

EXHAUST RAILS



Part No. / Art. Nr. / Réf.:

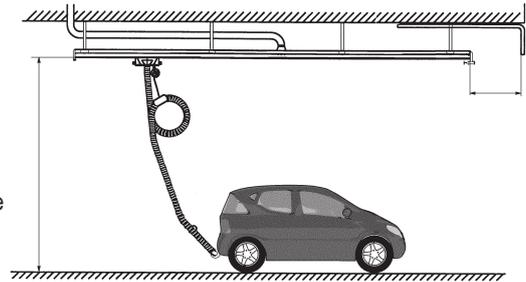
84530, 84531, 84532, 84533, 84534, 84535, 84536

EXHAUST RAILS

STRAIGHT RAIL FOR MOBILE EXHAUST GAS EXTRACTION

EN

Offers a complete solution to exhaust gas problems when vehicles are run in a straight, distinct distance indoors. The system consists of crabs equipped with exhaust hoses, running along an extraction rail mounted to the ceiling. The straight rail system is extendable according to requirements and can be designed to indefinite length. The system offers an energy saving and economical solution to vehicle workshops, loading bays and service halls as well as to other workshops with mobile pollution loads. A balancer attached to the crab supports the exhaust hose and lifts up the hose when not in use hence giving free walking and driving space under the hose. The system allows several crabs if required.



ADVANTAGES

EN

- Modular system.
- Great flexibility for indefinite expansion.
- Easily combinable with looped rail systems.
- Automatic disconnection from the vehicle's exhaust pipe at an appointed position by use of the Grabber nozzle.

DELIVERY

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The track is delivered in parts together with mounting instructions. Fan, fan-control device to be added individually depending on application.

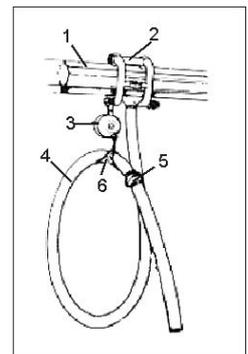
MODEL	PART NO	RAIL LENGTH	DUCT CONNECTION	EN
Straight rail system	84530	14,6 m	2 pcs	
Straight rail system	84531	17,4 m	3 pcs	
Straight rail system	84532	20,4 m	4 pcs	
Straight rail system	84533	23,2 m	4 pcs	
Straight rail system	84534	26,2 m	4 pcs	
Straight rail system	84535	29,0 m	4 pcs	
Straight rail system	84536	34,8 m	4 pcs	

COMPONENT PARTS; CRAB

EN

The straight rail can be equipped with either an internal and external crab. The internal crab can only be used in connection with straight rails and offers the most economical solutions. If future demands require a looped rail you should choose an external crab. The external crab is less sensitive to uneven loads thanks to its wheel suspension.

1. Profile
2. Crab
3. Balancer
4. Exhaust hose
5. Quick release coupling
6. Suspension halter



MOUNTING

EN

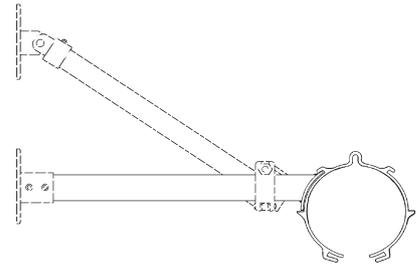
Measure the mounting height. The height of the rail is determined by the ceiling height and the vehicle height, the Straight rail should not be positioned under a level of 3,5-5 m. The rail should be positioned 1-1,5 m from the gate opening and 0,5 m to the side of the vehicle.

EXHAUST RAILS

FLEXIBLE SUPPORT SYSTEM

EN

The standard STP support system, included in all models. The support has a number of parts to make it complete; e.g. Support pipe, flexible and fixed construction couplings to fit the existing wall and ceiling structure. Maximum distance between support legs is 6,0 m.



SPACE REQUIREMENTS

EN

The top face of the rail is to be situated 5 metres over the floor in order to allow 2 metres free space below the lifted hose.



PRESSURE LOSS AND CALCULATION

EN

The pressure drop in an air duct system or a hose is mainly determined by the air velocity in the system. The higher the velocity is, the higher the pressure loss will be. And the higher the pressure loss is, the less air the fan will extract. The diagram 6 "Pressure loss chart for fans" is pointing out a suitable fan regarding the relationship between airflow (m³/h) and pressure loss (Pa). In a ventilation system with many extraction devices and long suction ducts the pressure loss can be kept down by increasing the size of the ducting and you will achieve an even velocity in the whole system. See Diagram 4 and 5.

Recommended values Airflow:

Cars 360 m³/h = 100 l/s

Trucks 1080 m³/h = 300 l/s

Air velocity in ducting: 10-15 m/s.

Hose dimension:

Ø 100 mm at airflow < 540 m³/h

Ø 125 mm at airflow < 810 m³/h

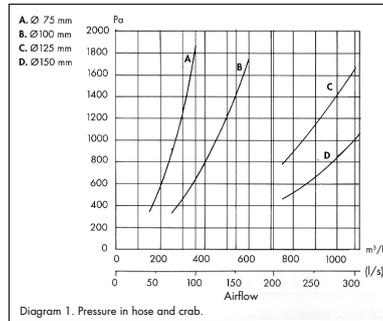


Diagram 1. Pressure in hose and crab.

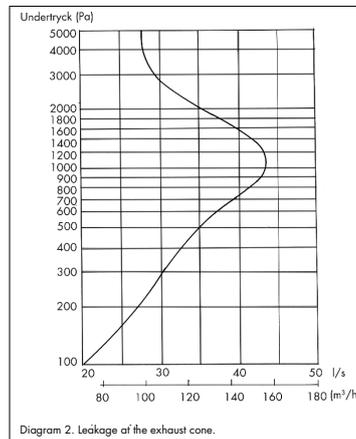
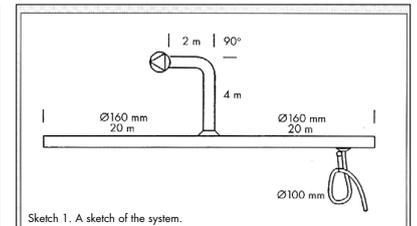
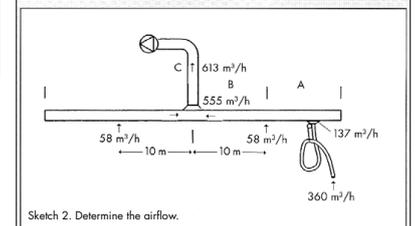


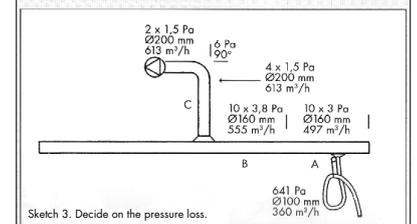
Diagram 2. Leakage of the exhaust cone.



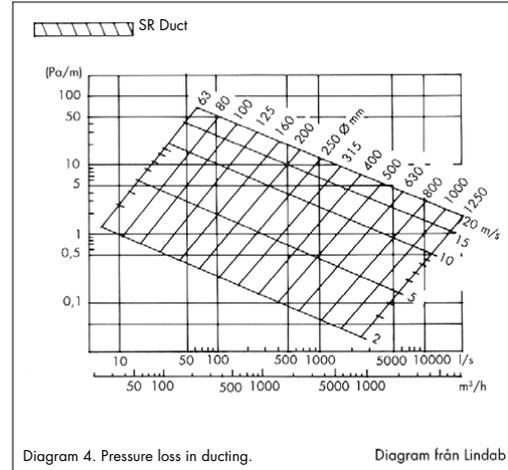
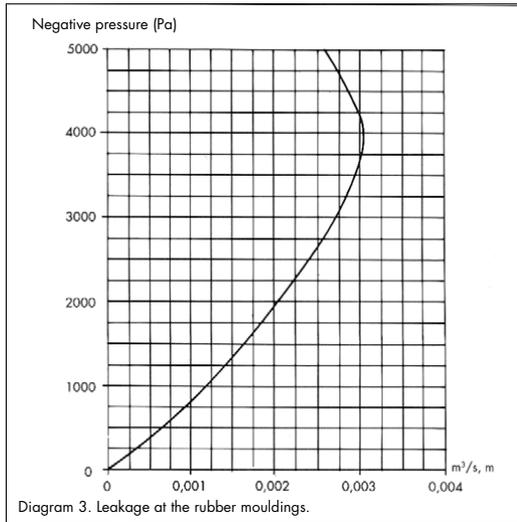
Sketch 1. A sketch of the system.



Sketch 2. Determine the airflow.



Sketch 3. Decide on the pressure loss.



1. Start by making a simple sketch of the position of the hose reels and the fan. See sketch 1.
2. Decide of the air volumes. See text under title Pressure loss Calculation. In this exercise we choose 360 m³/h.

3. Decide on the crab. In this exercise we will use a crab with hose diameter 100 mm and length 5 m. Recommendations for the hose diameter are given on page 3.

4. Determine the pressure loss in the crab. See diagram1. With diameter 100 mm and airflow 360 m³/h the pressure loss will be 641 Pa.

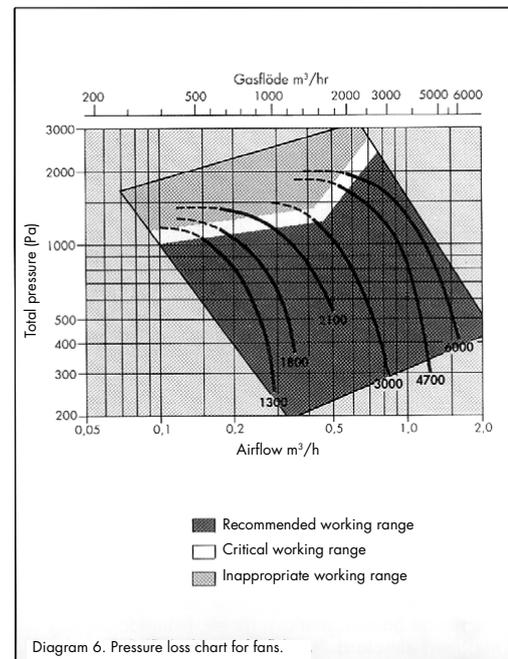
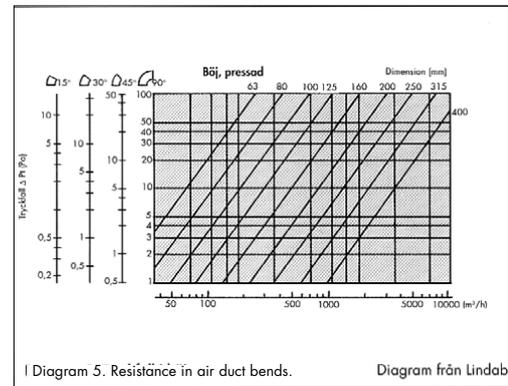
5. Calculate the leakages. See sketch 2. The leakage at the exhaust cone (at 641 Pa) according to diagram 2:137 m³/h. Leakage at the rubber mouldings (at 641 Pa) according to diagram 3: 58 m³/h. (2,9 m³/h, m x 20 = 58).

6. Calculate the pressure loss for each one of the sections A-C. See sketch 3. Section A: 360 m³/h + 137 m³/h = 497 m³/h. See diagram 4. With Ø160 mm and airflow 497 m³/h the pressure loss is 3 Pa/m. 3 Pa/m x 10 m = 30 Pa. Section B: 497 m³/h + 58 m³/h = 555 m³/h. See diagram 4. With Ø160 mm and airflow 555 m³/h the pressure loss is 3,8 Pa/m. 3,8 Pa/m x 10 m = 38 Pa. Section C: 555 m³/h + 58 m³/h = 613 m³/h. See diagram 4. With Ø200 mm and airflow 613 m³/h the pressure loss is 1,5 Pa/m. 1,5 Pa/m x (2 + 4m) = 9 Pa.

7. Now look at the 90° bend in the system. Bends will of course have the same diameter as the ducting adjoining them; here it is 200 mm. 613 m³/h is to pass through the bend. See diagram 5. The pressure loss will be 6 Pa.

8. Add all of the noted Pa-values. (Crab) 641 Pa + (Section A) 30 Pa + (Section B) 38 Pa + (Section C) 9 Pa + (Bend) 6 Pa = 724 Pa.

9. Select your fan. See diagram 6; Pressure loss chart for fans, and select a fan that meets your requirements of 613 m³/h and 724 Pa. The curve to right of the intersection indicates the suitable fan; in this case FS-1300 m³/h => Alentec&Orion fan 84320

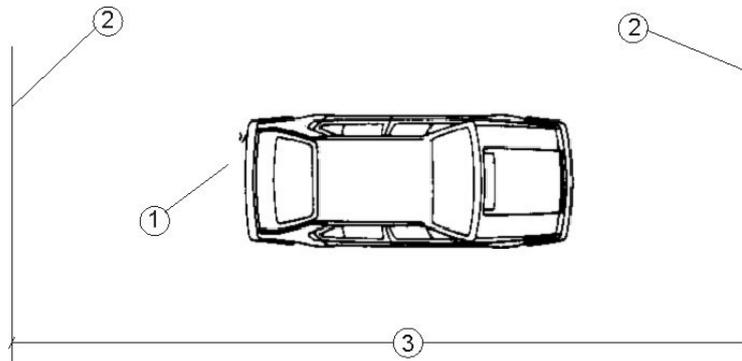


Drive thru measurement procedure

1. Exhaust pipe:
2. Gate:
3. Distance entrance gate-exit gate:

Determine the position of the exhaust pipe (1) on the vehicle, which side and diameter. The gate (2) height and width is measured. Check what type of gate, slide gate or overhead gate. Check at what height the exhaust rail track can be installed.

Measure the distance between the entrance gate and exit gate (3) to determine required length of exhaust rail.
The required length is determined by taking the distance entrance gate-exit gate minus 3.0m.



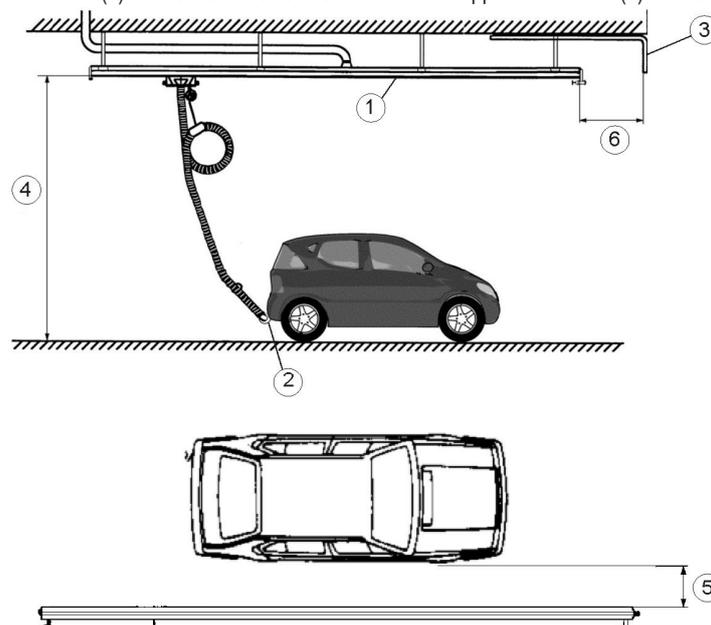
Track location procedure

1. Exhaust rail profile:
2. Exhaust pipe:
3. Door:
4. Height of track:
5. Distance to vehicle:
6. The longitudinal track:

The exhaust rail track (1) is mounted at a height (4) of 3.5-4.5 m over the floor on the side where the vehicles exhaust pipe (2) is situated.

The track is often mounted immediately beside the door (3).

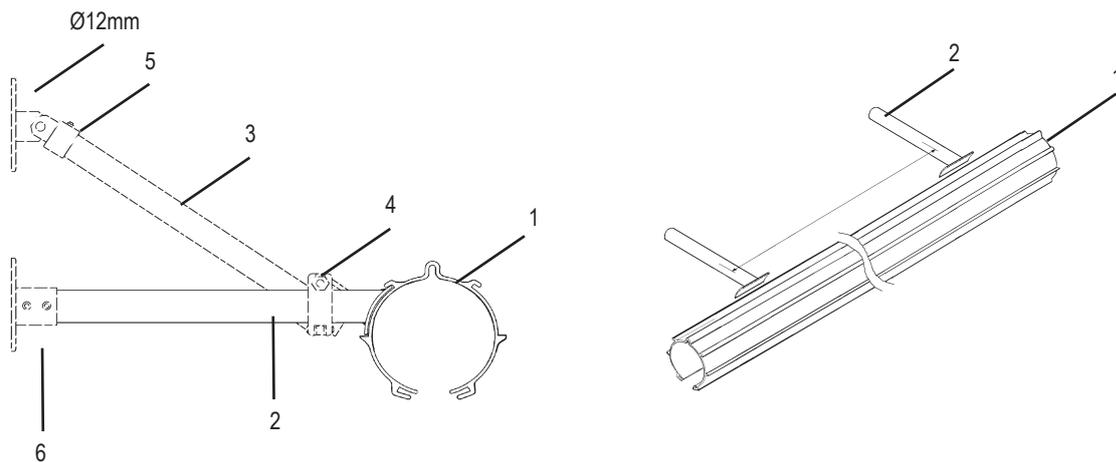
The exhaust rail track is placed 400-600 mm (5) from the truck-side of the vehicle and approx. 1500 mm (6) from the door.



Horizontal (Wall) suspension

1. Exhaust rail profile
2. Horizontal support leg. (Standard supply)
3. Side brace. (Not standard supply)
4. Turnable double construction coupling. (Not standard supply)
5. Turnable construction coupling wall. (Not standard supply)
6. Fixed construction coupling wall. (Not standard supply)

Put the components of the rail under the intended position, alternatively mark the floor. Check possible support leg position with a maximum distance of 6 m between each support. (Check space availability for coiled air hose and its support.) Mark up in a line and bolt or weld the horizontal support legs. Each horizontal support leg must be side braced upwards or downwards.



Splicing the profile

1. Exhaust rail profile
2. Splicing sleeve

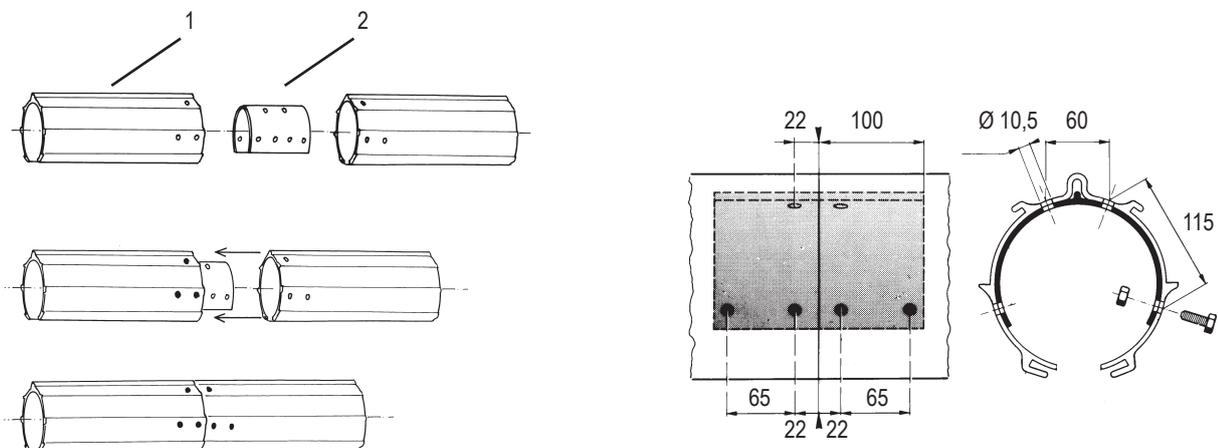
Put the components of the rail under the intended position on trestles or similar with the open side downwards.

Line and fix the rail profiles so that the extended rail edges are joined to a continuous length.

Fix the splicing sleeve with a clamp or similar, drill according to the drawing below with a 10.5 mm drill and mount the splicing sleeve to one of the rail profiles.

Assemble the other rail profile, straighten the splicing sleeve, drill and mount together. Every splice is mounted together with 12 pcs of 10x25 mm bolts.

Grind the edges inside the splice where the internal crab will travel to achieve smooth running.



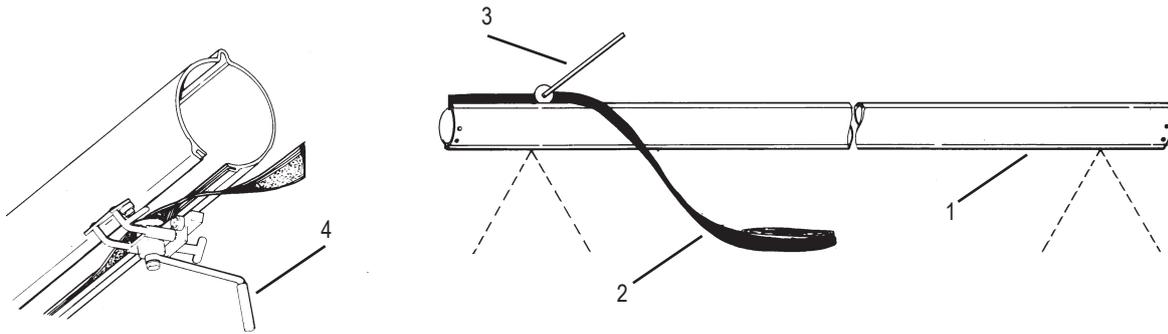
Mounting of rubber seal

1. Exhaust rail profile
2. Rubber seal
3. Tool no. 11600
4. Tool no. 84225

Turn the rail profile with the opening upwards.

If the seal must be joined it must be done before mounting. The rubber seal should overlap and be cut together with a sharp knife. The rubber seal ends are to be fixed together with glue; Loctite no. 495 or similar rubber glue. NOTE! The rubber seal is to be greased with liquid soap before mounting.

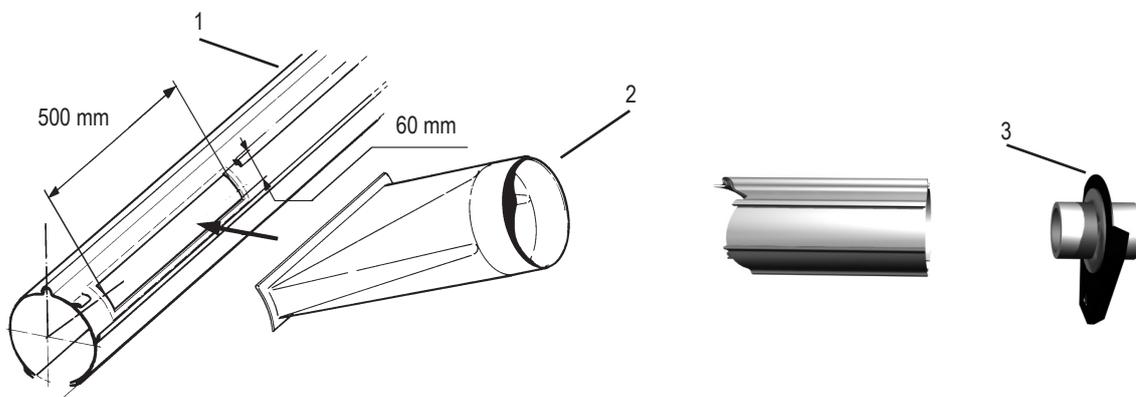
The rubber seal is mounted with tool no. 11600. The rubber seal is easily mounted with tool no. 84225, the rail profile hanging in its support legs.



Duct connection

1. Exhaust rail profile:
2. Connection socket, d=200 mm:
3. End socket with duct connection, d=160 mm:

The rail is connected to the fan and the duct system by the connection socket (2) or the end connection socket (3). The connection socket is mounted by cutting a hole with a length of 500 mm in the rail profile's side. The connection socket is mounted with a rivet or self drilled screws and sealed with elastic compound. The end socket with duct connection, d=160 mm, is mounted according to "Mounting instruction; End sockets and suspensions"



Mounting of end sockets and suspensions

1. Exhaust rail profile:
2. End socket with hydraulic shock absorber
3. End socket

Position the end sockets in the centre.

Drill with a 8.5 mm drill according to the drawing below and mount end socket with hydraulic shock absorber at the exit side and mount end socket with cover or end socket with duct connection (see mounting instruction; Duct connection) with 4 pcs of M8x20 bolts.

The hydraulic shock absorber mounted is according to the picture (4)

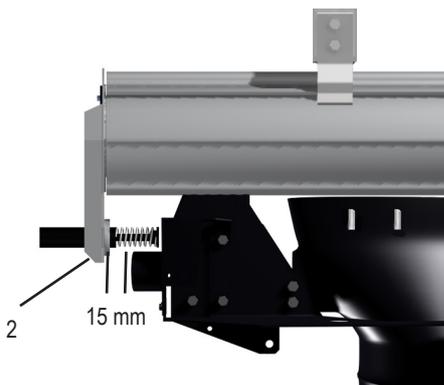
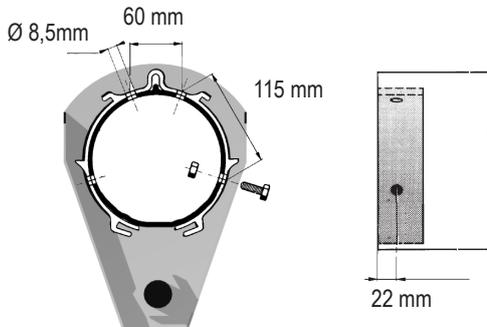
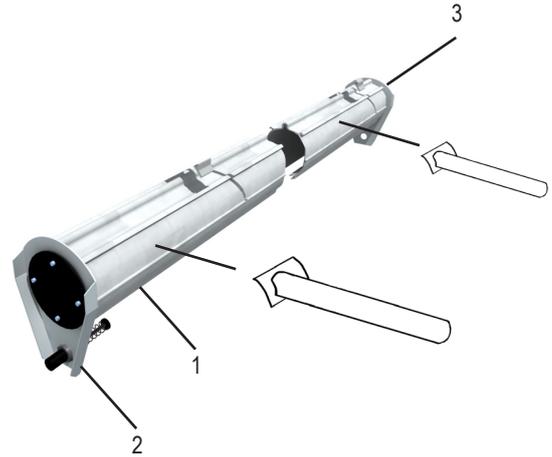
Side Suspension

Position the exhaust-rail.

Put the rails together to intended length .

Attach the suspensions to the roof.

Plummet the position of the supports and attach the Side Suspensions to the rail.



Lifting the rail

Always use approved lifting equipment.

Our recommendation is to lift a continuous rail up to 30.0 m max. with a max. distance between the lifting points of 10.0 m.

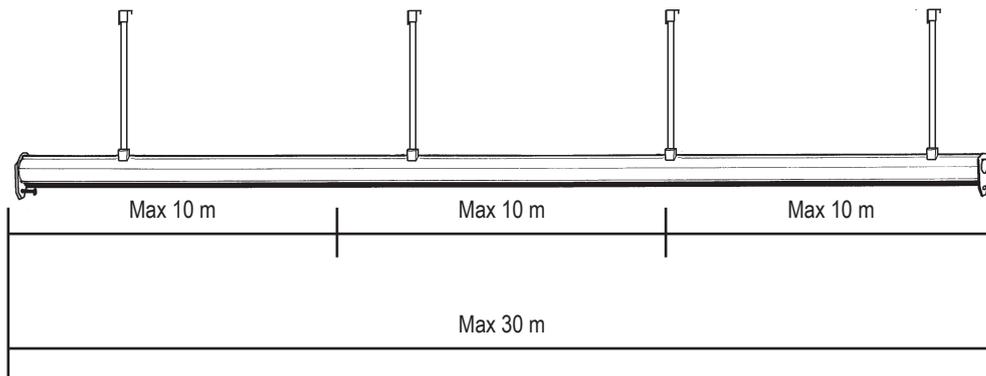
NOTE! It is very important to lift the rail evenly to avoid damage to the splicing sleeves.

SIDE SUSPENSION

The horizontal support legs is connected to the vertical support legs using couplings.

Adjust the rail both vertically and horizontally to get it level.

Tighten the couplings thoroughly and if required drill and screw a safety bolt through the coupling and the support leg.



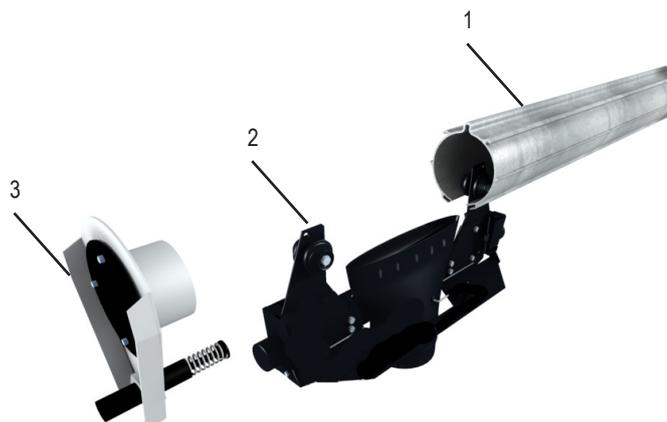
Mounting of internal crab

1. Exhaust rail profile:
2. Internal Crab:
3. End socket:

Take off the end socket from the rail end.

Put the internal crab in the profile.

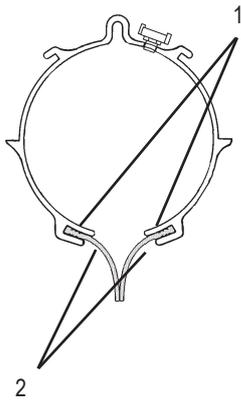
Refit the end socket.



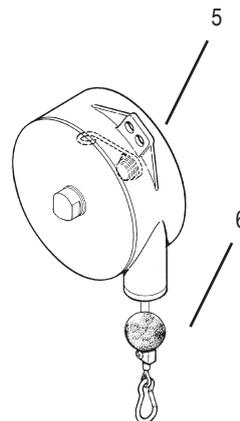
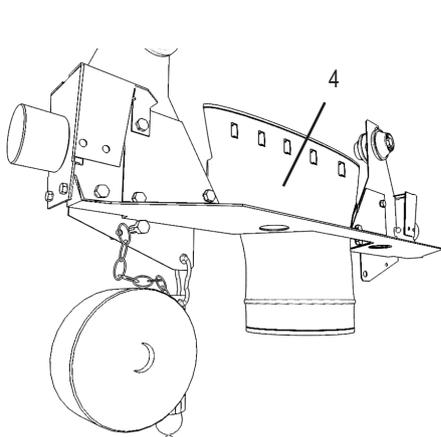
Routine check and maintenance shall be performed according to the following schedule:

0-500 call outs/year every 16th week
500-1500 call outs/year every 12th week
1500-3000 call outs/year every 8th week
3000+ call outs/year every 4th week

1. Clean the inside of the rail where the crab wheels are running.
2. Clean the inside of the rubber seal
3. Check mechanical damages and oil leakage on the exit end-stop with hydraulic shock absorber.



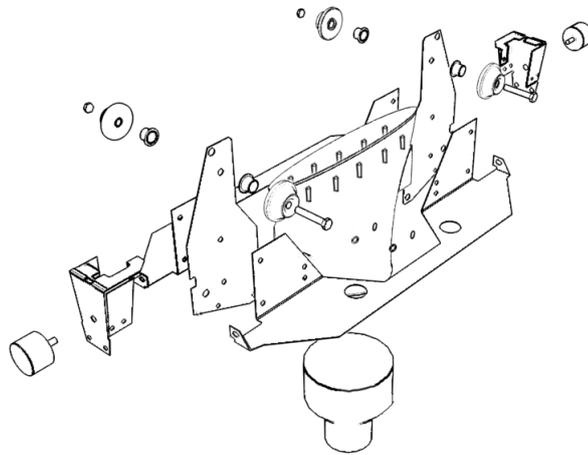
4. Check the internal crab, clean the inside of suction cone.
5. Check the balancer support and wire.
6. Balancer spring tension is to be adjusted when needed, see manual for balancer.



Crab

Check every 3 month:

1. Clean the rail where the crab wheels are running.
2. Clean the inside of the rubber seal and lubricate with teflon/silicon spray when required.
3. Check the internal crab, clean the inside of the suction cone.
4. Clean the rollers on the suction cone and grease moderately with thin oil.
5. Check the rubber shock absorber on the crab for damages and their position.
6. Check and/or adjust the open gap between the profile rail and the travelling crab wheel. This must be done at the point on the rail where it has its largest cross section, normally by the splicing sleeve. The axel (1) at the guide wheels (2) are exentric and should be turned to achieve correct tolerance, approximate 0.5 mm on both sides. Lock the axel with the locking plate (3). By adjustment, the suction cone (5) position must be centered in the opening of the suction rail (4)..

Internal crab**External crab**