

# Metering pump for Polyurethane production

## Series QXP



- High-accuracy metering with very low pulsations, even at high pressures
- Can be used with high and low viscosities and at variable speeds

## 1 Description

The QXP pumps are the 5th generation of Bucher internal gear pumps, which have proven themselves in thirty years of service around the world. Numerous improvements have been made to the straightforward and robust design. Advances in the manufacturing process have made it possible - without making higher demands on individual components - to build pumps that are considerably lighter and more compact. A new tooth profile, conceived and optimised with the

help of CAE, has yielded another significant reduction in noise levels. Large sealing areas result in higher efficiencies. The internal gear ring is supported by a hydrodynamic/ hydrostatic lubricating film, which allows operation at low viscosities or low and high speeds. QXP pumps are therefore suitable for use with variable-speed drives, where they can provide variable deliveries.

## 2 Technical data

General characteristics	Description, value, unit
Installation attitude	unrestricted
Mounting method (standard)	oval 2-hole flange to ISO 3019/1 (SAE): QX 3-6 oval 2-hole flange to ISO 3019/2 (metric) QX 2+8
Direction of rotation	right, alternatively left (but not reversible)
Pump drive method	in-line, through a flexible coupling over solenoid coupling (contact Bucher Hydraulics)
Volumetric efficiency rate $\eta_v$	unto 95%
Fluids	HLP mineral oils to DIN 51524, Part 2 HFC fluids to VDMA 24317 other fluids - contact Bucher Hydraulics

General characteristics		Description, value, unit
Viscosity range		10 ... 300 mm <sup>2</sup> /s (cSt) (for values from 3 to 20'000 mm <sup>2</sup> /s outside this range, contact Bucher Hydraulics)
Inlet pressure	maximum minimum	4,0 bar absolute (only at special feature with PTFE- oil seal) 0.5 - 0.95 bar absolute (addictet to scale, speed and viscosity)
Approach against pressure		maximum 20 bar (higher values, contact Bucher Hydraulics)

## 2.1 Main characteristics for pressure range 1

Effective displacement Flow rate <sup>1)</sup> cm <sup>3</sup> /rev	Speed to rpm	Type	Continuous pressure. <sup>1)</sup> bar	Torque <sup>2)</sup> Nm	Power requirement at rpm 1450 <sup>3)</sup> KW
10,3 12,6 15,9	1800	QXP21-010 QXP21-012 QXP21-016	100	26 25 25	2,7 3,3 3,9
20,0 25,3 31,2	1800	QXP31-020 QXP31-025 QXP31-032	100	51 50 50	5,2 6,5 7,5
40,7 50,3 64,7	1800	QXP41-040 QXP41-050 QXP41-063	100	104 100 103	10,5 13,0 15,6
78,6 101,1 127,3	1500	QXP51-080 QXP51-100 QXP51-125	100	200 201 203	20,2 25,9 30,8
160,5 202,1 249,7	1500	QXP61-160 QXP61-200 QXP61-250	100	409 402 397	41,1 51,7 63,9
326,0 402,6 498,5	1500	QXP81-315 QXP81-400 QXP81-500	100	830 801 793	83,3 102,9 127,4

## 2.2 Main characteristics for pressure range 2

Effective displacement Flow rate <sup>1)</sup> cm <sup>3</sup> /rev	Speed to rpm	Type	Continuous pressure. <sup>1)</sup> bar	Torque <sup>2)</sup> Nm	Power requirement at rpm 1450 <sup>3)</sup> KW
3,3 4,2 5,1 6,3 8,0	1800	QXP22-002 QXP22-003 QXP22-005 QXP22-006 QXP22-008	210	10 13 17 21 27	1,9 2,3 2,6 3,2 4,0
10,0 12,6 15,6	1800	QXP32-010 QXP32-012 QXP32-016	210	34 42 52	5,1 6,4 7,9

Effective displacement Flow rate <sup>1)</sup> cm <sup>3</sup> /rev	Speed to rpm	Type	Continuous pressure. <sup>1)</sup> bar	Torque <sup>2)</sup> Nm	Power requirement at rpm 1450 <sup>3)</sup> KW
20,4 25,1 32,4	1800	QXP42-020 QXP42-025 QXP42-032	210	68 84 108	10,4 12,7 16,5
39,3 50,6 63,7	1500	QXP52-040 QXP52-050 QXP52-063	210	132 170 213	19,9 25,7 32,3
80,2 101,0 124,8	1500	QXP62-080 QXP62-100 QXP62-125	210	268 338 417	40,7 51,2 63,4
163,0 201,3 249,2	1500	QXP82-160 QXP82-200 QXP82-250	210	544 672 833	82,7 102,1 126,5

### 2.3 Main characteristics for pressure range 3

Effective displacement Flow rate <sup>1)</sup> cm <sup>3</sup> /rev	Speed to rpm	Type	Continuous pressure. <sup>1)</sup> bar	Torque <sup>2)</sup> Nm	Power requirement at rpm 1450 <sup>3)</sup> KW
5,1 6,3 8,0	1800	QXP23-005 QXP23-006 QXP23-008	250	26 32 41	3,4 4,2 5,4
10,0 12,6 15,6	1800	QXP33-010 QXP33-012 QXP33-016	250	51 64 80	6,5 8,8 10,2
20,4 25,1 32,4	1800	QXP43-020 QXP43-025 QXP43-032	250	104 128 165	13,2 16,5 21,0
39,3 50,6 63,7	1500	QXP53-040 QXP53-050 QXP53-063	250	200 258 321	25,5 32,5 40,8
80,2 101,0 124,8	1500	QXP63-080 QXP63-100 QXP63-125	250	409 514 636	51,9 65,5 81,4
163,0 201,3 249,2	1500	QXP83-160 QXP83-200 QXP83-250	250	830 1025 1270	105,0 131,2 161,7

The main characteristics data are valid for fluids with 40 mm<sup>2</sup>/s

1) maximum pressure values apply for 20 - 100 mm<sup>2</sup>/s

2) theoretical value at the max. permitted continuous pressure for mineral oil

3) theoretical value for valid continuous pressure calculated at 40 mm<sup>2</sup>/s

### 3 Dimensions

Frame size		2			3			4			5			6			7		
Pressure range		1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
Pressure port: to standard SAE J518 <sup>4)</sup>	P	G1/2" <sup>6) 7)</sup> thread			G3/4" <sup>6) 7)</sup> thread			1"			1 1/4"			1 1/2"			2"		
Mounting: oval 2-hole flange to ISO 3019/1 (SAE) ISO3019/2 (metr.)	A	118			132			170			212			267			330		
	B (SAE)	-			106			146			181			229			-		
	B (Metr.)	100			109			140			180			224			280		
	C	9			11			14			18			22			26		
	N (SAE)	-			82,55 - 0,05			101,6 - 0,05			127 - 0,05			152,4 - 0,05			-		
	N (Metr.)	63 h8			80 h8			100 h8			125 h8			160 h8			200 h8		
	O	8,5			8,5			10,5			12,5			16,5			20		
V	6			6			7			7			7			9			
4-hole flange ISO 3019/2	X (Metr.)	9			9			12			14			18			22		
	Y (Metr.)	85			103			125			160			200			250		
Shaft end: parallel, to ISO/R775 <sup>5)</sup>	D	20 j6			25 j6			32 j6			40 j6			50 j6			63 j6		
	E	36			42			58			82			82			105		
	F	6			8			10			12			14			18		
	G	22,5			28			35			43			53,5			67		
	I	45			50			68			92			92			117		
Housing	K	37,5			44			52,5			60,5			74			90		
	L	136	117 <sup>8)</sup>	153	164	144	189	202	176	232	242	210	280	288	248	338	361	331	446
	M	-	55 <sup>8)</sup>	90	-	69,5	114	-	87	143	-	102	172	-	119	209	-	151	266
	T	85			107			133			177			214	220	220	273	275	275
	Z	50			60			62,5			78			97,5			125		
Weight	kg	5	5	6,5	10	9,5	12,5	18	17	22	33	31	40	64	60	76	130	120	160

4) for SAE 3000 pipe flange dimensions, high pressure type up to 420 bar (see section 5.1)  
low pressure type for up to 16 bar (see section 5.2)

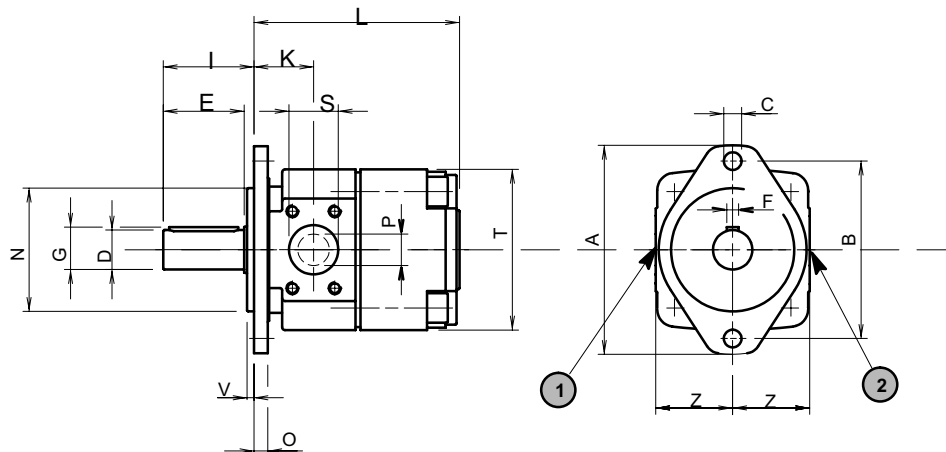
5) or other shaft ends, contact Bucher Hydraulics

6) threaded port to DIN 3852, Part 2

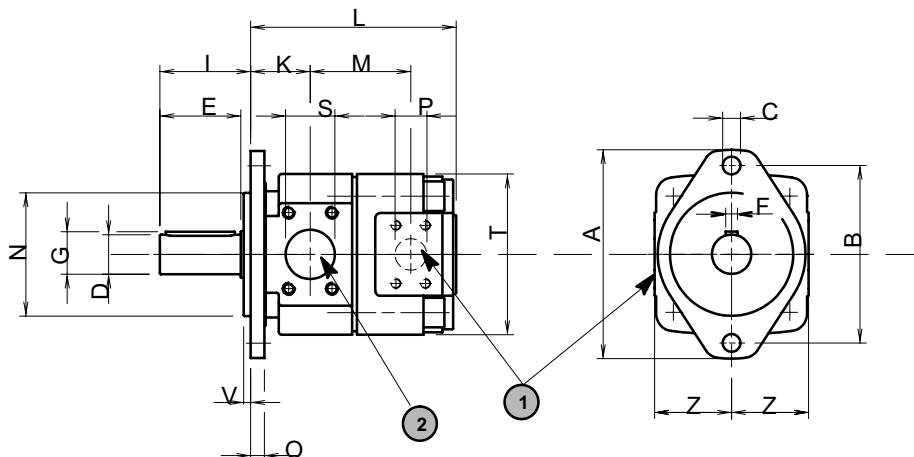
7) pressure port to SAE J 518 can be supplied for pressure ranges 2+3

8) at QXP22-003 and QXP22-004 : L = 113 ; M = 51

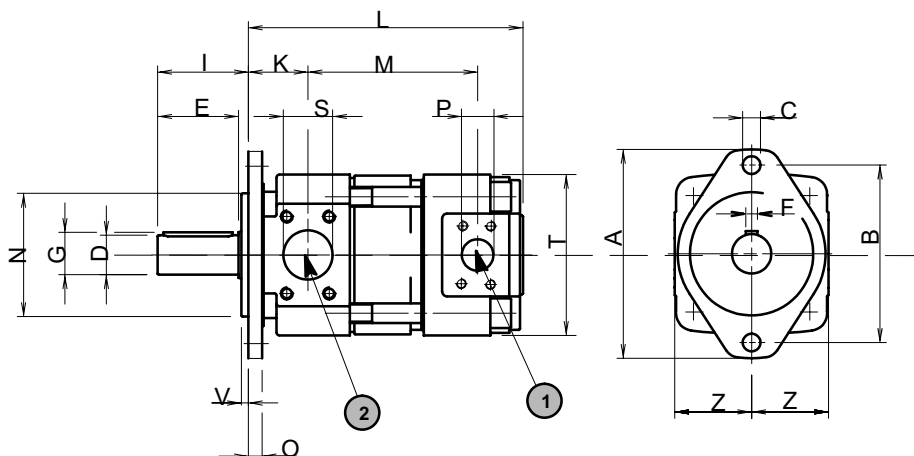
### 3.1 Pressure range 1



### 3.2 Pressure range 2



### 3.3 Pressure range 3



1	Pressure port P
2	Suction port S

## 4 Ordering code

Series	= QXP	Q	X	P	4	1	-	0	4	0	R	*	*
Frame size	= 2 / 3 / 4 / 5 / 6 / 8												
Pressure range	= 1 / 2 / 3												
Displacement in cm <sup>3</sup> /rev	= 003 - 500												
Rotation viewed from shaft end	right (CW) = R (standard) left (ACW) = L												
Variants / special features (to be inserted by the factory, see section 4.2 for a selection)													

### Ordering example:

Required: single pump  
 Displacement: 40cm<sup>3</sup>/rev  
 Continuous pressure: 100 bar  
 for use with polyol  
 Ordering code: QXP41-040R386

### 4.1 Standard configuration

- direction of rotation - right (CW)
- 2-hole mounting flange to ISO 3019/1 (SAE): sizes QX 3-6
- 2-hole mounting flange to ISO 3019/2 (metr.): sizes QX 2+8
- FPM (viton) seals
- parallel shaft end to ISO/R775

### 4.2 Special features

358 = for components Polyole, Isocyanate und Additives  
 ports for liquid sealing arrangement, additional lubrication for plain bearings  
 PTFE shaft seal

390 = for Isocyanate  
 ports for liquid sealing arrangement  
 PTFE shaft seal

386 = for Polyole  
 additional lubrication for plain bearings  
 PTFE shaft seal

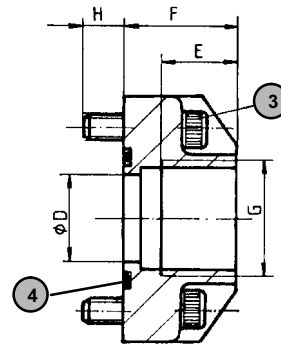
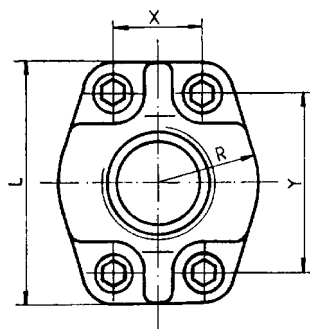
QXP pumps require fluid with a minimum cleanliness level of NAS 1638, Class 8 or ISO 4406, code 19/17/14; no transgression

## 5 Note

This catalogue is intended for users with specialist knowledge. The user must check the suitability of the equipment described herein in order to ensure that all of the conditions necessary for the safety and proper functioning of the system are fulfilled. If you have any doubts or questions concerning the use of these pumps, please consult Bucher Hydraulics.

## 6 Accessories

### 6.1 Pipe flange - high pressure type for up to 420 bar - SAE 3000 pattern



<b>3</b>	Retaining screws
<b>4</b>	O-Ring

Threaded pipe flanges are spot-faced for DIN 2353 pipe fittings

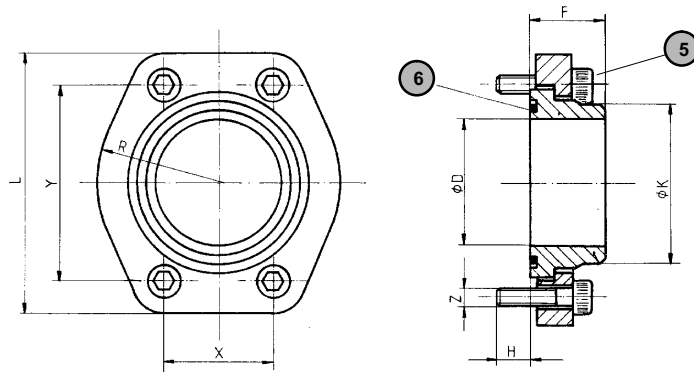
Material: ST37

For Viton seals, contact Bucher Hydraulics

Ordering-number	Ordering code	Size	DØ	E	F	H	L	R	X	Y	O-ring 90 Shore 'A'	Retaining screws DIN912-12.9 / Torque Nm	
037000	RF 01-R08	G 1/2"	12,5	16	27	13	54	23	17,5	38	20,24x2,62	M8x30	30
037010	RF 02-R10	G 3/4"	20	18	30	12	65	26	22,2	47,6	26,65x2,62	M10x30	60
037020	RF 03-R11	G 1"	25	20	34	13	70	29	26,2	52,4	32,99x2,62	M10x35	60
037030	RF 04-R12	G 1 1/4"	32	22	38	14	80	36	30,2	58,6	40,86x3,53	M10x40	60
037040	RF 05-R13	G 1 1/2"	38	24	41	19	94	41	35,7	70	44,04x3,53	M12x45	120
037050	RF 06-R14	G 2"	50	26	45	20	102	48	42,9	77,8	59,92x3,53	M12x50	120
055470*	RF 07-R16	G 2 1/2" *	63	30	50	18	114	57	50,8	89	72,62x3,53	M12x45	120

\* at RF07 only to 210 bar be allowed

## 6.2 Low pressure type for up to 16 bar - SAE 3000 pattern



5	Retaining screws
6	O-Ring

Material: ST37  
For Viton seals, contact Bucher Hydraulics

Ordering number	Ordering code	SAE flange Size	D	K	F	H	L	R	X	Y	O-ring 90 Shore 'A'	Retaining screws DIN 912-8.8 Torque Nm		pipe <sup>1)</sup> O/dia.a pprox.
062450	RF 07-S	2 1/2"	63	75	35	14	120	57	51	89	69,44x3,53	M12x30	70	75
063880	RN 08-S	3"	76	88			140,5	68	62	106,5	85,32x3,53	M16x40	180	88
063890	RN 09-S	3 1/2"	89	100	40	19	158,5	73	70	120,3	98,02x3,53	M16x40	180	100
063900	RN 10-S	4"	103	115			168	79	78	130	110,72x3,53	M16x40	180	115

1) We recommend the use of seamless precision steel tube to DIN 2391 with-wallthick. max 6 mm

[info.kl@bucherhydraulics.com](mailto:info.kl@bucherhydraulics.com)

[www.bucherhydraulics.com](http://www.bucherhydraulics.com)

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Classification: 410.100.