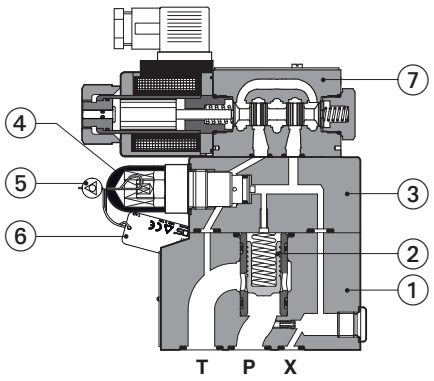
Safety pressure relief valves

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



AGAM-10/11/*/PED

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

AGAM /PED

Safety pressure relief valves, certified by DEKRA according to Pressure Equipment Directive 2014/68/EU (PED).

They are designed to operate as safety components, limiting the maximum system pressure or to protect parts of the hydraulic circuit and accumulators from overpressure.

The valves are factory set at the pressure level required by the costumer, see section 10.

The pressure adjustment screw is protected with a lead sealed plastic cap to avoid any tampering.

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

Size: **10, 20** and **32** - ISO 6264
Max flow: **200, 400** and **600 l/min**
Max pressure: **420 bar**

1 MODEL CODE

AGAM	-	20	/	20	/	420	/	210/100	/	E	/	PED	/	280	-	EP	X	24DC	*	/	*

Piloted pressure relief valve, subplate

Valve size ISO 6264:
10 **20** **32**

Configuration, see section 2 :
- = without pilot solenoid valve
10, 11:
with pilot solenoid valve for venting
20, 21, 22, 32:
with pilot solenoid valve for multiple pressure selection

Max pressure:
420 = 420 bar

Pressure range of second / third setting (1):
50 = 50 bar **100** = 100 bar
210 = 210 bar **350** = 350 bar **420** = 420 bar

Options, see section 9 :
E **WP** **Y**

PED = EU Type examination to 2014/68/EU - certified by DEKRA

Factory pressure setting (bar):
to be defined by the customer min step 1 bar
(example **280** = 280 bar)
min pressure setting 30 bar

Pilot valve (2):
EP= DHEP for AC and DC supply, high performances with **cURus** certified solenoids

X = without connector **(2)**:
See section 7 for available connectors, to be ordered separately
-00-AC = AC solenoid valve without coils
-00-DC = DC solenoid valve without coils

Voltage code, see section 6 **(2)**:

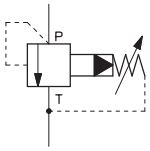
Series number

Seals material, see section 8:
- = NBR
PE = FKM
BT = HNBR

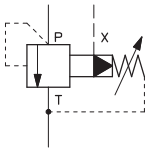
(1) Only for AGAM-* /20, /21, /22, /32; the set pressure cannot be higher than PED factory pressure setting
(2) Only for AGAM with pilot solenoid valve

2 CONFIGURATIONS AND HYDRAULIC SYMBOLS

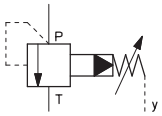
AGAM



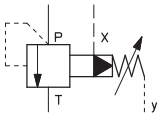
AGAM /E



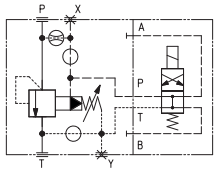
AGAM /Y



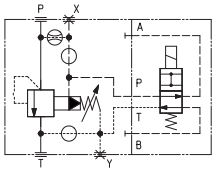
AGAM /EY



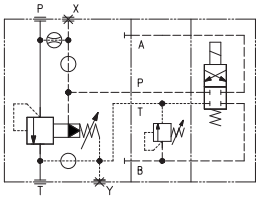
AGAM-/10**
one setting pressure + venting
with de-energized solenoid



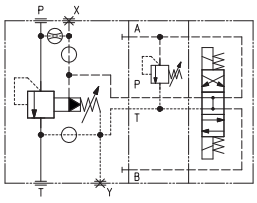
AGAM-/11**
one setting pressure + venting
with energized solenoid



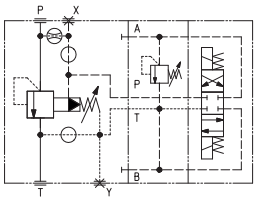
AGAM-/22**
two setting pressure
without venting



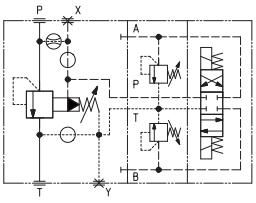
AGAM-/20**
two setting pressure + venting
with de-energized solenoid



AGAM-/21**
two setting pressure + venting
with energized solenoid

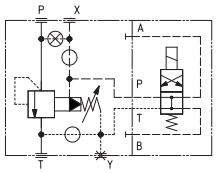


AGAM-/32**
three setting pressure
without venting

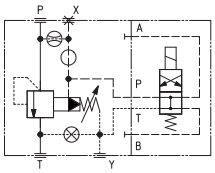


Example of complete hydraulic symbol of AGAM-**10 option /E, option /Y and option /EY

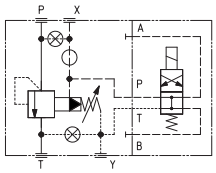
AGAM-/10** option **/E**



AGAM-/10** option **/Y**



AGAM-/10** option **/EY**



3 GENERAL CHARACTERISTICS

Assembly position / location		Any position
MTTFd values according to EN ISO 13849		75 years, for further details see technical table P007
Ambient temperature	Without pilot valve	**Standard** = -30°C ÷ +80°C **/PE** option = -20°C ÷ +80°C **/BT** option = -40°C ÷ +70°C
	With pilot valve	**Standard** = -30°C ÷ +70°C **/PE** option = -20°C ÷ +70°C **/BT** option = -40°C ÷ +70°C
Storage temperature range	Without pilot valve	**Standard** = -30°C ÷ +80°C **/PE** option = -20°C ÷ +80°C **/BT** option = -40°C ÷ +70°C
	With pilot valve	**Standard** = -30°C ÷ +70°C **/PE** option = -20°C ÷ +70°C **/BT** 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 **(1)** 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

4 HYDRAULIC CHARACTERISTICS

Valve model		**AGAM-10**	**AGAM-20**	**AGAM-32**
Max pressure on ports P, X	[bar]	420		
Max pressure on ports T **(1)**	[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 permessible 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	**H** (180°C) for DC coils; **F** (155°C) for AC coils Due to the occuring 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	**IP 65** (with connectors correctly assembled)
Relative duty factor	100%
Supply voltage and frequency	See section 6
Supply voltage tolerance	± 10%
Certification	**cURus** 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**		58 VA (3)	COE-230/50/60AC
230/60 AC	**230/60 AC**		80 VA (3)	COE-230/60AC
110/50 AC	**110RC**	669	30 W	COE-110RC
120/60 AC				
230/50 AC	**230RC**			COE-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
666	Connector IP-65, suitable for direct connection to electric supply source
667	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 www.atos.com 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	

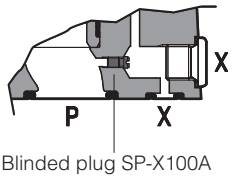
9 OPTIONS

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 ¼").

WP = Prolunged manual override protected by rubber cap - only for AGAM with pilot solenoid valve

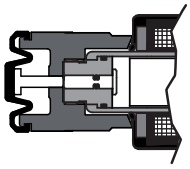
Y = External drain configuration to be selected in case of counterpressure in T line. Valves with option Y are supplied with the drain port G1/4" factory plugged with plastic plug

E option

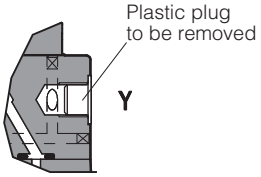


Blinded plug SP-X100A

WP option



Y option



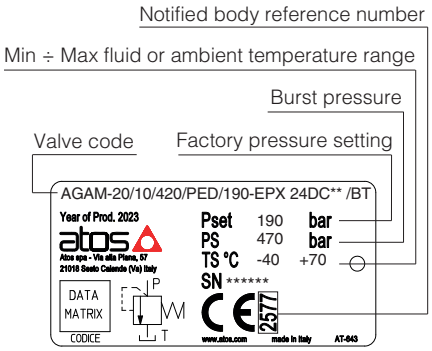
10 FACTORY PRESSURE SETTING

The /PED valves are factory set at the pressure level required by the costumer (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

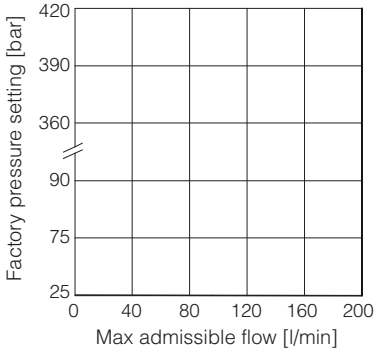
11 NAMEPLATE MARKING



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

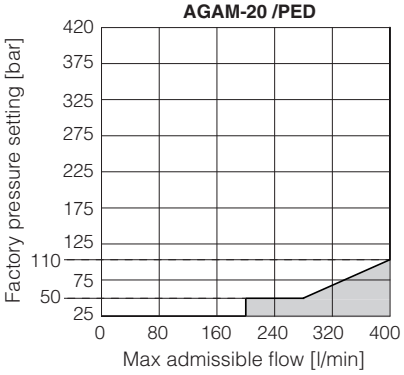
12 PERMISSIBLE RANGE - based on mineral oil ISO VG 46 at 50°C

AGAM-10 /PED

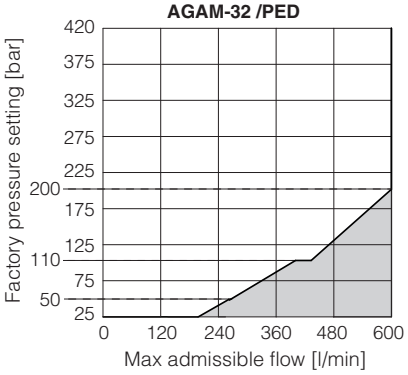


(no flow limitation up to 420 bar)

AGAM-20 /PED



AGAM-32 /PED



Notes:

1) 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.

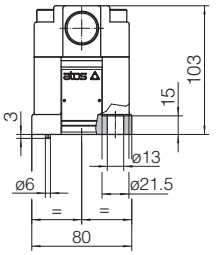
⚠ Before ordering the valve, check that the maximum admissible flow at the required pressure setting, is greater than the maximum flow rate of the system or the accumulator to be protected.

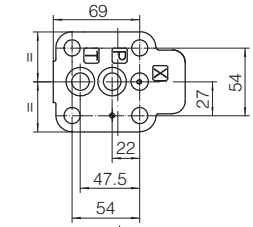
2) The permissible range in the above diagrams is valid only without counterpressure in T line.
In case of counterpressure in T line (up to max 15 bar) the external drain configuration (option Y) is highly recommended.
With internal drain (standard configuration), the max system pressure increases by 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.

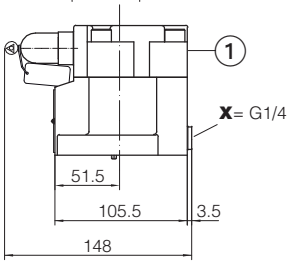
13 INSTALLATION DIMENSIONS [mm]

AGAM-10

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: Ø = 14,5 mm
Ports X: Ø = 3,2 mm



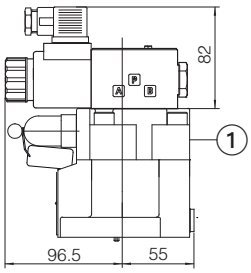




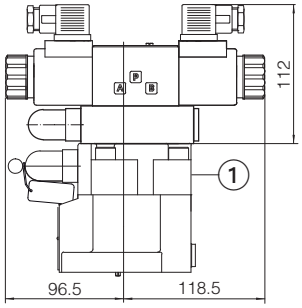
	Mass [kg]
AGAM-10	3,6

	Mass [kg]
	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

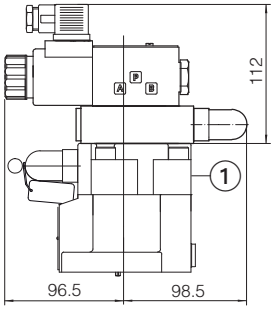
(1) External drain, only for option Y
Y port G1/4" factory plugged with plastic plug



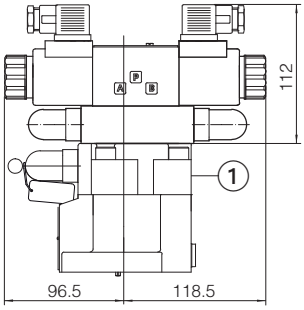
AGAM-10/10/-EPX**
AGAM-10/11/-EPX**



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



AGAM-10/22/-EPX**

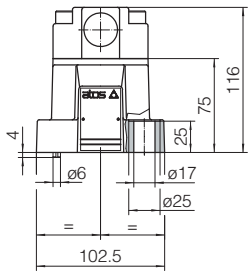


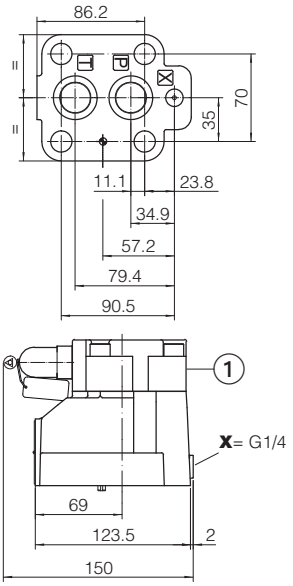
AGAM-10/32/-EPX**

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

AGAM-20

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: Ø = 24 mm
Ports X: Ø = 3,2 mm

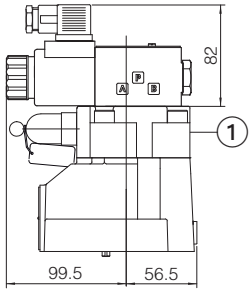




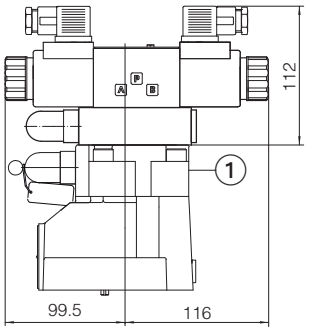
	Mass [kg]
AGAM-20	4,8

	Mass [kg]
	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

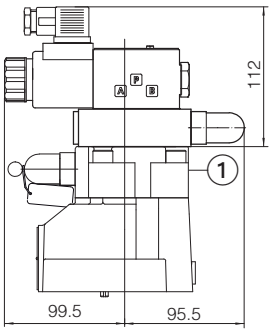
(1) External drain, only for option Y
Y port G1/4" factory plugged with plastic plug



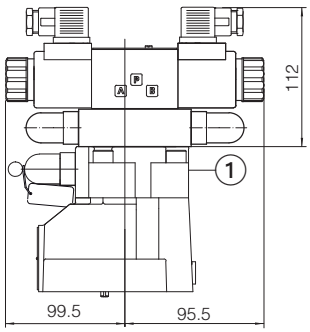
AGAM-20/10/-EPX**
AGAM-20/11/-EPX**



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



AGAM-20/22/-EPX**

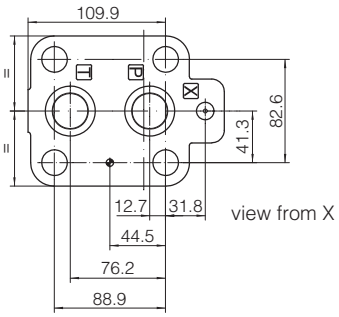


AGAM-20/32/-EPX**

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

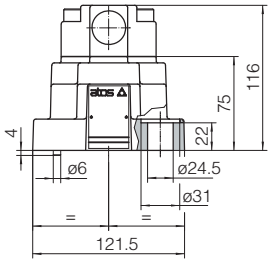
AGAM-32

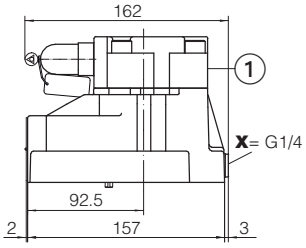
ISO 6264: 2007
Mounting surface: 6264-10-17-1-97
(with M20 fixing holes instead of standard M18)
Fastening bolts:
4 socket head screws M20x60 class 12.9
Tightening torque = 600 Nm
Seals: 2 OR 4131; 1 OR 109/70
Ports P, T: Ø = 28,5 mm
Ports X: Ø = 3,2 mm



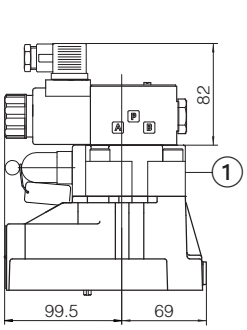
	Mass [kg]
AGAM-32	6.2

	Mass [kg]
	with option EPX
AGAM-32/10	8
AGAM-32/11	
AGAM-32/20	8,1
AGAM-32/21	
AGAM-32/22	8,8
AGAM-32/32	9,5

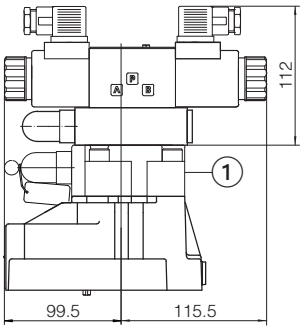




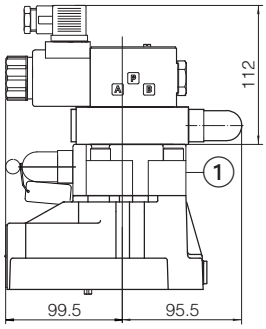
(1) External drain, only for option Y
Y port G1/4" factory plugged with plastic plug



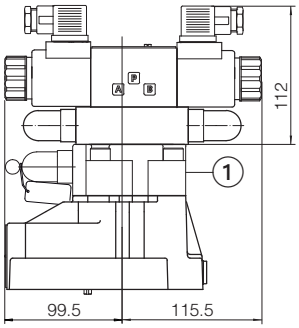
AGAM-32/10/-EPX**
AGAM-32/11/-EPX**



AGAM-32/20/-EPX**
AGAM-32/21/-EPX**



AGAM-32/22/-EPX**



AGAM-32/32/-EPX**

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

14 MOUNTING SUBPLATES - see table K280

Valve	Subplate model	Port location	Ports			Ø Counterbore [mm]			Mass [Kg]
			P	T	X	P	T	X	
AGAM-10	BA-306	Ports P, T, X underneath;	G 1/2"	G 3/4"	G 1/4"	30	36,5	21,5	1,5
AGAM-20	BA-406		G 3/4"	G 3/4"	G 1/4"	36,5	36,5	21,5	3,5
	BA-506		G 1"	G 1"	G 1/4"	46	46	21,5	3,5
AGAM-32	BA-706		G 1 1/2"	G 1 1/2"	G 1/4"	63,5	63,5	21,5	6

15 RELATED DOCUMENTATION

CY900	Operating and maintenance information for PED certified valves