AERMEC
air conditioning

R410A

TECHNICAL - INSTALLATION MANUAL

CHILLERS
REVERSIBLE HEAT PUMPS
CONDENSING UNIT

ANL-ANLH 020-200

- OUTDOOR UNIT
- HIGH EFFICIENCY
- PRODUCTION OF HOT WATER UP TO 50 ° C

UK

IANLTZ.1108.6755514_05 replace 6755514_04

Standards and Directives respected on designing and constructing the unit:

SAFETY

1. Machinery Directive 2006/42/CE
2. Low Voltage Directive LVD 2006/95/CE
3. Electromagnetic compatibility Directive EMC 2004/108/CE
4. Pressure Equipment Directive PED 97/23/CE, EN 378,
5. UNI12735, UNI14276

ELECTRIC PART

1. CEI EN 60335-2-40,
2. CEI EN 61000-6-1/2/3/4

ACUSTIC PART

1. ISO DIS 9614/2 (intensimetric method)

PROTECTION RATING

IP24

CERTIFICATIONS

EUROVENT

REFRIGERANT GAS

Questa unità contiene gas floururali a effetto serra coperti dal protocollo di Kyoto. Le operazioni di manutenzione e smaltimento devono essere eseguite solo da personale qualificato, nel rispetto delle norme vigenti

1. DESCRIPTION AND CHOCE OF UNIT

Chillers and heat pumps for OUTDOOR condensed in the air with R410A Series ANL have been designed and manufactured to satisfy heating and cooling needs and the production of domestic hot water (DHW) in medium to small commercial or residential buildings.

These units, have extremely silent functioning and are highly efficient and reliable, thanks to the use of exchangers with a large exchange surface and low-noise high-efficiency scroll compressors

They are available in the following versions:

1. **ANL "°" Standard**
2. **ANL "H" Heat pumps [1]**
3. **ANL "C" Moto condensing unit**

The versions can be in different set-ups at the same time in order to satisfy a wide range of plant engineering solutions:

1. **"°" STANDARD**
2. **"P" PUMPS**
3. **"N" INCREASED PUM**
4. **"A" PUMP |STORAGE TANK**
5. **"Q" INCREASED PUM|STORAGE TANK**
6. **"D" DESUPERHEATER**

2. CONFIGURATOR

Campo	DESCRIPTION
1,2,3	ANL

4,5,6	SIZE
	020 - 025 - 030 - 040 - 050 - 070 - 080 - 090 - 100 - 150 - 200

7	MODEL
°	Cooling
H	Heat pumps [1]

8	VERSION
°	Standard
P	With pump
N	With increased pump (solo ANL 100 - 150 - 200)
A	With storage tank
Q	Storake tank | increased pump (only ANL 50 - 70 - 80 - 90 - 100 - 150 - 200)

9	HEAT RECOVERY
°	Without recovery
D	With desuperheater [2]

10	COIL
°	Aluminium
R	Copper
S	Tinned copper
V	Painted aluminium

11	FIELD OF USE
°	Standard (temperature of water produced up to 4°C)
Z	Low temperature (temperature of water produced: 4°C up to 0°C)
Y	Low temperature(temperature of water produced: 0°C up to -6°C)

12	EVAPORATOR
°	Standard (temperature of water produced up to 4°C)
C	Motor condenser

13	POWER SUPPLY
°	400V/3N/50Hz
M	230V/1/50Hz (only ANL 020 - 025 - 030 - 040)

[1] Possibility of production of D.H.W. (DCPX | VMF-ACS | MODU-485A required)

[2] The DESUPERHEATER is not possible with:

- Version "C"
- With the thermostatic valve Y

7. TECHNICAL DATA

Model				020°	025°	030°	040°	050°	070°	080°	090°	100°	150°	200°
①														
Cooling capacity		All	kW	5,7	6,2	7,5	9,6	13,4	16,5	20,5	22,3	26,6	33,0	43,0
Total input power		°	kW	1,84	2	2,46	3,25	4,03	4,88	6,33	6,63	8.4	10.0	13.7
		P|A	kW	1,99	2,15	2,61	3,4	4,3	5,15	6,6	6,9	9.2	11.5	15.2
		N|Q	kW	-	-	-	-	4,48	5,33	6,78	7,08	9.4	11.3	15.0
Water flow rate		All	l/h	980	1070	1290	1650	2310	2840	3530	3840	4580	5680	7400
Pressure drops exchanger | piping		°	kPa	20	20	20	21	21	21	26	25	43	39	32
Pressure drops filter			kPa	1	1	2	3	4	5,5	8	10	6	9	15
Useful static pressur SYSTEM SIDE		P|A	kPa	60	60	59	55	82	80	69	66	84	115	90
		N|Q	kPa	-	-	-	-	160	158	144	140	140	185	158
ENERGY INDICES														
EER		°	W/W	3,10	3,10	3,05	2,95	3,33	3,38	3,24	3,36	3,17	3,30	3,14
		P|A	W/W	2,86	2,88	2,87	2,82	3,12	3,20	3,11	3,23	2,89	2,87	2,83
		N|Q	W/W	-	-	-	-	2,99	3,10	3,02	3,15	2,83	2,92	2,87
ESEER				3,72	3,72	3,66	3,54	3,99	4,06	3,88	4,03	4,14	4,25	4,12
②														
DESUPERHEATER														
Power recovered			kW	-	-	-	-	5,4	6,6	8,2	8,9	13,8	17,1	18,9
Water flow rate			l/h	-	-	-	-	930	1140	1410	1530	2370	2940	3260
Pressure drops			kPa	-	-	-	-	8	10	11	13	14	24	30
PROTECTION RATING														
IP				24	24	24	24	24	24	24	24	24	24	24
ELECTRICAL DATA														
Total input current	230V/1	°	A	9,4	10	13	16,3	-	-	-	-	-	-	-
	400V/3N	°	A	3,7	4,2	4,7	6,2	8,7	9,7	12,2	12,8	16,7	18,8	25,7
	230V/1	P|A	A	10,40	11,00	14,00	17,30	-	-	-	-	-	-	-
	400V/3N	P|A	A	4,70	5,20	5,70	7,20	10.7	11.7	14.2	14.8	17.9	20.8	27.7
	400V/3N	N|Q	A	-	-	-	-	11,40	12,40	14,90	15,50	18.7	21.4	28.3
Maximum current (FLA)	230V/1	°	A	16,50	16,50	19,70	23,70	-	-	-	-	-	-	-
	400V/3N	°	A	6	6	6,7	8,7	11,3	13,5	16,3	17,3	22	26	34
	230V/1	P|A	A	17,5	17,5	20,7	24,7	-	-	-	-	-	-	-
	400V/3N	P|A	A	7	7,00	7,70	9,70	13,30	15,50	18,30	19,30	23,4	28,8	36,8
	400V/3N	N|Q	A	-	-	-	-	14	16,2	19	20	24.8	29.5	37.5
Peak current (LRA)	230V/1	°	A	59,5	62,5	83,7	98,7	-	-	-	-	-	-	-
	400V/3N	°	A	26,5	32,5	35,7	48,7	65,3	75,3	102,3	96,3	76	87	117
	230V/1	P|A	A	60,5	63,5	84,7	99,7	-	-	-	-	-	-	-
	400V/3N	P|A	A	27,5	33,5	36,7	49,7	67,3	77,3	104,3	98,3	77.4	89.8	119.8
	400V/3N	N|Q	A	-	-	-	-	68	78	105	99	78.8	90.5	120.5
COMPRESSORS SCROLL														
Number / circuit		n°/n°		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	2/1	2/1	2/1
Compressors sump resistance		n°/kW		1x70	1x70	1x70	1x70	1x35	1x35	1x35	1x65	2X35	2X35	2X65
Partload		%		0-100	0-100	0-100	0-100	0-100	0-100	0-100	0-100	0-50-100	0-50-100	0-50-100
EXCHANGER SYSTEM SIDE														
Number			n°	1	1	1	1	1	1	1	1	1	1	1
Water content			dm^3											
hydraulic connections	IN|OUT		Ø	1"¼	1"¼	1"¼	1"¼	1"¼	1"¼	1"¼	1"¼	1"¼	1"¼	1"¼

① COOLING MODE

Evaporator water inlet	7°C
Evaporator water outlet	12°C
External air temperatures	35 °C

② COOLING MODE with DESUPERHEATER

Desuperheater water inlet	50°C
Evaporator water inlet	7 °C
Δt	5° C

Model				020°	025°	030°	040°	050°	070°	080°	090°	100°	150°	200°
HYDRONIC KIT SYSTEM SIDE														
STORAGE TANK														
Storage tank			l	25	25	35	35	75	75	75	75	100	100	100
Electri heater			N°/W	ACCESSORIES										
EXPANSION TANK														
Expansion tank			n°/l	2	2	2	2	5	5	5	5	8	8	8
Calibration expansion tank			bar	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5
STANDARD PUMP "P"														
Input power			kW	0,15	0,15	0,15	0,15	0,27	0,27	0,27	0,27	0.6	1.0	1.0
Input current			A	1,04	1,04	1,04	1,04	1,95	1,95	1,95	1,95	1.2	2.0	2.0
INCREASED PUMP "N"														
Input power			kW	-	-	-	-	0,45	0,45	0,45	0,45	1	1.3	1.3
Input current			A	-	-	-	-	2,7	2,7	2,7	2,7	2	2.6	2.6
SAFETY VALVE														
Safety valve			n°/bar	1/6	1/6	1/6	1/6	1/6	1/6	1/6	1/6	1/6	1/6	1/6
DESUPERHEATER														
Number			n°	1	1	1	1	1	1	1	1	1	1	1
Water content			dm^3											
hydraulic connections	IN|OUT		Ø											
FANS														
Number			n°	1	1	1	1	2	2	2	2	2	2	2
Air flow rate			m^3/h	2500	2500	3500	3500	7200	7200	7300	7200	13200	12000	12000
Input power			A	0,085	0,085	0,14	0,14	0,28	0,28	0,28	0,28	0,6	0,6	0,6
Input current			kW	0,45	0,45	0,66	0,66	1,32	1,32	1,32	1,32	2,6	2,6	2,6
SOUND DATA														
Sound pressure			dB(A)	30	30	37	37	38	38	38	37	44	45	46
Sound power			dB(A)	61	61	68	68	69	69	69	68	76	77	78
LOAD (ATTENTION: the declared data can be amended at any time by Aermec, if deemed necessary).														
Refrigerant R410A		°|P	kg	1,25	1,30	1,56	2,00	3,48	3,79	3,73	4,7	8,00	11,5	12,0
Oil		A	kg	1,30	1,30	1,56	2,00	3,41	3,74	3,73	4,7	8,00	11,5	12,0
DIMENSIONS - WEIGHT														
Height		°|P	mm	868	868	1000	1000	1252	1252	1252	1252	1345	1345	1345
		A	mm	868	868	1015	1015	1281	1281	1281	1281			
		Q	mm	-	-	-	-	1281	1281	1281	1281			
Width		°|P	mm	900	900	900	900	1124	1124	1124	1124	750	750	750
		A	mm	1124	1124	1124	1124	1165	1165	1165	1165			
		Q	mm	-	-	-	-	1165	1165	1165	1165			
Depth (without feet / with feet)		°|P	mm	310/354	310/354	310/354	310/354	384/428	384/428	384/428	384/428	1750	1750	1750
		A	mm	384/428	384/428	384/428	384/428	550	550	550	550			
		Q	mm	-	-	-	-	550	550	550	550			
Weight		°	kg	75	75	86	86	120	120	120	156	270	293	329
		P	kg	77	77	91	91	127	127	163	163	288	314	350
		A	kg	99	99	103	103	147	147	147	183	338	364	400
		Q	kg	-	-	-	-	151	151	187	187			

Sound power
Aermec determines sound power values in agreement with the 9614 Standard, in compliance with that requested by Eurovent certification

Sound Pressure
Sound pressure measured in free field conditions with reflective surface (directivity factor Q=2) at 10 mt distance from external surface of unit, in compliance with ISO 3744 regulations.

9.5. ANL 030° (230V/1/50Hz) |(400V/3N/50Hz) Cooling capacity - Total input power

TAP	EXTERNAL AIR TEMPERATURE (°C)																	
	20			25			30			35			40			45		
	Pc (kW)	Pe (kW)	EER	Pc (kW)	Pe (kW)	EER	Pc (kW)	Pe (kW)	EER	Pc (kW)	Pe (kW)	EER	Pc (kW)	Pe (kW)	EER	Pc (kW)	Pe (kW)	EER
-6	6,67	1,64	4,06	6,30	1,90	3,32	5,91	2,15	2,74	5,50	2,38	2,31	-	-	-	-	-	-
-4	7,07	1,66	4,26	6,67	1,91	3,49	6,25	2,17	2,89	5,83	2,39	2,44	-	-	-	-	-	-
-2	7,45	1,67	4,46	7,03	1,93	3,65	6,59	2,17	3,04	6,16	2,39	2,57	5,71	2,59	2,20	-	-	-
0	7,83	1,68	4,65	7,38	1,93	3,83	6,92	2,18	3,18	6,46	2,41	2,68	6,00	2,59	2,31	-	-	-
2	8,20	1,68	4,87	7,72	1,94	3,98	7,25	2,18	3,33	6,78	2,42	2,80	6,29	2,61	2,41	-	-	-
4	8,55	1,70	5,04	8,07	1,94	4,16	7,57	2,19	3,45	7,08	2,42	2,93	6,58	2,62	2,51	6,09	2,77	2,20
6	8,89	1,70	5,24	8,39	1,95	4,30	7,88	2,21	3,57	7,37	2,43	3,03	6,86	2,65	2,59	6,36	2,79	2,27
7	9,07	1,72	5,26	8,55	1,97	4,35	8,04	2,22	3,62	**7,50**	**2,46**	**3,05**	7,00	2,65	2,64	6,49	2,79	2,32
8	9,24	1,74	5,31	8,72	1,98	4,41	8,20	2,23	3,67	7,66	2,46	3,11	7,13	2,66	2,68	6,62	2,81	2,36
10	9,58	1,75	5,47	9,04	2,01	4,51	8,50	2,25	3,78	7,95	2,49	3,20	7,41	2,67	2,77	-	-	-
12	9,91	1,76	5,61	9,36	2,02	4,63	8,79	2,27	3,87	8,24	2,50	3,29	7,68	2,69	2,86	-	-	-
14	10,24	1,79	5,71	9,66	2,03	4,75	9,09	2,29	3,98	8,51	2,51	3,39	7,95	2,70	2,94	-	-	-
16	10,55	1,80	5,85	9,97	2,05	4,88	9,38	2,30	4,08	8,79	2,53	3,48	8,21	2,71	3,03	-	-	-
18	10,87	1,82	5,98	10,28	2,07	4,96	9,67	2,33	4,16	9,07	2,54	3,57	8,49	2,74	3,10	-	-	-

9.6. ANL 040° (230V/1/50Hz) |(400V/3N/50Hz) Cooling capacity - Total input power

TAP	EXTERNAL AIR TEMPERATURE (°C)																	
	20			25			30			35			40			45		
	Pc (kW)	Pe (kW)	EER	Pc (kW)	Pe (kW)	EER	Pc (kW)	Pe (kW)	EER	Pc (kW)	Pe (kW)	EER	Pc (kW)	Pe (kW)	EER	Pc (kW)	Pe (kW)	EER
-6	8,54	2,17	3,93	8,07	2,51	3,22	7,56	2,84	2,66	7,04	3,14	2,24	-	-	-	-	-	-
-4	9,04	2,19	4,13	8,54	2,53	3,38	8,00	2,86	2,80	7,46	3,16	2,36	-	-	-	-	-	-
-2	9,53	2,21	4,32	8,99	2,54	3,54	8,44	2,86	2,95	7,88	3,16	2,49	7,31	3,43	2,13	-	-	-
0	10,02	2,23	4,50	9,45	2,54	3,71	8,86	2,88	3,08	8,27	3,18	2,60	7,68	3,43	2,24	-	-	-
2	10,49	2,23	4,71	9,89	2,56	3,86	9,28	2,88	3,22	8,67	3,20	2,71	8,05	3,44	2,34	-	-	-
4	10,95	2,24	4,88	10,32	2,56	4,03	9,68	2,90	3,34	9,06	3,20	2,83	8,42	3,46	2,43	7,80	3,66	2,13
6	11,39	2,24	5,08	10,75	2,58	4,17	10,09	2,91	3,46	9,43	3,21	2,93	8,77	3,50	2,51	8,13	3,69	2,20
7	11,60	2,28	5,09	10,95	2,60	4,22	10,29	2,93	3,51	**9,60**	**3,25**	**2,95**	8,96	3,50	2,56	8,30	3,69	2,25
8	11,82	2,30	5,15	11,17	2,61	4,27	10,49	2,95	3,56	9,80	3,25	3,02	9,13	3,51	2,60	8,47	3,71	2,28
10	12,26	2,31	5,30	11,57	2,65	4,37	10,88	2,97	3,67	10,17	3,29	3,10	9,48	3,53	2,68	-	-	-
12	12,68	2,33	5,44	11,97	2,67	4,49	11,25	3,00	3,75	10,54	3,30	3,19	9,84	3,55	2,77	-	-	-
14	13,10	2,37	5,54	12,36	2,68	4,60	11,64	3,02	3,85	10,90	3,32	3,28	10,17	3,57	2,85	-	-	-
16	13,51	2,38	5,66	12,77	2,70	4,72	12,01	3,04	3,95	11,25	3,34	3,37	10,51	3,59	2,93	-	-	-
18	13,91	2,40	5,79	13,15	2,74	4,80	12,38	3,07	4,03	11,60	3,36	3,46	10,86	3,62	3,00	-	-	-

Key	
Pc	Cooling capacity
Pe	Total Input Power
TAP	Produced water temperature

ATTENTION
For intermediate points refer to the diagrams of operating limits (§ 8.1)

EUROVENT CERTIFIED PERFORMANCE www.eurovent-certification.com

9.3. Δt DIFFERENT FROM NOMINAL (Δt 5°C)

	3	5	8	10
Cooling capacity correction factors	0,99	**1**	1,02	1,03
Total input power correction factors	0,99	**1**	1,01	1,02

9.4. FOULING FACTOR

[K*m2]/[W]	0,00005	0,0001	0,0002
Cooling capacity correction factors	**1**	0,98	0,94
Total input power correction factors	**1**	0,98	0,95

18. PARAMETER CALIBRATION OF SAFETY AND CONTROL

SET COOLING	min	Max.	defoult
Water temperature inlet (cooling mode)	-6 °C	18 °C	7° C

SET HEATING			
Water temperature inlet (heating mode)	35 °C	55 °C	48 °C

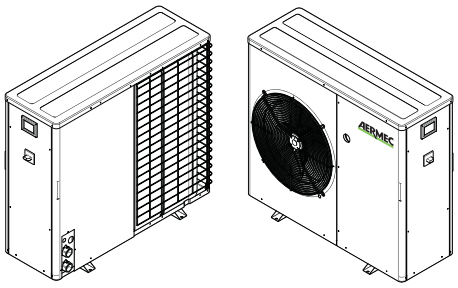
DEFROSTING MODE			
	-9 °C	4 °C	3 °C

TOTAL DIFFERENTIAL			
Banda proportional temperature within which the compressors are turned on and off	3 °C	10 °C	5 °C

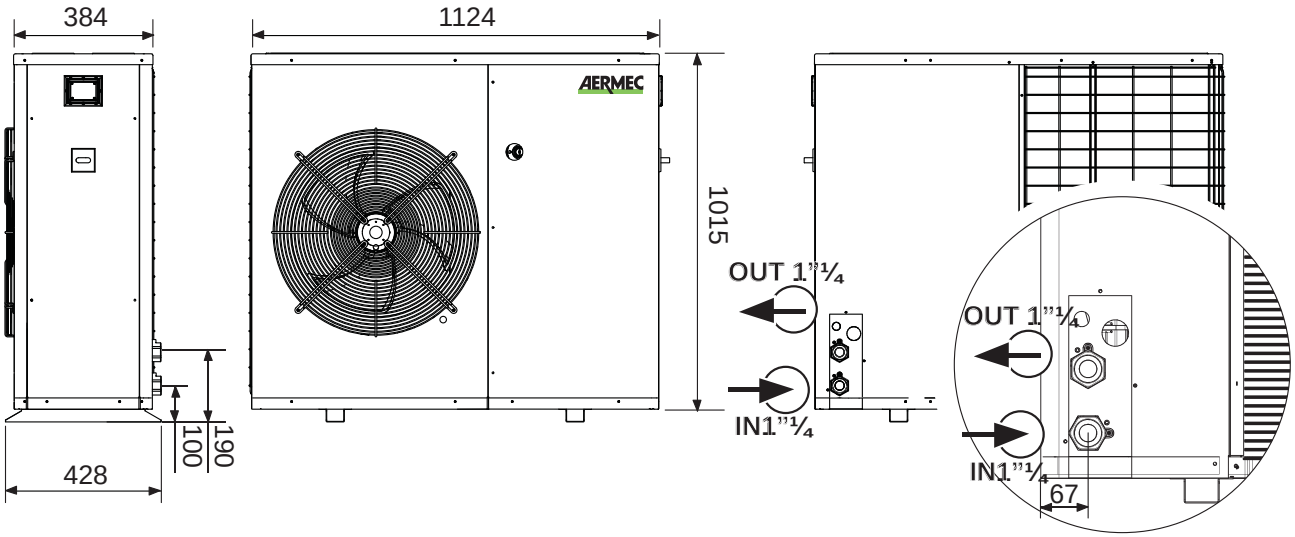
			020	025	030	040	050	070	080	090	100	150	200
ONLY COOLING VERSION													
BREAKERS FANS													
MTV1	A		2	2	2	2	2	2	2	2	2	2	2
MTV2	A		-	-	-	-	2	2	2	2	2	2	2
BREAKERS COMPRESSOR													
MTC1	A	230V	16	16	20	25	-	-	-	-	-	-	-
	A	400V/3N	2,2	2,2	6	8	10	13	15	16	10	12,5	15
MTC2	A		-	-	-	-	-	-	-	-	10	12,5	15
HIGH PRESSURE SWITCH													
PA	bar				42	42	42	42	42	42	42	42	42
HIGH PRESSURE TRANSDUCER													
TAP	bar				39	39	39	39	39	39	39	39	39
LOW PRESSURE TRANSDUCER													
TBP	bar				4	4	4	4	4	4	4	4	4

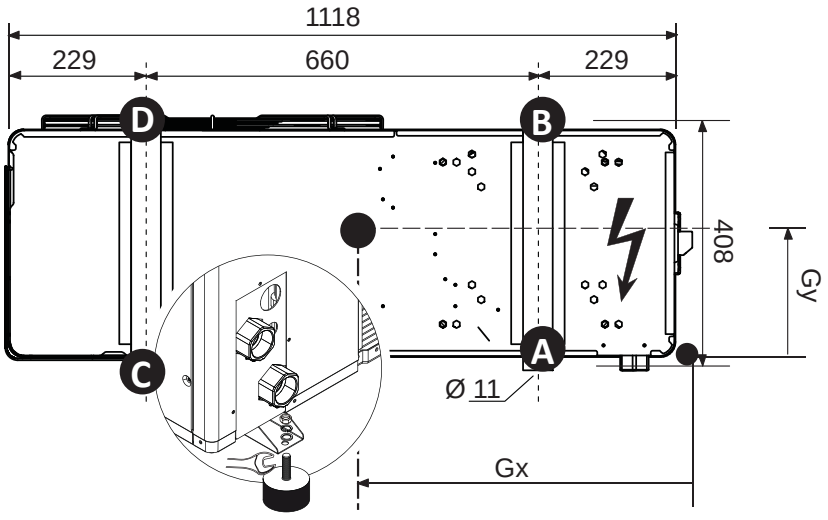
HEAT PUMP VERSION													
BREAKERS VENTILATORI													
MTV1	A		2	2	2	2	2	2	2	2	2	2	2
MTV2	A		-	-	-	-	2	2	2	2	2	2	2
BREAKERS COMPRESSOR													
MTC1	A	230V	16	16	20	25	-	-	-	-	-	-	-
	A	400V/3N	2,2	2,2	6	8	10	13	15	16	10	12,5	15
MTC2	A		-	-	-	-	-	-	-	-	10	12,5	15
HIGH PRESSURE SWITCH													
PA	bar		42	42	42	42	42	42	42	42	42	42	42
LOW PRESSURE SWITCH													
PA	bar	**vers."°"**	2	2	2	2	2	2	2	2	2	2	2
LOW PRESSURE TRANSDUCER													
TAP	bar	**vers."°"**	4	4	4	4	4	4	4	4	4	4	4
TAP	bar	**vers."H"**	2	2	2	2	2	2	2	2	2	2	2
HIGH PRESSURE TRANSDUCER													
TBP	bar		40	40	40	40	40	40	40	40	40	40	40

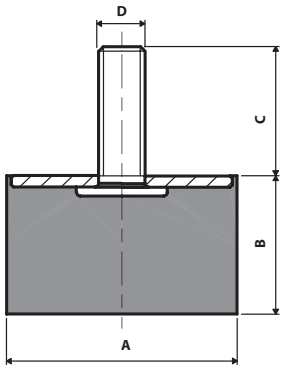
22.6. ANL 030 ÷ 040 version °A|HA



ANL	MOD.	VERS.	WEIGHT	CENTER OF GRAVITY		A	B	C	D	KIT VT
				Gy	Gx	%	%	%	%	
030	°/H	A	103	180	327	39%	32%	16%	13%	9
040	°/H	A	103	180	327	39%	32%	16%	13%	9







Mod.	A	B	C	D
VT9	40	30	23	M8

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la prima per il clima

The technical data on the following documents are not binding.
Aermec reserves the right to make any changes at any time deemed necessary for product improvement.