



- PROJECT: AVANTE 2200
- SHIPYARD: NAVANTIA S.A.
- SYSTEM: HVAC



PROJECT: AVANTE 2200

SHIPYARD: 
Navantia

SYSTEM: HVAC

CENTRIFUGAL FANS

REF.: D-MO5462-099

REV	DESCRIPTION	DATE	ISSUED BY	CHECKED BY	APPROVED BY
A	For information / and comments	30/08/2019	JCR	AMF	MRH
B	Updated	25/10/2019	JCR	AMF	MRH
C	Updated	08/05/2020	JCR	AMF	MRH
D	Updated	24/08/2020	JCR	AMF	MRH



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1. ITEM LIST ACCOMODATION AREA :

1.1. GENERAL TECHNICAL DATA:

TYPE	TAG	OPERATION	MODEL	MAKER	AIRFLOW (m3/h)	DESIGN PRESSURE (Pa)	APROX. DIMENSIONS (mm)	IP GRADE	VOLTAGE	MAX ELECT. POWER (kW)	RATED CURRENT (A)	HEAT DISSIP. (Kw)	MOTOR MAKER- MODEL	RPM MOTOR AND FAN	WEIGHT (Kg)	NOISE dB(A) (*NOTE 2)
CENTRIFUGAL	FAN-VEN01001	SUPPLY	CMR-728-2T (Orientation LG 270)	SODECA	1.686	355	453x357x506	IP55	3X440V/60Hz	0,85	1,91	0,187	WEG-W-21-F80	3380	18	55
CENTRIFUGAL	FAN-VEN01002	SUPPLY	CMR-1031-2T (Orientation LG 270)	SODECA	3.210	1301	542x573x626	IP55	3X440V/60Hz	2,6	4,76	0,416	WEG-W-21-F90L	3370	45	55
CENTRIFUGAL	FAN-VEN01003	SUPPLY	CMR-1031-2T (Orientation LG 270)	SODECA	3.498	1187	542x573x626	IP55	3X440V/60Hz	2,6	4,76	0,416	WEG-W-21-F90L	3370	45	55
CENTRIFUGAL	FAN-VEN02004	SUPPLY	CMR-625-2T (Orientation LG 270)	SODECA	250	998	407x343x457	IP55	3X440V/60Hz	0,85	1,91	0,187	WEG-W-21-F80	3380	14	65
CENTRIFUGAL	FAN-VEN02005	SUPPLY	CMR-1031-2T (Orientation LG 270)	SODECA	2.080	1628	542x573x626	IP55	3X440V/60Hz	2,6	4,76	0,416	WEG-W-21-F90L	3370	45	55
CENTRIFUGAL	FAN-VEN02006	EXHAUST	CMR-1031-2T (Orientation LG 270)	SODECA	1.955	1663	542x573x626	IP55	3X440V/60Hz	2,6	4,76	0,416	WEG-W-21-F90L	3370	45	60
DUCT	FAN-VEN01007	EXHAUST	R-200	ROSENBERG	187	350	Ø341x234	IP44	1X230V/60Hz	0,126	0,56	0,018	R-200	2248	4	55
CENTRIFUGAL	FAN-VEN01008	SUPPLY	CMR-731-2T (Orientation LG 270)	SODECA	1.779	1020	507x374x564	IP55	3X440V/60Hz	1,8	3,44	0,306	WEG-W21-F90S	3410	23	70
CENTRIFUGAL	FAN-VEN01009	EXHAUST	CMR-1031-2T (Orientation LG 270)	SODECA	3.352	1248	542x573x626	IP55	3X440V/60Hz	2,6	4,76	0,416	WEG-W-21-F90L	3370	45	60
CENTRIFUGAL	FAN-VEN01010	SUPPLY	CMR-728-2T (Orientation LG 270)	SODECA	1.100	1089	453x357x506	IP55	3X440V/60Hz	0,85	1,91	0,187	WEG-W-21-F80	3380	18	65
CENTRIFUGAL	FAN-VEN01011	EXHAUST	CMR-731-2T (Orientation LG 270)	SODECA	1.500	1284	507x374x564	IP55	3X440V/60Hz	1,8	3,44	0,306	WEG-W21-F90S	3410	23	68
CENTRIFUGAL	FAN-VEN01012	SUPPLY	CMR-622-2T SPARK RESISTANT (Orientation LG 270)	SODECA	250	715	364x338x415	IP55	3X440V/60Hz	0,62	1,32	0,117	WEG-W21-F71	3315	12	75
CENTRIFUGAL	FAN-VEN01013	EXHAUST	CMP-616-2T ATEX ZONE 2 (Orientation LG 0)	SODECA	250	776	258x320x297	IP55	3X440V/60Hz	0,55	1,18	0,082	WEG-W22Xec-F71 ATEX ZONE 2	3400	19	75
CENTRIFUGAL	FAN-VEN01014	EXHAUST	CMP-616-2T ATEX ZONE 1 (Orientation LG 0)	SODECA	188	770	258x320x297	IP55	3X440V/60Hz	0,55	1,18	0,082	WEG-W22Xeb-F71 ATEX ZONE 1	3400	23	75
CENTRIFUGAL	FAN-VEN01015	EXHAUST	CMR-1031-2T (Orientation LG 270)	SODECA	2.586	1499	542x573x626	IP55	3X440V/60Hz	2,6	4,76	0,416	WEG-W-21-F90L	3370	45	55
CENTRIFUGAL	FAN-VEN02016	SUPPLY	CMR-622-2T SPARK RESISTANT (Orientation LG 270)	SODECA	125	732	364x338x415	IP55	3X440V/60Hz	0,62	1,32	0,117	WEG-W21-F71	3315	12	75
CENTRIFUGAL	FAN-VEN02017	EXHAUST	CMP-616-2T ATEX ZONE 2 (Orientation LG 90)	SODECA	125	762	258x320x297	IP55	3X440V/60Hz	0,55	1,18	0,082	WEG-W22Xec-F71 ATEX ZONE 2	3400	19	75



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TYPE	TAG	OPERATION	MODEL	MAKER	AIRFLOW (m3/h)	DESIGN PRESSURE (Pa)	APROX. DIMENSIONS (mm)	IP GRADE	VOLTAGE	MAX ELECT. POWER (kW)	RATED CURRENT (A)	HEAT DISSIP. (Kw)	MOTOR MAKER- MODEL	RPM MOTOR AND FAN	WEIGHT (Kg)	NOISE dB(A) (*NOTE 2)
CENTRIFUGAL	FAN-VEN02018	SUPPLY	CMR-1031-2T (Orientation LG 270)	SODECA	1.530	1750	542x573x626	IP55	3X440V/60Hz	2,6	4,76	0,416	WEG-W-21-F90L	3370	45	60
CENTRIFUGAL	FAN-VEN02019	EXHAUST	CMR-1031-2T (Orientation LG 270)	SODECA	1.530	1750	542x573x626	IP55	3X440V/60Hz	2,6	4,76	0,416	WEG-W-21-F90L	3370	45	75
CENTRIFUGAL	FAN-VEN01023	SUPPLY	CMR-625-2T SPARK RESISTANT (Orientation LG 270)	SODECA	472	974	407x343x457	IP55	3X440V/60Hz	0,85	1,91	0,187	WEG-W-21-F80	3380	14	75
CENTRIFUGAL	FAN-VEN01024	EXHAUST	CMP-616-2T ATEX ZONE 2 (Orientation LG 90)	SODECA	472	748	258x320x297	IP55	3X440V/60Hz	0,55	1,18	0,082	WEG-W22Xec-F71 ATEX ZONE 2	3400	19	75
CENTRIFUGAL	FAN-VEN01025	SUPPLY	CMR-625-2T SPARK RESISTANT (Orientation LG 270)	SODECA	476	980	407x343x457	IP55	3X440V/60Hz	0,85	1,91	0,187	WEG-W-21-F80	3380	14	75
CENTRIFUGAL	FAN-VEN01026	EXHAUST	CMP-616-2T ATEX ZONE 2 (Orientation LG 270)	SODECA	476	750	258x320x297	IP55	3X440V/60Hz	0,55	1,18	0,082	WEG-W22Xec-F71 ATEX ZONE 2	3400	19	75
CENTRIFUGAL	FAN-VEN01028	EXHAUST	CMR-1031-2T (Orientation LG 270)	SODECA	2799	1417	542x573x626	IP55	3X440V/60Hz	2,6	4,76	0,416	WEG-W-21-F90L	3370	45	65
CENTRIFUGAL	FAN-VEN02029	SUPPLY	CMR-622-2T (Orientation LG 270)	SODECA	125	732	364x338x415	IP55	3X440V/60Hz	0,62	1,32	0,117	WEG-W21-F71	3315	12	75
CENTRIFUGAL	FAN-VEN02030	SUPPLY	CMP-616-2T SPARK RESISTANT (Orientation LG 90)	SODECA	125	762	258x320x297	IP55	3X440V/60Hz	0,62	1,32	0,117	WEG-W21-F71	3315	12	75
CENTRIFUGAL	FAN-VEN02031	EXHAUST	CMP-616-2T ATEX ZONE 2 (Orientation LG 90)	SODECA	125	762	258x320x297	IP55	3X440V/60Hz	0,55	1,18	0,082	WEG-W22Xec-F71 ATEX ZONE 2	3400	19	75
CENTRIFUGAL	FAN-VEN01032	SUPPLY	CMP-616-2T SPARK RESISTANT (Orientation LG 90)	SODECA	188	762	258x320x297	IP55	3X440V/60Hz	0,62	1,32	0,117	WEG-W21-F71	3315	12	75
DUCT	FAN-VEN02033	EXHAUST	R-200	ROSENBERG	250	320	Ø341x234	IP44	1X230V/60Hz	0,126	0,56	0,018	R-200	2248	4	65
CENTRIFUGAL	FAN-VEN01034	EXHAUST	CMR-625-2T (Orientation LG 270)	SODECA	745	915	407x343x457	IP55	3X440V/60Hz	0,85	1,91	0,187	WEG-W-21-F80	3380	14	55
CENTRIFUGAL	FAN-VEN01035	EXHAUST	CMR-625-2T (Orientation LG 270)	SODECA	625	960	407x343x457	IP55	3X440V/60Hz	0,85	1,91	0,187	WEG-W-21-F80	3380	14	55
DUCT	FAN-VEN02036	EXHAUST	R-200	ROSENBERG	125	370	Ø341x234	IP44	1X230V/60Hz	0,126	0,56	0,018	R-200	2248	4	75

*NOTE 1: For fan accessories and dimensional details see drawing P-MO5462-023 REVC

*NOTE 2: Maximum noise radiated in the served space. In case of FANS attending to spaces of different typology, the value for the most restrictive space has been indicated.



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1.2. TECHNICAL AND FUNCIONAL DESCRIPTION:

Class W: Fan operating or closure opens under all conditions of ship operation. The fans shall only be closed or stopped for repair purposes.

Class (W): Fan secured or closure closed only during NBC warfare.

Class Z: Fan normally operating and closure normally open but secured or closed respectively during *General Quarters*.

Class X: Fan normally secured and closure normally closed. Fan is operated and closure opened only when the Damage Control Officer authorizes blowout of the space served by the fan and closure.

*NOTE: for more details see document "D-MO5462-094, Functional description"

TAG	OPERATION	OPERATIONAL DESCRIPTION	CLASS.
FAN-VEN01001	SUPPLY	Outdoor forced air supply to its served space	(W)
FAN-VEN01002	SUPPLY	Outdoor forced air supply to its served spaces	Z
FAN-VEN01003	SUPPLY	Outdoor forced air supply to its served space	Z
FAN-VEN02004	SUPPLY	Outdoor forced air supply to its served space	(W)
FAN-VEN02005	SUPPLY	Outdoor forced air supply to its served space	Z
FAN-VEN02006	EXHAUST	Forced air exhaust from its served space	Z
FAN-VEN01007	EXHAUST	Forced air exhaust from its served space	(W)
FAN-VEN01008	SUPPLY	Outdoor forced air supply to its served spaces	Z
FAN-VEN01009	EXHAUST	Forced air exhaust from its served spaces	Z
FAN-VEN01010	SUPPLY	Outdoor forced air supply to its served space	Z
FAN-VEN01011	EXHAUST	Forced air exhaust from its served space	Z
FAN-VEN01012	SUPPLY	Outdoor forced air supply to its served space	X
FAN-VEN01013	EXHAUST	Forced air exhaust from its served space	X
FAN-VEN01014	EXHAUST	Forced air exhaust from its served spaces	Z
FAN-VEN01015	EXHAUST	Forced air exhaust from its served space	Z
FAN-VEN02016	SUPPLY	Outdoor forced air supply to its served space	X
FAN-VEN02017	EXHAUST	Forced air exhaust from its served space	X
FAN-VEN02018	SUPPLY	Outdoor forced air supply to its served space	Z
FAN-VEN02019	EXHAUST	Forced air exhaust from its served space	Z
FAN-VEN01023	SUPPLY	Outdoor forced air supply to its served space	X
FAN-VEN01024	EXHAUST	Forced air exhaust from its served space	X
FAN-VEN01025	SUPPLY	Outdoor forced air supply to its served space	X
FAN-VEN01026	EXHAUST	Forced air exhaust from its served space	X
FAN-VEN01028	EXHAUST	Forced air exhaust from its served space	Z
FAN-VEN02029	SUPPLY	Outdoor forced air supply to its served space	(W)
FAN-VEN02030	SUPPLY	Outdoor forced air supply to its served space	X
FAN-VEN02031	EXHAUST	Forced air exhaust from its served space	X
FAN-VEN01032	SUPPLY	Outdoor forced air supply to its served space	Z
FAN-VEN02033	EXHAUST	Forced air exhaust from its served space	(W)
FAN-VEN01034	EXHAUST	Forced air exhaust from its served space	(W)



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TAG	OPERATION	OPERATIONAL DESCRIPTION	CLASS.
FAN-VEN01035	EXHAUST	Forced air exhaust from its served space	(W)
FAN-VEN02036	EXHAUST	Forced air exhaust from its served space	(W)



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2. ITEM LIST ENGINE ROOM, GENERATOR ROOMS & AUXILIARY MACHINERY ROOM AREA:

2.1. GENERAL TECHNICAL DATA:

TYPE	TAG	OPERATION	MODEL	MAKER	AIRFLOW (m3/h)	DESIGN PRESSURE (Pa)	APROX. DIMENSIONS (mm)	IP GRADE	VOLTAGE	MAX ELECT. POWER (kW)	RATED CURRENT (A)	HEAT DISSIP. (Kw)	MOTOR MODEL	RPM MOTOR	WEIGHT (Kg)	NOISE dB(A) (**NOTE 1)
CENTRIFUGAL	FAN-VES01002	SUPPLY	CMR-625-2T (Orientation LG 270)	SODECA	500	1000	407x343x457	IP55	3X440V/60Hz	0,85	1,91	0,187	WEG-W-21-F80	3380	14	75
CENTRIFUGAL	FAN-VES01019	EXHAUST	CMR-625-2T (Orientation LG 270)	SODECA	500	1000	407x343x457	IP55	3X440V/60Hz	0,85	1,91	0,187	WEG-W21-F80	3380	14	75
CENTRIFUGAL	FAN-VES02020	EXHAUST	CMP-616-2T (Orientation LG 90)	SODECA	655	706	258x320x297	IP55	3X440V/60Hz	0,62	1,32	0,117	WEG-W21-F71	3315	12	65

*For fan accessories and dimensional details see drawing P-MO5462-023 REVC

*NOTE 1: Maximum noise radiated in the served space. In case of FANS attending to spaces of different typology, the value for the most restrictive space has been indicated.

2.2. TECHNICAL AND FUNCIONAL DESCRIPTION:

Class (W): Fan secured or closure closed only during NBC warfare.

*NOTE: for more details see document "D-MO5462-094, Functional description"

TAG	OPERATION	CLASS.
FAN-VES01002	SUPPLY	(W)
FAN-VES01019	EXHAUST	(W)
FAN-VES02020	EXHAUST	X



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ISO 9001
ISO 14001
OHSAS 18001
BUREAU VERITAS
Certification



Annex A. CENTRIFUGAL FANS

FAN-VEN01001:

CMR-728-2T 60HZ



Extremely robust medium pressure, single inlet centrifugal fans fitted with a backward-curved impeller.

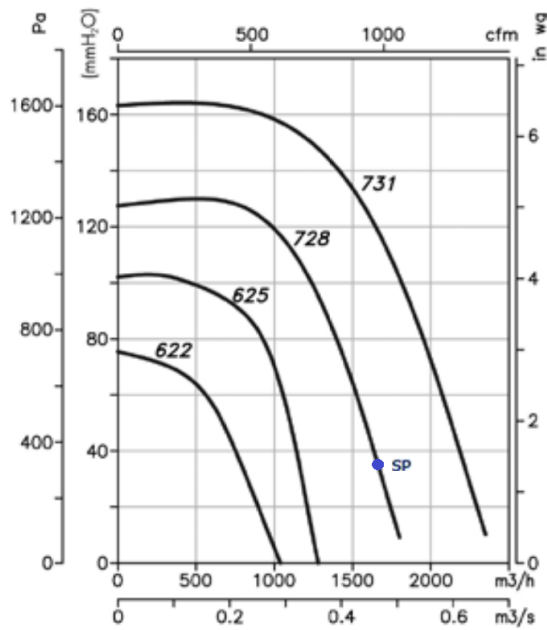
Fan:

- Sheet steel casing.
- Impeller with reaction blades in extremely robust sheet steel.

Finish:

- Anticorrosive finish of polyester resin polymerised at 190 °C. previously degreased with phosphate-free nanotechnological treatment.

CHARACTERISTIC CURVE AND ACOUSTICS AT 1.2KG/M³



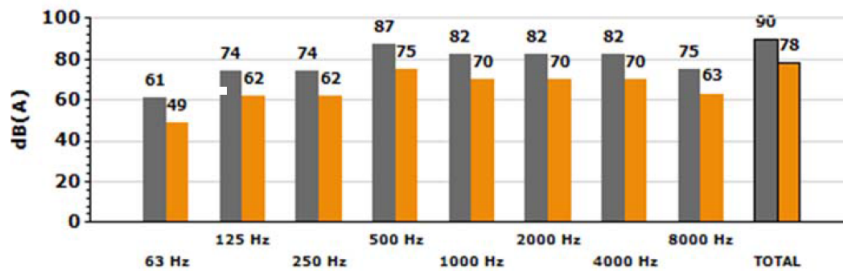
Design Point

Q (m³/h)	1686
Ps (Pa)	355


Service Point (SP)

Q (m³/h)	1686.00
Ps (Pa)	355.00
Pd (Pa)	107.08
Pt (Pa)	462.08

Acoustics: Inlet, 1.50 (m), 1 plane



Band	Lw dB(A)	Lp dB(A)
63 Hz	61	49
125 Hz	74	62
250 Hz	74	62
500 Hz	87	75
1000 Hz	82	70
2000 Hz	82	70
4000 Hz	82	70
8000 Hz	75	63
TOTAL	90	78

DATA SHEET			
Customer :			
Product line : Standard Alumínio Multimontagem Multitensão (Centro 6100)		Product code : 14980520	
Frame : 80	Insulation class : F	Duty cycle : S1	Ambient temperature : -20 °C to +45 °C
Altitude : 1000 m.a.s.l	Degree of protection : IP55	Design : N	Cooling method : IC411 - TEFC
Mounting : B14T	Direct of rotation ¹ : Both	Starting method : Direct On Line	Approx. weight ³ : 8.3 kg
Moment of inertia (J) : 0.0006 kgm ²	Output : 0.85 kW	Output : 0.85 kW	Output : 0.75 kW
Poles : 2	Frequency : 60 Hz	Rated voltage : 440 V	Rated current : 1.91 A
L. R. Amperes : 9.55 A	LRC (p.u.) : 5.0 x Code H	No load current : 1.25 A	Rated speed : 3380 rpm
Slip : 6.11 %	Rated torque : 2.40 Nm	Locked rotor torque : 220 %	Breakdown torque : 230 %
Service factor : 1.00	Temperature rise ⁴ : 100 K	Noise level ² : 62.0 dB(A)	Locked rotor time : 9 s (hot)
Temperature rise ⁴ : 100 K	Noise level ² : 62.0 dB(A)	Locked rotor time : 16 s (cold)	Efficiency (%) : 50% : 69.0
Efficiency (%) : 75% : 73.0	Efficiency (%) : 100% : 73.0	Power factor : Start : 0.73	Power factor : 50% : 0.63
Power factor : 75% : 0.72	Power factor : 100% : 0.80	Bearing type : 6204-ZZ	Lubrication interval : -
Lubricant amount : -	Lubricant type : MOBIL POLYREX EM	Foundation loads : Maximum traction : 170 N	Maximum compression : 252 N
This revision replaces and cancels the previous one, which must be eliminated. (1) When viewed from the drive end. (2) Measured at 1m and with tolerance of +3dB(A). (3) Approximate weight subject to changes after manufacturing process. (4) At the rated point.		These are average values based on tests with sinusoidal power supply, subject to the tolerances stipulated in IEC 60034-1.	
Rev.	Summary of changes	Performed	Checked
Performed by			182632/2020-T
Checked by			
Date			

FAN-VEN01002:

CMR-1031-2T-3 60HZ



Extremely robust medium pressure, single inlet centrifugal fans fitted with a backward-curved impeller.

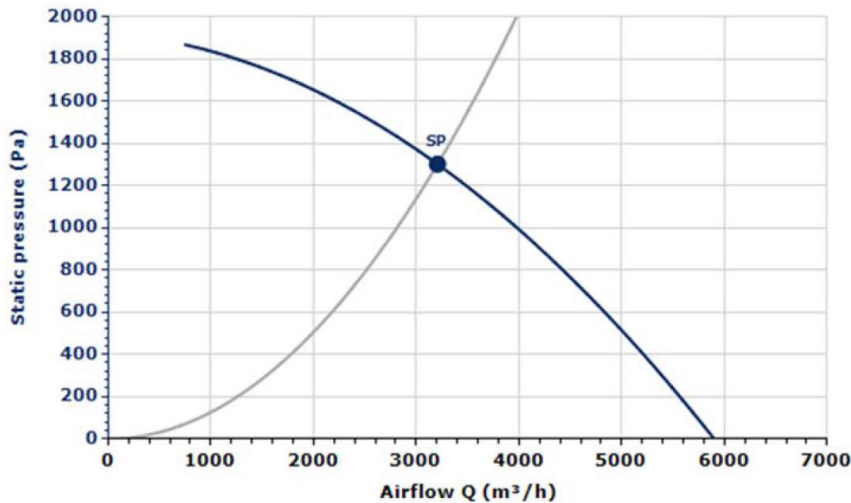
Fan:

- Sheet steel casing.
- Impeller with reaction blades in extremely robust sheet steel.

Finish:

- Anticorrosive finish of polyester resin polymerised at 190 °C. previously degreased with phosphate-free nanotechnological treatment.

CHARACTERISTIC CURVE AT 1.2KG/M³

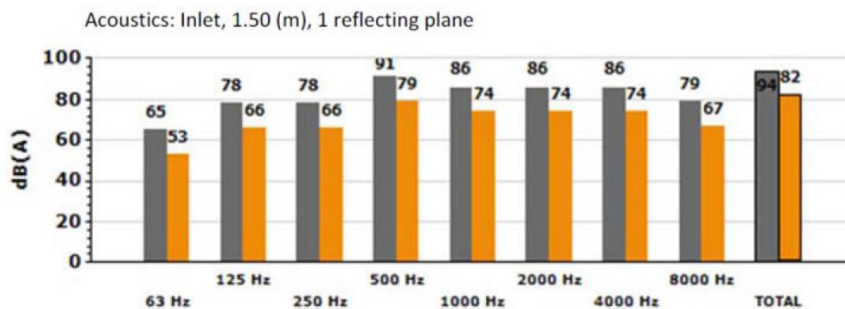


Design Point

Q (m ³ /h)	3210
Ps (Pa)	1301

Service Point (SP)

Q (m ³ /h)	3205.42
Ps (Pa)	1301.34
Pd (Pa)	76.70
Pt (Pa)	1378.05



Band	Lw dB(A)	Lp dB(A)
63 Hz	65	53
125 Hz	78	66
250 Hz	78	66
500 Hz	91	79
1000 Hz	86	74
2000 Hz	86	74
4000 Hz	86	74
8000 Hz	79	67
TOTAL	94	82



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DATA SHEET					
Customer :					
Product line : Standard Alumínio Multimontagem Multitensão (Centro 6100)		Product code : 15052241			
Frame : 90S/L	Insulation class : F	Duty cycle : S1	Ambient temperature : -20 °C to +45 °C		
Altitude : 1000 m.a.s.l	Degree of protection : IP55	Design : N	Cooling method : IC411 - TEFC		
Mounting : B3T	Direct of rotation ¹ : Both	Starting method : Direct On Line	Approx. weight ³ : 18.5 kg		
Moment of inertia (J) : 0.0022 kgm ²					
Output	2.6 kW	2.6 kW	2.2 kW		
Poles	2	2	2		
Frequency	60 Hz	60 Hz	60 Hz		
Rated voltage	440 V	460 V	460 V		
Rated current	4.76 A	4.62 A	4.13 A		
L. R. Amperes	32.3 A	31.4 A	31.4 A		
LRC (p.u.)	6.8 x Code H	6.8 x Code H	7.6 x Code K		
No load current	1.85 A	2.10 A	2.10 A		
Rated speed	3370 rpm	3390 rpm	3430 rpm		
Slip	6.39 %	5.83 %	4.72 %		
Rated torque	7.37 Nm	7.33 Nm	6.13 Nm		
Locked rotor torque	240 %	270 %	320 %		
Breakdown torque	260 %	290 %	350 %		
Service factor	1.00	1.00	1.15		
Temperature rise ⁴	100 K	100 K	100 K		
Noise level ²	68.0 dB(A)	68.0 dB(A)	68.0 dB(A)		
Locked rotor time	9 s (hot)	9 s (hot)	9 s (hot)		
	16 s (cold)	16 s (cold)	16 s (cold)		
Efficiency (%)	50%	77.0	75.6		
	75%	80.0	78.8		
	100%	81.5	80.6		
Power factor	Start	0.70	0.70		
	50%	0.73	0.68		
	75%	0.83	0.80		
	100%	0.88	0.86		
Bearing type	Drive end : 6205-ZZ	Non drive end : 6204-ZZ	Foundation loads		
Lubrication interval	-	-	Maximum traction : 569 N		
Lubricant amount	-	-	Maximum compression : 751 N		
Lubricant type	MOBIL POLYREX EM				
This revision replaces and cancels the previous one, which must be eliminated. (1) When viewed from the drive end. (2) Measured at 1m and with tolerance of +3dB(A). (3) Approximate weight subject to changes after manufacturing process. (4) At the rated point.			These are average values based on tests with sinusoidal power supply, subject to the tolerances stipulated in IEC 60034-1.		
Rev.	Summary of changes		Performed	Checked	Date
Performed by			182635/2020-T		
Checked by					
Date					

FAN-VEN01003:

CMR-1031-2T-3 60HZ



Extremely robust medium pressure, single inlet centrifugal fans fitted with a backward-curved impeller.

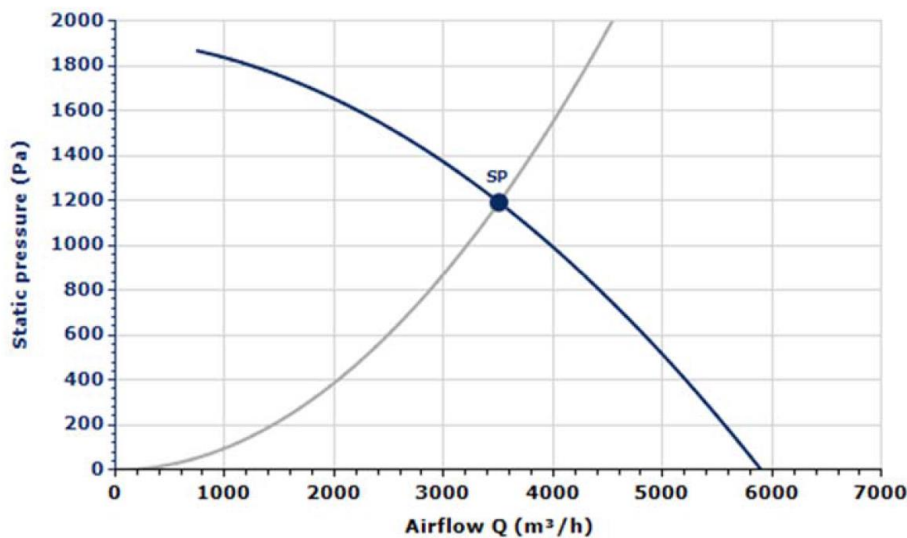
Fan:

- Sheet steel casing.
- Impeller with reaction blades in extremely robust sheet steel.

Finish:

- Anticorrosive finish of polyester resin polymerised at 190 °C. previously degreased with phosphate-free nanotechnological treatment.

CHARACTERISTIC CURVE AT 1.2KG/M³



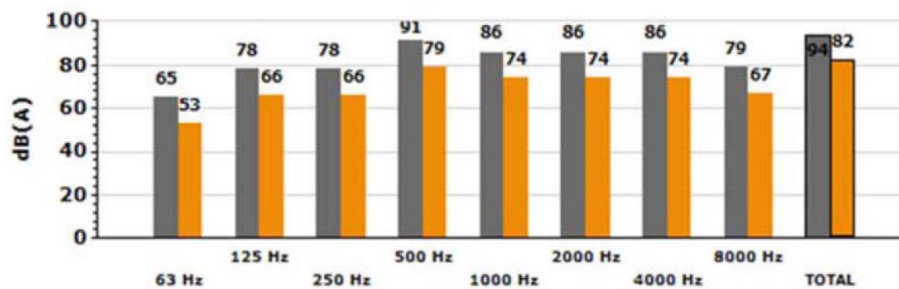
Design Point

Q (m ³ /h)	3498
Ps (Pa)	1187.59

Service Point (SP)

Q (m ³ /h)	3504.46
Ps (Pa)	1191.98
Pd (Pa)	91.68
Pt (Pa)	1283.66

Acoustics: Inlet, 1.50 (m), 1 reflecting plane



Band	Lw dB(A)	Lp dB(A)
63 Hz	65	53
125 Hz	78	66
250 Hz	78	66
500 Hz	91	79
1000 Hz	86	74
2000 Hz	86	74
4000 Hz	86	74
8000 Hz	79	67
TOTAL	94	82



• PROJECT: AVANTE 2200
 • SHIPYARD: NAVANTIA S.A.
 • SYSTEM: HVAC



DATA SHEET			
Customer :			
Product line : Standard Alumínio Multimontagem Multitensão (Centro 6100)		Product code : 15052241	
Frame : 90S/L	Insulation class : F	Cooling method : IC411 - TEFC	Mounting : B3T
Duty cycle : S1	Ambient temperature : -20 °C to +45 °C	Direct of rotation ¹ : Both	Starting method : Direct On Line
Altitude : 1000 m.a.s.l	Degree of protection : IP55	Approx. weight ³ : 18.5 kg	Moment of inertia (J) : 0.0022 kgm ²
Design : N			
Output	2.6 kW	2.6 kW	2.2 kW
Poles	2	2	2
Frequency	60 Hz	60 Hz	60 Hz
Rated voltage	440 V	460 V	460 V
Rated current	4.76 A	4.62 A	4.13 A
L. R. Amperes	32.3 A	31.4 A	31.4 A
LRC (p.u.)	6.8 x Code H	6.8 x Code H	7.6 x Code K
No load current	1.85 A	2.10 A	2.10 A
Rated speed	3370 rpm	3390 rpm	3430 rpm
Slip	6.39 %	5.83 %	4.72 %
Rated torque	7.37 Nm	7.33 Nm	6.13 Nm
Locked rotor torque	240 %	270 %	320 %
Breakdown torque	260 %	290 %	350 %
Service factor	1.00	1.00	1.15
Temperature rise ⁴	100 K	100 K	100 K
Noise level ²	68.0 dB(A)	68.0 dB(A)	68.0 dB(A)
Locked rotor time	9 s (hot)	9 s (hot)	9 s (hot)
	16 s (cold)	16 s (cold)	16 s (cold)
Efficiency (%)	50%	77.0	75.6
	75%	80.0	78.8
	100%	81.5	80.6
Power factor	Start	0.70	0.70
	50%	0.73	0.68
	75%	0.83	0.80
	100%	0.88	0.86
Bearing type	Drive end : 6205-ZZ	Non drive end : 6204-ZZ	Foundation loads : 569 N
Lubrication interval	-	-	Maximum compression : 751 N
Lubricant amount	-	-	
Lubricant type	MOBIL POLYREX EM		
This revision replaces and cancels the previous one, which must be eliminated.		These are average values based on tests with sinusoidal power supply, subject to the tolerances stipulated in IEC 60034-1.	
(1) When viewed from the drive end.			
(2) Measured at 1m and with tolerance of +3dB(A).			
(3) Approximate weight subject to changes after manufacturing process.			
(4) At the rated point.			
Rev.	Summary of changes	Performed	Checked
Performed by		182635/2020-T	
Checked by			
Date			

FAN-VEN01008:

CMR-731-2T 60HZ



Extremely robust medium pressure, single inlet centrifugal fans fitted with a backward-curved impeller.

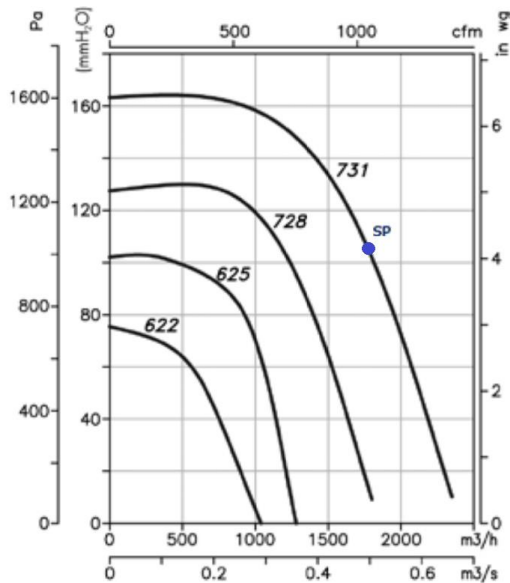
Fan:

- Sheet steel casing.
- Impeller with reaction blades in extremely robust sheet steel.

Finish:

- Anticorrosive finish of polyester resin polymerised at 190 °C. previously degreased with phosphate-free nanotechnological treatment.

CHARACTERISTIC CURVE AND ACOUSTICS AT 1.2KG/M³



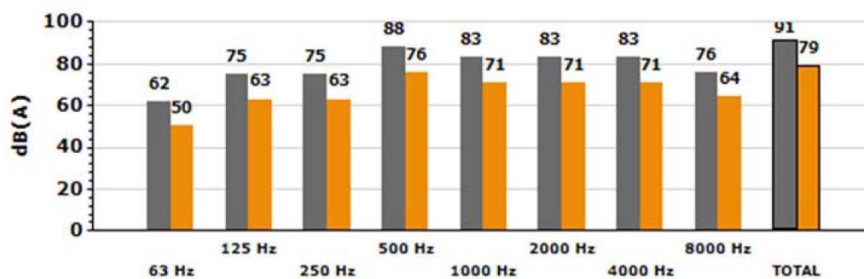
Design Point

Q (m ³ /h)	1779
Ps (Pa)	1020

Service Point (SP)

Q (m ³ /h)	1779.00
Ps (Pa)	1020.00
Pd (Pa)	72.64
Pt (Pa)	1092.64

Acoustics: Inlet, 1.50 (m), 1 plane



Band	Lw dB(A)	Lp dB(A)
63 Hz	62	50
125 Hz	75	63
250 Hz	75	63
500 Hz	88	76
1000 Hz	83	71
2000 Hz	83	71
4000 Hz	83	71
8000 Hz	76	64
TOTAL	91	79



• PROJECT: AVANTE 2200
 • SHIPYARD: NAVANTIA S.A.
 • SYSTEM: HVAC



DATA SHEET					
Customer :					
Product line : Standard Alumínio Multimontagem Multitensão (Centro 6100)		Product code : 14980523			
Frame : 90S/L	Insulation class : F	Duty cycle : S1	Ambient temperature : -20 °C to +45 °C		
Altitude : 1000 m.a.s.l	Degree of protection : IP55	Design : N	Cooling method : IC411 - TEFC		
Mounting : B14T	Direct of rotation ¹ : Both	Starting method : Direct On Line	Approx. weight ³ : 14.8 kg		
Moment of inertia (J) : 0.0017 kgm ²					
Output	1.8 kW	1.8 kW	1.5 kW		
Poles	2	2	2		
Frequency	60 Hz	60 Hz	60 Hz		
Rated voltage	440 V	460 V	460 V		
Rated current	3.44 A	3.36 A	2.91 A		
L. R. Amperes	21.7 A	21.2 A	21.0 A		
LRC (p.u.)	6.3 x Code H	6.3 x Code H	7.2 x Code K		
No load current	1.55 A	1.85 A	1.85 A		
Rated speed	3410 rpm	3430 rpm	3465 rpm		
Slip	5.28 %	4.72 %	3.75 %		
Rated torque	5.04 Nm	5.01 Nm	4.14 Nm		
Locked rotor torque	220 %	250 %	300 %		
Breakdown torque	200 %	240 %	290 %		
Service factor	1.00	1.00	1.15		
Temperature rise ⁴	100 K	100 K	100 K		
Noise level ²	68.0 dB(A)	68.0 dB(A)	68.0 dB(A)		
Locked rotor time	7 s (hot) 13 s (cold)	7 s (hot) 13 s (cold)	7 s (hot) 13 s (cold)		
Efficiency (%)	50%	76.0	74.5		
	75%	78.0	77.9		
	100%	78.0	79.0		
Power factor	Start	0.69	0.69		
	50%	0.74	0.63		
	75%	0.83	0.75		
	100%	0.88	0.82		
Bearing type	Drive end 6205-ZZ	Non drive end 6204-ZZ	Foundation loads		
Lubrication interval	-	-	Maximum traction : 329 N		
Lubricant amount	-	-	Maximum compression : 474 N		
Lubricant type	MOBIL POLYREX EM				
This revision replaces and cancels the previous one, which must be eliminated.			These are average values based on tests with sinusoidal power supply, subject to the tolerances stipulated in IEC 60034-1.		
(1) When viewed from the drive end.					
(2) Measured at 1m and with tolerance of +3dB(A).					
(4) At the rated point.					
Rev.	Summary of changes		Performed	Checked	Date
Performed by			182633/2020-T		
Checked by					
Date					

FAN-VEN01009:

CMR-1031-2T-3 60HZ



Extremely robust medium pressure, single inlet centrifugal fans fitted with a backward-curved impeller.

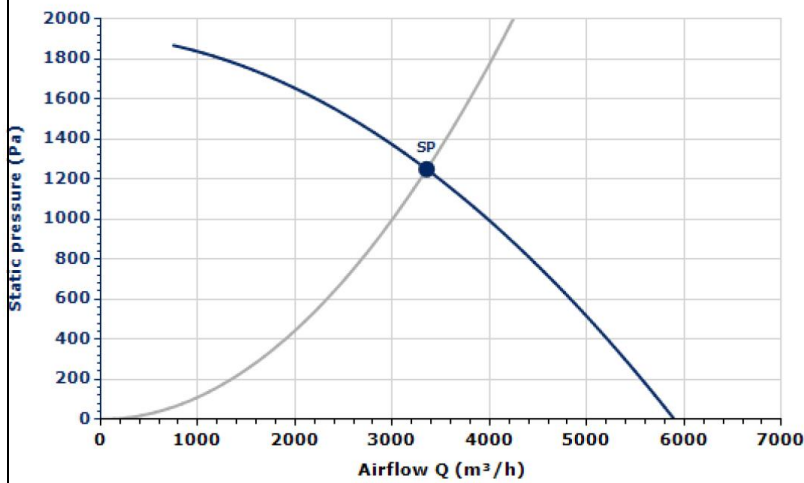
Fan:

- Sheet steel casing.
- Impeller with reaction blades in extremely robust sheet steel.

Finish:

- Anticorrosive finish of polyester resin polymerised at 190 °C. previously degreased with phosphate-free nanotechnological treatment.

CHARACTERISTIC CURVE AT 1.2KG/M³



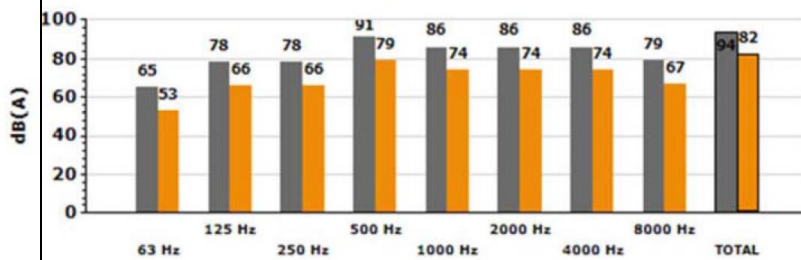
Design Point

Q (m ³ /h)	3352
Ps (Pa)	1248

Service Point (SP)

Q (m ³ /h)	3352.75
Ps (Pa)	1248.56
Pd (Pa)	83.92
Pt (Pa)	1332.48

Acoustics: Inlet, 1.50 (m), 1 reflecting plane



Band	Lw dB(A)	Lp dB(A)
63 Hz	65	53
125 Hz	78	66
250 Hz	78	66
500 Hz	91	79
1000 Hz	86	74
2000 Hz	86	74
4000 Hz	86	74
8000 Hz	79	67
TOTAL	94	82



• PROJECT: AVANTE 2200
 • SHIPYARD: NAVANTIA S.A.
 • SYSTEM: HVAC



ISO 9001
 ISO 14001
 OHSAS 18001
 BUREAU VERITAS
 Certification



DATA SHEET



Three Phase Induction Motor - Squirrel Cage

Customer :					
Product line : Standard Alumínio Multimontagem Multitensão (Centro 6100)		Product code : 15052241			
Frame : 90S/L	Insulation class : F	Duty cycle : S1	Ambient temperature : -20 °C to +45 °C		
Altitude : 1000 m.a.s.l	Degree of protection : IP55	Design : N	Cooling method : IC411 - TEFC		
Mounting : B3T	Direct of rotation ¹ : Both	Starting method : Direct On Line	Approx. weight ³ : 18.5 kg		
Moment of inertia (J) : 0.0022 kgm ²					
Output	2.6 kW	2.6 kW	2.2 kW		
Poles	2	2	2		
Frequency	60 Hz	60 Hz	60 Hz		
Rated voltage	440 V	460 V	460 V		
Rated current	4.76 A	4.62 A	4.13 A		
L. R. Amperes	32.3 A	31.4 A	31.4 A		
LRC (p.u.)	6.8 x Code H	6.8 x Code H	7.6 x Code K		
No load current	1.85 A	2.10 A	2.10 A		
Rated speed	3370 rpm	3390 rpm	3430 rpm		
Slip	6.39 %	5.83 %	4.72 %		
Rated torque	7.37 Nm	7.33 Nm	6.13 Nm		
Locked rotor torque	240 %	270 %	320 %		
Breakdown torque	260 %	290 %	350 %		
Service factor	1.00	1.00	1.15		
Temperature rise ⁴	100 K	100 K	100 K		
Noise level ²	68.0 dB(A)	68.0 dB(A)	68.0 dB(A)		
Locked rotor time	9 s (hot) 16 s (cold)	9 s (hot) 16 s (cold)	9 s (hot) 16 s (cold)		
Efficiency (%)	50%	77.0	75.6		
	75%	80.0	78.8		
	100%	81.5	80.6		
Power factor	Start	0.70	0.70		
	50%	0.73	0.68		
	75%	0.83	0.80		
	100%	0.88	0.86		
Bearing type	Drive end : 6205-ZZ	Non drive end : 6204-ZZ	Foundation loads		
Lubrication interval	-	-	Maximum traction : 569 N		
Lubricant amount	-	-	Maximum compression : 751 N		
Lubricant type	MOBIL POLYREX EM				
This revision replaces and cancels the previous one, which must be eliminated. (1) When viewed from the drive end. (2) Measured at 1m and with tolerance of +3dB(A). (3) Approximate weight subject to changes after manufacturing process. (4) At the rated point.			These are average values based on tests with sinusoidal power supply, subject to the tolerances stipulated in IEC 60034-1.		
Rev.	Summary of changes		Performed	Checked	Date
Performed by			182635/2020-T		
Checked by					
Date					

FAN-VEN01010:

CMR-728-2T 60HZ



Extremely robust medium pressure, single inlet centrifugal fans fitted with a backward-curved impeller.

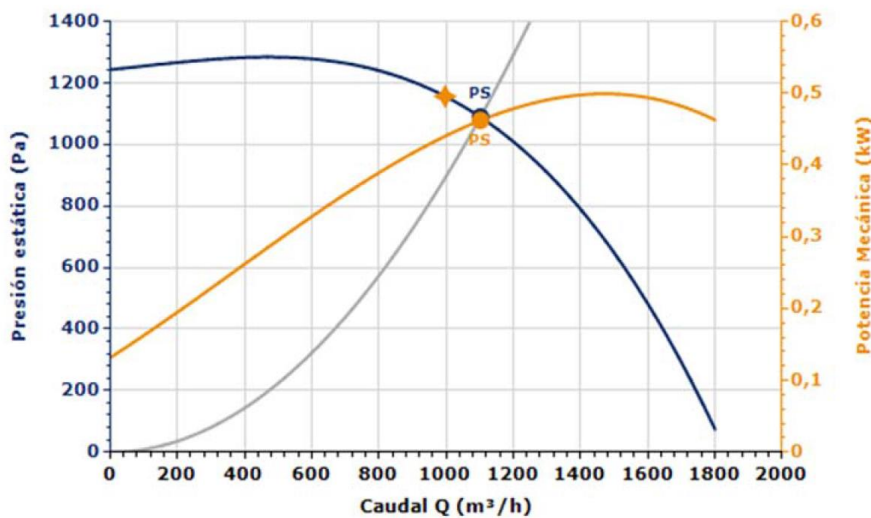
Fan:

- Sheet steel casing.
- Impeller with reaction blades in extremely robust sheet steel.

Finish:

- Anticorrosive finish of polyester resin polymerised at 190 °C. previously degreased with phosphate-free nanotechnological treatment.

CHARACTERISTIC CURVE AND ACOUSTICS AT 1.2KG/M³



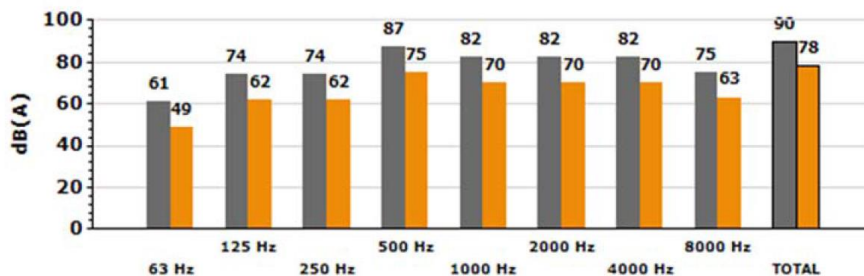
Punto Diseño

Q (m ³ /h)	1102
Pe (Pa)	1089,52

Punto Servicio (PS)

Q (m ³ /h)	1101,86
Pe (Pa)	1089,25
Pd (Pa)	45,88
Pt (Pa)	1135,13

Acoustics: Inlet, 1.50 (m), 1 plane



Band	Lw dB(A)	Lp dB(A)
63 Hz	61	49
125 Hz	74	62
250 Hz	74	62
500 Hz	87	75
1000 Hz	82	70
2000 Hz	82	70
4000 Hz	82	70
8000 Hz	75	63
TOTAL	90	78



• PROJECT: AVANTE 2200
 • SHIPYARD: NAVANTIA S.A.
 • SYSTEM: HVAC



DATA SHEET				
Customer :				
Product line : Standard Alumínio Multimontagem Multitensão (Centro 6100)		Product code : 14980520		
Frame : 80	Insulation class : F	Duty cycle : S1	Ambient temperature : -20 °C to +45 °C	Altitude : 1000 m.a.s.l
Degree of protection : IP55	Design : N	Cooling method : IC411 - TEFC	Mounting : B14T	Direct of rotation ¹ : Both
Starting method : Direct On Line	Approx. weight ³ : 8.3 kg	Moment of inertia (J) : 0.0006 kgm ²		
Output	0.85 kW	0.85 kW	0.75 kW	
Poles	2	2	2	
Frequency	60 Hz	60 Hz	60 Hz	
Rated voltage	440 V	460 V	460 V	
Rated current	1.91 A	1.92 A	1.75 A	
L. R. Amperes	9.55 A	9.60 A	9.45 A	
LRC (p.u.)	5.0 x Code H	5.0 x Code H	5.4 x Code J	
No load current	1.25 A	1.40 A	1.35 A	
Rated speed	3380 rpm	3400 rpm	3435 rpm	
Slip	6.11 %	5.56 %	4.58 %	
Rated torque	2.40 Nm	2.39 Nm	2.09 Nm	
Locked rotor torque	220 %	240 %	270 %	
Breakdown torque	230 %	260 %	300 %	
Service factor	1.00	1.00	1.15	
Temperature rise ⁴	100 K	100 K	100 K	
Noise level ²	62.0 dB(A)	62.0 dB(A)	62.0 dB(A)	
Locked rotor time	9 s (hot)	9 s (hot)	9 s (hot)	
	16 s (cold)	16 s (cold)	16 s (cold)	
Efficiency (%)	50%	69.0	66.0	65.0
	75%	73.0	72.0	70.0
	100%	73.0	73.0	72.5
Power factor	Start	0.73	0.73	0.73
	50%	0.63	0.52	0.49
	75%	0.72	0.66	0.63
	100%	0.80	0.76	0.74
Bearing type	Drive end : 6204-ZZ	Non drive end : 6203-ZZ	Foundation loads	
Lubrication interval	-	-	Maximum traction : 170 N	
Lubricant amount	-	-	Maximum compression : 252 N	
Lubricant type	MOBIL POLYREX EM			
This revision replaces and cancels the previous one, which must be eliminated. (1) When viewed from the drive end. (2) Measured at 1m and with tolerance of +3dB(A). (3) Approximate weight subject to changes after manufacturing process. (4) At the rated point.			These are average values based on tests with sinusoidal power supply, subject to the tolerances stipulated in IEC 60034-1.	
Rev.	Summary of changes		Performed	Checked
Performed by			182632/2020-T	
Checked by				
Date				

FAN-VEN01011:

CMR-731-2T 60HZ



Extremely robust medium pressure, single inlet centrifugal fans fitted with a backward-curved impeller.

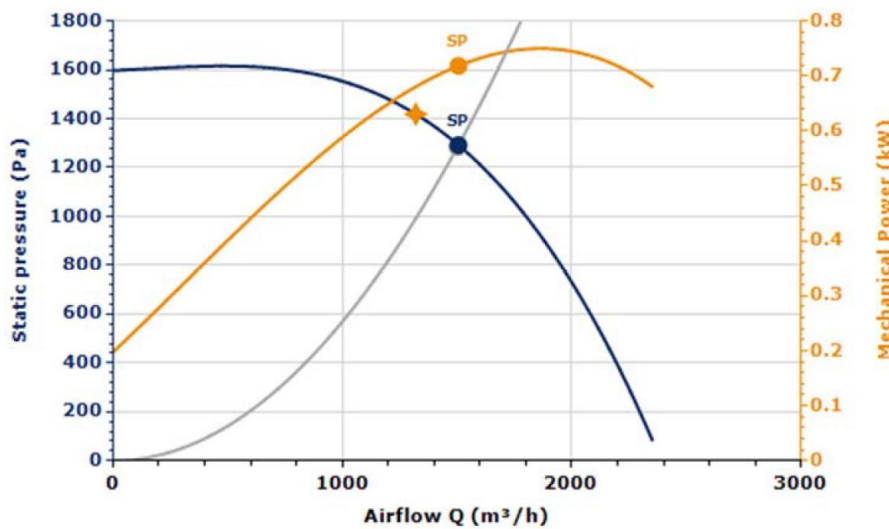
Fan:

- Sheet steel casing.
- Impeller with reaction blades in extremely robust sheet steel.

Finish:

- Anticorrosive finish of polyester resin polymerised at 190 °C. previously degreased with phosphate-free nanotechnological treatment.

CHARACTERISTIC CURVE AND ACOUSTICS AT 1.2KG/M³



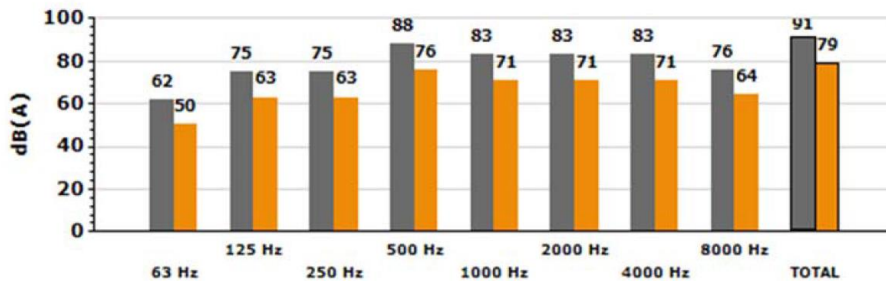
Design Point

Q (m ³ /h)	1501
Ps (Pa)	1284

Service Point (SP)

Q (m ³ /h)	1505.71
Ps (Pa)	1292.07
Pd (Pa)	51.83
Pt (Pa)	1343.90

Acoustics: Inlet, 1.50 (m), 1 plane



Band	Lw dB(A)	Lp dB(A)
63 Hz	62	50
125 Hz	75	63
250 Hz	75	63
500 Hz	88	76
1000 Hz	83	71
2000 Hz	83	71
4000 Hz	83	71
8000 Hz	76	64
TOTAL	91	79



• PROJECT: AVANTE 2200
 • SHIPYARD: NAVANTIA S.A.
 • SYSTEM: HVAC



DATA SHEET					
Customer :					
Product line : Standard Alumínio Multimontagem Multitensão (Centro 6100)		Product code : 14980523			
Frame : 90S/L	Insulation class : F	Duty cycle : S1	Ambient temperature : -20 °C to +45 °C		
Altitude : 1000 m.a.s.l	Degree of protection : IP55	Design : N	Cooling method : IC411 - TEFC		
Mounting : B14T	Direct of rotation ¹ : Both	Starting method : Direct On Line	Approx. weight ³ : 14.8 kg		
Moment of inertia (J) : 0.0017 kgm ²					
Output	1.8 kW	1.8 kW	1.5 kW		
Poles	2	2	2		
Frequency	60 Hz	60 Hz	60 Hz		
Rated voltage	440 V	460 V	460 V		
Rated current	3.44 A	3.36 A	2.91 A		
L. R. Amperes	21.7 A	21.2 A	21.0 A		
LRC (p.u.)	6.3 x Code H	6.3 x Code H	7.2 x Code K		
No load current	1.55 A	1.85 A	1.85 A		
Rated speed	3410 rpm	3430 rpm	3465 rpm		
Slip	5.28 %	4.72 %	3.75 %		
Rated torque	5.04 Nm	5.01 Nm	4.14 Nm		
Locked rotor torque	220 %	250 %	300 %		
Breakdown torque	200 %	240 %	290 %		
Service factor	1.00	1.00	1.15		
Temperature rise ⁴	100 K	100 K	100 K		
Noise level ²	68.0 dB(A)	68.0 dB(A)	68.0 dB(A)		
Locked rotor time	7 s (hot) 13 s (cold)	7 s (hot) 13 s (cold)	7 s (hot) 13 s (cold)		
Efficiency (%)	50%	76.0	76.0		
	75%	78.0	79.0		
	100%	78.0	79.0		
Power factor	Start	0.69	0.69		
	50%	0.74	0.69		
	75%	0.83	0.80		
	100%	0.88	0.85		
Bearing type	Drive end 6205-ZZ	Non drive end 6204-ZZ	Foundation loads		
Lubrication interval	-	-	Maximum traction : 329 N		
Lubricant amount	-	-	Maximum compression : 474 N		
Lubricant type	MOBIL POLYREX EM				
This revision replaces and cancels the previous one, which must be eliminated.			These are average values based on tests with sinusoidal power supply, subject to the tolerances stipulated in IEC 60034-1.		
(1) When viewed from the drive end.					
(2) Measured at 1m and with tolerance of +3dB(A).					
(3) Approximate weight subject to changes after manufacturing process.					
(4) At the rated point.					
Rev.	Summary of changes		Performed	Checked	Date
Performed by			182633/2020-T		
Checked by					
Date					

FAN-VEN01012 (SPARK RESISTANT):

CMR-622-2T 60HZ



Extremely robust medium pressure, single inlet centrifugal fans fitted with a backward-curved impeller.

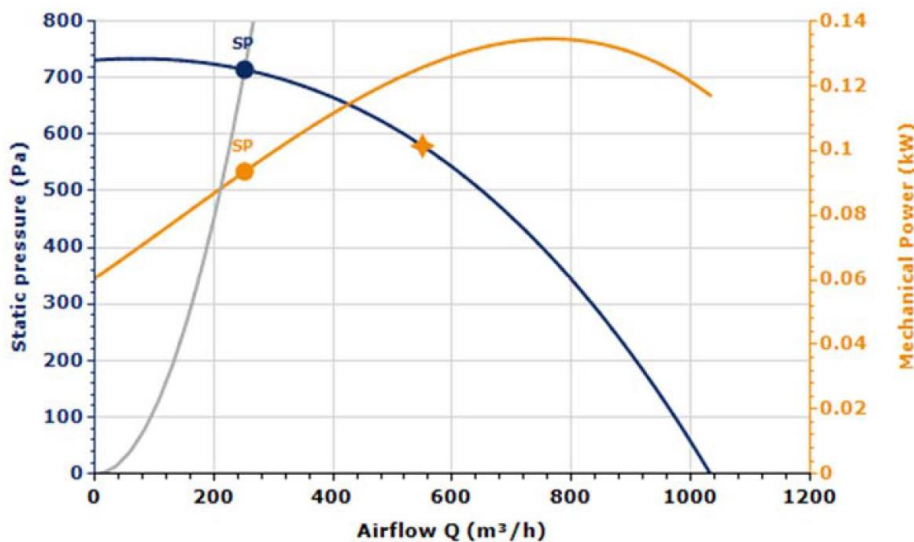
Fan:

- Sheet steel casing.
- Impeller with reaction blades in extremely robust sheet steel.
- Non-sparking inlet ring made of copper or aluminium.

Finish:

- Anticorrosive finish of polyester resin polymerised at 190 °C. previously degreased with phosphate-free nanotechnological treatment.

CHARACTERISTIC CURVE AND ACOUSTICS AT 1.2KG/M³



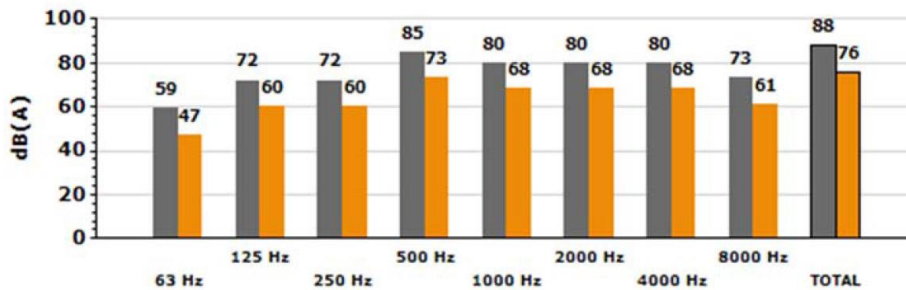
Design Point

Q (m ³ /h)	252
Ps (Pa)	715

Service Point (SP)

Q (m ³ /h)	251.90
Ps (Pa)	714.45
Pd (Pa)	13.06
Pt (Pa)	727.51

Acoustics: Inlet, 1.50 (m), 1 plane



Band	Lw dB(A)	Lp dB(A)
63 Hz	59	47
125 Hz	72	60
250 Hz	72	60
500 Hz	85	73
1000 Hz	80	68
2000 Hz	80	68
4000 Hz	80	68
8000 Hz	73	61
TOTAL	88	76



• PROJECT: AVANTE 2200
 • SHIPYARD: NAVANTIA S.A.
 • SYSTEM: HVAC



ISO 9001
 ISO 14001
 OHSAS 18001
 BUREAU VERITAS
 Certification



DATA SHEET



Three Phase Induction Motor - Squirrel Cage

Customer :					
Product line : Standard Alumínio Multimontagem Multitensão (Centro 6100)		Product code : 14980426			
Frame : 71	Insulation class : F	Duty cycle : S1	Ambient temperature : -20 °C to +45 °C		
Altitude : 1000 m.a.s.l	Degree of protection : IP55	Design : N	Cooling method : IC411 - TEFC		
			Mounting : B14T		
			Direct of rotation ¹ : Both		
			Starting method : Direct On Line		
			Approx. weight ³ : 7.3 kg		
			Moment of inertia (J) : 0.0003 kgm ²		
Output	0.62 kW	0.62 kW	0.55 kW		
Poles	2	2	2		
Frequency	60 Hz	60 Hz	60 Hz		
Rated voltage	440 V	460 V	460 V		
Rated current	1.32 A	1.26 A	1.13 A		
L. R. Amperes	6.73 A	6.93 A	6.78 A		
LRC (p.u.)	5.1 x Code G	5.5 x Code H	6.0 x Code J		
No load current	0.650 A	0.730 A	0.730 A		
Rated speed	3315 rpm	3345 rpm	3375 rpm		
Slip	7.92 %	7.08 %	6.25 %		
Rated torque	1.79 Nm	1.77 Nm	1.56 Nm		
Locked rotor torque	240 %	270 %	310 %		
Breakdown torque	260 %	290 %	330 %		
Service factor	1.00	1.00	1.15		
Temperature rise ⁴	100 K	100 K	100 K		
Noise level ²	60.0 dB(A)	60.0 dB(A)	60.0 dB(A)		
Locked rotor time	10 s (hot)	10 s (hot)	10 s (hot)		
	18 s (cold)	18 s (cold)	18 s (cold)		
Efficiency (%)	50%	65.4	64.0		
	75%	68.0	70.5		
	100%	69.5	71.0		
Power factor	Start	0.83	0.83		
	50%	0.73	0.69		
	75%	0.85	0.81		
	100%	0.89	0.87		
Bearing type	Drive end 6203-ZZ	Non drive end 6202-ZZ	Foundation loads		
Lubrication interval	-	-	Maximum traction : 160 N		
Lubricant amount	-	-	Maximum compression : 232 N		
Lubricant type	MOBIL POLYREX EM				
This revision replaces and cancels the previous one, which must be eliminated.			These are average values based on tests with sinusoidal power supply, subject to the tolerances stipulated in IEC 60034-1.		
(1) When viewed from the drive end.					
(2) Measured at 1m and with tolerance of +3dB(A).					
(4) At the rated point.					
Rev.	Summary of changes		Performed	Checked	Date
Performed by			182631/2020-T		
Checked by					
Date					

FAN-VEN01015:

CMR-1031-2T-3 60HZ



Extremely robust medium pressure, single inlet centrifugal fans fitted with a backward-curved impeller.

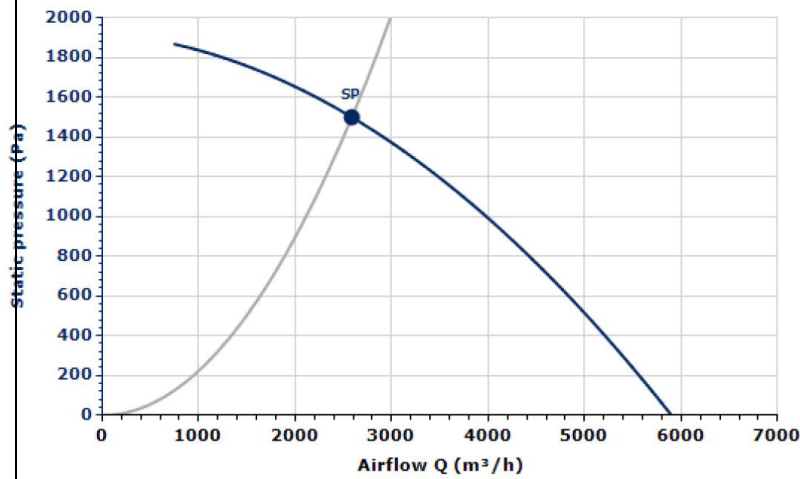
Fan:

- Sheet steel casing.
- Impeller with reaction blades in extremely robust sheet steel.

Finish:

- Anticorrosive finish of polyester resin polymerised at 190 °C. previously degreased with phosphate-free nanotechnological treatment.

CHARACTERISTIC CURVE AT 1.2KG/M³

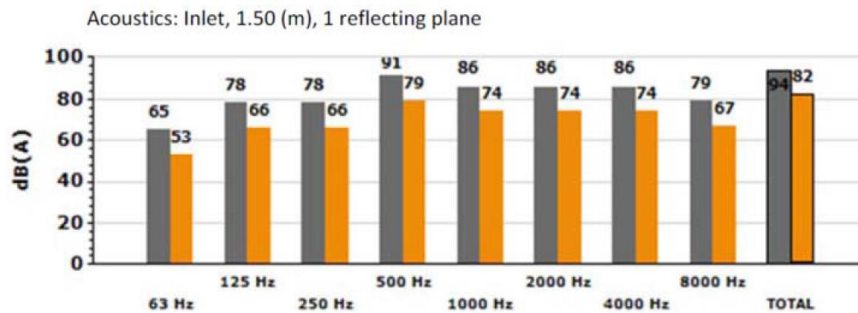


Design Point

Q (m ³ /h)	2586
Ps (Pa)	1499

Service Point (SP)

Q (m ³ /h)	2586.63
Ps (Pa)	1499.72
Pd (Pa)	49.95
Pt (Pa)	1549.67



Band	Lw dB(A)	Lp dB(A)
63 Hz	65	53
125 Hz	78	66
250 Hz	78	66
500 Hz	91	79
1000 Hz	86	74
2000 Hz	86	74
4000 Hz	86	74
8000 Hz	79	67
TOTAL	94	82



• PROJECT: AVANTE 2200
 • SHIPYARD: NAVANTIA S.A.
 • SYSTEM: HVAC



ISO 9001
 ISO 14001
 OHSAS 18001
 BUREAU VERITAS
 Certification



DATA SHEET



Three Phase Induction Motor - Squirrel Cage

Customer :					
Product line : Standard Alumínio Multimontagem Multitensão (Centro 6100)		Product code : 15052241			
Frame : 90S/L	Insulation class : F	Duty cycle : S1	Ambient temperature : -20 °C to +45 °C		
Altitude : 1000 m.a.s.l	Degree of protection : IP55	Design : N	Cooling method : IC411 - TEFC		
Mounting : B3T	Direct of rotation ¹ : Both	Starting method : Direct On Line	Approx. weight ³ : 18.5 kg		
Moment of inertia (J) : 0.0022 kgm ²					
Output	2.6 kW	2.6 kW	2.2 kW		
Poles	2	2	2		
Frequency	60 Hz	60 Hz	60 Hz		
Rated voltage	440 V	460 V	460 V		
Rated current	4.76 A	4.62 A	4.13 A		
L. R. Amperes	32.3 A	31.4 A	31.4 A		
LRC (p.u.)	6.8 x Code H	6.8 x Code H	7.6 x Code K		
No load current	1.85 A	2.10 A	2.10 A		
Rated speed	3370 rpm	3390 rpm	3430 rpm		
Slip	6.39 %	5.83 %	4.72 %		
Rated torque	7.37 Nm	7.33 Nm	6.13 Nm		
Locked rotor torque	240 %	270 %	320 %		
Breakdown torque	260 %	290 %	350 %		
Service factor	1.00	1.00	1.15		
Temperature rise ⁴	100 K	100 K	100 K		
Noise level ²	68.0 dB(A)	68.0 dB(A)	68.0 dB(A)		
Locked rotor time	9 s (hot) 16 s (cold)	9 s (hot) 16 s (cold)	9 s (hot) 16 s (cold)		
Efficiency (%)	50%	77.0	75.6		
	75%	80.0	78.8		
	100%	81.5	80.6		
Power factor	Start	0.70	0.70		
	50%	0.73	0.68		
	75%	0.83	0.75		
	100%	0.88	0.83		
Bearing type	Drive end : 6205-ZZ	Non drive end : 6204-ZZ	Foundation loads		
Lubrication interval	-	-	Maximum traction : 569 N		
Lubricant amount	-	-	Maximum compression : 751 N		
Lubricant type	MOBIL POLYREX EM				
This revision replaces and cancels the previous one, which must be eliminated. (1) When viewed from the drive end. (2) Measured at 1m and with tolerance of +3dB(A). (3) Approximate weight subject to changes after manufacturing process. (4) At the rated point.			These are average values based on tests with sinusoidal power supply, subject to the tolerances stipulated in IEC 60034-1.		
Rev.	Summary of changes		Performed	Checked	Date
Performed by			182635/2020-T		
Checked by					
Date					

FAN-VEN01023 (SPARK RESISTANT):

CMR-625-2T 60HZ



Extremely robust medium pressure, single inlet centrifugal fans fitted with a backward-curved impeller.

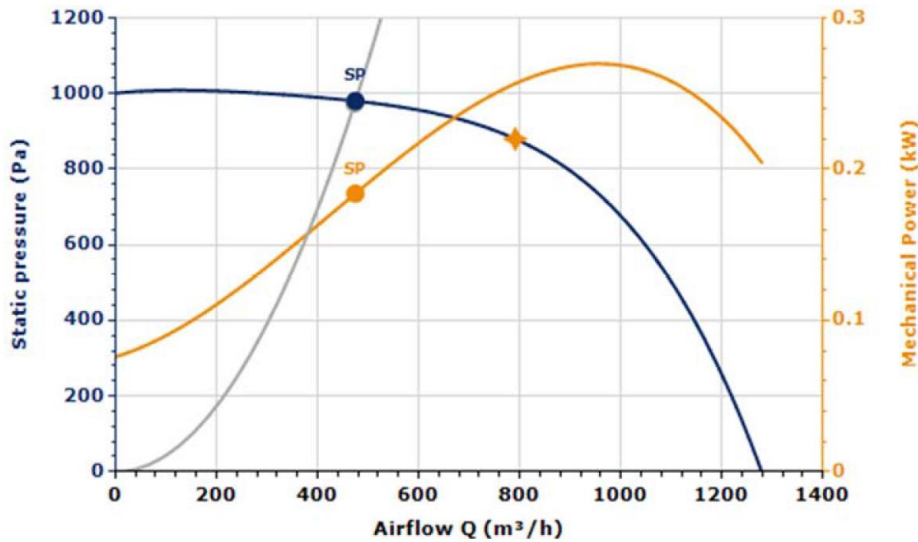
Fan:

- Sheet steel casing.
- Impeller with reaction blades in extremely robust sheet steel.
- Non-sparking inlet ring made of copper or aluminium.

Finish:

- Anticorrosive finish of polyester resin polymerised at 190 °C. previously degreased with phosphate-free nanotechnological treatment.

CHARACTERISTIC CURVE AND ACOUSTICS AT 1.2KG/M³



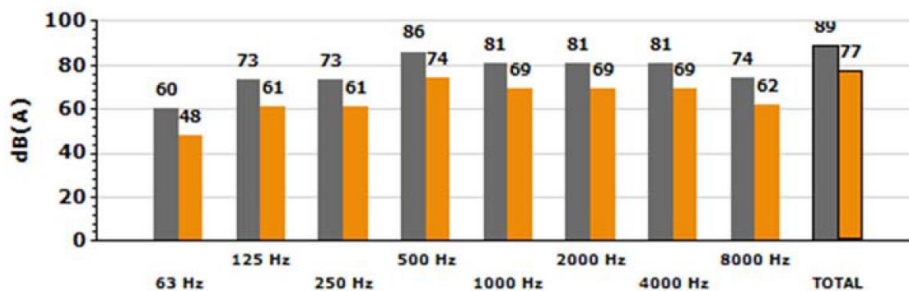
Design Point

Q (m ³ /h)	473
Ps (Pa)	974

Service Point (SP)

Q (m ³ /h)	474.64
Ps (Pa)	980.76
Pd (Pa)	13.30
Pt (Pa)	994.07

Acoustics: Inlet, 1.50 (m), 1 plane



Band	Lw dB(A)	Lp dB(A)
63 Hz	60	48
125 Hz	73	61
250 Hz	73	61
500 Hz	86	74
1000 Hz	81	69
2000 Hz	81	69
4000 Hz	81	69
8000 Hz	74	62
TOTAL	89	77



• PROJECT: AVANTE 2200
 • SHIPYARD: NAVANTIA S.A.
 • SYSTEM: HVAC



DATA SHEET					
Customer :					
Product line : Standard Alumínio Multimontagem Multitensão (Centro 6100)		Product code : 14980520			
Frame : 80	Insulation class : F	Cooling method : IC411 - TEFC	Mounting : B14T		
Duty cycle : S1	Ambient temperature : -20 °C to +45 °C	Direct of rotation ¹ : Both	Starting method : Direct On Line		
Altitude : 1000 m.a.s.l	Degree of protection : IP55	Approx. weight ² : 8.3 kg	Moment of inertia (J) : 0.0006 kgm ²		
Design : N					
Output	0.85 kW	0.85 kW	0.75 kW		
Poles	2	2	2		
Frequency	60 Hz	60 Hz	60 Hz		
Rated voltage	440 V	460 V	460 V		
Rated current	1.91 A	1.92 A	1.75 A		
L. R. Amperes	9.55 A	9.60 A	9.45 A		
LRC (p.u.)	5.0 x Code H	5.0 x Code H	5.4 x Code J		
No load current	1.25 A	1.40 A	1.35 A		
Rated speed	3380 rpm	3400 rpm	3435 rpm		
Slip	6.11 %	5.56 %	4.58 %		
Rated torque	2.40 Nm	2.39 Nm	2.09 Nm		
Locked rotor torque	220 %	240 %	270 %		
Breakdown torque	230 %	260 %	300 %		
Service factor	1.00	1.00	1.15		
Temperature rise ⁴	100 K	100 K	100 K		
Noise level ²	62.0 dB(A)	62.0 dB(A)	62.0 dB(A)		
Locked rotor time	9 s (hot)	9 s (hot)	9 s (hot)		
	16 s (cold)	16 s (cold)	16 s (cold)		
Efficiency (%)	50%	69.0	66.0	65.0	
	75%	73.0	72.0	70.0	
	100%	73.0	73.0	72.5	
Power factor	Start	0.73	0.73	0.73	
	50%	0.63	0.52	0.49	
	75%	0.72	0.66	0.63	
	100%	0.80	0.76	0.74	
	<u>Drive end</u>	<u>Non drive end</u>	Foundation loads		
Bearing type	6204-ZZ	6203-ZZ	Maximum traction	: 170 N	
Lubrication interval	-	-	Maximum compression	: 252 N	
Lubricant amount	-	-			
Lubricant type	MOBIL POLYREX EM				
This revision replaces and cancels the previous one, which must be eliminated.			These are average values based on tests with sinusoidal power supply, subject to the tolerances stipulated in IEC 60034-1.		
(1) When viewed from the drive end.					
(2) Measured at 1m and with tolerance of +3dB(A).					
(3) Approximate weight subject to changes after manufacturing process.					
(4) At the rated point.					
Rev.	Summary of changes		Performed	Checked	Date
Performed by					182632/2020-T
Checked by					
Date					

FAN-VEN01025 (SPARK RESISTANT):

CMR-625-2T 60HZ



Extremely robust medium pressure, single inlet centrifugal fans fitted with a backward-curved impeller.

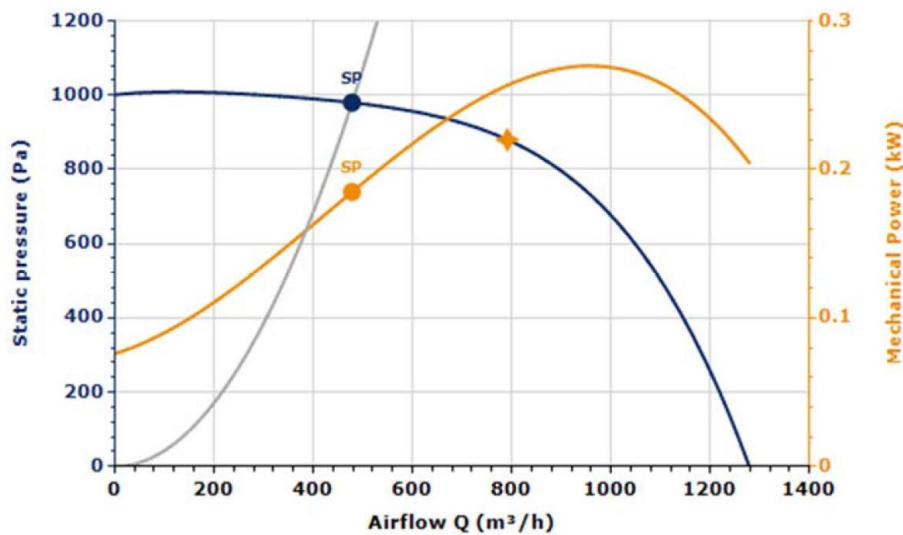
Fan:

- Sheet steel casing.
- Impeller with reaction blades in extremely robust sheet steel.
- Non-sparking inlet ring made of copper or aluminium.

Finish:

- Anticorrosive finish of polyester resin polymerised at 190 °C. previously degreased with phosphate-free nanotechnological treatment.

CHARACTERISTIC CURVE AND ACOUSTICS AT 1.2KG/M³



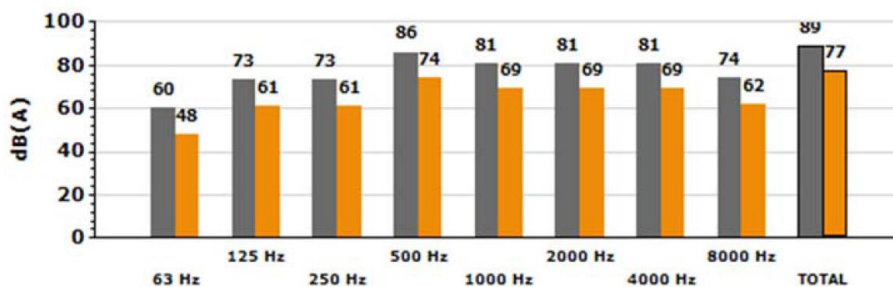
Design Point

Q (m³/h)	478
Ps (Pa)	980

Service Point (SP)

Q (m³/h)	478.06
Ps (Pa)	980.26
Pd (Pa)	13.50
Pt (Pa)	993.75

Acoustics: Inlet, 1.50 (m), 1 plane



Band	Lw dB(A)	Lp dB(A)
63 Hz	60	48
125 Hz	73	61
250 Hz	73	61
500 Hz	86	74
1000 Hz	81	69
2000 Hz	81	69
4000 Hz	81	69
8000 Hz	74	62
TOTAL	89	77



• PROJECT: AVANTE 2200
 • SHIPYARD: NAVANTIA S.A.
 • SYSTEM: HVAC



ISO 9001
 ISO 14001
 OHSAS 18001
 BUREAU VERITAS
 Certification



DATA SHEET



Three Phase Induction Motor - Squirrel Cage

Customer :					
Product line		: Standard Alumínio Multimontagem Multitensão (Centro 6100)		Product code : 14980520	
Frame	: 80	Cooling method	: IC411 - TEFC		
Insulation class	: F	Mounting	: B14T		
Duty cycle	: S1	Direct of rotation ¹	: Both		
Ambient temperature	: -20 °C to +45 °C	Starting method	: Direct On Line		
Altitude	: 1000 m.a.s.l	Approx. weight ³	: 8.3 kg		
Degree of protection	: IP55	Moment of inertia (J)	: 0.0006 kgm ²		
Design	: N				
Output	0.85 kW	0.85 kW	0.75 kW		
Poles	2	2	2		
Frequency	60 Hz	60 Hz	60 Hz		
Rated voltage	440 V	460 V	460 V		
Rated current	1.91 A	1.92 A	1.75 A		
L. R. Amperes	9.55 A	9.60 A	9.45 A		
LRC (p.u.)	5.0 x Code H	5.0 x Code H	5.4 x Code J		
No load current	1.25 A	1.40 A	1.35 A		
Rated speed	3380 rpm	3400 rpm	3435 rpm		
Slip	6.11 %	5.56 %	4.58 %		
Rated torque	2.40 Nm	2.39 Nm	2.09 Nm		
Locked rotor torque	220 %	240 %	270 %		
Breakdown torque	230 %	260 %	300 %		
Service factor	1.00	1.00	1.15		
Temperature rise ⁴	100 K	100 K	100 K		
Noise level ²	62.0 dB(A)	62.0 dB(A)	62.0 dB(A)		
Locked rotor time	9 s (hot) 16 s (cold)	9 s (hot) 16 s (cold)	9 s (hot) 16 s (cold)		
Efficiency (%)	50%	69.0	66.0	65.0	
	75%	73.0	72.0	70.0	
	100%	73.0	73.0	72.5	
Power factor	Start	0.73	0.73	0.73	
	50%	0.63	0.52	0.49	
	75%	0.72	0.66	0.63	
	100%	0.80	0.76	0.74	
Bearing type	Drive end 6204-ZZ	Non drive end 6203-ZZ	Foundation loads		
Lubrication interval	-	-	Maximum traction	: 170 N	
Lubricant amount	-	-	Maximum compression	: 252 N	
Lubricant type	MOBIL POLYREX EM				
This revision replaces and cancels the previous one, which must be eliminated. (1) When viewed from the drive end. (2) Measured at 1m and with tolerance of +3dB(A). (3) Approximate weight subject to changes after manufacturing process. (4) At the rated point.			These are average values based on tests with sinusoidal power supply, subject to the tolerances stipulated in IEC 60034-1.		
Rev.	Summary of changes		Performed	Checked	Date
Performed by					182632/2020-T
Checked by					
Date					

FAN-VEN01028:

CMR-1031-2T-3 60HZ



Extremely robust medium pressure, single inlet centrifugal fans fitted with a backward-curved impeller.

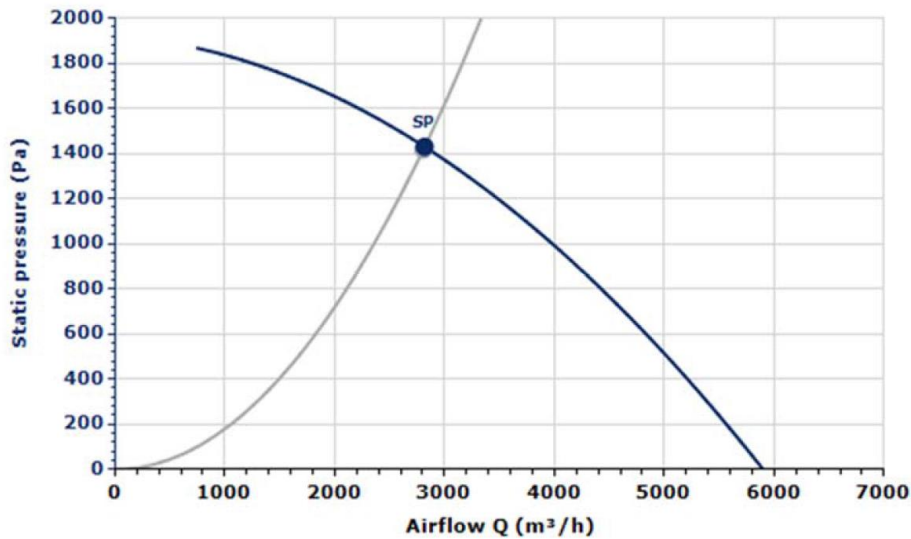
Fan:

- Sheet steel casing.
- Impeller with reaction blades in extremely robust sheet steel.

Finish:

- Anticorrosive finish of polyester resin polymerised at 190 °C. previously degreased with phosphate-free nanotechnological treatment.

CHARACTERISTIC CURVE AT 1.2KG/M³

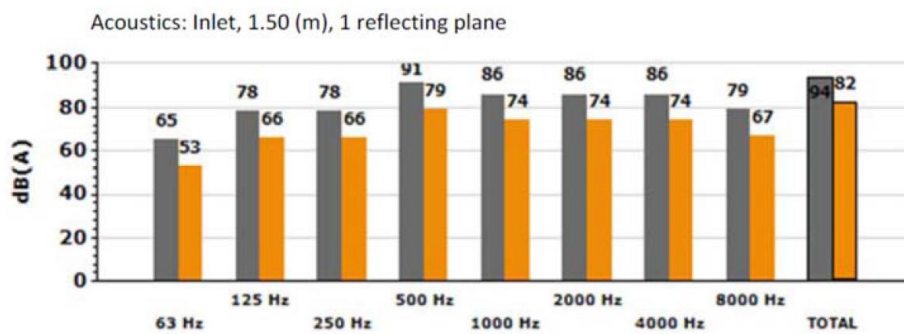


Design Point

Q (m ³ /h)	2805
Ps (Pa)	1417

Service Point (SP)

Q (m ³ /h)	2817.84
Ps (Pa)	1430.00
Pd (Pa)	59.28
Pt (Pa)	1489.28



Band	Lw dB(A)	Lp dB(A)
63 Hz	65	53
125 Hz	78	66
250 Hz	78	66
500 Hz	91	79
1000 Hz	86	74
2000 Hz	86	74
4000 Hz	86	74
8000 Hz	79	67
TOTAL	94	82



• PROJECT: AVANTE 2200
 • SHIPYARD: NAVANTIA S.A.
 • SYSTEM: HVAC



ISO 9001
 ISO 14001
 OHSAS 18001
 BUREAU VERITAS
 Certification



DATA SHEET



Three Phase Induction Motor - Squirrel Cage

Customer :					
Product line : Standard Alumínio Multimontagem Multitensão (Centro 6100)		Product code : 15052241			
Frame : 90S/L	Insulation class : F	Duty cycle : S1	Ambient temperature : -20 °C to +45 °C		
Altitude : 1000 m.a.s.l	Degree of protection : IP55	Design : N	Cooling method : IC411 - TEFC		
Mounting : B3T	Direct of rotation ¹ : Both	Starting method : Direct On Line	Approx. weight ³ : 18.5 kg		
Moment of inertia (J) : 0.0022 kgm ²					
Output	2.6 kW	2.6 kW	2.2 kW		
Poles	2	2	2		
Frequency	60 Hz	60 Hz	60 Hz		
Rated voltage	440 V	460 V	460 V		
Rated current	4.76 A	4.62 A	4.13 A		
L. R. Amperes	32.3 A	31.4 A	31.4 A		
LRC (p.u.)	6.8 x Code H	6.8 x Code H	7.6 x Code K		
No load current	1.85 A	2.10 A	2.10 A		
Rated speed	3370 rpm	3390 rpm	3430 rpm		
Slip	6.39 %	5.83 %	4.72 %		
Rated torque	7.37 Nm	7.33 Nm	6.13 Nm		
Locked rotor torque	240 %	270 %	320 %		
Breakdown torque	260 %	290 %	350 %		
Service factor	1.00	1.00	1.15		
Temperature rise ⁴	100 K	100 K	100 K		
Noise level ²	68.0 dB(A)	68.0 dB(A)	68.0 dB(A)		
Locked rotor time	9 s (hot) 16 s (cold)	9 s (hot) 16 s (cold)	9 s (hot) 16 s (cold)		
Efficiency (%)	50%	77.0	75.6		
	75%	80.0	78.8		
	100%	81.5	80.6		
Power factor	Start	0.70	0.70		
	50%	0.73	0.68		
	75%	0.83	0.75		
	100%	0.88	0.83		
Bearing type	Drive end : 6205-ZZ	Non drive end : 6204-ZZ	Foundation loads		
Lubrication interval	-	-	Maximum traction : 569 N		
Lubricant amount	-	-	Maximum compression : 751 N		
Lubricant type	MOBIL POLYREX EM				
This revision replaces and cancels the previous one, which must be eliminated. (1) When viewed from the drive end. (2) Measured at 1m and with tolerance of +3dB(A). (3) Approximate weight subject to changes after manufacturing process. (4) At the rated point.			These are average values based on tests with sinusoidal power supply, subject to the tolerances stipulated in IEC 60034-1.		
Rev.	Summary of changes		Performed	Checked	Date
Performed by			182635/2020-T		
Checked by					
Date					

FAN-VEN02004:

CMR-625-2T 60HZ



Extremely robust medium pressure, single inlet centrifugal fans fitted with a backward-curved impeller.

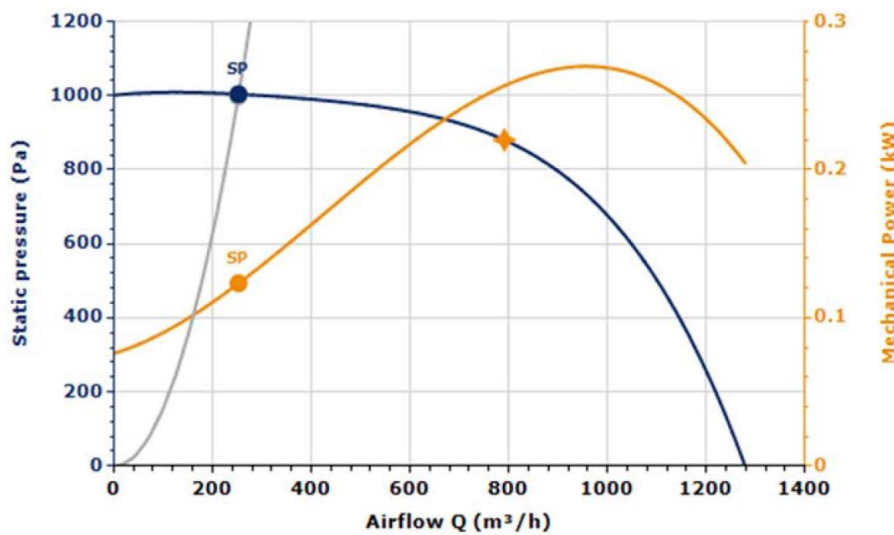
Fan:

- Sheet steel casing.
- Impeller with reaction blades in extremely robust sheet steel.

Finish:

- Anticorrosive finish of polyester resin polymerised at 190 °C. previously degreased with phosphate-free nanotechnological treatment.

CHARACTERISTIC CURVE AND ACOUSTICS AT 1.2KG/M³



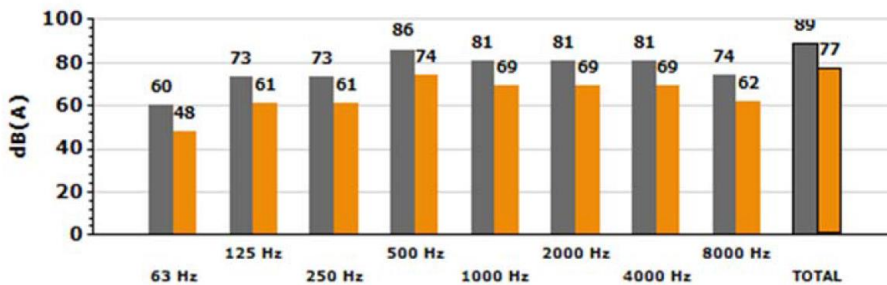
Design Point

Q (m ³ /h)	252
Ps (Pa)	998


Service Point (SP)

Q (m ³ /h)	252.76
Ps (Pa)	1004.02
Pd (Pa)	3.7726
Pt (Pa)	1007.79

Acoustics: Inlet, 1.50 (m), 1 plane



Band	Lw dB(A)	Lp dB(A)
63 Hz	60	48
125 Hz	73	61
250 Hz	73	61
500 Hz	86	74
1000 Hz	81	69
2000 Hz	81	69
4000 Hz	81	69
8000 Hz	74	62
TOTAL	89	77

DATA SHEET				
Customer :				
Product line : Standard Alumínio Multimontagem Multitensão (Centro 6100)		Product code : 14980520		
Frame : 80	Insulation class : F	Duty cycle : S1	Ambient temperature : -20 °C to +45 °C	Altitude : 1000 m.a.s.l
Degree of protection : IP55	Design : N	Cooling method : IC411 - TEFC	Mounting : B14T	Direct of rotation ¹ : Both
Starting method : Direct On Line	Approx. weight ³ : 8.3 kg	Moment of inertia (J) : 0.0006 kgm ²		
Output	0.85 kW	0.85 kW	0.75 kW	
Poles	2	2	2	
Frequency	60 Hz	60 Hz	60 Hz	
Rated voltage	440 V	460 V	460 V	
Rated current	1.91 A	1.92 A	1.75 A	
L. R. Amperes	9.55 A	9.60 A	9.45 A	
LRC (p.u.)	5.0 x Code H	5.0 x Code H	5.4 x Code J	
No load current	1.25 A	1.40 A	1.35 A	
Rated speed	3380 rpm	3400 rpm	3435 rpm	
Slip	6.11 %	5.56 %	4.58 %	
Rated torque	2.40 Nm	2.39 Nm	2.09 Nm	
Locked rotor torque	220 %	240 %	270 %	
Breakdown torque	230 %	260 %	300 %	
Service factor	1.00	1.00	1.15	
Temperature rise ⁴	100 K	100 K	100 K	
Noise level ²	62.0 dB(A)	62.0 dB(A)	62.0 dB(A)	
Locked rotor time	9 s (hot)	9 s (hot)	9 s (hot)	
	16 s (cold)	16 s (cold)	16 s (cold)	
Efficiency (%)	50%	69.0	66.0	65.0
	75%	73.0	72.0	70.0
	100%	73.0	73.0	72.5
Power factor	Start	0.73	0.73	0.73
	50%	0.63	0.52	0.49
	75%	0.72	0.66	0.63
	100%	0.80	0.76	0.74
Bearing type	Drive end 6204-ZZ	Non drive end 6203-ZZ	Foundation loads	
Lubrication interval	-	-	Maximum traction : 170 N	
Lubricant amount	-	-	Maximum compression : 252 N	
Lubricant type	MOBIL POLYREX EM			
This revision replaces and cancels the previous one, which must be eliminated. (1) When viewed from the drive end. (2) Measured at 1m and with tolerance of +3dB(A). (3) Approximate weight subject to changes after manufacturing process. (4) At the rated point.			These are average values based on tests with sinusoidal power supply, subject to the tolerances stipulated in IEC 60034-1.	
Rev.	Summary of changes		Performed	Checked
Performed by			182632/2020-T	
Checked by				
Date				

FAN-VEN02005:

CMR-1031-2T-3 60HZ



Extremely robust medium pressure, single inlet centrifugal fans fitted with a backward-curved impeller.

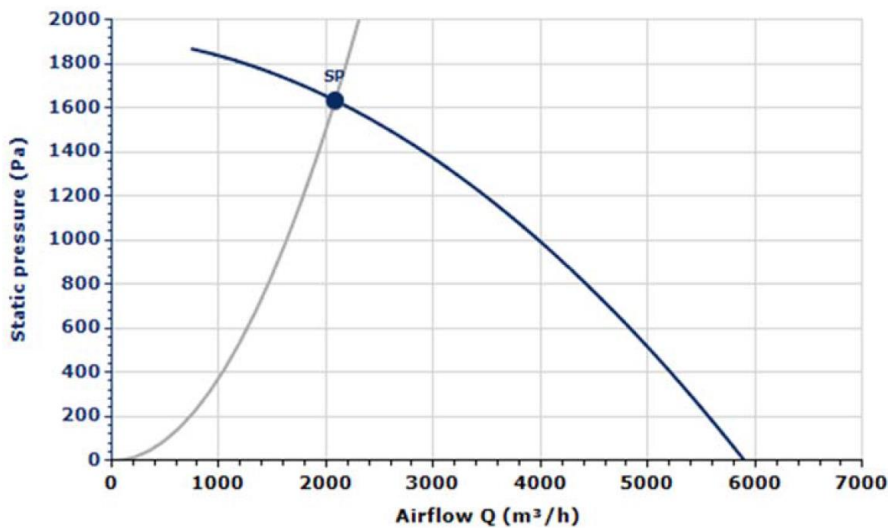
Fan:

- Sheet steel casing.
- Impeller with reaction blades in extremely robust sheet steel.

Finish:

- Anticorrosive finish of polyester resin polymerised at 190 °C. previously degreased with phosphate-free nanotechnological treatment.

CHARACTERISTIC CURVE AT 1.2KG/M³



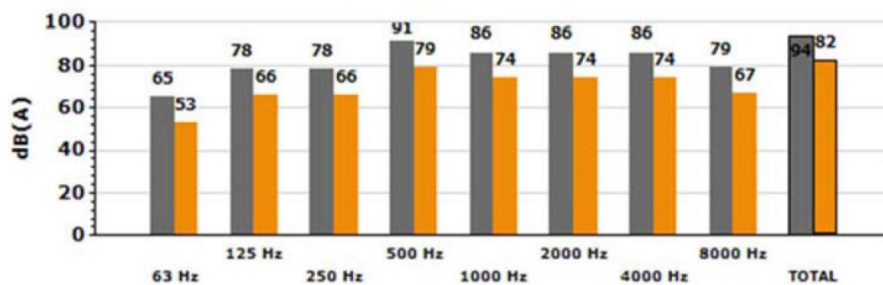
Design Point

Q (m³/h)	2079
Ps (Pa)	1628

Service Point (SP)

Q (m³/h)	2082.52
Ps (Pa)	1633.52
Pd (Pa)	32.38
Pt (Pa)	1665.89

Acoustics: Inlet, 1.50 (m), 1 reflecting plane



Band	Lw dB(A)	Lp dB(A)
63 Hz	65	53
125 Hz	78	66
250 Hz	78	66
500 Hz	91	79
1000 Hz	86	74
2000 Hz	86	74
4000 Hz	86	74
8000 Hz	79	67
TOTAL	94	82



• PROJECT: AVANTE 2200
 • SHIPYARD: NAVANTIA S.A.
 • SYSTEM: HVAC



ISO 9001
 ISO 14001
 OHSAS 18001
 BUREAU VERITAS
 Certification



DATA SHEET



Three Phase Induction Motor - Squirrel Cage

Customer :					
Product line		: Standard Alumínio Multimontagem Multitensão (Centro 6100)		Product code : 15052241	
Frame	: 90S/L	Cooling method	: IC411 - TEFC		
Insulation class	: F	Mounting	: B3T		
Duty cycle	: S1	Direct of rotation ¹	: Both		
Ambient temperature	: -20 °C to +45 °C	Starting method	: Direct On Line		
Altitude	: 1000 m.a.s.l	Approx. weight ³	: 18.5 kg		
Degree of protection	: IP55	Moment of inertia (J)	: 0.0022 kgm ²		
Design	: N				
Output	2.6 kW	2.6 kW	2.2 kW		
Poles	2	2	2		
Frequency	60 Hz	60 Hz	60 Hz		
Rated voltage	440 V	460 V	460 V		
Rated current	4.76 A	4.62 A	4.13 A		
L. R. Amperes	32.3 A	31.4 A	31.4 A		
LRC (p.u.)	6.8 x Code H	6.8 x Code H	7.6 x Code K		
No load current	1.85 A	2.10 A	2.10 A		
Rated speed	3370 rpm	3390 rpm	3430 rpm		
Slip	6.39 %	5.83 %	4.72 %		
Rated torque	7.37 Nm	7.33 Nm	6.13 Nm		
Locked rotor torque	240 %	270 %	320 %		
Breakdown torque	260 %	290 %	350 %		
Service factor	1.00	1.00	1.15		
Temperature rise ⁴	100 K	100 K	100 K		
Noise level ²	68.0 dB(A)	68.0 dB(A)	68.0 dB(A)		
Locked rotor time	9 s (hot)	9 s (hot)	9 s (hot)		
	16 s (cold)	16 s (cold)	16 s (cold)		
Efficiency (%)	50%	77.0	77.0	75.6	
	75%	80.0	80.0	78.8	
	100%	81.5	81.5	80.6	
Power factor	Start	0.70	0.70	0.70	
	50%	0.73	0.68	0.63	
	75%	0.83	0.80	0.75	
	100%	0.88	0.86	0.83	
Bearing type	Drive end 6205-ZZ	Non drive end 6204-ZZ	Foundation loads		
Lubrication interval	-	-	Maximum traction : 569 N		
Lubricant amount	-	-	Maximum compression : 751 N		
Lubricant type	MOBIL POLYREX EM				
This revision replaces and cancels the previous one, which must be eliminated. (1) When viewed from the drive end. (2) Measured at 1m and with tolerance of +3dB(A). (3) Approximate weight subject to changes after manufacturing process. (4) At the rated point.			These are average values based on tests with sinusoidal power supply, subject to the tolerances stipulated in IEC 60034-1.		
Rev.	Summary of changes		Performed	Checked	Date
Performed by					182635/2020-T
Checked by					
Date					

FAN-VEN02006:

CMR-1031-2T-3 60HZ



Extremely robust medium pressure, single inlet centrifugal fans fitted with a backward-curved impeller.

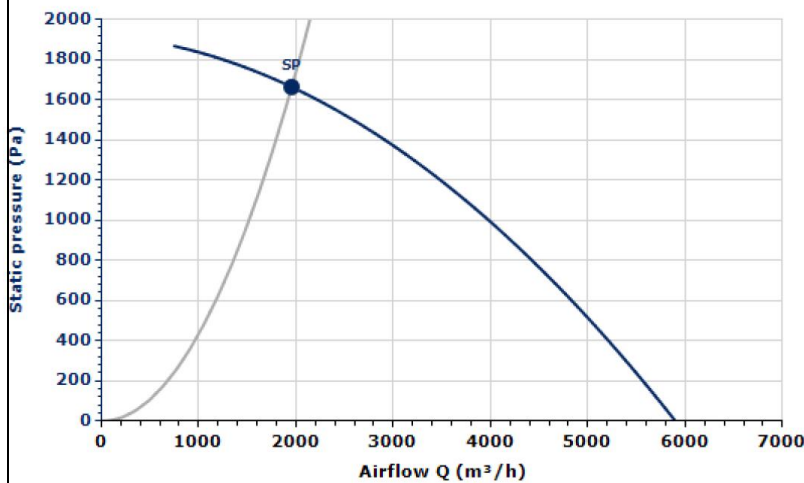
Fan:

- Sheet steel casing.
- Impeller with reaction blades in extremely robust sheet steel.

Finish:

- Anticorrosive finish of polyester resin polymerised at 190 °C. previously degreased with phosphate-free nanotechnological treatment.

CHARACTERISTIC CURVE AT 1.2KG/M³



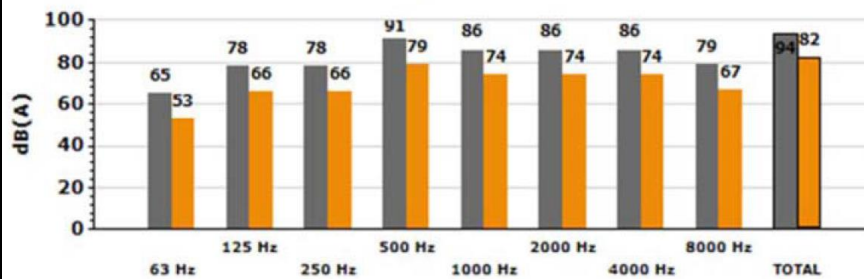
Design Point

Q (m ³ /h)	1955
Ps (Pa)	1663

Service Point (SP)

Q (m ³ /h)	1955.21
Ps (Pa)	1663.35
Pd (Pa)	28.54
Pt (Pa)	1691.89
Impeller (rpm)	3480
Max. Temp. (°C)	250
Outlet air speed (m/s)	6.90

Acoustics: Inlet, 1.50 (m), 1 reflecting plane



Band	Lw dB(A)	Lp dB(A)
63 Hz	65	53
125 Hz	78	66
250 Hz	78	66
500 Hz	91	79
1000 Hz	86	74
2000 Hz	86	74
4000 Hz	86	74
8000 Hz	79	67
TOTAL	94	82



• PROJECT: AVANTE 2200
 • SHIPYARD: NAVANTIA S.A.
 • SYSTEM: HVAC



DATA SHEET					
Customer :					
Product line : Standard Alumínio Multimontagem Multitensão (Centro 6100)		Product code : 15052241			
Frame : 90S/L	Insulation class : F	Duty cycle : S1	Ambient temperature : -20 °C to +45 °C	Altitude : 1000 m.a.s.l	
Degree of protection : IP55	Design : N	Cooling method : IC411 - TEFC	Mounting : B3T	Direct of rotation ¹ : Both	
Starting method : Direct On Line	Approx. weight ³ : 18.5 kg	Moment of inertia (J) : 0.0022 kgm ²			
Output	2.6 kW	2.6 kW	2.2 kW		
Poles	2	2	2		
Frequency	60 Hz	60 Hz	60 Hz		
Rated voltage	440 V	460 V	460 V		
Rated current	4.76 A	4.62 A	4.13 A		
L. R. Amperes	32.3 A	31.4 A	31.4 A		
LRC (p.u.)	6.8 x Code H	6.8 x Code H	7.6 x Code K		
No load current	1.85 A	2.10 A	2.10 A		
Rated speed	3370 rpm	3390 rpm	3430 rpm		
Slip	6.39 %	5.83 %	4.72 %		
Rated torque	7.37 Nm	7.33 Nm	6.13 Nm		
Locked rotor torque	240 %	270 %	320 %		
Breakdown torque	260 %	290 %	350 %		
Service factor	1.00	1.00	1.15		
Temperature rise ⁴	100 K	100 K	100 K		
Noise level ²	68.0 dB(A)	68.0 dB(A)	68.0 dB(A)		
Locked rotor time	9 s (hot)	9 s (hot)	9 s (hot)		
	16 s (cold)	16 s (cold)	16 s (cold)		
Efficiency (%)	50%	77.0	77.0	75.6	
	75%	80.0	80.0	78.8	
	100%	81.5	81.5	80.6	
Power factor	Start	0.70	0.70	0.70	
	50%	0.73	0.68	0.63	
	75%	0.83	0.80	0.75	
	100%	0.88	0.86	0.83	
Bearing type	Drive end : 6205-ZZ	Non drive end : 6204-ZZ	Foundation loads		
Lubrication interval	-	-	Maximum traction : 569 N		
Lubricant amount	-	-	Maximum compression : 751 N		
Lubricant type	MOBIL POLYREX EM				
This revision replaces and cancels the previous one, which must be eliminated. (1) When viewed from the drive end. (2) Measured at 1m and with tolerance of +3dB(A). (3) Approximate weight subject to changes after manufacturing process. (4) At the rated point.			These are average values based on tests with sinusoidal power supply, subject to the tolerances stipulated in IEC 60034-1.		
Rev.	Summary of changes		Performed	Checked	Date
Performed by					182635/2020-T
Checked by					
Date					

FAN-VEN02016 (SPARK RESISTANT):

CMR-622-2T 60HZ



Extremely robust medium pressure, single inlet centrifugal fans fitted with a backward-curved impeller.

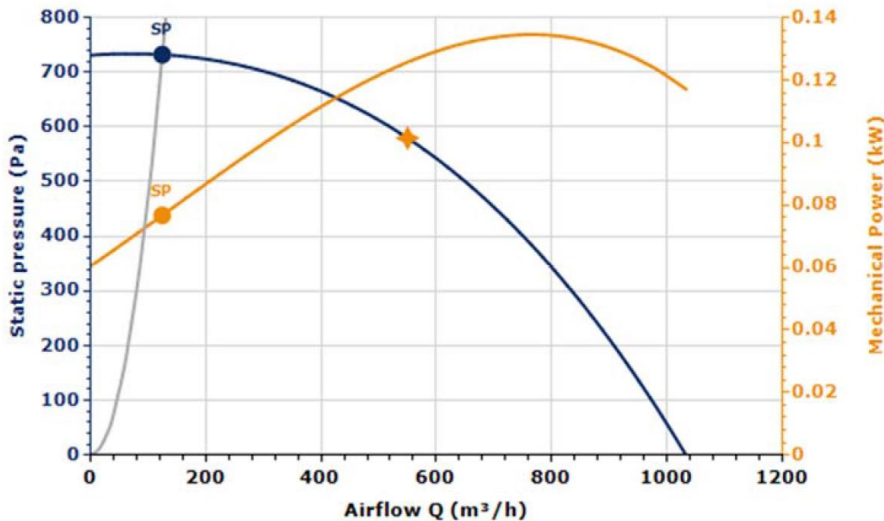
Fan:

- Sheet steel casing.
- Impeller with reaction blades in extremely robust sheet steel.
- Non-sparking inlet ring made of copper or aluminium.

Finish:

- Anticorrosive finish of polyester resin polymerised at 190 °C. previously degreased with phosphate-free nanotechnological treatment.

CHARACTERISTIC CURVE AND ACOUSTICS AT 1.2KG/M³



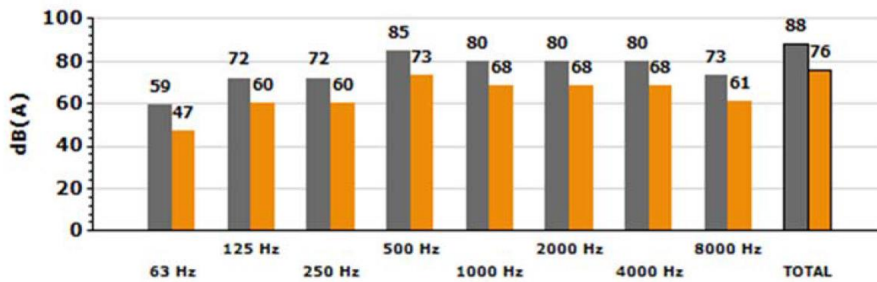
Design Point

Q (m ³ /h)	125
Ps (Pa)	732

Service Point (SP)

Q (m ³ /h)	125.02
Ps (Pa)	732.27
Pd (Pa)	3.2162
Pt (Pa)	735.49

Acoustics: Inlet, 1.50 (m), 1 plane



Band	Lw dB(A)	Lp dB(A)
63 Hz	59	47
125 Hz	72	60
250 Hz	72	60
500 Hz	85	73
1000 Hz	80	68
2000 Hz	80	68
4000 Hz	80	68
8000 Hz	73	61
TOTAL	88	76



• PROJECT: AVANTE 2200
 • SHIPYARD: NAVANTIA S.A.
 • SYSTEM: HVAC



DATA SHEET					
Customer :					
Product line : Standard Alumínio Multimontagem Multitensão (Centro 6100)		Product code : 14980426			
Frame : 71	Insulation class : F	Cooling method : IC411 - TEFC	Mounting : B14T		
Duty cycle : S1	Ambient temperature : -20 °C to +45 °C	Direct of rotation ¹ : Both	Starting method : Direct On Line		
Altitude : 1000 m.a.s.l	Degree of protection : IP55	Approx. weight ³ : 7.3 kg	Moment of inertia (J) : 0.0003 kgm ²		
Design : N					
Output	0.62 kW	0.62 kW	0.55 kW		
Poles	2	2	2		
Frequency	60 Hz	60 Hz	60 Hz		
Rated voltage	440 V	460 V	460 V		
Rated current	1.32 A	1.26 A	1.13 A		
L. R. Amperes	6.73 A	6.93 A	6.78 A		
LRC (p.u.)	5.1 x Code G	5.5 x Code H	6.0 x Code J		
No load current	0.650 A	0.730 A	0.730 A		
Rated speed	3315 rpm	3345 rpm	3375 rpm		
Slip	7.92 %	7.08 %	6.25 %		
Rated torque	1.79 Nm	1.77 Nm	1.56 Nm		
Locked rotor torque	240 %	270 %	310 %		
Breakdown torque	260 %	290 %	330 %		
Service factor	1.00	1.00	1.15		
Temperature rise ⁴	100 K	100 K	100 K		
Noise level ²	60.0 dB(A)	60.0 dB(A)	60.0 dB(A)		
Locked rotor time	10 s (hot)	10 s (hot)	10 s (hot)		
	18 s (cold)	18 s (cold)	18 s (cold)		
Efficiency (%)	50%	65.4	63.4		
	75%	68.0	68.3		
	100%	69.5	72.0		
Power factor	Start	0.83	0.83		
	50%	0.73	0.65		
	75%	0.85	0.78		
	100%	0.89	0.85		
Bearing type	Drive end 6203-ZZ	Non drive end 6202-ZZ	Foundation loads		
Lubrication interval	-	-	Maximum traction : 160 N		
Lubricant amount	-	-	Maximum compression : 232 N		
Lubricant type	MOBIL POLYREX EM				
This revision replaces and cancels the previous one, which must be eliminated.			These are average values based on tests with sinusoidal power supply, subject to the tolerances stipulated in IEC 60034-1.		
(1) When viewed from the drive end.					
(2) Measured at 1m and with tolerance of +3dB(A).					
(4) At the rated point.					
Rev.	Summary of changes		Performed	Checked	Date
Performed by			182631/2020-T		
Checked by					
Date					

FAN-VEN02018:

CMR-1031-2T-3 60HZ



Extremely robust medium pressure, single inlet centrifugal fans fitted with a backward-curved impeller.

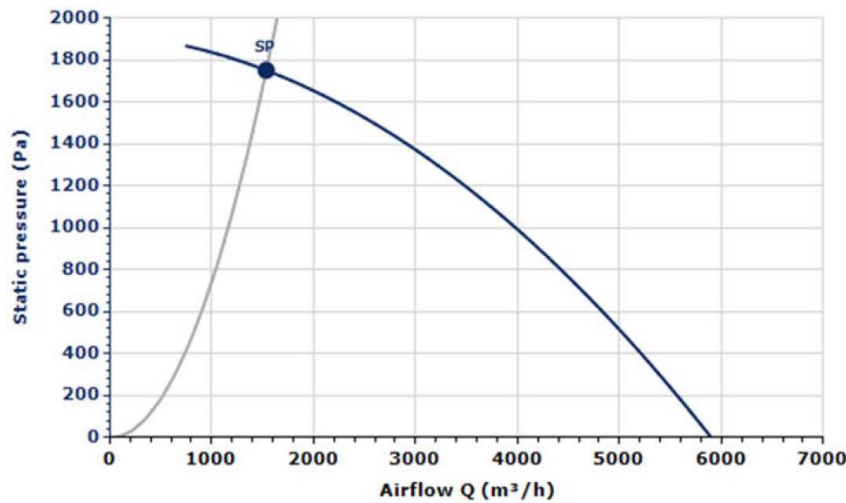
Fan:

- Sheet steel casing.
- Impeller with reaction blades in extremely robust sheet steel.

Finish:

- Anticorrosive finish of polyester resin polymerised at 190 °C. previously degreased with phosphate-free nanotechnological treatment.

CHARACTERISTIC CURVE AT 1.2KG/M³

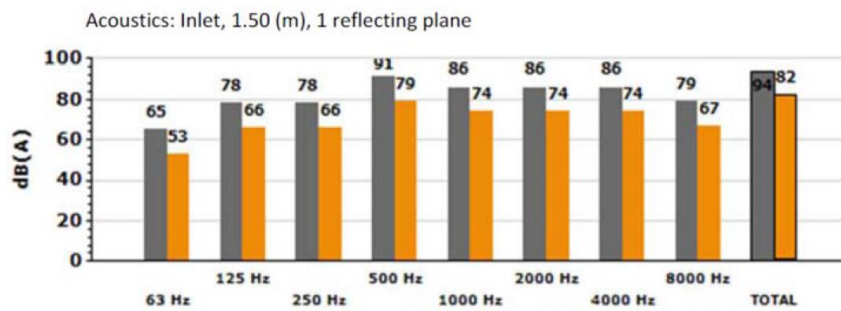


Design Point

Q (m ³ /h)	1530
Ps (Pa)	1749.51

Service Point (SP)

Q (m ³ /h)	1533.56
Ps (Pa)	1750.80
Pd (Pa)	17.56
Pt (Pa)	1768.35



Band	Lw dB(A)	Lp dB(A)
63 Hz	65	53
125 Hz	78	66
250 Hz	78	66
500 Hz	91	79
1000 Hz	86	74
2000 Hz	86	74
4000 Hz	86	74
8000 Hz	79	67
TOTAL	94	82



• PROJECT: AVANTE 2200
 • SHIPYARD: NAVANTIA S.A.
 • SYSTEM: HVAC



DATA SHEET			
Customer :			
Product line : Standard Alumínio Multimontagem Multitensão (Centro 6100)		Product code : 15052241	
Frame : 90S/L	Insulation class : F	Duty cycle : S1	Ambient temperature : -20 °C to +45 °C
Altitude : 1000 m.a.s.l	Degree of protection : IP55	Design : N	Cooling method : IC411 - TEFC
Mounting : B3T	Direct of rotation ¹ : Both	Starting method : Direct On Line	Approx. weight ³ : 18.5 kg
Moment of inertia (J) : 0.0022 kgm ²			
Output	2.6 kW	2.6 kW	2.2 kW
Poles	2	2	2
Frequency	60 Hz	60 Hz	60 Hz
Rated voltage	440 V	460 V	460 V
Rated current	4.76 A	4.62 A	4.13 A
L. R. Amperes	32.3 A	31.4 A	31.4 A
LRC (p.u.)	6.8 x Code H	6.8 x Code H	7.6 x Code K
No load current	1.85 A	2.10 A	2.10 A
Rated speed	3370 rpm	3390 rpm	3430 rpm
Slip	6.39 %	5.83 %	4.72 %
Rated torque	7.37 Nm	7.33 Nm	6.13 Nm
Locked rotor torque	240 %	270 %	320 %
Breakdown torque	260 %	290 %	350 %
Service factor	1.00	1.00	1.15
Temperature rise ⁴	100 K	100 K	100 K
Noise level ²	68.0 dB(A)	68.0 dB(A)	68.0 dB(A)
Locked rotor time	9 s (hot) 16 s (cold)	9 s (hot) 16 s (cold)	9 s (hot) 16 s (cold)
Efficiency (%)	50%	77.0	75.6
	75%	80.0	78.8
	100%	81.5	80.6
Power factor	Start	0.70	0.70
	50%	0.73	0.68
	75%	0.83	0.80
	100%	0.88	0.86
Bearing type	Drive end : 6205-ZZ	Non drive end : 6204-ZZ	Foundation loads
Lubrication interval	-	-	Maximum traction : 569 N
Lubricant amount	-	-	Maximum compression : 751 N
Lubricant type	MOBIL POLYREX EM		
This revision replaces and cancels the previous one, which must be eliminated. (1) When viewed from the drive end. (2) Measured at 1m and with tolerance of +3dB(A). (3) Approximate weight subject to changes after manufacturing process. (4) At the rated point.			These are average values based on tests with sinusoidal power supply, subject to the tolerances stipulated in IEC 60034-1.
Rev.	Summary of changes		Performed
			Checked
			Date
Performed by			182635/2020-T
Checked by			
Date			

FAN-VEN02019:

CMR-1031-2T-3 60HZ



Extremely robust medium pressure, single inlet centrifugal fans fitted with a backward-curved impeller.

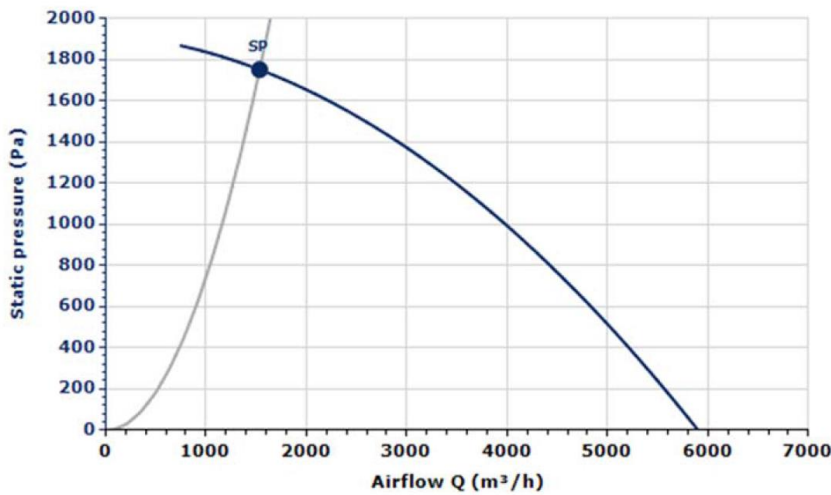
Fan:

- Sheet steel casing.
- Impeller with reaction blades in extremely robust sheet steel.

Finish:

- Anticorrosive finish of polyester resin polymerised at 190 °C. previously degreased with phosphate-free nanotechnological treatment.

CHARACTERISTIC CURVE AT 1.2KG/M³



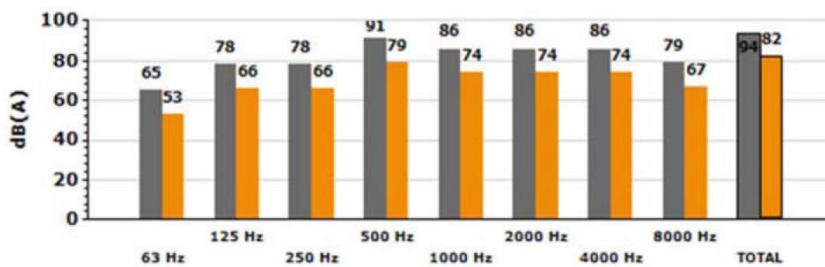
Design Point

Q (m ³ /h)	1530
Ps (Pa)	1749.51

Service Point (SP)

Q (m ³ /h)	1533.56
Ps (Pa)	1750.80
Pd (Pa)	17.56
Pt (Pa)	1768.35
Impeller (rpm)	3480
Max. Temp. (°C)	250
Outlet air speed (m/s)	5.41

Acoustics: Inlet, 1.50 (m), 1 reflecting plane



Band	Lw dB(A)	Lp dB(A)
63 Hz	65	53
125 Hz	78	66
250 Hz	78	66
500 Hz	91	79
1000 Hz	86	74
2000 Hz	86	74
4000 Hz	86	74
8000 Hz	79	67
TOTAL	94	82



• PROJECT: AVANTE 2200
 • SHIPYARD: NAVANTIA S.A.
 • SYSTEM: HVAC



ISO 9001
 ISO 14001
 OHSAS 18001
 BUREAU VERITAS
 Certification



DATA SHEET



Three Phase Induction Motor - Squirrel Cage

Customer :					
Product line		: Standard Alumínio Multimontagem Multitensão (Centro 6100)		Product code : 15052241	
Frame	: 90S/L	Cooling method	: IC411 - TEFC		
Insulation class	: F	Mounting	: B3T		
Duty cycle	: S1	Direct of rotation ¹	: Both		
Ambient temperature	: -20 °C to +45 °C	Starting method	: Direct On Line		
Altitude	: 1000 m.a.s.l	Approx. weight ³	: 18.5 kg		
Degree of protection	: IP55	Moment of inertia (J)	: 0.0022 kgm ²		
Design	: N				
Output	2.6 kW	2.6 kW	2.2 kW		
Poles	2	2	2		
Frequency	60 Hz	60 Hz	60 Hz		
Rated voltage	440 V	460 V	460 V		
Rated current	4.76 A	4.62 A	4.13 A		
L. R. Amperes	32.3 A	31.4 A	31.4 A		
LRC (p.u.)	6.8 x Code H	6.8 x Code H	7.6 x Code K		
No load current	1.85 A	2.10 A	2.10 A		
Rated speed	3370 rpm	3390 rpm	3430 rpm		
Slip	6.39 %	5.83 %	4.72 %		
Rated torque	7.37 Nm	7.33 Nm	6.13 Nm		
Locked rotor torque	240 %	270 %	320 %		
Breakdown torque	260 %	290 %	350 %		
Service factor	1.00	1.00	1.15		
Temperature rise ⁴	100 K	100 K	100 K		
Noise level ²	68.0 dB(A)	68.0 dB(A)	68.0 dB(A)		
Locked rotor time	9 s (hot)	9 s (hot)	9 s (hot)		
	16 s (cold)	16 s (cold)	16 s (cold)		
Efficiency (%)	50%	77.0	77.0	75.6	
	75%	80.0	80.0	78.8	
	100%	81.5	81.5	80.6	
Power factor	Start	0.70	0.70	0.70	
	50%	0.73	0.68	0.63	
	75%	0.83	0.80	0.75	
	100%	0.88	0.86	0.83	
Bearing type	Drive end 6205-ZZ	Non drive end 6204-ZZ	Foundation loads		
Lubrication interval	-	-	Maximum traction : 569 N		
Lubricant amount	-	-	Maximum compression : 751 N		
Lubricant type	MOBIL POLYREX EM				
This revision replaces and cancels the previous one, which must be eliminated. (1) When viewed from the drive end. (2) Measured at 1m and with tolerance of +3dB(A). (3) Approximate weight subject to changes after manufacturing process. (4) At the rated point.			These are average values based on tests with sinusoidal power supply, subject to the tolerances stipulated in IEC 60034-1.		
Rev.	Summary of changes		Performed	Checked	Date
Performed by					182635/2020-T
Checked by					
Date					

FAN-VEN02029:

CMR-622-2T 60HZ



Extremely robust medium pressure, single inlet centrifugal fans fitted with a backward-curved impeller.

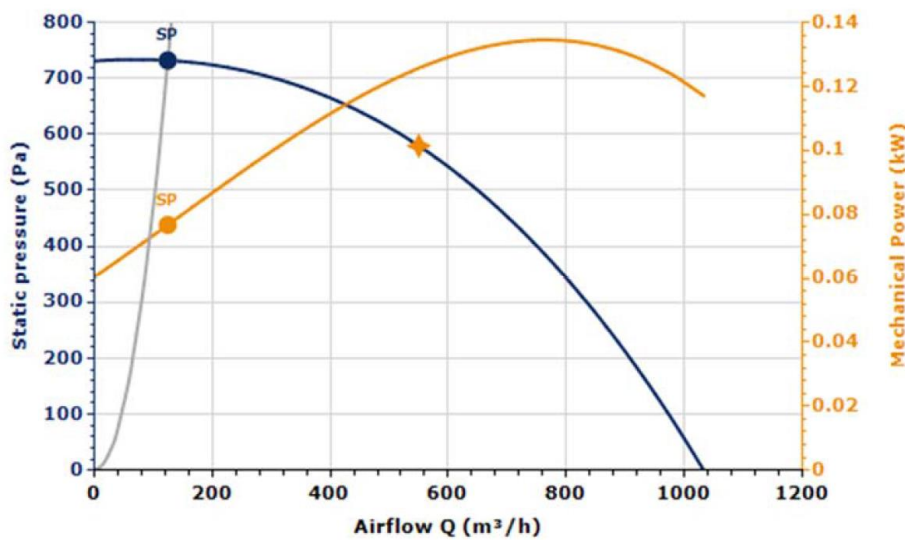
Fan:

- Sheet steel casing.
- Impeller with reaction blades in extremely robust sheet steel.

Finish:

- Anticorrosive finish of polyester resin polymerised at 190 °C. previously degreased with phosphate-free nanotechnological treatment.

CHARACTERISTIC CURVE AND ACOUSTICS AT 1.2KG/M³



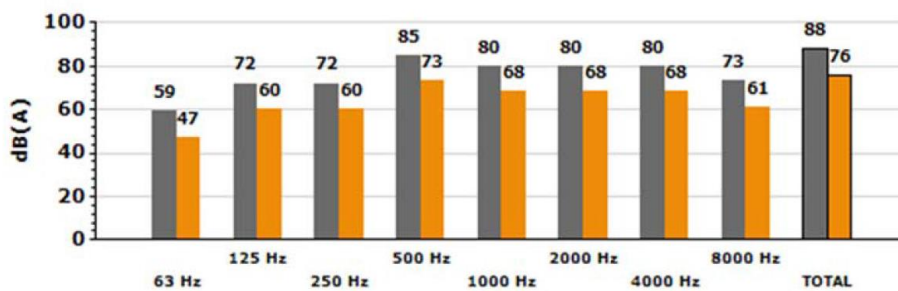
Design Point

Q (m ³ /h)	125
Ps (Pa)	732

Service Point (SP)

Q (m ³ /h)	125.02
Ps (Pa)	732.27
Pd (Pa)	3.2162
Pt (Pa)	735.49

Acoustics: Inlet, 1.50 (m), 1 plane



Band	Lw dB(A)	Lp dB(A)
63 Hz	59	47
125 Hz	72	60
250 Hz	72	60
500 Hz	85	73
1000 Hz	80	68
2000 Hz	80	68
4000 Hz	80	68
8000 Hz	73	61
TOTAL	88	76



• PROJECT: AVANTE 2200
 • SHIPYARD: NAVANTIA S.A.
 • SYSTEM: HVAC



DATA SHEET



Three Phase Induction Motor - Squirrel Cage

Customer :					
Product line		: Standard Alumínio Multimontagem Multitensão (Centro 6100)		Product code : 14980426	
Frame	: 71	Cooling method	: IC411 - TEFC		
Insulation class	: F	Mounting	: B14T		
Duty cycle	: S1	Direct of rotation ¹	: Both		
Ambient temperature	: -20 °C to +45 °C	Starting method	: Direct On Line		
Altitude	: 1000 m.a.s.l	Approx. weight ³	: 7.3 kg		
Degree of protection	: IP55	Moment of inertia (J)	: 0.0003 kgm ²		
Design	: N				
Output	0.62 kW	0.62 kW	0.55 kW		
Poles	2	2	2		
Frequency	60 Hz	60 Hz	60 Hz		
Rated voltage	440 V	460 V	460 V		
Rated current	1.32 A	1.26 A	1.13 A		
L. R. Amperes	6.73 A	6.93 A	6.78 A		
LRC (p.u.)	5.1 x Code G	5.5 x Code H	6.0 x Code J		
No load current	0.650 A	0.730 A	0.730 A		
Rated speed	3315 rpm	3345 rpm	3375 rpm		
Slip	7.92 %	7.08 %	6.25 %		
Rated torque	1.79 Nm	1.77 Nm	1.56 Nm		
Locked rotor torque	240 %	270 %	310 %		
Breakdown torque	260 %	290 %	330 %		
Service factor	1.00	1.00	1.15		
Temperature rise ⁴	100 K	100 K	100 K		
Noise level ²	60.0 dB(A)	60.0 dB(A)	60.0 dB(A)		
Locked rotor time	10 s (hot)	10 s (hot)	10 s (hot)		
	18 s (cold)	18 s (cold)	18 s (cold)		
Efficiency (%)	50%	65.4	64.0	63.4	
	75%	68.0	70.5	68.3	
	100%	69.5	71.0	72.0	
Power factor	Start	0.83	0.83	0.83	
	50%	0.73	0.69	0.65	
	75%	0.85	0.81	0.78	
	100%	0.89	0.87	0.85	
Bearing type	Drive end 6203-ZZ	Non drive end 6202-ZZ	Foundation loads		
Lubrication interval	-	-	Maximum traction : 160 N		
Lubricant amount	-	-	Maximum compression : 232 N		
Lubricant type	MOBIL POLYREX EM				
This revision replaces and cancels the previous one, which must be eliminated.			These are average values based on tests with sinusoidal power supply, subject to the tolerances stipulated in IEC 60034-1.		
(1) When viewed from the drive end.					
(2) Measured at 1m and with tolerance of +3dB(A).					
(3) Approximate weight subject to changes after manufacturing process.					
(4) At the rated point.					
Rev.	Summary of changes		Performed	Checked	Date
Performed by			182631/2020-T		
Checked by					
Date					

FAN-VEN02030 (SPARK RESISTANT):

CMP-616-2T 60HZ



Extremely robust medium pressure, single inlet centrifugal fans fitted with a backward-curved impeller.

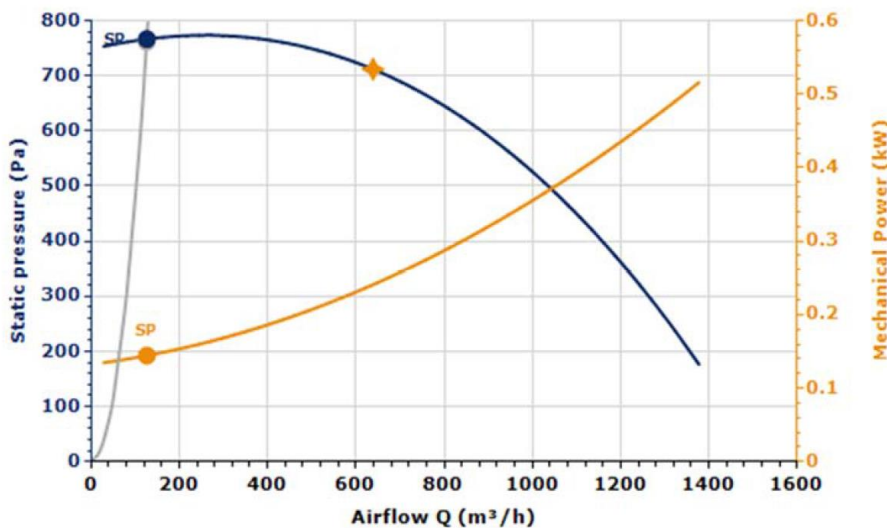
Fan:

- Sheet steel casing.
- Impeller with reaction blades in extremely robust sheet steel.
- Non-sparking inlet ring made of copper or aluminium.

Finish:

- Anticorrosive finish of polyester resin polymerised at 190 °C. previously degreased with phosphate-free nanotechnological treatment.

CHARACTERISTIC CURVE AT 1.2KG/M³



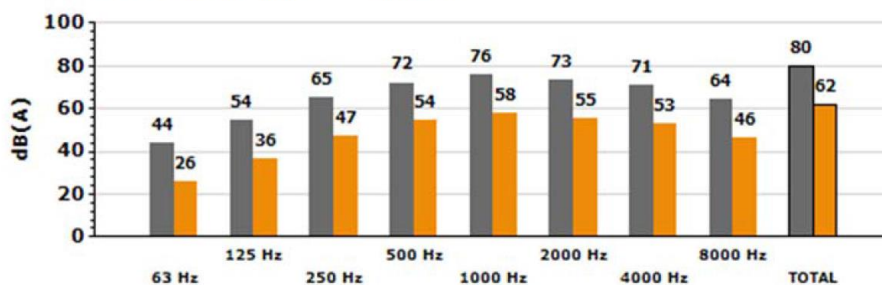
Design Point

Q (m ³ /h)	126
Ps (Pa)	762

Service Point (SP)

Q (m ³ /h)	126.41
Ps (Pa)	766.92
Pd (Pa)	4.3772
Pt (Pa)	771.30

Acoustics: Inlet, 3 (m), 1 reflecting plane



Band	Lw dB(A)	Lp dB(A)
63 Hz	44	26
125 Hz	54	36
250 Hz	65	47
500 Hz	72	54
1000 Hz	76	58
2000 Hz	73	55
4000 Hz	71	53
8000 Hz	64	46
TOTAL	80	62



• PROJECT: AVANTE 2200
 • SHIPYARD: NAVANTIA S.A.
 • SYSTEM: HVAC



DATA SHEET					
Customer :					
Product line : Standard Alumínio Multimontagem Multitensão (Centro 6100)		Product code : 14980426			
Frame : 71	Insulation class : F	Cooling method : IC411 - TEFC	Mounting : B14T		
Duty cycle : S1	Ambient temperature : -20 °C to +45 °C	Direct of rotation ¹ : Both	Starting method : Direct On Line		
Altitude : 1000 m.a.s.l	Degree of protection : IP55	Approx. weight ³ : 7.3 kg	Moment of inertia (J) : 0.0003 kgm ²		
Design : N					
Output	0.62 kW	0.62 kW	0.55 kW		
Poles	2	2	2		
Frequency	60 Hz	60 Hz	60 Hz		
Rated voltage	440 V	460 V	460 V		
Rated current	1.32 A	1.26 A	1.13 A		
L. R. Amperes	6.73 A	6.93 A	6.78 A		
LRC (p.u.)	5.1 x Code G	5.5 x Code H	6.0 x Code J		
No load current	0.650 A	0.730 A	0.730 A		
Rated speed	3315 rpm	3345 rpm	3375 rpm		
Slip	7.92 %	7.08 %	6.25 %		
Rated torque	1.79 Nm	1.77 Nm	1.56 Nm		
Locked rotor torque	240 %	270 %	310 %		
Breakdown torque	260 %	290 %	330 %		
Service factor	1.00	1.00	1.15		
Temperature rise ⁴	100 K	100 K	100 K		
Noise level ²	60.0 dB(A)	60.0 dB(A)	60.0 dB(A)		
Locked rotor time	10 s (hot)	10 s (hot)	10 s (hot)		
	18 s (cold)	18 s (cold)	18 s (cold)		
Efficiency (%)	50%	65.4	64.0		
	75%	68.0	70.5		
	100%	69.5	71.0		
Power factor	Start	0.83	0.83		
	50%	0.73	0.69		
	75%	0.85	0.81		
	100%	0.89	0.87		
Bearing type	Drive end 6203-ZZ	Non drive end 6202-ZZ	Foundation loads		
Lubrication interval	-	-	Maximum traction : 160 N		
Lubricant amount	-	-	Maximum compression : 232 N		
Lubricant type	MOBIL POLYREX EM				
This revision replaces and cancels the previous one, which must be eliminated.			These are average values based on tests with sinusoidal power supply, subject to the tolerances stipulated in IEC 60034-1.		
(1) When viewed from the drive end.					
(2) Measured at 1m and with tolerance of +3dB(A).					
(4) At the rated point.					
Rev.	Summary of changes		Performed	Checked	Date
Performed by			182631/2020-T		
Checked by					
Date					

FAN-VES01002:

CMR-625-2T 60HZ



Extremely robust medium pressure, single inlet centrifugal fans fitted with a backward-curved impeller.

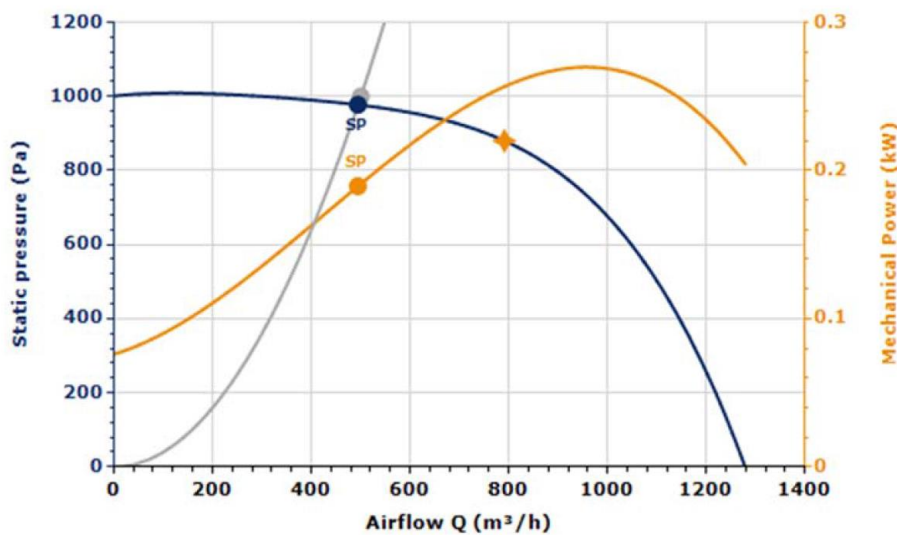
Fan:

- Sheet steel casing.
- Impeller with reaction blades in extremely robust sheet steel.

Finish:

- Anticorrosive finish of polyester resin polymerised at 190 °C. previously degreased with phosphate-free nanotechnological treatment.

CHARACTERISTIC CURVE AND ACOUSTICS AT 1.2KG/M³



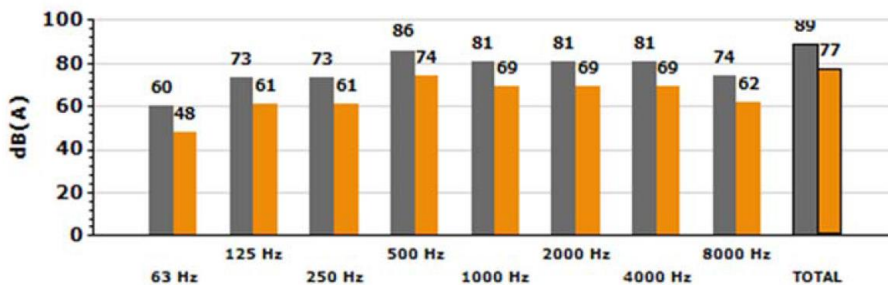
Design Point

Q (m ³ /h)	500
Ps (Pa)	1000

Service Point (SP)

Q (m ³ /h)	494.41
Ps (Pa)	977.75
Pd (Pa)	14.43
Pt (Pa)	992.18

Acoustics: Inlet, 1.50 (m), 1 plane



Band	Lw dB(A)	Lp dB(A)
63 Hz	60	48
125 Hz	73	61
250 Hz	73	61
500 Hz	86	74
1000 Hz	81	69
2000 Hz	81	69
4000 Hz	81	69
8000 Hz	74	62
TOTAL	89	77



• PROJECT: AVANTE 2200
 • SHIPYARD: NAVANTIA S.A.
 • SYSTEM: HVAC



DATA SHEET					
Customer :					
Product line : Standard Alumínio Multimontagem Multitensão (Centro 6100)		Product code : 14980520			
Frame : 80	Insulation class : F	Cooling method : IC411 - TEFC	Mounting : B14T		
Duty cycle : S1	Ambient temperature : -20 °C to +45 °C	Direct of rotation ¹ : Both	Starting method : Direct On Line		
Altitude : 1000 m.a.s.l	Degree of protection : IP55	Approx. weight ² : 8.3 kg	Moment of inertia (J) : 0.0006 kgm ²		
Design : N					
Output	0.85 kW	0.85 kW	0.75 kW		
Poles	2	2	2		
Frequency	60 Hz	60 Hz	60 Hz		
Rated voltage	440 V	460 V	460 V		
Rated current	1.91 A	1.92 A	1.75 A		
L. R. Amperes	9.55 A	9.60 A	9.45 A		
LRC (p.u.)	5.0 x Code H	5.0 x Code H	5.4 x Code J		
No load current	1.25 A	1.40 A	1.35 A		
Rated speed	3380 rpm	3400 rpm	3435 rpm		
Slip	6.11 %	5.56 %	4.58 %		
Rated torque	2.40 Nm	2.39 Nm	2.09 Nm		
Locked rotor torque	220 %	240 %	270 %		
Breakdown torque	230 %	260 %	300 %		
Service factor	1.00	1.00	1.15		
Temperature rise ⁴	100 K	100 K	100 K		
Noise level ²	62.0 dB(A)	62.0 dB(A)	62.0 dB(A)		
Locked rotor time	9 s (hot)	9 s (hot)	9 s (hot)		
	16 s (cold)	16 s (cold)	16 s (cold)		
Efficiency (%)	50%	69.0	66.0	65.0	
	75%	73.0	72.0	70.0	
	100%	73.0	73.0	72.5	
Power factor	Start	0.73	0.73	0.73	
	50%	0.63	0.52	0.49	
	75%	0.72	0.66	0.63	
	100%	0.80	0.76	0.74	
	<u>Drive end</u>	<u>Non drive end</u>	Foundation loads		
Bearing type	6204-ZZ	6203-ZZ	Maximum traction	: 170 N	
Lubrication interval	-	-	Maximum compression	: 252 N	
Lubricant amount	-	-			
Lubricant type	MOBIL POLYREX EM				
This revision replaces and cancels the previous one, which must be eliminated.			These are average values based on tests with sinusoidal power supply, subject to the tolerances stipulated in IEC 60034-1.		
(1) When viewed from the drive end.					
(2) Measured at 1m and with tolerance of +3dB(A).					
(3) Approximate weight subject to changes after manufacturing process.					
(4) At the rated point.					
Rev.	Summary of changes		Performed	Checked	Date
Performed by					182632/2020-T
Checked by					
Date					

FAN-VES01019:

CMR-625-2T 60HZ



Extremely robust medium pressure, single inlet centrifugal fans fitted with a backward-curved impeller.

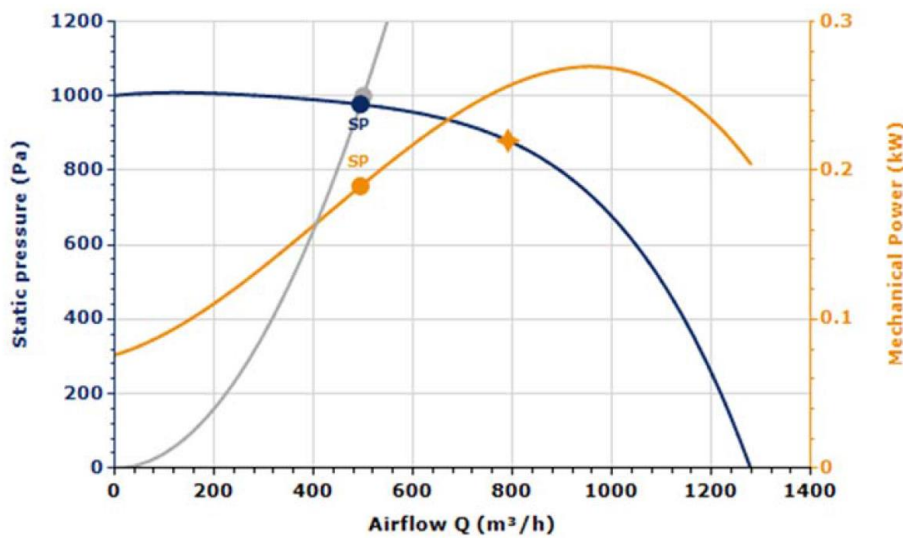
Fan:

- Sheet steel casing.
- Impeller with reaction blades in extremely robust sheet steel.

Finish:

- Anticorrosive finish of polyester resin polymerised at 190 °C. previously degreased with phosphate-free nanotechnological treatment.

CHARACTERISTIC CURVE AND ACOUSTICS AT 1.2KG/M³



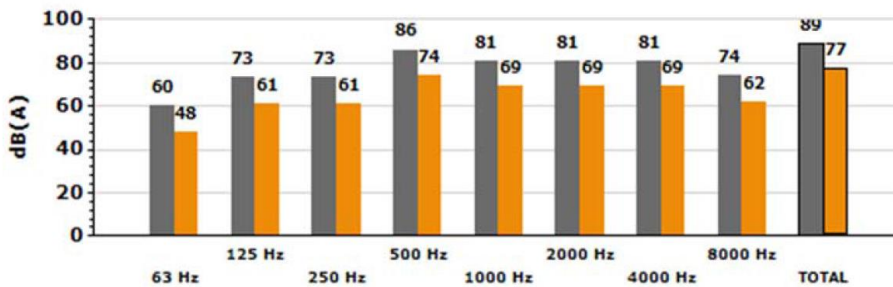
Design Point

Q (m ³ /h)	500
Ps (Pa)	1000

Service Point (SP)

Q (m ³ /h)	494.41
Ps (Pa)	977.75
Pd (Pa)	14.43
Pt (Pa)	992.18

Acoustics: Inlet, 1.50 (m), 1 plane



Band	Lw dB(A)	Lp dB(A)
63 Hz	60	48
125 Hz	73	61
250 Hz	73	61
500 Hz	86	74
1000 Hz	81	69
2000 Hz	81	69
4000 Hz	81	69
8000 Hz	74	62
TOTAL	89	77



• PROJECT: AVANTE 2200
 • SHIPYARD: NAVANTIA S.A.
 • SYSTEM: HVAC



ISO 9001
 ISO 14001
 OHSAS 18001
 BUREAU VERITAS
 Certification



DATA SHEET					
Customer :					
Product line		: Standard Alumínio Multimontagem Multitensão (Centro 6100)		Product code : 14980520	
Frame	: 80	Cooling method	: IC411 - TEFC		
Insulation class	: F	Mounting	: B14T		
Duty cycle	: S1	Direct of rotation ¹	: Both		
Ambient temperature	: -20 °C to +45 °C	Starting method	: Direct On Line		
Altitude	: 1000 m.a.s.l	Approx. weight ²	: 8.3 kg		
Degree of protection	: IP55	Moment of inertia (J)	: 0.0006 kgm ²		
Design	: N				
Output	0.85 kW	0.85 kW	0.75 kW		
Poles	2	2	2		
Frequency	60 Hz	60 Hz	60 Hz		
Rated voltage	440 V	460 V	460 V		
Rated current	1.91 A	1.92 A	1.75 A		
L. R. Amperes	9.55 A	9.60 A	9.45 A		
LRC (p.u.)	5.0 x Code H	5.0 x Code H	5.4 x Code J		
No load current	1.25 A	1.40 A	1.35 A		
Rated speed	3380 rpm	3400 rpm	3435 rpm		
Slip	6.11 %	5.56 %	4.58 %		
Rated torque	2.40 Nm	2.39 Nm	2.09 Nm		
Locked rotor torque	220 %	240 %	270 %		
Breakdown torque	230 %	260 %	300 %		
Service factor	1.00	1.00	1.15		
Temperature rise ⁴	100 K	100 K	100 K		
Noise level ²	62.0 dB(A)	62.0 dB(A)	62.0 dB(A)		
Locked rotor time	9 s (hot)	9 s (hot)	9 s (hot)		
	16 s (cold)	16 s (cold)	16 s (cold)		
Efficiency (%)	50%	69.0	66.0	65.0	
	75%	73.0	72.0	70.0	
	100%	73.0	73.0	72.5	
Power factor	Start	0.73	0.73	0.73	
	50%	0.63	0.52	0.49	
	75%	0.72	0.66	0.63	
	100%	0.80	0.76	0.74	
	<u>Drive end</u>	<u>Non drive end</u>	Foundation loads		
Bearing type	6204-ZZ	6203-ZZ	Maximum traction : 170 N		
Lubrication interval	-	-	Maximum compression : 252 N		
Lubricant amount	-	-			
Lubricant type	MOBIL POLYREX EM				
This revision replaces and cancels the previous one, which must be eliminated.			These are average values based on tests with sinusoidal power supply, subject to the tolerances stipulated in IEC 60034-1.		
(1) When viewed from the drive end.					
(2) Measured at 1m and with tolerance of +3dB(A).					
(3) Approximate weight subject to changes after manufacturing process.					
(4) At the rated point.					
Rev.	Summary of changes		Performed	Checked	Date
Performed by					182632/2020-T
Checked by					
Date					

FAN-VEN01032 (SPARK RESISTANT):

CMP-616-2T 60HZ



Extremely robust medium pressure, single inlet centrifugal fans fitted with a backward-curved impeller.

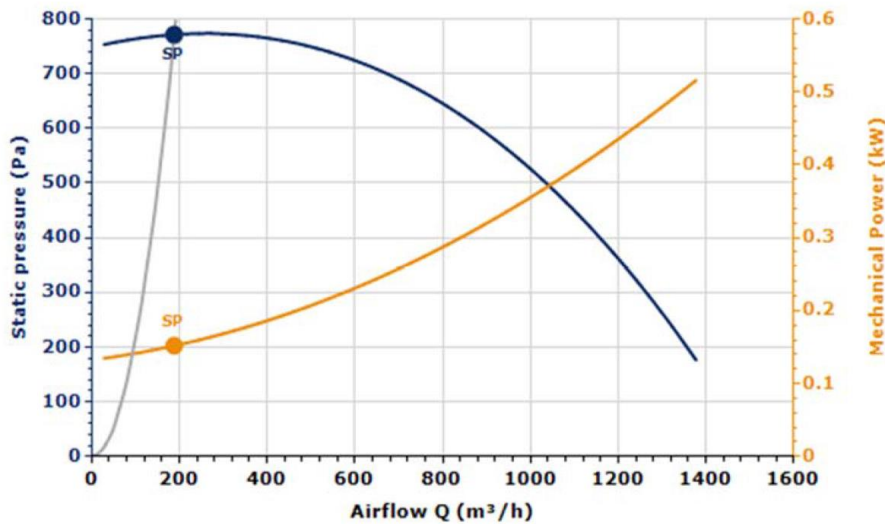
Fan:

- Sheet steel casing.
- Impeller with reaction blades in extremely robust sheet steel.
- Non-sparking inlet ring made of copper or aluminium.

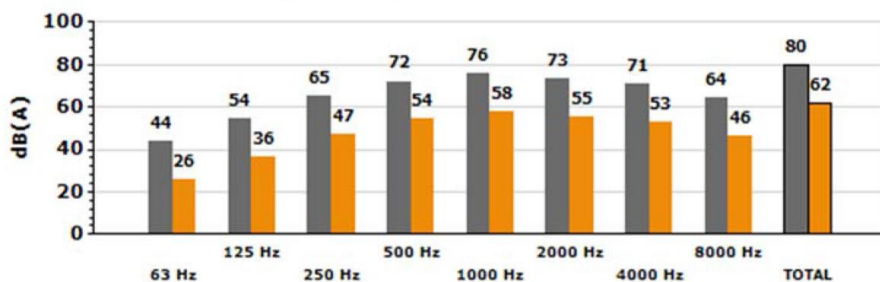
Finish:

- Anticorrosive finish of polyester resin polymerised at 190 °C. previously degreased with phosphate-free nanotechnological treatment.

CHARACTERISTIC CURVE AT 1.2KG/M³



Acoustics: Inlet, 3 (m), 1 reflecting plane



Band	Lw dB(A)	Lp dB(A)
63 Hz	44	26
125 Hz	54	36
250 Hz	65	47
500 Hz	72	54
1000 Hz	76	58
2000 Hz	73	55
4000 Hz	71	53
8000 Hz	64	46
TOTAL	80	62



• PROJECT: AVANTE 2200
 • SHIPYARD: NAVANTIA S.A.
 • SYSTEM: HVAC



ISO 9001
 ISO 14001
 OHSAS 18001
 BUREAU VERITAS
 Certification



DATA SHEET



Three Phase Induction Motor - Squirrel Cage

Customer :					
Product line : Standard Alumínio Multimontagem Multitensão (Centro 6100)		Product code : 14980426			
Frame : 71	Insulation class : F	Duty cycle : S1	Ambient temperature : -20 °C to +45 °C		
Altitude : 1000 m.a.s.l	Degree of protection : IP55	Design : N	Cooling method : IC411 - TEFC		
			Mounting : B14T		
			Direct of rotation ¹ : Both		
			Starting method : Direct On Line		
			Approx. weight ³ : 7.3 kg		
			Moment of inertia (J) : 0.0003 kgm ²		
Output	0.62 kW	0.62 kW	0.55 kW		
Poles	2	2	2		
Frequency	60 Hz	60 Hz	60 Hz		
Rated voltage	440 V	460 V	460 V		
Rated current	1.32 A	1.26 A	1.13 A		
L. R. Amperes	6.73 A	6.93 A	6.78 A		
LRC (p.u.)	5.1 x Code G	5.5 x Code H	6.0 x Code J		
No load current	0.650 A	0.730 A	0.730 A		
Rated speed	3315 rpm	3345 rpm	3375 rpm		
Slip	7.92 %	7.08 %	6.25 %		
Rated torque	1.79 Nm	1.77 Nm	1.56 Nm		
Locked rotor torque	240 %	270 %	310 %		
Breakdown torque	260 %	290 %	330 %		
Service factor	1.00	1.00	1.15		
Temperature rise ⁴	100 K	100 K	100 K		
Noise level ²	60.0 dB(A)	60.0 dB(A)	60.0 dB(A)		
Locked rotor time	10 s (hot)	10 s (hot)	10 s (hot)		
	18 s (cold)	18 s (cold)	18 s (cold)		
Efficiency (%)	50%	65.4	64.0		
	75%	68.0	70.5		
	100%	69.5	71.0		
Power factor	Start	0.83	0.83		
	50%	0.73	0.69		
	75%	0.85	0.81		
	100%	0.89	0.87		
Bearing type	Drive end : 6203-ZZ	Non drive end : 6202-ZZ	Foundation loads		
Lubrication interval	-	-	Maximum traction : 160 N		
Lubricant amount	-	-	Maximum compression : 232 N		
Lubricant type	MOBIL POLYREX EM				
This revision replaces and cancels the previous one, which must be eliminated. (1) When viewed from the drive end. (2) Measured at 1m and with tolerance of +3dB(A). (3) Approximate weight subject to changes after manufacturing process. (4) At the rated point.			These are average values based on tests with sinusoidal power supply, subject to the tolerances stipulated in IEC 60034-1.		
Rev.	Summary of changes		Performed	Checked	Date
Performed by			182631/2020-T		
Checked by					
Date					

FAN-VES02020:

CMP-616-2T 60HZ



Extremely robust medium pressure, single inlet centrifugal fans fitted with a backward-curved impeller.

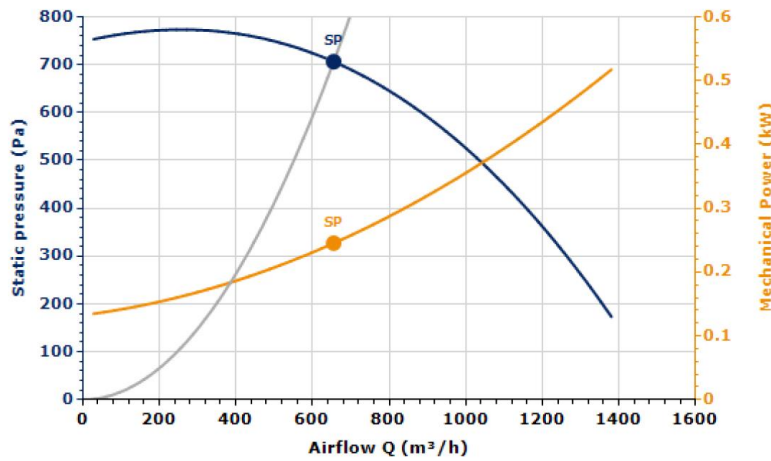
Fan:

- Sheet steel casing.
- Impeller with reaction blades in extremely robust sheet steel.

Finish:

- Anticorrosive finish of polyester resin polymerised at 190 °C. previously degreased with phosphate-free nanotechnological treatment.

CHARACTERISTIC CURVE AT 1.2KG/M³



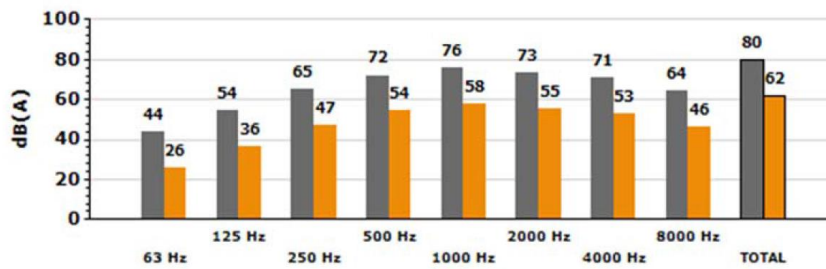
Design Point

Q (m ³ /h)	655
Ps (Pa)	706

Service Point (SP)

Q (m ³ /h)	655.28
Ps (Pa)	706.60
Pd (Pa)	117.63
Pt (Pa)	824.23

Acoustics: Inlet, 3 (m), 1 reflecting plane



Band	Lw dB(A)	Lp dB(A)
63 Hz	44	26
125 Hz	54	36
250 Hz	65	47
500 Hz	72	54
1000 Hz	76	58
2000 Hz	73	55
4000 Hz	71	53
8000 Hz	64	46
TOTAL	80	62



• PROJECT: AVANTE 2200
 • SHIPYARD: NAVANTIA S.A.
 • SYSTEM: HVAC



ISO 9001
 ISO 14001
 OHSAS 18001
 BUREAU VERITAS
 Certification



DATA SHEET



Three Phase Induction Motor - Squirrel Cage

Customer :					
Product line : Standard Alumínio Multimontagem Multitensão (Centro 6100)		Product code : 14980426			
Frame : 71	Insulation class : F	Duty cycle : S1	Ambient temperature : -20 °C to +45 °C		
Altitude : 1000 m.a.s.l	Degree of protection : IP55	Design : N	Cooling method : IC411 - TEFC		
			Mounting : B14T		
			Direct of rotation ¹ : Both		
			Starting method : Direct On Line		
			Approx. weight ³ : 7.3 kg		
			Moment of inertia (J) : 0.0003 kgm ²		
Output	0.62 kW	0.62 kW	0.55 kW		
Poles	2	2	2		
Frequency	60 Hz	60 Hz	60 Hz		
Rated voltage	440 V	460 V	460 V		
Rated current	1.32 A	1.26 A	1.13 A		
L. R. Amperes	6.73 A	6.93 A	6.78 A		
LRC (p.u.)	5.1 x Code G	5.5 x Code H	6.0 x Code J		
No load current	0.650 A	0.730 A	0.730 A		
Rated speed	3315 rpm	3345 rpm	3375 rpm		
Slip	7.92 %	7.08 %	6.25 %		
Rated torque	1.79 Nm	1.77 Nm	1.56 Nm		
Locked rotor torque	240 %	270 %	310 %		
Breakdown torque	260 %	290 %	330 %		
Service factor	1.00	1.00	1.15		
Temperature rise ⁴	100 K	100 K	100 K		
Noise level ²	60.0 dB(A)	60.0 dB(A)	60.0 dB(A)		
Locked rotor time	10 s (hot)	10 s (hot)	10 s (hot)		
	18 s (cold)	18 s (cold)	18 s (cold)		
Efficiency (%)	50%	65.4	64.0		
	75%	68.0	70.5		
	100%	69.5	71.0		
Power factor	Start	0.83	0.83		
	50%	0.73	0.69		
	75%	0.85	0.81		
	100%	0.89	0.87		
Bearing type	Drive end : 6203-ZZ	Non drive end : 6202-ZZ	Foundation loads		
Lubrication interval	-	-	Maximum traction : 160 N		
Lubricant amount	-	-	Maximum compression : 232 N		
Lubricant type	MOBIL POLYREX EM				
This revision replaces and cancels the previous one, which must be eliminated.			These are average values based on tests with sinusoidal power supply, subject to the tolerances stipulated in IEC 60034-1.		
(1) When viewed from the drive end.					
(2) Measured at 1m and with tolerance of +3dB(A).					
(3) Approximate weight subject to changes after manufacturing process.					
(4) At the rated point.					
Rev.	Summary of changes		Performed	Checked	Date
Performed by			182631/2020-T		
Checked by					
Date					

FAN-VEN01034:

CMR-625-2T 60HZ



Extremely robust medium pressure, single inlet centrifugal fans fitted with a backward-curved impeller.

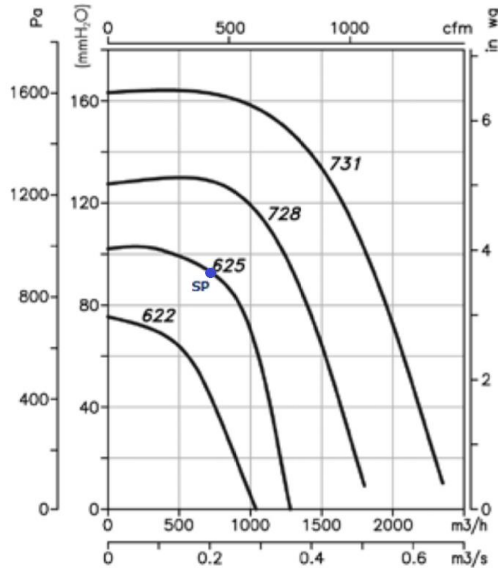
Fan:

- Sheet steel casing.
- Impeller with reaction blades in extremely robust sheet steel.

Finish:

- Anticorrosive finish of polyester resin polymerised at 190 °C. previously degreased with phosphate-free nanotechnological treatment.

CHARACTERISTIC CURVE AND ACOUSTICS AT 1.2KG/M³



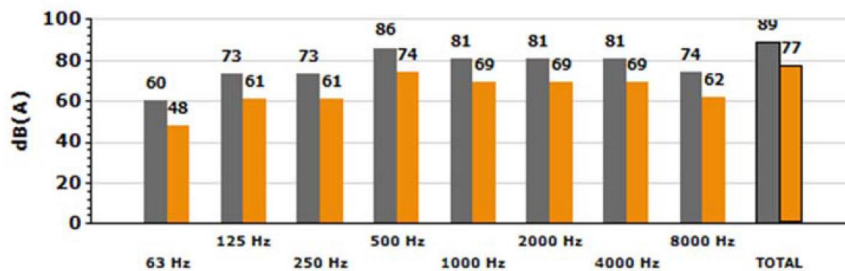
Design Point

Q (m ³ /h)	745
Ps (Pa)	915

Service Point (SP)

Q (m ³ /h)	745.00
Ps (Pa)	915.00
Pd (Pa)	32.95
Pt (Pa)	947.95

Acoustics: Inlet, 1.50 (m), 1 plane



Band	Lw dB(A)	Lp dB(A)
63 Hz	60	48
125 Hz	73	61
250 Hz	73	61
500 Hz	86	74
1000 Hz	81	69
2000 Hz	81	69
4000 Hz	81	69
8000 Hz	74	62
TOTAL	89	77

DATA SHEET



Three Phase Induction Motor - Squirrel Cage

Customer :					
Product line : Standard Alumínio Multimontagem Multitensão (Centro 6100)		Product code : 14980520			
Frame : 80	Insulation class : F	Duty cycle : S1	Ambient temperature : -20 °C to +45 °C	Altitude : 1000 m.a.s.l	
Degree of protection : IP55	Design : N	Cooling method : IC411 - TEFC	Mounting : B14T	Direct of rotation ¹ : Both	
Starting method : Direct On Line	Approx. weight ³ : 8.3 kg	Moment of inertia (J) : 0.0006 kgm ²			
Output	0.85 kW	0.85 kW	0.75 kW		
Poles	2	2	2		
Frequency	60 Hz	60 Hz	60 Hz		
Rated voltage	440 V	460 V	460 V		
Rated current	1.91 A	1.92 A	1.75 A		
L. R. Amperes	9.55 A	9.60 A	9.45 A		
LRC (p.u.)	5.0 x Code H	5.0 x Code H	5.4 x Code J		
No load current	1.25 A	1.40 A	1.35 A		
Rated speed	3380 rpm	3400 rpm	3435 rpm		
Slip	6.11 %	5.56 %	4.58 %		
Rated torque	2.40 Nm	2.39 Nm	2.09 Nm		
Locked rotor torque	220 %	240 %	270 %		
Breakdown torque	230 %	260 %	300 %		
Service factor	1.00	1.00	1.15		
Temperature rise ⁴	100 K	100 K	100 K		
Noise level ²	62.0 dB(A)	62.0 dB(A)	62.0 dB(A)		
Locked rotor time	9 s (hot) 16 s (cold)	9 s (hot) 16 s (cold)	9 s (hot) 16 s (cold)		
Efficiency (%)	50%	69.0	66.0	65.0	
	75%	73.0	72.0	70.0	
	100%	73.0	73.0	72.5	
Power factor	Start	0.73	0.73	0.73	
	50%	0.63	0.52	0.49	
	75%	0.72	0.66	0.63	
	100%	0.80	0.76	0.74	
Bearing type	Drive end : 6204-ZZ	Non drive end : 6203-ZZ	Foundation loads		
Lubrication interval	-	-	Maximum traction : 170 N		
Lubricant amount	-	-	Maximum compression : 252 N		
Lubricant type	MOBIL POLYREX EM				
This revision replaces and cancels the previous one, which must be eliminated. (1) When viewed from the drive end. (2) Measured at 1m and with tolerance of +3dB(A). (3) Approximate weight subject to changes after manufacturing process. (4) At the rated point.			These are average values based on tests with sinusoidal power supply, subject to the tolerances stipulated in IEC 60034-1.		
Rev.	Summary of changes		Performed	Checked	Date
Performed by			182632/2020-T		
Checked by					
Date					

FAN-VEN01035:

CMR-625-2T 60HZ



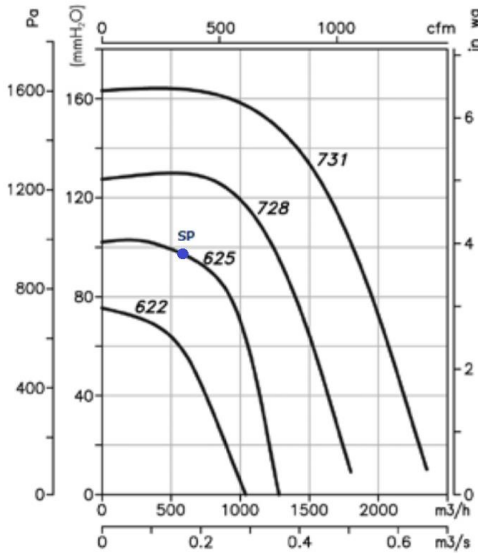
Extremely robust medium pressure, single inlet centrifugal fans fitted with a backward-curved impeller.

- Fan:
- Sheet steel casing.
 - Impeller with reaction blades in extremely robust sheet steel.

Finish:

- Anticorrosive finish of polyester resin polymerised at 190 °C. previously degreased with phosphate-free nanotechnological treatment.

CHARACTERISTIC CURVE AND ACOUSTICS AT 1.2KG/M³



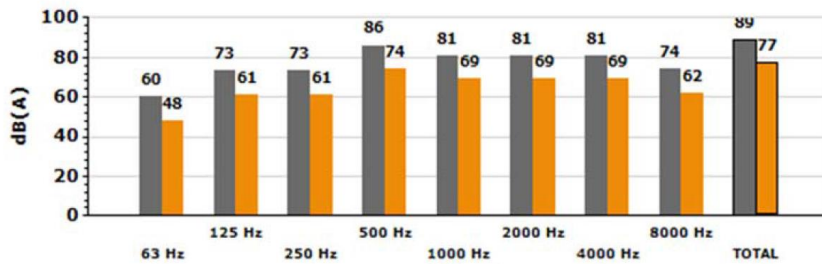
Design Point

Q (m ³ /h)	625
Ps (Pa)	960

Service Point (SP)

Q (m ³ /h)	625.00
Ps (Pa)	960.00
Pd (Pa)	23.19
Pt (Pa)	983.19

Acoustics: Inlet, 1.50 (m), 1 plane



Band	Lw dB(A)	Lp dB(A)
63 Hz	60	48
125 Hz	73	61
250 Hz	73	61
500 Hz	86	74
1000 Hz	81	69
2000 Hz	81	69
4000 Hz	81	69
8000 Hz	74	62
TOTAL	89	77

DATA SHEET



Three Phase Induction Motor - Squirrel Cage

Customer :					
Product line		: Standard Alumínio Multimontagem Multitensão (Centro 6100)		Product code	: 14980520
Frame	: 80	Cooling method	: IC411 - TEFC		
Insulation class	: F	Mounting	: B14T		
Duty cycle	: S1	Direct of rotation ¹	: Both		
Ambient temperature	: -20 °C to +45 °C	Starting method	: Direct On Line		
Altitude	: 1000 m.a.s.l	Approx. weight ³	: 8.3 kg		
Degree of protection	: IP55	Moment of inertia (J)	: 0.0006 kgm ²		
Design	: N				
Output	0.85 kW	0.85 kW	0.75 kW		
Poles	2	2	2		
Frequency	60 Hz	60 Hz	60 Hz		
Rated voltage	440 V	460 V	460 V		
Rated current	1.91 A	1.92 A	1.75 A		
L. R. Amperes	9.55 A	9.60 A	9.45 A		
LRC (p.u.)	5.0 x Code H	5.0 x Code H	5.4 x Code J		
No load current	1.25 A	1.40 A	1.35 A		
Rated speed	3380 rpm	3400 rpm	3435 rpm		
Slip	6.11 %	5.56 %	4.58 %		
Rated torque	2.40 Nm	2.39 Nm	2.09 Nm		
Locked rotor torque	220 %	240 %	270 %		
Breakdown torque	230 %	260 %	300 %		
Service factor	1.00	1.00	1.15		
Temperature rise ⁴	100 K	100 K	100 K		
Noise level ²	62.0 dB(A)	62.0 dB(A)	62.0 dB(A)		
Locked rotor time	9 s (hot) 16 s (cold)	9 s (hot) 16 s (cold)	9 s (hot) 16 s (cold)		
Efficiency (%)	50%	69.0	66.0	65.0	
	75%	73.0	72.0	70.0	
	100%	73.0	73.0	72.5	
Power factor	Start	0.73	0.73	0.73	
	50%	0.63	0.52	0.49	
	75%	0.72	0.66	0.63	
	100%	0.80	0.76	0.74	
Bearing type	Drive end 6204-ZZ	Non drive end 6203-ZZ	Foundation loads		
Lubrication interval	-	-	Maximum traction : 170 N		
Lubricant amount	-	-	Maximum compression : 252 N		
Lubricant type	MOBIL POLYREX EM				
This revision replaces and cancels the previous one, which must be eliminated. (1) When viewed from the drive end. (2) Measured at 1m and with tolerance of +3dB(A). (3) Approximate weight subject to changes after manufacturing process. (4) At the rated point.			These are average values based on tests with sinusoidal power supply, subject to the tolerances stipulated in IEC 60034-1.		
Rev.	Summary of changes		Performed	Checked	Date
Performed by			182632/2020-T		
Checked by					
Date					



- PROJECT: AVANTE 2200
- SHIPYARD: NAVANTIA S.A.
- SYSTEM: HVAC



Annex B. ATEX CENTRIFUGAL FANS

FAN-VEN01013 (ATEX ZONE 2):

CMP/ATEX *Centrifugal medium-pressure fans fitted with multi-blade impeller with ATEX certification*

CMP-616-2T 60HZ



Centrifugal single-inlet, medium-pressure fans with casing and sheet steel impeller to work in explosive atmospheres.

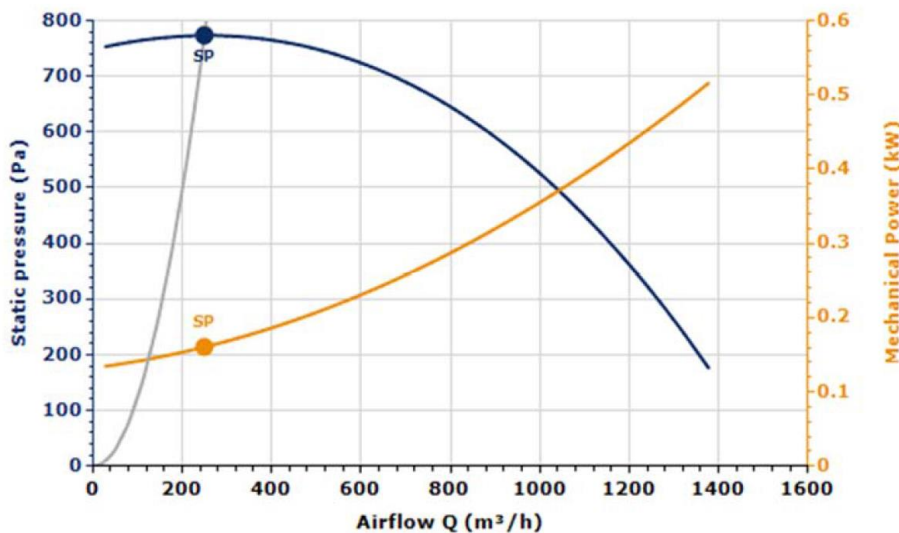
Fan:

- Steel sheet casing
- Impeller with forward-facing blades made from galvanised sheet steel
- Spark-proof inlet ring in copper or aluminium
- Max. air temperature to transport: -20°C+ 80°C

Finish:

- Rust retardant finish with ATEX paint, containing no ferrous components, in polyester resin polymerised at 190°C, after phosphate free pre-treatment

CHARACTERISTIC CURVE AT 1.2KG/M³



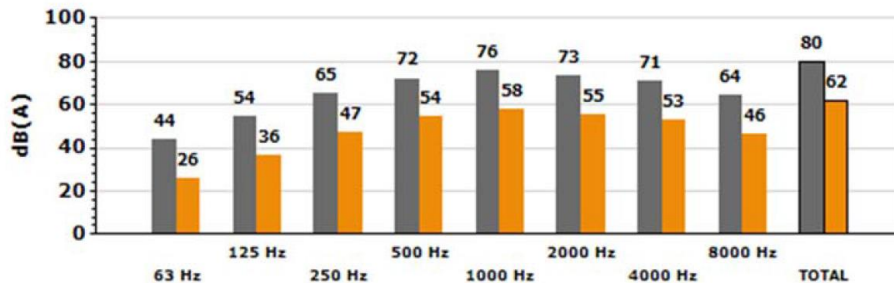
Design Point

Q (m ³ /h)	250
Ps (Pa)	776

Service Point (SP)

Q (m ³ /h)	249.62
Ps (Pa)	773.64
Pd (Pa)	17.07
Pt (Pa)	790.71

Acoustics: Inlet, 3 (m), 1 reflecting plane



Band	Lw dB(A)	Lp dB(A)
63 Hz	44	26
125 Hz	54	36
250 Hz	65	47
500 Hz	72	54
1000 Hz	76	58
2000 Hz	73	55
4000 Hz	71	53
8000 Hz	64	46
TOTAL	80	62



• PROJECT: AVANTE 2200
 • SHIPYARD: NAVANTIA S.A.
 • SYSTEM: HVAC



ISO 9001
 ISO 14001
 OHSAS 18001
 BUREAU VERITAS
 Certification



DATA SHEET						
Three Phase Induction Motor - Squirrel Cage						
Customer :						
Product line : W22Xec Increased Safety - Standard Efficiency IE1 Product code : 14994627						
Frame	: 71	Locked rotor time	: 7 s (hot) 13 s (cold)			
Output	: 0.55 kW	Temperature rise ⁴	: 80 K			
Poles	: 2	Duty cycle	: S1			
Frequency	: 60 Hz	Ambient temperature	: -20 °C to +45 °C			
Rated voltage	: 440 V	Altitude	: 1000 m.a.s.l			
Rated current	: 1.18 A	Degree of protection	: IP55			
L. R. Amperes	: 6.61 A	Cooling method	: IC411 - TEFC			
LRC (p.u.)	: 5.6	Mounting	: B34T			
No load current	: 0.780 A	Direct of rotation ¹	: Both			
Rated speed	: 3400 rpm	Noise level ²	: 60.0 dB(A)			
Slip	: 5.56 %	Vibration class	: A			
Rated torque	: 1.55 Nm	Starting method	: Direct On Line			
Locked rotor torque	: 230 %	Coupling	: Direct			
Pull up torque	: 195 %	Approx. weight ³	: 10.1 kg			
Breakdown torque	: 240 %	Painting plan	: 205P			
Insulation class	: F	Color	: RAL 5009			
Service factor	: 1.00	Efficiency level	: IE1			
Moment of inertia (J)	: 0.0004 kgm ²	Design	: N			
Output	Start	50%	75%	100%		
Efficiency (%)	-	71.0	71.5	72.0		
Power factor	0.86	0.64	0.77	0.85		
		<u>Drive end</u>	<u>Non drive end</u>	Foundation loads		
Bearing type		6202-ZZ	6202-ZZ	Maximum traction : 83 N		
Lubrication interval		-	-	Maximum compression : 182 N		
Lubricant amount		-	-			
Lubricant type		MOBIL POLYREX EM				
Notes:						
Standards	Specification	: IEC 60034-1		Vibration	: IEC 60034-14	
	Tests	: IEC 60034-2		Tolerance	: IEC 60034-1	
	Noise	: IEC 60034-9				
This revision replaces and cancels the previous one, which must be eliminated. (1) When viewed from the drive end. (2) Measured at 1m and with tolerance of +3dB(A). (3) Approximate weight subject to changes after manufacturing process. (4) At the rated point.			These are average values based on tests with sinusoidal power supply, subject to the tolerances stipulated in IEC 60034-1.			
Rev.	Summary of changes			Performed	Checked	Date
Performed by						
Checked by						
Date	16/08/2019					

FAN-VEN01014 (ATEX ZONE 1):

CMP/ATEX

Centrifugal medium-pressure fans fitted with multi-blade impeller with ATEX certification

CMP-616-2T 60HZ



Centrifugal single-inlet, medium-pressure fans with casing and sheet steel impeller to work in explosive atmospheres.

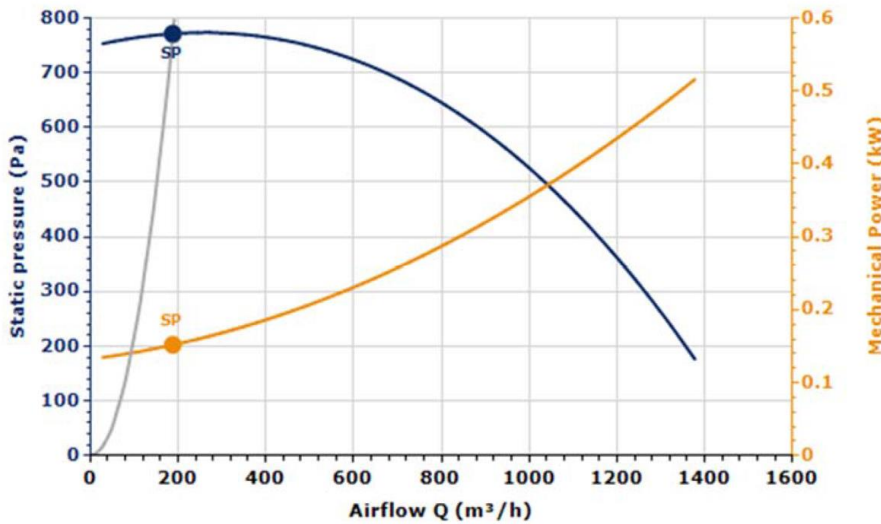
Fan:

- Steel sheet casing
- Impeller with forward-facing blades made from galvanised sheet steel
- Spark-proof inlet ring in copper or aluminium
- Max. air temperature to transport: -20°C+ 80°C

Finish:

- Rust retardant finish with ATEX paint, containing no ferrous components, in polyester resin polymerised at 190°C, after phosphate free pre-treatment

CHARACTERISTIC CURVE AT 1.2KG/M³



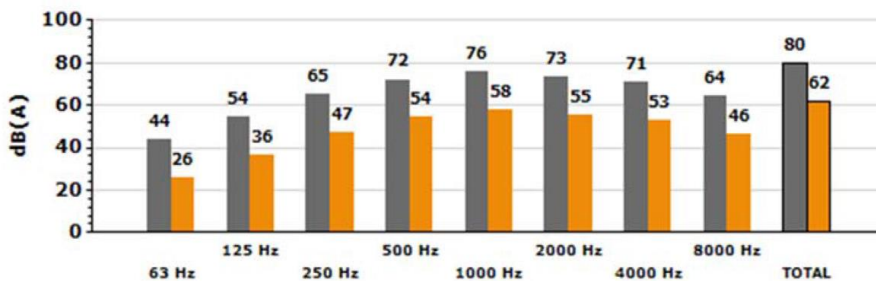
Design Point

Q (m ³ /h)	188
Ps (Pa)	770

Service Point (SP)

Q (m ³ /h)	188.21
Ps (Pa)	771.74
Pd (Pa)	9.70
Pt (Pa)	781.45

Acoustics: Inlet, 3 (m), 1 reflecting plane



Band	Lw dB(A)	Lp dB(A)
63 Hz	44	26
125 Hz	54	36
250 Hz	65	47
500 Hz	72	54
1000 Hz	76	58
2000 Hz	73	55
4000 Hz	71	53
8000 Hz	64	46
TOTAL	80	62



• PROJECT: AVANTE 2200
 • SHIPYARD: NAVANTIA S.A.
 • SYSTEM: HVAC



DATA SHEET



Three Phase Induction Motor - Squirrel Cage

Customer : _____

Product line : W22Xdb Flameproof - Standard Efficiency IE1

Frame	: 71	Locked rotor time	: 7 s (hot) 13 s (cold)
Output	: 0.55 kW	Temperature rise ⁴	: 75 K
Poles	: 2	Duty cycle	: S1
Frequency	: 60 Hz	Ambient temperature	: -20 °C to +45 °C
Rated voltage	: 440 V	Altitude	: 1000 m.a.s.l
Rated current	: 1.18 A	Degree of protection	: IP56
L. R. Amperes	: 6.80 A	Cooling method	: TEFC-XP
LRC (p.u.)	: 5.6	Mounting	: B34T
No load current	: 0.780 A	Direct of rotation ¹	: Both
Rated speed	: 3400 rpm	Noise level ²	: 60.0 dB(A)
Slip	: 5.56 %	Vibration class	: A
Rated torque	: 1.55 Nm	Starting method	: Direct On Line
Locked rotor torque	: 230 %	Coupling	: Direct
Pull up torque	: 195 %	Approx. weight ³	: 18.4 kg
Breakdown torque	: 240 %	Painting plan	: 205P
Insulation class	: F	Color	: RAL 5009
Service factor	: 1.00	Design	: N
Moment of inertia (J)	: 0.0004 kgm ²		

Output	Start	50%	75%	100%	Load type: -
Efficiency (%)	-	64.0	68.5	70.0	Load torque: -
Power factor	0.86	0.64	0.77	0.85	Load inertia (J=GD ² /4): -

	<u>Drive end</u>	<u>Non drive end</u>	Foundation loads	
Bearing type	6202-ZZ	6202-ZZ	Maximum traction	: 42 N
Lubrication interval	-	-	Maximum compression	: 223 N
Lubricant amount	-	-		
Lubricant type	MOBIL POLYREX EM			

Notes:

Standards	Specification	: IEC 60034-1	Vibration	: IEC 60034-14
	Tests	: IEC 60034-2	Tolerance	: IEC 60034-1
	Noise	: IEC 60034-9		

This revision replaces and cancels the previous one, which must be eliminated.

(1) When viewed from the drive end.
 (2) Measured at 1m and with tolerance of +3dB(A).
 (3) Approximate weight subject to changes after manufacturing process.
 (4) At the rated point.

These are average values based on tests with sinusoidal power supply, subject to the tolerances stipulated in IEC 60034-1.

Rev.	Summary of changes	Performed	Checked	Date
Performed by				
Checked by				
Date				

FAN-VEN01024 (ATEX ZONE 2):

CMP/ATEX

Centrifugal medium-pressure fans fitted with multi-blade impeller with ATEX certification



Centrifugal single-inlet, medium-pressure fans with casing and sheet steel impeller to work in explosive atmospheres.

Fan:

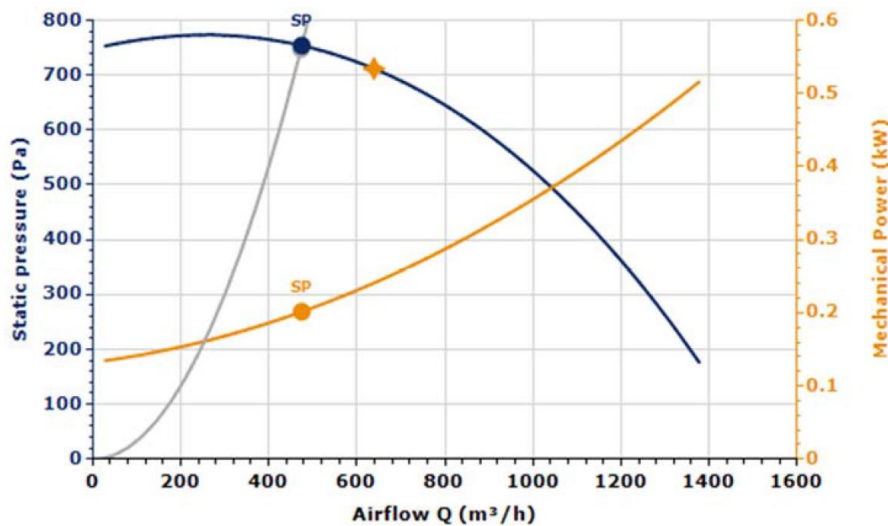
- Steel sheet casing
- Impeller with forward-facing blades made from galvanised sheet steel
- Spark-proof inlet ring in copper or aluminium
- Max. air temperature to transport: -20°C+ 80°C

Finish:

- Rust retardant finish with ATEX paint, containing no ferrous components, in polyester resin polymerised at 190°C, after phosphate free pre-treatment

CMP-616-2T 60HZ

CHARACTERISTIC CURVE AT 1.2KG/M³



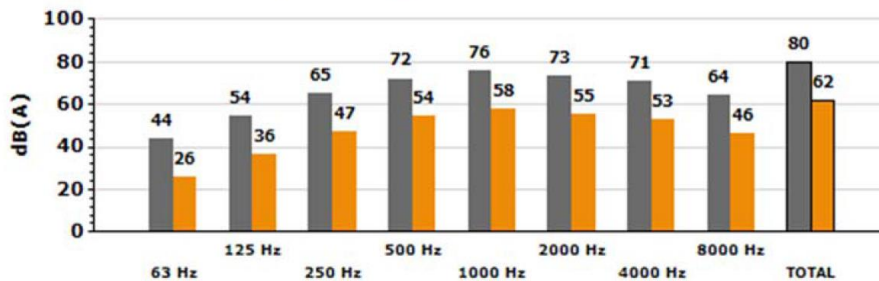
Design Point

Q (m³/h)	473
Ps (Pa)	748

Service Point (SP)

Q (m³/h)	474.99
Ps (Pa)	754.29
Pd (Pa)	61.80
Pt (Pa)	816.10

Acoustics: Inlet, 3 (m), 1 reflecting plane



Band	Lw dB(A)	Lp dB(A)
63 Hz	44	26
125 Hz	54	36
250 Hz	65	47
500 Hz	72	54
1000 Hz	76	58
2000 Hz	73	55
4000 Hz	71	53
8000 Hz	64	46
TOTAL	80	62



• PROJECT: AVANTE 2200
 • SHIPYARD: NAVANTIA S.A.
 • SYSTEM: HVAC



ISO 9001
 ISO 14001
 OHSAS 18001
 BUREAU VERITAS
 Certification



DATA SHEET						
Three Phase Induction Motor - Squirrel Cage						
Customer	:					
Product line	: W22Xec Increased Safety - Standard Efficiency IE1		Product code	: 14994627		
Frame	: 71	Locked rotor time	: 7 s (hot) 13 s (cold)			
Output	: 0.55 kW	Temperature rise ⁴	: 80 K			
Poles	: 2	Duty cycle	: S1			
Frequency	: 60 Hz	Ambient temperature	: -20 °C to +45 °C			
Rated voltage	: 440 V	Altitude	: 1000 m.a.s.l			
Rated current	: 1.18 A	Degree of protection	: IP55			
L. R. Amperes	: 6.61 A	Cooling method	: IC411 - TEFC			
LRC (p.u.)	: 5.6	Mounting	: B34T			
No load current	: 0.780 A	Direct of rotation ¹	: Both			
Rated speed	: 3400 rpm	Noise level ²	: 60.0 dB(A)			
Slip	: 5.56 %	Vibration class	: A			
Rated torque	: 1.55 Nm	Starting method	: Direct On Line			
Locked rotor torque	: 230 %	Coupling	: Direct			
Pull up torque	: 195 %	Approx. weight ³	: 10.1 kg			
Breakdown torque	: 240 %	Painting plan	: 205P			
Insulation class	: F	Color	: RAL 5009			
Service factor	: 1.00	Efficiency level	: IE1			
Moment of inertia (J)	: 0.0004 kgm ²	Design	: N			
Output	Start	50%	75%	100%		
Efficiency (%)	-	71.0	71.5	72.0		
Power factor	0.86	0.64	0.77	0.85		
		<u>Drive end</u>	<u>Non drive end</u>			
Bearing type		6202-ZZ	6202-ZZ	Foundation loads		
Lubrication interval		-	-	Maximum traction : 83 N		
Lubricant amount		-	-	Maximum compression : 182 N		
Lubricant type		MOBIL POLYREX EM				
Notes:						
Standards	Specification	: IEC 60034-1		Vibration	: IEC 60034-14	
	Tests	: IEC 60034-2		Tolerance	: IEC 60034-1	
	Noise	: IEC 60034-9				
This revision replaces and cancels the previous one, which must be eliminated.			These are average values based on tests with sinusoidal power supply, subject to the tolerances stipulated in IEC 60034-1.			
(1) When viewed from the drive end.						
(2) Measured at 1m and with tolerance of +3dB(A).						
(3) Approximate weight subject to changes after manufacturing process.						
(4) At the rated point.						
Rev.	Summary of changes			Performed	Checked	Date
Performed by						
Checked by						
Date	16/08/2019					

FAN-VEN01026 (ATEX ZONE 2):

CMP/ATEX

Centrifugal medium-pressure fans fitted with multi-blade impeller with ATEX certification

CMP-616-2T 60HZ



Centrifugal single-inlet, medium-pressure fans with casing and sheet steel impeller to work in explosive atmospheres.

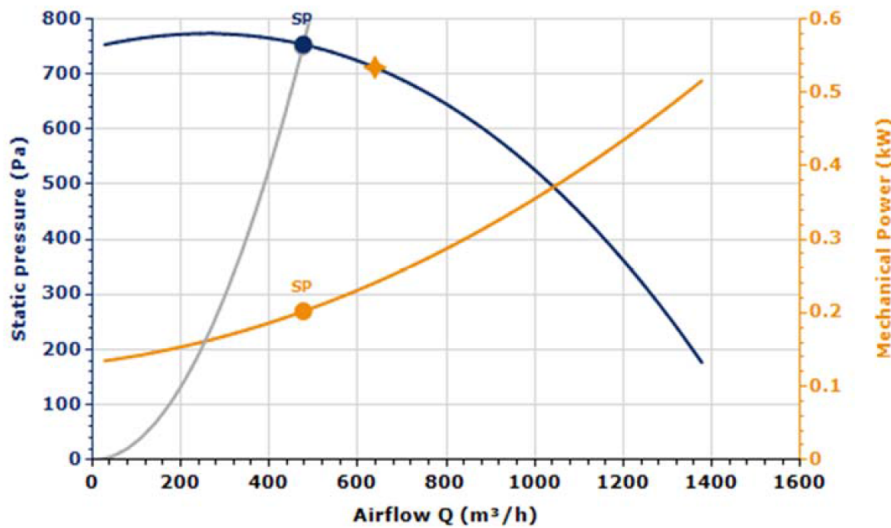
Fan:

- Steel sheet casing
- Impeller with forward-facing blades made from galvanised sheet steel
- Spark-proof inlet ring in copper or aluminium
- Max. air temperature to transport: -20°C+ 80°C

Finish:

- Rust retardant finish with ATEX paint, containing no ferrous components, in polyester resin polymerised at 190°C, after phosphate free pre-treatment

CHARACTERISTIC CURVE AT 1.2KG/M³



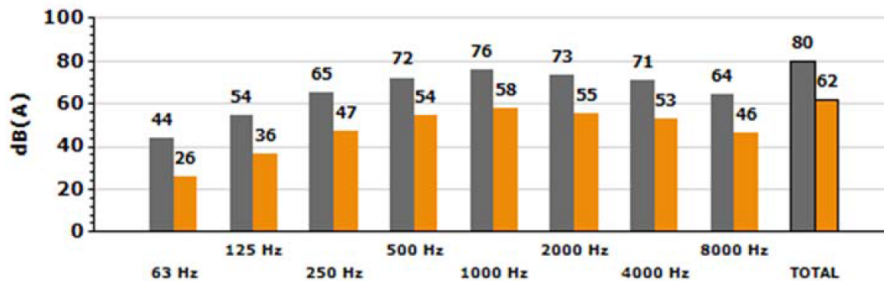
Design Point

Q (m ³ /h)	476
Ps (Pa)	750

Service Point (SP)

Q (m ³ /h)	477.23
Ps (Pa)	753.88
Pd (Pa)	62.39
Pt (Pa)	816.27

Acoustics: Inlet, 3 (m), 1 reflecting plane



Band	Lw dB(A)	Lp dB(A)
63 Hz	44	26
125 Hz	54	36
250 Hz	65	47
500 Hz	72	54
1000 Hz	76	58
2000 Hz	73	55
4000 Hz	71	53
8000 Hz	64	46
TOTAL	80	62



• PROJECT: AVANTE 2200
 • SHIPYARD: NAVANTIA S.A.
 • SYSTEM: HVAC



ISO 9001
 ISO 14001
 OHSAS 18001
 BUREAU VERITAS
 Certification



DATA SHEET					
Three Phase Induction Motor - Squirrel Cage					
Customer :					
Product line : W22Xec Increased Safety - Standard Efficiency IE1 Product code : 14994627					
Frame	: 71	Locked rotor time	: 7 s (hot) 13 s (cold)		
Output	: 0.55 kW	Temperature rise ⁴	: 80 K		
Poles	: 2	Duty cycle	: S1		
Frequency	: 60 Hz	Ambient temperature	: -20 °C to +45 °C		
Rated voltage	: 440 V	Altitude	: 1000 m.a.s.l		
Rated current	: 1.18 A	Degree of protection	: IP55		
L. R. Amperes	: 6.61 A	Cooling method	: IC411 - TEFC		
LRC (p.u.)	: 5.6	Mounting	: B34T		
No load current	: 0.780 A	Direct of rotation ¹	: Both		
Rated speed	: 3400 rpm	Noise level ²	: 60.0 dB(A)		
Slip	: 5.56 %	Vibration class	: A		
Rated torque	: 1.55 Nm	Starting method	: Direct On Line		
Locked rotor torque	: 230 %	Coupling	: Direct		
Pull up torque	: 195 %	Approx. weight ³	: 10.1 kg		
Breakdown torque	: 240 %	Painting plan	: 205P		
Insulation class	: F	Color	: RAL 5009		
Service factor	: 1.00	Efficiency level	: IE1		
Moment of inertia (J)	: 0.0004 kgm ²	Design	: N		
Output	Start 50% 75% 100%	Load type: -			
Efficiency (%)	- 71.0 71.5 72.0	Load torque: -			
Power factor	0.86 0.64 0.77 0.85	Load inertia (J=GD ² /4): -			
	<u>Drive end</u> <u>Non drive end</u>	Foundation loads			
Bearing type	6202-ZZ 6202-ZZ	Maximum traction	: 83 N		
Lubrication interval	- -	Maximum compression	: 182 N		
Lubricant amount	- -				
Lubricant type	MOBIL POLYREX EM				
Notes:					
Standards	Specification	: IEC 60034-1	Vibration	: IEC 60034-14	
	Tests	: IEC 60034-2	Tolerance	: IEC 60034-1	
	Noise	: IEC 60034-9			
This revision replaces and cancels the previous one, which must be eliminated.		These are average values based on tests with sinusoidal power supply, subject to the tolerances stipulated in IEC 60034-1.			
(1) When viewed from the drive end.					
(2) Measured at 1m and with tolerance of +3dB(A).					
(3) Approximate weight subject to changes after manufacturing process.					
(4) At the rated point.					
Rev.	Summary of changes		Performed	Checked	Date
Performed by					
Checked by					
Date	16/08/2019				

FAN-VEN02017 (ATEX ZONE 2):

CMP/ATEX

Centrifugal medium-pressure fans fitted with multi-blade impeller with ATEX certification

CMP-616-2T 60HZ



Centrifugal single-inlet, medium-pressure fans with casing and sheet steel impeller to work in explosive atmospheres.

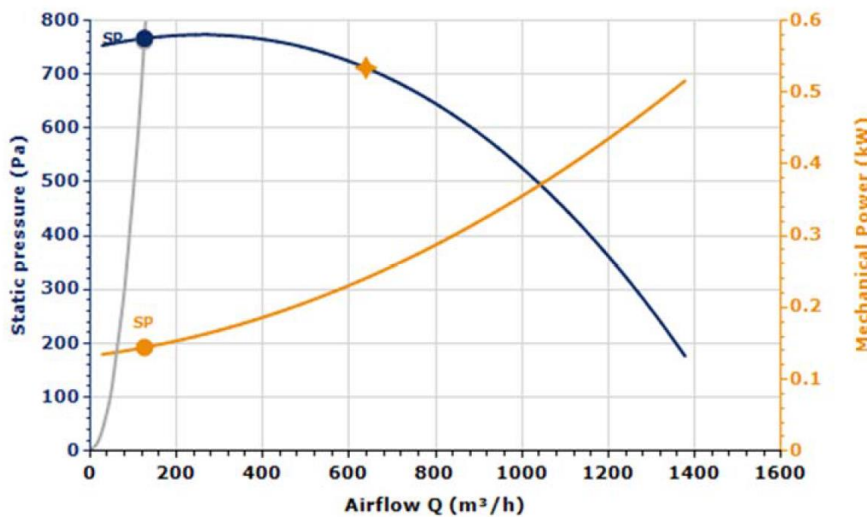
Fan:

- Steel sheet casing
- Impeller with forward-facing blades made from galvanised sheet steel
- Spark-proof inlet ring in copper or aluminium
- Max. air temperature to transport: -20°C+ 80°C

Finish:

- Rust retardant finish with ATEX paint, containing no ferrous components, in polyester resin polymerised at 190°C, after phosphate free pre-treatment

CHARACTERISTIC CURVE AT 1.2KG/M³



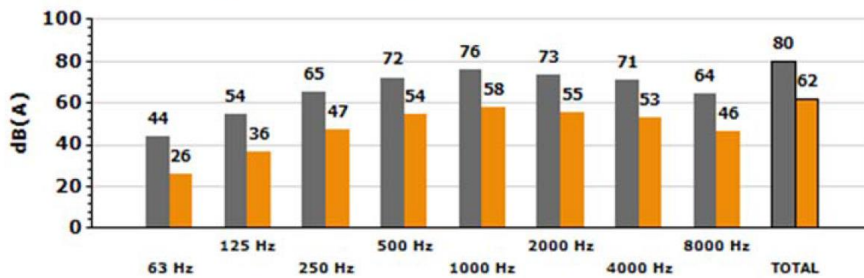
Design Point

Q (m³/h)	126
Ps (Pa)	762

Service Point (SP)

Q (m³/h)	126.41
Ps (Pa)	766.92
Pd (Pa)	4.3772
Pt (Pa)	771.30

Acoustics: Inlet, 3 (m), 1 reflecting plane



Band	Lw dB(A)	Lp dB(A)
63 Hz	44	26
125 Hz	54	36
250 Hz	65	47
500 Hz	72	54
1000 Hz	76	58
2000 Hz	73	55
4000 Hz	71	53
8000 Hz	64	46
TOTAL	80	62



• PROJECT: AVANTE 2200
 • SHIPYARD: NAVANTIA S.A.
 • SYSTEM: HVAC



ISO 9001
 ISO 14001
 OHSAS 18001
 BUREAU VERITAS
 Certification



DATA SHEET						
Three Phase Induction Motor - Squirrel Cage						
Customer :						
Product line : W22Xec Increased Safety - Standard Efficiency IE1 Product code : 14994627						
Frame	: 71	Locked rotor time	: 7 s (hot) 13 s (cold)			
Output	: 0.55 kW	Temperature rise ⁴	: 80 K			
Poles	: 2	Duty cycle	: S1			
Frequency	: 60 Hz	Ambient temperature	: -20 °C to +45 °C			
Rated voltage	: 440 V	Altitude	: 1000 m.a.s.l			
Rated current	: 1.18 A	Degree of protection	: IP55			
L. R. Amperes	: 6.61 A	Cooling method	: IC411 - TEFC			
LRC (p.u.)	: 5.6	Mounting	: B34T			
No load current	: 0.780 A	Direct of rotation ¹	: Both			
Rated speed	: 3400 rpm	Noise level ²	: 60.0 dB(A)			
Slip	: 5.56 %	Vibration class	: A			
Rated torque	: 1.55 Nm	Starting method	: Direct On Line			
Locked rotor torque	: 230 %	Coupling	: Direct			
Pull up torque	: 195 %	Approx. weight ³	: 10.1 kg			
Breakdown torque	: 240 %	Painting plan	: 205P			
Insulation class	: F	Color	: RAL 5009			
Service factor	: 1.00	Efficiency level	: IE1			
Moment of inertia (J)	: 0.0004 kgm ²	Design	: N			
Output	Start	50%	75%	100%		
Efficiency (%)	-	71.0	71.5	72.0		
Power factor	0.86	0.64	0.77	0.85		
		<u>Drive end</u>	<u>Non drive end</u>			
Bearing type		6202-ZZ	6202-ZZ	Foundation loads		
Lubrication interval		-	-	Maximum traction : 83 N		
Lubricant amount		-	-	Maximum compression : 182 N		
Lubricant type		MOBIL POLYREX EM				
Notes:						
Standards	Specification	: IEC 60034-1		Vibration	: IEC 60034-14	
	Tests	: IEC 60034-2		Tolerance	: IEC 60034-1	
	Noise	: IEC 60034-9				
This revision replaces and cancels the previous one, which must be eliminated. (1) When viewed from the drive end. (2) Measured at 1m and with tolerance of +3dB(A). (3) Approximate weight subject to changes after manufacturing process. (4) At the rated point.			These are average values based on tests with sinusoidal power supply, subject to the tolerances stipulated in IEC 60034-1.			
Rev.	Summary of changes			Performed	Checked	Date
Performed by						
Checked by						
Date	16/08/2019					

FAN-VEN02031 (ATEX ZONE 2):

CMP/ATEX

Centrifugal medium-pressure fans fitted with multi-blade impeller with ATEX certification

CMP-616-2T 60HZ



Centrifugal single-inlet, medium-pressure fans with casing and sheet steel impeller to work in explosive atmospheres.

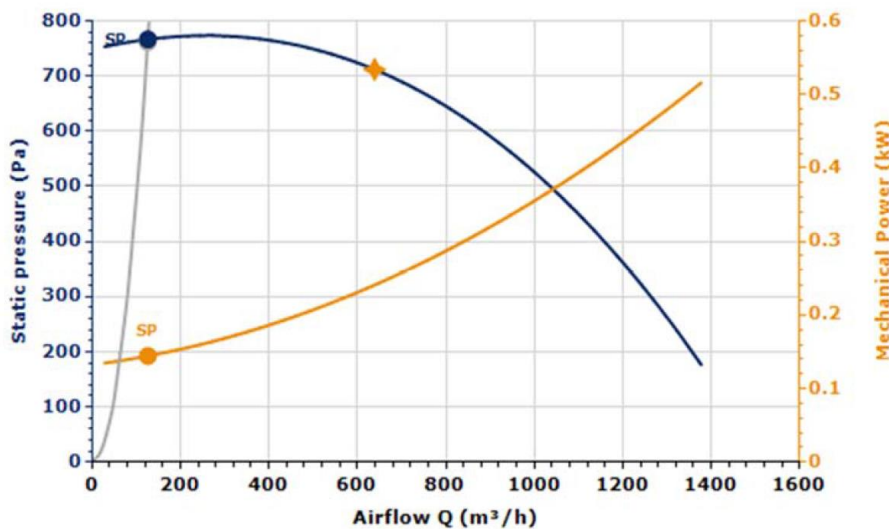
Fan:

- Steel sheet casing
- Impeller with forward-facing blades made from galvanised sheet steel
- Spark-proof inlet ring in copper or aluminium
- Max. air temperature to transport: -20°C+ 80°C

Finish:

- Rust retardant finish with ATEX paint, containing no ferrous components, in polyester resin polymerised at 190°C, after phosphate free pre-treatment

CHARACTERISTIC CURVE AT 1.2KG/M³



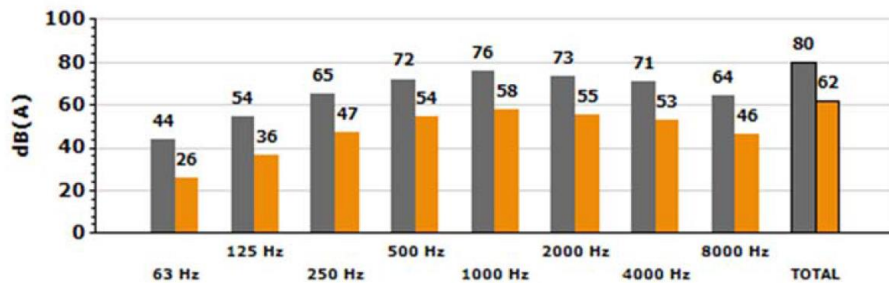
Design Point

Q (m ³ /h)	126
Ps (Pa)	762

Service Point (SP)

Q (m ³ /h)	126.41
Ps (Pa)	766.92
Pd (Pa)	4.3772
Pt (Pa)	771.30

Acoustics: Inlet, 3 (m), 1 reflecting plane



Band	Lw dB(A)	Lp dB(A)
63 Hz	44	26
125 Hz	54	36
250 Hz	65	47
500 Hz	72	54
1000 Hz	76	58
2000 Hz	73	55
4000 Hz	71	53
8000 Hz	64	46
TOTAL	80	62



• PROJECT: AVANTE 2200
 • SHIPYARD: NAVANTIA S.A.
 • SYSTEM: HVAC



ISO 9001
 ISO 14001
 OHSAS 18001
 BUREAU VERITAS
 Certification



DATA SHEET					
Three Phase Induction Motor - Squirrel Cage					
Customer :					
Product line : W22Xec Increased Safety - Standard Efficiency IE1 Product code : 14994627					
Frame	: 71	Locked rotor time	: 7 s (hot) 13 s (cold)		
Output	: 0.55 kW	Temperature rise ⁴	: 80 K		
Poles	: 2	Duty cycle	: S1		
Frequency	: 60 Hz	Ambient temperature	: -20 °C to +45 °C		
Rated voltage	: 440 V	Altitude	: 1000 m.a.s.l		
Rated current	: 1.18 A	Degree of protection	: IP55		
L. R. Amperes	: 6.61 A	Cooling method	: IC411 - TEFC		
LRC (p.u.)	: 5.6	Mounting	: B34T		
No load current	: 0.780 A	Direct of rotation ¹	: Both		
Rated speed	: 3400 rpm	Noise level ²	: 60.0 dB(A)		
Slip	: 5.56 %	Vibration class	: A		
Rated torque	: 1.55 Nm	Starting method	: Direct On Line		
Locked rotor torque	: 230 %	Coupling	: Direct		
Pull up torque	: 195 %	Approx. weight ³	: 10.1 kg		
Breakdown torque	: 240 %	Painting plan	: 205P		
Insulation class	: F	Color	: RAL 5009		
Service factor	: 1.00	Efficiency level	: IE1		
Moment of inertia (J)	: 0.0004 kgm ²	Design	: N		
Output	Start	50%	75%	100%	
Efficiency (%)	-	71.0	71.5	72.0	
Power factor	0.86	0.64	0.77	0.85	
	<u>Drive end</u>	<u>Non drive end</u>	Foundation loads		
Bearing type	6202-ZZ	6202-ZZ	Maximum traction	: 83 N	
Lubrication interval	-	-	Maximum compression	: 182 N	
Lubricant amount	-	-			
Lubricant type	MOBIL POLYREX EM				
Notes:					
Standards	Specification	: IEC 60034-1	Vibration	: IEC 60034-14	
	Tests	: IEC 60034-2	Tolerance	: IEC 60034-1	
	Noise	: IEC 60034-9			
This revision replaces and cancels the previous one, which must be eliminated. (1) When viewed from the drive end. (2) Measured at 1m and with tolerance of +3dB(A). (3) Approximate weight subject to changes after manufacturing process. (4) At the rated point.			These are average values based on tests with sinusoidal power supply, subject to the tolerances stipulated in IEC 60034-1.		
Rev.	Summary of changes		Performed	Checked	Date
Performed by					
Checked by					
Date	16/08/2019				



- PROJECT: AVANTE 2200
- SHIPYARD: NAVANTIA S.A.
- SYSTEM: HVAC



ISO 9001
ISO 14001
OHSAS 18001
BUREAU VERITAS
Certification



Annex C. DUCT FANS

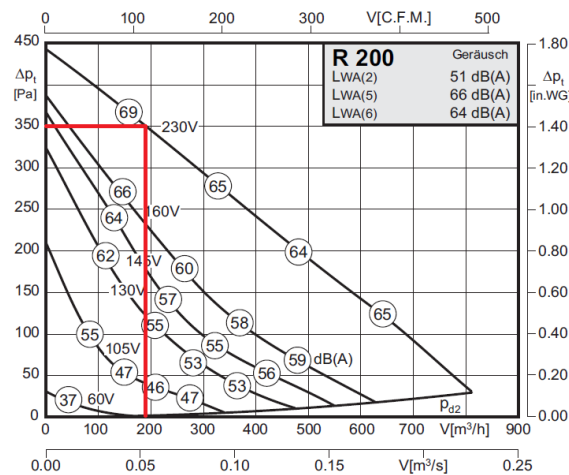
FAN-VEN01007:

Tube Fans / Size: 200





- casing made of galvanized sheet steel
- easy installation in any position
- easy electrical connection via IP54 terminal box
- insulation class F
- motor protection by thermal contacts
- speed is 100% infinitely variable using auto transformers or electronic control

Technical Data:



Type : R 200 L

U	230 V (60Hz)
P ₁	0.126 kW
I _N	0.56 A
n	2248 min ⁻¹
C _{400V}	2 μF
t _R	70 °C
I _A / I _N	1.5
	3.8 kg
	IP44

LWA _{rel} A-bewertet bei V=0,5*V _{max} LWA _{rel} A-weighted at V=0,5*V _{max}	fM [Hz]						
	125	250	500	1K	2K	4K	8K
LWA ₂ [dB(A)] Gehäuse / casing	37	45	44	45	45	37	28
LWA ₅ [dB(A)] Ansaugseite / inlet side	44	57	59	60	61	56	47
LWA ₆ [dB(A)] Ausblasseite / outlet side	42	53	53	59	60	54	47

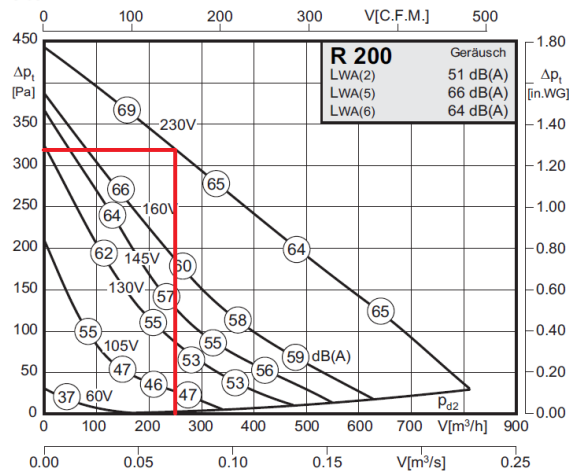
FAN-VEN02033:

Tube Fans / Size: 200





- casing made of galvanized sheet steel
- easy installation in any position
- easy electrical connection via IP54 terminal box
- insulation class F
- motor protection by thermal contacts
- speed is 100% infinitely variable using auto transformers or electronic control

Technical Data:



Type: R 200 L

U	230 V (60Hz)
P ₁	0.126 kW
I _N	0.56 A
n	2248 min-1
C _{400V}	2 μF
t _R	70 °C
I _A / I _N	1.5
	3.8 kg
	IP44

LWA _{rel} A-bewertet bei V=0,5*V _{max} LWA _{rel} A-weighted at V=0,5*V _{max}	fM [Hz]						
	125	250	500	1K	2K	4K	8K
LWA ₂ [dB(A)] Gehäuse / casing	37	45	44	45	45	37	28
LWA ₅ [dB(A)] Ansaugseite / inlet side	44	57	59	60	61	56	47
LWA ₆ [dB(A)] Ausblasseite / outlet side	42	53	53	59	60	54	47

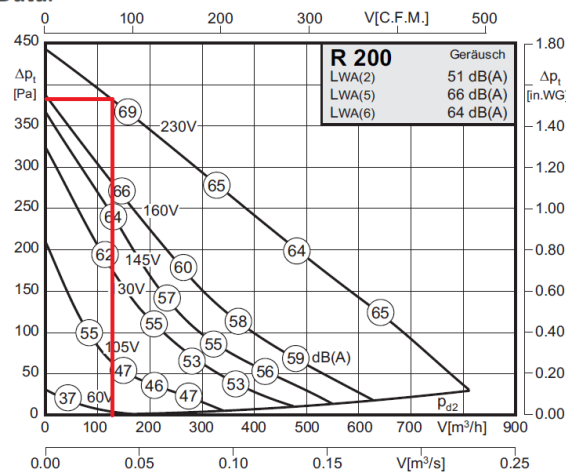
FAN-VEN02036:

Tube Fans / Size: 200





- casing made of galvanized sheet steel
- easy installation in any position
- easy electrical connection via IP54 terminal box
- insulation class F
- motor protection by thermal contacts
- speed is 100% infinitely variable using auto transformers or electronic control

Technical Data:



Type : R 200 L

U	230 V (60Hz)
P ₁	0.126 kW
I _N	0.56 A
n	2248 min ⁻¹
C _{400V}	2 μF
t _R	70 °C
I _A / I _N	1.5
	3.8 kg
	IP44

LWA _{rel} A-bewertet bei V=0,5*V _{max} LWA _{rel} A-weighted at V=0,5*V _{max}	fM [Hz]						
	125	250	500	1K	2K	4K	8K
LWA ₂ [dB(A)] Gehäuse / casing	37	45	44	45	45	37	28
LWA ₅ [dB(A)] Ansaugseite / inlet side	44	57	59	60	61	56	47
LWA ₆ [dB(A)] Ausblasseite / outlet side	42	53	53	59	60	54	47




- PROJECT: AVANTE 2200
- SHIPYARD: NAVANTIA S.A.
- SYSTEM: HVAC

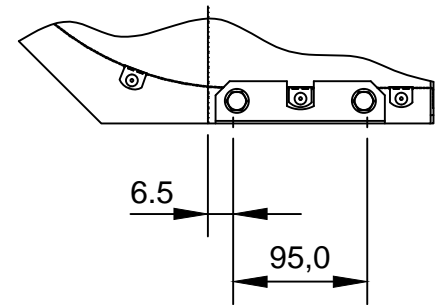
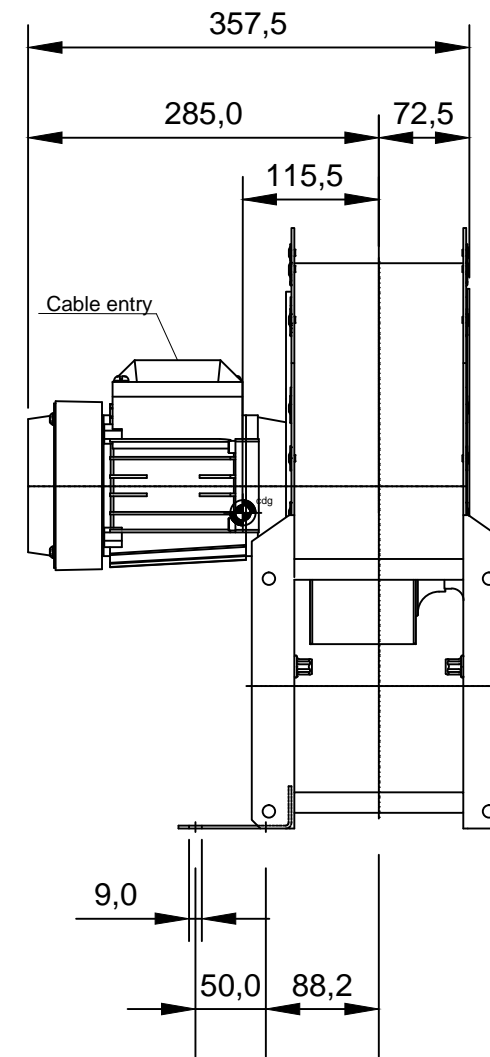
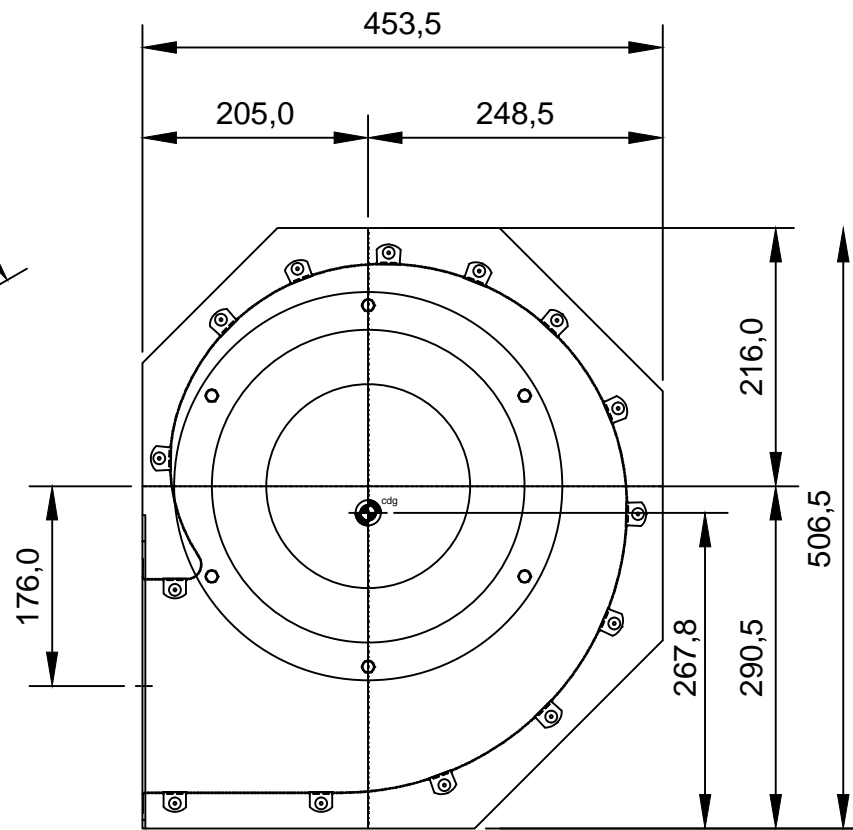
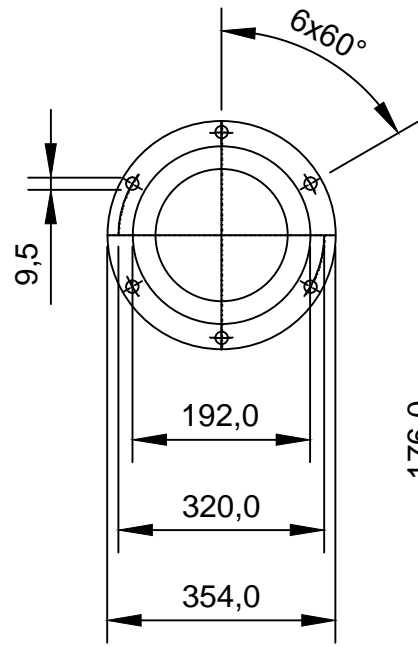
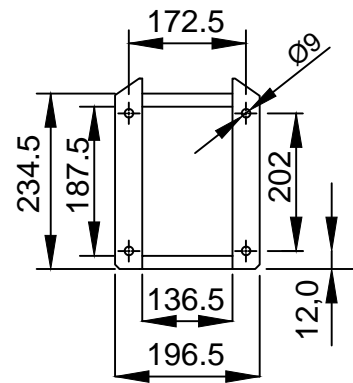


ISO 9001
ISO 14001
OHSAS 18001
BUREAU VERITAS
Certification

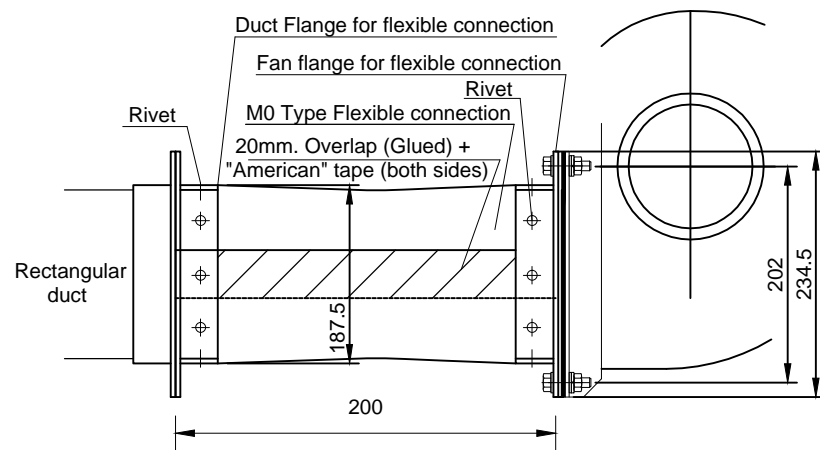


Annex D. DIMENSIONAL DRAWINGS

WEIGHT: 18 Kg
 CENTER OF GRAVITY

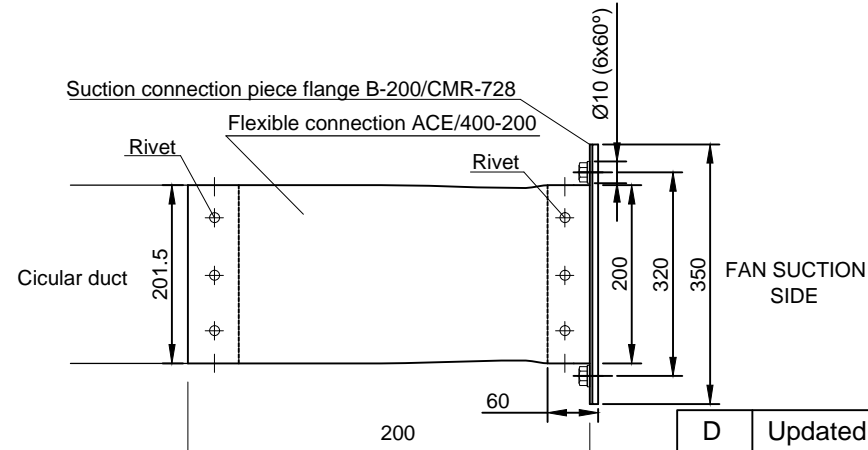


ACCESSORY FAN DISCHARGE SIDE



FLEXIBLE CONNECTION: RECTANGULAR - RECTANGULAR

ACCESSORY FAN SUCTION SIDE




FLEXIBLE CONNECTION: CIRCULAR - CIRCULAR

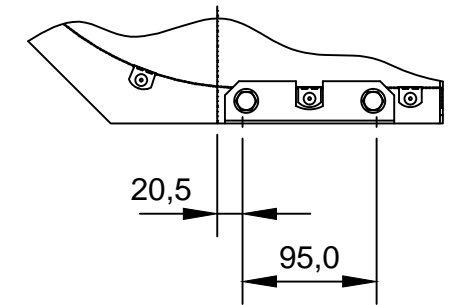
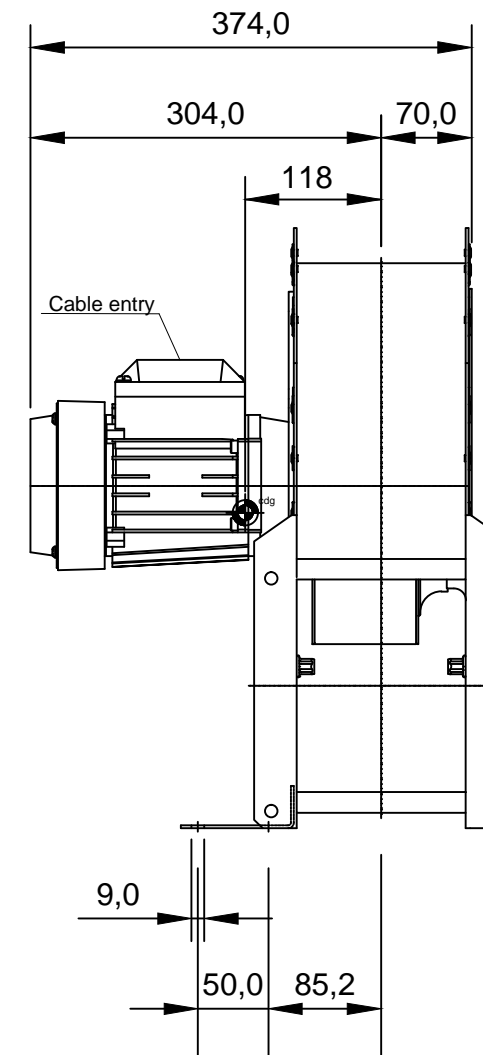
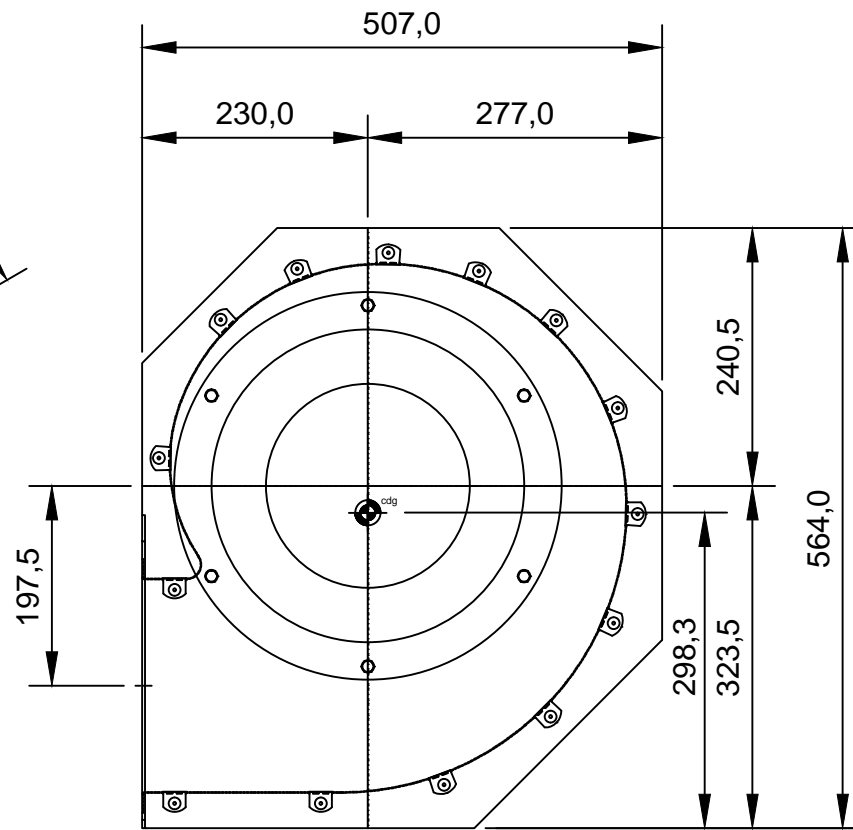
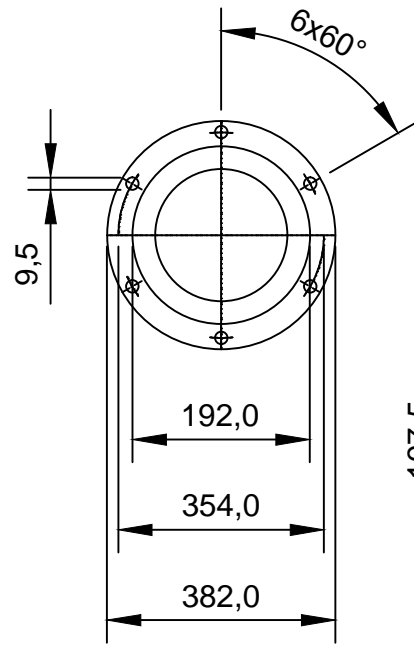
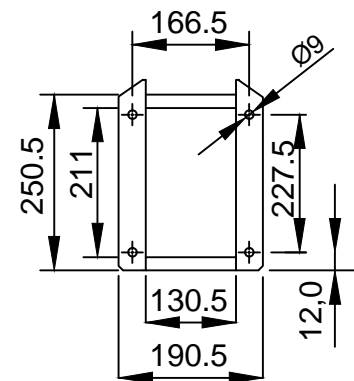
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C	Updated	08/05/20	JCR	AMF	MRH
B	FOR INFO./COMMENTS	25/10/19	JCR	AMF	MRH
A	FOR INFO./COMMENTS	30/08/19	JCR	AMF	MRH
REV.	DESCRIPTION	DATE	DRAWN	VERIFIED	APPROVED

TAG	OPERATION	MODEL	SERVICE	ACCESSORY FAN DISCHARGE SIDE	ACCESSORY FAN SUCTION SIDE
FAN-VEN01001	SUPPLY	CMR-728-2T (Orientation LG 270)	FCO-ACO01012 UCO-ACO01042 FCO-ACO01009 FCO-ACO01008 UCO-ACO01017 UCO-ACO01032-33-34-35 UCO-ACO01018 UCO-ACO01019 PASSAGE STARBOARD #117 PASSAGE PORTSIDE #107	Flexible connection 200 mm Model: discharge CMR-728-2T	Flexible connection 200 mm Model: ACE/400-200 + B-200/CMR-728
FAN-VEN01010	SUPPLY	CMR-728-2T (Orientation LG 270)	FCO-ACO01002 (GALLEY)	Flexible connection 200 mm Model: discharge CMR-728-2T	Flexible connection 200 mm Model: ACE/400-200 + B-200/CMR-728

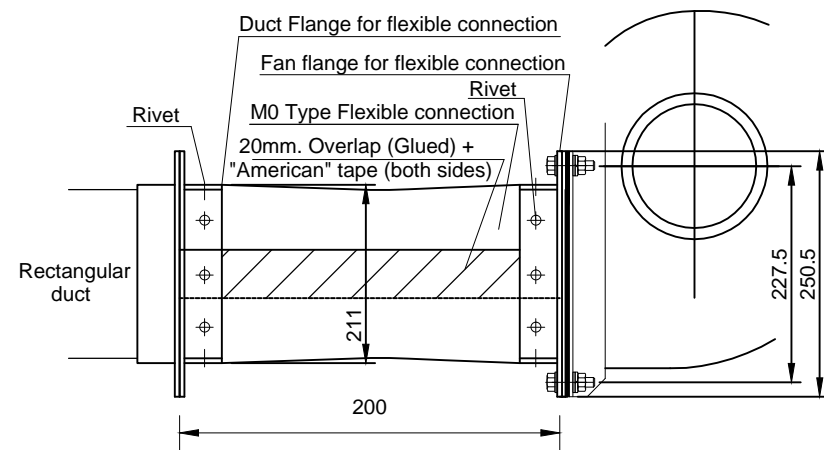
PROJECT:	AVANTE 2200		
DESCRIPTION:	CENTRIFUGAL FANS MODEL CMR-728-2T		
DRAWING NUMBER:	P-M05462-023		
SCALE:	NTS	FORMAT:	A3
SHEET:	01/11		



WEIGHT: 23 Kg
 CENTER OF GRAVITY

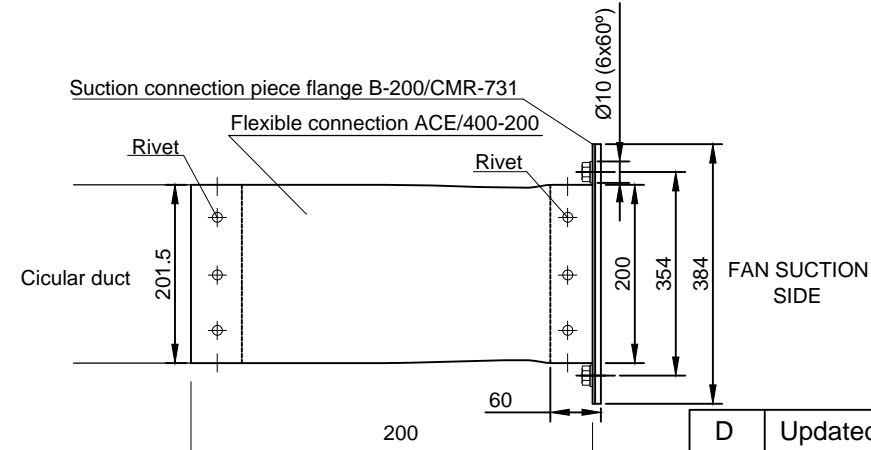


ACCESSORY FAN DISCHARGE SIDE



FLEXIBLE CONNECTION: RECTANGULAR - RECTANGULAR

ACCESSORY FAN SUCTION SIDE




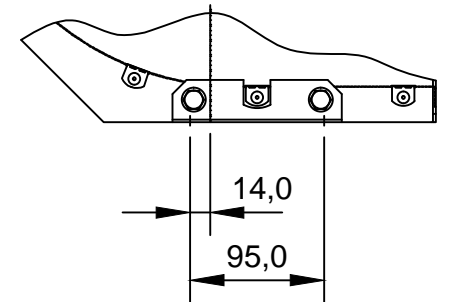
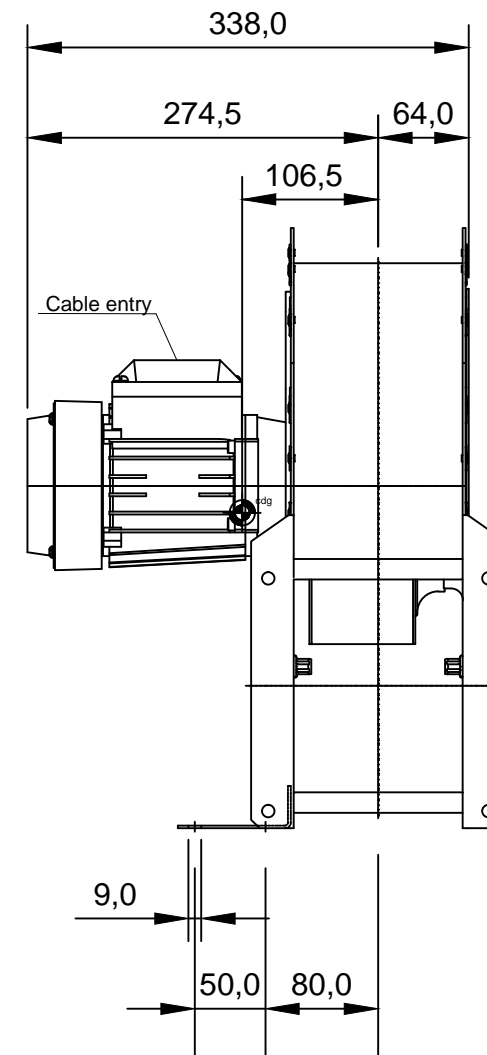
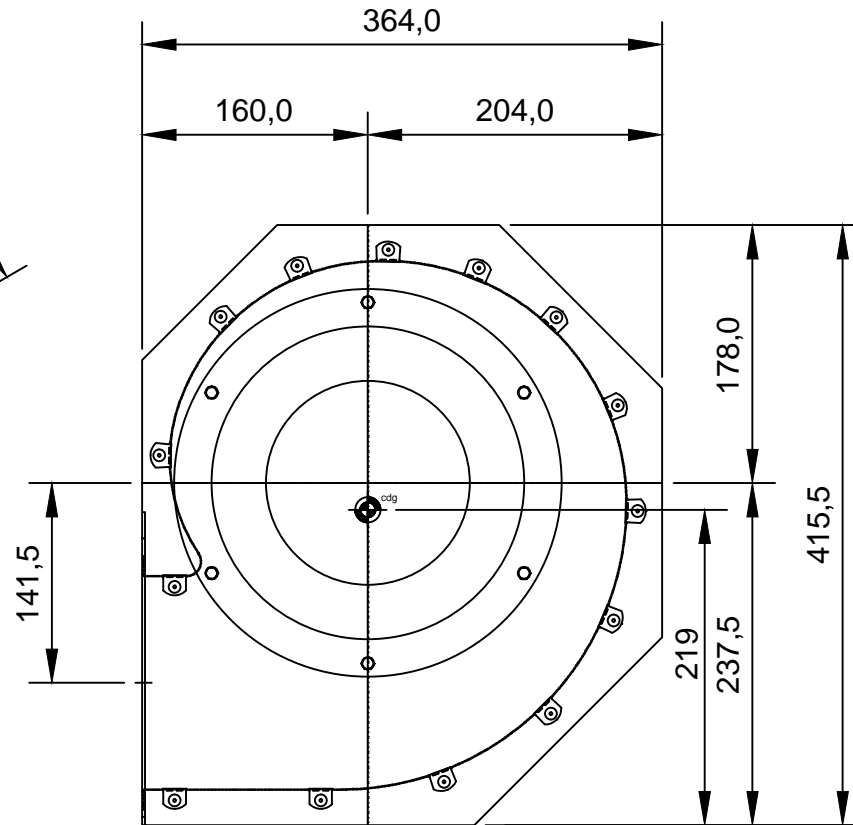
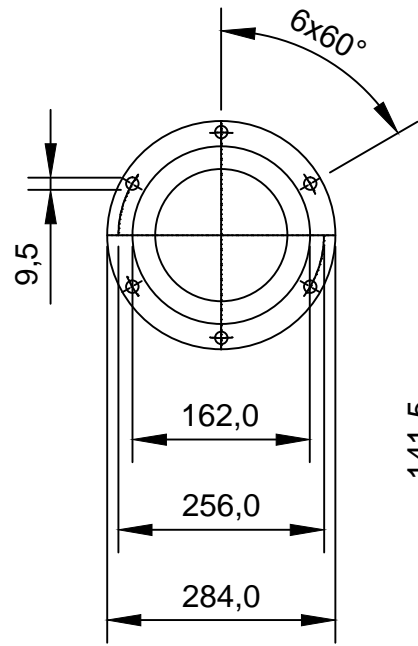
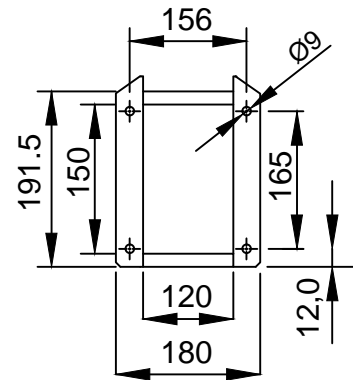
FLEXIBLE CONNECTION: CIRCULAR - CIRCULAR

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C	Updated	08/05/20	JCR	AMF	MRH
B	FOR INFO./COMMENTS	25/10/19	JCR	AMF	MRH
A	FOR INFO./COMMENTS	30/08/19	JCR	AMF	MRH
REV.	DESCRIPTION	DATE	DRAWN	VERIFIED	APPROVED

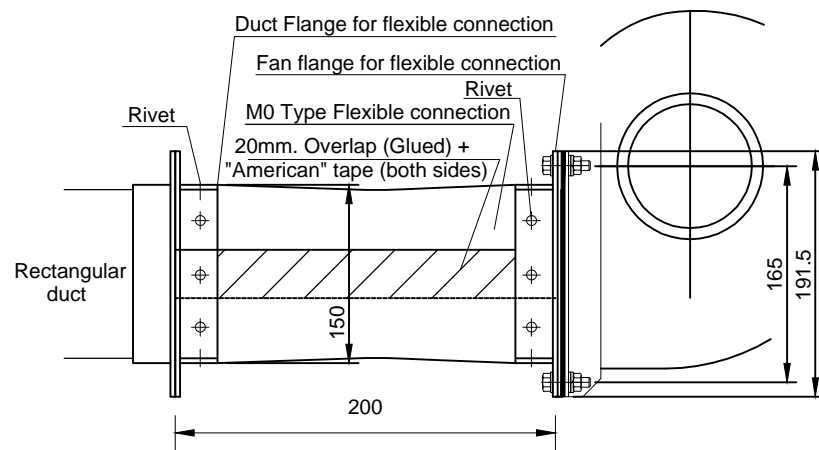
PROJECT:		AVANTE 2200			
DESCRIPTION:		FRIZONIA			
CENTRIFUGAL FANS		DRAWING NUMBER: P-M05462-023			
MODEL CMR-731-2T		SCALE:	FORMAT:	SHEET:	
		NTS	A3	02/11	

TAG	OPERATION	MODEL	SERVICE	ACCESSORY FAN DISCHARGE SIDE	ACCESSORY FAN SUCTION SIDE
FAN-VEN01008	SUPPLY	CMR-731-2T (Orientation LG 270)	DECK GEAR STOREROOM LINEN STOREROOM LAUNDRY TRASH COMPACTOR- ROOM	Flexible connection 200 mm Model: discharge CMR-731-2T	Flexible connection 200 mm Model: ACE/400-200 + B-200/CMR-731
FAN-VEN01011	EXHAUST	CMR-731-2T (Orientation LG 270)	GALLEY	Flexible connection 200 mm Model: discharge CMR-731-2T	Flexible connection 200 mm Model: ACE/400-200 + B-200/CMR-731

WEIGHT: 12 Kg
 CENTER OF GRAVITY

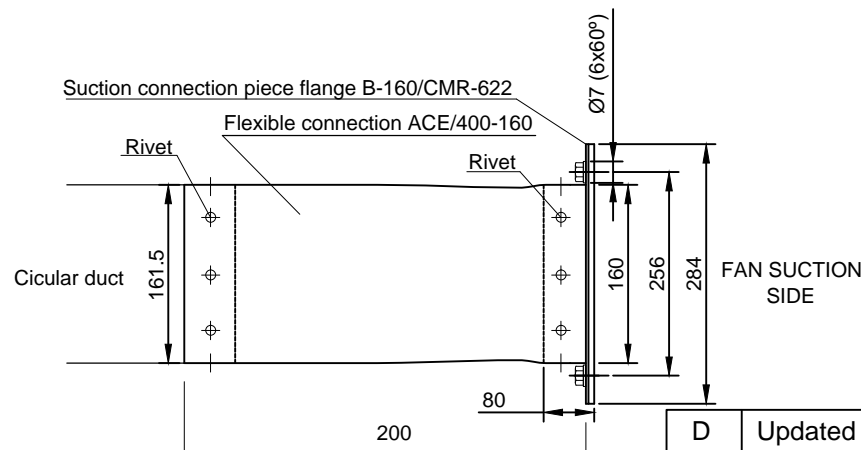


ACCESSORY FAN DISCHARGE SIDE



FLEXIBLE CONNECTION: RECTANGULAR - RECTANGULAR

ACCESSORY FAN SUCTION SIDE



FLEXIBLE CONNECTION: CIRCULAR - CIRCULAR

D	Updated	24/08/20	ATR	AMF	MRH
C	Updated	08/05/20	JCR	AMF	MRH
B	FOR INFO./COMMENTS	25/10/19	JCR	AMF	MRH
A	FOR INFO./COMMENTS	30/08/19	JCR	AMF	MRH
REV.	DESCRIPTION	DATE	DRAWN	VERIFIED	APPROVED

PROJECT:

AVANTE 2200

DESCRIPTION:

CENTRIFUGAL FANS

MODEL CMR-622-2T



DRAWING NUMBER:

P-M05462-023

SCALE:

NTS


FORMAT:

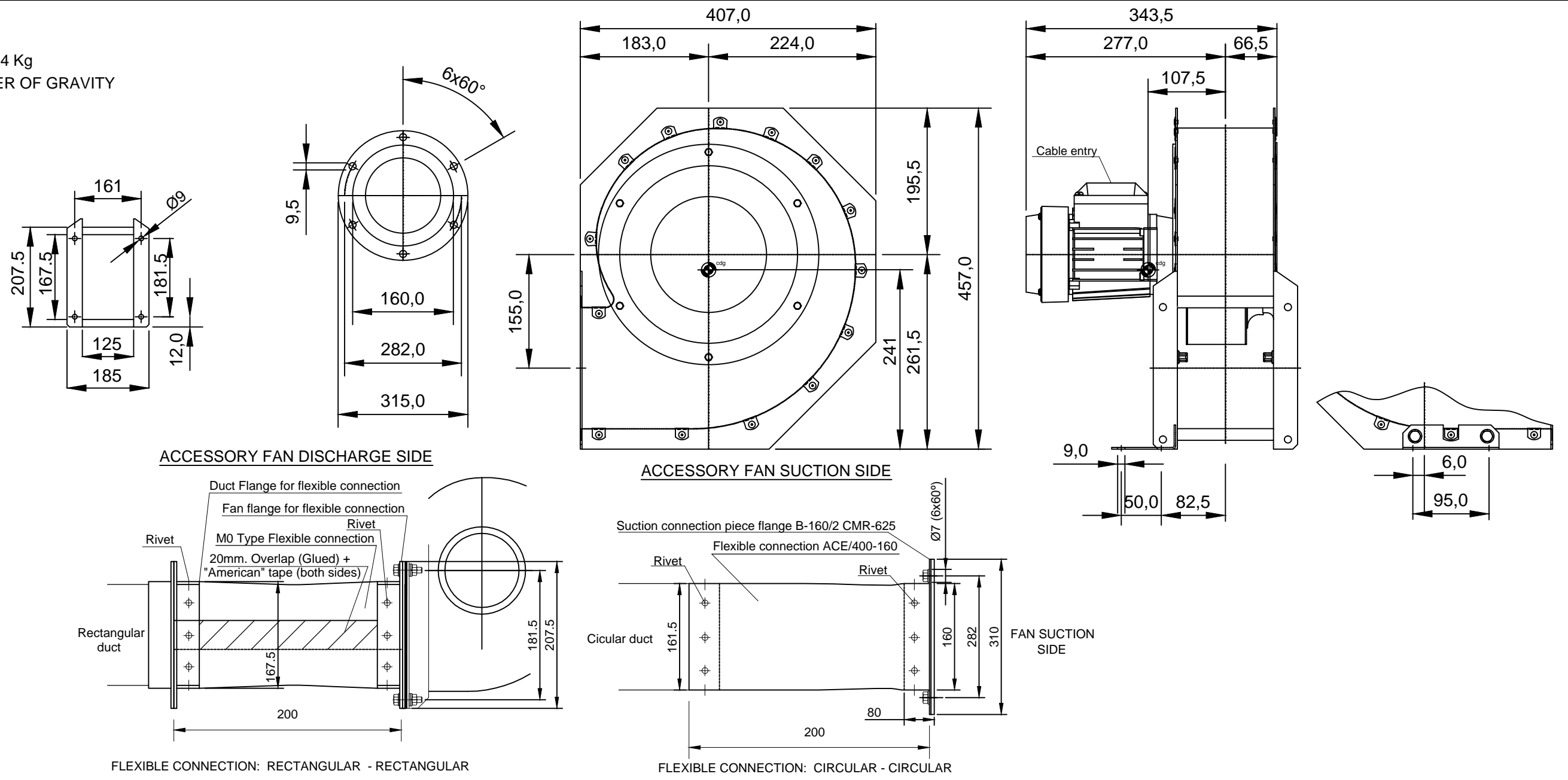
A3


SHEET:

03/11

TAG	OPERATION	MODEL	SERVICE	ACCESSORY FAN DISCHARGE SIDE	ACCESSORY FAN SUCTION SIDE
FAN-VEN01012	SUPPLY	CMR-622-2T SPARK RESISTANT (Orientation LG 270)	SMALL ARMS AMMUNITION MAGAZINE	Flexible connection 200 mm Model: discharge CMR-622-2T	Flexible connection 200 mm Model: ACE/400-160 + B-160/CMR-622
FAN-VEN02016	SUPPLY	CMR-622-2T SPARK RESISTANT (Orientation LG 270)	HELICOPTER AMMUNITION MAGAZINE	Flexible connection 200 mm Model: discharge CMR-622-2T	Flexible connection 200 mm Model: ACE/400-160 + B-160/CMR-622
FAN-VEN02029	SUPPLY	CMR-622-2T (Orientation LG 270)	UCO-ACO02014-15-16	Flexible connection 200 mm Model: discharge CMR-622-2T	Flexible connection 200 mm Model: ACE/400-160 + B-160/CMR-622

WEIGHT: 14 Kg
 CENTER OF GRAVITY



TAG	OPERATION	MODEL	SERVICE	ACCESSORY FAN DISCHARGE SIDE	ACCESSORY FAN SUCTION SIDE
FAN-VEN01023	SUPPLY	CMR-625-2T SPARK RESISTANT (Orientation LG 270)	76/62 mm GUN MACHINERY ROOM 76/62 mm READY USE AMMUNITION MAGAZINE	Flexible connection 200 mm Model: discharge CMR-625-2T	Flexible connection 200 mm Model: ACE/400-160 + B-160/2 CMR-625
FAN-VEN01025	SUPPLY	CMR-625-2T SPARK RESISTANT (Orientation LG 270)	76/62 mm AMMUNITION MAGAZINE ELEVATOR MACHINERY	Flexible connection 200 mm Model: discharge CMR-625-2T	Flexible connection 200 mm Model: ACE/400-160 + B-160/2 CMR-625
FAN-VEN02004	SUPPLY	CMR-625-2T (Orientation LG 270)	UCO-ACO02031 UCO-ACO02022	Flexible connection 200 mm Model: discharge CMR-625-2T	Flexible connection 200 mm Model: ACE/400-160 + B-160/2 CMR-625
FAN-VES01002	SUPPLY	CMR-625-2T (Orientation LG 270)	AUXILIARY MACHINERY ROOM	Free discharge Grille model: CMR-625-2T	Flexible connection 200 mm Model: ACE/400-160 + B-160/2 CMR-625
FAN-VES01019	EXHAUST	CMR-625-2T (Orientation LG 270)	AUXILIARY MACHINERY ROOM	Flexible duct connection Model: ACE/400 DN125 (L=200 mm)	Free suction Grille model: RPA-CMR-625-2T 
FAN-VEN01034	EXHAUST	CMR-625-2T (Orientation LG 270)	NAVIGATION BRIDGE PLATFORM CONTROL ROOM CIC RADIO ROOM	Flexible connection 200 mm Model: discharge CMR-625-2T	Flexible connection 200 mm Model: ACE/400-160 + B-160/2 CMR-625
FAN-VEN01035	EXHAUST	CMR-625-2T (Orientation LG 270)	No1 DAMAGE CONTROL VLS EQUIPMENT ROOM 76/62 mm GUN CONTROL ROOM	Flexible connection 200 mm Model: discharge CMR-625-2T	Flexible connection 200 mm Model: ACE/400-160 + B-160/2 CMR-625


REV.	DESCRIPTION	DATE	DRAWN	VERIFIED	APPROVED
D	Updated	24/08/20	ATR	AMF	MRH
C	Updated	08/05/20	JCR	AMF	MRH
B	FOR INFO./COMMENTS	25/10/19	JCR	AMF	MRH
A	FOR INFO./COMMENTS	30/08/19	JCR	AMF	MRH


PROJECT: **AVANTE 2200**

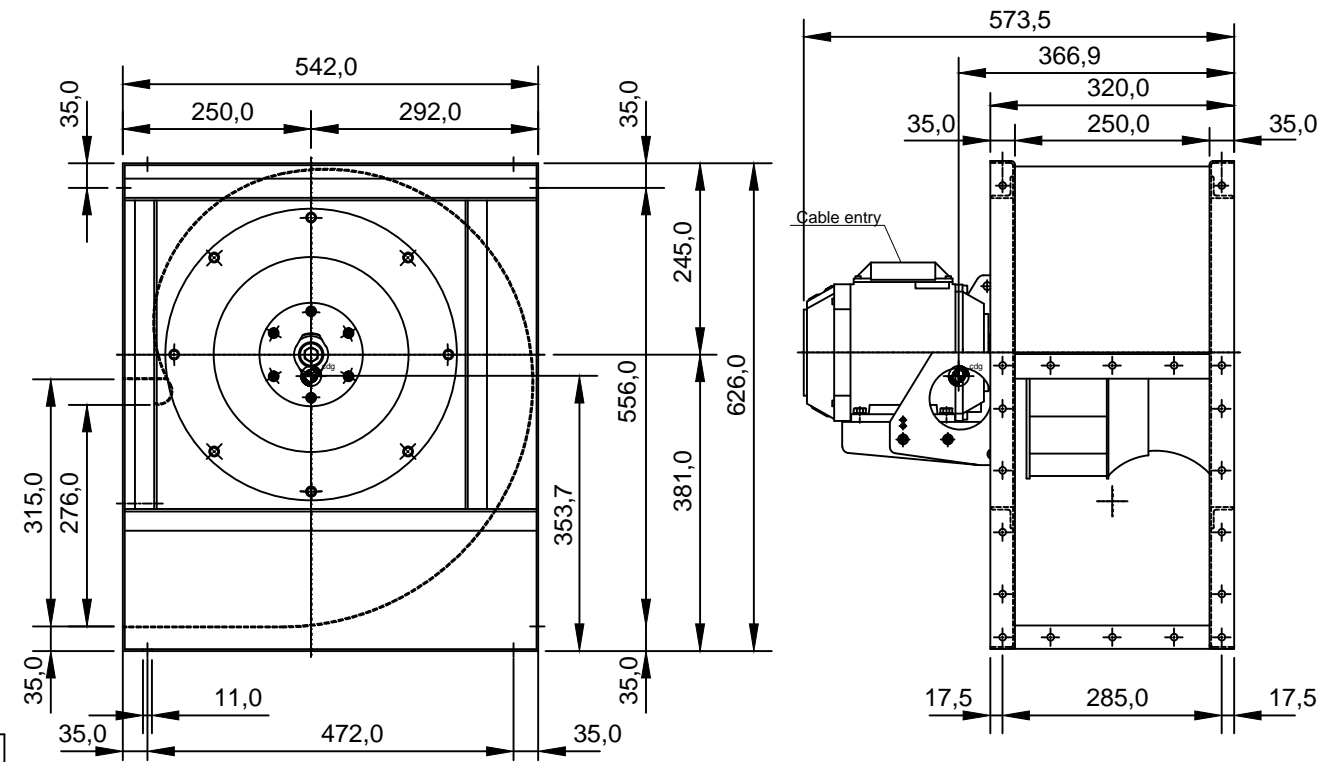
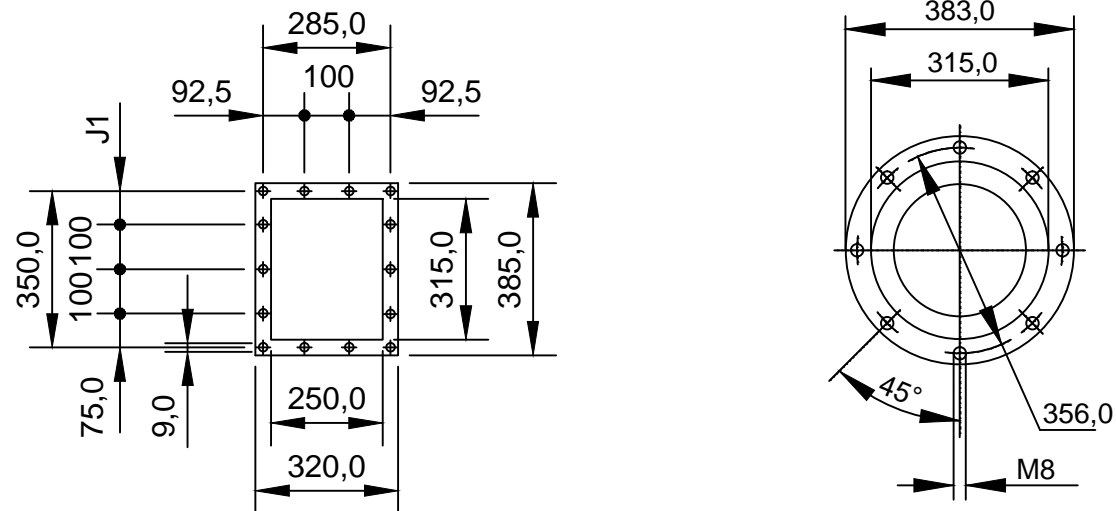
DESCRIPTION: **CENTRIFUGAL FANS
MODEL CMR-625-2T**

DRAWING NUMBER: **P-M05462-023**

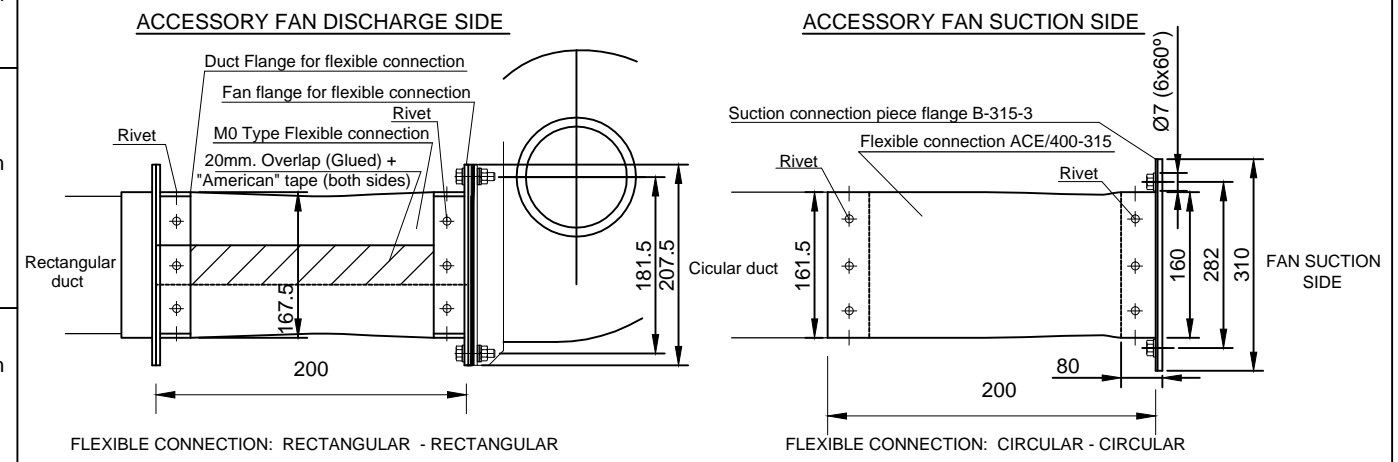
SCALE: **NTS** FORMAT: **A3** SHEET: **04/11**



WEIGHT: 45 Kg
 CENTER OF GRAVITY




TAG	OPERATION	MODEL	SERVICE	ACCESSORY FAN DISCHARGE SIDE	ACCESSORY FAN SUCTION SIDE
FAN-VEN01002	SUPPLY	CMR-1031-2T (Orientation LG 270)	FCO-ACO01007 ; FCO-ACO01006; FCO-ACO01005 ; FAN ROOM N°1	Flexible connection Model: ACE/400 DN160 (L=200 mm)	Flexible connection 300 mm Model: ACE/400-315 + B-315/3
FAN-VEN01003	SUPPLY	CMR-1031-2T (Orientation LG 270)	FCO-ACO01013 ; FCO-ACO01014 UCO-ACO01041 ; UCO-ACO01036 UCO-ACO01007 ; FAN ROOM N°2	Flexible connection 200 mm Model: discharge CMR-1031-2T	Flexible connection 300 mm Model: ACE/400-315 + B-315/3
FAN-VEN01009	EXHAUST	CMR-1031-2T (Orientation LG 270)	N°1 FAN ROOM ; Trush compactor room Linen storeroom ; Pantry Cargo elevator; Laundry (To dryers); Deck gear storeroom; Linen storeroom; Toilet	Flexible connection 200 mm Model: discharge CMR-1031-2T	Flexible connection 300 mm Model: ACE/400-315 + B-315/3
FAN-VEN01015	EXHAUST	CMR-1031-2T (Orientation LG 270)	No. 2 Fan Room ; Toilets; Gymnasium CO Sanitary cabin ; CO Pantry Sanitary Level 02	Flexible connection 200 mm Model: discharge CMR-1031-2T	Flexible connection 300 mm Model: ACE/400-315 + B-315/3
FAN-VEN01028	EXHAUST	CMR-1031-2T (Orientation LG 270)	Toilets ; Toilet Main Deck ; N°1Pantry N°2Pantry ; Dumbwaiter PT/STB	Flexible connection 200 mm Model: discharge CMR-1031-2T	Flexible connection 300 mm Model: ACE/400-315 + B-315/3
FAN-VEN02005	SUPPLY	CMR-1031-2T (Orientation LG 270)	FCO-ACO02003 ; FCO-ACO02004 UCO-ACO02024 ; FAN ROOM N°3 STOREROOM 2nd DECK STARBOARD	Flexible duct connection Model: ACE/400 DN200 (L=200 mm) Model: ACE/400 DN125 (L=200 mm) Model: ACE/400 DN100 (L=200 mm)	Flexible connection 300 mm Model: ACE/400-315 + B-315/3
FAN-VEN02006	EXHAUST	CMR-1031-2T (Orientation LG 270)	N°3 FAN ROOM ; TOILTES STOREROOM SECOND DECK STARB PASSAGE LEVEL 01	Flexible connection 200 mm Model: discharge CMR-1031-2T	Flexible connection 300 mm Model: ACE/400-315 + B-315/3
FAN-VEN02018	SUPPLY	CMR-1031-2T (Orientation LG 270)	Storeroom 2nd deck (Port side) UCO-ACO02012 ; UCO-ACO02026 No. 4 FAN ROOM	Flexible connection 200 mm Model: discharge CMR-1031-2T	Flexible connection 300 mm Model: ACE/400-315 + B-315/3
FAN-VEN02019	EXHAUST	CMR-1031-2T (Orientation LG 270)	N°4 FAN ROOM ; Diving equipment room Storeroom 2nd deck (Port side) PASSAGE LEVEL 01	Flexible connection 200 mm Model: discharge CMR-1031-2T	Flexible connection 300 mm Model: ACE/400-315 + B-315/3



D	Updated	24/08/20	ATR	AMF	MRH
C	Updated	08/05/20	JCR	AMF	MRH
B	FOR INFO./COMMENTS	25/10/19	JCR	AMF	MRH
A	FOR INFO./COMMENTS	30/08/19	JCR	AMF	MRH
REV.	DESCRIPTION	DATE	DRAWN	VERIFIED	APPROVED

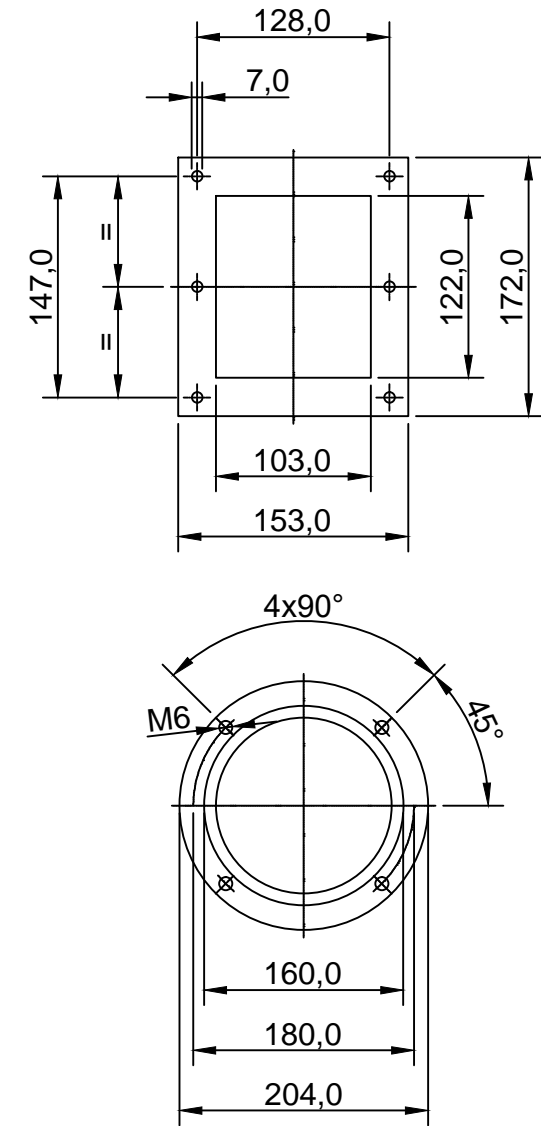
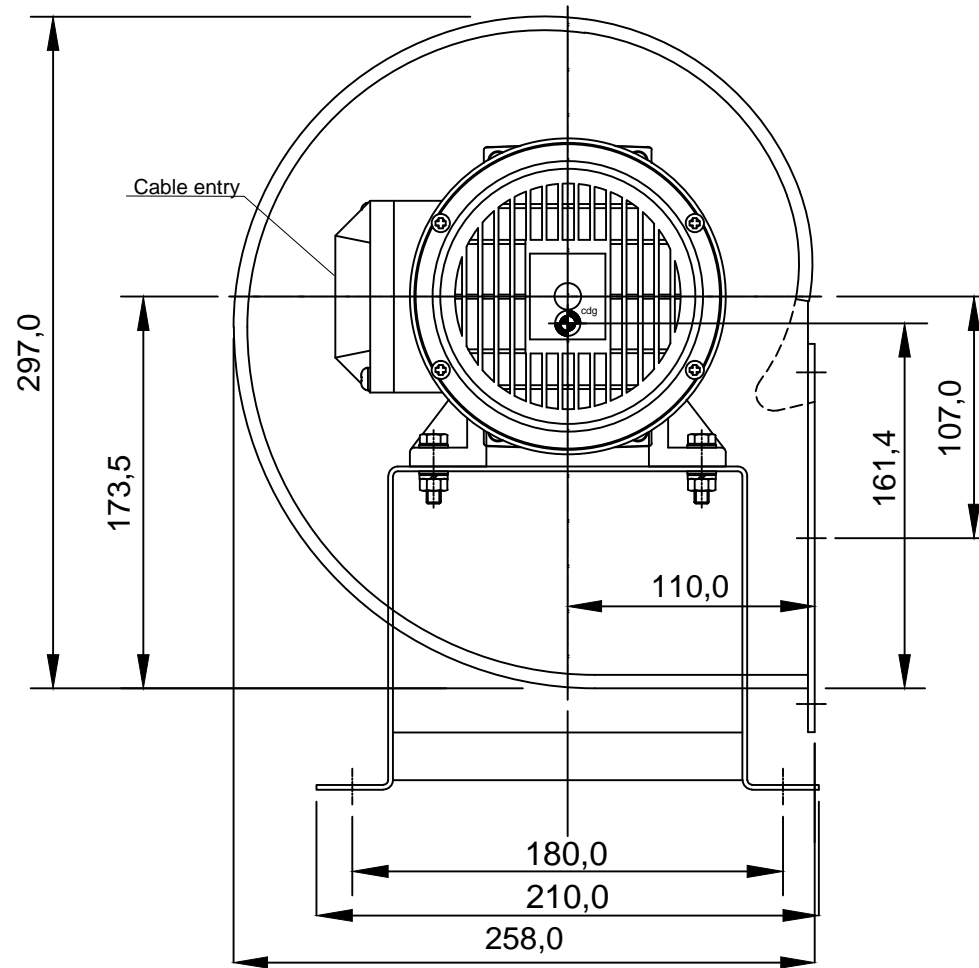
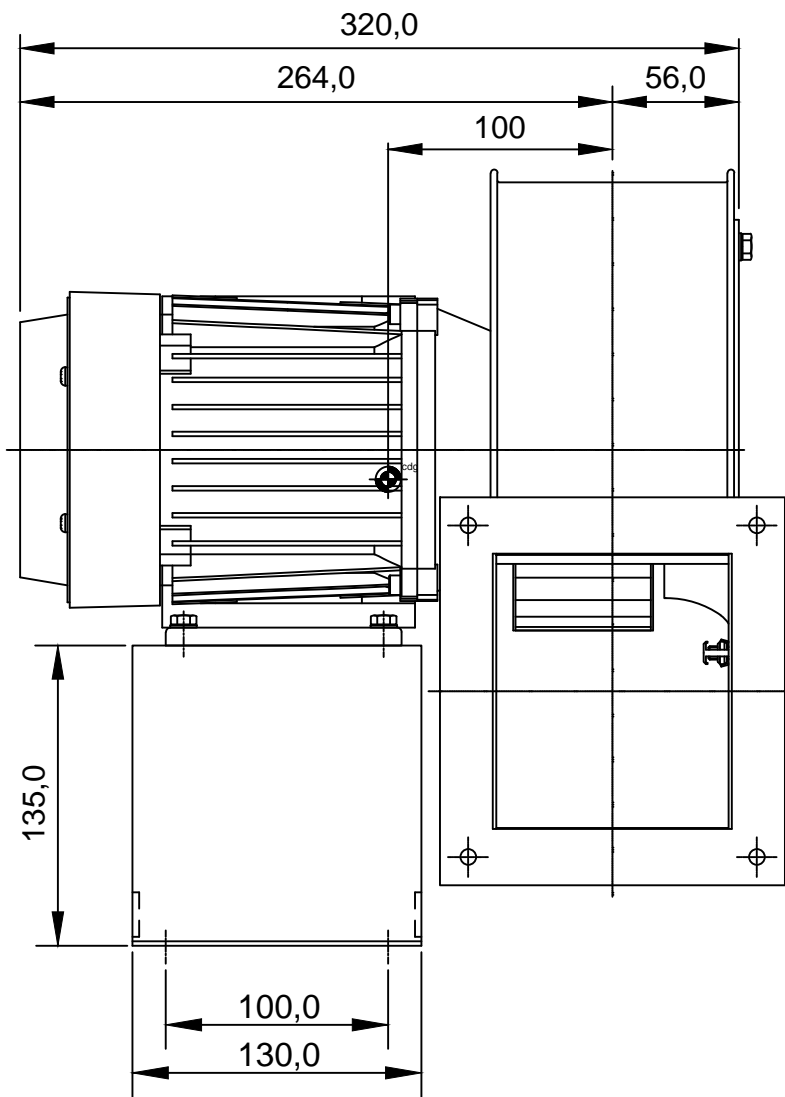
PROJECT:
AVANTE 2200



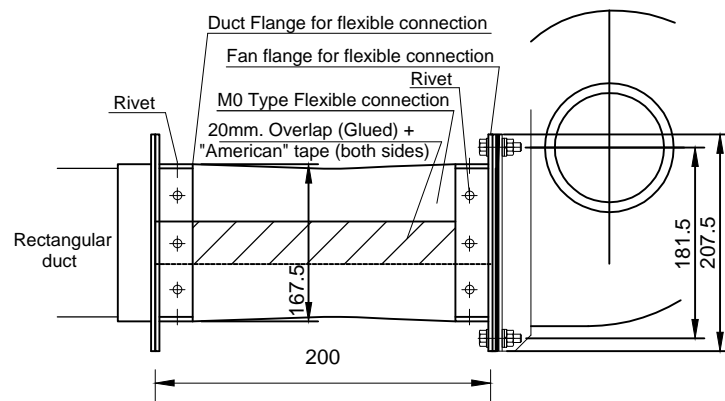
DESCRIPTION:
**CENTRIFUGAL FANS
MODEL CMR-1031-2T**

DRAWING NUMBER:
P-M05462-023

SCALE: **NTS** FORMAT: **A3** SHEET: **05/11**

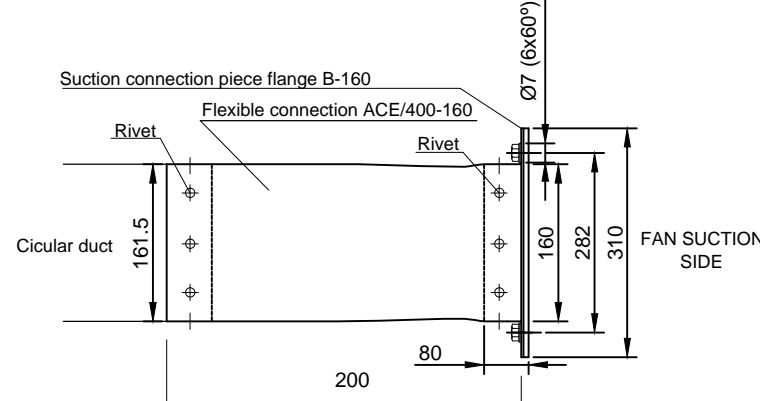


ACCESSORY FAN DISCHARGE SIDE



FLEXIBLE CONNECTION: RECTANGULAR - RECTANGULAR

ACCESSORY FAN SUCTION SIDE



FLEXIBLE CONNECTION: CIRCULAR - CIRCULAR

WEIGHT: 19 Kg
 CENTER OF GRAVITY

D	Updated	24/08/20	ATR	AMF	MRH
C	Updated	08/05/20	JCR	AMF	MRH
B	FOR INFO./COMMENTS	25/10/19	JCR	AMF	MRH
A	FOR INFO./COMMENTS	30/08/19	JCR	AMF	MRH
REV.	DESCRIPTION	DATE	DRAWN	VERIFIED	APPROVED

PROJECT:

AVANTE 2200



DESCRIPTION:

CENTRIFUGAL FANS
 MODEL CMP-616-2T

DRAWING NUMBER:

P-M05462-023

SCALE:

NTS

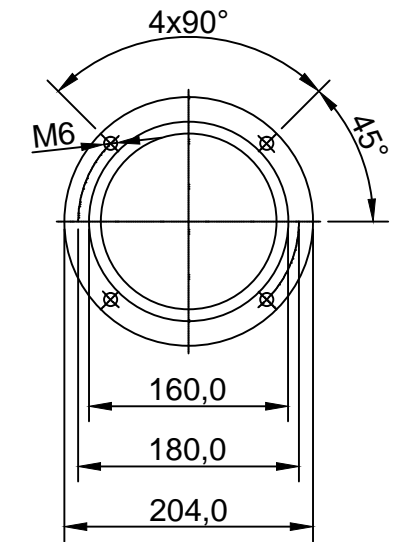
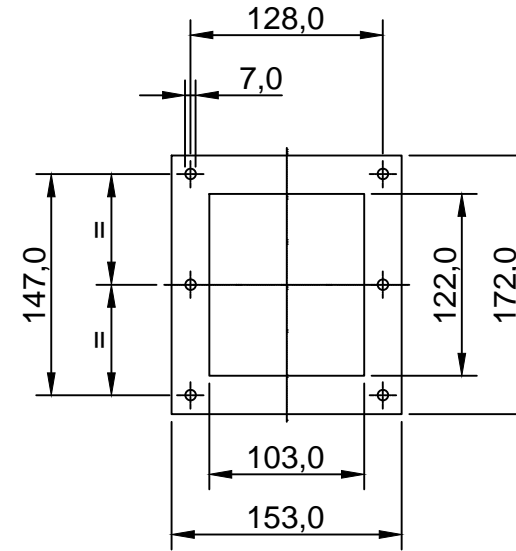
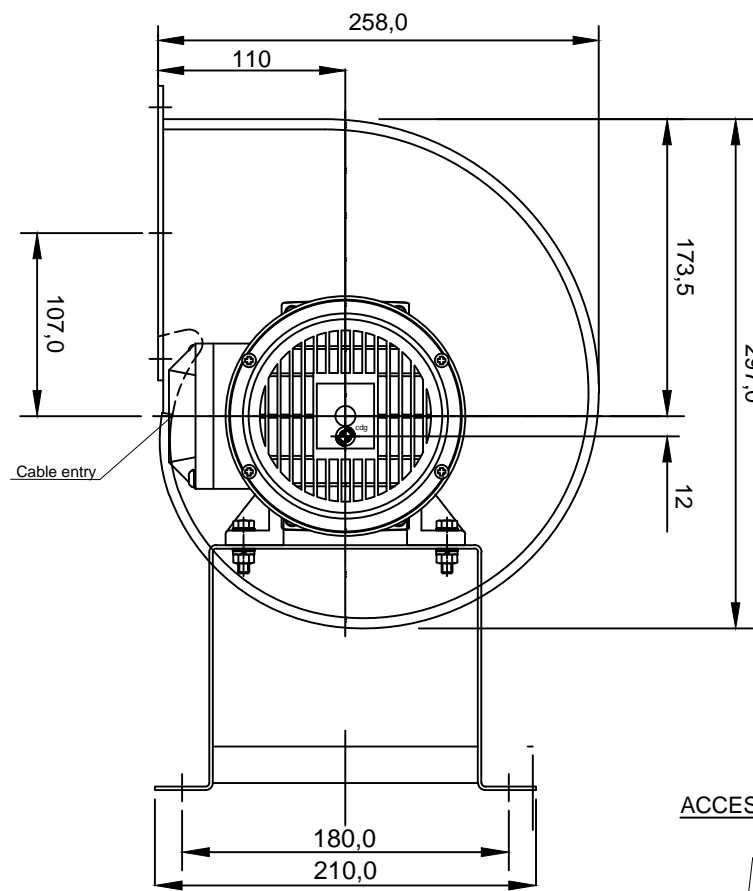
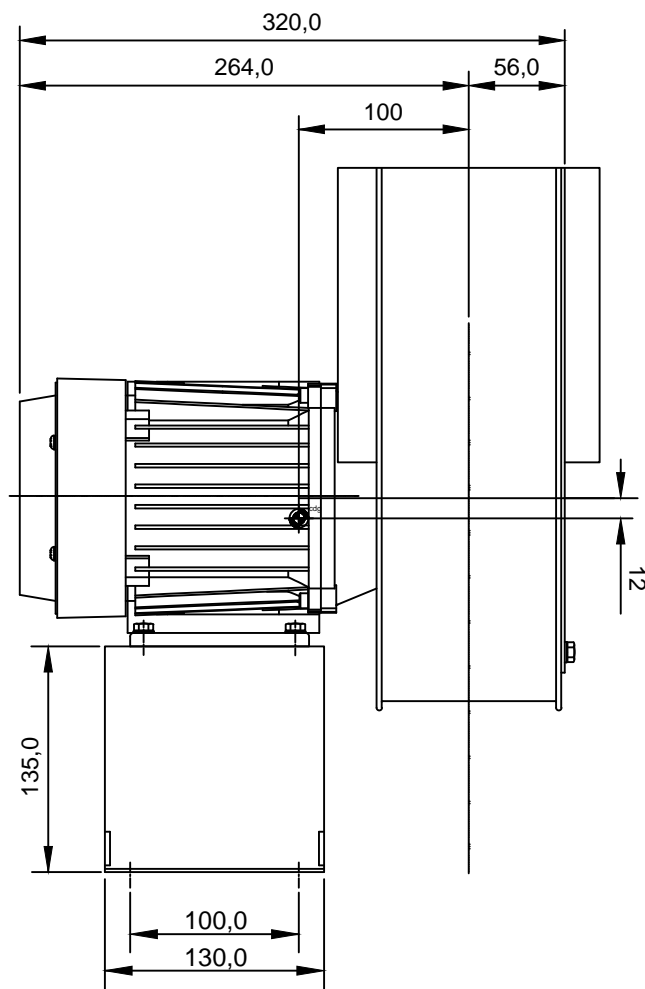
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A3

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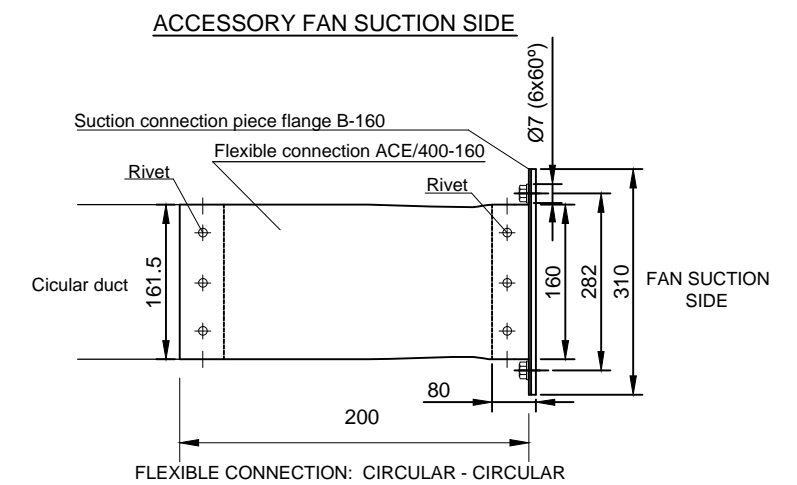
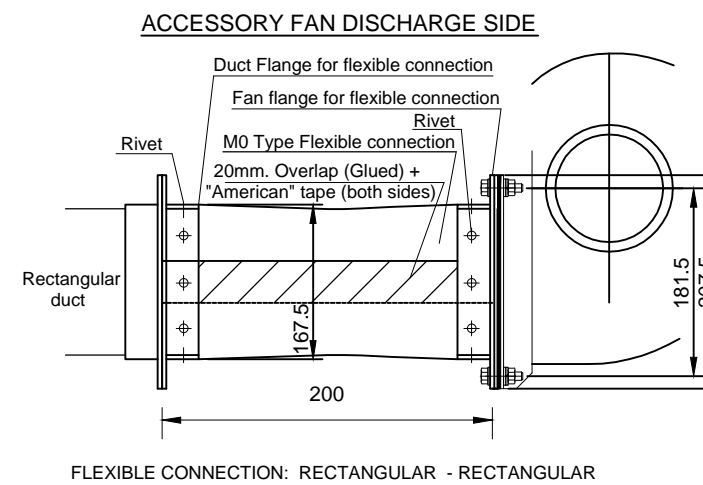
06/11

TAG	OPERATION	MODEL	SERVICE	ACCESSORY FAN DISCHARGE SIDE	ACCESSORY FAN SUCTION SIDE
FAN-VEN01026	EXHAUST	CMP-616-2T ATEX ZONE 2 (Orientation LG 270)	76/62 mm AMMUNITION MAGAZINE AMMUNITION ELEVATOR	Flexible connection 200 mm Model: discharge CMR-616-2T	Flexible connection 200 mm Model: ACE/400-160 + B-160



WEIGHT FAN CMP-616-2T ATEX: 19 Kg
 WEIGHT FAN CMP-616-2T SPARK RESISTANT: 14 Kg
 WEIGHT FAN CMP-616-2T : 14 Kg

CENTER OF GRAVITY

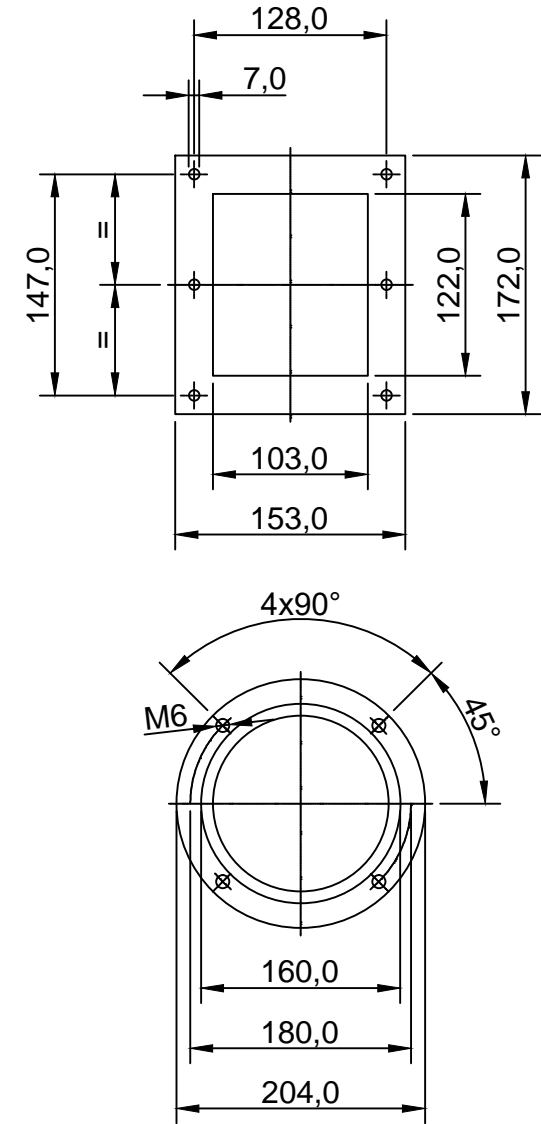
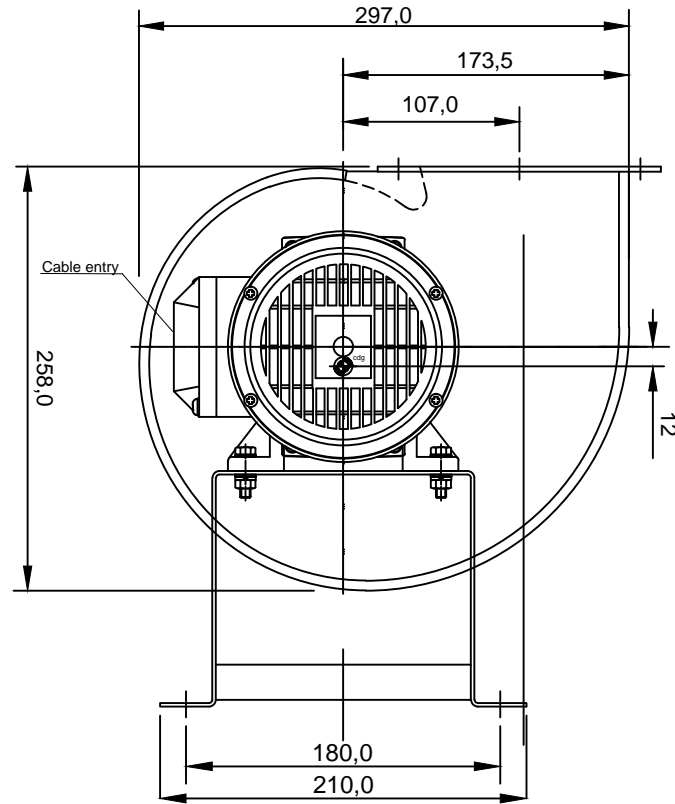
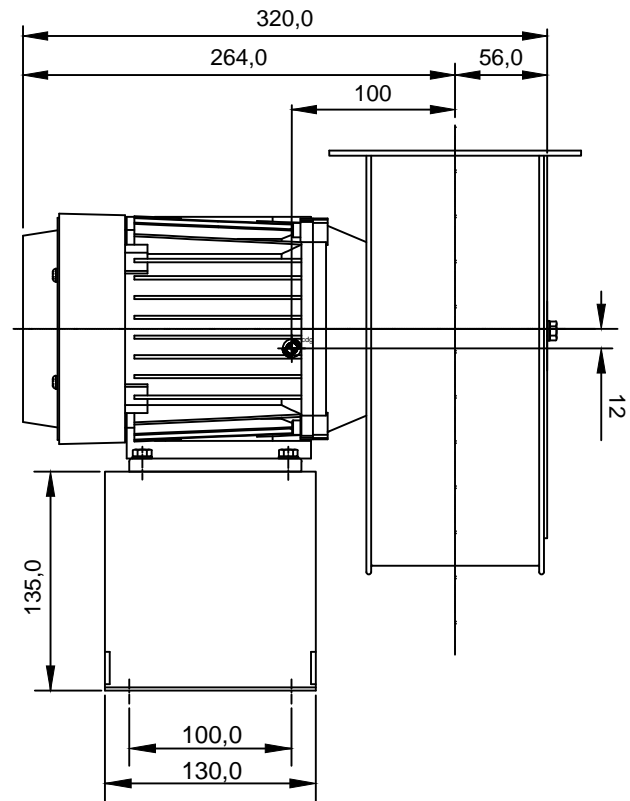


TAG	OPERATION	MODEL	SERVICE	ACCESSORY FAN DISCHARGE SIDE	ACCESSORY FAN SUCTION SIDE
FAN-VEN02017	EXHAUST	CMP-616-2T ATEX ZONE 2 (Orientation LG 90)	HELICOPTER AMMUNITION MAGAZINE	Flexible connection 200 mm Model: discharge CMR-616-2T	Flexible connection 200 mm Model: ACE/400-160 + B-160
FAN-VEN01024	EXHAUST	CMP-616-2T ATEX ZONE 2 (Orientation LG 90)	76/62 mm GUN MACHINERY ROOM 76/62 mm READY USE AMMUNITION MAGAZINE	Flexible connection 200 mm Model: discharge CMR-616-2T	Flexible connection 200 mm Model: ACE/400-160 + B-160
FAN-VEN02030	SUPPLY	CMP-616-2T SPARK RESISTANT (Orientation LG 90)	AMMUNITION MAGAZINE & PYROTECHNICS	Flexible connection 200 mm Model: discharge CMR-616-2T	Flexible connection 200 mm Model: ACE/400-160 + B-160
FAN-VEN02031	EXHAUST	CMP-616-2T ATEX ZONE 2 (Orientation LG 90)	AMMUNITION MAGAZINE & PYROTECHNICS	Flexible connection 200 mm Model: discharge CMR-616-2T	Flexible connection 200 mm Model: ACE/400-160 + B-160
FAN-VEN01032	SUPPLY	CMP-616-2T SPARK RESISTANT (Orientation LG 90)	PAINTS & FLAMMABLE LIQUIDS STOREROOM	Flexible connection 200 mm Model: discharge CMR-616-2T	Flexible connection 200 mm Model: ACE/400-160 + B-160
FAN-VES02020	EXHAUST	CMP-616-2T (Orientation LG 90)	GENERAL WORKSHOP (WELDING AREA)	Flexible connection 200 mm Model: discharge CMR-616-2T	Flexible connection 200 mm Model: ACE/400-160 + B-160

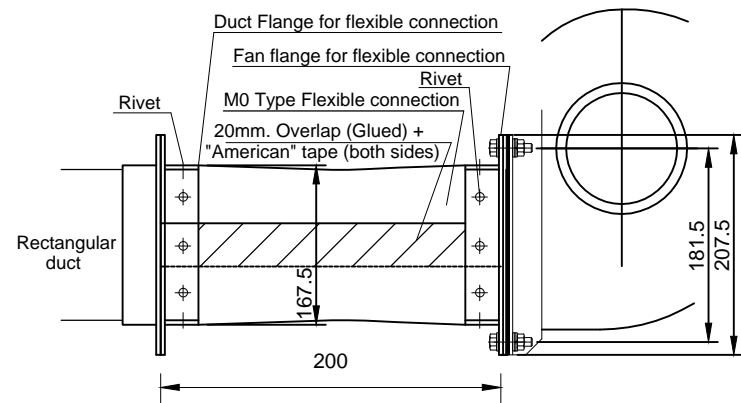
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C	Updated	08/05/20	JCR	AMF	MRH
B	FOR INFO./COMMENTS	25/10/19	JCR	AMF	MRH
A	FOR INFO./COMMENTS	30/08/19	JCR	AMF	MRH
REV.	DESCRIPTION	DATE	DRAWN	VERIFIED	APPROVED

PROJECT:	AVANTE 2200				
DESCRIPTION:	CENTRIFUGAL FANS MODEL CMP-616-2T				
DRAWING NUMBER:	P-M05462-023				
SCALE:	NTS	FORMAT:	A3	SHEET:	07/11



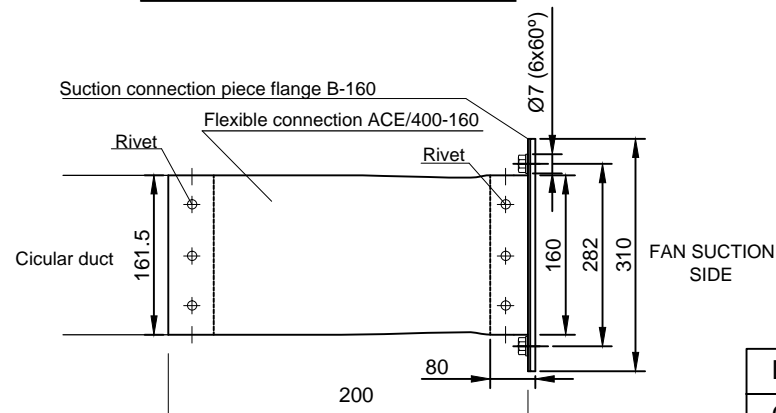


ACCESSORY FAN DISCHARGE SIDE



FLEXIBLE CONNECTION: RECTANGULAR - RECTANGULAR


ACCESSORY FAN SUCTION SIDE




FLEXIBLE CONNECTION: CIRCULAR - CIRCULAR

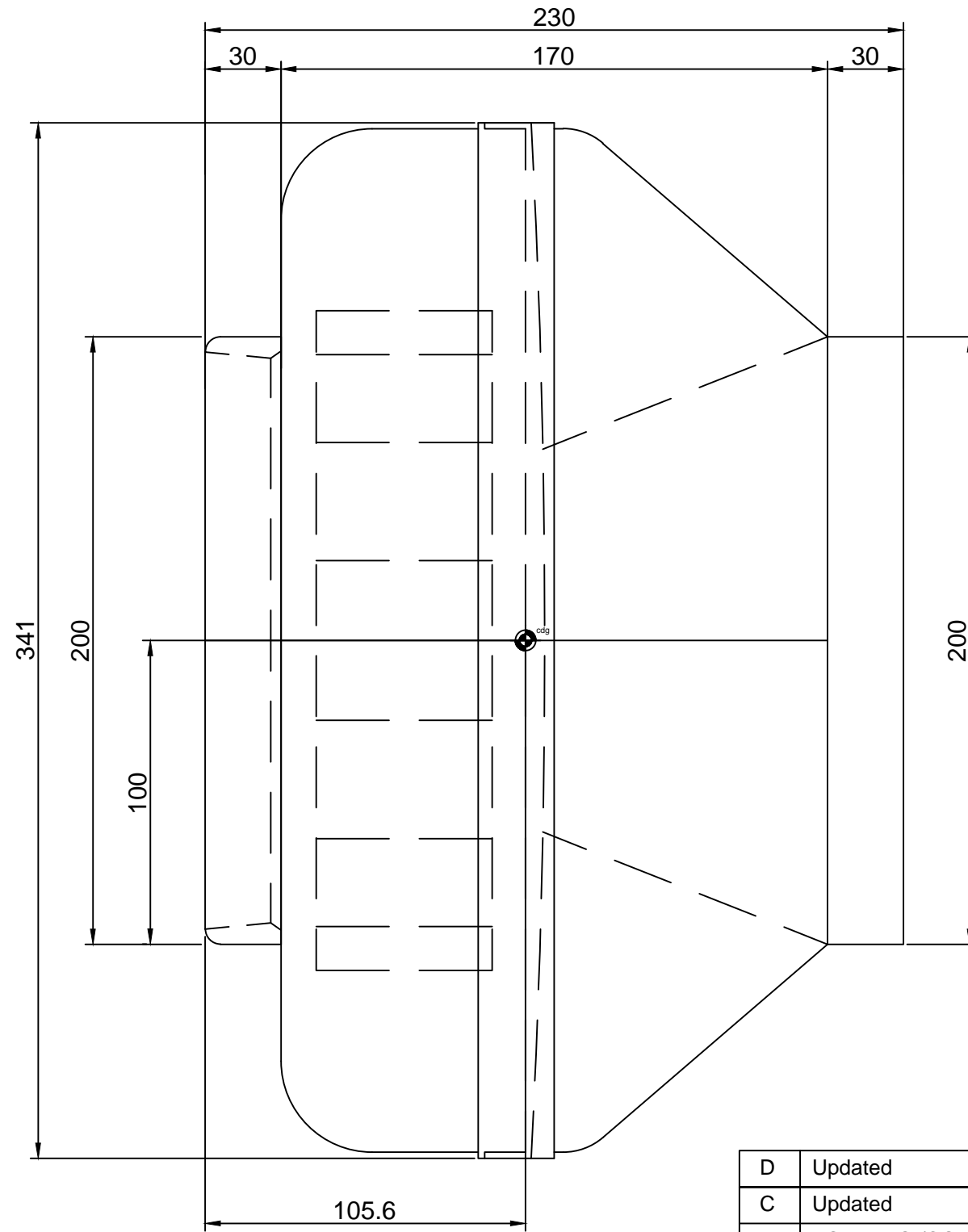
WEIGHT FAN ATEX ZONE 2: 19 Kg
 WEIGHT FAN ATEX ZONE 1: 23 Kg
 ● CENTER OF GRAVITY

D	Updated	24/08/20	ATR	AMF	MRH
C	Updated	08/05/20	JCR	AMF	MRH
B	FOR INFO./COMMENTS	25/10/19	JCR	AMF	MRH
A	FOR INFO./COMMENTS	30/08/19	JCR	AMF	MRH
REV.	DESCRIPTION	DATE	DRAWN	VERIFIED	APPROVED

PROJECT:		 AVANTE 2200			
DESCRIPTION:		DRAWING NUMBER:			
CENTRIFUGAL FANS MODEL CMP-616-2T		P-M05462-023			
SCALE:	FORMAT:	SHEET:			
NTS	A3	08/11			


TAG	OPERATION	MODEL	SERVICE	ACCESSORY FAN DISCHARGE SIDE	ACCESSORY FAN SUCTION SIDE
FAN-VEN01013	EXHAUST	CMP-616-2T ATEX ZONE 2 (Orientation LG 0)	SMALL ARMS AMMUNITION MAGAZINE	Flexible connection 200 mm Model: discharge CMR-616-2T	Flexible connection 200 mm Model: ACE/400-160 + B-160
FAN-VEN01014	EXHAUST	CMP-616-2T ATEX ZONE 1 (Orientation LG 0)	PAINTS & FLAMMABLE LIQUIDS STOREROOM	Flexible connection 200 mm Model: discharge CMR-616-2T	Flexible connection 200 mm Model: ACE/400-160 + B-160

WEIGHT: 4 Kg
 CENTER OF GRAVITY



TAG	OPERATION	MODEL	SERVICE	ACCESSORY
FAN-VEN01007	EXHAUST	R-200	INFIRMARY SANITARY	-
FAN-VEN02033	EXHAUST	R-200	FLIGHT CONTROL STATION N°2 DAMAGE CONTROL STATION	-
FAN-VEN02036	EXHAUST	R-200	STEERING GEAR ROOM	-

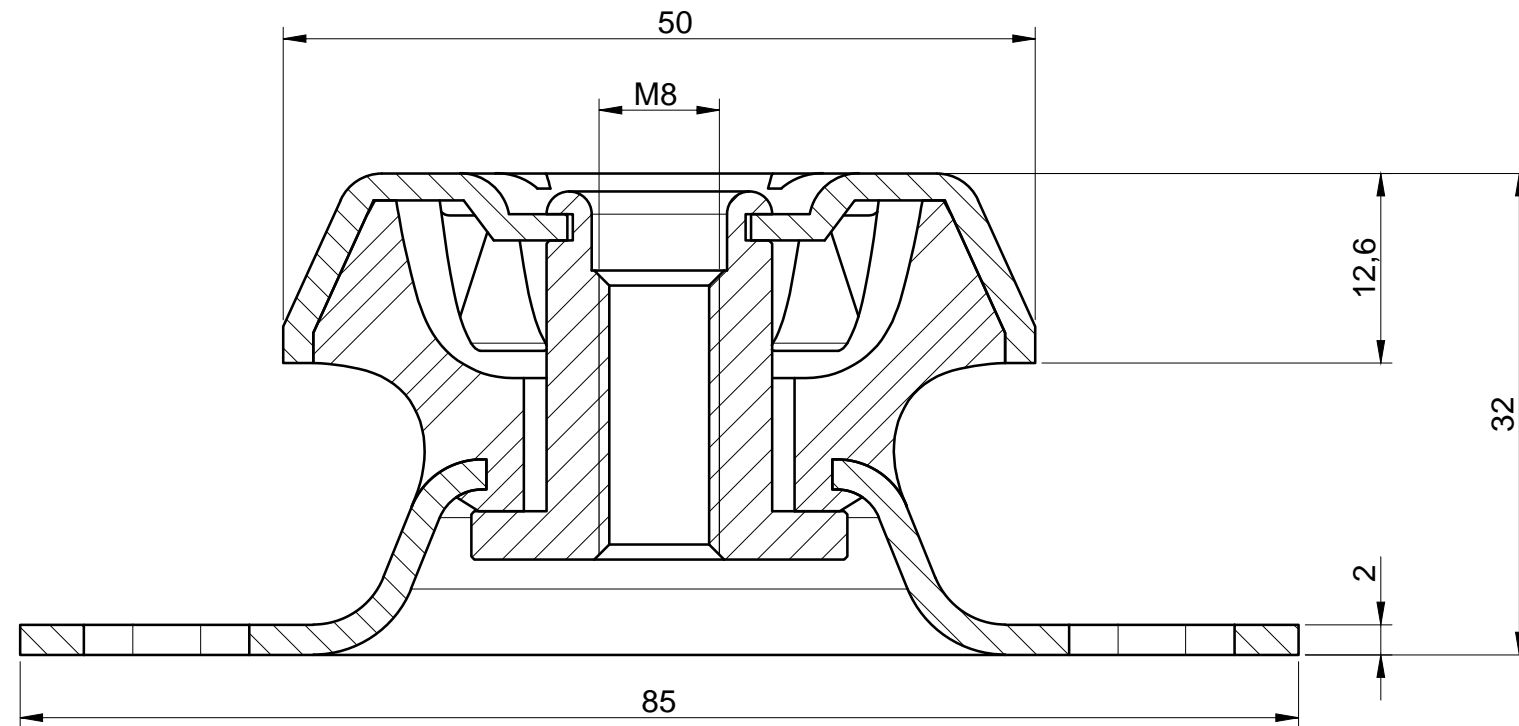
REV.	DESCRIPTION	DATE	DRAWN	VERIFIED	APPROVED
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C	Updated	08/05/20	JCR	AMF	MRH
B	FOR INFO./COMMENTS	25/10/19	JCR	AMF	MRH
A	FOR INFO./COMMENTS	30/08/19	JCR	AMF	MRH

PROJECT:					
AVANTE 2200					
DESCRIPTION:		DRAWING NUMBER:			
CENTRIFUGAL FANS MODEL R-200L		P-M05462-023			
SCALE:	FORMAT:	SHEET:			
NTS	A3	09/11			

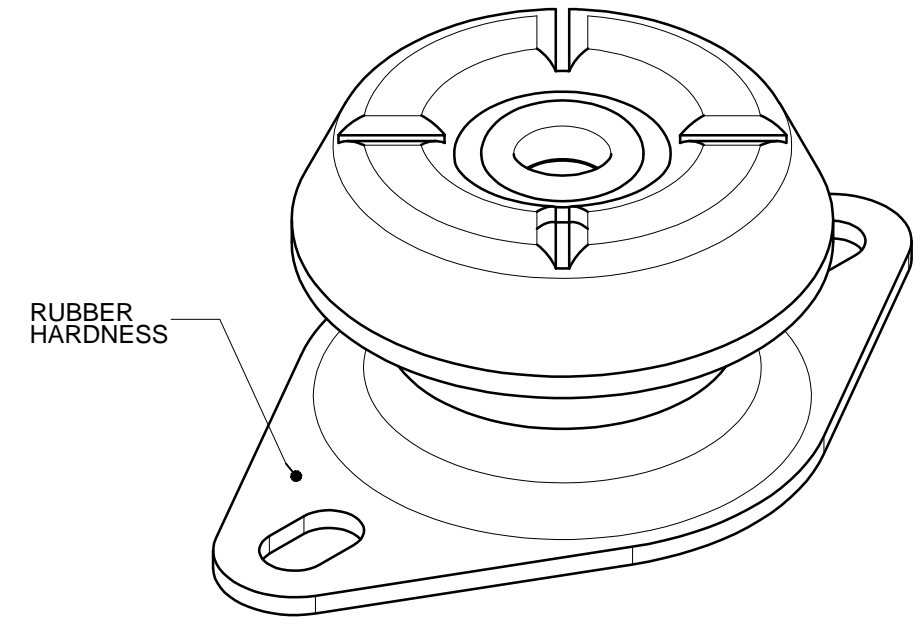
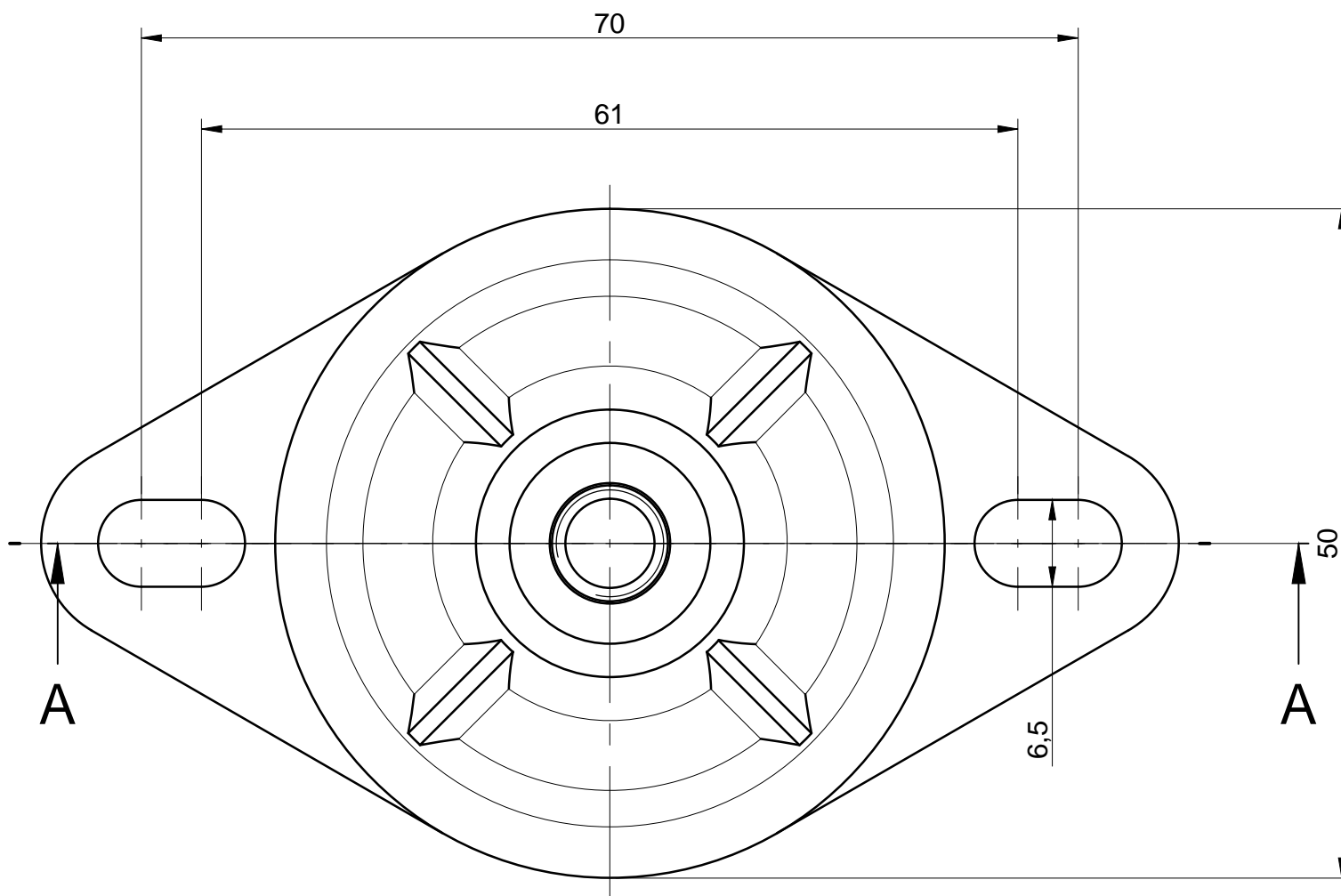
BRB 45 SUPPORTS			
CODE	RUBBER TYPE	HARDNESS	MAX. LOAD (Kg)
135137	NR	40Sh	12
135138	NR	50Sh	18
135139	NR	60Sh	25

GENERAL TOLERANCES TABLE FOR METAL PARTS	LARGER THAN (mm)	0,5	3	6	30	120	400	1000
	UP TO (mm)	3	6	30	120	400	1000	2000
	TOL. (mm)	±0,2	±0,3	±0,5	±0,8	±1,2	±2	±3

TOLERANCES FOR RUBBER AFFECTED DIMENSIONS: ISO 3302 M3



SECTION A-A




ANTIVIBRATION SUPPORT ASSOCIATED TO FANS:

FANS	MARINE SUPPORT CODE
FAN-VEN01001	135139
FAN-VEN01010	135139
FAN-VEN01012	135138
FAN-VEN02016	135138
FAN-VEN02029	135138
FAN-VEN01023	135138
FAN-VEN01025	135138
FAN-VEN02004	135138
FAN-VES01002	135138
FAN-VES01019	135138

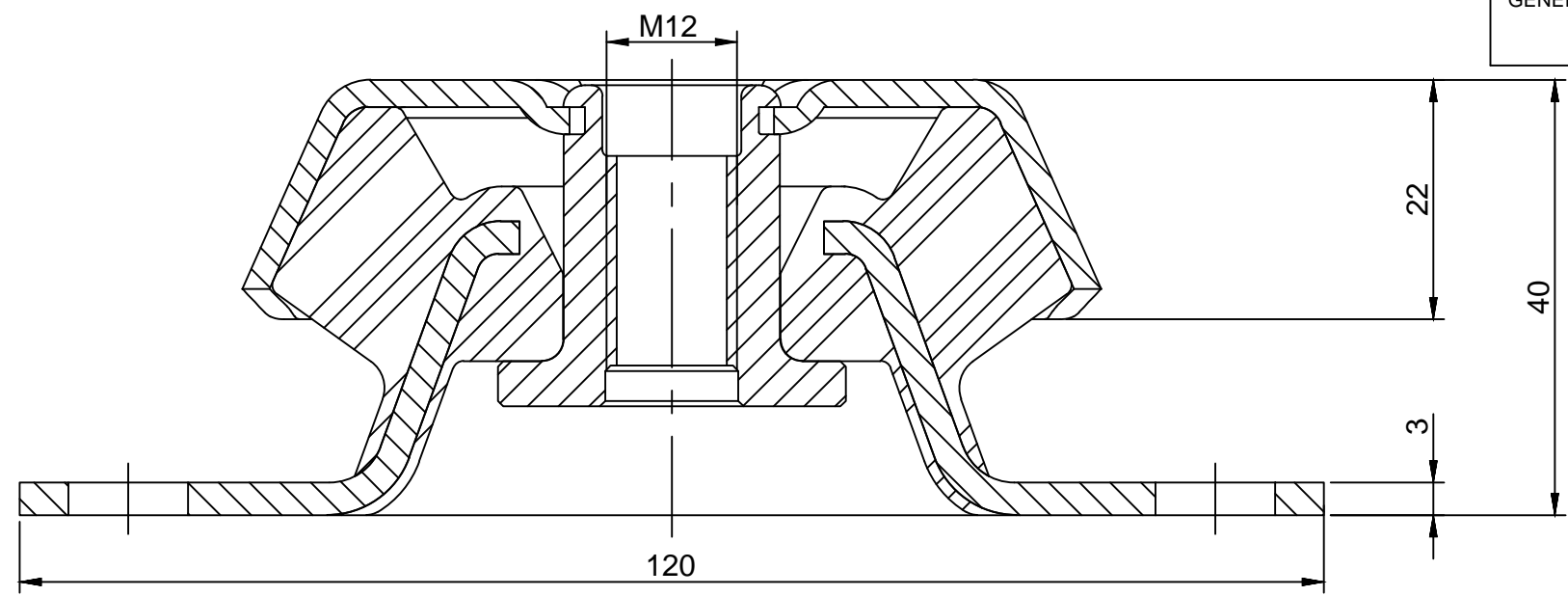
FANS	MARINE SUPPORT CODE
FAN-VEN01014	135139
FAN-VEN01026	135139
FAN-VEN02017	135139
FAN-VEN01024	135139
FAN-VEN02030	135139
FAN-VEN02031	135139
FAN-VEN01013	135139
FAN-VEN01032	135139
FAN-VEN01034	135138
FAN-VEN01035	135138
FAN-VES02020	135139

REV.	DESCRIPTION	DATE	DRAWN	VERIFIED	APPROVED
D	Updated	05/08/20	ATR	AMF	MRH
C	Updated	08/05/20	JCR	AMF	MRH
B	FOR INFO./COMMENTS	25/10/19	JCR	AMF	MRH
A	FOR INFO./COMMENTS	30/08/19	JCR	AMF	MRH

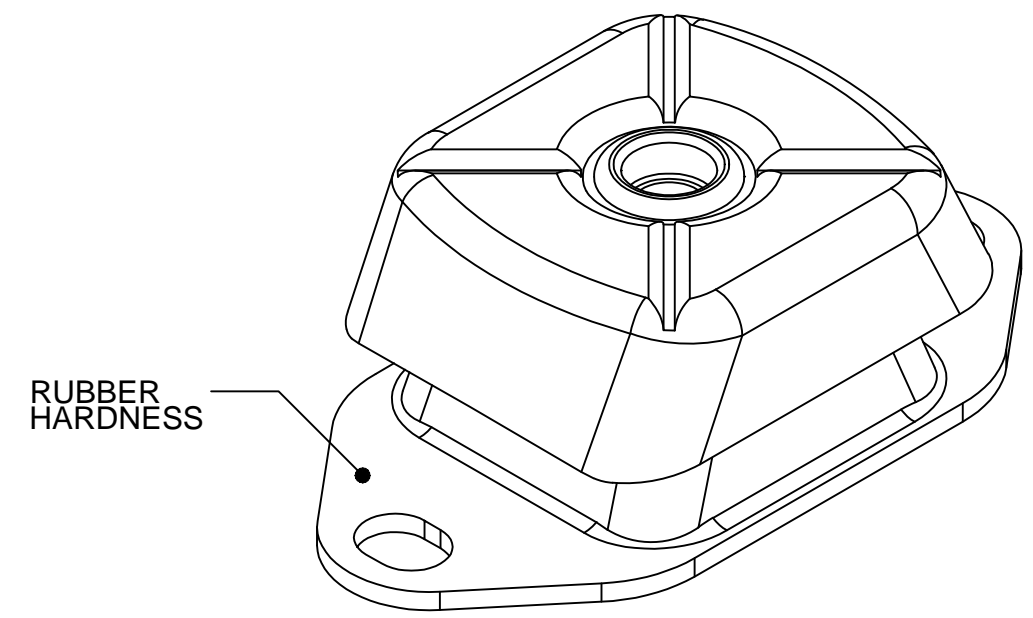
PROJECT:					
AVANTE 2200					
DESCRIPTION:		DRAWING NUMBER:			
CENTRIFUGAL FANS ANTIVIBRATION MARINE SUPPORTS BRB 45		P-M05462-023			
SCALE:	FORMAT:	SHEET:			
NTS	A3	10/11			

GENERAL TOLERANCES TABLE FOR METAL PARTS	LARGER THAN (mm)	0,5	3	6	30	120	400	1000
	UP TO (mm)	3	6	30	120	400	1000	2000
	TOL. (mm)	±0,2	±0,3	±0,5	±0,8	±1,2	±2	±3

TOLERANCES FOR RUBBER AFFECTED DIMENSIONS: ISO 3302 M3



SECTION A-A



MARINE SUPPORTS SMALL			
CODE	RUBBER TYPE	HARDNESS	MAX. LOAD (Kg)
136001	NR	40Sh	35
136002	NR	45Sh	45
136003	NR	55Sh	70
136004	NR	65Sh	95
136005	NR	75Sh	110

NOTE 1:

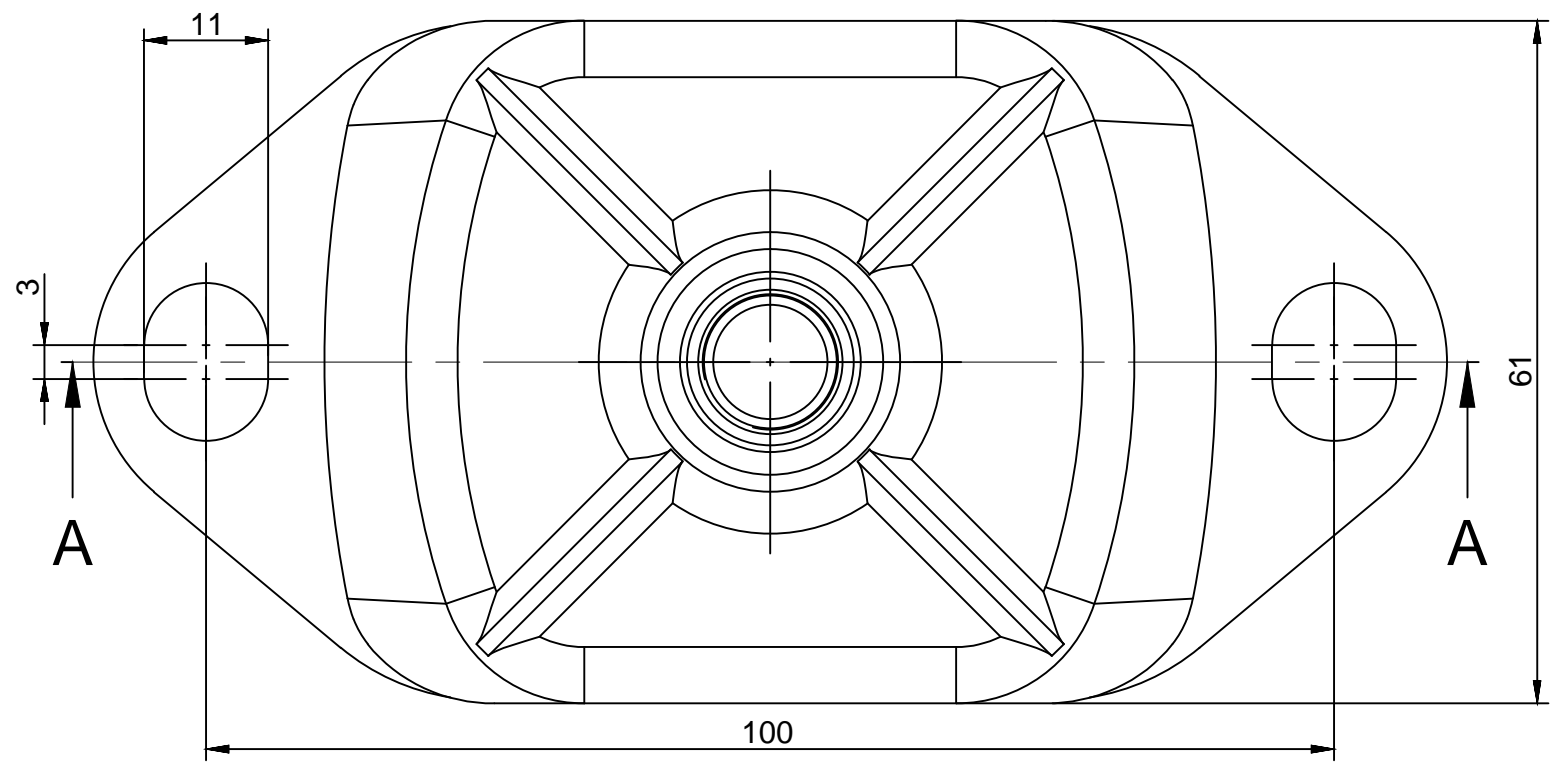
NON-AXISYMMETRIC RADIAL STIFFNESS

$K_x \gg K_y$

NOTE 2:

MAKE SURE THAT THE TOP HOOD DOES NOT ROTATE DURING TIGHTENING OF THE CENTRAL SCREW

MAX. TIGHTENING TORQUE: 55Nm




ANTIVIBRATION SUPPORT ASSOCIATED TO FANS:

FANS	MARINE SUPPORT CODE
FAN-VEN01008	136001
FAN-VEN01011	136001
FAN-VEN01002	136003
FAN-VEN01003	136003
FAN-VEN01009	136003
FAN-VEN01015	136003

FANS	MARINE SUPPORT CODE
FAN-VEN01028	136003
FAN-VEN02005	136003
FAN-VEN02006	136003
FAN-VEN02018	136003
FAN-VEN02019	136003

REV.	DESCRIPTION	DATE	DRAWN	VERIFIED	APPROVED
D	Updated	05/08/20	ATR	AMF	MRH
C	Updated	08/05/20	JCR	AMF	MRH
B	FOR INFO./COMMENTS	25/10/19	JCR	AMF	MRH
A	FOR INFO./COMMENTS	30/08/19	JCR	AMF	MRH

PROJECT: AVANTE 2200



DESCRIPTION: CENTRIFUGAL FANS
ANTIVIBRATION MARINE SUPPORTS SMALL

DRAWING NUMBER: P-M05462-023

SCALE: NTS FORMAT: A3 SHEET: 11/11