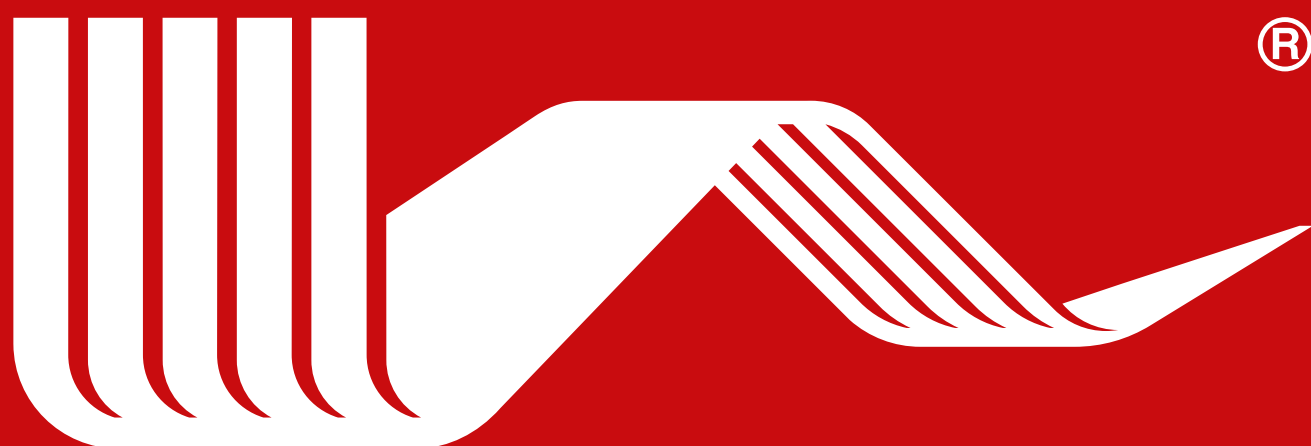


WE GIVE POWER TO MACHINES



PSM HYDRAULICS
PNEVMOSTROIMASHINA JSC

PRODUCTION RANGE:
HYDRAULIC EQUIPMENT



Dear partners,



Pnevmostroy mashina JSC (Ekaterinburg, Russia) is a leading Russian machine-building company with more than 100 years history, specialized in design and manufacture of various kinds of hydraulic equipment under the brand name PSM-HYDRAULICS®.

Production range:

Axial piston pumps

- fixed displacement bent-axis hydraulic pumps for open circuit 310, 411, 411.K, 311.TF series;
- variable displacement bent-axis hydraulic pumps for open circuit 313 series;
- fixed displacement swashplate hydraulic pumps for open circuit 405 series;
- variable displacement swashplate hydraulic pumps for open circuit 415 series;
- variable displacement swashplate hydraulic pumps for closed circuit 416 series;

Axial piston motors

- fixed displacement bent-axis hydraulic motors 310, 410 series ;
- variable displacement bent-axis hydraulic motors 303, 403 series;
- fixed displacement swashplate hydraulic motors 406 series;

Complex hydraulic solutions

- tandem pumps;
- hydrostatic transmissions;
- integrated pumping units;
- planetary gearboxes MR series;

Controls and valves

- hydraulic control blocks;
- hydraulic valves;
- electronic control systems etc.



Production activity of our company is based on long-term engineering potential and constant introduction of new equipment and technologies. All the products manufactured by our company



are 100% tested in our own laboratories equipped with modern measuring tools and testing benches.

The quality management system of the design and manufacturing of PSM-HYDRAULICS® products is certified by the international authorities (certificate of conformance by "Quality Austria") and meets the requirements of the standards ISO 9001-2015 (ISO 9001:2015).

PSM-HYDRAULICS® products conform with the requirements of the voluntary certification of the Russian Federation (GOST R). Safety of PSM-HYDRAULICS® products is confirmed by the European standard (CE) issued by SGS United Kingdom Ltd., authorized by the Department of Trade and Industry of Great Britain.

The present catalogue contains technical information on the range of our main products. You can download catalogues and find additional information about our company and products on our website: www.psm-export.com.

The company reserves the right to introduce changes into the catalogue contents in future edition, in terms of technical characteristics during update, improvement of parameters, introduction of new articles.

We have tried to present our production range in the most comprehensive and easily understandable way and we shall be glad if this catalogue helps you to apply and use our products.

We shall appreciate your kind comments and suggestions on the present catalogue edition and on improvements of our products by tel.: +7 /343/ 229-91-36, tel./fax: +7 /343/ 229-92-81 or by e-mail: trade@psmural.ru WWW.PSM-HYDRAULICS.RU



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210.4.250. Fixed displacement motor-pumps

Purpose: drilling rigs, locomotives

Pumps are intended for operation in open and closed circuits of stationary units and mobile machines.

Working displacement: 250 cc/rev.

Mounting dimensions as per ISO

Max. operating pressure:

continuous – 160 bar
peak – 350 bar

Design:

- fixed axial-piston motor-pumps with inclined block;
- bimetallic steel cylinder block.

Option:

- safety valves.

Technical parameters*:

	Pump	Motor
	250	250
Displacement, cc/rev		
Speed, rpm / Flow, l/min		
- minimum	400/100	50/12,5
- nominal	960/240	960/240
- maximum	-	2100/525
- maximum at $P_{Bx}=0,8$ bar	1500/375	-
- peak at $P_{Bx}=2$ bar	2100/525	-
Input pressure, bar		
- nominal	0,8	160
- maximum	2	400
Output pressure, bar		
- nominal	160	-
- maximum	400	200
Power, kW		
- nominal	65	60
- maximum	313	288
Torque, Nm		
- nominal	650	599
- maximum	1422	1310
Weight (without working fluid), kg	76,5	76,5

* the values are theoretical without consideration of efficiency coefficient

Analogues:

210.4.250.00.06 – complete analog 1MH250/160;
210.4.250.00.A6 – complete analog MH250/160.



310 SERIES.

Fixed displacement bent-axis pumps

Purpose: mobile cranes, drilling rigs, hydraulic manipulators.

Pumps are intended for operation in stationary units and mobile machines.

Working displacement: 12, 28, 56, 80, 112, 160, 250 cc/rev.

Mounting dimensions: as per DIN / ISO.

Max. operating pressure:

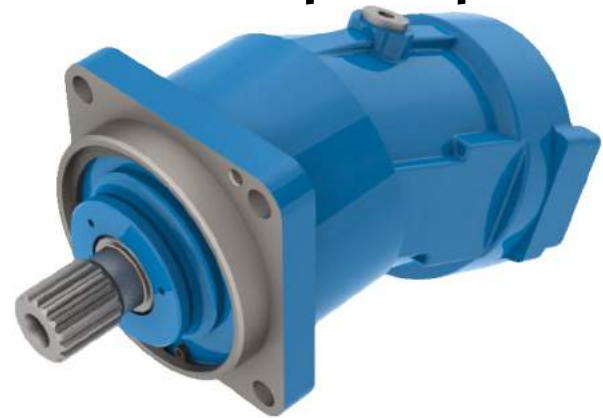
continuous – 350 bar
peak – 400 bar

Design:

- axial piston fixed displacement pump, bent-axis design;
- cylinder block bent-axis angle 25°-28°;
- bimetal steel cylinder block;
- available in cast iron or aluminium housings.

Option:

- shaft rotation speed sensor.



REPLACE
THE HYDRAULIC
PUMPS OF
310
SERIES
IN YOUR EQUIPMENT

WITH
IMPROVED
PUMPS OF
411
SERIES

p.13

Technical parameters*:

Size	12	28	56	80	112	160	250
Displacement, cc/rev	11,6	28	56	80	112	160	250
Max. speed, rpm	4000	3000	2500	2240	2000	1750	1500
Peak speed at $P_{input} = 0.2 \text{ MPa}$, rpm	6000	4750	3750	3350	3000	2650	2100
Flow at max. speed, l/min	46,4	84,0	140,0	179,2	224,0	280,0	375,0
Power**, kW							
at $\Delta p=250 \text{ bar}$	19,3	35,0	58,3	74,7	93,3	116,7	156,3
at $\Delta p=350 \text{ bar}$	27,0	49,0	81,7	104,5	130,7	163,3	218,7
at $\Delta p=400 \text{ bar}$	31,0	56,0	93,3	119,5	149,3	186,7	250,0
Torque**, Nm							
at $\Delta p=250 \text{ bar}$	46,2	111,4	222,8	318,3	445,6	636,6	994,7
at $\Delta p=350 \text{ bar}$	64,6	156,0	312,0	445,6	624,0	891,3	1392,6
at $\Delta p=400 \text{ bar}$	73,8	178,3	356,5	509,3	713,0	1018,6	1591,6
Weight (without working fluid), kg	4	9	17	19,2	29	45	76,5

* the values are theoretical without consideration of efficiency coefficient

** at max. rotation speed

Analogues:

A2F, A2FO (Bosch Rexroth)
F11, F12 (Parker)
H1C (Sam Hydraulik)
SCP (Sunfab)
BI (Aber)

! Notice for designers

We recommend that **310 series** pumps be replaced with **410 series** pumps within new projects

311.TF SERIES.

Fixed displacement bent-axis pumps

Purpose: drilling rigs, mobile cranes, communal machines

Pumps are intended for operation in stationary units and mobile machines.

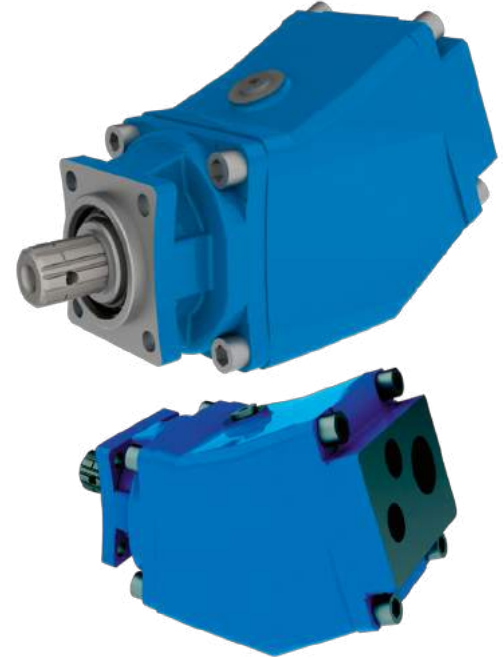
Pumps allow to manage two independent operation functions.

Working displacement: 35/70, 53/53 cc/rev.

Mounting dimensions: as per DIN / ISO 14.

Design:

- axial piston fixed displacement pump, bent-axis design;
- manufactured with two equal flows or with one larger and one smaller flows.



Technical parameters:

Size	311.TF.70.35	311.TF.53.53
Displacement, cc/rev		
- port A	35	53
- port B	70	53
Speed, rpm		
- minimum		400
- nominal		1200
- maximum (port A and port B under load)		2000
- maximum without load		2550
Flow (nominal), l/min		
- port A	42	63
- port B	84	63
Output pressure (nominal), bar		
- port A		200
- port B		200
Output pressure (max), bar		
- port A		350
- port B		350
Input pressure, bar		
- port A		0,8
- port B		2
Power (nominal), kW		44,4
Feed coefficient (port A and port B)		0,95
Overall efficiency coefficient		0,9
Weight (without working fluid), kg		26

Analogues:

TF TWIN FLOW 70+35 (OMFB)

F2 (Parker)

BID (Aber)

SCPD (Sunfab)

311.LN SERIES.

Hydraulic pumps with valve distribution

Purpose: crane-manipulators, auto-evacuators, car lifts, special equipment, dumps, tail lifts, communal machines, tankers

Pumps are intended for operation in open and closed circuits of stationary units and mobile machines.

Working displacement: 35, 45, 55 cc/rev.

Mounting dimensions: as per DIN / ISO 14

Max. operating pressure:

continuous – 350 bar
peak – 400 bar

Design:

- function of automatic rotation change;
- convenient sizes and small weight;
- work in different climate conditions;
- set up directly on the power take-off or driven from the driveshaft of mobile equipment.



Axial-piston hydraulic machines

Technical parameters*:

Size	35	45	55
Displacement, cc/rev	35	45	55
Speed, rpm			
- minimum	400	400	400
- nominal	1500	1500	1500
- maximum	1800	1800	1800
Minimum inlet pressure, P_{in} , bar (absolut)	0,08	0,08	0,08
Flow (nominal), l/min	50	64	78
Output pressure, P_{out} , bar			
- nominal	250	250	250
- maximum	350	350	350
- peak	400	400	400
Nominal power, N_{nom} , kW	22,5	29	35
Efficiency:			
- hydro-mechanical	0,96	0,96	0,96
- common	0,91	0,91	0,91
Weight (without working fluid), kg	12,5	12,7	13,0

* the values are theoretical without consideration of efficiency coefficient

Analogues:

SAP (Sunfab)

HDS, DARK (OMFB)

310 SERIES.

Fixed displacement bent-axis motors

Purpose: mobile cranes, excavators, drilling rigs

Motors are intended for operation in open and closed circuits of stationary units and mobile machines.

Working displacement: 12, 28, 56, 80, 112, 160, 250 cc/rev.

Mounting dimensions: as per DIN / ISO.

Max. operating pressure:

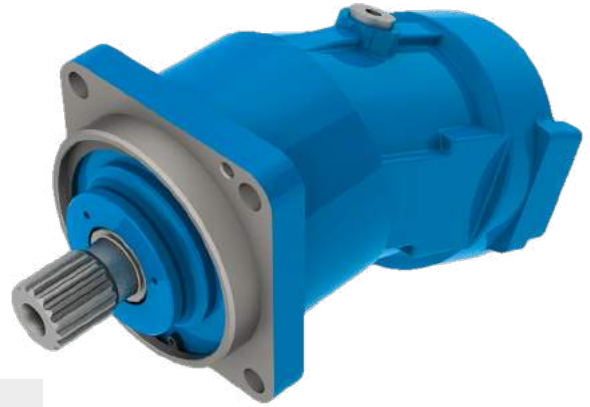
continuous – 350 bar
peak – 400 bar

Design:

- axial piston fixed displacement motor, bent-axis design;
- cylinder block bent-axis angle 25°-28°;
- bimetal steel cylinder block;
- available in cast iron or aluminium housings.

Options:

- flushing valve;
- relief valves;
- shaft rotation speed sensor.



REPLACE
THE HYDRAULIC
MOTORS OF

310
SERIES

IN YOUR EQUIPMENT

WHICH
IMPROVED
MOTORS OF

410
SERIES

P.15

Technical parameters*:

Size	12	28	56	80	112	160	250
Displacement, cc/rev	11,6	28	56	80	112	160	250
Max. speed, rpm	2400	1920	1800	1500	1200	1200	960
Peak speed at $P_{input} = 0.2 \text{ MPa}$, rpm	6000	4750	3750	3350	3000	2650	2100
Flow at max. speed, l/min	27,8	53,8	100,8	120,0	134,4	192,0	240,0
Power**, kW							
at $\Delta p=250 \text{ bar}$	11,6	22,4	42,0	50,0	56,0	80,0	100,0
at $\Delta p=350 \text{ bar}$	16,2	31,4	58,9	70,0	78,4	112,0	140,0
at $\Delta p=400 \text{ bar}$	18,6	35,8	67,2	80,0	89,6	128,0	160,0
Torque**, Nm							
at $\Delta p=250 \text{ bar}$	46,2	111,4	222,8	318,3	445,6	636,6	994,7
at $\Delta p=350 \text{ bar}$	64,6	156,0	312,0	445,6	623,9	891,3	1392,6
at $\Delta p=400 \text{ bar}$	73,8	178,3	356,5	509,3	713,0	1018,6	1591,6
Weight (without working fluid), kg	4	9	17	19,2	29	45	65

* the values are theoretical without consideration of efficiency coefficient

** at max. rotation speed

Analogues:

A2F, A2FM (Bosch Rexroth)
F11, F12 (Parker)
H1C (Sam Hydraulik)
MBI (Aber)
SCM (Sunfab)

313 SERIES.

Variable displacement bent-axis pumps

Purpose: excavators, hydraulic presses

Pumps are intended for operation in open circuits of stationary units and mobile machines.

Working displacement: 12, 28, 55, 56, 80, 107, 112, 160, 250 cc/rev.

Mounting dimensions: as per DIN / ISO.

Max. operating pressure:

continuous – 350 bar
peak – 400 bar

Design:

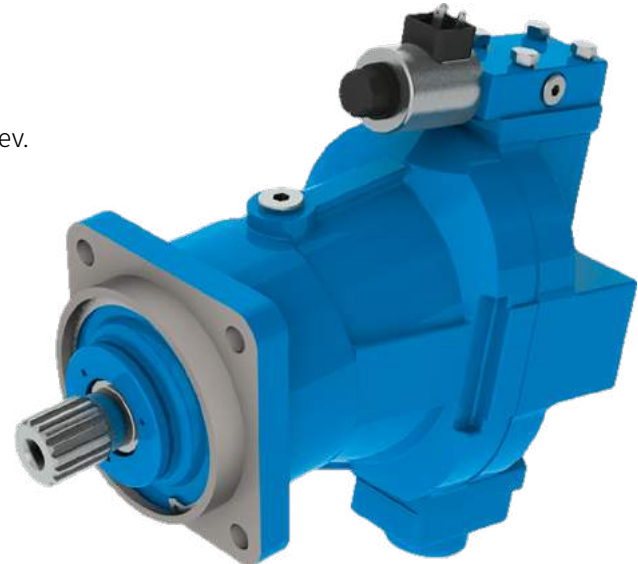
- axial piston variable displacement pump, bent-axis design;
- cylinder block bent-axis angle 25°-28°;
- bimetal steel cylinder block.

Types of regulators:

- proportional;
- Load sensing (LS);
- constant pressure;
- constant power;
- operating from external action.

Option:

- shaft rotation speed sensor.


Types of control:

- hydraulic proportional;
- hydraulic direct;
- mechanical;
- electric proportional (12, 24 V);
- electric discrete (12, 24 V).

Axial-piston hydraulic machines

Technical parameters*:

Size	12	28	55	56	80	107	112	160	250
Displacement, cc/rev	11,6	28	55	56	80	107	112	160	250
Max. speed, rpm	4000	3000	2500	2500	2240	2000	2000	1750	1500
Peak speed at P _{input} = 0.2 MPa, rpm	6000	4750	3750	3750	3350	3000	3000	2650	2100
Flow at max. speed, l/min	46,4	84,0	137,5	140,0	179,2	214,0	224,0	280,0	375,0
Power**, kW									
at Δp=250 bar	19,3	35,0	57,3	58,3	74,7	89,2	93,3	116,7	156,3
at Δp=350 bar	27,1	49,0	80,2	81,7	104,5	124,8	130,7	163,3	218,8
at Δp=400 bar	31,0	56,0	91,7	93,3	119,5	142,7	149,3	186,7	250,0
Torque**, Nm									
at Δp=250 bar	46,2	111,4	219,0	222,8	318,3	425,7	445,6	636,6	994,7
at Δp=350 bar	64,6	156,0	306,4	312,0	445,6	596,0	624,0	891,3	1392,6
at Δp=400 bar	73,8	178,3	350,1	356,5	509,3	681,2	713,0	1018,6	1591,6
Weight (without working fluid), kg	9	15,5	24	22	24,5	40	37,5	55	85

* the values are theoretical without consideration of efficiency coefficient

** at max. rotation speed

Analogues:

A7V, A7VO, A10VO, A11VO (Bosch Rexroth)
H1V (Sam Hydraulik)

303 SERIES.

Variable displacement bent-axis motors

Purpose: excavators, mobile cranes,
drilling rigs, road rollers

Motors are intended for operation in open and closed circuits of stationary units and mobile machines.

Working displacement: 12, 28, 55, 56, 80, 107, 112, 160, 250 cc/rev.

Mounting dimensions: as per DIN / ISO.

Max. operating pressure:

continuous – 350 bar
peak – 400 bar

Design:

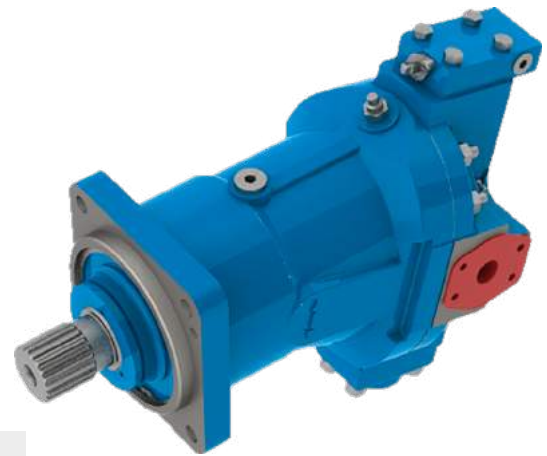
- axial piston variable displacement motor, bent-axis design;
- cylinder block bent-axis angle 25°-28°;
- bimetal steel cylinder block.

Types of control:

- hydraulic proportional;
- hydraulic 2-position (discrete);
- hydraulic direct;
- electro-hydraulic proportional;
- electro-hydraulic 2-position (discrete)
- mechanical;
- automatic pressure control.

Options:

- flushing valve;
- relief valve;
- shaft rotation speed sensor.



REPLACE
THE HYDRAULIC
MOTORS OF

303
SERIES

IN YOUR EQUIPMENT

WITH
IMPROVED
MOTORS OF
403
SERIES

P.17

Technical parameters*:

Size	12	28	55	56	80	107	112	160	250
Displacement, cc/rev	11,6	28	55	56	80	107	112	160	250
Nominal speed, rpm	2400	1920	1800	1800	1500	1200	1200	1200	960
Maximum speed, rpm	6000	4750	3750	3750	3350	3000	3000	2650	2100
Peak speed, rpm	7500	6250	5000	5000	4500	4000	4000	3500	3100
Flow at max. speed, l/min	69,6	133,0	206,2	210,0	268,0	321,0	336,0	424,0	525,0
Power**, kW									
at $\Delta p=250$ bar	29,0	55,4	86,0	87,5	111,7	133,7	140,0	176,7	214,4
at $\Delta p=350$ bar	40,6	77,6	120,3	122,5	156,3	187,3	196,0	247,3	300,2
at $\Delta p=400$ bar	46,4	88,7	137,5	140,0	178,7	214,0	224,0	282,7	343,1
Torque**, Nm									
at $\Delta p=250$ bar	46,1	111,4	218,8	222,8	318,3	425,7	445,6	636,6	975,0
at $\Delta p=350$ bar	64,6	156,0	306,4	312,0	445,6	596,0	624,0	891,3	1365,0
at $\Delta p=400$ bar	73,8	178,3	350,1	356,5	509,3	681,2	713,0	1018,6	1560,0
Weight (without working fluid), kg	6	15,5	24	22	24,5	40	38	55	85

* the values are theoretical without consideration of efficiency coefficient

** at max. rotation speed

Analogues:

A6V, A6VM (Bosch Rexroth)
51D (Sauer Danfoss)
V12, V14 (Parker)
H2V (Sam Hydraulik)

**! Notice
for designers**

We recommend that **303 series** motors be replaced with **403 series** motors within new projects

411 SERIES.

Fixed displacement bent-axis pumps

The new series with a conical piston and a tilt angle block of 40 degrees. It is completely interchangeable with 310 series hydraulic pumps. The parameters improved in terms of pressure and speed of rotation, the resource is increased.

Purpose: mobile cranes, excavators, drilling rigs

Pumps are intended for operation in stationary units and mobile machines.

Working displacement: 45, 56, 63, 80, 107, 125 cc/rev.

Max. operating pressure:

continuous – 400 bar
peak – 450 bar

Design:

- axial piston fixed displacement pump, bent-axis design, with conical pistons;
- cylinder block bent-axis angle 40°;
- bimetal steel cylinder block.



REPLACE
THE HYDRAULIC
PUMPS OF
310
SERIES
IN YOUR EQUIPMENT



WITH
IMPROVED
PUMPS OF
411
SERIES

Technical parameters*:

Size	45	56	63	80	107	125
Displacement, cc/rev	45	56	63	80	107	125
Max. speed, rpm	2200	2000	2000	1800	1600	1600
Flow at max. speed, l/min	94	106	120	137	163	190
Torque consumed at a pressure of 40 MPa	293	364	410	520	696	813
Power consumed at a pressure of 40 MPa	67	76	86	98	117	136
Weight (without working fluid), kg	17	17	18	25	29	30

* the values are theoretical without consideration of efficiency coefficient

Analogues:

A2FO (Bosch Rexroth)
F12 (Parker)

411.K SERIES.

Fixed displacement bent-axis pumps

Purpose: crane manipulators, mobile cranes, communal machines, autotowers

Pumps are intended for operation in stationary units and mobile machines.

Working displacement: 45, 56, 63, 80, 107, 125 cc/rev.

Mounting dimensions: as per DIN / ISO 14.

Max. operating pressure:

continuous – 350 bar
peak – 400 bar

Design:

- axial piston fixed displacement pump, bent-axis design;
- cylinder block bent-axis angle 40°.



Technical parameters:

Size	45	56	63	80	107	125
Displacement, cc/rev	45	56	63	80	107	125
Max. speed, rpm	2200	2000	2000	1800	1600	1600
Flow, l/min	94	106	120	137	163	190
Torque consumed at a pressure of 40 MPa	293	364	410	520	696	813
Power consumed at a pressure of 40 MPa	67	76	86	98	117	136
Weight (without working fluid), kg	17	17	18	25	29	30

Analogues:

A17FO, A17FNO, KFA (Bosch Rexroth)
F1, F12 (Parker)
SAP, SC (Sunfab)
BI (Aber)
HDS, MDS (OMFB)
BAP (Casappa)
FR (Bezares)

410 SERIES.

Fixed displacement bent-axis motors

The new series with a conical piston and a tilt angle block of 40 degrees. It is completely interchangeable with 310 series hydraulic pumps. The parameters improved in terms of pressure and speed of rotation, the resource is increased.

Purpose: tank trucks, motor graders, mobile cranes, bulldozers, drilling equipment, railway equipment, road rollers, communal machines, forest machines, oil and gas industry, loading and unloading equipment, loaders, wheel and crawler excavators (small class)

Motors are intended for operation in open and closed circuits of stationary units and mobile machines.

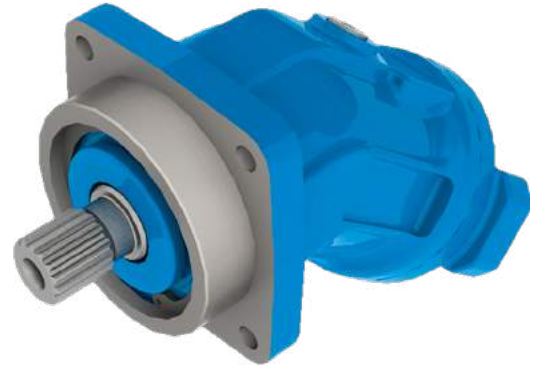
Working displacement: 45, 56, 63, 80, 107, 125 cc/rev.

Mounting dimensions: as per DIN / ISO.

Max. operating pressure:
 continuous – 400 bar
 peak – 450 bar

Design:

- axial piston fixed displacement motor, bent-axis design, with conical pistons;
- cylinder block bent-axis angle 40°;
- bimetal steel cylinder block;
- for hydraulic motor 410.2.107 – mounting flange as per SAE C, Ø127 mm;
- available in cast iron and aluminium housings.



REPLACE THE HYDRAULIC MOTORS OF **310** SERIES IN YOUR EQUIPMENT WITH IMPROVED MOTORS OF **410** SERIES

Axial-piston hydraulic machines

Technical parameters*:

Size	45	56	63	80	107	125
Displacement, cc/rev	45	56	63	80	107	125
Max. speed, rpm	5600	5000	5000	4500	4000	4000
Peak speed, rpm	6000	5500	5500	5000	4400	4400
Torque consumed at a pressure of 40 MPa	270	335	377	479	641	749
Power consumed at 40 MPa pressure and maximum speed	158	176	198	226	268	314
Weight (without working fluid), kg	17	17	18	25	29	30

* the values are theoretical without consideration of efficiency coefficient

Analogues:

- A2FM (Bosch Rexroth)
- F12 (Parker)
- MBI (Aber)
- SCM (Sunfab)

! Notice for designers

We recommend that **310 series** motors be replaced with **410 series** motors within new projects

410.1 SERIES.

Fixed displacement bent-axis motors, cartridge type

Purpose: tank trucks, motor graders, mobile cranes, bulldozers, drilling equipment, railway equipment, road rollers, communal machines, forest machines, oil and gas industry, loading and unloading equipment, loaders, wheel and crawler excavators, small class

Motors are intended for operation in open and closed circuits of stationary units and mobile machines.

Working displacement: 45, 56, 63, 80, 107, 125 cc/rev.

Mounting dimensions: as per DIN / ISO.

Max. operating pressure:

continuous – 400 bar
peak – 450 bar

Design:

- axial piston fixed displacement motor, bent-axis design, with conical pistons;
- cylinder block bent-axis angle 40°;
- bimetal steel cylinder block.

Options:

- flushing valve;
- speed valves;
- relief valve;
- bypass valve;
- charge valves;
- shaft rotation speed sensor.

Technical parameters*:

Size	45	56	63	80	107	125
Displacement, cc/rev	45	56	63	80	107	125
Max. speed, rpm	5600	5000	5000	4500	4000	4000
Peak speed, rpm	6000	5500	5500	5000	4400	4400
Torque consumed at a pressure of 40 MPa	270	335	377	479	641	749
Power consumed at 40 MPa pressure and maximum speed	158	176	198	226	268	314
Weight (without working fluid), kg	17	17	18	25	29	30

* the values are theoretical without consideration of efficiency coefficient

Analogues:

A2FE (Bosch Rexroth)
F12 (Parker)



403 SERIES.

Variable displacement bent-axis motors

The new series with a conical piston and a reduced length of the product. It is completely interchangeable with the 303 series in connection dimensions. Technical characteristics improved in terms of pressure and speed of rotation, increased resource.

Purpose: excavators, mobile cranes, drilling rigs, road rollers

Motors are intended for operation in open and closed circuits of stationary units and mobile machines.

Working displacement: 107, 160, 250 cc/rev.

Mounting dimensions: as per DIN / ISO.

Max. operating pressure:

continuous – 400 bar
peak – 450 bar

Design:

- axial piston variable displacement motor, bent-axis design, with conical pistons;
- cylinder block bent-axis angle 25°;
- bimetal steel cylinder block.

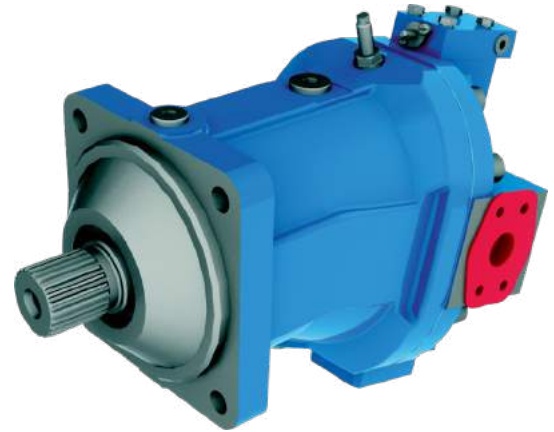
Options:

- loop flushing valve;
- relief valves;
- shaft rotation speed sensor.

Technical parameters*:

Size	107	160	250
Displacement, cc/rev	107	160	250
Speed, rpm			
- nominal at $V_g = \max$	1200	1200	960
- maximum at $V_g = \max$	3550	3100	2700
- maximum at $V_g \leq V_{gx}$	5600	4900	3600
Max. speed at $V_g = 0$, rpm	6300	5500	3600
Flow at max. speed, l/min	380	496	675
Power**, kW			
at $\Delta p = 250$ bar	158,3	202,6	275,7
at $\Delta p = 350$ bar	221,6	283,6	386,0
at $\Delta p = 400$ bar	253,2	324,1	441,1
at $\Delta p = 450$ bar	284,9	364,6	496,2
Torque**, Nm			
at $\Delta p = 250$ bar	425,7	624,0	975,0
at $\Delta p = 350$ bar	596,0	873,6	1365,0
at $\Delta p = 400$ bar	681,2	998,4	1560,0
at $\Delta p = 450$ bar	766,3	1123,2	1755,0
Weight (without working fluid), kg	45	64	100

* the values are theoretical without consideration of efficiency coefficient
Analogues: A6V, A6VM (Bosch Rexroth) ** at max. rotation speed



REPLACE
THE HYDRAULIC
MOTORS OF
303
SERIES
IN YOUR EQUIPMENT

WITH
IMPROVED
MOTORS OF
403
SERIES

↓ in the development

Axial-piston hydraulic machines

! Notice for designers

We recommend that **303 series** motors be replaced with **403 series** motors within new projects

403.0.107

Variable displacement bent-axis motor

403.0.107.W.A3.F12.V1.HA1.NN + GKP.0.25

Purpose: hydraulic motor for driving the stroke of wheel excavators

Hyundai 17 tons: R170W (-7, -7A, -9S etc.)
18 tons: R180W (-9S etc.)

Part numbers according to the Hyundai catalog:
31N5-43001, 31N5-43002

Working displacement: 107 cc/rev.

Mounting dimensions: as per DIN / ISO.

Max. operating pressure:

continuous – 400 bar
peak – 450 bar

Design:

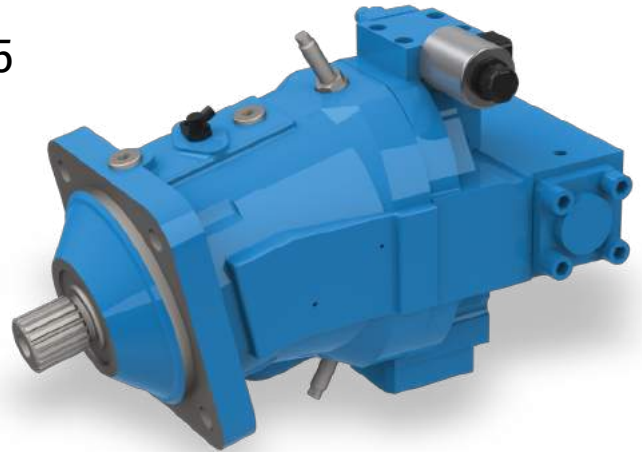
- axial piston variable displacement motor, bent-axis design, with conical pistons;
- cylinder block bent-axis angle 25°;
- bimetal steel cylinder block.

Options:

- loop flushing valve;
- relief valves;
- shaft rotation speed sensor.

Technical parameters:

Displacement, cc/rev	107
Speed, rpm	
- nominal at $V_g = \max$	1200
- maximum at $V_g = \max$	3550
- maximum at $V_g \leq V_{gx}$	5600
Max. speed at $V_g = 0$, rpm	6300
Maximum operating pressure, bar:	
- continuous	400
- peak	450
Flow rate at n^{\max} , l / min	380
Power, kW	
at $\Delta p = 250$ bar	158,3
at $\Delta p = 350$ bar	221,6
at $\Delta p = 400$ bar	253,2
at $\Delta p = 450$ bar	284,9



403.1 SERIES.

Variable displacement bent-axis motors, cartridge type

Purpose: excavators, crawler vehicle

Motors are intended for operation in open and closed circuits of stationary units and mobile machines.

Working displacement: 107 cc/rev.

Mounting dimensions: as per DIN / ISO.

Max. operating pressure:

continuous – 400 bar
peak – 450 bar

Design:

- axial piston variable displacement motor, bent-axis design, with conical pistons;
- cylinder block bent-axis angle 25°;
- bimetal steel cylinder block.

Options:

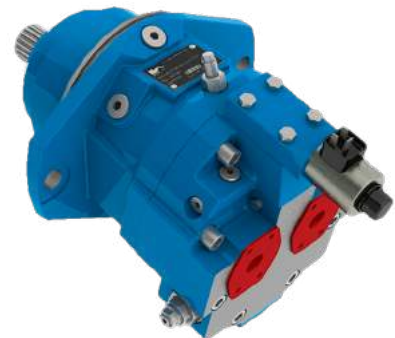
- loop flushing valve;
- relief valves;
- shaft rotation speed sensor.

Technical parameters*:

Size	107	160
Displacement, cc/rev	107	160
Speed, rpm		
- nominal at $V_g = \max$	1200	1200
- maximum at $V_g = \max$	3550	3100
- maximum at $V_g \leq V_{gx}$	5600	4900
Max. speed at $V_g \leq 68$ cc, rpm	6300	5500
Flow at max. speed, l/min	380	496
Power**, kW		
at $\Delta p = 250$ bar	158,3	202,6
at $\Delta p = 350$ bar	221,6	283,6
at $\Delta p = 400$ bar	253,2	324,1
at $\Delta p = 450$ bar	284,9	364,6
Torque**, Nm		
at $\Delta p = 250$ bar	425,7	624,0
at $\Delta p = 350$ bar	596,0	873,6
at $\Delta p = 400$ bar	681,2	998,4
at $\Delta p = 450$ bar	766,3	1123,2
Weight (without working fluid), kg	45	68
	51C (Sauer Danfoss)	V14 (Parker)

* the values are theoretical without consideration of efficiency coefficient

** at max. rotation speed



↓ in the development

Axial-piston hydraulic machines

416 SERIES.

Variable displacement swashplate pumps, closed circuit design

Purpose: harvesters, road rollers, concrete mixers

Pumps are intended for operation in closed circuits of stationary units and mobile machines.

Working displacement: 28, 71, 90, 110, 112, 125 cc/rev.

Mounting dimensions: as per SAE / DIN / ISO.

Max. operating pressure:

continuous – 400 bar
peak – 450 bar

Design:

- axial piston variable displacement pump, swashplate design;
- swashplate inclination angle 20°;
- bimetal steel cylinder block.

Types of control:

- servo proportional;
- hydraulic proportional;
- electric proportional;
- electric discrete.

Options:

- tandem: 15 versions;
- filtration.

↓ in the development

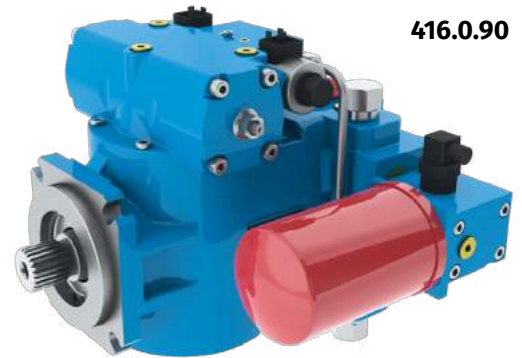
Technical parameters*:

Size	28	56	71	90	110	112	125
Displacement, cc/rev	28	56	71	90	110	112	125
Nominal speed, rpm	2000	2000	2000	2000	2000	2000	2000
Maximum speed, rpm	4250	3600	3050	3050	3000	3000	3000
Peak speed, rpm	4500	3900	3300	3300	3200	3200	3200
Flow at max. speed, l/min	119	201	216,6	274,5	330	336	375
Power, kW							
at $\Delta p=250$ bar	24	86	60,4	76,3	94	93,3	106
at $\Delta p=40$ bar, Q_{max}	80	137	146,3	185	223	227	252,5
at $\Delta p=45$ bar, Q_{peak}	96	167	177,8	224,9	267	277	302,7
Torque, Nm							
at $\Delta p=250$ bar	114	291	290	366	449	446	508
at $\Delta p=400$ bar	181	364	460	581	711	713	807
at $\Delta p=450$ bar	203	409	517	653	799	802	906
Weight (without working fluid), kg	29	38	67	67	80	67	80

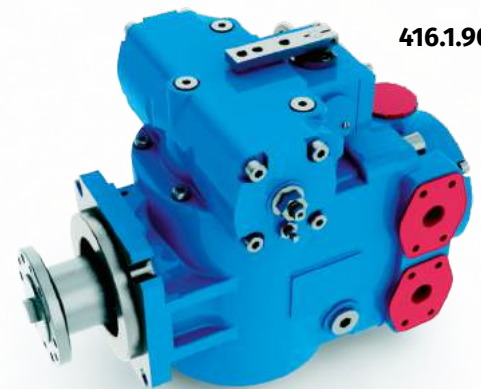
* the values are theoretical without consideration of efficiency coefficient

Analogues:

A4VG, A4VTG (Bosch Rexroth)
42R(L), 90R(L), SPV22/23/24 (Sauer Danfoss)



416.0.90



416.1.90

406 SERIES.

Fixed displacement swashplate motors, closed circuit design

Purpose: harvesters, road rollers, concrete mixers

Motors are intended for operation in closed circuits of stationary units and mobile machines.

Working displacement: 71, 80, 90, 110, 112, 125 cc/rev.

Mounting dimensions: as per SAE / DIN / ISO.

Max. operating pressure:

continuous – 400 bar
peak – 450 bar

Design:

- axial piston fixed displacement motor, swashplate design;
- bimetal steel cylinder block;
- 406.0 series – working ports are located on opposite sides;
- 406.1 series – working ports are located on one side.

Options:

- flushing valve;
- relief valves;
- shaft rotation speed sensor.

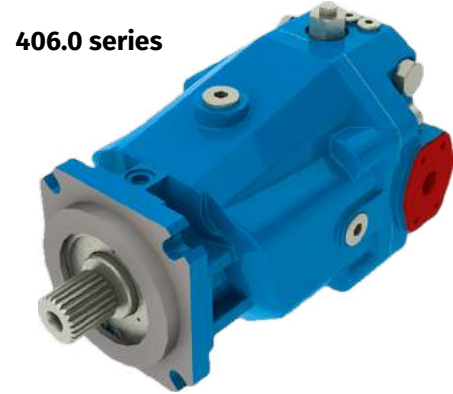
Technical parameters*:

Size	71	80	90	100	110	112	125
Displacement, cc/rev	71	80	90	100	110	112	125
Nominal speed, rpm	2000	2000	2000	2000	2000	2000	2000
Maximum speed, rpm	3050	3050	3050	3050	3000	3050	3000
Peak speed, rpm	3300	3300	3300	3300	3200	3300	3200
Flow at max. speed, l/min	228,0	256,8	289,0	305,0	347,4	359,6	394,7
Power, kW							
at $\Delta p=320$ bar	59	672	75	83,3	91,6	93	104
at $\Delta p=400$ bar	144	163	183	203,3	220	228	250
at $\Delta p=450$ bar	175	198	223	247,5	264	277	300
Torque, Nm							
at $\Delta p=320$ bar	283	318	358	397	437	446	497
at $\Delta p=400$ bar	452	509	573	637	700	713	796
at $\Delta p=450$ bar	508	572	645	716	788	802	895
Weight (without working fluid), kg							
- 406.0	40	40	40	40	48	48	48
- 406.1	28	28	28	28			

* the values are theoretical without consideration of efficiency coefficient

Analogues:

AA2FM (Bosch Rexroth)
42M, 90M, SMV22/23/24 (Sauer Danfoss)



Axial-piston hydraulic machines

415.0.85.

Variable displacement swashplate pump, open circuit design

Purpose: agricultural and industrial tractors

Pumps are intended for operation in open circuits. The pump feed is proportional to shaft rotation speed and working displacement. The working displacement value is steplessly regulated from zero to max. value by means of changing the swashplate inclination angle.

Main hydraulic pump of agricultural and industrial tractors K-7, K-744 series (modifications P1, P2, P3) K-702MV, K-703M

Working displacement: 85 cc/rev.

Design:

- axial piston variable displacement pump, swashplate design;
- mounting flange: $\varnothing 127$ mm, 4 holes as per ISO 3019- (metric);
- rotation direction: clockwise, counterclockwise.

Shaft version:

- splined – 1 1/4" 14T 12/24 ANSI B92.1a

Options:

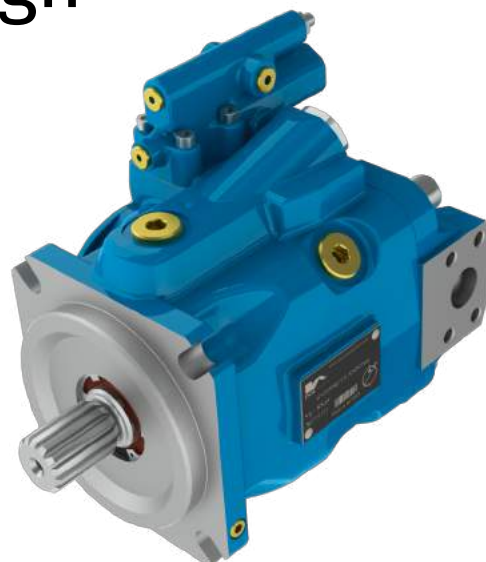
- tandem installation of auxiliary axial piston or gear pump.

Technical parameters:

Displacement, cc/rev	85
Speed, rpm	
- minimum	500
- nominal	1500
- maximum	2700
Flow, l/min	
- nominal	128
- maximum	230
Boost pressure, bar	
- nominal	210
- maximum	250
Power (consumed), kW	
- nominal	4,7
- maximum	101
Torque, Nm	
- nominal	135
- maximum	284
Weight (without working fluid), kg	28

Analogues:

A10VNO85 DRF (Bosch Rexroth)



415.0.260.

Variable displacement swashplate pump, open circuit design

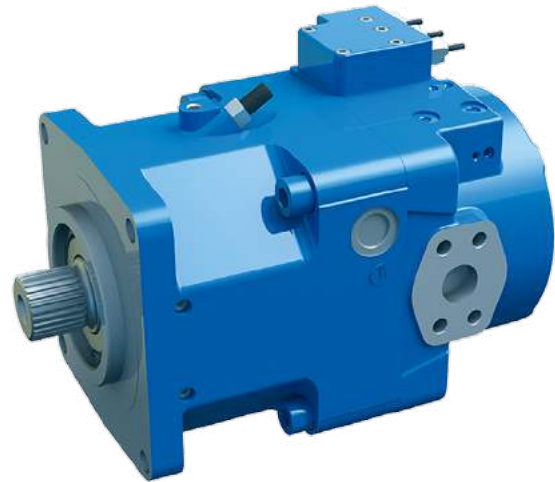
Purpose: dump trucks, drilling rigs

The pump feed is proportional to shaft rotation speed and working displacement. The working displacement value is steplessly regulated from zero to max. value by means of changing the swashplate inclination angle.

Working displacement: 260 cc/rev.

Design

- mounting flange: $\text{Ø}165.1$ mm;
- 4 holes according to ISO 3019-2 (metric);
- shaft design:
slotted W60x2x30x28x9g DIN 5480;
- pumps are performed with left and right rotation;
- ability to limit the minimum and maximum working volumes;
- built-in booster pump, allows the pump to operate at a shaft speed of up to 2300 rpm.



Axial-piston hydraulic machines

Additional options:

- pressure gauge

Technical parameters:

Displacement, cc/rev	260
Speed, rpm	
- maximum	2300
Flow, l/min	
- maximum	598
Boost pressure, bar	
- nominal	350
- maximum	400
Power (consumed), kW	
- maximum	349
Torque, Nm	
- maximum	741
Drainage pressure, bar	
- maximum	2
Inlet pressure of the suction port (abs.), bar	
- minimum	0,6
- maximum	2
Weight (without working fluid), kg	138

Analogues:

A11VLO 260 (Bosch Rexroth)

415.0.190.

Variable displacement swashplate pump, open circuit design

Purpose: dump trucks, excavators, metallurgical equipment

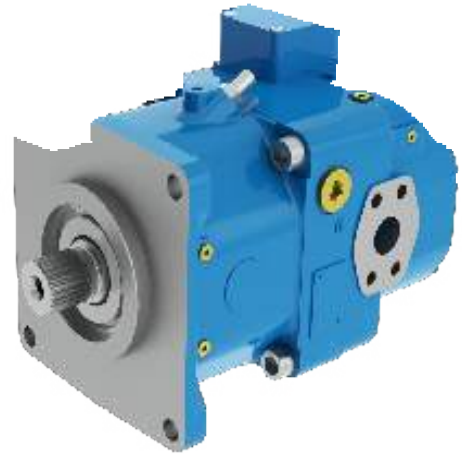
An adjustable axial piston pump with an inclined washer with the following advantages:

- cast-iron housing
- built-in feed pump (impeller)
- high shaft rotation speeds

Working displacement: 190 cc/rev.

Design

- mounting flange: $\varnothing 165.1$ mm;
- 4 holes according to ISO 3019-2 (metric);
- shaft design: slotted W50x2x30x24x9g DIN 5480;



Pumps of 415 series are complete analogues of products manufactured by Bosch Rexroth and have similar types of regulation.

Technical parameters:

Displacement, cc/rev	190
Speed, rpm	
- maximum	2100
Flow, l/min	
- maximum	379
Boost pressure, bar	
- nominal	18
- maximum	23
Power (consumed), kW	
- maximum	313
Weight (without working fluid), kg	4

Analogues:

A11VLO190 (Bosch Rexroth)

425.0.190. Variable displacement double axial piston pump

**Purpose: dump trucks, excavators,
metallurgical equipment**

Variable displacement double axial piston pump with swash plate designed to work in open hydraulic circuits.

Working displacement: 190x2 cc/rev.

Design

- mounting flange: $\varnothing 165.1$ mm;
- 4 holes according to ISO 3019-2 (metric);
- shaft design:
slotted W50x2x30x24x9g DIN 5480;

Advantages:

- cast-iron housing
- double rotary unit with common suction line
- built-in feed pump (impeller)
- high shaft rotation speeds

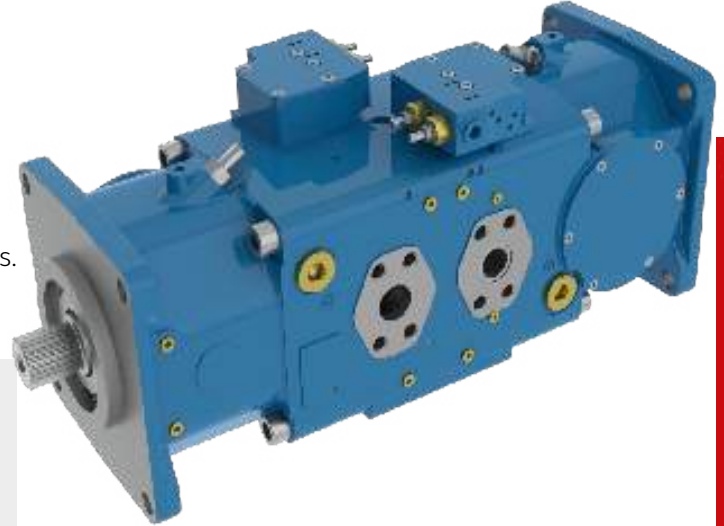
Pumps of 415 series are complete analogues of products manufactured by Bosch Rexroth and have similar types of regulation.

Technical parameters:

Displacement, cc/rev	190x2
Speed, rpm - maximum	2100
Flow, l/min - maximum	379x2
Boost pressure, bar - nominal	18
- maximum	23
Power (consumed), kW - maximum	313
Weight (without working fluid), kg	224

Аналоги:

A20VLO190 (Bosch Rexroth)



415.0.250.

Variable displacement swashplate pump, open circuit design

Purpose: rolling mills, hydraulic presses, press shears

Pumps are intended for operation in open circuits.

The pump feed is proportional to shaft rotation speed and working displacement. The working displacement value is steplessly regulated from zero to max. value by means of changing the swashplate inclination angle.

Working displacement: 250 cc/rev.

Design:

- axial piston variable displacement pump, swashplate design;
- mounting flange: $\varnothing 224$ mm, 4 holes as per ISO 3019-2 (metric);
- rotation direction: clockwise, counterclockwise.

Shaft version:

- keyed - AS18x11x100 as per DIN 6885
- splined - W60x2x28x9g as per DIN 5480

Options:

- tandem installation of auxiliary axial piston, gear or radial piston pump.

Types of regulators:

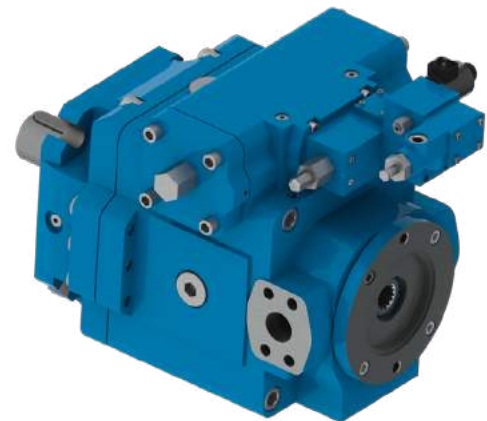
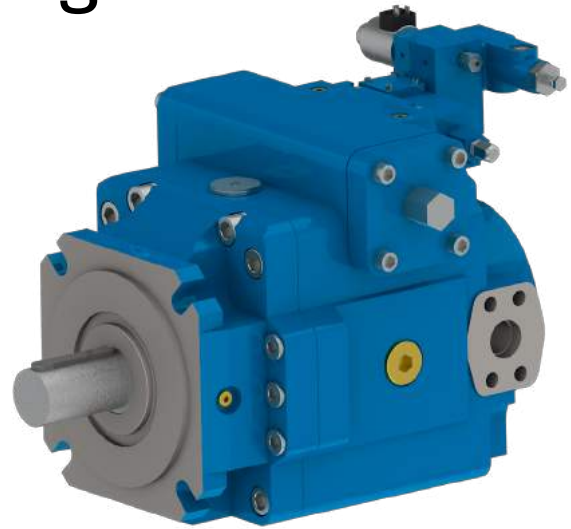
- DR
- DRG
- LR2S

Technical parameters:

Displacement, cc/rev	250
Max. speed, rpm	1500
Flow at max. speed, l/min	375
Boost pressure, bar	
- nominal	350
- maximum	400
Max. power (consumed), kW	250
Weight (without working fluid), kg	184

Analogues:

- A4VSO (Bosch Rexroth)
- 42R(L) (Sauer Danfoss)



HYDROSTATIC TRANSMISSION (HST)

Purpose: harvesters, road rollers, concrete mixers, self-propelled mowers

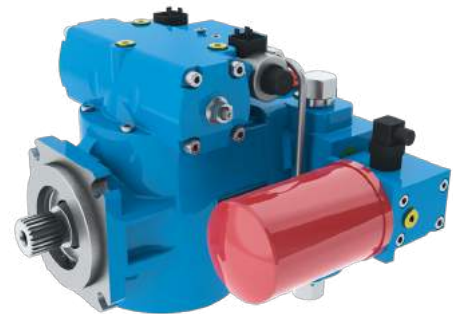
Hydrostatic transmission is a closed circuit, which consists of variable swashplate hydraulic pump and fixed swashplate hydraulic motor. Hydrostatic transmission is intended for mechanical energy transfer from the engine to the actuating device of the machine.

Working displacement: 90(71), 112, 125(110) cc/rev.

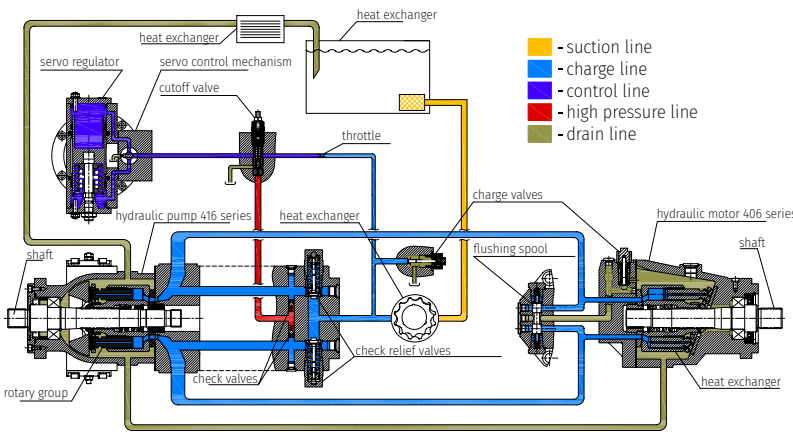
Design:

Main ports of the pump are connected with the main ports of the motor. Working fluid flows from hydraulic pump to hydraulic motor in any direction and returns to hydraulic pump within the closed circuit. Every hydraulic line can be under high pressure. In operating mode swashplate position determines working fluid flow direction and which of the lines is under high pressure.

416 series pump



406 series motor



Hydraulic units

Technical parameters*:

	Motor 406 series		Pump 416 series	
Size	90	112	90	112
Displacement, cc/rev	90	112	90	112
Nominal speed, rpm	2000	2000	2000	2000
Maximum speed, rpm	3050	3050	3050	3000
Peak speed, rpm	3300	3300	3300	3200
Max. pump flow, l/min	-	-	274,5	336
Flow at nmax, l/min	289,0	359,6	-	-
Power, kW	Efficient		Consumed	
at Δp=250 bar	75	93	76,3	93,3
at Δp=400 bar	183	228	185	227
at Δp=450 bar	223	277	224,9	277
Torque, Nm	Efficient		Consumed	
at Δp=250 bar	358	446	366	446
at Δp=400 bar	573	713	581	713
at Δp=450 bar	645	802	653	802
Weight (without working fluid), kg	40	48	67	67

* the values are theoretical without consideration of efficiency coefficient

Analogue:

A4VG+AA2FM (Bosch Rexroth)
90R(L)+90M, 42R(L)+42M, SPV22/23/24+SMV22/23/24 (Sauer Danfoss)

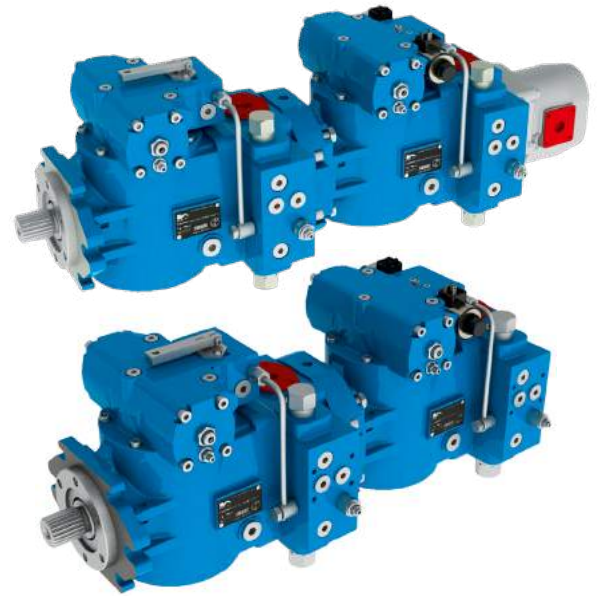
TANDEM PUMPS

Purpose: road rollers, rovers, crawler tractors, skid loaders

Tandem pumps are applied in power drives of stationary units and mobile machines.

Design:

- tandem design: hydraulic pumps are installed sequentially without distributing gearbox;
- tandem design: integrated with auxiliary hydraulic pumps of 416, 313, 310, 411 series as well as gear and axial piston pumps of other manufacturers (on agreement);
- quantity of tandem pumps: up to 4 pcs.



Application:

- installation directly on internal combustion engine;
- installation directly on electric engine;
- installation directly on distributing gearbox of pumping unit;
- driven by axle drive shaft.

Options:

- through shaft (power take-off shaft) for drives of auxiliary mechanisms.

Model range of pump tandems:

№	Factory designation	Designation according to the hydraulics catalog	№	Factory designation	Designation according to the hydraulics catalog
1	426.90.03.00000	416.0.90RY4S3F33C22HD/MVF3NNBY1 416.0.90RY2S2F33C22E2/NVF3NNBY1	23	496.90.11.00000	416.0.90RY4S4F33E22E4/MNF3NNBY1 416.0.90RY2S2F33E22E4/BNF3NNBY1
2	426.90.04.00000	416.0.90RY4S3F22C22P/MNF3NNBY1 416.0.90RY2S2F22C22E2/NVF3NNBY1	24	436.90.01.00000	416.0.90RY4S3F33C22HD/MVF3NNBY1 416.0.90RY2S2F33C22E2/AVF3NNBY1 20C11X085G (Caproni)
3	426.90.05.00000	416.0.90RY3A4F33C22P/KNF 1NNBY1 H1J10F-3RU2A1A	25	436.90.02.00000	416.0.90RY4S3F33C22HD/MVF3NNFT1 416.0.90RY2S2F33C22E2/AVF3NNFT1 20C11X085G (Caproni)
4	426.90.06.00000	416.0.90LY3A4F33C22HP/MNF3NNBY1 416.0.90LY2S2F33C22HP/NNF3NNBY1	26	436.90.03.00000	416.0.90RY2S3F33C22HP/MNF3NNBY1 416.0.71RY2S2F33A22HP/TVF3NNBY1 310.12.03.00
5	426.90.07.00000	416.0.90RY4S3F33C22HD/MVF1NNBY1 416.0.90RY2S2F33C22E2/NVF1 NNBY1	27	436.90.04.00000	416.0.90LY3A2F33A21 HP/MVF1NNBY1 416.0.90LY2S2F33A21 HP/TVF1NNBY1 313.2.12.300.4
6	426.90.08.00000	416.0.90RY4S3F22C22P/MNF1 NNBY1 416.0.90RY2S2F22C22E2/NVF1 NNBY1	28	436.90.05.00000	416.0.90RY3H3F33C22HP/MNF3NNBY1 416.0.90RY2S2F33C22HP/SNF3NNBY1 313.4.107.655.A
7	426.71.09.00000	416.0.71LY2K3F33C21P/MNF1NNFT1 416.0.71LY2S2F33C21P/NNF1NNFT1	29	426.110.01.00000	416.0.110RT2S3F33C22P/ LNF1NNBY1 H1J20M-4RU3A1A
8	426.90.10.00000	416.0.90LY2K3F33C21P/MNF1NNFT1 416.0.90LY2S2F33C21P/NNF1NNFT1	30	426.110.04.00000	416.0.110RY3S4F44E22E4/MVF3NNBY1 416.0.110RY2S2F44E22E4/BVF3NNBY1
9	426.90.11.00000	416.0.90LY4S3F22C22HP/MNF1 NNBY1 416.0.90LY2S2F22C22E2/NVF1NNBY1	31	426.112.01.00000	416.0.90RY4S4F33E22E4/MNF3NNBY1 416.0.90RY2S2F33E22E4/BNF3NNBY1
10	426.90.12.00000	416.0.90RY2A3F33B22E4/DNF3NNBY1 313.4.80.290.72	32	426.112.02.00000	416.0.112RY2S3F33C22P/XNF1NNBY1 416.0.28RY1S5F51C11P/AVF1NNBY1
11	426.71.13.00000	416.0.71LY4S3F33D22E4/MNF3NNBY1 416.0.71LY2S2F33D22E4/NNF3NNBY1	33	426.125.02.00000	416.0.125RY2S3F44C21E4/TNF1NNBY1 310.12.03.05
12	426.90.14.00000	416.0.90RY4S3F33C22HP/MNF3NNBY1 416.0.71 RY2S2F33A22HP/NVF3NNBY1	34	426.125.03.00000	416.0.125RY3A4F44C22P/HNF1NNBY1 411.0.56.R.A1.F40
13	426.90.15.00000	416.0.90RY2S3F22C22P/MNF1IN BY1 416.0.90RY2S2F22C22P/ANF1IN BY1	35	426.125.05.00000	416.0.125RY3A4F44C22P/MNF3NNBY1 416.0.125RY2S2F44C22P/NNF3NNBY1
14	426.71.16.00000	416.0.71RY4S3F33C22P/FNF3NNBY1 310.2.28.08.00	36	426.125.06.00000	416.0.125RY3A4F44C22E4/MNF3NNBY1 416.0.125RY2S2F44C22E4/NNF3NNBY1
15	426.90.17.00000	416.0.90RY4S3F33D22P3/MNF3NNBY1 416.0.90RY2S2F33D22E2/NVF3NNBY1	37	426.125.07.00000	416.0.125RY3A4F44C22P/MVF2NNFT1 416.0.71RY2S2F33D22E2/AVF2NNFT1
16	426.90.18.00000	416.0.90RY4S3F33C22P3/MNF3NNBY1 416.0.90RY2S2F33C22E2/NVF3NNBY1	38	426.125.08.00000	416.0.125RY3H3F34A22P/MNF3NNBY1 416.0.125RY2S2F34A22P/NNF3NNBY1
17	426.90.19.00000	416.0.90RY2S3F33C22HP/MNF3NNBY1 416.0.71 RY2S2F33A22HP/NVF3NNBY1	39	426.125.09.00000	416.0.125RY3S7F44E22P/SNF3NNBY1 313.4.107.290.72
18	426.90.20.00000	416.0.90RY4S4F33D22E4/MNF2NNBY1 416.0.90RY2S2F33D22E4/BNF2NNBY1	40	426.125.10.00000	416.0.125RY3A4F44C22P/MNF1NNBY1 416.0.125RY2S2F44C22P/LNF1NNBY1
19	426.90.21.00000	416.0.90LY2A3F33E22E4/MNF3NNBY1 416.0.90LY2S2F33E22E4/BY1 NNF3NNB	41	436.125.01.00000	416.0.125RY3A4F44C21E4/MNF3NNBY1 416.0.125RY2S2F44C21E4/FNF3NNBY1 313.4.28.695.3
20	426.90.22.00000	416.0.90RY4S3F33A22E3/FVF3NNBY1 310.2.28.08.00			
21	426.90.23.00000	416.0.90RY2S3F33C22HP/MNF3NNBY1 416.0.71 RY2S2F33A22HP/NVF3NNBY1			
22	426.90.24.00000	416.3.90RY2S3F22F20P/LNF1NNBY1 H1J32			

Analogue:

A4VG+A4VG (Bosch Rexroth)

90R(L)+90R(L), 42R(L)+42R(L) (Sauer Danfoss)

415.KV.112. TANDEM PUMPS

Purpose: excavators

The main pump of the hydraulic system of crawler tractors.

Design:

Tandem hydraulic pumps with swashplate for an open circuit.

Shaft design:

- 14 teeth;
- 12 teeth (optional).

Types of controllers (serial):

- 9N regulator;
- 9C regulator.

Option: gear pumps

- 10 cm³;
- 15 cm³.

Types of management (possible):

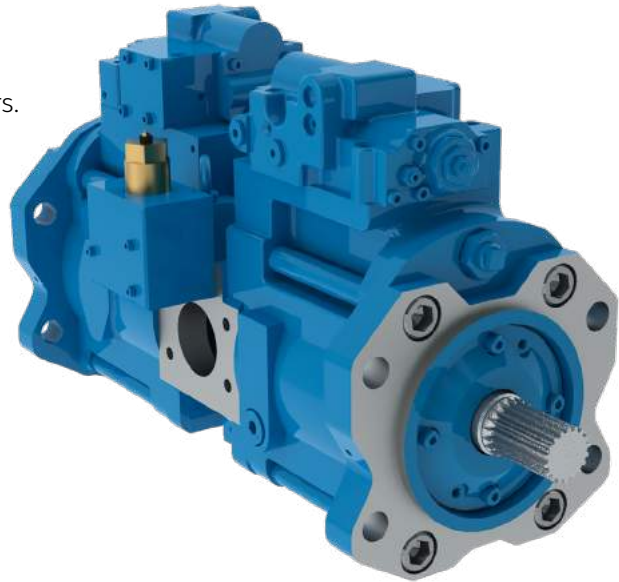
- power control;
- flow regulator;
- proportional electrical control;
- negative proportional electrical control.

Technical parameters:

Displacement, cc/rev	2*112
Nominal flow, l/min	2*220
Inlet pressure, bar:	
- minimum	0,8
Outlet pressure, bar:	
- nominal	250
- maximum	340
- peak	390
Speed, rpm	
- minimum	400
- nominal	1500
- maximum at minimum inlet pressure	2300
- maximum	2600
Weight (without working fluid), kg	134

Analogues:

K3V112DT (KAWASAKI)



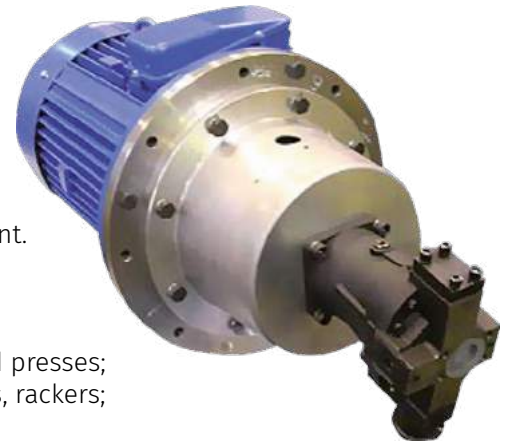
SELF-CONTAINED PUMPS

Purpose: hydrostations, machine equipment

Self-contained pump includes the joint connection of electric motor and axial piston pump connected by means of bell jar.

Shafts are connected with couplings and resilient element.

Self-contained pump is intended for application in hydraulic drives for delivery of hydraulic fluid to hydraulic systems of various equipment.



Application:

Self-contained pumps HA series can be applied in the following fields:

- machine building – for metal cutting, wood processing machines and presses;
- hoisting and transport facilities – for elevating tables, lifting facilities, rackers;
- technological equipment – roll mills, production lines;
- shipbuilding – for winch drives, hydraulic jacks, lifting ship cylinders;
- for import substitution during the equipment repair works.

Design:

- with drive of asynchronous electric motors of AC current 220.....380 V;
- with any pumps manufactured by Pnevmostroimashina JSC, with pumping units or tandem pumps;
- with additional frame as per drawings given by the Customer.

Technical parameters:

Code	Pump displacement, CC/rev	Shaft rotation speed, rpm	Flow, l/min	Electric engine power, kW													
				0,09	0,25	0,55	1,1	1,5	2,2	3	4	5,5	7,5	9,2	11	15	18,5
				Pressure at pump output (max), MPa													
				1	2	3	4	5	6	7	8	9	10	11	12	13	14
A		1000	10,9	0,47	1,30	2,87	5,73	7,82	11,5	15,6	20,8	28,7	35,0	35,0	-	-	-
B	12	1500	16,4	0,31	0,87	1,91	3,82	5,21	7,64	10,4	13,9	19,1	26,1	32,0	35,0	35,0	35,0
C		3000	32,7	-	0,43	0,96	1,91	2,61	3,82	5,21	6,95	9,55	13,0	16,0	19,1	26,1	32,1
D		1000	26,3	-	0,54	1,19	2,38	3,24	4,75	6,48	8,64	11,9	16,2	19,9	23,8	32,4	35,0
E	28	1500	39,5	-	0,36	0,79	1,58	2,16	3,17	4,32	5,76	7,92	10,8	13,2	15,8	21,6	26,6
F		3000	79,0	-	-	0,40	0,79	1,08	1,58	2,16	2,88	3,96	5,4	6,62	7,92	10,8	13,3
G	55	1000	52,6	-	-	0,59	1,19	1,62	2,38	3,24	4,32	5,94	8,1	9,93	11,9	16,2	20,0
H	or	1500	79,0	-	-	0,40	0,79	1,08	1,58	2,16	2,88	3,96	5,4	6,62	7,92	10,8	13,3
I	56	3000	157,9	-	-	-	0,40	0,54	0,79	1,08	1,44	1,98	2,7	3,31	3,96	5,4	6,66
J		1000	75,2	-	-	0,42	0,83	1,13	1,66	2,27	3,02	4,16	5,67	6,95	8,31	11,3	14,0
K	80	1500	112,8	-	-	-	0,55	0,76	1,11	1,51	2,02	2,77	3,78	4,63	5,54	7,56	9,32
L		3000	225,6	-	-	-	-	0,38	0,55	0,76	1,01	1,39	1,89	2,32	2,77	3,78	4,66
M	107	1000	105,3	-	-	-	0,59	0,81	1,19	1,62	2,16	2,97	4,05	4,97	5,94	8,10	9,99
N	or	1500	157,9	-	-	-	0,40	0,54	0,79	1,08	1,44	1,98	2,70	3,31	3,96	5,40	6,66
O	112	3000	315,8	-	-	-	-	-	0,40	0,54	0,72	0,99	1,35	1,66	1,98	2,70	3,33
P		1000	150,4	-	-	-	0,42	0,57	0,83	1,13	1,51	2,08	2,83	3,48	4,16	5,67	6,99
Q	160	1500	225,6	-	-	-	-	0,38	0,55	0,76	1,01	1,39	1,89	2,32	2,77	3,78	4,66
R		1000	235,0	-	-	-	-	0,36	0,53	0,73	0,97	1,33	1,81	2,22	2,66	3,63	4,47
S	250	1500	352,5	-	-	-	-	-	0,35	0,48	0,64	0,89	1,21	1,48	1,77	2,42	2,98

Code	Pump displacement, CC/rev	Shaft rotation speed, rpm	Flow, l/min	Electric motor power, kW													
				22	30	37	45	55	75	90	110	132	160	200	250	315	
				Pressure at pump output (max), MPa													
				15	16	17	18	19	20	21	22	24	25	26	27		
A		1000	10,9	-	-	-	-	-	-	-	-	-	-	-	-	-	
B	12	1500	16,4	-	-	-	-	-	-	-	-	-	-	-	-	-	
C		3000	32,7	35,0	35,0	35,0	-	-	-	-	-	-	-	-	-	-	
D		1000	26,3	35,0	-	-	-	-	-	-	-	-	-	-	-	-	
E	28	1500	39,5	31,7	35,0	35,0	-	-	-	-	-	-	-	-	-	-	
F		3000	79,0	15,8	21,6	26,6	32,4	35,0	35,0	-	-	-	-	-	-	-	
G	55	1000	52,6	23,8	32,4	35,0	35,0	35,0	-	-	-	-	-	-	-	-	
H	or	1500	79,0	15,8	21,6	26,6	32,4	35,0	35,0	35,0	-	-	-	-	-	-	
I	56	3000	157,9	7,92	10,8	13,3	16,2	19,8	27,0	32,4	35,0	35,0	35,0	-	-	-	
J		1000	75,2	16,6	22,7	28,0	34,0	35,0	35,0	-	-	-	-	-	-	-	
K	80	1500	112,8	11,1	15,1	18,6	22,7	27,7	35,0	35,0	35,0	-	-	-	-	-	
L		3000	225,6	5,54	7,56	9,32	11,3	13,9	18,9	22,7	27,7	33,3	35,0	35,0	-	-	
M	107	1000	105,3	11,9	16,2	20,0	24,3	29,7	35,0	35,0	35,0	-	-	-	-	-	
N	or	1500	157,9	7,92	10,8	13,3	16,2	19,8	27,0	32,4	35,0	35,0	35,0	-	-	-	
O	112	3000	315,8	3,96	5,40	6,66	8,10	9,9	13,5	16,2	19,8	23,8	28,8	35,0	35,0	-	
P		1000	150,4	8,31	11,3	14,0	17,0	20,8	28,3	34,0	35,0	35,0	35,0	-	-	-	
Q	160	1500	225,6	5,54	7,56	9,32	11,3	13,9	18,9	22,7	27,7	33,3	35,0	35,0	35,0	-	
R		1000	235,0	5,32	7,25	8,95	10,9	13,3	18,1	21,8	26,6	31,9	35,0	35,0	35,0	-	
S	250	1500	352,5	3,55	4,84	5,96	7,25	8,87	12,1	14,5	17,7	21,3	25,8	32,2	35,0	35,0	

INTEGRATED PUMPING UNITS

Purpose: excavators, drilling rigs, crawler cranes

Integrated pumping units are intended for operation in open circuits of stationary units and mobile machines.

Mounting dimensions:

- flange as per SAE / DIN / ISO;
- with various mounting flanges (upon Customer request);
- without flange;
- torsion shaft, splined shaft, flange shaft.

Design:

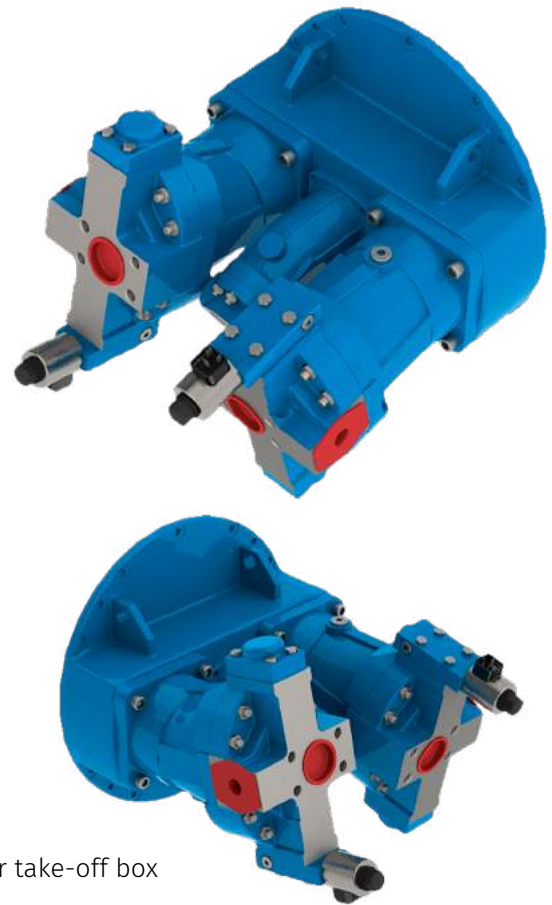
- modular principle of assembly;
- number of flows (number of installed pumps) is from 1 to 6;
- mounted pumps;
- fixed displacement: 310, 411 series;
- variable displacement: 313, 416 series;
- gear type;
- gear type with two or three flow;
- pump tandems 426, 436 and others.

Functions:

- all functions of the mounted pumps.

On request:

- main shaft rotation speed sensor.
- one or more power take-off shafts transform the unit into a power take-off box with simultaneous hydraulic and mechanical power transmission



Hydraulic units

Technical parameters:

Size (pumping units with fixed pumps)	233...28	233.55 233.56	223...80	233.107 233.112		233...160	263...160
Size (pumping units with variable pumps)	333...28	333.55 333.56	333...80	333.107 333.112	353...112	333...160	363...160
Torque, Nm	85...240	115...370	350...440	200...700	330...1250	280...1040	560...2160
Power, kW	20...54	27...85	55...105	45...160	95...465	65...240	130...500
Shaft rotation speed, rpm							
- nominal	1320	1800	1500	1500	1500	1500	1500
- maximum	2160	2400	2280	2100	2100	2100	2100
Weight (without working fluid), kg	40	74	88	110	224	155	440

Model range of pumping units:

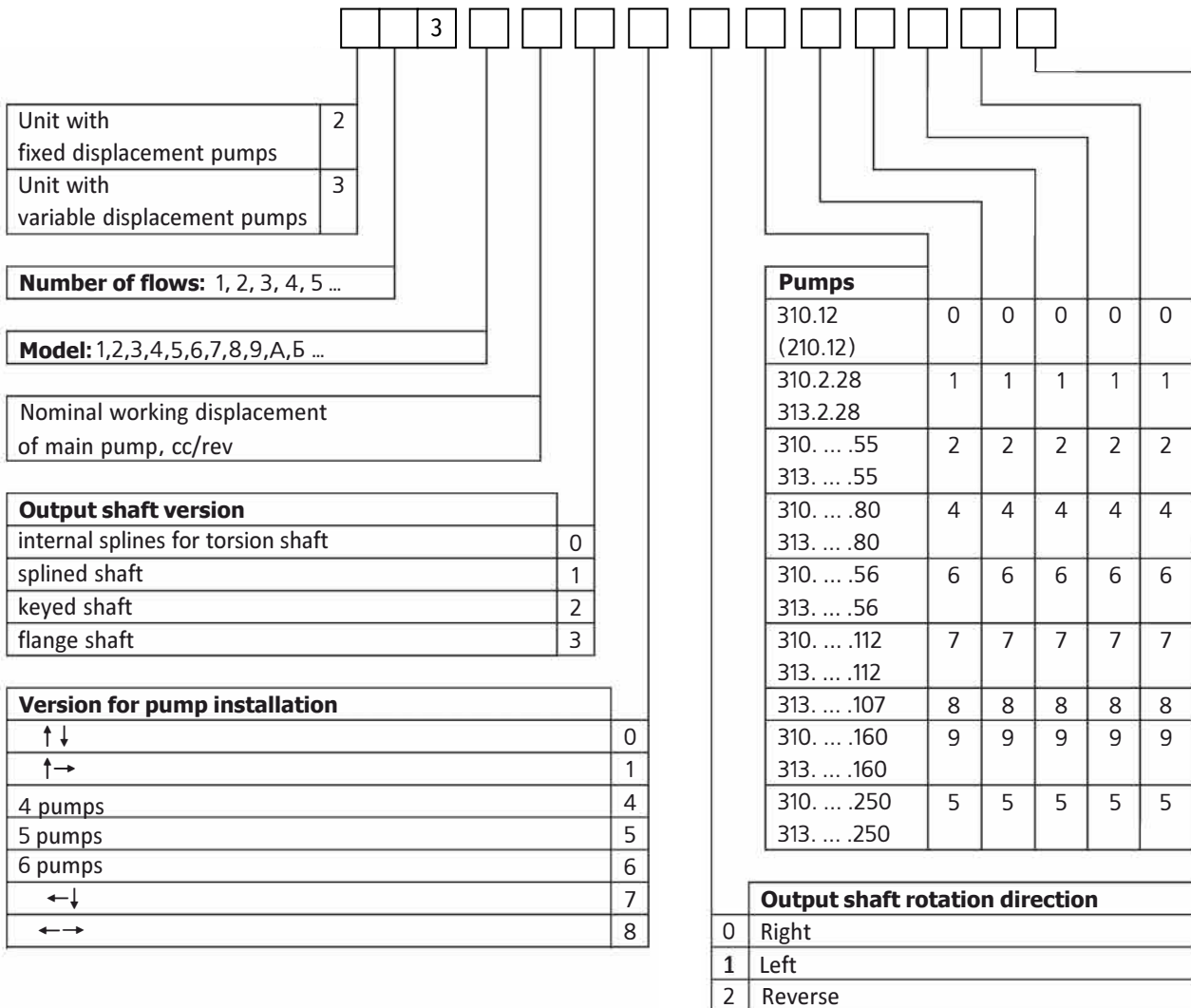
№	Designation	№	Designation	№	Designation	№	Designation	№	Designation	№	Designation
1	333.1.28.100.110	21	333.6.55.100.220	41	333.7.56.000.660	61	333.4.107.130.880	81	343.4.107.100.88ШШШ	101	353.2.112.150.77773
2	233.1.28.100.110	22	333.7.55.100.220	42	333.8.56.000.610	62	333.5.107.030.880	82	353.1.107.100.88ШШШШ	102	353.3.112.150.77770
3	233.2.28.110.110	23	333.8.55.100.220	43	333.9.56.000.660	63	333.9.107.030.880	83	223.1.112.100.77	103	353.4.112.150.77770
4	323.1.55.070.20	24	333.A.55.100.220	44	333.6.56.100.660	64	333.A.107.100.880	84	223.4.112.100.71	104	353.5.112.050.77780
5	323.2.55.070.20	25	333.E.55.100.220	45	343.1.56.140.6221	65	343.1.107.040.8803	85	223.5.112.320.71	105	333.9.112.100.770
6	323.3.55.100.20	26	333.E.55.100.220	46	223.1.80.120.41	66	333.E.107.000.880	86	223.6.112.100.77	106	333.A.112.100.771
7	323.4.55.130.20	27	333.K.55.100.220	47	223.2.80.320.41	67	333.B.107.180.880	87	223.7.112.130.76	107	233.1.160.000.990
8	323.5.55.130.20	28	223.0.56.100.60	48	233.1.80.100.440	68	333.I.107.180.880	88	233.1.112.090.766	108	323.2.160.100
9	323.6.55.130.20	29	223.1.56.000.66	49	233.2.80.300.460	69	333.D.107.100.880	89	233.2.112.100.770	109	323.3.160.100.99
10	323.7.55.100.22	30	223.2.56.100.660	50	333.1.80.100.440	70	333.E.107.000.880	90	233.3.112.100.771	110	333.1.160.030.990
11	323.8.55.100.21	31	233.2.56.000.660	51	333.2.80.100.440	71	323.K.107.110.88	91	233.4.112.100.711	111	333.1.160.000.990
12	323.9.55.000.20	32	333.0.56.100.660	52	333.3.80.100.440	72	333.L.107.110.880	92	233.5.112.100.770	112	333.2.160.130.990
13	323A.55.100.20	33	323.2.56.000.66	53	324.3.90.000.A6	73	323.M.107.100.88	93	233.6.112.100.776	113	333.3.160.130.990
14	323.C.55.000.22	34	323.3.56.000.61	54	344.2.90.1 П0.АА6Ш	74	333.M.107.100.880	94	323.3.112.020.77	114	333.4.160.130.990
15	333.1.55.030.220	35	333.2.56.000.662	55	344.3.90.1 П0.АААШ	75	333.H.107.100.881	95	323.4.112.120.77	115	333.5.160.100.990
16	333.2.55.000.220	36	333.3.56.000.660	56	354.2.90.1 П0.АААА0	76	333.P.107.100.881	96	323.5.112.110.77	116	333.6.160.100.960
17	333.3.55.100.220	37	333.4.56.000.660	57	323.0.107.000.88	77	333.P.107.000.880	97	333.6.112.110.770	117	333.7.160.080.990
18	333.4.55.100.220	38	333.5.56.000.660	58	323.1.107.320.81	78	333.T.107.100.881	98	333.7.112.110.770	118	333.8.160.180.990
19	333.4.55.100.220	39	333.6.56.100.660	59	333.2.107.020.880	79	333.Ш.107.100.880	99	333.8.112.110.771		
20	333.5.55.100.220	40	333.6.56.120.660	60	333.3.107.030.880	80	343.3.107.100.88ШШ	100	343.1.112.140.7721		

Analogue:

A8VO (Bosch Rexroth) HDV (Sam Hydraulik)

PSM-HYDAULICS® has provided the world market with more than 75 thousand integrated pumping units within 35 years

Structural diagram for integrated pumping unit



Example of designation for pumping unit with variable displacement where 333 — pumping unit with variable displacement pumps

↑ — (3) three pumps (three flow)

1 — model

112 — working displacement of larger pump, cc

1 — output shaft version: splined

0 — versions of pump installation

0 — direction of output shaft rotation: right

7 — pump 313.3.112

7 — pump 313.3.112

0 — auxiliary pump 310.12

PLANETARY GEARBOXES

SWING DRIVE MR.00.00

Purpose: Swing mechanisms of **mobile cranes**.

Design:

- possibility to install motor with a volume of 56/80/112 cc/rev, (on request of the customer);
- friction block;
- compact three-stage planetary gearbox;
- axial piston motor with adjustable relief valves;
- light weight and high efficiency;
- easy installation;
- easy oil change.

Technical parameters:

Parameter	Value	
Gear ratio	63,1	
Gearbox output torque, Nm	3650	
Gearbox output speed, rpm	19	
Weight (without working fluid), kg	95±10%	
Output shaft	Module	8 10
	No. of teeth	14 14
Working displacement of hydraulic motor, cc/rev	112	

Analogues:
705 T3L (Bonfiglioli)



SWING DRIVE MR.20.00

Purpose: Swing mechanisms of **excavators**.

Design:

- compact two-stage planetary gearbox;
- axial piston motor with adjustable relief valves;
- light weight and high efficiency;
- easy installation;
- easy oil change.

Technical parameters:

Parameter	Value	
Gear ratio	29,29	
Gearbox output torque, Nm	6200	
Gearbox output speed, rpm	68	
Weight (without working fluid), kg	115±10%	
Output shaft	Module	12
	No. of teeth	12
Working displacement of hydraulic motor, cc/rev	56	



TRAVEL, WINCH DRIVE MR.50.00

Purpose: Travel and winch mechanisms of **mobile cranes**,
travel mechanism of **compactors**.

Technical parameters:

Parameter	Value
Gear ratio	35,5
Max. working pressure, bar	143
Max. output speed of hydraulic motor, rpm	1260
Gearbox output torque, Nm	10000
Gearbox output speed, rpm	35,5
Weight, kg (without oil)	140±10%
Working displacement of hydraulic motor, cc/rev	107



Analogues:
PMC2000-S2 320 bar r. 35.5 (PMP)

CONTROL VALVES

CONTROL VALVES 1RM.323

Purpose: drilling rigs

Hydraulic control valves are designed to change the direction or start and stop the working fluid in the hydraulic system. The control valve 1RM.323 is used in mobile installations for major well repairs. Purpose – enabling and disabling the drilling rotor.

Technical parameters:

Size	1RM.323.B.64	1RM.323.BF.64
Nominal bore, mm	32	32
Flow, l/min		
- nominal	500	500
- maximum	660	660
Input pressure, bar		
- nominal	320	320
- maximum	350	350
Output pressure, bar	320	320
Maximum pressure in the drainage cavity, bar	0,5	0,5
Internal tightness (maximum internal leaks on each line at a pressure of 35 MPa and oil viscosity of 30 ⁺⁵ cSt), cc/min, no more than	700	700
Control powers, N, no more than	70	70
The stroke of the spool in each direction, mm	18	18
Weight (without working fluid), kg	34,3	34,3



Analogues:

1RN323 (The Ulyanovsk plant «Gidroapparat»)

CONTROL VALVES 1RM203

Purpose: drilling rigs

Spool control valve is intended for launch, shutdown and reverse of working fluid flow in hydraulic systems of machines and mechanisms.

Application:

Hydraulic volumetric drives of mobile and stationary systems of machines and mechanisms.

Design:

The spool providing conventional circuits of flows distribution (14, 24, 34, 44, 54, 64, 64A, 74, 84 etc.) is located in the housing of control valve (own casting). The spool shifts to the working positions by moving the handle and can be fixed at full shift positions. Mounting plates for control valves can be ordered separately.



Analogues:

1RN203 (The Ulyanovsk plant «Gidroapparat»)

Technical parameters:

Parameter	Value
Pressure in lines "P", "A", "B", "T", bar	
- nominal	320
- maximum	350
Max. pressure in line "Y", bar	5
Internal leak proofness (leakage at 30 MPa and viscosity 36 ⁺⁴ cSt.) cc/min, not more than	300
Flow, l/min	450
Regulation power, N	53
Weight, kg, ± 5 %	14

SECTIONAL CONTROL VALVES

RC80 AND RC150 SERIES

Purpose: mobile cranes, crane manipulators, front loaders, bulldozers, tractors

Sectional control valve is designed for launch, shutdown and reverse of working fluid flow.

It is intended for control of mobile cranes working operations:

- lifting-lowering of arm;
- telescoping;
- cargo winch drum rotation;
- platform rotation.



Design:

- type of control – mechanical (cable or pull rods);
- connection of working ports – threaded;
- spool return to neutral position – spring;
- relief valve with electric release is mounted in pressure line;
- relief and check valves can be mounted in working sections (optionally);
- spool relay “ON-OFF” can be mounted in working sections (optionally).

Technical parameters:

Size	RS80	RS150
Nominal flow of working fluid, l/min	80	150
Max. flow of working fluid, l/min	100	170
Max. operating pressure, bar	350	350
Max. pressure in drain section, bar	20	20
Max. leakage from operating channels to drain line, cc/min	5	5
Working fluid temperature range, °C	from -40 to +80	from -40 to +80

Analogues:

RS80 – SD8 (Walvoil)

RS150 – SDS180, SD16 (Walvoil)

MONOBLOCK CONTROL VALVES

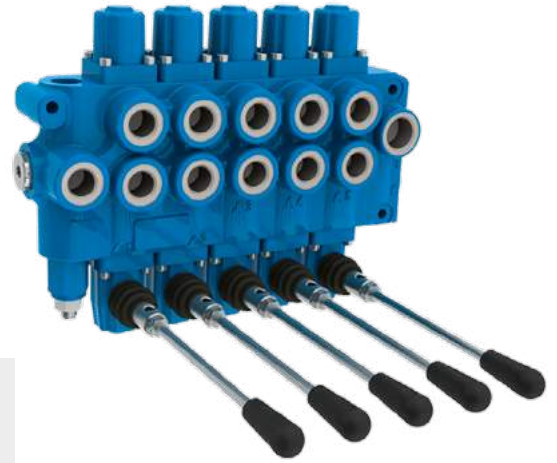
RM45 AND RM80 SERIES

Purpose: mobile cranes, crane manipulators, front loaders, bulldozers, tractors

Monoblock control valve is designed for launch, shutdown and reverse of working fluid flow. It is used for extension and control of outriggers of lifting equipment, control of working bodies of tractors and working operations of other types of equipment.

Design:

- type of control-manual using a lever;
- connection of working channels is threaded;
- return of the spool to the neutral position-spring.



Technical parameters:

Size

	RM45	RM80
Nominal flow of working fluid, l/min	45	80
Max. flow of working fluid, l/min	60	100
Max. operating pressure, bar	350	350
Max. pressure in drain section, bar	50	50
Max. leakage from operating channels to drain line, cc/min	3	3
Working fluid temperature range, °C	from -40 to +80	from -40 to +80
Nominal filtration fineness, microns	25	25

Analogues:

RM45 – SDM100 (Walvoil)
RM80 – SD11 (Walvoil)

HYDRAULIC CONTROL BLOCKS

Purpose: excavators, bulldozers, road rollers

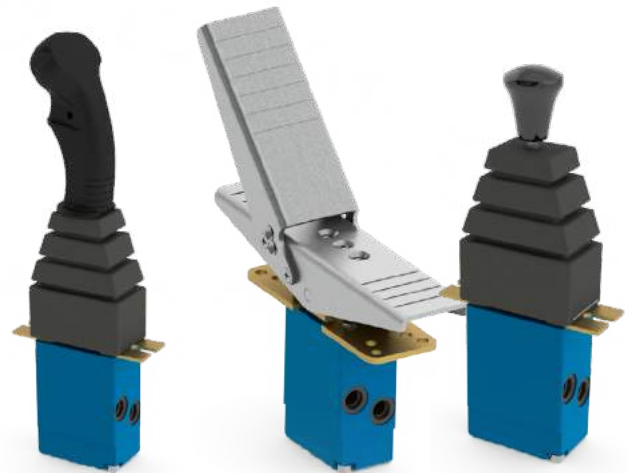
Hydraulic control blocks are intended for remote control of hydraulic system components of stationary units and mobile machines.

Design:

- single-axis and double-axis;
- with one or two handles;
- with one or two pedals.

Functions:

- up to 5 buttons of discrete electric control;
- with additional block of shuttle valve;
- with stick hold.



The new principles for fluid distribution, pressure and flow regulation are applied in hydraulic control blocks of 200BH series.

The design is versatile for various quantity of spools and can be in modules or in sections.

The block housing is at the same time the guide for the spools which improves their centering, increases the lifetime and allows to achieve stable operation of control block with input pressure up to 100 kgf/cm².

Advantages:

- wider application range;
- more fine control of the mechanisms;
- control blocks "OR" with different logic;
- possibility to mount on the plate, to connect the plate with variously located working lines;
- possibility to apply without plate or to mount on the plate of own manufacture.

Technical parameters:

Size	220BHM	221BHM	230BFM	231BFM	250BHM
Input pressure, bar					
- nominal			30		
- maximum			100		
Output pressure, bar					
- minimum			5±15		
- maximum			25±2		
Max. drain pressure, bar			3		
Max. voltage, V			36		
Max. current, A			4		
Weight, kg	3,5	4,2	3,2	3,3	2,5

Modifications of 220BHM control block:

- 220BHM with handle lock at one end position;
- 222BHM with block of valves "OR" for hydrostatic transmission of skid steering machines;
- 222BHM with handle lock at one end position and with block of valves "OR" for hydrostatic transmission of skid steering machines.

Analogues:

- 220BHM – 4TH6 (Bosch Rexroth)
- 221BHM – 4TH7G (Bosch Rexroth)
- 230BFM – 1TH7Q (Bosch Rexroth)
- 231BFM – 2TH7Q (Bosch Rexroth)
- 250BHM – 1-2TH6 (Bosch Rexroth)

PNEUMATIC HYDRAULIC ACCUMULATORS

Purpose: excavators, road-building equipment, communal machines

Pneumatic hydraulic accumulator flask type is intended for power supply from high pressure hydraulic line of spool remote control systems of control valves in hydraulic systems of road-building, construction and municipal machines. Pneumatic hydraulic accumulator (charged with technological nitrogen) provides the functioning of control system at switching off the drive engine.

Design:

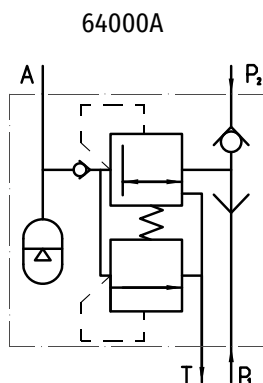
Pneumatic hydraulic accumulator flask type can be delivered separately or in assembly with block of valves. Reduced pressure at block output is provided with sideways mounted in reduction valve. Safety relief valve provides protection of remote control system.



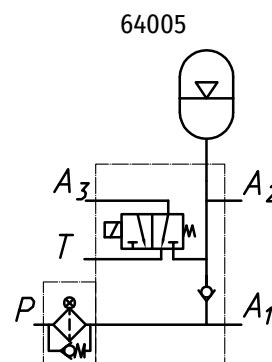
Technical parameters:

Size	64000A
Nominal bore, mm	8
Input pressure, bar	
- minimum	3
- nominal	320
- maximum	400
Opening pressure of check valve, not more, bar	0,5
Working fluid output flow (nominal), l/min	8
Nominal volume capacity, dm ³	0,63
Gas "charging" pressure in the flask, bar	7 ^{+0.5}
Allowed ratio of max. reduced pressure of working fluid to gas "charging" pressure	5
Reduction valve adjustment pressure, bar	
- nominal	30
- maximum	35
Max. exceeding of reduction valve adjustment pressure at instant increase of pressure, bar	20
Relief valve adjustment pressure, bar	
- minimum	40
- maximum	50
Max. exceeding of relief valve adjustment pressure at instant pressure growth, bar	25
Weight, kg, not more than	8
Working fluid fineness grade as per GOST 17216-71, not lower than	12

Modifications of pneumatic hydraulic accumulators with valves blocks:



P₁, P₂ – pressure in-feed inlet
A – pressure outlet
T – drain outlet



P – pressure in-feed inlet
A₁, A₂, A₃ – pressure outlet
T – drain outlet

BRAKE REDUCING HYDRAULIC VALVES

12.000, 12.100 types

Purpose: excavators, motor graders, front loaders

Three-line brake reducing hydraulic valve is intended for regulation of brake system drive in road-building, forestry, agricultural, municipal machines, material handling equipment etc.

Design:

- with one pedal;
- without pedal;
- with adjustment screw.

Functions:

- six ranges of reducing pressure: 0-4 MPa; 0-6 MPa; 0-8 MPa; 0-10 MPa; 0-12 MPa; 0-16 MPa.

Technical parameters:

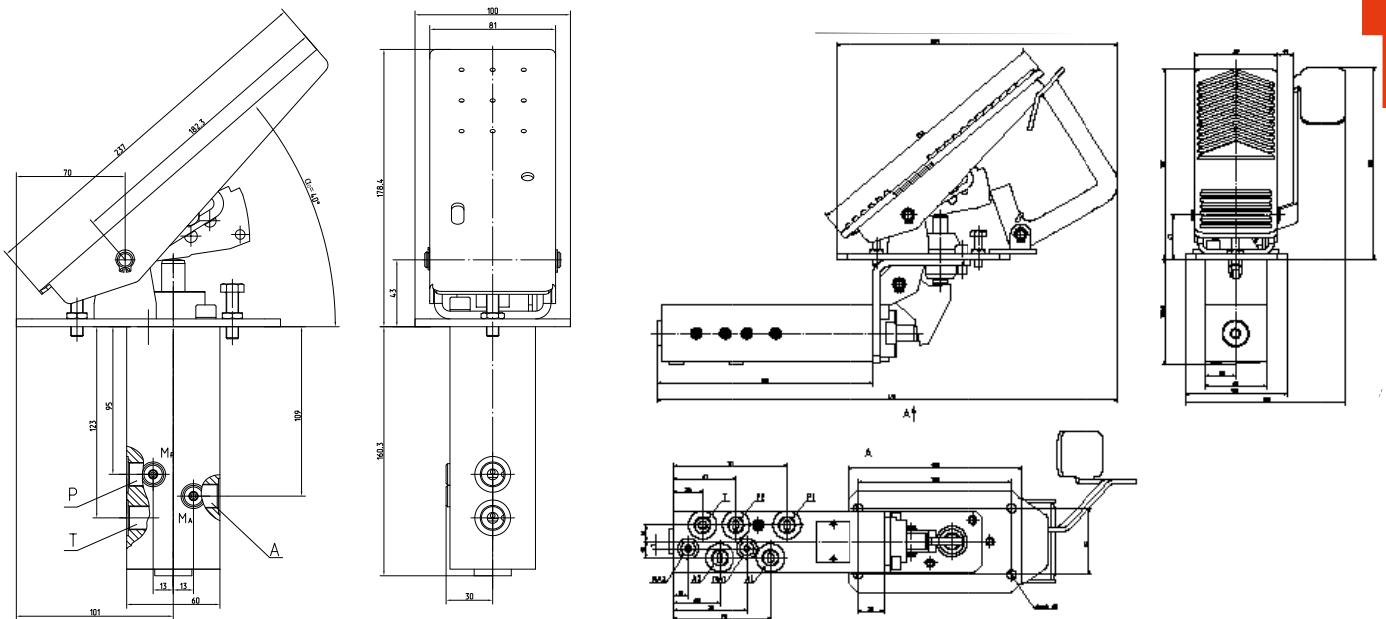
Parameter	Value
Max. input pressure, bar	200
Output pressure (reducing), changed proportionally to pedal inclination angle, bar	
- minimum	0
- maximum	60±2
Max. drain pressure, bar	3
Max. working fluid flow, l/min	70

Analogues:

KTR 12.000 – LT-07 (Bosch Rexroth)



Hydrovalve equipment



HYDROVALVE EQUIPMENT

BRAKE HYDRAULIC VALVES GKT.1.16 type

Purpose: mobile cranes

Brake hydraulic valve is applied in hydraulic system of mobile crane winch for boom lifting and telescoping, for maintaining the adjusted speed of executive devices driven with external force, for protection of hydraulic drive against exceeding pressure, for fixation of executive devices location.

Technical parameters:

Size	GKT.1.16
Input pressure, bar	
- nominal	250
- maximum	400
Working fluid flow, l/min:	
- nominal	160
- maximum	200



Analogues:

FD-16 (Bosch Rexroth)

COUNTERBALANCE HYDRAULICS VALVES GKP.0.25 type

Purpose: wheel excavators

Counterbalance hydraulic valve is intended for maintaining the constant (adjusted) speed of hydraulic motor shaft rotation under the influence of cocurrent load in the circuits of hydraulic systems.

Technical parameters:

Size	GKP.0.25
Input pressure, bar	
- nominal	250
- maximum	400
Working fluid flow, l/min:	
- nominal	220
- maximum	300



Analogues:

BVD25 (Bosch Rexroth)

RELIEF HYDRAULIC VALVES OF DIRECT ACTION U462.8...5, U462.8...7, R100.000 types

Purpose: in any hydraulic systems

Relief hydraulic valve is intended for the protection of fluid power drives against exceeding pressure. Relief hydraulic valve is the valve of direct action of plug-in design for mounting in panels, housings of bypass blocks and individual housings.

Technical parameters:

Size	U462.8...5	U462.8...7	R100.000
Working fluid flow, at kinematic viscosity 30...35 mm ² /s, l/min			
- minimum	3	5	3
- nominal	63	250	63
- maximum	120	400	120
Input pressure, bar			
- minimum		50	
- nominal		200	
- maximum		350	



Analogues:

U462.8...5 – DBD15 (Bosch Rexroth)

U462.8...7 – DBD25 (Bosch Rexroth)

R100.000 – DBD15 (Bosch Rexroth)

HYDROVALVE EQUIPMENT

RELIEF HYDRAULIC VALVES OF INDIRECT ACTION 510.20, 510.32, KPP-4, KPP-5, KPP-4.1, KPP-5.1 types

Purpose: in any hydraulic systems

Relief hydraulic valve is intended for the protection of fluid power drives against exceeding pressure. Relief hydraulic valve is the valve of indirect action of plug-in design for mounting in panels, housings of bypass blocks and individual housings

Technical parameters:

Size	510.20	KPP-4 KPP-4.1	510.32	KPP-5 KPP-5.1
Working fluid flow, at kinematic viscosity 30...35 mm ² /s, l/min				
- minimum	250	250	400	400
- nominal	400	400	600	600
- maximum	10	10	20	20
Input pressure, bar				
- minimum		10		
- nominal		400		
- maximum		500		



CHECK RELIEF HYDRAULIC VALVES OPK-18, OPK-20 types

Purpose: in any hydraulic systems

Check relief hydraulic valve is intended for protection against exceeding pressure in forward direction and free flow of working fluid in backward direction, is mounted in hydraulic line of reversible hydraulic machines. Check relief hydraulic valve includes relief valve and check valve.

Technical parameters:

Size	OPK.18	OPK.20
Working fluid flow, at kinematic viscosity 30...35 mm ² /s, l/min		
- minimum	3	8
- nominal	120	250
- maximum	280	400
Input pressure, bar		
- minimum		50
- nominal		200
- maximum		350



Analogues:

DBRF (Bosch Rexroth)

CHECK HYDRAULIC VALVES 4121.20.90, 530.25 types

Purpose: in any hydraulic systems

Check hydraulic valve is intended for providing free flow of working fluid only in forward direction, allowing the fluid to pass in backward direction only in case the valve has an orifice hole, also intended for restriction of working fluid flow in hydraulic systems of road-building, construction and municipal machines.

Technical parameters:

Size	4121.20.90 4121.20.90-6	4121.20.90- 1 / 2 / 3 / 4 / 5	530.25
Working fluid flow, at kinematic viscosity 15...25 mm ² /s, l/min			
- nominal	16	80	320
- maximum	63	125	360
Input pressure, bar			
- minimum		5	1
- nominal		250	400
- maximum		320	500



Analogues:

530.25 – M-SR25 (Bosch Rexroth)

HYDROVALVE EQUIPMENT

THROTTLES WITH CHECK HYDRAULIC VALVE 62900A type

Purpose: excavators, front loaders

Throttle is intended for restriction of working fluid flow in forward direction and for providing free flow in backward direction in hydraulic systems.

Technical parameters:

Parameter	Value
Input pressure, bar	
- minimum	4
- nominal	320
- maximum	400
Working fluid flow, l/min	
- minimum	9
- nominal	250
- maximum	320



ONE-DIRECTION PILOT-OPERATED CHECK HYDRAULIC VALVES 541.08, 541.12, GZO.12.00, GZO.12.01 TYPES

Purpose: mobile cranes

One-direction pilot-operated check hydraulic valve is intended for providing free flow of working fluid in forward direction, and at control pressure feed – in backward direction in hydraulic systems of road-building, construction and municipal machines.

Technical parameters:

Size	541.08	541.12	GZO.12.00/ GZO.12.01
Input pressure, bar			
- nominal	250	250	200
- maximum	350	350	350
Working fluid flow, l/min			
- nominal	16	63	80
- maximum	25	125	100



DOUBLE-DIRECTION PILOT-OPERATED CHECK HYDRAULIC VALVES GZD.08.00, GZD.12.00, GZD.12.01 TYPES

Purpose: excavators

Double-direction pilot-operated check hydraulic valve is intended for providing free flow of working fluid in forward direction and blocking in backward direction in case of absence of control action, and for allowing the flow in both directions in case of control action in hydraulic systems of road-building, construction and municipal machines.

Technical parameters:

Size	GZD.08.00	GZD.12.00/ GZD.12.01
Input pressure, bar		
- nominal	200	200
- maximum	350	350
Working fluid flow, l/min		
- nominal	25	80
- maximum	60	100



Analogues:

GZD.08.00 – A-VSO-DE-38-FC-1-SAE6000 (Bosch Rexroth)

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