190
RDAV	200		RDPV	200
RDAW	210		RDPW	210
RDAX	220		RDPX	220
RDAY	230		RDPY	230
RDAZ	240		RDPZ	240

Priority Flow Divider

1VP- / CVP100- □ □ □ □ □ □ □

Port Configuration | Port Orientation | Function | Priority Port | Excess Port | Priority Flow | R/V Setting

Code	Port Configuration
A	End Priority, End Excess
B	Side Priority, Side Excess
C	End Priority, Side Excess
D	Side Priority, End Excess
E	Double Side Ported

Code	Port Orientation
A	Priority Port on Pump Inlet Side
B	Priority Port on Pump Outlet Side

Code	Function
A	Priority Flow Divider
B	PFD with Full Flow R/V
C	PFD with Pilot R/V

Code	Priority Port
J1	3/4-16UNF
J8	9/16-18UNF
T1	3/8 BSP

other on request

Code	Excess Port
J2	7/8-14UNF
J3	1-1/16-12UN
T2	1/2 BSP
T4	3/4 BSP

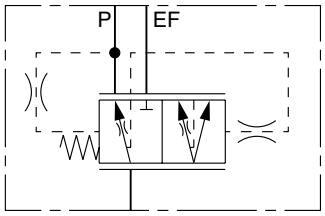
other on request

Code	R/V Setting
00	No Relief Valve
A05	Adjustable 40 - 120 bar
A15	Adjustable 130 - 250 bar
05	50 bar
08	80 bar
10	100 bar
11	110 bar
12	120 bar
13	130 bar
14	140 bar
15	150 bar
16	160 bar
17	170 bar
18	180 bar
20	200 bar

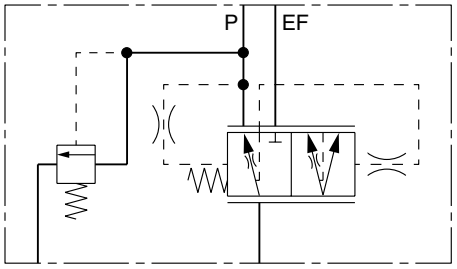
other on request

Code	Priority Flow
08	8 lpm
11	11 lpm
15	15 lpm
19	19 lpm
23	23 lpm
30	30 lpm
38	38 lpm

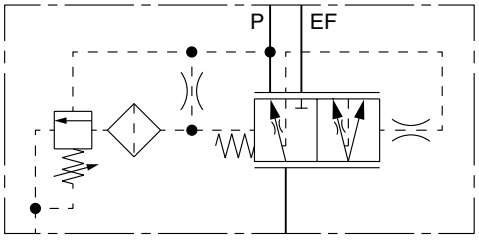
other on request



Priority Flow Divider
Function “A”



Priority Flow Divider With Full Flow R/V
Function “B”



Priority Flow Divider With Pilot R/V
Function “C”

Priority Flow Divider

Comments:

The Priority Flow Divider provides a constant and specified flow for power steering or other priority functions.

The balance of flow produced by the pump is available from the EF port for additional functions such as open center directional control valves, fan drives , etc. It can also be fitted with a pressure relief valve

Variations for PGP 511 / 517 / 620 / 625 / 640

without priority relief valve (Function “A”)

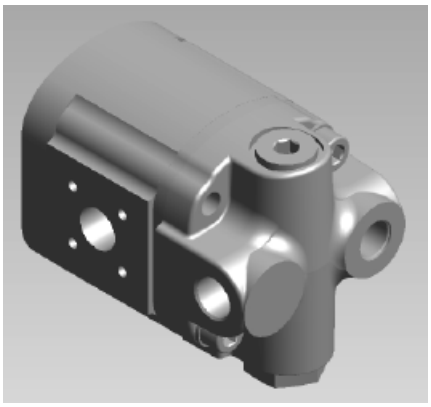
with full flow priority relief valve (Function “B”)

with pilot priority relief valve (Function “C”)

Pressure Range	
P-port Maximum	230 bar
EF-port Maximum	250 bar

Maximum Flows	
for PGP 511	
P-port	32 lpm
EF-port	70 lpm
max. input flow	70 lpm
for PGP 517 / 620 / 625 / 640	
P-port	45 lpm
EF-port	100 lpm
max. input flow	100 lpm

Port Configuration „A“
Port Orientation „B“



Port Configuration „D“
Port Orientation „A“

Port Configuration „C“
Port Orientation „B“

Side Mounted Priority Flow Divider (Load Sense or Fixed Flow)

Comments:

Piority Flow Dividers can also be direct mounted to the pressure port to provide a constant and specified flow for power steering or other priority functions.

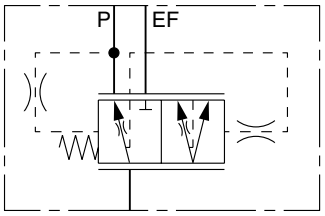
Variations for PGP 511 / 517 / 620 / 625 / 640

without priority relief valve (Function “A”)
with full flow priority relief valve (Function “B”)
with pilot priority relief valve (Function “C”)

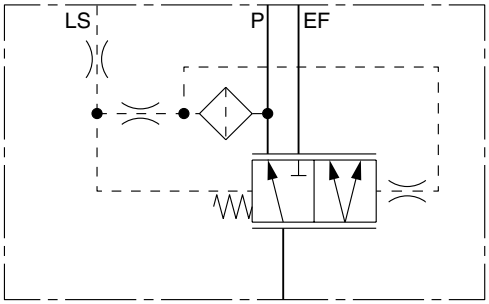
Note: relief valve in the steering unit is required.
control pressure settings and priority flow settings on request

Pressure Range	
for PGP 511 / 517	
P-port Maximum	230 bar
EF-port Maximum	250 bar
for PGP 517 / 620 / 625 / 640	
P-port Maximum	250 bar
EF-port Maximum	310 bar

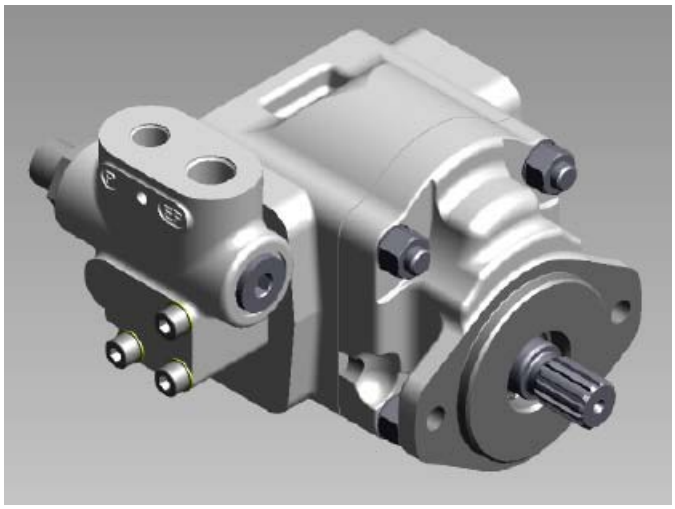
Maximum Flows	
for PGP 511	
P-port	32 lpm
max. input flow	80 lpm
for PGP 517 / 620 / 625 / 640	
P-port	45 lpm
max. input flow	160 lpm

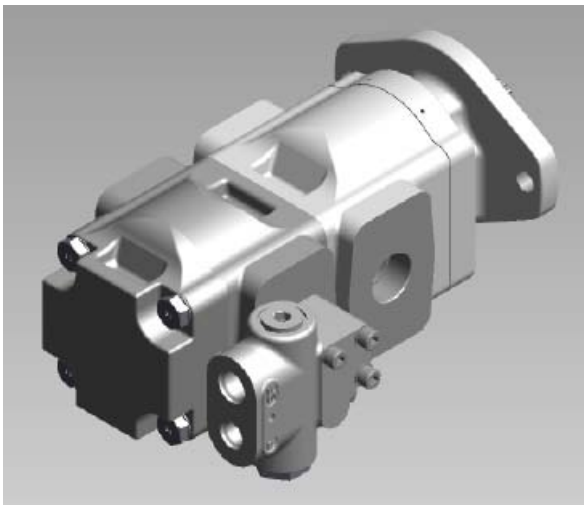


Priority Flow Divider
Function “A”



Load Sensing Priority Valve
with Dynamic Load Sensing Signal
Function “F”





Load Sensing Priority Valve

1VP- / CVP100- □ □ □ □ □ □ □ □

Port Configuration · Port Orientation · Function · Priority Port · Excess Port · LS Port · R/V Setting · Control Setting LS

Code	Port Configuration
A	End Priority, End Excess
B	Side Priority, Side Excess
C	End Priority, Side Excess
D	Side Priority, End Excess
E	Double Side Ported

Code	Port Orientation
A	Priority Port on Pump Inlet Side
B	Priority Port on Pump Outlet Side

Code	Function
D	LSPV, Static LS
E	LSPV, Static LS with Pilot R/V
F	LSPV, Dynamic LS
G	LSPV, Dynamic LS with Pilot R/V

Code	Priority Port
J1	3/4-16UNF
J8	9/16-18UNF
T1	3/8 BSP

other on request

Code	Excess Port
J2	7/8-14UNF
J3	1-1/16-12UN
T2	1/2 BSP
T4	3/4 BSP

other on request

Code	LS Port
X2	7/16- 20UNF female
Y1	1/4 BSP male
Y3	1/4 BSP
BX2	7/16- 20UNF Body Port

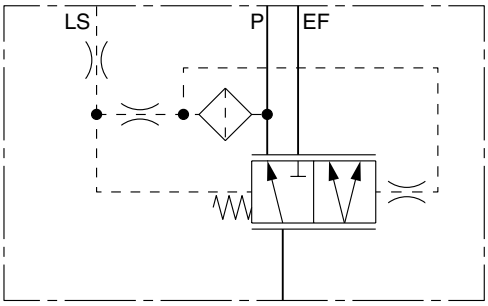
other on request

Code	Control Setting LS
052	5.2 bar static
056	5.6 bar dynamic
062	6.2 bar dynamic
063	6.3 bar static
070	7.0 bar static / dynamic
090	9.0 bar dynamic
093	9.3 bar static
104	10.4 bar dynamic
126	12.6 bar dynamic
140	14.0 bar dynamic
186	18.6 bar dynamic

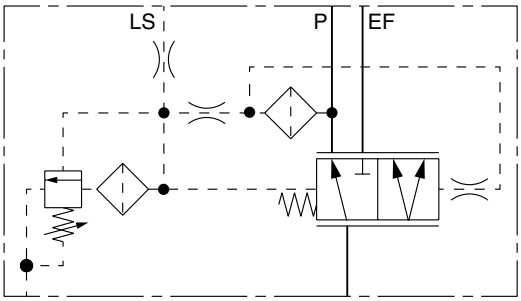
other on request

Code	R/V Setting
00	No Relief Valve
A05	Adjustable 40 - 120 bar
A15	Adjustable 130 - 250 bar
05	50 bar
08	80 bar
10	100 bar
11	110 bar
12	120 bar
13	130 bar
14	140 bar
15	150 bar
16	160 bar
17	170 bar
18	180 bar
20	200 bar

other on request



Load Sensing Priority Valve
with Dynamic Load Sensing Signal
Function “F”



Load Sensing Priority Valve
with Dynamic Load Sensing Signal
Function “G”

Load Sensing Priority Valve

Comments:

The Load sense Priority Valve provides priority flow on demand, typically for LS power steering: The balance of the flow produced by the pump is available from the EF port for additional functions such as open center directional control valves, fan drives , etc. When the power steering is idle, full pump flow is available for these functions

The selection of pilot relief and static or dynamic signal is dependent on the characteristics of the selected steering unit.

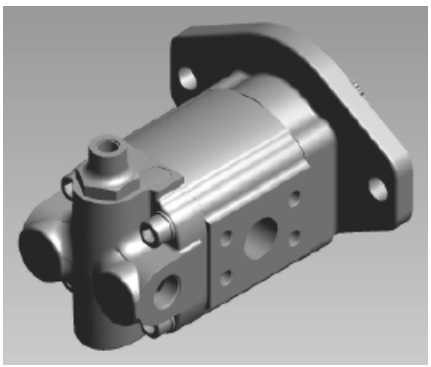
Variations for PGP 511 / 517 / 620 / 625 / 640

without pilot relief, dynamic LS signal (Function “G”) / with pilot relief,

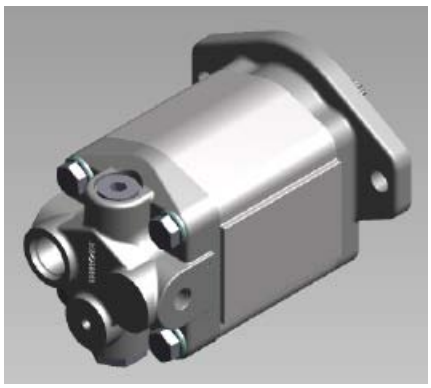
dynamic LS signal (Function “F”) without pilot relief, static LS signal / with pilot relief, static LS signal

Pressure Range	
P-port Maximum	230 bar
EF-port Maximum	equal to max. rating of pump

Maximum Flows	
for PGP 511	
P-port	32 lpm
EF-port	70 lpm
max. input flow	70 lpm
for PGP 517 / 620 / 640	
P-port	45 lpm
EF-port	100 lpm
max. input flow	100 lpm



Port Confiiguration „B“
Port Orientation „A“



Port Confiiguration „D“
Port Orientation „B“

Port Confiiguration „E“
Port Orientation „A“

Single Pressure Relief Valve

Comments:

Integral relief valve to protect the motor.

Motors with this valve may be applied in series with relief valve providing a limit to the pressure differential, and hence, the output torque.

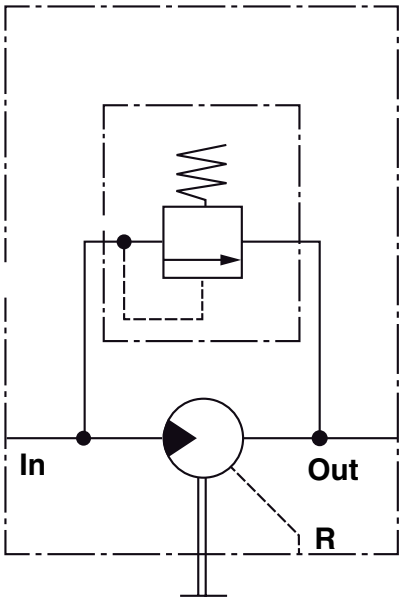
Variations for PGM 511 / PGM 620 / PGM 640

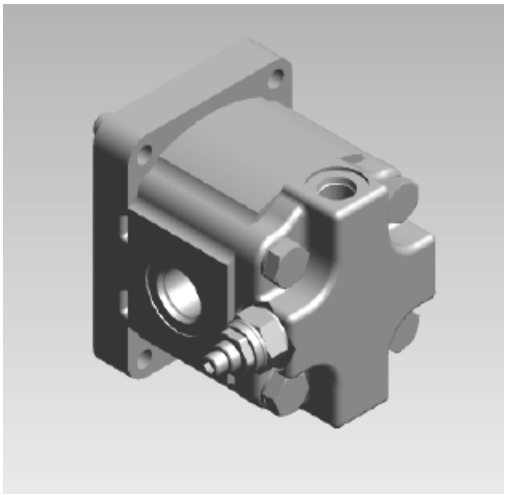
adjustable, with internal or external drain

Applications

Fan Drives, Mower Blade Drives, Compressor Drives and Water Pump Drives

Motor Range			
Ranges	PGM 511	PGM 620	PGM 640 .
Maximum Flow	75 lpm	113 lpm	113 lpm
Pressure Range	25-250 bar	25-280 bar	25-310 bar





Single Pressure Relief Valve with Anti-Cavitation

Comments:

Motors fitted with this relief valve may be applied in series with relief valve providing a limit to the pressure differential, and hence, the output torque.
The check valve allows the motor and driven load to “spool down” when the fluid supply is shut off or reduced due to engine speed fluctuations.
In series operation, the check valve permits the motor to come to a controlled stop should the outlet flow be suddenly blocked.
This valve reduces the risk of damaging the motor or blowing a hydraulic line.
Motors fitted with this valve are available with side or rear facing ports.

Variations for PGM 511 / PGM 620 / PGM 640

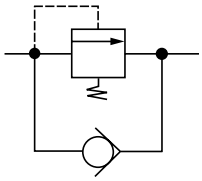
non-adjustable, with reverse flow check with internal or external drain

Applications

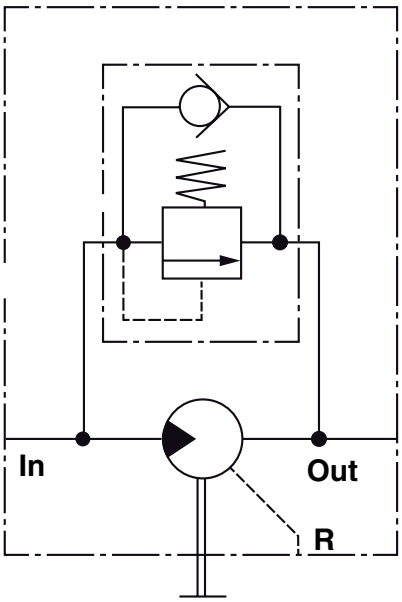
Fan Drives, Mower Blade Drives, Compressor Drives and Water Pump Drives

Motor Range PGM 511 / PGM 620 / PGM 640	
Pressure Range	35-250 bar
Maximum Flow	100 lpm

Motor Range PGM511 / PGM 620 / PGM 640



CODE	Pressure bar
RMAF	50
RMAP	90
RMAR	100
RMAV	120
RMBB	150
RMBD	160
RMBK	190
RMBP	210
RMBT	230



Cross Port Pressure Relief Valves

Comments:

Integral cross port relief to protect motor and to limit torque in both directions of rotation.
Motors fitted with this relief valve cover may be operated in series with other motors downstream when using external case drain.
Limited change to the factory set is possible .
Side ports are standard in order to minimize overall length.

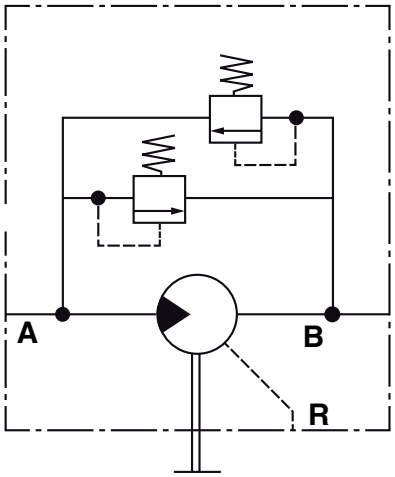
Variations for PGM 511 / PGM 620 / PGM 640

adjustable with internal and external drain

Applications

Fan Drives, Mower Reel Drives, and all low-medium power reversible drives

Motor Range			
Ranges	PGM 511	PGM 620	PGM 640 .
Maximum Flow	75 lpm	113 lpm	113 lpm
Pressure Range	25-250 bar	25-280 bar	25-310 bar



Cross Port Pressure Relief Valves with Anti-Cavitation

Comments:

Motors fitted this relief valve may be applied in series or in hydraulic transmission with relief valve providing a limit to the pressure differential, and hence, the output torque.
The check valves allow flow to return to the inlet of the motor to prevent cavitation.
Motor available with side ports, rear ports or combination of side and rear ports.

Variations for PGM 511 / PGM 620 / PGM 640

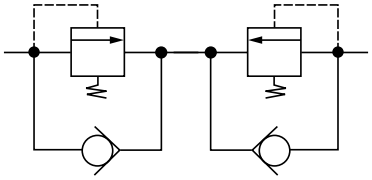
non-adjustable with internal or external drain

Applications

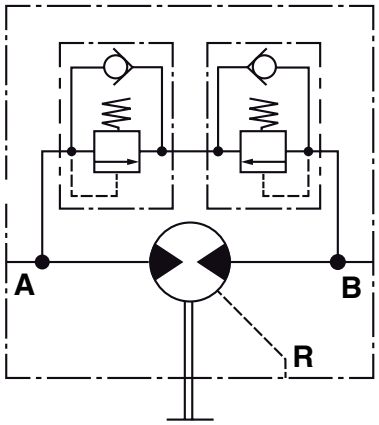
Fan Drives, Mower Blade Drives, Water Pump Drives and reversible hydrostatic transmissions

Motor Range PGM 511 / PGM 620 / PGM 640	
Pressure Range	35-250 bar
Maximum Flow	100 lpm

Motor Range PGM 511 / PGM 620 / PG M640



CODE	Pressure bar
RMCF	50
RMCP	90
RMCR	100
RMCV	120
RMDB	150
RMDD	160
RMDK	190
RMDP	210
RMDT	230



Cross Port Pressure Relief Valves with Anti-Cavitation + Check Valves

Comments:

Motors with cross-port relief valve and anti-cavitation check valves in case drain passages are suitable for open-circuit applications with closed center valves and hydrostatic transmissions. The check valves allow flow to return to the inlet of the motor to prevent cavitation.
For winches, make up flow at low pressure is introduced at the case drain port.

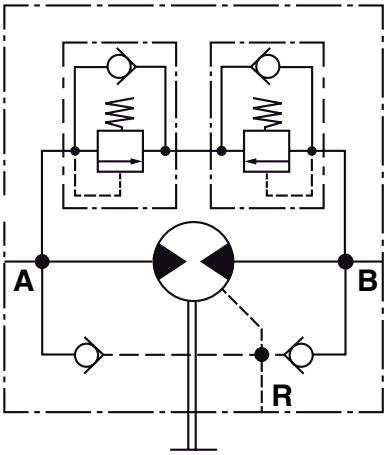
Variations for PGM 511 / PGM 620 / PGM 640

non-adjustable, with reverse flow check with internal or external drain

Applications

Fan Drives, Mower Blade Drives, Water Pump Drives and reversible hydrostatic transmissions, vibration drives on vibratory, rollers and winches

Motor Range PGM 511 / PGM 620 / PGM 640	
Pressure Range	25-250 bar
Maximum Flow	100 lpm



Solenoid Proportional Pressure Relief Valve

Comments:

In a fan drive circuit fan speed is adjusted by providing a varying Pulse Width Modulated electrical current signal to the proportional relief valve which controls the flow to the fan motor. The proportional valve is typically a normal closed type to assure failsafe full fan speed in case of a lost signal.
The anti-cavitation check valve allows the motor to spin freely when the fan is powered down.

Variations for PGM 511 / PGM 620 / PGM 640

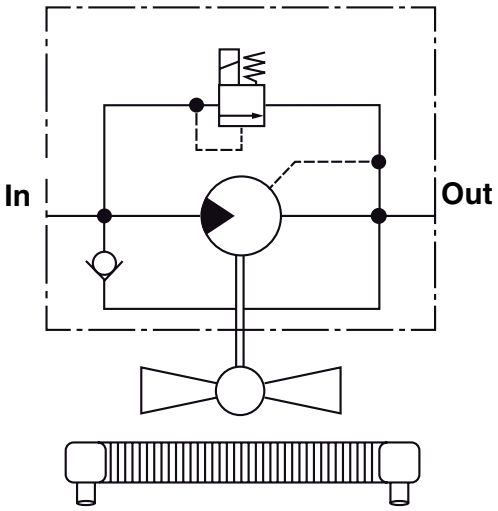
normally open valves, increasing pressure with increasing current
normally closed valves, decreasing pressure with increasing current with internal or tank return

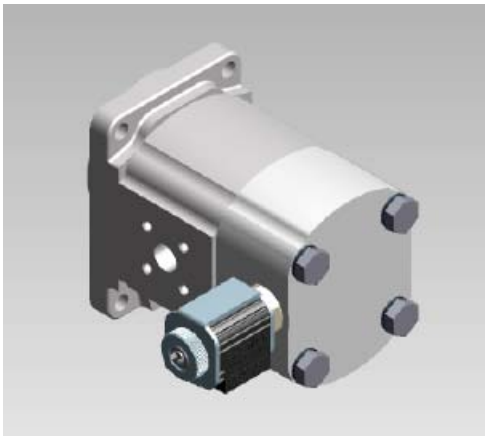
Applications

Fan Drives

Motor Range			
Ranges	PGM 511	PGM 620	PGM 640 .
Maximum Flow	95 lpm	95 lpm	95 lpm

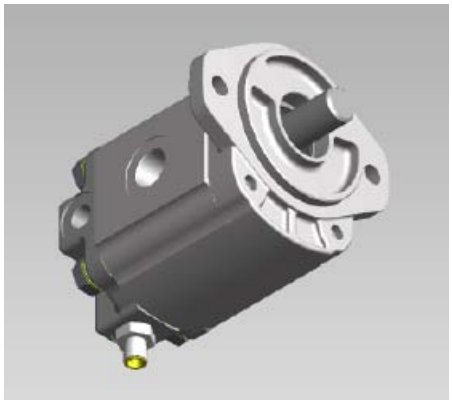
Pressure Range	
Pressure Range	standby pressure differential: 5 bar max. : equal to the max. pressure rating of the motor
Standard Pressure Relief Settings	100 / 210 / 350 bar other`s on request
Termination	on request



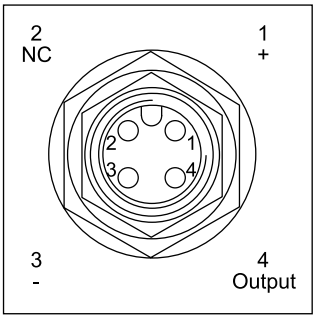


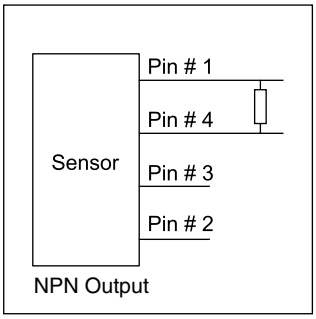
Speed Sensor

This rugged, weather resistant speed sensor is a Hall effect device. When externally powered, 30 square wave digital pulses per output shaft revolution are produced. By signal multiplication, 60 pulses per revolution can be obtained. The installation of this economical sensor does not affect the torque or side load capability of the motor into which it is installed.
The sensor has reverse polarity protection but no short circuit protection.



Speed sensor data	
Operating voltage range	4.5...24 V (DC)
Operating temperature	-30°...100° C
Operating frequency range	0...10 KHZ
Sink current	0...20 mA (max.)
Connection	4 Pin (12mm) DIN Standard





Formula pull-up resistor value (0.25 Watt, 5% tol.)

$$\frac{\text{Courant/Tensione } 4.5...24\text{ V}}{\text{Sink current } 0...20\text{ mA}} = \text{Resistor k Ohm}$$

State: off (95% +V)
+ V
State: on (max. 0.4 V DC)
0 V

Parker Hannifin
Pump and Motor Division
Chemnitz, Germany

Standard Seal Kits for pumps/motors 500 + 600

Model Code	Pump Series	TDN
PGP502	Single	391 1832 810
	Tandem	
	Single (FPM)	391 1832 811
PGP505	Single	391 1822 101
	Tandem	391 1822 102
PGP511	Single	8611-023-00N
	Single (Large size shaft)	8611-023-Q1N
	Single (FPM)	8611-023-00V
	Triple (FPM unsealed)	391 1832 770
	Tandem	8677-023-0NE
	Tandem rear	8677-023-000
	Triple PGP511	8832-023-0NX
	Tandem (sealed section)	3911832766
("S8F4")	Pump with outboard bearing	3911832133
PGP511S	Split gear	8801-023-00N
	Split gear (Large size sh.)	8801-023-Q1N
	Split gear (FPM)	8801-023-00V
	Split gear tandem rear	8850-023-000
PGP517	Single	391 1822 071
	Single / Tandem FPM	391 1842 244
	Tandem	391 1822 072
	Triple	391 1822 073
	FPM 517/517/511/511	391 1832 772
PGP517 / PGP505	Tandem	391 1822 254
PGP517 / PGP511	Tandem	391 1822 531

SERIES 600	Pump Series	TDN
PGP620	Single	8682-023-00N
	Tandem rear	8833-023-000
	Tandem	4070H-023-000
	Tandem (FPM)	3911822474
	Single (FPM)	8682-023-00V
	Triple Pump	3911832610
PGP620	...T2K5...	3911832635
PGP625	Single (M)	3911842351
PGP620/PGP511	Tandem	8766-023-00N
PGP620/PGP511	Tandem (FPM)	8766-023-00V
PGP625/PGP511	Tandem (M)	3911842352
PGP620/ PGP511/511	Triple (sealed)	3911832720
PGP620/620/ PGP511	Triple (FPM)	3911832716
PGP640	Single	3911832598
PGP640	Single FPM	3911832611
PGP640	Tandem (M)	3911832696
PGP640/PGP511	Tandem (M)	3911832798
PGP640/620/620	Triple Pump	3911832468

Model Code	Motor Series	TDN
PGM502	Motor BI-ROT	391 1832 812
PGM505	Motor UNI-ROT	391 1822 101
	Motor BI-ROT	391 1801 304
M11 + Bearing	Motor BI-ROT + Bearing	3911801340
PGM511	Motor (Bi + Uni-Rot.)	8301-023-00N
	Motor(large size shaft)	8301-023-Q1M
("S2F3", "S8F4")	Motor with outboard bearing	3911832704
	Motor with plain bearing	8772-023-00S
	Motor FPM	8301-023-00M
	Motor FPM (large shaft)	3911832086
	Motor FPM with bearing	3911832087
PGM517	Motor UNI-ROT	3911801335
	Motor UNI-ROT FPM	3911801410
	Motor BI-ROT	3911801336

Model Code	Motor Series	TDN
PGM620	Motor (Bi + Uni-Rot.)	8782-023-00N
	Motor (Bi + Uni-Rot.)-FPM	8782-023-00V
PGM640	Motor (Bi+Uni-Rotat.)	3911801451

Series PGP 640 Single Unit

PG P	640	A	0550	C	E4	A4	N	T5	T3	B1	B1

PGP	Gear Design / Type	PARKER Gear Pump
640	Series	
A	Unit	Single Unit
0550	Displacement	55.0 cm³/rev.
C	Rotation Direction	Clockwise
E4	Shaft	SAE „C“ Spline, 14T, 16/32 DP
A4	Flange	Mounting Flange SAE 4 bolt „C“
N	Shaft Seal	Shaft Seal NBR
T5	Side Suction Port	SAE Metric Split Flange 1 1/2"
T3	Side Pressure Port	SAE Metric Split Flange 1"
B1	Rear Suction Port	No Port
B1	Rear Suction Port	No Port

Series PGP 517 Single Unit

PG P	517	A	0230	A	D1	H3	N	L3	L2	B1	B1

PGP	Gear Design / Type	PARKER Gear Pump
517	Series	
A	Unit	Single Unit
0230	Displacement	23.0 cm³/rev.
A	Rotation Direction	Counter Clockwise
D1	Shaft	SAE „B“ Spline, 13T, 16/32 DP
H3	Flange	Mounting Flange SAE 2 bolt „B“
N	Shaft Seal	Shaft Seal NBR
L3	Side Suction Port	Ø27 Diamond Flange
L2	Side Pressure Port	Ø19 Diamond Flange
B1	Rear Suction Port	No Port
B1	Rear Pressure Port	No Port

Series PGP 620 Single Unit

PG P	620	A	0330	C	D1	H3	N	D6	D5	B1	B1

PGP	Gear Design / Type	PARKER Gear Pump
620	Series	
A	Unit	Single Unit
0330	Displacement	33.0 cm³/rev.
C	Rotation Direction	Clockwise
D1	Shaft	SAE „B“ Spline, 13T, 16/32 DP
H3	Flange	Mounting Flange SAE 2 bolt „B“
N	Shaft Seal	Shaft Seal NBR
D6	Side Suction Port	1 5/16 - 12 UN Thread
D5	Side Pressure Port	1 1/16 - 12 UN Thread
B1	Rear Suction Port	No Port
B1	Rear Pressure Port	No Port

Series PGP 511 Tandem Unit

PG P	511	B	0100	A	C1	H2	N	J7	H3	S - 511	A	0110	X	J7	J5	B1	B1

PGP	Gear Design / Type	PARKER Gear Pump
511	Series	
B	Unit	Single Unit
0100	Displacement	10.0 cm³/rev.
A	Rotation Direction	Counter Clockwise
C1	Drive shaft	SAE 19-4 Spline 11T, 16/32 DP
H2	Flange	Mounting Flange SAE 2 bolt „A“
N	Shaft Seal	Shaft Seal NBR
j7	Side Suction Port	Ø - 20 mm European Flange
J5	Side Pressure Port	Ø - 15 mm European Flange
S	Section Connection	Separate Inlets
511	Series Second Section	
A	Unit	Single Unit
110	Displacement	11.0 cm³/rev.
X	Shaft Seal	No Seal
J7	Side Suction Port	Ø - 20 mm European Flange
J5	Side Pressure Port	Ø - 15 mm European Flange
B1	Rear Suction Port	No Port
B1	Rear Pressure Port	No Port