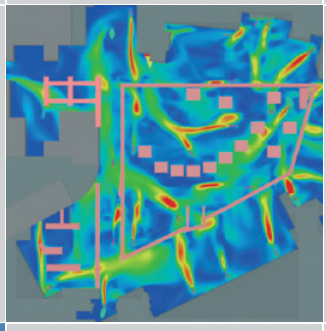

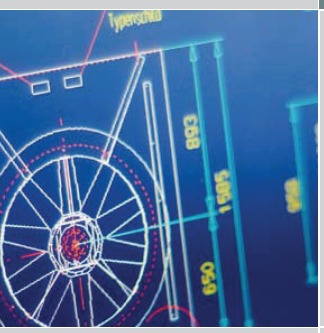

Wolter EC Induction Fans.

The innovation in compartment ventilation.

A08.3

wolter

Wolter EC Induction Fans -

Alternative to conventional wall mounted oscillating fans and ducted ventilation system in both open and enclosed areas. Reducing energy cost by nearly 60% compared to conventional motors.

Application

In the context of a ductless Impulse Ventilation system, the architecture of a compartment itself serves as the air duct. Air velocities are much lower and there is no resistance caused by a ducted system. The total amount of energy consumed by an Impulse Ventilation system is therefore comparatively low.

More importantly, in enclosed areas, the induction effect of the **Wolter Induction** fans creates a constant movement of air from the supply to the exhaust points, keeping CO levels to a minimum. A well-designed distribution of such induction fans throughout the compartment will prevent the accumulation of exhaust fumes in dead spots. The high velocity air stream along the ceiling level will induce a low-velocity airstream at floor level, ensuring the required mixing of low-level and high-level atmosphere.

Wolter Induction fans are ideal for use in underground car parks, passage ways, garages, warehouses and workshops.

Advantages

The induction fans, allow

- Uniform air distribution and no dead spots.
- Better air quality, expel stagnant, dirty exhaust gas and hot air
- Capital cost of the induction fan system is outweighed by potential savings over the traditional ducted system. ie costly installation of ductwork becomes obsolete
- Effective cooling by inducing 120% more air then normal fans
- High efficiency resulting in energy savings and fast amortization.
- Long service life and robust design
- Flexible installation and complementary with existing ductwork system
- Virtually “maintenance-free”, minimal or no maintenance cost

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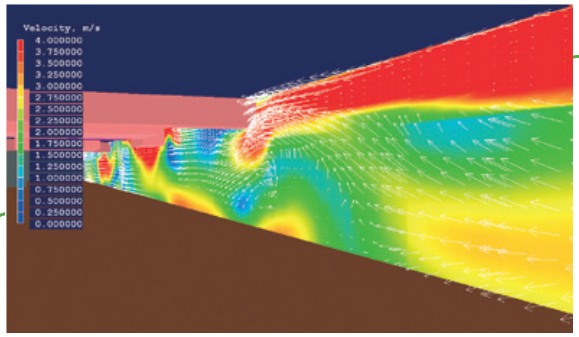
Wolter Induction Fan

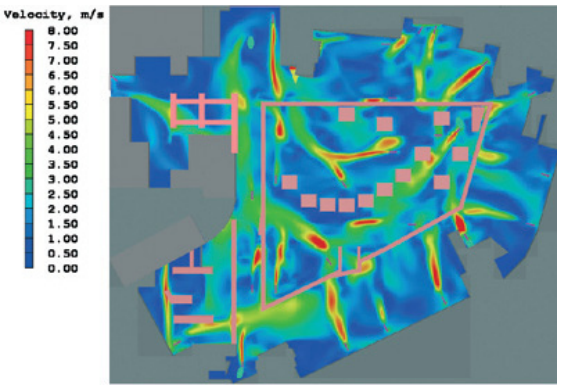
As opposed to conventional ventilation concepts based on transverse ventilation and ducted systems, the induction fan technology is derived from the longitudinal ventilation systems found in most recent innovative ventilation system.

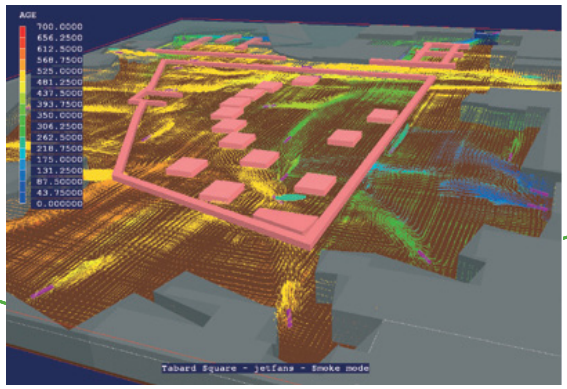
Here, a stream of air is injected into space by a series of free-blowing family of induction axial fans, thus inducing an air movement in addition to the natural ventilation. The decisive parameters of capacity are the air volume and velocity.

By installing an adequate number of induction fans in an enclosed compartment or car park, a constant air-movement can be created ensuring that the CO concentrations all over the areas are maintained in line with building regulations.



The high velocity air stream along the ceiling level will induce a low-velocity airstream at floor level, ensuring the required mixing of low-level and high-level atmosphere.





Computational-Fluid-Dynamics Design

The initial step in the design of induction fan ventilation system should always be a careful analysis of the air distribution and ventilation situation based on thorough CFD design.

CFD simulation uses purpose-built software that allows us to create a 3-dimensional image of the compartment or car park. After determining all relevant parameters such as required air-change rates, volume and air flow direction, the different ventilation scenarios can be studied taking into account all of the above factors. The number, size and positioning of induction fans can then be optimised. CFD software visualizes direction vectors of airflows and mean age of air distribution in all areas of the compartment or underground car park. CFD design can also be used to simulate the fume distribution throughout the compartment and the induction fans can be positioned accordingly.

WOLTER will be happy to assist you early during the design stage of your induction ventilation project.

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Wolter Induction Fan

Manufactured to cover all profile requirements in relevant specifications and incorporated with high efficient EC motors that are generally maintenance-free.

A new registered design feature of the WOLTER Induction Fan helps reduce energy costs by nearly 60% compare to conventional motor. Moreover, it allows a 120% increase in the amount of airflow through induction to guarantee ventilation in every corner of the area.

Technical Information

- Impeller:

  Impellers of high quality aluminum sheet with fixed pitch angle. They are class Q2.5 balanced in accordance with VDI 2060 / ISO1940/1-1986.

- EC Motor / Isolator Switch:

  The unit comes with five EC motorized impellers to give a high volume flow and induction capability. Mounted with wire guard and equipped with 3 different speeds (high, medium, and low) to suit the respective site requirements in unidirectional airflow direction. Four speed type as optional. Motors are connected to an external terminal box. Protection class E is IP55 according to IEC34-5 with 1/3 of the heat loss compared to those normally incurred by a conventional AC or 3-phase motor. Each induction fan unit has a starting current lower than 1A under high speed mode.

- Housing:

  The low profile fan housing of the induction fan is manufactured as one integral unit to minimise headroom obstruction. The overall low profile height of the unit is 298 mm. They do not significantly obstruct headroom heights within the compartment or car park space. Isolator switches, speed control, alarm function, lockable isolator switch can be fitted as optional extras.

- Fan inlet and outlet cone:

  The inlet and outlet cones are manufactured from precision injection-moulded casted aluminium. The J Series comes with 5, 6 or 8 fan units of modular design. The inlet cone comes with rotor unit. The aerodynamically shaped outlet comes with built-in guide vanes unit to give maximum air performance at low noise and a smooth velocity profile. Each individual motor unit/outlet cone can be easily removed to facilitate routine servicing. Therefore, it is not necessary to dismount the entire fan from the ceiling for revision or maintenance purpose.

- Protective screen:

  Inlet protective screen comply with BS3042 finger proof requirements. The screen is fitted to the motor side as appropriate in accordance to CE requirements. Protective screen shall be of low carbon steel wire or rod with powder coating.

- Airflow direction:

  Discharge vanes allow the adjustment of the airflow in 8 directions to match the mounting brackets at various angles.

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- Performance Test:
  Air Performance tested in accordance to ISO 5801/AMCA 210 standard,
  Sound performance tested in accordance to AMCA 300 standard,
  Air Induction tested in accordance to AMCA 260 standard.

AXV Axial Fan to supplement Main Exhaust and Supply Fans

The induction fan in operation provides sufficient airflow at longitudinal direction in series thus this guaranteed the exhaust fumes are directed to the nearest exhaust point located with the Main Exhaust fan. Adequately sized main exhaust fans are therefore an important part of the overall system.

Where the natural air supply is insufficient, supply fans may have to be installed.

Sensor and Control Technology

The sensor and control technology is a very important integral part of the induction fan system. The requirement for CO-sensors in a compartment or car park has to be individually determined during the design stage. The exhaust flow and running pattern also have to be carefully designed in order to determine exactly which fans have to be put in a specific area. Some fans can serve as standby units only and can be started automatically if certain maximum levels of air pollution are exceeded. EC motors can be designed to offer certain additional functions such as open or closed loop speed control, alarm function etc.

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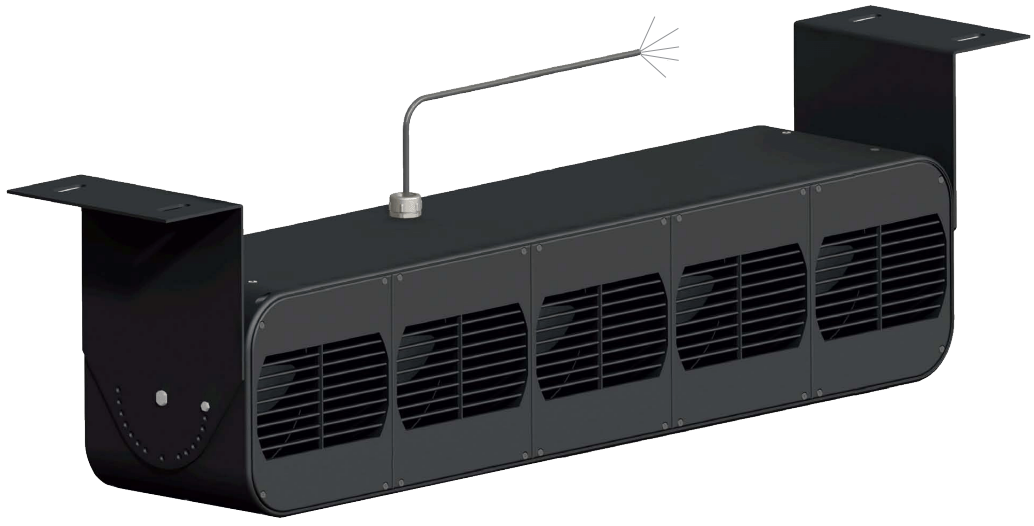
Technical Data

(Power Supply 50Hz 210V ~ 260V)

Model	Fan Speed [1/min]	Power [W]	Running Current [A]	Starting Current [A]	Volume Flow [m3/h]	Velocity at Max Volume [m/s]	Velocity at Free Flow [m/s]	Sound Pressure [dB(A)] 1,5m/45°	Weight [kg]
J9	*2260	66	0,52	0,83	2230	9,36	8,32	59 ~ 61	17
	2160	58	0,47	0,75	2140	8,75	7,95	58 ~ 60	
	1850	40	0,33	0,43	1900	8,05	7,18	55 ~ 57	
	1600	29	0,26	0,34	1660	6,90	6,21	50 ~ 52	
J11	*2260	80	0,62	0,99	2670	9,36	8,32	60 ~ 62	20
	2160	70	0,52	0,90	2560	8,75	7,95	58 ~ 61	
	1850	48	0,39	0,62	2280	8,05	7,18	56 ~ 59	
	1600	35	0,29	0,42	1990	6,90	6,21	51 ~ 53	
J15	*2260	110	0,84	1,34	3560	9,36	8,32	62 ~ 64	27
	2160	97	0,76	1,22	3420	8,75	7,95	61 ~ 63	
	1850	67	0,54	0,86	3040	8,05	7,18	58 ~ 60	
	1600	48	0,40	0,64	2650	6,90	6,21	53 ~ 55	

Note: 1, The volume flow indicated above is measured in chamber at 0 static pressure, other values are measured at free flow;
2, The sound pressure dB(A) is measured at the distance of 1,5m at 45 degree from the outlet;
3, Fan speed 2260 (1/min) as option.



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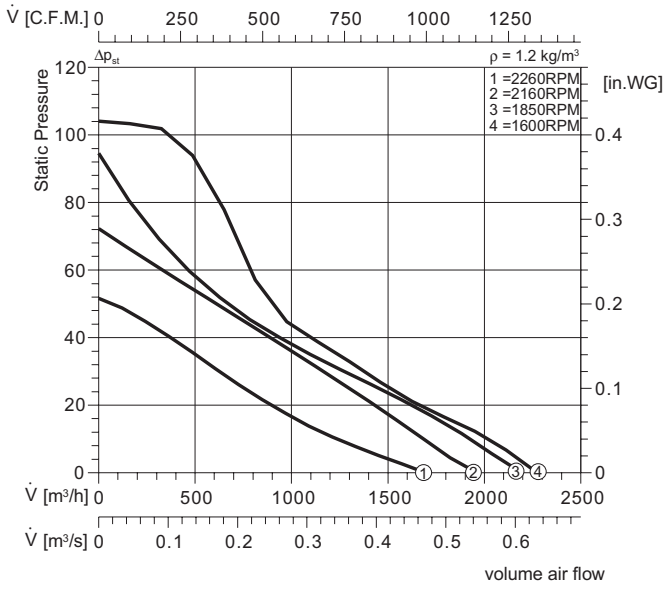
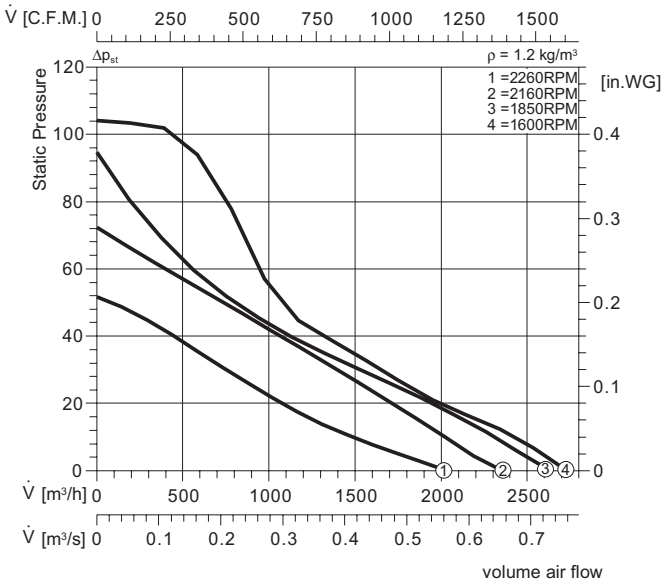
Performance curves

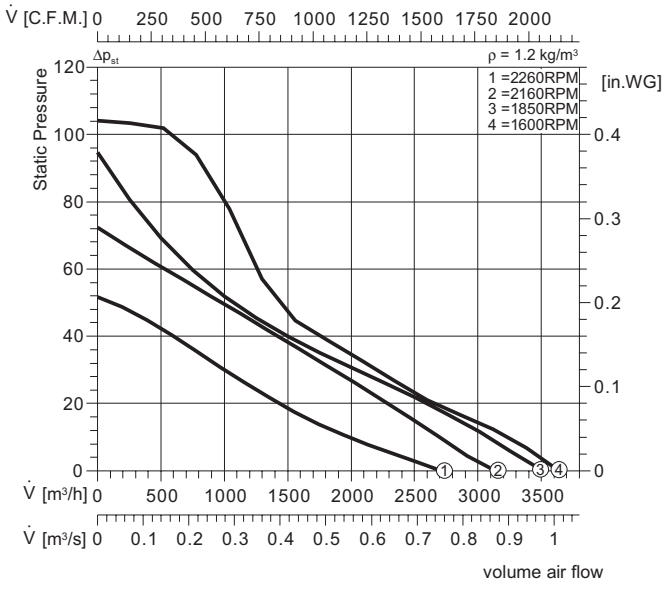
J9



J11



J15



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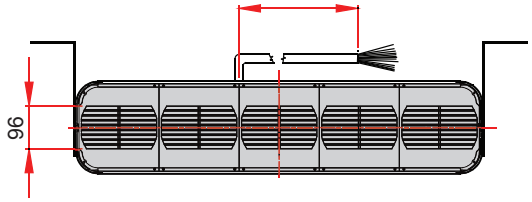
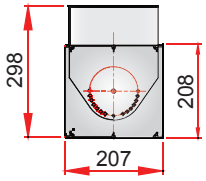
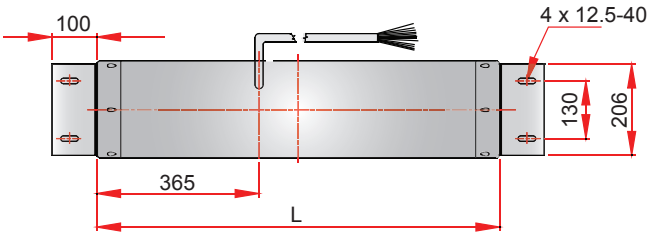
Dimensions

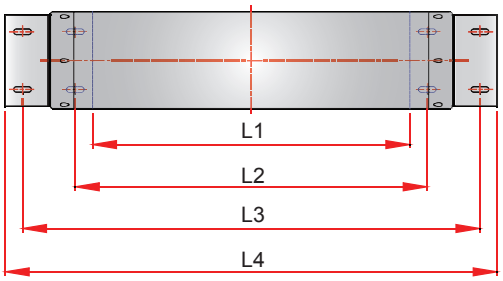
Approx. 1 Meter as standard
Different wire length optional.

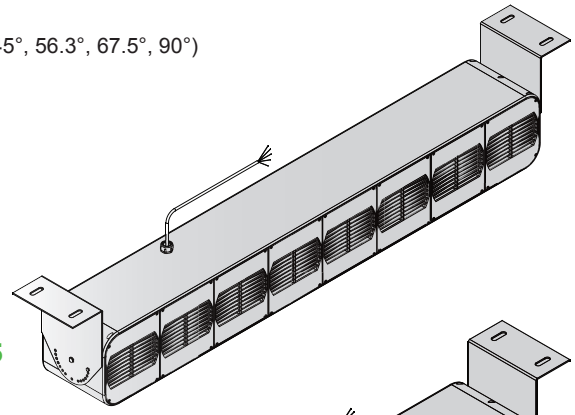


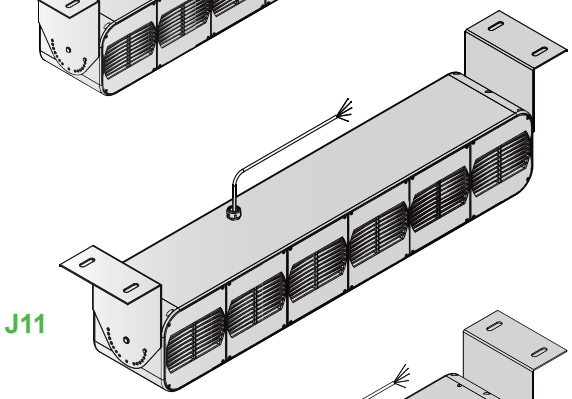
The mounting angle of the unit body can be adjusted in 8 steps.
(0°, 11.3°, 22.5°, 33.8°, 45°, 56.3°, 67.5°, 90°)

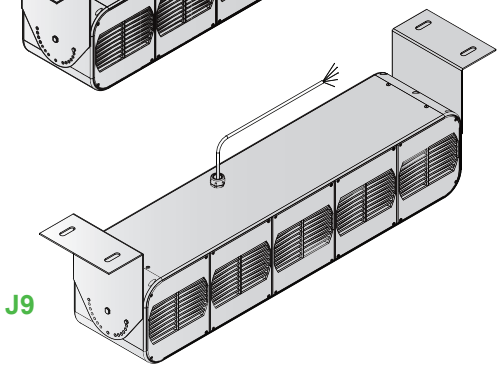












Model	L	L1	L2	L3	L4
-	[mm]	[mm]	[mm]	[mm]	[mm]
J9	910	718	798	1037	1117
J11	1090	899	979	1218	1298
J15	1452	1260	1340	1580	1660

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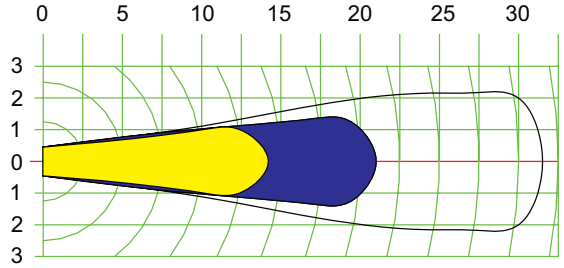
Air Velocity Profile *(J9)*

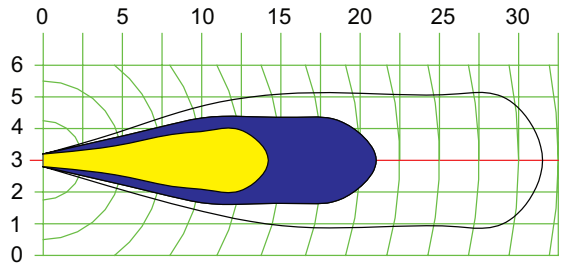
Volume = 0.62 m3/s
Speed 1 = 2260 [1/min]

=1.0m/s
=0.5m/s
=0.3m/s

Plan View



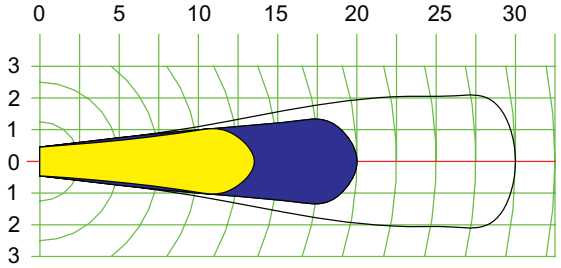
Side View



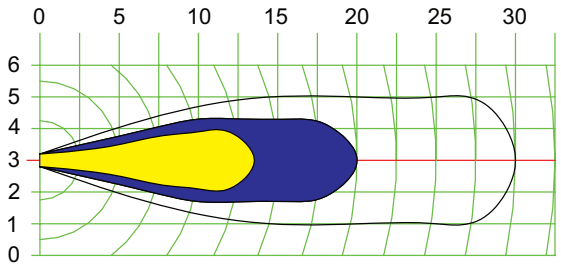
Volume = 0.59 m3/s
Speed 2 = 2160 [1/min]

Wolter J9

Plan View



Side View



Volume = 0.52 m3/s
Speed 3 = 1900 [1/min]

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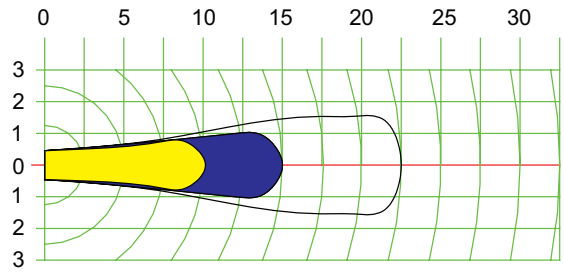
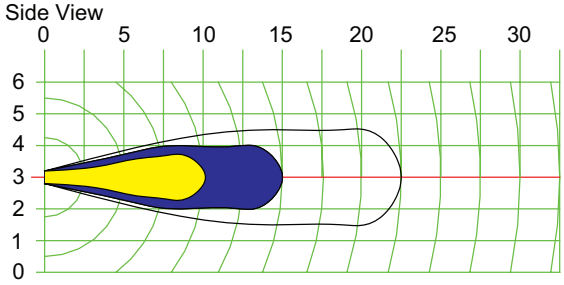
=0.5m/s
=0.3m/s

Plan View



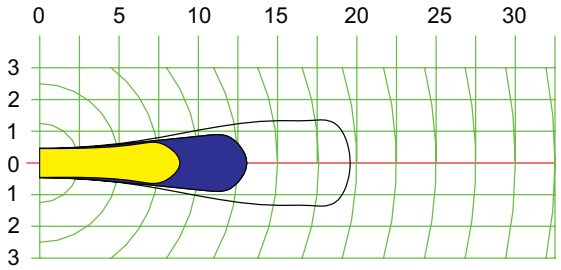
Side View



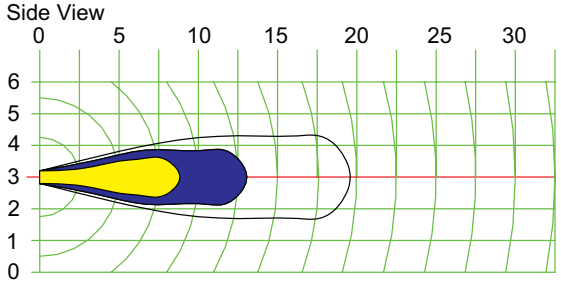
Volume = 0.46 m3/s
Speed 4 = 1600 [1min]

Wolter J9

Plan View



Side View



Scale in Meter

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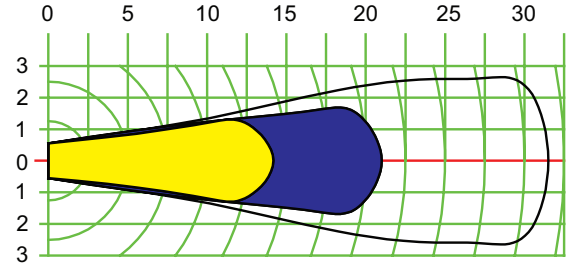
Air Velocity Profile *(J11)*

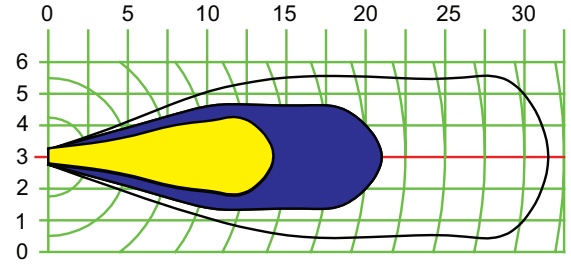
Volume = 0.74 m3/s
Speed 1 = 2260 [1/min]

=1.0m/s
=0.5m/s
=0.3m/s

Plan View



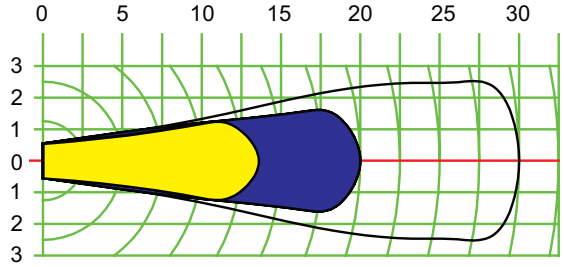
Side View



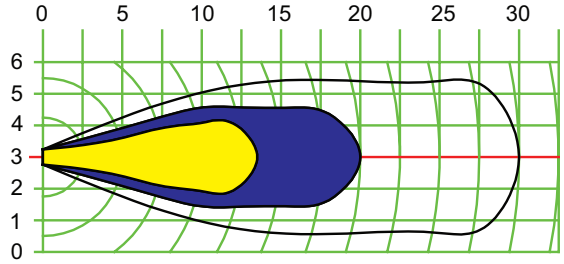
Volume = 0.71 m3/s
Speed 2 = 2160 [1/min]

Wolter J11

Plan View



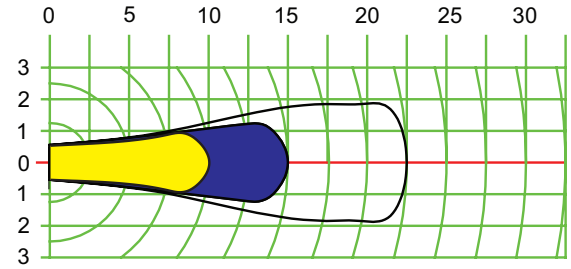
Side View



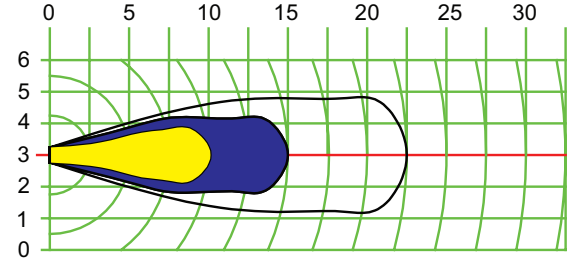
Volume = 0.62 m3/s
Speed 3 = 1900 [1/min]

=1.0m/s
=0.5m/s
=0.3m/s

Plan View



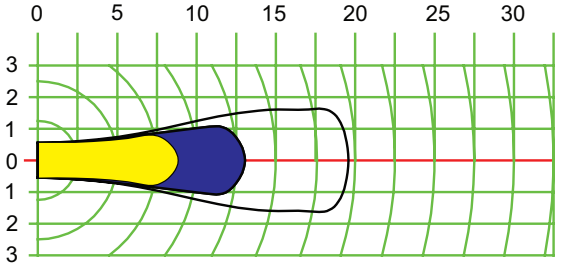
Side View



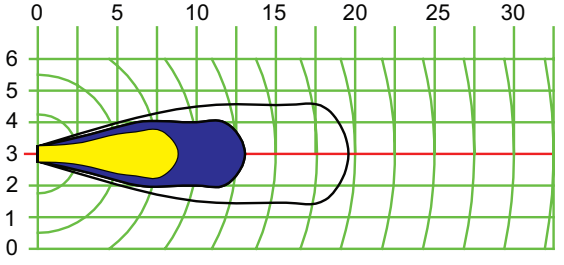
Volume = 0.55 m3/s
Speed 4 = 1600 [1min]

Wolter J11

Plan View



Side View



Scale in Meter

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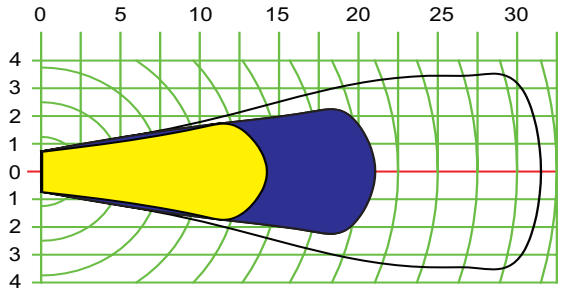
Air Velocity Profile *(J15)*

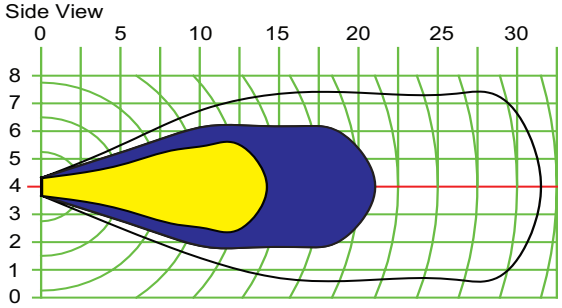
Volume = 0.99 m3/s
Speed 1 = 2260 [1/min]

=1.0m/s
=0.5m/s
=0.3m/s

Plan View



Side View



Volume = 0.94 m3/s
Speed 2 = 2160 [1/min]

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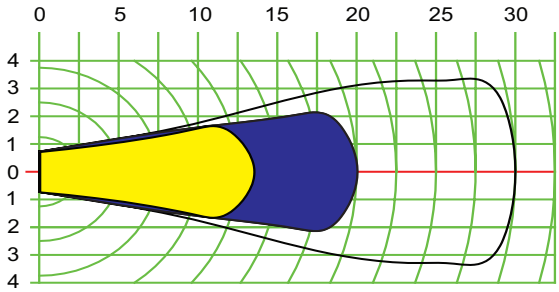
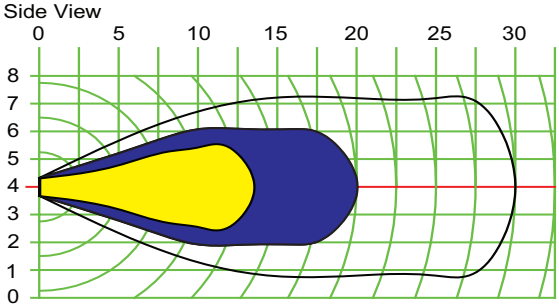
Plan View



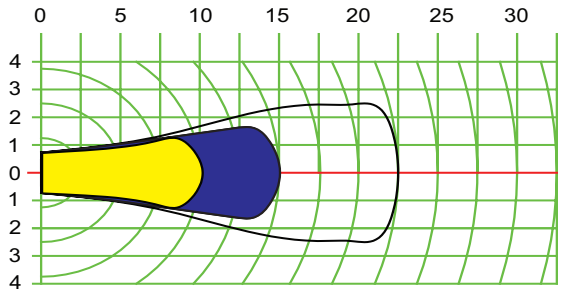
Side View



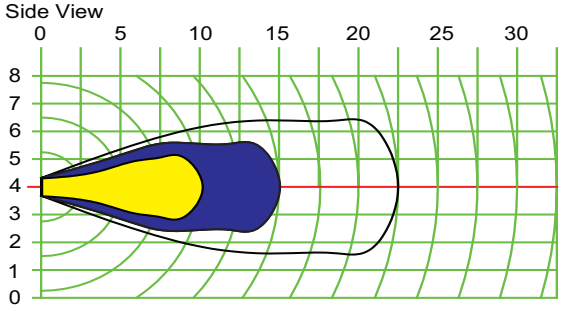
Volume = 0.83 m3/s
Speed 3 = 1900 [1/min]

=1.0m/s
=0.5m/s
=0.3m/s

Plan View



Side View



Volume = 0.74 m3/s
Speed 4 = 1600 [1/min]

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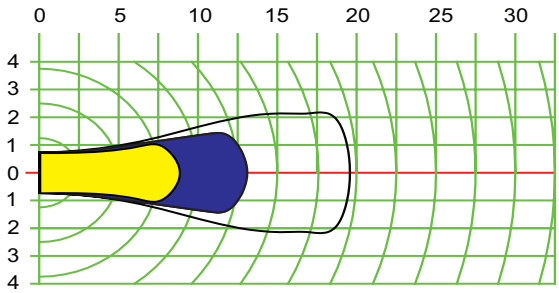
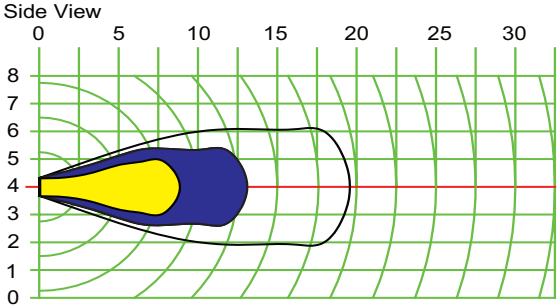
Plan View



Side View



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