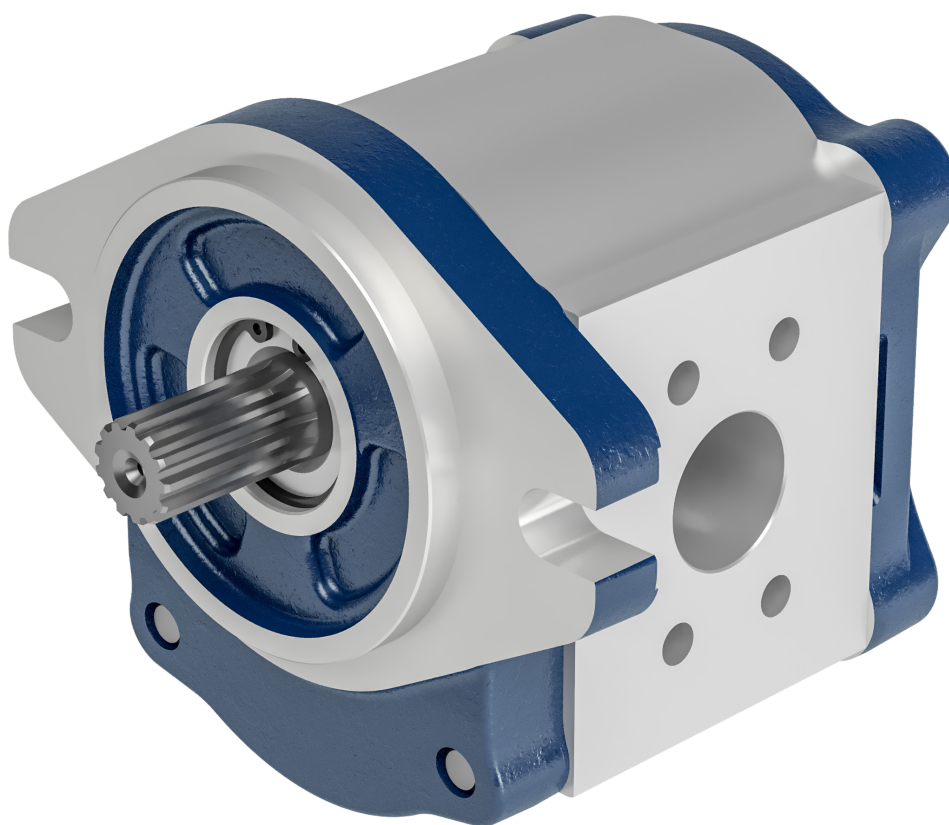


HPL Series



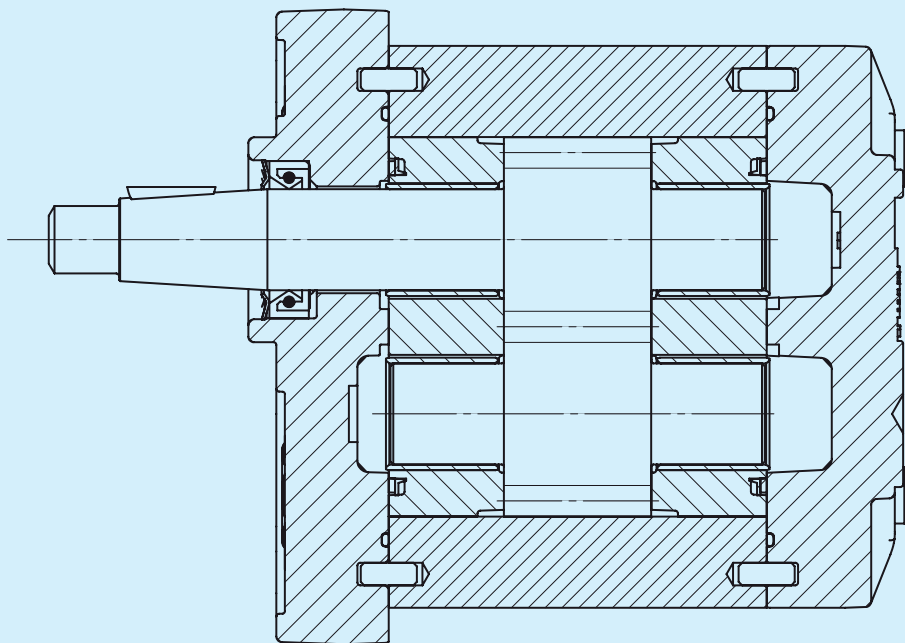
Introduction	4
HPL..1	5
HPL..2	23
HPL..3	49
HPL..4	67

Introduction Gear pumps and motors are among the most popularly produced and utilized hydrostatic units. Some of their many characteristics are: robust design, profitable price/performance ratio, easy installation, suitability for customized solutions, possible integration with control devices (valves). HP Hydraulic offers decades of well consolidated experience in the development and production of gear units with a constant approach towards innovation of design and of manufacturing process.

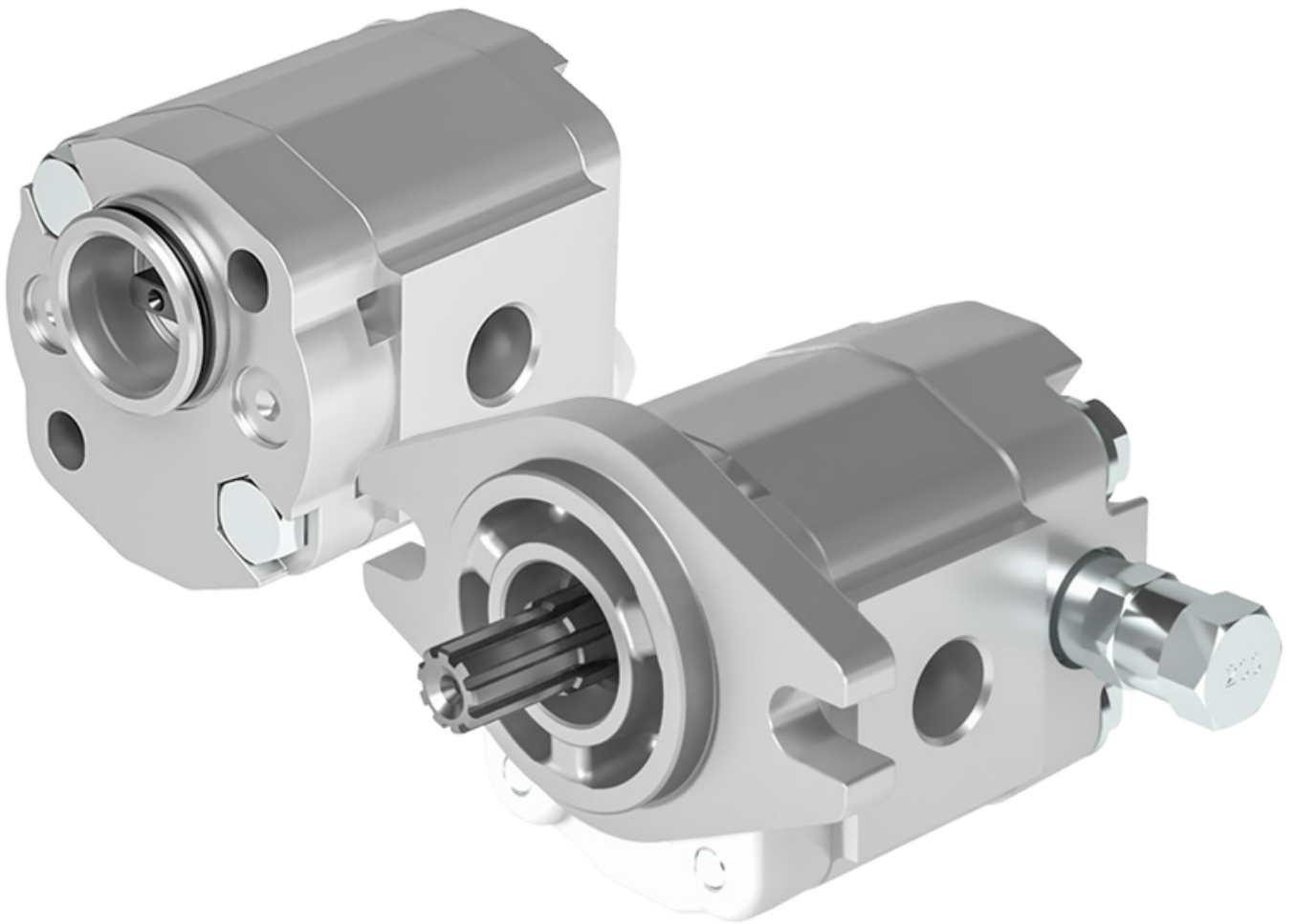
This same experience enables us today to offer a gear pumps range with aluminium body, grouped according to their capacity (from 0,37 to 90 cc/rev.), whose main features can be devised and varied to best respond to customer's requirements and whose performance permits use in any kind of application.

HP Hydraulic series L pumps are supplied in five groups, different in size (1,2,3,4). Various capacities will be determined within each group.

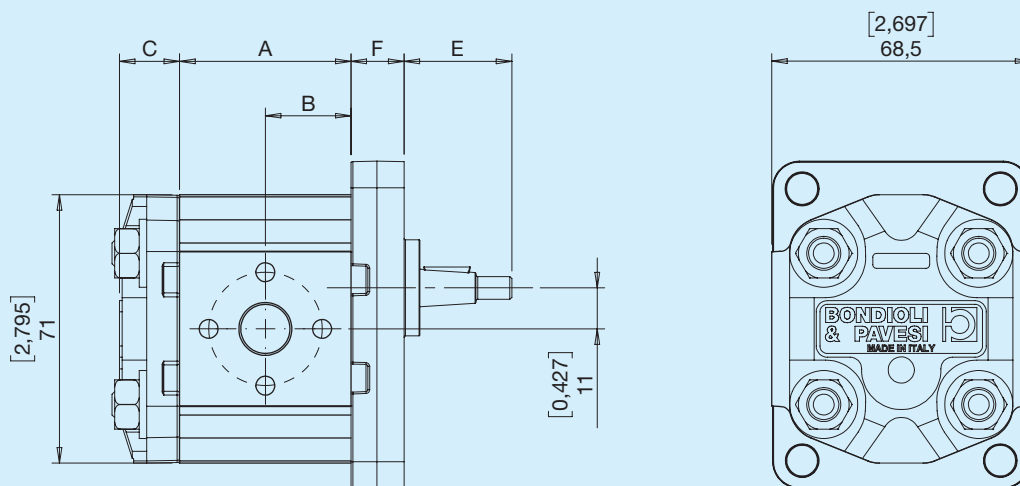
The series of products is even further completed with a full range of flanges, shaft ends, and available multiple pumps with or without valves integrated into the back cover.



HPL Series Group 1

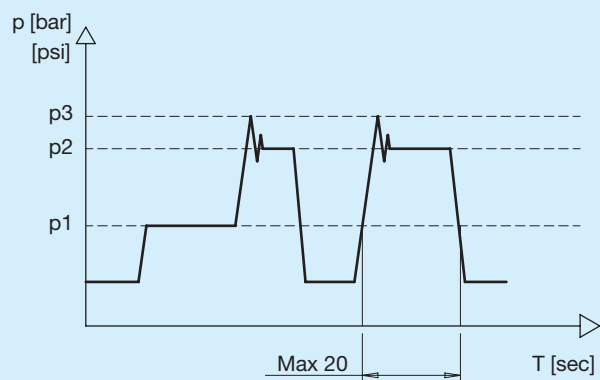


Before use, carefully read the GENERAL INSTRUCTIONS FOR USE OF GEAR PUMPS AND MOTORS.



C - See section on covers E - See section on shafts F - See section on flanges

Pressure definition



p1	Continuous pressure
A,B - Use	Intermittent pressure Maximum pressure permitted for short periods (max. 20 sec)
L1, L2 - Drain port	Peak pressure Maximum permitted pressure intended as peak pressure of Vmax

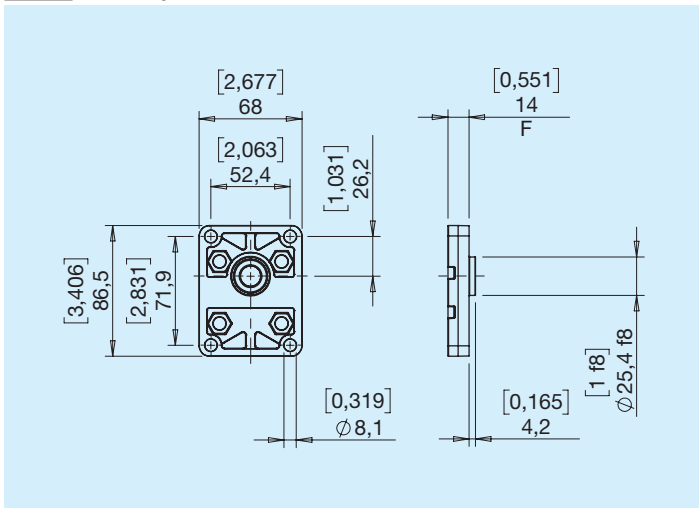
Pump dimensions and technical data

HPLPA1	Nominal displacement		Continuous pressure		Intermittent pressure		Peak pressure		Rotational speed		Weight		A		B	
	cm ³	in ³	bar	psi	bar	psi	bar	psi	min ⁻¹	min ⁻¹	kg	lbs	mm	in	mm	in
14	1.37	0.08	220	3191	260	3771	280	4061	3500	700	0.90	1.98	38.70	1.524	19.4	0.762
19	1.90	0.12	220	3191	260	3771	280	4061	3500	700	0.95	2.09	38.70	1.524	19.4	0.762
24	2.53	0.15	210	3046	250	3626	260	3771	3500	700	0.95	2.09	38.70	1.524	19.4	0.762
31	3.17	0.19	210	3046	250	3626	260	3771	3500	700	0.95	2.09	38.70	1.524	19.4	0.762
36	3.73	0.23	210	3046	250	3626	260	3771	3500	700	1.05	2.31	45.35	1.785	22.7	0.893
44	4.35	0.27	210	3046	250	3626	260	3771	3500	700	1.05	2.31	45.35	1.785	22.7	0.893
48	4.97	0.30	210	3046	250	3626	260	3771	3500	700	1.05	2.31	45.35	1.785	22.7	0.893
60	6.08	0.37	210	3046	250	3626	260	3771	3000	700	1.20	2.65	56.05	2.207	28.0	1.103
70	7.00	0.43	190	2756	210	3046	230	3336	3000	700	1.20	2.65	56.05	2.207	28.0	1.103
80	7.87	0.48	160	2321	180	2611	200	2901	3000	700	1.20	2.65	56.05	2.207	28.0	1.103

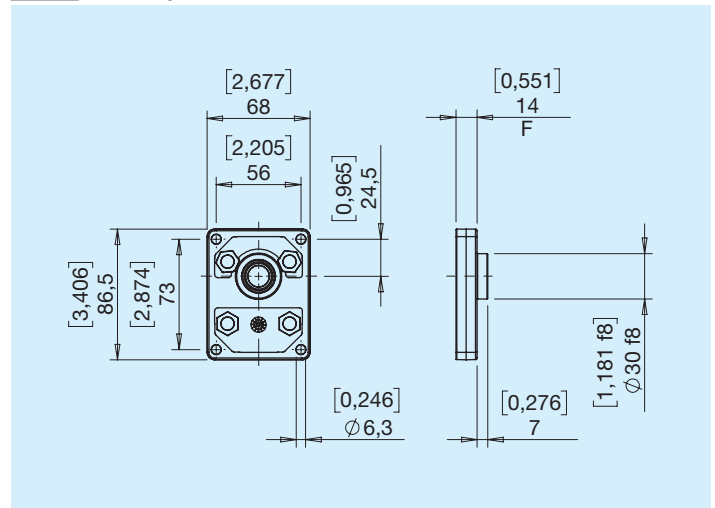
Motor dimensions and technical data

HPLMA1	Nominal displacement		Continuous pressure		Intermittent pressure		Peak pressure		Rotational speed		Weight		A		B	
	cm ³	in ³	bar	psi	bar	psi	bar	psi	min ⁻¹	min ⁻¹	kg	lbs	mm	in	mm	in
19	1.90	0.12	220	3191	260	3771	280	4061	4000	700	0.95	2.09	38.70	1.524	19.4	0.762
24	2.53	0.15	210	3046	250	3626	260	3771	4000	700	0.95	2.09	38.70	1.524	19.4	0.762
31	3.17	0.19	210	3046	250	3626	260	3771	4000	700	0.95	2.09	38.70	1.524	19.4	0.762
36	3.73	0.23	210	3046	250	3626	260	3771	4000	700	1.05	2.31	45.35	1.785	22.7	0.893
44	4.35	0.27	210	3046	250	3626	260	3771	4000	700	1.05	2.31	45.35	1.785	22.7	0.893
48	4.97	0.30	210	3046	250	3626	260	3771	4000	700	1.05	2.31	45.35	1.785	22.7	0.893
60	6.08	0.37	210	3046	250	3626	260	3771	3500	700	1.20	2.65	56.05	2.207	28.0	1.103
70	7.00	0.43	190	2756	210	3046	230	3336	3500	700	1.20	2.65	56.05	2.207	28.0	1.103
80	7.87	0.48	160	2321	180	2611	200	2901	3500	700	1.20	2.65	56.05	2.207	28.0	1.103

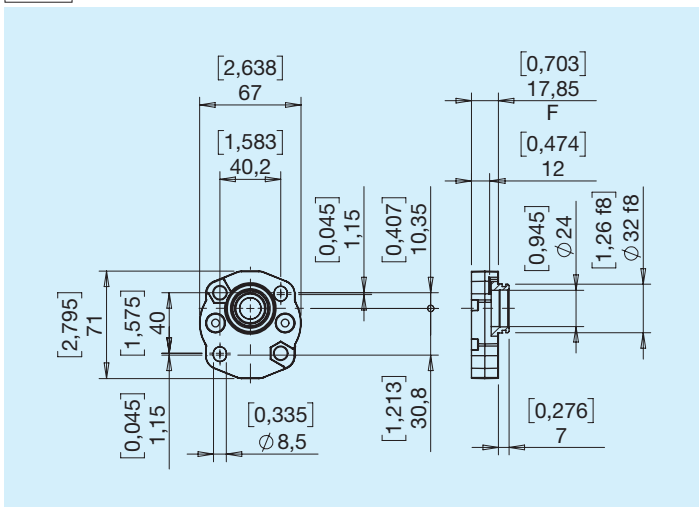
D European D25.4



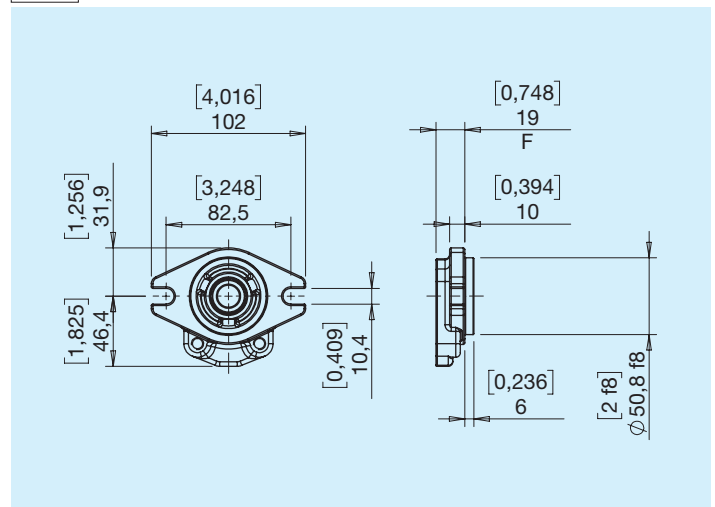
E European D30



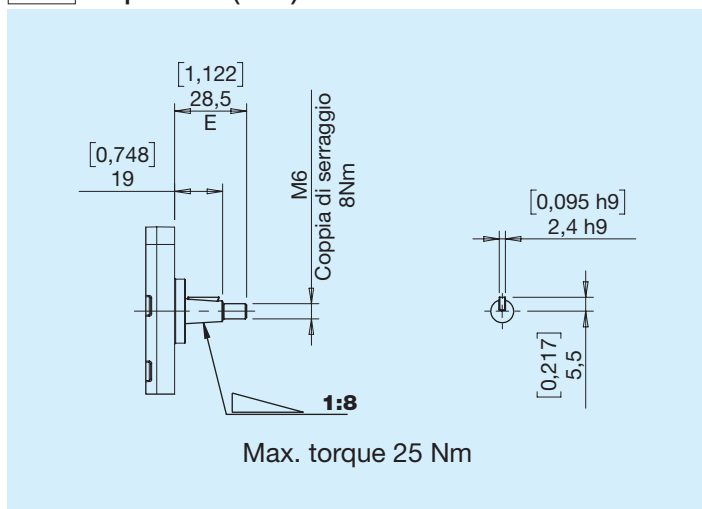
G German



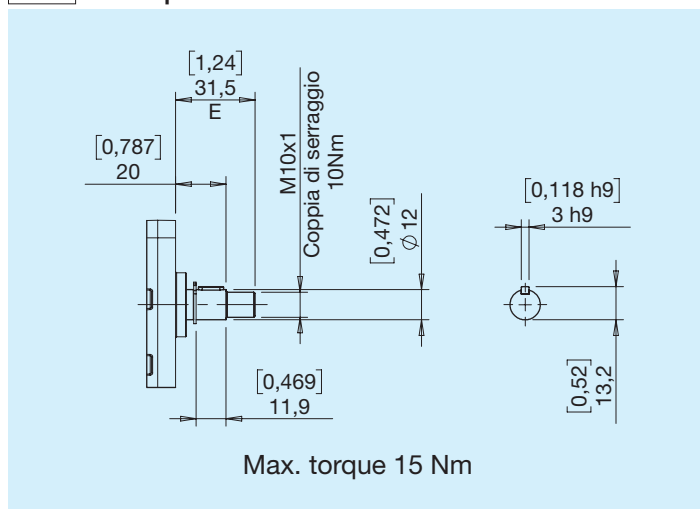
J SAE AA



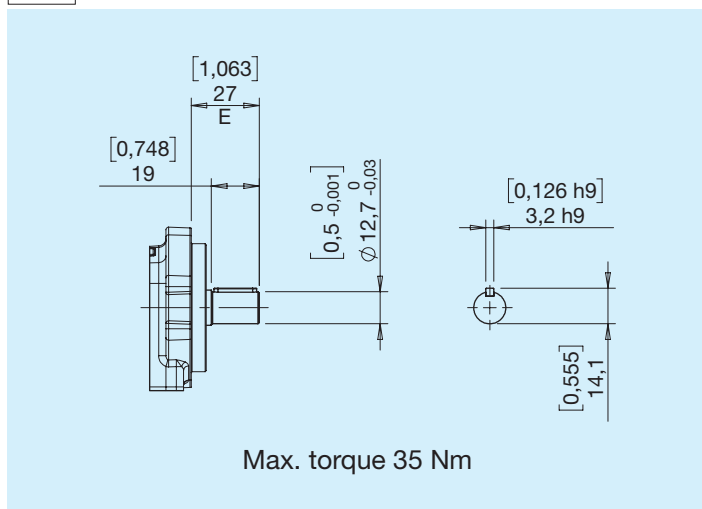
D Tapered (1:8)



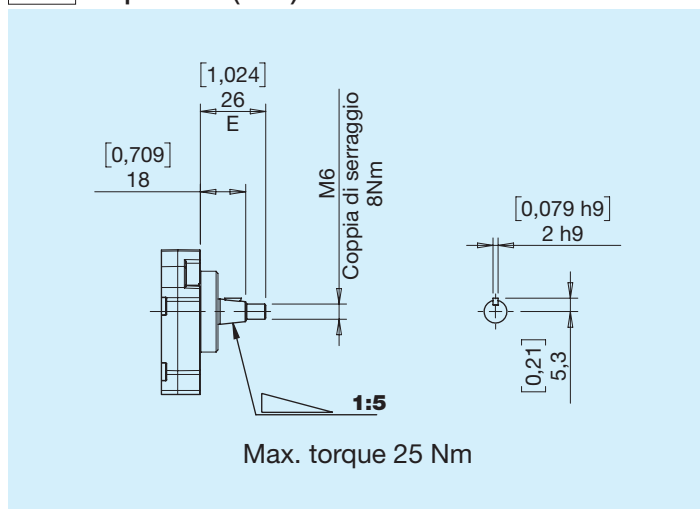
E European round



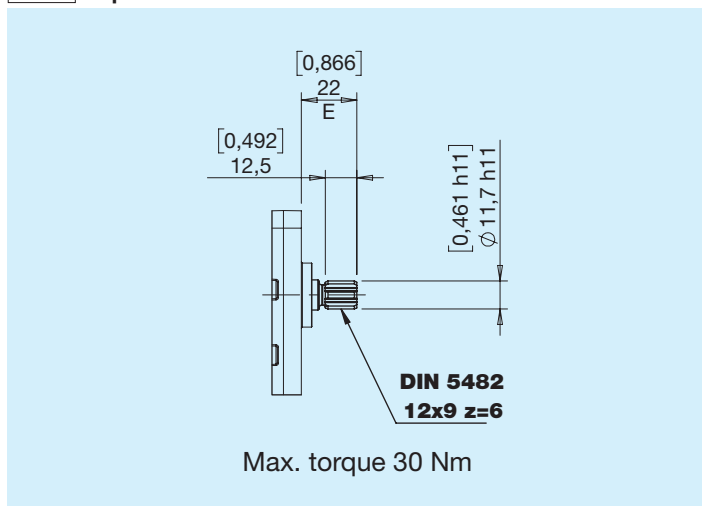
F Round SAE AA



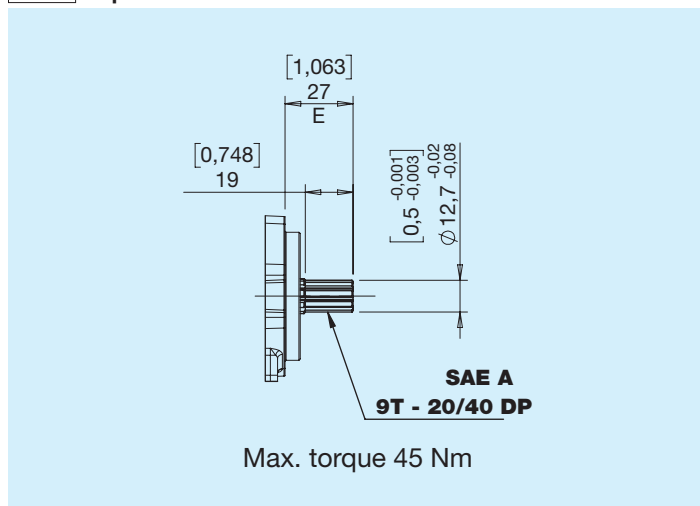
G Tapered (1:5)



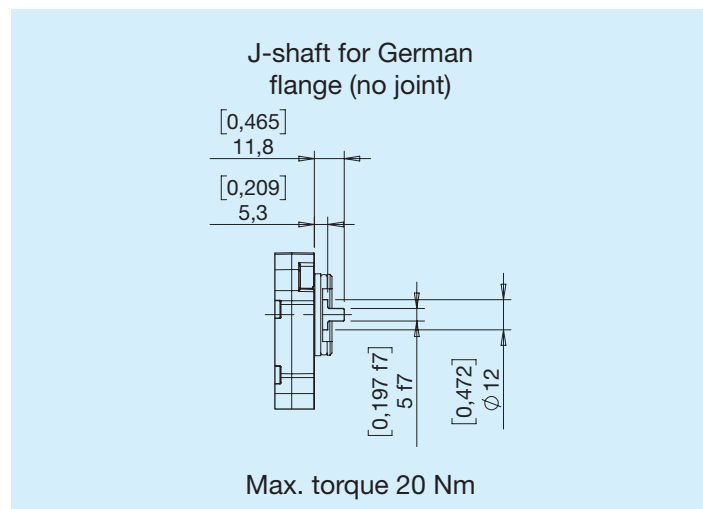
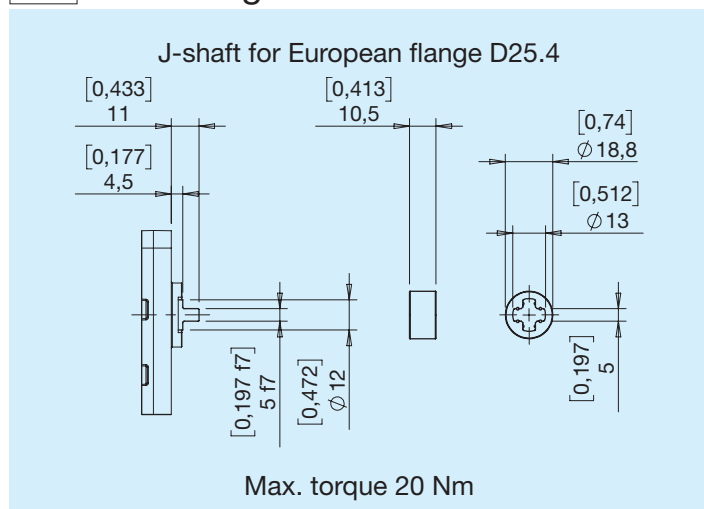
H Splined DIN 5482



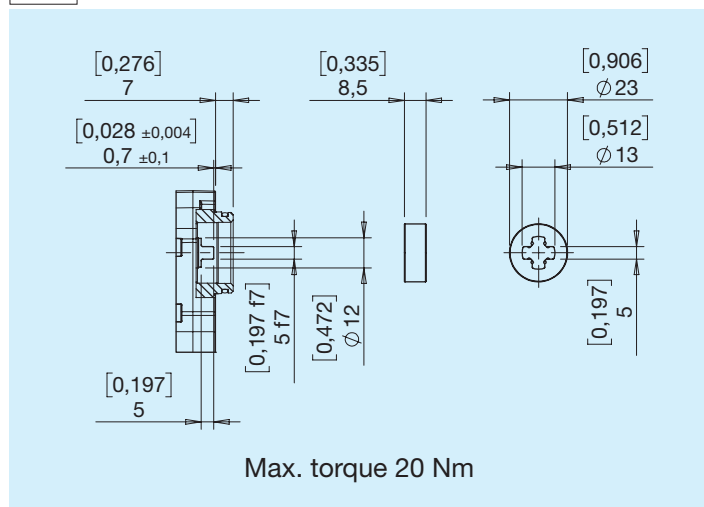
I Splined SAE AA



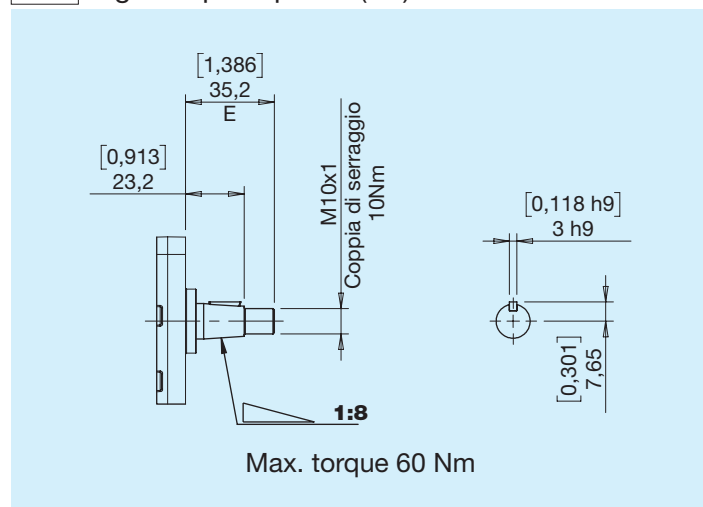
J Protruding front tooth



K Front tooth

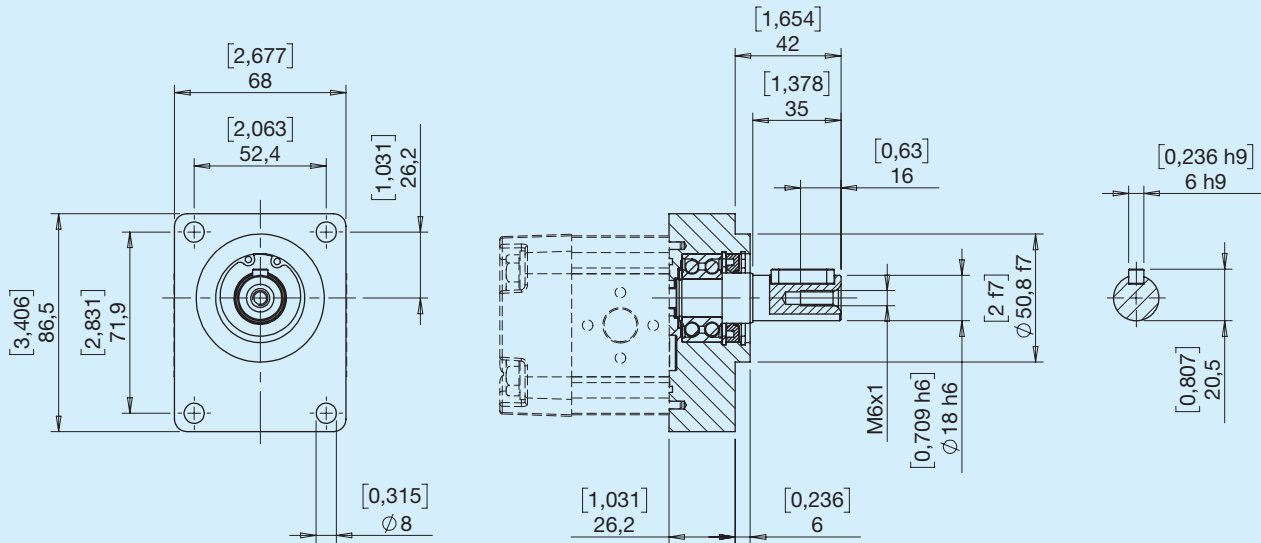


T High torque tapered (1:8)



Shafts	Flanges			
	D	E	G	J
D	•	•		
E	•	•		
F				•
G			•	
H	•			
I				•
J	•		•	
K			•	
T	•	•		

I5 Standard European flange round shaft D18



Technical drawing of the HPL5921C1R hydraulic pump, showing front, side, and detail views with dimensions in millimeters and tolerances in brackets.

Front View Dimensions:

- Overall width: $[2,756]$
- Overall height: $[3,425]$
- Port diameter: $\varnothing 70$
- Port to top edge distance: $[2,654]$ (67,4)
- Port to bottom edge distance: $[2,063]$ (52,4)
- Port to side edge distance: $[1,035]$ (26,3)
- Mounting hole diameter: $\varnothing 7$
- Mounting hole to side edge distance: $[0,276]$
- Mounting hole to bottom edge distance: $[2,835]$ (72)

Side View Dimensions:

- Shaft diameter: $\varnothing 25,4$ H7
- Shaft length: Z14 25x22 DIN 5482
- Mounting flange diameter: $\varnothing 50,8$ f7
- Mounting flange thickness: $[2,17]$
- Mounting flange to top edge distance: $[1,65]$ (42)
- Mounting flange to side edge distance: $[0,906]$ (23)
- Mounting flange to bottom edge distance: $[0,472]$ (12)
- Mounting flange to rear edge distance: $[1,575]$ (40)
- Mounting flange to front edge distance: $[0,236]$ (6)
- Mounting flange to rear edge distance: M12x1,5
- Mounting flange to front edge distance: 1:8

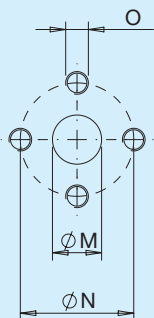
Detail View Dimensions:

- Mounting hole diameter: $\varnothing 7$
- Mounting hole to side edge distance: $[0,157$ h9
- Mounting hole to bottom edge distance: $[0,413]$ (10,5)

Can be ordered separately Code HPL5921C1R

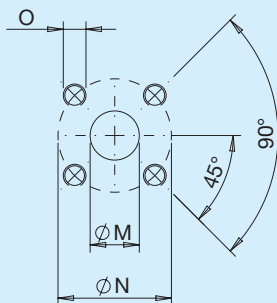
Can be ordered separately Code HPL5921C2R

E Lateral



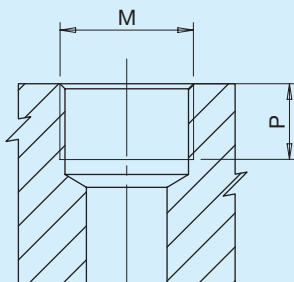
Type	M		N		O	
	mm	in	mm	mm		Nm
E2	13	0.51	26	1.02	M5	6
E3	13	0.51	30	1.18	M6	10

X Lateral



Type	M		N		O	
	mm	in	mm	mm		Nm
X3	13	0.51	30	1.18	M6	10

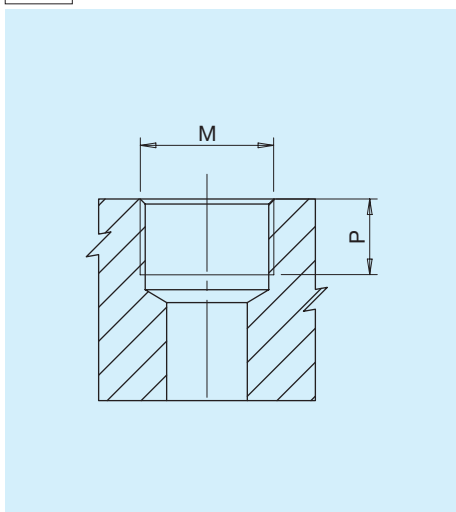
G Lateral / Drain



Type	M	Nm	P	
			mm	in
G2*	PORT ISO 1179-1-G 1/4	17	12	0.47
G3	PORT ISO 1179-1-G 3/8	38	12	0.47
G4	PORT ISO 1179-1-G 1/2	50	14.5	0.57

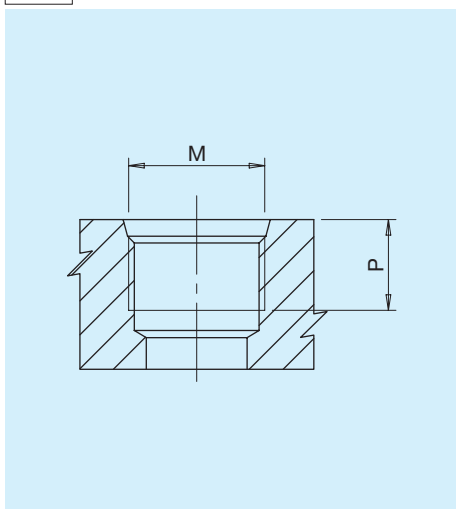
*Drain

T Rear



Type	M	Nm	P	
			mm	in
T3	PORT ISO 1179-1-G 3/8	38	12	0.47

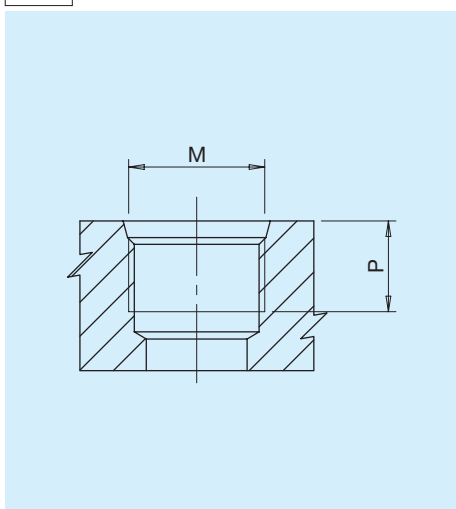
U Lateral / Drain



Type	Dim.	M	Nm	P	
				mm	in
U2*	1/4'	PORT ISO 11926-1 - 7/16-20	17	12	0.47
U3	3/8'	PORT ISO 11926-1 - 9/16-18	25	13	0.51
U4	1/2'	PORT ISO 11926-1 - 3/4-16	47	15	0.59

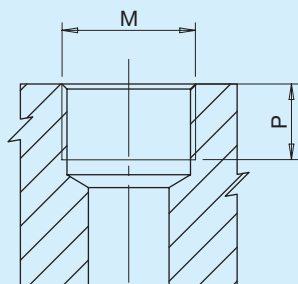
*Drain

C Rear



Type	Dim.	M	Nm	P	
				mm	in
C3	3/8'	PORT ISO 11926-1 - 9/16-18	25	13	0.51

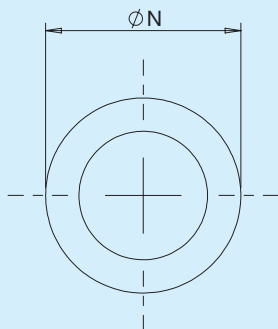
M Lateral / Drain



Type	M	Nm	P	
			mm	in
M1*	PORT ISO 6149 - 1 - M12x1.5	15	12	0.47
M2	PORT ISO 6149 - 1 - M14x1.5	17	12	0.47
M4	PORT ISO 6149 - 1 - M18x1.5	40	14.5	0.57

*Drain

H Front



Type	Front seal	mm	N
			in
H1	Port ISO 1179-1 - G 1/4	12.7	0.50

Combination of ports/flanges

Ports	Flanges			
	D	E	G	J
E	•	•		
X	•	•	•	
G	•	•	•	•
T	•	•	•	
U				•
C				•
M	•	•	•	
H			•	

Combination of round ports for one-way pumps/motors

Ports	Round		
	14 19 24 31	36 44 48	60 70 80
	IN/OUT ports	IN/OUT ports	IN/OUT ports
E	E2 E2*	E3 E3*	E3 E3*
X	X3 X3	X3 X3	X3 X3
G	G3 G3	G3 G3	G4 G4
T	T3 T3	T3 T3	-
U	U3 U3	U3 U3	U4 U4
C	C3 C3	C3 C3	-
M	M4 M2	M4 M2	M4 M4
HT	T3 H1	T3 H1	-

Combination of round ports for bidirectional pumps/motors

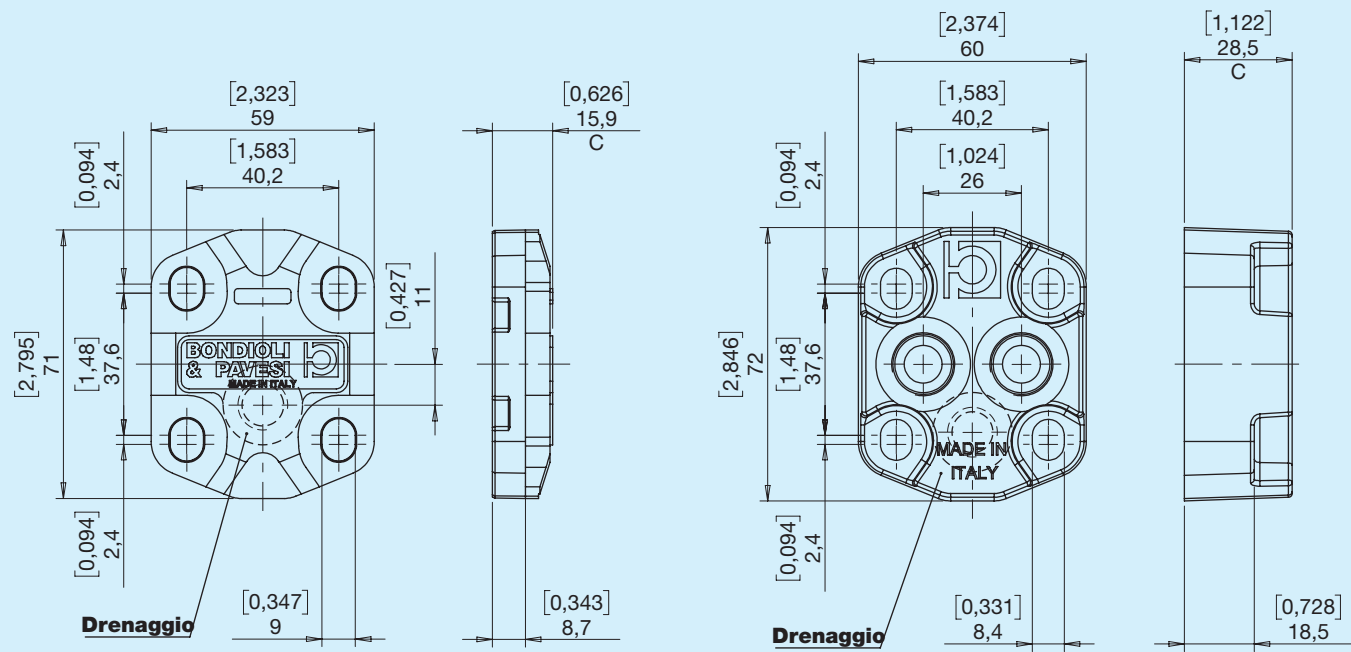
Ports	Round			
	19 24 31	36 44 48	60 70 80	
	IN/OUT ports	IN/OUT ports	IN/OUT ports	Drain line
E	E2 E2*	E3 E3*	E3 E3*	M1
X	X3 X3	X3 X3	X3 X3	M1
G	G3 G3	G3 G3	G4 G4	G2
T	T3 T3	T3 T3	-	G2
U	U3 U3	U3 U3	U4 U4	U2
C	C3 C3	C3 C3	-	U2
M	M2 M2	M4 M4	M4 M4	M1

Other combinations of ports are available. For more information, please contact our technical sales department.

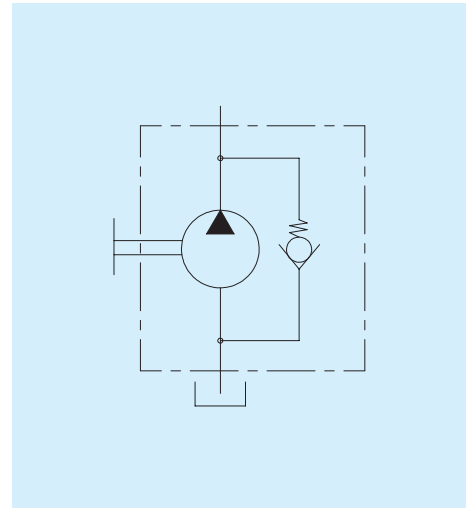
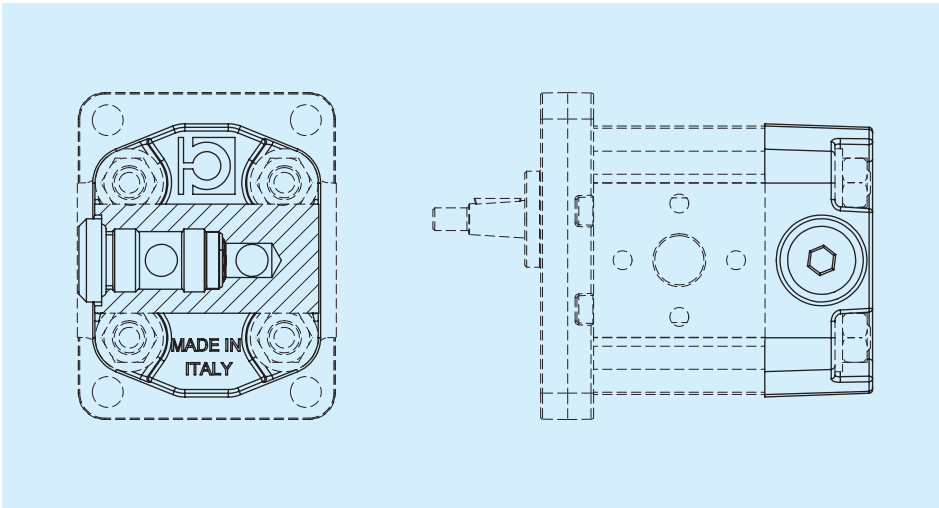
* Not available for EU versions (single port)

ST Aluminium

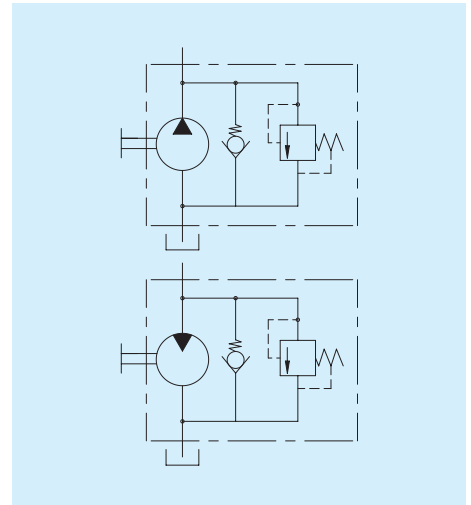
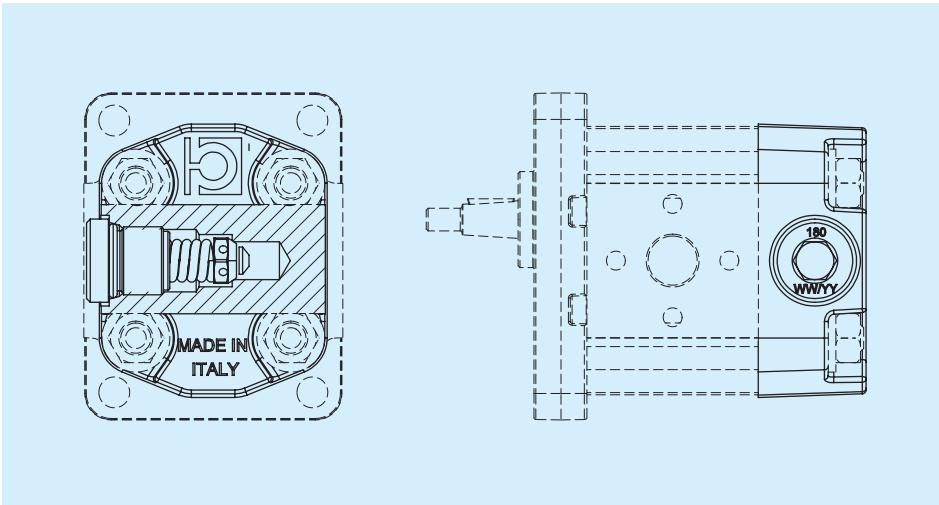
Standard version



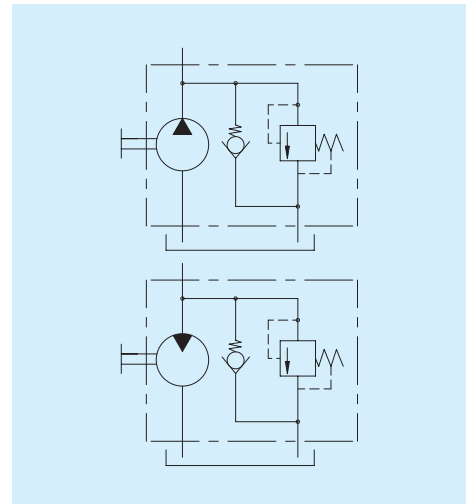
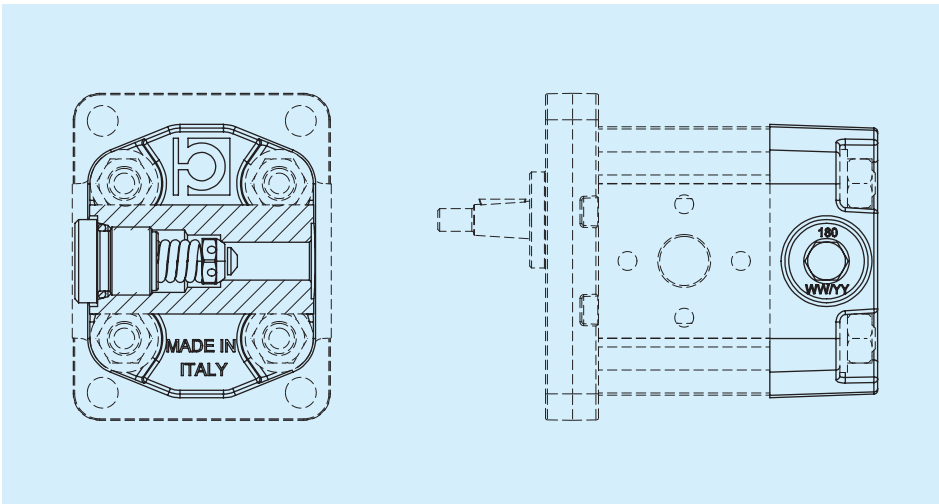
VA Check valve



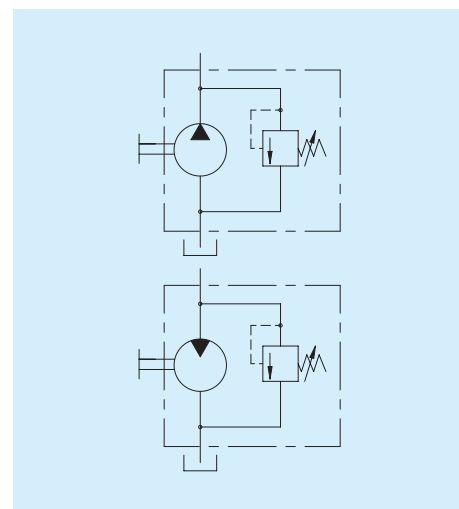
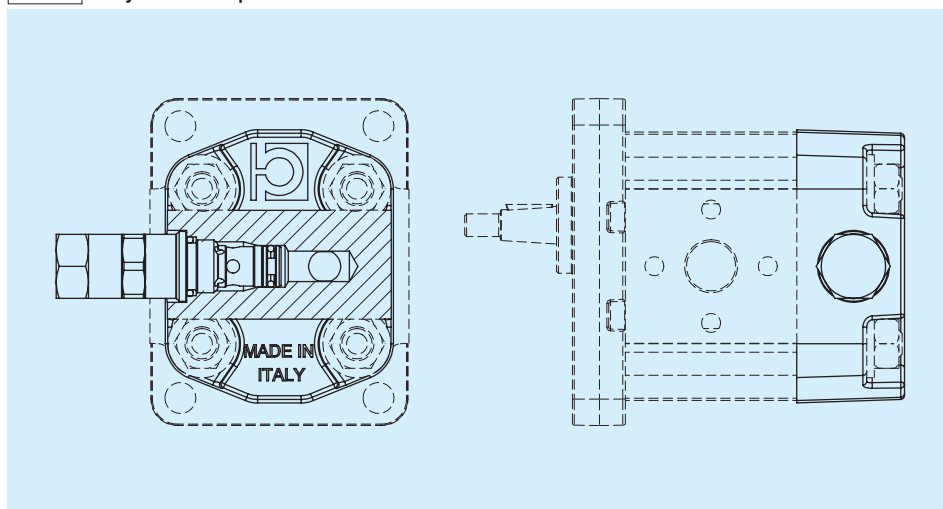
VB Fixed setting pressure relief valve with internal drain



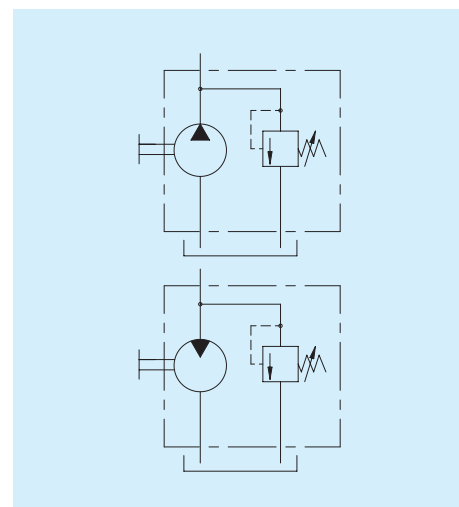
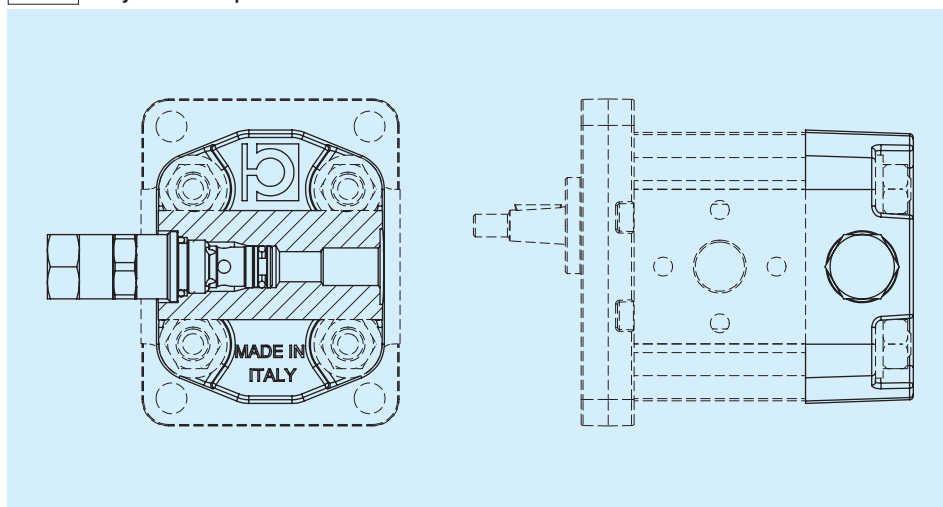
VC Fixed setting pressure relief valve with external drain



VD Adjustable pressure relief valve with internal drain



VE Adjustable pressure relief valve with external drain

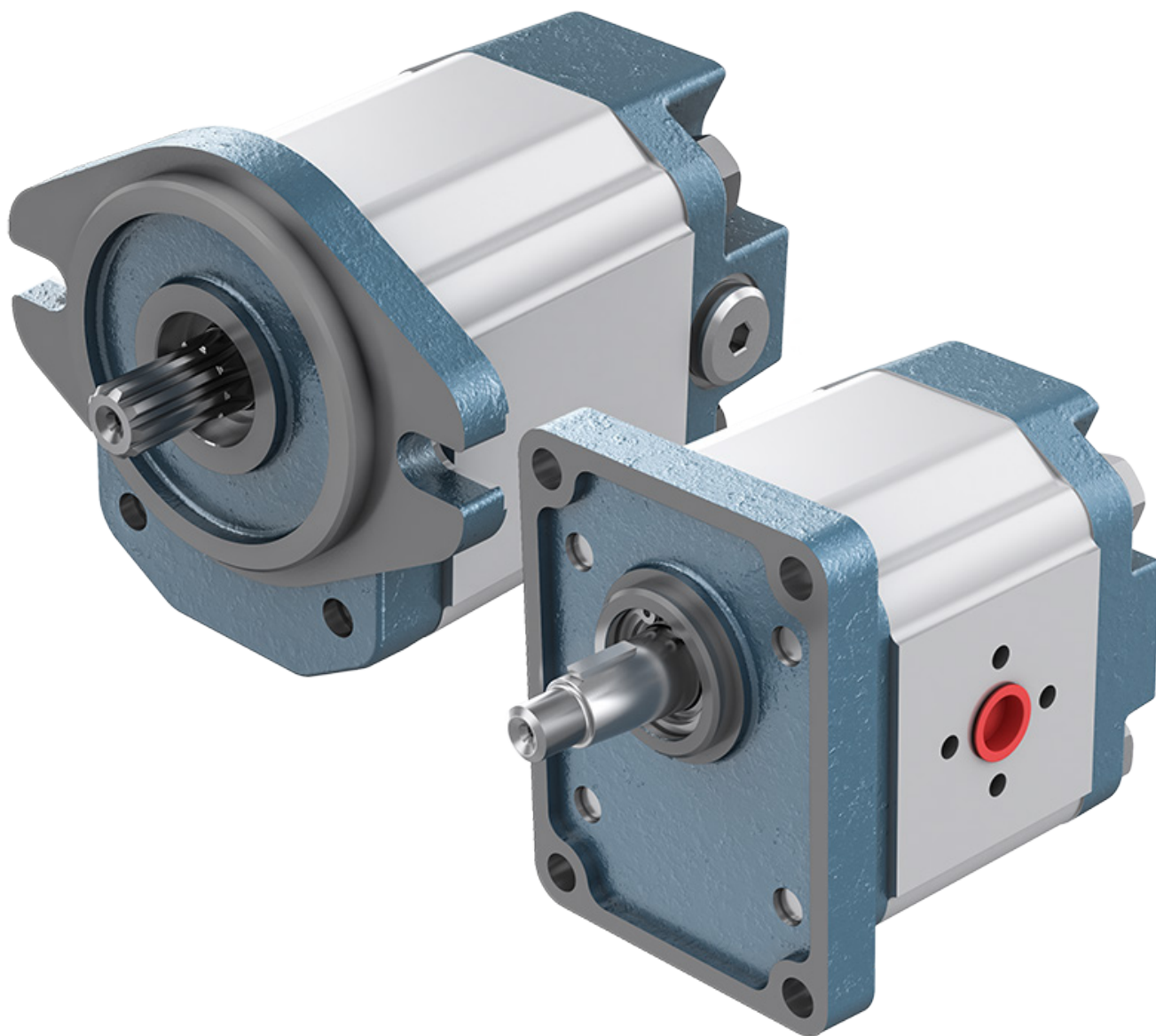


For more information, please contact the technical sales department

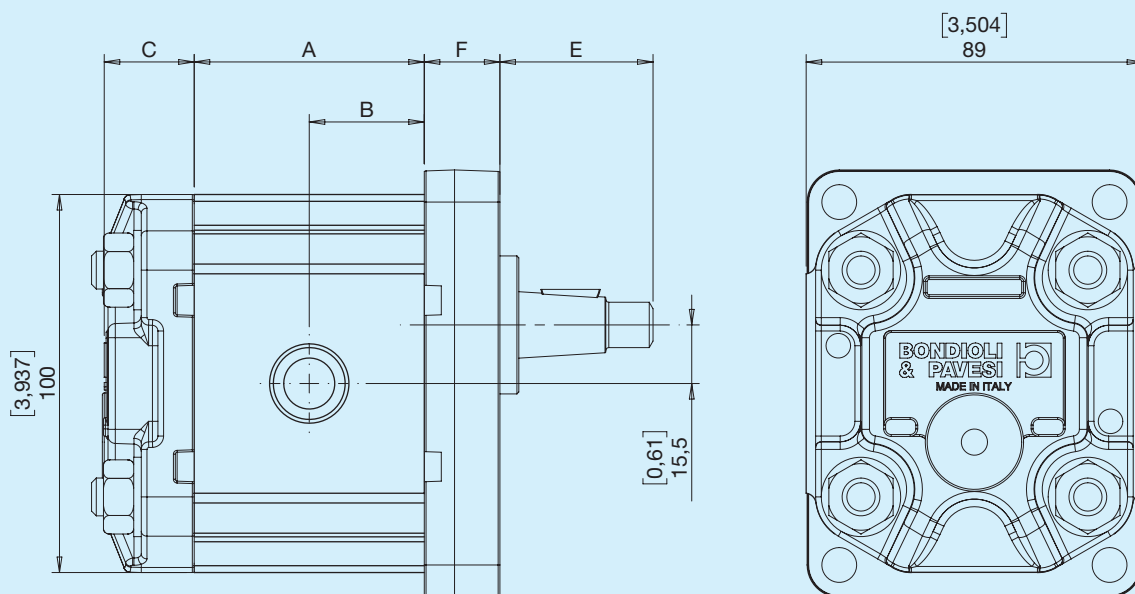
For pressure relief valves, please indicate the setting

1 2 3			4 5		6	7 8		9 10		11 12		13	14 15																																					
HPL																																																		
1 2 3			Series																																															
PA1			Gear pump Group 1						MA1						Gear motor Group 1																																			
4 5			Displacement																																															
14									31						48						80																													
19									36						60																																			
24									44						70																																			
6			Direction of rotation																																															
S			Anti-clockwise/left						D						Clockwise/right						H						Bidirectional internal drainage						B						Bidirectional rear external drainage											
7 8			Front flanges - Shafts																																															
DD			European D25.4 - Tapered (1:8)						DT						European D25.4 - High torque tapered (1:8)						GG						German - Tapered (1:5)						JI						SAE AA - Splined SAE AA											
DE			European D25.4 - European round						ED						European D30 - Tapered (1:8)						GJ						German - Protruding front tooth without joint																							
DH			European D25.4 - Splined DIN 5482						EE						European D30 - European round						GK						German - Front tooth																							
DJ			European D25.4 - Protruding front tooth						ET						European D30 - High torque tapered (1:8)						JF						SAE AA - SAE AA round																							
			I5												European flange - Round D18																																			
			C1												Centring D50.80 - Tapered (1:8)												C2												Centring D50.80 - Round D18											
9 10			IN - Inlet ports																																															
...			See tables Ports and Combinations																																															
11 12			OUT - Output ports																																															
...			See tables Ports and Combinations																																															
13			Seals																																															
B			NBR Pump						R						NBR Motor / Bid. pump High pressure pump						V						Viton Pump						W						Viton Motor / Bid. pump High pressure pump											
14 15			Covers																																															
ST			Standard						VB						Fixed setting pressure relief valve with internal drain						VD						Adjustable pressure relief valve with internal drain																							
VA			Check valve						VC						Fixed setting pressure relief valve with external drain						VE						Adjustable pressure relief valve with external drain																							

HPL Series Group 2

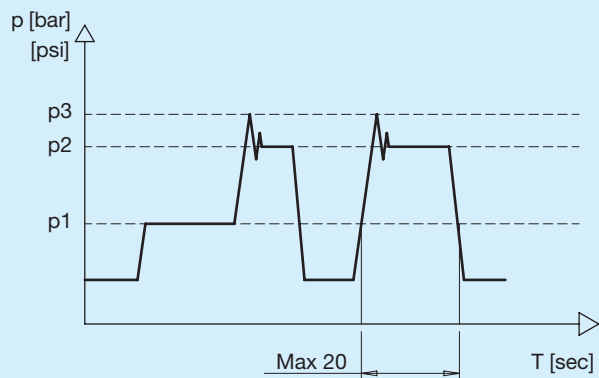


Before use, carefully read the GENERAL INSTRUCTIONS FOR USE OF GEAR PUMPS AND MOTORS.



C - See section on covers E - See section on shafts F - See section on flanges

Pressure definition



p_1	Continuous pressure
A, B - Use	Intermittent pressure Maximum pressure permitted for short periods (max. 20 sec)
L1, L2 - Drain port	Peak pressure Maximum permitted pressure intended as peak pressure of V_{max}

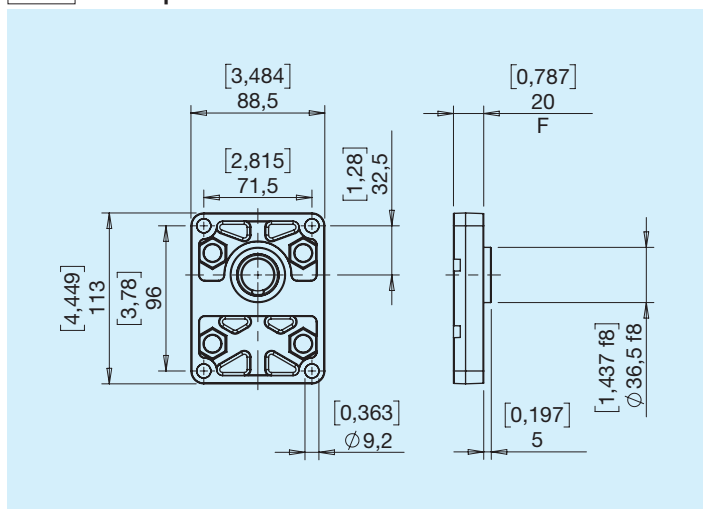
Pump dimensions and technical data

HPLPA2	Nominal displacement		Continuous pressure		Intermittent pressure		Peak pressure		Rotational speed		Weight		A		B	
	cm ³	in ³	bar	psi	bar	psi	bar	psi	min ⁻¹	min ⁻¹	kg	lbs	mm	in	mm	in
05	4.50	0.27	240	3481	260	3771	300	4351	3500	700	2.30	5.07	49.15	1.935	24.6	0.968
06	6.00	0.37	240	3481	260	3771	300	4351	3500	700	2.40	5.29	51.85	2.041	25.9	1.021
08	8.50	0.52	230	3336	250	3626	280	4061	3500	700	2.40	5.29	56.35	2.219	28.2	1.109
11	11.00	0.67	230	3336	250	3626	280	4061	3500	700	2.40	5.29	60.85	2.396	30.4	1.198
14	14.50	0.88	230	3336	250	3626	280	4061	3500	700	2.80	6.17	67.25	2.648	33.6	1.324
17	17.00	1.04	230	3336	250	3626	280	4061	3500	700	2.80	6.17	71.25	2.825	35.9	1.412
20	19.50	1.19	200	2901	220	3191	250	3626	3500	700	2.80	6.17	76.25	3.002	38.1	1.501
26	26.00	1.59	180	2611	190	2756	210	3046	3000	700	3.10	6.83	88.55	3.486	44.3	1.743
34	34.00	2.07	150	2175	170	2466	190	2756	3000	700	3.40	7.50	102.55	4.037	51.3	2.019
40	40.50	2.47	140	2031	160	2321	180	2611	2500	700	3.60	7.94	115.07	4.530	57.5	2.265

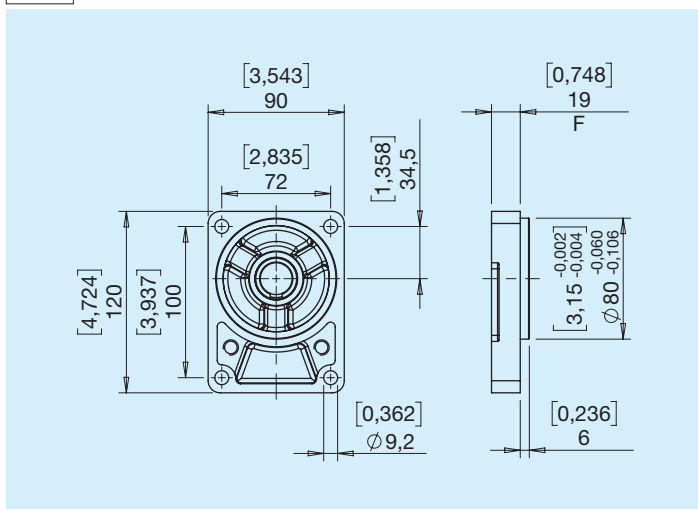
Motor dimensions and technical data

HPLMA2	Nominal displacement		Continuous pressure		Intermittent pressure		Peak pressure		Rotational speed		Weight		A		B	
	cm ³	in ³	bar	psi	bar	psi	bar	psi	min ⁻¹	min ⁻¹	kg	lbs	mm	in	mm	in
06	6.00	0.37	240	3481	260	3771	300	4351	4000	700	2.40	5.29	51.85	2.041	25.9	1.021
08	8.50	0.52	230	3336	250	3626	280	4061	4000	700	2.40	5.29	56.35	2.219	28.2	1.109
11	11.00	0.67	230	3336	250	3626	280	4061	4000	700	2.40	5.29	60.85	2.396	30.4	1.198
14	14.50	0.88	230	3336	250	3626	280	4061	4000	700	2.80	6.17	67.25	2.648	33.6	1.324
17	17.00	1.04	230	3336	250	3626	280	4061	4000	700	2.80	6.17	71.25	2.825	35.9	1.412
20	19.50	1.19	200	2901	220	3191	250	3626	4000	700	2.80	6.17	76.25	3.002	38.1	1.501
26	26.00	1.59	180	2611	190	2756	210	3046	3400	700	3.10	6.83	88.55	3.486	44.3	1.743

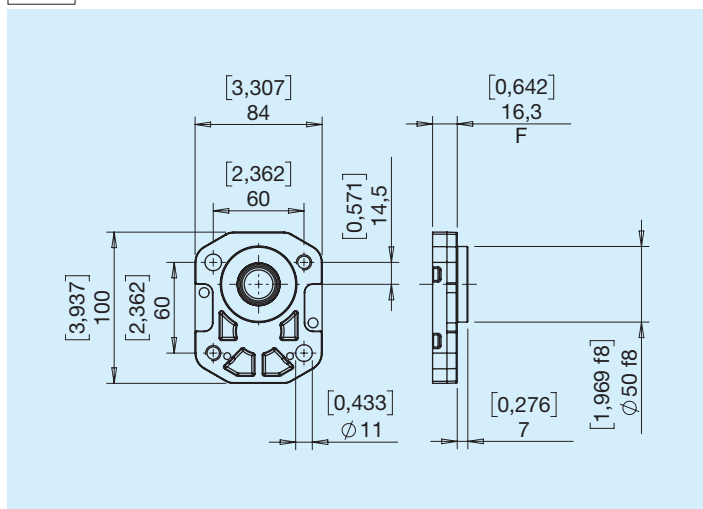
M European



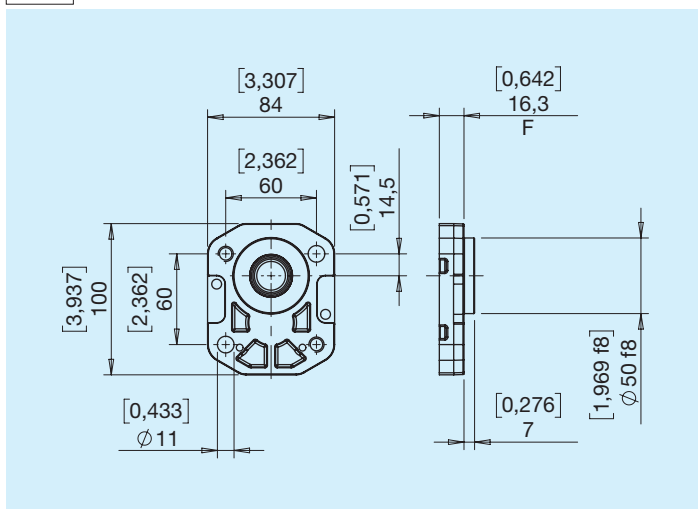
N German



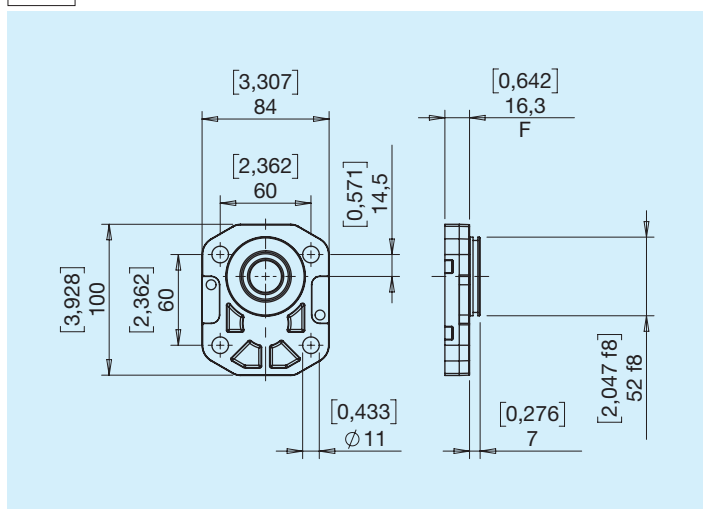
O German D50 2 holes RH



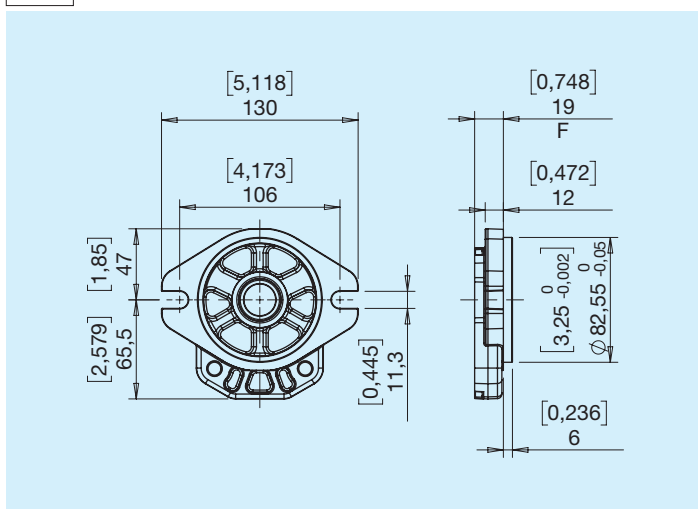
P German D50 2 holes LH



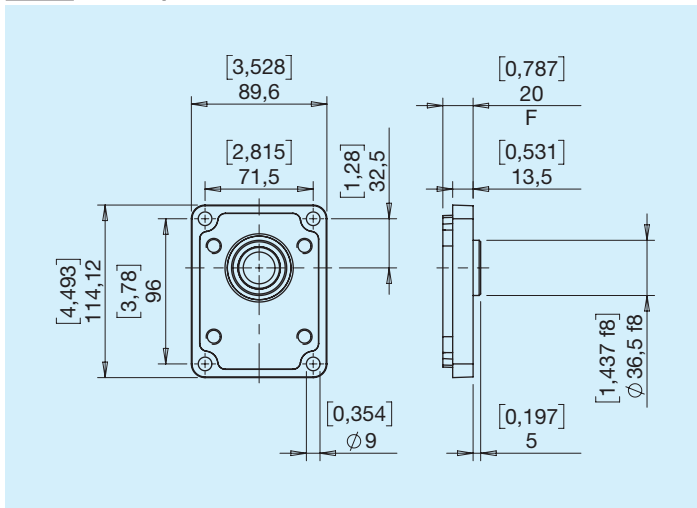
R German D52



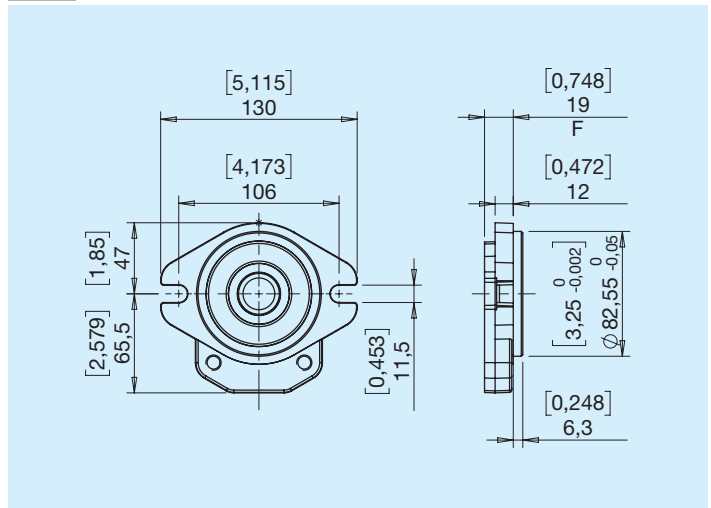
S SAE A 2 holes



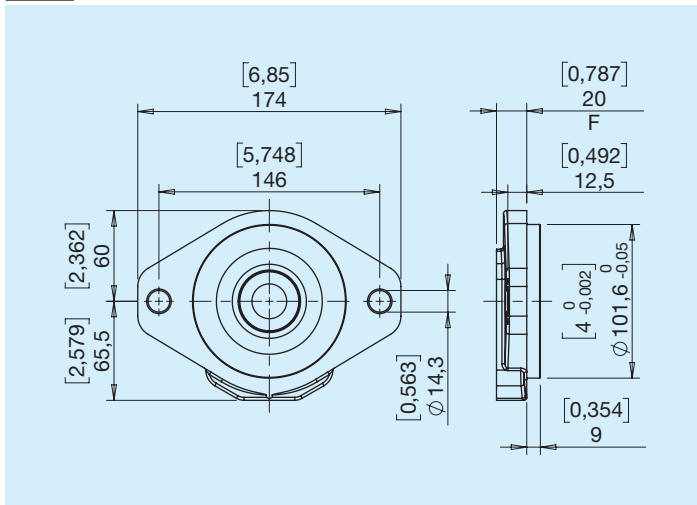
L European



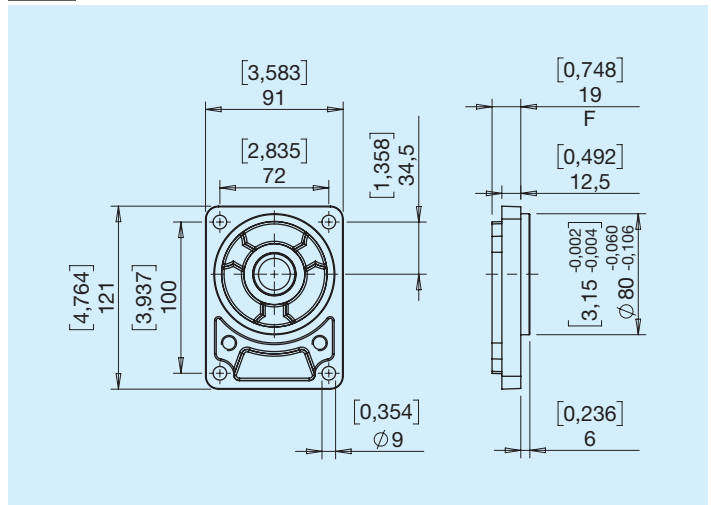
Q SAE A 2 holes



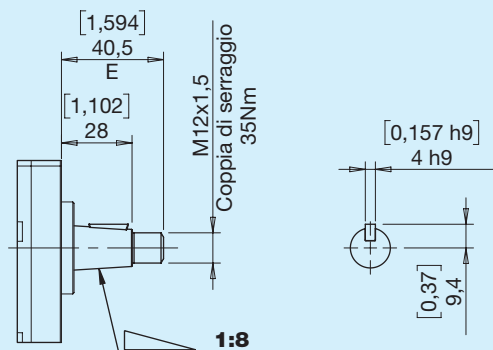
T SAE B 2 holes



V German

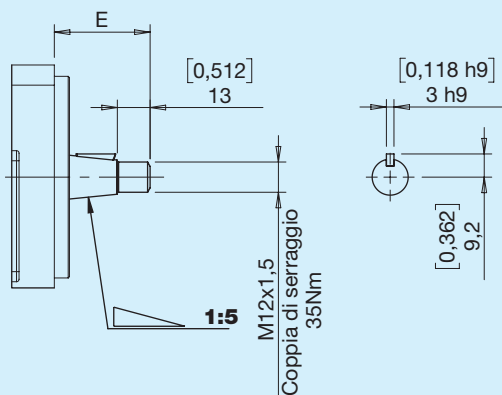


L Tapered (1:8)



Max. torque 140 Nm

M Tapered (1:5)

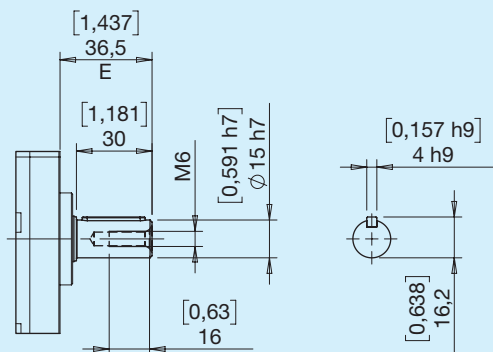


Max. torque 120 Nm

M shaft extension table

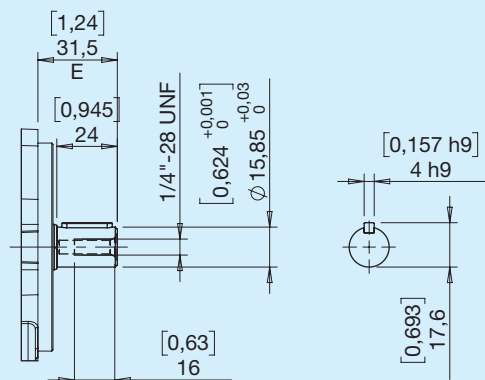
	Flange N/V		Flange O/P	
	mm	in	mm	in
N6	19	0.75	50.8	2

N European round D15



Max. torque 65 Nm

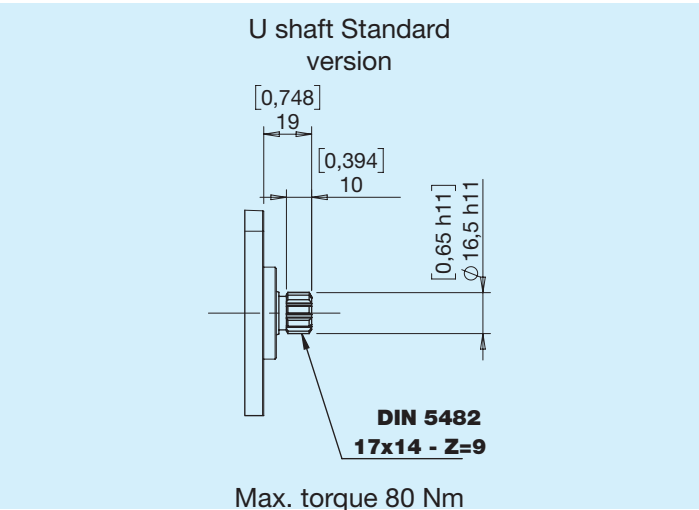
P Round SAE A



Max. torque 70 Nm

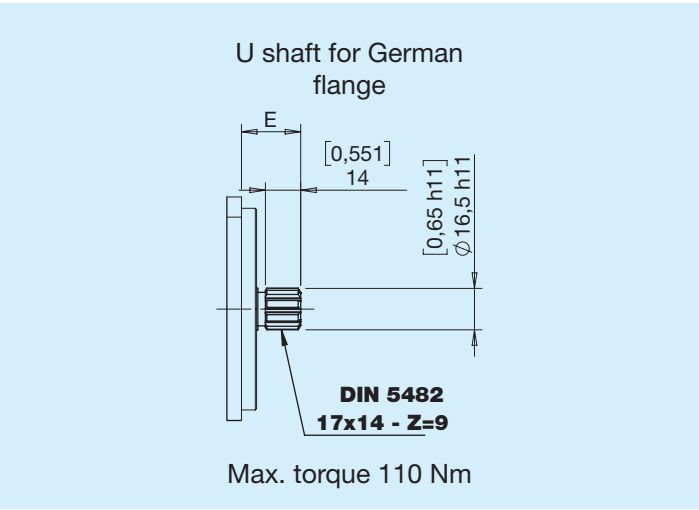
U

Splined DIN 5482



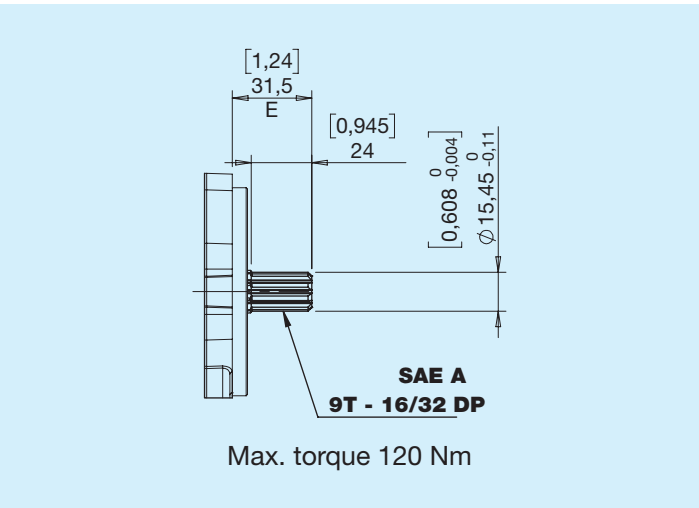
U shaft extension for German flange table

	Flange N/V		Flange O/P	
	mm	in	mm	in
N6	19	0.75	50.8	2



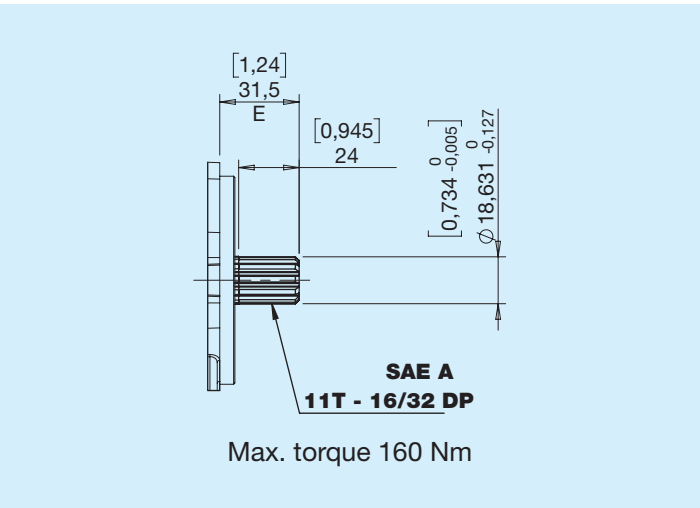
V

Splined SAE A 9T

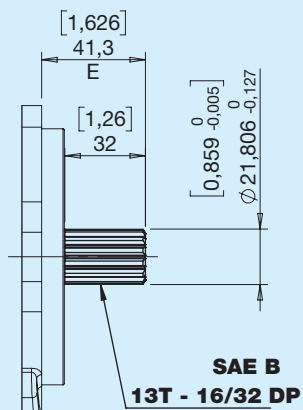


X

Splined SAE A 11T



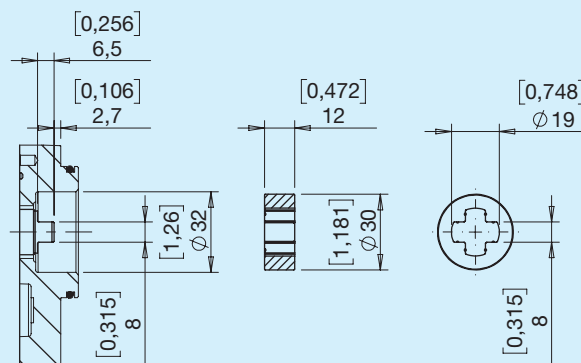
Y Splined SAE B 13T



**SAE B
13T - 16/32 DP**

Max. torque 310 Nm

Z Tang drive



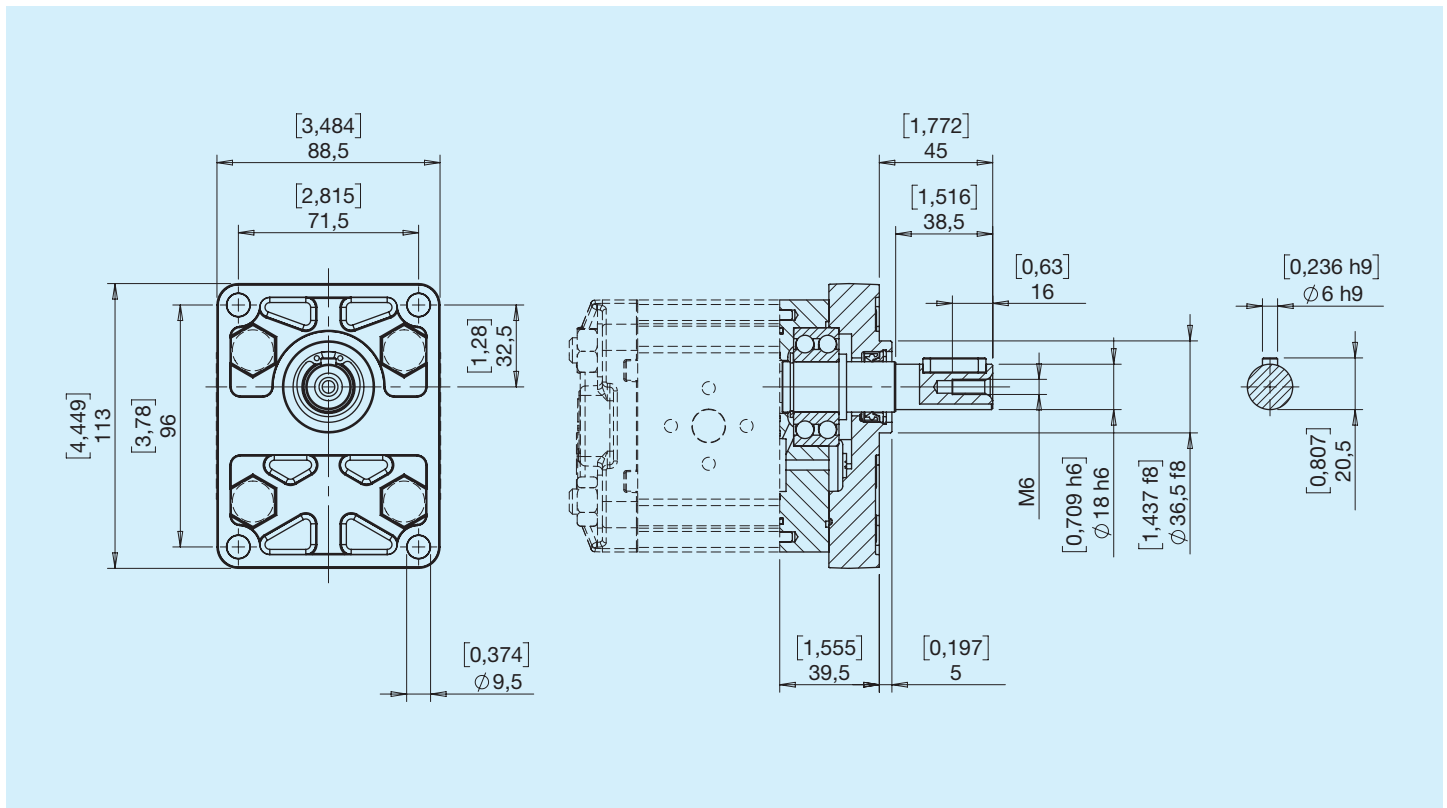
Max. torque 70 Nm

For more information, please contact the technical sales department

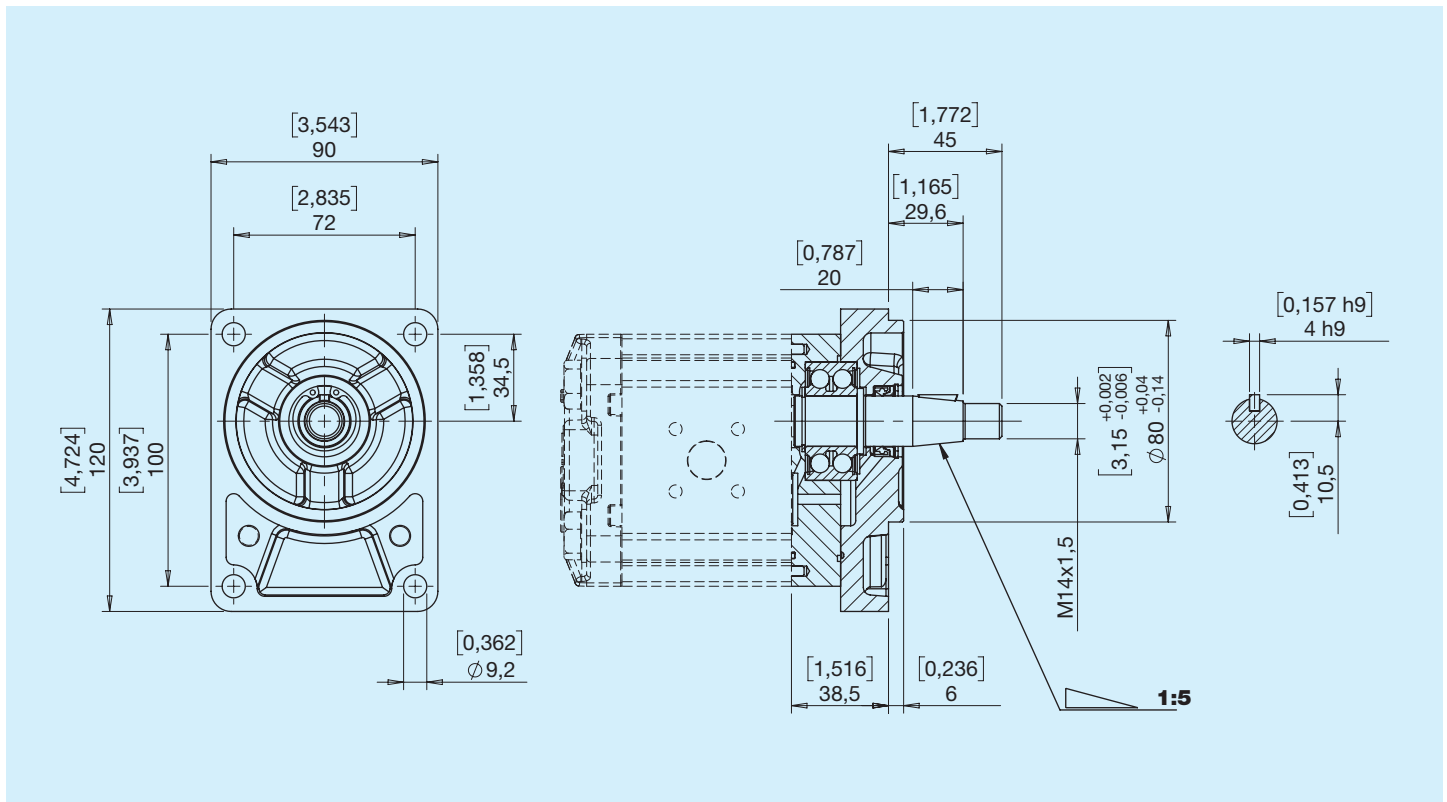
For pressure relief valves, please indicate the setting

Shafts	Flanges									
	M	L	N	V	O	P	R	S	Q	T
L	•	•								
M			•	•	•	•				
N	•	•								
P								•	•	
U	•	•	•	•	•	•				
V								•	•	
X								•	•	
Y										•
Z							•			

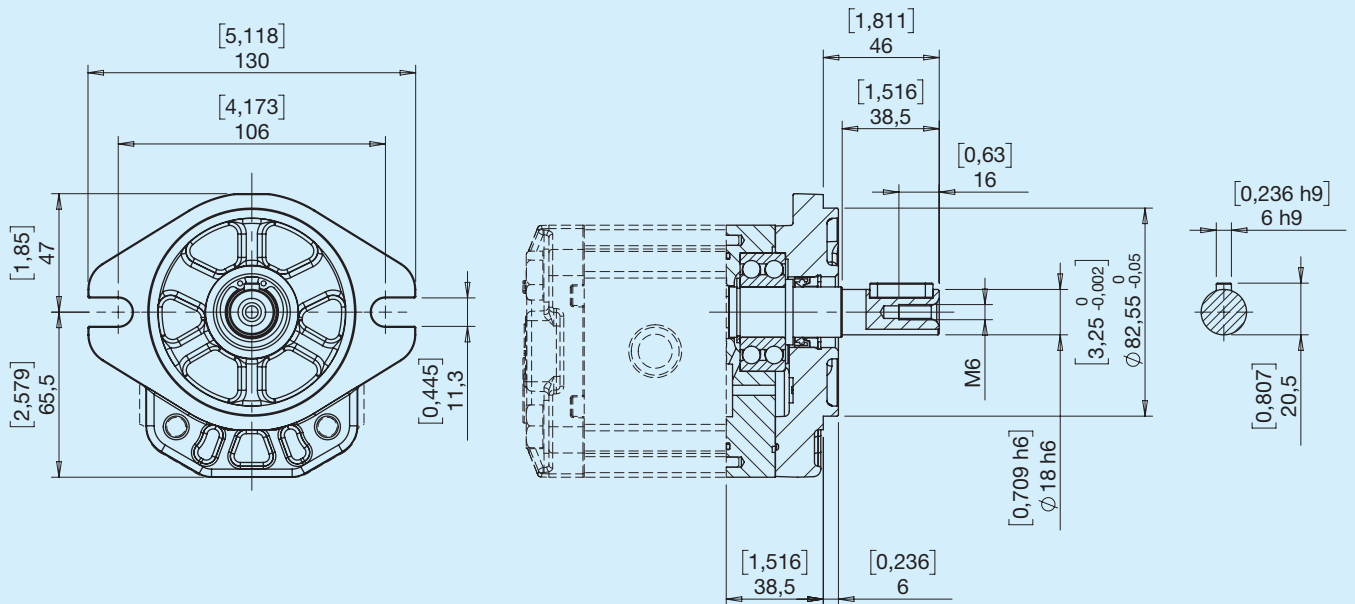
I1 Standard European flange round shaft D18



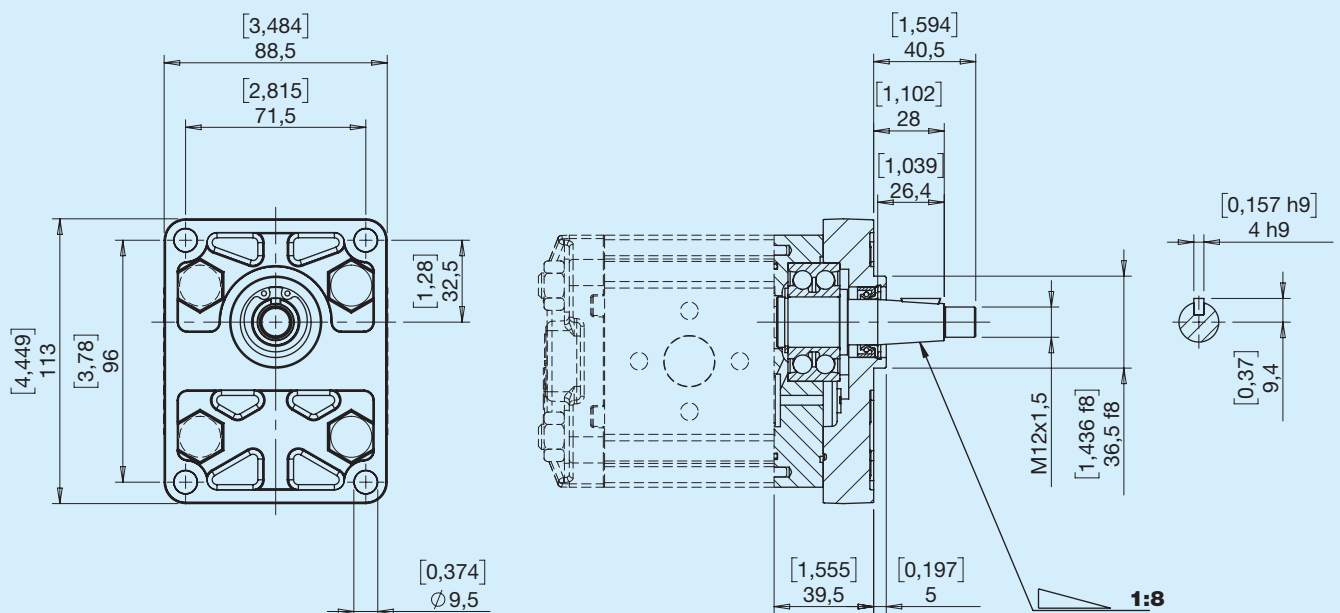
I2 German flange tapered shaft (1:5)



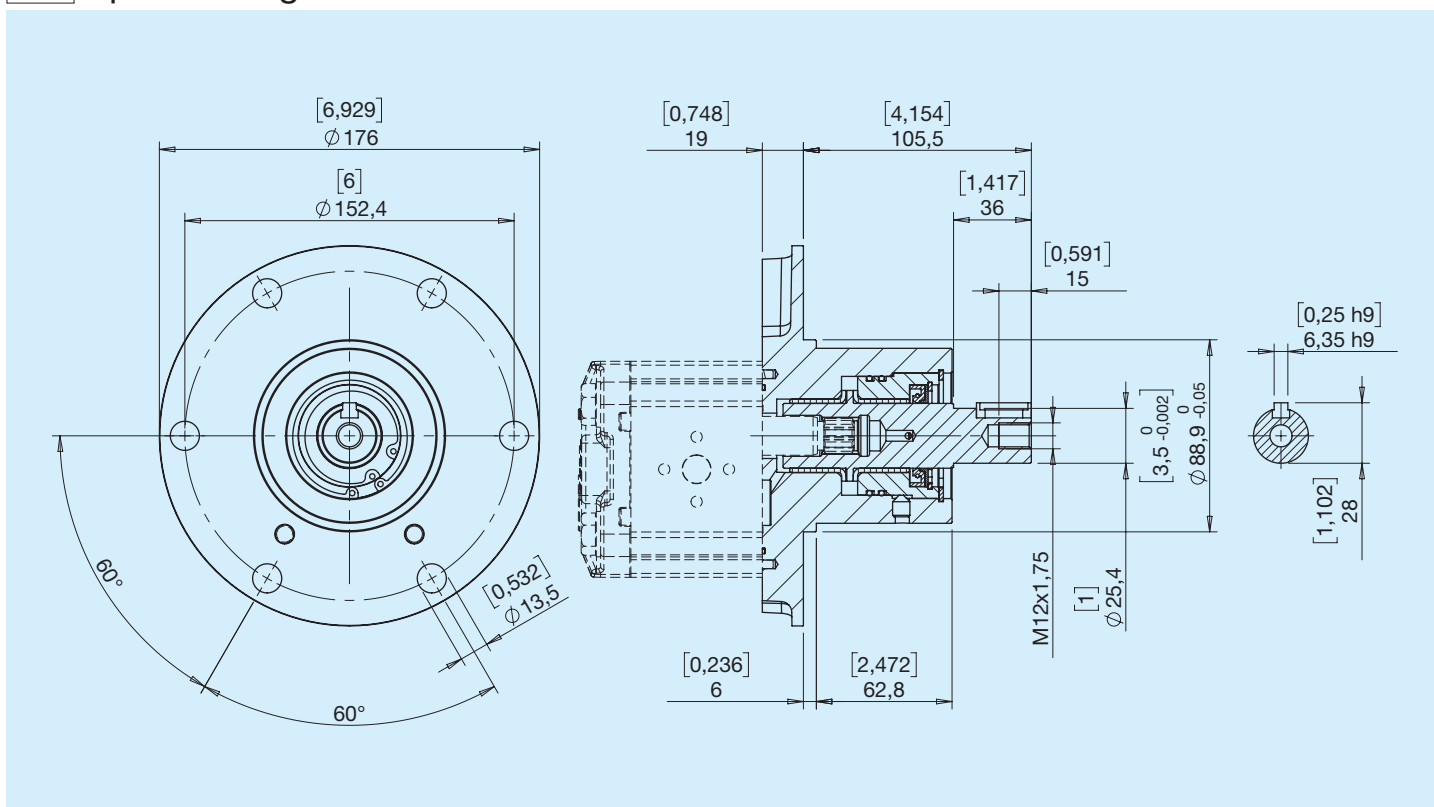
I3 Standard SAE A flange round shaft D18



I7 Standard European flange tapered shaft (1:8)

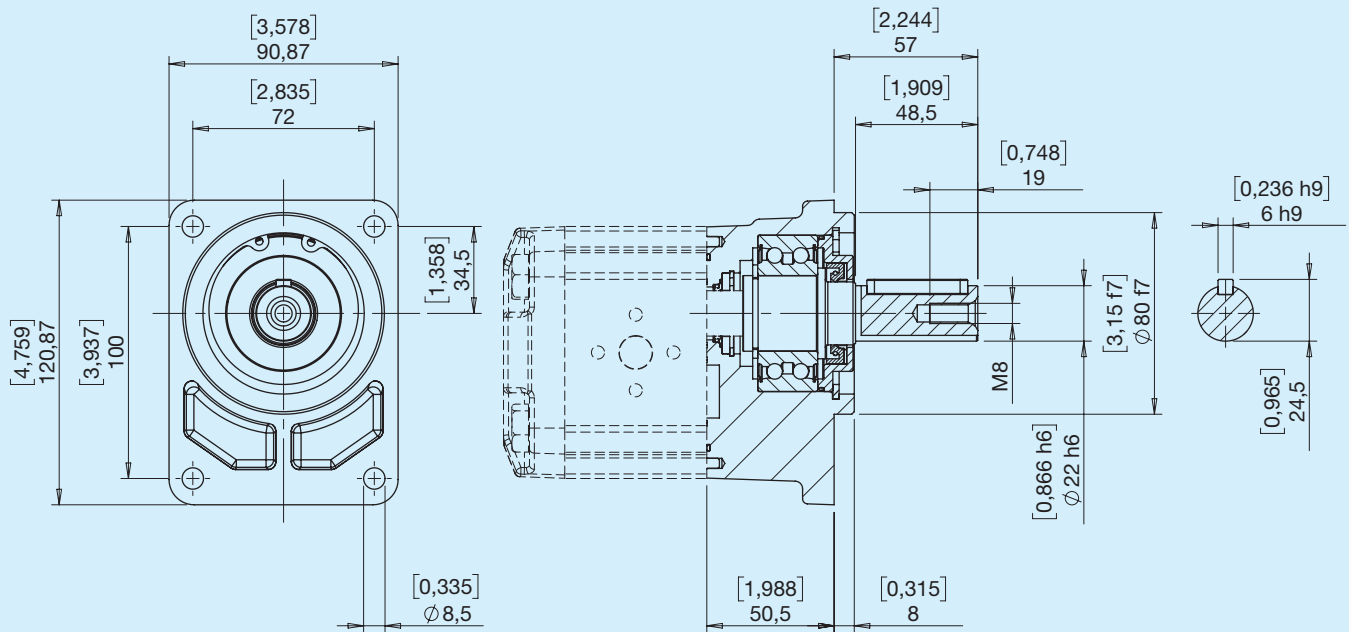


IS Special flange round shaft D25.40

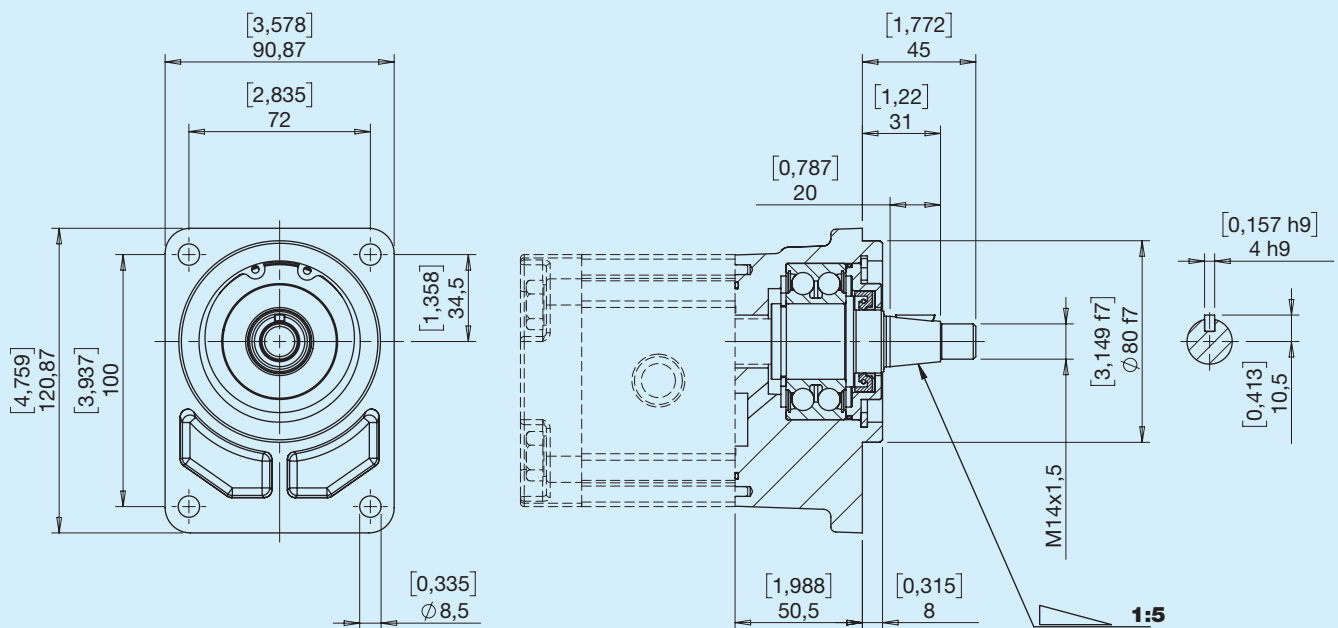


Integrated supports I1 - I2 - I3 - I7 are available in cast iron. For more information, please contact our technical sales department.

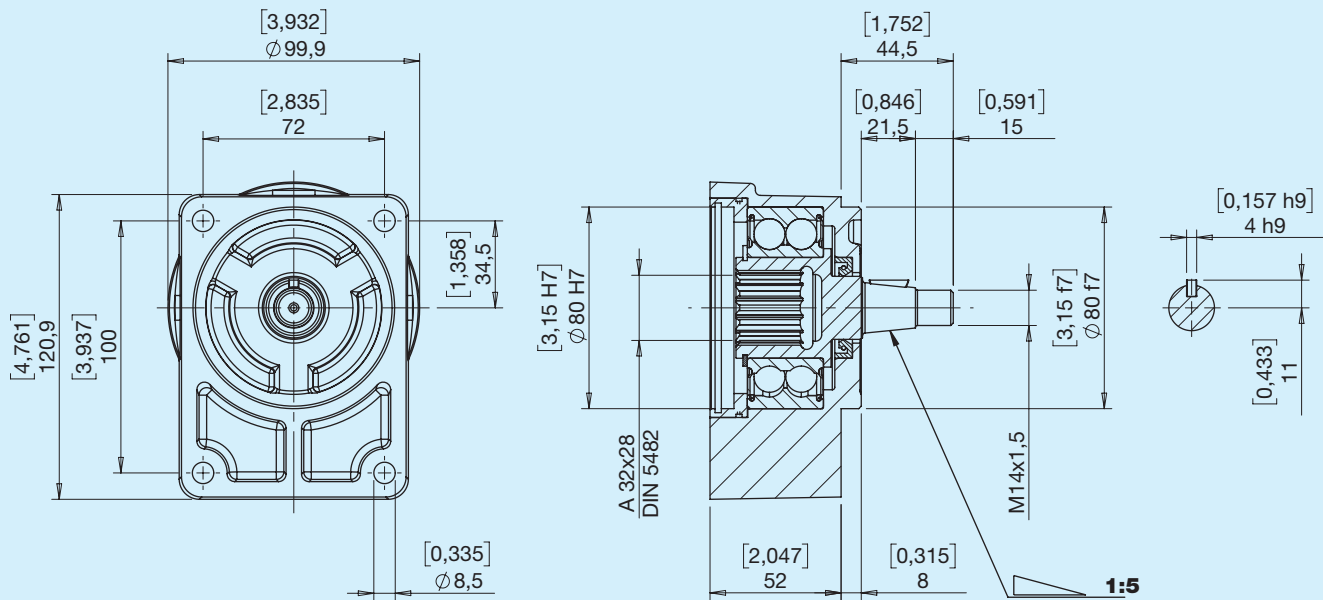
IB German flange round shaft D22



IC German flange tapered shaft (1:5)

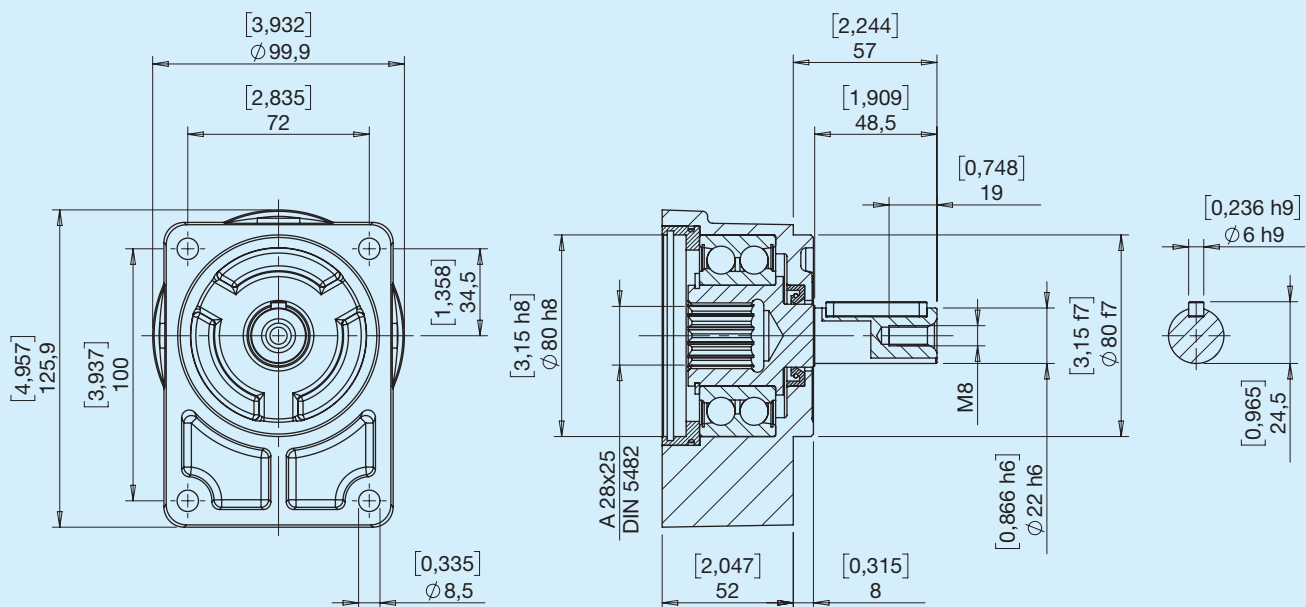


B1 Centring D80 tapered shaft (1:5)



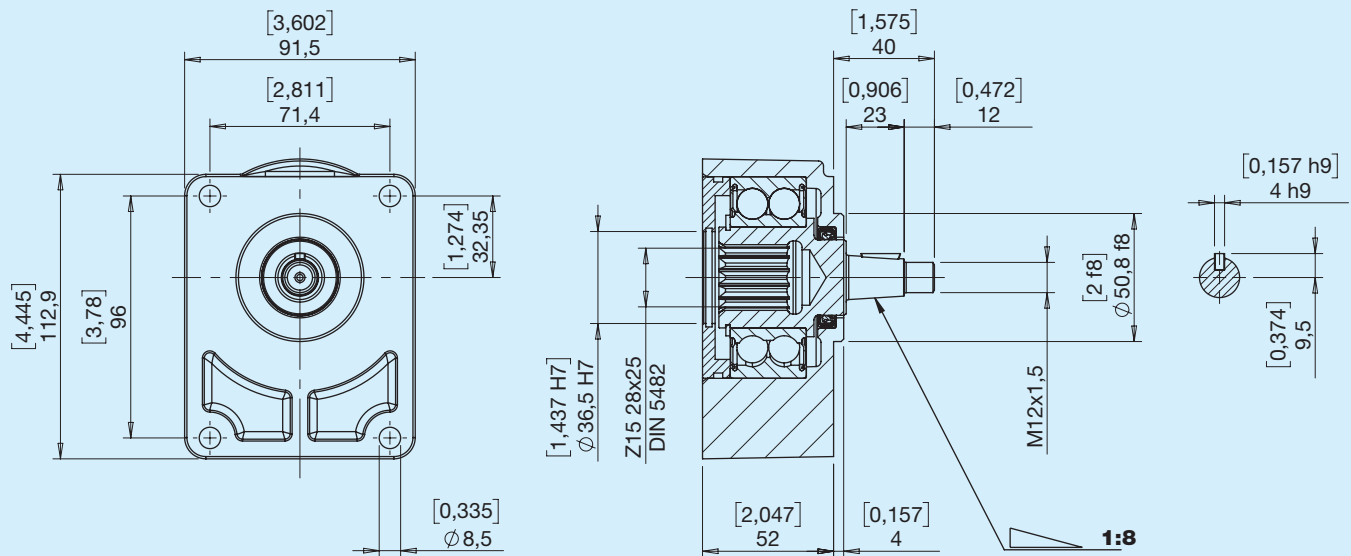
Can be ordered separately Cod. HPL5922B1

B3 Centring D80 round shaft D22

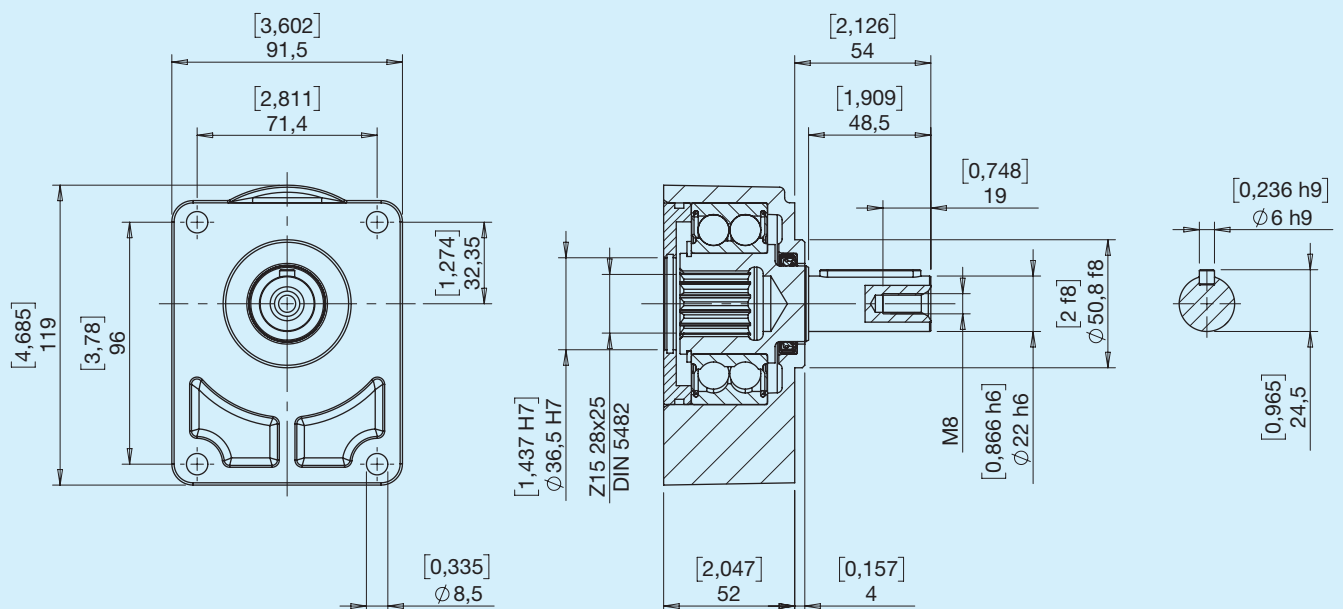


Can be ordered separately Cod. HPL5922B3

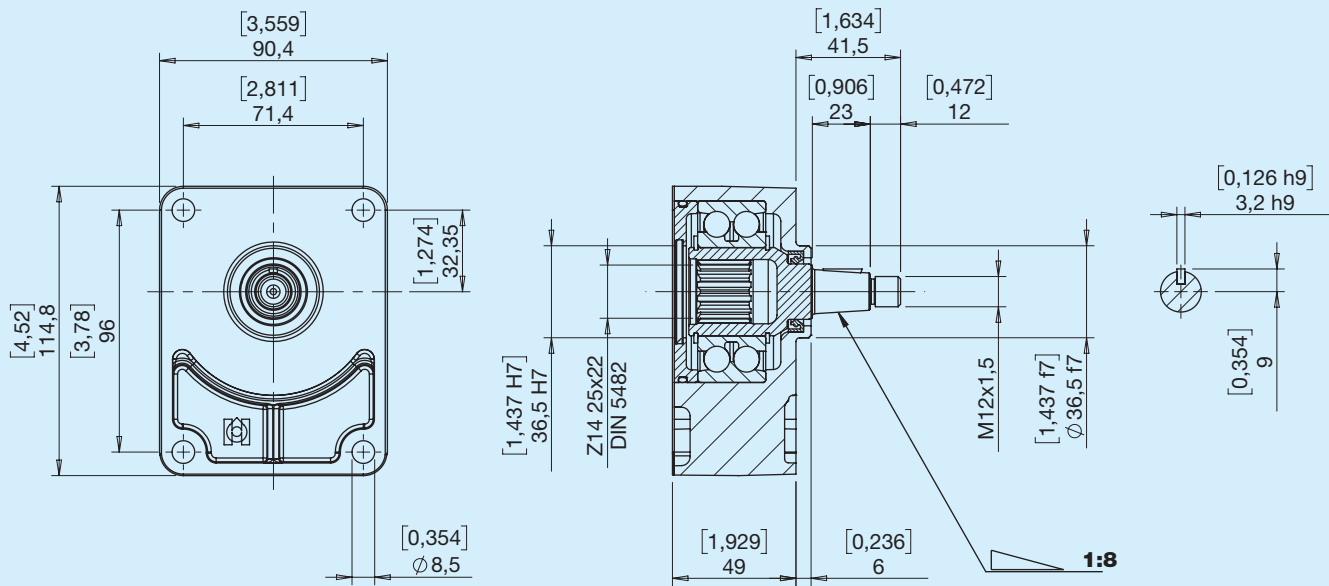
C3 Centring D50.80 tapered shaft (1:8)



C4 Centring D50.80 round shaft D22

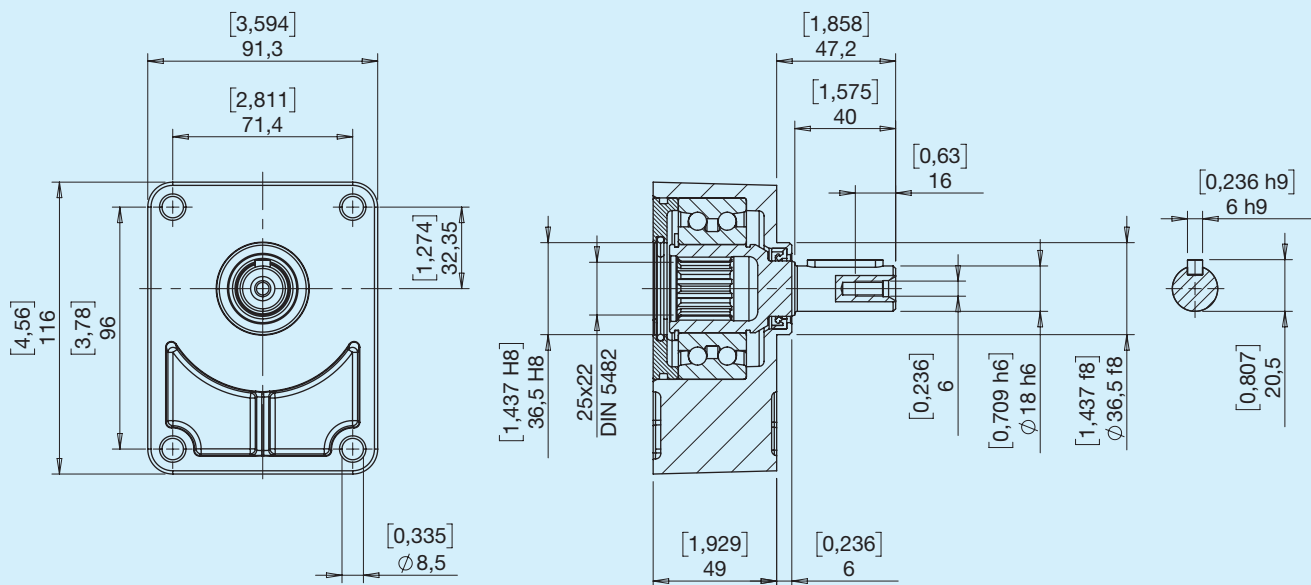


C5 Centring D36.50 tapered shaft (1:8)



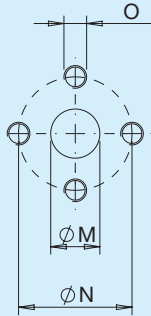
Can be ordered separately Code HPL5922C5R

C6 Centring D36.50 round shaft D18



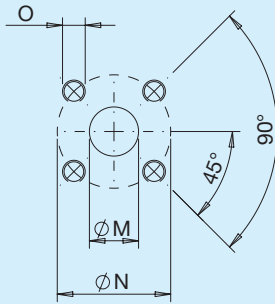
Can be ordered separately Code HPL5922C6R

E Lateral



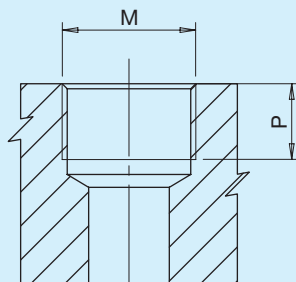
Type	M		N		O	
	mm	in	mm	mm	Nm	
E3	13	0.51	30	1.18	M6	10
E5	20	0.79	40	1.57	M8	15

X Lateral



Type	M		N		O	
	mm	in	mm	mm	Nm	
X4	15	0.59	35	1.38	M6	10
X5	15	0.59	40	1.57	M6	10
X6	20	0.79	40	1.57	M6	10
X8	27	1.06	55	2.17	M8	15

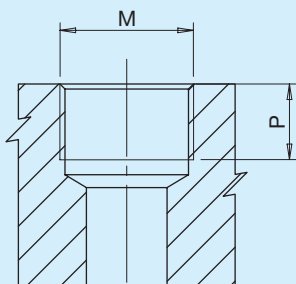
G Lateral / Drain



Type	M	Nm	P	
			mm	in
G3*	PORT ISO 1179-1-G 3/8	38	12	0.47
G4	PORT ISO 1179-1-G 1/2	50	16	0.63
G6	PORT ISO 1179-1-G3/4	90	19	0.75
G7	PORT ISO 1179-1-G 1	130	19	0.75
G7	PORT ISO 1179-1-G 1	130	19	0,75

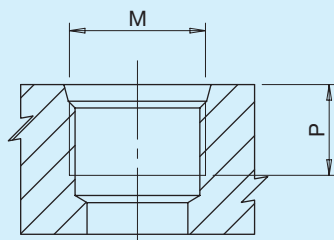
*Drain

T Rear



Type	M	Nm	P	
			mm	in
T4	PORT ISO 1179-1-G 1/2	50	16	0.63
T6	PORT ISO 1179-1-G3/4	90	19	0.75

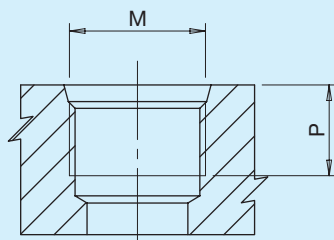
U Lateral / Drain



Type	Dim.	M	Nm	P	
				mm	in
U3*	3/8'	PORT ISO 11926-1 - 9/16-18	25	13	0.51
U5	5/8'	PORT ISO 11926-1 - 7/8-14	70	17	0.67
U6	3/4'	PORT ISO 11926-1 - 1 1/16-12	90	19	0.75
U7	1'	PORT ISO 11926-1 - 1 5/16-12	130	20	0.79
U7	1'	PORT ISO 11926-1 - 1 5/16-12	130	20	0,79

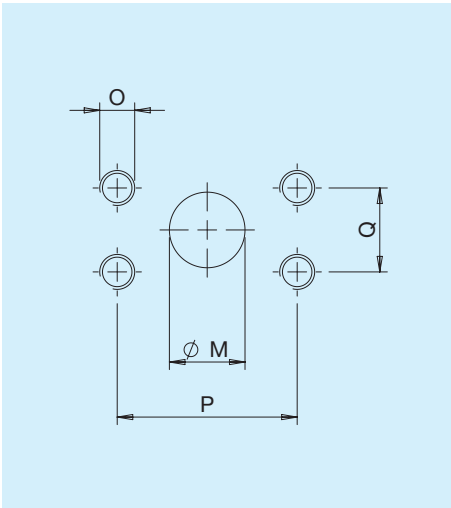
*Drain

C Rear



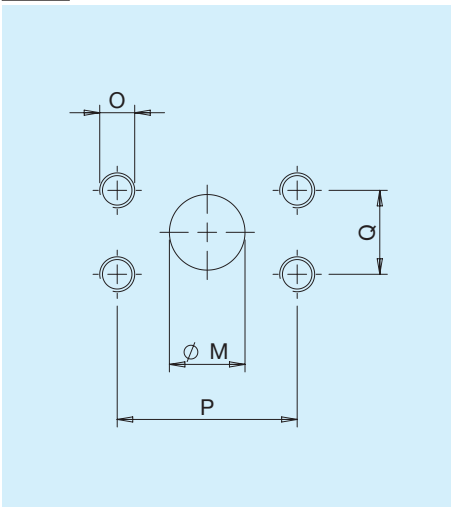
Type	Dim.	M	Nm	P	
				mm	in
C5	5/8'	PORT ISO 11926-1 - 7/8-14	70	17	0.67
C6	3/4'	PORT ISO 11926-1 - 1 1/16-12	90	19	0.75

N Lateral



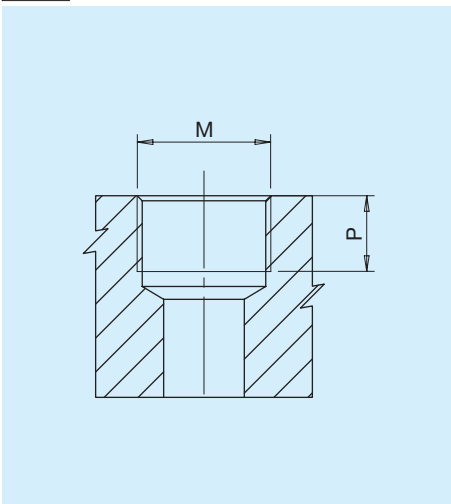
Type	Dim.	M		P		Q		O	Nm
		mm	in	mm	in	mm	in		
N4	1/2'	13	0.51	38.1	1.49	17.5	0.68	5/16-18 UNC-2B	17
N6	3/4'	20	0.79	47.6	1.87	22.2	0.87	3/8-16 UNC-2B	38
N7	1'	27	1.06	52.4	2.60	26.2	1.03	3/8-16 UNC-2B	38

F Lateral



Type	Dim.	M		P		Q		O	Nm
		mm	in	mm	in	mm	in		
F4	1/2'	13	0.51	38.1	1.49	17.5	0.68	M8	17
F6	3/4'	20	0.79	47.6	1.87	22.2	0.87	M10	38
F7	1'	25.4	1	52.4	2.60	26.2	1.03	M10	38

M Drain



Type	M	Nm	P	
			mm	in
M2*	PORT ISO 6149 - 1 - M14x1.5	17	12	0.47

*Drain

Combination of ports/flanges

Ports	Flanges									
	M	L	N	V	O	P	R	S	Q	T
E	•	•								
G	•	•						•	•	•
X			•	•	•	•	•			
U								•	•	•
F								•	•	•
N								•	•	•
C								•	•	•
T	•	•	•	•	•	•	•	•	•	•

Combination of round ports for one-way pumps/motors

Ports	Round				
	5 6 8	11	14 17 20	26	34 40
	IN/OUT ports	IN/OUT ports	IN/OUT ports	IN/OUT ports	IN/OUT ports
E	E3 E3	E3 E3	E5 E3	E5 E5	E5 E5
G	G4 G4	G4 G4	G6 G4	G6 G6	G7 G6
X	X5 X4	X6 X4	X6 X4	X6 X5	X8 X6
U	U6 U5	U6 U5	U6 U5	U6 U5	U7 U6
F	-	F4 F4	F6 F4	F7 F6	F7 F6
N	-	N4 N4	N6 N4	N7 N6	N7 N6
C	C6 C5	C6 C5	C6 C5	C6 C5	-
T	T6 T4	T6 T4	T6 T4	T6 T4	-

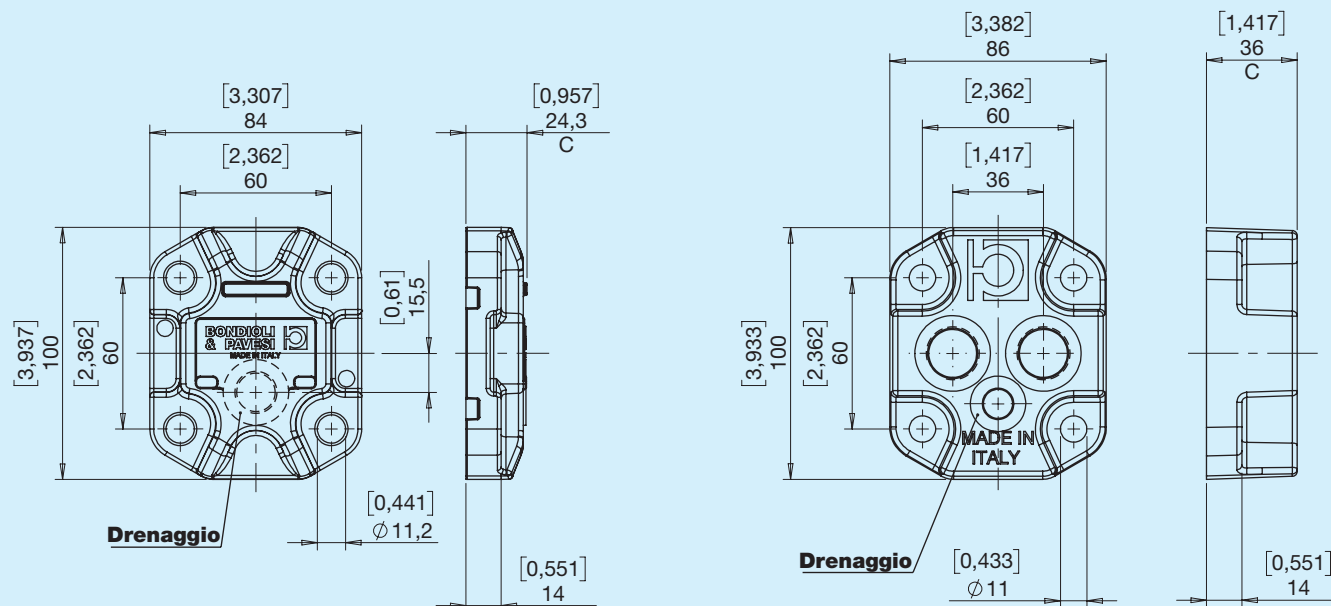
Combination of round ports for bidirectional pumps/motors

Ports	Round					Drain line
	6 8	11	14 17	20	26	
	IN/OUT ports	IN/OUT ports	IN/OUT ports	IN/OUT ports	IN/OUT ports	
E	E3 E3	E3 E3	E3 E3	E5 E5	E5 E5	M2
G	G4 G4	G4 G4	G4 G4	G6 G6	G6 G6	G3
X	X4 X4	X4 X4	X4 X4	X6 X6	X6 X6	M2
U	U5 U5	U5 U5	U5 U5	U6 U6	U6 U6	U3
F	-	F4 F4	F4 F4	F6 F6	F6 F6	M2
N	-	N4 N4	N4 N4	N6 N6	N6 N6	U3
C	C5 C5	C5 C5	C5 C5	-	-	U3
T	T4 T4	T4 T4	T4 T4	-	-	G3

Other combinations of ports are available. For more information, please contact our technical sales department.

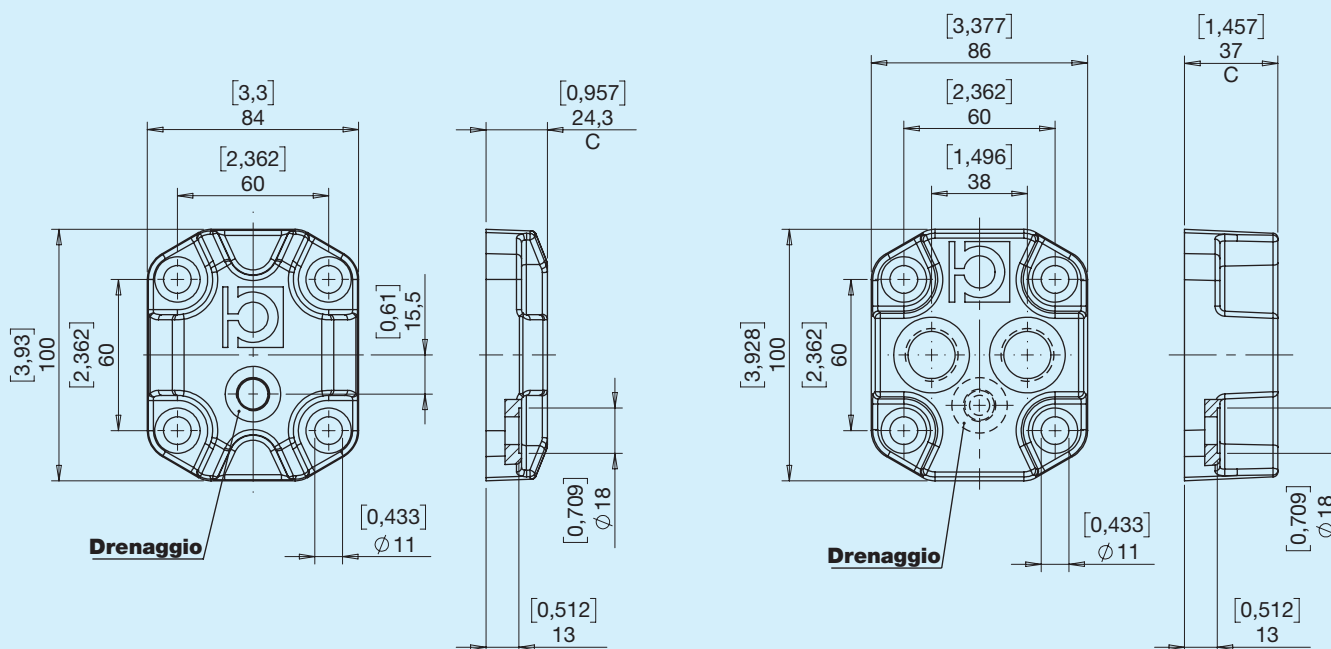
ST Aluminium

Standard version

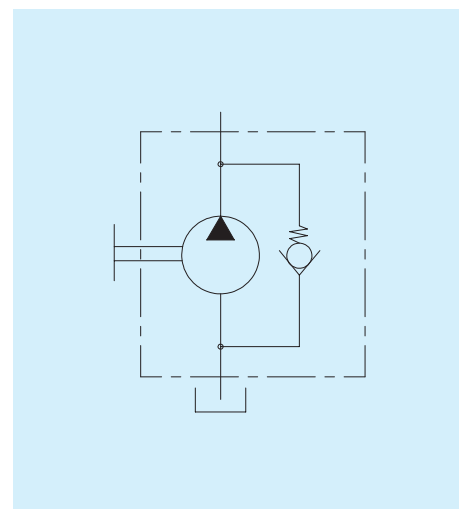
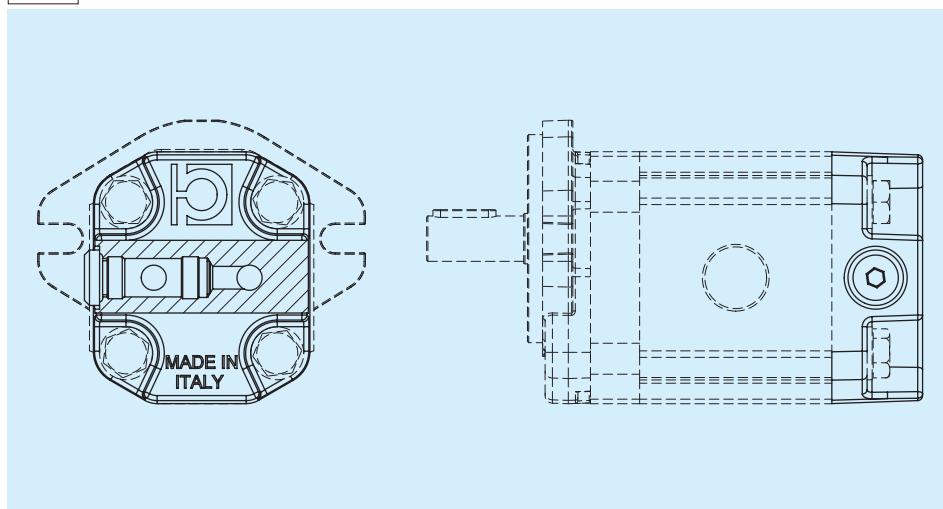


SG Cast iron

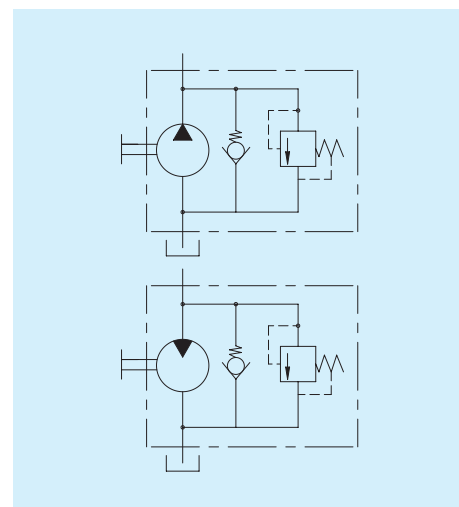
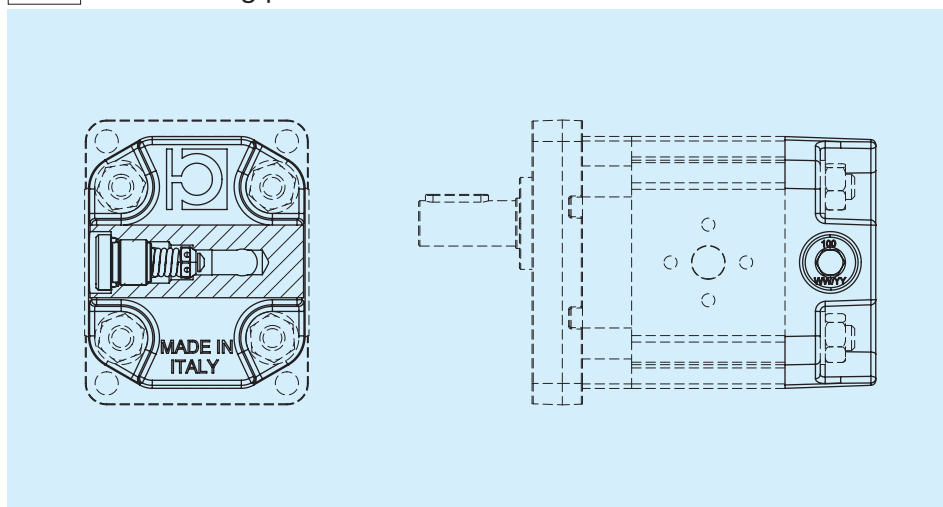
Standard version



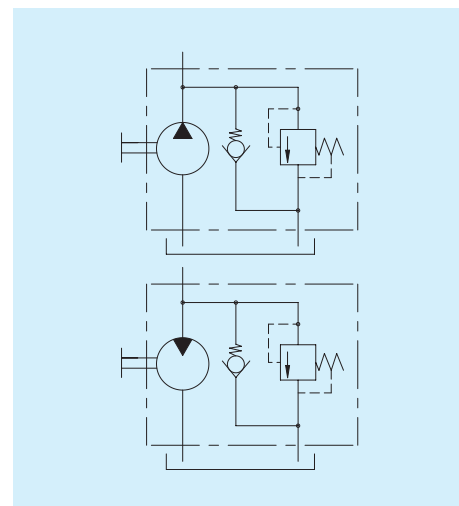
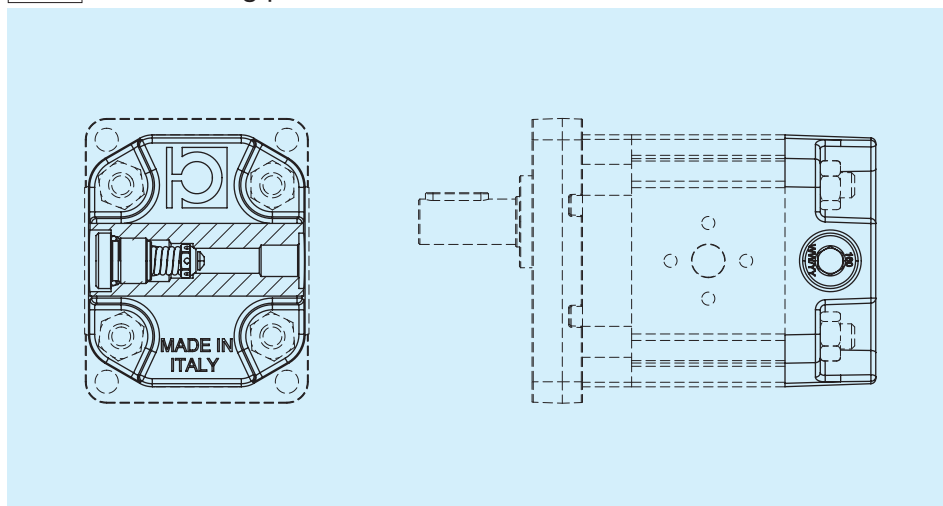
VA Check valve



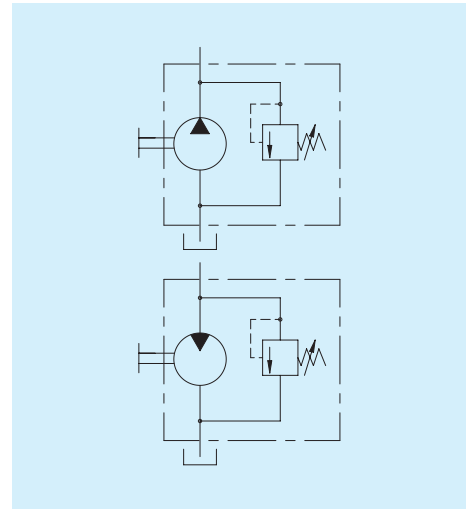
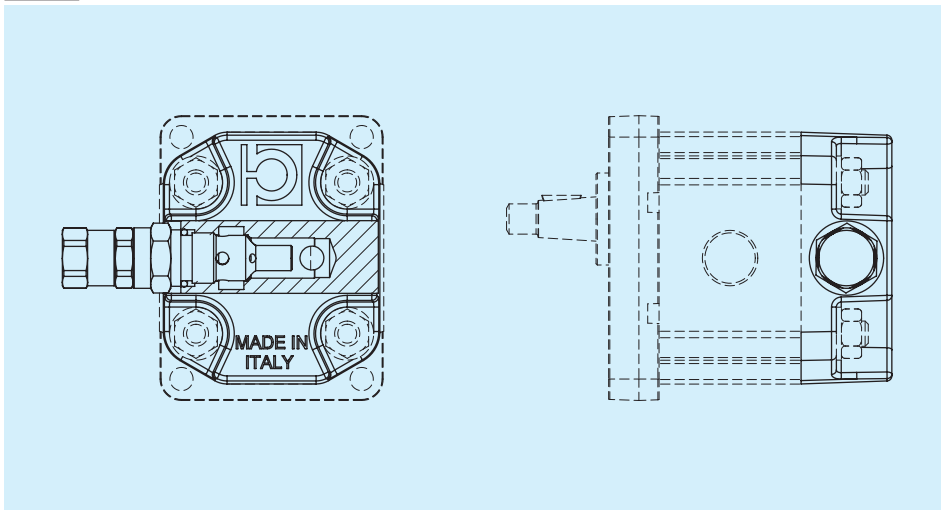
VB Fixed setting pressure relief valve with internal drain



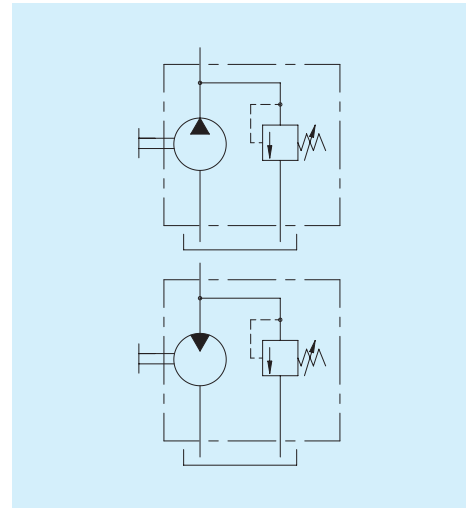
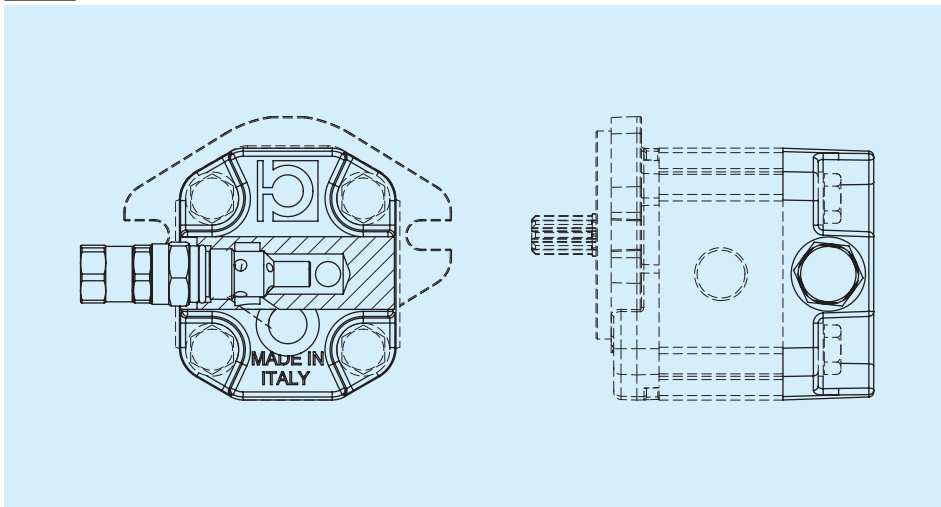
VC Fixed setting pressure relief valve with external drain



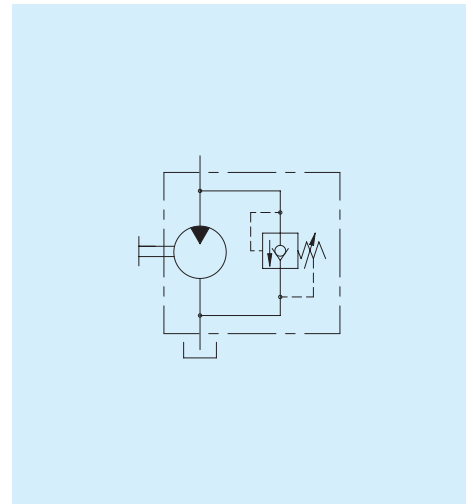
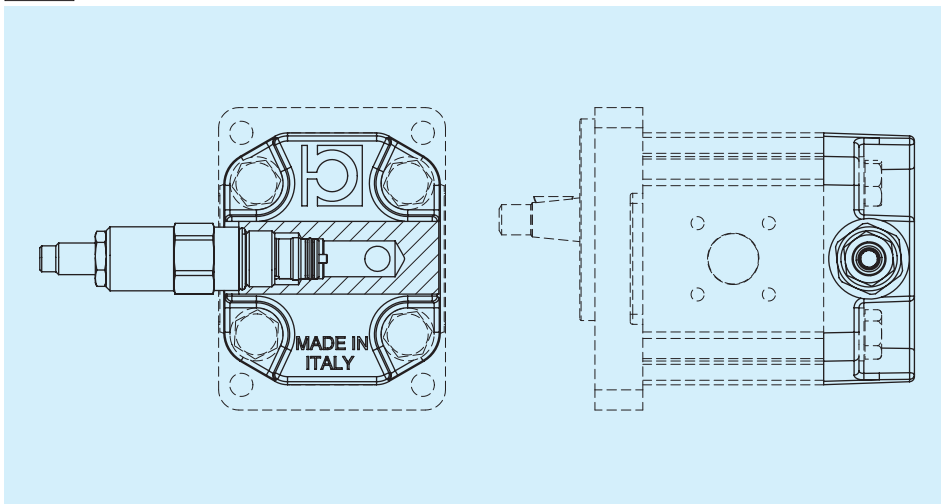
VD Adjustable pressure relief valve with internal drain



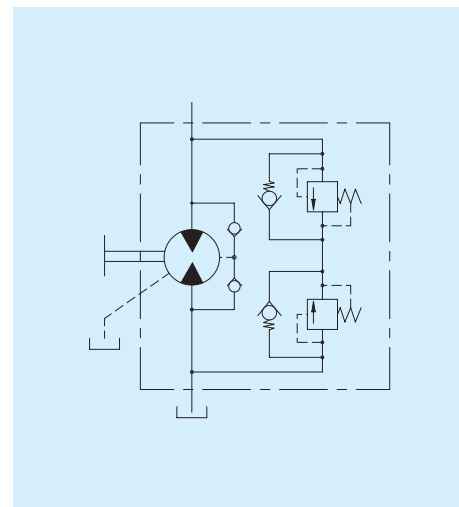
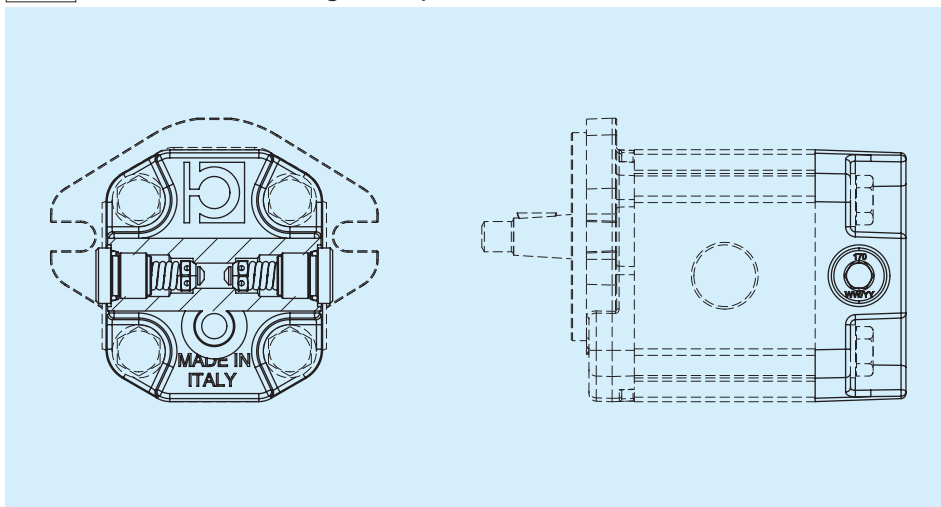
VE Adjustable pressure relief valve with external drain



VT Adjustable max. pressure valve with internal drain with anti-cavitation



VV Double fixed setting max. pressure valve with internal drain and anti-cavitation check valve with external drain

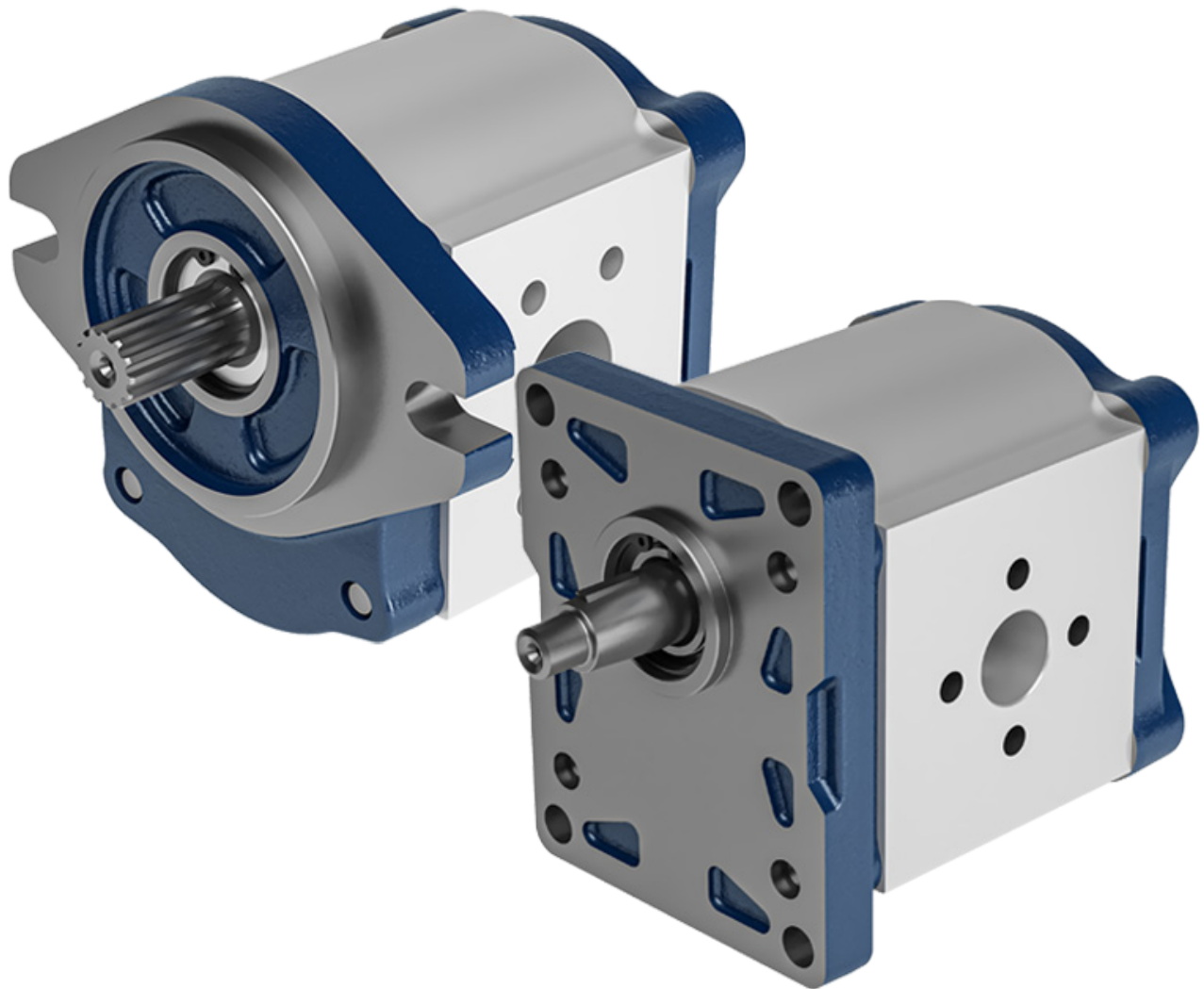


For more information, please contact the technical sales department

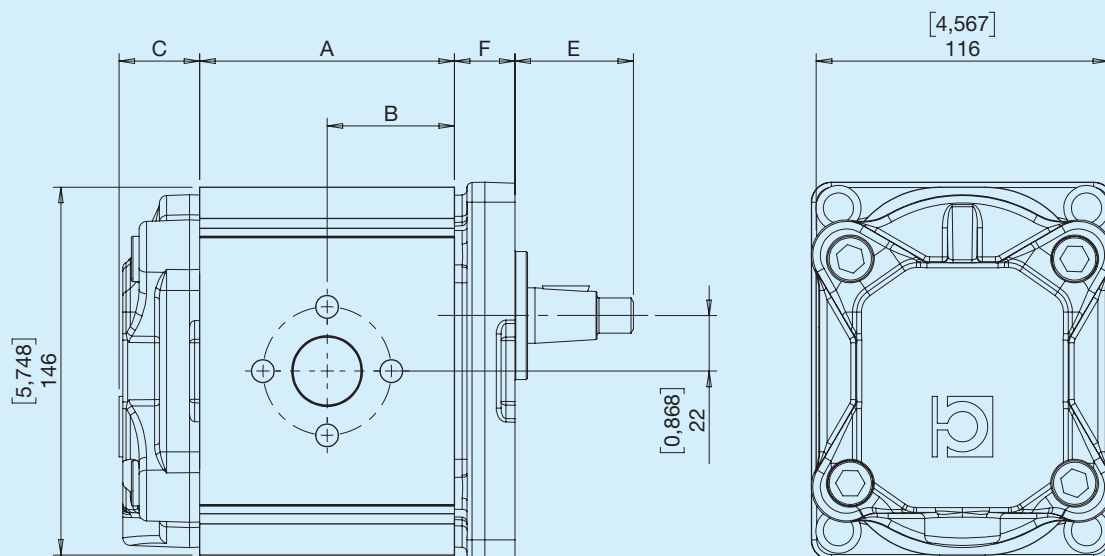
For pressure relief valves, please indicate the setting

HPL			1	2	3	4	5	6	7	8			9	10	11	12	13	14	15						
1 2 3			Series																						
1 2 3			PA2 Gear pump Group 2						MA2 Gear motor Group 2																
4 5			Displacement																						
4 5			05						11						20						40				
4 5			06						14						26						34				
4 5			08						17						34										
6			Direction of rotation																						
6			S Anti-clockwise/left						D Clockwise/right						H Bidirectional internal drainage (with cast iron flange/cover only)						B Bidirectional rear external drainage				
7 8			Front flanges - Shafts																						
7 8			LL European in cast iron - Tapered (1:8)						NM German - Tapered (1:5)						QP SAE A 2 cast iron holes - Round SAE A						SX SAE A 2 holes - Splined SAE A 11T				
7 8			LN European in cast iron - European round D15						NU German - Splined DIN 5482						QV SAE A 2 cast iron holes - Splined SAE A 9T						TY SAE B 2 cast iron holes - Splined SAE B 13T *				
7 8			LU European in cast iron - Splined DIN 5482						OM German D50 2 holes RH - Tapered (1:5)						QX SAE A 2 cast iron holes - Splined SAE B 11T						VM German in cast iron - Tapered (1:5)				
7 8			ML European - Tapered (1:8)						OU German D50 2 holes RH - Splined DIN 5482, German vers.						RZ German D52 - Front tooth						VU German in cast iron - Splined DIN 5482, German vers.				
7 8			MN European - European round D15						PM German D50 2 holes LH - Tapered (1:5)						SP SAE A 2 holes - Round SAE A										
7 8			MU European - Splined DIN 5482						PU German D50 2 holes LH - Splined DIN 5482, German vers.						SV SAE A 2 holes - Splined SAE A 9T										
			I1 European flange - Round D18						I3 SAE A flange - Round D18						IB German flange in cast iron - Round D22						IS Special flange - Round D25.40				
			I2 German flange - Tapered (1:5)						I7 European flange - Tapered (1:8)						IC German flange in cast iron - Tapered (1:5)										
			B1 Centring D80 - Tapered (1:5)						C3 Centring D50.80 - Tapered (1:8)						C5 Centring D36.50 - Tapered (1:8)										
			B3 Centring D80 - Round D22						C4 Centring D50.80 - Round D22						C6 Centring D36.50 - Round D18										
9 10			IN - Inlet ports																						
9 10			... See tables Ports and Combinations																						
11 12			OUT - Output ports																						
11 12			... See tables Ports and Combinations																						
13			Seals																						
13			B NBR Pump						R NBR Motor / Bid. pump High pressure pump						V Viton Pump						W Viton Motor / Bid. pump High pressure pump				
14 15			Covers																						
14 15			ST Standard						VB Fixed setting pressure relief valve with internal drain						VE Adjustable pressure relief valve with external drain										
14 15			SG Cast iron version						VC Fixed setting pressure relief valve with external drain						VT Adjustable max. pressure valve with internal drain with anti-cavitation										
14 15			VA Check valve						VD Adjustable pressure relief valve with internal drain						VV Double valve max. pressure fixed setting with internal drain and anti-cavitation valve with external drain										

HPL Series Group 3

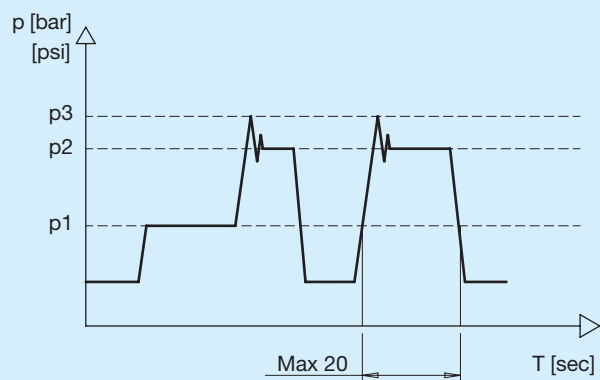


Before use, carefully read the GENERAL INSTRUCTIONS FOR USE OF GEAR PUMPS AND MOTORS.



C - See section on covers E - See section on shafts F - See section on flanges

Pressure definition



p1	Continuous pressure
A,B - Use	Intermittent pressure Maximum pressure permitted for short periods (max. 20 sec)
L1, L2 - Drain port	Peak pressure Maximum permitted pressure intended as peak pressure of Vmax

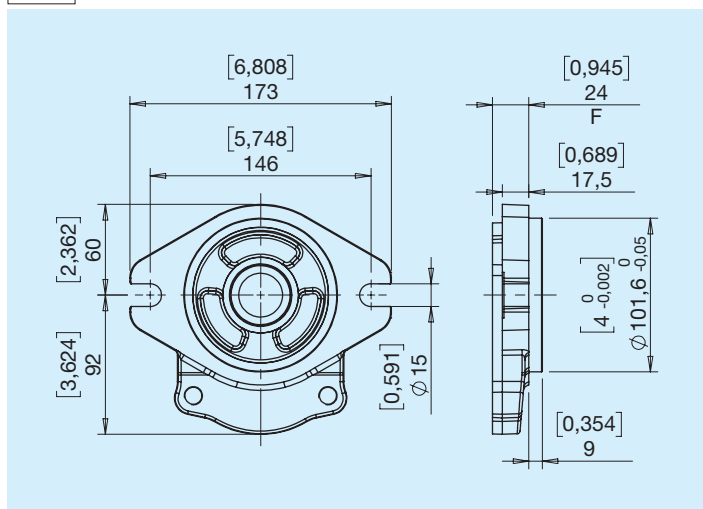
Pump dimensions and technical data

HPLPA3	Nominal displacement		Continuous pressure		Intermittent pressure		Peak pressure		Rotational speed		Weight		A		B	
	cm ³	in ³	bar	psi	bar	psi	bar	psi	min ⁻¹	min ⁻¹	kg	lbs	mm	in	mm	in
21	21.50	1.31	220	3191	250	3626	310	4496	3000	700	6.20	13.67	81.07	3.192	40.5	1.594
26	26.00	1.59	210	3046	250	3626	300	4351	3000	700	6.20	13.67	84.07	3.310	42.0	1.654
31	30.50	1.86	210	3046	250	3626	280	4061	3000	700	6.20	13.67	87.07	3.428	43.5	1.714
36	36.00	2.20	210	3046	250	3626	280	4061	3000	700	6.50	14.33	91.07	3.585	45.5	1.793
41	41.50	2.53	210	3046	250	3626	280	4061	3000	700	7.20	15.87	95.07	3.743	47.5	1.870
47	46.50	2.84	230	3336	250	3626	270	3916	3000	700	7.20	15.87	98.07	3.861	49.0	1.929
51	50.50	3.08	200	2901	220	3191	270	3916	3000	700	7.20	15.87	101.07	3.979	50.5	1.990
56	55.50	3.39	180	2611	190	2756	230	3336	2500	600	7.40	16.31	104.57	4.117	52.3	2.059
61	61.00	3.72	150	2175	170	2466	200	2901	2500	600	7.60	16.76	108.57	4.274	54.3	2.137
73	72.00	4.39	140	2031	160	2321	180	2611	2500	600	8.00	17.64	116.07	4.570	58.0	2.285
90	88.00	5.37	110	1595	120	1740	170	2466	2500	600	8.60	18.96	127.07	5.003	63.5	2.501

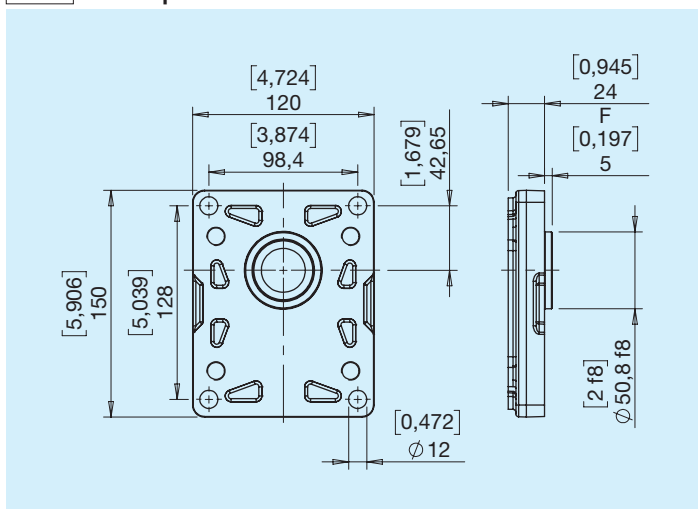
Motor dimensions and technical data

HPLMA3	Nominal displacement		Continuous pressure		Intermittent pressure		Peak pressure		Rotational speed		Weight		A		B	
	cm ³	in ³	bar	psi	bar	psi	bar	psi	min ⁻¹	min ⁻¹	kg	lbs	mm	in	mm	in
21	21.50	1.31	220	3191	250	3626	310	4496	3500	700	6.20	13.67	81.07	3.192	40.5	1.594
26	26.00	1.59	210	3046	250	3626	300	4351	3500	700	6.20	13.67	84.07	3.310	42.0	1.654
31	30.50	1.86	210	3046	250	3626	280	4061	3500	700	6.20	13.67	87.07	3.428	43.5	1.714
36	36.00	2.20	210	3046	250	3626	280	4061	3500	700	6.50	14.33	91.07	3.585	45.5	1.793
41	41.50	2.53	210	3046	250	3626	280	4061	3500	700	7.20	15.87	95.07	3.743	47.5	1.870
47	46.50	2.84	230	3336	250	3626	270	3916	3500	700	7.20	15.87	98.07	3.861	49.0	1.929
51	50.50	3.08	200	2901	220	3191	270	3916	3500	700	7.20	15.87	101.07	3.979	50.5	1.990
56	55.50	3.39	180	2611	190	2756	230	3336	3000	600	7.40	16.31	104.57	4.117	52.3	2.059
61	61.00	3.72	150	2175	170	2466	200	2901	3000	600	7.60	16.76	108.57	4.274	54.3	2.137
73	72.00	4.39	140	2031	160	2321	180	2611	3000	600	8.00	17.64	116.07	4.570	58.0	2.285

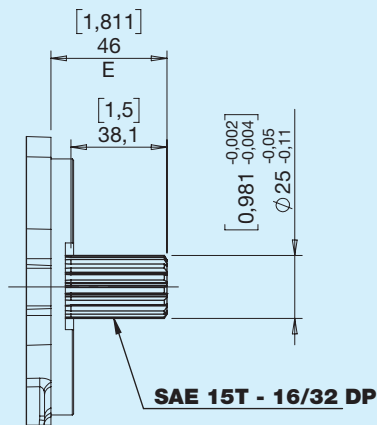
2 SAE B 2 holes



3 European D50.8

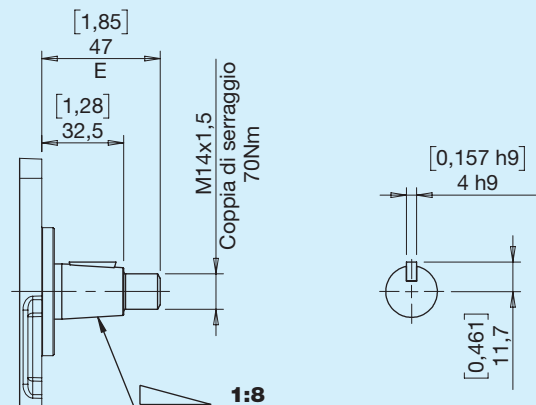


1 Splined SAE BB 15T



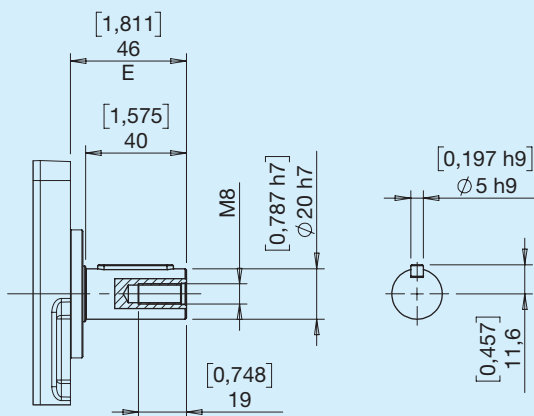
Max. torque 460 Nm

2 Tapered (1:8)



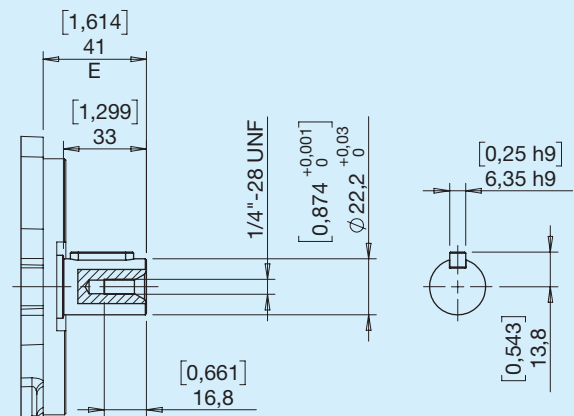
Max. torque 240 Nm

4 European round



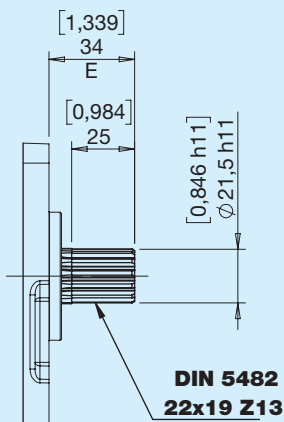
Max. torque 190 Nm

6 Round SAE B



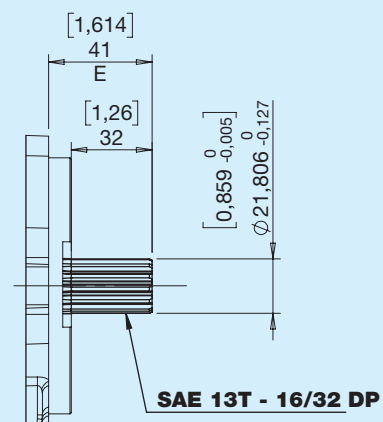
Max. torque 210 Nm

7 Splined DIN 5482



Max. torque 220 Nm

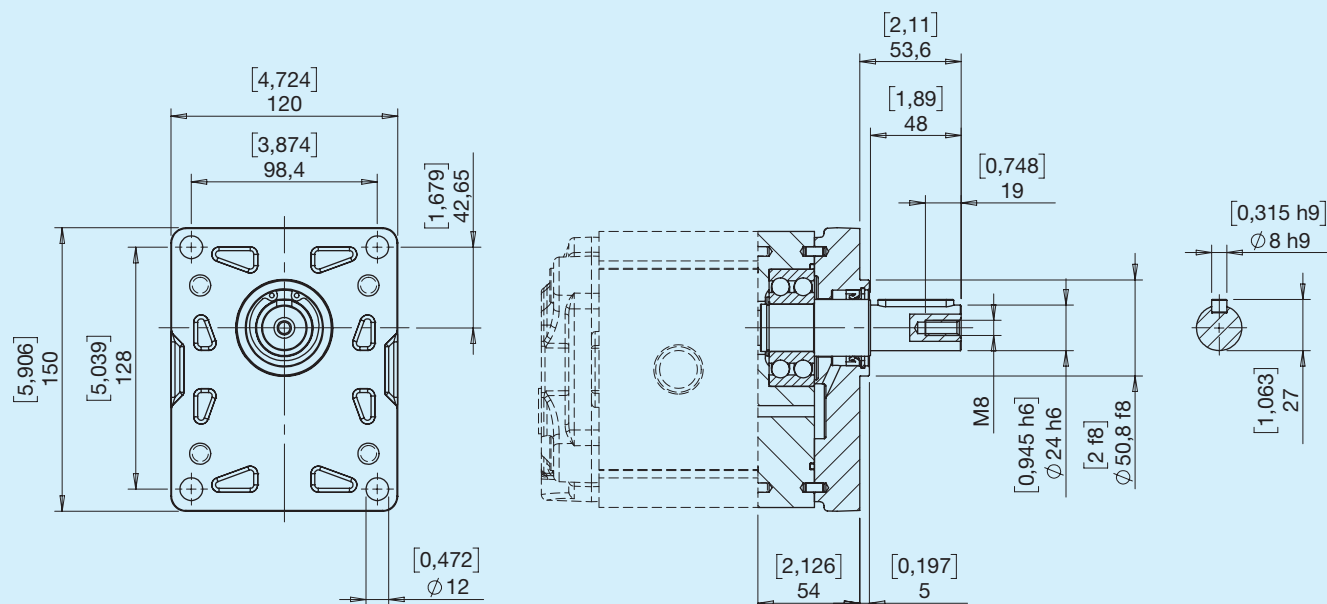
9 Splined SAE B 13T



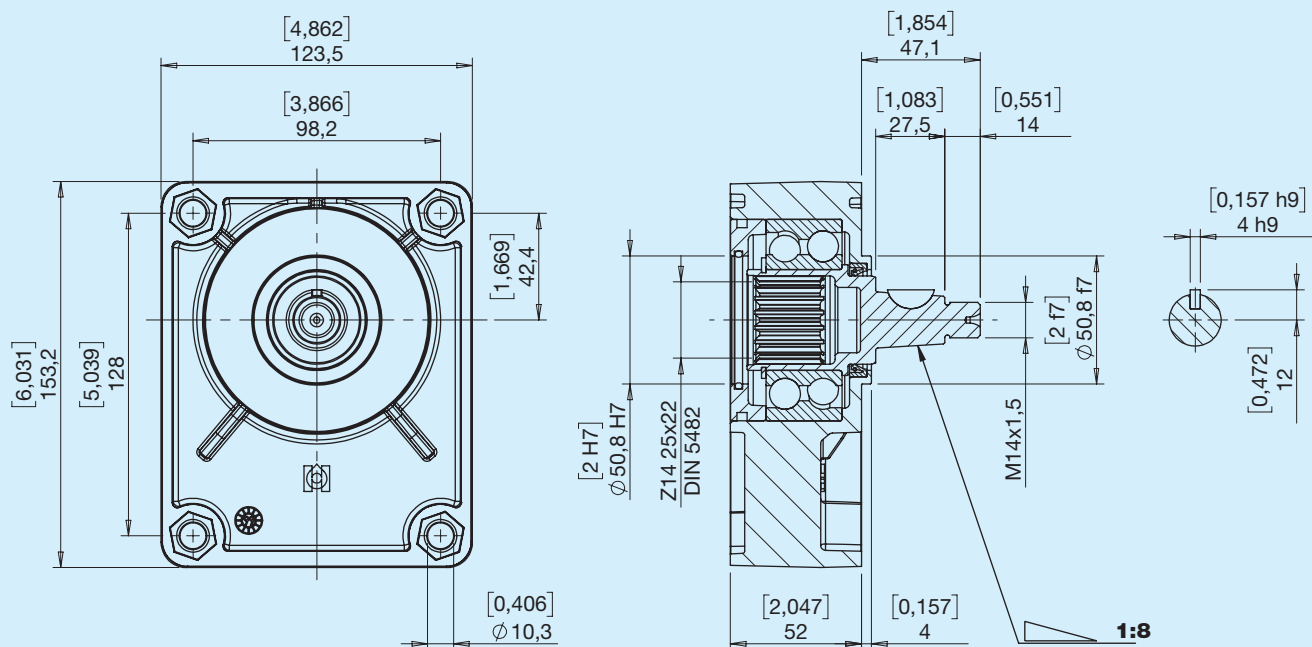
Max. torque 310 Nm

Shafts	Flanges	
	2	3
1	•	
2		•
4		•
6	•	
7		•
9	•	

I6 European flange D50.8 round shaft D24

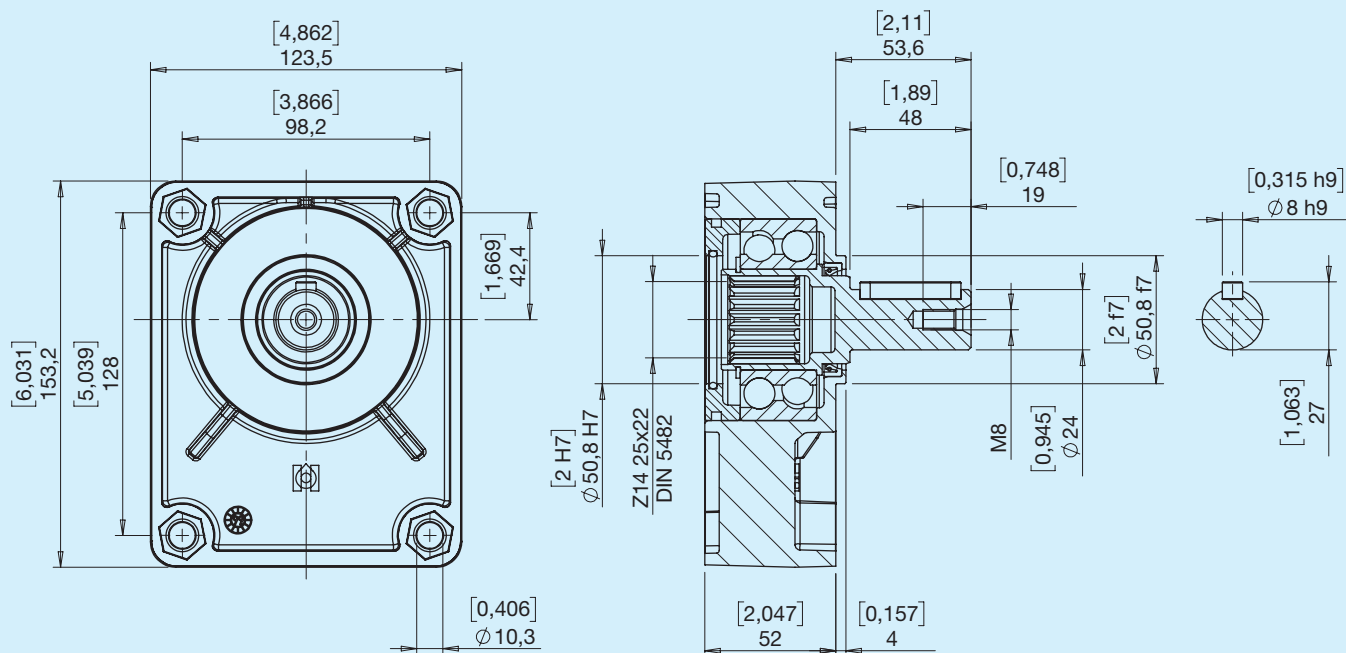


C7 Centring D50.8 tapered shaft (1:8)



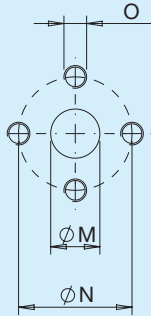
Can be ordered separately Code HPL5923C7R

C8 Centring D50.8 round shaft D24



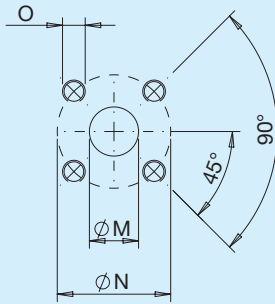
Can be ordered separately Code HPL5923C8R

E Lateral



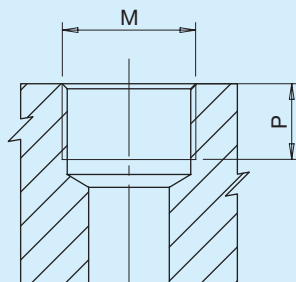
Type	M		N		O	
	mm	in	mm	in	mm	Nm
E5	20	0.79	40	1,57	M8	17
E7	27	1,06	51	2,01	M10	38
E8	34	1,34	62	2,44	M10	38

X Lateral



Type	M		N		O	
	mm	in	mm	in	mm	in
X7	19	0.75	55	2,17	M8	15
X8	27	1,06	55	2,17	M8	15

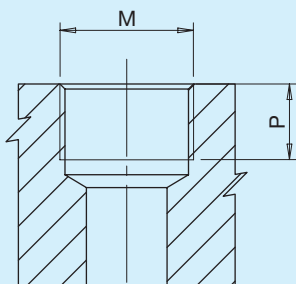
G Lateral / Drain



Type	M	Nm	P	
			mm	in
G3*	PORT ISO 1179-1-G 3/8	38	12	0.47
G6	Port ISO 1179-1 - G 3/4	90	15	0.59
G7	PORT ISO 1179-1-G 1	160	21	0,83
G8	PORT ISO 1179-1-G 1 1/4	200	21	0,83

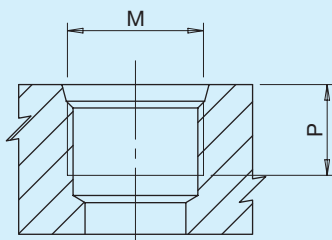
*Drain

T Rear



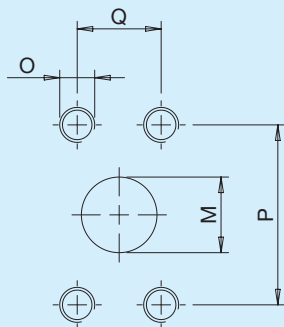
Type	M	Nm	P	
			mm	in
T6	PORT ISO 1179-1-G3/4	90	19	0,75

U Lateral / Drain



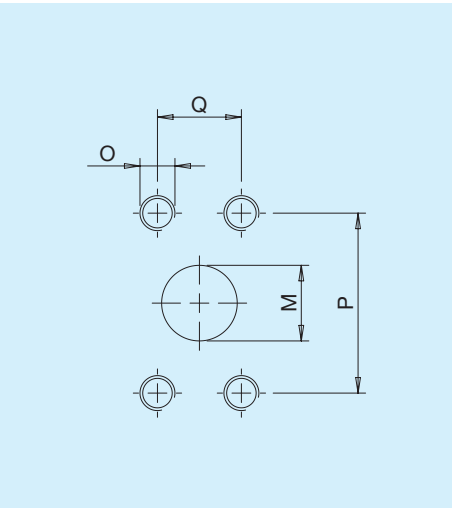
Type	Dim.	M		P	
		mm	in	mm	in
U6	3/4'	PORT ISO 11926-1 - 1 1/16-12		20	0,79
U7	1'	PORT ISO 11926-1 - 1 5/16-12		20	0,79
U8	1 1/4'	PORT ISO 11926-1 - 1 5/8-12		20	0,79

N Lateral



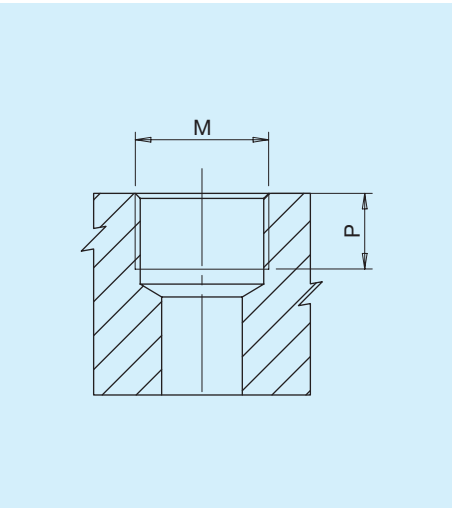
Type	Dim.	M		P		Q		O	Nm
		mm	in	mm	in	mm	in		
N6	3/4'	20	0,79	47,6	1,87	22,2	0,87	3/8-16 UNC-2B	38
N7	1'	27	1,06	52,4	2,60	26,2	1,03	3/8-16 UNC-2B	38
N8	1 1/4'	34	1,34	58,7	2,31	30,2	1,19	7/16-14 UNC-2B	45

F Lateral



Type	Dim.	M		P		Q		O	Nm
		mm	in	mm	in	mm	in		
F6	3/4'	20	0,79	47,6	1,87	22,2	0,87	M10	38
F7	1'	25,4	1	52,4	2,60	26,2	1,03	M10	38
F8	1 1/4'	30,5	1,2	58,7	2,31	30,2	1,19	M10	38

M Drain



Type	M	Nm	P	
			mm	in
M3*	PORT ISO 6149 - 1 - M16x1,5	35	14	0,55

*Drain

Combination of ports/flanges

Ports	Flanges	
	2	3
E		•
X		•
G	•	•
T	•	•
U	•	
N	•	
F	•	

Combination of round ports for one-way pumps/motors

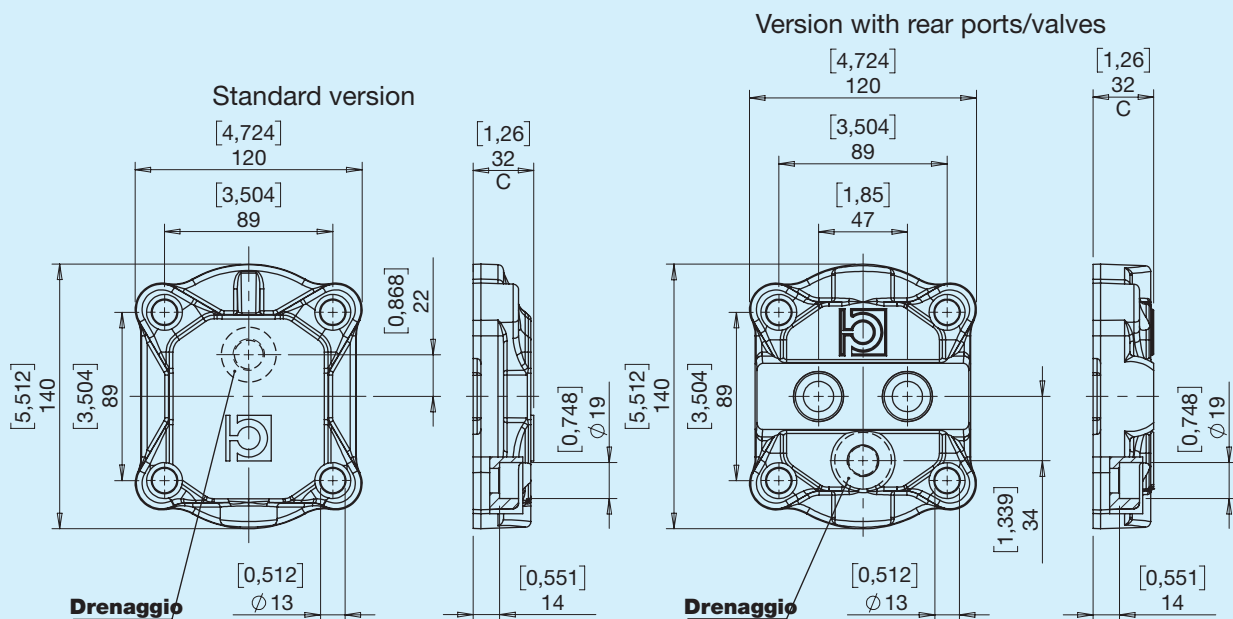
Ports	Round		
	22 26 31	36 41 47 51 56 61	73 90
	IN/OUT ports	IN/OUT ports	IN/OUT ports
E	E5 E5	E7 E5	E8 E7
X	X8 X7	X8 X7	X8 X7
G	G6 G6	G7 G6	G8 G7
T	T6 T6	-	-
U	U7 U6	U8 U7	U8 U7
N	N7 N6	N7 N6	N8 N7
F	F7 F6	F7 F6	F8 F7

Combination of round ports for bidirectional pumps/motors

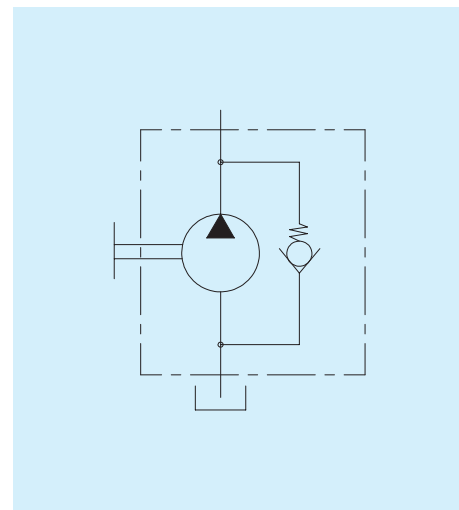
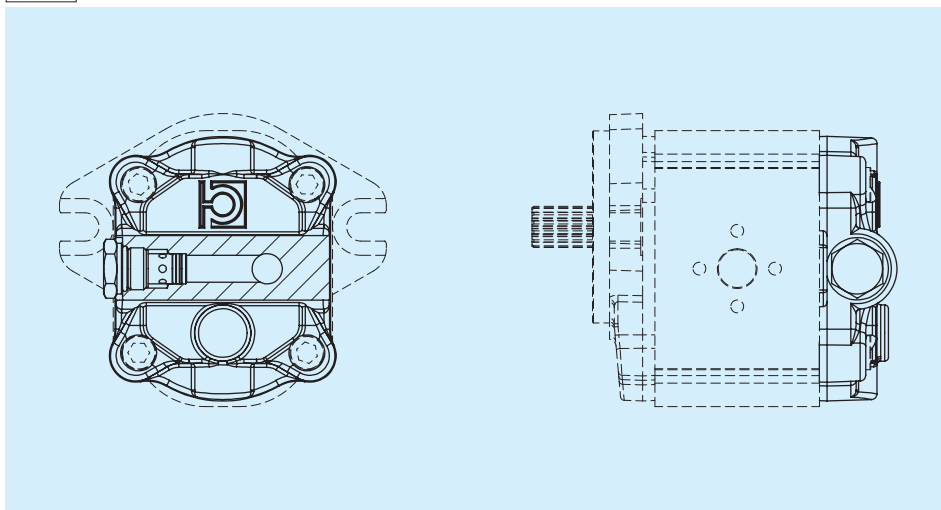
Ports	Round			
	22 26 31	36 41 47 51 56 61	73	
	IN/OUT ports	IN/OUT ports	IN/OUT ports	Drain line
E	E5 E5	E7 E7	E8 E8	M3
X	X7 X7	X8 X8	X8 X8	M3
G	G6 G6	G7 G7	G8 G8	G3
T	T6 T6	-	-	G3
U	U6 U6	U7 U7	U8 U8	M3
N	N6 N6	N7 N7	N8 N8	M3
F	F6 F6	F7 F7	F8 F8	M3

Other combinations of ports are available. For more information, please contact our technical sales department.

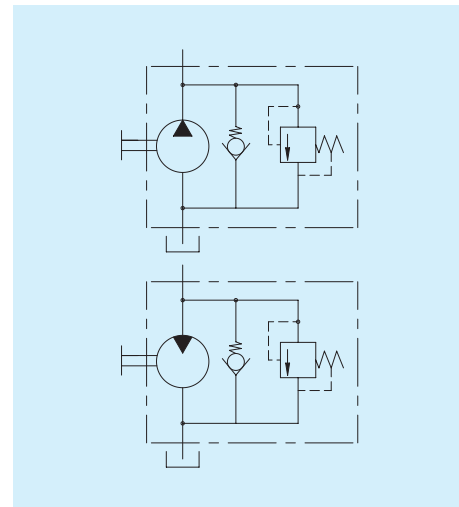
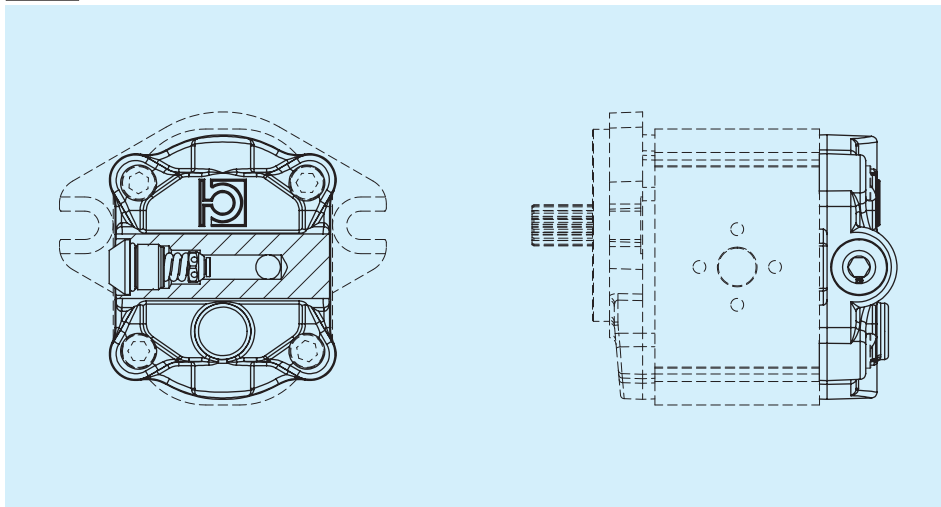
SG Cast iron



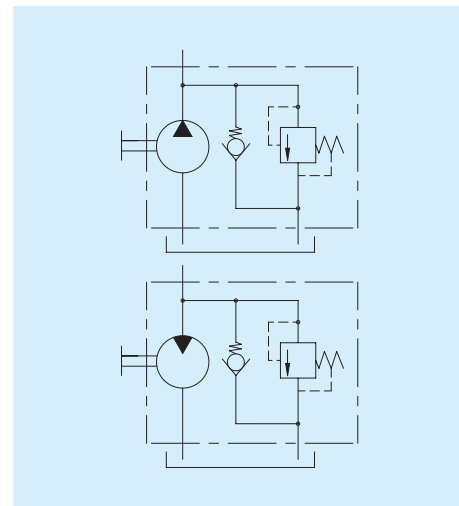
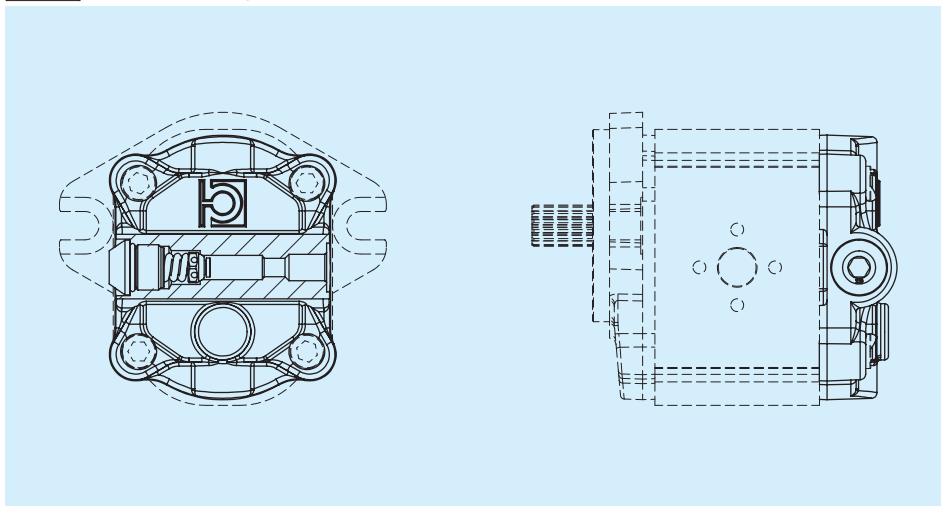
VA Check valve



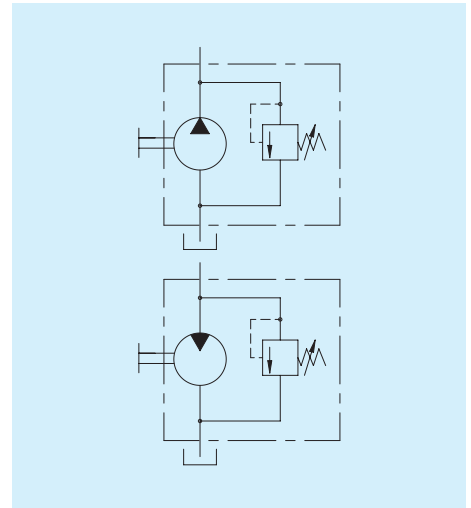
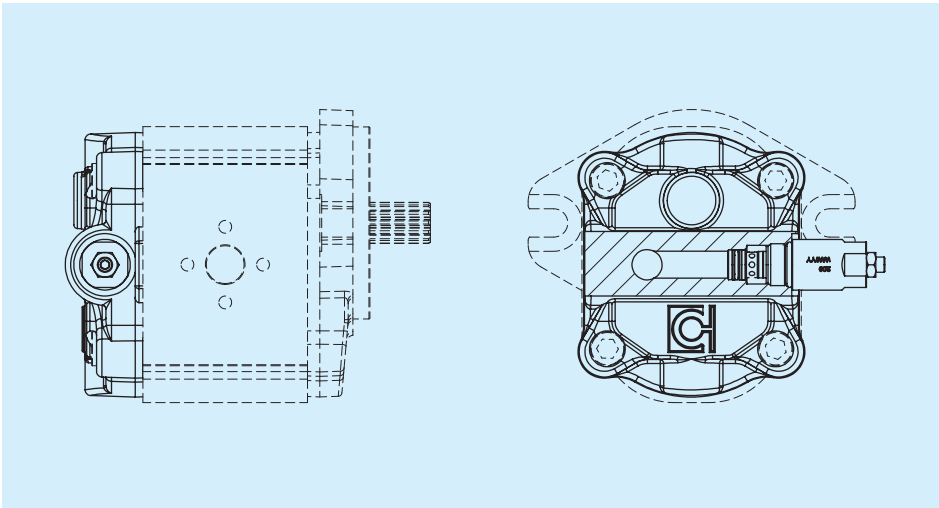
VB Fixed setting pressure relief valve with internal drain



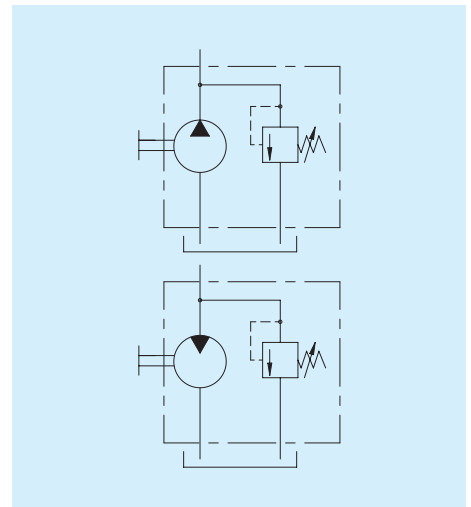
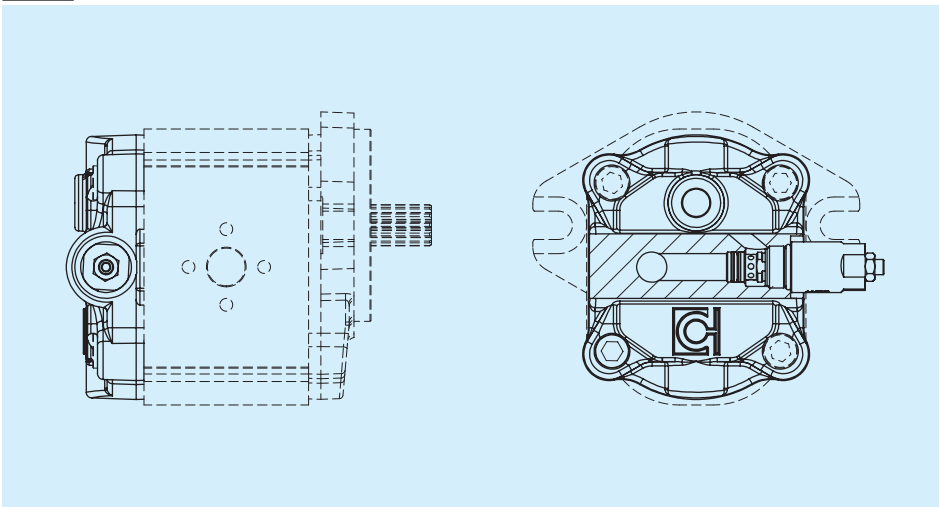
VC Fixed setting pressure relief valve with external drain



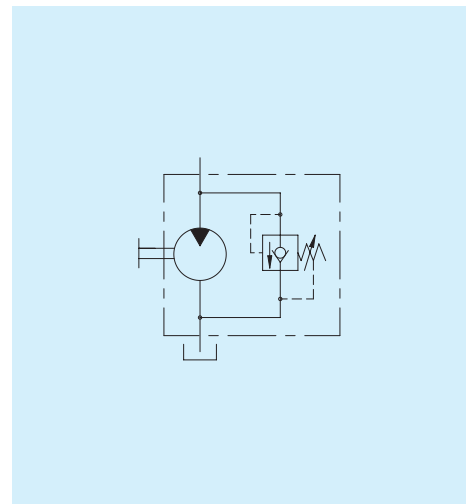
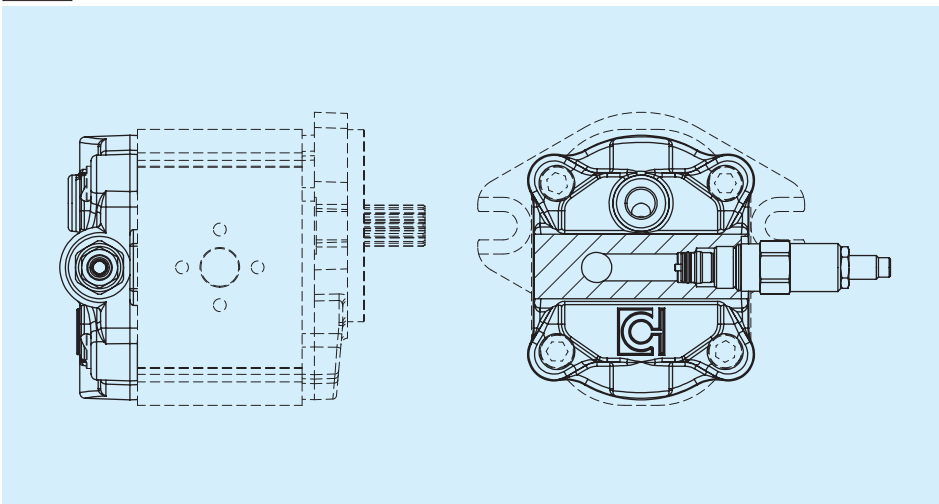
VD Adjustable pressure relief valve with internal drain



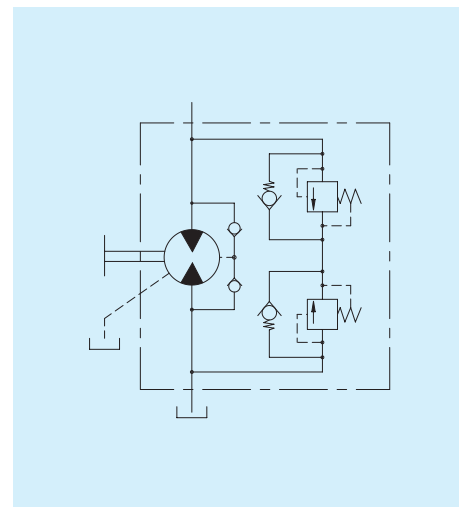
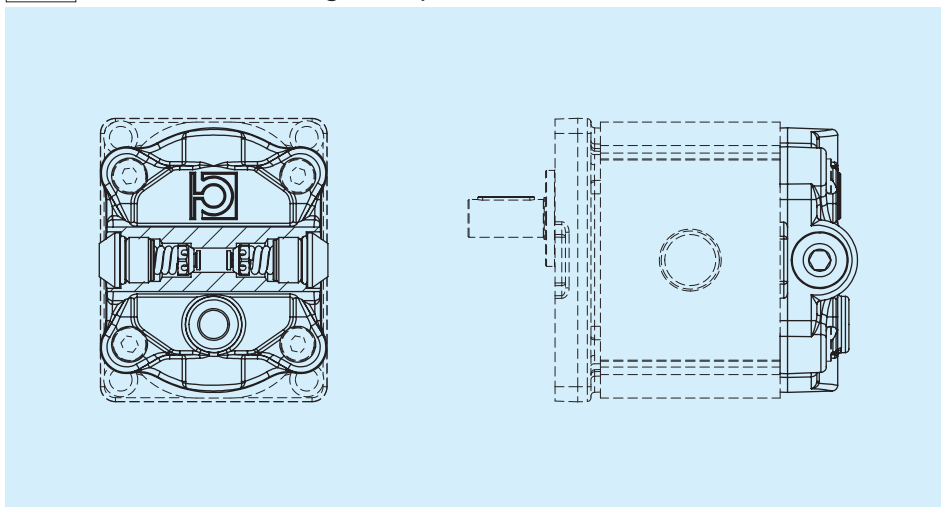
VE Adjustable pressure relief valve with external drain



VT Adjustable max. pressure valve with internal drain with anti-cavitation



VV Double fixed setting max. pressure valve with internal drain and anti-cavitation check valve with external drain

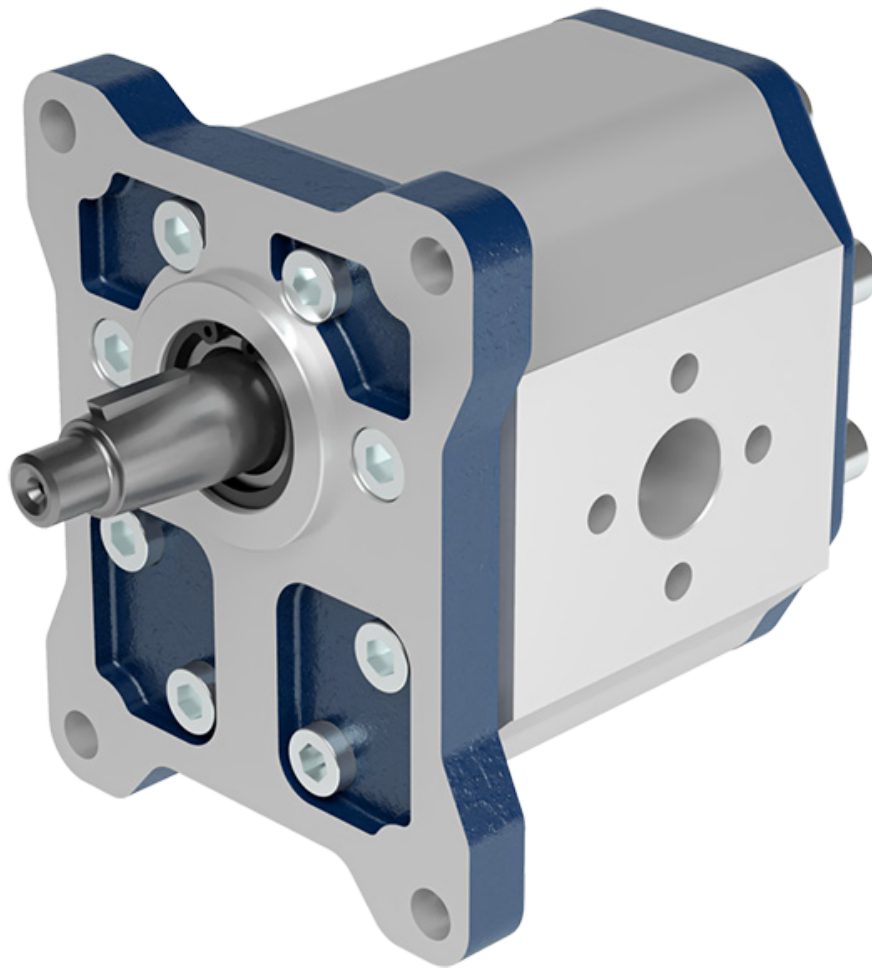


For more information, please contact the technical sales department

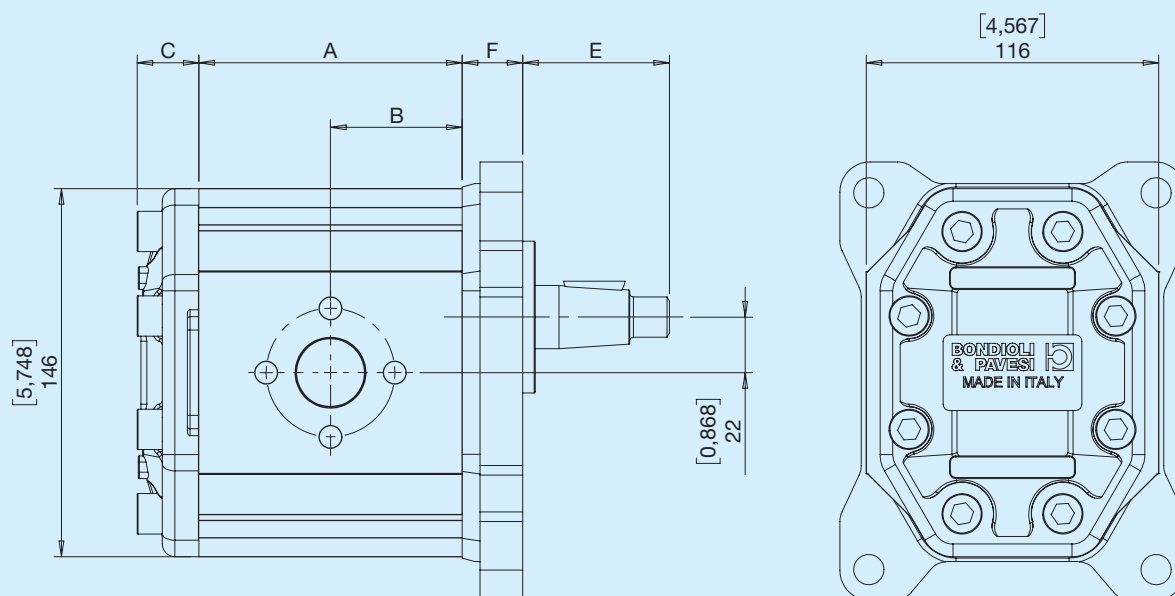
For pressure relief valves, please indicate the setting

HPL			1	2	3	4	5	6	7	8			9	10	11	12	13	14	15																									
1 2 3			Series																																									
PA3			Gear pump Group 3						MA3											Gear motor Group 3																								
4 5			Displacement																																									
22									36						51						73																							
26									41						56						90																							
31									47						61																													
6			Direction of rotation																																									
S			Anti-clockwise/left						D						Clockwise/right						H						Bidirectional internal drainage						B						Bidirectional rear external drainage					
7 8			Front flanges - Shafts																																									
21			SAE B 2 holes - Splined SAE BB 15T						29						SAE B 2 holes - Splined SAE B 13T						34						European D50.8 - European round																	
26			SAE B 2 holes - Round SAE B						32						European D50.8 - Tapered (1:8)						37						European D50.8 - Splined DIN 5482																	
			I6																	European flange D50.8 - round shaft D24																								
			C7																	Centring D50.80 - Tapered (1:8)						C8						Centring D50.80 - Round D24												
9 10			IN - Inlet ports																																									
...			See tables on pages 12 and 13																																									
11 12			OUT - Output ports																																									
...			See tables Ports and Combinations																																									
13			Seals																																									
1			NBR Pump						2						Viton Pump						3						NBR Motor / Bid. pump High pressure pump						4						Viton Motor / Bid. pump High pressure pump					
14 15			Covers																																									
SG			Cast iron version						VB						Fixed setting pressure relief valve with internal drain						VD						Adjustable pressure relief valve with internal drain						VT						Adjustable max. pressure valve with internal drain with anti-cavitation					
VA			Check valve						VC						Fixed setting pressure relief valve with external drain						VE						Adjustable pressure relief valve with external drain						VV						Double valve max. pressure fixed setting with internal drain and anti-cavitation valve with external drain					

HPL Series Group 4

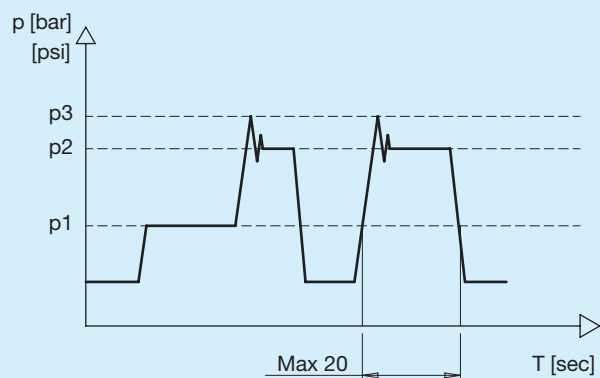


Before use, carefully read the GENERAL INSTRUCTIONS FOR USE OF GEAR PUMPS AND MOTORS.



C - See section on covers E - See section on shafts F - See section on flanges

Pressure definition



p_1	Continuous pressure
A,B - Use	Intermittent pressure Maximum pressure permitted for short periods (max. 20 sec)
L1, L2 - Drain port	Peak pressure Maximum permitted pressure intended as peak pressure of V_{max}

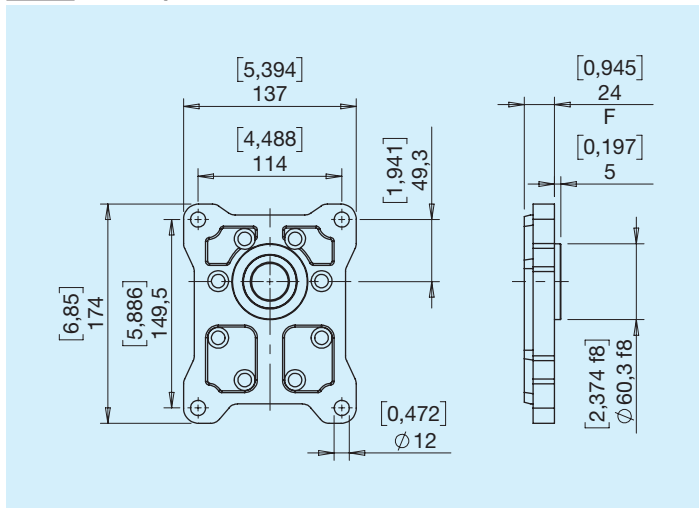
Pump dimensions and technical data

HPLPA4	Nominal displacement		Continuous pressure		Intermittent pressure		Peak pressure		Rotational speed		Weight		A		B	
	cm ³	in ³	bar	psi	bar	psi	bar	psi	min ⁻¹	min ⁻¹	kg	lbs	mm	in	mm	in
41	41.50	2.53	220	3191	250	3626	300	3561	3000	700	9.20	20.58	95.07	3.743	47.5	1.870
51	50.50	3.08	190	2756	210	3046	280	4061	3000	700	9.20	20.58	101.07	3.979	50.5	1.990
61	61.00	3.72	160	2321	180	2611	200	2901	2500	600	9.60	21.16	108.57	4.274	54.3	2.137
73	72.00	4.39	150	2176	160	2321	180	2611	2500	600	9.60	21.16	116.07	4.570	58.0	2.285
90	88.00	5.37	120	1740	130	1885	170	2466	2500	600	9.60	21.16	127.07	5.003	63.5	2.501

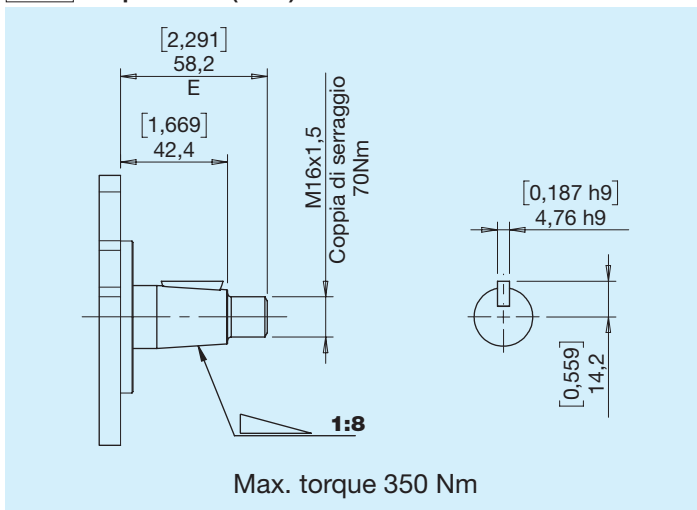
Motor dimensions and technical data

HPLMA4	Nominal displacement		Continuous pressure		Intermittent pressure		Peak pressure		Rotational speed		Weight		A		B	
	cm ³	in ³	bar	psi	bar	psi	bar	psi	min ⁻¹	min ⁻¹	kg	lbs	mm	in	mm	in
41	41.50	2.53	220	3191	250	3626	300	3561	2800	600	9.20	20.58	95.07	3.743	47.5	1.870
51	50.50	3.08	190	2756	210	3046	280	4061	2800	600	9.20	20.58	101.07	3.979	50.5	1.990
61	61.00	3.72	160	2321	180	2611	200	2901	2800	600	9.60	21.16	108.57	4.274	54.3	2.137
73	72.00	4.39	150	2176	160	2321	180	2611	2800	600	9.60	21.16	116.07	4.570	58.0	2.285
90	88.00	5.37	120	1740	130	1885	170	2466	2800	600	9.60	21.16	127.07	5.003	63.5	2.501

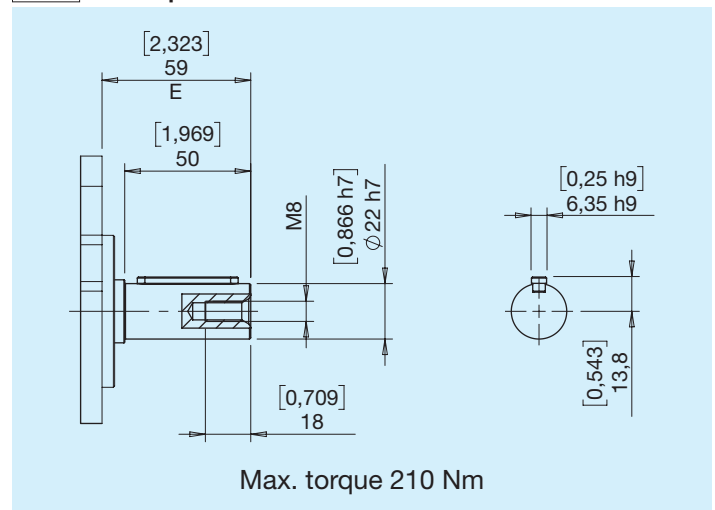
X European D60.3



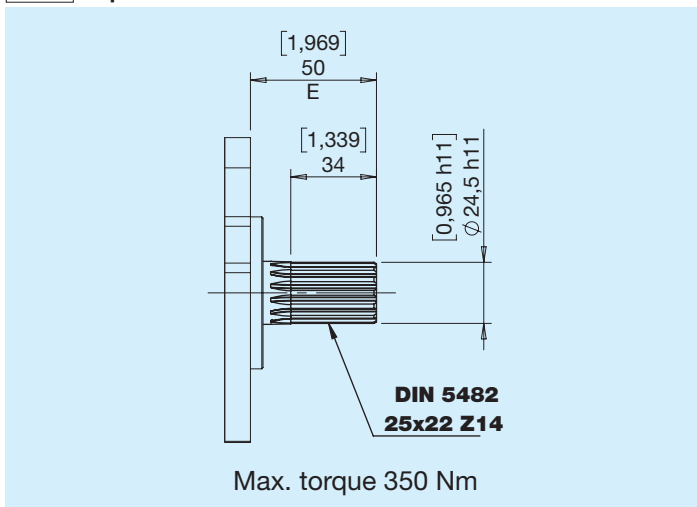
3 Tapered (1:8)



5 European round

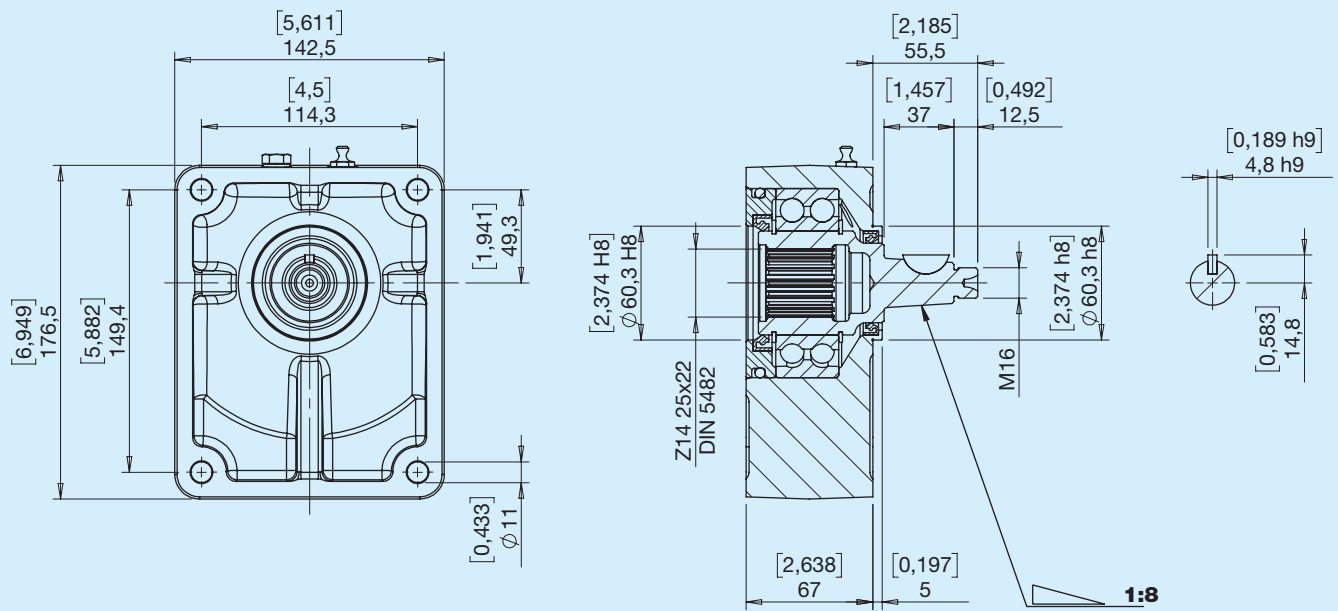


8 Splined DIN 5482

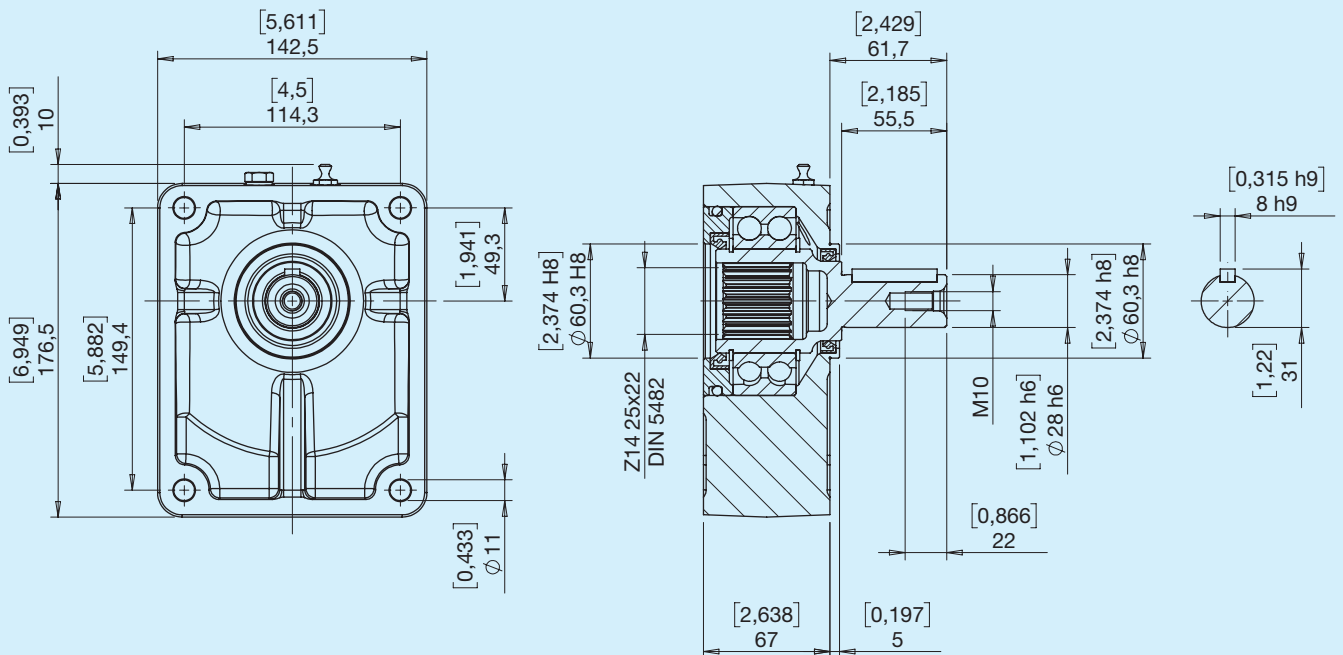


Shafts	Flanges
	X
3	•
5	•
8	•

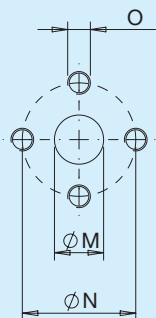
C9 Centring D60.3 tapered shaft (1:8)



C0 Centring D60.3 round shaft D28

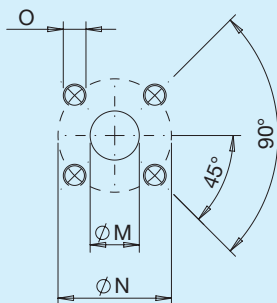


E Lateral



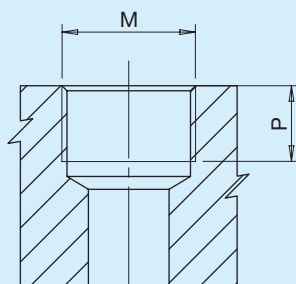
Type	M		N		O	
	mm	in	mm	mm		Nm
E7	27	1.06	51	2.01	M10	30
E8	34	1.34	62	2.44	M10	30

X Lateral



Type	M		N		O	
	mm	in	mm	mm		Nm
X7	19	0.75	55	2.17	M8	15
X8	27	1.06	55	2.17	M8	15

G Lateral / Drain



Type	M	Nm	P	
			mm	in
G3*	PORT ISO 1179-1-G 3/8	38	12	0.47
G7	PORT ISO 1179-1-G 1	130	21	0.83
G8	PORT ISO 1179-1-G 1 1/4	170	21	0.83

*Drain

Combination of ports/flanges

Ports	Flanges
	X
E	•
X	•
G	•

Combination of round ports for one-way pumps/motors

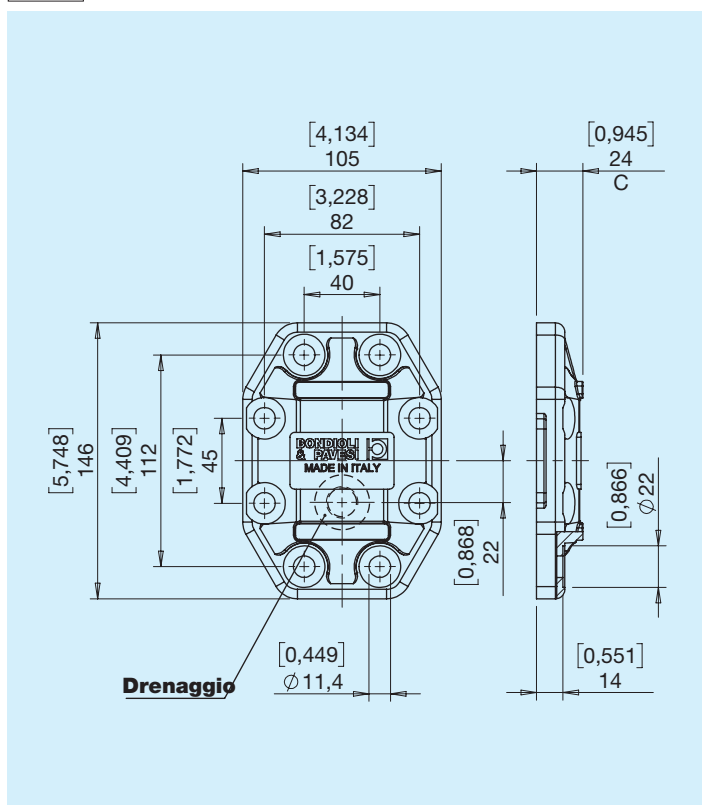
Ports	41 51 61 IN/OUT ports	73 90 IN/OUT ports
E	E7 E7	E8 E7
X	X8 X7	X8 X7
G	G7 G7	G8 G7

Combination of round ports for bidirectional pumps/motors

Ports	41 51 61 IN/OUT ports	73 90 IN/OUT ports	Drain line
E	E7 E7	E8 E8	G3
X	X7 X7	X8 X8	G3
G	G7 G7	G8 G8	G3

Other combinations of ports are available. For more information, please contact our technical sales department.

SG Cast iron



1	2	3	4	5	6	7	8	9	10	11	12	13	14	15				
HPL																		
1 2 3			Series															
			PA4 Gear pump Group 4						MA4 Gear motor Group 4									
4 5			Displacement															
			41						61						90			
			51						73									
6			Direction of rotation															
			S Anti-clockwise/left				D Clockwise/right				H Bidirectional internal drainage				B Bidirectional rear external drainage			
7 8			Front flanges - Shafts															
			X3 European D60.3 - Tapered (1:8)				X5 European D60.3 - European round				X8 European D60.3 - Splined DIN 5482							
9 10			IN - Inlet ports															
			... See tables Ports and Combinations															
11 12			OUT - Output ports															
			... See tables Ports and Combinations															
13			Seals															
			B NBR Pump				R NBR Motor / Bid. pump High pressure pump				V Viton Pump				W Viton Motor / Bid. pump High pressure pump			
14 15			Covers															
			SG Cast iron version															