

Pump & Motor Division

Screw Pump Series



ENGINEERING YOUR SUCCESS.

Parker Screw Pumps Series

Three-screw pumps

Three-screw pumps represent the largest class of multiple screw pumps in service today. No matter the applications and the environmental conditions, three-screw pump is the most flexible pump on the market. Well known to be very reliable, at reasonable cost, virtually pulsation-free flow, very low acoustic emissions, three-screw pumps are extensively used in meeting the requirements of oil & gas, chemical, marine, industrial, mobile, alternative energy, food processing, paper, power generation, pharmaceutical and many other industries. SMT/SMT16B three-screw pumps represent one of the most used pumps all over the world after many years of experience. SMT/SMT16B has been designed to reduce the dimensions of the traditional SMT series in order to be ideal where reduced dimensions are a must.

No pulsation – smooth flow. Low noise

SMT/SMT16B three-screw pumps are designed to avoid any pulsation, to ensure a smooth operation and to reduce to the lowest level the acoustic emissions, reducing all costs of second noise reduction measures. The pulsation-free flow of SMT/SMT16B pumps, allows Parker screw pumps also in output condition management critical to applications such as precision hydraulic controls and fuel metering.

Magnetic coupling sealless leakage free pumps – FGM option

SMT/SMT16B pump can be equipped with a magnetic coupling if required. The hermetically sealed magnetic coupling is a permanent magnetic synchronous coupling able to transmit torque through magnetic forces between the internal and external rotor. Applying a magnetic coupling, the drive and the driven sides are hermetically separated. In case of critical media the magnetic coupling is a reliable seal and avoids any serious leaking. The magnetic coupling is the containment shroud that is fixed to the driven sided power unit and separates internal and external rotor from each other. Due to the absence of mechanical connection the vibrations torque transmission are very low, with completely leak-proof separation of product and atmosphere. The magnetic coupling is used to ensure no media leaking or when working in environments with potentially explosive atmospheres.



Applications

Marine

- Off-line filtration
- Off-line filtration cart and trolleys
- Filtration & oil transfer
- Fuel service
- Lube oil circulation service
- Lubricating liquids (machines, turbines, gear sets, motors)
- Boosting Injection

Oil & Gas

- Oil filtration & cooling
- Oil and fuel oil lubrication
- Oil rigs
- Refineries (transport, meter and mix)
- Off-shore platform
- Petrochemical industry
- Transfer service

Power Generation

- Lube oil service
- Control oil service
- Sealing oil service for gas turbine
- Fuel unloading station
- Fuel transfer
- Fuel feeding
- Burner operations service
- Filtration & cooling

Industrial

- Lube services
- Power hydraulics (presses, machine tools, working machines rolling mill, dumping equipment, elevators, variable pitch propellers, hydraulic winches)
- Power unit & mini power packs
- Hydraulic governors
- Cooling, heating, recycling
- Driving and filtering
- Process technology and chemistry
- Filtration applications
- Chip conveyors
- Hydro power (turbines & compressor lubrication power)
- Paper & pulp (lubrication & filtration)
- Gear box lube and filtration system (high viscosity lube, air emulsion)

WARNING: This product can expose you to chemicals including lead or DEHP which are known to the state of California to cause cancer, birth defects, and other reproductive harm. www.p65warnings.ca.gov

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WARNING — User Responsibility

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Models	SMT	SMT16B	SMT8B	SMAPI
Max working pressure	1160 PSI (80 bar)	580 PSI (40 bar)	217 PSI (15 bar)	580/1160 PSI (40/80 bar)
Type	SMT: Standard dry external use SMT: Submerged	SMT16B: Standard dry external use SMT16B: Submerged	SMT8B: Standard dry external use	Comply to API676
Models	20 - 25 - 32 - 40 - 45 - 55 - 60 - 70 - 80	20 - 25 - 32 - 40 - 45 - 55 - 60 - 70 - 80 - 90s - 110 - 125 - 150 - 180	32 - 40 - 45 - 60	20 - 25 - 32 - 40 - 45 - 55 - 60 - 70 - 80 - 90s - 110 - 125 - 150 - 180
Mounting flange	ISO 3019/2	ISO 3019/2	ISO 3019/2	Custom
	IEC 600072	IEC 600072	IEC 600072	
Connections	SAE 3000 - BSPP	SAE 3000 - BSPP	SAE 3000 - BSPP	DIN, ANSI
Shaft speed ⁽¹⁾	min 500 rpm	min 500 rpm	min 500 rpm	min 500 rpm
	max 3,600 rpm	max 3,600 rpm	max 1,750 rpm	max 3,600 rpm
Inlet port pressure ⁽²⁾	min -10 PSI (-0.7 bar)	min -10 PSI (-0.7 bar)	min -7.2 PSI (-0.5 bar)	min -10 PSI (-0.7 bar)
	max 43 PSI (3 bar)	max 43 PSI (3 bar)	max 21.8 PSI (1.5 bar)	max 130 PSI (9 bar)
Fluids ⁽³⁾	Mineral oils, synthetic fluid or emulsions, bunker oils, furnace oils, ecologic fluids, fuel oils (HFO, MDO, LFO, MGO)	Mineral oils, synthetic fluid or emulsions, bunker oils, lubrication oils, furnace oils, ecologic fluids, fuel oils (HFO, MDO, LFO)	Mineral oils, synthetic oils	Mineral oils, synthetic fluid or emulsions, bunker oils, furnace oils, ecologic fluids, fuel oils (HFO, MDO, LFO, MGO), Naphta, Petrol
Viscosity ⁽⁴⁾	minimum: 1 cSt	minimum: 2 cSt	minimum: 10 cSt	minimum: 1 cSt
	maximum: 1,000 cSt	maximum: 1,000 cSt	maximum: 1,000 cSt	maximum: 1,000 cSt
	max peak 100,000 cSt	max peak 10,000 cSt	max peak 10,000 cSt	max peak 10,000 cSt
Fluid temperature ⁽⁵⁾	-4°F ÷ 176°F (-20°C ÷ 80°C)	-4°F ÷ 176°F (-20°C ÷ 80°C)	-4°F ÷ 176°F (-20°C ÷ 80°C)	-4°F ÷ 176°F (-20°C ÷ 80°C)
Filtration	Allowed degree of fluid contamination NAS to 1638 class 10 or ISO DIS 4406 - 19/16			
Seals material options ⁽⁶⁾	NBR, Viton, EPDM	NBR, Viton, EPDM	NBR, Viton, EPDM	NBR, Viton, EPDM
Seals type options ⁽⁷⁾	Lip shaft seal	Lip shaft seal	Lip shaft seal	Mechanical seal
	Mechanical seal	Mechanical seal	Magnetic coupling	API 682
	Magnetic coupling	Magnetic coupling		
Noise level	min 52 dB (A) at 2,950 rpm	min 52 dB (A) at 2,950 rpm	min 55 dB (A) at 1750 rpm	min 52 dB (A) at 2,950 rpm
	max 68 dB (A) at 2,950 rpm	max 68 dB (A) at 2,950 rpm	max 63 dB (A) at 1750 rpm	max 68 dB (A) at 2,950 rpm
Drive loading ⁽⁸⁾	No axial or radial load	No axial or radial load	No axial or radial load	No axial or radial load
Pump housing material	Aluminum (standard option)	Aluminum (standard option)	Aluminum (standard option)	Aluminum
	Carbon steel	Carbon steel	Cast iron	Carbon steel
	Cast iron	Cast iron		Cast iron
Screw material	Steel for main screw, cast iron for idler screws	Steel for main screw, cast iron for idler screws	Steel for main screw, cast iron for idler screws	Steel for main screw, cast iron for screws
	Option for special applications: Core hardened steel screws, surface treated screws	Option for special applications: Core hardened steel screws, surface treated screws		Option for special applications: Core hardened steel screws, surface treated screws

⁽¹⁾ For shaft speed lower than 1,000 rpm and over 1,800 rpm, please contact Parker.
⁽²⁾ For higher pressure, and for pressures different than 0 barg, please contact Parker.
⁽³⁾ For different fluids, please contact Parker.
⁽⁴⁾ For viscosity level lower than 20cSt and over 320cSt, please contact Parker.
⁽⁵⁾ For temperature outside of this range, please contact Parker.
⁽⁶⁾ For different type of seals material, please contact Parker.
⁽⁷⁾ From PSP125 and larger there is only the mechanical seal only.
⁽⁸⁾ Solutions can be available for radial load, please contact Parker.

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Ordering Codes

SMT16B Series

PSP	(1)	SMT16B (standard dry)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
		SMT16B (sumersible)														

Box (1) Pump Size	Box (2) Nominal flow series (liter/minute @ 2950 rpm)
20	8L, 12L, 15L, 20L
25	25L, 30L
32	35L, 45L, 55L, 75L
40	100L, 125L, 150L
45	180L, 210L
55	250L, 300L, 330L, 380L
60	440L, 500L
70	600L, 660L, 800L
80	1000L, 1200L
90S	1220L, 1500L, 1700L, 2000L, 2200L
110	2300L, 2500L, 2800L, 3200L
125	1750L, 1900L, 2100L, 2250L
150	2550L, 2700L, 2900L, 3100L, 3300L
180	3500L, 3700L, 4000L, 4300L, 4600L, 4900L

Box (3) High operation viscosity
Up to 100 cSt: no code
From 100cSt to 250 cSt: S1
From 250 cSt to 500 cSt: S2
From 500 cSt to 800 cSt: S3
Over 800 cSt: S4

Box (4) Shaft type
Standard male shaft & flange type: no code
Hollow shaft type options: AC9, AC11, AC14, AC19, AC24, AC28, AC38

Box (5) Mounting flanges for hollow shaft
Mounting with male shaft: no code
Type options: B5, B14

Box (6) Pump housing and flanges materials
Housing and flanges in aluminum: no code
Cast iron housing (aluminum flanges): G
Carbon steel housing (aluminum flanges): A
Housing and flanges in cast iron: ALLG
Housing and flanges in carbon steel: ALLA

Box (7) Seals material
Standard NBR: no code
Viton FKM: V
EPDM: E

Box (8) Screw treatment
Standard steel main screw, cast iron idler screws: no code
Core hardened steel screws (available only with mechanical seal): HA
Surface treated screws: HD

Box (9) Shaft seal type
Standard lip seal: no code
Mechanical seal for oil: TM
Mechanical seal for water glycole and coolant fluids: TMK
Mechanical seal for fuel oil: TMZ
Magnetic seal: FGM

Box (10) Suction position (see page 17)
Standard: T1
T2
T3
T4


Box (11) Weep hole position (only for hollow shaft configurations) see page 17
Standard: D2
D1
D3
D4

Box (12) Pressure relief valve
No valve: no code
5 bar setting: RF1
10 bar setting: RF2
15 bar setting: RF3
Adjustable setting: RP

Box (13) Suction flange type
Radial is the standard: no code
Axial SAE: AXS
Axial BSPP: AX
Tank-top flange: AL

Box (14) Rotation
Clockwise is standard: no code
Counter clockwise: SX

Box (15) Bearing type
Standard bearing is the standard: no code
Encapsulated ball bearing: CS

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Ordering Codes

SMT Series

PSP	(1)	SMT (standard dry)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
		SMT (sumersible)														

Box (1) Pump Size	Box (2) Nominal flow series (liter/minute @ 2950 rpm)
20	8L, 12L, 15L, 20L, 23L
25	25L, 30L
32	35L, 45L, 55L, 75L
40	100L, 125L, 150L
45	180L, 210L
55	250L, 300L, 330L, 380L
60	440L, 500L
70	600L, 660L, 800L
80	1000L, 1200L

Box (3) High operation viscosity
Up to 100 cSt: no code
Above 100cSt: SN

Box (4) Shaft type
Standard male shaft & flange type: no code
Hollow shaft type options: AC9, AC11, AC14, AC19, AC24, AC28, AC38

Box (5) Mounting flanges for hollow shaft
Mounting with male shaft: no code
Type options: B5, B14

Box (6) Pump housing and flanges materials
Housing and flanges in aluminum: no code
Cast iron housing (aluminum flanges): G
Carbon steel housing (aluminum flanges): A
Housing and flanges in cast iron: ALLG
Housing and flanges in carbon steel: ALLA

Box (7) Seals material
Standard NBR: no code
Viton FKM: V
EPDM: E

Box (8) Screw treatment
Standard steel main screw, cast iron idler screws: no code
Core hardened steel screws (available only with mechanical seal): HA
Surface treated screws: HD

Box (9) Shaft seal type
Standard lip seal: no code
Mechanical seal for oil: TM
Mechanical seal for water glycole and coolant fluids: TMK
Mechanical seal for fuel oil: TMZ
Magnetic seal: FGM

Box (10) Suction position (see page 17)
Standard: T1
T2
T3
T4


Box (11) Weep hole position (only for hollow shaft configurations) see page 17
Standard: D2
D1
D3
D4

Box (12) Pressure relief valve
No valve: no code
5 bar setting: RF1
10 bar setting: RF2
15 bar setting: RF3
Adjustable setting: RP

Box (13) Suction flange type
Radial is the standard: no code
Axial SAE: AXS
Axial BSPP: AX
Tank-top flange: AL

Box (14) Rotation
Clockwise is standard: no code
Counter clockwise: SX

Box (15) Bearing type
Standard bearing is the standard: no code
Encapsulated ball bearing: CS

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Ordering Codes

SMT8B Series

PSP	(1)	SMT8B	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
-----	-----	-------	-----	-----	-----	-----	-----	-----	-----	-----	------

Box (1) Pump Size	Box (2) Nominal flow series (liter/minute @ 2950 rpm)
32	26L, 30L, 35L, 45L
40	60L, 80L
45	120L, 155L
60	210L, 300L, 380L

Box (3) Pump housing material
Aluminum: no code
Cast Iron: G

Box (4) Housing treatment
None: no code
Anodic coating: OX (available for Aluminum housing)

Box (8) Screw treatment
None: no code
Surface treated screws: HD


Box (5) Shaft type
Standard male shaft & flange type: no code
Hollow shaft type options: AC14, AC19, AC24, AC28, AC38

Box (9) Weep hole position (see page 17)
Standard: D2
D1
D3
D4

Box (6) Seals material
Standard NBR: no code
Viton FKM: V
EPDM: E

Box (10) Rotation
Clockwise is standard: no code
Counter clockwise: SX

Box (7) Pressure relief valve
No valve: no code
5 bar setting: RF1
10 bar setting: RF2
15 bar setting: RF3

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Ordering Codes

SMAPI Series

PSP	(1)	SMAPI	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
-----	-----	-------	-----	-----	-----	-----	-----	-----	-----	-----	------

Box (1) Pump Size	Box (2) Nominal flow series (liter/minute @ 2950 rpm)
20	8L, 12L, 15L, 20L, 23L
25	25L, 30L
32	35L, 45L, 55L, 75L
40	100L, 125L, 150L
45	180L, 210L
55	250L, 300L, 330L, 380L
60	440L, 500L
70	600L, 660L, 800L
80	1000L, 1200L
90S	1220L, 1500L, 1700L, 2000L, 2200L
110	2300L, 2500L, 2800L, 3200L
125	1750L, 1900L, 2100L, 2250L
150	2550L, 2700L, 2900L, 3100L, 3300L
180	3500L, 3700L, 4000L, 4300L, 4600L, 4900L

Box (3) Pump housing and flanges materials
Housing and flanges in aluminum: no code
Cast iron housing (aluminum flanges): G
Carbon steel housing (aluminum flanges): A
Housing and flanges in cast iron: ALLG
Housing and flanges in carbon steel: ALLA

Box (4) Seals material
Standard NBR: no code
Viton FKM: V
EPDM: E

Box (5) Screw treatment
Standard steel main screw, cast iron idler screws: no code
Core hardened steel screws (available only with mechanical seal): HA
Surface treated screws: HD

Box (6) Shaft seal type
Standard lip seal: no code
Mechanical seal for oil: TM
Mechanical seal for water glycole and coolant fluids: TMK
Mechanical seal for fuel oil: TMZ
Magnetic seal: FGM

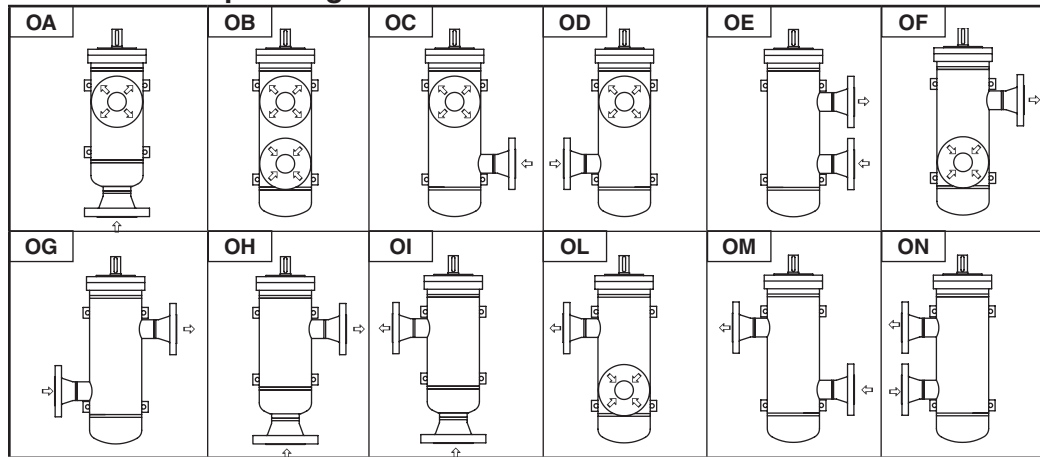
Box (7) Inlet port type options
ANSI 150
ANSI 300
ANSI 600
DN 10
DN 16
DN 25
DN 40

Box (8) Outlet port type options
ANSI
DN

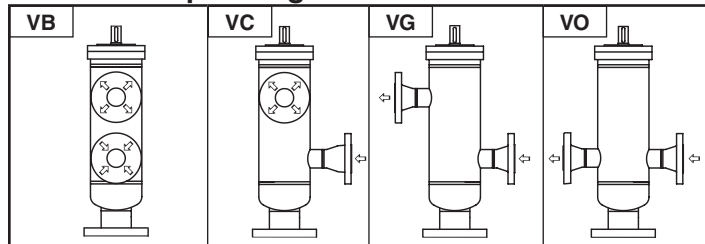
Box (9) Ports configuration (O=Horizontal; V=Vertical)
OA, OB, OC, OD, OE OF, OG, OH, OI, OL OM, ON
VB, VC, VG, VO

Box (10) Rotation
Clockwise is standard: no code
Counter clockwise: SX

Horizontal Pump Configuration



Vertical Pump Configuration



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Product Components

Exploded drawing - Front flange and suction ports configurations

A				Lip Seal	
1	Pump housing	8	Capscrews		
2	O-ring	9	Key		
3	Main screw	10	Shaft Seal		
4	Idler screw				
5	Ball bearing				
6	Seeger				
7	Flange				
B				Mechanical Seal - TM Option	
1	Pump housing	8	Capscrews		
2	O-ring	9	Key		
3	Main screw	11	Mechanical seal		
4	Idler screw	12	Driving oil bushing		
5	Ball bearing				
6	Seeger				
7	Flange				
C				Hollow Shaft (Lip Seal) - AC Option	
1	Pump housing	8	Capscrews		
2	O-ring	10	Shaft Seal		
3	Main screw				
4	Idler screw				
5	Ball bearing				
6	Seeger				
7	Flange				
D				Magnetic Coupling - FGM Option	
1	Pump housing	8	Capscrews		
2	O-ring	9	Key		
3	Main screw	13	Internal rotor MC		
4	Idler screw	14	Containment shroud MC		
5	Ball bearing				
6	Seeger	15	External rotor MC		
7	Flange				

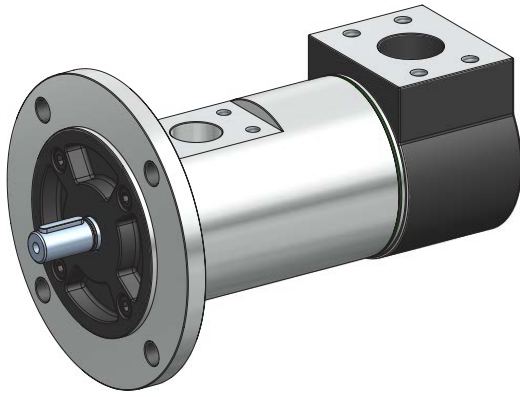
Suction Ports

E		Radial Suction Cover		G		Top Flange for Vertical Installation Over Tank - AL Option	
8	Capscrews			8	Capscrews		
16	Plane gasket						
17	Radial suction cover			16	Plane gasket		
F		Axial BSPP - AX Option		H		SMIT Submersible	
8	Capscrews			20	Filter		
16	Plane gasket			21	Clamp		
18	Axial suction cover						

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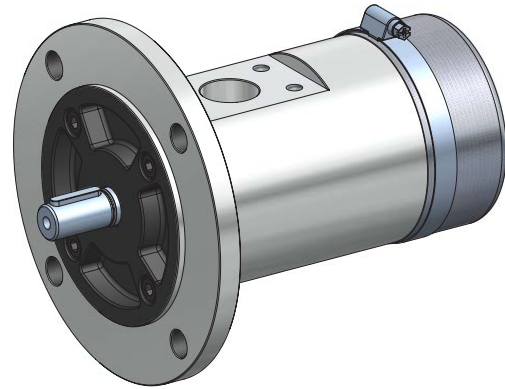


SMT/SMT16B

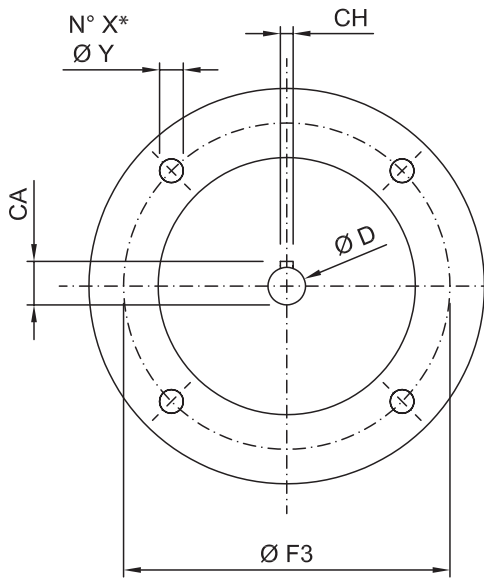


Dry screw pump

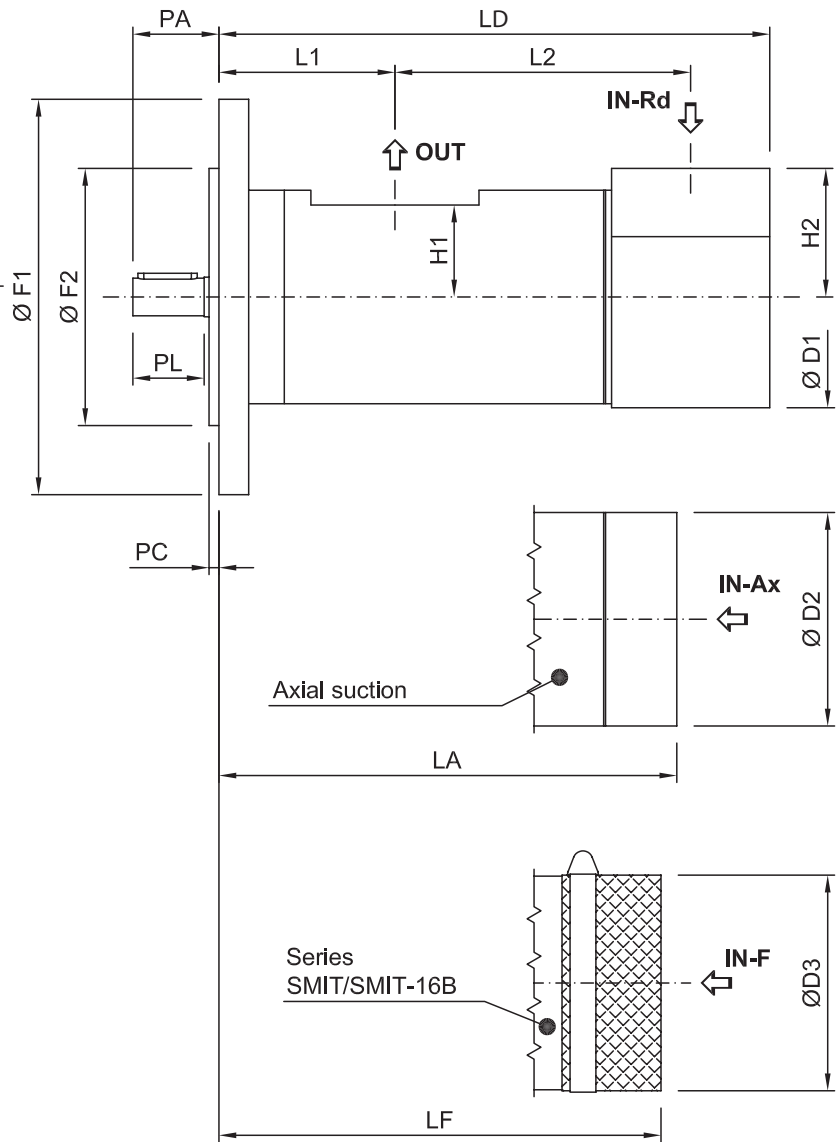
SMIT/SMIT16B



Submersible screw pump

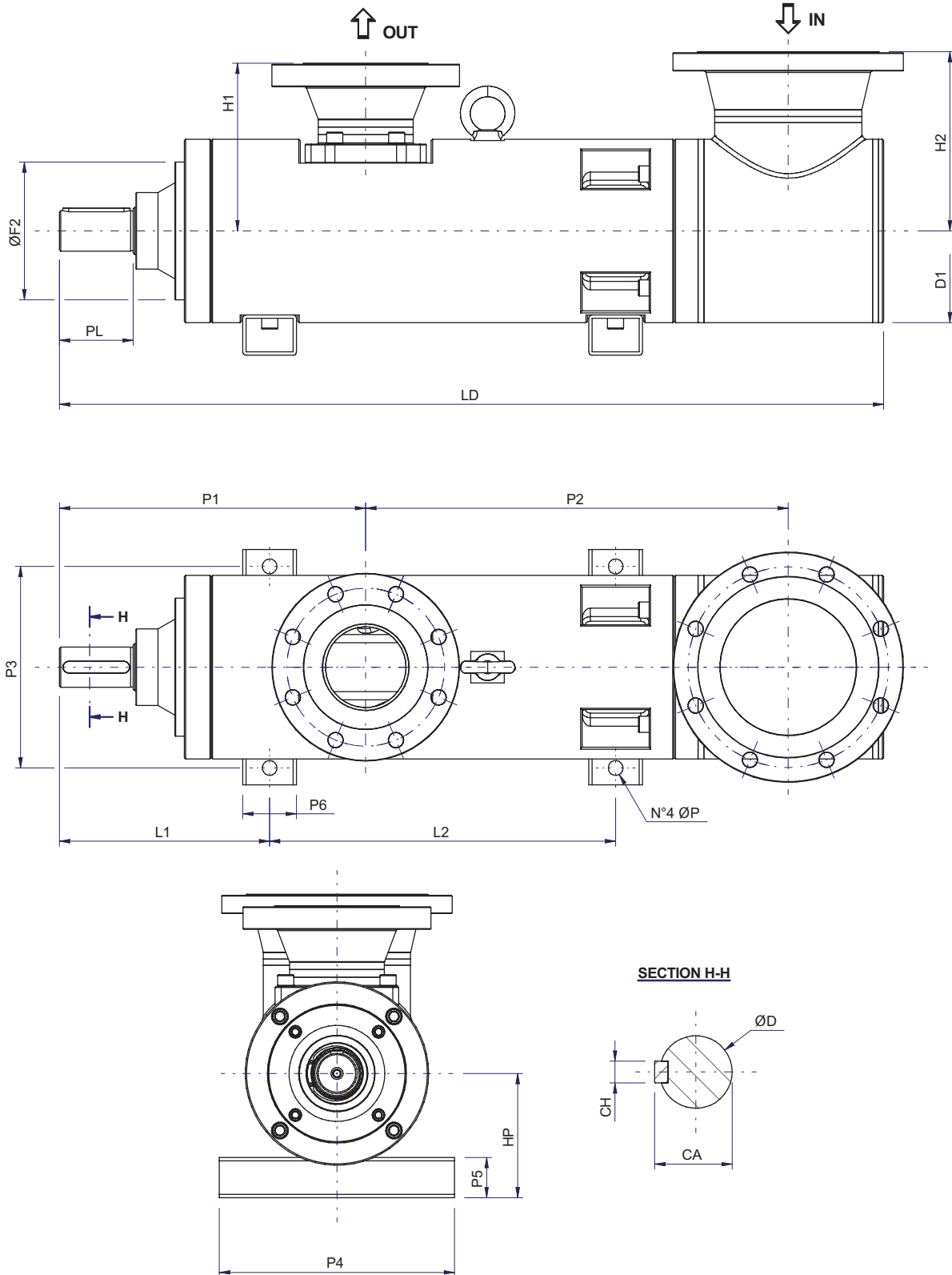


* 2 holes for PSP20, 4 holes for the other models.



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SMT16B, PSP125, PSP150 & PSP180



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Pump Dimensions

SMT/SMT16B pump chart


SMT & SMT16B		Type	PSP20	PSP25	PSP32	PSP40	PSP45	PSP55	PSP60	PSP70	PSP80	PSP90S	PSP110	PSP125	PSP150	PSP180		
Dry Pump	SMT & SMT16B	ØF2	80	80	100	125	125	160	160	200	200	200	250	205	245	245		
		ØY	11	11	11	14	14	18	18	22	22	22	26					
		ØF3	103	103	125	160	160	200	200	250	250	250	300					
		ØF1	125	125	150	188	188	235	235	300	300	300	350					
		PL	30	36	35	34	55	55	55	55	60	60	110	110	130	130		
		ØD	14	19	19	19	32	32	32	32	38	38	55	60	80	80	80	
		CA	16	21.5	21.5	21.5	35	35	35	35	41	41	59	64	85	85	85	
		CH	5	6	6	6	10	10	10	10	10	10	10	16	18	22	22	
		IN-Rd	1/2" BSPPP	3/4" BSPPP	1-1/4" SAE-3000	1-1/2" SAE-3000	2" SAE-3000	2-1/2" SAE-3000	3" SAE-3000	3-1/2" SAE-3000	4" SAE-3000	5" SAE-3000		8" ANSI-150 RF	8" ANSI-150 RF	10" ANSI-150 RF		
		IN-Ax	1/2" BSPPP	3/4" BSPPP	1-1/4" BSPPP	1-1/2" BSPPP	2" BSPPP	2-1/2" BSPPP	3" BSPPP	3-1/2" BSPPP	4" BSPPP		5" SAE-3000					
		H2	26	27	55	65	85	95	105	110	125		140	226.6	290	320		
		OUT	1/2" BSPPP		1" SAE-3000	1"-1/4" SAE-3000	1"-1/2" SAE-3000	2" SAE-3000	2"-1/2" SAE-3000	3" SAE-3000			4" SAE-3000	5" ANSI-150 RF	6" ANSI-150 RF	8" ANSI-150 RF		
		H1	25	27.5	41	46.5	51.5	55	63	73	83	83	100	249.4	290	320		
		PA	37	42	41	39.5	64.5	61.5	65.5	60.5	75	75	118					
	ØD1	59	65	96	112	125	148	160	180	210	210	250						
	ØD2	59	65	94	108	122.5	142.5	155	180	210	210	250						
	SMT	PL	30	36	35	34	55	55	55	60								
		PA	37	42	41	39.5	64.5	61.5	65.5	60.5	75							
		L1	53	72.5	69	84.5	89	100.5	101	115.5	150							
		L2	118.5	171	192	224.5	248	297	342	422	470.5							
		LD	193	262	295	348	382	449.5	505.5	605.5	695							
		LA	174	262	248	302	330	385.5	423.5	529.5	644							
		Kg	1.5	4	6.5	10.8	15	23.5	30	44	59							
		SMT16B	PL	30	36	35	36	55	55	55	60	60	110	110	130	130		
			PA	37	42	41	42.5	64.5	64.5	65.5	65.5	75	75	118				
			L1	53	72.5	61	69	75.4	83.5	83.5	94.5	150	144.5	287	313	458	458	
	L2		78.5	87	123	149.5	190.1	202.5	228.5	279	294.5	488	489	515	654	689		
	LD		153	178	218	257.5	310.5	338	374.5	441.5	519	731	879	1227	1254	1324		
LA	134		178	171	211.5	258.5	274	292.5	365.5	468	635.5	811						
Kg	1.5	2.7	4.4	7	11	15.5	25	30	47.5	61.5	120	216.3	299.7	396.1				
Submersible Pump	SMT & SMT16B	ØD3	60	66	95	109	123.5	143.5	154	179	204	204	251					
	SMT	LF	173	242.5	239	294	312	395.5	430.5	543.5	628							
	SMT16B	LF	133	158.5	162	203.5	240.5	284	299.5	379.5	452	620	716					
Foot	SMT16B	ØP												22	22	22		
		P1												456	321	321		
		P2												629	538	538		
		P3												300	400	400		
		P4												350	450	450		
		P5												60	60	40		
		P6												80	80	80		
		HP												185	207	207		

Above PSP80 available only SMT16B.

23L not available for SMT16B.

For SAE mountings and American thread options, please contact Parker.

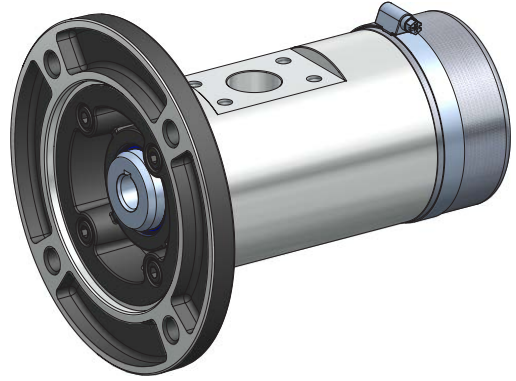
Dimensions reported in this catalog could change. To have the latest updated drawings of your pumps, please contact Parker.

 **WARNING:** This product can expose you to chemicals including lead or DEHP which are known to the state of California to cause cancer, birth defects, and other reproductive harm. www.p65warnings.ca.gov



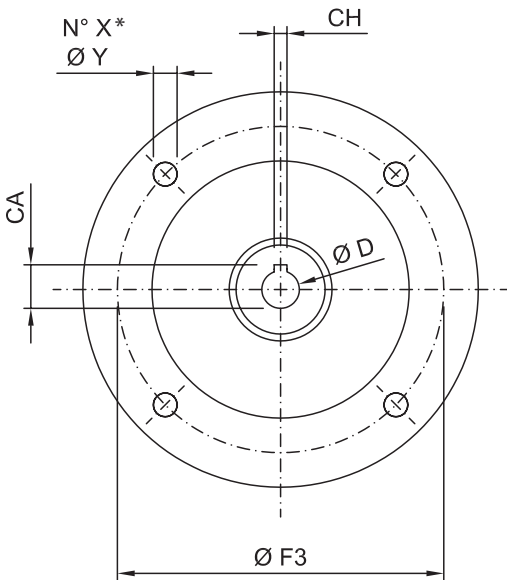
SMT/SMT16B AC

SMIT/SMIT16B AC

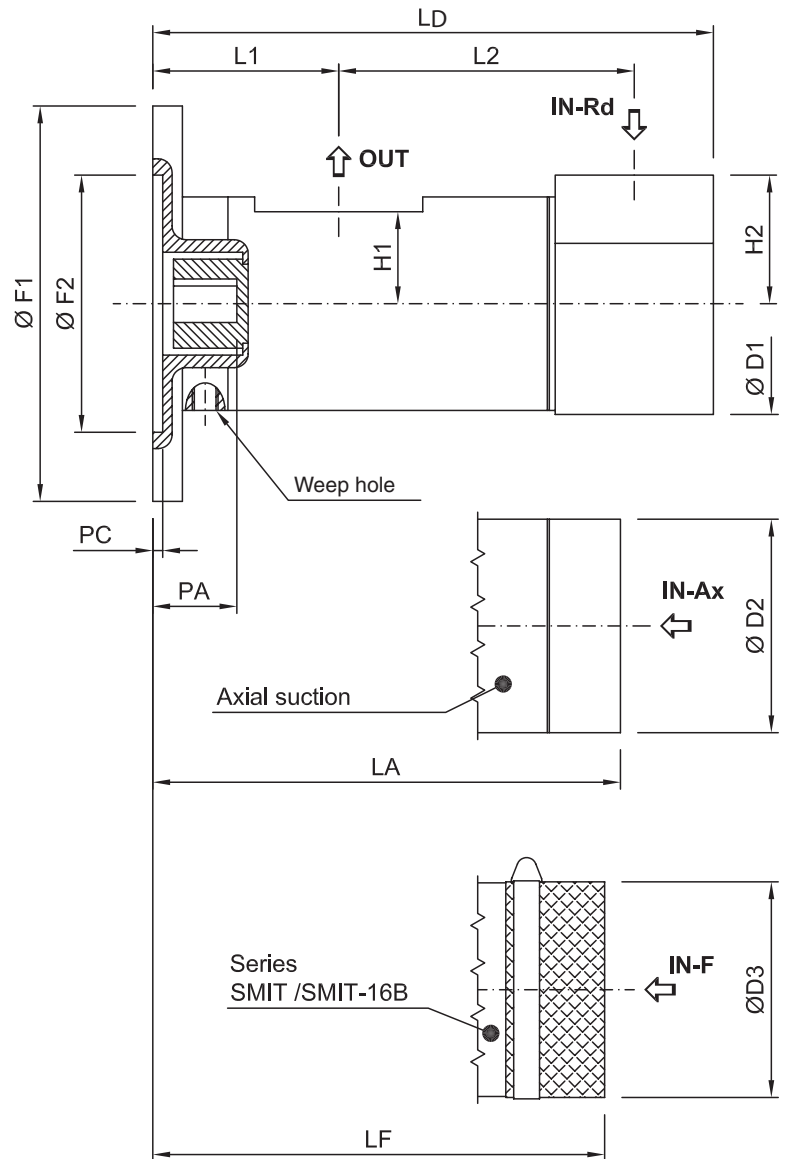


Dry screw pump

Submersible screw pump



2 holes for PSP20, 4 holes for the other models.



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Pump Dimensions

SMT/SMT16B AC pump chart

SMT & SMT16B AC		Type	PSP20			PSP25		PSP32		PSP40			PSP45		PSP55		PSP60		PSP70	
			AC11	AC14	AC19	AC14	AC19	AC19	AC24	AC19	AC24	AC28	AC28	AC38	AC28	AC38	AC28	AC38	AC28	AC38
			B5	B5	B5	B5	B5	B5	B5	B5	B5	B5	B5	B5	B5	B5	B5	B5	B5	B5
Dry Pump	SMT & SMT16B	ØF2	95	110	130	110	130	130	130	130	130	180	180	230	180	230	180	230	180	230
		ØY	9	9.5	11	9.5	10.5	12	12	12	12	14	14	15	14	15	14	14.5	14	14.5
		ØF3	115	130	165	130	165	165	165	165	165	215	215	265	215	265	215	265	215	265
		ØF1	140	160	200	160	200	200	200	200	200	250	250	300	250	300	250	300	250	300
		ØD	11	14	19	14	19	19	24	19	24	28	28	38	28	38	28	38	28	38
		CA	12.8	16.1	21.7	16.2	21.9	21.9	27.3	22	27.5	31.5	31.5	42	31.5	42	31.5	41.8	31.5	41.8
		CH	4.2	5.2	6.5	5.2	6.5	6.5	8.5	6.5	8.5	8.5	8.5	10.5	8.5	10.5	8.5	10.5	8.5	10.5
		IN-Rd	1/2" BSPP			3/4" BSPP		1-1/4" SAE - 3000		1-1/2" SAE - 3000			2" SAE - 3000		2-1/2" SAE - 3000		3" SAE - 3000		3-1/2" SAE - 3000	
		IN-Ax	1/2" BSPP			3/4" BSPP		1-1/4" BSPP		1-1/2" BSPP			2" BSPP		2-1/2" BSPP		3" BSPP		3-1/2" BSPP	
		H2	26	26	26	27	27	55	55	65	65	65	85	85	95	95	105	105	110	110
		OUT	1/2" BSPP					1" SAE - 3000		1-1/4" SAE - 3000			1-1/2" SAE - 3000		2" SAE - 3000		2-1/2" SAE - 3000		3" SAE - 3000	
		H1	25	25	25	27.5	27.5	41	41	46.5	46.5	46.5	51.5	51.5	55	55	63	63	73	73
		PA	25	33.5	42	32.5	42.5	43.7	52.7	42.5	52.5	64	63.5	81	62.5	82.5	65	83	63.1	87.3
		ØD1	59	59	59	65	65	96	96	112	112	112	125	125	148	148	160	160	180	180
	ØD2	59	59	59	65	65	94	94	108	108	108	122.5	122.5	142.5	142.5	155	155	180	180	
	SMT	L1	57	56	75	73.5	76.5	92.7	92.7	109.5	109.5	120	120	133.5	125.5	145.5	126	146	139.3	160.5
		L2	118.5	118.5	118.5	171	171	192	192	224.5	224.5	224.5	248	248	297	297	342	342	422	422
		LD	197	196	215	263	266	318.7	318.7	373	373	383.5	413	426.5	474.5	494.5	530.5	550.5	553.3	574.5
		LA	178	177	196	263	266	271.7	271.7	327	327	337.5	361	374.5	410.5	430.5	448.5	468.5	553.3	574.5
		Kg	1.5	1.5	1.5	2.7	2.7	4.4	4.4	7	7	7	7	7	15.5	15.5	25	25	30	30
SMT16B		L1	57	56	75	73.5	76.5	84.7	84.7	94	94	104.5	106.4	119.9	108.5	128.5	108.5	128.5	118.3	139.5
		L2	78.5	78.5	78.5	87	87	123	123	149.5	149.5	149.5	190.1	190.1	202.5	202.5	228.5	228.5	279	279
		LD	157	156	175	179	182	241.7	241.7	282.5	282.5	293	341.5	355	363	383	399.5	419.5	465.3	486.5
		LA	138	137	156	179	182	194.7	194.7	236.5	236.5	247	289.5	303	299	319	317.5	337.5	389.3	410.5
		Kg	1.5	1.5	1.5	2.7	2.7	4.4	4.4	7	7	7	7	7	15.5	15.5	25	25	30	30
Submersible Pump	SMT & SMT16B	ØD3	60	60	60	66	66	95	95	109	109	109	123.5	123.5	143.5	143.5	154	154	179	179
	SMIT	LF	177	176	195	243.5	246.5	262.7	262.7	319	319	329.5	343	356.5	420.5	440.5	455.5	475.5	567.3	588.5
	SMT16B	LF	137	136	155	159.5	162.5	185.7	185.7	228.5	228.5	239	271.5	285	309	329	324.5	344.5	403.3	424.5

For SAE mountings and American thread options, please contact Parker.

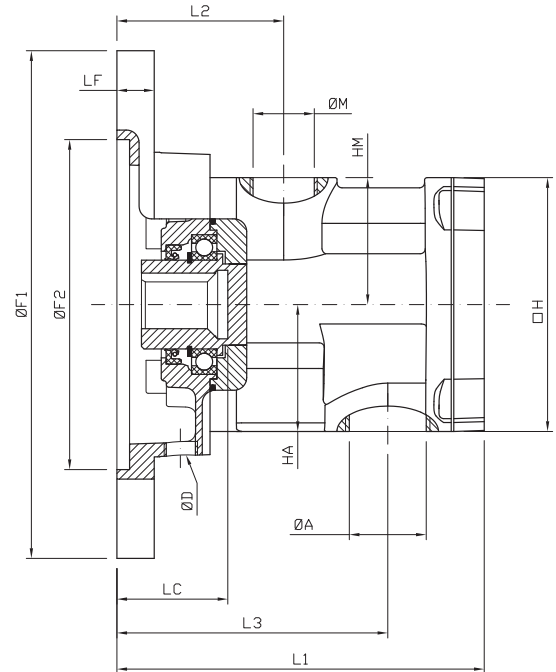
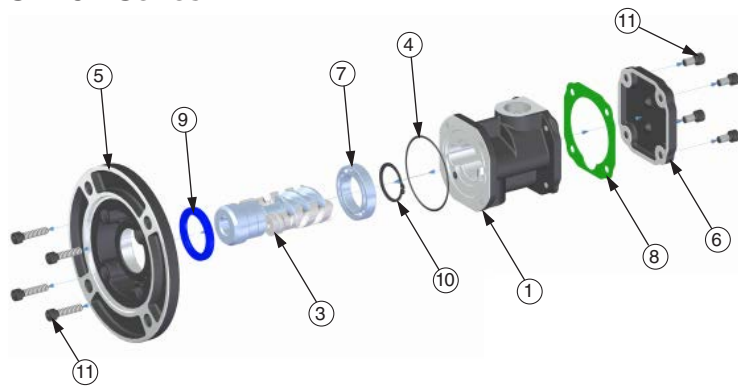
Dimensions reported in this catalog could change. To have the latest updated drawings of your pumps, please contact Parker.

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Dimensional Drawing/Table Dimensions

SMT8B Series



N°	Description	N°	Description
1	Pump housing	7	Ball bearing
2	Main screw	8	Gasket
3	Idler screw	9	Lip seal
4	O-ring	10	Circlip
5	Front cover	11	Capscrews
6	End cover		

Others available upon request.

SMT8B												
Size		PSP32			PSP40			PSP45			PSP60	
Shaft - Flange		AC14/B5	AC19/B5	AC24/B5*	AC19/B5	AC24/B5	AC28/B5	AC24/B5	AC28/B5	AC38/B5*	AC28/B5	AC38/B5
Flange	Type											
	ØF	9.5	11.6		12.0	14.0		12.0	14.0	15.0	14.0	
	ØF1	160.0	200.0		200.0	250.0		200.0	250.0	300.0	250.0	
	ØF2	110.0	130.0		130.0	180.0		130.0	180.0	230.0	180.0	
	ØF3	130.0	165.0		165.0	215.0		165.0	215.0	265.0	215.0	
	LF	23.3	15.7	23.7	15.0	23.0	15.0	12.0	15.0		11.0	
Shaft	C	5.2	6.5	8.5	6.5	8.5		8.5		10.5	8.5	
	ØCA	14.0	19.0	24.0	19.0	24.0	28	24.0	28.0	38.0	28.0	
	CH	16.2	21.9	27.5	21.8	27.5	31.5	27.5	31.5	42.0	31.5	
	LC	23.8	43.7	52.7	42.6	52.6	62.9	53.0	63.5	81.2	64.8	
Pump	L1	131.3	144.7	152.7	146.0	154.0	162.3	188.0	201.0	214.5	233.0	
	L2	52.3	65.7	73.7	67.0	75.0	83.3	81.0	94.0	107.5	88.5	
	L3	93.3	106.7	114.7	108.0	116.0	124.3	136.5	149.5	163.0	161.5	
	H		100.0			100.0			100.0		130.0	
	HA		50.0			50.0			70.0		80.0	
	ØA		1" Gas			1" Gas			1-1/2" Gas		2" SAE-3000	
	HM		50.0			50.0			65.0		80.0	
	ØM		3/4" Gas			3/4" Gas			1-1/4" Gas		1-1/4" SAE-3000	
	ØD		1/4" Gas			1/4" Gas			1/4" Gas		1/4" Gas	

* For SAE mountings and American thread options, please contact Parker.

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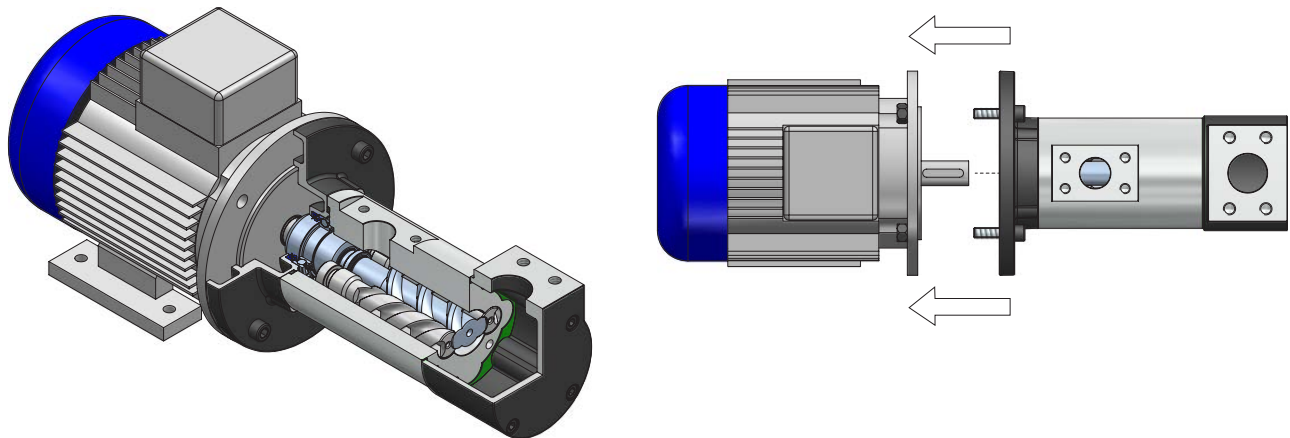


Motor Pumps

Motor pump selection for SMT/SMT16B

Size	PSP20		PSP25		PSP32		PSP40		PSP45	PSP55	PSP60	PSP70
Motor form	B14	B5	B14	B5	B14	B5	B14	B5	B5	B5	B5	B5
56 AC9	X											
63 AC11	X	X										
71 AC14	X	X	X	X								
80 AC19	X	X	X	X	X	X	X	X				
90 AC24					X	X	X	X				
100 AC28							X	X	X	X	X	X
112 AC28							X	X	X	X	X	X
132 AC38									X	X	X	X

All data reported in catalog can change without any notice.
 PSP80, PSP90S, PSP110 are not available with hollow shaft.



Motor pump selection for SMT8B

Size	PSP32				PSP40		PSP45		PSP60		
Type	26L	30L	35L	45L	60L	80L	120L	155L	210L	300L	380L
AC14	X	X	X	X							
AC19	X	X	X	X	X	X					
AC24	X	X	X	X	X	X	X	X			
AC28					X	X	X	X	X	X	X
AC38							X	X	X	X	X

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SMAPI Description

SMAPI pump series

SMAPI is a casing three-screw pumps designed and manufactured following the API676 regulation and also suitable for the ISO8217, which regulates the level of sulphur percentage in the fluid in case of marine applications.

The quality of Parker screws, with many years of experience and more than 1 million pumps installed around the world, ensures high performances, reliability and very low level of acoustic emissions and pulsations.

Parker SMAPI pump is a three-screw pump that is fitted inside an external case. Matching all of the possible applications it can be manufactured with different structural shapes, installation possibilities and materials.

The external case can be delivered in ASME carbon steel and inox, in accordance with international norms such as API.

The internal cartridge can be manufactured in cast iron, steel and hardened steel, while the screws are made by steel for the primary screw and cast iron for the secondary screws.

The three screws rotate inside the pump body and the design of the screws avoids any axial load.

The functional pressure develops a balancing hydrodynamic force on the screws and, at the same time, lubricates and cools down the sealing ports. The torque needed to move the lateral screws is transmitted hydraulically by the pumped fluid, which means that the screws rotate with no possibilities of wearing.

SMAPI pumps can always ensure flow and pressure matching to your current requirements, since it is always available a customized version. SMAPI pumps simplify your eventual necessity of maintenance: just remove the installed cartridge (n.1) without disconnecting the part (n.2) from the system.

Main areas of applications are oil & gas, marine, offshore and Power Generation industrial sectors. SMAPI is applied to deliver different fluids such as crude oil, diesel fuel, engine oil, petrol, naphta and many others.

Parker can deliver a package of motor, SMAPI pump and base plate according to the customer needs.

SMAPI pump can be installed horizontally (motor + pump unit + skid or feet base) or vertically (motor + pump unit).

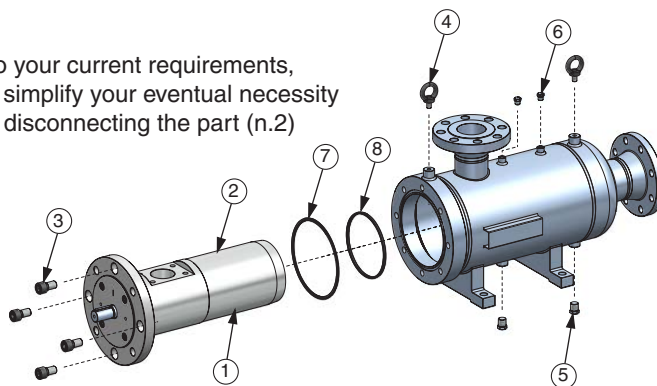
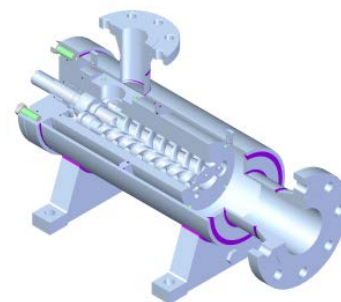
The maintenance of the pump cartridge can be operated without the disconnection of external case from the system.

Magnetic coupling sealless pump - FGM option

SMAPI pump can be equipped with a magnetic coupling if required. The hermetically sealed magnetic coupling is a permanent magnetic synchronous coupling able to transmit torque through magnetic forces between the internal and external rotor. Applying a magnetic coupling, the drive and the driven sides are hermetically separated. In case of critical media the magnetic coupling is a reliable seal and avoids any serious leaking.

The magnetic coupling is the containment shroud that is fixed to the driven sided power unit and separates internal and external rotor from each other. Due to the absence of mechanical connection the vibration torque transmission are very low, with completely leak-proof separation of product and atmosphere.

The magnetic coupling is used to ensure no media leaking or when working in environments with potentially explosive atmospheres.

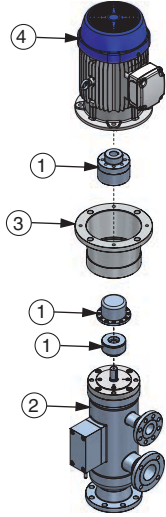


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SMAPI Configurations and Assembly

Vertical Assembly

Motor Pump Group / Magnetic Coupling

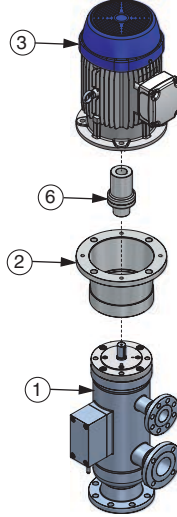


N°	Parts Description
1	Magnetic coupling
2	SMAPI pump
3	Bell housing
4	Electric motor

All fixing screws are steel
UNI-5739 M16x40 – 8.8

Vertical Assembly

Motor Pump Group / Standard Coupling

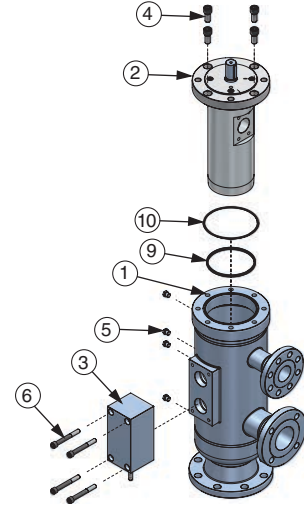


N°	Parts Description
1	SMAPI pump
2	Bell housing
3	Electric motor
6	Elastic coupling

All fixing screws are steel
UNI-5739 M16x40 – 8.8

Vertical Assembly

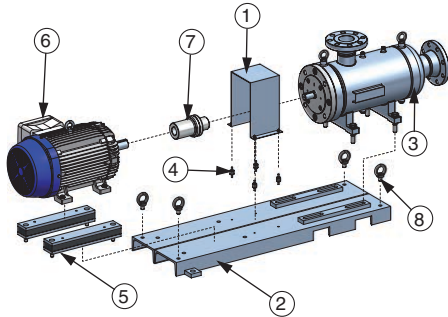
Pump



N°	Parts Description
1	Case V-ZN
2	Internal cartridge
3	RP external valve
4	Capscrews
5	Vent
6	Capscrews
9	Internal O-ring
10	Internal O-ring

Horizontal Assembly

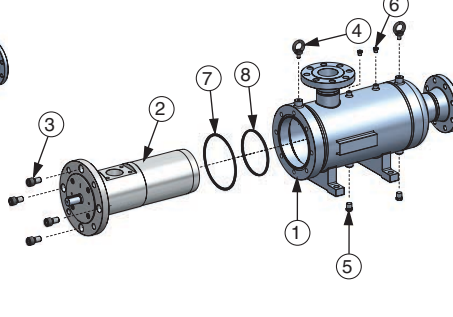
Motor Pump Group



N°	Parts Description
1	Carter
2	SKID
3	SMAPI pump
4	Vibration stopper
5	Shock absorber
6	Electric motor
7	Coupling
8	Golfare

Horizontal Assembly

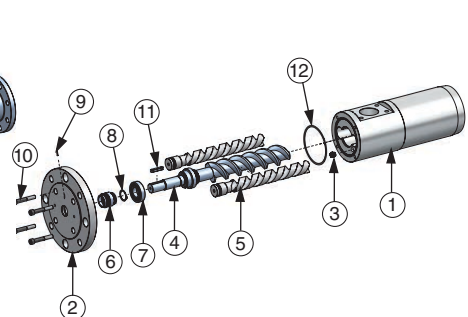
Pump



N°	Parts Description
1	External Case
2	Cartridge
3	Capscrews
4	Golfare
5	Drainer
6	Vent
7	Internal O-ring
8	Internal O-ring

Horizontal Assembly

Cartridge



N°	Parts Description
1	Pump housing
2	Flange
3	Bushing
4	Main screw
5	Idler screw
6	Mechanical seal
7	Ball bearing
8	Seeger
9	Pin
10	Capscrews
11	Key
12	Internal O-ring

Shaft seal

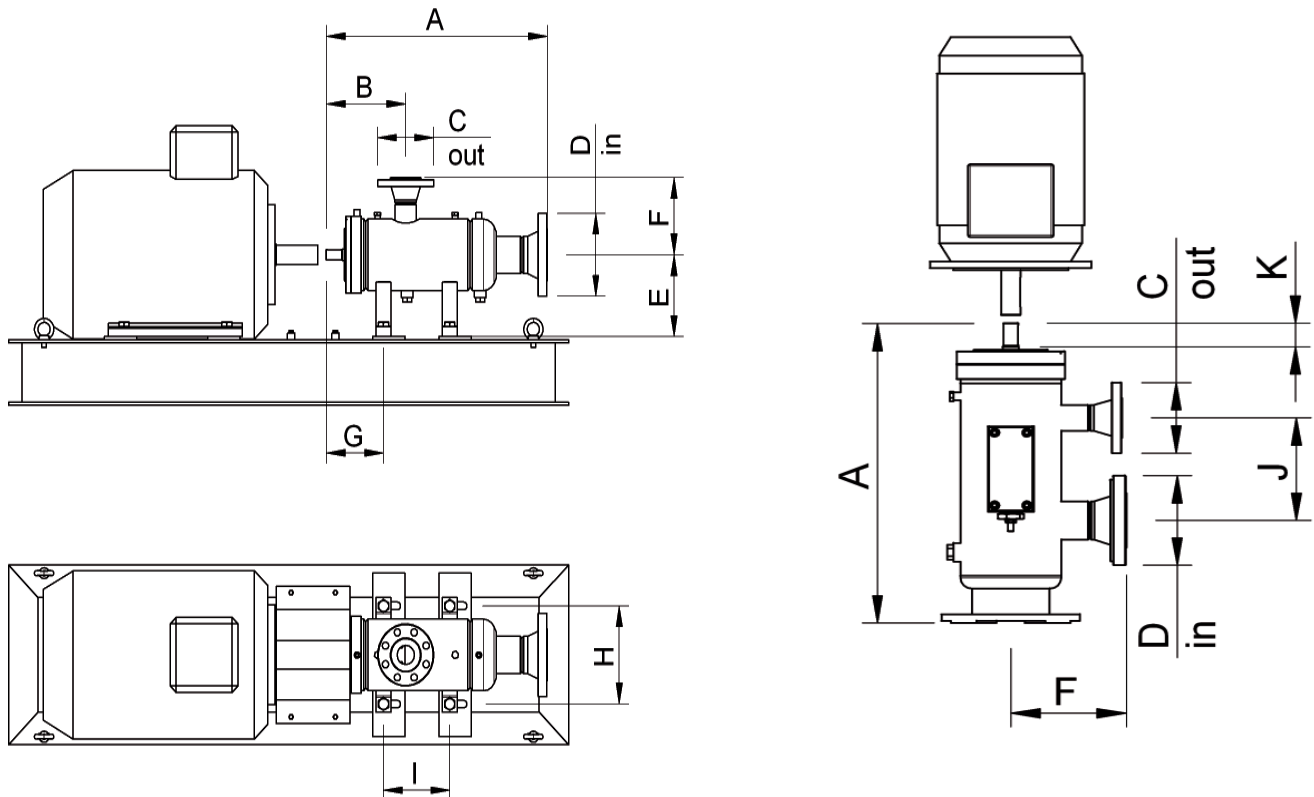
Mechanical seals can be supplied according to API 682 rules. As an alternative to rotating seals, the pump can be equipped with a magnetic coupling. The magnetic coupling ensures no possible leaking due to the rotating seals wearing or to contaminated fluids.

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SMAPI Pump Dimensions

Pump			PSP20	PSP25	PSP32	PSP40	PSP45	PSP55	PSP60	PSP70	PSP80	PSP90S	PSP110	PSP125	PSP150
Dimensions	A		305	354	359	521	600	670	750	820	900	990	1190	1343	1363
	B		130	165	170	186	208	245	270	290	325	370	410	438	458
Flanges Ø	ANSI	150	1"	1"	1-½"	1-½"	2"	3"	3"	3"	4"	6"	6"	8"	8"
		300				2"	3"	4"	4"	6"	ANSI-150 RF				
	600	1"	1"	1-½"	1-½"	1-½"	2"	3"	3"	3"	4"	4"	4"	6"	6"
	C (out) inches				2"	3"	4"	4"	6"	ANSI-300 RF	ANSI-300 RF				
DN	PN	10	25	25	40	40	50	80	80	80	100	150	150		
		16				50	80	100	100	150					
		25	25	25	40	40	50	80	80	80	100	100	100		
		C (out) mm				50	80	80	100	100					
Dimensions	E		106	106	106	119	150	160	190	200	215	225	260	315	315
	F		160	160	160	185	195	220	230	260	285	320	345	365	365
	G		80	85	144	155	180	199	190	200	205	265	270	398	418
	H		144	144	144	144	180	180	300	300	300	300	370	508	508
	I		90	90	160	150	215	245	335	400	470	490	550	530	530
	J		135	135	135	140	170	190	230	275	280	300	415	610	610
	K		36	36	36	36	55	55	55	55	60	110	110	110	130

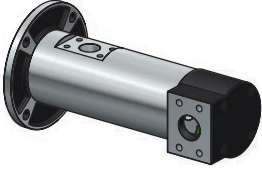
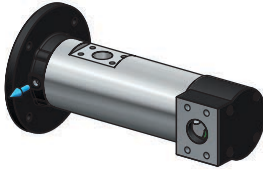

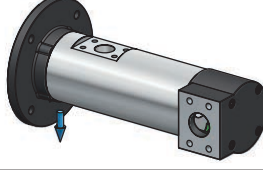
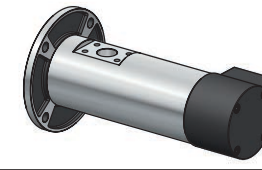
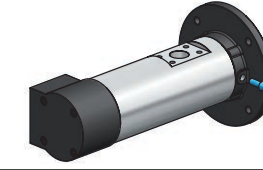
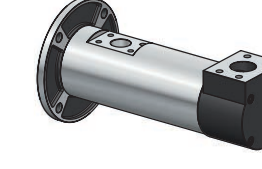
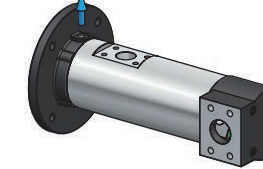
All above dimensions are indicative and can change without prior information.



All our SMAPI pumps can be customised with specific and/or special parts dimensions according to customer requirements.

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Suction and drain hole configuration table

Suction Configuration Codes		Weep Hole Configuration Codes only for the AC (hollow shaft configurations)	
	T1		D1
	T2		D2
	T3		D3
	T4		D4


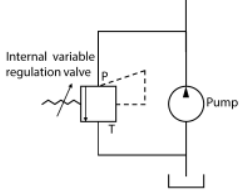

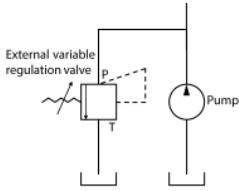
Standard configuration: T1 – D2

Standard configuration for pumps WITH RP VALVE*: T4 – D2

Example of code for optional suction and drain configuration: PSP32 SMT 45L AC19B5 T1 D3

* Parker recommends that in case of request of pump with RP valve (external variable regulation valve), it is necessary to choose very carefully the suction and drain configuration. Having the max relief valve built in the pump doesn't make possible any change of suction port position


RP relief valve option configuration table

Internal Bypass		External Bypass	
			

Internal Bypass variable regulation valve is available as option for the following models: PSP20, PSP25, PSP32, PSP40, PSP45, PSP55, PSP60, PSP70

External Bypass variable regulation valve is available as option for the following models: PSP80, PSP90S, PSP125.

Example of code for optional RP valve: PSP32 SMT 45L AC19B5 T4 D2 RP


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Type of Shaft Seals and Specifications

	NBR lip seal	VITON lip seal	EPDM lip seal
Seal materials	Nitrile Butadiene rubber	Fluoroelastometer rubber	Ethylene Propylene Diene Monomer rubber
Fluids managed	Mineral oils, synthetic oils	Mineral oils, synthetic oils	Skydrol, aeronautical fluids
Temperature range	From -40° up to +100° C	From -25° up to 160° C	From -50° up to +150° C
Contamination limits	NAS to 1638 class 10 or ISO DIS 4406 – 19/16		
Shaft rotation limits	From 500 to 3,600 rpm - for shaft speed lower than 1,000 rpm and over 1,800 rpm, please contact Parker.		
Order code	No code, standard-issue	V	EPDM

	TM mechanical seal	TMZ32Y1 mechanical seal	TMK22U31 mechanical seal
Seal materials	Graphite + chrome-molybdenum steel	Graphite + silicon carbide	Tungsten carbide + silicon carbide
Fluids managed	Mineral oils, synthetic oils	Fuel oils, diesel oils	Coolant fluids, water/glycol emulsions, fluids with contaminants
Temperature range	From -20° up to +140° C	From -20° up to +140° C	From -20° up to +140° C
Contamination limits	NAS to 1638 class 10 or ISO DIS 4406 – 19/16		
Shaft rotation limits	From 500 to 3,600 rpm - for shaft speed lower than 1,000 rpm and over 1,800 rpm, please contact Parker.		
Order code	TM	TMZ32Y1	TMK22U31

	Magnetic coupling seal
Seal materials	Stainless steel, Hastelloy, PEEK, ceramic
Fluids managed	All standard oils, fuels, emulsion and fluids, plus all fluids unsuited for use with NBR/Viton/EPDM/PTFE lip seals or with mechanical seal materials
Temperature range	Up to +130° C standard, up to 300° C with ceramic seal
Contamination limits	NAS to 1638 class 10 or ISO DIS 4406 – 19/16
Shaft rotation limits	From 500 to 3,600 rpm - for shaft speed lower than 1,000 rpm and over 1,800 rpm, please contact Parker.
Order code	Ask Parker: tell us the specifics of your installation, our engineers will provide you a solution!


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Performance Charts

SMT			Values at working speed 1450 rpm																					
Type	Size	Flow and Power	6 cSt					68 cSt								400 cSt								
			10 bar	20 bar	30 bar	40 bar	50 bar	10 bar	20 bar	30 bar	40 bar	50 bar	60 bar	70 bar	80 bar	10 bar	20 bar	30 bar	40 bar	50 bar	60 bar	70 bar	80 bar	
PSP20	8L	l/min	4.6	4.3	4.1	4.0		4.8	4.6	4.4	4.3	4.2	4.1	4.0	4.0	4.9	4.7	4.6	4.5	4.4	4.4	4.3	4.2	
		kW	0.1	0.2	0.3	0.4		0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.2	0.3	0.4	0.5	0.6	0.6	0.7	0.8	
	12L	l/min	6.4	6.1	5.8	5.5		6.7	6.4	6.2	6.0	5.9	5.8	5.6	5.5	6.8	6.6	6.4	6.3	6.2	6.1	6.0	5.9	
		kW	0.1	0.3	0.4	0.5		0.2	0.3	0.4	0.6	0.7	0.8	0.9	1.1	0.3	0.4	0.5	0.7	0.8	0.9	1.0	1.2	
	15L	l/min	9.2	8.7	8.2	7.9		9.5	9.2	8.9	8.6	8.4	8.2	8.1	7.9	9.7	9.4	9.2	9.0	8.9	8.7	8.6	8.5	
		kW	0.2	0.4	0.6	0.7		0.3	0.5	0.6	0.8	1.0	1.2	1.3	1.5	0.4	0.6	0.7	0.9	1.1	1.3	1.5	1.7	
	20L	l/min	12.9	12.1	11.5	11.1		13.4	12.8	12.4	12.1	11.8	11.5	11.3	11.1	13.6	13.2	12.9	12.6	12.4	12.2	12.0	11.9	
		kW	0.3	0.5	0.8	1.0		0.4	0.6	0.9	1.1	1.4	1.6	1.9	2.1	0.5	0.8	1.0	1.3	1.6	1.8	2.1	2.3	
	23L	l/min	11.0	10.4	9.9	9.5		11.5	11.0	10.6	10.4	10.1	9.9	9.7	9.5	11.7	11.3	11.0	10.8	10.6	10.5	10.3	10.2	
		kW	0.3	0.5	0.7	0.9		0.3	0.5	0.8	1.0	1.2	1.4	1.6	1.8	0.5	0.7	0.9	1.1	1.3	1.6	1.8	2.0	
	PSP25	25L	l/min	14.4	13.5	12.9	12.4		14.9	14.3	13.9	13.5	13.2	12.9	12.6	12.4	15.2	14.7	14.4	14.1	13.8	13.6	13.4	13.2
			kW	0.3	0.6	0.9	1.1		0.4	0.7	1.0	1.2	1.5	1.8	2.1	2.4	0.6	0.8	1.1	1.4	1.7	2.0	2.3	2.6
30L		l/min	18.0	16.9	16.1	15.4		18.6	17.9	17.3	16.9	16.4	16.1	15.8	15.5	19.0	18.4	18.0	17.6	17.3	17.0	16.8	16.5	
		kW	0.4	0.7	1.1	1.4		0.5	0.9	1.2	1.6	1.9	2.3	2.6	3.0	0.7	1.1	1.4	1.8	2.1	2.5	2.8	3.2	
PSP32	35L	l/min	21.2	20.0	19.0	18.2	17.5	22.0	21.1	20.4	19.9	19.4	19.0	18.6	18.3	22.4	21.7	21.2	20.8	20.4	20.1	19.8	19.5	
		kW	0.5	0.9	1.3	1.7	2.1	0.6	1.0	1.4	1.8	2.2	2.6	3.0	3.5	0.8	1.2	1.6	2.0	2.4	2.9	3.3	3.7	
	45L	l/min	25.9	24.4	23.2	22.3	21.4	26.9	25.8	25.0	24.3	23.7	23.2	22.7	22.3	27.4	26.6	25.9	25.4	24.9	24.5	24.2	23.9	
		kW	0.6	1.1	1.6	2.1	2.6	0.7	1.2	1.7	2.2	2.7	3.2	3.7	4.2	0.9	1.4	2.0	2.5	3.0	3.5	4.0	4.5	
	55L	l/min	28.3	26.6	25.3	24.3	23.4	29.3	28.2	27.3	26.5	25.9	25.3	24.8	24.3	29.9	29.0	28.3	27.7	27.2	26.8	26.4	26.0	
		kW	0.6	1.2	1.7	2.2	2.8	0.8	1.3	1.9	2.4	3.0	3.5	4.1	4.6	1.0	1.6	2.1	2.7	3.3	3.8	4.4	5.0	
	75L	l/min	37.7	35.5	33.8	32.4		39.1	37.5	36.3	35.3	34.5	33.7	33.1	32.5	39.9	38.6	37.7	36.9	36.3	35.7	35.2	34.7	
		kW	0.8	1.6	2.3	3.0		1.0	1.8	2.5	3.2	4.0	4.7	5.4	6.1	1.4	2.1	2.9	3.6	4.4	5.1	5.9	6.6	
PSP40	100L	l/min	51.6	48.5	46.2	44.3	42.6	53.5	51.3	49.7	48.3	47.1	46.1	45.2	44.4	54.5	52.8	51.6	50.5	49.6	48.8	48.1	47.4	
		kW	1.1	2.1	3.1	4.1	5.1	1.4	2.4	3.4	4.4	5.4	6.4	7.4	8.4	1.7	2.8	3.8	4.8	5.9	6.9	7.9	8.9	
	125L	l/min	62.6	58.9	56.1	53.8	51.7	64.9	62.3	60.3	58.7	57.2	56.0	54.9	53.9	66.2	64.2	62.6	61.3	60.2	59.2	58.4	57.6	
		kW	1.4	2.6	3.7	4.9	6.1	1.6	2.9	4.1	5.3	6.5	7.7	8.9	10.1	2.1	3.4	4.6	5.9	7.1	8.4	9.6	10.9	
	150L	l/min	73.6	69.3	66.0	63.2		76.4	73.3	71.0	69.0	67.4	65.9	64.6	63.4	77.9	75.5	73.7	72.1	70.8	69.7	68.7	67.8	
		kW	1.6	3.0	4.4	5.8		1.9	3.4	4.8	6.2	7.7	9.1	10.5	11.9	2.5	4.0	5.4	6.9	8.4	9.8	11.3	12.8	

For working conditions data sheet specific to your application, please contact Parker.

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Performance Charts

SMT			Values at working speed 1450 rpm																				
			6 cSt					68 cSt								400 cSt							
Type	Size	Flow and Power	10 bar	20 bar	30 bar	40 bar	50 bar	10 bar	20 bar	30 bar	40 bar	50 bar	60 bar	70 bar	80 bar	10 bar	20 bar	30 bar	40 bar	50 bar	60 bar	70 bar	80 bar
PSP45	180L	l/min	88.6	83.3	79.3	76.0	73.2	91.8	88.2	85.3	83.0	81.0	79.2	77.6	76.2	93.6	90.8	88.6	86.7	85.2	83.8	82.6	81.5
		kW	1.9	3.6	5.3	7.0	8.7	2.3	4.0	5.7	7.4	9.2	10.9	12.6	14.3	2.9	4.7	6.5	8.2	10.0	11.7	13.5	15.3
	210L	l/min	104.9	98.7	94.0	90.0	86.7	108.8	104.4	101.0	98.3	95.9	93.8	91.9	90.3	110.9	107.5	104.9	102.7	100.9	99.2	97.8	96.5
		kW	2.3	4.3	6.3	8.3	10.3	2.7	4.7	6.8	8.8	10.9	12.9	14.9	17.0	3.5	5.6	7.6	9.7	11.8	13.9	16.0	18.1
PSP55	250L	l/min	132.3	124.5	118.5	113.6	109.3	137.2	131.7	127.5	124.0	121.0	118.3	116.0	113.9	139.8	135.6	132.3	129.6	127.2	125.2	123.4	121.7
		kW	2.8	5.3	7.9	10.4	12.9	3.3	5.9	8.5	11.0	13.6	16.2	18.7	21.3	4.2	6.8	9.5	12.1	14.7	17.4	20.0	22.7
	300L	l/min	149.7	140.9	134.1	128.5	123.7	155.2	149.0	144.2	140.3	136.9	133.9	131.2	128.8	158.2	153.4	149.7	146.6	144.0	141.7	139.6	137.7
		kW	3.2	6.0	8.9	11.8	14.6	3.8	6.7	9.6	12.5	15.4	18.3	21.2	24.1	4.8	7.7	10.7	13.7	16.7	19.7	22.7	25.6
	330L	l/min	165.4	155.6	148.2	142.0		171.5	164.6	159.3	155.0	151.2	147.9	145.0	142.3	174.8	169.5	165.4	162.0	159.1	156.5	154.2	152.2
		kW	3.5	6.7	9.8	13.0		4.2	7.4	10.6	13.8	17.0	20.2	23.4	26.6	5.3	8.6	11.8	15.1	18.4	21.7	25.0	28.3
	380L	l/min	188.0	176.9	168.4	161.4		195.0	187.1	181.1	176.2	171.9	168.1	164.8	161.8	198.7	192.6	188.0	184.1	180.8	177.9	175.3	173.0
		kW	4.0	7.6	11.2	14.8		4.7	8.4	12.0	15.7	19.3	23.0	26.6	30.3	6.0	9.7	13.5	17.2	21.0	24.7	28.4	32.2
PSP60	440L	l/min	223.7	210.5	200.4	192.1		232.0	222.7	215.6	209.7	204.6	200.1	196.1	192.6	236.5	229.3	223.7	219.1	215.2	211.7	208.6	205.9
		kW	4.7	9.0	13.3	17.6		5.6	9.9	14.3	18.6	23.0	27.3	31.6	36.0	7.0	11.5	15.9	20.4	24.8	29.3	33.8	38.2
	500L	l/min	248.6	233.9	222.7	213.4		257.8	247.4	239.5	233.0	227.3	222.3	217.9	213.9	262.8	254.7	248.6	243.5	239.1	235.3	231.8	228.7
		kW	5.3	10.0	14.8	19.5		6.2	11.0	15.9	20.7	25.5	30.3	35.2	40.0	7.8	12.7	17.7	22.6	27.6	32.5	37.5	42.5
PSP70	600L	l/min	304.5	286.6	272.8	261.4		315.8	303.1	293.4	285.4	278.5	272.4	267.0	262.1	321.9	312.1	304.5	298.3	292.9	288.2	284.0	280.2
		kW	6.4	12.2	18.0	23.9		7.5	13.4	19.3	25.2	31.1	37.1	43.0	48.9	9.3	15.4	21.5	27.5	33.6	39.7	45.7	51.8
	660L	l/min	338.3	318.4	303.1	290.5		350.9	336.8	326.0	317.1	309.4	302.6	296.6	291.2	357.7	346.7	338.4	331.4	325.4	320.2	315.5	311.3
		kW	7.1	13.6	20.1	26.5		8.3	14.9	21.5	28.0	34.6	41.2	47.7	54.3	10.4	17.1	23.8	30.6	37.3	44.1	50.8	57.5
	800L	l/min	394.7	371.5	353.7	338.9		409.4	392.9	380.4	369.9	361.0	353.1	346.1	339.7	417.3	404.5	394.7	386.7	379.7	373.6	368.1	363.2
		kW	8.3	15.9	23.4	30.9		9.7	17.4	25.1	32.7	40.4	48.0	55.7	63.3	12.1	19.9	27.8	35.7	43.5	51.4	59.3	67.1
PSP80	1000L	l/min	515.5	485.2	461.9	442.7		534.7	513.2	496.8	483.2	471.5	461.2	452.0	443.7	545.0	528.3	515.6	505.0	495.9	487.9	480.8	474.4
		kW	10.7	20.4	30.2	39.9		12.0	21.7	31.5	41.2	51.0	60.7	70.5	80.2	14.0	23.7	33.5	43.2	53.0	62.7	72.5	82.2
	1200L	l/min	626.0	589.1	560.9	537.5		649.3	623.2	603.2	586.7	572.5	560.0	548.8	538.8	661.8	641.6	626.1	613.2	602.2	592.5	583.8	576.1
		kW	13.0	24.8	36.6	48.5		14.6	26.4	38.2	50.1	61.9	73.7	85.6	97.4	17.0	28.8	40.6	52.5	64.3	76.1	88.0	99.8

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Performance Charts

SMT			Values at working speed 2950 rpm																				
Type	Size	Flow and Power	6 cSt					68 cSt								400 cSt							
			10 bar	20 bar	30 bar	40 bar	50 bar	10 bar	20 bar	30 bar	40 bar	50 bar	60 bar	70 bar	80 bar	10 bar	20 bar	30 bar	40 bar	50 bar	60 bar	70 bar	80 bar
PSP20	8L	l/min	9.8	9.4	9.1	8.9	8.7	10.0	9.8	9.6	9.4	9.3	9.1	9.0	8.9	10.1	9.9	9.8	9.7	9.5	9.5	9.4	9.3
		kW	0.2	0.4	0.6	0.8	1.0	0.3	0.5	0.7	0.9	1.1	1.2	1.4	1.6	0.5	0.7	0.9	1.1	1.2	1.4	1.6	1.8
	12L	l/min	13.7	13.2	12.8	12.5	12.2	14.0	13.7	13.4	13.2	13.0	12.8	12.6	12.5	14.2	13.9	13.7	13.5	13.4	13.2	13.1	13.0
		kW	0.3	0.6	0.8	1.1	1.3	0.5	0.7	1.0	1.2	1.5	1.7	2.0	2.3	0.7	0.9	1.2	1.5	1.7	2.0	2.3	2.5
	15L	l/min	19.6	18.8	18.3	17.8	17.4	20.0	19.5	19.1	18.8	18.5	18.3	18.1	17.9	20.3	19.9	19.6	19.3	19.1	18.9	18.7	18.6
		kW	0.5	0.8	1.2	1.5	1.9	0.7	1.0	1.4	1.8	2.1	2.5	2.9	3.2	1.0	1.3	1.7	2.1	2.5	2.9	3.2	3.6
	20L	l/min	27.4	26.4	25.6	25.0	24.4	28.0	27.3	26.8	26.3	25.9	25.6	25.3	25.0	28.4	27.8	27.4	27.0	26.7	26.5	26.2	26.0
		kW	0.7	1.2	1.7	2.2	2.7	0.9	1.4	1.9	2.5	3.0	3.5	4.0	4.5	1.3	1.9	2.4	2.9	3.5	4.0	4.5	5.1
	23L	l/min	23.5	22.6	21.9	21.4	20.9	24.0	23.4	22.9	22.6	22.2	21.9	21.7	21.4	24.3	23.8	23.5	23.2	22.9	22.7	22.5	22.3
		kW	0.6	1.0	1.4	1.9	2.3	0.8	1.2	1.7	2.1	2.5	3.0	3.4	3.9	1.2	1.6	2.1	2.5	3.0	3.4	3.9	4.4
PSP25	25L	l/min	30.6	29.4	28.6	27.9	27.3	31.3	30.5	29.9	29.4	28.9	28.6	28.2	27.9	31.6	31.0	30.6	30.2	29.8	29.5	29.3	29.0
		kW	0.7	1.3	1.8	2.4	2.9	1.0	1.5	2.1	2.7	3.3	3.8	4.4	5.0	1.4	2.0	2.6	3.2	3.8	4.3	4.9	5.5
	30L	l/min	38.2	36.8	35.7	34.8	34.1	39.1	38.1	37.3	36.7	36.2	35.7	35.3	34.9	39.6	38.8	38.2	37.7	37.3	36.9	36.6	36.3
		kW	0.9	1.6	2.3	3.0	3.7	1.2	1.9	2.6	3.3	4.1	4.8	5.5	6.2	1.7	2.5	3.2	3.9	4.7	5.4	6.2	6.9
PSP32	35L	l/min	45.1	43.4	42.1	41.1	40.2	46.1	44.9	44.0	43.3	42.7	42.1	41.6	41.2	46.7	45.8	45.1	44.5	44.0	43.6	43.2	42.8
		kW	1.0	1.8	2.7	3.5	4.3	1.3	2.2	3.0	3.9	4.7	5.6	6.4	7.3	1.9	2.7	3.6	4.5	5.4	6.2	7.1	8.0
	45L	l/min	55.1	53.1	51.5	50.2	49.1	56.4	54.9	53.8	52.9	52.1	51.5	50.8	50.3	57.0	55.9	55.1	54.4	53.8	53.2	52.8	52.3
		kW	1.2	2.2	3.3	4.3	5.3	1.6	2.7	3.7	4.7	5.8	6.8	7.8	8.9	2.3	3.3	4.4	5.5	6.6	7.6	8.7	9.8
	55L	l/min	60.1	57.9	56.2	54.8	53.6	61.5	59.9	58.7	57.7	56.9	56.1	55.5	54.9	62.2	61.0	60.1	59.3	58.7	58.1	57.6	57.1
		kW	1.3	2.4	3.6	4.7	5.8	1.8	2.9	4.0	5.2	6.3	7.4	8.5	9.7	2.5	3.6	4.8	6.0	7.2	8.3	9.5	10.7
	75L	l/min	80.1	77.2	74.9	73.1	71.4	82.0	79.9	78.3	77.0	75.8	74.8	74.0	73.2	83.0	81.4	80.1	79.1	78.2	77.4	76.7	76.1
		kW	1.8	3.3	4.7	6.2	7.7	2.4	3.9	5.4	6.9	8.4	9.9	11.4	12.9	3.3	4.9	6.4	8.0	9.5	11.1	12.7	14.2
PSP40	100L	l/min	109.5	105.5	102.4	99.9	97.7	112.1	109.2	107.0	105.2	103.7	102.3	101.1	100.0	113.4	111.2	109.5	108.1	106.9	105.9	104.9	104.1
		kW	2.4	4.4	6.4	8.4	10.4	3.1	5.1	7.2	9.3	11.3	13.4	15.4	17.5	4.2	6.4	8.5	10.6	12.8	14.9	17.0	19.2
	125L	l/min	133.0	128.1	124.4	121.3	118.6	136.1	132.6	130.0	127.8	125.9	124.3	122.8	121.5	137.7	135.1	133.0	131.3	129.8	128.6	127.4	126.4
		kW	2.9	5.4	7.8	10.2	12.7	3.7	6.2	8.7	11.2	13.7	16.2	18.7	21.2	5.1	7.7	10.3	12.9	15.5	18.1	20.7	23.3
	150L	l/min	156.5	150.7	146.3	142.7	139.5	160.1	156.0	152.9	150.3	148.1	146.2	144.4	142.9	162.0	158.9	156.5	154.5	152.8	151.2	149.9	148.7
		kW	3.4	6.3	9.2	12.0	14.9	4.4	7.3	10.3	13.2	16.2	19.1	22.0	25.0	6.0	9.1	12.1	15.2	18.2	21.3	24.3	27.4

For working conditions data sheet specific to your application, please contact Parker.

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Performance Charts

SMT			Values at working speed 2950 rpm																				
Type	Size	Flow and Power	6 cSt					68 cSt								400 cSt							
			10 bar	20 bar	30 bar	40 bar	50 bar	10 bar	20 bar	30 bar	40 bar	50 bar	60 bar	70 bar	80 bar	10 bar	20 bar	30 bar	40 bar	50 bar	60 bar	70 bar	80 bar
PSP45	180L	l/min	188.1	181.2	175.9	171.5	167.8	192.5	187.6	183.9	180.8	178.1	175.8	173.7	171.8	194.8	191.0	188.1	185.7	183.7	181.8	180.2	178.8
		kW	4.1	7.5	11.0	14.4	17.9	5.2	8.7	12.3	15.8	19.3	22.9	26.4	29.9	7.0	10.7	14.4	18.0	21.7	25.4	29.0	32.7
	210L	l/min	222.8	214.6	208.3	203.1	198.7	227.9	222.2	217.7	214.1	210.9	208.1	205.7	203.4	230.7	226.2	222.8	219.9	217.5	215.3	213.4	211.7
		kW	4.8	8.9	13.0	17.1	21.2	6.2	10.3	14.5	18.7	22.9	27.1	31.3	35.4	8.3	12.7	17.0	21.4	25.7	30.1	34.4	38.7
PSP55	250L	l/min	281.0	270.7	262.8	256.3	250.6	287.5	280.2	274.7	270.0	266.0	262.5	259.4	256.6	291.0	285.4	281.0	277.5	274.4	271.6	269.2	267.1
		kW	6.0	11.2	16.3	21.5	26.6	7.5	12.8	18.1	23.4	28.6	33.9	39.2	44.5	10.0	15.5	21.0	26.5	32.0	37.4	42.9	48.4
	300L	l/min	318.0	306.3	297.4	290.0	283.6	325.4	317.1	310.8	305.6	301.1	297.1	293.6	290.4	322.9	318.0	314.0	310.5	307.4	304.7	302.2	
		kW	6.8	12.6	18.5	24.3	30.2	8.5	14.5	20.5	26.4	32.4	38.4	44.4	50.3	11.4	17.6	23.8	30.0	36.2	42.4	48.6	54.8
	330L	l/min	351.3	338.4	328.5	320.3	313.3	359.4	350.3	343.3	337.5	332.6	328.2	324.3	320.8	363.8	356.7	351.3	346.8	343.0	339.6	336.5	333.8
		kW	7.5	14.0	20.4	26.9	33.3	9.4	16.0	22.6	29.2	35.8	42.4	49.0	55.6	12.6	19.4	26.2	33.1	39.9	46.8	53.6	60.5
	380L	l/min	399.4	384.7	373.5	364.2	356.2	408.6	398.2	390.3	383.7	378.1	373.1	368.7	364.7	413.6	405.5	399.4	394.3	389.9	386.0	382.6	379.5
		kW	8.5	15.9	23.2	30.5	37.9	10.7	18.2	25.7	33.2	40.7	48.2	55.7	63.2	14.3	22.1	29.8	37.6	45.4	53.2	61.0	68.8
PSP60	440L	l/min	475.3	457.8	444.5	433.4	423.9	486.3	473.9	464.5	456.7	449.9	444.0	438.7	434.0	492.2	482.6	475.3	469.2	464.0	459.4	455.3	451.6
		kW	10.1	18.8	27.6	36.3	45.0	12.6	21.5	30.4	39.4	48.3	57.2	66.1	75.1	16.7	25.9	35.2	44.5	53.7	63.0	72.3	81.5
	500L	l/min	528.1	508.7	493.8	481.5	471.0	540.3	526.6	516.1	507.4	499.9	493.4	487.5	482.2	546.9	536.3	528.1	521.4	515.5	510.4	505.9	501.8
		kW	11.2	20.9	30.6	40.3	50.0	14.0	23.9	33.8	43.7	53.7	63.6	73.5	83.4	18.5	28.8	39.1	49.4	59.7	70.0	80.3	90.6
PSP70	600L	l/min	646.9	623.1	605.0	589.9	576.9	661.9	645.1	632.2	621.6	612.4	604.4	597.2	590.7	669.9	656.9	646.9	638.7	631.5	625.3	619.7	614.7
		kW	13.6	25.5	37.4	49.3	61.1	16.8	29.0	41.1	53.3	65.4	77.6	89.7	101.9	22.1	34.7	47.3	59.9	72.5	85.1	97.7	110.3
	660L	l/min	718.8	692.4	672.2	655.4	641.0	735.4	716.7	702.5	690.6	680.5	671.5	663.5	656.4	744.4	729.9	718.8	709.6	701.7	694.8	688.6	683.0
		kW	15.2	28.4	41.5	54.7	67.9	18.7	32.2	45.7	59.2	72.7	86.2	99.7	113.2	24.5	38.5	52.5	66.5	80.6	94.6	108.6	122.6
800L	l/min	838.6	807.8	784.2	764.7	747.9	858.0	836.2	819.5	805.7	793.9	783.4	774.1	765.8	868.4	851.5	838.6	827.9	818.7	810.6	803.4	796.9	
	kW	17.7	33.1	48.5	63.9	79.3	21.8	37.5	53.3	69.0	84.8	100.5	116.3	132.1	28.6	44.9	61.3	77.6	94.0	110.3	126.7	143.0	
PSP80	1000L	l/min	1095.3	1055.0	1024.3	998.7	-	1120.6	1092.2	1070.4	1052.4	1036.9	1023.2	1011.1	1000.2	1134.3	1112.2	1095.3	1081.3	1069.3	1058.7	1049.3	1040.8
		kW	22.7	42.5	62.4	82.2	-	26.7	46.5	66.4	86.2	106.0	125.8	145.6	165.5	32.8	52.6	72.4	92.2	112.1	131.9	151.7	171.5
	1200L	l/min	1330.0	1281.1	1243.7	1212.8	-	1360.8	1326.2	1299.8	1277.9	1259.1	1242.5	1227.8	1214.5	1377.4	1350.6	1330.0	1313.0	1298.4	1285.6	1274.1	1263.8
		kW	27.6	51.7	75.7	99.8	-	32.4	56.5	80.6	104.6	128.7	152.8	176.9	200.9	39.8	63.9	87.9	112.0	136.1	160.2	184.2	208.3

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Performance Charts

SMT16B			Values at working speed 1450 rpm											
Type	Size	Flow and Power	6 cSt		68 cSt					400 cSt				
			5 bar	10 bar	5 bar	10 bar	20 bar	30 bar	40 bar	5 bar	10 bar	20 bar	30 bar	40 bar
PSP20	8L	l/min	4.62	4.36	4.91	4.77	4.58	4.44	4.31	4.97	4.87	4.72	4.60	4.51
		kW	0.06	0.11	0.09	0.14	0.23	0.32	0.41	0.15	0.19	0.28	0.37	0.47
	12L	l/min	6.47	6.10	6.62	6.33	5.79	5.24	4.65	6.71	6.45	5.96	5.43	4.86
		kW	0.06	0.11	0.13	0.19	0.32	0.44	0.57	0.20	0.27	0.40	0.52	0.65
	15L	l/min	9.24	8.72	9.46	9.04	8.27	7.48	6.64	9.58	9.22	8.51	7.76	6.94
		kW	0.12	0.21	0.19	0.28	0.46	0.63	0.81	0.29	0.38	0.57	0.75	0.93
20L	l/min	11.09	10.46	11.36	10.85	9.92	8.98	7.97	11.50	11.06	10.21	9.31	8.33	
	kW	0.15	0.26	0.22	0.33	0.55	0.76	0.98	0.35	0.46	0.68	0.90	1.12	
PSP25	25L	l/min	14.44	13.62	14.79	14.13	12.92	11.69	10.38	14.98	14.40	13.30	12.13	10.85
		kW	0.19	0.32	0.27	0.41	0.69	0.97	1.25	0.41	0.55	0.84	1.13	1.41
	30L	l/min	18.05	17.03	18.48	17.66	16.15	14.61	12.98	18.72	18.00	16.62	15.16	13.56
		kW	0.23	0.41	0.34	0.51	0.86	1.21	1.56	0.51	0.69	1.05	1.41	1.77
PSP32	35L	l/min	21.29	20.09	21.80	20.83	19.05	17.23	15.31	22.08	21.24	19.61	17.88	16.00
		kW	0.27	0.47	0.37	0.58	0.99	1.40	1.81	0.55	0.76	1.18	1.60	2.03
	45L	l/min	26.02	24.55	26.65	25.46	23.28	21.06	18.71	26.99	25.96	23.97	21.86	19.56
		kW	0.32	0.57	0.45	0.71	1.21	1.71	2.21	0.67	0.93	1.44	1.96	2.48
	55L	l/min	28.39	26.79	29.07	27.78	25.40	22.98	20.41	29.44	28.32	26.15	23.85	21.33
		kW	0.35	0.62	0.50	0.77	1.32	1.87	2.42	0.73	1.01	1.58	2.14	2.70
75L	l/min	37.85	35.71	38.76	37.04	33.86	30.64	27.22	39.26	37.76	34.86	31.79	28.45	
	kW	0.47	0.83	0.66	1.03	1.76	2.49	3.22	0.97	1.35	2.10	2.85	3.60	
PSP40	100L	l/min	51.75	48.83	53.00	50.64	46.30	41.88	37.21	53.67	51.62	47.66	43.47	38.89
		kW	0.63	1.12	0.85	1.35	2.36	3.36	4.36	1.23	1.75	2.77	3.80	4.83
	125L	l/min	62.84	59.29	64.35	61.49	56.22	50.86	45.18	65.17	62.68	57.88	52.78	47.23
		kW	0.76	1.36	1.04	1.65	2.86	4.07	5.29	1.50	2.12	3.37	4.62	5.86
150L	l/min	73.92	69.75	75.71	72.34	66.14	59.83	53.16	76.68	73.74	68.09	62.10	55.56	
	kW	0.89	1.60	1.22	1.94	3.36	4.79	6.22	1.76	2.50	3.96	5.43	6.90	
PSP45	180L	l/min	88.88	83.87	91.03	86.98	79.52	71.94	63.91	92.19	88.66	81.87	74.66	66.80
		kW	1.06	1.91	1.43	2.29	4.01	5.73	7.44	2.04	2.93	4.69	6.45	8.22
	210L	l/min	105.25	99.32	107.80	103.00	94.17	85.19	75.68	109.17	104.99	96.95	88.42	79.11
		kW	1.26	2.26	1.69	2.71	4.75	6.78	8.82	2.42	3.47	5.55	7.64	9.73
PSP55	250L	l/min	132.77	125.28	135.99	129.94	118.79	107.47	95.47	137.72	132.45	122.29	111.54	99.79
		kW	1.56	2.82	2.06	3.34	5.91	8.47	11.04	2.89	4.21	6.84	9.48	12.11
	300L	l/min	150.24	141.77	153.88	147.03	134.42	121.61	108.03	155.84	149.87	138.39	126.21	112.92
		kW	1.76	3.19	2.33	3.78	6.68	9.59	12.49	3.27	4.76	7.74	10.73	13.71
	330L	l/min	165.97	156.60	169.98	162.42	148.49	134.33	119.34	172.15	165.56	152.87	139.42	124.74
		kW	1.94	3.52	2.57	4.18	7.38	10.59	13.80	3.61	5.26	8.55	11.85	15.14
380L	l/min	188.68	178.03	193.24	184.65	168.81	152.72	135.67	195.70	188.21	173.79	158.50	141.81	
	kW	2.21	4.01	2.92	4.75	8.39	12.04	15.69	4.11	5.98	9.72	13.47	17.21	

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Performance Charts

SMT16B			Values at working speed 1450 rpm											
Type	Size	Flow and Power	6 cSt		68 cSt					400 cSt				
			5 bar	10 bar	5 bar	10 bar	20 bar	30 bar	40 bar	5 bar	10 bar	20 bar	30 bar	40 bar
PSP60	440L	l/min	224.54	211.87	229.97	219.74	200.90	181.75	161.46	232.90	223.99	206.82	188.63	168.76
		kW	2.61	4.75	3.43	5.60	9.94	14.28	18.62	4.78	7.01	11.47	15.93	20.38
	500L	l/min	249.49	235.42	255.53	244.16	223.22	201.94	179.40	258.78	248.88	229.80	209.59	187.51
		kW	2.90	5.27	3.81	6.22	11.04	15.87	20.69	5.32	7.79	12.74	17.69	22.65
PSP70	600L	l/min	305.63	288.38	313.02	299.10	273.44	247.38	219.76	317.01	304.87	281.51	256.74	229.70
		kW	3.51	6.42	4.56	7.51	13.42	19.33	25.24	6.29	9.32	15.39	21.45	27.52
	660L	l/min	339.59	320.43	347.80	332.33	303.83	274.86	244.18	352.23	338.75	312.78	285.27	255.22
		kW	3.90	7.13	5.06	8.35	14.91	21.47	28.04	6.99	10.36	17.10	23.84	30.58
	800L	l/min	396.18	373.83	405.77	387.72	354.46	320.67	284.88	410.94	395.21	364.91	332.81	297.76
		kW	4.55	8.32	5.91	9.74	17.40	25.05	32.71	8.15	12.09	19.95	27.81	35.67
PSP80	1000L	l/min	517.47	488.27	529.98	506.41	462.97	418.84	372.09	536.73	516.19	476.62	434.70	388.91
		kW	5.82	10.69	7.13	12.00	21.74	31.49	41.23	9.11	13.99	23.73	33.47	43.22
	1200L	l/min	628.35	592.90	643.55	614.92	562.18	508.59	451.82	651.75	626.80	578.76	527.84	472.25
		kW	7.07	12.98	8.65	14.57	26.40	38.23	50.06	11.07	16.98	28.82	40.65	52.48
PSP90S	1220L	l/min	631.53	595.90	646.80	618.03	565.02	511.16	454.10	655.04	629.97	581.68	530.51	474.64
		kW	7.10	13.05	8.70	14.64	26.53	38.43	50.32	11.12	17.07	28.96	40.85	52.75
	1500L	l/min	701.70	662.11	718.67	686.70	627.80	567.96	504.56	727.82	699.96	646.31	589.46	527.38
		kW	7.89	14.50	9.66	16.27	29.48	42.69	55.91	12.36	18.97	32.18	45.39	58.61
	1700L	l/min	818.65	772.46	838.45	801.15	732.44	662.62	588.65	849.13	816.63	754.03	687.70	615.27
		kW	9.21	16.91	11.27	18.98	34.40	49.81	65.23	14.42	22.13	37.54	52.96	68.37
	2000L	l/min	935.60	882.81	958.22	915.60	837.07	757.28	672.74	970.43	933.29	861.75	785.94	703.17
		kW	10.52	19.33	12.88	21.69	39.31	56.93	74.54	16.48	25.29	42.91	60.52	78.14
	2200L	l/min	1075.94	1015.23	1101.96	1052.94	962.63	870.87	773.66	1116.00	1073.28	991.01	903.84	808.65
		kW	12.10	22.23	14.81	24.94	45.21	65.47	85.73	18.95	29.08	49.34	69.60	89.86
PSP110	2300L	l/min	1048.21	989.07	1073.57	1025.81	937.83	848.43	753.72	1087.24	1045.63	965.48	880.55	787.81
		kW	11.79	21.66	14.43	24.30	44.04	63.78	83.52	18.46	28.33	48.07	67.81	87.55
	2500L	l/min	1187.98	1120.95	1216.71	1162.58	1062.87	961.55	854.22	1232.21	1185.04	1094.21	997.96	892.85
		kW	13.36	24.54	16.36	27.54	49.91	72.28	94.65	20.92	32.11	54.48	76.85	99.22
	2800L	l/min	1327.74	1252.83	1359.85	1299.36	1187.92	1074.68	954.72	1377.17	1324.46	1222.94	1115.36	997.89
		kW	14.93	27.43	18.28	30.78	55.78	80.79	105.79	23.39	35.89	60.89	85.89	110.89
	3200L	l/min	1537.38	1450.64	1574.56	1504.52	1375.48	1244.36	1105.46	1594.62	1533.59	1416.04	1291.47	1155.46
		kW	17.29	31.76	21.17	35.64	64.59	93.54	122.49	27.08	41.55	70.50	99.45	128.40

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Performance Charts

SMT16B			Values at working speed 2950 rpm												
Type	Size	Flow and Power	6 cSt			68 cSt					400 cSt				
			5 bar	10 bar	20 bar	5 bar	10 bar	20 bar	30 bar	40 bar	5 bar	10 bar	20 bar	30 bar	40 bar
PSP20	8L	l/min	9.67	9.26	8.50	10.18	10.01	9.75	9.56	9.40	10.26	10.13	9.93	9.78	9.65
		kW	0.14	0.23	0.41	0.23	0.33	0.51	0.69	0.88	0.38	0.48	0.67	0.86	1.05
	12L	l/min	13.54	12.97	11.90	13.75	13.27	12.32	11.28	10.13	13.86	13.43	12.54	11.54	10.41
		kW	0.20	0.33	0.58	0.33	0.46	0.71	0.97	1.23	0.54	0.67	0.94	1.21	1.47
	15L	l/min	19.34	18.52	17.00	19.64	18.95	17.59	16.12	14.47	19.80	19.18	17.92	16.49	14.87
		kW	0.29	0.47	0.83	0.47	0.65	1.02	1.39	1.75	0.77	0.96	1.34	1.72	2.10
20L	l/min	23.21	22.23	20.39	23.56	22.74	21.11	19.34	17.37	23.76	23.02	21.50	19.79	17.84	
	kW	0.34	0.56	0.99	0.56	0.78	1.22	1.66	2.10	0.92	1.15	1.61	2.07	2.52	
PSP25	25L	l/min	30.22	28.94	26.56	30.68	29.61	27.49	25.18	22.61	30.93	29.97	27.99	25.77	23.23
		kW	0.42	0.71	1.27	0.67	0.96	1.53	2.10	2.68	1.07	1.37	1.97	2.56	3.16
	30L	l/min	37.28	36.18	33.19	38.35	37.02	34.36	31.48	28.27	38.67	37.47	34.99	32.21	29.04
		kW	0.53	0.88	1.58	0.84	1.19	1.91	2.63	3.35	1.34	1.71	2.46	3.20	3.95
PSP32	35L	l/min	44.56	42.68	39.16	45.24	43.67	40.54	37.13	33.34	45.61	44.20	41.28	37.99	34.26
		kW	0.60	1.01	1.84	0.90	1.33	2.17	3.02	3.87	1.42	1.86	2.73	3.61	4.49
	45L	l/min	54.46	52.16	47.86	55.30	53.37	49.54	45.38	40.75	55.75	54.02	50.45	46.44	41.87
		kW	0.73	1.23	2.25	1.11	1.62	2.66	3.69	4.73	1.73	2.27	3.34	4.42	5.49
	55L	l/min	59.42	56.90	52.21	60.33	58.22	54.05	49.51	44.46	60.82	58.93	55.04	50.66	45.68
		kW	0.79	1.35	2.45	1.21	1.77	2.90	4.03	5.16	1.89	2.48	3.65	4.82	5.99
	75L	l/min	79.22	75.87	69.61	80.43	77.03	72.06	66.01	59.28	81.09	78.58	73.39	67.55	60.91
		kW	1.06	1.79	3.27	1.61	2.36	3.87	5.37	6.88	2.52	3.30	4.86	6.42	7.99
PSP40	100L	l/min	108.31	103.73	95.18	109.97	106.13	98.53	90.25	81.04	110.86	107.43	100.33	92.35	83.27
		kW	1.40	2.40	4.41	2.06	3.09	5.14	7.20	9.26	3.16	4.23	6.36	8.50	10.63
	125L	l/min	131.52	125.96	115.57	133.53	128.88	119.64	109.59	98.41	134.62	130.45	121.83	112.14	101.12
		kW	1.69	2.92	5.36	2.50	3.75	6.25	8.75	11.24	3.84	5.13	7.72	10.32	12.91
	150L	l/min	154.73	148.19	135.96	157.10	151.62	140.75	128.93	115.78	158.37	153.47	143.33	131.92	118.96
		kW	1.99	3.43	6.30	2.94	4.41	7.35	10.29	13.23	4.51	6.04	9.09	12.14	15.19
PSP45	180L	l/min	186.04	178.17	163.48	188.88	182.30	169.23	155.01	139.20	190.42	184.52	172.34	158.62	143.03
		kW	2.36	4.08	7.54	3.43	5.19	8.73	12.26	15.80	5.21	7.04	10.71	14.37	18.04
	210L	l/min	220.31	211.00	193.59	223.68	215.88	200.41	183.57	164.85	225.50	218.52	204.08	187.84	169.38
		kW	2.79	4.83	8.92	4.06	6.15	10.34	14.52	18.71	6.17	8.34	12.68	17.02	21.37
PSP55	250L	l/min	277.91	266.16	244.20	282.16	272.32	252.80	231.56	207.95	284.45	275.65	257.44	236.95	213.67
		kW	3.43	6.01	11.17	4.89	7.53	12.81	18.08	23.36	7.30	10.04	15.52	21.00	26.48
	300L	l/min	314.48	301.18	276.34	319.29	308.16	286.07	262.03	235.31	321.88	311.92	291.31	268.13	241.78
		kW	3.88	6.80	12.64	5.53	8.52	14.49	20.46	26.44	8.26	11.36	17.56	23.76	29.96
	330L	l/min	347.39	332.70	305.26	352.70	340.41	316.00	289.45	259.93	355.57	344.56	321.80	296.19	267.08
		kW	4.29	7.51	13.96	6.11	9.41	16.01	22.61	29.20	9.13	12.55	19.40	26.25	33.10
	380L	l/min	394.92	378.23	347.03	400.97	386.99	359.25	329.06	295.50	404.23	391.71	365.84	336.72	303.63
		kW	4.87	8.54	15.87	6.94	10.69	18.20	25.70	33.20	10.38	14.27	22.06	29.84	37.62

For working conditions data sheet specific to your application, please contact Parker.

Continued on Next Page


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Performance Charts

SMT16B			Values at working speed 2950 rpm													
Type	Size	Flow and Power	6 cSt			68 cSt					400 cSt					
			5 bar	10 bar	20 bar	5 bar	10 bar	20 bar	30 bar	40 bar	5 bar	10 bar	20 bar	30 bar	40 bar	
PSP60	440L	l/min	469.99	450.13	412.99	477.18	460.55	427.53	391.61	351.68	481.06	466.17	435.38	400.72	361.35	
		kW	5.75	10.11	18.83	8.12	12.58	21.51	30.44	39.36	12.05	16.68	25.95	35.21	44.48	
	500L	l/min	522.21	500.14	458.88	530.20	511.72	475.04	435.12	390.75	534.51	517.96	483.75	445.25	401.50	
PSP70	600L	kW	6.38	11.23	20.93	9.02	13.98	23.90	33.82	43.74	13.39	18.54	28.83	39.12	49.42	
		l/min	639.71	612.67	562.13	649.50	626.85	581.92	533.02	478.67	654.78	634.51	592.60	545.43	491.83	
	660L	kW	7.70	13.64	25.52	10.73	16.81	28.96	41.11	53.26	15.76	22.06	34.67	47.28	59.89	
		l/min	710.79	680.74	624.59	721.66	696.51	646.58	592.25	531.85	727.53	705.01	658.44	606.03	546.48	
	800L	kW	8.56	15.15	28.35	11.92	18.67	32.17	45.68	59.18	17.51	24.51	38.52	52.54	66.55	
		l/min	829.25	794.20	728.68	841.94	812.59	754.34	690.96	620.50	848.79	822.51	768.18	707.03	637.56	
PSP80	1000L	kW	9.98	17.68	33.08	13.91	21.78	37.54	53.29	69.04	20.43	28.60	44.95	61.29	77.64	
		l/min	1083.10	1037.33	951.75	1099.68	1061.34	985.26	902.48	810.45	1108.62	1074.30	1003.34	923.47	832.73	
	1200L	kW	12.80	22.71	42.54	16.79	26.70	46.53	66.35	86.17	22.86	32.78	52.60	72.42	92.25	
l/min		1315.20	1259.61	1155.70	1335.32	1288.77	1196.39	1095.86	984.11	1346.18	1304.50	1218.34	1121.36	1011.17		
PSP90S	1220L	kW	15.55	27.58	51.65	20.39	32.42	56.50	80.57	104.64	27.76	39.80	63.87	87.94	112.02	
		l/min	1321.85	1265.98	1161.54	1342.07	1295.29	1202.44	1101.40	989.09	1352.99	1311.10	1224.50	1127.03	1016.28	
	1500L	kW	15.62	27.72	51.91	20.49	32.59	56.78	80.98	105.17	27.90	40.00	64.19	88.39	112.58	
		l/min	1468.72	1406.64	1290.60	1491.19	1439.21	1336.04	1223.78	1098.99	1503.32	1456.77	1360.55	1252.25	1129.20	
	1700L	kW	17.36	30.80	57.68	22.77	36.21	63.09	89.97	116.86	31.00	44.45	71.33	98.21	125.09	
		l/min	1713.51	1641.08	1505.70	1739.73	1679.07	1558.71	1427.74	1282.15	1753.87	1699.57	1587.31	1460.96	1317.41	
	2000L	kW	20.25	35.93	67.30	26.56	42.24	73.61	104.97	136.33	36.17	51.85	83.22	114.58	145.94	
		l/min	1958.29	1875.52	1720.80	1988.26	1918.94	1781.39	1631.71	1465.31	2004.42	1942.37	1814.07	1669.67	1505.61	
	2200L	kW	23.15	41.07	76.91	30.36	48.28	84.12	119.96	155.81	41.34	59.26	95.10	130.95	166.79	
		l/min	2252.04	2156.85	1978.92	2286.50	2206.78	2048.59	1876.46	1685.11	2305.09	2233.72	2086.18	1920.12	1731.45	
	PSP110	2300L	kW	26.62	47.23	88.45	34.91	55.52	96.74	137.96	179.18	47.54	68.15	109.37	150.59	191.81
			l/min	2194.01	2101.28	1927.93	2227.58	2149.93	1995.81	1828.12	1641.69	2245.70	2176.17	2032.43	1870.65	1686.84
2500L		kW	25.93	46.01	86.17	34.01	54.09	94.25	134.40	174.56	46.32	66.39	106.55	146.71	186.86	
		l/min	2486.55	2381.45	2184.99	2524.60	2436.58	2261.92	2071.87	1860.59	2545.12	2466.33	2303.42	2120.07	1911.75	
2800L		kW	29.39	52.15	97.66	38.55	61.30	106.81	152.33	197.84	52.49	75.25	120.76	166.27	211.78	
		l/min	2779.08	2661.62	2442.05	2821.61	2723.24	2528.03	2315.62	2079.48	2844.55	2756.48	2574.41	2369.49	2136.66	
3200L		kW	32.85	58.28	109.15	43.08	68.51	119.38	170.25	221.11	58.67	84.10	134.96	185.83	236.69	
		l/min	3217.88	3081.88	2827.64	3267.12	3153.23	2927.19	2681.24	2407.82	3293.69	3191.72	2980.90	2743.62	2474.03	
		kW	38.04	67.48	126.38	49.88	79.33	138.23	197.13	256.02	67.93	97.38	156.27	215.17	274.07	


For working conditions data sheet specific to your application, please contact Parker.

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Performance Charts

SMT16B - PSP125/PSP150/PSP180			Values at working speed 1450 rpm				
			46 cSt				
Type	Size	Flow and Power	5 bar	10 bar	20 bar	30 bar	40 bar
PSP125	1750L	l/min	1658.1	1584.7	1442.2	1301.9	1154.4
		kW	21.4	36.7	67.3	97.9	128.5
	1900L	l/min	1842.4	1757.4	1602.5	1446.6	1282.7
		kW	23.8	40.8	74.8	108.8	142.8
	2100L	l/min	1842.0	1757.4	1602.5	1446.6	1282.7
		kW	26.8	44.9	82.3	119.7	157.1
2250L	l/min	2210.9	2108.9	1923.0	1735.9	1539.2	
	kW	28.6	49.0	89.8	130.5	171.3	
PSP150	2550L	l/min	2387.7	2277.6	2076.8	1874.8	1662.3
		kW	30.9	52.9	96.9	141.0	185.0
	2700L	l/min	2586.7	2467.4	2249.9	2031.0	1800.9
		kW	33.5	57.3	105.0	152.7	200.5
	2900L	l/min	2785.7	2657.2	2423.0	2187.3	1939.4
		kW	36.0	61.7	113.0	164.5	215.9
3100L	l/min	2984.7	2847.1	2596.0	2343.5	2077.9	
	kW	38.6	66.1	121.2	176.5	231.3	
3300L	l/min	3183.6	3036.9	2769.1	2499.7	2216.4	
	kW	41.2	70.5	129.3	188.0	246.7	
PSP180	3500L	l/min	3342.8	3188.7	2907.6	2624.7	2327.3
		kW	43.2	74.1	135.7	197.4	259.0
	3700L	l/min	3915.9	3735.3	3406.0	3074.7	2726.2
		kW	46.9	80.4	147.4	214.3	281.2
	4000L	l/min	3915.9	3735.3	3406.0	3074.7	2726.2
		kW	50.6	86.8	159.0	231.2	303.5
4300L	l/min	4202.4	4008.6	3655.2	3299.6	2925.7	
	kW	54.3	93.1	170.6	248.1	325.7	
4600L	l/min	4488.5	4282.0	3904.4	3524.6	3125.2	
	kW	58.1	99.5	182.3	265.1	347.9	
4900L	l/min	4775.5	4555.3	4153.7	3749.6	3324.7	
	kW	61.8	105.8	193.9	282.0	370.1	

SMT8B			Values at working speed 1450 rpm				
			50 cSt				
Type	Size	Flow and Power	3 bar	6 bar	9 bar	12 bar	15 bar
PSP32	26L	l/min	15.2	14.7	14.2	13.7	13.2
		kW	0.2	0.3	0.3	0.4	0.6
	30L	l/min	17.7	17.0	16.6	16.0	15.5
		kW	0.2	0.3	0.4	0.5	0.6
	35L	l/min	22.8	22.0	21.3	20.6	19.9
		kW	0.3	0.4	0.5	0.6	0.8
45L	l/min	27.8	26.9	26.1	25.2	24.3	
	kW	0.3	0.5	0.6	0.8	0.9	
PSP40	60L	l/min	29.7	28.7	27.8	26.8	25.9
		kW	0.3	0.5	0.6	0.8	1.0
	80L	l/min	44.5	43.1	41.7	40.3	38.8
PSP45	120L	l/min	65.1	63.0	60.9	58.9	56.8
		kW	0.7	1.0	1.4	1.8	2.1
	155L	l/min	80.1	77.5	75.0	72.5	69.9
PSP60	210L	l/min	100.0	96.9	93.8	90.6	87.3
		kW	1.0	1.5	2.1	2.6	3.2
	300L	l/min	151.3	146.4	141.7	136.9	131.9
		kW	1.5	2.3	3.2	4.0	4.8
	380L	l/min	191.3	185.1	179.2	173.2	166.9
		kW	1.9	3.0	4.0	5.0	6.1

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Special Configuration

Samples application summary


Low pressure ⁽¹⁾ fluid applications	High viscosity configuration	Body material	Screw material	Seals	Bearing type
Diesel fuel, marine distillate fuel, marine residual fuel, low viscosity fuel oil	-	G	HA	TMZ	*
Heavy fuel oil transfer	S	G	HD	TMZ	*
Lube services high viscosity	S	*	*	*/TM	*
Water glycol emulsion (low % of water ⁽¹⁾)	-	G	HA	TMK	CS

* Standard configuration and material.

⁽¹⁾ For high pressure applications, please contact Parker.

Important Facts

- HA and TM are not available for version AC (hollow shaft).
- HD, HA is only available with A carbon steel or G cast iron body.
- RP with internal drain valve not available with options AX, AXS and AL.
- RP valve from PSP80 up to PSP180 has external drain.
- Hollow shaft maximum speed is 1800 rpm.
- Hollow shaft available up to PSP70.
- From PSP125 and larger must use mechanical seal.
- Water glycol fluid must be at least 40% glycol .
- SMT available up to PSP80, from PSP90S up to PSP180, SMT16B is standard.
- Radial and axial loads on shaft are not permitted for standard products. Special designs are available.
- Permissible degree of fluid contamination NAS to 1638 class 10.
- Use GZ option (cast iron housing with internal coating) when: Fluid is Fuel, the viscosity is < 3cst and the pressure is >15bar.
- FGM is the magnetic coupling seal option. To ensure always 100% leak free.

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Special Offerings

SFO

- Engine fuel filtration and boosting (shipyards and power plants)
- Circulation for filtration and cooling
- Engine fuel boosting and filtration
- Burner boosting systems
- Burners injection
- Transfer onboard
- Refineries
- Potentially replaceable of ACE IMO Screw Pump
- Available also with Magnetic Couplings

Models	25 – 32 – 40
Drive loading	No axial or radial loads
Shaft rotation	Clockwise (from shaft end)
Shaft speed	From 500 to 3,600 rpm*
Flows	From 12 up to 75 L/min (at 1.450 rpm)
Outlet pressure	20 bar continuous - 40 bar intermittent
Inlet pressure	Min. -0.7 bar max. 1.5 bar (for higher pressure, please contact Parker)
Fluids	Mineral oil, synthetic oil, oil water emulsions, fuels, marine distillate fuels, marine residual fuels
Viscosity	**Down to 2 cSt
Seals	Lip seal: NBR, Viton, EPDM (others on request) Mechanical seal Lip seal + Mechanical seal
Acoustic emissions	From 50 up to 58 db(A) at 2.950 rpm
Pump body	Cast iron GJL-250 EN 1561
Screw	Steel (central steel, lateral cast iron on request)
Environment temperature	From -20°C up to +50°C
Hydraulic temperature	From -20°C up to +155°C
Filtration	Permitted 70 µm, (in case of low viscosity 20 µm)



FOTP

- Non stop tandem solution for all fuels, ready also for low sulphur percentage.
- FOTP twin unit is an advanced version of pump for diesel fuel, strongly oriented to solve the new problems connected to low viscosity and low sulphur content of the new marine diesel fuels (MDO).

Models	20 – 25 – 32 – 40
Flanges	ISO 3019/2
Connections	SAE 3000 from 1"
Shaft rotation	Clockwise (from shaft end) – counter clockwise (please contact Parker)
Shaft speed	From 500 to 3,600 rpm
Flows	From 8 up to 150 L/min at 3,000 rpm
Outlet pressure	Up to 70 bar
Inlet pressure	Min. -0.7 bar max. 8 bar (for higher pressure, please contact Parker)
Fluids	Fuels, Marine distillate fuels, Marine residual fuels, all fuels according to latest ISO 8217 international standard (DMX, DMA, DMB, DMC, DMZ, LSD).



*Depending of viscosity.

**For lower viscosity (according to ISO 8217 fuel standard), please contact Parker.

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Technical Information

SCREW PUMP APPLICATION FORM (necessary to be filled in for any RFQ)

Customer	
Project number or name	

FIELD (select the right one)		APPLICATION (select the right one)			
Industrial		Lubrication		Boosting	
Marine		Fuel Transfer		Other	
Oil and Gas		Filtration			
Other:		Cooling			


PUMP TYPE (select the right one)					
SMT16B		FOTP		SMAPI (API 676 compliant)	
SMT		Continuum		Other	
SFO		2VHL			

INSTALLATION				Qty. of needed pumps
Horizontal/vertical				
Above liquid level		[m]		

FLUID DATA					
Type / name of fluid					
Fluid neatness (filtration, contamination)		micron			NAS
Temperature (min,normal,max)		[°C]		[°C]	[°C]
Viscosity (max,normal,min)		[cSt]		[cSt]	[cSt]

APPLICATION DATA					
Flow (min, design)		[l/min]			[l/min]
Discharge pressure (normal, design)		[bar]			[bar]
Suction pressure (normal, design)		[bar]			[bar]

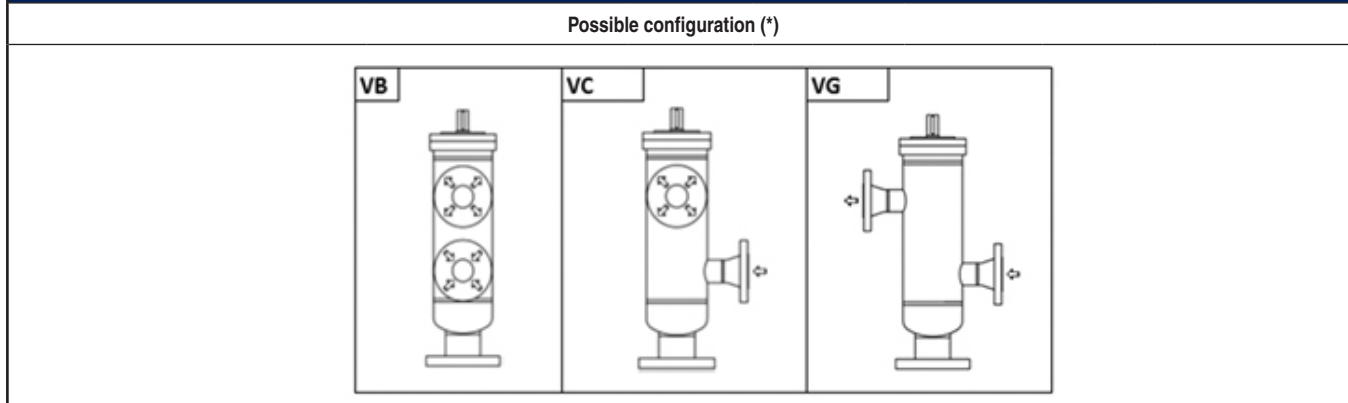
ELECTRICAL MOTOR					
To be supply by Parker (yes, no)					
Driving coupling (select the right one)		[Elastic standard]			[Steel Laminae + 5" Spacer compliant API676]
Other coupling requirements					
Rated speed		[rpm]			
Power		[kW]			
Frequency		[Hz]			
Other motor requirement (ATEX, ...)					
Other motor requirement (painting, ...)					

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Technical Information

PUMP OPTIONS	
Rotation direction (select the right one)	<input type="checkbox"/> [CW standard] <input type="checkbox"/> [CCW]
Safety relief valve	<input type="checkbox"/>
Mechanical seal requirements	<input type="checkbox"/>
Screw set material requirements:	<input type="checkbox"/>
Pump body material requirements	<input type="checkbox"/>
Pump certifications required	<input type="checkbox"/>
Pump test required	<input type="checkbox"/>
External pump case painting required	<input type="checkbox"/>
Other pump parts painting required (i.e. foot, ..)	<input type="checkbox"/>

TO BE FILLED ONLY FOR SMAPI (API 676) REQUEST



Customer selection:

NOTES:
 - for final offer please select the suitable configuration and add your additional notes.
 - please consider the above diagrams as view from TOP

GENERAL REQUIREMENTS

SELECT INSTALLATION:	CONNECTIONS REQUIREMENTS
1) horizontal with SKID <input type="checkbox"/>	Pressure port (DIN / ANSI) <input type="checkbox"/>
2) horizontal foot mounted <input type="checkbox"/>	Suction port (DIN / ANSI) <input type="checkbox"/>
3) vertical foot mounted <input type="checkbox"/>	
4) vertical submersible tank top <input type="checkbox"/>	
Comply to API682 - Mechanical seal cartridge (yes,no) <input type="checkbox"/>	
API Flush Plan <input type="checkbox"/>	
Bearing Type <input type="checkbox"/>	
Other remarks and information	

WARNING: This product can expose you to chemicals including lead or DEHP which are known to the state of California to cause cancer, birth defects, and other reproductive harm. www.p65warnings.ca.gov



Offer of Sale

1. Definitions. As used herein, the following terms have the meanings indicated.

- Buyer:** means any customer receiving a Quote for Products from Seller.
- Goods:** means any tangible part, system or component to be supplied by the Seller.
- Products:** means the Goods, Services and/or Software as described in a Quote provided by the Seller.
- Quote:** means the offer or proposal made by Seller to Buyer for the supply of Products.
- Seller:** means Parker Hannifin Corporation, including all divisions and businesses thereof.
- Services:** means any services to be supplied by the Seller.
- Software:** means any software related to the Products, whether embedded or separately downloaded.
- Terms:** means the terms and conditions of this Offer of Sale or any newer version of the same as published by Seller electronically at www.parker.com/saleterms.

2. Terms. All sales of Products by Seller are contingent upon, and will be governed by, these Terms and, these Terms are incorporated into any Quote provided by Seller to any Buyer. Buyer's order for any Products whether communicated to Seller verbally, in writing, by electronic data interface or other electronic commerce, shall constitute acceptance of these Terms. Seller objects to any contrary or additional terms or conditions of Buyer. Reference in Seller's order acknowledgement to Buyer's purchase order or purchase order number shall in no way constitute an acceptance of any of Buyer's terms of purchase. No modification to these Terms will be binding on Seller unless agreed to in writing and signed by an authorized representative of Seller.

3. Price; Payment. The Products set forth in Seller's Quote are offered for sale at the prices indicated in Seller's Quote. Unless otherwise specifically stated in Seller's Quote, prices are valid for thirty (30) days and do not include any sales, use, or other taxes or duties. Seller reserves the right to modify prices at any time to adjust for any raw material price fluctuations. Unless otherwise specified by Seller, all prices are F.C.A. Seller's facility (INCOTERMS2010). All sales are contingent upon credit approval and payment for all purchases is due thirty (30) days from the date of invoice (or such date as may be specified in the Quote). Unpaid invoices beyond the specified payment date incur interest at the rate of 1.5% per month or the maximum allowable rate under applicable law.

4. Shipment; Delivery; Title and Risk of Loss. All delivery dates are approximate. Seller is not responsible for damages resulting from any delay. Regardless of the manner of shipment, delivery occurs and title and risk of loss or damage pass to Buyer, upon placement of the Products with the shipment carrier at Seller's facility. Unless otherwise agreed, Seller may exercise its judgment in choosing the carrier and means of delivery. No deferral of shipment at Buyer's request beyond the respective indicated shipping date will be made except on terms that will indemnify, defend and hold Seller harmless against all loss and additional expense. Buyer shall be responsible for any additional shipping charges incurred by Seller due to Buyer's acts or omissions.

5. Warranty. The warranty related to the Products is as follows: (i) Goods are warranted against defects in material or workmanship for a period of twelve (12) months from the date of delivery or 2,000 hours of use, whichever occurs first; (ii) Services shall be performed in accordance with generally accepted practices and using the degree of care and skill that is ordinarily exercised and customary in the field to which the Services pertain and are warranted for a period of six (6) months from the completion of the Services by Seller; and (iii) Software is only warranted to perform in accordance with applicable specifications provided by Seller to Buyer for ninety (90) days from the date of delivery or, when downloaded by a Buyer or end user, from the date of the initial download. All prices are based upon the exclusive limited warranty stated above, and upon the following disclaimer: **DISCLAIMER OF WARRANTY: THIS WARRANTY IS THE SOLE AND ENTIRE WARRANTY PERTAINING TO PRODUCTS. SELLER DISCLAIMS ALL OTHER WARRANTIES, EXPRESS AND IMPLIED, INCLUDING DESIGN, NON INFRINGEMENT, MERCHANTABILITY, AND FITNESS FOR A PARTICULAR PURPOSE. SELLER DOES NOT WARRANT THAT THE SOFTWARE IS ERROR-FREE OR**

FAULT-TOLERANT, OR THAT BUYER'S USE THEREOF WILL BE SECURE OR UNINTERRUPTED. BUYER AGREES AND ACKNOWLEDGES THAT UNLESS OTHERWISE AUTHORIZED IN WRITING BY SELLER THE SOFTWARE SHALL NOT BE USED IN CONNECTION WITH HAZARDOUS OR HIGH RISK ACTIVITIES OR ENVIRONMENTS. EXCEPT AS EXPRESSLY STATED HEREIN, ALL PRODUCTS ARE PROVIDED "AS IS".

6. Claims; Commencement of Actions. Buyer shall promptly inspect all Products upon receipt. No claims for shortages will be allowed unless reported to the Seller within ten (10) days of delivery. Buyer shall notify Seller of any alleged breach of warranty within thirty (30) days after the date the non-conformance is or should have been discovered by Buyer. Any claim or action against Seller based upon breach of contract or any other theory, including tort, negligence, or otherwise must be commenced within twelve (12) months from the date of the alleged breach or other alleged event, without regard to the date of discovery.

7. LIMITATION OF LIABILITY. IN THE EVENT OF A BREACH OF WARRANTY, SELLER WILL, AT ITS OPTION, REPAIR OR REPLACE THE NON-CONFORMING PRODUCT, RE-PERFORM THE SERVICES, OR REFUND THE PURCHASE PRICE PAID WITHIN A REASONABLE PERIOD OF TIME. IN NO EVENT IS SELLER LIABLE FOR ANY SPECIAL, INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF, OR AS THE RESULT OF, THE SALE, DELIVERY, NON-DELIVERY, SERVICING, NON-COMPLETION OF SERVICES, USE, LOSS OF USE OF, OR INABILITY TO USE THE PRODUCTS OR ANY PART THERE OF, LOSS OF DATA, IDENTITY, PRIVACY, OR CONFIDENTIALITY, OR FOR ANY CHARGES OR EXPENSES OF ANY NATURE INCURRED WITHOUT SELLER'S WRITTEN CONSENT, WHETHER BASED IN CONTRACT, TORT OR OTHER LEGAL THEORY. IN NO EVENT SHALL SELLER'S LIABILITY UNDER ANY CLAIM MADE BY BUYER EXCEED THE PURCHASE PRICE PAID FOR THE PRODUCTS.

8. Loss to Buyer's Property. Any designs, tools, patterns, materials, drawings, confidential information or equipment furnished by Buyer or any other items which are or become Buyer's property, will be considered obsolete and maybe destroyed by Seller after two (2) consecutive years have elapsed without Buyer ordering the Products manufactured using such property. Seller shall not be responsible for any loss or damage to such property while it is in Seller's possession or control.

9. Special Tooling. Special Tooling includes but is not limited to tooling, jigs, fixtures and associated manufacturing equipment acquired or necessary to manufacture Products. A tooling charge may be imposed for any Special Tooling. Such Special Tooling shall be and remain Seller's property not withstanding payment of any charges by Buyer. In no event will Buyer acquire any interest in Special Tooling belonging to Seller that is utilized in the manufacture of the Products, even if such Special Tooling has been specially converted or adapted for such manufacture and not withstanding any charges paid by Buyer. Unless otherwise agreed, Seller has the right to alter, discard or otherwise dispose of any Special Tooling or other property in its sole discretion at any time.

10. Security Interest. To secure payment of all sums due, Seller retains a security interest in all Products delivered to Buyer and, Buyer's acceptance of these Terms is deemed to be a Security Agreement under the Uniform Commercial Code. Buyer authorizes Seller as its attorney to execute and file on Buyer's behalf all documents Seller deems necessary to perfect its security interest.

11. User Responsibility. The Buyer through its own analysis and testing, is solely responsible for making the final selection of the Products and assuring that all performance, endurance, maintenance, safety and warning requirements of the application of the Products are met. The Buyer must analyze all aspects of the application and follow applicable industry standards, specifications, and other technical information provided with the Product. If Seller provides Product options based upon data or specifications provided by the Buyer, the Buyer is responsible for determining that such data and specifications are suitable and sufficient for all applications and reasonably foreseeable uses of the Products. In the event the Buyer is not the end-user, Buyer will ensure such end-user complies with this paragraph.

⚠ WARNING: This product can expose you to chemicals including lead or DEHP which are known to the state of California to cause cancer, birth defects, and other reproductive harm. www.p65warnings.ca.gov



12. Use of Products, Indemnity by Buyer. Buyer shall comply with all instructions, guides and specifications provided by Seller with the Products. Unauthorized Uses. If Buyer uses or resells the Products for any uses prohibited in Seller's instructions, guides or specifications, or Buyer otherwise fails to comply with Seller's instructions, guides and specifications, Buyer acknowledges that any such use, resale, or non-compliance is at Buyer's sole risk. Buyer shall indemnify, defend, and hold Seller harmless from any losses, claims, liabilities, damages, lawsuits, judgments and costs (including attorney fees and defense costs), whether for personal injury, property damage, intellectual property infringement or any other claim, brought by or incurred by Buyer, Buyer's employees, or any other person, arising out of: (a) improper selection, application, design, specification or other misuse of Products provided by Seller; (b) any act or omission, negligent or otherwise, of Buyer; (c) Seller's use of patterns, tooling, equipment, plans, drawings, designs or specifications or other information or things furnished by Buyer; (d) damage to the Products from an external cause, repair or attempted repair by anyone other than Seller, failure to follow instructions, guides and specifications provided by Seller, use with goods not provided by Seller, or opening, modifying, deconstructing or tampering with the Products for any reason; or (e) Buyer's failure to comply with these Terms. Seller shall not indemnify Buyer under any circumstance except as otherwise provided in these Terms.

13. Cancellations and Changes. Buyer may not cancel or modify any order for any reason, except with Seller's written consent and upon terms that will indemnify, defend and hold Seller harmless against all direct, incidental and consequential loss or damage. Seller, at any time, may change Product features, specifications, designs and availability.

14. Limitation on Assignment. Buyer may not assign its rights or obligations without the prior written consent of Seller.

15. Force Majeure. Seller does not assume the risk and is not liable for delay or failure to perform any of Seller's obligations by reason of events or circumstances beyond its reasonable control ("Events of Force Majeure"). Events of Force Majeure shall include without limitation: accidents, strikes or labor disputes, acts of any government or government agency, acts of nature, delays or failures in delivery from carriers or suppliers, shortages of materials, or any other cause beyond Seller's reasonable control.

16. Waiver and Severability. Failure to enforce any provision of these Terms will not invalidate that provision; nor will any such failure prejudice Seller's right to enforce that provision in the future. Invalidity of any provision of these Terms by legislation or other rule of law shall not invalidate any other provision herein and, the remaining provisions will remain in full force and effect.

17. Termination. Seller may terminate any agreement governed by or arising from these Terms for any reason and at anytime by giving Buyer thirty (30) days prior written notice. Seller may immediately terminate, in writing, if Buyer: (a) breaches any provision of these Terms (b) appoints a trustee, receiver or custodian for all or any part of Buyer's property (c) files a petition for relief in bankruptcy on its own behalf, or one if filed by a third party(d) makes an assignment for the benefit of creditors; or (e) dissolves its business or liquidates all or a majority of its assets.

18. Ownership of Software. Seller retains ownership of all Software supplied to Buyer hereunder. In no event shall Buyer obtain any greater right in and to the Software than a right in the nature of a license limited to the use thereof and subject to compliance with any other terms provided with the Software.

19. Indemnity for Infringement of Intellectual Property Rights. Seller is not liable for infringement of any patents, trademarks, copyrights, trade dress, trade secrets or similar rights ("Intellectual Property Rights") except as provided in this Section. Seller will defend at its expense and will pay the cost of any settlement or damages awarded in an action brought against Buyer based on a third party claim that one or more of the Products sold hereunder infringes the Intellectual Property Rights of a third party in the country of delivery of the Products by the Seller to the Buyer. Seller's obligation to defend and indemnify Buyer is contingent on Buyer notifying Seller within ten (10) days after Buyer becomes aware of any such claim, and Seller having sole control over the defense of the claim including all negotiations for settlement or compromise. If one or more Products sold hereunder is subject to "such a claim,


Seller may, at its sole expense and option, procure for Buyer the right to continue using the Products, replace or modify the Products so as to render them non-infringing, or offer to accept return of the Products and refund the purchase price less a reasonable allowance for depreciation. Seller has no obligation or liability for any claim of infringement: (i) arising from information provided by Buyer; or (ii) directed to any Products provided hereunder for which the designs are specified in whole or part by Buyer; or (iii) resulting from the modification, combination or use in a system of any Products provided hereunder. The foregoing provisions of this Section constitute Seller's sole and exclusive liability and Buyer's sole and exclusive remedy for such claims of infringement of Intellectual Property Rights.

20. Governing Law. These Terms and the sale and delivery of all Products are deemed to have taken place in, and shall be governed and construed in accordance with, the laws of the State of Ohio, as applicable to contracts executed and wholly performed therein and without regard to conflicts of laws principles. Buyer irrevocably agrees and consents to the exclusive jurisdiction and venue of the courts of Cuyahoga County, Ohio with respect to any dispute, controversy or claim arising out of or relating to the sale and delivery of the Products.

21. Entire Agreement. These Terms, along with the terms set forth in the main body of any Quote, forms the entire agreement between the Buyer and Seller and constitutes the final, complete and exclusive expression of the terms of sale. In the event of a conflict between any term set forth in the main body of a Quote and these Terms, the terms set forth in the main body of the Quote shall prevail. All prior or contemporaneous written or oral agreements or negotiations with respect to the subject matter shall have no effect. These Terms may not be modified unless in writing and signed by an authorized representative of Seller.

22. Compliance with Laws. Buyer agrees to comply with all applicable laws, regulations, and industry and professional standards, including those of the United States of America, and the country or countries in which Buyer may operate, including without limitation the U.S. Foreign Corrupt Practices Act ("FCPA"), the U.S. Anti-Kickback Act ("Anti-Kickback Act"), U.S. and E.U. export control and sanctions laws ("Export Laws"), the U.S. Food Drug and Cosmetic Act ("FDCA"), and the rules and regulations promulgated by the U.S. Food and Drug Administration ("FDA"), each as currently amended. Buyer agrees to indemnify, defend, and hold harmless Seller from the consequences of any violation of such laws, regulations and standards by Buyer, its employees or agents. Buyer acknowledges that it is familiar with all applicable provisions of the FCPA, the Anti-Kickback Act, Export Laws, the FDCA and the FDA and certifies that Buyer will adhere to the requirements thereof and not take any action that would make Seller violate such requirements. Buyer represents and agrees that Buyer will not make any payment or give anything of value, directly or indirectly, to any governmental official, foreign political party or official thereof, candidate for foreign political office, or commercial entity or person, for any improper purpose, including the purpose of influencing such person to purchase Products or otherwise benefit the business of Seller. Buyer further represents and agrees that it will not receive, use, service, transfer or ship any Product from Seller in a manner or for a purpose that violates Export Laws or would cause Seller to be in violation of Export Laws."

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Parker Hannifin Corporation
Pump & Motor Division
101 Canterbury Road
Kings Mountain, NC 28086
phone 704 730 2000
fax 704 730 5856
www.parker.com/pmd

Your Local Authorized Parker Distributor