





We always strive to perform at the highest standards possible.

We are convinced that quality, innovation and service are cornerstones that guide our culture while building our legacy.

On these cornerstones SPAL has earned its credibility over the years, becoming an ideal partner to design, manufacture and market ventilation solutions in an epanding array of applications.

Alessandro Spaggiari



The SPAL Strengths

TECHNICAL KNOWLEDGE

- Fluid-dynamics
- Thermodynamics
- Electronics
- Electro-magnetic
- Mechanical

IN-HOUSE TESTING AND VALIDATION EQUIPMENT

- Climatic chambers
- Thermal shock chamber
- Oven & hot test chambers
- Water & salt spray chamber
- Vibration test benches
- Vibration test bench in climatic chamber
- Airflow test chambers
- Anechoic chamber with spectrum analyzer
- Endurance test facility
- Motor torque test bench
- 3D tester
- Laser sintered prototype machine
- EMC test equipment

FULLY INTEGRATED PROCESSES

- Rapid prototyping
- Chemical Department
- Tool shop
- Moulding
- Motor design and production
- PCB In-house Production
- Electronics SMD
- Automated assembly process





The SPAL production facility in Correggio, Italy, spans an area of 66,000m² accommodating over 500 employees serving the engineering, research & development, and manufacturing departments.



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The fan models are listed by decreasing fan diameter, and within the same diameter, in decreasing power rate.

It is customer's responsibility to verify that the selected product and/or the one we suggest from our catalogue suits the technical requirements and working conditions according to customer's application.

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Axial	355 mm (14")	VA116	16
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In case you are unable to find a suitable fan for your application, please contact us and we will help you find the best solution for your specific requirements. Upon request, we will support you in co-designing and developing new products and solutions.

Our technical specification are purely indicative and might change without any previous notice.

	Ø	Shroud	pages
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General Warranty Conditions

All SPAL fan/blower modules are GUARANTEED free from defects FOR 36 MONTHS.

Validity of the Warranty remains subject to the following conditions:

- 1) WARRANTY expires 36 months after the shipment date from SPAL Automotive.
- 2) the main label on the product (with indication Q.C. Quality Control) must remain stuck to validate the warranty (the WO number Work Order of production is a SPAL internal increasing number which allows SPAL to trace the production lot details);
- 3) warranty is valid for production defects only; defects and/or malfunctions caused by incorrect application or damage during transit and handling are not included;
- 4) warranty is not valid for malfunctions caused by normal wear and tear of the unit.
- 5) the product must not be disassembled, modified or anyhow manipulated;
- 6) SPAL Automotive reserves the right to inspect the part prior to accepting a warranty claim
- 7) for claims which fall under the general warranty conditions, SPAL Automotive will issue a credit note for the corresponding value of the part; no other costs will be accepted.

Note: General fan/blower working conditions must be in line with what specified in the product data sheet. Please request SPAL for detailed product data sheet before selecting any item from the catalogue.





RECOMMENDATIONS FOR THE USE OF AXIAL FAN MODULES WITH BRUSHLESS MOTORS

RECOMMENDATIONS FOR THE USE OF CENTRIFUGAL BLOWER MODULES WITH BRUSHLESS MOTORS

- -In order to maximize product life, the power supply must be rectified and stabilized with residual RIPPLE values of less than 3%. Higher RIPPLE values will considerably reduce motor life and cause anomalous operation. In case of application with higher RIPPLE values expected, please contact Spal at info@spalautomotive.com
- -For applications in which the fan module is mounted horizontally, you are required to use a fan blade with drain holes to allow water drainage (available upon request).
- -For a proper protection of the fan module, use an external fuse correctly rated for every installed fan in order to interrupt the power supply in case of accidental blockage. This is an indispensable protection for wire harness and motor.
- -For fan modules driven by an electronic speed control (linear, PWM or any other external speed control), please ensure that the external power supply is cut off in case of overload conditions such as partial or total blockage and over temperature.
- -The electronic fan controller must be compatible to our products. Contact Spal at info@spalautomotive.com for additional information.
- -It is sole customer's responsibility to verify the environmental conditions for the proper use of the fan module. Contact Spal at info@spalautomotive.com for additional information.
- -It is sole customer's responsibility to adequately protect the system and the fan against overload conditions or accidental rotor blockage.
- It is sole customer's responsibility to verify that the selected product suits the technical requirements and working conditions according to its own specifications and application. In case of customer specific request, we will be pleased to support him to detect the best possible solutions; however SPAL will not release any declaration or guarantee regarding the suitability of the selected item. Full responsibility and liability remains with the customer.
- -For any product update, please refer to www.spalautomotive.com
- -Never use blower modules in flammable, combustibles or blowing environments.

- -In order to maximize product life, the power supply must be rectified and stabilized with residual RIPPLE values of less than 3%. Higher RIPPLE values will considerably reduce motor life and cause anomalous operation. In case of application with higher RIPPLE values expected, please contact Spal at info@spalautomotive.com
- -For a proper protection of the blower module, use an external fuse correctly rated for every installed fan in order to interrupt the power supply in case of accidental blockage. This is an indispensable protection for wire harness and motor.
- -For blower modules driven by an electronic speed control (linear, PWM or any other external speed control), please ensure that the external power supply is cut off in case of overload conditions such as partial or total blockage and over temperature.
- -The electronic fan controller must be compatible to our products. Contact Spal at info@spalautomotive.com for additional information.
- -It is sole customer's responsibility to verify the environmental conditions for the proper use of the fan module. Contact Spal at info@spalautomotive.com for additional information.
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- -For any product update, please refer to www.spalautomotive.com
- -Never use blower modules in flammable, combustibles or blowing environments.



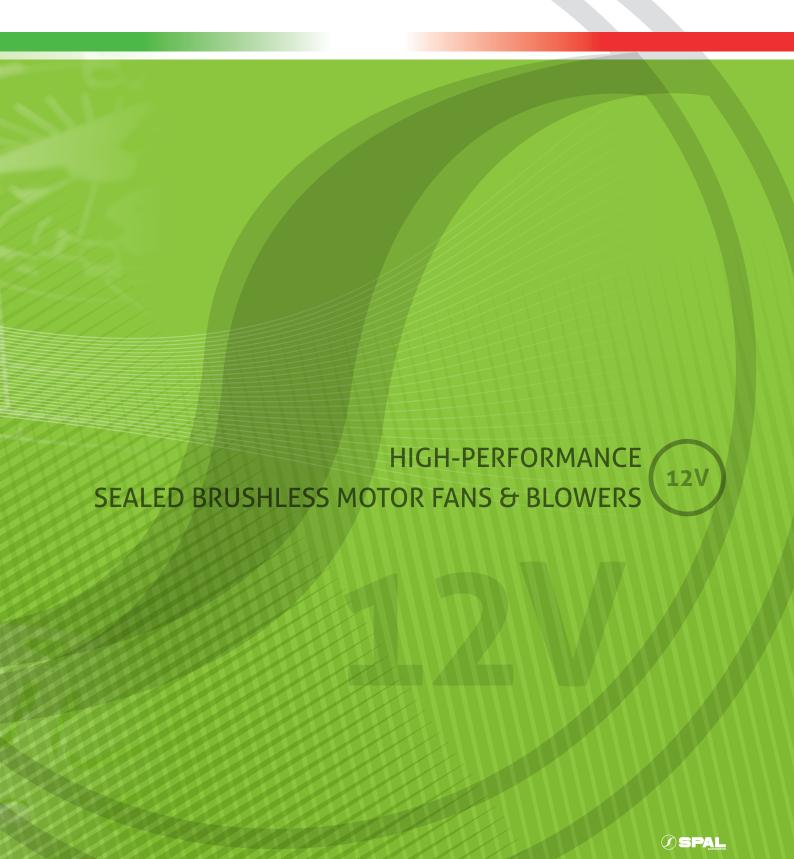
- Failure to strictly follow these recommendations could cause the product to fail, resulting in a fire, severe personal injury or even death.
- Should you have any questions, contact SPAL at info@spalautomotive.



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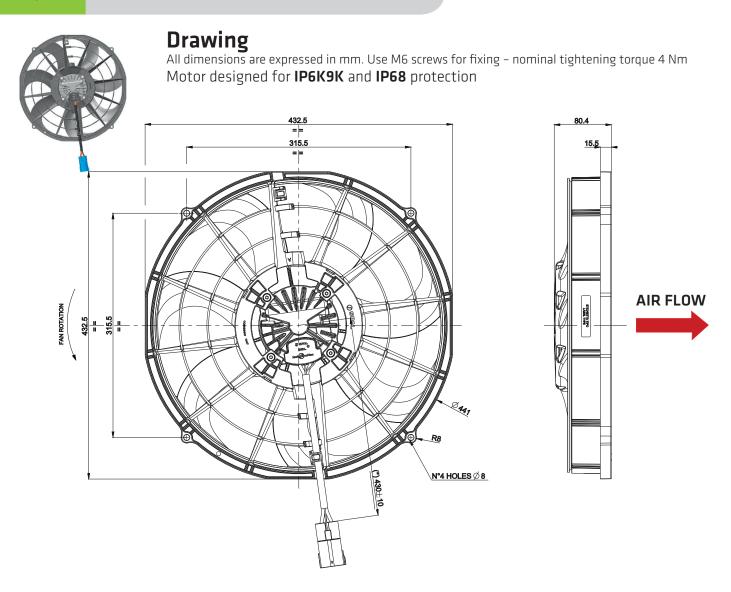






Ø 405 mm Ø 16"

VA117-ABL506P-103A



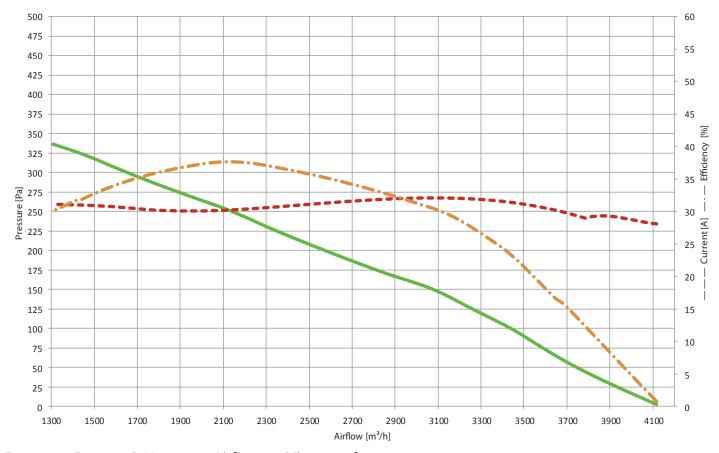
Connector:YAZAKI HYBRID (USCAR-2 compliant) - Part number: 7282-8497-90						
	Identification	+D	-D	А	PWM* / E*	
4. WHITE WIRE SECT. 0.5 mm ²	Pin number	1	2	3	4	
2. BLACK WIRE SECT. 6.0 mm ²	Wire Color	red	black	yellow	white	
	Sealing p/n	7158-3035	7158-3035	7158-3030-50	7158-3030-50	
3. YELLOW WIRE SECT. 0.5 mm ² 1. RED WIRE SECT. 6.0 mm ²	Pin p/n	7114-3250	7114-3250	7114-4102-02	7114-4102-02	
	Section [mm2]	6.0	6.0	0.5	0.5	

VA117-ABL506P-103A

Ø 405 mm

Ø 16"

Axial fan performance curve



Pressure: 1Pa=0.04 inH₂0

Airflow: 1m³/h=0.59 cfm

Features		
Max fan speed	rpm	2800
Min fan speed	rpm	700
Sound pressure level	dBA	72.8 - at 1 m ± 0.005 m from the fan module- lateral side
Weight	Kg	3.10
Operating supply voltage range	V	9.0 16.0 at the Drive Connector
Supply voltage to reach max speed	V	13.0 16.0 at the Drive Connector
Operating ambient temperature range	°C	-40 +120
Speed derating threshold	°C	+105 (*)
Storage temperature range	°C	-40 +125
Lifetime	h	up to 40000 hours depending on mission profile
Time from 0 rpm to max speed	S	17
Load dump protection (Pulse 5b)	V	35 - Pulse peak voltage (U _S *) - ISO16750-2:2010
Reverse polarity protection		ISO 16750-1 functional status class C - device fully functional after correcting the polarity

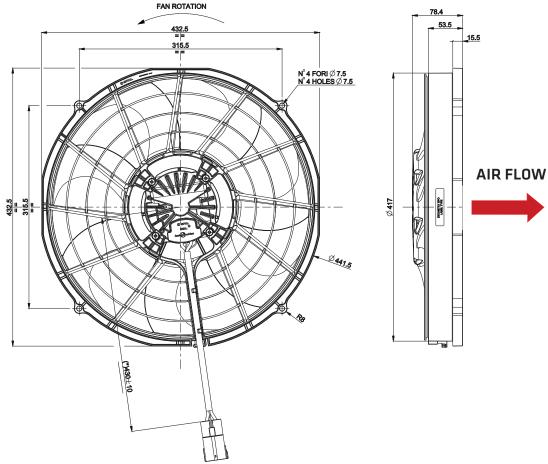


Ø 405 mm Ø 16"

VA97-ABL322P/N-103A

Drawing

All dimensions are expressed in mm. Use M6 screws for fixing – nominal tightening torque 4 Nm Motor designed for **IP6K9K** and **IP68** protection

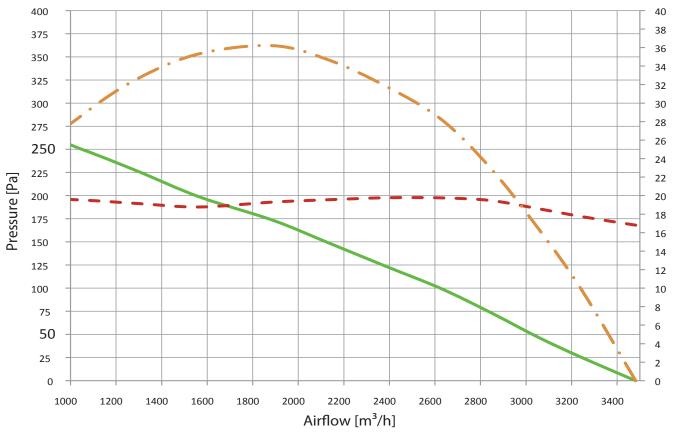


Connector:YAZAKI HYBRID (USCAR-2 compliant) - Part number: 7282-8497-90							
	Identification	+D	-D	А	PWM* / E*		
2. BLACK WIRE	Pin number	1	2	3	4		
3. YELLOW WIRE	Wire Color	red	black	yellow	white		
	Sealing p/n	7158-3035	7158-3035	7158-3030-50	7158-3030-50		
1. RED WIRE 4. WHITE WIRE	Pin p/n	7114-3250	7114-3250	7114-4102-02	7114-4102-02		
	Section [mm2]	6.0	6.0	0.5	0.5		

VA97-ABL322P/N-103A

Ø 405 mm Ø 16"

Axial fan performance curve



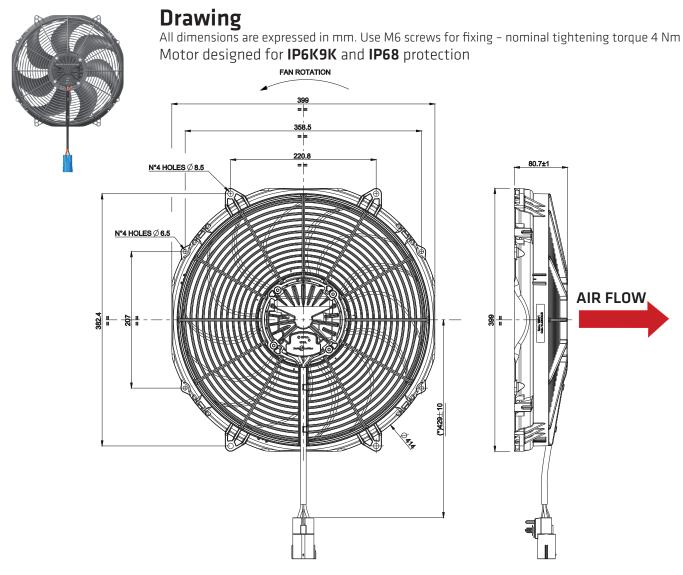
Pressure: 1Pa=0.04 inH₂0 Airflow: 1m³/h=0.59 cfm

Features		
Max fan speed	rpm	2350
Min fan speed	rpm	600
Sound pressure level	dBA	71.2 - at 1 m \pm 0.005 m from the fan module- lateral side
Weight	Kg	2.7
Operating supply voltage range	V	9.0 16.0 at the Drive Connector
Supply voltage to reach max speed	V	13.0 16.0 at the Drive Connector
Operating ambient temperature range	°C	-40 +115
Speed derating threshold	°C	+105 (*)
Storage temperature range	°C	-40 +125
Lifetime	h	up to 40000 hours depending on mission profile
Time from 0 rpm to max speed	S	10
Load dump protection (Pulse 5b)	V	35 - Pulse peak voltage (U _S *) - ISO16750-2:2010
Reverse polarity protection		ISO 16750-1 functional status class C - device fully functional after correcting the polarity



Ø 385 mm Ø 15.2"

VA91-ABL326P/N-65A



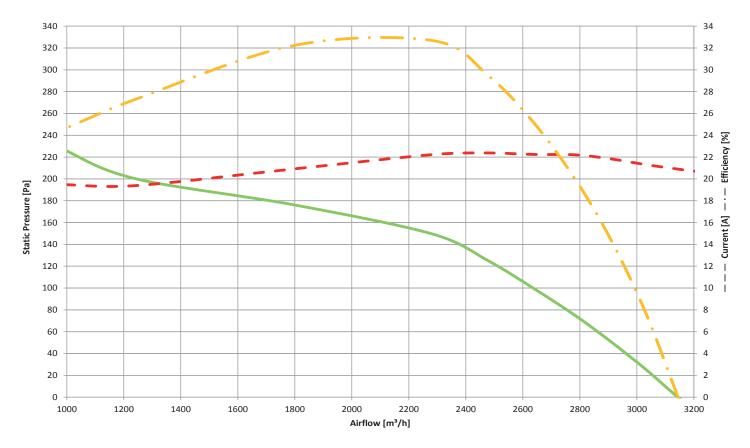
Connector:YAZAKI HYBRID (USCAR-2 compliant) - Part number: 7282-8497-90						
	Identification	+D	-D	А	PWM* / E*	
1. RED WIRE SECT. 4.0 mm ²	Pin number	1	2	3	4	
4. WHITE WIRE SECT. 0.5 mm ²	Wire Color	red	black	yellow	white	
	Sealing p/n	7157-3582-90	7157-3582-90	7158-3030-50	7158-3030-50	
2. BLACK WIRE SECT. 4.0 mm ² 3. YELLOW WIRE SECT. 0.5 mm ²	Pin p/n	7114-3251	7114-3251	7114-4102-02	7114-4102-02	
SECT. 4.0 mm ² SECT. 0.5 mm ²	Section [mm2]	4.0	4.0	0.5	0.5	

VA91-ABL326P/N-65A

Ø 385 mm

Ø 15.2"

Axial fan performance curve



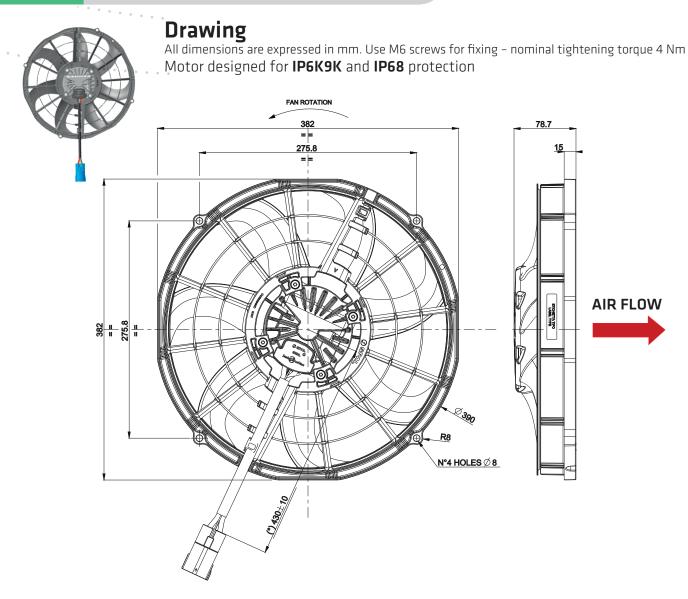
Pressure: 1Pa=0.04 inH₂0 Airflow: 1m³/h=0.59 cfm

rpm	2500
rpm	850
dBA	77 - at 1 m ± 0.005 m from the fan module- lateral side
Kg	2.4
V	9.0 16.0 at the Drive Connector
V	13.0 16.0 at the Drive Connector
°C	-40 +115
°C	+85 (*)
°C	-40 +125
h	up to 40000 hours depending on mission profile
S	14.5
V	35 - Pulse peak voltage (Us *) - ISO16750-2:2010
	ISO 16750-1 functional status class C - device fully functional after correcting the polarity
	rpm dBA Kg V V °C °C °C h



Ø 355 mm Ø 14"

VA116-ABL505P-105A



Connector:YAZAKI HYBRID (USCAR-2 compliant) - Part number: 7282-8497-90						
	Identification	+D	-D	А	PWM* / E*	
1. RED WIRE SECT. 10.0 mm ²	Pin number	1	2	3	4	
SECT. 0.5 mm ²	Wire Color	red	black	yellow	white	
	Sealing p/n	7158-3036-70	7158-3036-70	7158-3030-50	7158-3030-50	
2. BLACK WIRE SECT. 10.0 mm ² 3. YELLOW WIRE SECT. 0.5 mm ²	Pin p/n	7114-3273-02	7114-3273-02	7114-4102-02	7114-4102-02	
	Section [mm2]	10.0	10.0	0.5	0.5	

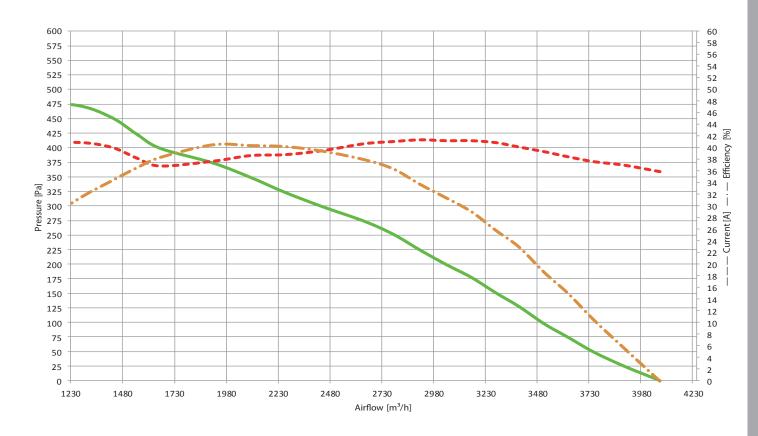


VA116-ABL505P-105A

Ø 355 mm

Ø 14"

Axial fan performance curve

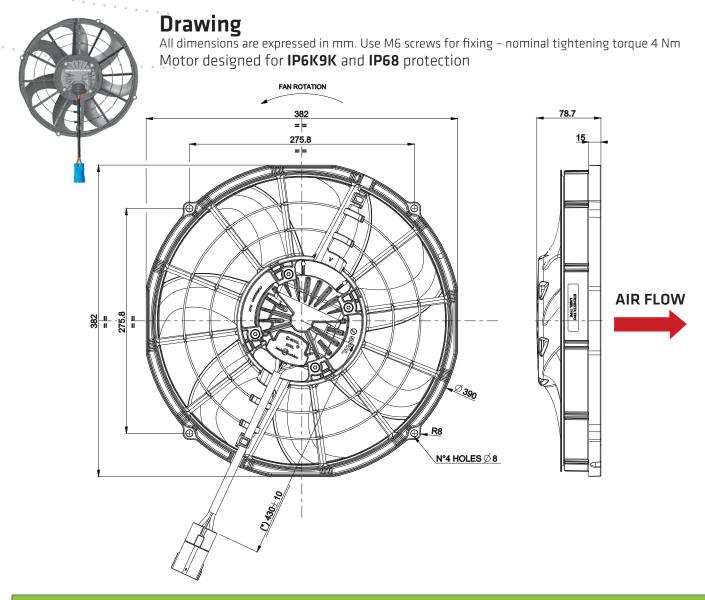


Pressure: 1Pa=0.04 inH₂0 Airflow: 1m³/h=0.59 cfm

Features		
Max fan speed	rpm	3300
Min fan speed	rpm	800
Sound pressure level	dBA	77.2 - at 1 m ± 0.005 m from the fan module- lateral side
Weight	Kg	2.80
Operating supply voltage range	V	9.0 16.0 at the Drive Connector
Supply voltage to reach max speed	V	13.0 16.0 at the Drive Connector
Operating ambient temperature range	°C	-40 +120
Speed derating threshold	°C	+105 (*)
Storage temperature range	°C	-40 +125
Lifetime	h	up to 40000 hours depending on mission profile
Time from 0 rpm to max speed	S	17
Load dump protection (Pulse 5b)	V	35 - Pulse peak voltage (Us *) - ISO16750-2:2010
Reverse polarity protection		ISO 16750-1 functional status class C - device fully functional after correcting the polarity

Ø 355 mm Ø 14"

VA116-ABL324P-105A



Connector:YAZAKI HYBRID (USCAR-2 compliant) - Part number: 7282-8497-90							
4. WHITE WIRE	Identification	+D	-D	А	PWM* / E*		
2. BLACK WIRE SECT. 0.5 mm ²	Pin number	1	2	3	4		
	Wire Color	red	black	yellow	white		
	Sealing p/n	7158-3035	7158-3035	7158-3030-50	7158-3030-50		
3. YELLOW WIRE SECT. 0.5 mm ² 1. RED WIRE SECT. 6.0 mm ²	Pin p/n	7114-3250	7114-3250	7114-4102-02	7114-4102-02		
	Section [mm2]	6.0	6.0	0.5	0.5		

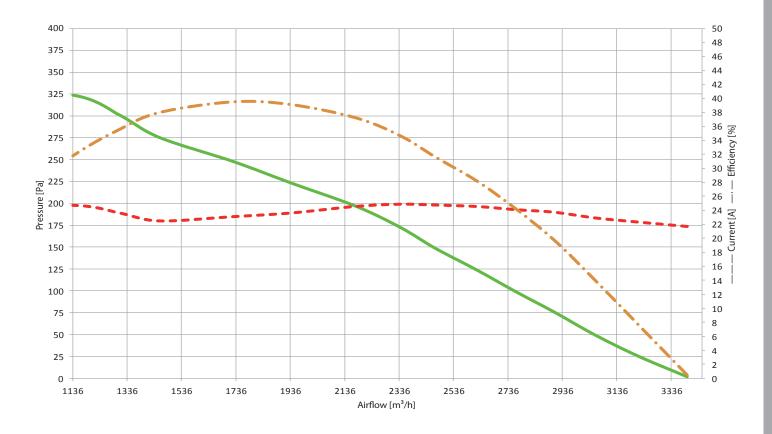


VA116-ABL324P-105A

Ø 355 mm

Ø 14"

Axial fan performance curve

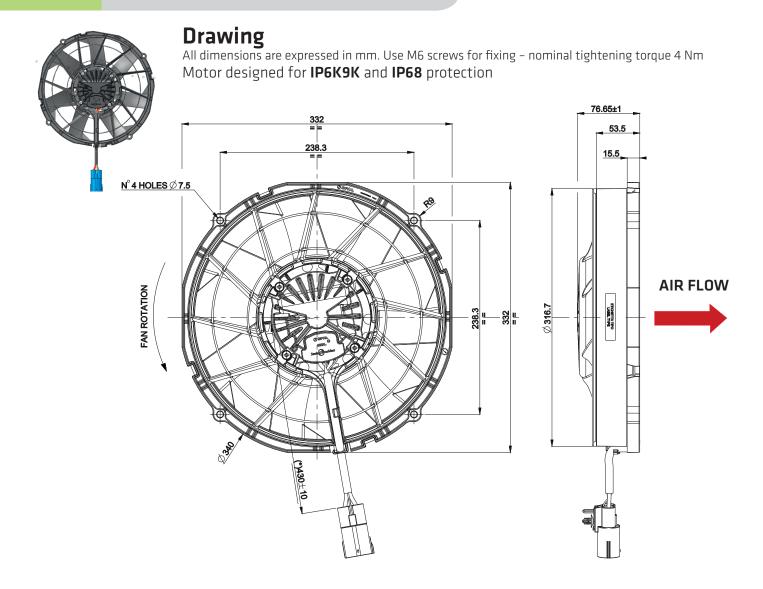


Pressure: 1Pa=0.04 inH₂0 Airflow: 1m³/h=0.59 cfm

Features		
Max fan speed	rpm	2800
Min fan speed	rpm	700
Sound pressure level	dBA	73.7 - at 1 m ± 0.005 m from the fan module- lateral side
Weight	Kg	2.40
Operating supply voltage range	V	9.0 16.0 at the Drive Connector
Supply voltage to reach max speed	V	13.0 16.0 at the Drive Connector
Operating ambient temperature range	°C	-40 +120
Speed derating threshold	°C	+105 (*)
Storage temperature range	°C	-40 + 125
Lifetime	h	up to 40000 hours depending on mission profile
Time from 0 rpm to max speed	S	17
Load dump protection (Pulse 5b)	V	35 - Pulse peak voltage (U _S *) - ISO16750-2:2010
Reverse polarity protection		ISO 16750-1 functional status class C - device fully functional after correcting the polarity

Ø 305 mm Ø 12"

VA89-ABL320P/N-94A



Connector:YAZAKI HYBRID (USCAR-2 compliant) - Part number: 7282-8497-90								
	Identification	+D	-D	А	PWM* / E*			
2. BLACK WIRE	Pin number	1	2	3	4			
3. YELLOW WIRE	Wire Color	red	black	yellow	white			
	Sealing p/n	7158-3035	7158-3035	7158-3030-50	7158-3030-50			
1. RED WIRE 4. WHITE WIRE	Pin p/n	7114-3250	7114-3250	7114-4102-02	7114-4102-02			
	Section [mm2]	6.0	6.0	0.5	0.5			

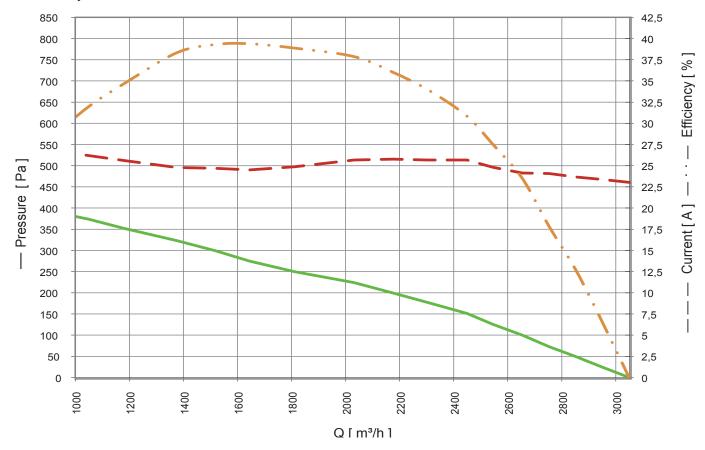


VA89-ABL320P/N-94A

Ø 305 mm

Ø 12"

Axial fan performance curve



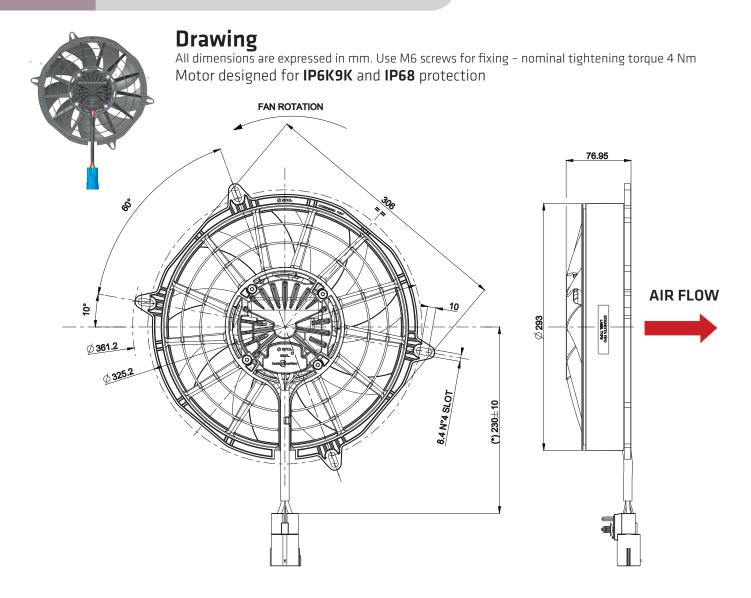
Pressure: 1Pa=0.04 inH₂0 Airflow: 1m³/h=0.59 cfm

Features		
Max fan speed	rpm	3500
Min fan speed	rpm	900
Sound pressure level	dBA	77 - at 1 m ± 0.005 m from the fan module- lateral side
Weight	Kg	2.25
Operating supply voltage range	V	9.0 16.0 at the Drive Connector
Supply voltage to reach max speed	V	13.0 16.0 at the Drive Connector
Operating ambient temperature range	°C	-40 +115
Speed derating threshold	°C	+105 (*)
Storage temperature range	°C	-40 +125
Lifetime	h	up to 40000 hours depending on mission profile
Time from 0 rpm to max speed	S	10
Load dump protection (Pulse 5b)	V	35 - Pulse peak voltage (U _S *) - ISO16750-2:2010
Reverse polarity protection		ISO 16750-1 functional status class C - device fully functional after correcting the polarity



Ø 280 mm Ø 11"

VA99-ABL315P/N-101A/SH

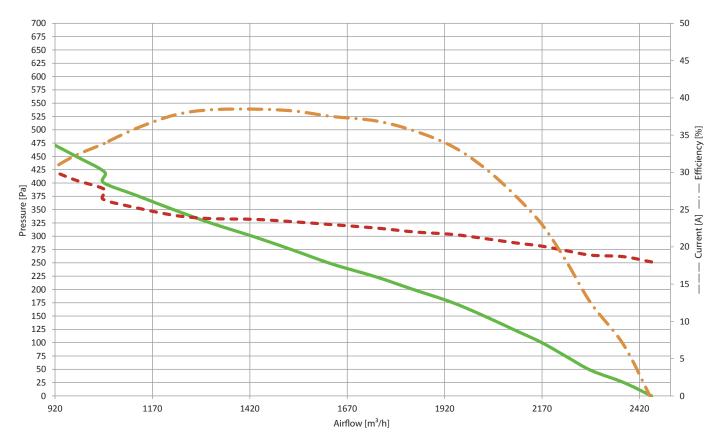


Connector:YAZAKI HYBRID (USCAR-2 compliant) - Part number: 7282-8497-90								
	Identification	+D	-D	А	PWM* / E*			
4. WHITE WIRE SECT. 0.5 mm ²	Pin number	1	2	3	4			
SECT. 6.0 mm ²	Wire Color	red	black	yellow	white			
	Sealing p/n	7158-3035	7158-3035	7158-3030-50	7158-3030-50			
3. YELLOW WIRE SECT. 0.5 mm ² 1. RED WIRE SECT. 6.0 mm ²	Pin p/n	7114-3250	7114-3250	7114-4102-02	7114-4102-02			
	Section [mm2]	6.0	6.0	0.5	0.5			

VA99-ABL315P/N-101A/SH

Ø 280 mm Ø 11"

Axial fan performance curve



Pressure: $1Pa=0.04 \text{ inH}_2O$ Airflow: $1m^3/h=0.59 \text{ cfm}$

rpm	3800
rpm	950
dBA	73.8 - at 1 m ± 0.005 m from the fan module- lateral side
Kg	2.20
V	9.0 16.0 at the Drive Connector
V	13.0 16.0 at the Drive Connector
°C	-40 + 120
°C	+105 (*)
°C	-40 +125
h	up to 40000 hours depending on mission profile
S	15.0
V	35 - Pulse peak voltage (U _S *) - ISO16750-2:2010
	ISO 16750-1 functional status class C - device fully functional after correcting the polarity
	rpm dBA Kg V V °C °C °C h



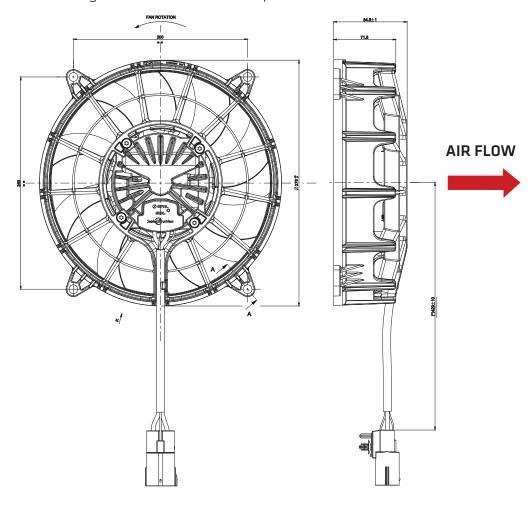
Ø 255 mm Ø 10"

VA109-ABL321P/N-109A/SH



Drawing

All dimensions are expressed in mm. Use M6 screws for fixing – nominal tightening torque 4 Nm Motor designed for **IP6K9K** and **IP68** protection

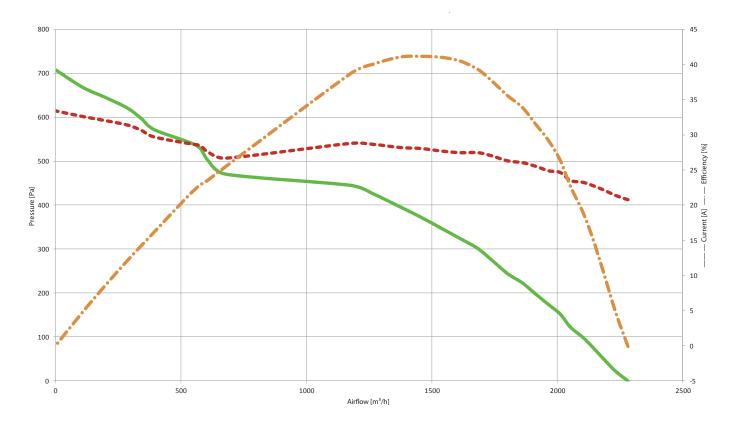


Connector:YAZAKI HYBRID (USCAR-2 compliant) - Part number: 7282-8497-90								
	Identification	+D	-D	А	PWM* / E*			
4. WHITE WIRE SECT. 0.5 mm ²	Pin number	1	2	3	4			
SECT. 6.0 mm ²	Wire Color	red	black	yellow	white			
	Sealing p/n	7158-3035	7158-3035	7158-3030-50	7158-3030-50			
3. YELLOW WIRE SECT. 0.5 mm ² 1. RED WIRE SECT. 6.0 mm ²	Pin p/n	7114-3250	7114-3250	7114-4102-02	7114-4102-02			
	Section [mm2]	6.0	6.0	0.5	0.5			

VA109-ABL321P/N-109A/SH

Ø 255 mm Ø 10"

Axial fan performance curve



Pressure: $1Pa=0.04 \text{ inH}_20$ Airflow: $1m^3/h=0.59 \text{ cfm}$

Features		
Max fan speed	rpm	4000
Min fan speed	rpm	1000
Sound pressure level	dBA	75.6 - at 1 m ± 0.005 m from the fan module- lateral side
Weight	Kg	2.0
Operating supply voltage range	V	9.0 16.0 at the Drive Connector
Supply voltage to reach max speed	V	13.0 16.0 at the Drive Connector
Operating ambient temperature range	°C	-40 + 115
Speed derating threshold	°C	+105 (*)
Storage temperature range	°C	-40 +125
Lifetime	h	up to 40000 hours depending on mission profile
Time from 0 rpm to max speed	S	14
Load dump protection (Pulse 5b)	V	35 - Pulse peak voltage (Us *) - ISO16750-2:2010
Reverse polarity protection		ISO 16750-1 functional status class C - device fully functional after correcting the polarity

020

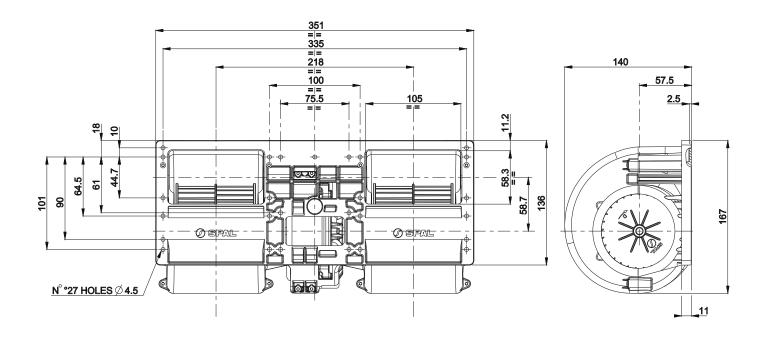
020-ABL313P/N-95



Drawing

All dimensions are expressed in mm. Use M6 screws for fixing – nominal tightening torque 4 \mbox{Nm}

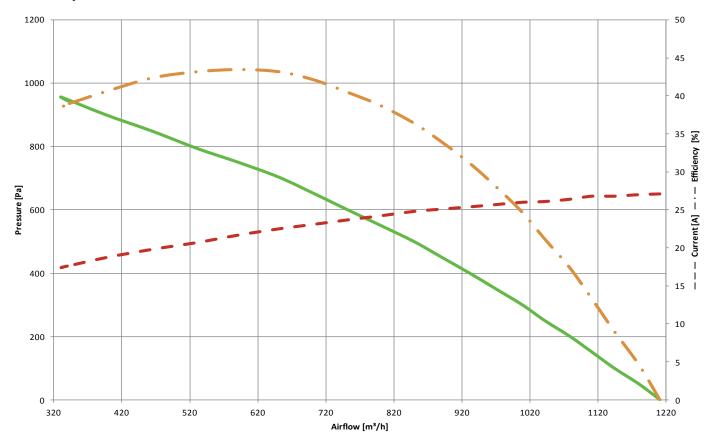
Motor designed for **IP6K9K** and **IP68** protection



Connector:YAZAKI HYBRID (USCAR-2 compliant) - Part number: 7282-8497-90							
	Identification	+D	-D	А	PWM* / E*		
4. WHITE WIRE SECT. 0.5 mm ²	Pin number	1	2	3	4		
SECT. 4.0 mm ²	Wire Color	red	black	yellow	white		
	Sealing p/n	7157-3582-90	7157-3582-90	7158-3030-50	7158-3030-50		
3. YELLOW WIRE SECT. 0.5 mm ² 1. RED WIRE SECT. 4.0 mm ²	Pin p/n	7114-3251	7114-3251	7114-4102-02	7114-4102-02		
	Section [mm2]	4.0	4.0	0.5	0.5		



Axial fan performance curve



Pressure: 1Pa=0.04 inH₂0 Airfl

Airflow: 1m³/h=0.59 cfm

Features		
Max fan speed	rpm	3680
Min fan speed	rpm	1100
Sound pressure level	dBA	73.1 - at 1 m \pm 0.005 m from the fan module- lateral side
Weight	Kg	2.7
Operating supply voltage range	V	9.0 16.0 at the Drive Connector
Supply voltage to reach max speed	V	13.0 16.0 at the Drive Connector
Operating ambient temperature range	°C	-40 +95
Speed derating threshold	°C	+85 (*)
Storage temperature range	°C	-40 +125
Lifetime	h	up to 40000 hours depending on mission profile
Time from 0 rpm to max speed	S	13
Load dump protection (Pulse 5b)	V	35 - Pulse peak voltage (U _S *) - ISO16750-2:2010
Reverse polarity protection		ISO 16750-1 functional status class C - device fully functional after correcting the polarity







Ø 405 mm Ø 16"

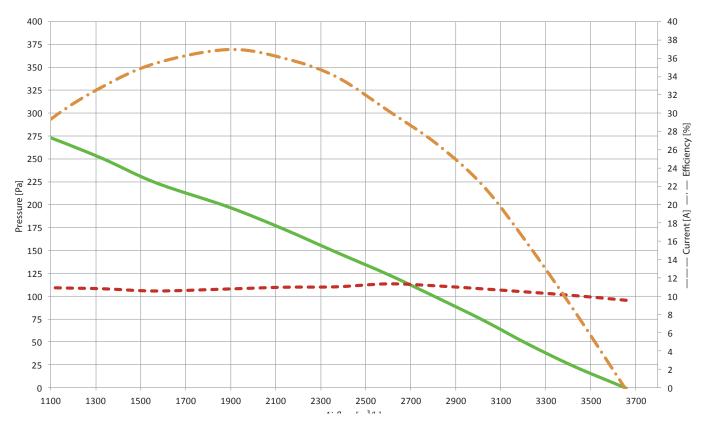
VA97-BBL339P/N-103A

Connector:YAZAKI HYBRID (USCAR-2 compliant) - Part number: 7282-8497-90								
	Identification	+D	-D	А	PWM* / E*			
1. RED WIRE SECT. 4.0 mm ²	Pin number	1	2	3	4			
SECT. 0.5 mm ²	Wire Color	red	black	yellow	white			
	Sealing p/n	7157-3582-90	7157-3582-90	7158-3030-50	7158-3030-50			
2. BLACK WIRE SECT. 4.0 mm ² 3. YELLOW WIRE SECT. 0.5 mm ²	Pin p/n	7114-3251	7114-3251	7114-4102-02	7114-4102-02			
	Section [mm2]	4.0	4.0	0.5	0.5			

VA97-BBL339P/N-103A

Ø 405 mm Ø 16"

Axial fan performance curve



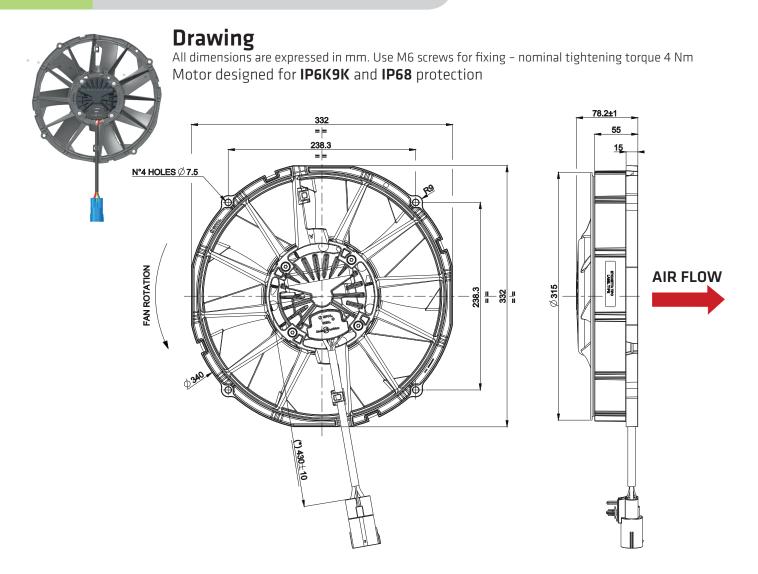
Pressure: 1Pa=0.04 inH₂0

Airflow: 1m³/h=0.59 cfm

Features		
Max fan speed	rpm	2450
Min fan speed	rpm	600
Sound pressure level	dBA	72.8 - at 1 m ± 0.005 m from the fan module- lateral side
Weight	Kg	2.80
Operating supply voltage range	V	16.0 32.0 at the Drive Connector
Supply voltage to reach max speed	V	26.0 32.0 at the Drive Connector
Operating ambient temperature range	°C	-40 +95
Speed derating threshold	°C	+85 (*)
Storage temperature range	°C	-40 +125
Lifetime	h	up to 40000 hours depending on mission profile
Time from 0 rpm to max speed	S	17
Load dump protection (Pulse 5b)	V	65 - Pulse peak voltage (Us *) - ISO16750-2:2010
Reverse polarity protection		ISO 16750-1 functional status class C - device fully functional after correcting the polarity

Ø 305 mm Ø 12"

VA113-BBL504P/N-94A



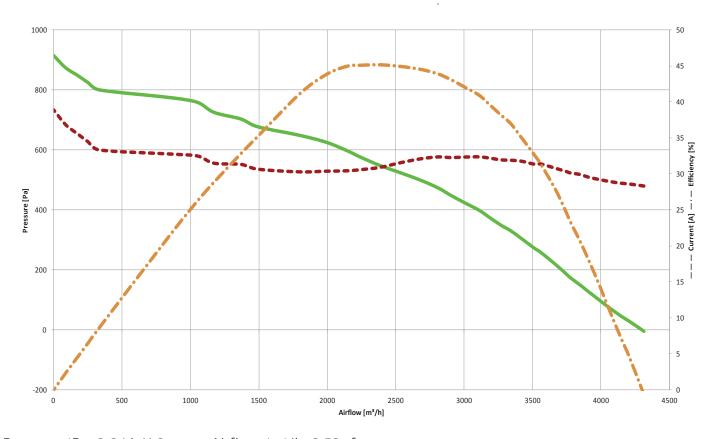
Connector:YAZAKI HYBRID (USCAR-2 compliant) - Part number: 7282-8497-90										
	Identification	+D	-D	А	PWM* / E*					
2. BLACK WIRE 3. YELLOW WIRE 1. RED WIRE 4. WHITE WIRE	Pin number	1	2	3	4					
	Wire Color	red	black	yellow	white					
	Sealing p/n	7158-3035	7158-3035	7158-3030-50	7158-3030-50					
	Pin p/n	7114-3250	7114-3250	7114-4102-02	7114-4102-02					
	Section [mm2]	6.0	6.0	0.5	0.5					

VA113-BBL504P/N-94A

Ø 305 mm

Ø 12"

Axial fan performance curve



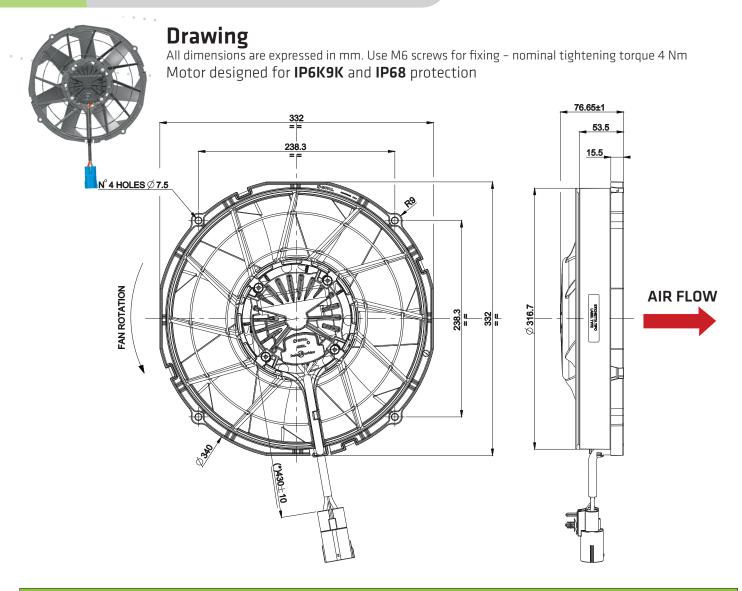
Pressure: 1Pa=0.04 inH₂0

Airflow: 1m³/h=0.59 cfm

Features					
Max fan speed	rpm	4750			
Min fan speed	rpm	1200			
Sound pressure level	dBA	85.6 - at 1 m ± 0.005 m from the fan module- lateral side			
Weight	Kg	2.6			
Operating supply voltage range	V	16.0 32.0 at the Drive Connector			
Supply voltage to reach max speed	V	26.0 32.0 at the Drive Connector			
Operating ambient temperature range	°C	-40 +110			
Speed derating threshold	°C	+65 (*)			
Storage temperature range	°C	-40 +125			
Lifetime	h	up to 40000 hours depending on mission profile			
Time from 0 rpm to max speed	S	10			
Load dump protection (Pulse 5b)	V	65 - Pulse peak voltage (U _S *) - ISO16750-2:2010			
Reverse polarity protection		ISO 16750-1 functional status class C - device fully functional after correcting the polarity			

Ø 305 mm Ø 12"

VA89-BBL338P/N-94A



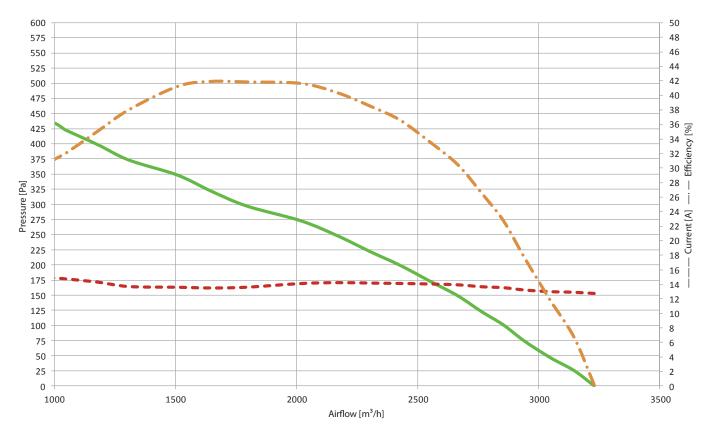
Connector:YAZAKI HYBRID (USCAR-2 compliant) - Part number: 7282-8497-90										
1 DED WIDE	Identification	+D	-D	А	PWM* / E*					
1. RED WIRE SECT. 4.0 mm ² 4. WHITE WIRE SECT. 0.5 mm ² 3. YELLOW WIRE SECT. 4.0 mm ²	Pin number	1	2	3	4					
	Wire Color	red	black	yellow	white					
	Sealing p/n	7157-3582-90	7157-3582-90	7158-3030-50	7158-3030-50					
	Pin p/n	7114-3251	7114-3251	7114-4102-02	7114-4102-02					
	Section [mm2]	4.0	4.0	0.5	0.5					

VA89-BBL338P/N-94A

Ø 305 mm

Ø 12"

Axial fan performance curve

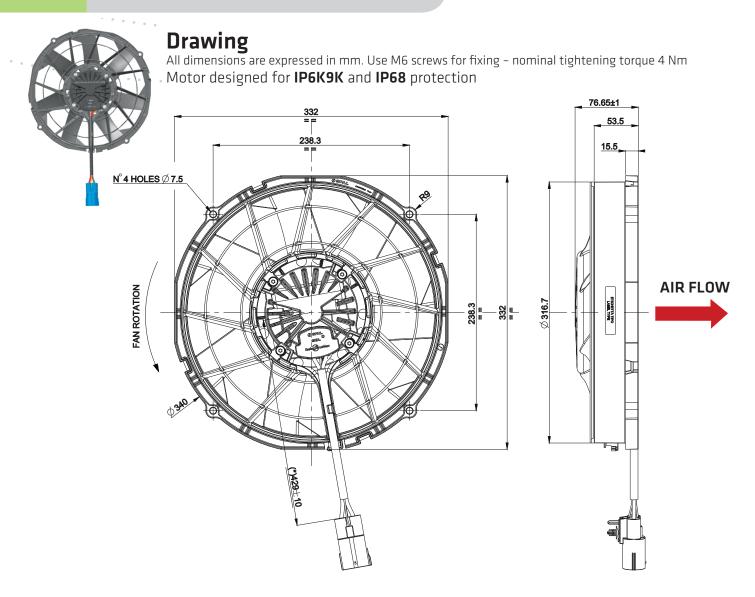


Pressure: 1Pa=0.04 inH₂0 Airflow: 1m³/h=0.59 cfm

7 (11)		
Features		
Max fan speed	rpm	3650
Min fan speed	rpm	900
Sound pressure level	dBA	78 - at 1 m ± 0.005 m from the fan module- lateral side
Weight	Kg	2.20
Operating supply voltage range	V	16.0 32.0 at the Drive Connector
Supply voltage to reach max speed	V	26.0 32.0 at the Drive Connector
Operating ambient temperature range	°C	-40 +95
Speed derating threshold	°C	+85 (*)
Storage temperature range	°C	-40 +120
Lifetime	h	up to 40000 hours depending on mission profile
Time from 0 rpm to max speed	S	15
Load dump protection (Pulse 5b)	V	65 - Pulse peak voltage (U _S *) - ISO16750-2:2010
Reverse polarity protection		ISO 16750-1 functional status class C - device fully functional after correcting the polarity

Ø 305 mm Ø 12"

VA89-BBL328P/N-94A



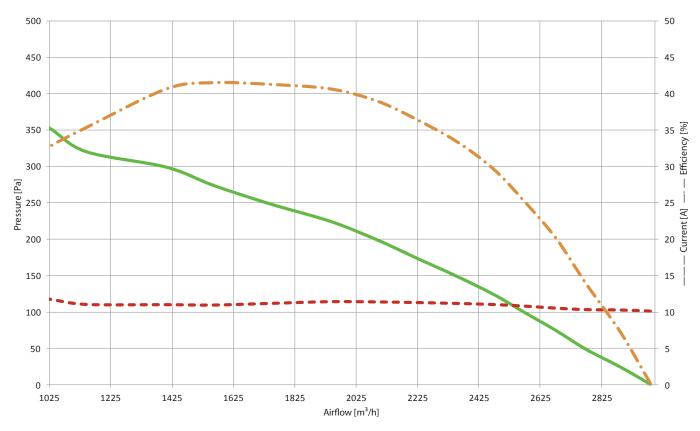
Connector:YAZAKI HYBRID (USCAR-2 con	npliant) - Part r	number: 7282-8	3497-90		
	Identification	+D	-D	А	PWM* / E*
1. RED WIRE SECT. 4.0 mm ² 4. WHITE WIRE	Pin number	1	2	3	4
SECT. 0.5 mm ²	Wire Color	red	black	yellow	white
	Sealing p/n	7157-3582-90	7157-3582-90	7158-3030-50	7158-3030-50
2. BLACK WIRE SECT. 4.0 mm ² 3. YELLOW WIRE SECT. 0.5 mm ²	Pin p/n	7114-3251	7114-3251	7114-4102-02	7114-4102-02
	Section [mm2]	4.0	4.0	0.5	0.5



VA89-BBL328P/N-94A

Ø 305 mm Ø 12"

Axial fan performance curve



Pressure: 1Pa=0.04 inH₂0

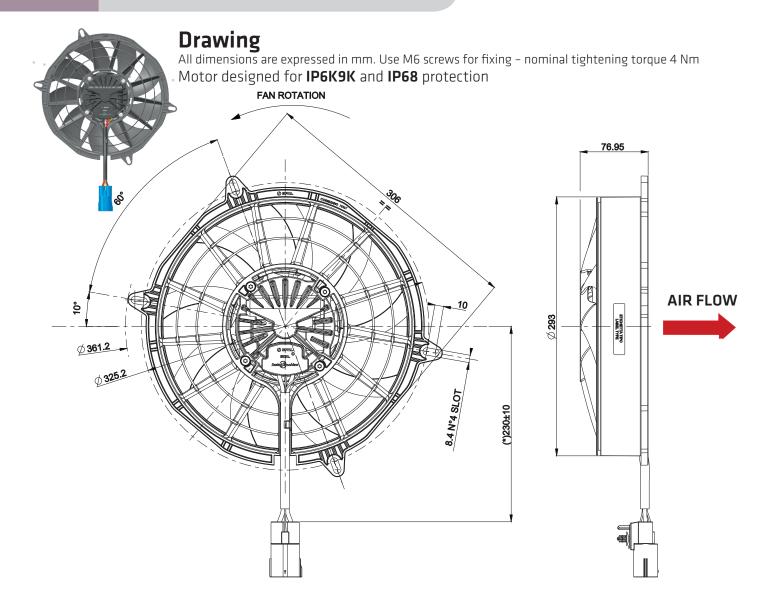
Airflow: 1m³/h=0.59 cfm

Features		
Max fan speed	rpm	3400
Min fan speed	rpm	850
Sound pressure level	dBA	75.7 - at 1 m ± 0.005 m from the fan module- lateral side
Weight	Kg	2.30
Operating supply voltage range	V	16.0 32.0 at the Drive Connector
Supply voltage to reach max speed	V	26.0 32.0 at the Drive Connector
Operating ambient temperature range	°C	-40 +110
Speed derating threshold	°C	+95 (*)
Storage temperature range	°C	-40 +125
Lifetime	h	up to 40000 hours depending on mission profile
Time from 0 rpm to max speed	S	11
Load dump protection (Pulse 5b)	V	65 - Pulse peak voltage (U _S *) - ISO16750-2:2010
Reverse polarity protection		ISO 16750-1 functional status class C - device fully functional after correcting the polarity

high Performance

Ø 280 mm Ø 11"

VA99-BBL324P/N-101A/SH



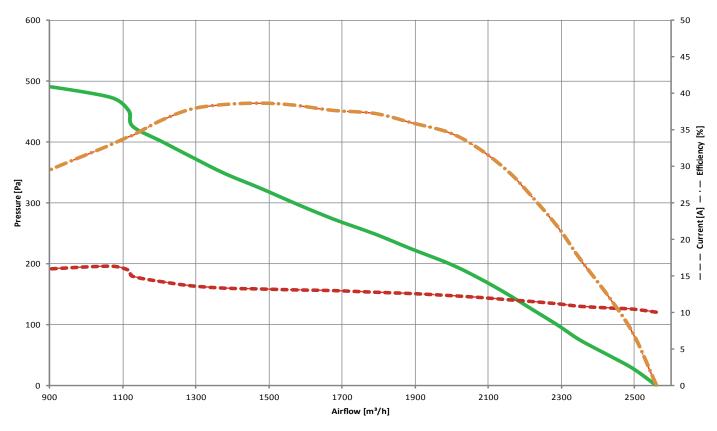
Connector:YAZAKI HYBRID (USCAR-2 con	npliant) - Part r	number: 7282-8	497-90		
	Identification	+D	-D	А	PWM* / E*
4. WHITE WIRE SECT. 0.5 mm ²	Pin number	1	2	3	4
SECT. 4.0 mm ²	Wire Color	red	black	yellow	white
	Sealing p/n	7157-3582-90	7157-3582-90	7158-3030-50	7158-3030-50
3. YELLOW WIRE SECT. 0.5 mm ² 1. RED WIRE SECT. 4.0 mm ²	Pin p/n	7114-3251	7114-3251	7114-4102-02	7114-4102-02
	Section [mm2]	4.0	4.0	0.5	0.5



VA99-BBL324P/N-101A/SH

Ø 280 mm Ø 11"

Axial fan performance curve

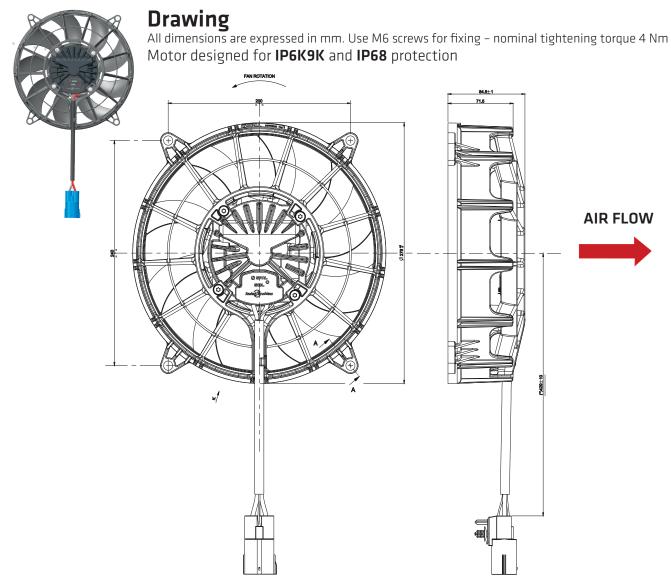


Pressure: 1Pa=0.04 inH₂0 Airflow: 1m³/h=0.59 cfm

Features		
Max fan speed	rpm	4000
Min fan speed	rpm	1000
Sound pressure level	dBA	74.8 at 1 m ± 0.005 m from the fan module- lateral side
Weight	Kg	2.0
Operating supply voltage range	V	16.0 32.0 at the Drive Connector
Supply voltage to reach max speed	V	26.0 32.0 at the Drive Connector
Operating ambient temperature range	°C	-40 +95
Speed derating threshold	°C	+85 (*)
Storage temperature range	°C	-40 +125
Lifetime	h	up to 40000 hours depending on mission profile
Time from 0 rpm to max speed	S	14
Load dump protection (Pulse 5b)	V	65 - Pulse peak voltage (U _S *) - ISO16750-2:2010
Reverse polarity protection		ISO 16750-1 functional status class C - device fully functional after correcting the polarity

Ø 255 mm Ø 10"

VA109-BBL330P/N-109A/SH

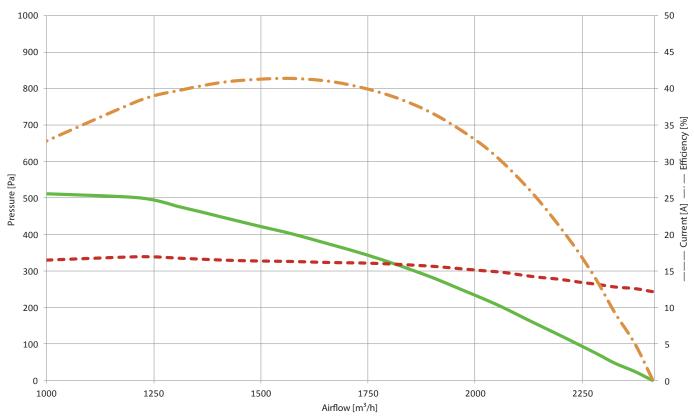


Connector:YAZAKI HYBRID (USCAR-2 cor	npliant) - Part r	number: 7282-8	497-90		
	Identification	+D	-D	А	PWM* / E*
1. RED WIRE SECT. 4.0 mm ² 4. WHITE WIRE	Pin number	1	2	3	4
SECT. 0.5 mm ²	Wire Color	red	black	yellow	white
	Sealing p/n	7157-3582-90	7157-3582-90	7158-3030-50	7158-3030-50
2. BLACK WIRE SECT. 4.0 mm ² 3. YELLOW WIRE SECT. 0.5 mm ²	Pin p/n	7114-3251	7114-3251	7114-4102-02	7114-4102-02
	Section [mm2]	4.0	4.0	0.5	0.5

VA109-BBL330P/N-109A/SH

Ø 255 mm Ø 10"

Axial fan performance curve



Pressure: $1Pa=0.04 \text{ inH}_2O$ Airflow: $1m^3/h=0.59 \text{ cfm}$

Features		
Max fan speed	rpm	4300
Min fan speed	rpm	1100
Sound pressure level	dBA	78 - at 1 m \pm 0.005 m from the fan module- lateral side
Weight	Kg	2.0
Operating supply voltage range	V	16.0 32.0 at the Drive Connector
Supply voltage to reach max speed	V	26.0 32.0 at the Drive Connector
Operating ambient temperature range	°C	-40 +95
Speed derating threshold	°C	+85 (*)
Storage temperature range	°C	-40 +125
Lifetime	h	up to 40000 hours depending on mission profile
Time from 0 rpm to max speed	S	14
Load dump protection (Pulse 5b)	V	65 - Pulse peak voltage (U _S *) - ISO16750-2:2010
Reverse polarity protection		ISO 16750-1 functional status class C - device fully functional after correcting the polarity

high Performance

020

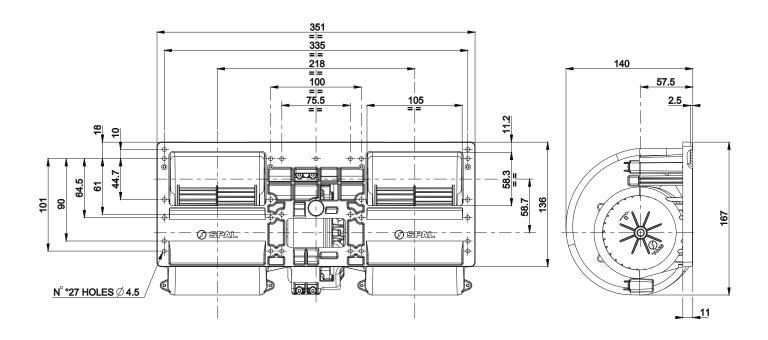
020-BBL331P/N-95



Drawing

All dimensions are expressed in mm. Use M6 screws for fixing – nominal tightening torque 4 \mbox{Nm}

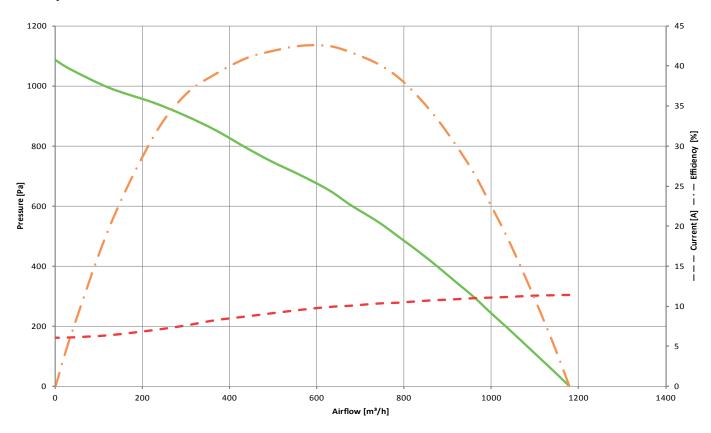
Motor designed for **IP6K9K** and **IP68** protection



Connector:YAZAKI HYBRID	Connector:YAZAKI HYBRID (USCAR-2 compliant) - Part number: 7282-8497-90									
		Identification	+D	-D	А	PWM* / E*				
2. BLACK WIRE	4. WHITE WIRE SECT. 0.5 mm ²	Pin number	1	2	3	4				
SECT. 4.0 mm ²	4.0 mm ²	Wire Color	red	black	yellow	white				
		Sealing p/n	7157-3582-90	7157-3582-90	7158-3030-50	7158-3030-50				
	RED WIRE ECT. 4.0 mm ²	Pin p/n	7114-3251	7114-3251	7114-4102-02	7114-4102-02				
		Section [mm2]	4.0	4.0	0.5	0.5				



Blower performance curve



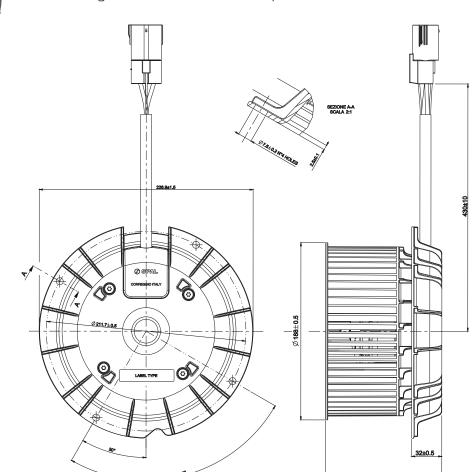
Pressure: 1Pa=0.04 inH₂0 Airflow: 1m³/h=0.59 cfm

Features		
Max fan speed	rpm	3574
Min fan speed	rpm	887
Sound pressure level	dBA	72.8 - at 1 m ± 0.005 m from the fan module- lateral side
Weight	Kg	2.3
Operating supply voltage range	V	16.0 32.0 at the Drive Connector
Supply voltage to reach max speed	V	26.0 32.0 at the Drive Connector
Operating ambient temperature range	°C	-40 +95
Speed derating threshold	°C	+85 (*)
Storage temperature range	°C	-40 +125
Lifetime	h	up to 40000 hours depending on mission profile
Load dump protection (Pulse 5b)	V	65 - Pulse peak voltage (Us *) - ISO16750-2:2010
Reverse polarity protection		ISO 16750-1 functional status class C - device fully functional after correcting the polarity

BBL354P-120S

DrawingAll dimensions are expressed in mm. Use M6 screws for fixing – nominal tightening torque 4 Nm

Motor designed for IP6K9K and IP68 protection



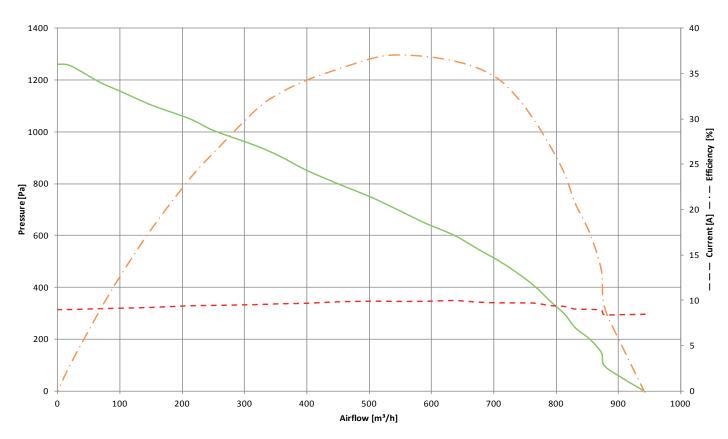
Connector:YAZAKI HYI	BRID (USCAR-2 cor	<mark>mpliant) - Part</mark> r	number: 7282-8	497-90		
4. WHITE WIRE	1. RED WIRE	Identification	+D	-D	А	PWM*/E*
SECT. 0.5 mm ²	SECT. 4.0 mm ²	Pin number	1	2	3	4
		Wire Color	red	black	yellow	white
		Sealing p/n	7157-3582-90	7157-3582-90	7158-3030-50	7158-3030-50
2. BLACK WIRE SECT. 4.0 mm ²	3. YELLOW WIRE SECT. 0.5 mm ²	Pin p/n	7114-3251	7114-3251	7114-4102-02	7114-4102-02
		Section [mm2]	4.0	4.0	0.5	0.5





BBL354P-120S

Axial fan performance curve



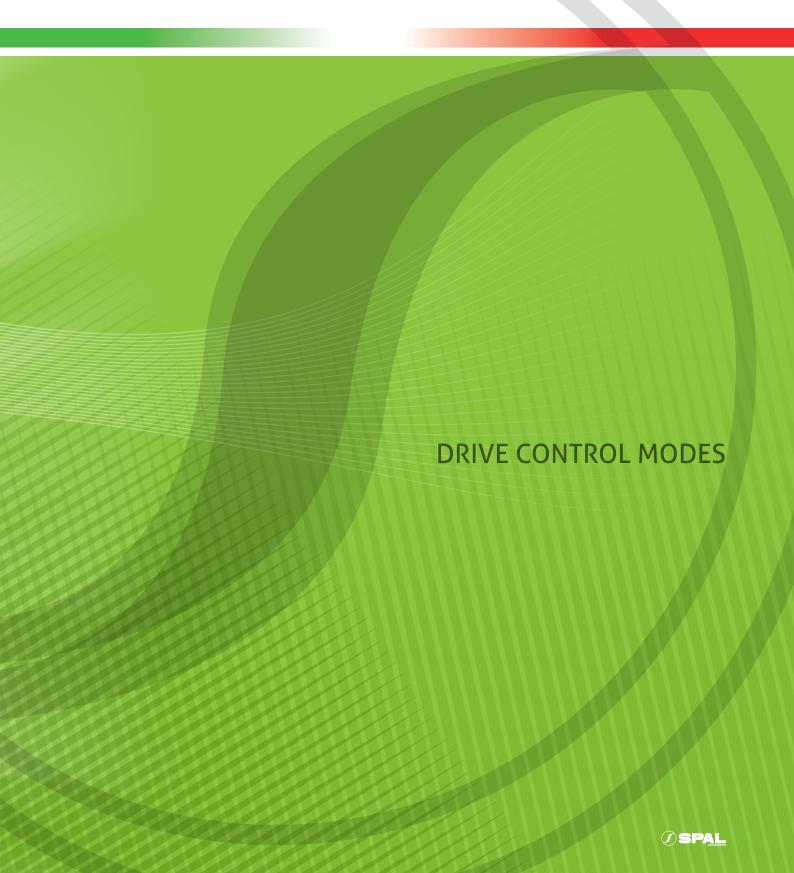
Pressure: 1Pa=0.04 inH₂0

Airflow: 1m³/h=0.59 cfm

Features		
Max fan speed	rpm	1850
Min fan speed	rpm	800
Sound pressure level	dBA	73 - at 1 m ± 0.005 m from the fan module- lateral side
Weight	Kg	1.9
Operating supply voltage range	V	16.0 32.0 at the Drive Connector
Supply voltage to reach max speed	V	26.0 32.0 at the Drive Connector
Operating ambient temperature range	°C	-40 +95
Speed derating threshold	°C	+85 (*)
Storage temperature range	°C	-40 +120
Lifetime	h	up to 40000 hours depending on mission profile
Time from 0 rpm to max speed	S	5 (0 to 1900 rpm)
Load dump protection (Pulse 5b)	V	65 - Pulse peak voltage (U _S *) - ISO16750-2:2010
Reverse polarity protection		ISO 16750 - 1 functional status class C - device fully functional after correcting the polarity







PROTECTIONS

Built-in drive protections:

- 1. Drive blocked
- 2. Drive overheated
- 3. Drive overloaded
- 4. Under voltage
- 5. Over voltage
- 6. Over current
- 7. Internal Drive failure

MOTOR CONTROL INTERFACE

8 different interface control strategies for flexible and smart motor control

Mode description	Mode	+D	-D	PWM* / E*	А	Pi	ns
On / off to minus	1	+	→ - □	-	+		4
On / off to plus	2	+ ← ✓ + + D	-	-	+		4
On / off with enable low	3	+	-	E*	+		4
Analog control 1	4	+		-	analog		4
Analog control 2	5	+/ ++D	-	-	analog		4
Analog control with enable low	6	+	-	E*	analog		4
Digital control	7	+	-	PWM	n.c.	3	
Mixed analog / digital control	8	+	-	PWM	analog		4

+D : Drive positive supply -D : Drive negative supply

PWM* / E* : PWM input / low active enable input

A : analog input
+ : connected to plus
- : connected to minus
analog : analog voltage signal

PWM : PWM signal n. c. : not connected

: switch of the Drive positive supply to plus

: switch of the Drive negative supply to minus / GND
: switch active low enable input to minus / GND

INTERFACE MODE 1: ON / OFF TO MINUS

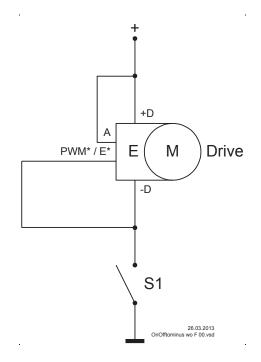
To realize the mode On / off to minus with the Drive Interface for Catalog Product 12 V it is necessary to put

- A to +D and
- PWM* / E* to -D.

When the switch S1 is switched on the Drive goes after the initialization of the electronics to full speed.

This mode can be used if the CCU which controls the Drive has limited capabilities or does not even exist. The Drive is just switched on and off via any power switch like a relay, MOS FET, or even just a switch.

The appropriate current rating for this "switch" has to be dimensioned according to the current consumption of the Drive.



INTERFACE MODE 2: ON / OFF TO PLUS

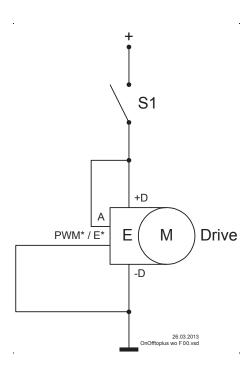
To realize the mode On / off to plus with the Drive Interface for Catalog Product 12 V it is necessary to put

- A to +D and
- PWM* / E* to -D.

When the switch S1 is switched on the Drive goes after the initialization of the electronics to full speed.

This mode can be used if the CCU which controls the Drive has limited capabilities or does not even exist. The Drive is just switched on and off via any power switch like a relay, MOS FET, or even just a switch.

The appropriate current rating for this "switch" has to be dimensioned according to the current consumption of the Drive.

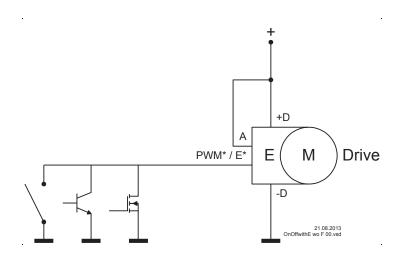


INTERFACE MODE 3: ON / OFF WITH ENABLE LOW

To realize the mode On / off with enable low with the Drive Interface for Catalog Product 12 V it is necessary

- A to +D and
- to use PWM* / E* as an low active enable.

In mode 3 the Drive can stay always on supply voltage and is controlled by a low current enable input which can be driven by simple low cost low side signal driver in the CCU. When the enable input PWM* / E* goes to high, the Drive goes after a short time into the quiescent current mode. When the enable pin PWM* / E* is driven low, the Drive goes to full speed after the initialization of the electronics. This mode can be used if the CCU which controls the Drive has limited capabilities or does not even exist. The appropriate sink current rating of the driver for the enable pin PWM* / E* has to be dimensioned according to the current consumption of the pin PWM* / E*. The circuit structure to drive the pin PWM* / E* can be any active low "open collector" Typical circuitry.

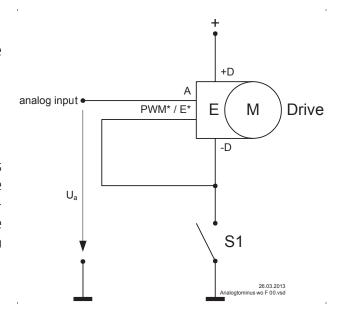


INTERFACE MODE 4: ANALOG CONTROL 1

To realize the mode Analog control 1 with the Drive Interface for Catalog Product 12 V it is necessary

- to use A as an analog input and
- to put PWM* / E* to -D.

When the switch S1 is switched on the Drive goes after the initialization of the electronics to the speed requested by the analog input A. The appropriate current rating for this "switch" has to be dimensioned according to the current consumption of the Drive.



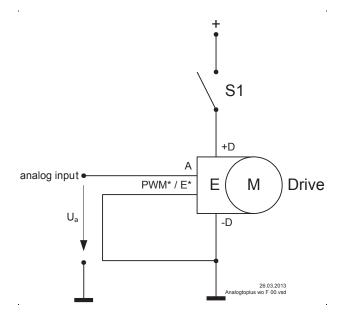
INTERFACE MODE 5: ANALOG CONTROL 2

To realize the mode Analog control 2 with the Drive Interface for Catalog Product 12 V it is necessary

- to use A as an analog input and
- to put PWM* / E* to -D.

When the switch S1 is switched on the Drive goes after the initialization of the electronics to the speed requested by the analog input A.

The appropriate current rating for this "switch" has to be dimensioned according to the current consumption of the Drive.



INTERFACE MODE 6: ANALOG CONTROL WITH ENABLE LOW

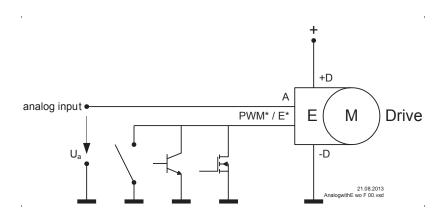
To realize the mode Analog control with enable low with the Drive Interface for Catalog Product 12 V it is necessary

- to use A as an analog input and
- to use PWM* / E* as a low active enable.

In mode 6 the Drive can stay always on supply voltage and is controlled by a low current enable input which can be driven by simple low cost low side signal driver in the CCU. When the enable input PWM* / E* goes to high, the Drive goes after a short time into the quiescent current mode.

When the enable pin PWM* / E^* is driven low, the Drive goes to the speed requested by the analog input A after the initialization of the electronics. The appropriate sink current rating of the driver for the enable pin PWM* / E^* has to be dimensioned according to the current consumption of the pin PWM* / E^* .

The circuit structure to drive the pin PWM* / E* can be any active low "open collector" Typical circuitry In this operating mode the supply voltage plus is usually connected permanently. To run the Drive first the pin PWM* / E* has to be connected to supply voltage minus and afterwards the Drive speed can be then controlled with an analog voltage on the pin A.

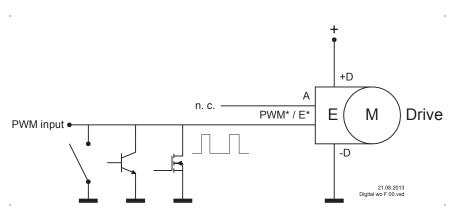


INTERFACE MODE 7: DIGITAL CONTROL

To realize the mode Digital control with the Drive Interface for Catalog Product 12 V it is necessary - to apply a PWM signal on the pin PWM* / E*.

In mode 7 the Drive can stay always on supply voltage and is controlled by a low current PWM and enable PWM* / E* input which can be driven by simple low cost low side signal driver in the CCU. When the enable input PWM* / E* goes to high, the Drive goes after a short time into the quiescent current mode. When the enable pin PWM* / E* is driven with PWM, the Drive goes to the speed requested by the duty cycle after the initialization of the electronics. The appropriate sink current rating of the driver for the enable pin PWM* / E* has to be dimensioned according to the current consumption of the pin PWM* / E*.

The circuit structure to drive the pin PWM* / E* can be any active low "open collector" Typical circuitry In this operating mode the supply voltage plus is usually connected permanently. To run the Drive on the pin PWM* / E* a PWM signal has to be applied and with the duty cycle of the PWM signal the Drive speed can be then controlled.

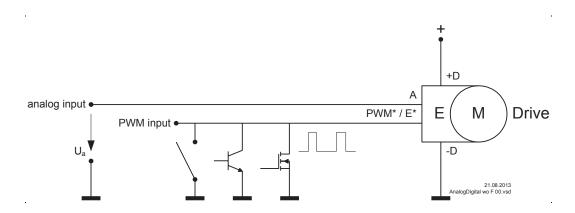


INTERFACE MODE 8: MIXED ANALOG / DIGITAL CONTROL

To realize the mode Mixed analog / digital control with the Drive Interface for Catalog Product 12 V it is necessary

- to use A as an analog input and
- to apply a PWM signal on the pin PWM* / E*.

In mode 8 the Drive can stay always on supply voltage and is controlled by a low current PWM and enable PWM* / E* input which can be driven by simple low cost low side signal driver in the CCU. When the enable input PWM* / E* goes to high, the Drive goes after a short time into the quiescent current mode. When the enable pin PWM* / E* is driven low (switched to supply voltage minus), the Drive goes to the speed requested by the analog input A after the initialization of the electronics (if the electronics is not already activated). When the enable pin PWM* / E* is driven with PWM, the Drive goes to the speed requested by the duty cycle after the initialization of the electronics (if the electronics is not already activated). The appropriate sink current rating of the driver for the enable pin PWM* / E* has to be dimensioned according to the current consumption of the pin PWM* / E*. The circuit structure to drive the pin PWM* / E* can be any active low "open collector" Typical circuitry.



In this operating mode the supply voltage plus is usually connected permanently. To run the Drive on the pin PWM* / E* a PWM signal has to be applied and with the duty cycle of the PWM signal the Drive speed can be then controlled. If the pin PWM* / E* is switched to supply voltage minus the Drive speed can be then controlled with an analog voltage on the pin A.

So a mixed control with either digital or analog input is possible. The priority has the digital PWM signal.

FUSE PROTECTION

An automotive fuse according ISO8820 part 3 must be applied in the vehicle/system wire harness. Depending on the application of the fan, it is customer responsability to define and verify the correct fuse value (due to the length of the vehicle cable harness, cross section of the power wires, fuse type).

POWER SUPPLY RESIDUAL RIPPLE

The maximum acceptable value of power supply rms ripple for the Drive is 1%. In case of application with high residual ripple values, please contact SPAL in order to find the suitable solution for your specific requirements.

STANDARDS AND DIRECTIVES

The product complies with the following standard / directives

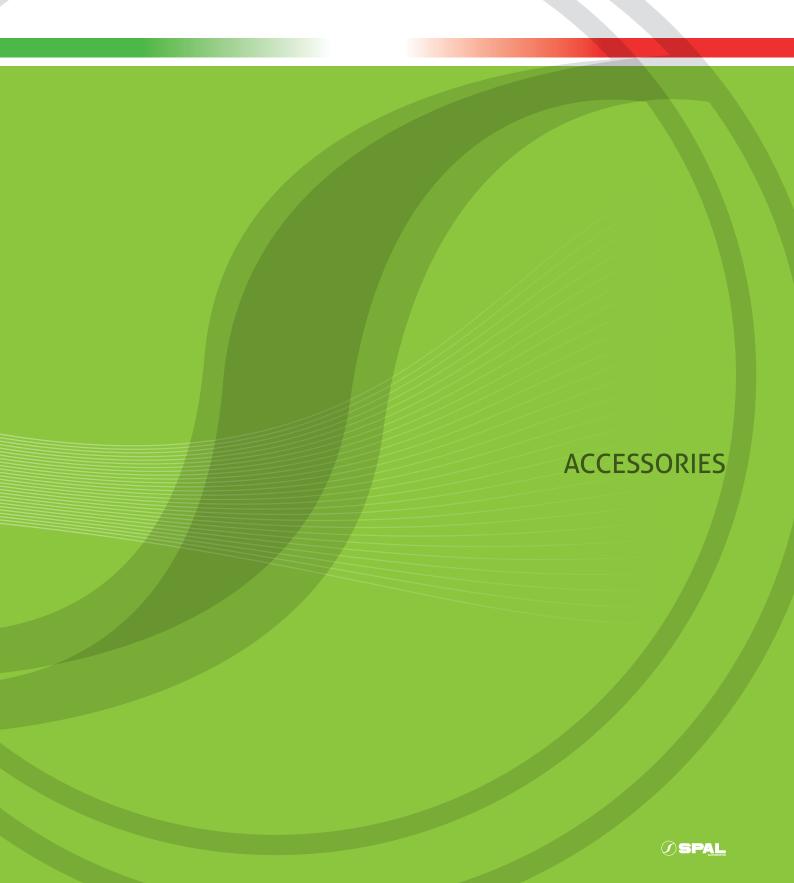
Standard Code	Description	
72/245/EC and updates	Automotive EMC directive	
ECE Reg. 10-03 and updates	niform provisions concerning the approval of vehicles with regard to electromagnetic compatibility	
2002/95/EC RoHS	Restriction of Hazardous Substances Directive	
2000/53/EC and updates	End-of Life Vehicle 2000/53/EC	

SEALING

Motor designed for **IP6K9K** and **IP68** protection









ACCESSORIES ON REQUEST

SPAL p/n 30130709 – Additional protection guard for VA89A and VA113 shroud

30130709 Fitting





BRUSHLESS MOTOR FANS AND BLOWERS

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YAZAKI CONNECTOR COUNTERPART

SPAL p/n 30130628 Complet Connector Counterpart. Kit available upon request.

The Kit includes:

Corresponding Yazaki component PN	Notes	Qty
7283-8497-90	Male Connector	1
7158-3032-60	Seal gasket 1,5 [mm]	1
7116-3251	Female Fast-on terminal	2
7157-3582-90	Seal gasket Ø 2,5-3,5 [mm] for cables	2
7116-3250	Female Fast-on terminal	2
7158-3035	Seal gasket Ø 4-5 [mm] for cables	2
7157-3581-80	Seal gasket Ø 4,75-5,65 [mm] for cables	2
7116-3285-02	Female Fast-on terminal	2
7158-3036-70	Seal gasket Ø 5,5-6,5 [mm] for cables	2
7116-4103-02	Female Fast-on terminal	2
7158-3031-90	Seal gasket Ø 1,6-2,2 [mm] for cables	2
7116-4102-02	Female Fast-on terminal	2
7158-3030-50	Seal gasket Ø 1,2-1,7 [mm] for cables	2
7147-8925-30	Connector fixing hook	1

Global Footprint

- The SPAL team has an international presence with subsidiaries in 6 countries around the world.
- The location of subsidiaries has been carefully co-ordinated to optimise the distribution and marketing of SPAL products with customer service and distribution centres based close to key customers.
- As manufacturers and the market are demanding products to perform increasingly complex tasks and requesting highly integrated systems, SPAL is prepared to invest in the future and rise to the challenge.
- SPAL is open to accessing new markets such as exhaust technology and vehicle-heating systems with plans to pursue these opportunities energetically in mature markets such as Europe and United States as well as in emerging regions such as China, India and Russia.

Accreditation

- SPAL has TS16949 and ISO 9001 certification for quality system requirements for design, development, production, installation and servicing.
- SPAL's Environmental Management System is certified to UNI EN ISO14001:2004, and also meets the European Directive 2000/53/EC on end-of-life vehicles (ELV).







SPAL ITALY (Correggio - Italy) Headquarter: Design, R&D and Production

- SPAL USA
- SPAL CHINA
- SPAL Automotive UK
- SPAL do Brazil
- SPAL RUS
- SPAL Japan K.K
- PEE AAR Automotive Technologies

(Des Moines - Iowa - USA) US Subsiadiary (Shanghai -China) Chinese Subsidiary (Worcester- UK) UK Subsidiary (Sao Paulo - Brazil) Brazilian Subsidiary

(Saint-Petersburg - Russia) Russian Subsidiary

(Tokyo - Japan) Japanese Subsidiary

(Delhi - India) Indian Distribution Facility

• Dedicated Area Managers covering Germany, Eastern Europe and Asian markets.







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This catalogue replaces all the previous one.

Our technical specification are purely indicative and might change without any previous notice.



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