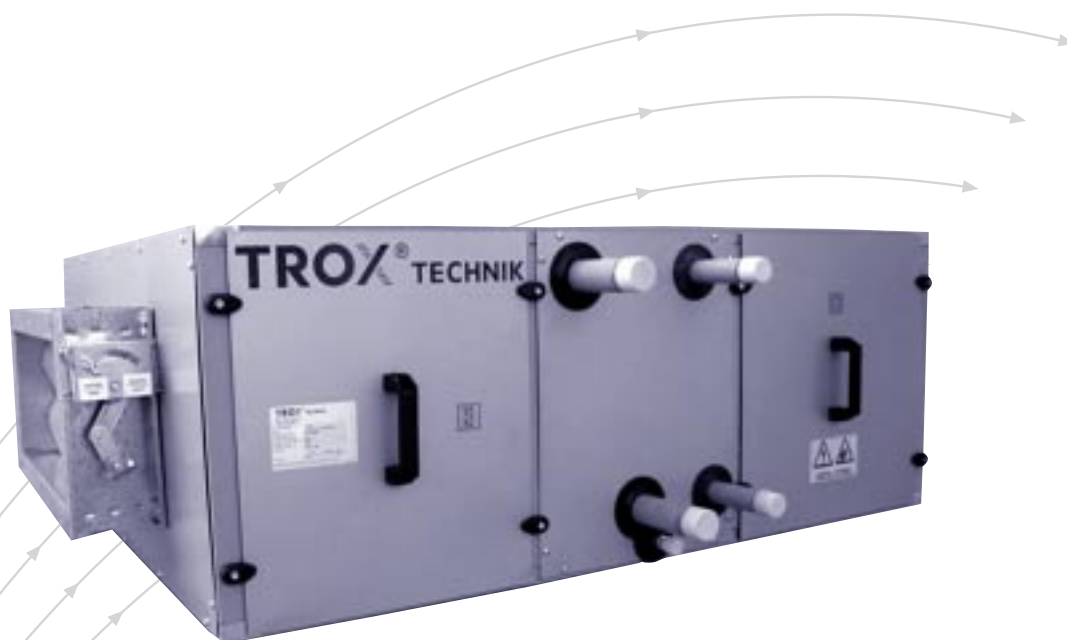


Mini air handling units

Type TBSN



TROX[®] TECHNIK

TROX España, S.A.
Polígono Industrial La Cartuja
E-50720 Zaragoza

Telephone 976/500250
Telefax 976/500904
e-mail trox@trox.es
www.trox.es

Contents · Description

Contents · Description _____	2	Specification · Heating coil features _____	7
Specification · Dimensions · Weights _____	3	Available pressures _____	8
Dimensions · Weights _____	4	Selection example · Technical data _____	9
Specification · Cooling coil features _____	6	Order details _____	10

TBSN External detail



The type TBSN mini air handling units are standard, 475 mm or 325 mm low-height air handling units especially designed for use in low height false ceiling voids.

The frame is made of painted galvanised steel plate with extruded aluminium corners and a perimeter seal.

The sandwich-type casing panels are 25 mm thick, formed by two flat plates with mineral wool insulation infill. These panels are bolted to the frame so that the internal surfaces remain flat for easier unit cleaning.

TBSN Internal detail



The type TBSN mini air handling units consist of double-inlet centrifugal fans with built-in motor (one fan on the types TBSN-25 and TBSN-S9, two fans on the types TBSN-50 and TBSN-S18 and three fans on the type TBSN-S27), heating and/or cooling coils, F702 flat panel filters with a disposable cardboard frame and air inlet section that can be formed by a control damper, an air mixing section with two dampers, a silencer on inlet or a mixing section for return flow and a constant fresh air flow.

The units as an option can be supplied with different types of variable speed drives to adjust the discharge flow, with a controller and equipped for outdoor operations.

Our “SASS” on line design programme is also available on the Internet for the design and selection of our products.

Specification · Dimensions · Weights

Casing

Self-supporting frame made of painted galvanised steel plate with extruded aluminium corners and a perimeter seal. 25 mm sandwich-type panels formed by grey RAL 9006 pre-painted external plates measuring 0.6 mm in thickness and galvanised internal plates measuring 0.5 mm in thickness with mineral wool insulation infill.

The panels are bolted to the frame. Panels that can be removed for inspection and maintenance are secured to the frame using adjustable latches.

Air inlet section

The following configurations can be selected depending on installation requirements:

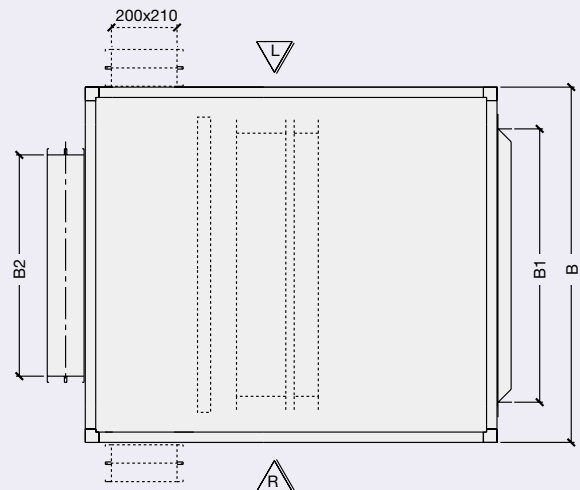
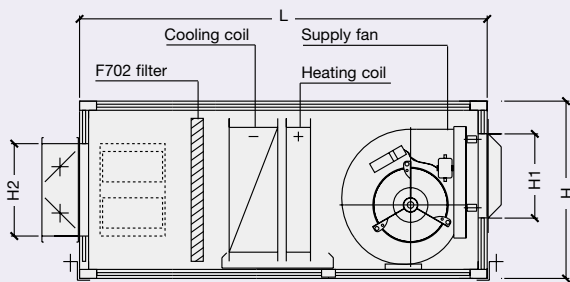
Air intake section

Where no silencer is fitted, this is formed by a control damper with aerodynamic blades with opposed blade action.

Frame and blades are made of St02Z quality galvanized steel plate, as per DIN 17162. F111 steel shafts. Hot-rolled and zinc-coated flat steel drive arm and rods. Special plastic bushes (Pocan) resistant to temperatures up to 100 °C, and capped on the opposite side to the drive.

Where a silencer is fitted, it utilises the total inlet cross section.

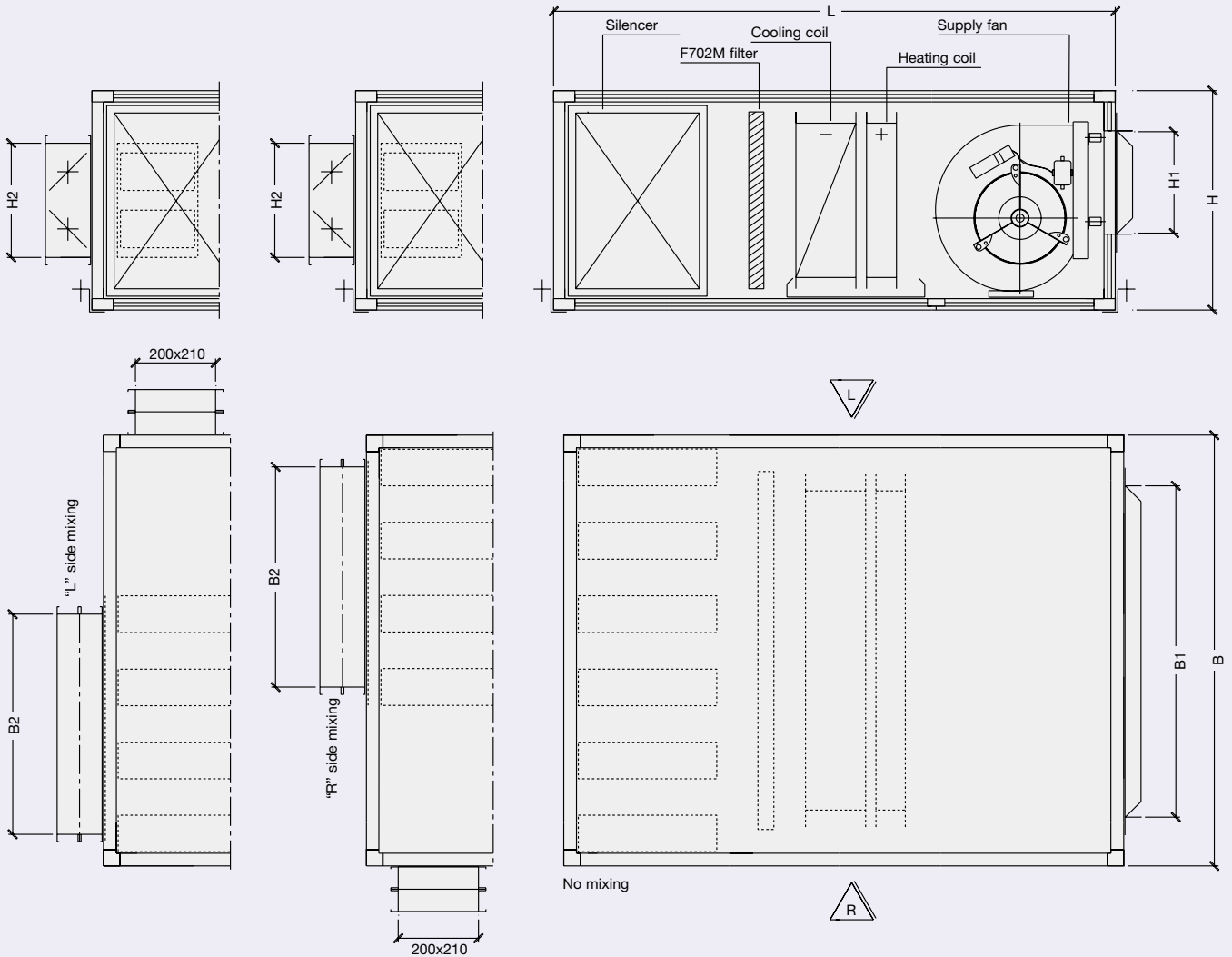
TBSN – Without silencer



Dimensions								Weights
Type	Coils	Mixing	B (mm)	H (mm)	L (mm)	B1xH1 (mm)	B2xH2 (mm)	approx. (kg)
TBSN-S9	1 Coil	No	750	325	750	224x114	300x210	70
		Yes	750	325	1,000	224x114	300x210	80
	2 Coils	No	750	325	1,000	224x114	300x210	85
		Yes	750	325	1,125	224x114	300x210	95
TBSN-S18	1 Coil	No	1,250	325	750	635x114	600x210	110
		Yes	1,250	325	1,000	635x114	600x210	120
	2 Coils	No	1,250	325	1,000	635x114	600x210	130
		Yes	1,250	325	1,125	635x114	600x210	140
TBSN-S27	1 Coil	No	1,750	325	750	1,050x114	1,000x210	145
		Yes	1,750	325	1,000	1,050x114	1,000x210	155
	2 Coils	No	1,750	325	1,000	1,050x114	1,000x210	175
		Yes	1,750	325	1,125	1,050x114	1,000x210	185
TBSN-25	1 Coil	No	1,000	475	900	300x260	500x210	115
		Yes	1,000	475	1,125	300x260	500x210	125
	2 Coils	No	1,000	475	1,125	300x260	500x210	140
		Yes	1,000	475	1,250	300x260	500x210	150
TBSN-50	1 Coil	No	1,800	475	900	1,000x260	1,000x210	185
		Yes	1,800	475	1,125	1,000x260	1,000x210	200
	2 Coils	No	1,800	475	1,125	1,000x260	1,000x210	225
		Yes	1,800	475	1,250	1,000x260	1,000x210	240

Dimensions · Weights

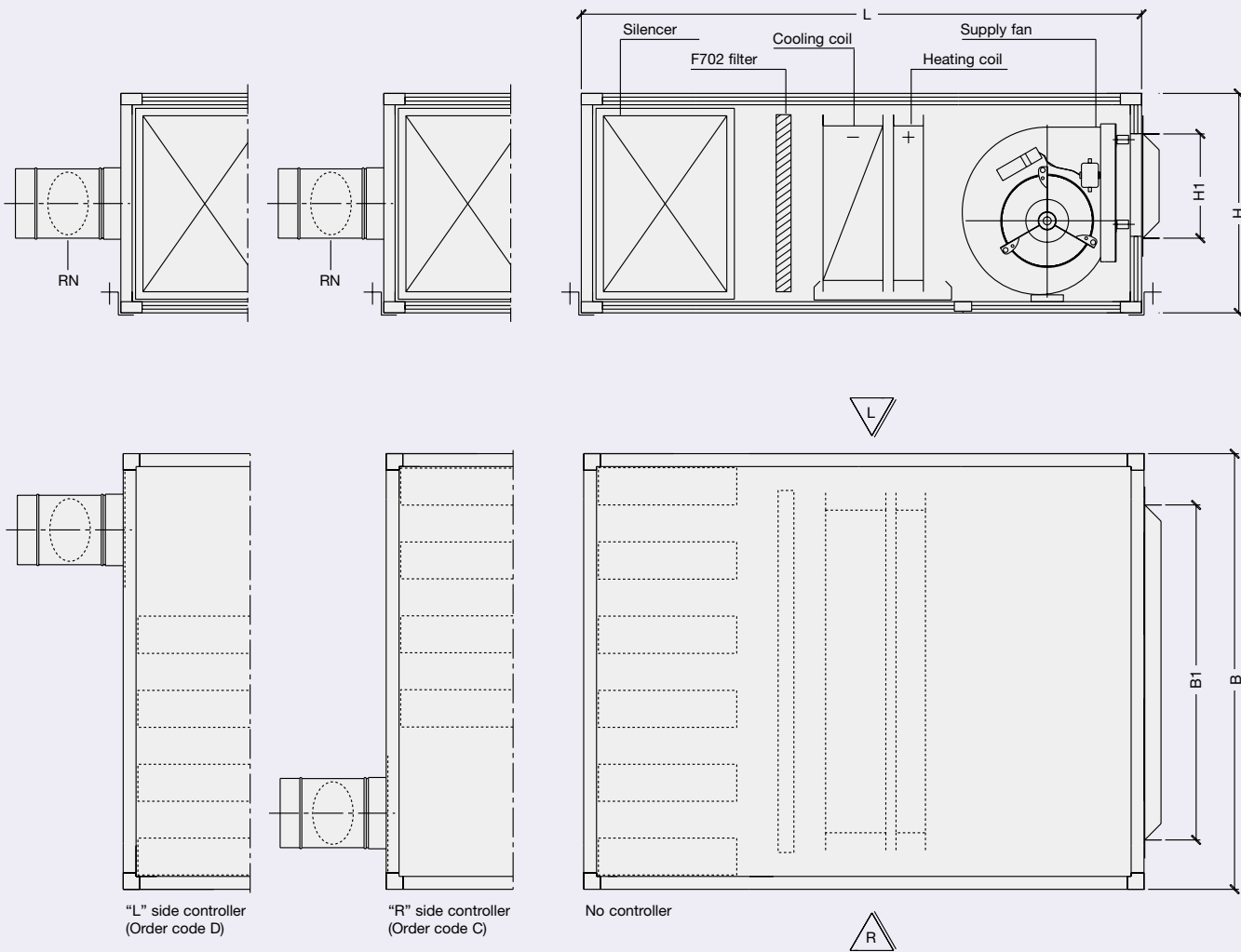
TBSN – With silencer



Dimensions								Weights
Type	Coils	Mixing	B (mm)	H (mm)	L (mm)	B1xH1 (mm)	B2xH2 (mm)	approx. (kg)
TBSN-S9	1 Coil	No	750	325	1,250	224x114		90
		Yes	750	325	1,250	224x114	450x210	100
	2 Coils	No	750	325	1,350	224x114		100
		Yes	750	325	1,350	224x114	450x210	110
TBSN-S18	1 Coil	No	1,250	325	1,250	635x114		130
		Yes	1,250	325	1,250	635x114	750x210	140
	2 Coils	No	1,250	325	1,350	635x114		150
		Yes	1,250	325	1,350	635x114	750x210	160
TBSN-S27	1 Coil	No	1,750	325	1,250	1,050x114		175
		Yes	1,750	325	1,250	1,050x114	1,000x210	185
	2 Coils	No	1,750	325	1,350	1,050x114		200
		Yes	1,750	325	1,350	1,050x114	1,000x210	210
TBSN-25	1 Coil	No	1,000	475	1,350	300x260		135
		Yes	1,000	475	1,350	300x260	500x345	150
	2 Coils	No	1,000	475	1,475	300x260		155
		Yes	1,000	475	1,475	300x260	500x345	170
TBSN-50	1 Coil	No	1,800	475	1,350	1,000x260		220
		Yes	1,800	475	1,350	1,000x260	1,100x345	240
	2 Coils	No	1,800	475	1,475	1,000x260		255
		Yes	1,800	475	1,475	1,000x260	1,100x345	275

Dimensions · Weights

TBSN – With flow rate controller (primary air)



Dimensions								Weights
Type	Coils	Mixing	B (mm)	H (mm)	L (mm)	B1xH1 (mm)	RN	approx. (kg)
TBSN-S9	1 Coil	No	750	325	1,250	224x114	100	90
		Yes	750	325	1,250	224x114	100	90
	2 Coils	No	750	325	1,350	224x114	100	100
		Yes	750	325	1,350	224x114	100	100
TBSN-S18	1 Coil	No	1,250	325	1,250	635x114	160	130
		Yes	1,250	325	1,250	635x114	160	130
	2 Coils	No	1,250	325	1,350	635x114	160	150
		Yes	1,250	325	1,350	635x114	160	150
TBSN-S27	1 Coil	No	1,750	325	1,250	1,050x114	200	175
		Yes	1,750	325	1,250	1,050x114	200	175
	2 Coils	No	1,750	325	1,350	1,050x114	200	200
		Yes	1,750	325	1,350	1,050x114	200	200
TBSN-25	1 Coil	No	1,000	475	1,350	300x260	200	135
		Yes	1,000	475	1,350	300x260	200	135
	2 Coils	No	1,000	475	1,475	300x260	200	155
		Yes	1,000	475	1,475	300x260	200	155
TBSN-50	1 Coil	No	1,800	475	1,350	1,000x260	315	220
		Yes	1,800	475	1,350	1,000x260	315	220
	2 Coils	No	1,800	475	1,475	1,000x260	315	255
		Yes	1,800	475	1,475	1,000x260	315	255

Specification · Technical data

Mixing section

Includes two dampers, one at the front face of the mixing section and of a size that allows for 100 % of the flow and the other on one side (to be determined by the client) measuring 200 x 210 mm. The construction specification of these dampers are as indicated in "Air inlet section".

Mixing section with constant fresh air flow

Achieved by an RN constant flow rate controller that ensures the fresh air flow rate remains constant throughout the pressure range.

To make sure that the fresh air flow rate is as the one set and that the system operates correctly, the fresh air flow must be adjusted by a controller.

The return air flows directly into the silencer.

Silencer section

The air can be taken into the unit through a silencer in order to reduce the noise emitted into the space.

The splitters are type MK-100 type. The splitters are formed by a galvanized steel plate frame and have mineral wool infill, are protected by a covering of glass fiber that is resistant to erosion at air velocities of up to 20 m/sec. and have an impregnation that makes them resistant to humidity. This material corresponds to Class A2 as per DIN 4102 (non combustible).

Filter section

This is formed by F702 flat filter panels, Class G3 as per EN 779. The panels are located on galvanized steel plate rails.

The filter section includes an independent access panel secured by adjustable latches on the inspection side for easier inspection and maintenance work.

Cooling coil characteristics

Type TBSN-S9

Q	Air Entry	Water Flow/Ret.	Water Flow rate	Capacity	Air Disch.	Δ PW	Ø	
I/s	(°C/% RH)	(°C)	(l/h)	(kW)	(°C/% RH)	(kPa)	Manifold	
139	26/50	7/12	468	2.7	13.4/93	3.3	1"	4 Rows
194	26/50	7/12	579	3.4	14.4/91	4.8	1"	
250	26/50	7/12	670	3.9	15.2/89	6.3	1"	
139	26/50	7/12	613	3.6	10.8/98	7.9	1"	
194	26/50	7/12	786	4.6	11.7/97	12.4	1"	6 Rows
250	26/50	7/12	933	5.4	12.4/96	16.9	1"	
139	29/60	7/12	994	5.8	11.0/99	18.9	1"	6 Rows
194	29/60	7/12	1,286	7.5	12.2/98	30.2	1"	
250	29/60	7/12	1,541	9.0	13.2/97	41.9	1"	

Type TBSN-25

Q	Air Entry	Water Flow/Ret.	Water Flow rate	Capacity	Air Disch.	Δ PW	Ø	
I/s	(°C/% RH)	(°C)	(l/h)	(kW)	(°C/% RH)	(kPa)	Manifold	
278	26/50	7/12	1,068	6.2	12.2/ 95	2.8	1 1/4"	4 Rows
417	26/50	7/12	1,410	8.2	13.4/ 93	4.7	1 1/4"	
556	26/50	7/12	1,690	9.8	14.3/ 91	6.5	1 1/4"	
694	26/50	7/12	1,935	11.3	15.0/ 89	9.0	1 1/4"	
556	26/50	7/12	2,229	13.0	11.7/ 97	12.3	1 1/4"	6 Rows
694	26/50	7/12	2,609	15.2	12.4/ 96	16.3	1 1/4"	
278	29/60	7/12	2,108	12.3	10.0/100	11.1	1 1/4"	6 Rows
417	29/60	7/12	2,938	17.1	11.2/ 99	20.3	1 1/4"	
556	29/60	7/12	3,663	21.3	12.2/ 98	30.3	1 1/4"	
694	29/60	7/12	4,303	25.0	13.1/ 98	40.5	1 1/4"	

Type TBSN-S18

Q	Air Entry	Water Flow/Ret.	Water Flow rate	Capacity	Air Disch.	Δ PW	Ø	
I/s	(°C/% RH)	(°C)	(l/h)	(kW)	(°C/% RH)	(kPa)	Manifold	
250	26/50	7/12	956	5.6	12.4/94	10.0	1"	4 Rows
333	26/50	7/12	1,161	6.8	13.3/92	15.0	1"	
417	26/50	7/12	1,337	7.8	14.0/91	19.0	1"	
500	26/50	7/12	1,491	8.7	14.6/89	23.0	1"	
250	26/50	7/12	1,132	6.6	10.6/98	6.0	1 1/4"	6 Rows
333	26/50	7/12	1,407	8.2	11.3/97	8.0	1 1/4"	
417	26/50	7/12	1,649	9.6	11.9/97	11.0	1 1/4"	6 Rows
500	26/50	7/12	1,866	10.9	12.4/96	14.0	1 1/4"	
250	29/60	7/12	1,832	10.6	10.7/99	14.0	1 1/4"	
333	29/60	7/12	2,298	13.4	11.6/99	20.0	1 1/4"	
417	29/60	7/12	2,713	15.8	12.4/98	28.0	1 1/4"	6 Rows
500	29/60	7/12	3,076	17.9	13.2/97	35.0	1 1/4"	

Type TBSN-50

Q	Air Entry	Water Flow/Ret.	Water Flow rate	Capacity	Air Disch.	Δ PW	Ø	
I/s	(°C/% RH)	(°C)	(l/h)	(kW)	(°C/% RH)	(kPa)	Manifold	
694	26/50	7/12	2,523	14.7	12.8/94	4.2	1 1/2"	4 Rows
833	26/50	7/12	2,851	16.6	13.3/93	5.3	1 1/2"	
972	26/50	7/12	3,145	18.3	13.8/92	6.4	1 1/2"	
1,111	26/50	7/12	3,421	19.9	14.2/91	7.4	1 1/2"	
1,250	26/50	7/12	3,663	21.3	14.6/90	8.4	1 1/2"	6 Rows
1,389	26/50	7/12	3,905	22.7	14.9/89	9.4	1 1/2"	
1,111	26/50	7/12	4,510	26.2	11.7/97	13.7	1 1/2"	6 Rows
1,250	26/50	7/12	4,890	28.4	12.0/96	15.9	1 1/2"	
1,389	26/50	7/12	5,253	30.5	12.3/96	18.0	1 1/2"	
694	29/60	7/12	5,098	29.6	10.5/99	17.1	1 1/2"	
833	29/60	7/12	5,910	34.4	11.1/99	22.4	1 1/2"	6 Rows
972	29/60	7/12	6,653	38.7	11.7/99	27.9	1 1/2"	
1,111	29/60	7/12	7,361	42.8	12.2/98	33.5	1 1/2"	6 Rows
1,250	29/60	7/12	8,018	46.6	12.6/98	39.2	1 1/2"	
1,389	29/60	7/12	8,640	50.2	13.0/98	44.9	1 1/2"	

Type TBSN-S27

Q	Air Entry	Water Flow/Ret.	Water Flow rate	Capacity	Air Disch.	Δ PW	Ø	
I/s	(°C/% RH)	(°C)	(l/h)	(kW)	(°C/% RH)	(kPa)	Manifold	
500	26/50	7/12	1,723	10.0	13.3/92	11.0	1 1/4"	4 Rows
583	26/50	7/12	1,901	11.1	13.8/91	14.0	1 1/4"	
667	26/50	7/12	2,056	12.0	14.3/90	16.0	1 1/4"	
750	26/50	7/12	2,212	12.9	14.6/89	18.0	1 1/4"	
500	26/50	7/12	2,108	12.3	11.3/97	8.0	1 1/2"	6 Rows
583	26/50	7/12	2,350	13.7	11.7/97	10.0	1 1/2"	
667	26/50	7/12	2,592	15.1	12.1/96	11.0	1 1/2"	6 Rows
750	26/50	7/12	2,799	16.3	12.4/96	13.0	1 1/2"	
500	29/60	7/12	3,439	20.0	11.6/99	19.0	1 1/2"	
583	29/60	7/12	3,853	22.4	12.2/98	24.0	1 1/2"	
667	29/60	7/12	4,251	24.7	12.7/98	28.0	1 1/2"	6 Rows
750	29/60	7/12	4,614	26.8	13.2/97	33.0	1 1/2"	

Specification · Technical data

Coil section

According to the requirements of the installation and where the units will be placed, the coil section may be formed by a single heating or cooling coil or by two coils – one for heating and the other for cooling. Coils are made with a galvanised steel frame, copper tubes and aluminium fins, with a suitable design to increase air turbulence as it passes through the coil and, therefore, improved the heat transfer coefficient. The cooling coils are assembled on a condensate collector tray made entirely of AISI 304 stainless steel.

There is an independent access panel on the inspection side that is bolted to the frame so that it can be removed, if required, without affecting any other section of the mini air handling unit.

Fan section

The fans installed are double-inlet centrifugal with a built-in single-phase motor. The TBSN-25 and TBSN-S9 air handling units have just one fan, the types TBSN-50 and TBSN-S18 units have two fans and the type TBSN-S27 units has three. The fans are isolated from the air handling unit casing using anti vibration mountings. The fan outlets are connected to the unit casing using flexible connectors to isolate any vibration from the unit casing. For easy access to the fans, these air handling units have an independent panel bolted to the frame at the bottom.

The fans can be adjusted using electronic variable speed drives. Manual or 0-10 V variable speed drives and auto-transformers with 4 outlets (IP00) can be supplied as an option. Just as the TROX 5010 variable speed drive which is specially designed to control fan speed and, as a result, the flow it provides, depending on the actual duct static pressure. Upon request, these units can be supplied with a controller equipped with a room temperature sensor, temperature controller, pressure sensor and motorised valves on the coils.

Heating coil characteristics

Type TBSN-S9

Q	Air Entry	Water Flow/Ret.	Water Flow rate	Capacity	Air Disch.	Δ PW	Ø	
l/s	(°C)	(°C)	(l/h)	(kW)	(°C)	(kPa)	Manifold	
139	0	85/70	445	7.8	46.4	9.6	3/4"	2 Rows
194	0	85/70	554	9.7	41.2	14.2	3/4"	
250	0	85/70	646	11.3	37.4	18.9	3/4"	
139	18	50/45	513	3.0	35.8	11.9	3/4"	2 Rows
194	18	50/45	641	3.7	33.9	17.8	3/4"	
250	18	50/45	752	4.4	32.5	23.7	3/4"	4 Rows
139	0	50/45	1,161	6.7	40.3	16.9	1"	
194	0	50/45	1,508	8.8	37.4	27.3	1"	
250	0	50/45	1,820	10.6	35.1	38.4	1"	4 Rows

Type TBSN-25

Q	Air Entry	Water Flow/Ret.	Water Flow rate	Capacity	Air Disch.	Δ PW	Ø	
l/s	(°C)	(°C)	(l/h)	(kW)	(°C)	(kPa)	Manifold	
278	18	85/70	399	7.0	38.8	8.4	3/4"	1 Row
417	18	85/70	516	9.0	35.9	13.4	3/4"	
556	18	85/70	599	10.4	33.6	17.5	3/4"	
694	18	85/70	677	11.8	32.1	22.0	3/4"	
278	0	85/70	993	17.3	51.7	7.9	1"	2 Rows
417	0	85/70	1,310	22.9	45.5	13.1	1"	
556	0	85/70	1,578	27.5	41.1	18.4	1"	
694	0	85/70	1,814	31.6	37.8	23.6	1"	
278	18	50/45	1,140	6.6	37.8	9.7	1"	4 Rows
417	18	50/45	1,521	8.8	35.6	16.0	1"	
556	18	50/45	1,832	10.6	33.9	22.9	1"	
694	18	50/45	2,102	12.2	32.6	29.6	1"	
278	0	50/45	2,465	14.3	42.8	13.1	1 1/4"	4 Rows
417	0	50/45	3,439	20.0	39.8	24.0	1 1/4"	
556	0	50/45	4,308	25.0	37.4	36.3	1 1/4"	
694	0	50/45	5,098	29.6	35.4	49.2	1 1/4"	

Type TBSN-S18

Q	Air Entry	Water Flow/Ret.	Water Flow rate	Capacity	Air Disch.	Δ PW	Ø	
l/s	(°C)	(°C)	(l/h)	(kW)	(°C)	(kPa)	Manifold	
250	0	85/70	829	14.5	48.0	7.0	1"	2 Rows
333	0	85/70	1,005	17.5	43.6	10.0	1"	
417	0	85/70	1,158	20.2	40.2	13.0	1"	
500	0	85/70	1,293	22.5	37.4	16.0	1"	
250	18	50/45	954	5.5	36.4	9.0	1"	4 Rows
333	18	50/45	1,161	6.8	34.8	12.0	1"	
417	18	50/45	1,339	7.8	33.5	16.0	1"	
500	18	50/45	1,503	8.7	32.5	20.0	1"	
250	0	50/40	1,112	12.9	42.9	19.0	1"	4 Rows
333	0	50/40	1,414	16.4	40.9	29.0	1"	
417	0	50/40	1,693	19.7	39.2	40.0	1"	
500	0	50/40	1,954	22.7	37.7	52.0	1"	

Type TBSN-50

Q	Air Entry	Water Flow/Ret.	Water Flow rate	Capacity	Air Disch.	Δ PW	Ø	
l/s	(°C)	(°C)	(l/h)	(kW)	(°C)	(kPa)	Manifold	
694	18	85/70	922	16.1	37.2	10.3	3/4"	1 Row
833	18	85/70	1,031	18.0	35.9	12.7	3/4"	
972	18	85/70	1,109	19.3	34.5	14.5	3/4"	
1,111	18	85/70	1,198	20.9	33.6	16.7	3/4"	
1,250	18	85/70	1,279	22.3	32.8	18.8	3/4"	2 Rows
1,389	18	85/70	1,354	23.6	32.1	20.9	3/4"	
694	0	85/70	2,328	40.6	48.5	12.7	1 1/4"	
833	0	85/70	2,632	45.9	45.7	15.8	1 1/4"	
972	0	85/70	2,916	50.9	43.4	19.1	1 1/4"	4 Rows
1,111	0	85/70	3,172	55.3	41.3	22.3	1 1/4"	
1,250	0	85/70	3,413	59.5	39.5	22.5	1 1/4"	
1,389	0	85/70	3,648	63.6	38.0	28.7	1 1/4"	
694	18	50/45	2,693	15.7	36.7	15.6	1 1/4"	2 Rows
833	18	50/45	3,041	17.7	35.6	19.6	1 1/4"	
972	18	50/45	3,387	19.7	34.8	23.7	1 1/4"	
1,111	18	50/45	3,686	21.4	34.0	27.7	1 1/4"	
1,250	18	50/45	3,966	23.1	33.3	31.8	1 1/4"	4 Rows
1,389	18	50/45	4,234	24.6	32.7	35.9	1 1/4"	
694	0	50/45	5,947	34.6	41.3	20.8	1 1/2"	
833	0	50/45	6,895	40.1	39.9	27.3	1 1/2"	
972	0	50/45	7,782	45.2	38.6	34.2	1 1/2"	4 Rows
1,111	0	50/45	8,640	50.2	37.5	41.3	1 1/2"	
1,250	0	50/45	9,435	54.9	36.4	48.7	1 1/2"	
1,389	0	50/45	10,195	59.3	35.4	56.2	1 1/2"	

Type TBSN-S27

Q	Air Entry	Water Flow/Ret.	Water Flow rate	Capacity	Air Disch.	Δ PW	Ø	
l/s	(°C)	(°C)	(l/h)	(kW)	(°C)	(kPa)	Manifold	
500	0	85/70	1,517	26.5	43.9	16.0	1"	2 Rows
583	0	85/70	1,677	29.3	41.6	19.0	1"	
667	0	85/70	1,820	31.7	39.5	22.0	1"	
750	0	85/70	1,960	34.2	37.8	26.0	1"	
500	18	50/45	1,763	10.2	35.0	20.0	1"	2 Rows
583	18	50/45	1,947	11.3	34.1	24.0	1"	
667	18	50/45	2,115	12.3	33.3	28.0	1"	
750	18	50/45	2,286	13.3	32.7	32.0	1"	
500	0	50/40	1,923	22.4	37.1	14.0	1 1/4"	4 Rows
583	0	50/40	2,159	25.1	35.7	17.0	1 1/4"	
667	0	50/40	2,385	27.7	34.5	20.0	1 1/4"	
750	0	50/40	2,597	30.2	33.4	24.0	1 1/4"	

Technical data

Available pressures

Type TBSN-S9

		Heating coil					
		2 Rows		4 Rows		4 Rows	
		Q (m³/h)	A. Pres. (Pa)	Q (m³/h)	A. Pres. (Pa)	Q (m³/h)	A. Pres. (Pa)
Cooling coil	4 Rows	500	397	500	388	500	388
		700	336	700	321	700	321
		900	214	900	190	900	190
		500	384	500	371	500	362
	6 Rows	700	314	700	290	700	275
		900	179	900	143	900	119
		500	364	500	351	500	342
		700	279	700	255	700	240
		900	126	900	90	900	66

Type TBSN-S27

		Heating coil					
		2 Rows		4 Rows		4 Rows	
		Q (m³/h)	A. Pres. (Pa)	Q (m³/h)	A. Pres. (Pa)	Q (m³/h)	A. Pres. (Pa)
Cooling coil	4 Rows	1,800	372	1,800	360	1,800	360
		2,100	337	2,100	321	2,100	321
		2,400	281	2,400	261	2,400	261
		2,700	215	2,700	190	2,700	190
	6 Rows	1,800	353	1,800	335	1,800	323
		2,100	312	2,100	289	2,100	273
		2,400	250	2,400	221	2,400	201
		2,700	177	2,700	142	2,700	117
		1,800	338	1,800	320	1,800	308
		2,100	292	2,100	269	2,100	253
		2,400	225	2,400	196	2,400	176
		2,700	147	2,700	112	2,700	87

Type TBSN-25

		Heating coil							
		1 Row		2 Rows		4 Rows		4 Rows	
		Q (m³/h)	A.Pres.(Pa)	Q (m³/h)	A.Pres.(Pa)	Q (m³/h)	A.Pres.(Pa)	Q (m³/h)	A.Pres.(Pa)
Cooling coil	4 Rows	1,000	291	1,000	287	1,000	282	1,000	282
		1,500	246	1,500	240	1,500	230	1,500	230
		2,000	261	2,000	251	2,000	234	2,000	234
		2,500	174	2,500	160	2,500	136	2,500	136
	6 Rows	1,000	281	1,000	277	1,000	273	1,000	268
		1,500	225	1,500	216	1,500	210	1,500	200
		2,000	226	2,000	212	2,000	202	2,000	185
		2,500	124	2,500	103	2,500	89	2,500	65
		1,000	269	1,000	265	1,000	261	1,000	256
		1,500	204	1,500	195	1,500	189	1,500	179
		2,000	205	2,000	191	2,000	181	2,000	164
		2,500	93	2,500	72	2,500	58	2,500	34

Type TBSN-S18

		Heating coil					
		2 Rows		4 Rows		4 Rows	
		Q (m³/h)	A. Pres. (Pa)	Q (m³/h)	A. Pres. (Pa)	Q (m³/h)	A. Pres. (Pa)
Cooling coil	4 Rows	900	409	900	401	900	401
		1,200	372	1,200	360	1,200	360
		1,500	324	1,500	306	1,500	306
		1,800	215	1,800	190	1,800	190
	6 Rows	900	397	900	386	900	378
		1,200	353	1,200	335	1,200	323
		1,500	296	1,500	270	1,500	252
		1,800	177	1,800	142	1,800	117
		900	388	900	377	900	369
		1,200	338	1,200	320	1,200	308
		1,500	274	1,500	248	1,500	230
		1,800	147	1,800	112	1,800	87

Available pressure for operation without silencer. Where the operation selected includes a silencer, the pressure drop of the silencer must be subtracted from the available pressure indicated in the table, as given in the table on Page 9.

Type TBSN-50

		Heating coil							
		1 Row		2 Rows		4 Rows		4 Rows	
		Q (m³/h)	A.Pres.(Pa)	Q (m³/h)	A.Pres.(Pa)	Q (m³/h)	A.Pres.(Pa)	Q (m³/h)	A.Pres.(Pa)
Cooling coil	4 Rows	2,500	258	2,500	254	2,500	247	2,500	247
		3,000	246	3,000	240	3,000	230	3,000	230
		3,500	254	3,500	246	3,500	233	3,500	233
		4,000	261	4,000	251	4,000	234	4,000	234
	6 Rows	2,500	237	2,500	226	2,500	206	2,500	206
		3,000	225	3,000	216	3,000	210	3,000	200
		3,500	226	3,500	215	3,500	207	3,500	194
		4,000	226	4,000	212	4,000	202	4,000	185
		4,500	195	4,500	177	4,500	166	4,500	146
		5,000	124	5,000	103	5,000	89	5,000	65
		2,500	227	2,500	220	2,500	216	2,500	209
		3,000	204	3,000	195	3,000	189	3,000	179
3,500	198	3,500	187	3,500	179	3,500	166		
4,000	205	4,000	191	4,000	181	4,000	164		
4,500	169	4,500	151	4,500	140	4,500	120		
5,000	93	5,000	72	5,000	58	5,000	34		

Selection example · Technical data

Example

Data given:

Maximum height 400 mm
 Primary air: Yes
 Silencer on inlet: Yes – inside location
 Air flow: 2,400 m³/h
 Cooling load: 13.89 kW
 Air intake conditions: 26 °C / 50 % RH
 Water flow/return temperature: 7 °C / 12 °C
 Heating load: 10.42 kW
 Air inlet temperature: 18 °C
 Water flow/return temperature: 50 °C / 45 °C
 Available pressure: 150 Pa

Requested:

Size
 Number of rows
 Actual available pressure of the fan
 Sound pressure level from discharge and from inlet

Selection:

Given the maximum height (400 mm) and the given flow rate 2,400 m³/h, we would select a TBSN-27 with a height of 325 mm and a flow rate of up to 2,700 m³/h.

Cooling coil: 6 rows (Table Page 6)
 Heating coil: 2 rows (Table Page 7)
 Available pressure: 196 Pa (Table Page 8)
 Silencer pressure drop: 6 Pa (Table Page 9)
 Actual available pressure: 196 Pa – 6 Pa = 190 Pa * (Table Page 8)
 Sound pressure level from discharge: 68 dB(A) (Table Page 9)
 Sound pressure level from inlet: 44 dB(A) (Table Page 9)
 Dimensions: 1,750 x 325 x 1,350 - B x H x L (mm) (Table Page 5)

* Due to the difference between the actual available pressure (190 Pa) and that requested (150 Pa), the flow rate must be adjusted using a variable speed drive. Where the configuration selected includes regulating dampers, the flow rate can be adjusted by the dampers.

Silencer pressure drop							
TBSN-S9	Flow rate (m ³ /h)	600	700	900			
	Δ P (Pa)	2	3	5			
TBSN-S18	Flow rate (m ³ /h)	900	1,200	1,500	1,800		
	Δ P (Pa)	2	3	4	6		
TBSN-S27	Flow rate (m ³ /h)	1,800	2,100	2,400	2,700		
	Δ P (Pa)	3	4	6	7		
TBSN-25	Flow rate (m ³ /h)	1,000	1,500	2,000	2,500		
	Δ P (Pa)	2	4	7	11		
TBSN-50	Flow rate (m ³ /h)	2,500	3,000	3,500	4,000	4,500	5,000
	Δ P (Pa)	2	3	4	5	7	8

Fan technical specification					
Series	TBSN-S9	TBSN-S18	TBSN-S27	TBSN-25	TBSN-50
Power (W)	140	2x140	3x140	373	2x373
Voltage (V)	230	230	230	230	230
Frequency (Hz)	50	50	50	50	50
Rated Current (A)	1.4	2x1.4	3x1.4	3	2x3
Peak Current (A)	1.4	2x1.4	3x1.4	4	8
Capacitor (uF)	10	2 x 10	3x10	10	2x10
RPM	2,100	2,100	2,100	1,380	1,380
Protection level	IP32	IP32	IP32	IP31	IP31
Insulation type	F	F	F	F	F
Max. Temp (°C)	40	40	40	40	40

Sound pressure level TBSN 1)

Fan noise from discharge (dB)

Type	Octave bands (Hz)								dB(A)
	63	125	250	500	1,000	2,000	4,000	8,000	
TBSN-25	63	68	68	64	64	62	60	55	69
TBSN-50	66	71	71	67	67	65	63	58	72
TBSN-S9	61	64	63	57	58	57	53	49	63
TBSN-S18	64	67	66	60	61	60	56	52	66
TBSN-S27	66	69	68	62	63	62	58	54	68

Case-radiated noise through panels (dB)

Type	Octave bands (Hz)								dB(A)
	63	125	250	500	1,000	2,000	4,000	8,000	
TBSN-25	63	58	56	41	39	37	36	31	50
TBSN-50	66	61	59	44	42	40	39	34	53
TBSN-S9	60	52	50	41	35	34	31	26	45
TBSN-S18	63	55	53	44	38	37	34	29	48
TBSN-S27	65	57	55	46	40	39	36	31	50

Radiated noise from inlet silencer (dB)

Type	Octave bands (Hz)								dB(A)
	63	125	250	500	1,000	2,000	4,000	8,000	
TBSN-25	56	59	53	39	39	35	38	30	48
TBSN-50	59	62	56	42	42	38	41	33	51
TBSN-S9	46	51	44	33	29	24	23	20	39
TBSN-S18	49	54	47	36	32	27	26	23	42
TBSN-S27	51	56	49	38	34	29	28	25	44

Total radiated noise from casing and silencer inlet (dB)

Type	Octave bands (Hz)								dB(A)
	63	125	250	500	1,000	2,000	4,000	8,000	
TBSN-25	64	61	58	43	42	39	40	34	52
TBSN-50	67	64	61	46	45	42	43	37	55
TBSN-S9	60	54	51	42	36	34	31	27	46
TBSN-S18	63	57	54	45	39	37	34	30	49
TBSN-S27	65	59	56	47	41	39	36	32	51

1) Sound pressure level measured on an actual unit as per EN ISO 5315 Standard, considering room absorption of 8 dB.

Order details

Specification text

TBSN air handling units with painted, self-supporting, and galvanized plate casing with perimeter seal. 25 mm thick sandwich-type casing panels, formed by two flat plates and mineral wool insulation infill. The panels are bolted or latched to the frame. Double-inlet centrifugal fans with built-in motor. Cooling and/or heating coils with galvanized sheet frame, copper pipes and aluminium fins. F702 panel filter, Class G3 as per EN 779.

Order Code

	TBSN	/	S18	/	CMH	/	4C - 2H	/	00	/	RL	/	0	/	700 m³/h
Type															Flow rate (Indicate units)⁷⁾
Construction	Standard	Ø													0 No control elements 1 Control elements
	Ultra low height	S													
			9 ⁴⁾ 18 ⁴⁾ 25 ⁵⁾ 27 ⁴⁾ 50 ⁵⁾												Access panel position R Right L Left
			Size												Coil connection R Right L Left
Mixing section	No mixing	Ø													Speed controller 0 No controller 1 Manual controller 2 TROX 5010 controller 3 4-outlet transformer (IP00) 4 Proportional controller (0-10 V)
	Right-hand damper	R													
	Left-hand damper	L													
	Right-hand front controller	C													
	Left-hand front controller	D													
Inlet silencer¹⁾	No silencer	Ø													
	Silencer ²⁾	M													
Damper control	No damper/s ³⁾	Ø													Location 0 Indoor 1 Outdoor
	Manual	H													
	Ready for motorising ³⁾	M													
															Heating coil 0H No coil 1H 1-row coil ⁵⁾ 2H 2-row coil 4H 4-row coil
															Cooling coil 0C No coil 4C 4-row coil 6C 6-row coil

1) Location determined by the mixing section configuration, silencer extends across whole unit cross section when there is no mixing section
 2) Always included for versions with controller
 3) Only if damper. Not acceptable on versions with controller
 4) Only if ultra low height unit
 5) Only for standard height unit
 6) Only if silencer is fitted
 7) Air flow rate for flow controller

Order Example

Make: TROX
 Type: TBSN / S18 / CMH / 4C - 2H / 00 / RL / 0 / 700 m³/h