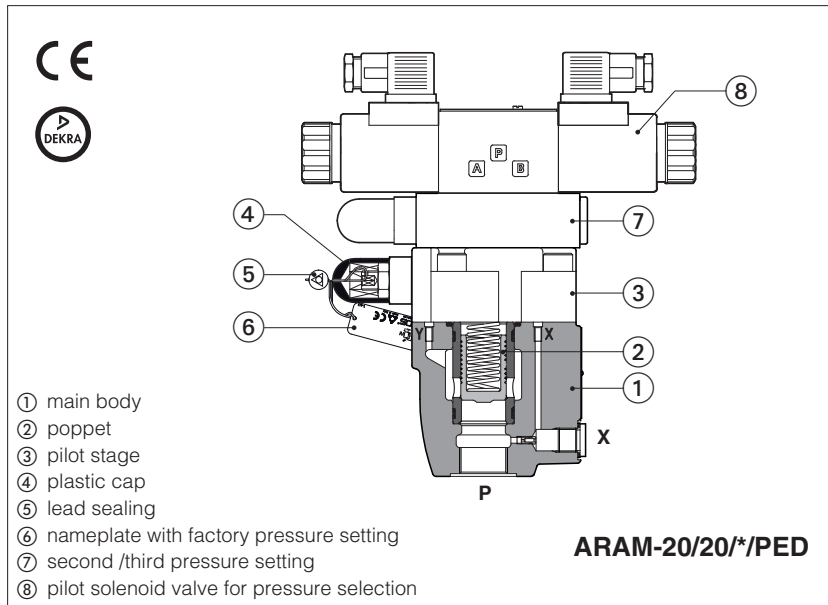


# Safety pressure relief valves

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



## ARAM /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.

ARAM can be equipped with a pilot solenoid valve for venting or for multiple pressure selection.

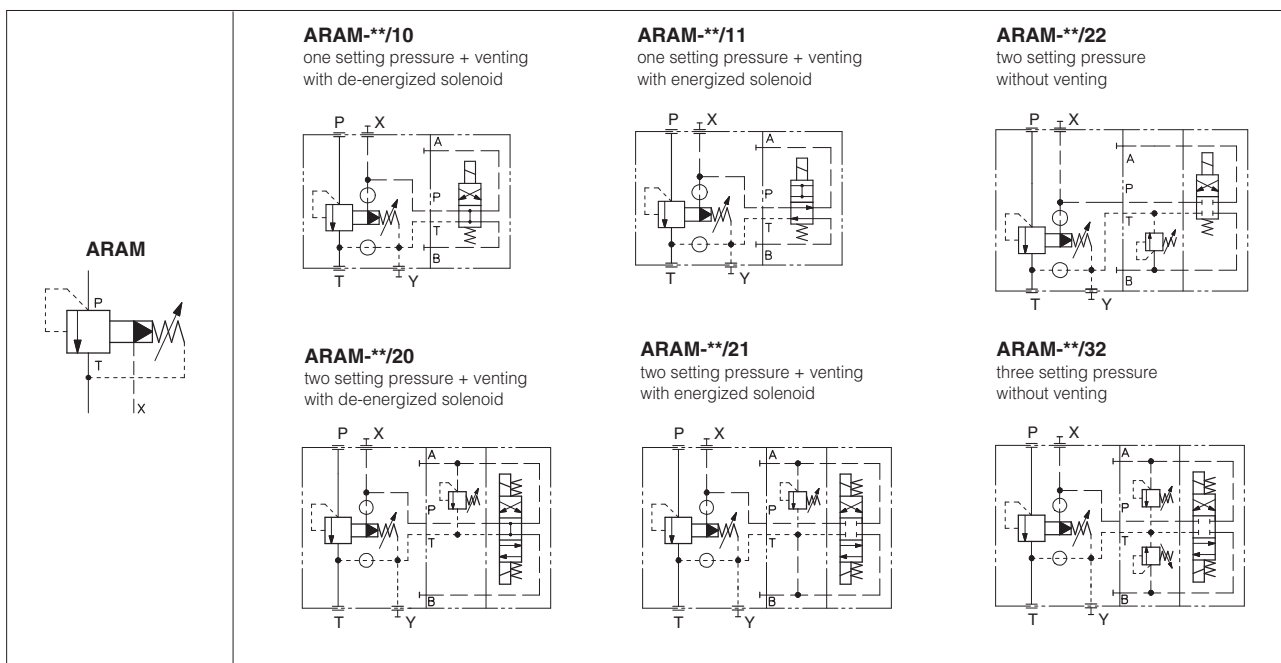
Size: **G 3/4"** and **G 1 1/4"**  
 Max flow: **350** and **500 l/min**  
 Max pressure: **350 bar**

### 1 MODEL CODE

|                                                                                                                                                                                                                              |   |                                                                                                                                                                                                                                                                                                                          |   |           |   |            |   |                |   |          |   |            |   |            |   |          |          |             |          |   |          |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|-----------|---|------------|---|----------------|---|----------|---|------------|---|------------|---|----------|----------|-------------|----------|---|----------|
| <b>ARAM</b>                                                                                                                                                                                                                  | - | <b>20</b>                                                                                                                                                                                                                                                                                                                | / | <b>20</b> | / | <b>350</b> | / | <b>210/100</b> | / | <b>E</b> | / | <b>PED</b> | / | <b>280</b> | - | <b>I</b> | <b>X</b> | <b>24DC</b> | <b>*</b> | / | <b>*</b> |
| Piloted pressure relief valve, in-line                                                                                                                                                                                       |   |                                                                                                                                                                                                                                                                                                                          |   |           |   |            |   |                |   |          |   |            |   |            |   |          |          |             |          |   |          |
| <b>Valve size ISO 6264:</b><br><b>20</b> = port P - G 3/4"<br><b>32</b> = port P - G 1 1/4"                                                                                                                                  |   |                                                                                                                                                                                                                                                                                                                          |   |           |   |            |   |                |   |          |   |            |   |            |   |          |          |             |          |   |          |
| <b>Configuration</b> , see section 2 :<br>- = without pilot solenoid valve<br><b>10, 11:</b><br>with pilot solenoid valve for venting<br><b>20, 21, 22, 32:</b><br>with pilot solenoid valve for multiple pressure selection |   |                                                                                                                                                                                                                                                                                                                          |   |           |   |            |   |                |   |          |   |            |   |            |   |          |          |             |          |   |          |
| <b>Max pressure:</b><br><b>350</b> = 350 bar                                                                                                                                                                                 |   |                                                                                                                                                                                                                                                                                                                          |   |           |   |            |   |                |   |          |   |            |   |            |   |          |          |             |          |   |          |
| <b>Pressure range of second / third setting (1):</b><br><b>50</b> = 50 bar <b>100</b> = 100 bar<br><b>210</b> = 210 bar <b>350</b> = 350 bar                                                                                 |   |                                                                                                                                                                                                                                                                                                                          |   |           |   |            |   |                |   |          |   |            |   |            |   |          |          |             |          |   |          |
|                                                                                                                                                                                                                              |   | <b>Seals material</b> , see section 8 :<br>- = NBR<br><b>PE</b> = FKM<br><br>Series number                                                                                                                                                                                                                               |   |           |   |            |   |                |   |          |   |            |   |            |   |          |          |             |          |   |          |
|                                                                                                                                                                                                                              |   | <b>Voltage code</b> , see section 6 (2):<br><br><b>X</b> = without connector (2):<br>Connectors to be ordered separately:<br>see section 7<br><b>-00</b> = solenoid valve without coils (for -I)<br><b>-00-AC</b> = AC solenoid valve without coils (for -E)<br><b>-00-DC</b> = DC solenoid valve without coils (for -E) |   |           |   |            |   |                |   |          |   |            |   |            |   |          |          |             |          |   |          |
|                                                                                                                                                                                                                              |   | <b>Pilot valve (1):</b><br><b>I</b> = DHI for AC and DC supply,<br>with cURus certified solenoids<br><b>E</b> = DHE for AC and DC supply, high performances<br>with cURus certified solenoids                                                                                                                            |   |           |   |            |   |                |   |          |   |            |   |            |   |          |          |             |          |   |          |
|                                                                                                                                                                                                                              |   | <b>Factory pressure setting (bar):</b><br>to be defined by the customer min step 1 bar<br>(example <b>280</b> = 280 bar)<br>min pressure setting 30 bar                                                                                                                                                                  |   |           |   |            |   |                |   |          |   |            |   |            |   |          |          |             |          |   |          |
|                                                                                                                                                                                                                              |   | <b>PED</b> = EU Type examination to 2014/68/EU - certified by DEKRA                                                                                                                                                                                                                                                      |   |           |   |            |   |                |   |          |   |            |   |            |   |          |          |             |          |   |          |
|                                                                                                                                                                                                                              |   | <b>Options</b> , see section 9 :<br><b>E WP Y</b>                                                                                                                                                                                                                                                                        |   |           |   |            |   |                |   |          |   |            |   |            |   |          |          |             |          |   |          |

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

## 2 CONFIGURATIONS AND HYDRAULIC SYMBOLS



## 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                    | <b>Standard</b> = -20°C ÷ +70°C <b>/PE</b> option = -20°C ÷ +70°C                                                                                                    |
| Storage temperature range              | <b>Standard</b> = -30°C ÷ +80°C <b>/PE</b> 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 <b>(1)</b><br>RoHs Directive 2011/65/EU as last update by 2015/65/EU<br>REACH Regulation (EC) n°1907/2006 |

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

## 4 HYDRAULIC CHARACTERISTICS

| Valve model                                 |  | ARAM-10                                                                                                                                                                        | ARAM-32 |
|---------------------------------------------|--|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
| Max pressure on ports P, X [bar]            |  | 350                                                                                                                                                                            |         |
| Max pressure on ports T, Y <b>(1)</b> [bar] |  | 210 without pilot solenoid valve<br>120 with pilot solenoid valve -I<br>210 with pilot solenoid valve -E with DC solenoid<br>160 with pilot solenoid valve -E with AC solenoid |         |
| Factory pressure setting range [bar]        |  | 30÷350                                                                                                                                                                         |         |
| Max flow <b>(2)</b> [l/min]                 |  | 350                                                                                                                                                                            | 500     |

**(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 ARAM with pilot solenoid valve

|                                   |                                                                          |                                                             |                                                                                                                                                  |
|-----------------------------------|--------------------------------------------------------------------------|-------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|
| Insulation class                  | DHI pilot                                                                | <b>H</b> (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                                                                | <b>H</b> (180°C) for DC coils <b>F</b> (155°C) for AC coils |                                                                                                                                                  |
| Protection degree to DIN EN 60529 | <b>IP 65</b> (with connectors 666, 667, 669 or E-SD correctly assembled) |                                                             |                                                                                                                                                  |
| Relative duty factor              | 100%                                                                     |                                                             |                                                                                                                                                  |
| Supply voltage and frequency      | See coil voltage <b>6</b>                                                |                                                             |                                                                                                                                                  |
| Supply voltage tolerance          | ± 10%                                                                    |                                                             |                                                                                                                                                  |
| Certification                     | <b>cURus</b> North American standard                                     |                                                             |                                                                                                                                                  |

**6 COIL VOLTAGE** - for ARAM with pilot solenoid valve

| External supply nominal voltage<br>± 10% <b>(1)</b>                                 | Voltage code                                                                                                   | Type of connector | Power consumption <b>(3)</b>          |                                       | ARAM-*-I                                                                |                                              | ARAM-*-E                                                                |
|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|-------------------|---------------------------------------|---------------------------------------|-------------------------------------------------------------------------|----------------------------------------------|-------------------------------------------------------------------------|
|                                                                                     |                                                                                                                |                   | DHI                                   | DHE                                   | Code of spare coil                                                      | Colour of coil label                         | Code of spare coil                                                      |
| 12 DC<br>24 DC<br>110 DC<br>220 DC                                                  | <b>12 DC</b><br><b>24 DC</b><br><b>110 DC</b><br><b>220 DC</b>                                                 | 666<br>or<br>667  | 33 W                                  | 30 W                                  | COU-12DC<br>COU-24DC<br>COU-110DC<br>COU-220DC                          | green<br>red<br>black<br>black               | COE-12DC<br>COE-24DC<br>COE-110DC<br>COE-220DC                          |
| 110/50 AC <b>(2)</b><br>115/60 AC<br>120/60 AC<br>230/50 AC <b>(2)</b><br>230/60 AC | <b>110/50/60 AC</b><br><b>115/60 AC (4)</b><br><b>120/60 AC (5)</b><br><b>230/50/60 AC</b><br><b>230/60 AC</b> | 666<br>or<br>667  | 60 VA<br>-<br>60 VA<br>60 VA<br>60 VA | 58 VA<br>80 VA<br>-<br>58 VA<br>80 VA | COI-110/50/60AC<br>-<br>COI-120/60AC<br>COI-230/50/60AC<br>COI-230/60AC | yellow<br>-<br>white<br>light blue<br>silver | COE-110/50/60AC<br>COE-115/60AC<br>-<br>COE-230/50/60AC<br>COE-230/60AC |

**(1)** For other supply voltages see technical tables E010, E015

**(2)** Coil can be supplied also with 60 Hz: in this case the performances are reduced by 10 ÷ 15%

**(3)** Average values measured at nominal hydraulic condition and ambient temperature 20°C;  
When AC solenoid is energized, the inrush current is approx 3 times the holding current

**(4)** Only for ARAM-\*-E

**(5)** Only for ARAM-\*-I

**7 ELECTRIC CONNECTORS ACCORDING TO DIN 43650** - for ARAM 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<br>FKM seals (/PE option) = -20°C ÷ +80°C<br>HNBR seals (/BT option) = -40°C ÷ +60°C, with HFC hydraulic fluids = -40°C ÷ +50°C |                            |               |
|--------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|---------------|
| Recommended viscosity                | 15÷100 mm <sup>2</sup> /s - max allowed range 2,8 ÷ 500 mm <sup>2</sup> /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

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

**Y** = external drain - only for ARAM with pilot solenoid valve

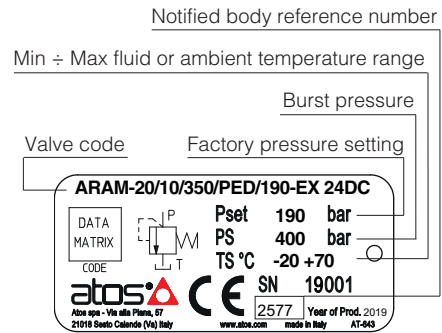
## 10 FACTORY PRESSURE SETTING

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) |
|-------------|-------------------------------------------|
| ARAM-10     | 25                                        |
| ARAM-20     | 25                                        |

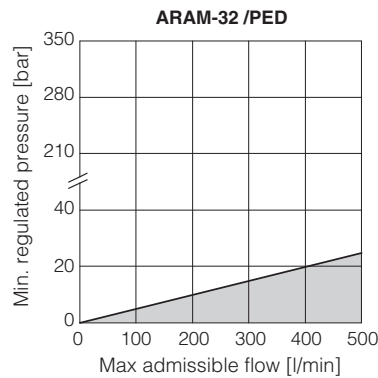
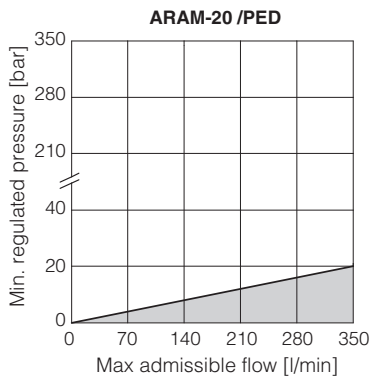
⚠ Any tampering of the lead sealing invalidates the certification

## 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.

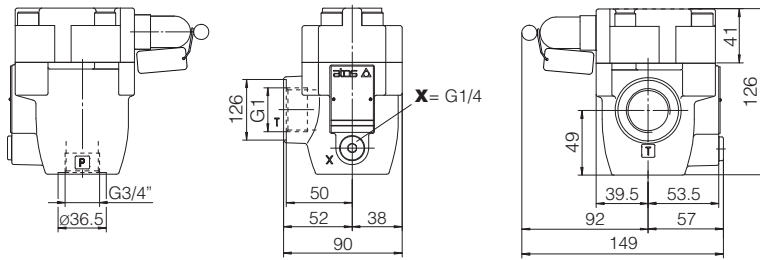
- 2) The working range in above diagrams is valid without counterpressure in T line.

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.

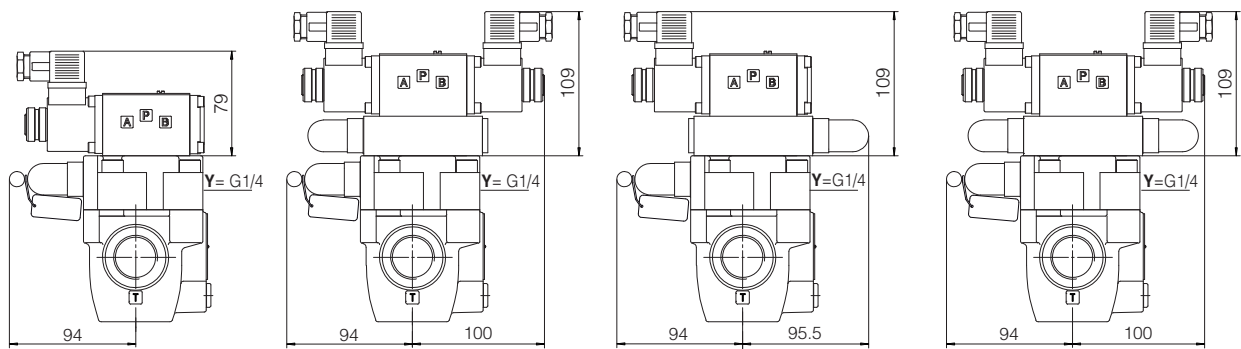
### ARAM-20



| Mass [kg] |     |
|-----------|-----|
| ARAM-20   | 3,9 |

|            | Mass [kg]      |                |
|------------|----------------|----------------|
|            | with option IX | with option EX |
| ARAM-20/10 | 5,4            | 5,7            |
| ARAM-20/11 | 5,4            | 5,7            |
| ARAM-20/20 | 7,1            | 7,7            |
| ARAM-20/21 | 7,1            | 7,7            |
| ARAM-20/22 | 6,8            | 7,2            |
| ARAM-20/32 | 7,4            | 8,0            |

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

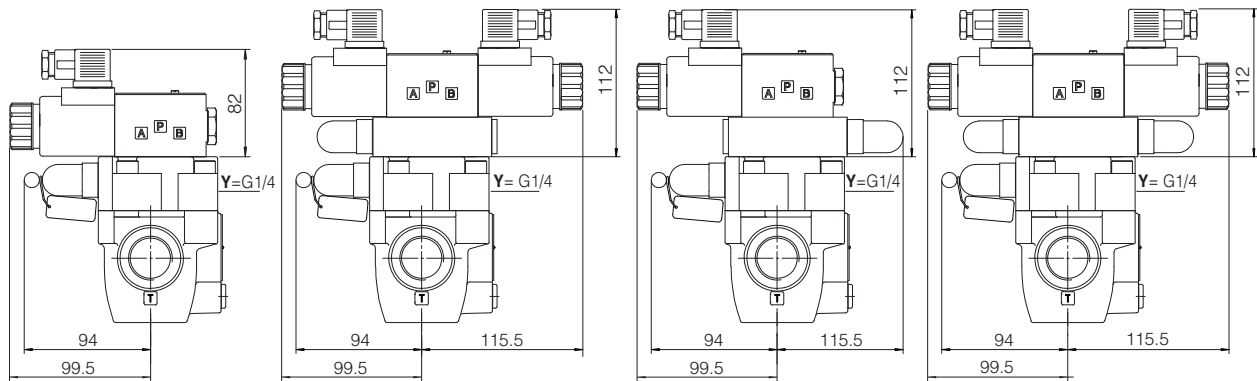


**ARAM-20/10/\*\*-IX**  
**ARAM-20/11/\*\*-IX**

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

**ARAM-20/22/\*\*-IX**

**ARAM-20/32/\*\*-IX**



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

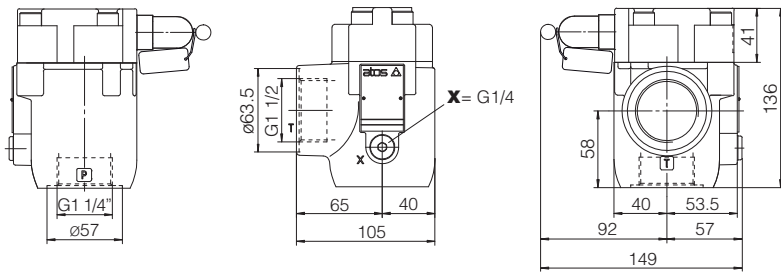
**ARAM-20/20/\*\*-EX**  
**ARAM-20/21/\*\*-EX**

**ARAM-20/22/\*\*-EX**

**ARAM-20/32/\*\*-EX**

Overall dimensions refer to valves with connectors type 666

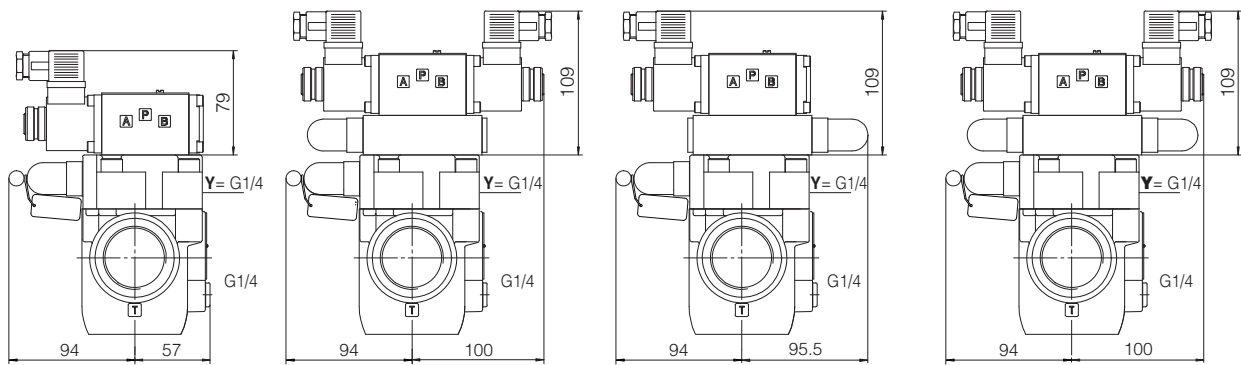
# ARAM-32



| Mass [kg] |     |
|-----------|-----|
| ARAM-32   | 4,7 |

|            | Mass [kg]      |                |
|------------|----------------|----------------|
|            | with option IX | with option EX |
| ARAM-32/10 | 6,2            | 6,5            |
| ARAM-32/11 | 6,2            | 6,5            |
| ARAM-32/20 | 7,9            | 8,5            |
| ARAM-32/21 | 7,9            | 8,5            |
| ARAM-32/22 | 7,6            | 7,9            |
| ARAM-32/32 | 8,8            | 8,2            |

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

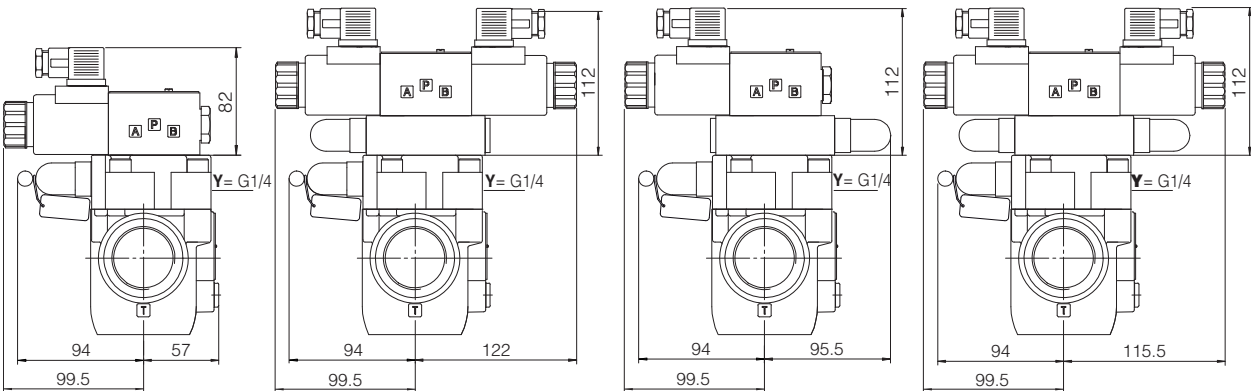


**ARAM-32/10/\*\*-IX**  
**ARAM-32/11/\*\*-IX**

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

**ARAM-32/22/\*\*-IX**

**ARAM-32/32/\*\*-IX**



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

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

**ARAM-32/22/\*\*-EX**

**ARAM-32/32/\*\*-EX**

Overall dimensions refer to valves with connectors type 666

## 14 RELATED DOCUMENTATION

**CY900** Operating and maintenance information for PED certified valves