

SINKO

Mankind needs fresh & clean air
SINKO technology can ensure this ...
Now and toward to the future



***LAGRE AIR VOLUME
FAN COIL UNIT
GTSCD/GTSFD SERIES***

GTSCD-2022-5-A

SINKO History

SINKO Industries LTD., incorporated in 1950 has constantly maintained its leadership position in the central air conditioning system industry as Japan's top manufactory of Air Conditioning Equipment for varied commercial and industrial applications. SINKO has manufacturing plants in Japan and outside Japan both equipped with the latest hi-tech manufacturing facilities and testing facilities to satisfy the diversified needs of the customers.

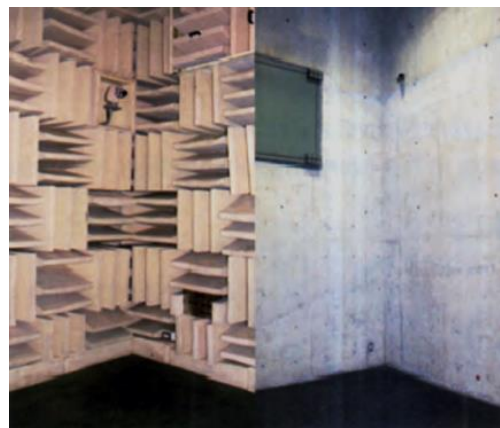
Research & Development

SINKO has multi-function HVAC R&D Center in Japan.

SINKO R&D Center is recognized as one of the foremost industrial research center in Japan's HVAC industry.

SINKO R&D Center features the most modern facilities comprising overall HVAC testing functions: air movement test room, temperature and humidity measurement room, sound measurement room, calorie measurement room.

SINKO research, improvement and Development will continue on existing air-conditioning systems and manufacturing technologies to satisfy the diversified needs of the customers.



*Insulated Acoustic Room/Reverberation Chamber
(Semi-Anechoic Wall)*



Visualized Airflow Test Room

GTSCD/GTSFD for indoor air recirculation uses EC fans to reduce the unit cost per heat capacity and features easy maintenance. Use aluminum frame post attached to 3-legged injection ABS corner piece form the rigid frame and the unit wall is made up of Double Skin Polyurethane foam (PU) insulation panel with 0.5 mm high strength pre-painted steel as external skin and 0.5 mm galvanized steel (GI) as internal skin.

1) Coil

Coil constructed with aluminum slit fins and seamless copper tubes. Copper fins and hydrophilic fins which are optional.

2) EC Fan

It consists of EC motor and DIDW forward curved centrifugal fan. EC motor efficiency is over **80%**, PWM stepless speed regulation.

3) Control Box

Built-in PWM module, power supply and terminal blocks.

4) Drain Pan

SUS 304 drain pan is covered with PE Insulation board and has a slope to ensure smooth drainage.

5) Filter Holding Frame

Material of GI steel plate.
Side withdraw for GTSCD, and
Front withdraw for GTSFD.

6) Filter

Thickness 20mm, efficiency G1, G2 or G3.

7) Access Door

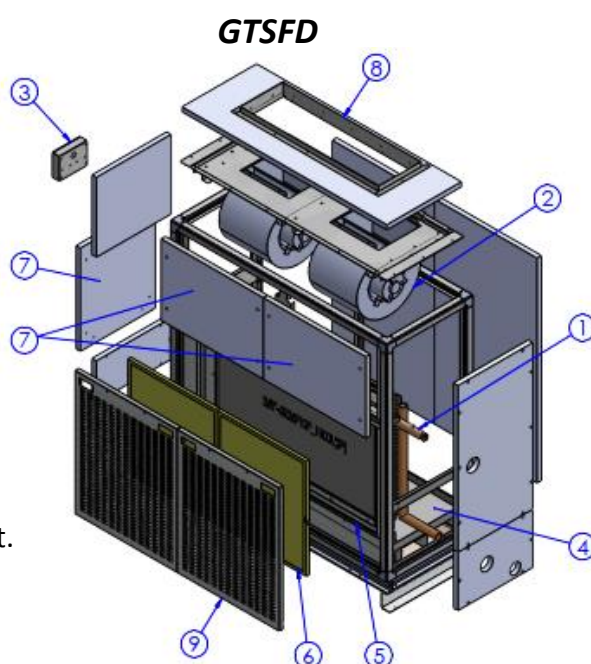
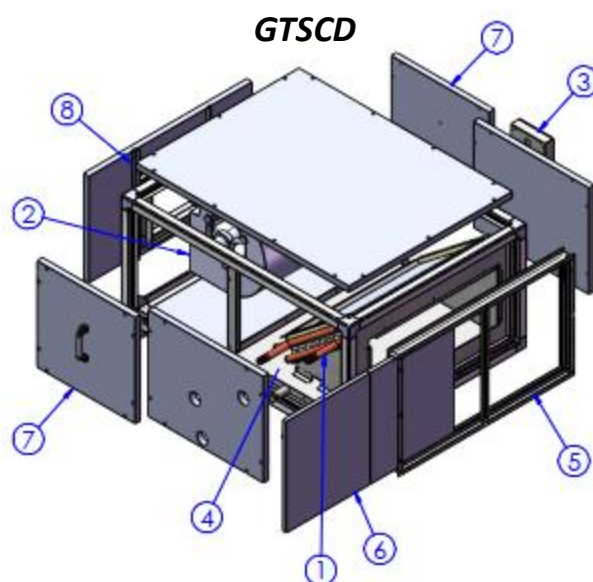
All doors are composed of double skin panels with a thickness as any other panel in the unit.

8) SA Flange

Material of GI steel plate.

9) punched-door

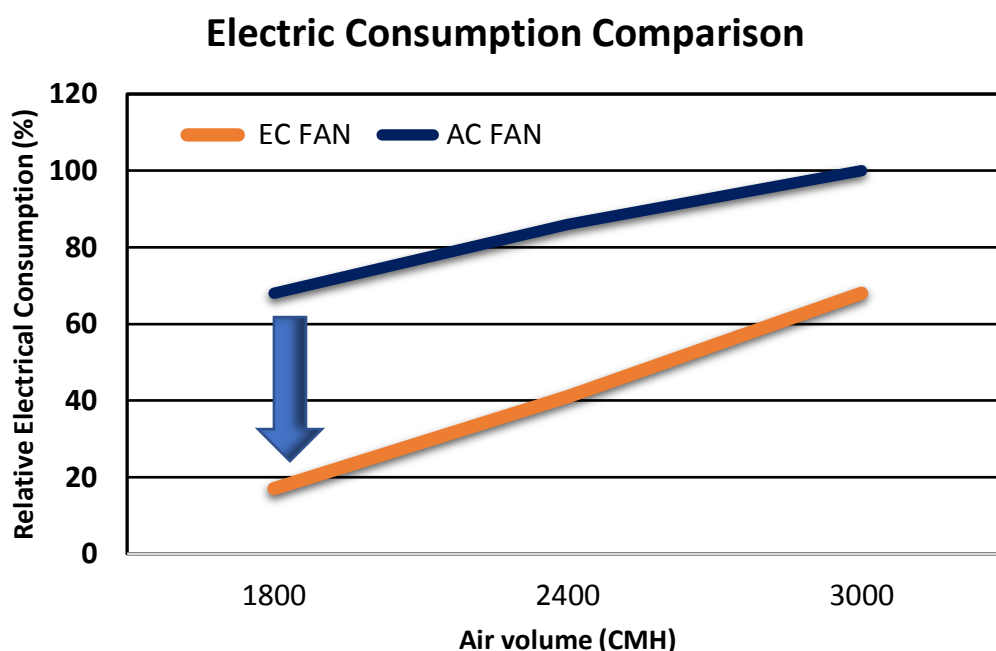
GI steel plate with powder coating.



1. More Energy Saving

EC motor are very high efficiency (65% ~ 85%) electric motors and maintain a high efficiency level at part speed, this means that GTSCD/GTSFD EC fan coil unit series have outstanding energy-saving performance, reducing air conditional energy consumption.

The comparison of the relative electrical consumption of the EC fan and the AC fan in the same unit (*GTSCD-50*) under the same working conditions is shown in the figure below. ***EC fan unit saves more than 70% energy than AC fan unit under low air volume conditions.***



2. More Environment-Friendly

With outstanding energy-saving performance, GTSCD/GTSFD series contributes a lot to global environment protection.

3. More Reliable

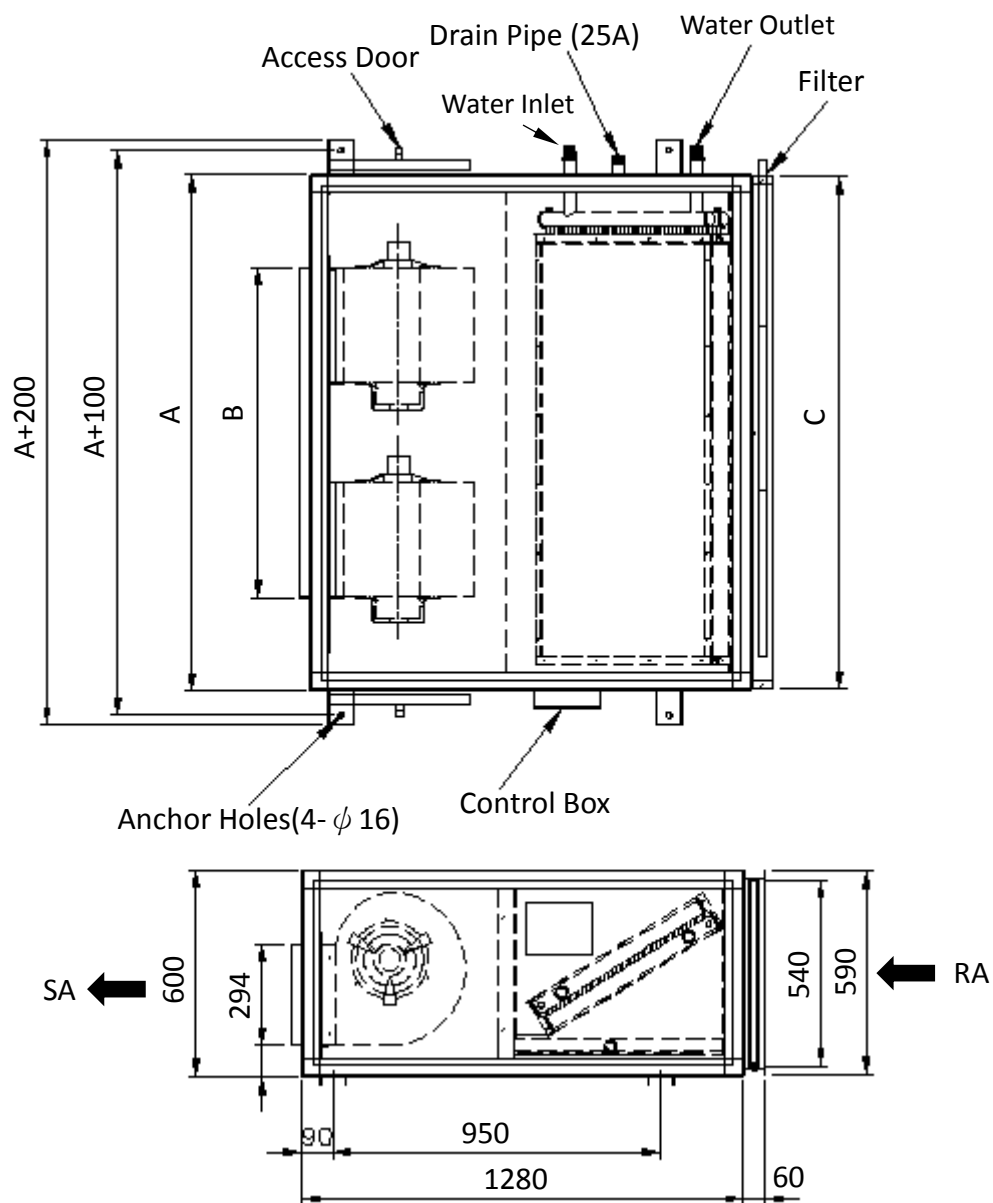
- 1) EC motor of GTSCD/GTSFD series comply with the EN 55014-1, EN 55014-2 and EN 60034-1 standards. It is equipped with high precision deep groove ball bearing, which is of low noise and long service life.
- 2) Heat exchanger of the GTSCD/GTSFD series consists of seamless copper tubes and split aluminum fins, and the tubes through the precisely mechanical expansion to ensure body rigidity and high heat transfer efficiency.

4. Easy Control

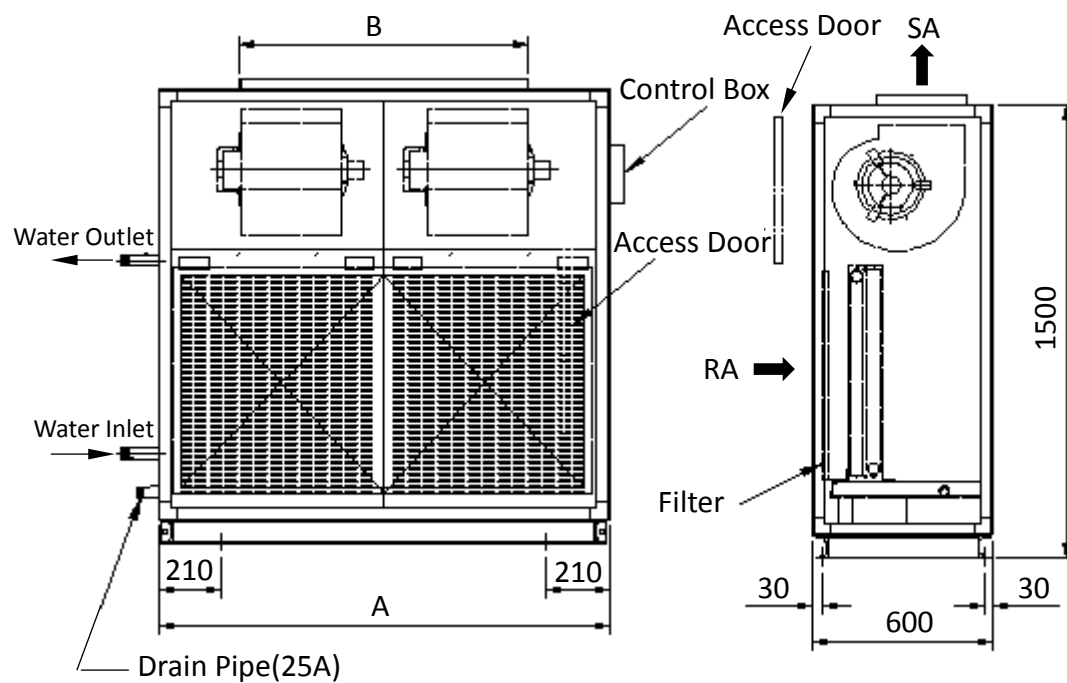
GTSCD/GTSFD series uses a PWM signal for step-less speed control.

Main Component		GTSCD-50	GTSCD-100
Air Volume	(l/s)	835	1670
	(m ³ /h)	3000	6000
	(CFM)	1770	3530
Motor	Type	Permanent magnet, Electronically commuted motor	
	Power Source	AC 220~240V/ 1ph/ 50/60Hz	
	Output Power	0.75 kW x1	0.75 kW x2
Fan	Type	DIDW forward curved centrifugal fan	
Coil	Rows	4 or 6 Rows	
	Fin Spacing	12FPI	
	Header Size	25A	32A
	Water Coil	Max. working pressure: 0.98 (MPa)	
	Tube	3/8" Dia. Seamless copper tube	
	Fin	Aluminum sheet thickness 0.11mm	
	Header	Copper pipe & copper connection	
Drain Pan	Type	SUS304 covered with PE insulation board	
Casing	Panel	Double skin panel: 30mm or 50mm (Optional)	
		Internal skin: 0.5mm Galvanized steel	
		External skin: 0.5mm pre-painted steel	
		Insulation: Polyurethane foam (PU)	
	Framework	Aluminum frame post	
Filter	Type	Metal frame + non-woven filter thickness 20mm	

Main Component		GTSFD-50	GTSFD-100
Air Volume	(l/s)	835	1670
	(m ³ /h)	3000	6000
	(CFM)	1770	3530
Motor	Type	Permanent magnet, Electronically commuted motor	
	Power Source	AC 220~240V/ 1ph/ 50/60Hz	
	Output Power	0.75 kW x1	0.75 kW x2
Fan	Type	DIDW forward curved centrifugal fan	
Coil	Rows	4 or 6 Rows	
	Fin Spacing	12FPI	
	Header Size	25A	32A
	Water Coil	Max. working pressure: 0.98 (MPa)	
	Tube	3/8" Dia. Seamless copper tube	
	Fin	Aluminum sheet thickness 0.11mm	
	Header	Copper pipe & copper connection	
Drain Pan	Type	SUS304 covered with PE insulation board	
Casing	Panel	Double skin panel: 30mm or 50mm (Optional)	
		Internal skin: 0.5mm Galvanized steel	
		External skin: 0.5mm pre-painted steel	
		Insulation: Polyurethane foam (PU)	
	Framework	Aluminum frame post	
Filter	Type	Metal frame + non-woven filter thickness 20mm	

GTSCD


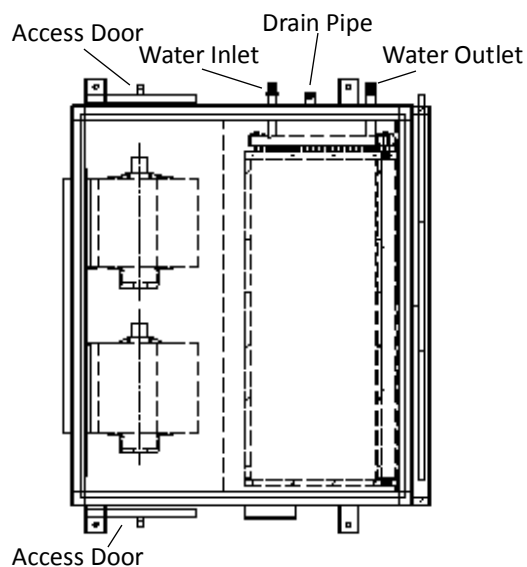
Unit Size	Dimensions(mm)			Fan Set
	A	B	C	Qty'
GTSCD-50	1000	336	990	1
GTSCD-100	1500	956	1490	2

GTSFD


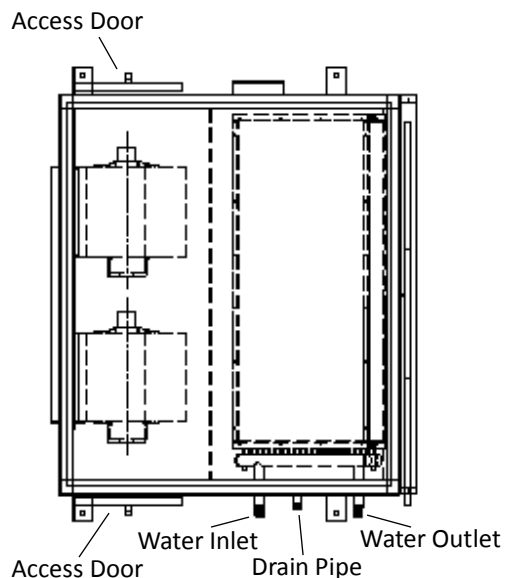
Unit Size	Dimensions(mm)		Fan Set
	A	B	Qty'
GTSFD-50	1000	336	1
GTSFD-100	1500	956	2

GTSCD Series

Left-Hand Piping(L)



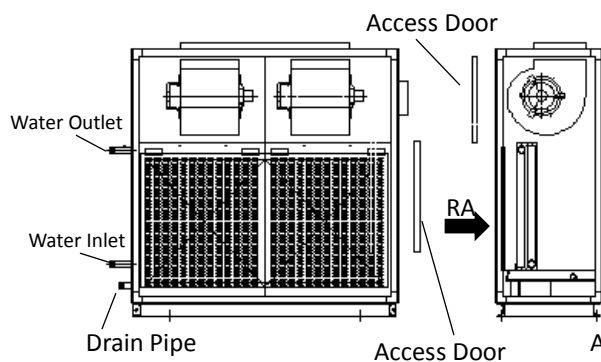
Right-Hand Piping(R)



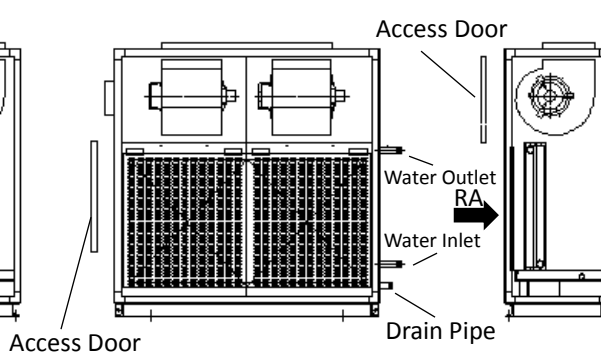
Note: Determine the left and right hang piping by facing the air outlet of the unit.

GTSFD Series

Left-Hand Piping(L)

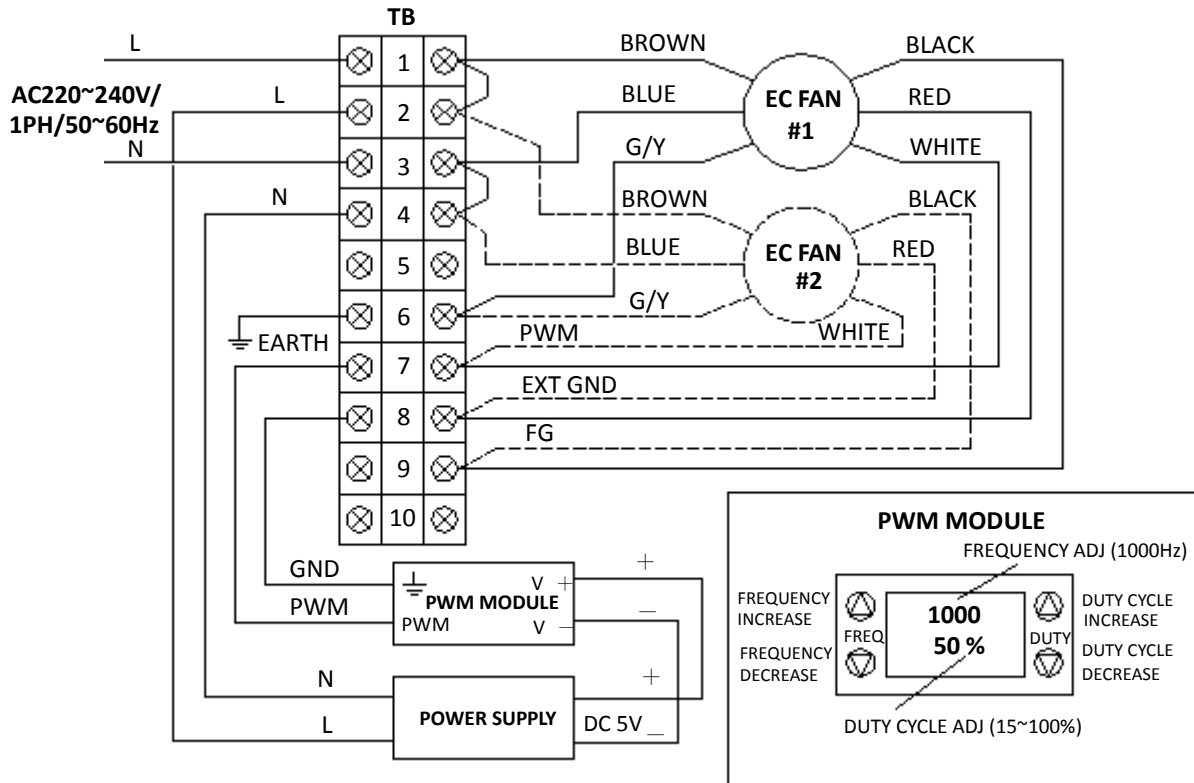


Right-Hand Piping(R)



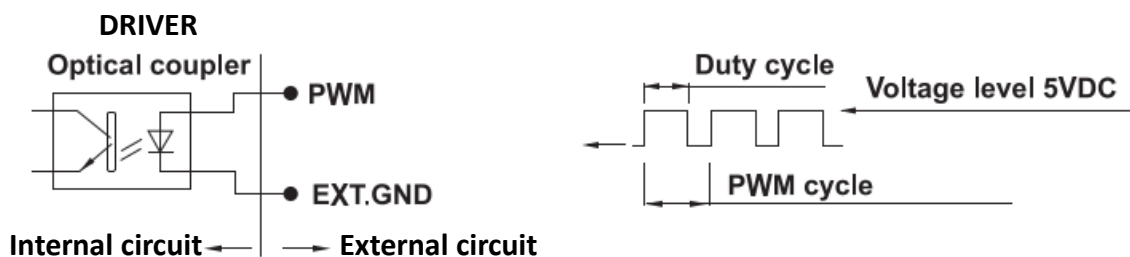
Note: Determine the left and right hang piping by facing the air inlet of the unit.

Wiring Diagram



PWM Speed Control Instruction

- ◆ Pulse-width modulation : 15 to 100%
- ◆ PWM voltage level : 5VDC
- ◆ PWM cycle : 1ms (Frequency 1kHz)
- ◆ Response cycle = (Duty cycle / PWM cycle) * 100%
- ◆ When response cycle is less than 15% motor stops.
- ◆ The motor speed is maximum when the response cycle is 100%.



Cooling Capacity: 4 Rows

On-Coil Air Temperature: DB26°C /WB 18.7°C

Model	Air Volume		On-Coil Temperature 5.5 °C						On-Coil Temperature 7 °C					
	(l/s)	(m³/h)	Water ΔT (K)	Water Flow		Capacity		Water Side ΔP (kPa)	Water ΔT (K)	Water Flow		Capacity		Water Side ΔP (kPa)
				(l/s)	l/min	Sensible (kW)	Total (kW)			(l/s)	l/min	Sensible (kW)	Total (kW)	
GTSCD-50	500	1800	7	0.38	23	8.3	11.3	32.4	5	0.52	31	8.1	10.8	53.9
			8	0.33	20	8.1	10.7	25.5	7	0.33	20	7.6	9.6	25.5
			9	0.27	16	7.9	10.1	17.7	9	0.23	14	7.2	8.5	13.7
	667	2400	7	0.47	28	10.4	13.3	45.1	5	0.57	34	9.8	11.8	34.3
			8	0.38	23	10.1	12.6	32.4	7	0.40	24	9.6	11.4	17.7
			9	0.32	19	9.8	11.8	23.5	9	0.27	16	9.1	10.0	9.8
	833	3000	7	0.53	32	12.4	15.3	56.9	5	0.65	39	11.9	13.5	42.2
			8	0.43	26	11.9	14.2	39.2	7	0.45	27	11.6	13.0	23.5
			9	0.37	22	11.7	13.4	29.4	9	0.32	19	11.0	11.5	12.7
GTSCD-100	1200	3600	7	0.75	45	16.3	21.8	21.6	5	1.02	61	16.0	21.0	36.3
			8	0.62	37	15.7	20.5	15.7	7	0.63	38	15.0	18.5	15.7
			9	0.52	31	15.2	19.2	11.8	9	0.43	26	14.0	16.1	8.8
	1333	4800	7	0.88	53	20.3	25.7	28.4	5	1.20	72	20.1	24.8	48.1
			8	0.73	44	19.9	24.2	20.6	7	0.75	45	19.1	22.0	21.6
			9	0.60	36	19.2	22.3	14.7	9	0.52	31	17.9	19.2	11.8
	1667	6000	7	1.00	60	24.4	29.0	35.3	5	1.35	81	23.9	28.1	58.8
			8	0.82	49	23.5	27.4	24.5	7	0.87	52	22.8	25.0	27.5
			9	0.68	41	23.1	25.4	18.0	9	0.58	35	21.5	22.0	13.7

Cooling Capacity: 6 Rows

On-Coil Air Temperature: DB26°C /WB 18.7°C

Model	Air Volume		On-Coil Temperature 5.5 °C						On-Coil Temperature 7 °C					
	(l/s)	(m³/h)	Water ΔT (K)	Water Flow		Capacity		Water Side ΔP (kPa)	Water ΔT (K)	Water Flow		Capacity		Water Side ΔP (kPa)
				(l/s)	l/min	Sensible (kW)	Total (kW)			(l/s)	l/min	Sensible (kW)	Total (kW)	
GTSCD-50	500	1800	7	0.50	30	9.6	14.4	11.8	5	0.67	40	9.3	13.7	18.6
			8	0.45	27	9.8	14.7	62.8	7	0.47	28	9.2	13.3	66.7
			9	0.38	23	9.6	14.1	48.1	9	0.33	20	8.6	12.1	37.3
	667	2400	7	0.60	36	12.1	17.5	15.7	5	0.82	49	11.8	16.9	26.5
			8	0.50	30	11.7	16.8	11.8	7	0.52	31	11.2	15.2	12.7
			9	0.47	28	12.0	17.2	66.7	9	0.40	24	11.0	14.7	51.0
	833	3000	7	0.70	42	14.5	20.5	20.6	5	0.95	57	14.2	19.8	35.3
			8	0.58	35	14.2	19.5	15.7	7	0.60	36	13.3	17.5	15.7
			9	0.48	29	13.6	18.1	10.8	9	0.47	28	13.1	17.0	66.7
GTSCD-100	1200	3600	7	1.02	61	19.7	29.4	53.9	5	1.28	77	18.3	26.6	12.7
			8	0.85	51	19.1	28.5	39.2	7	0.90	54	18.2	26.0	43.2
			9	0.73	44	18.6	27.4	30.4	9	0.63	38	17.1	23.4	23.5
	1333	4800	7	1.17	70	23.7	33.9	10.8	5	1.57	94	23.1	32.6	17.7
			8	1.05	63	24.4	34.9	56.9	7	1.08	65	22.8	31.6	59.8
			9	0.90	54	23.8	33.5	43.2	9	0.77	46	21.6	28.4	33.3
	1667	6000	7	1.35	81	28.3	39.3	13.7	5	1.82	109	27.8	38.1	22.6
			8	1.10	66	27.6	36.8	9.8	7	1.15	69	26.2	33.6	10.8
			9	1.03	62	28.1	38.6	54.9	9	0.87	52	25.7	32.6	41.2

Cooling Capacity: 4 Rows

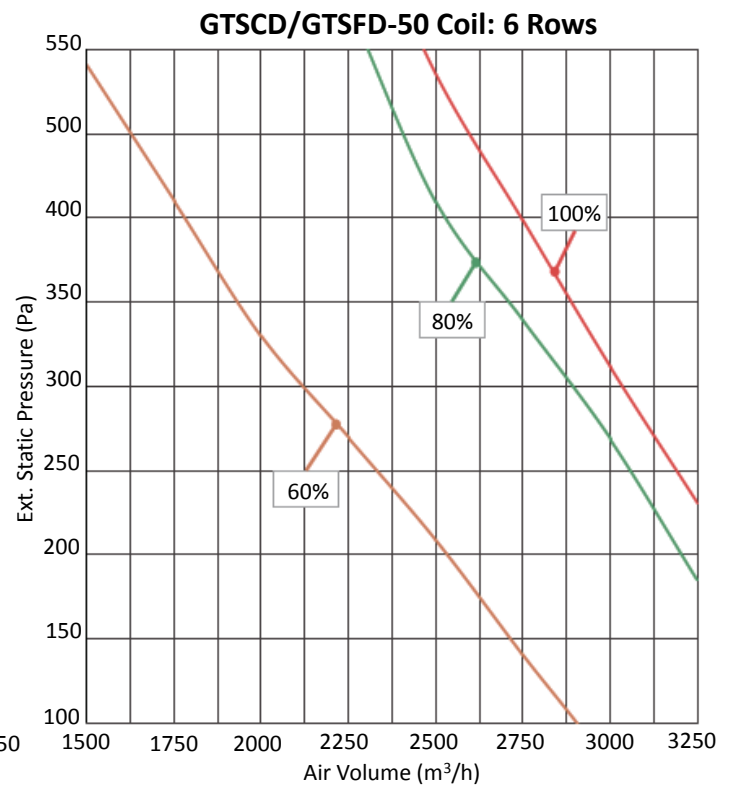
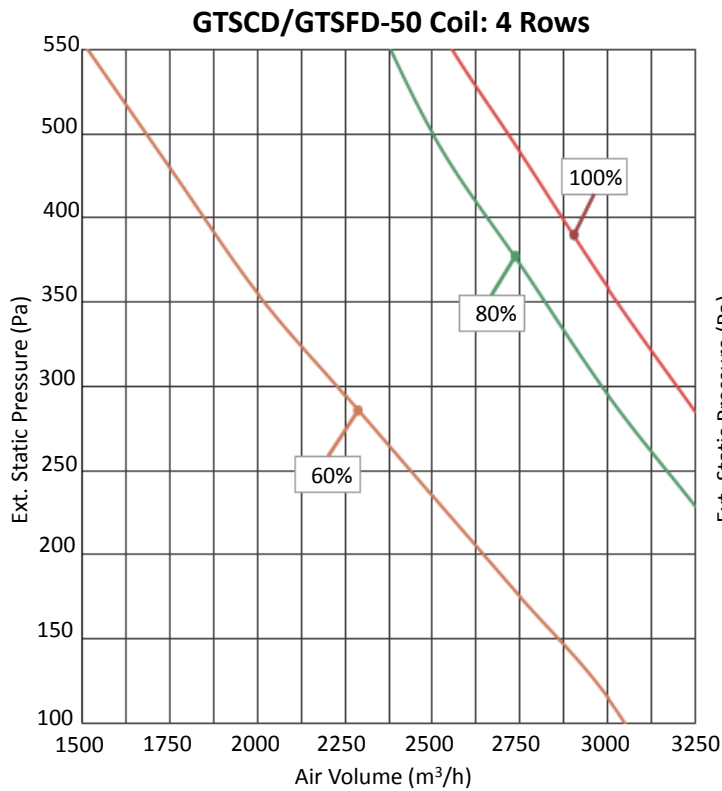
On-Coil Air Temperature: DB26°C /WB 18.7°C

Model	Air Volume		On-Coil Temperature 5.5 °C						On-Coil Temperature 7 °C					
	(l/s)	(m³/h)	Water ΔT (K)	Water Flow		Capacity		Water Side ΔP (kPa)	Water ΔT (K)	Water Flow		Capacity		Water Side ΔP (kPa)
				(l/s)	l/min	Sensible (kW)	Total (kW)			(l/s)	l/min	Sensible (kW)	Total (kW)	
GTSFD-50	500	1800	7	0.39	24	8.5	11.6	33.4	5	0.54	32	8.3	11.1	55.5
			8	0.34	21	8.3	11.0	36.6	7	0.34	21	7.8	9.9	26.3
			9	0.28	16	8.1	10.4	18.2	9	0.24	14	7.4	8.8	14.1
	667	2400	7	0.48	29	10.7	13.7	46.5	5	0.59	35	10.1	12.2	10.1
			8	0.39	24	10.4	13.0	33.4	7	0.41	25	9.9	11.7	35.3
			9	0.33	20	10.1	12.2	24.2	9	0.28	16	9.4	10.3	18.2
	833	3000	7	0.55	33	12.8	15.8	58.6	5	0.67	40	12.3	13.9	13.1
			8	0.44	27	12.3	14.6	40.4	7	0.46	28	11.9	13.4	43.5
			9	0.38	23	12.1	13.8	30.3	9	0.33	20	11.3	11.8	24.2
GTSFD-100	1200	3600	7	0.77	46	16.8	22.5	22.2	5	1.05	63	16.5	21.6	37.4
			8	0.64	38	16.2	21.1	16.2	7	0.65	39	15.5	19.1	16.2
			9	0.54	32	15.7	19.8	12.2	9	0.44	27	14.4	16.6	9.1
	1333	4800	7	0.91	55	20.9	26.5	29.3	5	1.24	74	20.7	25.5	49.5
			8	0.75	45	20.5	24.9	21.2	7	0.77	46	19.7	22.7	22.2
			9	0.62	37	19.8	23.0	15.1	9	0.54	32	18.4	19.8	12.2
	1667	6000	7	1.03	62	25.1	29.9	36.4	5	1.39	83	24.6	28.9	60.6
			8	0.84	50	24.2	28.2	25.2	7	0.90	54	23.5	25.8	28.3
			9	0.70	42	23.8	26.2	19.2	9	0.60	36	22.1	22.7	14.1

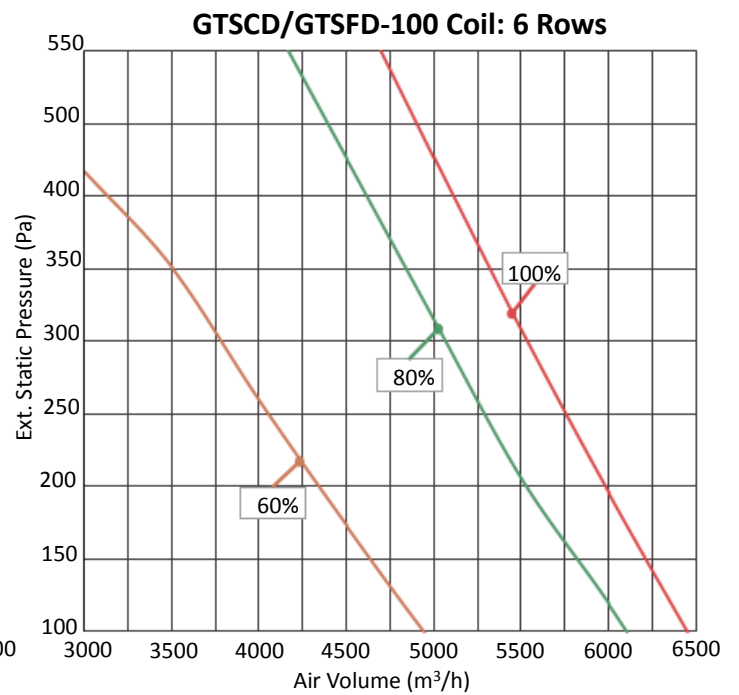
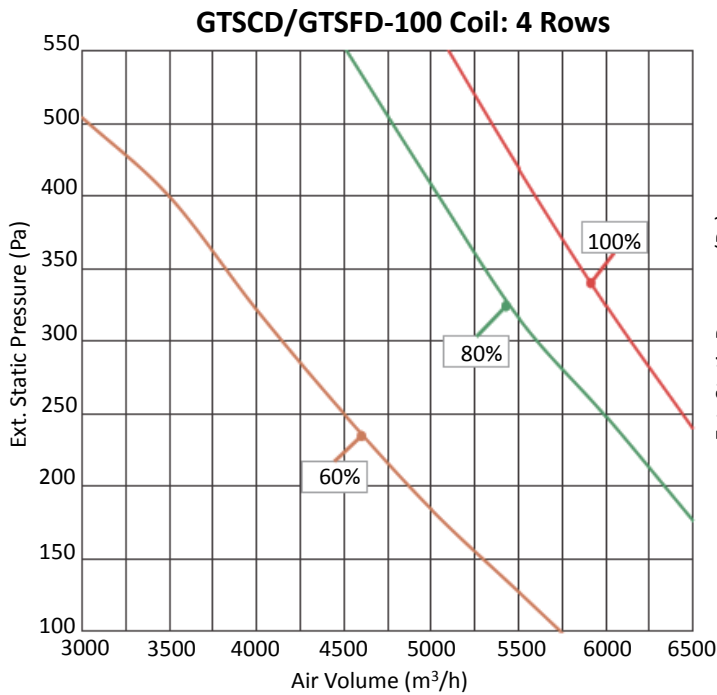
Cooling Capacity: 6 Rows

On-Coil Air Temperature: DB26°C /WB 18.7°C

Model	Air Volume		On-Coil Temperature 5.5 °C						On-Coil Temperature 7 °C					
	(l/s)	(m³/h)	Water ΔT (K)	Water Flow		Capacity		Water Side ΔP (kPa)	Water ΔT (K)	Water Flow		Capacity		Water Side ΔP (kPa)
				(l/s)	l/min	Sensible (kW)	Total (kW)			(l/s)	l/min	Sensible (kW)	Total (kW)	
GTSFD-50	500	1800	7	0.52	31	9.9	14.9	12.2	5	0.69	41	9.6	14.1	19.2
			8	0.46	28	10.1	15.1	64.7	7	0.48	29	9.5	13.7	68.7
			9	0.39	24	9.9	14.5	49.5	9	0.34	21	8.9	12.5	38.4
	667	2400	7	0.62	37	12.5	18.0	16.2	5	0.84	50	12.2	17.4	27.3
			8	0.52	31	12.1	17.3	12.2	7	0.54	32	11.5	15.7	13.1
			9	0.48	29	12.4	17.7	68.7	9	0.41	25	11.3	15.1	52.5
	833	3000	7	0.72	43	14.9	21.1	21.2	5	0.98	59	14.6	20.4	36.4
			8	0.60	36	14.6	20.1	16.2	7	0.62	37	13.7	18.0	16.2
			9	0.49	30	14.0	18.6	11.1	9	0.48	29	13.5	17.5	68.7
GTSFD-100	1200	3600	7	1.05	63	20.3	30.3	55.5	5	1.32	79	18.8	27.4	13.1
			8	0.88	53	19.7	29.4	40.4	7	0.93	56	18.7	26.8	44.5
			9	0.75	45	19.2	28.2	31.3	9	0.65	39	17.6	24.1	24.2
	1333	4800	7	1.21	72	24.4	34.9	11.1	5	1.62	97	23.8	33.6	18.2
			8	1.08	65	25.1	35.9	58.6	7	1.11	67	23.5	32.5	61.6
			9	0.93	56	24.5	34.5	44.5	9	0.79	47	22.2	29.3	34.3
	1667	6000	7	1.39	83	29.1	40.5	14.1	5	1.87	112	28.6	39.2	23.3
			8	1.13	68	28.4	37.9	10.1	7	1.18	71	27.0	34.6	11.1
			9	1.06	64	28.9	39.8	56.6	9	0.90	54	26.5	33.6	42.4



Note: P-Q chart for motor duty 60%, 80% and 100%



Note: P-Q chart for motor duty 60%, 80% and 100%



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