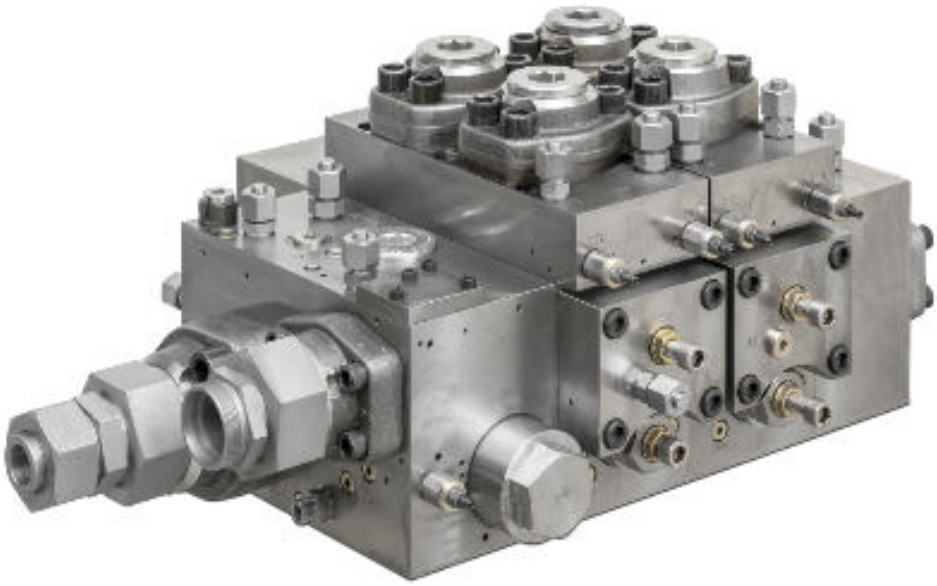
HPV Hydraulic Proportional Valves

AMCA HYDRAULIC CONTROLS

APV-32



- Modular assembly system, suitable for ‘Build Program’.
- Maximum operating pressure 400 Bar / 5800 PSI
- Different spool types up to 1.000 L/min / 262 GPM
- Compact sandwich design, suitable for mobile applications.
- Pressure compensated for simultaneous multi users.
- Several inlet plate types available for different types of pumps.
- Operating control in any combination (Electric-, Hydraulic and manual).
- Adjustable ΔP for setting the maximum flow for maximum proportional range.
- Several user port option functions.
- Designed for customisation.

Main technical data

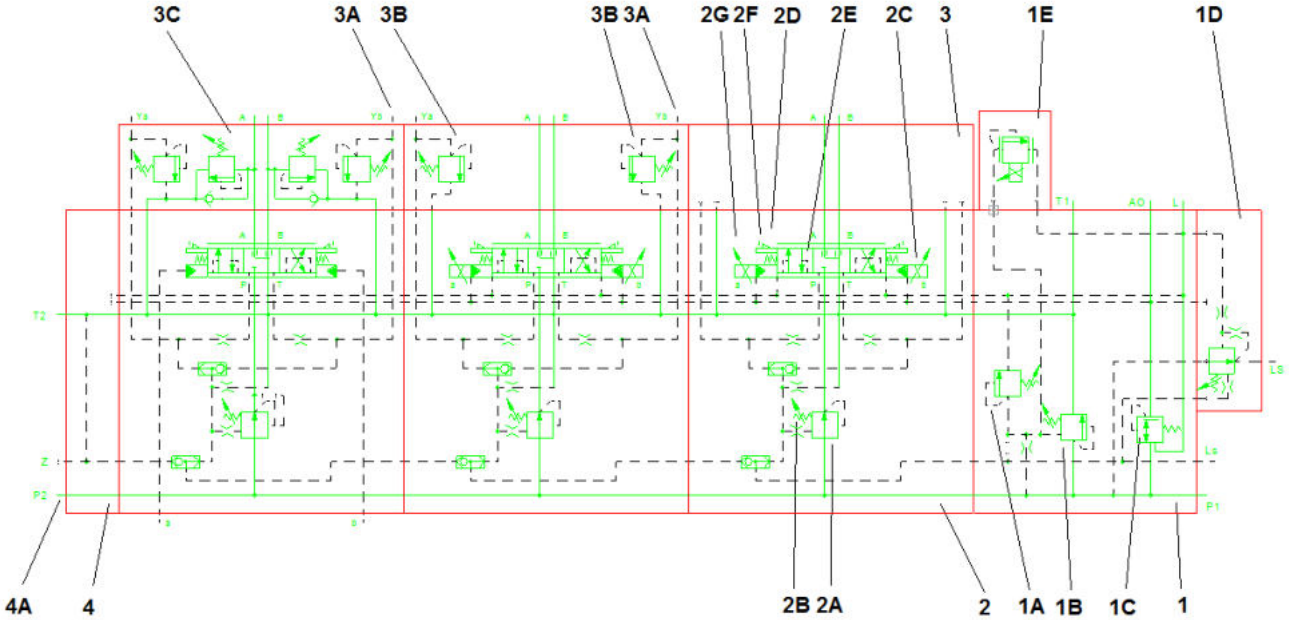
Max. flow:	Port P or P1	1.500 L/min.	394 Gallons/min
	Port P + P1	2.000 L/min.	525 Gallons/min
	Port A / B	1.000 L/min.	262 Gallons/min
Max. pressure:	Port P / A / B	400 Bar	5806 PSI
	Port T	35 Bar	508 PSI
Pressure setting range		20-400 Bar	290-5806 PSI

Pressure drop over 2-way compensator (A,B)	0-16 Bar	0-232 PSI
Internal pilot pressure supply	28 Bar	406 PSI
Pilot pressure for electric and hydraulic control	6-20 Bar	87-290 PSI
Spool stroke	16 mm	
Spool overlap (dead band)	3,5 mm (22% of spool stroke)	
Fluid	Mineral oil according to DIN 51524/51525	
Fluid temperature range	-30°C…+80°C	
Viscosity range	10…500cSt, optimal 30cSt	
Contamination level max.	According to NAS 1638 Class 8 or ISO 4406: 18/16/13	

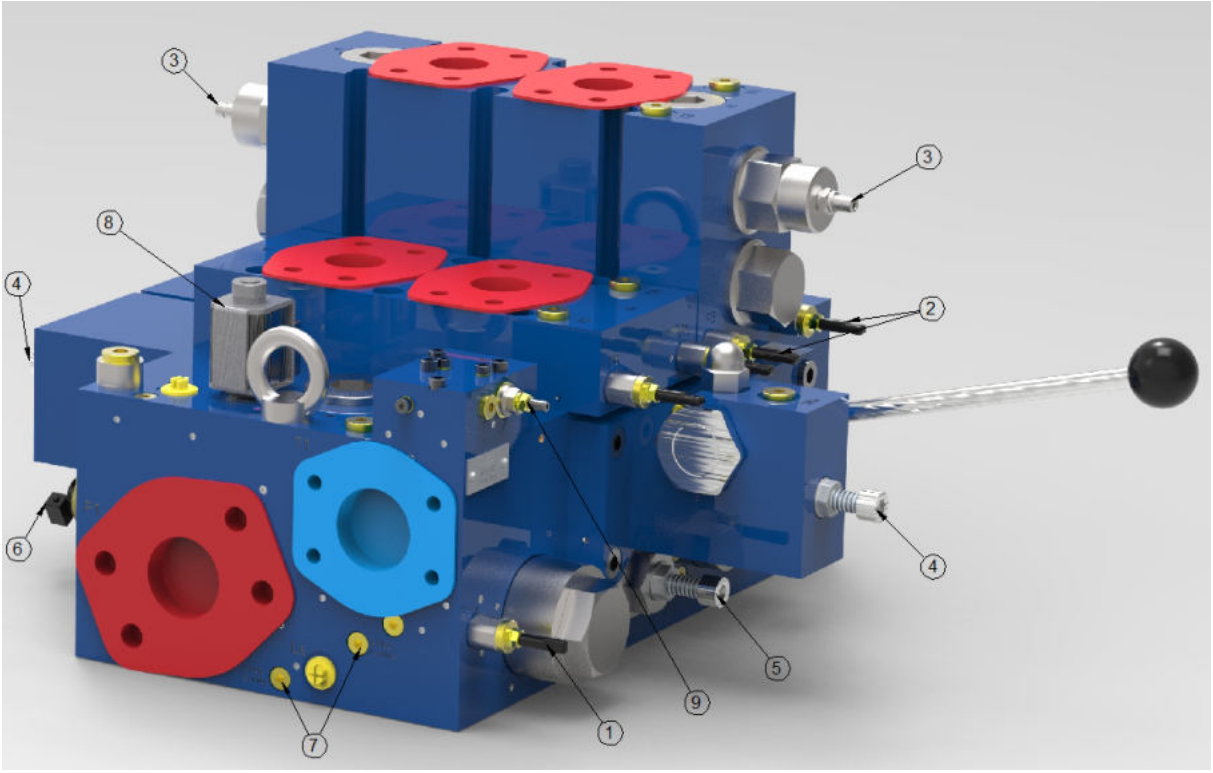
Port connections	
Port P, T	2” SAE flange
Port A,B	1 1/2” SAE flange
Port Ls	G 1/4” BSP
Port L	G 3/8” BSP
Port YA,YB	G 1/4” BSP

Electric connection	AMP Junior Power Timer / Deutsch
Nominal voltage	12 VDC or 24 VDC
Nominal current	12 VDC (1350 mA) 24 VDC (675 mA)
Coil resistance	12 VDC (5,3 ± 5% Ω) 24 VDC (21,1 ± 5% Ω)
Recommended dither frequency	100 Hz
Type of protection	IP 65
Duty cycle	100%
Hysteresis	4%

Overview



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	Pressure reducing valve, for electrical control
1D	LS amplifier, for strong signal and perfect stability of the LS-pump
1E	Electrical on/off valve, unloading function
1F	Electrical proportional pressure relief
1G	Anti saturation function
2	**Spool section**, basic section for different main spool types
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	Control method: Hydraulic Proportional
2E	Additional manual override control
2F	Main spool type
2G	Adjustable stroke limitation for adjusting the max. flow per port
3	**Connection block**, separate block for all different types of options
3A	Remote control connection on port A and B
3B	Adjustable pressure setting on port A and B
3C	Shock/Suction valves port A and B (optional)
3D	Load control valves port A and B (optional)
4	**End plate**, complete with P1, T1 and Z
4A	Without P1 and T1

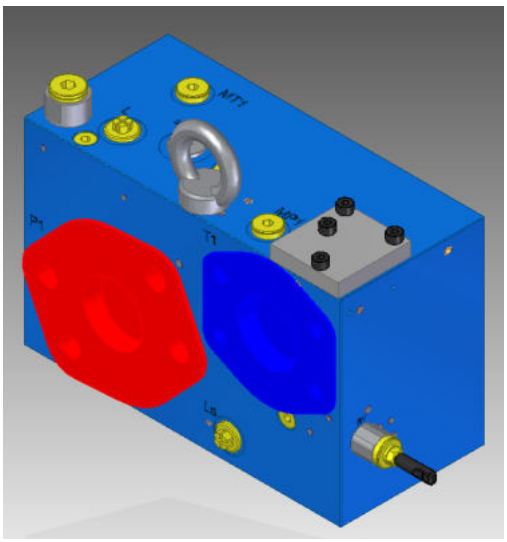


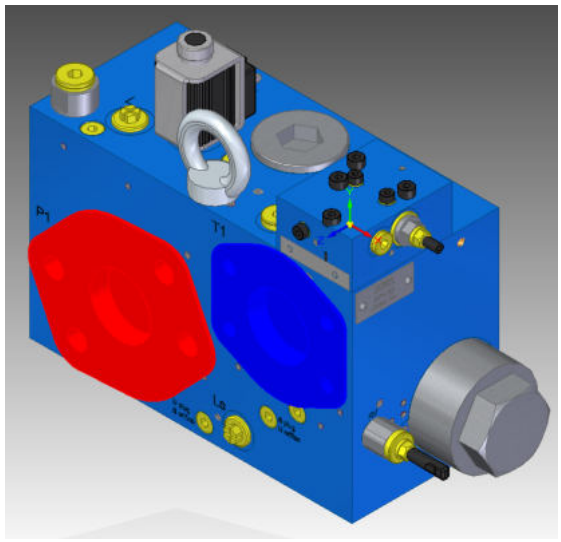
Pos.1 = 1B	Pump relief function
Pos.2 = 3B	Adjustable pressure setting on port A and B
Pos.3 = 3C	Shock/Suction valves port A and B (optional)
Pos.4 = 2G	Adjustable stroke limitation for adjusting the max. flow per port
Pos.5 = 2B	Flow adjustment by regulating the pressure drop across the main spool
Pos.6 = 2C	Control method: Electrical proportional
Pos.7 = 1A	Load sense / constant flow
Pos.8 = 1E / 1F	Electrical on/off valve, unloading function Electrical proportional pressure relief
Pos.9 = 1D	LS amplifier, for strong signal and perfect stability of the LS-pump

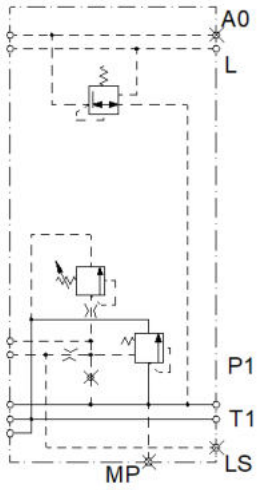
Note:
Connect the LS-pump to the LS-connection of the LS-amplifier block itself and not the standard LS-connection of the inlet section (plugged).

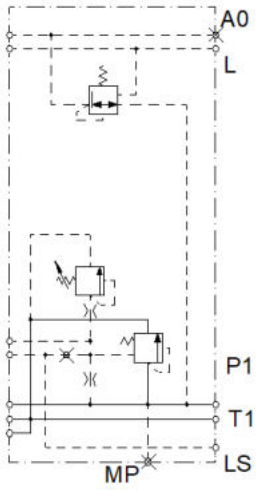
Inlet section

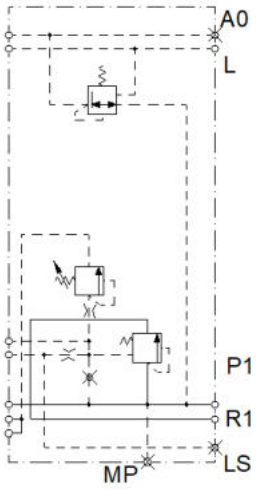
Inlet plates are available for fixed and variable displacement pumps, and constant pressure networks. Pilot pressure reducing valve for pilot pressure is included. Interchange plug and orifice to change between UJ and SJ is reachable from outside. P & T are 2” SAE flange.

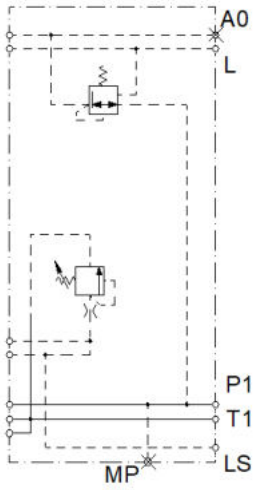




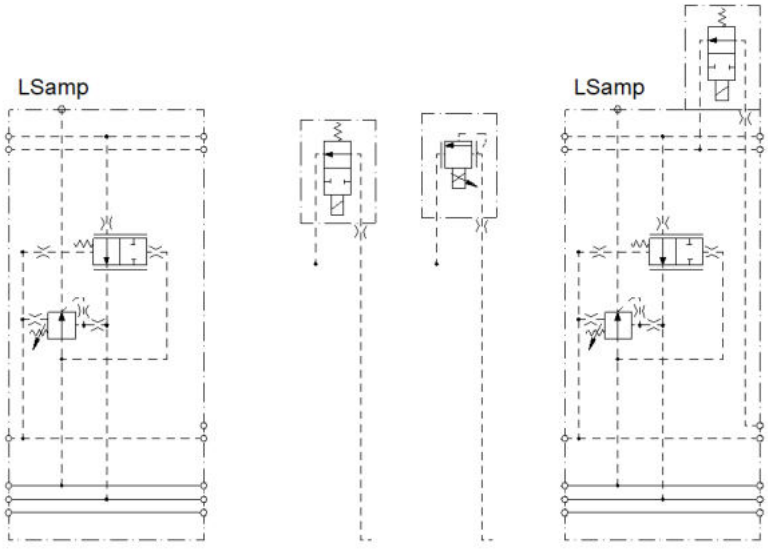








Inlet plate options are the Anti-saturation with LS amplifier block and Pump unloading or proportional pressure relief.



Inlet configuration codes

32	K	SJ	350	A		O	A	-	-

Size

32	32

Build type

K	Sandwich

body type

-	standard APV-32 type

Plate version

UJ	For fixed displacement pump, max flow ... l/min
UHJ	For fixed displacement pump, max flow 1000 l/min
SJ	For LS-pump and max. pressure valve in P
NJ	For LS-pump and LS safety valve

Pressure adjustment in bar

400	Max 400 bar (factory setting 350 Bar)

Port connections

A	P&T: 2" SAE flange

Options

AL	Anti saturation functions / LS amplifier combined
-	none

Options LS

O	Pump unloading function, normally open
C	Pump unloading function, normally closed
E	Prop pres relief increase current, increase pressure
F	Prop pres relief increase current, decrease pressure
-	none

Actuation

A	12 VDC
B	24 VDC
-	none

Oring type

-	BUNA N
	Other oring types on request

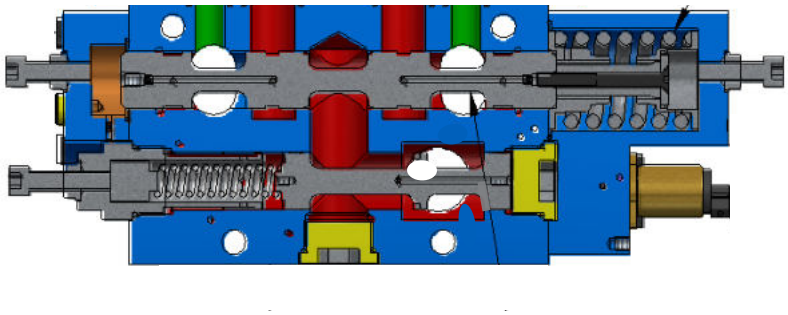
Surface treatment

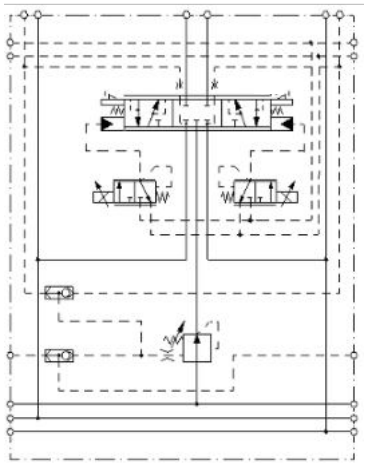
-	None (standard)
A	Protalloy, on request

Control section

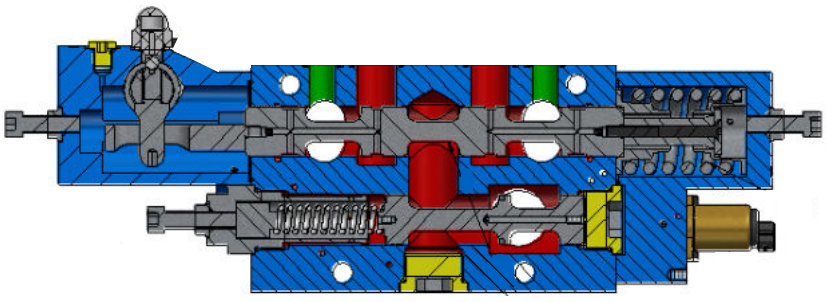
Control section.
The spools section is the base of the APV-32 control section, it contains the 2-way compensator with delta P adjustment, so the flow can be adjusted without using the stroke limitation.
Each control sections has a handle mechanism, for emergency control, a lever can be mounted if needed.
To change between the several control types, a different end cap is used.

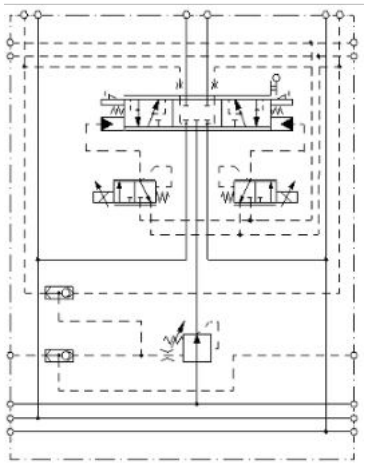
Electric control, end cap with 2 solenoids:





Electric with manual control, end cap with 2 solenoids

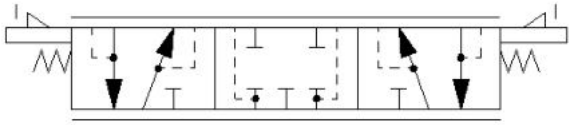




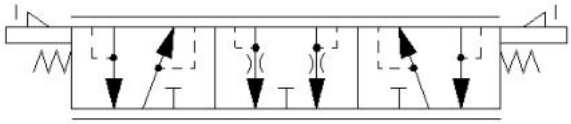
Control spool

There are 2 basic control spools available, the A spool with all ports closed in neutral position and the C spool with P closed and A en B to T in neutral position, with 20% of nominal opening to T.
These 2 basic spools have 3 flow ranges, shown below.

A spool 0 - 1.000 l/min: AP-3220-S01-102
A spool 0 - 500 l/min: AP-3220-S01-202



C spool 0 - 1.000 l/min: AP-3220-S01-152
C spool 0 - 500 l/min: AP-3220-S01-252



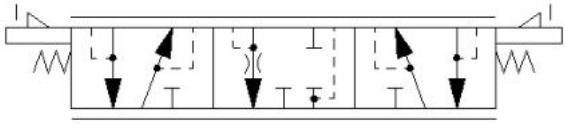
C Spool 0 - 500 l/min

A Spool 0 - 500 l/min

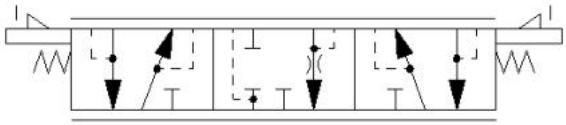
Available upon request are 1:2 / 2:1 ratio spools, for A and C type.

Instead of the basic A and C type B and D type are available upon request.

For B type the B port blocked in neutral;
the A port throttled to tank (20%).



For D type the A port is blocked in neutral;
the B port throttled to tank (20%).



Control section configuration codes

32	K	F	-	S	S	E	B	A	M	C	1/1

Size

32	32

Build type

K	Sandwich

Compensator

F	With compensator

-	

Body type

S	Standard body type
C	TWIN : 2 sections standard body type, up to 1600 l/min

Compensator spring

S	Standard flow compensator spring
H	High flow compensator spring

Control method

E	For electric or hydraulic control
H	Manual control, on request

Actuating type /port type

B	24VDC
F	24VDC with pin
A	12VDC
E	12VDC with pin
H	24VDC with II 2G Ex mb II T4, flying leed **
O	Hydraulic control 1/4" BSP
P	Hydraulic control SAE ORB 4

Connector type

A	Amp junior connector
D	Deutsch connector
-	

M	Additional manual control with E/O

Main spool type

A	All ports blocked in neutral
C	A&B to tank in neutral (20% of nominal flow)
	Other type, on request
	For TWIN body only:
Q	TWIN C spool (C in 1st section, A in 2nd section)
R	TWIN A spool (2pcs A spools)

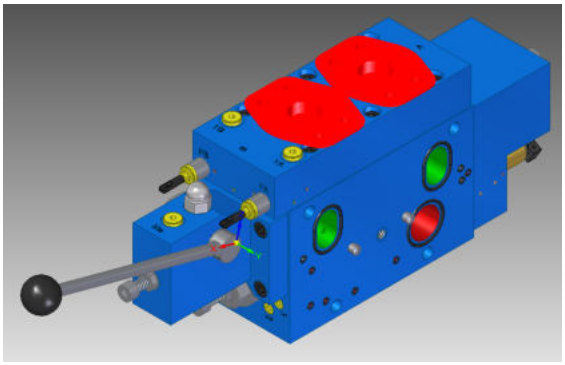
Max. flow (l/min) (APV-10) A port / B port

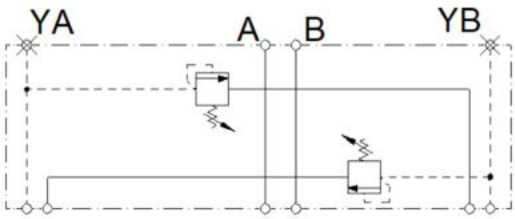
1	1.000
2	800, (1.600) for TWIN
3	500, (1.000) for TWIN

Connection block

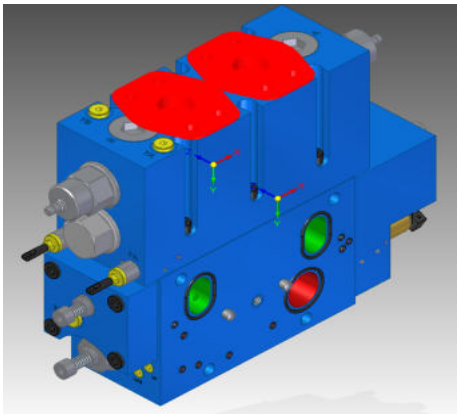
The connection block is the most flexible part of the APV range.
There are a few standard versions available.

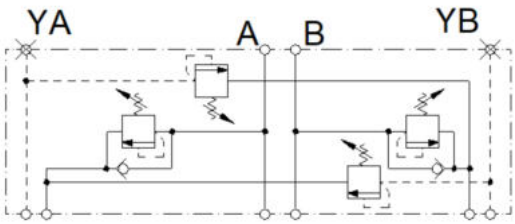
Connection block 'BFY'
Available with port connections in 1.1/2" SAE flange
includes Lsa and Lsb adjustments and 'Y' ports on both LS signals 1/4" BSP.





Connection block 'BFLY'
Available with port connections in 1.1/2" SAE flange
includes Lsa and Lsb adjustments and 'Y' ports on both LS signals in1/4" BSP
Adjustable shock-anti cavitation valves can be mounted.
Non-adjustable shock, and or anti cavitation valves are also available for larger qty's or OEM solutions





Connection block Customised version
Can be designed according to customer requirement.

Control section configuration codes

A FY F Z2 - -

Port connections

A	1 1/2" SAE flange
C	TWIN connection block SAE flange
9	special requirement

Connection block body

FY	Lsa/Lsb + Y ports
L1	For shock/suction valves 480 l/min, incl Lsa/Lsb + Y, on request, on request
L2	For shock/suction valves 240 l/min, incl Lsa/Lsb + Y, on request
D1	For dump or electrical proportional relief in common signal Lsa/Lsb
D2	For dump or electrical proportional relief in Lsa and Lsb

LS pressure setting range

F	A and B > 100 bar

Cartridge A-side / B-side

Z2	Shock suction
N2	Suction
P2	Shock
XX	Dummy
ZC	Shock suction for TWIN
NC	Suction for TWIN
PC	Shock for TWIN

Oring type

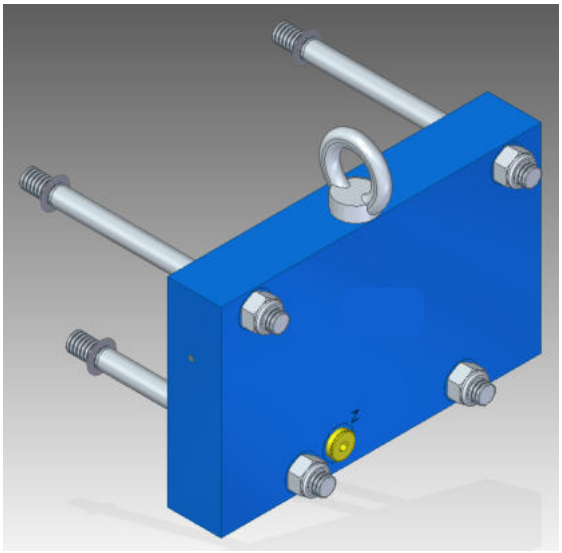
-	BUNA N
	Other oring types on request

Surface treatment

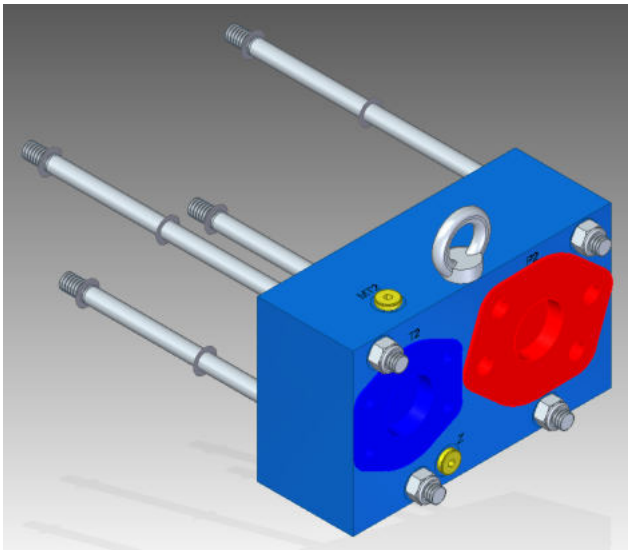
-	None (standard)
A	Protalloy, on request

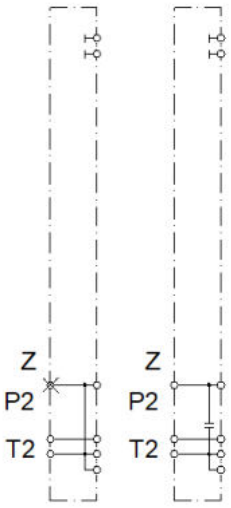
End plate

Basic end plate
The basic end plate has no additional ports.



End plate with additional P and T port
This end plate has additional P and T ports in 2” SAE flange.





End plate configuration codes

32	K	PT	-	A	2	-	-

Size

32	32

Build type

K	**Sandwich**

Plate version:

PT	End plate including P2 and T2
PX	End plate without P2 and T2, cover plate

Variants

Z	for LS signal from other valve
-	none

Port connections

A	**P&T 2" SAE Flange**
-	none

Tie rod kit:

01-06	With 1-6 control valve

Oring type

-	BUNA N
	Other oring types on request

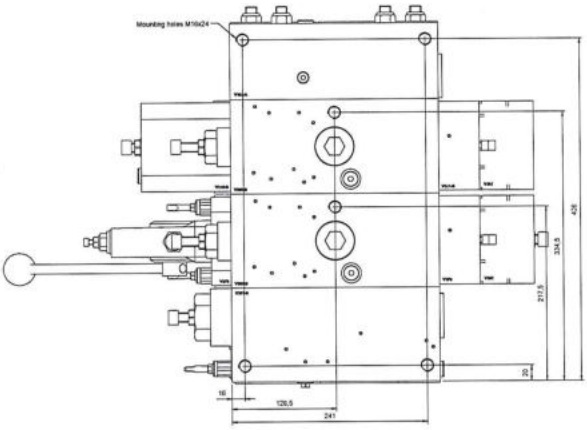
Surface treatment

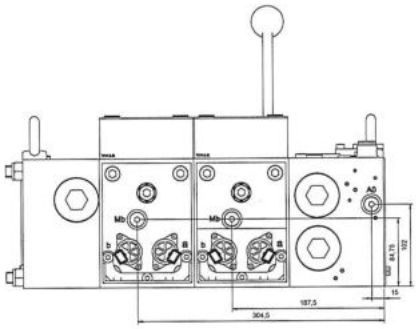
-	None (standard)
A	Protalloy, on request

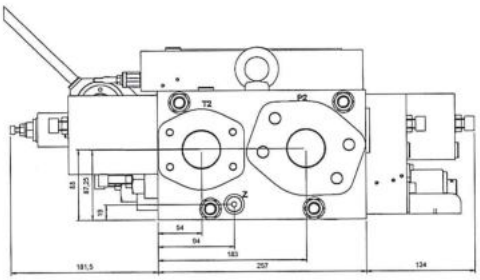
General dimensions (in mm)

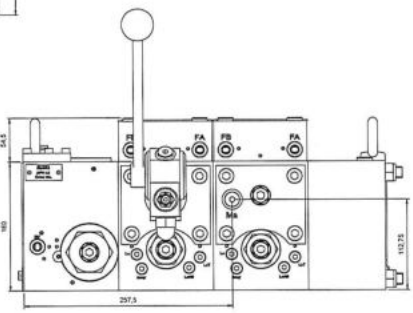
Port connections:

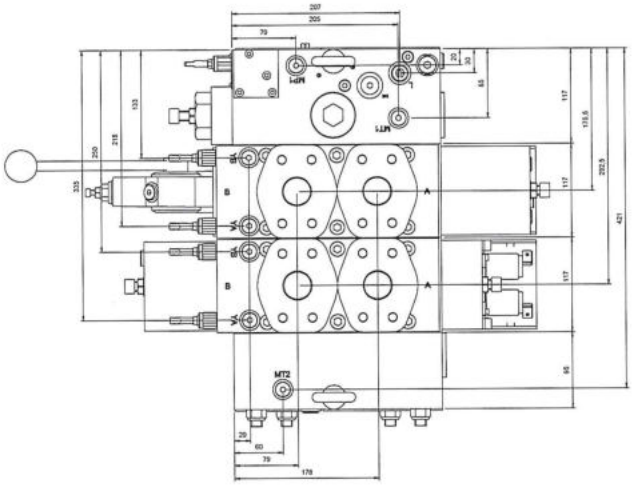
P1,P2:	2" SAE 6000 PSI
T1,T2:	2" SAE 3000 PSI
A,B:	1.1/2" SAE 6000 PSI
L:	G3/8" BSP
Ls:	G1/4" BSP
A0:	G1/4" BSP
Z:	G1/4" BSP
YA,YB:	G1/4" BSP
MP1:	G1/4" BSP
MT1,MT2:	G1/4" BSP
Ma,Mb:	G1/4" BSP

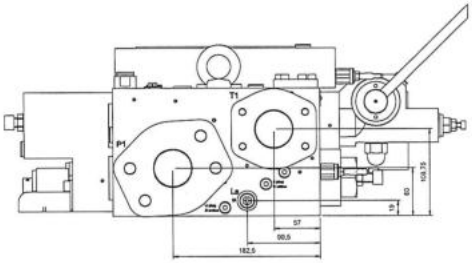












Electrical connections: AMP Junior power timer

Nominal current: 24 VDC = (6xx,in progress) mA

Nominal current: 12 VDC = (13xx,in progress) mA

HPV Hydraulic Proportional Valves

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