

TBX

OIL-FREE CHILLER
WITH TURBOCOR CENTRIFUGAL COMPRESSORS
ON R134a



Air cooled chillers.
Two-stage centrifugal compressor and axial fans.
Cooling capacity from 259 to 861 kW.



TBX Series

TBX series from Aermec. An innovative choice.

In a market demanding more energy efficient machines Aermec distinguishes itself introducing a complete chiller range, fitted with the oil-free centrifugal Turbocor compressor.

With this innovative compressor technology operating on refrigerant R134a, and through careful design and in depth testing inside the climate controlled test chamber at Aermec's Research and Development laboratory, the TBX series emerges with very high energy efficiency at part load and extremely low noise operation.



TECNOLOGIA
ad
**ALTA
EFFICIENZA**

Aermec technology has a heart. Surprisingly efficient.

- Very high energy efficiency (Class A according to Eurovent Certification), particularly at part load through the innovative inverter driven Turbocor compressor
- Maximum reliability with the oil-free system
- Precise temperature control with the electronic expansion valve fitted as standard
- Extremely low noise and vibration free
- Performance guarantee through Eurovent Certification.

-35%

**Primary energy
annual saving**

Compared to traditional
screw compressor chillers

-4dB(A)

**Average noise
level reduction**

Compared to traditional
screw compressor chillers

6A

**Low starting
current**

Typical of Turbocor
compressors

-35%

**Reduction of CO₂
emissions**

Compared to traditional
screw compressor chillers



-80%

**Weight of
Turbocor
compressor**

Compared to a screw
compressors of equal
capacity

The Turbocor compressor characteristics

- The Turbocor compressor has the following characteristics:
- Weight 1/5th of a screw compressor of equal capacity
- Extremely low noise (4 dB(A) less than traditional positive displacement compressors)
- Precise leaving water temperature control
- Extremely low starting current, equivalent to just 6 A
- No lubricating oil
- Magnetic levitation bearings
- Two stage impeller with inlet guide vanes
- Inverter control allowing continuous capacity modulation from 25% to 100%.



The nominal cooling capacity of the TBX series covers the 260-860 kW range. The electronic expansion valve is standard. The greatest energy efficiency is obtained at part load: the TBX series has a 35% better ESEER compared to screw compressor chillers of equal capacity.

Innovation, versatility and savings. Aermec technology. Always a step ahead.

Maximum savings economic/energy

The TBX chiller with Turbocor compressor places itself at the highest level of energy efficiency on the market. The innovative oil-free Turbocor compressor, matched to the flooded evaporator and the electronic expansion valve (standard on all models), and careful design of the refrigerant circuit, has allowed the TBX series to achieve Class A energy efficiency according to the rigid Eurovent parameters, the European certification institution in the HVAC sector.

The inverter technology, applied to the innovative compressor, raises performance for variable loads: the ESEER (seasonal efficiency) is up to 35% better compared to traditional screw compressor chillers on R134a. This translates to significant energy savings, particularly with installations that have high annual operating hours.



Environmental respect

The very high energy efficiency, and use of non-ozone depleting refrigerant R134a, make the TBX series a friend of the environment. R134a is also a thermodynamically high efficiency refrigerant which allows, together with the use of centrifugal compressors, to reduce CO2 emissions. The annual reduction of CO2 emissions compared to traditional screw compressor chillers can be up to 35%.



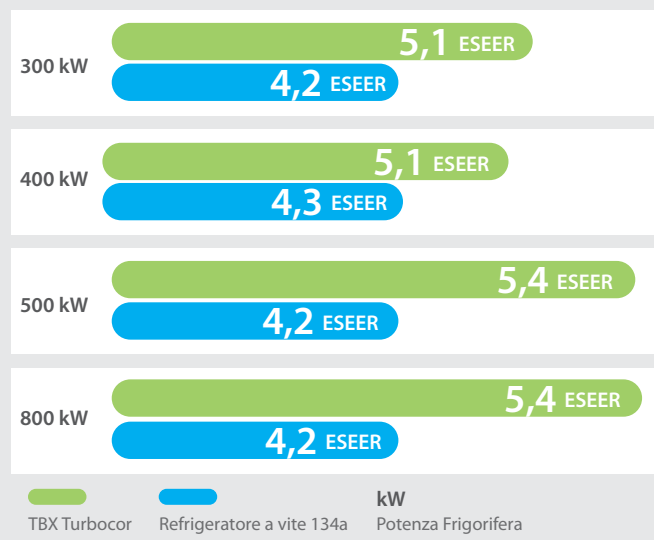
Surprising silence

The Turbocor compressor, beating heart of the Aermec TBX series, is noted for very low sound levels compared to traditional positive displacement compressors (Scroll and Screw). The reason is certainly because of the absence of mechanical contact between various components (the bearings for the drive train are levitating magnetic) and the high rotational speed which gives a steep acoustic curve easily attenuated with an acoustical enclosure (fitted as standard on all units).

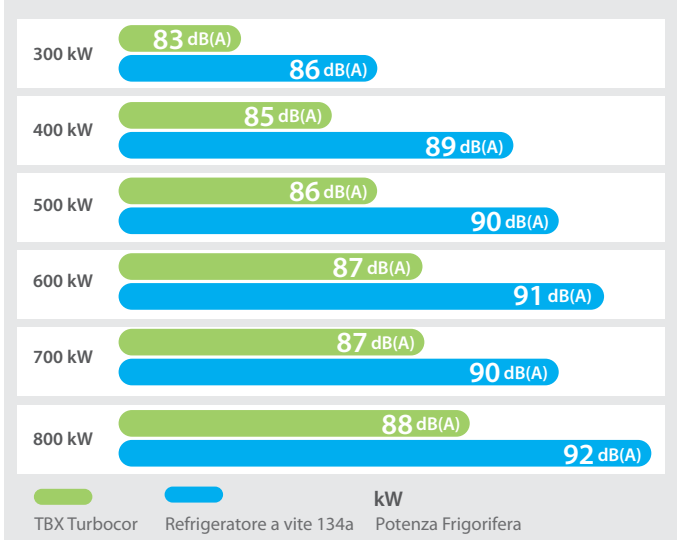
The total lack of vibration then does the rest. The result is surprising: the TBX series has a sound power level on average 4 decibel lower compared to traditional screw compressor chillers.



ESEER (Seasonal energy efficiency)



Sound power dB(A)



+35%

MAXIMUM SEASONAL ENERGY EFFICIENCY: ESEER + 35% compared to traditional screw compressors, through the inverter system and oil-free technology.

-4dB(A)

EXTREMELY LOW NOISE AND VIBRATION FREE, through the Turbocor technology with magnetic levitation bearings.

Technical characteristics

- Available in 12 sizes.
- Cooling only version.
- New generation two-stage oil-free centrifugal compressor with magnetic levitation bearings.
- Refrigerant R134a.
- Exceptional high efficiency at part load (up to 30% higher ESEER compared to standard chillers).
- Electronic expansion valve for precise control.
- Flooded shell and tube evaporator optimised for refrigerant R134a.
- Axial fans for extremely quiet operation.

COMPRESSOR FEATURES:

1. Operates without oil as bearings are magnetic levitation type. Vibration free and very quiet.
2. Provided with inverter technology that permits capacity modulation down to 25%.
3. Integrated controller that reduces starting current to 6 A only.

VERSIONI "O" e "L":

1. Operating limit up to 42 °C external air temperature.

2. Compressor acoustical enclosure for low noise operation.
3. Fan speed control

HIGH EFFICIENCY "A" AND HIGH EFFICIENCY LOW NOISE "E" VERSIONS:

1. Operating limit up to 42 °C external air temperature.
 2. Compressor acoustical enclosure for low noise operation.
 3. EC (Electronically Commutated) fan.
- Evaporator trace heating.
 - Modulating capacity control microprocessor system.
 - LCD user interface: colour touch-screen with simple and intuitive graphical menu.
 - Multilingual display panel.
 - Compact sizes.
 - Metal control panel with anti-corrosion polyester paint.

Accessories

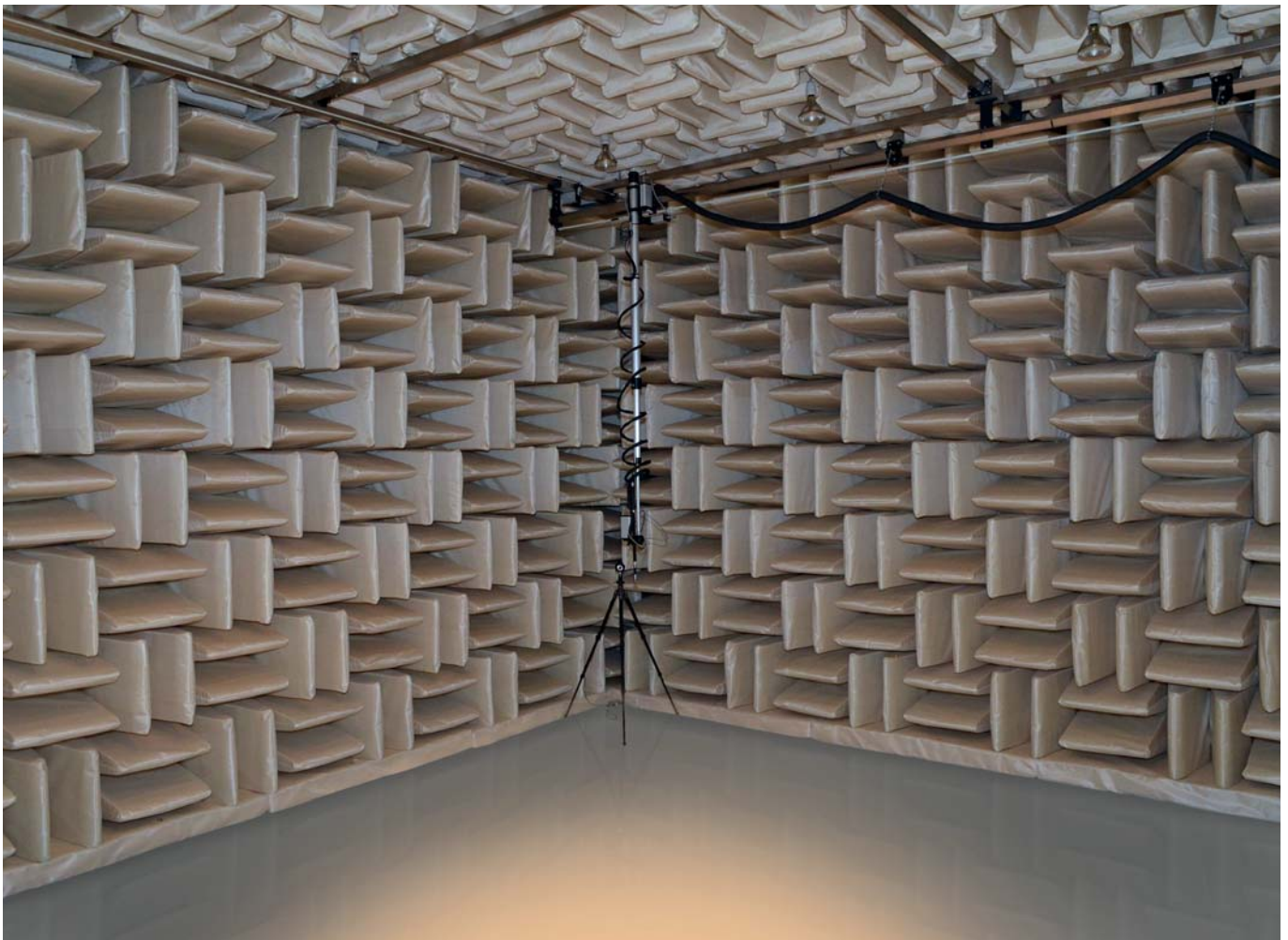
- **AER485P1:** RS-485 interface for supervision systems with MODBUS protocol.
- **AVX:** SSpring anti-vibration mounts. For compatibility of the AVX mounts refer to the technical manual.
- **GP:** Protective grille. Condenser coil external protection against accidental or hail damage. Factory fitted.
- **PTW:** Remote control of the chiller operating functions.

Total comfort. Maximum efficiency. Minimum consumption.

This is Aermec. Italian technology serving your comfort.

Aermec's capacity to remain leader in an evolving market is based on constant research for quality and innovation. A total Italian quality because each unit is designed, developed and tested in the modern and technologically advanced research laboratories of Aermec in Bevilacqua (Verona).

Constant attention to research and the final product quality is also developed through continuous training of specialised personnel and a close collaboration with the most prestigious Italian Universities.



Room for fan coils, split system and small chiller acoustic test.

Technical Data

TBX	u.m	Version	1401	1801	2001	2302	2502	2652	2802	3202*	3502*	3702*	3802*	4102*
Cooling capacity	(kW)	°	287	368,3	407,3	469,3	509,2	545,2	587,2	669,1	736	780,9	815,9	844,8
	(kW)	L	258,8	342,8	392,1	435,7	463,9	518,3	543,2	595	635,3	687,8	742,3	784,6
	(kW)	A	286,8	370,7	415,5	460,4	502,2	538,1	594,1	667,8	739,5	793,3	831,2	861
	(kW)	E	265,2	354,8	406,4	441,2	473,6	532,5	556	614	650,4	707,4	768,4	813,1
Total input power	(kW)	°	91,8	117,2	129,3	149	161,4	173	184,9	212,2	233,3	247,4	258,8	268,2
	(kW)	L	88,9	117,9	134,7	149,6	159,3	177,5	186,2	203,8	217,7	236,3	255	269
	(kW)	A	86	110,9	124,8	138,1	150,4	161,1	177,3	199,7	220,8	237,3	248,4	258,1
	(kW)	E	84,8	113,6	130,2	141,2	152,2	170,3	177	196,9	207,8	226,5	246,1	260,1
Evaporator water flow rate	(l/h)	°	49536	63468	70176	80840	87720	93912	101136	115240	126764	134504	140524	145512
	(l/h)	L	44646	59065	67577	75047	79911	89292	93568	102495	109444	118477	127858	135154
	(l/h)	A	49536	63984	71724	79464	86688	92880	102512	115240	127624	136912	143448	148608
	(l/h)	E	45790	61229	70176	76141	81755	91931	95976	105966	112282	122106	132633	140352
Evaporator pressure drop	kPa	°	36	17	15	15	15	15	14	15	16	17	15	16
	kPa	L	30	15	19	13	15	16	15	15	17	16	16	17
	kPa	A	50	41	43	44	44	44	41	43	45	46	45	48
	kPa	E	44	38	49	40	46	48	46	44	49	47	48	48
EER	(W/W)	°	3,13	3,14	3,15	3,15	3,16	3,15	3,18	3,15	3,15	3,16	3,15	3,15
	(W/W)	L	2,91	2,91	2,91	2,91	2,91	2,92	2,92	2,92	2,92	2,91	2,91	2,92
	(W/W)	A	3,33	3,34	3,33	3,33	3,34	3,34	3,35	3,34	3,35	3,34	3,35	3,34
	(W/W)	E	3,13	3,12	3,12	3,13	3,11	3,13	3,14	3,12	3,13	3,12	3,12	3,13
ESEER	(W/W)	°	4,82	4,92	4,95	5,12	5,14	5,13	5,18	5,14	5,14	5,14	5,15	5,14
	(W/W)	L	4,69	4,77	4,76	4,97	4,97	4,96	5,00	4,97	4,97	4,98	4,97	4,96
	(W/W)	A	5,01	5,06	5,04	5,33	5,35	5,35	5,38	5,37	5,37	5,36	5,37	5,34
	(W/W)	E	4,85	4,89	4,82	5,15	5,13	5,13	5,15	5,16	5,14	5,15	5,15	5,14
Power supply	V/h/Hz		400V/3/50Hz											
Total input current	(A)	°	147	195	216	242	260	280	299	355	389	412	431	447
	(A)	L	144	198	225	244	258	287	308	345	366	396	426	449
	(A)	A	134	179	200	217	235	251	276	322	355	382	399	413
	(A)	E	132	176	209	221	238	265	280	320	337	366	396	417
Maximum input current (FLA)	(A)	°	153	234	240	300	300	306	312	462	468	474	480	480
	(A)	L	153	234	240	300	300	306	312	462	462	468	474	480
	(A)	A	159	242	250	310	310	318	326	476	484	492	500	500
	(A)	E	159	242	250	310	310	318	326	476	476	484	492	500
Maximum starting current (LRA)	(A)	°	24	30	36	126	126	132	138	188	194	200	206	206
	(A)	L	24	30	36	126	126	132	138	188	188	194	200	206
	(A)	A	30	38	46	136	136	144	152	202	210	218	226	226
	(A)	E	30	38	46	136	136	144	152	202	202	210	218	226
Capacity modulation	tipo (%)		stepless 30-100 30-100 30-100 15-100 15-100 15-100 15-100 15-100 15-100 15-100 15-100 15-100 15-100											
Compressor	tipo n°		centrifugal inverter oil-free 1 1 1 2 2 2 2 2 2 2 2 2 2 2											
Refrigerant	tipo n°		R134a 1 1 1 1 1 1 1 1 1 1 1 1 1 1											
Air flow rate	m³/h	°/A	94200	132800	166000	166000	157000	199200	232400	232400	265600	298800	332000	314000
	m³/h	L/E	69720	92960	116200	116200	109900	139440	162680	162680	153860	185920	209160	232400
Fan	tipo	°/L	axial Axial EC (Electronic Commutated)											
	tipo	A/E												
	n°	L/E	6	8	10	10	10	12	14	14	16	18	20	20
	n°	°/A	6	8	10	10	10	12	14	14	14	16	18	20
Evaporator	tipo n°		flooded shell & tube 1 1 1 1 1 1 1 1 1 1 1 1 1 1											
Electric heater	n°/W	Tutte	1/170	1/250	1/250	1/250	1/250	1/250	1/250	1/250	1/250	1/250	1/250	1/250
Maximum external air temperature	°C		42	42	42	42	42	42	42	42	42	42	42	42
Sound power	dB(A)	°/A	88	89	90	90	90	91	92	92	93	93	93	93
	dB(A)	L	83	84	85	85	85	86	87	87	87	88	88	88
	dB(A)	E	81	82	83	83	83	84	85	85	85	86	86	86
Sound pressure	dB(A)	°/A	56	57	58	58	58	58	59	59	60	60	60	60
	dB(A)	L	51	52	53	53	53	53	54	54	54	55	55	55
	dB(A)	E	49	50	51	51	51	51	52	52	52	53	53	53

* Units not Eurovent certified

Data in accordance with EN14511-2:2011

Cooling

Entering water temperature
Leaving water temperature
External air temperature

12°C
7°C
35°C

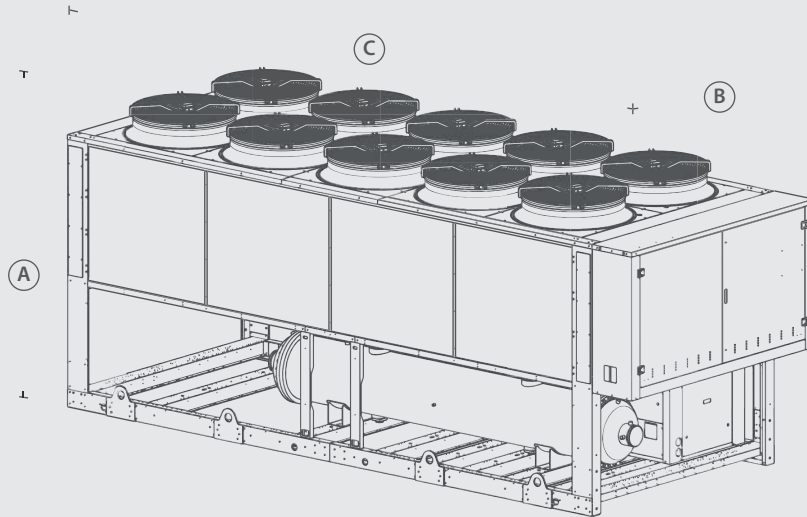
Sound power

Aermec determines the value of sound power on the basis of measurements made in accordance with ISO 9614-2, as required for Eurovent certification.

Sound pressure

Measured in free field over a reflective plane (directivity factor Q=2), at a distance of 10 metres from the outer surface of the unit, in accordance with ISO 3744.

Technical drawing



Dimensions (mm)

TBX	Version	1401	1801	2001	2302	2502	2652	2802	3202	3502	3702	3802	4102
Height A	all	2450	2450	2450	2450	2450	2450	2450	2450	2450	2450	2450	2450
Width B	all	2200	2200	2200	2200	2200	2200	2200	2200	2200	2200	2200	2200
Length C	°A	3780	4770	5750	5750	5750	7160	8150	8150	9140	10120	11100	11100
	L/E	3780	4770	5750	5750	5750	7160	8150	8150	8150	9140	10120	11100

For further information, please refer to the technical booklet available on the website www.aermec.com. The technical data shown in the following documentation are not binding. Aermec reserves the right, at any time, to make any changes necessary to improve the product.

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