

Manual

Vabi Uniforme Omgeving

Stroming

August 2023

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13.5.	Release februari 2019	Fout! Bladwijzer niet gedefinieerd.
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13.7.	Release april 2018	Fout! Bladwijzer niet gedefinieerd.
13.8.	2017 en ouder	Fout! Bladwijzer niet gedefinieerd.

Introduction

Welkom to the manual of Vabi Uniforme Omgeving!

Using F1 wil lead you tot he right page from the software.

Personal advise? Contact our servicedesk

Call the helpdesk: 015 - 21 33 501

Or mail to uo@vabi.nl

Openingstijden telefonische service desk:

Werkdagen van 09.00 tot 16.00 uur

1. Modules

From version 10.0 the modules are integrated in the software:

- Main system
- Air ducts
- Tapwater system
- Gas pipes
- Rainwater, Sewage

1.1. Main system

A well-designed piping system ensures that connected installations, such as radiators and cooling systems, are powered and function carefree. With a correct pipe network you prevent poor water distribution and, among other things, the heat from radiators in a building is in balance.

With **Vabi Uniforme Omgeving Main system** you design piping systems for the smallest homes up to the largest utility buildings. A good design ensures a competitive offer, lower maintenance costs and prevents complaints. With **Vabi Uniforme Omgeving Main system** you dimension a pipe system and determine the pipe diameters, the pressure drop per pipe, balancing positions and the total circuit pressure. The calculation method is in accordance with **ISSO 18 Leidingnetberekening** and **NEN 5064**. The module helps you determine the pressure drop of the pipes, with which you determine the necessary pipe diameters. The pressure drop of all pipes is then determined and the total circuit pressure is determined for each connected installation.

1.1.1. Changes towards old version

The new "look &feel" of the flow programs is set up as a system that works the same for each module with 5 input screens. All as shown in Workflow.

1.1.2. Calculation based on:

The calculation method is in accordance with **ISSO 18 Leidingnetberekening** and **NEN 5064**.

1.1.3. Standards



ISSO Publicatie 18 (2012)

Leidingnetberekening

[ISSO-digitaal](#) | [ISSO Winkel](#)

1.2. Airducts

A healthy and comfortable indoor climate in a building means less absenteeism and a pleasant living environment. The right amount of fresh air in the right place is essential. If this is not possible in a natural way, supply via grids and the underlying channels is required. **Vabi Uniforme Omgeving Air ducts** helps you with the correct design of the channels. This also means maintenance savings, lower investment costs and fewer energy losses.

With **Vabi Uniforme Omgeving Luchtkanalen** you design duct systems and determine the system pressure of the installation, the adjustment pressures and the fans to be installed. It is possible to calculate different duct shapes (round, oval or rectangular) and supply and extraction installations. In addition to a clear output with which you can substantiate the designed system, you get an overview of all the necessary channels and fittings. Even with a global design, at the beginning of a project, the program can quickly provide insight into the consequences of the design. Later extensions or changes are easy to implement.

With the **Air Ducts** module, you can quickly and reliably determine the resistances of branches and reducers on the basis of the formulas from the **ISSO-publicatie 17 Kwaliteitseisen voor luchtkanaalsystemen in woning- en utiliteitsbouw**. For designing a duct system, you can choose from the design method of constant friction, constant speed or gradual speed reduction.

1.2.1. Sound in airducts

Noise in air ducts prevents comfort complaints from users. With this extension module on **Air ducts** you can calculate the sound of the dimensioned air duct system. Because the extension is integrated into the **Air Ducts** module, you can almost immediately check whether the set noise requirements are met.

Noise in air ducts calculates the noise production in the ducts, the transmission of sound to a room and attenuation caused by the fan, bends, tees, grilles and other fittings based on the ISSO publication 24 (Installation noise). Once you have entered a channel network, you can calculate the number of dBs to be muted per octave band. Then you can choose a damper and substantiate which measure is needed to meet the noise requirement in the room.

1.2.2. Changes towards old version

The new "look & feel" of the flow programs is set up as a system that works the same for each module with 5 input screens. All as shown in Workflow.

1.2.3. Calculation based on:

The calculation method is in accordance with **ISSO-publicatie 17 Kwaliteitseisen voor luchtkanaalsystemen in woning- en utiliteitsbouw** and **ISSO-publicatie 24 (Installatiegeluid)**.

1.2.4. Standards



ISSO Publicatie 17 (2010)

Kwaliteitseisen voor luchtkanaalsystemen in woning- en utiliteitsbouw

[ISSO-digitaal](#) | [ISSO Winkel](#)



ISSO Publicatie 24 (1990)

Installatiegereguleerder

[ISSO-digitaal](#) | [ISSO Winkel](#)

1.3. Tapwater system

After oxygen, water is the most important element for health and comfort. That is why strict requirements are set for tap water installations. For example, there is a guarantee temperature, there are requirements for the speed gradient and the circuit pressure. The **Vabi Uniforme Omgeving Tapwater system** module helps you design optimal tap water networks for homes to the largest circuits for hotels, for example. In addition to comfort and health, a good design ensures maintenance savings, lower investment costs and less energy consumption.

With **Vabi Uniforme Omgeving Tapwater system** you dimension a tap water network to determine the pipe diameters, the total circuit pressure and the minimum required prepressures at the devices. The specific gravity and kinematic viscosity are automatically determined by the program when specifying the water temperature. In addition to dimensioning and calculating tap water networks with circulation pipes, it is also possible to do this for 'conventional' hot and cold water networks. The programme provides insight into the consequences of the design at an early stage. Later extensions or changes are easy to implement. The calculation method is according to the **werkbladen van de VEWIN** and the recommendations of their **werkgroep Inspectie en automatisering**. A database with **VEWIN** dimensions and data is part of the software.

1.3.1. Changes towards old version

The new "look & feel" of the flow programs is set up as a system that works the same for each module with 5 input screens. All as shown in Workflow.

1.3.2. Calculation based on:

The calculation method is according to the **werkbladen van de VEWIN** and the recommendations of their **werkgroep Inspectie en automatisering**.

1.3.3. Standards



ISSO Publicatie 30 (2003)

Leidingwaterinstallaties in woningen

[ISSO-digitaal](#) | [ISSO Winkel](#)



ISSO Publicatie 55 (2013)

Leidingwaterinstallaties

[ISSO-digitaal](#) | [ISSO Winkel](#)



NEN 1006+A3:2011 nl

Algemene voorschriften voor leidingwaterinstallaties (AVWI-2002)

[BRISwarenhuis](#) | [NEN Normshop](#)

1.4. Gas pipes

A well-designed gas pipeline network ensures that connected installations such as boilers, stoves or stoves are sufficiently fed and function safely. You prevent dangerous situations such as excessive pressure in the pipes, irregular gas distribution or gas accumulation. The **Vabi Uniforme Omgeving Gas pipes** helps you design a gas pipeline network for homes up to the most complex utility buildings.

When designing a gas pipeline network, safety is paramount, but a good design also ensures a competitive offer, less gas consumption and efficient maintenance. With **Vabi Uniforme Omgeving Gas pipes** you dimension a gas pipeline network and determine the pipe diameters, the pressure drop and the total circuit pressure. The programme distinguishes between low-pressure and high-pressure gas networks. The calculation method is in accordance with NEN **1078**.

The module first determines the resistances in the pipes, with which you determine the necessary pipe diameters. Based on the specified initial and final pressure, the 'Gas pipeline' module of all pipes calculates the pressure drop and determines the total circuit pressure for each connected installation. The programme provides insight into the consequences of a design at an early stage. You can easily make any subsequent changes.

1.4.1. Changes towards old version

The new "look &feel" of the flow programs is set up as a system that works the same for each module with 5 input screens. All as shown in Workflow.

1.4.2. Calculation based on:

The calculation method is according to the **NEN 1078**.

1.4.3. Standards



NEN 1078:2004 nl

Voorziening voor gas met een werkdruk tot en met 500 mbar - Prestatie-eisen - Nieuwbouw

[BRISwarenhuis](#) | [NEN Normshop](#)

1.5. Rainwater, Sewage

A well-designed drainage system prevents blockages, leaks and odour nuisance in the inner sewerage system and at the rainwater drainage. With **Vabi Uniforme Omgeving Rainwater, Sewage** you can dimension drainage systems for the smallest homes into the largest utility buildings. A good design prevents problems in practice, but also ensures the lowest possible investment and lower maintenance costs.

With **Vabi Uniforme Omgeving Rainwater, Sewage** you dimension a drainage system and determine the pipe diameters, the pressure drop and the discharge flow. The program distinguishes between a waste water drain and a rainwater drain. It is also possible to calculate a combination. The calculation method is in accordance with **NEN3215** and **NTR3216**.

The module first determines the required pipe diameters. For the correct determination of the diameters, the type of pipe is important. The program automatically assigns the type of pipe based on the isometric input, for example a collection pipe or release line. This saves time and prevents input errors. The total length of the drainage system is then determined. The program provides quick insight into the performance of different designs at an early stage. You can easily make subsequent extensions or design changes.

1.5.1. Changes towards old version

The new "look &feel" of the flow programs is set up as a system that works the same for each module with 5 input screens. All as shown in Workflow.

1.5.2. Calculation based on:

The calculation method is according to **NEN3215** en **NTR3216**.

1.5.3. Standards



NEN 3215+C1:2014 nl

Gebouwriolering en buitenriolering binnen de perceelgrenzen

[BRISwarenhuis](#) | [NEN Normshop](#)



NTR 3216 (2012)

Riolering van bouwwerken

[ISSO-digitaal](#) | [ISSO Winkel](#)

2. Install & Activate

Vabi Uniforme Omgeving can be installed both locally and on a server.

2.1. Locall installation

Two files from the *klantportaal* are needed to install **Vabi Uniforme Omgeving**.

- **Vabi UO Setup:** (Downloads)
- **Licentiekey voor Uniforme Omgeving:** (Licenties)

This (Dutch) video shows the installation of Vabi Uniforme Omgeving.

New installation

For a new installation both files of *Locall installation* are necessary.

Step 1: Download software

Log in on [Vabi Klantportaal](#) and download the setup of Vabi Uniforme Omgeving. The setup can be found at the menu item 'Downloads' on the left side of the screen. The setup can also be found at <https://support.vabi.nl/support/uniforme-omgeving/downloads/> Save the setup for instance in 'Downloads' on your computer.

Step 2: Download licentiekey

Download your licentiekey for the Vabi Uniforme Omgeving (UO) at menu item 'Licenties'. Save the file also for instance in 'Downloads' on your computer.

Step 3: Close Vabi UO

Before installing the software, make sure there are no open Vabi UO programs.

Step 4: Extract the setup

The download of the software is a zipped map, extract this file.
Open the unzipped folder and start the file: **WINSTALL.exe**.

Step 5: Choose folder

Choose the folder where Vabi Unified Environment needs to be installed, this folder should be called 'VABI_UO' (e.g. C:\VABI_UO) and choose 'Volgende'. Don't install UO in subfolders.

Step 6: Type installation

In the next step you choose '**Programma onderdelen en licentie toevoegen**'. And 'Volgende'.

Step 7: License

In this step you need the downloaded 'licentiekey'. This file has extension: **.UO_licentie**. Choose downloaded file and 'Volgende'

Step 8: Programs

The programs in your license are default choosen. Choose 'Installeren' to install these programs.

Step 9: Shortcut

Istallation is succesfully finished. An option for a shortcut on your desktop or start menu is given.

Step 10: Finish installation

You can close the installationprogram. The Vabi UO software is ready to be used as lang as you are a customer and your system is connected to internet. For offline applications it is neccesary to update the license each year (choose in step 6 for 'jaarlijkse licentie update').

2.1.2. Updates

When there has been an update the software wil give a notice. You can update the software whenever you like. You only need the new setup.

Step 1: Download software

Log in on [Vabi Klantportaal](#) and download the setup of Vabi Uniforme Omgeving. The setup can be found at the menu item 'Downloads' on the left side of the screen. The setup can also be found at <https://support.vabi.nl/support/uniforme-omgeving/downloads/> Save the setup for instance in 'Downloads' on your computer.

Stap 2: Close Vabi UO

Before installing the software, make sure there are no open Vabi UO programs.

Stap 3: Extract the setup

The download of the software is a zipped map, extract this file.
Open the unzipped folder and start the file: **WINSTALL.exe**.

Stap 4: Folder

Choose the folder where Vabi Unified Environment already has been installed, this folder should be called 'VABI_UO' (e.g. C:\VABI_UO) and choose 'Volgende'. Don't install UO in subfolders.

Stap 5: Type installatie

In the next step you choose '**Programma onderdelen (update)**'. And 'Volgende'.

Stap 6: Programs

The programs in your license are default choosen. Choose 'Installeren' to install these programs.

Stap 7: Finish installation

You can close the installationprogram.

2.2. Server installatie

UO Stroming kan eenvoudig op een netwerk worden geïnstalleerd. Er zijn echter een aantal punten waar rekening mee moet worden gehouden:

- Deze programma's hebben geen 'multi-user'-functionaliteit. Meerdere gebruikers kunnen dus niet tegelijk aan het zelfde project werken. Ze kunnen dit wel na elkaar doen;
- Gebruikers kunnen wel tegelijk aan verschillende projecten werken. Heel belangrijk is alleen dat er per gebruiker een aparte **WERK**-, **TEMP**- en **BACKUP**- directory moet zijn ingesteld.
- De programma's kunnen niet overweg met de 'unc'-naamgeving (bijv. \\server1\apps\vabi_uo). De paden waar de programma's staan en de paden die het programma gebruikt, moeten dus aan drive-letters gekoppeld zijn.

Als eerste moeten de programma's volgens de 'normale' installatie-handleiding in een directory op het netwerk worden geïnstalleerd. De overige instellingen worden via het bestand **VABI.INI** geregeld, dat zich dan in deze directory bevindt.



Als meerdere gebruikers van dezelfde **WERK**-, **TEMP**- of **BACKUP** map (directory) gebruik maken kunnen de werkgegevens onherstelbaar beschadigd worden.

Instellingen van VABI.INI

In het bestand **VABI.INI** worden diverse instellingen van het programma vastgelegd. Dit zijn onder andere de instellingen van de uitvoer, kleurinstellingen en ook de diverse directories.

Bij het installeren op een netwerk moet voornamelijk op vijf directories gelet worden:

- De map (directory) **PROJecten** (**PROJDIR** in **VABI.INI**): In deze directory worden de projecten bewaard. In het programma wordt deze directory als default gebruikt. In principe kan er in iedere willekeurige directory een project ingelezen of weggeschreven worden (behalve de ingestelde **WERK-** of **TEMP-**directory). Deze mag dus voor iedereen hetzelfde zijn;
- De map (directory) **BESTanden** (**BESTDIR** in **VABI.INI**): Hierin worden eigen gemaakte databanken opgeslagen. Het is verstandig om iedere gebruiker naar dezelfde directory te laten verwijzen, zodat iedere gebruiker bij de in het bedrijf (door andere gebruikers) aangemaakte databanken kan;
- De map (directory) **WERK** (**WERKDIR** in **VABI.INI**): Wanneer een project wordt ingelezen, dan worden de bestanden hiervan in de WERKDIR gezet. Alle veranderingen die dan gedaan worden worden in deze directory bewaard. Pas als het project weer wordt weggeschreven, worden deze verandering weer in het project opgeslagen. Daarom is het belangrijk dat een project maar door één gebruiker tegelijk wordt gebruikt! Tenzij de gebruiker het project onder een andere naam wegschrijft, zodat een tweede (en dus apart) project wordt gemaakt;
- De tijdelijke bestanden map (directory) **TEMP** (**TEMPDIR** in **VABI.INI**): Verschillende programma's zetten hier tijdelijke resultaten of instellingen in. Deze directory moet dus ook voor iedere gebruiker verschillend zijn.
- De backup bestanden map (directory) **BACKUP** (**BACKUPDIR** in **VABI.INI**): Wanneer in een project een (onherstelbare) actie wordt uitgevoerd maakt het programma een backup van het project, zodat altijd een vorige versie van het project bewaard blijft. Er blijven maximaal 50 backups van de projecten bewaard.

Er zijn twee verschillende methodes om de hierboven genoemde directories op een netwerk in te stellen:

- Via **Instellingen van** relatieve paden: bijvoorbeeld **werkdir = .\werk**;
- Via **Instellen van** absolute paden: bijvoorbeeld **werkdir = F:\vabi_uo\werk**.

Voor de hierna volgende voorbeelden wordt deze basisconfiguratie genomen:

- De programma's staan op de server in F:\APPS\VABI_UO;
- Voor iedere gebruiker is in zijn home-directory een VABI_UO directory met een WERK-, een TEMP- en een BACKUP- directory aanwezig: zoals H:\USERS\PIET\VABI_UO\WERK, H:\USERS\PIET\VABI_UO\TEMP en H:\USERS\PIET\VABI_UO\BACKUP.
- De projecten en databanken worden in aparte directories op G:\DATA\VABI_UO bewaard. (De bestanden die reeds in F:\APPS\VABI_UO\BESTAND staan moeten dan wel naar G:\DATA\VABI_UO\BESTAND gekopieerd worden.)

Instellingen van relatieve paden

Als de programma's voor het eerst worden geïnstalleerd dan zijn de instellingen in feite al geschikt om via **relatieve paden** te werken. In het bestand VABI.INI in de VABI_UO directory staat dan o.a. het volgende:

- [VABI]
- WERKDIR=.\WERK\
- TEMPDIR=.\TEMP\
- PROJDIR=.\PROJ\
- BESTDIR=.\BESTAND\

In deze file dient dan nog een regel toegevoegd te worden voor de BACKUPDIR, zodat de text in VABI.INI er als volgt uit komt te zien:

- [VABI]
- WERKDIR=.\WERK\

- TEMPDIR=.\TEMP\
- BACKUPDIR=.\BACKUP\
- PROJDIR=.\PROJ\
- BESTDIR=.\BESTAND\

Onder het kopje **VABI** staat ondermeer beschreven welke directories het programma moet gebruiken. Om het programma voor meerdere gebruikers geschikt te maken, is het van belang dat de WERK-, TEMP- en BACKUP-directory voor iedere gebruiker verschillend is.

Als we nu naar de WERK-directory kijken staat deze op '.\werk\'. Het gedeelte '.\' geeft aan dat de directory wordt gebruikt waarin men is opgestart. Om er dus voor te zorgen dat iedere gebruiker andere directories gebruikt, moet iedere gebruiker dus in een andere directory het programma opstarten. In Windows kan men dit aangeven in de eigenschappen van de snelkoppeling. Als laatste moet er nog een zoekpad worden aangemaakt die verwijst naar de VABI_UO directory. (zodat **vabidate.dll** gevonden wordt)

Voorbeeld instellingen relatieve paden:

- De instellingen in VABI.INI worden dan:


```
[VABI]
WERKDIR=.\WERK\
TEMPDIR=.\TEMP\
BACKUPDIR= \BACKUPDIR\
PROJDIR=G:\DATA\VABI_UO\PROJ\
BESTDIR=G:\DATA\VABI_UO\BESTAND\
```

Voor gebruiker 'Piet' moet dan op zijn computer een snelkoppeling naar F:\APPS\VABI_UO\VABIMENU.EXE worden aangemaakt. Bij **Beginnen in:** in de eigenschappen van de snelkoppeling komt dan **H:\USERS\PIET\VABI_UO** te staan (dit is dus de huidige directory).

Gebruiker 'Piet' moet ook nog een zoekpad naar F:\APPS\VABI_UO hebben. De meest simpele manier om dit te doen is in de **AUTOEXEC.BAT** de regel **SET PATH=%PATH%;F:\APPS\VABI_UO** te zetten. Maar dit kan ook via een loginscript geregeld worden.

Instellen van absolute paden

In plaats van de relatieve paden kunnen de WERK-, TEMP- en BACKUP- directory ook via **absolute paden** worden opgegeven. Er hoeft dan geen zoekpad meer te worden aangemaakt.

Voorbeeld instellingen absolute paden:

- De instellingen in VABI.INI worden dan:


```
[VABI]
WERKDIR=Q:\WERK\
TEMPDIR=Q:\TEMP\
BACKUPDIR=Q:\BACKUP\
PROJDIR=G:\DATA\VABI_UO\PROJ\
BESTDIR=G:\DATA\VABI_UO\BESTAND\
```

Voor gebruiker 'Piet' moet dan het volgende gebeuren:

- Er moet voor de gebruiker een netwerkverbinding worden aangemaakt, zodat Q:\ verwijst naar H:\USERS\PIET\VABI_UO.
- Op zijn computer moet een snelkoppeling naar F:\APPS\VABI_UO\VABIMENU.EXE worden

aangemaakt.

Door het op deze manier te installeren gebruiken alle gebruikers dezelfde VABI.INI in de VABI_UO directory. Hierdoor hebben alle gebruikers dus dezelfde instellingen (fonts, kleuren,...). En als dit bestand schrijfbeveiligd is kan de gebruiker bepaalde instellingen niet meer veranderen (dit kan een voordeel zijn).



Omdat de UO programma's veel gebruik maken van bestanden in de WERKDIR, TEMPDIR en BACKUPDIR kan op sommige netwerken een aanzienlijke snelheidswinst worden behaald door deze op de lokale harde schijf te zetten. Dus bijvoorbeeld door in de VABI.INI op het netwerk het volgende in te stellen:

- [VABI]
 WERKDIR=C:\VABI_UO\WERK\
 TEMPDIR= C:\VABI_UO\TEMP\
 BACKUPDIR= C:\VABI_UO\BACKUP\

Deze directories moeten dan wel weer eerst worden aangemaakt bij diegene die de programma's gaan gebruiken! Gebruikers die nog weleens van werkplek wisselen moeten dan wel steeds het project wegschrijven op de oude werkplek, en daarna weer inlezen op de nieuwe werkplek.

Eigen instellingen per gebruiker

Het is ook mogelijk om iedere gebruiker een eigen *INI*-bestand te geven zodat de gebruiker zijn eigen instellingen kan bewaren en anderen daar geen last van hebben.

Als eerste moet dan in het 'operating system' een omgevingsvariabele VABIUSER of USER of USERNAME gezet worden met de gebruikersnaam. (bijv. SET VABIUSER=PIET)

In de VABI.INI in de VABI_UO directory op het netwerk moet dan onder het kopje 'Users' de gebruikersnaam worden toegevoegd en een verwijzing naar zijn INI bestand.

Bijvoorbeeld:

- [Users]
 PIET=H:\USERS\PIET\PIET.INI

Het programma zal dan dit INI-bestand gebruiken om zijn instellingen op te halen en weg te schrijven. Dus ook de WERKDIR, TEMPDIR en BACKUPDIR instellingen uit de gebruikers-ini worden gebruikt.

Bijvoorbeeld:

Gebruiker Piet is ingelogd en de variabele VABIUSER staat op PIET.

De instellingen in VABI.INI worden dan:

- ----- VABI.INI -----
 [VABI]
 WERKDIR=Q:\WERK\
 TEMPDIR=Q:\TEMP\
 BACKUPDIR=Q:\BACKUP\
 PROJDIR=G:\DATA\VABI_UO\PROJ\
 BESTDIR=G:\DATA\VABI_UO\BESTAND\

 [Users]
 PIET=H:\USERS\PIET\PIET.INI

In H:\USERS\PIET\PIET.INI staat het volgende:

- ----- PIET.INI -----
[VABI]
WERKDIR=C:\VABI_UO\WERK\
TEMPDIR=C:\VABI_UO\TEMP\
BACKUPDIR=C:\VABI_UO\BACKUP\

Voor gebruiker 'Piet' moet dan het volgende gebeuren: Op zijn computer moet een snelkoppeling naar F:\APPS\VABI_UO\VABIMENU.EXE worden aangemaakt.

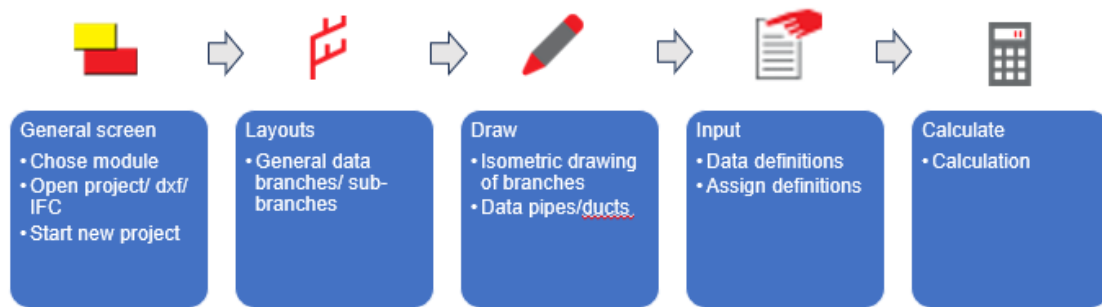
Het programma gebruikt dan de WERKDIR, TEMPDIR en BACKUPDIR in C:\VABI_UO\ op de computer van 'Piet'. Instellingen die niet in de gebruikers-ini staan worden dan uit de VABI.INI in de VABI_UO directory gehaald.

Instellen van de toegangsrechten

Om de programma's voldoende af te kunnen schermen van de gebruikers zijn de volgende (minimale) instellingen benodigd:

- Om er voor te zorgen dat meerdere gebruikers de programma's kunnen opstarten moet op de server meestal aangegeven worden dat de programma's in de VABI_UO folder ge-'shared' zijn.
- In de directory VABI_UO heeft de gebruiker genoeg aan lees- en filescan rechten.

3. Workflow



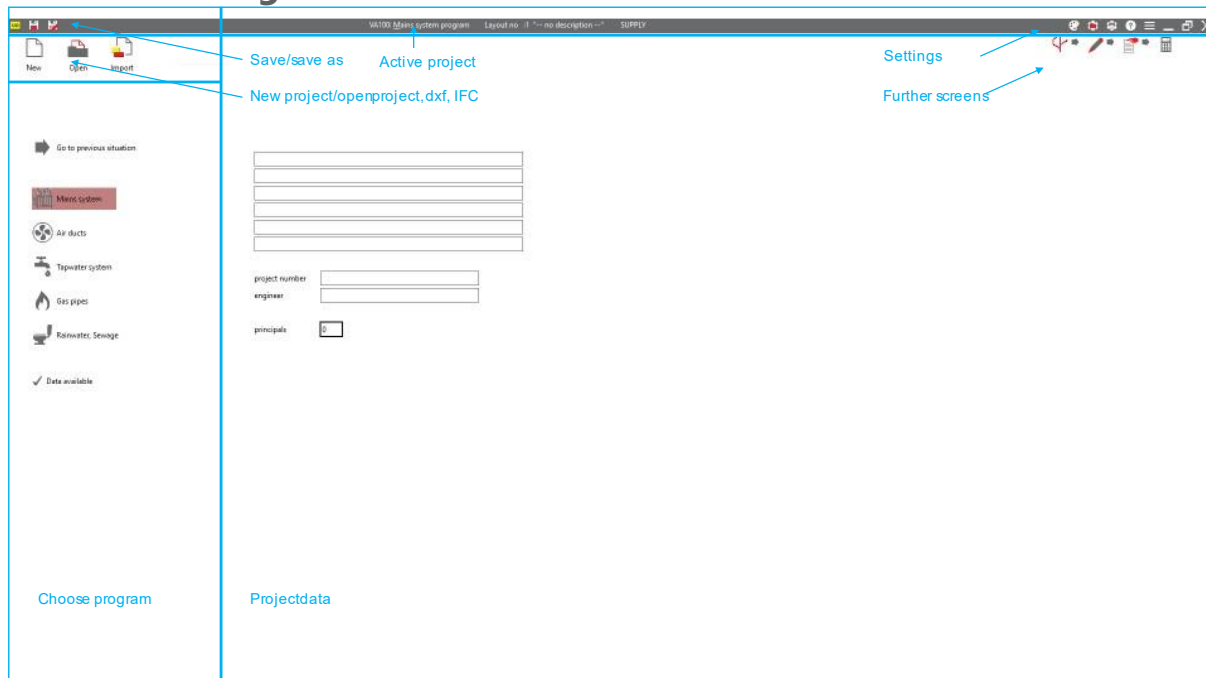
As shown schematically in the figure above:

1. In the general screen you choose a module and you can choose a new project or to read an existing project, DXF file or IFC;
2. In the layout screen, enter the general data per system;
3. In the drawing screen, draw or change the system to an isometric view;
4. The input screen contains all the tools to be assigned;
5. As soon as all data has been filled in, the calculation can be started from the calculation screen.

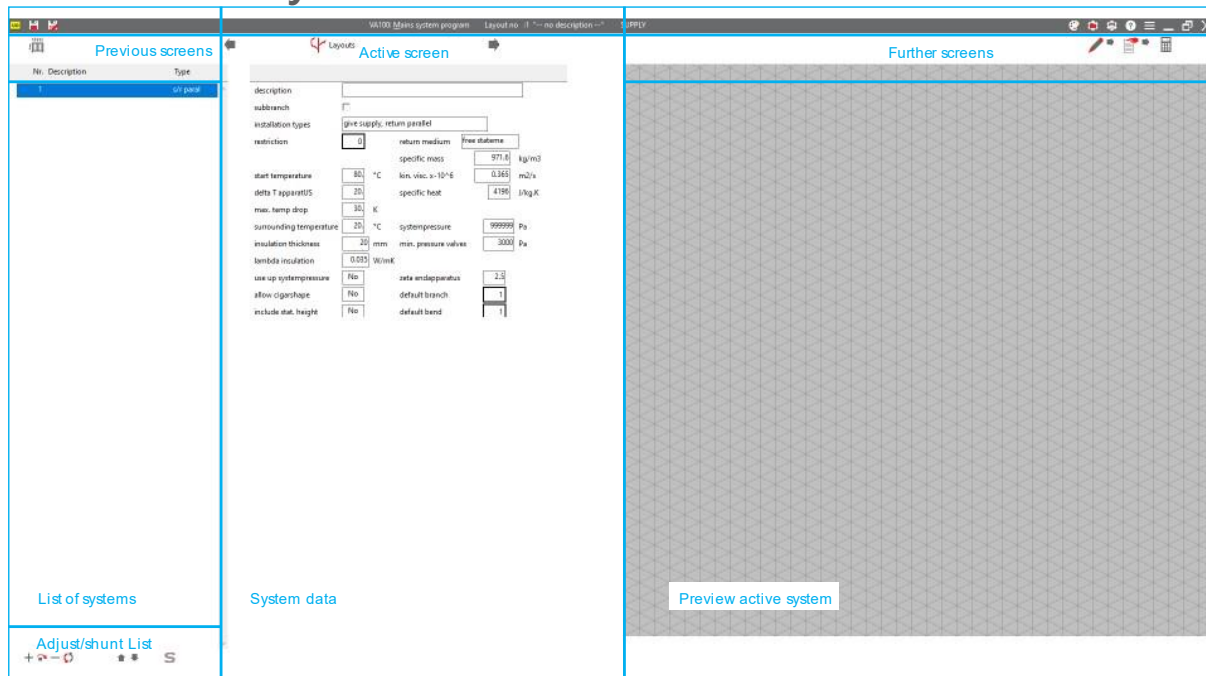
4. Interface en instellingen

The following chapters discuss the screens as well as the various function keys and keyboard shortcuts.

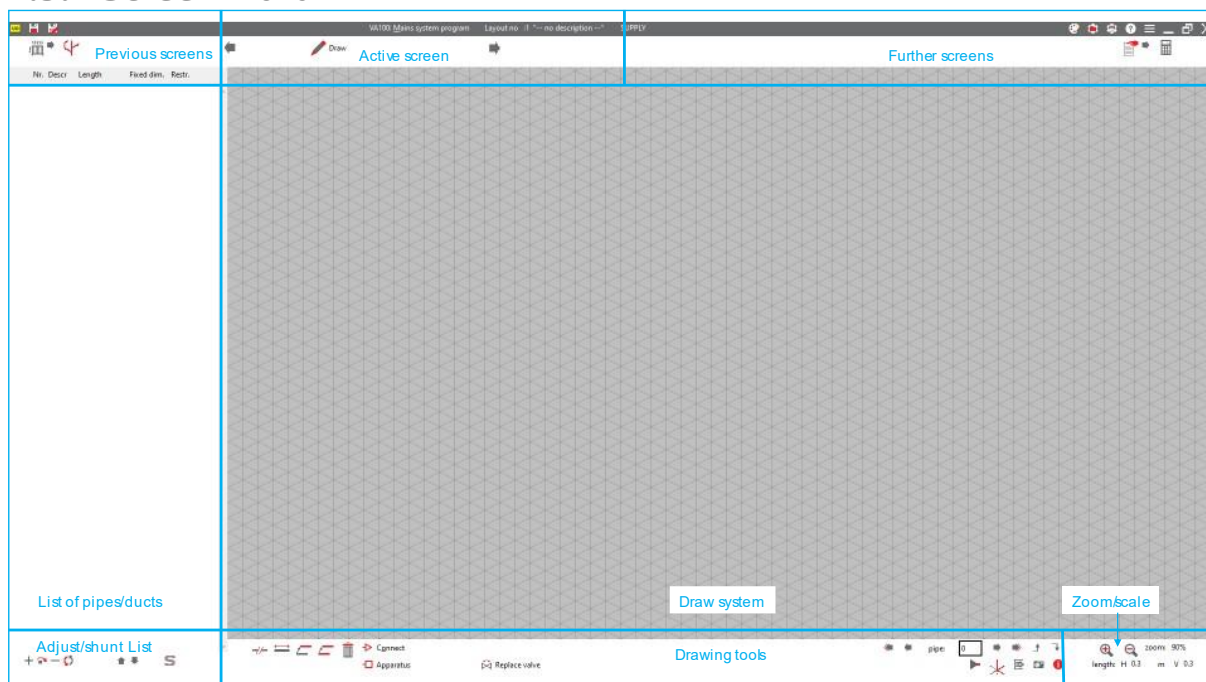
4.1. Screen – general



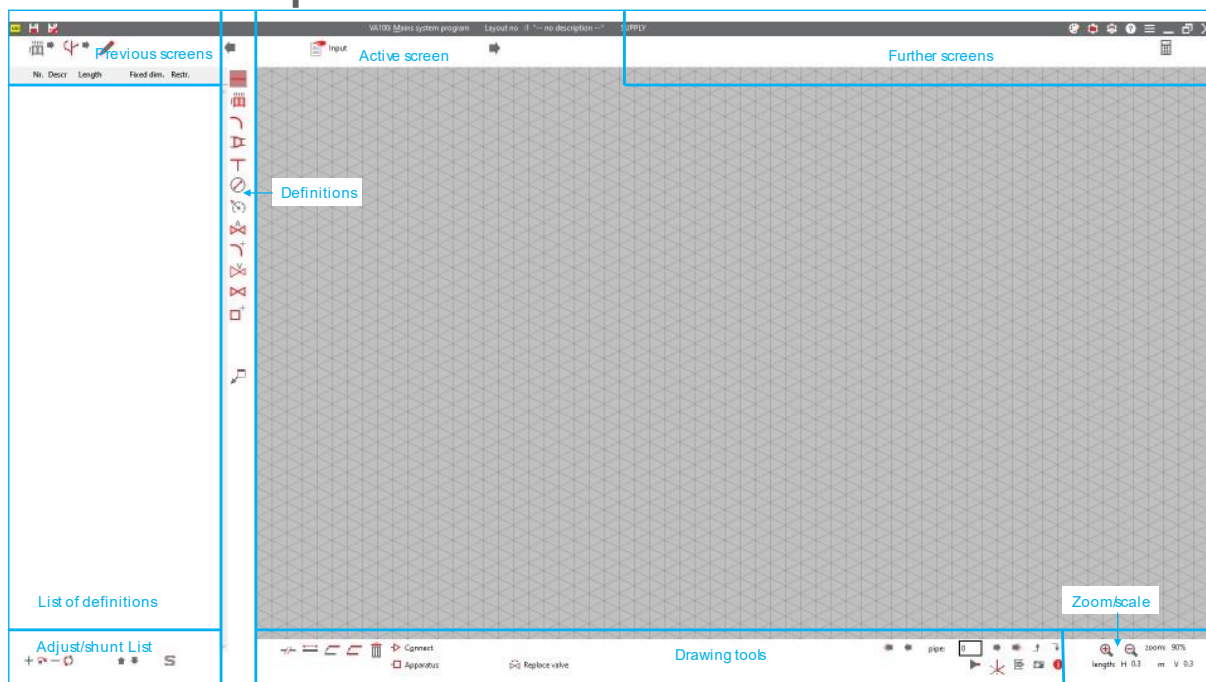
4.2. Screen – layout



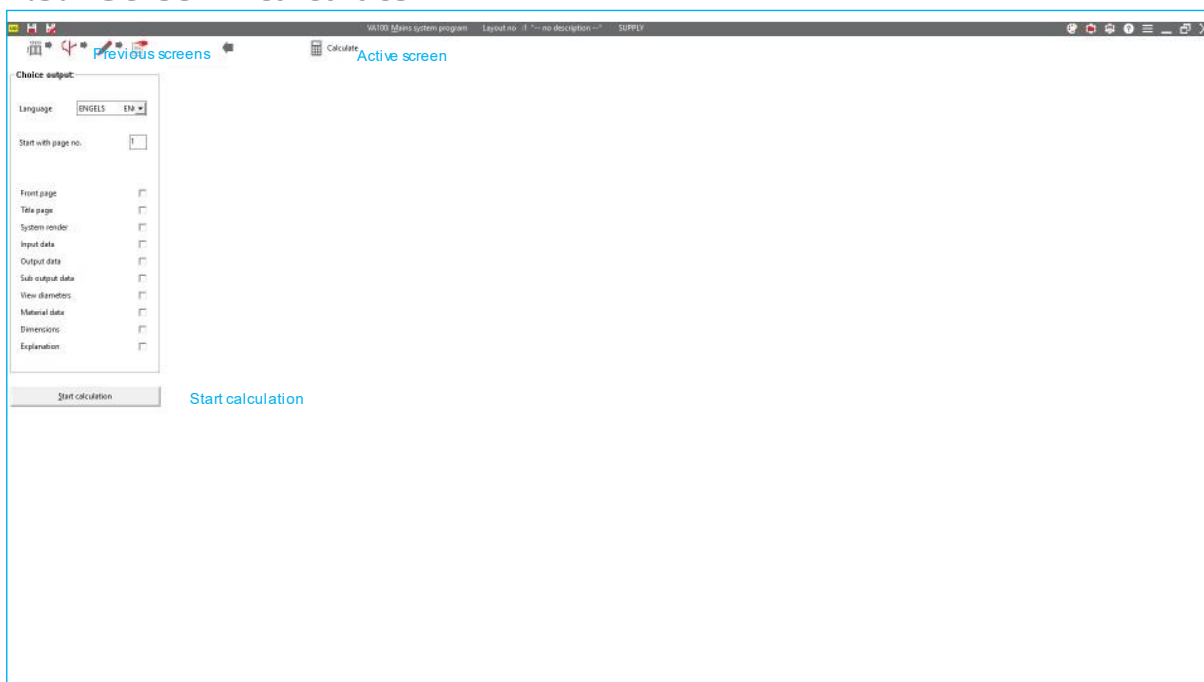
4.3. Screen – draw



4.4. Screen – input









4.5. Screen – calculate



4.6. Keyboard shortcut







An "undo"-function (or [ctrl]+[z]) is not possible in the program. Before every action in the drawing screen a back-up of the project is saved in C:\VABI_UO\BACKUP.

List of shortcuts (LMK: left mouse button; RMK: right mouse button)

Shortcut	Icon	Description	Screen	Mouse
[-]		Zoom out	Draw, Input	Scroll
[+]		Zoom in	Draw, Input	Scroll
[< ^ >]		Pan/move system	Layout, Draw, Input	LMK/RMK
[tab]		Next input field	General, Layout, Draw, Input	
[alt] + [E]		Export to DXF	Draw/3D view	
[alt] + [K]		Copy	Draw	[ctrl] + [shift] + LMK
[alt] + [L]		Move	Draw	[ctrl] + LMK
[alt] + [N]		Cancel	In screens waarin de text <u>A</u> nnuleren staat	
[alt] + [O]		Overzicht	In schermen waarin de text <u>O</u> verzicht staat	
[alt] + [O]		Ok in deelscherm.	In schermen waarin de text <u>O</u> k staat	
[alt] + [O]		Omzetten niveau	In schermen waarin de text <u>O</u> mzetten staat	
[alt] + [S]		Verschuif	Tekenscherf	[shift] + LMK
[alt] + [S]		Sluiten	Teken/3D weergave	
[alt] + [S]		Zet alle kleurinstellingen terug naar standaard.	Deelscherm kleur	
[alt] + [S]		Selecteren	In schermen waarin de text <u>S</u> electeren staat	

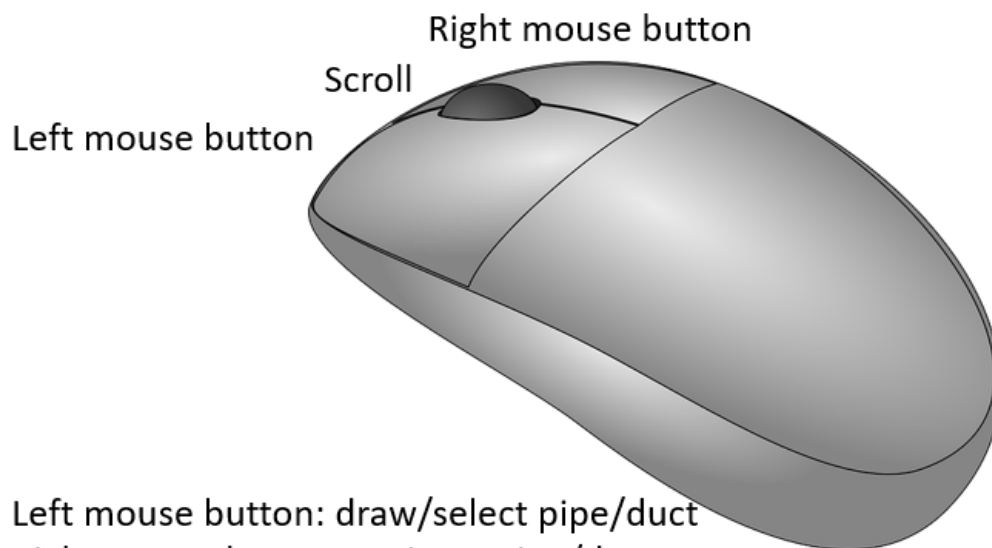
[alt] + [T]		Toevoegen	In schermen waarin de text Toevoegen staat
[alt] + [T]		Splits	Teken
[alt] + [W]		Wissen	Teken
[ctrl] + [N]		Nieuw project	Alle
[ctrl] + [O]		Inlezen project	Alle
[ctrl] + [S]		Opslaan project	Alle
[alt] + [V]		Geef een voorbeeld van de ingestelde kleuren weer.	Deelscherm kleur
[ctrl] + [shift] + [S]		Opslaan project als	Alle

4.7. Function buttons

Functiontoets	Icoon	Description	Scherm
[F1]		Help (on-line)	Alle
[F2]		Overslaan/uitzetten overslaan	Deelschermen
[F3]		Terughalen van verwijderde items	Deelschermen
[F4]		Toevoegen	Stelsel, Invoer
[alt] + [F4]		Stoppen met programma	Alle
[F5]		Verwijderen	Stelsel, Invoer
[F6]		Defaultwaarden	Stelsel, Teken, Invoer, Reken
[F7]		Rekenen	Alle
[F8]		Niveau wijzigen	Waar van toepassing
[F9]		Scherm ophalen	Stelsel, Teken, Invoer, Reken

4.8. Muiscoördinatie invoerschermen

Muis	Icoon	Description	Scherm	(Snel)toets
Scroll		Uitzoomen	Teken, Invoer	[-]
Scroll		Inzoomen	Teken, Invoer	[+]
LMK		Klikken: eindpunt nieuwe leiding	Teken	
LMK		Klikken: weergeven gegevens	Stelsel, Invoer	
LMK		Ingedrukt houden: verschuiven stelsel	Teken, Invoer	
RMK		Klikken: actief maken leiding	Teken, Invoer	
RMK		Ingedrukt houden: verschuiven stelsel	Teken, Invoer	
[ctrl] + LMK		Toewijzing ongedaan maken	Invoer	
[ctrl] + RMK		Verplaats	Teken	[alt] + [L]
[ctrl] + [shift] + RMK		Kopieer	Teken	[alt] + [K]
[shift] + LMK		Toewijzen/plaatsen	Invoer	
[shit] + RMK		Verschuif	Teken	[alt] + [S]



Left mouse button: draw/select pipe/duct

Right mouse button: activate pipe/duct

Scroll: zoom

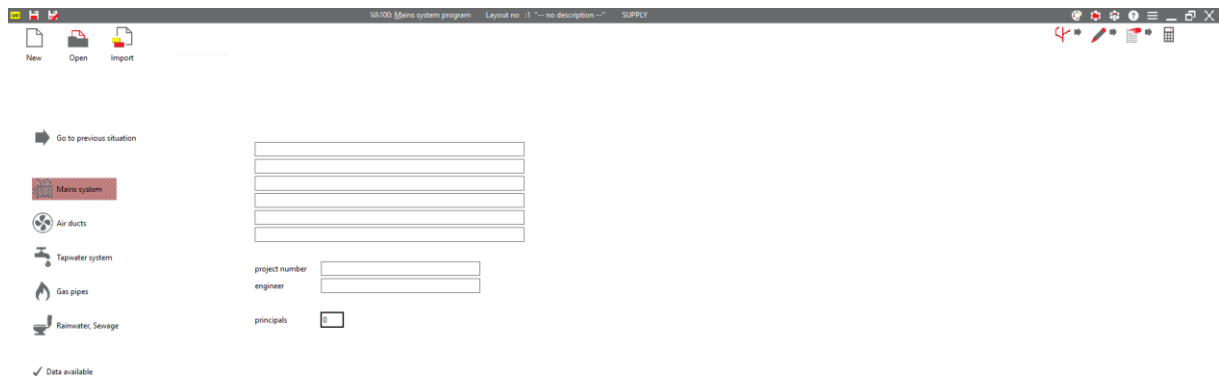
Hold mouse button: move system

Left mouse button + [shift]: connect definition

Left mouse button + [ctrl]: disconnect definition

5. Step 1: General screen

In the general screen you can switch between the programs. In this screen all general project data can be added.



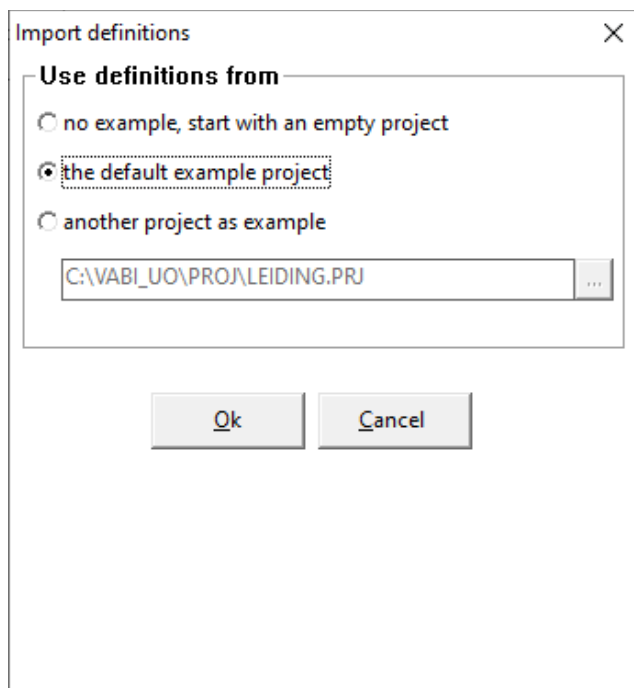
5.1. Start



New

[function] 

To start a new project. It's possible to import definitions of:



- No example, the new project will contain no definitions;
- The default example, the new project will contain definitions (dimensions) of the example project;
- Another project as example, the new project will contain definitions (dimensions) of the chosen project.

Open

[function]     

To open an existing project.


Import



[function]     



To import definitions or geometries (same program) of another project in the current project. See also



Import project



5.2. Go to...



 Go to previous situation


 Mains system 

 Air ducts 

 Tapwater system 

 Gas pipes 

 Rainwater, Sewage 

 Data available

Previous situation

[function]     

This button brings you back to the last open screen before the program was closed.

Mains system

[function]     

To start the program mains system.

Air ducts

[function]     

To start the program air ducts.

Tapwater system

[function]     

To start the program tapwater system.

Gas pipes

[function]     

To start the program gas pipes.

Rainwater, Sewage

[function]     

To start the program rainwater, sewage.

Data available

[function]     

The mark shows you which program has been used in this project.

5.2.1. Projectdata

project number

engineer

principals

0

Projectdata

[text]     

This is a discription of the project.

Project number

[text]     

The number of the project.

Engineer

[text]     

Name of the engineer.

Principle

[text]    

Possibility to add the name and data of the principle.

5.2.2. Address information principle

Address information principal nr. 1

Select

Cancel

Add

<<

>>

Overview

name

department

person

street

city

1000

AA

telephone

fax

modem

po box

city

1000

AA

Name

[text]    

Field for the name of the principal.

Department

[text]    

Field for the department of the principal.

Person

[text]    

Field for the name of a person of the principal.

Street

[text]    

Field for the adress of the principal

Postal code and city

[text]    

Field for the adress of the principal.

Telephone, fax en modem

[text]    

Field for the phonenumber of the principal.

Po box

[text]    

Field for the number of po box of the principal.

Postcode en plaats postbus

[text]    

Field for the adres of the po box of the principal.

5.3. Navigation and configuration

In the right top corner you can find these buttons.



Four buttons at the bottom to navigate to the further screens. The top buttons can be used for configuration. They can be used in every screen.



Colors.



Maps.



Printer.



Help (F1).



Update info.

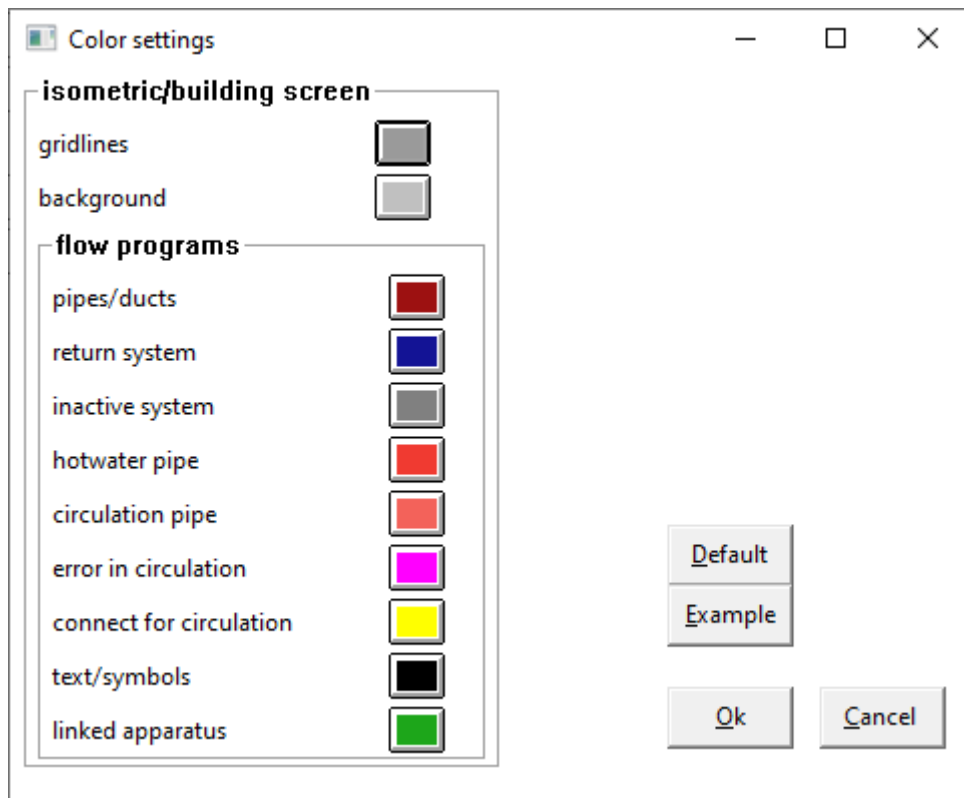
Minimize, minimize the screen.

Maximize, maximize the screen.

Close the program.

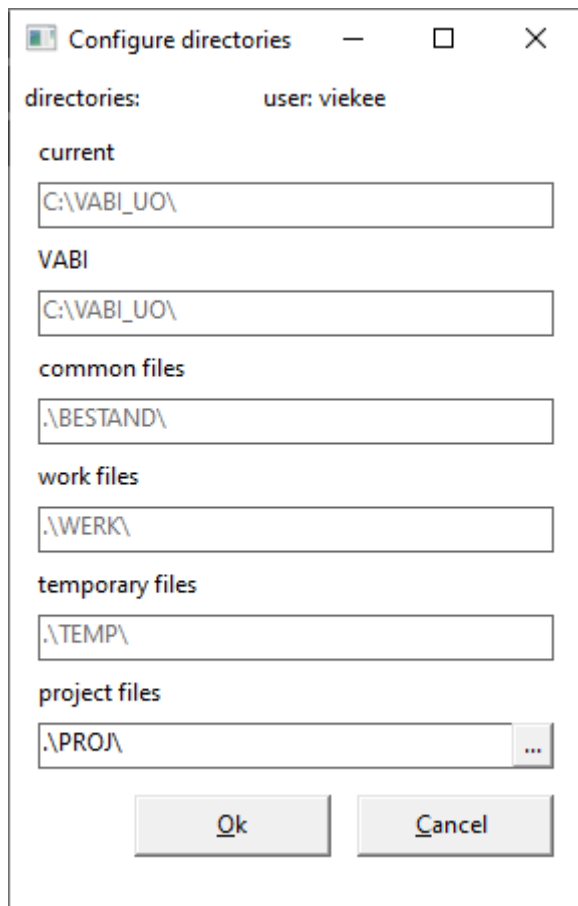
5.3.1. Colors

Color settings: you can set the colors of the grid lines, the background, but also the colors used in the flow programs for the various types of pipes, symbols and connected devices. The Example button previews the set colors, the default button resets all settings to the default settings.



5.3.2. Maps

Under Maps, the default file locations of the commonl, work, temporary, and project files can be showed. The path for project files (proj) is adaptable.



Configure directories

directories: user: viekee

current
C:\VABI_UO\

VABI
C:\VABI_UO\

common files
.\BESTAND\

work files
.\WERK\

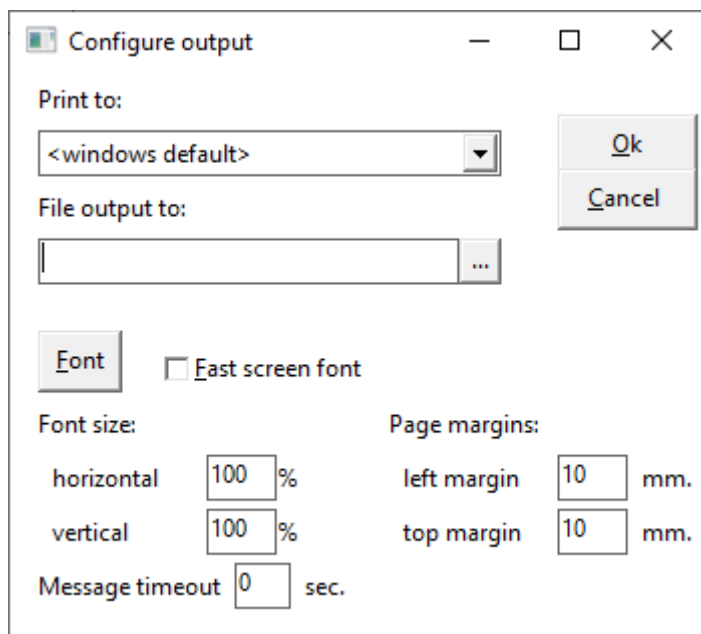
temporary files
.\TEMP\

project files
.\PROJ\

Ok Cancel

5.3.3. Printer

Printer: choosing a printer (or pdf writer) or file name. But also setting the output: font size and page margins. These settings are applied as default as soon as output is chosen after calculating.



Configure output

Print to:
<windows default>

File output to:
...

Font

Fast screen font

Font size:

horizontal 100 %

vertical 100 %

Page margins:

left margin 10 mm.

top margin 10 mm.

Message timeout 0 sec.


Ok Cancel

5.3.4. Help (F1)

Link to the on-line help file. This can also be done by using the [F1] key.


5.3.5. Update info

This option is intended to display the version of the program. In this case 11.60.

Vabi Software BV	License 10000
	
VA100 Mains system program voor laatste normversies zie online help	Version 11.60
	
<p>Vabi UO Release 11.60a</p> <p>Stille release voor versie 10.60a, ga naar downloads</p> <p>Ontdek ook de andere Vabi programma's zoals Epa en Elements.</p> <p>Nieuw, gekoppeld aan Epa, is Epa Maatwerk Advies</p>	
Click here for more information	

6. Stap 2: Layouts

The Layouts screen enters the general data of a system. This screen is used to manage the systems. There is the possibility to add, remove, skip in the calculation and recover deleted systems.

 Add new layout



Put a layout to be skipped



Delete a layout



Recover a layout



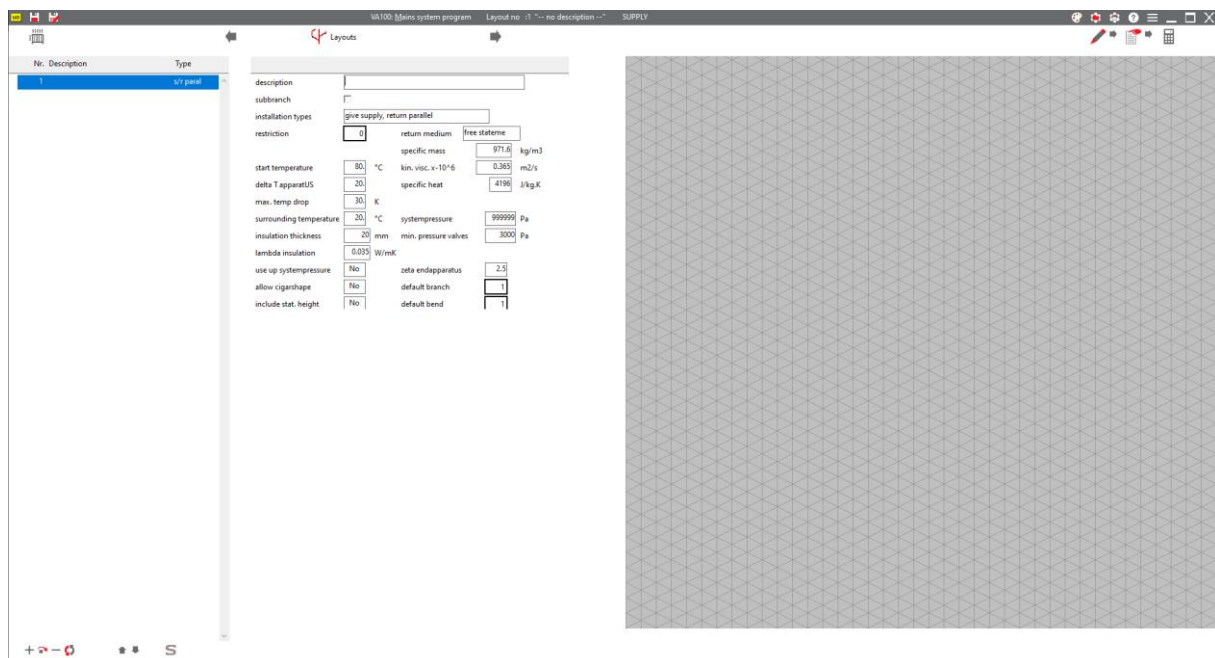
Previous list item



Next list item



Sort pipes to number/calculation order



6.1. Layout Mains system

When the **Main system** program is active, the input parameters that apply to a main system layout calculation are displayed.

6.1.1. General

description

subbranch

☐

installation types

give supply, return parallel

restriction

Description

[text] 

Add a discription of the layout.

Subbranch

[option] 

Indicates (main)branche or subbranche.

- Main branch; In the main branch is the beginning of the piping system, which contains a pump, fan, water meter, gas meter, etc.
- Sub-branch; Because larger systems can become cluttered and often contain identical branches, sub-branches (or sub-branches) can be used. A subbranch is basically an independent system with its own boundary. The other data (medium, specific gravity, temperature, etc.) and also the limit if not specified here are taken from the previous system, to which the subbranch is connected. One subbranch can be connected at several points in a system and even within several systems. The subbranch can also be used if a part of the total system should have a different boundary. Instead of running down all the pipes and changing the boundary here, this section can be made into a sub-branch. This limit then only applies to all pipes in the sub-branch.

Installation types

[choise] 

Installation type, the choises are:

- Single piping systems.
- Give supply, return parallel.
- Give supply and return together up.
- Double piping system (f.i. Tichelman-systeem).

Restiction

[choise] 

For the calculation of the system, pipe material and speed limits must be defined. If you click on this input field, you will be taken to the **Mains system** and Rainwater, Sewage screen.

6.1.2. Medium

		return medium	<input type="text" value="water"/>
		specific mass	971.04 kg/m3
start temperature	<input type="text" value="80."/> °C	kin. visc. x-10^6	0.3635 m2/s
delta T apparatUS	<input type="text" value="20."/> °C	specific heat	4196 J/kg.K

Medium

[choise] 

For the determination of the pressure drop in pipes/ducts, the density and kinematic viscosity of the medium to be transported is important.

- Water
- Free statement

Water: all specifications are automatically filled according toe the specified temperature. For the choise of free statement, the density, kinematic viscosity and specific heat of the medium must be specified. These can be found, for water/glycol, for example, in ISSO 18 Annex C.



ISSO Publicatie 18 (2012)

Leidingnetberekening

[ISSO-digitaal](#) | [ISSO Winkel](#)

Density

[kg/m³]

Density of the medium.

Kinematic viscosity (*-10⁶)

[m²/s]

Kinematic viscosity of the medium.

Specific heat

[J/kgK]

Specific heat of the medium. This specification and the specified deltaT allows the program to calculate the specified [W] of the apparatus to waterflow [kg/s].

Start temperature

[°C]

The temperature of the water in the system. At the start of the layout. This specification is used to determine the density, kinematic viscosity and specific heat of the medium in case of medium "water".

ΔT

[K]

Default temperature difference [K] between the supply and return flow. With this data and the specific heat the emission of the apparatus in [W] can be converted to mass flow [kg/s].

6.1.3. Temperature drop

max. temp drop	<input type="text" value="30."/>	K
surrounding temperature	<input type="text" value="20."/>	°C
insulation thickness	<input type="text" value="20"/>	mm
lambda insulation	<input type="text" value="0.035"/>	W/mK

Maximum temperature drop

[K]

A notification is given if the difference between supply and return temperature is greater than this value. This is just a warning, it is possible to continue calculating. Because there are losses in the pipes, max. dT higher than deltaT.

Surrounding temperature

[°C]

The ambient temperature is used to calculate the cooling (in case of heating) or the heating (in case of cooling) of the water in the pipes.

Insulation thickness

[mm]

Thickness of the insulation.

Lambda insulation

[W/mK] 

The coefficient of thermal conductivity of the insulating material. The default value is 0.035 W/m-K and corresponds to glass wool, polyurethane foam and polyethylene foam.

See, among others, Table 10 and Table 11 of ISSO 25 pipe insulation. [ISSO 25-2/3](#)

6.1.4. Pressure

systempressure Pa

use up systempressure

Systempressure

[Pa] 

Available system pressure. In some cases it will be desirable to limit the total pressure drop of an installation or installation part, for example with an already existing pump / fan. In that case, the program will flatten the pressure drop in the pipe network when calculating until the desired system pressure is reached. If no limit is desired, 999999 Pa can be filled in.

Use up systempressure

[Pa] 

If a desired system pressure is specified, the total system will be adjusted in such a way that the available pressure is completely consumed. This applies, among other things, to "stadsverwarming", where, for example, 10 kPa must be "fully used".

6.1.5. Fittings

min. pressure valves Pa

zeta endapparatus

default branch

default bend

Minimum pressure valves

[Pa] 

Minimum desired pressure for the valves can be specified due to the responsiveness of the valves (default value 3000 Pa).

Zeta endapparatus

[-] 

Resistance factor that is included in the calculation by default for each connected device. By default, this value is set to 2.5. This is a common value for radiators. For accurate calculations, consult the supplier's documentation.

Default branch

[choise] 

Indication of the default tee. Wherever the program sees a tee, this default value is used. This can be overruled at the tee itself.

Default bend

[choose] 

Indication of the default bend. Wherever the program sees a curve, this default value is used. This can be overruled at the bend itself.

6.1.6. Cigarshape, stat. height

allow cigarshape

include stat. height

Allow cigarshape

[choose] 

Choise from 'Yes' or 'No'. If one opts for cigar shape, dilations are allowed to occur in the course of the piping system. This means that in places the pipe first gets a larger diameter and then a smaller diameter again. No error messages are given in the output. If you choose No, error messages will appear in those places where deletions occur.

Include statistic height

[choose] 

Choise from 'Yes' or 'No'. If desired, pressure gradients due to gravity can be included in the calculation. If this is chosen, the static height will be taken into account for the vertical pipes.

6.2. Layouts Air ducts

When the **Airducts** program is active, the input parameters that apply to an air duct calculation are displayed.

6.2.1. General

description

subbranch ☐


sound VA112 ☒

restrictions

installationtype

fan

Description

[text] 

This is a possible description of the system. This is free to use.

Subbranche

[option] 

This indicates whether it is a main branch or a sub-branch.

- Main branch; In the main branch is the beginning of the piping system, which contains a pump, fan, water meter, gas meter, etc.
- Sub-branch; Because larger systems can become cluttered and often contain identical branches, sub-branches (or sub-branches) can be used. A subbranch is basically an independent system with its own boundary. The other data (medium, specific gravity, temperature, etc.) and also the limit if not specified here are taken from the previous system, to which the subbranch is connected. One subbranch can be connected at several points in a system and even within several systems. The subbranch can also be used if a part of the total system should have a different boundary. Instead of running down all the pipes and changing the boundary here, this section can be made into a sub-branch. This limit then only applies to all pipes in the sub-branch.

Sound VA112

[option] 

This field is only visible if the Sound in air ducts program has also been ordered from VABI. By clicking on this input field, you indicate that you also want to perform a noise calculation and specific input fields will appear for the sound calculation.

Restrictions

[choise] 

For dimensioning the dimensions, it must be known which pipe material and which speed limits are allowed. If you click on this input field, you will be taken to the Air **Air ducts**.

Installationtype

[choise] 

When clicking on this input field, a menu appears in which one can select from:

- **Supply;**
- **Return.**

Fan

[choise] 

This field is only visible if the Sound in air ducts program has also been ordered from Vabi and the option Sound **Sound** VA112 is checked. By clicking this input field in the **Fan** screen. Here you have the possibility to enter the data for the noise production of the fan. This is not yet important when dimensioning ducts, but it is important when calculating sound in air ducts.



In order to be able to make a noise calculation, a fan must be selected.

6.2.2. Medium

enter medium

2

temperature (°C)

20.

relative humidity (%)

65

Enter medium


[choise] 

For the determination of the pressure drop in channels, the kinematic viscosity and the specific gravity of the medium to be transported are important. When clicking on this item one gets a menu with the following options:

- **Density (kg/m³) – kin. visc. x 10⁶ (m²/s: 0** specify density and kinematic viscosity;


- **Temperature (°C) – amount of moisture (gr/kg): 1** specify temperature and amount of moisture of the air;
- **Temperature (°C) – relative humidity (%): 2** specify temperature and relative humidity of the air.

Density

[kg/m³] 

Density of the medium.

Kinematic viscosity (*-10⁶)

[m²/s] 

Kinematic viscosity of the medium.

6.2.3. Insulation


insulationthickness:

external mm

internal mm

wallroughness x 10⁻⁵ mm

External

[mm] 


Thickness of any external insulation present, this applies to all duct parts. This default insulation thickness can be deviated from per duct part. External insulation is possible only with rectangular channels. The insulation is included in the material state.

Internal

[mm] 

Thickness of any internal insulation present, this applies to all duct parts. This default insulation thickness can be deviated from per duct part. Internal insulation is possible only with rectangular channels. The insulation is included in the material state.

Wallroughness x10⁻⁵

[mm] 

Als er gekozen is voor inwendig insulation moet de wandruwheid van het inwendige insulationmateriaal worden opgegeven. De lucht stroomt namelijk niet langs de metalen of kunststof wand, maar langs het insulationmateriaal. ISSO-publicatie 17 geeft voor de wandruwheid van inwendig geïsoleerde kanalen 0.25 mm (invullen als 25) als richtwaarde (tabel 5.1 ISSO 17).



ISSO Publicatie 17 (2010)

Kwaliteitseisen voor luchtkanaalsystemen in woning- en utiliteitsbouw

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6.2.4. Pressure

system pressure Pa

System pressure

[Pa] 

Available system pressure. In some cases it will be desirable to limit the total pressure drop of an installation or installation part, for example with an already existing pump / fan. In that case, the

program will flatten the pressure drop in the pipe network when calculating until the desired system pressure is reached. If no limit is desired, 999999 Pa can be filled in.

6.2.5. Fittings

maximum A/B ratio	<input type="text" value="4."/>
keep A-size	<input type="text" value="No"/>
Tee	<input type="text" value="1"/>
bend	<input type="text" value="1"/>
airdensityclass	<input type="text" value="no leakage"/>

Maximum A/B ratio

[-] 

The value to be specified here is the maximum for the ratio of the two sides of a rectangular channel. This value must be at least 1.5 and may not exceed 9. In addition, A is the height of the channel.

Keep A-size

[-] 

If possible, the program dimensions square channels, e.g. 400x400, 250x250 and 200x200 mm. Maintaining A-size means that the size of size A (height) is maintained if possible, so for example that a 400x400 mm air duct is connected to a 400x300 mm duct, which in turn is connected to a 400x250 mm channel, etc.

Tee

[choise] 

Indication of the default tee. Wherever the program sees a tee, this default value is used. This can be overruled at the tee itself.

Bend

[choise] 

Indication of the default bend. Wherever the program sees a curve, this default value is used. This can be overruled at the bend itself.

Air density class

[-] 


Air ducts are used for a specific purpose, which requires a certain air density class, which is indicated by classes no leakage, class 0 and class A to D. Depending on the chosen air density class, the total air flow rate will be increased by the program.

6.2.6. Fan

This screen is a sub-input screen of the **Layouts Air ducts** and is clicked under **Fan**. This screen is only used for sound calculation (so the **Sound VA112** box must be clicked).

In this screen, the noise characteristic and data of the fan for the calculation of the noise production can be specified. Choise whether the fan noise output is calculated (Specify **Yes**) or whether the fan noise output is specified per octave band (Specify **No**).

General

	Select	Cancel	Add	<<	>>	Overview
description	<input type="text"/>					
coding	<input type="text"/>	supplier	<input type="text" value="0"/>			
calculate	<input type="text" value="No"/>					

Description

[text] 


This is a possible description of the fan. This is free to use.

Coding

[text] 

Unique coding for the fan, e.g. the order coding.

Supplier

[choise] 

Calling up the address details of **Adress information principle**.

Calculate

[choise] 

Choise from the possibilities below:

- **Yes:** the noise production of the fan is calculated;
- **No:** The noise production of the fan is specified per octave band.

If one chooses to calculate noise production of the fan, the sound power is calculated in accordance with section 2.3 of the ISSO-publicatie 24 Installatiegeluid.



ISSO Publicatie 24 (1990)

Installatiegeluid

[ISSO-digitaal](#) | [ISSO Winkel](#)

In this case, the air flow, the total pressure drop, the speed, the degree of operation, the type of fan and the number of blades shall be specified. If No is entered here, the noise production of the fan must be specified per octave band from 63 to 4000 Hz.


Properties

air capacity	<input type="text" value="0."/>	m ³ /h
total head (delta p)	<input type="text" value="0."/>	Pa
number of revolutions (max 3000)	<input type="text" value="0"/>	n/min
werkingsgraad (Q/Q _{opt})	<input type="text" value="0.1"/>	
design	<input type="text" value="Centrifugal"/>	
number of paddles	<input type="text" value="0"/>	n
paddleshape	<input type="text" value="Forward"/>	

dB/wave-band (Hz)	63	125	250	500	1000	2000	4000
moise production L _w							

data bank

Air capacity

[m³/h] 

To be filled in when **Calculate**Yes is chosen for **Calculate**. The air flow rate moved by the fan.

Total head (delta p)

[Pa] 

To be filled in when **Calculate**Yes is chosen for **Calculate**. The total head is the pressure difference across the fan. The head entered here is used for flattening.

Revolutions

[n/min] 

To be filled in when **Calculate**Yes is chosen for **Calculate**. The speed of the fan in revolutions per minute with a maximum of 3000.

Werkingsgraad (Q/Q_{opt})

[-] 

To be filled in when **Calculate**Yes is chosen for **Calculate**. The degree of operation of the fan is the ratio of the air quantity entered at **Air capacity** rate and the air quantity at the maximum efficiency of the fan, at the same speed. The degree of operation can be read from the fan characteristic.

Design

[choise] 

To be filled in when **Calculate**Yes is chosen for **Calculate**. Choise from the possibilities below:

- **Centrifugal**;
- **Axial**.



The correction at the sound power level for the determination of the sound power level per octave band is not the same for centrifugal fans as for axial fans.

Number of paddles[n] 

To be filled in **Calculate Calculate** for **Design** and when for **Execution for Centrifugal** is chosen. Number of blades of the fan for the determination of the vane frequency in centrifugal fans.

Paddle shape[choise] 

To be filled in **Calculate Calculate** for **Design** and when for **Execution for Centrifugal** is chosen. Choise from the possibilities below, this choise is necessary for determining the correction term per octave band:

- **Forward;**
- **Backward.**

Noise production L_w [dB] 

To be filled in when No is chosen **CalculateCalculate**. Here, the fan noise production per octave band can be specified. This can be filled in for the octave bands below:

- **63 Hz;**
- **125 Hz;**
- **250 Hz;**
- **500 Hz;**
- **1000 Hz;**
- **2000 Hz;**
- **4000 Hz.**

6.3. Layouts Tapwater system

When the *Fout! Verwijzingsbron niet gevonden.* program is active, the input parameters that apply to a tap water calculation are displayed.

6.3.1. General

<u>o</u> mschrijving	<input style="width: 100%;" type="text"/>
<u>s</u> ubtak	<input type="checkbox"/>
<u>b</u> egrenzinger	<input style="width: 50px;" type="text" value="0"/>

Description=Description[text] 

This is a possible description of the system. This is free to use.

Subtak=subbranch[option] 

Here it is indicated whether it is a main branch or a sub-branch.

- Main branch; In the main branch is the beginning of the piping system, which contains a pump, fan, water meter, gas meter, etc..

- Sub-branch; Because larger systems can become cluttered and often contain identical branches, sub-branches (or sub-branches) can be used. A subbranch is basically an independent system with its own boundary. The other data (medium, specific gravity, temperature, etc.) and also the limit if not specified here are taken from the previous system, to which the subbranch is connected. One subbranch can be connected at several points in a system and even within several systems. The subbranch can also be used if a part of the total system should have a different boundary. Instead of running down all the pipes and changing the boundary here, this section can be made into a sub-branch. This limit then only applies to all pipes in the sub-branch.

Begrenzungen=restrictions

[choise] 

For dimensioning the dimensions, it must be known which pipe material and which speed limits are allowed. If you click on this input field, you will be taken to the **Tapwater**.

6.3.2. Medium

temperatuur water °C

soortelijke massa (kg/m³) 999.7

kin. visc. x-10⁶ (m²/s) 1.308

maximum moment volumestroom:


mmv
 drinkwaterdeel %

Temperatuur water= water temperature

[°C] 


For the determination of the pressure drop in pipes, the specific gravity and kinematic viscosity of the medium to be transported is important. When filling in the temperature water value, the density and kinematic viscosity of the medium are automatically filled in.

Soortelijke massa= density

[kg/m³] 

Density of the medium.

Kinematische viscositeit (*-10⁶)= kinematic viscosity

[m²/s] 

Kinematic viscosity of the medium.

Maximum-moment-volumestroom= maximum moment volume flow

[choise] 

- Fire hose reel [l/min]; Maximum moment volume flow of the fire hose reels that may operate simultaneously in a network. In most cases, you will be charged a maximum of two.
- Continuous consumption [l/min]; Maximum moment volume flow of the continuous consumers that may operate simultaneously in a network.
- shower group [l/min]; Maximum moment volume flow of the shower groups that may operate simultaneously in a network.
- eye shower [l/min]; Maximum moment volume flow of the eye washes that may operate simultaneously in a network. Default 12l/min.
- face shower [l/min]; Maximum-moment volume flow of the facial showers that may operate simultaneously in a network. Default 24l/min.

- shower [l/min]; Maximum moment-volume flow of the showers that may operate simultaneously in a network. Default 30l/min.

Drinkwaterdeel= tap water part

[%] 

Factor relating to the expected concurrency of the use of emergency devices and the maximum moment volume flow of other taps, normally 25%.

6.3.3. Hulpstukken= fittings

I-stuk

bocht

T-stuk= tee

[choise] 

Indication of the default tee. Wherever the program sees a tee, this default value is used. This can be overruled at the tee itself.

Bocht= bend

[choise] 


Indication of the default bend. Wherever the program sees a curve, this default value is used. This can be overruled at the bend itself.

6.3.4. Druk= pressure

max. voordruk + verhoog.

 kPa

Maximum voordruk + verhoog= system pressure.

[kPa] 

Available initial pressure increased by the pressure of any pressure boosting device.

6.3.5. Circulatiesysteem= circulation system

circulatiesysteem:

isolatiedikte

mm

delta T

°C

lambda isolatie

W/mK

max. snelheid circulatie

m/s

isolatie factor circulatie

omgevings temperatuur

°C

according ISSO55

Isoltiedikte= insulation thickness

[mm] 

The insulation thickness for the circulation system. This insulation thickness applies to all pipes of the circulation system, including the hot water pipes that are in the circulation network.

Lambda isolatie= lambda insulation

[W/m·K] 

The coefficient of thermal conductivity of the insulating material. The default value is 0.035 W/m·K and corresponds to glass wool, polyurethane foam and polyethylene foam.

Isolatiefactor circulatie= insulation factor circulation

[-] 

Since the insulation at the location of fittings may be worse, it is desirable to calculate for the circulation pipes with a higher coefficient of thermal conductivity. This can be done by this factor.

Omgevingstemperatuur= surrounding temperature

[°C] 


The ambient temperature in degrees Celsius. This applies to all pipes of the circulation system.

ΔT

[K] 

The maximum temperature drop of the water in the circulation system.

Max. snelheid circulatie= maximum velocity circulation

[m/s] 

The maximum circulation flow rate in the circulation system. Default 0.7 m/s to prevent erosion.

According ISSO55

[choice] 

If "Yes" according to ISSO 55 is chosen, circulation lines can only be drawn as prescribed. If you choose "No", you can also draw and calculate in a different order. This may be necessary for existing situations. However, flow problems can arise.

6.4. Layouts Gas pipes

When the **Gas** pipes pipeline program is active, the input parameters that apply to a gas pipeline calculation are displayed.

6.4.1. General

omschrijving	<input type="text"/>
subtak	<input type="checkbox"/>
gelijktijdigheid	<input type="button" value="Yes"/>
begrenzinger	<input type="text" value="0"/>

Description=description

[text] 

This is a possible description of the system. This is free to use.

Subtak= subbranche

[option] 

This indicates whether it is a main branch or a sub-branch.

- Main branch; In the main branch is the beginning of the piping system, which contains a pump, fan, water meter, gas meter, etc.
- Sub-branch; Because larger systems can become cluttered and often contain identical branches, sub-branches (or sub-branches) can be used. A subbranch is basically an independent system with its own boundary. The other data (medium, specific gravity, temperature, etc.) and also the limit, if

not specified here, are taken from the previous system, to which the subbranch is connected. One subbranch can be connected at several points in a system and even within several systems. The subbranch can also be used if a part of the total system should have a different boundary. Instead of running down all the pipes and changing the boundary here, this section can be made into a sub-branch. This limit then only applies to all pipes in the sub-branch.

Gelijktijdigheid= simultaneity

[choise] 🔥

If this is chosen, a concurrency F will be taken into account during the calculation. When connecting up to 2 devices: $F=1$, when connecting 3 or more devices $F=0.8$.

Begrenzungen= restrictions

[choise] 🔥

For dimensioning the dimensions, it must be known which pipe material and which speed limits are allowed. If you click on this input field, you will enter the Gas **Gas pipes**.

6.4.2. Medium

soort gas

Aardgas

temperatuur gas

15.0 °C

soortelijke massa (kg/m^3)

0.788

kin. visc. $\times 10^6$ (m^2/s)

14.47

Soort gas= type of gas

[choise] 🔥

In het programma kan voor de onderstaande soorten gas gekozen worden. Het programma past automatisch de waarden voor de soortelijke massa en de kinematische viscositeit aan.

- **Aardgas= Natural gas:** will be used the most;
- **Propaan= Propane;**
- **Butaan= Butane.**

Temperatuur gas= temperatur gas

[°C] 🔥

Voor de bepaling van de drukval in leidingen is de soortelijke massa en de kinematische viscositeit van the medium to be transported of interest. When filling in the temperature, the specific gravity and kinematic viscosity of the medium are automatically filled in. This value can only be entered if **natural gas has been chosen**.

Soortelijke massa= density

[kg/m^3] 🔥

Density of the medium.

Kinematische viscositeit ($\times 10^6$)= kinematic viscosity

[m^2/s] 🔥

Kinematic viscosity of the medium.

6.4.3. Druk= pressure

begindruk

25.0 mBar

min. voordruk

23.3 mBar

Beginndruk[mbar] 

Available initial pressure. A distinction is made between high-pressure and low-pressure systems. At a pressure greater than 30 mbar, the rise gain is not taken into account when calculating. At gas pressures less than or equal to 30 mbar, ascent gain and rise loss are taken into account.

Minimum voordruk= minimum pressure[mbar] 

The minimum prepressure applies to the most heavily loaded device. The data from this device is printed in bold in the output.

6.4.4. fittings

bocht

1

Bocht= bend[choise] 


Indication of the default bend. Wherever the program sees a curve, this default value is used. This can be overruled at the bend itself.

6.5. Layouts Rainwater, Sewage

When *Rainwater, Sewage*.

6.5.1. General

omschrijving	<div style="border: 1px solid black; height: 20px; width: 100%;"></div>
subtak	<input type="checkbox"/>
HWA	<input checked="" type="checkbox"/>
gelijktijdigheid	<div style="border: 1px solid black; padding: 2px;">(0.5) woonfunctie</div>
begrenzinger	<div style="border: 1px solid black; padding: 2px;">0</div>

Omschrijving= description[text] 

This is a possible description of the system. This is free to use.

Subtak= subbranche[option] 

This indicates whether it is a main branch or a sub-branch.

- Main branch; In the main branch is the beginning of the piping system, which contains a pump, fan, water meter, gas meter, etc.
- Sub-branch; Because larger systems can become cluttered and often contain identical branches, sub-branches (or sub-branches) can be used. A subbranch is basically an independent system with its own boundary. The other data (medium, specific gravity, temperature, etc.) and also the limitation, if not specified here, are taken from the previous system, to which the subbranch is connected. One subbranch can be connected at several points in a system and even within several systems. The subbranch can also be used if a part of the total system should have a different boundary. Instead of running down all the pipes and changing the boundary here, this section can be made into a sub-branch. This limit then only applies to all pipes in the sub-branch.

HWA= rainwater drainage

[option] 

If rainwater connections are also specified, the box must be clicked here to enable rainwater drainage input.

Gelijktijdigheid= simultaneity

[choise] 

Concurrency coefficient. Several devices can be connected to a pipe. In simultaneous use, there is a composite discharge which determines the design flow rate and therefore the design diameter of the discharge. The design flow rate depends on the frequency of use and the dischargers used.

For the coefficient of concurrency, choise is out:

- Woonfunction (0,5)
- Office/education function (0.7)
- Horecafunction (0,7)
- Gezondheidszorgfunction (0,7)
- Winkelfunction (0,7)
- Logiesfunction (0,7)
- Celfunction (0,7)
- Bijeenkomstfunction (1,0)
- Sportfunction (1,0)
- Industry (Scheffer) (1.2)
- Other usage functions (0.7)

Begrenzungen= restrictions

[choise] 

For dimensioning the dimensions, it must be known which pipe material and which speed limits are allowed. If you click on this input field, you will enter the screen **Mains system and** Rainwater, Sewage.

6.5.2. Roof

dakvlak	<input type="text" value="helling 3° tot 45°"/>
oppervlakte (m ²)	<input type="text" value="0."/>
reductie dakbreedte	1.00
reductie intensiteit	1.00
regenintensiteit l/(s.m ²)	0.030

Dakvlak= roof plane

[choise] 

Type of roof surface. To determine the design flow rate of the rainwater drainage system, the total effective roof area is used. Depending on the type of roof surface, reductions for the design flow rate are applied. See NEN 3215, p. ..table..

Dakvlak	Reductie dakbreedte	Reductie intensiteit	Reductie intensiteit [l/(s.m ²)]
helling gecombineerd	vrij	vrij	vrij
helling 0° tot 45°	1.0	1.0	0.03
helling 45° tot 60°	0.8	1.0	0.03
helling 60° tot 85°	0.6	1.0	0.03
helling groter 85°	0.3	1.0	0.03
platte daken	1.0	0.75	0.03
platte daken (grind)	1.0	0.6	0.03
groendaken helling 3° tot 45°	1.0	0.75	0.03
platte groendaken, aardlaag > 25 cm	1.0	0.3	0.03
platte groendaken, aardlaag ≤ 25 cm	1.0	0.6	0.03

Oppervlakte= surface

[m²] 

For the input of the roof surface, we assume the actual roof surface and not the horizontal surface. To determine the surface area, we assume the effective roof width. For effective roof width, see NEN 3215, p..

Reductie dakbreedte= reduction width

[-] 

Due to the influence of the wind, the precipitation will never fall purely vertically. To offset this somewhat, a reduction in the roof width is applied depending on the roof slope (see table for roof surface).

At the choice of combined slope freely enter. For the other choices, the correct value is automatically filled in.

Reductie intensiteit= reduction intensity

[-] 

Depending on the slope and covering of the roof, the drainage of rainwater will be delayed. When determining the rainwater drainage system, a lower design flow rate can therefore be calculated by a reduction in the rain intensity (e.g. $0.7 \times 0.03 = 0.0225$ l/(s.m²)).

At the choice of combined slope freely enter. For the other choices, the correct value is automatically filled in.

Regenintensiteit= rain intensity

[l/(s.m²)] 

The average rainfall intensity for rainwater drainage systems is 0.03 l/s.m².

At the choice of combined slope freely enter. For the other choices, the correct value is automatically filled in.

Roof drain

dakafvoer:

HWA-Stelsel

overlaatsysteem (traditioneel)

instroming

(1.2) conische dakafvoer

afvoerfactor g

(0.6) aan vlakdakafvoer gekoppeld

dakafvoer:

HWA-Stelsel	UV-systeem directe daktrechter	
per noodoverlaat	250.0	m ² dakvlak
doorlaat breedte	0.4	m
afschot grondleiding	5.0	mm/m

HWA-stelsel= rainwater drainage

[choise] 

HWA system to be used. Here a choice can be made for the HWA system to be used. An HWA system is a pipe to which one or more HWA roof penetrations are connected.

We distinguish the following types:

- Overlaatsysteem (traditioneel)
- UV-systeem directe daktrechter
- UV-systeem flexibel daktrechter

Instroming- inflow opening

[choise] 

Type of inflow opening. To determine the design diameter of the HWA stand pipe, the characteristics of the gutter to be connected are decisive in addition to the roof surface. The standard inflow is sharp-edged. For example, a conical inflow may discharge a 20% larger flow rate (larger roof area). A roof surface is then calculated to be 1.2 times larger.

We distinguish the following values:

- [1.0] standaard dakafvoer ($r=1.0 \times \text{dakvlak}$)
- [1.2] conische dakafvoer ($r=1.2 \times \text{dakvlak}$)
- [1.2] binnen 2xD geen opstaande rand ($r=1.2 \times \text{dakvlak}$)
- [1.4] conisch, geen opstaande rand ($r=1.4 \times \text{dakvlak}$)

Afvoerfactor g- location drainage

[choise] 

Factor for location drainage. In addition to the aforementioned inflow, the so-called location is also decisive for determining the design diameter. The location is the ratio between the gutter type, gutter height and connection diameter. The calculated design diameter must be corrected later with this ratio.

We distinguish the following values (see NEN 3215, blz. 22 tabel 8)

- | | |
|--|---------|
| ▪ [1.0] na een verzamelleiding | $g=1.0$ |
| ▪ [0.6] aan dakgoot gekoppeld | $g=0.6$ |
| ▪ [0.6] hoogte goot $\geq D$ | $g=0.6$ |
| ▪ [0.3] $.65 D \leq \text{hoogte goot} \leq D$ | $g=0.3$ |
| ▪ [0.3] afvoer met stadsuitloop | $g=0.3$ |

Per noodoverlaat- emergency spillway

[m² dakvlak] 

When applying a UV rainwater drain, emergency spillways must be applied in case the mounted drainage pipes have insufficient capacity. An emergency spillway may take care of between 100 and 500 m² of roof surface.

Doorlaat breedte- width spillway

[m] 

The emergency spillway used may have a width [m] between 0.2 and 0.6. The program calculates the minimum height of the orifice to be applied.

Afschot grondleiding- slope groundpipe

[mm/m] 

The slope of the groundpipe to be applied

6.5.3. Fittings

T-stuk

bocht

T-stuk= tee

[choise] 

Indication of the default tee. Wherever the program sees a tee, this default value is used. This can be overruled at the tee itself.

Bocht= bend

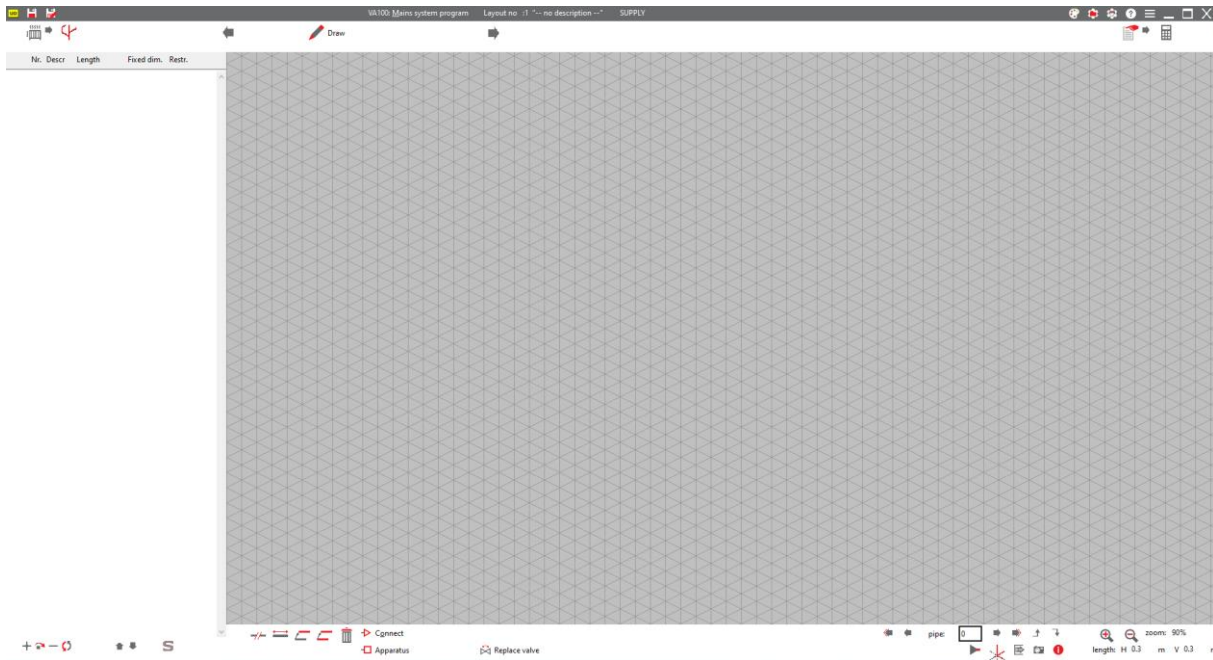
[choise] 

Indication of the default bend. Wherever the program sees a curve, this default value is used. This can be overruled at the bend itself.

7. Step 3: Draw

To make a calculation of a flow system, the geometry of the system must first be entered.

Via the Systems screen, the corresponding system can be opened in the Isometric input by selecting the arrow next to systems or clicking on the pencil at the top right. From the main menu, the Isometric input can also be opened directly by clicking on the pencil. If no General Installation screen is open yet, the first available system will be read in.



With the help of the Isometric input, a schematic 3-dimensional geometry can be easily built up. The drawing screen consists of an isometric grid, a bar with icons for extra functionality (copying, erasing, etc.) and the definition/overview screen. The drawing of pipes is done by connecting two points of the grid via a grid line (in the remainder of this instruction only the term 'pipe' will be used, one can also read air duct instead). In this way, a system consists only of pipes that are in line with each other (expired) or perpendicular to each other (bends, tees and cross pieces). The cross pieces are only found in Air ducts. Once a point has been placed on the grid, a pipe can be created via a grid line from this point. The following pipes can only be added to the end of an active pipe. The length of the drawn pipe (depending on the set length of a horizontal or vertical grid block) is included in the overview list to the left of the isometric screen. A different length and a possible name of the pipe can be entered in the overview list. The schematic input is also printed in the output of the program. A large piping system can be introduced in several parts (sub-branches). In the output, the piping system is therefore printed per sub-branch.

7.1. Drawing layout

Every time a pipe is created or selected, its unique number will be visible in the bar on the left. The Pipe Data screen can also be called up via this number. When one goes to another pipeline via the Pipe data screen, this pipeline will become active in the isometric screen.

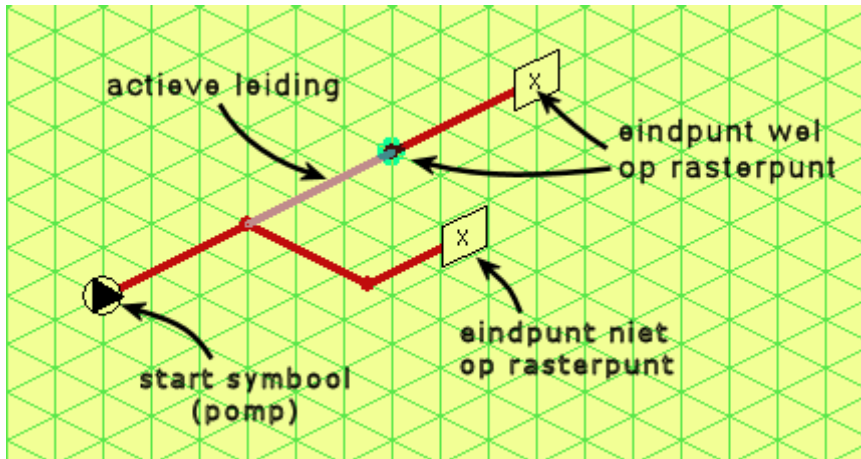
7.1.1. Drawing

After the isometric screen is opened, you can start drawing. If no system is already present, a starting point is placed somewhere in the grid. This then becomes the active point and a symbol (pump, fan...) appears.

If pipes are already present, then the end of the active pipe is the point from which new pipes can be added.







7.1.2. Grid

A new pipeline can only be drawn from an active point that lies on the grid. If this is not the case, you have to zoom in and out again ('+' and '-' or scroll button on the mouse), the end point of the active pipeline is then placed on a grid point.



If you are in danger of getting outside the drawing surface, you can move the drawing surface via the cursor keys or with a pressed mouse button.

7.1.3. Select


With the right mouse button, or using the 'buttons'    , another lead can be selected. For larger projects with many pipes, it may be necessary to first switch to a next or previous block with the buttons  .

If pipes are close to each other, you can try again with a second right mouse click to make the desired pipeline active. The program then looks for another nearby pipeline.

7.2. Adjust layout

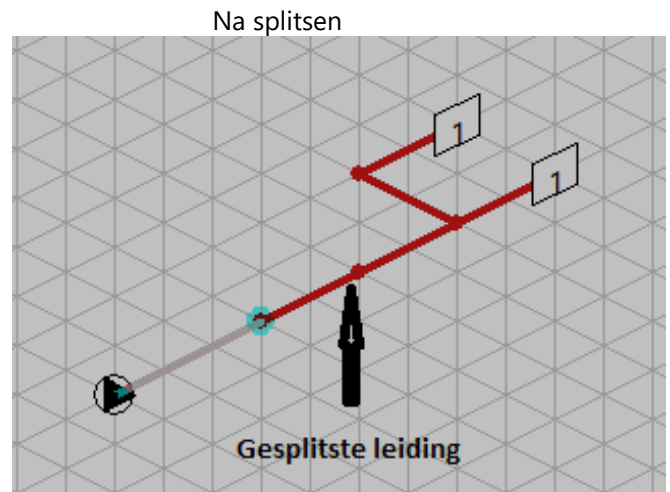
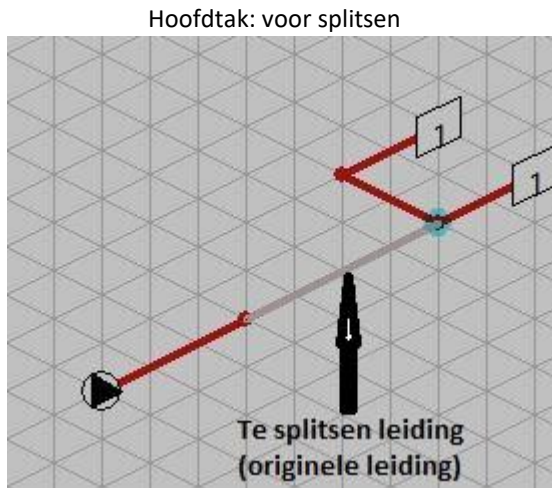
Here we discuss the functions that are present to be able to change a system.

7.2.1. Split

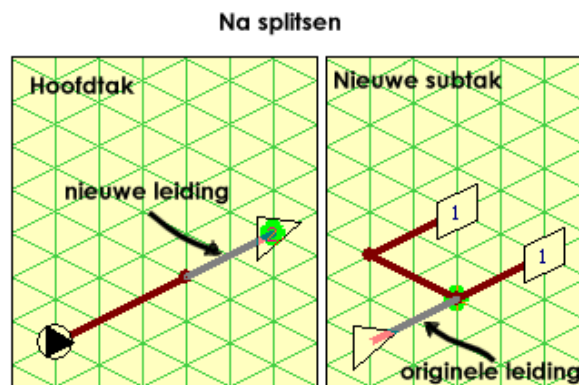
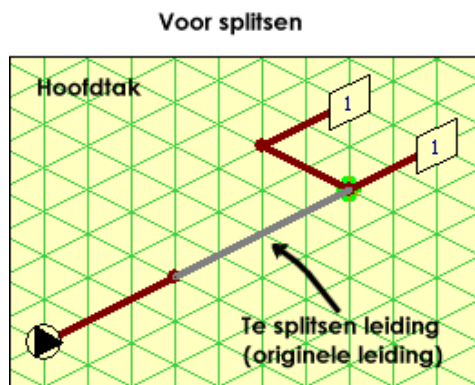
 Hotkey – Draw: **ALT-T**

With the **Split** function is used, a pipe can be split into two pipes. This function also makes it possible to split off part of the system as a sub-branch.

1. Right-click on the pipeline to be split; it now becomes active;
2. Click the **Split button**; the split function is now active;
3. Click on a point on the pipe selected in step 1; a **circle** appears around the point where the split will occur; the popup also appears **do you want to split the marked pipe?**; with the choice **Yes** you will proceed to the next step;
When choosing No or Cancel the function is aborted;
4. Do you want the branch to split off as a subbranche? will now appear; if no is chosen, the pipe is split as shown in the images below; if yes is chosen, the system is broken down at the indicated point in step 3; the part after this indicated point is placed in a new sub-branch; this is shown in the images below; When Cancel is chosen, the Split function is aborted.



Eventueel kan de geselecteerde leiding naar een subtak worden afgesplitst.



7.2.2. Shift

Hotkey – Draw: **ALT-S**
SHIFT-right mouse button

With the **Shift** function, a pipe of (drawn) length can be changed. As a result, the associated branch will also shift. If there is no overlapping pipeline, the direction of the pipeline can also be reversed.

1. Right-click on the pipeline to be moved; it now becomes active;
 - When you use **Shift + right mouse button** you can go directly to step 4;
2. Click on the **Shift** button; the isometric screen now indicates which branch will be moved;
 - Instead of clicking on the **Shift button**, the **ALT-S key combination can also** be used;
3. In the displayed screen, click **Yes** if the indicated branch needs to be moved. Click **No**, if you want to make a different selection;
4. The indicated branch now shifts with the mouse; Click where you want the offset to be; it is automatically snapped on the grid and the move is made.


7.2.3. Move

Hotkey – Draw: **ALT-L**

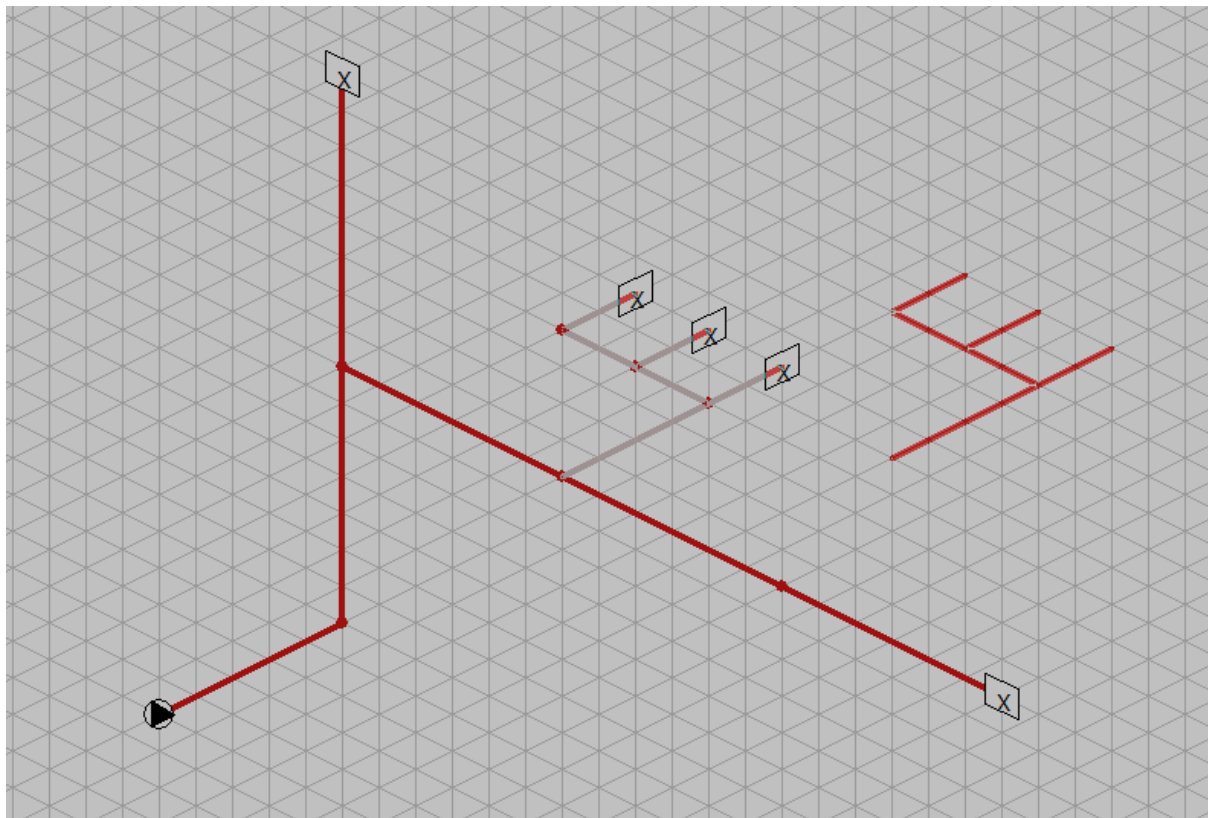
The Move function works in the same way as copying, only the originally selected branch is moved to the desired pipe. If the branch does not fit its new destination (the branch cuts other pipes), the promotion will be canceled.

You can also move it by just holding down the <Ctrl> key and then dragging a lead with the RMK.

7.2.4. Copy

 Hotkey – Draw: **ALT-K**

The isometric input is based on a tree structure. This means that if a pipe is copied, moved, etc., the pipes connected to it (the branch) are also included.

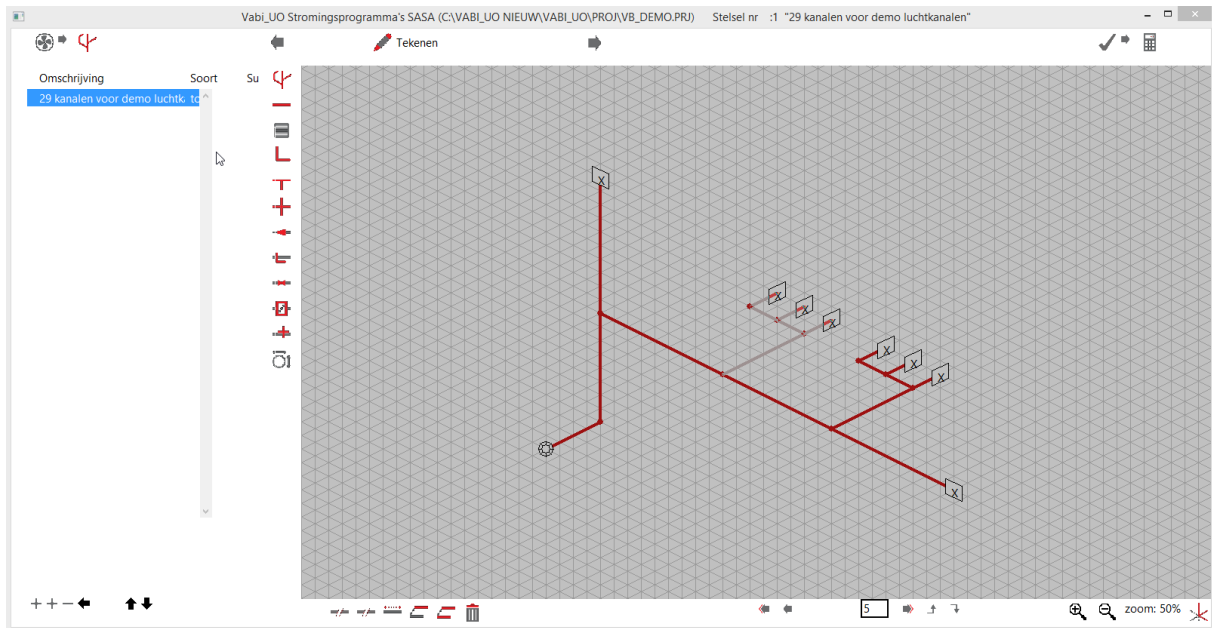


In the figure above, a branch is selected to copy. This is done by first activating the lead at the beginning of that branch and clicking the Copy button. Copying can also be done by holding down both the <Ctrl> and <Shift> keys and then dragging a lead with the right mouse button (abbreviated with [RMK]).

After this, the 'floating' copy can be connected to a node of one of the other pipes. During copying, attachments, devices and other information that has been placed in the branch are also automatically copied.

It is even possible to copy a branch to itself.

It is also possible to copy or move branches to any other system. When after choosing the branch to be copied (or moved), the 'floating' branch is visible, another system can be activated via the System icon. The 'floating' branch will therefore be visible here again!



7.2.5. Delete



Hotkey – Draw: **ALT-W**

The Delete function deletes the selected branch.

7.2.6. Connect/apparatus



The connect button is available to connect an active pipe to a sub-branch.



The button apparatus can replace an already placed sub-branch with a apparatus that breaks the link with the sub-branch.

How to apply these options is described in More detail in **Using sub-branches**

7.2.7. Switch between return and supply



With VA100 Leidingnet it is possible to specify a supply and return system separately. In the **Layout** screen, the **installation type** must be set to '*double piping systems*'. A return must therefore be signed for the isometric input for the system. With the **Return** or **Supply button**, the relevant part can be activated.



Return.



Supply.

This is explained in more detail in **Link between** supply and retur

7.2.8. Replace valve



In the piping program, all control valves of one type can be replaced at once by another, already created, type.



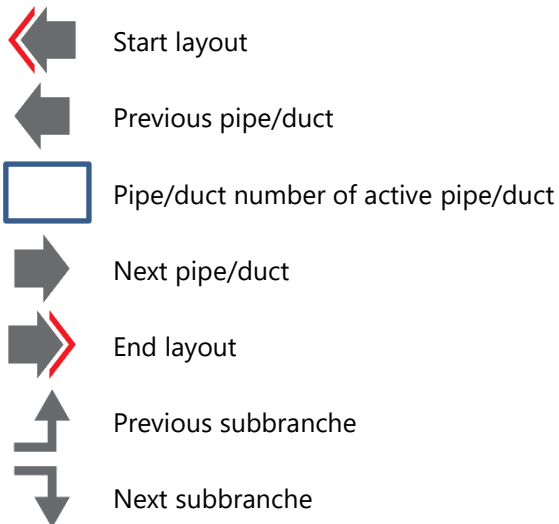
Replace valve.

7.3. Navigate

In the drawing screen, below the isometric screen, there are various icons to navigate through the galaxies, change the starting point, adjust the display or enable output to DXF.

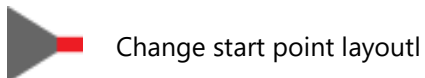
7.3.1. Navigation buttons

Various buttons are available to simplify navigation through systems and pipes/channels:

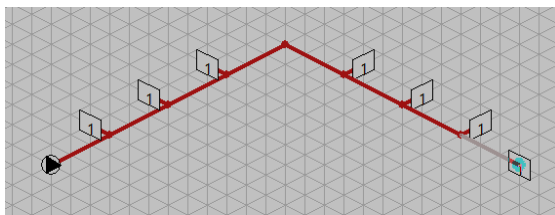


7.3.2. Functional buttons

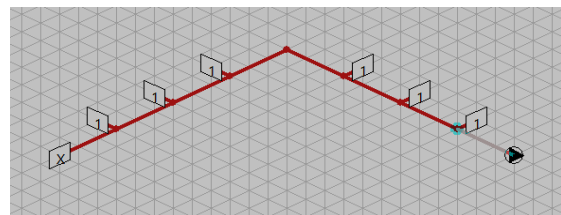
Below the isometric drawing screen there are various functional icons:



This option makes it possible to designate an active leadership as a new starting point of the system. A pump or fan will be installed here by the program.



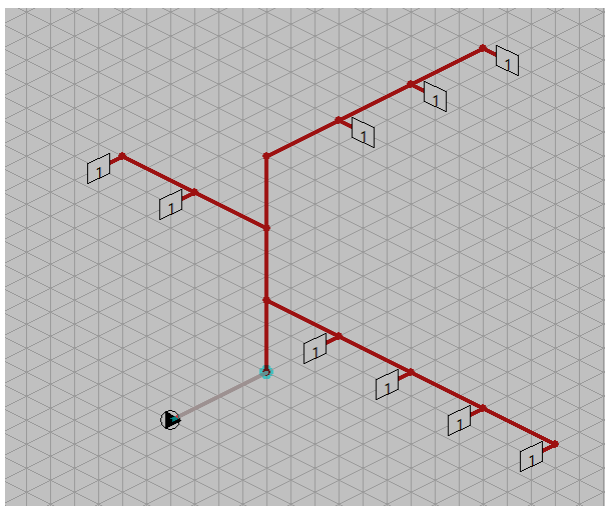
Before change starting point



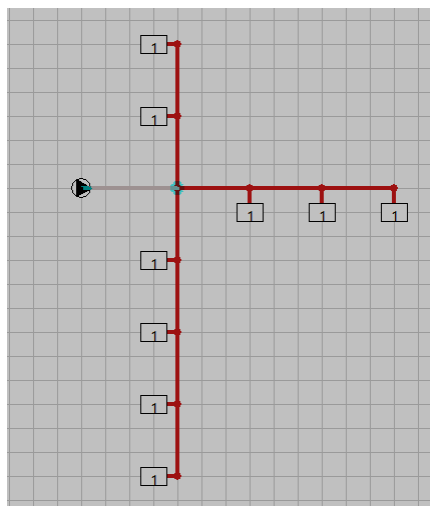
Ná verander beginpunt



This option changes the isometric view to a two-dimensional view and back again.



3D



2D



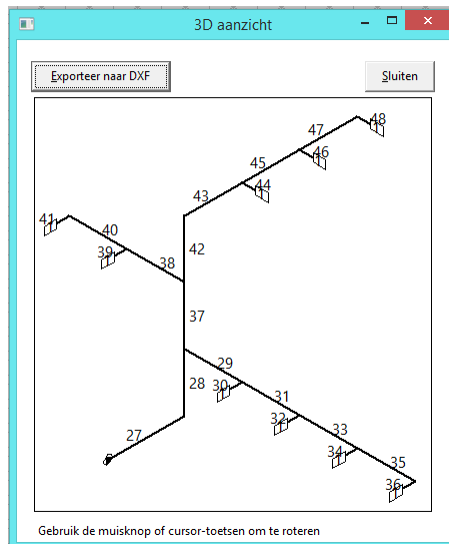
Export layout to DXF

This option makes it possible to export the system to a DXF file. **Export to DXF**



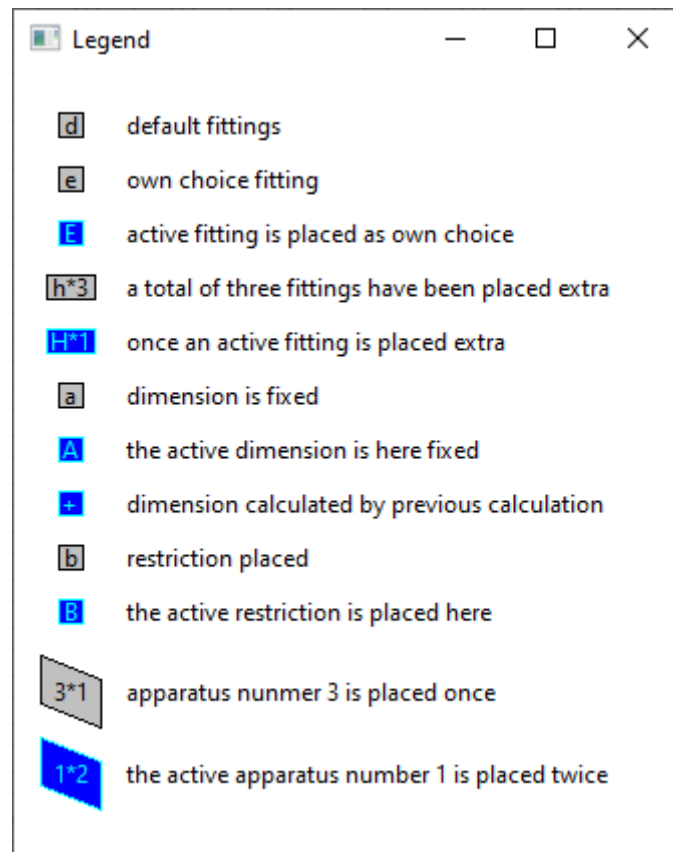
3D view

Returns a 3D view of the layout. From this screen you can also make an export to a DXF file.



Legend

Using this icon returns a representation of potentially used symbols in the display.



7.4. Using sub-branches

Because larger systems can become cluttered and often contain identical branches, sub-branches (or sub-branches) can be used. A subbranch is basically an independent system, with its own **Installation general** screen. For sub-branches, however, only the boundary can be specified separately in this screen. The other data (medium, specific gravity, temperature, etc.), as well as the limit if not specified here, are taken from the previous system to which the subbranch is connected. One subbranch can be connected at several points in a system and even within several systems.

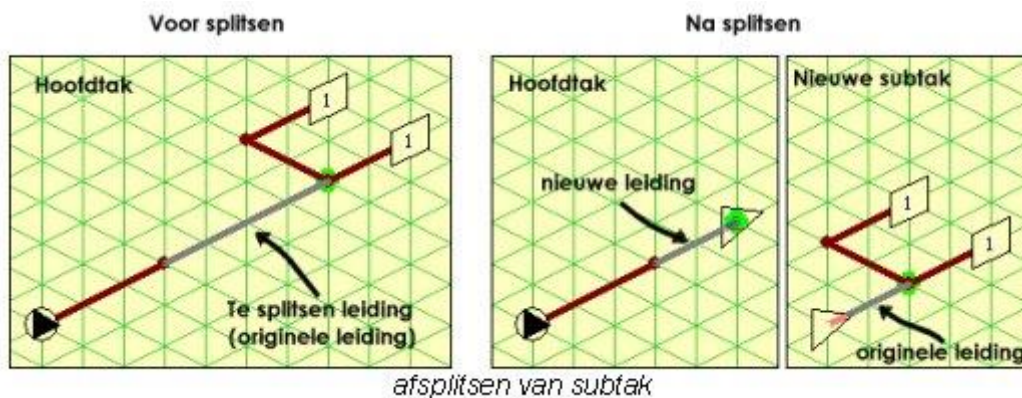
The advantage of this method is that a subbranch can initially be calculated as a normal system. Do not fill in the option subtak yet. Then provide all the general information. Enter the system part and then calculate it. If the calculation is sufficient, the option sub-branch can be enabled and this system can be used as a sub-branch.

The subbranch can also be used if a part of the total system should have a different boundary. Instead of running down all the pipes and changing the boundary here, this section can be made into a sub-branch and only the boundary in the **Installation general** screen can be changed for this. This limit then applies to all pipes in the sub-branch.


Creating and connecting sub-branches can be done in different ways.

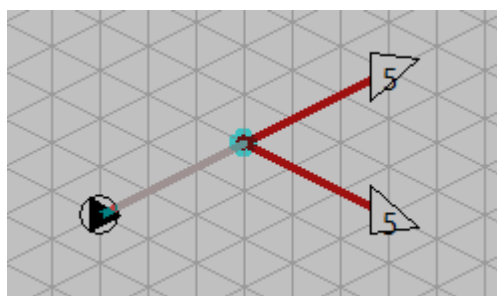
- The New function button (in the system screen) creates a new system. If the active management of an already existing system is a 'final pipeline' (and therefore has no branches), it is possible to link this new system as a sub-branch to the active pipeline.
- A new sub-branch can be linked to a 'final pipe' of a system by means of the Link function . And then to answer "yes" to the question "Link new system as a sub-branch to current leadership?" This new system can be drawn directly in a new screen.

- An already existing sub-branch can also be linked to an 'end pipe' of a system by means of the **Link** function. And then answer the question "Link new system as a sub-branch to current leadership?" with "no". A choice can then be made from a list of all available systems.
- The Split function can be used to split off a branch as a sub-branch. After a split point on a pipe has been chosen, the choice can be used to split off the branch as a sub-branch, the branch following this pipeline. A new pipe is then created with a link to a new sub-branch, which has the 'originally' chosen pipe as the starting line. (see figure below)

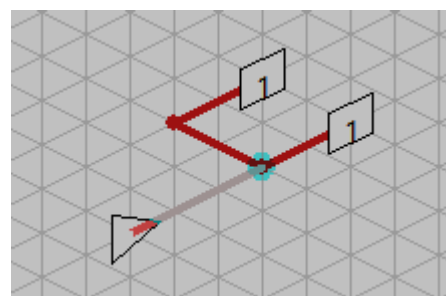


Once linked, a sub-branch can be disconnected and possibly replaced by another sub-branch. If a subbranch is linked to a pipe, the end device changes to a subbranch link with the number of the system. After that, the Pair button will change to **Device**. Changing or removing a sub-branch link is now done with the **Device** function, which gives the pipe an end device again. The button then changes back to **Link**, after which a new sub-branch can be linked.

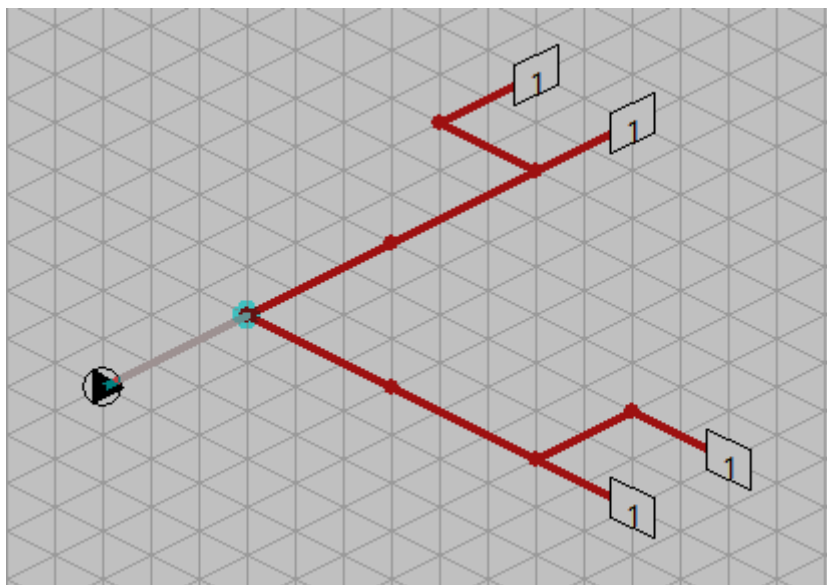
 Sub-branches are **always connected** to pipes as a **gradient**. Thus, the direction to which a sub-branch is drawn is unimportant for the main branch to which it is connected. As shown in the figure below, **subbranch 5** is linked **in the calculation as a gradient on the different pipes of the main branch**.



Main branch



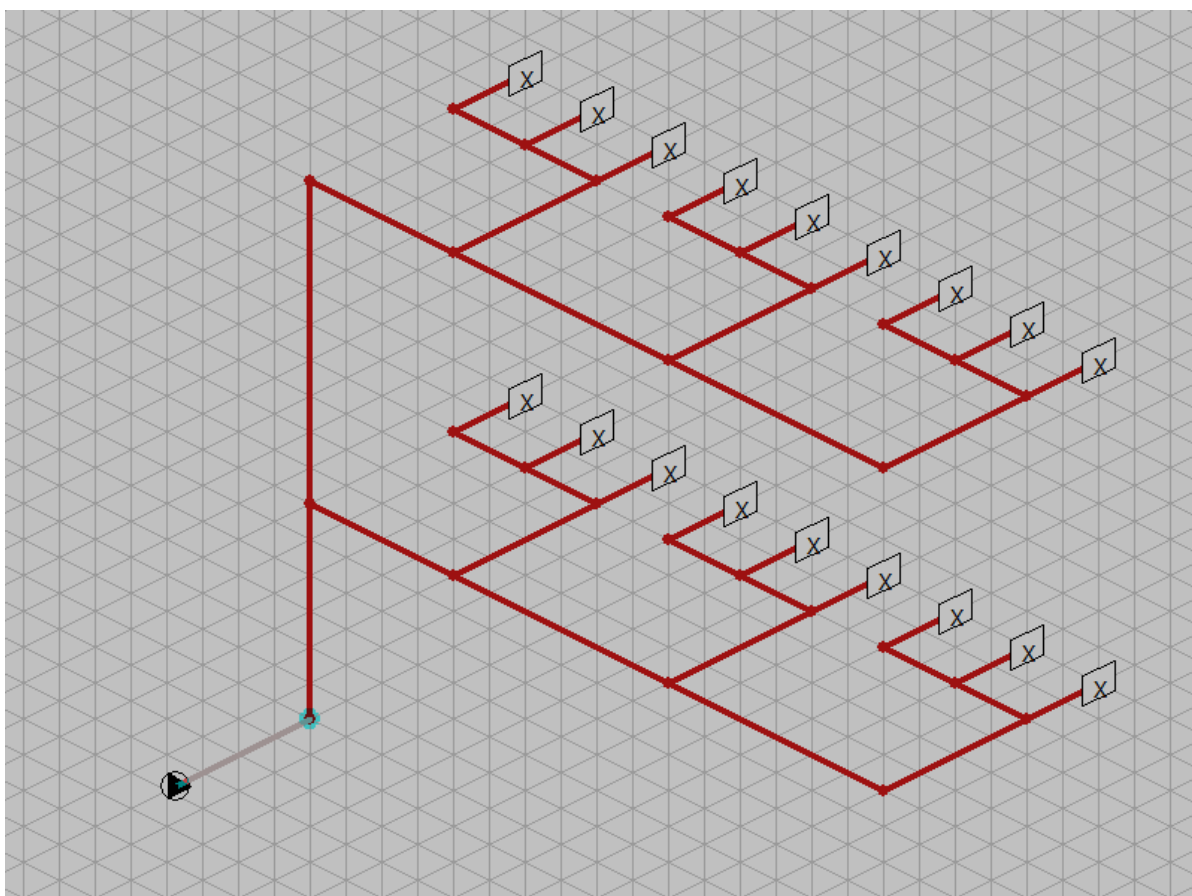
Sub-branch 5



According to the calculation

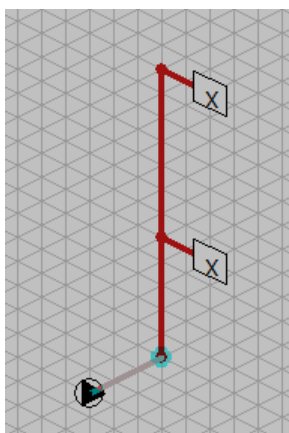
7.4.1. Simple example entering sub-branches

The system shown in the figure below will result in considerable savings in imports when sub-branches are used. This system is introduced using sub-branches.

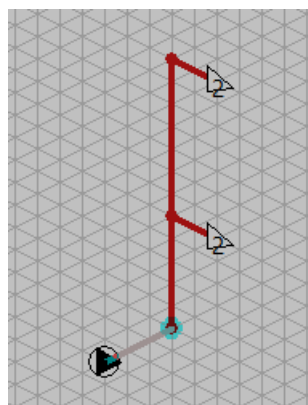


Picture the system without subbranches

We start by entering the vertical main branch with two horizontal branches as shown in the following figure.

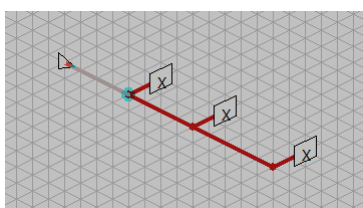


Main branch picture

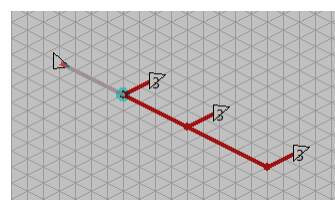


Main branch 2x connected to subtak

Then select a horizontal end line so that it becomes active. Then click on **New**. The next question '**Link new sub-branch to current leadership?**' is answered with 'Yes'. A triangular symbol appears and the sub-branch is drawn from here: a horizontal strang (figure below). This strang is now connected to the horizontal 'end line' of the vertical main branch that was active before drawing the sub-branch. To connect the horizontal strang to the second connection of the vertical main branch, the symbol << is used to return to this strang (figure above). One clicks with the right mouse button on the point to which one wants to link the subbranch (it has become active as a result) and then clicks on **Link**. An overview of the entered branches will appear and select the sub-branch that should connect at this point. At that place there will be a triangular symbol with the relevant subbranch number.

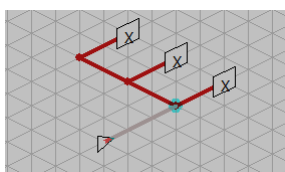


Picture horizontal strang



Horizontal strang 3x connected to subbranch 3

Finally, a new sub-branch (figure below) is introduced which is connected three times to the horizontal strang using the same method as described above.

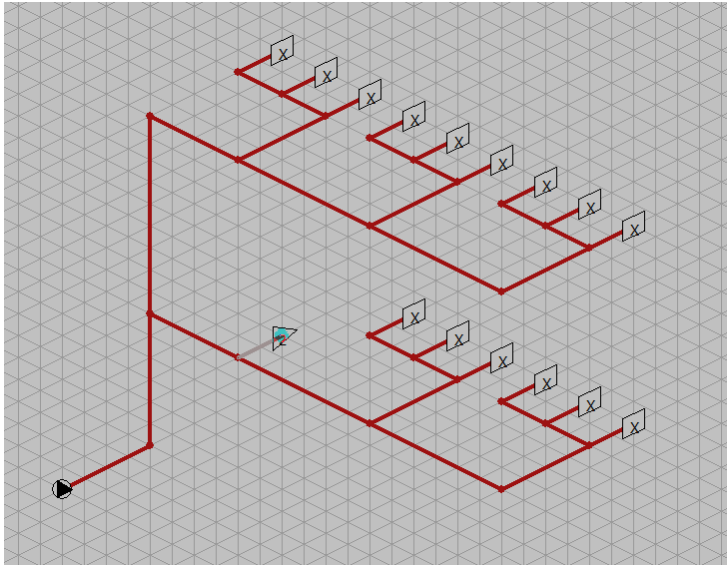


Picture new sub-branch

7.4.2. Splitting up a large system

Large systems with identical branches can be divided into parts for the sake of clarity. It is again based on the previously introduced system.

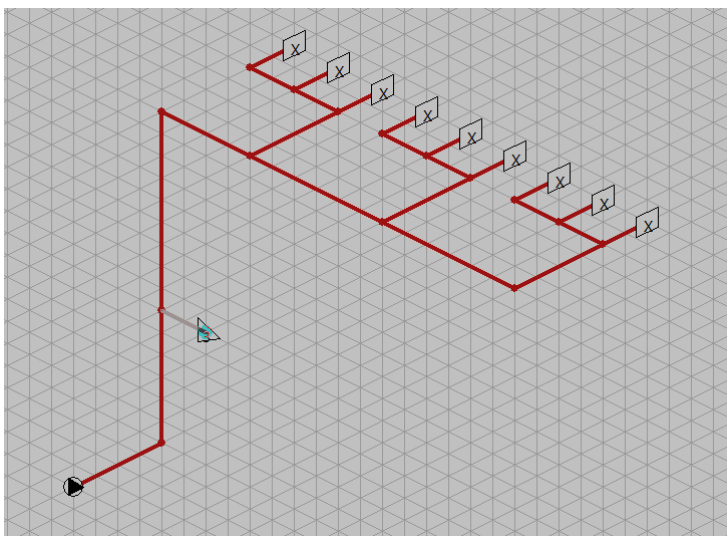
First, in the figure below, the selected pipeline is split off into a sub-branch. By choosing the already existing terminus of the pipeline as the split point, it is broken up into two pipes in the middle. The original pipe (with the original pipe data) becomes the first pipe of the new sub-branch, the newly created pipeline (with unfilled pipe data) contains the link to the sub-branch.



Picture split subbranch

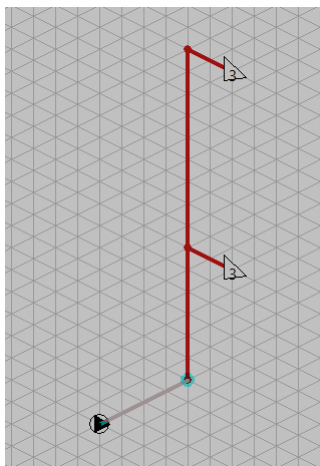
In the figure above, the same branches can then be deleted, and the pipe with the sub-branch link can also be copied here.

To further simplify the system, the branch with the three sub-branch references is also split off to a sub-branch (figure below). As a result, the top branch can also be replaced by a reference to the newest sub-branch.

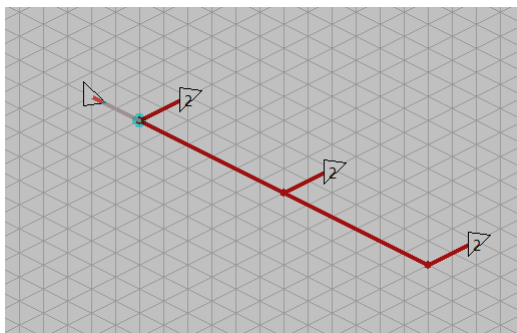


Picture split off again as a sub-branch

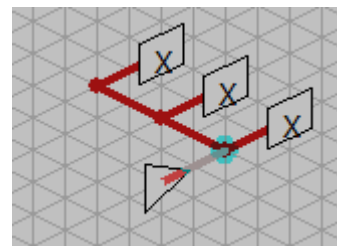
The whole system is now divided into three simple sub-branches.



Main branch



Horizontal sub-branch



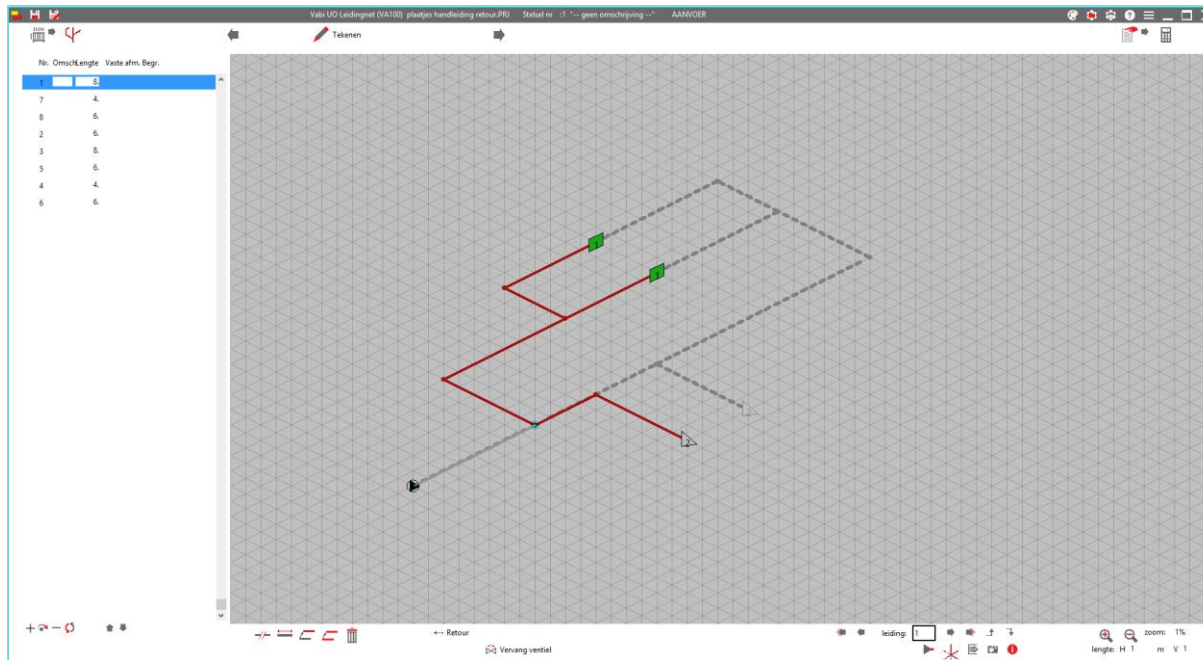
Last subbranch

7.5. Link between supply and return

With VA100 Leidingnet it is possible to specify a supply and return system separately. In the **Installation general** screen, the **installation type** must be set to '**supply and return pipe**'. A return must therefore be signed for the isometric input for the system. With the **Return** or **Supply button**, the relevant part can be activated.

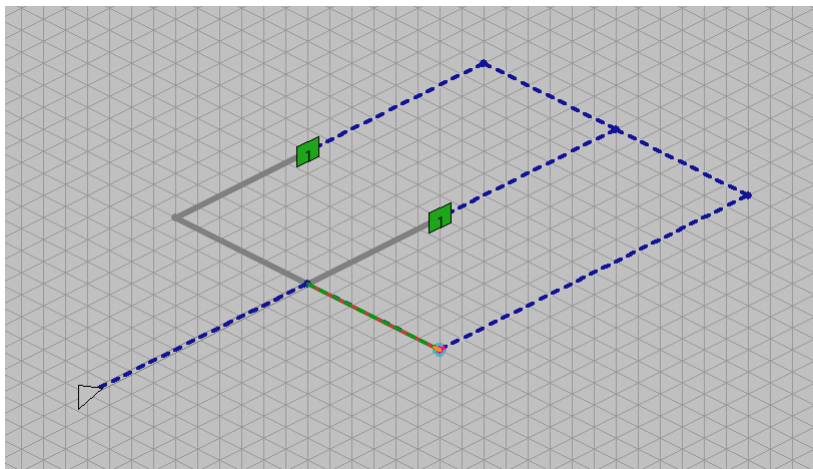
The following points should be taken into account::

- The end devices of the supply and return must be connected to each other. This is done by drawing a final pipe of the supply on a final pipe of the return (or v.v.). If the end devices then have the same position, the program automatically connects the devices. The number of the device is taken over and it is given a different color to indicate pairing. If the positions do not match exactly according to the 3 dimensions, a notification will be given. You can choose to ignore this, creating a 'crooked' pipe. This is not a serious problem, only with the 3D view and a possible exportable DXF drawing this will be visible from certain points of view.
- The calculation can only calculate a system with sub-branches of the same installation type. So if the main system has a separate supply and return, all the sub-branches used in it must also have them. As an example, see the figures below. This shows the main system with 2 devices linked to its return. And both in the supply and the return there is a link to sub-branch no.2.



Main system picture

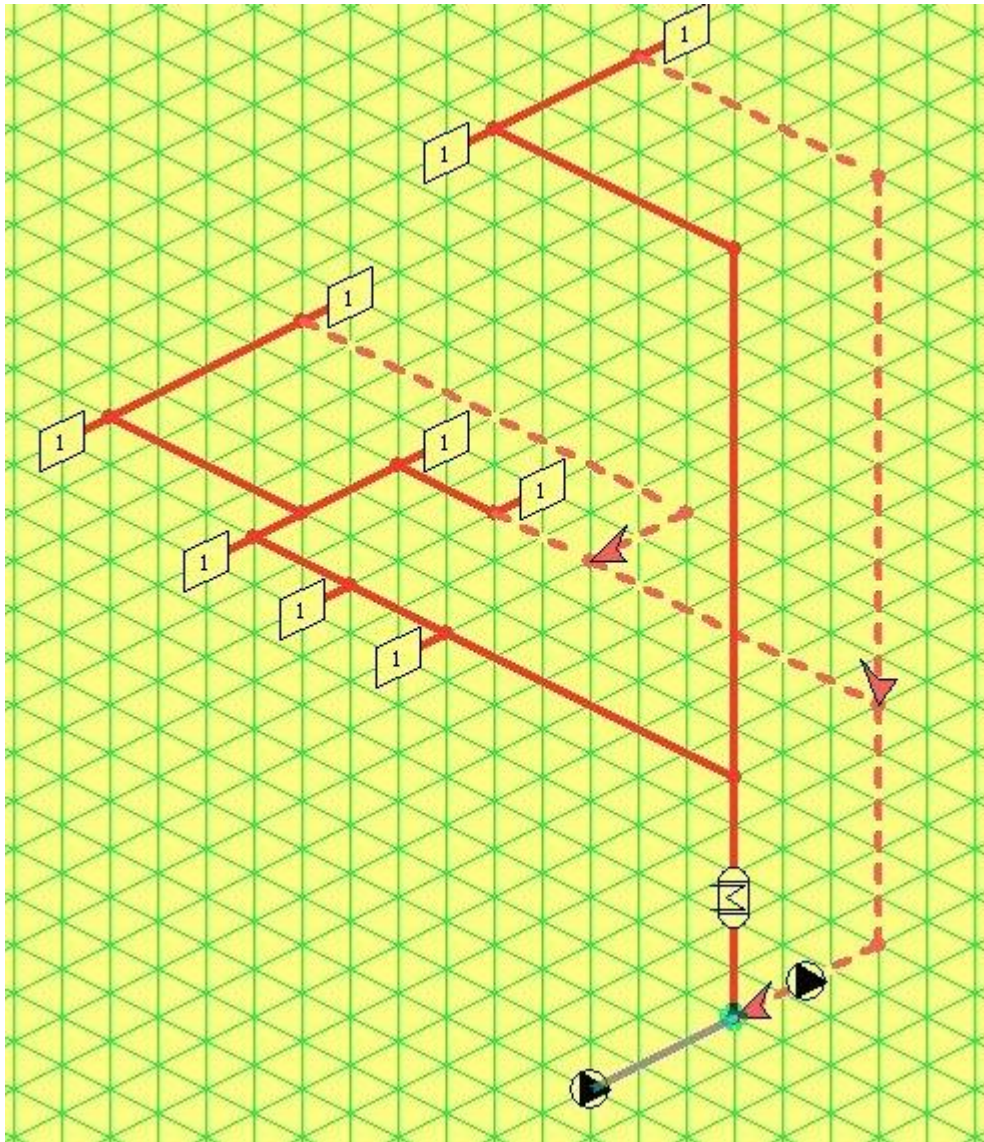
In subbranch no. 2 the active return can be seen with again 2 linked devices on its supply.



Picture subbranch no. 2

7.6. Introduction of a circulation system with partial rings (VA109 Tap water)

With VA109 Tap Water it is possible to introduce a circulation system with different sub-rings. The following system is taken as an example:.



Example diagram circulation system

In the layout screen, data are also entered especially for the circulation calculation such as Insulation thickness, Lambda insulation, Ambient temperature, Delta T, Max. circulation speed.

Stelsels

omschrijving

subtak ☐

begrenzingen ☐ 1

temperatuur water 10.0 °C

soortelijke massa (kg/m³) 999.7

kin. visc. x-10⁻⁶ (m²/s) 1.308

maximum moment volumestroom:

mmv ☐ 1

drinkwaterdeel 25 %

T-stuk scherpe aftakking 90

bocht knie afgerond

max. voordruk + verhoog. 999.0 kPa

circulatiesysteem:

isolatiedikte 20 mm

delta T 5.0 °C

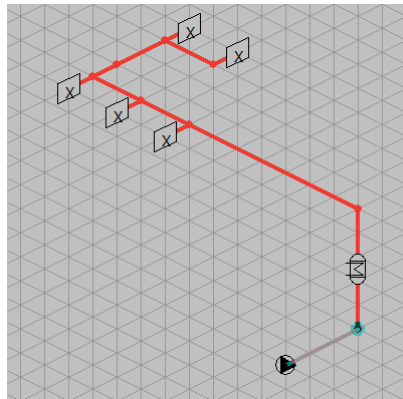
lambda isolatie 0.035 W/mK

max. snelheid circulatie 0.7 m/s

omgevings temperatuur 20.0 °C

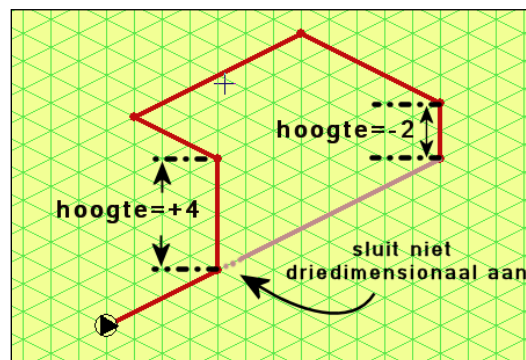
Graphical input of the tap water network

After this, go to the drawing screen. Here we first drew a horizontal base pipe and then the first pipe for the circulation system vertically upwards. The hot water device must first be placed in the vertical pipe. With a double click on the pipe in the overview screen to the left of the isometric screen, the pipe data screen opens and the hot water device can be selected under **hot water preparer**. In the drawing, the symbol of the hot water device appears on the pipe and all subsequent pipes are drawn light red to indicate hot water (see next figure).

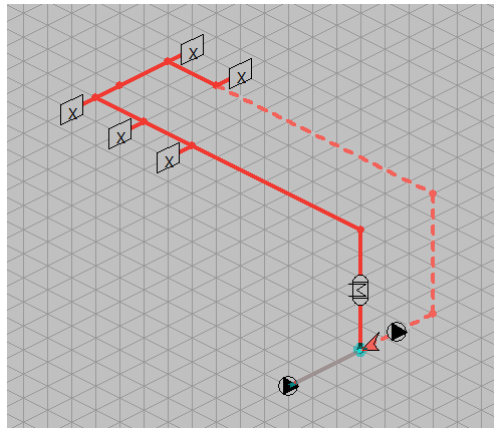


After this, the first ring R1 can be drawn.

The connection of partial ring pipes is done using the three-dimensional positions of pipes. This means that partial ring connections cannot be made if the positions do not fit together spatially. (see e.g. image below)



When the connection of a subring is made, it appears with a thick arrow as a symbol. The last pipe that reconnects the ring to the hot water device is given the symbol for the circulation pump. And the last part of the ring is drawn dotted to indicate the return part.



The return part is defined by the pipes after the last tee.

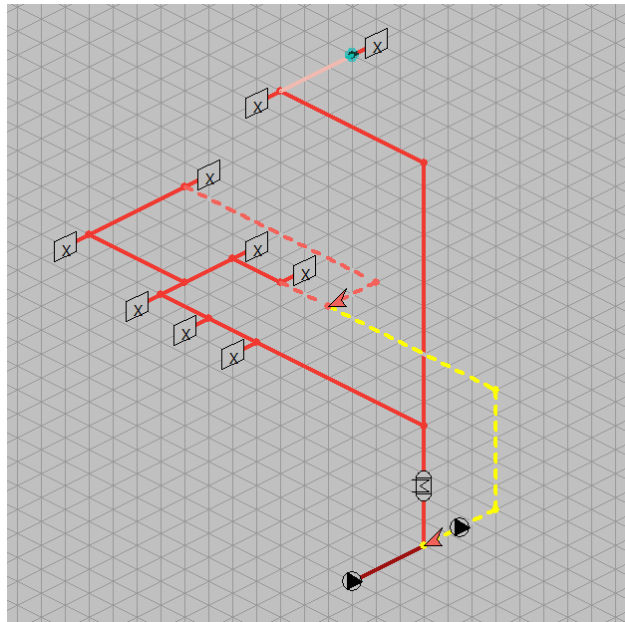
Then the next subring R2 is drawn on the previous subring.

Tekenen

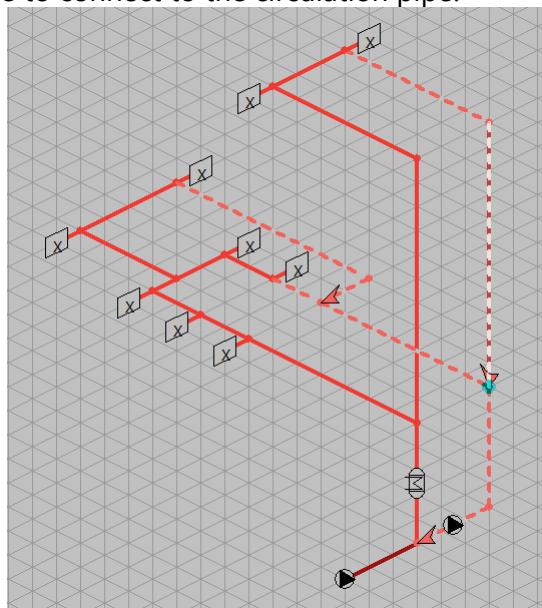
Nr.	Omschrijving	Lengte	Vaste afm. Begr.
1			3.
2			5.
3			7.
4			1.
5			2.
6			1.
7			2.
8			1.
9			1.
10			2.
11			1.
12			2.
13			1.
22			0.
14			9.
15			5.
16			3.
17			4.
18			1.
19			4.
20			1.
21			8.
23			2.

Finally, we draw the subring R3. To draw the connection properly, we follow the method below:

1. Draw the supply lines of R3.
2. Make the leadership from which we 'depart' active.
 - The existing circulation pipe to which this pipe may be connected changes color (yellow), connection to other circulation pipes is not possible.



- Connect the pipe to the indicated circulation pipe. If necessary, use the split function to make it possible to connect to the circulation pipe.



Then the taps are placed.

8. Stap 4: Input

Icons are present in the input screen to define and assign the various tools.



Het icoon voor het invoerscherm is in ieder scherm te gebruiken om naar het invoerscherm te navigeren.

8.1. Pipes or ducts

In this screen, data of a pipe or duct part such as the description, length, size, connected device, etc. can be entered. This screen can be called up from the drawing screen and from the input screen.

For example, if a pipe part is involved with a device, the Device input field will automatically appear on the screen, the Next Tee input field in a tee, the Next bend input field will automatically appear in a bend, etc.

piping data nr. 1

Close << >> Overview

description		next bend	0
length (total)	1.5 m		
fixed dimension	0	fittings	0 (number)
restrictions	0	insulation	Yes
		insulation thickness	0 mm
		insulation length	0 m
temp_surrounding	0 °C	lambda insulation	0 W/mK

description
 next bend

length (total) m

next bend

next branch

next reduction

apparatus x

Here the description of the pipe part can be entered.

Length (total)

[m] 


The length of the pipe part. Here, by default, the length on which the pipe is drawn in the isometric screen is shown, taking into account the set value (horizontal or vertical) per "grid block". In addition to the pipe data screen, the length can also be overridden in the overview screen if you are in the drawing screen.

Next bend

[number] 

If a bend is present at the end of the considered pipe or duct part, this input field will automatically appear on the screen. By clicking on this input field, you automatically enter the Bend Data screen and you can enter the data of the bend. If a bend is present at the end of the considered pipe or duct part, this input field will automatically appear on the screen. By clicking on this input field, you automatically enter the Bend Data screen and you can see the data of the bend.

Next reduction

[number] 

If a reducer is present at the end of the considered pipe or channel part, this input field will automatically appear on the screen. By clicking on this input field, you automatically enter the Gradient Data screen and can view the data of the reducer.

Next branch

[number] 

If a tee is present at the end of the considered pipe part, this input field will automatically appear on the screen. By clicking on this input field, you automatically enter the branch data screen and you can view the data of the tee.

Apparatus

[number] 

If a device is present at the end of the considered pipe part, this input field will automatically appear on the screen. By clicking on this input field, one automatically enters the Local Heating/Cooling Device Data screen and can view the data of the device.

When a device is selected, one can specify the number of devices connected to this pipe section. In most cases, this will be one.

Properties

fixed dimension	<input type="text" value="0"/>	fittings	<input type="text" value="0"/> (number)
restrictions	<input type="text" value="0"/>	insulation	<input type="text" value="Yes"/>
		insulation thickness	<input type="text" value="0"/> mm
		insulation length	<input type="text" value="0."/> m
temp_surrounding	<input type="text" value="0."/> °C	lambda insulation	<input type="text" value="0."/> W/mK

Fixed dimension

[choise] 

In an existing piping system, the pipes already have a certain size. This dimension is specified per pipe section. If you click on this input field, the Dimensions screen appears.

If 0 remains in this input field, no fixed dimension of a pipe part is specified. If a fixed size is chosen here, one cannot select a boundary and vice versa. When the number of the fixed size is known, it can already be entered here. The numbers and corresponding dimensions can be printed.

Restrictions

[choise] 

If no fixed dimension is specified, new boundaries for this pipe section can be indicated, which differ from the values specified for the total pipeline network. If a fixed size is selected, this input field is not accessible.

The boundaries that apply to the entire pipeline network or canal system were previously specified via the Step **Step 2: Layouts** screen. These are limits on the dimensions, speed and search area.

This can be deviated from per pipe section by:

- specify a fixed size as above;
- click this input field and specify other boundaries.

The input screen Pipeline network **Mains system and** Rainwater, Sewage. A further boundary is now created, which applies to the considered pipe part. The limit no.1 specified on the **Step 2: Layouts** screen applies to the total pipeline network.



If this input field contains 0, the previously specified boundaries also remain in force for this pipe or channel part.

Fittings

[number] 

This field shows the amount of connected fittings.

Insulation

[choise] 

Choose Yes to indicate pipes are insulated.

Insulation thickness

[mm] 

This data is used to calculate the total number of m² of insulation material given in the material state. When insulation is specified, the Insulation thickness and length input field appear on the screen Insulationlengt.

Insulationlength

[m] 

Length of the part of the pipe that is insulated. Under Total length, the total length is specified. This data is used to calculate the total number of m² of insulation material given in the material state. This input field appears only when a value is specified under insulation thickness. The program automatically takes over the **Length (total)** in Length (total).

Lambda insulation

[W/mK] 

In the system data screen, the Lambda value of the isolation to be applied is entered. Where a different Lambda value applies per pipe part, this can be entered here.

8.1.2. Air ducts

Channeldata nr. 1

Close
<<
>>
Overview

description		next bend	0
length (total)	1.5 m		
fixed dimension	0	fittings	0 (number)
restrictions	0		
insulationthickness	0 mm		

General

description		next bend	0
length (total)	1.5 m	next reduction	0
		next T-piece	0
		next X-piece	0
		grill	1 x 0

Description

[text] 


Here the description of the channel part can be entered.

Length (total)

[m] 


The length of the channel part. Here, by default, the length on which the channel in the isometric screen is drawn takes into account the set value (horizontal or vertical) per "grid block". In addition to the channel data screen, the length can also be overruled in the overview screen if you are in the drawing screen.

Next bend

[number] 

If a bend is present at the end of the considered channel part, this input field will automatically appear on the screen. By clicking on this input field, you automatically enter the Bend Data screen and you can view the data of the bend.

Next reduction

[number] 

If a reducer is present at the end of the considered channel part, this input field will automatically appear on the screen. By clicking on this input field, you automatically enter the Gradient Data screen and can view the data of the reducer.

Next T-piece

[number] 


If a tee is present at the end of the considered channel part, this input field will automatically appear on the screen. By clicking on this input field, you automatically enter the branch data screen and you can view the data of the tee.

Next X-piece

[number] 

If an X-piece is present at the end of the considered channel part, this input field will automatically appear on the screen. By clicking on this input field, you will automatically enter the Branch Data screen and you can view the data of the X-piece.

Grill

[number / choose] 

If a grid is present at the end of the considered channel part, this input field will automatically appear on the screen. By clicking on this input field, you will automatically enter the Grids screen and you can enter the data of the grid.

When a grid is selected, one can specify the number of grids connected to this channel part. In most cases, this will be one.

Eigenschappen

fixed dimension	<input type="text" value="0"/>	fittings	<input type="text" value="0"/> (number)
restrictions	<input type="text" value="0"/>		
insulationthickness	<input type="text" value="0"/> mm		

Fixed dimension

[choose] 

In an existing duct system, the ducts already have a certain size. This size is specified per channel part. If you click on this input field, the Dimensions screen appears.

If 0 remains in this input field, no fixed dimension of a channel part is specified. If a fixed size is chosen here, one cannot select a boundary and vice versa. When the number of the fixed size is known, it can already be entered here. The numbers and corresponding dimensions can be printed.

Restrictions

[choose] 

If no fixed dimension is specified, new boundaries for this channel part can be indicated, which differ from the values specified for the total channel system. If a fixed size is selected, this input field is not accessible.

The boundaries that apply to the entire channel system were previously specified via the **Step 2: Layouts** screen. These are limits on dimensions, speed and search area.

This can be deviated from per channel part by:

- specify a fixed size as above;
- click this input field and specify other boundaries.

The Boundaries input screen will then appear. A further boundary is now created, which applies to the considered channel part. The limit no.1 specified in the **Step 2: Layouts** screen applies to the total pipeline network.



If this input field contains 0, the previously specified boundaries also remain in force for this pipe or channel part.

Fittings

[choise] 

This field shows the amount of connected fittings.

Insulationdikte

[mm] 

This data is used to calculate the total number of m² of insulation material given in the material state. When an insulation thickness value is specified, the options below appear:

- Internal;
- External.

8.1.3. Pipes Tap water

Piping data nr. 1

Close

<< >>

Overview

description		next bend	0
length (total)	1.8 m	fittings	0
fixed dimension	0	water heater	0
restrictions	0	typologie	0
insulation thickness	0 mm	f_fractie	1.
insulation length	0. m	s_fractie	1.
lambda insulation	0. W/mK	mmv	0
temp_surrounding	0. C	static head	0. m
DH_factor	Opbouw	pressuredrop	0. kPa

General

Piping data nr. 1

Close

<< >>

Overview

description		next bend	0
length (total)	1.8 m	fittings	0

next bend	<input type="text" value="0"/>
next reduction	<input type="text" value="0"/>
next branch	<input type="text" value="0"/>
water outlet	<input type="text" value="1"/> x <input type="text" value="0"/>

Description

[text] 

Here the description of the pipe part can be entered.

Length (total)

[m] 


The length of the pipe part. Here is the default length on which the pipe in the isometric screen is drawn taking into account the set value (horizontal or vertical) per "grid block". In addition to the pipeline data screen, the length can also be overridden in the overview screen if you are in the drawing screen.

Next bend

[number] 

If a bend is present at the end of the considered pipe part, this input field will automatically appear on the screen. By clicking on this input field, you automatically enter the Bend Data screen and can view the data of the bend.

Next reduction

[number] 


If a reducer is present at the end of the considered pipe or channel part, this input field will automatically appear on the screen. By clicking on this input field, you automatically enter the Gradient Data screen and can view the data of the reducer.

Next branch

[number] 

If a tee is present at the end of the considered pipe part, this input field will automatically appear on the screen. By clicking on this input field, you automatically enter the branch data screen and you can view the data of the tee.

Water outlet

[number / choice] 

If a tap is present at the end of the considered pipe part, this input field will automatically appear on the screen. By clicking on this input field, you will automatically enter the Tap point data screen and you can view the data of the tap point.

When a tap point is selected, the number of taps connected to this pipe section can be specified.

Properties

fixed dimension	<input type="text" value="0"/>	
restrictions	<input type="text" value="0"/>	
insulation thickness	<input type="text" value="0"/>	mm
insulation length	<input type="text" value="0."/>	m
lambda insulation	<input type="text" value="0."/>	W/mK
temp_surrounding	<input type="text" value="0."/>	C
DH_factor	<input type="text" value="Opbouw"/>	
	static head	<input type="text" value="0."/>
		m

Fixed dimension

[choise] 

In an existing piping system, the pipes already have a certain size. This dimension is specified per pipe section. If you click on this input field, the Dimensions screen appears.

If 0 remains in this input field, no fixed dimension of a pipe part is specified. If a fixed size is chosen here, one cannot select a boundary and vice versa. When the number of the fixed size is known, it can already be entered here. The numbers and corresponding dimensions can be printed.

Restrictions

[choise] 

If no fixed dimension is specified, new boundaries for this pipe section can be indicated, which differ from the values specified for the total pipeline network. If a fixed size is selected, this input field is not accessible.

The boundaries that apply to the entire pipeline network or canal system were previously specified via the Step **Step 2: Layouts** screen. These are limits on dimensions, speed and search area.

This can be deviated from per pipe section by:

- specify a fixed size as above;
- click this input field and specify other boundaries.

The tap water **Tapwater**. A further boundary is now created, which applies to the considered pipe part. The limit no.1 specified in the **Step 2: Layouts** screen applies to the total pipeline network.




Als in dit invoerveld 0 staat blijven de eerder opgegeven begrenzingen ook voor dit leiding- of kanaaldeel van kracht.

Fittings

[choise] 

This field shows the amount of connected fittings.

Insulation thickness

[mm] 

This data is used to calculate the total number of m² of insulation material given in the material state. When an insulation thickness value is specified, the length appears as a value in the Insulationlength input field Insulationlengt.

Insulation length

[mm] 

Length of the part of the pipe that is isolated. Under length total, the total length is specified. This data is used to calculate the total number of m² of insulation material given in the material state. This input field appears only when a value is specified under insulation thickness. The program automatically takes over the value previously **Length (total)**Length (total).

Lambda insulation

[W/mK] 

The lambda value of the applied insulation material.

Temperature surrounding

[°C] 

Temperature of the environment in connection with calculation of circulation pipe.

DH-factor

[-] 

From version 10.70 (calculate waiting times added), the DH factor is chosen here whether the pipe in question is superstructure or installation. The DH factor associated with this is specified in the dimensions. The DH_{w,70} _factor is a measure that indicates the ratio of the heat that is transmitted to the next pipe and how much heat radiates to the environment. According to Isso55, these can be the values from Table II.1.

De DH_{w,70} zijn gegeven in tabel II.1.

Tabel II.1 Wachttdfactor DH_{w,70} voor verschillende leidingmaterialen

Leidingmateriaal	DH _{w,70} opbouw	DH _{w,70} inbouw + mantelbuis
Koper	1,50	1,55
PVC-C	1,20	1,15
PB	1,25	1,25
PE-X	1,60	1,55
PPR (zonder mantelbuis)	1,25	1,30
PR-RT/AI	1,55	1,50
PE-X/AI	1,55	1,50
PE-X/EVOH	1,40	1,45


Static head

[m] 

For vertically drawn stranges, the software calculates the length of the pipe as static height. If for some reason a pipe with a different static height than that drawn in the isometric screen is drawn, the static height can be specified here.

Tap water

water heater	<input type="text" value="0"/>
typologie	<input type="text" value="0"/>
f_fractie	<input type="text" value="1."/>
s_fractie	<input type="text" value="1."/>
mmv	<input type="text" value="0"/>
pressuredrop	<input type="text" value="0."/> kPa

Water heater[number] 

Clicking on this input field will take you to the Hot **Hot water data and** Maximum moment volumestroom screen in which data on concurrency and the temperature of the water is specified.

Typologie[number] 

Clicking on this input field will take you to the **T** in which data about the type of building is specified.

F-fractie[-] 


Here you specify the f-fraction. With the f-fraction you can specify a simultaneity in a pipe itself. Thus, the flow of the pipe itself is increased or decreased by multiplying by that fraction.

S-fractie[-] 

Here you specify the s-fraction. With the s-fraction you have influence on the previous leadership, the leadership for the branch. The flow is multiplied by the s-fraction added to the preceding line. In the pipeline itself, the specified flow is calculated. You can use this when, for example, you have a filling point for a stock barrel. The pipe diameter must be determined but with a fraction s of 0. the flow is not counted with the rest of the system. He has a different concurrency

Maximum moment volumestroom[-] 

Clicking on this input field will take you to the **Hot water data and Maximum** moment volumestroom screen in which data on the consumption of taps are specified.

Pressuredrop[kPa] 

Here you specify the pressure drop over the pipe.

Typology data

Water outlet data nr. 1 ()

Close

Add

<<

>>

Overview

description

<New>

sort device

pre pressure

Load

1

read in

Overzicht databank typologie

Omschrijving

niet meetellen

dienstleiding scholen

dienstleiding sporthallen

dienstleiding sportvelden

een- en tweepers. huish: Luxe tweekamer

een- en tweepers. huish: Studio

een- en tweepers. huish: Senioren

meerpersoons huish: Driekamerappartement

meerpersoons huish: Luxe driekamerapp.

meerpersoons huish: Luxe vierkamerapp.

woonzorgcombinatie

woonzorgcombinatie geen bedspanspoelers

woonzorgcombinatie gem gebruik bedspansp

woonzorgcombinatie int gebruik bedspansp

zakelijk hotel douche I

zakelijk hotel douche II

zakelijk hotel douche III

zakelijk hotel douche IV

zakelijk hotel douche V

zakelijk hotel douche VI

zakelijk hotel douche VII

toeristisch hotel douche I

toeristisch hotel douche II

toeristisch hotel douche III

toeristisch hotel douche IV

toeristisch hotel douche V

toeristisch hotel douche VI

toeristisch hotel douche VII

kantoor (toiletten, urinoirs)

kantoor (toiletten, urinoirs >90% manne

kantoor (toiletten, geen urinoirs)

Here a typology can be assigned to a pipeline, for this and all subsequent pipelines will then be calculated with the calculation rules that belong to the chosen typology in accordance with ISSO 55



ISSO Publicatie 55
Leidingwaterinstallaties
[ISSO-digitaal](#) |

8.1.4. Pipes Gas pipes

~Leidinggegevens nr. 1

Close

<<

>>

Overview

omschrijving

~ bewoon

volgende bocht

0

lengte

0.

m

vaste afmeting

0

statische hoogte

0.

m

begrenzigen

0

hulpstukken

0

(aantal)

General

omschrijving	<input type="text"/>	bewoond	volgende bocht	<input type="text" value="0"/>
lengte	<input type="text" value="0."/> m		volgend verloop	
			volgend T-stuk	
		toestel	<input type="text" value="1"/> x <input type="text" value="0"/>	

Omschrijving = Description

[text] 

Here the description of the pipe part can be entered.

Lengte = Length

[m] 

The length of the pipe part. Here is the default length on which the pipe in the isometric screen is drawn taking into account the set value (horizontal or vertical) per "grid block". In addition to the pipeline data screen, the length can also be overridden in the overview screen if you are in the drawing screen.

Bewoond = inhabited

[choise] 

Choise for inhabited or uninhabited. Maximum speed in inhabited spaces: maximum gas velocity of 15 m/s. Uninhabited spaces: 20m/s.

Volgende bocht = next bend

[number] 

If a bend is present at the end of the considered pipe part, this input field will automatically appear on the screen. By clicking on this input field, you will automatically enter the Bend Data screen and you can enter the data of the bend.

Volgend verloop = next reduction

[text] 


If a reducer is present at the end of the considered pipe part, this text will automatically appear on the screen.

Volgend T-stuk = next tee

[text] 

If a tee is present at the end of the considered pipe part, this text will automatically appear on the screen.

Toestel = device

[getal / choise] 

If a device is connected at the end of the considered pipe section, this input field automatically appears on the screen. If you click on this input field, you will enter the Device Data input screen and you can enter data from a connected device.

When a device is selected, the number of devices connected to this pipe section can be specified.

Properties

vaste afmeting	<input type="text" value="0"/>	statische hoogte	<input type="text" value="0."/> m
begrenzungen	<input type="text" value="0"/>	hulpstukken	<input type="text" value="0"/> (aantal)

Vaste afmeting = fixed dimension

[choise] 

In an existing piping system, the pipes already have a certain size. This dimension is specified per pipe section. If you click on this input field, the Dimensions screen appears.

If 0 remains in this input field, no fixed dimension of a pipe part is specified. If a fixed size is chosen here, one cannot select a boundary and vice versa. When the number of the fixed size is known, it can already be entered here. The numbers and corresponding dimensions can be printed.

Begrenzungen = restrictions

[choise] 

If no fixed dimension is specified, new boundaries for this pipe section can be indicated, which differ from the values specified for the total pipeline network. If a fixed size is selected, this input field is not accessible.

The boundaries that apply to the entire pipeline network were previously specified via the Step **Step 2: Layouts** screen. These are limits on the dimensions, speed and search area.

This can be deviated from per pipe section by:

- specify a fixed size as above;
- click this input field and specify other boundaries.

The input screen Gas pipeline will then appearGas pipes. A further boundary is now created, which applies to the considered pipe part. The limit no.1 specified in the **Step 2: Layouts** screen applies to the total pipeline network.



If this input field contains 0, the previously specified boundaries also remain in force for this pipe or channel part.

Statische hoogte = statistic head

[m] 


For vertically drawn stranges, the software calculates the length of the pipe as static height. If for some reason a pipe with a different static height than that drawn in the isometric screen is drawn, the static height can be specified here.

Hulpstukken = fittings

[choise] 

This field shows the amount of connected fittings.

8.1.5. Pipes Rainwater, sewage drainage


Pipe details no. 1


Close
<<
>>
Overview

discription		next bend	0
length	0. m		
fixed diameter	0		
limits	0	attachments	0 number

General

discription	<input type="text"/>	next bend	<input type="text" value="0"/>
length	<input type="text" value="0."/> m	next adapter	<input type="text" value="0"/>
		next T	<input type="text" value="0"/>
		drain fixture	<input type="text" value="1"/> x <input type="text" value="0"/>

Description

[text] 


Here the description of the pipe part can be entered.

Length

[m] 


De length van het leidingdeel. Hier staat default de length waar de leiding in het isometrisch scherm op getekend is met in acht neming van de ingestelde waarde (horizontaal of verticaal) per "grid-blokje". De length is behalve in het scherm leidinggegevens eveneens te overschrijven in het overzicht scherm indien men zich in het tekenscherm bevindt.

Next bend

[number] 


If a bend is present at the end of the considered pipe part, this input field will automatically appear on the screen. By clicking on this input field, you will automatically enter the Bend Data screen and you can enter the data of the bend.

Next adapter

[text] 


If a reducer is present at the end of the considered pipe part, this text will automatically appear on the screen.

Next T

[text] 

If a tee is present at the end of the considered pipe part, this text will automatically appear on the screen.

Drain fixture

[number / choice] 

If a discharge device is connected at the end of the considered pipe section, this input field will automatically appear on the screen. If you click on this input field, you will enter the input screen Discharge devices and you can enter data from a connected discharge device.

When a discharge device is selected, the number of devices connected to this pipe section can be specified.

Properties

fixed diameter	<input type="text" value="0"/>	reduce diameter VWA	<input type="text" value="No"/>
limits	<input type="text" value="0"/>	attachments	<input type="text" value="0"/> number

Fixed diameter

[choise] 

In an existing piping system, the pipes already have a certain size. This dimension is specified per pipe section. If you click on this input field, the Dimensions screen appears.

If 0 remains in this input field, no fixed dimension of a pipe part is specified. If a fixed size is chosen here, one cannot select a boundary and vice versa. When the number of the fixed size is known, it can already be entered here. The numbers and corresponding dimensions can be printed.

Limits

[choise] 

If no fixed dimension is specified, new boundaries for this pipe section can be indicated, which differ from the values specified for the total pipeline network. If a fixed size is selected, this input field is not accessible.

The boundaries that apply to the entire pipeline network were previously specified via the Step **Step 2: Layouts** screen. These are limits on the dimensions, speed and search area.

This can be deviated from per pipe section by:

- specify a fixed size as above;
- click this input field and specify other boundaries.

The input screen Pipe **Mains system and** Rainwater, Sewage will then appear. A further boundary is now created, which applies to the considered pipe part. The limit no.1 specified in the **Step 2: Layouts** screen applies to the total pipeline network.




If this input field contains 0, the previously specified boundaries also remain in force for this pipe or channel part.

Reduce diameter VWA

[choise] 

Choise from **Yes** or **No**. If you choose **Yes**, the computer may reduce the diameter of the pipe of the discharge device by a size.

Attachments

[number] 


This field shows the amount of connected fittings.

8.2. Apparatus / Grills / Water taps / Devices / Drain fixtures

8.2.1. Apparatus

This screen discusses data from the connected devices such as load, minimum prepressure, etc. This screen is a sub-input screen of the *Fout! Verwijzingsbron niet gevonden.* and can also be accessed by clicking on the Device input field Apparat .

Description

[text] 

Here the description of the device can be entered.

Flow / emission

[Watt / kg/s] 

Nominal load on the device.

Connection diameter

[getal] 

Connection size of the device. By clicking on the Dimension data screen, the Dimension data screen appears.

Kind of app

[-] 

The choice made for the type of device affects the concurrency if level 3 is chosen for the limit. "Ketel" is taken according to the concurrency file chosen by the user, "tapwater" is taken according to the root n method and "continue" is always 100% included. This option is good to use for residential construction where the concurrency for heating is important and the concurrency for tap water must be determined in the qVn way. If level 2 is chosen for the concurrency limit, then the filled simultaneities at limits are applied to both boiler and tap water. In the results, a device "tap water" is marked with a "*" and a device "continuous" with a "!".

Zeta

[-] 

The zeta value of the device

Delta T

[K] 

Temperature fall of the device when a different valua than the default given at Layout-screen.

Pressurefall

[Pa] 

The pressure drop over the device.

8.2.2. Grills

Grill data no. 1 (airduct 1 :+□□□□□□)

Close Add << >> Overview

description <New>

airflow 0. m³/h pre pressure 0. Pa

zeta 0. net area 80. %

Grill data no. 2 Roosters

Select Cancel Add << >> Overview

room number

description

volume room 0. m³

room number 0

Grill data no. 1 Geluidgegevens

Select Cancel Add << >> Overview

description

position in wall Space

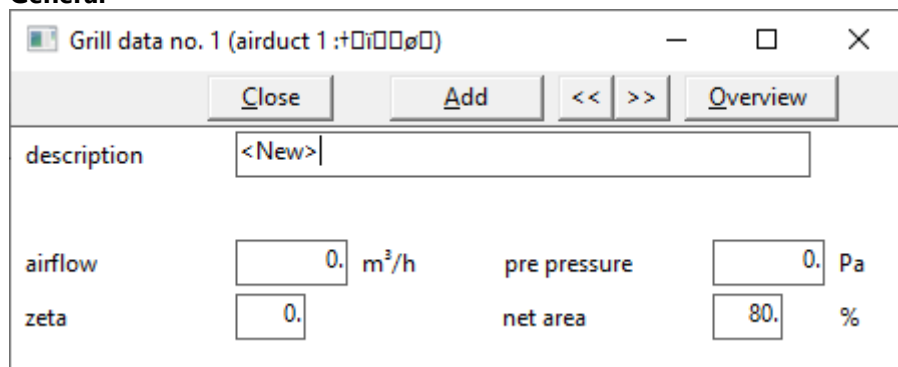
direction factor 4.

afstand tot oor 0.7 m

dB/octave band (Hz) 63 125 250 500 1000 2000 4000

soundproduction Lw 0. 0. 0. 0. 0. 0. 0.

General



Grill data no. 1 (airduct 1 :+□□□□□□)

Close Add << >> Overview

description <New>

airflow 0. m³/h pre pressure 0. Pa


zeta 0. net area 80. %

Description

[text] 

Here the description of the grill can be entered.

Airflow

[m³/h] 

Air flow rate of the grill. This is the air flow rate that is supplied or discharged during day operation. This is the primary flow rate (from the air handling unit).

Pre pressure

[Pa] 

The desired prepressure of the grid.

Zeta

[text] 

If no pressure drop of the lattice is known, but a zeta value is known, the zeta value of the grill is specified.

Net area


[%] 

The net area of a grid is the ratio between the net area of the grill and the area of the connection size to the duct.

Space nr

Can be filled when at **Layouts Air** ducts check mark **Sound VA112** is checked.

As soon as a placed grid is active, the connection channel must be selected (right mouse button). Then a field appears at the bottom left for the space data of this placed grill.



Grill data no. 2 Roosters

Select Cancel Add << >> Overview


room number

description

volume room 0. m³

room number 0

Room number

[text] 


Here the number of the room can be entered.

Description

[text] 

Here the description of the grill can be entered.

Volume room

[m³] 

Here you can fill in the volume of the departure. This volume is used for Sabine's formula and for ear spacing.

Room number

[-] 

Number of the room in which the schedule is present. If you click on this input field, the departure details sub-entry screen will appear *Fout! Verwijzingsbron niet gevonden..*

Room data no. 1

Select

Cancel

Add

<<

>>

Overview

description

room type

occupied room

sound absorption () m²

sound claim

30.

dB(A)

NR value

0.

frequency tire (Hz)

63

125

250

500

1000

2000

4000

echo time (sec)

0.5

0.5

0.5

0.5

0.5

0.5

0.5

Description

[text] 

Here you can enter the description of the room.

Room type

[choise] 

There is the choise from the following types:

- **Occupied room;**
- **Occupied zone;**
- **Corridor room;**
- **Technical room;**
- **General room;**
- **Toilet;**
- **Bathroom;**
- **Meter room;**

- Elevator;
- Sun-lounge;
- Not dpec. room.

Sound absorption

[m²] 

The acoustic hardness or absorbency of the room is determined by the material and the possible covering of walls, floor and ceiling. The sound absorption of the room is expressed in m² Sabine. If the sound absorption is not known, it is also sufficient to specify the **Instead of the Sound claim** in dB(A), the NR value for the departure can also be specified. In order to be able to assess the sound pressure level at the different frequencies, the so-called NR (Noise Rating) curves have been developed.

There is no fixed relationship between the sound pressure level and NR value. This depends on the spectrum. However, the following approach can be used to set requirements:

Sound pressure level = NT + 5.

Echo time. In this case, 0 must be entered in the sound absorption. The input field will then disappear.

Sound claim

[dB(A)] 

The noise requirement for the departure is set in dB(A). In ISSO publication 24 "Installation noise", chapter 7 page 46, maximum permissible sound pressure levels for the different rooms are given. If the noise requirement is not known before departure, it is also sufficient to specify the **NR value**.

NR value

[-] 

Instead of the **Sound claim** in dB(A), the NR value for the departure can also be specified. In order to be able to assess the sound pressure level at the different frequencies, the so-called NR (Noise Rating) curves have been developed.

There is no fixed relationship between the sound pressure level and NR value. This depends on the spectrum. However, the following approach can be used to set requirements:

Sound pressure level = NT + 5.

Echo time

[sec] 

To be filled in when the **Sound absorption** value **is 0**. Here the reverberation time of the departure per octave band can be specified. This can be filled in for the octave bands below:

- 63 Hz;
- 125 Hz;
- 250 Hz;
- 500 Hz;
- 1000 Hz;
- 2000 Hz;
- 4000 Hz.

Sounddata

Can be filled when at **Layouts Air** ducts check mark **Sound VA112** is checked.

As soon as a placed grid is active, the connection channel must be selected (right mouse button). Then a field appears at the bottom left for the sound data of this placed grill.

Grill data no. 1 Geluidgegevens

Select Cancel Add << >> Overview

description

position in wall

direction factor

afstand tot oor m

dB/octave band (Hz) 63 125 250 500 1000 2000 4000

soundproduction Lw

Description

[text] 

Here you can enter the description of the grill data.

Position in wall

[choise] 

For the distance to the observer, the position of the grid in the wall must also be indicated. Choices:

- **Space:** grille in duct, free-hanging under ceiling;
- **Surface:** grid in a ceiling or wall;
- **2-face:** grid in a ditagon plane;
- **3-face:** lattice in a triangle plane.

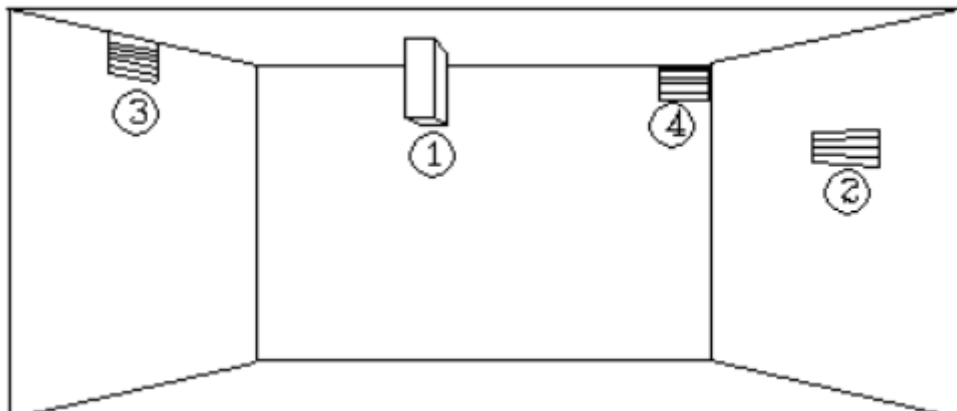
Direction factor

[-] 

The position of the grid in the room is important because of the direction factor of the schedule (ISSO publication 24 paragraph 1.16). Here the following situations can be specified for rectangular rooms. The direction factor is:

- **1:** grille in duct, free-hanging under ceiling (see number 1 in the figure below from ISSO 24);
- **2:** grid in a ceiling or wall (see number 2 in the figure below from ISSO 24);
- **4:** lattice in a ditagon plane (see number 3 in the figure below from ISSO 24);
- **8:** grid in a triangular plane (see number 4 in the figure below from ISSO 24).

If it is not a rectangular room, the direction factor must be determined.



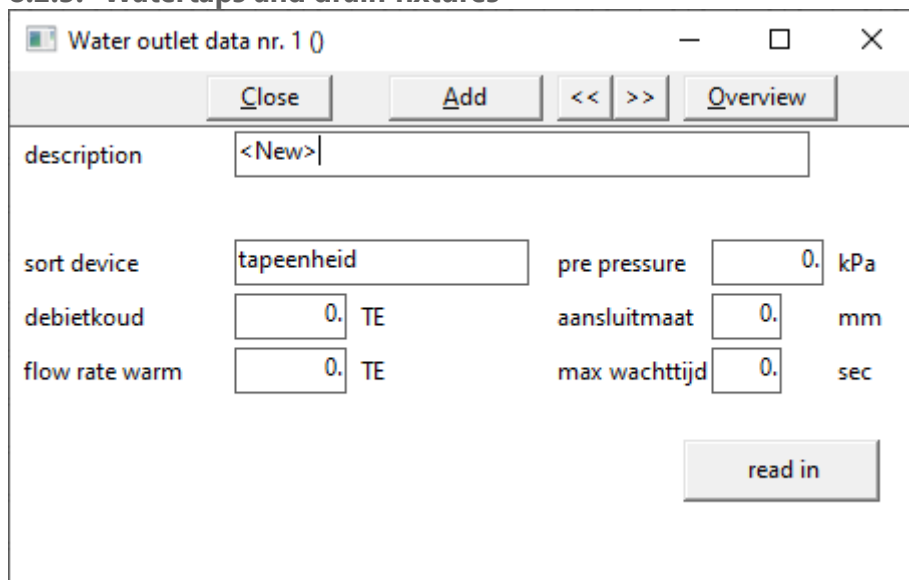
Afstand tot oor[m] 

Here the distance between the grid and the "ear of a person" is filled in, so that the sound level can be determined at the location of the person.

Sound production L_w [dB] 

Here the sound production of the grid per octave band can be specified. This can be filled in for the octave bands below:

- 63 Hz;
- 125 Hz;
- 250 Hz;
- 500 Hz;
- 1000 Hz;
- 2000 Hz;
- 4000 Hz.

8.2.3. Watertaps and drain fixtures


This screen discusses data from the connected devices such as load, minimum prepressure, etc. This screen is a sub-input screen of the **Pipes Tap water** and can also be accessed by clicking on the tap point input field Water outlet .

In this screen, data from the connected tap point such as load, minimum prepressure, etc. can be entered. Furthermore, this screen can indicate that it is a circulation system, by choosing 'end of circulation' as a species in the circulation pipe for tap point data. The following criteria are used for dimensioning domestic hot water systems with circulation:

- The maximum cooling in the entire circulation system is up to 5 °C;
- The maximum circulation flow rate is 0.7 m/s.

Based on the criteria mentioned above and the heat loss of the pipe with the environment, the program calculates the minimum circulation flow rate and the diameter of the circulation pipe. The results show per pipeline:


- the **heat transfer coefficient**;

- heat loss;
- the **minimum circulation flow rate**;
- The **circulation rate**.

The input for **Rainwater, Sewage** can be done in two ways:

- Manual;
- If the *Fout! Verwijzingsbron niet gevonden*. taps have previously been introduced with the Tap Water program, the same devices can be selected here as discharge devices. With the help of the Overview button, the already entered tap points can be selected as discharge devices.

Description

[text]  

Here the description of the device can be entered.

Sort device (Tapwater)

[choise] 

You can choose from this:

- **Tapeenheid**;
- **Brandslanghaspel**;
- **Continue verbruik**;
- **Spoelkraaneenheid**;
- **Noodoogdouche**;
- **Noodgelaatsdouche**;
- **Noodplensdouche**;
- **Douchegroep**;
- **Dakdoorvoer (HWA)**;
- **Ontspanning**;
- **Closet >= 7ltr**;
- **Closet 6-7 ltr**;
- **Einde circulatie (oud)**.


Sort device (Rainwater, Sewage)

[choise] 

Choise from the following possibilities:

- **Lozingstoestel**;
- **Tapeenheid**;
- **Brandslanghaspel**;
- **Continue verbruik**;
- **Spoelkraaneenheid**;
- **Noodoogdouche**;
- **Noodgelaatsdouche**;
- **Noodplensdouche**;
- **Douchegroep**
- **Dakdoorvoer (HWA)**;
- **Ontspanning**;
- **Closet >= 7ltr**;
- **Closet 6-7 ltr**;
- **Einde circulatie (oud)**.

Pre pressure

[kPa] 

Minimum desired prepressure of the tap point.

Debiet koud = flow rate cold

[TE / SE / l/min]  

For the tap water calculation, the flow rate can be entered cold here. For the purposes of the waste water calculation, for information purposes if used in conjunction with the tap water calculation.

Flow rate warm

[TE] 

The number of tap units of hot water. If the device is connected to a hot water pipe, this specified water quantity is calculated.

Drainage

[l/min / m² dakoppervlak] 

The discharge rate of the device. If roof **passage** is chosen, enter the roof surface (see NTR 3216:2002).

Max wachttijd

[sec] 

The maximum latency of the device in seconds. If a value is entered here, the software will actually calculate the waiting time.

Read in

[button] 

Omschrijving	
closetstortbak >= 7 ltr.	0.25 TE
closetstortbak 6-7 ltr.	0.25 TE
urinoirstortbak	0.25 TE
stortbak slophopper	0.25 TE
bedpanspoeler	10 TE
fonteinkraan	0.25 TE
fonteinmengkraan	0.25 TE
drinkfontein	0.25 TE
wastafelkraan	1 TE

Selecting products from the databases of suppliers. By pressing this button, an overview of product data follows. Dimensions can then be extracted one by one from the product database and added to the project database.

8.2.4. Devices

Omschrijving = Description

[text] 🔥

Here the description of the device can be entered.

Codering = code

[text] 🔥

Unique coding for the device, for example the order coding.

Leverancier = supplier

[getal] 🔥

Calling up the address details of **Adress information principle**.

Gelijktijdigheid = simultaneity

[choise] 🔥

A concurrency factor shall be taken into account in the calculation. The following factors apply:

- **Gas stove:** concurrency factor 0.7;
- **Heating:** concurrency factor 1.0;
- **Warmtapwater:** gelijktijdigheidsfactor 1.0.

Rated output

[kW] 🔥

Nominal load of the device in kW (based on the upper value).

Minimum pre pressure

[mbar] 🔥

Minimum desired prepressure of the device. For appliances with low pressure (< 30 mbar), is taken from the **Layouts Gas pipes**. For high-pressure appliances (> 30 mbar), the value specified in the Gas pipeline systems screen may be deviated from and Layouts Gas pipes can be entered here.

8.3. Bends

This screen can be accessed by:

- on the Pipe Data or Channel Data screen , **click the** Next Turn field;
- in the Enter menu, choose **Curves**. If there is no bend in the overview yet, a new bend can be created with "+" at the bottom of the list.

In this screen, the data of a bend is entered. At the top of the screen, it is always indicated which curve data is involved.

General

Benddata nr. 1

Select

Cancel

Add

<<

>>

Overview



description	default bend		
type bend	elbow rounded		
code		supplier	0
angle	90°	R/a ratio	.75
Thickness change	0. mm		
Zeta	0.		

Description

[text]    

Here the description of the bend can be entered.

Type bend

[choise]  

Selection of the type of bend. If you click on this input field, the following options will appear:

- **elbow rounded:** R/d = 0.75;
- **3S weldingbend:** R/d = 1.5;
- **Long weldingbend:** R/d = 2.0;
- **5S weldingbend:** R/d = 2.5;
- **Bend bent:** R/d = 4.0.

Type bend (Air ducts)

[choise] 

Selection of the type of bend. If you click on this input field, the following options will appear:

- **Symmetric rounded bend:** round or rectangular duct (o/#);
- **Symmetric segmented bend:** round duct (o);
- **Symmetric with louver:** rectangular duct (#);
- **Squared with airturms:** rectangularduct (#).

Type bend

[choise] 

Selection of the type of bend. If you click on this input field, the following options will appear:

- **Elbow rounded;**
- **Bend bent.**

Type bend (Rainwater, Sewage)

[choise] 

Selection of the type of bend. If you click on this input field, the following options will appear:

- **Elbow rounded;**
- **Bend bent.**

Code

[text]    

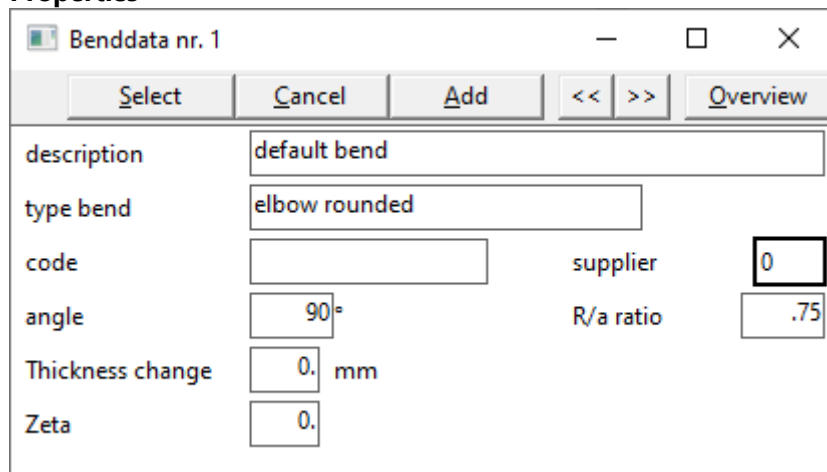
Unique coding for the bend, for example the order coding.

Supplier

[number]    

Calling up the address details of **Adress information principle**.

Properties



Angle

[°]    

Angle of the bend for the determination of the coefficient of resistance (default 90 degrees).

R/a ratio

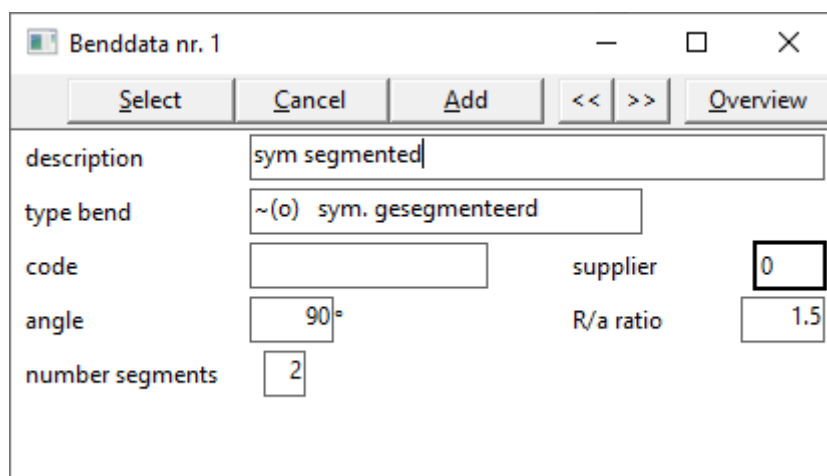
[-]  

Ratio radius of the bend and the diameter of the pipe, default values according to overview at Type of bend

Description    

Here the description of the bend can be entered.

Type bend. Other values can be filled in.



R/a ratio

[-] 

The coefficient of resistance depends, among other things, on the ratio R/a of the bend. **R** is the

bending radius of the bend measured over the heart *and a is the height of the bend for curves with a rectangular shape and the diameter of the bend for curves with a round shape (ISSO 17 chapter 5.3).*

Number segments

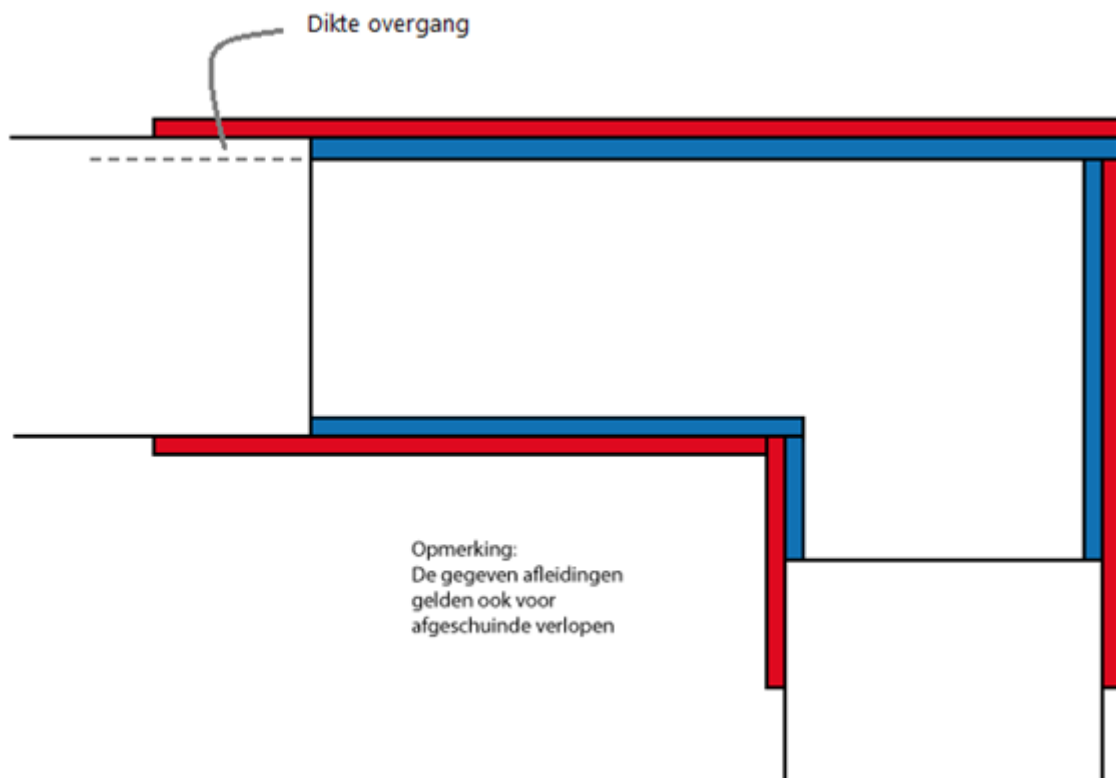
[n] 

Number of corner segments in a segmented corner. This is only requested when **Type** is chosen for Curve **type**.

Thickness change

[mm] 

The thickness of any narrowing at the site of the bend.



ISSO Publicatie 18 (2012) paragraaf 7.5.3 afbeelding 7.8

Afmetingen en snelheden bij insteekappendages / perskoppelingen

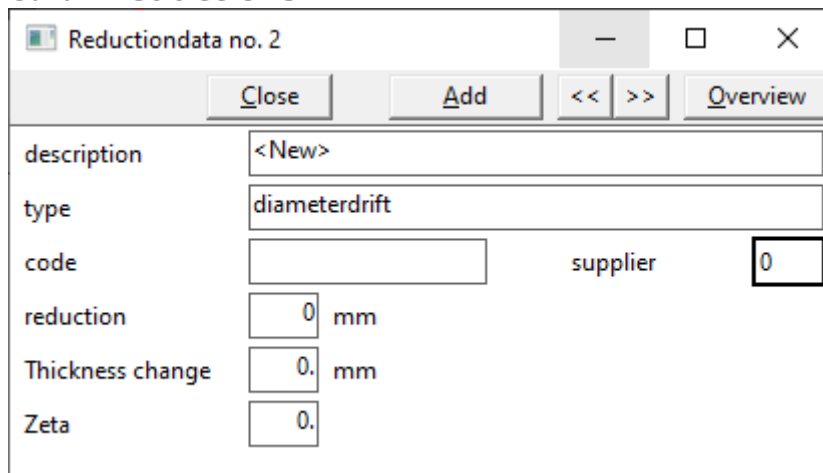
[ISSO-digitaal](#)

Zeta

[-] 

Value to determine resistance.

8.4. Reductions



This screen can be accessed by:

- on the Pipeline Data or Channel Data screen , **click the** Next reduction field;
- on the Enter menu, choose **Expired**.

In this screen, the data about the reduction is entered. At the top of the screen, it is always indicated which reduction data is involved.

Description

[text]    

Here the description of the reduction can be entered

Type

[text]    

Here the fixed value is **diameter drift**.

Code

[text]    

Unique coding for the reduction, for example the order coding.

Supplier

[getal]    

Calling up the address details of **Adress information principle**.

Reduction

[mm]    

Here the length of the reduction is entered.

Thickness change

[mm]  

Here the thickness of any narrowing is entered at the location of the reduction.

Zeta

[getal]  

Here the zeta value of the reduction is entered.

8.5. Branches and Crossdata

This screen can be accessed by:

- on the Pipe Details screen , **click** the Next tee **or** Next X-piece field;
- in the Enter menu, choose **tees** or **x-pieces**.

In this screen, data of tees and cross pieces are entered. At the top of the screen, it is always indicated which branch data is involved.

Description

[text]    

Here the description of the branch can be entered


Type (Mains and tapwater system)

[text]  

The desired type of branch can be selected from the overview. There's choice from:

- **Sharp branch 90;**
- **Sharp branch 45;**
- **Rounded branch;**
- **Sharp Y-piece;**
- **Rounded Y-piece.**

Type (Air ducts)


[text] 

The desired type of branch can be selected from the overview. There's choice from:

- **Y-piece 30 deg sharp;**
- **Y- piece 60 deg sharp;**
- **Y-piece 90 deg sharp;**
- **Y-piece 120 deg sharp;**
- **Y-piece 150 deg sharp;**
- **Reverse 180 deg T-stuk;**
- **T-stuk 45 deg sharp;**
- **T-stuk 60 deg sharp;**
- **T-stuk 90 deg sharp;**
- **T-stuk 90 deg round;**
- **Branch 90 deg s=0;**
- **Branch 90 deg s=b/8;**

- Branch 90 deg $s=b/2$;
 - Branch 90 deg $s=b$;
 - T-stuk 90 deg afschiller;
 - T-stuk 2x90 deg afschiller;
 - T-stuk 2 x 90 rever;
- Diameterdrift air duct (Cross).

Type (Rainwater, sewage)

[text] 

The desired type of branch can be selected from the overview. There's choice from:

- Branch T-stuk 90;
- Branch T-stuk 45;

Code

[text] 

Unique coding for the branch, for example the order coding.

Supplier

[getal] 

Calling up the address details of **Adress information principle**.

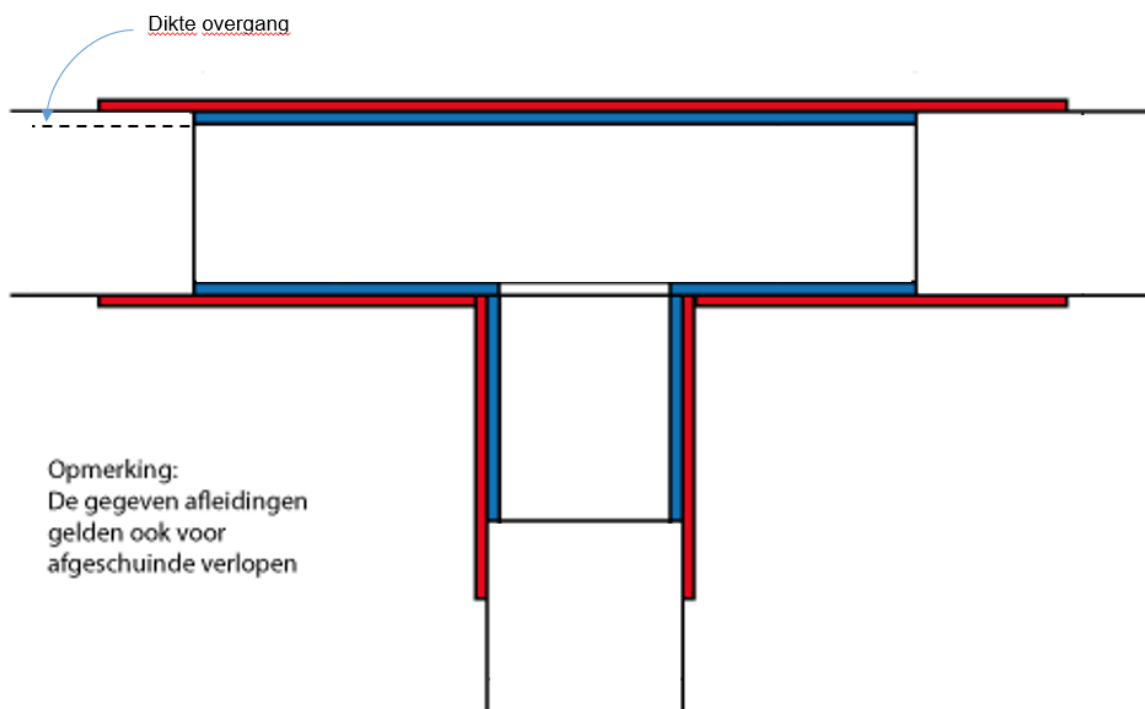
Thickness change mm

Zeta

Thickness change


[mm] 

Here the thickness of any narrowing at the location of the branch is entered.



ISSO Publicatie 18 (2012) paragraaf 7.5.1 afbeelding 7.6
Afmetingen en snelheden bij insteekappendages / perskoppelingen
[ISSO-digitaal](#)

Zeta

[getal] 

Here the zeta value of the branch is entered.

8.6. Dimensions

8.6.1. Mains systems and Rainwater, Sewage

Description

[text] 

Here the description of the pipe size can be entered.

Code

[text] 

Unique coding for the pipe size, e.g. the order coding.

Supplier

[number] 


Calling up the address details of **Adress information principle**.

Manufactur

[choose] 

Make piping material.


Search area

[choose] 

Conditions that the pipe dimensions must meet. There's the choice from:

- **Ideal;**
- **Favourable;**
- **Unfavourable.**

Sort (Mains system)

[choose] 

Type of pipe applied. There's choice from:

- **Precisie NEN 1894;**

- Steel precision DIN 2391;
- Seamless steel pipe NEN-EN 10220;
- Copper pipe NEN2200;
- PVC pipe;
- Steel screwed DIN 2440;
- Steel screwed NEN 3257 gastube;
- Polybutene H-pipe;
- Soft polyethene (ZPE);
- Hard polyethene (HPE);
- Vernet polyethene (VPE);
- Polypropenecopolymer (PPH);
- Polybutene (PB);
- ABS (Durapipe);
- Multicon (Multicon);
- Unipipe (UNICOR);
- Pe XB-AL-PE (Mepila);
- Raupink (REHAU);
- PP-R/GF7/E (ERIKS);
- PP-RP/GF7/E (ERIKS);
- PP-R/GFO/E (ERIKS);
- Other.

Sort (Rainwater, Sewage)

[choise] 

Type of pipe applied. There's choise from:

- PVC NEN 7045;
- PE NEN 7008 – S16;
- ABS NEN 7012;
- PPC BRL-K 449/02;
- Verzinkt staal NEN 7041;
- Gietijzer NEN 7062;
- Otherwise.

Dimension

[mm] 


Fixed size of the pipe section considered.

Wallthickness

[mm] 

Wall thickness of the pipe part. Used for the conversion of the inner dimensions to the outer dimensions.

Wallroughness x 10⁻⁵

[x 10⁻⁵ m] 

Wall roughness of the pipe part. When 0.25 mm is the wall roughness of the pipe, the value to be filled in is 25.


Database

database

read in

write to


Database read in

[button] 

Selecting products from the databases of suppliers. By clicking on this button, two things can happen:

- An overview of product data follows. After that, dimensions can be extracted one by one from the product database and added to the project database;
- If there is no product data, a selection screen is started.

Database write to

[button] 

By clicking on this button you can write data to your own database that you can give a name yourself. It is not possible to change data of a manufactured product in the supplied product database.

8.6.2. Air ducts

dimensiondata no. 7

Close

Add

<<

>>

Overview

description

rond 200 mm voorkeur 1

coding

supplier

0

product

LUKA

sort

naadloze kanalen; Staal

shape

Round

wallthickness

0.50

mm

dimension A

200.

mm

wallroughness x 10⁻⁵

15.

m

dimension B

mm

searchdomain

Ideal

data bank

read in

write to

This screen is selected by clicking the Fixed size input field in the Channel Data input screen. In this screen, fixed dimensions of pipe or duct parts are entered. If a fixed dimension is chosen, the previously specified boundaries no longer apply to the pipe or duct part under consideration.

General

description

rond 200 mm voorkeur 1

coding

supplier

0

product

LUKA

Description

[text] 

Here the description of the channel can be entered.

Coding

[text] 

Unique coding for the channel, e.g. order coding.

Supplier

[number] 

Calling up the address details of **Adress information principle**.

Product

[choise] 

Manufactured duct material.

searchdomain

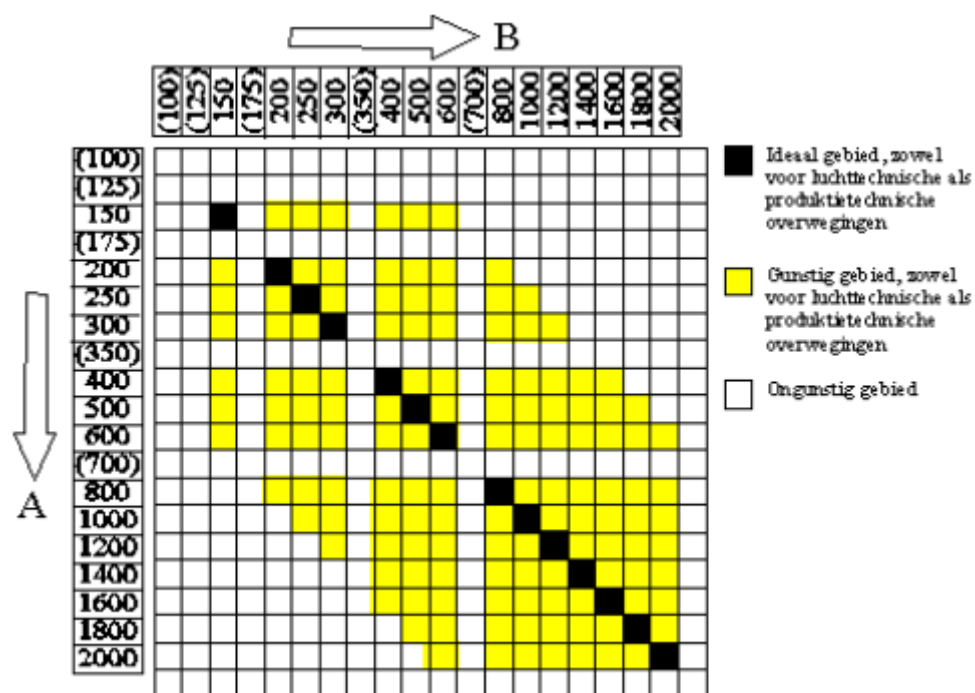
Ideal

Searchdomain

[choise] 

Conditions that the pipe dimensions must meet. For air ducts, the distribution is maintained as indicated in ISSO publication 17, part 1, figure 1 on page 17. There's the choise from:

- **Ideal**: only rectangular channels that lie within the black boxes may be chosen;
- **Favourable**: only rectangular channels that lie within the yellow (and black) boxes may be chosen;
- **Unfavourable**: material is difficult to supply, for example, for air ducts that all diameters and all A and B sizes can be chosen




Properties

sort	naadloze kanalen; Staal		
shape	Round	wallthickness	0.50 mm
dimension A	200. mm	wallroughness x 10 ^{-^5}	15. m
dimension B	mm		

Sort[choise] 

Type of channel applied. There's choice out:

- Naadloze kanalen; Staal; Naadloze kanalen; Aluminium; Naadloze kanalen; Kunststof;
- Spiraal gefelste kanalen; Verzinkt staal; Spiraal gefelste kanalen; Roestvast staal;
- Met langsnaad gefelste kanalen; Verzinkt staal; Met langsnaad gefelste kanalen; Roestvast staal;
- Steenachtige kanalen; Metaal; Steenachtige kanalen; Kunststof;
- Flexibele kanalen; Metaal; Flexibele kanalen; Kunststof;
- Instortkanaal;
- Overig.

Shape[text] 

Shape	
round	<input type="checkbox"/>
rectangular	<input type="checkbox"/>
oval	<input type="checkbox"/>

Shape of the channel part. Choose from:

- Round;
- Rectangular;
- Oval.

Dimension A and B[text] 

Fixed dimensions A and B of the channel part under consideration. If round is chosen for shape, only size A needs to be specified. In the case of rectangular and oval channels, both dimensions A and dimensions B must be given.

Wallthickness[mm] 

Wall thickness of the duct part. Used for the conversion of the inner dimensions to the outer dimensions.

Walrougness x 10⁻⁵[m] 

For ducts, if internal insulation is chosen, the wall roughness of the internal insulation material must be specified. The air does not flow along the metal or plastic wall, but along the insulation material. ISSO publication 17 Table 5.1 gives 0.25 mm as the guide value for the wall roughness of internally insulated channels. This gives a value to be filled in of 25.

Data bank

data bank	read in	write to
-----------	---------	----------

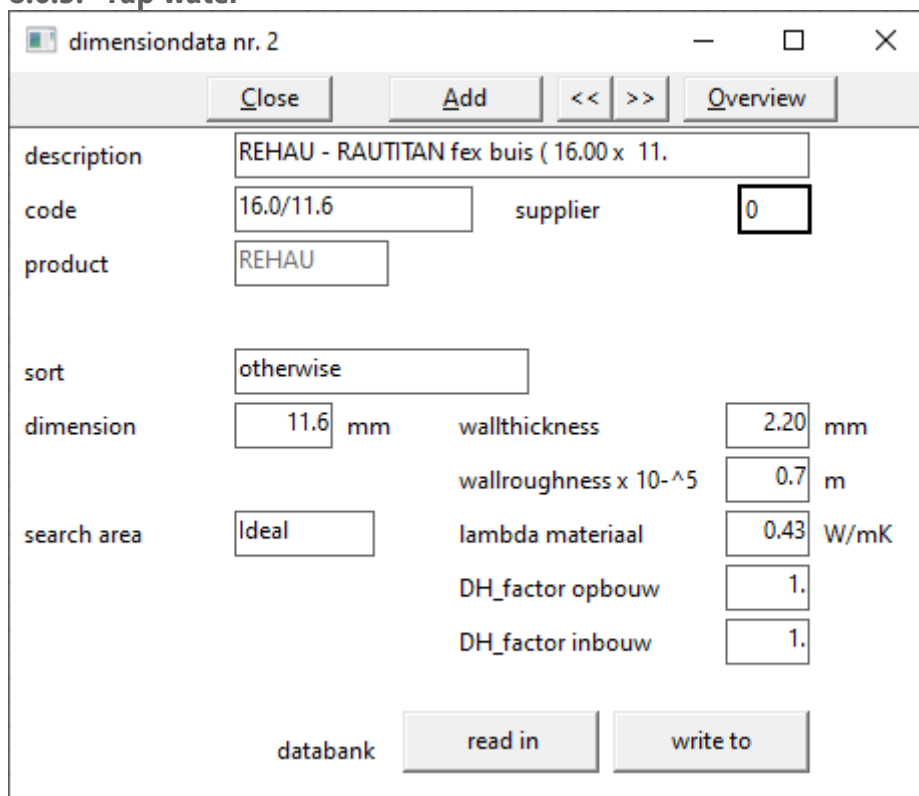
Databank read[button] 

Selecting products from the databases of suppliers. By clicking on this button, two things can happen:

- An overview of product data follows. After that, dimensions can be extracted one by one from the product database and added to the project database;
- If there is no product data, a selection screen is started.

Data bank write to[button] 

By clicking on this button you can write data to your own database that you can give a name yourself. It is not possible to change data of a manufactured product in the supplied product database.

8.6.3. Tap water


dimensiondata nr. 2

Close Add << >> Overview

description REHAU - RAUTITAN fex buis (16.00 x 11.

code 16.0/11.6 supplier 0

product REHAU

sort otherwise

dimension 11.6 mm wallthickness 2.20 mm

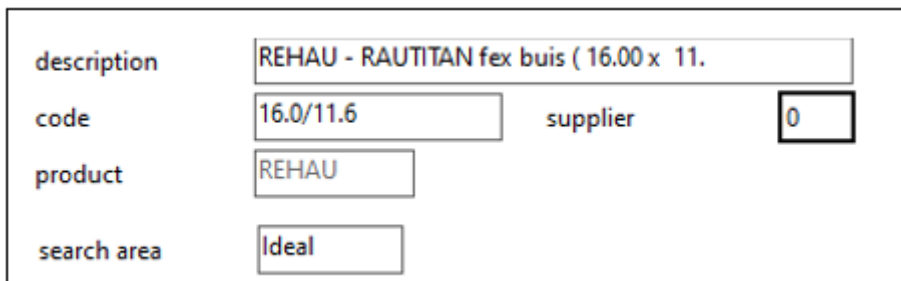
wallroughness x 10⁻⁵ 0.7 m

search area Ideal lambda materiaal 0.43 W/mK

DH_factor opbouw 1.

DH_factor inbouw 1.

databank read in write to

General


description REHAU - RAUTITAN fex buis (16.00 x 11.

code 16.0/11.6 supplier 0


product REHAU

search area Ideal

Description[text] 


Here the description of the dimension can be entered.

Code

[text] 

Unique coding for the size, e.g. the order coding.

Supplier

[number] 

Calling up the address details of **Adress information principle**.

Product

[choise] 

Fabrikaat leiding- of kanaalmateriaal.

Search area

[choise] 

Conditions that the pipe dimensions must meet. There's the choise out:

- **Ideal;**
- **Favourable;**
- **Unfavourable.**

Properties

sort	<input type="text" value="otherwise"/>			
dimension	<input type="text" value="11.6"/> mm	wallthickness	<input type="text" value="2.20"/> mm	
		wallroughness x 10 ^{-^5}	<input type="text" value="0.7"/> m	
		lambda materiaal	<input type="text" value="0.43"/> W/mK	
		DH_factor opbouw	<input type="text" value="1."/>	
		DH_factor inbouw	<input type="text" value="1."/>	

Sort

[choise] 

Type of pipe applied. There's choise from:

- **Precisie NEN 1894;**
- **Draad / naadloos vlam;**
- **Koperen pijp NEN 2200;**
- **PVP pijp;**
- **Polyetheen ZPE 25/30;**
- **Polyetheen (HPE 50);**
- **Gietijzeren pijp 2.0;**
- **Gietijzeren pijp 2.5;**
- **Polypropyleen PPR;**
- **Polyetheen PE;**
- **Overig.**

Dimension

[mm] 

Fixed size of the pipe section considered.

Wallthickness

[mm] 

Wall thickness of the pipe or duct part. Used for the conversion of the inner dimensions to the outer dimensions.

Wallroughness x 10⁻⁵

[x 10⁻⁵ m] 

Wall roughness of the pipe part. When 0.25 mm is the wall roughness of the pipe, the value to be filled in is 25.

Lambda material

[W/mK] 

Insulation value of the material of the pipe (required for the waiting time calculation).

DH- factor opbouw

[-] 

DH-factor inbouw

[-] 

The DH_{w,70} _factor is a measure that indicates the ratio of the heat that is transmitted to the next pipe and how much heat radiates to the environment. According to Isso55, these can be the values from Table II.1 are.

De DH_{w,70} zijn gegeven in tabel II.1.

Tabel II.1 Wachtijdfactor DH_{w,70} voor verschillende leidingmaterialen

Leidingmateriaal	DH _{w,70} opbouw	DH _{w,70} inbouw + mantelbuis
Koper	1,50	1,55
PVC-C	1,20	1,15
PB	1,25	1,25
PE-X	1,60	1,55
PPR (zonder mantelbuis)	1,25	1,30
PR-RT/AI	1,55	1,50
PE-X/AI	1,55	1,50
PE-X/EVOH	1,40	1,45

Databank

databank

read in

write to

Databank read in

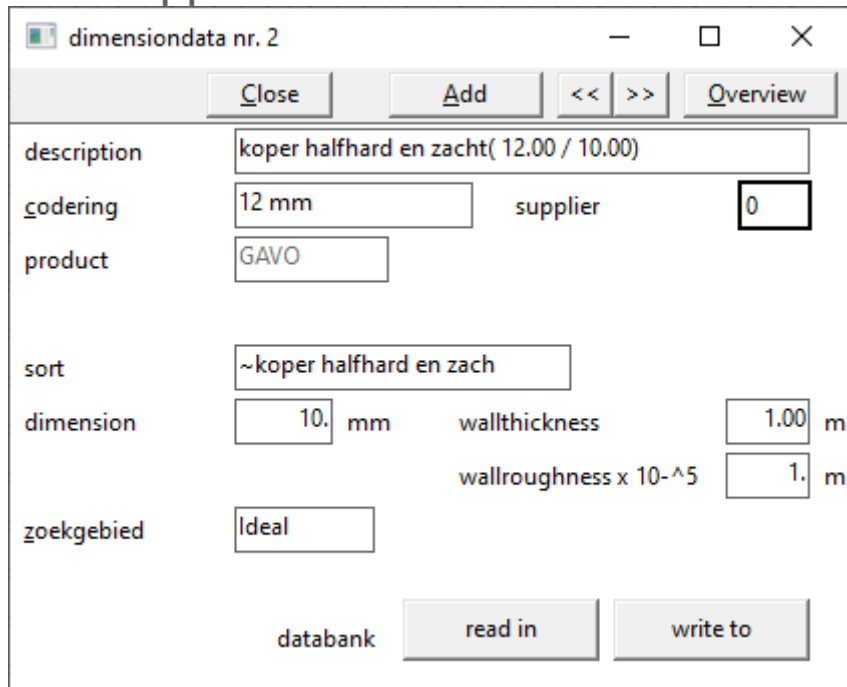
[button] 

Selecting products from the databases of suppliers. By clicking on this button, two things can happen:

- An overview of product data follows. After that, dimensions can be extracted one by one from the product database and added to the project database;
- If there is no product data, a selection screen is started.

Databank write to[button] 

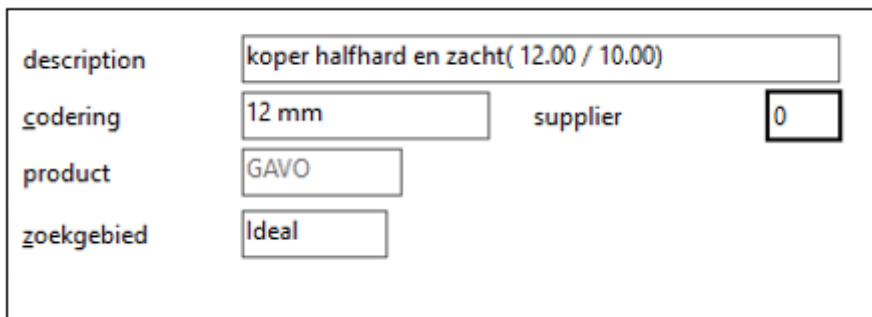
By clicking on this button you can write data to your own database that you can give a name yourself. It is not possible to change data of a manufactured product in the supplied product database.

8.6.4. Gas pipes


The screenshot shows a window titled "dimensiondata nr. 2" with a toolbar containing "Close", "Add", "<<", ">>", and "Overview". The main area contains the following fields:

- description**: koper halfhard en zacht(12.00 / 10.00)
- codering**: 12 mm
- supplier**: 0
- product**: GAVO
- sort**: ~koper halfhard en zach
- dimension**: 10. mm
- wallthickness**: 1.00 m
- wallroughness x 10⁻⁵**: 1. m
- zoekgebied**: Ideal

At the bottom, there is a "databank" label and two buttons: "read in" and "write to".

General


This screenshot shows the "General" section of the form with the following fields:

- description**: koper halfhard en zacht(12.00 / 10.00)
- codering**: 12 mm
- supplier**: 0
- product**: GAVO
- zoekgebied**: Ideal

Description[text] 

Here the description of the dimension can be entered.

Codering[text] 

Unique coding for the size, e.g. the order coding.

Supplier[number] 

Calling up the address details of **Adress information principle**.

Product[choise] 

Manufactured pipe material.

Zoekgebied

[choise] 🔥

Conditions that the pipe dimensions must meet. There's the choise out:

- **Ideal;**
- **Favourable;**
- **Unfavourable.**

Properties

sort	<input type="text" value="~koper halfhard en zach"/>		
dimension	<input type="text" value="10."/> mm	wallthickness	<input type="text" value="1.00"/> m
		wallroughness x 10 ⁻⁵	<input type="text" value="1."/> m

Sort

[choise] 🔥

Type of pipe applied. There's choise out:

- **Kunststofbuizen PVC-CPE;**
- **Kunststofbuizen PE;**
- **Nodulair gietijzer;**
- **Grijsgietijzer;**
- **Koper halfhard en zacht;**
- **Stalen precisie;**
- **Naadloos of gelast;**
- **Stalen draadpijp;**
- **Overig.**

Dimension

[mm] 🔥

Fixed size of the pipe section considered.

Wallthickness

[mm] 🔥

Wall thickness of the pipe part. Used for the conversion of the inner dimensions to the outer dimensions.

Walroughness x 10⁻⁵[x 10⁻⁵ m] 🔥

Wall roughness of the pipe part. When 0.25 mm is the wall roughness of the pipe, the value to be filled in is 25.

Databank

databank	<input type="button" value="read in"/>	<input type="button" value="write to"/>
----------	--	---

Databank read in[button] 

Selecting products from the databases of suppliers. By clicking on this button, two things can happen:

- An overview of product data follows. After that, dimensions can be extracted one by one from the product database and added to the project database;
- If there is no product data, a selection screen is started.

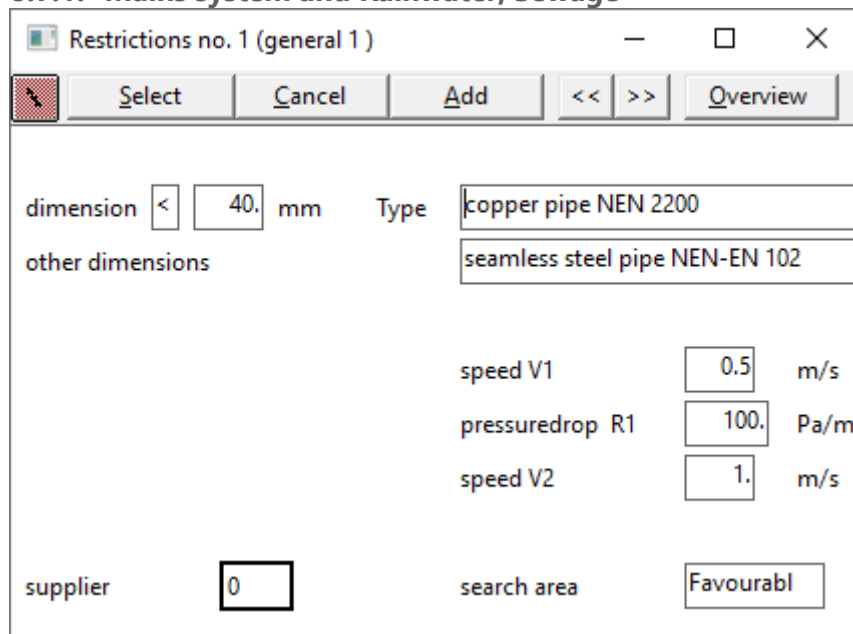
Databank write to[button] 

By clicking on this button you can write data to your own database that you can give a name yourself. It is not possible to change data of a manufactured product in the supplied product database.


8.7. Restrictions

The restrictions for the systems can be specified from the layout screen, but also from the input screen.

8.7.1. Mains system and Rainwater, Sewage



This screen is selected in the input screen Input and is clicked there under Limits. This screen specifies the type of material, the supplier, data on the size, the speed limits and the search area, applicable to the piping system belonging to the installation generally specified in the Installation screen. One piping system can be calculated with different sets of boundaries. However, this can be deviated from per pipeline part.

This program has 3 levels at Leidingnet, which can be reached with the "stairs" at the  top left:

1. Level 1: used in almost all calculations where it concerns an ordinary transmission pipeline network;
2. Level 2: used for very special transport pipelines such as district heating networks used in district heating projects where issues such as connection value, concurrency and design flows per house connection are discussed. It is about the Concurrency input field;

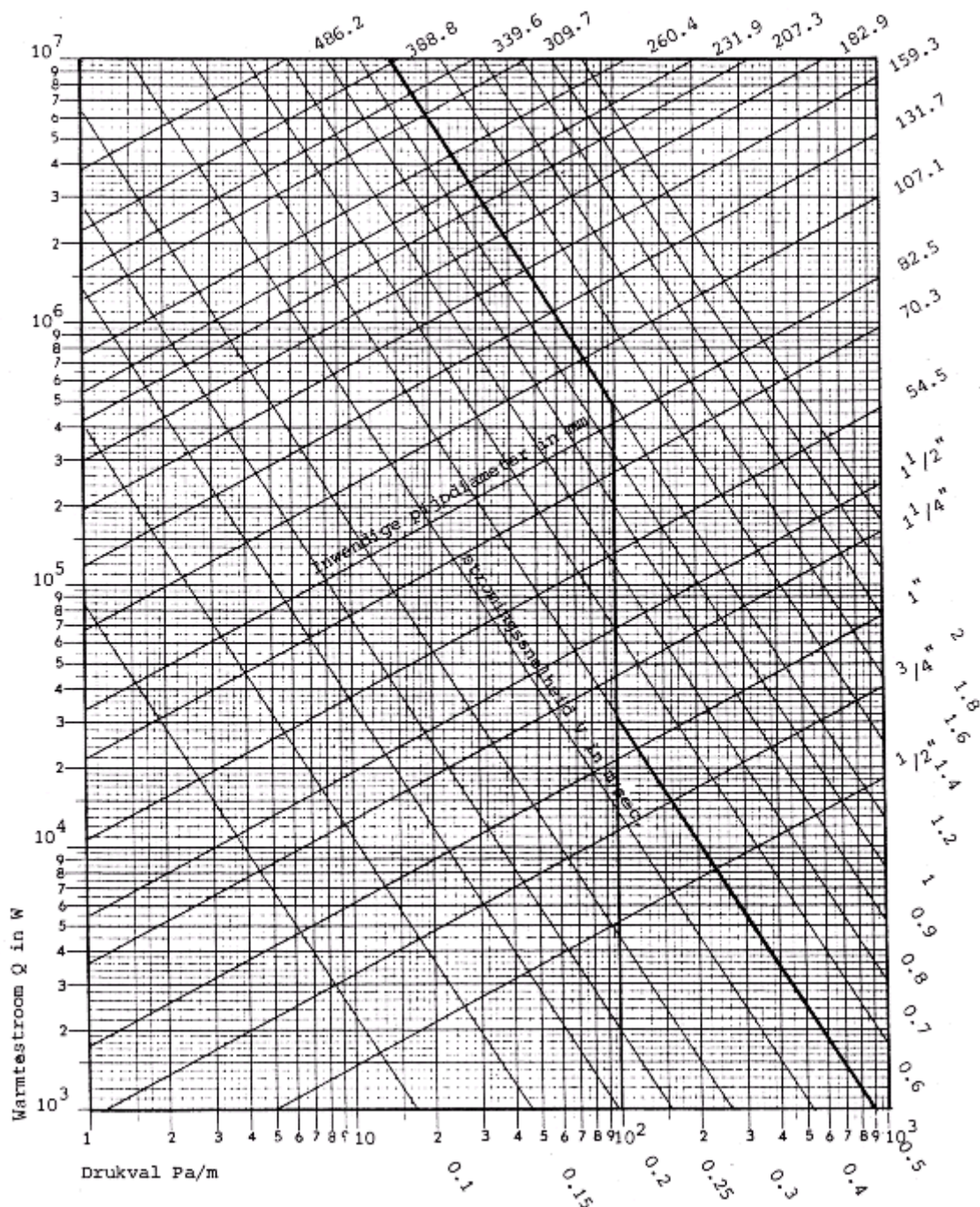
3. Level 3: in this level, a distinction is made between different types of delivery devices. A delivery device defined as Continuous is taken 100%, a delivery device defined as "Tap water" is carried according to a "root n" method (similar to the method for tap water) and a device designated as "Boiler" carries a concurrency that can be indicated by the user in a separate file and that does not have a maximum number of customers to be specified as in level 2 at a maximum of 16 customer is limited. This file can be selected in level 3
 - In the results, a device "tap water" is marked with a "*" and a device "continuous" with a "!".

Limits are specified for the speed in the pipes and the pressure drop per meter of pipe. The program will dimension a pipeline network that, if possible, follows these boundaries as much as possible.

The first limit (V1) is the maximum speed for small diameters, which is set to 0.5 m/s by default in the program. The second limit (V2) is the maximum speed for large diameters. By default, it is set at 1.0 m/s. The third limit (R1) is the pressure drop per meter. This is standard at 100 Pa/m. These default values can be changed by the user to a different value. The program will dimension a pipeline network that, if possible, lies against this line. Thus, if you specify high speeds and a high Pa/m, the pump pressure can increase sharply (see diagram below). This diagram applies to one temperature. One should not apply this diagram for a manual calculation.

Guide values for the maximum current and the resistance per meter of pipe length (Table 13 from ISSO publication 18, Pipeline network calculation).


Type inst.	Omschrijving	Toepassingsgebied	V max (m/s)	R max (Pa/m)
1	lang, vrij sterk vertakt, leidingnet met geringe watercirculatie	c.v.-net	1,2	100-150
2	lang, vrij sterk vertakt, leidingnet met grote watercirculatie	gekoeldwaternet voor inductieapparaten	1,5	150-200
3	weinig vertakt leidingnet met grote watercirculatie	luchtverhitters	1,8	200-250
4	kort, weinig vertakt, leidingnet met grote watercirculatie	ketel- en koelmachine circuit	2,5	200-300
5	afstandsleidingen	stadsverwarming	3,0	400-600



Algemeen


supplier	<input type="text" value="0"/>	search area	<input type="text" value="Favourabl"/>
----------	--------------------------------	-------------	--

Supplier

[number] 

Calling up the address details of **Adress information principle**.

Search area

[choise] 

Conditions that the pipe dimensions must meet. There's the choise from:

- **Ideal;**
- **Favourable;**
- **Unfavourable.**

Properties

Dimensions

[choise / mm] 

dimension	<	40.	mm	Type	copper pipe NEN 2200
other dimensions					seamless steel pipe NEN-EN 102

Size of all pipe parts.

Choise from:

- Free;
- <: Smaller than or equal to the specified diameter;
- =: Equal to the specified diameter;
- >: Larger than or equal to the specified diameter.

The default setting is always free. This means that the pipe dimensions are determined by the speed limits to be specified below. If < smaller, = equal or > larger is chosen, the maximum size, the size itself or the minimum size is entered in the input field that appears.

Type (Mains)


[choise] 

There is choise from the following possibilities:

- **Steel precission DIN 2391;**
- **Seamless steel pipe NEN-EN 10220;**
- **Copper pipe NEN 2200;**
- **PVC pipe;**
- **Steel screwed DIN 2440;**
- **Steel screwed NEN 3257 gastube;**
- **Polybuthene H-pipe;**
- **Soft polyethene (ZPE);**
- **Hard polyethene (HPE);**
- **Vernet polyethene (VPE);**
- **Polypropenecopolymer (PPH);**
- **Polybutene (PB);**
- **ABS (DURAPIPE);**
- **Multicon (MULTICON);**
- **Unipipe (UNICOR);**
- **Pe XB-AL-PE (MEPLA);**
- **Raupink (REHAU);**
- **PP-R/GF7/E (ERIKS);**
- **PP-RP/GF7/E (ERIKS);**

- PP-R/GFO/E (ERIKS);
- Overig.

Sort (Rainwater, sewage)

[choise] 

Er is choise uit de volgende mogelijkheden:

- PVC NEN 7045;
- PE NEN 7008 – S16;
- ABS NEN 7012;
- PPC BRL-K 449/02;
- Verzinkt staal NEN 7041;
- Gietijzer NEN 7062;
- Overig.

Other dimensions


[choise] 

If < is **chosen for Dimensions**, then here is the possibility to let the program choose the larger dimensions from a different material. There are the same choise options as under the Kind input fieldType.

Speed and pressure

speed V1	<input type="text" value="0.5"/>	m/s
pressuredrop R1	<input type="text" value="100."/>	Pa/m
speed V2	<input type="text" value="1."/>	m/s

Speed V1

[m/s] 


Speed V1 is the maximum speed for small diameters, which is **Main system** in the Pipeline Network program.

Pressuredrop R1

[Pa/m] 

Pressure drop per meter is the second limit, this is for the program **Main** system network default 100 Pa/m.

Speed V2

[m/s] 

Speed V2 is the maximum speed for large diameters, which is **Main system** Pipeline Network program.

Simultaneity

Restrictions no. 1 (general 1)

Select

Cancel

Add

<<

>>

Overview

dimension

mm

Type

copper pipe NEN 2200

speed V1

0.5

m/s

pressuredrop R1

100.

Pa/m

speed V2

1.

m/s

supplier

0

search area

Favourabl

simultaneity

1-2

1.

3-4

1.

5-6

1.

7-8

1.

9-10

1.

11-12

1.

13-14

1.

15-16

1.

For the correct dimensioning of a district heating network (district heating, stacked construction), a certain simultaneity can be taken into account for the connection capacity of the various home installations.

In order to be able to make a statement about the actual maximum heat demand of homes in the residential area, the ETM department of REMU conducted a study into the actual heat demand in existing distribution networks. This showed that for the concurrency, the connection capacity per house (transmission + hot water capacity) is 100% for the last two houses of each drive.

This concurrency factor is then reduced by 5% after each second home to a minimum value of 70%. The boundary that is linked to the installation via the general screen determines the concurrency factors for the total calculation!

Default values that can be changed are built into the program. Depending on the factor entered, the connection capacity per house x factor is done. (input of power with appliance = power of home connection).

Restrictions no. 1 (general 1)

Select

Cancel

Add

<<

>>

Overview

dimension

mm

Type

speed V1 m/s

pressuredrop R1 Pa/m

speed V2 m/s

supplier

search area

simultaneity

8.7.2. Air ducts

Restriction number 1 (general 1)

Select

Cancel

Add

<<

>>

Overview

airductshape insulation

ext

int

round ☐

straight ☐

oval ☐

dimension A

mm

dimension B

mm

preference round

mm

velocity V1 m/s

pressuredrop R1 Pa/m

velocity V2 m/s

Type

supplier

searchdomain

This screen specifies the type of material, the supplier, data on the size, the speed limits and the search area, applicable to the channel system belonging to the ducts in the specified system. One channel system can be calculated with different sets of boundaries. However, this can be deviated from per channel part.

General

supplier	<input type="text" value="0"/>	searchdomain	<input type="text" value="Favourabl"/>
----------	--------------------------------	--------------	--

Supplier

[number] 

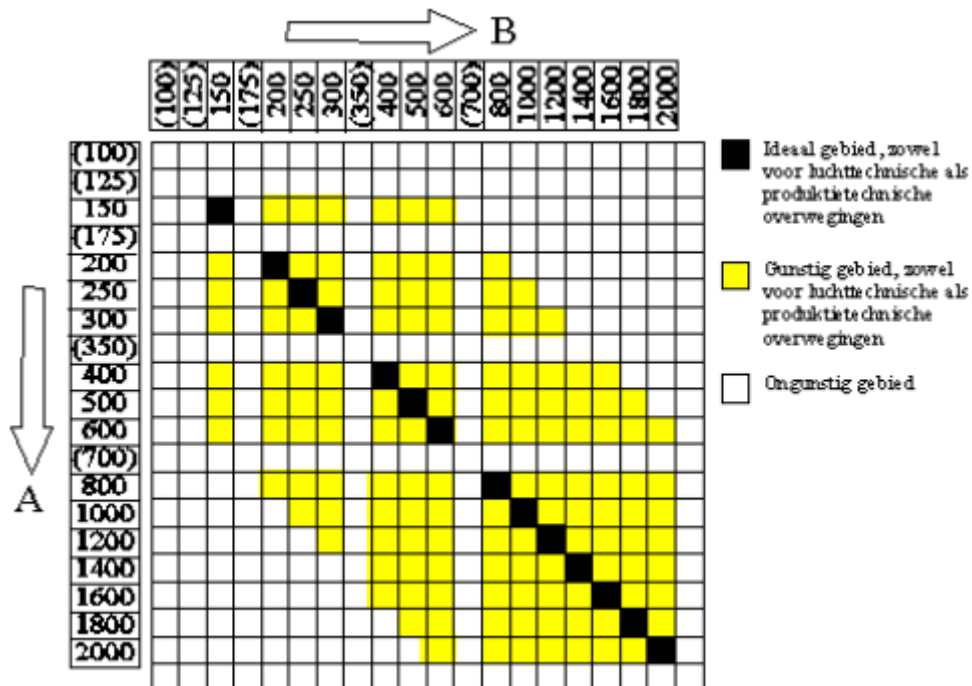
Calling up the address details of **Adress information principle**.

Searchdomain

[choise] 

Conditions that the pipe dimensions must meet. For air ducts, the distribution is maintained as indicated in ISSO publication 17, part 1, figure 1 on page 17. There's the choice from:

- **Ideal:** only rectangular channels that lie within the black boxes should be chosen;
- **Favourable:** only rectangular channels that lie within the yellow boxes should be chosen;
- **Unfavourable:** material is difficult to supply, for example, for air ducts that all diameters and all A and B sizes can be chosen



Properties

airductshape insulation			dimension A	<input type="text"/>	mm
	ext	int	dimension B	<input type="text"/>	mm
round	<input type="checkbox"/>	<input type="checkbox"/>	preference round	<input type="text"/>	mm
straight	<input type="checkbox"/>	<input type="checkbox"/>	velocity V1	<input type="text" value="1."/>	m/s
oval	<input type="checkbox"/>	<input type="checkbox"/>	pressuredrop R1	<input type="text" value="4."/>	Pa/m
			velocity V2	<input type="text" value="9."/>	m/s
Type	<input type="text" value="naadloze kanalen; Staal"/>				

Airductshape and insulation

[option] 

Shape of the air duct. Chose from:

- **Round;**
- **Straight;**
- **Oval.**

Multiple shapes can be included in the calculation at the same time. By clicking on the box behind the shape in question, you indicate that that shape may be used. A check mark appears in the selected box. Click again and the check mark will disappear. If you do not click on any box, all shapes may be used.

For each shape, round, rectangular or oval, it can be indicated whether there is insulation. The insulation per shape is specified by clicking on the empty box. A check mark appears in the box as a marker. Round and oval channels can only be insulated externally. This input data is used to indicate in a material state how much insulation material is needed.

Dimension A/B preference round

[choise / mm] 

Size of all channel parts.

Chose from:

- **Free;**
- **<:** Smaller than or equal to the specified diameter;
- **=:** equal to the specified diameter;
- **>:** Larger than or equal to the specified diameter.

The default setting is always free. This means that the channel dimensions are determined by the speed limits to be specified below. If < smaller, = equal or > larger is chosen, the maximum size, the size itself or the minimum size is entered in the input field that appears.

Type

[choise] 

Type of channel applied. There's choise from:

- **Naadloze kanalen; Staal;**
- **Naadloze kanalen; Aluminium;**

- Naadloze kanalen; Kunststof;
- Spiraal gefelste kanalen; Verzinkt staal;
- Spiraal gefelste kanalen; Roestvast staal;
- Met langsnaad gefelste kanalen; Verzinkt staal;
- Met langsnaad gefelste kanalen; Roestvast staal;
- Steenachtige kanalen; Metaal;
- Steenachtige kanalen; Kunststof;
- Flexibele kanalen; Metaal;
- Flexibele kanalen; Kunststof;
- Instortkanaal;
- Overig.

Snelheid en Drukval

velocity V1	1.	m/s
pressuredrop R1	4.	Pa/m
velocity V2	9.	m/s

Limits are specified for the speed in the ducts and the pressure drop per meter of channel. The program will dimension an air duct system that, if possible, follows these boundaries as much as possible. Default values are built into the program that the user can change. In the case of air ducts, a distinction can therefore be made between an air velocity for the main ducts (shaft) and the ducts towards the rooms. By specifying the speed limits and pressure drop per meter, it is possible to choose a particular design method. (see ISSO 17, section 5.2).

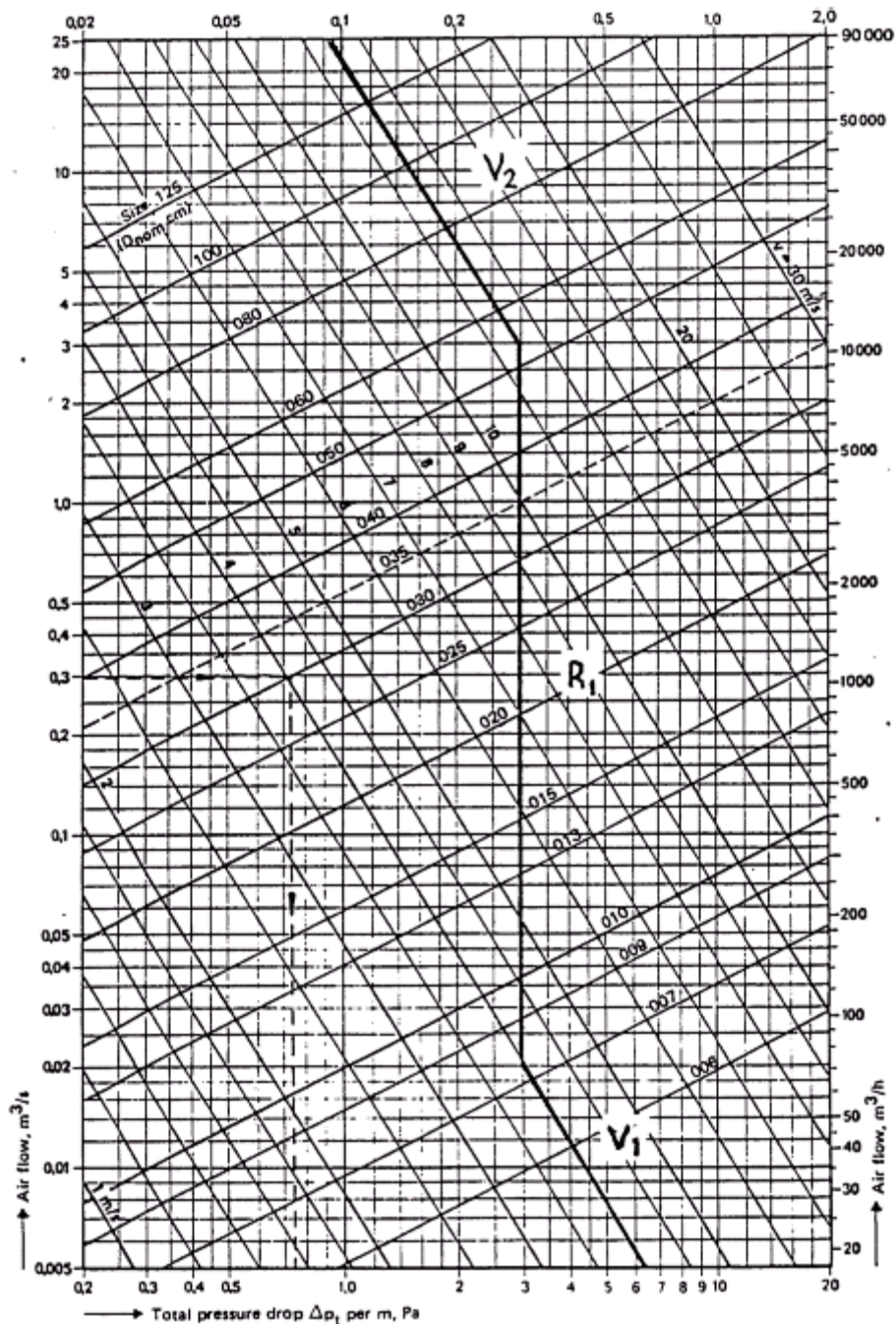
- If the speed V1 and V2 are equal, the method of constant speed is applied;
- If the minimum (1 m/sec) is given for V1 and the maximum (99.9 m/sec) for V2 and a certain value for R1, the constant friction method shall be applied;
- A combination of the methods mentioned above is the method of gradual speed reduction.

For air velocities to be applied see the following table.


Tabel 5.4 Aanbevolen maximale luchtsnelheden ter voorkoming van stromingsgeluid

Luchtsnelheid voor [m/s]	Toelaatbaar geluidsniveau in vertrek [dB(A)]				
	25	30	35	40	45
Hoofdkanalen	4,5	5,0	6,5	7,5	9,0
Aftakkingen	3,5	4,5	5,5	6,0	7,0
Laatste kanaal naar ruimte	2,0	2,5	3,25	4,0	5,0

The program will dimension a duct system, the dimensions of which are as close as possible to the boundary line. Thus, when one takes high speeds and a high pressure drop, the fan pressure will rise sharply (see diagram below). This diagram applies to one temperature, one should not apply this diagram for a manual calculation.



Velocity V1

[m/s] 


The speed V1 is the maximum speed for small diameters and is set to **Airducts** Air ducts by default.

Pressuredrop R1

[Pa/m] 

The limit R1 is the pressure drop per meter Default for **Airducts** is this 4 Pa/m.

Velocity V2

[m/s] 

The speed V2 is the maximum speed for large diameters/cross sections, for **Airducts** this default is set at 9.0 m/s.

8.7.3. Tapwater

Restriction nr. 1 (general 1)

Select Cancel Add << >> Overview

precision DIN 2391 ☐ dimension mm

screwed/seamless pipe ☐ other dimensions

copper pipe NEN 2200 ☒

PVC pipe ☐ velocity m/s

polyethylene ZPE 25/32 ☐

polyethylene (HPE 50) ☐

cast iron pipe 2.0 ☐

cast iron pipe 2.5 ☐ search area

polypropylene PPR ☐

polyethylene PE ☐

other ☐

supplier

This screen specifies the type of material, the supplier, data on the size, the speed limits and the search area, applicable to the piping system belonging to the installation generally specified in the Installation screen. One piping system can be calculated with different sets of boundaries. However, this can be deviated from per pipeline section.

Algemeen

supplier search area

Supplier

[number]

Calling up the address details of **Adress information principle**.

Search area

[choise]

Conditions that the pipe dimensions must meet. There's the choise out:

- Ideal;
- Favourable;
- Unfavourable.

Properties

precision DIN 2391	<input type="checkbox"/>	dimension	< 30. mm
screwed/seamless pipe	<input type="checkbox"/>	other dimensions	seamless
copper pipe NEN 2200	<input checked="" type="checkbox"/>		
PVC pipe	<input type="checkbox"/>	velocity	2. m/s
polyethylene ZPE 25/32	<input type="checkbox"/>		
polyethylene (HPE 50)	<input type="checkbox"/>		
cast iron pipe 2.0	<input type="checkbox"/>		
cast iron pipe 2.5	<input type="checkbox"/>		
polypropylene PPR	<input type="checkbox"/>		
polyethylene PE	<input type="checkbox"/>		
other	<input type="checkbox"/>		

Dimension

[choise / mm] 

Size of all pipe sections.

Choise from:

- **Free;**
- <: Smaller than or equal to the specified diameter;
- =: Equal to the specified diameter;
- >: Larger than or equal to the specified diameter.

The default setting is always free. This means that the pipe dimensions are determined by the speed limits to be specified below. If < smaller, = equal or > larger is chosen, the maximum size, the size itself or the minimum size is entered in the input field that appears.

Sort

[choise] 

There is choise from the following possibilities:

- **Precision NEN 2391;**
- **Screwed/seamless pipe;**
- **Copper pipe NEN 2200;**
- **PVC pipe;**
- **Polyethylene ZPE 25/32;**
- **Polyethylene (HPE 50);**
- **Cast Iron pipe 2.0;**
- **Cast iron pipe 2.5;**
- **Polypropylene PPR;**
- **Polyethene PE;**
- **Other.**

Velocityvelocity m/s**Velocity**

[m/s]

Maximum permitted speed [m/s] of the water in the tap water network. When the calculated speed exceeds this maximum, a larger diameter is chosen so that the speed becomes equal to or less than the maximum permitted speed.

Noise pollution can occur, among other things, as a result of an excessive flow rate in the pipes. For this reason, the flow rate should not exceed 2 m/s. The design assumes a speed between 1 and 2 m/s. For high noise requirements, the speed is not chosen higher than 1 m/s. For homes adjacent to another home, the flow rate must be a maximum of 1.5 m/s (NPR 5075) as a result of the Building Decree.

Maximum water speed in pipes:

	Light requirement	Normal requirement
Cold and hot water pipes	2,0 m/s	1,5 m/s
Hot water circulation	0,7 m/s	0,7 m/s

8.7.4. Gas pipes

~Begrenzungen nr. 1 (~algemeen 1)

Select Cancel Add << >> Overview

kunststofbuizen PVC-CPE	<input type="checkbox"/>		
kunststofbuizen PE	<input type="checkbox"/>	afmeting	< 30. mm
nodulair gietijzer	<input type="checkbox"/>	overige afmetingen	~naadloos
grijsgietijzer	<input type="checkbox"/>		
koper halfhard en zacht	<input checked="" type="checkbox"/>	bewoond	15. m/s
stalen precisie	<input type="checkbox"/>	onbewoond	20. m/s
naadloos of gelast	<input type="checkbox"/>		
stalen draadpijp	<input type="checkbox"/>	zoekgebied	Favourabl
overig	<input type="checkbox"/>		

leverancier 0

This screen specifies the type of material, the supplier, data on the size, the speed limits and the search area, applicable to the piping system belonging to the installation generally specified in the Installation screen. One piping system can be calculated with different sets of boundaries. However, this can be deviated from per pipeline section.

General

leverancier

0

zoekgebied

Favourabl

Leverancier = supplier

[number] 🔥

Calling up the address details of *Adress information principle*.

Zoekgebied = search area

[choise] 🔥

Conditions that the pipe dimensions must meet. There's the choise from:

- **Ideal;**
- **Favourable;**
- **Unfavourable.**

Properties

kunststofbuizen PVC-CPE	<input type="checkbox"/>	
kunststofbuizen PE	<input type="checkbox"/>	afmeting < 30. mm
nodulair gietijzer	<input type="checkbox"/>	overige afmetingen ~naadloos
grijsgietijzer	<input type="checkbox"/>	
koper halfhard en zacht	<input checked="" type="checkbox"/>	
stalen precisie	<input type="checkbox"/>	
naadloos of gelast	<input type="checkbox"/>	
stalen draadpijp	<input type="checkbox"/>	
overig	<input type="checkbox"/>	

Afmeting = dimension

[choise / mm] 🔥

Size of all pipe sections.

Choise uit:

- **Free;**
- <: Smaller than or equal to the specified diameter;
- =: Equal to the specified diameter;
- >: Larger than or equal to the specified diameter.

The default setting is always free. This means that the pipe dimensions are determined by the speed limits to be specified below. If < smaller, = equal or > larger is chosen, the maximum size, the size itself or the minimum size is entered in the input field that appears.

Sort

[choise] 🔥

There is choise from the following possibilities:

- Kunststofbuizen PVC-CPE;
- Kunststofbuizen PE;
- Nodulair gietijzer;
- Grijsgietijzer;
- Koper halfhard en zacht;
- Stalen precisie;
- Naadloos of gelast;
- Stalen draadpijp;
- Overig.

Velocity

bewoond	15.	m/s
onbewoond	20.	m/s

Bewoond = inhabited

[m/s] 🔥

Maximum speed in inhabited spaces. This is subject to a maximum gas velocity in the pipeline of 15 m/s.

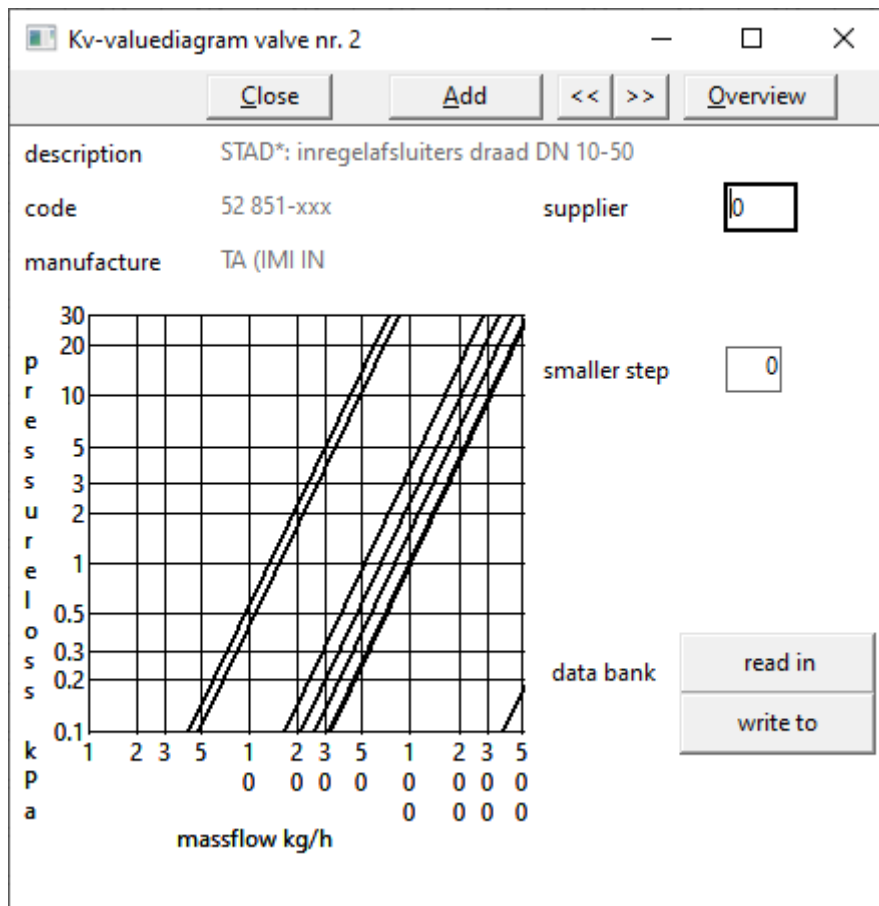
Onbewoond = uninhabited

[m/s] 🔥

Maximum speed in uninhabited spaces. This is subject to a maximum gas velocity in the pipeline of 20 m/s.

8.8. Valves, Dampers, Hotwaterapp. and MMV

8.8.1. Valves



In this screen, data from a valve is read from a database, written to its own database, or possibly if the data does not appear in the database, entered here (see the Add button).


The resistance factors of fittings vary greatly per type and manufacturer and should be used as a guide value in the calculation. With valves, one can calculate much more accurately with the valve characteristic, the Kv value. The Kv value indicates how much m^3 , with a specific gravity of 1000 kg/m^3 , flows through the valve per hour at a pressure drop over the valve of 100 kPa.

The kv value diagram associated with the valve appears on the screen.

General

description	STAD*: inregelafsluiters draad DN 10-50		
code	52 851-xxx	supplier	<input type="text" value="0"/>
manufacture	TA (IMI IN)		

Description

[text] 


The description of the valve is displayed here.

Code

[text] 

Unique coding for the valve, e.g. the order coding.

Supplier

[number] 

Calling up the address details of **Adress information principle**.

Manufacture

[choise] 

Manufacture of the valve.

smaller step

Smaller step

[choise] 

When the strang valve is determined, it removes the entire difference between the calculated pressure of that branch and the pressure on the node in front of it. The consequence is that a device in this branch now becomes the heaviest branch and is therefore completely open. Sometimes you don't want a fully open position because at that position the adjustment characteristic is very unfavorable. If you turn off the tap a little, it can react very badly or you suddenly get a very large influence. Very difficult to find the right position.

What you can then do is close the pressure valve a little less far, so that the pressure, which you do not remove, must be made up by the valve in the heaviest branch of this strang.

Data bank



Data bank read in

[button] 

Selecting products from the databases of suppliers. By clicking on this button, two things can happen:

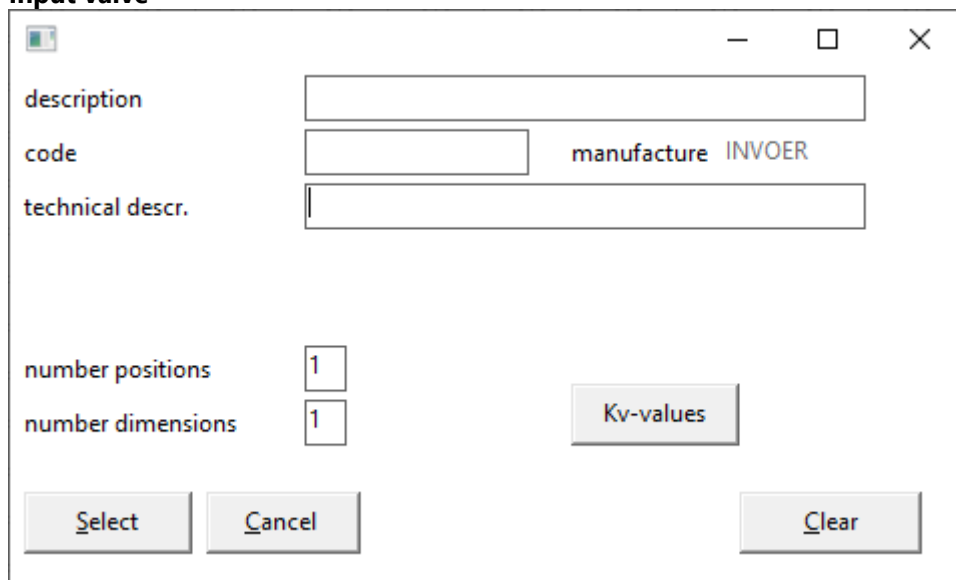
- An overview of product data follows. After that, valves can be extracted one by one from the product database and added to the project database;
- If there is no product data, a selection screen is started.

Data bank write to

[button] 

y clicking on this button you can write data to your own database that you can give a name yourself. It is not possible to change data of a manufactured product in the supplied product database.

Input valve



The 'Input valve' dialog box is a standard Windows-style window with a title bar containing a minimize, maximize, and close button. Inside the window, there are three text input fields labeled 'description', 'code', and 'technical descr.'. To the right of the 'code' field, the text 'manufacture INVOER' is displayed. Below these fields are two numeric input boxes labeled 'number positions' and 'number dimensions', both containing the value '1'. To the right of these boxes is a button labeled 'Kv-values'. At the bottom of the dialog are three buttons: 'Select', 'Cancel', and 'Clear'.


This screen is called up when clicking on the **Add** button. In this screen it is possible to enter your own valves or to view the values of an existing valve.

Description

[text] 

Hier wordt de description van het ventiel ingegeven.

Code

[text] 

Unique coding for the valve, e.g. the order coding.

Manufacture

[choise] 

Manufacture of the valve.

Technical description

[text] 

A further description of the valve can be entered here.

Number positions

[number] 

Number of modes for which Kv values are specified. See **Invoer Kv-waarden**.

Number dimensions

[number] 

Number of dimensions for which Kv values are specified. See **Invoer Kv-waarden**.

Select

[button] 

Assign the modified or entered data to the project file.

Cancel

[button] 

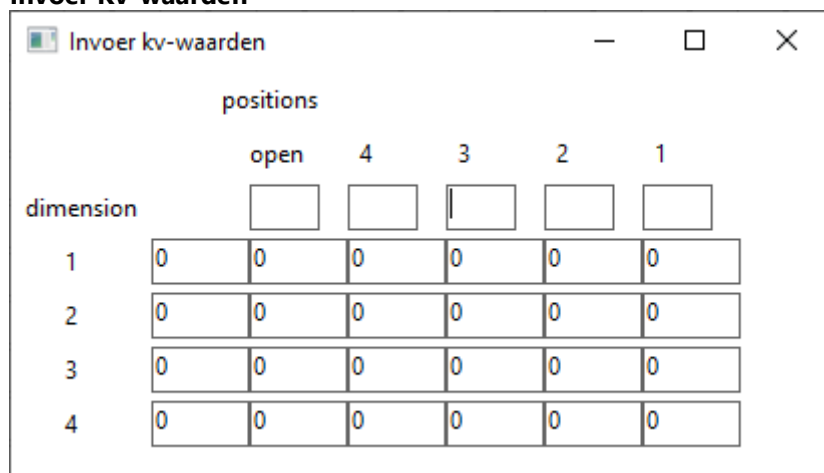
Exit this input screen without adding data.

Clear

[button] 

Clear all input fields to specify new values. The operation of the Add button in the Kv-value diagram valves screen is different here. After clicking, the input fields are not cleared. This is arranged because in practice it will happen that people often want to adjust the data of a valve from the database on a number of points.

Invoer Kv-waarden

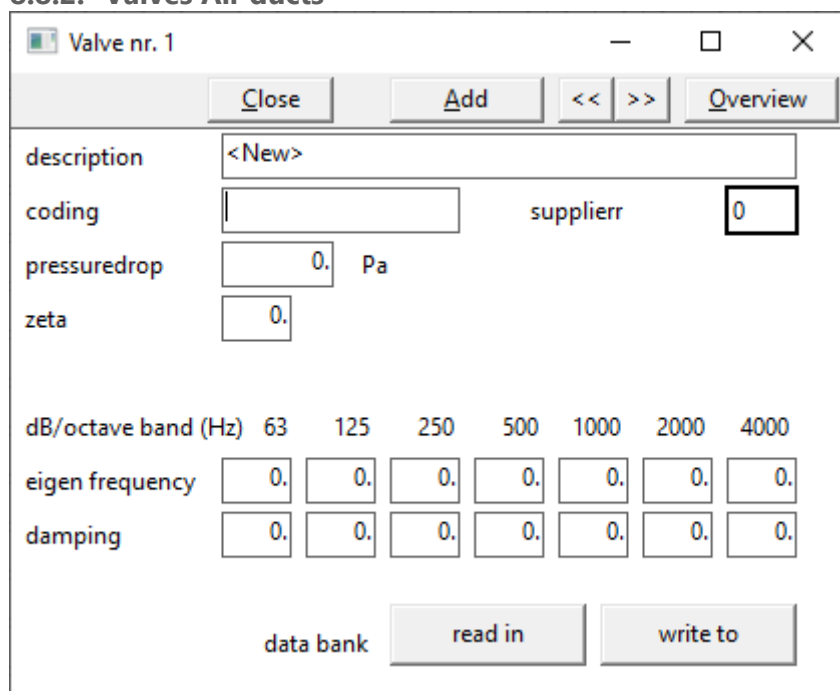


		positions				
		open	4	3	2	1
dimension						
1	0	0	0	0	0	0
2	0	0	0	0	0	0
3	0	0	0	0	0	0
4	0	0	0	0	0	0

This screen is a sub-input screen of the input screen **Input valve** and is clicked there under the button Kv-values. In this screen you enter Kv values of valves, which you have specified yourself. The number of input fields depends on the number of **Input valve** in the Custom Input Valve screen.

In the first column, the dimensions are specified vertically below each other. At the top the smallest size and at the bottom the largest size. The orientations are entered in the top row of horizontal input fields. The leftmost input field is always reserved for the "open" position and the rightmost input field for the most dense position. In the other fields, the Kv values are specified.

8.8.2. Valves Air ducts



		dB/octave band (Hz)						
		63	125	250	500	1000	2000	4000
description	<New>							
coding							supplerr	0
pressuredrop	0. Pa							
zeta	0.							
eigen frequency		0.	0.	0.	0.	0.	0.	0.
damping		0.	0.	0.	0.	0.	0.	0.

data bank read in write to

General

description	<input type="text" value=" <New>"/>		
coding	<input type="text"/>	supplieerr	<input type="text" value="0"/>

Description

[text] 


Here the description of the valve is entered.

Coding

[text] 

Unique coding for the valve, e.g. the order coding.

Supplier

[number] 

Calls up from the screen **Adress information principle**.

Properties

pressuredrop	<input type="text" value="0."/>	Pa
zeta	<input type="text" value="0."/>	

Pressuredrop

[Pa] 

Pressure drop of the valve.

Zeta

[-] 

Zeta value of the valve if no pressure drop of the valve is known.

Sound

dB/octave band (Hz)	63	125	250	500	1000	2000	4000
eigen frequency	<input type="text" value="0."/>	<input type="text" value="0."/>	<input type="text" value="0."/>	<input type="text" value="0."/>	<input type="text" value="0."/>	<input type="text" value="0."/>	<input type="text" value="0."/>
damping	<input type="text" value="0."/>	<input type="text" value="0."/>	<input type="text" value="0."/>	<input type="text" value="0."/>	<input type="text" value="0."/>	<input type="text" value="0."/>	<input type="text" value="0."/>

To be filled in when under **Layouts Air ducts** the check mark **Sound VA112** is checked.

Eigen frequency

[dB] 

Own sound production of the valve per octave band. This can be filled in for the octave bands below:

- 63 Hz;
- 125 Hz;

- 250 Hz;
- 500 Hz;
- 1000 Hz;
- 2000 Hz;
- 4000 Hz.

Damping

[dB] 

The damping of the valve per octave band. This can be filled in for the same octave bands as the *Eigen frequency*.

data bank

read in

write to

Data bank

[-] 

For the air valves it is possible to use a database. This can be supplemented by the user himself.

8.8.3. Valves Gas pipe

~Klep nr. 1

Close Add << >> Overview

omschrijving

<New>

codering

leverancier

0

type klep

~vrije opgave

zeta

0.0

General

omschrijving

<nieuw>

codering

leverancier


0

Omschrijving = Description

[text] 

Here the description of the valve is entered.

Codering = code

[text] 

Unique coding for the valve, e.g. the order coding.

Leverancier = supplier

[getal] 

Calls up from the screen *Adress information principle*.

Properties

type klep	vrije opgave
zeta	0.0

Type klep

[choice]

Choise menu with valve types and associated resistance factors taken from ISSO publication 18:

- **Vrije opgave:** Zeta-waarde vrij op te geven;
- **Rechte klepafsluiter:** Zeta-waarde is 4.6;
- **Vrijstroomafsluiter:** Zeta-waarde is 1.3;
- **Membraanafsluiter:** Zeta-waarde is 2.6;
- **Schuifafsluiter:** Zeta-waarde is 0.2;
- **Vlinderklep:** Zeta-waarde is 0.3;
- **Terugslagklep:** Zeta-waarde is 8.0;
- **Haakse klepafsluiter:** Zeta-waarde is 4.0;
- **Plugafsluiter:** Zeta-waarde is 1.0;
- **Kogelafsluiter open:** Zeta-waarde is 0.1;
- **Kogelafsluiter reduceer:** Zeta-waarde is 0.3.

Zeta

[-]

Zeta value if user defined (vrije opgave).

8.8.4. Dampers

Dampersdata no. 1

Close
Add
<<
>>
Overview

description
<New>

coding
supplier
0

pressuredrop
0.
a

zeta
0.

dB/octave band (Hz)
63
125
250
500
1000
2000
4000

eigen frequency
0.
0.
0.
0.
0.
0.
0.

damping
0.
0.
0.
0.
0.
0.
0.

data bank
read in
write to

General


description	<input type="text" value=" <New>"/>		
coding	<input type="text"/>	supplier	<input type="text" value="0"/>

Description

[text] 

Here the description of the damper is entered.

Coding

[text] 

Unique coding for the damper, e.g. the order coding.

Supplier

[number] 

Calling up the address details of **Adress information principle**.

Properties

pressuredrop	<input type="text" value="0."/>	a
zeta	<input type="text" value="0."/>	

Pressuredrop

[Pa] 

Pressure drop of the damper.

Zeta

[-] 

Zeta value of the damper if no pressure drop of the damper is known.

Sound

dB/octave band (Hz)	63	125	250	500	1000	2000	4000
eigen frequency	<input type="text" value="0."/>	<input type="text" value="0."/>	<input type="text" value="0."/>	<input type="text" value="0."/>	<input type="text" value="0."/>	<input type="text" value="0."/>	<input type="text" value="0."/>
damping	<input type="text" value="0."/>	<input type="text" value="0."/>	<input type="text" value="0."/>	<input type="text" value="0."/>	<input type="text" value="0."/>	<input type="text" value="0."/>	<input type="text" value="0."/>

To be filled in when under **Layouts Air ducts** the check mark **Sound VA112** is checked.

Eigen frequency

[dB] 

Own sound production of the damper per octave band. This can be filled in for the octave bands below:

- 63 Hz;

- 125 Hz;
- 250 Hz;
- 500 Hz;
- 1000 Hz;
- 2000 Hz;
- 4000 Hz.

Damping

[dB] 

The damping of the damper per octave band. This can be filled in for the same octave bands as the *Eigen frequency*.

data bank

read in

write to

Data bank

[-] 

For the dampers it is possible to use a database. This can be supplemented by the user himself.

8.8.5. Hot water data and Maximum moment volumestroom

hotwater data nr. 1 ()
— □ ×

Close
Add
<<
>>
Overview

description

<New>

simultaneity

~1 flow keukenmengkraan

summation

cold

4.00

TE

hot

1.00

TE

temperture hotwater

65.0

°C

toestel wachttijd

0.

sec

In order to indicate in the program that it is a hot water pipe system, a hot water preparer is selected in the pipe data screen via hot water device. A concurrency class is also chosen here. To indicate that it is a hot water system, the pipes that follow the pipe where the hot water preparer is selected are colored red. For non-residential buildings, the concurrency can be determined at your own discretion by choosing the concurrency class 'specify flow maximum yourself'.

In this screen, data of the connected hot tap water such as concurrency, temperature of the environment and temperature of the water can be entered.

Description

[text] 

Here the description of the hot water device can be entered.

Simultaneity

[choise] 

1 flow keukenmengkraan
2a flow keuken- en douchmengkraan
2b flow keuken- en badmengkraan
3 flow keuken-, douch- en badmengkraan
flow maximaal zelf opgeven

The maximum moment volume flow calculated according to the standard q/\sqrt{n} method is not sufficient to meet the comfort requirements of simultaneous tapping of hot tap water. The program uses a custom method, taking into account variations in concurrency. The adapted method is based on the method as described in the ISSO/VNI guideline 30-2. This method does not apply to non-residential buildings. The modified method is based on the addition of tap units. To this end, a distinction has been made between four concurrency classes from which one can choose:

- **1 Flow keukenmengkraan: Concurrency Class I:** Several hot water taps, one of which is used for choose, without a concurrency requirement. The maximum volume flow is based on the kitchen mixer tap;
- **2a Flow keuken- en douchmengkraan: Concurrency class IIa:** Several hot water taps, two of which can be used simultaneously to choose. The maximum volume flow is based on the kitchen mixer tap and the shower mixer tap;
- **2b Flow keuken- en badmengkraan: Concurrency class IIb:** Several hot water taps, two of which can be used simultaneously to choose. The maximum volume flow is based on the kitchen mixer tap and the bath mixer tap;
- **3 Flow keuken- douche- en badmengkraan: Concurrency class III:** Several hot water points, three of which can be used simultaneously to choose. The maximum volume flow is based on the kitchen mixer tap, the bath mixer tap and the shower mixer tap;
- **Flow maximaal zelf opgeven:** For non-residential buildings, the simultaneity can be determined at your own discretion by choosing this option. An input field will then appear in which you can specify the addition of hot water yourself.

Hot water addition

[%] 

This input field appears when under **Simultaneity** for **Flow maximum self-specifying**, is chosen. Here you can specify the addition of hot water yourself.

Summation

[text] 

After summation is indicated the cold water part and the hot water part belonging to the chosen simultaneity. The current values are only displayed when the screen with the Select button has been linked to the Pipe Data screen. When the Hot Water Data screen is opened again, the correct current values for the cold water part and the hot water part are displayed.

Temperature hotwater

[°C] 

Temperature of the hot water.

Toestel wachttijd

[sec] 

The time that should be taken into account when determining the waiting time per device.

8.8.6. Maximum moment volumestroom


maximum moment volumestroom nr. 1 (general 1)		
<input type="button" value="Close"/> <input type="button" value="Add"/> <input >="" <input="" type="button" value="Overview"/>		
brandslanghaspel	<input type="text" value="45.00"/>	l/min
continue verbruik	<input type="text" value="0.00"/>	l/min
douchegroep	<input type="text" value="0.00"/>	l/min
oog douche	<input type="text" value="12.00"/>	l/min
gelaat douche	<input type="text" value="24.00"/>	l/min
plens douche	<input type="text" value="30.00"/>	l/min

Maximum moment volumestroom – Brandslanghaspels = fire hose

[l/min] 

Maximum moment volume flow of the fire hose reels that may operate simultaneously in a network. In most cases, a maximum of two will be charged: For pipes in a combined fire extinguishing drinking water installation with one or more fire hose reels and multiple emergency showers, the place of a fire hose reel is taken by an emergency shower and the largest volume flow is charged. For the calculation of the maximum moment volume flow for pipes with fire hose reels, a distinction is also made between pipes with eye wash, pipes with face shower and pipes with shower shower. In addition, when using two fire hose reels or more at the same time, the volume flow of the eye wash is not taken into account.

Maximum moment volumestroom – Continue verbruik

[l/min] 

Maximum flow of devices indicated as continuous consumers.

Maximum moment volumestroom – Douchegroep

[l/min] 


Maximum flow of devices indicated as douchegroep.

Maximum moment volumestroom – Oog douche = eyewash

[l/min] 

Maximum flow of devices indicated as oogdouche.

Maximum moment volumestroom – Gelaat douche = face shower

[l/min] 

Maximum flow of devices indicated as gelaatdouche.

Maximum moment volumestroom – Plens douche = shower shed

[l/min] 

Maximum flow of devices indicated as plensdouche

For emergency showers, the following volume flows are used:

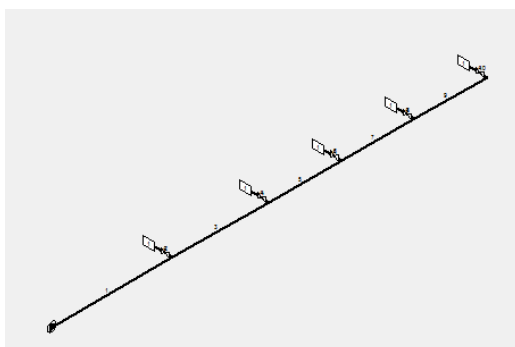
- **Eyewash:** 0.25 l/s (15 l/min);
- **Face shower:** 0.42 l/s (25 l/min);
- **Shower shed:** 1.33 l/s (80 l/min)

For the calculation of the maximum moment volume flow, a distinction is made between pipes with eye wash, pipes with face shower and pipes with shower shower. The relevant formulas as stated in the 'Manual of Installation Technology' (TVVL, ISSO and Novem) and in 'Het ontwerpen van sanitaire installaties' (W.J.H. Scheffer) have been used.

8.8.7. Authority

[number] 

Authority is a property that indicates how great the influence of a control valve must be on the piping behind this valve. The function is intended to determine the required Kv value of the control valves to be applied to achieve a certain authority. To this end, it is possible to make a calculation and assign it to the places where a valve must be given a certain authority. After making the calculation, the authority can be set to "skip" or removed and the necessary valve can be assigned.



RESULTATEN											
										berekende systeemdruk	
										1984 Pa	
nr.	naam	app.	Q	lengte	V	druk	afmeting	drukval	inregel	stand	fijn Kvs
nr.	nr.	nr.	kg/s	m	m ³ /s	Pa	mm	nr.	Pa	klep	inr.
1			0.298	3.0	0.38	52.7	8	32.00	DN 35	158	
2	1	5000 W	0.6	0.46	229.0	5	13.00	DN 15	849	976	4.00 0.31
3			0.238	2.4	0.48	103.6	7	25.60	DN 28	223	
4	1	5000 W	0.6	0.46	229.0	5	13.00	DN 15	1392	211	2.50 0.49
5			0.179	1.8	0.36	62.0	7	25.60	DN 28	150	
6	1	5000 W	0.6	0.46	229.0	5	13.00	DN 15	1345	108	2.50 0.54
7			0.119	1.8	0.40	103.6	6	19.80	DN 22	176	
8	1	5000 W	0.6	0.46	229.0	5	13.00	DN 15	858	419	4.00 0.24
9			0.060	1.8	0.46	229.0	5	13.00	DN 15	396	
10	1	5000 W	0.6	0.46	229.0	5	13.00	DN 15	881	(0)	4.00 0.24

Algemeen

Authority values no. 2

Close Add << >> Overview

description

standaard kvs reeks

type

Default

manufacture

AUTORIT

minimal authority

0.1

select Kvs smaller

No

number positions

20

number dimensions

1

Kv-values

Clear

database


read in

Description

[text] 

Here the description of the authority is filled in.

Type

[text] 

Here the type of valve of the authority is filled in, for example, Default.

Manufacture[text] 

Here the product of the authority is filled in.

Minimal authority[number] 

This is where the minimum value for the authority is entered. A good guide value for authority is a value between 0.3 and 0.6.

Select Kvs smaller[text] 

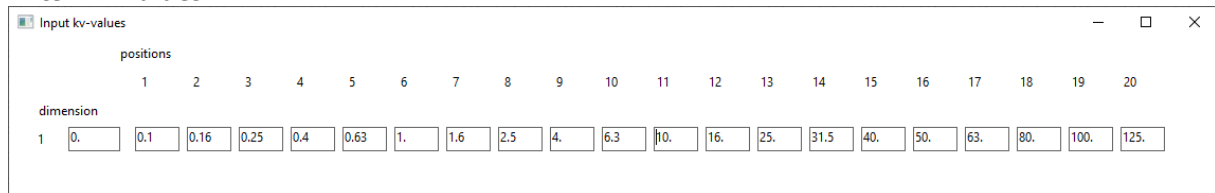
Here it is decided whether or not a smaller Kvs may be chosen, e.g. (slightly) larger in the case of a pump whose head is already fixed, or smaller in the case of a minimum required authority.

Number positions[number] 

The number entered here shows the number of positions for a self-created Kv value series.

Number dimensions[number] 

The number entered here represents the number of dimensions for a self-created Kv value series.

Enter Kv-values


dimension	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
1	0.	0.1	0.16	0.25	0.4	0.63	1.	1.6	2.5	4.	6.3	10.	16.	25.	31.5	40.	50.	63.	80.	100.	125.

This screen is a sub-input screen and opens after clicking on the Kv values button. In this screen, Kv values of authorities are entered, which one has specified yourself. The number of input fields depends on the specified number of orientations and dimensions.

In the first column, the dimensions are specified vertically below each other. At the top the smallest size and at the bottom the largest size. If the top line says diameter 0, this line is used from diameter 0. If the next line says diameter 12.0, this line is used from size 12.0.

In the other fields, the Kv values are specified at this diameter.

Clear[button] 

Clear all input fields to specify new values.

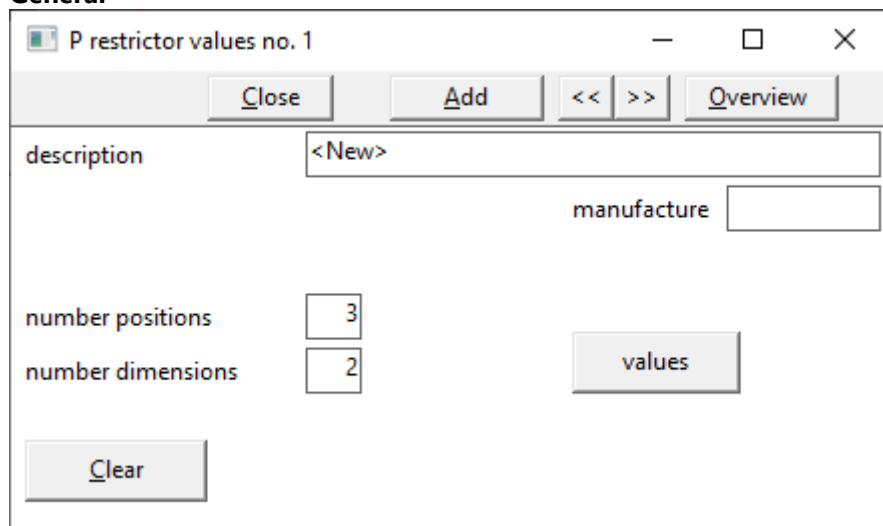
Database read in[button] 

The database contains an example of a standard authority to be chosen.

8.8.8. Pressure restriction[number] 

From version 10.44 it is possible to use a pressure reducing valve in the gas line module.

General



Description

[text] 

Here the description of the pressure limiter is filled in.

Manufacture

[text] 

Here the manufacture of the pressure limiter is filled in.

Number positions

[number] 

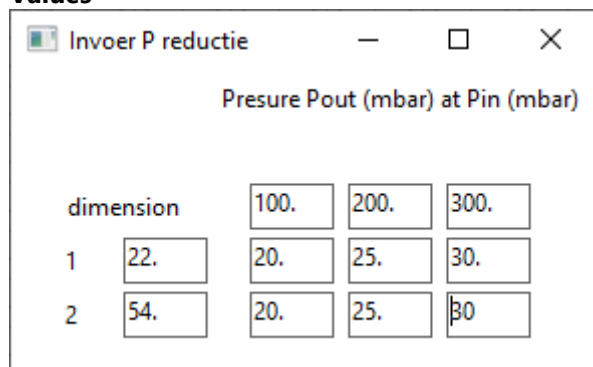
The number entered here indicates the number of positions for a self-created series.

Number dimensions

[number] 

The number entered here indicates the number of dimensions for a self-created series

Values



	dimension	100.	200.	300.
1	22.	20.	25.	30.
2	54.	20.	25.	30.

This screen is a sub-input screen and opens after clicking on the Values button. In this screen, outgoing pressures are entered from relative to the incoming pressure. In the example above, an incoming pressure of 100mbar is reduced to a pressure of 20mbar. Then the pressure slowly increases to an incoming pressure of 200mbar a reduced pressure of 25mbar.

The number of input fields depends on the specified number of orientations and dimensions.

In the first column, the dimensions are specified vertically below each other. At the top the smallest size and at the bottom the largest size. If the top line says diameter 0, this line is used from diameter

0. If the next line says diameter 12.0, this line is used from size 12.0. In the example above, line 1 is used up to diameters of 54 mm.

Clear

[button] 

Clear all input fields to specify new values.

8.8.9. Volume restriction

[number] 

From version 10.50 it is possible to use a pressure-compensated volume controller in the piping module

The screen is set up as a result of the working method of IMI balancing valves.

A valve with a certain diameter has various adjustment settings. At each position, the valve can keep the volume flow constant. For this he needs a minimum of pressure. This pressure is usually the same for a type of valve at each position but can sometimes differ. That is why the minimum pressure per balancing position is requested.

A maximum pressure over the valve must also be taken into account per diameter, nothing happens with this at this moment in the program, but can be entered.

In the screen there is first a diameter description per diameter, e.g. DN15.

This is then followed by the real internal size associated with the diameter. This size is compared in the program with the calculated internal pipe size. If this matches, this diameter is chosen.

This is followed by the maximum pressure (in kPa) that the program does not yet do anything with.

After that, a description of the balancing position, the corresponding volume (in l/h) that can be held and the minimum pressure in kPa can be given for each adjustment position

Furthermore, in the screen the possibility is offered to choose a different diameter, then enter the first number of the diameter, in this case 1 to 8


A maximum flow per diameter is also given in the screen. For the value in the first line, the diameter of the 2nd line is chosen.

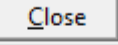
I did not specify the value of the last position here because of the tolerance on the volume flow which can be as much as 10 to 20%. If you are close to the maximum, you should not be able to choose a higher position after installation, but should install a different valve

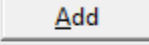
In the calculation, the program will therefore look up the correct diameter, either via the maximum volume flow, or via the fixed diameter or via the crossing of the diameter with the pipe diameter.

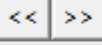
The minimum pressure is then added to the valve in question, so when this valve is in the heaviest branch, this means that this minimum pressure is also counted at the pump pressure.

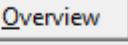
8.9. Other fittings


Data other fitting nr. 1


Close


Add


<< >>


Overview

description

<New>

code

supplier

0

pressuredrop

0. Pa

Kv-value

0.

zeta

0.

General

description

<New>

code

supplier

0

Description

[text] 

The description of the other attachment is displayed here.

Code

[text] 

Unique coding for the other attachment, e.g. the order coding.

Supplier

[number] 

Calling up the address details of *Adress information principle*.

Properties

pressuredrop

0. Pa

Kv-value


0.

zeta

0.

Pressure drop

[Pa] 

[mBar] 

Attachment pressure drop.

Kv-value

[-] 

Kv value of the attachment.

equivalent m

Equivalent

[m]

The resistance of an attachment is counted as extra length in the program. Here the equivalent length of the attachment can be specified at the respective diameter.


Zeta-value

Zeta-value

[-]   

Zeta value of the attachment.

Data other fitting nr. 1



Close

Add

<<

>>

Overview

description

<New>

code

supplier

pressuredrop

Pa

Kv-value

dim 1 t/m 10

12.5

16.0

21.6

27.2

35.9

41.8

54.5

70.3

82.5

107.1

dim 11 t/m 20

131.7

159.3

182.9

207.3

231.9

260.4

309.7


339.6

388.8

486.2


Dimension 1 t/m 10

[-]   

Zeta values of the default file diameters (total 20). These Zeta values can be entered when the level has been converted to extended (button at the top left): 

Afm 11 t/m 20

[-]   


Zeta values of the default file diameters (total 20). These Zeta values can be entered when the level has been converted to extended (button at the top left): 

Sound

dB/octave band (Hz)	63	125	250	500	1000	2000	4000
eigen frequency	<input type="text" value="0."/>	<input type="text" value="0."/>	<input type="text" value="0."/>	<input type="text" value="0."/>	<input type="text" value="0."/>	<input type="text" value="0."/>	<input type="text" value="0."/>
damping	<input type="text" value="0."/>	<input type="text" value="0."/>	<input type="text" value="0."/>	<input type="text" value="0."/>	<input type="text" value="0."/>	<input type="text" value="0."/>	<input type="text" value="0."/>

To be filled in when under **Layouts Air ducts** the check mark **Sound VA112** is checked.

Eigen frequency = production

[dB] 

Own sound production of the attachment per octave band. This can be filled in for the octave bands below:

- 63 Hz;
- 125 Hz;
- 250 Hz;
- 500 Hz;
- 1000 Hz;
- 2000 Hz;
- 4000 Hz.

Damping

[dB] 

The attenuation of the attachment per octave band. This can be filled in for the same octave bands as the **Eigen frequency** = production.


9. Step 5: Calculate

As soon as all settings of the system have been specified, the system has been drawn and all resources have been allocated, the calculation can be started



With the calculation icon, the calculation can be started from any screen.

9.1. Choose output

Language 

Start with page no.

In addition to Dutch, it is possible to draw up the output in English.


9.2. Choose output items

Here you can indicate which calculation results should be visible in the output. If nothing is checked, a complete output is generated.

Results mains system program 



Choice output:

Language ENGELS EN 

Start with page no. 1

Front page ☐

Title page ☐

System render ☐

Input data ☐

Output data ☐

Sub output data ☐

View diameters ☐

Material data ☐

Dimensions ☐

Explanation ☐

Start calculation

Results Air ducts



Choice output:

Language

ENGELS

EN



Start with page no.

1

Front page

☐

Title page

☐

System render

☐

Input data

☐

Output data

☐

Sub output data

☐

View diameters

☐

Sound

☐

Partsound

☐

Roomoutput

☐

Materials

☐

Dimensions

☐

Explanation

☐


Start calculation

Results tapwater systemr



Choice output:

Language

ENGELS EN 

Start with page no.

1

- | | |
|-----------------------------|--------------------------|
| Front page | <input type="checkbox"/> |
| Title page | <input type="checkbox"/> |
| System render | <input type="checkbox"/> |
| Input data | <input type="checkbox"/> |
| Output data | <input type="checkbox"/> |
| Sub output data | <input type="checkbox"/> |
| Output data emergency | <input type="checkbox"/> |
| Sub output data emergency | <input type="checkbox"/> |
| View diameters | <input type="checkbox"/> |
| Output circulation | <input type="checkbox"/> |
| Sub output data circulation | <input type="checkbox"/> |
| Materials | <input type="checkbox"/> |
| Flush plan | <input type="checkbox"/> |
| Afmetingen | <input type="checkbox"/> |
| Explanation | <input type="checkbox"/> |

Start calculation

Results gas pipes



Choice output:

Language

ENGELS EN 

Start with page no.

1

Front page ☐

Title page ☐

System render ☐

Input data ☐

Output data ☐

Sub output data ☐

View diameters ☐

Materialen ☐

Afmetingen ☐

Explanation ☐


Start calculation

Results Rainwater, sewage drainage



Choice output:

Language

ENGELS EN 

Start with page no.

1

Front page ☐

Title page ☐

System render ☐

Input data ☐

Output data ☐

Materialen ☐

Afmetingen ☐

Explanation ☐

Start calculation

9.3. Navigating the output



Go to first page.



Go to previous page.



Go to next page.



Go to last page.



Set font, style and size.



Output to printer.

10. Database

All pipes, ducts, taps, valves, typologies, etc. that are included in various databases can be read from the database and added to the project. The user's own definitions can also be created and stored in a database.

11. Import and export

11.1. Import 3D CAD

It is possible to import a DXF file by opening the function and then choosing the extension DXF. In order to make optimal use of a DXF file, it is advisable to build this file as indicated in the supplied examples in the VABI_UO/PROJ folder.

Also an IFC can be imported.

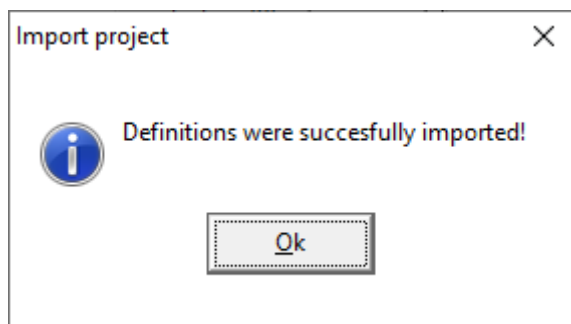
11.2. Import project



In the start screen there is a possibility to import layouts or definitions created from an already saved project.

definition	selection list	incl. references
<input type="checkbox"/> layouts va100	selection (0)	<input checked="" type="checkbox"/>
<input type="checkbox"/> restrictions (VA100)	selection (0)	<input checked="" type="checkbox"/>
<input type="checkbox"/> dimensions (VA100)	selection (0)	<input checked="" type="checkbox"/>
<input type="checkbox"/> local heating (VA100)	selection (0)	<input checked="" type="checkbox"/>
<input type="checkbox"/> valves	selection (0)	<input checked="" type="checkbox"/>
<input type="checkbox"/> bends	selection (0)	<input checked="" type="checkbox"/>
<input type="checkbox"/> branches	selection (0)	<input checked="" type="checkbox"/>
<input type="checkbox"/> fittings	selection (0)	<input checked="" type="checkbox"/>
<input type="checkbox"/> punten	selection (0)	<input checked="" type="checkbox"/>
<input type="checkbox"/> building zones	selection (0)	<input checked="" type="checkbox"/>

With this function, various definitions can be taken from a project. The picture above indicates that, for example, the 10 local heating devices from the pipeline.prj project are being taken over. To do this, the button selection is pressed behind the description and then the items to be selected are indicated from the list or with the button select all selected. Then press the Ok button for confirmation.



After this, the definitions are imported and therefore present in the project.

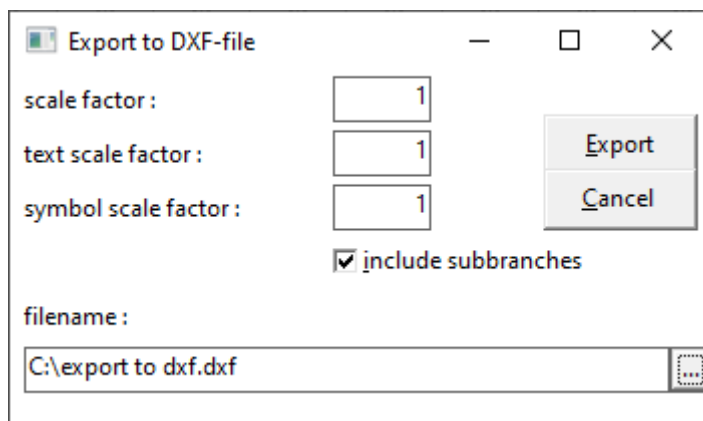
11.3. Export to DXF

Below the drawing screen is the icon for outputting the drawn piping system to a DXF file.



Export system to DXF

Allows a system to be exported to a DXF drawing. With this drawing, for example, more data can be made visible via AutoCad than in the 'standard' system view in the VABI output.



Scale factor

This is a relative scale factor. With a scale factor of 1, the isometric screen is at 50% zoom. One grid step is then equal to 100 units in the DXF drawing. A scale factor of 0.5 halves this scale and a factor of 2 doubles this scale in the drawing.

Text scale factor

This allows the text size of all text in the DXF drawing to be adjusted. A scale factor of 0.5 halves the text size and a factor of 2 doubles the text size in the drawing.

Symbol scale factor

This allows the symbol size of all symbols in the DXF drawing (end devices, sub-branch couplings, dampers, valves) to be adjusted. A scale factor of 0.5 halves a symbol in size and a factor of 2 doubles the size of a symbol in the drawing.

Include subbranches

This can indicate whether only the 'visible' system should be exported, or also the associated sub-branches.

Filename

Enter the file name of the DXF file.

Export

The exported drawing consists of the following layers, which can be made visible: layer 0 basic drawing, consisting of pipes and end devices · low TXT1 numbering of pipes · layer TXT2 description of pipes · low HLPSTK contains the fittings (dampers, valves ...) · layer HLPNR contains number of the fittings · layer HLPCODE contains coding of the fittings · layer HLPOMS contains description of the fittings.

Cancel

Stop exporting.