

EQUIPMENT and INSTALLATION PROPOSAL

Nederman Rep.:	NEDERMAN, INC.	Contact:	TOM NOLAN
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City & State:	Westland, MI 48185	Fax No.:	734-729-3358

Fire Department:	ROCHESTER HILLS FIRE DEPARTMENT
Contact:	CHIEF RON CROWELL
Subject:	VEHICLE EXHAUST REMOVAL SYSTEM
Reference:	STATION 5

PROJECT SCOPE

To furnish a complete and operational vehicle exhaust removal equipment as manufactured by NEDERMAN, INC. of Westland, MI with a mechanical only installation (electrical by others). This proposal shall outline the requirements of the fire department for a complete vehicle exhaust removal system.

PRODUCT RECOMMENDATIONS

Based on the field information taken on March 15, 2011 by nederman personnel, the APPARATUS BAYS in the fire station shall be equipped with the Nederman MAGNA System of two types;

- The MagnaTracks shall include the overhead guide track, horizontal hose, suspension brackets, 6" vertical hose drop assemblies (one per vehicle), electromagnet and anchor plate combination, trolley and safety stops.
- The MagnaRail shall include the overhead suction rail, sealing lips, end caps, suspension brackets, connection hoods, 6" vertical hose drop assemblies (one per vehicle), electromagnet and anchor plate combination, trolley and balancer assembly, and safety stops.

Mounted in each vehicle shall be a transmitter for fan activation. Anchor plates shall be installed on the vehicle side above the tail pipe. Tail pipe modifications are included herein.

The direct-drive exhaust fan with an energy efficient TEFC Motor, 3-60-208,230/460 volt, shall be rated according to the total air demand per vehicle (exact vehicle air requirement shall be determined prior to the final bid), and pre-sized as specified herein. The fan shall include the Auto-Start Control center (including starter, timer, relays, and NEMA enclosure) for complete system automatic operation with manual override.

PRODUCT RECOMMENDATIONS

Shall be outfitted with two extractor systems.

- Two 30 ft. MagnaTracks, for a back-in/pull-out mode of driving operation
- One 57ft. MagnaRail, for a back-in/drive-thru mode of driving operation
- One fan shall be located indoors, sized for four vehicles.
- One auto-start control console w/transmitters and receivers

The complete system shall be pre-engineered and designed by Nederman. The type of extractor device for each vehicle, mounting arrangements, electrical requirements, ventilation ducting design and performance shall all be fully guaranteed to deliver a 100% effective capture and removal of diesel contaminants within the fire station. Fire personnel shall be trained on the use and operation of the equipment and system overall. The exhaust fan is to be located indoors. Power available is both single and three phase through a current panel.

IMPLEMENTATION

The exhaust removal equipment shall be furnished through Nederman, Inc. directly. The coordination of and installation of the project shall be managed by Tom Nolan. Nederman will work in concert with the installer to assure a complete and proper system shall be provided, utilized, and serviced. To be specific, the installation shall include;

1. Complete pre-engineering and design of the equipment specified.
2. Removal of the existing exhaust system.
3. Complete field assembly of exhaust removal equipment.
4. All supports, brackets, fasteners, and hardware between building structure and exhaust removal equipment required to affix said equipment in a rigid state.
5. Provision of and installation of all related ducting, brackets hardware, fasteners, sealant, wall penetrations from product outlet to fan inlet.
6. Provision of and installation of all related ducting, brackets hardware, fasteners, sealant, wall or roof penetrations, curbs, escutcheons from fan outlet to outside atmosphere.
7. Fan and fan installation including brackets, platforms, vibration isolators, and all related fasteners.
8. Provide all related components for the auto-start control panel to include transmitters and receivers.
9. System start-up, testing, adjusting, balancing and commissioning including submission of a signed 26-point check list upon completion of commissioning.
10. All electrical wiring by others.
11. Fire station personnel training.

WARRANTY and SATISFACTION GUARANTEE

The Manufacturer (Nederman) shall replace or repair, at its discretion, any products or components manufactured which prove to be defective in workmanship or material within **FIVE FULL YEARS** of shipment. If for any reason the fire department is not completely satisfied with our products or services, we will do everything within our ability to achieve their total satisfaction.

ADDITIONAL NOTES

Deliveries are subject to delay by reasons of acts of God, strikes, lockouts, terrorist attacks, fires, and any other contingencies, of like nature or otherwise, beyond the control of Nederman. Delivery promises are based on current stock and production conditions, and are subject to demand of prior customers should their purchase order precede your purchase order. All orders accepted by Nederman are invoiced on the basis of our prices in effect at the time of shipment. The dollar amount shown herein is based off of 2011 current prices.

PROJECT PRICE

Total price complete for the vehicle exhaust removal system as described herein to be furnished and installed in its entirety with the complete mechanical installation provided, including freight to the jobsite shall be **\$ 36,753.00.**

- Date of this Proposal: March 16, 2011
- This Proposal is submitted by;

Tom Nolan

TOM NOLAN
Nederman, Inc.

**VEHICLE EXHAUST EQUIPMENT LIST
FOR
ROCHESTER HILLS FIRE DEPARTMENT**

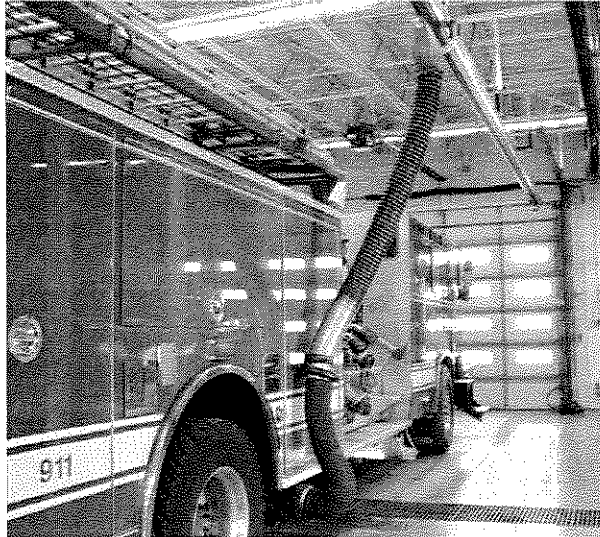
STATION: 5

DRAWING REFERENCE NO.:

QTY	DESCRIPTION	PART No.
2	MAGNATRACK ASSEMBLY 6IN X 30'	20804364
2	MAGNATRACK L.L. EXTRACTION UNIT 6IN X 10FT HOSE	20801764
1	MAGNARAIL WITH RUBBER SEAL AND CONDUCTOR 57 FT	20814464
2	MAGNARAIL L.L. EXTRACTION UNIT 6IN X 10FT	20813464
4	MAGNA HB NOZZLE 6IN LOWER ASSEMBLY c/c 600	20802364
1	FAN 5 HP 3PH, 60HZ 208-230/460V	14522028
1	AUTO-START CONTROL CONSOLE 5HP/3PH/208V-230V	87000322
4	AUTO-START TRANSMITTERS	87000313
3	AUTO-START RECEIVER WITH TERMINAL STRIP	87000314
2	CONNECTION HOOD, EXHAUST RAIL	20374246
1	CSA-14 HVA Silencer	87000171

MagnaRail

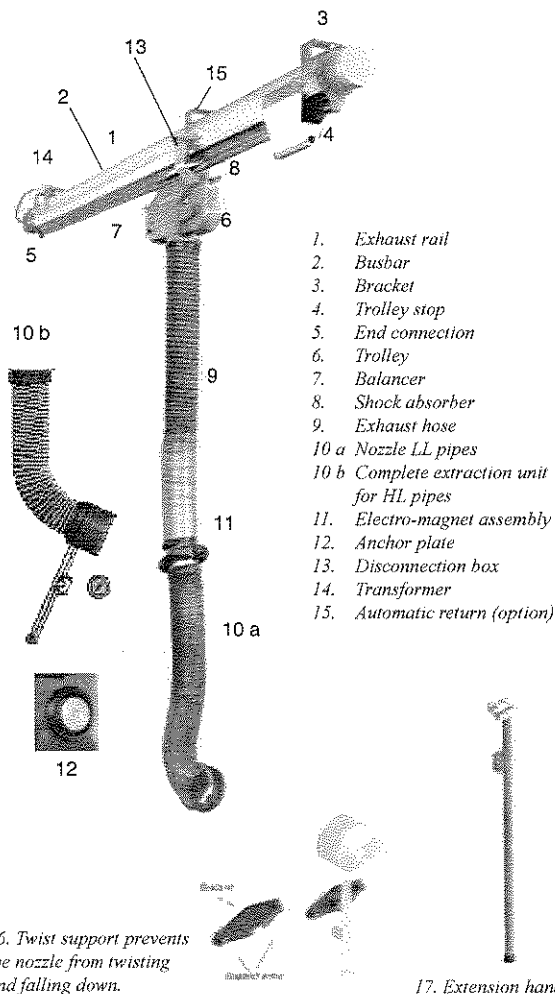
Exhaust extraction system for emergency stations with highest operational requirements



MagnaRail is a high capacity system designed to handle highest operational requirements. Up to four vehicles can be attached to the same rail each with a designated disconnection point. For a drivethrough application for vehicles with either high level or low level tail pipes. The suction rail is formed in a configuration such that the extrusion serves not only as an exhaust duct, but also as the guide rail that the extraction trolley travels in. The rail is available in up to 30 m.

The fan/duct work can be connected to the rail via either an end outlet or one/several top outlets (depending on length of rail).

- Capacity: up to 4 vehicles at a time
- Exhaust pipes: low level or high level
- High exit speed: up to 25 km/h - 15 mph
- For reverse-in or drive-through



1. Exhaust rail
2. Busbar
3. Bracket
4. Trolley stop
5. End connection
6. Trolley
7. Balancer
8. Shock absorber
9. Exhaust hose
- 10 a Nozzle LL pipes
- 10 b Complete extraction unit for HL pipes
11. Electro-magnet assembly
12. Anchor plate
13. Disconnection box
14. Transformer
15. Automatic return (option)

16. Twist support prevents the nozzle from twisting and falling down.

17. Extension handle

MagnaRail track/exhaust rail (1)			
Including: Busbar (2), Brackets (3), Trolley stop (4), End connection (5), Transformer (14)			
Lenght, m / ft	Part no	Lenght, m / ft	Part no
2.5 / 8.2	20813864	17.5 / 57.4	20814464
5.0 / 16.4	20813964	20.0 / 65.6	20814564
7.5 / 24.6	20814064	22.5 / 73.8	20814664
10.0 / 32.8	20814164	25.0 / 82.0	20814764
12.5 / 41.0	20814264	27.5 / 90.2	20814864
15.0 / 49.2	20814364	30.0 / 98.4	20814964

MagnaRail Extraction Unit for low level pipes (LL)		
Including: Trolley (6), Balancer (7), Shock absorber (8), Exhaust hose (9), Electro-magnet assembly (11), Anchor plate (12), Disconnection box (13)		
Hose Ø, mm / inch	Hose lenght, m / ft	Part no
160 / 6.3"	4 / 13.1	20813364
160 / 6.3"	3 / 9.8	20813464
130 / 5.1"	4 / 13.1	20813564
130 / 5.1"	3 / 9.8	20813664

Nozzles for low level (LL) exhaust pipes (10 a)				
Type	Distance exhaust pipe - anchor plate	Hose Ø mm / inch	Hose length mm / inch	Part no
Standard LL	Variable	160 / 6.3"	1000 ± 100 39.4 ± 4"	20802164
HB 600 LL	Fixed	160 / 6.3"	600 ± 100 23.6 ± 4"	20802264
HB 600 LL	Fixed	130 / 5.1"	600 ± 100 23.6 ± 4"	20802364
HB 900 LL	Fixed	160 / 6.3"	900 ± 100 35.4 ± 4"	20802464

Complete extraction unit for high level (HL) exhaust pipes (10 b)		
Extraction trolley, Balancer, Disconnection box, Vertical hose, Electro-magnet assembly, HL nozzle and anchor plate		
Type	Hose length, m / ft	Part no
160 / 6.3"	2 / 6.6	20813764

Accessories for high level nozzles		
Type	Description	Part no
Twist support (16)	Prevents nozzle from twisting and falling down	20374364
Extension handle (17)	1.1 m long	20374359

General Accessories: See other page

Technical specification

Exhaust rail

Material Aluminum
Sealing lips EPDM

Busbar

Material Hardened brass with plastic insulation.

Trolley

Incl wheels with sealed bearings
Material in trolley body PA +30 % Glass
Material in wheels Hardened brass with plastic insulation

Balancer

Lifting force 120 N
Material in cord Polyester
Material drum POM

Vertical exhaust hose

Compressible, with integrated cables to the electro-magnet assembly
Temp. resistance -40 to +175°C cont, short term: +190°C
Material Hypalon with aluminum clip

Electro magnet assembly

Voltage 24 V DC
Effect 1.9 VA
Material Nitro carburized treated steel

Anchor plate

Material Nedox treated steel

Disconnection box

Power indicator
2 carbon brushes transmitting power from busbar

Transformer

Prim. voltage 100-230 V 1-phase AC
Sec. voltage 24 V DC
Effect 8 VA

IP Class

Internal Protection IP 67

Weight

Rail 6.8 kg/m
Extraction unit 13 kg

Environmental information

Recycling level 100 %
Energy consumption 4 W per extraction unit.

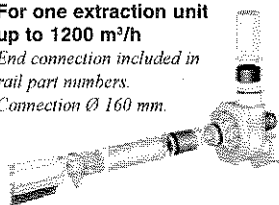
Accessories

General accessories	Part no.
Anchor plate standard	20372003
Anchor plate 2 parts	20371853
Anchor plate 3 parts	20371868
Auto start /stop radio transmitter for vehicle	20801369
Auto start /stop radio receiver	20802669
Transformer 230/24 V 15VA for max 4 trolleys	20374242
Reducer for end connection, Ø 160 mm to Ø 150 mm	20373760
Connection cone top outlet Ø 200 mm	20374246
Motor operated wire return unit	20800844

Fan connection alternatives

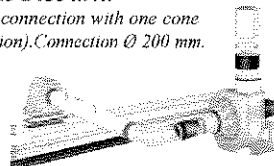
For one extraction unit up to 1200 m³/h

End connection included in rail part numbers.
Connection Ø 160 mm.



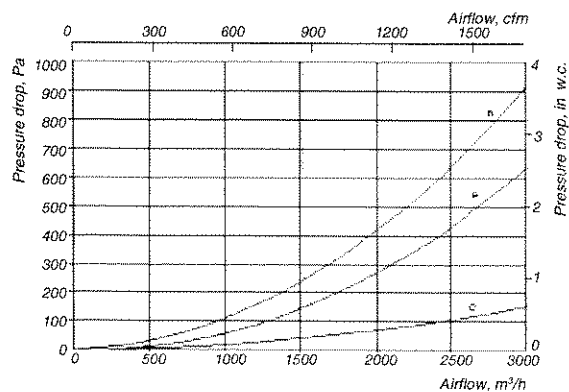
For two extraction units up to 2400 m³/h

Top connection with one cone (option). Connection Ø 200 mm.



Pressure drop

Extraction units

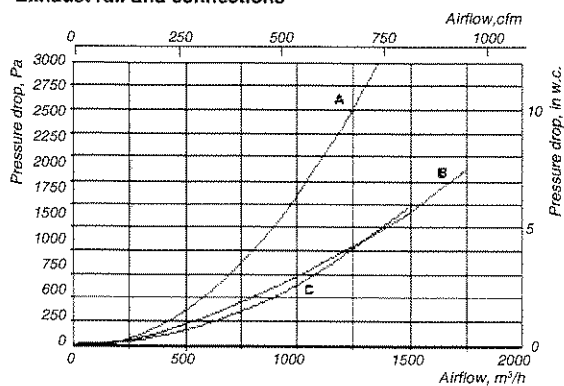


A = Top connection angled, Ø 200 mm
B = End connection
C = Exhaust rail, per metre

Airflow recommendation:

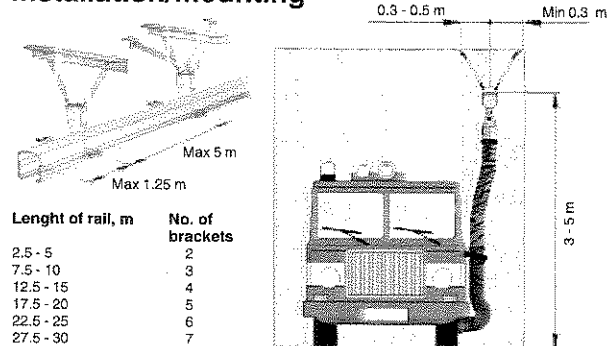
Heavy vehicles: 1000 - 1200 m³/h
(590 - 705 cfm)
Cars/Suvs: 400 - 600 m³/h
(235 - 355 cfm)

Exhaust rail and connections



A = Extraction unit LL, hose 4 m, ø 130 mm
B = Extraction unit LL, hose 4 m, ø 160 mm
C = Extraction unit HL, hose 2 m, ø 160 mm

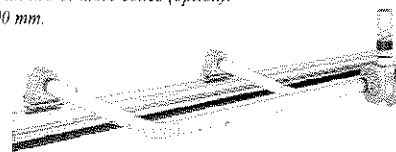
Installation/mounting



N.B. The nozzle for high level (HL) exhaust pipes must be installed at a higher level than the exhaust pipe. The nozzle must be pulled downwards at connection, which will activate the balancer.

For more than two extraction units more than 2400 m³/h

Top connection with two or more cones (option).
Connection Ø 200 mm.



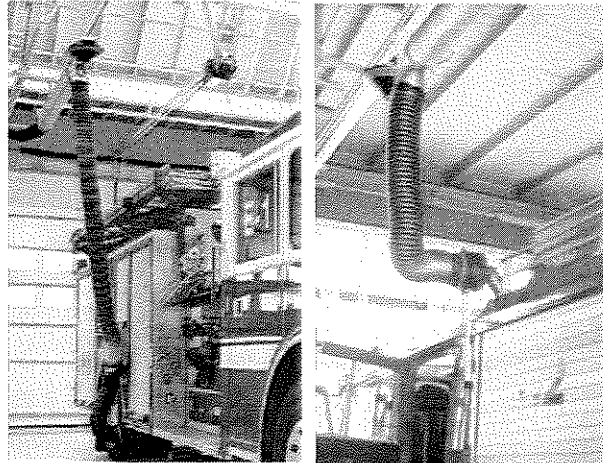
Nederman

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MagnaTrack HS

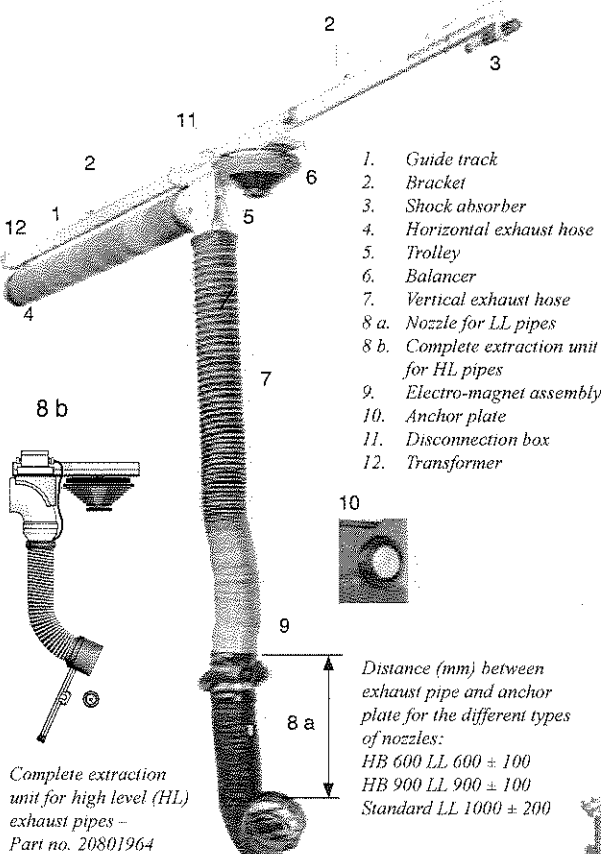
Exhaust extraction system for emergency stations with high frequency /high speed runs



The MagnaTrack HS is designed to serve emergency stations with a high frequency of runs. The track system serves one vehicle at a time. The balancer has a constant lifting power.

MagnaTrack HS is available in lengths from 3.5 m to 18 m; (10 ft to 60 ft) and it fits vehicles with low as well as high mounted exhaust pipes.

- Capacity: 1 vehicle per system
- Exhaust pipes: High level or Low level tail pipes
- High exit speed: up to 25 km/h; 15 mp
- For reverse-in (or drive-through)



MagnaTrack HS	
Including: Guide Track (1), Mounting brackets for 2,4 m distance (2), Shock absorber (3), Horizontal hose (4), Transformer (12)	
Track length m / ft	Part no
3.5 / 11.5	20804164
5.9 / 19.4	20804264
7 / 22.9	20806864
9.5 / 31.2	20804364
11.8 / 38.7	20804464
15.3 / 50.2	20804564
17.7 / 58.0	20804664

MagnaTrack HS extraction unit for low level (LL) pipes		
Including: Trolley (5), Balancer (6), Vertical hose (7), Electro-magnet assembly (9), Anchor plate (10), Disconnection box (11)		
Hose Ø vertical mm / inch	Hose length vertical m / ft	Part no
160 / 6.3"	4 / 13.1	20801864
160 / 6.3"	3 / 9.8	20801764
130 / 5.1"	4 / 13.1	20801664
130 / 5.1"	3 / 9.8	20801564

Nozzles for low level (LL) exhaust pipes (8a)				
Type	Distance exhaust pipe - anchor plate	Hose Ø mm / inch	Hose length mm / inch	Part no
HB 600 LL	Fixed	160 / 6.3"	600 ± 100 23.6 ± 4"	20802264
HB 900 LL	Fixed	160 / 6.3"	900 ± 100 35.4 ± 4"	20802464
Standard LL	Variable	160 / 6.3"	1000 ± 100 39.4 ± 4"	20802164
HB 600 LL	Fixed	130 / 5.1"	600 ± 100 23.6 ± 4"	20802364

Complete extraction unit for high level (HL) exhaust pipes including (8b):		
Extraction trolley, balancer, disconnection box, vertical hose, electro magnet assembly, HL nozzle, handle and anchor plate		
Hose Ø mm / inch	Hose length m / ft	Part no
160 / 6.3"	2 / 6.6	20801964

Accessories for high level nozzles		
Type	Description	Part no
Twist support (13)	Prevents nozzle from twisting and falling down	20374364
Extension handle (14)	1.1 m long	20374359

General Accessories: see other page

Technical specification

Track

Material Aluminum

Exhaust hose, horizontal

Compressible, with integrated cables to the electro-magnet assembly.
Temp. resistance -35 to +125°C cont., short term: +150°C
Material Neoprene with steel clip

Trolley

Material Aluminum
Wheels High density polyeten

Balancer

Lifting force 120 N
Material in cord Polyester
Material drum POM

Exhaust hose, vertical

Compressible, with integrated cables to the electro-magnet assembly.
Temp. resistance: -40 to +175°C cont., short term: +190°C
Material Hypalon with aluminum clip

Electro magnet

Voltage 24 V DC
Effect 1.9 VA
Material Nitro carburized treated steel

Anchor plate

Material Nedox treated steel

Disconnection box

Power indicator
Includes a deactivating electro-magnet

Transformer

Prim. voltage 100-230 V 1-phase AC
Sec. voltage 26 V DC
Effect 5 VA

IP Class

Internal Protection IP 67

Total weight

Track incl horizontal hose (Pos 1, 2, 3, 4, 12) 4.0 kg/m

Complete extraction unit incl LL nozzle (Pos 5, 6, 7, 8, 9, 10, 11) 17-19 kg

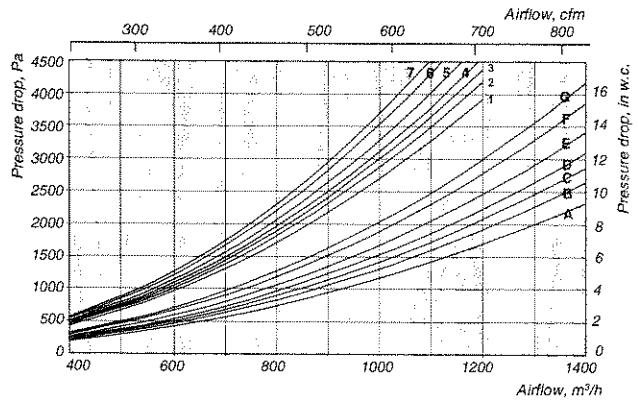
Environmental information

Recycling level 100 %
Energy consumption 4 W per extraction unit

Accessories

General accessories	Part no.
Anchor plate standard	20372003
Anchor plate 2 parts	20371853
Anchor plate 3 parts	20371868
Auto start /stop radio transmitter for vehicle	20801369
Auto start /stop radio receiver	20802689

Pressure drop



System pressure drop according to track length

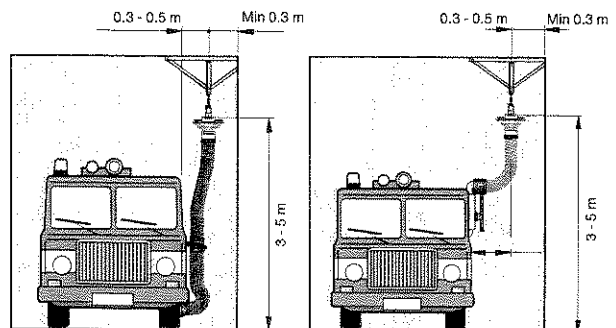
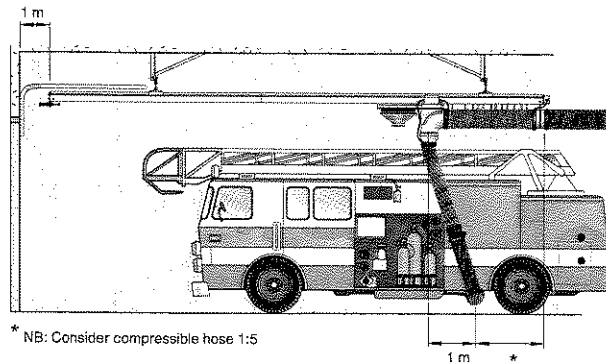
Ø 130	Ø 160	Length m / ft
1	A	3.5 / 11.5
2	B	5.9 / 19.4
3	C	7 / 22.9
4	D	9.5 / 31.2
5	E	11.8 / 38.7
6	F	15.3 / 50.2
7	G	17.7 / 58.0

Airflow recommendation:

Heavy vehicles: 1000 - 1200 m³/h (590 - 705 cfm)

Cars/Suvs: 400-600 m³/h (235 - 355 cfm)

Installation/mounting



Length of rail, m	No. of brackets
3.5	2
5.9	3
7	4
9.5	4
11.8	5
15.3	7
17.7	9

N.B. The nozzle for high level (HL) exhaust pipes must be installed at a higher level than the exhaust pipe. The nozzle must be pulled downwards at connection, which will activate the balancer.

Nederman

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