aalberts integrated piping systems

VSH Shurjoint

grooved couplings

ductile iron, painted

Environmental Product Declaration

in accordance with
ISO 14044, ISO 14040 and EN 15804

EN EPD

1 general information

1.1 note on this document

The original document was written in English, all other versions are a translation of the original document.

1.2 declaration holder

Aalberts integrated piping systems B.V.
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Aalberts integrated piping systems develops the most advanced integrated piping systems for distribution and control of liquids and gases. These systems are used in various markets such as industry, utility and residential construction. We offer fully integrated piping systems in valve, connection, fastening and piping technology. In close cooperation with our customers, we build the perfect integrated piping system that meets all their requirements. Our piping systems are easy to specify, install, check and maintain, saving you considerable time on preparation and installation. We meet the highest quality and industry standards required in our markets.

1.3 declared product

This document applies to the VSH Shurjoint ductile iron couplings in painted finish, listed in the appendix -chapter 6- of this document. Galvanized or stainless steel couplings are not covered in this declaration.
A VSH Shurjoint flexible coupling model 7705, 114.3 mm (DN100), painted orange, with article number 177050045E01 has been used as a reference article. All LCA results are based on 1 kg of the reference article.

1.4 LCA standards

This EPD is generated according to the following standards and requirements of: NEN-EN ISO 14040 [1], NEN-EN ISO 14044 [2], NEN-EN ISO 14025 [3] and EN15804+A2:2019 [4]

1.5 calculation method

LCA standard:	EN15804+A2 (2019)
Database:	Worldwide - Ecoinvent v 3.9.1 Cut-Off
PCR:	CEN standard 15804 serves as the Core PCR

1.6 statement comparability EPD

EPDs within the same product category but from different programs may not be comparable. EPDs of construction products may not be comparable if they do not comply with the requirements in EN15804. EPD data may not be comparable if the datasets used are not developed in accordance with EN15804 and if the background systems are not based on the same database.

1.7 verification statement

This EPD is a preliminary self-declared version and is in the process of getting externally verified.

1.8 EPD details

Version:	1.1
Date of issue:	01/5/2025
Author of LCA:	Fabian Bruns
Production data:	2023/2024
EPD created with:	LCA software Ecochain Helix | version 4.3.1

Hilversum, January 2025
Aalberts integrated piping systems B.V.

Roland Voermans
CEO

2 product

2.1 description and application purpose

VSH Shurjoint is a high-quality grooved piping system product range that saves considerable installation time compared to welding, flanged, and threaded connections. It is less labour-intensive, safer, and cleaner. It delivers a consistent quality in all grooved joint connections. VSH Shurjoint is suitable for a wide range of applications, including heating, cooling, compressed air, sprinkler, and dry extinguishing lines. The range includes more than 6000 individual products, including couplings, fittings, grooved to flange adapters, valves, and mechanical outlets. Sizes range from ½" (DN15) to 104" (DN2600).

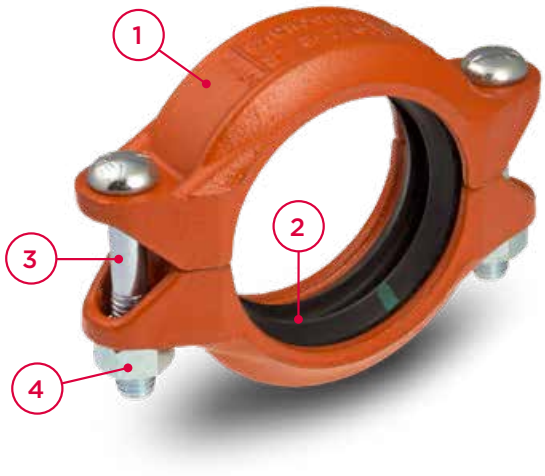
Grooved fittings and pipes are connected to each other by grooved, gasketed couplings. The coupling's 'key' engages with the pipe's or fitting's 'groove', compressing the coupling's gasket to create a seal within the grooved joint. The couplings are assembled with bolts and nuts. VSH Shurjoint couplings and fittings are available in ductile iron and stainless steel material. The couplings and fittings are finished with an orange, red, or black coating or are also offered with a galvanised coating.

materials

Ductile Iron Shurjoint components are made to ASTM A536 grade 65-45-12. This material provides the same or greater strength than forged or cast steel pipe materials, such as forged steel flanges – ASTM A105, steel valves – ASTM A216 WCB, forged steel pipe – ASTM A53 grade B, etc. For optimum performance, it is important that the correct gasket be used. Grooved couplings use various styles (shapes) of gaskets: standard, GapSeal, EP (End Protection) and FF (Fast-Fit) are examples. GapSeal gaskets are compatible with standard couplings and are interchangeable with standard gaskets. Other special types are not interchangeable with standard or GapSeal gaskets.

2.2 VSH Shurjoint couplings (orange & red)

VSH Shurjoint couplings are produced in our modern, automated factory in Taiwan. The VSH Shurjoint product range includes couplings, fittings, grooved to flange adapters, valves and mechanical outlets. Couplings are available in different styles and with different gaskets, to create an optimal connection, suited for the required application.



1. coupling segment
2. gasket
3. bolt
4. nut

2.3 product composition

The reference article, a VSH Shurjoint flexible coupling model 7705, 114.3 mm (DN100), painted orange with article number 177050045E01, has the following composition:

ductile iron:	1665 gram
gasket:	95 gram
bolts and nuts:	190 gram
paint:	40 gram
total circa:	1990 gram

2.4 range and conversion factors

The life cycle assessment results in chapter 4 can be converted to other articles listed in the appendix of this document. This can be done by multiplying the results with the conversion factor for a specific product. For products and their corresponding conversion factors, see the appendix -chapter 6-.

3 life cycle assessment scope

3.1 system boundaries

This EPD can be regarded as a Cradle-to-Gate with options, A4-A5, C1-C4 and D. The following phases are considered not relevant for this product range: B

3.2 process flowchart

A simplified overview of the VSH Shurjoint ductile iron coupling production process flow

3.3 data quality

For module A1, specific data for product compositions as provided by the manufacturer are used. For module A2, transportation data of the raw materials used to the production site was collected. For module A3, energy consumption and waste production data was collected for production year 2023/2024. The used background processes are derived from Worldwide - Ecoinvent v 3.9.1 Cut-Off.

3.4 allocation

Allocation was carried out in accordance with the provisions of the EN15804. All manufacturing inputs (energy and auxiliary materials) were measured and assessed.

3.5 cut-off criteria

All relevant inputs and outputs - like emissions, energy and materials - have been taken into account in this LCA. In accordance with EN15804, the total neglected input flows per module does not exceed 5% of energy usage and mass.

3.6 assumptions and background information

A1-A3: For the raw material supply 100% of the materials on the bill of materials were modelled using data from suppliers when available or otherwise from the Ecoinvent database. Also included were waste and auxiliary materials like water, lubrication oil, bags and pallets. VSH Shurjoint products are manufactured in the Aips factory, located in Pingtung, Taiwan. Specific transport distances of materials to Aalberts integrated piping systems from materials suppliers were used. This factory uses the national electricity mix for manufacturing the VSH Shurjoint products. Therefore the national electricity mix Taiwan was used for calculating the electricity consumption.

A4-A5: Transport from the factory in Pingtung, Taiwan, to the warehouse in Zeewolde, Netherlands, is done by Aalberts integrated piping systems and logistical partners. The main means of transport is by average {GLO} trucks or better performing engine and per container ship {GLO}. Transportation to customers within Europe from the warehouse in Zeewolde is done by logistical partners. The main means of transport in Europe is by Class Euro 5 trucks or better performing engine. The average transportation distance is calculated at 561 km. Installation uses an impact wrench or socket ratchet; the associated energy consumption is considered negligible.

B1-B7: A VSH Shurjoint coupling is designed for a lifetime of 50+ years of service. It does not need any maintenance, repair, replacement or refurbishment and has no operational water or energy use during its lifetime. This module was therefore not assessed (ND)

C1-C4: The piping system is assumed to be stripped as a whole from a building in the demolition process by means of diesel powered machines. The diesel modelled for the demolition process is 0.001 L/Kg of VSH Shurjoint coupling.

The following transport distances were used; 50 km for waste separation, 50 km for recycling and 50 km for incineration or landfill by means of Class Euro 5 trucks or better performing engine. For building materials the values from the Nationale Milieu Database were used [5].

material	recycling rate	incineration	landfill
ductile iron	90%		10%
ductile iron production waste	100%		
gasket		80%	20%
bolts & nuts	90%		10%
paint (+ waste)		100%	
packaging foil		80%	20%
wooden box		100%	
remainder of product/waste			100%

D: Recycling rates described in Module C were used to calculate the benefits and loads beyond the system in module D

4 life cycle assessment results

The table below shows the results of a VSH Shurjoint flexible coupling model 7705, 114.3 mm (DN100), painted orange, with article number 177050045E01 according to EN15804+A2 (2019). All LCA results are based on 1 kg of the reference article.

impact category	unit	A1	A2	A3	A1-A3	A4	C1	C2	C3	C4	D	total
climate change (EN15804+A2)	kg CO_2 eq	2,592	0,047	1,510	4,149	0,310	0,003	0,003	0,045	0,268	-1,48E+00	**3,303**
climate change - fossil	kg CO_2 eq	2,657	0,047	1,512	4,215	0,310	0,003	0,003	0,045	0,184	-1,49E+00	**3,267**
climate change - biogenic (EN15804+A2)	kg CO_2 eq	-1,05E-01	2,17E-05	-2,32E-03	-1,08E-01	7,45E-05	9,12E-07	1,18E-05	-3,86E-04	0,085	0,016	**-7,04E-03**
climate change - land use and LU change (EN15804+A2)	kg CO_2 eq	0,041	1,72E-05	0,001	0,042	1,83E-04	2,58E-07	1,71E-06	3,82E-05	5,72E-06	0,001	**0,043**
ozone depletion	kg CFC11 eq	1,01E-07	1,04E-08	2,06E-08	1,32E-07	4,01E-08	7,08E-10	5,56E-10	9,91E-10	3,50E-09	-3,38E-08	**1,44E-07**
acidification	mol H+ eq	0,015	2,72E-04	0,006	0,022	0,006	3,43E-05	1,25E-05	2,91E-04	1,17E-04	-5,73E-03	**0,022**
eutrophication, freshwater	kg P eq	1,43E-04	4,74E-07	1,14E-04	2,57E-04	1,80E-06	1,19E-08	6,10E-08	1,18E-06	2,01E-07	-5,30E-05	**2,08E-04**
eutrophication, marine	kg N eq	0,003	9,59E-05	9,60E-04	0,004	0,002	1,51E-05	2,85E-06	6,64E-05	4,26E-05	-1,05E-03	**0,004**
eutrophication, terrestrial	mol N eq	0,036	0,001	0,011	0,047	0,017	1,66E-04	3,15E-05	7,57E-04	4,71E-04	-1,23E-02	**0,054**
photochemical ozone formation	kg NMVOC eq	0,012	3,02E-04	0,004	0,016	0,005	4,57E-05	1,35E-05	2,33E-04	1,34E-04	-8,47E-03	**0,013**
resource use, minerals and metals	kg Sb eq	3,68E-04	1,19E-06	7,75E-06	3,77E-04	1,99E-06	5,03E-09	1,01E-07	1,59E-06	3,21E-07	-6,41E-07	**3,81E-04**
resource use, fossils	MJ	33,356	0,708	20,294	54,359	4,110	0,045	0,081	0,444	0,283	-1,03E+01	**49,055**
water use	m^3 depriv.	0,329	0,003	0,256	0,588	0,011	6,05E-05	0,002	0,006	0,007	-2,85E-01	**0,329**
particulate matter	disease inc.	4,36E-07	4,22E-09	1,92E-08	4,60E-07	1,60E-08	9,07E-10	3,94E-10	4,20E-09	1,75E-09	-8,57E-08	**3,97E-07**
Ionising radiation	kBq U-235 eq	0,052	0,003	0,126	0,181	0,011	1,93E-04	1,28E-04	0,001	9,24E-04	0,027	**0,221**
ecotoxicity, freshwater	CTUe	94,555	0,631	16,345	111,531	3,249	0,027	0,040	1,338	0,405	-5,03E+01	**66,313**
human toxicity, cancer	CTUh	1,01E-08	2,05E-11	3,88E-10	1,05E-08	1,58E-10	9,50E-13	1,46E-12	6,31E-11	8,57E-11	-1,89E-10	**1,06E-08**
human toxicity, non-cancer	CTUh	7,03E-08	6,90E-10	1,77E-08	8,87E-08	2,90E-09	2,33E-11	6,95E-11	1,92E-09	5,31E-10	2,92E-07	**3,86E-07**
land use	Pt	22,407	0,614	1,566	24,587	1,485	0,006	0,076	0,673	0,330	-2,11E+00	**25,052**
use of renewable primary energy excluding renewable primary energy resources used as raw materials	MJ	3,685	0,009	0,610	4,303	0,028	0	0,002	0,053	0,003	0,004	**4,392**
use of renewable primary energy resources used as raw materials	MJ	0	0	0	0	0,016	2,44E-04	0	0	0,002	0,305	**0,323**
total use of renewable primary energy resources	MJ	3,685	0,009	0,610	4,303	0,044	2,44E-04	0,002	0,053	0,005	0,309	**4,716**
use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials	MJ	35,364	0,752	21,796	57,912	1,951	0	0,087	0,472	0,196	0,261	**60,879**
use of non-renewable primary energy resources used as raw materials	MJ	0	0	0	0	2,416	0,048	0	0	0,107	-1,09E+01	**-8,34E+00**
total use of non-renewable primary energy resources	MJ	35,364	0,752	21,796	57,912	4,366	0,048	0,087	0,472	0,302	-1,06E+01	**52,539**
total energy	MJ	39,049	0,760	22,406	62,215	4,410	0,048	0,089	0,525	0,307	-1,03E+01	**57,255**

impact category	unit	A1	A2	A3	A1-A3	A4	C1	C2	C3	C4	D	total
use of secondary material	kg	0	0	0	0	0	0	0	0	0	0	**0**
use of renewable secondary fuels	MJ	0	0	0	0	0	0	0	0	0	0	**0**
use of non-renewable secondary fuels	MJ	0	0	0	0	0	0	0	0	0	0	**0**
use of net fresh water	m^3	0,011	8,62E-05	0,006	0,017	3,65E-04	2,32E-06	4,43E-05	2,06E-04	3,24E-04	-5,38E-03	**0,012**
hazardous waste disposed	kg.	2,12E-04	1,79E-06	4,17E-05	2,55E-04	1,34E-05	1,23E-07	5,18E-08	2,27E-06	6,02E-07	-1,80E-04	**9,18E-05**
non-hazardous waste disposed	kg	0,327	0,045	0,084	0,455	0,101	5,34E-05	0,006	0,030	0,511	-1,31E-01	**0,972**
radioactive waste disposed	kg	4,66E-05	4,65E-06	5,73E-05	1,09E-04	1,72E-05	3,13E-07	1,55E-07	8,24E-07	1,39E-06	1,01E-05	**1,39E-04**
components for re-use	kg	0	0	0	0	0	0	0	0	0	0	**0**
materials for recycling	kg	0	0	0	0	0	0	0	0	0	0	**0**
materials for energy recovery	kg	0	0	0	0	0	0	0	0	0	0	**0**
exported energy	MJ	0	0	0	0	0	0	0	0	0	0	**0**
exported energy thermic	MJ	0	0	0	0	0	0	0	0	0	0	**0**
exported energy electric	MJ	0	0	0	0	0	0	0	0	0	0	**0**

5 References

1. ISO 14040: Environmental management - Life cycle assessment – Principles and Framework', International Organization for Standardization, ISO14040:2006
2. ISO 14044: Environmental management - Life cycle assessment - Requirements and guidelines', International Organization for Standardization, ISO14044:2006
3. ISO 14025: Environmental labels and declarations -- Type III environmental declarations -- Principles and procedures', International Organization for Standardization, ISO14025:2006
4. NEN-EN 15804:2012+A2:2019: Sustainability of construction works - Environmental product declarations - Core rules for the product category of construction products', NEN-EN 15804:2012+A2:2019
5. Forfaitaire waarden (mei 2024): forfaitaire waarden voor verwerking-scenario's einde leven behorende bij: Bepalingsmethode milieuprestatie bouwwerken, https://milieudatabase.nl/nl/milieuprestatie/bepalingsmethode
6. the paper value chain reached a 70.5% recycling rate in 2022: CEPI press release 31 july 2023, https://www.cepi.org/wp-content/uploads/2023/07/EPRC-press-release_moniroting-report-2022_FINAL_31072023.pdf

6 appendix

The life cycle assessment results listed in chapter 4 can be converted to the other sales articles listed using the conversion factor in accordance with the following tables.

M07	rigid quick install coupling, painted orange	
article no.	**dimensions**	**conversion factor**
10M070020E01	60.3 (DN50)	1,30
10M070029E01	76.1 (DN65)	1,50
10M070030E01	88.9 (DN80)	0,79
10M070045E01	114.3 (DN100)	2,30
10M070052E01	139.7 (DN125)	3,50
10M070065E01	168.3 (DN150	3,80
10M070085E01	219.1 (DN200)	7,91

Z05	rigid coupling, painted orange	
article no.	**dimensions**	**conversion factor**
10Z050012E01	42.4 (DN32)	0,64
10Z050015E01	48.3 (DN40)	0,66
10Z050020E01	60.3 (DN50)	0,79
10Z050029E01	76.1 (DN65)	0,97
10Z050030E01	88.9 (DN80)	1,20
10Z050045E01	114.3 (DN100)	1,87
10Z050052E01	39.7 (DN125)	2,57
10Z050062E01	165.1	3,05
10Z050065E01	168.3 (DN150	3,07
10Z050085E01	219.1 (DN200)	6,08

Z07	heavy duty rigid coupling, painted orange	
article no.	**dimensions**	**conversion factor**
10Z070012E01	42.4 (DN32)	0,72
10Z070015E01	48.3 (DN40)	0,81
10Z070020E01	60.3 (DN50)	0,91
10Z070025E01	73	1,08
10Z070029E01	76.1 (DN65)	1,14
10Z070030E01	88.9 (DN80)	1,29
10Z070045E01	114.3 (DN100)	2,00
10Z070052E01	139.7 (DN125)	3,02
10Z070062E01	165.1	3,42
10Z070065E01	168.3 (DN150)	3,46
10Z070085E01	219.1 (DN200)	7,13
10Z0700A1001	273	10,38
10Z0700A3001	323.9 (DN300)	11,81
1Z07N00A4001	355.6 (DN350)	14,84
1Z07N00A6001	406.4 (DN400)	17,02
1Z07N00B0001	508	23,62

7705	flexible coupling, painted orange	
article no.	**dimensions**	**conversion factor**
177050010E01	33.7 (DN25)	0,55
177050012E01	42.4 (DN32)	0,69
177050015E01	48.3 (DN40)	0,73
177050020E01	60.3 (DN50)	0,90
177050029E01	76.1 (DN65)	1,08
177050030E01	88.9 (DN80)	1,41
177050040E01	108	1,85
177050045E01*	114.3 (DN100)	1,99
177050052E01	139.7 (DN125)	2,87
177050062E01	165.1	3,12
177050065E01	168.3 (DN150	3,37
177050085E01	219.1 (DN200)	5,27
177050085E92	219.1 (DN200)	7,21
1770500A1E01	273 (DN250)	8,21
1770500A3001	323.9 (DN300)	10,81

*reference article

7706	flexible reduced coupling, painted red	
article no.	**dimensions**	**conversion factor**
177061512E02	48.3 (DN40) x 42.4 (DN32)	0,82
177062015E02	60.3 (DN50) x 48.3 (DN40)	0,90
177062920E02	76.1 (DN65) x 60.3 (DN50)	1,20
177062925E02	76.1 (DN65) x 73	1,09
177063020E02	88.9 (DN80) x 60.3 (DN50)	1,50
177063029E02	88.9 (DN80) x 76.1 (DN65)	1,70
177064520E02	114.3 (DN100) x 60.3 (DN50)	2,40
177064529E02	114.3 (DN100) x 76.1 (DN65)	2,60
177064530E02	114.3 (DN100) x 88.9 (DN80)	2,23
177065245E02	139.7 (DN125) x 114.3 (DN100)	3,80
177066230E02	165.1 x 88.9 (DN80)	4,60
177066245E02	165.1 x 114.3 (DN100)	4,50
177066530E02	168.3 (DN150) x 88.9 (DN80)	4,60
177066545E02	168.3 (DN150) x 114.3 (DN100)	4,50
177066562E02	168.3 (DN150) x 165.1	3,50
177068562E02	219.1 (DN200) x 165.1	6,51
177068565E02	219.1 (DN200) x 168.3 (DN150)	6,51
177062015E04	60.3 (DN50) x 48.3 (DN40)	0,90
177062920E04	76.1 (DN65) x 60.3 (DN50)	1,20

7707	heavy duty flexible coupling, painted orange	
article no.	**dimensions**	**conversion factor**
177070010E01	33.7 (DN25)	0,75
177070012E01	42.4 (DN32)	0,96
177070015E01	48.3 (DN40)	0,95
177070020E01	60.3 (DN50)	1,20
177070029E01	76.1 (DN65)	1,30
177070030E01	88.9 (DN80)	1,50
177070045E01	114.3 (DN100)	2,40
177070052E01	139.7 (DN125)	3,10
177070062E01	165.1	3,60
177070065E01	168.3 (DN150)	4,24
177070085E01	219.1 (DN200)	6,61
1770700A1001	273 (DN250)	10,58
1770700A3001	323.9 (DN300)	12,01
1770N00A4001	355.6 (DN350)	15,25
1770N00A6001	406.4 (DN400)	16,80

7041	flange adapter, painted black	
article no.	**dimensions**	**conversion factor**
1041A0030011	88.9 (DN80)	2,82
1041A00A4011	355.6 (DN350)	28,59
1041A00A6011	406.4 (DN400)	35,04
1041A0065010	168.3 (DN150)	5,05
1041B0020010	60.3 (DN50)	2,30
1041B0029010	76.1 (DN65)	2,57
1041B0030010	88.9 (DN80)	3,22
1041B0045010	114.3 (DN100)	3,41
1041B0052010	139.7 (DN125)	4,43
1041B0062010	165.1	5,15
1041B0085010	219.1 (DN200)	7,81
1041B00A1010	273 (DN250)	11,44
1041B00A3010	323.9 (DN300)	13,71
1041B00A4010	355.6 (DN350)	23,02
1041B00A6010	406.4 (DN400)	28,03

79	plain end coupling 'Wildcat' for steel pipe, painted orange	
article no.	**dimensions**	**conversion factor**
100790015E01	48.3 (DN40)	1,77
100790020E01	60.3 (DN50)	3,18
100790025E01	73	3,29
100790030E01	88.9 (DN80)	5,05
100790045E01	114.3 (DN100)	6,48
100790085E01	219.1 (DN200)	18,90
100790065001	168.3 (DN150)	12,92

H305	plain end coupling for ISO sized HDPE pipe, painted orange	
article no.	**dimensions**	**conversion factor**
1H3050015E01	50	1,74
1H3050020E01	63	1,93
1H3050025E01	75	2,40
1H3050030E01	90	3,25
1H3050045E01	110	4,08
1H3050052E01	140	4,50
1H3050065E01	160	5,58
1H3050070E01	180	6,07
1H3050085E01	200	9,44
1H3050090E01	225	10,06
1H30500A1E01	250	12,74
1H30500A2E01	280	18,42
1H30500A3E01	315	16,70
1H30500A4E01	355	39,99
1H30500A6E01	400	51,57
1H30500A8E01	450	64,36

7721	mechanical tee threaded, painted red	
article no.	**dimensions**	**conversion factor**
177212005E02	60.3 (DN50) x Rc½	1,28
177212007E02	60.3 (DN50) x Rc¾	1,33
177212010E02	60.3 (DN50) x Rc1	1,43
177212012E02	60.3 (DN50) x Rc1¼	1,47
177212015E02	60.3 (DN50) x Rc1½	1,48
177212505E02	76.1 (DN65) x Rc½	1,77
177212507E02	76.1 (DN65) x Rc¾	1,74
177212510E02	76.1 (DN65) x Rc1	1,85
177212512E02	76.1 (DN65) x Rc1¼	2,00
177212515E02	76.1 (DN65) x Rc1½	2,01
177213005E02	88.9 (DN80) x Rc½	1,66
177213007E02	88.9 (DN80) x Rc¾	1,75
177213010E02	88.9 (DN80) x Rc1	1,75
177213012E02	88.9 (DN80) x Rc1¼	2,07
177213015E02	88.9 (DN80) x Rc1½	2,09
177213020E02	88.9 (DN80) x Rc2	2,40
177214505E02	114.3 (DN100) x Rc½	1,91
177214507E02	114.3 (DN100) x Rc¾	1,96
177214510E02	114.3 (DN100) x Rc1	1,98
177214512E02	114.3 (DN100) x Rc1¼	2,31
177214515E02	114.3 (DN100) x Rc1½	2,30
177214520E02	114.3 (DN100) x Rc2	2,67
177214525E02	114.3 (DN100) x Rc2½	3,16
177214530E02	114.3 (DN100) x Rc3	5,55
177215520E02	139.7 (DN125) x Rc2	4,18
177215525E02	139.7 (DN125) x Rc2½	4,40
177216512E02	165.1/168.3 (DN150) x Rc1¼	4,45
177216515E02	165.1/168.3 (DN150) x Rc1½	4,44
177216520E02	165.1/168.3 (DN150) x Rc2	4,84
177216525E02	165.1/168.3 (DN150) x Rc2½	5,39
177216530E02	165.1/168.3 (DN150) x Rc3	6,04
177218520E02	219.1 (DN200) x Rc2	5,87
177218525E02	219.1 (DN200) x Rc2½	6,11
177218530E02	219.1 (DN200) x Rc3	6,71

7722	mechanical tee, painted red	
article no.	**dimensions**	**conversion factor**
177222012E02	60.3 (DN50) x 42.4 (DN32)	1,34
177222015E02	60.3 (DN50) x 48.3 (DN40)	1,30
177222512E02	73.0/76.1 (DN65) x 42.4 (DN32)	1,85
177222515E02	73.0/76.1 (DN65) x 42.4 (DN32)	1,90
177223012E02	88.9 (DN80) x 42.4 (DN32)	1,83
177223015E02	88.9 (DN80) x 48.3 (DN40)	2,00
177223020E02	88.9 (DN80) x 60.3 (DN50)	2,22
177224512E02	114.3 (DN100) x 42.4 (DN32)	2,14
177224515E02	114.3 (DN100) x 48.3 (DN40)	2,18
177224520E02	114.3 (DN100) x 60.3 (DN50)	2,43
177224529E02	114.3 (DN100) x 76.1 (DN65)	2,84
177224530E02	114.3 (DN100) x 88.9 (DN80)	5,21
177225520E02	139.7 (DN125) x 60.3 (DN50)	4,02
177225529E02	139.7 (DN125) x 76.1 (DN65)	4,26
177226512E02	165.1/168.3 (DN150) x 42.4 (DN32)	4,20
177226515E02	165.1/168.3 (DN150) x 48.3 (DN40)	4,30
177226520E02	165.1/168.3 (DN150) x 60.3 (DN50)	4,63
177226529E02	165.1/168.3 (DN150) x 76.1 (DN65)	5,04
177226530E02	165.1/168.3 (DN150) x 88.9 (DN80)	5,61
177226545E02	165.1/168.3 (DN150) x 114.3 (DN100)	7,01
177228520E02	219.1 (DN200) x 60.3 (DN50)	5,61
177228529E02	219.1 (DN200) x 76.1 (DN65)	6,01
177228530E02	219.1 (DN200) x 88.9 (DN80)	6,54
177228545E02	219.1 (DN200) x 114.3 (DN100)	7,51

723	saddle let, painted red	
article no.	**dimensions**	**conversion factor**
107231205V02	42.4 (DN32) x Rc½	0,37
107231207V02	42.4 (DN32) x Rc¾	0,38
107231210V02	42.4 (DN32) x Rc1	0,43
107231505V02	48.3 (DN40) x Rc½	0,36
107231507V02	48.3 (DN40) x Rc¾	0,37
107231510V02	48.3 (DN40) x Rc1	0,42
107232005V02	60.3 (DN50) x Rc½	0,35
107232007V02	60.3 (DN50) x Rc¾	0,38
107232010V02	60.3 (DN50) x Rc1	0,42
107232505V02	76.1 (DN65) x Rc½	0,38
107232507V02	76.1 (DN65) x Rc¾	0,42
107232510V02	76.1 (DN65) x Rc1	0,45

K-9	ridid coupling, painted red	
article no.	**dimensions**	**conversion factor**
100K90012E20	42.4 (DN32)	0,63
100K90015E20	48.3 (DN40)	0,66
100K90020E20	60.3 (DN50)	0,76
100K90029E20	76.1 (DN65)	0,86
100K90030E20	88.9 (DN80)	1,12
100K90045E20	114.3 (DN100)	1,76
100K90052E20	139.7 (DN125)	2,43
100K90062E20	165.1	2,68
100K90065E20	168.3 (DN150	2,69
100K90085E20	219.1 (DN200)	4,83
100K90085E90	219.1 (DN200)	7,13

F09	quick, rigid fire protection coupling, painted red	
article no.	**dimensions**	**conversion factor**
10F090012002	42.4 (DN32)	0,72
10F090015002	48.3 (DN40)	0,72
10F090020002	60.3 (DN50)	0,84
10F090029002	76.1 (DN65)	0,99
10F090030002	88.9 (DN80)	1,20
10F090045002	114.3 (DN100)	1,46

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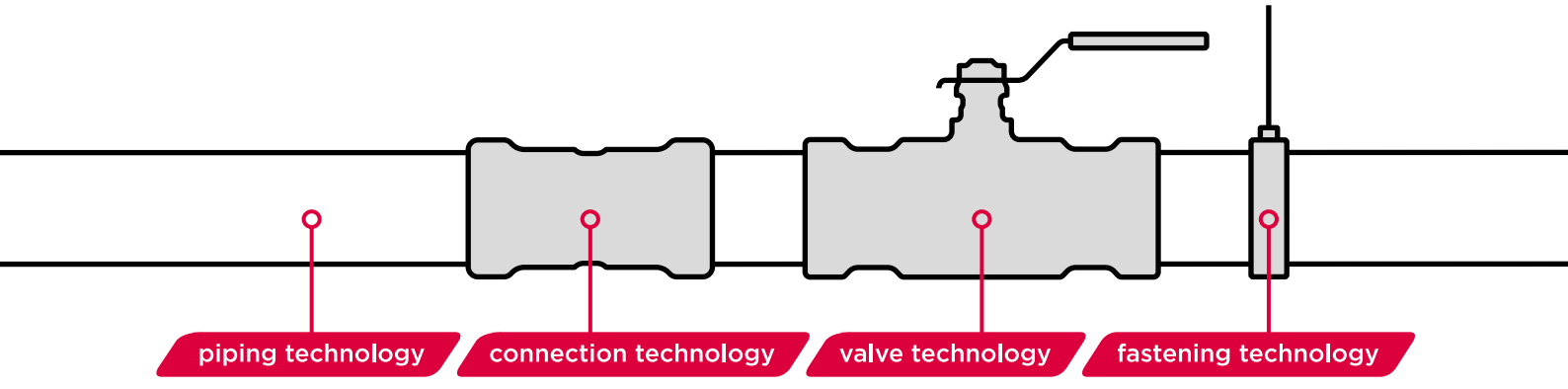

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