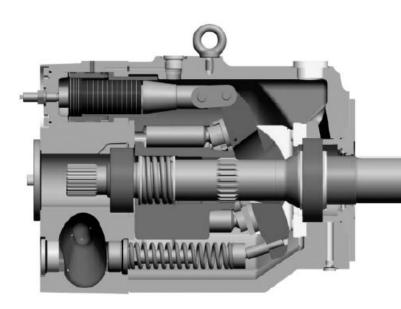
#### With thru drive for single and multiple pumps

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 recomended, like HLP oils to DIN 51524, part 2. Brugger- value has to be 30 N/mm<sup>2</sup> minimum for general application and 50 N/mm<sup>2</sup> 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 mm<sup>2</sup>/s (cSt). Max. start-up viscosity is 800 mm<sup>2</sup>/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.

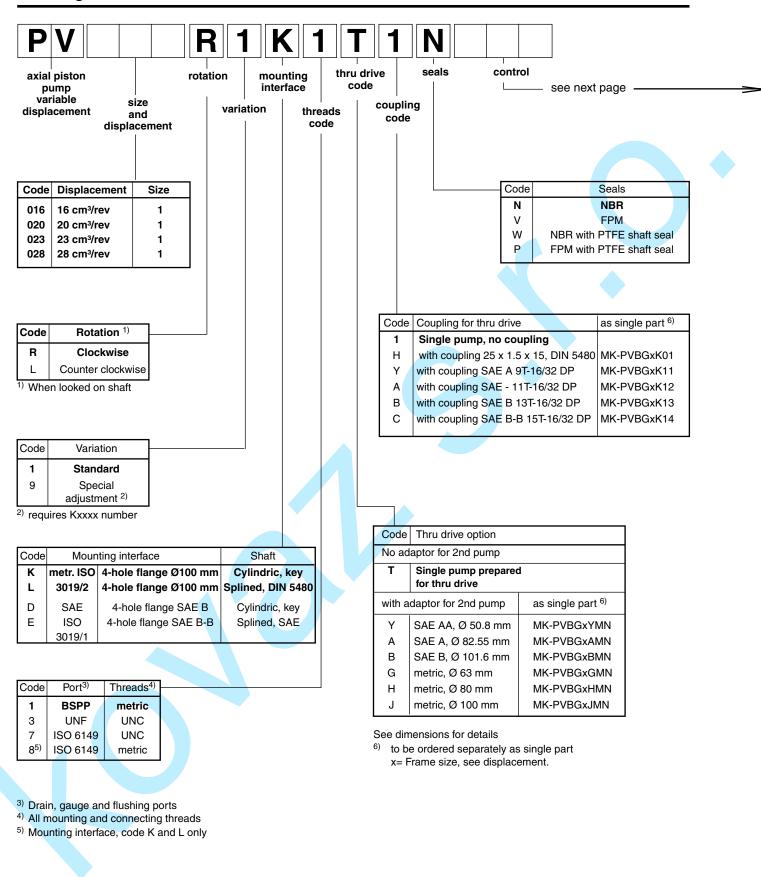
-Parker

		PV016	PV020	PV023	PV028	PV032	PV040	PV046
Frame size		1	1	1	1	2	2	2
Max. Displacement [	cm <sup>3</sup> /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	<sup>1)</sup> [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 <sup>2</sup> ]	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 <sup>3</sup> /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	e <sup>1)</sup> [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 <sup>2</sup> ]	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.

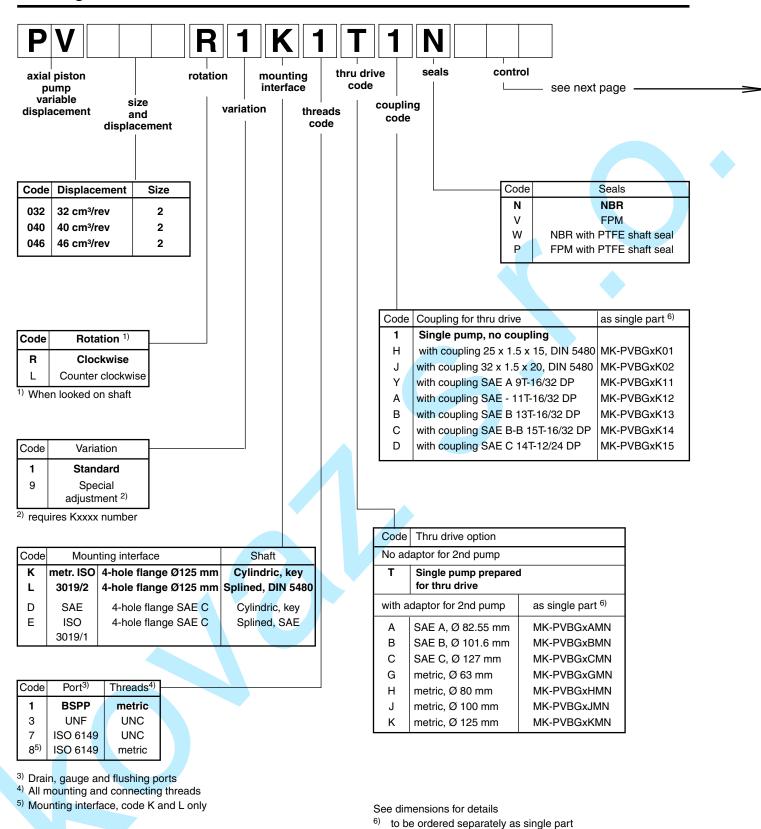






[	Co	ode					Cont	trol	options		1	
0		0	1						ntrol		]	
1			0						o control function		ļ	
М		М							ol, integrated pilot valve			
M		R							I, integrated pilot valve			
M M		F T		Load Se	ensir				ol, integrated pilot valve S control	)		
	•	<u> </u>							ariation		-	
			c						version <sup>1)</sup>			
			1	Ν	IG6 iı	nterfa	ice t	op s	ide for pilot valves			
		· ·	w	With	unlo	bading	g fui	nctio	n, 24VDC solenoid <sup>1)</sup>			
			к	Prop	pilo	ot valv	/e ty	pe P	VACRE35 mounted			
			z						valve, NG6 interface,			
						-			ssory code PVAC*		1) not for MT	
			P	IVI I	I WI	in mo	unte	ea pi	lot valve PVAC1P <sup>2)</sup>		2) only for MT	
	-		cem.		Ho		oow ode		Forque control			
01 02									Nominal HP at 1.500 rpm		Nominal	
02	20				+	в			3 kW		20 Nm	
					-	C			4 kW	_	25 Nm	
					_	D						
_		-	_		-	E			5.5 kW 7.5 kW		35 Nm 50 Nm	
					-	G			11 kW		71 Nm	
			-		+	H			15 kW		97 Nm	
						к			18.5 kW		120 Nm	
							Fu	ncti	on			
							L		Horse power control v	with p	pressure control	
							С				oad sensing (single spool)	
							Co	ontro	l variation			
								С	Standard version			
							/	1	NG 6 interface top sic	le		
		L						W	With unloading function			
			_					ĸ	Proppilot valve type			
								z	Without integrated pill for mounting of acces			
										y		
-	-	Cod				<u></u>	ntre	1.07	vion 1			
	_	_		draulic co	ontre		intro	l op				
		P	onyo IV I				laco	men	t control, no pressure			
		r	V	comper			ace	men	r control, no pressure			
U	ſ	Ρ			ional	displ	lace	men	t control, with pressure			
		ontr		riation	June							
H		2110	R		erate	d pre	SSI	re co	ontrol, open			
				NG6 int			200					
			К						ontrol, proportional			
					-	•			35 mounted			
			М						ontrol, pressure sensor e type PVACRE35			
									trol and/or power			

U	Р		Proportional displacement control, with pressure compensation
C	ontr	ol va	riation
		R	pilot operated pressure control, open NG6 interface
		к	pilot operated pressure control, proportional pilot valve type PVACRE35 mounted
		М	pilot operated pressure control, pressure sensor and proportional pilot valve type PVACRE35 mounted for pressure control and/or power control

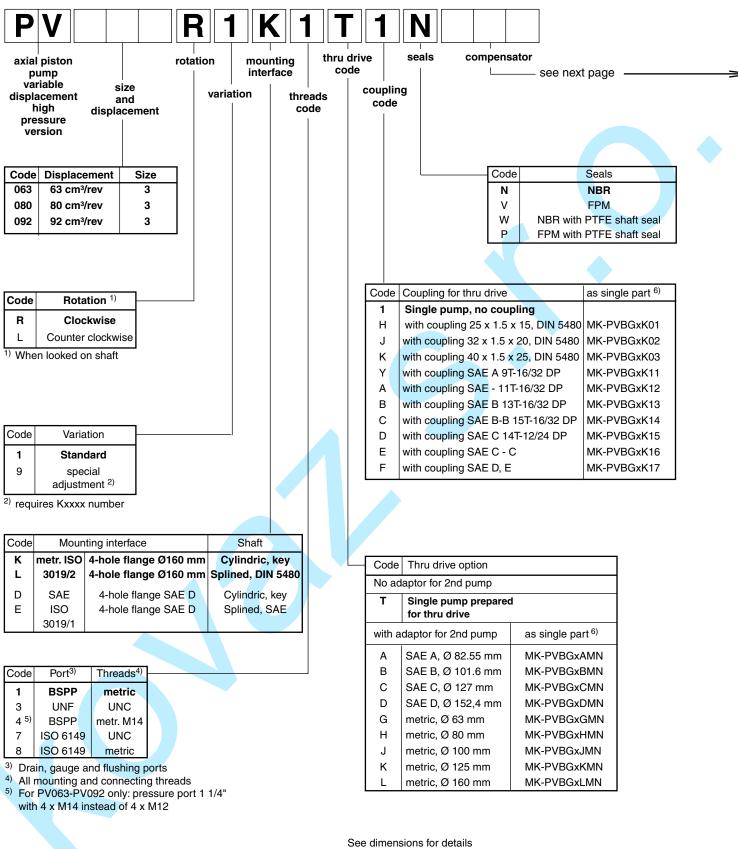


x= Frame size, see displacement.

Code				Co			ption	s			
0 0 1	1					o con					
1 0 0	1							rol function			
мм			•				· ·	grated pilot valve			
MR	Ι.							rated pilot valve			
M F M T	'	oad Se					ol, inte S con	egrated pilot valve			
	-						ariatio				
- C							ersion				
1		N	G6 inte					pilot valves			
w		With	unloa	ding	fund	ction	n, 24V	DC solenoid 1)			
ĸ		Prop.	-pilot v	valve	typ	be P∖	VACR	E35 mounted			
z		•	•		• •			NG6 interface,			
								code PVAC*		1) not for MT	
P		MT	1 with	mou	ntec	d pilc	ot valv	/e PVAC1P <sup>2)</sup>		2) only for MT	
			Harr			v / T-	oraura	control			
Displace	m.		Hors	se po Co		er / To	orque	control			
Displace	m.		Hors	-		er / To		e control		Nominal	
<u> </u>	m.		Hors	-		er / To	Nom			Nominal torque	
032	m.			-		er / To	Nom	ninal HP			
032	m.			Co		er / To	Nom	ninal HP 500 rpm		torque	
032	m.			Co D		er / To	Nom	ninal HP 500 rpm 5.5 kW		torque 35 Nm	
032	m.			Co D E G H		er / To	Nom	ninal HP 500 rpm 5.5 kW 7.5 kW		torque 35 Nm 50 Nm	
032	m.			Co D E G H K		er / To	Nom	ninal HP 500 rpm 5.5 kW 7.5 kW 11 kW 15 kW 18.5 kW		torque       35 Nm       50 Nm       71 Nm       97 Nm       120 Nm	
032	m.		           	Co D E G H K M			Nom	ninal HP 500 rpm 5.5 kW 7.5 kW 11 kW 15 kW 18.5 kW 22 kW		torque       35 Nm       50 Nm       71 Nm       97 Nm       120 Nm       142 Nm	
032	m.		           	Co D E G H K M S			Non at 1.	ninal HP 500 rpm 5.5 kW 7.5 kW 11 kW 15 kW 18.5 kW		torque       35 Nm       50 Nm       71 Nm       97 Nm       120 Nm	
032	m.		           	Co D E G H K M S	Fun		Nom at 1.	ninal HP 500 rpm 5.5 kW 7.5 kW 11 kW 15 kW 18.5 kW 22 kW 30 kW		torque       35 Nm       50 Nm       71 Nm       97 Nm       120 Nm       142 Nm       195 Nm	
032	m.		           	Co D E G H K S	de Fun		Nom at 1.	Aninal HP       500 rpm       5.5 kW       7.5 kW       11 kW       15 kW       18.5 kW       22 kW       30 kW		torque       35 Nm       50 Nm       71 Nm       97 Nm       120 Nm       142 Nm       195 Nm	
032	m.		           	Co D E G H K K M S L C	fun		Nom at 1.	hinal HP 500 rpm 5.5 kW 7.5 kW 11 kW 15 kW 18.5 kW 22 kW 30 kW se power control w se power control w		torque       35 Nm       50 Nm       71 Nm       97 Nm       120 Nm       142 Nm       195 Nm	e spoo
032	m.		           	Co D E G H K K M S L C	Fun	nctio	Nom at 1.	hinal HP 500 rpm 5.5 kW 7.5 kW 11 kW 15 kW 18.5 kW 22 kW 30 kW se power control w se power control w		torque       35 Nm       50 Nm       71 Nm       97 Nm       120 Nm       142 Nm       195 Nm	e spoo
032	m.		           	Co D E G H K K M S L C	Fun Con	ntrol C	Nom at 1.	hinal HP 500 rpm 5.5 kW 7.5 kW 11 kW 15 kW 18.5 kW 22 kW 30 kW se power control w se power control w ttion	vith loa	torque       35 Nm       50 Nm       71 Nm       97 Nm       120 Nm       142 Nm       195 Nm	e spoo
032	m.		           	Co D E G H K K M S L C	Gereine Fun Fun Con	nctio	Nom at 1. n Hors Hors Varia Stan NG (	hinal HP 500 rpm 5.5 kW 7.5 kW 11 kW 15 kW 18.5 kW 22 kW 30 kW se power control w se power control w se power control w tion	vith loa	torque 35 Nm 50 Nm 71 Nm 97 Nm 120 Nm 142 Nm 195 Nm ressure control ad sensing (single	e spoo
032	m.		           	Co D E G H K K M S L C	fun Fun V	nctio C 1	Nom at 1.	hinal HP 500 rpm 5.5 kW 7.5 kW 11 kW 15 kW 18.5 kW 22 kW 30 kW se power control w se power control w ttion	e n, 24	torque 35 Nm 50 Nm 71 Nm 97 Nm 120 Nm 142 Nm 195 Nm ressure control ad sensing (single) VDC solenoid	
032			           	Co D E G H K K M S L C	Gereine Fun	ntrol C 1 W	Nom at 1.	hinal HP 500 rpm 5.5 kW 7.5 kW 11 kW 15 kW 18.5 kW 22 kW 30 kW 22 kW 30 kW se power control w se power control w	e n, 24 PVAC	torque 35 Nm 50 Nm 71 Nm 97 Nm 120 Nm 142 Nm 195 Nm ressure control ad sensing (single) VDC solenoid CRE35 mounted	

0	Code	e	Control option
el	ectro	o hy	draulic control
F	Р	V	Proportional displacement control, no pressure compensation
U	Ρ		Proportional displacement control, with pressure compensation
C	ontro	ol va	riation
		R	pilot operated pressure control, open NG6 interface
		К	pilot operated pressure control, proportional pilot valve type PVACRE35 mounted
		Μ	pilot operated pressure control, pressure sensor and proportional pilot valve type PVACRE35 mounted for pressure control and/or power control





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

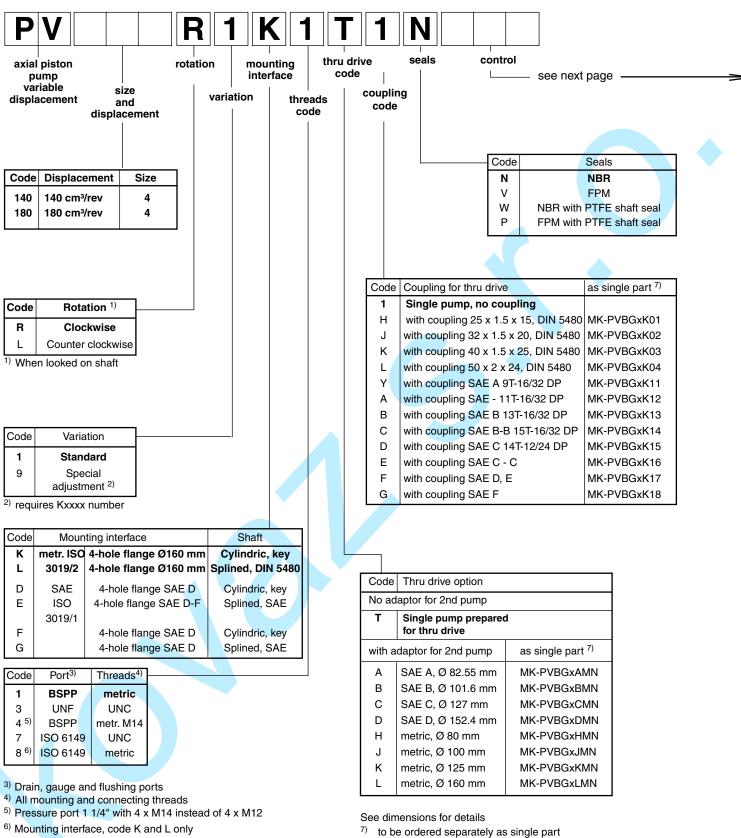


				-
 С	ode	÷	Control options	]
0	0	1	No control	
1	0	0	With cover plate, no control function	
М	М		Standard pressure control, integrated pilot valve	
М	R		Remote pressure control, integrated pilot valve	
М	F		Load Sensing (flow) control, integrated pilot valve	
М	Т		Two spool LS control	
			Control variation	]
		С	Standard version <sup>1)</sup>	]
		1	NG6 interface top side for pilot valves	
		W	With unloading function, 24VDC solenoid 1)	
		к	Proppilot valve type PVACRE35 mounted	
		Ζ	Without integrated pilot valve, NG6 interface,	
			for mounting of accessory code PVAC*	1) not for MT
		Ρ	MT1 with mounted pilot valve PVAC1P <sup>2)</sup>	2) only for MT

			Ho	orse	pow	er/	Torque	control	
Displa	cem.			0	ode	;			
063 092								ninal HP 500 rpm	Nominal torque
				G				11 kW	71 Nm
				Н				15 kW	97 Nm
				K				18.5 kW	120 Nm
				М				22kW	142 Nm
				S				30 kW	195 Nm
				Т				37 kW	240 Nm
				U				45 kW	290 Nm
				W				55 kW	355 Nm
					Fu	Incti	on		
					L		Hors	e power control wi	th pressure control
					С		Hors	e power control wi	th load sensing (single spool)
					Co	ontro	ol varia	tion	
						С	Stan	dard version	
						1	NG	6 interface top side	•
						W	With	unloading function	n, 24 VDC solenoid
						K	Prop	pilot valve type P	VACRE35 mounted
						Z			t valve, NG6 interface,
							for m	nounting of access	ory code PVAC*

_		Code	e	Control option
	el	ectr	o hy	draulic control
	F	Ρ	V	Proportional displacement control, no pressure compensation
	υ	Ρ		Proportional displacement control, with pressure compensation
	Ċ	ontr	ol va	riation
			R	pilot operated pressure control, open NG6 interface
			К	pilot operated pressure control, proportional pilot valve type PVACRE35 mounted
			Μ	pilot operated pressure control, pressure sensor and proportional pilot valve type PVACRE35 mounted for pressure control and/or power control





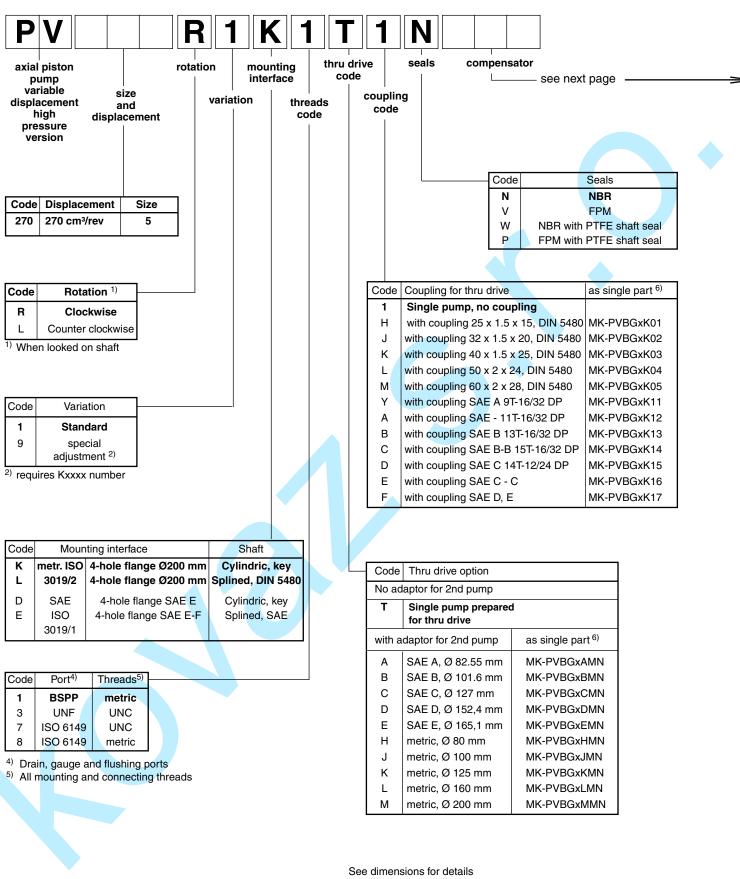
to be ordered separately as single x= Frame size, see displacement.



	de					Cont	rol c	ptions		
0	<u> </u>	1				N	о со	ntrol	_	
1		5		With	cove	r plat	te, no	o control function		
M	Л		Star	dard p	ress	ure c	ontro	l, integrated pilot valve		
MF	٦							, integrated pilot valve		
	=		Load	Sens				ol, integrated pilot valve		
M	Г							S control		
							-	ariation		
				NOC	-			ersion <sup>1)</sup> de for pilot valves		
		1	14				•	•		
		V				-		n, 24VDC solenoid <sup>1)</sup>		
		<					•	VACRE35 mounted		
	4	Z						valve, NG6 interface,		
	Ι.	5				-		ssory code PVAC* ot valve PVAC1P <sup>2)</sup>	1) not for MT 2) only for MT	
					oree	<b></b>	or / 7	orgue control		
Disp	Jac	om		п		pow Code		orque control		
140		_			+			Nominal HP	Nominal	
1.40								at 1.500 rpm		
									torque	
					К			18.5 kW	120 Nm	
					K M			· · · · · ·		
					_			18.5 kW	120 Nm	
					М			18.5 kW 22 kW	120 Nm 142 Nm	
					M S T U			18.5 kW 22 kW 30 kW	120 Nm 142 Nm 195 Nm	
					M S T U W			18.5 kW 22 kW 30 kW 37 kW 45 kW 55 kW	120 Nm 142 Nm 195 Nm 240 Nm 290 Nm 355 Nm	
					M S T U W Y			18.5 kW 22 kW 30 kW 37 kW 45 kW 55 kW 75 kW	120 Nm 142 Nm 195 Nm 240 Nm 290 Nm 355 Nm 485 Nm	
					M S T U W Y Z			18.5 kW       22 kW       30 kW       37 kW       45 kW       55 kW       75 kW       90 kW	120 Nm 142 Nm 195 Nm 240 Nm 290 Nm 355 Nm 485 Nm 585 Nm	
					M S T U W Y			18.5 kW       22 kW       30 kW       37 kW       45 kW       55 kW       75 kW       90 kW       110 kW	120 Nm 142 Nm 195 Nm 240 Nm 290 Nm 355 Nm 485 Nm	
					M S T U W Y Z		nctic	18.5 kW 22 kW 30 kW 37 kW 45 kW 55 kW 75 kW 90 kW 110 kW	120 Nm 142 Nm 195 Nm 240 Nm 290 Nm 355 Nm 485 Nm 585 Nm 715 Nm	
					M S T U W Y Z	L	nctic	18.5 kW     22 kW     30 kW     37 kW     45 kW     55 kW     75 kW     90 kW     110 kW     on     Horse power control with	120 Nm 142 Nm 195 Nm 240 Nm 290 Nm 355 Nm 485 Nm 585 Nm 715 Nm th pressure control	
					M S T U W Y Z	L C		18.5 kW 22 kW 30 kW 37 kW 45 kW 55 kW 75 kW 90 kW 110 kW 0n Horse power control wi Horse power control wi	120 Nm 142 Nm 195 Nm 240 Nm 290 Nm 355 Nm 485 Nm 585 Nm 715 Nm	)
					M S T U W Y Z	L C	ntro	18.5 kW 22 kW 30 kW 37 kW 45 kW 55 kW 75 kW 90 kW 110 kW bn Horse power control withorse power control withowse power control w	120 Nm 142 Nm 195 Nm 240 Nm 290 Nm 355 Nm 485 Nm 585 Nm 715 Nm th pressure control	)
					M S T U W Y Z	L C	ntro C	18.5 kW 22 kW 30 kW 37 kW 45 kW 55 kW 75 kW 90 kW 110 kW 0n Horse power control wi Horse power control wi Variation Standard version	120 Nm 142 Nm 195 Nm 240 Nm 290 Nm 355 Nm 485 Nm 585 Nm 715 Nm th pressure control th load sensing (single spool	)
					M S T U W Y Z	L C	ntro C 1	18.5 kW 22 kW 30 kW 37 kW 45 kW 55 kW 75 kW 90 kW 110 kW 0n Horse power control wi Horse power control wi Horse power control wi Standard version NG 6 interface top side	120 Nm 142 Nm 195 Nm 240 Nm 290 Nm 355 Nm 485 Nm 585 Nm 715 Nm th pressure control th load sensing (single spool	)
					M S T U W Y Z	L C	ntro C 1 W	18.5 kW 22 kW 30 kW 37 kW 45 kW 55 kW 75 kW 90 kW 110 kW 0n Horse power control wi Horse power control wi Horse power control wi Standard version NG 6 interface top side With unloading functior	120 Nm 142 Nm 195 Nm 240 Nm 290 Nm 355 Nm 485 Nm 585 Nm 715 Nm th pressure control th load sensing (single spool	)
					M S T U W Y Z	L C	ntro C 1	18.5 kW 22 kW 30 kW 37 kW 45 kW 55 kW 75 kW 90 kW 110 kW 0n Horse power control wi Horse power control wi Horse power control wi Standard version NG 6 interface top side	120 Nm 142 Nm 195 Nm 240 Nm 290 Nm 355 Nm 485 Nm 585 Nm 715 Nm th pressure control th load sensing (single spool h, 24 VDC solenoid VACRE35 mounted	)

	Code	e	Control option
el	ectr	o hy	draulic control
F	Ρ	V	Proportional displacement control, no pressure compensation
U	Ρ		Proportional displacement control, with pressure compensation
C	ontro	ol va	riation
		R	pilot operated pressure control, open NG6 interface
		К	pilot operated pressure control, proportional pilot valve type PVACRE35 mounted
		Μ	pilot operated pressure control, pressure sensor and proportional pilot valve type PVACRE35 mounted for pressure control and/or power control





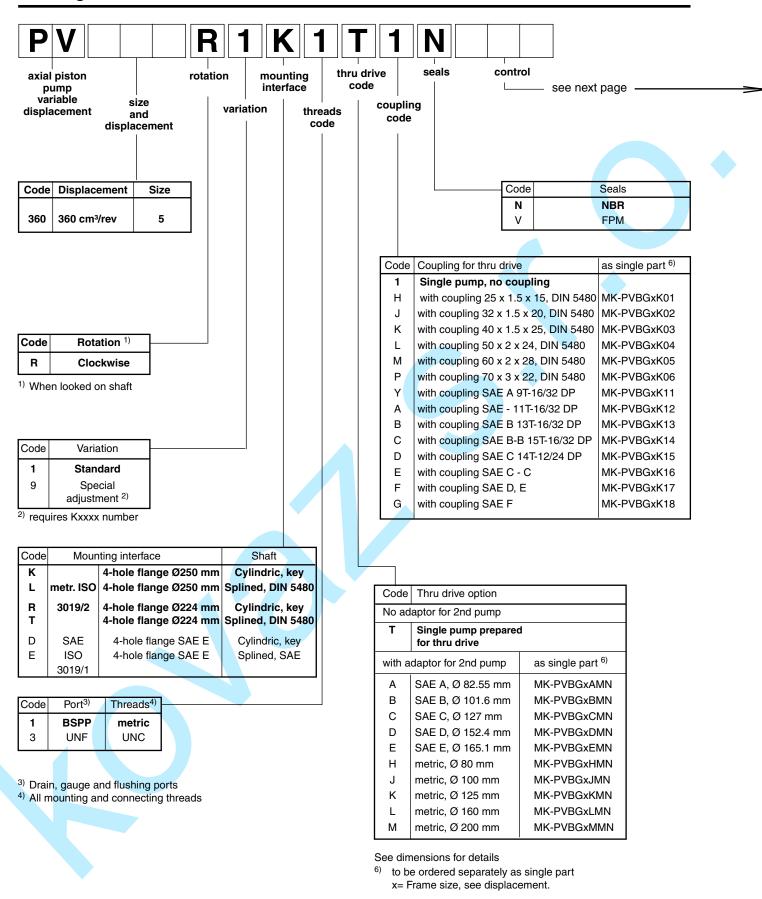
 to be ordered separately as single part x= Frame size, see displacement.



Coc	de					(	Cont	rol c	options		
0 0	ן נ	1					N	o co	ntrol		
1 0		0		۷	Nith	cove	r plat	te, no	o control function		
ΜN	- I		Sta	anda	ard p	ressu	ire c	ontro	ol, integrated pilot valve		
ΜF									l, integrated pilot valve		
M F M T			Loa	ad Se	ensir				rol, integrated pilot valve		
ΜT							<u> </u>		_S control	_	
	+	c							version <sup>1)</sup>		
		1		Ν	IG6 iı				ide for pilot valves		
		wl						•	n, 24VDC solenoid 1)		
		ĸ					-		VACRE35 mounted		
		z			•			•	t valve, NG6 interface,		
		-							essory code PVAC*		
		Р					-		lot valve PVAC1P <sup>2)</sup>	1) not for MT 2) only for MT	
					п	136	how	CI /	Torque control		
l Dien	sla.	com				0	'ode				-
	ola	cem				C	ode			Nominal	-
Disp 270	ola	cem				C	ode		Nominal HP at 1.500 rpm	Nominal torque	
	bla	cem				T	Code		Nominal HP		-
		cem					Code		Nominal HP at 1.500 rpm	torque	-
						Т	Code		Nominal HP at 1.500 rpm 37 kW	torque 240 Nm	-
						TU	ode		Nominal HP at 1.500 rpm 37 kW 45 kW	torque       240 Nm       290 Nm	- - - -
						T U W	>ode		Nominal HP at 1.500 rpm 37 kW 45 kW 55 kW	torque       240 Nm       290 Nm       350 Nm	
						T U W Y Z 2	>ode		Nominal HP at 1.500 rpm       37 kW       45 kW       55 kW       75 kW       90 kW       110 kW	torque       240 Nm       290 Nm       350 Nm       480 Nm       580 Nm       700 Nm	
						T U W Y Z	Code		Nominal HP at 1.500 rpm       37 kW       45 kW       55 kW       75 kW       90 kW	torque       240 Nm       290 Nm       350 Nm       480 Nm       580 Nm	
						T U W Y Z 2			Nominal HP at 1.500 rpm       37 kW       45 kW       55 kW       75 kW       90 kW       110 kW       132 kW	torque       240 Nm       290 Nm       350 Nm       480 Nm       580 Nm       700 Nm	
						T U W Y Z 2	Fu		Nominal HP at 1.500 rpm 37 kW 45 kW 55 kW 75 kW 90 kW 110 kW 132 kW on Horse power control wit	torque       240 Nm       290 Nm       350 Nm       480 Nm       580 Nm       700 Nm       840 Nm	
						T U W Y Z 2	Fu		Nominal HP at 1.500 rpm 37 kW 45 kW 55 kW 75 kW 90 kW 110 kW 132 kW on Horse power control wit	torque       240 Nm       290 Nm       350 Nm       480 Nm       580 Nm       700 Nm       840 Nm	
						T U W Y Z 2	Fu		Nominal HP at 1.500 rpm 37 kW 45 kW 55 kW 75 kW 90 kW 110 kW 132 kW on Horse power control wit	torque       240 Nm       290 Nm       350 Nm       480 Nm       580 Nm       700 Nm       840 Nm	
						T U W Y Z 2	Fu	nctio	Nominal HP at 1.500 rpm 37 kW 45 kW 55 kW 75 kW 90 kW 110 kW 132 kW on Horse power control wit Horse power control wit Horse power control wit Standard version	torque       240 Nm       290 Nm       350 Nm       480 Nm       580 Nm       700 Nm       840 Nm	
						T U W Y Z 2	Fu	entro C 1	Nominal HP at 1.500 rpm 37 kW 45 kW 55 kW 75 kW 90 kW 110 kW 132 kW on Horse power control wit Horse power control wit Horse power control wit Standard version NG 6 interface top side	torque 240 Nm 290 Nm 350 Nm 480 Nm 580 Nm 700 Nm 840 Nm h pressure control h load sensing (single spool)	
						T U W Y Z 2	Fu	enction pontroc C 1 W	Nominal HP at 1.500 rpm 37 kW 45 kW 55 kW 75 kW 90 kW 110 kW 132 kW on Horse power control wit Horse power control wit Horse power control wit Horse power control wit Standard version NG 6 interface top side With unloading function	torque 240 Nm 290 Nm 350 Nm 480 Nm 580 Nm 700 Nm 840 Nm h pressure control h load sensing (single spool) , 24 VDC solenoid	
						T U W Y Z 2	Fu	nction C 1 W K	Nominal HP at 1.500 rpm 37 kW 45 kW 55 kW 75 kW 90 kW 110 kW 132 kW 0n Horse power control wit Horse power control wit Horse power control wit Horse power control wit Horse power control wit Standard version NG 6 interface top side With unloading function Proppilot valve type P	torque 240 Nm 290 Nm 350 Nm 480 Nm 580 Nm 700 Nm 840 Nm h pressure control h load sensing (single spool) , 24 VDC solenoid VACRE35 mounted	
						T U W Y Z 2	Fu	enction pontroc C 1 W	Nominal HP at 1.500 rpm 37 kW 45 kW 55 kW 75 kW 90 kW 110 kW 132 kW on Horse power control wit Horse power control wit Horse power control wit Horse power control wit Standard version NG 6 interface top side With unloading function	torque 240 Nm 290 Nm 350 Nm 480 Nm 580 Nm 700 Nm 840 Nm h pressure control h load sensing (single spool) , 24 VDC solenoid VACRE35 mounted valve, NG6 interface,	

Code			Control option		
electro hydraulic control					
F	Ρ	V	Proportional displacement control, no pressure compensation		
U	Ρ		Proportional displacement control, with pressure compensation		
Control variation					
		R	pilot operated pressure control, open NG6 interface		
		К	pilot operated pressure control, proportional pilot valve type PVACRE35 mounted		
		Μ	pilot operated pressure control, pressure sensor and proportional pilot valve type PVACRE35 mounted for pressure control and/or power control		





0   0   1   No control     1   0   0   With cover plate, no control function     M   M   Remote pressure control, integrated pilot valve     N   R   Remote pressure control, integrated pilot valve     M   F   Load Sensing (flow) control, integrated pilot valve     M   T   Two spool LS control     I   Control variation   Image: Control variation     C   Standard version 1)   1     NG6 interface top side for pilot valves   With unloading function, 24VDC solenoid 1)     K   Proppilot valve type PVACRE.35 mounted   1) not for MT     Z   Withus unitegrated pilot valve, NG6 interface, for mounting of accessory code PVAC*   1) ont for MT     P   MT1 with mounted pilot valve PVAC1P 2)   1) ont for MT     2) only for MT   2) only for MT     360   U   45 kW   290 Nm     U   U   45 kW   200 Nm	- C	ode	e				(	Con	tro		tions	6		
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   Control variation     C   Standard version 1)   Control variation     I   NG6 interface top side for pilot valves     W   With unloading function, 24VDC solenoid 1)     K   Proppilot valve type PVACRE35 mounted     Z   Without integrated pilot valve, NG6 interface, for mounting of accessory code PVAC*   1) not for MT     P   MT1 with mounted pilot valve PVAC1P 2)   2) only for MT     Displacem.   Code   Nominal HP   Nominal at 1.500 rpm     360   U   45 kW   290 Nm     I   V   75 kW   480 Nm     I   2   10 kW   700 Nm     I   2   110 kW   700 Nm     I   3   132 kW   840 Nm     I   2   110 kW   1020 Nm     I   3   132 kW   840 Nm     I   2   100 kW   1020 Nm     I <td colspan="4">0 0 1</td> <td></td> <td></td> <td></td> <td></td> <td>-</td> <td></td> <td></td> <td>7</td> <td></td>	0 0 1								-			7		
M   R   Remote pressure control, integrated pilot valve Load Sensing (flow) control, integrated pilot valve     M   F   Control variation     C   Standard version 1)   Control variation     I   NG6 interface top side for pilot valves   Image: Control variation     W   With unloading function, 24VDC solenoid 1)   Image: Control variation   Image: Control valve type PVACRE35 mounted     Z   Without integrated pilot valve, NG6 interface, for mounting of accessory code PVAC*   Image: Control variation   Image: Control variation     Displacem.   Code   Nominal HP   Nominal torque   Image: Control variation     B   U   45 kW   290 Nm   Image: Control valve type PVACRE 2)   Image: Control valve type torque torque     B   U   45 kW   290 Nm   Image: Control valve type torque torque   Image: Control valve type torque torque     B   U   45 kW   290 Nm   Image: Control valve type torque torque   Image: Control valve type torque torque     I   U   45 kW   290 Nm   Image: Control valve type torque torque   Image: Control valve type torque torque   Image: Control valve type torque torque   Image: Control valve type torque torque torque     I   U<	1	0	0		V	Vith (	cove	r pla	ate,	no d	contr	ol function		
M   F   Load Sensing (flow) control, integrated pilot valve Two spool LS control     M   T   Control variation     C   Standard version 1)   NG6 interface top side for pilot valves     W   With unloading function, 24VDC solenoid 1)   Image: Control variation     K   Proppilot valve type PVACRE35 mounted   1) not for MT     Z   Without integrated pilot valve, NG6 interface, for mounting of accessory code PVAC*   1) not for MT     P   MT1 with mounted pilot valve PVAC1P 2)   2) only for MT     Bisplacem.   Code   Nominal torque     Gold   U   45 kW   290 Nm     Stat   1.500 rpm   torque     U   U   45 kW   290 Nm     Gold   Q   V   75 kW   480 Nm     Q   Q   V   75 kW   380 Nm     Q   Q   100 kW   100 km   100 km     Q   Q   13 kW   132 kW   840 Nm     Q   Q   1380 kW   1150 Nm   1280 kM     Q   Q   Q   Runne   1280 kM   1280 kM   1280 kM   1280 kM	М	М		St	Standard pressure control, integrated pilot valve				integ	rated pilot valve				
M   T   Two spool LS control     I   Control variation     C   Standard version 1)     1   NG6 interface top side for pilot valves     W   With unloading function, 24VDC solenoid 1)     K   Proppilot valve type PVACRE35 mounted     Z   Without integrated pilot valve, NG6 interface, for mounting of accessory code PVAC*     P   MT1 with mounted pilot valve PVAC1P 2)     J) not for MT     2) only for MT     Bisplacem.     Code     360     U   45 kW     290 Nm     40   U     45 kW   290 Nm     40   V     41   55 kW     360   3     42   110 kW     43   132 kW     44   160 kW     43   130 kW     44   160 kW     45   120 kW     46   200 kW     47   75 kW     480 Nm   120 kW     480 kW   120 kW     480 kW   120 kW     480 kW   1	М													
Control variation     C   Standard version 1)     1   NG6 interface top side for pilot valves     W   With unloading function, 24VDC solenoid 1)     K   Proppilot valve type PVACRE35 mounted     Z   Without integrated pilot valve, NG6 interface, for mounting of accessory code PVAC*     P   MT1 with mounted pilot valve PVAC1P 2)     Displacem.   Code     360   Image: the transmitted of the transmitted to the transmitt				Loa	ad Se	ensir								
C   Standard version 1)     1   NG6 interface top side for pilot valves     With unloading function, 24VDC solenoid 1)     K   Proppilot valve type PVACRE35 mounted     Z   Without integrated pilot valve, NG6 interface, for mounting of accessory code PVAC*     P   MT1 with mounted pilot valve PVAC1P 2)     Displacem.   Code     360   U     4   1.500 rpm     torque   torque     4   U     45 kW   290 Nm     56 kW   350 Nm     4   V     7   75 kW     480 Nm     4   10 kW     7   75 kW     480 Nm     4   10 kW     7   75 kW     480 Nm     4   10 kW     7   10 kW     7   10 kW     7   10 kW     80 kW   110 kW     10 k   12 kW     80 kW   120 kW     12 k   10 kW     13 k   132 kW     14 k   10 kW	М	Т												
1   NG6 interface top side for pilot valves     W   With unloading function, 24VDC solenoid <sup>1</sup> )     Proppilot valve type PVACRE35 mounted     Z   Without integrated pilot valve, NG6 interface, for mounting of accessory code PVAC*     P   MT1 with mounted pilot valve PVAC1P <sup>2</sup> )     J) not for MT     2) only for MT     2) only for MT     360     4   U     45 kW   290 Nm     5 kW   350 Nm     4   V     5 kW   350 Nm     4   V     5 kW   350 Nm     2   110 kW     700 Nm     3   132 kW     840 Nm     4   160 kW     5   180 kW     10   4     10   10     10   10     11   150 Nm     12   10 kW     13   132 kW     840 Nm   1280 Nm     10   1     10   1     11   10     12   180 kW     <		⊢								-				
W   With unloading function, 24VDC solenoid 1)     Proppilot valve type PVACRE35 mounted     Z   Without integrated pilot valve, NG6 interface, for mounting of accessory code PVAC*     P   MT1 with mounted pilot valve PVAC1P 2)     Jong to the pilot valve processory code PVAC*     MT1 with mounted pilot valve PVAC1P 2)     Jong to the pilot valve processory code PVAC*     MT1 with mounted pilot valve PVAC1P 2)     Jong to the pilot valve processory code processory     Jong to the pilot valve processory     MT1 with mounted pilot valve PVAC1P 2)     Jong to the pilot valve processory     Jong to the pilot valve processory     Jong to the pilot valve processory     MT1 with mounted pilot valve processory     Jong to the pilot processory						<u> </u>	-							
K   Proppilot valve type PVACRE35 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     Bisplacem.     Code     360     U   45 kW     290 Nm     40     10   45 kW     290 Nm     20   10 W     55 kW   350 Nm     20   10 W     21   10 kW     22   110 kW     23   10 kW     24   10 kW     25   90 kW     24   10 kW     25   10 kW     26   110 kW     27   90 kW     380 Nm   1020 Nm     23   110 kW     24   10 kW     25   180 kW     26   200 kW     280 Nm   1200 Nm     290 KW   1200 Nm     290 KW   120 Nm     200 kW   1200 Nm									•					
Z   Without integrated pilot valve, NG6 interface, for mounting of accessory code PVAC*   1) not for MT     P   MT1 with mounted pilot valve PVAC1P 2)   1) not for MT     2) only for MT   2) only for MT     Displacem.   Code     360   U   45 kW     2   10 kminal     4   1.500 rpm     4   4     5   10 kW     5   10 kW     1   10 kW <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>-</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>								-						
Image: product of the mounting of accessory code PVAC* MT1 with mounted pilot valve PVAC1P 2)   1) not for MT 2) only for MT     Image: product of the mounted pilot valve PVAC1P 2)   1) not for MT 2) only for MT     Image: product of the mounted pilot valve PVAC1P 2)   1) not for MT 2) only for MT     Image: product of the mounted pilot valve PVAC1P 2)   1) not for MT 2) only for MT     Image: product of the mounted pilot valve PVAC1P 2)   1) not for MT 2) only for MT     Image: product of the mounted pilot valve PVAC1P 2)   1) not for MT 2) only for MT     Image: product of the mounted pilot valve PVAC1P 2)   1) not for MT 2) only for MT     Image: product of the mounted pilot valve PVAC1P 2)   1) not for MT 2) only for MT     Image: product of the mounted pilot valve PVAC1P 2)   1) not for MT     Image: product of the mounted pilot valve PVAC1P 2)   1) not for MT     Image: product of the mounted pilot valve PVAC1P 2)   1) not for MT     Image: product of the mounted pilot valve pvalue   10     Image: product of the mounted pilot valve pvalue   10     Image: product of the mounted pilot valve pvalue   10     Image: product of the mounted pilot valve pvalue   10     Image: product of the mounted pilot valve pvalue   10     Image: product of the mounted pilot valve   10					•	•								
P     MT1 with mounted pilot valve PVAC1P 2)     1) not for M1 2) only for MT       2) only for MT     2) only for MT       2) only for MT     2) only for MT       360     Image: Code state stat														
Horse power / Torque control     2) only for MT       Displacem.     Code       360     U     45 kW     290 Nm       U     U     45 kW     290 Nm       U     V     55 kW     350 Nm       U     Y     75 kW     480 Nm       U     Z     90 kW     580 Nm       U     Z     100 kW     700 Nm       U     Z     110 kW     700 Nm       U     Z     110 kW     120 Nm       U     Z     110 kW     1200 Nm       U     Z     180 kW     1150 Nm       U     L     Horse power control with pressure control       U     L     Horse power control with load sensing (single spool)       Control variation     Control variation     Control variation								-			-			
at 1.500 rpm     torque       U     45 kW     290 Nm       W     55 kW     350 Nm       V     75 kW     480 Nm       Z     90 kW     580 Nm       Z     10 kW     700 Nm       Z     10 kW     700 Nm       Z     10 kW     1020 Nm       Z     10 kW     1020 Nm       Z     100 kW     1280 Nm       Z     200 kW     1280 Nm       L     L     Horse power control with pressure control       L     L     Horse power control with load sensing (single spool)       Control variation     Control variation	Di	spl	acem			Но		-		/ To	rque	control		
U   45 kW   290 Nm     W   55 kW   350 Nm     Y   75 kW   480 Nm     Z   90 kW   580 Nm     Z   90 kW   580 Nm     Z   10 kW   700 Nm     Z   10 kW   1020 Nm     Z   100 kW   1020 Nm     Z   100 kW   1020 Nm     Z   200 kW   1280 Nm     L   Horse power control with pressure control     L   L   Horse power control with load sensing (single spool)     Control variation	36	0									Nom	inal HP	Nominal	
W     55 kW     350 Nm       Y     75 kW     480 Nm       Z     90 kW     580 Nm       Z     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       L     L     Horse power control with load sensing (single spool)       Control variation											at 1.	500 rpm	torque	
Y     75 kW     480 Nm       Z     90 kW     580 Nm       Z     90 kW     580 Nm       Z     110 kW     700 Nm       Z     110 kW     700 Nm       Z     110 kW     1020 Nm       Z     180 kW     1020 Nm       Z     180 kW     1150 Nm       Z     5     180 kW       Z     5     180 kW       Z     5     180 kW       Z     6     200 kW       Z     8     100 kW       Z     6     200 kW       Z     8     100 kW       Z     6     200 kW       Z     8     100 kW       Z     10 kW     100 kW       Z     10 kW     100 kW       Z     10 kW							U					45 kW	290 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							W					55 kW	350 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							Y					75 kW	480 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)													580 Nm	
4     160 kW     1020 Nm       5     180 kW     1150 Nm       6     200 kW     1280 Nm         Function         Control variation														
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				_	<u> </u>	-		-	_					
6 200 kW 1280 Nm   Function   1 L Horse power control with pressure control   1 C Horse power control with load sensing (single spool)   Control variation			_			-			+					
Function     L   Horse power control with pressure control     C   Horse power control with load sensing (single spool)     Control variation		-	_	_						4	4			
Control variation	_						0	F	unc	tion	1	200 KW	1200 1411	
Control variation								L			Hors	e power control wi	th pressure control	
								С			Hors	e power control wi	th load sensing (single spool)	
				_				C	ont	rolv	/aria	tion		
C Standard version									-		Stan	dard version		
I     NG 6 interface top side														
W With unloading function, 24 VDC solenoid						ſ								
K Proppilot valve type PVACRE35 mounted						1			K		Prop	pilot valve tvpe P	VACRE35 mounted	
Z Without integrated pilot valve, NG6 interface, for mounting of accessory code PVAC*		_							_					

Code			Control option			
electro hydraulic control						
FPV			Proportional displacement control, no pressure compensation			
UP			Proportional displacement control, with pressure compensation			
Control variation						
		R	pilot operated pressure control, open NG6 interface			
		К	pilot operated pressure control, proportional pilot valve type PVACRE35 mounted			
		М	pilot operated pressure control, pressure sensor and proportional pilot valve type PVACRE35 mounted for pressure control and/or power control			

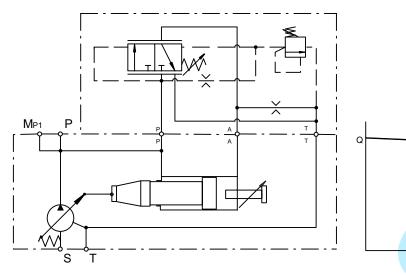


#### **Standard Pressure Control**

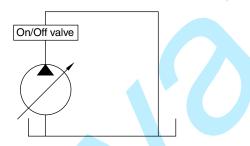
#### **Control option MMC**

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**



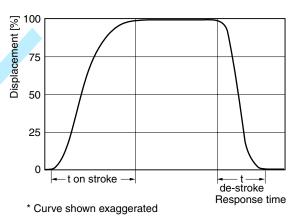
Response times of the pump are collected from a circuit as below by measuring the pumps swash angle movement at different pressures.



	Time on-s	troke [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 s	50 bar				
Differentia	10 to 40 bar				
Factory s	Factory setting differential pressure				
Control oi	I consumption	Max 8.0 l/min			

#### Dynamic characteristic of flow control \*



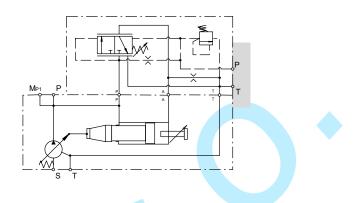


### Standard Pressure Control with NG6 Interface

#### **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.

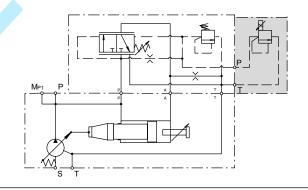
When the solenoid is de-energised, the pump compensates at a stand-by pressure of typically 15 bar. When the solenoid is energised, the pump compensates at the pressure adjusted on the integrated pilot valve.

### 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.

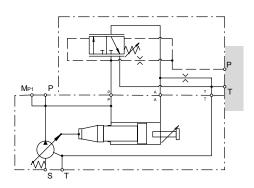


### **Standard Pressure Control with Accessory**

#### 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.





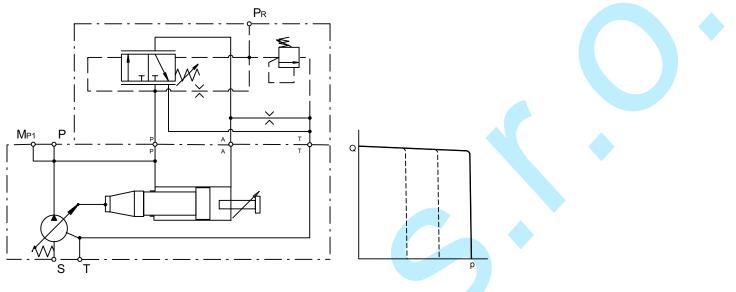
**Parker Hannifin** Pump and Motor Division Chemnitz, Germany

#### **Remote Pressure Control**

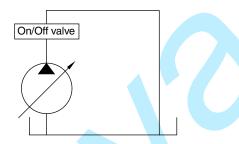
#### **Control option MRC**

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**



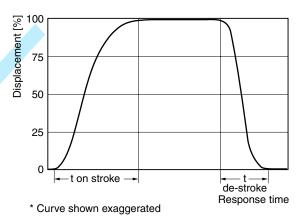
Response times of the pump are collected from a circuit as below by measuring the pumps swash angle movement at different pressures.



	Time on-s	troke [ms]	Time de-s	troke [ms]
	against 50 bar	against 350 bar	zero stroke 50 bar	zero stroke 350 bar
PV360	5 <mark>2</mark> 0	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

Dynamic characteristic of flow control \*



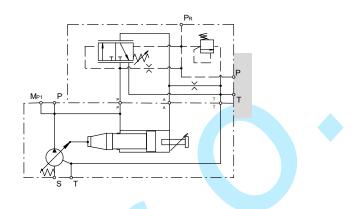


## Remote Pressure Control with NG6 Interface

#### **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.

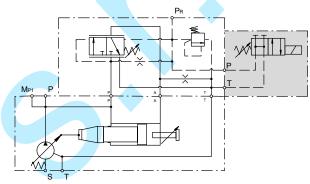


### **Remote Pressure Control with Electrical Unloading**

#### **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.

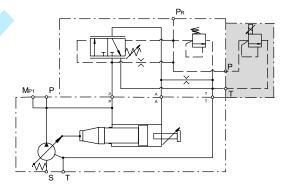
This allows a variation of the pump compensating pressure between 20 and 350 bar by an electrical signal.

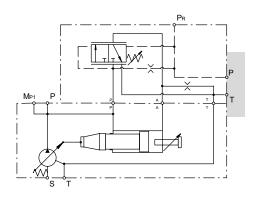


#### Control option MRZ

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

This version is recommended for valve accessories.







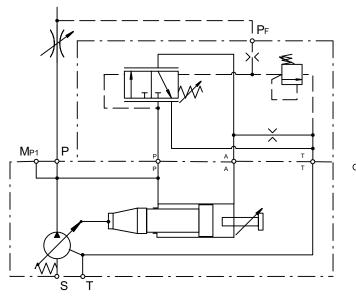
**Parker Hannifin** Pump and Motor Division Chemnitz, Germany

#### **Load Sensing Control**

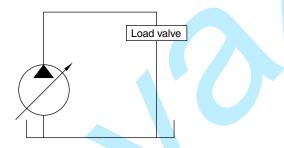
#### **Control option MFC**

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**



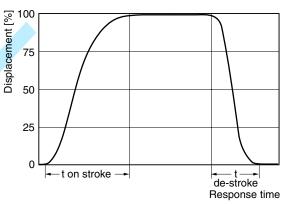
Response times of the pump are collected from a circuit as below by measuring the pumps swash angle movement at different pressures.



	Time on-s	troke [ms]	Time de-stroke [ms]		
	st <mark>and-</mark> by to 50 bar	stand-by to 350 bar	50 bar to stand-by	350 bar to stand-by	
PV360	<mark>5</mark> 00	690	830	50	

Pressu	ire	adjustment range	15 to 350 bar
Factor	y se	50 bar	
Differe	ntia	10 to 40 bar	
Factor	y se	10 bar	
Contro	l oi	l consumption	Max 8.0 l/min

#### Dynamic characteristic of flow control \*



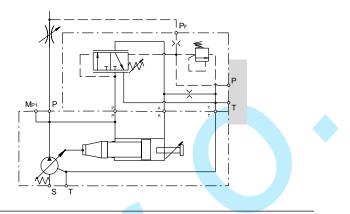
\* Curve shown exaggerated



#### 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.

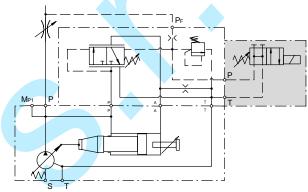
This interface allows the mounting of accessories like multiple pressure selectors without the need of external piping and valve mounting.



#### 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.

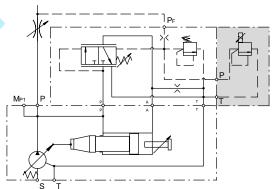


## Load Sensing Control with Proportional Pilot Valve

#### 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.

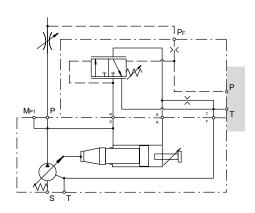


### Load Sensing Control with Accessory

#### 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.



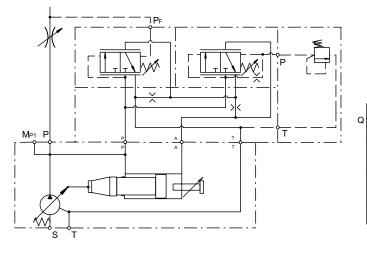


#### 2 Spool Load Sensing Control

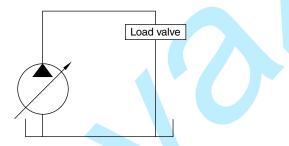
#### **Control option MTP**

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**



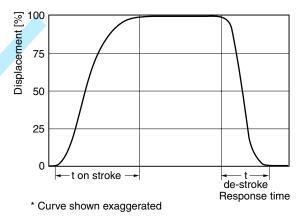
Response times of the pump are collected from a circuit as below by measuring the pumps swash angle movement at different pressures.



	Time on-s	troke [ms]	Time de-s	troke [ms]
	st <mark>and-</mark> by to 50 bar	stand-by to 350 bar	50 bar to stand-by	350 bar to stand-by
PV360	<mark>9</mark> 20	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, 15 bar pressure control					
Control oil consumption	Max 8.0 l/min				

Dynamic characteristic of flow control \*

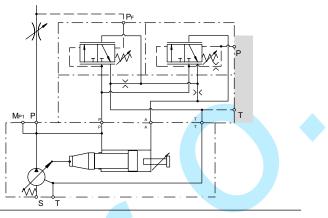


## 2 Spool Load Sensing Control with NG6 Interface

#### 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.

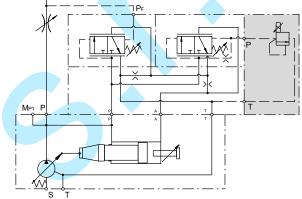


## 2 Spool Load Sensing Control with Proportional Pilot Valve

#### **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.

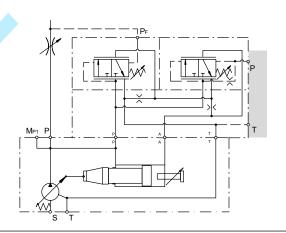


#### 2 Spool Load Sensing Control with Accessory

#### **Control option MTZ**

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

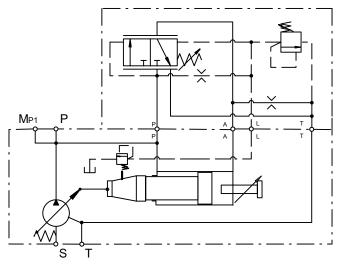
Available valve accessory can be seen on page 33. Specify the accessory with full ordering code.



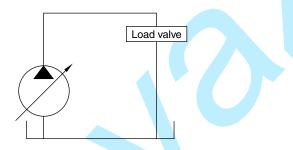
## Horse Power/Torque Controls with Pressure Control Control option \*LC

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**



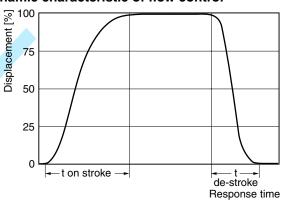
Response times of the pump are collected from a circuit as below by measuring the pumps swash angle movement at different pressures.



	Time on-s	troke [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	

Dynamic characteristic of flow control \*



\* Curve shown exaggerated

See Horse Power characteristic curves on page 24

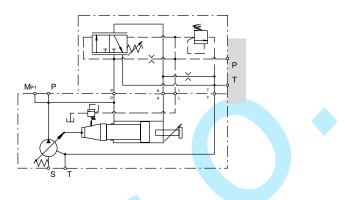


### Horse Power/Torque Control with NG6 Interface

#### 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.

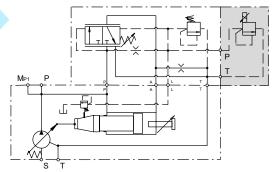
This allows a variation of the pump compensating pressure between 20 and 350 bar by an electrical signal.

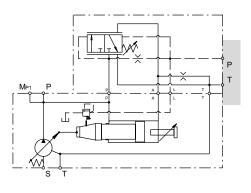


#### Control option \*LZ

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

This version is recommended for valve accessories.





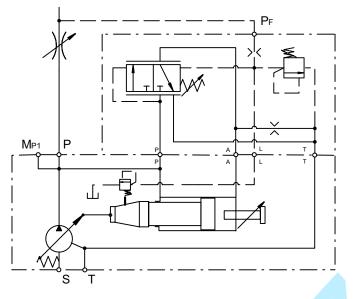


#### Horse Power/Torque Controls with Load Sensing

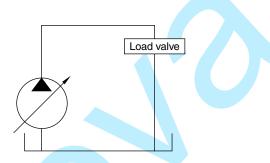
#### Control option \*CC

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.

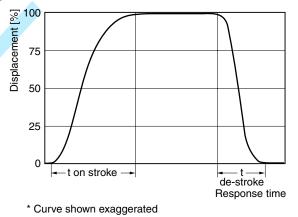


	Time on-stroke [ms]		Time de-stroke [ms]	
	stand-by to 50 bar	sta <mark>nd-b</mark> y to 35 <mark>0 b</mark> ar	50 bar to stand-by	350 bar to stand-by
PV360	90	90	100	100

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



Dynamic characteristic of flow control \*



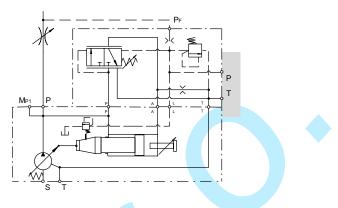
See Horse Power characteristic curves on page 24

### 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.

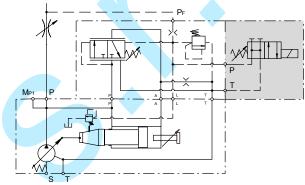


## Horse Power/Torque Control with Electrical Unloading

#### 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.

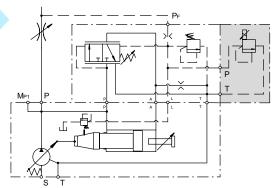


#### Horse Power/Torque Control with Proportional Pilot Valve

#### 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.

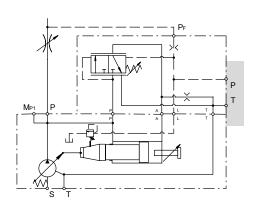


#### Horse Power/Torque Control with Accessory

#### Control option \*CZ

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

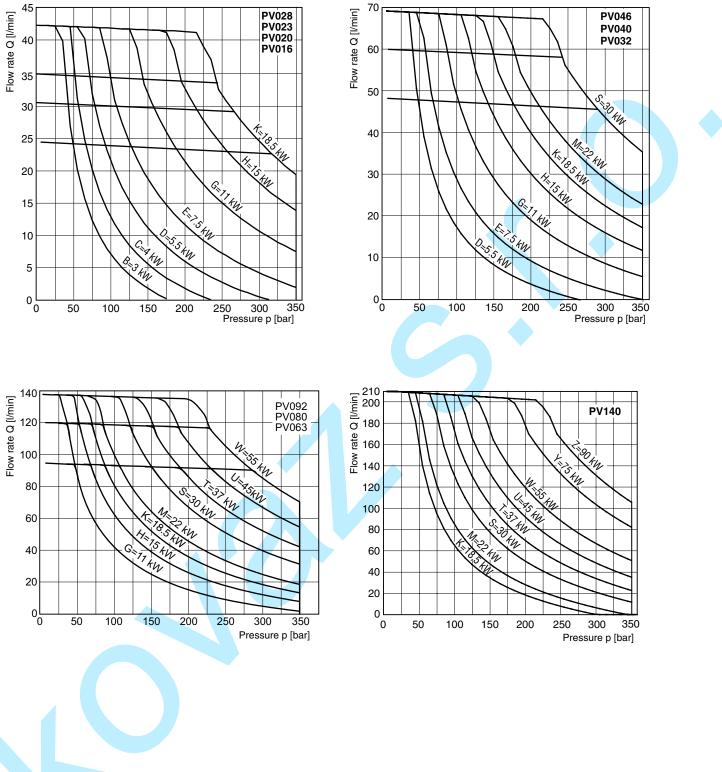
This version is recommended for valve accessories.



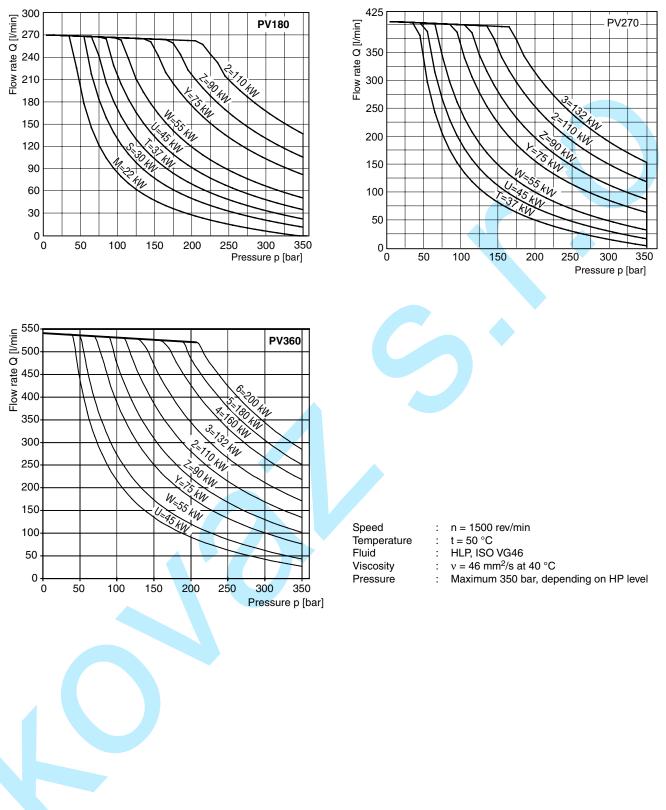


**Parker Hannifin** Pump and Motor Division Chemnitz, Germany

### **Typical Horse Power/Torque Control Characteristics**



#### **Typical Horse Power/Torque Control Characteristics**



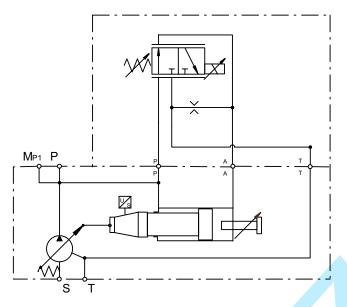
#### **Proportional Displacement Control**

#### **Control option FPV**

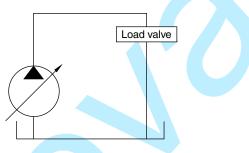
The proportional displacement control allows the adjustment of the pumps output flow with an electrical input signal. The actual displacement of the pump is monitored by an LVDT and compared with the commanded displacement in an electronic control module PQDXXA-Z00. The command is given as an electrical 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**



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



	Time on-stroke [ms]		Time de-s	troke [ms]
	stand-by to 50 bar	stan <mark>d-b</mark> y to 350 bar	50 bar to stand-by	350 bar to stand-by
PV3 <mark>60</mark>	180	100	330	240

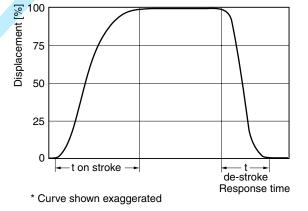
Pressure adjustment range *	25 to 350 bar
Factory setting pressure *	50 bar
Differential pressure adjustment range *	10 to 40 bar
Factory setting differential pressure *	15 bar
Control oil consumption	Max 8.0 l/min

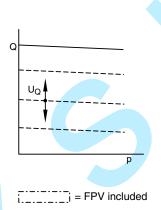
Internal pilot pressure required to control the pump	
FPV	15 bar
UPR	25 bar
UPK	25 bar
UPM	25 bar

\* Data valid for UP\* version



Dynamic characteristic of flow control \*

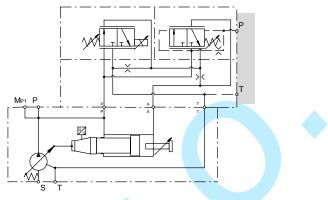




#### Proportional Displacement Control with Overriding Pressure Control Control option UPR

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).

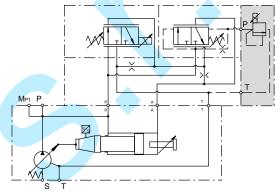


## Proportional Displacement Control with Proportional Pressure Control

#### **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.

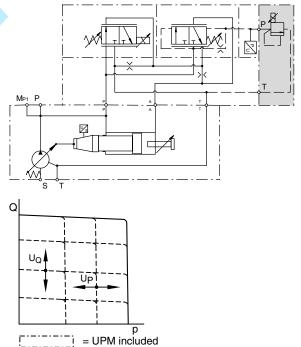


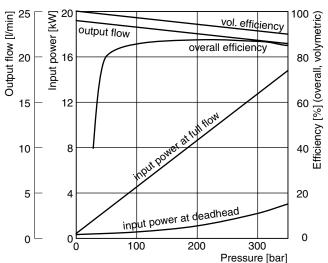
#### Proportional Displacement Control with Closed Loop Pressure Control Control option UPM

## Control version UPM is completed by a pressure trans-

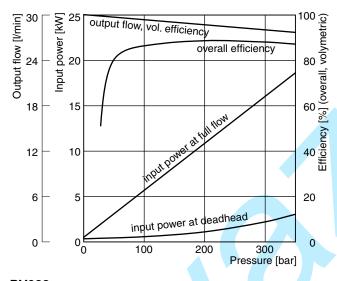
ducer Parker SCP 8181 CE. In combination with control module PQDXXA-Z00 a closed loop pressure control of pump outlet pressure is available.

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

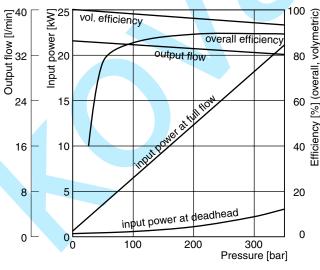




#### PV020







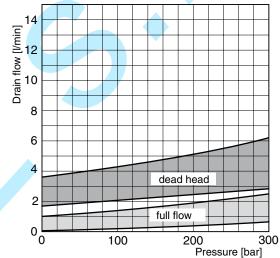
# Efficiency and case drain flows PV016, PV020, PV023 and PV028

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 mm<sup>2</sup>/s.

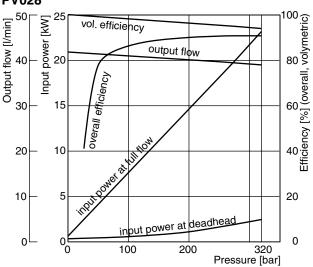
Case drain flow and compensator control flow leave via the drain port of the pump. To the values shown are to be added 1 to 1.2 l/min , if at pilot operated compensators the control flow of the pressure pilot valve also goes through the pump.

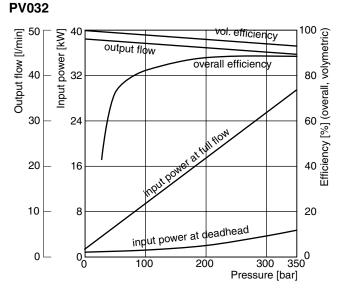
**Please note:** The values shown below are only valid for static operation. Under dynamic conditions and at rapid compensation of the pump the volume displaced by the servo piston also leaves the case drain port. This dynamic control flow can reach up to 40 l/min! Therefore the case drain line is to 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)

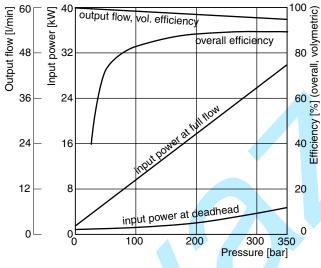


PV028

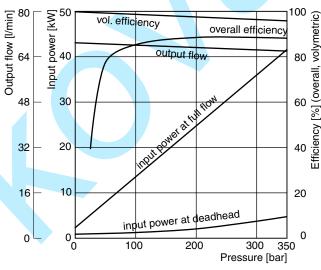




#### PV040



PV046



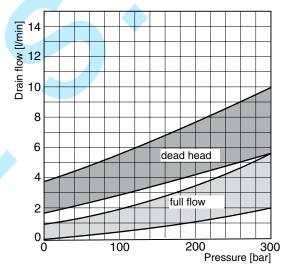
#### Efficiency and case drain flows PV032 to PV046

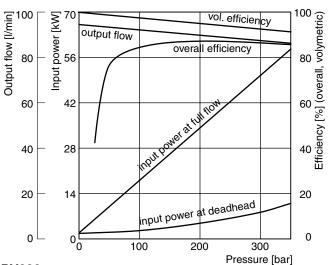
The efficiency and power graphs are measured at an input speed of n = 1500 rpm, a temperature of 50 °C and a fluid viscosity of 30 mm<sup>2</sup>/s.

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.

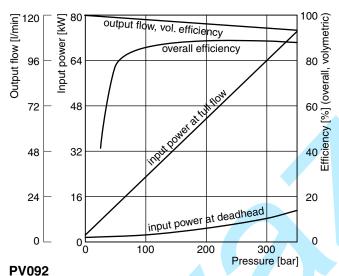
**Please note:** The values shown below are only valid for static operation. Under dynamic conditions and at rapid compensation of the pump the volume displaced by the servo piston also leaves the case drain port. This dynamic control flow can reach up to 60 l/min! Therefore the case drain line is to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

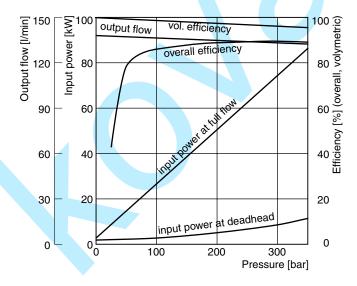
## Case drain flow PV032-046 with pressure compensator (MMC)





**PV080** 





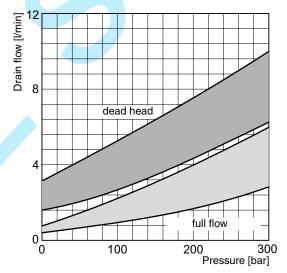
#### Efficiency and case drain flows PV063, PV080, PV092

The efficiency and power graphs are measured at an input speed of n = 1500 rpm, a temperature of 50 °C and a fluid viscosity of 30 mm<sup>2</sup>/s.

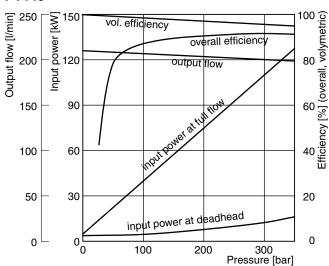
Case drain flow and compensator control flow leave via the drain port of the pump. To the values shown are to be added 1 to 1.2 l/min , if at pilot operated compensators (codes FR\*, FF\*, FT\*, power compensator and p-Qcontrol) the control flow of the pressure pilot valve also goes through the pump.

**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.

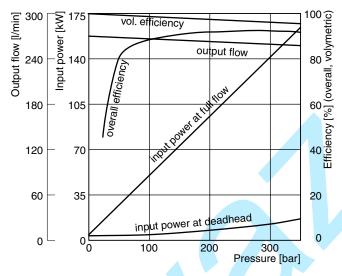




-Parker



#### PV180



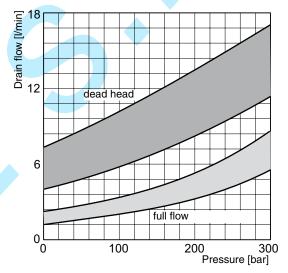
#### Efficiency and case drain flows PV140, PV180

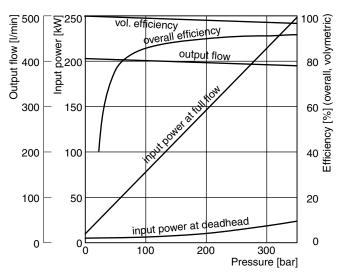
The efficiency and power graphs are measured at an input speed of n = 1500 rpm, a temperature of 50 °C and a fluid viscosity of 30 mm<sup>2</sup>/s.

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





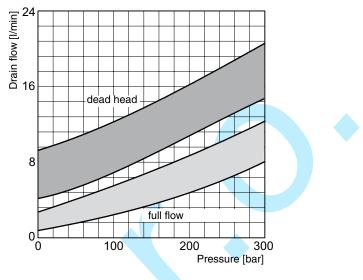
#### Efficiency and case drain flows PV270

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 mm<sup>2</sup>/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-Qcontrol) the control flow of the pressure pilot valve also goes through the pump.

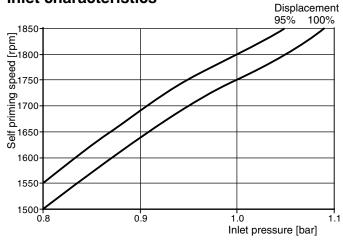
**Please note:** The values shown below are only valid for static operation. Under dynamic conditions and at rapid compensation of the pump the volume displaced by the servo piston also leaves the case drain port. This dynamic control flow can reach up to 120 l/min! Therefore the case drain line is to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

#### Case drain flows PV270

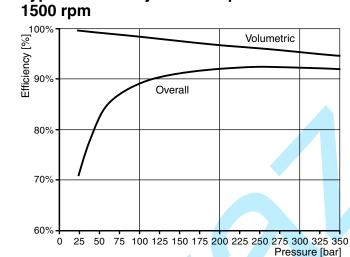


-Parker

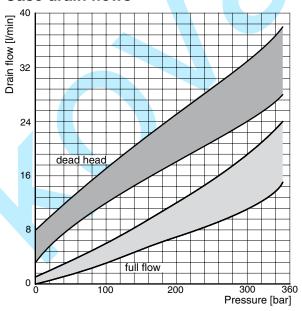
#### Typical inlet characteristics vs. speed at various percentage displacements Inlet characteristics



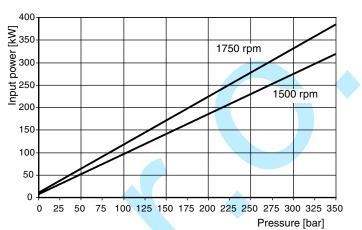
#### Typical efficiency at full displacement and 1500 rpm



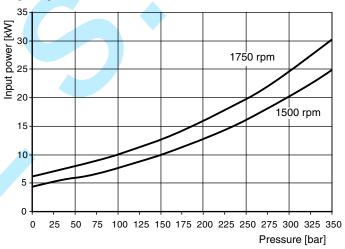
#### **Case drain flows**



Typical drive power at full displacement Input power – full stroke



#### Typical compensated power Input power – zero stroke



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.

