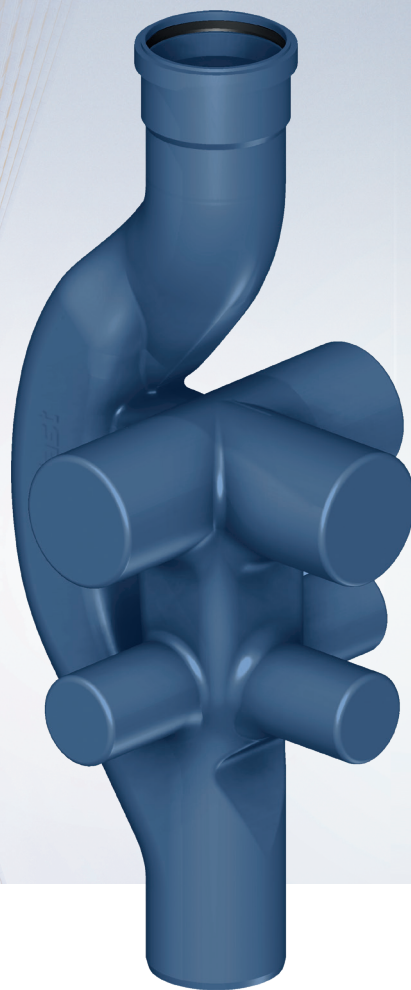


# FITTING GUIDE

Building drainage

**POLO-KAL NG Qmax**



PURE  
PROGRESS / **poloplast**



# CONTENTS

<b>1. General</b>	
1.1 About POLO-KAL NG Qmax .....	4
1.2 Application .....	4
1.3 The advantages of POLO-KAL NG Qmax.....	4
1.4 Technical datas Qmax .....	5
<b>2. Design basis</b>	
2.1 Product-related basic data .....	6
2.2 Standards.....	6
<b>3. Planning and design</b>	
3.1 Drainage performance.....	7
3.2 Admissible combinations of storey connections .....	8
<b>4. Stacks</b>	
4.1 Pressure relief pipe .....	9
4.2 Displacement of stacks up to 2 meters.....	10
4.3 Installation stacks offset up to 1 meter.....	10
4.4 Mixed installation .....	11
4.5 Additional connections to the stack .....	11
4.6 Velocity reduction .....	12
4.7 Stack ventilation onto the roof .....	13
<b>5. Laying</b>	
5.1 Fastening.....	14
5.2 Connecting Qmax with pipes .....	15

## General information

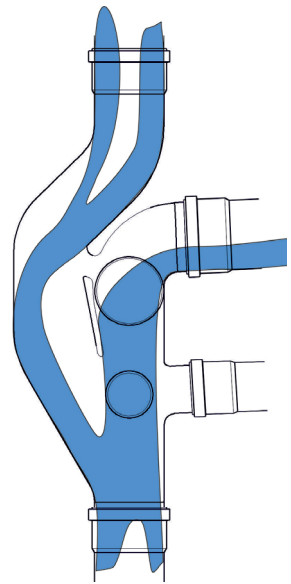
The data contained in the present guide are to help you to select our products for your purposes. Texts and illustrations have been collated with utmost care. Nevertheless, errors cannot be ruled out entirely. POLOPLAST cannot take any kind of responsibility for incorrect information and its consequences. POLOPLAST shall be grateful for any suggestions for improvement.

# 1. GENERAL

## 1.1 About POLO-KAL NG Qmax

Waste water stacks must be ventilated properly. The corresponding dimensioning and fitting helps to make sure that the air can circulate without any hindrance and without generating any excess or negative pressure in the connecting pipes. The pressure variations that particularly occur in the construction of multi-storey buildings place great demands on the correct pipe dimensioning and laying.

This is where the strengths of the POLO-KAL NG Qmax fitting come into play. Its unique shape improves the inflow behaviour in the stack, and its separated inflow section guarantees an optimum air exchange in the stack, while the inflowing water does not reduce the ventilation cross section. The additional diversion on every storey significantly reduces the velocity of the falling water and, consequently, also the pressure variation.



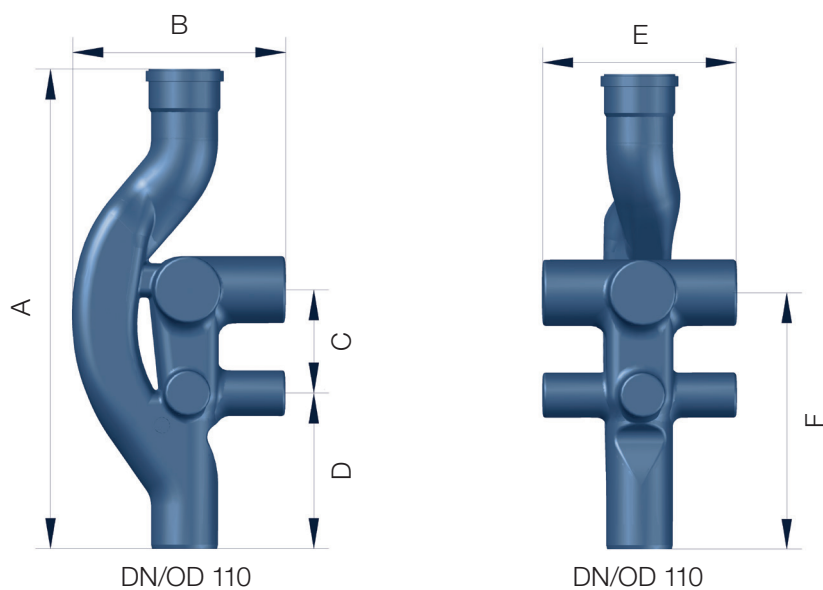
## 1.2 Application

Thanks to its high drainage performance, it is predestined to be used in stacks of multi-storey buildings. It cannot be used in any pipes other than stacks.

## 1.3 The advantages of POLO-KAL NG Qmax

- Very high drainage performance: 12 l/s with DN 110 single stacks.
- The high drainage performance allows to reduce the dimensions of stacks significantly as compared with conventional stacks.
- It offers a wide range of different connection options on every storey.
- It saves space in the installation pit, as no supplementary ventilation pipes are required.

## 1.4 Technical datas Qmax



Dimensions in mm

DN/OD	A	B	C	D	E	F	A. no.
110	789	350	170	256	320	426	03640

## **2. DESIGN BASIS**

### **2.1 Product-related basic data**

All basic information provided in this guide relating to design and fitting refers specifically to the POLO-KAL NG Qmax special fitting. Only the comprehensive observance of these product-related basics can guarantee the perfect function of the POLO-KAL NG Qmax system.

### **2.2 Standards**

The POLO-KAL NG Qmax must be fitted in accordance with the present fitting guide in conjunction with the respective national standards. The flow rate, the frequency factor and the dimensions of individual pipe sections must be determined according to the state of the art and the respective national standards. The only exception to this rule is the higher load on the stack, which can be designed using the maximum flow values as indicated for the POLO-KAL-NG Qmax special fitting in this guide.

If no national standard exists, POLOPLAST recommends to design the system according to the European standards EN 12056 part 1-2 and DIN 1986-100.

### 3. PLANNING AND DESIGN

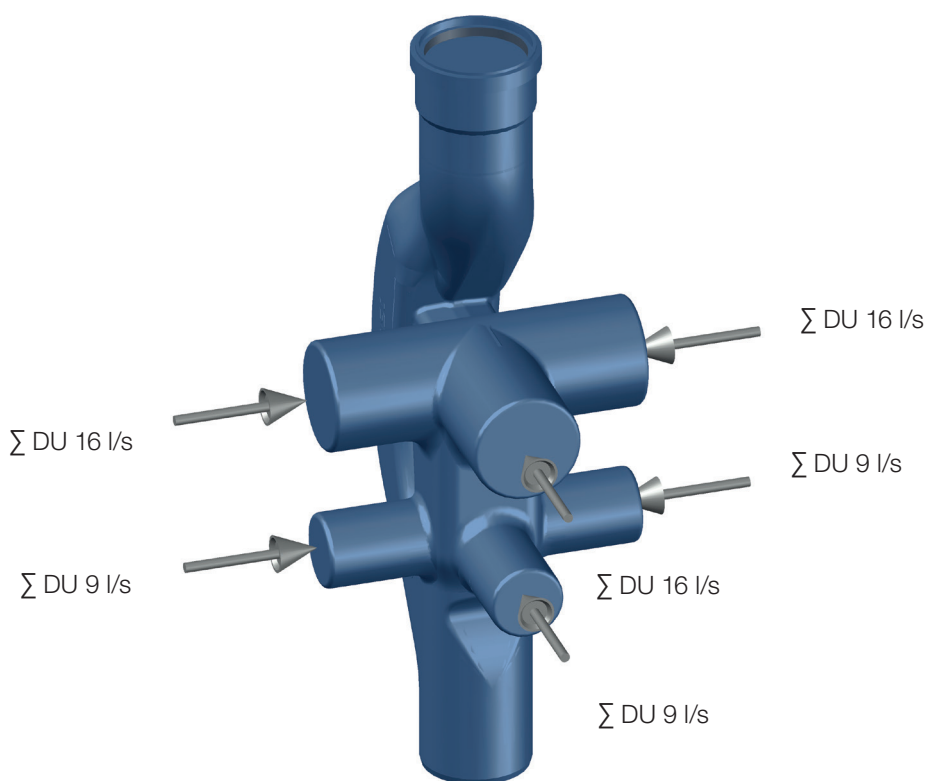
#### 3.1 Drainage performance

With the POLO-KAL NG Qmax used, the maximum drainage performance of the entire stack amounts to 12 l/s.

Assuming a frequency factor of  $K = 0.5$ , this means that the maximum load on the POLO-KAL NG Qmax is  $\Sigma$  DU 576 l/s on the stack.

According to the branch discharge, with a frequency factor of  $K = 0.5$  a maximum branch discharge of  $\Sigma$  DU 25 l/s can be confirmed.

The maximum loads for the Qmax connections are:

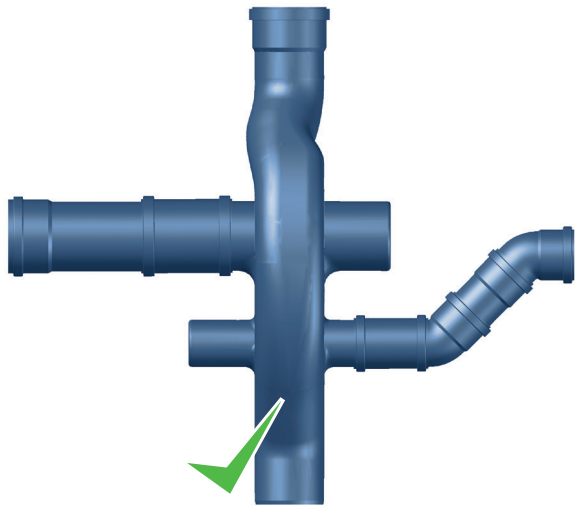


DU (Design Units)  $\rightarrow$  acc. EN 12056-2

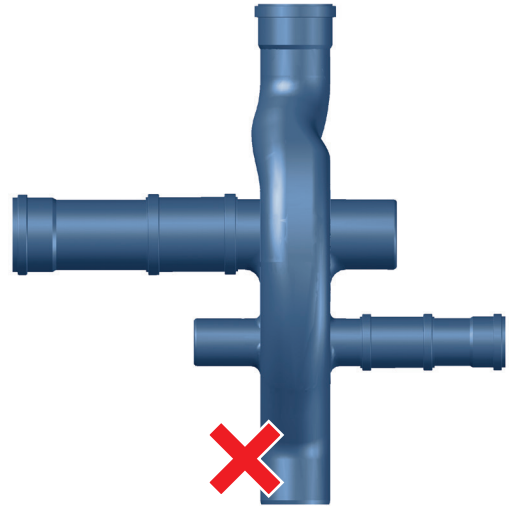
Branch connection DN/OD	Maximum single connection value (l/s)	Maximum total connection value $\Sigma$ DU (l/s)
75	1.5	9.0
110	2.5	16.0

### 3.2 Admissible combinations of storey connections

Inflow into connection pipes opposite one another must be ruled out. This is why we recommend to keep connection pipes unloaded that are arranged diagonally opposite one another. If such a combination of connections is inevitable, the level of the connecting pipe DN 75 must be adapted to match the level of the opposite connection DN 110 immediately behind the connection to the POLO-KAL Qmax; a 45° bend needs to be used for this purpose.



Correct



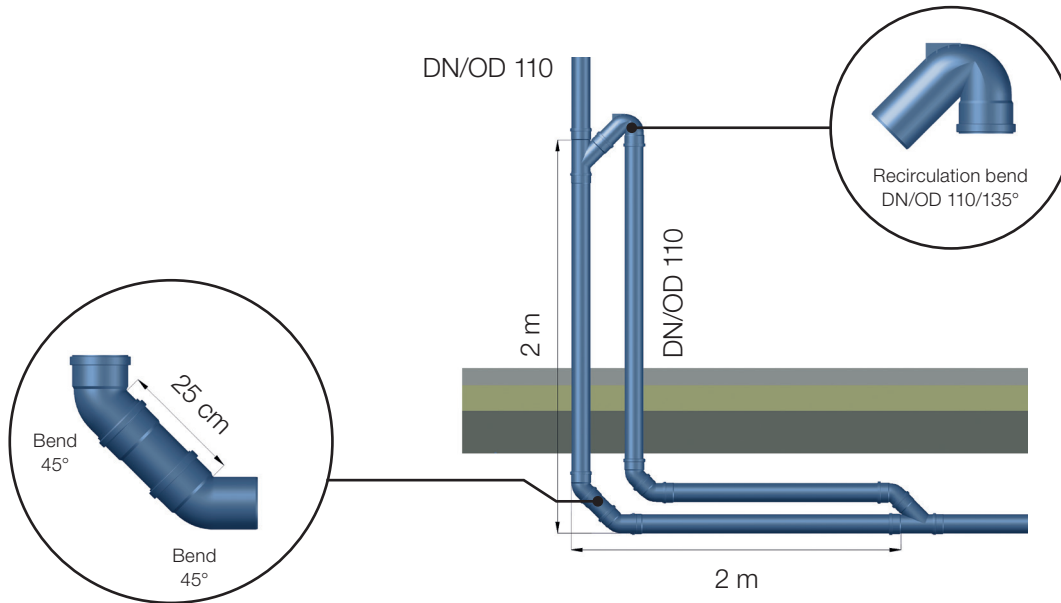
Incorrect



## 4. STACKS

### 4.1 Pressure relief pipe

Because of the high discharge flowrate on the Qmax stack a pressure relief pipe with zones without connections must be designed and installed at each stack offset (exceptional case 4.3 stack offsets up to 1 meter) and on the transition from the stack to the drain / collection pipe. The pressure relief pipe reduces any pressure which might occur on this sensible parts of the system.

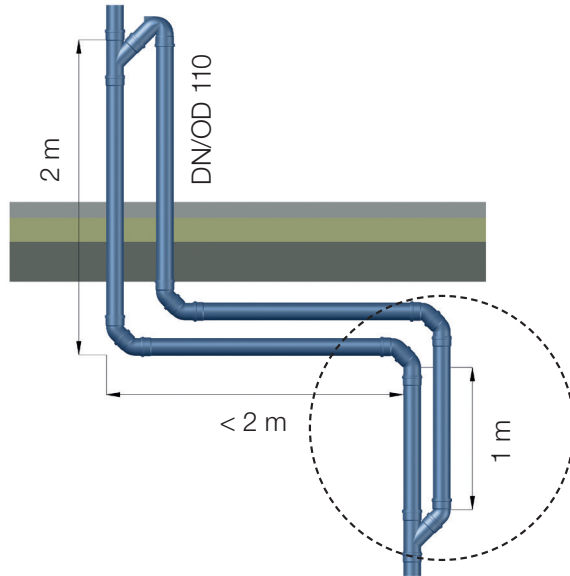


The design measurements must include a zone without connection at least 2 meters horizontal and 2 meters vertical. The transition has to be done with two 45° bend and a short pipe with not less than 25 centimeters. In this area the pressure relief pipe must be installed with DN 110. The joined on the stack or drain has to be done on both sides with 45°. We recommend the use of the POLO-KAL NG recirculation bend DN 110/135° on the stack to ensure the unproblematic performance.

## 4.2 Displacement of stacks up to 2 meters

If the stack offset is less than 2 meters horizontal pipe length, the pressure relief pipe must be extended at least 1 meter after the transition from the offset to the stack line.

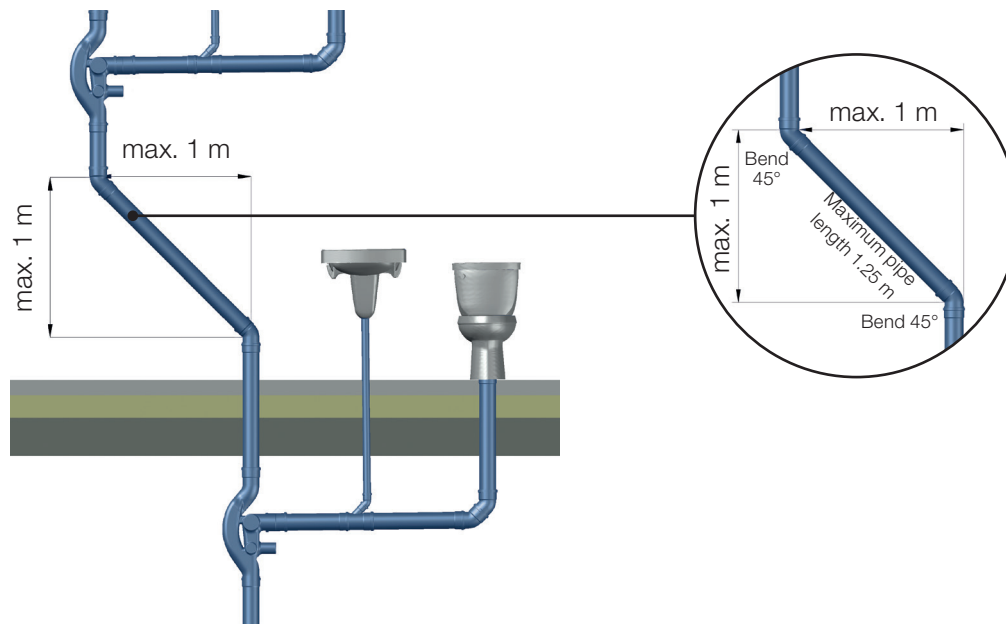
DN/OD 110



## 4.3 Installation stacks offset up to 1 meter

A maximum displacement of the stack of 1 meter in a vertical direction, and an angle of 45° in a horizontal direction are allowed without requiring any further measures.

DN/OD 110



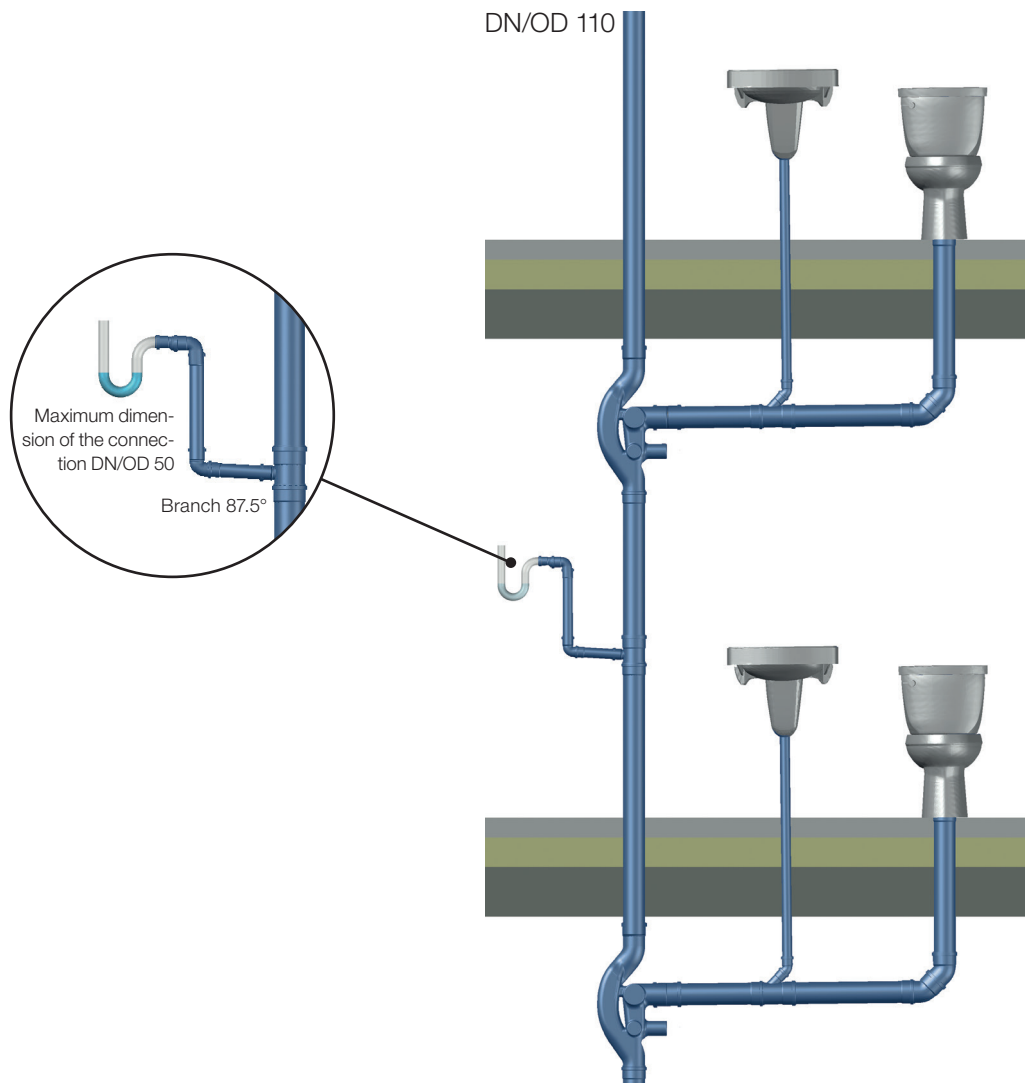
## 4.4 Mixed installation

A POLO-KAL NG Qmax element must be used for every storey connection. A mixed use of POLO-KAL NG Qmax fittings and standard branches is not permitted (exceptional case 4.5. additional connections to the stack). The dimension of the entire stack must not be reduced, and the entire cross section needs to be routed onto the roof.

## 4.5 Additional connections to the stack

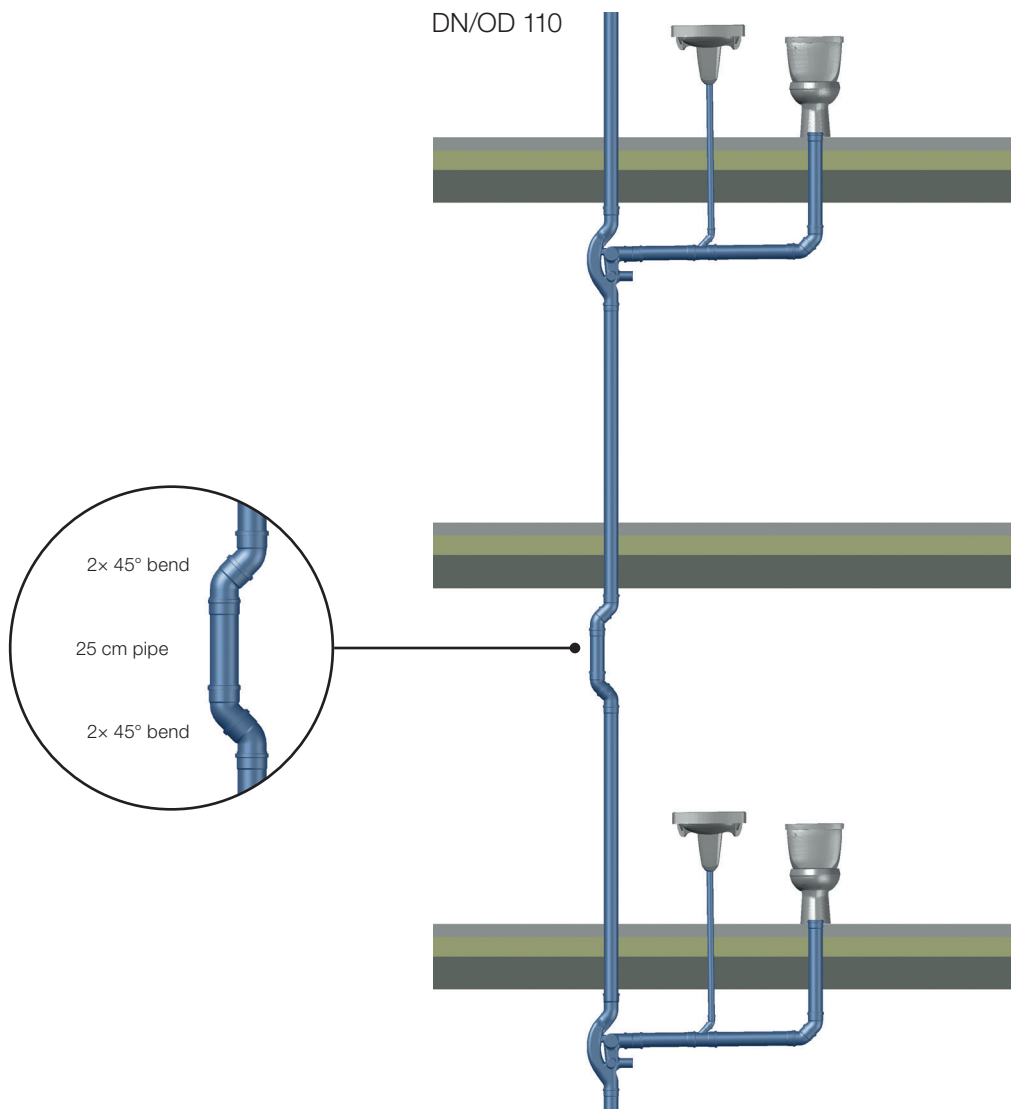
In exceptional cases, a connection to the stack between two storeys is allowed to be made without using a POLO-KAL NG Qmax, provided that the following requirements are met.

- Maximum dimension of the connection DN 50
- A 87.5° branch is used for the connection



## 4.6 Velocity reduction

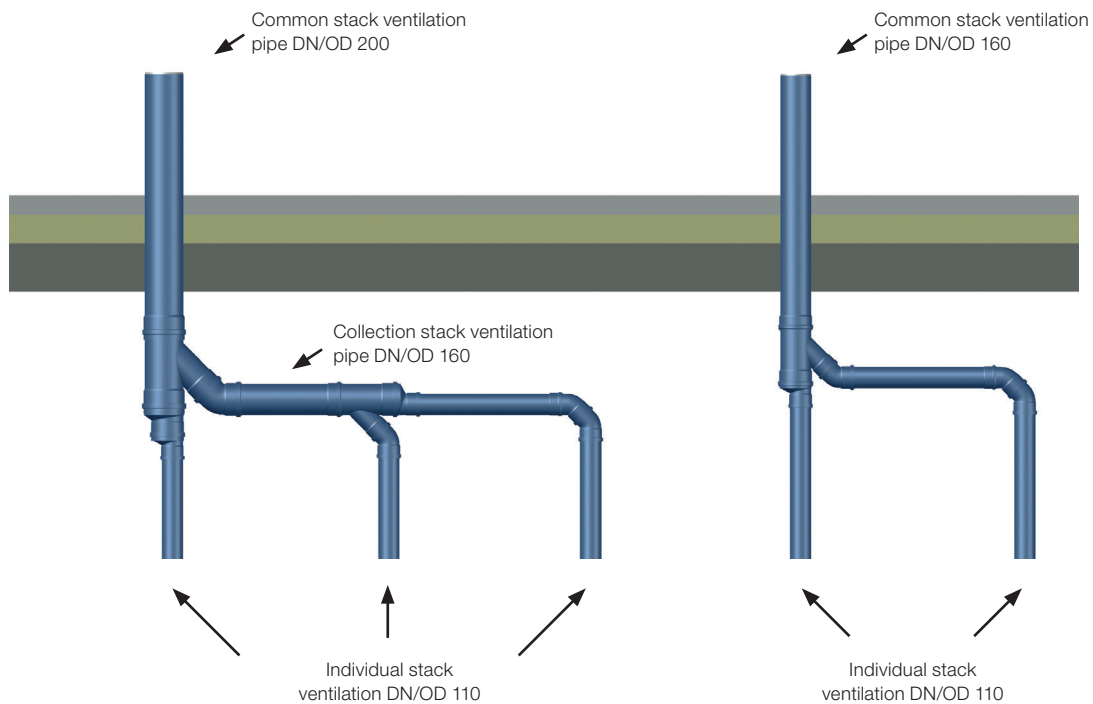
In order to make sure that the pressure curve in the various storey connections is stable, the falling velocity needs to be reduced on every storey. If the distance between two Qmax fittings is longer than 6 meters, a so-called fall brake, i.e., a displacement using 45° bends and a 25 centimeters short pipe, must be used.



## 4.7 Stack ventilation onto the roof

We recommend to route stacks that use the POLO-KAL NG Qmax fitting onto the roof separately. For a combined ventilation, the following requirements need to be met:

- The nominal widths need to be taken from the drawing below.
- The POLO-KAL NG Qmax is allowed to combine a maximum of three pipe stacks.



**Note:** Direction changings in ventilation pipe with max. 45° bends.

## 5. LAYING

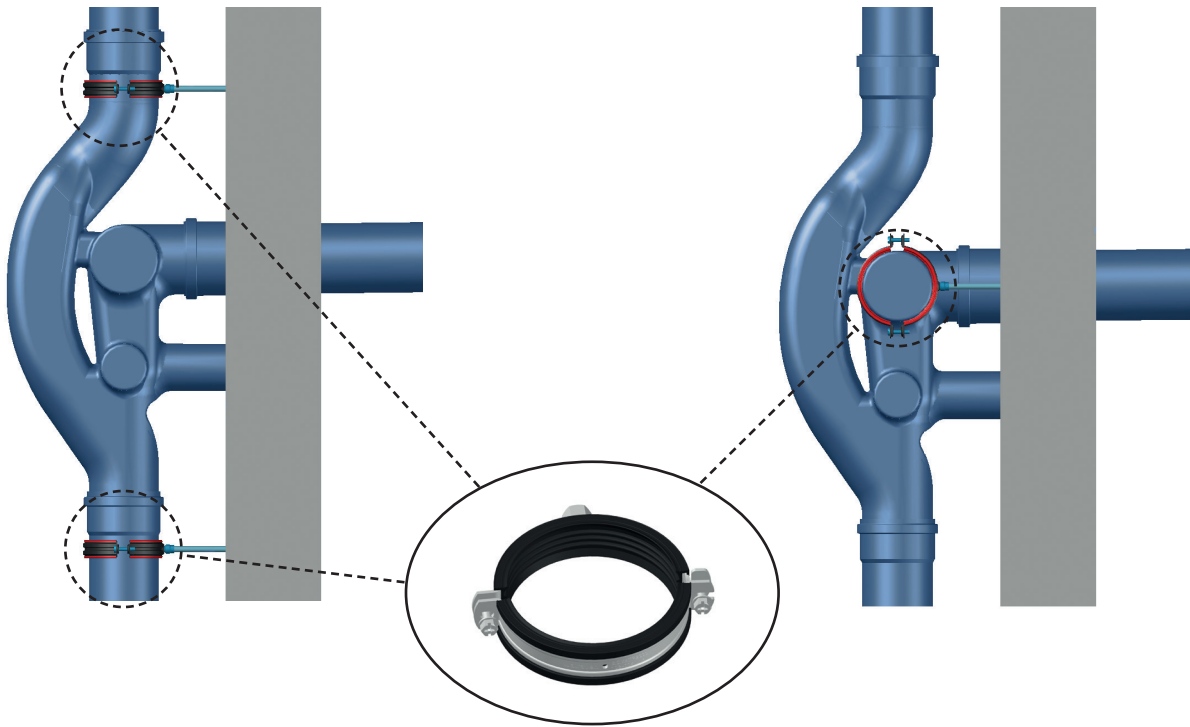
### 5.1 Fastening

A pipe clamp must be fitted below the sockets:

- one directly to the POLO-KAL NG Qmax fitting
- one to the pipe installed under it

**Alternativ:**

If the horizontal connections are not used, a steel pipe clamp with rubber inlets can be fitted to both sides to secure the system.



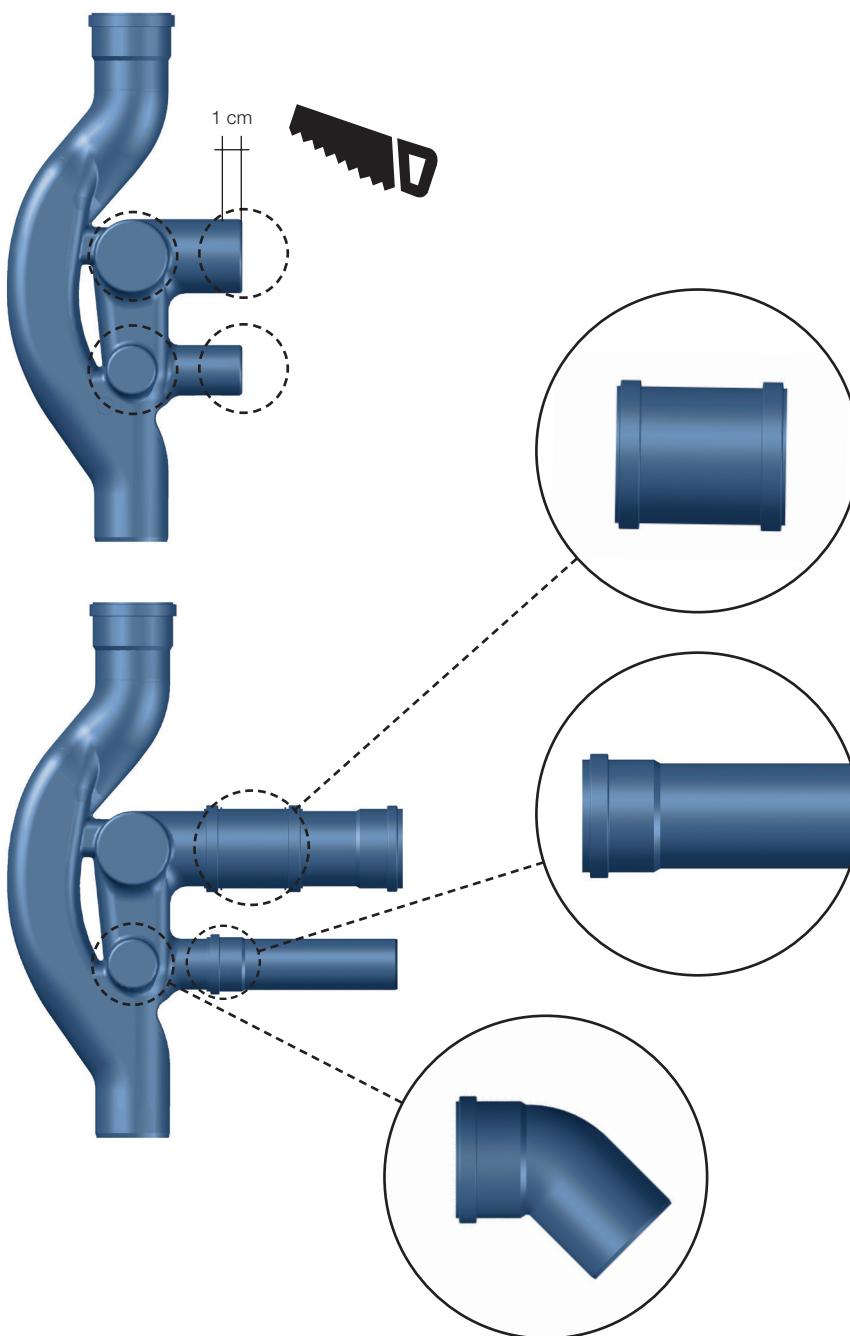
The POLO-KAL NG Qmax may only be fastened using steel pipe clamps with rubber inserts, which must be fitted as close to the building as possible.

## 5.2 Connecting Qmax with pipes

All six branch connections are factory-closed. Only the required connections may be cut open at the cutting mark (approximately 1 centimeter from the edge) and deburred professionally. Subsequently, a POLO-KAL NG socket can provide a direct connection.

Double sockets can be used for the connection of the POLO-KAL NG Qmax, which makes it easier to plug in the required sanitary equipment.

If a connection has been opened unintentionally, a double socket and a socket plug can be used to close it. In such cases, we also recommend the use of a POLO-KAL NG ASV to secure the system.





POLOPLAST. A company of **Wintersdorfer**

© Copyright. All contents and graphical representations are protected by copyright and, even in altered form, they may only be reproduced, published or distributed following the express written approval of POLOPLAST.

01/09.19/500\_EN\_wanted.co.at

**PURE  
PROGRESS / poloplast**

**POLOPLAST** GmbH & Co KG  
Poloplaststraße 1  
4060 Leonding . Austria  
T +43 (0) 732 . 38 86 . F +43 (0) 732 . 38 86 . 9

office@poloplast.com  
www.poloplast.com