



**SABIANA**  
IL CLIMA AMICO

A leading brand of  AFG



# Carisma CRC-ECM

## Fan Coil Unit with Centrifugal Fan with EC Brushless Electronic Motor and Inverter Board

**R**ange includes **5 air flow rates** (from 115 to 1395 m<sup>3</sup>/h) and **5 models** (for wall and ceiling installation, with casing and concealed), each equipped with 3 or 4 row coil and with the possibility to add a 1 or 2 row coil for 4 pipe systems.

This is the series with the **lowest electrical consumption** in relation to both heat performance as well as working static performance and is particularly suited to satisfying the strictest energy consumption needs **of class A** buildings, and to ensuring excellent acoustic comfort.

The **ECM range** makes use of the excellent experience gained with the SkyStar Cassette fan coils with inverter board, first in the world in production since 2009, and which have had great success on all markets.

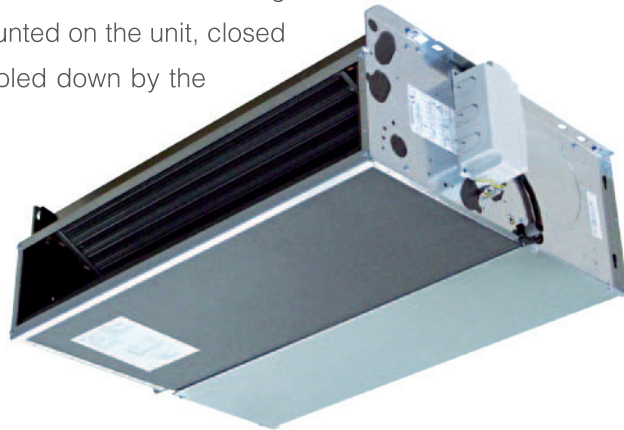
The innovative **brushless** and **sensorless** type synchronous electronic motor with permanent magnets, is controlled by an inverter board designed and developed in Italy. The board is mounted on the unit, closed to the motor, without the need to be cooled down by the air flow.

The air flow rate can be varied **in continuously** by means of a 1-10 V signal generated by Sabiana controls or by independent control systems.

The continuous air flow control improves the acoustic comfort and allows a more punctual reply to the variation of the thermal loads and a greater stability of the requested ambient temperature.

The extreme efficiency, also at low speed, makes possible a great reduction in electric consumption (50% less in comparison to CRC AC motor) with absorption values under normal operating conditions that **do not exceed 16 Watt**. The excellent values of the CRC range in terms of sound levels have been maintained **in all working conditions**, without any resonance phenomenon at any frequency.

The full compliance with the Electromagnetic Compatibility Directive and with the other severe Standards in force is certified by an independent institute.



## Technical characteristics of the main components:

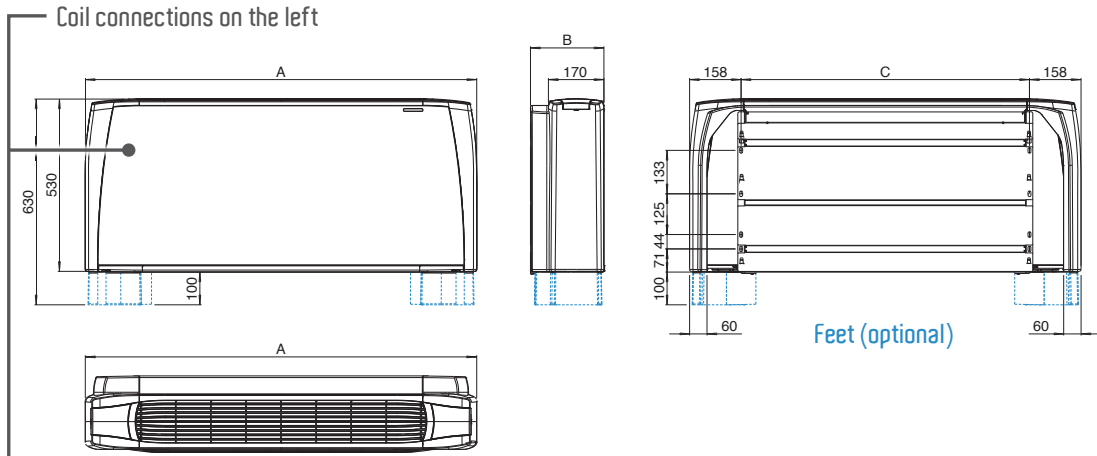
For the technical characteristics of the various components refer to Carisma CRC Fan Coil Unit, except for

**Electronic motor:** three phase permanent magnet brushless electronic motor that is controlled with current reconstructed according to a **BLAC** sinusoidal wave. The inverter board that controls the motor operation is powered by 230 Volt, single-phase and, with a **switching system**, it generates a three-phase frequency modulated, wave form power supply.

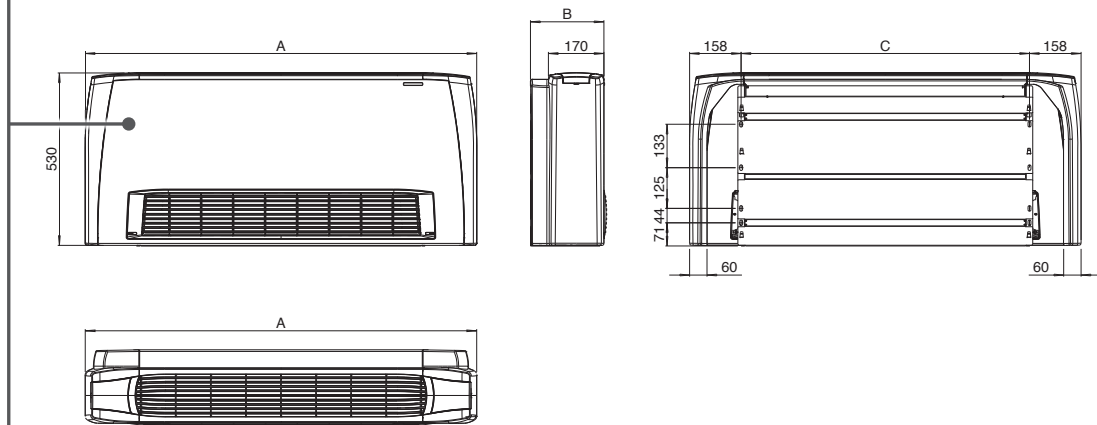
The electric power supply required for the machine is therefore single-phase with voltage of **230 – 240 U** and frequency of **50 – 60 Hz**.

# Dimensions, Weight, Water content

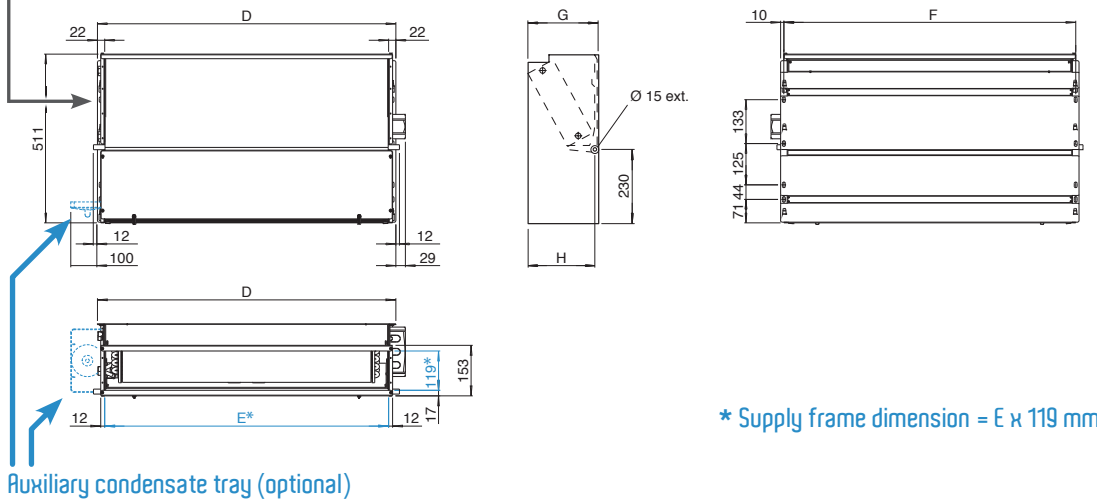
## MU model



## MO-MUB model



## IU-IO model

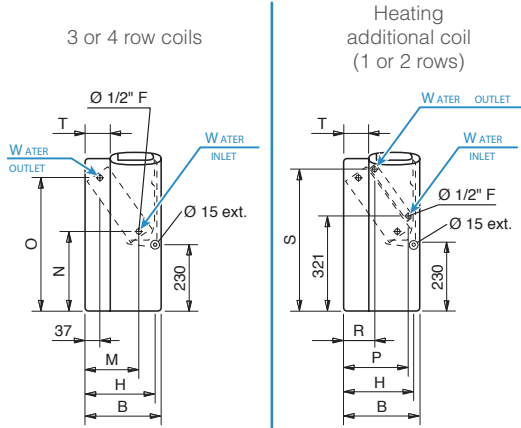


Auxiliary condensate tray (optional)

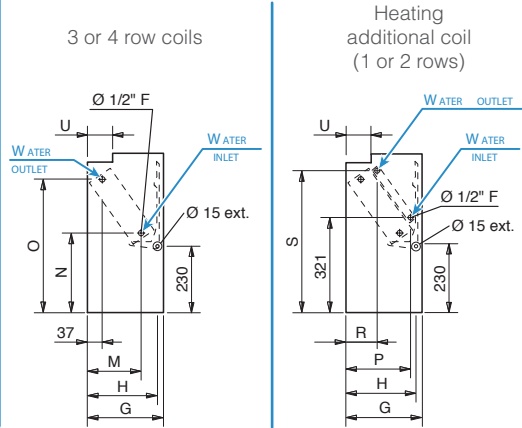
# Dimensions, Weight, Water content

## Coil connections

### MU and MO-MUB model



### IU-IO model



## Dimension (mm)

MODEL	2	4	6	7	9
A	770	985	1200	1415	1415
B	225	225	225	225	255
C	454	669	884	1099	1099
D	474	689	904	1119	1119
E	430	645	860	1075	1075
F	454	669	884	1099	1099
G	218	218	218	218	248
H	205	205	205	205	235
M	145	145	145	145	170
N	260	260	260	260	270
O	460	460	460	460	450
P	185	185	185	185	210
R	105	105	105	105	110
S	475	475	475	475	465
T	55	55	55	55	85
U	65	65	65	65	95

## Weight (kg)

		WEIGHT WITH PACKAGING					WEIGHT WITHOUT PACKAGING					
	MODEL	2	4	6	7	9	2	4	6	7	9	
MU MO-MUB	ROWS	3	17,2	22,5	27,7	32,1	35,9	15,4	20,2	24,9	28,8	32,2
		3+1	18,0	23,7	29,2	33,9	37,7	16,2	21,4	26,4	30,6	34,0
		3+2	18,6	24,4	30,1	35,0	38,8	16,8	22,1	27,3	31,7	35,1
		4	18,0	23,5	29,0	33,6	37,4	16,2	21,2	26,2	30,3	33,7
		4+1	18,8	24,7	30,5	35,4	39,2	17,0	22,4	27,7	32,1	35,5
IU-IO	ROWS	3	13,6	18,1	22,8	27,0	30,4	11,8	16,3	20,5	24,2	27,3
		3+1	14,4	19,3	24,3	28,8	32,2	12,6	17,5	22,0	26,0	29,1
		3+2	15,0	20,0	25,2	29,9	33,3	13,2	18,2	22,9	27,1	30,2
		4	14,4	19,1	24,1	28,5	31,9	12,6	17,3	21,8	25,7	28,8
		4+1	15,2	20,3	25,6	30,3	33,7	13,4	18,5	23,3	27,5	30,6

## Water content (litres)

MODEL	2	4	6	7	9	
ROWS	3	0,6	0,9	1,6	1,7	1,9
	4	0,8	1,3	2,2	2,4	2,8
	+1	0,2	0,3	0,5	0,5	0,6
	+2	0,4	0,6	1,0	1,0	1,2



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# Certification

## Units with 3 row coil

**2 pipe units.** The following standard rating conditions are used:

### COOLING (summer mode)

Entering air temperature: +27°C d.b. +19°C w.b.  
Water temperature: + 7°C E.W.T. +12°C L.W.T.

### HEATING (winter mode)

Entering air temperature: +20°C  
Entering water temperature: +50°C

Water flow rate as for the cooling conditions

MODEL	CRC-ECM 23					CRC-ECM 43					CRC-ECM 63					
	1 (E)	3	5 (E)	7,5	10 (E)	1 (E)	3	5 (E)	7,5	10 (E)	1 (E)	3	5 (E)	7,5	10 (E)	
Inverter Power (V)																
<b>Speed</b>	<b>MIN MED MAX</b>					<b>MIN MED MAX</b>					<b>MIN MED MAX</b>					
Air flow	m <sup>3</sup> /h	120	170	220	270	330	210	280	350	430	515	305	395	495	610	735
Cooling total emission (E)	kW	0,74	0,98	1,19	1,39	1,61	1,42	1,80	2,19	2,58	2,97	1,97	2,45	2,94	3,46	3,99
Cooling sensible emission (E)	kW	0,56	0,75	0,93	1,10	1,30	1,04	1,34	1,65	1,96	2,28	1,47	1,84	2,23	2,67	3,11
Heating (E)	kW	0,92	1,24	1,53	1,81	2,13	1,70	2,20	2,70	3,21	3,74	2,35	2,96	3,59	4,25	4,95
Heating - Water 70-60°C	kW	1,55	2,10	2,61	3,09	3,64	2,85	3,70	4,55	5,43	6,33	3,95	4,97	6,04	7,17	8,37
Dp Cooling (E)	kPa	1,8	2,9	4,0	5,3	6,9	7,9	12,0	17,0	22,6	28,9	5,5	8,0	11,1	14,8	19,0
Dp Heating (E)	kPa	1,4	2,5	3,4	4,5	5,7	6,6	9,9	13,8	18,2	23,9	4,5	6,7	9,2	12,1	15,7
Fan (E)	W	7,0	9,0	11,0	14,5	21,0	6,0	9,0	12,0	17,0	25,0	7,0	10,0	15,0	22,0	32,0
Sound power (E)	dB(A)	30	36	41	47	51	30	36	42	47	51	33	38	44	49	54
Sound pressure (*)	dB(A)	21	27	32	38	42	21	27	33	38	42	24	29	35	40	45
1 row heating additional coil (Water 70/60°C)	Heating (E) kW	0,81	1,04	1,23	1,42	1,63	1,47	1,79	2,11	2,42	2,74	2,00	2,40	2,80	3,24	3,68
	Dp Heat. (E) kPa	1,3	1,9	2,6	3,4	4,3	4,5	6,4	8,5	10,9	13,6	1,5	2,1	2,8	3,6	4,5
Energy classification FCEER (**)	(E)	C					A					A				
Energy classification FCCOP (***)	(E)	C					B					A				

MODEL	CRC-ECM 73					CRC-ECM 93					
	1 (E)	3	5 (E)	7,5	10 (E)	1 (E)	3	5 (E)	7,5	10 (E)	
Inverter Power (V)											
<b>Speed</b>	<b>MIN MED MAX</b>					<b>MIN MED MAX</b>					
Air flow	m <sup>3</sup> /h	400	500	610	755	890	605	785	945	1175	1395
Cooling total emission (E)	kW	2,61	3,14	3,70	4,39	4,98	3,47	4,25	4,86	5,67	6,36
Cooling sensible emission (E)	kW	1,93	2,35	2,79	3,35	3,84	2,65	3,31	3,83	4,56	5,20
Heating (E)	kW	3,08	3,76	4,47	5,32	6,09	4,45	5,53	6,41	7,62	8,69
Heating - Water 70-60°C	kW	5,16	6,30	7,50	8,94	10,25	7,55	9,40	10,94	13,06	14,95
Dp Cooling (E)	kPa	10,5	14,5	19,4	26,1	32,6	8,9	12,7	16,1	21,1	25,9
Dp Heating (E)	kPa	8,4	11,9	16,1	21,5	26,8	7,7	11,0	13,9	18,3	22,5
Fan (E)	W	9,0	13	18,5	28,5	41,0	16,0	25,0	41,0	65,0	99,0
Sound power (E)	dB(A)	37	43	48	53	57	44	50	55	60	64
Sound pressure (*)	dB(A)	28	34	39	44	48	35	41	46	51	55
1 row heating additional coil (Water 70/60°C)	Heating (E) kW	2,65	3,10	3,56	4,13	4,63	3,40	4,08	4,62	5,35	5,98
	Dp Heat. (E) kPa	2,9	3,9	4,9	6,4	7,8	4,6	6,3	7,8	10,1	12,3
Energy classification FCEER (**)	(E)	A					B				
Energy classification FCCOP (***)	(E)	A					B				

(E) = Eurovent certified performance.

(\*) = The sound pressure levels are 9 dB(A) lower than the sound power levels and apply to the reverberant field of a 100 m<sup>3</sup> room and a reverberation time of 0.5 sec.

(\*\*) FCEER = Energy classification in Cooling.

(\*\*\*) FCCOP = Energy classification in Heating.



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# Certification

## Units with 4 row coil

**2 pipe units.** The following standard rating conditions are used:

### COOLING (summer mode)

Entering air temperature: +27°C d.b. +19°C w.b.  
Water temperature: + 7°C E.W.T. +12°C L.W.T.

### HEATING (winter mode)

Entering air temperature: +20°C  
Entering water temperature: +50°C

Water flow rate as for the cooling conditions

MODEL	CRC-ECM 24					CRC-ECM 44					CRC-ECM 64					
	1 (E)	3	5 (E)	7,5	10 (E)	1 (E)	3	5 (E)	7,5	10 (E)	1 (E)	3	5 (E)	7,5	10 (E)	
Inverter Power (V)																
<b>Speed</b>	<b>MIN</b>					<b>MIN</b>					<b>MIN</b>					
Air flow	m <sup>3</sup> /h	115	160	210	260	325	200	265	340	415	505	290	375	475	590	720
Cooling total emission (E)	kW	0,78	1,07	1,33	1,59	1,88	1,44	1,84	2,28	2,73	3,19	2,06	2,61	3,20	3,86	4,54
Cooling sensible emission (E)	kW	0,57	0,79	0,99	1,20	1,44	1,04	1,35	1,68	2,04	2,41	1,49	1,90	2,35	2,86	3,41
Heating (E)	kW	0,94	1,30	1,63	1,98	2,37	1,70	2,19	2,75	3,31	3,91	2,43	3,12	3,87	4,71	5,60
Heating - Water 70-60°C	kW	1,57	2,18	2,75	3,33	4,01	2,83	3,67	4,59	5,57	6,60	4,05	5,21	6,48	7,90	9,43
Dp Cooling (E)	kPa	3,2	5,5	8,0	11,0	14,8	4,0	6,1	8,9	12,2	16,1	8,2	12,4	17,8	24,8	33,0
Dp Heating (E)	kPa	2,6	4,6	6,5	9,1	12,6	3,0	4,8	7,2	10,0	13,5	6,5	10,2	14,9	20,4	26,9
Fan (E)	W	7,0	9,0	11,0	14,5	21,0	6,0	9,0	12,0	17,0	25,0	7,0	10,0	15,0	22,0	32,0
Sound power (E)	dB(A)	30	36	41	47	51	30	36	42	47	51	33	38	44	49	54
Sound pressure (*)	dB(A)	21	27	32	38	42	21	27	33	38	42	24	29	35	40	45
1 row heating additional coil (Water 70/60°C)	Heating (E) kW	0,81	1,04	1,23	1,42	1,63	1,47	1,79	2,11	2,42	2,74	2,00	2,40	2,80	3,24	3,68
	Dp Heat. (E) kPa	1,3	1,9	2,6	3,4	4,3	4,5	6,4	8,5	10,9	13,6	1,5	2,1	2,8	3,6	4,5
Energy classification FCEER (**)	(E)	C					A					A				
Energy classification FCCOP (***)	(E)	C					B					A				

MODEL	CRC-ECM 74					CRC-ECM 94					
	1 (E)	3	5 (E)	7,5	10 (E)	1 (E)	3	5 (E)	7,5	10 (E)	
Inverter Power (V)											
<b>Speed</b>	<b>MIN</b>					<b>MIN</b>					
Air flow	m <sup>3</sup> /h	380	475	585	735	875	575	755	910	1145	1365
Cooling total emission (E)	kW	2,62	3,21	3,84	4,64	5,34	3,61	4,52	5,25	6,25	7,14
Cooling sensible emission (E)	kW	1,91	2,36	2,84	3,47	4,03	2,71	3,43	4,03	4,87	5,63
Heating (E)	kW	3,09	3,82	4,61	5,61	6,51	4,50	5,73	6,70	8,12	9,39
Heating - Water 70-60°C	kW	5,16	6,38	7,73	9,39	10,93	7,58	9,69	11,37	13,82	16,03
Dp Cooling (E)	kPa	7,3	10,5	14,3	20,0	25,6	6,3	9,3	12,1	16,5	20,8
Dp Heating (E)	kPa	6,0	8,5	11,8	16,7	21,0	5,2	7,7	9,9	13,5	17,0
Fan (E)	W	9,0	13,0	18,5	28,5	41,0	16,0	25,0	41,0	65,0	99,0
Sound power (E)	dB(A)	37	43	48	53	57	44	50	55	60	64
Sound pressure (*)	dB(A)	28	34	39	44	48	35	41	46	51	55
1 row heating additional coil (Water 70/60°C)	Heating (E) kW	2,65	3,10	3,56	4,13	4,63	3,40	4,08	4,62	5,35	5,98
	Dp Heat. (E) kPa	2,9	3,9	4,9	6,4	7,8	4,6	6,3	7,8	10,1	12,3
Energy classification FCEER (**)	(E)	A					B				
Energy classification FCCOP (***)	(E)	A					B				

(E) = Eurovent certified performance.

(\*) = The sound pressure levels are 9 dB(A) lower than the sound power levels and apply to the reverberant field of a 100 m<sup>3</sup> room and a reverberation time of 0.5 sec.

(\*\*) FCEER = Energy classification in Cooling.

(\*\*\*) FCCOP = Energy classification in Heating.

# Electronic controls included

## MU-MUB models

<b>CB-T-ECM</b>	Continuous fan speed control with electronic thermostat and summer/winter switch
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**N.B.:** if the electrostatic filter is mounted (CRC-ECM only), use the "**IAQ**" controls.

# Wall electronic controls

## MU, MO-MUB and IU-IO models

<b>CR-T-ECM</b>	Continuous fan speed control with electronic thermostat and summer/winter switch
<b>CR-DI-ECM</b>	Continuous fan speed control with electronic thermostat and summer/winter switch
<b>UPM-ECM</b>	Power unit for CR-T-ECM and CR-DI-ECM remote control, fitted on the unit
<b>UPS-ECM</b>	Power unit for CR-T-ECM and CR-DI-ECM remote control, not fitted on the unit

# Electronic controls for MB boards

<b>MB-ECM-M</b>	MB electronic board fitted on the unit
<b>MB-ECM-S</b>	MB electronic board supplied with separate packaging
<b>T-MB</b>	Wall control (to be used with MB board only)
<b>T-MB-M</b>	Control fitted on the unit, for MV/MVB models with left connections (available with right connections, to be used with MB board only)
<b>T-MB-S</b>	Control supplied with separate packaging, for MV/MVB models with left connections (available with right connections, to be used with MB board only)
<b>RM-RT03</b>	RT03 infra-red remote control with fitted receiver, for MV/MO-MVB models (to be used with MB board only)
<b>RS-RT03</b>	RT03 infra-red remote control with receiver supplied with separate packaging (to be used with MB board only)
<b>RT03</b>	RT03 infra-red remote control supplied with separate packaging (to be used with MB board only)
<b>RM</b>	Receiver for RT03 infra-red remote control fitted on the unit, for MV/MO-MVB models (to be used with MB board only)
<b>RS</b>	Receiver for RT03 infra-red remote control supplied with separate packaging (to be used with MB board only)
<b>PSM-DI</b>	Multifunction control (to be used with MB board only)

## Sabianet management system for a network of fan coils

<b>Sabianet</b>	Hardware/software supervisory system (to be used with MB board only)
<b>ROUTER-S</b>	Router for Sabianet
<b>SIOS</b>	Relay output board for Sabianet



**CB-T-ECM  
control**

**CR-T-ECM  
control  
and Power Unit**



The descriptions and illustrations provided in this publication are not binding: Sabiana reserves the right, whilst maintaining the essential characteristics of the types described and illustrated, to make, at any time, without the requirement to promptly update this piece of literature, any changes that it considers useful for the purpose of improvement or for any other manufacturing or commercial requirements.



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