AUTOMATIC FIRE
SUPPRESSION SYSTEMS

BlazeCut Automatic Fire Suppression System

System Manual

Specification, Installation and Operation

C Series Direct Low Pressure Powder Systems

CPO118

TABLE OF CONTENTS

1 INTRODUCTION 4

2 BASIC INFORMATION ABOUT THE SYSTEM 5

2.1 EXPLANATION OF MODEL NAME CAPTION 5

2.2 TECHNICAL SPECIFICATION AND TYPES OF DLP SYSTEMS 6

2.3 USE OF THE SYSTEM 7

3 SYSTEM DESIGN LIMITATIONS 8

3.1 TOTAL FLOODING APPLICATIONS 8

3.2 ISO 9094 REQUIREMENTS 11

4 COMPONENTS OF THE SYSTEM AND THEIR DESCRIPTION 11

4.1 CYLINDERS FOR EXTINGUISHING AGENT 11

4.2 CYLINDER VALVE 13

4.3 BLAZETUBE DETECTION 16

4.4 PRESSURE GAUGE 17

4.5 BLAZETUBE PUSH IN CONNECTORS 18

4.6 BLAZETUBE END-OF-LINE DEVICES 18

4.7 FASTENING MATERIAL 19

4.8 LABELS 21

5 DEFINITION OF LEGAL REQUIREMENTS 22

6 INFORMATION ON EXTINGUISHING AGENT USED 22

6.1 DESCRIPTION 22

6.2 PERMISSIBLE USES OF EXTINGUISHING AGENT 23

6.3 IMPROPER USES OF EXTINGUISHING AGENT 23

7 FILLING AND CHARGING OF SYSTEMS 24

7.1 FILLING AND CHARGING OF SYSTEMS WITH POWDER 24

7.2 PROCEDURE OF PRESSURISATION OF THE CYLINDER ONLY 25

7.3 ADDITIONAL STEPS AFTER PRESSURISATION 27

8 INSTRUCTIONS FOR INSTALLATION OF THE SYSTEM 27

8.1 GENERAL RULES 27

8.2 INSTALLATION OF THE CYLINDER AND BRACKET 29

8.3 INSTALLATION OF THE BLAZETUBE DETECTION 31

8.4 PRESSURISATION OF THE CYLINDER AND THE DETECTION SYSTEM 35

8.5 FINAL INSPECTION OF THE SYSTEM INSTALLATION 38

9 OPERATION OF BLAZECUT SYSTEM IN CASE OF FIRE 38

10 REGULAR INSPECTION AND MAINTENANCE OF THE FIRE SUPPRESSION SYSTEM 40

BlazeCut and the BlazeCut logo are trademarks of BlazeCut s.r.o.

© BlazeCut, all rights reserved.

10.1 INSPECTION OF PRESSURE IN THE SYSTEM 41
10.2 BASIC POINTS OF INSPECTION OF THE SYSTEM 41
10.3 PRESSURISATION OF THE SYSTEM 42

11 SYSTEM DEACTIVATION AND REMOVAL 42
11.1 SYSTEM DEACTIVATION 42
11.2 REMOVAL OF THE SYSTEM FROM THE SERVICE 42

12 REPLACEMENT OF COMPONENTS AND RESTORATION OF ACTIVITY 42
12.1 CLEANING THE SYSTEM 42
12.2 CLEANING AFTER SYSTEM ACTIVATION 43
12.3 RESTORATION OF ACTIVITY OF BLAZECUT SYSTEM IN CASE OF FIRE 43
12.4 REPLACEMENT OF THE CYLINDER 44
12.5 REPLACEMENT OF THE BLAZETUBE DETECTION 44
12.6 DECLARATION OF CONFORMITY 45

13 LIST OF ANNEXES 45
ANNEX 1: SIGNALLING DEVICES 46
A1.1. SIGNALLING UNITS 46
A1.2. ALARM PANEL 47

ANNEX 2: PRESSURE MONITORING AND ELECTRICAL COMPONENTS 48
A2.1. PRESSURE TRANSDUCER ATA100 48
A2.2. PRESSURE SWITCH APS001-xx 49
A2.3. PRESSURE SWITCH APS003-xx 50
A2.4. INSTALLATION OF PRESSURE MONITORING COMPONENTS 51
A2.5. ELECTRICAL CABLES, CONDUITS AND CONNECTORS 52

ADITIONAL NOTES 55

© BlazeCut, all rights reserved.

1 INTRODUCTION

1.1.1 MANUFACTURER INFORMATION

BlazeCut s.r.o., Triblavinská 3191, 90025 Chorvátsky Grob, Slovakia

www.blazecut.com; customerservice@blazecut.com

1.1.2 INSTRUCTIONS FOR USE OF THE MANUAL

This manual is intended to supply technical information for trained and authorized personnel by BlazeCut . Any personnel performing installation, inspection, maintenance or replacement of components with the BlazeCut system shall have this manual available and proceed solely in accordance with it. Failure to follow the instructions in this manual and any other BlazeCut manuals may result in loss of warranty, a system malfunction, causing damage to the protected equipment and may present serious danger to the life and health of others.

1.1.3 SAFETY FIRST

Please read this manual in its entirety. Operation and installation instructions need to be fully understood before this BlazeCut product is installed. Failure to do so may void warranty. Your local governing regulations for safety and compliance must be followed**.**

1.1.4 WARNINGS AND CAUTIONS

This symbol within the manual represents warning of specific risks, dangers, or warning of described procedures. Failure to follow the instructions in the text marked with this symbol may result in loss of warranty, damage to property, threat to safety or life of persons performing the operation on the system or persons in the vicinity. Do not proceed without following the instructions marked with such symbols.

1.1.5 FURTHER INFORMATION

BlazeCut® is a registered trademark of BlazeCut and is recorded in the Register of Community Trade Marks.

If any of the instructions in this manual are unclear or in case of further questions, contact the BlazeCut Team.

This document is the property of BlazeCut It is prohibited to reproduce it, copy it in whole or in part, or provide third parties with any related information without prior written consent of BlazeCut.

WARNING

Please ensure that the safety instructions are fully understood before the equipment is put into service.

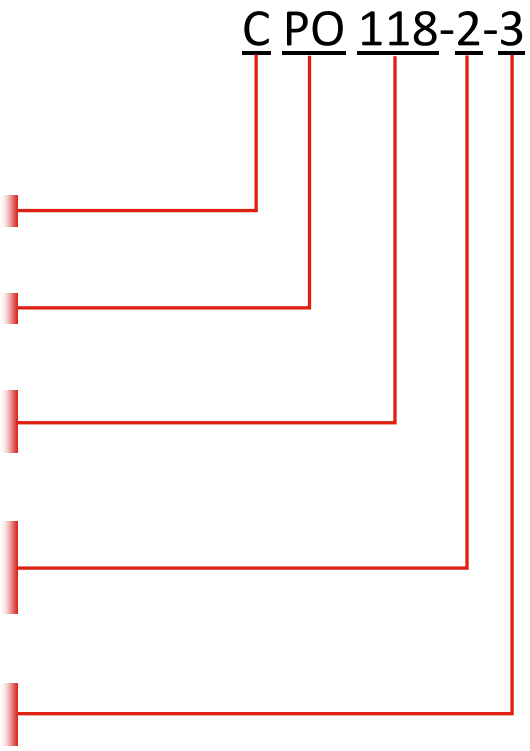
Do not modify any part of the BlazeCut components as this may cause serious injury or a failure of the system.

Always wear the appropriate protective equipment and clothing whilst installing or servicing.

© BlazeCut, all rights reserved.

2 BASIC INFORMATION ABOUT THE SYSTEM

2.1 EXPLANATION OF MODEL NAME CAPTION



Product line
C – Cylinder Series systems

Extinguishing agent
PO – ABC powder agent

Valve series
118 – with one outlet for Ø 8 mm BlazeTube detection
128 – with two outlets for Ø 8 mm BlazeTube detections

Examples of extinguishing agent quantity
1 – 1 kg of agent
2 – 2 kg of agent
4 – 4 kg of agent

Lower G1/8" port on a valve (126 and 128 valves only)
0 – plug FVP1B02
3 – M10x1 adapter FVABM0210 with a plug

Example 1: CPO118-2 – includes BlazeCut system with one cylinder (C) with the extinguishing agent used powder (PO), with the valve type 118 (118), total amount of the extinguishing agent 2 kg (-2).

2.1.1 DESCRIPTION OF THE SYSTEM

Commercial name: BlazeCut

Characteristics: Powder Automatic Fire Suppression System

Type: Cylinder Series (C Series), Direct Low Pressure (DLP)

Examples of applications:

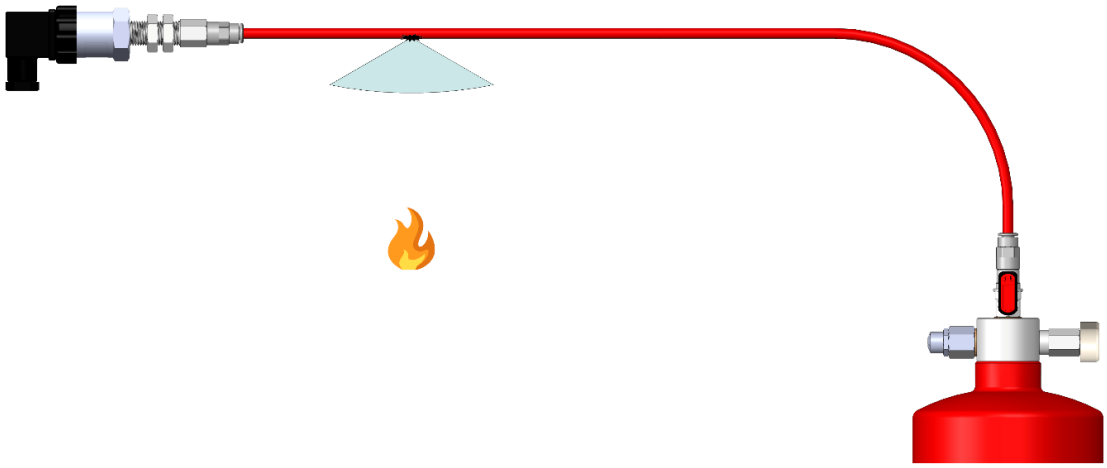
- engine compartments of mobile construction equipment,
- engine compartments of boats,
- engine compartments of buses,
- engine compartments of vehicles,
- others

Functionality: BlazeCut Direct Low Pressure System suppresses fire automatically without any external power source. Extinguishing agent is stored in a cylinder. The cylinder is closed with a valve, which keeps the pressure in a cylinder and releases the agent.

The system is referred to as direct, which means that the activation and distribution of the agent is secured by heat detection tubing – BlazeTube. The fire suppression system operates by detecting fire and also application of the agent using a BlazeTube detection connected to the cylinder valve. The BlazeTube detection is placed in the protected enclosure and is under constant pressure. In case of a fire the BlazeTube detection degrades by the effect of a fire or high temperature. When the BlazeTube detection is disrupted, the agent is released through created "nozzle". This system is independent of any electrical supply and operates solely on physical principles.

BlazeCut and the BlazeCut logo are trademarks of BlazeCut s.r.o.

© BlazeCut, all rights reserved.



Principle of operation of BlazeCut DLP system

2.1.2 OPTIONAL COMPONENTS

Installation, use, function and service of selected optional components is described in annexes of the Installation and service manual or supplied as a separate manual. For more information contact the supplier.

Table 1: Installation characteristics for BlazeCut DLP systems

Description	Value
Test pressure of pressure equipment	30 bar
Amount of agent	1 to 4 kg
Type of extinguishing agent	ABC Powder
Expellant gas	nitrogen
Pneumatic activation	yes
Connection to a fire alarm or other warning device	with AAP210, AAP310, AAP400
Display, monitor and provide a low-pressure alarm	with APS001/ATA100 + AAP210/AAP400; APS001 + custom panel
Connection to a sounder or other alarm activation system	with APS001 + signalling unit
Isolating power supplies and auxiliary equipment such as fan units to the enclosure upon system activation	with APS001, AAP210 or AAP310

NOTE

As a general rule, it shall not be possible for the user to isolate any electrical power supply or alarm connections to the DLP system without also isolating the power supply to the enclosure, and/or placing the system into an alarm state. If the end user does not require operational shut down of the enclosure during DLP equipment maintenance, this shall be clearly acknowledged and confirmed in written form by the installer to the end user.

2.2 TECHNICAL SPECIFICATION AND TYPES OF DLP SYSTEMS

Table 2: DLP basic kits with powder

Model number	Valve type	Agent quantity [kg]	BlazeTube size [mm]	BlazeTube outlets	Operating pressure at 20 °C [bar]	Operating pressure range [bar]	Operating temperature range [°C]
CPO118-1	118	1	ø 8	1	17	14 – 20	-30 to +60
CPO118-2		2					
CPO118-4		4					

NOTE

Operating temperature refers to temperature in the protected enclosure as well as pressure cylinder location.

© BlazeCut, all rights reserved.

2.3 USE OF THE SYSTEM

The BlazeCut system is designed for protection of closed spaces from fire using local fire suppression. It is **not** intended for use as a whole room or building fire protection system.

The fire suppressing properties depend on many factors, including the size of the protected enclosure, the properties of the flammable substances in the space, shape and degree of closure of the area, the possibility of placement of the BlazeTube detection, air circulation etc. In order effectively use the BlazeCut system consult the choice of type, amount of agent and cylinders, type of extinguishing agent and installation method with the supplier of the system.

In order to achieve accurate design of the system it is necessary to be priory informed of at least the following parameters:

- the dimensions of the protected area,
- openness of the protected area and airflow in it,
- the nature of fire risk in the protected area (presence of flammable materials, their amount, location),
- layout of the protected enclosure,
- sites with the highest probability of fire (presence of possible ignition sources of fire),
- placement options of the system within the protected area (especially the location of the cylinder and BlazeTube detection),
- the presence of people in the protected area, and what safety measures are required to limit human exposure to agents,
- the method of operation of the protected equipment, etc.

It is always recommended to discuss the potential fire risk factors and factors in the protected enclosure with a local fire protection specialist who has knowledge about the protected enclosure and this information is provided to the supplier of the system. A BlazeCut risk assessment template is available for this purpose if required.

It is also necessary that the conditions in the protected area are in accordance with the permissible parameters of the system, especially the lowest and highest temperature in the protected area.

Remember that there are many of factors and variables that can affect the extinguishing process in event of fire. Is not possible to guarantee total suppression of fire in the protected enclosure under all circumstances.

The BlazeCut system is designed to protect of equipment in closed spaces. Use in partially or completely open spaces or spaces with strong air circulation may significantly decrease the efficiency of the system.

In case of forced ventilation in protected enclosure after activation of the system the ventilation shall be switched-off immediately to avoid venting of the agent from the protected area. In such case, it is recommended to provide automatic cut-off of ventilation when BlazeCut system is activated (e.g., with the Pressure Switch APS001-xx or APS003-xx).

Use of the system is also limited by the properties of extinguishing agent and its possible application. Detailed information are included in Chapter 6.2.

2.3.1 WARNINGS

Install and use BlazeCut system only with originally supplied components. Do not replace anything in the system, use only original components and spare parts. The use of external components not approved by the manufacturer, for example beacons and alarms, will not be the responsibility of BlazeCut and no warranty or claim will be acknowledged in this regard.

BlazeCut system is not compatible with other fire suppression systems, do not try to connect the system to any other equipment.

© BlazeCut, all rights reserved.

The system may be installed, maintained and repaired only by persons trained or authorized by the manufacturer and also holding relevant professional qualification depending on the procedure. Unprofessional interference with the system may cause malfunction of the system and provides threat to safety and health of people.

The system is not designed to be used as portable fire extinguisher. Do not try to suppress fire by holding the system in hands or sprinkling the extinguishing agent directly into the fire. Do not use the system in any other way than described in this manual.

3 SYSTEM DESIGN LIMITATIONS

3.1 TOTAL FLOODING APPLICATIONS

A total flooding application is defined by a closed area with maximum openings not exceeding 1 % of the total area of all four sides, top, and bottom of the enclosure. In the event that the openings are greater than 1 % allowances of addition powder for openings will be calculated based on the size of the opening

The calculation is based on

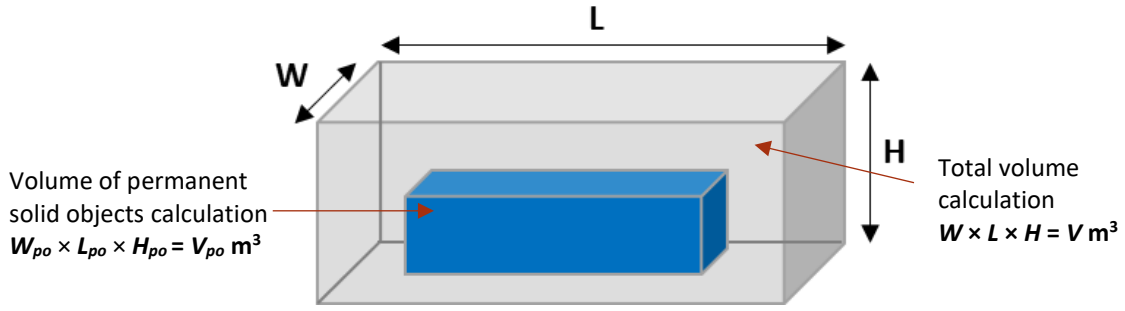
- net volume equals to total volume minus volume of permanent solid objects;
- powder calculation of 0.6 kg per 1 m^3 of the nett volume;
- additional powder to be added for openings between 1 % and 5 % calculated at 2.44 kg/m^2 based on the m^2 size of the opening;

Table 3: Coverage limitations for flooding applications with less than 1 % openings

Cylinder volume [L]	Total agent [kg]	Maximum height of BlazeTube from the hazard [mm]	System volume coverage [m^3]
1.2	1	100	1.66
2.4	2	100	3.33
5.0	4	100	6.66

3.1.1 DESIGN NOTES

The volume calculated is a nett volume with deductions included for permanent objects.



Simplified model of the enclosed space with one permanent solid object

$$V = W \times L \times H \ \text{[m}^3\text{]} \quad (1)$$

V – total volume of the enclosed space [m^3]

W – width [m] L – length [m] H – height [m]

$$V_{po} = W_{po} \times L_{po} \times H_{po} \ \text{[m}^3\text{]} * \quad (2)$$

V_{po} –volume of one permanent solid object [m^3] W_{po} – width of one permanent solid object [m]

L_{po} – length of one permanent solid object [m] H_{po} – height of one permanent solid object [m]

*if more than one permanent solid object is present, calculate the volume V_{po} for all of them

BlazeCut and the BlazeCut logo are trademarks of BlazeCut s.r.o.

© BlazeCut, all rights reserved.

$$V_t = V - V_{po} \text{ [m}^3\text{]} \quad (3)$$

V_t – compartment volume excluding all permanent objects [m³]

$$A_t = 2(W \times L) + 2(W \times H) + 2(H \times L) \quad (4)$$

A_t – total area of all four sides, top, and bottom of the enclosure [m²]

$$E_{add} = A_v \times E_v \text{ [kg]} \quad (5)$$

E_{add} – additional amount of extinguishing agent compensating for size of the opening [kg/m²]

A_v – area of all vents (openings) on the enclosure [m²]

E_v – coefficient of additional amount of extinguishing agent depending on value A_v [kg/m²]

$A_v/A_t \times 100 = [\%]$

if the result of the formula above is lower than 1 %, then $E_v = 0$

if the result of the formula above is higher than 1 % and lower than 5 %, then E_v = 2.44 kg/m²

$$E = V_t \times 0.6 + E_{add} \text{ [kg]} \quad (6)$$

E – total amount of extinguishing agent required [kg]

0.6 – given amount of extinguishing agent per 1 m³ [kg]

Calculation example for an enclosures with less than 2.5 % of openings of the total enclosure area:

Given values for an enclosure:

W = 1.16 m L = 5.02 m H = 1.38 m A_v = 0.2 m²

Given values for a permanent solid object:

W_{po} = 0.80 m L_{po} = 4.50 m H_{po} = 1.00 m

Calculation procedure:

$V = W \times L \times H = 1.16 \times 5.02 \times 1.38 = 8.04 \text{ m}^3$

$V_{po} = W_{po} \times L_{po} \times H_{po} = 0.80 \times 4.50 \times 1.00 = 3.60 \text{ m}^3$

$V_t = V - V_{po} = 8.04 - 3.60 = 4.44 \text{ m}^3$

$A_t = 2(W \times L) + 2(W \times H) + 2(H \times L) = 2(1.16 \times 5.02) + 2(1.16 \times 1.38) + 2(5.02 \times 1.38) = 28.70 \text{ m}^2$

$A_v/A_t \times 100 = \frac{0.2}{28.70} \times 100 = 0.7\ \%\ \ => E_o = 0 \text{ kg/m}^2$

$E_{add} = A_v \times E_v = 0.2 \times 0 = 0 \text{ kg}$

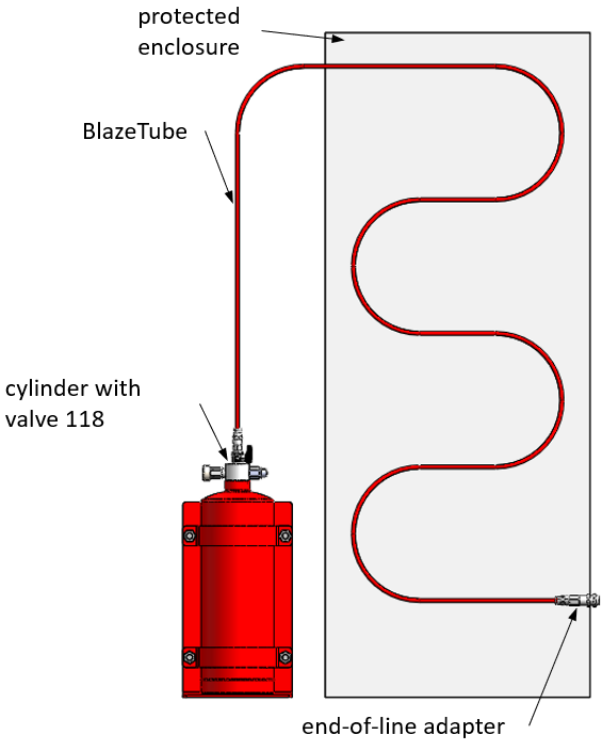
$E = V_t \times 0.6 + E_{add} = 4.44 \times 0.6 + 0 = 2.66 \text{ kg}$

Recommended system: CPO118-4

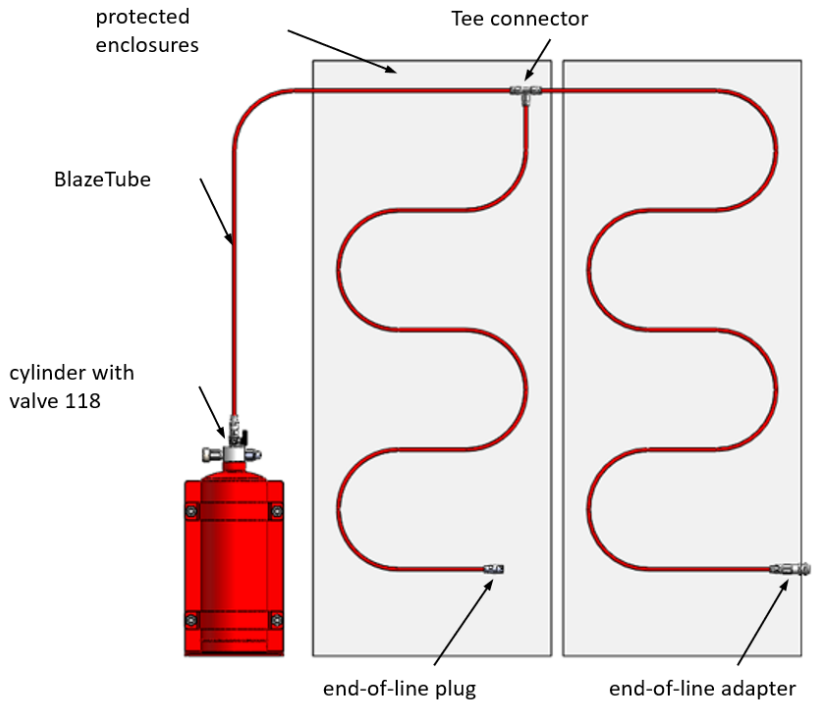
BlazeCut and the BlazeCut logo are trademarks of BlazeCut s.r.o.

© BlazeCut, all rights reserved.

3.1.2 DESIGN OF BLAZETUBE DETECTION



Example 1: one enclosure



Example 2: two enclosures – the detection tube is branched. It is suitable for installations with separate enclosures that are situated side by side.

With this installation in case of fire and release of the extinguishing agent to one protected enclosure, the other enclosure remain unprotected.

Method of installation consult with the supplier of BlazeCut system.

© BlazeCut, all rights reserved.

3.2 ISO 9094 REQUIREMENTS

When protecting a space containing a combustion engine there shall be a device, manual or automatic, that shuts down the engine before or during the discharge or activation.

Prior to or during system discharge, the manual and/or automatic shutdown of engines, generators, forced ventilation, or other permanently installed equipment which could compromise the levels of extinguishing medium in the protected area, shall be installed.

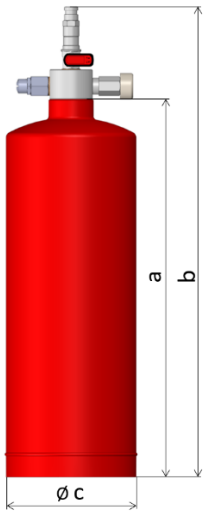
Where equipment shutdown as described above cannot guarantee that extinguishing medium design concentration can be maintained, shut-off dampers closing the ventilation ducts shall be installed.

For automatic systems having a single external power source, a means to indicate to the craft occupants that the power supply is active shall be installed.

4 COMPONENTS OF THE SYSTEM AND THEIR DESCRIPTION

4.1 CYLINDERS FOR EXTINGUISHING AGENT

Depending on the system configuration and the necessary amount of the extinguishing agent, different size cylinders filled with the necessary amount of extinguishing agent may be used. The set size and selected parameters of normally used cylinders and valves are shown in the picture and Table 4 below.



Cylinder with a valve 118

Table 4: Parameters and dimensions of cylinders including a cylinder valve

Cylinder volume [L]	Valve	a [mm]	b [mm]	Ø c [mm]	M* [kg]	Amount of agent [kg]
1.2	118	245	323	90	1.43	1
2.4	118	319.5	397.5	110	1.91	2
5	118	348	426	150	2.85	4

* Weight of the empty cylinder with the valve and without the extinguishing agent and pressure gauge, tolerance ± 0.05 kg

BlazeCut and the BlazeCut logo are trademarks of BlazeCut s.r.o.

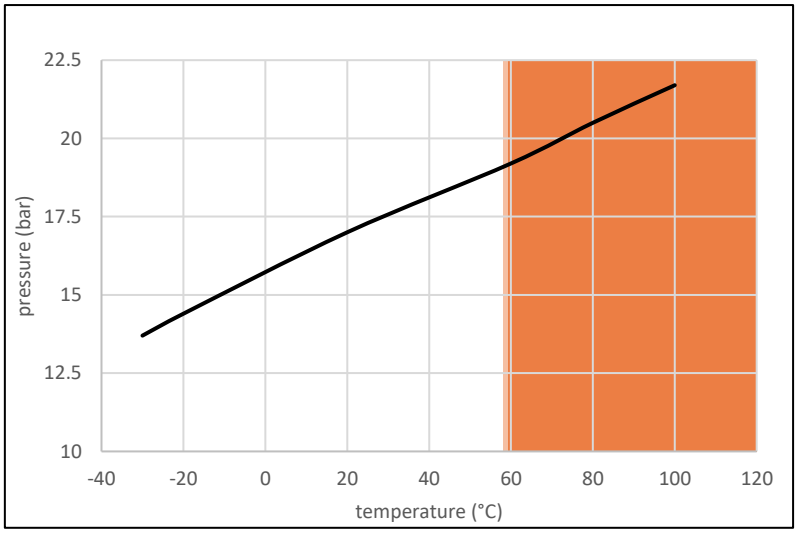
© BlazeCut, all rights reserved.

Table 5: Cylinders parameters

Parameter	Description
Certification	2014/68/EU
Material	steel DC04 EN10130
Surface treatment	high resistant powder coating
Neck ring	stainless steel 316L AISI/EN 1.4435/1.4404
Inside surface	polymer coating
Max. working pressure	PS 20 bar at 60 °C
Working temperature	-30 to +60 °C
Testing pressure	PT 30 bar
Colour	red RAL 3000

Cylinder label with model designation and production data

The cylinder is used for storage of extinguishing agent and expellant gas. The expellant gas is required to release the agent through the nozzle and also assists in the stabilization of pressure in the cylinder. Pressure in the cylinder will vary depending on the ambient temperature (see graph below). The amount of the extinguishing agent and its fill pressure are indicated on the label of the cylinder. The cylinder arrives **unpressurised** as standard.



The relationship between temperature and pressure in the cylinder

Table 6: Values of pressure in the cylinder at given temperatures

Temperature [°C]	-30	-20	-10	0	10	20	30	40	50	60
Pressure [bar]	14	14.6	15.2	15.8	16.4	17	17.7	18.4	19.2	20

4.1.1 WARNINGS

In case of a significant difference between the actual pressure in the system with the data on the cylinder label, conduct an inspection of the system.

Do not install the cylinder, if an incorrect pressure is detected in the cylinder during inspection (i.e., pressure is significantly different from the values stated on the label).

BlazeCut and the BlazeCut logo are trademarks of BlazeCut s.r.o.

© BlazeCut, all rights reserved.

The cylinder of the system is under constant pressure. Do not damage, puncture or throw the cylinder. During transfer or transport, secure the cylinder to avoid tipping, rolling or rubbing against other objects or the ground. Do not mend or solder a damaged cylinder, it must be replaced.

During storage, separate empty cylinders from fully charged cylinders and appropriately label their storage area. Do not store or transport in the vicinity of strong sources of heat, aggressive chemical (caustic, corrosive) substances, prevent contact with sharp objects, vibrations or loading with other objects. Store in dry and well-ventilated rooms.

Do not expose the cylinder to extreme heat or direct sunlight if possible. Heating the surface of the cylinder may significantly increase pressure in the cylinder.

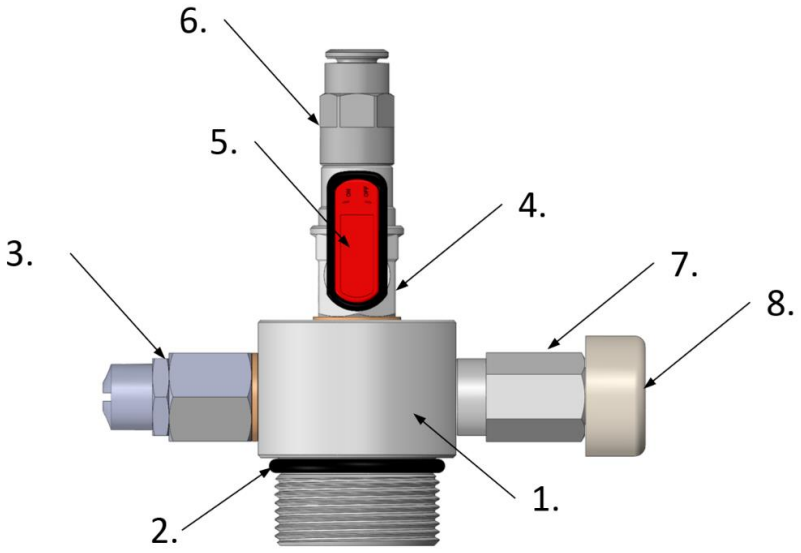
Always handle the cylinder as if it was under pressure, unless it is directly verified that it is completely empty (e.g., by pressing the Schrader valve in the M10x1 pressure gauge outlet on the cylinder valve; the value of the pressure on the pressure gauge may be incorrect or the pressure gauge may be malfunctioning).

Transportation of equipment under pressure by transportation vehicles is governed by specific legislation. Seek information and follow corresponding security requirements during transportation depending on the method of transport.

4.2 CYLINDER VALVE

The cylinder valve is assembled and is part of the charged cylinder when BlazeCut system is supplied. The valve is closed by an external ball valve, which holds the pressure in the cylinder. The ball valve can be opened once the BlazeTube is installed and connected with the supplied end-of-line adapter or plug.

4.2.1 VALVE 118 WITH ONE BLAZETUBE OUTLET Ø 8 MM



Side view of the cylinder valve 118 and connecting components

1. Body of the cylinder valve 118
2. O-ring seal of the cylinder valve
3. G1/8” outlet with a pressure relief valve APR001 or APR003 and a bonded seal FVG002
4. G1/8” agent discharge outlet with a ball valve ABV001 and a bonded seal FVG002
5. Removable lever of the ball valve
6. BlazeTube outlet connector FBT1BP028 for the BlazeTube detection
7. G1/8" outlet with a valve adaptor FVABM0210 (G1/8” to M10x1) – comes with pre-installed pressure gauge 8. as standard
8. Pressure gauge APG003 with an O-ring, thread M10x1

© BlazeCut, all rights reserved.

4.2.2 WARNINGS

Prevent the cylinder valve from damage and impact. Do not lift the cylinder holding it by the cylinder valve or by other components connected to the valve. Always store and transport cylinders with the valve facing upwards.

Do not try to remove the cylinder valve if the cylinder is under pressure. Prevent the cylinder valve from damage and impact. Do not lift the cylinder holding it by the cylinder valve or by other components of the system. Always store and transport cylinders with the valve facing upwards.

The valve is mounted on the cylinder by a specific tightening torque. Do not tighten or release the valve. If leak is detected on the connector of the valve and the cylinder join, the charged cylinder cannot be used.

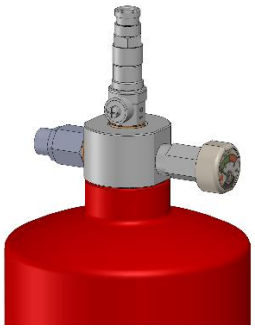
Table 7: Parameters of valve 118

Valve type	Total valve height	Valve height w/o the cylinder thread	Cylinder thread	Dip tube thread	Pressure gauge thread	BlazeTube Detection outlet	Ball valve outlet
118	99 mm	78 mm	M30x1.5	M16x1.5	M10x1	Ø 8 mm	G1/8“

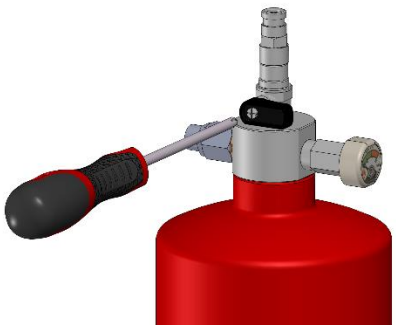
4.2.3 BLAZETUBE DETECTION OUTLET

The BlazeTube connector with Ø 8 mm (valve 118) outlet is coupled with a small ball valve mounted on the top valve outlet with a thread G1/8“. The ball valve is closed when supplied and must only be opened after pressurisation of the BlazeTube detection, for the system to become fully functional.

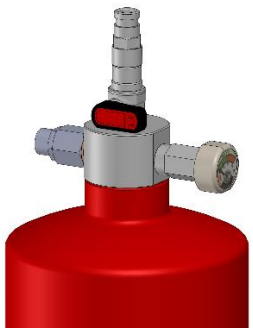
For safety reasons cylinders under pressure must be protected against accidental activation by removal of the lever of the ball valve during transportation of the cylinder. Install the lever when required during installation of the BlazeTube detection by using the supplied parts – lever body, lever cover, screw. During the installation of the ball valve lever, follow the steps listed below. To uninstall the ball valve lever, remove the red cover by pushing its pin on the back and follow the steps in reverse to the installation.



Ball valve without a lever



Use a screwdriver for mounting



Place the red cover on the lever

4.2.4 WARNINGS

Do not try to remove the BlazeTube detection ball valve connector from the cylinder valve if the system is under pressure. This will cause the cylinder valve to activate and discharge the agent.

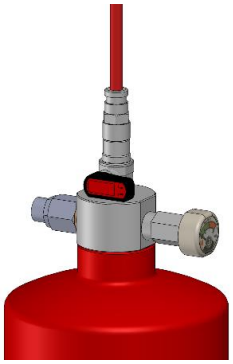
Always remove the lever of the ball valve during transportation of cylinders which are under pressure.

Do not open the ball valve of the BlazeTube detection outlet connector on a pressurised cylinder before the installation and pressurisation of the BlazeTube, the extinguishing agent will be released. Protect the ball valve from accidental opening during transportation and handling of the cylinder. Follow the instructions for transportation of the cylinder.

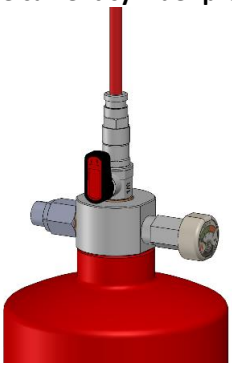
© BlazeCut, all rights reserved.

The ball valve of the BlazeTube detection outlet connector can only be opened after completing the following:

- **the cylinder of the system is properly fastened,**
- **the system is completely installed,**
- **the BlazeTube detection is properly connected to the valve and to the end-of-line adapter,**
- **the end-of-line adapter is properly mounted and secured with a P-clamp,**
- **the BlazeTube detection is pressurised to 1 bar above the current cylinder pressure.**

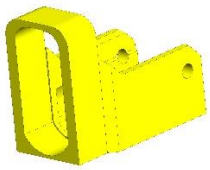


Ball valve is closed

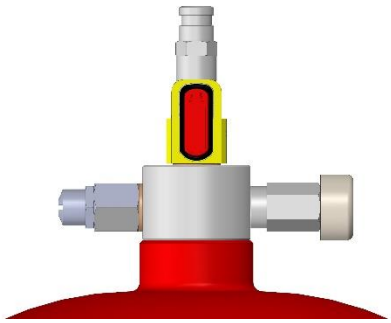


Ball valve is open

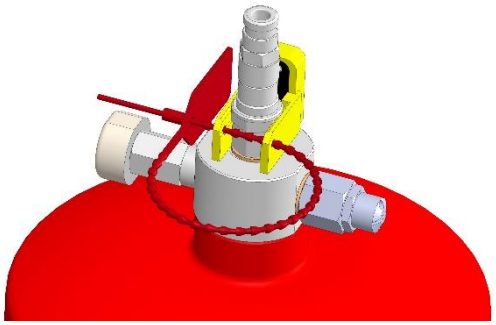
To prevent unintentional switch of the ball valve lever to closed position, install the ball valve anti tamper safety lock ABL001 and a plastic lock seal ALS001.



Ball valve anti tamper safety lock ABL001 (supplied with a lock seal)



Installed ball valve anti tamper safety lock



Installed plastic lock seal

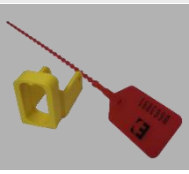
Put the ball valve anti tamper safety lock in position so that the front face of it and the front face of the ball valve lever are in plane. To secure the ball valve anti tamper safety lock, insert a plastic lock seal through the two holes on the ball valve anti tamper safety lock. Fasten the lock seal tightly.

Table 8: Parts for the cylinder valve

Picture	Part №	Description	Material
	FVABM0210	valve adaptor G1/8" - M10x1 with internal Schrader valve, includes M10x1 plug	stainless steel, EPDM sealing

BlazeCut and the BlazeCut logo are trademarks of BlazeCut s.r.o.

© BlazeCut, all rights reserved.

	APR001	pressure relief valve for ILP/ DLP valves, 22 bar set pressure, G1/8"	stainless steel, EPDM sealing
	APR003	Pressure relief valve for ILP/DLP valves, 25 bar set pressure, G1/8"	nickel-plated brass, EPDM sealing
	FVP1B02	valve plug G1/8"	stainless steel EPDM sealing
	FVP1M10	valve plug M10x1	stainless steel EPDM sealing
	FVG002	bonded seal, 1/8", used with ball valve ABV001 and pressure relief valve APR001 or APR003	stainless-steel, EPDM seal
	ABV001	ball valve G1/8" to G1/8"	chrome nickel-plated brass body, EPDM sealing
	ABL001	Ball valve anti tamper safety lock with lock seal	plastic

4.3 BLAZETUBE DETECTION

The BlazeTube detection is a linear indicator of fire and also distribution tube for application of the agent into the protected enclosure. During installation the tube is pressurised with nitrogen gas and during operation of the system it is under constant pressure. Pressure in the tube and in the cylinder is the same during the operation of the system. During fire, the BlazeTube detection degrades by direct effect of fire or high temperature at any place whereby disrupting the BlazeTube in the place of direct effect of fire or the highest temperature and releasing entire content of the cylinder through the created “nozzle”. This system is independent of any electrical supply and operates solely on physical principles.

The time taken to cause the rupture of the BlazeTube detection may vary and depends on the pressure in the tube, which is affected by the level of pressurisation in the system and ambient temperature. The higher the pressure in the BlazeTube detection, the sooner the BlazeTube detection ruptures and activates the system.

© BlazeCut, all rights reserved.

Table 9: BlazeTube detection parameters

Parameter	Property
material	special heat sensitive plastic
colour	red (RAL3000)
outside diameter	6 mm or 8 mm
operating temperature	-30 °C to +110 °C
activation temperature	about 129 °C
life span	up to 10 years

BlazeTube Detection

Table 10: Compatibility with selected common chemicals

Name	Status	Name	Status
Sodium Hydroxide, 35 %	OK	Standard fuel with alcohol	OK
Ammonium Hydroxide, 10 %	OK	Standard fuel without alcohol	OK
Isopropyl alcohol	OK	Sodium Carbonate, 20 %	OK
Ethanol	OK	Sodium Hypochlorite, 10 %	OK
Methanol	OK	Sodium Chloride, 10 %	OK
Diethyl ether	OK	Zinc Chloride, 50 %	OK
Acetone	OK	Citric Acid, 10 %	OK
Toluene	OK	Acetic Acid, 5 %	OK
Hexane	OK	Sulfuric Acid, 38 %	OK
iso-Octane	OK	Lactic Acid, 10 %	OK
Insulating Oil	OK	Ethylene Glycol in water, 50 %	OK
Multi-grade motor oil	OK	Hydrogen peroxide	OK
Hypoid gear oil	OK	Ethyl Acetate	OK
Diesel fuel	OK	Water	OK

Table 11: Types of BlazeTube detection

Part №	Description
ABT129-8-UL	UL certified 8 mm BlazeTube 129 °C, suits to valve type 118, 128

4.4 PRESSURE GAUGE

Actual pressure in the cylinder can be determined by reading the value on the pressure gauge, which is mounted on the cylinder valve, alternatively an additional gauge on the end-of-line adapter. Green zone of the pressure gauge indicates the permissible pressure in the system.

Table 12: Pressure gauge

Part №	Description	Pressure range	Thread	Material
APG003	for ABC Powder systems	green zone: 14 – 19 bar red zones: 0 – 14 bar, 19 – 28 bar	M10x1	body: nickel plated brass seal: EPDM

APG003

When the system is supplied, the pressure gauge is mounted on the cylinder valve via an adapter FVABM0210 (G1/8" to M10x1).

The M10x1 port on the adapter is closed by a Schrader valve, which closes and opens automatically during removal or installation of the pressure gauge, which can be performed only when the system is **unpressurised**. If there is a need for the pressure gauge removal, follow instructions in Chapter A2.4.

Always place the pressure gauge so that the value of pressure can be read easily.

Before installation of a pressure transducer, pressure switch or a pressure gauge to the ports on the cylinder valve, the cylinder has to be depressurised.

If the system is in operation and the BlazeTube detection under pressure, when mounting and dismounting the pressure gauge at the end-of-line device, the ball valve on the cylinder valve must be closed to avoid a false actuation.

© BlazeCut, all rights reserved.

4.5 BLAZETUBE PUSH IN CONNECTORS

BlazeCut double seal push in connectors provide a double tight connection on the BlazeTube, thus ensuring a highly reliable connection and avoiding possible leakage that may occur. Connection and disconnection of the tube can be repeated several times without the use of proper tools and without compromising the performance of the fitting and the sealing around the tube.

The BlazeTube detection can be connected through Tee, elbow or straight push-in connectors. It is recommended to minimise the use of BlazeTube connectors and install them low in the main fire risk areas to avoid high temperatures during the operation of the equipment. In fire risk areas with high temperatures like engine compartments it is recommended to install the BlazeTube detection in whole length and refrain from using BlazeTube fittings in the heated areas.

Table 13: BlazeTube push in connectors

Part №	Description	Working temperature	Working pressure	Material
FBT1PP88	straight connector for BlazeTube Ø 8 mm, NBR	-20 to +80 °C	0.9 – 60 bar	body and gripper: nickel-plated brass seals: NBR or EPDM
FBT3PPP888	Tee connector for BlazeTube Ø 8 mm, NBR			
FBT1BP028	outlet connector for BlazeTube Ø 8 mm, G1/8", EPDM	-30 to +80 °C		

FBT1PP88

FBT1BP028

FBT3PPP888

4.6 BLAZETUBE END-OF-LINE DEVICES

4.6.1 END-OF-LINE PLUGS

End-of-line plugs are used to close one BlazeTube detection in installations with two BlazeTube detections (valve types 126 and 128) or when branching the BlazeTube.

Table 14: Types of end-of-line plugs

Part №	Description	Working temperature	Working pressure	Material
FBT1P8	End-of-line plug Ø 8 mm	-30 to +80 °C	0.9 – 60 bar	body and gripper: nickel-plated brass seals: EPDM

FBT1P8

4.6.2 END-OF-LINE ADAPTERS

BlazeTube end-of-line adapter is used for pressurisation of the BlazeTube detection system when the system is installed (see Chapter 8.4) and for pressurisation of the system during inspection (see Chapter 10.3).

IMPORTANT!

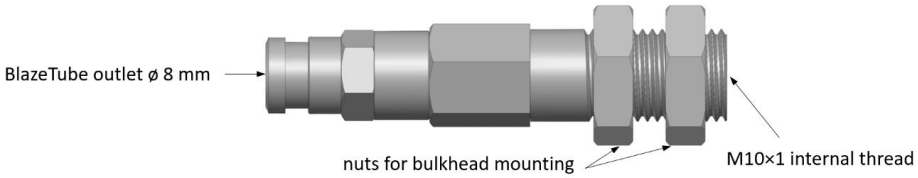
The end of the adapter with internal thread M10x1 must be occupied by a pressure gauge, Pressure Switch APS001 or Pressure Transducer ATA100, to protect the Shrader valve inside.

BlazeCut and the BlazeCut logo are trademarks of BlazeCut s.r.o.

© BlazeCut, all rights reserved.

Table 15: Types of end-of-line adapters

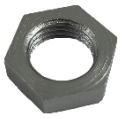
Part №	Description	Working temperature	Working pressure	Material
AEA008	End-of-line adapter Ø 8 mm	-30 to +80 °C	0.9 – 60 bar	body and gripper: nickel-plated brass seals: EPDM



End-of-line adapter AEA008

Table 16: End-of-line adapter components

Part №	Description	Material
ANE001	spare nut for end-of-line adapter AEA006 and AEA008, M14x1.5	galvanized steel



ANE001

4.7 FASTENING MATERIAL

Linear parts of BlazeCut system (BlazeTube detection, electrical cables) must be tightly fastened and secured against movement. Use enclosed connecting material if necessary. It is possible to use other suitable fastening systems if they provide secure mounting of the components and are suitable for the environment (high temperatures etc.). Avoid damaging the components when fastening. Follow the instructions in this manual when fastening.

4.7.1 P-CLAMPS AND FASTENERS

BlazeCut system kits are supplied with various P-clamps suitable for firm fastening of the BlazeCut components.

Table 17: P-clamps

Part №	Description	Material
APC008	8 mm – suits 8 mm BlazeTube detection	galvanized steel, rubber insert
APC012	12 mm – suits spiral ABTS008	galvanized steel, rubber insert
APC014	14 mm –suits all push in fittings for ø 8 BlazeTube, end of line adapter AEA006 and AEA008	galvanized steel, rubber insert
APC016	16 mm – suits end-of-line plug FBT1P8	galvanized steel, rubber insert

Table 18: Through panel fasteners

Part №	Description	Material
ACG112	cable gland with locknut, for detection tube, 12 mm steel tube and electrical cable, 18.5 mm hole for mounting	polyamide

P-clamp APC008 – APC016

Cable gland ACG112

BlazeCut and the BlazeCut logo are trademarks of BlazeCut s.r.o.

© BlazeCut, all rights reserved.

4.7.2 PROTECTIVE SPIRALS AND BRAIDS FOR THE BLAZETUBE DETECTION

In case of installation in enclosures with increased risk of mechanical damage part of the BlazeTube detection exposed to higher risk of mechanical damage can be installed in the protective spiral or braid. Slot the BlazeTube detection into the protective spiral or braid before installation.

Do not use the protective spiral or braid on the BlazeTube detection in the main fire risk area as it could affect discharge of the extinguishing agent from the BlazeTube detection.

IMPORTANT!

Always ensure the cut ends of the spiral do not turn inward towards the BlazeTube, this will avoid scratches and damage to the BlazeTube.

Table 19: Types of protective spirals and braids

Part №	Description	Material	Length
ABTS008-005	protective spiral for Ø 8 mm BlazeTube detection	stainless steel	5 m
ABTS008-010		stainless steel	10 m
ABTB006-005	protective braid for Ø 6 mm and Ø 8 mm BlazeTube, from -55 °C to 180 °C	polyamide	5 m
ABTB006-010		polyamide	10 m

Table 20: Protective spiral kits

Part №	Description
KABTS008-005	for Ø 8 mm BlazeTube, 5 metres protective spiral ABTS008, 10 P-clamps APC010
KABTS008-010	for Ø 8 mm BlazeTube, 10 metres protective spiral ABTS008, 20 P-clamps APC010

Protective spiral

Protective spiral with BlazeTube

Protective spiral kit

Protective braid

Table 21: Cable ties

Part №	Description	Material
ACT314	cable tie with increased heat resistance up to +125 °C, 3.6 x 140 mm, black	plastic
ACT528	cable tie with increased heat resistance up to +125 °C, 5 x 280 mm, black	

Cable tie

BlazeCut and the BlazeCut logo are trademarks of BlazeCut s.r.o.

© BlazeCut, all rights reserved.

Never use cable ties for installation of BlazeTube in engine compartment or other installations with high ambient temperature. Always use suitable hose clamps.

4.8 LABELS

Various high-quality UV stabilized labels are supplied with the BlazeCut system to ensure that the operator or people that may come in contact with the system are informed about its presence and operation. All labels can be reordered separately when replacement is required due to damage.

Table 22: Notification labels

Part №	Description	Comment
ALA002	"Shutdown Equipment"	label for use with the Pressure switch and a relay, 100 x 70 mm
ALA008	General warning	Label for DLP systems 100 x 70 mm
ALA018	"Caution fire detection"	label for BlazeTube, 135 x 25 mm
ALA019	"Fire Alarm"	label for the buzzer AWB001, Ø 53 mm
ABS110	"BlazeCut"	promotional sticker, 110 x 68 mm
ABS220	"BlazeCut"	promotional sticker, 220 x 135 mm
ABS300	"BlazeCut"	promotional sticker AFSS, 300 x 110 mm

ALA002

ALA008

ALA018

ALA019

ABS110 and ABS220

ABS300

© BlazeCut, all rights reserved.

Table 23: Labels for cylinders

Part №	Agent	Cylinder size
ALA023	ABC Powder	1.2 L, 2.4 L
ALA024	ABC Powder	5.0 L

Cylinder labels identifying type of extinguishing agent and basic information and instructions about the system

5 DEFINITION OF LEGAL REQUIREMENTS

After the BlazeCut System is installed the cylinder, valve and BlazeTube detection is under constant pressure. The activities of installation of the system, its activation, operation, repair and maintenance may be governed by specific legislation. These activities may need to be performed only by persons with professional qualifications. Activation and operation of the equipment under pressure may also be governed by specific legislation

Always observe local legislation and statutory requirements.

6 INFORMATION ON EXTINGUISHING AGENT USED

The BlazeCut systems CPO use dry ABC powder extinguishing agent based on ammonium salts. Please refer to SDS for detail information.

6.1 DESCRIPTION

The fire suppression is based on solid extinguishing agent (powder) acting in space applied into the flame. Each particle of the fire which enters the combustion reaction must have so called activation energy. If the particle of the fire hits the powder particle, its activation energy decreases and it will not enter the combustion reaction – the combustion is interrupted. The extinguishing agent must be applied directly onto the source of fire or the combustion focal point. Extinguishing agent does not contain dangerous materials, is not toxic or poisonous, it does not have carcinogenic or mutagenic effects.

Table 24: Extinguishing agent parameters

Agent	Chemical formula	Colour	Melting point	Density at 20 °C
ABC powder	$NH_4H_2PO_4$	white	>200 °C	1.8 g/cm^3

© BlazeCut, all rights reserved.

6.1.1 MAIN ADVANTAGES OF THE EXTINGUISHING AGENT

- universal
- electrically non-conductive
- non-corrosive in dry conditions
- resistant to temperature changes
- safe for people

6.2 PERMISSIBLE USES OF EXTINGUISHING AGENT

ABC Powder may be used for the following classes of fire:

Class A – flammable combustibles (creating flames)

Class B – flammable liquids

Class C – flammable gaseous substances

*System is suitable for fire suppression of electrical equipment under voltage**

*Before dry chemical extinguishing equipment is considered for use in protecting electrical equipment or delicate electric relays, the effect of residual deposits of dry chemical on the performance on electrical equipment shall be evaluated. Always consult suitability of use of the system and type of extinguishing agent in specific conditions with the supplier.

6.3 IMPROPER USES OF EXTINGUISHING AGENT

Extinguishing agent is not suitable for fire suppression in spaces with:

- chemicals containing their own oxygen supply, such as cellulose nitrate;
- alkali metals, alkaline earth metals and metals in powder form (e.g., sodium, magnesium, aluminium, zinc, lithium etc.). The metals are not normally found in these forms. If the metals are found in compact, commonly used form the use of BlazeCut system is not limited;
- deep-seated or burrowing fires in ordinary combustibles where the dry chemical cannot reach the point of combustion;
- machinery such as carding equipment in textile operations and delicate electrical equipment.

If people are present always consult the use of the system in the specific area with the supplier.

6.3.1 WARNINGS

During the system activation the extinguishing agent emerges from the BlazeTube detection under high pressure and at very low temperature. It is recommended that the automatic activation function of the system is deactivated when working less than 1 metre from the BlazeTube detection (see Chapter 11.1).

No permanent workplace should be placed less than 1 metre from the system if the system is not installed in enclosure that prevents the extinguishing agent being discharged onto the people or no other barriers are in place preventing the extinguishing agent being discharged onto the people. In case of long-lasting contact with fire extinguishing powders the skin may become dry.

BlazeCut and the BlazeCut logo are trademarks of BlazeCut s.r.o.

© BlazeCut, all rights reserved.

For installation, inspection, maintenance and repair of the system always use eye protection - wear appropriate protective glasses with side-shields and appropriate protective impervious working gloves.

7 FILLING AND CHARGING OF SYSTEMS

7.1 FILLING AND CHARGING OF SYSTEMS WITH POWDER

7.1.1 DISASSEMBLY

IMPORTANT!

Before starting the disassembly, make sure that the cylinder is unpressurised!

1. Firmly fasten the cylinder assembly to a clamping device, so that the cylinder is firmly fastened but not damaged.
2. Use a spanner size 36 to unscrew the valve.
3. Remove the valve with a dip tube attached.

7.1.2 FILLING WITH EXTINGUISHING AGENT

1. Unscrew the valve with the dip tube attached.

IMPORTANT!

Before filling, make sure the cylinder inside is clean, dry and there is no moisture. If there is any residual moisture, dry the inside of the cylinder using air compressor or similar tool.

Use a filling funnel to fill the extinguishing powder. The amount of extinguishing powder depends on volume of the cylinder. Always check your system specifications on the cylinder label before proceeding.

System model: CPO1xx
System kit: CPO1xx-2-x
Cylinder volume: 2.4 L
Amount of agent: 2 kg
Serial number: 0000001
Production date: 01-2024

Volume of the cylinder Litres	Amount of agent [kg]
1.2	1
2.4	2
5.0	4

2. Pour in an exact amount of the extinguishing powder.
3. Follow steps in Chapter 7.1.3

7.1.3 ASSEMBLY

1. Firmly fasten the cylinder assembly to a clamping device, so that the cylinder is firmly fastened but not damaged.
2. Ensure that the dip tube is clear and by hand screw it to the valve.
3. First by hand screw in the valve with dip tube to the cylinder.
4. Use a torque wrench (size 46) set to 50 Nm torque to tighten the valve on the cylinder. Do not overtighten the valve!
5. Label with the model designation should be in accordance with parameters of the filled system. When refilling and the parameters are no longer valid, a new label has to be applied.

Assembly of the valve using a torque wrench

BlazeCut and the BlazeCut logo are trademarks of BlazeCut s.r.o.

© BlazeCut, all rights reserved.

6. Record this procedure to the system's Supporting Document *SD-RSCS Refill Service Report C Series* and on a service label/tag.

To proceed with pressurisation of the cylinder and BlazeTube, use of Tool Charging Kit is needed. To cut the BlazeTube detection use special cutter ATC002 included in the Tool charging kit.

Table 25: Tool charging kit

Model	Included components
KATC001	1 x adjustable regulation valve **up to 20 bar** with W24.32x1/14" connection 1 x Charging adapter ATC001 2 m BlazeTube, 6 mm 1 x BlazeTube cutter
KATC001-xxx	1 x Adjustable regulation valve **up to 20 bar** with various connections, see below 1 x Charging adapter ATC001 2 m BlazeTube, 6 mm 1 x BlazeTube cutter Available connections: W21.8x1/14", NEVOC W30x2, G3/4", G5/8" male, W30x2"LH, W21.8x1/14"LH ***NOTE: Other options may be available; pricing & delivery time on request only***
KARV002	1 x adjustable regulation valve **up to 30 bar** with W24.32x1/14" connection 1 x Charging adapter ATC001 2 m BlazeTube, 6 mm 1 x BlazeTube cutter

Tool charging kit KATC001, KARV002

7.2 PROCEDURE OF PRESSURISATION OF THE CYLINDER ONLY

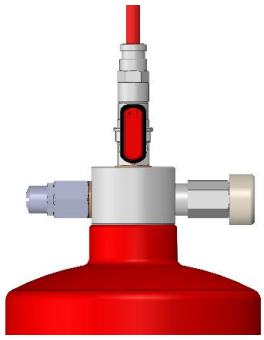
Proceed according to instructions in this chapter to pressurise an unpressurised cylinder and BlazeTube detection separately. For pressurisation of BlazeTube detection follow instructions in Chapter 8.4.

Step 1:

Make sure the cylinder is unpressurised!

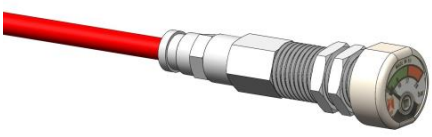
Connect a BlazeTube to an end-of-line adapter and to the BlazeTube connector outlet on the cylinder valve.

Open the ball valve on the cylinder valve.



Step 2:

If installed, remove the pressure gauge (pressure switch or transducer) from the end-of-line adapter AEA006 at the end of the BlazeTube.



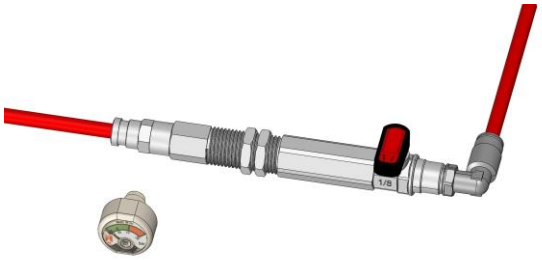
BlazeCut and the BlazeCut logo are trademarks of BlazeCut s.r.o.

© BlazeCut, all rights reserved.

Step 3:

Make sure the valve on the charging adapter is closed.

Mount the charging adapter ATC001 to the end-of-line adapter's M10x1 port by rotating clockwise. Tighten the charging adapter properly.



Step 4:

Set the control valve on the source of N2 to the desired value (**17 bar at 20 °C ± 3 °C ambient temperature**) For pressure filling values at different temperatures refer to Table 6.

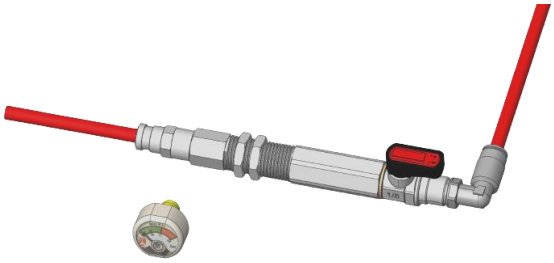
Open the regulation valve .

Step 5:

Slowly open the ball valve on the charging adapter and pressurise the cylinder.

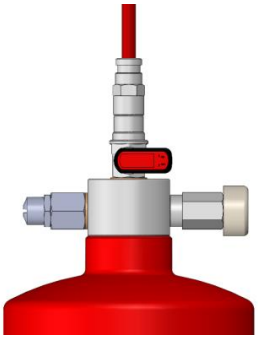
During pressurisation hissing can be heard, the cylinder may jump once and a bang can be heard. When the hissing stops, keep the ball valve open for at least 30 seconds to stabilize the pressure.

Close the ball valve on the cylinder valve, shake the cylinder several times and repeat **Step 5** until the pressure stays at the desired value.



Step 6:

Close the ball valve on the cylinder valve.

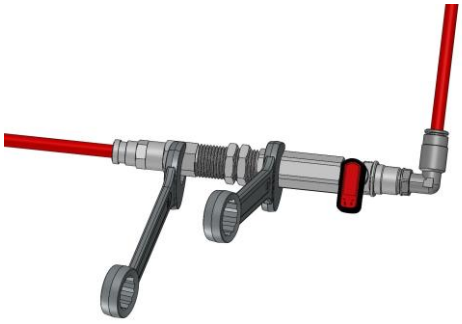


Step 7:

Close the ball valve on the charging adapter.

Step 8:

Unscrew the charging adapter from the M10x1 port of the end-of-line adapter (with size 16 spanner). You can use size 14 spanner on the valve adapter to push clockwise while unscrewing the charging adapter.

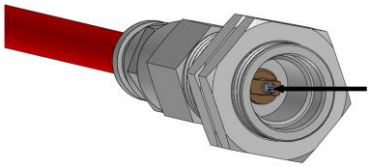


BlazeCut and the BlazeCut logo are trademarks of BlazeCut s.r.o.

© BlazeCut, all rights reserved.

Step 9:

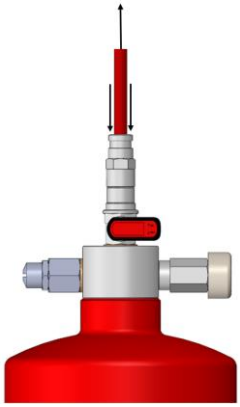
Push in the integrated Schrader valve inside the end-of-line adapter AEA006 to release the pressure from the BlazeTube.



Step 10:

Disconnect the BlazeTube from the connector on the cylinder valve.

Follow additional steps from Chapter 7.3.



7.3 ADDITIONAL STEPS AFTER PRESSURISATION

Observe the value on the cylinder valve's pressure gauge and check the system components for leaks. If pressure is decreasing, the BlazeTube detection may not be connected properly or some component may not be mounted tightly. Also check the connection between the cylinder neck ring and the cylinder valve using a foaming solution. Observe if no bubbles are formed due to loss of pressure through the connection.

Connection between the cylinder neck ring and the valve

IMPORTANT!

Never install the cylinder assembly if any leak is detected!

8 INSTRUCTIONS FOR INSTALLATION OF THE SYSTEM

8.1 GENERAL RULES

All parts of the system must be placed into the protected enclosure so that they are not in direct contact with parts of the protected equipment or in the immediate vicinity of the equipment parts that reach high temperatures during operation (transformers, engine block, exhaust pipes, etc.), not exposed to aggressive chemical substances (caustic, acids, solvents, corrosive substances etc.) and it is not exposed to direct atmospheric influences.

All components of the BlazeCut system must be firmly secured by using the recommended fixings to avoid movement and vibration. Do not secure any components to part, which may move when the protected equipment is in operation.

BlazeCut and the BlazeCut logo are trademarks of BlazeCut s.r.o.

© BlazeCut, all rights reserved.

Choose mountings so that fastening components are not damaged when the device is in operation. Accidental displacement of any part of BlazeCut system from the place of installation may result in reduction of the extinguishing effect of the system, its damage or device damage.

When fastening the system, make sure not to damage other parts of the device.

The system has to be positioned so that it is possible to perform maintenance , component replacement, inspections and optimising safety of the pressurised equipment. Do not secure any components that will interfere with future inspection and maintenance of the equipment.

Ensure that no part is damaged after closing of the protected enclosure (e.g., after closing the covers/doors of the installation, engine etc.) and that no part is affected by moving parts of the equipment (fans etc.).

When fastening the system, make sure not to damage other parts of the equipment.

Do not overload the threads on the components, do not tighten or release the threads on the components forcibly, use the correct tightening torque. Make sure not to damage the components of the system by tools. Always check that the thread is clean and undamaged before installation.

During handling and installation of components of the system do not strain the components or handle forcibly.

In the event of subsequent changes in the protected enclosure during operation of BlazeCut system, always check whether changes are or not necessary in the installation of the system, relocation of BlazeTube detection etc. to secure the functionality and efficiency of the system.

Installation of the system, its activation and repair and maintenance is governed by specific legislation and these activities may only be performed by persons with relevant professional qualification subject to applicable legislation. Depending on procedure, also a relevant training or authorization by the manufacturer is required. Unprofessional interference with the system may cause malfunction of the system and provides danger to safety and health of people.

After the installation of the system the configuration is under constant pressure. Never tamper with the system under pressure.

In the case of work in the vicinity of electrical equipment observe corresponding safety rules and instructions. Do not perform installation and maintenance of the system when the equipment is in operation. In the case of work in the vicinity of electrical equipment observe corresponding safety rules and instructions. Work on electrical installations may be performed only by qualified persons.

Install and use BlazeCut system only with original supplied components. Do not replace anything in the system; use only original component and spare components. Using components not approved by the manufacturer causes loss of warranty, may cause malfunction of the system and presents danger to life and health of persons.

Do not install the cylinder to configuration if non-corresponding pressure is detected in the cylinder during inspection.

When handling parts of the system under pressure (cylinder, valves, Pressure Switch/Transducer, BlazeTube detection) always wear appropriate protective glasses with side-shields. Eyes may be seriously damaged when coming into contact with extinguishing agent in case of sudden leak.

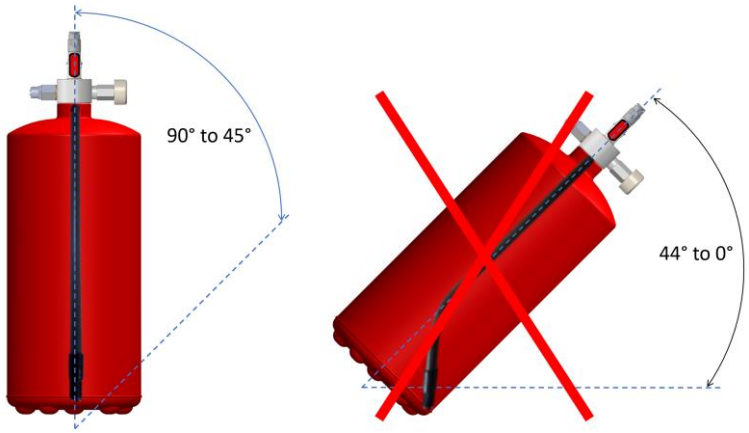
Refrain from handling the system, if it was exposed high temperature (as a result of operation of the protected device or after exposure to fire etc.). If the system is hot, temperature of extinguishing agent increases and pressure in the system increases. In this case the BlazeTube detection cannot be put under mechanical stress. Wait until the system cools off naturally.

BlazeCut and the BlazeCut logo are trademarks of BlazeCut s.r.o.

© BlazeCut, all rights reserved.

8.2 INSTALLATION OF THE CYLINDER AND BRACKET

In order to release the extinguishing agent by pressure, there is a dip tube in the cylinder. This is why the cylinder is recommended to be installed in vertical position. If the cylinder is leaning, the extinguishing agent may not be fully released the greater the mounted angle of the cylinder the higher risk of the agent not discharging entirely. Maximum recommended tilt of the cylinder is 45° from vertical axis.



The cylinder should be placed as close to the protected area as possible, so that the BlazeTube detection can be as short as possible. If the cylinder is placed directly into the protected area, the cylinder should be protected from elevated temperatures or potential damage if necessary.

The cylinder should be placed so that the cylinder label is visible and the current pressure can be read on the pressure gauge and be readily accessible to allow future servicing or inspection.

Only install undamaged cylinders that are properly labelled and with the correct mounted cylinder valve. The cylinder is supplied unpressurised and has to the pressurised to become functional. The current pressure can be determined by reading the value on the pressure gauge, which is mounted on the cylinder valve when the system is supplied.

Do not install the cylinder, if the pressure is significantly different from values stated on the cylinder label or stated in this manual.

Carefully select a firm and secure part of the equipment to install the cylinder bracket using appropriate fasteners. If necessary, fabricate additional support to mount the cylinder. The cylinder must be properly fastened in the bracket using the bracket straps supplied. Once installed ensure all fastenings are firm and have no risk of loosening.

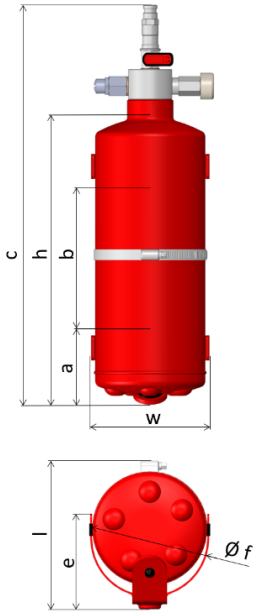
When installed in a vehicle, if the cylinder is situated in a horizontal position the valve must not be situated in a driving direction. Situate the bracket of the cylinder in a position so the cylinder will not eject from the bracket during a crash.

BlazeCut fire suppression systems are supplied with standard brackets that are suitable for fixed indoor applications or with heavy duty brackets for mobile equipment, vehicles or other harsh environment applications.

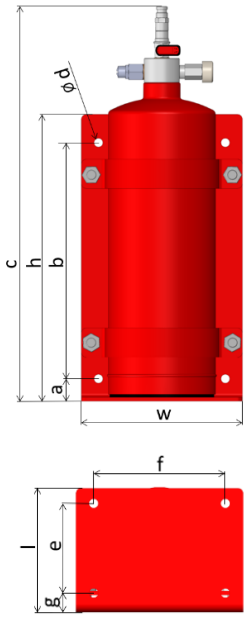
© BlazeCut, all rights reserved.

Light bracket ACB012

Standard bracket ACB324, ACB350



Cylinder with the 118 valve in a light bracket ACB012



Cylinder with the 118 valve in a bracket

Table 26: Brackets

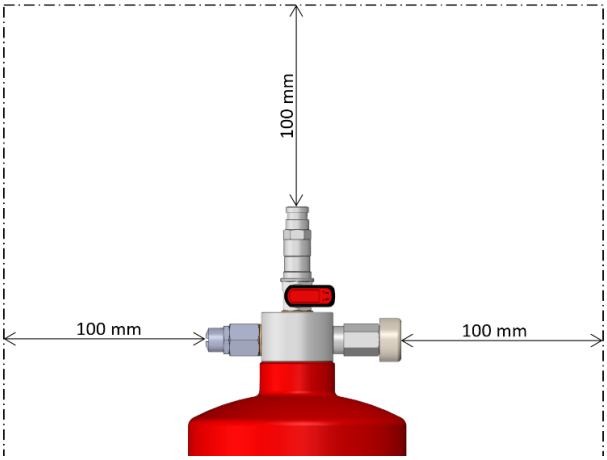
Part №	l × w × h [mm]	a [mm]	b [mm]	Ø d [mm]	e [mm]	f [mm]	g [mm]	Material	Colour	Operating temperature
ACB012	104×96×241	59	120	5.5	63	Ø 90	-	powder coated steel	red RAL3000	-40 to +80 °C
ACB312	103×60×216	25.5	165	7	84	46	12			
ACB324	135×80×294	24.5	249.5	9	112	62	14			
ACB350	185×100×314	26	268	9	154	82	19			

© BlazeCut, all rights reserved.

Table 27: Brackets and cylinder assembly combinations

Cylinder volume [L]	Bracket	Bracket weight [kg]*	Valve type	Total height c [mm]
1.2	ACB012	0.32	118	333
1.2	ACB312	0.48	118	333
2.4	ACB324	1.15	118	406
5.0	ACB350	1.67	118	396

When placing the cylinder, leave free area around the cylinder valve of minimum 100 mm on the sides and above the valve, to install other components of the system and perform maintenance of the system in future.



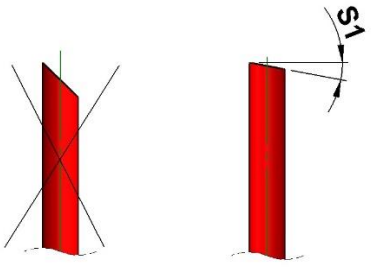
Example with the valve 118

8.3 INSTALLATION OF THE BLAZETUBE DETECTION

The efficiency of BlazeCut system significantly depends on correct placement of the BlazeTube detection. Follow the instructions below. The BlazeTube must be placed so that it is disrupted as soon as the fire starts, before damaging other components of BlazeCut system and before the fire spreads outside of the protected enclosure.

BlazeCut system uses quick slotting system of mounting BlazeTube detections in connectors with double seal to prevent leak of extinguishing agent and of pressure. Use only the connectors supplied with the system. Ends of the BlazeTube detection must be properly adjusted. End of the BlazeTube detection must be straight before inserting, without cuttings and notches to avoid damaging the seals in the BlazeTube connectors.

To cut the BlazeTube detection use special cutter ATC002 included in the Tool charging kit KATC001.



Example of incorrect (left) and correct (right) BlazeTube end cuts

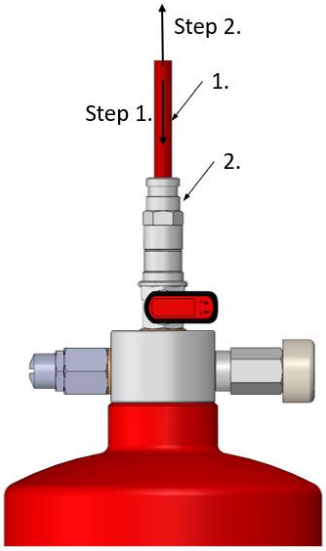
BlazeTube cutter ATC002

Step 1: Cut the BlazeTube detection straight, maximum degree of chamfer is 5°

Fasten the BlazeTube detection firmly so that it is slotted into the BlazeTube outlet connector and pushed all the way by hand. After slotting always check if the BlazeTube is firmly fastened by gently pulling it. Do not open the ball valve on the BlazeTube outlet connector yet.

BlazeCut and the BlazeCut logo are trademarks of BlazeCut s.r.o.

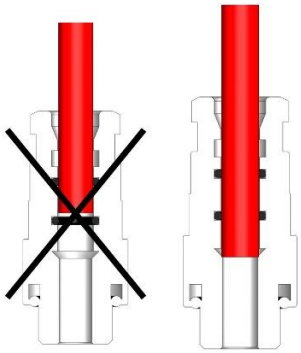
© BlazeCut, all rights reserved.



Scheme of connecting the BlazeTube detection to the connector on the cylinder valve

1. BlazeTube Detection
2. BlazeTube Detection outlet
   Step 1: Slot the BlazeTube detection firmly into the *BlazeTube connector* all the way in
   Step 2: Pull the BlazeTube detection slightly and make sure that it is firmly fastened

Always slot the BlazeTube detection to the outlet adapter all the way in.



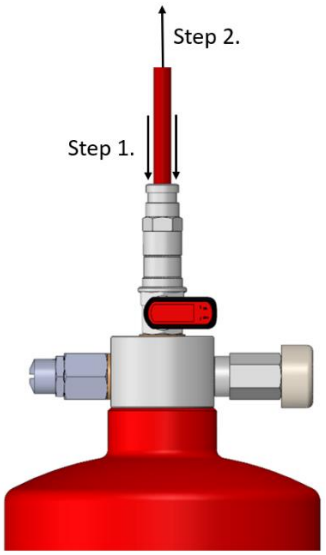
Detail of slotting the BlazeTube detection to the outlet connector

Do not open the ball valve before pressurising the BlazeTube detection on a pressurised cylinder, this will release extinguishing agent. Protect the ball valve from accidental opening during transportation and handling of the cylinder. Follow the instructions for transportation of the cylinder.

During normal operation of the system the pressure in the BlazeTube detection is the same as in the cylinder.

Disconnect the BlazeTube detection from a BlazeTube connector by pushing the connector's ring in (away from the BlazeTube detection) and pull the BlazeTube detection away from the connector. Proceed accordingly when disconnecting the BlazeTube detection from the end-of-line adapter.

© BlazeCut, all rights reserved.



Disconnection of the BlazeTube detection from the valve

Step 1: Push the ring of the BlazeTube detection connector
Step 2: Pull the BlazeTube detection from the connector

During disconnection of the BlazeTube detection under pressure a pressure is released and if the system was in operation also small amount of agent is released. In such case always wear appropriate protective glasses with side-shields and suitable protective gloves. Aim the BlazeTube detection always apart. Make sure not to interpose any other person.

If the BlazeTube detection is under pressure disconnection can be more difficult. The pressure can be released by pushing a small pin of the charging adapter inside the end-of-line device. Before this procedure dismount the pressure gauge and make sure that the ball valve is closed.

8.3.1 INSTALLATION PROCEDURE OF THE BLAZETUBE DETECTION IN THE PROTECTED ENCLOSURE

Place the BlazeTube detection in the protected enclosure and gradually fasten with P-clamps and fastening elements. Proper fastening of BlazeTube detection is important. In case of fire, it is exposed to fast changes in pressure and forces of flowing gas or extinguishing agent. Maximum distance between fastenings of the tube cannot be more than 250 mm. Fastening must also be in place where the tube bends. The BlazeTube detection has minimum bend radius of 100 mm. Do not bend the tube more. To preserve enough flexibility of the BlazeTube detection, it is recommended to install it at ambient temperature of more than 10° C.

IMPORTANT!

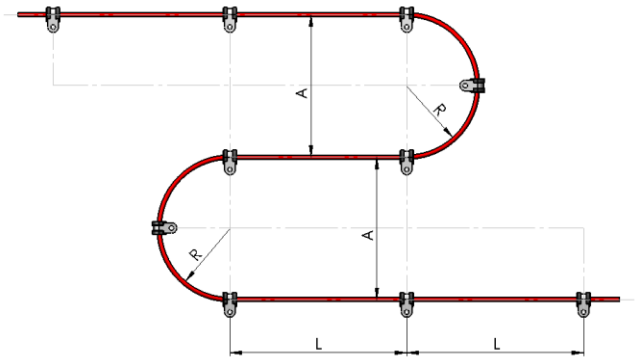
The BlazeTube detection must come out of each connection in direct position in order to avoid any leakage. If a redirection of the BlazeTube detection is needed the bend of the tube from the connection must be in a minimum distance of 50 mm. To determine the required length of BlazeTube to be used in an enclosure, the horizontal mounting of BlazeTube is to be between 200 mm – 500 mm to ensure a more rapid actuation is achieved.

Table 28: Installation limitations of the BlazeTube detection for powder systems

Valve type	Total BlazeTube supplied in standard kit	Max. BlazeTube length from cylinder outlet to the tubes end point	Max. recommended length of BlazeTube
118	10 m	15 m	15 m

BlazeCut and the BlazeCut logo are trademarks of BlazeCut s.r.o.

© BlazeCut, all rights reserved.



Installation of BlazeTube detection

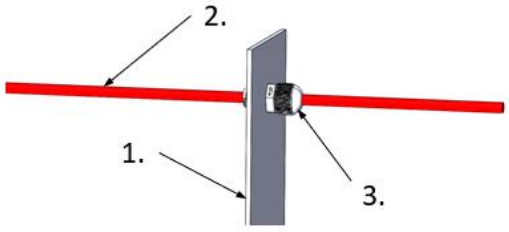
Distance between installed BlazeTube detection and a fire hazard must stay between h_{min} and h_{max}.
h – distance between BlazeTube detection and fire hazard
L – distance between fastenings
R – bending radius
A – distance between BlazeTube lines

Table 29: Boundary distance values

Symbol	Value
h_{min}	10 mm*
h_{max}	150 mm
L	max. 250 mm
R	min. 100 mm
A	max. 1000 mm
Number of bends per 1 m	3

*Surface temperature of the protected item has to be withing operating temperature of the BlazeTube (see Table 9)

1. structure
2. BlazeTube detection
3. protective element (cable gland ACG112, rubber grommet etc.)



At the crossing of the BlazeTube through a structure it is advised to protect the BlazeTube

Place the BlazeTube detection as close as possible above the places with greatest risk of fire. Do not place the tube horizontally next to places of possible fire, it may significantly delay activation of the system in case of fire.

The BlazeTube detection cannot be placed freely in the protected enclosure. It must be tightened to appropriate construction. If necessary, the BlazeTube detection can be installed in open space (e.g., above the protected device) by using steel wire, which is wired in suitable area of the protected enclosure and the BlazeTube detection can be tightened on a steel wire. Use a steel wire with appropriate strength and secure the steel wire firmly.

Proceed carefully during installation not to damage the tube with sharp objects. Do not stretch or forcibly bend the BlazeTube.

During the installation of BlazeTube detection, specifically make sure that the tube will not be damaged during operation of the device by mechanical stress. After the system is fully installed and functional, if the BlazeTube is damaged, and the pressure decreases the system will always activate.

The tube cannot be in direct contact with hot parts of the protected device or in immediate proximity of parts of the device, which heat to high temperatures during operation (transformers etc.).

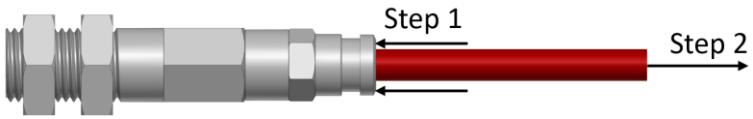
© BlazeCut, all rights reserved.

Depending on the size and shape of the protected enclosure use necessary length of the BlazeTube detection. If you do not use the whole tube, cut the ending. The ending must be adjusted, see figures at start of this chapter.

Place the loose ending of the BlazeTube detection into the area so that it is possible to pressurise the system using external device through end-of-line adapter of the tube. It also enables in future to perform inspection of pressure in the system with pressure gauge on end-of-line adapter of the tube if the pressure gauge will be installed at the end-of-line.

Fasten the end-of-line adapter into the ending of the tube; proceed according to the figure below.

Step 1: Slot the BlazeTube detection firmly into the end-of-line adapter all the way
Step 2: After slotting always make sure that the BlazeTube is firmly fastened by gentle pulling it



Connection of the BlazeTube detection on the end-of-line adapter

8.4 PRESSURISATION OF THE CYLINDER AND THE DETECTION SYSTEM

The cylinder and BlazeTube detection must be pressurised with the correct pressure by nitrogen gas (N_2) before the system is put into operation. Use appropriate source of N_2 - cylinder with a control valve. The pressurised system must be pressurised to value corresponding to the operating pressure for the given temperature (see Chapter 4.1).

Tool charging adapter ATC001

Pressurisation is performed through the end-of-line adapter of the BlazeTube detection using charging adapter ATC001. The BlazeTube detection end-of-line adapter has outlet with a thread M10x1 and it contains a Schrader valve, which must be pushed and opened with the charging adapter.

This valve closes and opens automatically during removal or installation of the charging adapter or the pressure gauge. It is possible to install and remove these components even when the tube is under pressure.

To pressurise the cylinder only, follow steps in Chapter 7.2.

Proceed carefully and strictly follow the following steps. Fasten the connectors of the tubes, charging adapter and BlazeTube detection firmly and inspect. Their accidental disconnecting during pressurisation would release the extinguishing agent into the environment.

Never connect or disconnect the charging adapter to the BlazeTube detection if the ball valve of the outlet of the BlazeTube detection on the cylinder valve is open.

BlazeCut and the BlazeCut logo are trademarks of BlazeCut s.r.o.

© BlazeCut, all rights reserved.

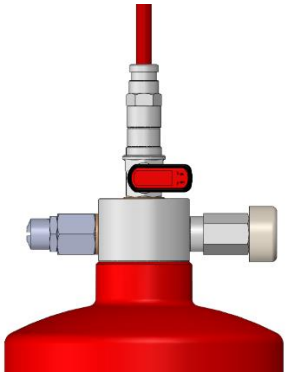
8.4.1 PROCEDURE OF PRESSURISATION OF THE CYLINDER AND THE DETECTION SYSTEM

Proceed according to instructions in this chapter to pressurise the cylinder and BlazeTube detection at once.

For pressurisation of BlazeTube detection only, skip **Step 6** and **Step 7**.

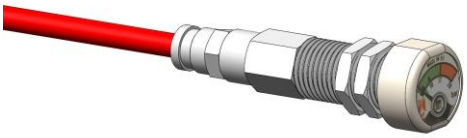
Step 1:

Close the ball valve on the cylinder valve. Read and write down the value of pressure from the cylinder valve.



Step 2:

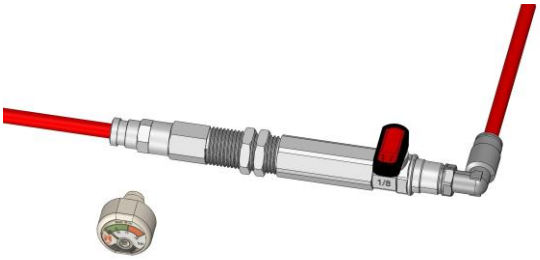
If installed, remove the pressure gauge (pressure switch or transducer) from the end-of-line adapter AEA008 at the end of the BlazeTube.



Step 3:

Make sure the ball valve on the charging adapter is closed.

Mount the Tool Charging Adapter ATC001 to the end-of-line adapter's M10x1 port by rotating clockwise. Tighten the charging adapter properly.



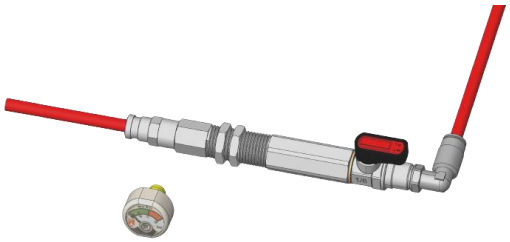
Step 4:

Set the regulator on the source of N_2 to the value at least on the level of pressure in the cylinder increased by 1 bar. For pressure filling values at different temperatures refer to Table 6.

Open the regulation valve.

Step 5:

Slowly open the ball valve of the charging adapter and pressurise the BlazeTube detection first.



BlazeCut and the BlazeCut logo are trademarks of BlazeCut s.r.o.

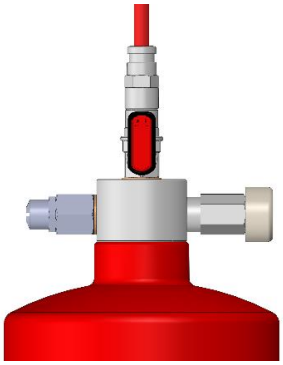
© BlazeCut, all rights reserved.

Step 6: (skip this step if pressurising only the BlazeTube):

Slowly open the ball valve on the cylinder valve and pressurise the cylinder.

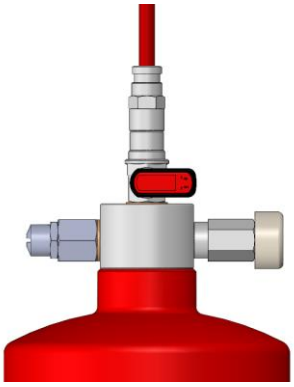
During pressurisation hissing can be heard, the cylinder may jump once and a bang can be heard. When the hissing stops, keep the ball valve open for at least 30 seconds to stabilize the pressure.

Close the ball valve on the cylinder valve, shake the cylinder several times and repeat **Step 6** until the pressure stays at the desired value.



Step 7: (skip this step if pressurising only the BlazeTube):

Close the ball valve on the cylinder valve.

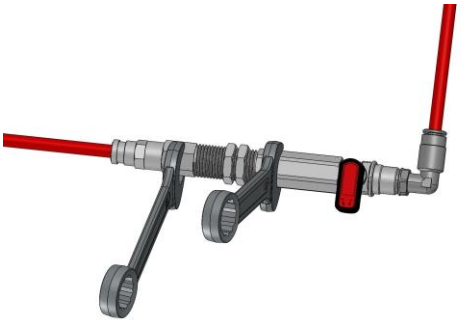


Step 8:

Close the ball valve of the charging adapter.

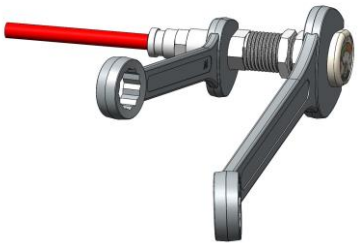
Step 9:

Unscrew the charging adapter from the M10x1 port of the end-of-line adapter (with size 16 spanner). You can use size 14 spanner on the valve adapter to push clockwise while unscrewing the charging adapter.



Step 10:

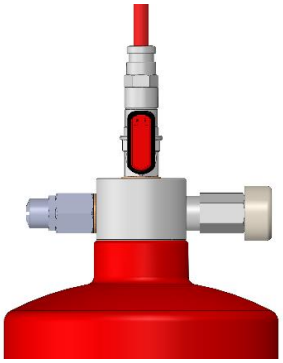
Mount the pressure gauge (pressure switch or transducer) back. Tighten it with spanner 22 mm.



Step 11:

If the pressure is not decreasing, very slowly open the ball valve on the cylinder valve. Pressures in the tube and the cylinder will equalise. Wait approximately 30 seconds.

Follow additional steps in Chapter 8.4.2.



BlazeCut and the BlazeCut logo are trademarks of BlazeCut s.r.o.

© BlazeCut, all rights reserved.

Since this moment, the cylinder and the BlazeTube detection are connected in one pressure unit. Proceed carefully not to damage the BlazeTube detection. Its damage would cause activation of the system and release of extinguishing agent.

Do not try to remove the BlazeTube detection from the BlazeTube outlet on the cylinder valve or remove the end-of-line adapter if the BlazeTube is under pressure and the ball valve is open.

8.4.2 ADDITIONAL STEPS AFTER PRESSURISATION

Observe the value on the cylinder valve's pressure gauge and check the system components for leaks right away and after 30 minutes. If pressure is decreasing, the BlazeTube detection may not be connected properly or some component may not be mounted tightly. Also check the connection between the cylinder neck ring and the cylinder valve using a foaming solution. Observe if no bubbles are formed due to loss of pressure through the connection.

Connection between the cylinder neck ring and the valve

IMPORTANT!

Never install the cylinder assembly if any leak is detected!

8.5 FINAL INSPECTION OF THE SYSTEM INSTALLATION

Fill-out the Supporting Document *SD-CRDLP Commissioning-Installation Report C Series DLP*.

9 OPERATION OF BLAZECUT SYSTEM IN CASE OF FIRE

BlazeCut system is designed to protect closed spaces from fire using local fire suppression. BlazeCut system suppresses fire automatically without any external power source.

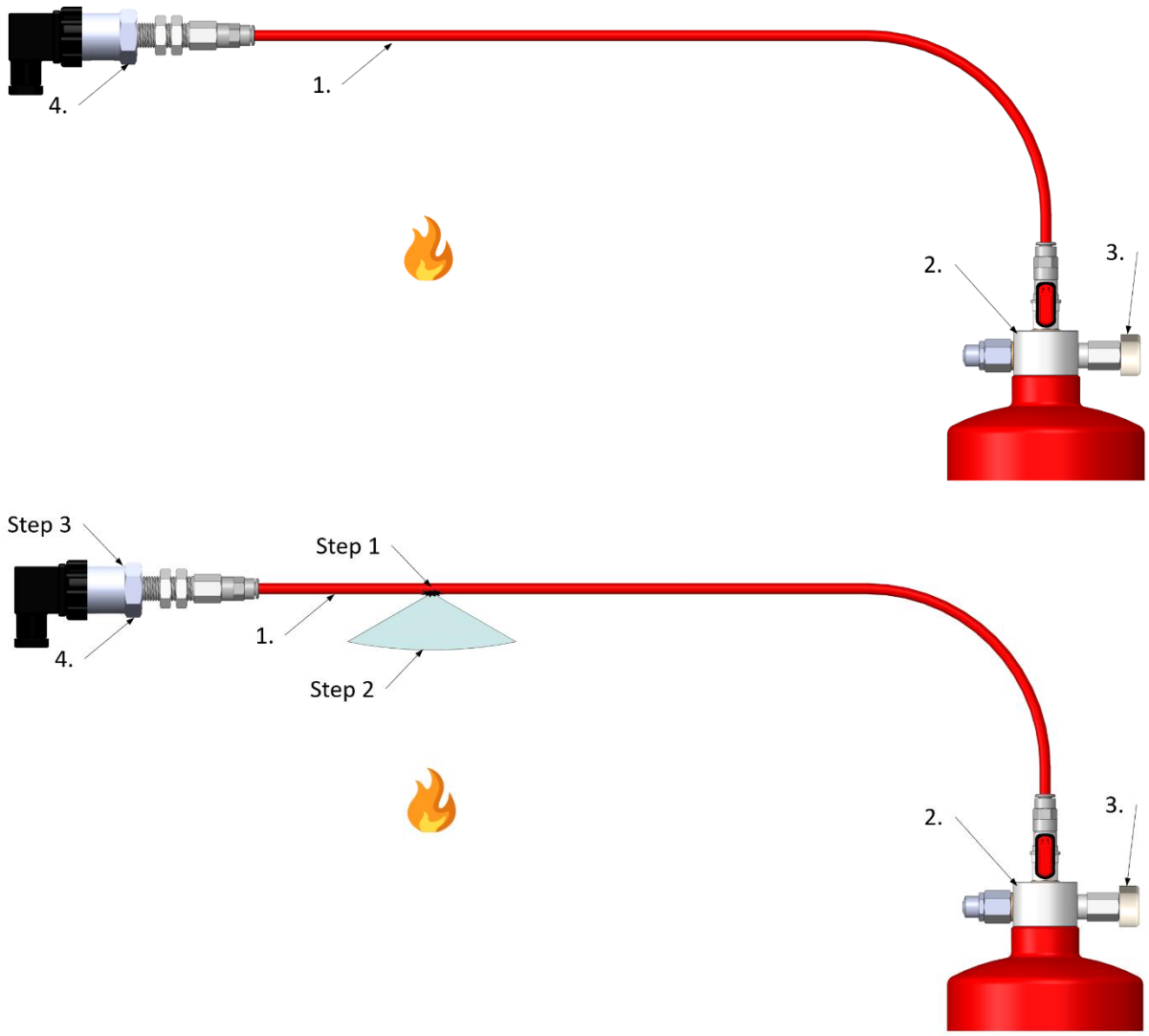
The fire suppression system operates by detecting fire and the application of the agent using a BlazeTube detection fastened to the cylinder valve. The BlazeTube detection is placed in the protected enclosure and is under constant pressure. In case of fire the BlazeTube detection degrades by the effect of fire or high temperature. When the BlazeTube detection is disrupted, the agent is released through created "nozzle". This system is independent of any electrical supply and operates solely on physical principles.

Time necessary for degrading of the BlazeTube detection by direct effect of fire or minimum temperature necessary for degrading the BlazeTube detection depends on the pressure in the tube, which is affected by factors such as the level of pressurisation of the system and ambient temperature. The higher the pressure in the tube, the sooner the tube degrades and the system activates.

If the Pressure Switch/Transducer installed on the cylinder valve is part of the system, it sends a signal to the external device (for example Alarm Panel AAP210).

Procedure during automatic activation of the system is described in figure below.

© BlazeCut, all rights reserved.



Procedure during automatic activation of the system

1. BlazeTube detection
2. Cylinder valve
3. Pressure gauge
4. *Pressure Switch/Transducer with cable connector

Step 1: Burning through the BlazeTube detection
Step 2: Release of extinguishing agent through created “nozzle”
Step 3: *The Pressure Switch/Transducer sends signal to external device after decrease of pressure in the system

*Applicable only if the Pressure Switch/Transducer is installed

In case of fire the system activates automatically by burning the BlazeTube detection without previous warning. Do not come to immediate proximity of the nozzles of the system in case of fire, there is risk of being struck by extinguishing agent.

If the system is activated wait for its activity to finish. Do not enter the protected enclosures and do not open the covers of the protected enclosure during the activity of the system.

In case of fire in the vehicle the driver must immediately stop the vehicle, stop the engine and perform further measures according to operation instructions of the vehicle (for example cut-off the supply of gas/fuel) in order to protect the persons and property according to applicable legislation.

BlazeCut and the BlazeCut logo are trademarks of BlazeCut s.r.o.

© BlazeCut, all rights reserved.

10 REGULAR INSPECTION AND MAINTENANCE OF THE FIRE SUPPRESSION SYSTEM

Pressure configuration of the system is reserved technical equipment under pressure. Its activation and operation is subject to professional inspections and tests performed by revision technician according to applicable legislation. Operator is obliged to have inspections of safety condition of the equipment performed and immediately remove defects detected.

Always follow local legislation and statutory requirements.

All inspections (except daily operator's checks) and repairs, whether during regular maintenance or in exceptional situation, must be performed by a person authorized and trained by the manufacturer and depending on the procedure with corresponding professional qualification to ensure correct operation of the fire suppression system.

Required system inspection and maintenance must be followed to ensure long term, reliable and safe operation of the BlazeCut system.

Inspection and test intervals stated in Table 30 are minimum intervals required by the manufacturer. If the legislation in place of installation require shorter intervals as stated in the table or additional inspections and tests, which are not stated in the table, it is necessary that these inspections are performed in accordance with this legislation. Additionally, if the environment where the system is installed is harsh, the system may require inspections every 3-6 months due to possible damage that may occur.

Table 30: Overview of inspections in non-harsh environments (internal fixed installations)

Period / interval	Obligatory scope
Daily operator's check	1. Check system pressure 2. Fire Alarm Panel check (if used) 3. Visual inspection of system: check for loose and/or damage to cylinder assembly, brackets, detection, wiring, etc.
1 x 12 months	1. Overall inspection of the system 2. Inspection of pressure in the system
1 x 5 years	1. Overall inspection of the system
1 x 10 years	1. Overall inspection of the system 2. Pressure test of the cylinder 3. Replacement of BlazeTube detection
In special incident	1. Overall inspection of the system 2. Inspection of pressure in the system
As necessary	1. Inspection of weight of extinguishing agent in the system 2. Pressurisation of the system

IMPORTANT!

If any deficiencies are found, appropriate corrective action shall be taken immediately!

Inspection must be performed also after each exceptional circumstance (e.g., accidental activation, exposure to mechanical or excessive thermal stress for example in case of fire without activation of the system).

In case of performing exceptional inspection, the 12-month period to perform the next regular inspection starts only when exceptional inspection was performed in full scope.

Regular replacement of components subject to wear and tear (effects of temperature, pressure and environment) is also necessary in BlazeCut system.

IMPORTANT!

Agents removed from containers during service or maintenance procedures shall be recovered and recycled or disposed of in accordance with any applicable laws and regulations.

© BlazeCut, all rights reserved.

10.1 INSPECTION OF PRESSURE IN THE SYSTEM

10.1.1 GENERAL RULES

The pressure of the system is inspected by a control pressure gauge situated on the cylinder valve (if the Pressure Switch/Transducer is not installed) or on the end-of-line adapter. If both pressure gauges are installed use the most accessible pressure gauge.

During inspection of pressure the ball valve on the cylinder valve must be open to inspect pressure in the system correctly (like during regular operation of the system). During inspection, the system cannot be heated (e.g., during operation of the protected enclosure) and exposed to a direct sunlight.

10.1.2 DAILY OPERATOR PRESSURE CHECK

Read the pressure gauge. If the pressure is within the green zone, the system is operational. If the pressure indicator is in the red zone, contact the service technician.

Pressure level is optimal

Pressure level is critical

If the system is using a Pressure Switch APS001-xx or APS003-xx for monitoring of low pressure or a Pressure Transducer ATA100 for constant monitoring with the AAP210 panel the visual check of pressure gauge is not necessary as the alarm panel will notify the operator by warning light and buzzer on the panel, in case of low pressure.

10.1.3 12-MONTH PRESSURE INSPECTION

When mounting and unmounting the pressure gauge or control pressure gauge to the end-of-line device, the ball valve of the outlet of the BlazeTube detection must be always closed.

During inspection proceed as follows:

- Read the pressure from a pressure gauge (on the cylinder valve or end-of-line adapter) and remove the pressure monitoring device from the end-of-line adapter.
- Measure pressure by installing control pressure gauge (with adapter compatible with outlet M10x1) and compare detected value with data from the pressure gauge of the system. Values must be equal, permissible tolerance of pressure is maximum 1 bar. In case of discrepancy replace the pressure gauge of the system.
- If the control pressure gauge detects pressure in the system lower by more than 10 % than the required value of pressure, taking into consideration temperature (see Chapter 4.1), perform the pressurisation of the system, and proceed according to Chapter 10.3.

10.2 BASIC POINTS OF INSPECTION OF THE SYSTEM

- check completeness of the system,
- clean surface of the cylinder and the cylinder valve, BlazeTube detection and pressure gauge from major dirt,
- check surface of the cylinder, focus on possible changes in shape of the cylinder, mechanical damage, signs of corrosion, signs of leak, etc.; in case of damage of the cylinder or the cylinder valve replace them immediately,
- check firmness of the connection of the BlazeTube detection to the cylinder valve and firmness of the connection of the end-of-line adapter, connectors or plugs of the BlazeTube detection by gently pulling the tube,

© BlazeCut, all rights reserved.

- check that the BlazeTube detection is not damaged, focus on possible change of shape, colour, dents, damage caused by temperature or mechanical damage; in case of damage replace it,
- check firmness of the fastening of the cylinder in the bracket, check the fastenings of the tubes, firmness of the fastening of the electrical installation, check firmness of the mounting of the cable connectors to the Pressure Switch/Transducer,
- clean and check that all corresponding labelling of the system and warning labels marking the area protected by BlazeCut system are undamaged; if they are damaged, replace them.

Remove detected defects immediately. During replacement of components and reconnecting the tubes, the electrical installation and during pressurisation of the system proceed in accordance with the procedures described in Chapter 11.1.

10.3 PRESSURISATION OF THE SYSTEM

During the operation of the system there is always a natural slight pressure leak in the system. The leak occurs on the BlazeTube connectors and through the BlazeTube detection itself due to permeability of the material. The operation conditions and the size of the cylinder also influence the pressure decrease. Therefore, it is necessary to pressurise the system occasionally if the pressure decrease is more than 10 %.

During pressurisation of the system during maintenance, the cylinder is also pressurised as opposed to pressurising only the BlazeTube detection during installation. Follow steps in Chapter 8.4.

11 SYSTEM DEACTIVATION AND REMOVAL

11.1 SYSTEM DEACTIVATION

If necessary, the BlazeCut system may be disabled without removing it from the protected enclosure. Close the ball valve on the cylinder valve. In this case even after damaging the tube the cylinder valve does not open and extinguishing agent is not released.

11.2 REMOVAL OF THE SYSTEM FROM THE SERVICE

The system must be immediately put out of service in the following cases:

- The system has been activated or emptied for other reason.
- The system has been exposed to direct flame or temperatures exceeding the limits of the system operation.
- The cylinder or valve shows signs of damage (deformation, cracks, leaks and severe corrosion, unusual phenomena that cannot be inspected or removed during operation of the system).
- If the pressure in the system is significantly higher with the respect to the ambient temperature or if it exceeds the highest permissible pressure level of the system.

Subsequent measures to ensure safety of the system and protection of persons must be taken by the persons trained and authorized by the manufacturer and, depending on the procedure, with corresponding professional qualification. If necessary, contact your supplier of the BlazeCut system.

12 REPLACEMENT OF COMPONENTS AND RESTORATION OF ACTIVITY

When replacing components and restoring system activity, also follow instruction from other chapters stated in this manual.

12.1 CLEANING THE SYSTEM

During maintenance of BlazeCut system clean the surface of the cylinder and the cylinder valve and the tubes from major dirt with appropriate cleaning textiles or cloths and nonaggressive cleaning products.

Do not use aggressive cleaning products such as solvents and caustic to clean the system.

Do not expose the system and especially its electronic parts to direct effect of water pressure during cleaning of the protected enclosure with high-pressure water.

© BlazeCut, all rights reserved.

12.2 CLEANING AFTER SYSTEM ACTIVATION

During cleaning process always wear appropriate protective glasses, breathing mask and suitable protective gloves and clothes.

After system activation clean the protected areas as soon as possible preferably by vacuuming the powder or by blowing with air.

Try to remove as much powder as possible from affected area to prevent the powder from absorbing moisture and causing corrosion on metal components.

After the powder is removed you can flush the affected area by clean water.

12.3 RESTORATION OF ACTIVITY OF BLAZECUT SYSTEM IN CASE OF FIRE

Install and use BlazeCut system only with original supplied components. Do not replace anything in the system; use only original component and spare components. Using components not approved by the manufacturer causes loss of warranty, may cause malfunction of the system and presents danger to life and health of persons.

The system may be installed, maintained and repaired only by persons trained or authorized by the manufacturer and depending on procedure also with relevant professional qualification. Unprofessional interference with the system may cause malfunction of the system and presents danger to safety and health of people.

After the fire extinguishing is finished, follow the instructions below:

- Enter the protected area only after the system operation is finished,
- Unless absolutely necessary (e.g., fire is still present and it is necessary to use a portable fire extinguisher), enter the protected area only after is has been properly ventilated and cooled off and make sure that entry is safe,
- If immediate entry is necessary, persons must be properly protected (using self-contained breathing apparatus, protective clothing, etc.).

If the system is automatically activated in case of fire in the protected enclosure, it is necessary to replace several components. Proceed as follows:

- Check all components of the system for any damage. Any part that was exposed to direct fire or temperature above maximum operating temperature of the component shall be replaced,
- Disconnect the cable connector from the Pressure Switch/Transducer, if used in the system, and remove the Pressure Switch/Transducer from the cylinder valve. Check if electrical installation was not damaged, replace possible damaged parts,
- Disconnect the BlazeTube detection from the cylinder valve,
- Replace the cylinder with valve and extinguishing agent,
- Replace BlazeTube detection; BlazeTube detection is replaced always in whole length; BlazeTube detection is replaced always after exposure to fire,
- Connect the cable connectors to the Pressure Switch/Transducer and check correct functioning of the electrical installation.

During installation of new components or their replacement and during repeatedly connecting electrical installation and pressurisation of the system, proceed according to instructions in respective chapters.

Proceed accordingly also in case of accidental discharge of the system.

© BlazeCut, all rights reserved.

12.4 REPLACEMENT OF THE CYLINDER

During replacement use only undamaged cylinder filled with the correct extinguishing agent, properly labelled, with correctly mounted cylinder valve. Cylinder is supplied unpressurised as standard. Pressures corresponding to actual temperature are stated in Chapter 4.1.

During replacement of the cylinder proceed as follows:

- Disconnect cable connectors on the Pressure Switch/Transducer, if used in the system and remove the Pressure Switch/Transducer.
- Close the ball valve and disconnect the BlazeTube detection.
- Loosen the clamps of the bracket of the cylinder and remove it from the bracket.
- Place a new cylinder assembly into the cylinder bracket and fasten it properly with clamps.
- Connect the BlazeTube detection to the cylinder valve.
- Install the Pressure Switch/Transducer and connect the cable connector, if used in the system.
- After replacement of the cylinder have corresponding inspection of the pressure device performed according to Chapter 10.
- During removal and installation of individual components proceed according to the instructions as stated in individual chapters relating to components.

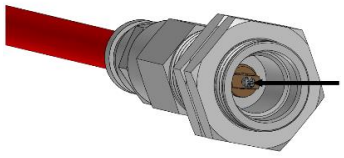
12.5 REPLACEMENT OF THE BLAZETUBE DETECTION

Do not try to remove the BlazeTube detection from the cylinder valve when the tube is under pressure and the ball valve on the cylinder valve is open.

Before handling the BlazeTube detection during removal, replacement or adjustment fastening in the protected enclosure, always close the ball valve on the cylinder valve where the tube is fastened. When the BlazeTube detection is connected to the cylinder valve and the ball valve is open, if the tube is damaged and the pressure decreases, the fire suppression system is always activated and the extinguishing agent is released completely.

During disconnection of the BlazeTube detection under pressure a pressure is released and if the system was in operation also small amount of agent is released. In such case always wear appropriate protective glasses with side-shields and suitable protective gloves. Aim the BlazeTube detection always apart. Make sure not to interpose any other person.

1. Close the ball valve on the cylinder valve, position of the lever as shown in figure below.
2. If the BlazeTube detection is under pressure, remove the pressure gauge (pressure switch or transducer) from the end-of-line adapter AEA006 at the end of the BlazeTube, if installed. Push in the Schrader valve inside the end-of-line adapter to release the pressure from the BlazeTube.

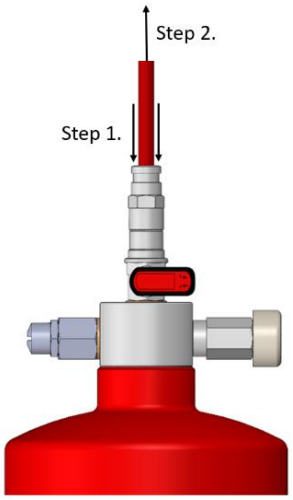


Shrader valve inside the end-of-line adapter

3. Disconnect the BlazeTube detection from the connector on the cylinder valve. Disconnect the BlazeTube by pushing the ring inwards in the place of entry of the tube to the connector and remove the tube. Proceed according to the instructions in Chapter 8.3, also when disconnecting the end-of-line adapter. Be careful, if the tube was under pressure, the pressure will leak from the BlazeTube detection.

BlazeCut and the BlazeCut logo are trademarks of BlazeCut s.r.o.

© BlazeCut, all rights reserved.



The ball valve is closed

4. Fasten the new BlazeTube detection properly to the connector of the cylinder valve. Fasten the BlazeTube detection so that the tube is slotted to the connector and pushed by hand all the way. After slotting always make sure by pulling that the tube is firmly gripped.
5. Place the BlazeTube detection in the protected enclosure and gradually fasten with clamps/ties.
6. During installation proceed further according to Chapter 8.3.
7. Pressurise the BlazeTube detection, proceed according to Chapter 8.4.

12.6 DECLARATION OF CONFORMITY

Upon installation of each piece of the system the Commissioning/Installation Report must be prepared. Send the original of the Report to the manufacturer of the system. Keep the copy of the original.

Records on the maintenance and inspection of the system indicating the scope of service must be kept. Keep the maintenance records.

Declaration of conformity is issued by the manufacturer for each of the systems separately. The basis and requirement to issue the declaration of conformity is the Report issued by the authorized qualified person with relevant professional qualification in accordance with the relevant legislation and delivered to the manufacturer, whereby the authorized person certifies correct installation of the system pursuant to the technical documentation.

In the declaration of conformity, the manufacturer declares that the equipment under pressure is in conformity with the certificate of the type of the equipment under pressure issued in accordance with the requirements of European directive 2014/68/EU, Module B+E.

Supervising the implementation of the obligations arising out of the approved quality assurance system is ensured by notified body:

Technická inšpekcia, a.s., Trnavská cesta 56, 821 01 Bratislava, Slovak Republic (NB 1354).

Pursuant to the abovementioned, the equipment under pressure is labelled with CE conformity mark and identification code of notified body: 1354.

The products are safe when the terms of use and technical requirements are observed.

A copy of the current certificates can be requested by emailing technical@blazecut.com

13 LIST OF ANNEXES

ANNEX 1: SIGNALLING DEVICES

ANNEX 2: PRESSURE MONITORING AND ELECTRICAL COMPONENTS

© BlazeCut, all rights reserved.

ANNEX 1: SIGNALLING DEVICES

A1.1. SIGNALLING UNITS

Table 31: Signalling units

Part №	Description
ASU001	Signalling unit, light and sound, 81 dB, CE, 6-28 V DC, CE. Suitable for indoor, fixed, low vibration installations
ASU002	Signalling unit red, sounder and beacon with high base, 114 dB, IP44, EN54-3/CE/LPCB, 24 V DC. Suitable for indoor, fixed, low vibration installations
ASU003	Signalling unit red, sounder and beacon with high base, 101 dB(A), IP65, 18-24 V DC, CE, EN54-3. Suitable for fixed, low vibration installations
ASU004	Signalling unit, combined sounder and beacon, 97 dB, IP65 - Type B - 20-30 V DC, CE, EN54-3, -20 °C up to 70 °C. Suitable for outdoor, fixed, low vibration installations
ASR001	Sounder red, multi tone with high base, 92 dB to 112 dB, IP65, CE/VdS, LPCB, 9-15 V DC, CE, EN54-3. Suitable for fixed, low vibration installations
ASR002	Sounder, multi tone with high base, IP65, EN54-3, voltage range 9-29 V DC, operating temperature: -25 °C +80 °C, deep base. Suitable for fixed, low vibration installations
ABR001	Beacon red xenon, IP65, CE, VdS, 9V-60Vdc, CE, EN54-3. Suitable for fixed, low vibration installations
ABR002	Beacon red LED, IP65, CE, R10, 12-24 V DC, -20°C to +50°C, 3 bolt mounting. Suitable for outdoor mobile applications.
ASB001	Sounder black, 97 dB, IP65, SAE J994 Type C, AMCA, UL, CE, E, 12-24 V DC, -40°C to +85°C. Suitable for outdoor mobile applications.
AWB012	Warning buzzer with red LED dots, 12 V DC, 80 dB (@1m), IP50, -20 to +50 °C, stainless steel, 29 mm diameter. Suitable for fixed and mobile installations. Includes ALA019 label.
AWB024	Warning buzzer with red LED dots, 24 V DC, 80 dB (@1m), IP50, -20 to +50 °C, stainless steel, 29 mm diameter. Suitable for fixed and mobile installations. Includes ALA019 label.
ASB8666	Sign Board optical acoustic with text: "EXTINGUISHING IN PROGRESS", size of text: 135x320 mm, IP65, 12/24 V, 100 dB @1 m, -10 °C to +50 °C, CE, fixed applications

ASU001

ASU002, ASU003

ASU004

ASR001

ABR001

ABR002

ASB001

AWB012 and AWB024

ASB8666

© BlazeCut, all rights reserved.

A1.2. ALARM PANEL

Table 32: Alarm panel and accessories

Part №	Description
AAP210	Alarm panel **without** a fire button for C Series, OK, Fault and Fire LED indication (automatic dimmer function), fully configurable via Wi-Fi, include data logging and programmable NO/NC integrated relay output, 9 - 36 V DC, 85 dB buzzer, IP67, -30°C to 70°C, CE, EMC tested, flush or external mounting, red anodized aluminium body, 55 mm diameter. Includes 2x End-of-line Resistor AER101. ***Note: Requires programming***
AAP310	Alarm panel **without** a fire button for T and C Series, preconfigured from factory, OK, Fault and Fire LED indication (automatic dimmer function), 9 - 36 V DC, 85 dB buzzer, IP67, -30°C to 70°C, CE, EMC tested, Integrated NO relay output, flush or external mounting, red anodized aluminium body, 55 mm diameter. Includes 1x End-of-line Resistor AER101.Can be used for: a) C Series with just one pressure switch b) as a fire warning device ***Note: Non-programmable***
AAP400	Alarm panel with a test button for T and C Series, preconfigured from factory, OK, Fault and Fire LED indication, 10 - 30 V DC, 85 dB buzzer, IP65, -30°C to 70°C, CE, EMC tested, flush or external mounting, powder coated aluminium body, 64x58x30 mm, 0.5 m cable. Includes 2x End-of-line Resistor AER106. Can be used for: a) C Series with one or two pressure switches b) as a fire warning device ***Note: Non-programmable***
APB210	Panel bracket stainless steel for Alarm Panels AAP210, AAP211 and AAP310
ABP212	Back-up power supply 12 V for Alarm Panels AAP210, AAP211 and AAP310, includes 1 x 7.0 Ah battery. For indoor use only
ABP224	Back-up power supply 24 V for Alarm Panels AAP210, AAP211 and AAP310, includes 2 x 7.0 Ah battery. For indoor use only
ACF001	Case for an external fuse, IP66, -20 up to 70 °C, max 10 A (for AEF001, AEF002, AEF100, AEF200)
ACF002	Case for an external fuse, IP50, max 6.3 A (for AEF001, AEF002, AEF100, AEF200)
AEF002	External fuse 2 A for Alarm Panels AAP210, AAP211 and AAP310
AEF200	External fuse 200 mA for Alarm Panel AAP400

AAP310

AAP400

APB210

ABP212

ABP224

ACF001

ACF002

AEF002, AEF200

BlazeCut and the BlazeCut logo are trademarks of BlazeCut s.r.o.

© BlazeCut, all rights reserved.

Table 33: Alarm panel kits

Part №	Content
KAAP210	Alarm Panel AAP210 kit without a fire button for C Series, Panel Bracket APB210, 12-pin Deutsch Connector ADC012, Sealing Plugs ADP001, External Fuse AEF002, Fuse Case ACF001, End-of-line Resistors AER101, labels ALA002, ALA003, ALA004 ALA005
KAAP310	Alarm Panel AAP310 kit without a fire button for T and C Series, Panel Bracket APB210, 6-pin Deutsch Connector ADC006, Sealing Plugs ADP001, External Fuse AEF002, Fuse Case ACF001, End-of-line Resistor AER101, labels ALA002, ALA004 ALA005
KAAP400	Alarm Panel AAP400 kit with a test button for T and C Series, 6-pin Deutsch Connector ADC006, Sealing Plugs ADP001, External Fuse AEF200, Fuse Case ACF002, End-of-line Resistors AER106, labels ALA004 ALA005

KAAP210

KAAP310

KAAP400

For additional information ask for a component manual *CM-AP2 Alarm Panels AAP210, AAP211, AAP310* or *CM-AP4 Alarm Panel AAP400*.

ANNEX 2: PRESSURE MONITORING AND ELECTRICAL COMPONENTS

A2.1. PRESSURE TRANSDUCER ATA100

Pressure Transducer ATA100 provides full range constant pressure monitoring in the system. It can identify a low pressure or overpressure in the system and notify the operator through an Alarm Panel or other external device.

Depending on the valve type, the Pressure Transducer ATA100 can be installed to the system in several ways described in Chapter A2.4.

Table 34: Specifications of pressure transducer ATA100

Parameter	Description
Material of body	stainless steel
Pressure range	0 – 40 bar
Accuracy	0.5 % BFSL
Maximum overpressure	80 bar
Operation voltage	8 – 30 V DC
Power consumption	8 mA
IP rating	IP67
Operating temperature	from -40 °C up to 70 °C
Thread	M10x1 (14 mm with O-ring and filter)
Electrical cable	25 cm length, 3 x 0.75 mm^2

Pressure Transducer ATA100

BlazeCut and the BlazeCut logo are trademarks of BlazeCut s.r.o.

© BlazeCut, all rights reserved.

A2.2. PRESSURE SWITCH APS001-XX

Pressure Switch APS001-xx is a mechanical switch with one pre-set pressure value (switch point). When the pressure in the system drops below the switch point the pressure switch sends a signal to an Alarm Panel or an external device to perform the operation. The pressure switch is supplied with the cable connector.

The Pressure Switch APS001-xx will send a signal when the pressure in the system decreases regardless of the cause, in case of fire or accidental activation and rapid decrease of pressure in the system which is below the pre-set value.

Depending on the valve type, the Pressure Switch APS001 can be installed to the system in several ways described in Chapter A2.4.

Table 35: Specifications of pressure switch APS001-xx

Parameter	Description		
Material of body	nickel plated steel		
Switch configuration	open or closed (SPDT)		
Hysteresis	min. 0.5 bar, max. 1.5 bar		
Switching frequency	max. 100 min-1		
Power rating	Voltage		Current
Resistive load AC-12, DC12	AC 250 V	DC 24 V	4 A
Inductive load AC-14, DC14	AC 250 V	DC 24 V	2 A
IP rating	IP65 with cable connector and seal		
Electrical outlet	DIN EN 175301-803 A		
Operating temperature	from -30 °C up to 100 °C		
Thread	M10x1 (12.5 mm with O-ring and filter)		

Pressure Switch APS001-xx

IMPORTANT

Diagram on the pressure switch label is at atmospheric pressure (e.g., unpressurised system or discharged system).

Table 36: Versions of APS001-xx for powder agent

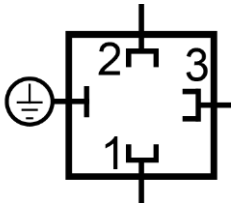
Suitable for	Switch point	Pressure value	Part №
powder	Fire indication	11	APS001-11
powder	Low pressure	13	APS001-13

APS001 has a selectable switching function, so it can be set to normally open or closed state.

IMPORTANT

Normal state is at atmospheric pressure (e.g., unpressurised system or system after extinguishing).

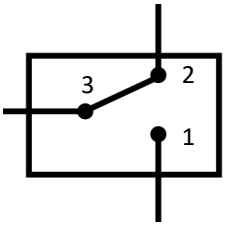
1. Connector for closed circuit – for sending signal to an alarm panel, switching on devices (sirens, beacons) or switching off devices using an external relay
2. Connector for open circuit – for switching off connected devices (e.g., ventilation, that is connected in the electric circuit)
3. COM connector
4. ground connector



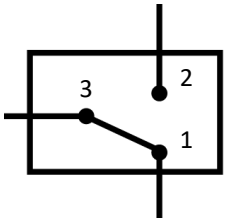
APS001 connector

BlazeCut and the BlazeCut logo are trademarks of BlazeCut s.r.o.

© BlazeCut, all rights reserved.



Pressurised



Discharged

A2.3. PRESSURE SWITCH APS003-XX

Pressure Switch APS003-xx is a mechanical switch with one pre-set pressure value (switch point). When the pressure in the system drops below the switch point, the pressure switch sends a signal to an Alarm Panel or an external device to perform the operation. The pressure switch is supplied with a cable connector.

The Pressure Switch APS003 will send a signal when the pressure in the system decreases regardless of the cause, in case of fire or accidental activation and rapid decrease of pressure in the system which is below the pre-set value.

Depending on the valve type, the Pressure Switch APS003 can be installed to the system in several ways described in Chapter A2.4

Table 37: Specifications of pressure switch APS003

Parameter	Description
Material of body	brass
Switch configuration	closed (no pressure)
Hysteresis	min. 0.5 bar, max. 1.5 bar
Voltage	42 V DC / 100 V AC
Current	max 4 A
IP rating	IP65 with cable connector and seal
Electrical outlet	DIN 43650A
Operating temperature	from -40 °C up to 100 °C
Thread	M10x1 (12.5 mm with O-ring and filter)

Pressure Switch APS003

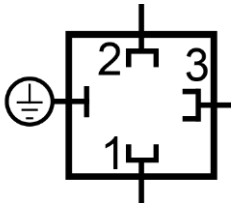
Table 38: Versions of APS003-xx for powder agent

Suitable for	Switch point	Pressure value	Part №
powder	Fire indication	11	APS003-11
powder	Low pressure	13	APS003-13

IMPORTANT

Normal state is at atmospheric pressure (e.g., unpressurised system, system after extinguishing).

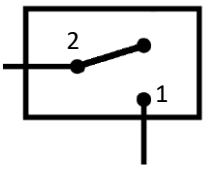
1. Connector for closed circuit – for sending signal to an alarm panel, switching on devices (sirens, beacons) or switching off devices using an external relay
2. COM connector
3. not used
4. ground connector



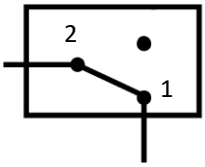
APS003 connector

BlazeCut and the BlazeCut logo are trademarks of BlazeCut s.r.o.

© BlazeCut, all rights reserved.



Pressurised



Discharged

A2.4. INSTALLATION OF PRESSURE MONITORING COMPONENTS

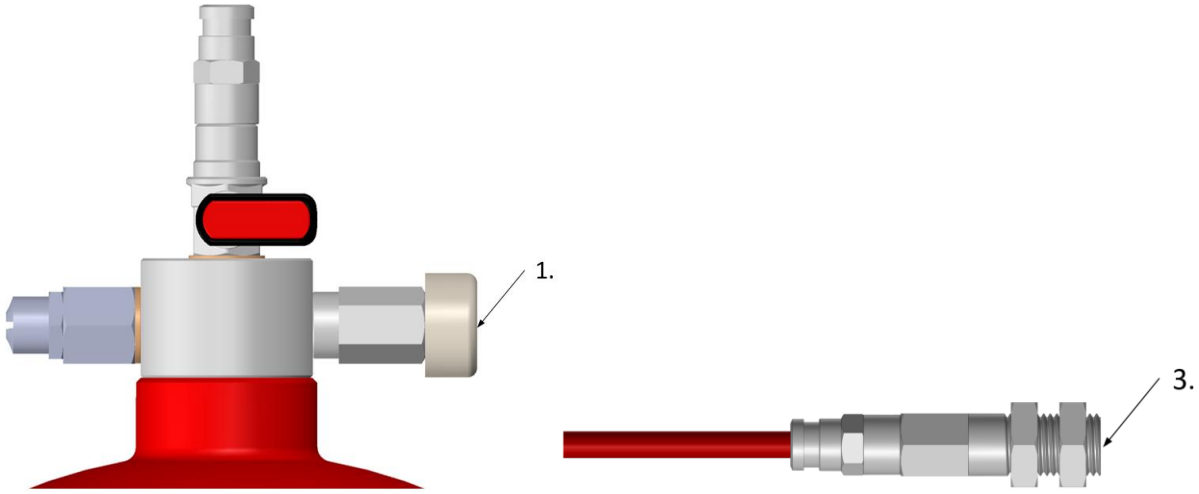
Pressure monitoring components such as pressure transducers, pressure switches and additional pressure gauges are usually delivered not installed, to prevent them from damaging during transportation. All pressure monitoring components are compatible with M10x1 ports. The M10x1 ports are sealed by a Schrader valve, which closes and opens automatically during removal or installation of the components. The same principle of sealing is also used on end-of-line adapters and M10x1 adapter FVABM0210 on the cylinder valve.

Suitable outlets for individual components:

1. Valve Adapter FVABM0210
    a) main pressure gauge
3. End-of-line Adapter AEA006 on a BlazeTube
    a) additional pressure gauge
    b) Pressure Transducer ATA100
    c) Pressure Switch APS001 or APS003

IMPORTANT!

Main pressure gauge must always be installed in the appropriate port on the cylinder valve. It can be uninstalled only momentarily, during maintenance or gauge relocation.



M10x1 ports on valve 118 (left) and on the end-of-line adapter (right)

A2.4.1. WARNINGS

Don't use the M10x1 port with the mounted pressure gauge. By removing the pressure gauge from the valve when the system is pressurised a small amount of agent can be released into the port and damage the integrated Schrader valve, causing a pressure leak.

When uninstalling components from the M10x1 ports on the cylinder valve, the system must be depressurised beforehand. Not doing so can lead to release of a small amount of agent into the port and damage the integrated Schrader valve, causing a pressure leak.

© BlazeCut, all rights reserved.

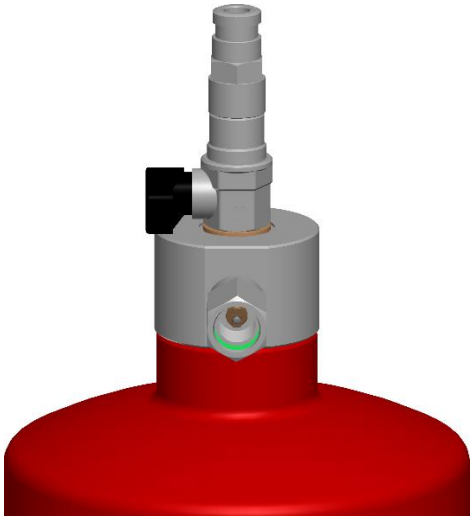
Install the pressure switch and pressure transducer so that it is not exposed to aggressive chemical substances (caustic, acids, solvents, corrosive substances etc.) and to direct influence of weather conditions.

Always place the pressure switch and pressure transducer in the lower part of the risk area to avoid direct flames and heat. The pressure switch cannot be in direct contact or be in immediate proximity with parts which heat to temperatures of more than 80 °C (176 °F) e.g., engine block, engine turbocharger, exhaust pipe, heated parts of inductors etc.

Be aware of the danger posed by the protected device. When working in the vicinity of electrical equipment observe corresponding safety rules and instructions. Work on electrical installations may be performed only by qualified persons.

In case a pressure transducer, pressure switch or a pressure gauge has to be uninstalled from the cylinder valve, depressurisation of the cylinder has to be done beforehand. Follow these steps when installing or uninstalling components into the cylinder valve:

1. Uninstall (fully unscrew) the desired component. A small amount of extinguishing agent may be released from the port.
2. Release pressure from the cylinder by gently pushing in the Schrader valve in the freed port.
3. Clean up the whole port, mainly the sealing surfaces (green area on the picture) on the cylinder valve with a clean dry cloth or a brush.
4. Install the new component. To properly install it and prevent any malfunctions of the system, screw in the component tightly.
5. Pressurise the system as described in Chapter 10.3 and check for presence of any leaks.



M10x1 port with exposed Schrader valve after component uninstallation

NOTE

In case of malfunction or disconnection of the electrical components (Pressure Switch APS001-xx or APS003-xx, Pressure Transducer ATA100, electrical installation) the system remains functional, these components are not necessary for its automatic activation in case of fire.

A2.5. ELECTRICAL CABLES, CONDUITS AND CONNECTORS

For installation of electrical components use the appropriate electrical cables supplied as optional components:

- Pressure Transducer ATA100 – two core electrical cable,
- Pressure Switch APS001-xx or APS003-xx – two, three or four core electrical cable.

BlazeCut and the BlazeCut logo are trademarks of BlazeCut s.r.o.

© BlazeCut, all rights reserved.

Table 39: Specifications of cables

Part №	Description	Comment	Length
ASC002	standard cable, 2x0.75 mm², -40°C up to 80 °C, UV stabilized	for standard installations	per metre
ASC004	standard cable 4x0.5 mm², -40°C up to 80 °C, UV stabilized	for standard installations	per metre
ASC102	silicone cable 2x0.75 mm², -60 °C up to 180 °C, UV stabilized, up to 500 V	for installations with high temperatures like in engine compartments	per metre
ASC103	silicone cable 3x0.50 mm², -60 °C up to 180 °C, UV stabilized, up to 500 V	for installations with high temperatures like in engine compartments	per metre
ASC104	silicone cable 4x0.50 mm², -60 °C up to 180 °C, UV stabilized, up to 500 V	for installations with high temperatures like in engine compartments	per metre

Standard cable

Silicone cable

Table 40: Silicone cable kits

Part №	Description
KASC102-005	2-core Silicone cable kit, 5 metres, 15 cable ties, -60 °C up to 180 °C
KASC102-010	2-core Silicone cable kit, 10 metres, 30 cable ties, -60 °C up to 180 °C
KASC102-015	2-core Silicone cable kit, 15 metres, 45 cable ties, -60 °C up to 180 °C
KASC102-020	2-core Silicone cable kit, 20 metres, 55 cable ties, -60 °C up to 180 °C
KASC103-005	3-core Silicone cable kit, 5 metres, 15 cable ties, -60 °C up to 180 °C
KASC103-010	3-core Silicone cable kit, 10 metres, 30 cable ties, -60 °C up to 180 °C
KASC103-015	3-core Silicone cable kit, 15 metres, 45 cable ties, -60 °C up to 180 °C
KASC103-020	3-core Silicone cable kit, 20 metres, 55 cable ties, -60 °C up to 180 °C
KASC104-005	4-core Silicone cable kit, 5 metres, 15 cable ties, -60 °C up to 180 °C
KASC104-010	4-core Silicone cable kit, 10 metres, 30 cable ties, -60 °C up to 180 °C
KASC104-015	4-core Silicone cable kit, 15 metres, 45 cable ties, -60 °C up to 180 °C
KASC104-020	4-core Silicone cable kit, 20 metres, 55 cable ties, -60 °C up to 180 °C

In case of installation in spaces with increased risk of damage due to mechanical interference use the cable conduit with conduit connector to protect the electrical cables.

Table 41: Specifications of conduits

Part №	Description	Length
ACC110	internal Ø 10 mm, -40 °C to 120 °C, UV stabilized	per metre

Cable conduit ACC110

BlazeCut and the BlazeCut logo are trademarks of BlazeCut s.r.o.

© BlazeCut, all rights reserved.

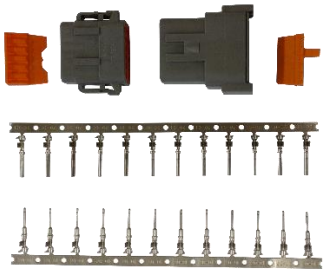
Table 42: Specifications of electrical connectors

Part №	Description	Working temperature
ADP001	sealing plug for Deutsch connectors	-55 °C to +125 °C
ADC002	2-pin Deutsch connector	
ADC006	6-pin Deutsch connector	
ADC012	12-pin Deutsch connector	

ADP001

2-pin Deutsch connector

6-pin Deutsch connector



12-pin Deutsch connector

BlazeCut and the BlazeCut logo are trademarks of BlazeCut s.r.o.

© BlazeCut, all rights reserved.

ADITIONAL NOTES

Please note any suggestions for BlazeCut to improve our manuals and email us at technical@blazecut.com

© BlazeCut, all rights reserved.