

# TBX

OIL-FREE CHILLER  
WITH TURBOCOR CENTRIFUGAL COMPRESSORS  
ON R134a

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

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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.



# 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 CO<sub>2</sub>  
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%.



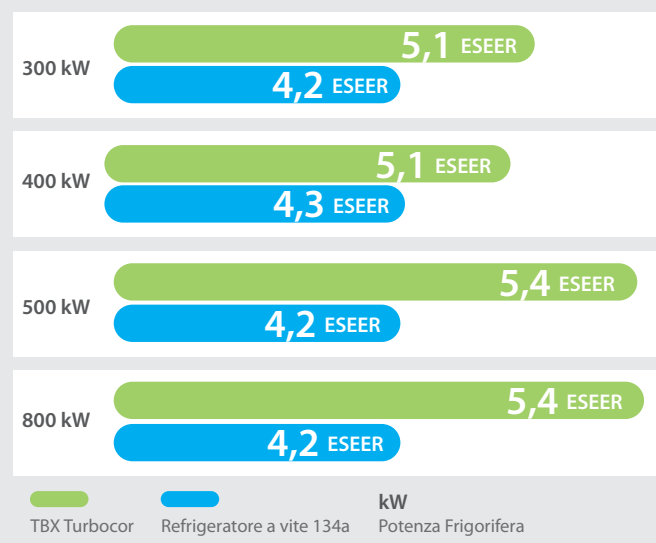
## Surprising silence

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).

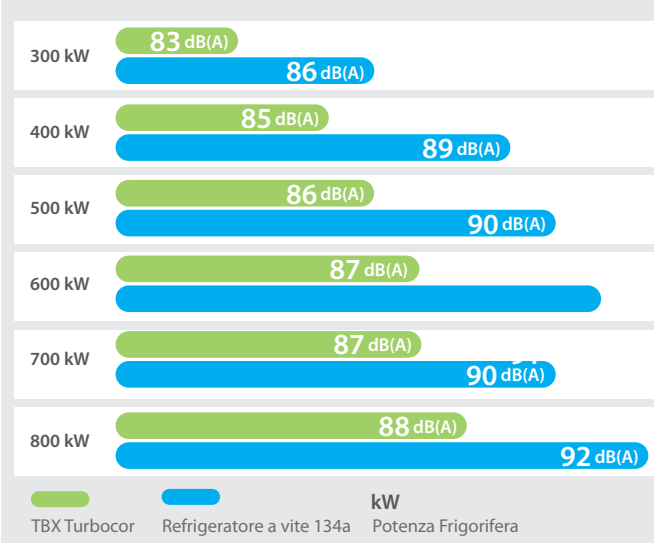
The total lack of vibration then does the rest. The result is surprising: the TBX series has a sound power level on average 4 decibel lower compared to traditional screw compressor chillers.



### 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. Range of operation 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. Range of operation 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:** Spring anti-vibration mounts.
- **GP:** Protective grille. Condenser coil external protection against accidental or hail damage.
- **MULTICHILLER\_TBX:** Control system to switch the individual chillers on and off, and command them, in a system in which several units are installed in parallel, always ensuring a constant delivery to the exchanger.
- **PTW:** Remote control of the chiller operating functions. Factory fitted.



## Technical Data

TBX - °		1401	1801	2001	2302	2502	2652	2802	3202	3502	3702	3802	4102		
		V/ph/Hz													
		400V/3/50Hz													
12°C/7°C	Cooling capacity	(1)	kW	287	368	407	469	509	545	587	669	736	781	816	845
	Total power input	(1)	kW	91,8	117,2	129,3	149	161,4	173	184,9	212,2	233,3	247,4	258,8	268,2
	EER	(1)		3,13	3,14	3,15	3,15	3,16	3,15	3,18	3,15	3,15	3,16	3,15	3,15
	ESEER	(1)		4,82	4,92	4,95	5,12	5,14	5,13	5,18	5,14	5,14	5,14	5,15	5,14
	Cooling Energy Class Eurovent	(1)		A	A	A	A	A	A	A	A	A	A	A	A
	Water flow rate	(1)	l/h	49536	63468	70176	80840	87720	93912	101136	115240	126764	134504	140524	145512
Pressure drop	(1)	kPa	36	17	15	15	15	15	14	15	16	17	15	16	

TBX - L		1401	1801	2001	2302	2502	2652	2802	3202	3502	3702	3802	4102		
		V/ph/Hz													
		400V/3/50Hz													
12°C/7°C	Cooling capacity	(1)	kW	259	343	392	436	464	518	543	595	635	688	742	785
	Total power input	(1)	kW	88,9	117,9	134,7	149,6	159,3	177,5	186,2	203,8	217,7	236,3	255,0	269,0
	EER	(1)		2,91	2,91	2,91	2,91	2,91	2,92	2,92	2,92	2,92	2,91	2,91	2,92
	ESEER	(1)		4,69	4,77	4,76	4,97	4,97	4,96	5,00	4,97	4,97	4,98	4,97	4,96
	Cooling Energy Class Eurovent	(1)		A	A	A	A	A	A	A	A	A	A	A	A
	Water flow rate	(1)	l/h	44646	59065	67577	75047	79911	89292	93568	102495	109444	118477	127858	135154
Pressure drop	(1)	kPa	30	15	19	13	15	16	15	15	17	16	16	17	

TBX - A		1401	1801	2001	2302	2502	2652	2802	3202	3502	3702	3802	4102		
		V/ph/Hz													
		400V/3/50Hz													
12°C/7°C	Cooling capacity	(1)	kW	287	371	416	460	502	538	594	668	740	793	831	861
	Total power input	(1)	kW	86,0	110,9	124,8	138,1	150,4	161,1	177,3	199,7	220,8	237,3	248,4	258,1
	EER	(1)		3,33	3,34	3,33	3,33	3,34	3,34	3,35	3,34	3,35	3,34	3,35	3,34
	ESEER	(1)		5,01	5,06	5,04	5,33	5,35	5,35	5,38	5,37	5,37	5,36	5,37	5,34
	Cooling Energy Class Eurovent	(1)		A	A	A	A	A	A	A	A	A	A	A	A
	Water flow rate	(1)	l/h	49536	63984	71724	79464	86688	92880	102512	115240	127624	136912	143448	148608
Pressure drop	(1)	kPa	50	41	43	44	44	44	41	43	45	46	45	48	

TBX - E		1401	1801	2001	2302	2502	2652	2802	3202	3502	3702	3802	4102		
		V/ph/Hz													
		400V/3/50Hz													
12°C/7°C	Cooling capacity	(1)	kW	265	355	406	441	474	533	556	614	650	707	768	813
	Total power input	(1)	kW	84,8	113,6	130,2	141,2	152,2	170,3	177	196,9	207,8	226,5	246,1	260,1
	EER	(1)		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	(1)		4,85	4,89	4,82	5,15	5,13	5,13	5,15	5,16	5,14	5,15	5,15	5,14
	Cooling Energy Class Eurovent	(1)		A	A	A	A	A	A	A	A	A	A	A	A
	Water flow rate	(1)	l/h	45790	61229	70176	76141	81755	91931	95976	105966	112282	122106	132633	140352
Pressure drop	(1)	kPa	44	38	49	40	46	48	46	44	49	47	48	48	

Date (14511:2013)

(1) Water evaporator 12°C/7°C, External air 35°C

		1401	1801	2001	2302	2502	2652	2802	3202	3502	3702	3802	4102		
<b>Electrical data</b>															
400V	Total input current (cooling)	(3)	A	147	195	216	242	260	280	299	355	389	412	431	447
	Maximum current (FLA)	(3)	A	153	234	240	300	300	306	312	462	474	480	480	480
	Starting current (LRA)	(3)	A	24	30	36	126	126	132	138	188	194	200	206	206
400V	Total input current (cooling)	(3)	A	144	198	225	244	258	287	308	345	366	396	426	449
	Maximum current (FLA)	(3)	A	153	234	240	300	300	306	312	462	462	468	474	480
	Starting current (LRA)	(3)	A	24	30	36	126	126	132	138	188	188	194	200	206
400V	Total input current (cooling)	(3)	A	134	179	200	217	235	251	276	322	355	382	399	413
	Maximum current (FLA)	(3)	A	159	242	250	310	310	318	326	476	484	492	500	500
	Starting current (LRA)	(3)	A	30	38	46	136	136	144	152	202	210	218	226	226
400V	Total input current (cooling)	(3)	A	132	176	209	221	238	265	275	320	337	366	396	417
	Maximum current (FLA)	(3)	A	159	242	250	310	310	318	326	476	476	484	492	500
	Starting current (LRA)	(3)	A	30	38	46	136	136	144	152	202	202	210	218	226

### Centrifugal inverter oil-free Compressor

Compressors / Circuit	n°/n°	1/1	1/1	1/1	2/1	2/1	2/1	2/1	2/1	2/1	2/1	2/1	2/1
Refrigerant	Type	R134a											

### Heat exchanger system side

Exchanger	Type/n°	flooded shell & tube/1											
Electrical heater	n°/W	1/170	1/250	1/250	1/250	1/250	1/250	1/250	1/250	1/250	1/250	1/250	1/250

### Axial fans

Fan	Type/n°	Axial/6	Axial/8	Axial/10	Axial/10	Axial/10	Axial/10	Axial/12	Axial/14	Axial/14	Axial/16	Axial/18	Axial/20	Axial/20
Air flow rate (cooling)	m³/h	94200	132800	166000	166000	157000	199200	232400	232400	265600	298800	332000	314000	
Fan	Type/n°	Axial/6	Axial/8	Axial/10	Axial/10	Axial/10	Axial/10	Axial/12	Axial/14	Axial/14	Axial/14	Axial/16	Axial/18	Axial/20
Air flow rate (cooling)	m³/h	69720	92960	116200	116200	109900	139440	162680	162680	153860	185920	209160	232400	
Fan	Type/n°	Ax.EC/6	Ax.EC/8	Ax.EC/10	Ax.EC/10	Ax.EC/10	Ax.EC/12	Ax.EC/14	Ax.EC/14	Ax.EC/16	Ax.EC/18	Ax.EC/20	Ax.EC/20	
Air flow rate (cooling)	m³/h	94200	132800	166000	166000	157000	199200	232400	232400	265600	298800	332000	314000	
Fan	Type/n°	Ax.EC/6	Ax.EC/8	Ax.EC/10	Ax.EC/10	Ax.EC/10	Ax.EC/12	Ax.EC/14	Ax.EC/14	Ax.EC/14	Ax.EC/16	Ax.EC/18	Ax.EC/20	
Air flow rate (cooling)	m³/h	69720	92960	116200	116200	109900	139440	162680	162680	153860	185920	209160	232400	

### Sound data (cooling)

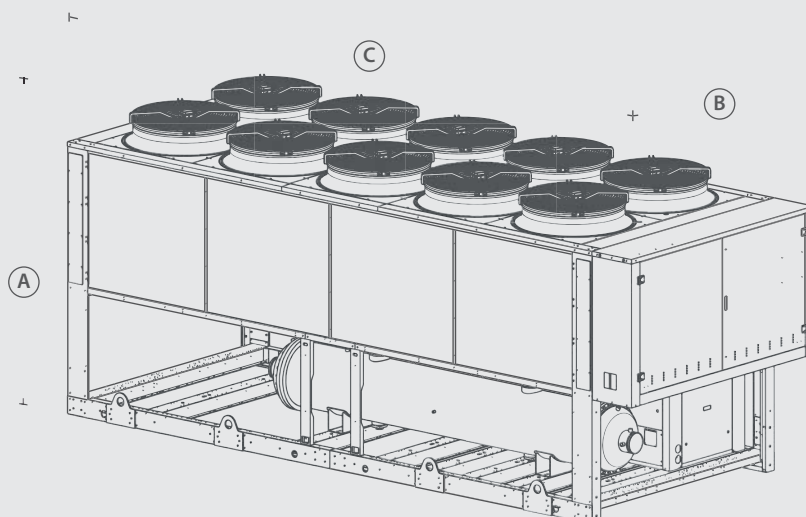
Sound power level	dB(A)	88	89	90	90	90	91	92	92	93	93	93	93
Sound pressure level	dB(A)	56	57	58	58	58	58	59	59	60	60	60	60
Sound power level	dB(A)	83	84	85	85	85	86	87	87	88	88	88	88
Sound pressure level	dB(A)	51	52	53	53	53	53	54	54	55	55	55	55
Sound power level	dB(A)	88	89	90	90	90	91	92	92	93	93	93	93
Sound pressure level	dB(A)	56	57	58	58	58	58	59	59	60	60	60	60
Sound power level	dB(A)	81	82	83	83	83	84	85	85	85	86	86	86
Sound pressure level	dB(A)	49	50	51	51	51	51	52	52	52	53	53	53

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

Sound pressure Sound pressure in free field, at 10 m distance from the external surface of the unit (in accordance with UNI EN ISO 3744).

Note: For more information, refer to the selection program or the technical documentation available on the website [www.aermec.com](http://www.aermec.com)

## Technical drawing



## Dimensions (mm)

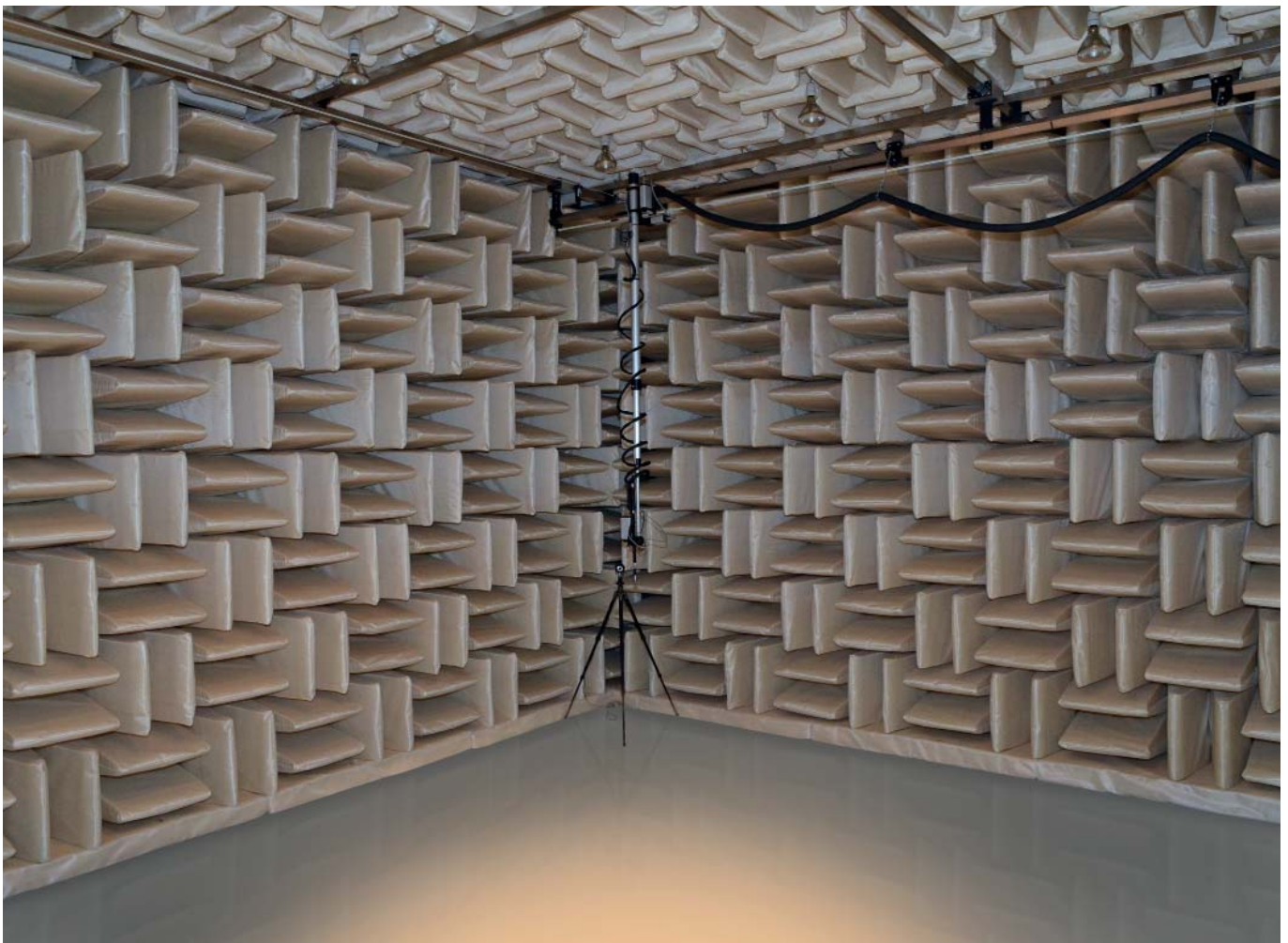
TBX	Version	1401	1801	2001	2302	2502	2652	2802	3202	3502	3702	3802	4102
Height A	all	2450	2450	2450	2450	2450	2450	2450	2450	2450	2450	2450	2450
Width B	all	2200	2200	2200	2200	2200	2200	2200	2200	2200	2200	2200	2200
Length C	°/A	3780	4770	5750	5750	5750	7160	8150	8150	9140	10120	11100	11100
	L/E	3780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



# 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.

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