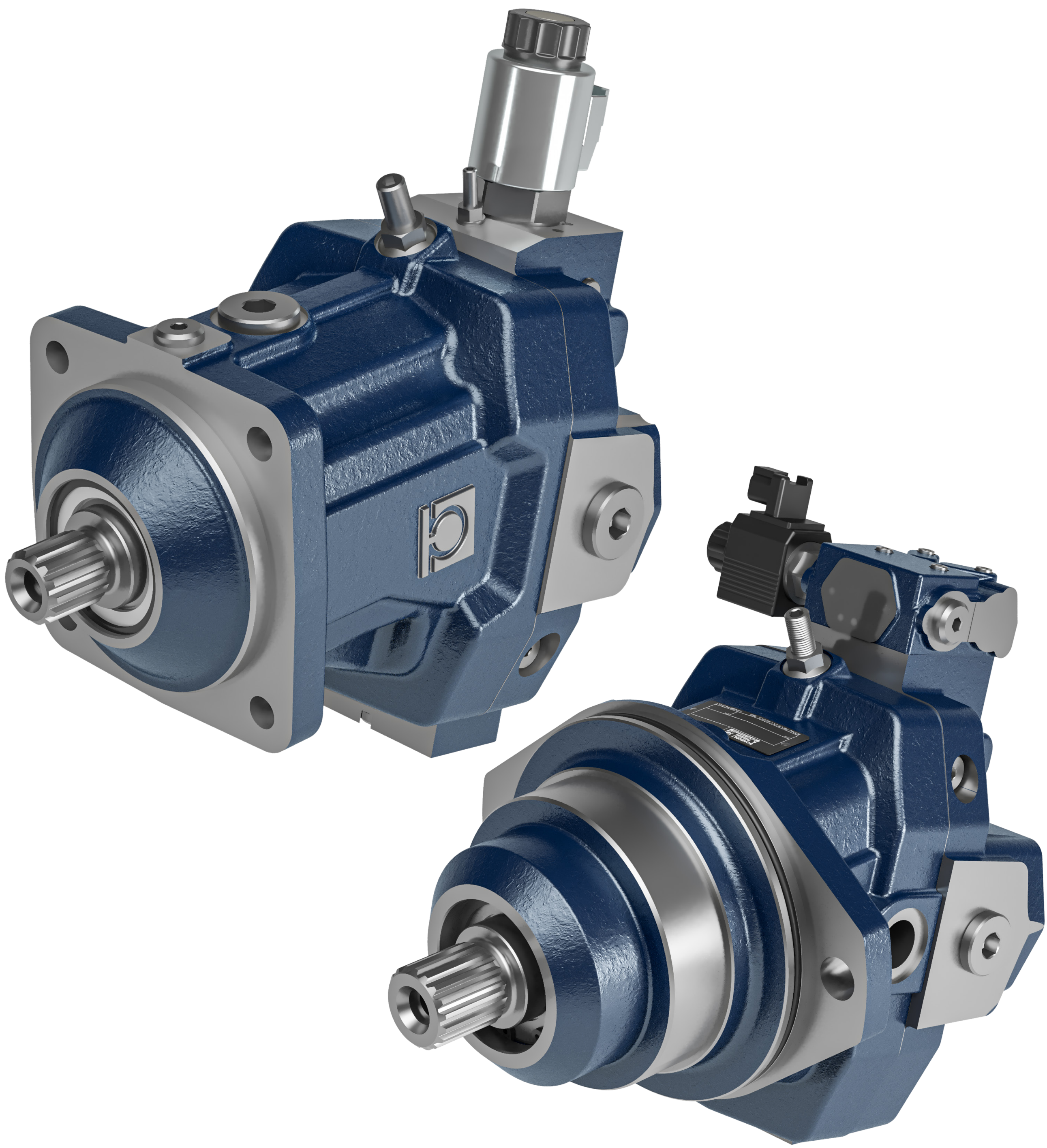
Bent axis axial piston motors



Contents

Introduction

The bent axis variable motors have been designed to obtain a high angle of inclination of the pumps to the output shaft axis. Compared with swashplate motors which reach an angle of inclination of 18°, the bent axis versions reach 25°.
This geometry offers several advantages:

- high starting torque;
- high range of variation in displacement;
- high volumetric and mechanical efficiency;
- high maximum speed;
- high maximum pressures.

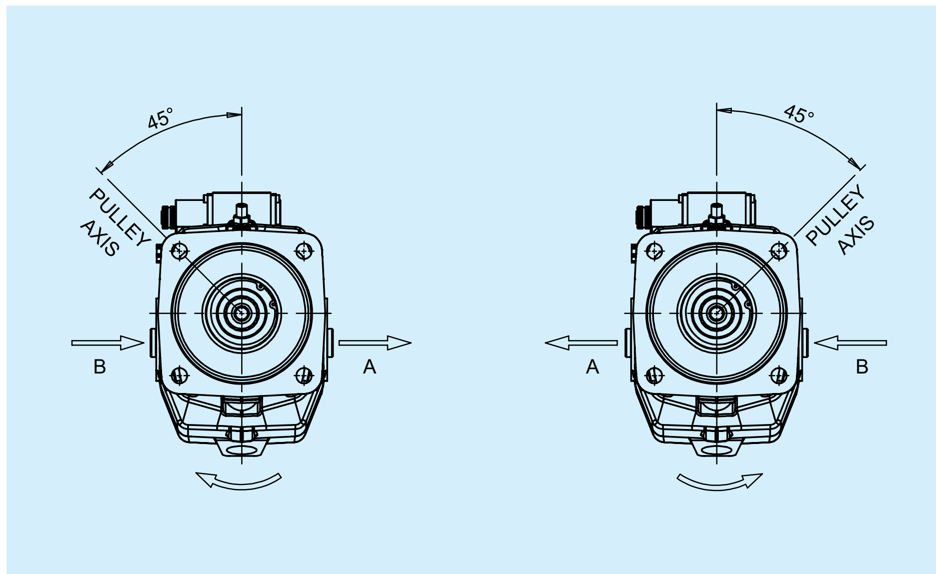
The Bondioli and Pavesi bent axis motors can be used with other products in open and closed circuit systems to transfer and control hydraulic power. They can be fitted with a flushing valve (the valve is fitted with a 1.7 diameter orifice as standard). The variation in displacement can be changed from maximum to minimum using high or low pressure hydraulic control or electric control, depending on customer requirements.
The ON-OFF electrically-controlled version allows a minimum displacement adjustment equal to 30% of the maximum displacement.
The proportional control version, on the other hand, thanks to the geometry used in its design, allows a wide range of variation in displacement, up to 0° of inclination of the motors (minimum zero displacement).
The extended zero-degree capability function creates opportunities to easily improve machine performance for:

- assist drive on the steering axle of high inertia machines (e.g. combine harvesters) and could include Anti Slip control;
- off-road machines that require Anti Slip Control (self-propelled sprayers);
- multi-engine applications which require optimized operating and transport modes that use the zero degree position for maximum transport speed;
- improvement in the machine's angle of inclination.

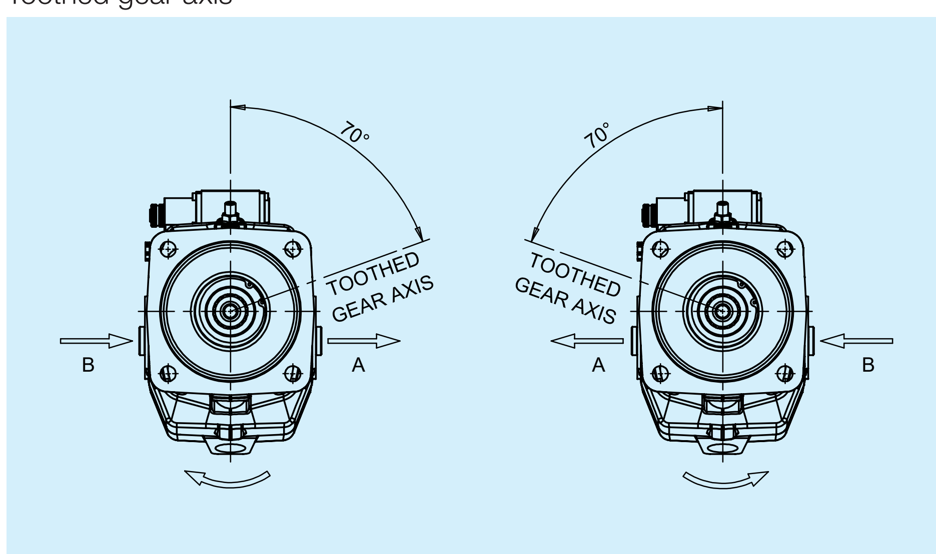
Optimization of service life of bearings in applications with radial load

The direction of application of the radial load affects the service life of the motor bearings.
An optimal direction of the force reduce the stress on the bearings and gives them a longer service life.
The recommended angle of load application depends on the direction of rotation and the type of application.
For application-specific bearing life calculations, please contact our technical offices.

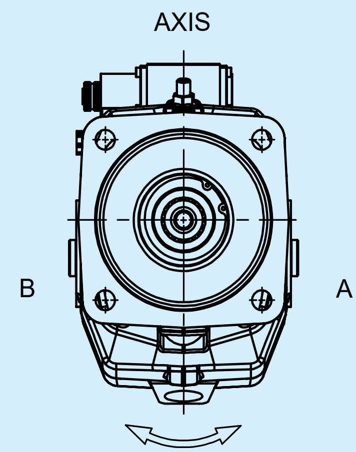
Pulley axis



Toothed gear axis

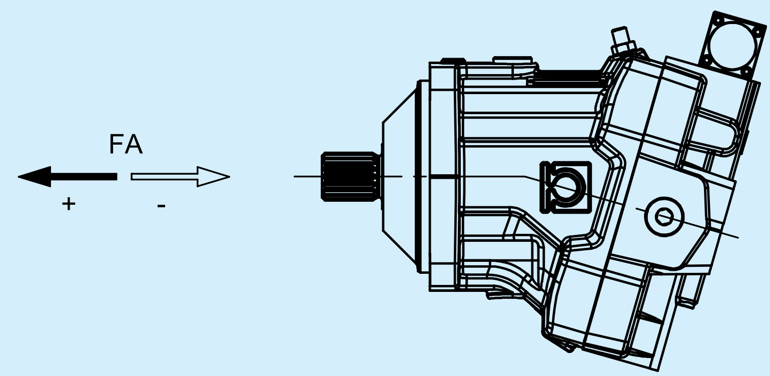


Axis for any application (alternating direction of rotation)



Application of axial forces to the shaft

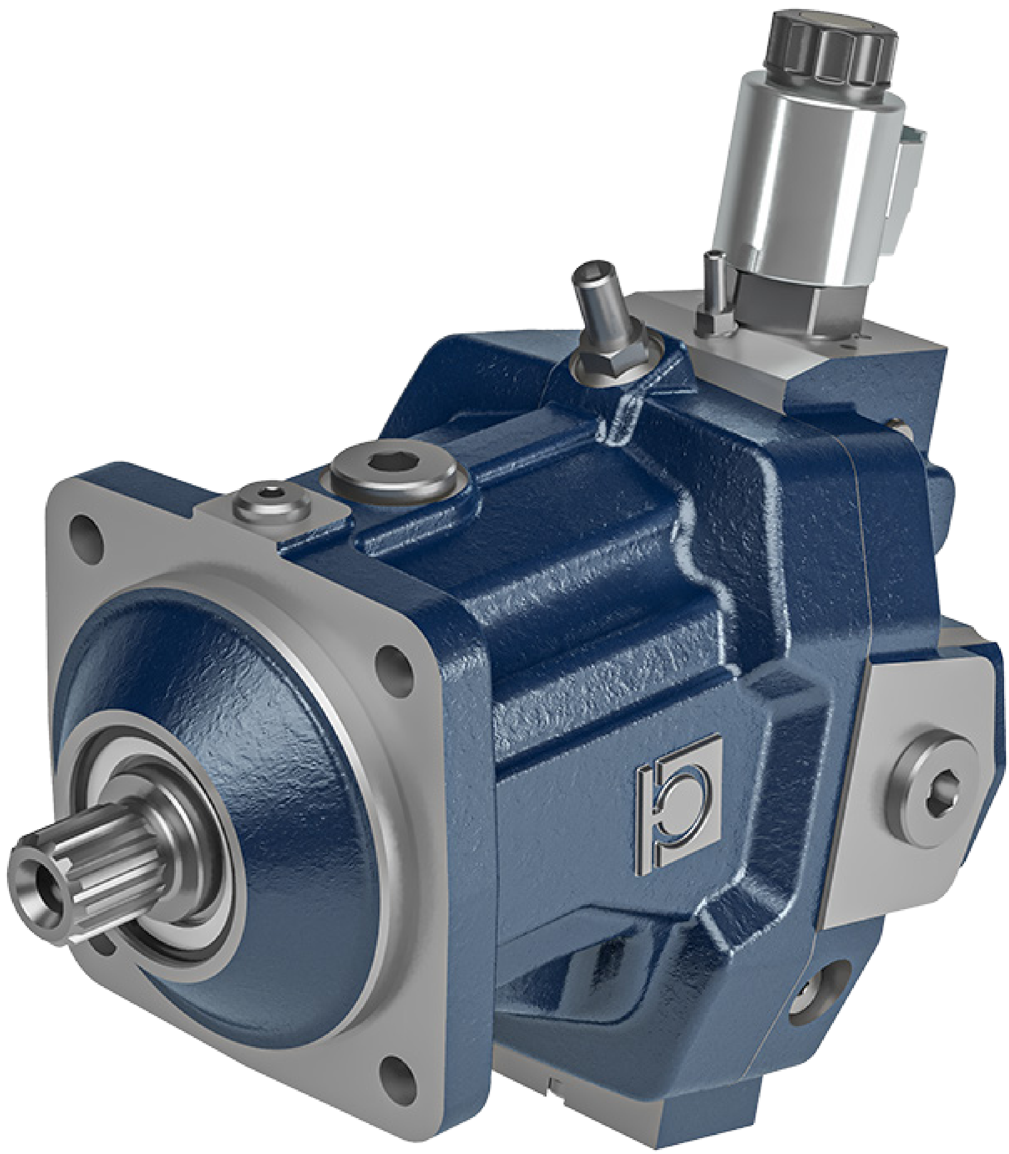
Axial compressive forces can be applied to the shaft (see table).
Axial tensile loads, on the other hand, which can reduce the service life of the main bearing, should be avoided.



Nominal displacement		MAX axial load without pressure (*)	MAX axial load at working pressure
cm3	in3	N	N/bar
60	3.66	1340	118
78	4.76	1340	141
80	4.88	1840	141
108	6.59	1840	184
110	6.71	2000	184
130	7,93	2000	230
160	9.76	3650	230
200	12.2	3650	270

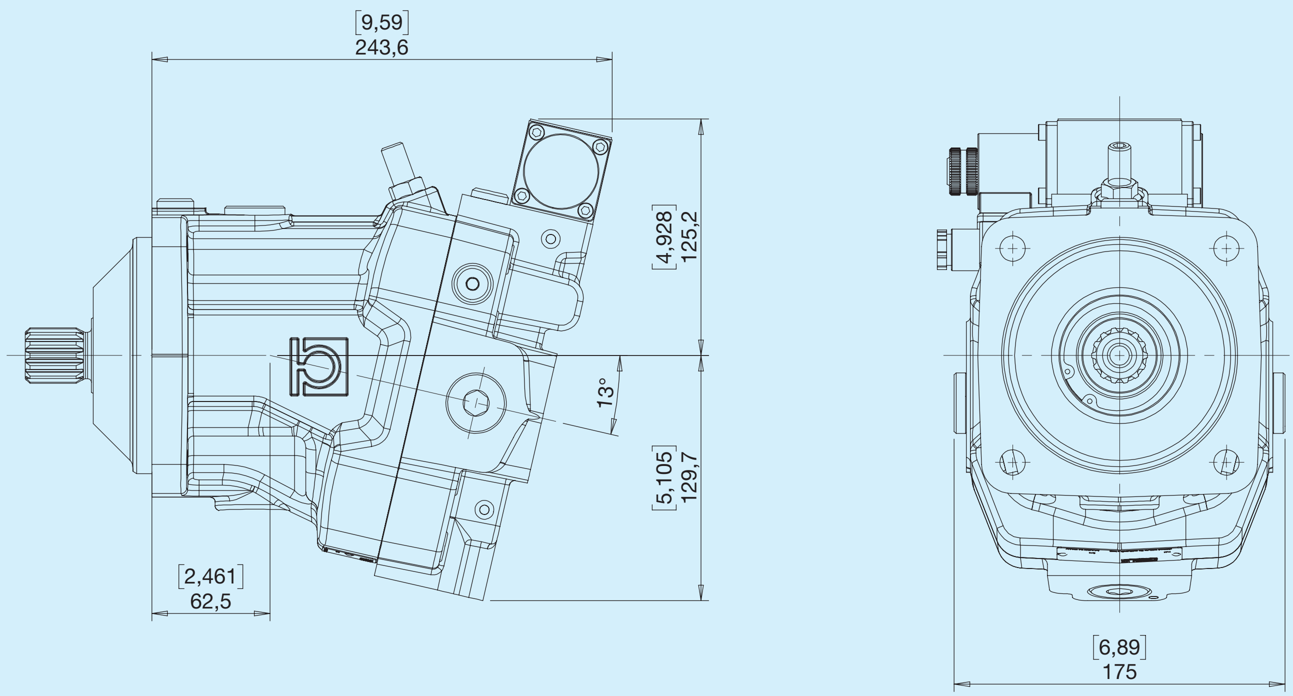
(*) The values indicated are maximum values and should not be applied during continuous operation.

Variable-displacement motors HPBA 060-078



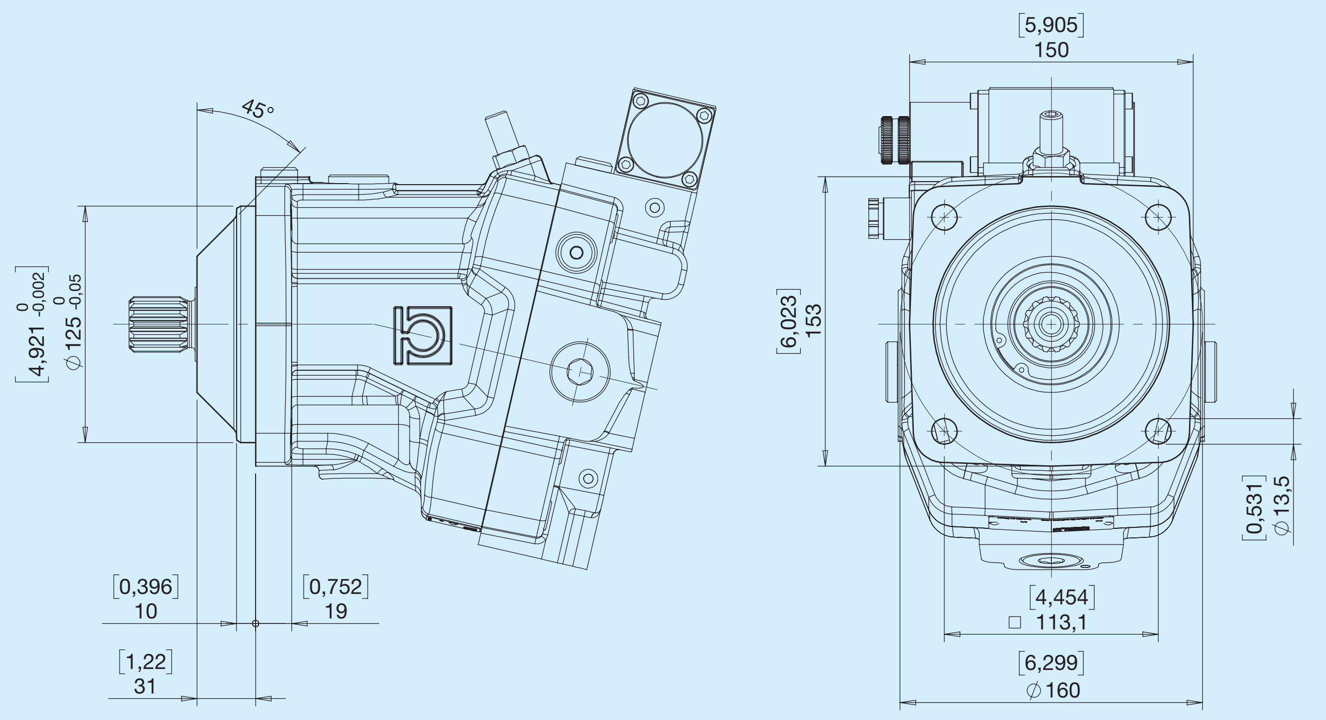
Before use, carefully read the GENERAL INSTRUCTIONS FOR USE OF CLOSED CIRCUIT AXIAL PISTON PUMPS AND MOTORS.

Dimensions and technical data

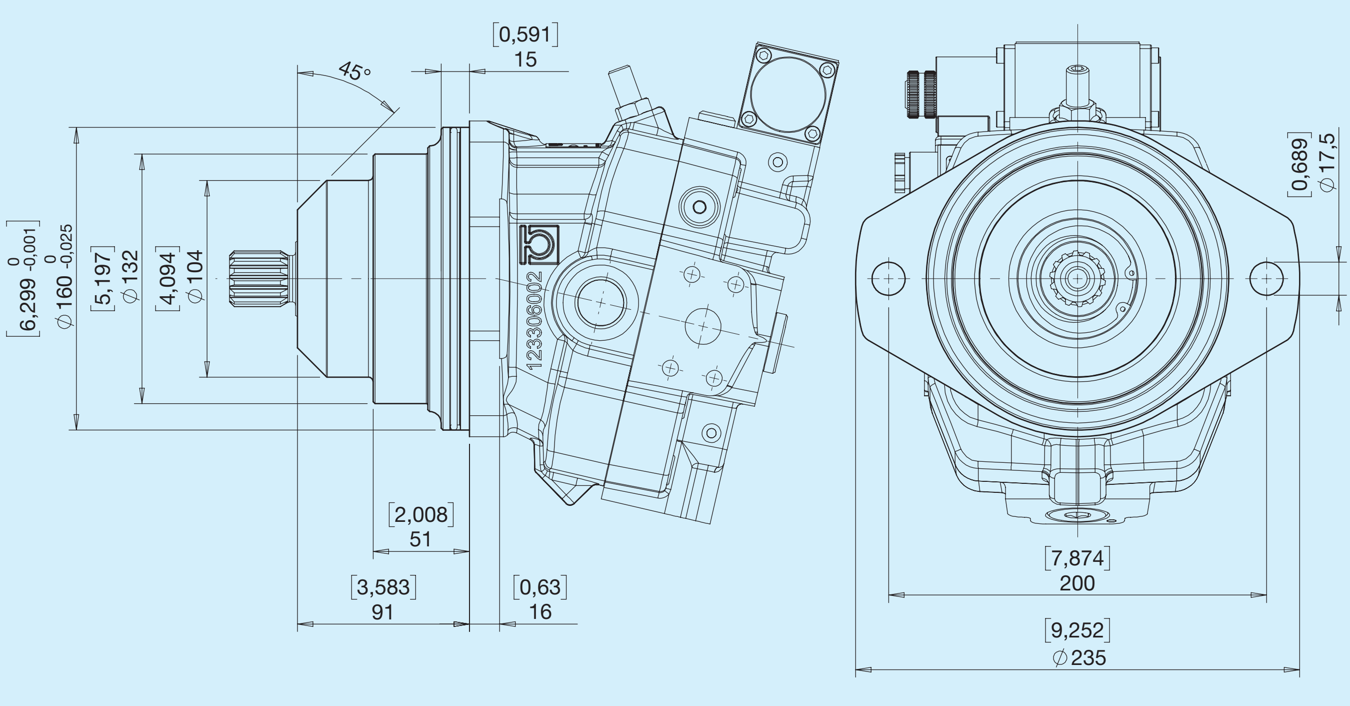


HPBA	Theoretical displacement		Swash plate	Continuous Pressure		Intermittent pressure		Peak pressure		Rotational speed			Weight	
	cm³	**in³**	°	**bar**	**psi**	**bar**	**psi**	**bar**	**psi**	**MAX (max V) min⁻¹**	**MAX (min V) min⁻¹**	**MIN min⁻¹**	**kg**	**lbs**
060	60	3.66	25	380	5510	400	5800	450	6525	4400	**5500**	500	28	62
078	78	4.73	26	300	4350	350	5075	400	5800	4400	**5500**	500	28.7	63

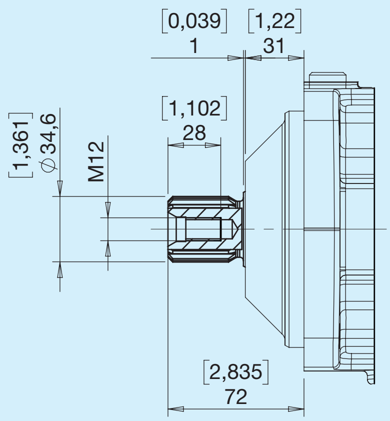
I ISO 4 holes standard



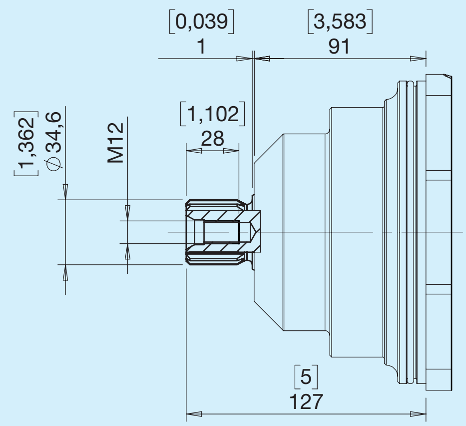
P ISO 2 holes cartridge centring



C DIN 5480 W35x2x30x16

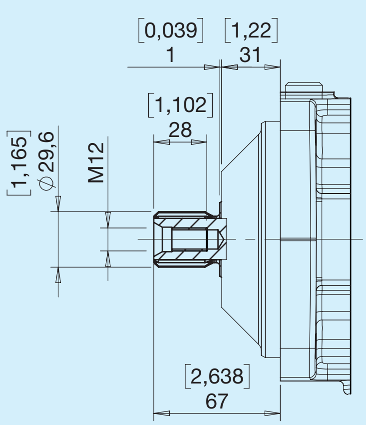


Max. torque 860 Nm

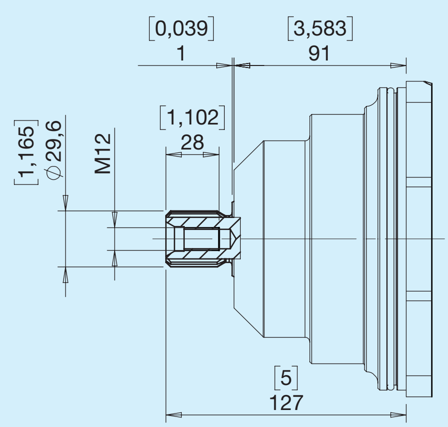


Max. torque 860 Nm

1 DIN 5480 W30x2x30x14

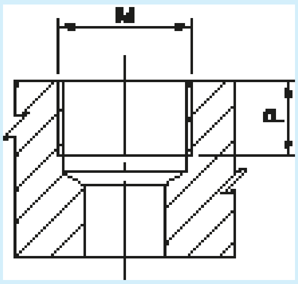


Max. torque 590 Nm



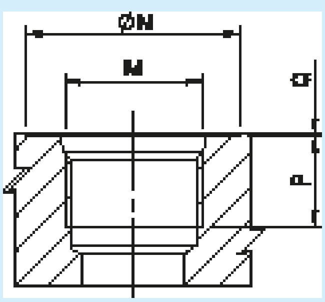
Max. torque 590 Nm

Type G



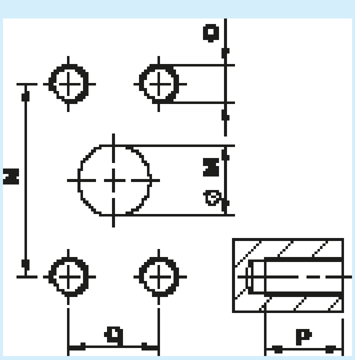
Type	M		P	
		Nm	mm	in
G2	Port ISO 1179-1 - G 1/4	17	8	0.31
G6	Port ISO 1179-1 - G 3/4	90	19	0.75
G7	Port ISO 1179-1 - G 1	160	19	0.75

Type U



Type	Dim.	N		P		Q		M	
		mm	in	mm	in	mm	in		Nm
U2	1/4'	20	0.79	12	0.47	0.3	0.01	Port ISO 11926-1-7/16-20	17
U6	3/4'	41	1.61	20	0.79	0.3	0.01	Port ISO 11926-1-1 1/16-12	90
U7	1'	49	1.93	18	0.70	0.3	0.01	Port ISO 11926-1-1 5/16-12	160

Type N

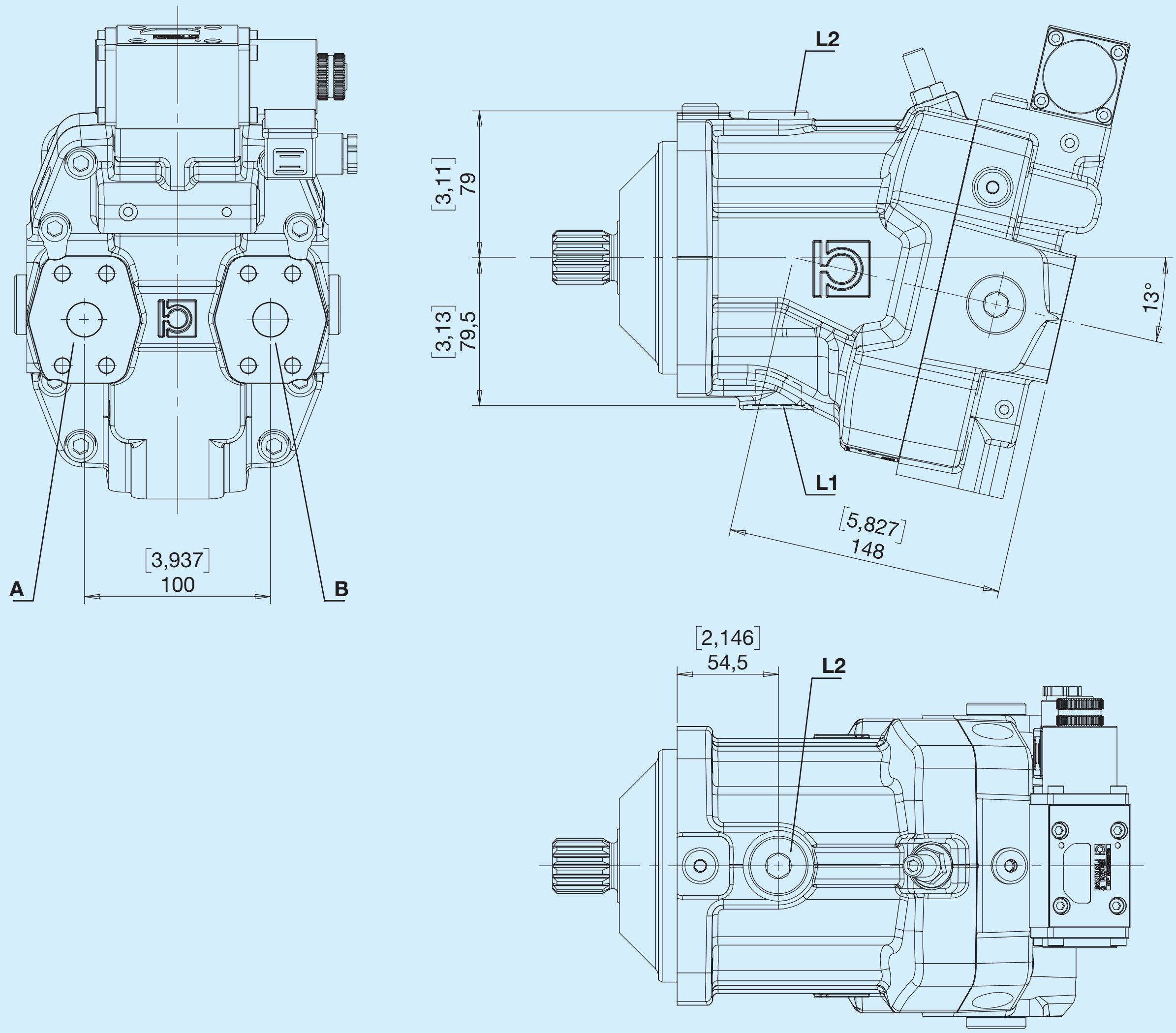


Type	M		N		Q		P		O	
	mm	in	mm	in	mm	in	mm	in		Nm
N6	19	0.75	50.8	2	23.8	0.94	17	0.67	M10	38

Combinations

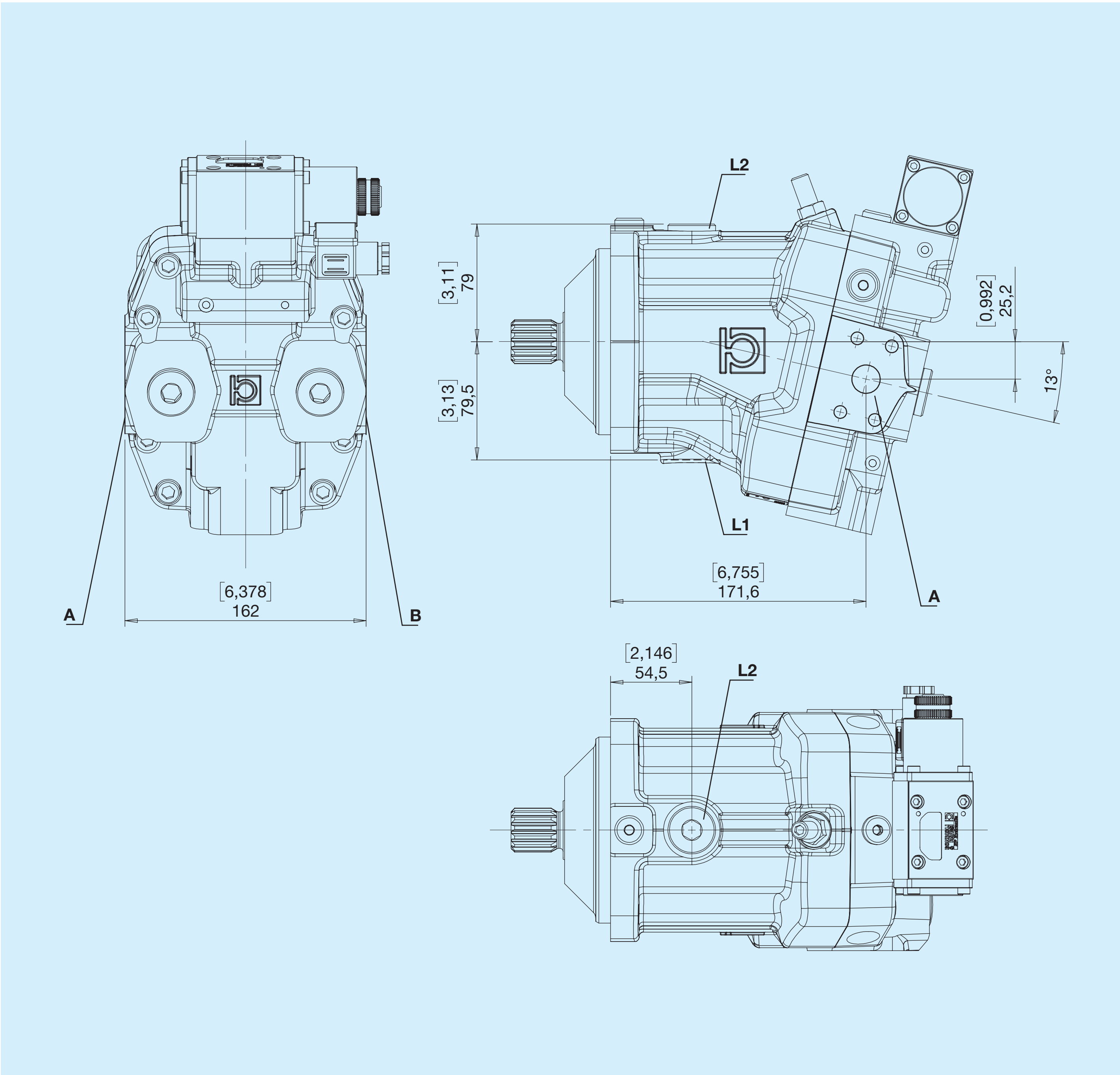
Type	Inlet/outlet **A-B**	Drain port **L1-L2**	Pilot **a-b-x**
G	G6	G6	G6
U	U6	U6	U6
N	N6	G6	G2
M	N6	U6	U2

P Rear



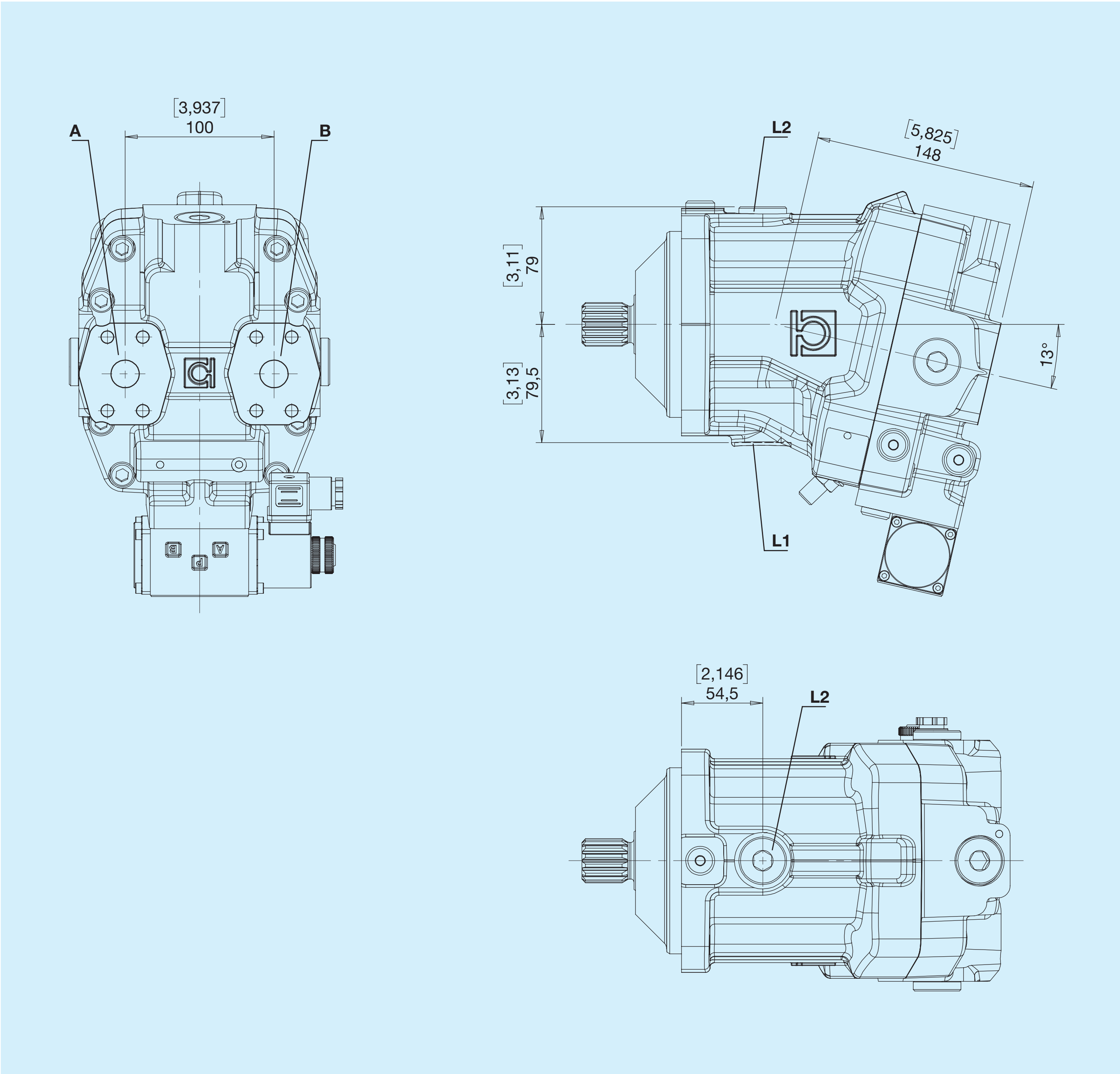
A,B - Use
L1, L2 - Drain port

L Opposite sideways



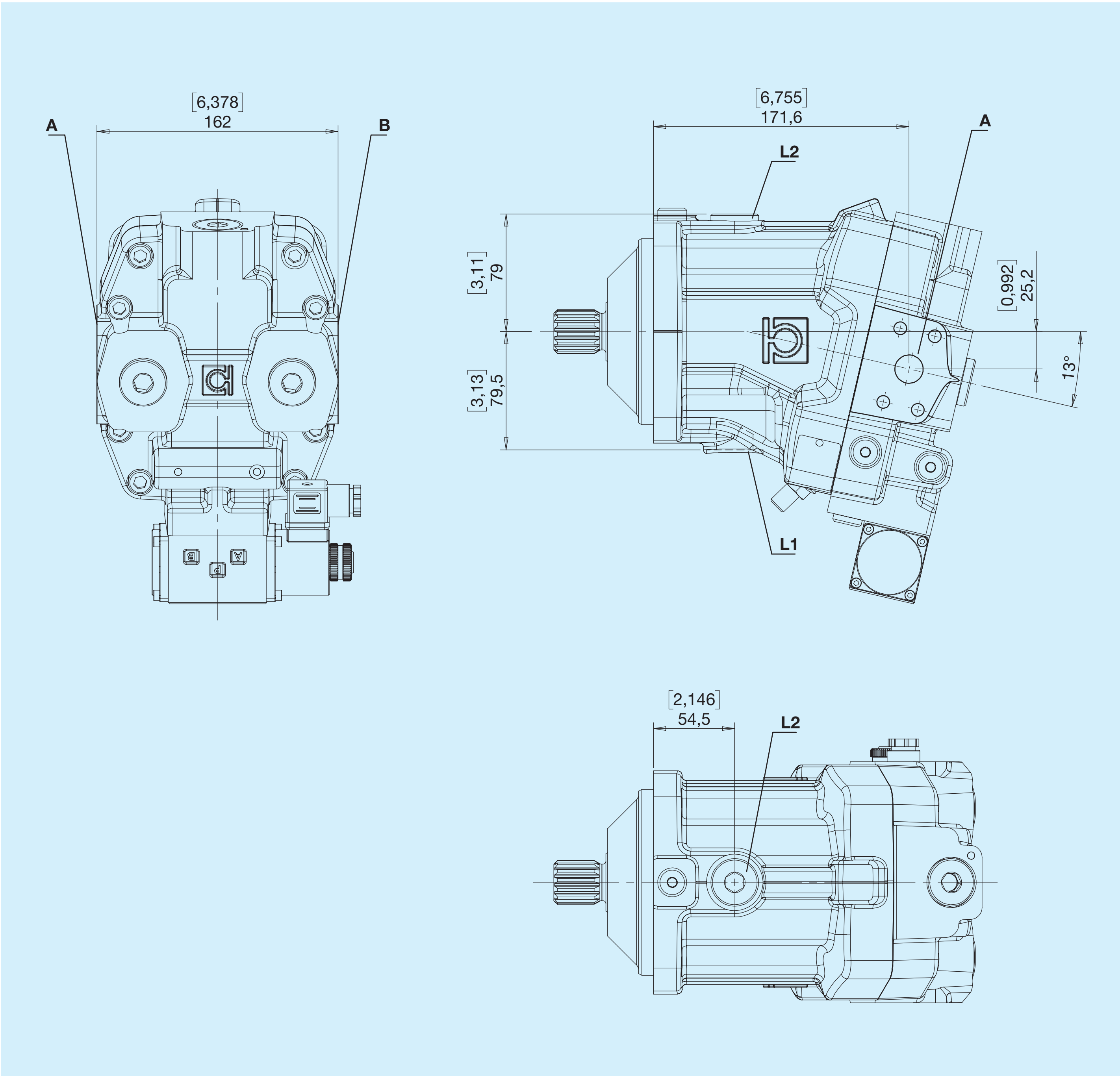
A,B - Use
L1, L2 - Drain port

Y Rear with rotated valve



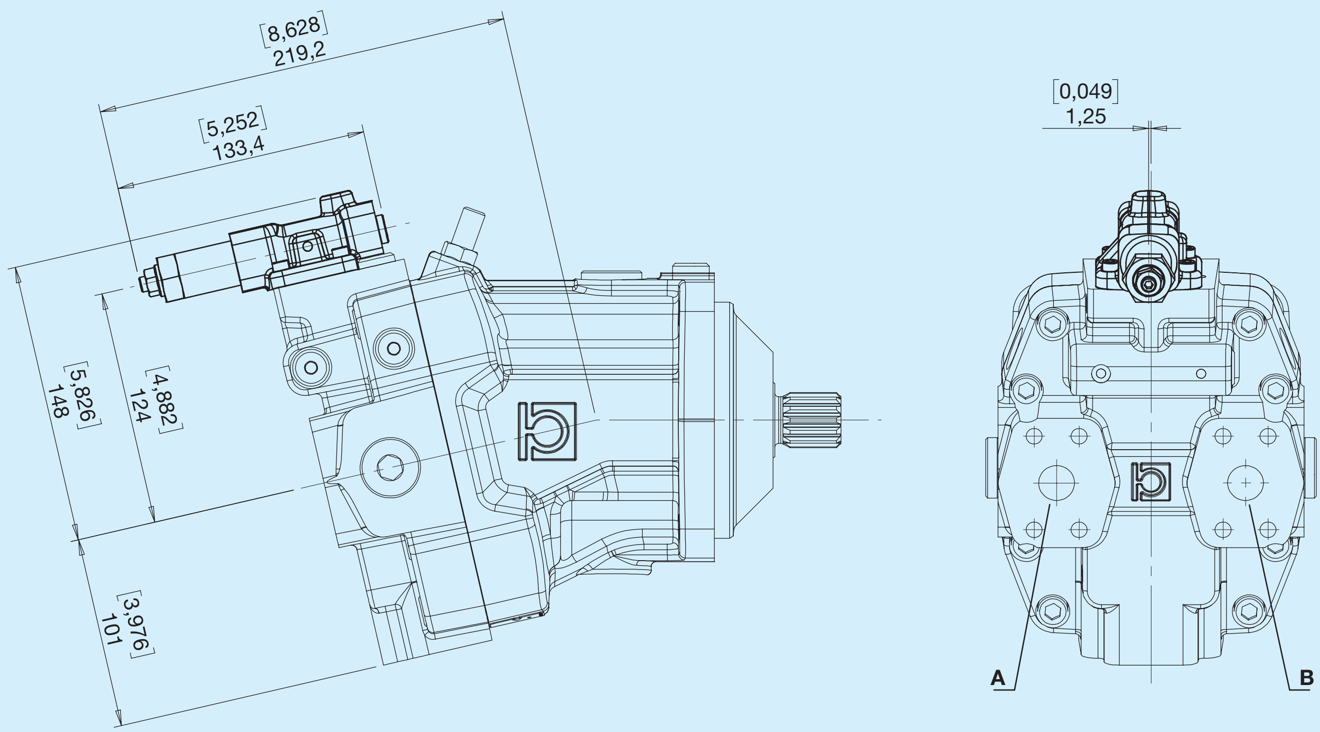
A,B - Use
L1, L2 - Drain port

J Opposite sideways with rotated valve



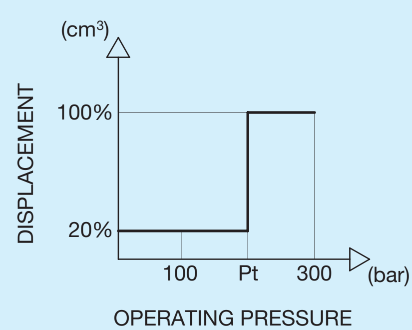
A,B - Use
L1, L2 - Drain port

A Hydraulic automatic, ON/OFF



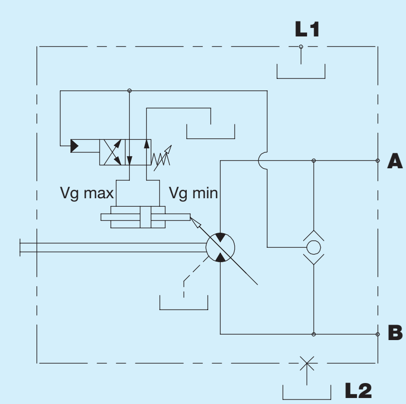
Inlet	Rotation
Right	Left
Right	Right

Pilot

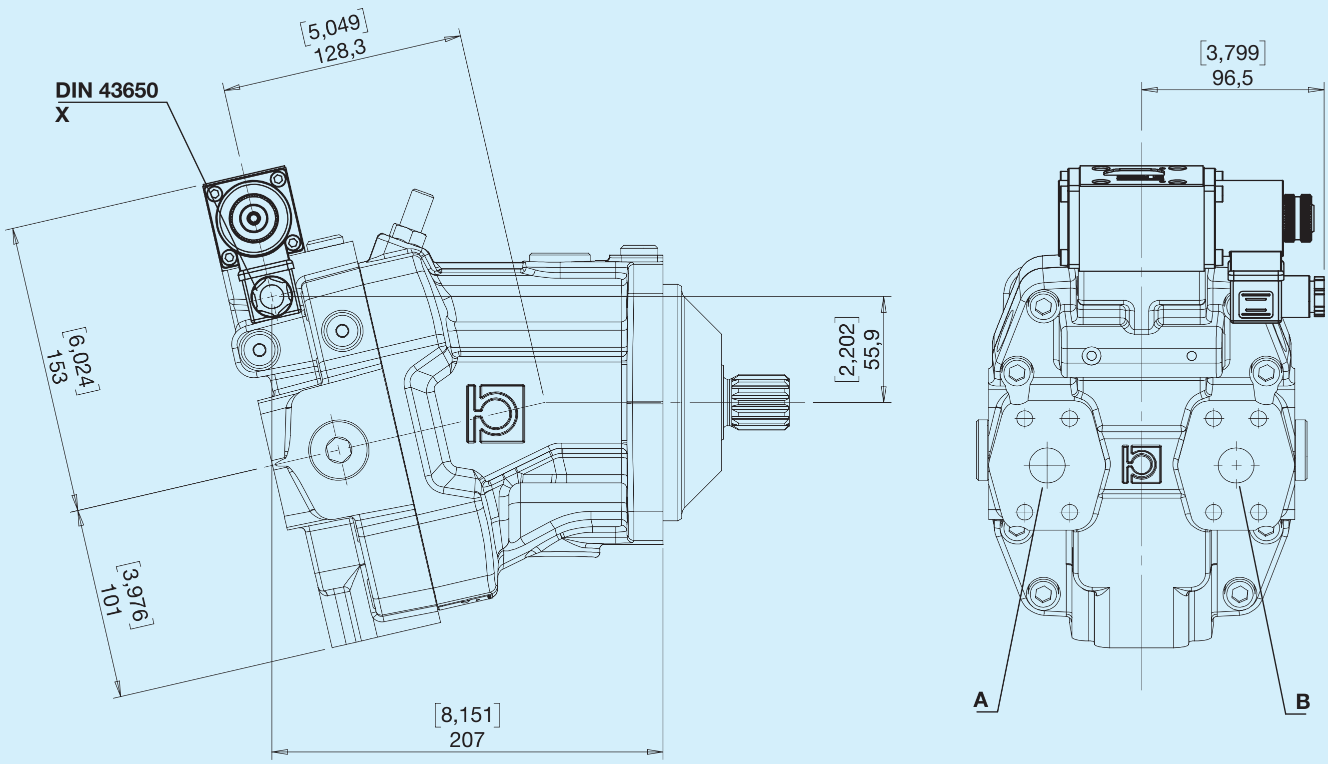


Pt - Calibration pressure
(according to customer
specifications)

Hydraulic diagram

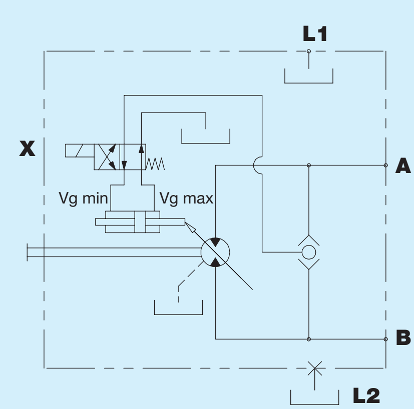


E Electric 2-position 12V



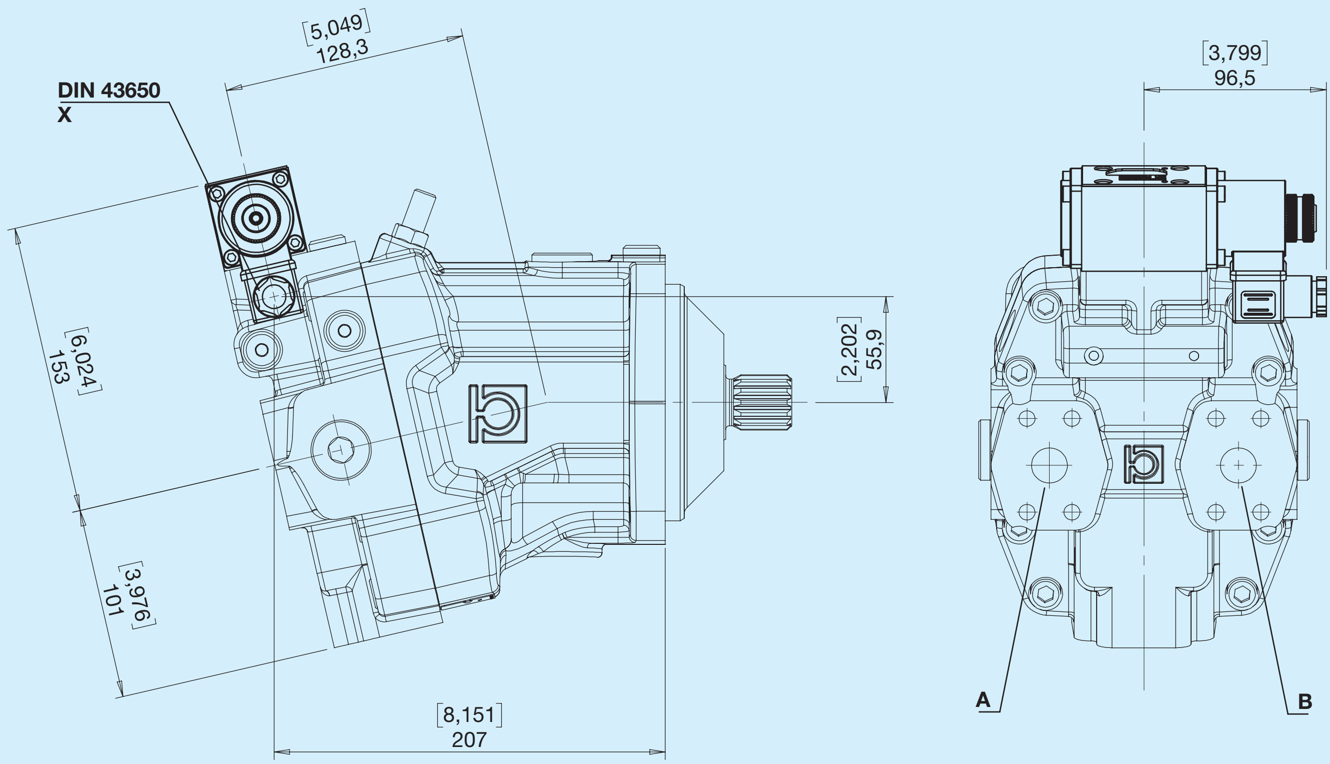
X - Solenoid valve available on request with DEUTSCH DT04-2P connectors

Hydraulic diagram



Inlet	Rotation
Right	Left
Right	Right

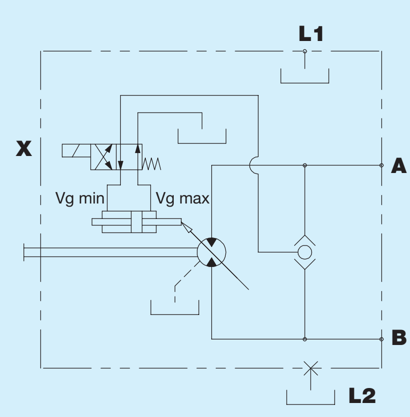
F Electric 2-position 24V



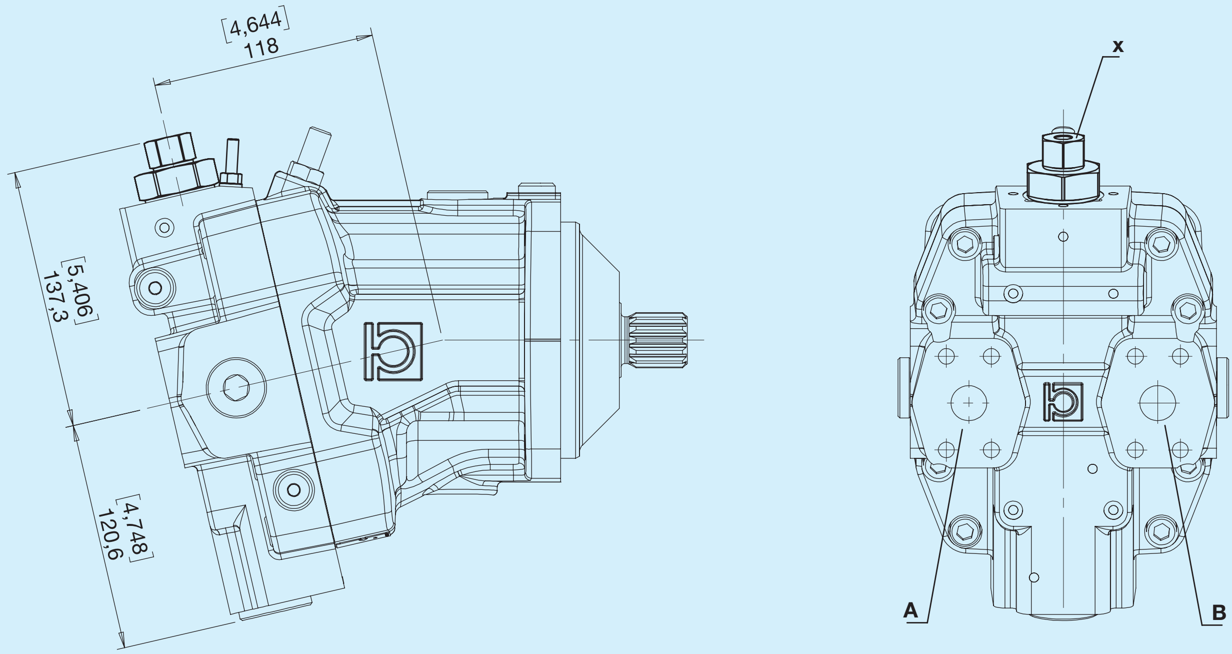
X - Solenoid valve available on request with DEUTSCH DT04-2P connectors

Inlet	Rotation
Right	Left
Right	Right

Hydraulic diagram



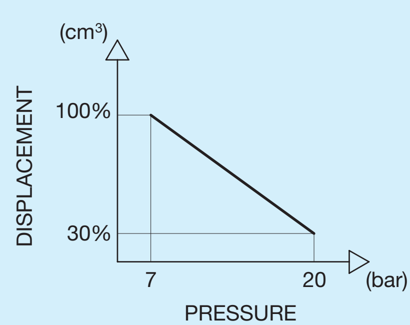
G Proportional hydraulic



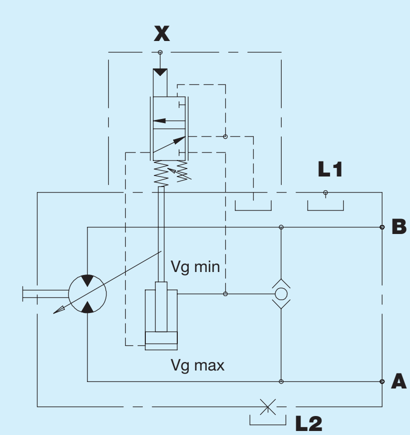
X - Pilot G1/8

Inlet	Rotation
Right	Left
Right	Right

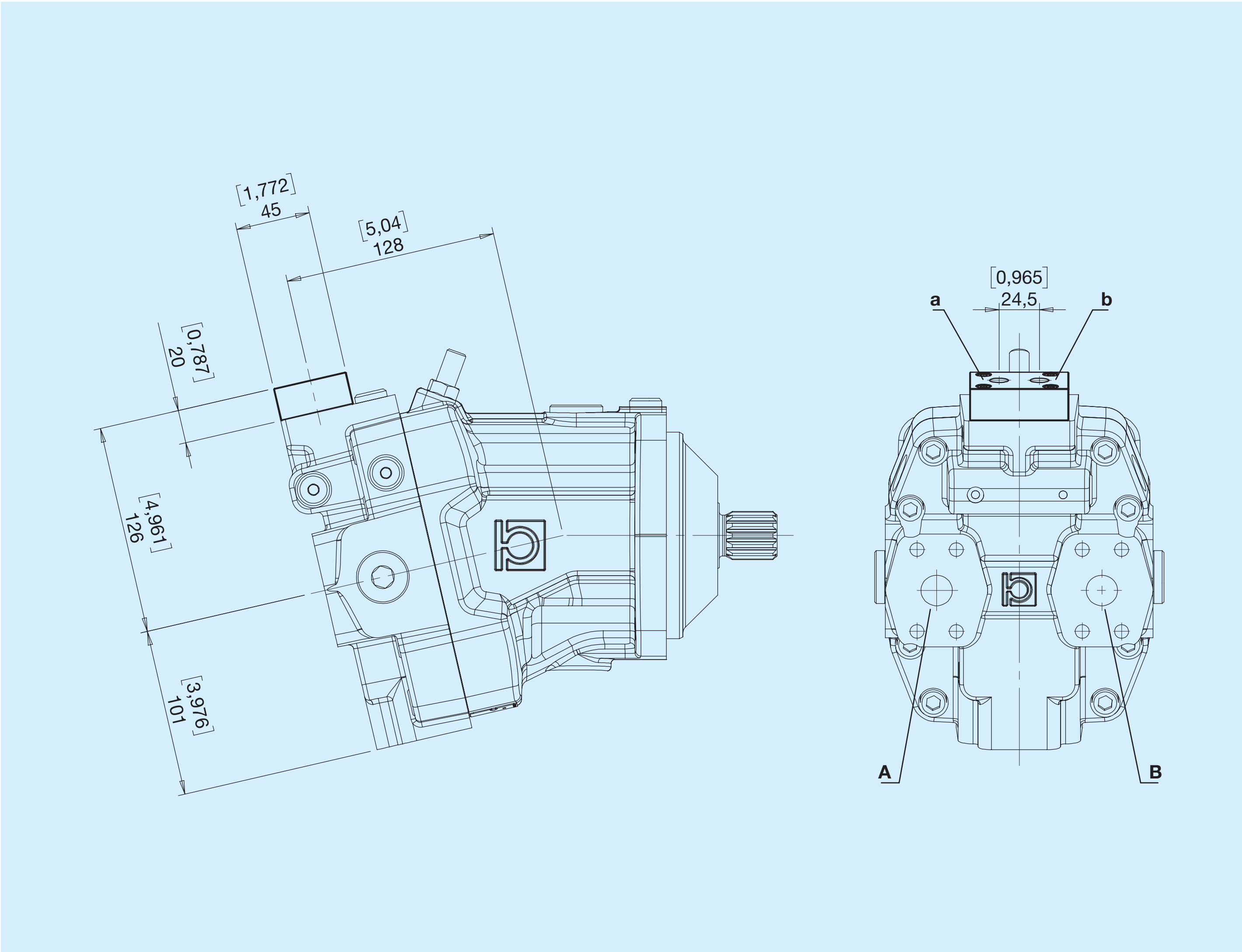
Pilot



Hydraulic diagram

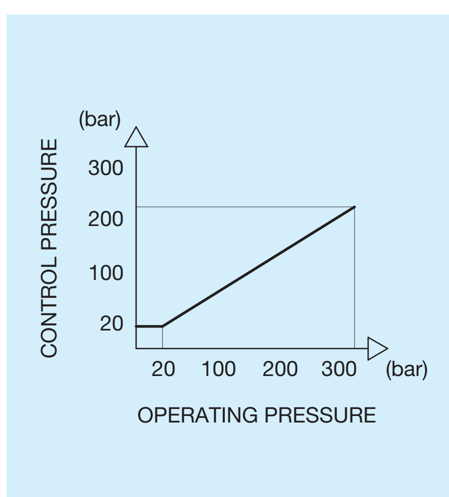


H Direct hydraulic, 2-position

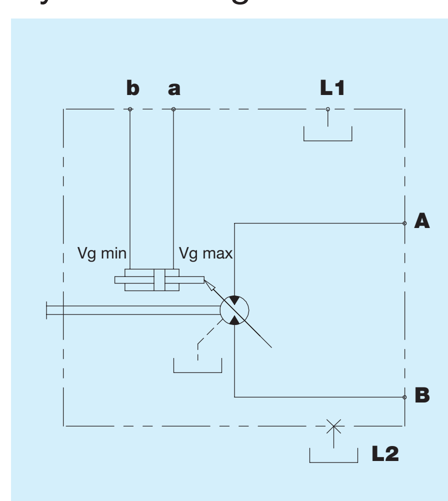


Inlet	Rotation
Right	Left
Right	Right

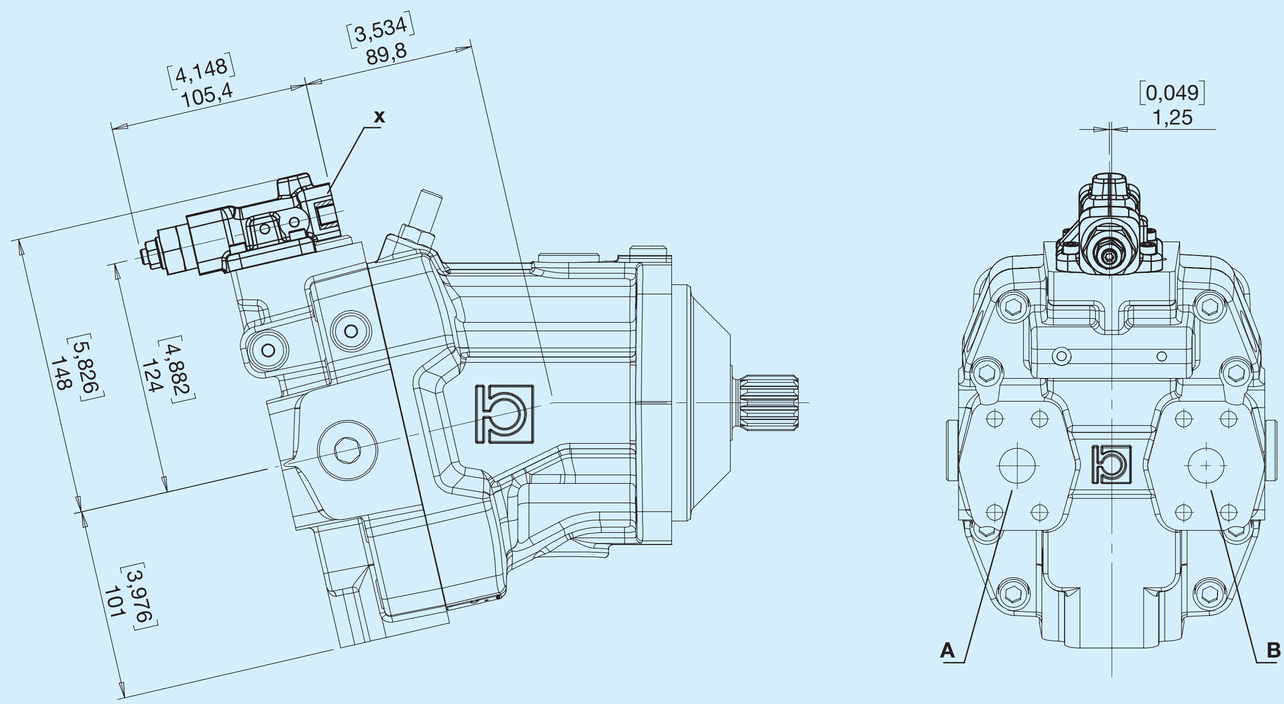
Pilot



Hydraulic diagram



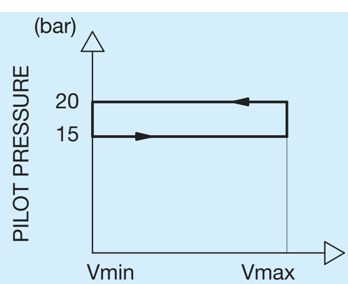
K Hydraulic, 2-position, low pressure



X - Pilot G1/8

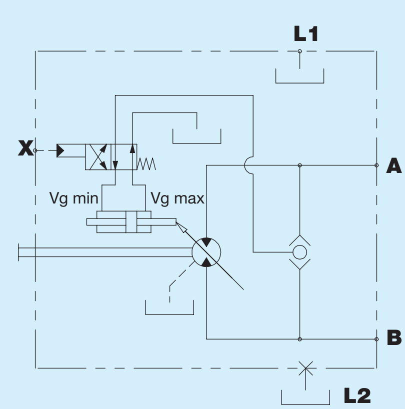
Inlet	Rotation
Right	Left
Right	Right

Diagram

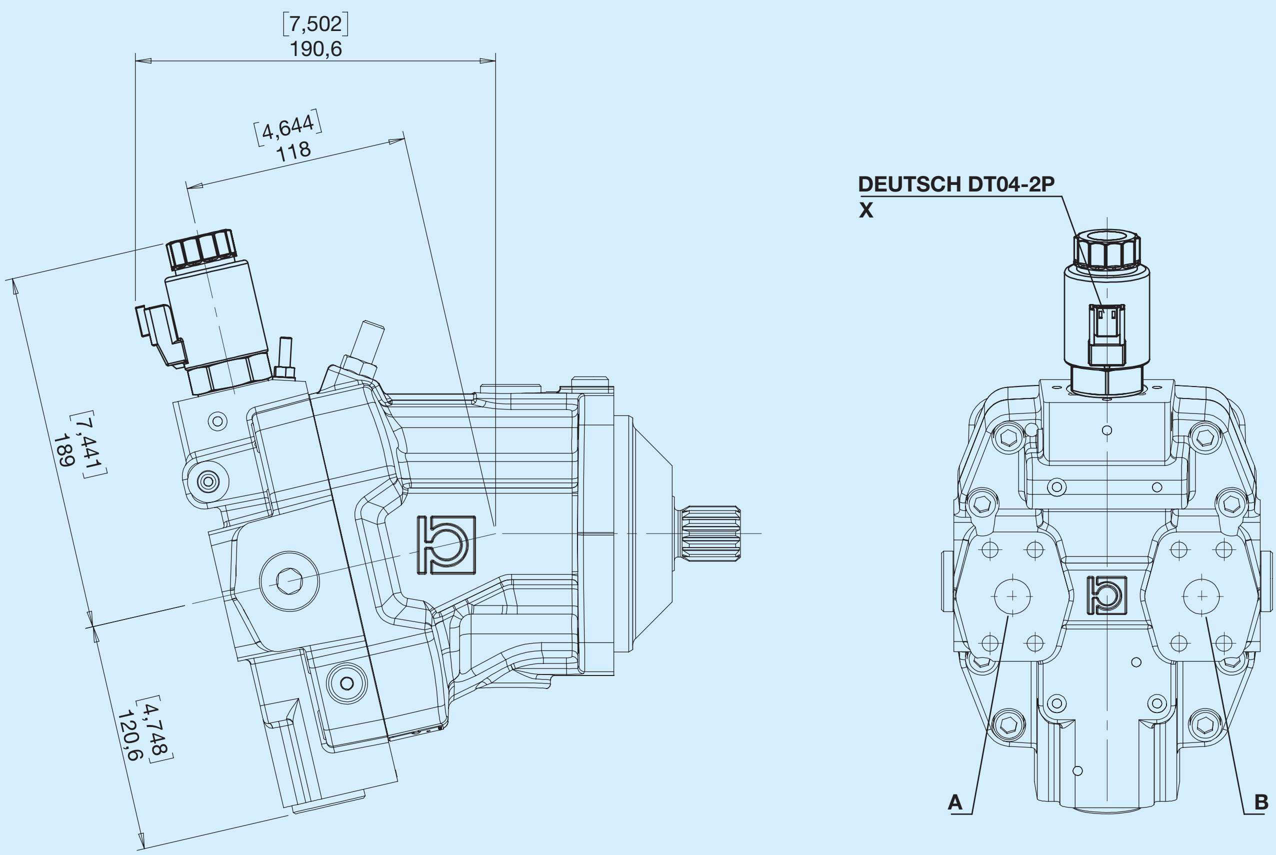


The motor is normally at maximum displacement. By applying external pressure to the pilot valve, the motor switches to minimum displacement. For correct displacement variation, observe the pilot pressure values shown in the diagram.

Hydraulic diagram



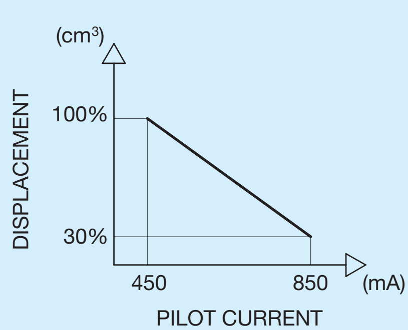
O Electronic proportional feedback control 12V



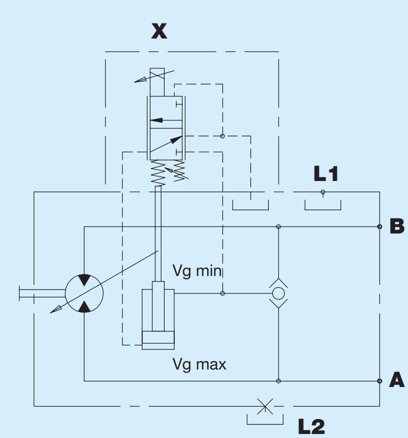
X - Solenoid valve

Inlet	Rotation
Right	Left
Right	Right

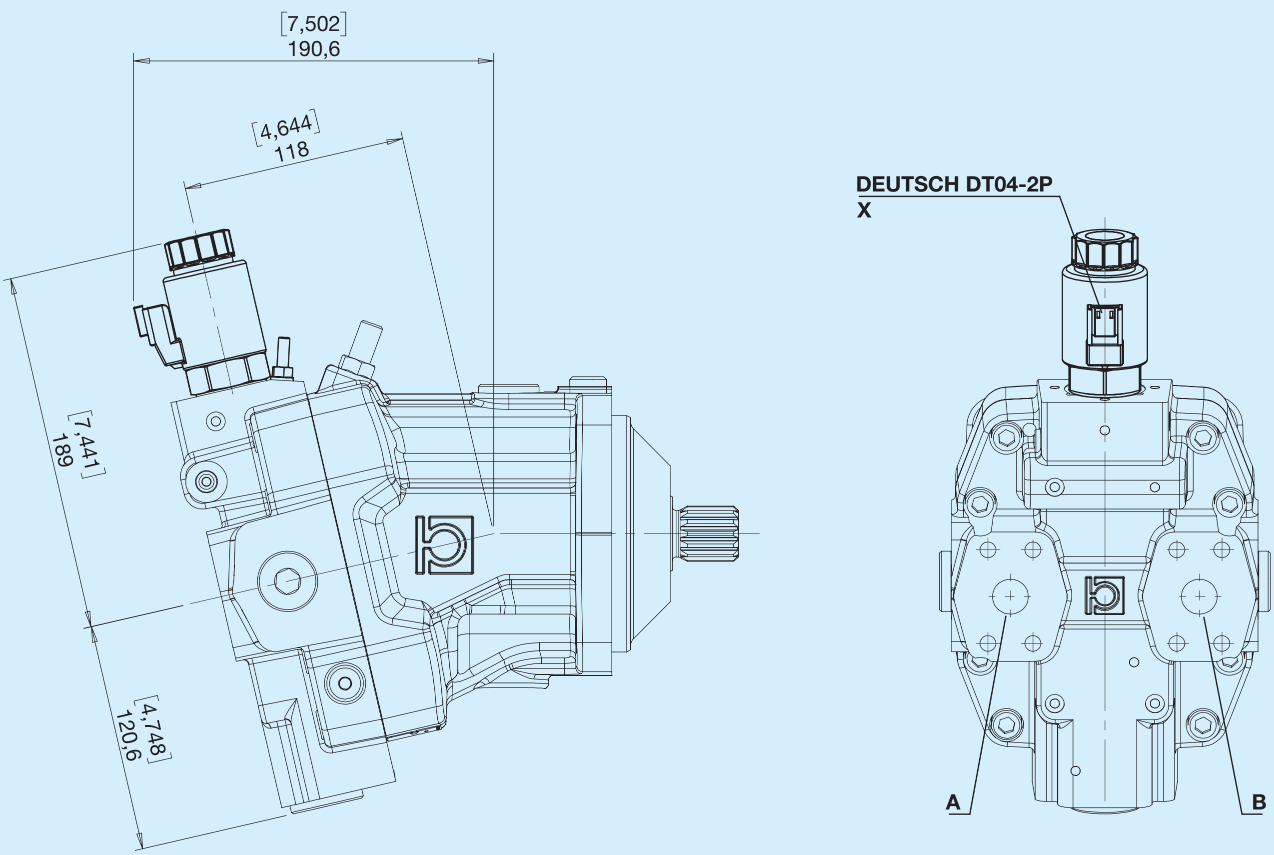
Pilot



Hydraulic diagram



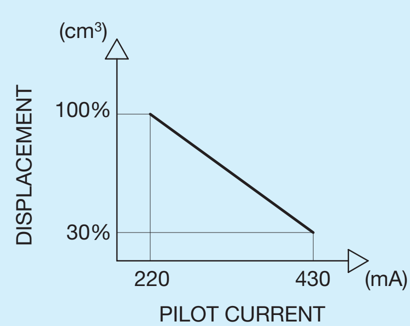
V Electronic proportional feedback control 24V



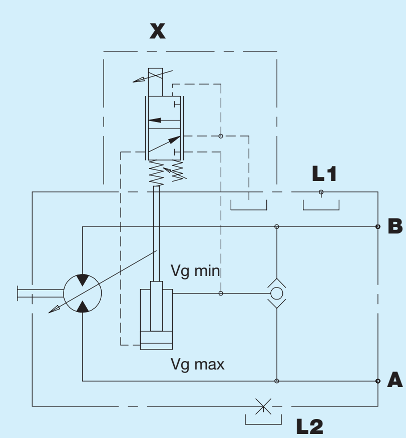
X - Solenoid valve

Inlet	Rotation
Right	Left
Right	Right

Pilot

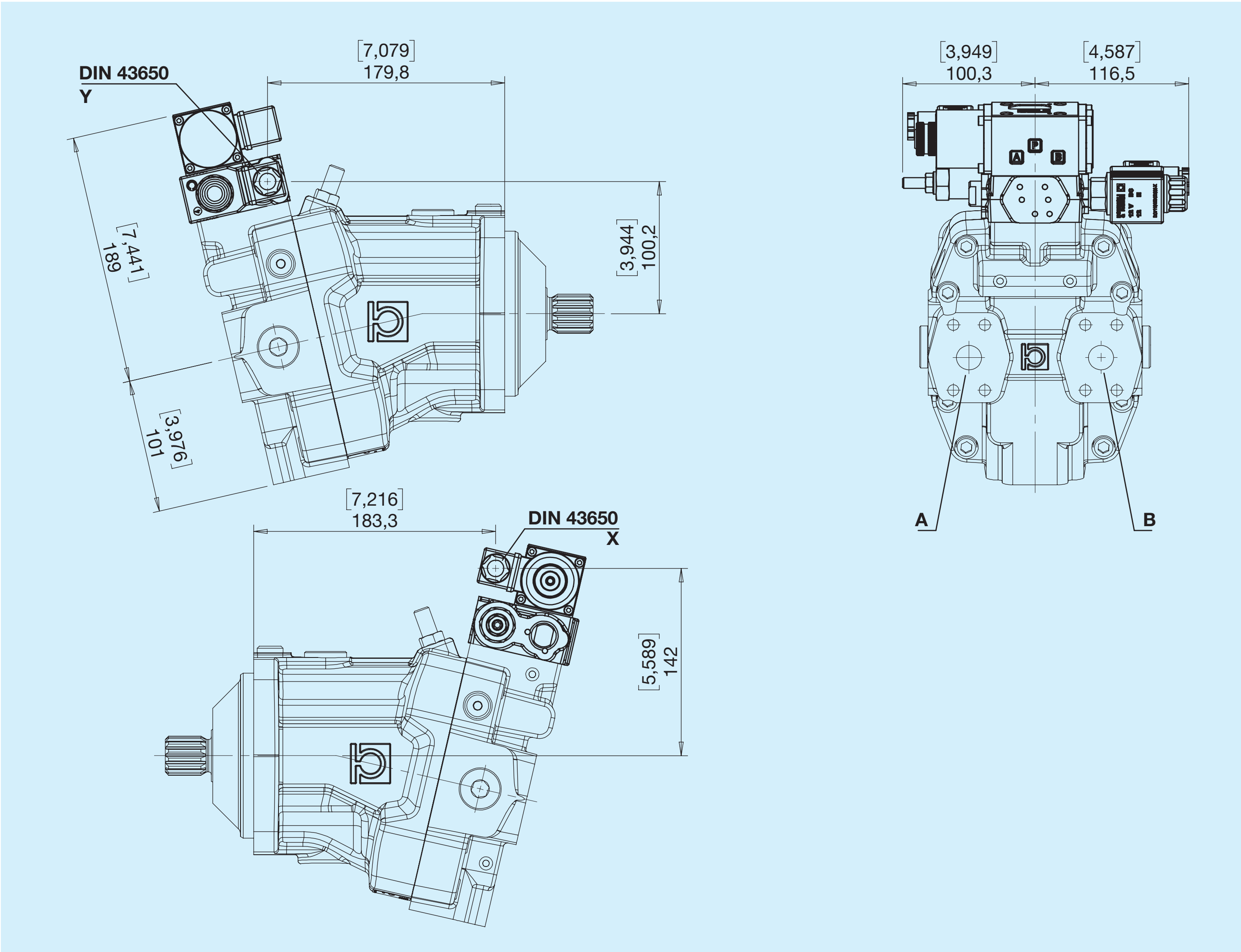


Hydraulic diagram



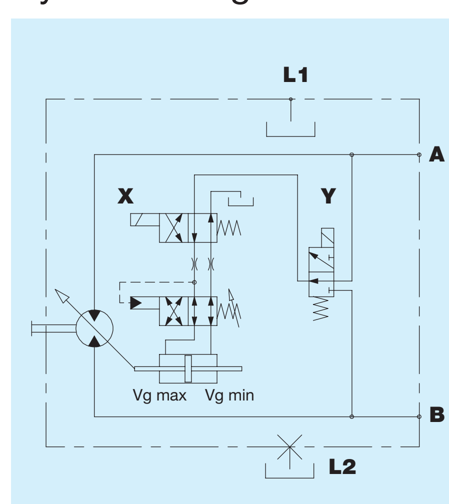
BONDIOLI & PAVESI HP Hydraulic

R Electric ON/OFF with pressure override and channel selector

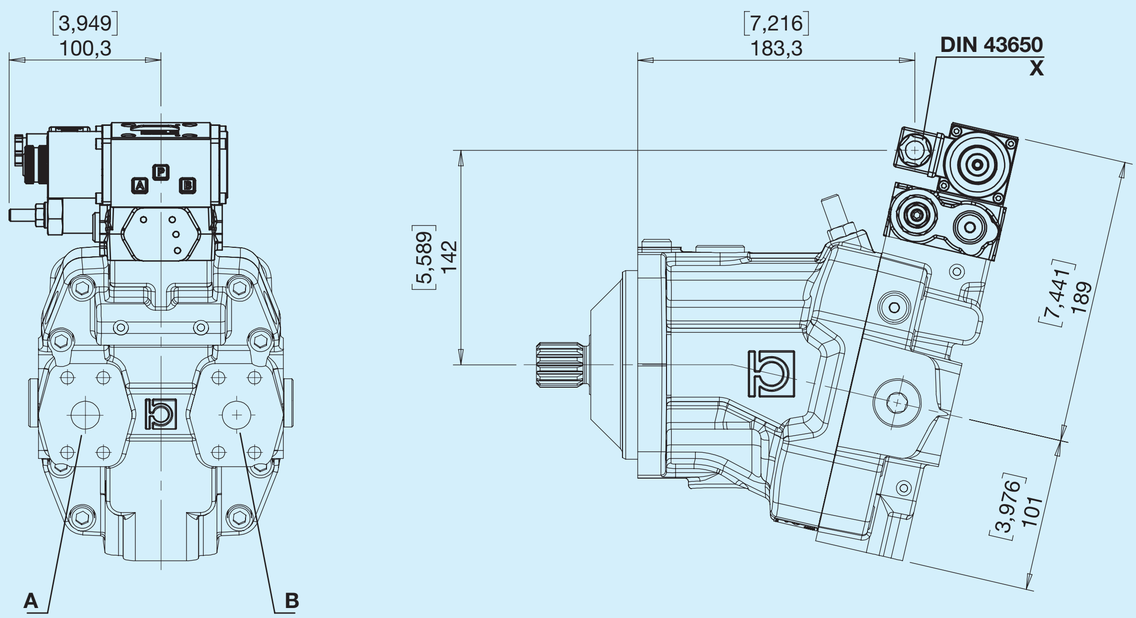


Inlet	Rotation
Right	Left
Right	Right

Hydraulic diagram

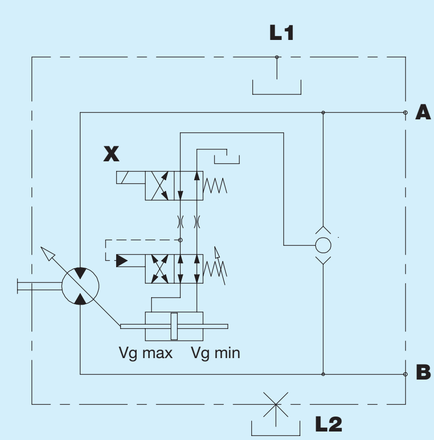


U Electric ON/OFF with pressure override

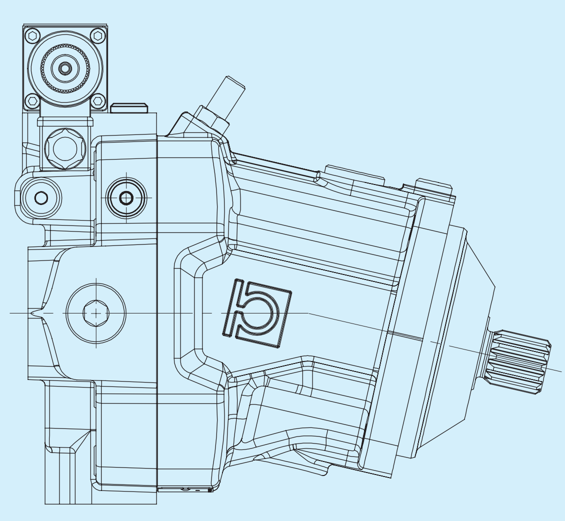


Inlet	Rotation
Right	Left
Right	Right

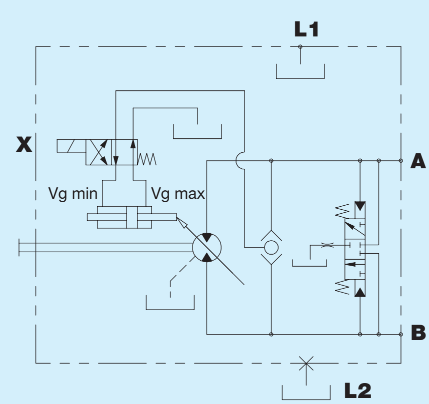
Hydraulic diagram



V Flushing valve (5-7 l/min)



Hydraulic diagram



HPBA 060-078	1	2	3	4	5	6	7	8	9	10	11	12	13	14

1 2 3 — Standard displacement

060		**078**	

4 5 — Minimum displacement

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6 — Flanges

I	ISO 4 holes standard	**P**	ISO 2 holes cartridge centring

7 — Shafts

C	DIN 5480 W35x2x30x16	**1**	DIN 5480 W30x2x30x14

8 — Type of ports

G	Gas	**U**	UNF	**N**	Gas-SAE inlet/outlet	**M**	UNF-SAE inlet/outlet

9 — Position of ports

P	Rear	**L**	Opposite sideways	**Y**	Rear with rotated valve (not available for O - V - G controls)	**J**	Opposite sideways with rotated valve (not available for O - V - G controls)

10 — Controls

A	Hydraulic automatic, ON/OFF	**G**	Proportional hydraulic	**O**	Electronic proportional feedback control 12V	**U**	Electric ON/OFF with pressure override
E	Electric 2-position 12V	**H**	Direct hydraulic, 2-position	**V**	Electronic proportional feedback control 24V		
F	Electric 2-position 24V	**K**	Hydraulic, 2-position, low pressure	**R**	Electric ON/OFF with pressure override and channel selector		

11 — Accessories

0	No option	**V**	Flushing valve	**V**	Flushing valve

12 13 14 — Special versions

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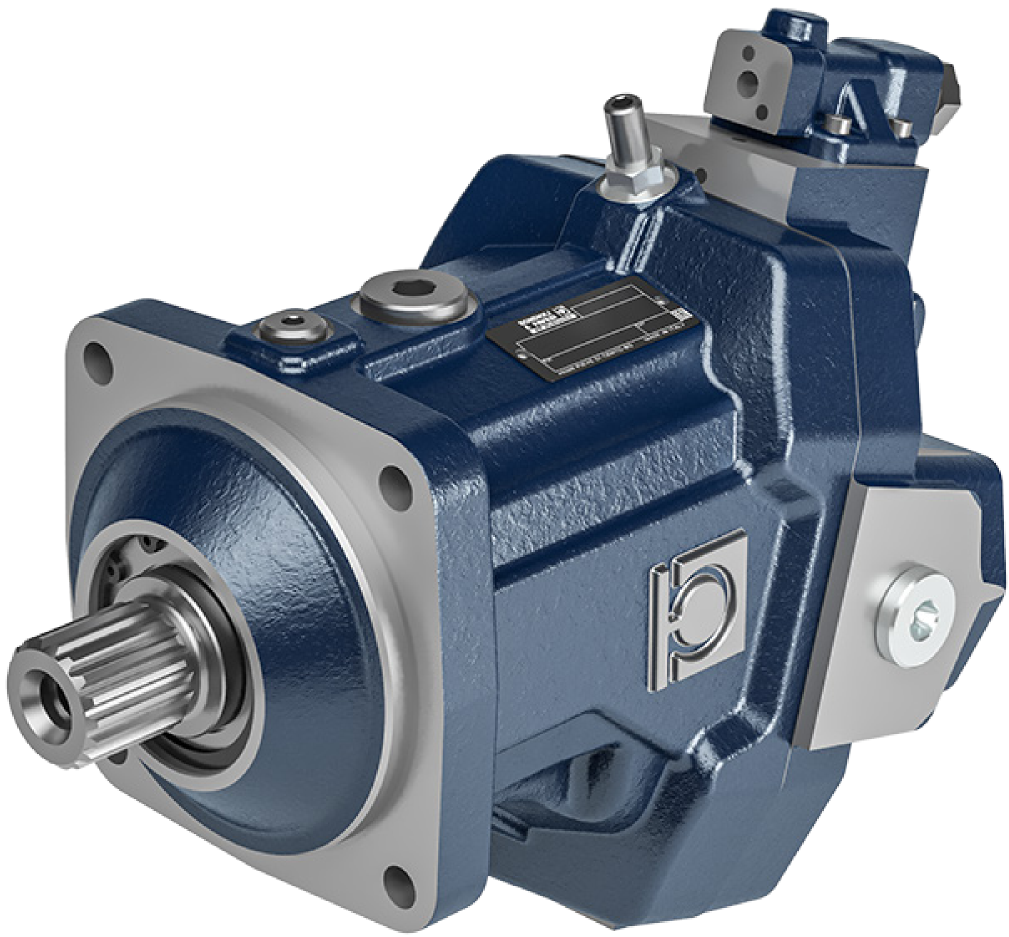
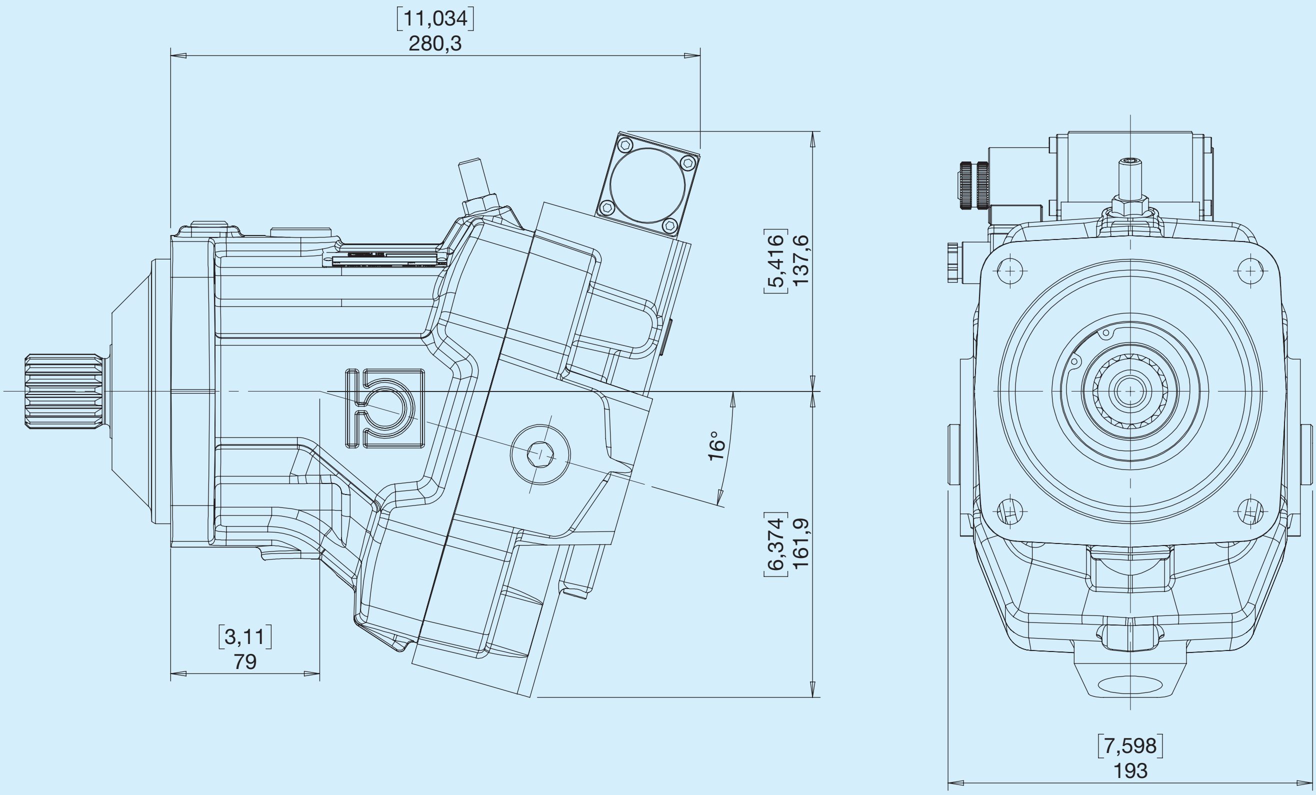
BONDIOLI & PAVESI HP Hydraulic

Variable-displacement motors HPBA 080-108



Before use, carefully read the GENERAL INSTRUCTIONS FOR USE OF CLOSED CIRCUIT AXIAL PISTON PUMPS AND MOTORS.

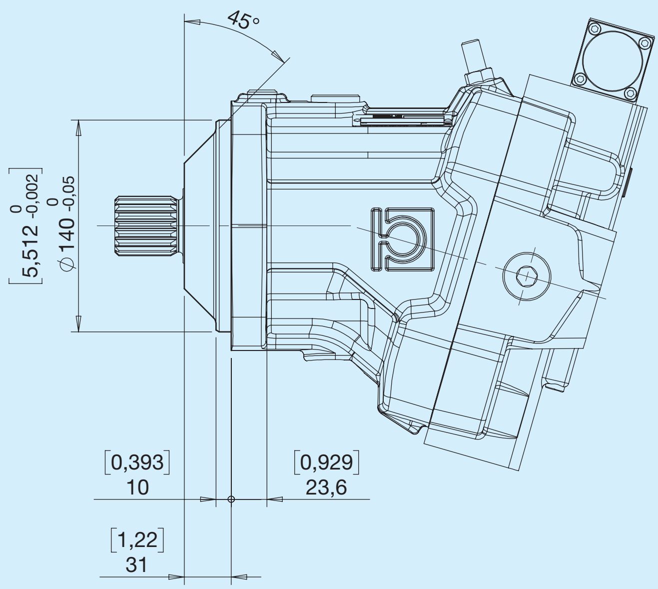
Dimensions and technical data

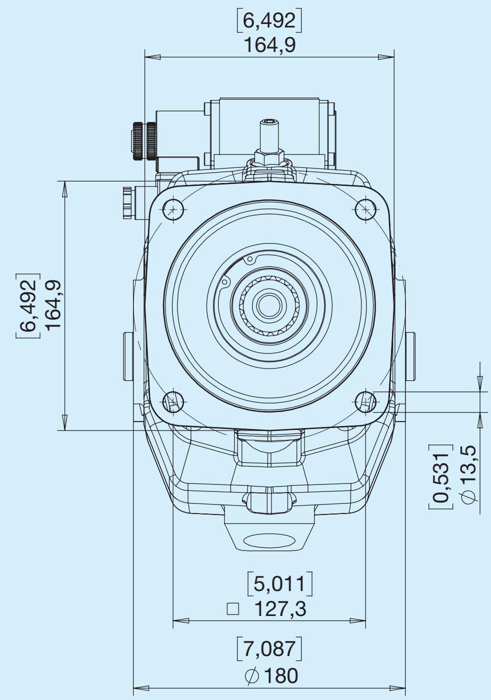


HPBA	Theoretical displacement		Swash plate	Continuous Pressure		Intermittent pressure		Peak pressure		Rotational speed			Weight	
	cm³	in³	°	bar	psi	bar	psi	bar	psi	MAX (max V) min⁻¹	MAX (min V) min⁻¹	MIN min⁻¹	kg	lbs
080	80	4.88	25	350	5075	400	5800	450	6525	3200	**5000**	500	38	84
108	108	6.59	25	350	5075	400	5800	450	6525	3200	**5000**	500	38	84

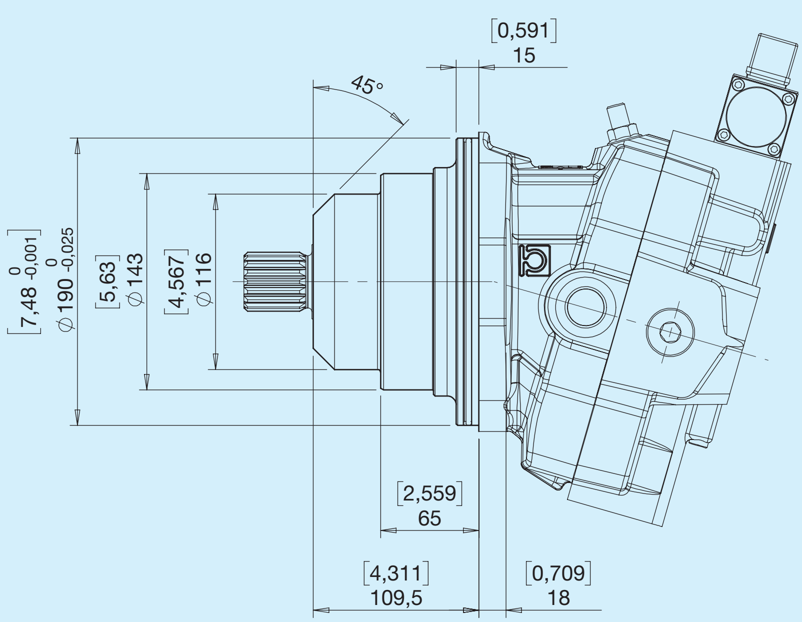
BONDIOLI & PAVESI HP Hydraulic

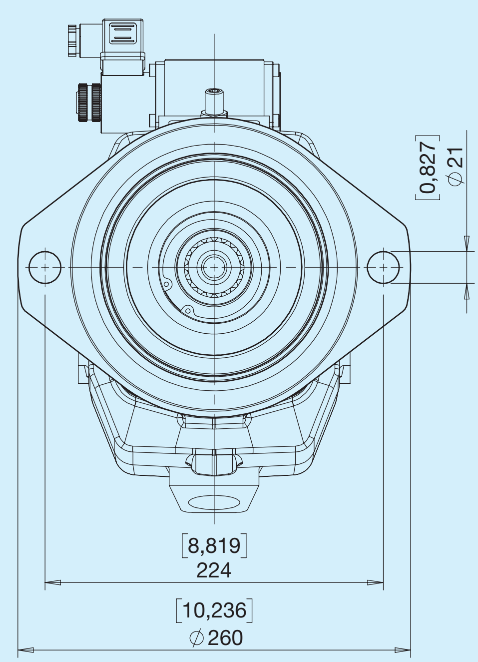
I ISO 4 holes standard



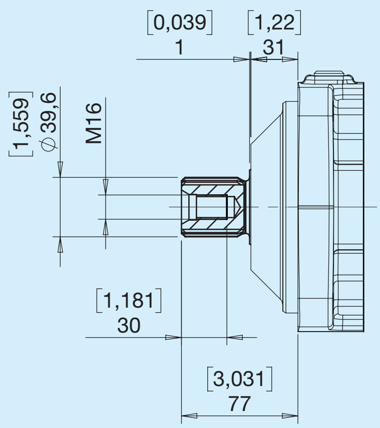


P ISO 2 holes cartridge centring

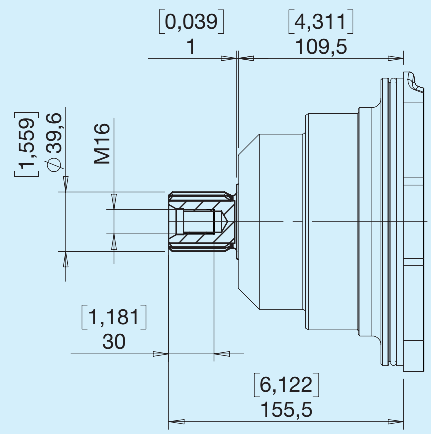




B DIN 5480 W40x2x30x18

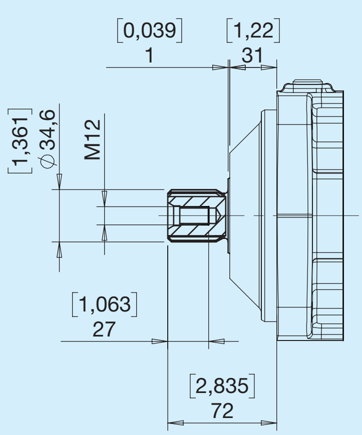


Max. torque 1310 Nm

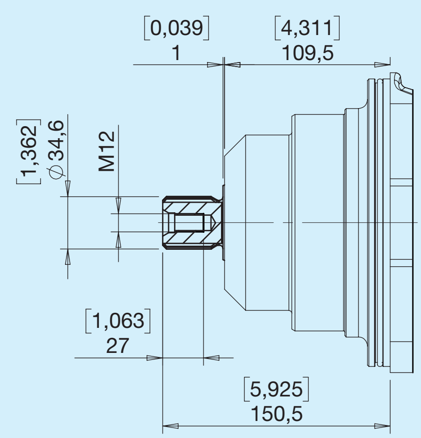


Max. torque 1310 Nm

C DIN 5480 W35x2x30x16

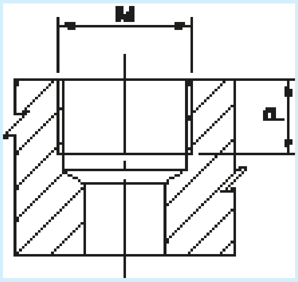


Max. torque 860 Nm



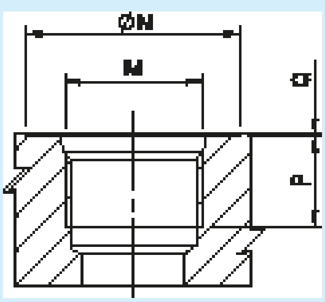
Max. torque 860 Nm

Type G



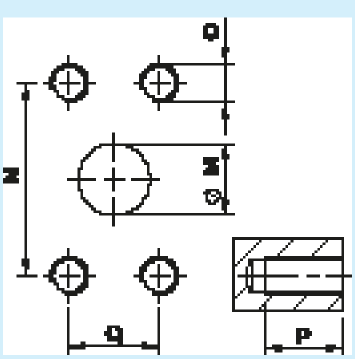
Type	M		P	
		Nm	mm	in
G2	Port ISO 1179-1 - G 1/4	17	8	0.31
G6	Port ISO 1179-1 - G 3/4	90	19	0.75
G7	Port ISO 1179-1 - G 1	160	19	0.75

Type U



Type	Dim.	N		P		Q		M	
		mm	in	mm	in	mm	in		Nm
U2	1/4'	20	0.79	12	0.47	0.3	0.01	Port ISO 11926-1-7/16-20	17
U6	3/4'	41	1.61	20	0.79	0.3	0.01	Port ISO 11926-1-1 1/16-12	90
U7	1'	49	1.93	18	0.70	0.3	0.01	Port ISO 11926-1-1 5/16-12	160

Type N

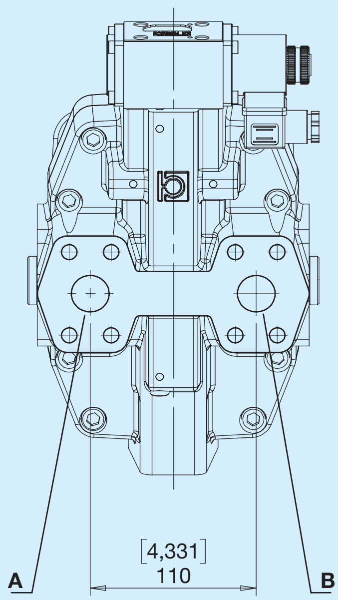


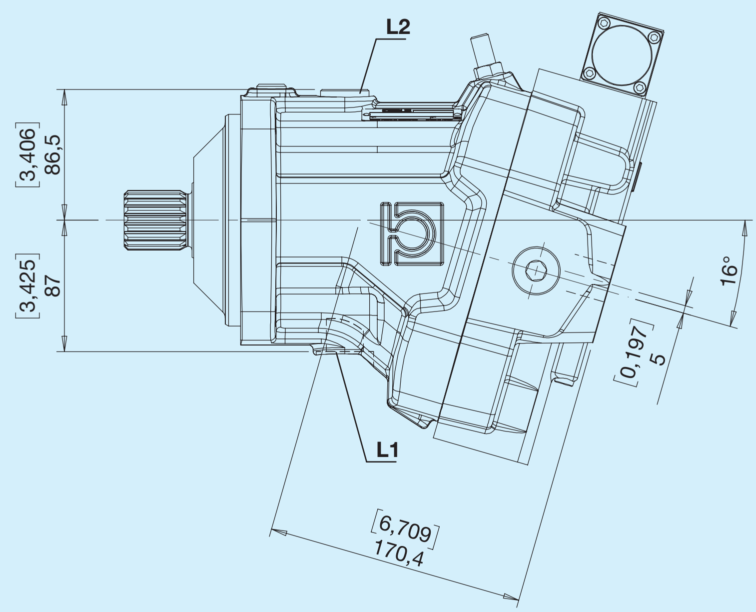
Type	M		N		Q		P		O	
	mm	in	mm	in	mm	in	mm	in		Nm
N7	25	1	57.15	2.25	27.76	1.09	20	0.79	M12	70

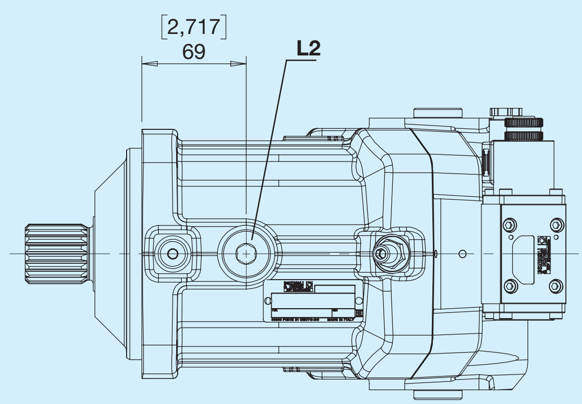
Combinations

Type	Inlet/outlet **A-B**	Drain port **L1-L2**	Pilot **a-b-x**
G	G6	G6	G6
U	U6	U6	U6
N	N7	G6	G2
M	N7	U6	U2

P Rear

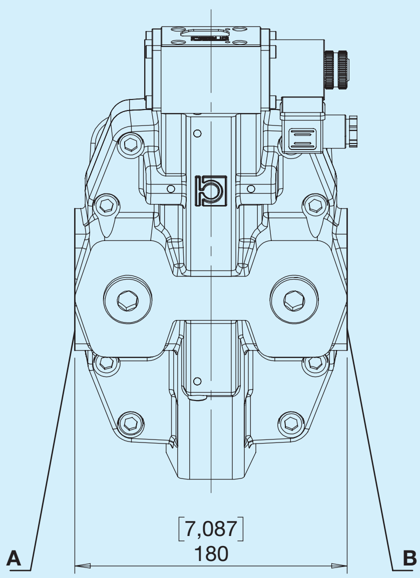


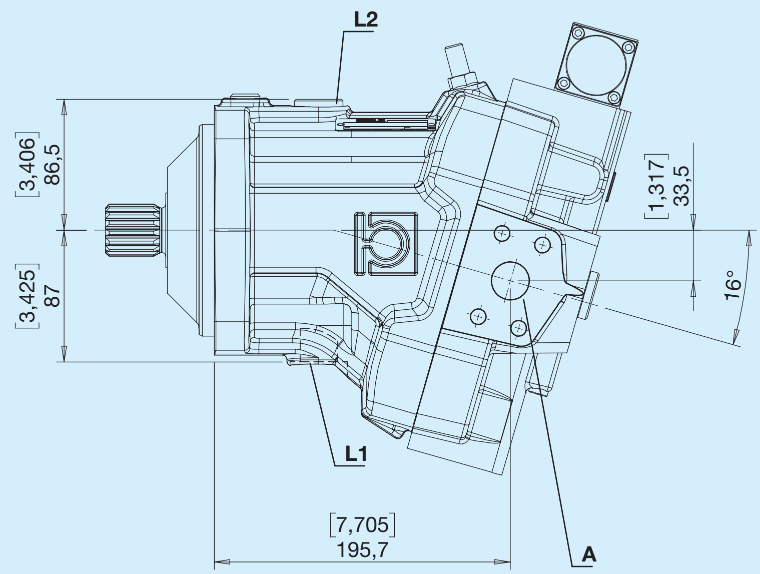


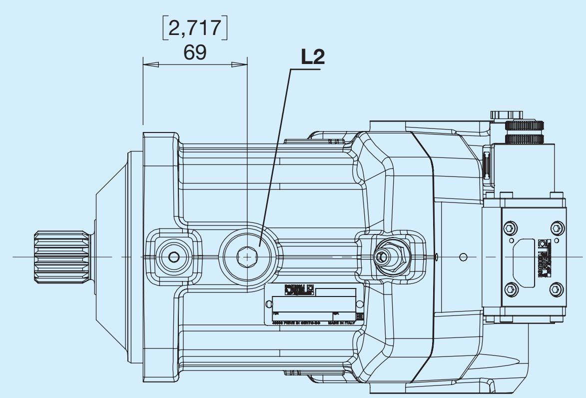


A,B - Use
L1, L2 - Drain port

L Opposite sideways

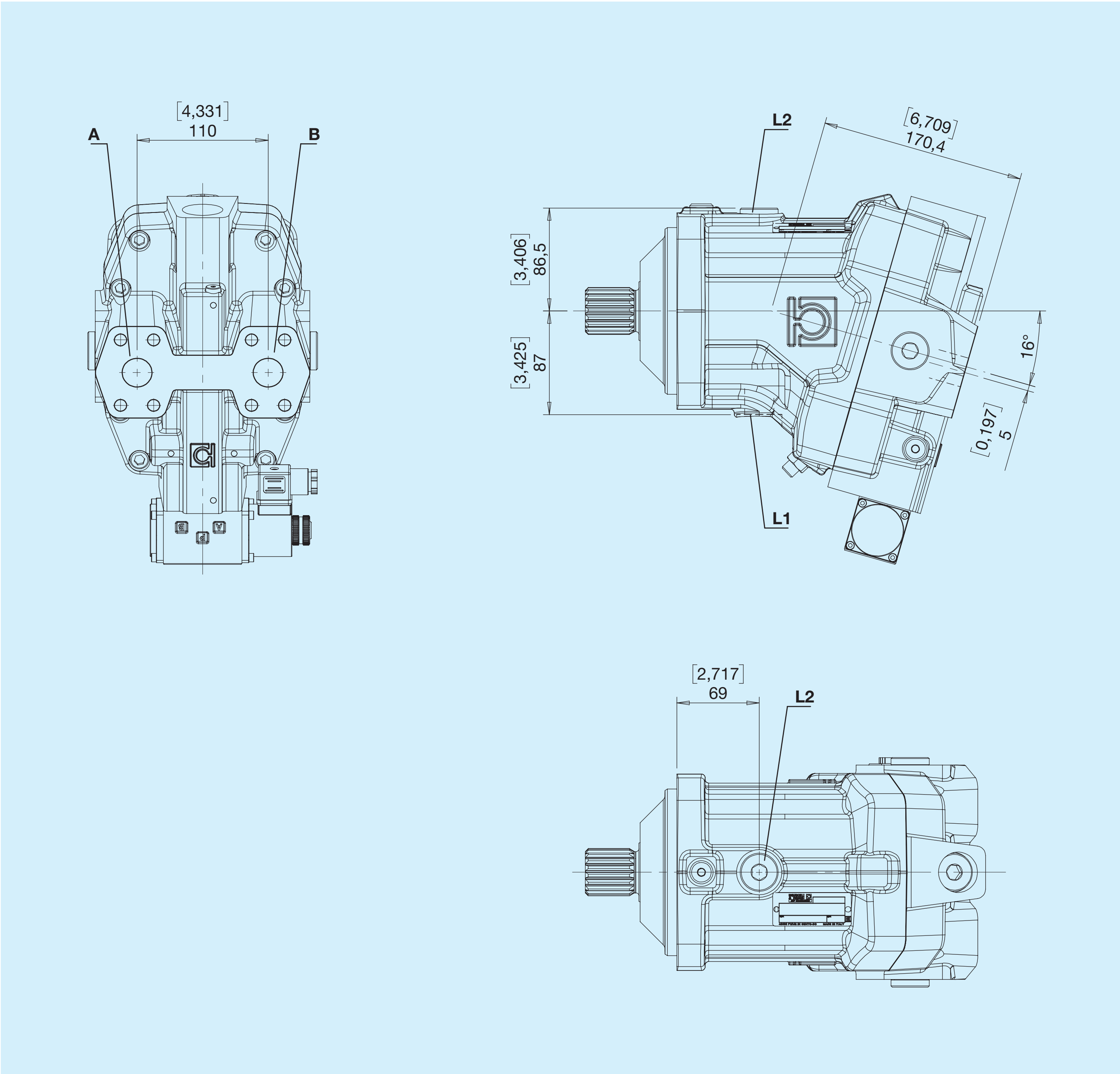






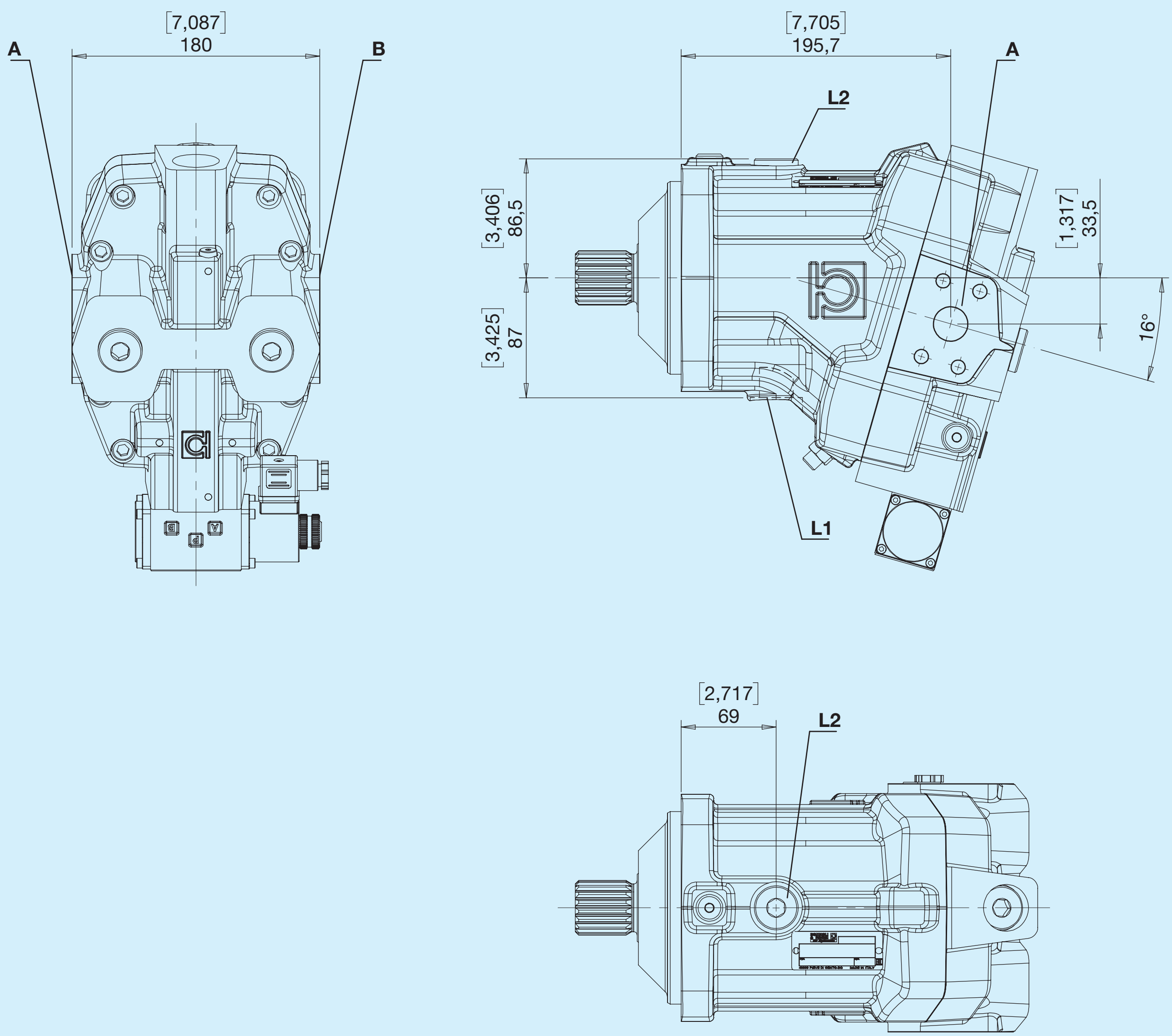
A,B - Use
L1, L2 - Drain port

Y Rear with rotated valve



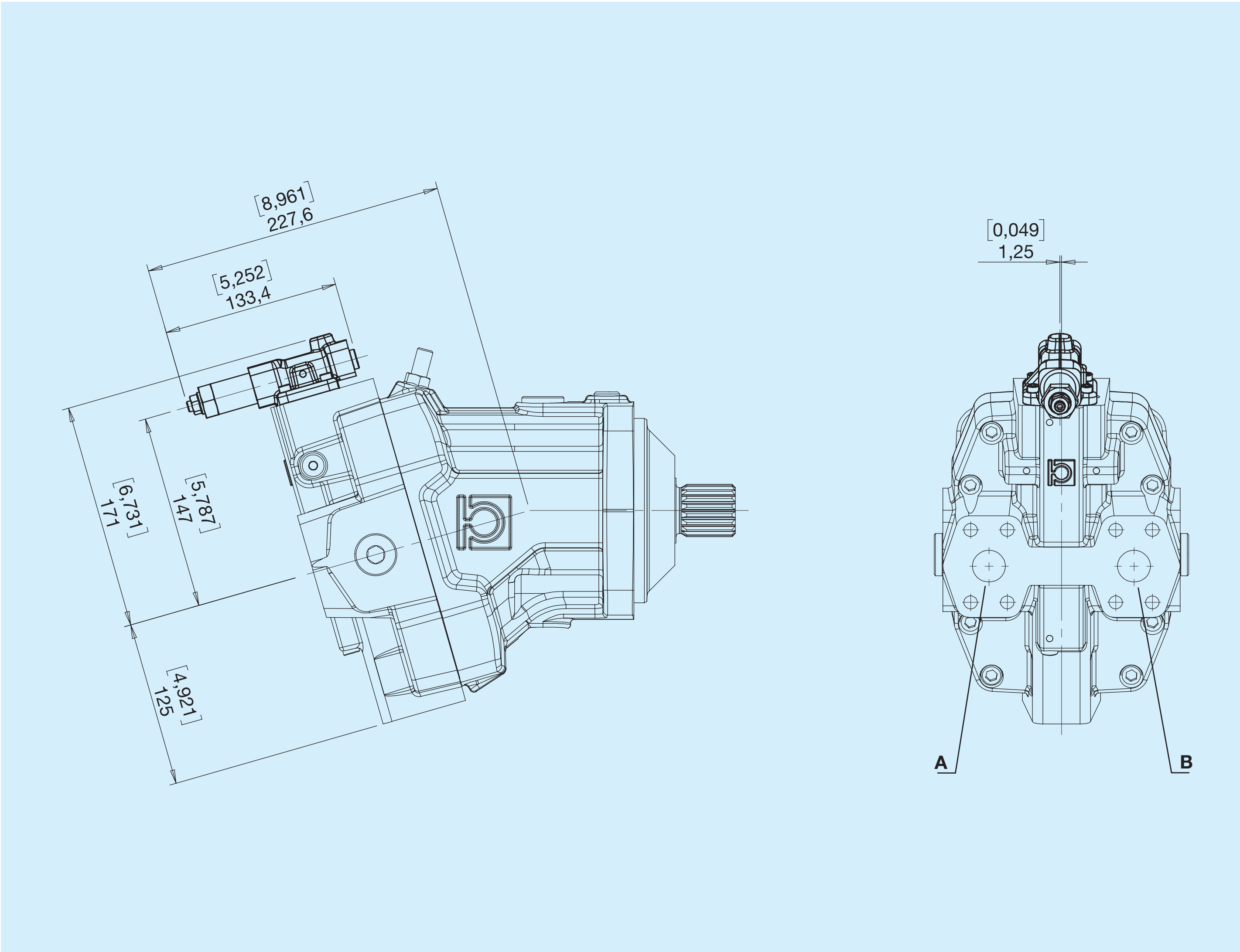
A,B - Use
L1, L2 - Drain port

J Opposite sideways with rotated valve



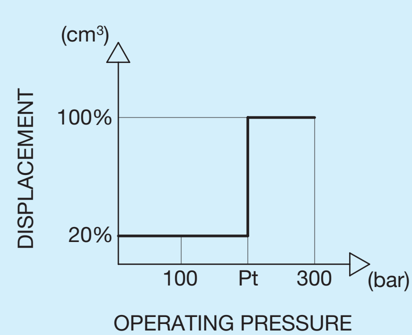
A,B - Use
L1, L2 - Drain port

A Hydraulic automatic, ON/OFF



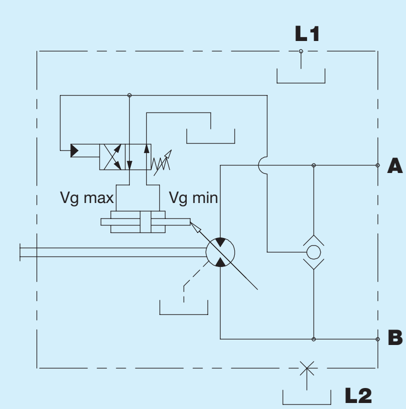
Inlet	Rotation
Right	Left
Right	Right

Pilot

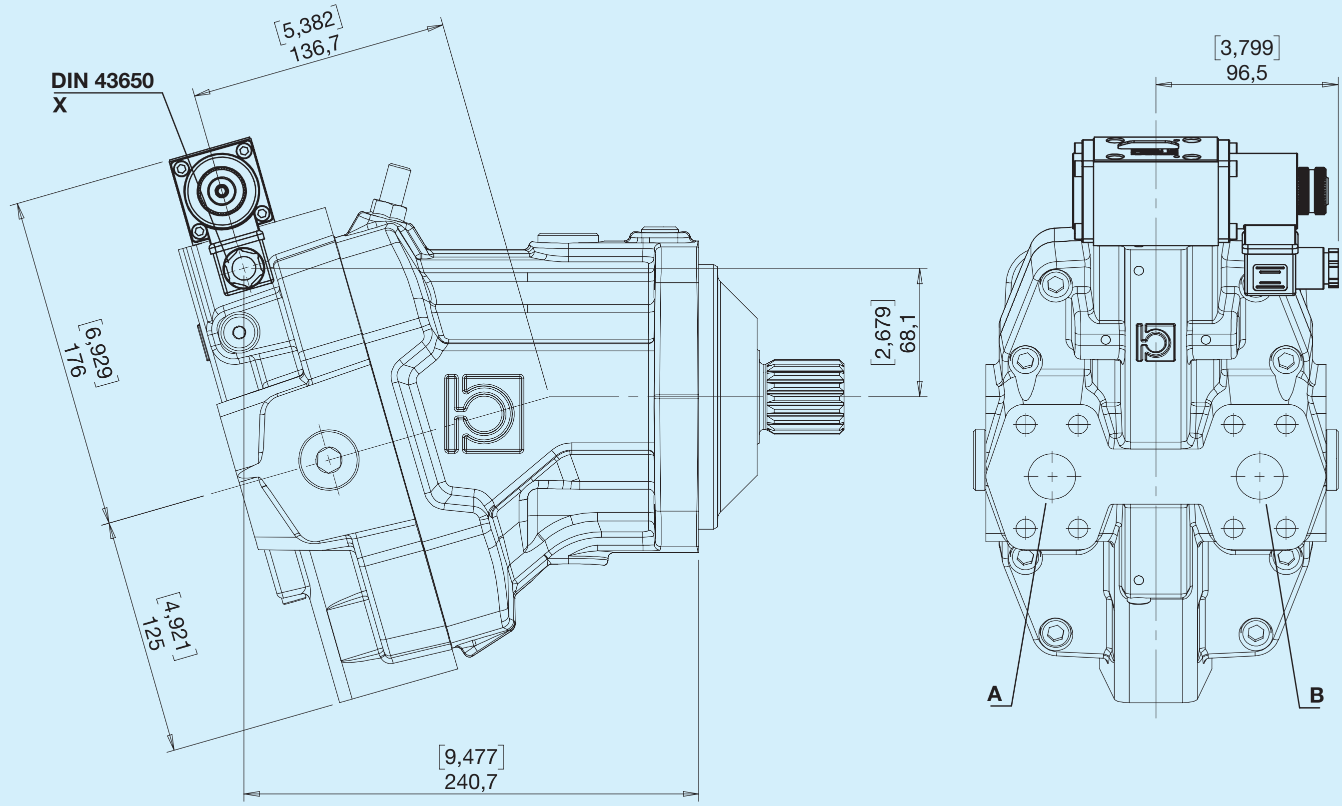


Pt - Calibration pressure (according to customer specifications)

Hydraulic diagram



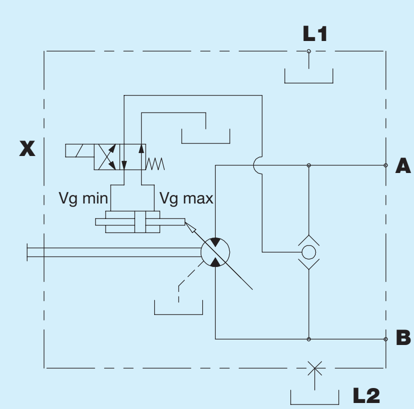
E Electric 2-position 12V



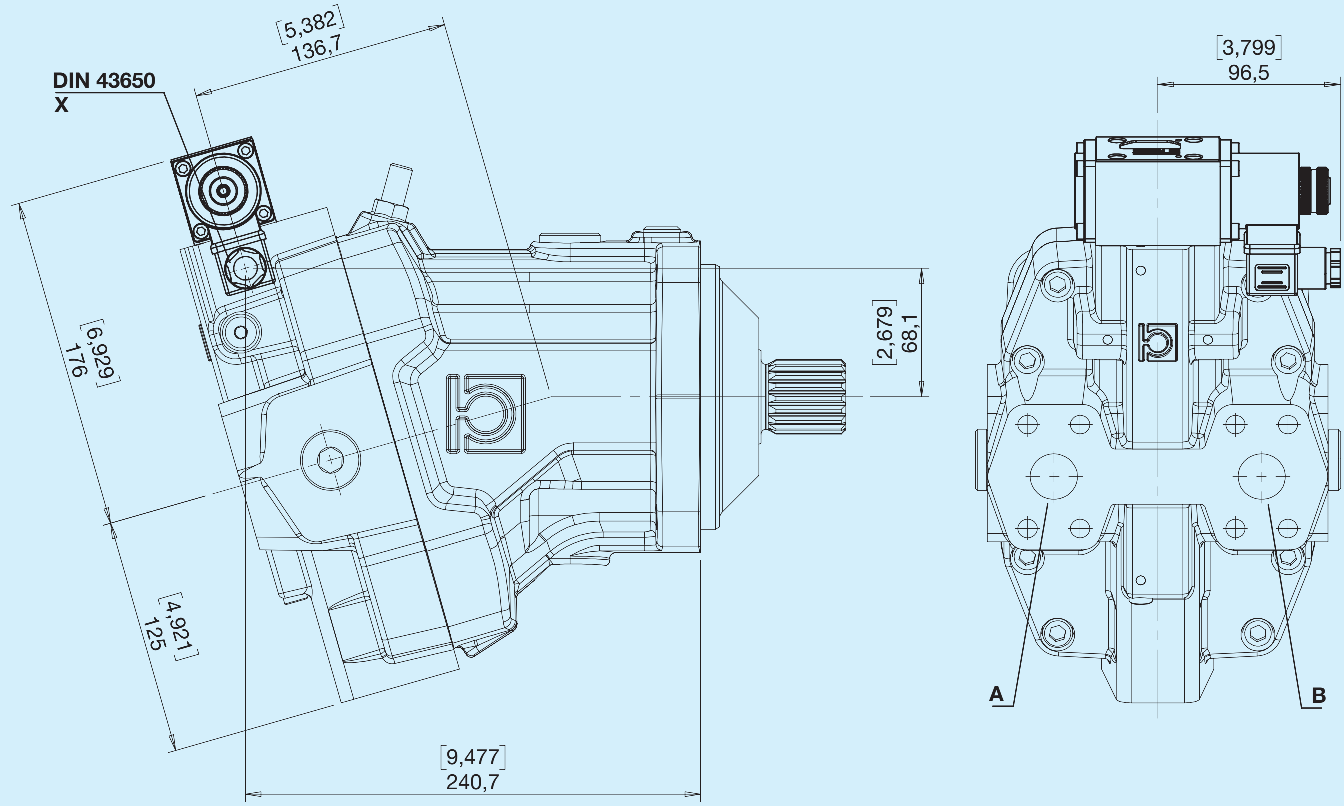
X - Solenoid valve available on request with DEUTSCH DT04-2P connectors

Inlet	Rotation
Right	Left
Right	Right

Hydraulic diagram

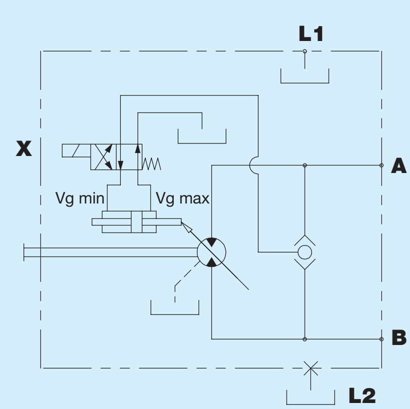


F Electric 2-position 24V



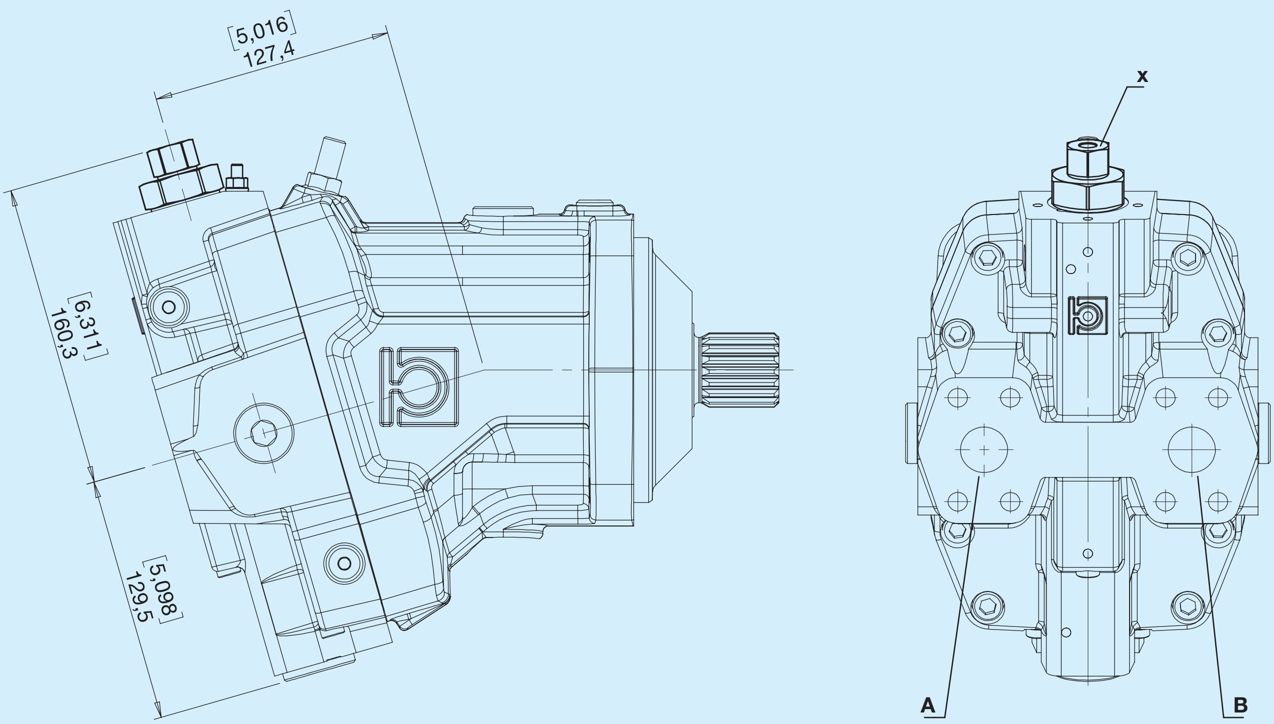
X - Solenoid valve available on request with DEUTSCH DT04-2P connectors

Hydraulic diagram



Inlet	Rotation
Right	Left
Right	Right

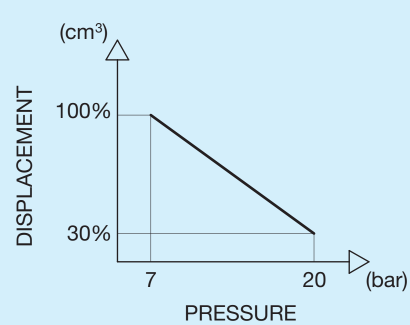
G Proportional hydraulic



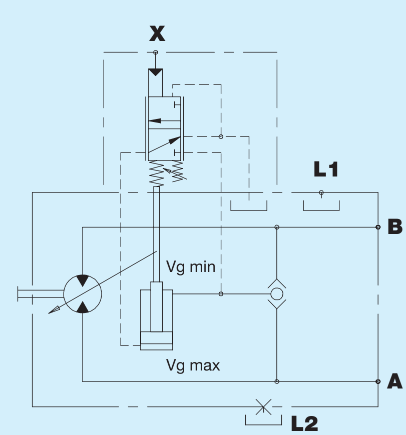
X - Pilot G1/8

Inlet	Rotation
Right	Left
Right	Right

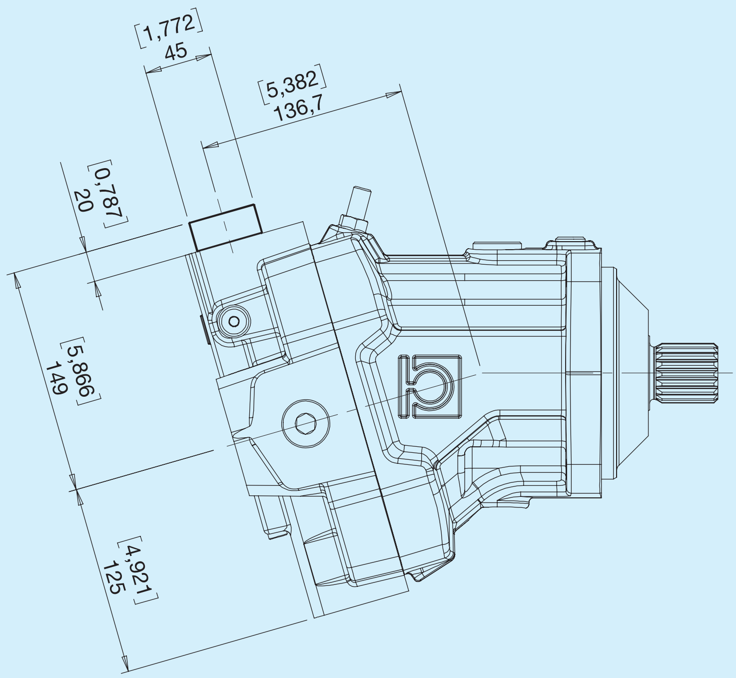
Pilot

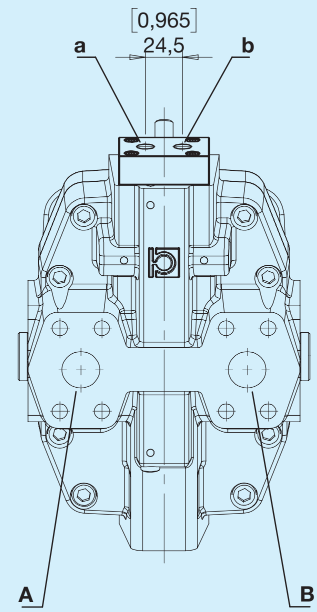


Hydraulic diagram



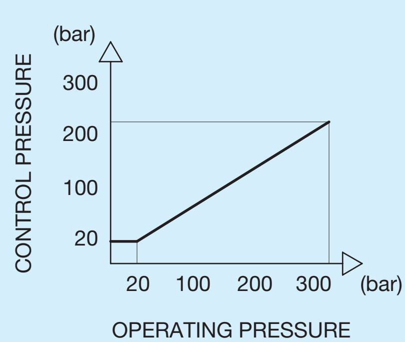
H Direct hydraulic, 2-position



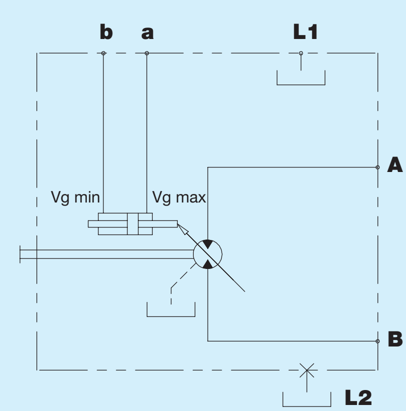


Inlet	Rotation
Right	Left
Right	Right

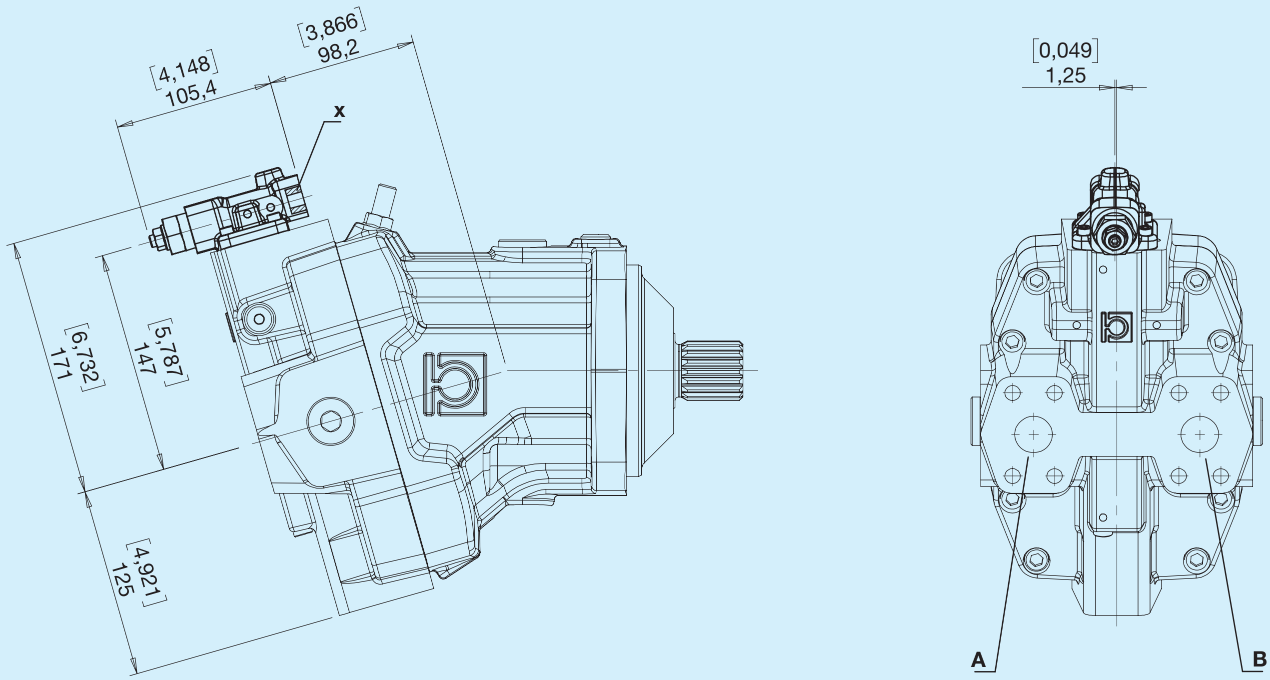
Pilot



Hydraulic diagram



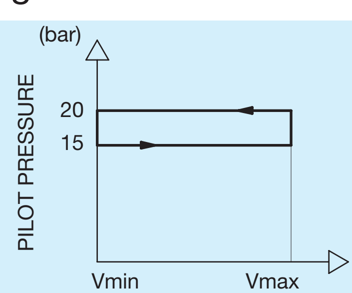
K Hydraulic, 2-position, low pressure



X - Pilot G1/8

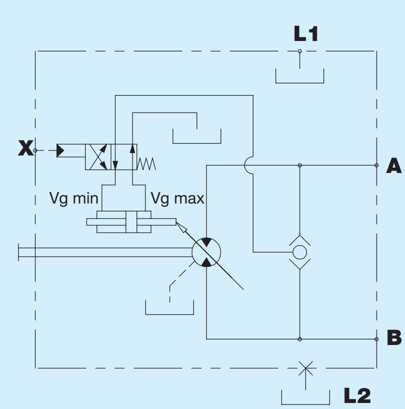
Inlet	Rotation
Right	Left
Right	Right

Diagram

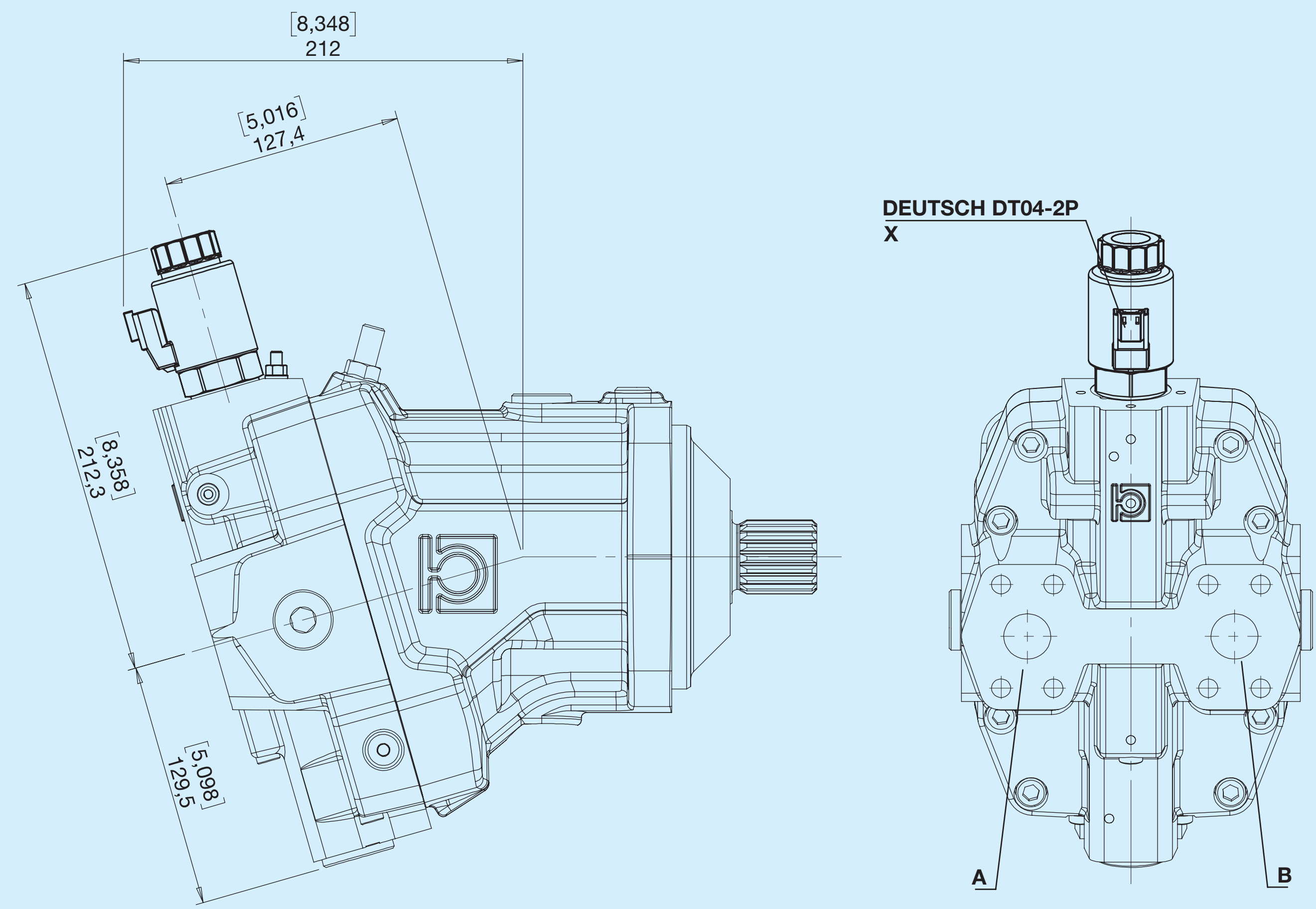


The motor is normally at maximum displacement. By applying external pressure to the pilot valve, the motor switches to minimum displacement. For correct displacement variation, observe the pilot pressure values shown in the diagram.

Hydraulic diagram



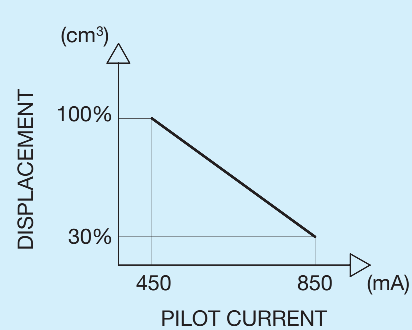
O Electronic proportional feedback control 12V



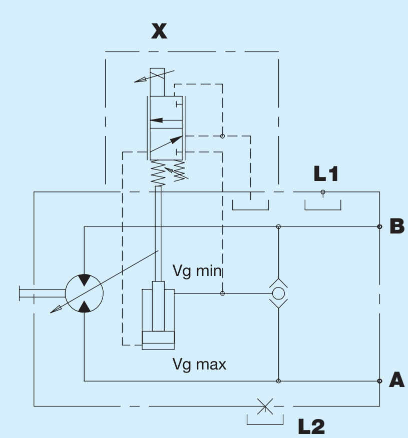
X - Solenoid valve

Inlet	Rotation
Right	Left
Right	Right

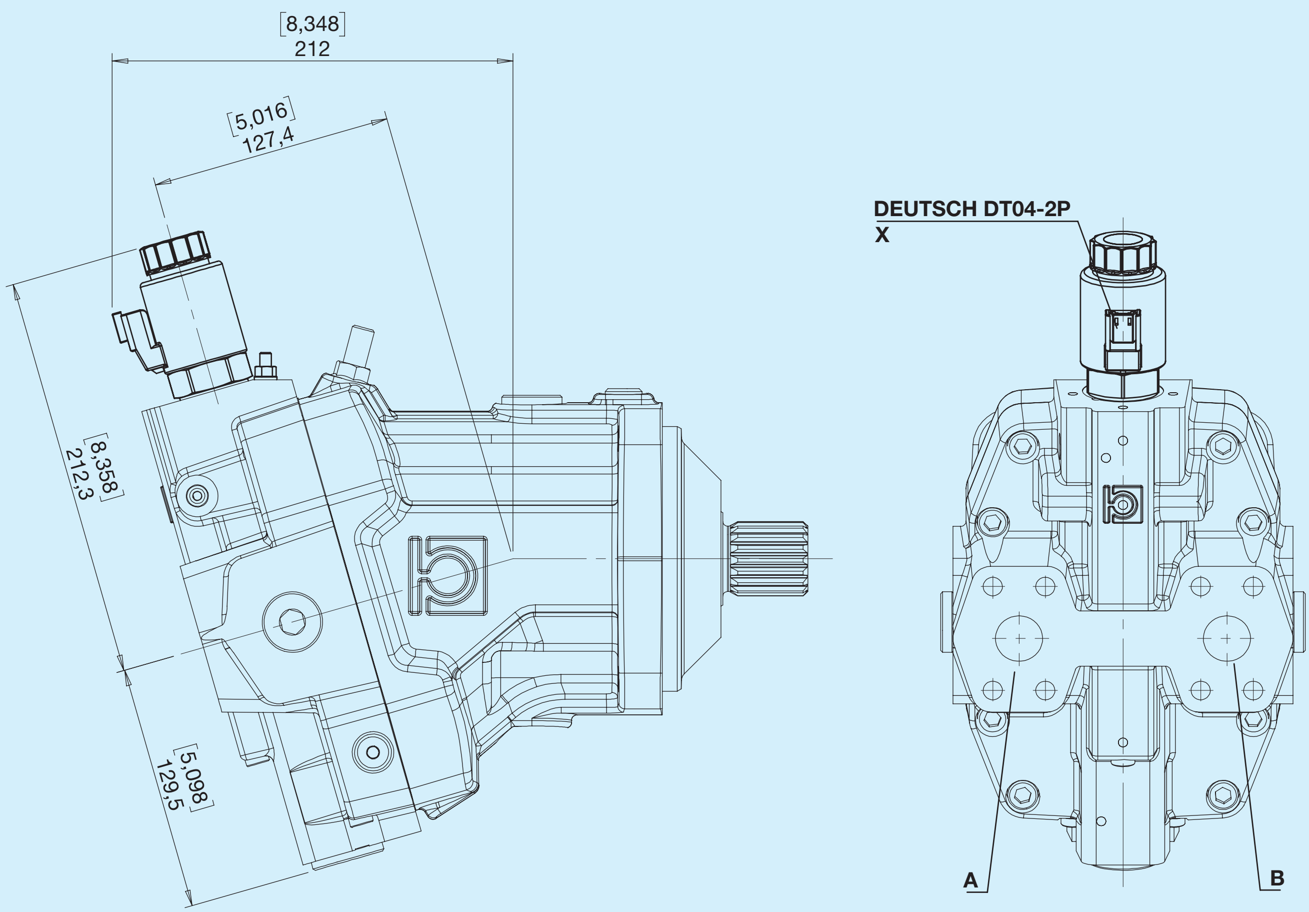
Pilot



Hydraulic diagram



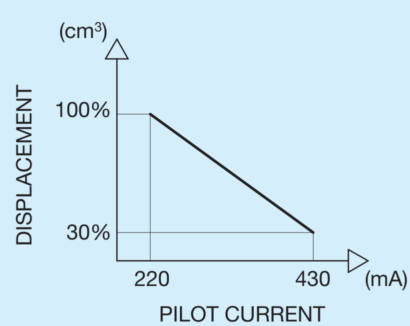
V Electronic proportional feedback control 24V



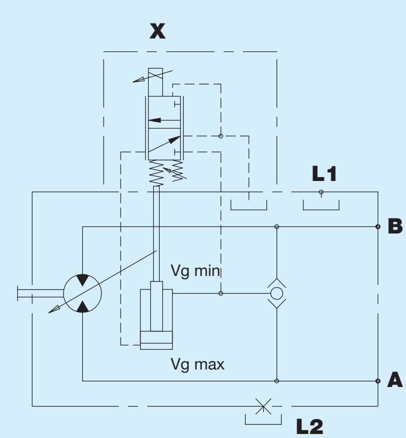
X - Solenoid valve

Inlet	Rotation
Right	Left
Right	Right

Pilot

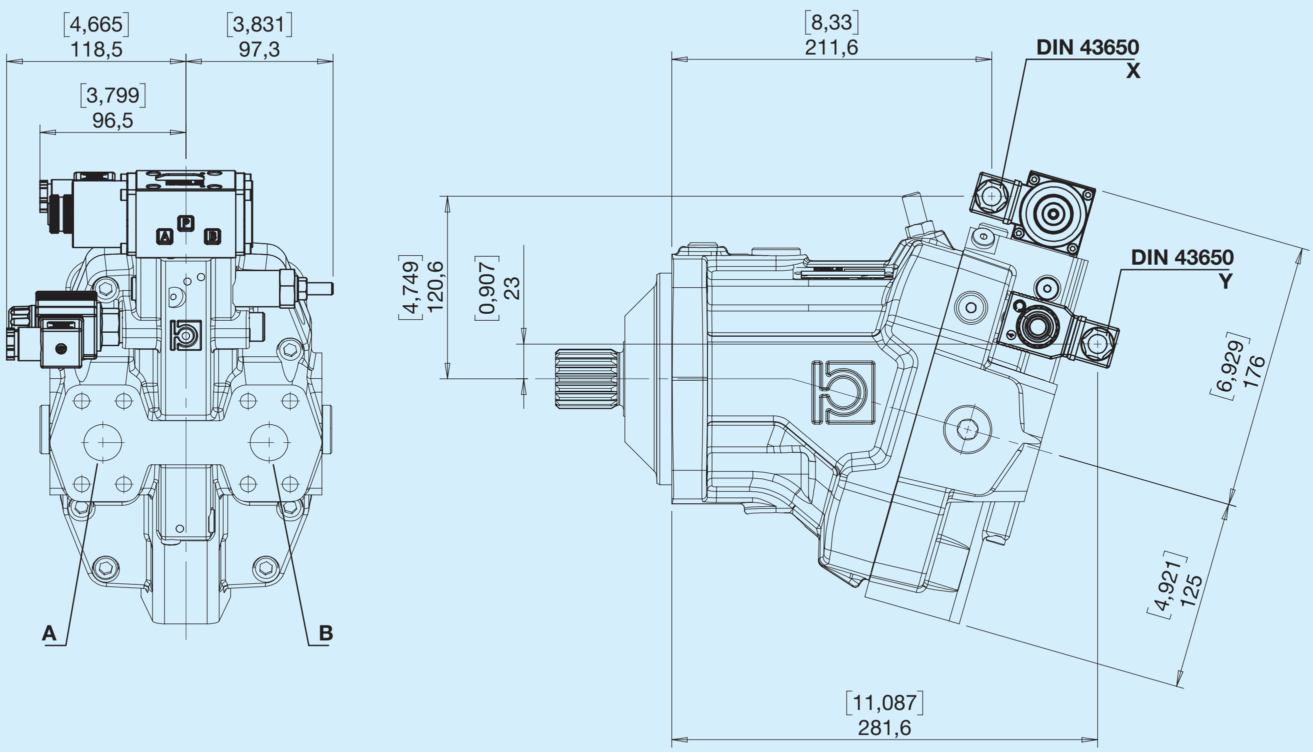


Hydraulic diagram

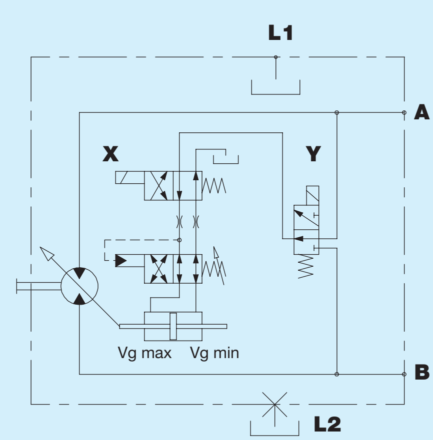


BONDIOLI & PAVESI HP Hydraulic

R Electric ON/OFF with pressure override and channel selector

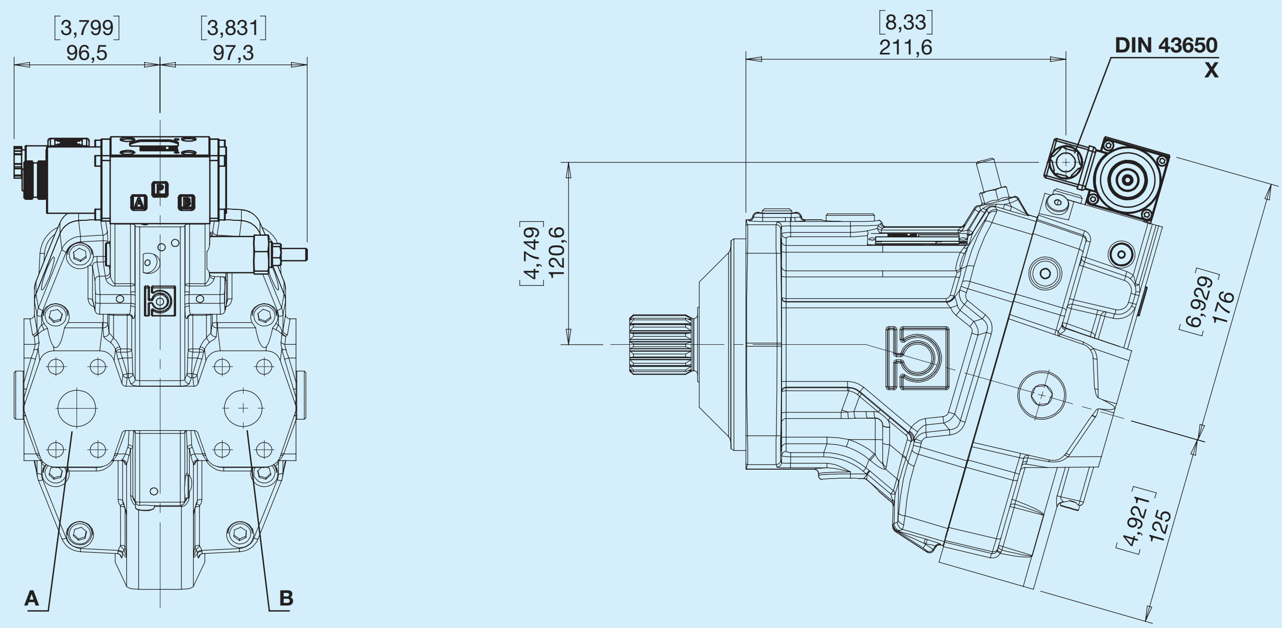


Hydraulic diagram



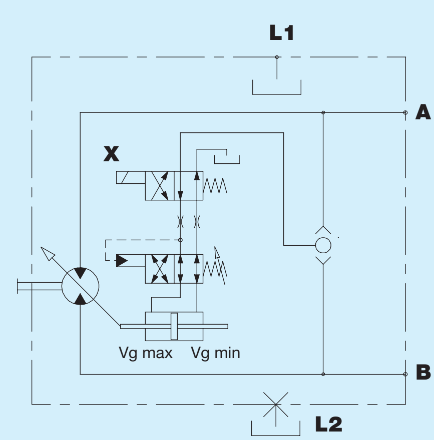
Inlet	Rotation
Right	Left
Right	Right

U Electric ON/OFF with pressure override

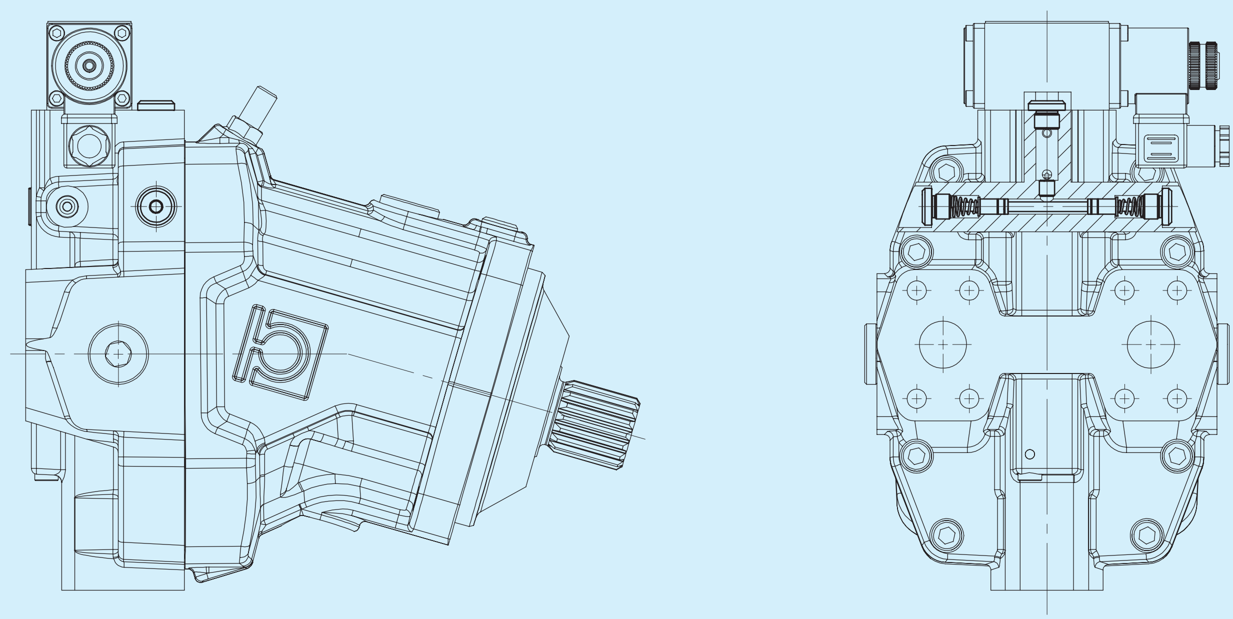


Inlet	Rotation
Right	Left
Right	Right

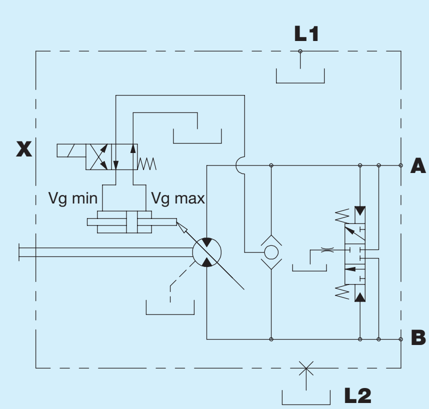
Hydraulic diagram



V Flushing valve (5-7 l/min)



Hydraulic diagram



Instructions for ordering

HPBA 080-108	1	2	3	4	5	6	7	8	9	10	11	12	13	14

1 2 3 — Standard displacement

080	**108**

4 5 — Minimum displacement

...

6 — Flanges

I	ISO 4 holes standard	**P**	ISO 2 holes cartridge centring

7 — Shafts

B	DIN 5480 W40x2x30x18	**C**	DIN 5480 W35x2x30x16

8 — Type of ports

G	Gas	**U**	UNF	**N**	Gas-SAE inlet/outlet	**M**	UNF-SAE inlet/outlet

9 — Position of ports

P	Rear	**L**	Opposite sideways	**Y**	Rear with rotated valve (not available for O - V - G controls)	**J**	Opposite sideways with rotated valve (not available for O - V - G controls)

10 — Controls

A	Hydraulic automatic, ON/OFF	**G**	Proportional hydraulic	**O**	Electronic proportional feedback control 12V	**U**	Electric ON/OFF with pressure override
E	Electric 2-position 12V	**H**	Direct hydraulic, 2-position	**V**	Electronic proportional feedback control 24V		
F	Electric 2-position 24V	**K**	Hydraulic, 2-position, low pressure	**R**	Electric ON/OFF with pressure override and channel selector		

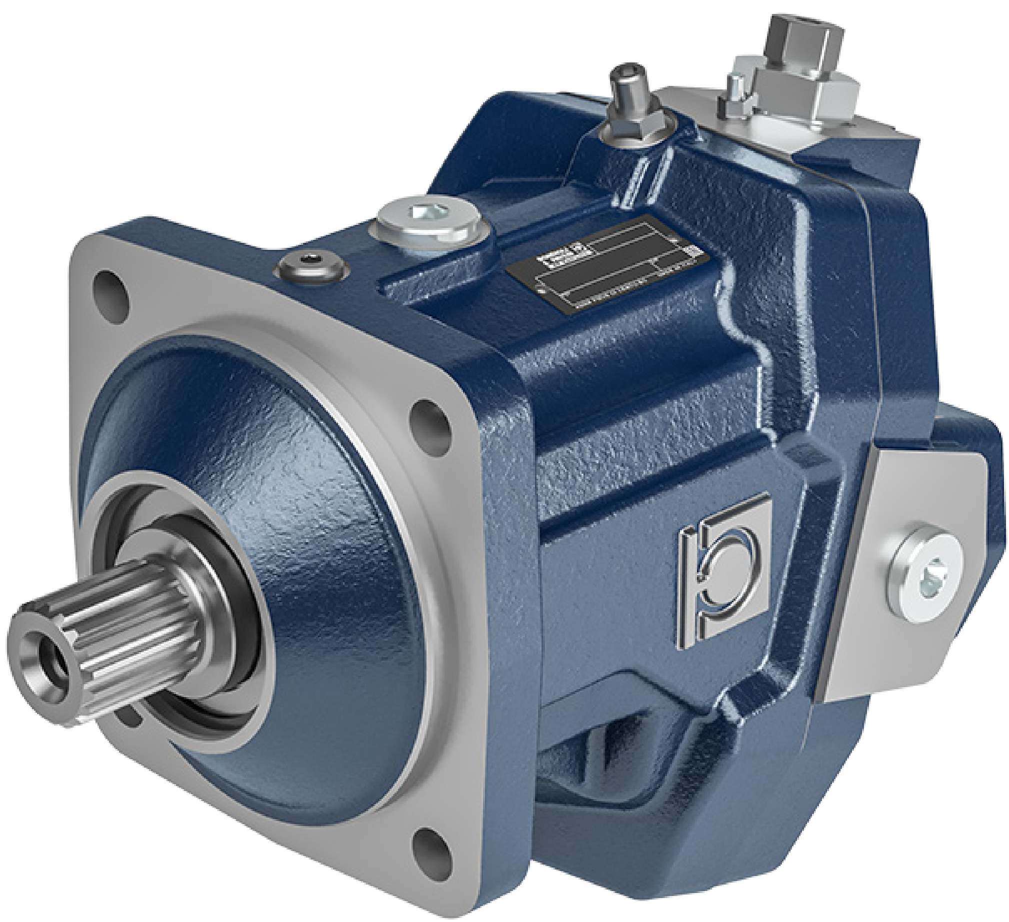
11 — Accessories

0	No option	**V**	Flushing valve	**V**	Flushing valve

12 13 14 — Special versions

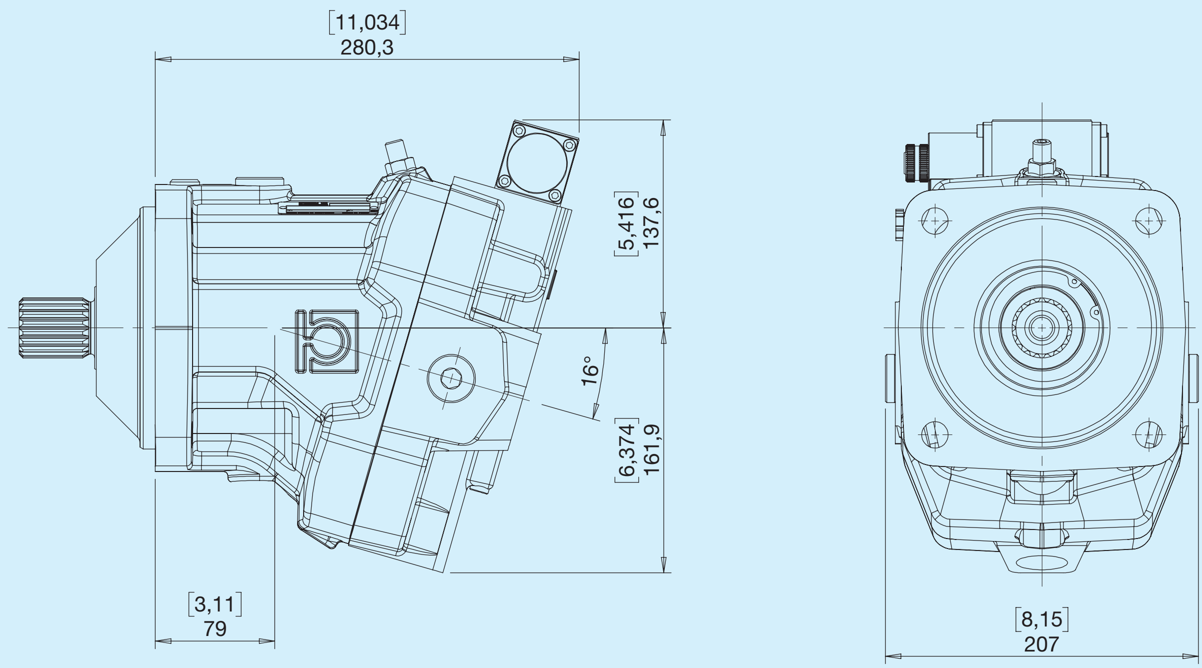
...

Variable-displacement motors HPBA110-130



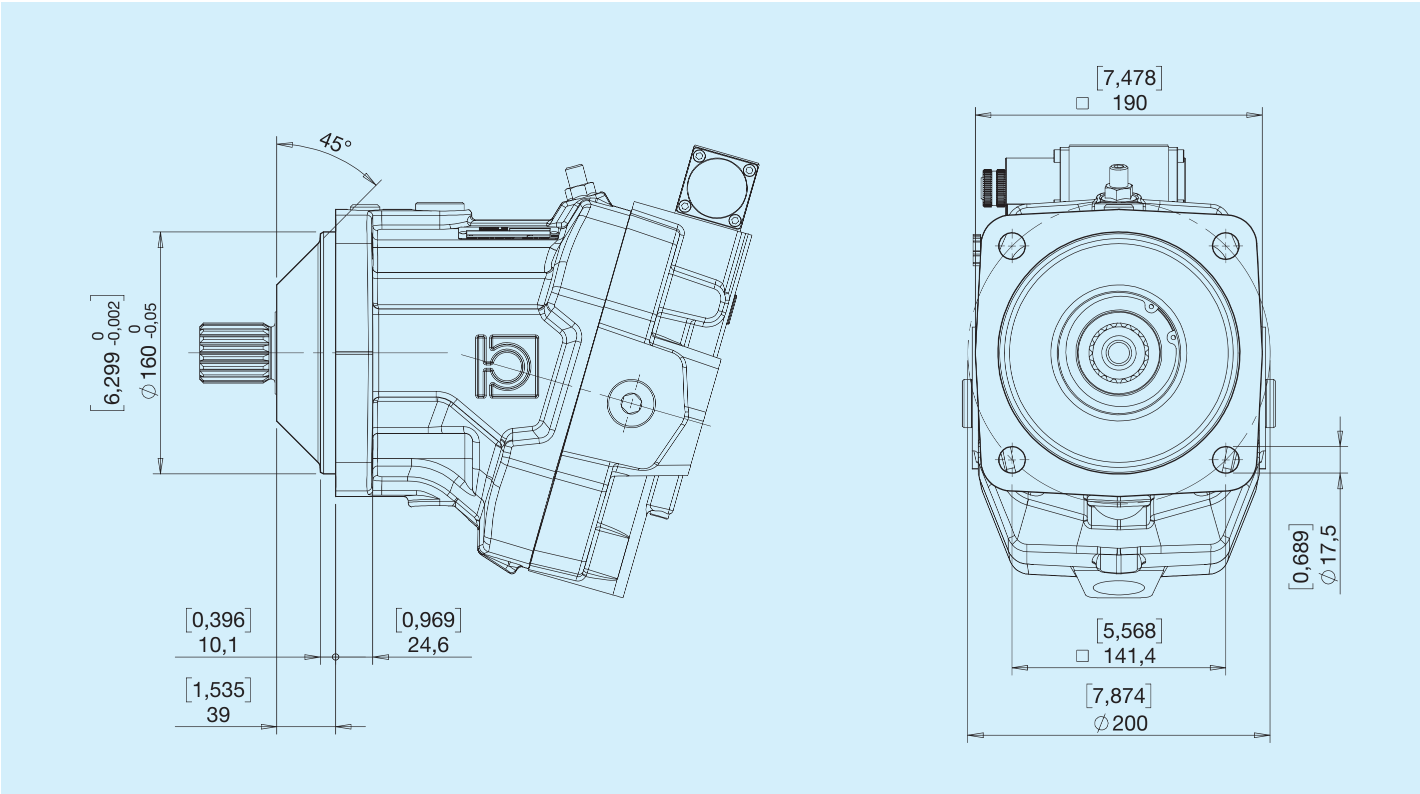
Before use, carefully read the GENERAL INSTRUCTIONS FOR USE OF CLOSED CIRCUIT AXIAL PISTON PUMPS AND MOTORS.

Dimensions and technical data

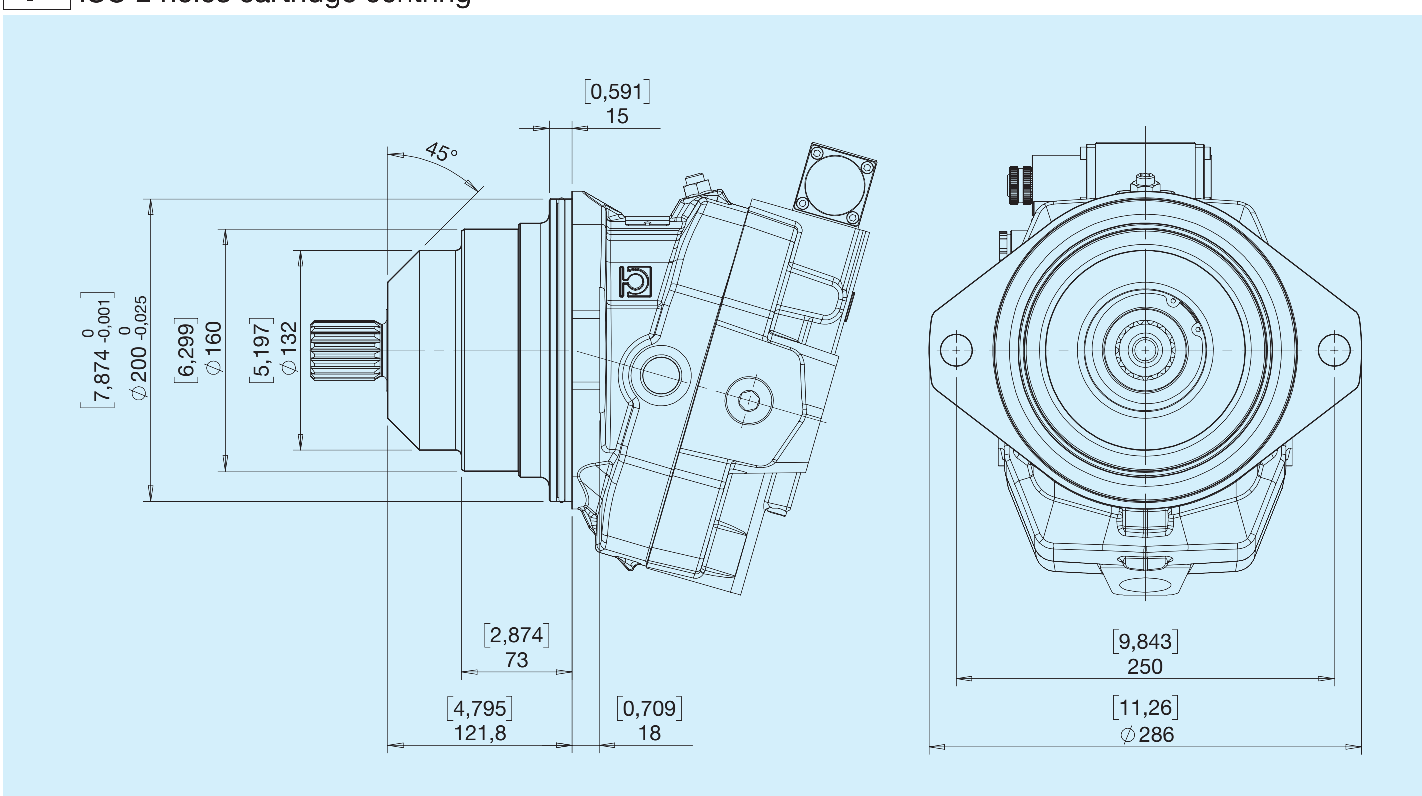


HPBA	Theoretical displacement		Swash plate	Continuous Pressure		Intermittent pressure		Peak pressure		Rotational speed			Weight	
	cm^3	**in^3**	**°**	**bar**	**psi**	**bar**	**psi**	**bar**	**psi**	**MAX (max V) min^{-1}**	**MAX (min V) min^{-1}**	**MIN min^{-1}**	**kg**	**lbs**
110	110	6.65	26	350	5075	400	5800	450	6525	2900	**4500**	500	45	99
130	130	7,93	25	350	5075	400	5800	450	6525	2900	**4500**	500	51	112

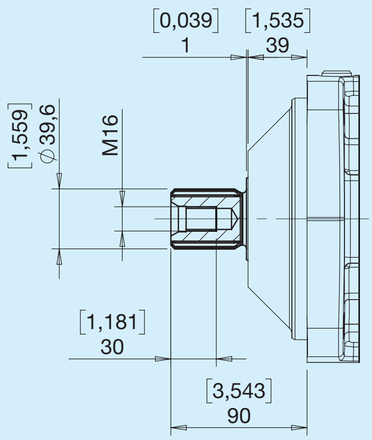
I ISO 4 holes standard



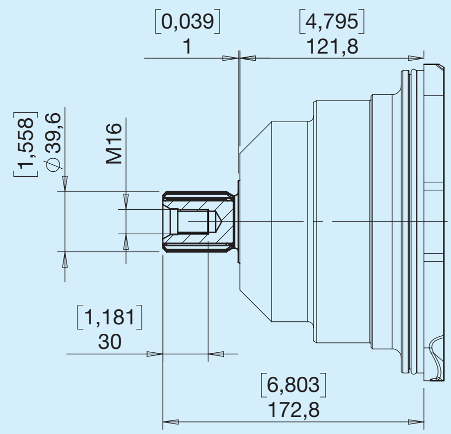
P ISO 2 holes cartridge centring



B DIN 5480 W40x2x30x18

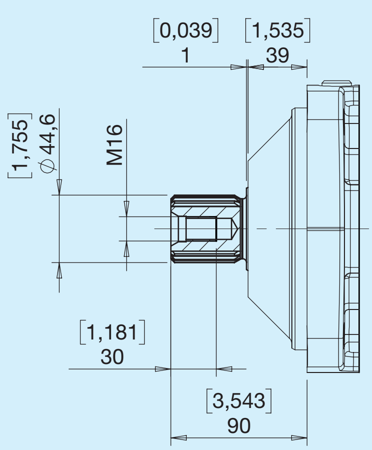


Max. torque 1310 Nm

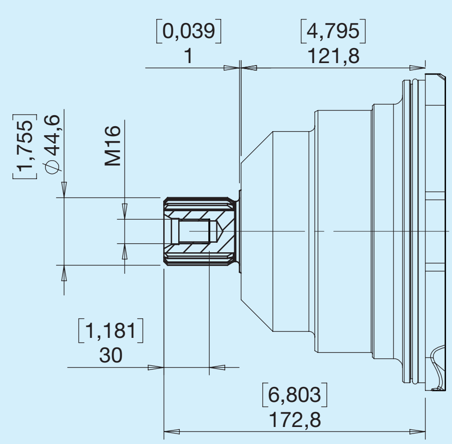


Max. torque 1310 Nm

D DIN 5480 W45x2x30x21



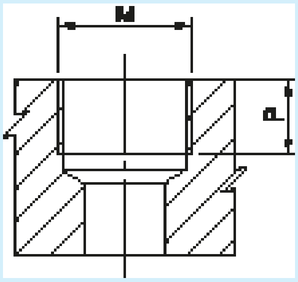
Max. torque 1980 Nm



Max. torque 1980 Nm

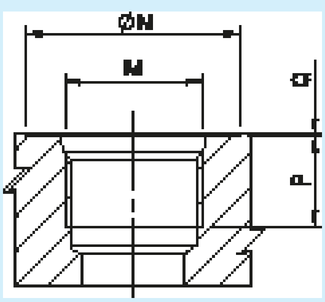
BONDIOLI & PAVESI HP Hydraulic

Type G



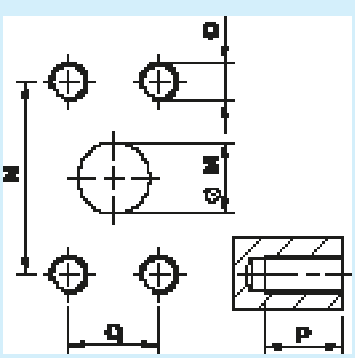
Type	M		P	
		Nm	mm	in
G2	Port ISO 1179-1 - G 1/4	17	8	0.31
G6	Port ISO 1179-1 - G 3/4	90	19	0.75
G7	Port ISO 1179-1 - G 1	160	19	0.75

Type U



Type	Dim.	N		P		Q		M	
		mm	in	mm	in	mm	in		Nm
U2	1/4'	20	0.79	12	0.47	0.3	0.01	Port ISO 11926-1-7/16-20	17
U6	3/4'	41	1.61	20	0.79	0.3	0.01	Port ISO 11926-1-1 1/16-12	90
U7	1'	49	1.93	18	0.70	0.3	0.01	Port ISO 11926-1-1 5/16-12	160

Type N

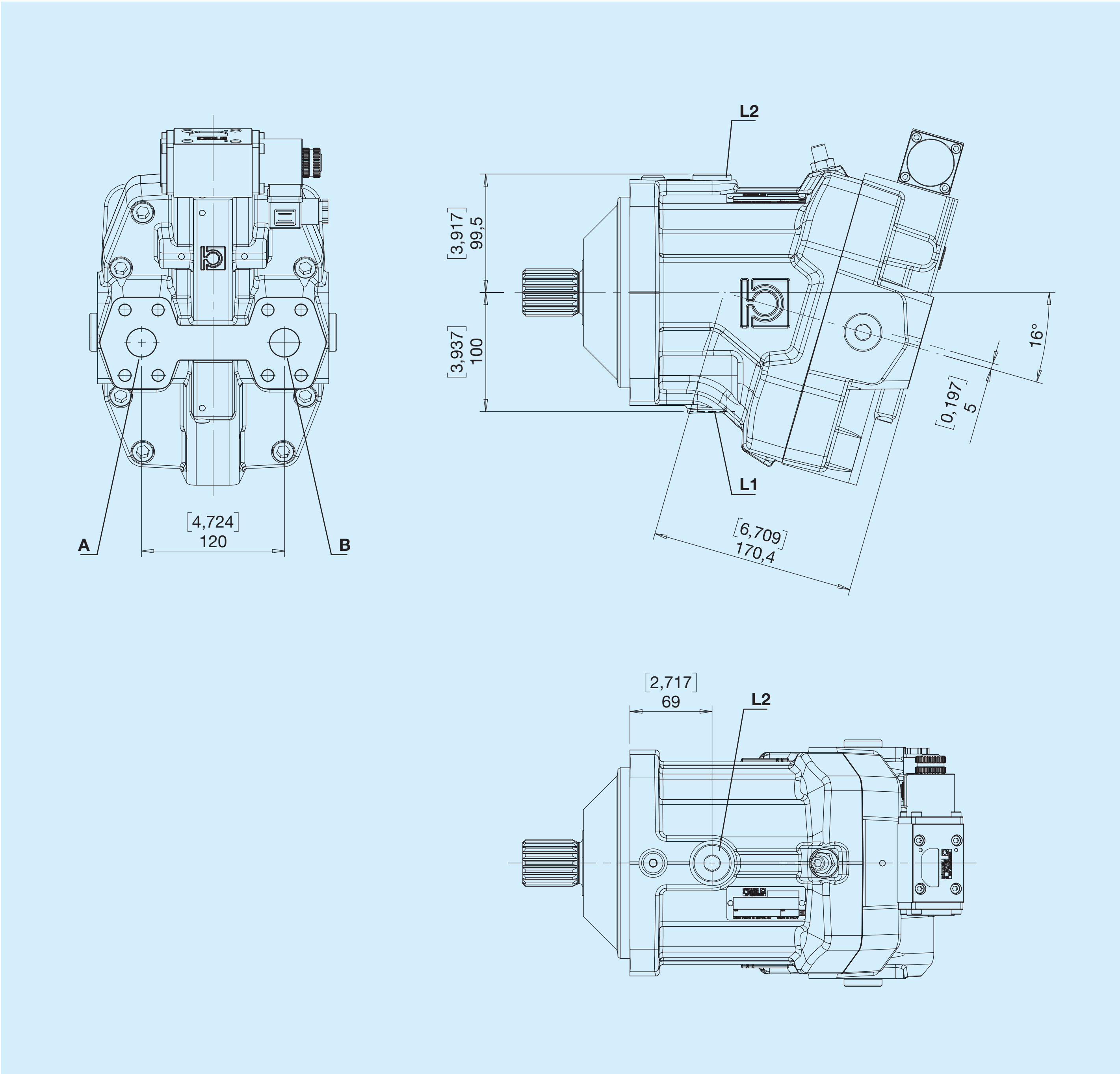


Type	M		N		Q		P		O	
	mm	in	mm	in	mm	in	mm	in		Nm
N7	25	1	57.15	2.25	27.76	1.09	20	0.79	M12	70

Combinations

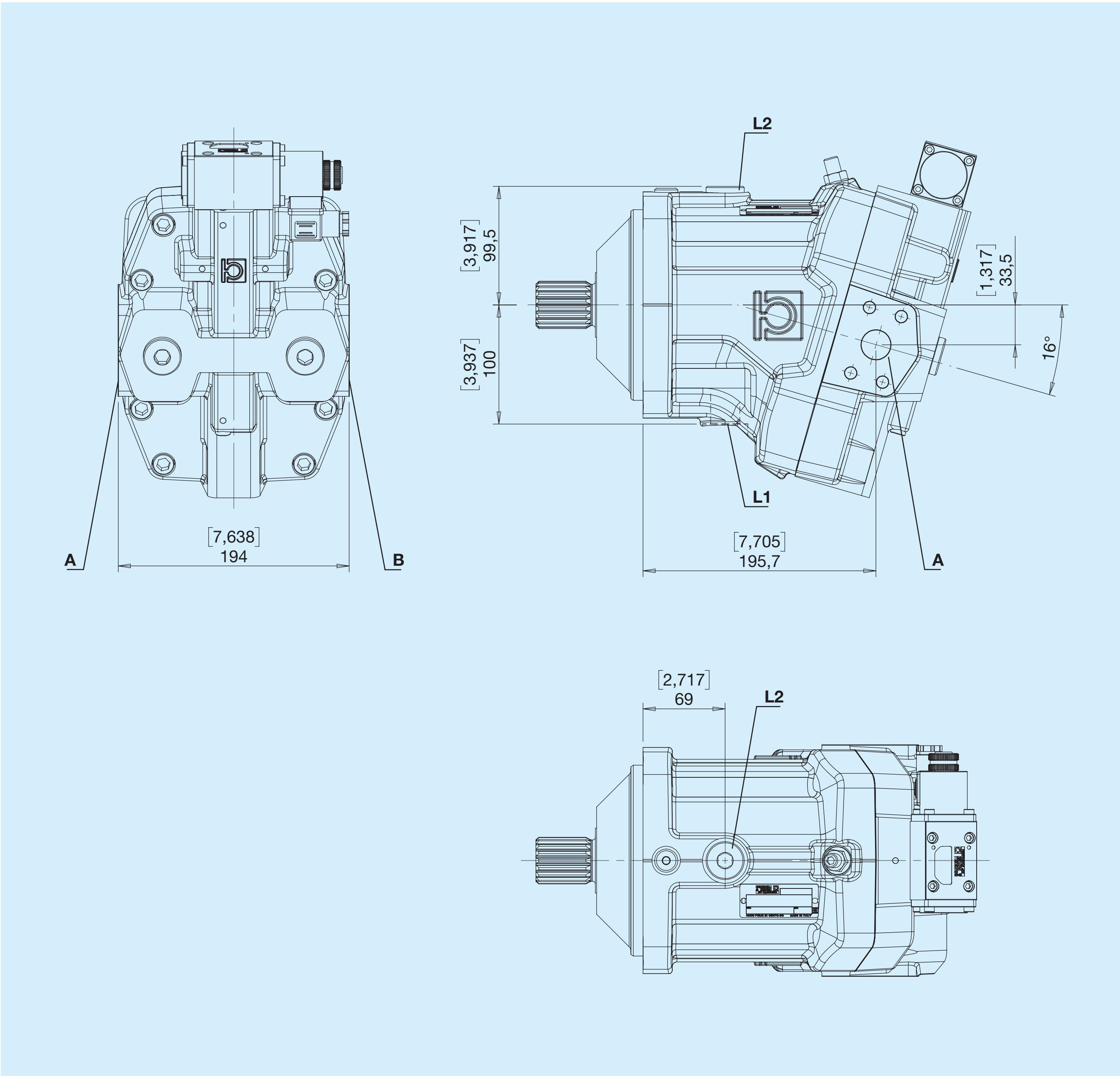
Type	Inlet/outlet **A-B**	Drain port **L1-L2**	Pilot **a-b-x**
G	G6	G6	G6
U	U6	U6	U6
N	N7	G6	G2
M	N7	U6	U2

P Rear



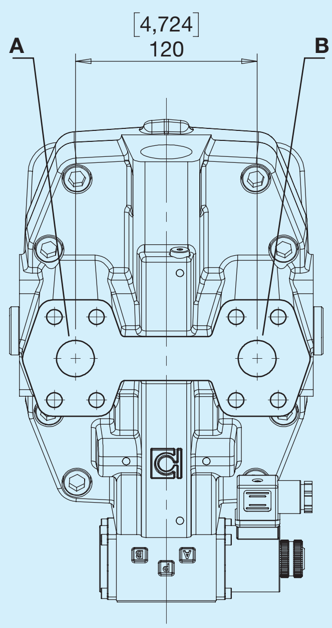
A,B - Use
L1, L2 - Drain port

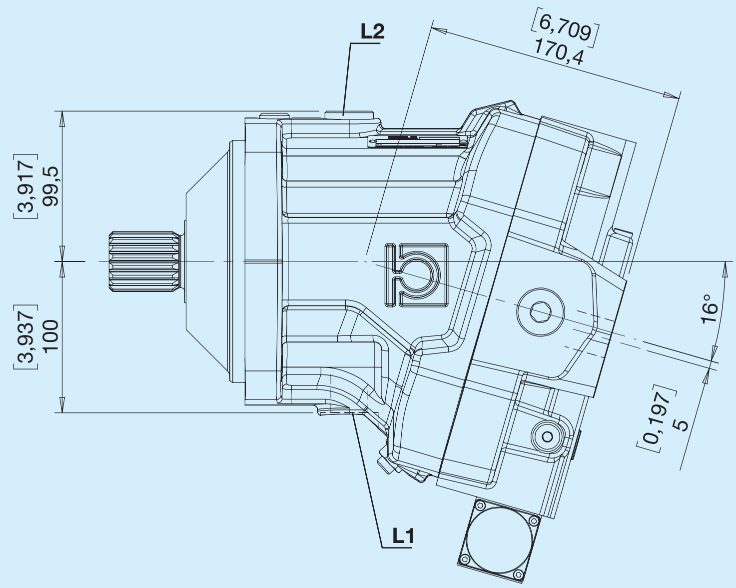
L Opposite sideways

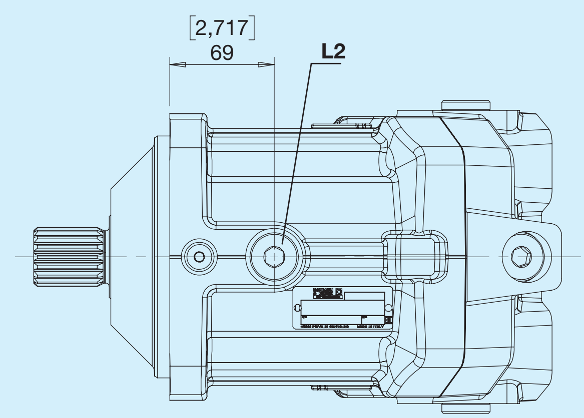


A,B - Use
L1, L2 - Drain port

Y Rear with rotated valve

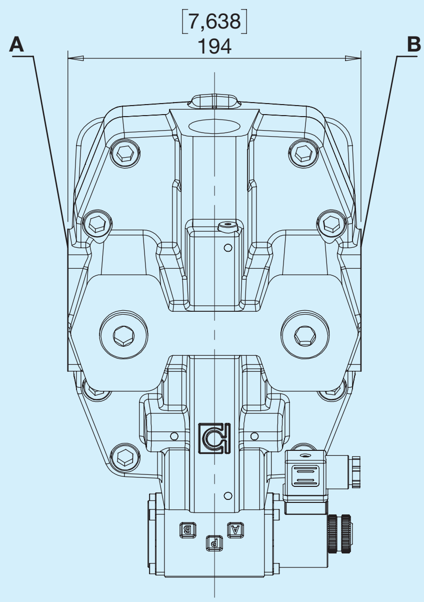


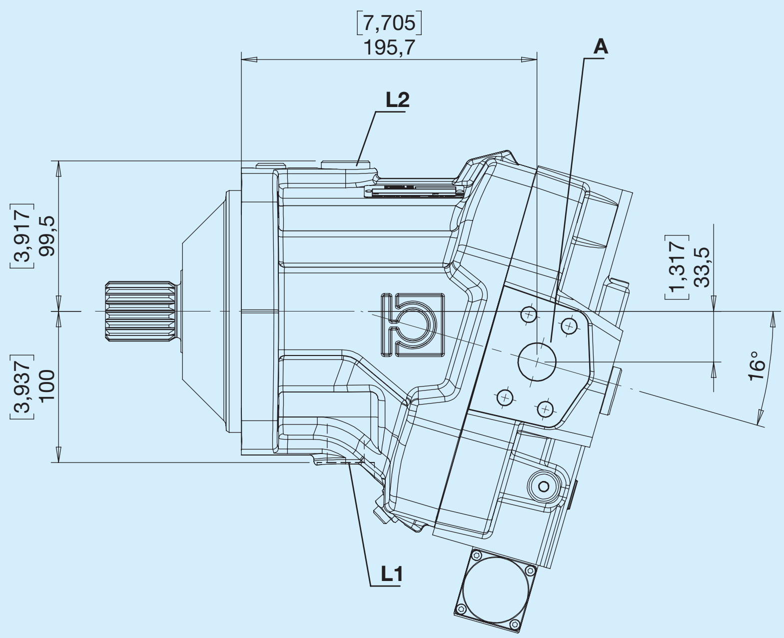


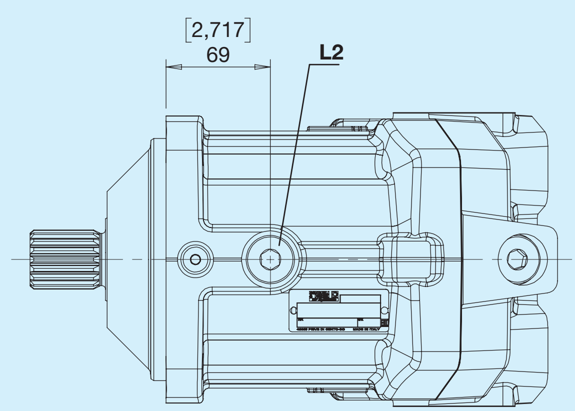


A,B - Use
L1, L2 - Drain port

J Opposite sideways with rotated valve

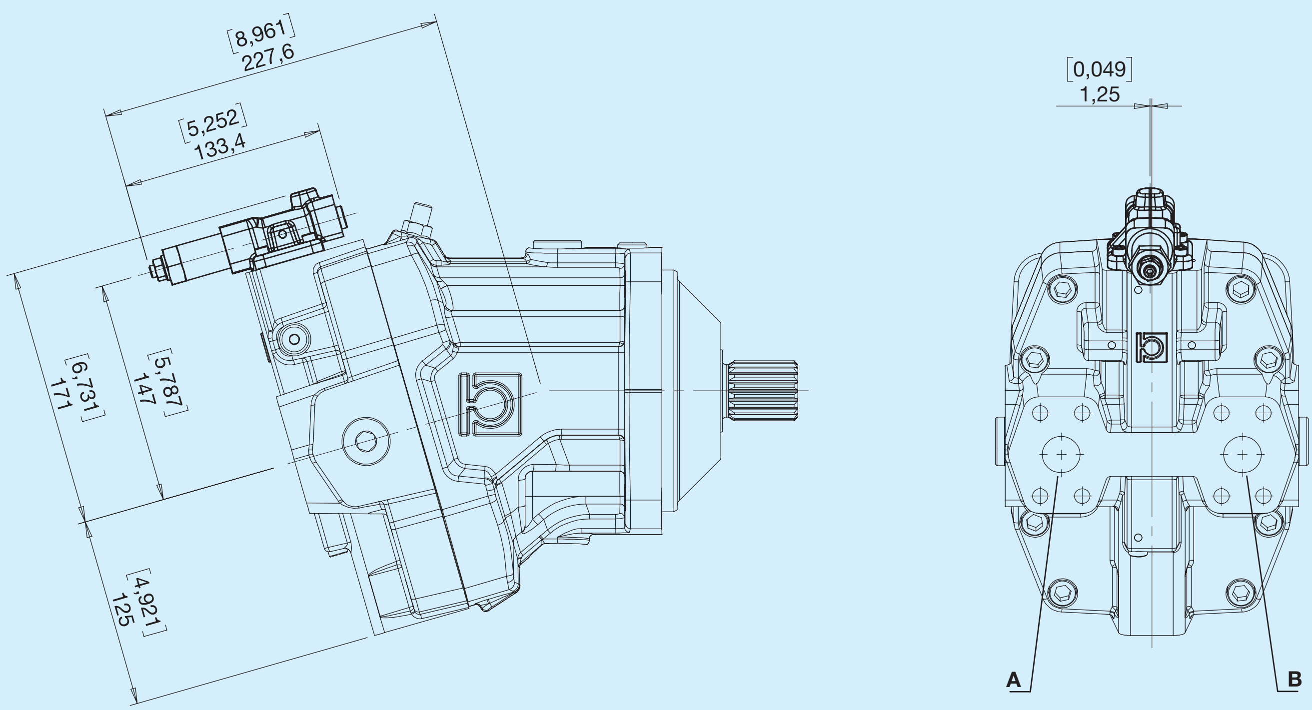






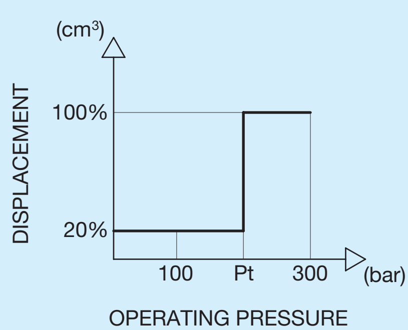
A,B - Use
L1, L2 - Drain port

A Hydraulic automatic, ON/OFF



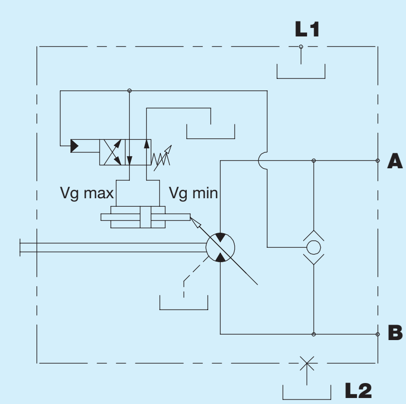
Inlet	Rotation
Right	Left
Right	Right

Pilot

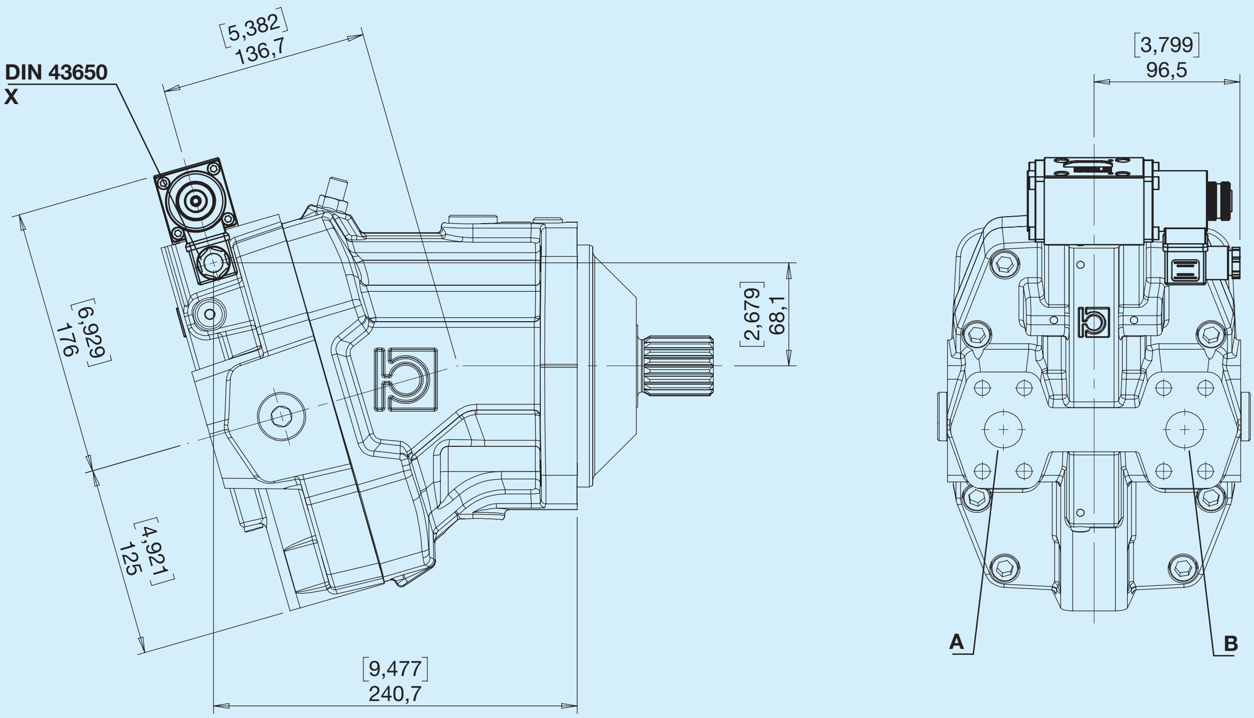


Pt - Calibration pressure
(according to customer
specifications)

Hydraulic diagram

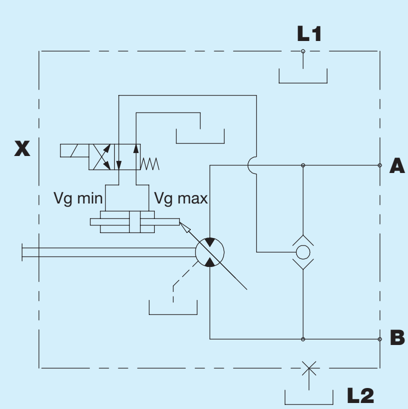


E Electric 2-position 12V



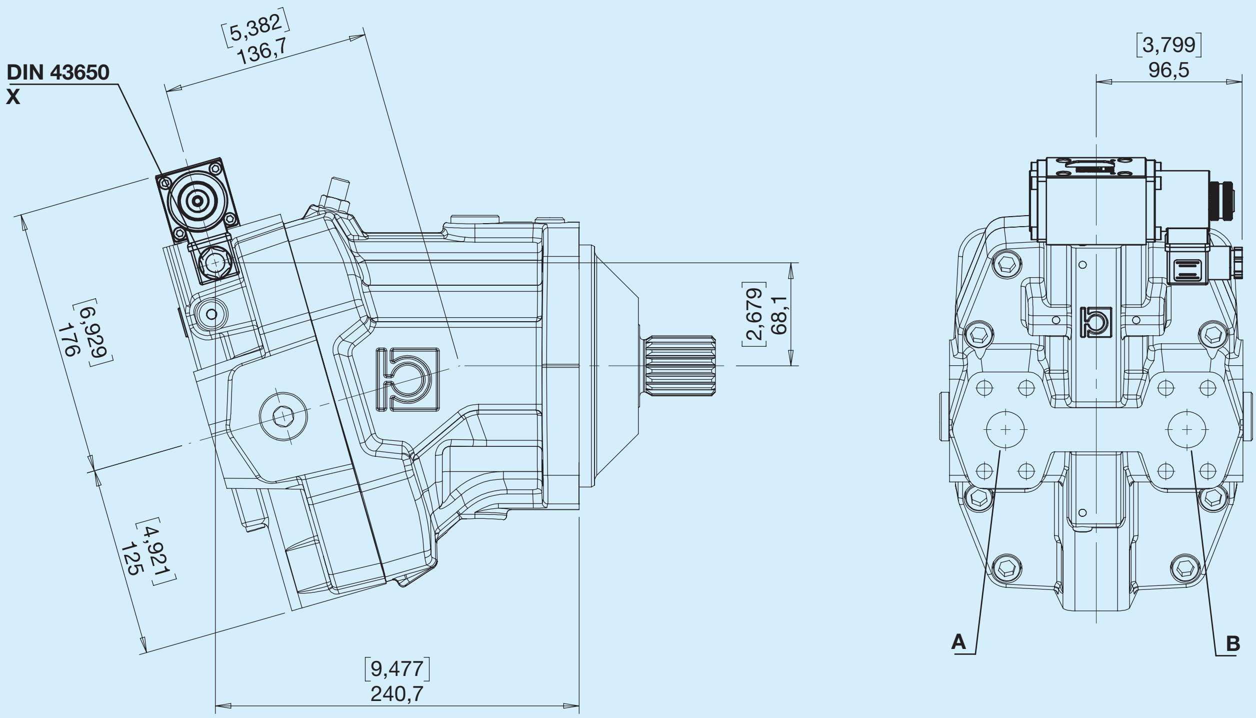
X - Solenoid valve available on request with DEUTSCH DT04-2P connectors

Hydraulic diagram



Inlet	Rotation
Right	Left
Right	Right

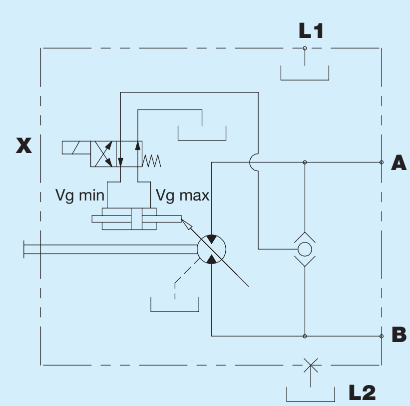
F Electric 2-position 24V



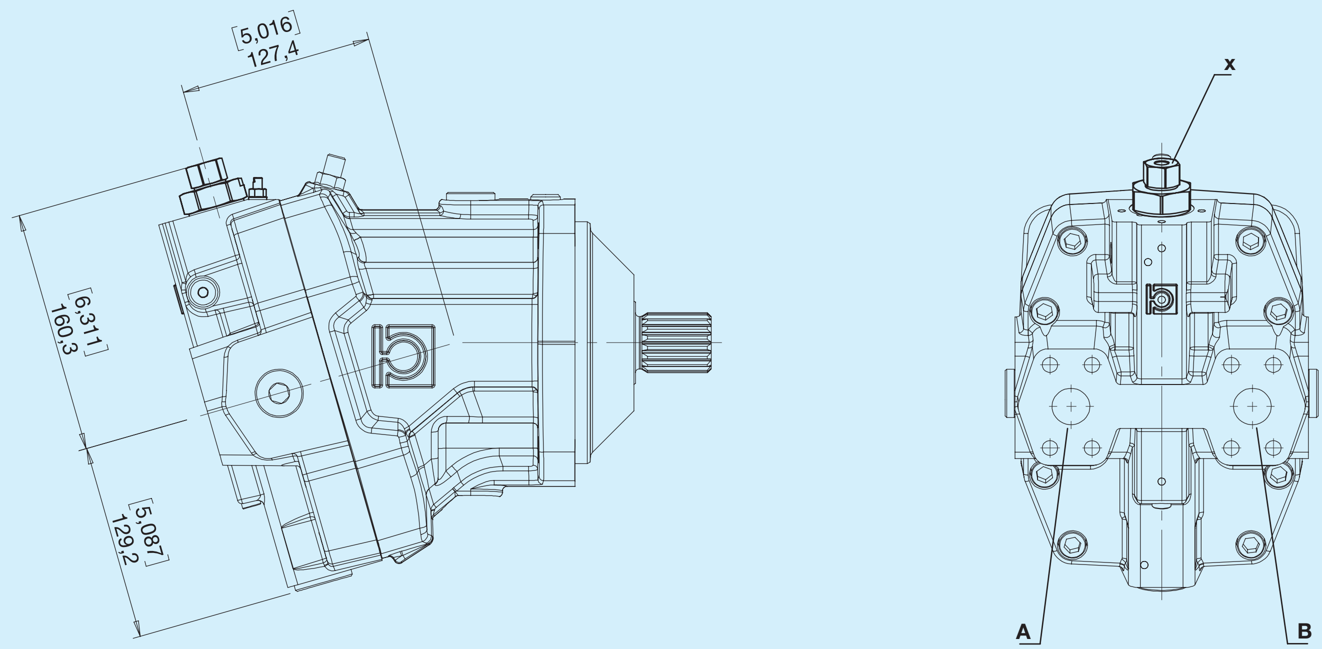
X - Solenoid valve available on request with DEUTSCH DT04-2P connectors

Inlet	Rotation
Right	Left
Right	Right

Hydraulic diagram



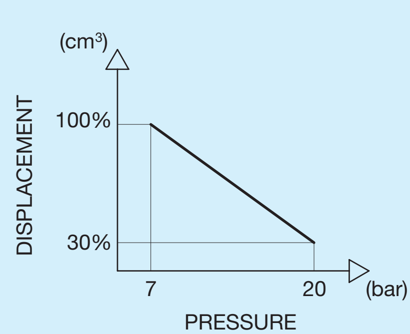
G Proportional hydraulic



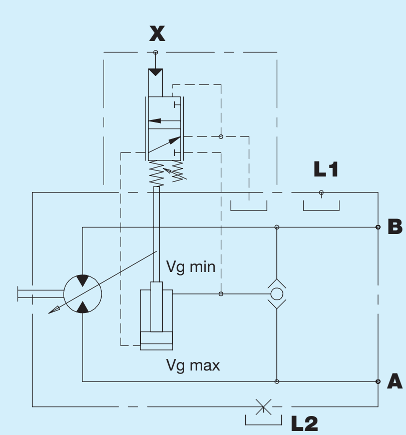
X - Pilot G1/8

Inlet	Rotation
Right	Left
Right	Right

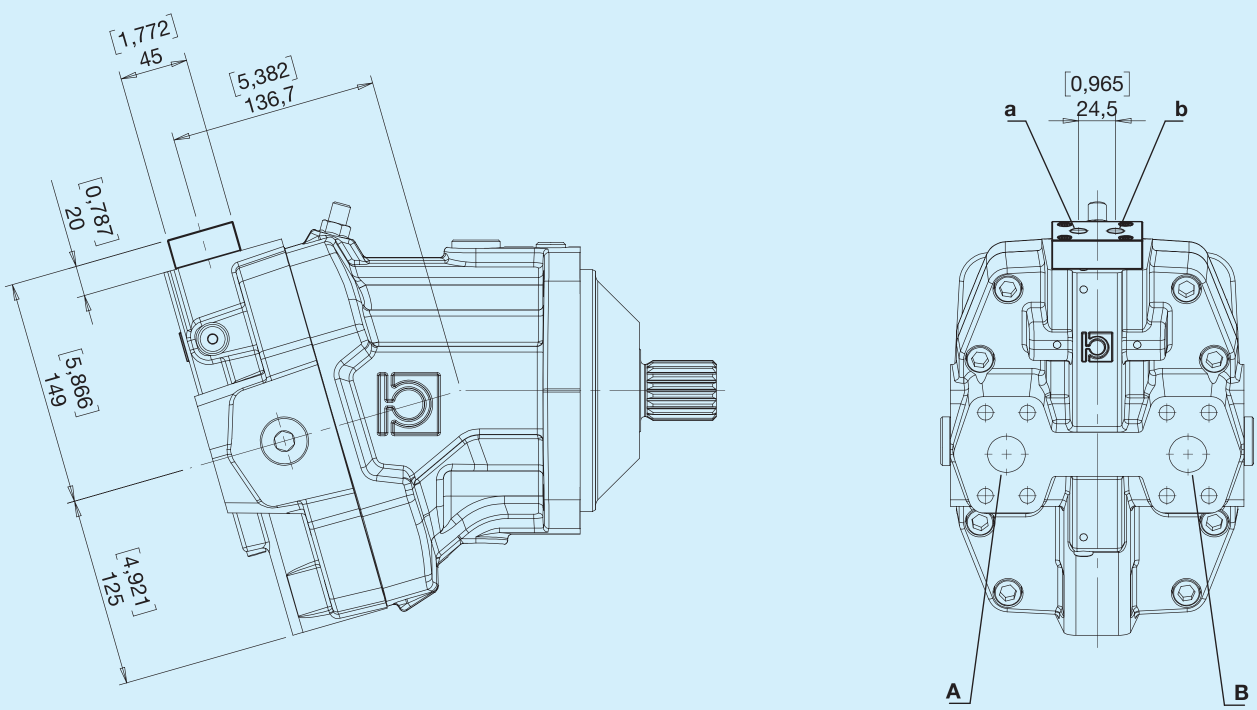
Pilot



Hydraulic diagram

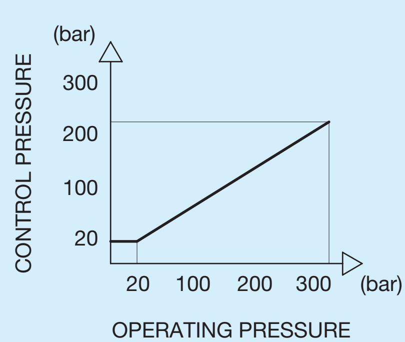


H Direct hydraulic, 2-position

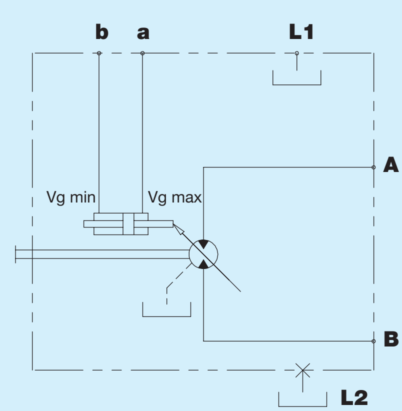


Inlet	Rotation
Right	Left
Right	Right

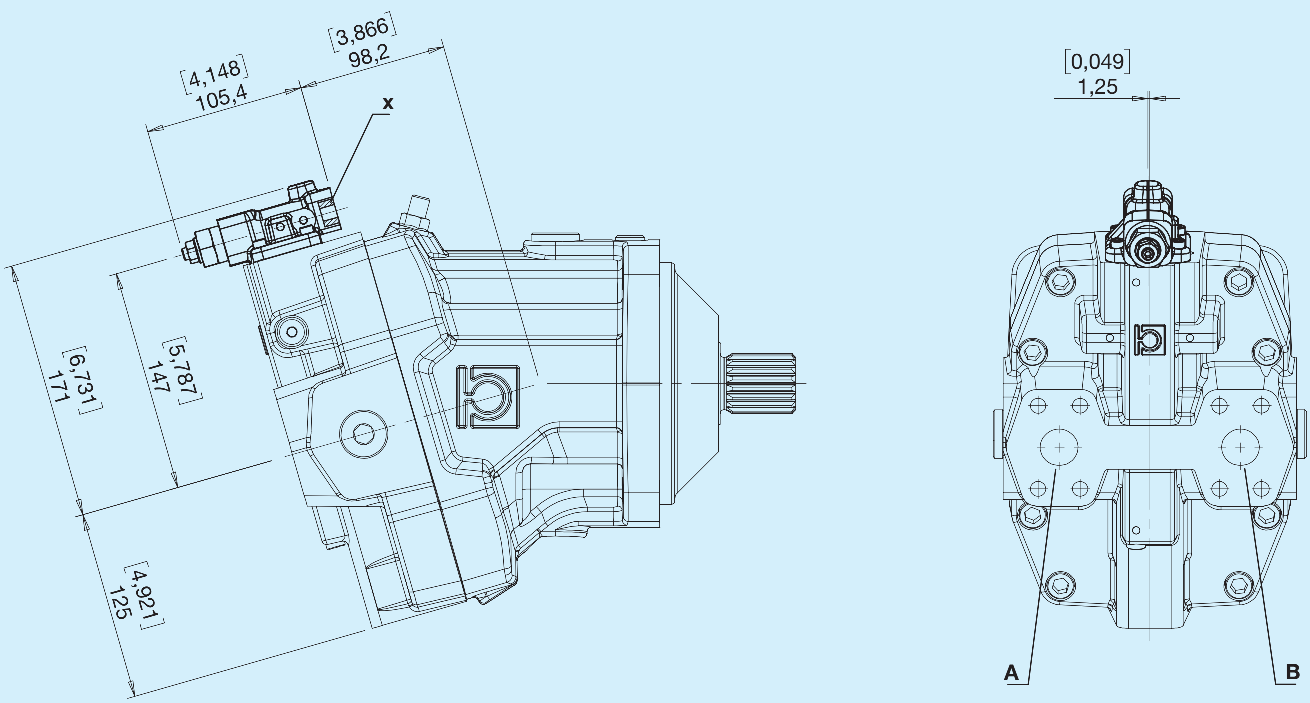
Pilot



Hydraulic diagram



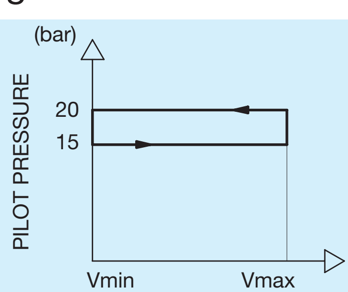
K Hydraulic, 2-position, low pressure



X - Pilot G1/8

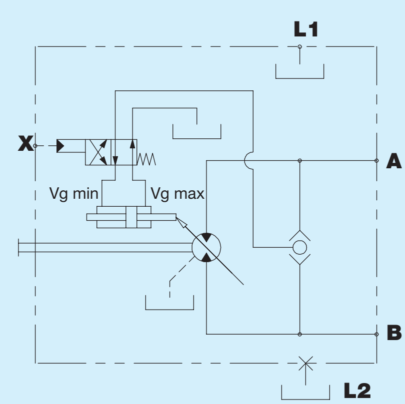
Inlet	Rotation
Right	Left
Right	Right

Diagram

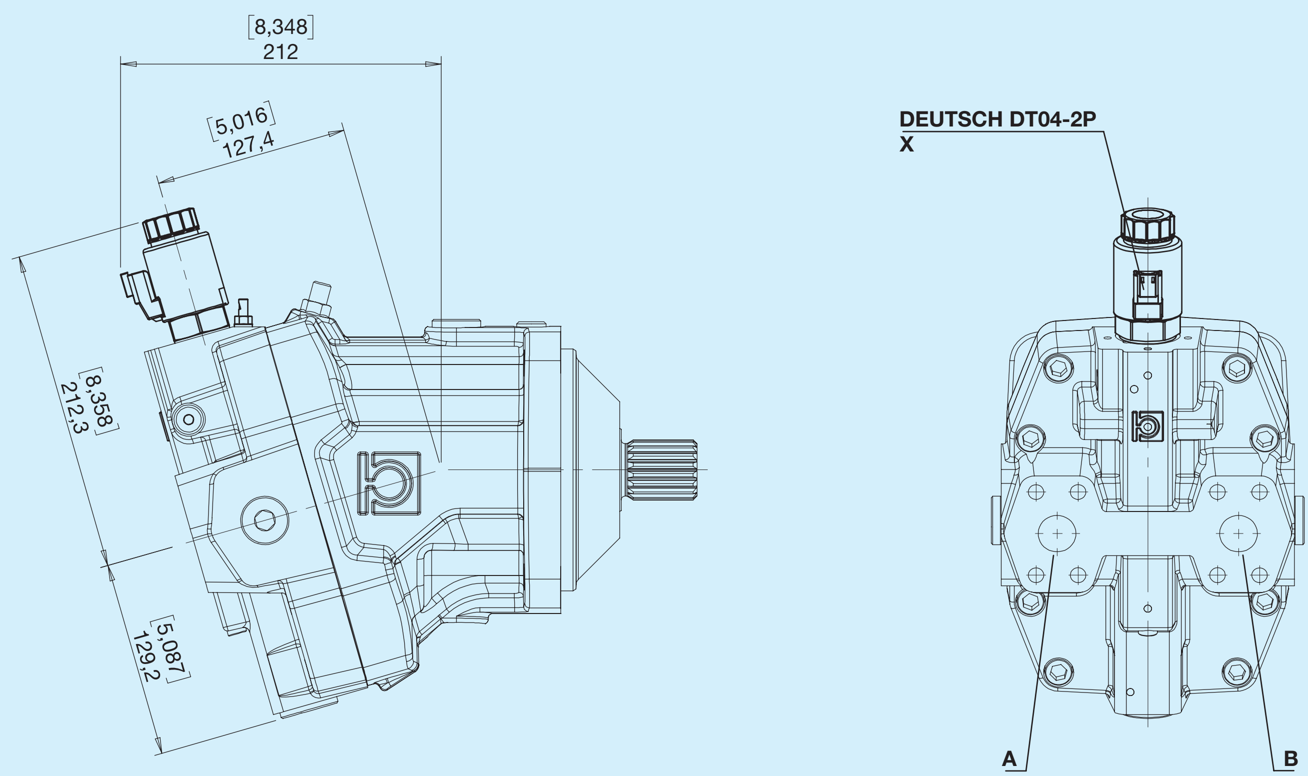


The motor is normally at maximum displacement. By applying external pressure to the pilot valve, the motor switches to minimum displacement. For correct displacement variation, observe the pilot pressure values shown in the diagram.

Hydraulic diagram



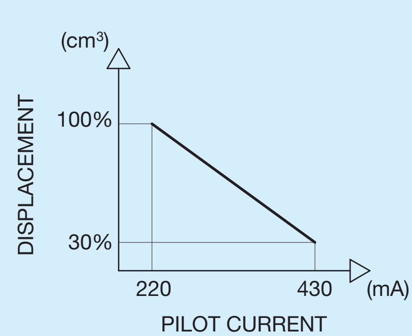
O Electronic proportional feedback control 12V



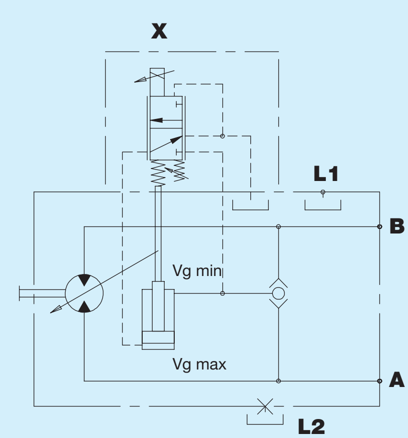
X - Solenoid valve

Inlet	Rotation
Right	Left
Right	Right

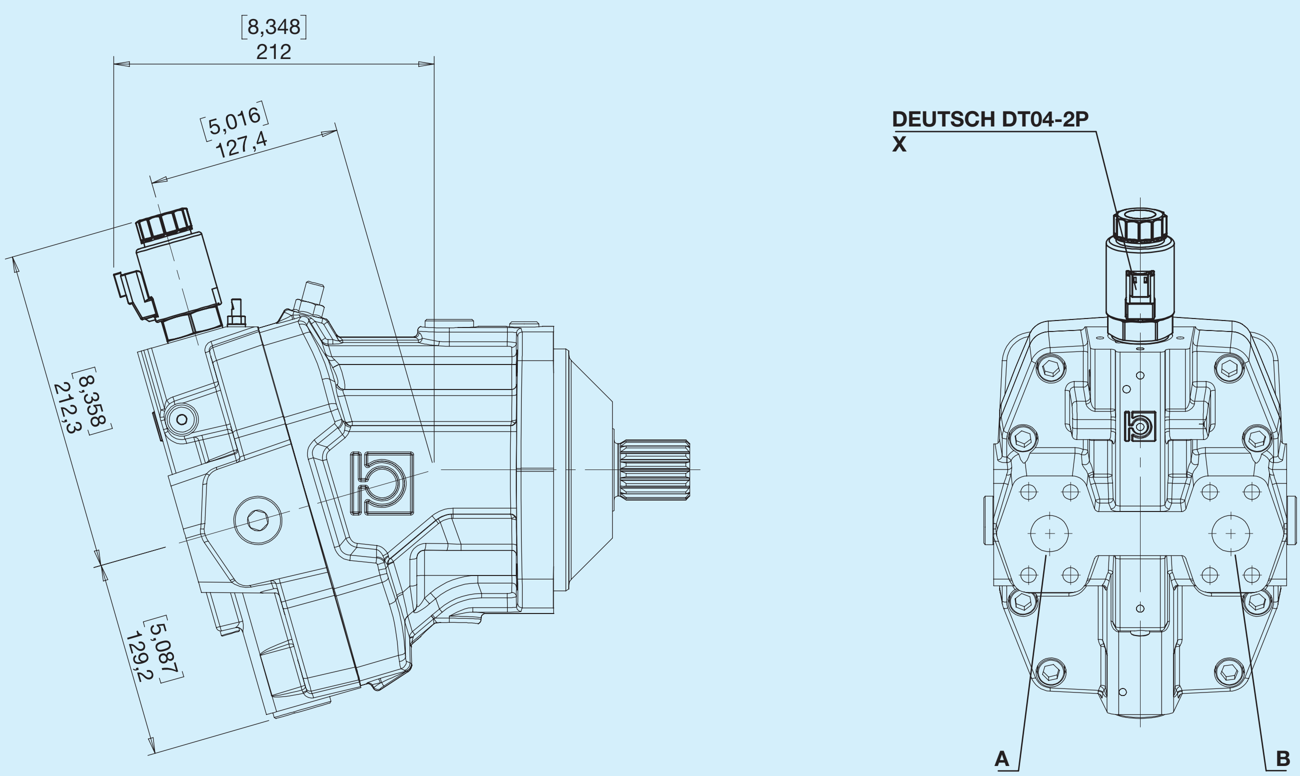
Pilot



Hydraulic diagram



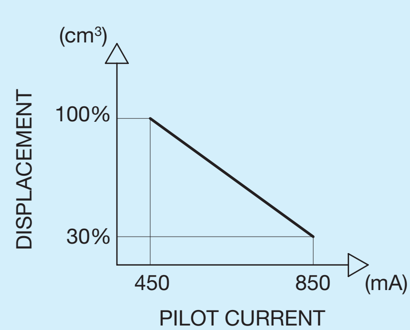
V Electronic proportional feedback control 24V



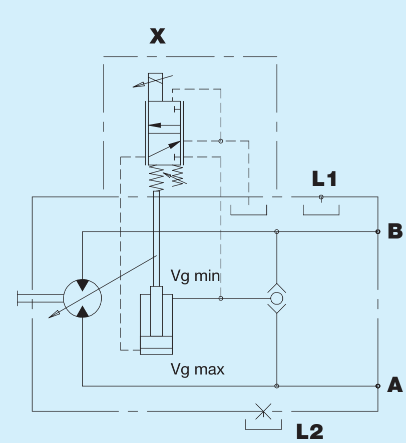
X - Solenoid valve

Inlet	Rotation
Right	Left
Right	Right

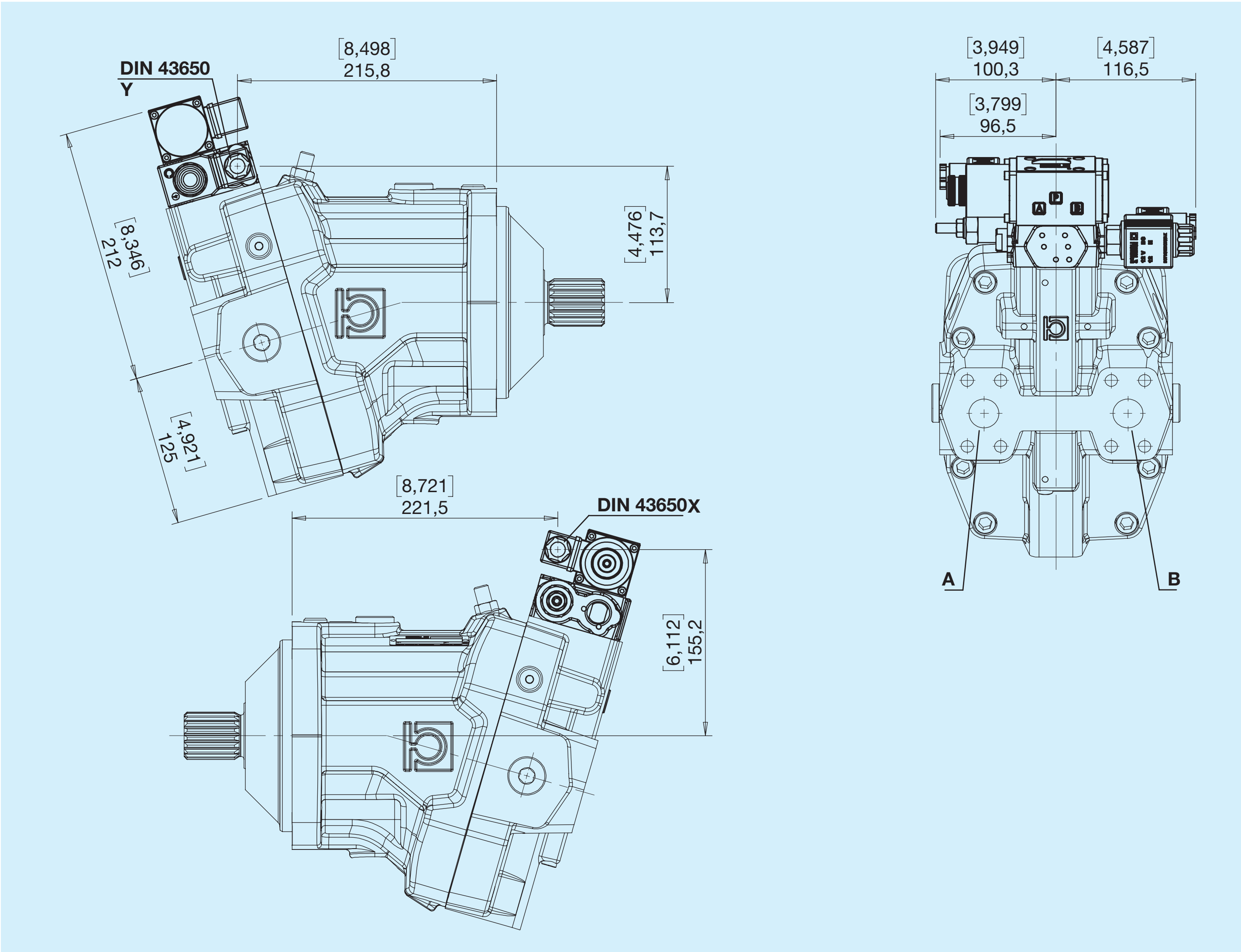
Pilot



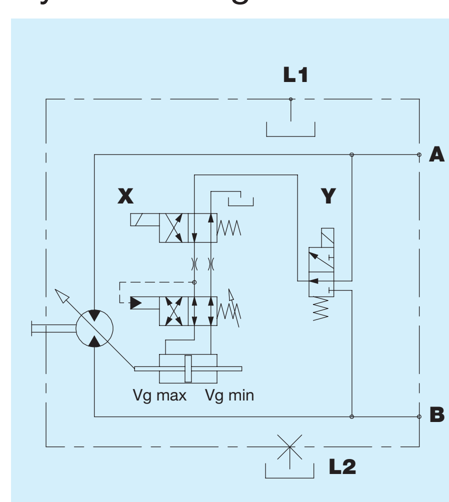
Hydraulic diagram



R Electric ON/OFF with pressure override and channel selector

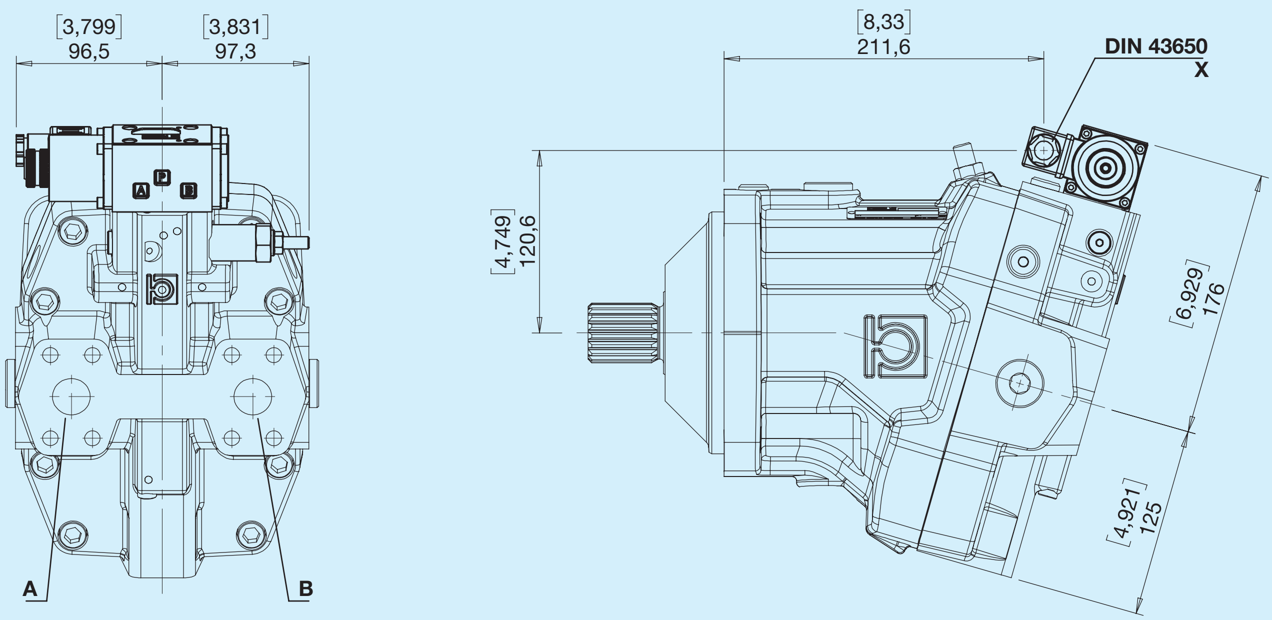


Hydraulic diagram



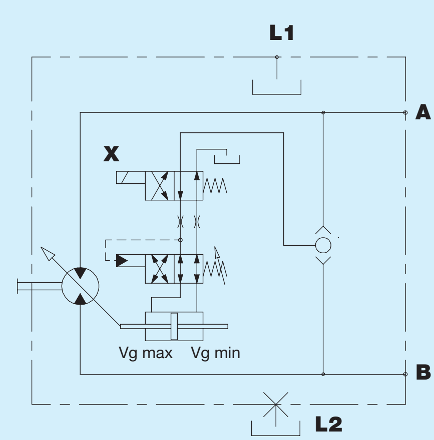
Inlet	Rotation
Right	Left
Right	Right

U Electric ON/OFF with pressure override



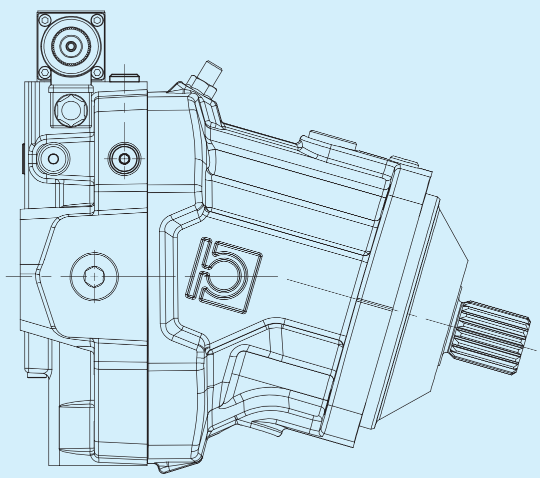
Inlet	Rotation
Right	Left
Right	Right

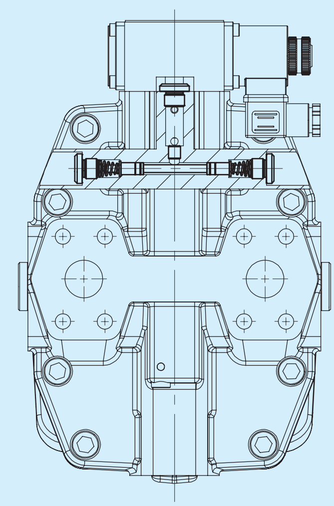
Hydraulic diagram



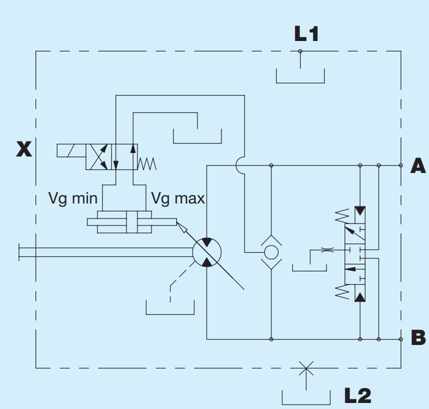
BONDIOLI & PAVESI HP Hydraulic

V Flushing valve (5-7 l/min)





Hydraulic diagram



HPBA 110-130 Instructions for ordering

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
HPBA 110-130														

1 2 3 Standard displacement

110 | **130**

4 5 Minimum displacement

...

6 Flanges

I	ISO 4 holes standard	**P**	ISO 2 holes cartridge centring

7 Shafts

B	DIN 5480 W40x2x30x18	**D**	DIN 5480 W45x2x30x21

8 Type of ports

G	Gas	**U**	UNF	**N**	Gas-SAE inlet/outlet	**M**	UNF-SAE inlet/outlet

9 Position of ports

P	Rear	**L**	Opposite sideways	**Y**	Rear with rotated valve (not available for O - V - G controls)	**J**	Opposite sideways with rotated valve (not available for O - V - G controls)

10 Controls

A	Hydraulic automatic, ON/OFF	**G**	Proportional hydraulic	**O**	Electronic proportional feedback control 12V	**U**	Electric ON/OFF with pressure override
E	Electric 2-position 12V	**H**	Direct hydraulic, 2-position	**V**	Electronic proportional feedback control 24V		
F	Electric 2-position 24V	**K**	Hydraulic, 2-position, low pressure	**R**	Electric ON/OFF with pressure override and channel selector		

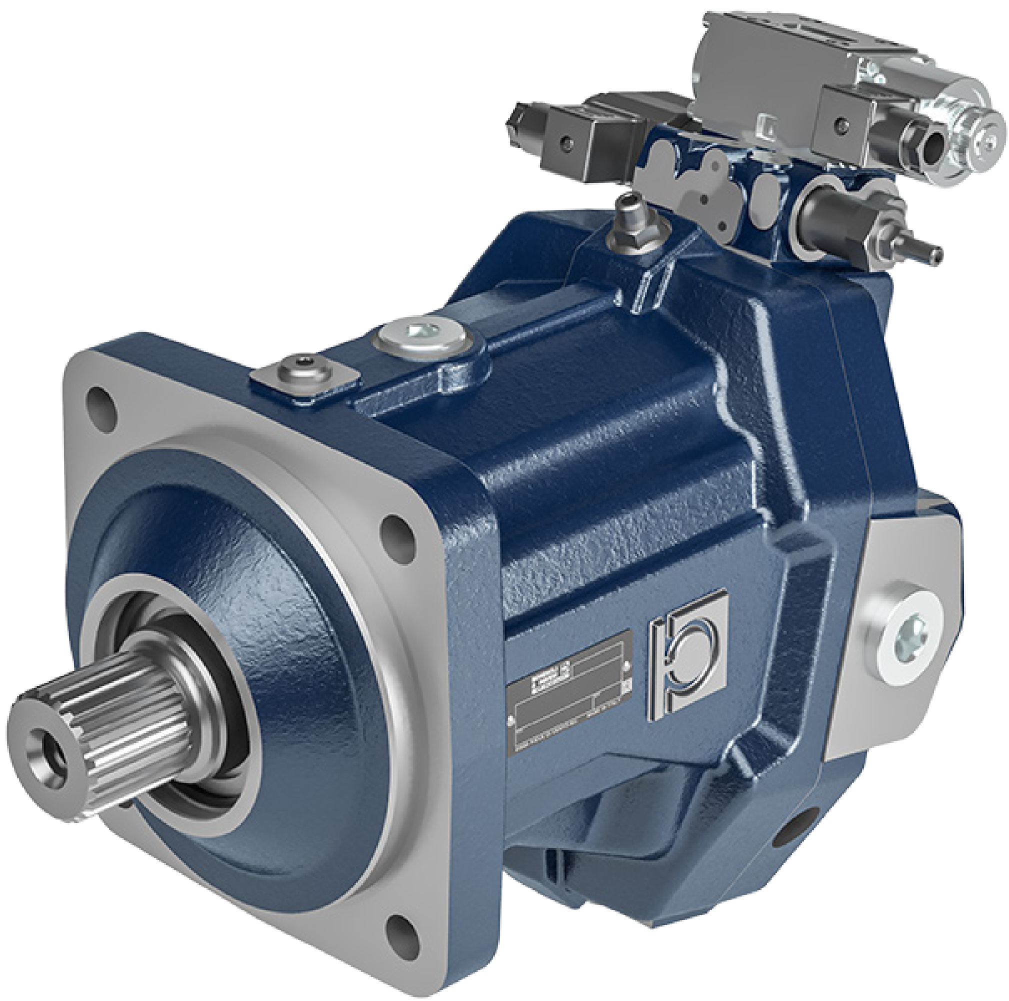
11 Accessories

0	No option	**V**	Flushing valve	**V**	Flushing valve

12 13 14 Special versions

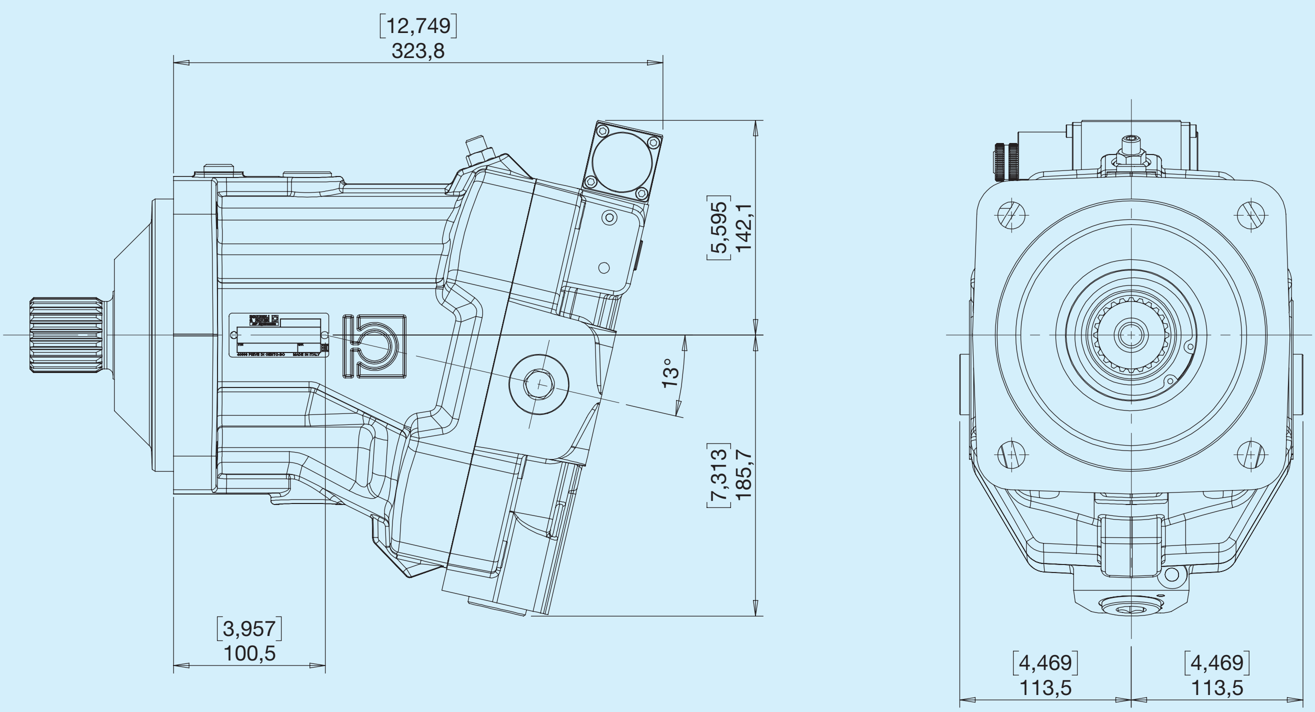
...

Variable-displacement motors HPBA 160-200



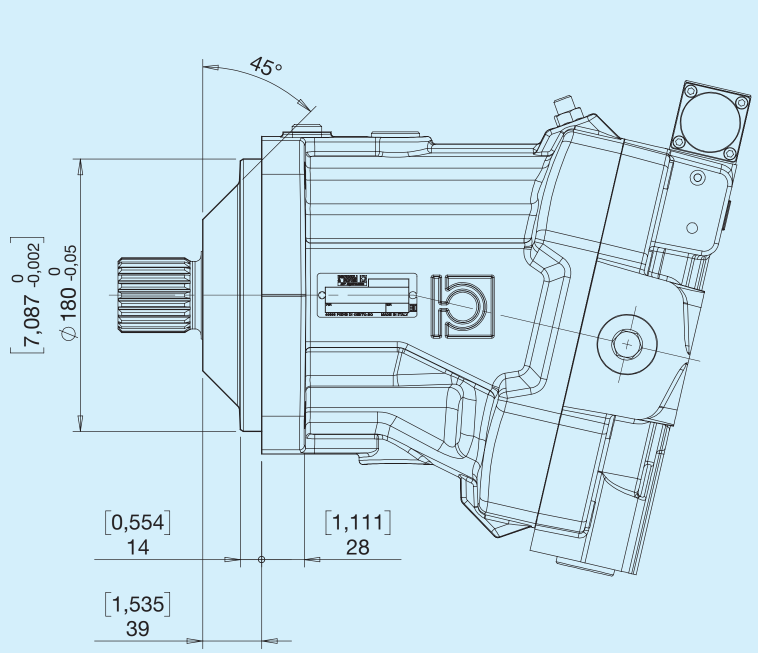
Before use, carefully read the GENERAL INSTRUCTIONS FOR USE OF CLOSED CIRCUIT AXIAL PISTON PUMPS AND MOTORS.

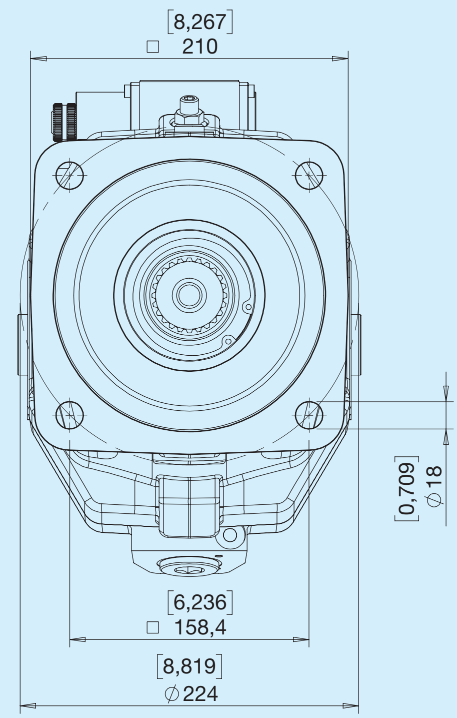
Dimensions and technical data



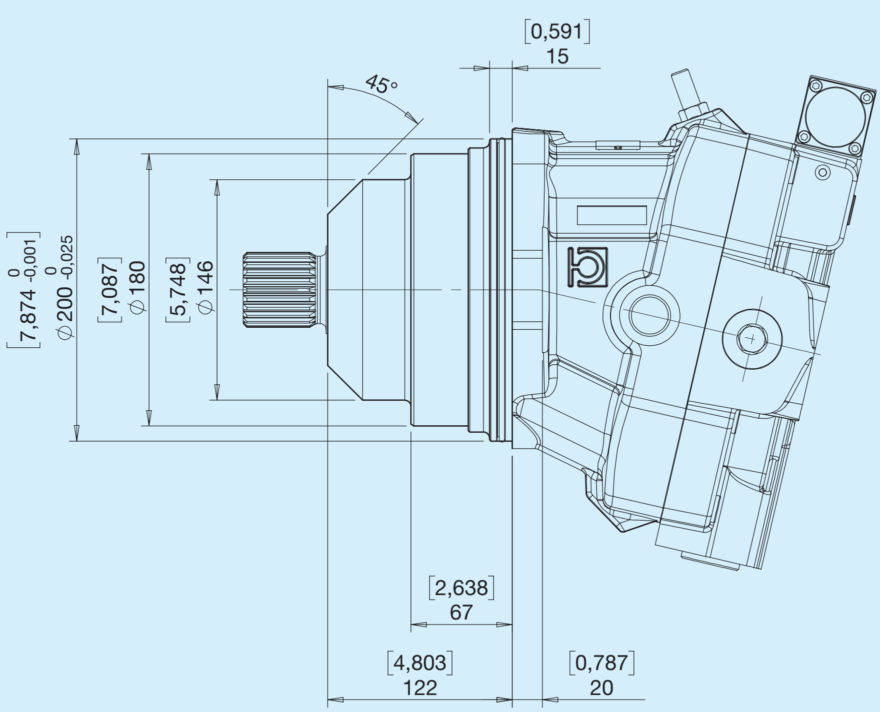
HPBA	Theoretical displacement		Swash plate	Continuous Pressure		Intermittent pressure		Peak pressure		Rotational speed			Weight	
	cm³	**in³**	°	**bar**	**psi**	**bar**	**psi**	**bar**	**psi**	**MAX (max V) min⁻¹**	**MAX (min V) min⁻¹**	**MIN min⁻¹**	**kg**	**lbs**
160	160	9.77	25	380	5510	400	5800	450	6525	3100	**4000**	500	80	176
200	200	12.20	25	350	5075	380	5510	420	6090	2800	**4000**	500	81.7	180

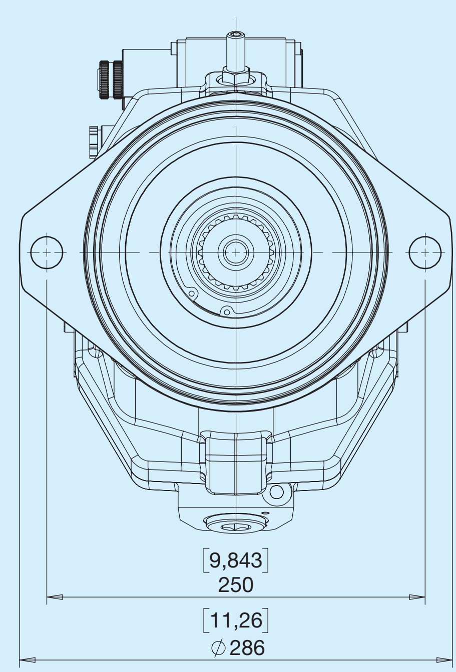
I ISO 4 holes standard



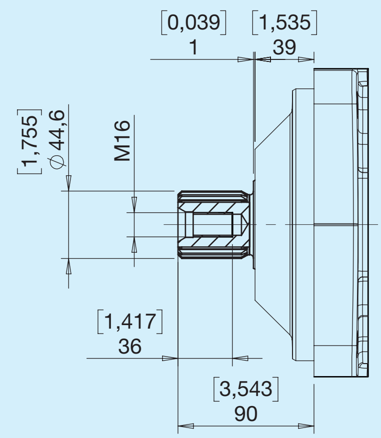


P ISO 2 holes cartridge centring

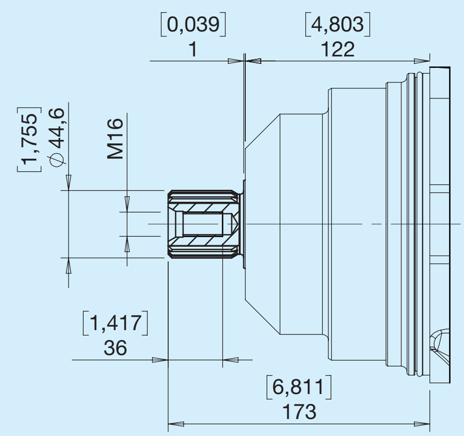




D DIN 5480 W45x2x30x21

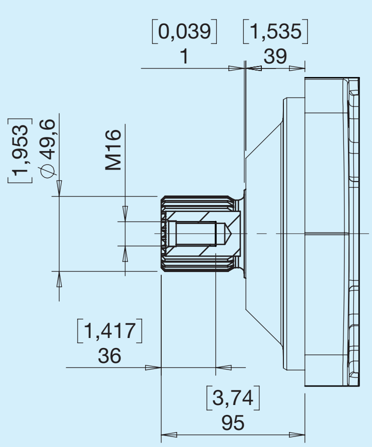


Max. torque 1980 Nm

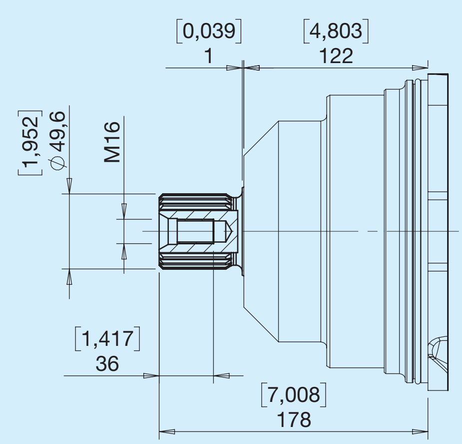


Max. torque 1980 Nm

E DIN 5480 W50x2x30x24

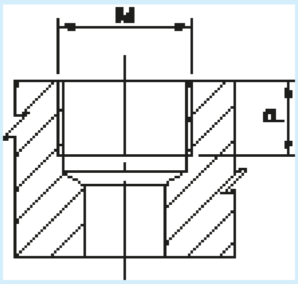


Max. torque 2860 Nm



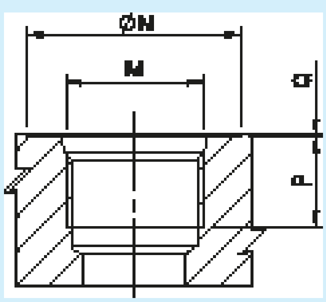
Max. torque 2860 Nm

Type G



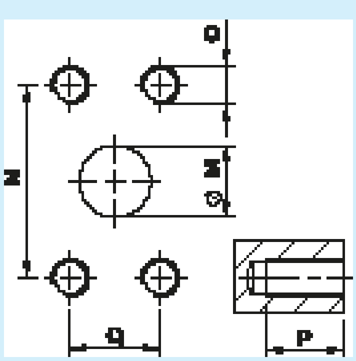
Type	M		P	
		Nm	mm	in
G2	Port ISO 1179-1 - G 1/4	17	8	0.31
G6	Port ISO 1179-1 - G 3/4	90	19	0.75
G7	Port ISO 1179-1 - G 1	160	19	0.75

Type U



Type	Dim.	N		P		Q		M	
		mm	in	mm	in	mm	in		Nm
U2	1/4'	20	0.79	12	0.47	0.3	0.01	Port ISO 11926-1-7/16-20	17
U6	3/4'	41	1.61	20	0.79	0.3	0.01	Port ISO 11926-1-1 1/16-12	90
U7	1'	49	1.93	18	0.70	0.3	0.01	Port ISO 11926-1-1 5/16-12	160

Type N

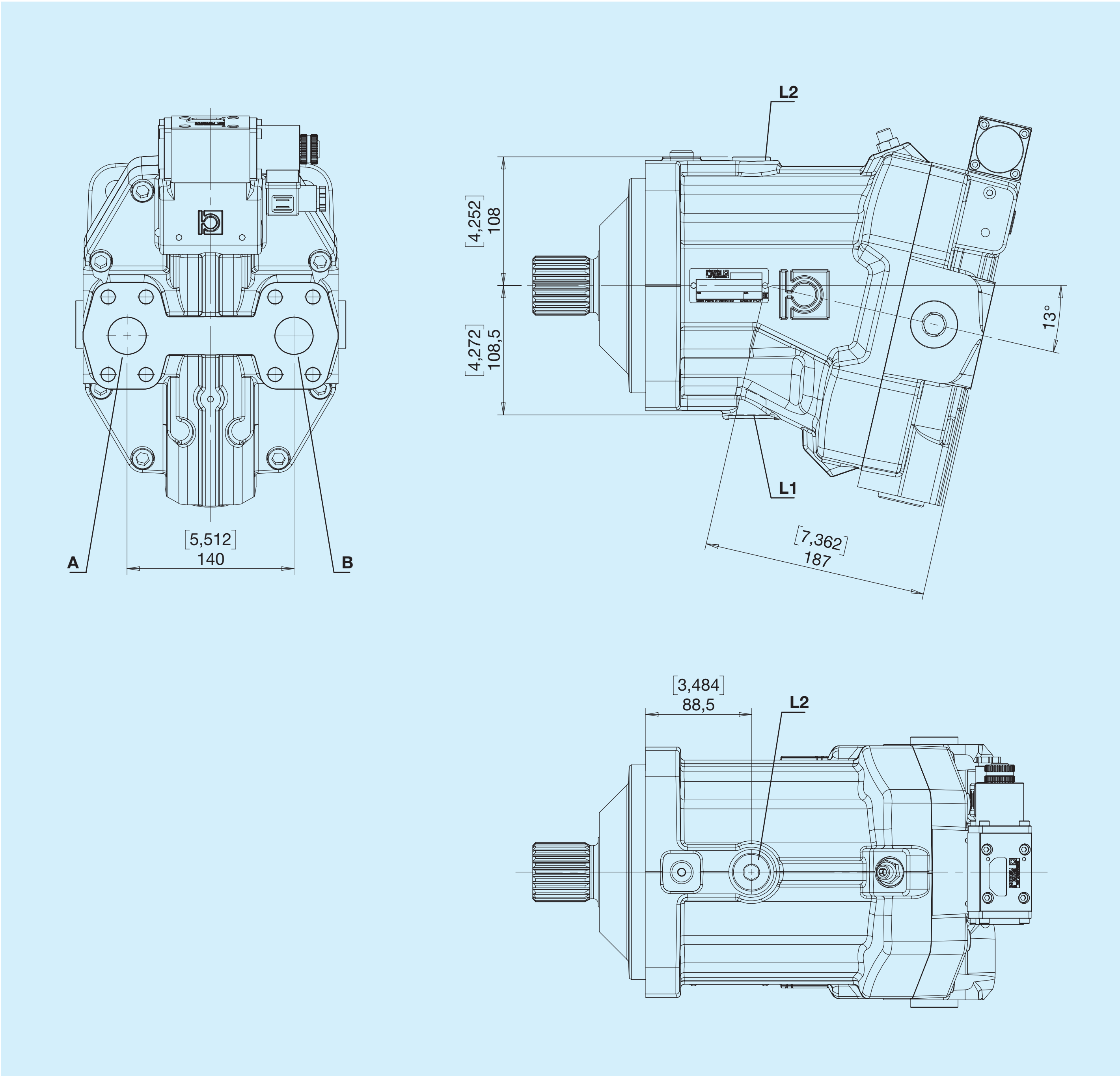


Type	M		N		Q		P		O	
	mm	in	mm	in	mm	in	mm	in		Nm
N8	32	1.26	66.7	2.62	31.8	1.25	20	0.79	M12	70

Combinations

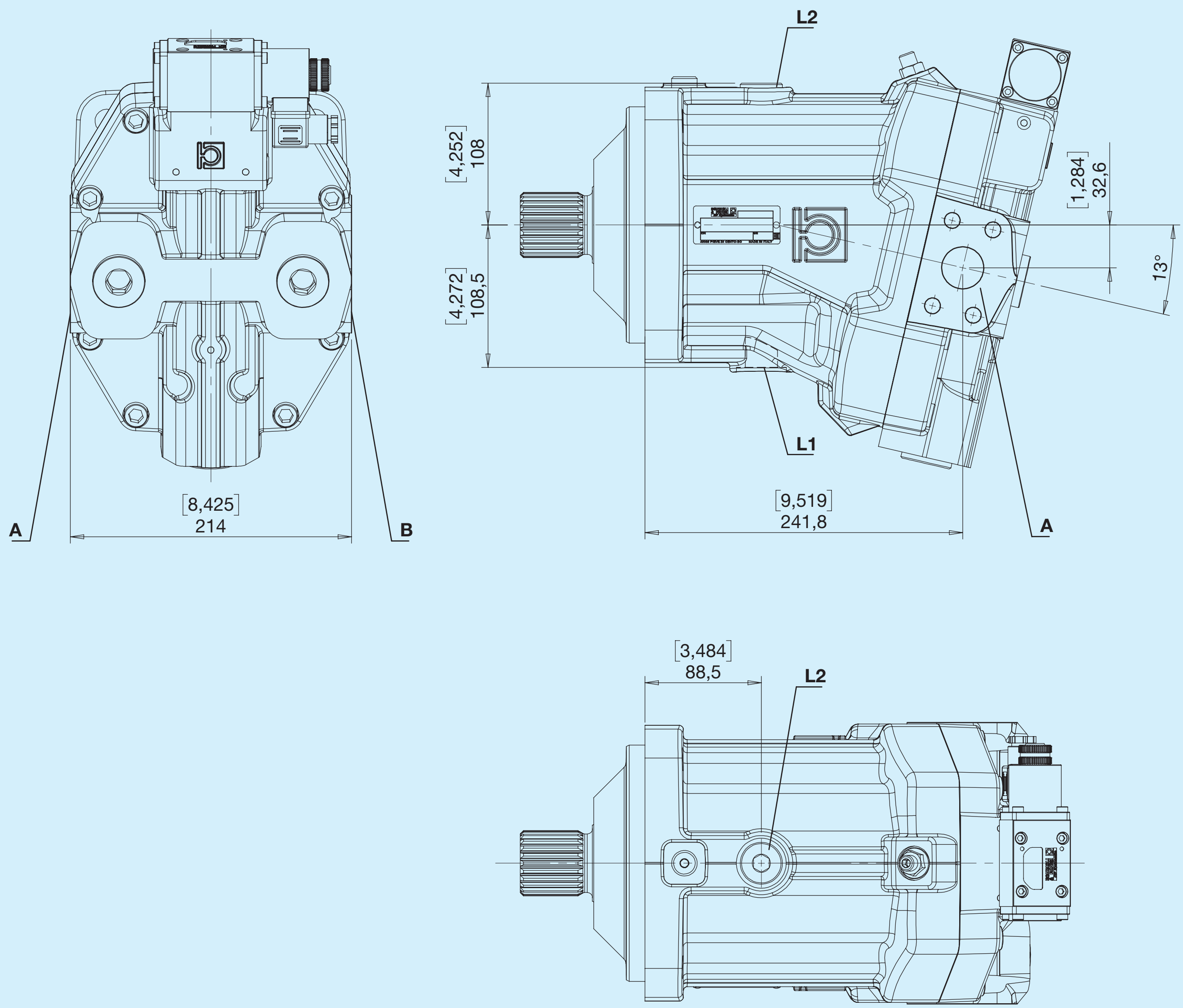
Type	Inlet/outlet **A-B**	Drain port **L1-L2**	Pilot **a-b-x**
G	G6	G6	G6
U	U6	U6	U6
N	N8	G6	G2
M	N8	U6	U2

P Rear



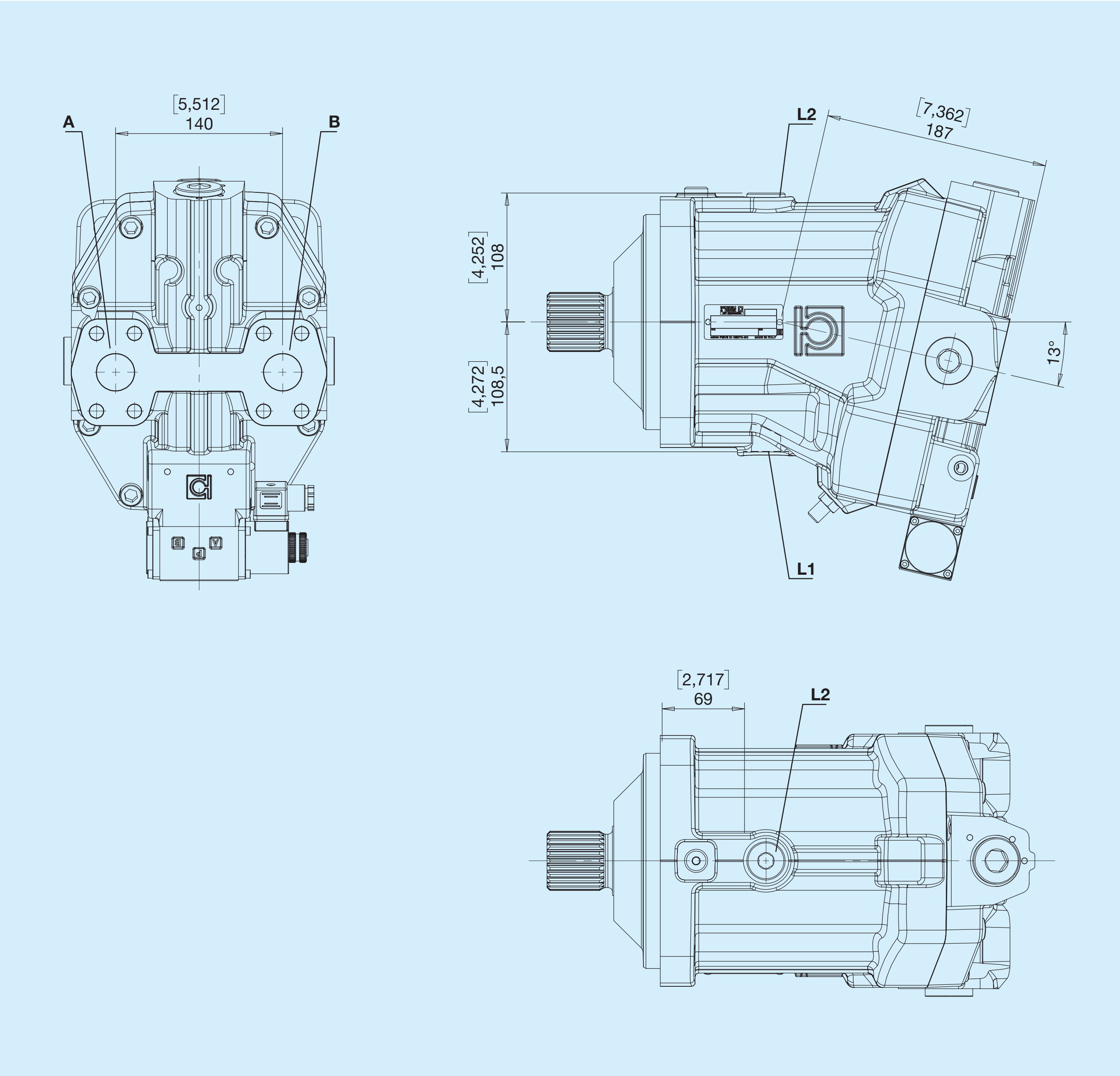
A,B - Use
L1, L2 - Drain port

L Opposite sideways



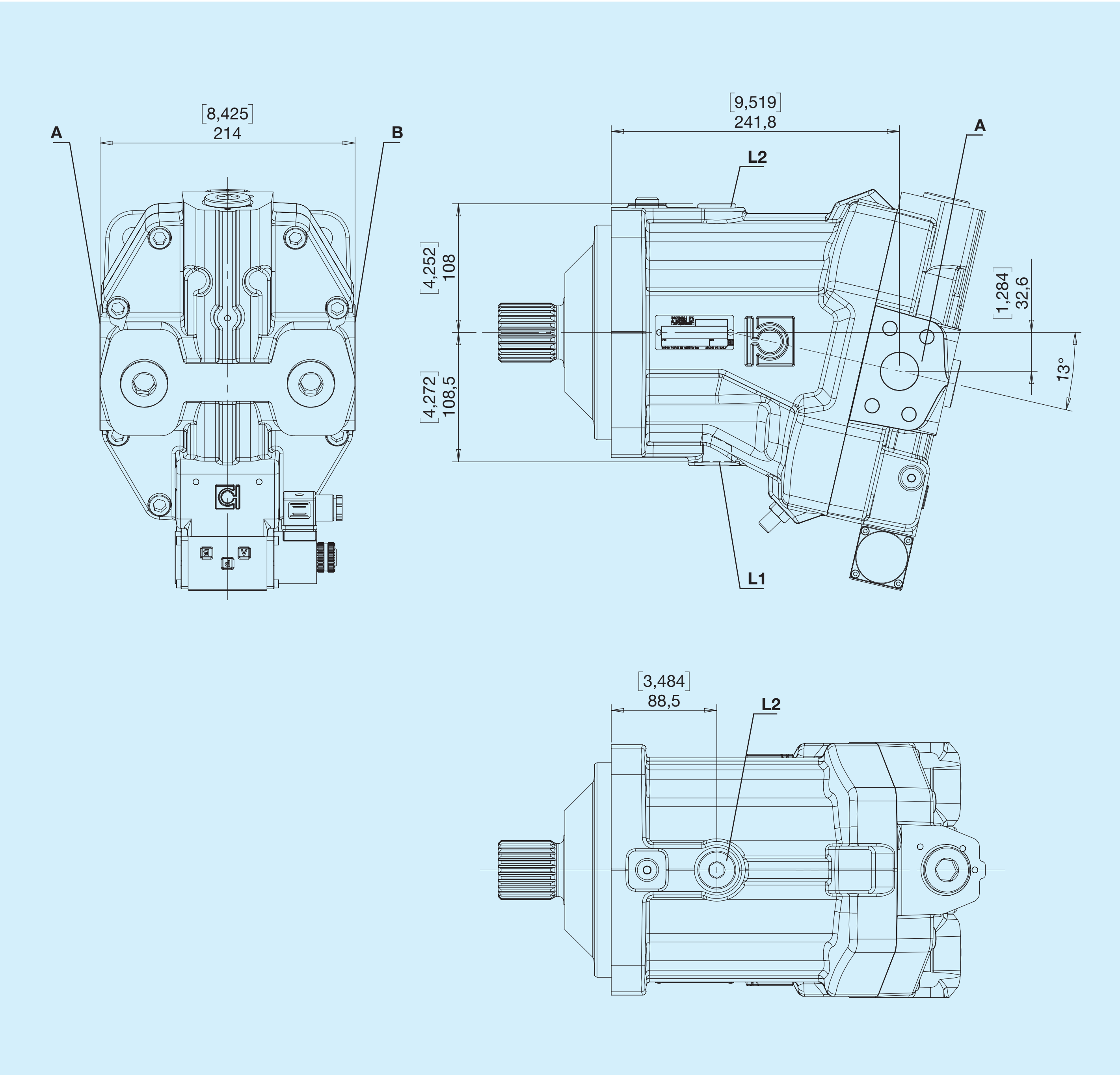
A,B - Use
L1, L2 - Drain port

Y Rear with rotated valve



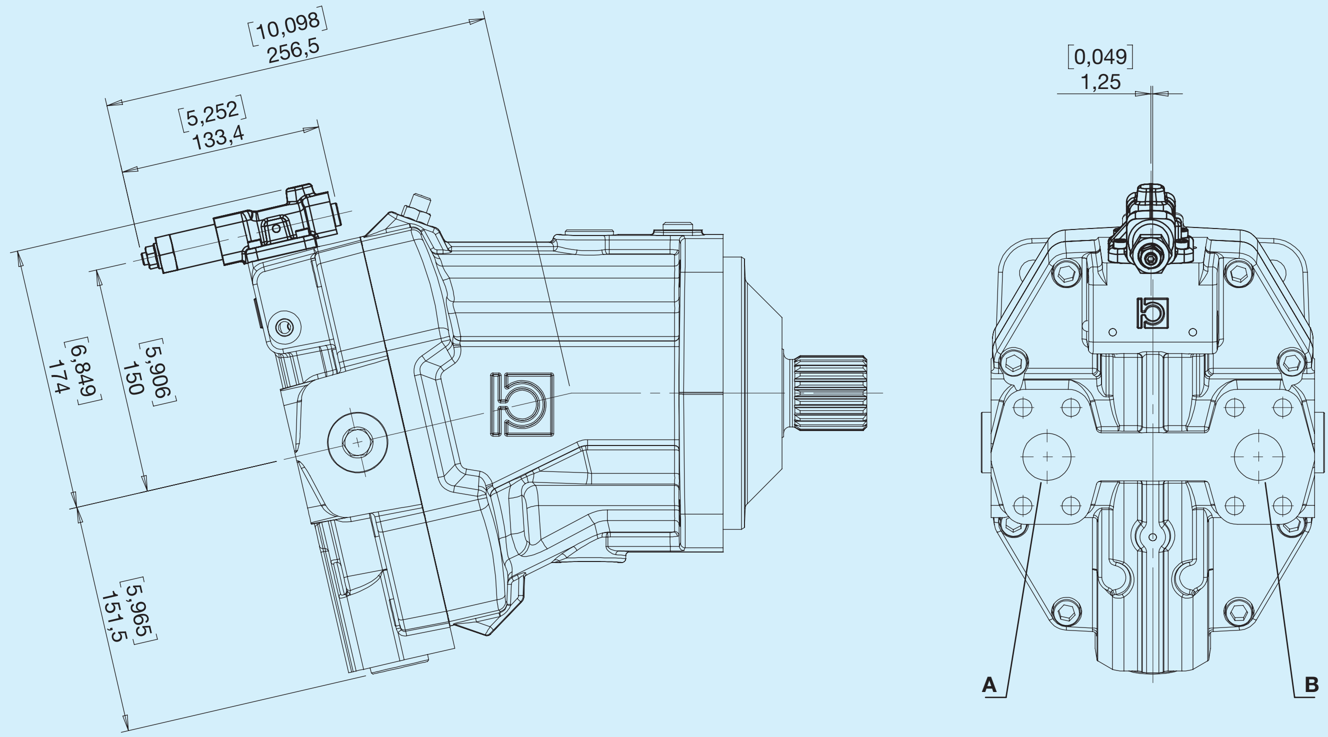
A,B - Use
L1, L2 - Drain port

J Opposite sideways with rotated valve



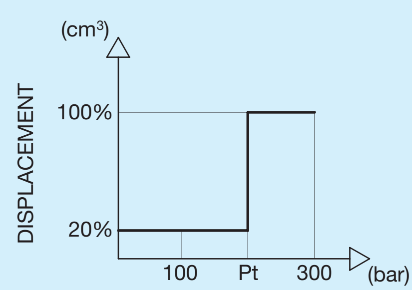
A,B - Use
L1, L2 - Drain port

A Hydraulic automatic, ON/OFF



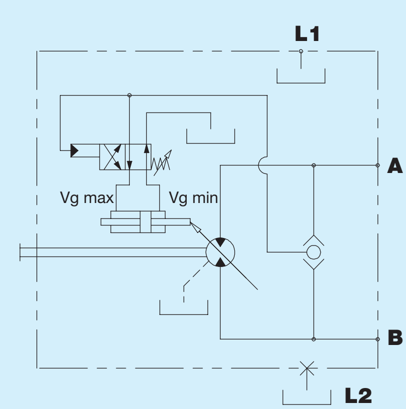
Inlet	Rotation
Right	Left
Right	Right

Pilot

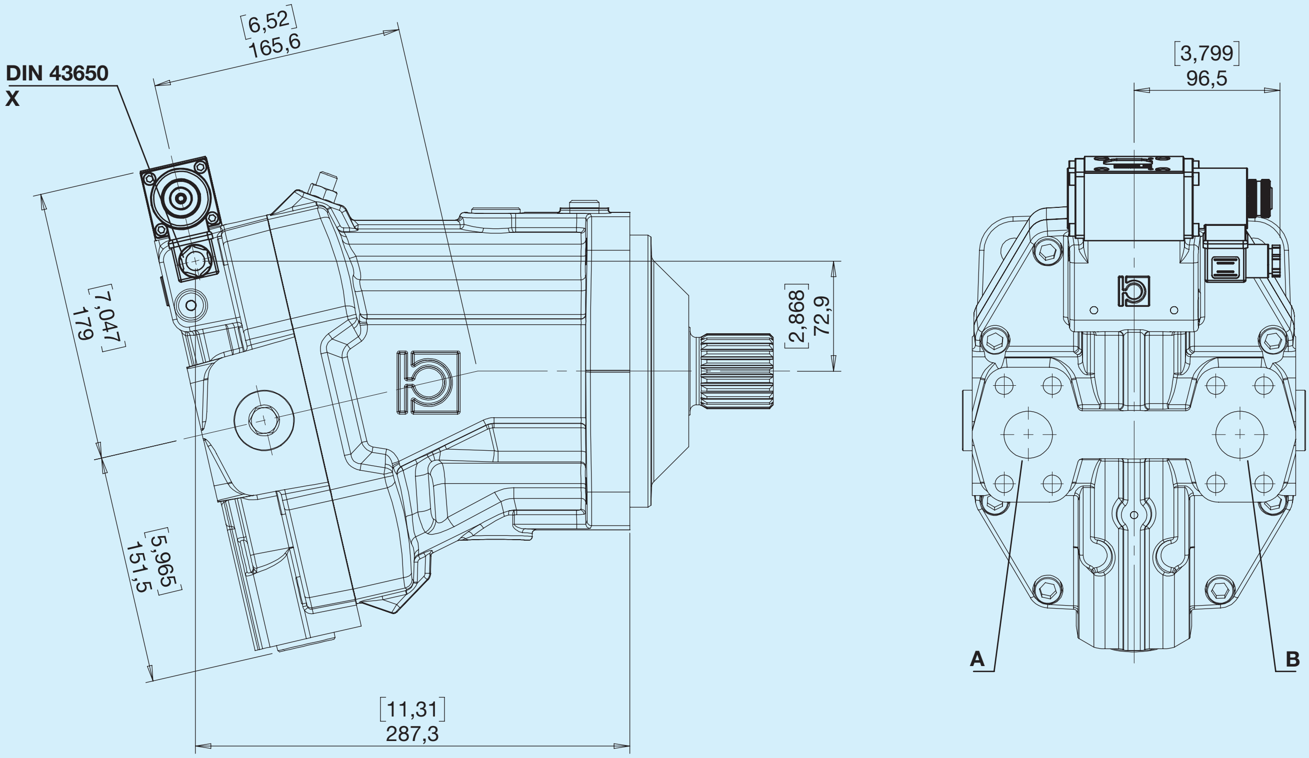


Pt - Calibration pressure (according to customer specifications)

Hydraulic diagram



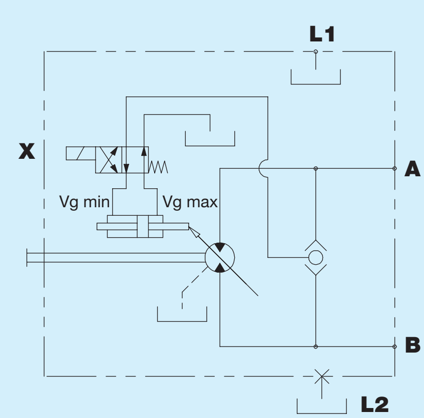
E Electric 2-position 12V



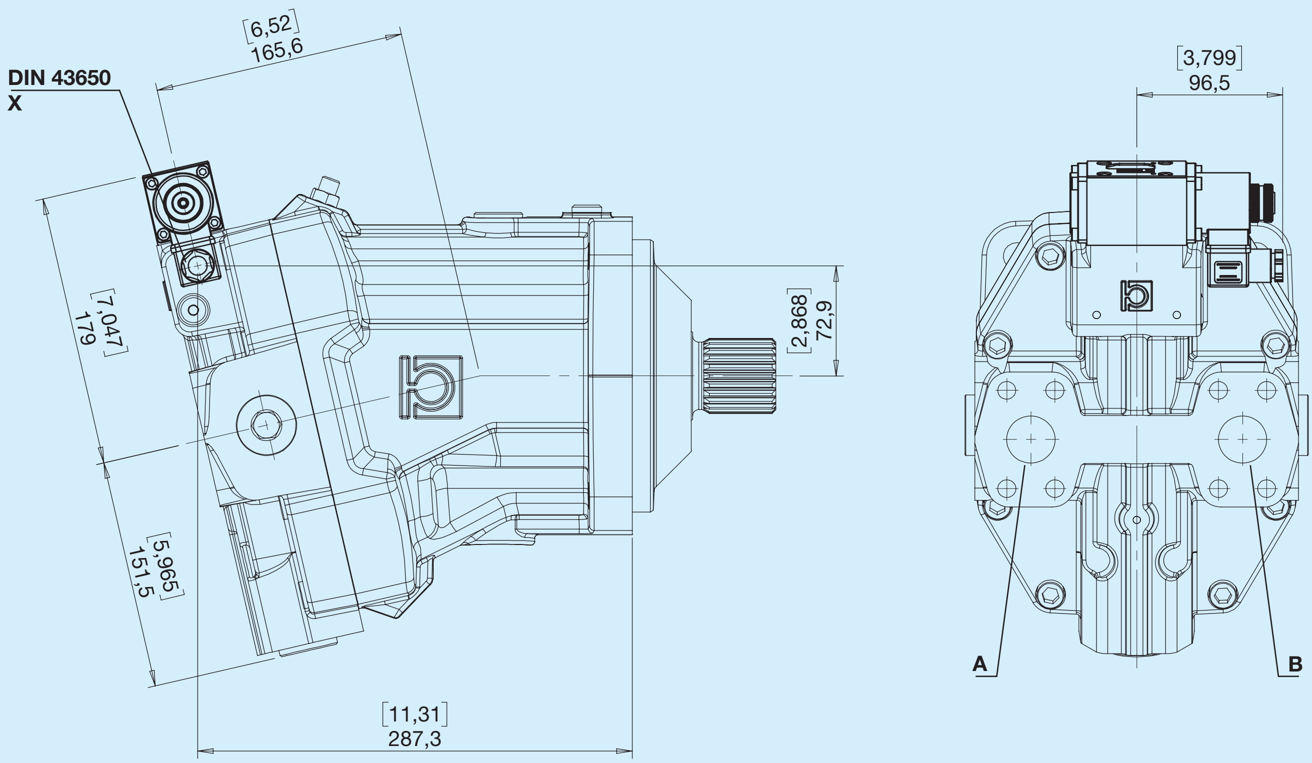
X - Solenoid valve available on request with DEUTSCH DT04-2P connectors

Inlet	Rotation
Right	Left
Right	Right

Hydraulic diagram

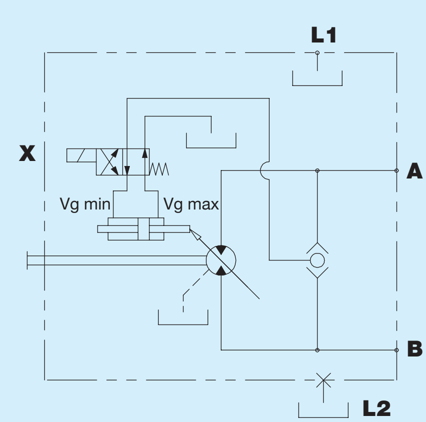


F Electric 2-position 24V



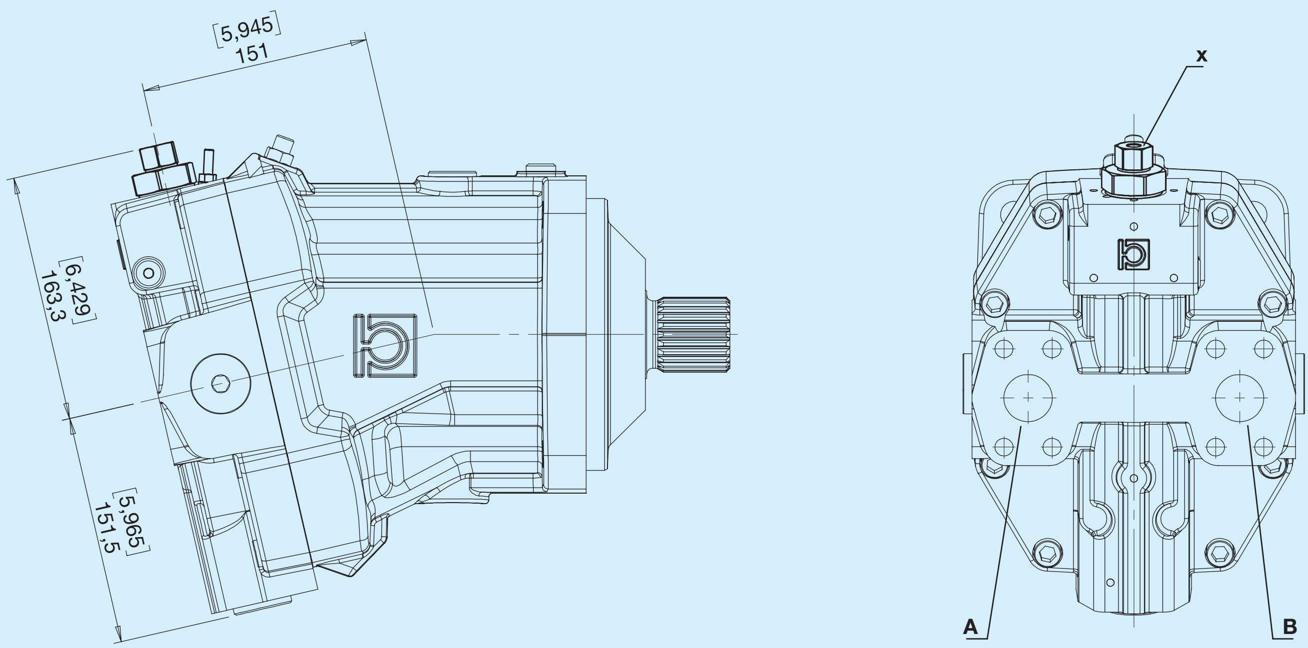
X - Solenoid valve available on request with DEUTSCH DT04-2P connectors

Hydraulic diagram



Inlet	Rotation
Right	Left
Right	Right

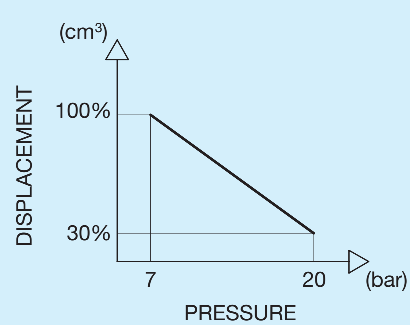
G Proportional hydraulic



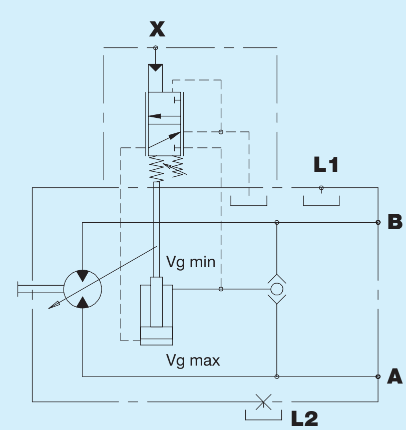
X - Pilot G1/8

Inlet	Rotation
Right	Left
Right	Right

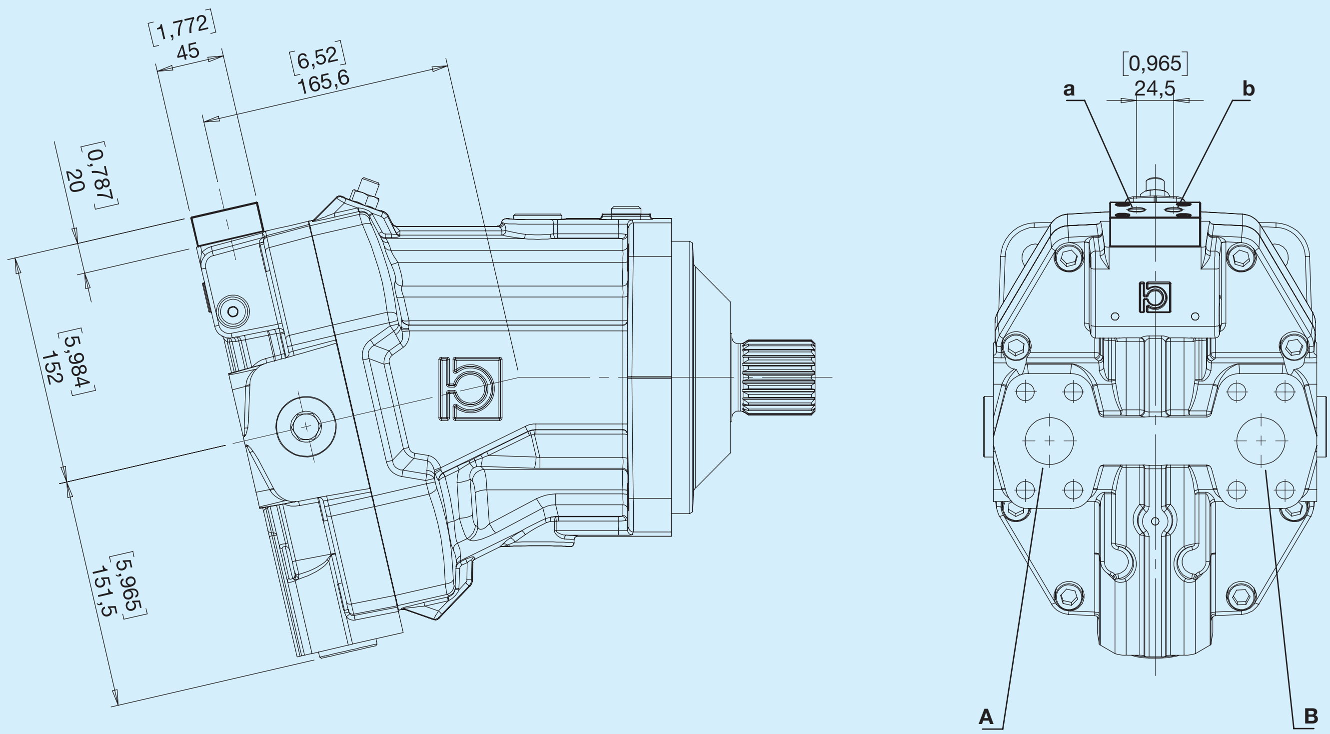
Pilot



Hydraulic diagram

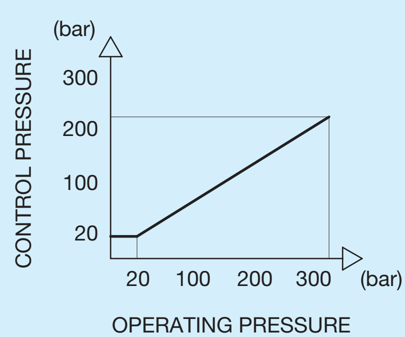


H Direct hydraulic, 2-position

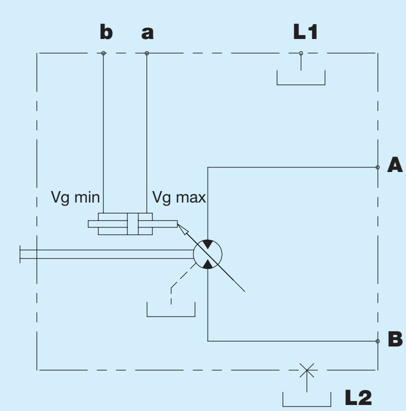


Inlet	Rotation
Right	Left
Right	Right

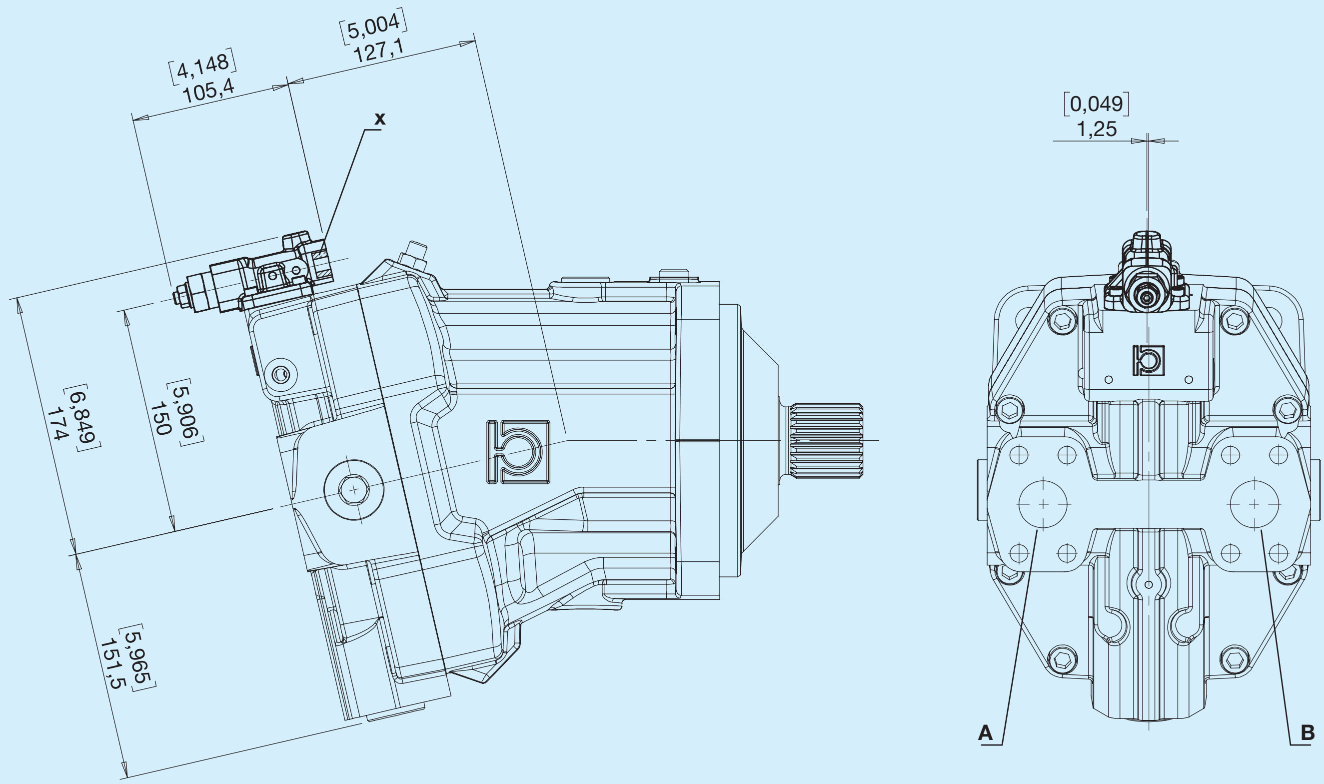
Pilot



Hydraulic diagram



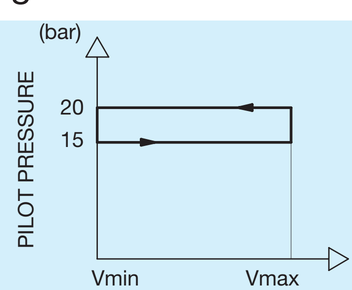
K Hydraulic, 2-position, low pressure



X - Pilot G1/8

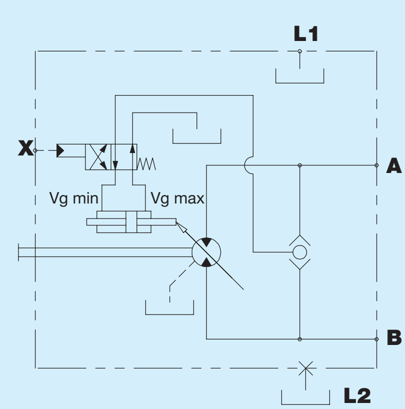
Inlet	Rotation
Right	Left
Right	Right

Diagram

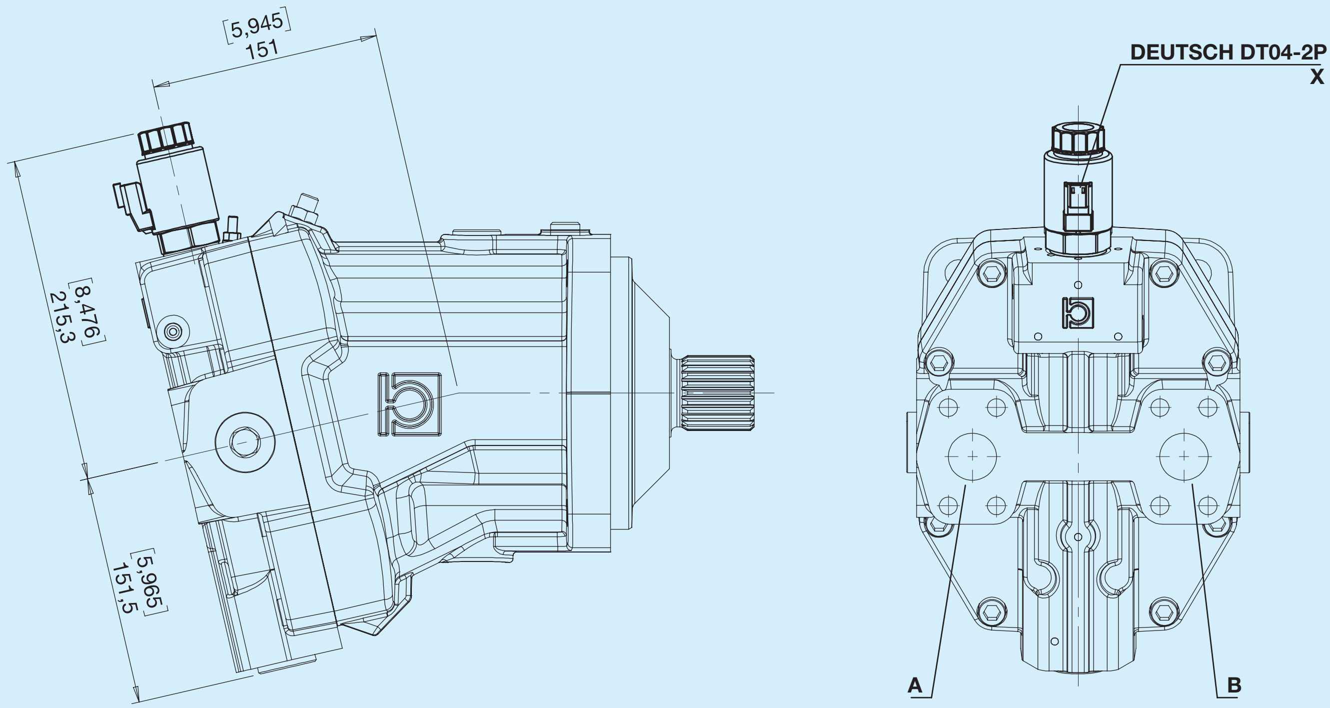


The motor is normally at maximum displacement. By applying external pressure to the pilot valve, the motor switches to minimum displacement. For correct displacement variation, observe the pilot pressure values shown in the diagram.

Hydraulic diagram



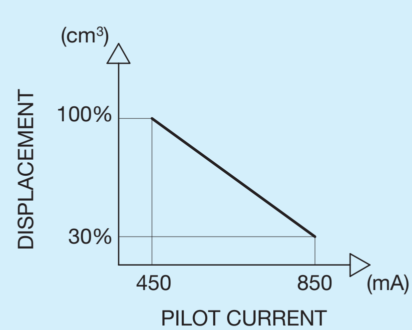
O Electronic proportional feedback control 12V



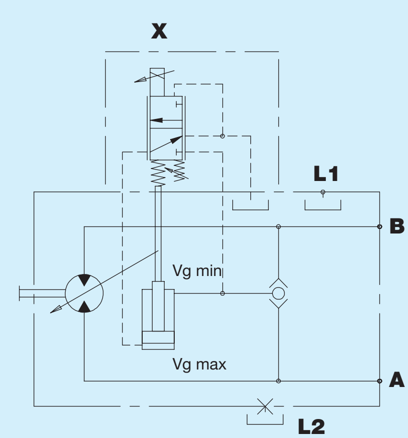
X - Solenoid valve

Inlet	Rotation
Right	Left
Right	Right

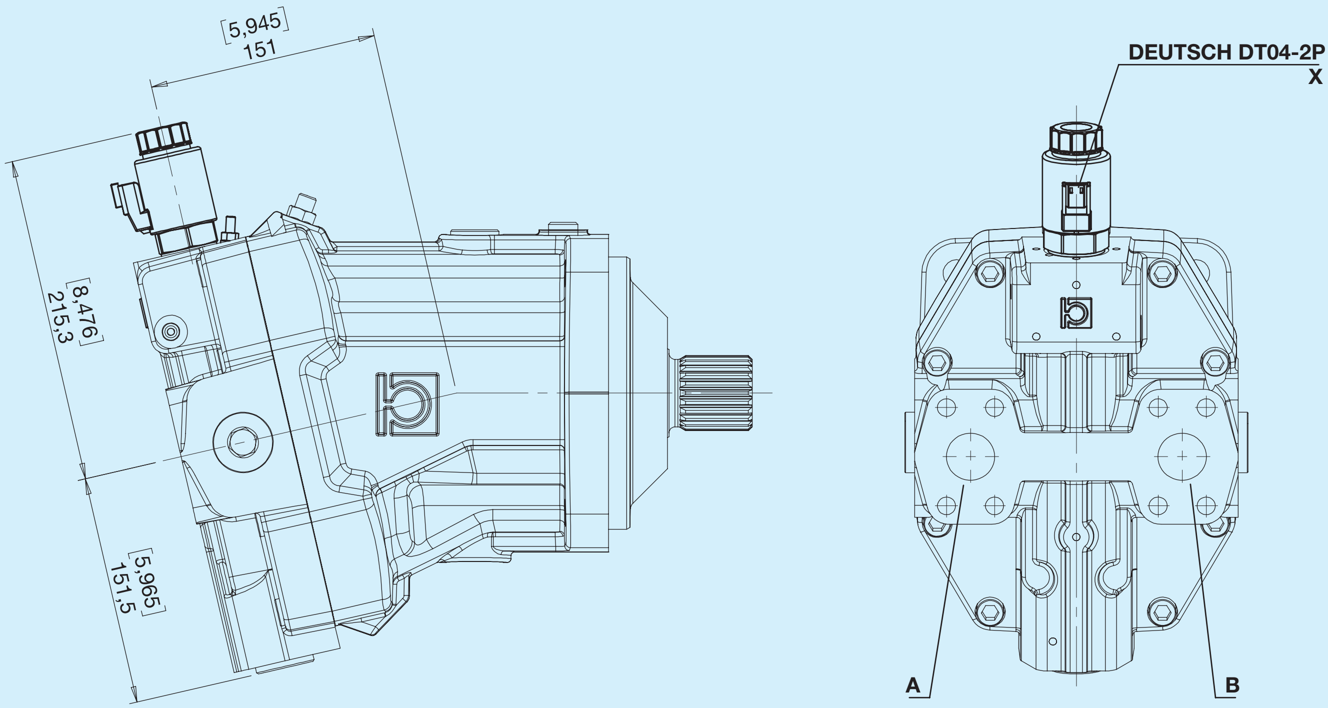
Pilot



Hydraulic diagram



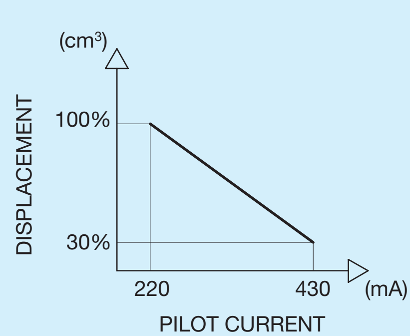
V Electronic proportional feedback control 24V



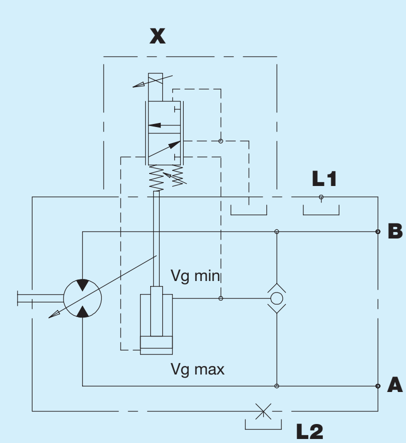
X - Solenoid valve

Inlet	Rotation
Right	Left
Right	Right

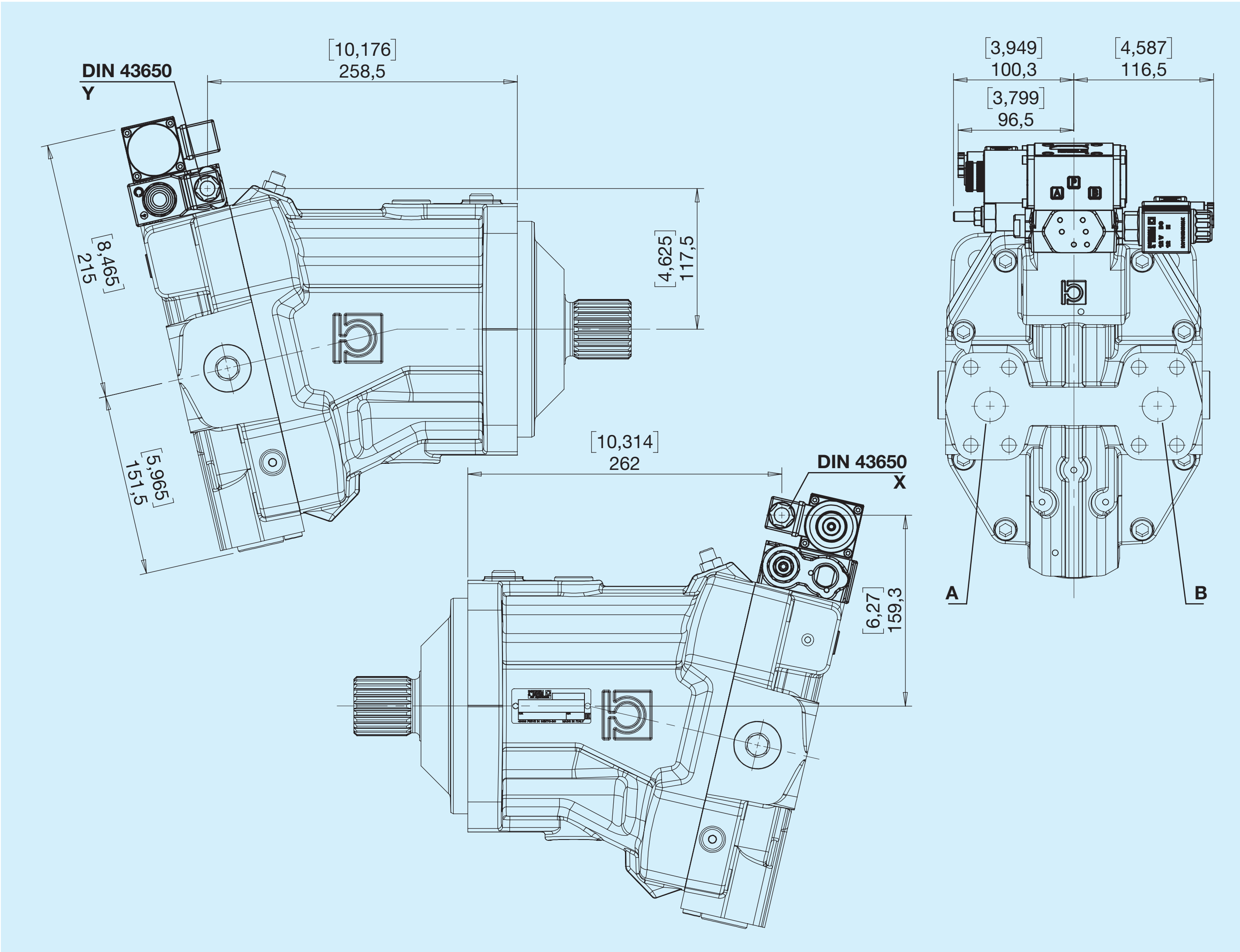
Pilot



Hydraulic diagram

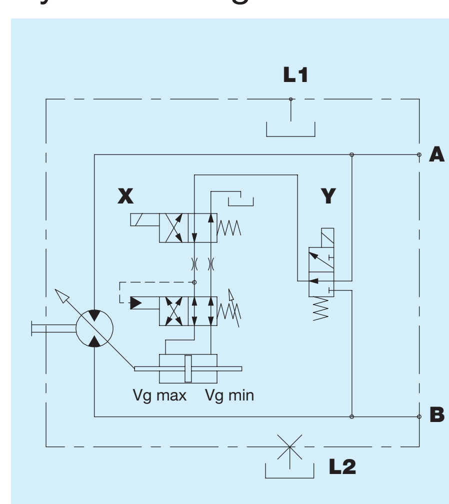


R Electric ON/OFF with pressure override and channel selector

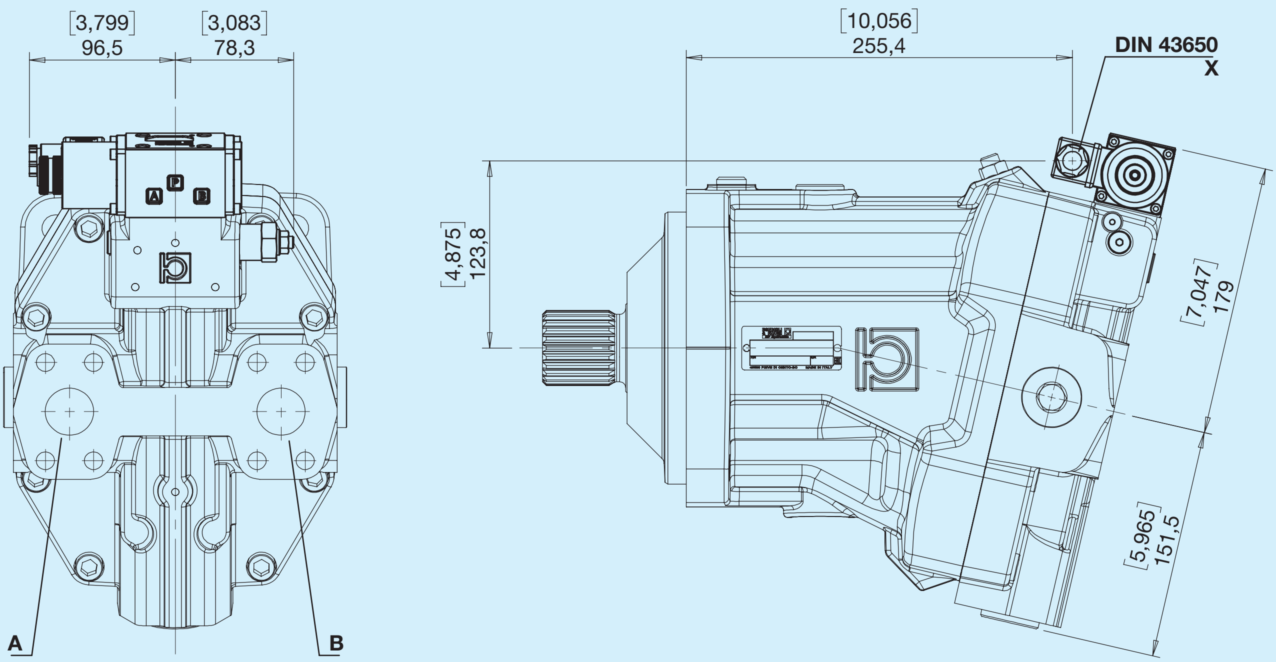


Inlet	Rotation
Right	Left
Right	Right

Hydraulic diagram

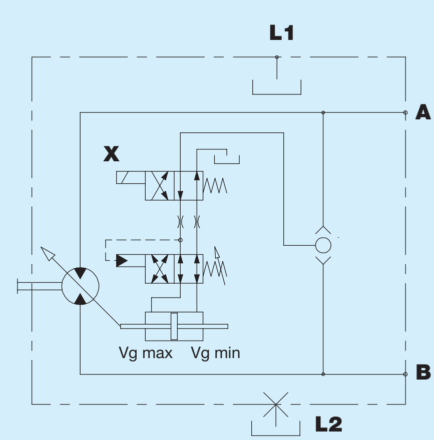


U Electric ON/OFF with pressure override

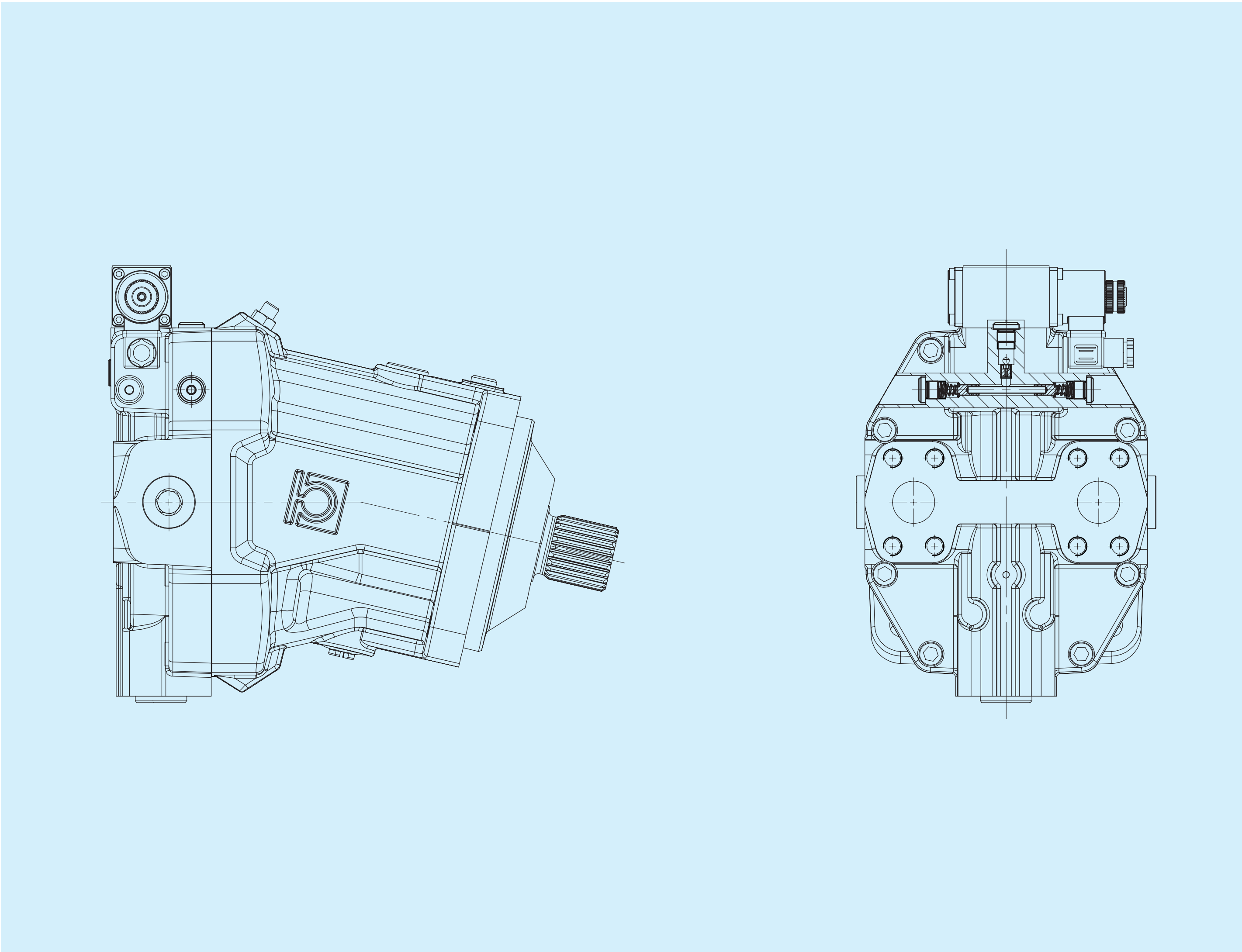


Inlet	Rotation
Right	Left
Right	Right

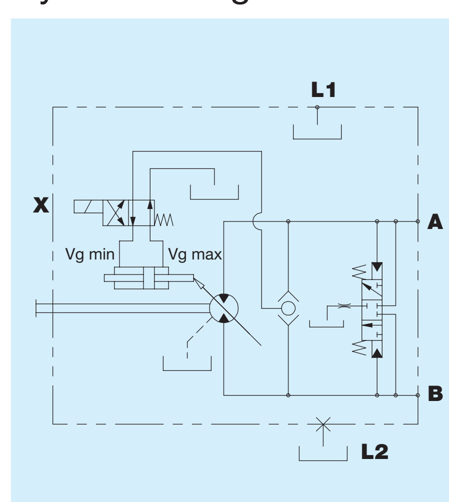
Hydraulic diagram



V Flushing valve (5-7 l/min)



Hydraulic diagram



Instructions for ordering

HPBA 160-200	1	2	3	4	5	6	7	8	9	10	11	12	13	14

1 2 3 – Standard displacement

160	**200**

4 5 – Minimum displacement

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6 – Flanges

I	ISO 4 holes standard	**P**	ISO 2 holes cartridge centring

7 – Shafts

D	DIN 5480 W45x2x30x21	**E**	DIN 5480 W50x2x30x24

8 – Type of ports

G	Gas	**U**	UNF	**N**	Gas-SAE inlet/outlet	**M**	UNF-SAE inlet/outlet

9 – Position of ports

P	Rear	**L**	Opposite sideways	**Y**	Rear with rotated valve (not available for O - V - G controls)	**J**	Opposite sideways with rotated valve (not available for O - V - G controls)

10 – Controls

A	Hydraulic automatic, ON/OFF	**G**	Proportional hydraulic	**O**	Electronic proportional feedback control 12V	**U**	Electric ON/OFF with pressure override
E	Electric 2-position 12V	**H**	Direct hydraulic, 2-position	**V**	Electronic proportional feedback control 24V		
F	Electric 2-position 24V	**K**	Hydraulic, 2-position, low pressure	**R**	Electric ON/OFF with pressure override and channel selector		

11 – Accessories

0	No option	**V**	Flushing valve	**V**	Flushing valve

12 13 14 – Special versions

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