Axial Piston Pumps

Series P2 / P3
Variable Displacement

aerospace
climate control
electromechanical
filtration
fluid & gas handling
hydraulics
pneumatics
process control
sealing & shielding

Parker

ENGINEERING YOUR SUCCESS.

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Technical Features

Variable displacement, axial piston pumps for open circuit hydraulic systems

Available as standard (P2) or supercharged (P3) version

Optimized for mobile applications:

- Dedicated envelope design and unique port layout
- High self-priming speed
- Standard integrated pre-compression volume
- Heavy duty approval (size 105 and 145) for increased power density

Customer Benefits

- Cost saving installation by direct PTO mount
- High productivity by maximized output flow
- High altitude operation capability
- Low noise level and reduced flow ripple

P2 Series

P3 Series

Technical Data

		P2 Series				P3 Series	
Frame size		**P2060**	**P2075**	**P2105**	**P2145**	**P3105**	**P3145**
Max. displacement	[cm³/rev]	60	75	105	145	105	145
Self-priming speed at 1 bar absolute inlet pressure [1)]	[rpm]	2800	2500	2300	2200	2600	2500
Nominal pressure [2)]	[bar]	320	320	350	350	350	350
Min. inlet pressure, absolute [1)]	[bar]	0.8	0.8	0.8	0.8	0.8	0.8
Max. inlet pressure, absolute	[bar]	10	10	10	10	1.5	1.5
Max. case drain pressure, absolute	[bar]	1.5	1.5	1.5	1.5	1.5	1.5
Min. outlet pressure, absolute	[bar]	15	15	15	15	15	15
Noise level at full flow at 1800 rpm and 250 bar	[dbA]	74	76	78	80	78	80
Weight with load sense control	[kg]	37	44	63	78	62	76
Mass moment of inertia (at axis of shaft)	[kg m²]	0.0061	0.0101	0.0168	0.0241	0.0177	0.0264

1) Detailed inlet characteristics can be taken from page 18 and 36

2) For maximum operating pressures exceeding above mentioned nominal ratings please consult manufacturer

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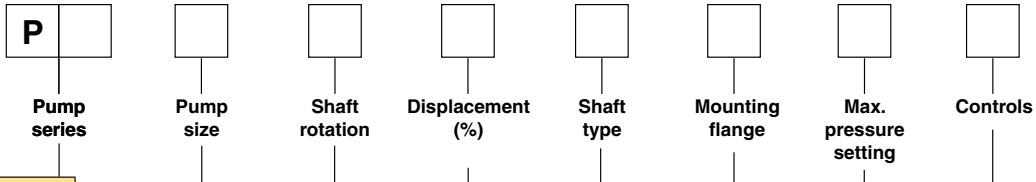

Code	Pump series
2	Standard
3	Super charged

Code	Pump size (max. displacement in cc/rev)	
	P2	P3
060	60	-
075	75	-
105	105	105
145	145	145

Code	Shaft rotation [1]
R	Right (CW)
L	Left (CCW)

[1] Viewed from shaft end.

Code	% of max. displacement
00	100 % stroke standard factory set
XX	Range is 70 % to 99 %

Code	Shaft type (splined)[2] [3]	Pump size			
		060	075	105	145
B1	SAE B	•	–	–	–
B2	SAE B-B	•	•	–	–
C1	SAE C	•	•	•	•
C2	SAE C-C	–	•	•	•
C3	SAE C, w/o undercut	•	•	•	•
D1	SAE D	–	–	•	•
D2	SAE D, w/o undercut	–	–	•	•
M6	DIN 5480, W50	–	–	–	•

[2] See pages 32 and 44 for permissible input torque.
[3] For further shaft options please consult manufacturer.

Code	Mounting flange	Pump size			
		060	075	105	145
B	SAE B 2-bolt	•	–	–	–
C	SAE C 2-bolt	–	–	–	•
	SAE C 2 & 4-bolt	–	•	•	–
	SAE C 4-bolt	•	–	–	[4]
D	SAE D 4-bolt	–	–	–	•

[4] Please consult manufacturer.

Code	Max. pressure setting	
	Pressure setting in 10 bar increments	
XX	060	100 to 320 bar, XX = [10…32]
	075	
	105	100 to 350 bar, XX = [10…35]
	145	

Code	Controls
PA	Max. pressure control
RA	Remote pressure control with max. pressure control
LA	Load sensing control w/o bleed-off orifice, with max. pressure control
LB	Load sensing control with bleed-off orifice, with max. pressure control
TA	Torque control, load sensing w/o bleed-off orifice and max. pressure control, range 20...60 % of reference torque value
TB	Torque control, load sensing with bleed-off orifice and max. pressure control, range 20...60% of reference torque value
TC	Torque control, load sensing w/o bleed-off orifice and max. pressure control, range 50...90 % of reference torque value
TD	Torque control, load sensing with bleed-off orifice and max. pressure control, range 50...90 % of reference torque value

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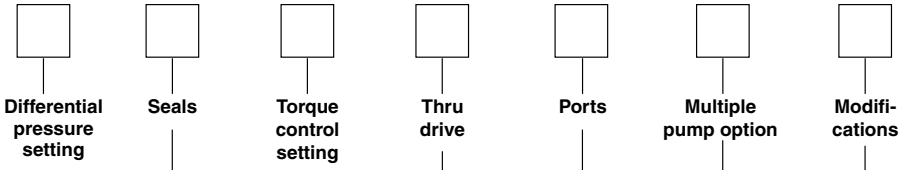

Pump	Code	Modifications
P2	U	No paint
	P	Parker black painted
P3	D	No paint
	E	Parker black painted

Code	Multiple pump option [6]
1	Single pump
2	Front pump of multiple pumps [7]
3	Middle pump of multiple pumps [7]
4	Rear pump of multiple pumps [7]

[6] For multiple pump assemblies please contact manufacturer for issue of part number.

[7] Choose this option if pump is considered to be shipped as part of a combination assembled by manufacturer, otherwise please use option 1.

Code	Ports
A	Side ports, UNC threads
B	Side ports, metric threads

Code	Thru drive		Pump size			
	Mounting flange	Coupling	060	075	105	145
S1	No thru drive		•	•	•	•
T1	Prepared for thru drive - no coupling		•	•	•	•
A1	SAE A 2-bolt	SAE A, spline	•	•	•	•
B1	SAE B 2-bolt	SAE B, spline	•	•	•	•
B2	SAE B 2-bolt	SAE B-B, spline	•	•	•	•
C1	SAE C 2-bolt	SAE C, spline	•	•	•	•
C2	SAE C 2-bolt	SAE C-C, spline	–	–	–	•
C3	SAE C 4-bolt	SAE C, spline	•	•	•	•
C4	SAE C 4-bolt	SAE C-C, spline	–	–	–	•
D3	SAE D 4-bolt	SAE D, spline	–	–	–	•

Code	Torque control setting					
00	Non torque controlled (PA, RA, LA and LB control)					
XX	20% to 90% of reference torque value[5]	pump size	60	75	105	145
		torque ref. [Nm]	339	424	594	820

[5] Example: To limit maximum input torque of P2145 to 600Nm setting to be defined is 73%

Code	Seals
N	NBR seals, FPM single shaft seal
B	NBR seals, NBR single shaft seal
D	NBR seals, FPM double shaft seal
Q	NBR seals, NBR double shaft seal
V	FPM seals, FPM single shaft seal
T	FPM seals, FPM double shaft seal

Code	Differential pressure setting
00	Not applicable for PA controlled pumps
XX	Δ pressure setting range 10 to 35 bar

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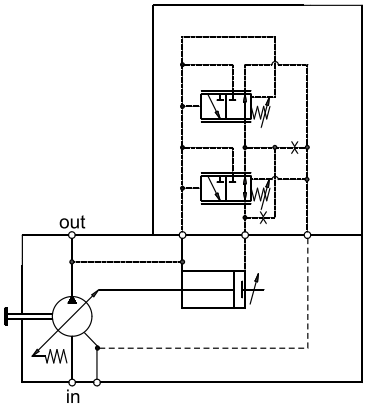
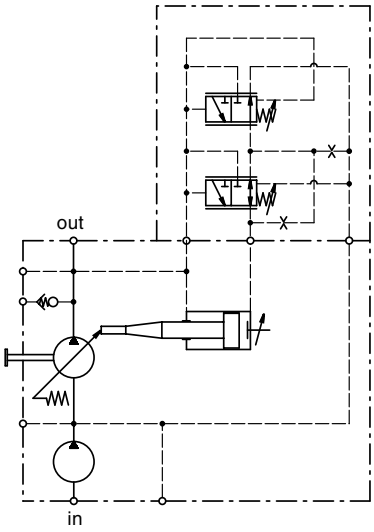
Pressure control

The pressure control is used to limit the maximum system pressure. The control acts such that full pump displacement is achieved unless the load pressure reaches the maximum setting of the control. If pump flow is restricted by the system valve, the pump will provide only the flow demanded, but at the maximum pressure setting of the compensator control. If the outlet flow is completely blocked, the pump will de-stroke to zero displacement and maintain the pressure at the setting of the compensator spring.

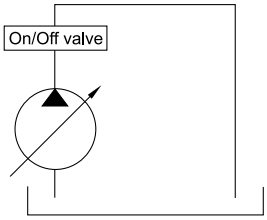
P2 Control schematics



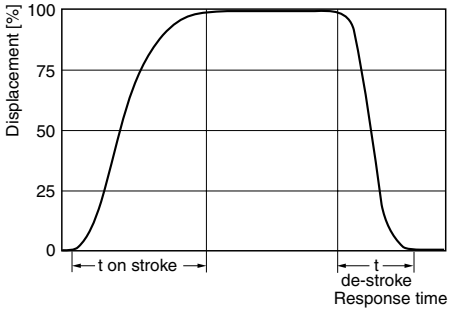
P3 Control schematics



Response times of the pump are collected from a circuit as below by measuring the pumps swash angle movement at different pressures.



Dynamic characteristic of flow control *



	t on stroke [ms]		t de-stroke [ms]
	against 50 bar	against 220 bar	zero stroke 280 bar
P2060	70	65	30
P2075	70	70	30
P2105 / P3105	120	90	30
P2145 / P3145	160	130	30

Compensator oil consumption PA control	max. 3.0 l/min
Pressure compensator adjusting range	Size 105 and 145 100 ... 350 bar
	Size 60 and 75 100 ... 320 bar
Hysteresis and repetitive accuracy	max. 3 bar

* Curve shown exaggerated

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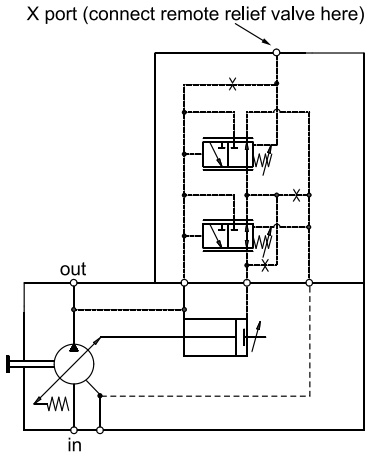
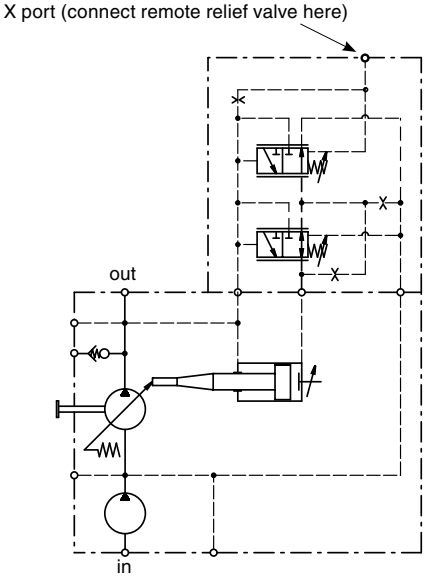
Remote pressure control

This control allows the pump pressure compensator setting to be adjusted from a remote relief valve. The control acts such that when full pump displacement is achieved the load pressure reaches the maximum setting of the remote relief valve. If pump flow is restricted by the system valve, the pump will provide only the flow demanded, but at the maximum pressure setting of the compensator control. If the outlet flow is completely blocked, the pump will de-stroke to zero displacement and maintain the pressure at the setting of the remote relief valve.

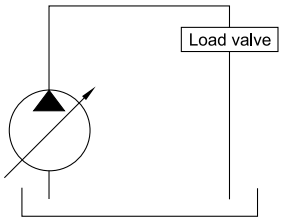
P2 Control schematics



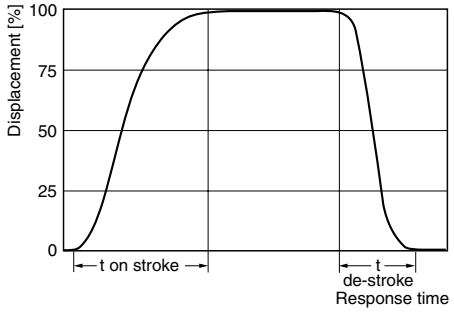
P3 Control schematics



Response times of the pump are collected from a circuit as below by measuring the pumps swash angle movement at different pressures.



Dynamic characteristic of flow control *



	t on stroke [ms]	t de-stroke [ms]	
	stand by to 250 bar	250 bar to stand by	50 bar to stand by
P2060	60	30	40
P2075	80	35	40
P2105 / P3105	100	40	45
P2145 / P3145	120	45	50

Compensator oil consumption 'RA control	max. 3.0 l/min
Pilot pressure valve oil consumption	max. 2.0 l/min
Delta P compensator adjusting range	10 ... 35 bar
Pressure compensator adjusting range	Size 105 and 145 100 ... 350 bar
	Size 60 and 75 100 ... 320 bar
Hysteresis and repetitive accuracy	max. 3 bar

* Curve shown exaggerated

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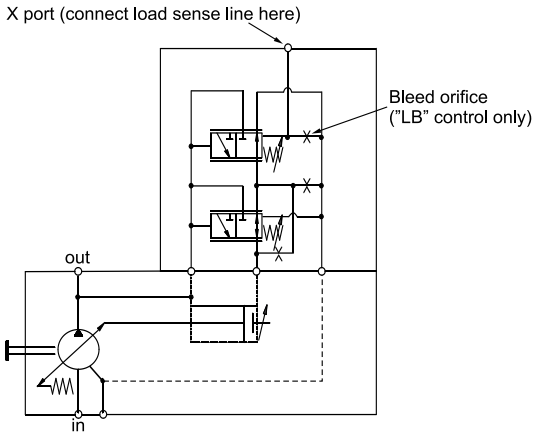
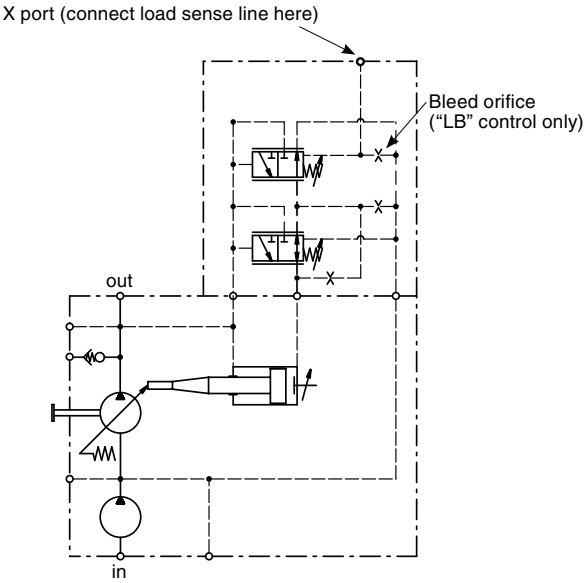
Load sensing control with maximum pressure control

These controls feature load sensing and maximum pressure compensation. Load sense controls are used to match pump flow to system demands.

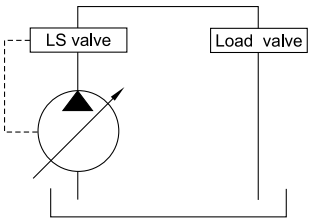
P2 Control schematics



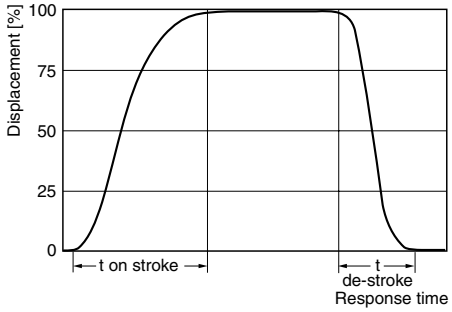
P3 Control schematics



Response times of the pump are collected from a circuit as below by measuring the pumps swash angle movement at different pressures.



Dynamic characteristic of flow control *

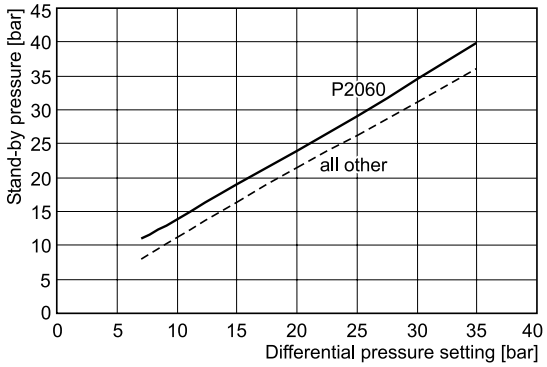


	t on stroke [ms]	t de-stroke [ms]	
	stand by to 250 bar	250 bar to stand by	50 bar to stand by
P2060	60	30	40
P2075	80	35	40
P2105 / P3105	100	40	45
P2145 / P3145	120	45	50

Compensator oil consumption LA control	max. 3.0 l/min
Compensator oil consumption LB control	max. 4.5 l/min
Load sensing compensator adjusting range	10 ... 35 bar
Pressure compensator adjusting range	Size 105 and 145 100 ... 350 bar
	Size 60 and 75 100 ... 320 bar
Hysteresis and repetitive accuracy	max. 3 bar

* Curve shown exaggerated

Differential setting vs. stand-by pressure



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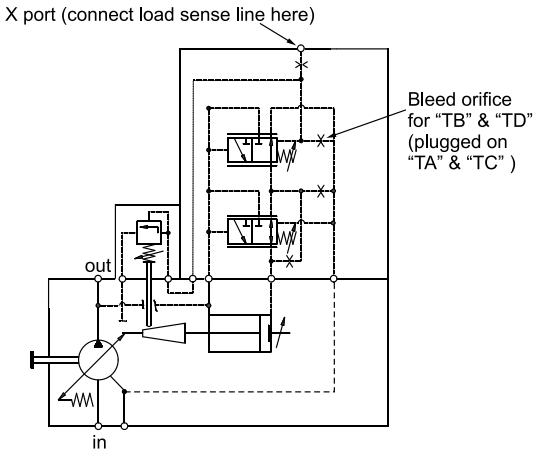
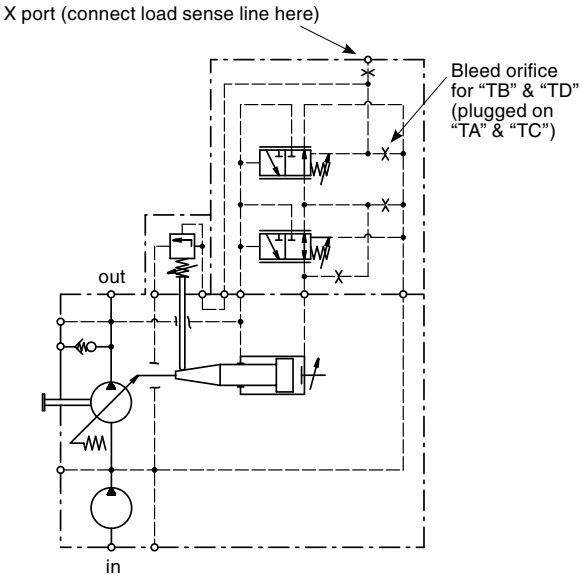
Torque limiting control with load sensing and maximum pressure control limiter

These controls provide the benefits of the load sensing and pressure limiting controls, plus the ability to limit the input torque the pump will draw. These controls are beneficial when the power available from the prime mover for the hydraulics is limited or the application power demand has both high flow/low pressure and low flow/high pressure duty cycles.

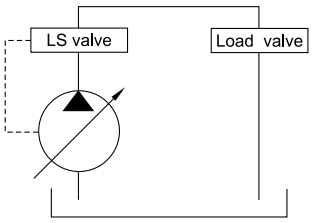
P2 Control schematics



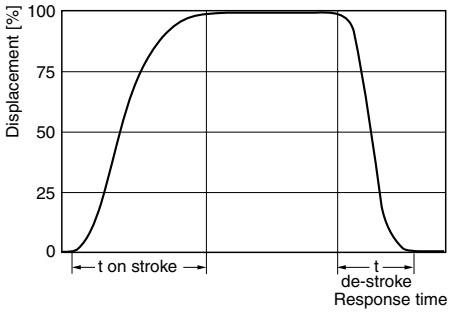
P3 Control schematics



Response times of the pump are collected from a circuit as below by measuring the pumps swash angle movement at different pressures.



Dynamic characteristic of flow control *



	t on stroke [ms]	t de-stroke [ms]	
	stand by to 250 bar	250 bar to stand by	50 bar to stand by
P2060	60	30	40
P2075	80	35	40
P2105 / P3105	100	40	45
P2145 / P3145	120	45	50

Compensator oil consumption TA, TC control	max. 3.0 l/min
Compensator oil consumption TB, TD control	max. 4.5 l/min
Torque control valve oil consumption	max. 2.0 l/min
Load sensing compensator adjusting range	10 ... 35 bar
Pressure compensator adjusting range	Size 105 and 145 100 ... 350 bar
	Size 60 and 75 100 ... 320 bar
Hysteresis and repetitive accuracy	max. 3 bar

* Curve shown exaggerated

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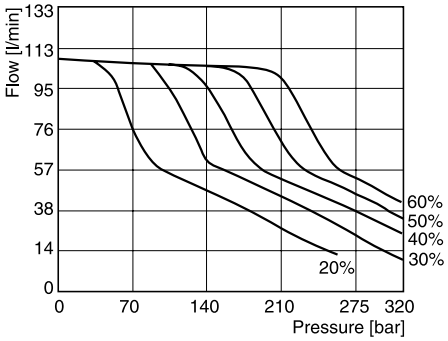
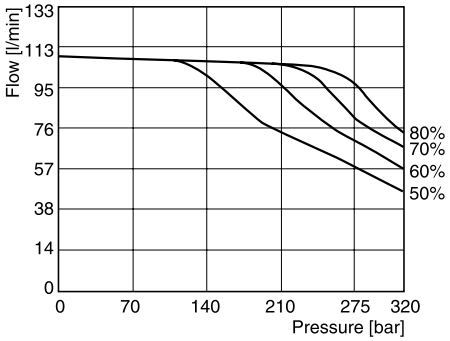
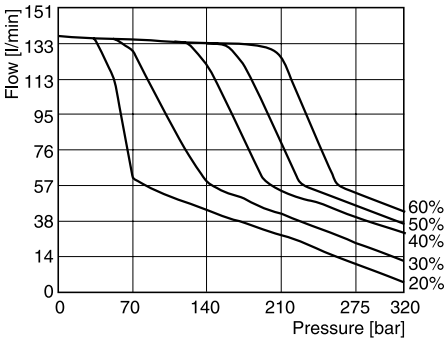
P2060 - 20...60 % Torque (1800 rpm)



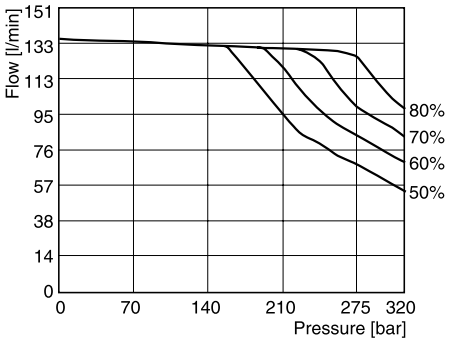
P2060 - 50...90 % Torque (1800 rpm)



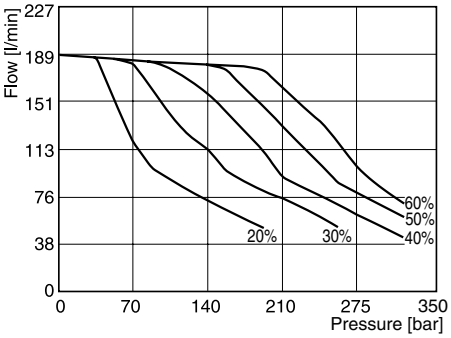
P2075 - 20...60 % Torque (1800 rpm)



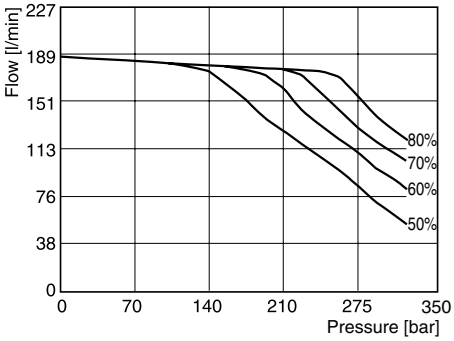
P2075 - 50...90 % Torque (1800 rpm)



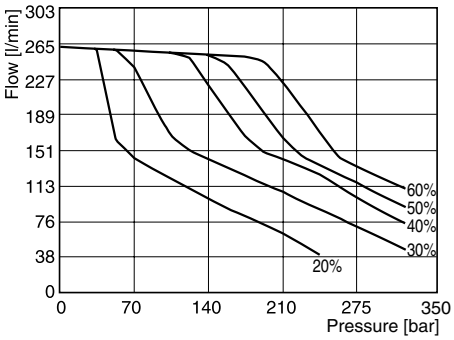
P2105 - 20...60 % Torque (1800 rpm)



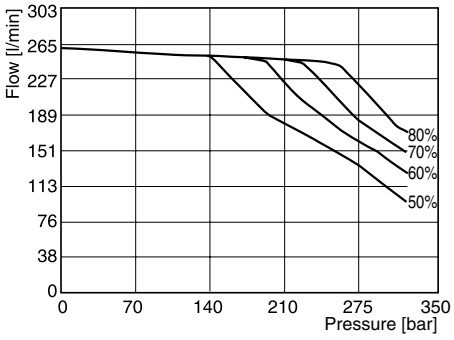
P2105 - 50...90 % Torque (1800 rpm)



P2145 - 20...60 % Torque (1800 rpm)



P2145 - 50...90 % Torque (1800 rpm)



Fluid: Mineral oil ISO VG 32 at 40°C ; Inlet pressure: 1.0 bar (absolute) measured at inlet port.

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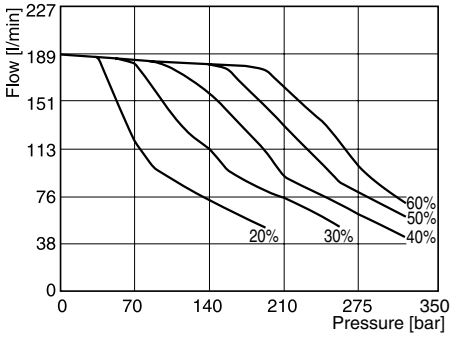
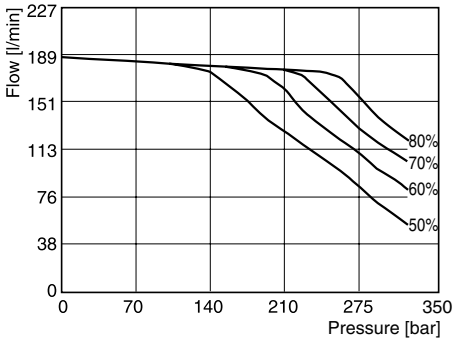
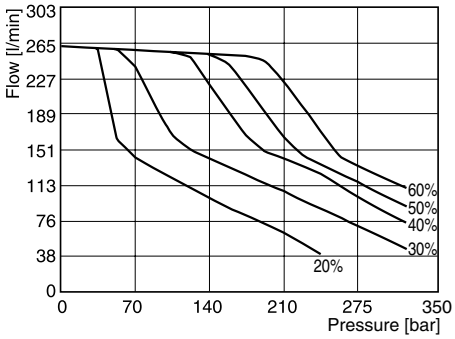
P3105 - 20...60 % Torque (1800 rpm)



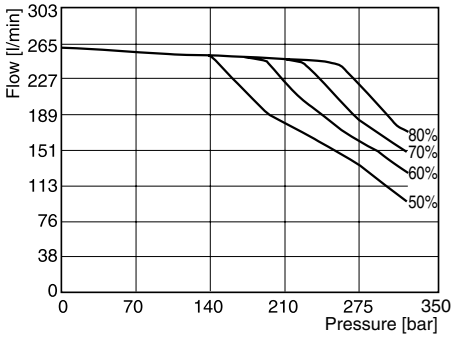
P3105 - 50...90 % Torque (1800 rpm)



P3145 - 20...60 % Torque (1800 rpm)



P3145 - 50...90 % Torque (1800 rpm)



Fluid: Mineral oil ISO VG 32 at 40°C ; Inlet pressure: 1.0 bar (absolute) measured at inlet port.

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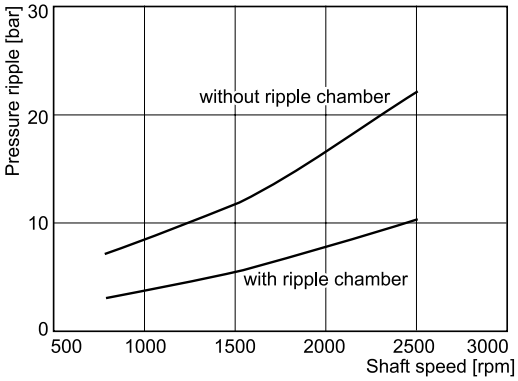
Ripple chamber

Pressure ripple at 200 bar

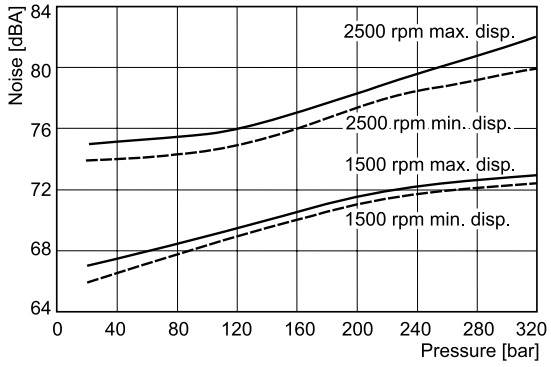
The chart on the right refers to the “Ripple Chamber” technology engineered into the P2 and P3 series pumps. The ripple chamber reduces flow pulsation and due to this pressure pulsation (called “ripple”) at the outlet of the pump. This technology reduces the ripple by 40–60%. This leads to a significant reduction in overall system noise without additional components or cost.

The ripple chamber is standard on all P2 and P3 series side ported pumps.

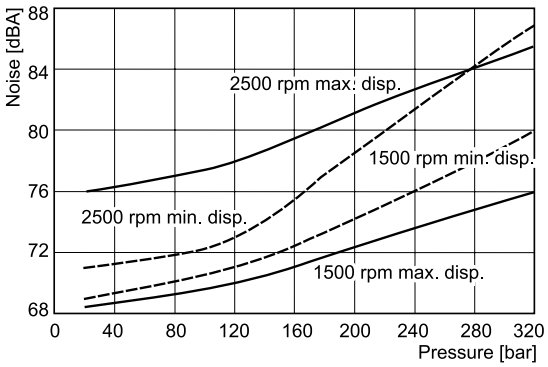


P2 Noise characteristics at max./min. displacement

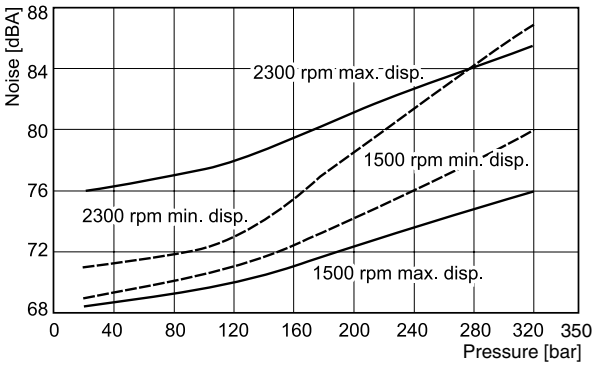
P2060 Noise characteristics



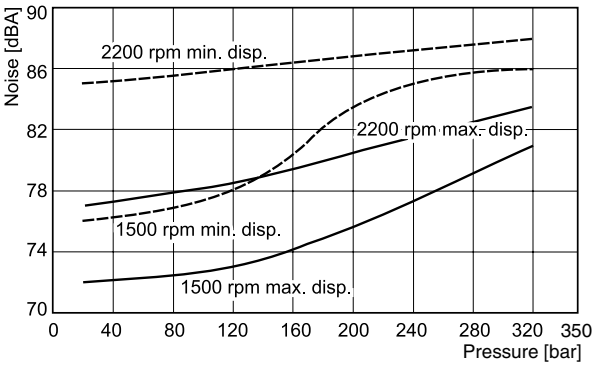
P2075 Noise characteristics



P2105 Noise characteristics



P2145 Noise characteristics



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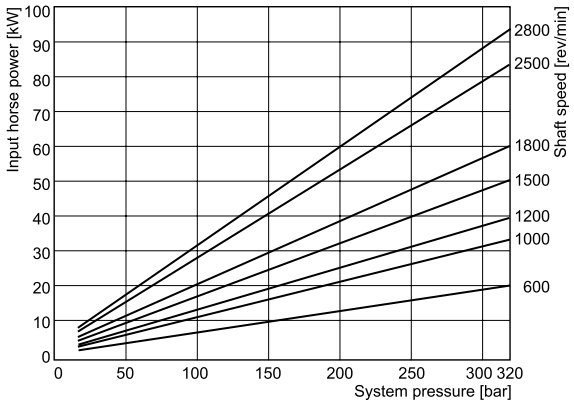
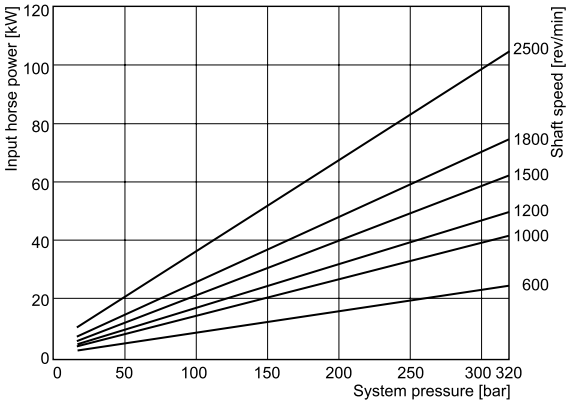
P2 Series - typical drive power at full displacement

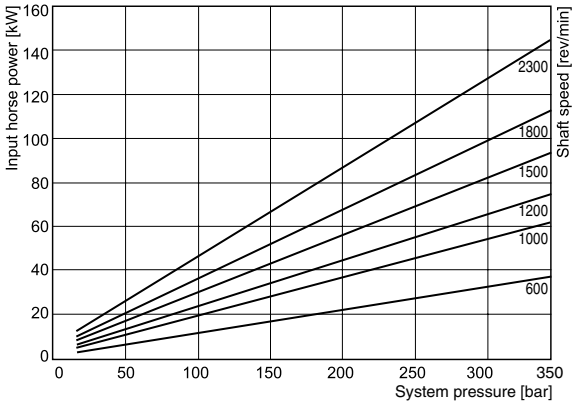
P2060 Input power - full stroke



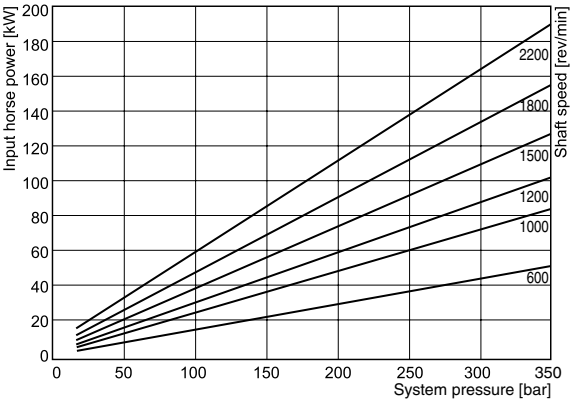
P2075 Input power - full stroke



P2105 Input power - full stroke



P2145 Input power - full stroke



Fluid: Mineral oil ISO VG 32 at 40°C ; Inlet pressure: 1.0 bar (absolute) measured at inlet port.

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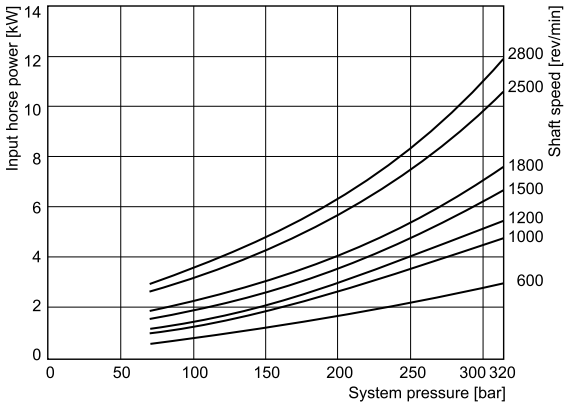
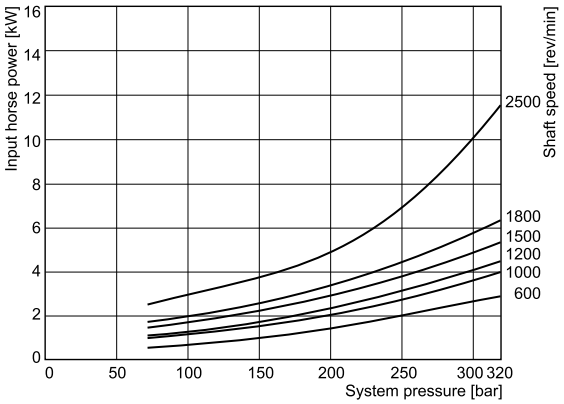
P2 Series - typical compensated input power

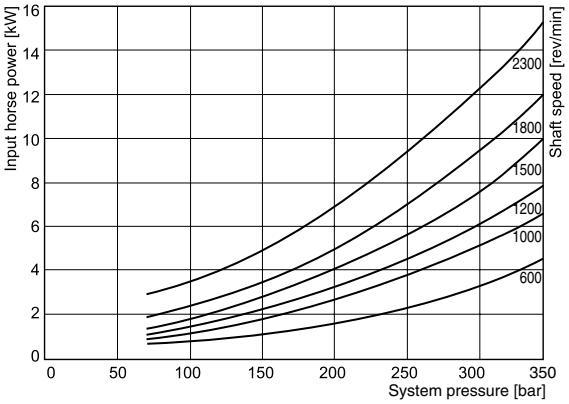
P2060 Input power - zero stroke



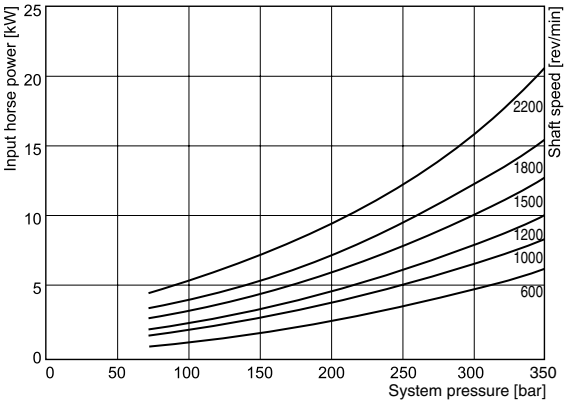
P2075 Input power - zero stroke



P2105 Input power - zero stroke



P2145 Input power - zero stroke



Fluid: Mineral oil ISO VG 32 at 40°C ; Inlet pressure: 1.0 bar (absolute) measured at inlet port.

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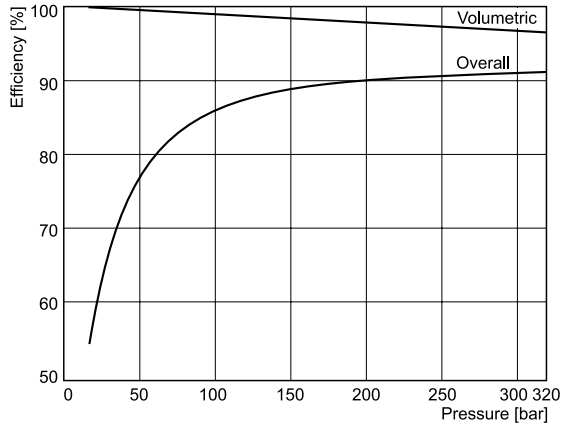
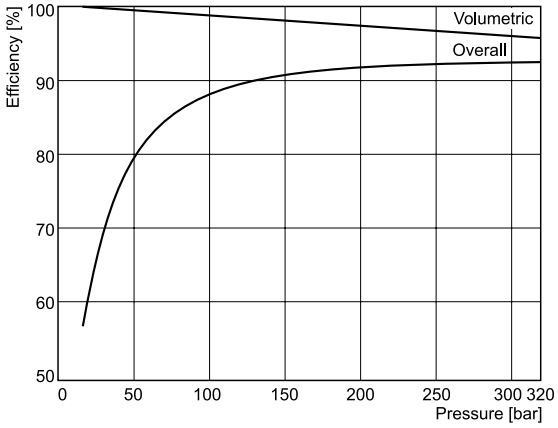
P2 Series - typical efficiency at full displacement at 1800 rpm

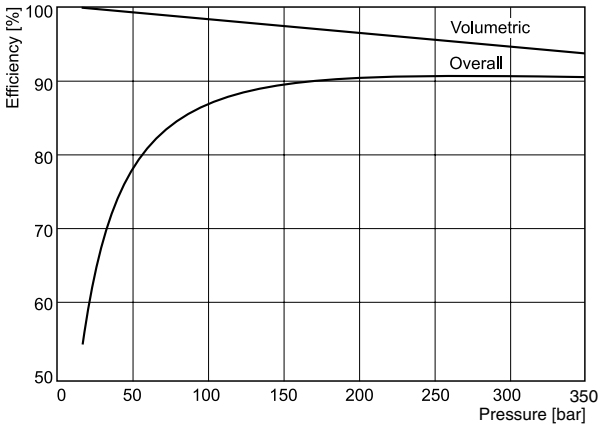
P2060 Efficiency at 1800 rpm



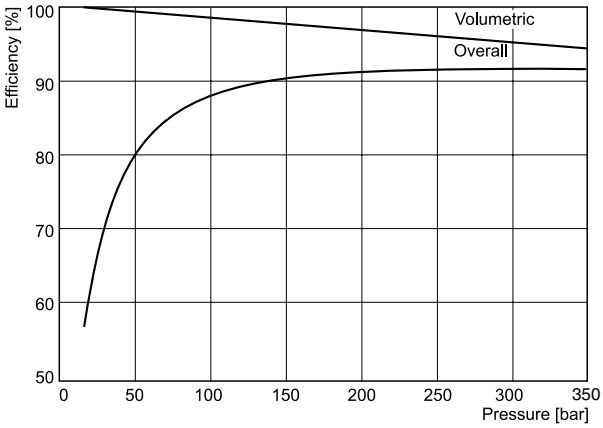
P2075 Efficiency at 1800 rpm



P2105 Efficiency at 1800 rpm



P2145 Efficiency at 1800 rpm



Fluid: Mineral oil ISO VG 32 at 40°C ; Inlet pressure: 1.0 bar (absolute) measured at inlet port.

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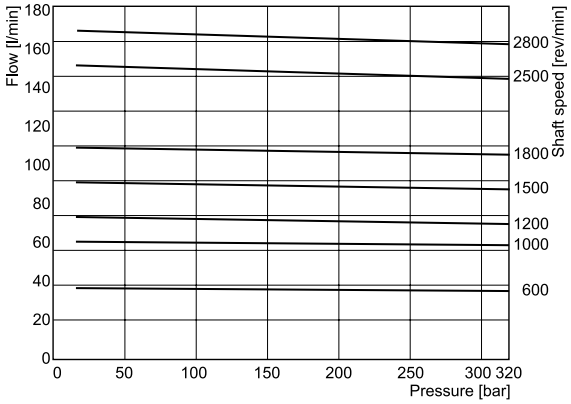
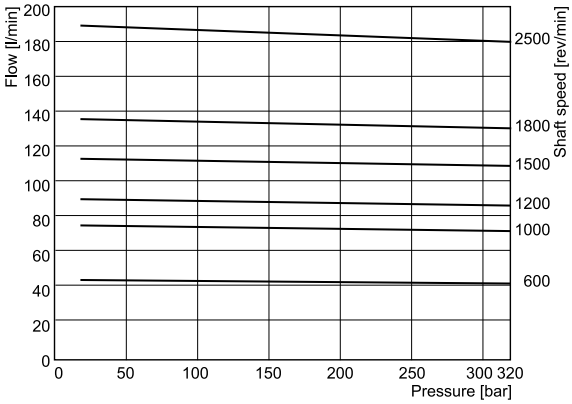
P2 Series - typical flow vs. pressure

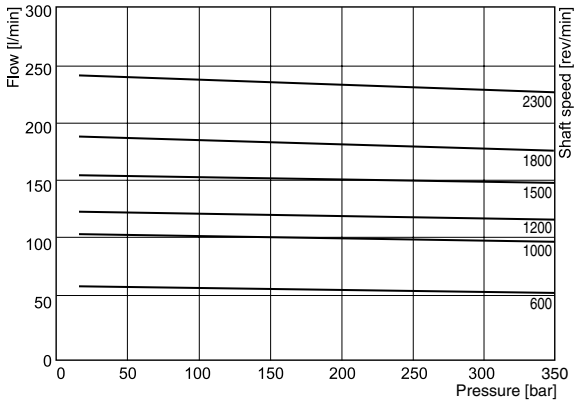
P2060 Outlet flow - full stroke



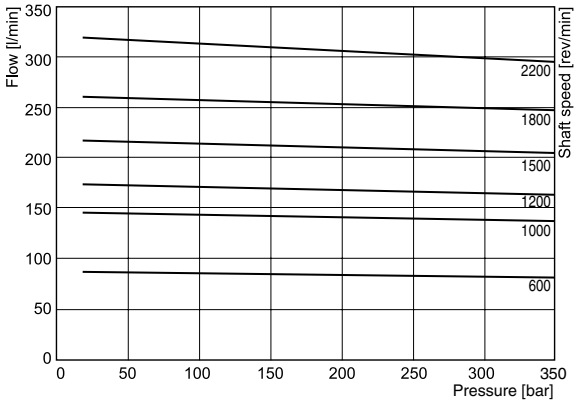
P2075 Outlet flow - full stroke



P2105 Outlet flow - full stroke



P2145 Outlet flow - full stroke



Fluid: Mineral oil ISO VG 32 at 40°C ; Inlet pressure: 1.0 bar (absolute) measured at inlet port.

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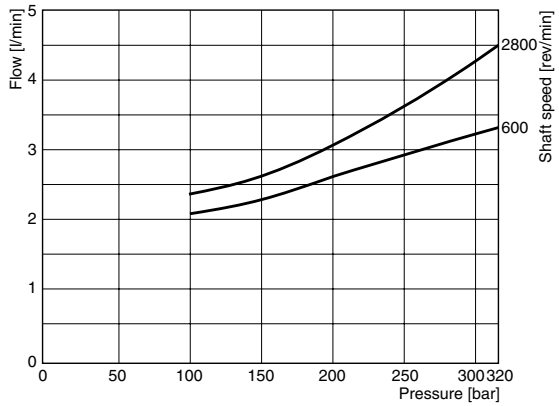
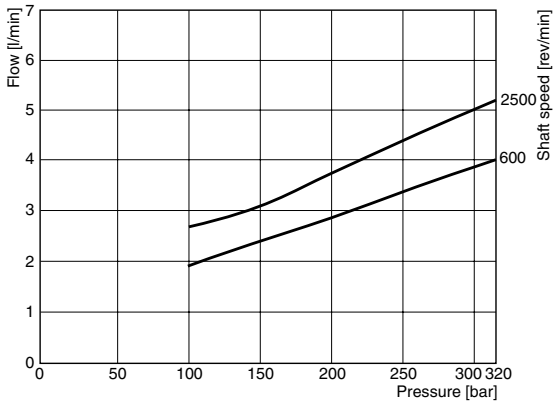
P2 Series - typical compensated case drain flow

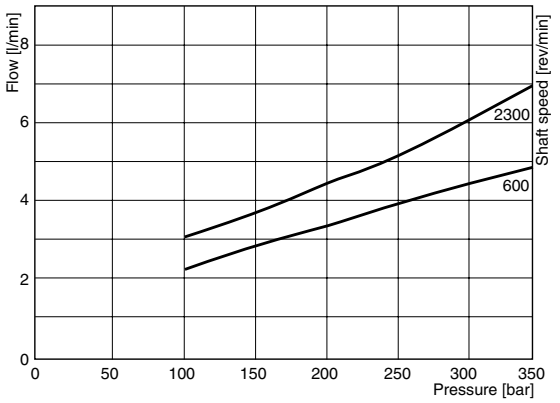
P2060 Drain flow at zero stroke



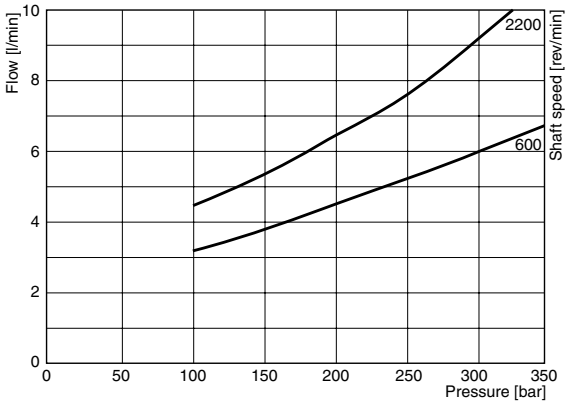
P2075 Drain flow at zero stroke



P2105 Drain flow at zero stroke



P2145 Drain flow at zero stroke



Fluid: Mineral oil ISO VG 32 at 40°C ; Inlet pressure: 1.0 bar (absolute) measured at inlet port.

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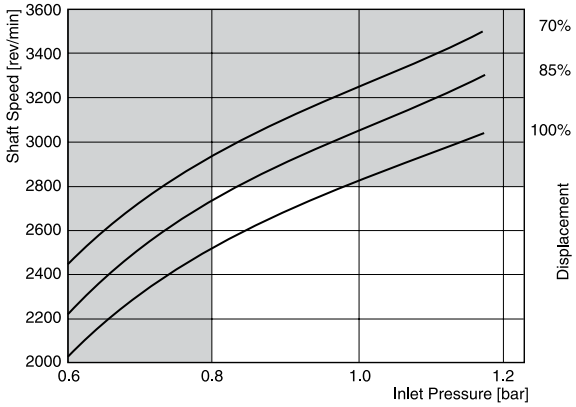
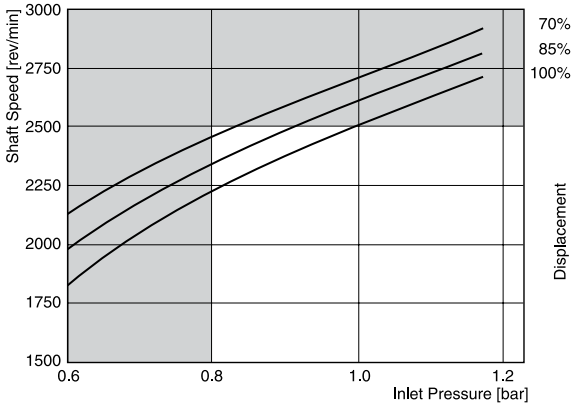
P2 Series - typical inlet characteristics vs. speed at various percentage displacements

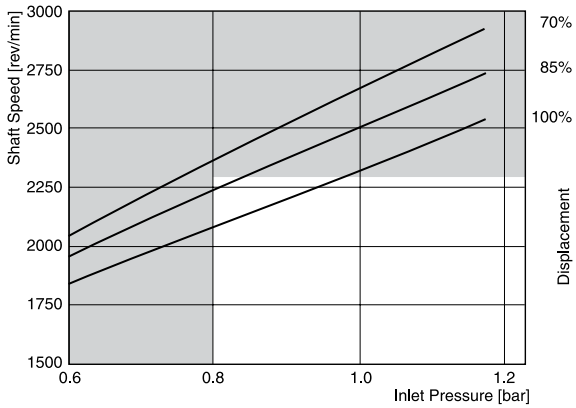
P2060 Inlet characteristics



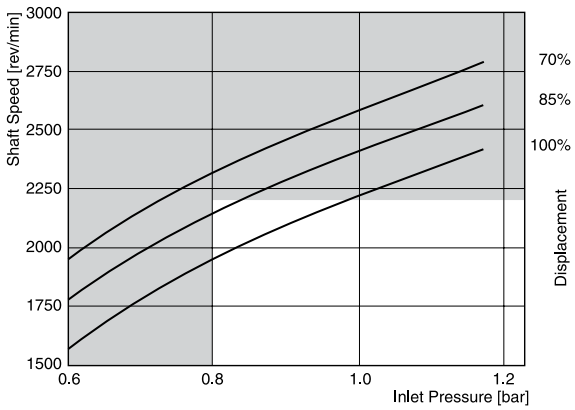
P2075 Inlet characteristics



P2105 Inlet characteristics



P2145 Inlet characteristics



Fluid: Mineral oil ISO VG 32 at 40°C ; Inlet pressure: 1.0 bar (absolute) measured at inlet port.

For operation at these conditions, please consult manufacturer for approval.

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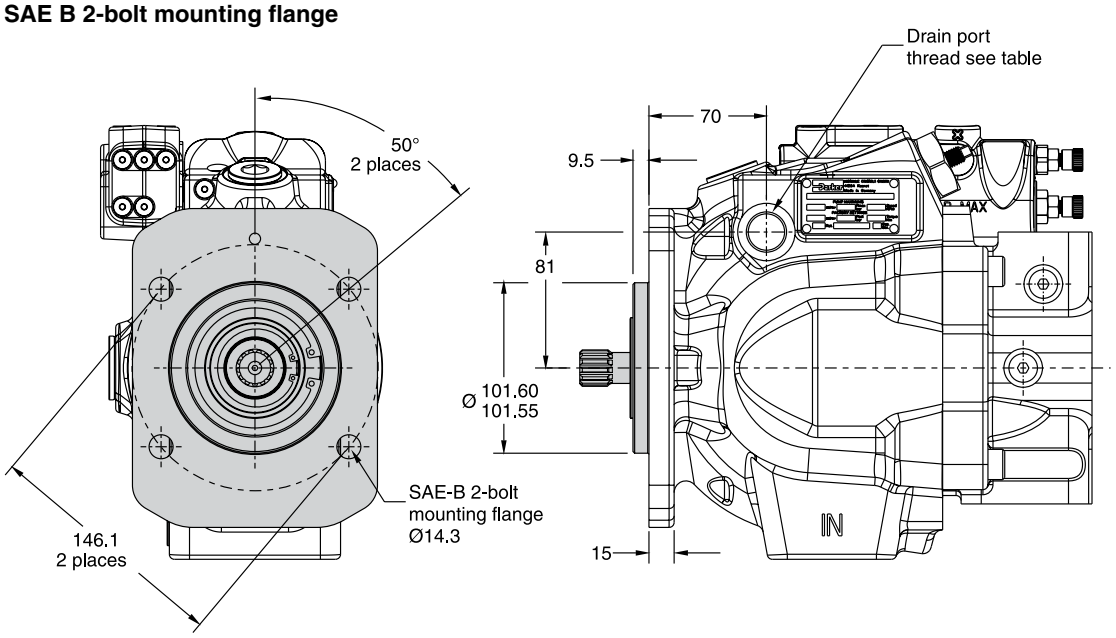
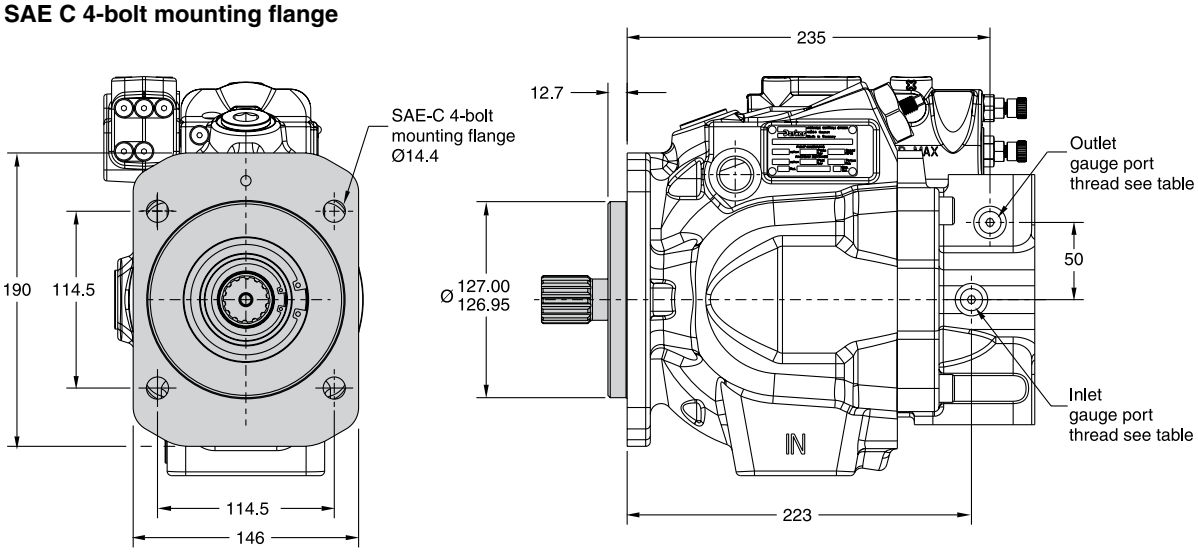
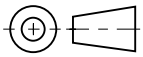
P2060 Mounting flange

SAE B 2-bolt mounting flange



SAE C 4-bolt mounting flange

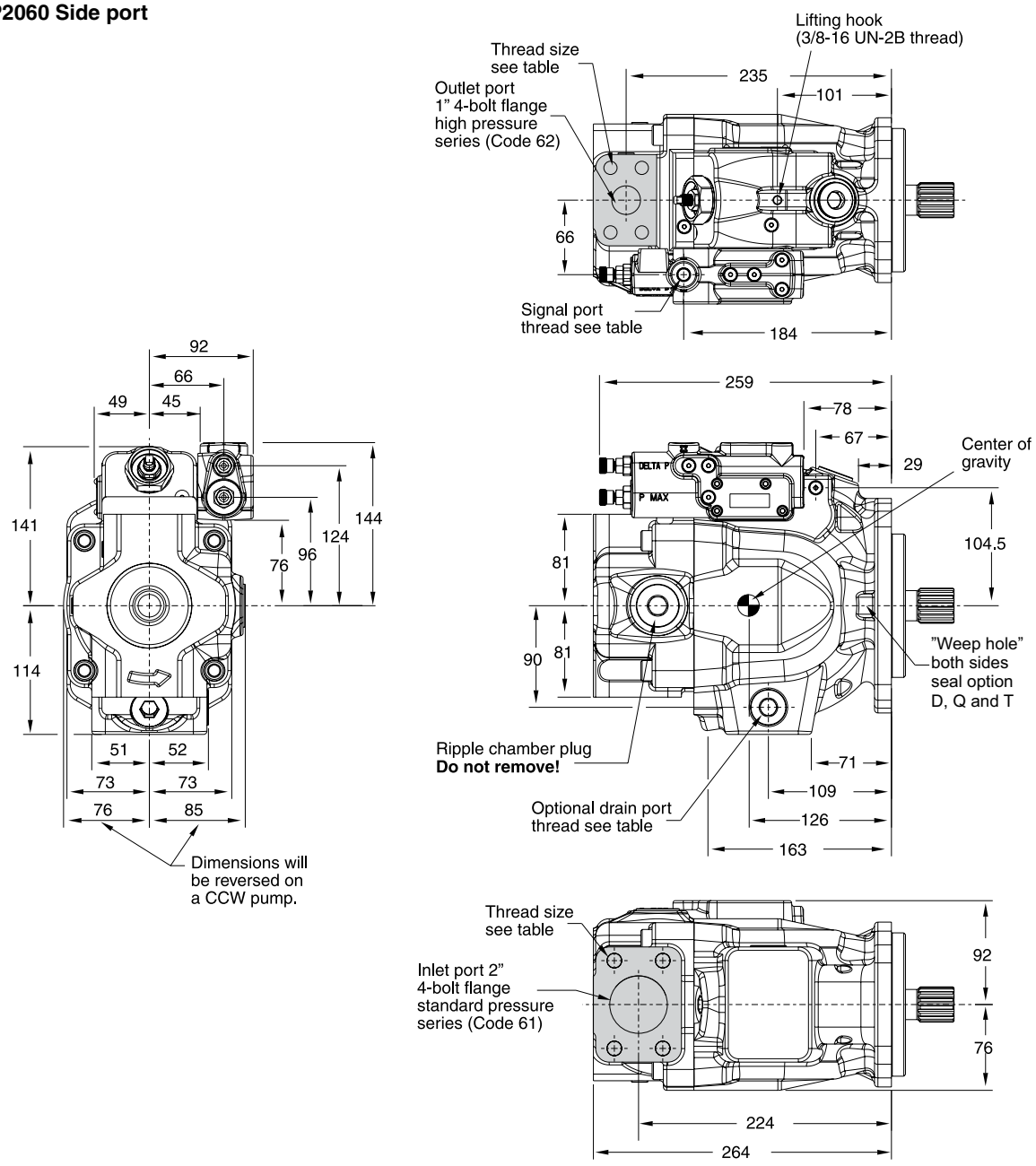




CW pump shown.
CCW pump will have inlet and outlet gauge ports reversed.

Port ordering code	Drain port	Inlet gauge port / Outlet gauge port / Signal port
"A" side - UNC	SAE-10 straight thread / O-ring port: 7/8-14 UN thread	SAE-4 straight thread / O-ring port: 7/16-20 UN thread
"B" side - metric	ISO 6149 straight thread / O-ring port: M22 x 1.5 thread	ISO 6149 straight thread / O-ring port: M12 x 1.5 thread

P2060 Side port



Pump shown is a CW rotation P2060 series pump with load sense and max. pressure compensator.

As an option the compensator unit can be positioned at opposite side of the pump. Please consult manufacturer for details.

CCW pump will have inlet and outlet gauge ports reversed.

Port option	Drain port	Inlet port	Outlet port	Inlet gauge port / Outlet gauge port / Signal port
"A" side - UNC	SAE-10 straight thread / O-ring port: 7/8-14 UN thread	1/2-13 UN	7/16-14 UN	SAE-4 straight thread / O-ring port: 7/16-20 UN thread
"B" side - metric	ISO 6149 straight thread / O-ring port: M22 x 1.5 thread	M12 x 1.75	M12 x 1.75	ISO 6149 straight thread / O-ring port: M12 x 1.5 thread

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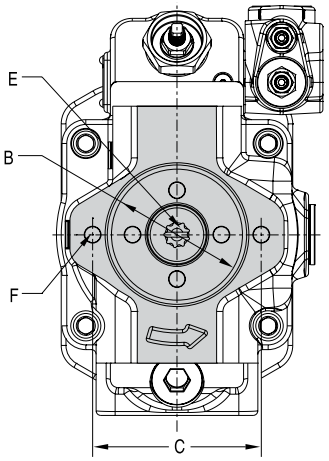
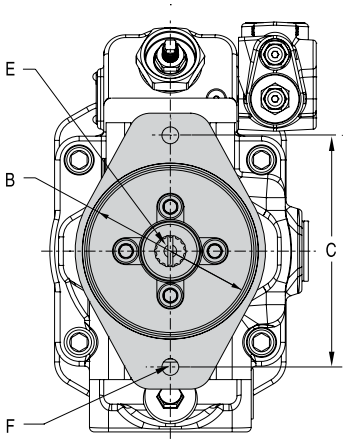
P2060 Thru-drive option

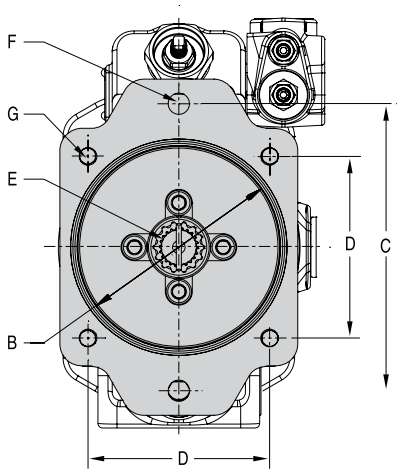
A1 configuration



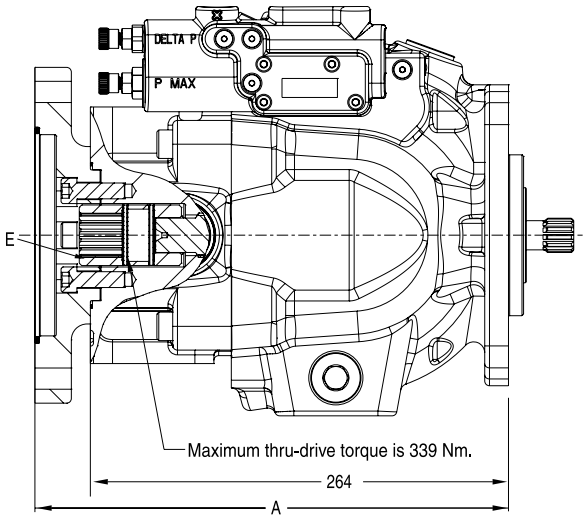
B1 and B2 configurations



C1 and C3 configurations



P2060 partial cut-away of thru-drive area



Thru-shaft option	A	B Ø	C	D	E	F UNC	F metric	G UNC	G metric	Weight
A1	264	82.625 82.575	106.38	N/A	SAE-A spline 9 tooth 16/32 pitch	3/8-16 UNC-2B THD	M10 x 1.5 THD	N/A	N/A	36.2 kg
B1	297	101.676 101.625	146.05	N/A	SAE-B spline 13 tooth 16/32 pitch	1/2-13 UNC-2B THD	M12 x 1.75 THD	N/A	N/A	38.9 kg
B2	297	101.676 101.625	146.05	N/A	SAE-BB spline 15 tooth 16/32 pitch	1/2-13 UNC-2B THD	M12 x 1.75 THD	N/A	N/A	38.9 kg
C1 C3	299	127.076 127.025	180.98	114.5	SAE-C spline 14 tooth 12/24 pitch	5/8-11 UNC-2B THD	M16 x 2 THD	1/2-13 UNC-2B THD	M12 x 1.75 THD	40.2 kg

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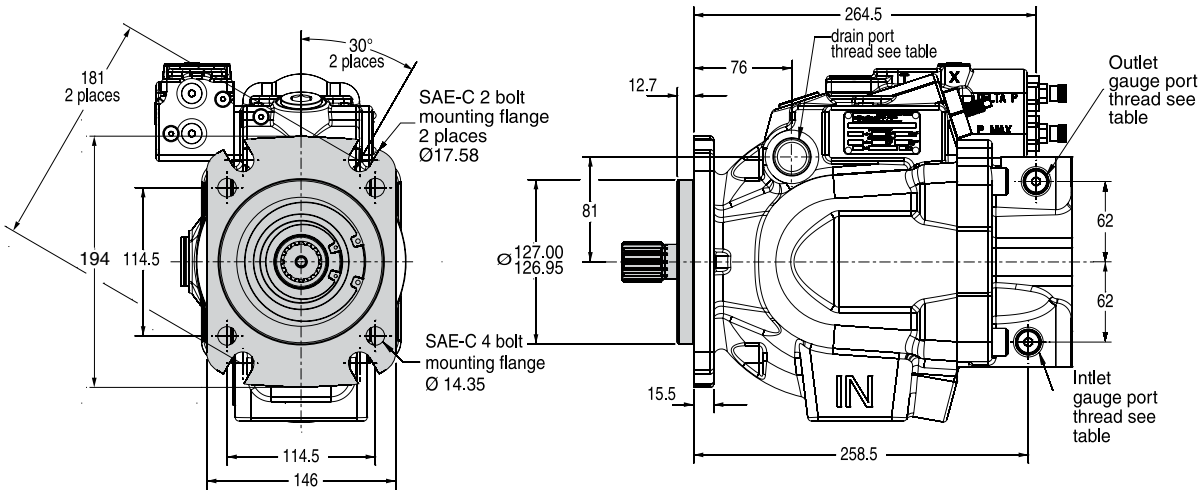
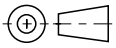
P2075 Mounting flange



CW pump shown.
CCW pump will have inlet and outlet gauge ports reversed.



Port ordering code	Drain port	Inlet gauge port / Outlet gauge port
"A" side - UNC	SAE-12 straight thread / O-ring port: 1-1/16-12 UN thread	SAE-4 straight thread / O-ring port: 7/16-20 UN thread
"B" side - metric	ISO 6149 straight thread / O-ring port: M27 x 2 thread	ISO 6149 straight thread / O-ring port: M12 x 1.5 thread

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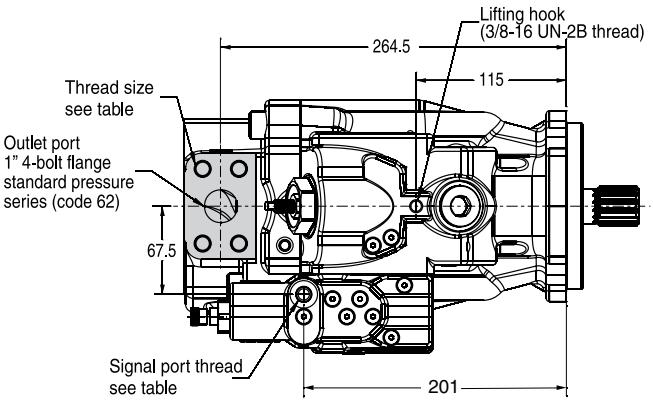
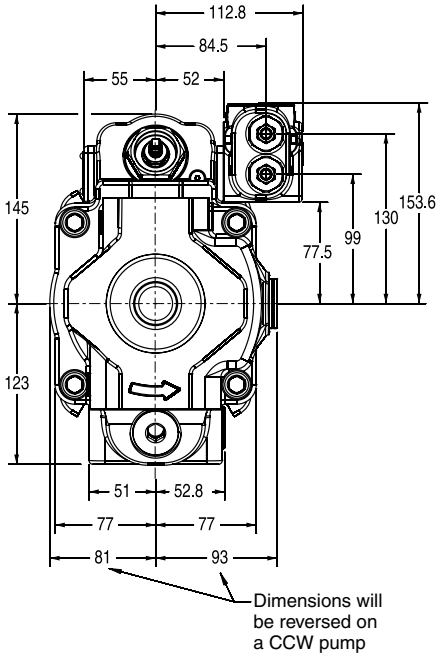
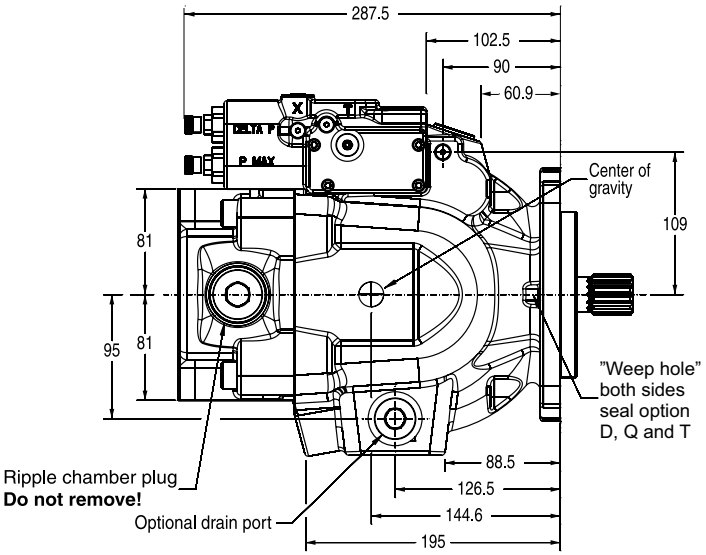
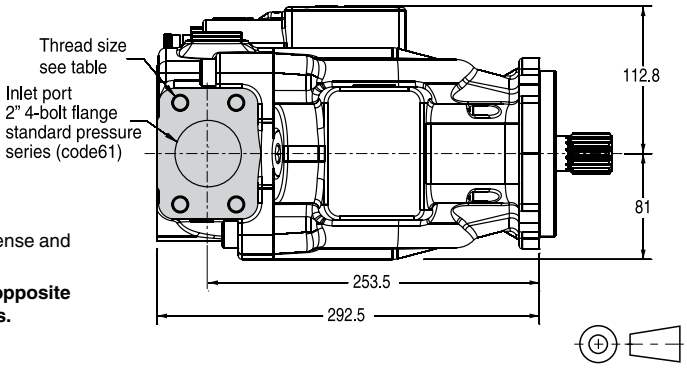
P2075 Side port









Pump shown is a CW rotation P2075 series pump with load sense and max. pressure compensator.

As an option the compensator unit can be positioned at opposite side of the pump. Please consult manufacturer for details.

CCW pump will have inlet and outlet gauge ports reversed.

Port option	Drain port	Inlet port	Outlet port	Inlet gauge port / Outlet gauge port / Signal port
"A" side - UNC	SAE-12 straight thread / O-ring port: 1-1/16-12 thread	1/2-13 UN	7/16-14 UN	SAE-4 straight thread / O-ring port: 7/16-20 UN thread
"B" side - metric	ISO 6149 straight thread / O-ring port: M27 x 2 thread	M12 x 1.75	M12 x 1.75	ISO 6149 straight thread / O-ring port: M12 x 1.5 thread

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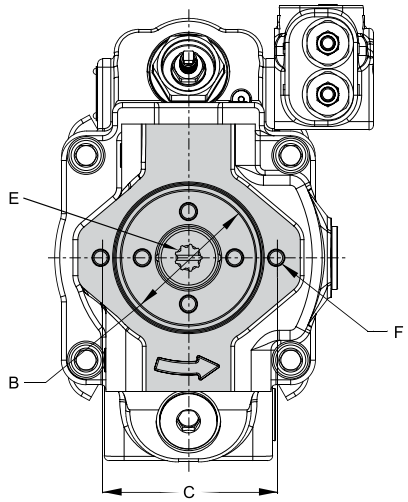
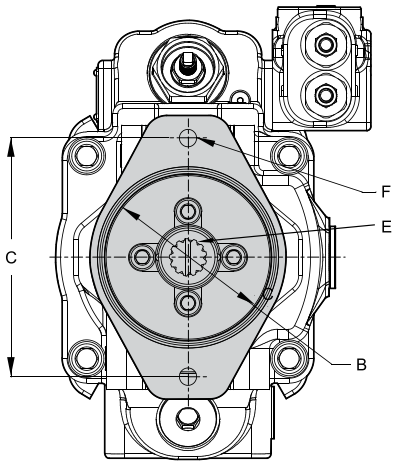
P2075 Thru-drive option

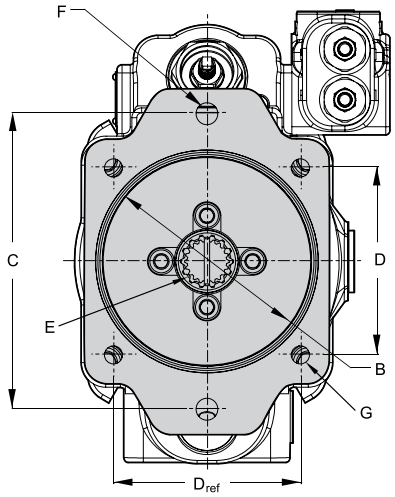
A1 configuration



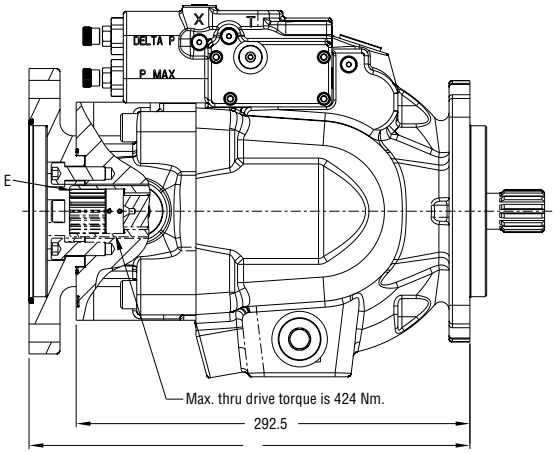
B1 and B2 configurations



C1 and C3 configurations



P2075 partial cut-away of thru-drive area



Pumps will be assembled with flange adapters as shown. Options B1, B2, C1 and C3 can be rotated 90°.

Thru-shaft option	A	B Ø	C	D	E	F UNC	F metric	G UNC	G metric	Weight
A1	292.5	82.625 82.575	106.38	N/A	SAE-A spline 9 tooth 16/32 pitch	3/8-16 UNC-2B THD	M10 x 1.5 THD	N/A	N/A	44 kg
B1	325.5	101.676 101.625	146.05	N/A	SAE-B spline 13 tooth 16/32 pitch	1/2-13 UNC-2B THD	M12 x 1.75 THD	N/A	N/A	46.5 kg
B2	325.5	101.676 101.625	146.05	N/A	SAE-BB spline 15 tooth 16/32 pitch	1/2-13 UNC-2B THD	M12 x 1.75 THD	N/A	N/A	46.5 kg
C1 C3	327.5	127.076 127.025	180.98	114.5	SAE-C spline 14 tooth 12/24 pitch	5/8-11 UNC-2B THD	M16 x 2 THD	1/2-13 UNC-2B THD	M12 x 1.75 THD	48 kg

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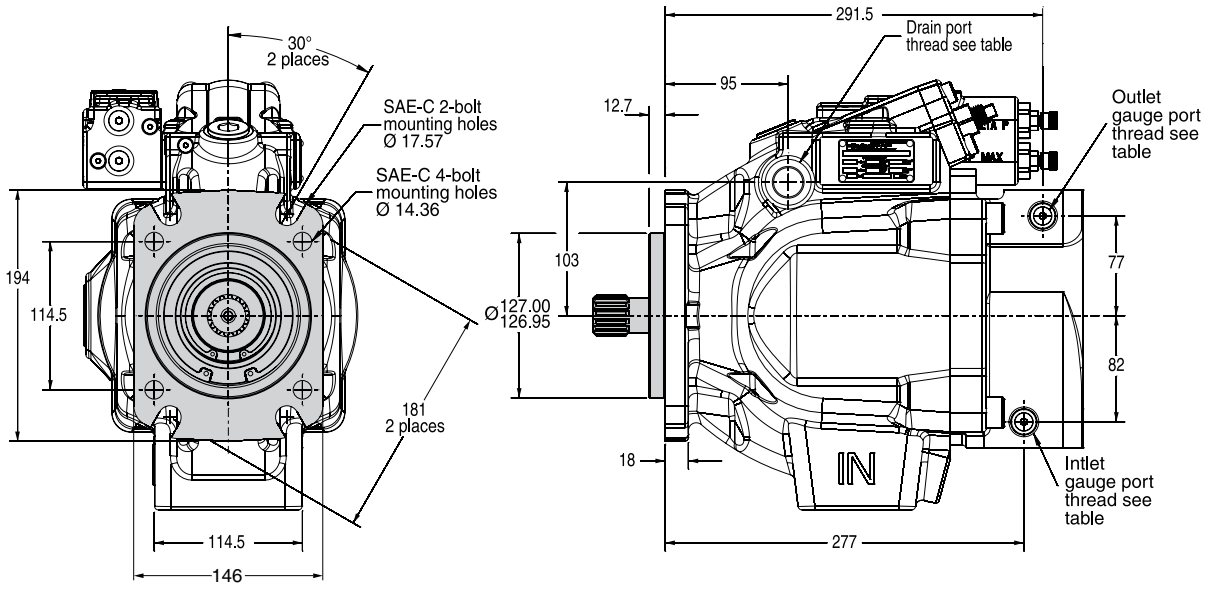
P2105 Mounting flange



CW pump shown.
CCW pump will have inlet and outlet gauge ports reversed.

Port ordering code	Drain port	Inlet gauge port / Outlet gauge port
“A” side - UNC	SAE-12 straight thread / O-ring port: 1-1/16-12 UN thread	SAE-4 straight thread / O-ring port: 7/16-20 UN thread
“B” side - metric	ISO 6149 straight thread / O-ring port: M27 x 2 thread	ISO 6149 straight thread / O-ring port: M12 x 1.5 thread

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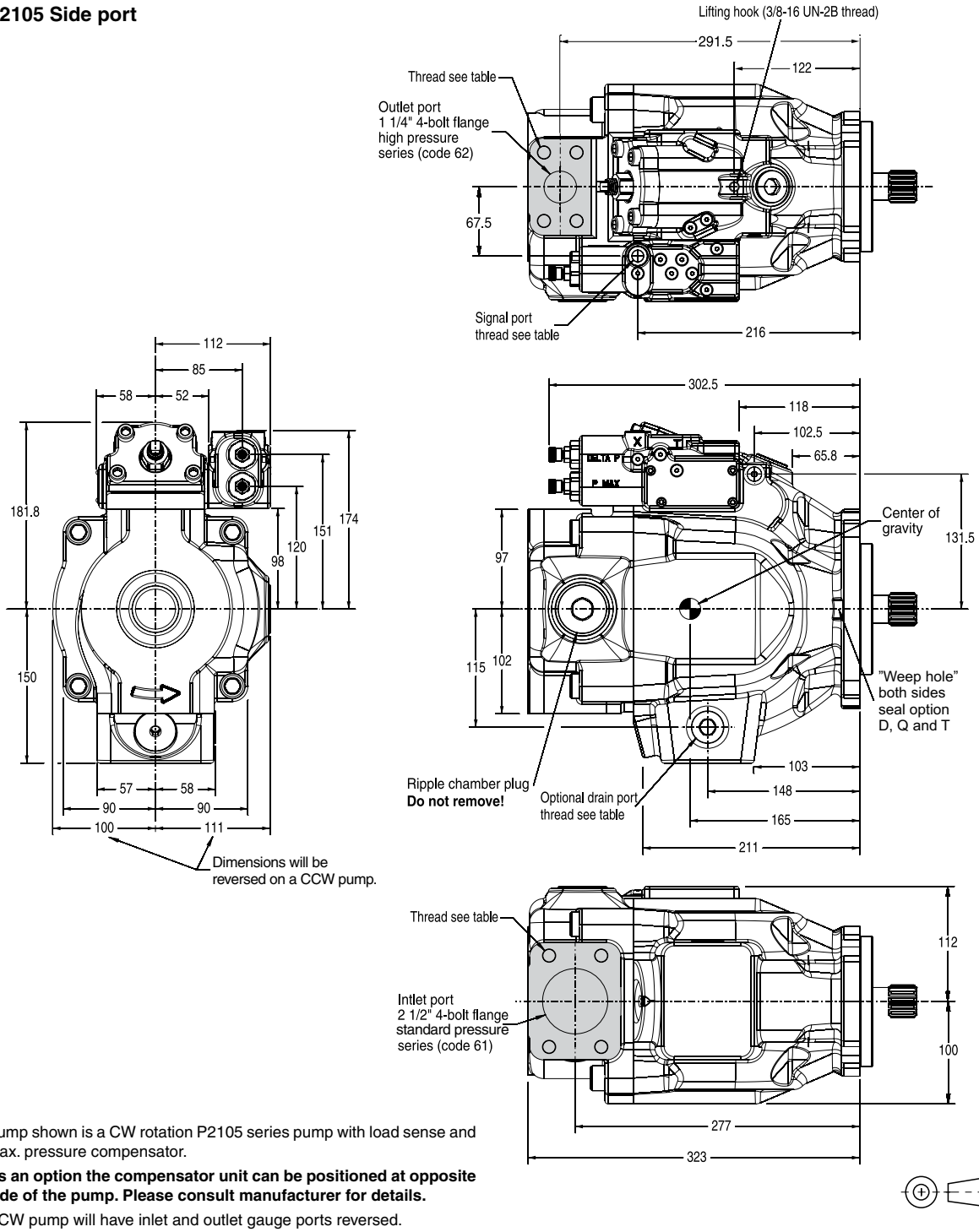
P2105 Side port



Pump shown is a CW rotation P2105 series pump with load sense and max. pressure compensator.

As an option the compensator unit can be positioned at opposite side of the pump. Please consult manufacturer for details.

CCW pump will have inlet and outlet gauge ports reversed.

Port option	Drain port	Inlet port	Outlet port	Inlet gauge port / Outlet gauge port / Signal port
"A" side - UNC	SAE-12 straight thread / O-ring port: 1-1/16-12 thread	1/2-13 UN	1/2-13 UN	SAE-4 straight thread / O-ring port: 7/16-20 UN thread
"B" side - metric	ISO 6149 straight thread / O-ring port: M27 x 2 thread	M12 x 1.75	M12 x 1.75	ISO 6149 straight thread / O-ring port: M12 x 1.5 thread

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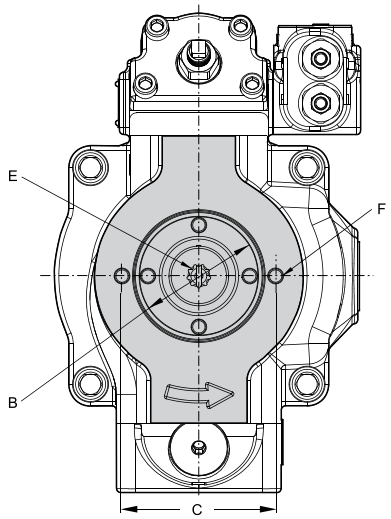
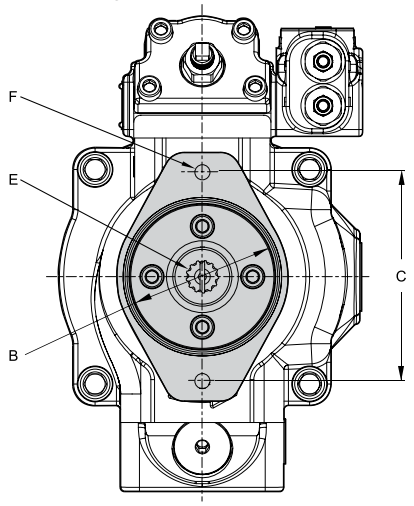
P2105 Thru-drive option

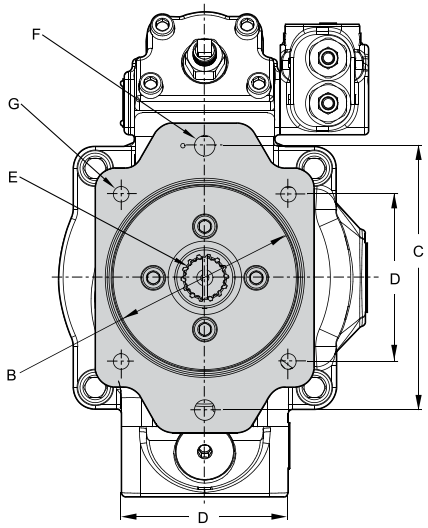
A1 configuration



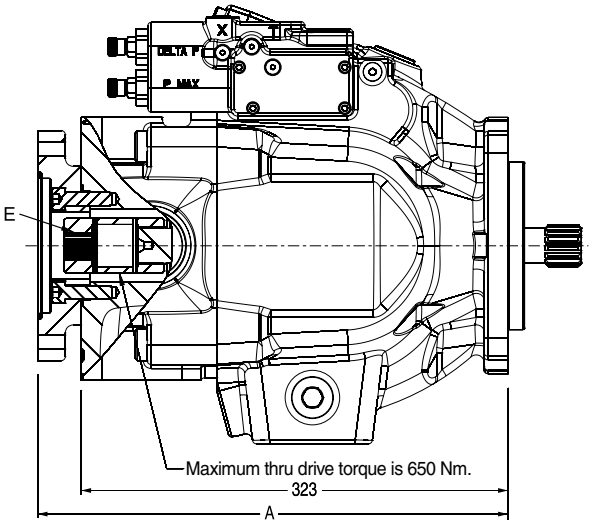
B1 and B2 configurations



C1 and C3 configurations



P2105 partial cut-away of thru-drive area



Pumps will be assembled with flange adapters as shown. Options B1, B2, C1 and C3 can be rotated 90°.

Thru-shaft option	A	B Ø	C	D	E	F UNC	F metric	G UNC	G metric	Weight
A1	323	82.625 82.575	106.38	N/A	SAE-A spline 9 tooth 16/32 pitch	3/8-16 UNC-2B THD	M10 x 1.5 THD	N/A	N/A	61 kg
B1	356	101.676 101.625	146.05	N/A	SAE-B spline 13 tooth 16/32 pitch	1/2-13 UNC-2B THD	M12 x 1.75 THD	N/A	N/A	64 kg
B2	356	101.676 101.625	146.05	N/A	SAE-BB spline 15 tooth 16/32 pitch	1/2-13 UNC-2B THD	M12 x 1.75 THD	N/A	N/A	64 kg
C1, C3	358	127.075 127.025	180.98	114.5	SAE-C spline 14 tooth 12/24 pitch	5/8-11 UNC-2B THD	M16 x 2 THD	1/2-13 UNC-2B THD	M12 x 1.75 THD	65 kg

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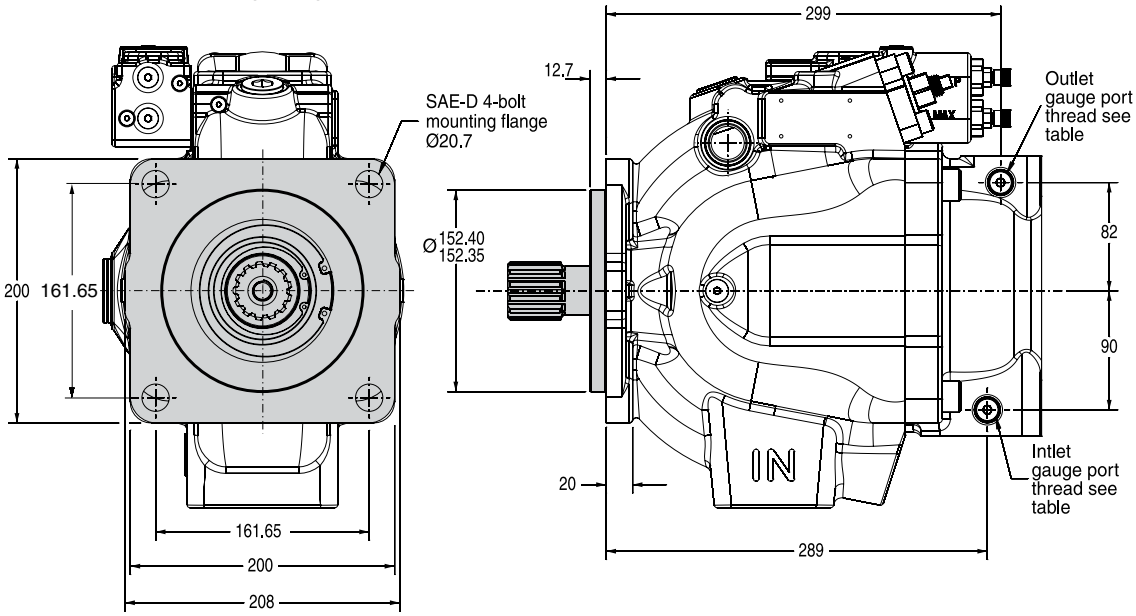
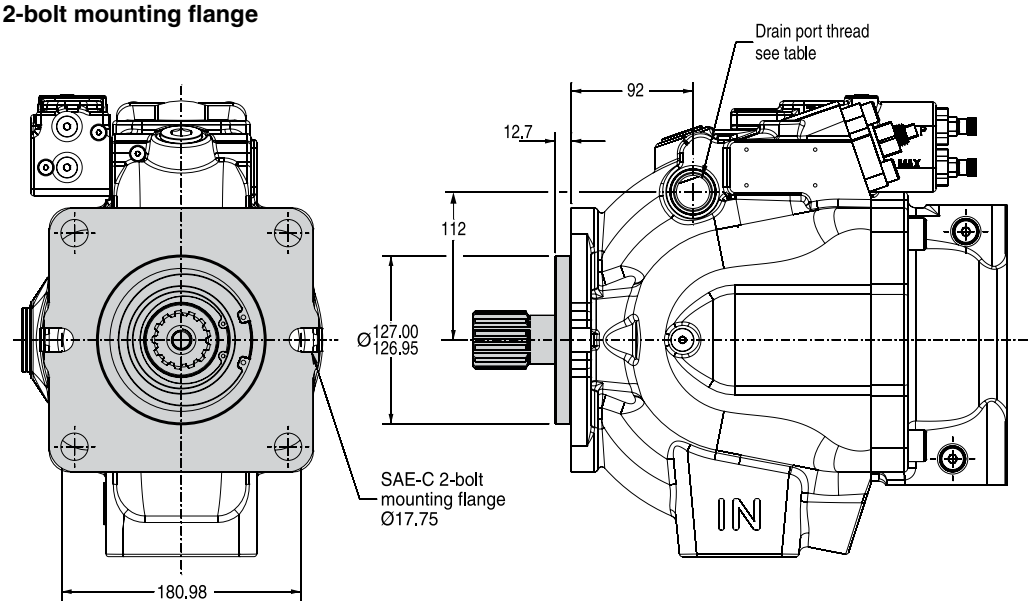
P2145 Mounting flange

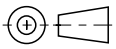
SAE D 4-bolt mounting flange



SAE C 2-bolt mounting flange



CW pump shown.
CCW pump will have inlet and outlet gauge ports reversed.



Port ordering code	Drain port	Inlet gauge port / Outlet gauge port
"A" side - UNC	SAE-12 straight thread / O-ring port: 1-1/16-12 UN thread	SAE-4 straight thread / O-ring port: 7/16-20 UN thread
"B" side - metric	ISO 6149 straight thread / O-ring port: M27 x 2 thread	ISO 6149 straight thread / O-ring port: M12 x 1.5 thread

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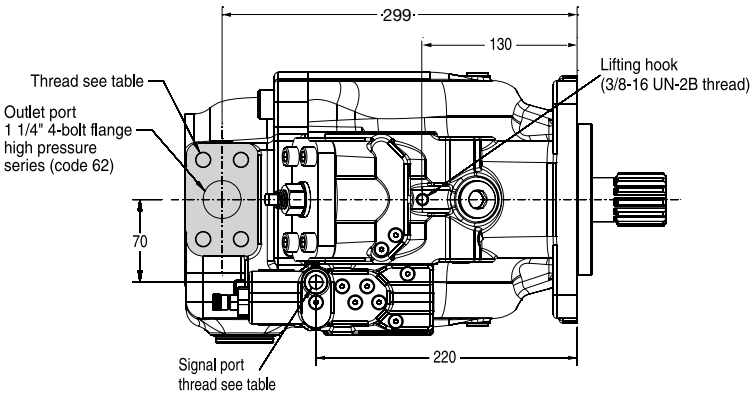
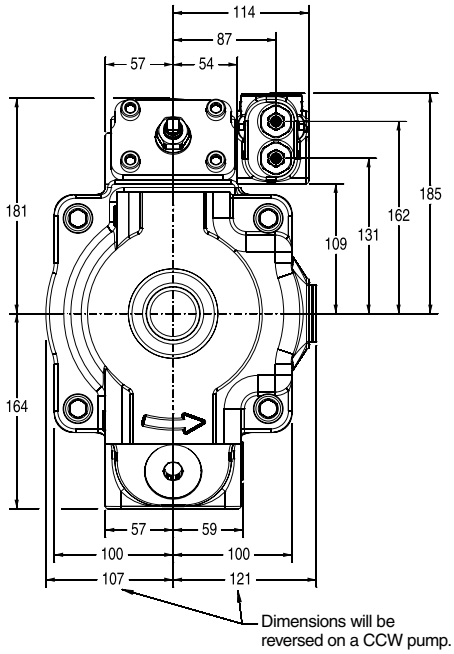
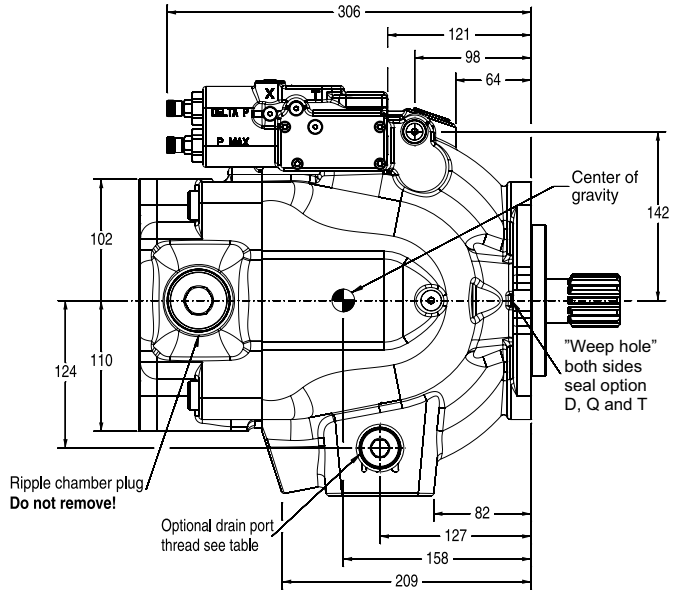
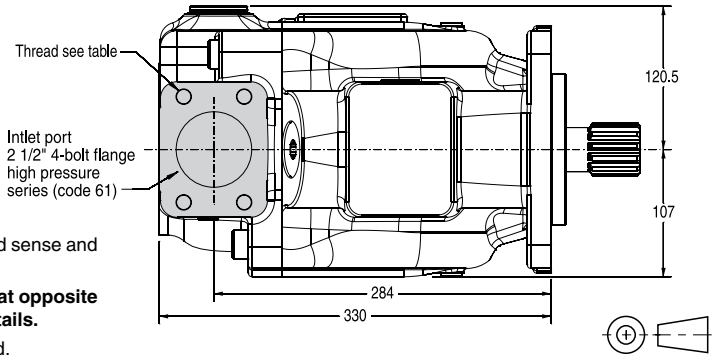
P2145 Side port









Pump shown is a CW rotation P2145 series pump with load sense and max. pressure compensator.

As an option the compensator unit can be positioned at opposite side of the pump. Please consult manufacturer for details.

CCW pump will have inlet and outlet gauge ports reversed.

Port option	Drain port	Inlet port	Outlet port	Inlet gauge port / Outlet gauge port / Signal port
“A” side - UNC	SAE-12 straight thread / O-ring port: 1-1/16-12 thread	1/2-13 UN	1/2-13 UN	SAE-4 straight thread / O-ring port: 7/16-20 UN thread
“B” side - metric	ISO 6149 straight thread / O-ring port: M27 x 2 thread	M12 x 1.75	M12 x 1.75	ISO 6149 straight thread / O-ring port: M12 x 1.5 thread

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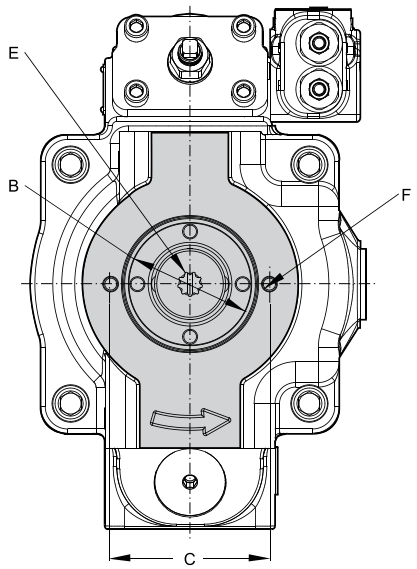
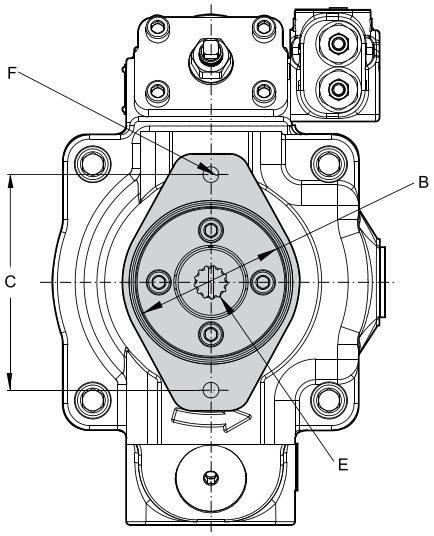
P2145 Thru-drive option

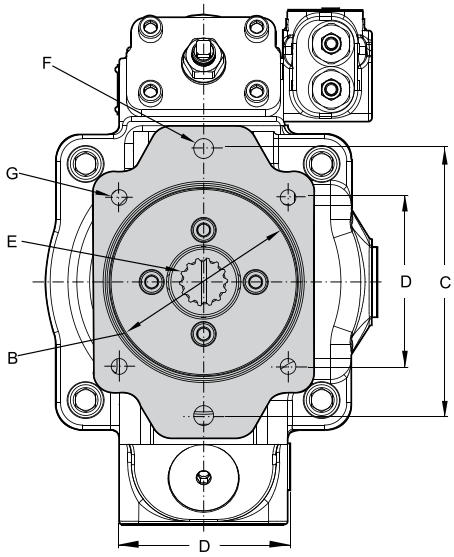
A1 configuration



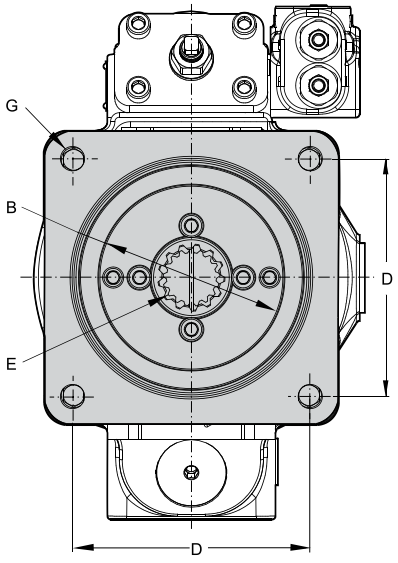
B1 and B2 configurations



C1, C2, C3 and C4 configurations



D3 configuration



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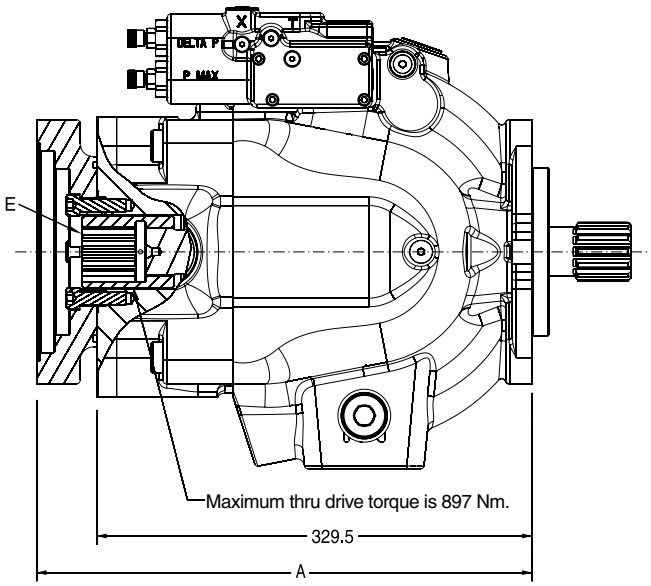
P2145 Thru-drive option



Thru-shaft option	A	B Ø	C	D	E	F UNC	F metric	G UNC	G metric	Weight
A1	329.5	82.626 82.575	106.38	N/A	SAE-A spline 9 tooth 16/32 pitch	3/8-16 UNC-2B THD	M10 x 1.5 THD	N/A	N/A	79.8 kg
B1	362.5	101.676 101.625	146.05	N/A	SAE-B spline 13 tooth 16/32 pitch	1/2-13 UNC-2B THD	M12 x 1.75 THD	N/A	N/A	82.6 kg
B2	362.5	101.676 101.625	146.05	N/A	SAE-BB spline 15 tooth 16/32 pitch	1/2-13 UNC-2B THD	M12 x 1.75 THD	N/A	N/A	82.6 kg
C1 & C2	364.5	127.075 127.025	180.98	NA	SAE-C spline 14 tooth 2/24 pitch	5/8-11 UNC-2B THD	M16 x 2 THD	1/2-13 UNC-2B THD	M12 x 1.75 THD	83.9 kg
C3	364.5	127.075 127.025	180.98	114.5	SAE-C spline 14 tooth 2/24 pitch	5/8-11 UNC-2B THD	M16 x 2 THD	1/2-13 UNC-2B THD	M12 x 1.75 THD	83.9 kg
C4	364.5	127.075 127.025	180.98	114.5	SAE-CC spline 17 tooth 2/24 pitch	5/8-11 UNC-2B THD	M16 x 2 THD	1/2-13 UNC-2B THD	M12 x 1.75 THD	83.9 kg
D3	375	152.475 152.425	NA	161.65	SAE-D spline 13 tooth 8/16 pitch	NA	NA	3/4-10 UNC-2B THD	M16 x 2 THD	88 kg

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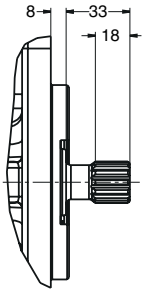
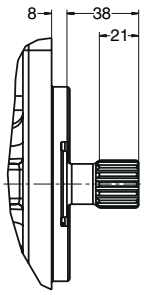
P2 Shaft options

B1



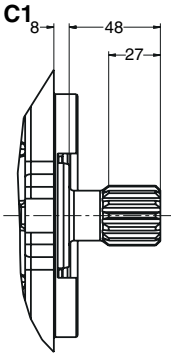
SAE “B” spline
13 tooth
16/32 pitch
30° involute spline
Max. input torque
209 Nm

B2



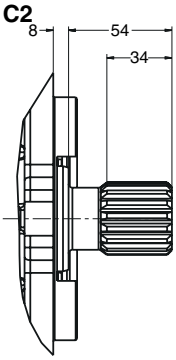
SAE “B-B” spline
15 tooth
16/32 pitch
30° involute spline
Max. input torque
337 Nm

C1



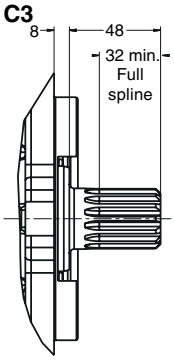
SAE “C” spline
14 tooth
12/24 pitch
30° involute spline
Max. input torque
641 Nm

C2



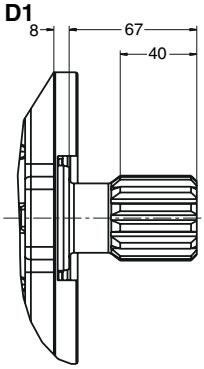
SAE “C-C” spline
17 tooth
12/24 pitch
30° involute spline
Max. input torque
1217 Nm

C3



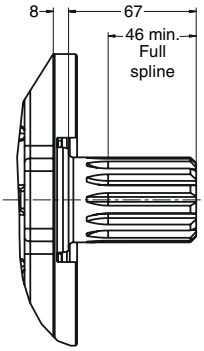
SAE "C" spline
no undercut
14 tooth
12/24 pitch
30° involute spline
Max. input torque
769 Nm

D1



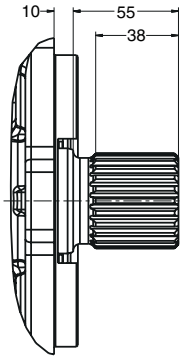
SAE D
13 tooth
8/16 pitch
30° involute spline
Max. input torque
1701 Nm

D2



SAE “D” spline
no undercut
13 tooth
8/16 pitch
30° involute spline
Max. input torque
2041 Nm

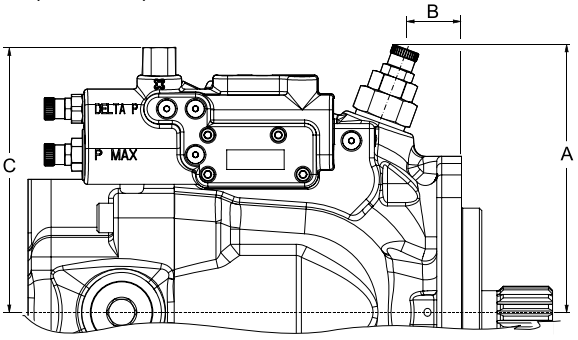
M6



DIN 5480 spline
W50x2x30x24x9g
Max. input torque
3050 Nm

Torque control dimensions

Torque control options ”TA”, ”TB”, ”TC” and ”TD”



	P2060	P2075	P2105	P2145
A	163	171	190	202
B	34	69	69	69
C	161	154	175	186

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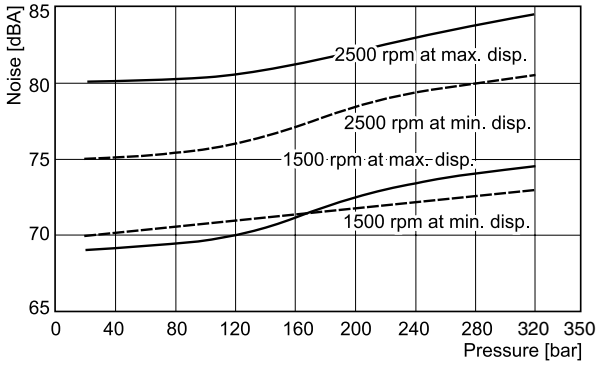
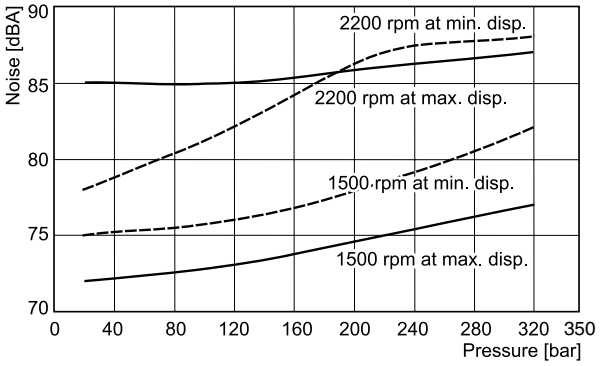
P3 Noise characteristics at max./min. displacement

P3105 Noise characteristics

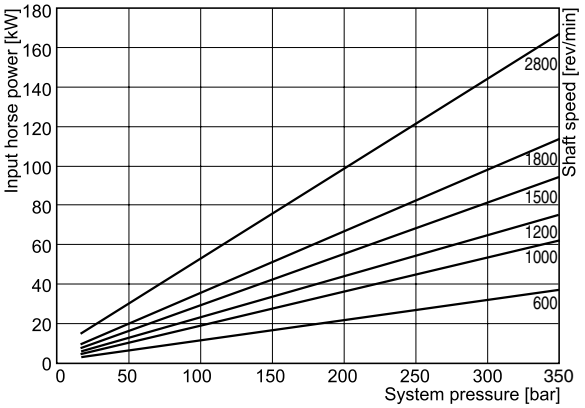


P3145 Noise characteristics

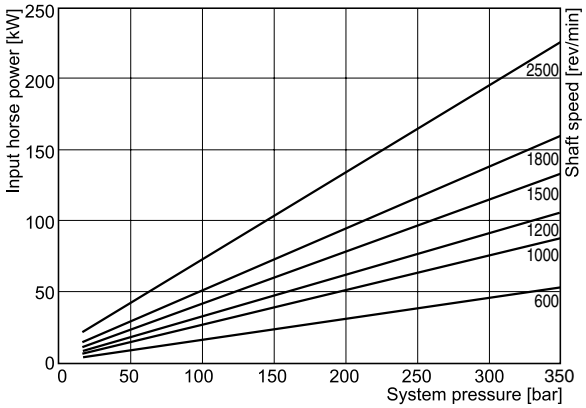


P3 Series - typical drive power at full displacement

P3105 Input power - full stroke



P3145 Input power - full stroke



Fluid: Mineral oil ISO VG 32 at 40°C ; Inlet pressure: 1.0 bar (absolute) measured at inlet port.

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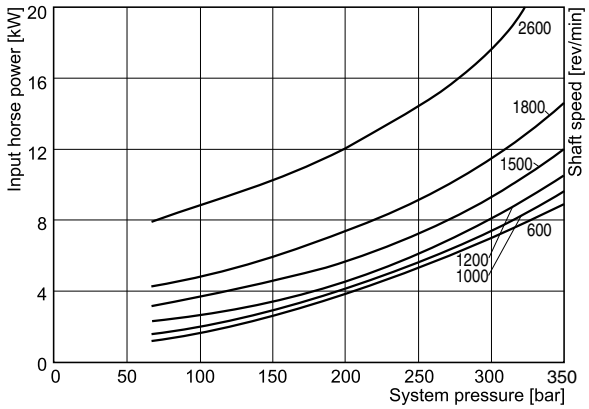
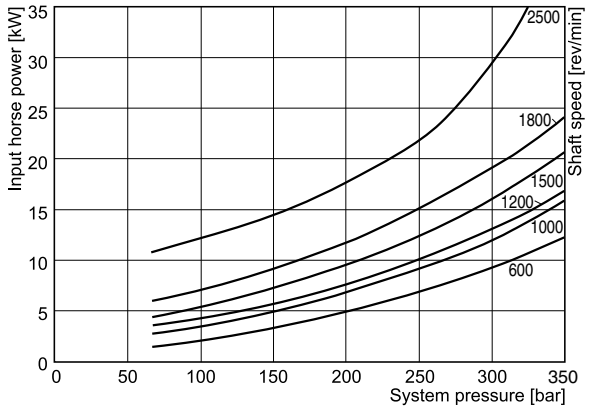
P3 Series - typical compensated input power

P3105 Input power - zero stroke

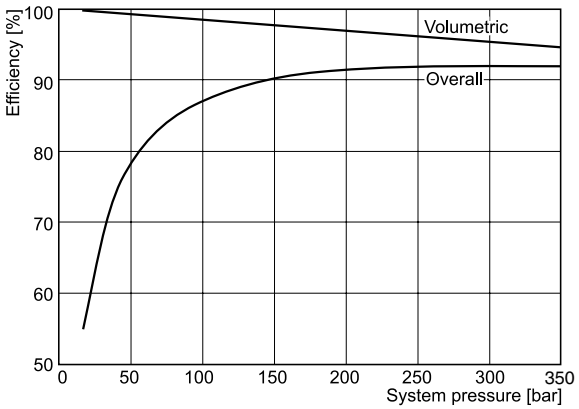


P3145 Input power - zero stroke

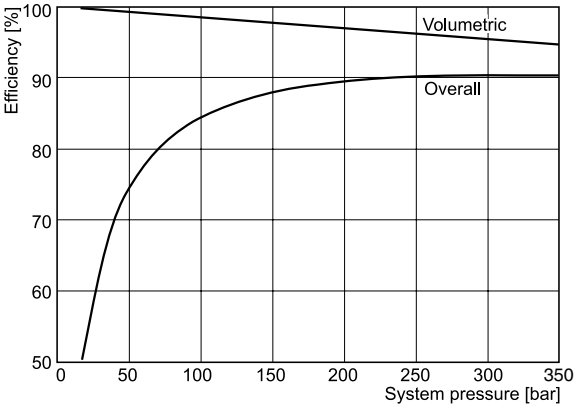


P3 Series - typical efficiency at full displ. at 1800 rpm

P3105 Efficiency at 1800 rpm



P3145 Efficiency at 1800 rpm



Fluid: Mineral oil ISO VG 32 at 40°C ; Inlet pressure: 1.0 bar (absolute) measured at inlet port.

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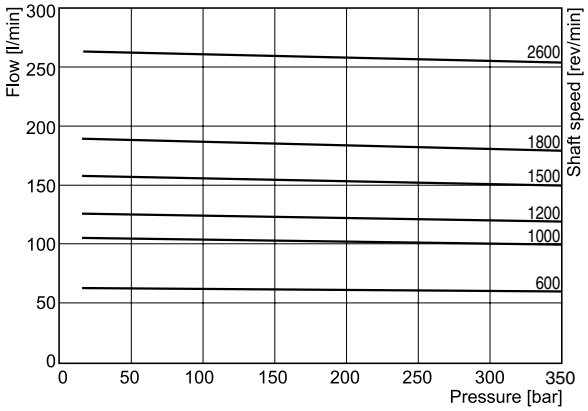
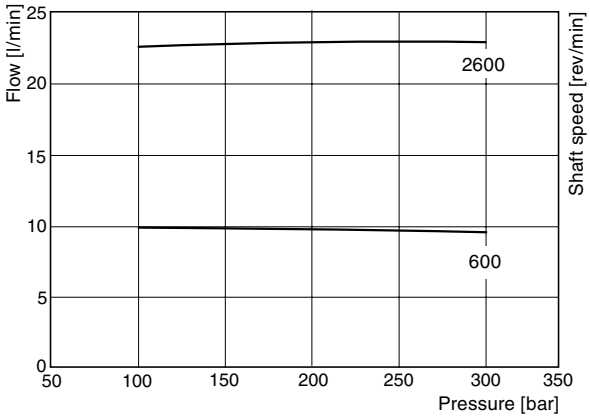
P3 Series - typical flow vs. pressure

P3105 Outlet flow - full stroke

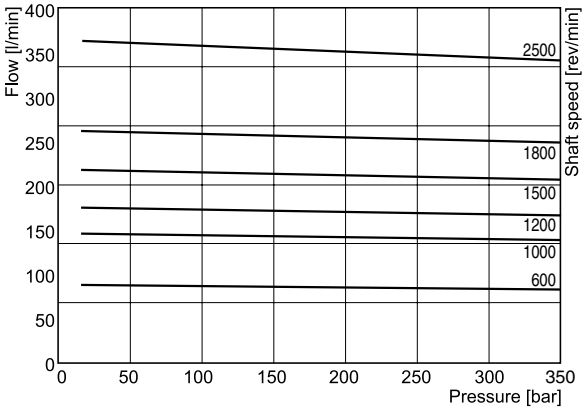


P3 Series - typical compensated drain flow

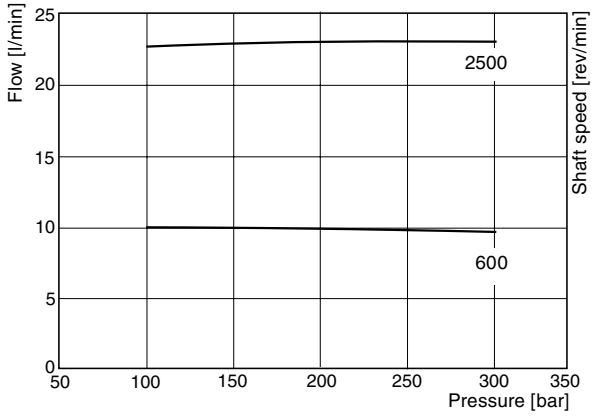
P3105 Drain flow at zero stroke



P3145 Outlet flow - full stroke



P3145 Drain flow at zero stroke



Fluid: Mineral oil ISO VG 32 at 40°C ; Inlet pressure: 1.0 bar (absolute) measured at inlet port.

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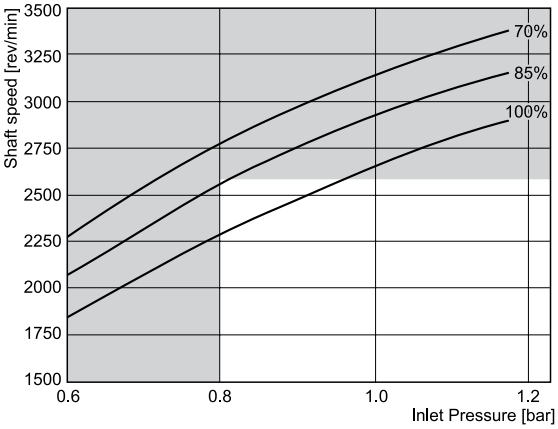
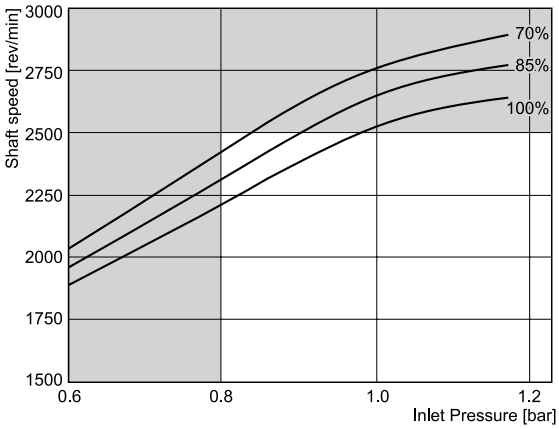
P3 Series - typical inlet characteristics vs. speed at various percentage displacements

P3105 Inlet characteristics



P3145 Inlet characteristics



Fluid: Mineral oil ISO VG 32 at 40°C ; Inlet pressure: 1.0 bar (absolute) measured at inlet port.

For operation at these speeds, please consult manufacturer for approval.

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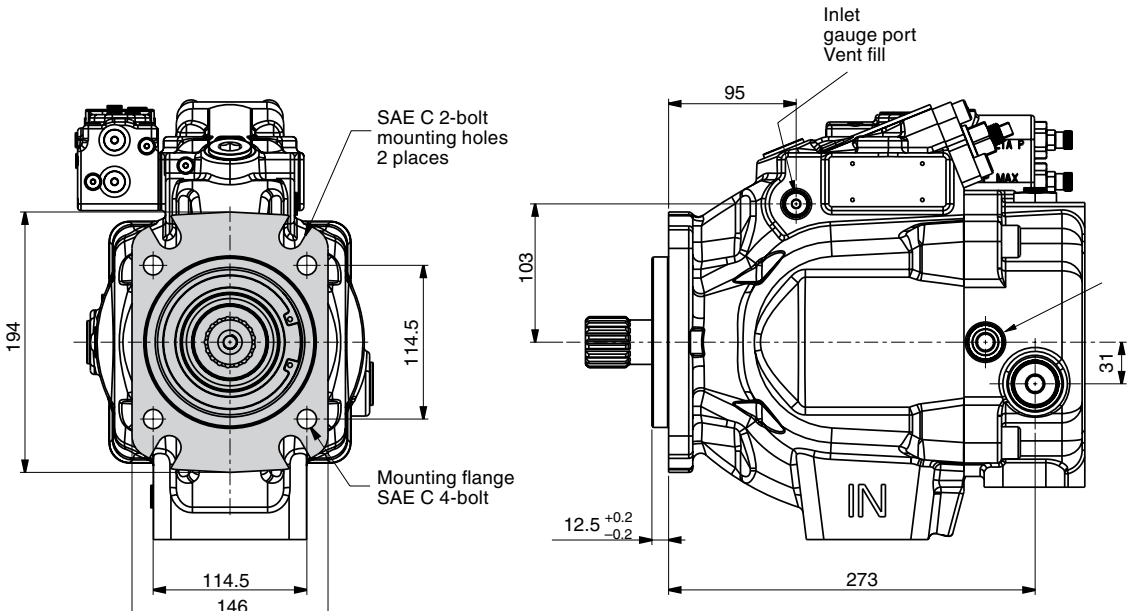
P3105 Mounting flange



CW pump shown
CCW pump will have outlet gauge port at opposite side

Port ordering code	Drain port	Airbleed port / vent port
“A” side - UNC	SAE-8 straight thread / O-ring port: 3/4 - 16 UN thread	SAE-4 straight thread / O-ring port: 7/16-20 UN thread
“B” side - metric	ISO 6149 straight thread / O-ring port: M18 x 1.5 thread	ISO 6149 straight thread / O-ring port: M12 x 1.5 thread

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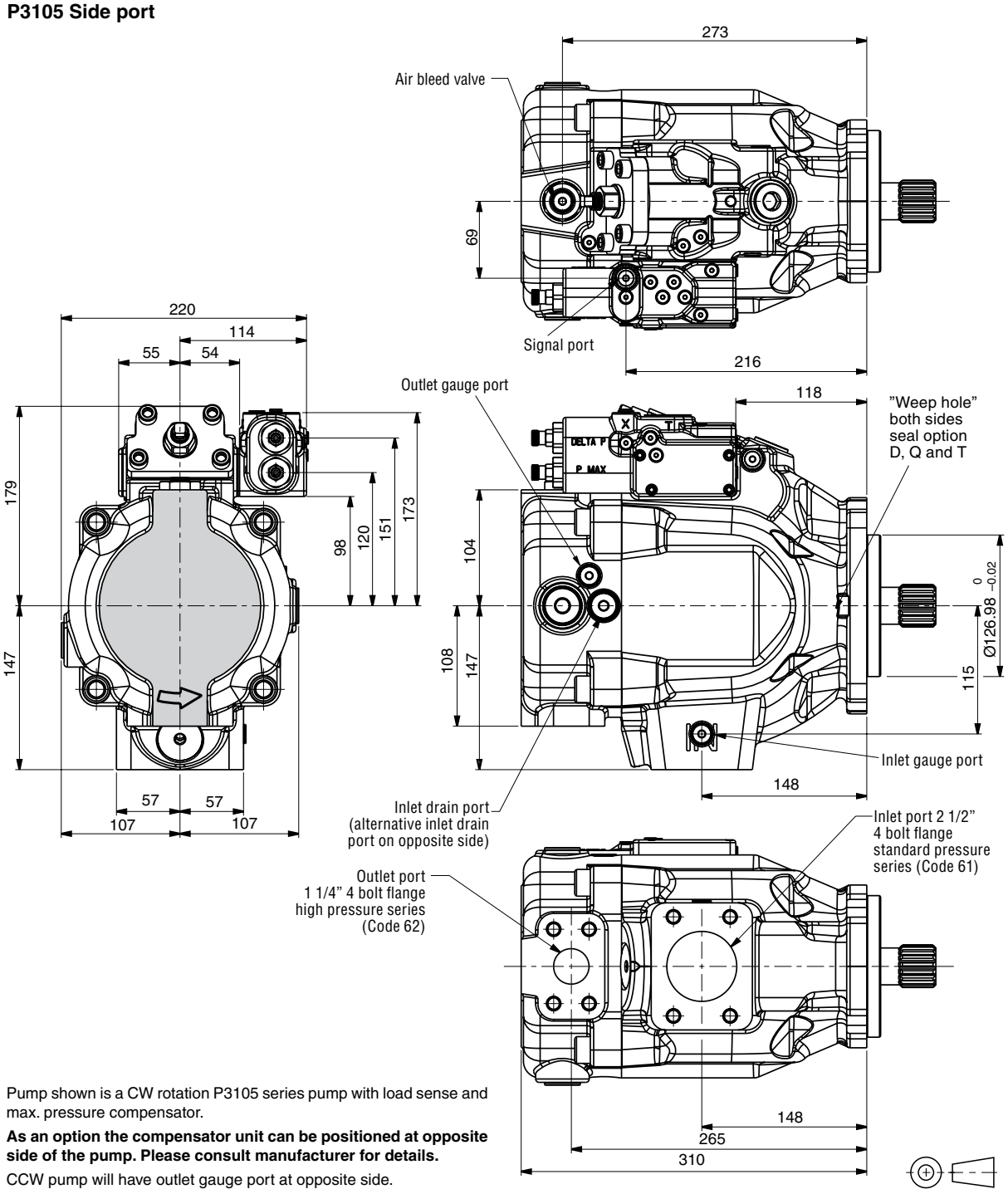
P3105 Side port



Pump shown is a CW rotation P3105 series pump with load sense and max. pressure compensator.

As an option the compensator unit can be positioned at opposite side of the pump. Please consult manufacturer for details.

CCW pump will have outlet gauge port at opposite side.

Port ordering code	Drain port	Inlet port	Outlet port	Inlet gauge port / Outlet gauge port / Airbleed port / Signal port
"A" side - UNC	SAE 8 straight thread / O-ring port: 3/4 - 16 UN thread	1/2-13 UNC	1/2-13 UNC	SAE-4 straight thread / O-ring port: 7/16-20 UN thread
"B" side - metric	ISO 6149 straight thread / O-ring port: M18 x 1.5 thread	M12 x 1.75	M12 x 1.75	ISO 6149 straight thread / O-ring port: M12 x 1.5 thread

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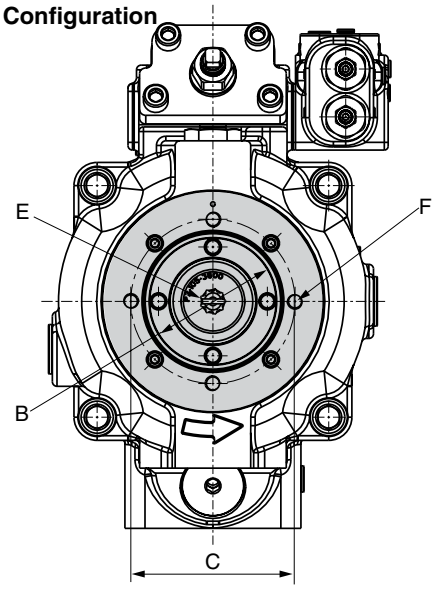
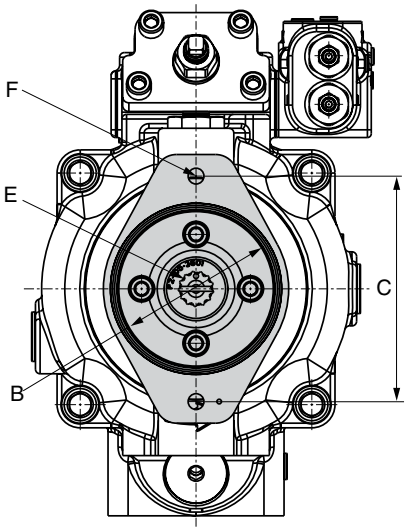
P3105 Thru-drive option

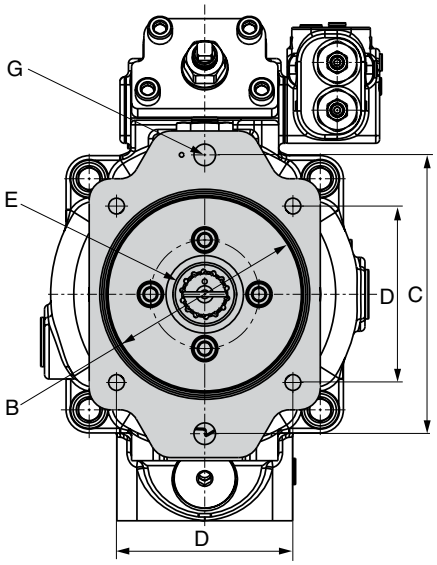
A1 Configuration



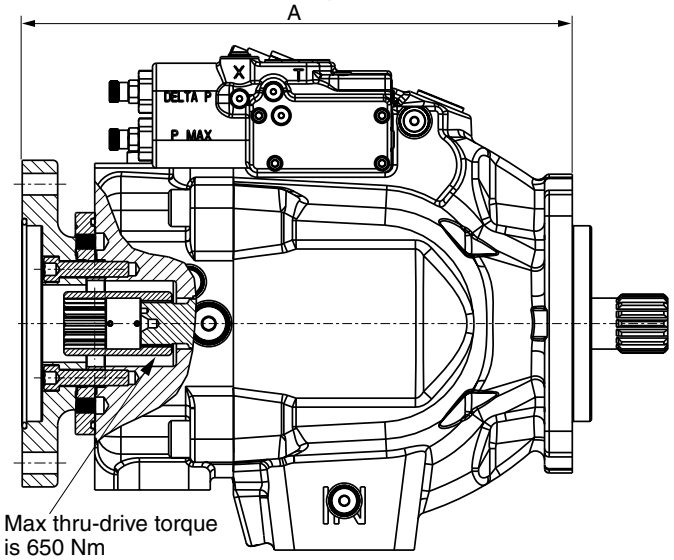
B1 and B2 Configuration



C1 and C3 Configuration



P3105 Partial cut-away of thru-drive area



Thru-shaft option	A	B Ø	C	D	E	F UNC	F metric	G UNC	G metric	Weight
A1	323	82.626 82.575	106.3	N/A	SAE-A spline 9 tooth 16/32 pitch	3/ 16 UNC-2B THD	M10 x 1.5 THD	N/A	N/A	63 kg
B1	356	101.676 101.625	146.1	N/A	SAE-B spline 13 tooth 16/32 pitch	1/2-13 UNC-2B THD	M12 x 1.75 THD	N/A	N/A	64 kg
B2	356	101.676 101.625	146.1	N/A	SAE-BB spline 15 tooth 16/32 pitch	1/2-13 UNC-2B THD	M12 x 1.75 THD	N/A	N/A	64 kg
C1 C3	358	127.075 127.025	181	114.5	SAE-C spline 14 tooth 12/24 pitch	1/2-13 UNC-2B THD	M12 x 1.75 THD	5/8-11 UNC-2B THD	M16 x 2 THD	66 kg

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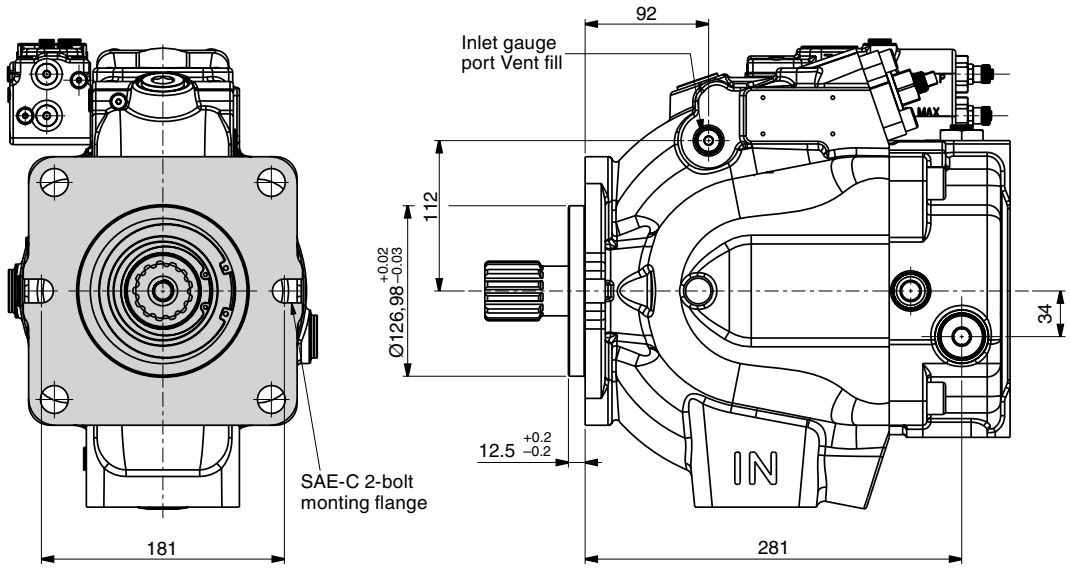
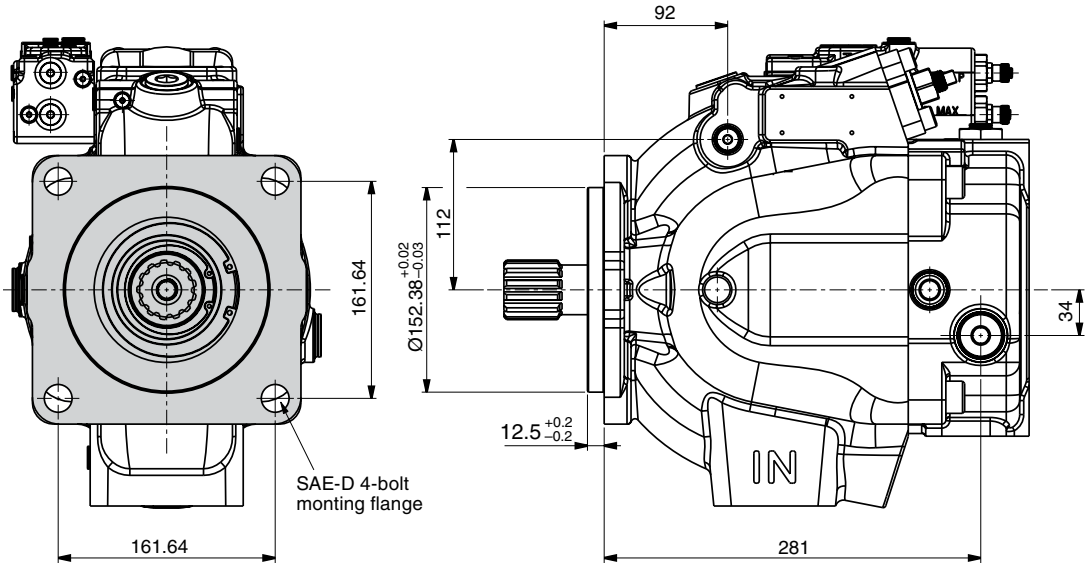
P3145 Mounting flange

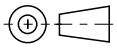
SAE C 2-bolt mounting flange



SAE D 4-bolt mounting flange



CW pump shown
CCW pump will have outlet gauge port at opposite side



Port ordering code	Drain port	Airbleed port / vent port
“A” side - UNC	SAE 8 straight thread / O-ring port: 3/4 - 16 UN thread	SAE-4 straight thread / O-ring port: 7/16-20 UN thread
“B” side - metric	ISO 6149 straight thread / O-ring port: M18 x 1.5 thread	ISO 6149 straight thread / O-ring port: M12 x 1.5 thread

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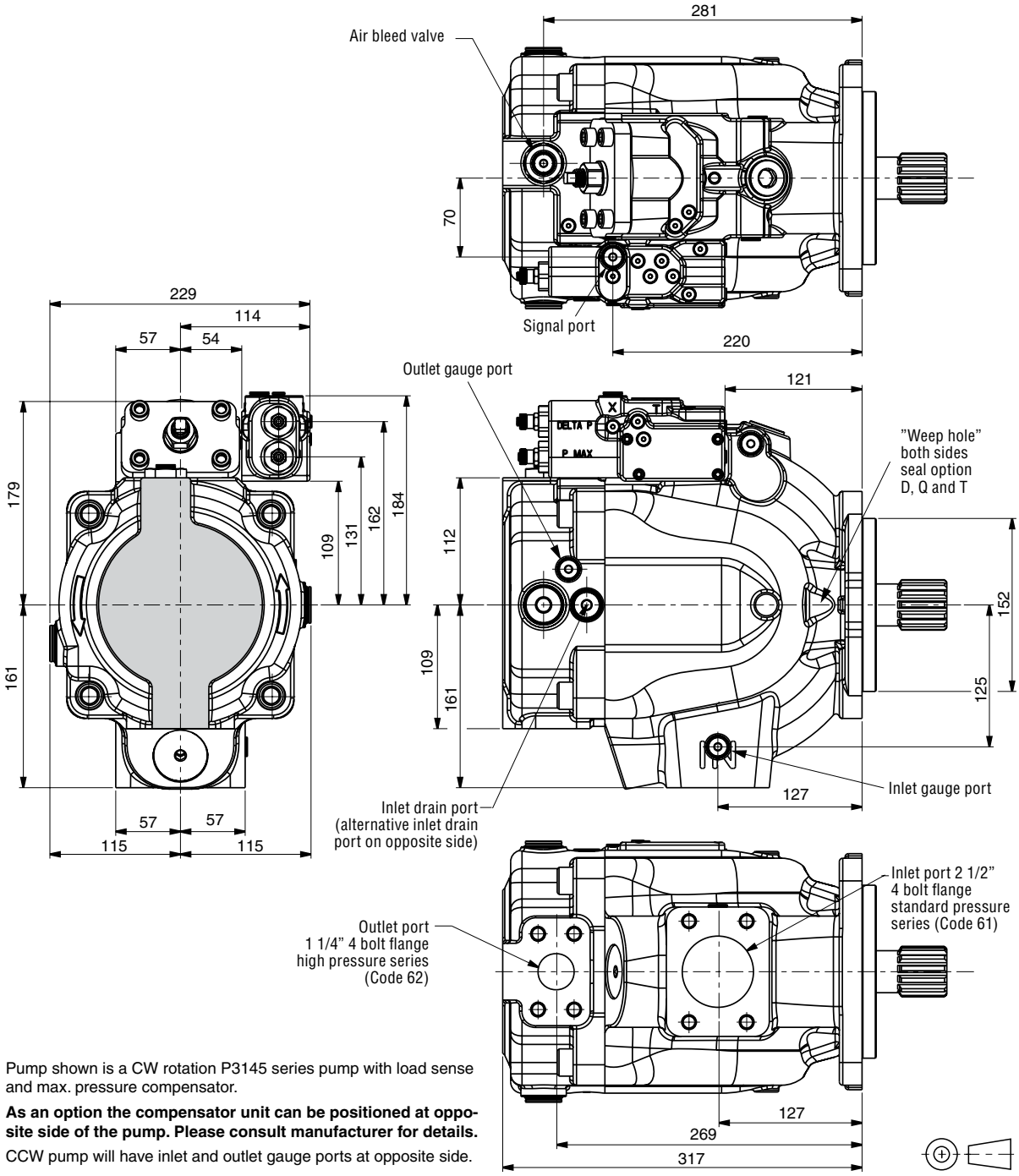
P3145 Side port



Pump shown is a CW rotation P3145 series pump with load sense and max. pressure compensator.

As an option the compensator unit can be positioned at opposite side of the pump. Please consult manufacturer for details.

CCW pump will have inlet and outlet gauge ports at opposite side.

Port ordering code	Drain port	Inlet port	Outlet port	Inlet gauge port / Outlet gauge port / Airbleed port / Signal port
"A" side - UNC	SAE 8 straight thread / O-ring port: 3/4 - 16 UN thread	1/2-13 UNC	1/2-13 UNC	SAE-4 straight thread / O-ring port: 7/16-20 UN thread
"B" side - metric	ISO 6149 straight thread / O-ring port: M18 x 1.5 thread	M12 x 1.75	M12 x 1.75	ISO 6149 straight thread / O-ring port: M12 x 1.5 thread

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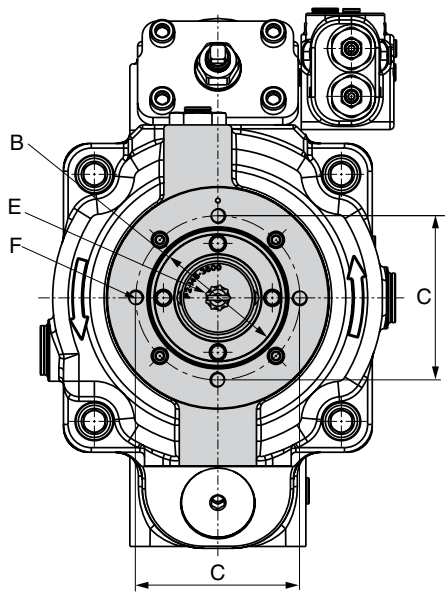
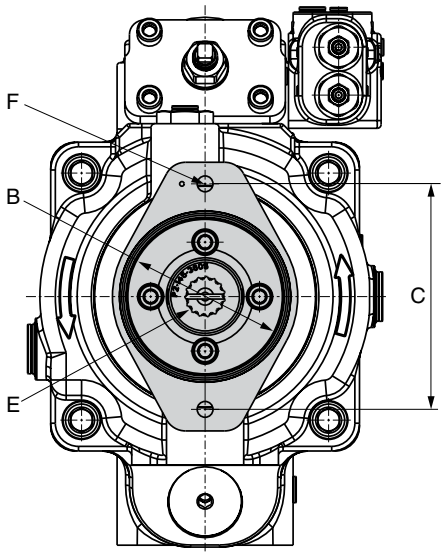
P3145 Thru-drive option

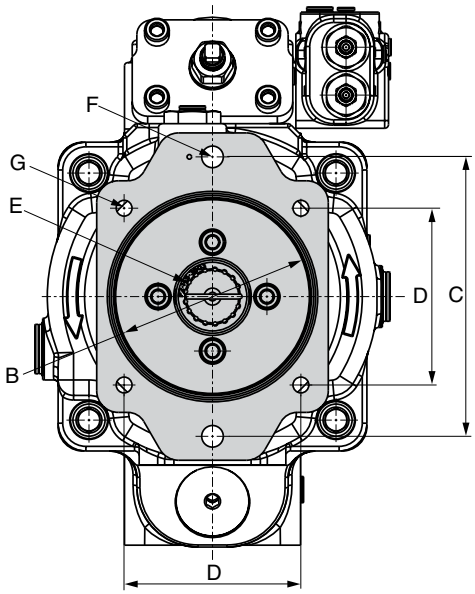
A1 Configuration



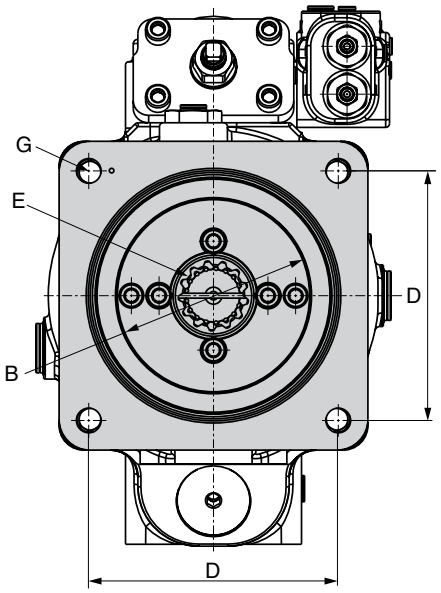
B1 and B2 Configuration



C1, C2, C3 and C4 Configuration



D3 Configuration



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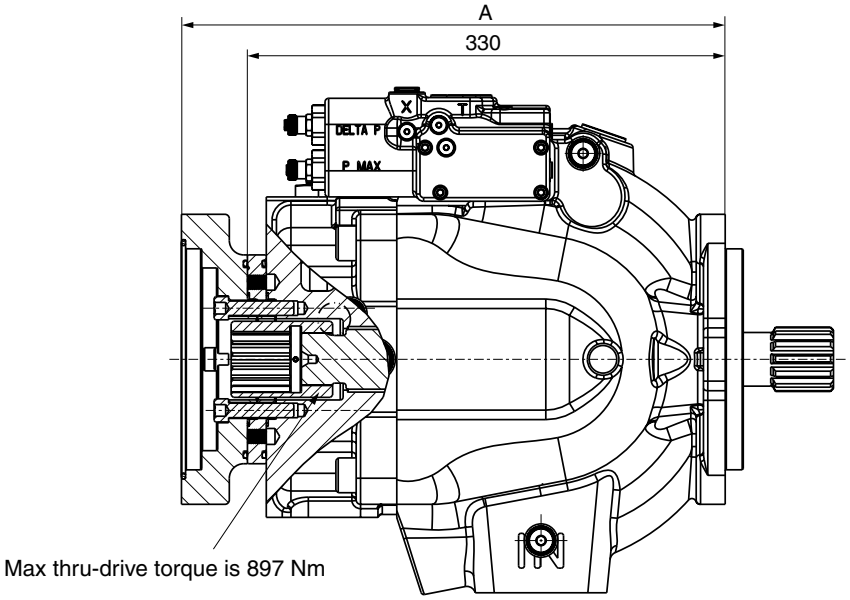
P3145 Thru-drive option



Max thru-drive torque is 897 Nm

Thru-shaft option	A	B Ø	C	D	E	F UNC	F metric	G UNC	G metric	Weight
A1	329.5	82.626 82.575	106.38	N/A	SAE-A spline 9 tooth 16/32 pitch	3/8-16 UNC-2B THD	M10 x 1.5 THD	N/A	N/A	75.9 kg
B1	362.5	101.676 101.625	146.05	N/A	SAE-B spline 13 tooth 16/32 pitch	1/2-13 UNC-2B THD	M12 x 1.75 THD	N/A	N/A	78.5 kg
B2	362.5	101.676 101.625	146.05	N/A	SAE-BB spline 15 tooth 16/32 pitch	1/2-13 UNC-2B THD	M12 x 1.75 THD	N/A	N/A	78.5 kg
C1	364.5	127.075 127.025	180.98	NA	SAE-C spline 14 tooth 12/24 pitch	5/8-11 UNC-2B THD	M16 x 2 THD	1/2-13 UNC-2B THD	M12 x 1.75 THD	80 kg
C2	364.5	127.075 127.025	180.98	NA	SAE-C spline 17 tooth 12/24 pitch	5/8-11 UNC-2B THD	M16 x 2 THD	1/2-13 UNC-2B THD	M12 x 1.75 THD	80 kg
C3	364.5	127.075 127.025	180.98	114.5	SAE-C spline 14 tooth 12/24 pitch	5/8-11 UNC-2B THD	M16 x 2 THD	1/2-13 UNC-2B THD	M12 x 1.75 THD	80 kg
C4	364.5	127.075 127.025	180.98	114.5	SAE-CC spline 17 tooth 12/24 pitch	5/8-11 UNC-2B THD	M16 x 2 THD	1/2-13 UNC-2B THD	M12 x 1.75 THD	80 kg
D3	375	152.475 152.425	NA	161.65	SAE-D spline 13 tooth 8/16 pitch	NA	NA	3/4-10 UNC-2B THD	M16 x 2 THD	83.7 kg

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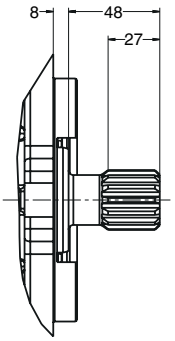
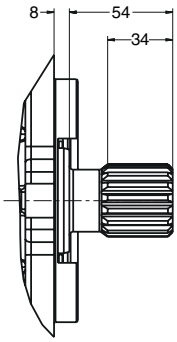
P3 Shaft options

C1



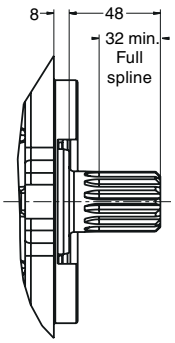
SAE “C” spline
14 tooth
12/24 pitch
30° involute spline
Max. input torque
641 Nm

C2



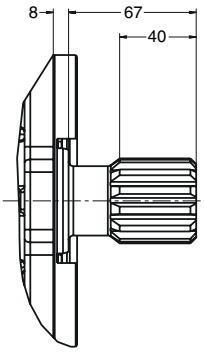
SAE “C-C” spline
17 tooth
12/24 pitch
30° involute spline
Max. input torque
1217 Nm

C3



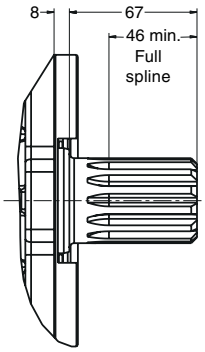
SAE "C" spline
no undercut
14 tooth
12/24 pitch
30° involute spline
Max. input torque
769 Nm

D1



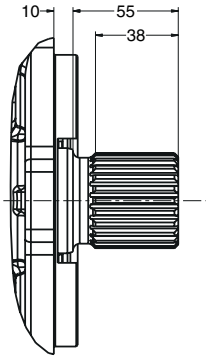
SAE D
13 tooth
8/16 pitch
30° involute spline
Max. input torque
1701 Nm

D2



SAE “D” spline
no undercut
13 tooth
8/16 pitch
30° involute spline
Max. input torque
2041 Nm

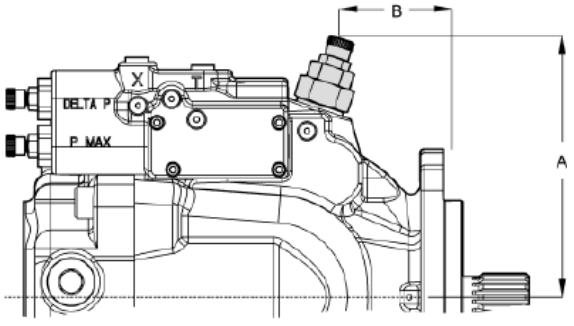
M6



DIN 5480 spline
W50x2x30x24x9g
Max. input torque
3050 Nm

Torque control dimensions

Torque control options "TA", "TB", "TC" and "TD"



	P3105	P3145
A	190	202
B	69	69

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Multiple pump combinations - Maximum moment

To avoid excessive front flange loads combinations of multiple pumps might require additional pump support.

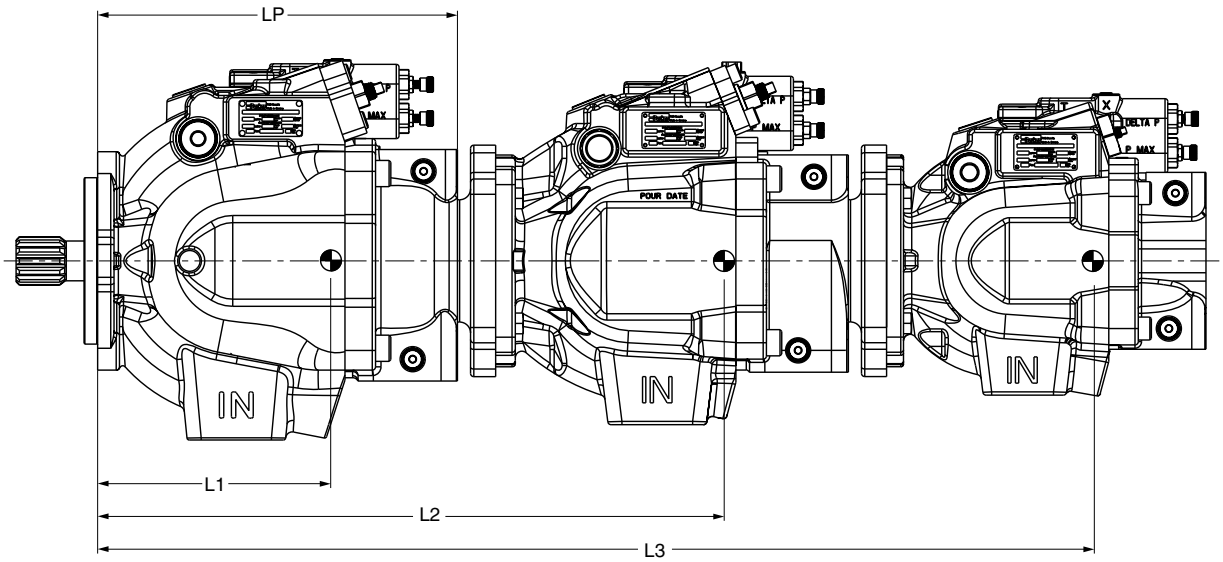

Chart 1. Maximum moment and pump dimensions

		P2060	P2075	P2105	P2145
Maximum Moment	[Nm]	197	266	425	556
Weight	[N]	358	431	618	805
Distance L1	[mm to C/G]	126	145	165	158
Distance Lp	[mm]	264	292	323	329

Chart 2. Through drive adapter plate thickness

LF		P2060	P2075	P2105	P2145
SAE - A Flange	[mm]	0	0	0	0
SAE - B Flange	[mm]	33	33	33	33
SAE - C Flange	[mm]	35	35	35	35
SAE - D Flange	[mm]	–	–	–	45.5

Resulting moment can be calculated by using the following formula:

Moment M = (L1*W1+L2*W2+L3*W3+…)

If resulting moment exceeds the maximum value given in chart 1 additional support is mandatory.

Multiple pump combinations - Maximum thru drive torque

		P2060	P2075	P2105/ P3105	P2145/ P3145
Torque	[Nm]	339	424	650	897

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Fluid recommendations

- Normal mineral oil
- Premium hydraulic fluid / HLP oil
- Bio-degradable hydraulic fluid
- Synthetic hydraulic fluid
- Fire resistant fluids, water based fluids (HFC)

Note: Maximum system pressure reduced to 210bar for water based fluids. Bearing life time reduced to 25% by using water based fluids.

Viscosity

Min. viscosity for short periods:	10 mm²/s (cSt)
Normal operating viscosity:	15...40 mm²/s (cSt)
Max. viscosity for short periods:	1000 mm²/s (cSt)

Filtration

For maximum pump and system component functionability and life, the system should be protected from contamination by effective filtration.

Fluid cleanliness should be in accordance with ISO classification ISO 4406. The quality of filter elements should be in accordance with ISO standards.

Recommendation for filtration:

Class 21/18/14, according to ISO 4406

Seals

Check hydraulic fluid specification for chemical resistance of seal material.

Check temperature range of seal material and compare with max. system and ambient temperature.

N/D	- NBR seals, FPM shaft seal(s)	-25 ... +90 °C
B/Q	- NBR seals, NBR shaft seal(s)	-40 ... +90 °C
V/T	- FPM seals, FPM shaft seal(s)	-25 ... +115 °C

Note: Above limitations refer to average case drain temperature, which can be up to 20 °C higher than in the reservoir.

Axial / Radial Loads

Units subjected to radial loads require the installation of an outboard bearing. Axial Loads are not permitted.

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