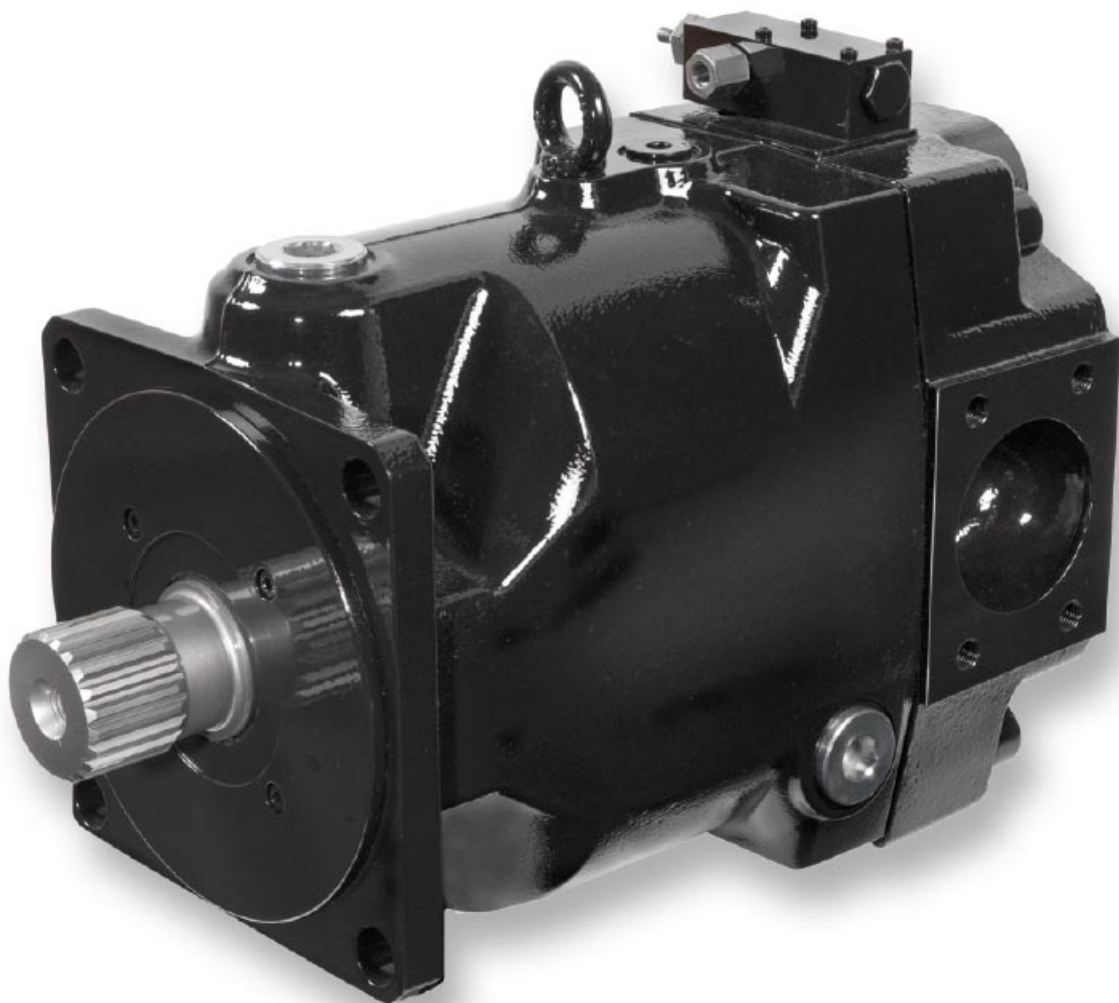




Axial Piston Pump

PV016 - PV360
Variable Displacement

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



ENGINEERING YOUR SUCCESS.

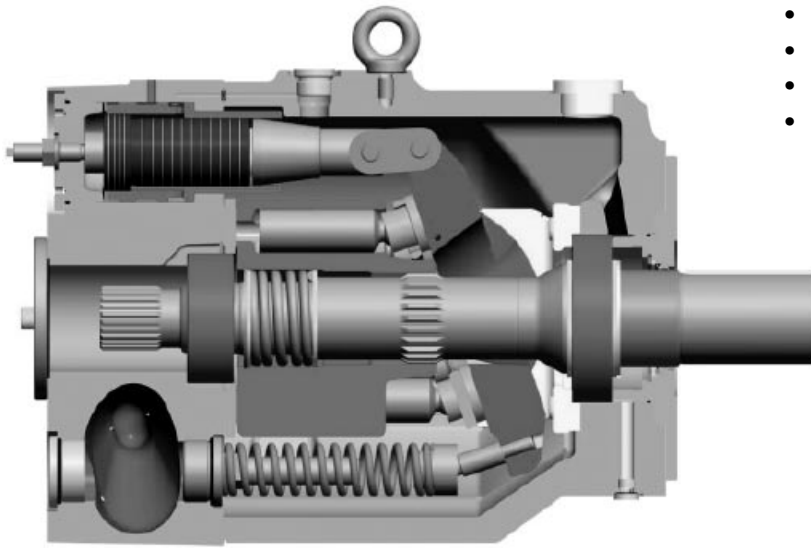
Contents	Page
Introduction and general Information.....	4
Technical Data	5
Ordering Code	6
Pressure Controls.....	18
Remote Pressure Controls	20
Load Sensing Controls	22
Horse Power/Torque Controls.....	26
Performance Curves.....	30
Electronic P/Q Controls	32
Proportional Displacement Control.....	32
Electronic P/Q Controls	33
Efficiency and Case Drain Flows.....	34
Performance Curves and Case Drain Flows PV 360.....	39
Accessories Control.....	40
Proportional pressure relief valve PVACRE*	42
Accessories Control.....	43
Dimensions.....	44
Control Dimensions	56
Electronic Module PQDXXA.....	60
Through Drive, Mounting Kits	61
Through Drive, Flange Load Limitation	62
Multiple Pump Combinations - Maximum Moment.....	62
Through Drive, Shaft Load Limitations	63
PV360 shaft options	64

With thru drive for single and multiple pumps

Swash plate type for open circuit

Technical Features

- Low noise level
- Fast response
- Service-friendly
- High self-priming speed
- Compact design
- Thru drive for 100% nominal torque

**General Information****Fluid recommendations**

Premium quality hydraulic mineral fluid is recommended, like HLP oils to DIN 51524, part 2. Bruggen- value has to be 30 N/mm² minimum for general application and 50 N/mm² for heavily loaded hydraulic equipment and fast cycling machines and/or high dynamic loads, measured in accordance with DIN 51 347-2. See also Document HY30-3248/UK Parker Hydraulic Fluids.

Viscosity

The normal operating viscosity should range between 16 and 100 mm²/s (cSt). Max. start-up viscosity is 800 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 4406:1999. The quality of filter elements should be in accordance with ISO standards. General hydraulic systems for satisfactory operation: Class 20/18/15, according to ISO 4406:1999. Recommended cleanliness for maximum component life and functionality: Class 18/16/13, according to ISO 4406:1999

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 -40 ... +90 °C

Note: The highest fluid temperature will be at the drain port of the pump, up to 25 °C higher than in the reservoir.

		PV016	PV020	PV023	PV028	PV032	PV040	PV046
Frame size		1	1	1	1	2	2	2
Max. Displacement	[cm ³ /rev.]	16	20	23	28	32	40	46
Output flow at 1500 rpm	[l/min]	24	30	34,5	42	48	60	69
Nominal pressure pN	[bar]	350	350	350	350	350	350	350
Max. pressure pmax at 20% working cycle ¹⁾	[bar]	420	420	420	420	420	420	420
Case drain pressure, continuous	[bar]	0.5	0.5	0.5	0.5	0.5	0.5	0.55
Case drain pressure, max. peak	[bar]	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Min. Inlet pressure, abs.	[bar]	0.8	0.8	0.8	0.8	0.8	0.8	0.8
Max. Inlet pressure	[bar]	16	16	16	16	16	16	16
Input power at 1500 rpm and 350 bar	[kW]	15.5	19.5	22.5	27.5	31	39	45
Max speed at 1 bar, abs, inlet pressure	[rpm]	3000	3000	3000	3000	2800	2800	2800
Moment of inertia	[kgm ²]	0.0017	0.0017	0.0017	0.0017	0.0043	0.0043	0.0043
Weight	[kg]	19	19	19	19	30	30	30

		PV063	PV080	PV092	PV140	PV180	PV270	PV360
Frame size		3	3	3	4	4	5	5
Max. Displacement	[cm ³ /rev.]	63	80	92	140	180	270	360
Output flow at 1500 rpm	[l/min]	94.5	120	138	270	405	405	540
Nominal pressure pN	[bar]	350	350	350	350	350	350	350
Max. pressure pmax at 20% working cycle ¹⁾	[bar]	420	420	420	420	420	420	420
Case drain pressure, continuous	[bar]	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Case drain pressure, max. peak	[bar]	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Min. Inlet pressure, abs.	[bar]	0.8	0.8	0.8	0.8	0.8	0.8	0.8
Max. Inlet pressure	[bar]	16	16	16	16	16	16	16
Input power at 1500 rpm and 350 bar	[kW]	61.5	78	89.5	136	175	263	350
Max speed at 1 bar, abs, inlet pressure	[rpm]	2800	2500	2300	2400	2200	1800	1750
Moment of inertia	[kgm ²]	0.018	0.018	0.018	0.030	0.030	0.098	0.103
Weight	[kg]	59	59	59	90	90	172	180

1) Special control options required.

P	V					R	1	K	1	T	1	N			
----------	----------	--	--	--	--	----------	----------	----------	----------	----------	----------	----------	--	--	--

axial piston
pump
variable
displacement

size
and
displacement

rotation

variation

mounting
interface

threads
code

thru drive
code

coupling
code

seals

control

see next page →

Code	Displacement	Size
016	16 cm ³ /rev	1
020	20 cm ³ /rev	1
023	23 cm ³ /rev	1
028	28 cm ³ /rev	1

Code	Seals
N	NBR
V	FPM
W	NBR with PTFE shaft seal
P	FPM with PTFE shaft seal

Code	Rotation ¹⁾
R	Clockwise
L	Counter clockwise

¹⁾ When looked on shaft

Code	Variation
1	Standard
9	Special adjustment ²⁾

²⁾ requires Kxxxx number

Code	Mounting interface		Shaft
K	metr. ISO	4-hole flange Ø100 mm	Cylindric, key
L	3019/2	4-hole flange Ø100 mm	Splined, DIN 5480
D	SAE	4-hole flange SAE B	Cylindric, key
E	ISO	4-hole flange SAE B-B	Splined, SAE
	3019/1		

Code	Port ³⁾	Threads ⁴⁾
1	BSPP	metric
3	UNF	UNC
7	ISO 6149	UNC
8 ⁵⁾	ISO 6149	metric

Code	Coupling for thru drive	as single part ⁶⁾
1	Single pump, no coupling	
H	with coupling 25 x 1.5 x 15, DIN 5480	MK-PVBGxK01
Y	with coupling SAE A 9T-16/32 DP	MK-PVBGxK11
A	with coupling SAE - 11T-16/32 DP	MK-PVBGxK12
B	with coupling SAE B 13T-16/32 DP	MK-PVBGxK13
C	with coupling SAE B-B 15T-16/32 DP	MK-PVBGxK14

Code	Thru drive option	
	No adaptor for 2nd pump	
T	Single pump prepared for thru drive	
	with adaptor for 2nd pump	as single part ⁶⁾
Y	SAE AA, Ø 50.8 mm	MK-PVBGxYMN
A	SAE A, Ø 82.55 mm	MK-PVBGxAMN
B	SAE B, Ø 101.6 mm	MK-PVBGxBMN
G	metric, Ø 63 mm	MK-PVBGxGMN
H	metric, Ø 80 mm	MK-PVBGxHMN
J	metric, Ø 100 mm	MK-PVBGxJMN

See dimensions for details

⁶⁾ to be ordered separately as single part
 x= Frame size, see displacement.

³⁾ Drain, gauge and flushing ports

⁴⁾ All mounting and connecting threads

⁵⁾ Mounting interface, code K and L only

Code			Control options
0	0	1	No control
1	0	0	With cover plate, no control function
M	M		Standard pressure control, integrated pilot valve
M	R		Remote pressure control, integrated pilot valve
M	F		Load Sensing (flow) control, integrated pilot valve
M	T		Two spool LS control
			Control variation
		C	Standard version ¹⁾
		1	NG6 interface top side for pilot valves
		W	With unloading function, 24VDC solenoid ¹⁾
		K	Prop.-pilot valve type PVACRE..35 mounted
		Z	Without integrated pilot valve, NG6 interface, for mounting of accessory code PVAC*
		P	MT1 with mounted pilot valve PVAC1P ²⁾

1) not for MT
2) only for MT

Horse power / Torque control												
Displacem.						Code						
016									Nominal HP at 1.500 rpm	Nominal torque		
028												
						B			3 kW	20 Nm		
						C			4 kW	25 Nm		
						D			5.5 kW	35 Nm		
						E			7.5 kW	50 Nm		
						G			11 kW	71 Nm		
						H			15 kW	97 Nm		
						K			18.5 kW	120 Nm		
Function												
							L		Horse power control with pressure control			
							C		Horse power control with load sensing (single spool)			
Control variation												
							C		Standard version			
							1		NG 6 interface top side			
							W		With unloading function, 24 VDC solenoid			
							K		Prop.-pilot valve type PVACRE..35 mounted			
							Z		Without integrated pilot valve, NG6 interface, for mounting of accessory code PVAC*			

Code			Control option
			electro hydraulic control
F	P	V	Proportional displacement control, no pressure compensation
U	P		Proportional displacement control, with pressure compensation
			Control variation
		R	pilot operated pressure control, open NG6 interface
		K	pilot operated pressure control, proportional pilot valve type PVACRE..35 mounted
		M	pilot operated pressure control, pressure sensor and proportional pilot valve type PVACRE..35 mounted for pressure control and/or power control

P	V					R	1	K	1	T	1	N			
----------	----------	--	--	--	--	----------	----------	----------	----------	----------	----------	----------	--	--	--

axial piston
pump
variable
displacement

size
and
displacement

rotation

variation

mounting
interface

threads
code

thru drive
code

coupling
code

seals

control

see next page →

Code	Displacement	Size
032	32 cm ³ /rev	2
040	40 cm ³ /rev	2
046	46 cm ³ /rev	2

Code	Seals
N	NBR
V	FPM
W	NBR with PTFE shaft seal
P	FPM with PTFE shaft seal

Code	Rotation ¹⁾
R	Clockwise
L	Counter clockwise

¹⁾ When looked on shaft

Code	Variation
1	Standard
9	Special adjustment ²⁾

²⁾ requires Kxxxx number

Code	Mounting interface		Shaft
K	metr. ISO	4-hole flange Ø125 mm	Cylindric, key
L	3019/2	4-hole flange Ø125 mm	Splined, DIN 5480
D	SAE	4-hole flange SAE C	Cylindric, key
E	ISO	4-hole flange SAE C	Splined, SAE
	3019/1		

Code	Port ³⁾	Threads ⁴⁾
1	BSPP	metric
3	UNF	UNC
7	ISO 6149	UNC
8 ⁵⁾	ISO 6149	metric

³⁾ Drain, gauge and flushing ports

⁴⁾ All mounting and connecting threads

⁵⁾ Mounting interface, code K and L only

Code	Coupling for thru drive	as single part ⁶⁾
1	Single pump, no coupling	
H	with coupling 25 x 1.5 x 15, DIN 5480	MK-PVBGxK01
J	with coupling 32 x 1.5 x 20, DIN 5480	MK-PVBGxK02
Y	with coupling SAE A 9T-16/32 DP	MK-PVBGxK11
A	with coupling SAE - 11T-16/32 DP	MK-PVBGxK12
B	with coupling SAE B 13T-16/32 DP	MK-PVBGxK13
C	with coupling SAE B-B 15T-16/32 DP	MK-PVBGxK14
D	with coupling SAE C 14T-12/24 DP	MK-PVBGxK15

Code	Thru drive option	
	No adaptor for 2nd pump	
T	Single pump prepared for thru drive	
	with adaptor for 2nd pump	as single part ⁶⁾
A	SAE A, Ø 82.55 mm	MK-PVBGxAMN
B	SAE B, Ø 101.6 mm	MK-PVBGxBMN
C	SAE C, Ø 127 mm	MK-PVBGxCMN
G	metric, Ø 63 mm	MK-PVBGxGMN
H	metric, Ø 80 mm	MK-PVBGxHMN
J	metric, Ø 100 mm	MK-PVBGxJMN
K	metric, Ø 125 mm	MK-PVBGxKMN

See dimensions for details

⁶⁾ to be ordered separately as single part
 x= Frame size, see displacement.

Code			Control options
0	0	1	No control
1	0	0	With cover plate, no control function
M	M		Standard pressure control, integrated pilot valve
M	R		Remote pressure control, integrated pilot valve
M	F		Load Sensing (flow) control, integrated pilot valve
M	T		Two spool LS control
			Control variation
		C	Standard version ¹⁾
		1	NG6 interface top side for pilot valves
		W	With unloading function, 24VDC solenoid ¹⁾
		K	Prop.-pilot valve type PVACRE..35 mounted
		Z	Without integrated pilot valve, NG6 interface, for mounting of accessory code PVAC*
		P	MT1 with mounted pilot valve PVAC1P ²⁾

1) not for MT
2) only for MT

Horse power / Torque control										
Displacem.						Code				
032									Nominal HP at 1.500 rpm	Nominal torque
046										
						D			5.5 kW	35 Nm
						E			7.5 kW	50 Nm
						G			11 kW	71 Nm
						H			15 kW	97 Nm
						K			18.5 kW	120 Nm
						M			22 kW	142 Nm
						S			30 kW	195 Nm
Function										
						L			Horse power control with pressure control	
						C			Horse power control with load sensing (single spool)	
Control variation										
							C		Standard version	
							1		NG 6 interface top side	
							W		With unloading function, 24 VDC solenoid	
							K		Prop.-pilot valve type PVACRE..35 mounted	
							Z		Without integrated pilot valve, NG6 interface, for mounting of accessory code PVAC*	

Code			Control option
			electro hydraulic control
F	P	V	Proportional displacement control, no pressure compensation
U	P		Proportional displacement control, with pressure compensation
			Control variation
		R	pilot operated pressure control, open NG6 interface
		K	pilot operated pressure control, proportional pilot valve type PVACRE..35 mounted
		M	pilot operated pressure control, pressure sensor and proportional pilot valve type PVACRE..35 mounted for pressure control and/or power control

P V **R 1 K 1 T 1 N**

axial piston
 pump
 variable
 displacement
 high
 pressure
 version

size
 and
 displacement

rotation

variation

mounting
 interface

threads
 code

thru drive
 code

coupling
 code

seals

compensator

see next page

Code	Displacement	Size
063	63 cm ³ /rev	3
080	80 cm ³ /rev	3
092	92 cm ³ /rev	3

Code	Seals
N	NBR
V	FPM
W	NBR with PTFE shaft seal
P	FPM with PTFE shaft seal

Code	Rotation ¹⁾
R	Clockwise
L	Counter clockwise

¹⁾ When looked on shaft

Code	Variation
1	Standard
9	special adjustment ²⁾

²⁾ requires Kxxxx number

Code	Mounting interface	Shaft
K	metr. ISO 4-hole flange Ø160 mm	Cylindric, key
L	3019/2 4-hole flange Ø160 mm	Splined, DIN 5480
D	SAE 4-hole flange SAE D	Cylindric, key
E	ISO 4-hole flange SAE D	Splined, SAE

Code	Port ³⁾	Threads ⁴⁾
1	BSPP	metric
3	UNF	UNC
4 ⁵⁾	BSPP	metr. M14
7	ISO 6149	UNC
8	ISO 6149	metric

³⁾ Drain, gauge and flushing ports

⁴⁾ All mounting and connecting threads

⁵⁾ For PV063-PV092 only: pressure port 1 1/4" with 4 x M14 instead of 4 x M12

Code	Coupling for thru drive	as single part ⁶⁾
1	Single pump, no coupling	
H	with coupling 25 x 1.5 x 15, DIN 5480	MK-PVBGxK01
J	with coupling 32 x 1.5 x 20, DIN 5480	MK-PVBGxK02
K	with coupling 40 x 1.5 x 25, DIN 5480	MK-PVBGxK03
Y	with coupling SAE A 9T-16/32 DP	MK-PVBGxK11
A	with coupling SAE - 11T-16/32 DP	MK-PVBGxK12
B	with coupling SAE B 13T-16/32 DP	MK-PVBGxK13
C	with coupling SAE B-B 15T-16/32 DP	MK-PVBGxK14
D	with coupling SAE C 14T-12/24 DP	MK-PVBGxK15
E	with coupling SAE C - C	MK-PVBGxK16
F	with coupling SAE D, E	MK-PVBGxK17

Code	Thru drive option	
No adaptor for 2nd pump		
T	Single pump prepared for thru drive	
with adaptor for 2nd pump		as single part ⁶⁾
A	SAE A, Ø 82.55 mm	MK-PVBGxAMN
B	SAE B, Ø 101.6 mm	MK-PVBGxBMN
C	SAE C, Ø 127 mm	MK-PVBGxCMN
D	SAE D, Ø 152,4 mm	MK-PVBGxDMN
G	metric, Ø 63 mm	MK-PVBGxGMN
H	metric, Ø 80 mm	MK-PVBGxHMN
J	metric, Ø 100 mm	MK-PVBGxJMN
K	metric, Ø 125 mm	MK-PVBGxKMN
L	metric, Ø 160 mm	MK-PVBGxLMN

See dimensions for details

⁶⁾ to be ordered separately as single part
 x= Frame size, see displacement.

Code			Control options
0	0	1	No control
1	0	0	With cover plate, no control function
M	M		Standard pressure control, integrated pilot valve
M	R		Remote pressure control, integrated pilot valve
M	F		Load Sensing (flow) control, integrated pilot valve
M	T		Two spool LS control
			Control variation
		C	Standard version ¹⁾
		1	NG6 interface top side for pilot valves
		W	With unloading function, 24VDC solenoid ¹⁾
		K	Prop.-pilot valve type PVACRE..35 mounted
		Z	Without integrated pilot valve, NG6 interface, for mounting of accessory code PVAC*
		P	MT1 with mounted pilot valve PVAC1P ²⁾

1) not for MT
2) only for MT

Horse power / Torque control										
Displacem.						Code				
063									Nominal HP at 1.500 rpm	Nominal torque
092										
						G			11 kW	71 Nm
						H			15 kW	97 Nm
						K			18.5 kW	120 Nm
						M			22kW	142 Nm
						S			30 kW	195 Nm
						T			37 kW	240 Nm
						U			45 kW	290 Nm
						W			55 kW	355 Nm
Function										
						L			Horse power control with pressure control	
						C			Horse power control with load sensing (single spool)	
Control variation										
							C		Standard version	
							1		NG 6 interface top side	
							W		With unloading function, 24 VDC solenoid	
							K		Prop.-pilot valve type PVACRE..35 mounted	
							Z		Without integrated pilot valve, NG6 interface, for mounting of accessory code PVAC*	

Code			Control option
electro hydraulic control			
F	P	V	Proportional displacement control, no pressure compensation
U	P		Proportional displacement control, with pressure compensation
			Control variation
		R	pilot operated pressure control, open NG6 interface
		K	pilot operated pressure control, proportional pilot valve type PVACRE..35 mounted
		M	pilot operated pressure control, pressure sensor and proportional pilot valve type PVACRE..35 mounted for pressure control and/or power control

P V **R 1 K 1 T 1 N**

axial piston
pump
variable
displacement

size
and
displacement

rotation

variation

mounting
interface

threads
code

thru drive
code

coupling
code

seals

control

see next page

Code	Displacement	Size
140	140 cm³/rev	4
180	180 cm³/rev	4

Code	Rotation ¹⁾
R	Clockwise
L	Counter clockwise

¹⁾ When looked on shaft

Code	Variation
1	Standard
9	Special adjustment ²⁾

²⁾ requires Kxxxx number

Code	Mounting interface	Shaft
K	metr. ISO 4-hole flange Ø160 mm	Cylindric, key
L	3019/2 4-hole flange Ø160 mm	Splined, DIN 5480
D	SAE 4-hole flange SAE D	Cylindric, key
E	ISO 4-hole flange SAE D-F	Splined, SAE
	3019/1	
F	4-hole flange SAE D	Cylindric, key
G	4-hole flange SAE D	Splined, SAE

Code	Port ³⁾	Threads ⁴⁾
1	BSPP	metric
3	UNF	UNC
4 ⁵⁾	BSPP	metr. M14
7	ISO 6149	UNC
8 ⁶⁾	ISO 6149	metric

³⁾ Drain, gauge and flushing ports

⁴⁾ All mounting and connecting threads

⁵⁾ Pressure port 1 1/4" with 4 x M14 instead of 4 x M12

⁶⁾ Mounting interface, code K and L only

Code	Seals
N	NBR
V	FPM
W	NBR with PTFE shaft seal
P	FPM with PTFE shaft seal

Code	Coupling for thru drive	as single part ⁷⁾
1	Single pump, no coupling	
H	with coupling 25 x 1.5 x 15, DIN 5480	MK-PVBGxK01
J	with coupling 32 x 1.5 x 20, DIN 5480	MK-PVBGxK02
K	with coupling 40 x 1.5 x 25, DIN 5480	MK-PVBGxK03
L	with coupling 50 x 2 x 24, DIN 5480	MK-PVBGxK04
Y	with coupling SAE A 9T-16/32 DP	MK-PVBGxK11
A	with coupling SAE - 11T-16/32 DP	MK-PVBGxK12
B	with coupling SAE B 13T-16/32 DP	MK-PVBGxK13
C	with coupling SAE B-B 15T-16/32 DP	MK-PVBGxK14
D	with coupling SAE C 14T-12/24 DP	MK-PVBGxK15
E	with coupling SAE C - C	MK-PVBGxK16
F	with coupling SAE D, E	MK-PVBGxK17
G	with coupling SAE F	MK-PVBGxK18

Code	Thru drive option	
No adaptor for 2nd pump		
T	Single pump prepared for thru drive	
with adaptor for 2nd pump		as single part ⁷⁾
A	SAE A, Ø 82.55 mm	MK-PVBGxAMN
B	SAE B, Ø 101.6 mm	MK-PVBGxBMN
C	SAE C, Ø 127 mm	MK-PVBGxCMN
D	SAE D, Ø 152.4 mm	MK-PVBGxDMN
H	metric, Ø 80 mm	MK-PVBGxHMN
J	metric, Ø 100 mm	MK-PVBGxJMN
K	metric, Ø 125 mm	MK-PVBGxKMN
L	metric, Ø 160 mm	MK-PVBGxLMN

See dimensions for details

⁷⁾ to be ordered separately as single part
 x= Frame size, see displacement.

Code			Control options
0	0	1	No control
1	0	0	With cover plate, no control function
M	M		Standard pressure control, integrated pilot valve
M	R		Remote pressure control, integrated pilot valve
M	F		Load Sensing (flow) control, integrated pilot valve
M	T		Two spool LS control
			Control variation
		C	Standard version ¹⁾
		1	NG6 interface top side for pilot valves
		W	With unloading function, 24VDC solenoid ¹⁾
		K	Prop.-pilot valve type PVACRE..35 mounted
		Z	Without integrated pilot valve, NG6 interface, for mounting of accessory code PVAC*
		P	MT1 with mounted pilot valve PVAC1P ²⁾

1) not for MT
2) only for MT

Horse power / Torque control												
Displacem.					Code							
140	180							Nominal HP at 1.500 rpm	Nominal torque			
						K		18.5 kW	120 Nm			
						M		22 kW	142 Nm			
						S		30 kW	195 Nm			
						T		37 kW	240 Nm			
						U		45 kW	290 Nm			
						W		55 kW	355 Nm			
						Y		75 kW	485 Nm			
						Z		90 kW	585 Nm			
						2		110 kW	715 Nm			
Function												
							L	Horse power control with pressure control				
							C	Horse power control with load sensing (single spool)				
Control variation												
							C	Standard version				
							1	NG 6 interface top side				
							W	With unloading function, 24 VDC solenoid				
							K	Prop.-pilot valve type PVACRE..35 mounted				
							Z	Without integrated pilot valve, NG6 interface, for mounting of accessory code PVAC*				

Code			Control option
electro hydraulic control			
F	P	V	Proportional displacement control, no pressure compensation
U	P		Proportional displacement control, with pressure compensation
Control variation			
		R	pilot operated pressure control, open NG6 interface
		K	pilot operated pressure control, proportional pilot valve type PVACRE..35 mounted
		M	pilot operated pressure control, pressure sensor and proportional pilot valve type PVACRE..35 mounted for pressure control and/or power control

P V **R 1 K 1 T 1 N**

axial piston
pump
variable
displacement
high
pressure
version

size
and
displacement

rotation

variation

mounting
interface

threads
code

thru drive
code

coupling
code

seals

compensator

see next page

Code	Displacement	Size
270	270 cm ³ /rev	5

Code	Rotation ¹⁾
R	Clockwise
L	Counter clockwise

¹⁾ When looked on shaft

Code	Variation
1	Standard
9	special adjustment ²⁾

²⁾ requires Kxxxx number

Code	Mounting interface		Shaft
K	metr. ISO	4-hole flange Ø200 mm	Cylindric, key
L	3019/2	4-hole flange Ø200 mm	Splined, DIN 5480
D	SAE	4-hole flange SAE E	Cylindric, key
E	ISO	4-hole flange SAE E-F	Splined, SAE
	3019/1		

Code	Port ⁴⁾	Threads ⁵⁾
1	BSPP	metric
3	UNF	UNC
7	ISO 6149	UNC
8	ISO 6149	metric

⁴⁾ Drain, gauge and flushing ports

⁵⁾ All mounting and connecting threads

Code	Seals
N	NBR
V	FPM
W	NBR with PTFE shaft seal
P	FPM with PTFE shaft seal

Code	Coupling for thru drive	as single part ⁶⁾
1	Single pump, no coupling	
H	with coupling 25 x 1.5 x 15, DIN 5480	MK-PVBGxK01
J	with coupling 32 x 1.5 x 20, DIN 5480	MK-PVBGxK02
K	with coupling 40 x 1.5 x 25, DIN 5480	MK-PVBGxK03
L	with coupling 50 x 2 x 24, DIN 5480	MK-PVBGxK04
M	with coupling 60 x 2 x 28, DIN 5480	MK-PVBGxK05
Y	with coupling SAE A 9T-16/32 DP	MK-PVBGxK11
A	with coupling SAE - 11T-16/32 DP	MK-PVBGxK12
B	with coupling SAE B 13T-16/32 DP	MK-PVBGxK13
C	with coupling SAE B-B 15T-16/32 DP	MK-PVBGxK14
D	with coupling SAE C 14T-12/24 DP	MK-PVBGxK15
E	with coupling SAE C - C	MK-PVBGxK16
F	with coupling SAE D, E	MK-PVBGxK17

Code	Thru drive option	
	No adaptor for 2nd pump	
T	Single pump prepared for thru drive	
	with adaptor for 2nd pump	as single part ⁶⁾
A	SAE A, Ø 82.55 mm	MK-PVBGxAMN
B	SAE B, Ø 101.6 mm	MK-PVBGxBMN
C	SAE C, Ø 127 mm	MK-PVBGxCMN
D	SAE D, Ø 152,4 mm	MK-PVBGxDMN
E	SAE E, Ø 165,1 mm	MK-PVBGxEMN
H	metric, Ø 80 mm	MK-PVBGxHMN
J	metric, Ø 100 mm	MK-PVBGxJMN
K	metric, Ø 125 mm	MK-PVBGxKMN
L	metric, Ø 160 mm	MK-PVBGxLMN
M	metric, Ø 200 mm	MK-PVBGxMMN

See dimensions for details

⁶⁾ to be ordered separately as single part
x= Frame size, see displacement.

Code			Control options
0	0	1	No control
1	0	0	With cover plate, no control function
M	M		Standard pressure control, integrated pilot valve
M	R		Remote pressure control, integrated pilot valve
M	F		Load Sensing (flow) control, integrated pilot valve
M	T		Two spool LS control
			Control variation
		C	Standard version ¹⁾
		1	NG6 interface top side for pilot valves
		W	With unloading function, 24VDC solenoid ¹⁾
		K	Prop.-pilot valve type PVACRE..35 mounted
		Z	Without integrated pilot valve, NG6 interface, for mounting of accessory code PVAC*
		P	MT1 with mounted pilot valve PVAC1P ²⁾

1) not for MT
2) only for MT

Horse power / Torque control											
Displacem.						Code					
270									Nominal HP at 1.500 rpm	Nominal torque	
						T			37 kW	240 Nm	
						U			45 kW	290 Nm	
						W			55 kW	350 Nm	
						Y			75 kW	480 Nm	
						Z			90 kW	580 Nm	
						2			110 kW	700 Nm	
						3			132 kW	840 Nm	
Function											
						L			Horse power control with pressure control		
						C			Horse power control with load sensing (single spool)		
Control variation											
						C			Standard version		
						1			NG 6 interface top side		
						W			With unloading function, 24 VDC solenoid		
						K			Prop.-pilot valve type PVACRE..35 mounted		
						Z			Without integrated pilot valve, NG6 interface, for mounting of accessory code PVAC*		

Code			Control option
			electro hydraulic control
F	P	V	Proportional displacement control, no pressure compensation
U	P		Proportional displacement control, with pressure compensation
			Control variation
		R	pilot operated pressure control, open NG6 interface
		K	pilot operated pressure control, proportional pilot valve type PVACRE..35 mounted
		M	pilot operated pressure control, pressure sensor and proportional pilot valve type PVACRE..35 mounted for pressure control and/or power control

P	V					R	1	K	1	T	1	N			
----------	----------	--	--	--	--	----------	----------	----------	----------	----------	----------	----------	--	--	--

axial piston
pump
variable
displacement

size
and
displacement

rotation

variation

mounting
interface

threads
code

thru drive
code

coupling
code

seals

control

see next page →

Code	Displacement	Size
360	360 cm³/rev	5

Code	Seals
N	NBR
V	FPM

Code	Rotation ¹⁾
R	Clockwise

¹⁾ When looked on shaft

Code	Variation
1	Standard
9	Special adjustment ²⁾

²⁾ requires Kxxxx number

Code	Mounting interface	Shaft
K		4-hole flange Ø250 mm
L	metr. ISO	4-hole flange Ø250 mm
R	3019/2	4-hole flange Ø224 mm
T		4-hole flange Ø224 mm
D	SAE	4-hole flange SAE E
E	ISO	4-hole flange SAE E
	3019/1	

Code	Port ³⁾	Threads ⁴⁾
1	BSPP	metric
3	UNF	UNC

³⁾ Drain, gauge and flushing ports

⁴⁾ All mounting and connecting threads

Code	Coupling for thru drive	as single part ⁶⁾
1	Single pump, no coupling	
H	with coupling 25 x 1.5 x 15, DIN 5480	MK-PVBGxK01
J	with coupling 32 x 1.5 x 20, DIN 5480	MK-PVBGxK02
K	with coupling 40 x 1.5 x 25, DIN 5480	MK-PVBGxK03
L	with coupling 50 x 2 x 24, DIN 5480	MK-PVBGxK04
M	with coupling 60 x 2 x 28, DIN 5480	MK-PVBGxK05
P	with coupling 70 x 3 x 22, DIN 5480	MK-PVBGxK06
Y	with coupling SAE A 9T-16/32 DP	MK-PVBGxK11
A	with coupling SAE - 11T-16/32 DP	MK-PVBGxK12
B	with coupling SAE B 13T-16/32 DP	MK-PVBGxK13
C	with coupling SAE B-B 15T-16/32 DP	MK-PVBGxK14
D	with coupling SAE C 14T-12/24 DP	MK-PVBGxK15
E	with coupling SAE C - C	MK-PVBGxK16
F	with coupling SAE D, E	MK-PVBGxK17
G	with coupling SAE F	MK-PVBGxK18

Code	Thru drive option	
No adaptor for 2nd pump		
T	Single pump prepared for thru drive	
with adaptor for 2nd pump		as single part ⁶⁾
A	SAE A, Ø 82.55 mm	MK-PVBGxAMN
B	SAE B, Ø 101.6 mm	MK-PVBGxBMN
C	SAE C, Ø 127 mm	MK-PVBGxCMN
D	SAE D, Ø 152.4 mm	MK-PVBGxDMN
E	SAE E, Ø 165.1 mm	MK-PVBGxEMN
H	metric, Ø 80 mm	MK-PVBGxHMN
J	metric, Ø 100 mm	MK-PVBGxJMN
K	metric, Ø 125 mm	MK-PVBGxKMN
L	metric, Ø 160 mm	MK-PVBGxLMN
M	metric, Ø 200 mm	MK-PVBGxMMN

See dimensions for details

⁶⁾ to be ordered separately as single part
x= Frame size, see displacement.

Code			Control options
0	0	1	No control
1	0	0	With cover plate, no control function
M	M		Standard pressure control, integrated pilot valve
M	R		Remote pressure control, integrated pilot valve
M	F		Load Sensing (flow) control, integrated pilot valve
M	T		Two spool LS control
			Control variation
		C	Standard version ¹⁾
		1	NG6 interface top side for pilot valves
		W	With unloading function, 24VDC solenoid ¹⁾
		K	Prop.-pilot valve type PVACRE..35 mounted
		Z	Without integrated pilot valve, NG6 interface, for mounting of accessory code PVAC*
		P	MT1 with mounted pilot valve PVAC1P ²⁾

1) not for MT
2) only for MT

Horse power / Torque control										
Displacem.						Code				
360									Nominal HP at 1.500 rpm	Nominal torque
						U			45 kW	290 Nm
						W			55 kW	350 Nm
						Y			75 kW	480 Nm
						Z			90 kW	580 Nm
						2			110 kW	700 Nm
						3			132 kW	840 Nm
						4			160 kW	1020 Nm
						5			180 kW	1150 Nm
						6			200 kW	1280 Nm
Function										
						L			Horse power control with pressure control	
						C			Horse power control with load sensing (single spool)	
Control variation										
						C			Standard version	
						1			NG 6 interface top side	
						W			With unloading function, 24 VDC solenoid	
						K			Prop.-pilot valve type PVACRE..35 mounted	
						Z			Without integrated pilot valve, NG6 interface, for mounting of accessory code PVAC*	

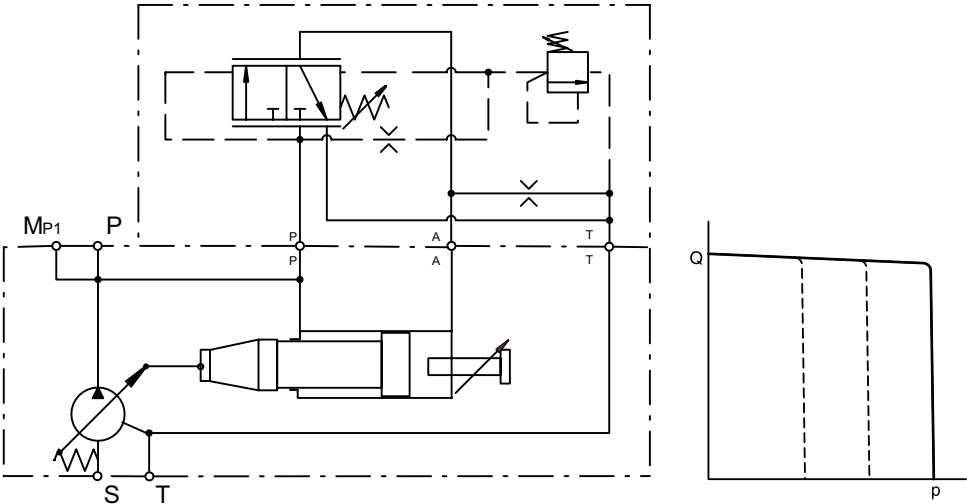
Code			Control option
electro hydraulic control			
F	P	V	Proportional displacement control, no pressure compensation
U	P		Proportional displacement control, with pressure compensation
			Control variation
		R	pilot operated pressure control, open NG6 interface
		K	pilot operated pressure control, proportional pilot valve type PVACRE..35 mounted
		M	pilot operated pressure control, pressure sensor and proportional pilot valve type PVACRE..35 mounted for pressure control and/or power control

Standard Pressure Control

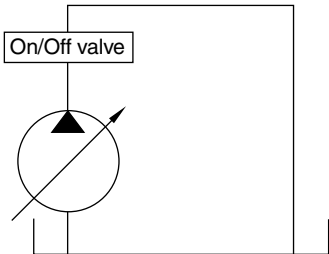
Control option MMC

The standard pressure control adjusts the pump displacement according to the actual need of flow in the system in order to keep the pressure constant.

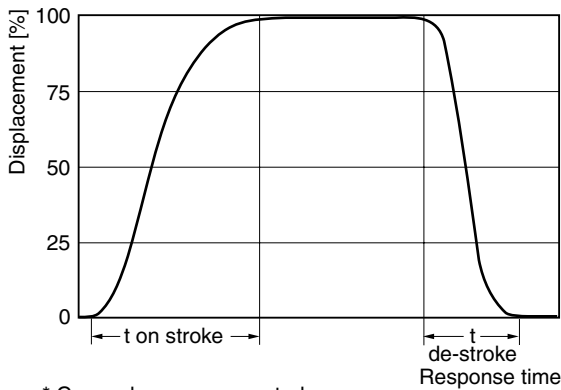
Control schematics



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 *



* Curve shown exaggerated

	Time on-stroke [ms]		Time de-stroke [ms]	
	against 50 bar	against 350 bar	zero stroke 50 bar	zero stroke 350 bar
PV360	520	180	120	82

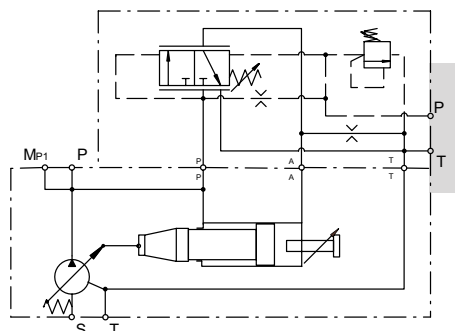
Pressure adjustment range	15 to 350 bar
Factory setting pressure	50 bar
Differential pressure adjustment range	10 to 40 bar
Factory setting differential pressure	15 bar
Control oil consumption	Max 8.0 l/min

Standard Pressure Control with NG6 Interface

Control option MM1

With code MM1 the standard pressure control has a valve interface size NG 6 DIN 24340 (CETOP 03 acc. RP35H, NFPA D03) on the top side.

This interface allows the mounting of accessories like multiple pressure selectors without the need of external piping and valve mounting.

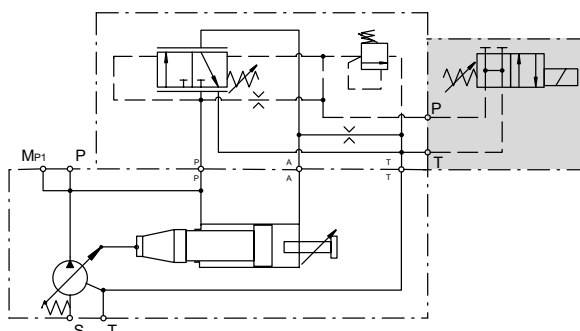


Standard Pressure Control with Electrical Unloading

Control option MMW

With code MMW a solenoid operated directional control valve (D1VW002KNJW) for electrical unloading is mounted on the control top side.

When the solenoid is de-energised, the pump compensates at a stand-by pressure of typically 15 bar. When the solenoid is energised, the pump compensates at the pressure adjusted on the integrated pilot valve.

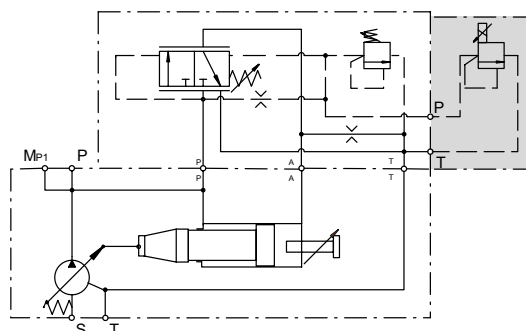


Standard Pressure Control with Proportional Pilot Valve

Control option MMK

With code MMK a proportional pilot valve of type PVACRE..35 (see page 35) is mounted on the top side interface.

This allows a variation of the pump compensating pressure between 20 and 350 bar by an electrical signal.

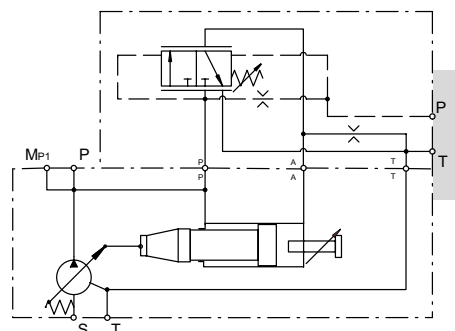


Standard Pressure Control with Accessory

Control option MMZ

Control MMZ has no integrated pilot valve but a valve interface NG6 DIN 24340 on the top.

This version is recommended for valve accessories.

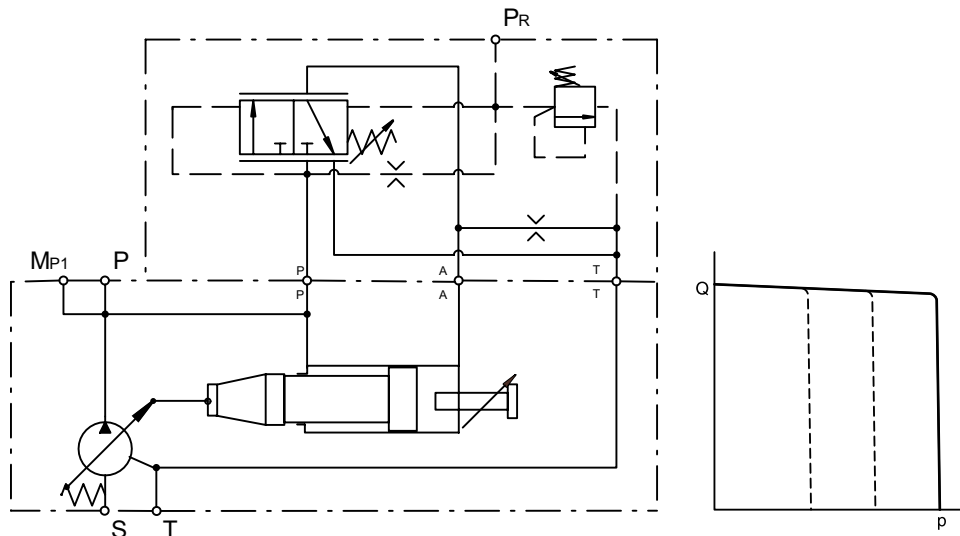


Remote Pressure Control

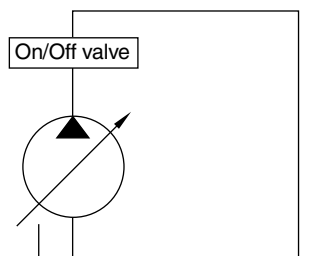
Control option MRC

The remote pressure control adjusts the pump displacement according to the actual need of flow in the system in order to keep the pressure constant at a level given by a remotely installed pilot valve.

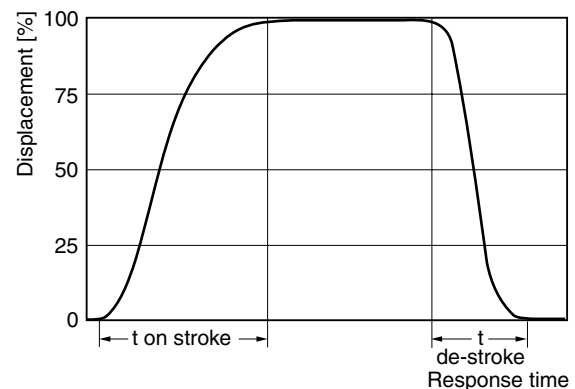
Control schematics



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 *



* Curve shown exaggerated

	Time on-stroke [ms]		Time de-stroke [ms]	
	against 50 bar	against 350 bar	zero stroke 50 bar	zero stroke 350 bar
PV360	520	180	120	82

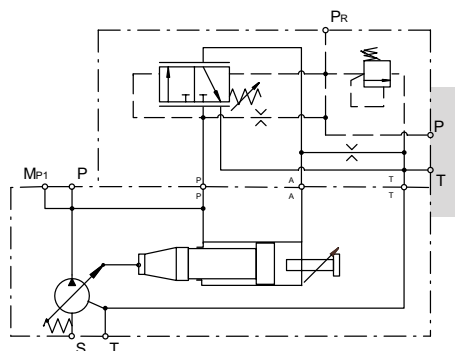
Pressure adjustment range	15 to 350 bar
Factory setting pressure	50 bar
Differential pressure adjustment range	10 to 40 bar
Factory setting differential pressure	15 bar
Control oil consumption	Max 8.0 l/min

Remote Pressure Control with NG6 Interface

Control option MR1

With code MR1 the remote pressure control has a valve interface size NG 6 DIN 24340 (CETOP 03 acc. RP35H, NFPA D03) on the top side.

This interface allows the mounting of accessories like multiple pressure selectors without the need of external piping and valve mounting.

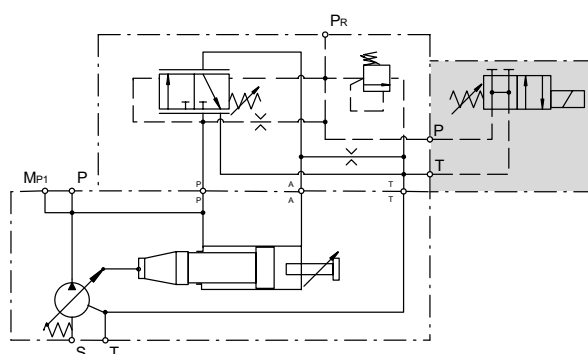


Remote Pressure Control with Electrical Unloading

Control option MRW

With code MRW a solenoid operated directional control valve (D1VW002KNJW) for electrical unloading is mounted on the control top side.

When the solenoid is de-energised, the pump compensates at a stand-by pressure of typically 15 bar. When the solenoid is energised, the pump compensates at the pressure adjusted on the integrated pilot valve.

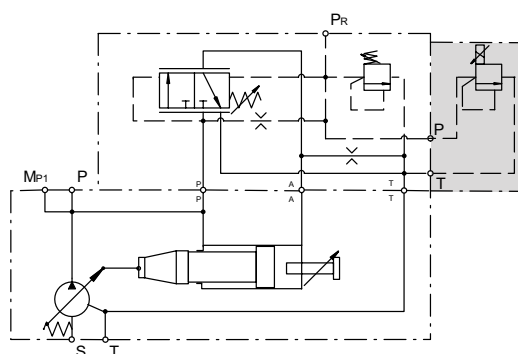


Remote Pressure Control with Proportional Pilot Valve

Control option MRK

With code MRK a proportional pilot valve of type PVACRE..35 (see page 35) is mounted on the top side interface.

This allows a variation of the pump compensating pressure between 20 and 350 bar by an electrical signal.

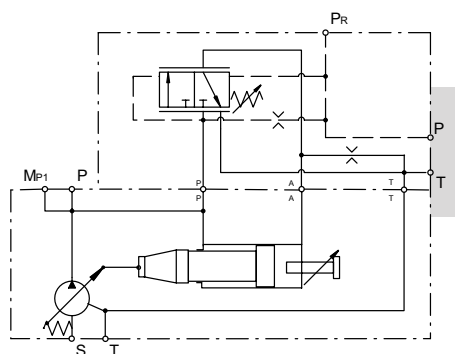


Remote Pressure Control with Accessory

Control option MRZ

Control MRZ has no integrated pilot valve but a valve interface NG6 DIN 24340 on the top.

This version is recommended for valve accessories.

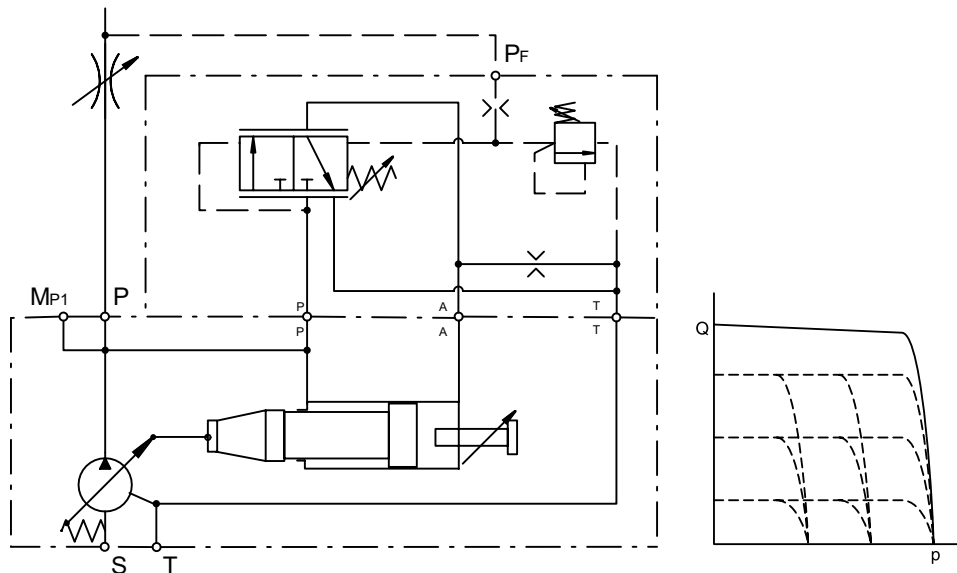


Load Sensing Control

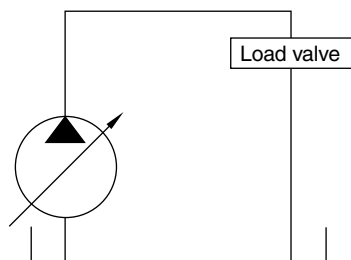
Control option MFC

The pilot pressure of the load sensing control is taken from a load sensing port in the hydraulic system. It is used to match pump flow to system demands.

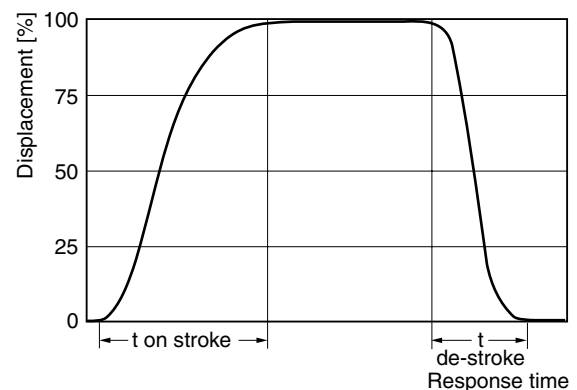
Control schematics



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 *



* Curve shown exaggerated

	Time on-stroke [ms]		Time de-stroke [ms]	
	stand-by to 50 bar	stand-by to 350 bar	50 bar to stand-by	350 bar to stand-by
PV360	500	690	830	50

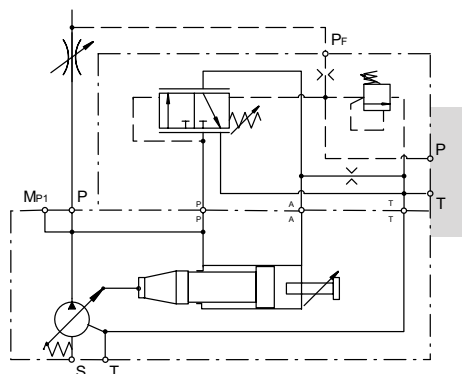
Pressure adjustment range	15 to 350 bar
Factory setting pressure	50 bar
Differential pressure adjustment range	10 to 40 bar
Factory setting differential pressure	10 bar
Control oil consumption	Max 8.0 l/min

Load Sensing Control with NG6 Interface

Control option MF1

With code MF1 the remote pressure control has a valve interface size NG 6 DIN 24340 (CETOP 03 acc. RP35H, NFPA D03) on the top side.

This interface allows the mounting of accessories like multiple pressure selectors without the need of external piping and valve mounting.

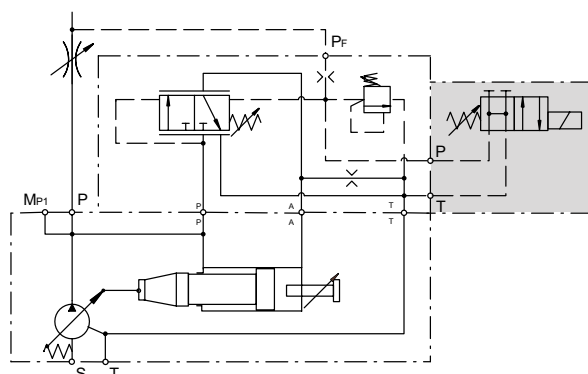


Load Sensing Control with Electrical Unloading

Control option MFW

With code MFW a solenoid operated directional control valve (D1VW002KNJW) for electrical unloading is mounted on the control top side.

When the solenoid is de-energised, the pump compensates at a stand-by pressure of typically 15 bar. When the solenoid is energised, the pump compensates at the pressure adjusted on the integrated pilot valve.

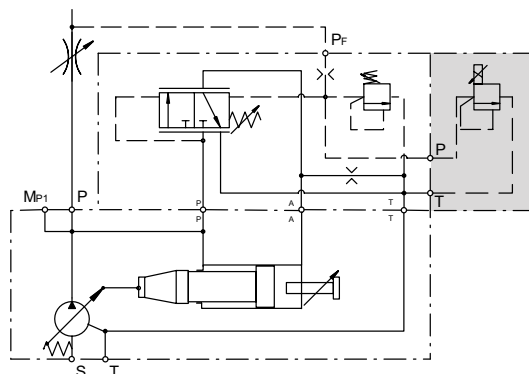


Load Sensing Control with Proportional Pilot Valve

Control option MFK

With code MFK a proportional pilot valve of type PVACRE..35 (see page 35) is mounted on the top side interface.

This allows a variation of the pump compensating pressure between 20 and 350 bar by an electrical signal.

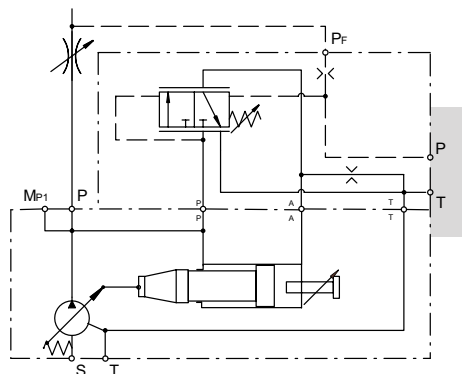


Load Sensing Control with Accessory

Control option MFZ

Control MFZ has no integrated pilot valve but a valve interface NG6 DIN 24340 on the top.

This version is recommended for valve accessories.

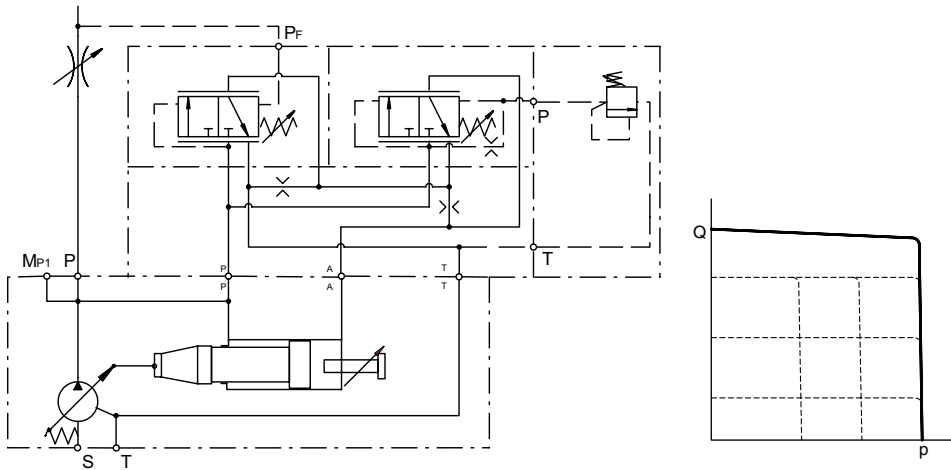


2 Spool Load Sensing Control

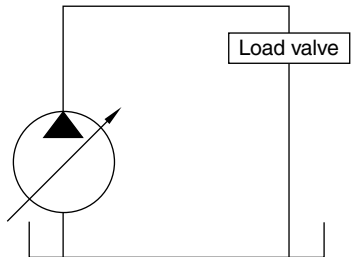
Control option MTP

The pilot pressure of the load sensing control is taken from a load sensing port in the hydraulic system. It is used to match pump flow to system demands. With the 2 spool control the interaction of the two control functions is avoided by using two separate control valves for flow and pressure compensation.

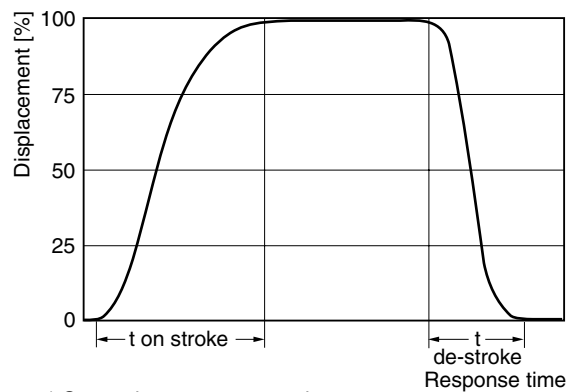
Control schematics



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 *



* Curve shown exaggerated

	Time on-stroke [ms]		Time de-stroke [ms]	
	stand-by to 50 bar	stand-by to 350 bar	50 bar to stand-by	350 bar to stand-by
PV360	920	670	1000	170

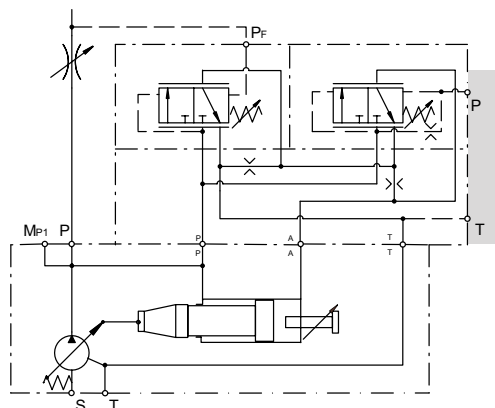
Pressure adjustment range	15 to 350 bar
Factory setting pressure	50 bar
Differential pressure adjustment range	10 to 40 bar
Factory setting differential pressure load sensing	10 bar
Factory setting differential pressure, pressure control	15 bar
Control oil consumption	Max 8.0 l/min

2 Spool Load Sensing Control with NG6 Interface

Control option MT1

With code MT1 the remote pressure control has a valve interface size NG 6 DIN 24340 (CETOP 03 acc. RP35H, NFPA D03) on the top side.

This interface allows the mounting of accessories like multiple pressure selectors without the need of external piping and valve mounting.

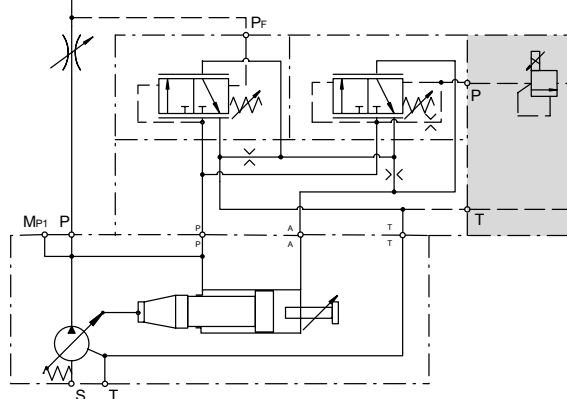


2 Spool Load Sensing Control with Proportional Pilot Valve

Control option MTK

With code MTK a proportional pilot valve of type PVACRE..35 (see page 35) is mounted on the top side interface.

This allows a variation of the pump compensating pressure between 20 and 350 bar by an electrical signal.

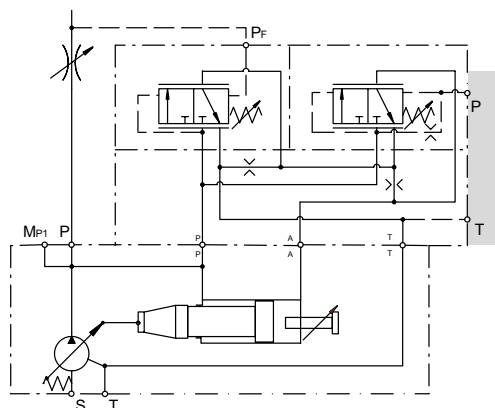


2 Spool Load Sensing Control with Accessory

Control option MTZ

Control MTZ has a valve accessory factory mounted on the NG6 interface.

Available valve accessory can be seen on page 33.
 Specify the accessory with full ordering code.

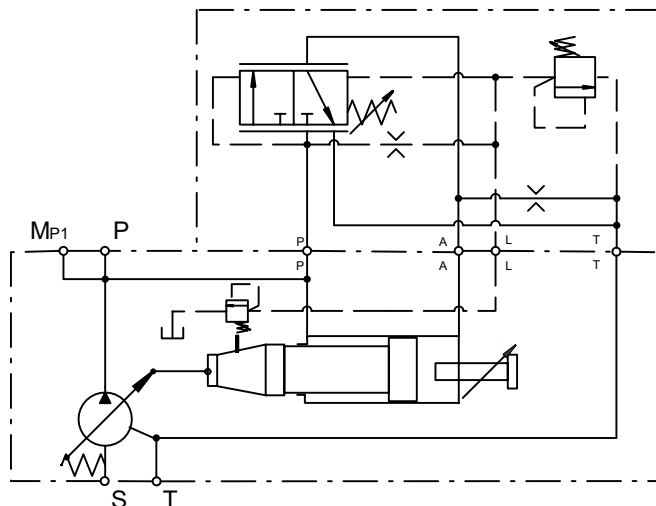


Horse Power/Torque Controls with Pressure Control

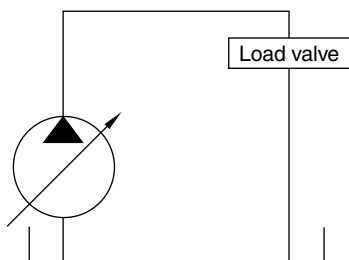
Control option *LC

The horse power control type *L* provides the benefit of the pressure control, plus the ability to limit the input power 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.

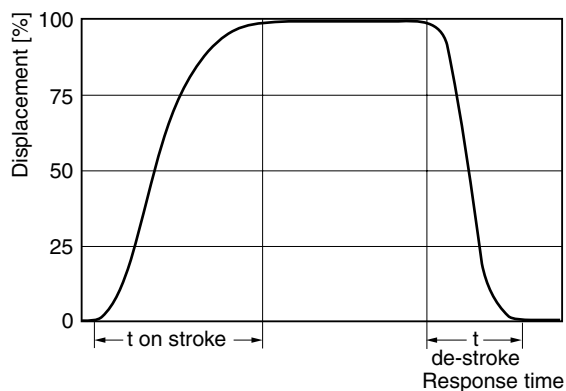
Control schematics



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 *



* Curve shown exaggerated

	Time on-stroke [ms]		Time de-stroke [ms]	
	against 50 bar	against 350 bar	zero stroke 50 bar	zero stroke 350 bar
PV360	90	90	100	100

Pressure adjustment range	15 to 350 bar
Factory setting pressure	350 bar
Differential pressure adjustment range	10 to 40 bar
Factory setting differential pressure	15 bar
Control oil consumption	Max 8.0 l/min

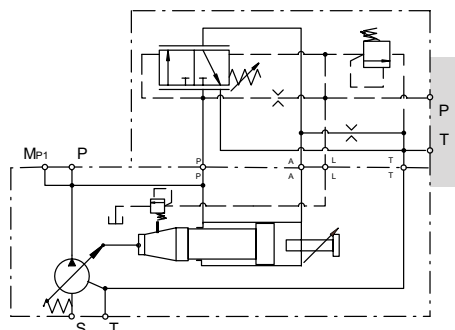
See Horse Power characteristic curves on page 24

Horse Power/Torque Control with NG6 Interface

Control option *L1

With code *L1 the remote pressure control has a valve interface size NG 6 DIN 24340 (CETOP 03 acc. RP35H, NFPA D03) on the top side.

This interface allows the mounting of accessories like multiple pressure selectors without the need of external piping and valve mounting.

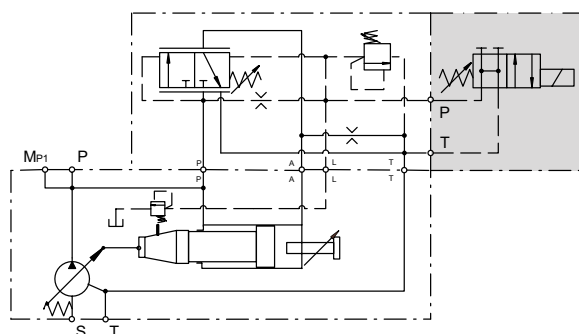


Horse Power/Torque Control with Electrical Unloading

Control option *LW

With code *LW a solenoid operated directional control valve (D1VW002KNJW) for electrical unloading is mounted on the control top side.

When the solenoid is de-energised, the pump compensates at a stand-by pressure of typically 15 bar. When the solenoid is energised, the pump compensates at the pressure adjusted on the integrated pilot valve.

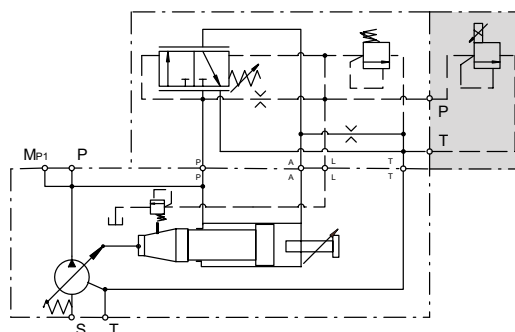


Horse Power/Torque Control with Proportional Pilot Valve

Control option *LK

With code *LK a proportional pilot valve of type PVACRE..35 (see page 35) is mounted on the top side interface.

This allows a variation of the pump compensating pressure between 20 and 350 bar by an electrical signal.

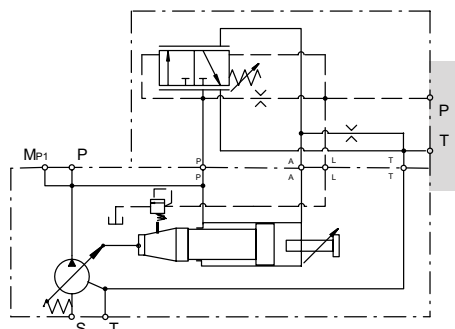


Horse Power/Torque Control with Accessory

Control option *LZ

Control *LZ has no integrated pilot valve but a valve interface NG6 DIN 24340 on the top.

This version is recommended for valve accessories.

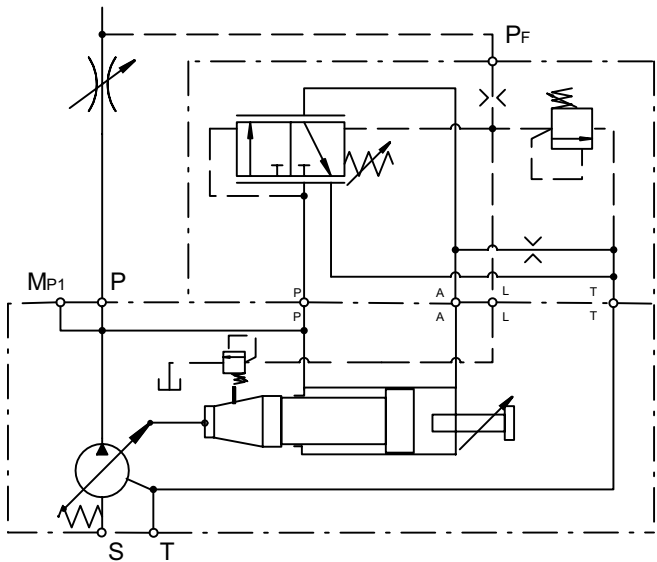


Horse Power/Torque Controls with Load Sensing

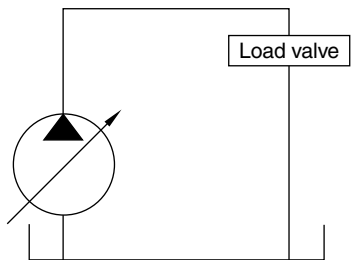
Control option *CC

The horse power control type *C* provides the benefit of the load sensing control, plus the ability to limit the input power 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.

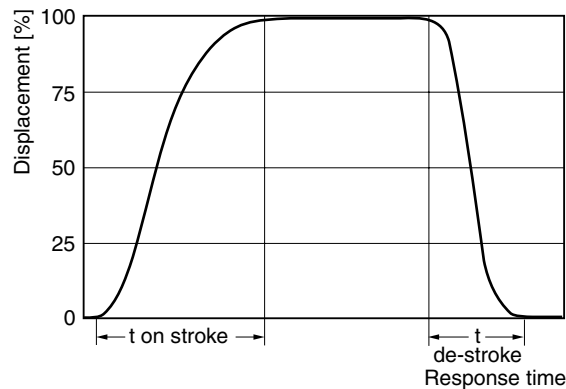
Control schematics



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 *



* Curve shown exaggerated

	Time on-stroke [ms]		Time de-stroke [ms]	
	stand-by to 50 bar	stand-by to 350 bar	50 bar to stand-by	350 bar to stand-by
PV360	90	90	100	100

Pressure adjustment range	15 to 350 bar
Factory setting pressure	350 bar
Differential pressure adjustment range	10 to 40 bar
Factory setting differential pressure	15 bar
Control oil consumption	Max 8.0 l/min

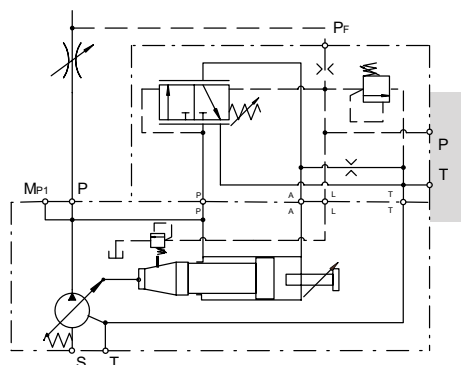
See Horse Power characteristic curves on page 24

Horse Power/Torque Control with NG6 Interface

Control option *C1

With code *C1 the remote pressure control has a valve interface size NG 6 DIN 24340 (CETOP 03 acc. RP35H, NFPA D03) on the top side.

This interface allows the mounting of accessories like multiple pressure selectors without the need of external piping and valve mounting.

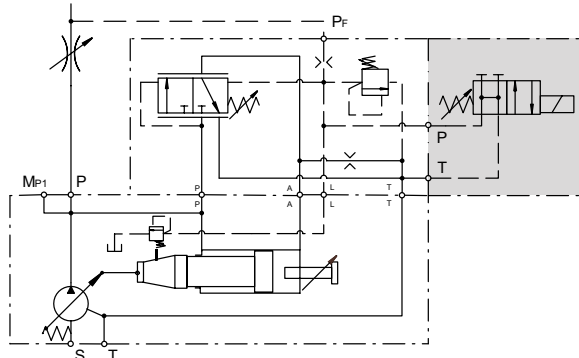


Horse Power/Torque Control with Electrical Unloading

Control option *CW

With code *CW a solenoid operated directional control valve (D1VW002KNJW) for electrical unloading is mounted on the control top side.

When the solenoid is de-energised, the pump compensates at a stand-by pressure of typically 15 bar. When the solenoid is energised, the pump compensates at the pressure adjusted on the integrated pilot valve.

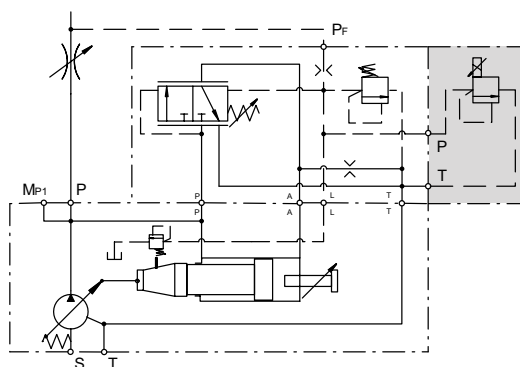


Horse Power/Torque Control with Proportional Pilot Valve

Control option *CK

With code *CK a proportional pilot valve of type PVACRE..35 (see page 35) is mounted on the top side interface.

This allows a variation of the pump compensating pressure between 20 and 350 bar by an electrical signal.

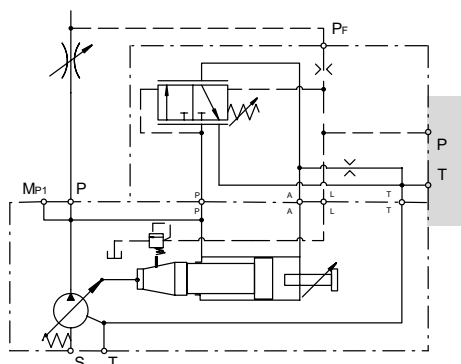


Horse Power/Torque Control with Accessory

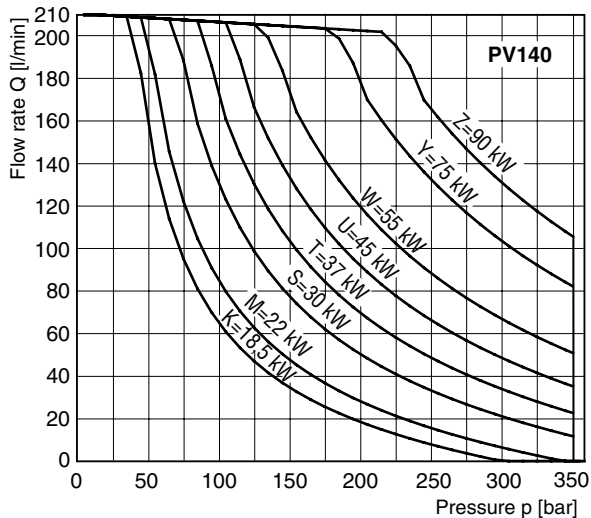
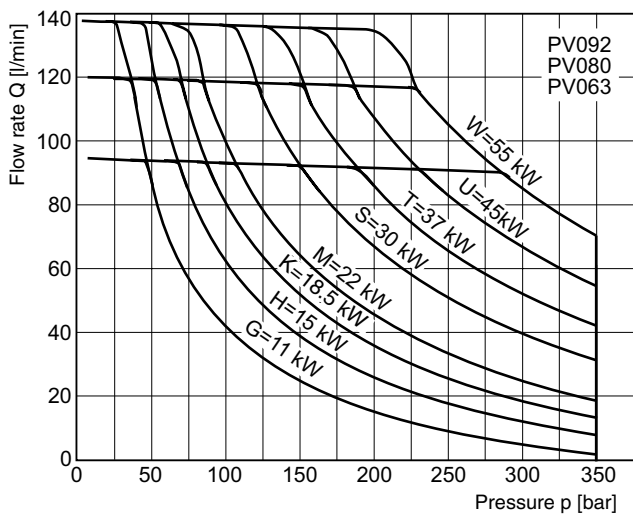
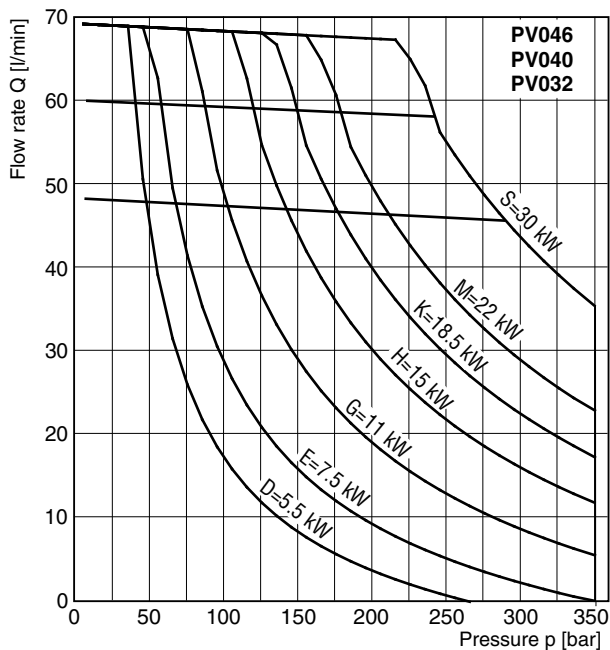
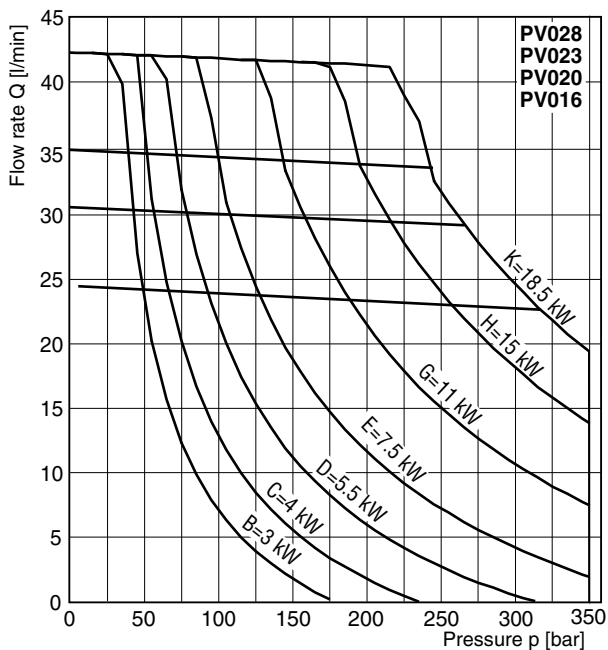
Control option *CZ

Control *CZ has no integrated pilot valve but a valve interface NG6 DIN 24340 on the top.

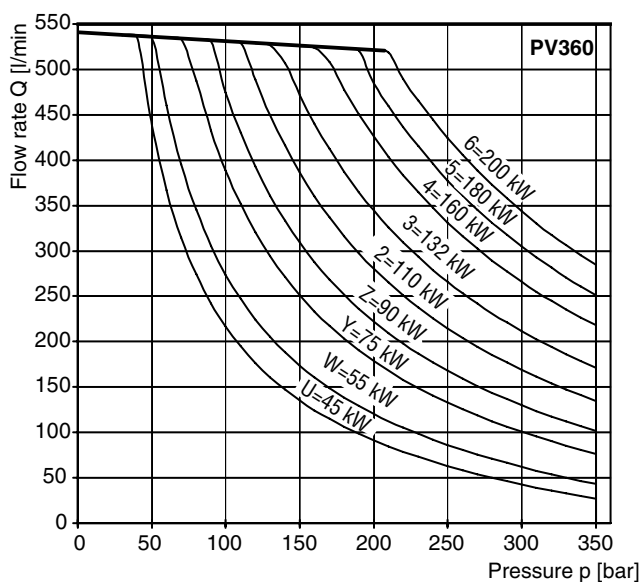
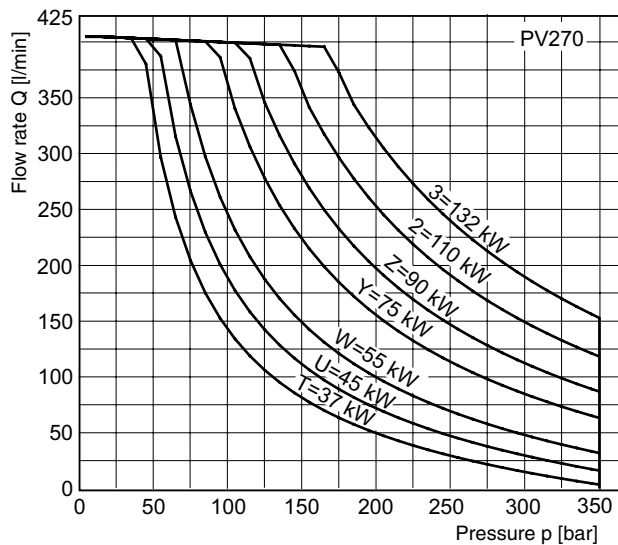
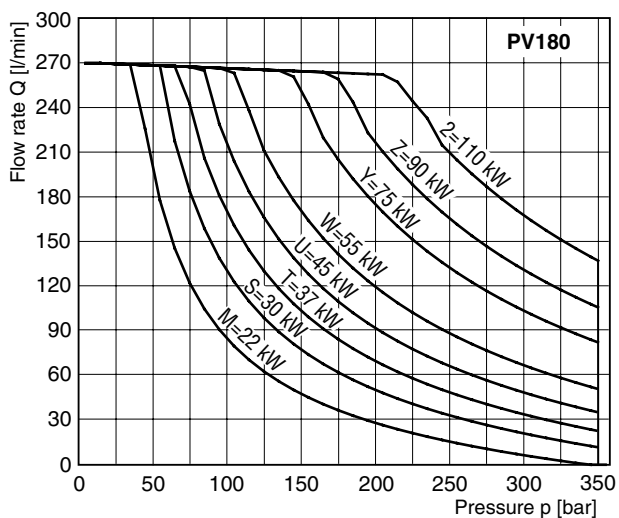
This version is recommended for valve accessories.



Typical Horse Power/Torque Control Characteristics



Typical Horse Power/Torque Control Characteristics



Speed : $n = 1500 \text{ rev/min}$
 Temperature : $t = 50^\circ\text{C}$
 Fluid : HLP, ISO VG46
 Viscosity : $\nu = 46 \text{ mm}^2/\text{s}$ at 40°C
 Pressure : Maximum 350 bar, depending on HP level

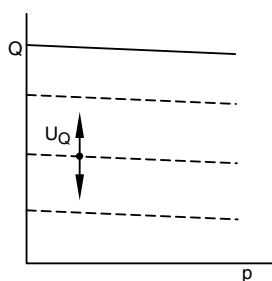
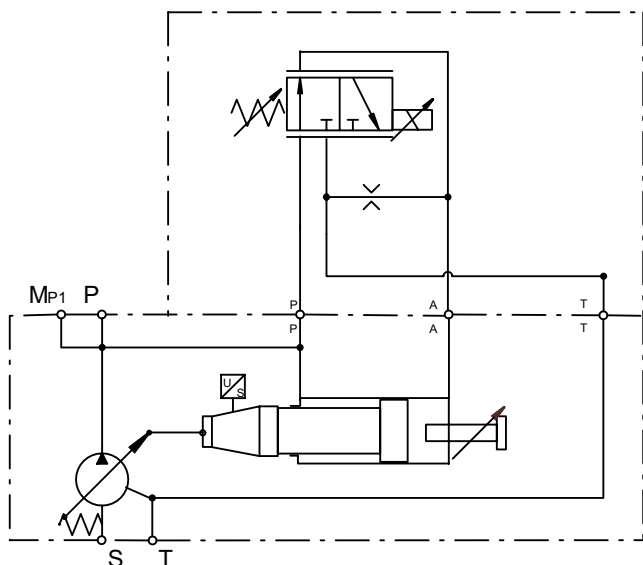
Proportional Displacement Control

Control option FPV

The proportional displacement control allows the adjustment of the pumps output flow with an electrical input signal. The actual displacement of the pump is monitored by an LVDT and compared with the commanded displacement in an electronic control module PQDXXA-Z00. The command is given as an electrical input signal (0 - 10 V) from the supervising machine control or a potentiometer.

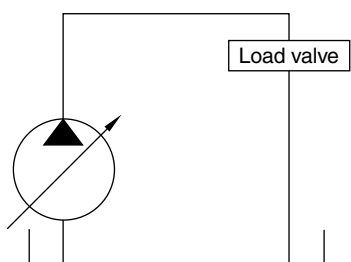
Version FPV of the proportional control does not provide a pressure compensation. The hydraulic circuit must be protected by a pressure relief valve.

Control schematics

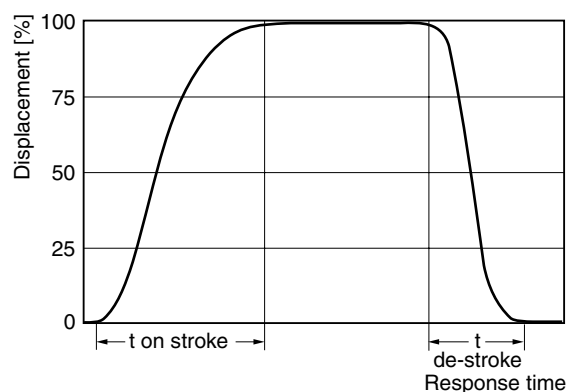


[Dashed box] = FPV included

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 *



* Curve shown exaggerated

	Time on-stroke [ms]		Time de-stroke [ms]	
	stand-by to 50 bar	stand-by to 350 bar	50 bar to stand-by	350 bar to stand-by
PV360	180	100	330	240

Pressure adjustment range *	25 to 350 bar
Factory setting pressure *	50 bar
Differential pressure adjustment range *	10 to 40 bar
Factory setting differential pressure *	15 bar
Control oil consumption	Max 8.0 l/min

Internal pilot pressure required to control the pump	
FPV	15 bar
UPR	25 bar
UPK	25 bar
UPM	25 bar

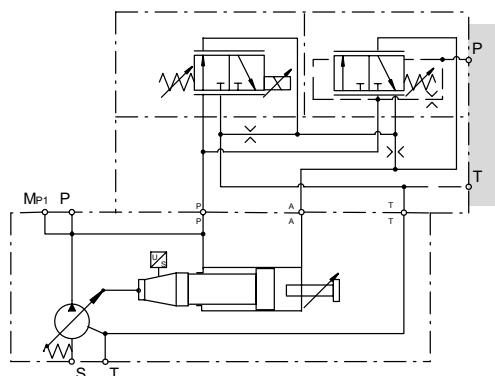
* Data valid for UP* version

Proportional Displacement Control with Overriding Pressure Control

Control option UPR

Control version UPR provides electro- hydraulic displacement control and pressure stage mounted on an elbow manifold.

The elbow manifold provides NG6/D03 interface on top to mount a pressure pilot valve (not included in UPR).

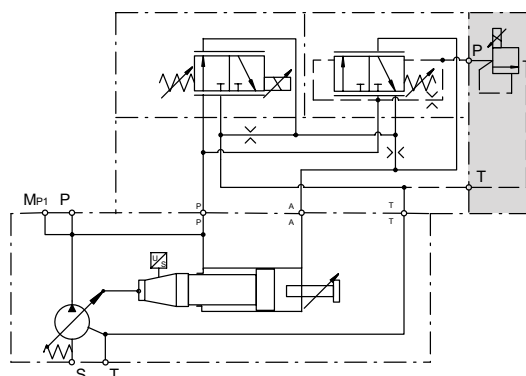


Proportional Displacement Control with Proportional Pressure Control

Control option UPK

When using a proportional pressure pilot valve an electro-hydraulic p/Q control can be realized. The proportional pressure pilot valve PVACRE..35 is included in control version UPK.

By using the digital module PQDXXA-Z00 it is possible to control the displacement proportionally with overriding open loop proportional pressure control.

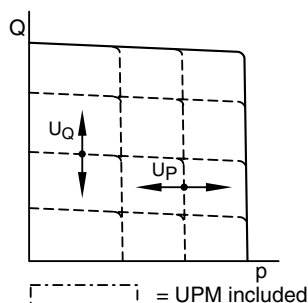
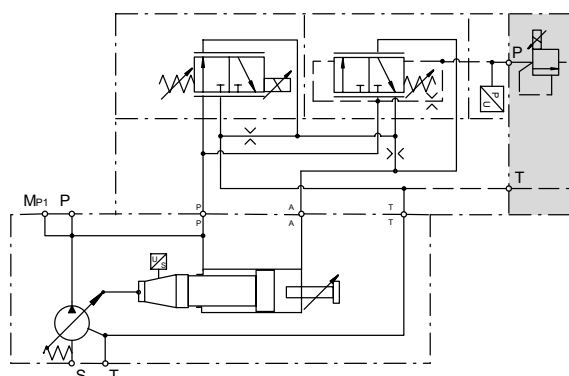


Proportional Displacement Control with Closed Loop Pressure Control

Control option UPM

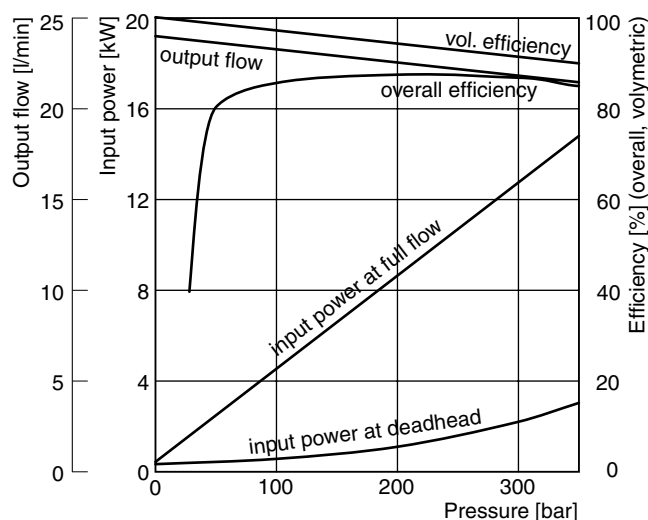
Control version UPM is completed by a pressure transducer Parker SCP 8181 CE. In combination with control module PQDXXA-Z00 a closed loop pressure control of pump outlet pressure is available.

The control module also offers an electronic power limiter in addition to closed loop pressure control with this control option.

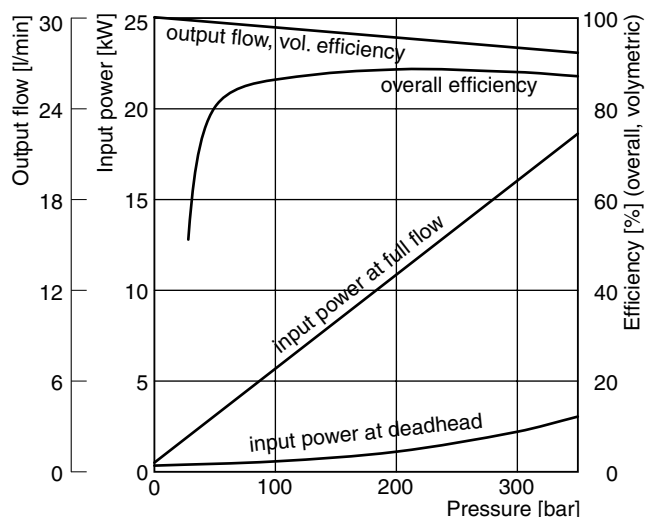


Efficiency, power consumption

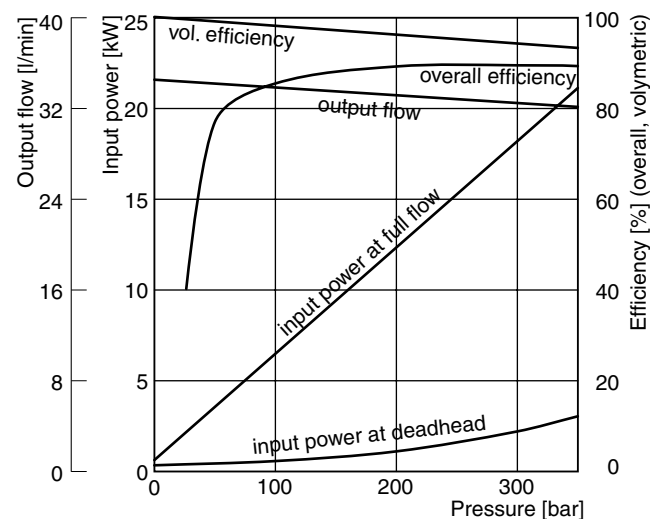
PV016



PV020



PV023



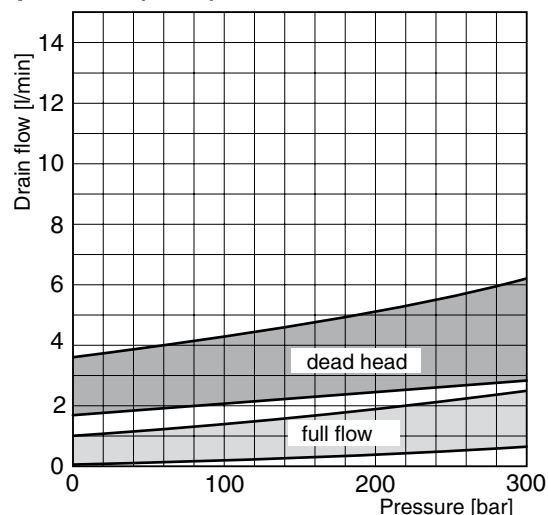
Efficiency and case drain flows PV016, PV020, PV023 and PV028

The efficiency and power graphs are measured at an input speed of $n = 1500$ rpm, a temperature of 50°C and a fluid viscosity of $30\text{ mm}^2/\text{s}$.

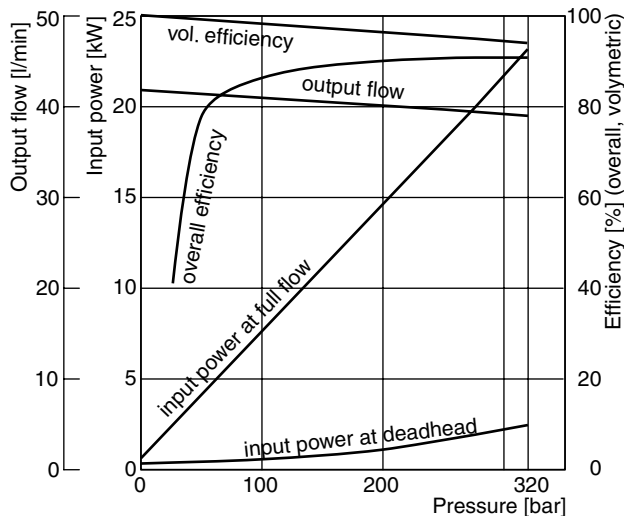
Case drain flow and compensator control flow leave via the drain port of the pump. To the values shown are to be added 1 to 1.2 l/min, if at pilot operated compensators the control flow of the pressure pilot valve also goes through the pump.

Please note: The values shown below are only valid for static operation. Under dynamic conditions and at rapid compensation of the pump the volume displaced by the servo piston also leaves the case drain port. This dynamic control flow can reach up to 40 l/min! Therefore the case drain line is to lead to the reservoir at full size and without restrictions as short and direct as possible.

Case drain flow PV016-028 with pressure compensator (MMC)

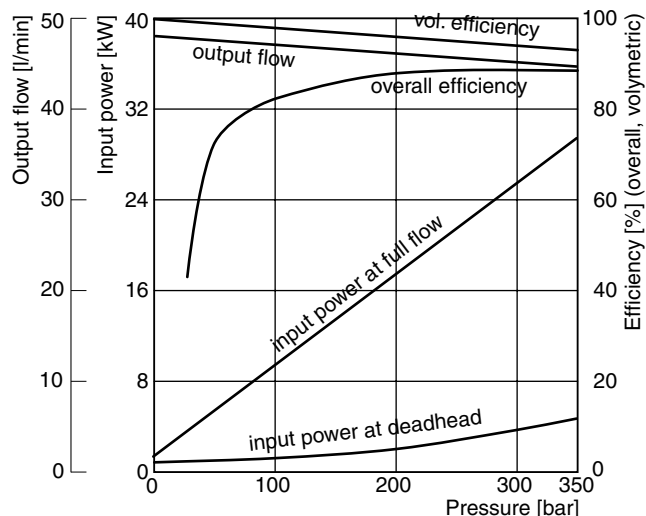


PV028



Efficiency, power consumption

PV032



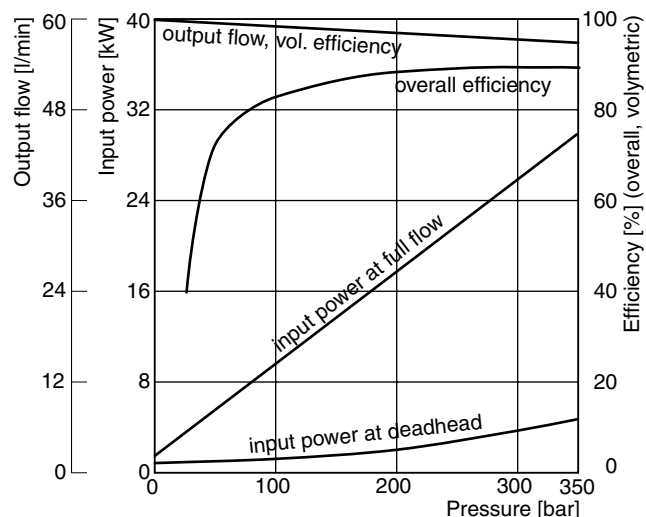
Efficiency and case drain flows PV032 to PV046

The efficiency and power graphs are measured at an input speed of $n = 1500$ rpm, a temperature of 50°C and a fluid viscosity of $30\text{ mm}^2/\text{s}$.

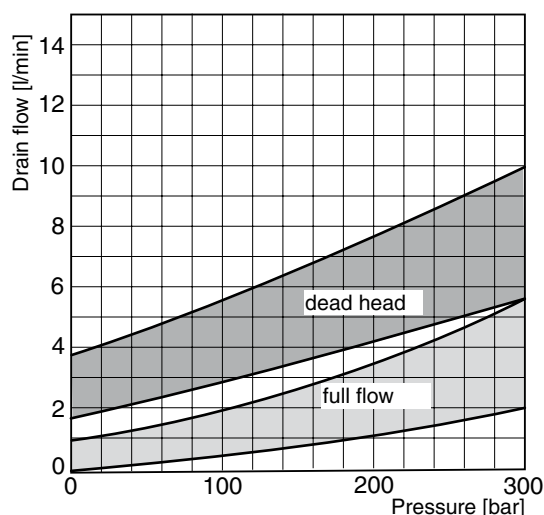
Case drain flow and compensator control flow leave via the drain port of the pump. To the values shown are to be added 1 to 1.2 l/min, if at pilot operated compensators the control flow of the pressure pilot valve also goes through the pump.

Please note: The values shown below are only valid for static operation. Under dynamic conditions and at rapid compensation of the pump the volume displaced by the servo piston also leaves the case drain port. This dynamic control flow can reach up to 60 l/min! Therefore the case drain line is to lead to the reservoir at full size and without restrictions as short and direct as possible.

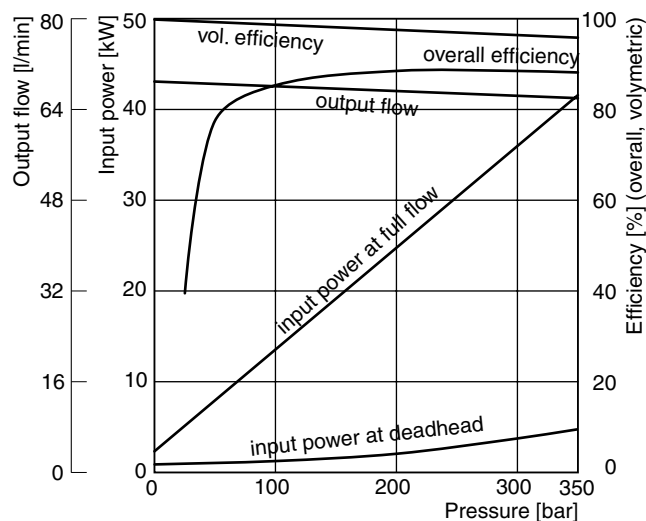
PV040



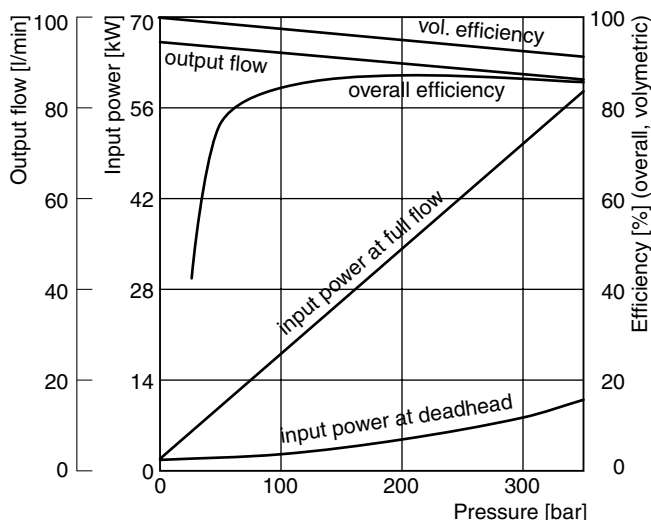
Case drain flow PV032-046 with pressure compensator (MMC)



PV046



**Efficiency, power consumption
PV063**



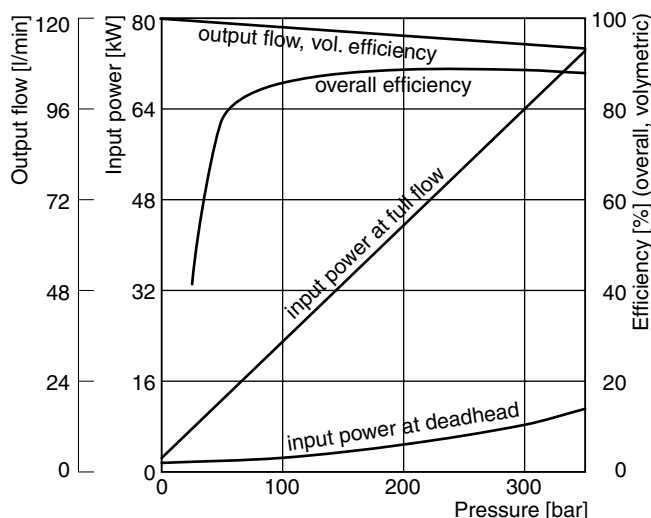
Efficiency and case drain flows PV063, PV080, PV092

The efficiency and power graphs are measured at an input speed of $n = 1500$ rpm, a temperature of $50\text{ }^{\circ}\text{C}$ and a fluid viscosity of $30\text{ mm}^2/\text{s}$.

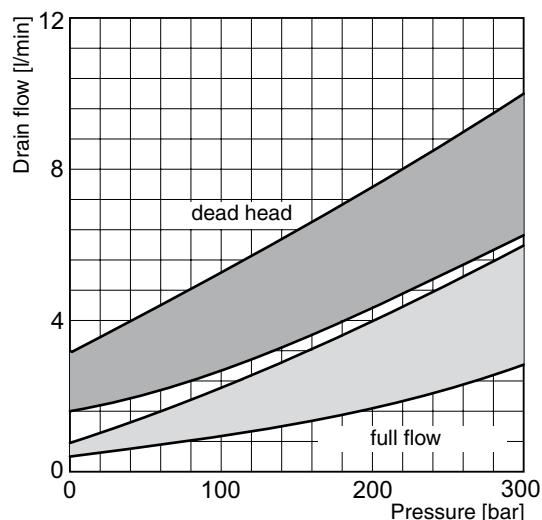
Case drain flow and compensator control flow leave via the drain port of the pump. To the values shown are to be added 1 to 1.2 l/min, if at pilot operated compensators (codes FR*, FF*, FT*, power compensator and p-Q-control) the control flow of the pressure pilot valve also goes through the pump.

Please note: The values shown below are only valid for static operation. Under dynamic conditions and at rapid compensation of the pump the volume displaced by the servo piston also leaves the case drain port. This dynamic control flow can reach up to 80 l/min! Therefore the case drain line is to lead to the reservoir at full size and without restrictions as short and direct as possible.

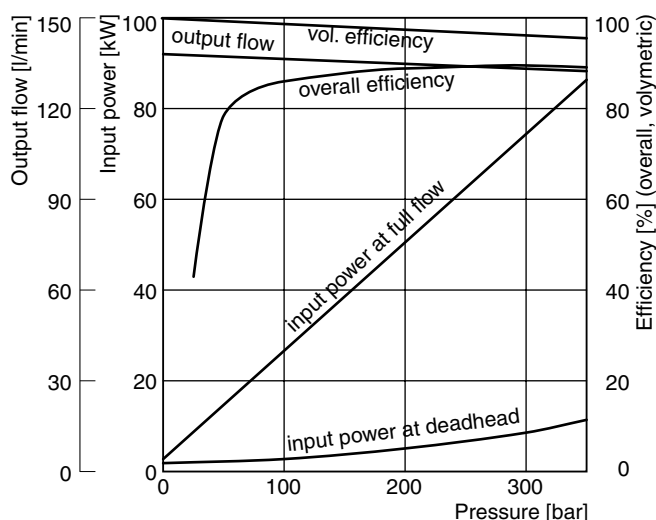
PV080



Case drain flows PV063-092

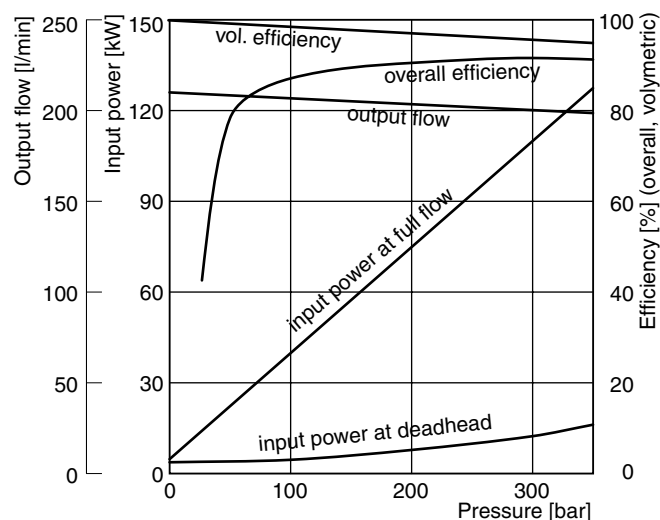


PV092

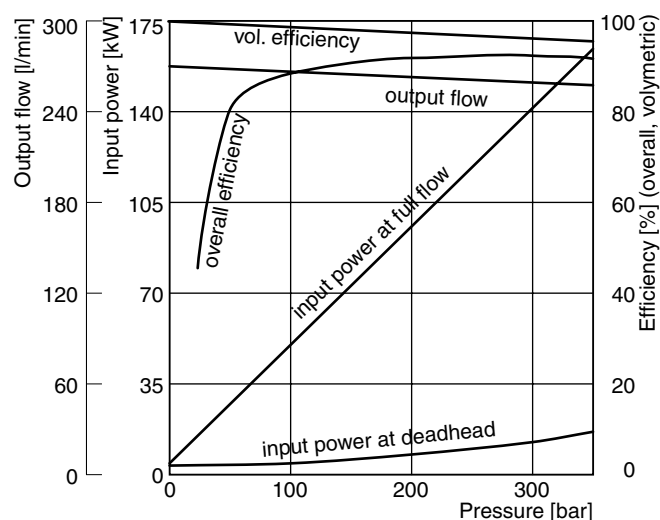


Efficiency, power consumption

PV140



PV180



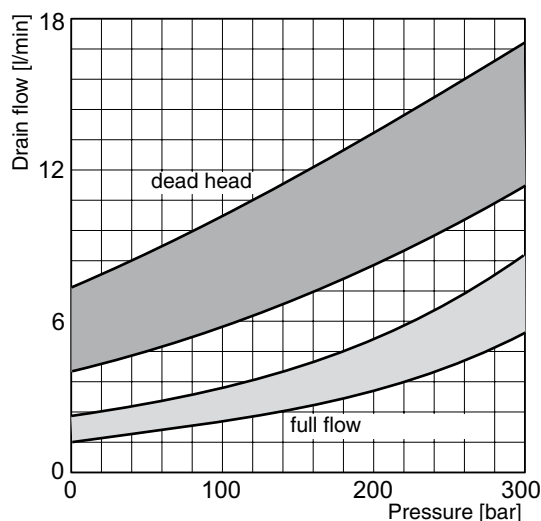
Efficiency and case drain flows PV140, PV180

The efficiency and power graphs are measured at an input speed of $n = 1500$ rpm, a temperature of 50°C and a fluid viscosity of $30\text{ mm}^2/\text{s}$.

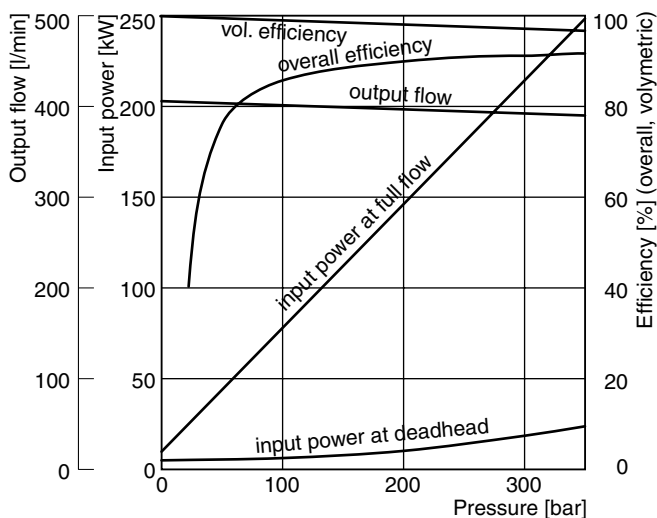
Case drain flow and compensator control flow leave via the drain port of the pump. To the values shown are to be added 1 to 1.2 l/min, if at pilot operated compensators the control flow of the pressure pilot valve also goes through the pump.

Please note: The values shown below are only valid for static operation. Under dynamic conditions and at rapid compensation of the pump the volume displaced by the servo piston also leaves the case drain port. This dynamic control flow can reach up to 120 l/min! Therefore the case drain line is to lead to the reservoir at full size and without restrictions as short and direct as possible.

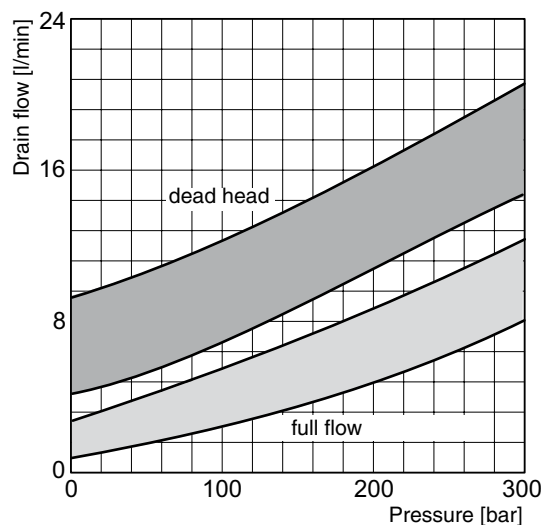
Case drain flows PV140-180



Efficiency, power consumption PV270



Case drain flows PV270



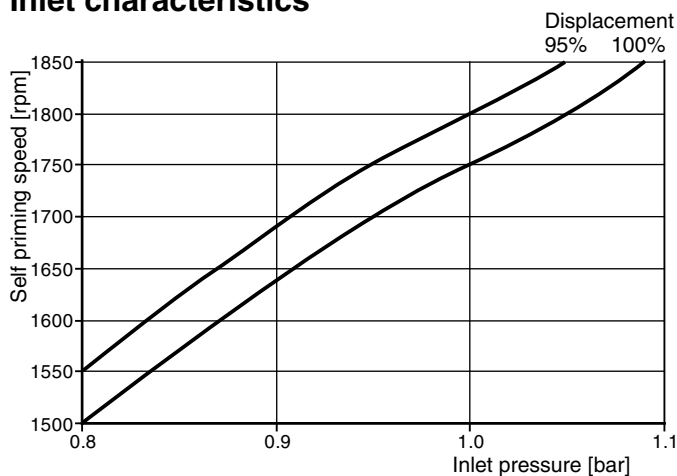
Efficiency and case drain flows PV270

The efficiency and power graphs are measured at an input speed of $n = 1500$ rpm, a temperature of $50\text{ }^{\circ}\text{C}$ and a fluid viscosity of $30\text{ mm}^2/\text{s}$.

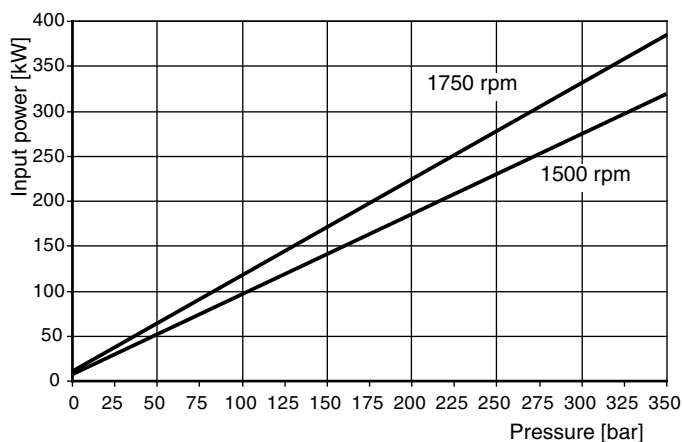
Case drain flow and compensator control flow leave via the drain port of the pump. To the values shown are to be added 1 to 1.2 l/min, if at pilot operated compensators (codes FR*, FF*, FT*, power compensator and p-Q-control) the control flow of the pressure pilot valve also goes through the pump.

Please note: The values shown below are only valid for static operation. Under dynamic conditions and at rapid compensation of the pump the volume displaced by the servo piston also leaves the case drain port. This dynamic control flow can reach up to 120 l/min! Therefore the case drain line is to lead to the reservoir at full size and without restrictions as short and direct as possible.

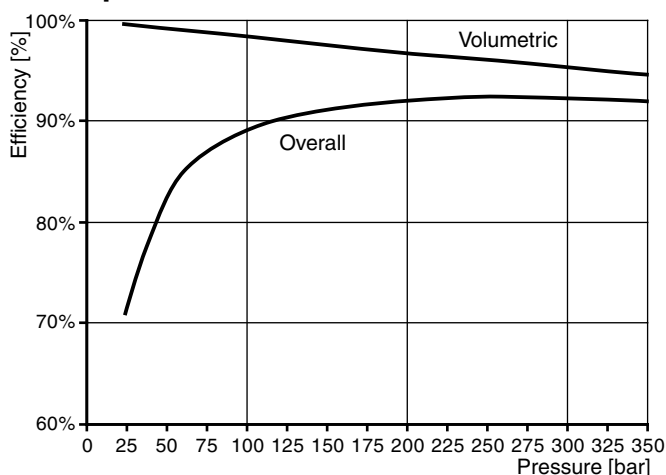
Typical inlet characteristics vs. speed at various percentage displacements
Inlet characteristics



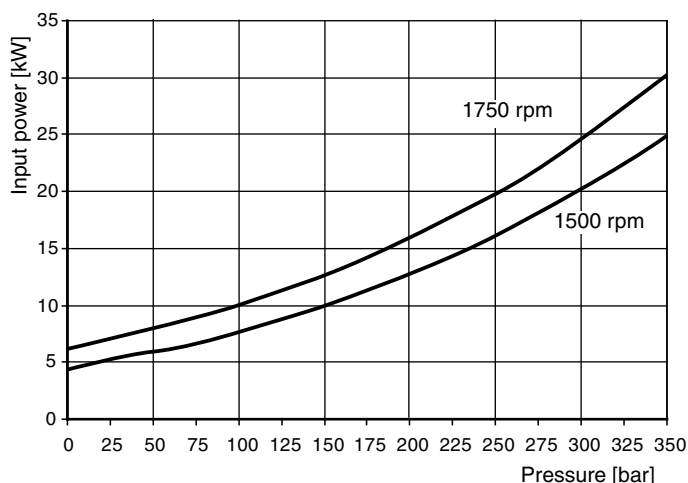
Typical drive power at full displacement
Input power – full stroke



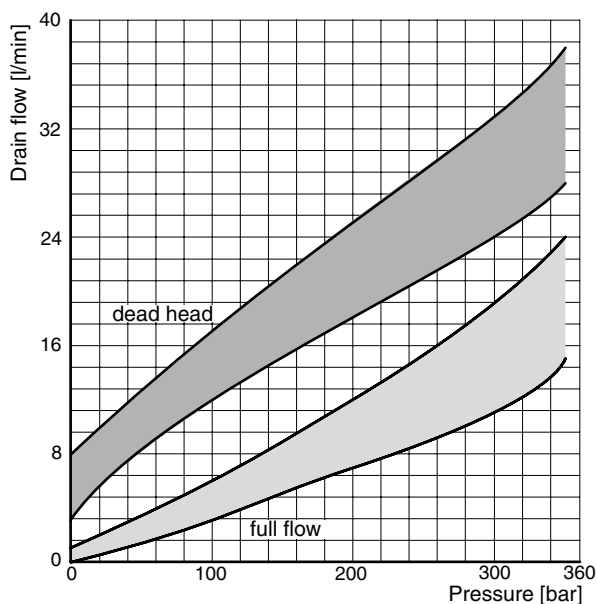
Typical efficiency at full displacement and 1500 rpm



Typical compensated power
Input power – zero stroke



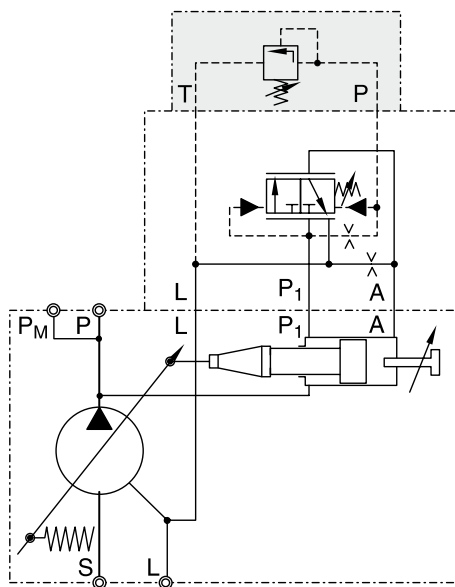
Case drain flows



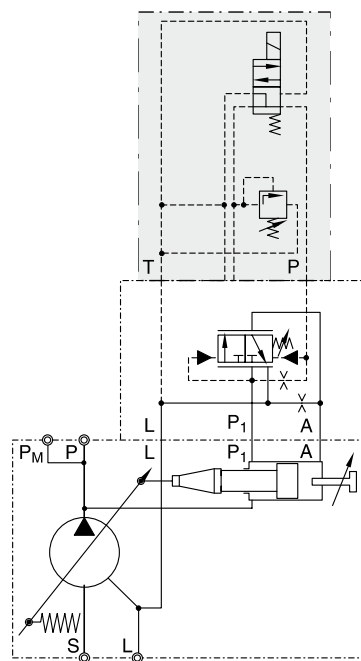
The curves show typical characteristics measured under following conditions:
Fluid: Mineral oil ISO VG 22 at 32 °C
Inlet pressure 1,0 bar (absolute), measured at inlet port.

PV	AC								35	
For PV pump series	Accessories for controls	Function	Mounting bolts	Threads	Seals	Adjustment	Solenoid	Solenoid accessories	Nominal pressure 350 bar	
Code	Function			Code	Threads			Code	Solenoid accessories	
1P	Max. pressure relief 1 pressure, electrical unloading stand by default			M	Metric			omit	For function 1P	
1E				S	SAE / UNC			W	DIN plug socket without plug	
2P	2 pressures, electrical selection					Code	Seals			
2E						N	NBR			
2M	2 pressures + stand by electrical selection stand by default					V	FPM			
2E										
		Code	Mounting bolts					Code	Solenoid voltage	
		C	For single controls					omit	For function 1P	
		S	Without bolts					Y	110V/50Hz - 120V/60Hz	
		M	For code UP*/MT*					T	220V/50Hz - 240V/60Hz	
					Code	Adjustment			J	24V DC
					S	Spindle with lock nut				

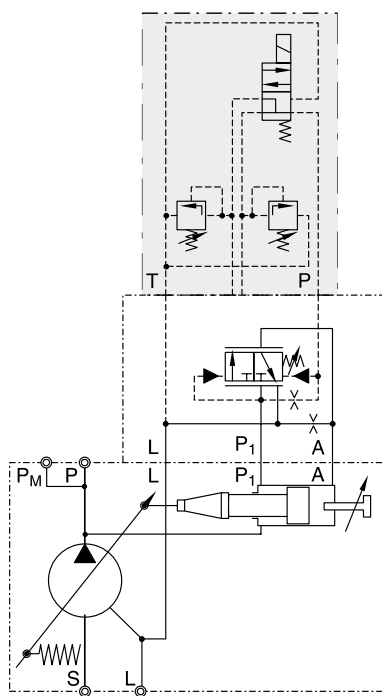
Schematics PVAC1P*



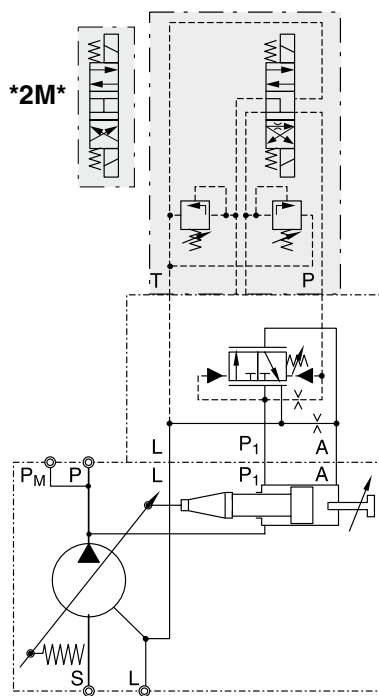
Schematics PVAC1E*



Schematics PVAC2P*



Schematics PVAC2M*/PVAC2E*

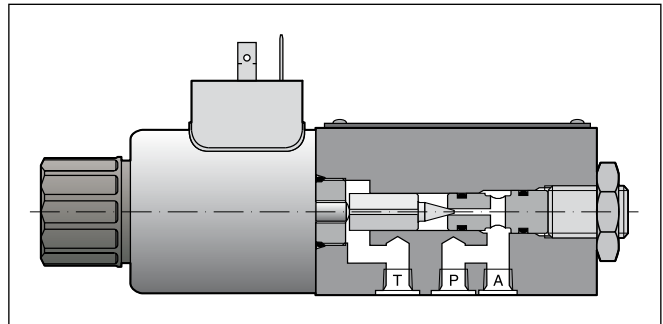
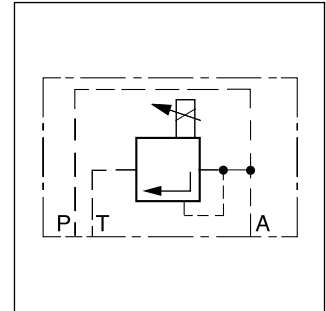


Proportional pressure relief valve PVACRE*

Function

When the pressure in port P exceeds the pressure setting at the solenoid, the poppet opens to port T and limits the pressure in port P to the adjusted level.

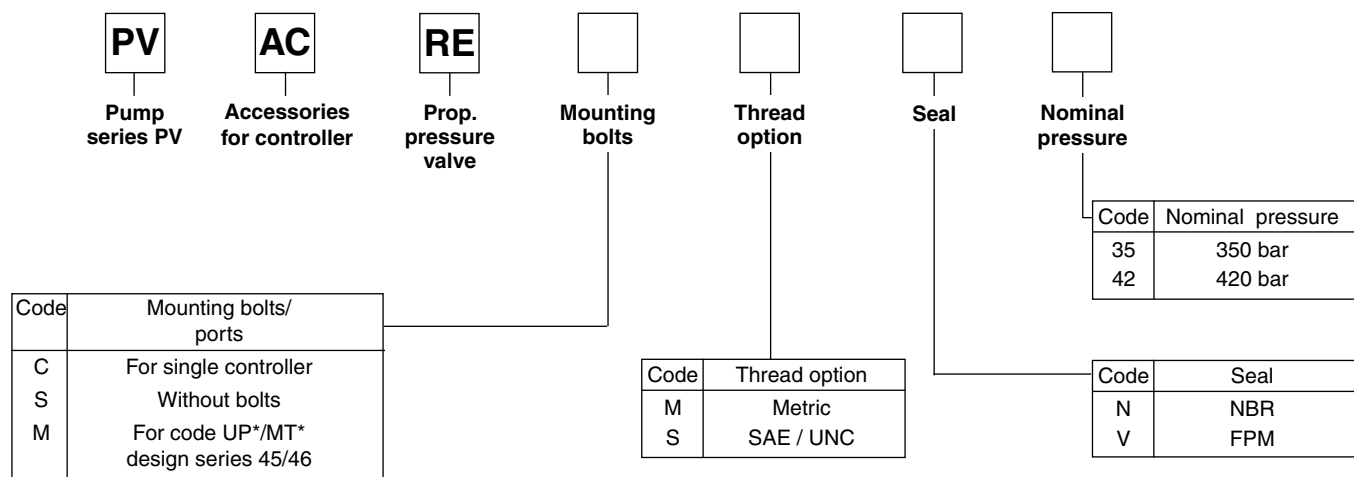
The optimum performance can be achieved in combination with the digital amplifier module PCD00A-400 (see catalogue HY11-3500 for reference).



Technical data

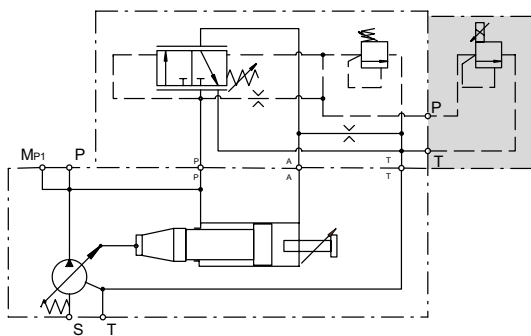
General		
Nominal size		DIN NG06 / CETOP03 / NFPA D03
Mounting position		as desired, horizontal mounting preferred
Ambient temperature	[°C]	-20 ... +70
Weight	[kg]	1.8
Hydraulic		
Max. operating pressure	[bar]	Ports P and A up to 420; port T depressurized
Pressure stages	[bar]	350, 420
Fluid		Hydraulic oil as per DIN 51524 ... 525
Viscosity, recommended	[cSt] / [mm²/s]	30 ... 80
permitted	[cSt] / [mm²/s]	12 ... 380
Fluid temperature	[°C]	-20 ... +60
Filtration		ISO 4406 (1999), 18/16/13
Linearity	[%]	±2.8
Repeatability	[%]	<±1
Hysteresis	[%]	±1.5 of p _{max}
Electrical		
Duty ratio	[%]	100 ED
Protection class		IP 65 in accordance with EN 60529 (plugged and mounted)
Nominal voltage	[V]	16 (1.3 A max. current)
Coil resistance	[Ohm]	4 at 20°C
Solenoid connection		Connector as per EN 175301-803
Power amplifier, recommended		PCD00A-400

Ordering code proportional pressure relief valve

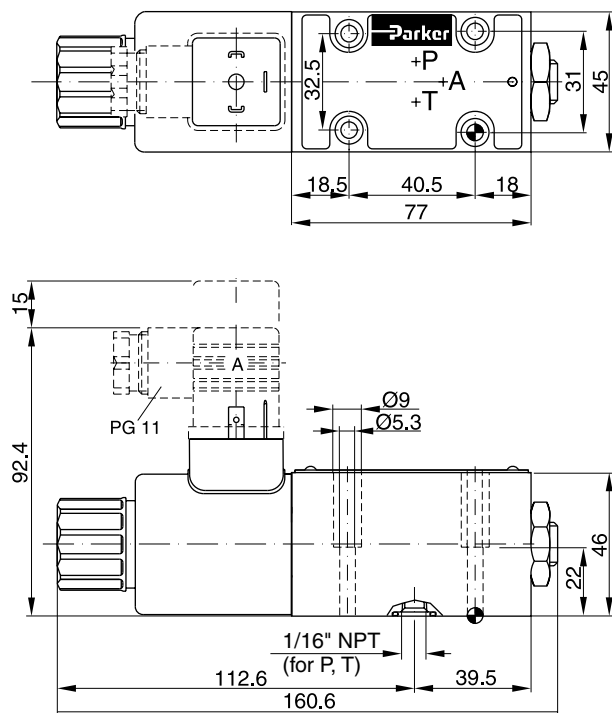


Schematic PVACRE*

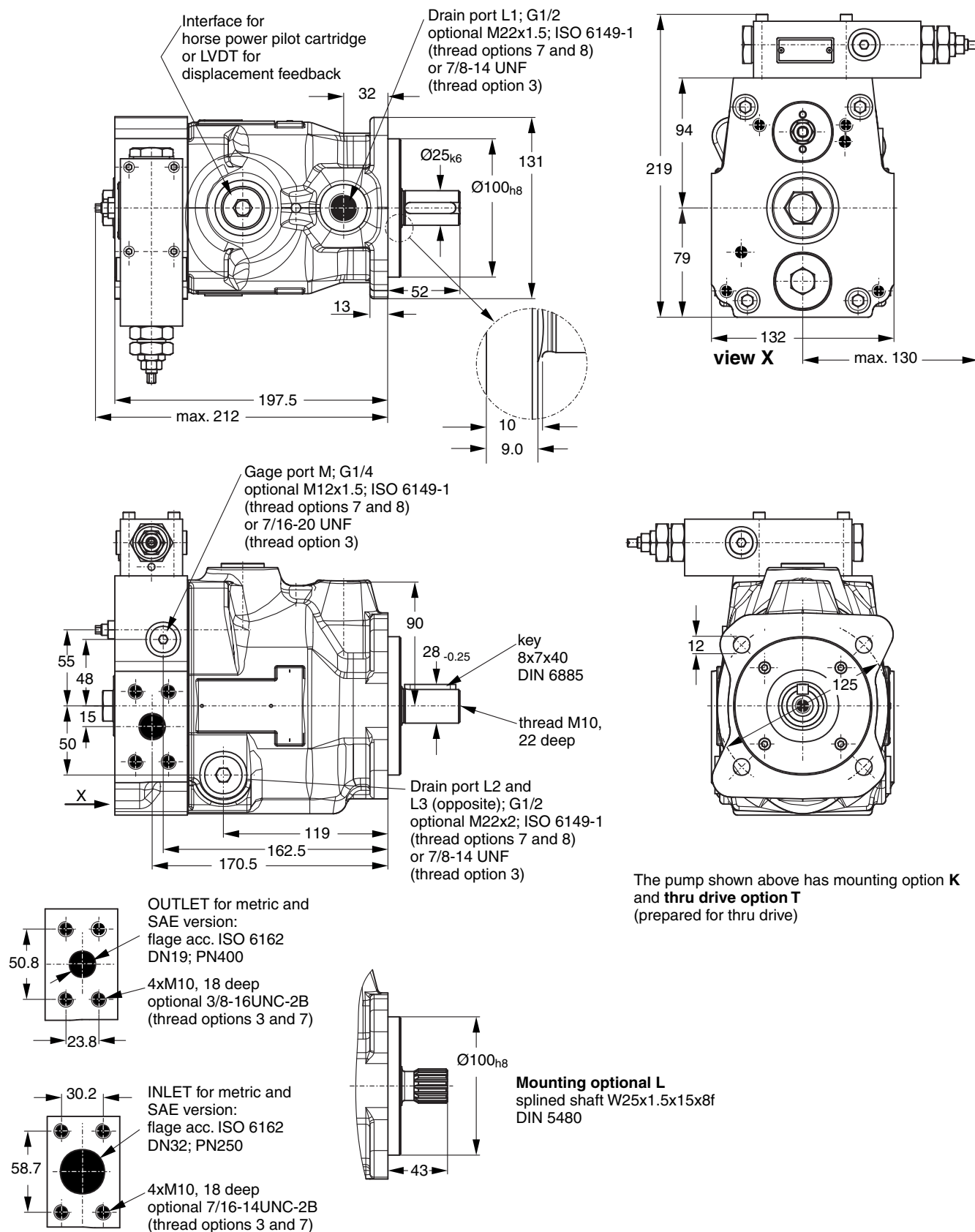
Example for PVACRE* mounted



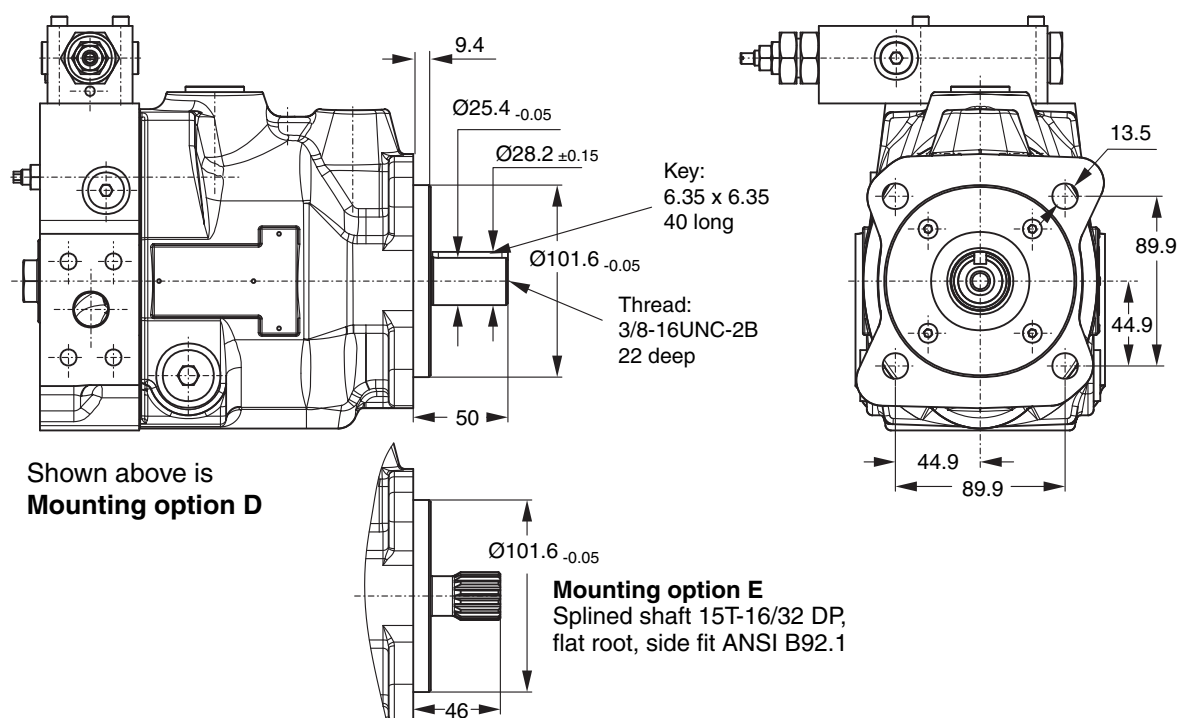
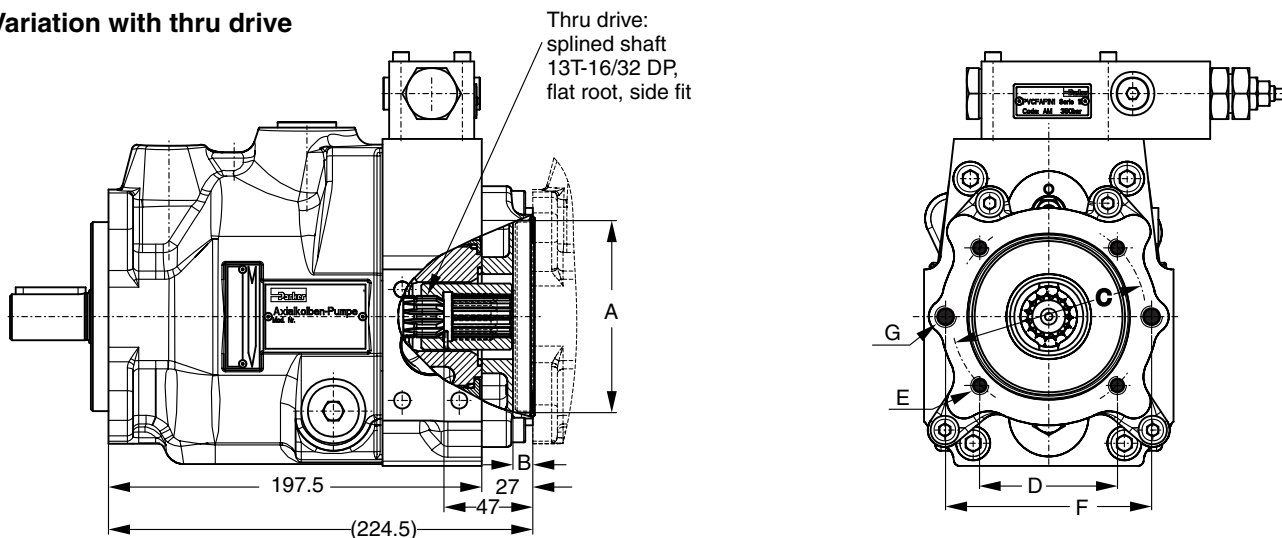
Dimensions PVACRE*



PV016 - 028, metric version

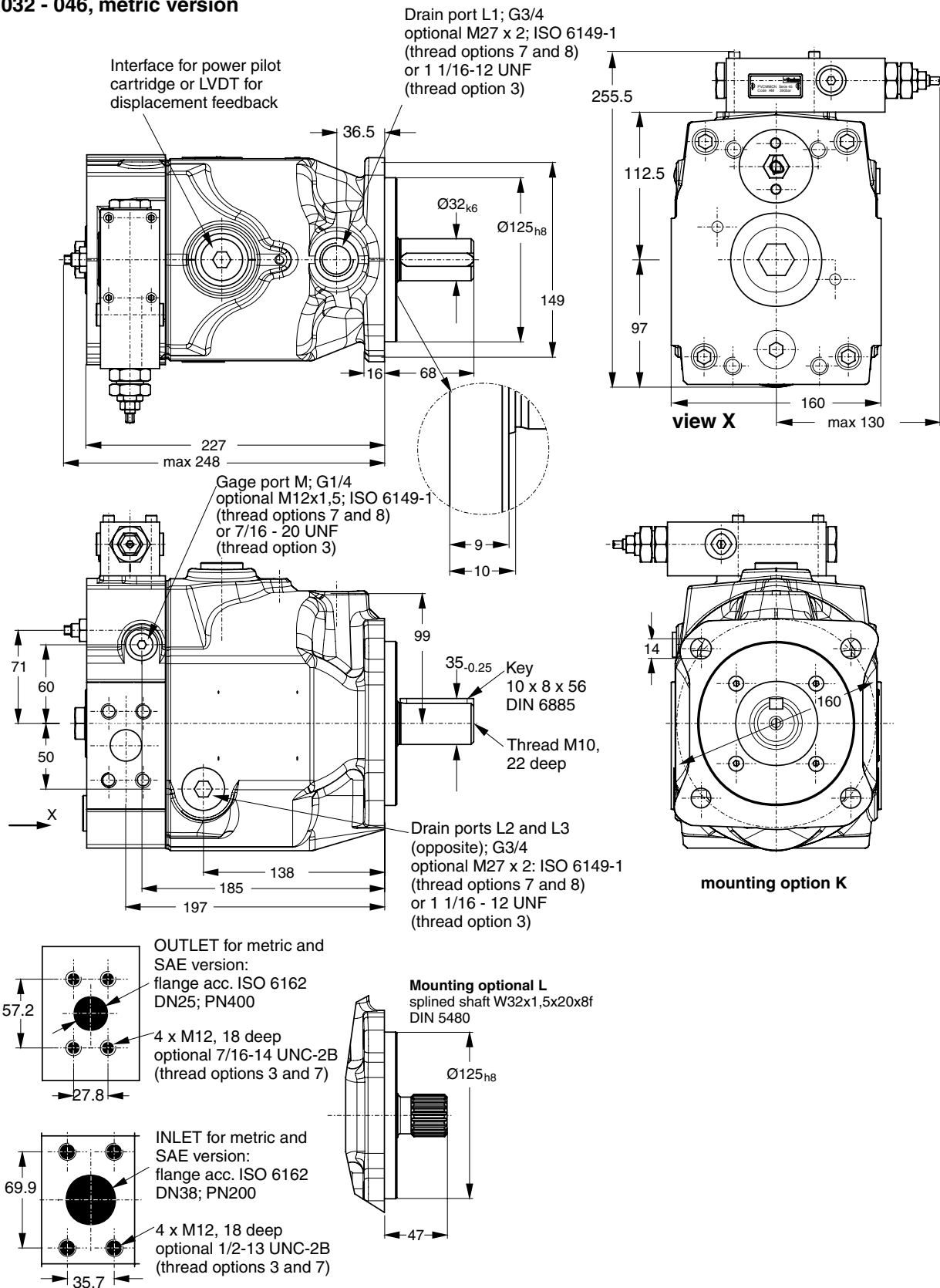


Shown is a clockwise rotating pump with standard pressure compensator.
 Counter clockwise rotating pumps have inlet, outlet and gauge port reversed.

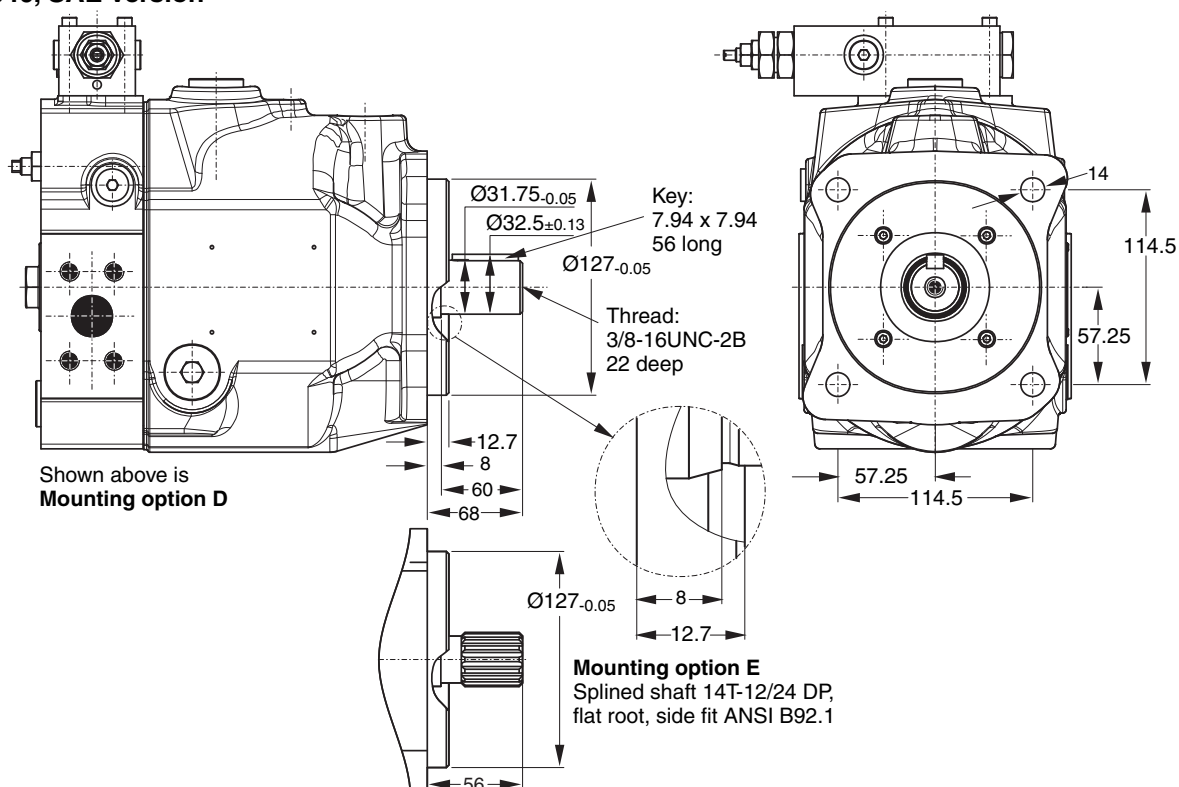
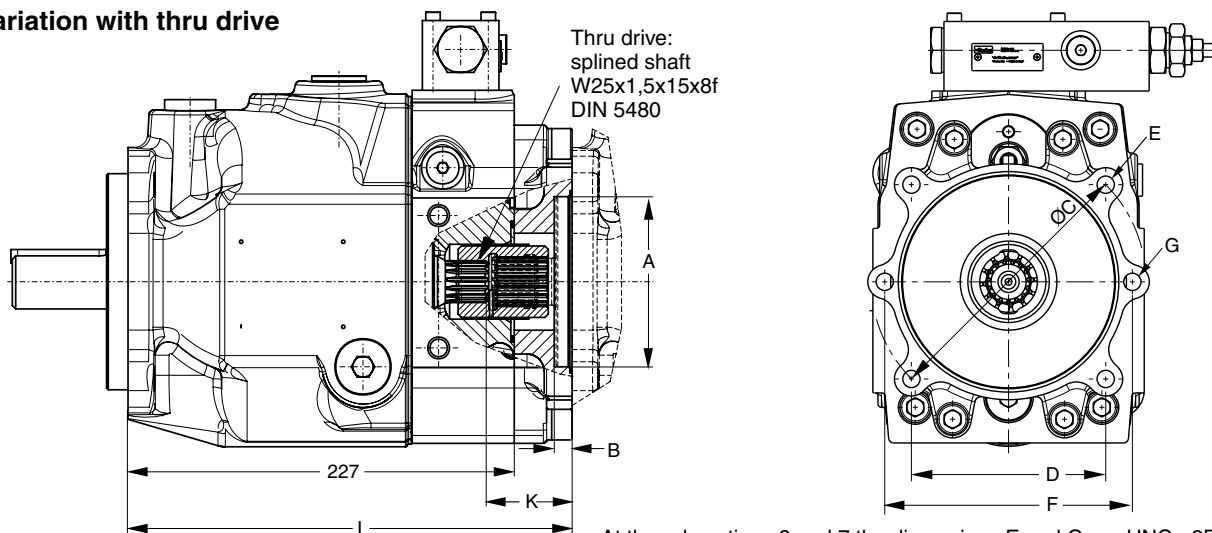
PV016 - 028, SAE version**Variation with thru drive****Thru drive adaptors are available with the following dimensions**

Drawing Dimension Thru drive option	A	B	C	D	E		F	G		Remark
					Metr	UNC		Metr	UNC	
Y	50.8	8	-	-	-	-	82	M8	5/16"-18	SAE AA 2-Bolt
A	82.55	8	-	-	-	-	106	M10	3/8"-16	SAE A 2-Bolt
B	101.6	10.5	127	89.8	M12	1/2"-13	-	-	-	SAE B 4-Bolt
G	63	8.5	85	60.1	M8	5/16"-18	100	M8	5/16"-18	2/4-Bolt
H	80	8.5	103	72.8	M8	5/16"-18	109	M10	3/8"-16	2/4-Bolt
J	100	10,5	125	88.4	M10	3/8"-16	-	-	-	4-Bolt

PV032 - 046, metric version



Shown is a clockwise rotating pump with standard pressure compensator.
 Counter clockwise rotating pumps have inlet, outlet and gauge port reversed.

PV032 - 046, SAE version**Variation with thru drive**

At threads options 3 and 7 the dimensions E and G are UNC - 2B threads.

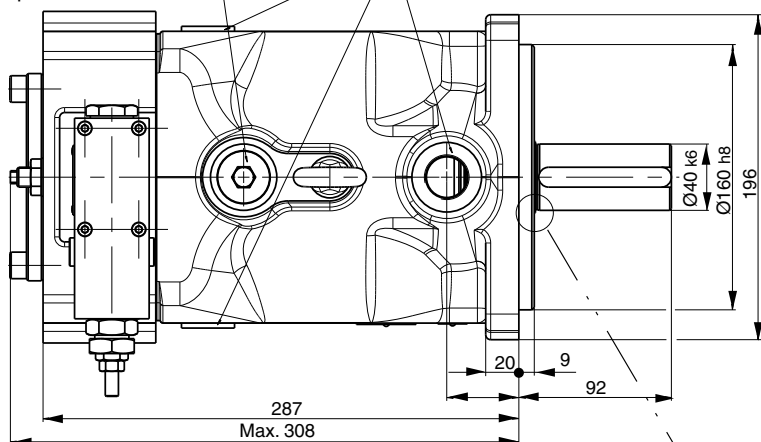
Thru drive adaptors are available with the following dimensions

Drawing Dimension Thru drive option	A	B	C	D	E		F	G		K	L	Remark
					Metr	UNC		Metr	UNC			
A	82.55	8	-	-	-	-	106	M10	3/8"-16	48	261	SAE A 2-Bolt
B	101.6	11	127	89.8	M12	1/2"-13	146	M12	1/2"-13	48	261	SAE B 2/4-Bolt
C	127	13.5	162	114.6	M12	1/2"-13	-	-	-	63	276	SAE C 4-Bolt
G	63	8.5	85	60.1	M8	5/16"-18	100	M8	5/16"-18	48	261	2/4-Bolt
H	80	8.5	103	72.8	M8	5/16"-18	109	M10	3/8"-16	48	261	2/4-Bolt
J	100	10.5	125	88.4	M10	3/8"-16	140	M12	1/2"-13	48	261	2/4-Bolt
K	125	10.5	160	113.1	M12	1/2"-13	-	-	-	48	261	4-Bolt

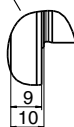
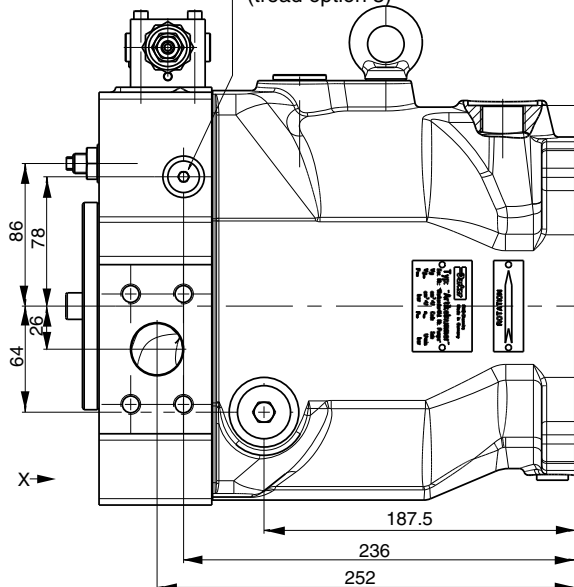
PV 063 - 092 Metric

Mounting interface for
horse power pilot or LVDT
for displacement feedback

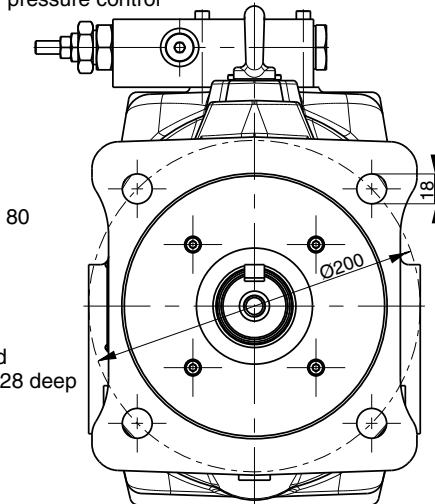
Drain ports L1, L2 and L3; G3/4"
optional M27 x 2; ISO 6149-1
(thread option 7 and 8)
or 1 1/16 - 12 UNF
(thread option 3)



Gage port M; G1/4, optional M12 x 1.5; ISO
6149-1 (thread option 7 and 8) or 7/16 - 20 UNF
(thread option 3)



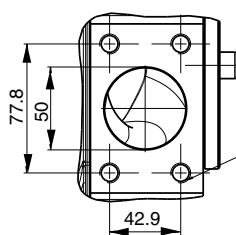
Shown with standard
pressure control



view X

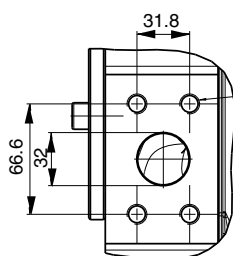
Key 12 x 8 x 80
DIN 6885

Thread
M12 - 28 deep



INLET for metric and SAE
version:
flange according ISO 6162
DN 51; PN 200 bar

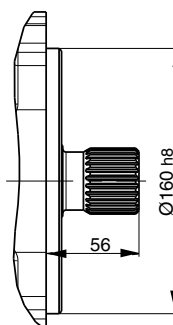
4 x M12, 20 deep
optional 1/2 - 13 UNC - 2B
(thread options 3 and 7)



4 x M12, 20 deep
optional 1/2 - 13 UNC - 2B
(thread options 3 and 7)
or thread options 4:
4 x M14, 20 deep

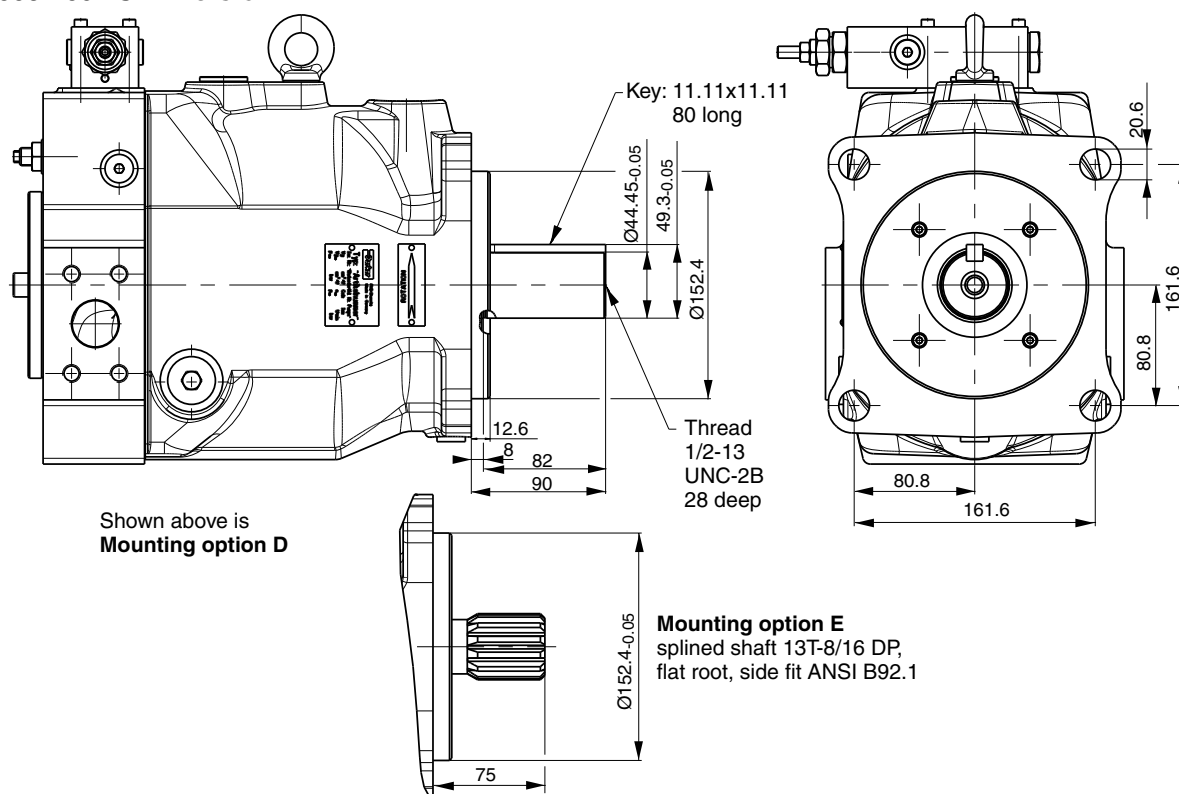
OUTLET for metric and SAE version:
flange according ISO 6162
DN 32; PN 400 bar

The pump shown above has **Mounting option K**
and **through drive variation T**
(prepared for through drive)

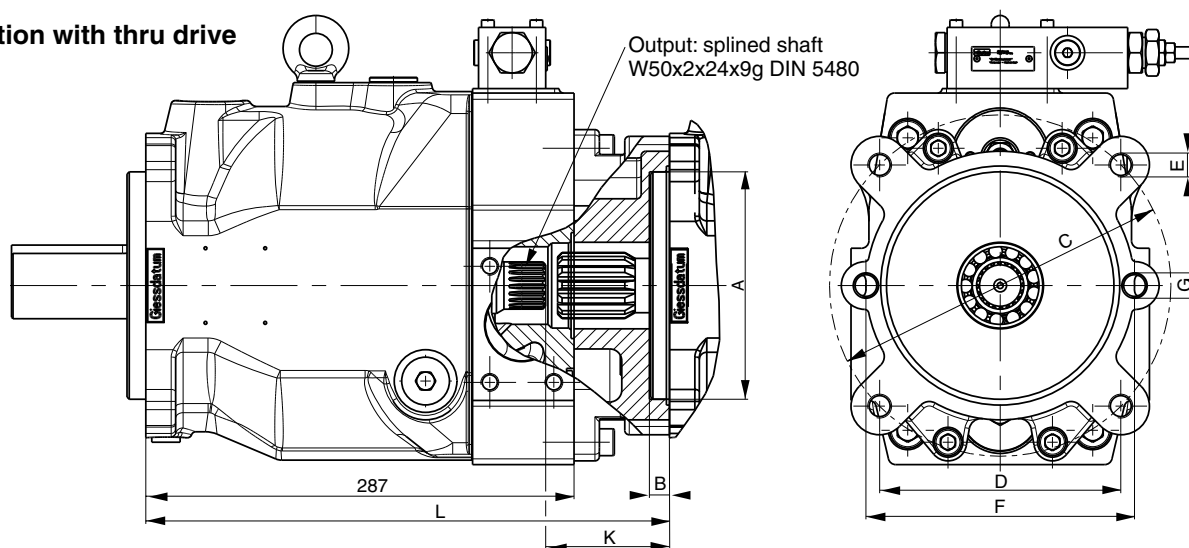


Mounting option L, splined shaft
W40 x 1.5 x 25 x 8f DIN 5480

PV 063 - 092 SAE Version



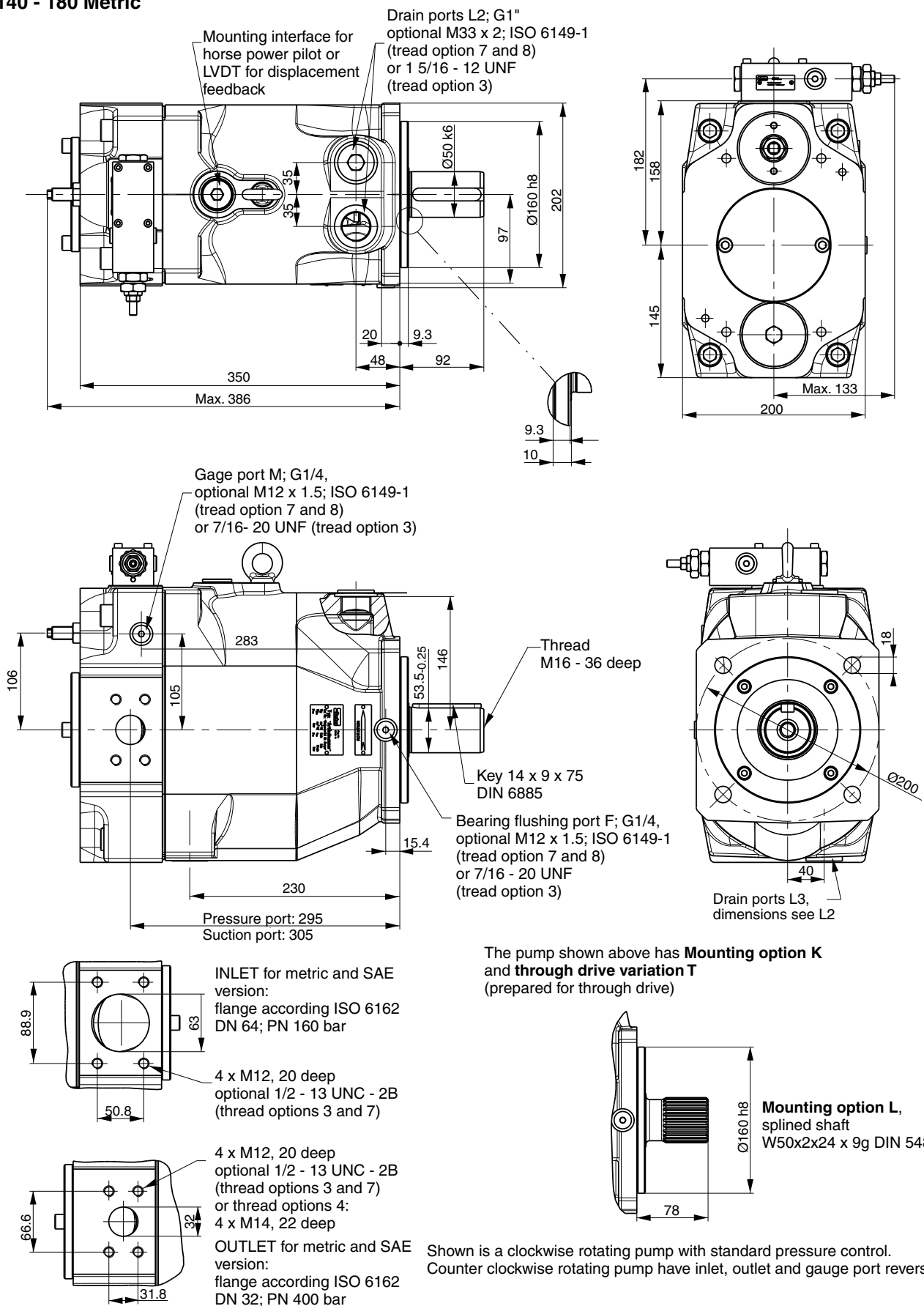
Variation with thru drive



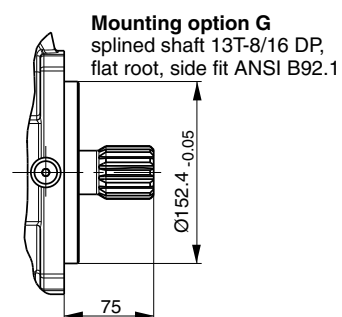
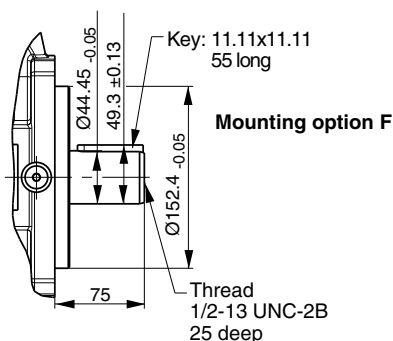
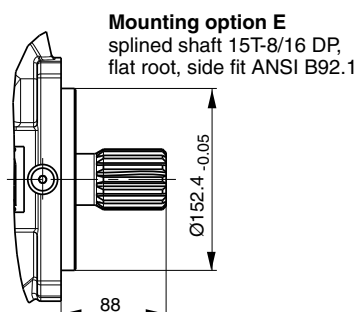
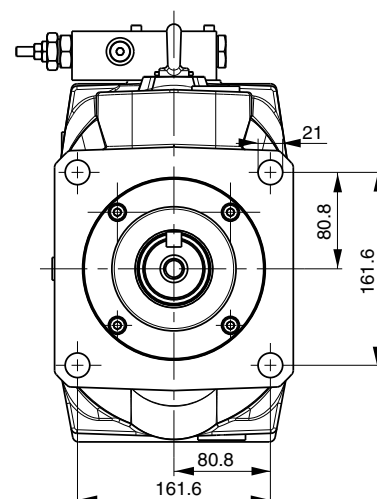
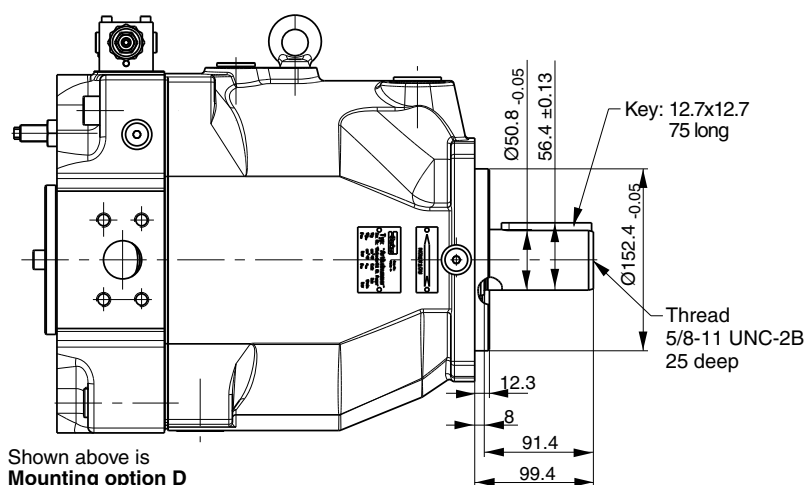
Thru drive adaptors are available with the following dimensions

Drawing Dimension Thru drive option	A	B	C	D	E		F	G		K	L	Remark
					Metr	UNC		Metr	UNC			
A	82.55	8	-	-	-	-	106	M10	3/8"-16	58	326	SAE A 2-Bolt
B	101.6	11	127	89.8	M12	1/2"-13	146	M12	1/2"-13	58	326	SAE B 2/4-Bolt
C	127	13.5	162	114.6	M12	1/2"-13	181	M16	5/8"-11	58	326	SAE C 2/4-Bolt
D	152.4	13.5	228.5	161.6	M16	5/8"-11	-	-	-	83	351	SAE D 4-Bolt
G	63	8.5	85	60.1	M8	5/16"-18	100	M8	5/16"-18	58	326	2/4-Bolt
H	80	8.5	103	72.8	M8	5/16"-18	109	M10	3/8"-16	58	326	2/4-Bolt
J	100	10.5	125	88.4	M10	3/8"-16	140	M12	1/2"-13	58	326	2/4-Bolt
K	125	10.5	160	113.1	M12	1/2"-13	180	M16	5/8"-11	58	326	2/4-Bolt
L	160	13.5	200	141.4	M16	5/8"-11	-	-	-	58	326	4-Bolt

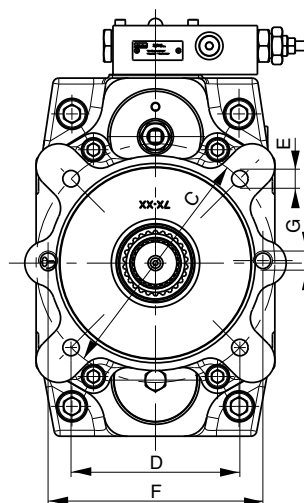
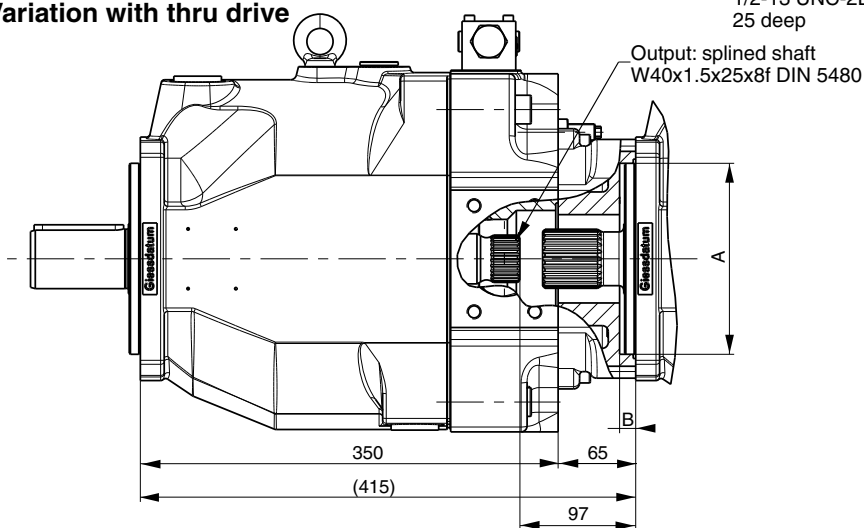
PV 140 - 180 Metric



PV 140 - 180 SAE Version



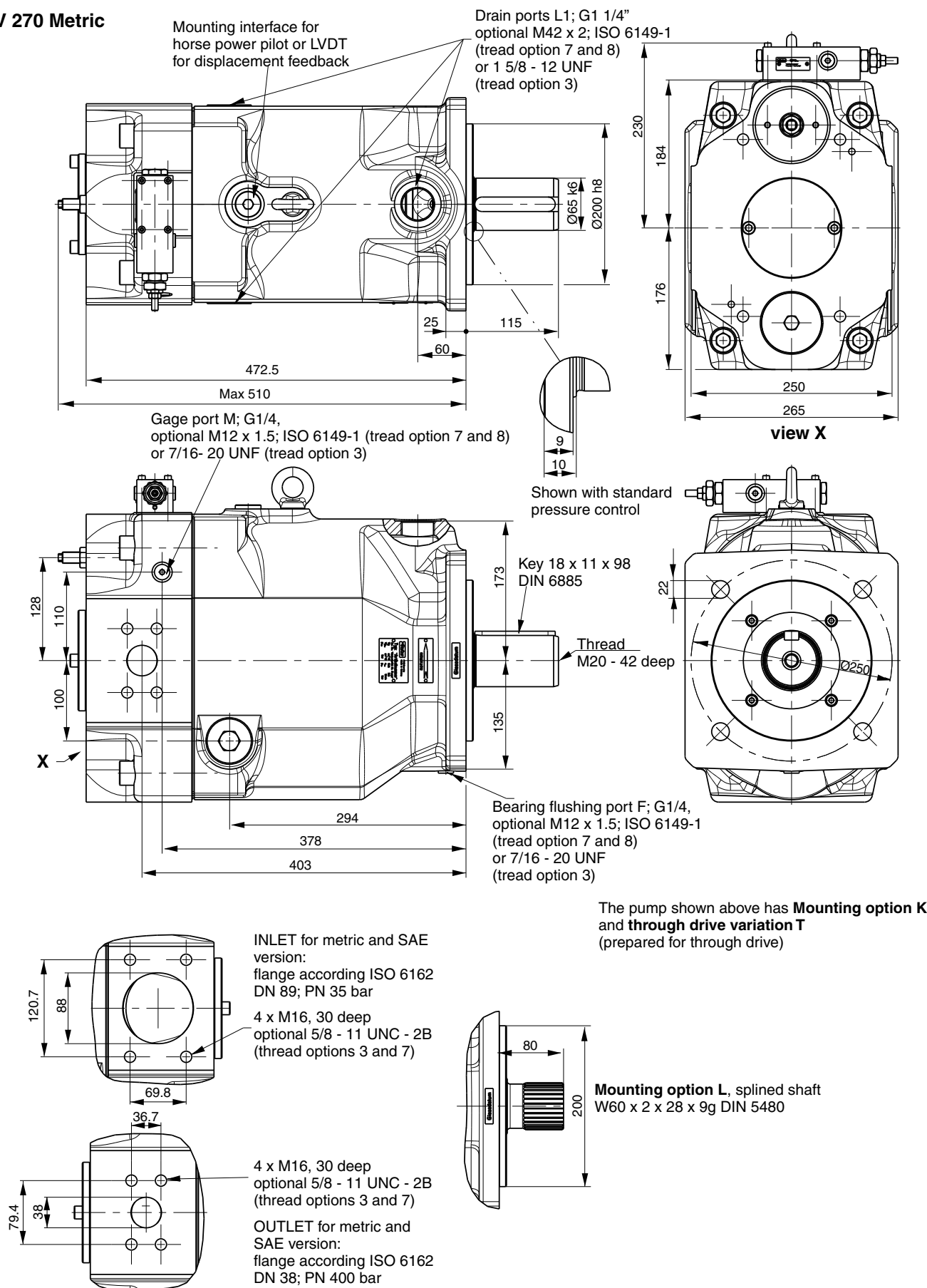
Variation with thru drive



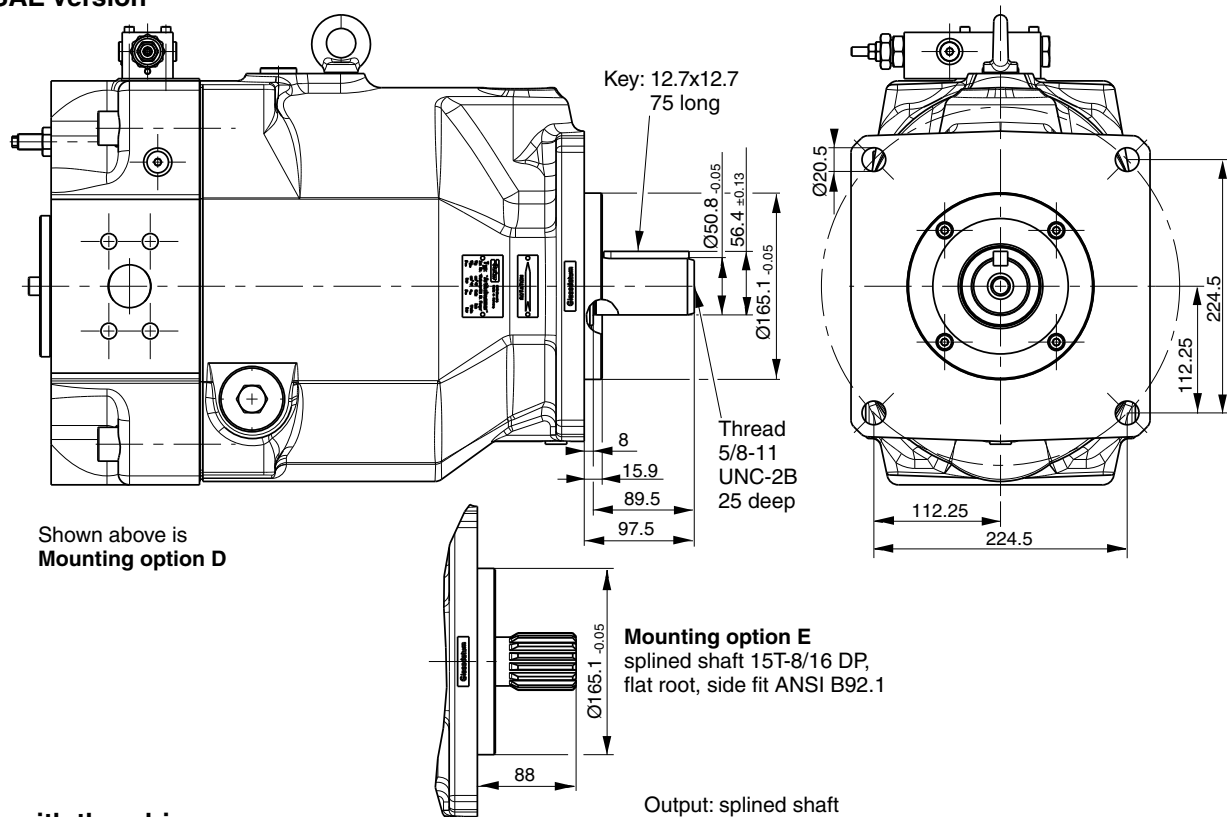
Thru drive adaptors are available with the following dimensions

Drawing Dimension Thru drive option	A	B	C	D	E		F	G		Remark
					Metr	UNC		Metr	UNC	
A	82.55	8	-	-	-	-	106	M10	3/8"-16	SAE A 2-Bolt
B	101.6	11	127	89.8	M12	1/2"-13	146	M12	1/2"-13	SAE B 2/4-Bolt
C	127	13.5	162	114.6	M12	1/2"-13	181	M16	5/8"-11	SAE C 2/4-Bolt
D	152.4	13.5	228.5	161.6	M16	5/8"-11	-	-	-	SAE D 4-Bolt
H	80	8.5	103	72.8	M8	5/16"-18	109	M10	3/8"-16	2/4-Bolt
J	100	10.5	125	88.4	M10	3/8"-16	140	M12	1/2"-13	2/4-Bolt
K	125	10.5	160	113.1	M12	1/2"-13	180	M16	5/8"-11	2/4-Bolt
L	160	13.5	200	141.4	M16	5/8"-11	-	-	-	4-Bolt

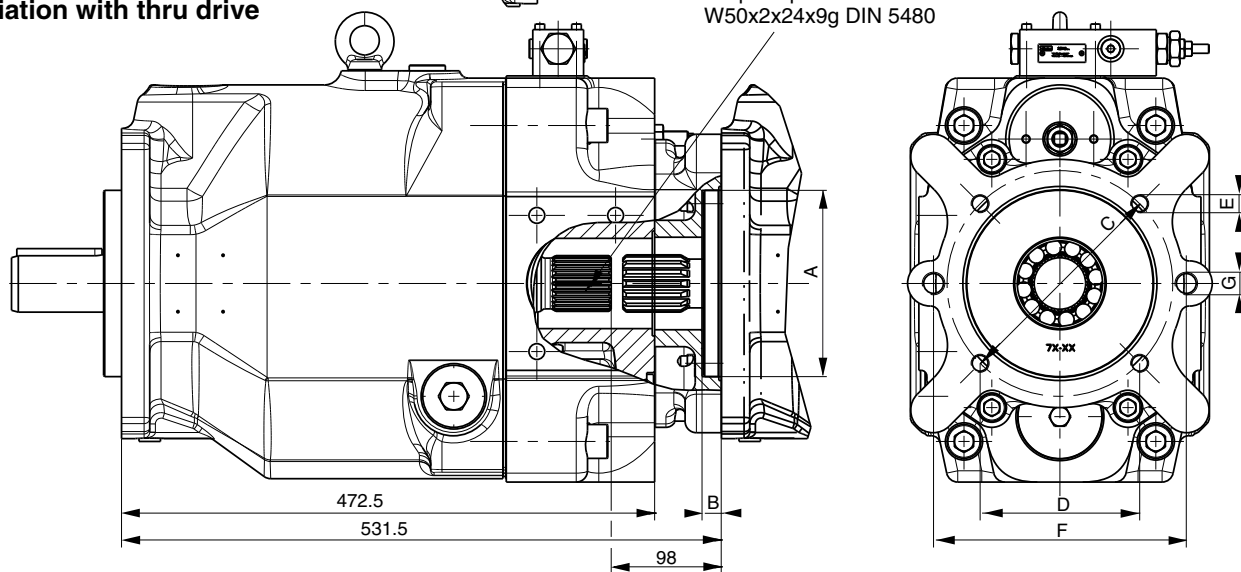
PV 270 Metric



PV 270 SAE Version



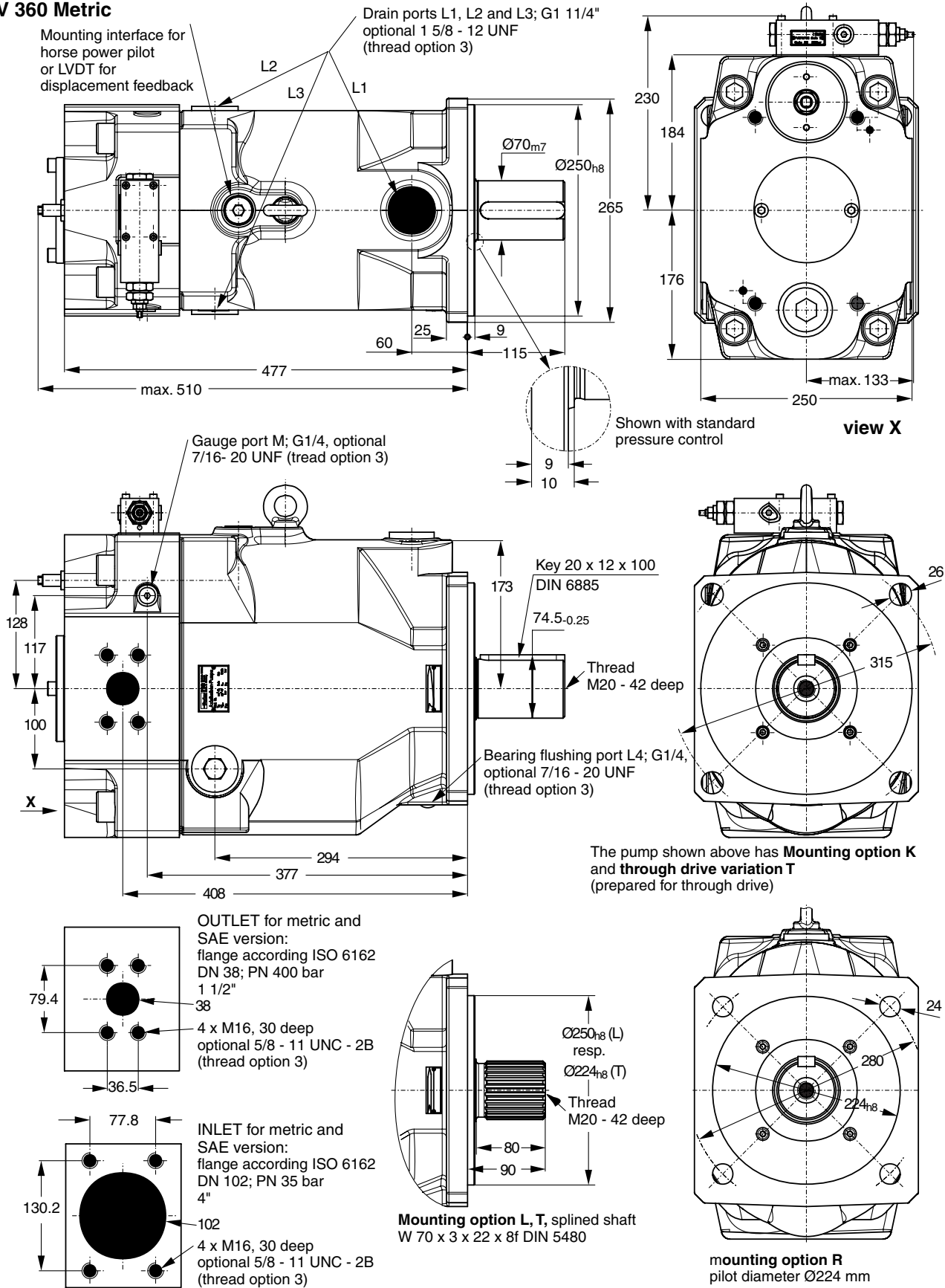
Variation with thru drive



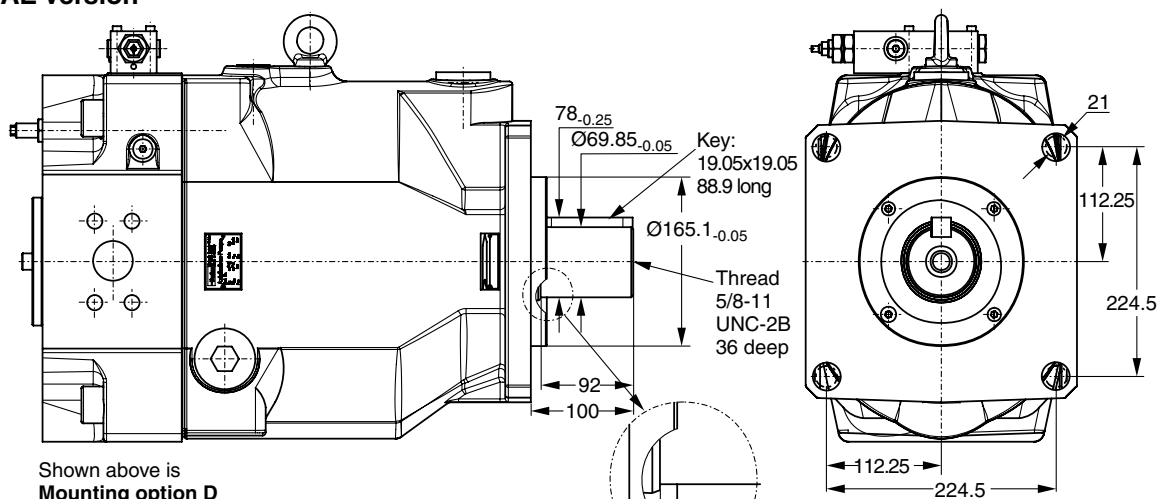
Thru drive adaptors are available with the following dimensions

Drawing Dimension Thru drive option	A	B	C	D	E		F	G		Remark
					Metr	UNC		Metr	UNC	
A	82.55	8	-	-	-	-	106	M10	3/8"-16	SAE A 2-Bolt
B	101.6	11	127	89.8	M12	1/2"-13	146	M12	1/2"-13	SAE B 2/4-Bolt
C	127	13.5	162	114.6	M12	1/2"-13	181	M16	5/8"-11	SAE C 2/4-Bolt
D	152.4	13.5	228.5	161.6	M16	5/8"-11	229	M16	5/8"-11	SAE D 2/4-Bolt
E	165.1	17	317.5	224.5	M20	3/4"-10	-	-	-	SAE E 4-Bolt
H	80	8.5	103	72.8	M8	5/16"-18	109	M10	3/8"-16	2/4-Bolt
J	100	10.5	125	88.4	M10	3/8"-16	140	M12	1/2"-13	2/4-Bolt
K	125	10.5	160	113.1	M12	1/2"-13	180	M16	5/8"-11	2/4-Bolt
L	160	13.5	200	141.4	M16	5/8"-11	224	M20	3/4"-10	2/4-Bolt
M	200	13.5	250	176.8	M20	3/4"-10	-	-	-	4-Bolt

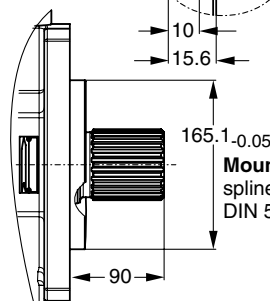
PV 360 Metric



PV 360 SAE Version

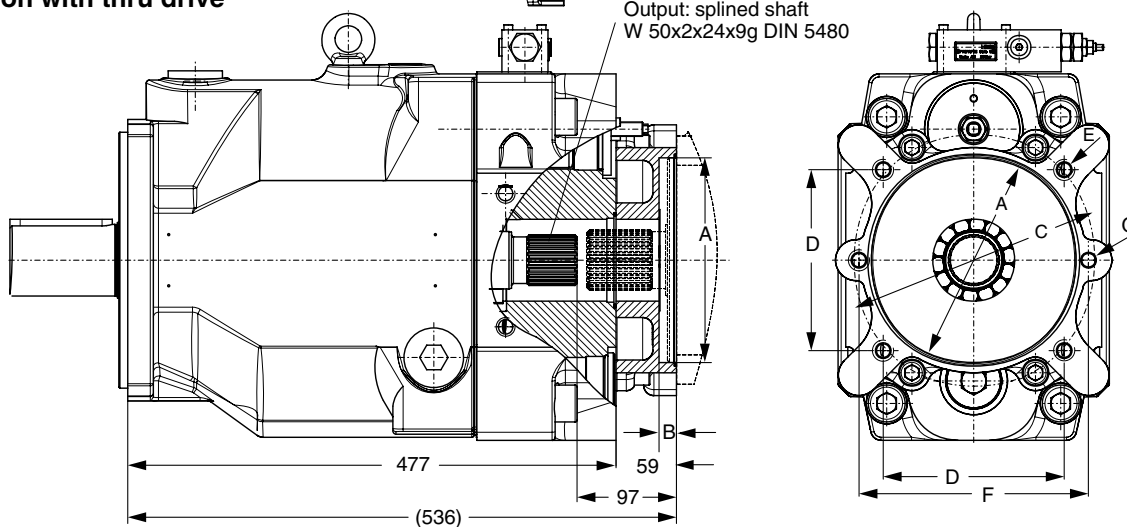


Shown above is
Mounting option D



Mounting option E
splined shaft W 70x3x22x8f,
DIN 5480

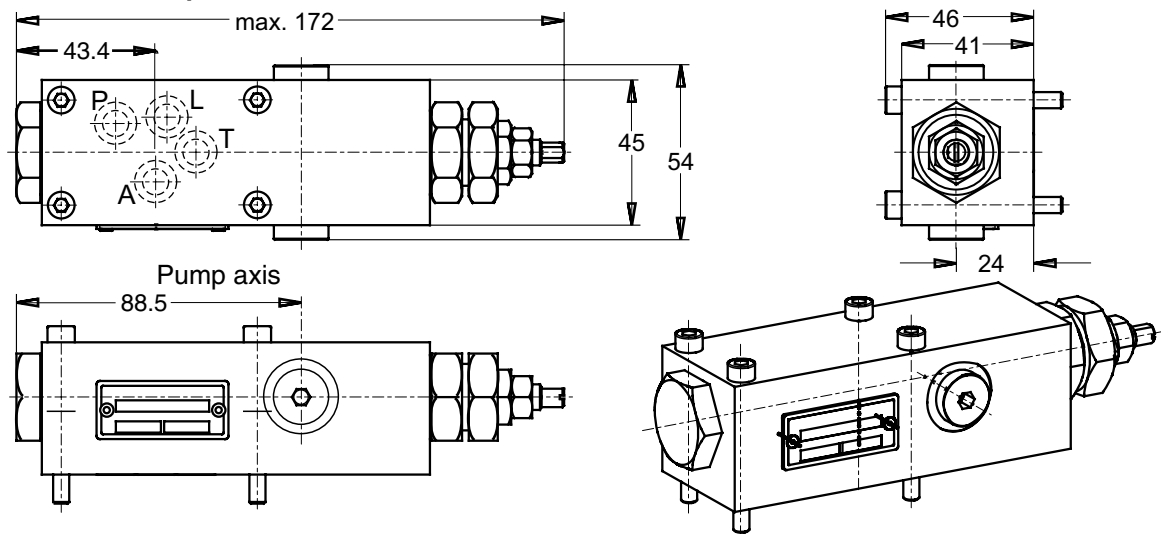
Variation with thru drive



Output: splined shaft
W 50x2x24x9g DIN 5480

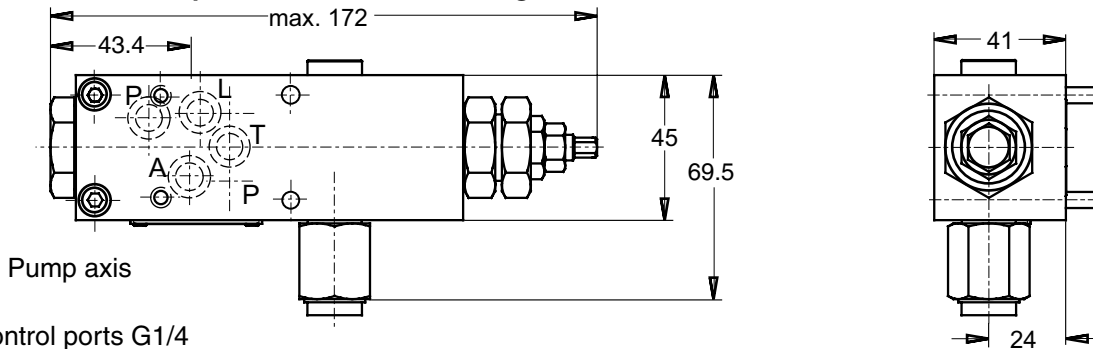
Thru drive adaptors are available with the following dimensions										
Drawing Dimension Thru drive option	A	B	C	D	E		F	G		Remark
					Metr	UNC		Metr	UNC	
A	82.55	8	-	-	-	-	106	M10	3/8"-16	SAE A 2-Bolt
B	101.6	11	127	89.8	M12	1/2"-13	146	M12	1/2"-13	SAE B 2/4-Bolt
C	127	13.5	162	114.6	M12	1/2"-13	181	M16	5/8"-11	SAE C 2/4-Bolt
D	152.4	13.5	228.5	161.6	M16	5/8"-11	229	M16	5/8"-11	SAE D 2/4-Bolt
E	165.1	17	317.5	224.5	M20	3/4"-10	-	-	-	SAE E 4-Bolt
H	80	8.5	103	72.8	M8	5/16"-18	109	M10	3/8"-16	2/4-Bolt
J	100	10.5	125	88.4	M10	3/8"-16	140	M12	1/2"-13	2/4-Bolt
K	125	10.5	160	113.1	M12	1/2"-13	180	M16	5/8"-11	2/4-Bolt
L	160	13.5	200	141.4	M16	5/8"-11	224	M20	3/4"-10	2/4-Bolt
M	200	13.5	250	176.8	M20	3/4"-10	-	-	-	4-Bolt

Dimensions standard pressure control, code ...MMC

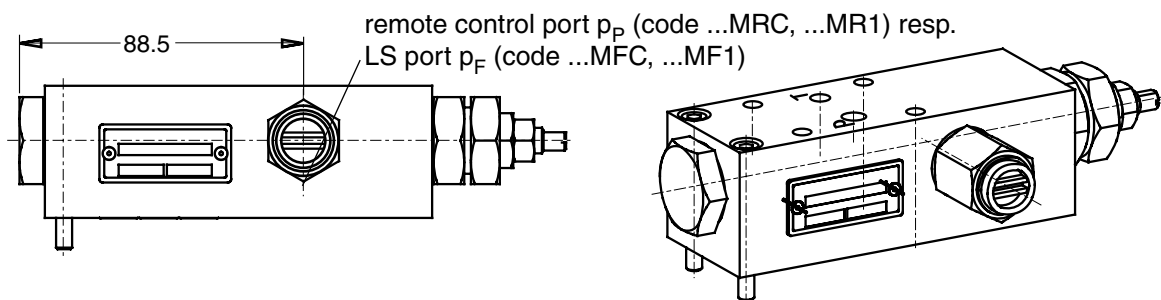


Controls with code ...MM1 have a NG6 / Cetop 3 interface topside (as shown below)

Dimensions remote pressure and load sensing control, codes ...MR1, ...MF1

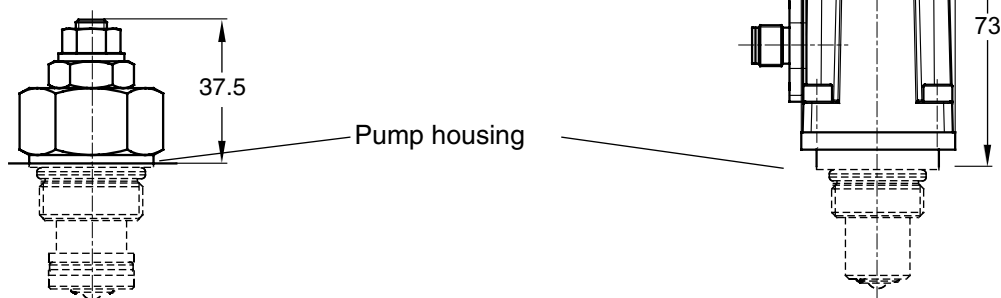


All control ports G1/4
Optional 7/16-20 UNF (option 3)

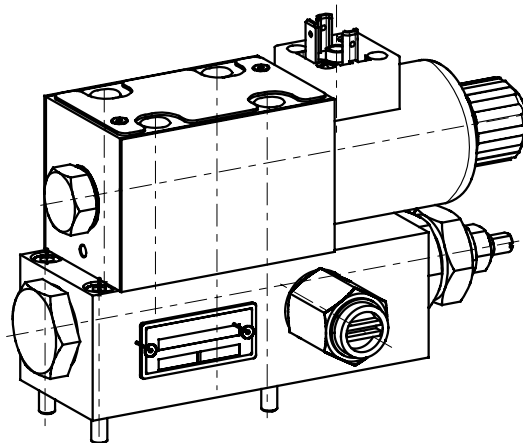
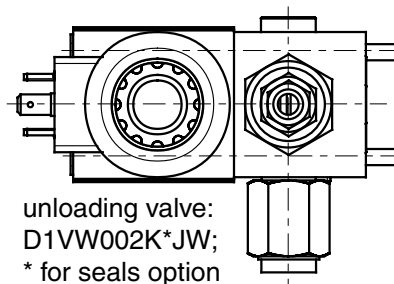
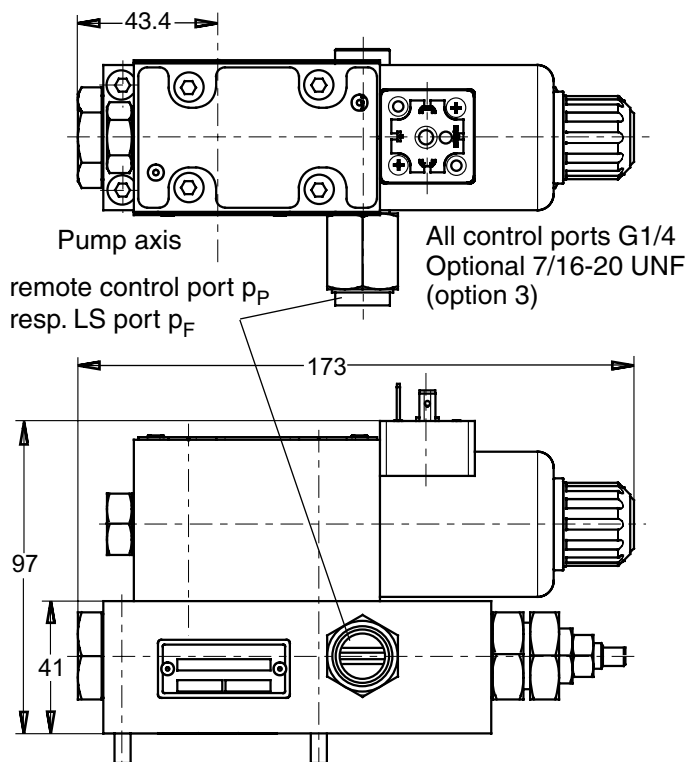


Controls with code ...MRC and MFC have no topside valve interface (as shown above)

Dimensions horse power pilot cartridge, displacement sensor

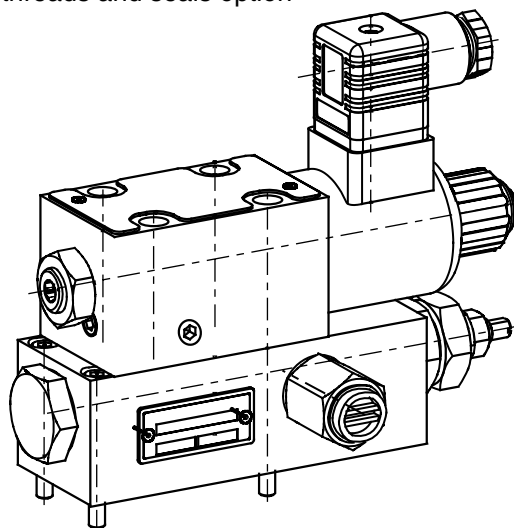
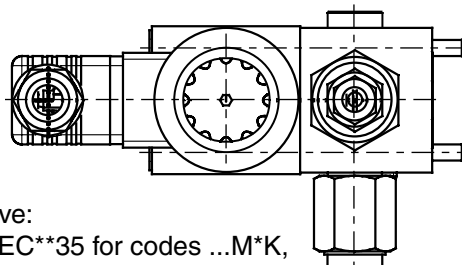
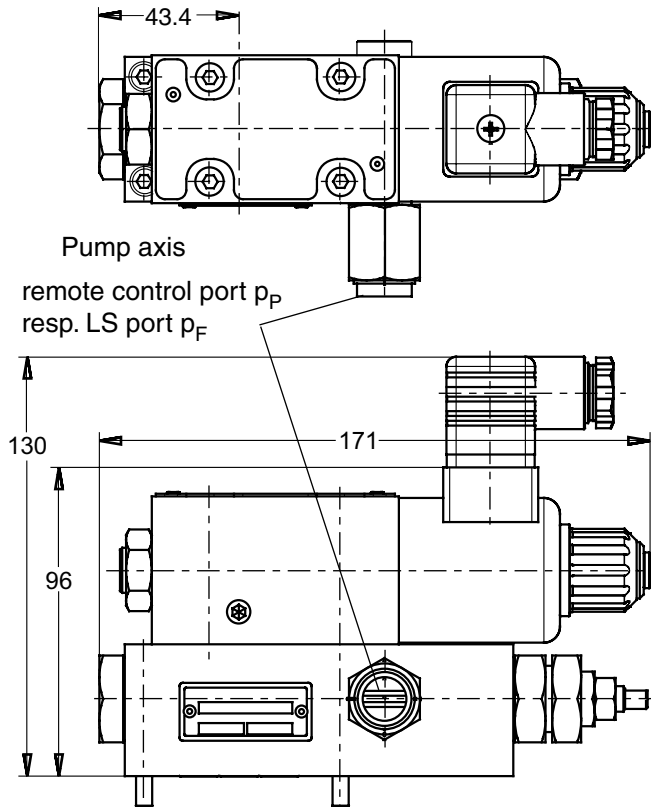


Dimensions for controls with unloading valve, codes ...M*W



Shown in version MRW/MFW, version MMW has no remote control port.

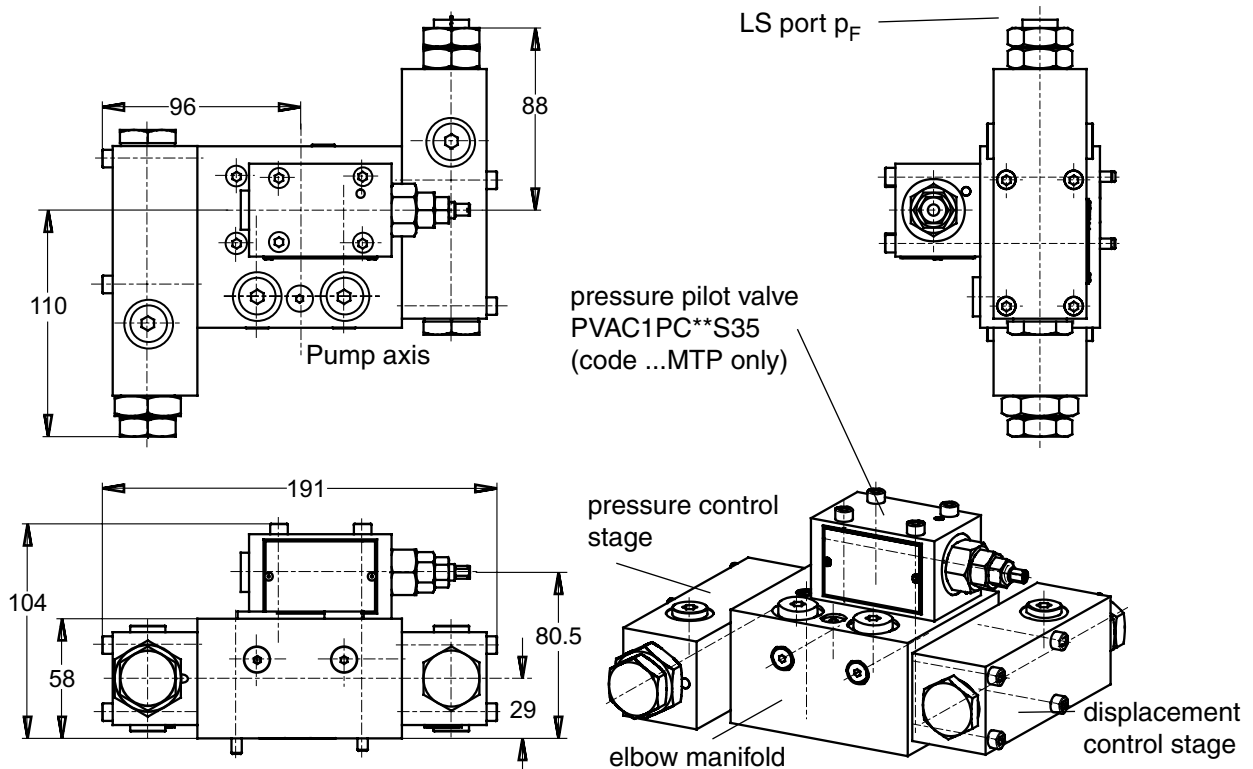
Dimensions for controls with proportional pressure pilot valve, codes ...M*K



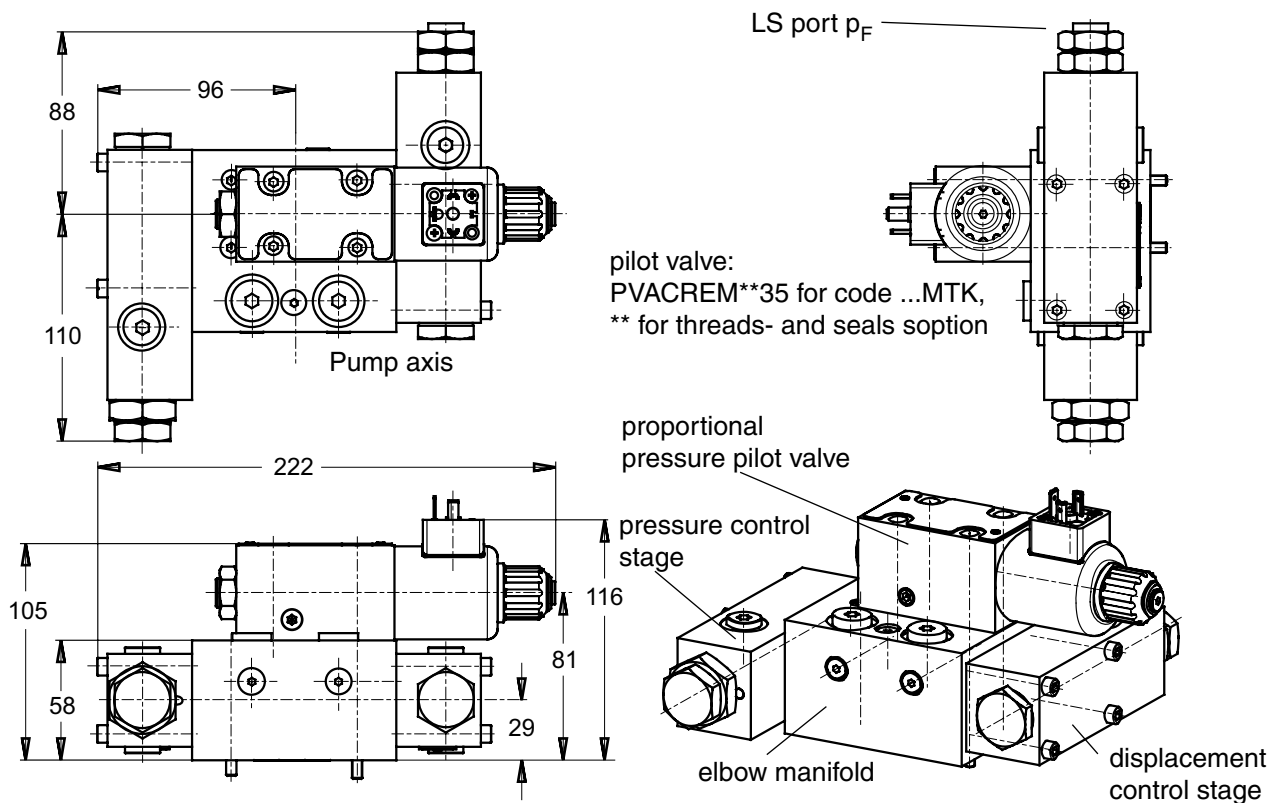
Shown in version MRK/MFK, version MMK has no remote control port.

Dimensions for horse power compensator *L* and *C* are identical to MM* respectively MF*.

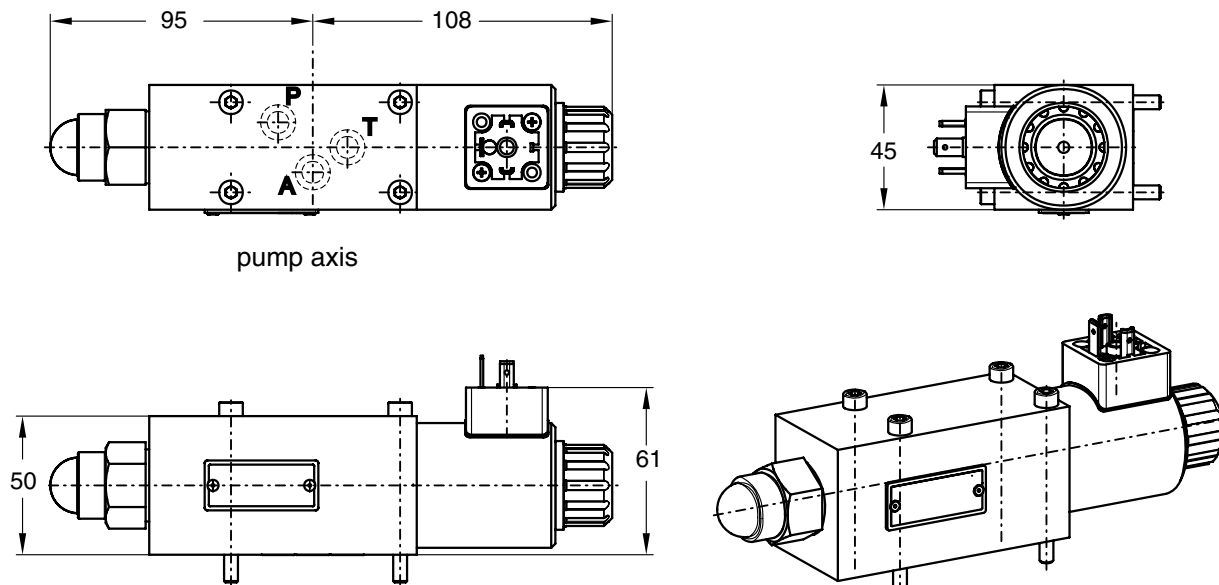
Dimensions two spool load sensing control, code ...MT1, ...MTP



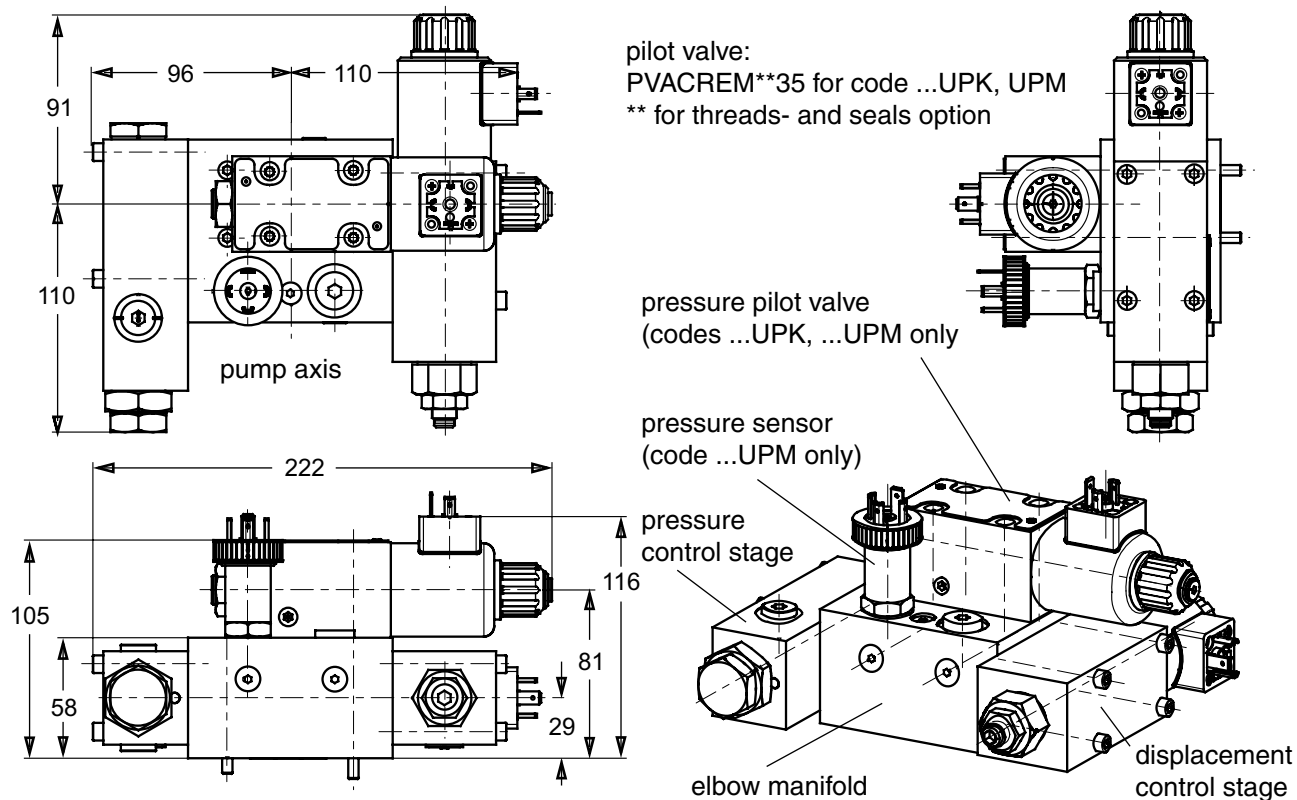
Dimensions two spool load sensing control with proportional pressure pilot valve, code ...MTK



Dimensions proportional displacement control, code ...FPV

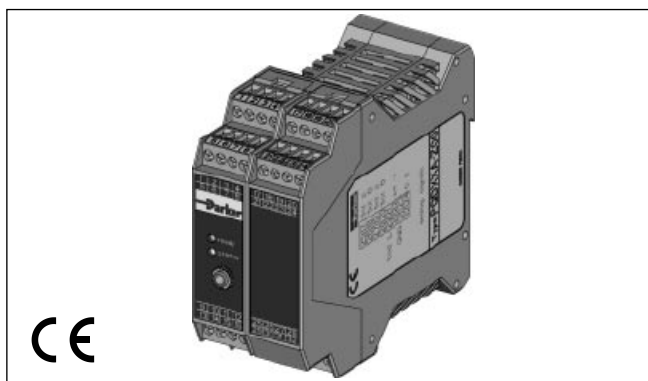


Dimensions proportional p/Q-control, codes ...UPR, ...UPK, ...UPM



Features

- Digital control circuit
- Parameter setting via RS-232 or USB interface
- All settings (ramps, MIN/MAX, control parameters) can be stored digitally and recalled from a PC to duplicate settings to other modules
- Ramp time up to 60 seconds
- Compatible to the relevant european EMC specifications
- Easy to use PC based setup software
- Covers all displacements
- Covers all available functions

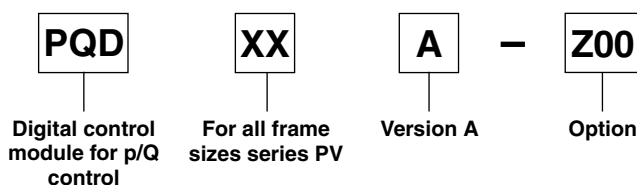


Technical data

Mounting style		Snap-on mounting for EN50022 rail
Body material		Polycarbonate
Inflammation class		V2...V0 acc. UL 94
Mounting position		any
Env. temperature range	[°C]	-20...+55
Protection class		IP 20 acc. DIN 40 050
Weight	[g]	160
Duty ratio	[%]	100
Supply voltage	[V]	18...30VDC, ripple <5% eff.
Rush in current	[A]	22 for 0.2 ms
Current consumption	[A]	< 4 for p/Q control ; < 2 for Q-control
Resolution	[%]	0.025 (power 0.1)
Interface		RS232C, 9600 baud, 3.5 mm cinch
EMC		EN 50 081-2, EN 50 082-2
Connectors		Screw terminals 0.2...2.5 mm ² , plug in style
Cables	[mm ²]	Supply and solenoid cables; 1,5 mm ² (AWG16) overall braid shield. Sensor and command signals; 0,5 mm ² (AWG20) overall braid shield
Max. cable length	[m]	50

For programming the module via PC, an interface cable is needed,
please order part number PQDXXA-KABEL (RS232) or PQDXXA-KABEL-USB (USB) separately.

Ordering code



Programming software

The programming of the p/Q control module is done in an easy to learn mode. To select the pump model and size and to set the control parameters the program ProPVplus must be started. This program runs under WINDOWS® 95 and higher.

The latest version of this software can be downloaded at the following internet address:

www.parker.com/euro_pmd

Features

- Display and documentation of parameter sets
- Save and reload of optimized parameter sets
- Offers oscilloscope function for easy performance evaluation and optimization
- Parameter sets for all PVplus pumps are pre-installed in the modules

Mounting kits for multiple pumps, for second pump option

MK – PV		BG				
Mounting kit		Axial piston pump series PV	Size	Second pump	Thread	Seals

Code	Pump size
1	Pump size 1: PV016 - PV028
2	Pump size 2: PV032 - PV046
3	Pump size 3: PV063 - PV092
4	Pump size 4: PV140 - PV180
5	Pump size 5: PV270 - PV360

Code	Second pump, SAE
T	Prepared for thru drive option (plugged)
Y	SAE AA, diameter 50.8 mm
A	SAE A, diameter 82.55 mm
B	SAE B, diameter 101.6 mm
C	SAE C, diameter 127 mm
D	SAE D, diameter 152.4 mm
E	SAE E, diameter 165.1 mm
Second pump, metric	
H	Diameter 80 mm
J	Diameter 100 mm
K	Diameter 125 mm
L	Diameter 160 mm
M	Diameter 200 mm

Code	Seals
N	NBR
V	FPM

Code	Thread
M	Metric
S	SAE

Kit contains positions 30, 69, 84, 85 and 87, see drawing below.

Mounting kits for multiple pumps, couplings

MK – PV		BG		K	
Mounting kit		Axial piston pump series PV	Size	Coupling	

Code	Pump size
1	Pump size 1: PV016 - PV028
2	Pump size 2: PV032 - PV046
3	Pump size 3: PV063 - PV092
4	Pump size 4: PV140 - PV180
5	Pump size 5: PV270 - PV360

Code	Coupling for metric, splined shaft DIN 5480
01	N25 x 1.5 x 15
02	N32 x 1.5 x 20
03	N40 x 1.5 x 25
04	N50 x 2 x 24
05	N60 x 2 x 28
06	N70 x 3 x 22*
Coupling for SAE splined shaft flat root, side fit	
11	SAE A, 9T 16/32
12	SAE-, 11T 16/32
13	SAE B, 13T 16/32
14	SAE B-B, 15T 16/32
15	SAE C, 14T 12/24
16	SAE C-C, 17T 12/24
17	SAE D+E, 13T 8/16
18	SAE F, 15T 8/16
Coupling + adaptor for keyed shaft	
20	Diameter 12 mm
21	Diameter 16 mm
22	Diameter 18 mm

Kit contains positions 1 (and 2 for keyed shaft).

front pump

second pump

SAE, splined

keyed shaft (only up to Ø18, metric)

metric splined

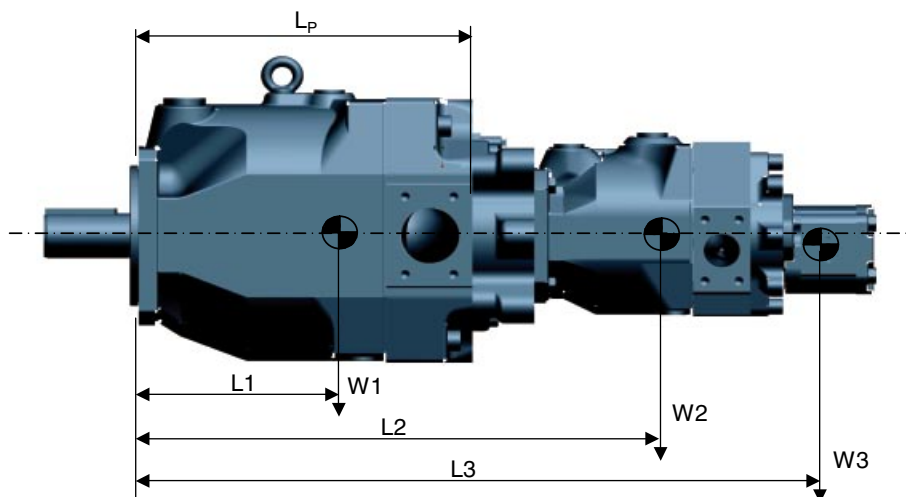
* For PV360 only

Availability of thru drive flange and coupling please check with ordering code options per each pump size, starting at page 6

Multiple Pump Combinations - Maximum Moment

Combinations of multiple pumps might require additional pump support to avoid a too high stress on the front mounting flange. Combinations of two PVplus pumps in the same frame size generally do not need additional support in an industrial application. For combinations of more pumps support is required.

In case of combinations of a PVplus pump with another type of pump it is recommended to calculate the moment for the combination and compare with the maximum moment in table 1 below.



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

Note:

If the calculated moment M exceed the maximum moment in table 1 below, additional pump support is needed

Table 1: Maximum Moment and Pump Dimensions

		PV016-PV028	PV032-PV046	PV063-PV092	PV140-PV180	PV270	PV360
Maximum moment ¹⁾	[Nm]	81	151	401	591	1686	1686
Weight W	[N]	186	294	589	883	1687	1766
Distance L1	[mm to C/G]	106	119	178	184	234	238
Distance Lp	[mm]	197.5	227	287	350	472.5	477

1) at dynamic weight acceleration 10g = 98.1 m/sec²

Table 2 Through Drive Adapter Plate Thickness [mm]

Adapter option ²⁾	PV016-PV028	PV032-PV046	PV063-PV092	PV140-PV180	PV270	PV360
Y	27	-	-	-	-	-
A	27	34	39	65	59	59
B	27	34	39	65	59	59
C	-	49	39	65	59	59
D	-	-	39	65	59	59
E	-	-	-	-	59	59
G	27	34	39	-	-	-
H	27	34	39	65	59	59
J	27	34	39	65	59	59
K	-	49	39	65	59	59
L	-	-	39	65	59	59
M	-	-	-	-	59	59

2) See page 6 to 17 for reference per each frame size.

Maximum allowed transferable torque FRONT							
Shaft code	Shaft type	Transferable torque at FRONT shaft end. [Nm]					
		PV016-028	PV032-046	PV063-092	PV140-180	PV270	PV360
D	SAE - Key	300	650	1850	2150	2150	4750
E	SAE - Spline	320	630	1700	2750	2800	8100
F	SAE - Key				1200		
G	SAE - Spline				1700		
R	Metric - Key						3750
T	Metric - Spline						8100
K	Metric - Key	280	640	1200	1550	3300	3750
L	Metric - Spline	320	720	1500	3050	5750	8100
Maximum allowed transferable torque REAR							
Max. torque transmission cap. for rear mounted pump		350	520	1100	1550	3150	3250

Important notice

The max. allowable torque of the individual shaft must not be exceeded. For 2-pump combinations there is no problem because PV series offers 100% thru torque. For 3-pump combinations (and more) the limit torque could be reached or exceeded.

Therefore it is necessary to calculate the torque factor and compare it with the allowed torque limit factor in the table.

Required: calculated torque factor
 < torque limit factor

To make the necessary calculations easier and more user friendly it is not required to calculate actual torque requirements in Nm and compare them with the shaft limitations. The table on the right shows limit factors that include material specification, safety factors and conversion factors.

The **total torque factor** is represented by the sum of the individual torque factors of all pumps in the complete pump combination.

Total torque factor of the combination
= sum of individual torque factors of all pumps

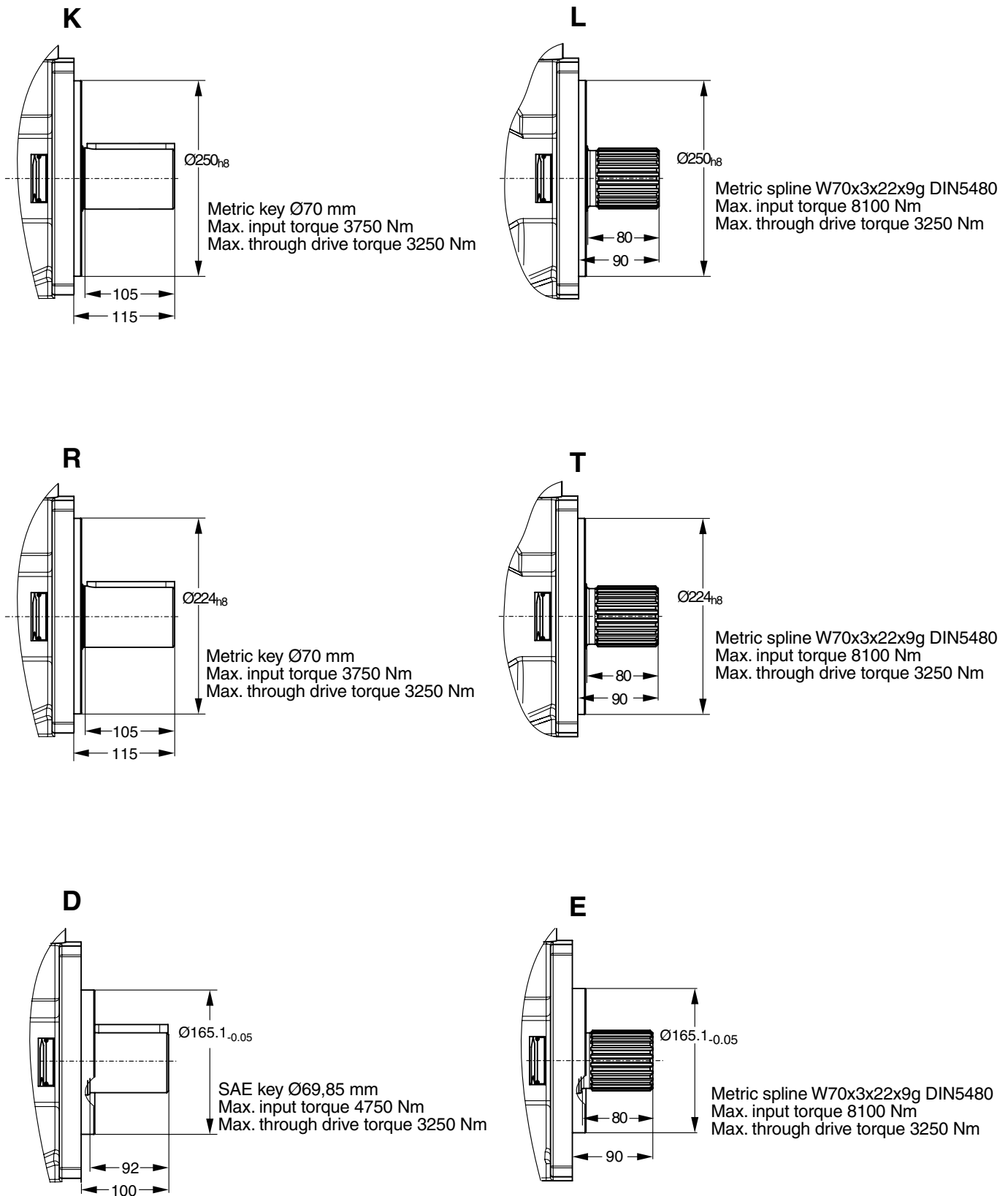
The **torque factor of each individual pump** is calculated by multiplying the max. operating pressure p of the pump (in bar) with the max. displacement V_g of the pump (in cm^3/rev).

Torque factor of any pump
= $p \times V_g$

Pump	Shaft	Torque limit factor
PV016-028	D	17700
	E	17700
	K	17700
	L	20130
PV032-046	D	32680
	E	36380
	K	33810
	L	40250
PV063-092	D	77280
	E	72450
	K	67620
	L	83720
PV140-180	D	118400
	E	158760
	F	78750
	G	97650
	K	113400
	L	157500
PV270	D	119000
	E	159700
	K	170100
	L	236250

PV360 shaft options

Max. transferable torque in [Nm] for different shaft options



This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There is no text or other markings on the paper.

[illegible]



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.

This document and other information from Parker-Hannifin Corporation, its subsidiaries and authorized distributors provide product or system options for further investigation by users having technical expertise.

The user, through its own analysis and testing, is solely responsible for making the final selection of the system and components and assuring that all performance, endurance, maintenance, safety and warning requirements of the application are met. The user must analyze all aspects of the application, follow applicable industry standards, and follow the information concerning the product in the current product catalog and in any other materials provided from Parker or its subsidiaries or authorized distributors.

To the extent that Parker or its subsidiaries or authorized distributors provide component or system options based upon data or specifications provided by the user, the user is responsible for determining that such data and specifications are suitable and sufficient for all applications and reasonably foreseeable uses of the components or systems.

Offer of Sale

Please contact your Parker representation for a detailed "Offer of Sale".

Parker Worldwide

Europe, Middle East, Africa

AE – United Arab Emirates, Dubai

Tel: +971 4 8127100
parker.me@parker.com

AT – Austria, Wiener Neustadt

Tel: +43 (0)2622 23501-0
parker.austria@parker.com

AT – Eastern Europe, Wiener Neustadt

Tel: +43 (0)2622 23501 900
parker.easteurope@parker.com

AZ – Azerbaijan, Baku

Tel: +994 50 2233 458
parker.azerbaijan@parker.com

BE/LU – Belgium, Nivelles

Tel: +32 (0)67 280 900
parker.belgium@parker.com

BY – Belarus, Minsk

Tel: +375 17 209 9399
parker.belarus@parker.com

CH – Switzerland, Etoy

Tel: +41 (0)21 821 87 00
parker.switzerland@parker.com

CZ – Czech Republic, Klecany

Tel: +420 284 083 111
parker.czechrepublic@parker.com

DE – Germany, Kaarst

Tel: +49 (0)2131 4016 0
parker.germany@parker.com

DK – Denmark, Ballerup

Tel: +45 43 56 04 00
parker.denmark@parker.com

ES – Spain, Madrid

Tel: +34 902 330 001
parker.spain@parker.com

FI – Finland, Vantaa

Tel: +358 (0)20 753 2500
parker.finland@parker.com

FR – France, Contamine s/Arve

Tel: +33 (0)4 50 25 80 25
parker.france@parker.com

GR – Greece, Athens

Tel: +30 210 933 6450
parker.greece@parker.com

HU – Hungary, Budapest

Tel: +36 1 220 4155
parker.hungary@parker.com

IE – Ireland, Dublin

Tel: +353 (0)1 466 6370
parker.ireland@parker.com

IT – Italy, Corsico (MI)

Tel: +39 02 45 19 21
parker.italy@parker.com

KZ – Kazakhstan, Almaty

Tel: +7 7272 505 800
parker.easteurope@parker.com

NL – The Netherlands, Oldenzaal

Tel: +31 (0)541 585 000
parker.nl@parker.com

NO – Norway, Asker

Tel: +47 66 75 34 00
parker.norway@parker.com

PL – Poland, Warsaw

Tel: +48 (0)22 573 24 00
parker.poland@parker.com

PT – Portugal, Leca da Palmeira

Tel: +351 22 999 7360
parker.portugal@parker.com

RO – Romania, Bucharest

Tel: +40 21 252 1382
parker.romania@parker.com

RU – Russia, Moscow

Tel: +7 495 645-2156
parker.russia@parker.com

SE – Sweden, Spånga

Tel: +46 (0)8 59 79 50 00
parker.sweden@parker.com

SK – Slovakia, Banská Bystrica

Tel: +421 484 162 252
parker.slovakia@parker.com

SL – Slovenia, Novo Mesto

Tel: +386 7 337 6650
parker.slovenia@parker.com

TR – Turkey, Istanbul

Tel: +90 216 4997081
parker.turkey@parker.com

UA – Ukraine, Kiev

Tel: +380 44 494 2731
parker.ukraine@parker.com

UK – United Kingdom, Warwick

Tel: +44 (0)1926 317 878
parker.uk@parker.com

ZA – South Africa, Kempton Park

Tel: +27 (0)11 961 0700
parker.southafrica@parker.com

North America

CA – Canada, Milton, Ontario

Tel: +1 905 693 3000

US – USA, Cleveland

(industrial)
Tel: +1 216 896 3000

US – USA, Elk Grove Village

(mobile)
Tel: +1 847 258 6200

Asia Pacific

AU – Australia, Castle Hill

Tel: +61 (0)2-9634 7777

CN – China, Shanghai

Tel: +86 21 2899 5000

HK – Hong Kong

Tel: +852 2428 8008

IN – India, Mumbai

Tel: +91 22 6513 7081-85

JP – Japan, Fujisawa

Tel: +81 (0)4 6635 3050

KR – South Korea, Seoul

Tel: +82 2 559 0400

MY – Malaysia, Shah Alam

Tel: +60 3 7849 0800

NZ – New Zealand, Mt Wellington

Tel: +64 9 574 1744

SG – Singapore

Tel: +65 6887 6300

TH – Thailand, Bangkok

Tel: +662 717 8140

TW – Taiwan, Taipei

Tel: +886 2 2298 8987

South America

AR – Argentina, Buenos Aires

Tel: +54 3327 44 4129

BR – Brazil, Sao Jose dos

Campos
Tel: +55 12 4009 3500

CL – Chile, Santiago

Tel: +56 2 623 1216

MX – Mexico, Apodaca

Tel: +52 81 8156 6000

VE – Venezuela, Caracas

Tel: +58 212 238 5422

Ed. 2010-11-30

EMEA Product Information Centre

Free phone: 00 800 27 27 5374

(from AT, BE, CH, CZ, DE, DK, EE, ES, FI, FR, IE, IL,
IS, IT, LU, MT, NL, NO, PL, PT, RU, SE, SK, UK, ZA)

US Product Information Centre

Toll-free number: 1-800-27 27 537

www.parker.com

Your local authorized Parker distributor

