

Exhaust extraction systems for fire and emergency service stations

2018/2019



The NORFI Philosophy: Competence pays

NORFI is characterised by a strong focus on applications and customers. Based on our many years of experience, we can easily put ourselves into our customers' position - and understand the view of the operator who has to use the system daily. We think the way the operator thinks and always look for the most advantageous solution. *Because:* Different from others, we do not offer only standard solutions! Of course, you can also work with a conventional system. But that surely is not the optimum regarding handling, functionality or economic efficiency. NORFI makes the difference!

NORFI means added value: Always a better solution

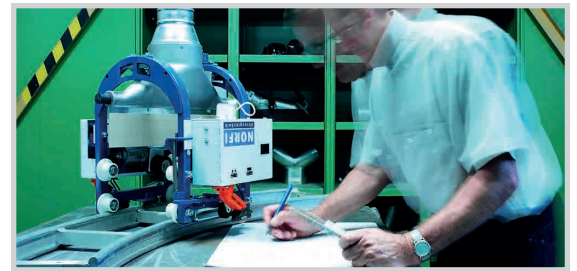
A NORFI solution means for example that there is definitely nothing lying on the ground, that operators can fulfil their work more efficiently, that all components are installed ergonomically perfect. And it means that we do not build three different nozzles per vehicle type, but only one that will fit all varieties. This does not necessarily mean a more expensive solution. At the end, NORFI is even more favourable in most of the cases. We do also understand the other trades involved in installations. Thus, we can see whether there is something going to be in the way already during the planning phase. Not only during the installation! Take these advantages, add to them our experience in the co-operation with site managements, and you will understand why the integration of NORFI systems into any kind of building always is a bit better - as is the functionality. We develop automatic systems which will help you to rationalise processes, to decrease the required operation work, to reduce the need for manipulation, and to avoid production downtimes.

About Us

NORFI stands for more than 25 years of competence in extraction technology.

From 1996 to 2003 we were part of another group of companies, now we are an independent company, trading on our traditional strength again - and we are moving forward with innovative energy. With a broad range of manufacture and well experienced personnel comprising only specialists.

Welcome to the new old NORFI



NORFI's experience...

Competence can't be replaced by anything. Thus, whoever is looking for a competent partner for his application, can make use of our virtually unlimited diversity in experience with different trades and applications. Because every industry has its own rules. And every application includes its specific tasks. The better one understands the demands, the easier one will find the solution. Trying to go by rote will result in failure.

...and how it pays off

Each vehicle, each building is different: trucks mostly have the exhaust pipe at the bottom of the chassis, utility vehicles often at the top. With locomotives, you might be able to install the extraction rail beside the rail track, some special vehicles require a very large working radius. Within one trade alone, there can be huge differences already. Just take an emission test stand and compare it to a dynamometer: the first one requires reliable extraction during the short cycles, while the latter demands for durability against temperatures of more than 500 °C even for longer periods. There are all kinds of different requirements. NORFI knows them all.

1 PLANNING

During the planning phase, we concentrate on finding the ideal solution for your problem. And we design it under economical aspects. Your contact person will support you throughout the entire process.

2 DEVELOPMENT

Our experience helps you to avoid mistakes. Through careful and permanent reviews of all details, autonomous and foresighted work.

3 MANUFACTURE

We produce in our own premises, from A to Z and under permanent supervision of the project manager in charge. Including electrical engineering and assembly of control boards. All components and systems are thoroughly tested and documented.

4 REALISATION

The installation is carried out by our own staff - all specialists. The project manager is on site as well.



Exhaust nozzle for electromagnetic systems type "E"

Nozzle is attached to an anchor plate, fixed on the vehicle. It requires no direct connection to the tail pipe and generates lower force on the complete system. The automatic disconnection takes place by a release switch, which can be freely adjusted on the channel or rail system. The system requires a constant power supply of 24V DC.



Exhaust nozzle for pneumatic systems type "P"

Nozzle is attached by its air chambers, directly to the tail pipe and ensures a seal connection. The automatic disconnection takes place by a release valve, which can be freely adjusted on the channel or by a release valve. The system requires a constant compressed air supply of 6-8 bar.



Exhaust nozzle for mechanical systems type "M"

Nozzle is attached by its clamping device, directly to the tail pipe. The automatic disconnection takes place by a bowden wire operation, and it's disconnection rail, which can be freely adjusted on the channel or rail system. The system requires no additional power supply.

Rail profile type ALU 150/250 "RA"



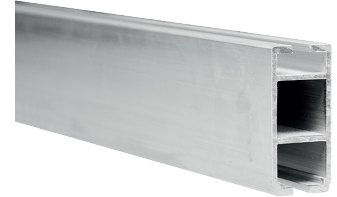
The suction rail is the underpressure channel which is equipped with an integrated guide rail, outside of the exhaust stream. Movable trolleys creates a smooth connection between the system and the vehicle. Thanks to its modular construction, the ALU-system is suitable for various requirements. The optimised profile shape ensures simple assembly and low pressure loss. Designed for the extraction of large vehicles and fully automated extraction systems. The scope of supply includes the necessary sealing lips and clamping strips. Rail connectors are required for installations exceeding 6 meters. All suction trolleys are generally equipped with integrated fall protection.

Rail profile type TECHNORAIL "RT"



The suction rail is the under pressure channel which is equipped with an integrated guide rail, outside of the exhaust stream. Movable trolleys creates a smooth connection between the system and the vehicle. Thanks to its modular construction, the TECHNORAIL-system is suitable for various requirements. The optimised profile shape ensures simple assembly and low pressure loss. Designed for the extraction of all kinds of common vehicles. The scope of supply includes the necessary sealing lips and clamping strips. Rail connectors are required for installations exceeding 6 meters. All suction trolleys are generally equipped with integrated fall protection.

Aluminum profile type "RP"



The aluminium profile is torsion-free and has a wall thickness of 3,6 mm. The optimised profile shape ensures simple assembly and highest possible flexibility for brackets and duct connector. Profile connectors are required for installations exceeding 6 meters. The balancers attached to the trolleys are generally equipped with fall protection. This light and lean system is suitable for all kinds of stations and is used in the entire PMS and EMS series.

COMMON TYPES OF EXHAUST TAIL PIPES



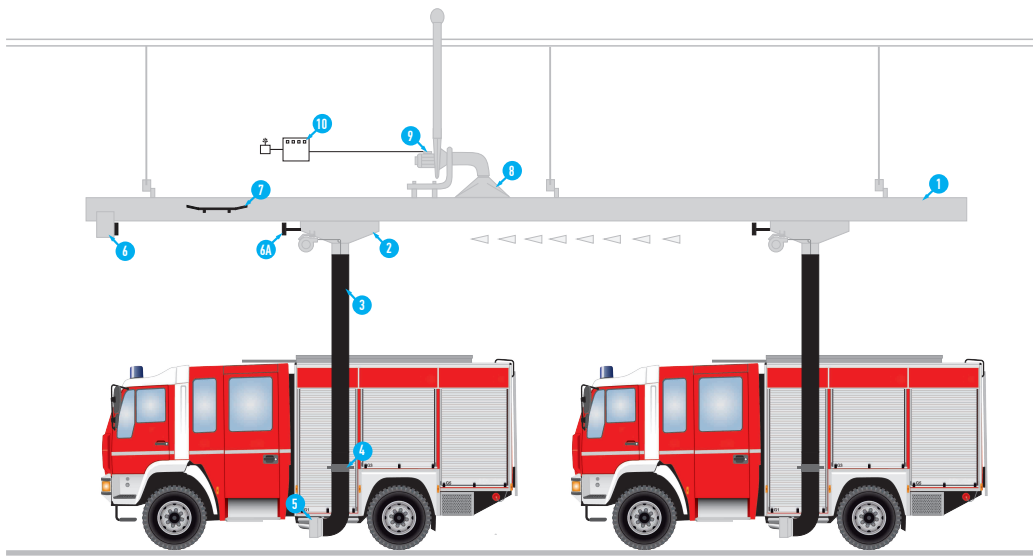
Key features of NORFI's exhaust extraction systems

EXHAUST EXTRACTION SYSTEM	NOZZLE CONNECTION	RAIL TYPE	AUTOMATIC DISCONNECTION	AUTOMATIC CONNECTION	NUMBERS OF TRACKS	DRIVE THROUGH	AUTOMATIC TROLLEY RETURN	EXHAUST PIPE POSITION	FAN START POSSIBILITIES	
									AUTOMATIC / RADIO	PRESSURE SENSOR
TES LL	E	RT	✓		1+	✓		A	✓	
AES LL	E	RA	✓		1+	✓	✓	A	✓	
TES HL	E	RT	✓		1+	✓		B-D	✓	
AES HL	E	RA	✓		1+	✓	✓	B-D	✓	
EMS-H	E	RP	✓		1			A	✓	
EMS-HL	E	RP	✓		1			B-D	✓	
EMS-HV	E	RP	✓	✓	1			C	✓	
EMS	E	RP	✓		1			A	✓	
TPS	P	RT	✓		1+	✓		A	✓	✓
APS	P	RA	✓		1+	✓	✓	A	✓	✓
PMS	P	RP	✓		1			A	✓	✓
TMS	M	RT	✓		1+	✓		A	✓	
AMS	M	RA	✓		1+	✓	✓	A	✓	
AMS-V	M	RA	✓	✓	1	✓	✓	C	✓	
EHR	M				1			A	✓	
SE	M				1			A	✓	



Extraction rail for low level exhaust systems with electromagnetic connection and automatic disconnection

**TES LL
AES LL**



INSTALLATION EXAMPLE:

1. Extraction rail type TECHNORAIL (TES) or ALU 150 (AMS)
2. Extraction trolley with balancer and disconnection unit
3. Exhaust hose with spiral protection and integrated wire
4. Handle with electromagnet and manual disconnection switch
5. Exhaust nozzle with integrated spring mechanism
6. End stop for extraction trolley

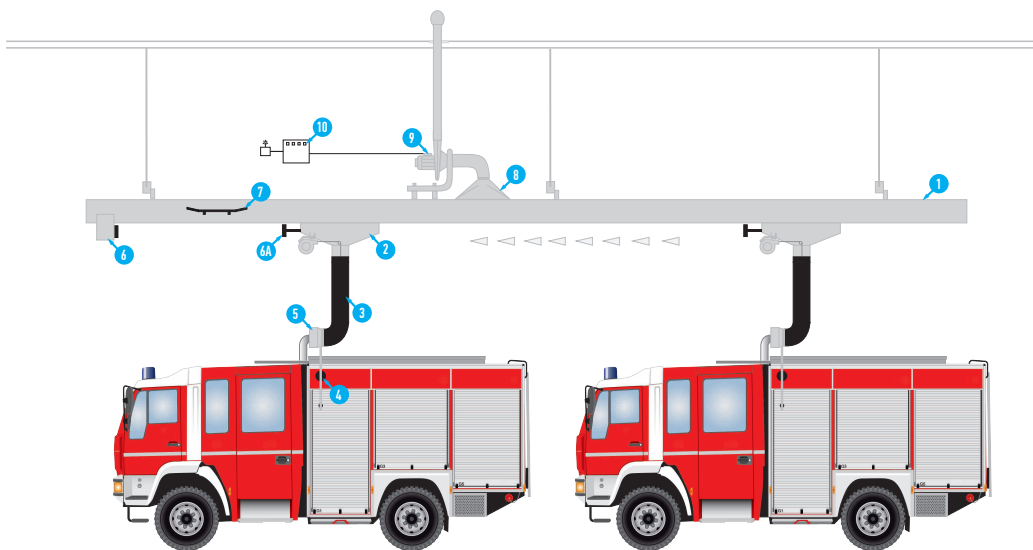
- 6A. Hydraulic shock absorber
7. Disconnection Rail
8. Duct connector top
9. Fan with ducting
10. Fan control unit

TECHNICAL DATA:

Rail length: 1 m to 100 m
Hose diameter: 125 mm, 150 mm
Electrical power: 230 V AC (24 DC)
Capacity: 1 to 4 vehicles
Exhaust pipe: low

Extraction rail for high level exhaust systems with electromagnetic connection and automatic disconnection

**TES HL
AES HL**



INSTALLATION EXAMPLE:

1. Extraction rail type TECHNORAIL (TES) or ALU 150 (AES)
2. Extraction trolley with balancer and disconnection unit
3. Exhaust hose with spiral protection and integrated wire
4. Handle with electromagnet and manual disconnection switch
5. Exhaust nozzle with integrated spring mechanism
6. End stop for extraction trolley

- 6A. Hydraulic shock absorber
7. Disconnection Rail
8. Duct connector top
9. Fan with ducting
10. Fan control unit

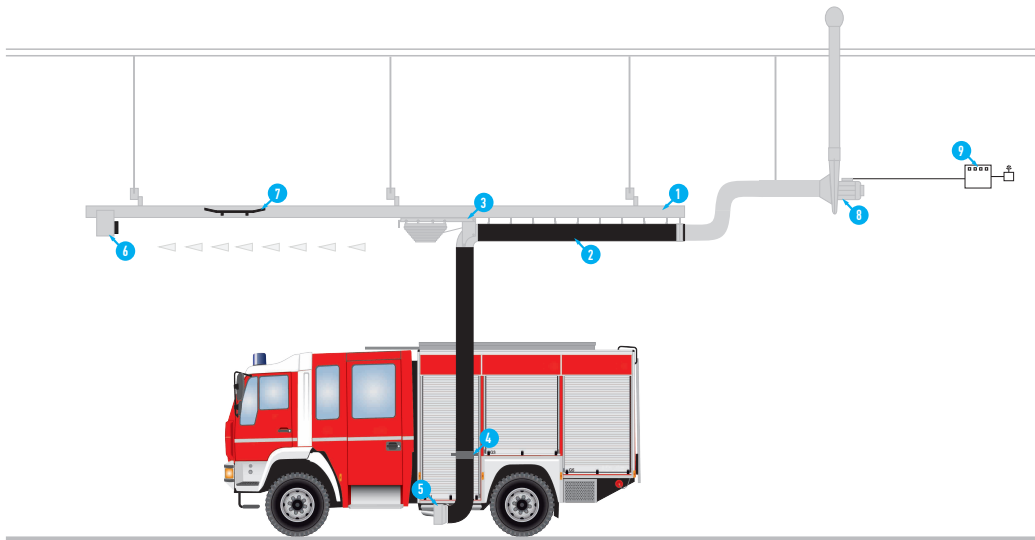
TECHNICAL DATA:

Rail length: 1 m to 100 m
Hose diameter: 125 mm, 150 mm
Electrical power: 230 V AC (24 DC)
Capacity: 1 to 4 vehicles
Exhaust pipe: high (side)



Extraction track solution for low level exhaust systems with electromagnetic connection and automatic disconnection

EMS-H



INSTALLATION EXAMPLE:

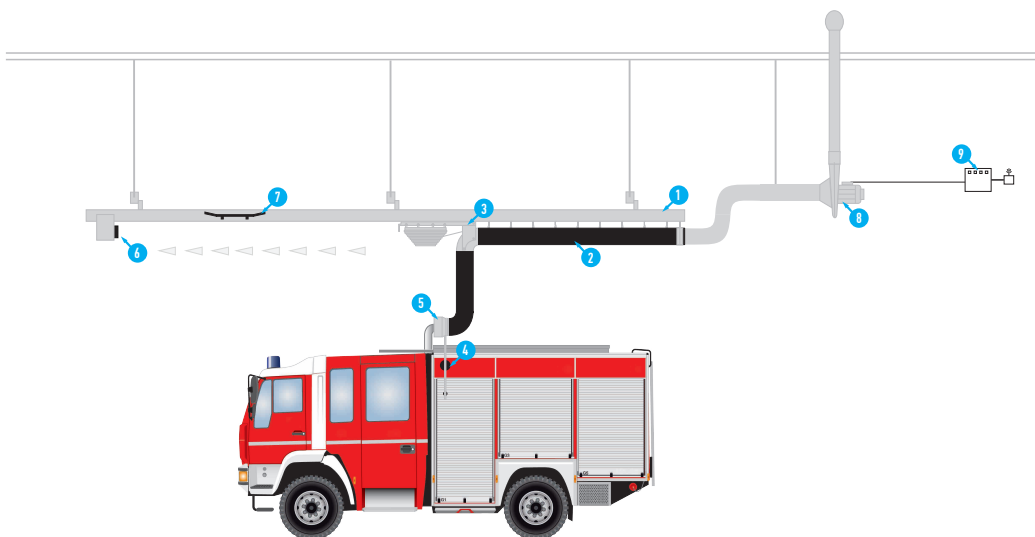
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|--|-----------------------|
| 1. Aluminium profile type „RP” | 7. Disconnection Rail |
| 2. Exhaust hose with spiral protection and integrated wire | 8. Fan with ducting |
| 3. Extraction trolley with balancer and disconnection unit | 9. Fan control unit |
| 4. Handle with electromagnet and manual disconnection switch | |
| 5. Exhaust nozzle with integrated spring mechanism | |
| 6. Hydraulic shock absorber | |

TECHNICAL DATA:

Track length: 3 m to 18 m
 Hose diameter: 125 mm, 150 mm
 Electrical power: 230 V AC (24 DC)
 Capacity: 1 vehicle
 Exhaust pipe: low

Extraction rail for high level exhaust systems with an electromagnetic suction global innovation

EMS-HL



INSTALLATION EXAMPLE:

- | | |
|--|-----------------------|
| 1. Aluminium profile type „RP” | 7. Disconnection Rail |
| 2. Exhaust hose with spiral protection and integrated wire | 8. Fan with ducting |
| 3. Extraction trolley with balancer and disconnection unit | 9. Fan control unit |
| 4. Handle with electromagnet and manual disconnection switch | |
| 5. Exhaust nozzle with integrated spring mechanism | |
| 6. Hydraulic shock absorber | |

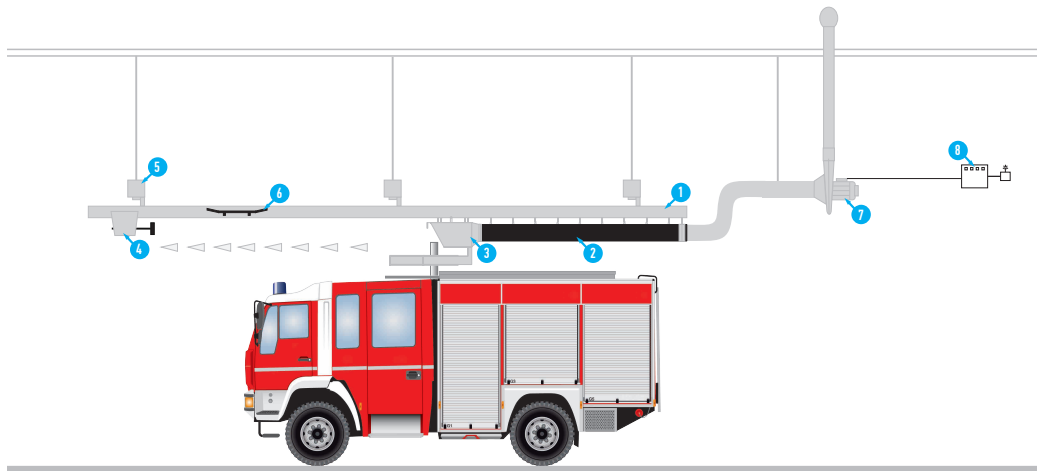
TECHNICAL DATA:

Track length: 3 m to 18 m
 Hose diameter: 125 mm, 150 mm
 Electrical power: 230 V AC (24 DC)
 Capacity: 1 vehicle
 Exhaust pipe: high (side)



Extraction track solution for vertical stack exhaust pipe systems with electromagnetic connection and automatic disconnection

EMS-HV



INSTALLATION EXAMPLE:

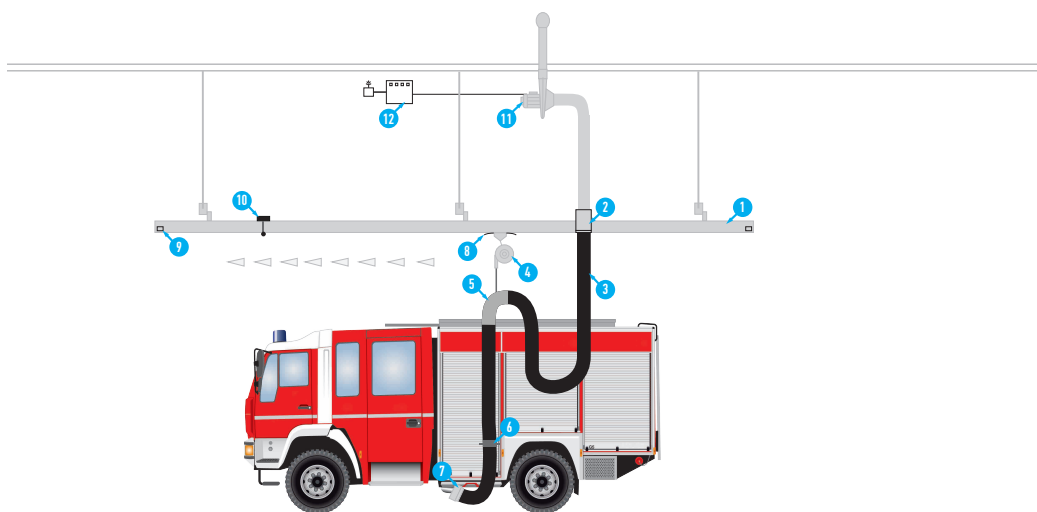
1. Aluminium profile type „RP”
2. Exhaust hose with spiral protection and integrated wire
3. Extraction trolley with hood and magnet unit
4. Hydraulic shock absorber
5. Flexible installation brackets Guide tracks
6. Disconnection Rail
7. Fan with ducting
8. Fan control unit

TECHNICAL DATA:

Track length: 3 m to 18 m
 Hose diameter: 150 mm
 Electrical power: 230 V AC (24 DC)
 Capacity: 1 vehicle
 Exhaust pipe: vertical stack

Extraction track solution for low level exhaust systems with electromagnetic connection and automatic disconnection

EMS



INSTALLATION EXAMPLE:

1. Aluminium profile type „RP”
2. Duct connector
3. Exhaust hose
4. Spring balancer
5. Hose suspension consist of bend with rotating flange
6. Handle with electromagnet and manual disconnection switch
7. Exhaust nozzle with integrated spring mechanism
8. Trolley with disconnection unit
9. End stop
10. Disconnection unit
11. Fan with ducting
12. Fan control unit

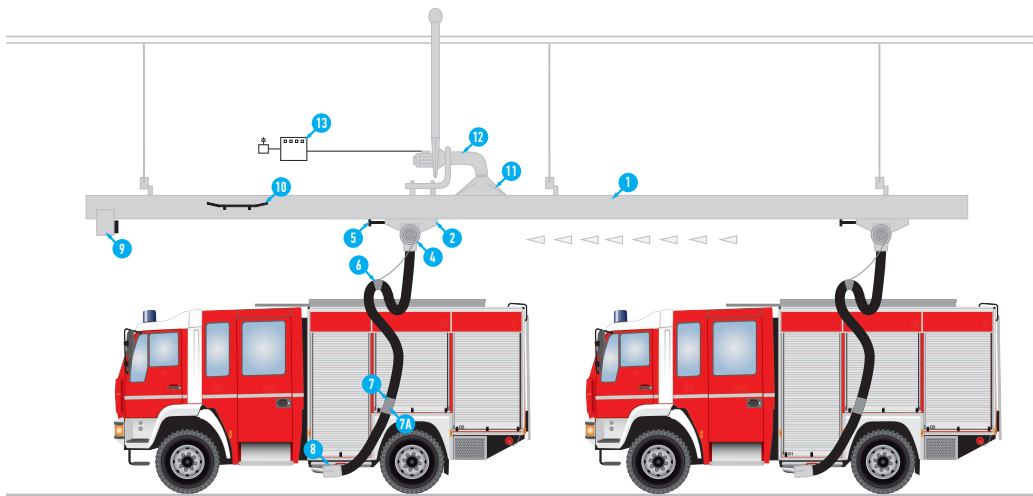
TECHNICAL DATA:

Track length: 6 m to 9,5 m
 Hose diameter: 125 mm, 150 mm
 Electrical power: 230 V AC (24 DC)
 Capacity: 1 vehicle
 Exhaust pipe: low



Extraction rail for low level exhaust systems with pneumatic connection and automatic disconnection

TPS
APS



INSTALLATION EXAMPLE:

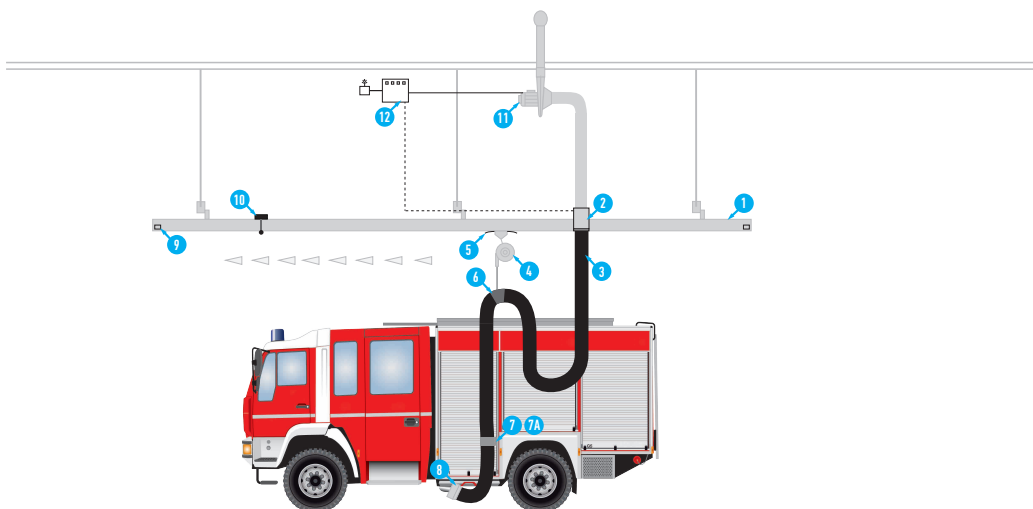
1. Extraction rail type TECHNORAIL (TPS) or ALU 150 (APS) with power and air supply
2. Extraction trolley with pressure gauge, disconnection unit and pressure sensor (option)
3. Exhaust hose
4. Spring balancer
5. Hydraulic shock absorber
6. Hose suspension
7. Handle with manual connection valve
- 7A. Safety disconnection device (option)
8. Pneumatic nozzle with quick release valve
8. Duct connector top
9. End stop for extraction trolley
10. Disconnection unit
11. Duct connector top
12. Fan with ducting
13. Fan control unit

TECHNICAL DATA:

Rail length: 1 m to 100 m
Hose diameter: 100 mm
Air power: 6-8 bar
Capacity: 1 to 4 vehicles
Exhaust pipe: low

Extraction track solution for low level exhaust systems with pneumatic connection and automatic disconnection

PMS



INSTALLATION EXAMPLE:

1. Aluminium profile type „RP“
2. Duct connector with pressure gauge and pressure sensor (option)
3. Exhaust hose
4. Spring balancer
5. Trolley with disconnection unit
6. Hose suspension
7. Handle with manual connection valve
- 7A. Safety disconnection device (option)
8. Pneumatic nozzle with quick release valve
9. End stop
10. Disconnection unit
11. Fan with ducting
12. Fan control unit

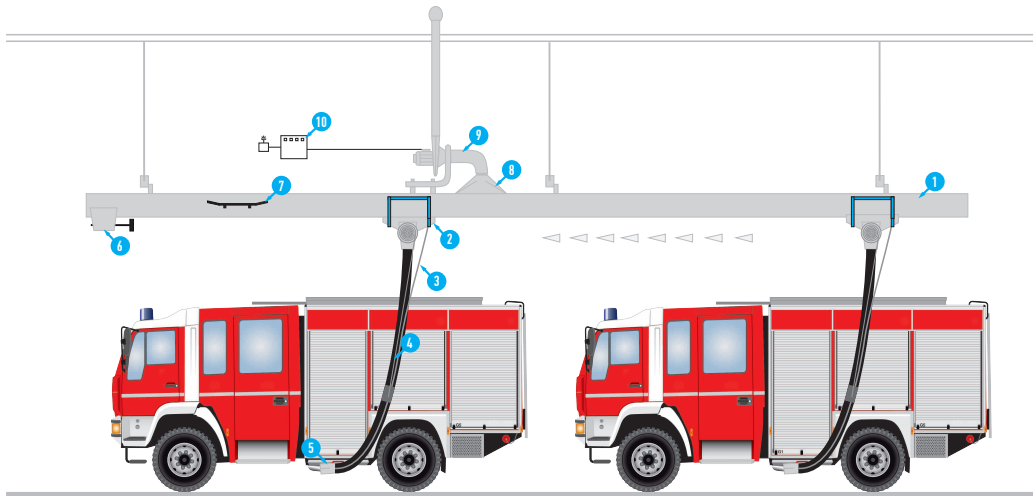
TECHNICAL DATA:

Track length: 6 m
Hose diameter: 100 mm
Air power: 6-8 bar
Capacity: 1 vehicle
Exhaust pipe: low



Extraction rail for low level exhaust systems with mechanical connection and automatic disconnection

TMS AMS



INSTALLATION EXAMPLE:

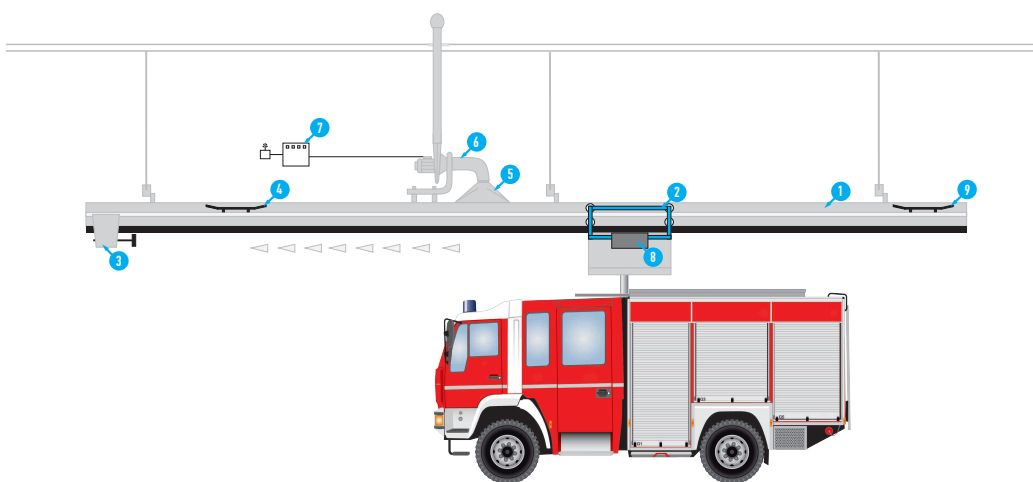
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|--|-----------------------|
| 1. Extraction rail type TECHNORAIL (TMS) or ALU 150 (AMS) | 7. Disconnection Rail |
| 2. Extraction trolley with a balancer TECHNORAIL (TMS) / ALU (AMS) | 8. Duct connector top |
| 3. Bowden wire | 9. Fan with ducting |
| 4. Exhaust hose | 10. Fan control unit |
| 5. Nozzle with automatic release function | |
| 6. Hydraulic shock absorber | |

TECHNICAL DATA:

Rail length: 1 m to 100 m
 Hose diameter: 125 mm, 150 mm
 Electrical or air power: none
 Capacity: 1 to 4 vehicles
 Exhaust pipe: low

Extraction rail for vertical stack exhaust pipe systems with extraction hood for automatic connection and disconnection

AMS-V



INSTALLATION EXAMPLE:

- | | |
|--|----------------------------|
| 1. Extraction rail type ALU 150 (AMS) | 7. Fan control unit |
| 2. Extraction trolley with hood for vertical stack pipes | 8. Drive unit (option) |
| 3. Hydraulic shock absorber | 9. Trolley sensor (option) |
| 4. Disconnection Rail | |
| 5. Duct connector top | |
| 6. Fan with ducting | |

TECHNICAL DATA:

Rail length: 1 m to 100 m
 Electrical or air power: none
 Capacity: 1 vehicle
 Exhaust pipe: vertical stack



Extraction hose reel for low level exhaust systems with mechanical connection

EHR



INSTALLATION EXAMPLE:

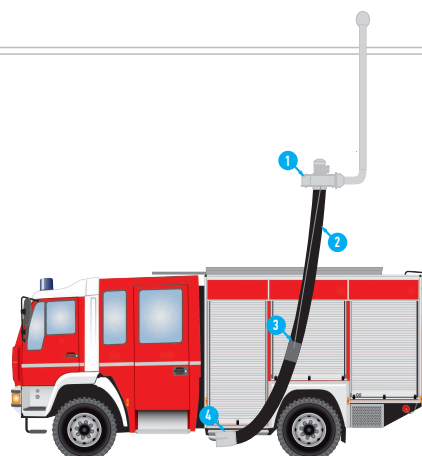
1. Extraction hose reel with spring drive
2. Fan with ducting
3. Exhaust hose
4. Nozzle with mechanical clamping device

TECHNICAL DATA:

Hose length: 5 - 10 m
Hose diameter: 100 - 200 mm
Drive mechanism: spring drive
Capacity: 1 vehicle
Exhaust pipe: low

Single extractor for low level exhaust with mechanical connection

SE



INSTALLATION EXAMPLE:

1. Fan with ducting
2. Exhaust hose
3. Hose suspension
4. Nozzle with mechanical clamping device

TECHNICAL DATA:

Hose length: 5 - 10 m
Hose diameter: 100 - 200 mm
Capacity: 1 vehicle
Exhaust pipe: low

Fan start possibilities

To remove exhaust fume from your station, a suitable extraction fan is required. It properly needs to be calculated by the number of vehicles to be served and the individual duct system.

MANUALLY:

The simplest option is to start the fan's operation via a manual switch inside the station. Manual systems can be equipped with a time relay with adjustable timer.

RADIO CONTROLLED:

A radio transmitter can be connected to the ignition lock of the vehicle. Once the engine is started up, the transmitter sends a signal to the radio receiver inside the control board. The usage of a time relay is also recommended.

AUTOMATIC:

Automatic start options for fans need any kind of switch which sends an electrical signal, just like limit switch at the gate; from central control board; push buttons or pressure sensors (in compressed air systems). For ideal function and power consumption, a time relay can be used in the control board.



Manually



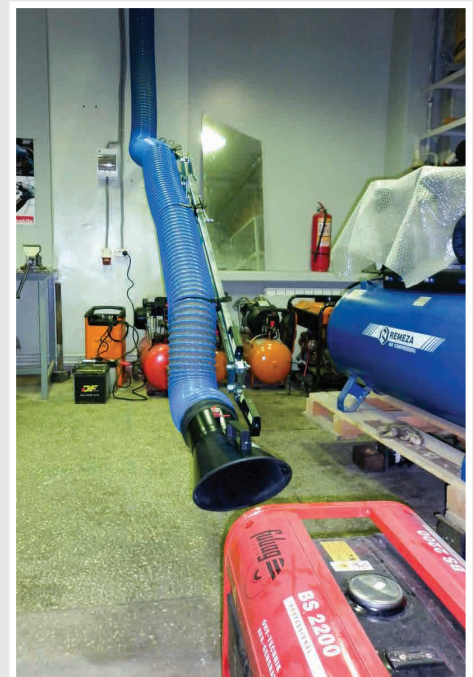
Radio controlled



Automatic

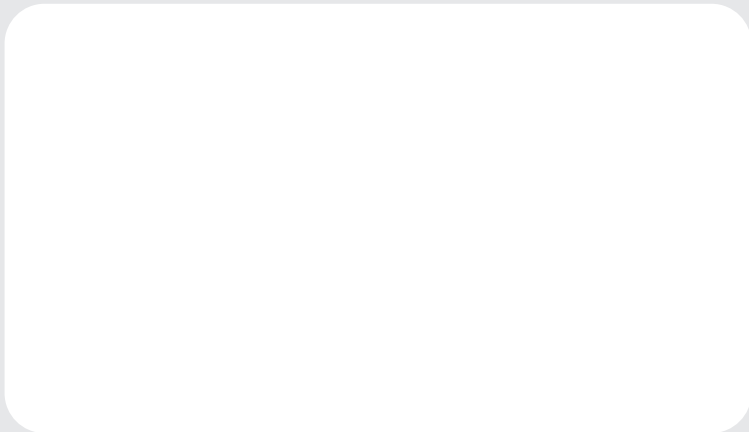
Additional applications for the usage of exhaust extraction systems

Exhaust extraction systems can capture gases and fumes from any machine with combustion engines, such as: generators, pumps, etc. The mechanical clamping device of the nozzle can be individually adapted to customised requirements.



Airport Fire & Rescue Services





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