

# BRUGG

## Pipes

### PETREX®-CNT

Pipe systems for petrol stations

Technical details



**PIONEERS IN  
INFRASTRUCTURE**

## PETREX®-CNT Pipe systems for petrol stations

**Contents****CNT 1.0 Contents****CNT 1.10 System description**

CNT 1.10.0 System description PETREX®-CNT

**CNT 1.11 Product overview**

CNT 1.11.01 Piping, connections, fittings

**CNT 1.20 Pipe**

CNT 1.20.01 Construction – dimensions, bending radii, weights, volumes

**CNT 5.0 Connections**

CNT 5.01.15 Connection fitting with split loose flange

CNT 5.01.16 Connection fitting with outer thread

**Fittings**

CNT 5.02.04 Through-connection GRAPA – compression/screwed connection CNT

CNT 5.05.01 Steel duct and pipe sleeve entry

**CNT 5.52 Fluid mechanics**

CNT 5.52.01 Pressure loss diagram for normal and high-octane petrol

CNT 5.52.02 Pressure loss diagram for heating oil (EL) and diesel

**CNT 5.55 Tips for laying**

CNT 5.55.01 for pressure/suction lines PETREX®-CNT

## PETREX®-CNT Pipe systems for petrol stations

### System description

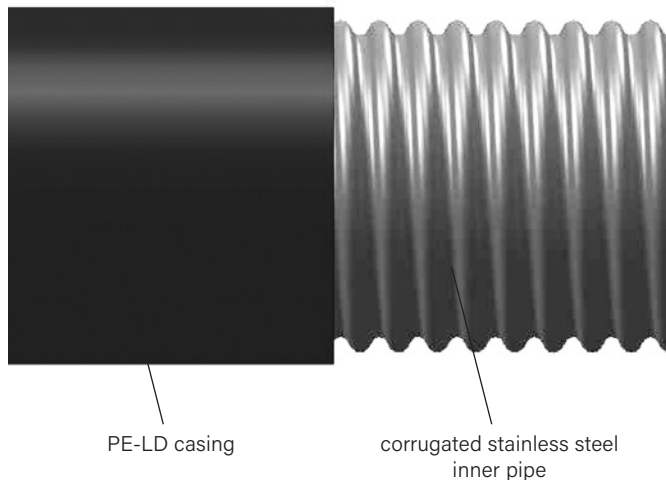
PETREX®-CNT was specially designed for the underground transport of flammable, water-hazardous fluids on petrol stations. Fast and simple installation with no welded connections, fast completion of work and avoidance of downtime when backfitting are some of the main advantages offered by PETREX®-CNT.

The system advantages of PETREX®-CNT:

- fast and simple laying
- environmentally friendly
- economical
- diffusion-tight

#### Construction

PETREX®-CNT is a flexible, single-walled pipe system consisting of a corrugated stainless steel inner medium pipe and an outer polyethylene casing. The corrosion-proof stainless steel inner pipe is absolutely permeation-tight and able to fulfil all future requirements for the transport of modern fuels.



#### Range of applications

- suction pipe
- vapour recovery stage I/stage II
- vent pipe

The specific applications are subject to the requirements of the regulatory authorities in each country.

#### Nominal bores and pressure stages

PETREX®-CNT is available in nominal bores from DN 25/1" to DN 80/3". PETREX®-CNT can be operated with max. -0.7 bar negative pressure or with max. 10 bar positive pressure

#### Connection fittings

PETREX®-CNT connection fittings can be delivered either as split circular flange or as threaded connector for connection to screwed fittings. Installation is normally carried out without any open flame, i.e. without welding or hard-soldering, using compression fittings.

#### Accessories

The following accessories are available:

- through-connections
- steel duct entries


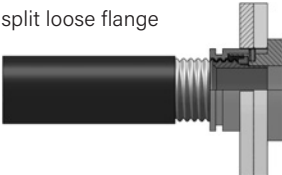
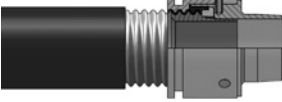


#### Laying the pipes

PETREX®-CNT is manufactured in factory lengths of up to 500 m. The corrugated inner medium pipe ensures excellent flexibility and ease of laying. PETREX®-CNT can be cut to the required length at the construction site and, where necessary, bent through tight radii.

PETREX®-CNT Pipe systems for petrol stations

**Product overview**

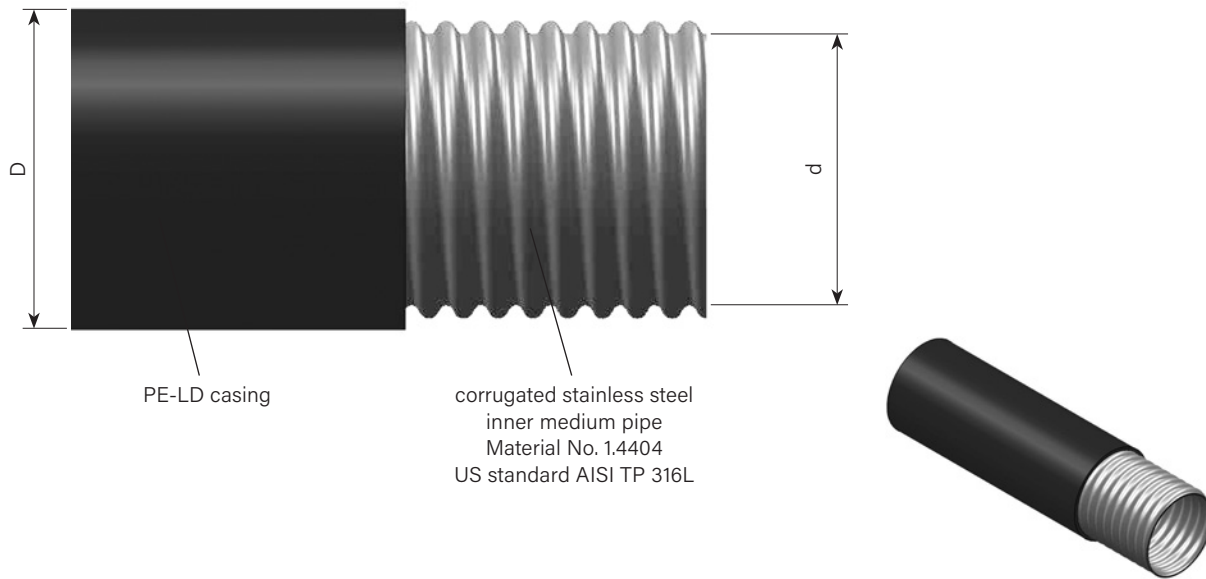
Piping/connection fittings/moulded fittings

Type designation	Type CNT	Nominal bore/ connection DN	Pressure PN	Connection type	Material No.	Work-sheet
Pipe 	30/ 39	25		corrugated inner pipe	1.4404	CNT 1.20.01
	39/ 49	32			PE-LD	
	48/ 60	40			outer casing	
	60/ 71	50				
	98/120	80				
Connection fitting with split loose flange 	39/ 49	32	10	split loose flange acc. to DIN EN 1092-1	steel	CNT 5.01.15
	48/ 60	40			coated	
	60/ 71	50			1.4404/ 1.4301	
	98/120	80/100				
Connection fitting 	30/ 39	25	10	outer thread	steel	CNT 5.01.16
	39/ 49	32			coated	
	48/ 60	40			1.4404/ 1.4301	
	60/ 71	50				
	98/120	80				
Through-connection 	30/ 39	25			1.4404/ 1.4571/ 1.4301/ ECO 51P 6030	CNT 5.02.04
	39/ 49	32				
	48/ 60	40				
	60/ 71	50				
	98/120	80				
Steel manhole entry 	30/ 39	76.1 x 2.9 mm		pipe sleeve from contractor		CNT 5.05.01
	39/ 49	76.1 x 2.9 mm				
	48/ 60	114.3 x 3.6 mm				
	60/ 71	114.3 x 3.6 mm				
	98/120	168.3 x 4.5 mm				

PETREX®-CNT Pipe systems for petrol stations

## Product Construction

Dimensions, bending radii, weights, volumes



All geometrical data are compiled in the following table.

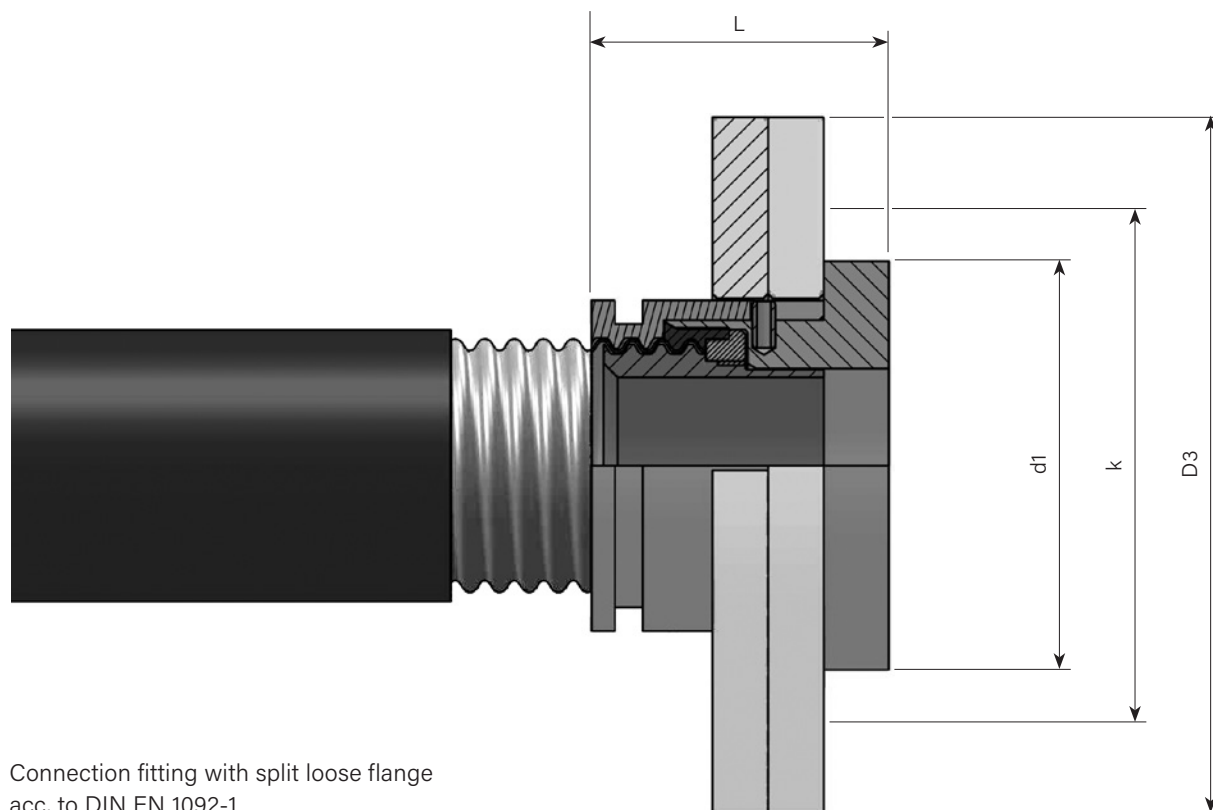
Type	Nominal bore	Dimension		Bending radius*	Weight	Volumes	Article No.
		d	D				
		mm	mm	cm	kg/m	dm <sup>3</sup> /m or l/m	
CNT 30/ 39	1"	30	39	20	0.56	0.8	1014463
CNT 39/ 49	1 ¼"	32	49	25	0.90	1.3	1014464
CNT 48/ 60	1 ½"	48	60	30	1.37	2.0	1014465
CNT 60/ 71	2"	60	71	40	1.75	3.0	1014466
CNT 98/120	3"	98	120	80	4.50	8.4	1014468

\* Only bend the pipe with a bending template/bending machine.

PETREX®-CNT Pipe systems for petrol stations

## Connection fitting

with split loose flange



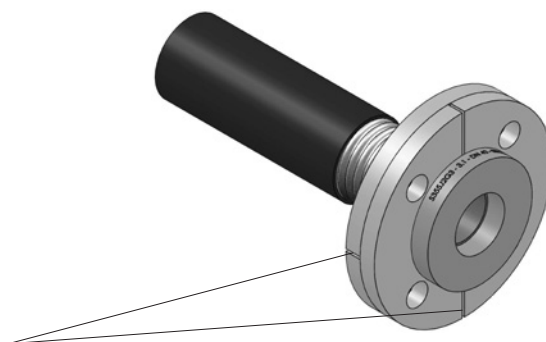
Connection fitting with split loose flange acc. to DIN EN 1092-1

**Material:**

- Connection piece with collar      Material No. St 52-3 nickel-plated
- Pressure ring                              Material No. St 52-3 nickel-plated
- Support collar                              Material No. 1.4404
- Split loose flange                        P265GH/P250GH, galvanized
- Inner pipe seal                             Graphite ring

**Tip for installing the split loose flange:**

Stagger the separation of the loose flanges 90° against each other.

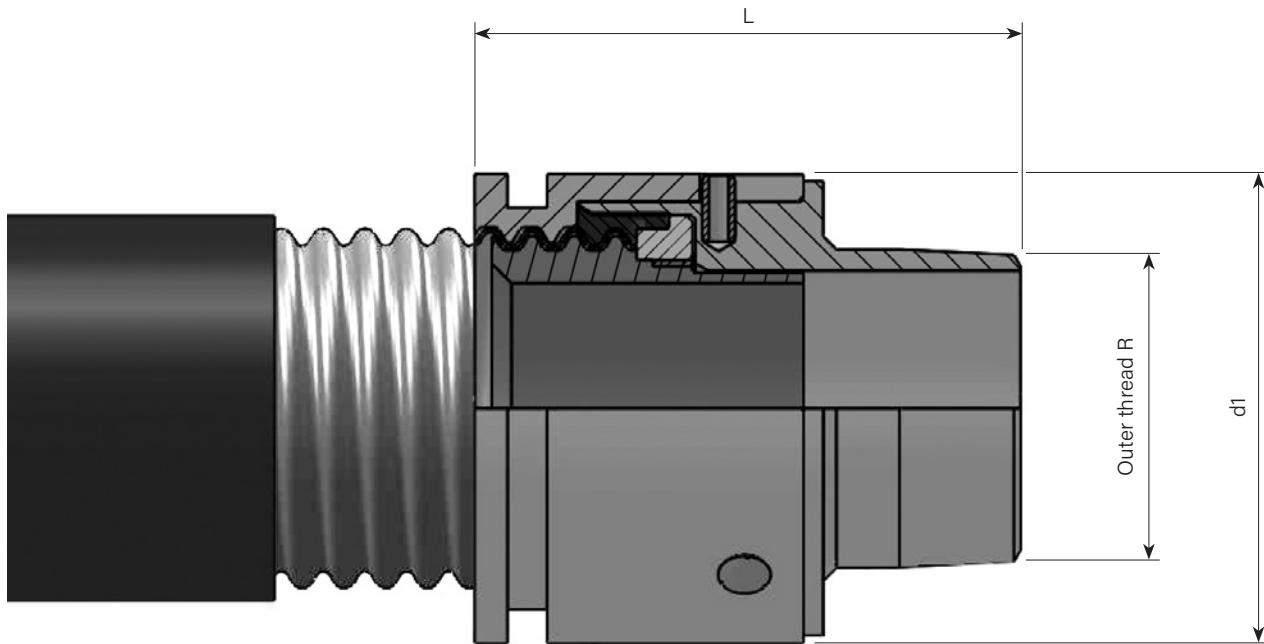


Type	DN	Flange DN	D3	d1	k	L	Screws*	Number	Number of drill holes	Article No. connection fitting
			mm	mm	mm	mm				
CNT 30/ 39	25	25	115	68	85	56	M16 x 80	4	4	1014365
CNT 39/ 49	32	32	140	78	100	52	M16 x 90	4	4	1014649
CNT 48/ 60	40	40	150	88	110	64	M16 x 90	4	4	1014370
CNT 60/ 71	50	50	165	102	125	68	M16 x 90	4	4	1014373
CNT 98/120	80	80/100	220	158	180	91	M20 x 110	8	8	1014376

PETREX®-CNT Pipe systems for petrol stations

## Connection fitting

with outer thread



**Material:**

- Connection piece with outer thread
- Pressure ring
- Support collar
- Inner pipe seal

- Material No. St 52-3 nickel-plated
- Material No. St 52-3 nickel-plated
- Material No. 1.4404
- Graphite ring

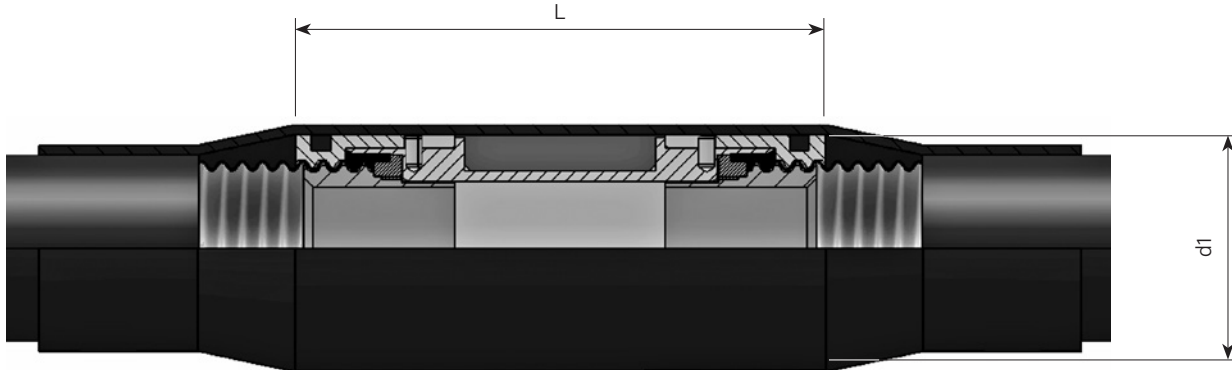


Type	DN	Type designation	Connection	d1 mm	L mm	Article No.
CNT 25	25	outer thread	R 1"	50.0	72	1014363
CNT 39	32	outer thread	R 1 ¼"	58.0	71	1014648
CNT 40	40	outer thread	R 1 ½"	71.2	83	1014369
CNT 50	50	outer thread	R 2"	84.7	90	1014372
CNT 100	80	outer thread	R 3"	136.0	122	1014375

PETREX®-CNT Pipe systems for petrol stations

## Through-connection GRAPA

Compression/screwed connection



**Material:**

- Connection piece with collar      Material No. 1.4404
- Pressure ring                              Material No. 1.4301
- Support collar                              Material No. 1.4404
- Inner pipe seal                              Graphite ring
- Packing                                        PE-HD



The fitting cannot be detached after assembling.

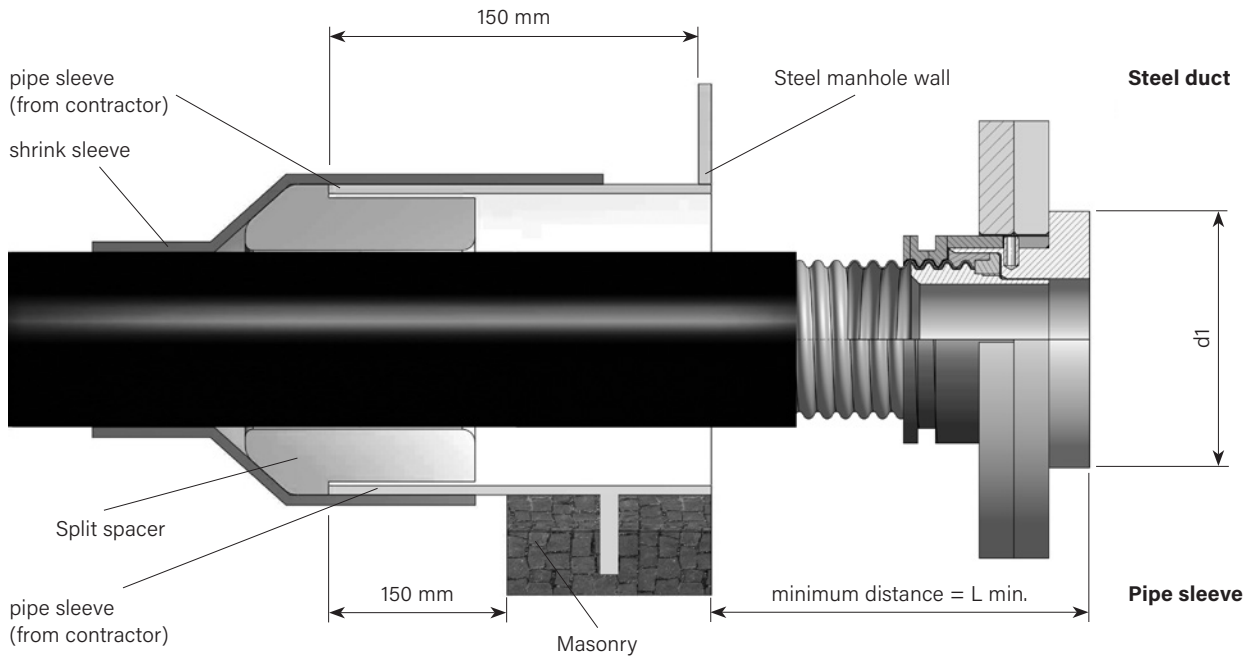
Type	DN	d1 mm	L mm	Article No.
CNT 30/ 39	25	50.0	144	1014646
CNT 39/ 49	32	58.0	142	1014650
CNT 48/ 60	40	71.2	166	1014654
CNT 60/ 71	50	84.7	180	1014658
CNT 98/120	80	136.0	320	1014662



PETREX®-CNT Pipe systems for petrol stations  
**Steel duct and pipe sleeve entry**

**General information**

The PETREX®-CNT steel duct entry Type SSE is designed to be used with standard-sized pipe sleeves. The pipe sleeves must be provided by the contractor.



Type SSE	pipe sleeve (from contractor) mm	d1 mm	L min. mm	Article No.
CNT 30/ 39	76.1 x 2.9	68	200	1014669
CNT 39/ 49	76.1 x 2.9	68	200	1014669
CNT 48/ 60	114.3 x 3.6	88	200	1014670
CNT 60/ 71	114.3 x 3.6	102	250	1014671
CNT 98/120	168.3 x 4.5	158	250	1014672

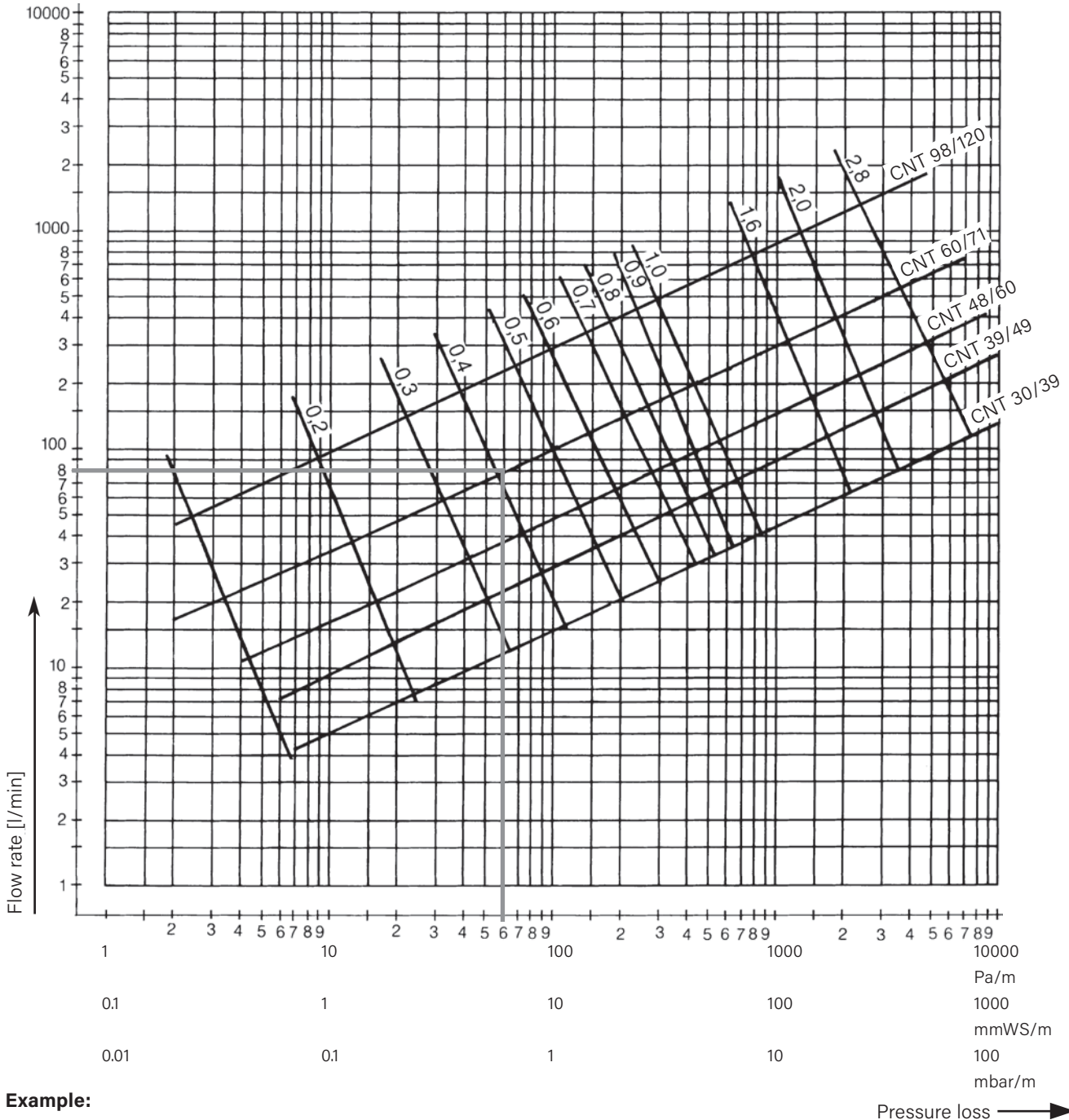
Supplied by BRUGG: split spacer and shrink sleeve

PETREX®-CNT Pipe systems for petrol stations

**Fluid mechanics**

Pressure loss diagram for normal and high-octane petrol

Temperature: 15 °C  
 Specific density: 735 kg/m<sup>3</sup>  
 Kinematic viscosity: 5.5 · 10<sup>-7</sup> m<sup>2</sup>/s



**Example:**

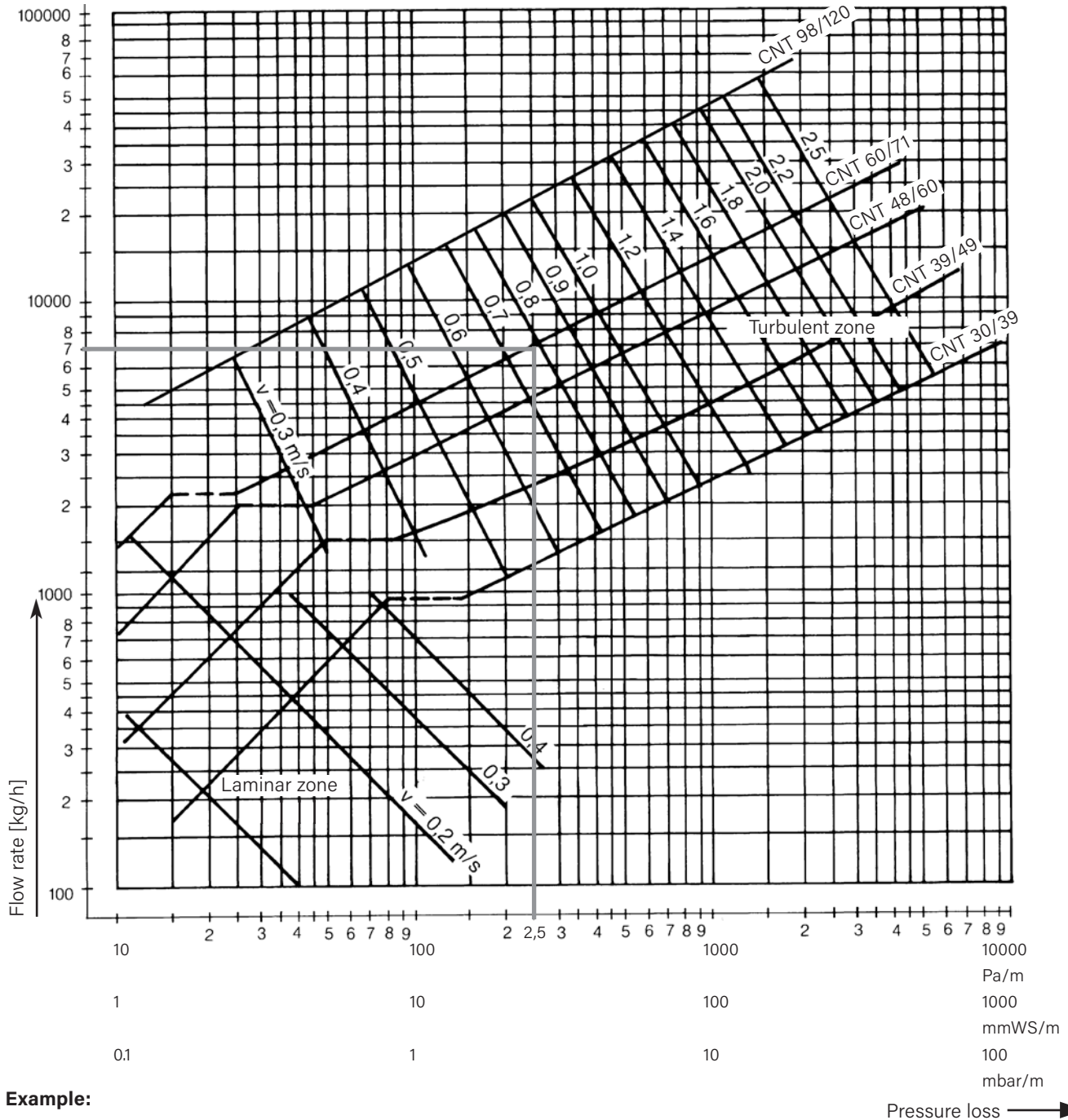
Pipe DN 50  
 Flow rate 80 l/min  
 at a speed of c. 0.4 m/s  
 pressure loss is 0.6 mbar/m

PETREX®-CNT Pipe systems for petrol stations

**Fluid mechanics**

Pressure loss diagram for heating oil (EL) and diesel fuel

Temperature: 15 °C  
 Specific gravity: 860 kg/m<sup>3</sup>  
 Kinematic viscosity: 7 · 10<sup>-6</sup> m<sup>2</sup>/s



**Example:**

Pipe DN 50  
 Mass flow 7000 kg/h  
 at a speed of c. 0.8 m/s  
 pressure loss is 2.5 mbar/m

Pressure loss →

## PETREX®-CNT Pipe systems for petrol stations

### Tips for laying

for pressure/suction pipe PETREX®-CNT

#### Thorough preparations

The following preparations should be completed before laying commences:

- Install fuel dispenser lift hole with installation mounting to fix and restrain the piping
- Install the switching duct with mounting for the piping to be led into it
- Install the remote feed tank with fill nozzle and counter flange for installing the remote fill pipe
- Prepare the dome cover with counter flange for the piping (aligned according to the pipework drawings)
- Prepare the steel manhole with the correct pipe sleeve dimensions for leading in the piping

#### Preparing and levelling the soil

The PETREX®-CNT Pipe systems for petrol stations must be laid on a layer of sand bedding at least 10 cm thick. The depth of the trench bottom can be calculated by adding the height of the sand bedding to the laying depth of the suction piping. Use sand with a grain size of < 2 mm and level the sand bedding afterwards. Finally tamp down the sand to compact it.

The careful preparation of the trench bottom is essential for the fast and efficient laying of the piping.

#### Laying the suction pipes

The PETREX®-CNT pipe system for petrol stations is a flexible pipe system, in contrast to conventional piping. It is manufactured in one piece and wound on cable drums. The piping is laid direct from the drum into the trench on site and cut to the length needed.

The technical installation of end fittings on site only necessary at the ends of each pipe run, which should be in a visually accessible area.

Important points which must under all circumstances be observed when laying the sand bed:

- In order to guarantee the safe functioning of the pipe on the inherently safe suction principle, the piping must have a continuous downward gradient to the tank.
- When choosing the downward gradient, take care to consider any crossing pipes on your routing. The minimum gradient must be maintained under all circumstances along the entire line.

- You must make up the sand bedding in such a way that the suction piping lies directly on it all the way along when it laid later. This will prevent the pipe from sagging and forming bulges. Under no circumstances is it permissible to let the piping lie on the bedding only at certain points.
- The laying of the sand bedding must be completed before pulling in of the piping commences.

#### Laying the feed pipes

Unlike conventional piping, the pressure pipes are a bendable pipe system. They are manufactured in one continuous piece and wound on cable drums. The pipes are laid direct into the trench off the drum on site and cut to whatever length is needed. Due to its flexibility the pipe can be laid in one piece over great lengths.

Manual installation of pipe connections on site is only necessary at the ends of the pipe lines.

#### Expansion takeup

Longitudinal expansion due to temperature rise is taken up in positive pressure piping by the geometrical variation of the corrugated pipe, rather like a compensator. No action therefore needs to be taken to compensate expansion. Expansion bends as in conventional piping are not needed.

#### Anchor points

Anchor points are not needed when piping is laid in the ground. That means that routing can be freely chosen in this respect so that no extra work is needed.

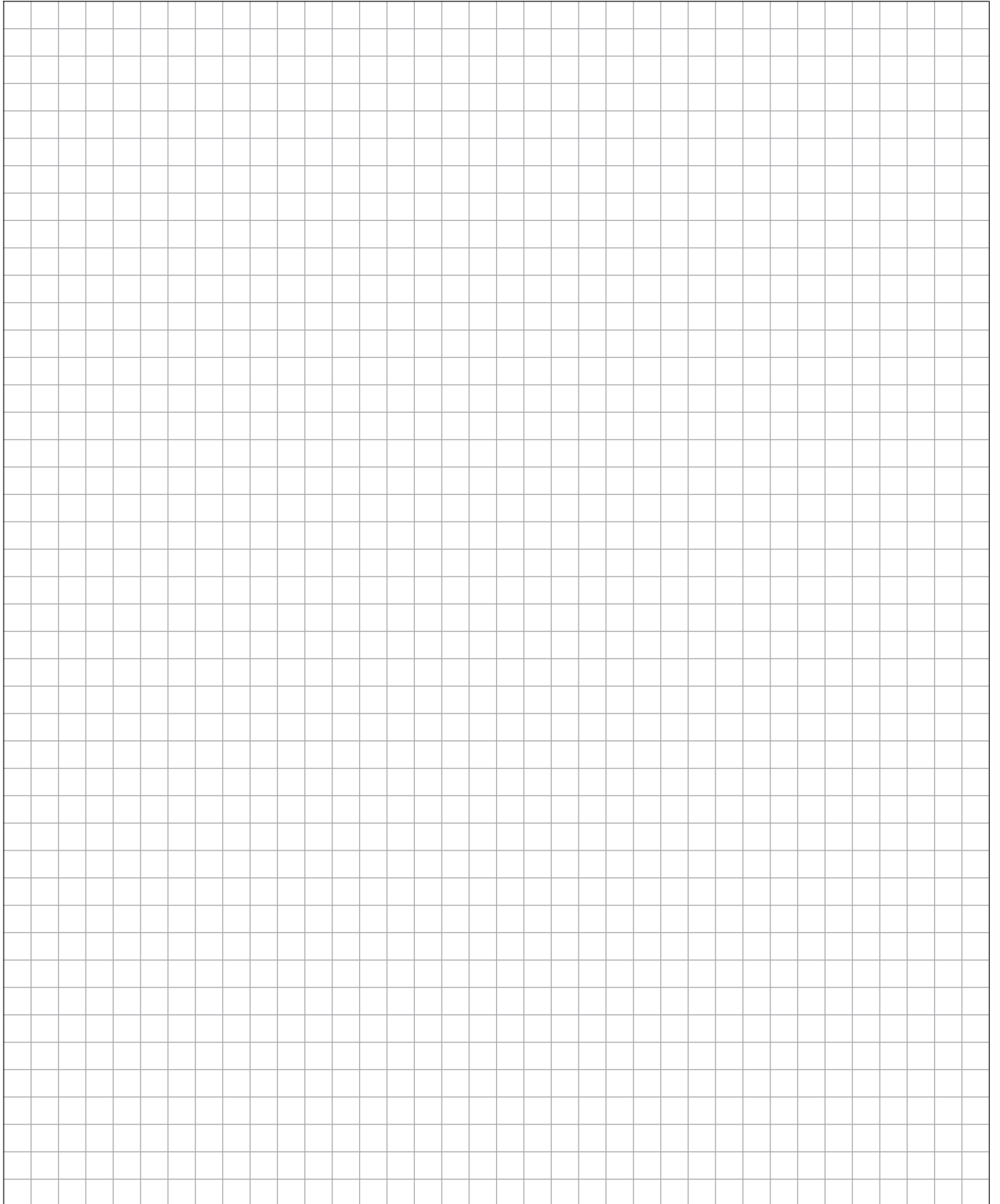
Volume increase in fluid transport media due to temperature rise and resulting higher pressures can only be elastically compensated to a limited extent when piping is laid above ground.

#### Safety equipment

Positive pressure pipes must comply with TRbF 40/50. Additional approvals are in preparation here.

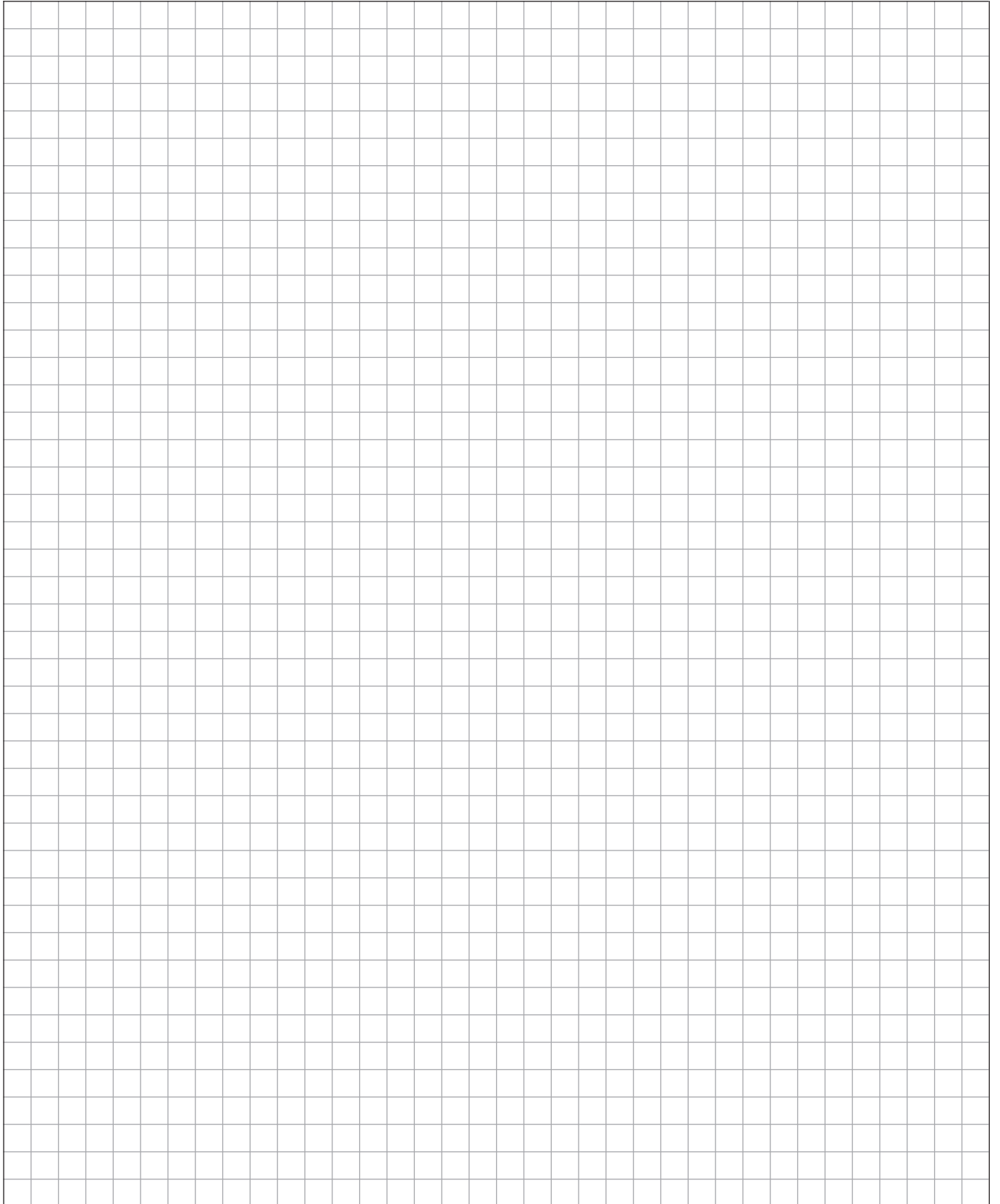
PETREX®-CNT Pipe systems for petrol stations

**Notes**



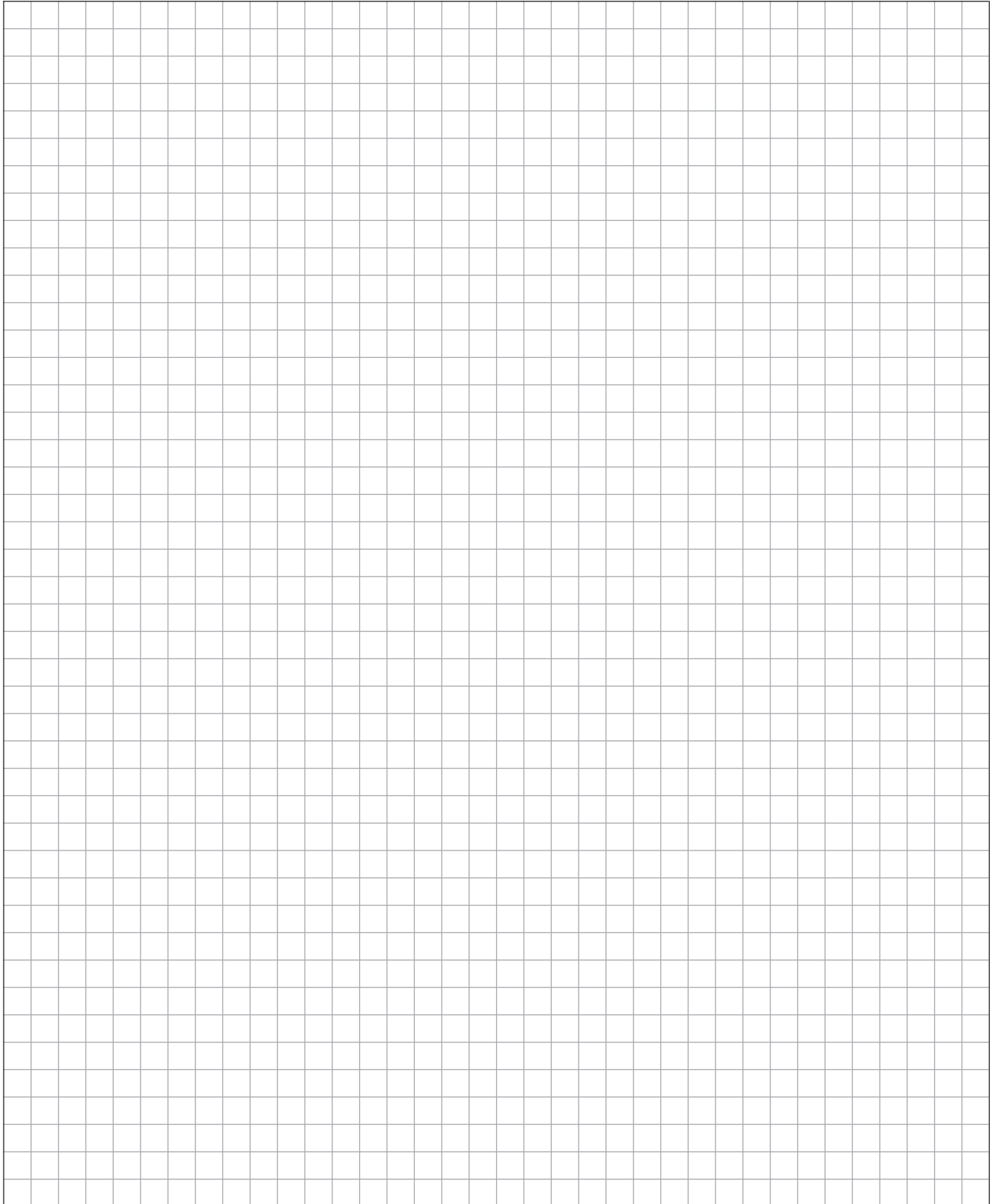
PETREX®-CNT Pipe systems for petrol stations

**Notes**



PETREX®-CNT Pipe systems for petrol stations

**Notes**



A BRUGG GROUP COMPANY

