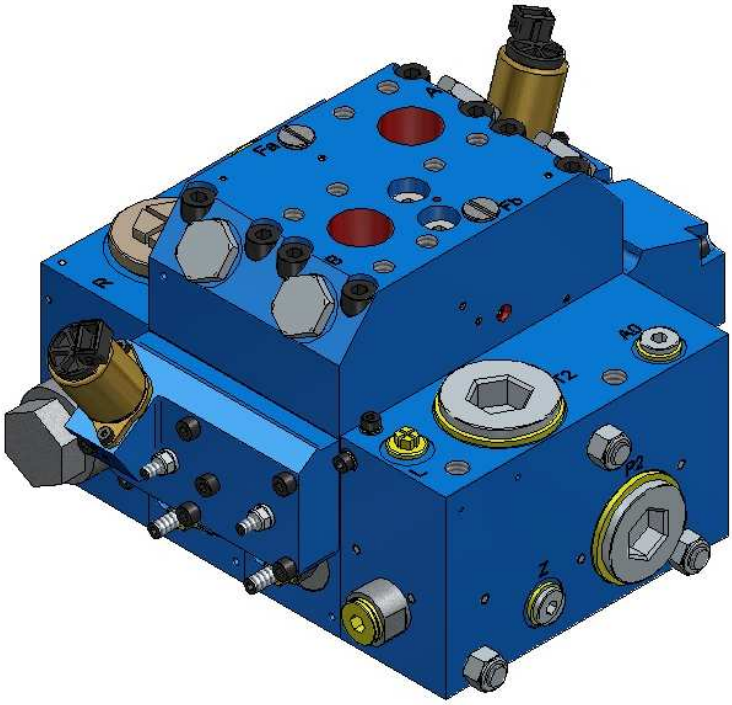
Proportional Directional Control Valve
Load-Sensing Pressure Compensated

Electrical and Hydraulic operation SeriesAPV-22TWIN



Features.

* Modular assembly system, suitable for 'Build Program'.

* Max. operating pressure 420 bar.

* Different spooltypes up to 550 l/min. in combination with simultaneously control.

* Valve blocks mountable with maximal 5 double spool units.

* Several inlet plate types available for different types of pumps.

* Operating control in any combination (electrical and hydraulic).

* Adjustable ΔP for setting the maximum flow.

* Several user relief options as primairy-, shock-, suction- and remote control functions.

* One full flat surface for mounting in any position.

* Standard seawater resistant.

TECHNICAL DATA

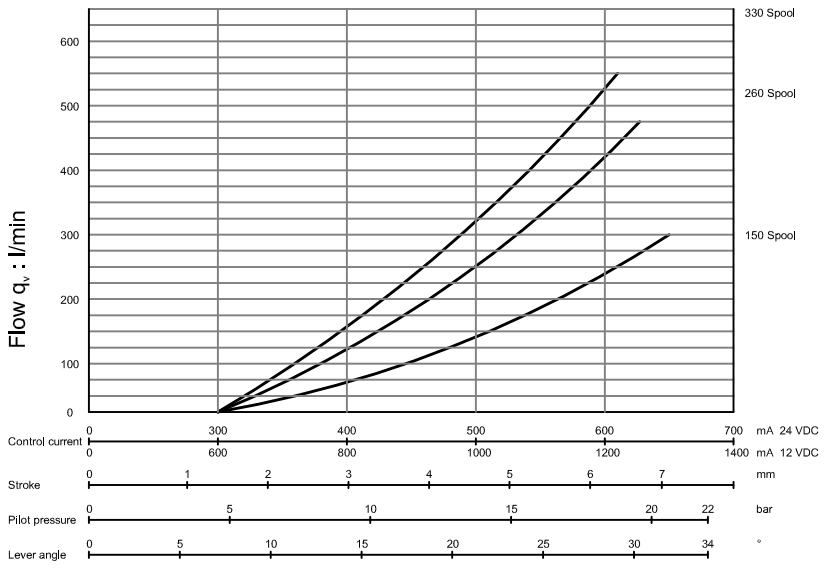
Max. flow :	port P1 + P2	660 l/min
	Combiplate port P1 + P2 (22)	660 l/min
	port A/B	550 l/min
	port P/A/B	420 bar
	port T	35 bar
Max. pressure:		
Pressure setting range		20 - 420 bar
Nominal pressure drop over 2-way compensator (A,B)		7 bar
Internal pilot pressure supply		28 bar
Pilot pressure for electrical and hydraulic control		6-20 bar
Spool stroke		7 mm
Spool overlap (dead band)		1,45 mm (21% of the spool stroke)
Fluid		Mineral oil according to DIN 51524/51525
Fluid temperature range		- 30 … + 80°C
Viscosity range		10 … 500 cSt, optimal 30cSt
Contamination level max		According to NAS 1638 Class 8 or ISO 4406: 18/16/13
Mounting position		Optional

Connections	BSP	SAE ORB
Port P	G1 1/4"	20
Port T	G1 1/2"	24
Port A/B	G1 1/2"	24
	SAE 1" flange as optional available	
Port LS	G1/4"	6
Port L	G1/4"	6
Port Ya,Yb	G1/4"	6
Electrical connections	AMP Junior Power Timer	

Electrical	
Nominal voltage	12 VDC or 24 VDC
Nominal current	12 VDC = 1300 mA 24 VDC = 650 mA
Coil resistance	12 VDC = 5.3 ± 5% Ω 24 VDC = 21.2 ± 5% Ω
Recommended dither frequency	100 Hz
Type of protection	IP 65
Duty cycle	100%
Hysteresis	3%

* Pumpflow, see note page 14

Flow P → A/B



TECHNICAL DATA

Technical information.

The APV-22TWIN valve is based on the parts of the APV-22 valve.
The construction of a combined APV-22TWIN section is realized by mounting a combining connection block across 2 APV-22 single sections.

Futhermore there is a double springcap and double endcap mounted on the two combined sections. Due to this configuration the double spool section is switched by one single solenoid (electrically controlled) or one joystick (hydraulically controlled).

Inlet Plate.
Inlet plates are available for fixed and variable displacement pumps, and constant pressure networks.
Functions as:
- anti-saturation;
- pump unloading;
- pressure relief;
- LS signal amplifier and combinations thereof; can be integrated into the inlet plate.

Control Valve.
The control valve consists of a double spool section and connection block.

Spool Section.
The main advantage of the APV-series is the standardization of the spool section s. Different types of spools and control methods are available. Up to 5 double control valves, with or without a 2-way compensator can be stacked. For perfect system stability the 2-way compensator can be equipped with a damping function. Check valve function is also available within this compensator. Stroke limitation per port and Δp-setting per section is standard.

Connection Block.
A very wide range of optional functions can be delivered using several connection blocks. Besides a basic connection block, optimized customization can be achieved by the following functions:
- remote controlled pressure setting/unloading per port;
- adjustable secondary pressure setting per port;
- suction valves and shock/suction valves per port;
- adjustable primary port relief per port with excellent relieving characteristic.

Any other special functions can be easily integrated into special connection blocks on request.

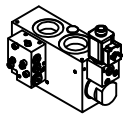
End Plate.
Also the end plates for different control methods can be equipped with optional functions as:
- additional P-port;
- Z-port to enable a LS-cascade with another valve;
- feeding point for hydraulic joysticks.

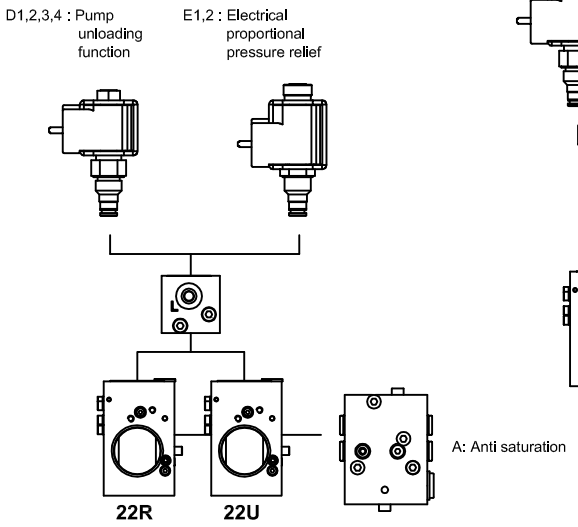
Safety.
To comply with national and international safety regulations, special safety functions can be integrated as described above.

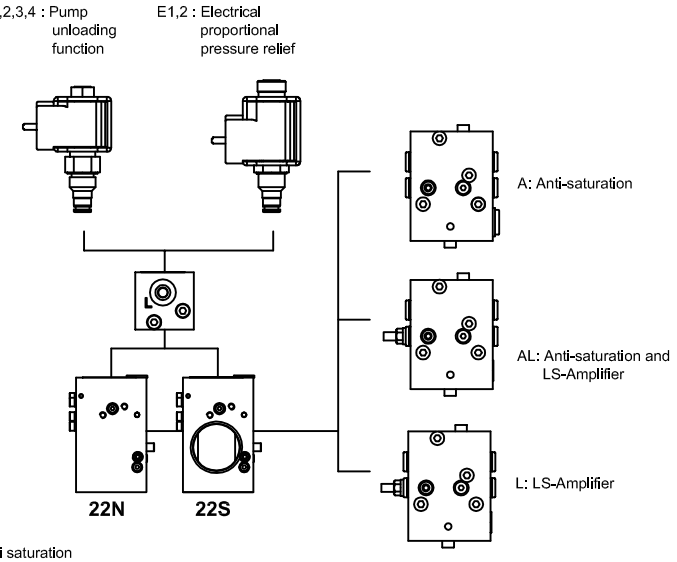
Serviceability.
The modular concept (build-program) improved the servicing of the APV.
All orifices and shuttle valves are directly attainable from the outside of the valves.

Symbols and Terminology.
Graphic symbols in accordance with ISO1219-1.
Identification of valve ports in accordance with ISO 9461.
For the purposes of this document, the definitions and terminology given in ISO 5598 and the following definitions apply:
- LS : load sensing
- Primary relief : relief function in the flow line, e.g. the 3-way compensator in the inlet plate and the shock/suction valve in the connection block.
- Secondary relief : relief function in the signal line, e.g. max. load pressure relief in the inlet plate.

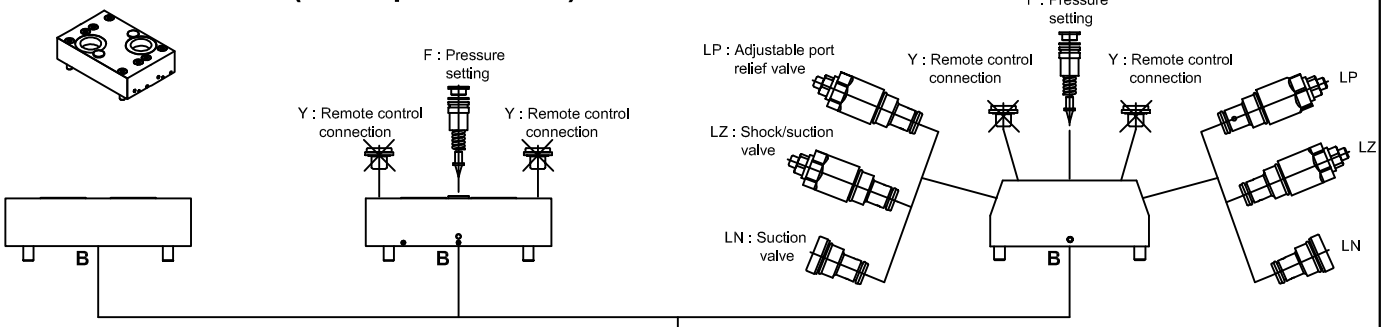
Inlet plate



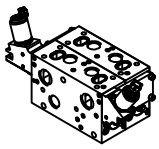


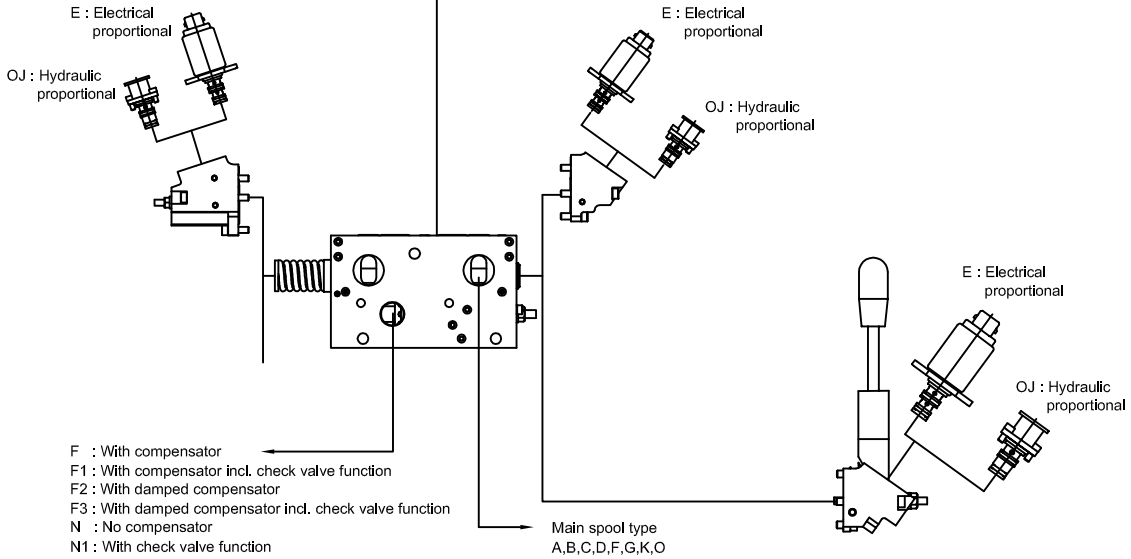


Connection block (Some possibilities)



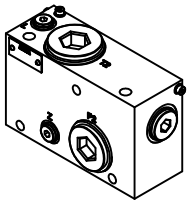
Spool section



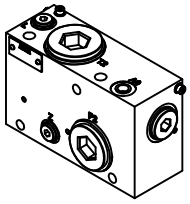


End plate

22PH



22PJ

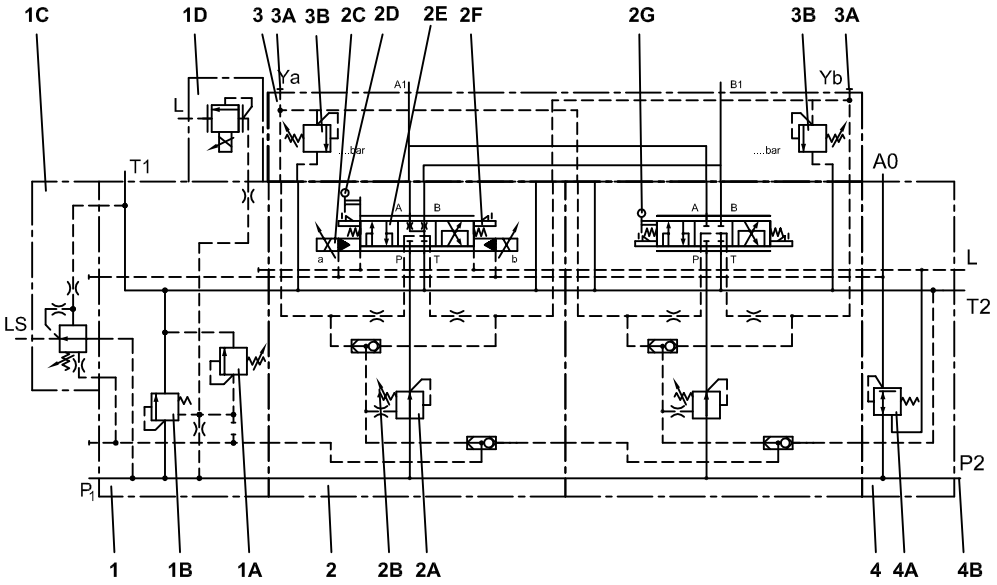


P: With additional P-port

T: With additional T-port

Z: With Z-port

Example:



Pos.	Description:
1	**Inlet plate**, several types available for different types of pumps
1A	Adjustable load pressure relief, standard on all types of inlet plate
1B	Pump relief function
1C	LS amplifier, for strong signal and perfect stability of the LS-pump
1D	Electrical proportional pressure relief
2	**Spool section**, basic section for different main spool types and compensator variants
2A	2-way compensator for load-independent control and simultaneously operation
2B	Flow adjustment by regulating the pressure drop across the main spool
2C	Control method: Electrical proportional
2D	Additional manual control
2E	Main spool type
2F	Adjustable stroke limitation for adjusting the max. flow per port
2G	Control method: Manual proportional
2H	No 2-way compensator per section
2I	Control method: Hydraulic Proportional
2J	Additional manual control
	Connection block, separate block for all different types of options
3	Remote control connection on port A and B (optional)
3A	Adjustable pressure setting on port A and B (optional)
3B	Shock/Suction valves port A and B (optional)
3C	
	End plate
4	Pressure reducing valve, for electrical control
4A	Additional pump connection (optional)
4B	

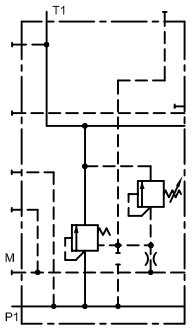
INLET PLATE

INLET PLATE
For every pumptype an inlet plate is available:

Fixed displacement pump

Fig.1

The APV inlet plate version 22U, fig. 1, is designed for fixed displacement pumps.
The main relief in this section is functioning as a 3-way compensator.
If none of the control sections are in operation, the inlet plate version 22U creates about 14 bar in the pumpline. Actuating one of the control sections, the specific load pressure is added as signal to the spring chamber. Actuating more control sections at the same time, the highest load pressure will be added.
The load signal pressure is also controlled by the max. load pressure relief.
This relief can be adjusted (14 … 420 bar).
To feed also another circuit, an inlet plate 22R is available.
(see application examples).



22U420B

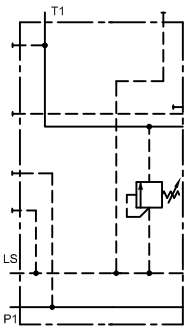
Variable displacement pump (LS-pump)

Fig.2 Fig.3

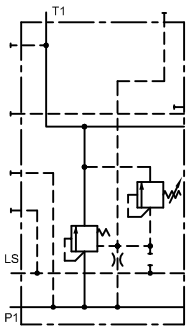
The APV inlet plate versions 22N and 22S are designed for this pump type.

The version 22N, fig. 2, has the function as inlet block for P, T and LS (load sense line). The load sense signal from the valveblock can be adjusted, up to 420 bar, with the relief valve.

Version 22S, fig. 3, has an overpressure safety function.
The relief valve can be adjusted to max. pumpline pressure and the relief spool reduces the overpressure by relieving the pumpflow to tank.



22N420B

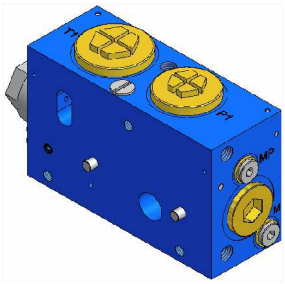


22S420B

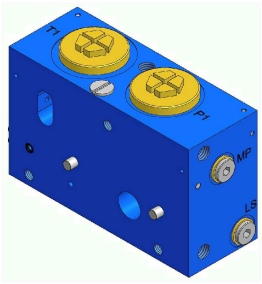
Pressure compensated pumps / Constant pressure networks

The APV inlet plate version 22N, fig. 2, is also designed for pressure compensated pumps and constant pressure networks.
It has the function as inletblock for P, T. The LS connection G1/4" has to be blocked.
The load signal pressure is controlled by the max. load pressure relief.
The max. load pressure of the valve block can be adjusted (up to 420 bar).

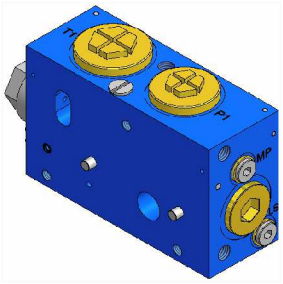
Fig.1A Fig.2A Fig.3A



22U420B



22N420B



22S420B

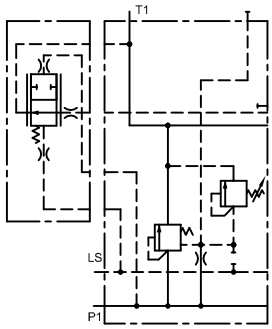
INLET PLATE

Additional functions for all types of pumps:

Anti-saturation function, code A, fig. 4

The anti-saturation function is developed for electrical and hydraulic controlled valves.
If the valve block has insufficient pumpflow, the user flow for every control section will be reduced with this function so that every control section keeps working simultaneously.

Fig.4

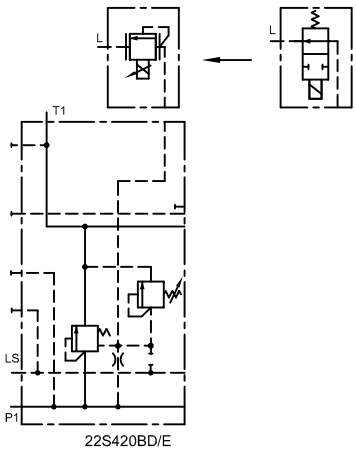


22S420BA

Electrical proportional pressure relief, code E, fig. 5

For remote control of the maximum pressure of the valve block, the electrical proportional pressure relief is available in 12 VDC and 24 VDC.

Fig.5 Fig.6



22S420BD/E

Pump unloading function, code D, fig. 6

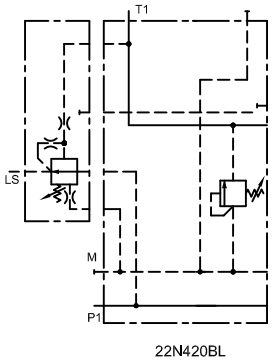
For emergency stop function the load pressure signal from the control sections can be unloaded directly to tank.
The electrical control is available in 12 VDC and 24 VDC with 2/2-way cartridge in normal-open or normal-closed configuration.
The example shows a normal-open configuration.
Please note that the recirculation pressure or stand-by pressure is still on the P-line.

Additional function for LS pumps:

LS Amplifier, code L, fig. 7

This option enables increasing the LS pressure signal if some LS-pumps have a continuous leak of the load-pressure signal to tank.
This option can also be used for fine-tuning of the stability of the pump and the proportional control.
With the adjustment screw the stand-by pressure of the LS-pump is adjustable within 4 bar.

Fig.7



22N420BL

Fig.4A

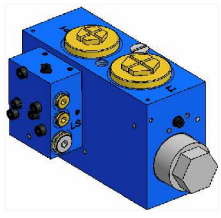


Fig.5A

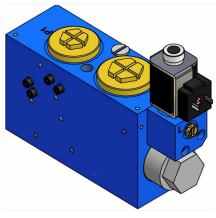
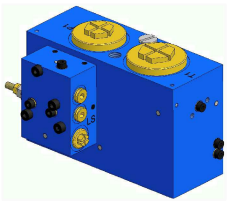


Fig.7A

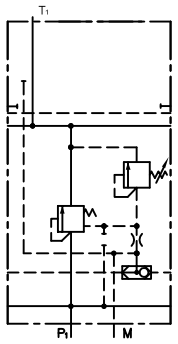


INLET PLATE

COMBI INLET PLATE

If different flows are needed, for example 250 and 75 l/min or less, a combination plate is available to connect the series APV-16 to the series APV-22. This is the most cheapest and flexible way for a compact combination of proportional directional control valves.
The combiplate is available for modelnumber 22N, 22S, 22U and 22R.

Fig.1



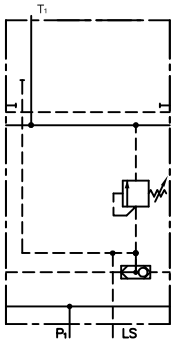
22U420B/C

Fixed displacement pump

The APV combi inlet plate version 22U/C, fig. 1, is designed for fixed displacement pumps.
The main relief in this section is functioning as a 3-way compensator.
If none of the control sections are in operation, the inlet plate version 22U/C creates about 14 bar in the pumpline. Actuating one of the control sections, the specific load pressure is added as signal to the spring chamber. Actuating more control sections at the same time, the highest load pressure will be added.
The load signal pressure is also controlled by the max. load pressure relief.
This relief can be adjusted (14 … 420 bar).
To feed also another circuit, an inlet plate 22R is available.

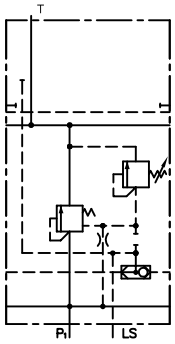
Variable displacement pump (LS-pump)

Fig.2



22N420B/C

Fig.3



22S420B/C

The APV combi inlet plate versions 22N/C and 22S/C are designed for this pump type.

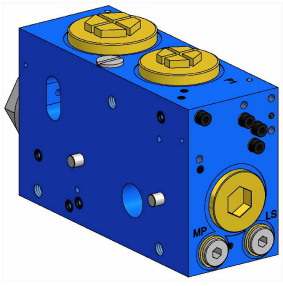
The version 22N/C, fig. 2, has the function as inlet block for P, T and LS (load sense line). The load sense signal from the valveblock can be adjusted, up to 420 bar, with the relief valve.

Version 22S/C, fig. 3, has an overpressure safety function.
The relief valve can be adjusted to max. pumpline pressure and the relief spool reduces the overpressure by relieving the pumpflow to tank.

Pressure compensated pumps / Constant pressure networks

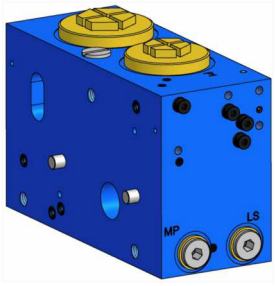
The APV combi inlet plate version 22N/C, fig. 2, is also designed for pressure compensated pumps and constant pressure networks.
It has the function as inletblock for P, T. The LS connection G1/4" (SAE 6) has to be blocked.
The load signal pressure is controlled by the max. load pressure relief.
The max. load pressure of the valve block can be adjusted (up to 420 bar).

Fig.1A



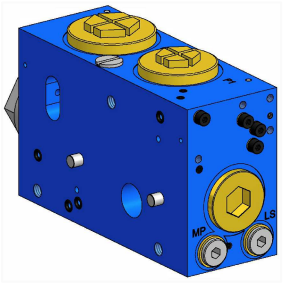
22U420B/C

Fig.2A



22N420B/C

Fig.3A



22S420B/C

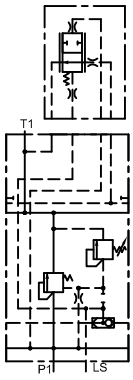
INLET PLATE

Additional functions for all types of pumps:

Anti-saturation function, code A, fig. 4

The anti-saturation function is developed for electrical and hydraulic controlled valves.
If the valve block has insufficient pumpflow, the user flow for every control section will be reduced with this function so that every control section keeps working simultaneously.

Fig.4

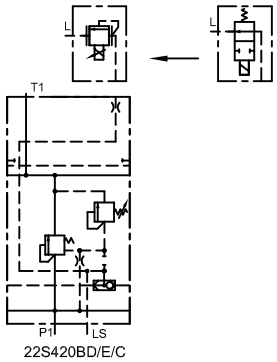


22S420BA/C

Electrical proportional pressure relief, code E, fig. 5

For remote control of the maximum pressure of the valve block, the electrical proportional pressure relief is available in 12 VDC and 24 VDC.

Fig.5 Fig.6



22S420BD/E/C

Pump unloading function, code D, fig. 6

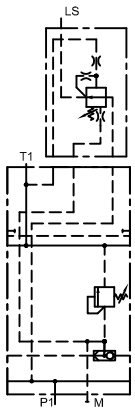
For emergency stop function the load pressure signal from the control sections can be unloaded directly to tank.
The electrical control is available in 12 VDC and 24 VDC with 2/2-way cartridge in normal-open or normal-closed configuration.
The example shows a normal-open configuration.
Please note that the recirculation pressure or stand-by pressure is still on the P-line.

Additional function for LS pumps:

LS Amplifier, code L, fig. 7

This option enables increasing the LS pressure signal if some LS-pumps have a continuous leak of the load-pressure signal to tank.
This option can also be used for fine-tuning of the stability of the pump and the proportional control.
With the adjustment screw the stand-by pressure of the LS-pump is adjustable within 4 bar.

Fig.7



22N420BL/C

Fig.4A

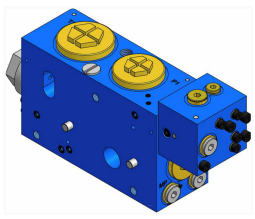


Fig.5A

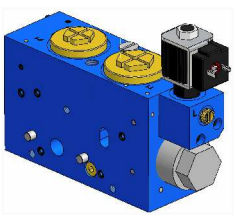
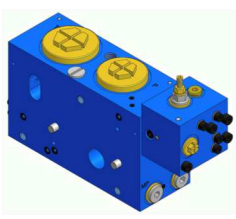


Fig.7A



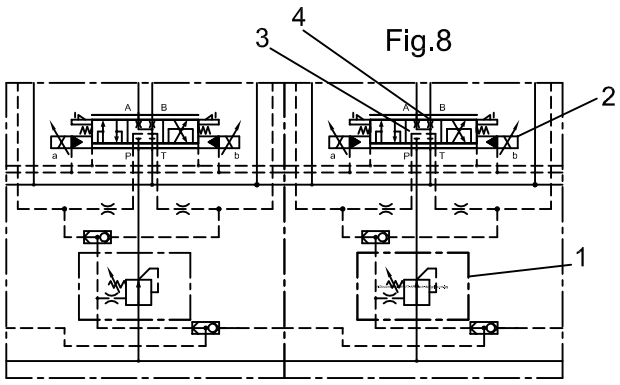
CONTROL VALVE

CONTROL VALVE.

On the basis of the build-program principles the APV-22 control valve consists of I standardized spool sections and II basic or customized connection blocks and spring- and endcaps. Max. 10 control sections.

I Spool sections:

Fig.8



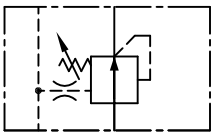
1 Compensator types;
2 Control method : electrical or hydraulic control;
3 Spool types;
4 Flow per port.

1. Compensator types :

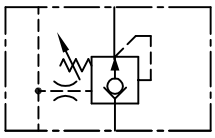
The various compensators enable load independent flow control and possibility of simultaneous operation.
The max. flow can be pre-adjusted by adjusting the compensator spring.
At part 1 from fig. 8 the following types can be mounted:

Code:

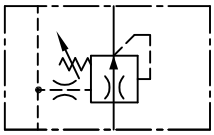
F: 2-way compensator



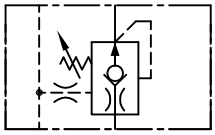
F1: 2-way compensator with load-hold check valve



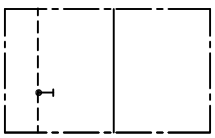
F2: 2-way compensator with damping function.



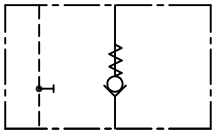
F3: 2-way compensator with load-hold check valve and damping function.



N: Without compensator.
*Note: Max. flow depends on stand-by pressure setting in case of using LS-pump

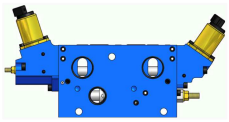


N1: Load-hold check valve.
*Note: Max. flow depends on stand-by pressure setting in case of using LS-pump

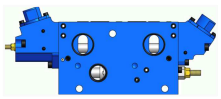


CONTROL VALVE

2. Control method :



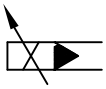
E = electrical control



OJ = hydraulic control

The electrical- and hydraulic control can be configured in combination with an additional manual control. All the control methods are standard equipped with stroke limiters for separate fine-tuning the flow of A and/or B port. The cartridge cavity in the end-caps is suitable for all three control methods.

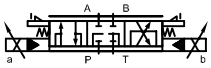
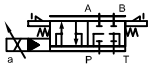
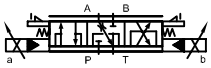
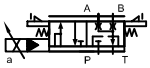
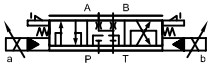
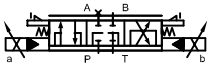
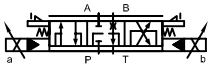
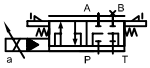
E: electrical control:
The reducing cartridge is integrated within the proportional solenoid 24 VDC or 12 VDC.
All the control sections have a pilot supply pressure and return line, which must be fed through the end plate type 22PE. The 22PE end plate is equipped with a separate "L"-connection to drain the pilot return line to tank, which creates a perfect system stability.



OJ: hydraulical control:
For hydraulic remote control, the endcaps have G1/4" connections.

3. Spool types .

The spool is available for different types of users, like single and double acting cylinders and hydraulic motors.

Code:	Symbol:	Remark	Code:	Symbol:	Remark
A		In neutral position all ports blocked	F		In neutral position all ports blocked
B		In neutral position port A throttled flow to T (approx.20% of nominal flow)	G		In neutral position port A+B throttled flow to T (approx.20% of nominal flow)
C		In neutral position port A+B throttled flow to T (approx.20% of nominal flow)	K		In neutral position all ports blocked, A port blended *
D		In neutral position port B throttled flow to T (approx.20% of nominal flow)	O		In neutral position all ports blocked, B port blended *

* Port is blended with stop in the connection block

4. Flow per port .

Each user port can be set at different flow.
By adjusting the compensator spring (Δp adjustment) the flow of A and B port can be pre-adjusted. By using the stroke limiters the flow of A and/or B port can be adjusted separately.

CONTROL VALVE

II Connection block.

Following the modulair line of the APV-22 also the APV-22TWIN valves can be realized by various connectionblock types with different functions. If necessary the connectionsblocks can be customized in order to meet special requirements.
The standard available connection blocks are:

1 - basic version only with A and B ports
2 - version with secondary safety functions
3 - version with primary and secondary safety functions
4 - customized versions

The code of the connection block has to start with the type of the thread of the connection port (1 1/2" BSP or SAE 24). The other threads are on request.

1. Basic version:

The basic version is a connection block with only A and B ports.

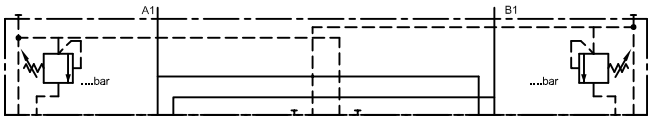
code:

B: The connection A and B port is 1 1/2" BSP.
S: The connection A and B port is SAE 2 4

xxxxx-B
xxxxx-S

2. Version with secondairy safety functions:

The version with secondary safety functions is a connection block with possibility of two secondary safety functions. Secondary safety functions are active at the load pressure signal lines, so overpressure (reached maximum load pressure) causes a small amount of oil from the load sense signal vented to tank at maximum pressure. This in contrast with the primary relief valves, whereby the full userflow has to be vented to tank at maximum pressure. Secondary reliefs are only in function if the control valve is actuated.



xxxxx-BFY
xxxxx-BFY

Code:

F: Adjustable pressure setting on port A and B:
Each user port can be set with a separate maximum load pressure relief. (LS-relief)
Factory pressure setting (first A-port then B-port) has to be mentioned in the order code.
Adjustable pressure setting only on one port, state "-" for the other port.
Example: A-port = 380 bar and B-port = 320 bar: "F= 380/320 bar"
or only A-port = 380 bar: "F= 380/- bar"

Y: Remote control connection on port A and B:
The load pressure signal of each userport can be connected to sytem safety relief devices, through Ya and Yb(1/4"BSP or SAE 6).
Example: cylinder stroke limiting or overload control function in combination with a 2/2-way valve to tank.

CONTROL VALVE

3. Version with primary and secondary safety functions:

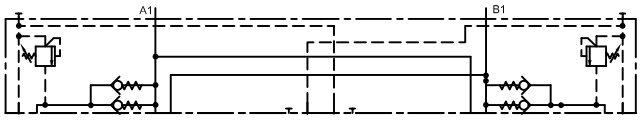
The version with primary and secondary safety functions is a connection block with possibility of three primary safety functions and two secondary safety functions.
Primary safety functions are active at the user port, even if the control section is not operated.
Primary safety functions are available in 3 different types. These types can be used in the same cartridge cavity.
A-port as well B-port can be configured as a specific primary safety function.

Code:

LN: Suction valves port A and B

The suction valve per userport prevents cavitation in the user line.
Two suction cartiridges valves per port can handle together 160l/min. suction flow per port.

xxxxx-BFLNY
xxxxx-SFLNY



LP: Adjustable port relief on port A and B

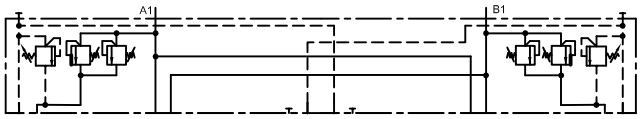
Adjustable primary port relief valve prevents the user line against overpressure during operation and also in neutral position. T wo port relief cartridge valves per port can handle together 240 l/min. flow per port. The adjustable pressure setting range is 35-420 bar with the following steps:

- LPB: range 35-140 bar
- LPV: range 70 - 280 bar
- LPG: range 140-420 bar

Factory pressure setting (first A-port then B-port) has to be mentioned on configuration code.
Adjustable pressure setting only on one port, state "-" for the other port.

Example: A-port = 320 bar and B-port = 280 bar give orderingcode "LPG=320/280"
A-port = 320 bar and B-port = no port relief give orderingcode "LPG=320/-"

xxxxx-BFLPY
xxxxx-SFLPY

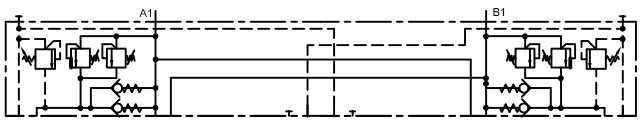


LZ: Shock/Suction valves in port A and B

Combined shock/suction valves prevents the user line to relief temporary pressure peaks and prevent cavitation. Two port shock/suction cartridge valves per port can handle together 16 0l/min. flow per port. The adjustable range is up to 420 bar.
Factory pressure setting (first A-port then B-port) has to be mentioned on configuration code. Adjustable pressure setting only on one port, state "-" for the other port.

Example: A-port = 380 bar and B-port = 320 bar: "LZ= 380/320 bar"
or for only A-port = 380 bar: "LZ=380/- bar"

xxxxx-BFLZY
xxxxx-SFLZY



Note:

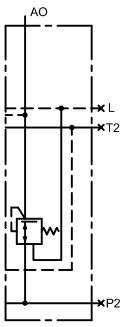
- If A-port needs LZ-function 280 bar and B-port needs LP-function 280 bar, please note at the connection plate configuration: "LZ=280/-" and "LP= -/280".
- Additional, options "F" and/or "Y" can be configured.

END PLATE

APV..PH

Code PH: For control method O

End plate for hydraulic operated valves.

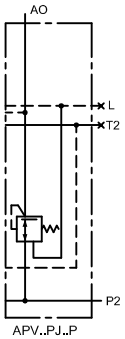


APV..PJ

Code PJ: For control method E or O

End plate with built-in pressure reducing valve for internal pilot pressure supply of 28 bar to the electrical pilot valves of each electrical proportional control valve or for external pilot pressure supply of 28 bar to the hydraulic joysticks.

Note: The L-connection has to be connected as seperate drain to tank.

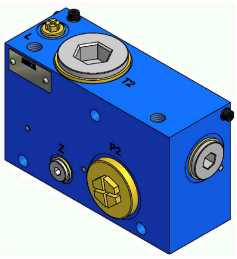


APV..PJ..P

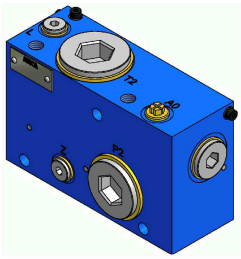
Code P: With additional P-port

Additional P-port to connect an extra P-line in systems with high pump flow.

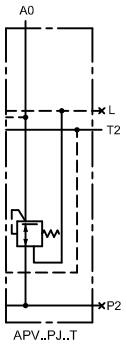
22PH/P



22PJ

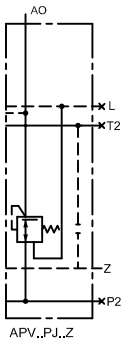


END PLATE



Code T: With additional T-port

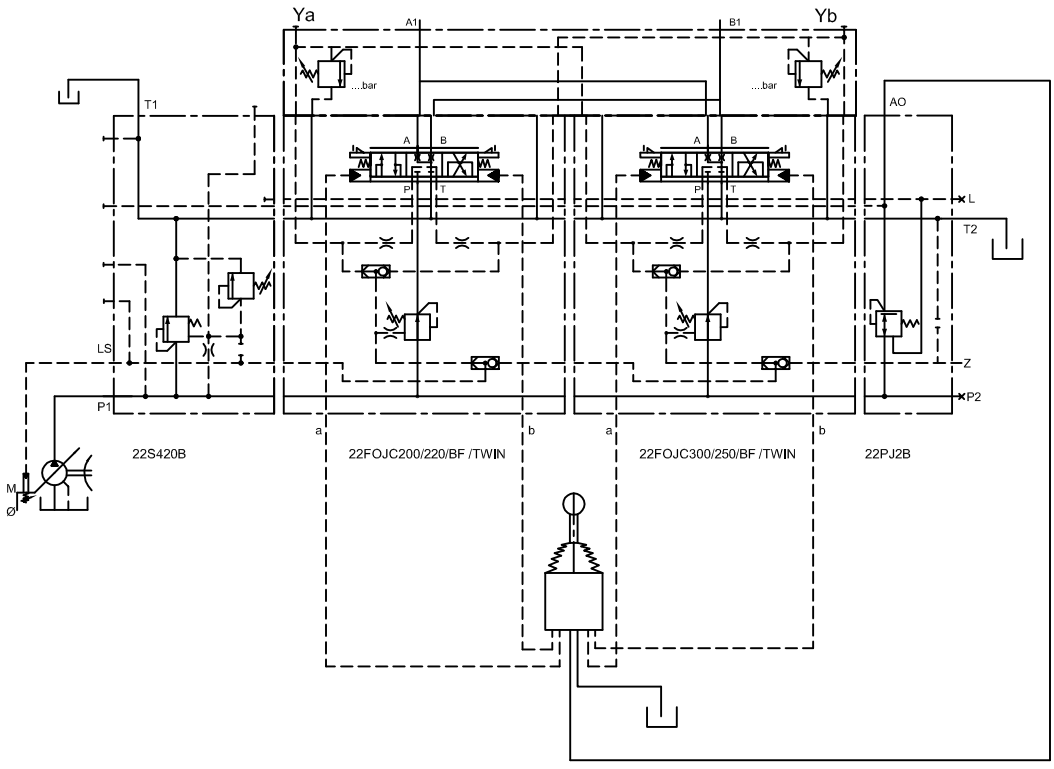
Additional T-port.



Code Z: With Z-port

Z-port to connect the LS-signal of a second valve to the LS-cascade of the first valve , to be able to use the compensator of the first valve.

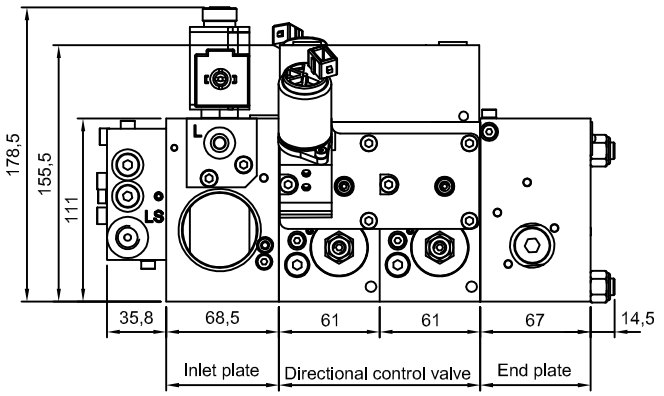
Note: In systems with a pumpflow > 380l/min use endplate with P2 port (Ordering code 22P...P). For reduction of the return pressure the use of the second tank connection T2 on the end plate is possible (ordering code 22P...T).

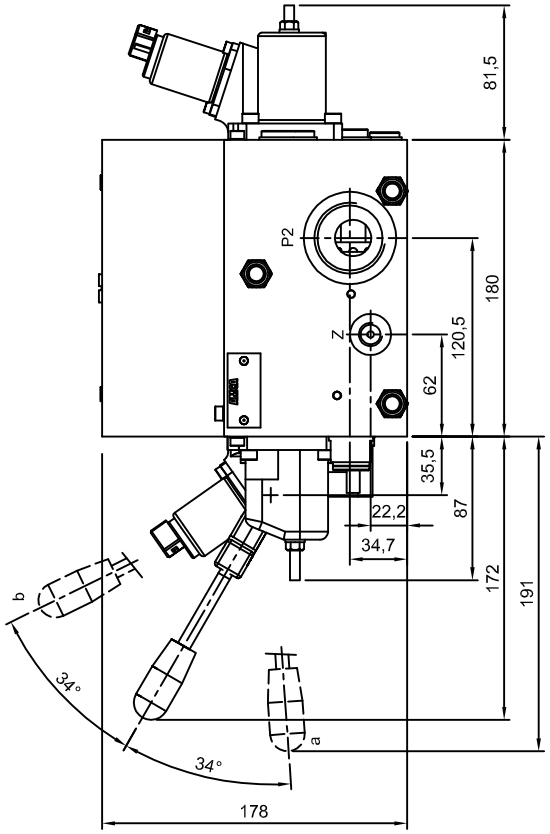


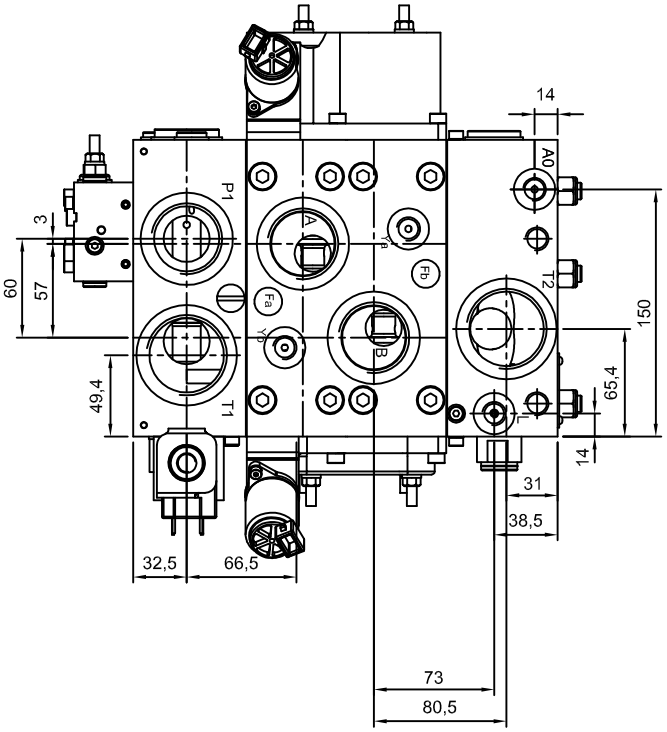
DIMENSIONS

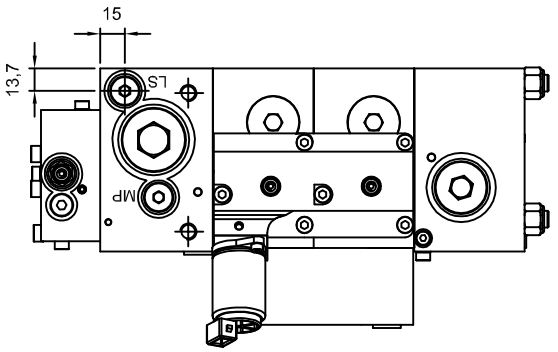
Connection ports

	BSP	SAE ORB
P	: 1 1/4"	20
T,T2	: 1 1/2"	24
A,B	: 1 1/2"	24
LS	: 1/4"	6
L	: 1/4"	6
Ya,Yb	: 1/4"	6
A0	: 1/4"	6
Z	: 1/4"	6



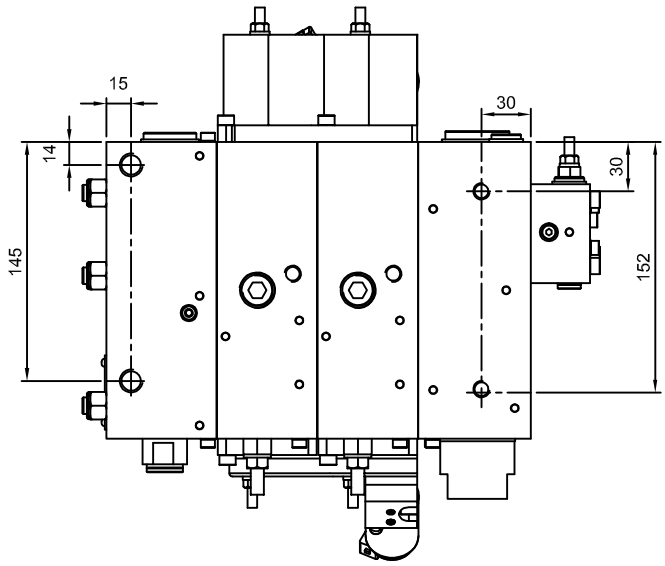


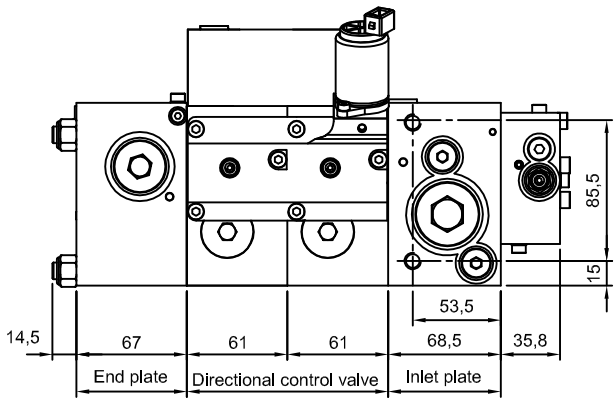




DIMENSIONS

Mounting holes M14 x 17





Weight:	*N*
Inlet plate	
22N	84
22U/S/R	85
Opt. D/E	7,5
Opt. A/L	12
Spool section	
22FE*	87
22FE*M	89
22FOJ	85
22FOJM	88

Weight:	*N*
Connection block	
B	30
BFY	32
BFLZY	65
End plate	
22PH	83
22PJ	83

Weight assembly kit:	*N*
with 1 control valve	2,91
with 2 control valve	3,57
with 3 control valve	4,23
with 4 control valve	4,89
with 5 control valve	5,55
with 6 control valve	6,21
with 7 control valve	6,87
with 8 control valve	7,53
with 9 control valve	8,19
with 10 control valve	8,85

CONFIGURATION CODE

INLET PLATE

22 N 420 B AD1

	Size
22	22
	Plate version
N	For LS-pump
S	For LS-pump and max. pressure valve in P
U	For fixed displacement pump
R	For fixed displacement pump and serial connection
	Pressure adjusment in bar:
420	Max. 420 bar (factory setting 350 bar)
	Port connections:
B	Thread in BSP
S	Thread in SAE ORB
	Variants:
A	Anti-saturation function
D1	Pump unloading function: 12VDC and N.O.
D2	" 12VDC and N.C.
D3	" 24VDC and N.O.
D4	" 24VDC and N.C.
E1	Electrical proportional pressure relief: 12VDC
E2	" 24VDC
L	LS amplifier only in combination with N or S-plate
/I	Viton seals
/C	Combiplate

END PLATE

22 PJ 2 / B P

	Size
22	22
	Plate version
PH	For control method: H or O
PJ	For control method: E or O + port A0 for joystick supply: 28bar
	Assembly kits:
1	With 1 control valve
2	With 2 control valve
3	With 3 control valve
4	With 4 control valve
5	With 5 control valve
6	With 6 control valve
7	With 7 control valve
8	With 8 control valve
9	With 9 control valve
10	With 10 control valve
	Port connections:
B	Thread in BSP
S	Thread in SAE ORB
	Variants:
P	With additional P-port
T	With additional T-port
Z	With Z-port
/I	Viton seals

CONFIGURATION CODE

CONTROL VALVE

PART: SPOOL SECTION

22 F EBM C 550/550 / B FY (F=380/320bar)

	Size
22	22
	Compensator:
F	With compensator
F1*	With compensator incl. check valve function
F2	With damped compensator
F3*	With damped compensator incl. check valve function
N	No compensator
N1	With check valve function
	Control method:
EA	Electrical proportional: 12VDC
EAM	" " : 12VDC and additional manual control
EB	" " : 24VDC
EBM	" " : 24VDC and additional manual control
EE	" " : 12VDC with pin
EF	" " : 24VDC with pin
EH	" " : 24VDC with II 2G Ex mb II T4
OJ	Hydraulic proportional
OJM	" " and additional manual control
	Main spool type:
A	A,B,C,D,F,G,K,O
	Max. flow: (l/min)
.../...	Choose the flow: port A / port B (max. 550 l/min)

PART: CONNECTION BLOCK

	Port connections:
B	Thread in BSP
S	Thread in SAE ORB (available upon request)
	Variants:
F	Adjustable pressure setting on port A and B ***
LN**	Suction valves port A and B
LP**	Adjustable port relief valve on port A and B
LZ**	Shock/Suction valves port A and B
Y	Remote pressure connection on port A and B
/I	Viton seals
/TWIN	TWIN (mounted as double section, one connection block)

* = for option F1 and F3 the max. flow is 520l/min
** = one type per port, for LP and LZ give pressure setting
*** = give pressure setting A and B-port

Example:
22N320BAD1
22FEBMC550/550/BFY (F=380/320bar) /TWIN
22PJ2BP

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