

T-Line90

VERSATILE EXTRACT FAN UNITS FOR HIGHER AIR TEMPERATURES AND PRESSURES

Duty range 0.15 to 7.0m³/sec

Motor out of airstream

Up to 90°C operating
temperature

Easy to clean

Inverter speed control

Low specific fan power



VES AIR HANDLING UNITS

*part of a complete range of innovative
flexible products from the HVAC experts*

T-Line90 EXTRACT FAN UNITS

Why choose VES

VES have been supplying products for the HVAC industry for over 40 years, and have the in-depth knowledge and resources to provide solutions to all ventilation related requirements. We are a substantial British manufacturing company with over 220 employees, several factories plus a regional base in the north of England, and sales and service engineers located throughout the UK.

Complete range of products

The product range encompasses all types of ventilation products, including those required for commercial, industrial, public and domestic buildings. The emphasis is on low energy products and sophisticated controls to meet the requirements of the

Building Regulations.

The range extends from a small bathroom extract fan up to a mighty central station air handling unit. There are specialist heat recovery units, high temperature fans for kitchen hood extract; duct, wall, ceiling and roof units; low noise products and silencers; fitted controls.

High quality, flexible solutions

VES operate a quality assurance system to ISO 9001, monitored by the BSI. The air movement products are tested in house to BS 848 Part 1, and submitted for external testing and approval when necessary.

VES specialise in bespoke designs for ventilation units, and whatever the issue, be it space, noise, temperature etc, can provide a design solution to meet the requirements of the project.

Superior customer service

From the moment we receive your enquiry to delivery and beyond, we have the people in place to give excellent customer service.

The VES after sales service covers the whole of the UK and is among the best in the industry.

Experience and expertise

VES employ a range of experts in disciplines including air movement, noise control, air conditioning, controls, electrics and product refurbishment, and we have key staff who have worked at VES for many years.

Manufactured in the UK

VES has over 12000m² of manufacturing and stores space, and has state of the art sheet metalworking equipment, plus a large powder coating plant. VES also has a substantial controls department, and makes components such as dampers and electric heaters in-house. This not only provides employment for local people, but also many suppliers around the UK.

Ideal for polluted air extract, including kitchen hood, commercial and industrial processes, this range is suitable for up to 90°C constant operating temperatures.



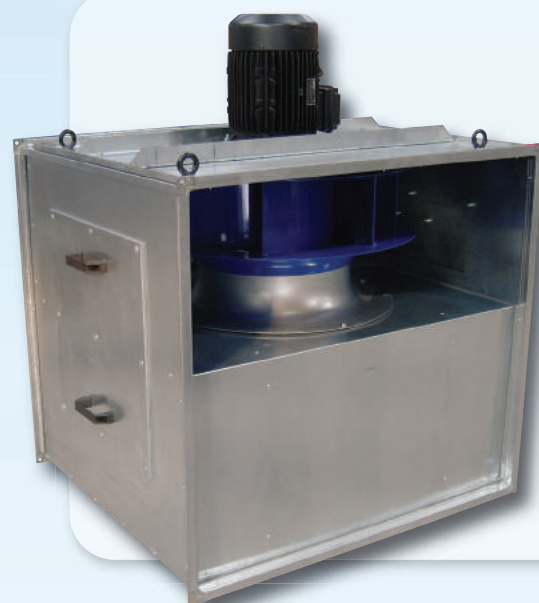
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T-Line 90

Features

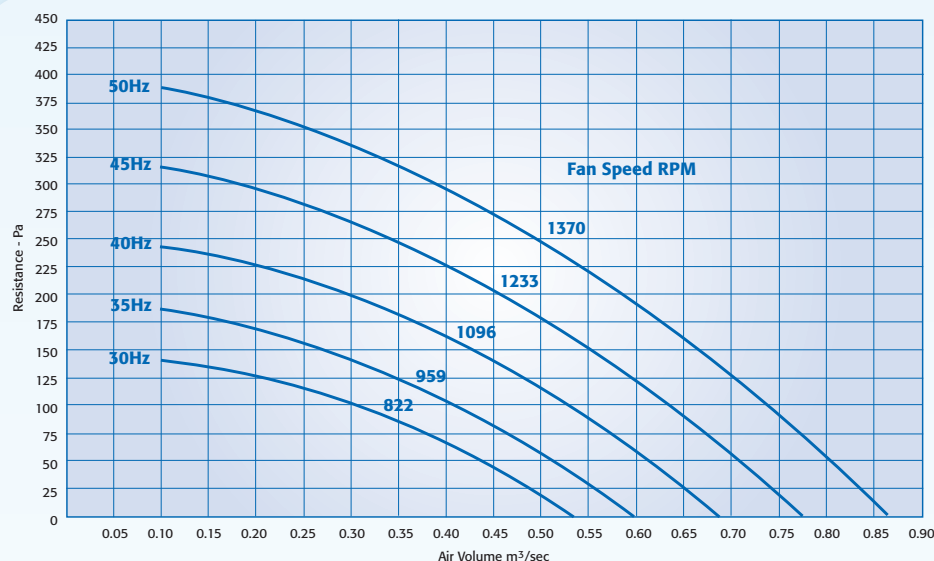
- ▶ With motor out of airstream, and a backward curved impellor, the unit is easy to clean without dismantling.
- ▶ The motor can be speed controlled by inverter, giving a choice of manual or automatic control from a variety of dictates, including BMS, the VES Air Quality Sensor, and set back to trickle ventilation.
- ▶ The fan airflow is easy to accurately commission right at the unit, using a micromanometer. There is no need for a conventional pitot traverse in the ductwork.
- ▶ For quiet running, a T-Line 90 can be selected from a range of speeds, all published with the noise level and specific fan power detailed.
- ▶ The units are available for mounting horizontally, vertically, internally or outside, and a weatherproof motor housing is available if required.
- ▶ The unit case is manufactured from galvanised sheet steel, which will be powder coat paint finished if weatherproof construction is required.
- ▶ Units fitted with pre-wired isolator, and the motor has a quick change plug connector for easy maintenance.
- ▶ Mounting feet are supplied fitted as standard. AV mounts and high temperature flexible connections are available for all units.
- ▶ Matching cleanable silencers available for all units.
- ▶ Acoustic housings available for noise sensitive applications.
- ▶ All units have been tested to BS 848 Part 1, and manufactured under the ISO 9001 quality system.



T-Line⁹⁰ EXTRACT FAN UNITS

Model TLL 350/4-1 TLL 350/4-3

Selection Curves



Sound Data

Fan Voltage	Inverter Setting - Hz	Fan Speed RPM	Sound Power Level PWL, dB Linear Spectrum								Sound Pressure Level dBA @ 3 metres from outlet
			Centre Frequency - Hz								
			63	125	250	500	1k	2k	4k	8k	
*230 - 1 phase	50	1370	64	68	71	71	67	63	58	54	58
400 - 3 phase	30	822	52	56	60	59	55	51	46	42	46
400 - 3 phase	35	959	55	59	63	62	58	54	49	45	49
400 - 3 phase	40	1096	58	62	66	65	61	57	52	48	52
400 - 3 phase	45	1233	61	65	69	68	64	60	55	51	55
400 - 3 phase	50	1370	64	68	71	71	67	63	58	54	58

*The 230 volt 1 phase fan is not speed controllable, see page 13 for options.

Specific Fan Power - watts/litre/second

Fan Voltage	Inverter Setting - Hz	Fan Speed RPM	Air Volume - m³/sec							
			0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8
230 - 1 phase	50	1370	4.00	2.40	1.60	1.31	1.05	0.89	0.72	0.63
400 - 3 phase	30	822	1.75	0.84	0.60	0.46	0.39	-	-	-
400 - 3 phase	35	959	1.90	0.96	0.70	0.54	0.41	0.33	-	-
400 - 3 phase	40	1096	2.00	1.10	0.78	0.57	0.46	0.38	-	-
400 - 3 phase	45	1233	2.20	1.05	0.87	0.65	0.53	0.44	0.36	-
400 - 3 phase	50	1370	2.40	1.37	1.00	0.75	0.60	0.51	0.43	0.36

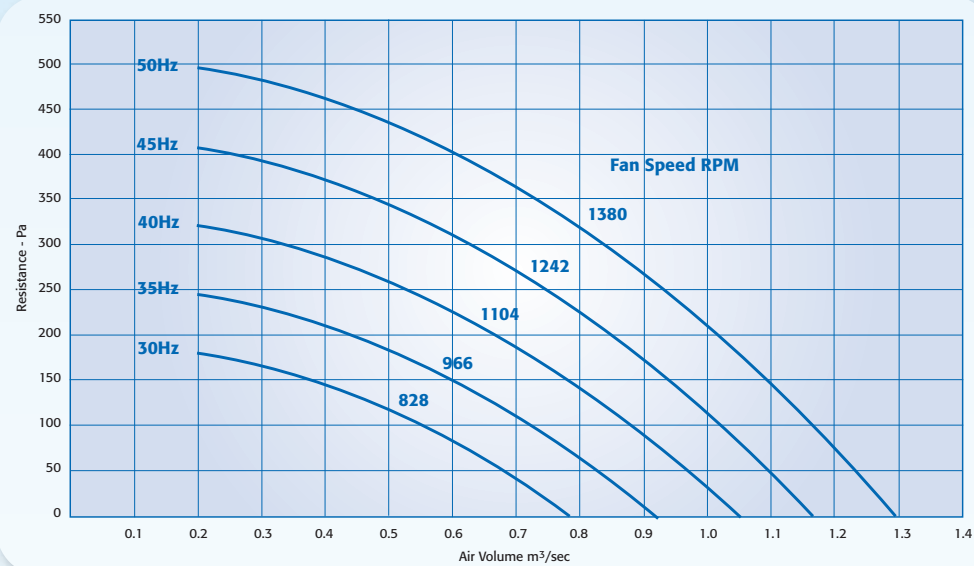
Technical Details

Model TLL 350/4	230 volt - 1 phase	400 volt - 3 phase
Motor size kW	0.37	0.37
Full load current, amps	3.00	1.20
Starting current, amps	8.10	4.13*
Fan speed (full) RPM	1370	1370
Speed controller IP 21	N/A	IN 03/3434-0037/GN/IP 21
Speed controller IP 54	N/A	IN 03/3434-0037/GN/IP 54

*Applies to full speed DOL starting only.

Model TLL 400/4-1 TLL 400/4-3

Selection Curves



Sound Data

Fan Voltage	Inverter Setting - Hz	Fan Speed RPM	Sound Power Level PWL, dB Linear Spectrum								Sound Pressure Level dBA @ 3 metres from outlet
			63	125	250	500	1k	2k	4k	8k	
*230 - 1 phase	50	1380	66	70	73	73	69	65	60	56	61
400 - 3 phase	30	828	55	59	62	62	57	53	49	44	47
400 - 3 phase	35	966	58	62	65	65	60	56	52	47	50
400 - 3 phase	40	1104	61	65	68	68	63	59	55	50	53
400 - 3 phase	45	1242	64	67	71	70	66	62	58	53	57
400 - 3 phase	50	1380	66	70	73	73	69	65	60	56	61

*The 230 volt 1 phase fan is not speed controllable, see page 13 for options.

Specific Fan Power - watts/litre/second

Fan Voltage	Inverter Setting - Hz	Air Volume - m³/sec										
		0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.1	1.2
230 - 1 phase	50	2.54	1.90	1.53	1.30	1.15	1.05	0.89	0.77	0.70	0.58	0.50
400 - 3 phase	30	0.99	0.70	0.53	0.41	0.36	0.29	-	-	-	-	-
400 - 3 phase	35	1.10	0.80	0.60	0.50	0.41	0.36	0.30	0.26	-	-	-
400 - 3 phase	40	1.45	0.88	0.69	0.58	0.48	0.41	0.37	0.30	0.26	-	-
400 - 3 phase	45	1.60	0.98	0.80	0.67	0.57	0.49	0.44	0.38	0.33	0.28	-
400 - 3 phase	50	1.75	1.16	0.91	0.78	0.68	0.61	0.53	0.48	0.40	0.36	0.30

Technical Details

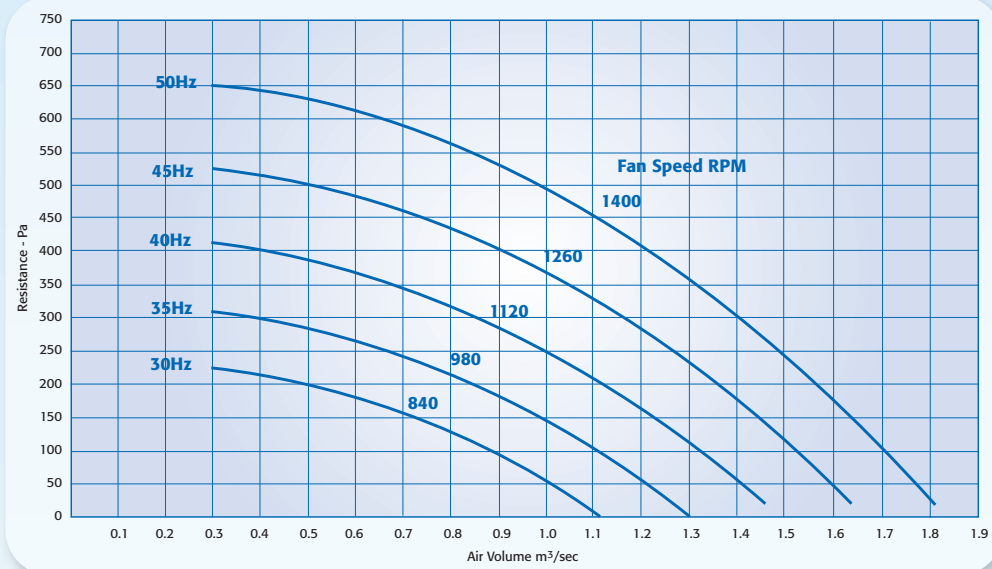
Model TLL 400/4	230 volt - 1 phase	400 volt - 3 phase
Motor size kW	0.55	0.55
Full load current, amps	4.00	1.60
Starting current, amps	12.80	6.12*
Fan speed (full) RPM	1380	1380
Speed controller IP 21	N/A	IN 03/3434-0055/GN/IP 21
Speed controller IP 54	N/A	IN 03/3434-0055/GN/IP 54

*Applies to full speed DOL starting only.

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Model TLL 450/4-1 TLL 450/4-3

Selection Curves



Sound Data

Fan Voltage	Inverter Setting - Hz	Fan Speed RPM	Sound Power Level PWL, dB Linear Spectrum								Sound Pressure Level dBA @ 3 metres from outlet
			Centre Frequency - Hz								
			63	125	250	500	1k	2k	4k	8k	
*230 - 1 phase	50	1400	71	75	79	78	74	70	66	61	66
400 - 3 phase	30	840	60	64	67	67	63	58	54	49	54
400 - 3 phase	35	980	63	67	70	70	66	61	57	52	57
400 - 3 phase	40	1120	66	70	73	73	69	64	60	55	60
400 - 3 phase	45	1260	69	73	76	76	72	67	63	58	63
400 - 3 phase	50	1400	71	75	79	78	74	70	66	61	66

*The 230 volt 1 phase fan is not speed controllable, see page 13 for options.

Specific Fan Power - watts/litre/second

Fan Voltage	Inverter Setting - Hz	Air Volume - m³/sec												
		0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.1	1.2	1.3	1.4	1.5	1.6
230 - 1 phase	50	2.17	1.90	1.72	1.50	1.37	1.24	1.13	1.03	1.00	0.82	0.73	0.66	0.62
400 - 3 phase	30	0.72	0.58	0.53	0.46	0.39	0.34	0.30	0.25	-	-	-	-	-
400 - 3 phase	35	0.82	0.71	0.61	0.54	0.46	0.42	0.37	0.33	0.28	0.24	-	-	-
400 - 3 phase	40	0.99	0.85	0.74	0.63	0.59	0.51	0.47	0.42	0.37	0.31	0.29	-	-
400 - 3 phase	45	1.20	1.05	0.87	0.77	0.71	0.64	0.58	0.53	0.49	0.44	0.40	0.35	0.29
400 - 3 phase	50	1.36	1.22	1.07	0.93	0.86	0.78	0.73	0.66	0.62	0.57	0.52	0.45	0.40

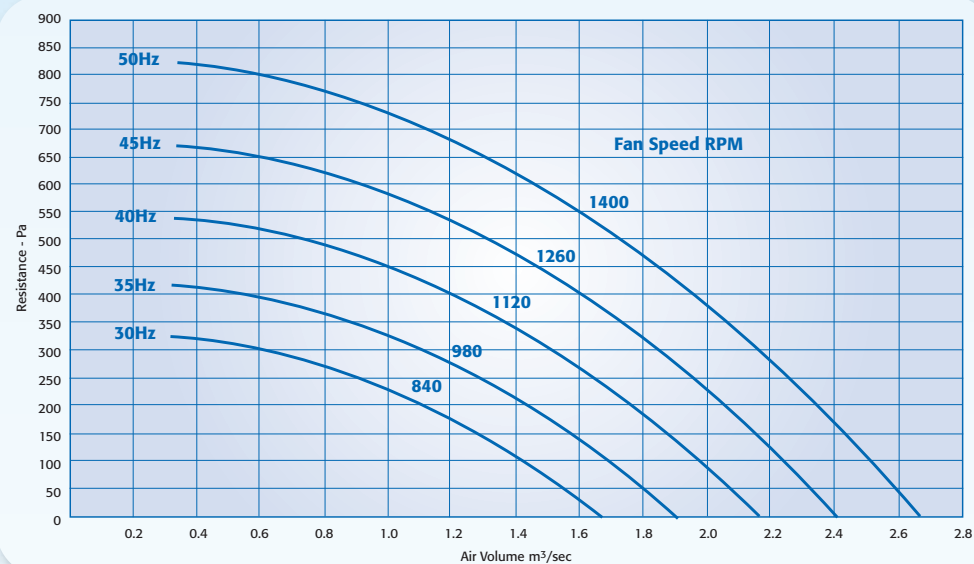
Technical Details

Model TLL 450/4	230 volt - 1 phase	400 volt - 3 phase
Motor size kW	1.10	1.10
Full load current, amps	7.40	2.80
Starting current, amps	26.64	12.76*
Fan speed (full)	1400	1400
Speed controller IP 21	N/A	IN 03/3434-0110/GN/IP 21
Speed controller IP 54	N/A	IN 03/3434-0110/GN/IP 54

*Applies to full speed DOL starting only.

Model TLL 500/4-1 TLL 500/4-3

Selection Curves



Sound Data

Fan Voltage	Inverter Setting - Hz	Fan Speed RPM	Sound Power Level PWL, dB Linear Spectrum								Sound Pressure Level dBA @ 3 metres from outlet
			Centre Frequency - Hz								
			63	125	250	500	1k	2k	4k	8k	
*230 - 1 phase	50	1400	74	78	82	82	78	73	69	64	69
400 - 3 phase	30	840	64	67	70	70	66	61	57	52	57
400 - 3 phase	35	980	67	70	73	73	69	64	60	55	60
400 - 3 phase	40	1120	70	73	77	76	72	68	63	59	64
400 - 3 phase	45	1260	72	76	79	79	75	71	66	62	67
400 - 3 phase	50	1400	74	78	82	82	78	73	69	64	69

*The 230 volt 1 phase fan is not speed controllable, see page 13 for options.

Specific Fan Power - watts/litre/second

Fan Voltage	Inverter Setting - Hz	Air Volume - m³/sec										
		0.6	0.8	1.0	1.2	1.4	1.6	1.8	2.0	2.2	2.4	2.6
230 - 1 phase	50	2.43	1.96	1.71	1.49	1.37	1.23	1.08	0.97	0.80	0.71	0.59
400 - 3 phase	30	0.62	0.51	0.44	0.35	0.28	0.23	-	-	-	-	-
400 - 3 phase	35	0.77	0.62	0.52	0.45	0.38	0.33	0.26	-	-	-	-
400 - 3 phase	40	0.90	0.77	0.65	0.57	0.49	0.43	0.36	0.31	-	-	-
400 - 3 phase	45	1.10	0.94	0.80	0.72	0.62	0.55	0.49	0.40	0.34	0.29	-
400 - 3 phase	50	1.30	1.16	1.00	0.86	0.79	0.72	0.65	0.57	0.50	0.41	0.35

Technical Details

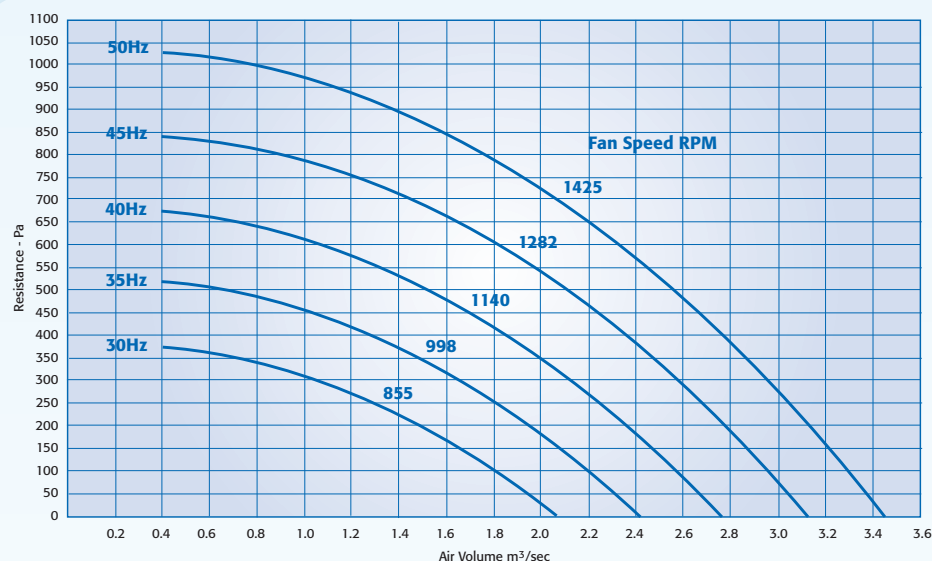
Model TLL 500/4	230 volt - 1 phase	400 volt - 3 phase
Motor size kW	1.50	1.50
Full load current, amps	9.00	3.60
Starting current, amps	42.30	21.09*
Fan speed (full) RPM	1400	1400
Speed controller IP 21	N/A	IN 03/3434-0150/GN/IP 21
Speed controller IP 54	N/A	IN 03/3434-0150/GN/IP 54

*Applies to full speed DOL starting only.

T-Line⁹⁰ EXTRACT FAN UNITS

Model TLL 560/4-3

Selection Curves



Sound Data

Fan Voltage	Inverter Setting - Hz	Fan Speed RPM	Sound Power Level PWL, dB Linear Spectrum								Sound Pressure Level dBA @ 3 metres from outlet
			63	125	250	500	1k	2k	4k	8k	
400 - 3 phase	30	855	67	70	73	72	68	64	59	55	59
400 - 3 phase	35	998	70	74	77	76	72	68	63	59	64
400 - 3 phase	40	1140	73	77	80	79	75	71	67	62	66
400 - 3 phase	45	1282	75	79	83	82	78	74	70	65	70
400 - 3 phase	50	1425	78	81	85	85	81	77	72	68	73

Specific Fan Power - watts/litre/second

Fan Voltage	Inverter Setting - Hz	Air Volume - m³/sec													
		0.6	0.8	1.0	1.2	1.4	1.6	1.8	2.0	2.2	2.4	2.6	2.8	3.0	3.2
400 - 3 phase	30	0.75	0.59	0.48	0.41	0.36	0.32	0.27	0.22	-	-	-	-	-	-
400 - 3 phase	35	0.90	0.75	0.65	0.56	0.49	0.44	0.38	0.32	0.28	0.23	-	-	-	-
400 - 3 phase	40	1.15	0.95	0.80	0.74	0.66	0.61	0.53	0.49	0.42	0.36	0.30	-	-	-
400 - 3 phase	45	1.40	1.21	1.02	0.93	0.88	0.80	0.70	0.64	0.59	0.54	0.49	0.42	0.37	-
400 - 3 phase	50	1.75	1.56	1.38	1.19	1.12	1.02	0.93	0.82	0.75	0.71	0.65	0.56	0.51	0.43

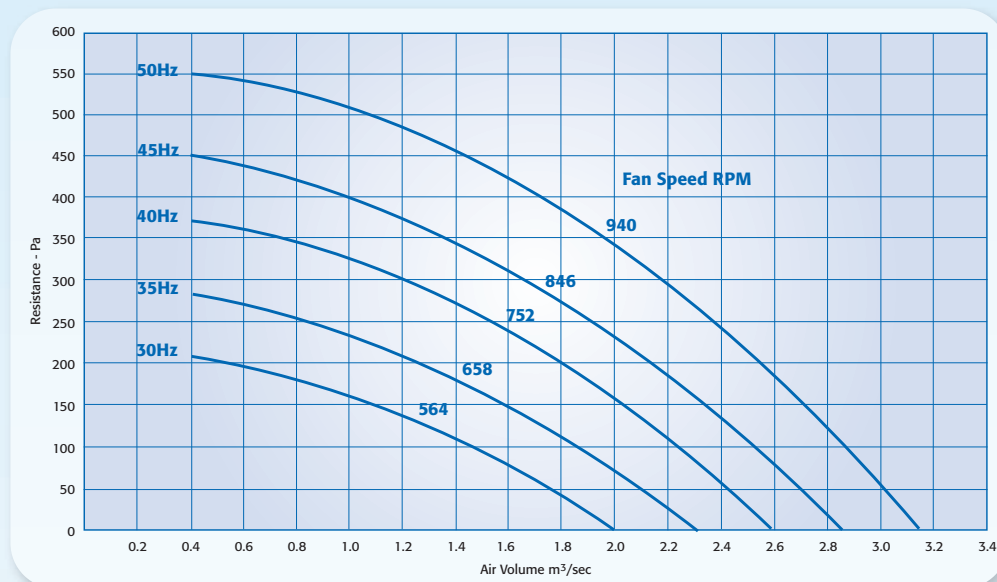
Technical Details

Model TLL 560/4-3	400 volt - 3 phase
Motor size kW	3.0
Full load current, amps	6.80
Starting current, amps	31.74*
Fan speed (full) RPM	1425
Speed controller IP 21	IN 03/3434-0300/GN/IP 21
Speed controller IP 54	IN 03/3434-0300/GN/IP 54

*Applies to full speed DOL starting only.

Model TLL 630/6-3

Selection Curves



Sound Data

Fan Voltage	Inverter Setting - Hz	Fan Speed RPM	Sound Power Level PWL, dB Linear Spectrum								Sound Pressure Level dBA @ 3 metres from outlet
			Centre Frequency - Hz								
			63	125	250	500	1k	2k	4k	8k	
400 - 3 phase	30	564	61	64	67	66	62	57	53	48	53
400 - 3 phase	35	658	64	67	70	69	65	60	56	51	56
400 - 3 phase	40	752	67	70	73	72	68	63	59	54	59
400 - 3 phase	45	846	70	73	76	75	71	67	62	58	62
400 - 3 phase	50	940	72	75	79	78	74	69	65	60	65

Specific Fan Power - watts/litre/second

Fan Voltage	Inverter Setting - Hz	Air Volume - m³/sec												
		0.6	0.8	1.0	1.2	1.4	1.6	1.8	2.0	2.2	2.4	2.6	2.8	3.0
400 - 3 phase	30	0.55	0.44	0.35	0.31	0.26	0.22	0.19	0.17	-	-	-	-	-
400 - 3 phase	35	0.69	0.55	0.46	0.39	0.33	0.30	0.26	0.23	0.19	-	-	-	-
400 - 3 phase	40	0.80	0.67	0.54	0.49	0.44	0.39	0.34	0.30	0.26	0.23	0.19	-	-
400 - 3 phase	45	1.05	0.81	0.66	0.60	0.55	0.48	0.43	0.39	0.33	0.30	0.27	0.24	-
400 - 3 phase	50	1.25	1.00	0.80	0.73	0.67	0.60	0.56	0.50	0.43	0.41	0.36	0.34	0.28

Technical Details

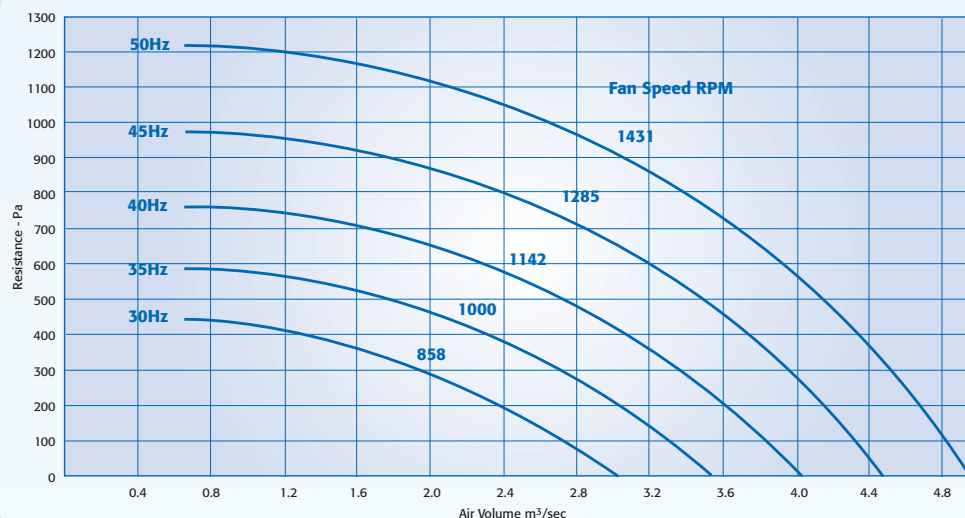
Model TLL 630/6-3	400 volt - 3 phase
Motor size kW	2.2
Full load current, amps	5.30
Starting current, amps	23.32*
Fan speed (full) RPM	940
Speed controller IP 21	IN 03/3434-0220/GN/IP 21
Speed controller IP 54	IN 03/3434-0220/GN/IP 54

*Applies to full speed DOL starting only.

T-Line⁹⁰ EXTRACT FAN UNITS

Model TLL 630/4-3

Selection Curves



Sound Data

Fan Voltage	Inverter Setting - Hz	Fan Speed RPM	Sound Power Level PWL, dB Linear Spectrum								Sound Pressure Level dBA @ 3 metres from outlet
			Centre Frequency - Hz								
			63	125	250	500	1k	2k	4k	8k	
400 - 3 phase	30	858	70	73	76	75	71	67	62	58	62
400 - 3 phase	35	1000	73	77	80	79	75	71	66	62	67
400 - 3 phase	40	1142	76	80	83	83	79	74	70	65	70
400 - 3 phase	45	1285	79	82	86	86	82	77	73	68	73
400 - 3 phase	50	1431	81	85	89	88	84	80	76	71	75

Specific Fan Power - watts/litre/second

Fan Voltage	Inverter Setting - Hz	Air Volume - m³/sec									
		0.8	1.2	1.6	2.0	2.4	2.8	3.2	3.6	4.0	4.4
400 - 3 phase	30	0.78	0.64	0.53	0.42	0.35	0.28	-	-	-	-
400 - 3 phase	35	1.20	0.98	0.81	0.68	0.56	0.48	0.36	-	-	-
400 - 3 phase	40	1.68	1.34	1.11	0.96	0.82	0.74	0.63	0.54	-	-
400 - 3 phase	45	2.30	1.85	1.53	1.29	1.15	0.97	0.87	0.83	0.58	0.42
400 - 3 phase	50	3.06	2.45	2.03	1.76	1.58	1.37	1.20	1.10	0.95	0.80

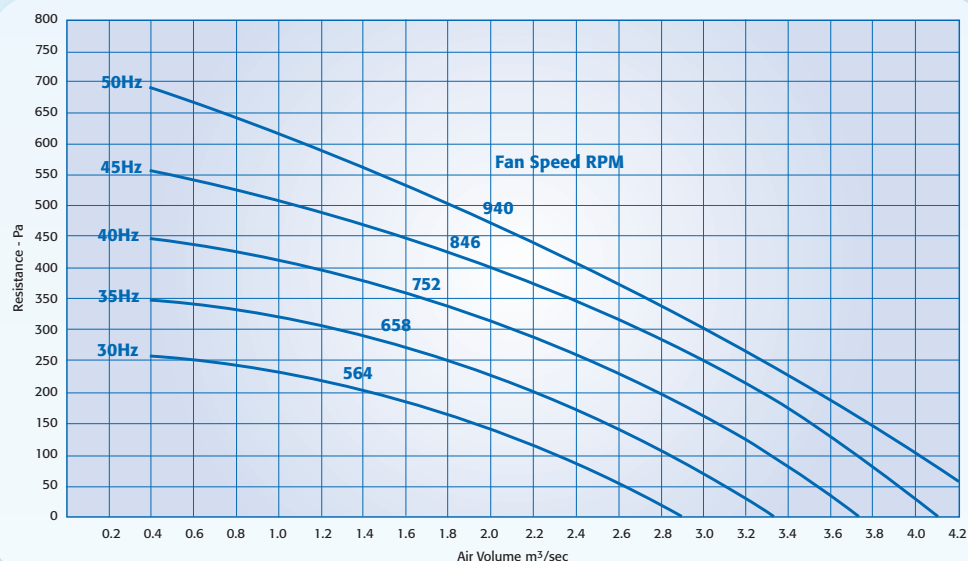
Technical Details

Model TLL 710/6-3	400 volt - 3 phase
Motor size kW	5.5
Full load current, amps	11.4
Starting current, amps	76.0*
Fan speed (full) RPM	1431
Speed controller IP 21	IN 03/3434-0550/GN/IP 21
Speed controller IP 54	IN 03/3434-0550/GN/IP 54

*Applies to full speed DOL starting only.

Model TLL 710/6-3

Selection Curves



Sound Data

Fan Voltage	Inverter Setting - Hz	Fan Speed RPM	Sound Power Level PWL, dB Linear Spectrum								Sound Pressure Level dBA @ 3 metres from outlet
			Centre Frequency - Hz								
			63	125	250	500	1k	2k	4k	8k	
400 - 3 phase	30	564	65	67	70	69	65	60	56	51	56
400 - 3 phase	35	658	68	70	73	72	68	63	59	54	59
400 - 3 phase	40	752	71	74	76	76	71	67	62	58	63
400 - 3 phase	45	846	73	76	79	78	74	70	65	61	66
400 - 3 phase	50	940	75	79	82	81	77	73	68	64	69

Specific Fan Power - watts/litre/second

Fan Voltage	Inverter Setting - Hz	Air Volume - m³/sec								
		0.6	1.0	1.4	1.8	2.2	2.6	3.0	3.4	3.8
400 - 3 phase	30	0.67	0.44	0.34	0.25	0.20	0.14	-	-	-
400 - 3 phase	35	0.85	0.60	0.47	0.38	0.30	0.23	0.17	-	-
400 - 3 phase	40	1.12	0.77	0.62	0.53	0.41	0.34	0.27	-	-
400 - 3 phase	45	1.22	1.01	0.82	0.69	0.58	0.47	0.40	0.32	-
400 - 3 phase	50	1.50	1.18	0.97	0.82	0.75	0.64	0.56	0.47	0.41

Technical Details

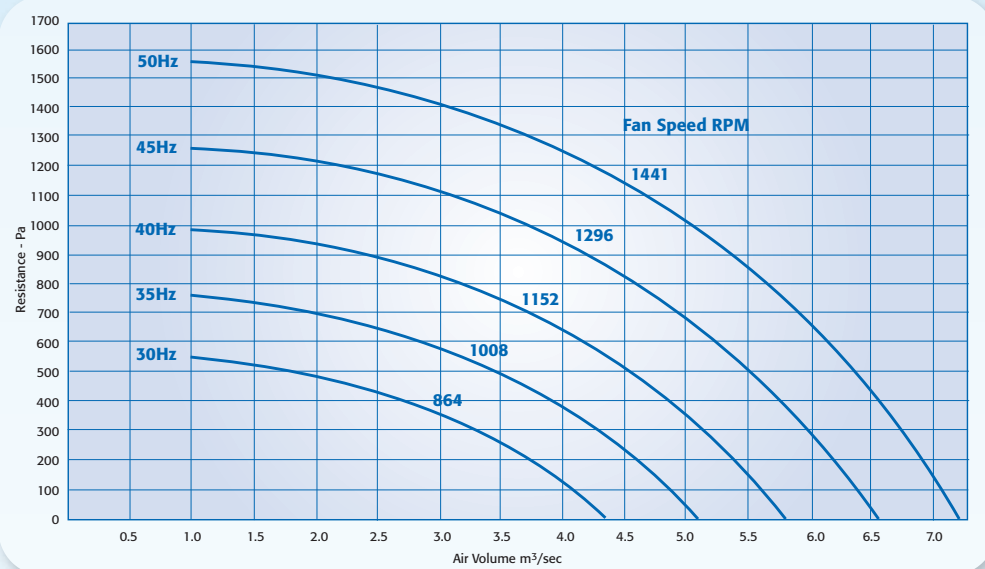
Model TLL 710/6-3	400 volt - 3 phase
Motor size kW	3.0
Full load current, amps	7.30
Starting current, amps	35.77*
Fan speed (full) RPM	940
Speed controller IP 21	IN 03/3434-0300/GN/IP 21
Speed controller IP 54	IN 03/3434-0300/GN/IP 54

*Applies to full speed DOL starting only.

T-Line⁹⁰ EXTRACT FAN UNITS

Model TLL 710/4-3

Selection Curves



Sound Data

Fan Voltage	Inverter Setting - Hz	Fan Speed RPM	Sound Power Level PWL, dB Linear Spectrum								Sound Pressure Level dBA @ 3 metres from outlet
			Centre Frequency - Hz								
			63	125	250	500	1k	2k	4k	8k	
400 - 3 phase	30	864	74	77	80	79	75	70	66	61	67
400 - 3 phase	35	1008	77	80	84	83	79	74	70	65	70
400 - 3 phase	40	1152	80	83	87	86	82	78	73	69	73
400 - 3 phase	45	1296	82	86	90	89	85	81	76	72	76
400 - 3 phase	50	1441	84	88	92	92	88	84	79	75	79

Specific Fan Power - watts/litre/second

Fan Voltage	Inverter Setting - Hz	Air Volume - m³/sec									
		2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0	6.5
400 - 3 phase	30	0.76	0.62	0.53	0.42	0.36	-	-	-	-	-
400 - 3 phase	35	1.16	0.95	0.81	0.74	0.63	0.55	0.43	-	-	-
400 - 3 phase	40	1.60	1.37	1.22	1.10	0.97	0.85	0.72	0.60	-	-
400 - 3 phase	45	2.14	1.86	1.67	1.50	1.36	1.21	1.08	0.96	0.83	0.72
400 - 3 phase	50	2.79	2.43	2.18	1.97	1.84	1.62	1.55	1.40	1.24	1.14

Technical Details

Model TLL 710/6-3	400 volt - 3 phase
Motor size kW	7.5
Full load current, amps	15.1
Starting current, amps	59.6 (star/delta)*
Fan speed (full) RPM	1441
Speed controller IP 21	IN 03/3434-0750/GN/IP 21
Speed controller IP 54	IN 03/3434-0750/GN/IP 54

*Applies to full speed star/delta starting only.

T-Line⁹⁰ EXTRACT FAN UNITS

3 phase speed control using inverters

Option 1

The benefits include 0-100% stepless control from a wide range of input signals, and reduce starting current. Inverters are genuine energy saving devices, and under the Energy Technology List ECA Scheme, the client can claim back 100% tax relief for inverters in the first year. See www.eca.gov.uk for details. Please note that inverters may cause interference to nearby electronic equipment and must be installed correctly to avoid this happening.

Inverter with comprehensive range of functions and IP54 enclosure.

- Complete with operational keypad.
- Optional advanced keypad with built-in time clock.
- IP54 protection for indoor or external use.
- Features include BMS control, remote manual controller, temperature, constant pressure, humidity and CO₂/VOC control.
- Main isolating switch with lockable handle.
- Panel live indicator.
- Damper control.
- Volt free run and trip indication.
- Connections for motor thermal cutout safety interlock.



Option 2

Low cost inverter with IP21 enclosure. Suitable for internal location.

- Complete with operational keypad.
- IP21/NEMA1 protection for indoor use.
- Features include on/off control at inverter pad with built-in pot for easy adjustment and BMS control. Remote manual controller available (CFSC1).



Inverters for 1 phase supply

If only a 230 volt 1 phase supply is available, it is possible to use a single to three phase inverter. This is available for motors up to 1.5kW. A standard three phase motor would be used which will run on a 3 phase 230 volt supply from the inverter. The full load current and the input current to the inverter are listed below:

Motor kW	0.37	0.55	0.75	1.10	1.50
Inverter output current amps (FLC)	2.3	3.2	3.9	6.0	7.8
Input current to inverter	6.2	7.7	10.0	14.7	19.7

Air volume and pressure commissioning.

Instant and accurate measuring of the air volume, right at the fan. There will be no need for duct traverses.

- Each unit is fitted with pressure tapping connections on the outside of the case, these are piped inside the unit to provide an accurate differential static pressure (Pdiff) across the fan.
- This is measured on site using a micromanometer.
- There is a k factor for each size of fan.

Fan Size	k factor
350	121
400	154
450	197
500	252
560	308
630	381
710	490

- To determine the air volume multiply the square root of the pressure differential by the k factor
ie: $qv(m^3/hr) = k \text{ factor} \times \sqrt{Pdiff}$

Example:

Fan size 450: k factor = 197
Static pressure differential measured at fan 400Pa
 $qv = 197 \times \sqrt{400} = 3940 \text{ m}^3/hr$

To simplify this calculation further a differential pressure diagram for each fan is published in the O & M instructions for these products.

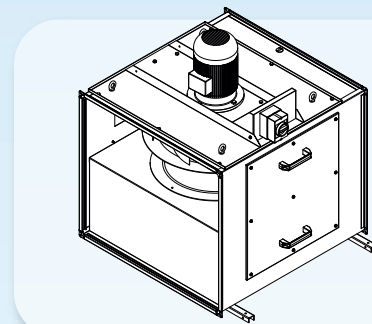
T-Line⁹⁰

DIMENSIONS

Sizes 350-710 PH

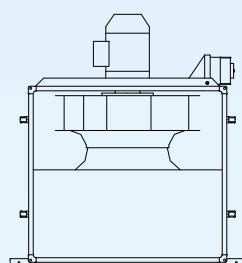
Plantroom/Internal Units

- All units fitted with 30mm MEZ flanges.
- PH units suitable for vertical airflow, in which case the feet will fit each side of the case for support by drop rods or cantilever brackets.
- All units fitted with access panels both sides.
- Differential pressure tapping points fitted for air volume and pressure measurements.
- Plantroom internal units can be powder coat paint finished if required.

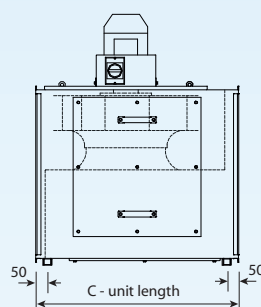


Horizontal inlet and outlet

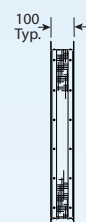
View on outlet



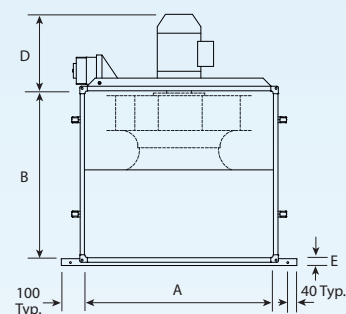
Side elevation



Flexible Connection

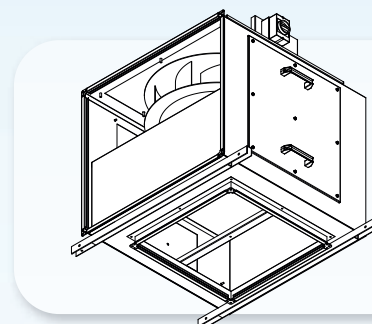


View on inlet

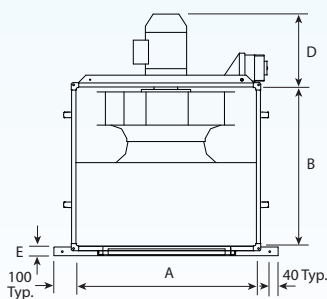


Sizes 350-710 PL

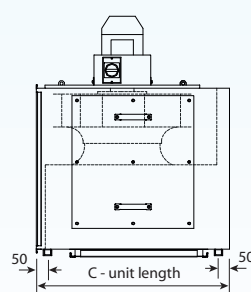
Bottom inlet, horizontal outlet



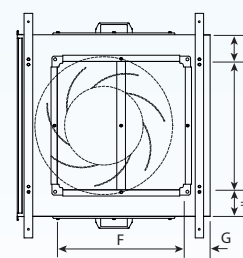
View on outlet



Side elevation



View on bottom inlet



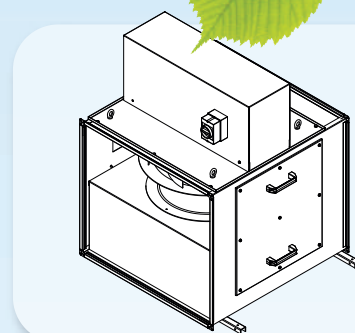
Dimensions (mm)

Unit Size	A	B	C	D	E	F	G	Weight kg
350	500	500	600	215	30	400	100	50
400	700	600	700	232	30	450	100	70
450	750	600	700	267	30	500	100	95
500	800	700	800	267	30	600	100	105
560	850	750	900	306	30	600	120	130
630	900	800	900	362	60	600	150	200
710	1100	1000	1000	328	60	600	170	245

Sizes 350-710 WH

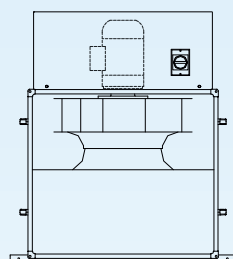
Weatherproof Units

- All units powder coat paint finished in Signal Grey to RAL 7004.
- All units fitted with 30mm MEZ flanges.
- WH units suitable for vertical airflow, in which case the feet will fit each side of the case for support by cantilever brackets.

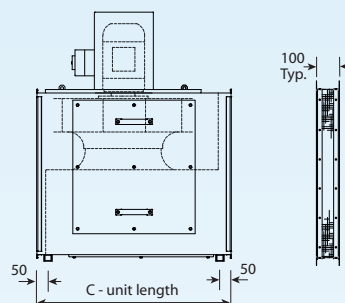


Horizontal inlet and outlet

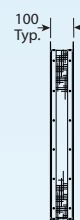
View on outlet



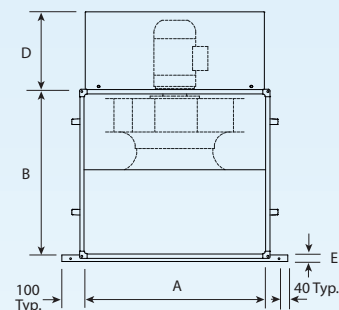
Side elevation



Flexible Connection



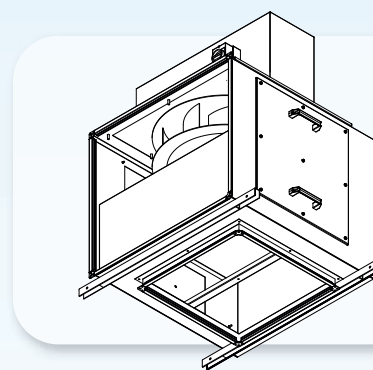
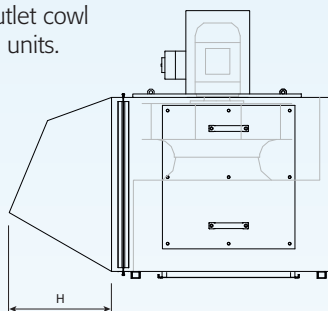
View on inlet



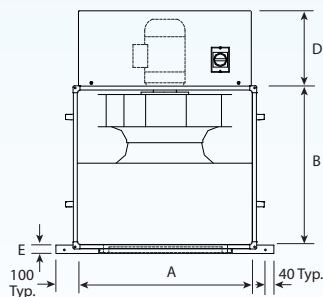
Sizes 350-710 WL

Bottom inlet, horizontal outlet

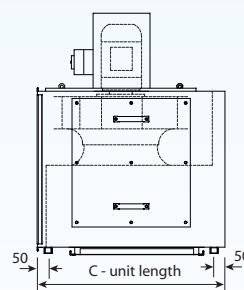
- Weatherproof outlet cowl available with all units.



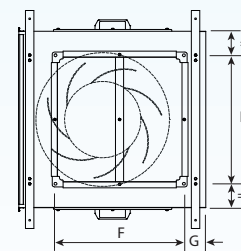
View on outlet



Side elevation



View on bottom inlet

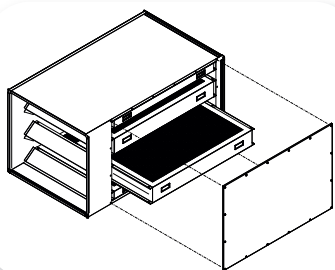


Dimensions (mm)

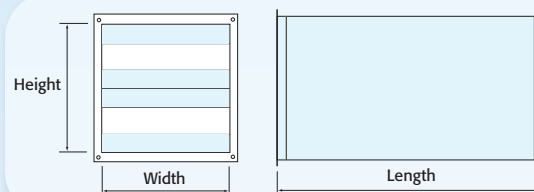
Unit Size	A	B	C	D	E	F	G	H	Weight kg
350	500	500	600	250	30	400	100	350	55
400	700	600	700	275	30	450	100	450	75
450	750	600	700	350	30	500	100	500	100
500	800	700	800	350	30	600	100	500	113
560	850	750	900	375	30	600	120	500	140
630	900	800	900	425	60	600	150	600	210
710	1100	1000	1000	425	60	600	170	600	255

T-Line⁹⁰ EXTRACT FAN UNITS

Silencers



- Designed to fit directly onto the T-Line 90 unit, with the exception of the 630/4 and 710/4 which will require a duct transition.
- The silencers are available with splitters that are easily removed for cleaning, or in non cleanable construction.
- The set back pointed splitter ends to face fan unit.



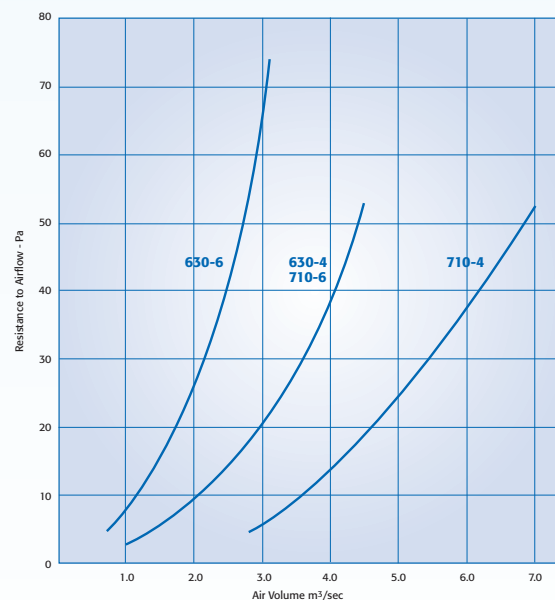
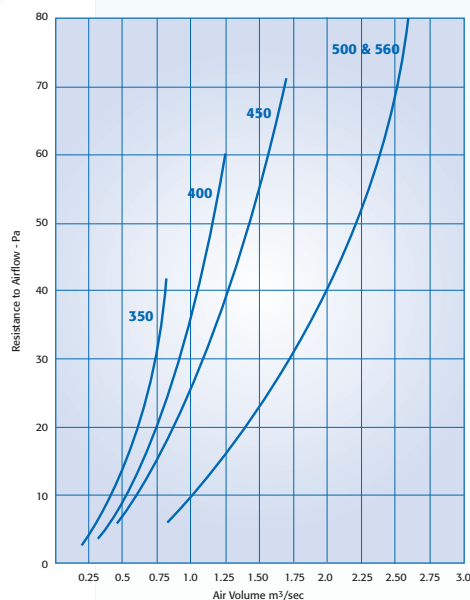
Silencer attenuation - Insertion Loss - dB

To fit T-Line 90	Silencer Model	63	125	250	500	1k	2k	4k	8k
350	TLL VA 350	4	8	14	27	35	35	26	22
400	TLL VA 400	4	8	14	27	35	35	26	22
450	TLL VA 450	4	8	17	30	37	37	27	16
500	TLL VA 500	4	7	14	24	30	30	17	10
560	TLL VA 560	4	9	18	30	40	40	34	24
630-4	TLL VA 630/4	5	10	20	35	42	42	36	26
630-6	TLL VA 630/6	4	8	17	30	37	37	27	16
710-4	TLL VA 710/4	5	9	18	30	37	37	27	16
710-6	TLL VA 710/6	4	8	17	30	37	37	27	16

Silencer Dimensions - mm

Silencer Model	Width	Height	Length	Weight
TLL VA 350	500	500	1250	55
TLL VA 400	700	600	1250	80
TLL VA 450	750	600	1500	105
TLL VA 500	800	700	1500	120
TLL VA 560	850	750	1500	135
TLL VA 630/4	1200	1200	1500	255
TLL VA 630/6	900	800	1500	145
TLL VA 710/4	1350	1350	1700	285
TLL VA 710/6	1100	1000	1500	200

Silencer Air Pressure Loss



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ISO 9001:2008
Cert. No. Q05375



VES reserve the right to amend product specifications and details without notice.



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