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HYDRAULICS INC

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2025

DISTRIBUTOR OF THE YEAR



**100% GENUINE
MADE IN USA
& GERMANY**



SERIES P2145

AXIAL PISTON PUMP

Variable Displacement



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INVENTORY STATUS

[CHECK PRICING](#)

Unit Availability	
Parts Availability	
Ability to Solve Problems	

FEATURES

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

SPECIFICATIONS

Max. displacement	[cm ³ /rev]	145
Self-priming speed at 1 bar absolute inlet pressure ¹⁾	[rpm]	2200
Nominal pressure ²⁾	[bar]	350
Min. inlet pressure, absolute ¹⁾	[bar]	0.8
Max. inlet pressure, absolute	[bar]	10
Max. case drain pressure, absolute	[bar]	1.5
Min. outlet pressure, absolute	[bar]	15
Noise level at full flow at 1800 rpm and 250 bar	[dbA]	80
Weight with load sense control	[kg]	78
Mass moment of inertia (at axis of shaft)	[kg m ²]	0.0241

¹⁾ Detailed inlet characteristics can be taken from further in this catalogue

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

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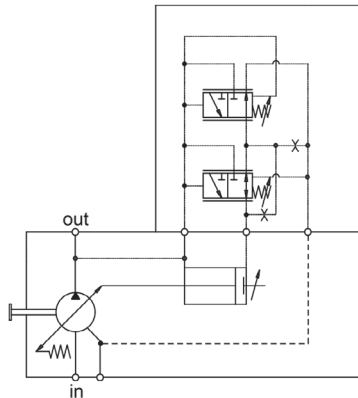
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CONTROL OPTION "PA"

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 destroke 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.

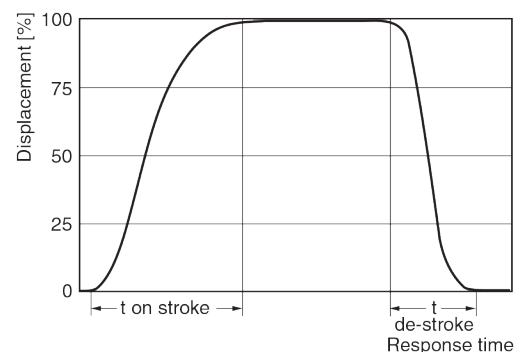


	time on stroke [ms]		time de-stroke [ms]
	against 50 bar	against 220 bar	zero stroke 280 bar
P2060	70	65	30
P2075	70	70	30
P2105	120	90	30
P2145	160	130	30

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

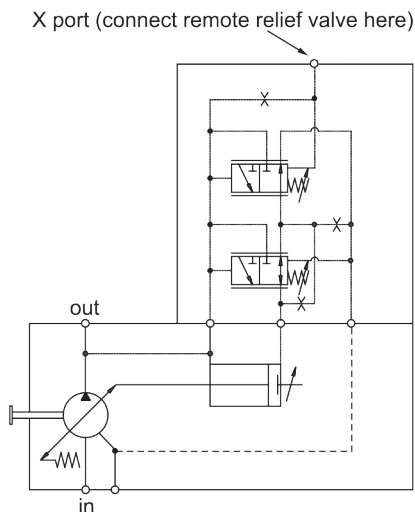
Dynamic characteristic of flow control *



CONTROL OPTION "RA"

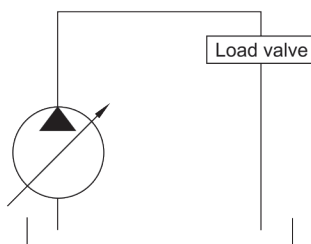
This control allows the pump pressure compensator setting to be adjusted from a remote relief valve. The control acts such that when full pump displacement is achieved the load pressure reaches the maximum setting of the remote relief valve. If pump flow is restricted by the system valve, the pump will 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.

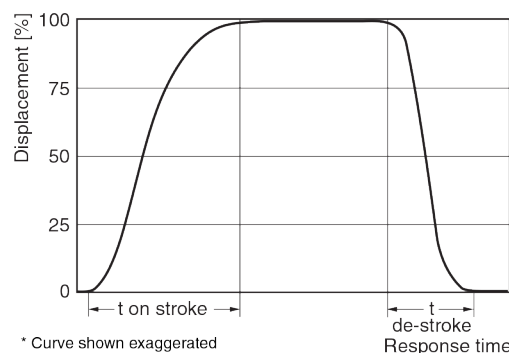


time on stroke [ms]	time de-stroke [ms]	
stand by to 250 bar	250 bar to stand by	50 bar to stand by
120	45	50

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	100 ... 350 bar
Hysteresis and repetitive accuracy	max. 3 bar



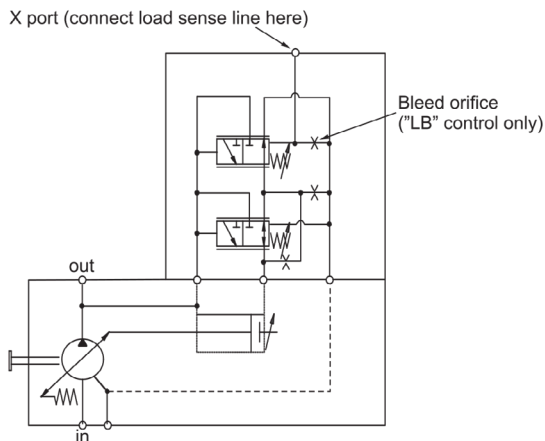
Dynamic characteristic of flow control *



CONTROL OPTIONS "LA" AND "LB"

Load sensing control with maximum pressure control

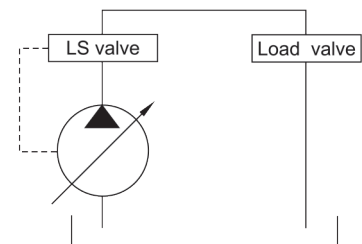
These controls feature load sensing and maximum pressure compensation. Load sense controls are used to match pump flow to system demands.



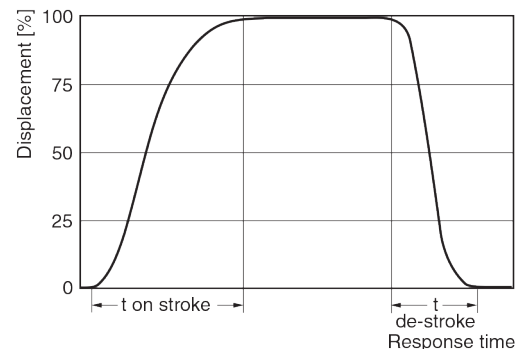
	time on stroke [ms]		time de-stroke [ms]
	stand by to 250 bar	250 bar to stand by	50 bar to stand by
P2060	60	30	40
P2075	80	35	40
P2105	100	40	45
P2145	120	45	50

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



Dynamic characteristic of flow control *



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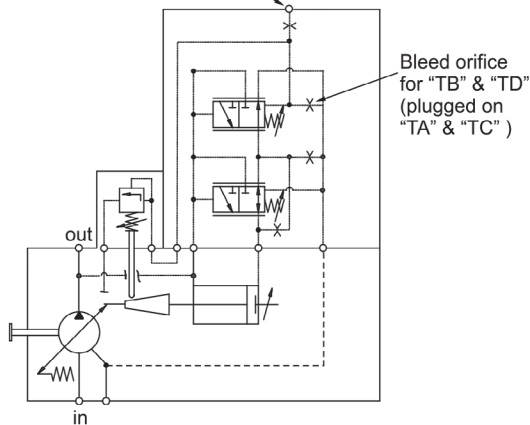
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CONTROL OPTIONS "TA", "TB", "TC" & "TD"

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.

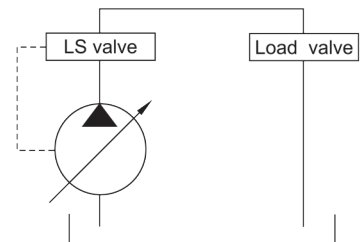
X port (connect load sense line here)



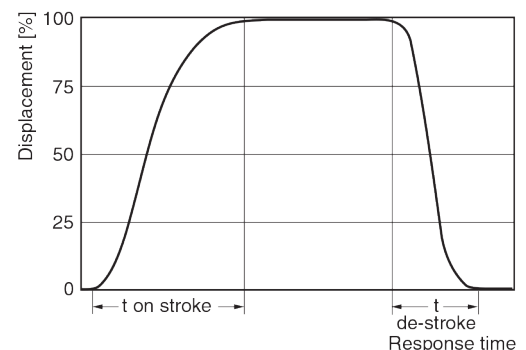
	time on stroke [ms]	time de-stroke [ms]	
	stand by to 250 bar	250 bar to stand by	50 bar to stand by
P2060	60	30	40
P2075	80	35	40
P2105	100	40	45
P2145	120	45	50

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



Dynamic characteristic of flow control *



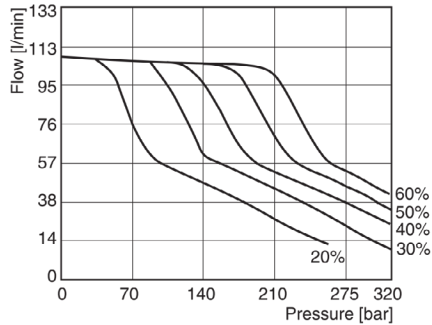
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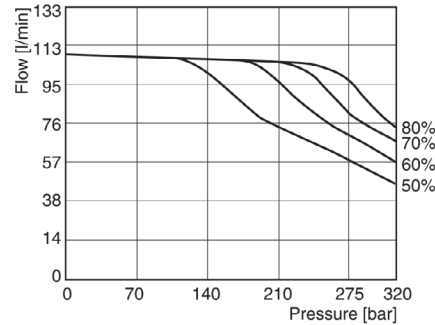
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TYPICAL TORQUE CONTROL CHARACTERISTICS

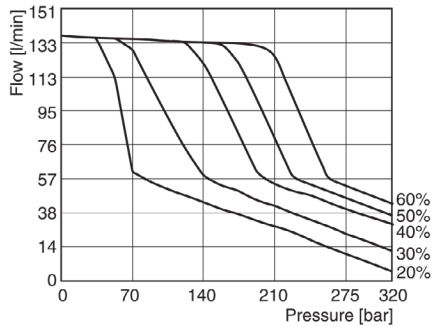
P2060 - 20...60 % Torque (1800 rpm)



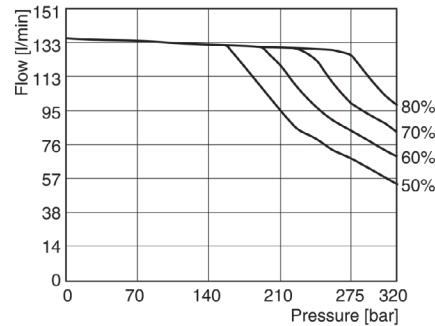
P2060 - 50...90 % Torque (1800 rpm)



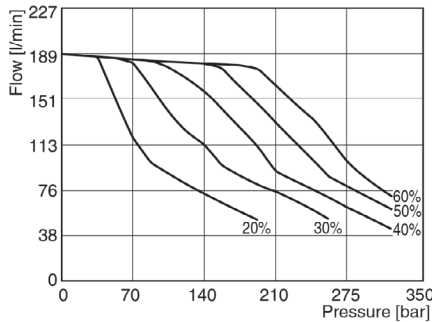
P2075 - 20...60 % Torque (1800 rpm)



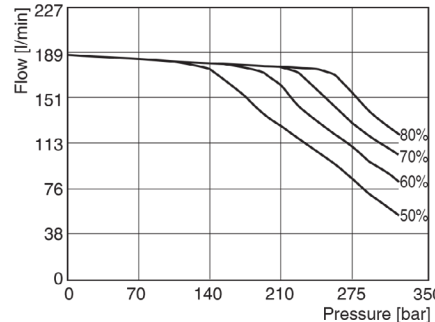
P2075 - 50...90 % Torque (1800 rpm)



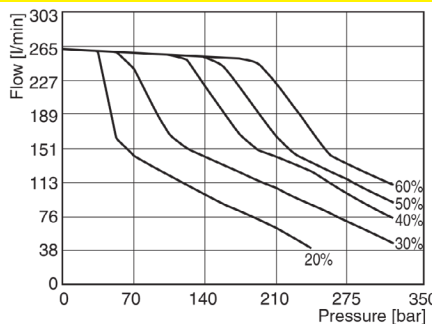
P2105 - 20...60 % Torque (1800 rpm)



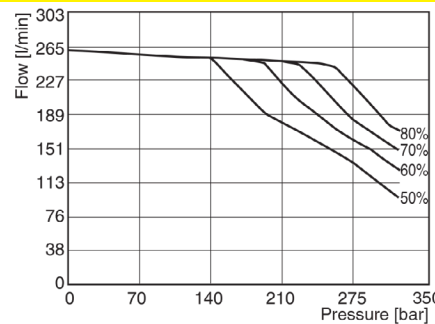
P2105 - 50...90 % Torque (1800 rpm)



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



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



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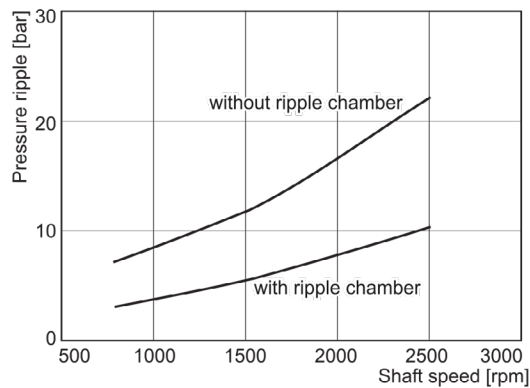
HYDR. GENERATED NOISE / PERFORMANCE CURVES

Ripple chamber

Pressure ripple at 200 bar

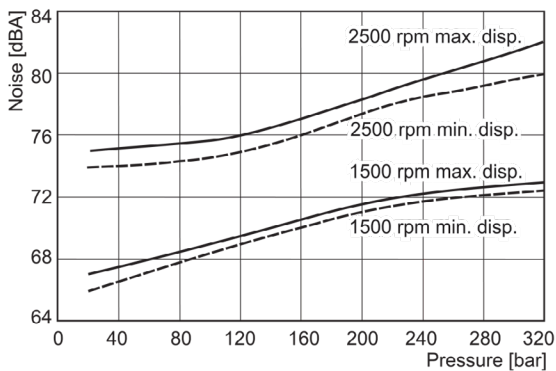
The chart on the right refers to the "Ripple Chamber" technology engineered into the P2 and P3 series pumps. The ripple chamber reduces flow pulsation and due to this pressure pulsation (called "ripple") at the outlet of the pump. This technology reduces the ripple by 40–60% and leads to a significant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

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

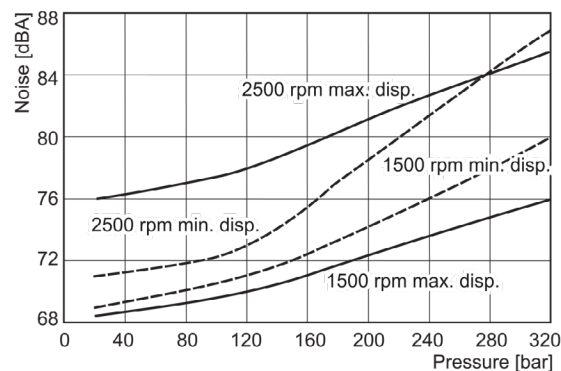


P2 Noise characteristics at max./min. displacement

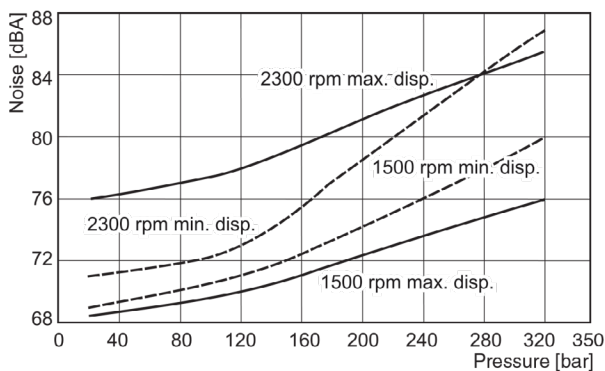
P2060 Noise characteristics



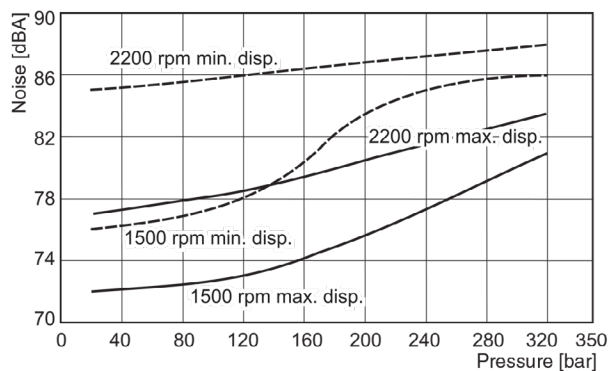
P2075 Noise characteristics



P2105 Noise characteristics



P2145 Noise characteristics



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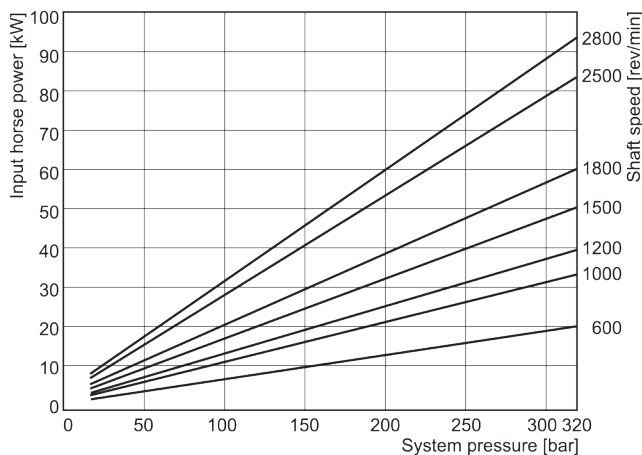
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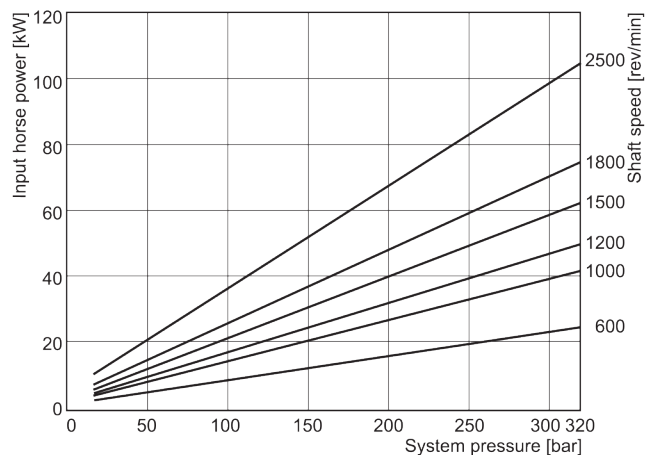
PERFORMANCE CURVES

P2 Series - typical drive power at full displacement

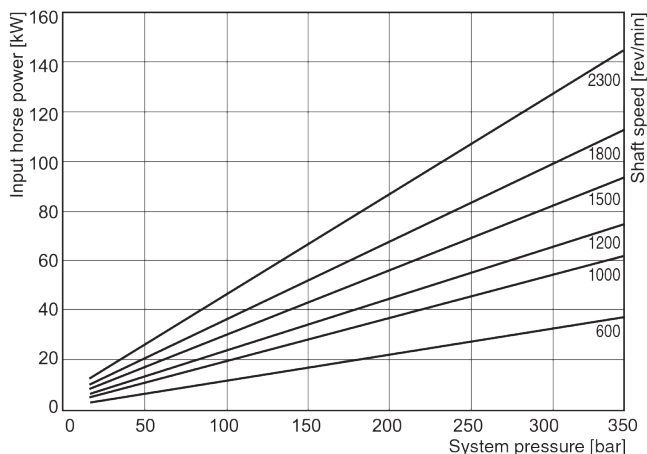
P2060 Input power - full stroke



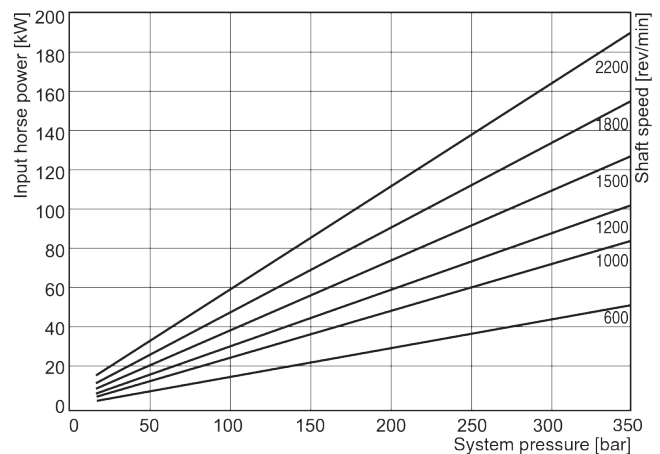
P2075 Input power - full stroke



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.

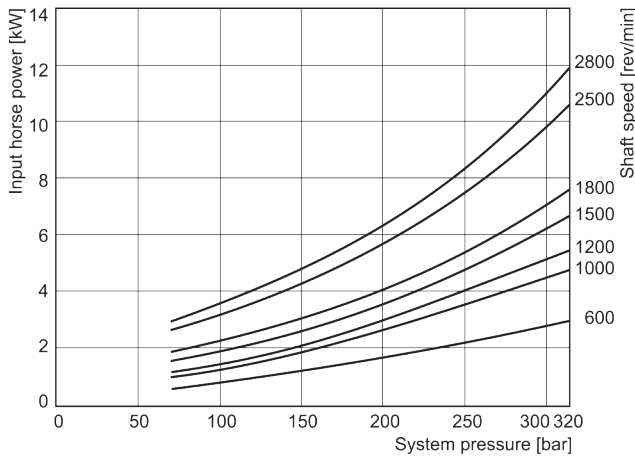
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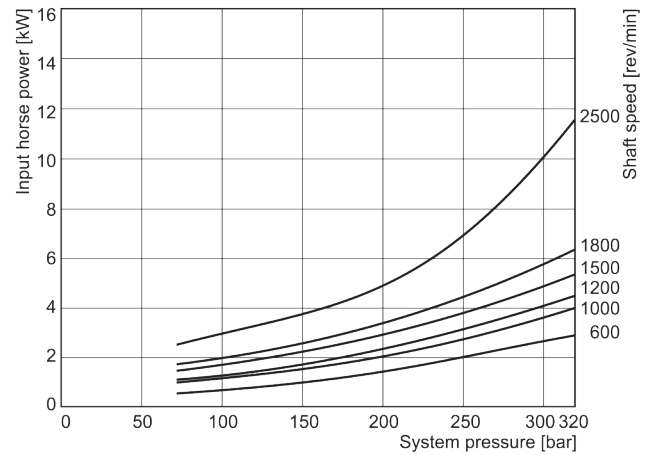
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P2 Series - typical compensated input power

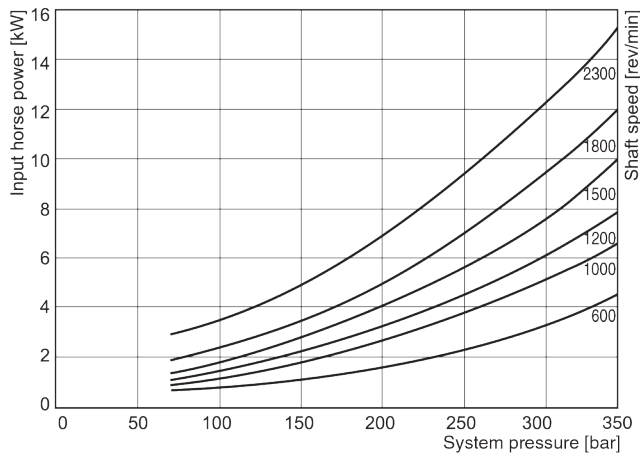
P2060 Input power - zero stroke



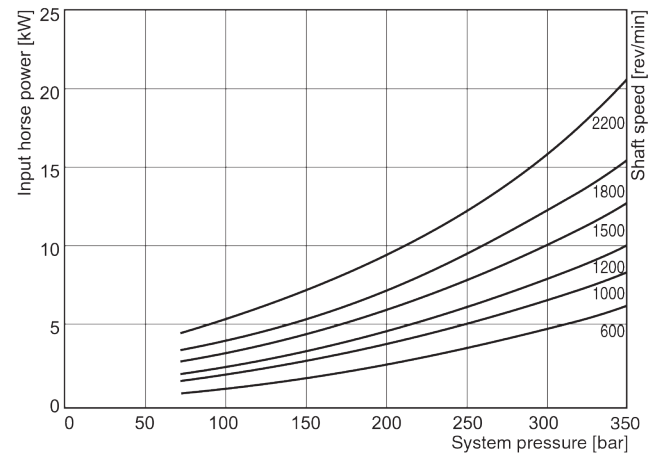
P2075 Input power - zero stroke



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.

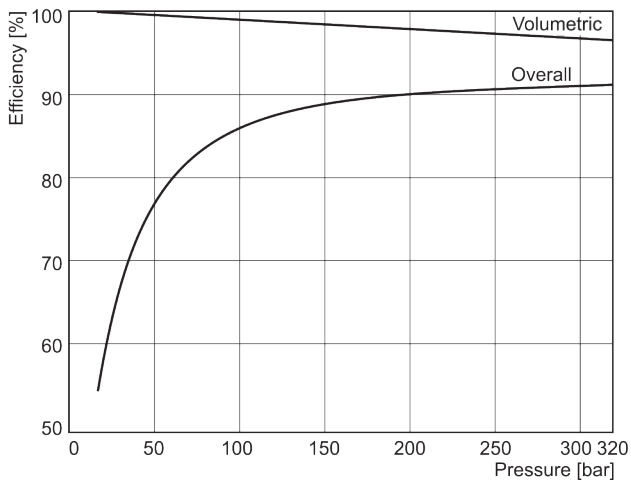
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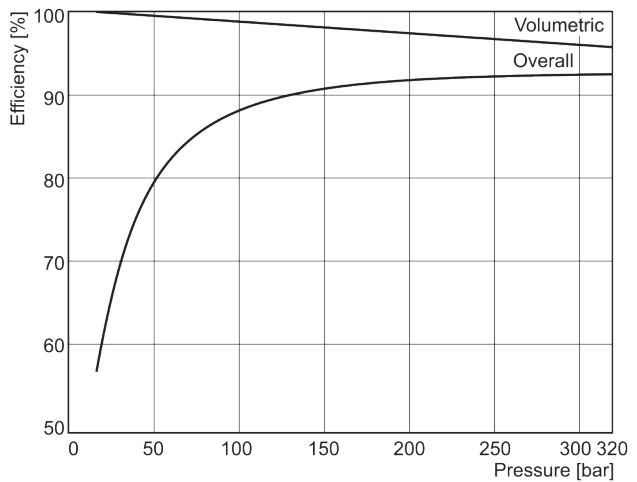
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P2 Series - typical efficiency at full displacement at 1800 rpm

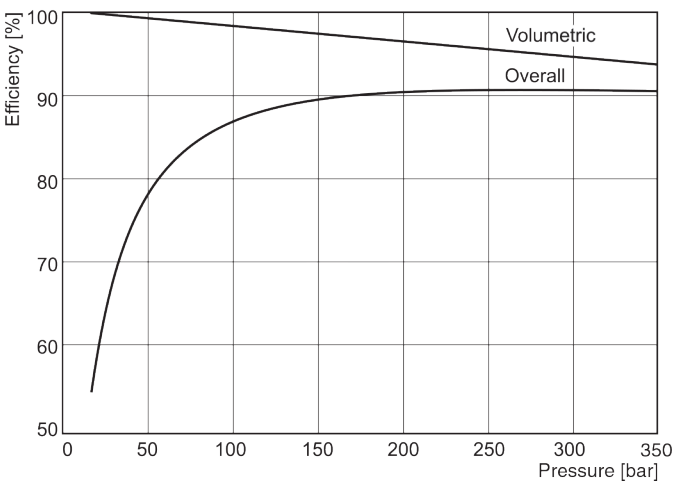
P2060 Efficiency at 1800 rpm



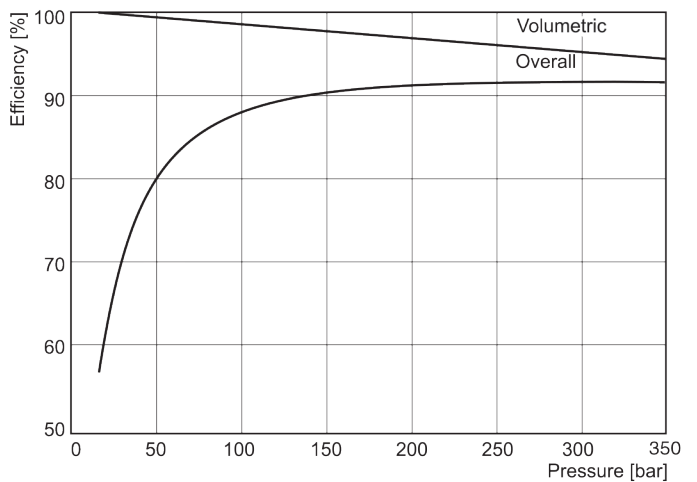
P2075 Efficiency at 1800 rpm



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.

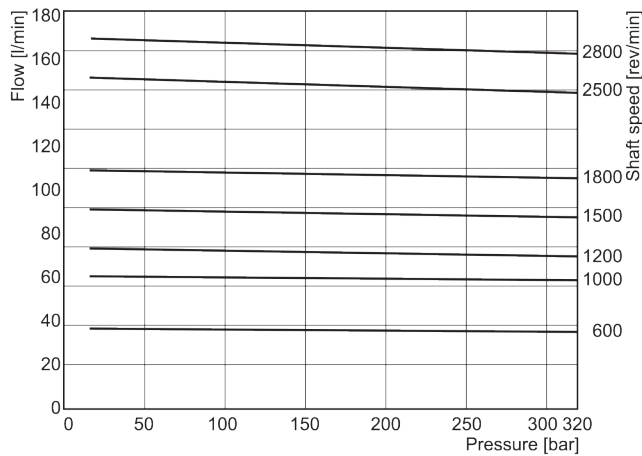
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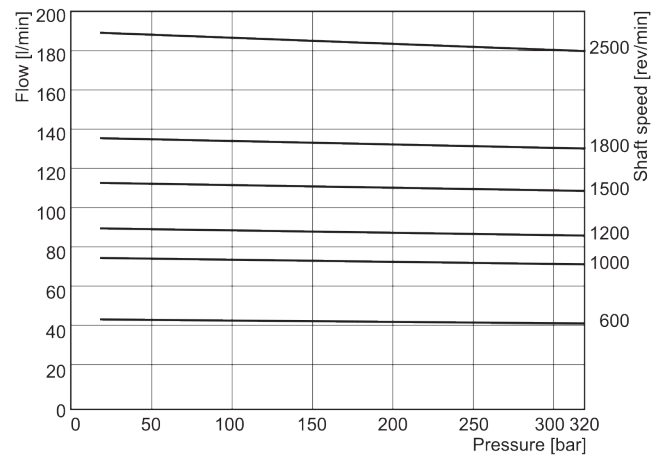
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P2 Series - typical flow vs. pressure

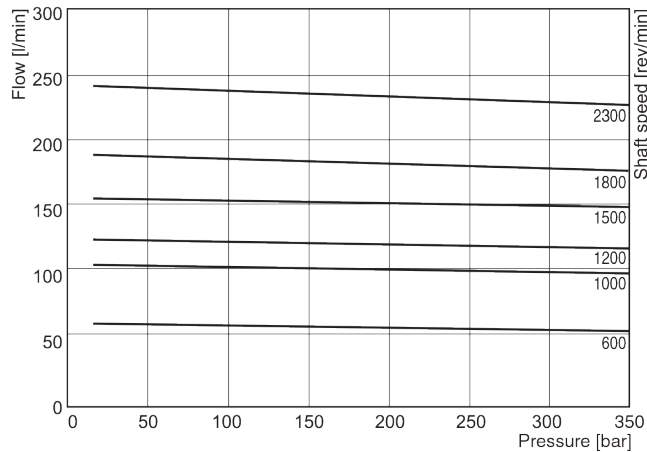
P2060 Outlet flow - full stroke



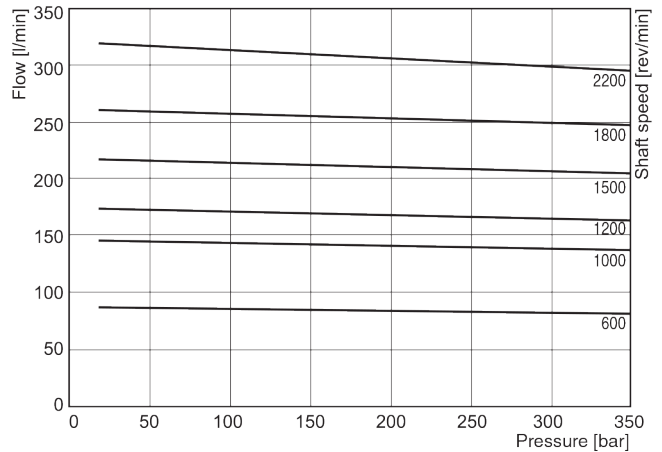
P2075 Outlet flow - full stroke



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.

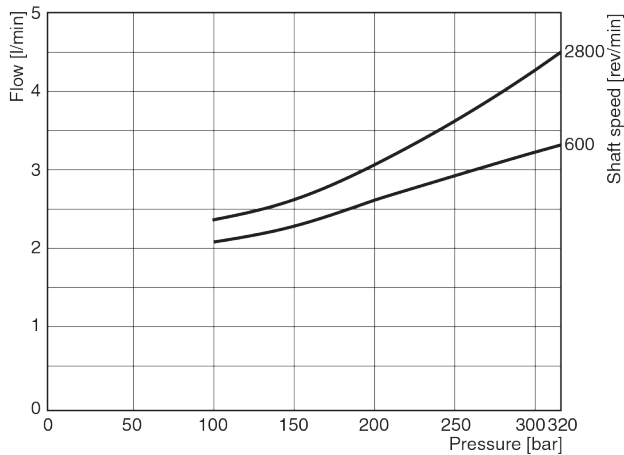
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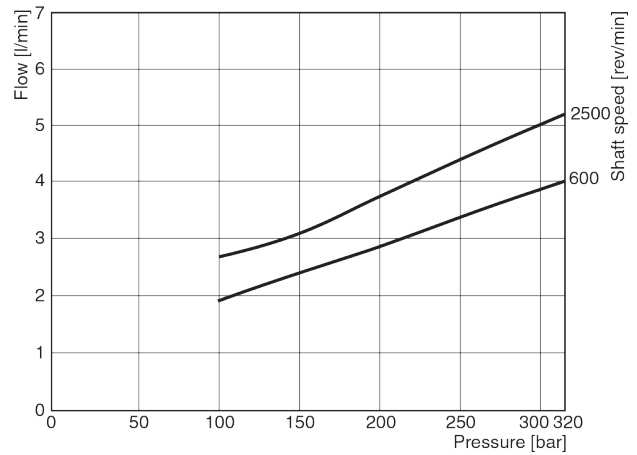
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P2 Series - typical compensated case drain flow

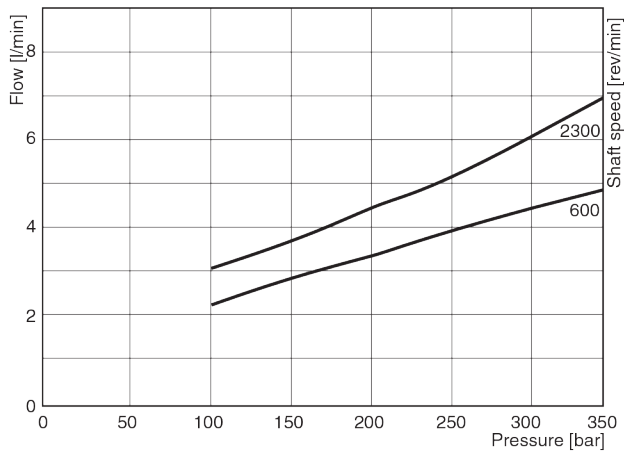
P2060 Drain flow at zero stroke



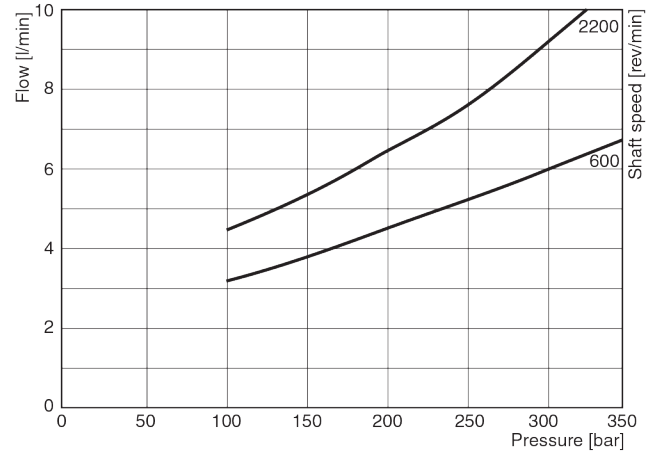
P2075 Drain flow at zero stroke



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.

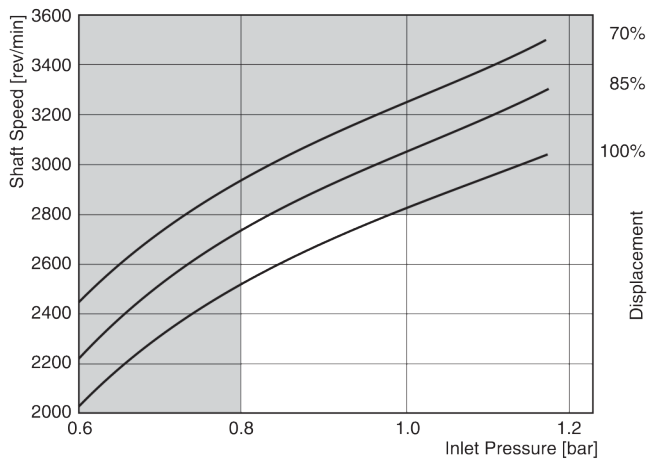
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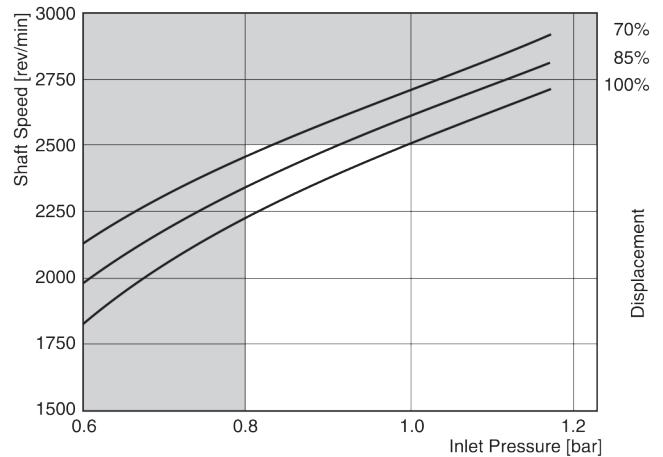
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P2 Series - typical inlet characteristics vs. speed at various percentage displacements

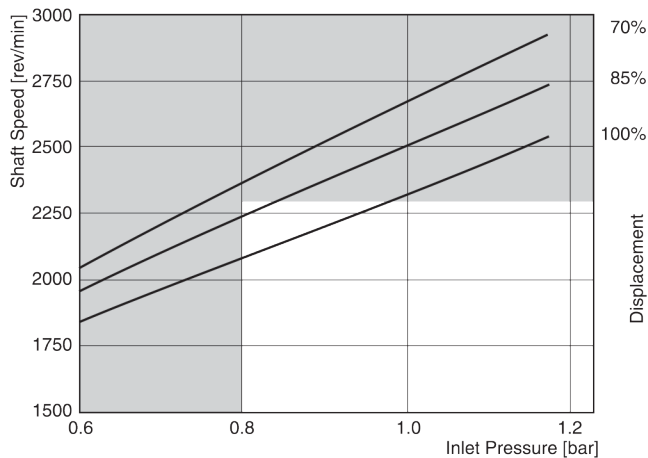
P2060 Inlet characteristics



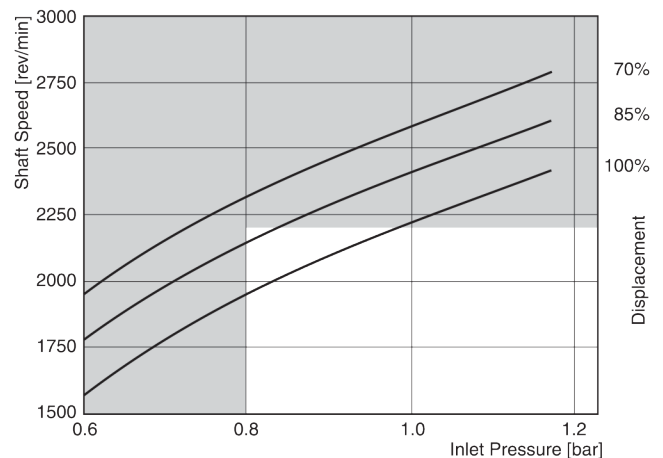
P2075 Inlet characteristics



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.

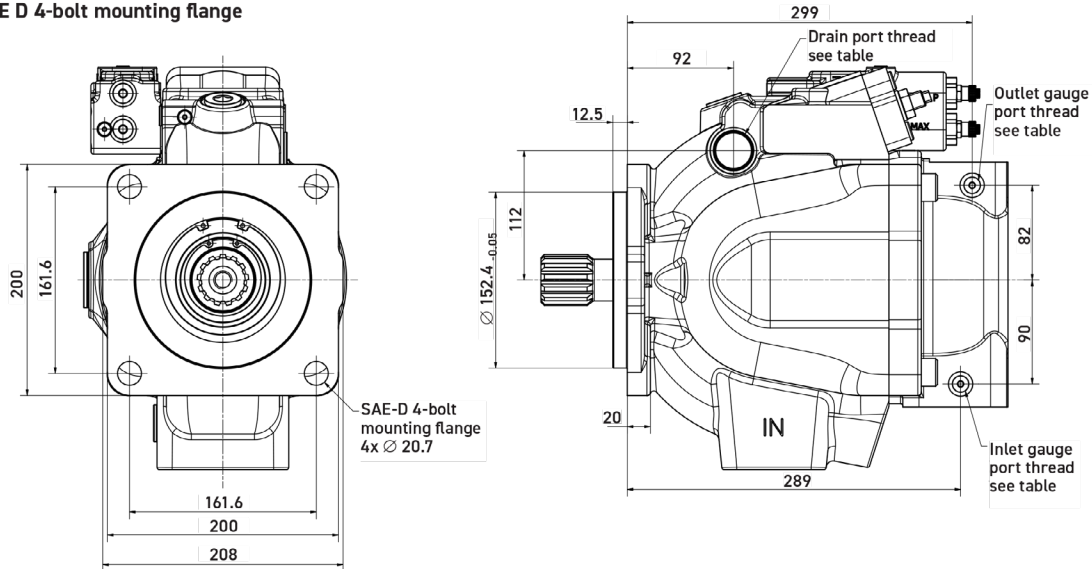
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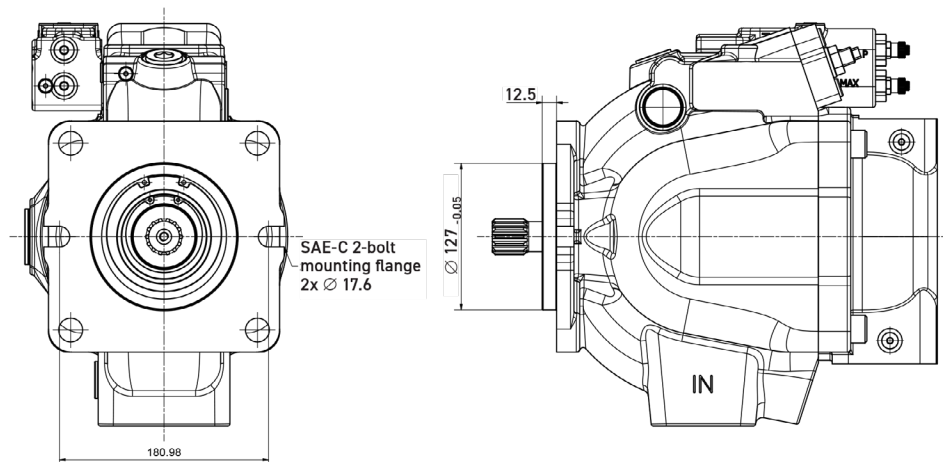
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MOUNTING FLANGE

SAE D 4-bolt mounting flange



SAE C 2-bolt mounting flange



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



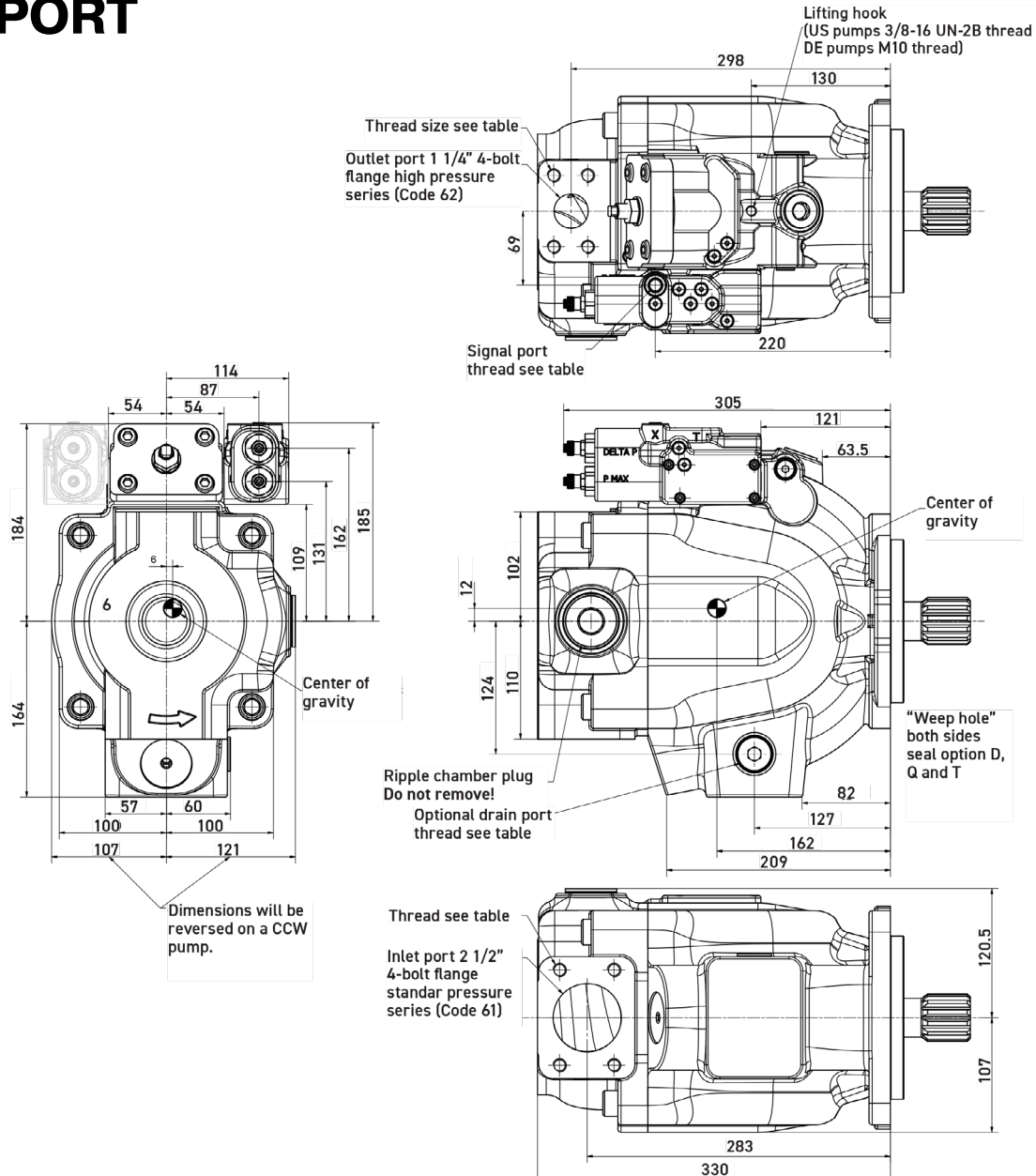
Port ordering code	Drain port	Inlet gauge port / Outlet gauge port
"A" side - UNC	SAE-12 straight thread / O-ring port: 1-1/16-12 UN thread	SAE-4 straight thread / O-ring port: 7/16-20 UN thread
"B" side - metric	ISO 6149 straight thread / O-ring port: M27 x 2 thread	ISO 6149 straight thread / O-ring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

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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 opposite side.



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

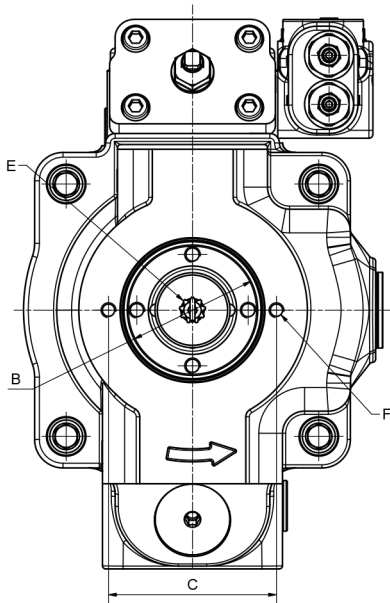
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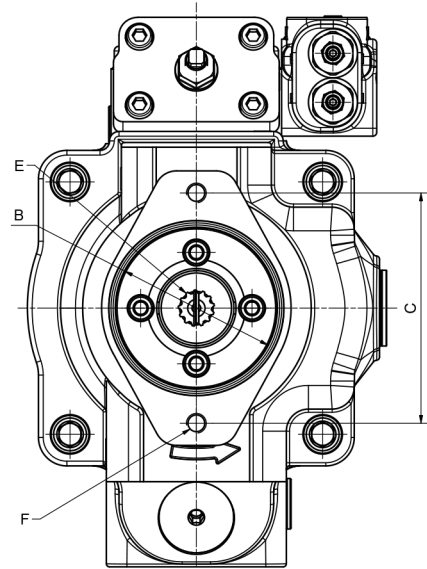
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THRU-DRIVE OPTION

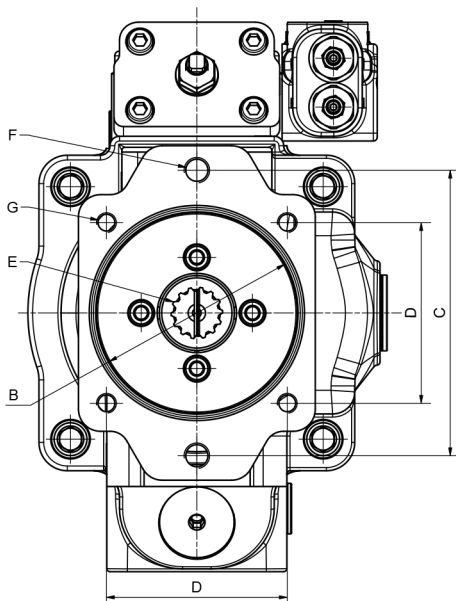
A1 configuration



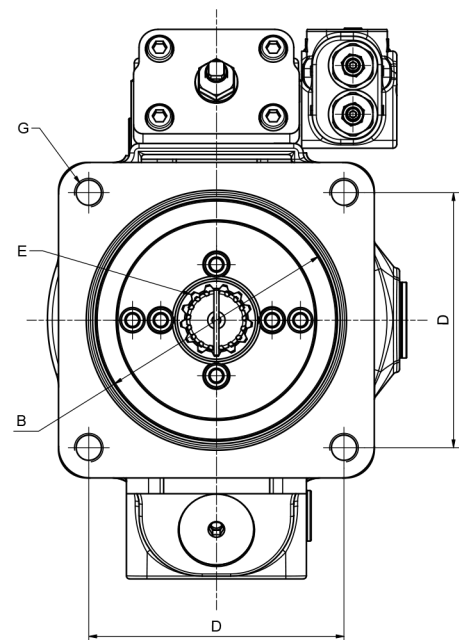
B1 and B2 configurations



C1, C2, C3 and C4 configurations



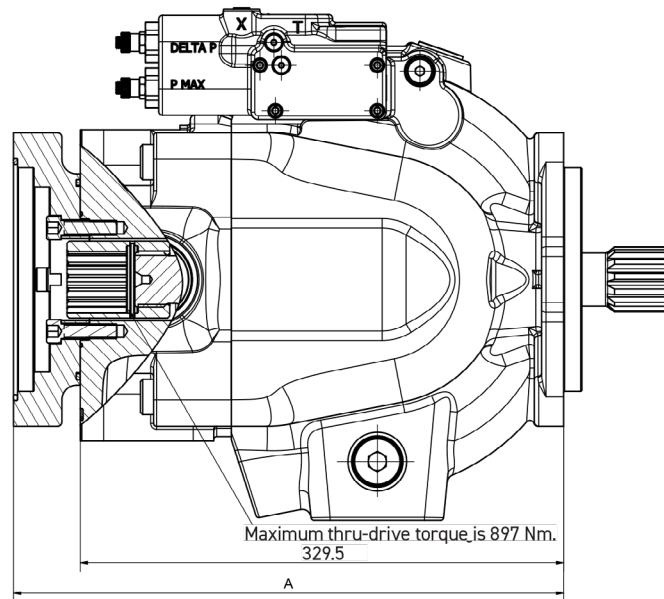
D3 configuration



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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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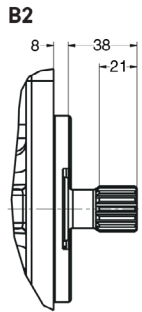
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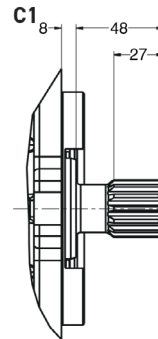
SHAFT OPTIONS



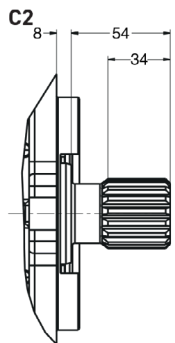
SAE "B" spline
13 tooth
16/32 pitch
30° involute spline
Max. input torque
209 Nm



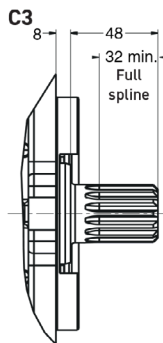
SAE "B-B" spline
15 tooth
16/32 pitch
30° involute spline
Max. input torque
337 Nm



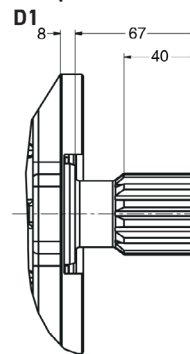
SAE "C" spline
14 tooth
12/24 pitch
30° involute spline
Max. input torque
641 Nm



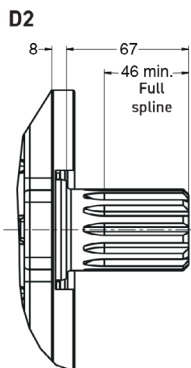
SAE "C-C" spline
17 tooth
12/24 pitch
30° involute spline
Max. input torque
1217 Nm



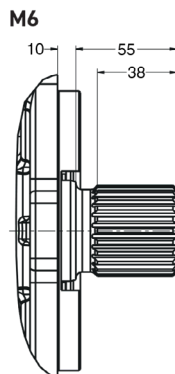
SAE "C" spline
no undercut
14 tooth
12/24 pitch
30° involute spline
Max. input torque
769 Nm



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



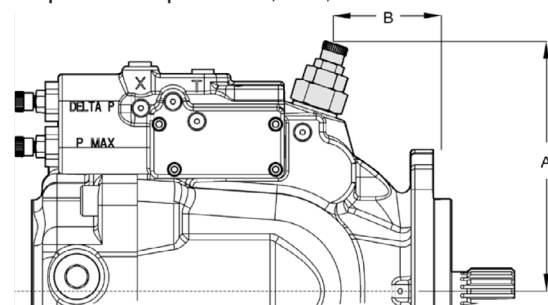
SAE "D" spline
no undercut
13 tooth
8/16 pitch
30° involute spline
Max. input torque
2041 Nm



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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GENERAL INSTALLATION INFORMATION

Multiple pump combinations - Maximum moment

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

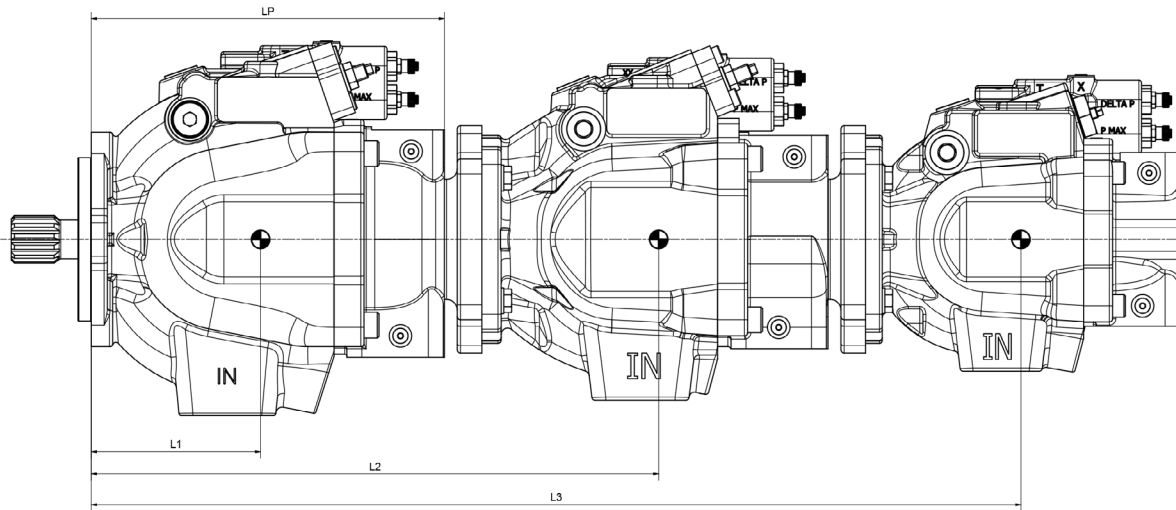


Chart 1. Maximum moment and pump dimensions

		P2060	P2075	P2105	P2145
Maximum Moment	[Nm]	197	266	425	556
Weight Force	[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:

$$\text{Moment } M = (L1*W1 + L2*W2 + L3*W3 + \dots)$$

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

The fluid recommended for use in these pumps has a petroleum base and contains agents which provide oxidation inhibition and anti-rust, anti-foam and de-aerating properties as described in PARKER standard HF-1. Where anti-wear additive fluids are specified, see PARKER standard HF-0.

Viscosity

Min. viscosity for short periods:	10 mm ² /s (cSt)
Normal operating viscosity:	15...40 mm ² /s (cSt)
Max. viscosity for short periods:	1000 mm ² /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/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.



WARNING — USER RESPONSIBILITY

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

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