

piloted, subplate, conforming to PED Directive 2014/68/EU - certified by



AGAM can be equipped with a pilot solenoid valve for venting or for different pressure selection.

Max pressure: **420 bar**

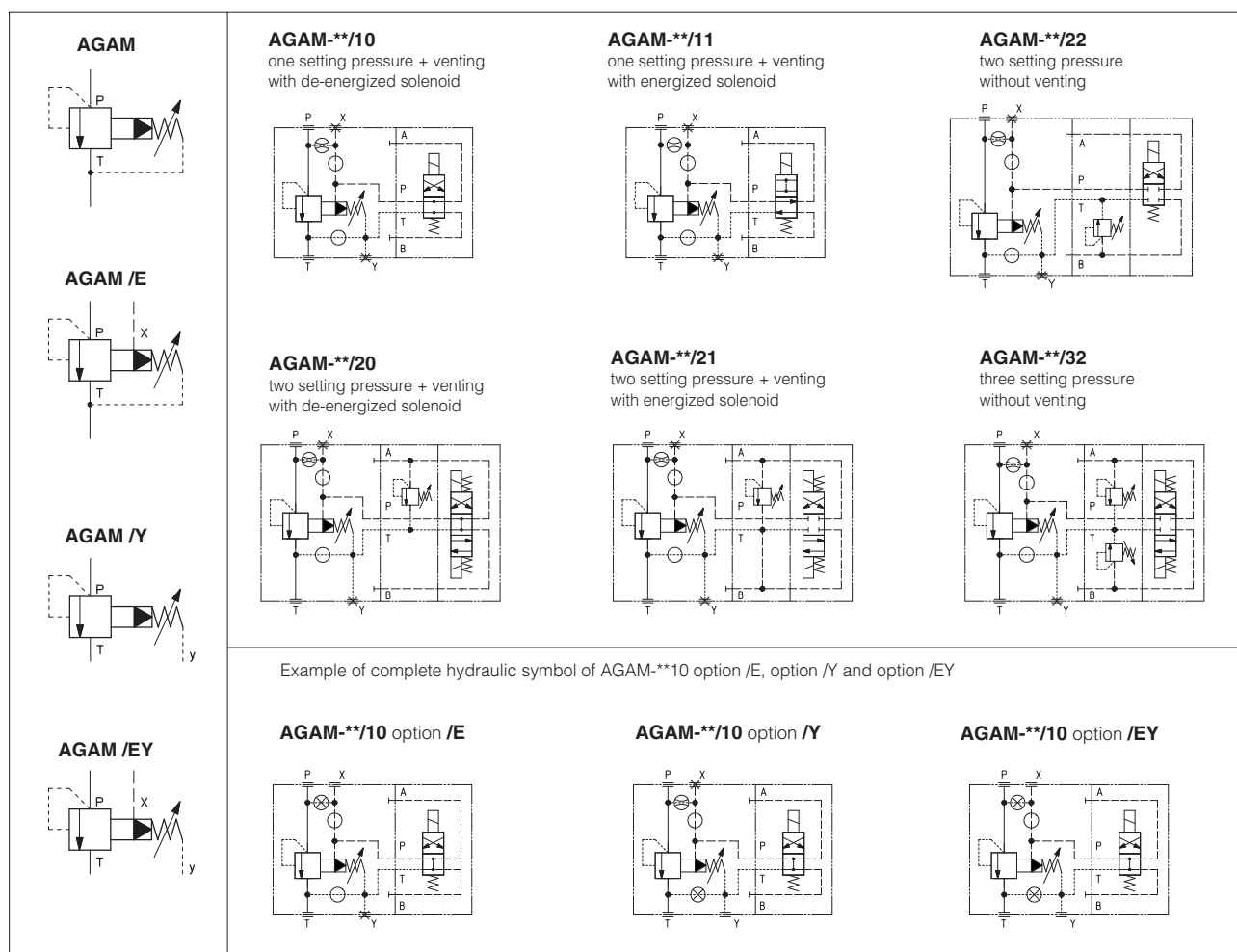
- ① main body
- ② poppet
- ③ pilot stage
- ④ plastic cap
- ⑤ lead sealing
- ⑥ nameplate with factory pressure setting
- ⑦ pilot solenoid valve for pressure selection

## 1 MODEL CODE

<b>AGAM</b>	-	<b>20</b>	/	<b>20</b>	/	<b>420</b>	/	<b>210/100</b>	/	<b>E</b>	/	<b>PED</b>	/	<b>280</b>	-	<b>EP</b>	<b>X</b>	<b>24DC</b>	*	/	*
<div>Piloted pressure relief valve, subplate</div>																		<div><b>Seals material</b>, see section <b>8</b>: - = NBR <b>PE</b> = FKM <b>BT</b> = HNBR</div>			
<div><b>Valve size</b> ISO 6264: <b>10 20 32</b></div>																		<div>Series number</div>			
<div><b>Configuration</b>, see section <b>2</b>: - = without pilot solenoid valve <b>10, 11</b>: with pilot solenoid valve for venting <b>20, 21, 22, 32</b>: with pilot solenoid valve for multiple pressure selection</div>																		<div><b>Voltage code</b>, see section <b>6</b> <b>(2)</b>:  <b>X</b> = without connector <b>(2)</b>: See section <b>7</b> for available connectors, to be ordered separately <b>-00-AC</b> = AC solenoid valve without coils <b>-00-DC</b> = DC solenoid valve without coils</div>			
<div><b>Max pressure</b>: <b>420</b> = 420 bar</div>																		<div><b>Pilot valve (2)</b>: <b>EP</b>= DHEP for AC and DC supply, high performances with <b>cURus</b> certified solenoids</div>			
<div><b>Factory pressure setting</b> (bar): to be defined by the customer min step 1 bar (example <b>280</b> = 280 bar) min pressure setting 30 bar</div>																					
<div><b>PED</b> = EU Type examination to 2014/68/EU - certified by DEKRA</div>																					
<div><b>Options</b>, see section <b>9</b>: <b>E WP Y</b></div>																					
<div><b>Pressure range of second / third setting (1)</b>: <b>50</b> = 50 bar      <b>100</b> = 100 bar <b>210</b> = 210 bar      <b>350</b> = 350 bar      <b>420</b> = 420 bar</div>																					

(2) Only for AGAM with pilot solenoid valve

## 2 CONFIGURATIONS AND HYDRAULIC SYMBOLS



## 3 GENERAL CHARACTERISTICS

Assembly position / location	Any position
MTTf values according to EN ISO 13849	75 years, for further details see technical table P007
Ambient temperature	Without pilot valve <b>Standard</b> = -30°C ÷ +80°C <b>/PE</b> option = -20°C ÷ +80°C <b>/BT</b> option = -40°C ÷ +70°C
	With pilot valve <b>Standard</b> = -30°C ÷ +70°C <b>/PE</b> option = -20°C ÷ +70°C <b>/BT</b> option = -40°C ÷ +70°C
Storage temperature range	Without pilot valve <b>Standard</b> = -30°C ÷ +80°C <b>/PE</b> option = -20°C ÷ +80°C <b>/BT</b> option = -40°C ÷ +70°C
	With pilot valve <b>Standard</b> = -30°C ÷ +70°C <b>/PE</b> option = -20°C ÷ +70°C <b>/BT</b> option = -40°C ÷ +70°C
Surface protection	Zinc coating with black passivation -salt spray test (EN ISO9227) > 200h
Compliance	PED Directive 2014/68/EU - EU type-examination certificate <b>(1)</b> RoHS Directive 2011/65/EU as last update by 2015/863/EU REACH Regulation (EC) n°1907/2006

**(1)** The type-examinator certificate can be download from [www.atos.com](http://www.atos.com)

## 4 HYDRAULIC CHARACTERISTICS

Valve model	AGAM-10	AGAM-20	AGAM-32
Max pressure on ports P, X [bar]	420		
Max pressure on ports T <b>(1)</b> [bar]	0 with internal drain 15 bar with external drain, option Y		
Max pressure on port Y [bar]	0		
Factory pressure setting range [bar]	25÷420		
Max flow [l/min]	200	400	600

**(1)** PED valves must be operated without counterpressure in T line to comply with permissible range in section **12**

A max counterpressure of 15 bar is allowed only with external drain configuration (option Y)

## 5 ELECTRICAL CHARACTERISTICS - for AGAM with pilot solenoid valve

Insulation class	<b>H</b> (180°C) for DC coils; <b>F</b> (155°C) for AC coils Due to the occurring surface temperatures of the solenoid coils, the European standards EN ISO 13732-1 and EN ISO 4413 must be taken into account
Protection degree to DIN EN 60529	<b>IP 65</b> (with connectors correctly assembled)
Relative duty factor	100%
Supply voltage and frequency	See section 6
Supply voltage tolerance	± 10%
Certification	<b>cURus</b> North American standard

## 6 COIL VOLTAGE - for AGAM with pilot solenoid valve

External supply nominal voltage ± 10%	Voltage code	Type of connector	Power consumption (2)	Code of spare coil	
12 DC	12 DC	666 or 667	30 W	COE-12DC	
14 DC	14 DC			COE-14DC	
24 DC	24 DC			COE-24DC	
28 DC	28 DC			COE-28DC	
48 DC	48 DC			COE-48DC	
110 DC	110 DC			COE-110DC	
125 DC	125 DC			COE-125DC	
220 DC	220 DC			COE-220DC	
110/50 AC	110/50/60 AC		58 VA (3)	COE-110/50/60AC	
115/60 AC	115/60 AC		80 VA (3)	COE-115/60AC	
230/50 AC	230/50/60 AC	669	58 VA (3)	COE-230/50/60AC	
230/60 AC	230/60 AC		80 VA (3)	COE-230/60AC	
110/50 AC	110RC		30 W	COE-110RC	
120/60 AC				COE-230RC	
230/50 AC	230RC				
230/60 AC					

(1) In case of 60 Hz voltage frequency the performances are reduced by 10÷15% and the power consumption is 58 VA

(2) Average values based on tests performed at nominal hydraulic condition and ambient/coil temperature of 20°C.

(3) When solenoid is energized, the inrush current is approx 3 times the holding current.

## 7 ELECTRIC CONNECTORS ACCORDING TO DIN 43650 - for AGAM with pilot solenoid valve

The connectors must be ordered separately.

Code of connector	Function
<b>666</b>	Connector IP-65, suitable for direct connection to electric supply source
<b>667</b>	As 666 connector IP-65 but with built-in signal led, suitable for direct connection to electric supply source

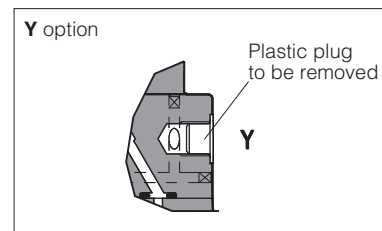
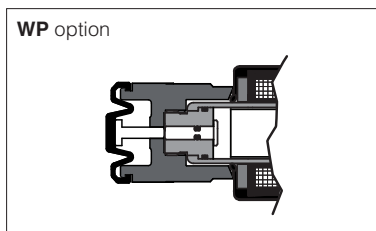
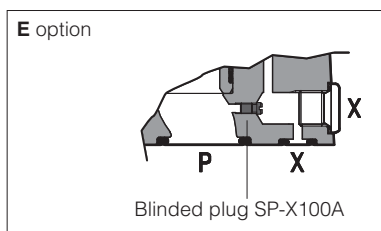
For other available connectors, see tech table K800

## 8 SEALS AND HYDRAULIC FLUIDS - for other fluids not included in below table, consult our technical office

Seals, recommended fluid temperature	NBR seals (standard) = -20°C ÷ +80°C, with HFC hydraulic fluids = -20°C ÷ +50°C FKM seals (/PE option) = -20°C ÷ +80°C HNBR seals (/BT option) = -40°C ÷ +60°C, with HFC hydraulic fluids = -40°C ÷ +50°C		
Recommended viscosity	15÷100 mm²/s - max allowed range 2,8 ÷ 500 mm²/s		
Max fluid contamination level	ISO 4406 class 20/18/15 NAS 1638 class 9, see also filter section <a href="http://www.atos.com">www.atos.com</a> or KTF catalog		
Hydraulic fluid	Suitable seals type	Classification	Ref. Standard
Mineral oils	NBR, FKM, HNBR	HL, HLP, HLPD, HVLP, HVLPD	DIN 51524
Flame resistant without water	FKM	HFDU, HFDR	ISO 12922
Flame resistant with water	NBR, HNBR	HFC	

## 9 OPTIONS

- E** = External pilot option to be selected when the pilot pressure is supplied from a different line respect to the P main line.  
With option E the internal connection between port P and X of the valve is plugged.  
The pilot pressure must be connected to the X port available on the valve's mounting surface or on main body (threaded pipe connection G 1/4").
- WP** = Prolonged manual override protected by rubber cap - only for AGAM with pilot solenoid valve
- Y** = External drain configuration to be selected in case of counterpressure in T line. Valves with option Y are supplied with the drain port G1/4" factory plugged with plastic plug



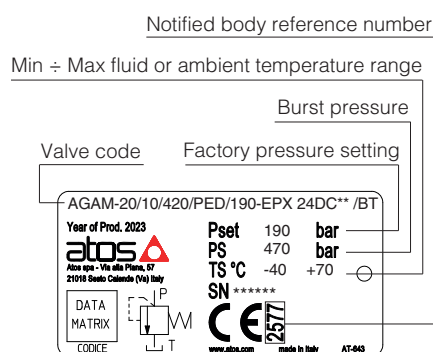
## 10 FACTORY PRESSURE SETTING

The /PED valves are factory set at the pressure level required by the customer (min step: 1bar). The factory pressure setting is performed at the flow shown in the following table. The factory pressure setting is marked on the valve nameplate, see section 11.

VALVE MODEL	FLOW FOR FACTORY PRESSURE SETTING (l/min)
AGAM-10	10
AGAM-20	25
AGAM-32	25

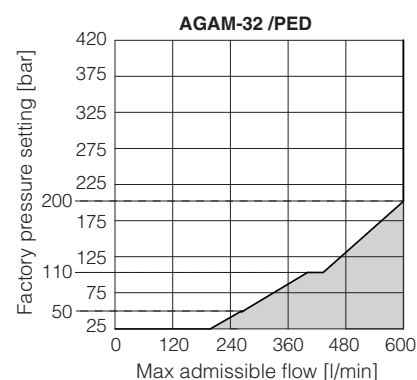
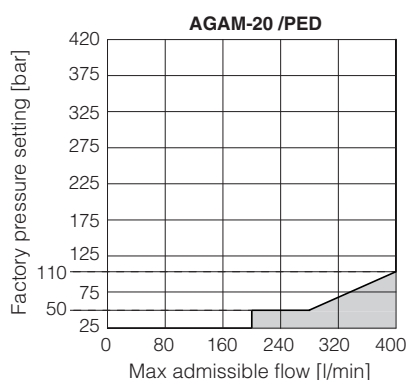
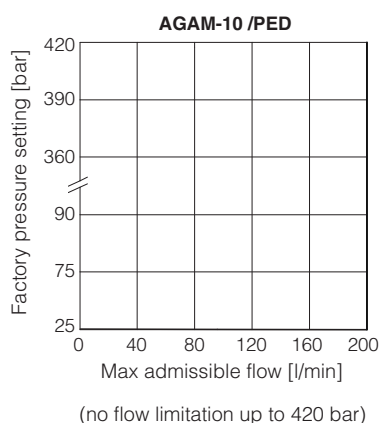
⚠ Any tampering of the lead sealing invalidates the certification

## 11 NAMEPLATE MARKING



Note: **TS** values are referred to the extreme temperatures, regardless of whether the fluid or the ambient

## 12 PERMISSIBLE RANGE - based on mineral oil ISO VG 46 at 50°C



### Notes:

- The valves can operate only in the white area of the above diagrams.  
The max admissible flow values within the white area are those for which the pressure increase remains within **+10% with respect to the factory pressure setting**.  
Pressure / flow values located in gray areas cannot be performed.  
⚠ Before ordering the valve, check that the maximum admissible flow at the required pressure setting, is greater than the maximum flow rate of the system or the accumulator to be protected.
- The permissible range in the above diagrams is valid only without counterpressure in T line.  
In case of counterpressure in T line (up to max 15 bar) the external drain configuration (option Y) is highly recommended.  
With internal drain (standard configuration), the max system pressure increases by the counter pressure value in the T line .  
To ensure that this increase in max system pressure does not exceed 10% of the valve's factory pressure setting, the admissible flow must be reduced dependent on the counter pressure value in the T line.

## ISO 6264: 2007

Mounting surface: 6264-06-09-1-97

Fastening bolts:

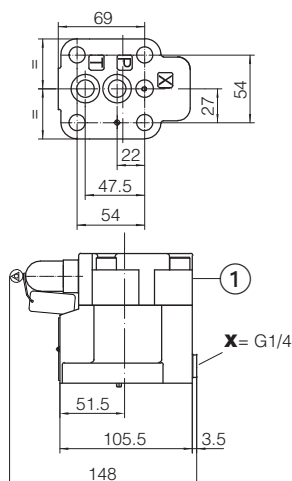
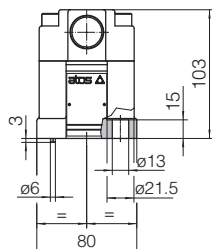
4 socket head screws M12x35 class 12.9

Tightening torque = 125 Nm

Seals: 2 OR 123; 1 OR 109/70

Ports P, T:  $\varnothing = 14,5 \text{ mm}$

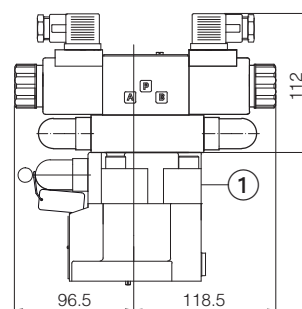
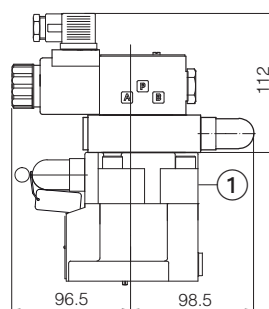
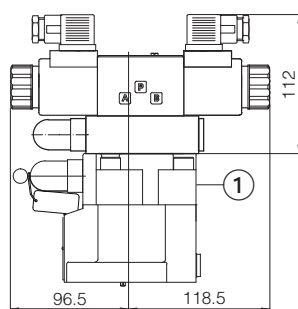
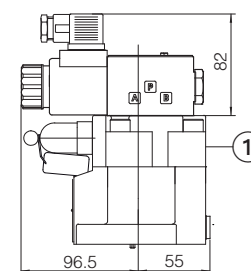
Ports X:  $\varnothing = 3,2 \text{ mm}$



Mass [kg]	
AGAM-10	3,6

	<b>Mass [kg]</b>
	with option EPX
AGAM-10/10	5,4
AGAM-10/11	
AGAM-10/20	6,2
AGAM-10/21	
AGAM-10/22	5,9
AGAM-10/32	6,3

① External drain, only for option Y  
Y port G1/4" factory plugged with plastic plug



AGAM-10/10/\*\*-EPX  
AGAM-10/11/\*\*-EPX

AGAM-10/20/\*\*-EPX  
AGAM-10/21/\*\*-EPX

AGAM-10/22/\*\*-EPX

AGAM-10/32/\*\*-EPX

Overall dimensions refer to valves **DC** voltage, with connectors type 666

**ISO 6264: 2007**

Mounting surface: 6264-08-13-1-97

Fastening bolts:

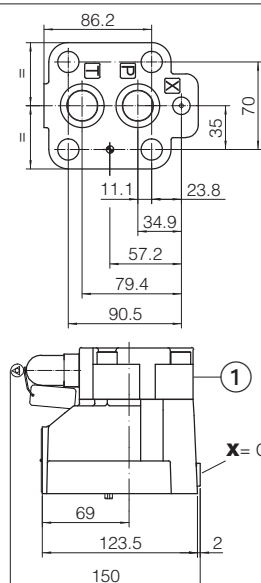
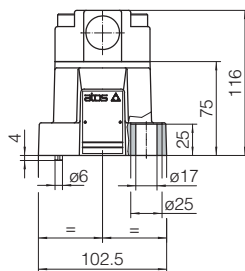
4 socket head screws M16x50 class 12.9

Tightening torque = 300 Nm

Seals: 2 OR 4112; 1 OR 109/70

Ports P, T:  $\varnothing = 24$  mm

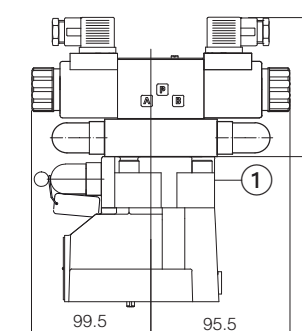
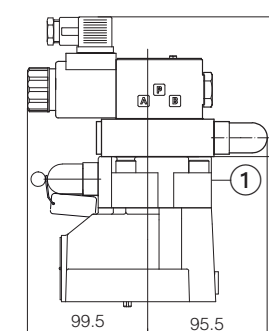
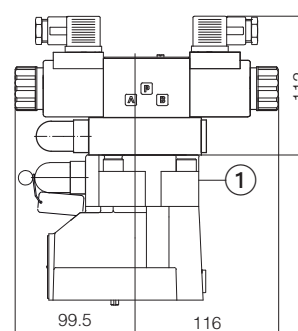
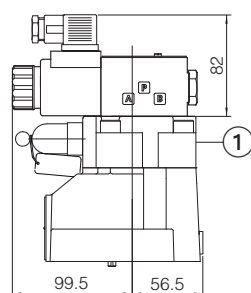
Ports X:  $\varnothing = 3,2 \text{ mm}$



Mass [kg]	
AGAM-20	4,8

	<b>Mass [kg]</b>
	with option EPX
AGAM-20/10	6,6
AGAM-20/11	
AGAM-20/20	7,7
AGAM-20/21	
AGAM-20/22	7,4
AGAM-20/32	7,8

① External drain, only for option Y  
Y port G1/4" factory plugged with plastic plug



AGAM-20/10/\*\*-EPX  
AGAM-20/11/\*\*-EPX

AGAM-20/20/\*\*-EPX  
AGAM-20/21/\*\*-EPX

AGAM-20/22/\*\*-EPX

AGAM-20/32/\*\*-EPX

Overall dimensions refer to valves **DC** voltage, with connectors type 666

Ports X:  $\varnothing = 3,2 \text{ mm}$

