



פלסימ תשתיות בע"מ, קבוץ מרחביה, 19100 www.plassim.co.il

**צנרת HDPE של פלסימ
ואביזרי AKATHERM
מערכת צנרת ואביזרים מפוליאתילן
למערכות לסילוק שפכים במבנים**



כללי

- מערכות HDPE של פלסטים/AKATHERM מיועדות למערכות לסילוק שפכים בתוך ביניינים.
 למערכות פוליאתילן יתרונות רבים, ביניהם:
- עמידות בטמפרטורות עבודה מ- 40 °C עד 100 °C (ללא לחץ)
 - עמידות טובה בקורוזיה
 - עמידות טובה בכימיקלים
 - חיבור בריתוך – מערכת אטומה

תקנים

- פלסטים מייצר צינורות לסילוק שפכים בהתאם לדרישות התקנים המקובלים בעולם ובארץ:
- ת"י 4476 צינורות ואביזרים מפוליאתילן לסילוק שפכים בתוך מבנים
 - ISO8770 Plastic piping systems for soil and waste inside buildings – Polyethylene
 - EN1519 Plastic piping systems for soil and waste inside buildings – Polyethylene

חומרי גלם

צינורות HDPE מיוצרים מחומרי פוליאתילן בצפיפות גבוהה. להלן תכונות טיפוסיות לחומר גלם:

ערך	שיטה	יחידה	התכונה
>940	ISO 1183	kg/m ³	צפיפות (23 °C)
0.2 – 1.1	ISO 1133	g/10 min	(5 kg, 190 °C) MFR
>700	ISO 527	N/mm ²	מודול אלסטיות
>350	ISO 527	%	התארכות בשבר
>20	EN728	min	OIT 200 °C
0.18	ISO11359	mm/m °C	מקדם התפשטות טרמית
2 – 2.5	ISO6964	%	תכולת פיח

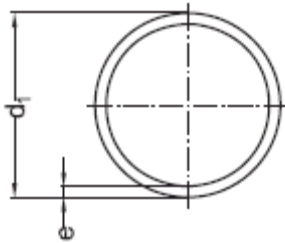
צורת פלסטים מיוצרת מחומרים טבעיים בתוספת חומרים גרוסים מייצור עצמי בלבד. אין שימוש בחומר ממוחזר.

אביזרים ושיטות חיבור

צנרת HDPE ניתנת לחיבור במספר שיטות – ריתוך פנים (But-Fusion), ריתוך חשמלי (Electro-Fusion) או ע"י שקע/תקע.

פלסים המפיצים הבלעדיים של החברה ההולנדית AKATHERM בישראל בנושא אביזרי חיבור לצנרת HDPE לשפכים ביתיים. לפלסים מלאי גדול של אביזרים למטרה זו. למידע על אביזרי AKATHERM ראה הקטלוג הטכני בהמשך.

מידות צינורות



עובי דופן (מ"מ) e	סדרה	קוטר (מ"מ) d
3.0	S12.5	32
3.0	S12.5	40
3.0	S12.5	50
3.0	S12.5	63
3.0	S12.5	75
3.5	S12.5	90
4.2	S12.5	110
4.8	S12.5	125
6.2	S12.5	160
6.2	S16	200
7.7	S16	250
9.7	S16	315

הצינורות מסופקים באורך 5 מטר.



 **akatherm**

HDPE Drainage
Technical data and dimensions



System overview

The Akatherm HDPE drainage system has been used for more than 40 years in areas of application where the drainage system has to meet high standards of durability and reliability.

These standards are met by combining the excellent material properties of HDPE with homogeneous welded joints.



The range covers an extensive package of pipes and fittings in the diameters 75-315 mm.

Their high impact resistance + wide temperature range make Akatherm HDPE pipe system extremely suitable for draining waste water in utilities constructions like hospitals, hotels, schools as well as residential buildings.



Properties
HDPE Drainage
Material properties

	Unit	Test method	Value
Density at 23°C	g/cm ³	ISO 1183	0,954
Elasticity modulus	N/mm ²	ISO 527	850
Bending creep modulus	N/mm ²	DIN 54852-Z4	1000
Tensile strength at 23°C	N/mm ²	ISO 527	22
Elongation at break	%	ISO R 527	300
Linear expansion coefficient	mm/mK	DIN 53752	0,13 tot 0,19
Indentation hardness	N/mm ²	ISO 2039	36 tot 46
Inflammability temperature	°C	-	~350
Heat conductivity	W/m . K	DIN 52612	0,37 tot 0,43
Shore hardness		ISO 868	61
Crystallite melting range	°C		125 tot 131
Application temperature without mechanical stress	°C	-	-40 tot +100

	Properties PE	Benefits
	Impact-resistant and tough	Unbreakable at temperatures > 5°C
	Elastic	Suitable for underground pipes through adjustment to local ground movement
	Thermal resistant	Application possible between -40°C and 100°C
	Smooth internal wall	Low blockage risk due to low deposit/residue effects
	Wear resistant	Lower costs due to relatively long life
	Weather-resistant / UV resistant	Application in open air unrestricted through colouring with carbon black
	Poor heat conductivity	No condensation during short periods of cooling
	Non-toxic	Environmental friendly
	Insulating	Non-conductive
	Highly suitable for welding	Easy installation using butt welding and electrofusion techniques
	Homogeneous welded joints	Pull tight and leak proof
	Prefabrication	Fast cost-saving installation
	Light in weight	Cost-saving in transport and handling

Standards and quality

HDPE Drainage

Akatherm specialist drainage systems are developed and produced according to the certified quality system ISO 9001:2000. All our products are complying with EN 1519, ISO 8770 and other relevant standards. The system has obtained numerous national approvals.

Standards and approvals

Country	Certificate of approval	Standard
The Netherlands		NEN 7018 NEN 7008
Belgium		NBN EN 1519
Germany		DIN EN 1519 DIN 19537
Denmark		NKB Product Rules No. 8
Sweden		NKB Product Rules No. 8
France		NF EN 1519
Italy		UNI EN 1519
Austria		ÖNORM EN 1519
Australia		MP52 SPEC. 005

Akatherm International and ISO 9001

Akatherm International's quality management system is according to ISO 9001:2000 and is certified by Lloyds Register Quality Assurance.

The quality system comprises the complete work process at Akatherm. Not only the development and production is recorded but also the marketing and delivery of plastic pipe systems.



HDPE Drainage

Joining methods

Electrofusion



Electrofusion, the most simple and rapid joining technique, is mainly used on construction sites for a highly efficient method of assembly for pipes, fittings and prefabricated sections.

Electrofusion couplers

The PE range includes couplers in the diameters 75 to 315 mm. The couplers are extremely suitable for applications in waste water and rain-water drainage, with the following features:

1. Injection molded with excellent dimensional accuracy and stability
2. One welding indicator on each welding surface for checking both welding connections
3. Centre stops easy to remove in order to use the coupler as a slide-over coupler
4. Resistance wires fixed to the surface for an optimal heat transfer and therefore a high quality welding connection
5. Yellow edge surrounding the welding indicators of the diameters 200, 250 and 315 mm for better visibility

Electrofusion control box

The akafusion control box CB315 can not only weld Akatherm electrofusion couplers in the diameter range 40 to 160 mm but also the diameters 200, 250 and 315 mm. The new techniques applied in the electronics (such as integrated circuit boards) and the case material make it a solid and reliable control box.

Multiple welding

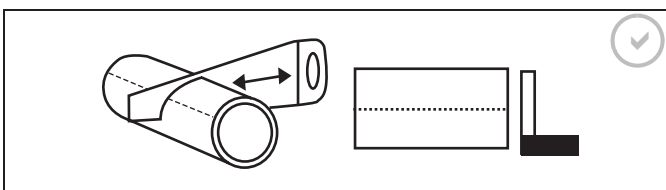
The CB315 is capable of welding several electrofusion couplers simultaneously in the same time that is needed for producing one electrofusion weld. The combined diameters of the couplers to be joined should not exceed 200 mm. For example in the case of a 45° 75/50 mm tee, both the diameters 75 mm and the branch 50 mm can be welded at once.



Joining procedure

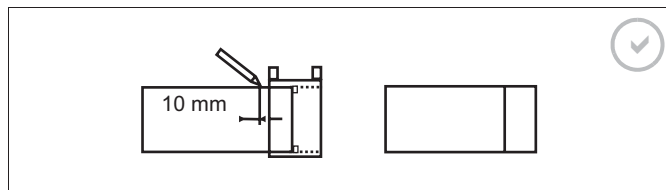
1. Cut the pipe square

The pipe ends must be cut square to ensure that the heating element in the coupler is completely covered by the pipe or fitting



2. Mark insertion depth + 10 mm

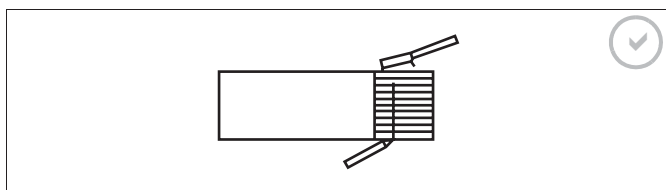
This is to ensure that across the full welding zone the oxidised layer will be removed.



3. Scrape pipe and mark insertion depth again

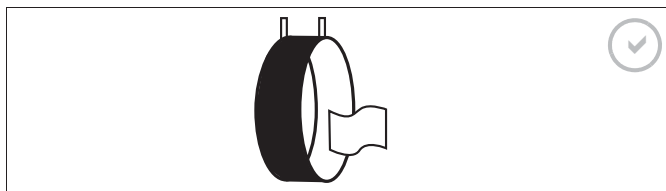
The outer surface of the pipe (approx. 0.2 mm deep) must be scraped for the full distance that will be covered by the coupler to remove any surface 'oxidation'.

The insertion depth should be marked again to safeguard full insertion .



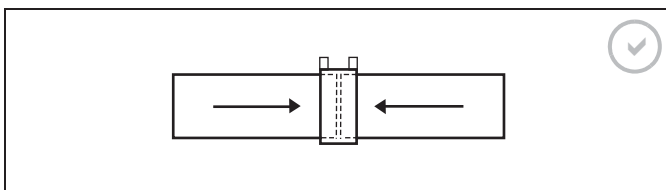
4. Clean coupler

Before assembling the pipes into the coupler ensure that all surfaces are clean and dry

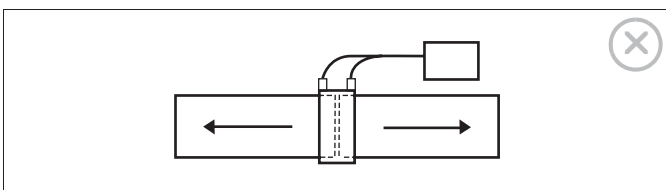


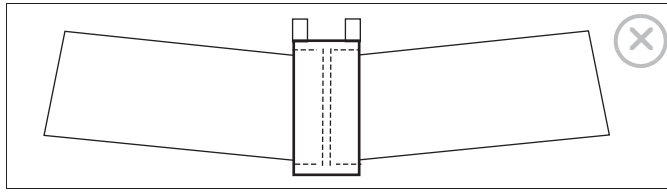
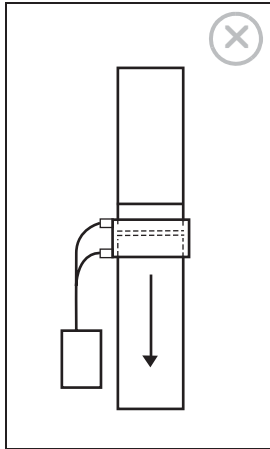
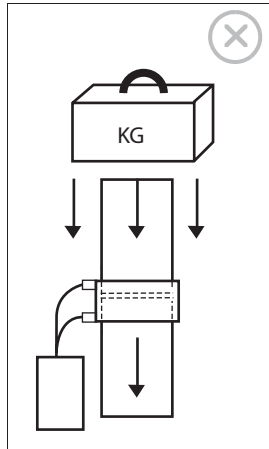
5. Insert pipe and/or fitting up to pipe stop

Ensure that the pipe is pushed as straight as possible into the fitting



6. Prevent joint movement during welding

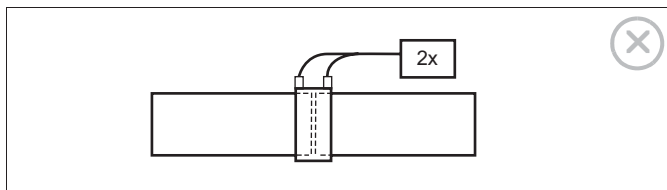


7. Prevent misalignment

8. Prevent coupler from sliding down when installed vertical

9. Prevent load on vertical pipesystem


After connecting the cables of the control box the welding process can be commenced by pushing the start button. The CB315 control box adapts the welding time to the ambient temperature. When it is colder than 20°C the welding time is extended and when the ambient temperature exceeds 20°C the welding time is shortened. For welding times and cooling down time see table below.

The joint assembly should not be disturbed during the fusion cycle and for the specified cooling time afterwards.

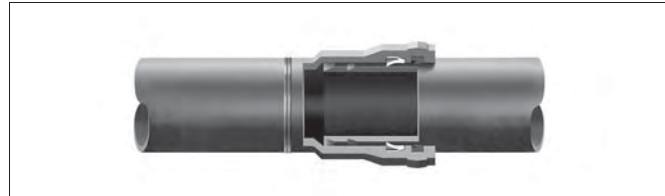
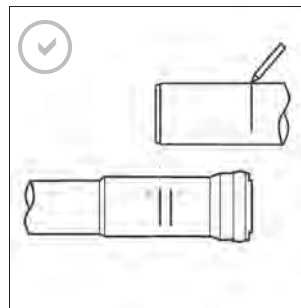
dimension d1	system	weld time	cooling time
mm		sec	min
40-160	Constant current 5A	80	20
200-315	Constant voltage 220V	420	30

10. Don't weld coupler twice

Buttwelding


Buttwelding is a very economical and reliable joining technique for making non-detachable welded joints, requiring only buttwelding equipment. All Akatherm pipes and fittings can be joined by this welding method. Fittings for which a k-dimension is shown in the table can be shortened by not more than this amount. Buttwelding is extremely suitable for prefabricating pipe sections and for making special fittings.

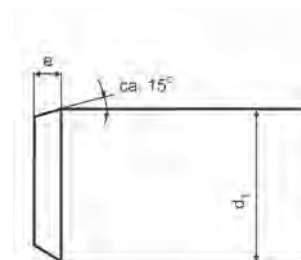
Expansion sockets
Joining procedure

Cut pipe square and remove all burrs


Mark insertion depth


An expansion socket counteracts the variation in length caused by the thermal expansion and shrinkage of the pipe.

Depending on the ambient temperature the insertion depth varies. The right insertion depth for both 0° and 20°C is indicated on the expansion socket.

Chamfer pipe end


The pipe-end needs to be chamfered under an angle of 15°. To get an even cut and chamfer a chamfering tool should be used.

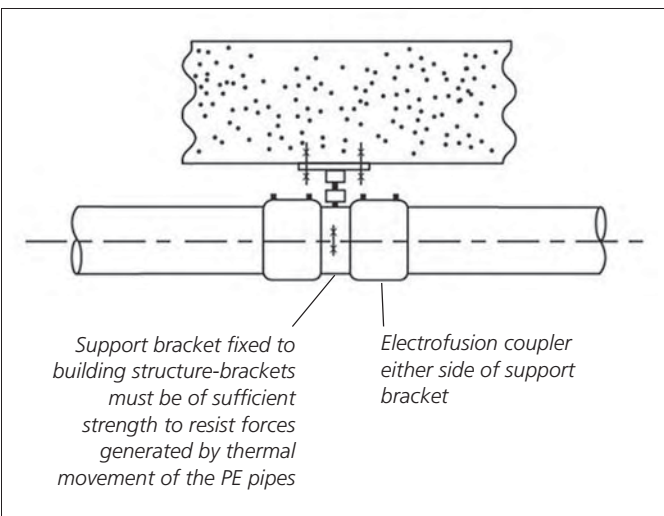
Make Joint

Lubricate the pipe end and insert the pipe up to the marked insertion depth.

For the installation of Akatherm PE pipe systems several bracketing systems can be used:

Anchor point bracket

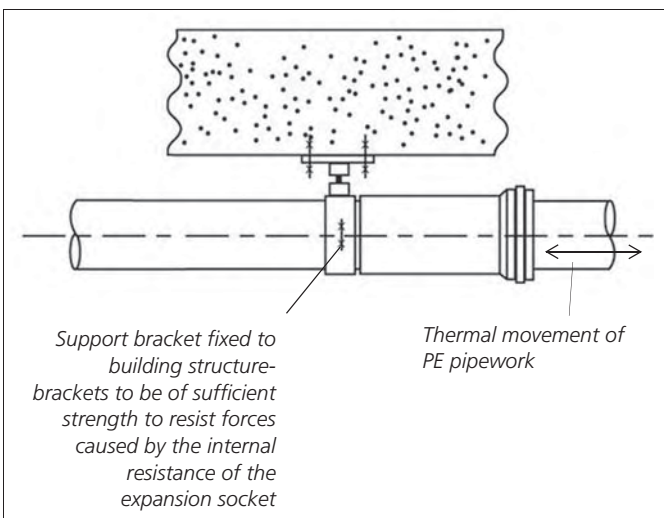
This method of bracketing is used for rigid installations. The expansion forces are transferred to the building structure.



Anchor bracket with 2 electrofusion couplers art.nr. 41xx95

Anchor bracket with expansion socket

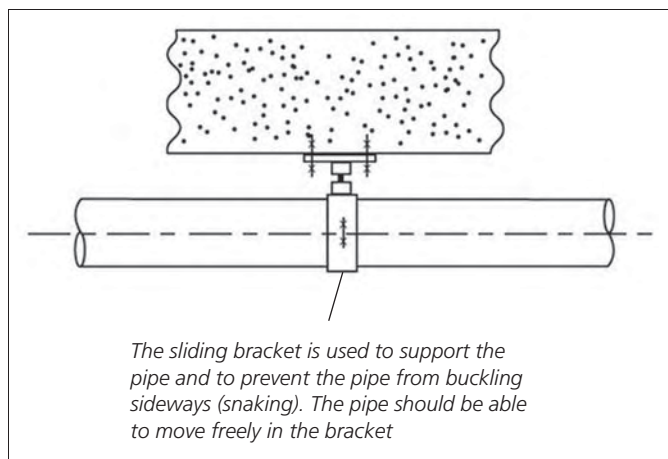
This method of installation is used for flexible installations where the expansion force is not transferred to the building structure. Only the force caused by the internal resistance of the expansion socket is transferred.



Anchor with expansion socket

Guide bracket

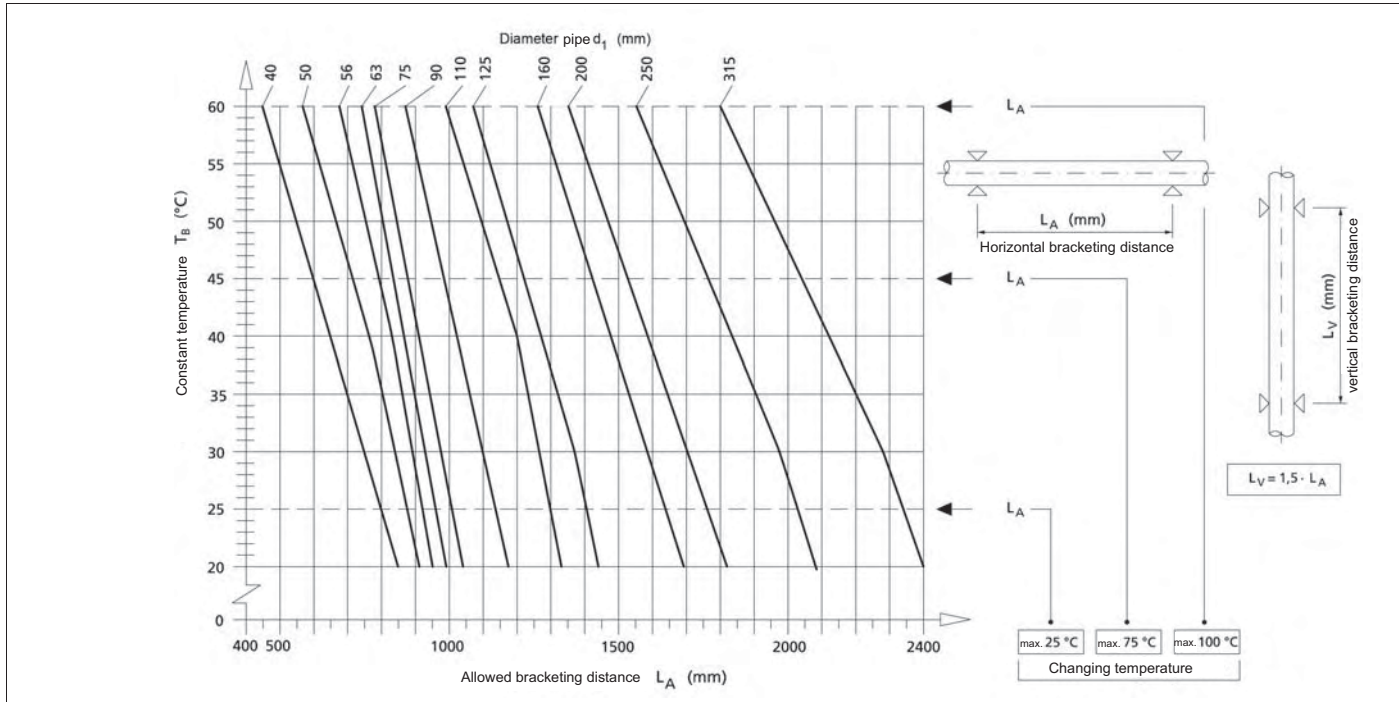
The guide bracket is used to support the pipe and to prevent the pipe from buckling sideways when in a rigid installation. The pipe can freely move in the bracket.



Guide bracket

Bracket distance

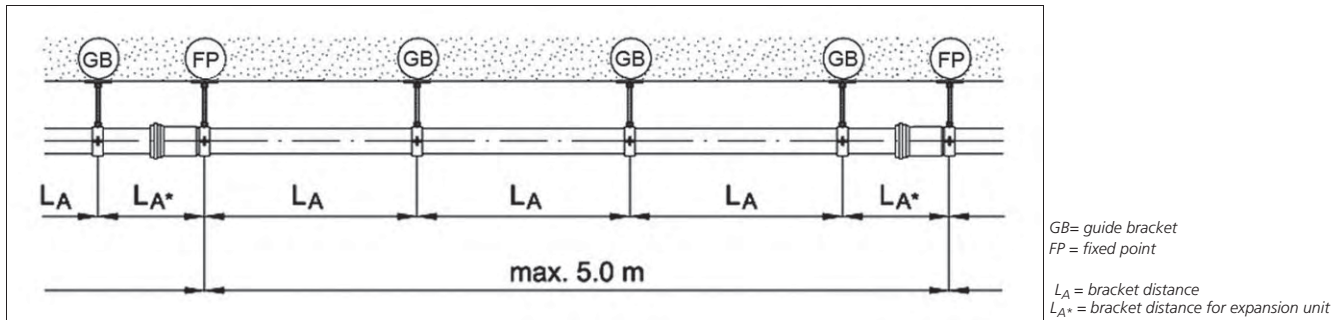
The bracket distances for Akatherm PE pipes are largely dependent on the working temperature of the pipe system. Also the filling rate of the pipe plays a role. A fully filled pipe has a different bracket distance.



Bracket distances for vertical and horizontal PE pipesystems with standard filling

Horizontal installation with expansion sockets without support trays

The bracket directly in front of the expansion socket has a shorter bracket distance (L_A^*). This makes a better guidance into the expansion socket possible (see image). The bracketing distances for this application can be found in table below. The maximum distance between 2 expansion sockets is 5 m.



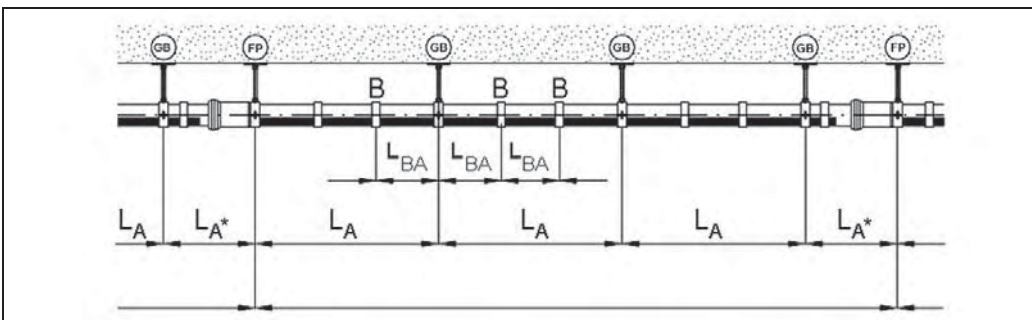
Horizontal pipework

d_1	L_A	L_A^*
75	0.8m	0.4m
90	0.9m	0.5m
110	1.1m	0.6m
125	1.3m	0.7m
160	1.6m	0.8m
200	2.0m	1.0m
250	2.0m	1.0m
315	2.0m	1.0m

Bracket distances horizontal installation with expansion sockets

Horizontal installation with expansion sockets and support trays

In this kind of installation the pipe is extra supported by support trays. The distance between the brackets can be larger. The support shells are installed on to the pipe with straps. For distances see table below.



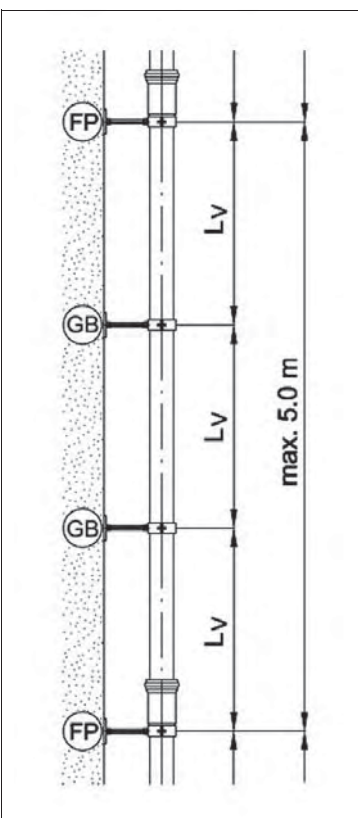
GB= guide bracket
 FP= Fixed point
 B= tray band
 L_A= bracket distance
 L_A*= bracket distance for expansion unit
 L_{BA}= spacing for bands

horizontal pipework with support tray

d ₁	L _A	L _A *	L _{BA}
75	1.2m	0.6m	0.5m
90	1.4m	0.7m	0.5m
110	1.7m	0.9m	0.5m
125	1.9m	1.0m	0.5m
160	2.4m	1.2m	0.5m
200	3.0m	1.5m	0.5m
250	3.0m	1.5m	0.5m
315	3.0m	1.5m	0.5m

Bracket distances horizontal installation with expansion sockets and support trays

Vertical installation: to the wall



For the vertical installation the bracketing distance is in general 1,5 times the distance of the horizontal bracketing. There is no separate bracketing distance for immediately in front of the expansion socket because there is no sagging of the pipe and the insertion is always in line.

d ₁	L _V
50	1.0m
56	1.0m
63	1.0m
75	1.2m
90	1.4m
110	1.7m
125	1.9m
160	2.4m
200	3.0m
250	3.0m
315	3.0m

Bracket distances vertical installation with expansion sockets

GB = guide bracket
 FP = fixed point
 L_V = vertical support distance