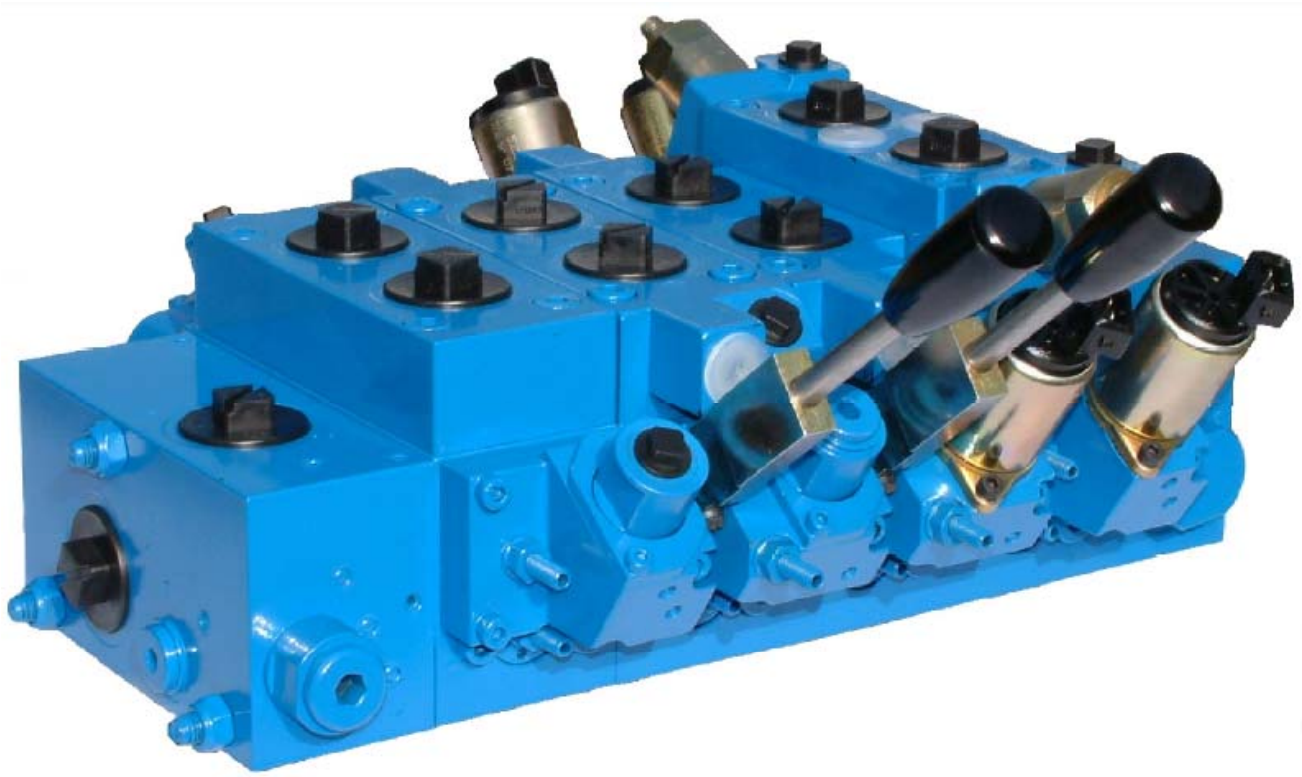
PROPORTIONAL DISTRIBUTION VALVE LS UP TO 120 L / min.



AMCA

INTERFLUID Hidráulica S.L.U - Ctra. de Torrelles, 34 - E-08620 - Sant Vicenç dels Horts – Barcelona - España
Telf : +34 93 656.27.97 - Fax : +34 93.676.98.25 - www.interfluid.es

FEATURES.

· MODULAR ASSEMBLY SYSTEM, SUITABLE FOR "BUILD PROGRAM.

· MAX.OPERATING PRESSURE 420 bar.

· DIFFERENT SPOOLTYPES UP TO 120L/min IN COMBINATION WITH SIMULTANEOUSLY CONTROL.

· COMPACT SANDWICH DESIGN , SUITABLE FOR MOBILE APPLICATIONS.

· SEVERAL INLET PLATE TYPES AVALIABLE FOR DIFFERENT TYES OF PUMPS.

· OPERATING CONTROL IN ANY COMBINATION (ELECTRIAL, MANUAL AND HYDRAULIC).

· ADJUSTABLE P FOR SEETING THE MAXIMUM FLOW.

· SEVERAL USER RELIEF OPTIONS AS PRIMAIRY-, SHOCK-, SUCTION- AND REMOTE CONTROL FUNCTIONS.

· ONE FULL FLAT SURFACE FOR MOUNTING IN ANY POSITION.

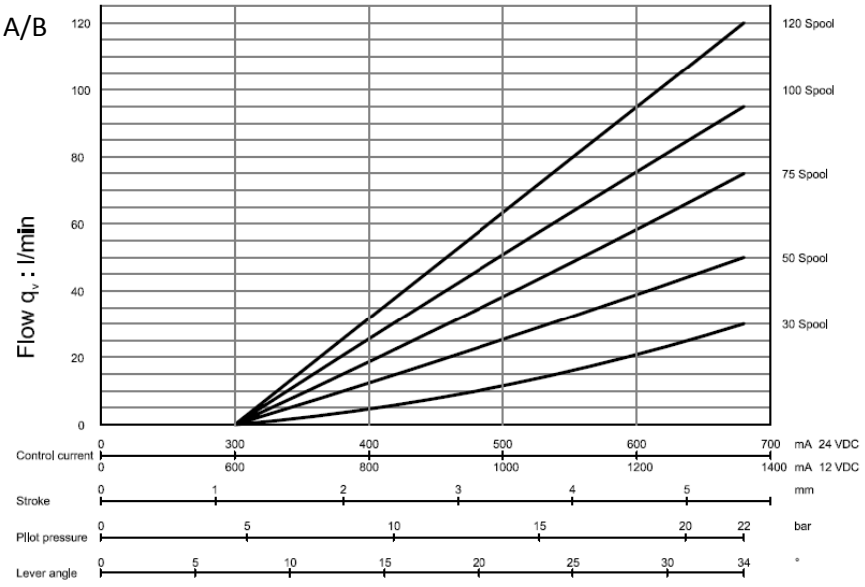
· STANDARD SEAWATER RESISTANT.

TECHNICAL DATA.

Max. Flow : Port P1 or P2 Port P1+P2 Port A/B Port A/B without compensator **Max.Pressure:** Port P/A/B Port T		160L/min 260L/min 120L/min 140L/min 420 bar 35 bar
Pressure setting range		13-420 bar Manual operating 20-420 bar Electrical operating
Nominal pressure drop over 2-way compensator (A,B) Internal pilot pressure supply Pilot pressure for electrical and hydraulic control		7 bar 28 bar 6-22 bar
Spool stroke		5.25 mm
Spool overlap (dead band)		1.25mm(24% of the spool stroke)
Fluid		Mineral oil according to DIN51524/51525
Fluid temperature range		-30ºC...+80ºC
Viscosity range Contamination level max.		10...500cSt, optimal 30cSt According to NAS 1638 Class 8 or ISO4406:18/16/13
Mounting position		Optional
Connections:	BSP	SAE ORB
Port P/T	G3/4"	12
Port A/B	G3/4"	12
Port LS	G1/4"	6
Port L	G1/8"	4
Port Ya, Yb	G1/4"	6
Electrical connections		A,P Junior Power Timer
Electrical:		
Nominal voltage		12 VDC or 24 VDC
Nominal current		12 VDC= 1300 mA 24 VDC= 650 mA
Coil resistance Recommended dither frequency Type of protection Duty cycle		12 VDC= 3.5±5%? 24 VDC= 21.2±5% ? 100Hz IP 65 100%
Hysteresis		3% *Pump flow

Different flowtypes: (with compensator)

Flow A → A/B



TECHNICAL DATA.

Technical information

The unique modularity of the APV enables system solutions for manufacturers or mobile machines as a wide range of functions can be integrated/changed by customer in an easy, flexible and cost-effective way.

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 de inlet plate

Control Valve

The control valve consist of spool section and connection block.

Spool section

The main advantage of the APV-series is the standardization of the spool section. Different types of spools and control methods are available. Up to 12 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 P setting per section is standard.

Connection block

A very wide range of optional functions can be delivered using several, easy to mount, low-cost, 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 AVP.

All the orifices and shuttle valves are directly attainable from the outside of the valves.

Symbols and Terminology

Graphic symbols in accordance with ISO 1219-1.

Identification of valve ports in accordance with ISO 9461.

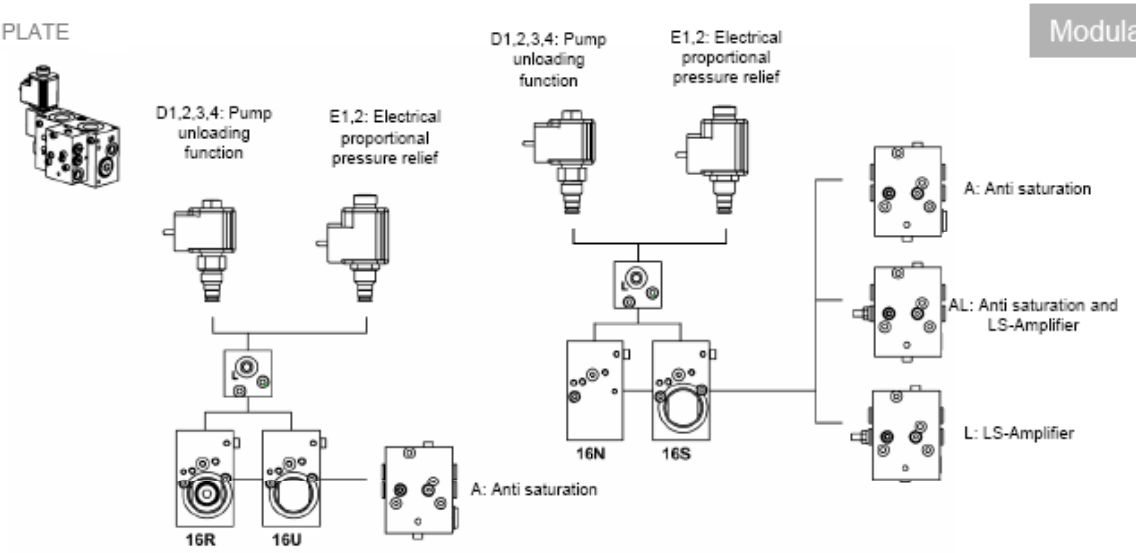
For the purposes of this document, the definitions and terminology given in ISO 5598 and the following definitions:

- -LS: Load-sensing
- -Primary relief: relief functions in the flow line, e.g. the 3-way compensator in the inlet plate and the shock/suction valve in connection block.
- -Secondary relief: relief functions in the signal line, e.g. max. load pressure relief in the inlet plate.

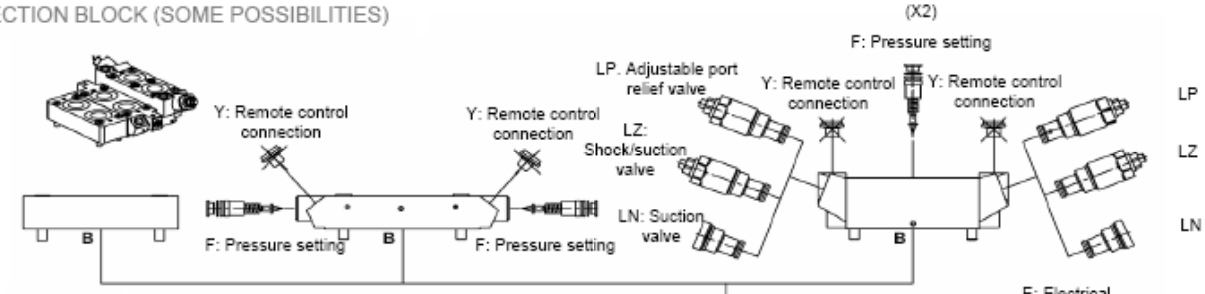
TECHNICAL DATA.

Modularity

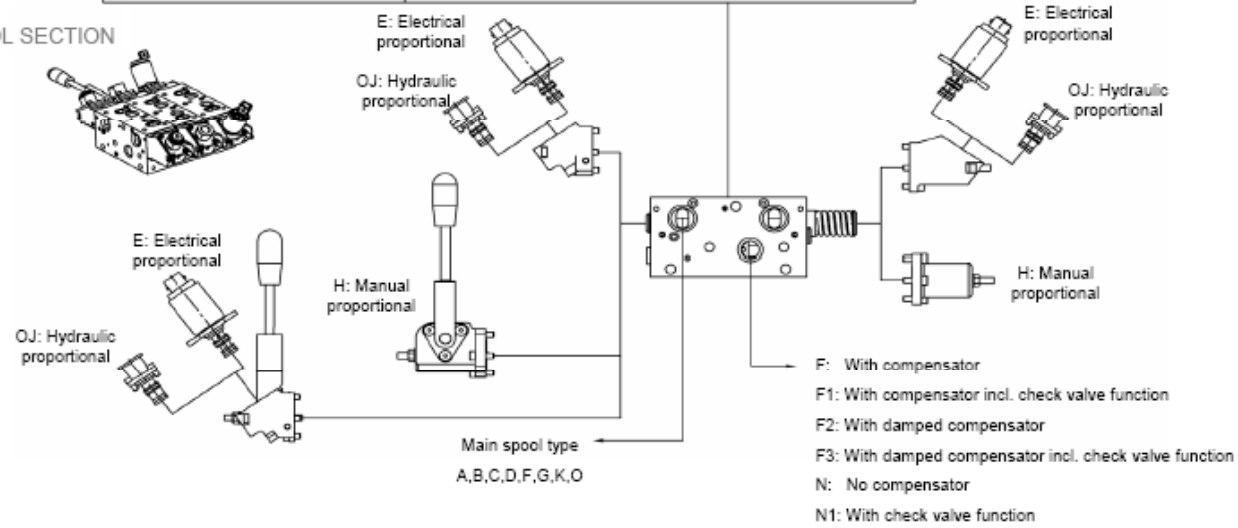
INLET PLATE



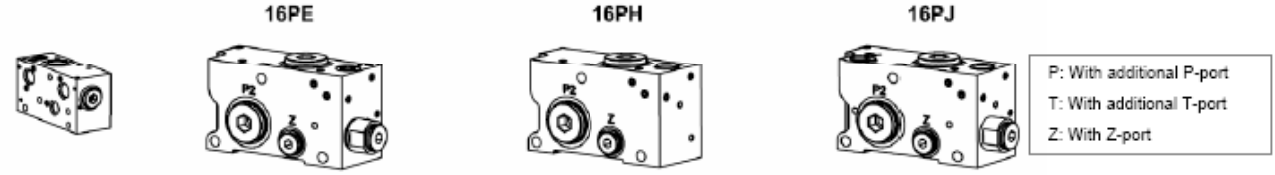
CONECTION BLOCK (SOME POSSIBILITIES)



SPOOL SECTION

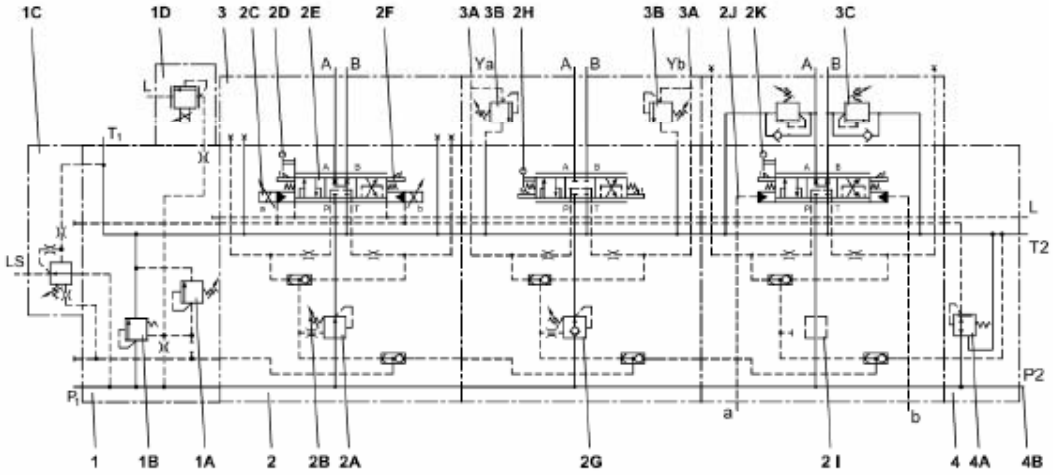


END PLATE



TECHNICAL DATA.

Example:



Pos.	Description:
1	**Intel 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	As A2, with check valve to P-line
2H	Control method: Manual Proportional
2I	No 2-way compensator per section
2J	Control method: Hydraulic proportional
2K	Additional manual control

3	**Connection block,** separate block for all different types of options
3A	Remote control connection on port A and B (optional)
3B	Adjustable pressure setting on port A and B (optional)
3C	Shock/suction valves port A and B (optional)

4	**End plate**
4A	Pressure reducing valve, for electrical control
4B	Additional pump connection (optional)

TECHNICAL DATA.

INLET PLATE

For every pump type an inlet plate is available

Fixed displacement pump

The APV inlet plate version 16U, fig. 1, is designed for fixed displacement pumps.
The main relief in this section is functioning as a 3-way compensator. If none of control sections are in operation, the inlet plate version 16U creates about 14 bar in the pump line. Actuating one of the control sections, the specific load pressure is added as a 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 feel also another circuit, an inlet plate 16R is available. (see applications examples).

Variable displacement pump (LS-pump)

The AVP inlet plate versions 16N and 16S are designed for this pump type.
The version 16N, fig.2, has the function as inlet block for P, T and LS (load sense line). The load sense signal from the valve block can be adjusted, up to 420 bar, with the relief valve.
Version 16S, fig.3, has an overpressure safety function.
The relief valve can be adjusted to max. pump line pressure and the relief spool reduces the overpressure by relieving the pump flow to tank.

Pressure compensated pumps/Constant pressure networks

The AVP inlet plate version 16N, fig 2, is also designed for pressure compensated pumps and constant pressure networks.
It has the function as inlet block 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

16U420B

Fig.2A

16N420B

Fig.3A

16S420B

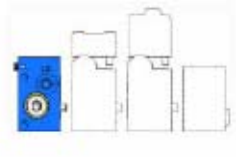
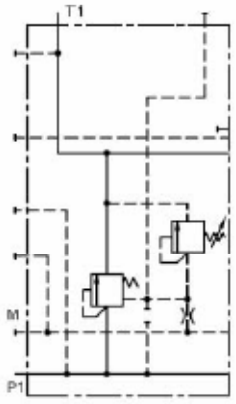
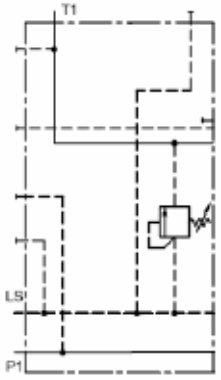


Fig.1



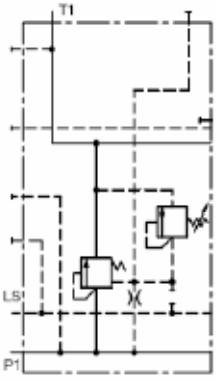
16U420B

Fig.2

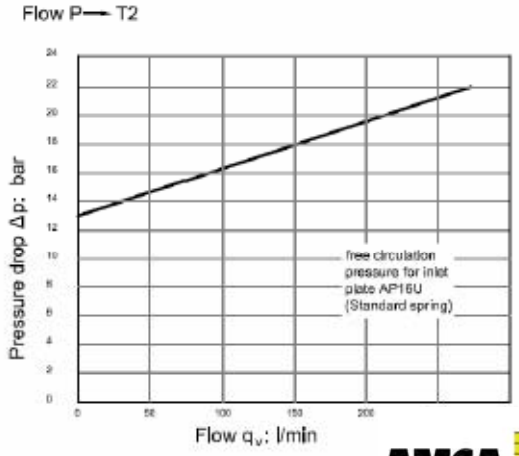


16N420B

Fig.3



16S420B



TECHNICAL DATA.

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 block has insufficient pump flow, the user flow for every control section will be reduced with this function so that every control section keeps working simultaneously.

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.

Pump unloading function, code D, fig.6.

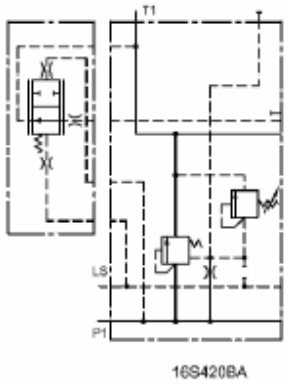
For emergency stop function the load pressure signal from the control sections can be unloaded directly to tank.

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.

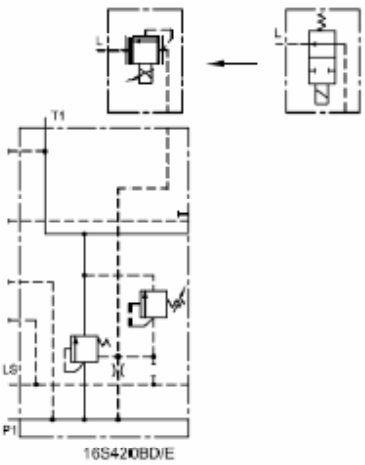
Please note that the recirculation pressure or stand-by pressure is still on the P-line.

Fig.4



16S420BA

Fig.5 Fig.6



16S420BD/E

ADDITIONAL FUNCTION FOR LS PUMPS

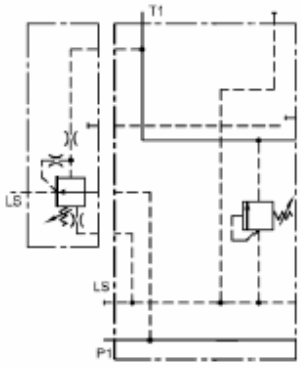
LS-Amplifier, code L, fig.7.

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



16N420BL

Fig.4A

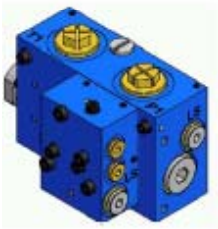


Fig.5A

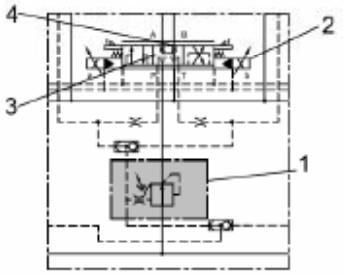
Fig.7A

TECHNICAL DATA.

Fig.8

CONTROL VALVE

On the basis of the build program principles the APV-16 control valve consist of I standardized spool section and II basic or customized connections blocks and spring-and end caps. Max. 12 control sections.



I Spool section.

1 Compensator types;
2 Control methods: electrical, hydraulic and manual control
3 Spool types;
4 Flow per port.

1. Compensator types:

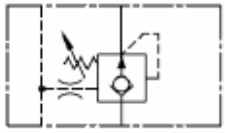
The various compensators enable load independent flow control and possibility of simultaneous operation. The max. Flow can be pre-adjusted by adjusting the compensator spring.

At part 1 from fig.8 the following types can be mounted:

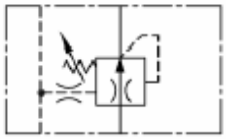
Code:

F: 2-way compensator.

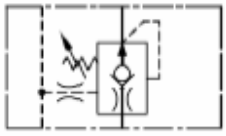
F1: 2-way compensator with load-hold check valve.



F2: 2-way compensator with damping function.



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



N: Without compensator.

Note: Max. Flow depends on stand-by pressure setting in case of using LS-pump.

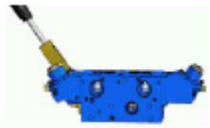
N1: Load-hold check valve.

Note: Max. Flow depends on stand-by pressure setting in case of using LS-pump.

TECHNICAL DATA.

2. Control Method.

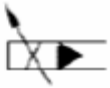

E = electrical control


H = manual 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 16PE. The 16PE end plate in equipped with a separate "L"-connection to drain the pilot return line to tank, which creates perfect system stability.

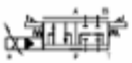


H: Manual control:
If the handle is not actuated, the spring assembly keeps the spool in neutral position (code HF).
The manual control can be configured with detent or friction brake.
Detent (code HR): the spool can be set in any position, the center position and both end positions are perceptible.
Friction brake (code HB): the spool can be set in any position, the center position in perceptible.

OJ: Hydraulically control:
For hydraulic remote control, the end caps 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 throttlled 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)	0		In neutral position all ports blocked, B port blended*

4. Flow per port.

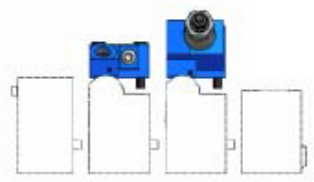
Each user port can be set at different flow. The flow with compensator is up to 120 l/min and without compensator the flow is up to 140l/min.
By adjusting the compensator spring (?p adjustment) the flow of A and B port can be pre-adjusted. By using the stroke limiters the flow of A and/or B port can be adjusted separately.

TECHNICAL DATA.

II. Connection block

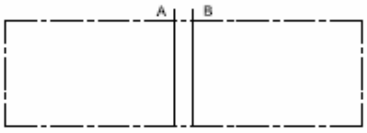
The main flexibility of APV series is realized by various connection blocks with a very wide range of optional functions. The connection block is the only part to be customized in order to meet special requirements. The available connection blocks are:

1. Basic version only with A and B ports.
2. Version with secondary safety functions
3. Version with primary safety functions.
4. Version with primary and secondary safety functions.
5. Customized versions.



The code of the connection block has to start with the type of the thread of the connection port (3/4" BSP or SAE 12). The order 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 ports is ¾" BSP
S: The connection A and B port is SAE 12.



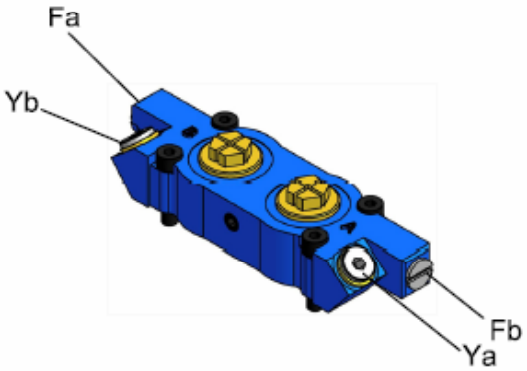
xxxxx-B
xxxxx-S

2. Version with secondary 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 user flow has to be vented to tank at maximum pressure. Secondary relieves are only in function if the control valve is actuating.

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: "F380/320bar" or only A port=380 bar. "F=380/-bar"

Y: Remote control connection on port A and B:
The load pressure signal of each user port can be connected to system safety relief devices, through Ya and Yb (1/4" BSP or SAE 12).
Example:
Cylinder stroke limiting or overload control function is combination with a 2/2 way valve to tank.

1.



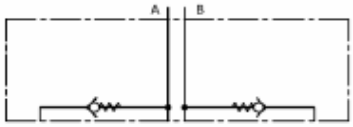
2.

3. Version with primary safety functions.

The version with primary functions is a connection block with possibility of two primary 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 2 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.

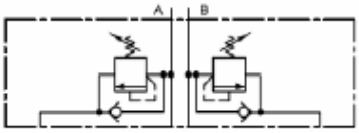
Code:

CN: Suction valves port A and B.
The suction valve per user port prevents cavitations in the user line.



xxxxx-BCN
xxxxx-SCN

CZ: Shock/Suction valves in port A and B.
Combined shock/suction valves prevents the user line to relief temporary pressure peaks and prevent cavitations.
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=350bar and B-port=320bar: "CZ=350/320 bar"



xxxxx-BCZ
xxxxx-SCZ

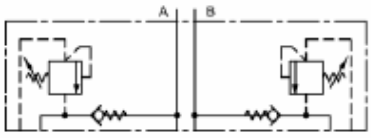
Note:
-Max. Operating pressure for CN and CZ is in 350 bar

3.

4. Version with primary and secondary safety functions:
The version with primary and secondary safety functions is a connection block available in 2 different types. 4A. Connection block exist from 2 primary and 2 secondary safety functions with a max. operating pressure off 345 bar.
Primary safety functions are active at the user port, even if the control section is not operated. Primary safety functions are available in 2 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:

CN: Suction valves port A and B.
The suction valve per user port prevents cavitations in the user line.

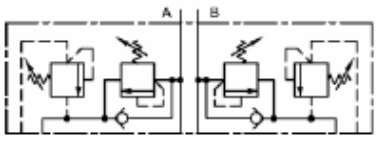


xxxxx-BFCN
xxxxx-SFCN

CZ: Shock/Suction valves in port A and B.
Combined shock/suction valves prevents the user line to relief temporary pressure peaks and prevents cavitations.
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=350 bar and B-port=320 bar:"350/320 bar"
or for only A-port=350bar:"CZ=350/-bar"

Note:
-Max. operating pressure for CN and CZ is 350 bar.



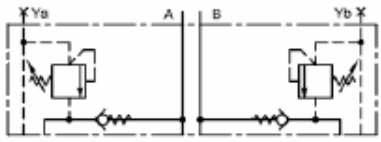
xxxxx-BFCZ
xxxxx-SFCZ

TECHNICAL DATA.

4B. Connection block exist from 3 primary and 2 secondary safety functions with a max. Operating pressure off 420 bars.
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 can be configured as specific primary safety function.

Code:

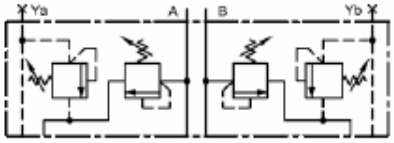
LN: Suction valves port A and B.
The suction valve per user port prevents cavitations in the user line.



xxxxx-BFLNY
xxxxx-SFLNY

LP: Adjustable port relief on port A and B.
Adjustable primary port relief valve prevents the user line against over pressure during operation and also in neutral position. The flow over the relief is maximum 120 l/min.
For the range up to 420 bars the adjustable port relief has to be configured for the following steps:
LPB: range 35-140 bars
LPV: range 70-280 bars
LPG: range 140-420 bars
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.

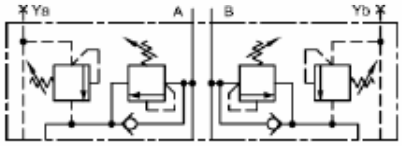
Example: A-port=320 bar and B-port=280 bar give ordering code "LPG=320/280"
A-port=320 bar and B-port=no port relief give ordering code "LPG=320/-"



xxxxx-BFLPY
xxxxx-SFLPY

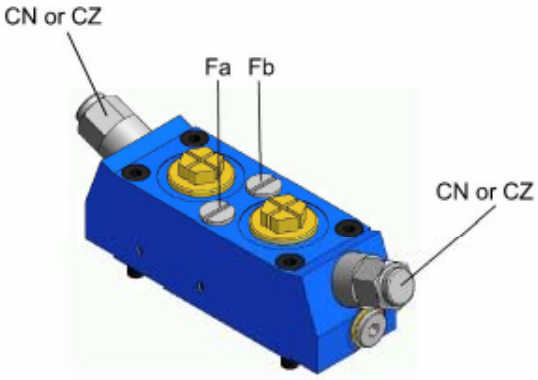
LZ: Shock/Suction valves in port A and B.
Combined shock/suction valves prevents the user line to relief temporary pressure peaks and prevent cavitations.
Factory pressure setting (first A-port then B-port) has to be mentioned on configuration code. Adjustable pressure setting only on one port, state "-" 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"

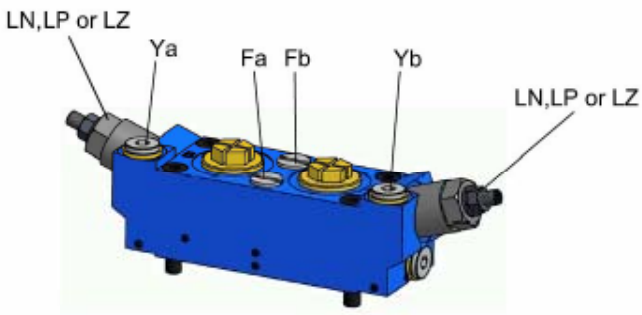


xxxxx-BFLZY
xxxxx-SFLZY

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



4A.



4B.

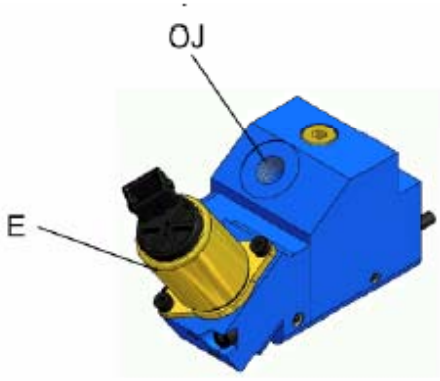
5. Customized version.

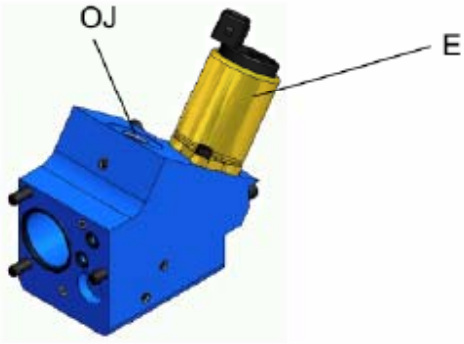
Connection block with integrated counterbalance valve, LS-relieves and electrically controlled 2/2 way valve.

Connection blocks with integrated LS-relieves and counterbalance valves in the user ports A and B.

The unique modularity of the APV enables system solutions for manufacturers of mobile machines as a wide range of functions can be integrated/changed by the costumer in an easy, flexible and cost-effective way.

Some examples are shown below.

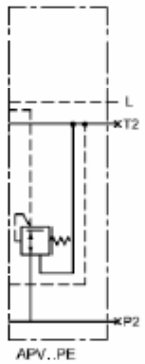




Spring and end cap double control method electrical and hydraulic proportional.

TECHNICAL DATA.

END PLATE

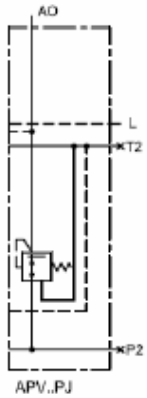


Code PE: For control method E.

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.

Code PH: For control method H or O.

End plate for manual or hydraulic operated valves.

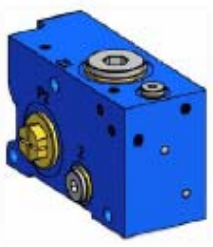


Code PJ: For control method E or O.

End plate with built-in pressure reducing valve for external pilot pressure supply of 28 bar to the hydraulic joysticks.

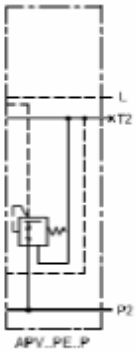
16PE/PZ

16PH/P



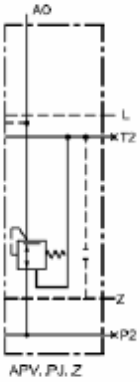
16PJ/P

TECHNICAL DATA.



Code P: With additional P-port.

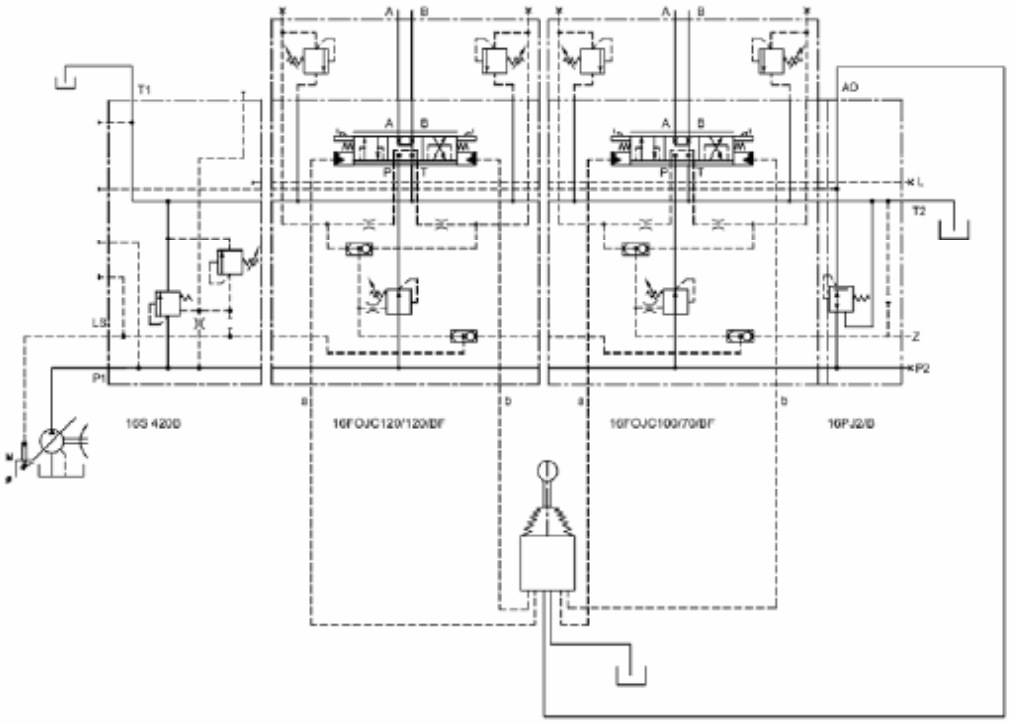
Additional P-port to connect an extra P-line in systems with high pump flow.



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.

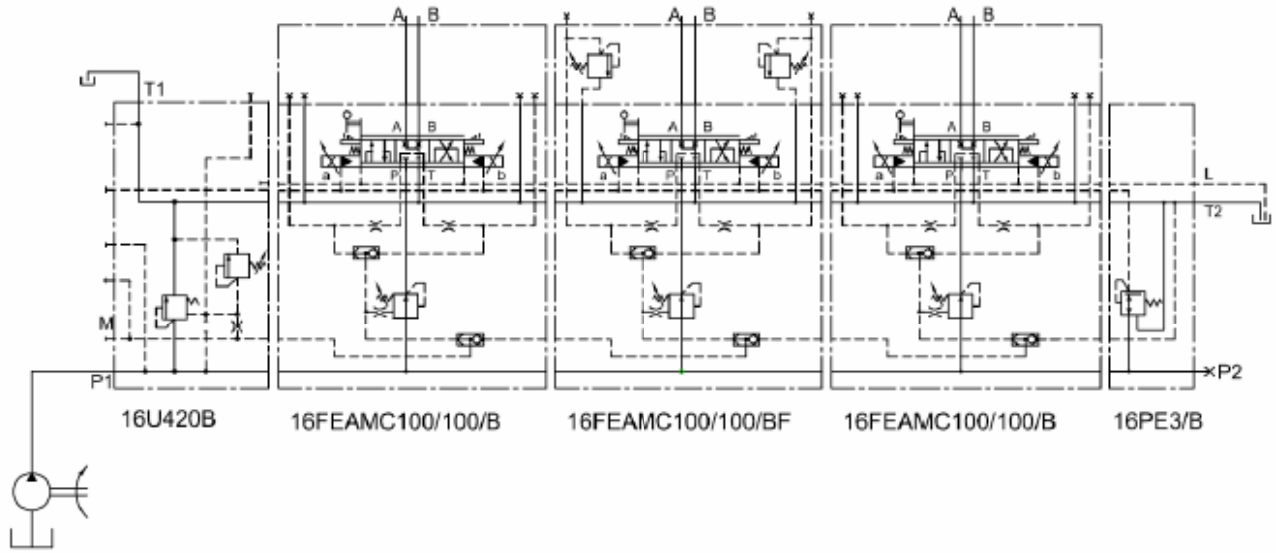
Note:
In systems with a pump flow > 160l/min use end plate with P2 port (ordering code 16P…P). For reduction of the return pressure the use of second tank connection T2 on the end plate is possible (ordering code 16P…T).



TECHNICAL DATA.

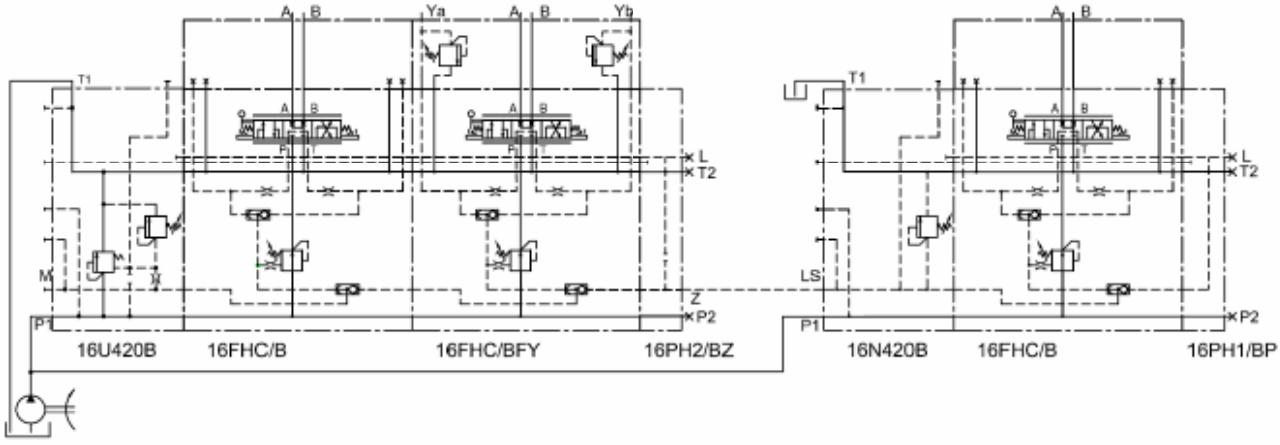
APPLICATIONS

Example inlet code U.



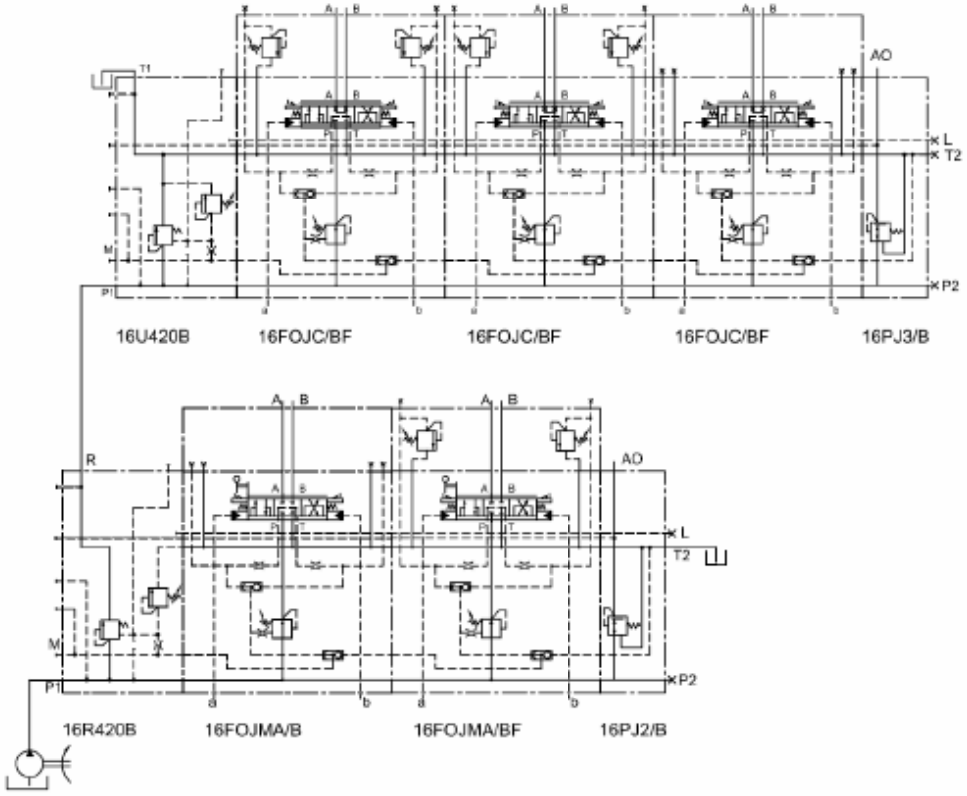
Code U:

Inlet plate for fixed displacement pump: 16U420B.
If none of the control sections are in operation, the integrated 3-way compensator of the inlet plate 16U re-circulates the flow to tank.
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 (see shuttle valve cascade system). The maximum load signal pressure is controlled by the max. load pressure relief.
If one ore more of the users have to be set on a lower max. pressure, the control section can be configured with pressure relieves per port (see for example the second section).



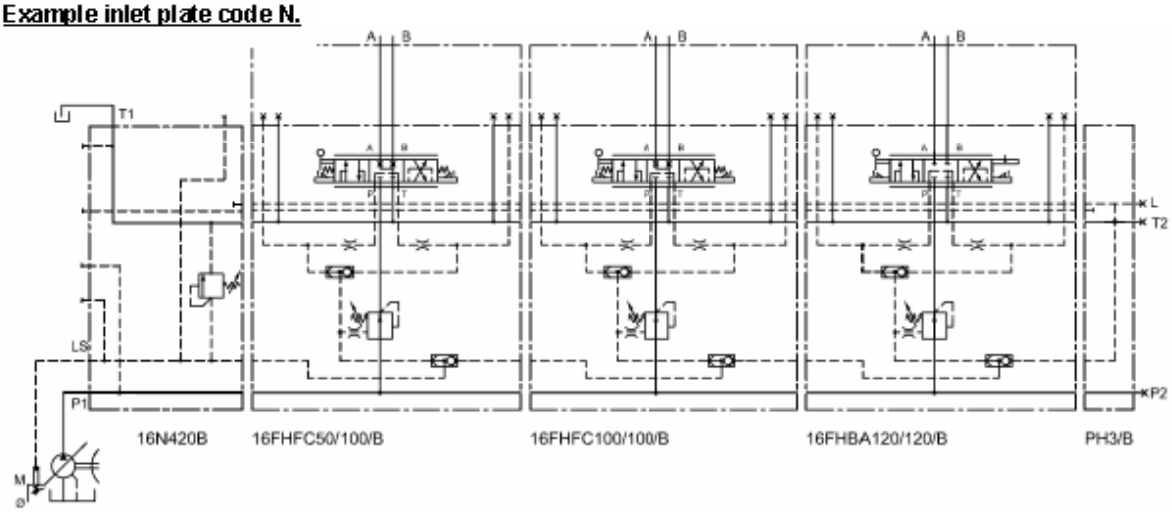
Parallel circuit with fixed displacement pump: 16U and 16N.
When two valve blocks should be mounted on different places in a system on valve block can be configured with a 16N inlet plate. The valve block with the 16U is regulating the pump flow and the end plate 16P-Z has to be connected to the LS port of the second valve block with a 16N inlet plate. The max. load pressure relief of the 16N inlet plate has to be adjusted equally or lower as the max. load pressure relief at the main inlet plate.

TECHNICAL DATA.



Series circuit with fixed displacement pump: 16U and 16R.
For the same condition as the parallel circuit a series circuit can be used. The advantage of a series circuit is that there is not a longer LS signal line that shall give a lower signal under colder conditions.
In the 16R inlet plate the tank circuit is disconnected from the control sections and there is an additional possibility of directing the pump flow from P to R in order to feed another circuit. Please note that with this type of valve block the T2 connection in the end plate has to be connected with tank.

Example inlet plate code N.

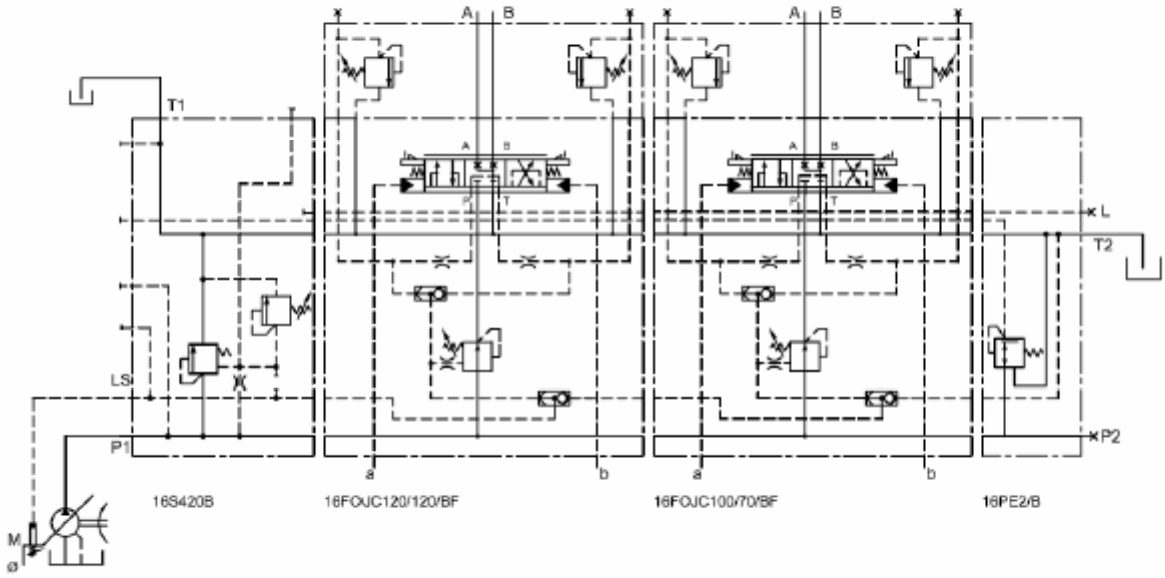


Code N:

Inlet plate for LS-pumps: 16N240B.
The version 16N is the inlet plate for the P, T and LS connection. The adjustable max. Pressure relief for the load signal is standard integrated.

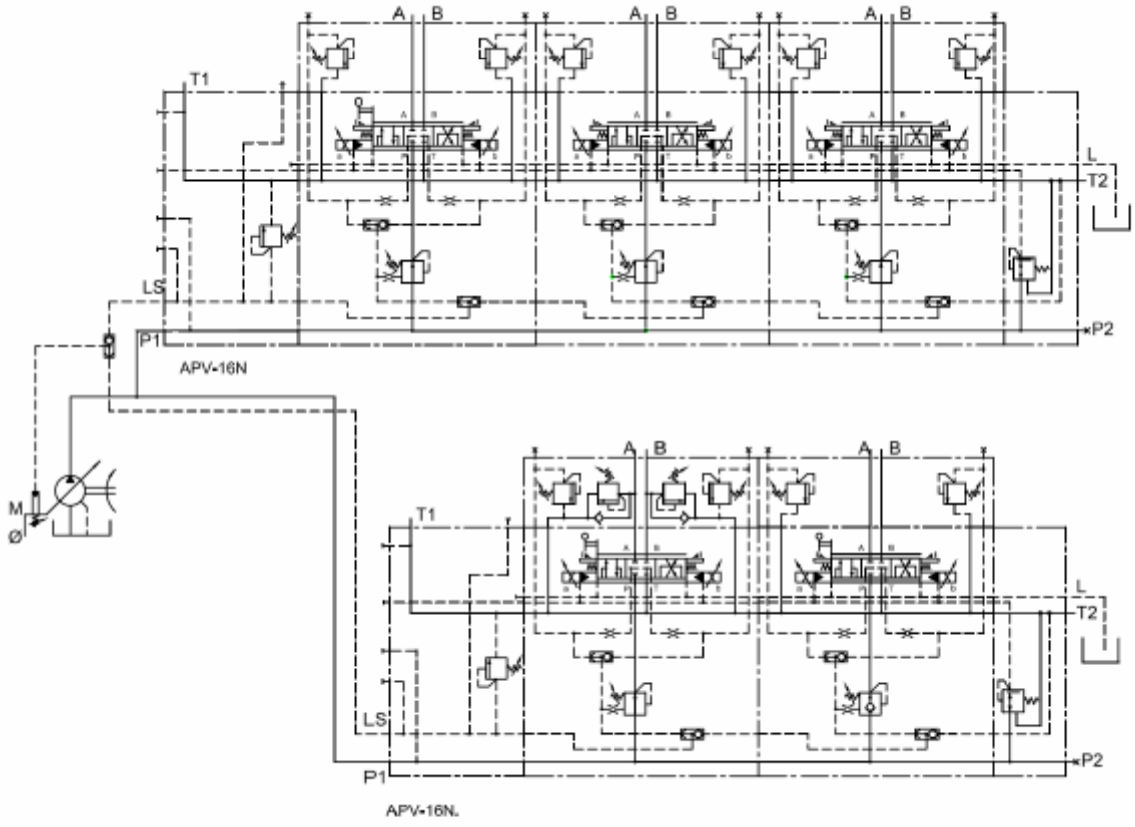
TECHNICAL DATA.

Example inlet plate code S.

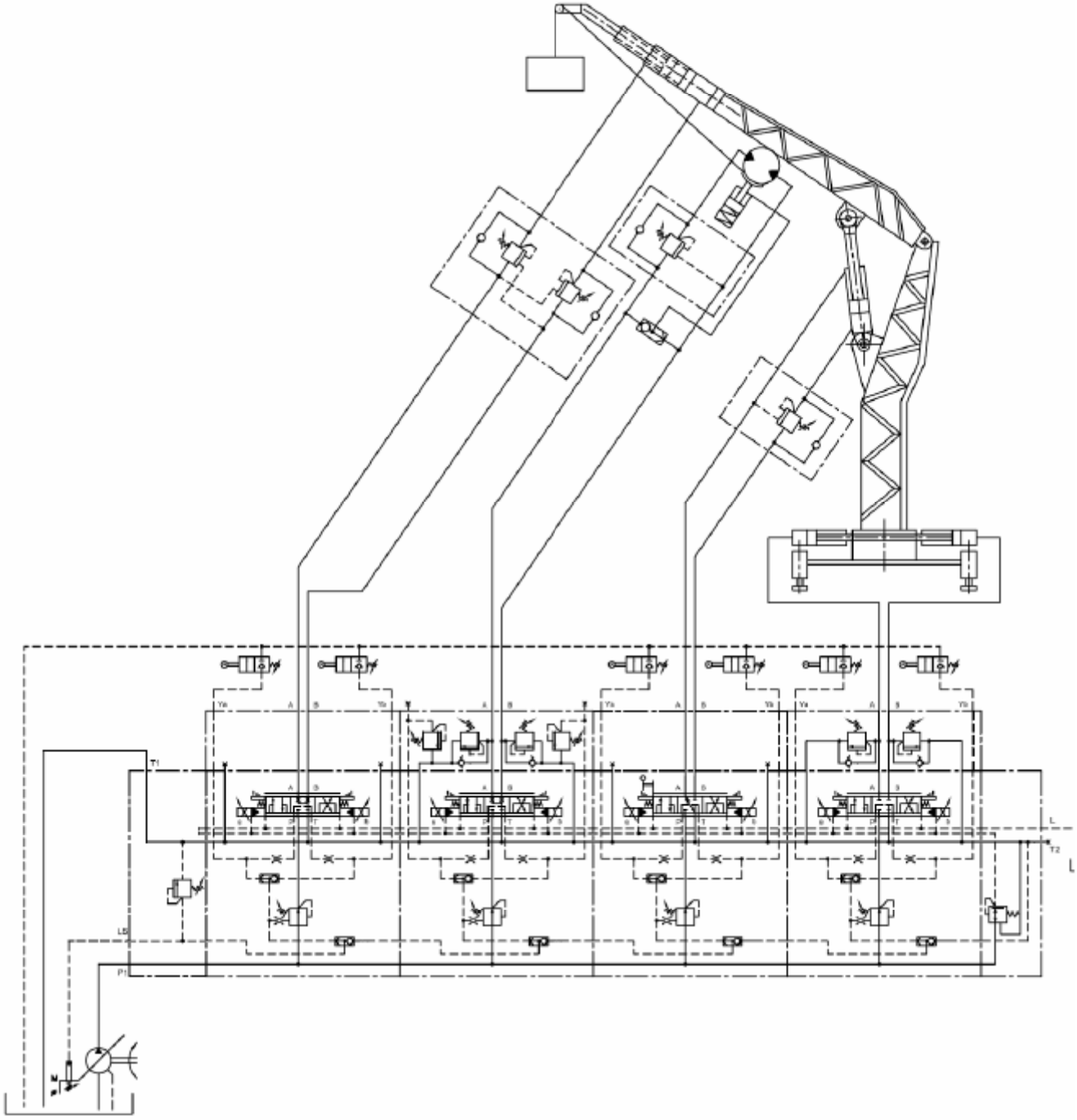


Code S:

Inlet plate for LS-pump: 16S420B.
The version 16N has primary overpressure safety function. The relief valve can be adjusted to max. Pump line pressure and the relief spool reduce the overpressure by relieving the pump flow to tank.



TECHNICAL DATA.

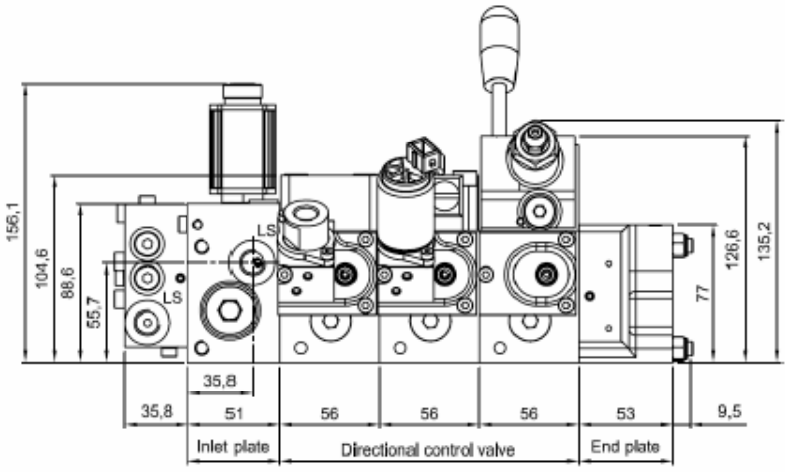


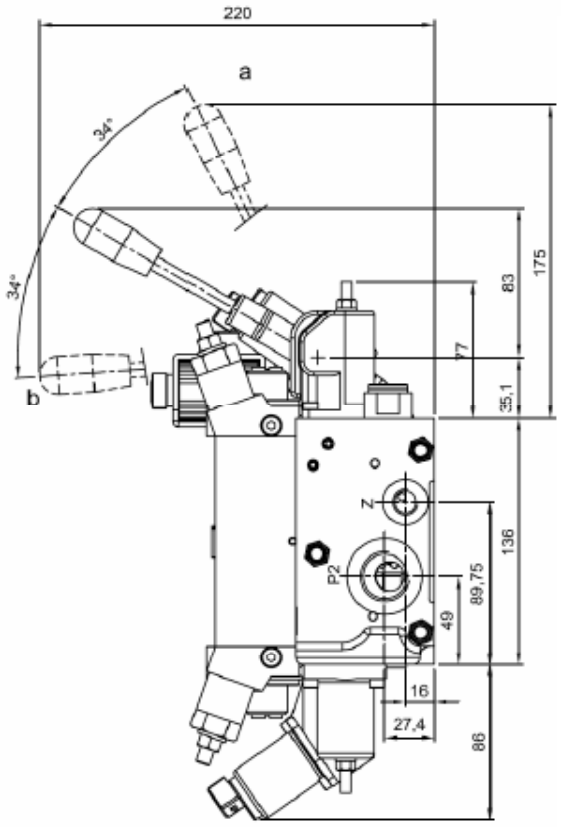
TECHNICAL DATA.

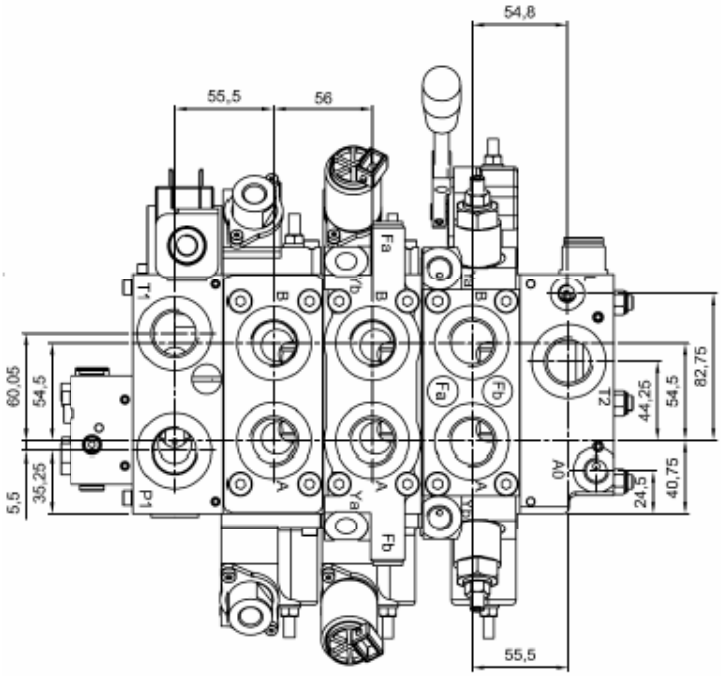
DIMENSIONS

Connection ports

	BSP	SAE ORB
P,T1,T2	¾"	12
A,B	¾"	12
LS	¼"	6
L	1/8"	4
Ya, Yb	¼"	6
A0	¼"	6
Z	¼"	6





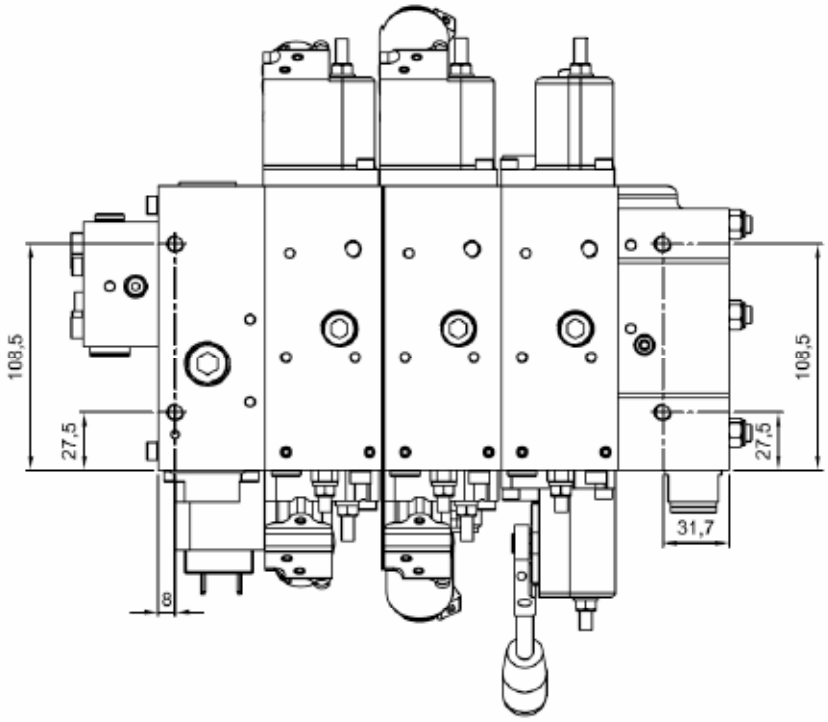


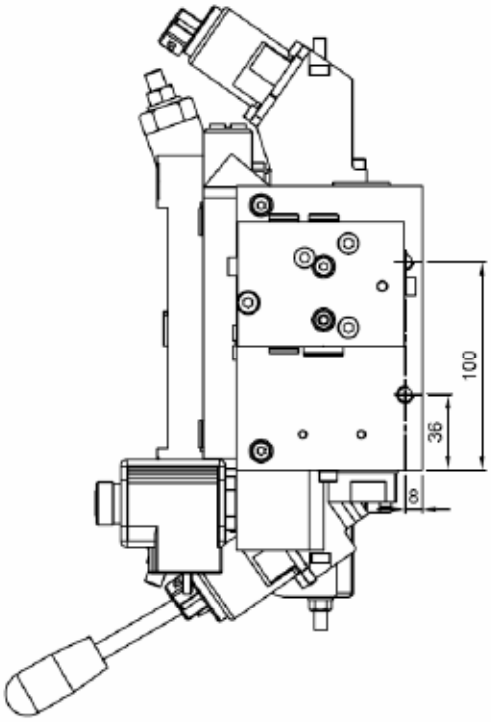
Weight:	N
Inlet plate	
16N	35
16U/S/R	36,5
Opt. D/E	7,5
Opt. A/L	12
Spool Section	
16FE*	45
16FE*M	47
16FH	46
16FOJ	43
16FOJM	46

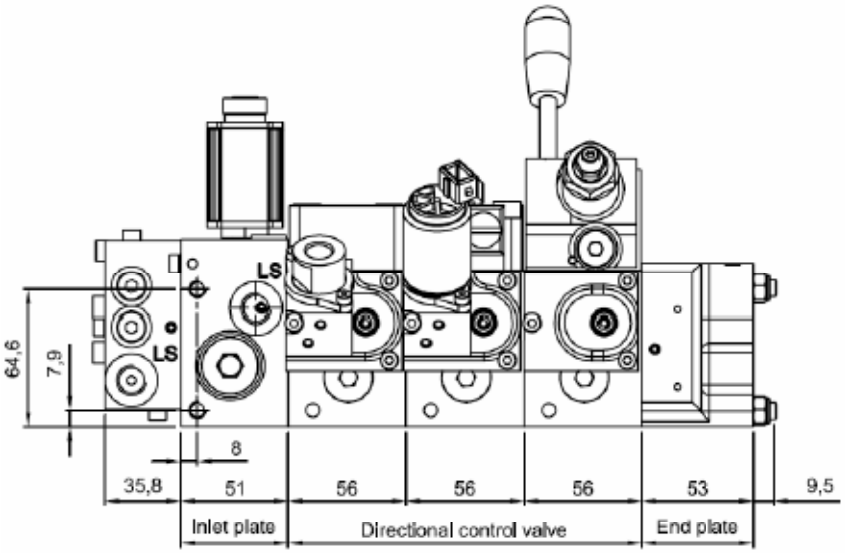
Weight:	N
Connection block	
B	14,4
BFY	16,5
BFLZY	26
End plate	
16PE	32,5
16PH	32,5
16PJ	32,5

TECHNICAL DATA.

Mounting holes M8 X12







Weight assembly kit:	N
With 1 control valve	1.59
With 2 control valve	2.25
With 3 control valve	2.91
With 4 control valve	3.57
With 5 control valve	4.23
With 6 control valve	4.89
With 7 control valve	5.55
With 8 control valve	6.21
With 9 control valve	6.87
With 10 control valve	7.53
With 11 control valve	8.19
With 12control valve	8.85

TECHNICAL DATA.

CONFIGURATION CODE

INLET PLATE

16 N 420 B AD1

	Size
16	16

	Plate Version
N	For LS-pump
S	For LS-pump and max pressure valve in P
U	For fixed displacement pumps
R	For fixed displacement pumps and serial connections

	Pressure adjustment 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	Pump unloading function: 12VDC and N.O
D3	Pump unloading function: 24VDC and N.O
D4	Pump unloading function: 24VDC and N.O
E1	Electrical proportional pressure relief: 12VDC
E2	Electrical proportional pressure relief: 12VDC
L	LS amplifier only in combination with N or S-plate
/I	Viton seals

END PLATE

16 PE 2 / B P

	Size
16	16

	Plate Version
PE	For control method: E
PH	For control method: H or E
PJ	For control method: E or O + port A0 for joystick supply: 28 bar

	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
11	With 11 control valve
12	With 12 control valve

	Port connections
B	Thread in BSP (other threads on request)
S	Threads in SAE ORB

	Variants
P	With additional P-port
T	With additional T-port
Z	With Z- port
/I	Viton seals

TECHNICAL DATA.

CONFIGURATION CODE

CONTROL VALVE

16 F EBM C 120/100 / B FY (F=380/320bar)

	Size
16	16
	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	Electrical proportional: 12VDC and additional manual control
EB	Electrical proportional: 24 VDC
EBM	Electrical proportional: 24 VDC and additional manual control
EE	Electrical proportional: 12VDC with pin
EF	Electrical proportional: 24 VDC with pin
EH	Electrical proportional: 24VDC with II 2G Ex mb II T4
HF	Manual proportional: spring return
HB	Manual proportional: with friction brake and centre detent
HR	Manual proportional: with detent (3 positions)
OJ	Hydraulic proportional
OJM	Hydraulic proportional and additional manual control
	Main spool type
A	A, B, C, D, E, F, G, K, O
	Max. Flow: (l/min)
.../...	Chose the flow: port A/ port B (max. 120 l/min)
	Port connection
B	Thread in BSP (other threads on request)
S	Thread in SAE ORB
	Variants
F	Adjustable pressure setting on port A and B **
CN***	Suction valves port A and B (max. 345 bar)
CZ***	Shock/Suction valves port A and B (max. 345 bar)
LN***	Suction valves port A and B (max. 420 bar)
LP***	Adjustable port relief valve on port A and B (max. 420 bar)
LZ***	Shock/Suction valves port A and B (max. 420 bar)
Y	Remote pressure connection Ya, Yb on port A and B
/I	Viton seals

• = for option F1 and F3 the max. flow is 100 l/min

** = give pressure setting A and B port

***= one type per port, for LP and LZ give pressure setting

Example:

16N32BAD1

16FEBMC120/100/BFY (F=380/320 bar)

16F1EBMC90/60/BFLPY (LP=280/200)

16PE2BP