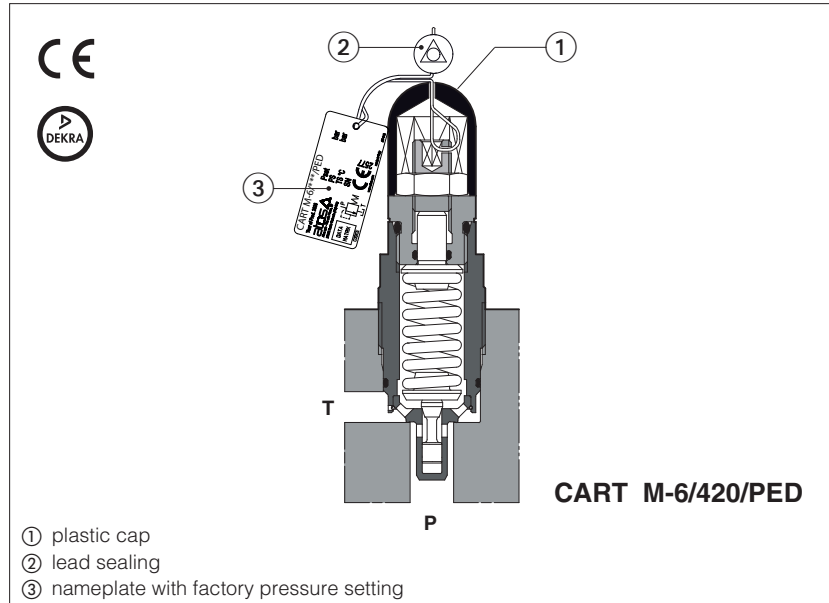


## Safety pressure relief valves

direct, screw-in, conforming to PED Directive 2014/68/EU - certified by



### CART /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 5.

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

The screw-in execution is specifically designed to reduce the dimension of blocks and manifolds, without penalizing the functional characteristics.

Size: **G1/2" ÷ M35**

Max flow: **2,5 ÷ 150 l/min**

Max pressure: up to **420 bar**

### 1 MODEL CODE

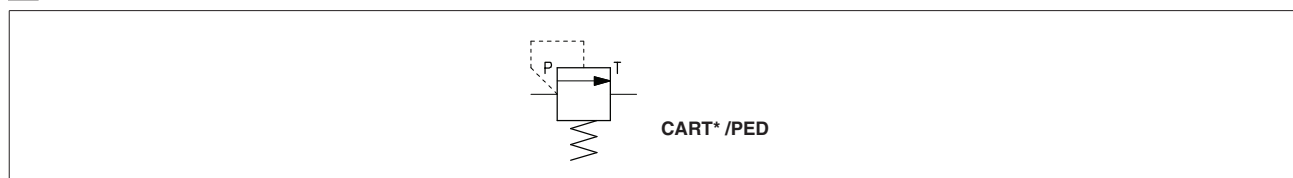
CART	M-6	/	420	/	PED	/	280	*	/	*
Safety pressure relief valves, screw-in										<b>Seals material, (2)</b> see section 5: - = NBR <b>PE</b> = FKM <b>BT</b> = HNBR
<b>Size:</b> <b>M-3</b> = G1/2 (1) <b>M-4</b> = M14x1 <b>M-5</b> = M20x1,5 <b>M-6</b> = M33x1,5 (1) <b>ARE-15</b> = M32x1,5 <b>ARE-20</b> = M35x1,5 (1)								Series number		
<b>Max pressure:</b> <b>420</b> = 420 bar								<b>Factory pressure setting (bar):</b> to be defined by the customer min step 1 bar (example <b>280</b> = 280 bar) min pressure setting: <b>25</b> = for CART-M* and CART ARE-15 <b>30</b> = for CART ARE-20		
								<b>PED</b> = EU Type examination to 2014/68/EU - certified by DEKRA		

(1) Available also in stainless steel execution, see technical table CWY010

(2) EPDM seals, code **EP**, are available on request for applications with HFDR fire-resistant phosphate ester-based fluids used in ground aviation hydraulic equipment (e.g., Skydrol or HyJet) – Max factory pressure setting = 350 bar.

Valves are identified by number **000400** before the model code, e.g.: 000400 CART-M-6/420/PED/350 /EP

### 2 HYDRAULIC SYMBOL



### 3 GENERAL CHARACTERISTICS

Assembly position	Any position
Cavity	See section 9
MTTFd values according to EN ISO 13849	150 years, for further details see technical table P007
Ambient temperature range	<b>Standard</b> = -30°C ÷ +80°C <b>/PE</b> option = -20°C ÷ +80°C <b>/BT</b> option = -40°C ÷ +70°C
Storage temperature range	<b>Standard</b> = -30°C ÷ +80°C <b>/PE</b> option = -20°C ÷ +80°C <b>/BT</b> option = -40°C ÷ +70°C
Surface protection	Zinc coating with black passivation - salt spray test (EN ISO 9227) > 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-examination certificate can be download from [www.atos.com](http://www.atos.com)

### 4 HYDRAULIC CHARACTERISTICS

Valve model	CART M-3	CART M-4	CART M-5	CART M-6	CART ARE-15	CART ARE-20
Max pressure on port P [bar]	420	420	420	420	420	420
Factory pressure setting range [bar]	25÷420	25÷420	25÷420	25÷420	25÷420	30÷420
Max pressure on port T [bar] (1)	50	50	50	50	50	50
Max flow [l/min] (2)	2,5	15	50	60	100	150

(1) The valves should be operated without counterpressure on T line, see note 2 at section 8

(2) Max flow without conterpressure on T line, see diagrams at section 8 for max ammissible flow

### 5 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 <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	

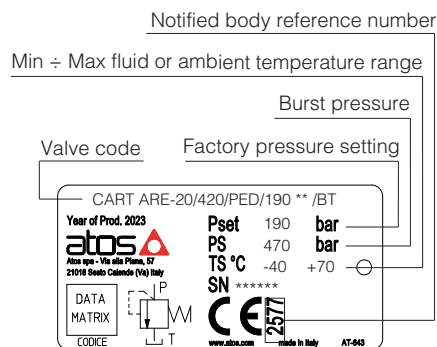
### 6 FACTORY PRESSURE SETTING

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 7

VALVE MODEL	FLOW FOR FACTORY PRESSURE SETTING (l/min)
CART M-3	0.5
CART M-4	0.5
CART M-5	2
CART M-6	2
CART ARE-15	2
CART ARE-20	2

⚠ Any tampering of the lead sealing invalidates the certification

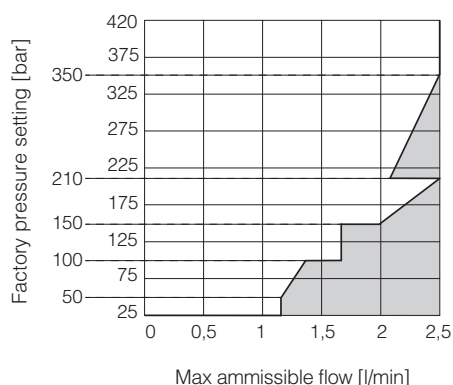
### 7 NAMEPLATE MARKING



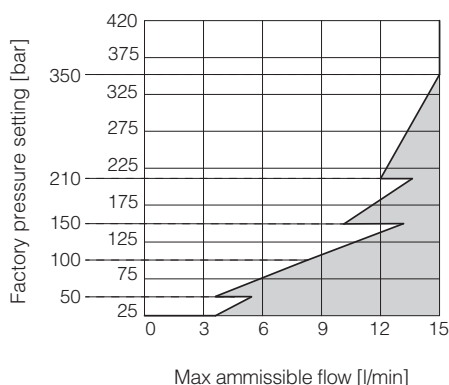
Note: **TS** values are referred to the extreme temperatures, regardless of whether the fluid or the ambient

**8 PERMITTED WORKING RANGE** (based on mineral oil ISO VG 46 at 50°C)

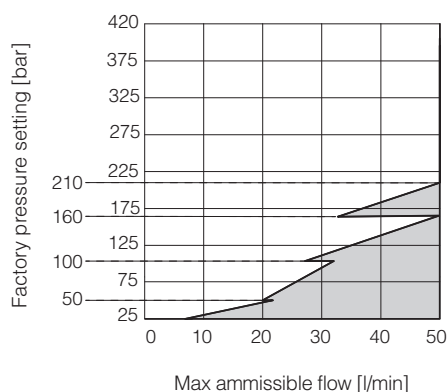
**CART M-3 \*\*/PED**



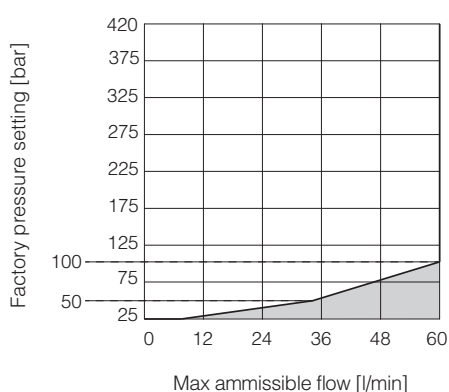
**CART M-4 \*\*/PED**



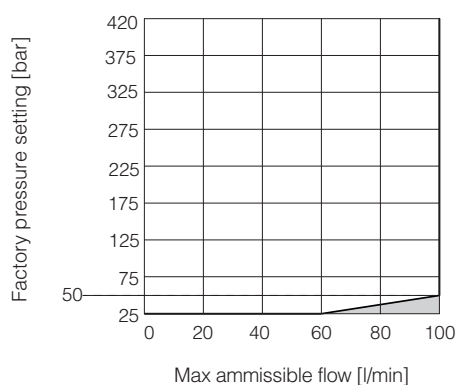
**CART M-5 \*\*/PED**



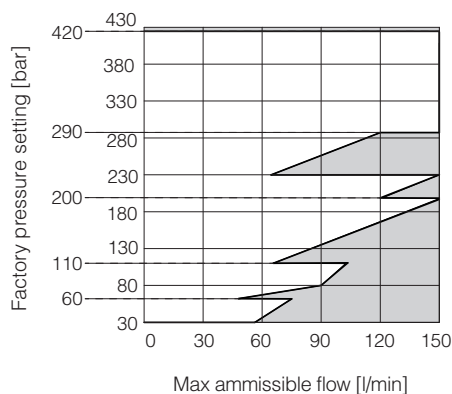
**CART M-6 \*\*/PED**



**CART ARE-15 \*\*/PED**



**CART ARE-20 \*\*/PED**



**Notes:**

- 1) The valves can operate only in the white area of the above diagrams.

The max ammissible 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 ammissible 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.

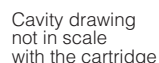
In case of counter pressure in T line, the maximum ammissible flow has to be reduced with respect to the values reported in the diagram, so as not to exceed the limit of +10% with respect to the factory pressure setting. Contact Atos technical office for details.

**CART M-3**



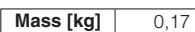
Mass [kg]	0,12
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**CART M-4**



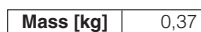
Mass [kg]	0,06
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## CART M-5



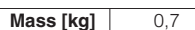
Mass [kg]	0,17
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## CART M-6



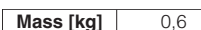
Mass [kg]	0,37
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**CART ARE-15**



Mass [kg]	0,7
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## CART ARE-20



Mass [kg]	0,6
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