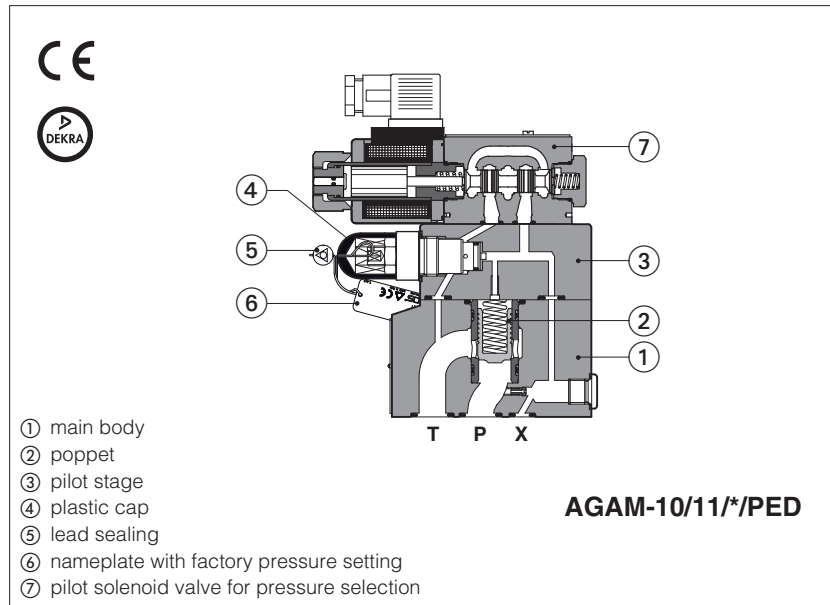


Safety pressure relief valves

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



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 customer, 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.

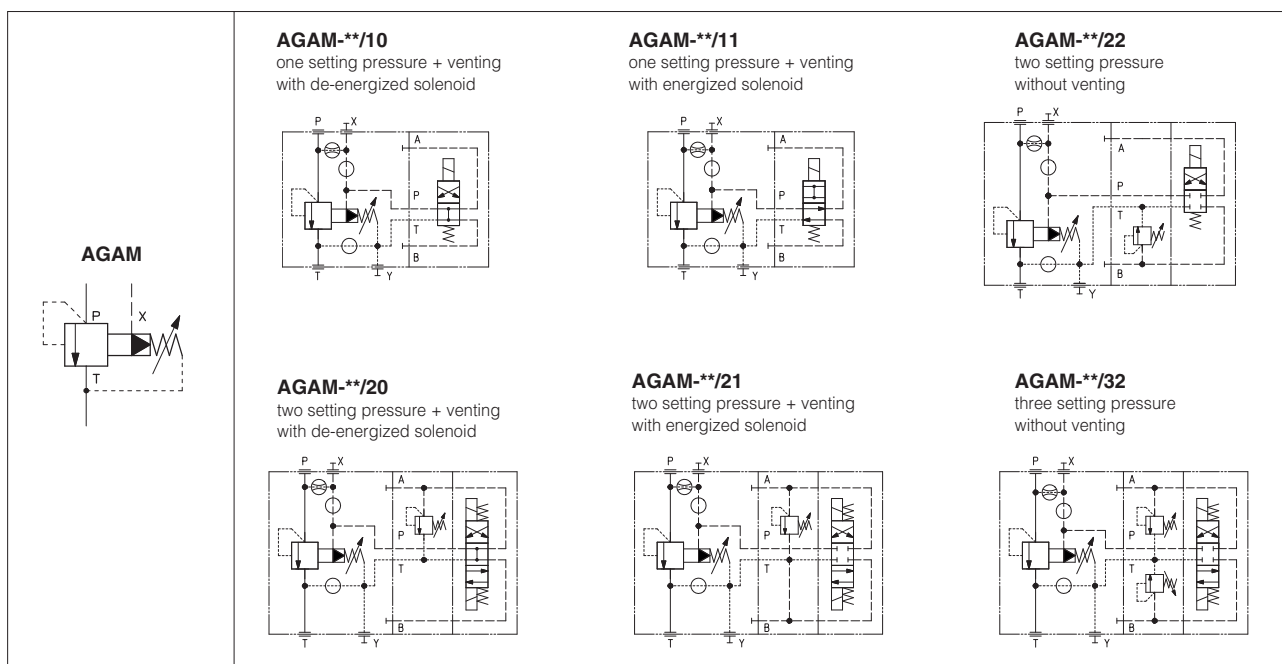
Size: **10, 20** and **32** - ISO 6264
Max flow: **200, 400** and **600 l/min**
Max pressure: **350 bar**

1 MODEL CODE

AGAM	-	20	/	20	/	350	/	210/100	/	E	/	PED	/	280	-	E	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: 350 = 350 bar																					
Pressure range of second / third setting (1): 50 = 50 bar 100 = 100 bar 210 = 210 bar 350 = 350 bar																					
																			Seals material , see section 8 : - = NBR PE = FKM Series number		
																			Voltage code , see section 6 (2): 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		
																			Pilot valve (2): E = DHE for AC and DC supply, high performances with cURus certified solenoids		
																			Factory pressure setting (bar): to be defined by the customer min step 1 bar (example 280 = 280 bar) min pressure setting 30 bar		
																			PED = EU Type examination to 2014/68/EU - certified by DEKRA		
																			Options , see section 9 : E WP Y		

(1) Only for AGAM-* /20, /21, /22, /32
(2) Only for AGAM with pilot solenoid valve

2 CONFIGURATIONS AND HYDRAULIC SYMBOLS



3 GENERAL CHARACTERISTICS

Assembly position / location	Any position
Subplate surface finishing to ISO 4401	Acceptable roughness index, Ra ≤0,8 recommended Ra 0,4 - flatness ratio 0,01/100
MTTFd values according to EN ISO 13849	75 years, for further details see technical table P007
Ambient temperature	Standard = -20°C ÷ +70°C / PE option = -20°C ÷ +70°C
Storage temperature range	Standard = -20°C ÷ +80°C / PE option = -20°C ÷ +80°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 2015/65/EU REACH Regulation (EC) n°1907/2006

(1) The type-examination 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]	350		
Max pressure on ports T, Y (1) [bar]	210 without pilot solenoid valve 210 with pilot solenoid valve -E with DC solenoid 160 with pilot solenoid valve -E with AC solenoid		
Factory pressure setting range [bar]	30÷350		
Max flow (2) [l/min]	200	400	600

(1) The valves should be operated without counterpressure on T line, see note 2 at section **12**

(2) Max flow without conterpressure on T line, see diagrams at section **12** for max ammissible flow

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				230RC	COE-230RC
230/50 AC					
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		
Recommended viscosity	15÷100 mm ² /s - max allowed range 2,8 ÷ 500 mm ² /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	HL, HLP, HLPD, HVLP, HVLPD	DIN 51524
Flame resistant without water	FKM	HFDU, HFDR	ISO 12922
Flame resistant with water	NBR	HFC	

9 OPTIONS

E = external pilot


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

Y = external drain - only for AGAM with pilot solenoid valve

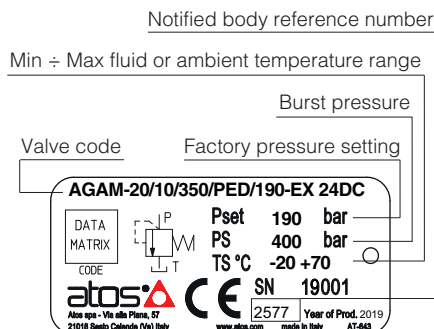
10 FACTORY PRESSURE SETTING

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	25
AGAM-20	25
AGAM-32	25

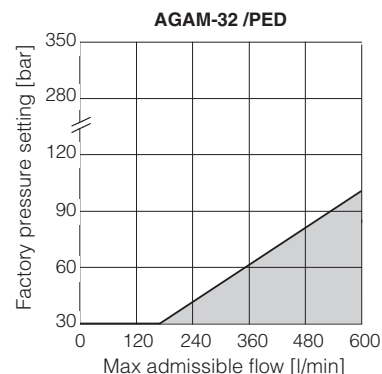
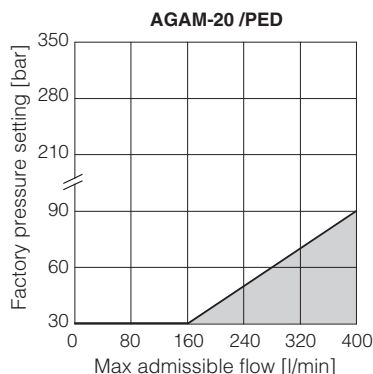
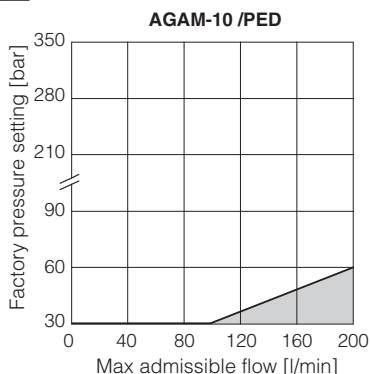
 Any tampering of the lead sealing invalidates the certification

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:

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 working range in above diagrams is valid without counterpressure in T line. The factory pressure setting is increased by the counterpressure valve in T line. As general rule PED valves should be operated without counter pressure in the T line. In case of counter pressure in T line, the maximum admissible flow has to be reduced with respect to the values reported in the diagram, so as not to exceed the limit of +10% with respect to the factory pressure setting. Contact Atos technical office for details.

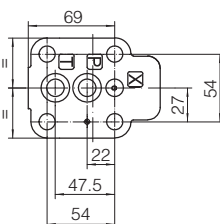
13 INSTALLATION DIMENSIONS [mm]

AGAM-10

ISO 6264: 2007

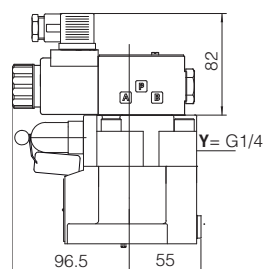
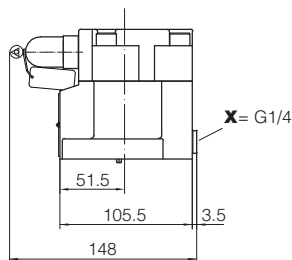
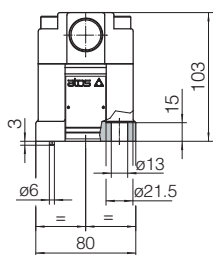
Mounting surface: 6264-06-09-1-97

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

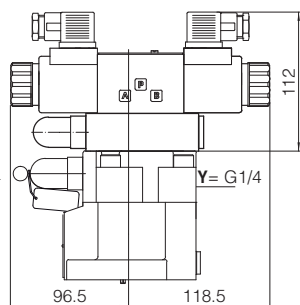


Mass [kg]	
AGAM-10	3,6

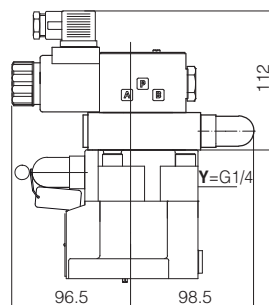
Mass [kg]	
with option EX	
AGAM-10/10	5,4
AGAM-10/11	
AGAM-10/20	6,2
AGAM-10/21	
AGAM-10/22	5,9
AGAM-10/32	6,3



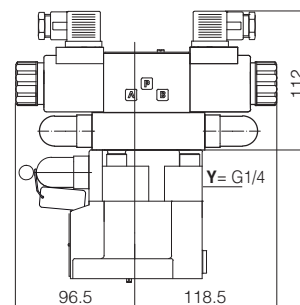
AGAM-10/10/-EX
AGAM-10/11/**-EX**



AGAM-10/20/-EX
AGAM-10/21/**-EX**



AGAM-10/22/-EX**



AGAM-10/32/-EX**

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

AGAM-20

ISO 6264: 2007

Mounting surface: 6264-08-11-1-97

Fastening bolts:

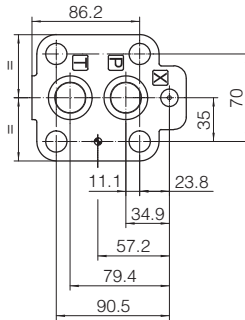
4 socket head screws M16x50 class 12.9

Tightening torque = 300 Nm

Seals: 2 OR 4112; 1 OR 109/70

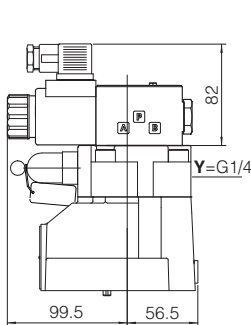
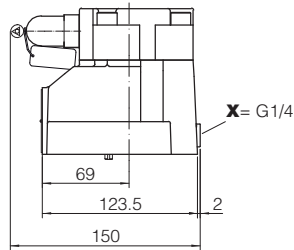
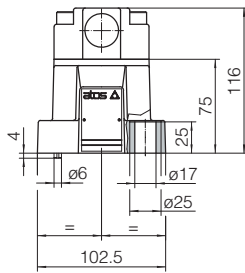
Ports P, T: $\varnothing = 24$ mm

Ports X: $\varnothing = 3,2$ mm

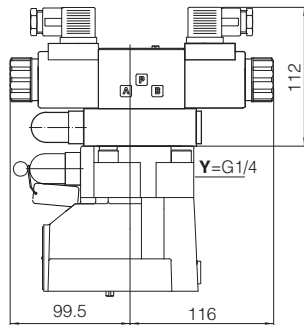


Mass [kg]	
AGAM-20	4,8

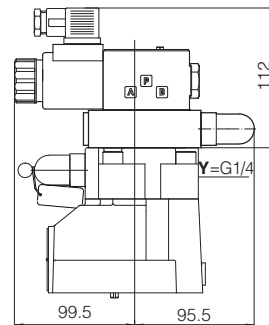
Mass [kg]	
with option IX	
AGAM-20/10	6,6
AGAM-20/11	
AGAM-20/20	7,7
AGAM-20/21	
AGAM-20/22	7,4
AGAM-20/32	7,8



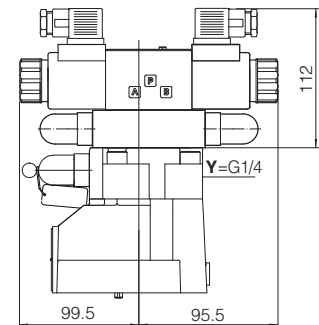
AGAM-20/10/-EX**
AGAM-20/11/-EX**



AGAM-20/20/-EX**
AGAM-20/21/-EX**



AGAM-20/22/-EX**



AGAM-20/32/-EX**

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:

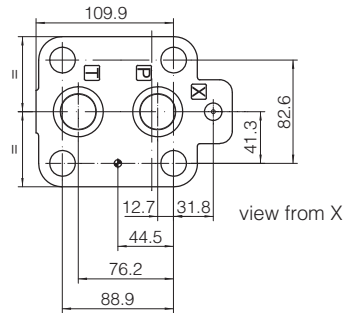
4 socket head screws M20x60 class 12.9

Tightening torque = 600 Nm

Seals: 2 OR 4131; 1 OR 109/70

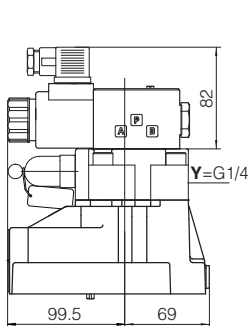
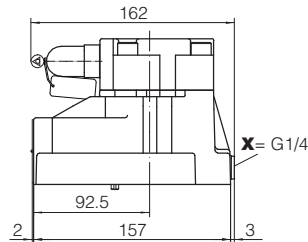
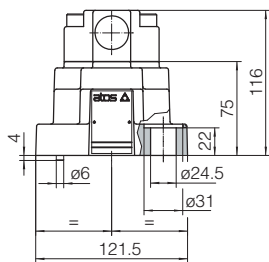
Ports P, T: Ø = 28,5 mm

Ports X: Ø = 3,2 mm

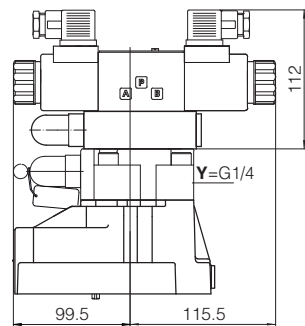


Mass [kg]	
AGAM-32	6.2

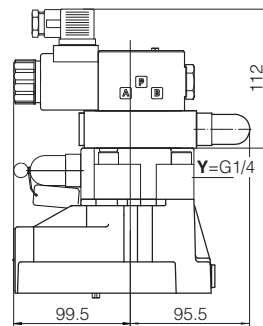
Mass [kg]	
with option EX	
AGAM-32/10	8
AGAM-32/11	8,1
AGAM-32/20	8,8
AGAM-32/21	9,5



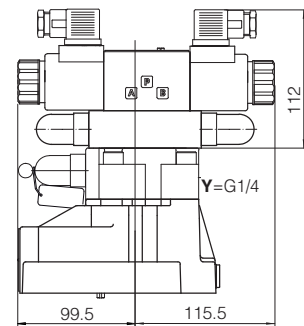
AGAM-32/10/**-EX
AGAM-32/11/**-EX



AGAM-32/20/**-EX
AGAM-32/21/**-EX



AGAM-32/22/**-EX



AGAM-32/32/**-EX

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