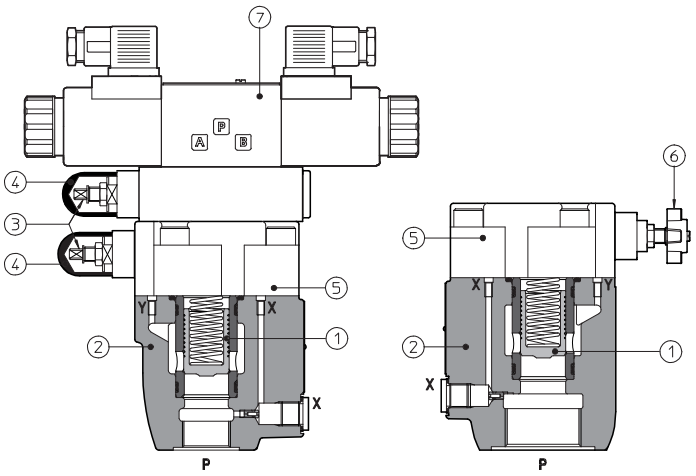
Pressure relief valves type ARAM

two stage, in line mounting - G 3/4" and G 1¼" threaded ports



ARAM-20/20...-E **ARAM-32..../V**

ARAM are two stage pressure relief valves with balanced poppet, designed with threaded ports for in-line mounting.
In standard versions the piloting pressure of the poppet ① of the main stage ② is regulated by means of a grub screw ③ protected by cap ④ installed in the cover ⑤. Optional versions with setting adjustment by handwheel ⑥ instead of the grub screw are available on request.
Clockwise rotation increases the pressure.
Also available in safety option with sealed regulation:
/PED conforming to PED Directive (2014/68/UE). The valves are factory set at the pressure level required by the costumer with a flow through the valve as shown in section 6. For this version the P, Q limits are shown in section 10.
ARAM can be equipped with a pilot solenoid valve ⑦ for venting or for different pressure setting, type:

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

Threaded ports: **G 3/4", G 1¼"**
Max flow: **350, 500 l/min**
Max pressure up to **350 bar**

1 MODEL CODE

ARAM	-	20	/	20	/	210	/	100/100	/	V	/	*	-	I	X	24DC	**	/	*

ARAM = pressure relief valve threated port connections

Size:
20= port P - G 3/4"
32= port P - G 1¼"

Setting pressure and venting option **(1)**:
- = 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

Setting: see section 3 for available setting

Pressure range of second/third setting **(1)(2)**:
50 = 4÷50 bar **100** = 6÷100 bar
210 = 7÷210 bar **350** = 8÷350 bar

Options, see section 5
E PED V WP Y

Only for /PED options:
190 = factory pressure setting to be defined depending to the customer requirement (example 190 = 190 bar)

Pilot valve **(1)**:
I = DHI for AC and DC supply, with **cURus** certified solenoids
E = DHE for AC and DC supply, high performances with **cURus** certified solenoids

X = without connector **(1):**
See section 7 for available connectors, to be ordered separately
-00 = solenoid valve without coils (for -I)
-00-AC = AC solenoid valve without coils (for -E)
-00-DC = DC solenoid valve without coils (for -E)

Voltage code, see section 8 **(1)**:

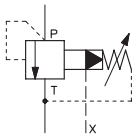
Series number

Seals material, see section 4:
- = NBR
PE = FKM
BT = HNBR

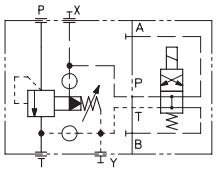
(1) Only for ARAM with solenoid valve for venting and/or for the selection of the setting pressure.
(2) For valves with multiple pressure settings, the eventual /PED option is relevant only to the first main setting. The second (and third) pressure setting are not sealed and their regulation must be lower than the /PED one.

2 HYDRAULIC SYMBOL

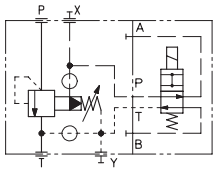
ARAM



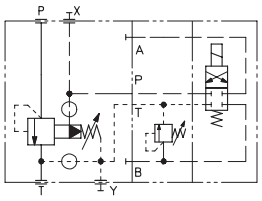
ARAM-/10**

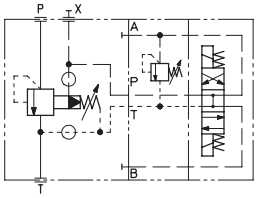


ARAM-/11**

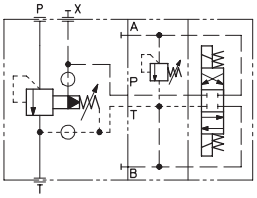


ARAM-/22**

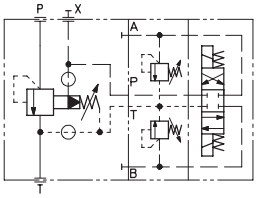




ARAM-/20**



ARAM-/21**



ARAM-/32**

3 HYDRAULIC CHARACTERISTICS

Valve model		**ARAM-20**	**ARAM-32**
Setting [bar]	standard	50; 100; 210; 350	
	/PED		
Pressure range [bar]	standard	4÷50; 6÷100; 7÷210; 8÷350	
	/PED	10÷50; 10÷100; 10÷210; 10÷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 E010 and E015	
Max flow [l/min]	standard	350	500
	/PED		

4 MAIN CHARACTERISTICS, SEALS AND FLUIDS - for other fluids not included in below table, consult our technical office

Assembly position	Any position		
Ambient temperature	Standard execution = -30°C ÷ +70°C /PE option = -20°C ÷ +70°C /BT option = -40°C ÷ +70°C		
Seals, recommended fluid temperature	NBR seals (standard) = -20°C ÷ +60°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		
Fluid contamination class	ISO 4406 class 21/19/16 NAS 1638 class 10, in line filters of 25 μm (β10 ≥75 recommended)		
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	

4.1 Coils characteristics (for ARAM with pilot solenoid valve)

Insulation class	DHI pilot	**H** (180°C)	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
	DHE pilot	**H** (180°C) for DC coils **F** (155°C) for AC coils	
Protection degree to DIN EN 60529		**IP 65** (with connectors 666, 667, 669 or E-SD correctly assembled)	
Relative duty factor		100%	
Supply voltage and frequency		See electric feature 8	
Supply voltage tolerance		± 10%	
Certification		**cURus** North American standard	

5 OPTIONS

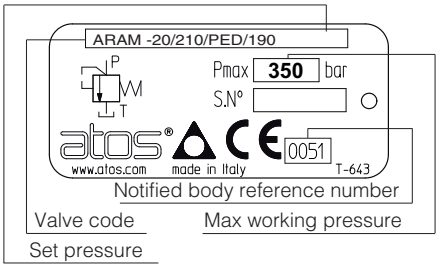
/E = external pilot
/PED = conforming to Directive 97/23/CE (not available with option /V)
/V = regulating handwheel instead of grub screw protected by cap (for handwheel features, see table K150), (not available with option /PED)
/WP = prolunged manual override protected by rubber cap (only for ARAM with pilot solenoid valve)
/Y = external drain (only for ARAM with pilot solenoid valve)

6 SETTING OF VALVES WITH /PED OPTION

The /PED valves are factory set at the pressure level required by the costumer (every 1 bar) at the following flow shown in the table.
The set pressure is marked on the valve nameplate, see section 6.1

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

6.1 EXAMPLE OF NAMEPLATE FOR /PED OPTION



7 ELECTRIC CONNECTORS ACCORDING TO DIN 43650 FOR ARAM WITH 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 tab. E010 and K500

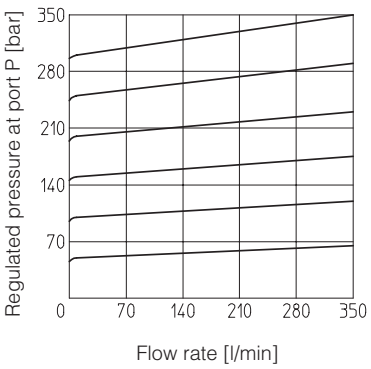
8 ELECTRIC FEATURES FOR AGAM WITH SOLENOID VALVE

Solenoid valve type	External supply nominal voltage ± 10% (1)		**Voltage code**	Type of connector	Power consumption **(3)** DHI	DHE	Code of spare coil DHI	Colour of coil label DHI	Code of spare coil DHE
DHI DHE	DC	12 DC 24 DC 110 DC 220 DC	**12 DC** **24 DC** **110 DC** **220 DC**	666 or 667	33 W	30 W	COU-12DC COU-24DC COU-110DC COU-220DC	green red black black	COE-12DC COE-24DC COE-110DC COE-220DC
	AC	110/50 AC **(2)** 115/60 AC 120/60 AC 230/50 AC **(2)** 230/60 AC	**110/50/60 AC** **115/60 AC (5)** **120/60 AC (6)** **230/50/60 AC** **230/60 AC**	666 or 667	60 VA - 60 VA 60 VA 60 VA	58 VA 80 VA - 58 VA 80 VA	COI-110/50/60AC - COI-120/60AC COI-230/50/60AC COI-230/60AC	yellow - white light blue silver	COE-110/50/60AC COE-115/60AC - COE-230/50/60AC COE-230/60AC

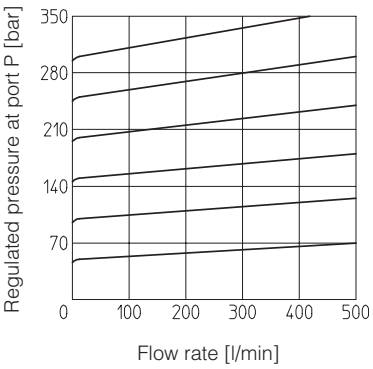
(1) For other supply voltages available on request see technical tables E010, E015.
(2) Coil can be supplied also with 60 Hz of voltage frequency: in this case the performances are reduced by 10 ÷ 15% and the power consumption is 55 VA (DHI) and 58 VA
(3) Average values based on tests performed at nominal hydraulic condition and ambient/coil temperature of 20°C.
(4) When solenoid is energized, the inrush current is approx 3 times the holding current.
(5) Only for DHE
(6) Only for DHI

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

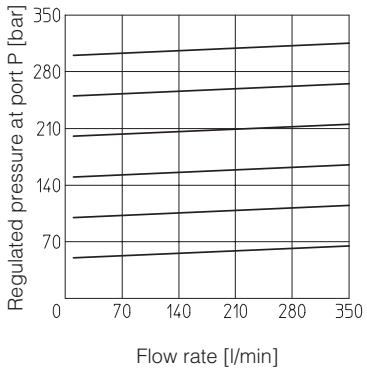
ARAM-20



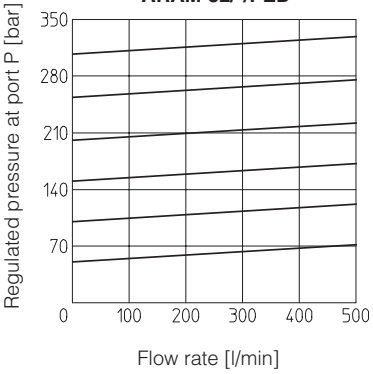
ARAM-32



ARAM-20/*/PED

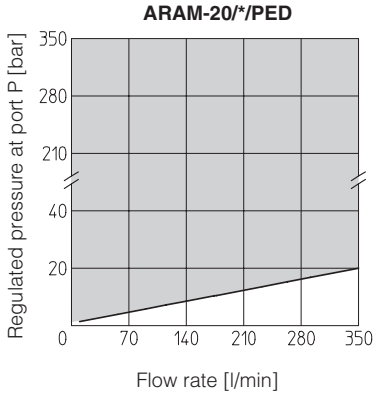


ARAM-32/*/PED

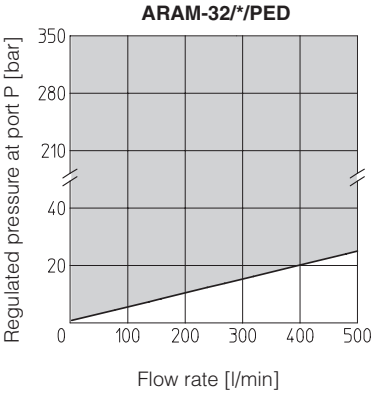


10 **PERMISSIBLE RANGE (shared area)** based on mineral oil ISO VG 46 at 50°C

ARAM-20/*/PED

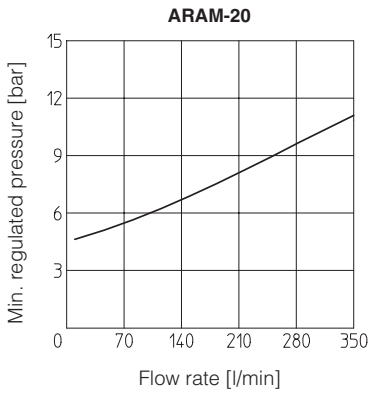


ARAM-32/*/PED

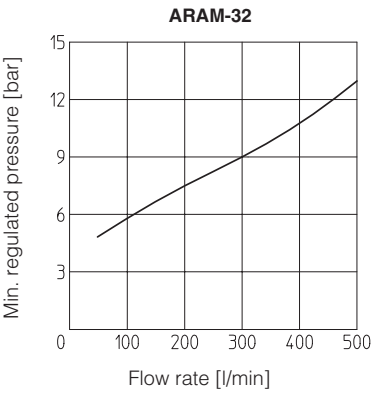


11 **MINIMUM PRESSURE VERSUS FLOW DIAGRAMS** based on mineral oil ISO VG 46 at 50°C

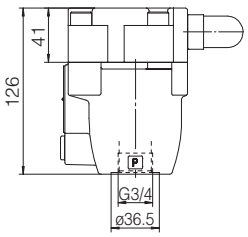
ARAM-20



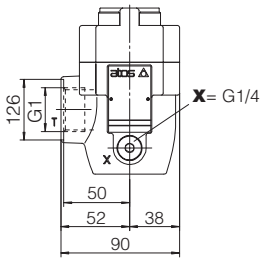
ARAM-32



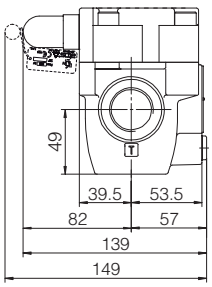
ARAM-20



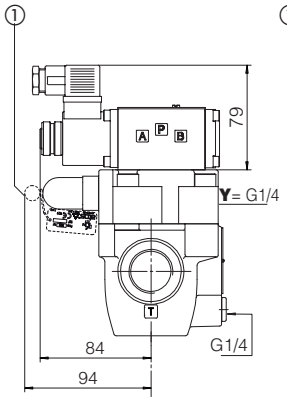
X = port connection for external pilot
Y = port connection for external drain



Mass: 3,9 Kg

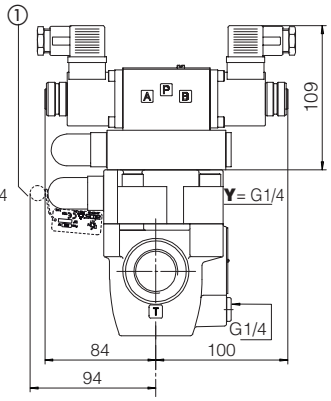


OPTION /PED



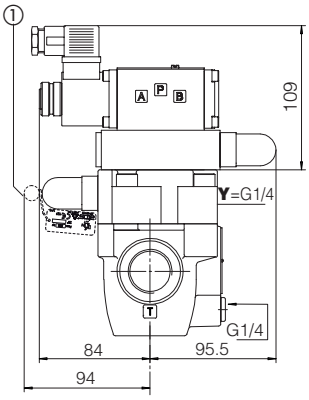
ARAM-20/10/-IX**
ARAM-20/11/-IX**

Mass: 5,4 Kg



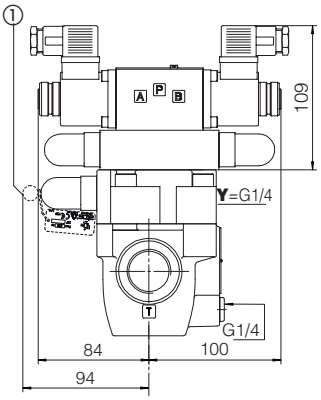
ARAM-20/20/-IX**
ARAM-20/21/-IX**

Mass: 7,1 Kg



ARAM-20/22/-IX**

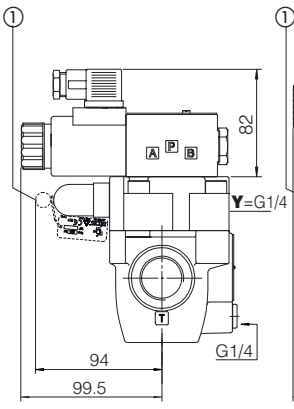
Mass: 6,8 Kg



ARAM-20/32/-IX**

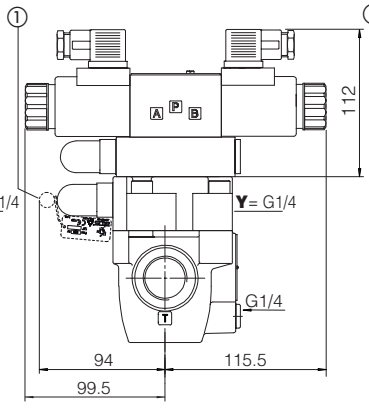
Mass: 7,4 Kg

① = sealed adjustment and nameplate only for /PED option



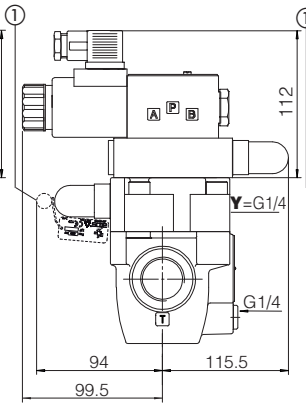
ARAM-20/10/-EX**
ARAM-20/11/-EX**

Mass: 5,7 Kg



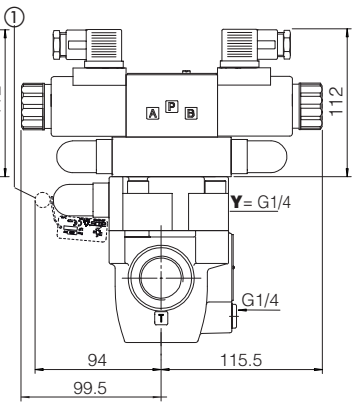
ARAM-20/20/-EX**
ARAM-20/21/-EX**

Mass: 7,7 Kg



ARAM-20/22/-EX**

Mass: 7,2 Kg



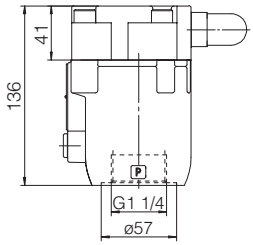
ARAM-20/32/-EX**

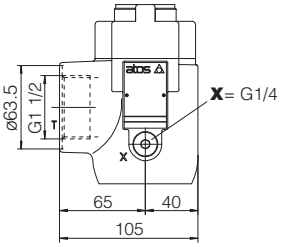
Mass: 8 Kg

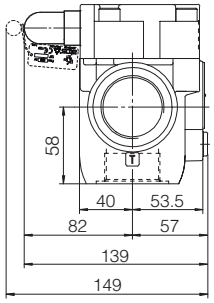
① = sealed adjustment and nameplate only for /PED option

Overall dimensions refer to valves with connectors type 666

ARAM-32



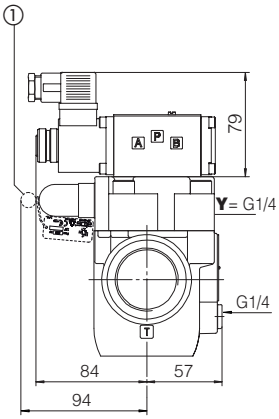




X = port connection for external pilot
Y = port connection for external drain

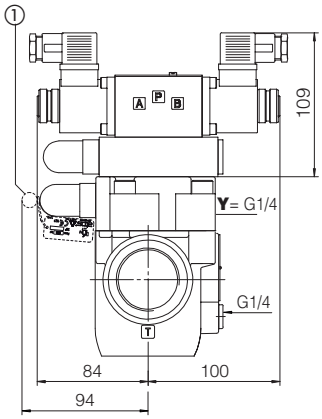
Mass: 4,7 Kg

OPTION /PED



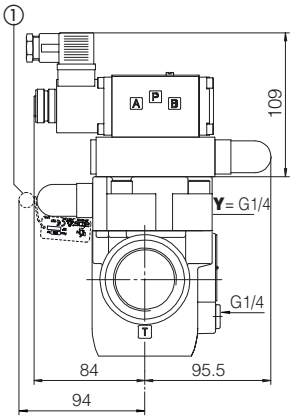
ARAM-32/10/-IX**
ARAM-32/11/-IX**

Mass: 6,2 Kg



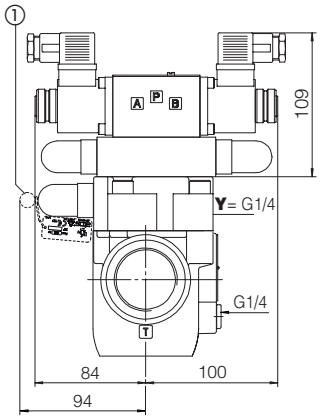
ARAM-32/20/-IX**
ARAM-32/21/-IX**

Mass: 7,9 Kg



ARAM-32/22/-IX**

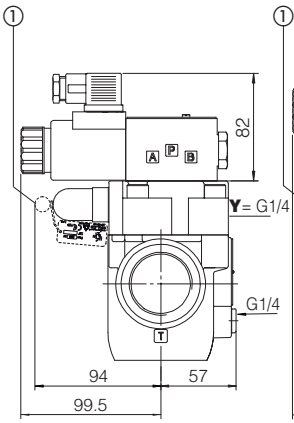
Mass: 7,6 Kg



ARAM-32/32/-IX**

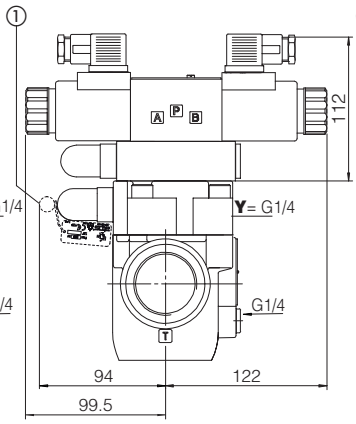
Mass: 8,2 Kg

① = sealed adjustment and nameplate only for /PED option



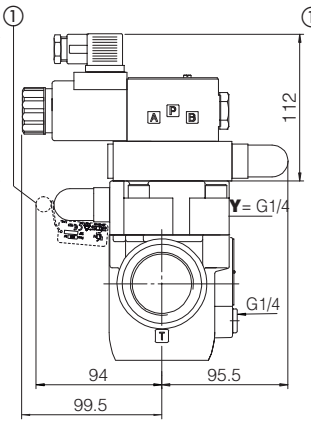
ARAM-32/10/-EX**
ARAM-32/11/-EX**

Mass: 6,5 Kg



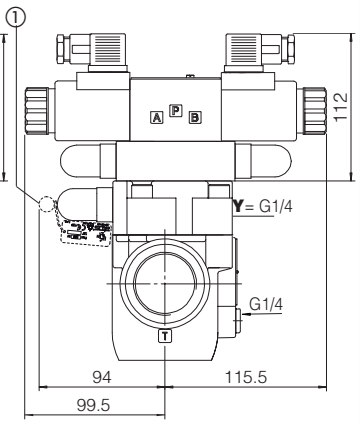
ARAM-32/20/-EX**
ARAM-32/21/-EX**

Mass: 8,5 Kg



ARAM-32/22/-EX**

Mass: 7,9 Kg



ARAM-32/32/-EX**

Mass: 8,8 Kg

① = sealed adjustment and nameplate only for /PED option

Overall dimensions refer to valves with connectors type 666