

# Multi-outlet radial piston pumps

## Type MRK701/702

up to **700 bar**

0.16 to 3.62 cm<sup>3</sup>/rev  
per circuit

### Features

- High volumetric efficiency
- Self-venting and priming
- Outlets with different displacements in the same pump possible on request
- Combination with gear pump on request
- Pulsations are minimized

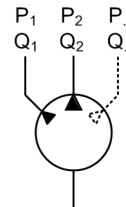


### Applications

- Multiple hydraulic outlets are needed in one pump
- Power units
- Test benches
- Synchronised moving and lifting systems (bridge building, ship building, railway yards, etc.)

### Design

- With multiple pumping elements which are led into two or more pressure ports
- Valve-controlled, radial piston pump of modular design



### Technical Data

Hydraulic fluid	mineral oil according to DIN 51524 (other fluids on request)
Fluid temperature range	-20 to 80 °C
Ambient temperature range	-30 to 50 °C
Viscosity range	5 to 220 mm <sup>2</sup> /s
Max. operating pressure	700 bar
Operating pressure suction side	-0.2 bar to 0.5 bar gauge pressure
Displacement volume	0.16 to 3.62 cm <sup>3</sup> /rev
Filtration (recommendation)	according to NAS 1638 class 6 resp. ISO/DIN 4406 17/15/12
Axial force onto driving shaft	can't be taken up
Radial force onto driving shaft	on request
Max. rotation speed	2000 rpm
Direction of rotation	any
Suction height	max. 500 mm
Weight	see overview "Product information"
Materials	pressure flange: steel driving shaft: steel cover: diecast aluminium

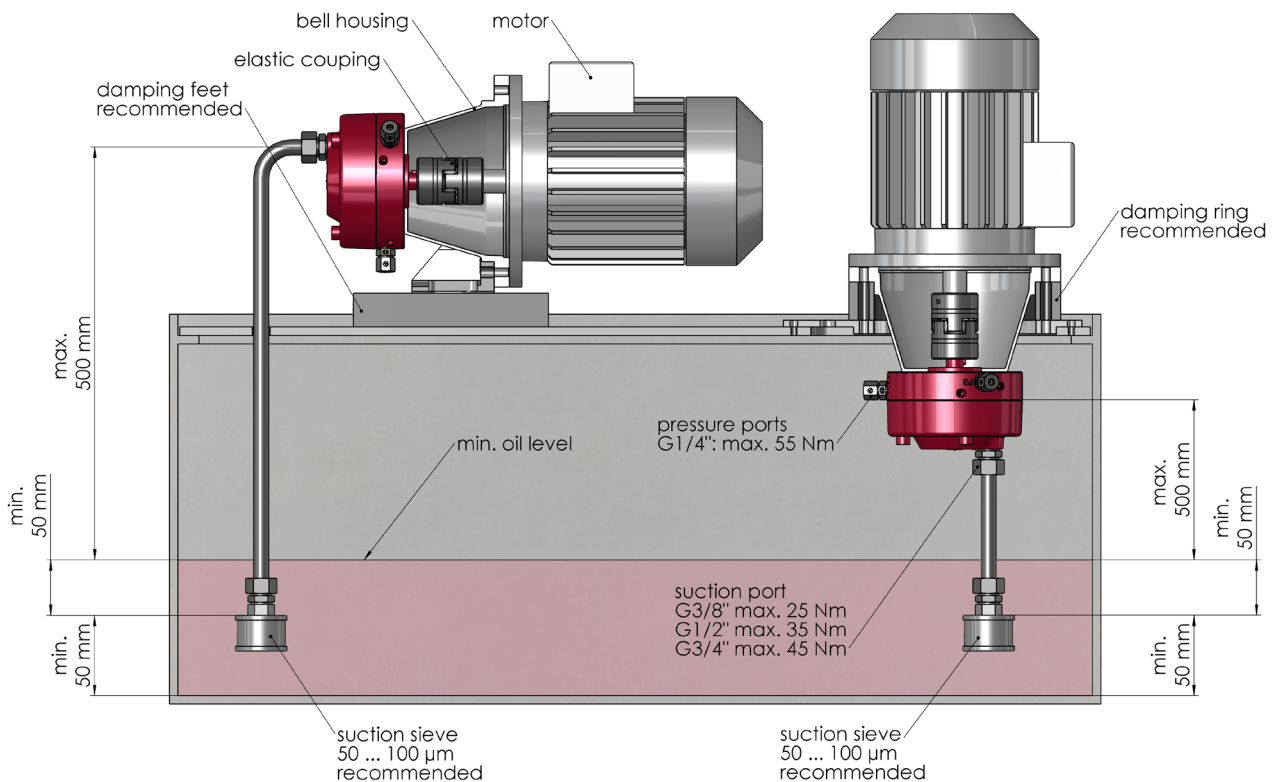
## Type MRK701/702

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0.16 to 3.62 cm<sup>3</sup>/rev  
per circuit

## Type code

<b>Example</b>	MRK 701 - 2 x 0,31 - 700 - V - C 00																																										
<b>Multi-outlet radial piston pumps</b>	<table border="1"> <tr> <td><b>Design</b></td> <td colspan="10">00 ... 99 For internal purposes</td> </tr> <tr> <td><b>Index</b></td> <td colspan="10">Please leave blank For internal purposes</td> </tr> <tr> <td><b>Design revision</b></td> <td colspan="10">For internal purposes</td> </tr> </table>										<b>Design</b>	00 ... 99 For internal purposes										<b>Index</b>	Please leave blank For internal purposes										<b>Design revision</b>	For internal purposes									
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<b>Size</b>	701																																										
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<b>Number of circuits</b>	see overview "Product information"																																										
<b>Displacement volume per circuit [cm<sup>3</sup>/rev]</b>	see overview "Product information"																																										
<b>Max. operating pressure [bar]</b>	see overview "Product information"																																										
<b>Seal material</b>	V FKM		other seal materials on request																																								

## Mounting



## Product information size 701

type code	number of circuits	number of pumping elements per circuit	max. operating pressure [bar]	displacement volume per circuit [cm <sup>3</sup> /rev]	pulsation	weight [kg]	part no.
MRK701-2x0,31-700-V-C*00	2	2	700	0.31	high	7.1	on request
MRK701-2x0,45-700-V-C*00	2	2	700	0.45	high	7.1	on request
MRK701-2x0,63-700-V-C*00	2	2	700	0.63	high	7.1	on request
MRK701-2x0,80-700-V-C*00	2	2	700	0.80	high	7.1	on request
MRK701-2x1,02-700-V-C*00	2	2	700	1.02	high	7.1	on request
MRK701-2x1,26-700-V-C*00	2	2	700	1.26	high	7.1	on request
MRK701-2x1,53-700-V-C*00	2	3	700	1.53	low	8.7	on request
MRK701-2x1,81-700-V-C*00	2	2	700	1.81	high	7.1	on request
MRK701-2x1,88-700-V-C*00	2	3	700	1.88	low	8.7	on request
MRK701-2x2,71-700-V-C*00	2	3	700	2.71	low	8.7	on request
MRK701-3x0,40-700-V-C*00	3	1	700	0.40	very high	7.0	on request
MRK701-3x0,80-700-V-C*00	3	2	700	0.80	high	8.7	on request
MRK701-3x1,14-700-V-C*00	3	2	700	1.14	high	8.7	on request
MRK701-3x1,81-700-V-C*00	3	2	700	1.81	high	8.7	on request
MRK701-4x0,16-700-V-C*00	4	1	700	0.16	very high	7.2	on request
MRK701-4x0,23-700-V-C*00	4	1	700	0.23	very high	7.2	on request
MRK701-4x0,40-700-V-C*00	4	1	700	0.40	very high	7.2	on request
MRK701-4x0,51-700-V-C*00	4	1	700	0.51	very high	7.2	on request
MRK701-4x0,63-700-V-C*00	4	1	700	0.63	very high	7.2	on request
MRK701-4x0,90-700-V-C*00	4	1	700	0.90	very high	7.2	on request
MRK701-5x0,16-700-V-C*00	5	1	700	0.16	very high	7.4	on request
MRK701-5x0,23-700-V-C*00	5	1	700	0.23	very high	7.4	on request
MRK701-5x0,40-700-V-C*00	5	1	700	0.40	very high	7.4	on request
MRK701-5x0,51-700-V-C*00	5	1	700	0.51	very high	7.4	on request
MRK701-5x0,63-700-V-C*00	5	1	700	0.63	very high	7.4	on request
MRK701-5x0,90-700-V-C*00	5	1	700	0.90	very high	7.4	on request
MRK701-6x0,16-700-V-C*00	6	1	700	0.16	very high	7.5	on request
MRK701-6x0,23-700-V-C*00	6	1	700	0.23	very high	7.5	on request
MRK701-6x0,40-700-V-C*00	6	1	700	0.40	very high	7.5	on request
MRK701-6x0,51-700-V-C*00	6	1	700	0.51	very high	7.5	on request
MRK701-6x0,90-700-V-C*00	6	1	700	0.90	very high	7.5	on request

**Note:** Size MRK701 can be fitted with up to 7 pumping elements.  
Pumping elements are available with 0.16 / 0.23 / 0.40 / 0.51 / 0.63 / 0.90 cm<sup>3</sup>/rev.

Further versions on request

## Type MRK701/702

up to 700 bar  
0.16 to 3.62 cm<sup>3</sup>/rev  
per circuit

## Product information size 702

type code	number of circuits	number of pumping elements per circuit	max. operating pressure [bar]	displacement volume per circuit [cm <sup>3</sup> /rev]	pulsation	weight [kg]	part. no.
MRK702-2x2,04-700-V-C*00	2	4	700	2.04	low	16.5	on request
MRK702-2x3,07-700-V-C*00	2	4	700	3.07	low	16.5	on request
MRK702-2x3,62-700-V-C*00	2	4	700	3.62	low	16.5	on request
MRK702-3x1,88-700-V-C*00	3	3	700	1.88	low	21.6	on request
MRK702-3x2,71-700-V-C*00	3	3	700	2.71	low	21.6	on request
MRK702-4x0,80-700-V-C*00	4	2	700	0.80	high	21.4	on request
MRK702-4x1,02-700-V-C*00	4	2	700	1.02	high	21.4	on request
MRK702-4x1,26-700-V-C*00	4	2	700	1.26	high	21.4	on request
MRK702-4x1,41-700-V-C*00	4	2	700	1.41	high	21.4	on request
MRK702-4x1,81-700-V-C*00	4	2	700	1.81	high	21.4	on request
MRK702-8x0,16-700-V-C*00	8	1	700	0.16	very high	16.5	on request
MRK702-8x0,23-700-V-C*00	8	1	700	0.23	very high	16.5	on request
MRK702-8x0,40-700-V-C*00	8	1	700	0.40	very high	16.5	on request
MRK702-8x0,51-700-V-C*00	8	1	700	0.51	very high	16.5	on request
MRK702-8x0,63-700-V-C*00	8	1	700	0.63	very high	16.5	on request
MRK702-8x0,90-700-V-C*00	8	1	700	0.90	very high	16.5	on request
MRK702-9x0,16-700-V-C*00	9	1	700	0.16	very high	16.7	on request
MRK702-9x0,23-700-V-C*00	9	1	700	0.23	very high	16.7	on request
MRK702-9x0,40-700-V-C*00	9	1	700	0.40	very high	16.7	on request
MRK702-9x0,51-700-V-C*00	9	1	700	0.51	very high	16.7	on request
MRK702-9x0,63-700-V-C*00	9	1	700	0.63	very high	16.7	on request
MRK702-9x0,90-700-V-C*00	9	1	700	0.90	very high	16.7	on request

**Note:** Size MRK702 can be fitted with up to 9 pumping elements.

Pumping elements are available with the following displacements: 0.16 / 0.23 / 0.40 / 0.51 / 0.63 / 0.90 cm<sup>3</sup>/rev.

More versions on request

### Calculation of driving motor power

$$P = \frac{p \cdot V_g \cdot n \cdot k}{\eta_t \cdot 600 \cdot 10^3}$$

P = driving power [kW]  
p = operating pressure [bar]  
V<sub>g</sub> = displacement volume [cm<sup>3</sup>/rev]  
n = speed [rpm]  
η<sub>t</sub> = overall efficiency approx. 0.8

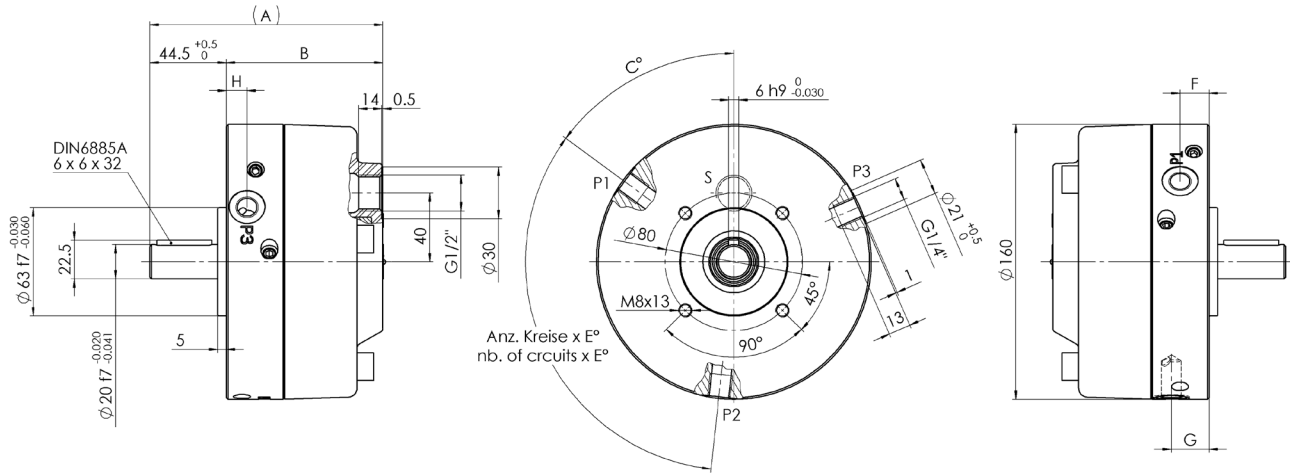
k = pulsation factor  
- with 2 pumping elements: k approx. 1.60  
- with 3 pumping elements: k approx. 1.05  
- with 4 pumping elements: k approx. 1.10  
- with 5 pumping elements: k approx. 1.00  
- with 6 pumping elements: k approx. 1.05  
- with 7 pumping elements: k approx. 1.00  
- with 8 pumping elements: k approx. 1.05  
- with 9 pumping elements: k approx. 1.00

### Calculation of driving motor torque

$$M = \frac{p \cdot V_g}{62,8 \cdot \eta_t} \quad M \text{ torque [Nm]}$$

## Dimensional drawings

### Size MRK701



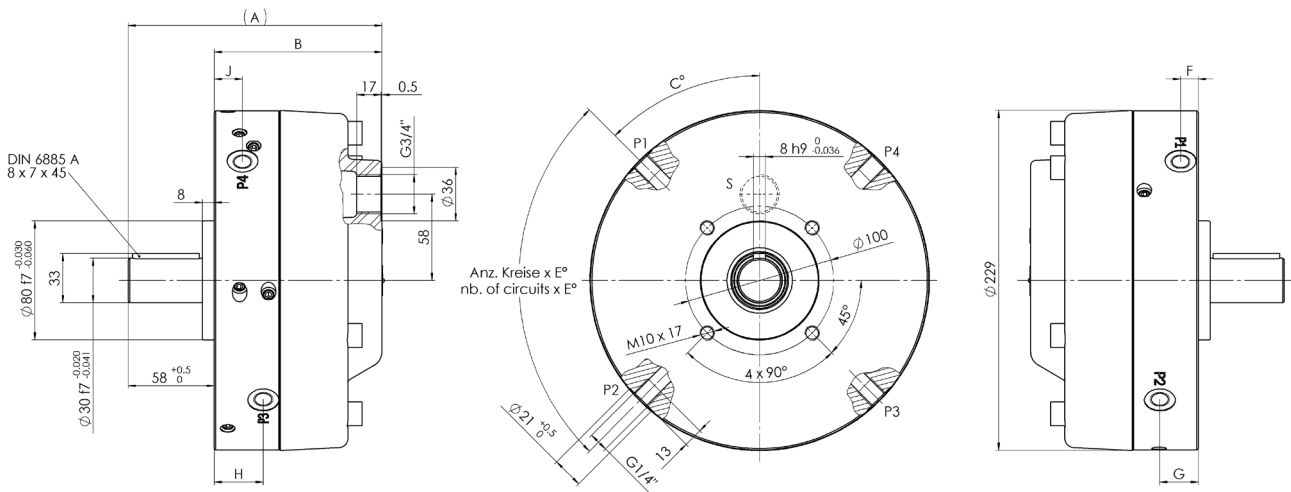
**Note:** Illustration of a pump with 3 circuits! Further drawings on request.

number of circuits	number of pumping elements per circuit	dim. A [mm]	dim. B [mm]	dim. C [°]	dim. E [°]	dim. F [mm]	dim. G [mm]	dim. H [mm]
2	2	127.5	83.0	90	180	12.0	14.0	
2	3	135.5	91.0	90	180	19.0	19.0	
3	1	127.5	83.0	60	120	12.0	12.0	12.0
3	2	135.5	91.0	53.7	120	17.0	22.0	12.0
4	1	127.5	83.0	45	90	12.0	12.0	12.0
5	1	127.5	83.0	36	72	12.0	12.0	12.0
6	1	127.5	83.0	23.7	60	12.0	12.0	12.0
7	1	127.5	83.0	25.7	51.4	12.0	12.0	12.0

## Type MRK701/702

up to 700 bar  
0.16 to 3.62 cm<sup>3</sup>/rev  
per circuit

### Size MRK702



**Note:** Illustration of a pump with 4 circuits! Further drawings on request.

number of circuits	number of pumping elements per circuits	dim. A [mm]	dim. B [mm]	dim. C [°]	dim. E [°]	dim. F [mm]	dim. G [mm]	dim. H [mm]	dim. J [mm]
2	4	155.0	97.0	90	180	12.0	12.0		
3	3	171.0	113.0	60	120	20.5	15.0	20.5	
4	2	171.0	113.0	45	90	12.0	26.0	33.0	19.0
8	1	155.0	97.0	12.5	45	14.0	14.0	14.0	14.0
9	1	155.0	97.0	20	40	14.0	14.0	14.0	14.0

### Spare parts

item description	part no.
seals kit for MRK701	4006555
seals kit for MRK702	4006559

### Bieri Hydraulik AG

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The information in this brochure relates to the operating conditions and applications described.

For applications and operating conditions not described, please contact the relevant technical department.

Subject to technical modifications.