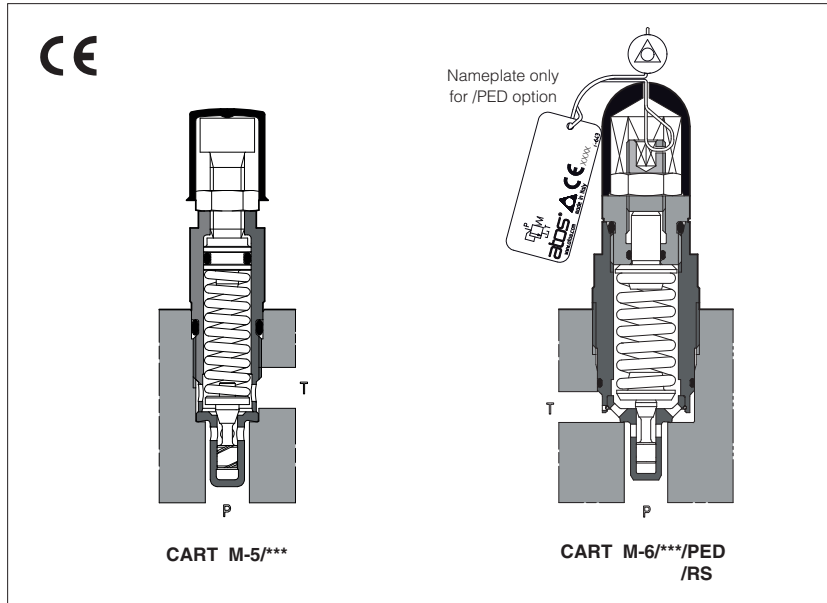


Cartridge pressure relief valves type CART

screw-in mounting, direct operated, PED safety version conforming to directive 2014/68/EU - certified by



CART are screw-in, direct operated pressure relief valves. They are used to limit the max pressure in the hydraulic systems or to protect part of the circuit from overpressure. They are available in six sizes for different flow and pressure ranges. The cartridge execution is specifically designed to reduce the dimension of blocks and manifolds, without penalizing the functional characteristics.

The following safety options are available with factory preset and lead sealed regulation:

PED certified by DEKRA according to Pressure Equipment Directive (2014/68/EU). The valves are factory set at the pressure level required by the customer with a flow through the valve as shown in section [6].

RS conforming to the Machine Directive (2006/42/CE). The factory preset regulation required by the customer corresponds to the valve's cracking pressure.

Max flow: **150 l/min**
Max pressure: up to **420 bar**

1 MODEL CODE

CART	M-6	/	420	/	PED	/	*	**	/	*
Screw-in relief cartridges										Seals material, see section [4]: - = NBR PE = FKM BT = HNBR (2):
Size: M-3 = G1/2 (1) M-4 = M14x1 M-5 = M20x1,5 M-6 = M33x1,5 (1) ARE-15 = M32x1,5 ARE-20 = M35x1,5 (1)										Series number
Max pressure: see section [3]										Only for RS, PED options: 280 = factory pressure setting to be defined by the customer min step: 1 bar - min pressure setting: 25 bar (example 280 = 280 bar)
										Options: see section [5] for options availability and combination: PED = certified by DEKRA according to 2014/68/EU R = leak free for special application (standard for CART M-4 and CART ARE-20) (3) RS = as /R, plus conforming to 2006/42/CE Only for standard and /R option (4): V = regulating handwheel VF = regulating knob VS = regulating knob with safety locking

(1) Available also in stainless steel execution, see technical table CX050

(2) BT option is not available for **CART M5/PED** and **CART ARE-20/PED**

(3) Standard execution of **CART M-4** and **CART ARE-20** provides the leak free feature, then the /R is always present in the valve model code, with the exception in case of PED and RS options

(4) For handwheel and knob features, see sections [10], [11]. For their availability see section [5]

2 HYDRAULIC SYMBOLS



3 HYDRAULIC CHARACTERISTICS

Valve model	CART M-3	CART M-4	CART M-5	CART M-6	CART ARE-15	CART ARE-20	
STANDARD	50 100 210 350 420	100 210 350 420	50 100 210 250 350	50 100 210 350 500	15 50 75 150 250 350 420	50 100 210	
Max pressure setting [bar]	R	350 420		50 100 210 350 500	15 50 75 150 250 420	315 400	
	RS		220 270 350		220 270 330 350	150 190 230	
	PED	420	420	350 (4)	420	420	400 (4)
Pressure range [bar]	STANDARD (1)	4÷50 6÷100 7÷210 8÷350 15÷420	6÷100 7÷210 8÷350 15÷420	2÷50 3÷100 5÷210 7÷250 8÷350	2÷50 3÷100 8÷210 15÷350 15÷500	2÷15 3÷50 4÷75 8÷150 8÷250 8÷350 15÷420	3÷50 5÷100 6÷210
	R (1)				2÷50 3÷100 10÷210 15÷350 15÷500	2÷15 3÷50 4÷75 8÷150 8÷250 15÷420	8÷315 10÷400
	RS (1)		210÷260 260÷300 300÷370		200÷250 250÷290 290÷350 310÷370	130÷170 170÷210 210÷250	
	PED	25÷420	25÷420	25÷350	25÷420	25÷420	30÷400
Max pressure on port T [bar]	(2) 50	50	50	50	50	50	
Max flow [l/min]	STANDARD RS, PED (3)	2,5 15 15	35 50	40 60	75 100	120 150	

- (1) The values correspond to the min and max regulation of the valve's craking pressure
(2) Ped valves should be operated without counterpressure on T line, see note 2 at section 8
(3) For PED valves see diagrams at section 8
(4) Not available with BT option

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 ÷ +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 mm ² /s - max allowed range 2,8 ÷ 500 mm ² /s		
Max fluid contamination level	ISO 4406 class 21/19/16 NAS 1638 class 10, see also filter section 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	HFDU, HFDR	ISO 12922
Flame resistant with water	NBR, HNBR	HFC	

5 OPTIONS AVAILABILITY

Valve model	CART M-3	CART M-4	CART M-5	CART M-6	CART ARE-15	CART ARE-20
Option	/R	STANDARD		●	●	STANDARD
	/RS		●		●	
	/PED	●	●	●	●	●
	/V	●			●	●
	/VF				●	●
	/VS				●	●
Combinated option (1)	/RV			●	●	●
	/RVF			●	●	
	/RVS			●	●	

- (1) **RV** = leak free and regulating handwheel
RVF = leak free and regulating knob
RVS = leak free and regulating knob with safety lock

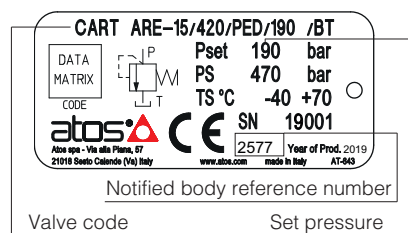
6 SETTING OF VALVES WITH /PED OPTION

The /PED valves are factory set at the pressure level required by the customer (min step: 1bar - min pressure setting: 25 bar) at the following flow shown in the table.

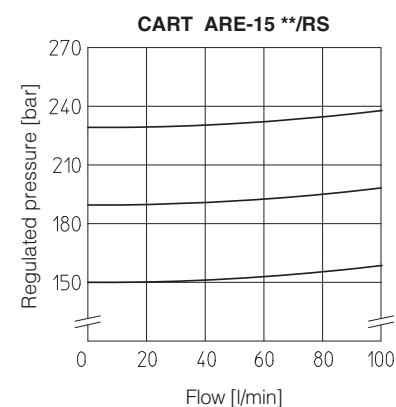
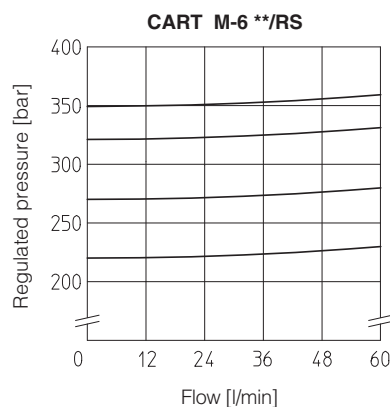
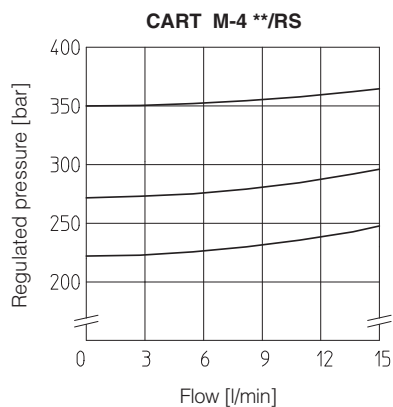
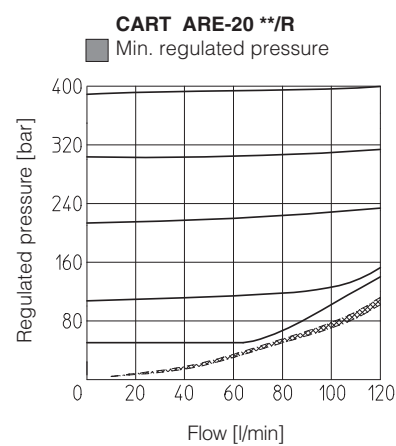
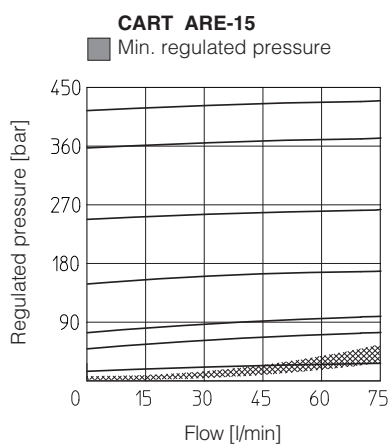
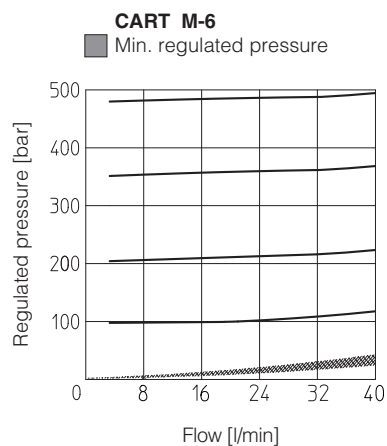
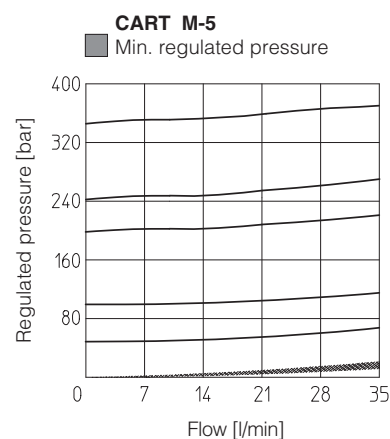
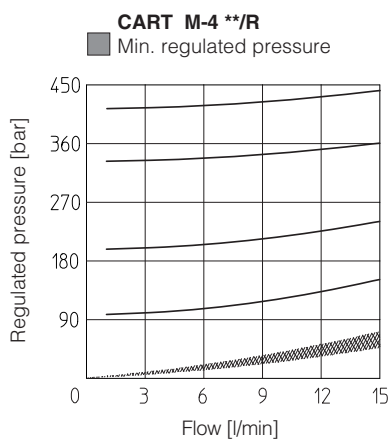
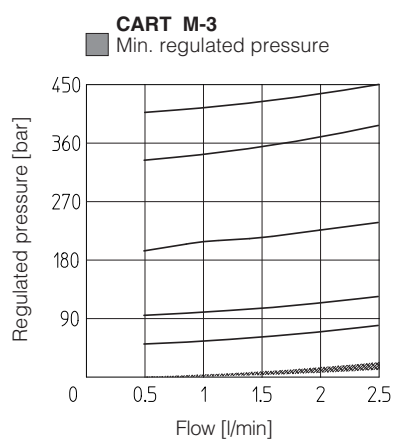
The set pressure is marked on the valve nameplate, see section 6.1

VALVE MODEL	FLOW FOR FACTORY PRESSURE SETTING (l/min)
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

6.1 EXAMPLE OF NAMEPLATE FOR /PED OPTION

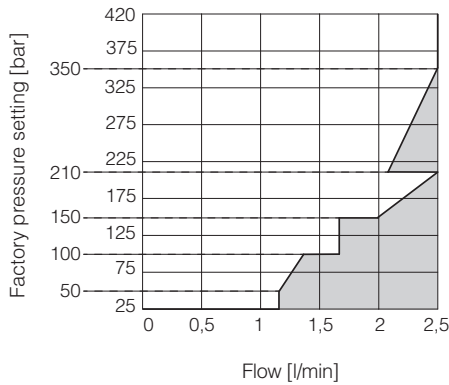


7 REGULATED PRESSURE VERSUS FLOW DIAGRAMS (based on mineral oil ISO VG 46 at 50°C)

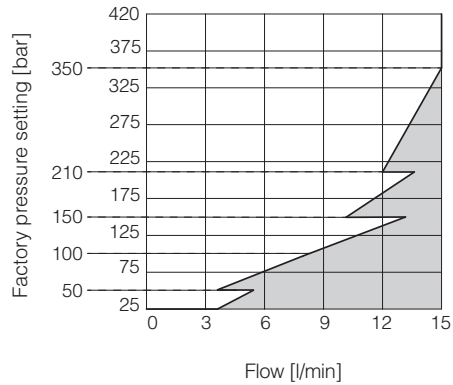


8 PERMITTED WORKING RANGES (based on mineral oil ISO VG 46 at 50°C)

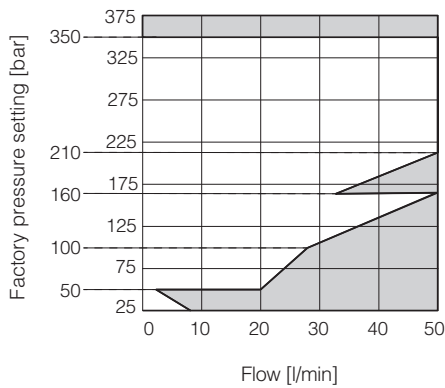
CART M-3 **/PED



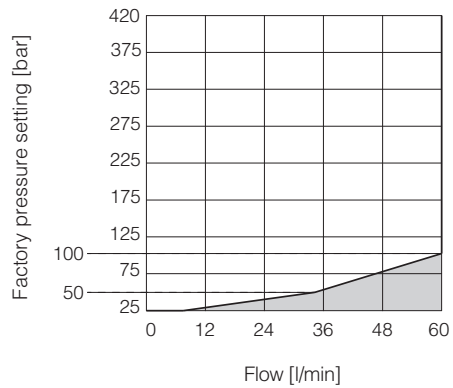
CART M-4 **/PED



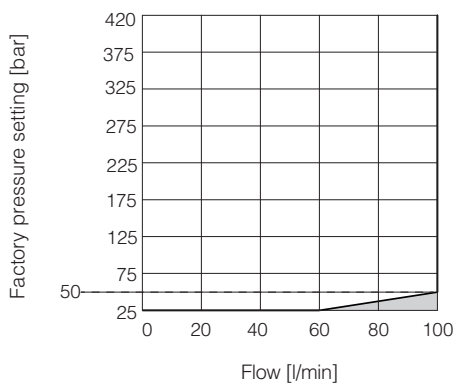
CART M-5 **/PED



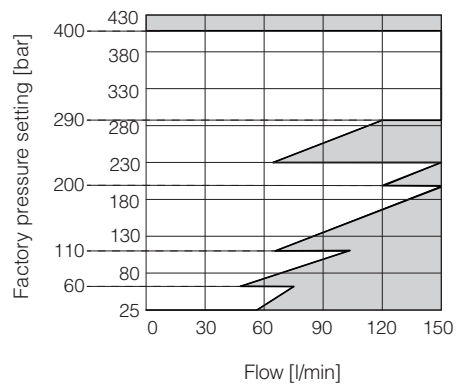
CART M-6 **/PED



CART ARE-15 **/PED



CART ARE-20 **/PED



Note:

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

The maximum flow values within the white area are those for which the pressure increases of +10% respect to the factory pressure setting. Pressure / flow values located in gray areas cannot be performed

2) The working range in above diagrams is valid with 0 bar in T line.

As general rule PED valves should be operated without counter pressure in the T line.

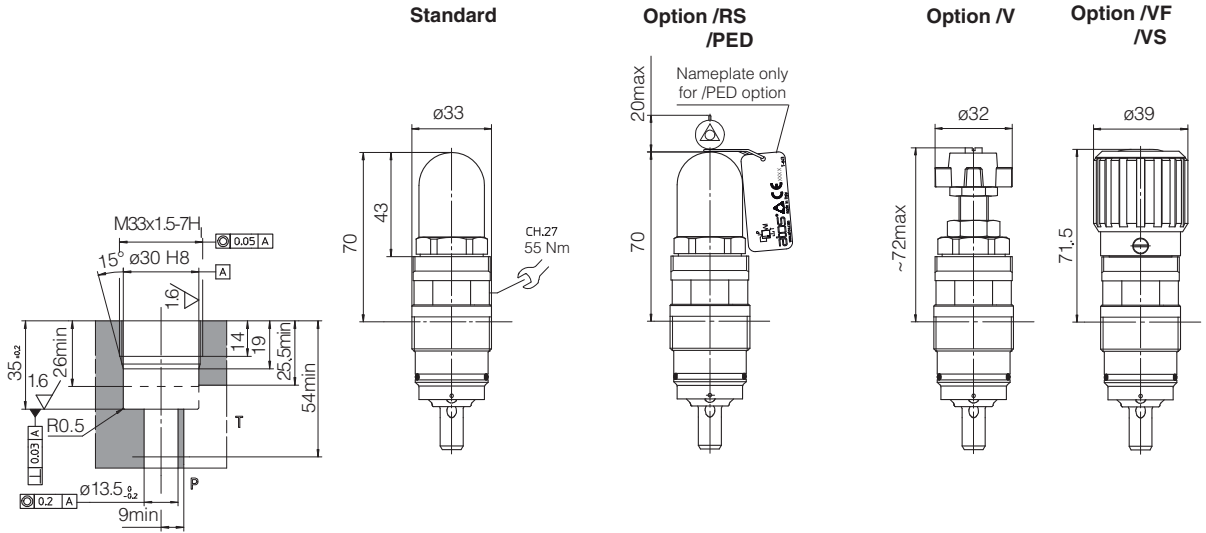
Differently, in case of counter pressure in T line, the maximum flow is reduced respect to values reported in the diagrams.

There is a relation between the maximum counter pressure, the factory pressure setting and the maximum flow: with a flow near to zero, the maximum counter pressure in T line is 10% of the factory pressure setting.

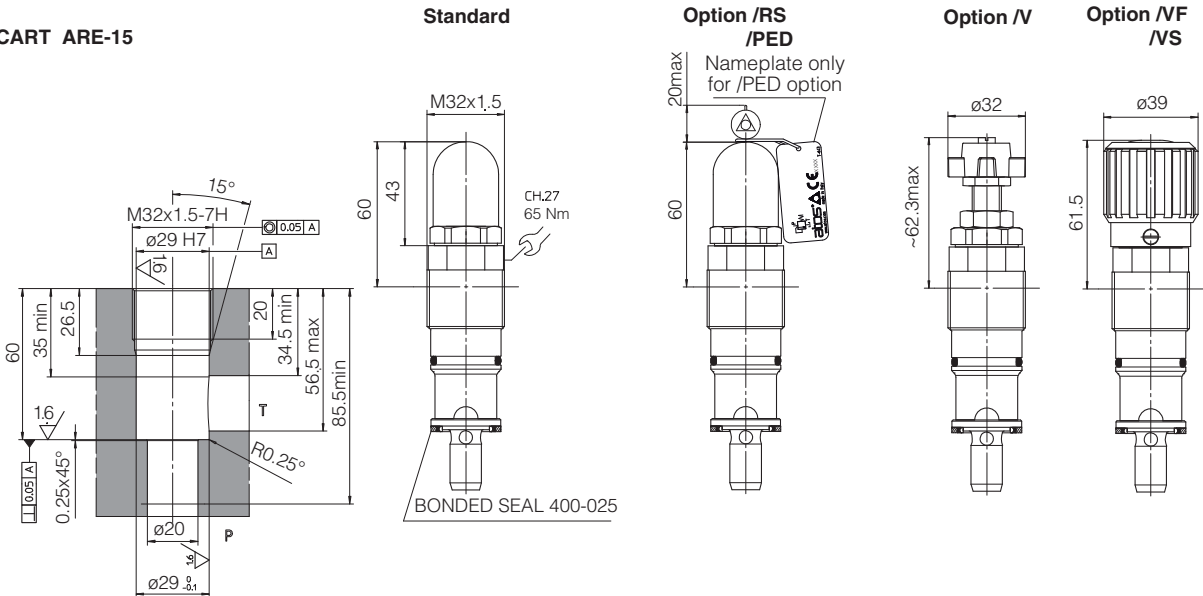
With increasing flow, the maximum counter pressure in T line must be reduced. Contact Atos technical office for details.

11 CAVITY AND DIMENSIONS FOR CART M-6, CART ARE-15 AND ARE-20 [mm]

CART M-6



CART ARE-15



CART ARE-20

