

Coil, Physical Data: TVS Series

COILS

Titus offers hot water and chilled water coils for specific application with all TVS Series fan coil units. Strict onsite inspection before, during,

and after installation guarantees the highest quality and performance available.

Standard Features

- » Cooling - 3 or 4 row chilled water
- » Heating - 1 or 2 row hot water
- » 5 total rows of cooling and heating coils maximum
- » ½" O.D. seamless copper tubes
- » 0.016" tube wall thickness
- » High efficiency aluminum fin surface for optimizing heat transfer, pressure drop and carryover
- » Manual air vents

Optional Features

- » Automatic air vents
- » Stainless steel coil casings

Titus offers TEAMS, the industry's leading fan coil rating and selection program for complete unit, coil and sound selection.

AIRFLOW CORRECTION

Airflow Correction Factors For Hot Water Coils						
Unit Size	1 Row HW Coil			2 Row HW Coil		
	High	Med.	Low	High	Med.	Low
03	0.927	0.961	0.950	0.859	.0924	0.903
04	0.988	0.939	0.946	0.976	0.882	0.895
06	0.965	0.953	0.927	0.931	0.908	0.859
08	0.973	0.966	0.977	0.947	0.933	0.955
10	0.981	0.975	0.997	0.962	0.951	0.994
12	0.966	0.968	0.947	0.933	0.937	0.897

Notes:

1. Use for addition of HW coils with CW coils on 4-pipe units only. Not for use on 2-pipe changeover systems
2. For 1 row HW coil, use with 3 row or 4 row CW coils
3. For 2 row HW coil, use with 3 row CW coils only

Example: TVS03 with 3 row cooling coil and no additional external static pressure, determine airflow with the addition of a 2 row HW coil.

Solution: From TVS03 fan curve, CFM is 350 at 0 ESP. Multiply CFM by correction factor for 2 row coil. $350 \times .859 = 300$ CFM.

FACE AREA, FREE AREA AND FILTER SIZES

Unit Size	Coil Face Area	Filter Face Area	Nominal Filter Sizes
03	2.17 [.20]	2.29 [.21]	13 ¾ x 24 x 1 [349 x 610 x 25]
04	2.17 [.20]	2.29 [.21]	13 ¾ x 24 x 1 [349 x 610 x 25]
06	2.77 [.26]	2.90 [.27]	15 ¾ x 26 ½ x 1 [400 x 673 x 25]
08	2.77 [.26]	2.90 [.27]	15 ¾ x 26 ½ x 1 [400 x 673 x 25]
10	3.85 [.36]	3.98 [.37]	19 ¾ x 29 x 1 [502 x 737 x 25]
12	3.85 [.36]	3.98 [.37]	19 ¾ x 29 x 1 [502 x 737 x 25]

ALTITUDE CORRECTION

Altitude Correction Factors								
Altitude (ft)	0	1000	2000	3000	4000	5000	6000	7000
Air Density (lb./ft. ³)	0.075	0.0722	0.0697	0.0672	0.0648	0.0625	0.0601	0.0579
Total Capacity	1.000	0.988	0.986	0.983	0.981	0.979	0.977	0.975
Sensible Capacity	1.000	0.960	0.930	0.900	0.860	0.830	0.800	0.770
Static Pressure	1.000	0.960	0.930	0.900	0.860	0.830	0.800	0.770

Note: Capacity and static pressures will be affected for applications above sea level. To apply correction factors, multiply factor to desired coil capacity or fan curve data.

Example: TVS03 with 3 row coil, high speed fan operation at 3000 ft. above sea level and with 0.1 IN. W.C. ESP.

Solution: Using correction factors from Altitude Correction chart for 3000 ft. above sea level, data from AHRI Standard Ratings table and fan curves.
 Total capacity = 12,500 BTUH (.983) = 12,288 BTUH
 Sensible Capacity = 8,000 BTUH (.90) = 7,200 BTUH
 SP = .1 (.90) = .09 IN. W.C.



Physical Data TVS Series

AHRI STANDARD RATINGS

Model/Size	Coil		Airflow CFM (Dry Flow)	Cooling Capacity		Water		Power Input (Watts)
	Rows	FPI		QT (BTUH)	QS (BTUH)	Flow Rate (GPM)	WPD (ft-wg)	
TVS 03	3	14	346	12649	8920	2.5	6.36	66
TVS 04	3	14	441	15649	11060	3.1	8.48	118
TVS 06	3	14	608	23430	16069	4.6	15.93	142
TVS 08	3	14	799	26969	19200	5.4	10.13	247
TVS 10	3	14	1006	36419	25510	7.3	8.49	279
TVS 12	3	14	1238	42229	29959	8.4	9.63	474
TVS 03	4	14	337	15750	10470	3.1	11.31	66
TVS 04	4	14	426	19450	12989	3.9	13.86	118
TVS 06	4	14	587	27260	18129	5.4	13.86	142
TVS 08	4	14	779	33709	22799	6.7	17.96	247
TVS 10	4	14	989	42099	28780	8.4	7.1	279
TVS 12	4	14	1206	49159	33970	9.7	8.49	474

Note: Based on 80°F DB and 67°F WB EAT, 45°F EWT, 10°F temperature rise, high fan speed. Motor type is PSC and motor voltage is 115/1/60. Airflow under dry coil conditions. All models tested at 0.0" external static pressure.

HEATING CAPACITY

Unit Type	Unit Size	Nom CFM	1 Row			2 Row		
			QS (MBH)	GPM	WPD	QS (MBH)	GPM	WPD
TVS / RAR	03	350	17.6	0.9	0.53	28.6	1.5	2.56
	04	466	17.9	0.9	0.26	35.4	1.8	3.79
	06	592	24.9	1.3	0.27	47.3	2.4	8.51
	08	846	29.8	1.5	0.33	59.8	3.1	12.96
	10	971	44.9	2.3	0.78	74.5	3.8	3.84
	12	1225	49.7	2.6	0.93	87.9	4.5	5.17

Note: Based on 70°F DB EAT, 180°F EWT, 40°F temperature drop, high fan speed

TVS UNIT WEIGHT DATA

Component	Unit Size						
	03	04	06	08	10	12	
TVS Base Unit	218 [99]	218 [99]	235 [107]	235 [107]	277 [126]	277 [126]	
TVSM/TVSS Fire Rated Wall Plenum	130 [59]	130 [59]	145 [66]	145 [66]	160 [73]	160 [73]	
TVSM/TVSS Non Fire Rated Wall Plenum	78 [35]	78 [35]	87 [40]	87 [40]	96 [44]	96 [44]	
(4) 2" Risers & (1) 1" Riser (115" L & ¾" INS)	100 [45]	100 [45]	100 [45]	100 [45]	100 [45]	100 [45]	
Total Coil Rows	3 Row - Dry	20 [9]	20 [9]	24 [15]	24 [15]	34 [15]	34 [15]
	3 Row - Wet	26 [12]	26 [12]	31 [14]	31 [14]	44 [20]	44 [20]
	4 Row - Dry	25 [11]	25 [11]	30 [14]	30 [14]	42 [19]	42 [19]
	4 Row - Wet	32 [15]	32 [15]	39 [18]	39 [18]	55 [25]	55 [25]
	5 Row - Dry	30 [14]	30 [14]	35 [16]	35 [16]	50 [23]	50 [23]
	5 Row - Wet	38 [17]	38 [17]	46 [21]	46 [21]	66 [30]	66 [30]

Note: Unit weight data is in pounds [kilograms]

Electric Heat

Standard Features

- » ETL listed as an assembly for safety compliance
- » Single point power connection
- » Mounted in preheat position
- » Automatic reset primary and back-up secondary thermal limits
- » Internal wiring rated at 105°C
- » Integral electric heat assembly with removable element for easy service
- » Stainless steel terminals and hardware



Useful Formulas

$$kW^* = \frac{CFM \times \Delta T \times 1.085^{**}}{3413}$$

$$1\emptyset \text{ AMPs} = \frac{kW \times 1000}{\text{Volts}}$$

* 1kW = 3413 BTU/H

** Capacity at sea level

Altitude Considerations:

Reduce by 0.034 for each 1000 ft. of altitude above sea level.

Example: 5000 ft./1000 ft. = 5

$$5 \times 0.034 = 0.17$$

$$1.085 - 0.17 = 0.915$$

Notes:

1. Shaded areas of the electric heat selection chart indicate kW and voltage options not available
2. Available voltages are single phase, 60 hertz
3. Size heater for Leaving Air Temperature (LAT) less than 104°F
4. Silent, solid state heater relay is available for heater currents less than 18 amps
5. Ask Titus representative about continuously modulating electric heat using SSR and special control options

Optional Features

- » Silent solid state relays
- » Manual reset secondary thermal units
- » Door interlocking disconnect switch
- » Main fusing

Electrical Calculations Information

1. Contact your Titus representative for more information on electrical calculations, including FLA, MCA and MOP
2. Non-Fused Door Interlock Disconnect Switch shall be sized according to MCA
3. Fused Door Interlock Disconnect Switch and Main Fusing shall be sized according to MOP

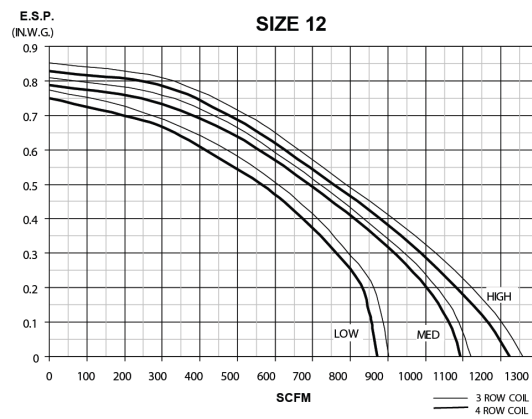
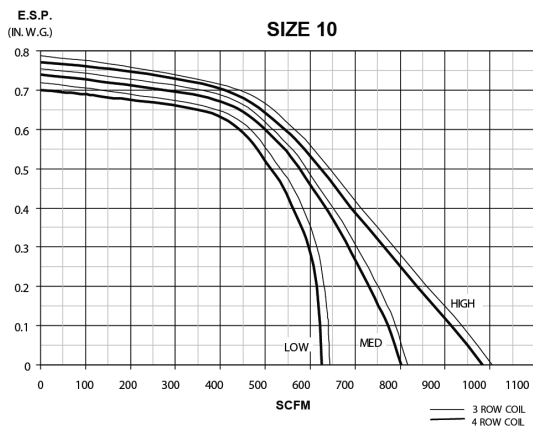
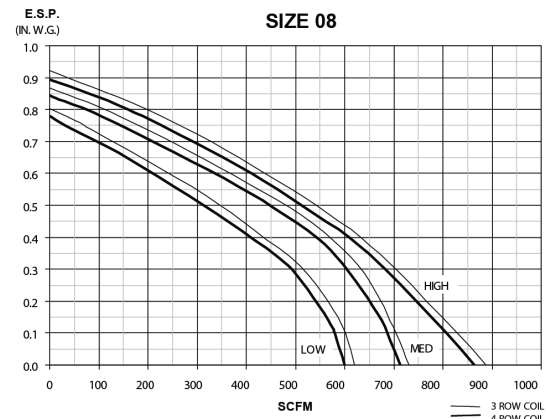
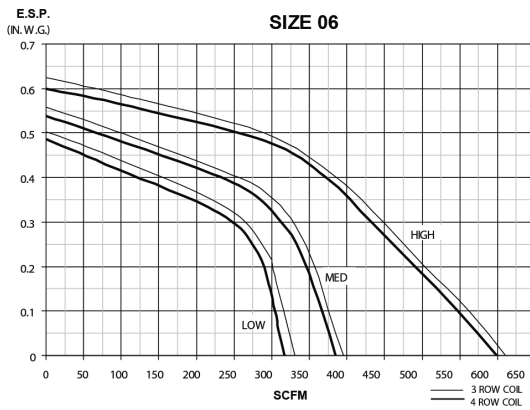
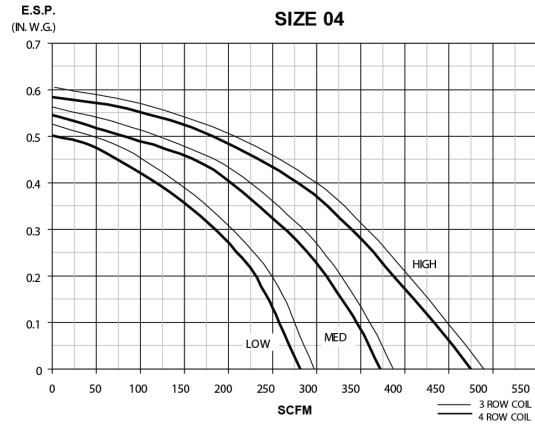
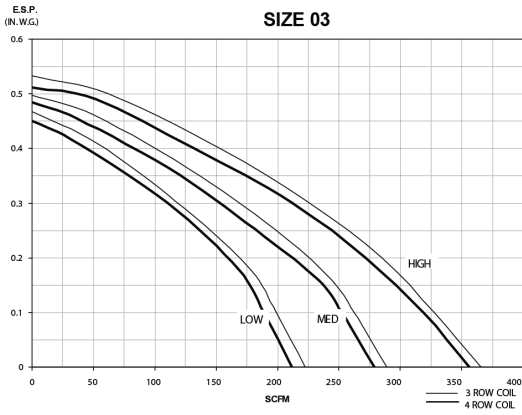
TVS ELECTRIC HEAT SELECTION CHART (AMPS)

Unit Size	MBH	3.4	6.8	10.2	13.7	17.1	20.5	23.9	27.3	30.7	34.1
	KW	1.0	2.0	3.0	4.0	5.0	6.0	7.0	8.0	9.0	10.0
	Volts	AMPS									
03	115	8.7	17.4	26.1							
	208	4.8	9.6	14.4							
	230	4.4	8.7	13.1							
	277	3.6	7.2	10.8							
04	115	8.7	17.4	26.1	34.8						
	208	4.8	9.6	14.4	19.2						
	230	4.4	8.7	13.1	17.4						
	277	3.6	7.2	10.8	14.4						
06	115	8.7	17.4	26.1	34.8						
	208	4.8	9.6	14.4	19.2	24.1					
	230	4.4	8.7	13.1	17.4	21.8					
	277	3.6	7.2	10.8	14.4	18.1					
08	115	8.7	17.4	26.1	34.8						
	208	4.8	9.6	14.4	19.2	24.1	28.9	33.7	38.5		
	230	4.4	8.7	13.1	17.4	21.8	26.1	30.5	34.8		
	277	3.6	7.2	10.8	14.4	18.1	21.7	25.3	28.9		
10	115	8.7	17.4	26.1	34.8						
	208	4.8	9.6	14.4	19.2	24.1	28.9	33.7	38.5	43.3	
	230	4.4	8.7	13.1	17.4	21.8	26.1	30.5	34.8	39.2	43.5
	277	3.6	7.2	10.8	14.4	18.1	21.7	25.3	28.9	32.5	36.1
12	115	8.7	17.4	26.1	34.8						
	208	4.8	9.6	14.4	19.2	24.1	28.9	33.7	38.5	43.3	
	230	4.4	8.7	13.1	17.4	21.8	26.1	30.5	34.8	39.2	43.5
	277	3.6	7.2	10.8	14.4	18.1	21.7	25.3	28.9	32.5	36.1



Fan Curves

Note: Contact Titus regarding EC motor data before project submission



Motor, Fan And Sound Data

Note: Contact Titus regarding EC motor data before project submission

MOTOR AND FAN DATA

Unit Size	Fan Speed	Motor H.P. (QTY)	115 Volts		208-230 Volts		277 Volts	
			AMPS	WATTS	AMPS	WATTS	AMPS	WATTS
03	High	1/35	0.6	66	0.3	74	0.3	70
	Medium	1/60	0.5	54	0.2	58	0.2	58
	Low	1/150	0.4	40	0.2	43	0.2	45
04	High	1/25	1.0	118	0.5	118	0.5	124
	Medium	1/50	0.7	76	0.4	91	0.3	93
	Low	1/100	0.5	52	0.3	67	0.3	68
06	High	1/15	1.3	132	0.6	129	0.5	126
	Medium	1/30	0.9	82	0.5	93	0.4	94
	Low	1/60	0.7	69	0.4	85	0.3	93
08	High	1/6	2.7	247	1.4	233	1.0	240
	Medium	1/8	2.4	245	0.9	202	0.9	217
	Low	1/10	2.2	205	0.6	177	0.8	214
10	High	1/5	2.7	279	1.2	310	1.0	290
	Medium	1/6	1.9	277	0.8	285	0.7	255
	Low	1/8	1.0	202	0.6	245	0.5	220
12	High	1/4	4.9	474	2.2	477	2.0	458
	Medium	1/5	4.3	420	1.5	420	1.4	418
	Low	1/6	3.7	325	1.1	325	1.0	332

Notes:

1. Motor electrical data is nameplated data. Actual data will vary with application.
2. 230 volt motor is nameplated for 208-230/1/60. Use 230 volt motor data for 208 volt applications.

TVS SOUND DATA

Unit Size	Fan Speed	Total Sound Power Level						
		Octave Band / Center Frequency (HZ)						
		2/125	3/250	4/500	5/1000	6/2000	7/4000	8/8000
03	High	63	56	53	48	42	37	33
	Medium	59	52	49	43	36	32	27
	Low	51	45	41	34	25	22	21
04	High	65	58	54	49	46	42	36
	Medium	60	54	50	45	41	37	31
	Low	53	47	41	37	32	28	26
06	High	70	61	56	51	48	45	40
	Medium	63	54	52	45	41	41	36
	Low	58	51	47	42	34	28	25
08	High	71	63	61	59	54	52	47
	Medium	68	60	58	54	49	48	39
	Low	63	57	55	50	45	42	35
10	High	73	66	62	62	58	53	51
	Medium	71	63	59	55	50	47	45
	Low	64	59	57	53	48	44	41
12	High	74	70	69	65	61	61	53
	Medium	71	67	64	60	56	53	47
	Low	65	60	59	55	50	44	42

Sound data tested in accordance with AHRI 350-2000

2. Sound levels are expressed in decibels, dB Re: 1 x 10⁻¹² watts

3. Total sound power level data based on Model TVSR with fan CFM at corresponding motor tap with 115/1/60 volt motor, 4 row coil, 1" throwaway filter, double deflection discharge grille, 0.0" external static pressure and standard rated internal pressure losses

