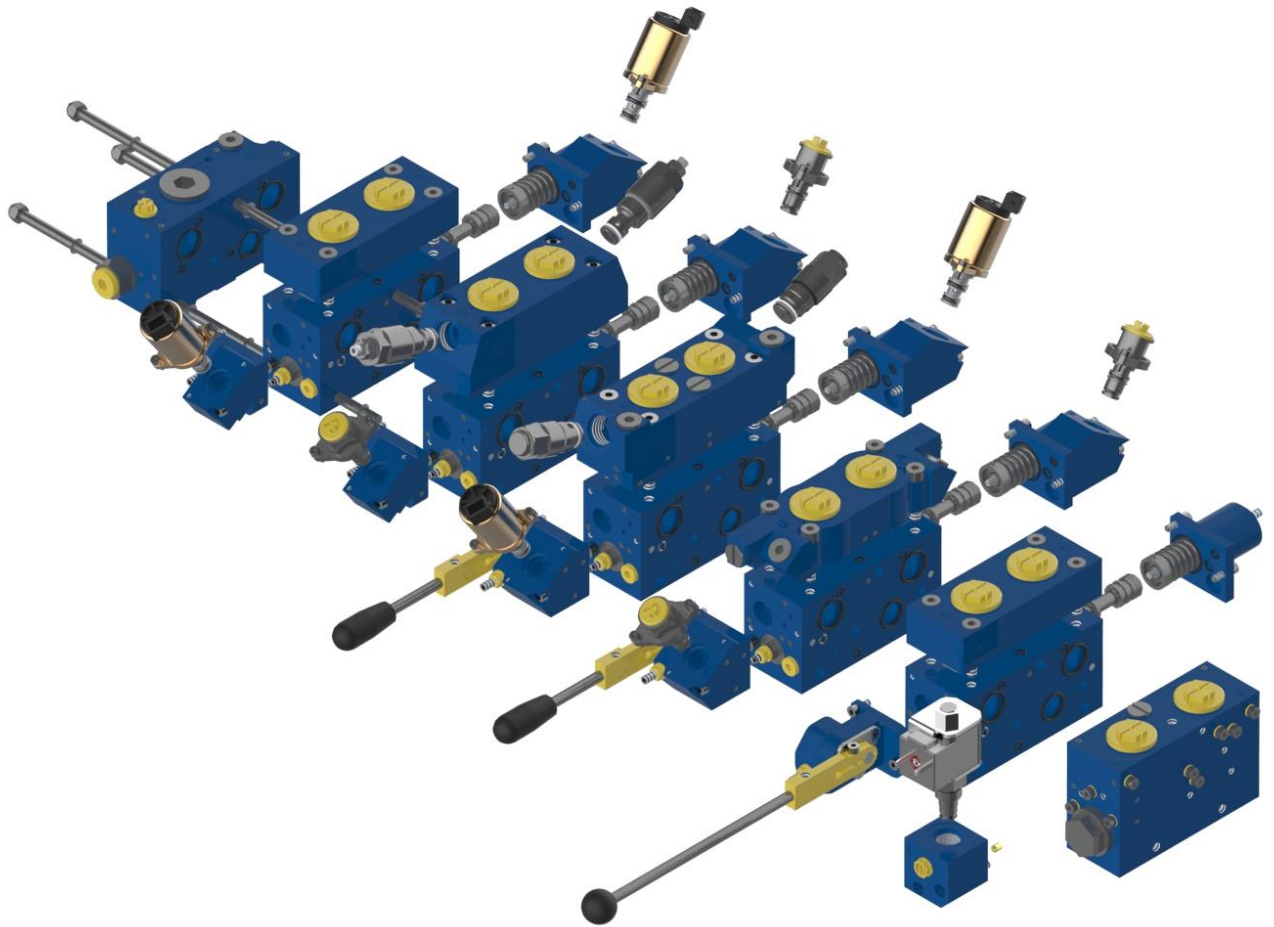


Build Program APV-16 SAE Thread



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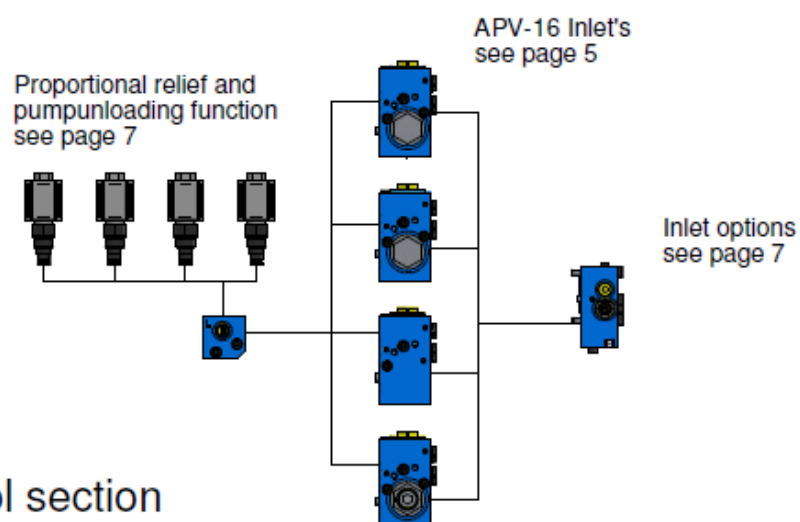
Main technical data

Max. flow:	Port P or P1	42 GPM.
	Port P + P1	67 GPM.
	Port A / B	32 GPM.
Max. pressure:	Port P / A / B	6091 PSI
	Port T	507 PSI
Pressure setting range		189-6091 PSI Manual operating 290-420 PSI Electrical operating
Pressure drop over 2-way compensator (A,B)		102 PSI
Internal pilot pressure supply		406 PSI
Pilot pressure for electric and hydraulic control		87-319 PSI
Spool stroke		0,207 inch
Spool overlap (dead band)		0,049 inch (24% 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		12" ORB
Port A,B		12" ORB
Port Ls		6" ORB
Port L		4" ORB
Port YA,YB		6" ORB
Electric connection		AMP Junior Power Timer / Deutsch
Nominal voltage		12 VDC or 24 VDC
Nominal current		12 VDC (1500 mA) 24 VDC (750 mA)
Coil resistance		12 VDC (4,72 ± 5% Ω) 24 VDC (20,8 ± 5% Ω)
Recommended dither frequency		100 Hz
Type of protection		IP 65
Duty cycle		100%
Hysteresis		3%

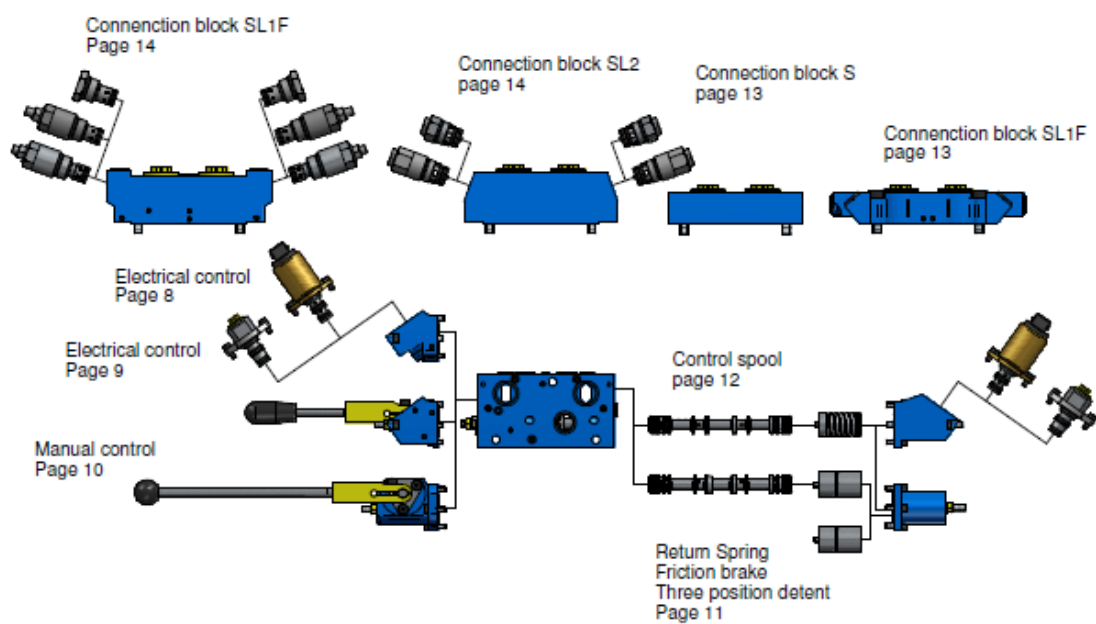


Modularity

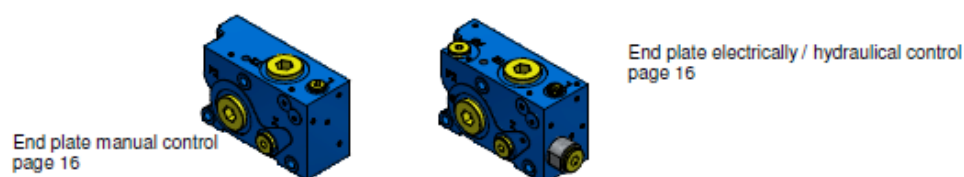
Inlet



Spool section



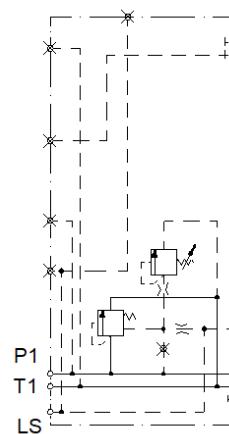
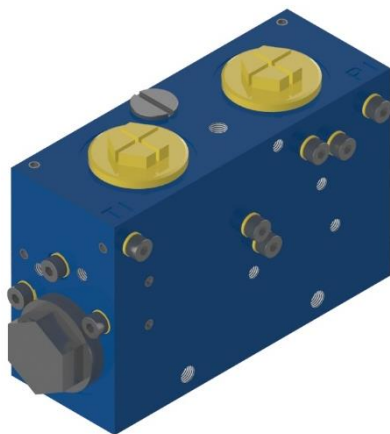
End plate



Inlet section

Fixed displacement pump

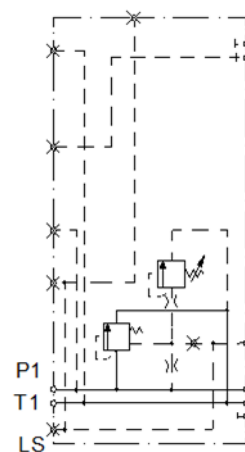
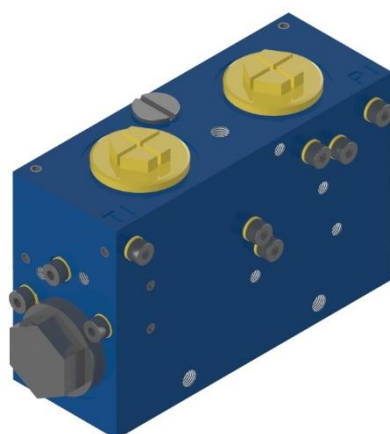
For fixed displacement pumps the “508U” is used. The inlet section is equipped a three-way compensator that also acts as a main relief in the pump line. The 508U can easily be converted to the 584S.



Part number	Description
AP-1611-584U	INLET 16K U 420S

Load sense pump

For load sense pumps the “584S” can be used. The inlet section is equipped with a pilot operated relief valve in the pump line. The 584S can easily be converted to the 584U.

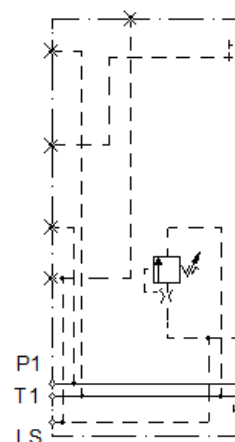
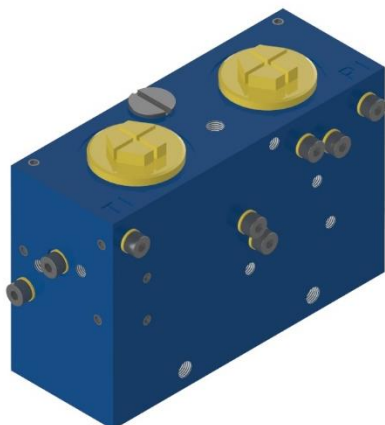


Part number	Description
AP-1611-584S	INLET 16K S 420S



Load sense pump or pressure compensated systems

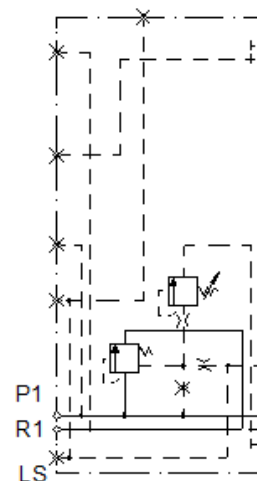
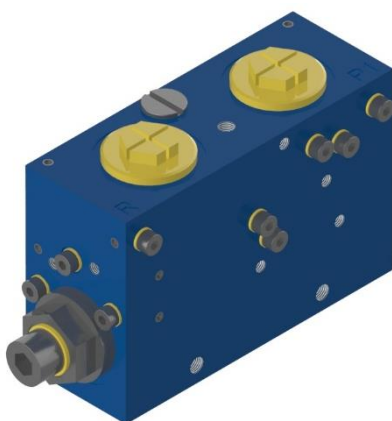
For load sense or pressure compensated pump systems the 584N can be used. This inlet section is equipped with only a relief valve in the main LS signal.



Part number	Description
AP-1611-584N	INLET 16K N 420S

Constant pump and serial connection or high pressure carry over

To feed a secondary circuit the inlet plate “584R” is available, to be used with a fixed displacement pump.



Part number	Description
AP-1611-584R	INLET 16K R 420S



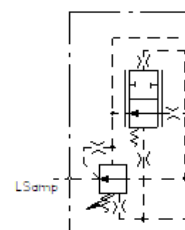
Inlet options

Anti-saturation and LS amplifier block

This block contains both functions.

The anti-saturation function can reduce the pilot pressure if the pump supplies less flow than the operated sections require. This results in a general speed decrease of all operated sections. So the user is still able to operate all functions at the same time.

The LS amplifier can add a maximum of 102 PSI to the LS signal going to the pump. this is done by feeding a small amount of pressure from the P line into the LS line.

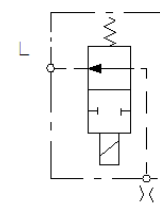
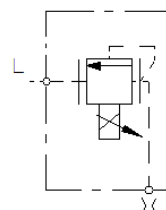
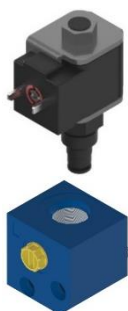


Part number	Description
AP-1610-305AL	FUNCTION AL. 16/22

Pump unloading and Proportional pressure control: D/E function

For the pump unloading function the load pressure signal from the control sections can be dumped directly to tank. The electrical control is available in 12 VDC and 24 VDC with 2/2-way cartridge in Normally open or normally closed configuration.

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



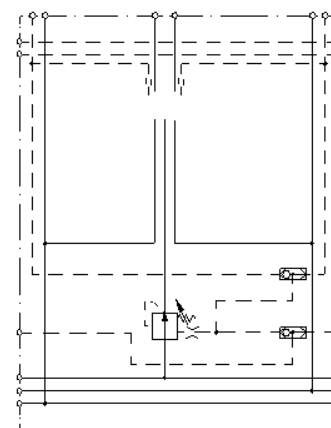
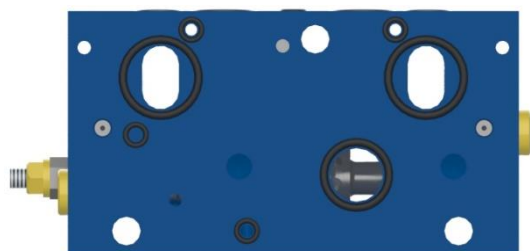
Part number	Description
AP-1610-330	D/E BLOCK
AP-1610-364D1	DUMPVALVE N.O. 12VDC-OA
AP-1610-364D2	DUMPVALVE N.C. 12VDC-CA
AP-1610-364D3	DUMPVALVE N.O. 24VDC-OB
AP-1610-364D4	DUMPVALVE N.C. 24VDC-CB
AP-1610-364E1	EL.PROP 12 VDC-EA
AP-1610-364E2	EL.PROP 24 VDC-EB



Spool section

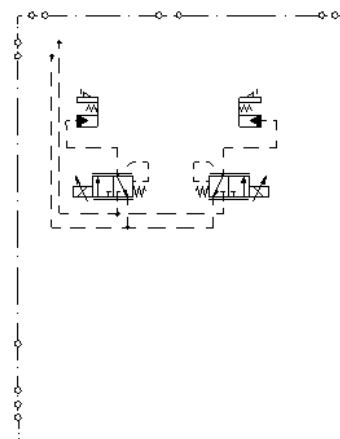
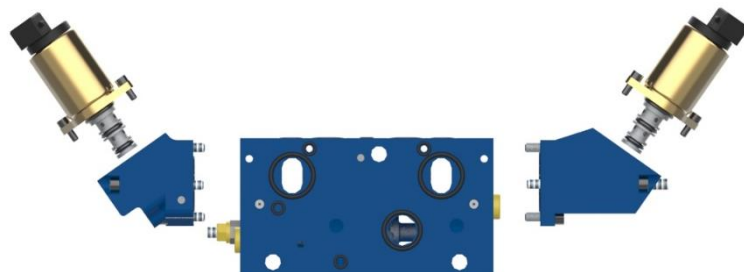
Basic spool section "315F"

The spool section is the base of the APV-16 control section, it contains the 2-way compensator with delta P adjustment, so the flow can be adjusted without using the stroke limitation. By mounting end- and spring caps the control method is configured.



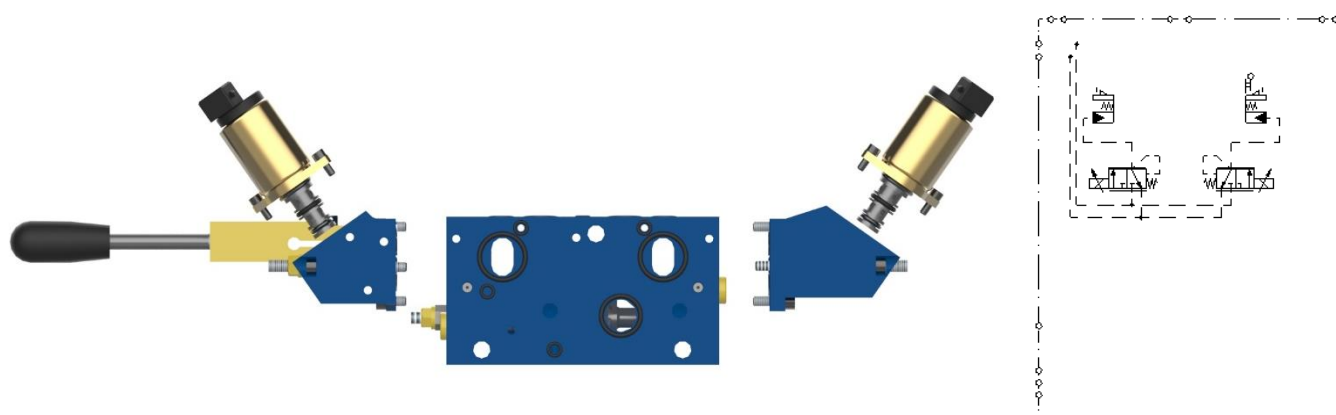
Part number	Description
AP-1620-315F	SPOOL SECTION 16KF-SS

Electric control



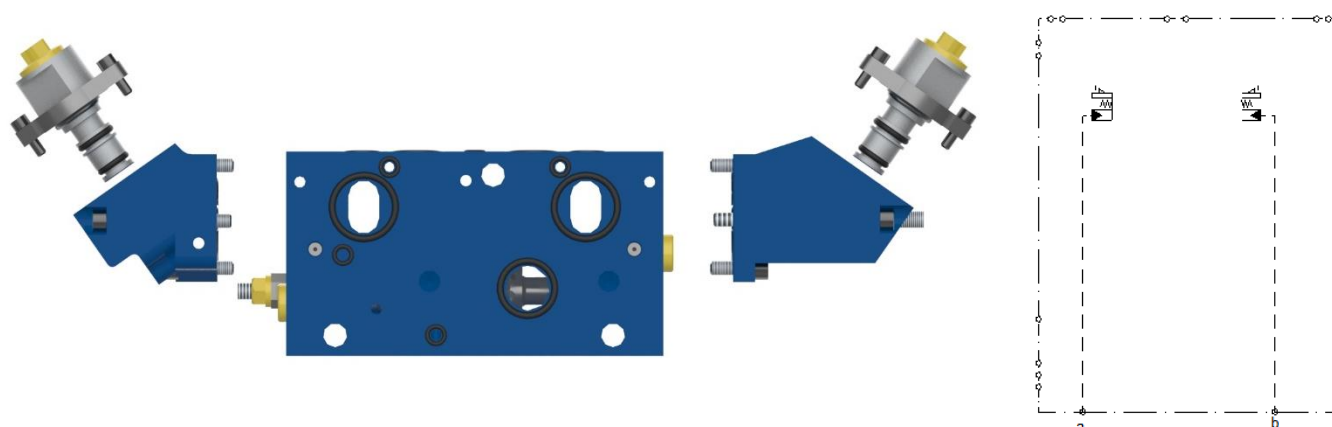
Part number	Description
AP-1620-312	END CAP 16 E/O
AP-1620-313	SPRING CAP 16 E/O
AP-1620-356A	SOLENOID 12VDC AMP - 20BAR
AP-1620-356AD	SOLENOID 12V DEUTSCH - 20BAR
AP-1620-356B	SOLENOID 24 VDC AMP - 20BAR
AP-1620-356BD	SOLENOID 24VDC DEUTSCH - 20BAR
AP-1620-356E	SOLENOID 12VDC+HN - 20bar
AP-1620-356F	SOLENOID 24VDC+HN - 20bar
AP-1620-356H	SOLENOID 24VDC II 2G Ex mb II

Electric control with emergency lever



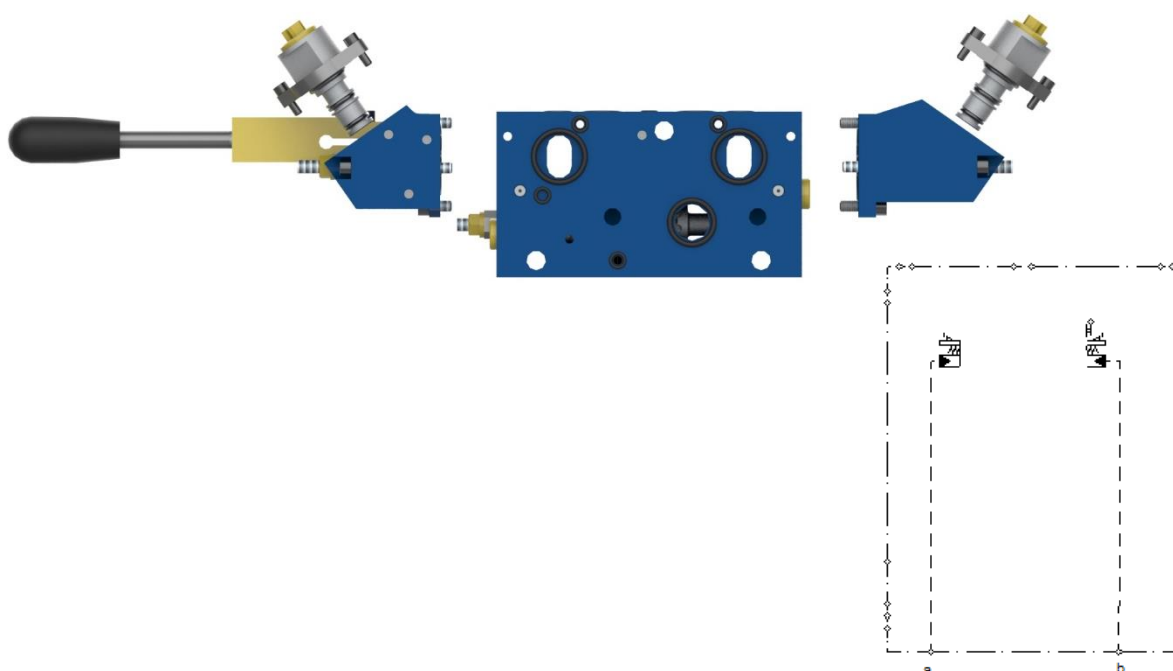
Part number	Description
AP-1620-317	EN CAP 16 E/O--M
AP-1620-313	SPRING CAP 16 E/O
AP-1620-356A	SOLENOID 12VDC AMP - 20BAR
AP-1620-356AD	SOLENOID 12V DEUTSCH - 20BAR
AP-1620-356B	SOLENOID 24 VDC AMP - 20BAR
AP-1620-356BD	SOLENOID 24VDC DEUTSCH - 20BAR
AP-1620-356E	SOLENOID 12VDC+HN - 20bar
AP-1620-356F	SOLENOID 24VDC+HN - 20bar
AP-1620-356H	SOLENOID 24VDC II 2G Ex mb II

Hydraulic control



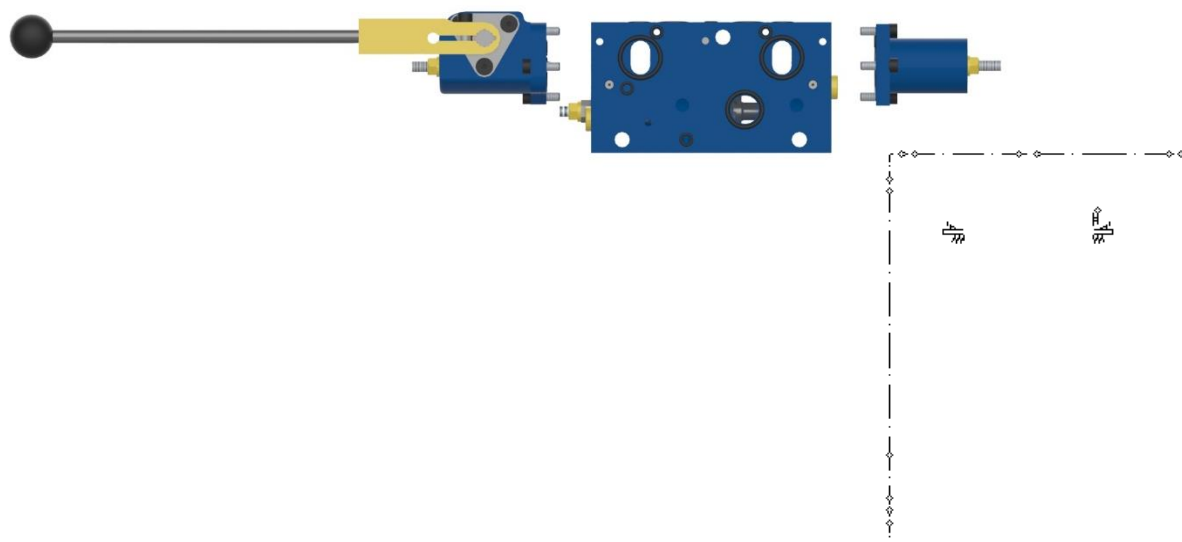
Part number	Description
AP-1620-312	END CAP 16 E/O
AP-1620-313	SPRING CAP 16 E/O
AP-1621-385O	CARTRIDGE 16/22 P

Hydraulic control with emergency lever



Part number	Description
AP-1620-317	END CAP 16 E/O--M
AP-1620-313	SPRING CAP
AP-1621-3850	CARTRIDGE 16/22 P

Manual control



Part number	Description
AP-1620-348	END CAP 16 H
AP-1620-347	SPRING CAP 16 H



Spring return electric, hydraulic control



Part number	Description
AP-1620S000E	SPRING ASSEMBLY 16 E

Spring return manual control



Part number	Description
AP-1620S000H	SPRING ASSEMBLY 16 H

Friction brake



Part number	Description
AP-1620S000HB	FRICTION BRAKE 16 HB

Three position Detent



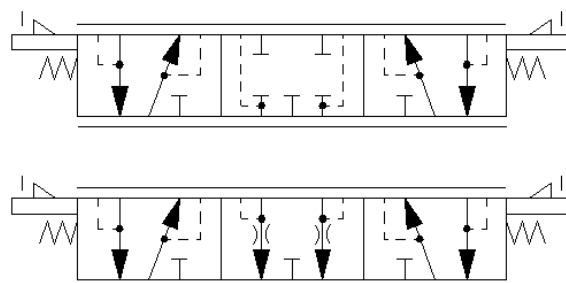
Part number	Description
AP-1620S000HR	DETENT 16 HR



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 0-100 GPM: AP-1620S102
 A spool 0-75 GPM: AP-1620S202
 A spool 0-50 GPM: AP-1620S302
 A spool 0-30 GPM: AP-1620S402
 A spool 0-10 GPM: AP-1620S902

C spool 0-100 GPM: AP-1620S152
 C spool 0-75 GPM: AP-1620S252
 C spool 0-50 GPM: AP-1620S352
 C spool 0-30 GPM: AP-1620S452
 C spool 0-10 GPM: AP-1620S952

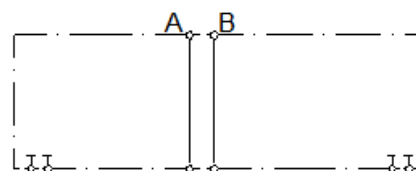
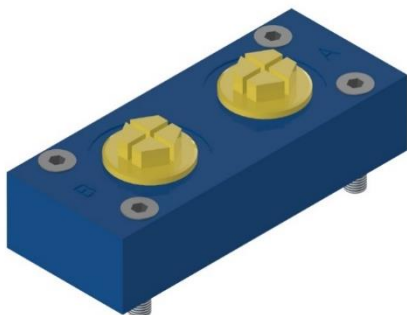
Part number	Description
AP-1620S152	SPOOL 16 A 102 120/120
AP-1620S202	SPOOL 16 C 152 120/120
AP-1620S252	SPOOL 16 A 202 75/75
AP-1620S302	SPOOL 16 C 252 75/75
AP-1620S352	SPOOL 16 A 302 50/50
AP-1620S402	SPOOL 16 C 352 50/50
AP-1620S452	SPOOL 16 A 402 30/30
AP-1620S502	SPOOL 16 C 452 30/30
AP-1620S552	SPOOL 16 A 502 120/60
AP-1620S602	SPOOL 16 C 525 120/60
AP-1620S652	SPOOL 16 A 602 75/38
AP-1620S702	SPOOL 16 C 625 75/38
AP-1620S752	SPOOL 16 A 702 50/30
AP-1620S902	SPOOL 16 C 752 50/30
AP-1620S952	SPOOL 16 A 902 10/10

Connection block

The connection block is the most flexible part of the APV range.

Basic connection block 'S'

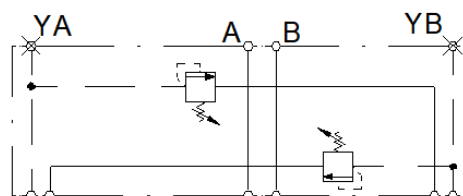
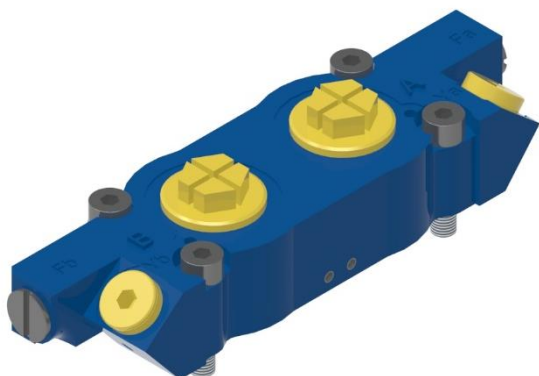
The "Basic" version with only A and B ports in 12" ORB.



Part number	Description
AP-1631-586	CON. BLOCK 16 S

Connection block 'BFYF'

Available with port connections in 12" ORB, includes Lsa and Lsb adjustments and 'Y' ports on both LS signals 6" ORB.

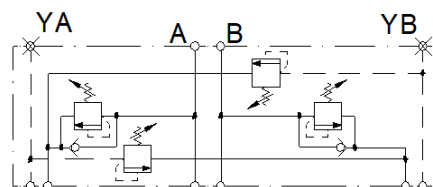


Part number	Description
AP-1630-587	CON. BLOCK 16 SFYF



Connection block 'SL1F'

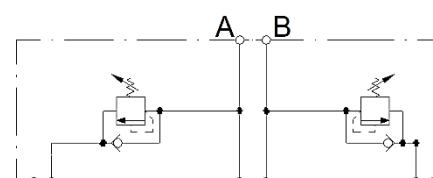
Available with port connections in 12" ORB, includes Lsa and Lsb adjustments and 'Y' ports on both LS signals 6" ORB. Additional this connection block holds shock and/or suction valves. Different pressure setting ranges are available AP-1630-302B: 508-2031 PSI, AP-1630-302G: 2031-6092 PSI and AP-1630-302V: 1015-3626 PSI, AP-1630-303: 1015-3626 PSI.



Part number	Description
AP-1633-388	CON. BLOCK SL1F
AP-1630-302B	SHOCK 16 P1
AP-1630-302V	SHOCK 16 P2
AP-1630-302G	SHOCK 16 P3
AP-1630-303	SHOCK 16 Z1
AP-1630-304	SUCTION 16 N1
AP-1630-349	CAVITY PLUG 16 XX Z/P/N

Connection block 'BL2'

Available with port connections in 12" ORB, this connection block holds shock and/or suction valves only. Pressure setting available AP-1630-303CZ: 725-5004 PSI



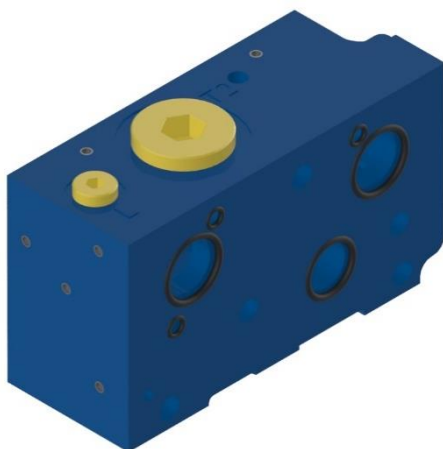
Part number	Description
AP-1631-388C	CON. BLOCK SL2
AP-1630-303CZ	SHOCK SUCTION 16 Z2
AP-1630-304CN	SUCTION 16 N2



End plates

Basic end plate

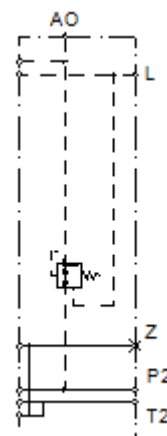
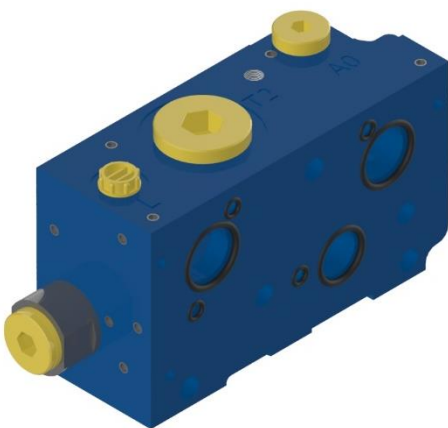
Available with port connections in 12" ORB.



Part Number	Description
AP-1641-589PH	END PLATE 16KPH-S

And plate for electric or hydraulic controlled valves

Available with port connections in 12" ORB.



Part Number	Description
AP-1641-589PJ	END PLATE 16KPJ-S



Tie rod kits

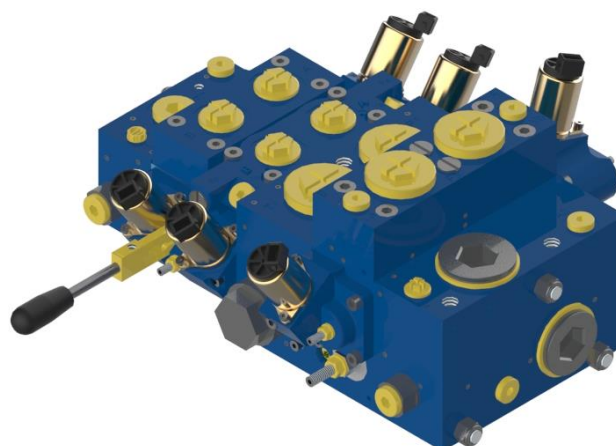
Tie rod kits are available to assemble a valve up to twelve sections



Part Number	Description
AP-1620-331K1	TIE ROD 1V
AP-1620-331K2	TIE ROD 2V
AP-1620-331K3	TIE ROD 3V
AP-1620-331K4	TIE ROD 4V
AP-1620-331K5	TIE ROD 5V
AP-1620-331K6	TIE ROD 6V
AP-1620-331K7	TIE ROD 7V
AP-1620-331K8	TIE ROD 8V
AP-1620-331K9	TIE ROD 9V
AP-1620-331K10	TIE ROD 10V
AP-1620-331K11	TIE ROD 11V
AP-1620-331K12	TIE ROD 12V



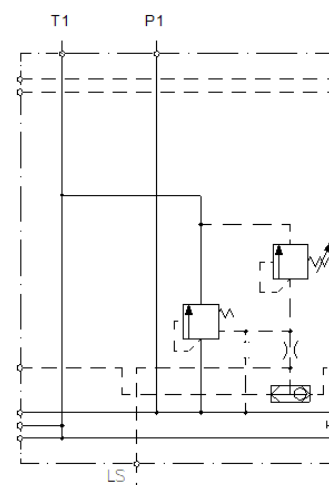
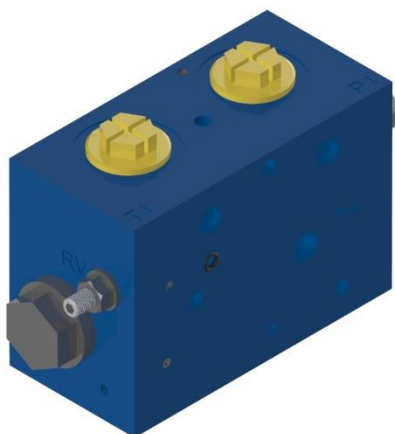
Combinations



APV-16 combined with the APV-10

The APV-16 can be combined with the APV-10. In this configuration a combi-inlet plate is used. Different combi-inlet plates are available for fixed displacement pumps, load sense pumps or constant pressure networks.

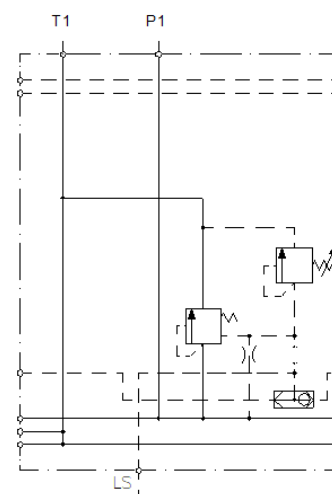
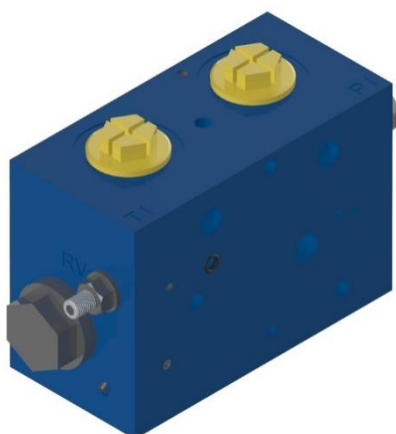
Fixed displacement pump



Part number	Description
AP-1611-555U	COMBI INLET 16/10KCU 420 S

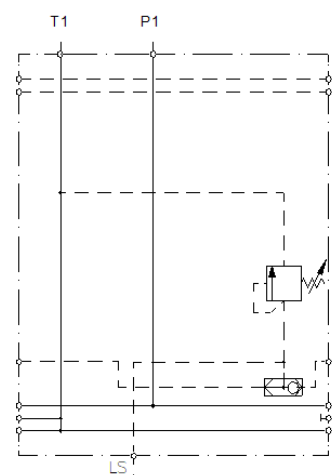
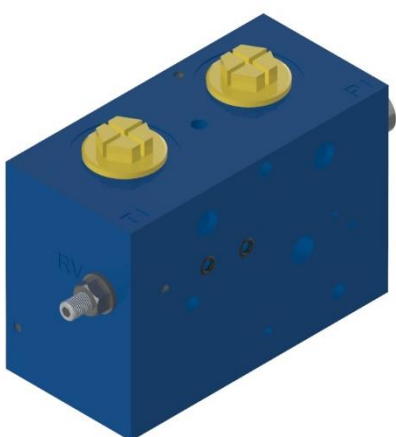


Load sense pump including relief valve in P



Part number	Description
AP-1611-555S	COMBI INLET 16/10KCS 420 S

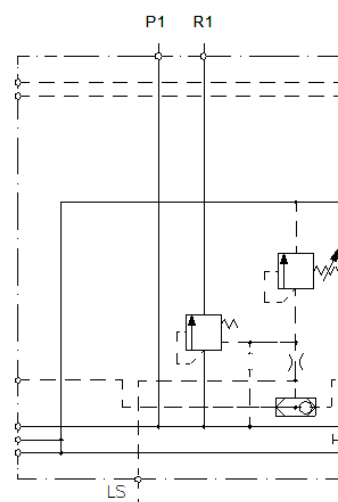
Load sense pump or pressure compensated systems



Part number	Description
AP-1611-555N	COMBI INLET 16/10KCN 420 S



Constant pump with serial connection or “high pressure carry-over”



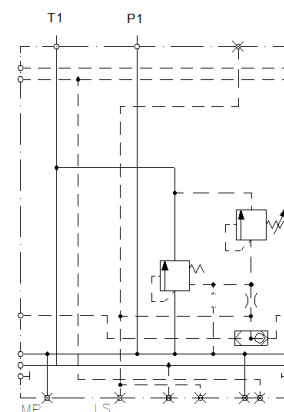
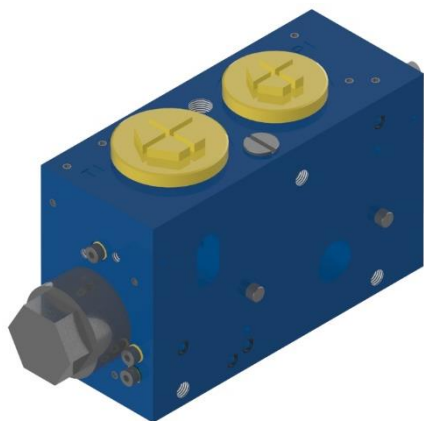
Part number	Description
AP-1611-555R	COMBI INLET 16/10KCR 420 B



APV-16 with APV-22

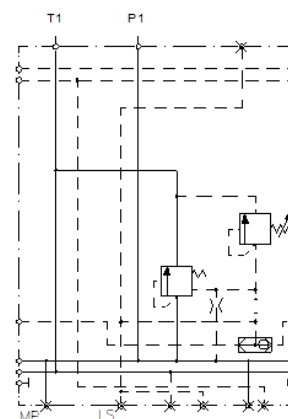
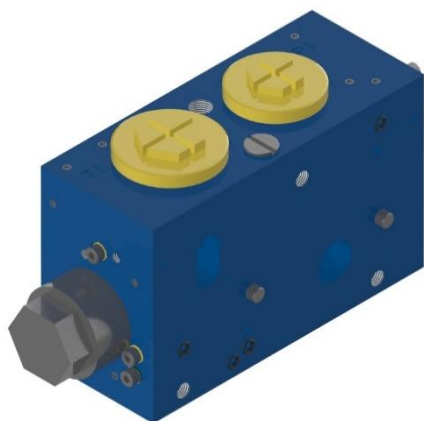
The APV-16 can also be combined with an APV-22, in this case a combination inlet section is needed. On one side of the section the APV-22 can be mounted, and on the opposite side the APV-16. The standard endplates for the APV-16 and APV-22 are needed. For this configuration several inlet plates are available.

Fixed displacement pump



Part number	Description
AP-2211-592U	COMBI INLET 22/16KCU 420 S

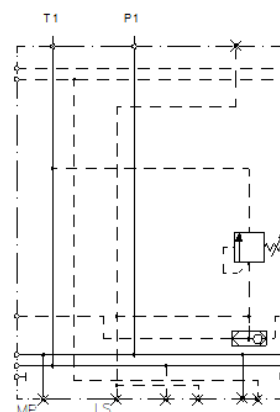
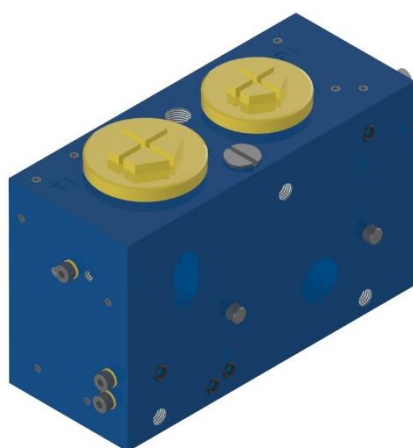
Load sense pump



Part number	Description
AP-2211-592S	COMBI INLET 22/16KCS 420 S

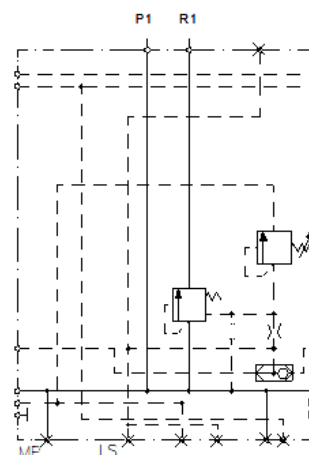
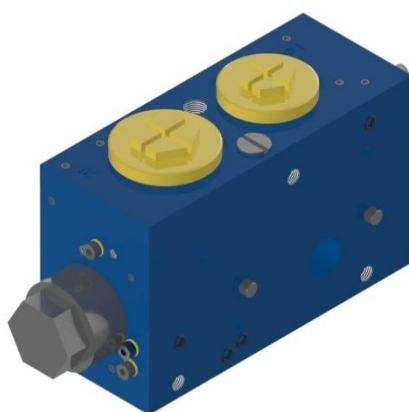


Load sense pump



Part number	Description
AP-2211-592N	COMBI INLET 22/16KCN 420 S

Constant pump with serial connection or “high pressure carry-over”



Part number	Description
AP-2211-592R	COMBI INLET 22/16KCR 420 S



Combi inlet options

Anti-saturation and LS amplifier block

This block contains both functions.

The anti-saturation function can reduce the pilot pressure if the pump supplies less flow than the operated sections require. This results in a general speed decrease of all operated sections. So the user is still able to operate all functions at the same time.

The LS amplifier can add a maximum of 7 bars to the LS signal going to the pump. this is done by feeding a small amount of pressure from the P line into the LS line

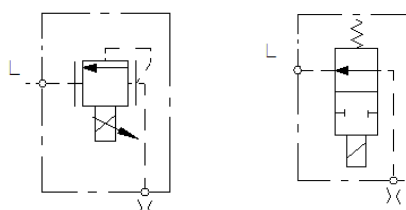
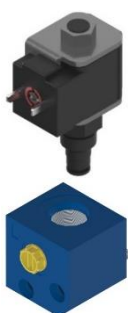


Part number	Description
AP-2210-358AL	COMBI FUNCTION 16/22 AL

Pump unloading and Proportional pressure control: D/E function

For the pump unloading function the load pressure signal from the control sections can be dumped directly to tank. The electrical control is available in 12 VDC and 24 VDC with 2/2-way cartridge in Normally open or normally closed configuration.

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

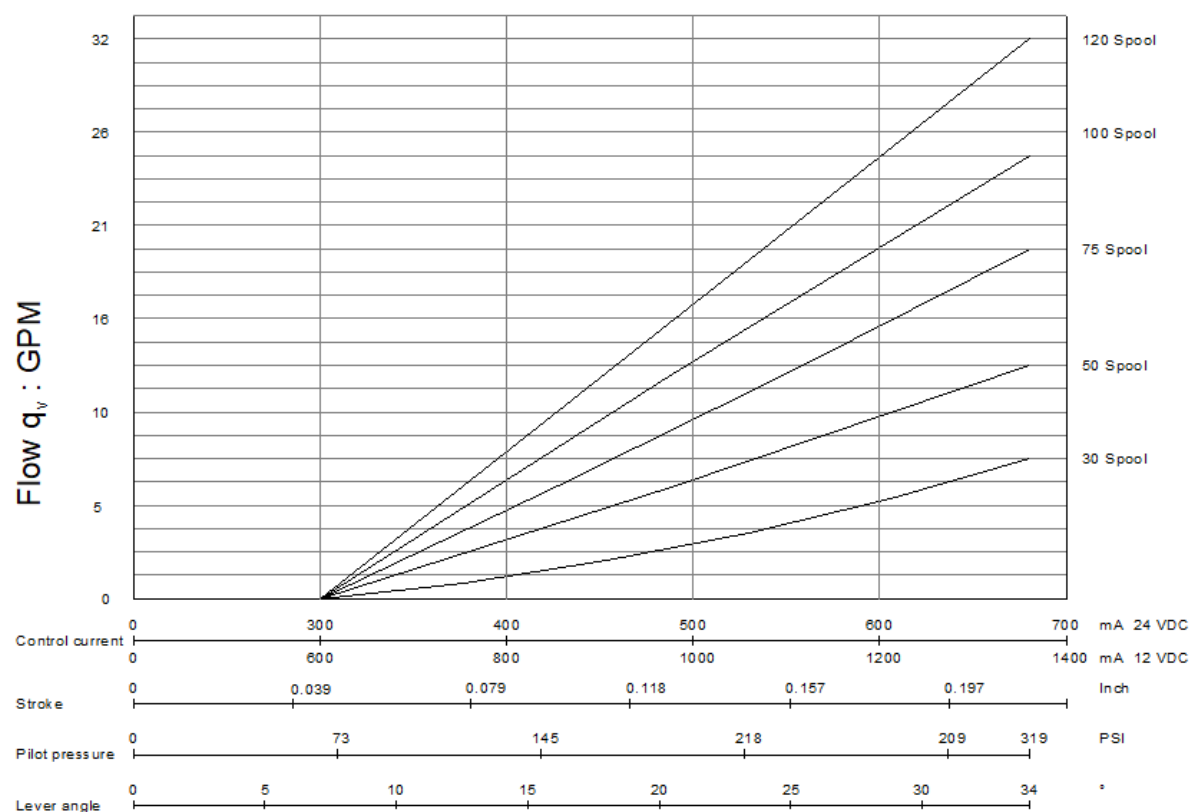


Part number	Description
AP-1610-330	D/E BLOCK
AP-1610-364D1	DUMPVALVE N.O. 12VDC-OA
AP-1610-364D2	DUMPVALVE N.C. 12VDC-CA
AP-1610-364D3	DUMPVALVE N.O. 24VDC-OB
AP-1610-364D4	DUMPVALVE N.C. 24VDC-CB
AP-1610-364E1	EL.PROP 12 VDC-EA
AP-1610-364E2	EL.PROP 24 VDC-EB

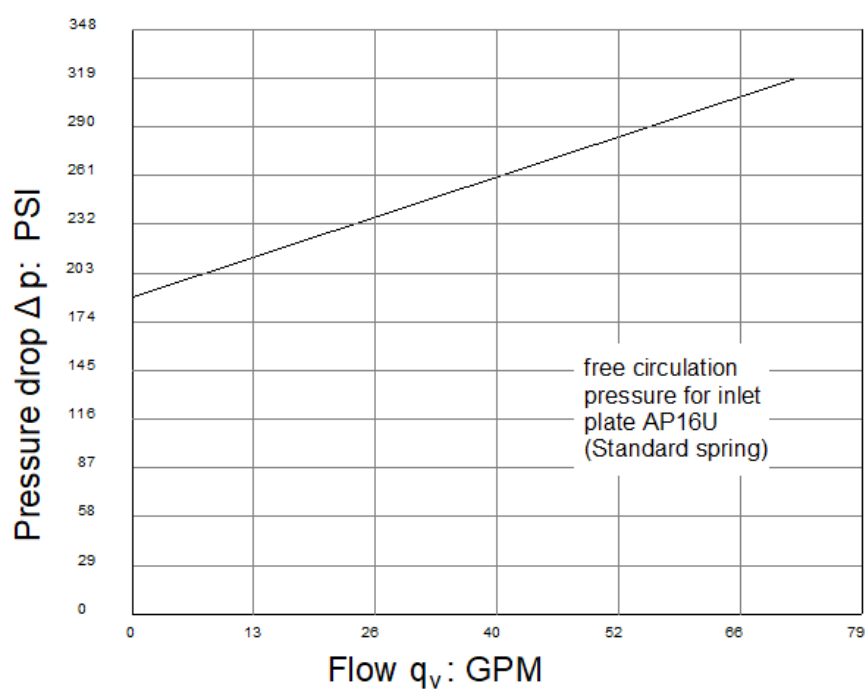


Performance

Flow P → A/B



Flow P → T2



Inlet	AP-1611-584U				AP-1611-584U				AP-1611-584U + AP-1610-001-017			
DP ADJUSTMENT:	AP-1620-001-042				AP-1620-001-039				AP-1620-001-040			
	MIN DP:	29 PSI	MAX dp:	44 PSI	MIN DP:	94 PSI	MAX dp:	145 PSI	MIN DP:	145 PSI	MAX dp:	174 PSI
	A-PORT	B-PORT	A-PORT	B-PORT	A-PORT	B-PORT	A-PORT	B-PORT	A-PORT	B-PORT	A-PORT	B-PORT
AP-1620S102	12	12	14	14	22	22	26	26	30	30	32	32
AP-1620S152	12	12	14	14	22	22	26	26	30	30	32	32
AP-1620S202	9	9	11	11	16	16	20	20	20	20	22	22
AP-1620S252	9	9	11	11	16	16	20	20	20	20	22	22
AP-1620S302	6	6	7	7	11	11	13	13	13	13	14	14
AP-1620S352	6	6	7	7	11	11	13	13	13	13	14	14
AP-1620S402	3	3	4	4	6	6	8	8	8	8	9	9
AP-1620S452	3	3	4	4	6	6	8	8	8	8	9	9
AP-1620S502	12	6	14	7	22	11	26	13	30	15	32	16
AP-1620S552	12	6	14	7	22	11	26	13	30	15	32	16
AP-1620S602	9	4	11	5	16	8	20	10	20	10	22	11
AP-1620S652	9	4	11	5	16	8	20	10	20	10	22	11
AP-1620S702	6	3	8	4	11	6	13	8	13	8	14	9
AP-1620S752	6	3	8	4	11	6	13	8	13	8	14	9
AP-1620S902	1	1	3	3	2	2	5	5	3	3	5	5
AP-1620S952	1	1	3	3	2	2	5	5	3	3	5	5
Inlet	AP-1611-584S				AP-1611-584S				AP-1611-584S			
DP ADJUSTMENT:	AP-1620-001-042				AP-1620-001-039				AP-1620-001-040			
	MIN DP:	29 PSI	MAX dp:	44 PSI	MIN DP:	94 PSI	MAX dp:	145 PSI	MIN DP:	145 PSI	MAX dp:	174 PSI
	A-PORT	B-PORT	A-PORT	B-PORT	A-PORT	B-PORT	A-PORT	B-PORT	A-PORT	B-PORT	A-PORT	B-PORT
AP-1620S102	12	12	14	14	22	22	26	26	30	30	32	32
AP-1620S152	12	12	14	14	22	22	26	26	30	30	32	32
AP-1620S202	9	9	11	11	16	16	20	20	20	20	22	22
AP-1620S252	9	9	11	11	16	16	20	20	20	20	22	22
AP-1620S302	6	6	7	7	11	11	13	13	13	13	14	14
AP-1620S352	6	6	7	7	11	11	13	13	13	13	14	14
AP-1620S402	3	3	4	4	6	6	8	8	8	8	9	9
AP-1620S452	3	3	4	4	6	6	8	8	8	8	9	9
AP-1620S502	12	6	14	7	22	11	26	13	30	15	32	16
AP-1620S552	12	6	14	7	22	11	26	13	30	15	32	16
AP-1620S602	9	4	11	5	16	8	20	10	20	10	22	11
AP-1620S652	9	4	11	5	16	8	20	10	20	10	22	11
AP-1620S702	6	3	8	4	11	6	13	8	13	8	14	9
AP-1620S752	6	3	8	4	11	6	13	8	13	8	14	9
AP-1620S902	1	1	3	3	2	2	5	5	3	3	5	5
AP-1620S952	1	1	3	3	2	2	5	5	3	3	5	5

