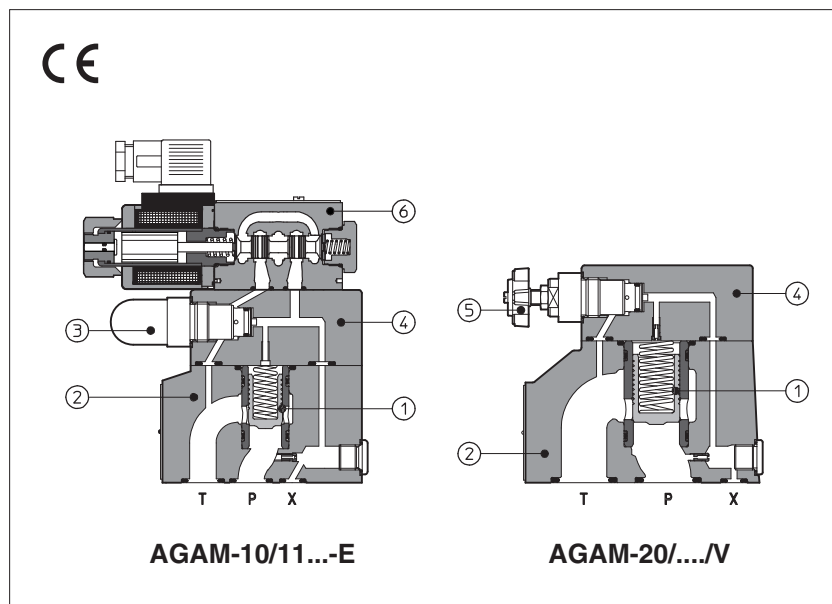


Pressure relief valves type **AGAM**

two stage, subplate mounting - ISO 6264 size 10, 20 and 32



AGAM are two stage pressure relief valves with balanced poppet, designed to operate in oil hydraulic systems.

In standard versions the piloting pressure of the poppet (1) of the main stage (2) is regulated by means of a grub screw protected by cap (3) in the cover (4).

Optional versions with setting adjustment by handwheel (5) instead of the grub screw are available on request.

Clockwise rotation increases the pressure.

AGAM can be equipped with a pilot solenoid valve (6) for venting or for different pressure setting type:

- DHE for AC and DC supply, high performances with **cURus** certified solenoids

- DHL for AC and DC supply, compact execution

Mounting surface: **ISO 6264 size 10, 20 and 32**

Max flow: **200, 400 and 600 l/min**

Max pressure up to **350 bar**

1 MODEL CODE

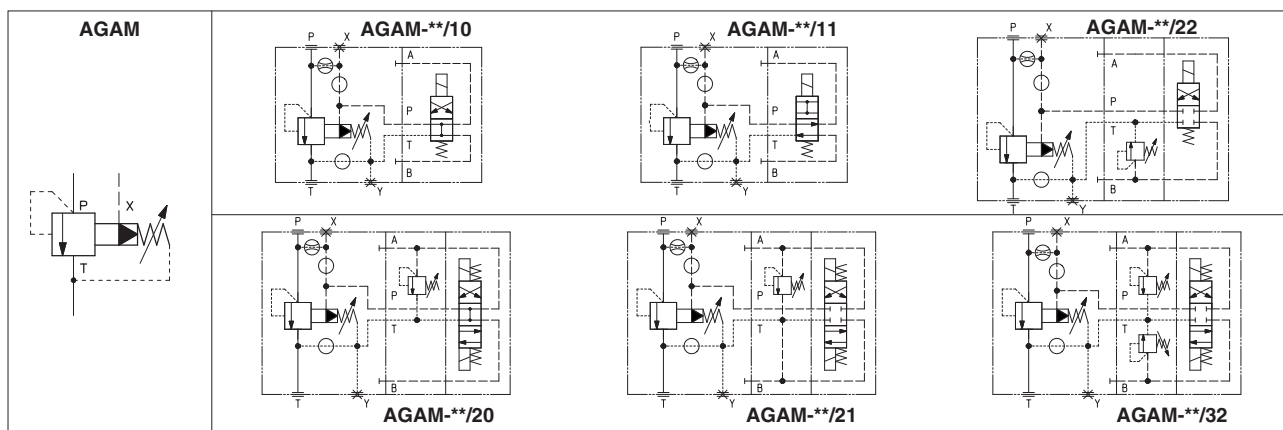
AGAM	-	20	/	20	/	210	/	100/100	/	V	-	E	X	24DC	**	/	*
<div><div><div>AGAM = pressure relief valve subplate mounting</div></div><div><div>Size: 10 20 32</div></div><div><div>Setting pressure and venting option: - = one setting pressure without option 10=one setting pressure with venting, with de-energized solenoid 11=one setting pressure with venting, with energized solenoid 20=two setting pressure with venting, with de-energized solenoid 21=two setting pressure with venting, with energized solenoid 22=two setting pressure without venting 32=three setting pressure without venting</div><div>Setting: see section 3 for available setting (1)</div></div></div>																	<div><div>Seals material, see section 11: - = NBR PE = FKM BT = HNBR (2)</div><div>Series number</div><div>Voltage code, see section 6 (1):</div><div>X = without connector (1): See section 10 for available connectors, to be ordered separately -00-AC = AC solenoid valve without coils -00-DC = DC solenoid valve without coils</div><div>Pilot valve (1): E = DHE for AC and DC supply, high performances with cURus certified solenoids L = DHL for AC and DC supply, compact execution</div><div>Options, see section 7 E V WP Y</div></div>

For **PED** version see technical table CY066

(1) Only for AGAM with solenoid valve for venting and/or for the selection of the setting pressure

(2) Not available for -L version (DHL pilot valve)

2 HYDRAULIC SYMBOLS



3 GENERAL CHARACTERISTICS

Assembly position	Any position
Subplate surface finishing to ISO 4401	Acceptable roughness index, $R_a \leq 0,8$ recommended $R_a 0,4$ - flatness ratio 0,01/100
MTTFd valves according to EN ISO 13849	75 years for standard version, 75 years for venting option, see technical table P007
Ambient temperature range	Standard = $-30^{\circ}\text{C} \div +70^{\circ}\text{C}$ /PE option = $-20^{\circ}\text{C} \div +70^{\circ}\text{C}$ /BT option = $-40^{\circ}\text{C} \div +70^{\circ}\text{C}$
Storage temperature range	Standard = $-30^{\circ}\text{C} \div +80^{\circ}\text{C}$ /PE option = $-20^{\circ}\text{C} \div +80^{\circ}\text{C}$ /BT option = $-40^{\circ}\text{C} \div +80^{\circ}\text{C}$
Surface protection	Body: zinc coating with black passivation Coil: zinc nickel coating (DC version) plastic incapsulation (AC version)
Corrosion resistance	Salt spray test (EN ISO 9227) > 200 h
Compliance	CE to Low Voltage Directive 2014/35/EU RoHS Directive 2011/65/EU as last update by 2015/863/EU REACH Regulation (EC) n°1907/2006

4 HYDRAULIC CHARACTERISTICS

Valve model	AGAM-10	AGAM-20	AGAM-32
Setting [bar]	50;	100; 210;	350
Pressure range [bar]	4÷50;	6÷100; 7÷210;	8÷350
Max pressure [bar]	Ports P, X = 350 Ports T, Y = 210 (without pilot solenoid valve) For version with pilot solenoid valve, see technical tables E015 and E018		
Max flow [l/min]	200	400	600

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 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	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 - only for DHE pilot valve

6 COIL VOLTAGE

External supply nominal voltage ± 10%	Voltage code	Type of connector	-EX Power consumption (2)	-LX Power consumption (2)	Code of spare coil -EX	Code of spare coil -LX
12 DC	12 DC	666 or 667	30W	29W	COE-12DC	COL-12DC
14 DC	14 DC				COE-14DC	COL-14DC
110 DC	110 DC				COE-110DC	COL-110DC
220 DC	220 DC				COE-220DC	COL-220DC
110/50 AC (1)	110/50/60 AC	666 or 667	58VA (3)	58VA (3)	COE-110/50/60AC	COL-110/50/60AC
115/60 AC	115/60 AC		80VA (3)		COE-115/60AC	COL-115/60AC
230/50 AC (1)	230/50/60 AC		58VA (3)		COE-230/50/60AC	COL-230/50/60AC
230/60 AC	230/60 AC		80VA (3)		COE-230/60AC	COL-230/60AC

(1) For other supply voltages available on request see technical tables E015, E018.

(2) Coil can be supplied also with 60 Hz of voltage frequency: in this case the performances are reduced by 20 ÷ 25% and the power consumption is 55 VA (DHL) and 58 VA (DHE)

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

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

7 OPTIONS

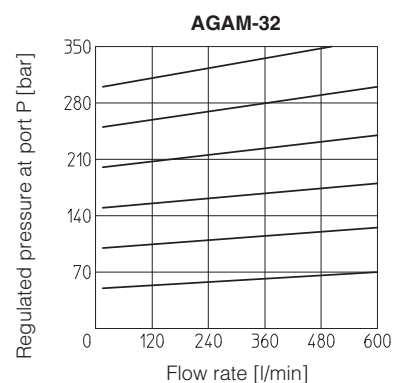
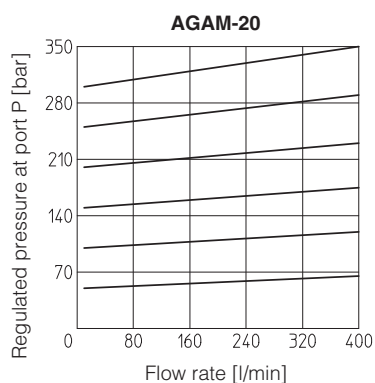
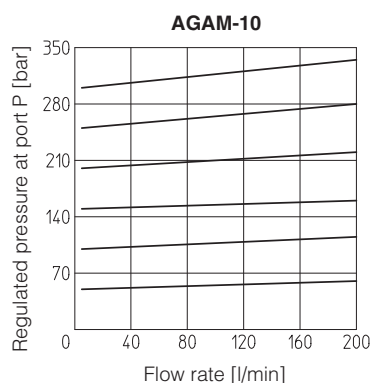
/E = external pilot

/V = regulating handwheel instead of grub screw protected by cap (for handwheel features, see table K150)

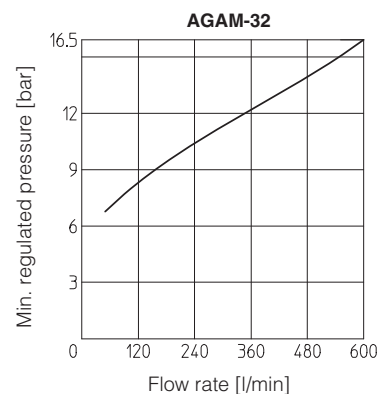
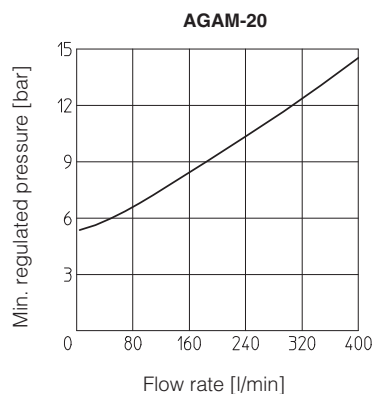
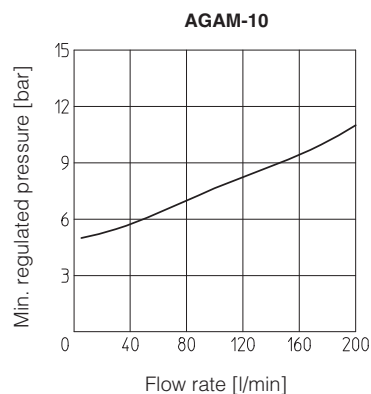
/WP = prolonged manual override protected by rubber cap (only for AGAM with pilot solenoid valve)

/Y = external drain (only for AGAM with pilot solenoid valve)

8 REGULATED PRESSURE VERSUS FLOW DIAGRAMS based on mineral oil ISO VG 46 at 50°C



9 MINIMUM PRESSURE VERSUS FLOW DIAGRAMS based on mineral oil ISO VG 46 at 50°C



10 ELECTRIC CONNECTORS ACCORDING TO DIN 43650 for AGAM with solenoid valve (to be ordered separately, see tech table K800)

666 = standard connector IP-65, suitable for direct connection to electric supply source

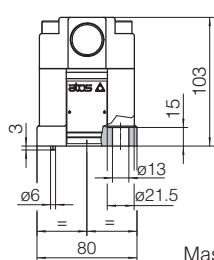
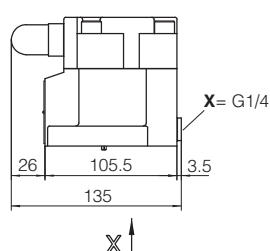
667 = as 666, but with built-in signal led. Available for power supply voltage 24 AC or DC, 110 AC or DC, 220 AC or DC

11 SEALS AND HYDRAULIC FLUID - for other fluids not included in below table, consult our technical office

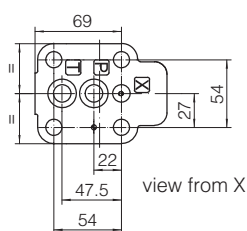
Seals, recommended fluid temperature	NBR seals (standard) = -20°C ÷ +80°C, with HFC hydraulic fluids = -20°C ÷ +50°C FKM seals (/PE option) = -20°C ÷ +80°C HNBR seals (/BT option) = -40°C ÷ +60°C, with HFC hydraulic fluids = -40°C ÷ +50°C		
Recommended viscosity	15 ÷ 100 mm²/s - max allowed range 2,8 ÷ 500 mm²/s		
Max fluid contamination level	ISO4406 class 20/18/15 NAS1638 class 9, see also filter section at 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	HFDR, HFDR	ISO 12922
Flame resistant with water	NBR, HNBR	HFC	

12 DIMENSIONS [mm]

AGAM-10



Mass: 3,6 Kg

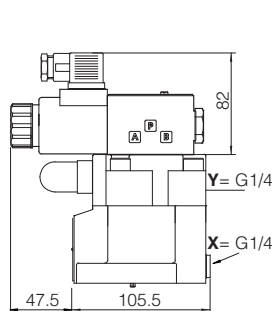


view from X

ISO 6264: 2007

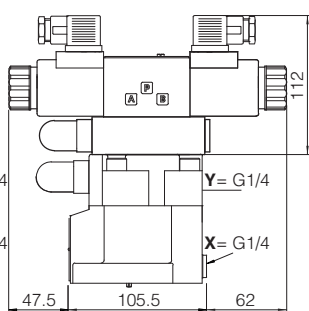
Mounting surface: 6264-06-09-1-97

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



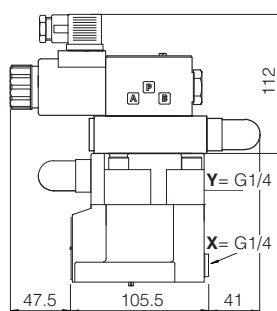
AGAM-10/10/-EX
AGAM-10/11/**-EX**

Mass: 5,1 Kg



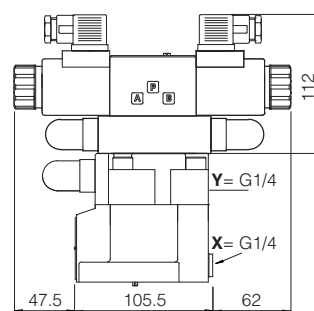
AGAM-10/20/-EX
AGAM-10/21/**-EX**

Mass: 6,2 Kg



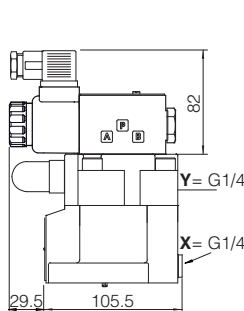
AGAM-10/22/-EX**

Mass: 5,9 Kg



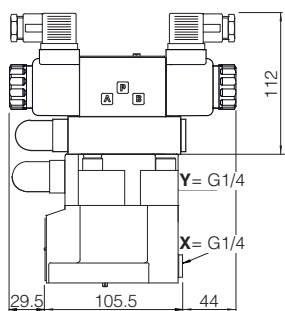
AGAM-10/32/-EX**

Mass: 6,3 Kg



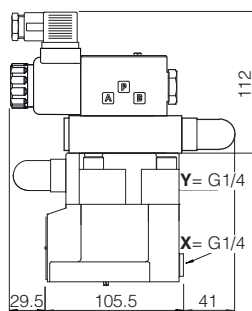
AGAM-10/10/-LX
AGAM-10/11/**-LX**

Mass: 4,8 Kg



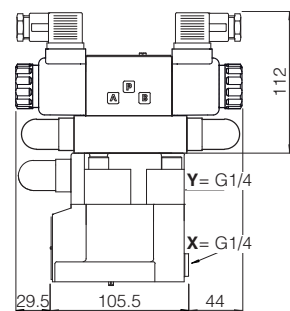
AGAM-10/20/-LX
AGAM-10/21/**-LX**

Mass: 5,6 Kg



AGAM-10/22/-LX**

Mass: 5,6 Kg

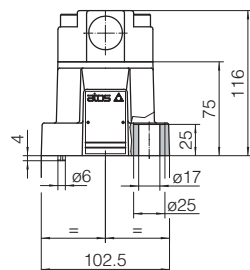


AGAM-10/32/-LX**

Mass: 5,7 Kg

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

Technical drawing of a mechanical part with dimensions and a coordinate system. The part is shown in a cross-sectional view. The overall width is 138. The base width is 124. The left side has a width of 12. The right side has a width of 2. The height of the base is 12. The height of the main body is 124. The height of the top section is 12. The coordinate system X is defined with the origin at the bottom center, pointing upwards.



Technical drawing of the 3-position 3-way solenoid valve 3232. The drawing shows a side view of the valve with dimensions and port specifications. Dimensions include a total width of 138, a mounting bracket width of 37, and a base width of 40. The height is 112. Port specifications are given as Y = G1/4 and X = G1/4. The valve body is marked with 'A', 'B', and 'P'.

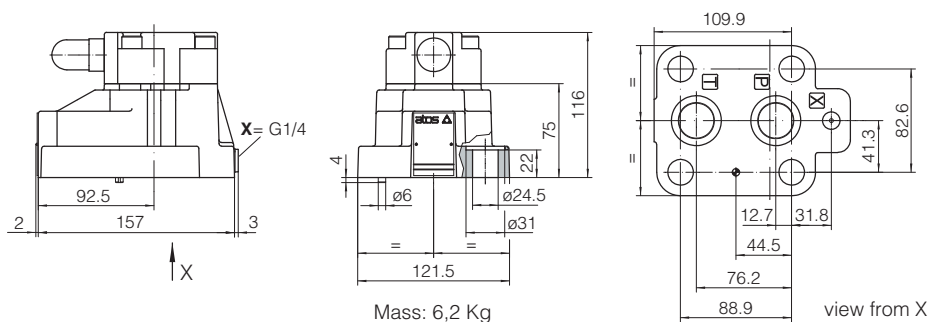
Technical drawing of the 3-position 3-way valve 3232 in its closed position. The drawing shows the valve body with ports A, B, and P. Dimensions include a total height of 112, a port offset $Y = G/4$, and a base offset $X = G/4$. Mounting dimensions are 37, 138, and 27.

Technical drawing of the 112 series valve assembly, showing a side view. The drawing includes the following dimensions and labels:

- Overall width: 138
- Overall height: 112
- Bottom flange width: 40
- Port size: $Y = G1/4$ and $X = G1/4$
- Labels A, B, and C are present on the top of the valve body.

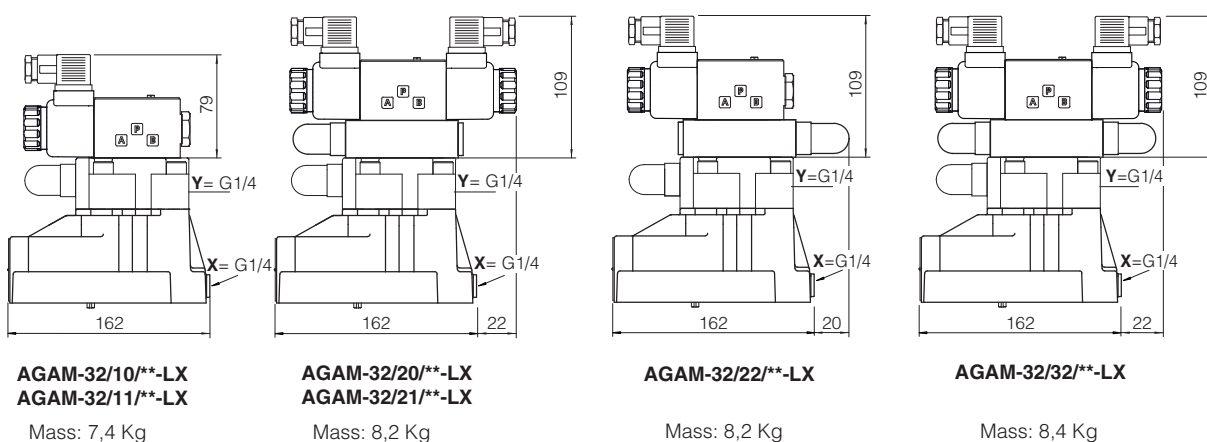
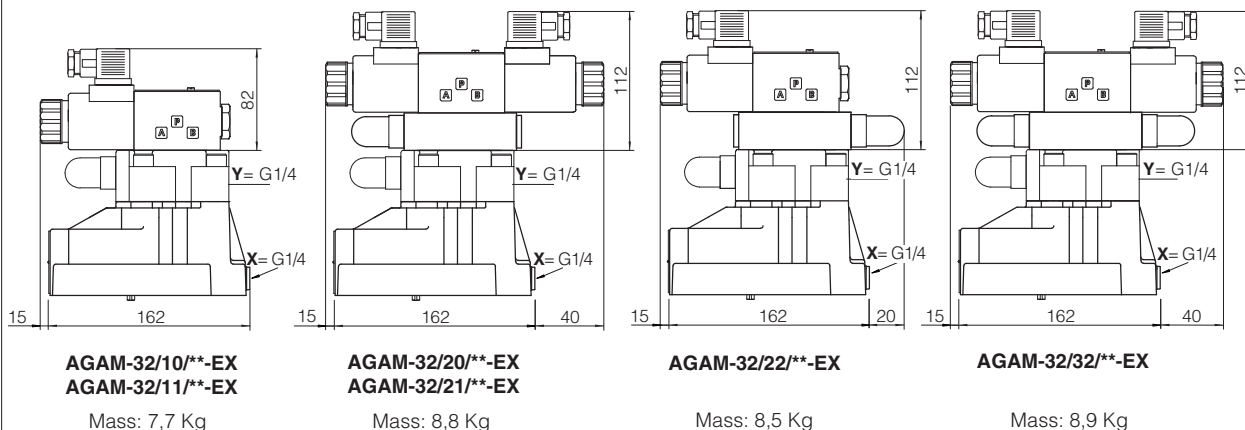
C066

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



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

13 MOUNTING SUBPLATES

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

The subplates are supplied with fastening bolts. For further details see table K280