

Akasion fixing system

10.2 Akasion fixing system

In general the Akatherm HDPE pipe system is fixed to the roof construction using the Akasion fixing system with rail.

10.2.1 Rail installation

First the rail suspension brackets (Art. Nr. 700020) are suspended from the roof using threaded rods. The rail (Art. Nr. 700000) can be simply installed ("single hand closing clip") in the suspension bracket. The rail is connected using the rail connectors (Art. Nr. 700010). Onto the rail the rail brackets (Art. Nr. 72xx10) are mounted as either anchor point bracket or guide bracket using the easy single hand-closing clip. The bracket distances can be found in table 10.11.

d_1/DN (mm)	Max. bracket distance L_1 (m)	Max. distance rail suspension brackets L_2 (m)	Max. distance between anchorpoints L_3 (m)
40	0,80	2,5	5
50	0,80	2,5	5
56	0,80	2,5	5
63	0,80	2,5	5
75	0,80	2,5	5
90	0,90	2,5	5
110	1,10	2,5	5
125	1,25	2,5	5
160	1,60	2,0	5
200	1,65	1,65	5
250	1,65	1,65	5
315	1,65	1,65	5

Table 10.11 Bracket distances Akasion fixing system

Rule of thumb for bracket distance:

40-75 mm bracket distance 0,8 m
90-315 mm bracket distance $10 \times d_1$

For installation with support trays the following bracket distances must be applied:

40-75 mm bracket distance 1,2 m
90-160 mm bracket distance $15 \times d_1$

The maximum dimension with support trays is 160 mm

When using the diameters 200, 250 and 315 mm the bracket has to be mounted within 0,20 m from a rail suspension bracket, see illustration 10.62.

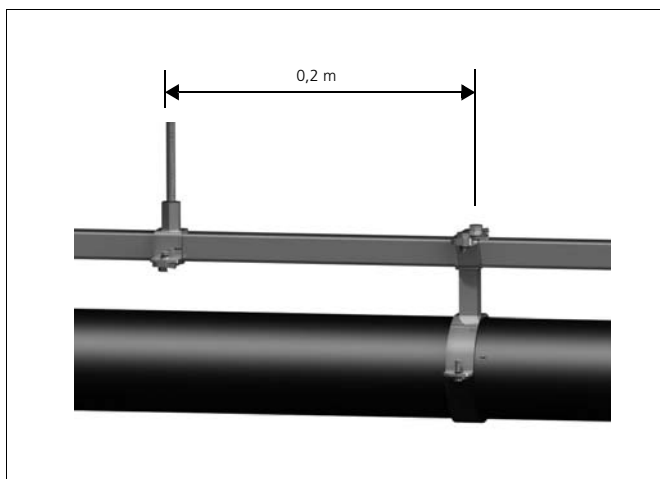


Illustration 10.62

Depending on the roof construction it can be necessary to alter the distance between the rail suspension brackets or to install an additional rail for the lightweight roof constructions. In table 10.12 the weight of a fully filled pipe including brackets is listed. The loads per rail suspension bracket are also listed.

d_1/DN (mm)	kg/m	kg/bracket
40	3,3	8,3
50	4,00	10,00
56	4,50	11,30
63	5,20	13,00
75	6,50	16,30
90	8,50	21,30
110	11,60	29,00
125	14,30	35,80
160	22,10	44,20
200	34,00	56,10
250	51,80	85,50
315	80,80	133,30

Table 10.12 Weight of fully filled pipe including brackets

10.2.2 Connection to building

To prevent movement caused by dynamic forces the rail has to be connected to the construction of the building every **12 m** (see illustration 10.63 and 10.64) using standard bracketing.



Illustration 10.63 Connection to metal beam

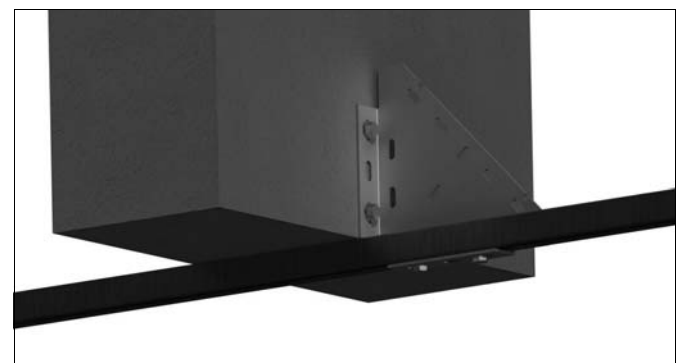


Illustration 10.64 Connection to concrete beam

When the rail is interrupted for example at a wall penetration, the rail has to be fixed to the building construction at each side (see illustration 10.65). This rail has to be fixed also to the building construction at the beginning and end of the horizontal pipe sections or before a change of direction. The same method of installation is also applicable when changing from horizontal to vertical direction into the downpipe. Standard bracketing can be used for this method of installation.

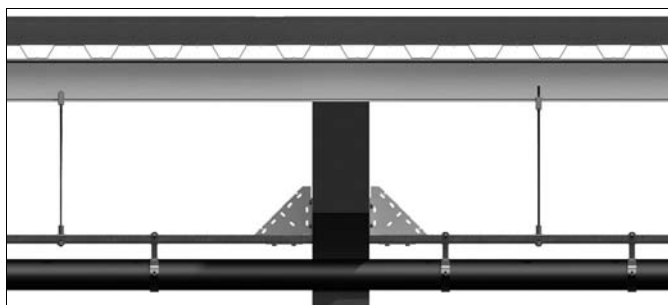


Illustration 10.65 Connection at wall penetration

10.2.3 Anchor points

The Akasion fixing systems' anchor points in the horizontal pipe work withstand the expansion and contraction forces of the PE pipe system in such a way that a rigid bracket construction is made. This results in no transfer of the expansion force onto the building.

Anchor point up to dimension 160 mm

Up to the diameter 160 mm an anchor point consists of two electrofusion couplers (Art. Nr. 41xx95) (1) and one rail bracket (Art. Nr. 72xx10) (2), see illustration 10.66.

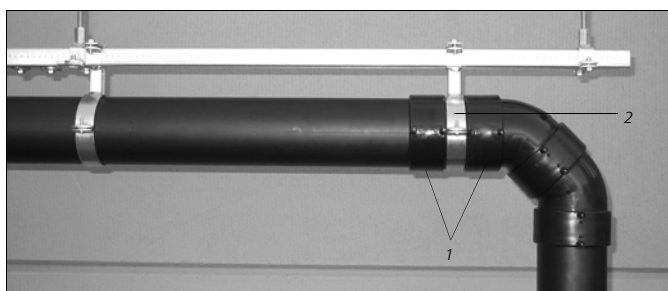


Illustration 10.66 Horizontal anchor point up to 160 mm

- 1 Art. Nr. 41xx95
- 2 Art. Nr. 72xx10

Anchor point 200, 250 and 315 mm

From diameter 200 mm and above the anchor point consists of one electrofusion coupler (Art. Nr. 41xx95) (1) and two rail brackets (Art. Nr. 72xx10) (2) which are connected using a halter (Art. Nr. 730020) (3) for extra stability (see also illustration 10.67).



Illustration 10.67 Horizontal anchor point 200, 250 and 315 mm

- 1 Art. Nr. 41xx95
- 2 Art. Nr. 72xx10
- 3 Art. Nr. 730020

An anchor point should be installed:

- Before every branch 45°
- Before every change of direction
- At the beginning and end of the collector (detail A in illustration 10.68)
- Every 5 m (detail C in illustration 10.68)

Between the anchor point the guide brackets are positioned in conformity with the standard bracket distances (detail B in illustration 10.68).

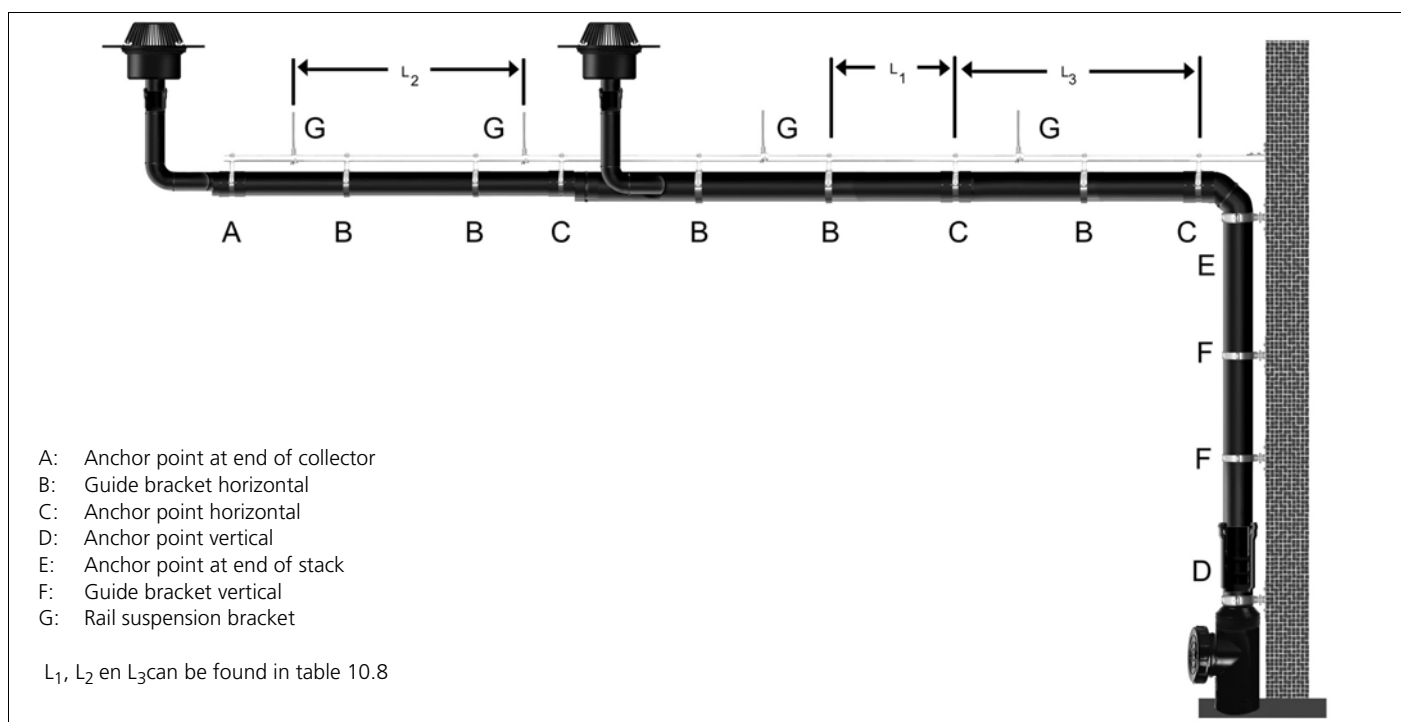


Illustration 10.68 Akasion fixing system

Akasion fixing system

10.2.4 Fixing system underneath concrete ceilings

When the system is installed underneath a concrete ceiling the brackets must be fit directly to the ceiling. Suitable wall fixation products replace the rail and rail suspension brackets. In case of an anchor point the rail bracket (Art. Nr. 72xx10) is replaced by a pipe bracket for wall fixing (Art. Nr. 70xx78/70xx80) with the corresponding mounting plate (Art. Nr. 709478/709480), see illustration 10.69.

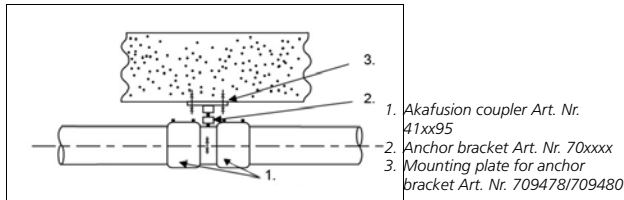


Illustration 10.69 Anchor bracket with 2 Akafusion couplers Art. Nr. 41xx95

The anchor bracket must be fixed to the building in such a way that it can resist the forces caused by the expansion or contraction of the pipe.

With the dimensions 200, 250 and 315 mm the halter (Art. Nr. 730020) is obsolete.

When used as a guide bracket, the bracket (Art. Nr. 72xx10) is replaced by a pipe guide bracket (Art. Nr. 70xx10/70xx80) and the corresponding mounting plate (Art. Nr. 709410/709480), see illustration 10.70. The guide bracket is used to support the pipe and to prevent the pipe from buckling sideways in a rigid installation. The pipe can move freely in the bracket.

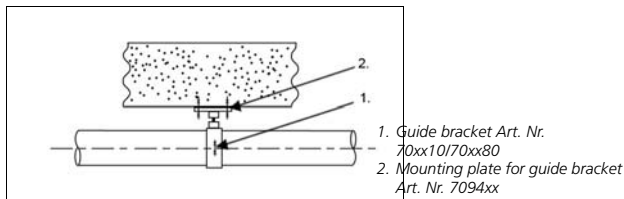


Illustration 10.70 Guide bracket

A standard threaded rod is used for the connection between bracket and mounting plate.

The pipe system can be installed using only brackets or using brackets with additional support trays.

Horizontal installation with anchor points

The bracketing distances for horizontal installation with anchor points can be found in table 10.13.

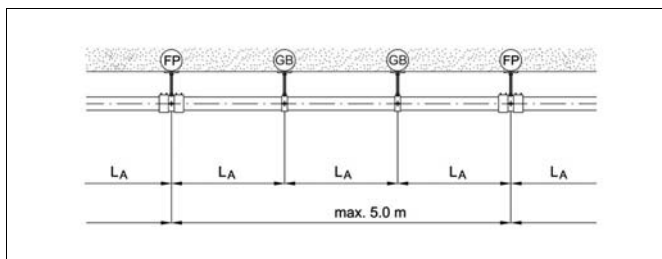


Illustration 10.71 Horizontal installation with anchor points

GB = guide bracket
FP = anchor point
 L_A = bracket distance

d_1	L_A
50	0,8 m
56	0,8 m
63	0,8 m
75	0,8 m
90	0,9 m
110	1,1 m
125	1,3 m
160	1,6 m
200	2,0 m
250	2,0 m
315	2,0 m

Table 10.13 Bracket distances horizontal installation with anchor brackets

Horizontal installation with anchor points and support trays

This horizontal installation with anchor points is extra supported by support trays. The distance between the brackets can therefore be larger than without support trays. The support trays are installed on to the pipe with straps. For distances see table 10.14.

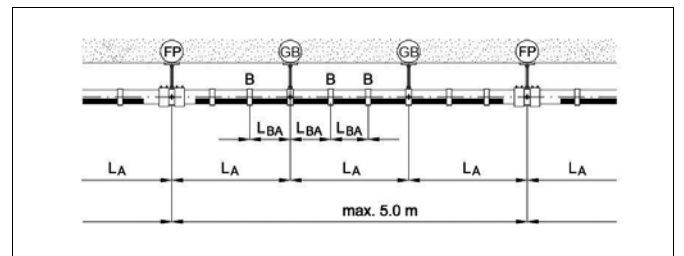


Illustration 10.72 Horizontal installation with anchor points and support trays

GB = Guide bracket
FP = Anchor point
 L_A = Bracket distance
 L_{BA} = Spacing for straps

d_1	L_A	L_{BA}
50	1,0 m	0,5 m
56	1,0 m	0,5 m
63	1,0 m	0,5 m
75	1,2 m	0,5 m
90	1,4 m	0,5 m
110	1,7 m	0,5 m
125	1,9 m	0,5 m
160	2,4 m	0,5 m
200	3,0 m	0,5 m
250	3,0 m	0,5 m
315	3,0 m	0,5 m

Table 10.14 Bracket distances horizontal installation with anchor brackets and support trays

The positioning of the brackets is identical to the bracketing system with rail.

An anchor point should be installed:

- Before every branch 45°
- Before every change of direction
- At the beginning and end of the collector (detail A in illustration 10.68)
- Every 5 m (detail C in illustration 10.68)

Between the anchor point the guide brackets are positioned in conformity with the standard bracket distances (detail B in illustration 10.68).

10.2.5 Fixing system to wall

A system fixed to the wall is installed using the standard method with expansion sockets. The bracketing distance for vertical installation is in general 1,5 times the distance of the horizontal bracketing (see table 10.15). There is no separate bracket immediately in front of an expansion socket because the pipe does not sag at this location and the insertion is always in line.

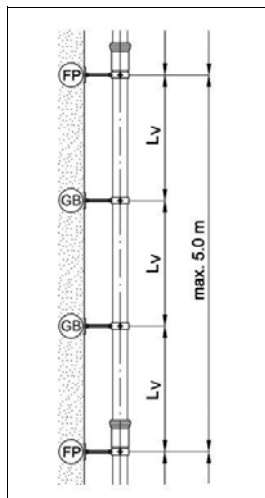
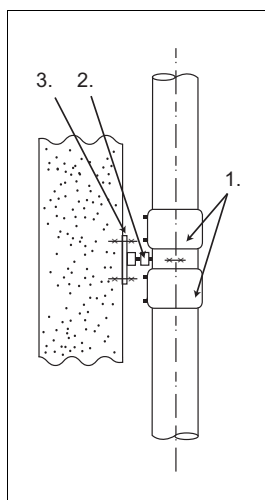


Illustration 10.73 Vertical installation to the wall

d_1	L_V
50	1,0 m
56	1,0 m
63	1,0 m
75	1,2 m
90	1,4 m
110	1,7 m
125	1,9 m
160	2,4 m
200	3,0 m
250	3,0 m
315	3,0 m

Table 10.15 Bracket distances vertical installation to the wall

At the top of the vertical pipe (stack) an anchor point is installed (detail E in illustration 10.68). This anchor point consists of an anchor bracket and a mounting plate.

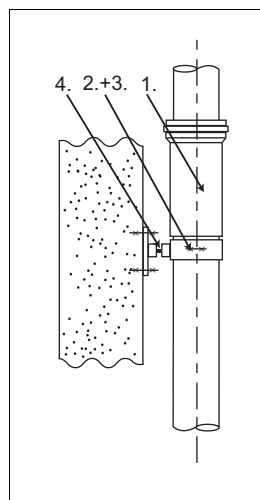


1. Akafusion coupler Art. Nr. 41xx95
2. Anchor bracket Art. Nr. 70xxxx
3. Mounting plate for anchor bracket Art. Nr. 709478/709480

Illustration 10.74 Anchor bracket with 2 Akafusion couplers Art. Nr. 41xx95

The anchor bracket must be fixed to the building in such a way that it can resist the forces caused by the expansion or contraction of the pipe.

At the bottom of the vertical pipe (stack) and every 5 m an anchor point with expansion socket is positioned to accommodate the expansion (detail D in illustration 10.68). The anchor point consists of an expansion socket, an anchor bracket and a mounting plate (see illustration 10.75). A clamp liner is used for a better grip on the pipe (expansion socket Art. Nr. 40xx20 only).

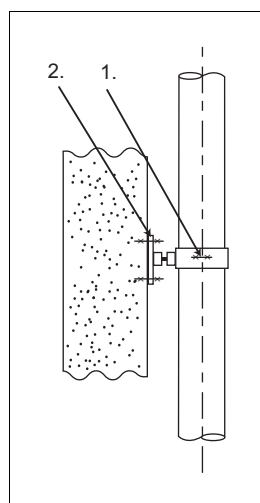


1. Expansion socket Art. Nr. 40xx20
2. Clamp liner Art. Nr. 70xx15 (expansion socket Art. Nr. 40xx20 only)
3. Anchor bracket Art. Nr. 70xxxx
4. Mounting plate for anchor bracket Art. Nr. 709478/709480

Illustration 10.75 Anchor bracket with expansion socket Art. Nr. 40xx20/42xx20

Between the anchor points the guide brackets (Art. Nr. 70xx10/70xx80) with mounting plate (Art. Nr. 709478/709480) are positioned in conformity with the standard bracket distances (detail F in illustration 10.68). A standard threaded rod is used for the connection between bracket and mounting plate.

The guide bracket is used to support the pipe and to prevent the pipe from buckling sideways in a rigid installation. The pipe can move freely in the bracket.



1. Guide bracket Art. Nr. 70xx10/70xx80
2. Mounting plate for guide bracket Art. Nr. 7094xx

Illustration 10.76 Guide bracket