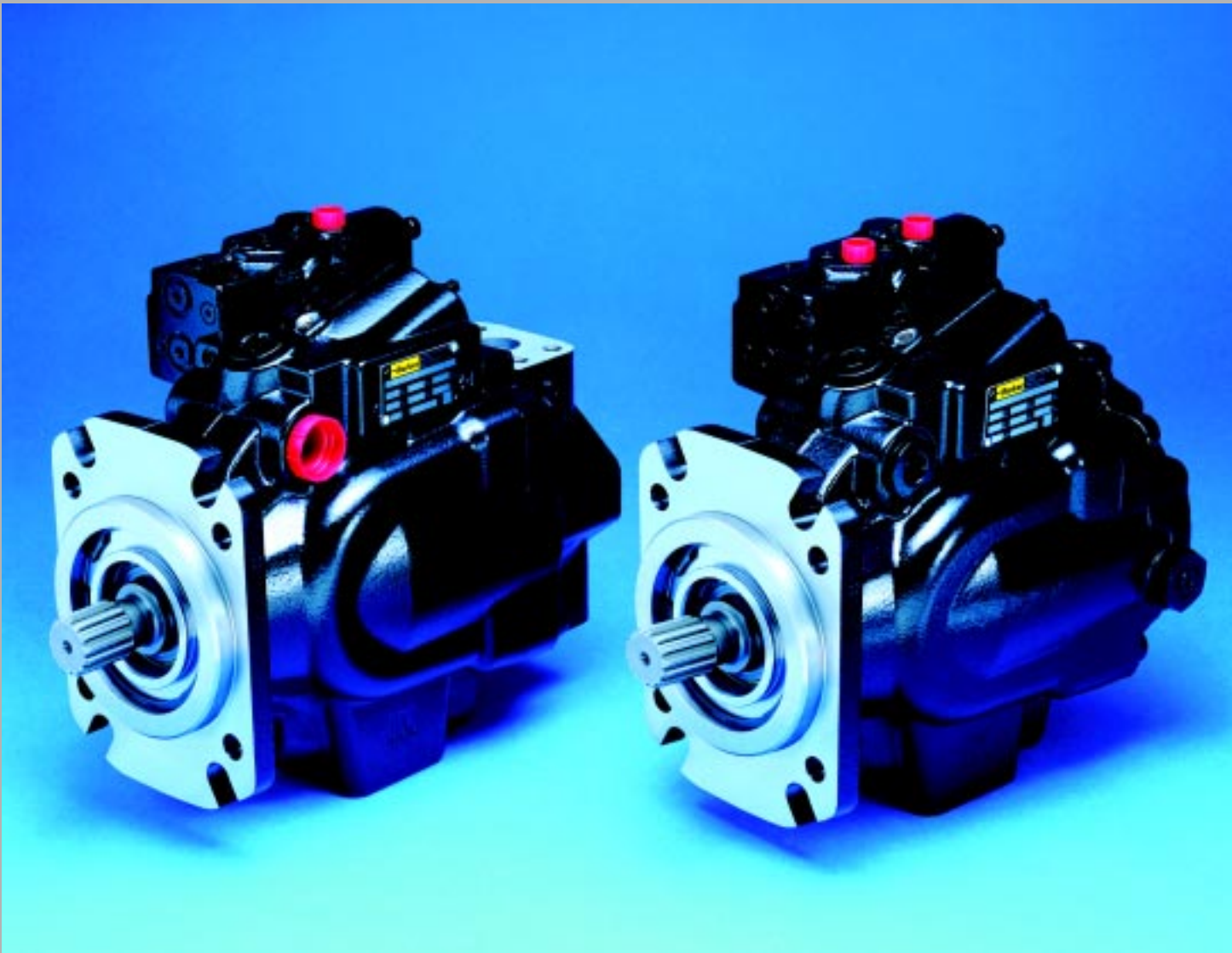




Piston Pumps Series P2 / P3 Variable Displacement

*Catalogue HY11-2600/UK
July 2003*



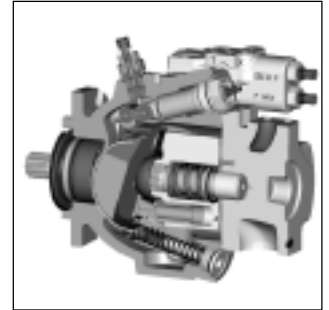
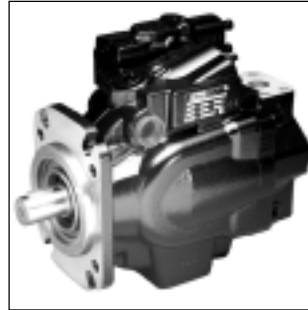
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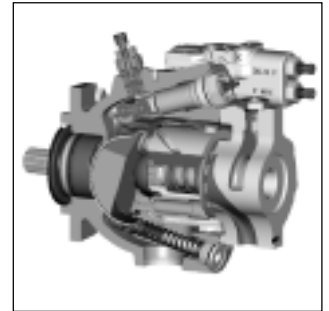
Technical Features

- Compact design
- Low noise level
- Service friendly
- Reliable
- Long-lasting
- Flexible
- Easy to install
- High self-priming speed

P2 Series



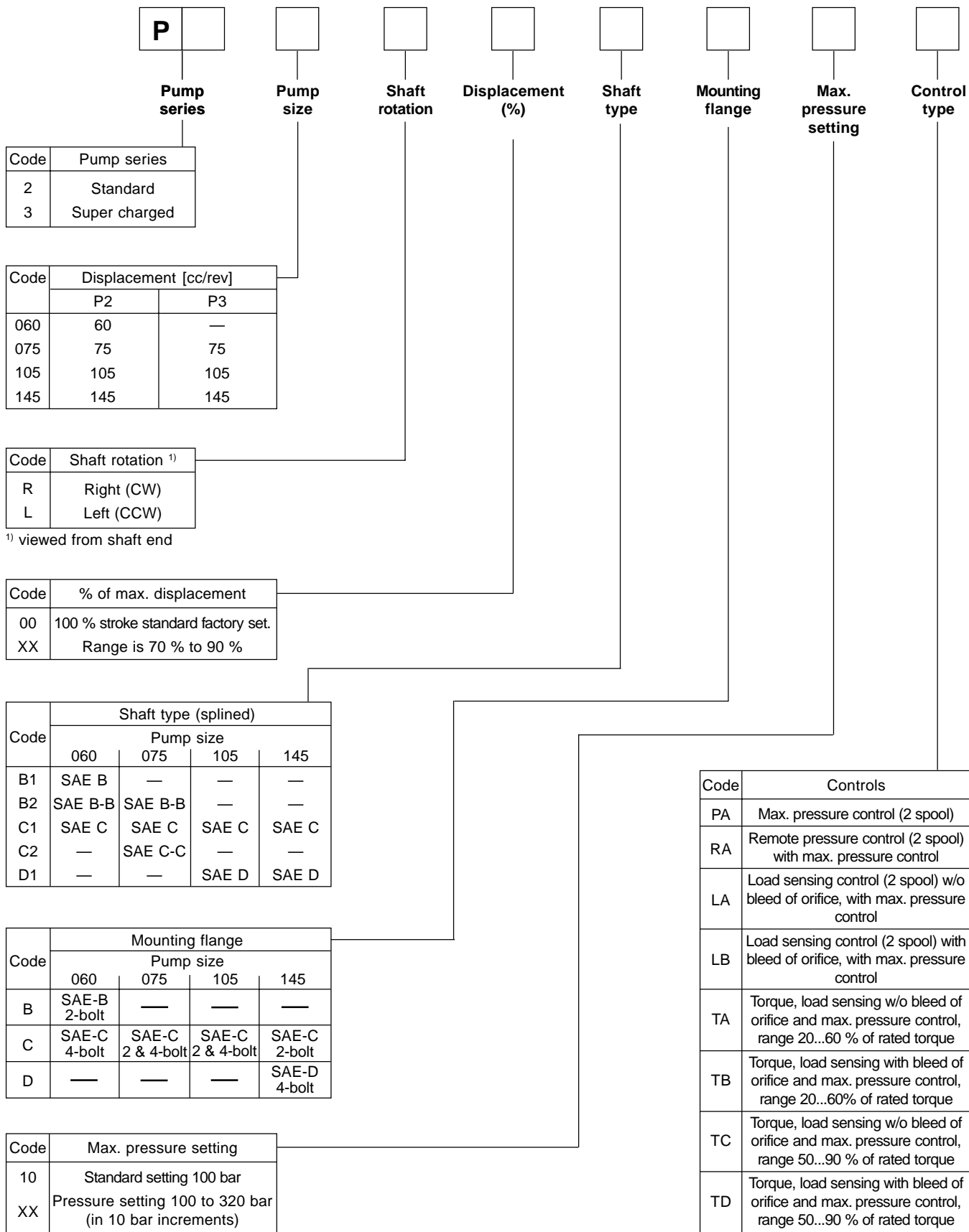
P3 Series

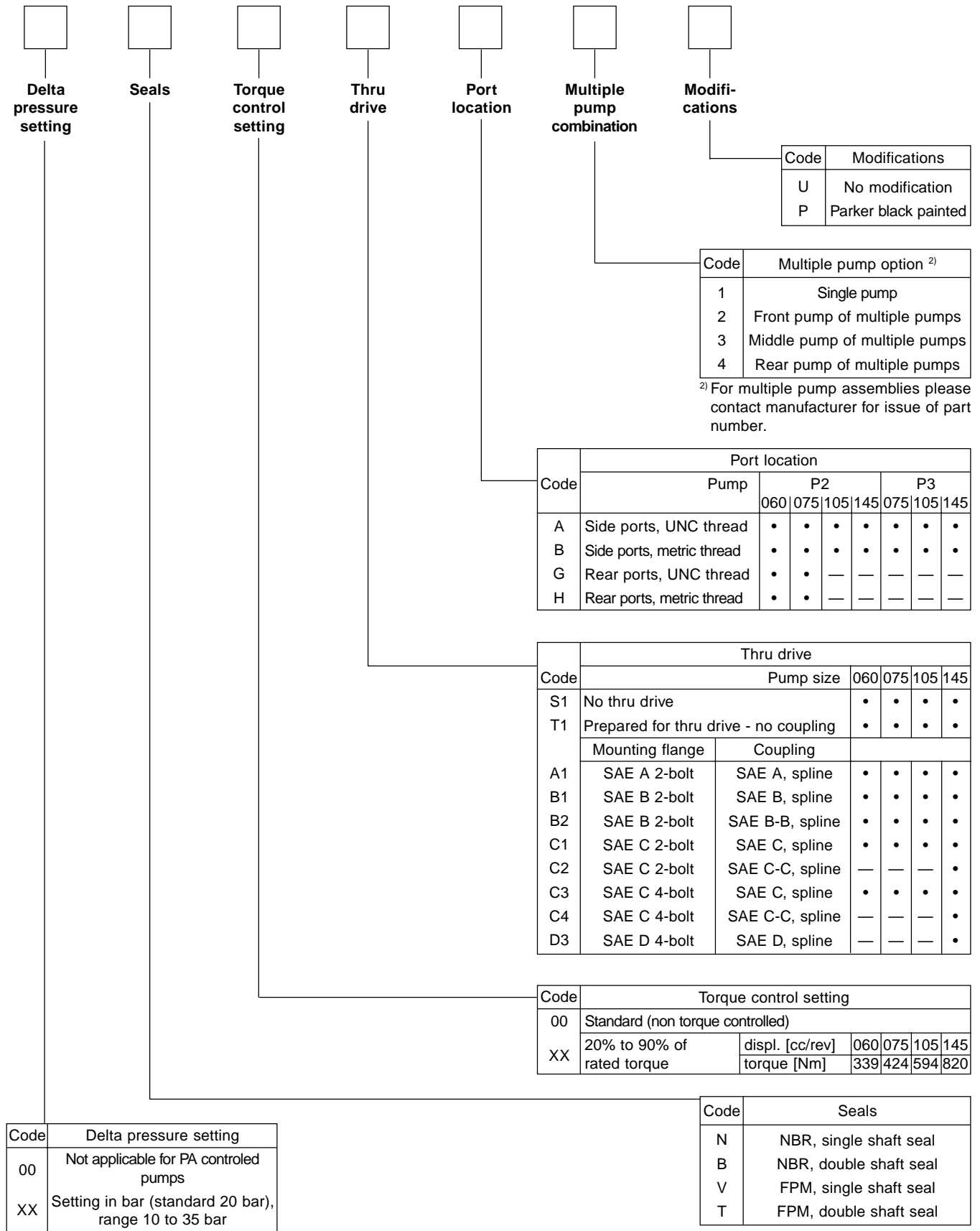


Technical Data

		P2 Series				P3 Series		
		P2060	P2075	P2105	P2145	P3075	P3105	P3145
Frame size								
Max. displacement	[cm ³ /rev]	60	75	105	145	75	105	145
	[cu in/rev]	3.66	4.58	6.41	8.85	4.58	6.41	8.85
Self-priming speed at 1 bar absolute inlet pressure	[rpm]	2800	2500	2300	2200	3000	2600	2500
Max. continuous pressure	[bar]	320	320	320	320	320	320	320
	[psi]	4600	4600	4600	4600	4600	4600	4600
Peak pressure	[bar]	370	370	370	370	370	370	370
	[psi]	5365	5365	5365	5365	5365	5365	5365
Min. inlet pressure absolute	[bar]	0.8	0.8	0.8	0.8	0.8	0.8	0.8
at max. speed	[in Hg vacuum]	5.8	5.8	5.8	5.8	5.8	5.8	5.8
Max. inlet pressure	[bar]	10	10	10	10	1.5	1.5	1.5
	[psi]	145	145	145	145	22.7	22.7	22.7
Max. case drain pressure	[bar]	0.5	0.5	0.5	0.5	1	1	1
	[psi]	7.75	7.75	7.75	7.75	14.5	14.5	14.5
Noise level at full flow at 1800 rpm and 250 bar	[dbA]	74	76	78	80	76	78	80
Weight with load sense control	[kg]	37	44	63	78	42	62	76
	[lbs]	81	97	139	172	92	136	167
Mass moment of inertia (at axis of shaft)	[kg m ²]	0.0061	0.0101	0.0168	0.0241	0.0106	0.0177	0.0264

Ordering Code





Code	Modifications
U	No modification
P	Parker black painted

Code	Multiple pump option ²⁾
1	Single pump
2	Front pump of multiple pumps
3	Middle pump of multiple pumps
4	Rear pump of multiple pumps

²⁾ For multiple pump assemblies please contact manufacturer for issue of part number.

Code	Port location	Pump						
		P2		P3				
		060	075	105	145	075	105	145
A	Side ports, UNC thread	•	•	•	•	•	•	•
B	Side ports, metric thread	•	•	•	•	•	•	•
G	Rear ports, UNC thread	•	•	—	—	—	—	—
H	Rear ports, metric thread	•	•	—	—	—	—	—

Code	Thru drive	Pump size				
		060	075	105	145	
S1	No thru drive	•	•	•	•	
T1	Prepared for thru drive - no coupling	•	•	•	•	
	Mounting flange	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	Standard (non torque controlled)					
XX	20% to 90% of rated torque	displ. [cc/rev]	060	075	105	145
		torque [Nm]	339	424	594	820

Code	Delta pressure setting
00	Not applicable for PA controled pumps
XX	Setting in bar (standard 20 bar), range 10 to 35 bar

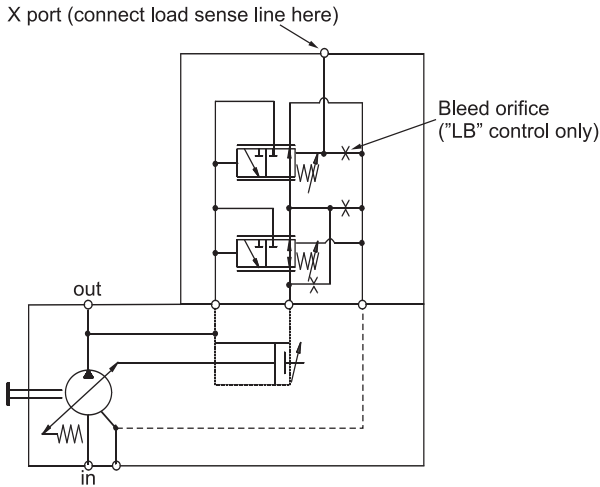
Code	Seals
N	NBR, single shaft seal
B	NBR, double shaft seal
V	FPM, single shaft seal
T	FPM, double shaft seal

Control options “LA” and “LB”

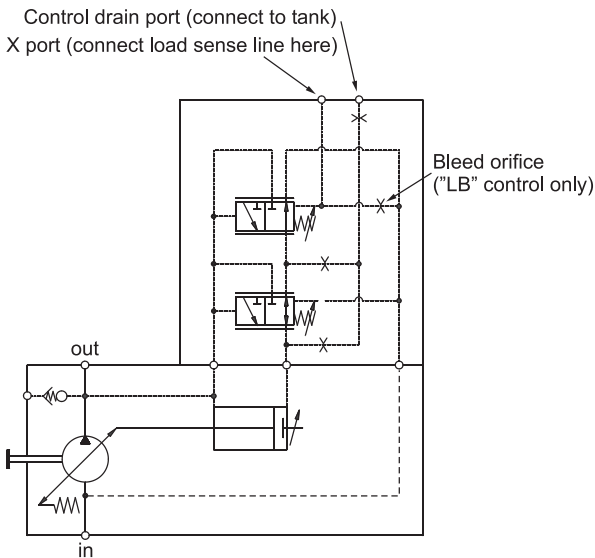
Load sensing control with maximum pressure control

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

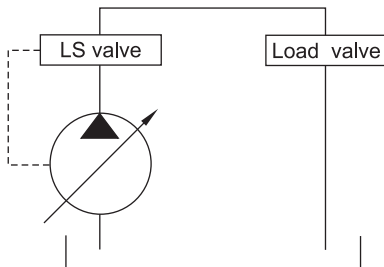
P2 Control schematics



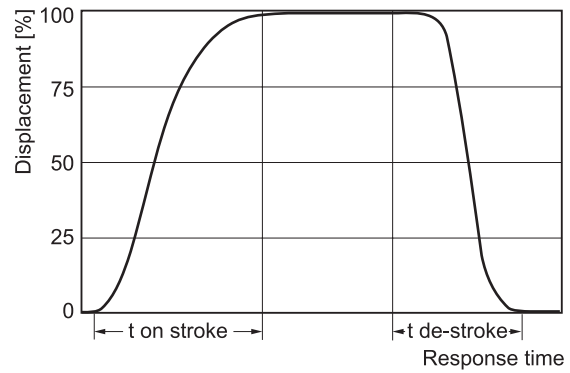
P3 Control schematics



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 *

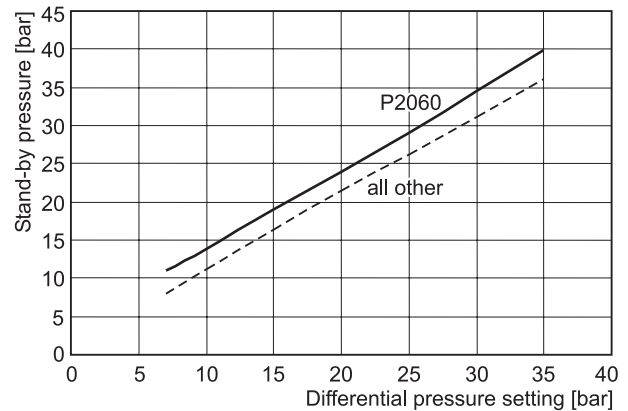


	t on stroke [ms]		t de-stroke [ms]	
	stand by to 250 bar	250 bar to stand by	50 bar to stand by	stand by
P2060	60	30	40	
P2075 / P3075	80	35	40	
P2105 / P3105	100	40	45	
P2145 / P3145	120	45	50	

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	100 ... 320 bar
Hysteresis and repetitive accuracy	max. 3 bar

* Curve shown exaggerated

Differential setting vs. stand-by pressure

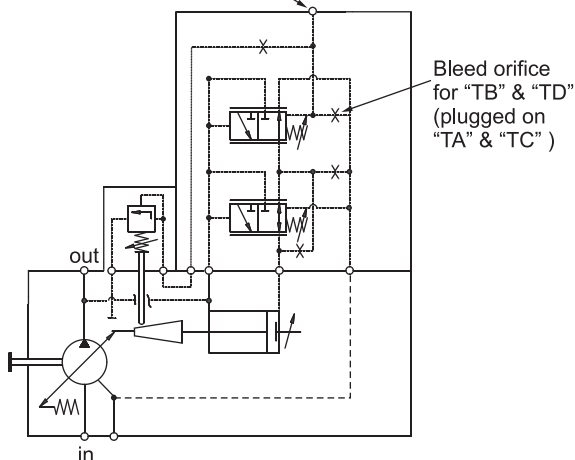


**Control Options “TA”, “TB”, “TC” and “TD”
Torque limiting control with load sensing and maximum pressure control limiter**

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.

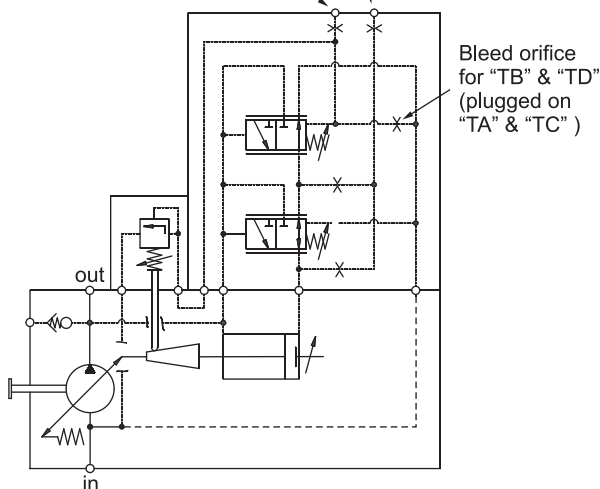
P2 Control schematics

X port (connect load sense line here)

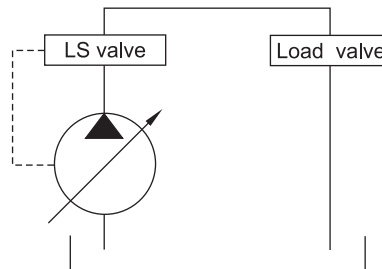


P3 Control schematics

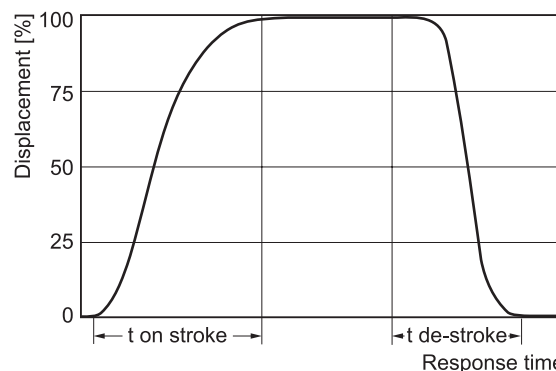
Control drain port (connect to tank)
X port (connect load sense line here)



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 *

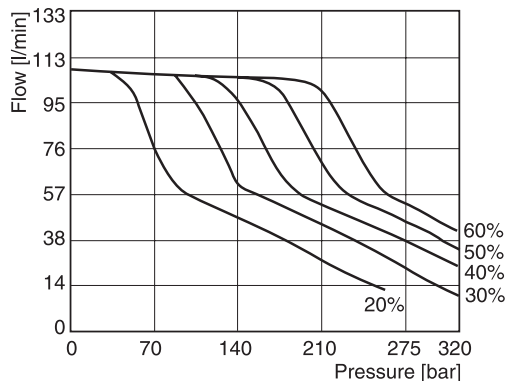


	t on stroke [ms]	t de-stroke [ms]	
	stand by to 250 bar	250 bar to stand by	50 bar to stand by
P2060	60	30	40
P2075 / P3075	80	35	40
P2105 / P3105	100	40	45
P2145 / P3145	120	45	50

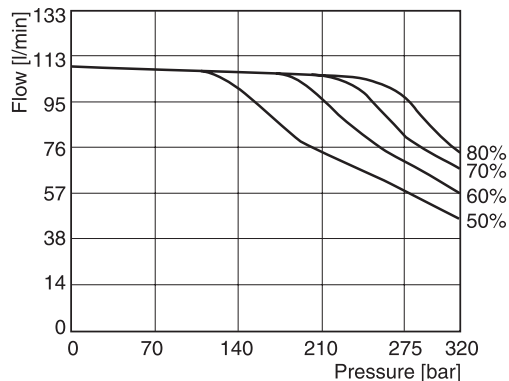
Compensator oil consumption TA, TC control	max. 3.0 l/min
Compensator oil consumption TB, TD control	max. 4.5 l/min
Torque control valve oil consumption	max. 2.0 l/min
Load sensing compensator adjusting range	10 ... 35 bar
Pressure compensator adjusting range	100 ... 320 bar
Hysteresis and repetitive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

* Curve shown exaggerated

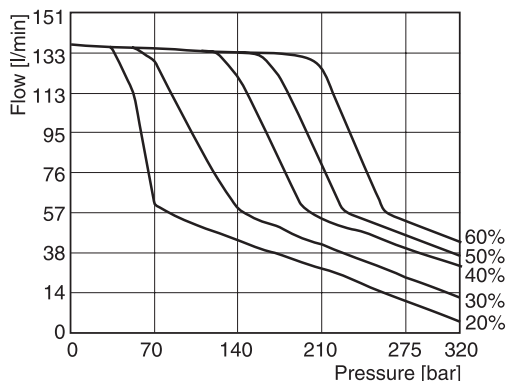
P2060 - 20...60 % Torque (1800 rpm)



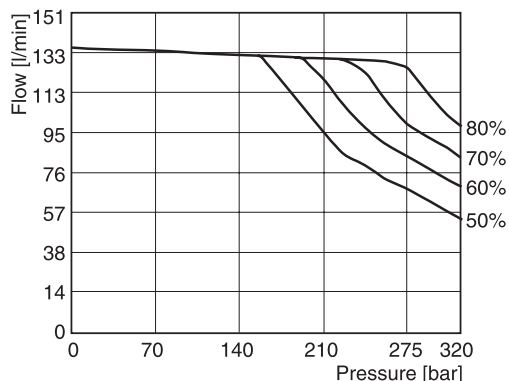
P2060 - 50...90 % Torque (1800 rpm)



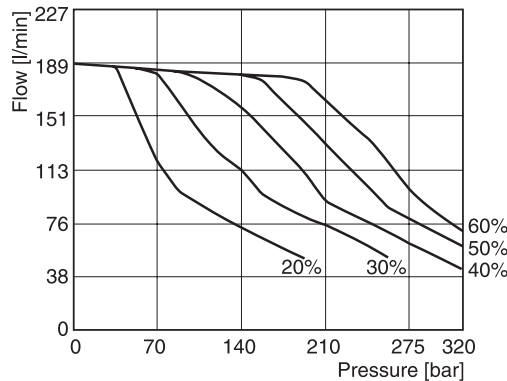
P2075 - 20...60 % Torque (1800 rpm)



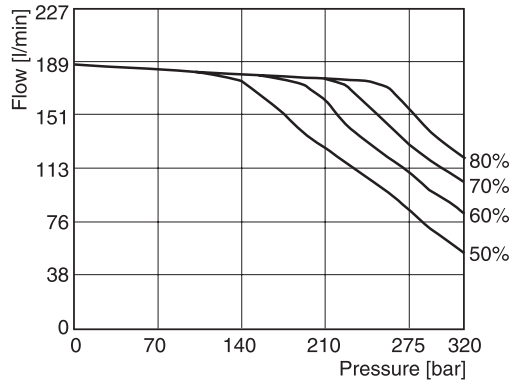
P2075 - 50...90 % Torque (1800 rpm)



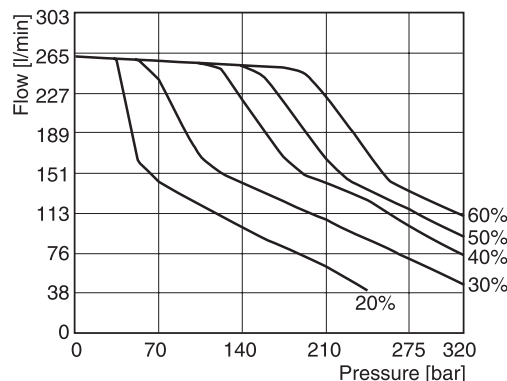
P2105 - 20...60 % Torque (1800 rpm)



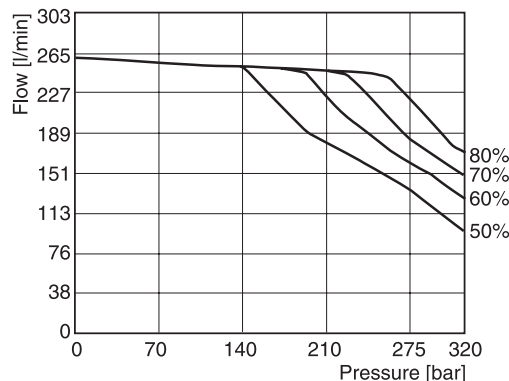
P2105 - 50...90 % Torque (1800 rpm)



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



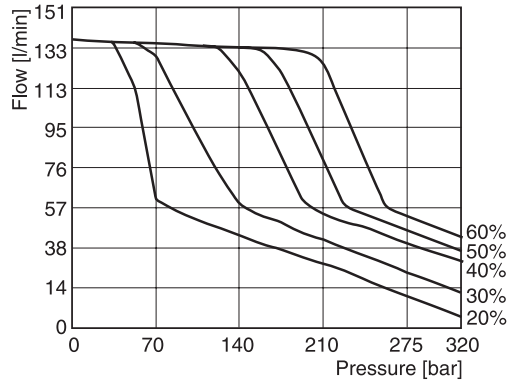
P2145 - 50...90 % Torque (1800 rpm)



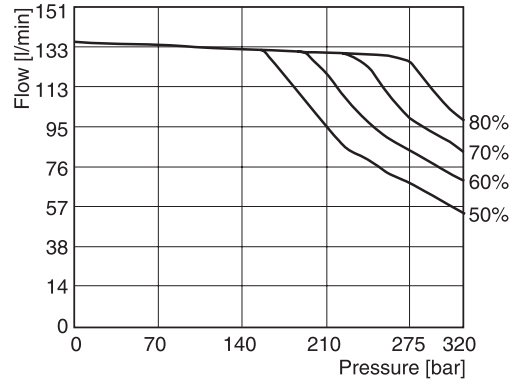
Fluid: Mineral oil ISO VG 32 at 40°C ; Inlet pressure: 1.0 bar (absolute) measured at inlet port.

PI P2-P3 UK.PM6.5 RH

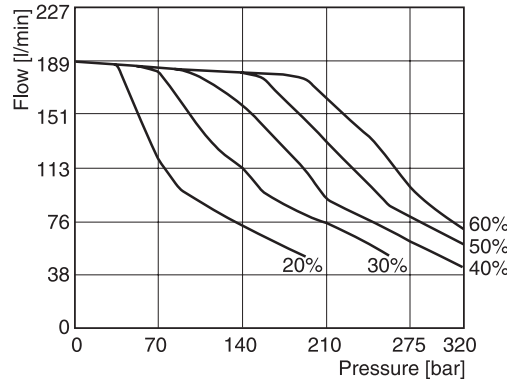
P3075 - 20...60 % Torque (1800 rpm)



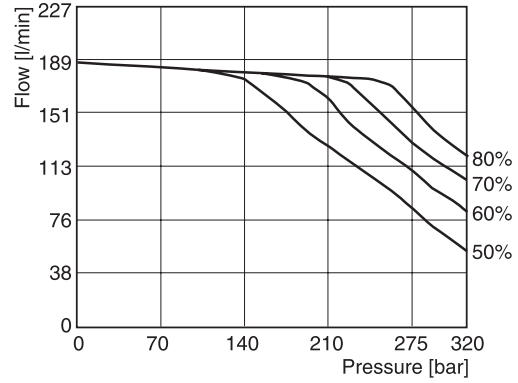
P3075 - 50...90 % Torque (1800 rpm)



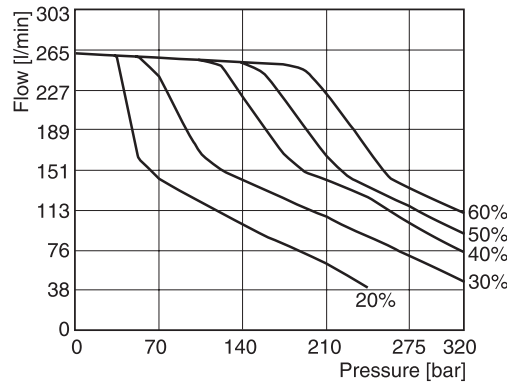
P3105 - 20...60 % Torque (1800 rpm)



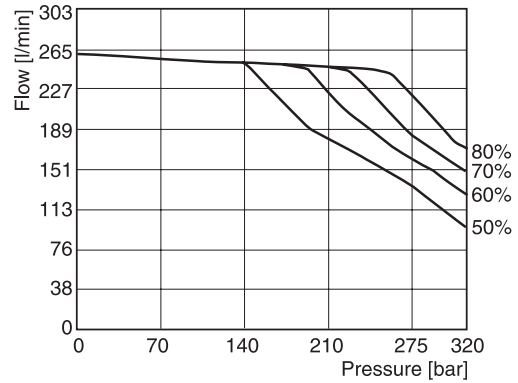
P3105 - 50...90 % Torque (1800 rpm)



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



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

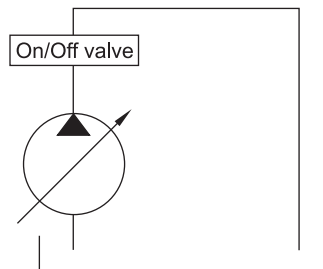


Fluid: Mineral oil ISO VG 32 at 40°C ; Inlet pressure: 1.0 bar (absolute) measured at inlet port.

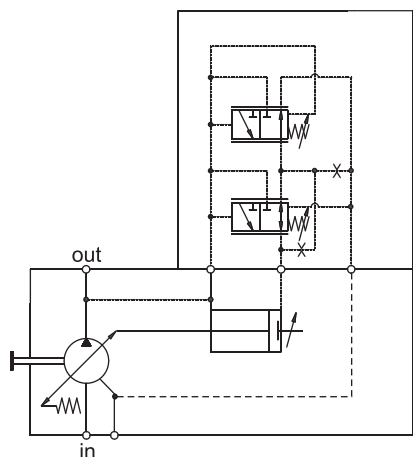
Control option "PA"
Pressure control

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.

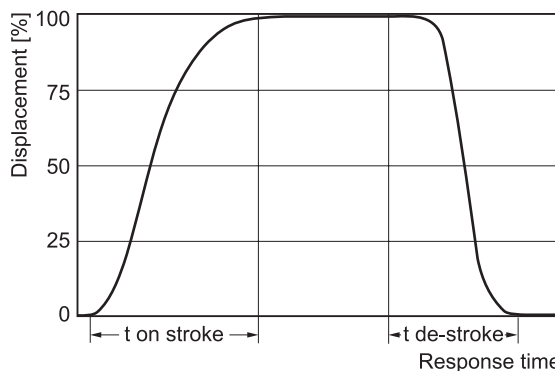
Response times of the pump are collected from a circuit as below by measuring the pumps swash angle movement at different pressures.



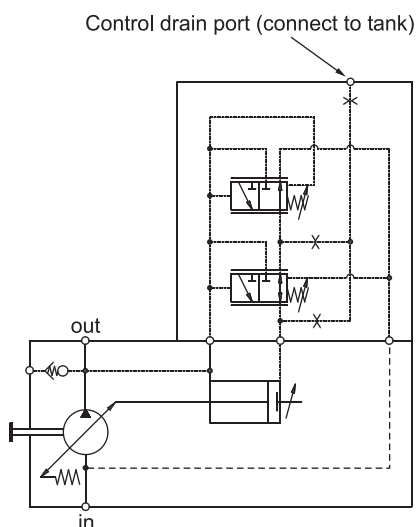
P2 Control schematics



Dynamic characteristic of flow control *



P3 Control schematics



	t on stroke [ms]		t de-stroke [ms]
	against 50 bar	against 220 bar	zero stroke 280 bar
P2060	70	65	30
P2075 / P3075	70	70	30
P2105 / P3105	120	90	30
P2145 / P3145	160	130	30

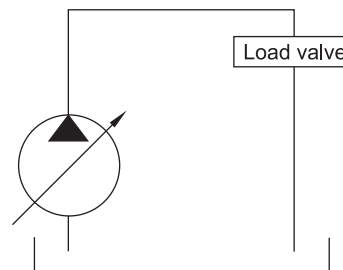
Compensator oil consumption PA control	max. 3.0 l/min
Pressure compensator adjusting range	100 ... 320 bar
Hysteresis and repetitive accuracy	max. 3 bar

* Curve shown exaggerated

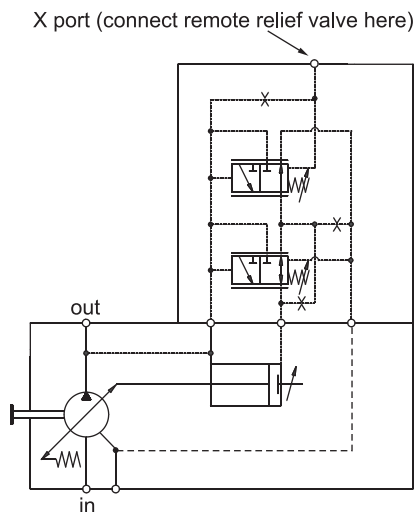
**Control Option “RA”
 Remote pressure control**

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.

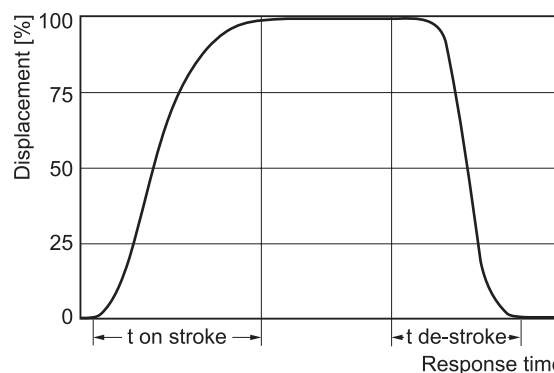
Response times of the pump are collected from a circuit as below by measuring the pumps swash angle movement at different pressures.



P2 Control schematics

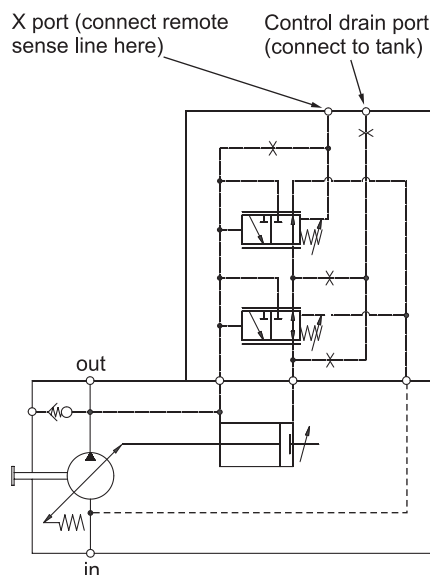


Dynamic characteristic of flow control *



	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 / P3075	80	35	40
P2105 / P3105	100	40	45
P2145 / P3145	120	45	50

P3 Control schematics



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	100 ... 320 bar
Hysteresis and repetitive accuracy	max. 3 bar

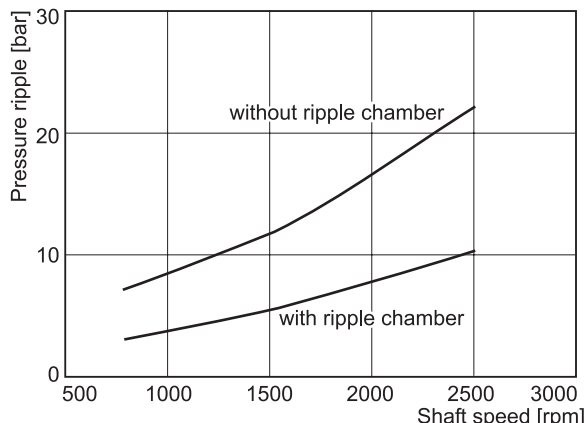
* Curve shown exaggerated

Ripple chamber

Pressure ripple at 200 bar

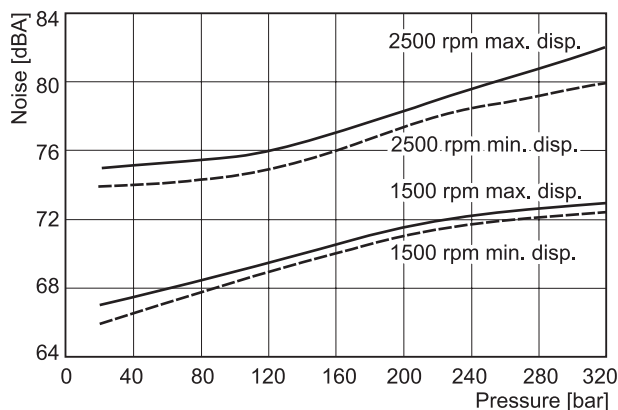
The chart on the right refers to the “Ripple Chamber” technology engineered into the P2 and P3 series pumps. The ripple chamber reduces flow pulsation and due to this pressure pulsation (called “ripple”) at the outlet of the pump. This technology reduces the ripple by 40–60%. This leads to a significant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

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

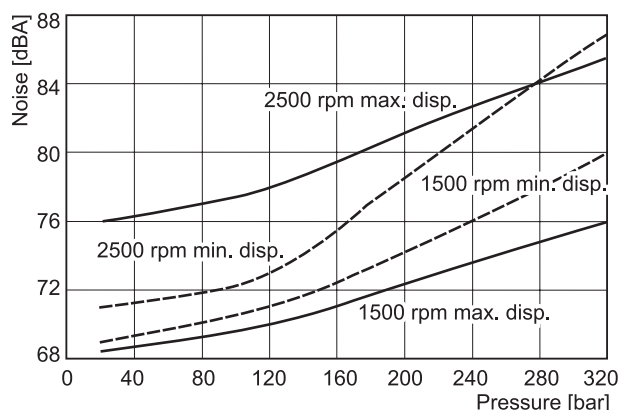


P2 Noise characteristics at max./min. displacement

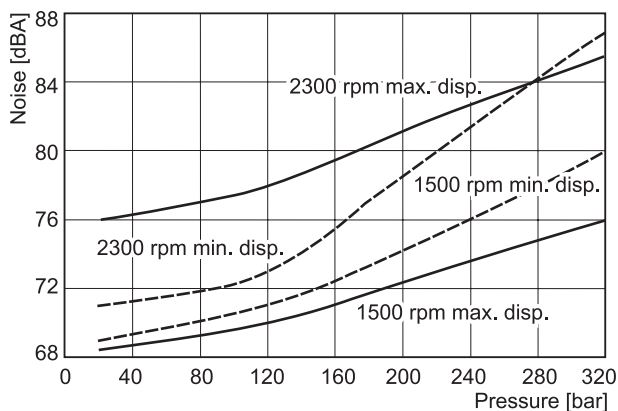
P2060 Noise characteristics



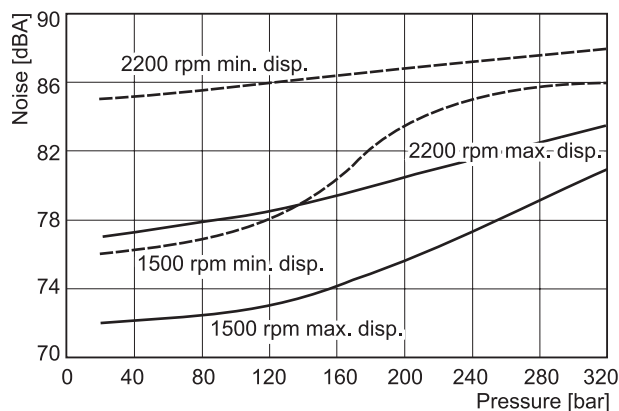
P2075 Noise characteristics



P2105 Noise characteristics

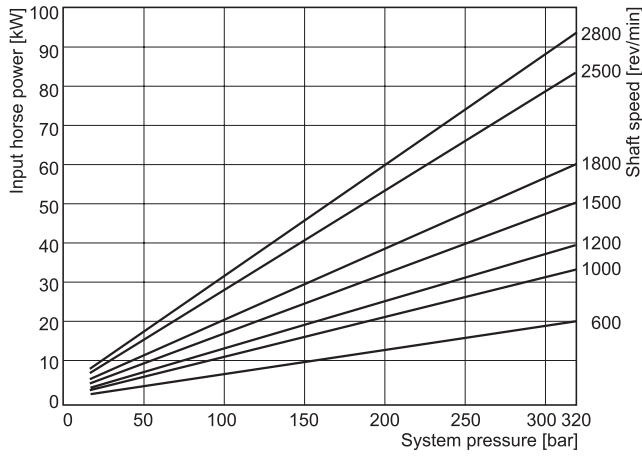


P2145 Noise characteristics

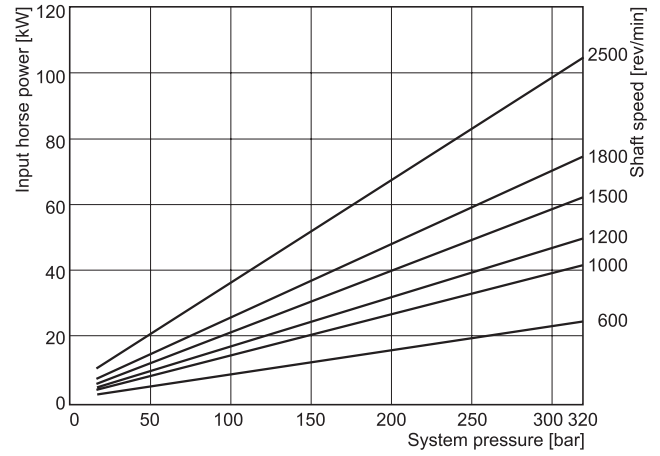


P2 Series-typical drive power at full displacement

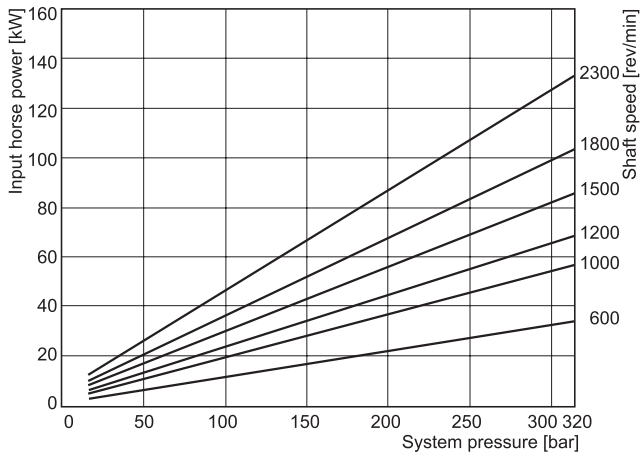
P2060 Input power - full stroke



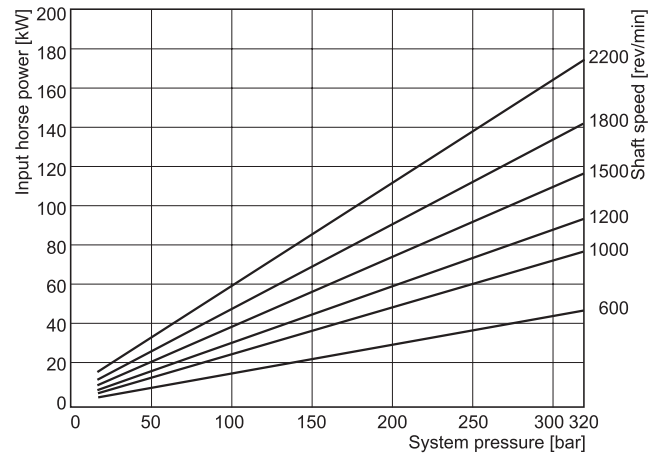
P2075 Input power - full stroke



P2105 Input power - full stroke



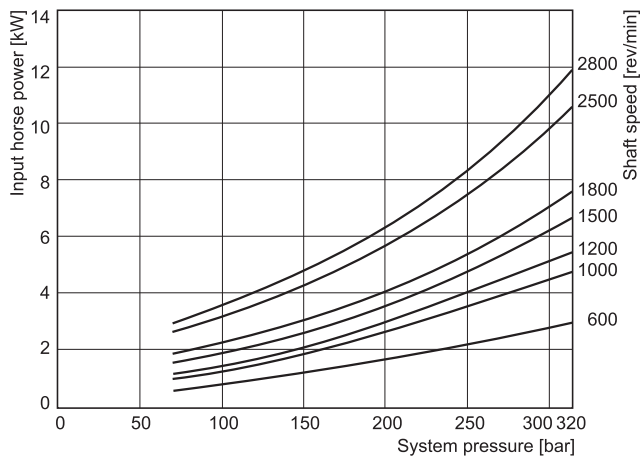
P2145 Input power - full stroke



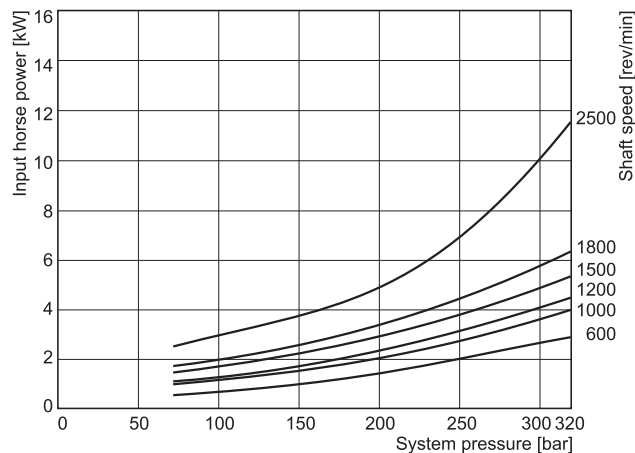
Fluid: Mineral oil ISO VG 32 at 40°C ; Inlet pressure: 1.0 bar (absolute) measured at inlet port.

P2 Series-typical compensated power

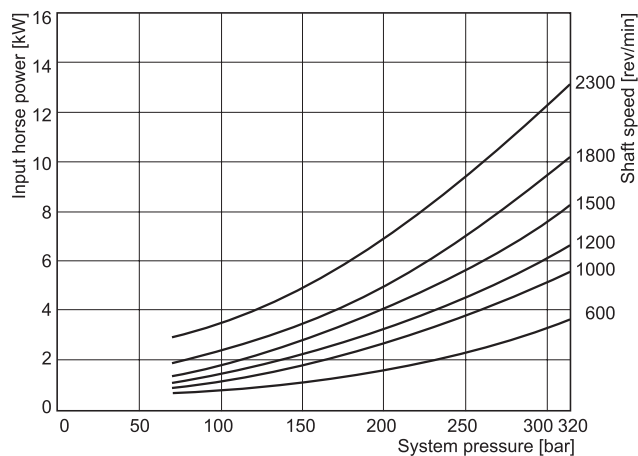
P2060 Input power - zero stroke



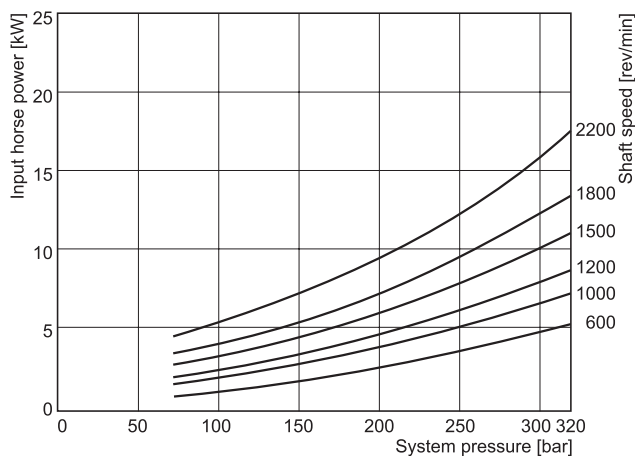
P2075 Input power - zero stroke



P2105 Input power - zero stroke



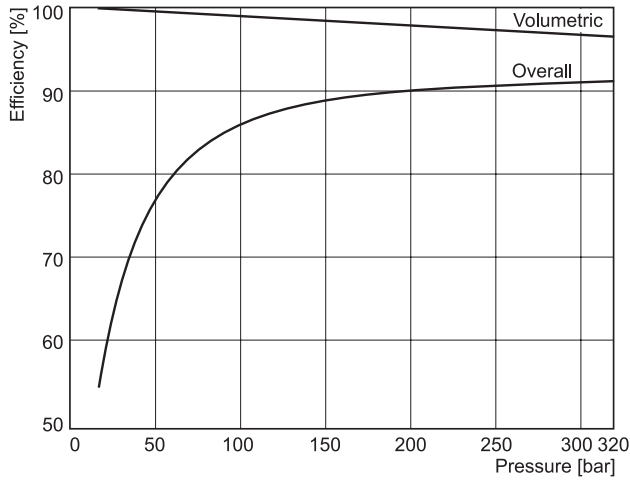
P2145 Input power - zero stroke



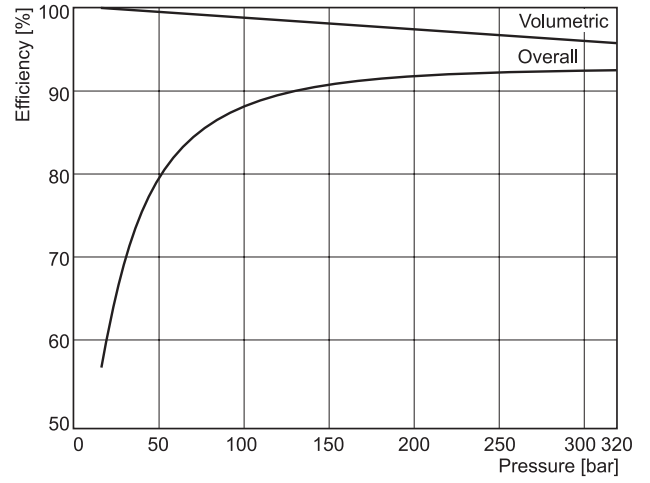
Fluid: Mineral oil ISO VG 32 at 40°C ; Inlet pressure: 1.0 bar (absolute) measured at inlet port.

P2 Series-typical efficiency at full displacement at 1800 rpm

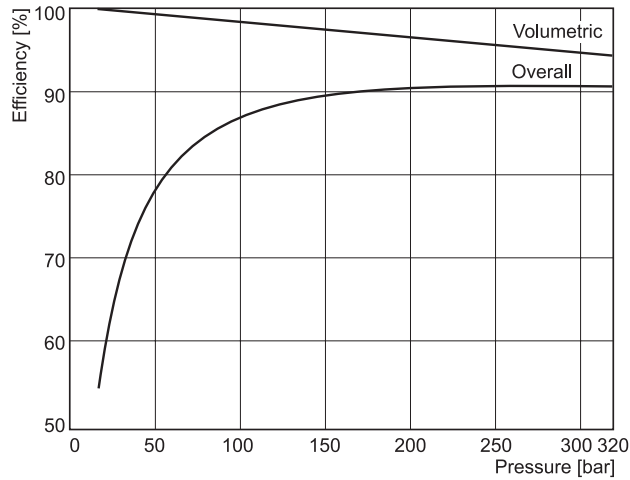
P2060 Efficiency at 1800 rpm



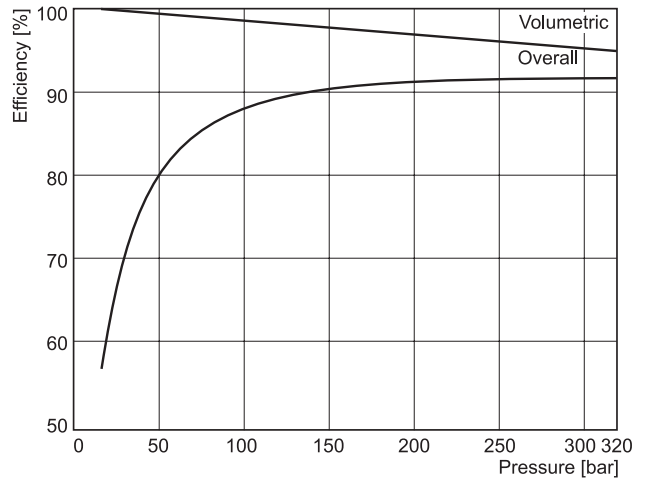
P2075 Efficiency at 1800 rpm



P2105 Efficiency at 1800 rpm



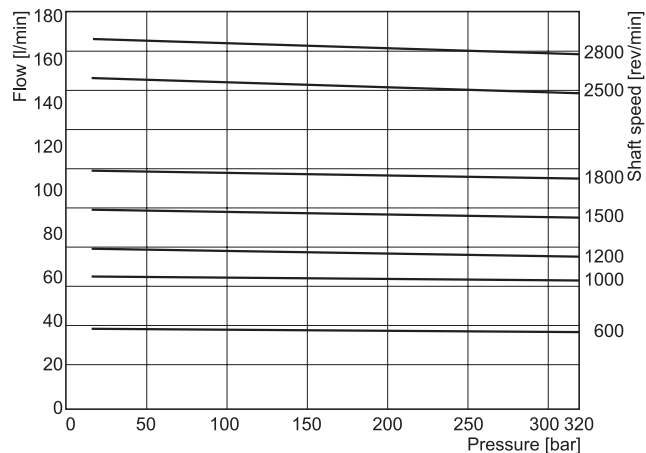
P2145 Efficiency at 1800 rpm



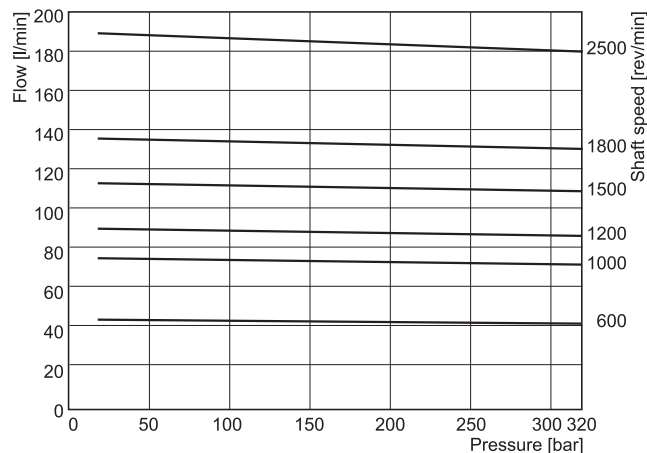
Fluid: Mineral oil ISO VG 32 at 40°C ; Inlet pressure: 1.0 bar (absolute) measured at inlet port.

P2 Series-typical flow vs. pressure

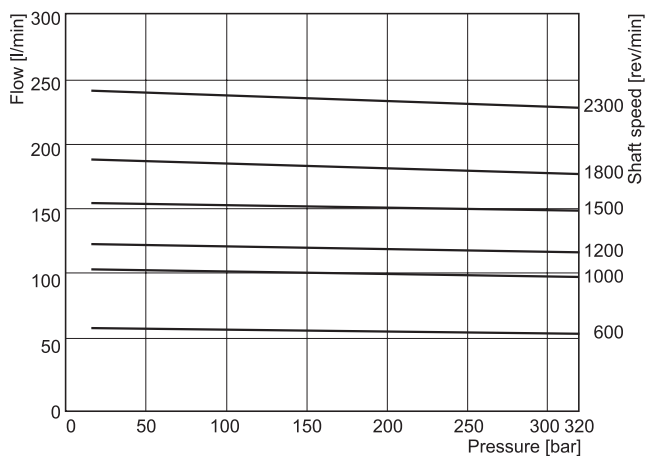
P2060 Outlet flow - full stroke



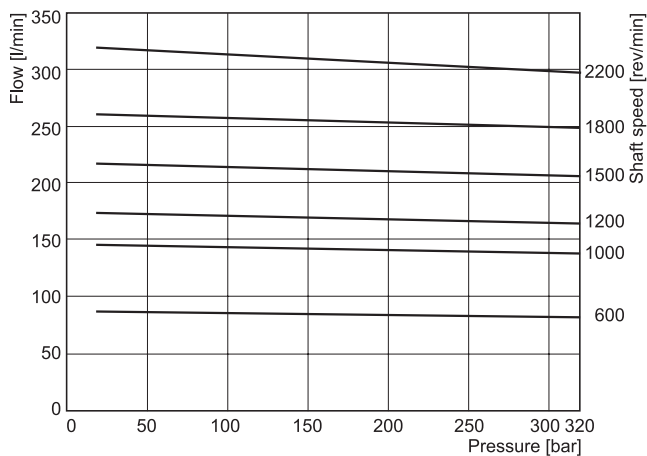
P2075 Outlet flow - full stroke



P2105 Outlet flow - full stroke



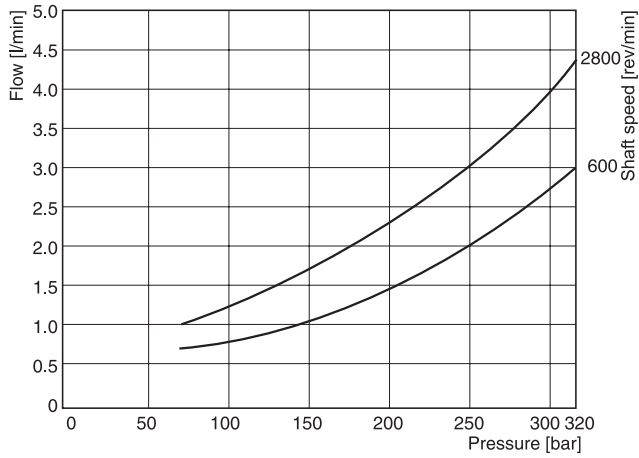
P2145 Outlet flow - full stroke



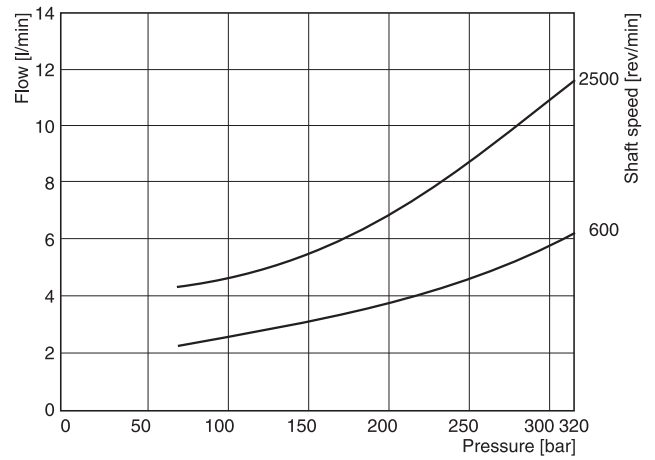
Fluid: Mineral oil ISO VG 32 at 40°C ; Inlet pressure: 1.0 bar (absolute) measured at inlet port.

P2 Series-typical compensated case drain flow

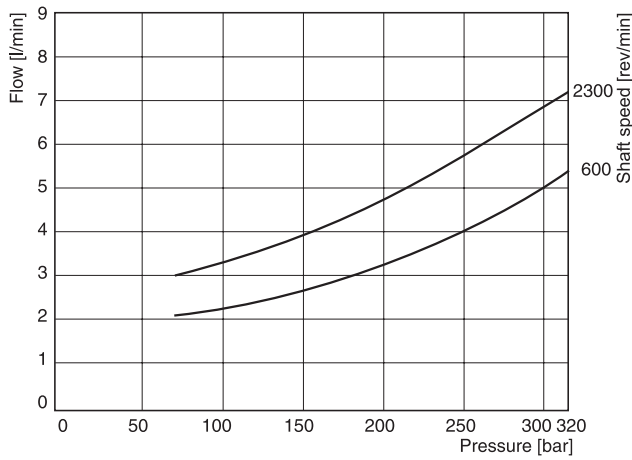
P2060 Drain flow at zero stroke



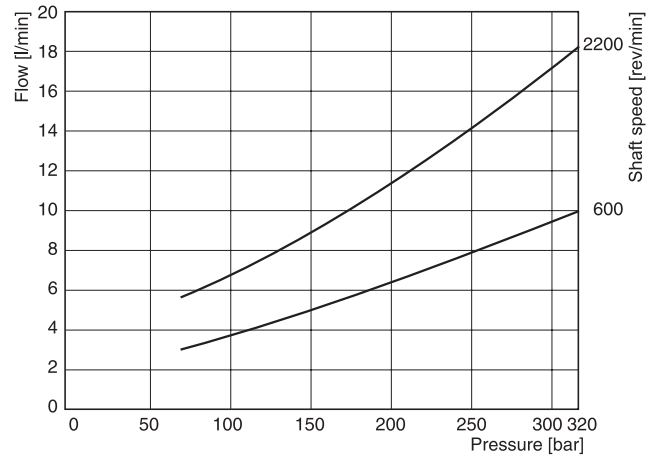
P2075 Drain flow at zero stroke



P2105 Drain flow at zero stroke



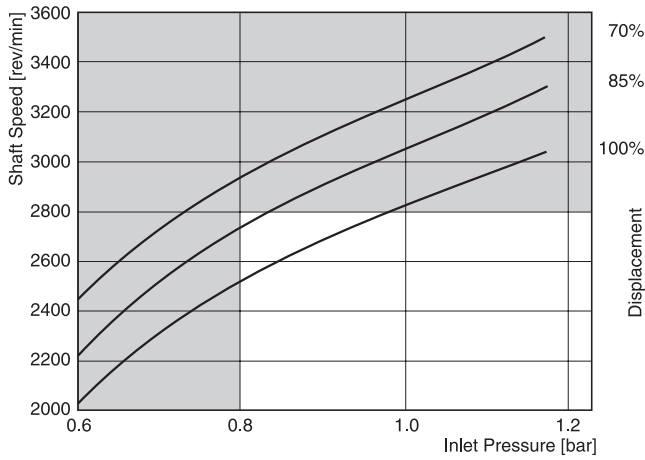
P2145 Drain flow at zero stroke



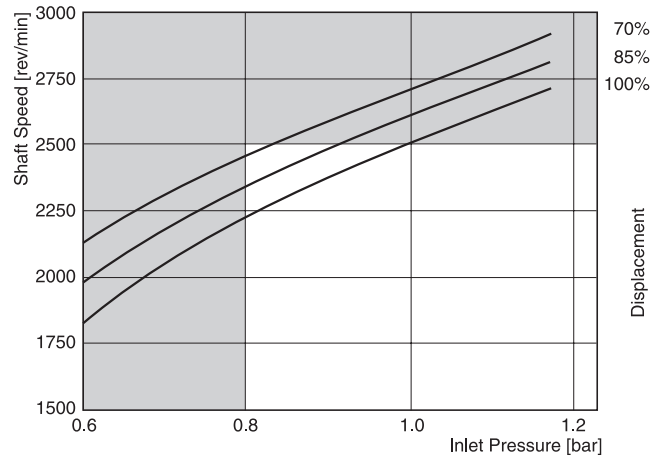
Fluid: Mineral oil ISO VG 32 at 40°C ; Inlet pressure: 1.0 bar (absolute) measured at inlet port.

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

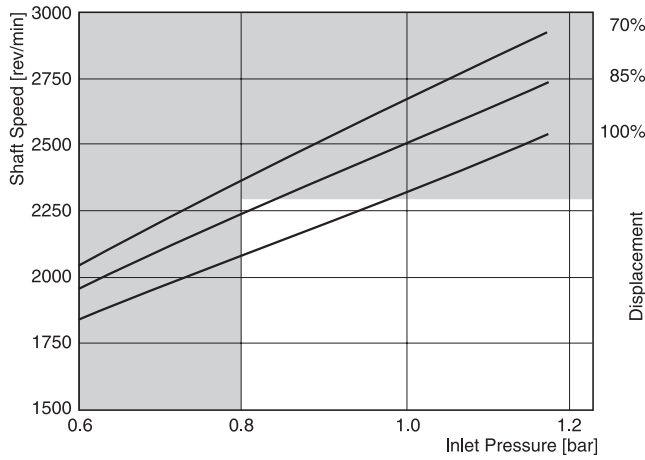
P2060 Inlet characteristics



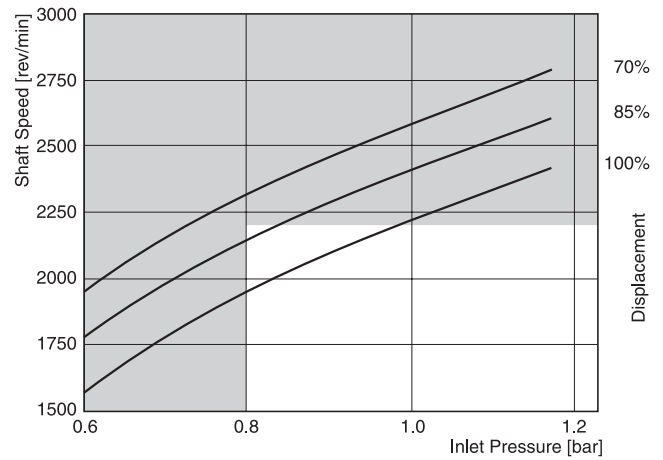
P2075 Inlet characteristics




P2105 Inlet characteristics



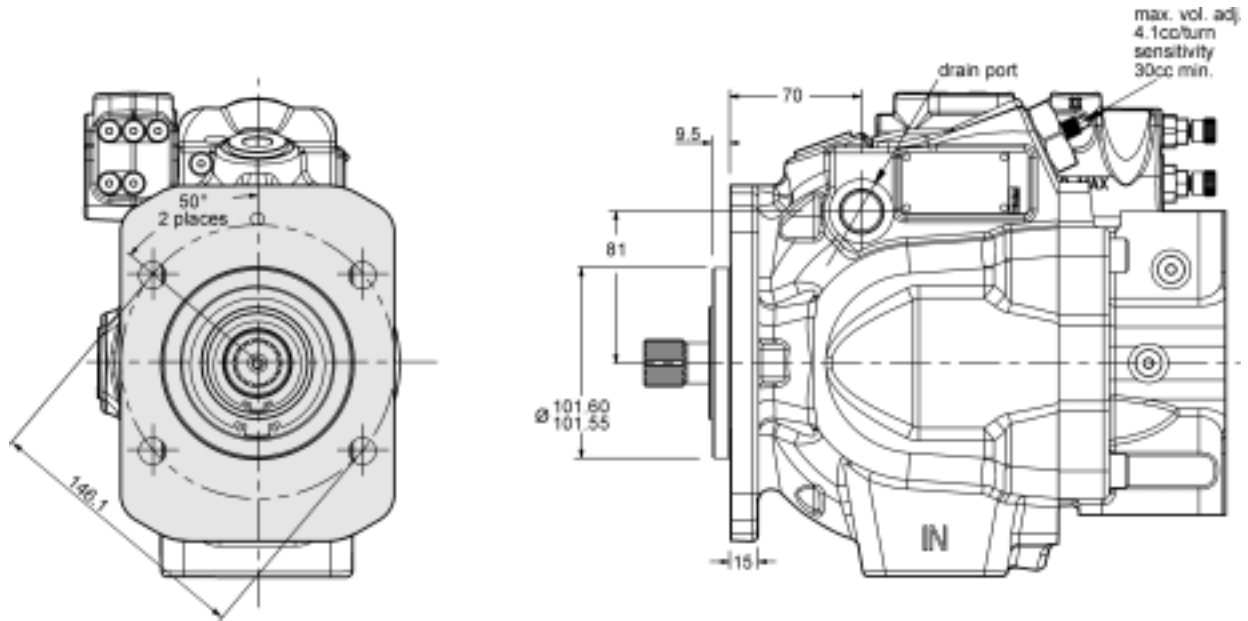
P2145 Inlet characteristics



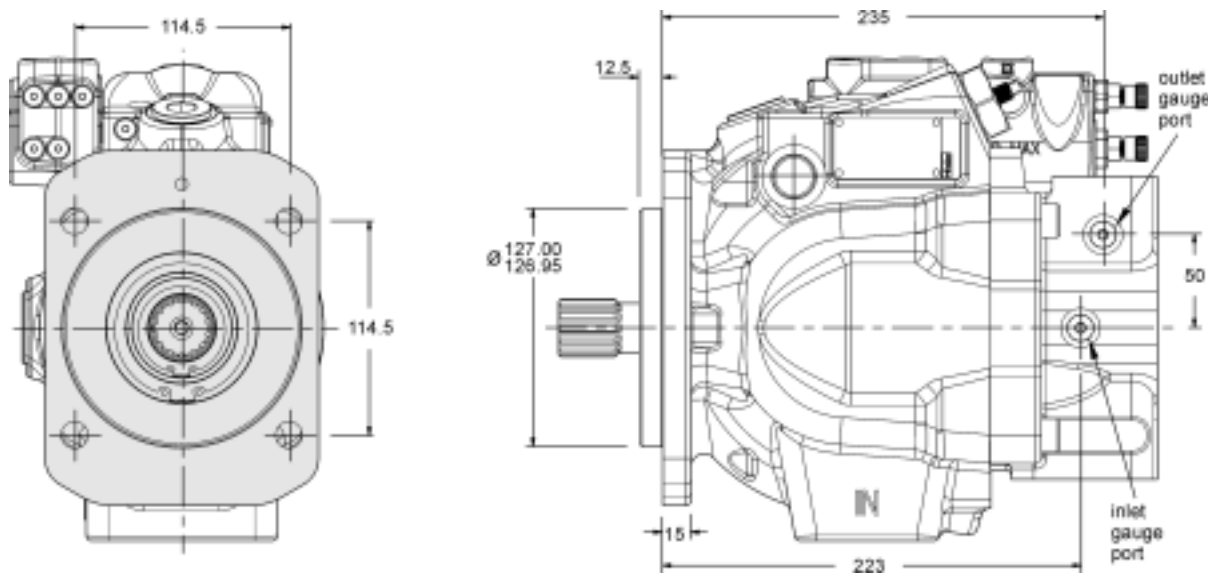
 **For operation at these conditions, please consult manufacturer for approval.**

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

P2060 Mounting flange (side port)
SAE B 2-bolt mounting flange - diagonal mount



SAE C 4-bolt mounting flange

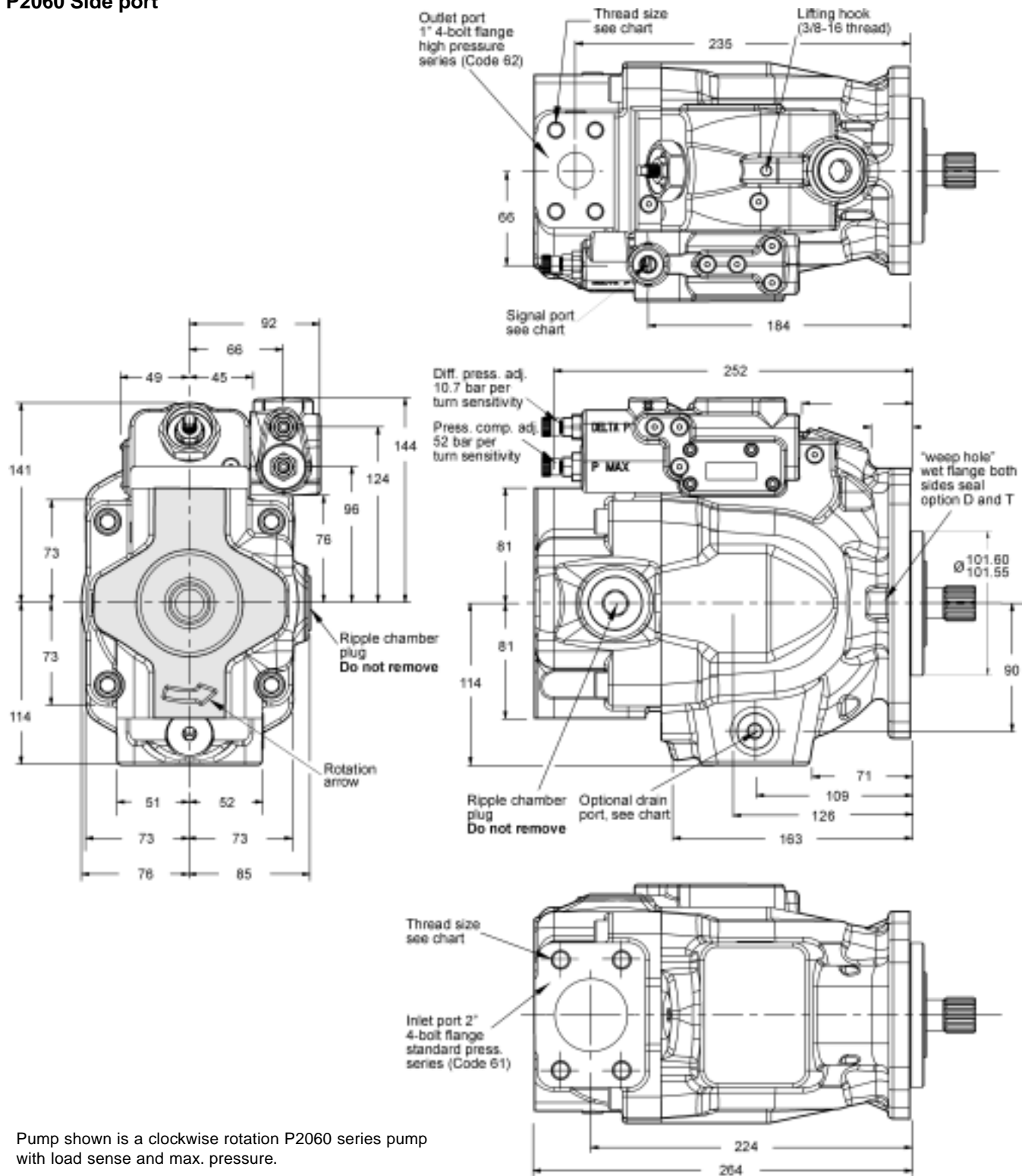


CW pump shown.
 CCW pump will have inlet and outlet gauge ports reversed.



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

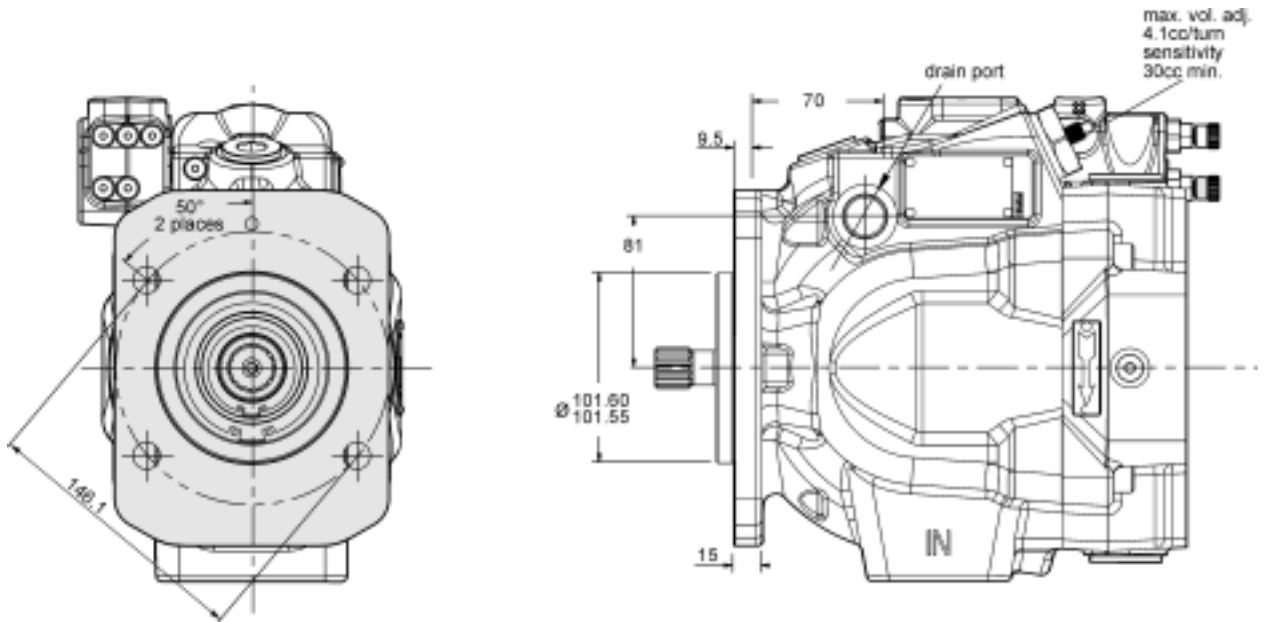


Pump shown is a clockwise rotation P2060 series pump with load sense and max. pressure.
 CCW pump will have inlet and outlet gauge ports reversed.
 Does not include ripple chamber.

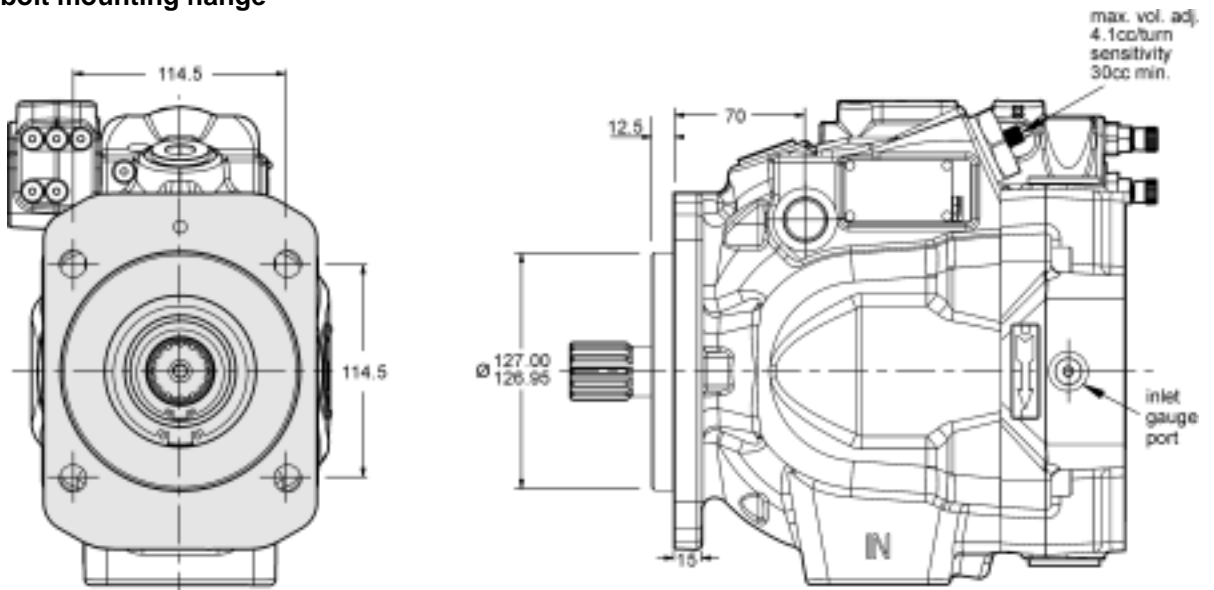


Port option	Drain port	Inlet port	Outlet port	Inlet gauge port / Outlet gauge port / Signal port
"A" side - UNC	SAE-12 straight thread / O-ring port: 1-1/16-12 thread	1/2-13 UN	7/16-14 UN	SAE-4 straight thread / O-ring port: 7/16-20 UN thread
"B" side - metric	ISO 6149 straight thread / O-ring port: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

P2060 Mounting flange (rear port)
SAE B 2-bolt mounting flange - diagonal mount



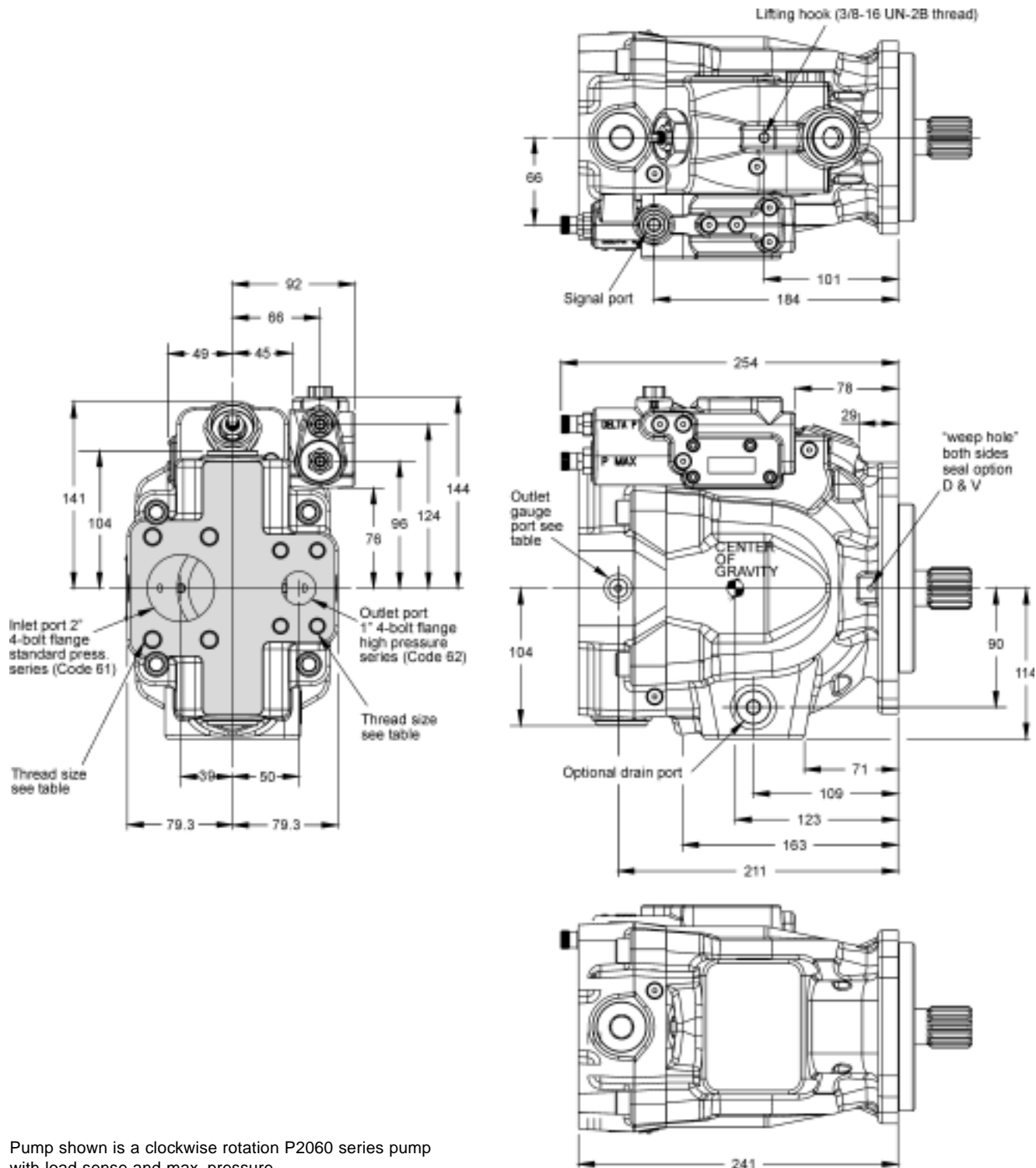
SAE C 4-bolt mounting flange



CW pump shown.
 CCW pump will have inlet and outlet gauge ports reversed.
 Does not include ripple chamber.



P2060 Rear port



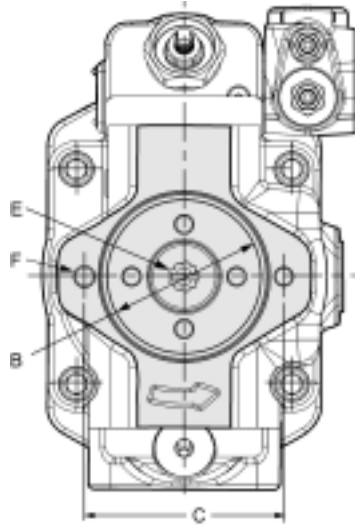
Pump shown is a clockwise rotation P2060 series pump with load sense and max. pressure.
 CCW pump will have inlet and outlet gauge ports reversed.
 Does not include ripple chamber.



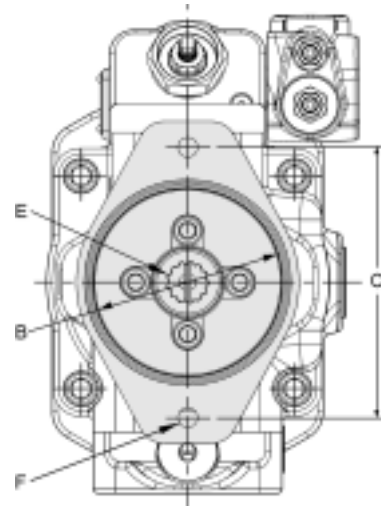
Port option	Drain port	Inlet port	Outlet port	Inlet gauge port / Outlet gauge port / Signal port
"G" rear - UNC	SAE-12 straight thread / O-ring port: 1-1/16-12 thread	1/2-13 UN	7/16-14 UN	SAE-4 straight thread / O-ring port: 7/16-20 UN thread
"H" rear - metric	ISO 6149 straight thread / O-ring port: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

P2060 Thru-Shaft Option

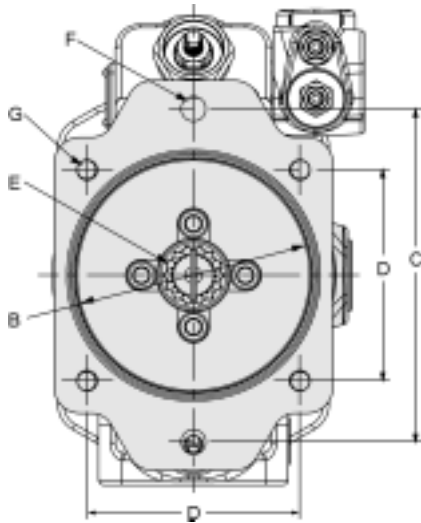
A1 Configuration



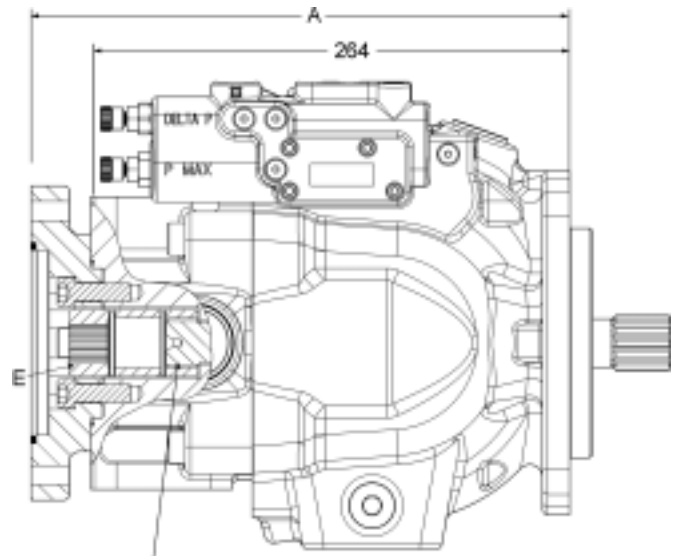
B1 and B2 Configuration



C1 and C3 Configuration



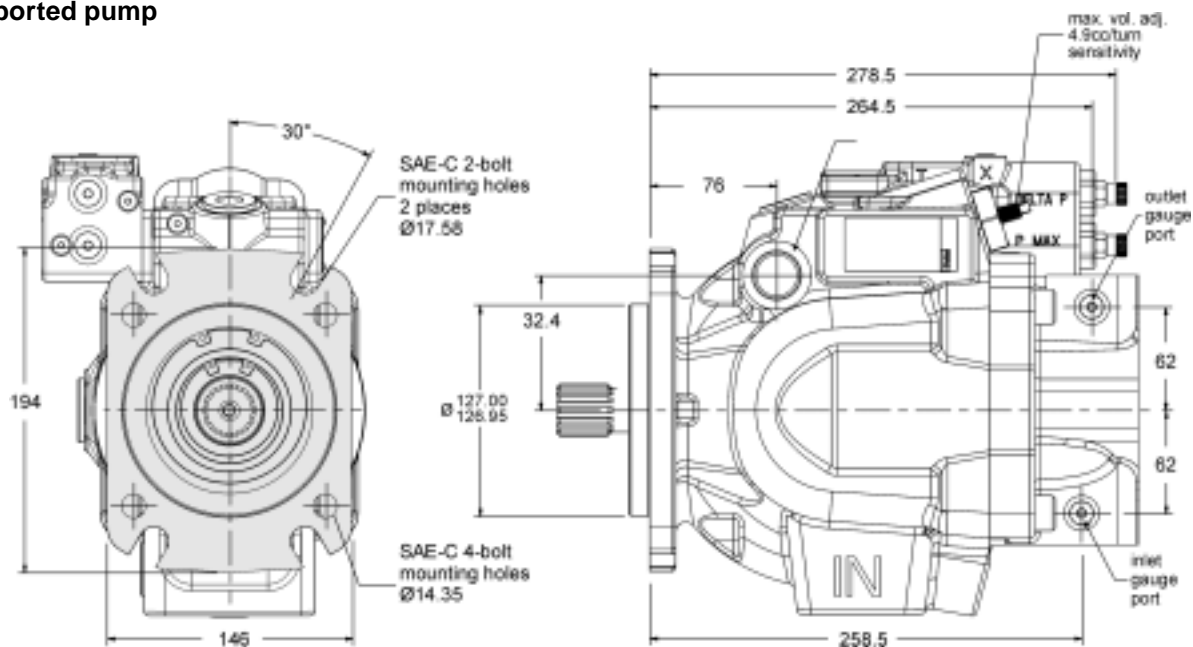
P2060 Partial cut-away of thru-drive area



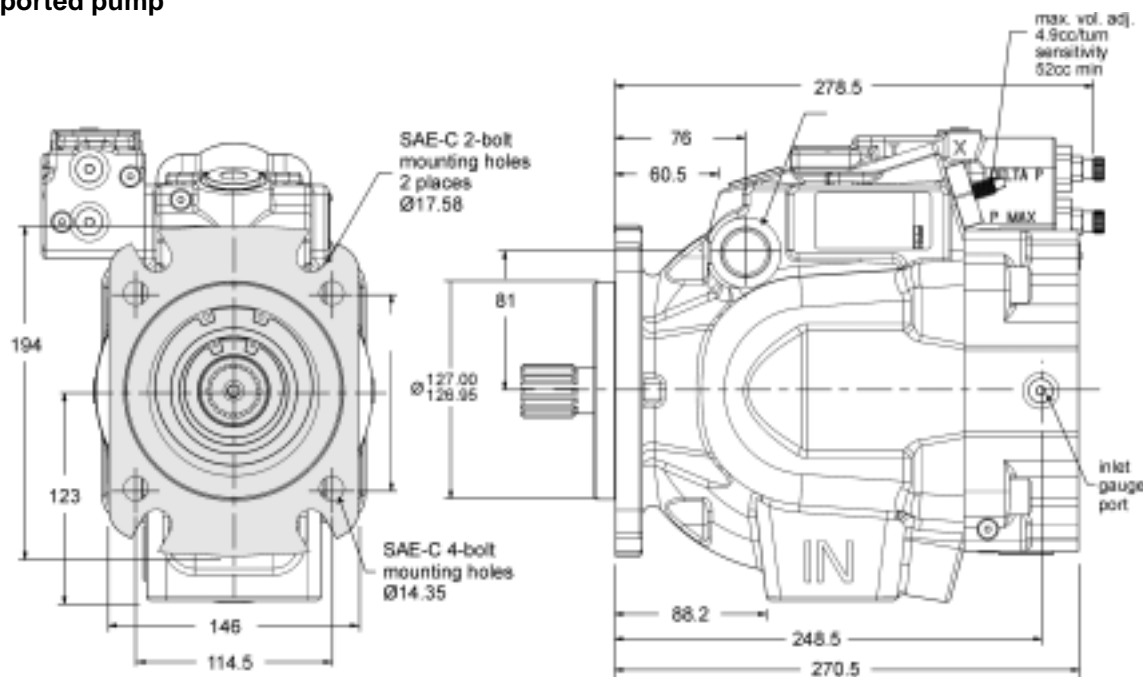
Thru-shaft option	A	B Ø	C	D	E	F UNC	F metric	G UNC	G metric	Pump weight
A1	264	82.625 82.575	106.38	N/A	SAE-A spline 9 tooth 16/32 pitch	3/8-16 UNC-2B THD	M10 x 1.5 THD	N/A	N/A	36.2 kg
B1	297	101.676 101.625	146.05	N/A	SAE-B spline 13 tooth 16/32 pitch	1/2-13 UNC-2B THD	M12 x 1.75 THD	N/A	N/A	38.9 kg
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

PI P2-P3 UK.PM6.5 RH

**P2075 Mounting flange
 Side ported pump**



Rear ported pump

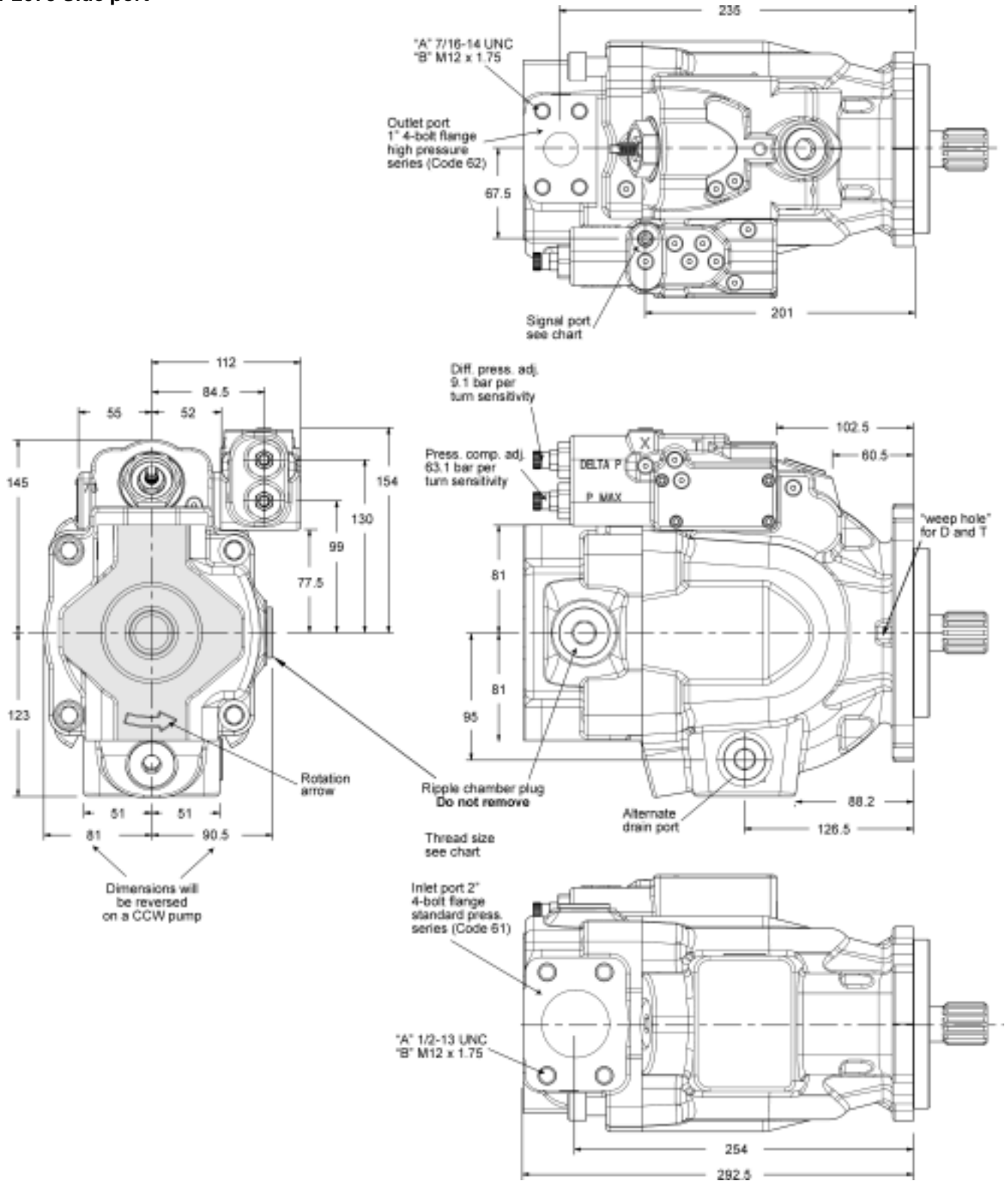


CW pump shown.
 CCW pump will have inlet and outlet gauge ports reversed.

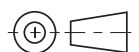


Port ordering code	Drain port	Inlet gauge port / Outlet gauge port
"A" side - UNC	SAE-12 straight thread / O-ring port: 1-1/16-12 UN thread	SAE-4 straight thread / O-ring port: 7/16-20 UN thread
"B" side - metric	ISO 6149 straight thread / O-ring port: M27 x 2 thread	ISO 6149 straight thread / O-ring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

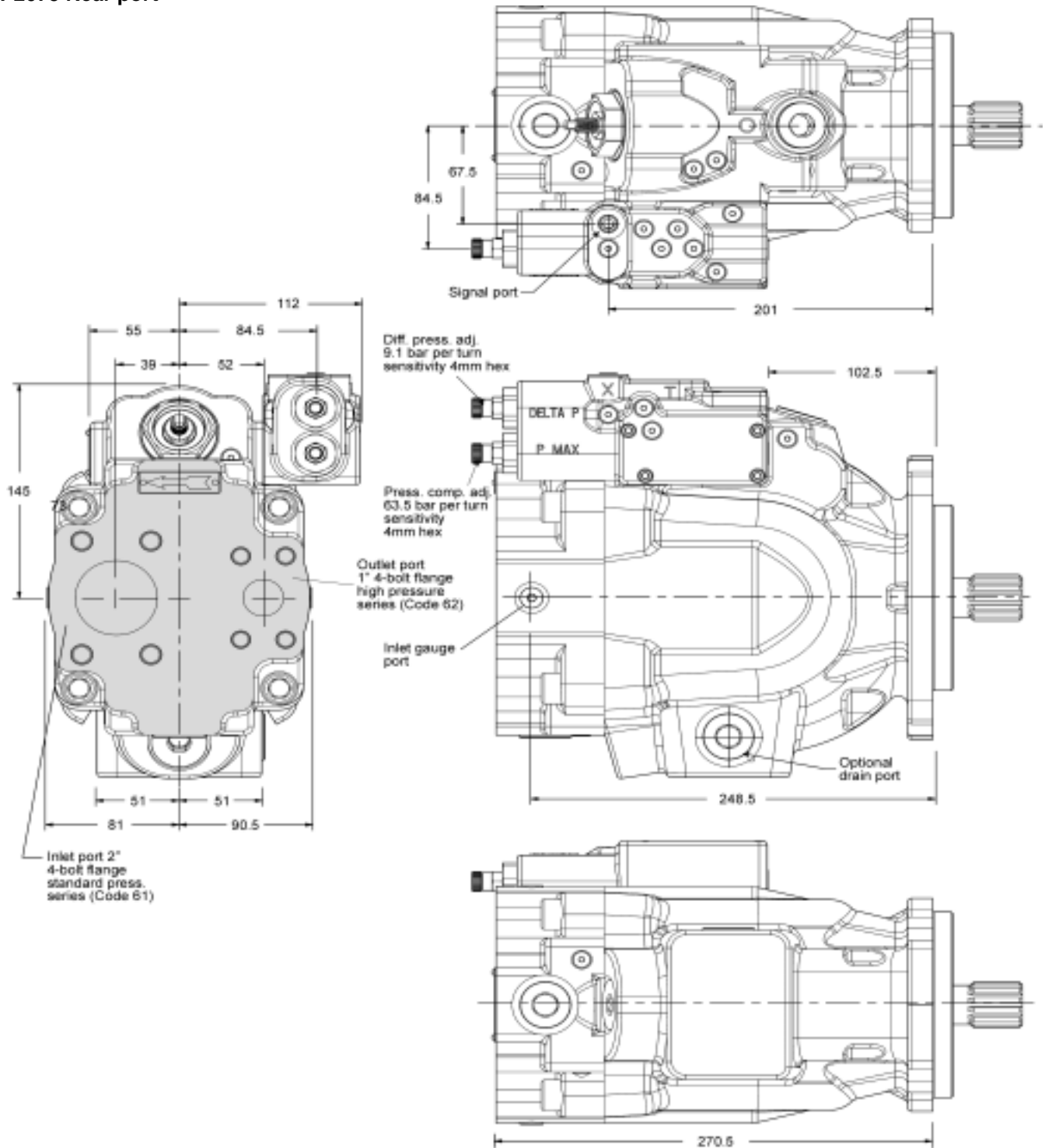
P2075 Side port



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



P2075 Rear port



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

CCW pump will have inlet and outlet gauge ports reversed.

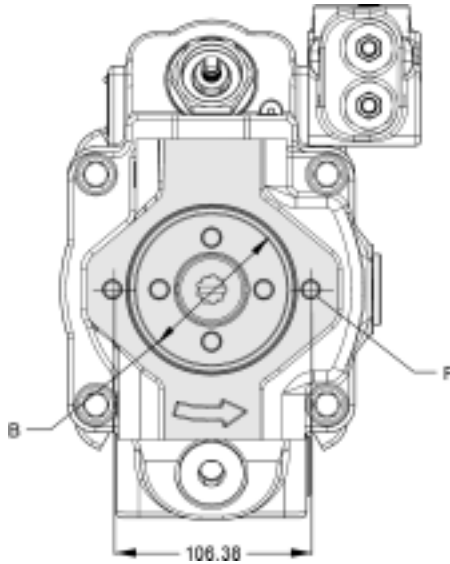
Does not include ripple chamber.



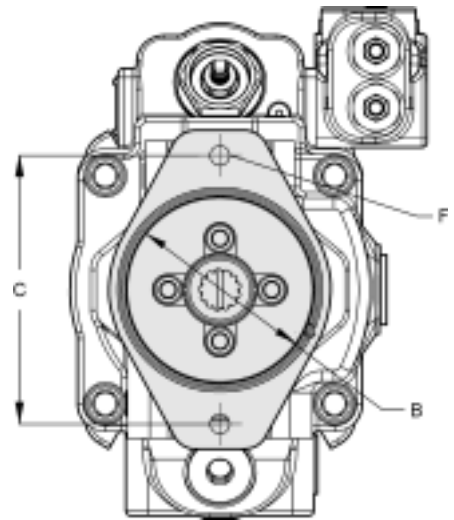
Port option	Drain port	Inlet port	Outlet port	Inlet gauge port / Outlet gauge port / Signal port
"G" rear - UNC	SAE-12 straight thread / O-ring port: 1-1/16-12 thread	1/2-13 UN	7/16-14 UN	SAE-4 straight thread / O-ring port: 7/16-20 UN thread
"H" rear - metric	ISO 6149 straight thread / O-ring port: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

P2075 Thru-shaft option

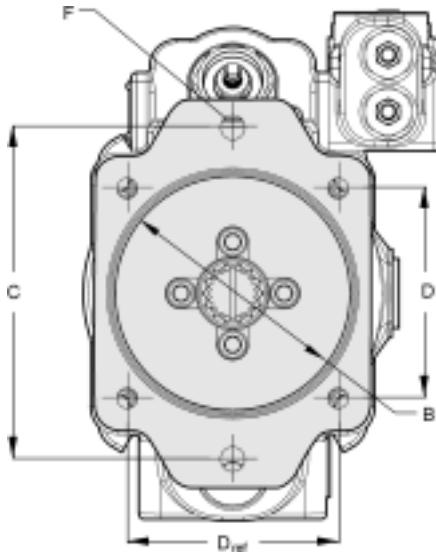
A1 Configuration



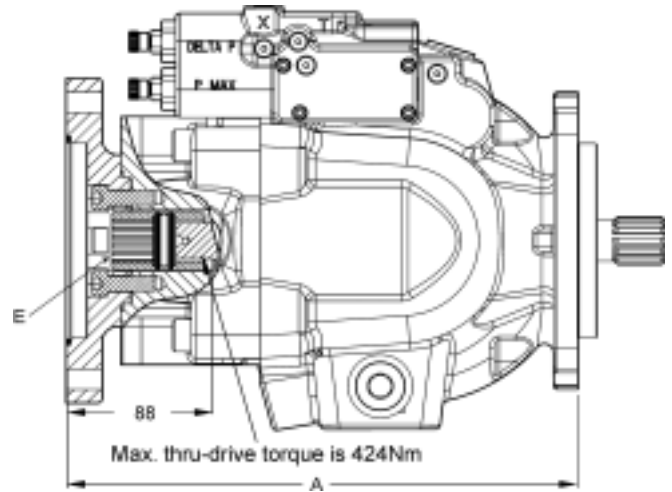
B1 and B2 Configuration



C1 and C3 Configuration



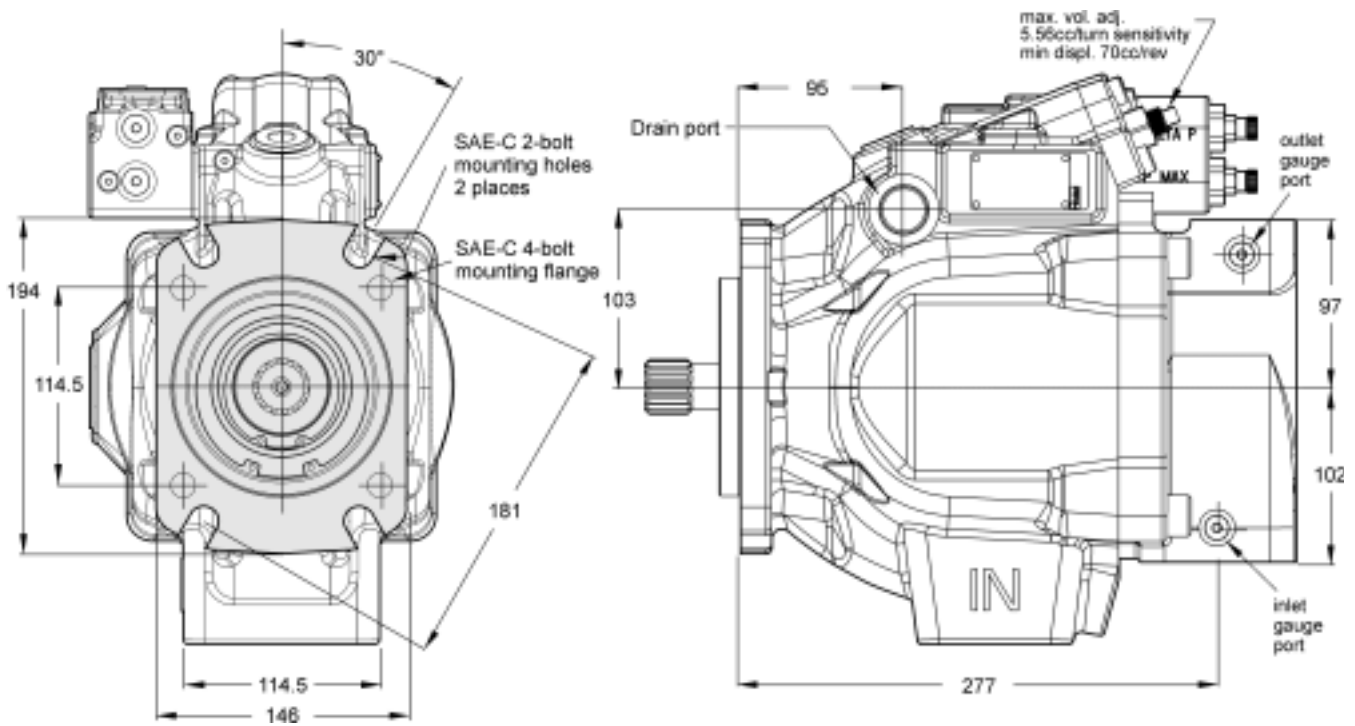
P2075 Partial cut-away of thru-drive area



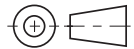
Pumps will be assembled with flange adapters as shown. Options B1, B2, C1 and C3 can be rotated 90°.

Thru-shaft option	A	B Ø	C	D	E	F UNC	F metric	G UNC	G metric	Pump 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	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	48 kg

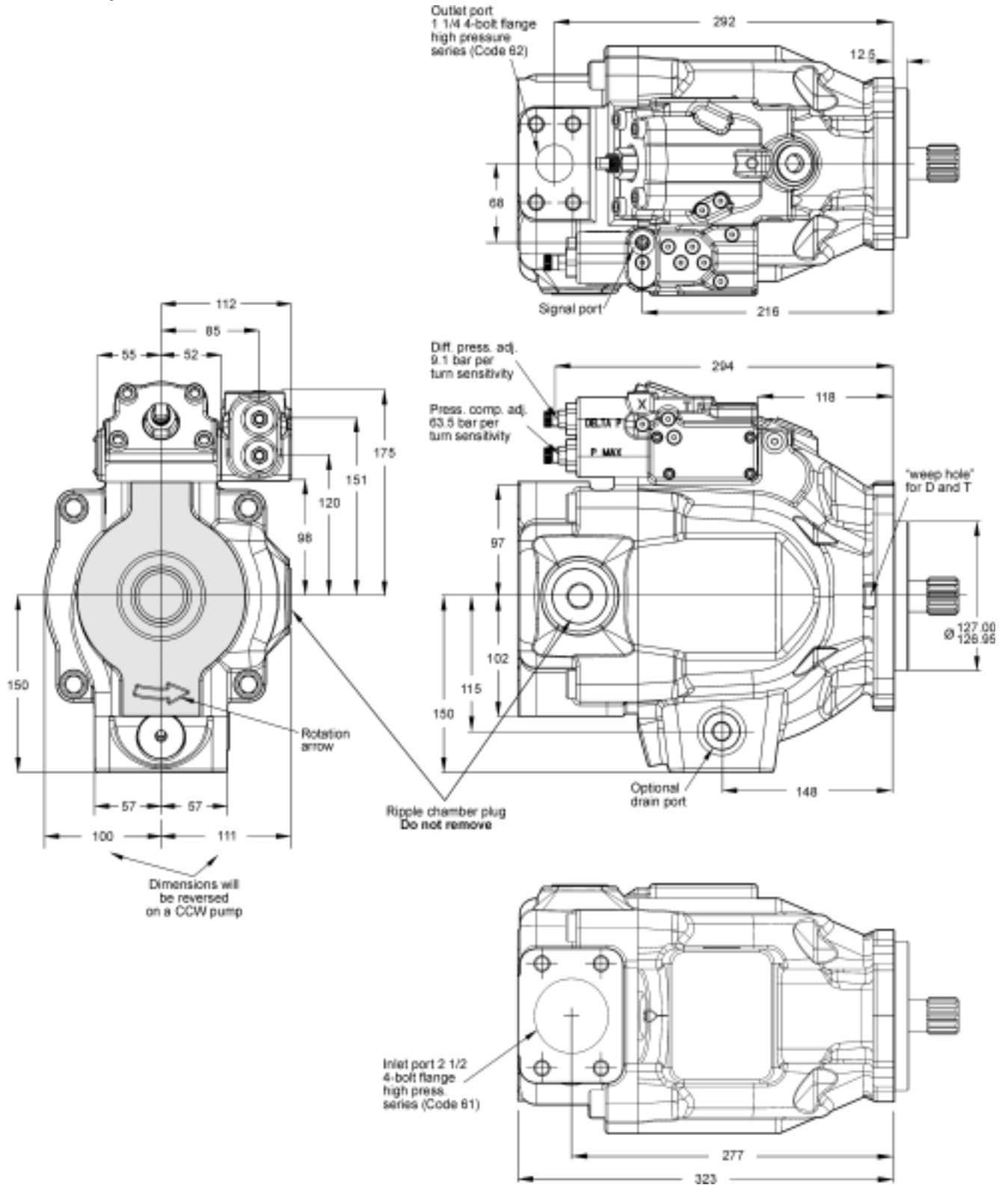
P2105 Mounting flange



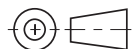
CW pump shown.
 CCW pump will have inlet and outlet gauge ports reversed.



P2105 Side port

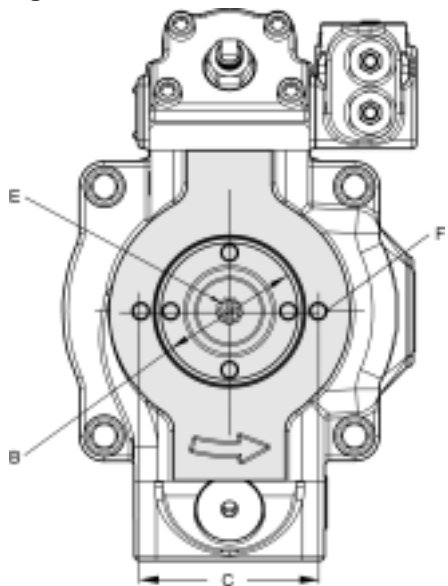


CW pump shown.
 CCW pump will have inlet and outlet gauge ports reversed.

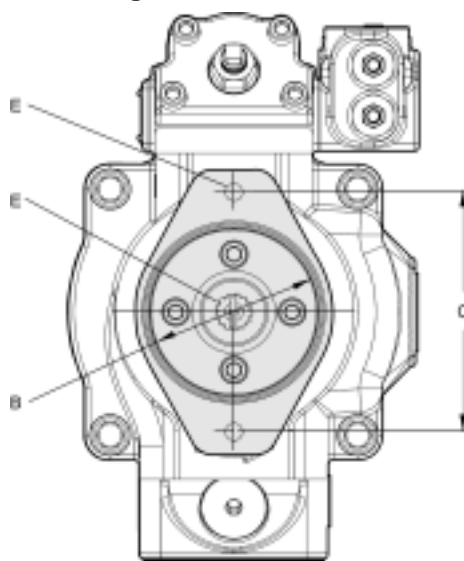


P2105 Thru-shaft option

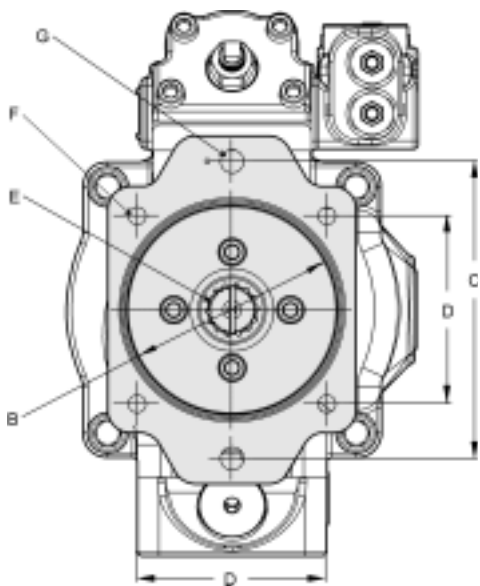
A1 Configuration



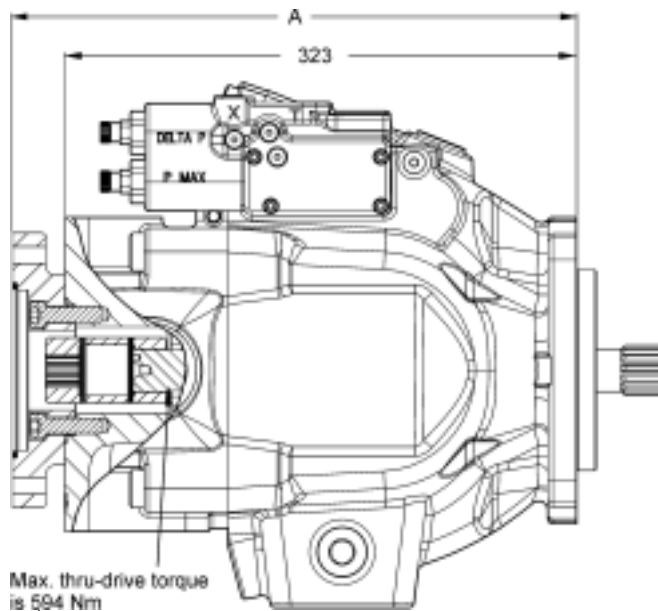
B1 and B2 Configuration



C1 and C3 Configuration



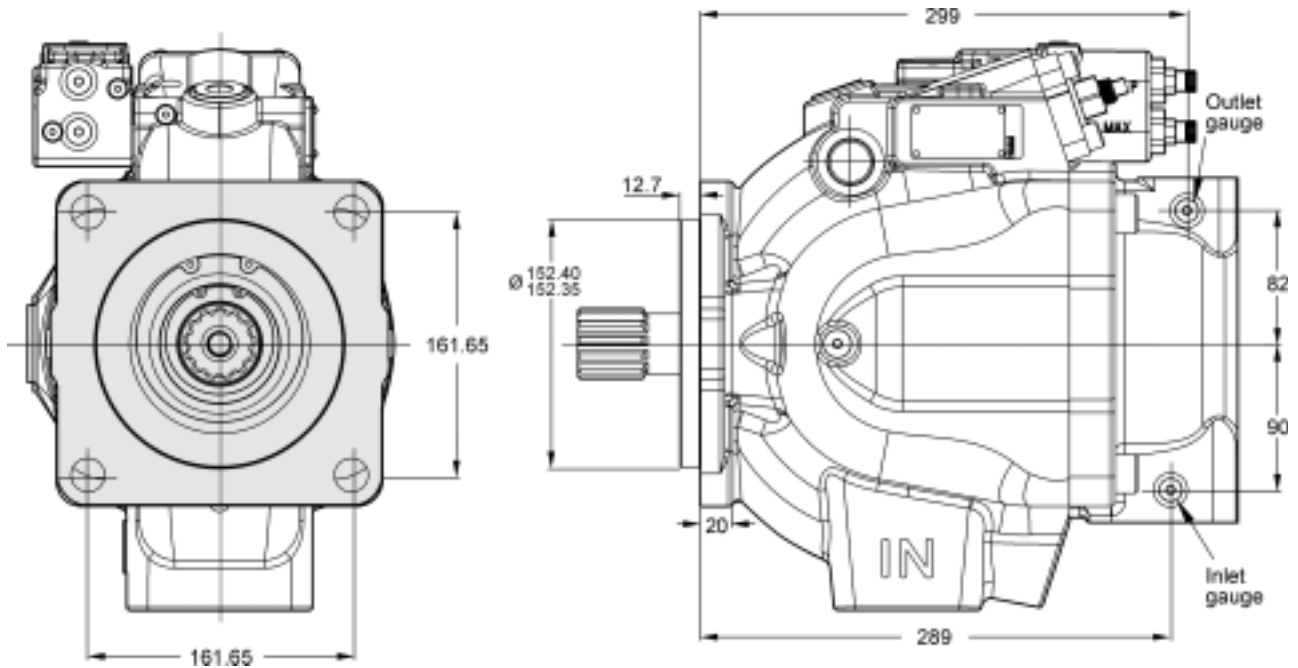
P2105 Partial cut-away of thru-drive area



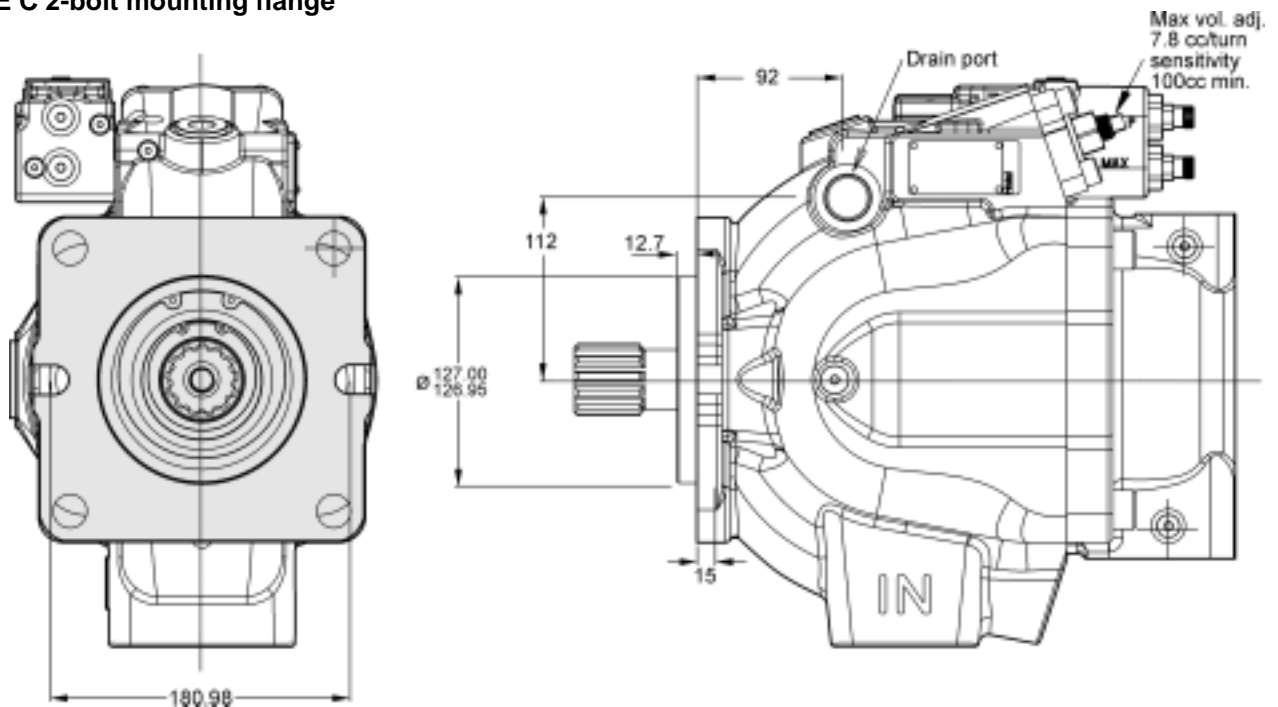
Thru-shaft option	A	B Ø	C	D	E	F UNC	F metric	G UNC	G metric	Pump weight
A1	323	82.625 82.575	106.3	N/A	SAE-A spline 9 tooth 16/32 pitch	1/2-13 UNC-2B THD	M10 x 1.5 THD	N/A	N/A	61 kg
B1	356	101.676 101.625	146.1	N/A	SAE-B spline 13 tooth 16/32 pitch	1/2-13 UNC-2B THD	M12 x 1.75 THD	N/A	N/A	64 kg
B2	356	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	65 kg

PI P2-P3 UK.PM6.5 RH

P2145 Mounting flange
SAE D 4-bolt mounting flange



SAE C 2-bolt mounting flange

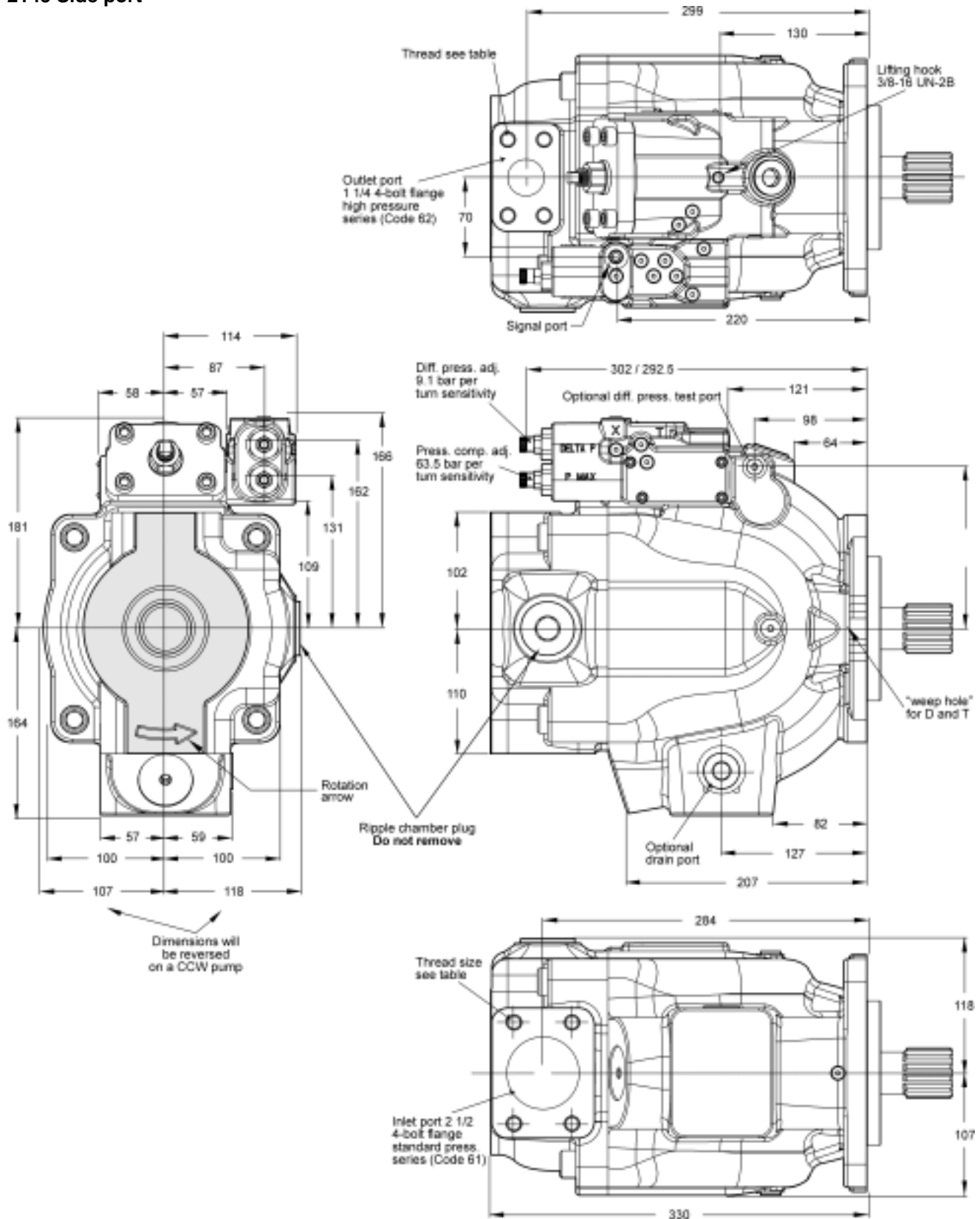


CW pump shown.
 CCW pump will have inlet and outlet gauge ports reversed.

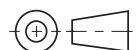


Port ordering code	Drain port	Inlet gauge port / Outlet gauge port
"A" side - UNC	SAE-12 straight thread / O-ring port: 1-1/16-12 UN thread	SAE-4 straight thread / O-ring port: 7/16-20 UN thread
"B" side - metric	ISO 6149 straight thread / O-ring port: M27 x 1.75 thread	ISO 6149 straight thread / O-ring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

P2145 Side port

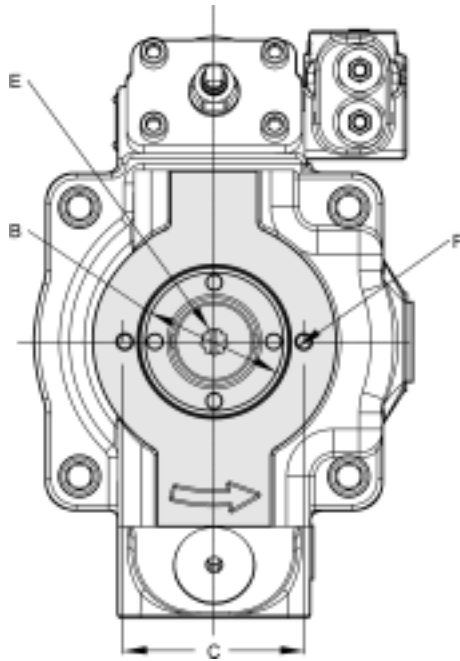


CW pump shown.
 CCW pump will have inlet and outlet gauge ports reversed.

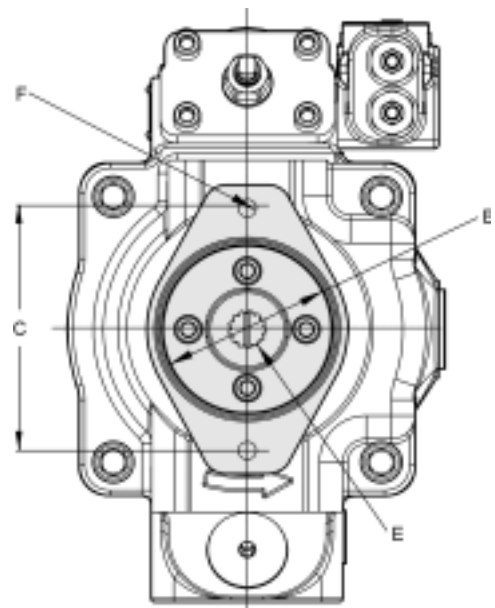


P2145 Thru-shaft option

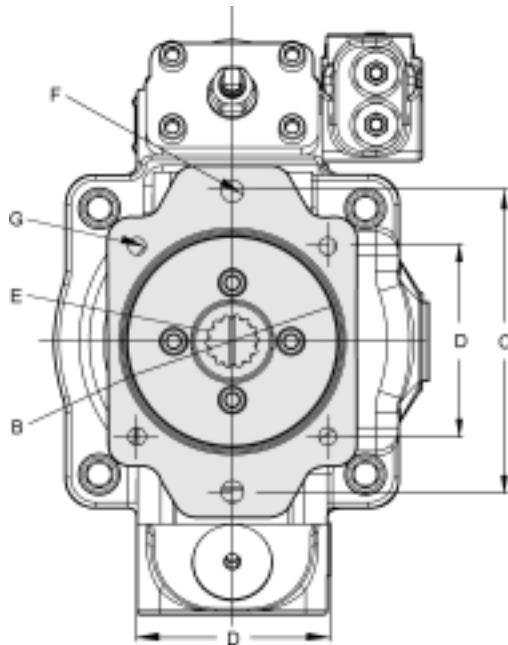
A1 Configuration



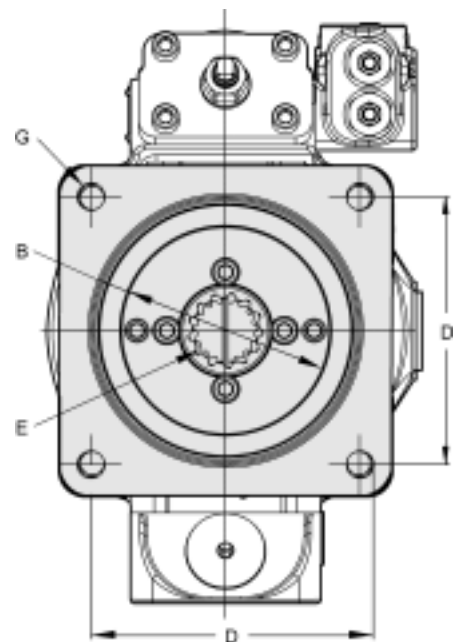
B1 and B2 Configuration



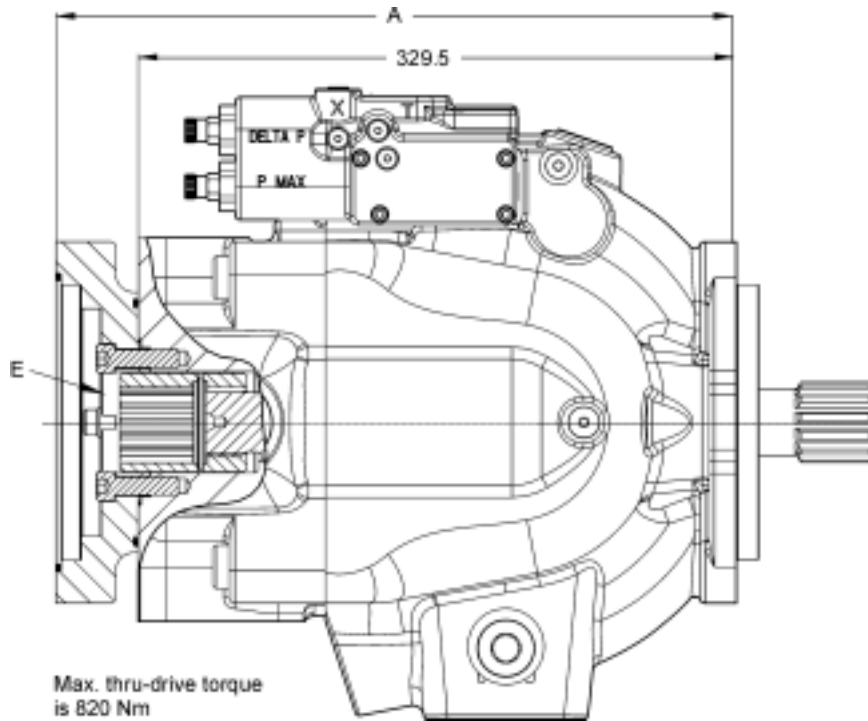
C1, C2, C3 and C4 Configuration



D3 Configuration



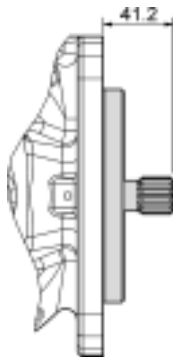
P2145 Thru-drive option



Thru-shaft option	A	B Ø	C	D	E	F UNC	F metric	G UNC	G metric	Pump 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	146.1	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	82.6 kg
C1 & C2	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	83.9 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	83.9 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	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

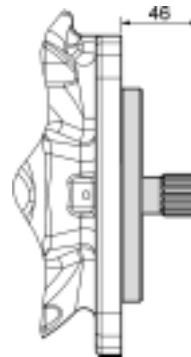
P2 Shaft options

“B1” Shaft option



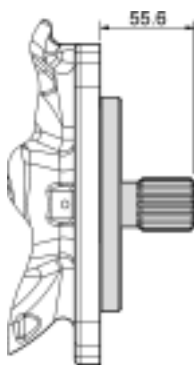
SAE “B” spline
 13 tooth
 16/32 pitch
 30° involute spline
 max. input torque 209 Nm

“B2” Shaft option



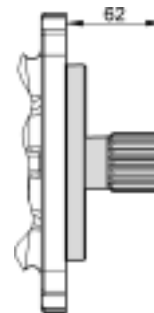
SAE “B-B” spline
 15 tooth
 16/32 pitch
 30° involute spline
 max. input torque 337 Nm

“C1” Shaft option



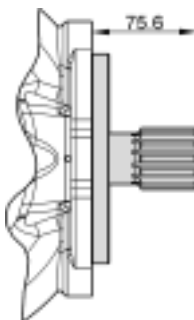
SAE “C” spline
 14 tooth
 12/24 pitch
 30° involute spline
 max. input torque 641 Nm

“C2” Shaft option



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

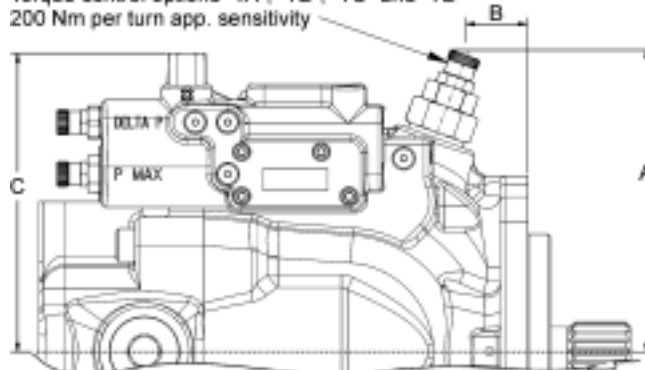
“D1” Shaft option



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

Dimensions

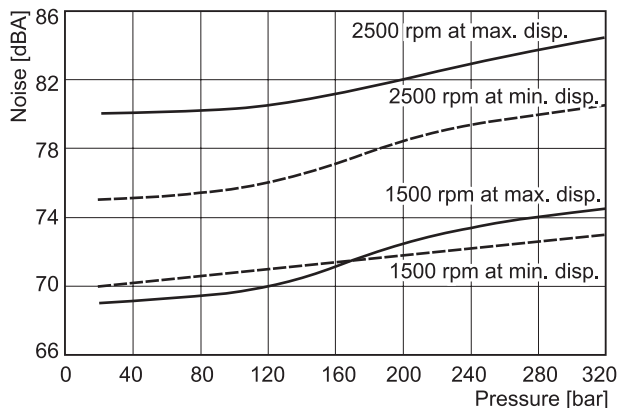
Torque control options “TA”, “TB”, “TC” and “TD”
 200 Nm per turn app. sensitivity



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

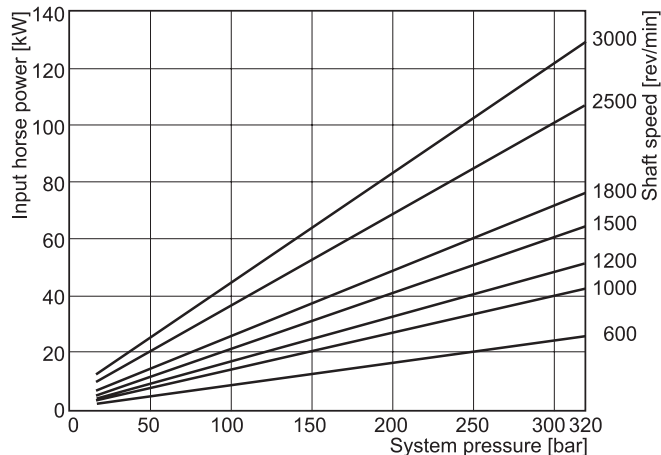
P3 Noise characteristics at max./min. displacement

P3075 Noise characteristics

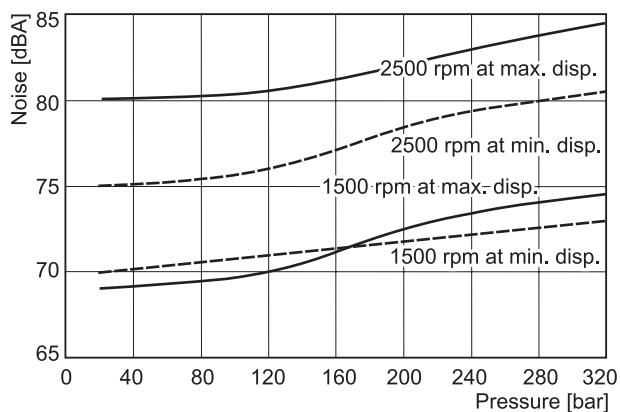


P3 Series-typical drive power at full displacement

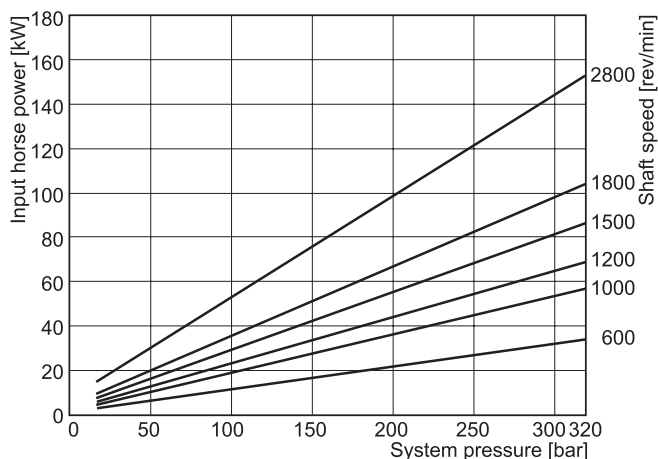
P3075 Input power - full stroke



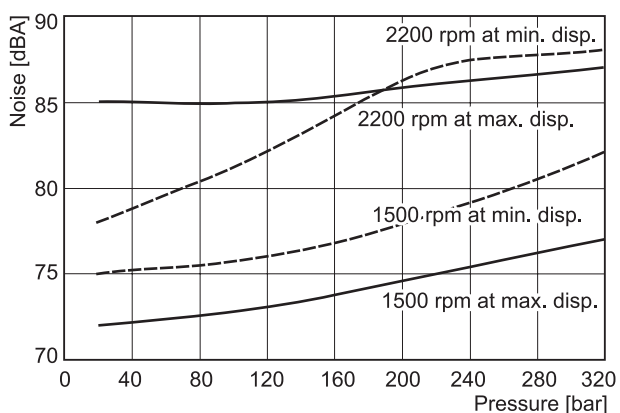
P3105 Noise characteristics



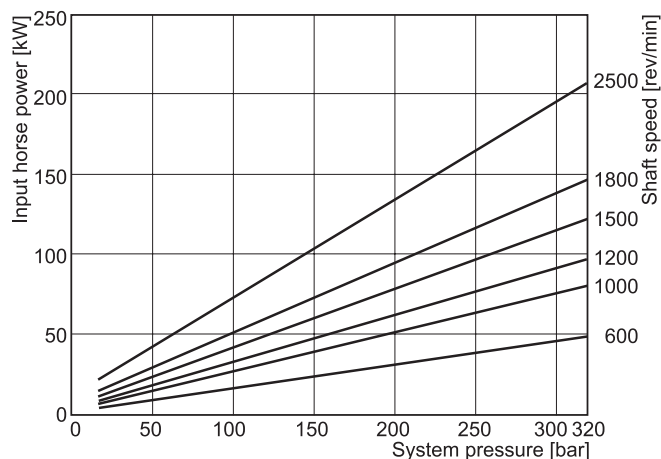
P3105 Input power - full stroke



P3145 Noise characteristics



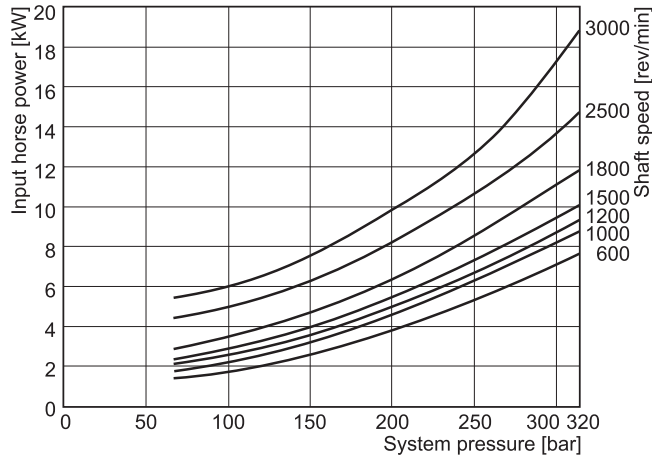
P3145 Input power - full stroke



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

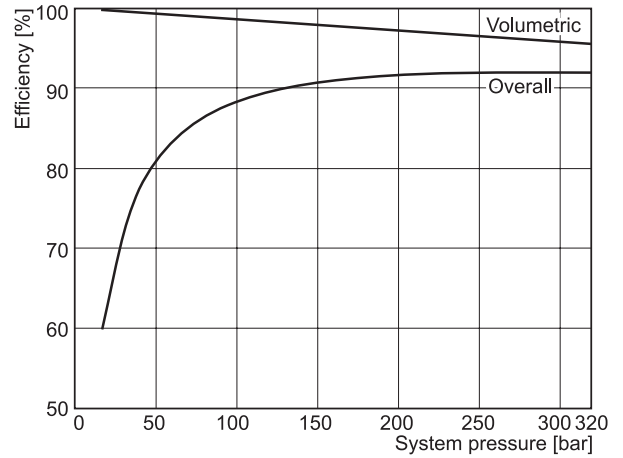
P3 Series-typical compensated power

P3075 Input power - zero stroke

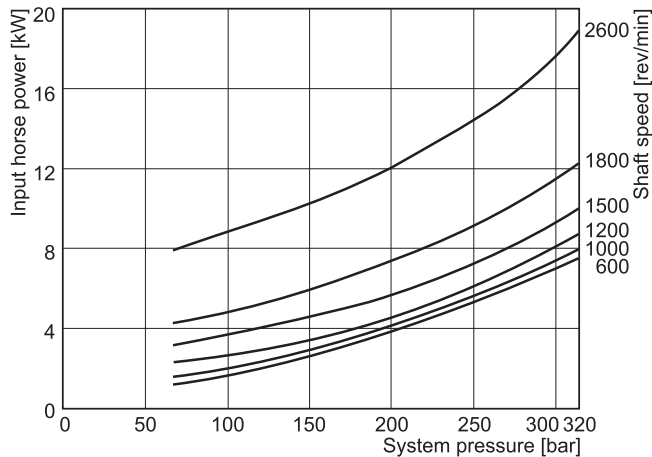


P3 Series-typical efficiency at full displ. at 1800 rpm

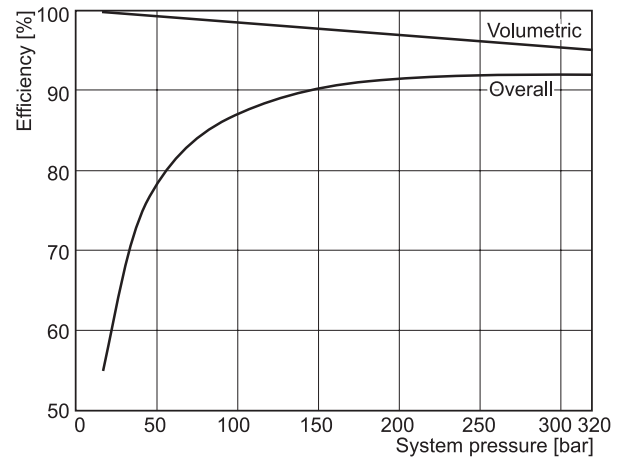
P3075 Efficiency at 1800rpm



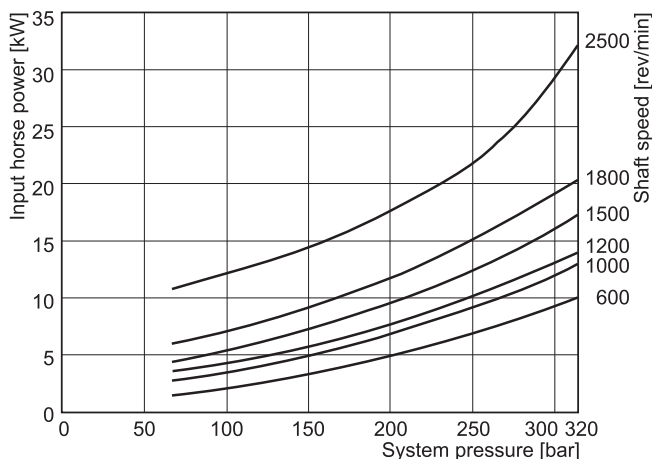
P3105 Input power - zero stroke



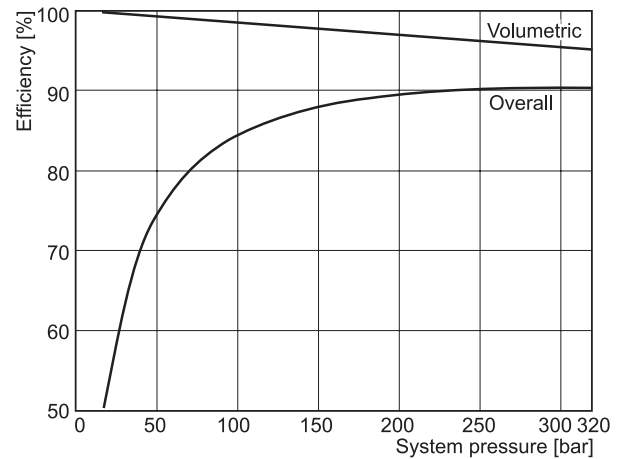
P3105 Efficiency at 1800 rpm



P3145 Input power - zero stroke



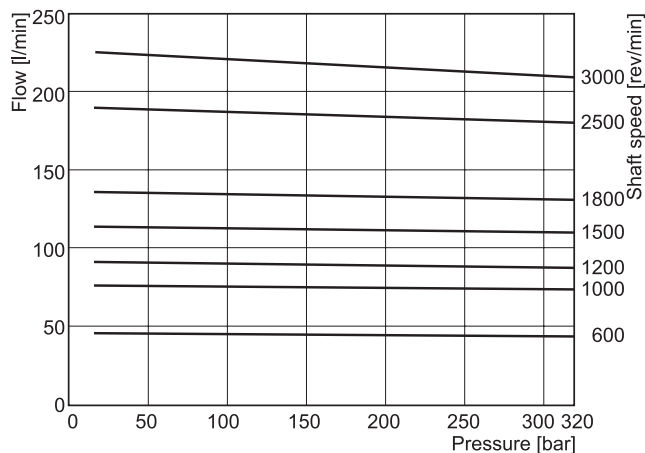
P3145 Efficiency at 1800 rpm



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

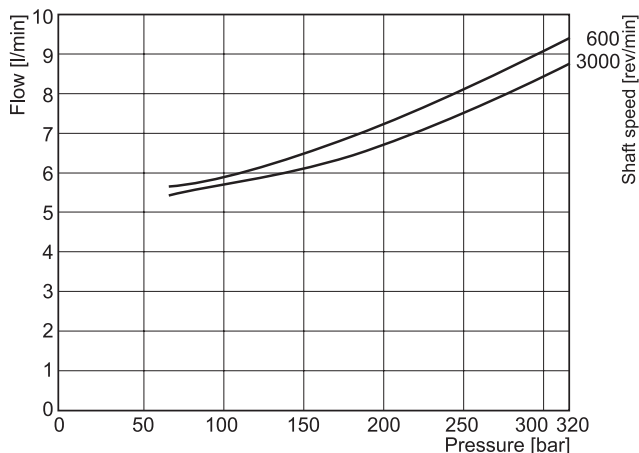
P3 Series-typical flow vs. pressure

P3075 Outlet flow - full stroke

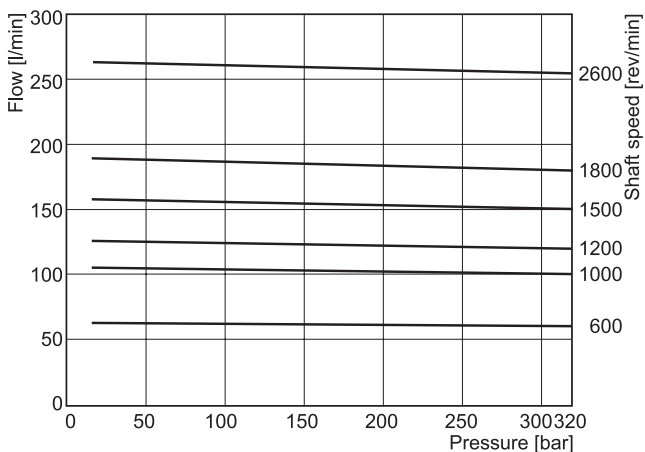


P3 Series-typical compensated control drain flow

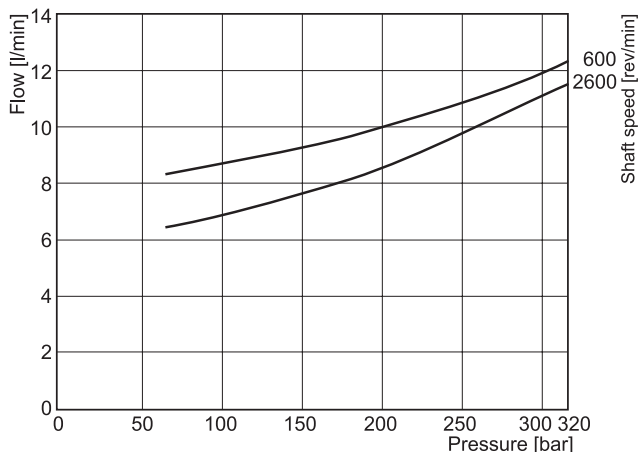
P3075 Control drain flow at zero stroke



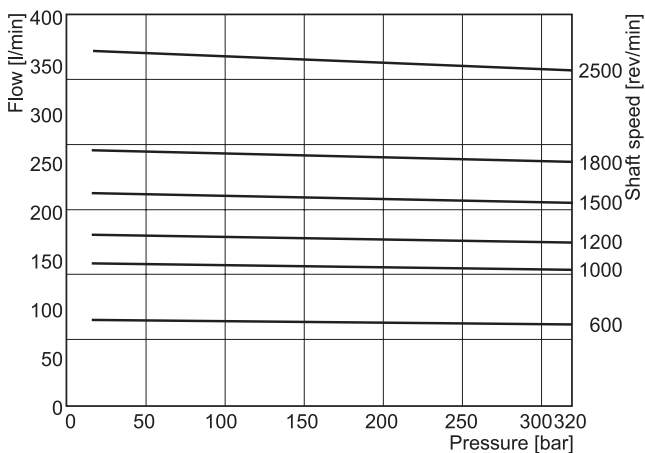
P3105 Outlet flow - full stroke



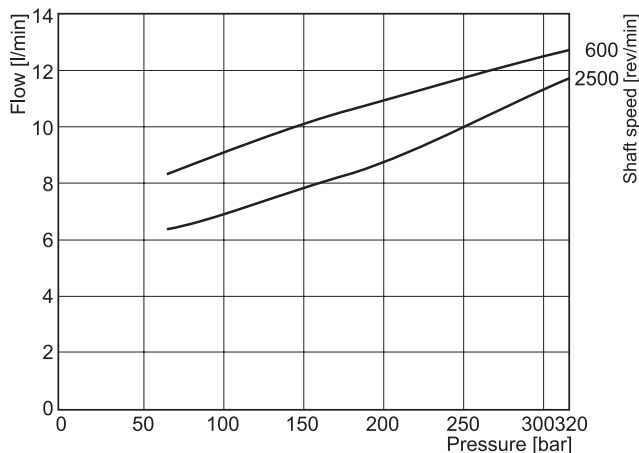
P3105 Control drain flow at zero stroke



P3145 Outlet flow - full stroke



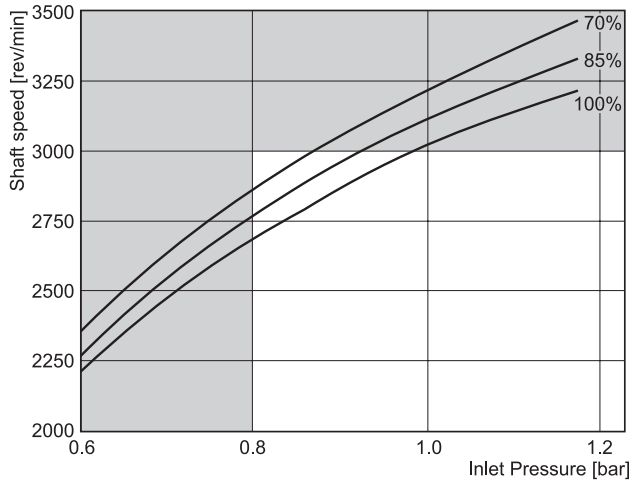
P3145 Control drain flow at zero stroke



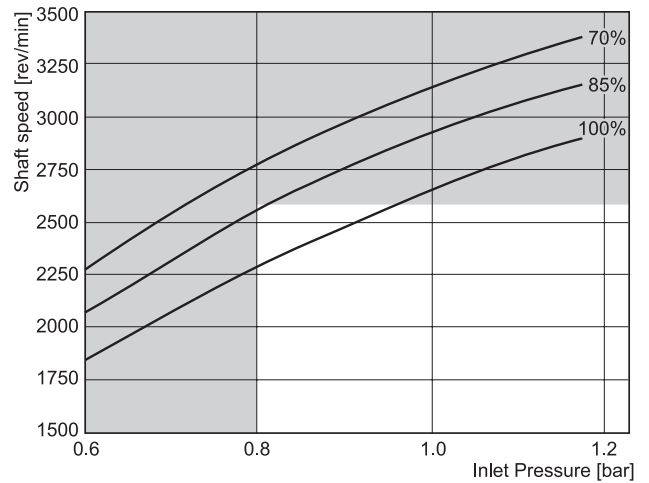
Fluid: Mineral oil ISO VG 32 at 40°C ; Inlet pressure: 1.0 bar (absolute) measured at inlet port.

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

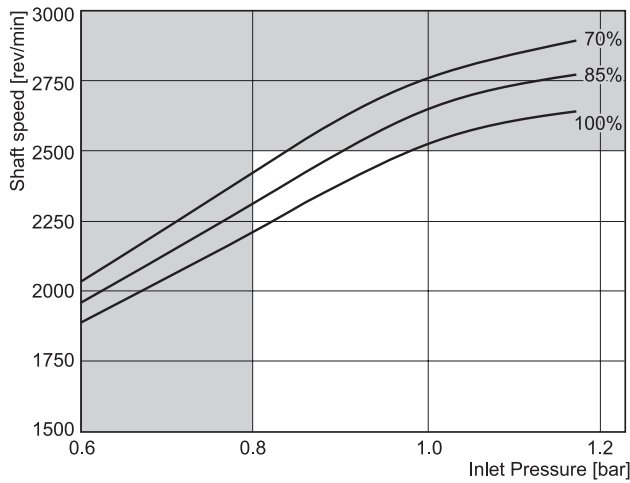
P3075 Inlet characteristics



P3105 Inlet characteristics



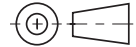
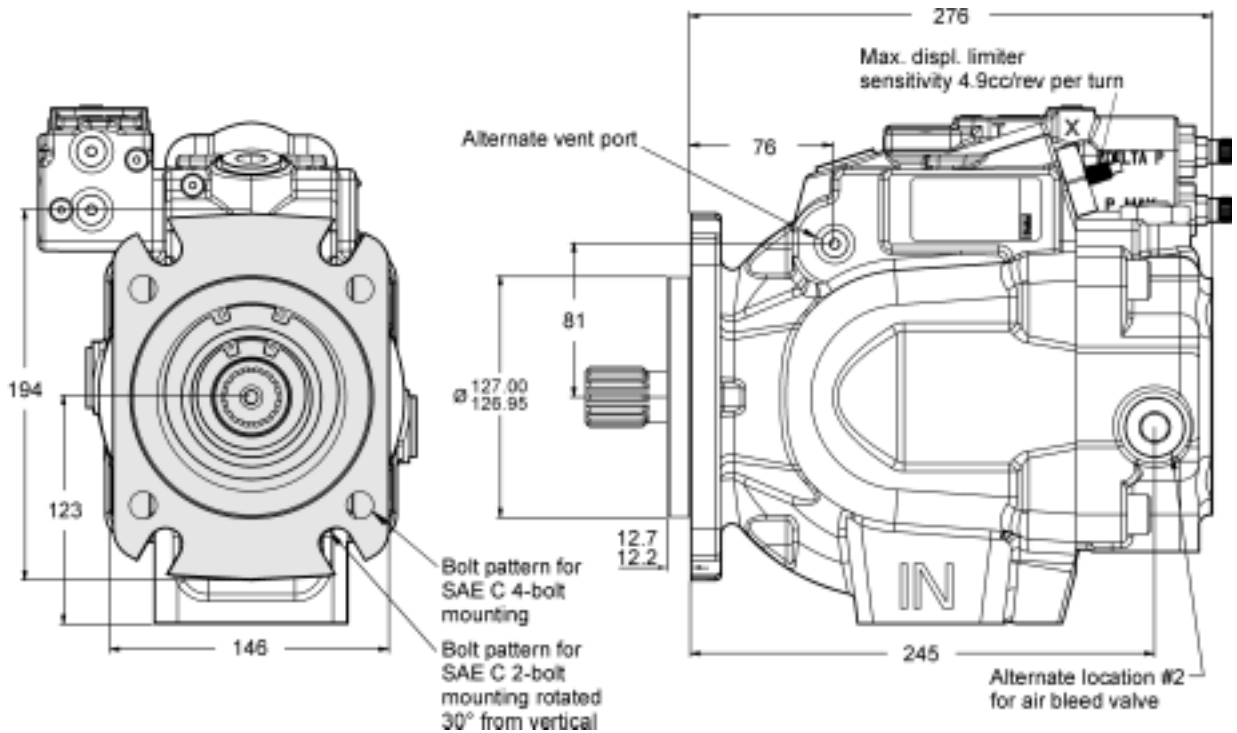
P3145 Inlet characteristics



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

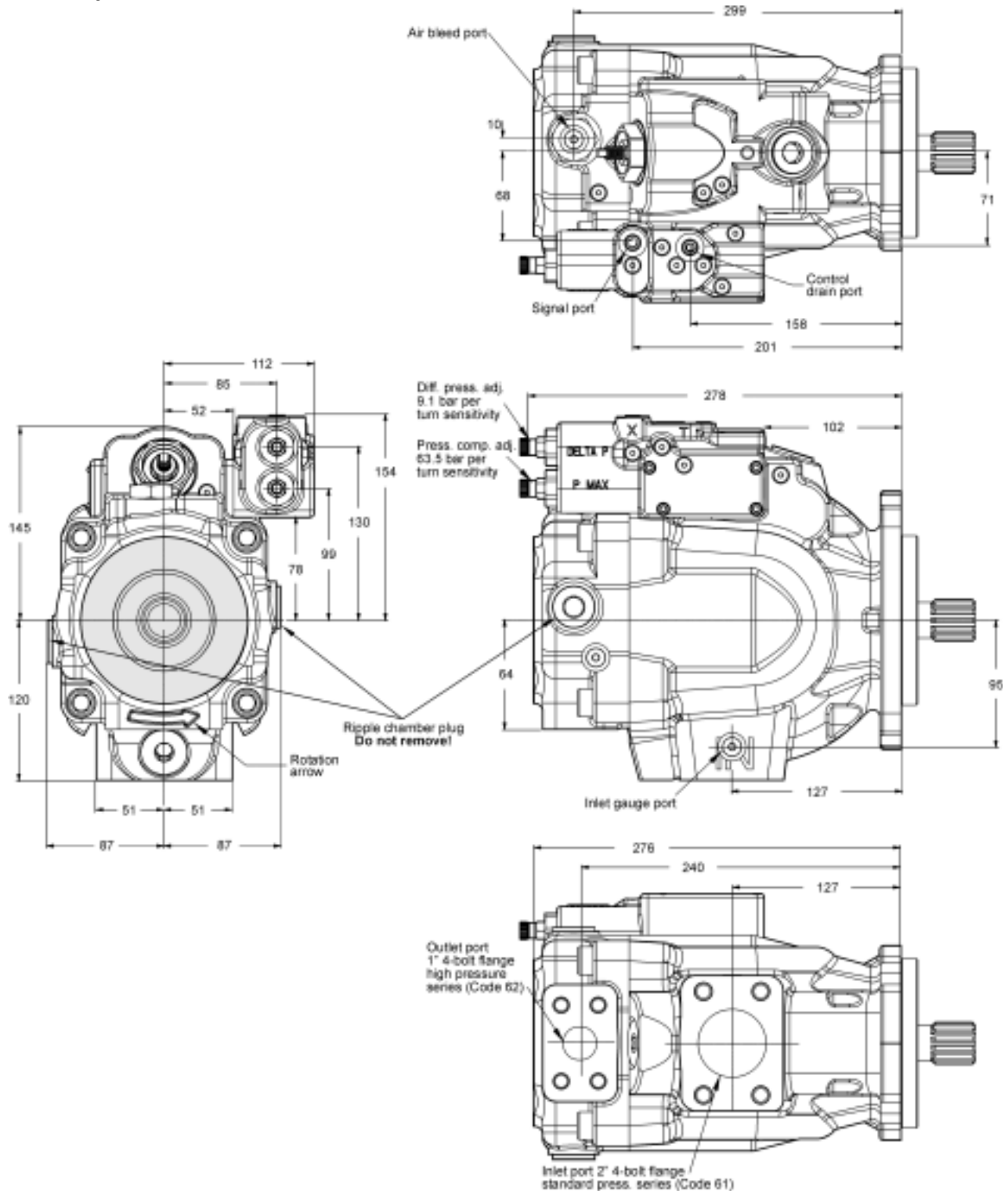
Fluid: Mineral oil ISO VG 32 at 40°C ; Inlet pressure: 1.0 bar (absolute) measured at inlet port.

P3075 Mounting flange
SAE C 2-bolt and 4-bolt mounting flange



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

P3075 Side port



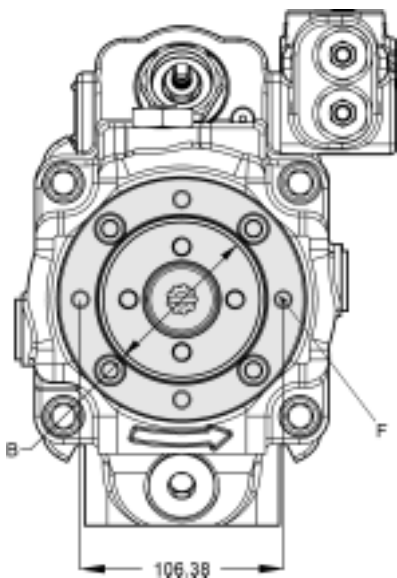
Port ordering code	Inlet port	Outlet port	Inlet gauge port / Outlet gauge port / Airbleed port / Signal port
"A" side - UNC	1/2-13 UNC	7/16-14 UNC	SAE-4 straight thread / O-ring port: 7/16-20 UN thread
"B" side - metric	M12 x 1.75	M12 x 1.75	ISO 6149 straight thread / O-ring port: M12 x 1.5 thread

PI P2-P3 UK.PM6.5 RH

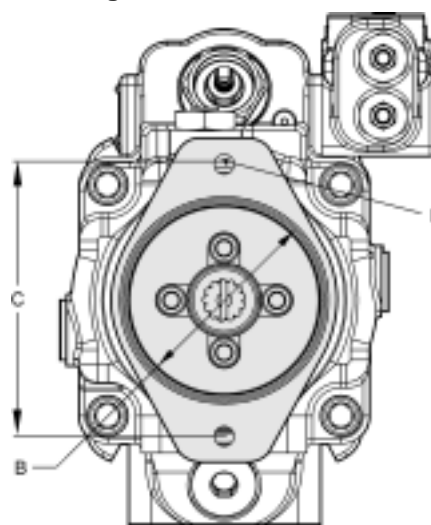


P3075 Thru-shaft option

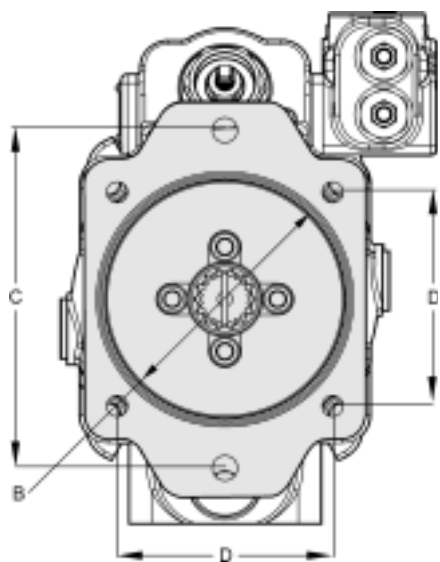
A1 Configuration



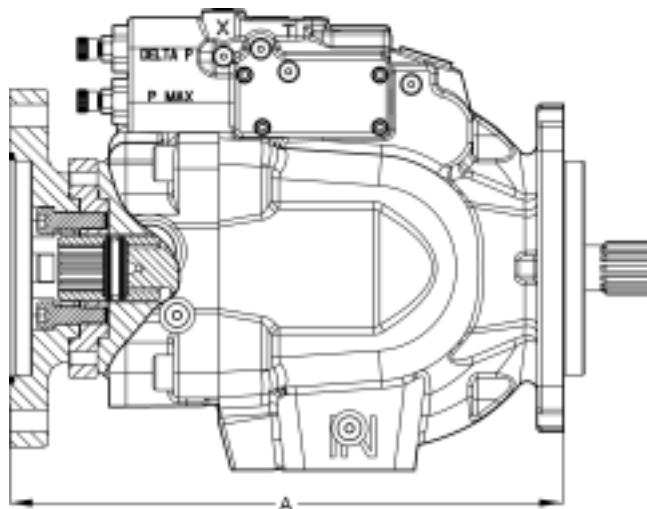
B1 and B2 Configuration



C1 and C3 Configuration

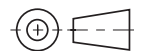
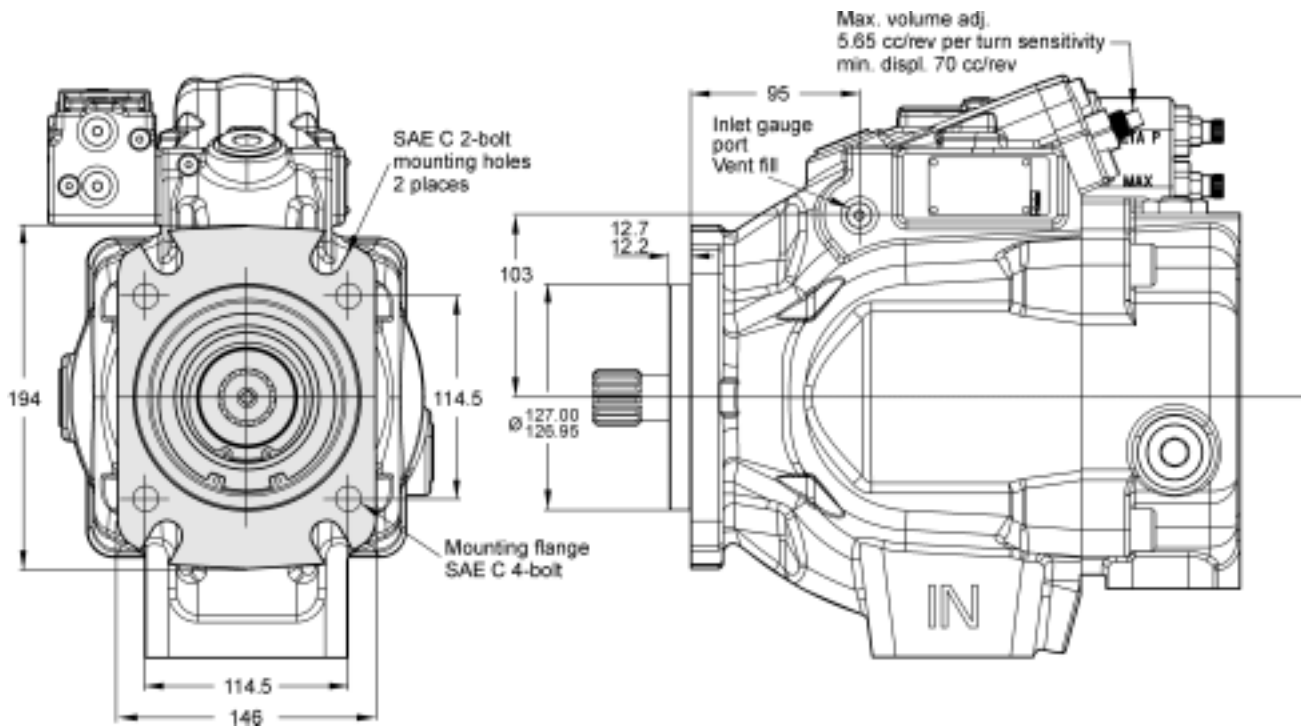


P3075 Partial cut-away of thru-drive area



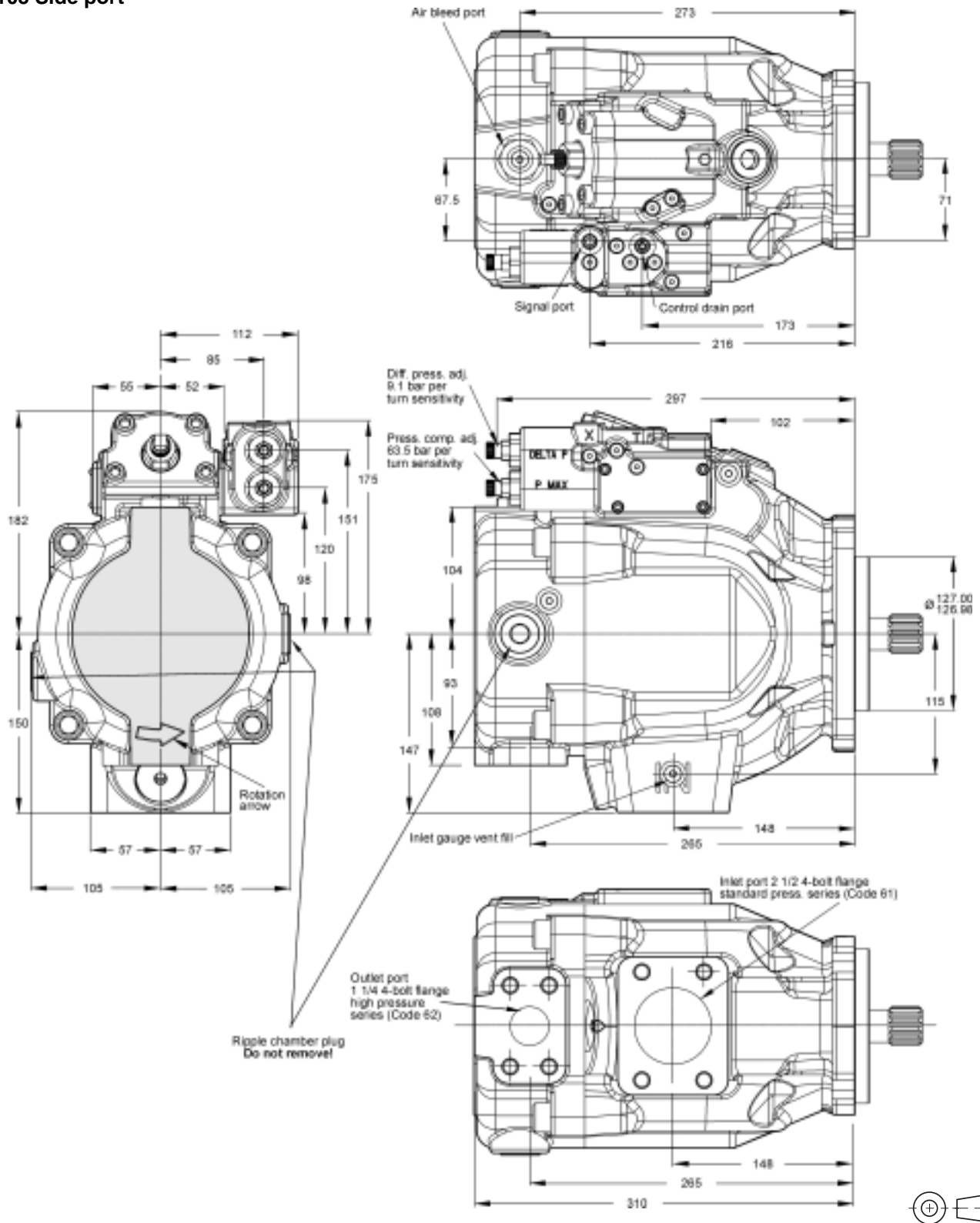
Thru-shaft option	A	B Ø	C	D	E	F UNC	F metric
A1	292.5	82.626 82.575	106.3	N/A	SAE-A spline 9 tooth 16/32 pitch	3/8-16 UNC-2B THD	M10 x 1.5 THD
B1	325.5	101.676 101.625	146.1	N/A	SAE-B spline 13 tooth 16/32 pitch	1/2-13 UNC-2B THD	M12 x 1.75 THD
B2	325.5	101.676 101.625	146.1	N/A	SAE-BB spline 15 tooth 16/32 pitch	1/2-13 UNC-2B THD	M12 x 1.75 THD
C1	327.5	127.075 127.025	181	114.5	SAE-C spline 14 tooth 12/24 pitch	5/8-11 UNC-2B THD	M16 x 2 THD
C3	327.5	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

P3105 Mounting flange



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

P3105 Side port

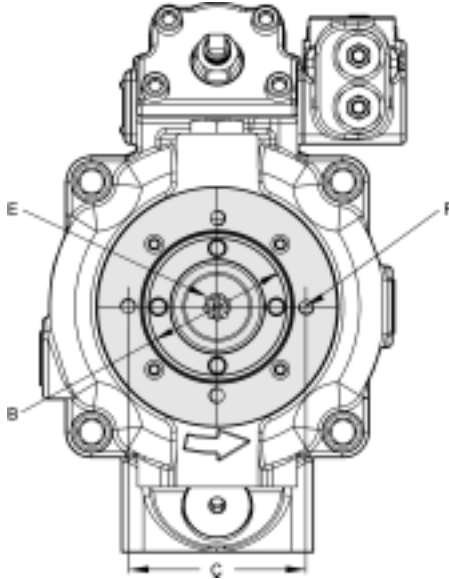


Port ordering code	Inlet port	Outlet port	Inlet gauge port / Outlet gauge port / Airbleed port / Control drain / Signal port
"A" side - UNC	1/2-13 UNC	1/2-13 UNC	SAE-4 straight thread / O-ring port: 7/16-20 UN thread
"B" side - metric	M12 x 1.75	M12 x 1.75	ISO 6149 straight thread / O-ring port: M12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

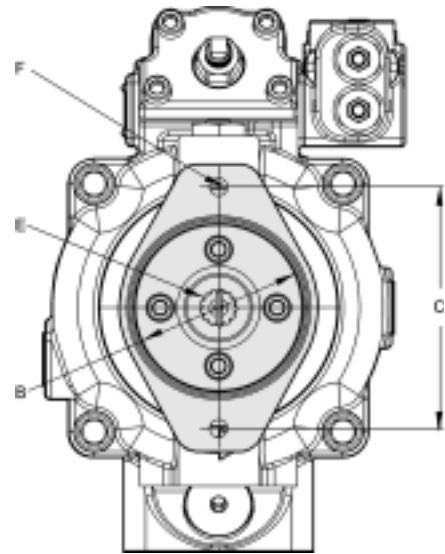
PI P2-P3 UK.PM6.5 RH

P3105 Thru-shaft option

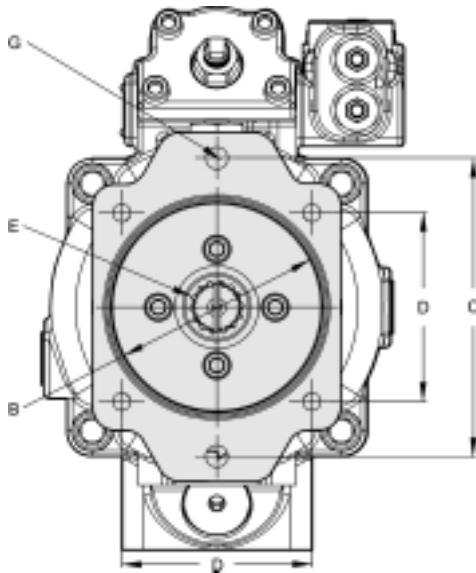
A1 Configuration



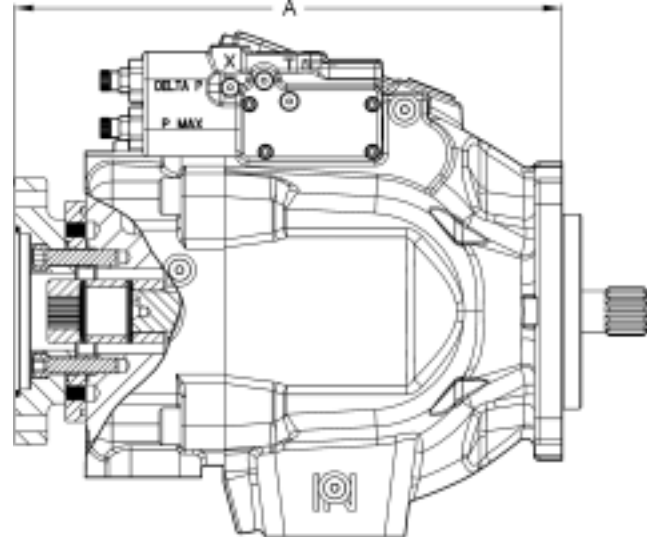
B1 and B2 Configuration



C1 and C3 Configuration



P3105 Partial cut-away of thru-drive area

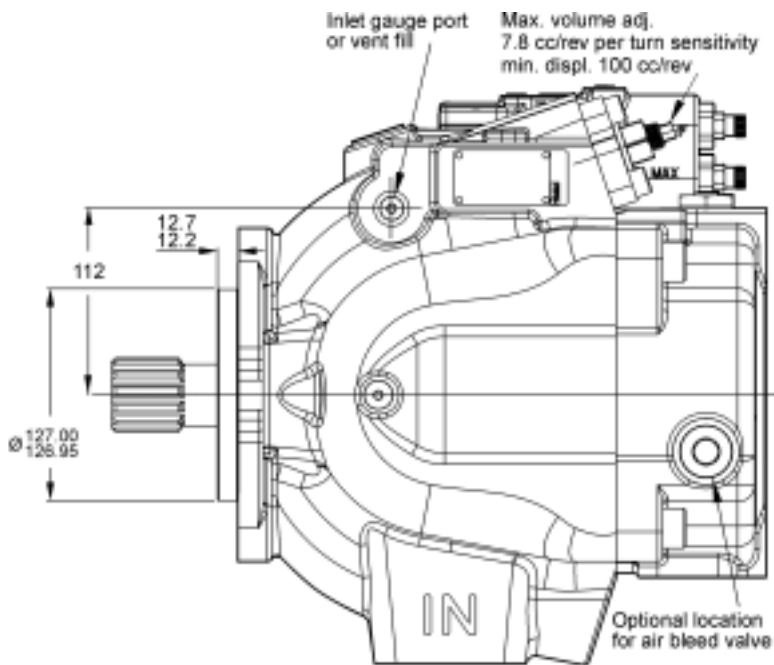
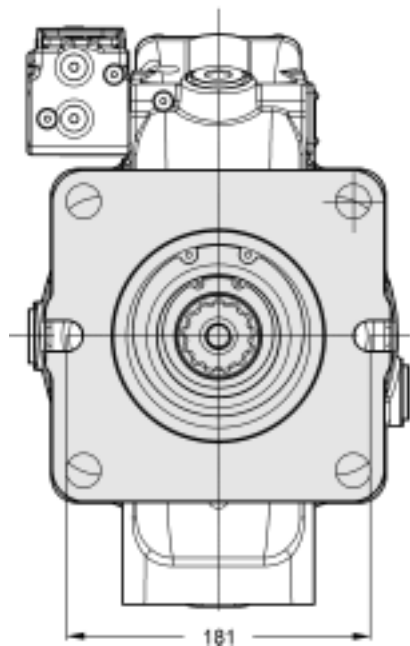


Max. thru-drive torque is 594Nm

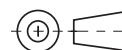
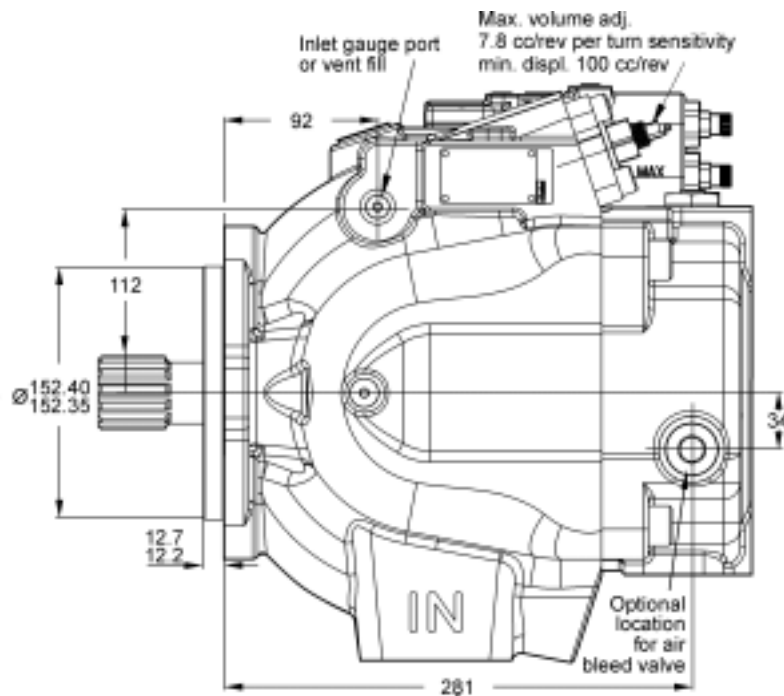
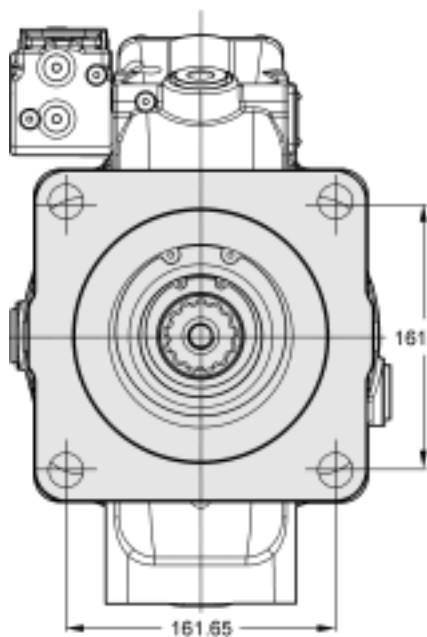
Thru-shaft option	A	B Ø	C	D	E	F UNC	F metric	G UNC	G metric
A1	292.5	82.626 82.575	106.3	N/A	SAE-A spline 9 tooth 16/32 pitch	3/ 16 UNC-2B THD	M10 x 1.5 THD	N/A	N/A
B1	325.5	101.676 101.625	146.1	N/A	SAE-B spline 13 tooth 16/32 pitch	1/2-13 UNC-2B THD	M12 x 1.75 THD	N/A	N/A
B2	325.5	101.676 101.625	146.1	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
C1 C3	327.5	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

PI P2-P3 UK.PM6.5 RH

P3145 Mounting flange
SAE C 2-bolt mounting flange



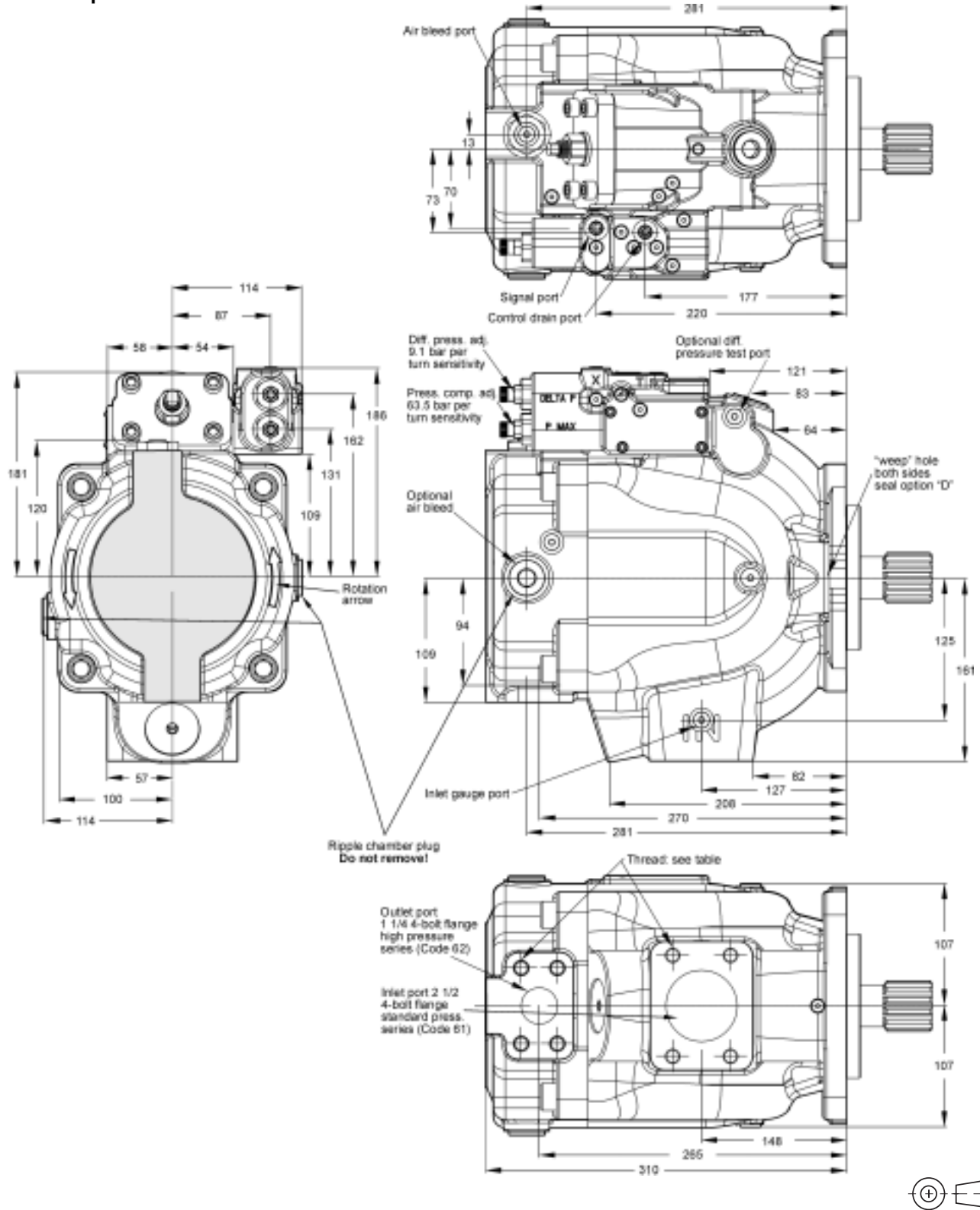
SAE D 4-bolt mounting flange



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

PI P2-P3 UK.PM6.5 RH

P3145 Side port



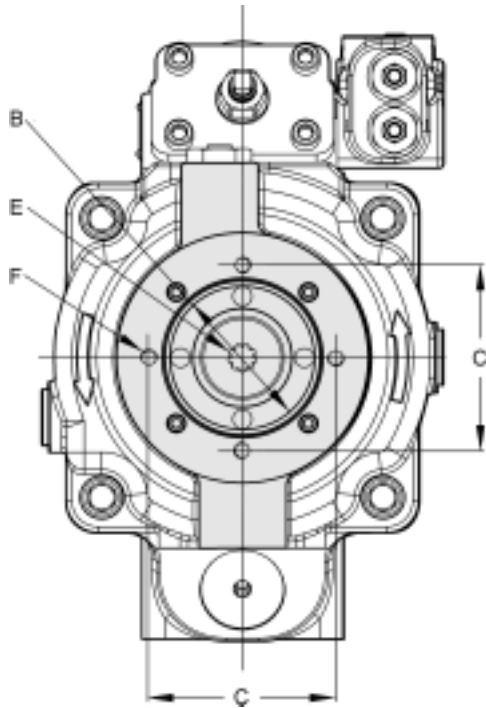
Port ordering code	Inlet port	Outlet port	Inlet gauge port / Outlet gauge port / Airbleed port / Control drain / Signal port
"A" side - UNC	1/2-13 UNC	1/2-13 UNC	SAE-4 straight thread / O-ring port: 7/16-20 UN thread
"B" side - metric	M12 x 1.75	M12 x 1.75	ISO 6149 straight thread / O-ring port: M12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

PI P2-P3 UK.PM6.5 RH

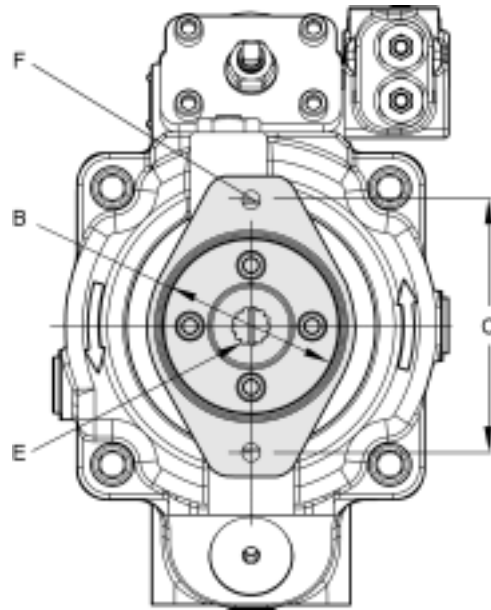


P3145 Thru-shaft option

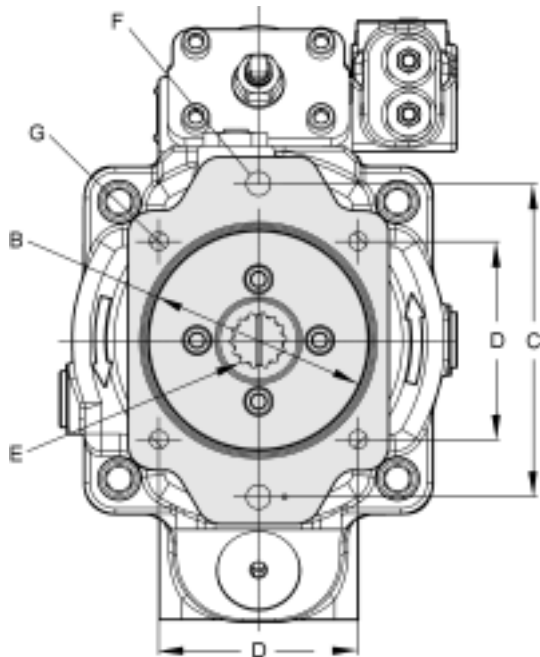
A1 Configuration



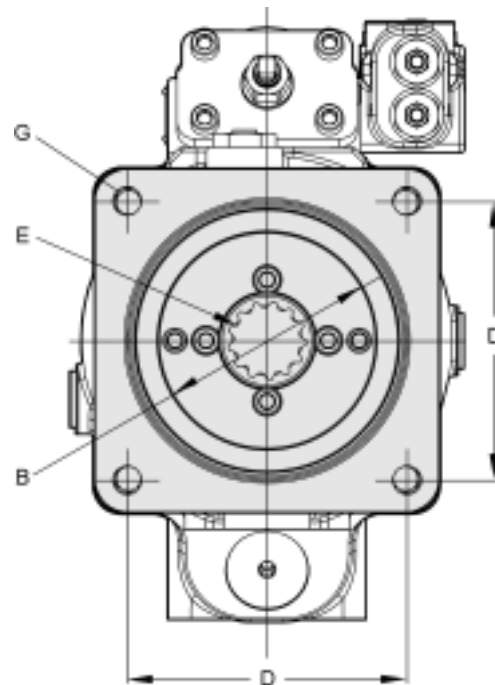
B1 and B2 Configuration



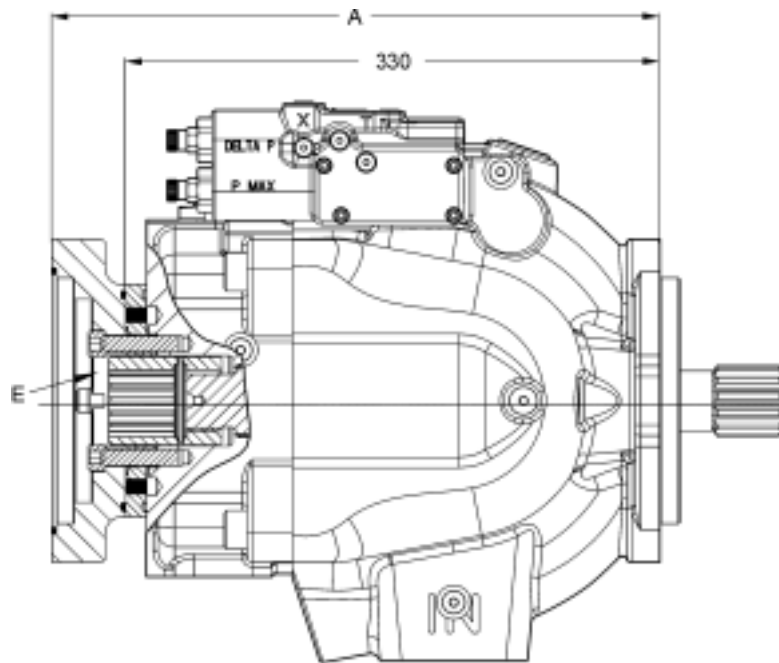
C1, C2, C3 and C4 Configuration



D3 Configuration



P3145 Thru-drive option

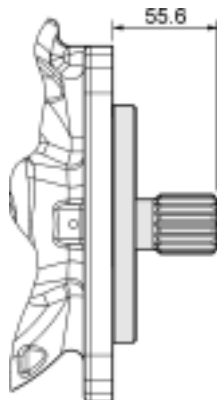


Max. thru-drive torque is 820Nm.

Thru-shaft option	A	B Ø	C	D	E	F UNC	F metric	G UNC	G metric	Pump 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	75.7 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	83.9 kg

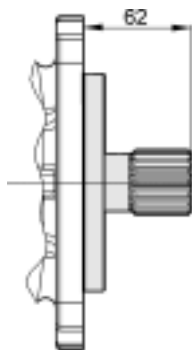
P3 Shaft options

“C1” Shaft option



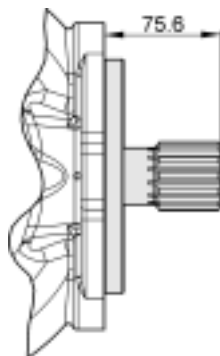
SAE “C” spline
 14 tooth
 12/24 pitch
 30° involute spline
 max. input torque 641Nm

“C2” Shaft option



SAE “CC” spline
 17 tooth
 12/24 pitch
 30° involute spline
 max. input torque 1217Nm

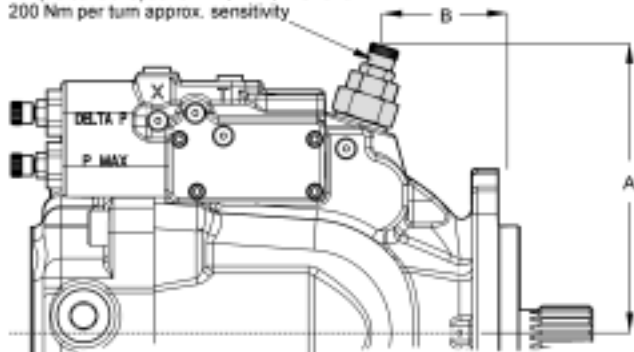
“D1” Shaft option



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

Dimensions

Torque control options “TA”, “TB”, “TC” and “TD”
 200 Nm per turn approx. sensitivity



	P3075	P3105	P3145
A	171	190	202
B	69	69	69

Fluid recommendations

- Normal mineral oil
- Premium hydraulic fluid / HLP oil
- Bio-degradable hydraulic fluid
- Synthetic hydraulic fluid
- Fire resistant fluids

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 functionality 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 - Nitrile, single shaft seal -40 ... +90 °C

D - Nitrile, double shaft seal -40 ... +90 °C

V - Fluorocarbon, single shaft seal -15 ... +150 °C

T - Fluorocarbon, double shaft seal -15 ... +150 °C

Note: The highest fluid temperature will be at the drain port of the pump, up to 20°C higher than in the reservoir.

Note

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