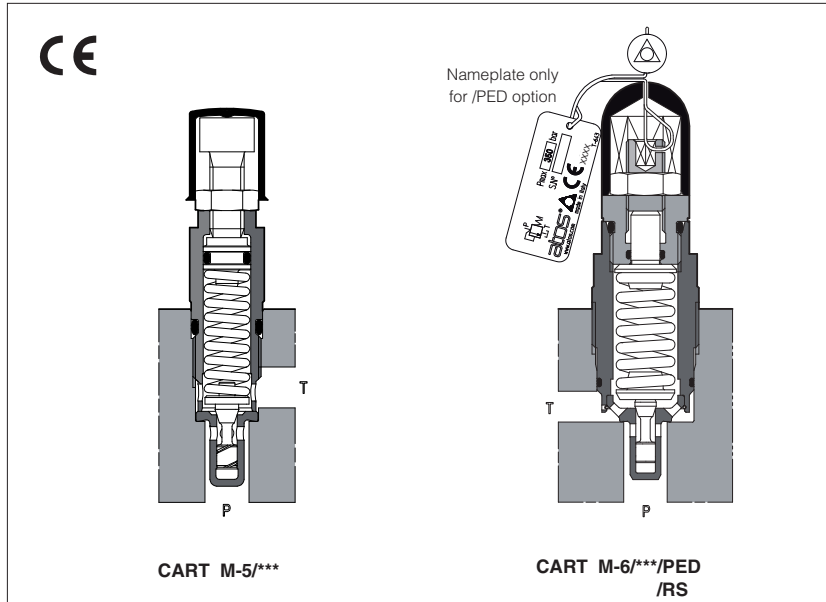


# Cartridge pressure relief valves type CART

screw-in mounting



**CART** are direct operated pressure relief valves for screw-in mounting.

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 range.

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 regulation, not adjustable (lead sealed regulation):

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

**/PED** certified by ConCert according to PED Directive (2014/68/UE). The valves are factory set at the pressure level required by the customer with a flow through the valve as shown in section 6. For this version, the P/Q limits are shown in section 7.

Max flow: **150 l/min.**

Max pressure: up to **420 bar**

## 1 MODEL CODE

<b>CART</b>	<b>M-6</b>	/	<b>350</b>	/	<b>PED</b>	/	<b>*</b>	/	<b>**</b>	/	<b>*</b>
Screw-in relief cartridges											Seals material, see section 4: - = NBR <b>PE</b> = FKM <b>BT</b> = HNBR
Size: <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
Max pressure setting: see section 3 for available setting											Only for RS, PED options: <b>280</b> = factory pressure setting to be defined depending to the customer requirement min step: 1bar - min pressure setting: 25 bar (example 280 = 280 bar)
											Options: see section 5 for options availability and combination: <b>R</b> = reduced leakage for special application (standard code for <b>CART M-4</b> and <b>CART ARE-20</b> ) (2) <b>RS</b> = as /R, plus conforming to 2006/42/CE <b>PED</b> = as /R, plus certified by ConCert according to 2014/68/CE Only for standard and /R option (3): <b>V</b> = regulating handwheel <b>VF</b> = regulating knob <b>VS</b> = regulating knob with safety locking

(1) Available also in stainless steel execution, see technical table E135

(2) Standard execution of CART M-4 and CART ARE-20 provides the reduced leakage feature, then the /R is always present in the valve model code

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

(1) The values correspond to the min and max regulation of the valve's craking pressure

### 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 mm <sup>2</sup> /s - max allowed range 2,8 ÷ 500 mm <sup>2</sup> /s		
Fluid contamination class	ISO 4406 class 21/19/16 NAS 1638 class 10, in line filters of 25 µm (β10 ≥75 recommended)		
<b>Hydraulic fluid</b>	<b>Suitable seals type</b>	<b>Classification</b>	<b>Ref. Standard</b>
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	

### 5 OPTIONS AVAILABILITY

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

(1) **RV** = reduced leakage and regulating handwheel  
**RVF** = reduced leakage and regulating knob  
**RVS** = reduced leakage and regulating knob with safety lock

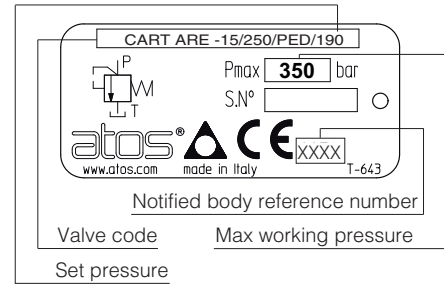
## 6 SETTING OF VALVES WITH /PED OPTION

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.

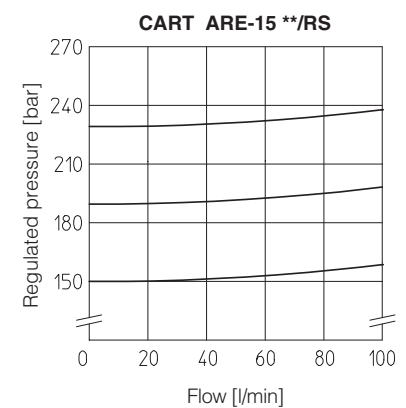
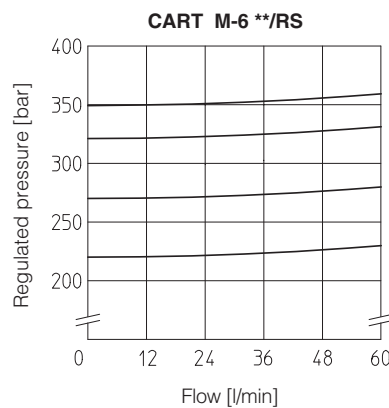
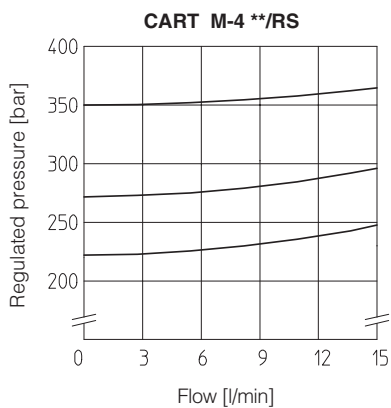
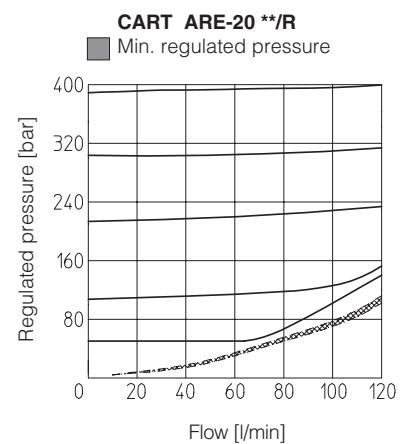
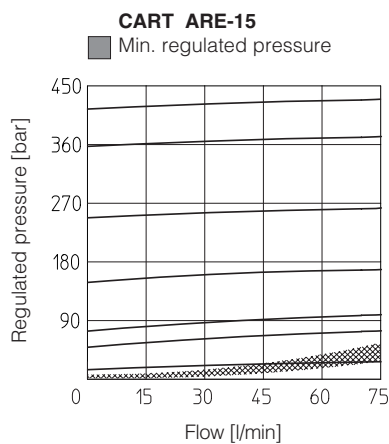
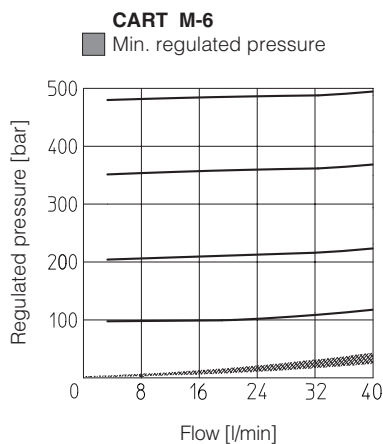
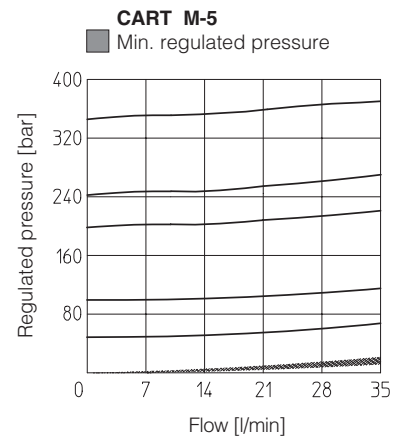
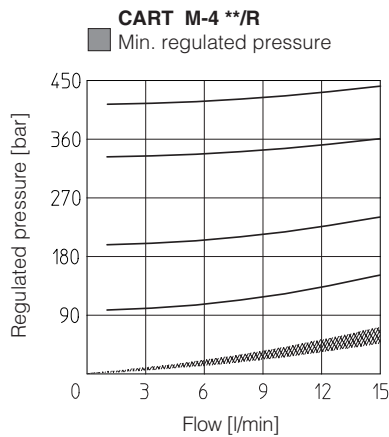
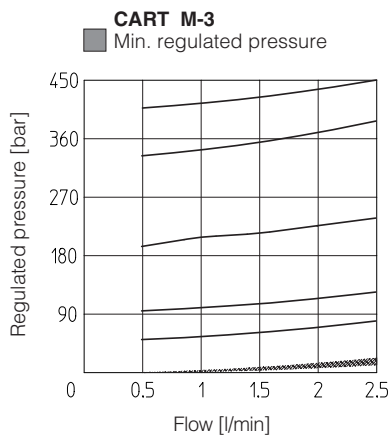
The set pressure is marked on the valve nameplate, see section 6.1

VALVE MODEL	FLOW FOR FACTORY PRESSURE SETTING (l/min)
CART M-3	1
CART M-4	1
CART M-5	12
CART M-6	12
CART ARE-15	12
CART ARE-20	23

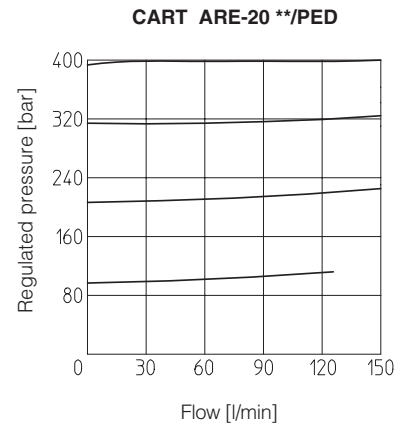
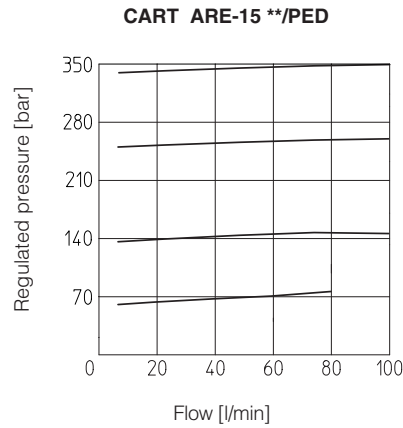
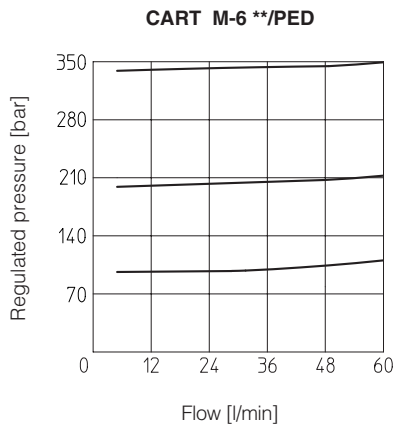
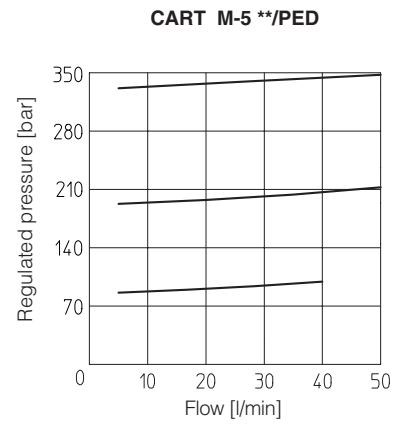
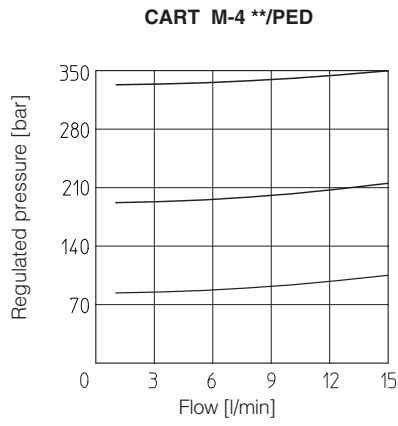
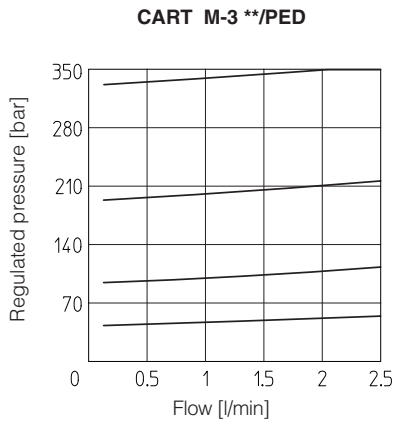
## 6.1 EXAMPLE OF NAMEPLATE FOR /PED OPTION



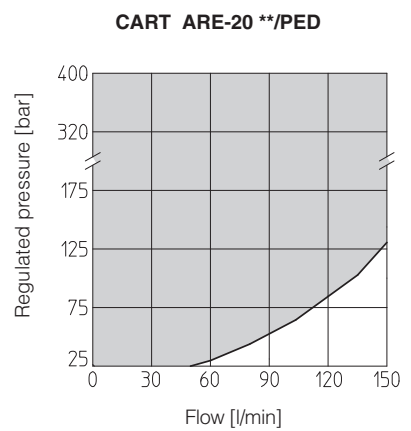
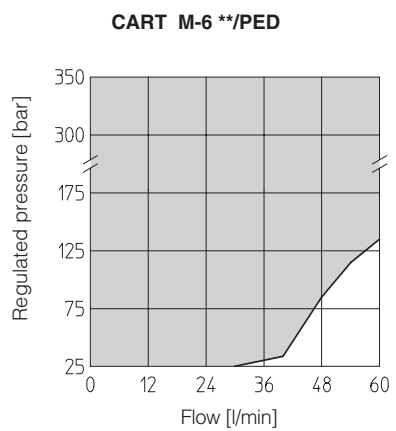
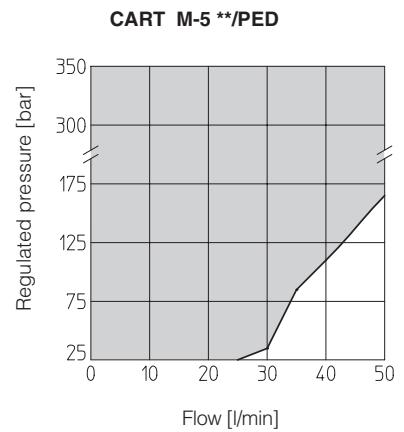
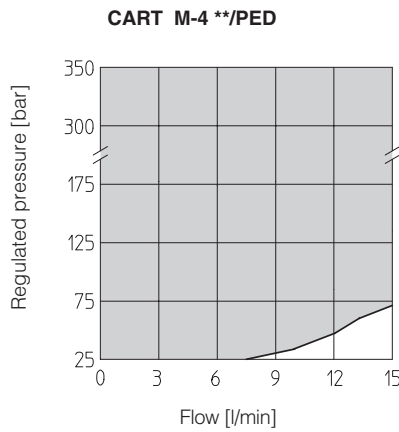
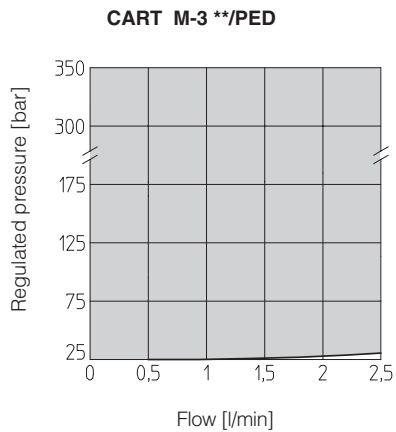
## 7 REGULATED PRESSURE VERSUS FLOW DIAGRAMS (based on mineral oil ISO VG 46 at 50°C)



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

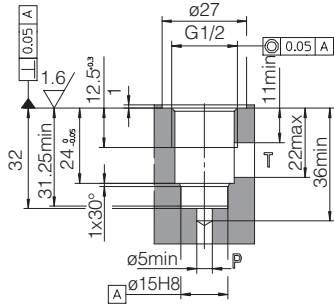


**9 PERMITTED WORKING RANGES** shaded area (based on mineral oil ISO VG 46 at 50°C)

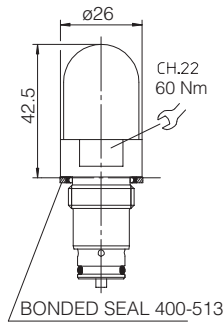


10 CAVITY AND DIMENSIONS FOR CART M-3, M-4 AND M-5 [mm]

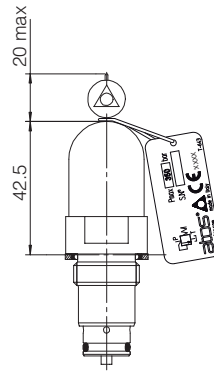
**CART M-3**



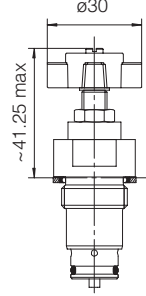
**Standard**



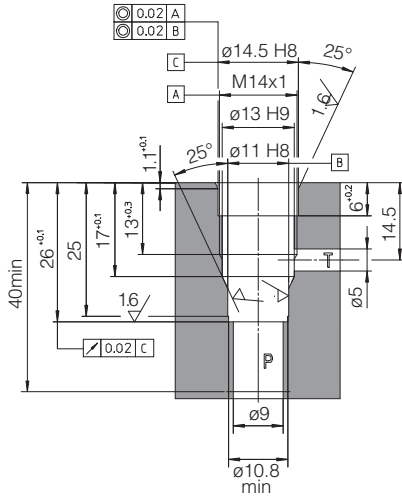
**Option /PED**



**Option IV**

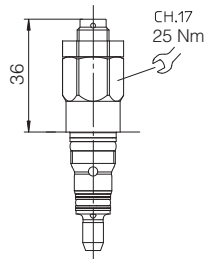


**CART M-4**

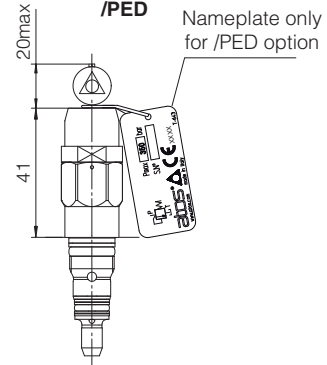


Cavity drawing not in scale with the cartridge

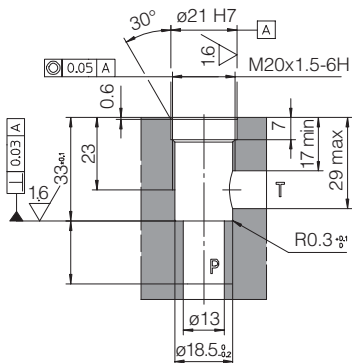
**Standard**



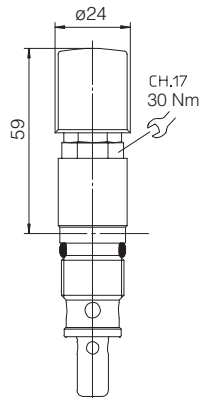
**Option /RS /PED**



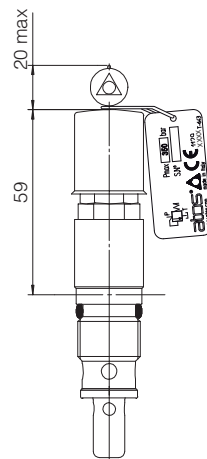
**CART M-5**



**Standard**



**Option /PED**



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

