Automatic laboratory safety system consisting of laboratory safety valve VCL and laboratory control unit LCU

Technical Information · GB
5.2.1.4 Edition 05.09

- Fully automatic testing of the downstream installation to check for leaks and that it is in the closed position each time before the system is started
- Protection from manipulation and incorrect use by users
- Short testing time
- Safe system thanks to self-monitoring electronics pursuant to EN 298
- Compact construction VCL
- Easy commissioning
- 1-finger operation (menu prompting with plain-text display)
- Automatic switch-off of the LCU after 60 minutes not in use
- Automatic switch-off of valves after an adjustable period of time
- Easy servicing thanks to informative operating, warning and fault messages
- Automatic shut-down and fault signalling in the event of an installation error
- EC type-tested and certified

elster Kromschröder

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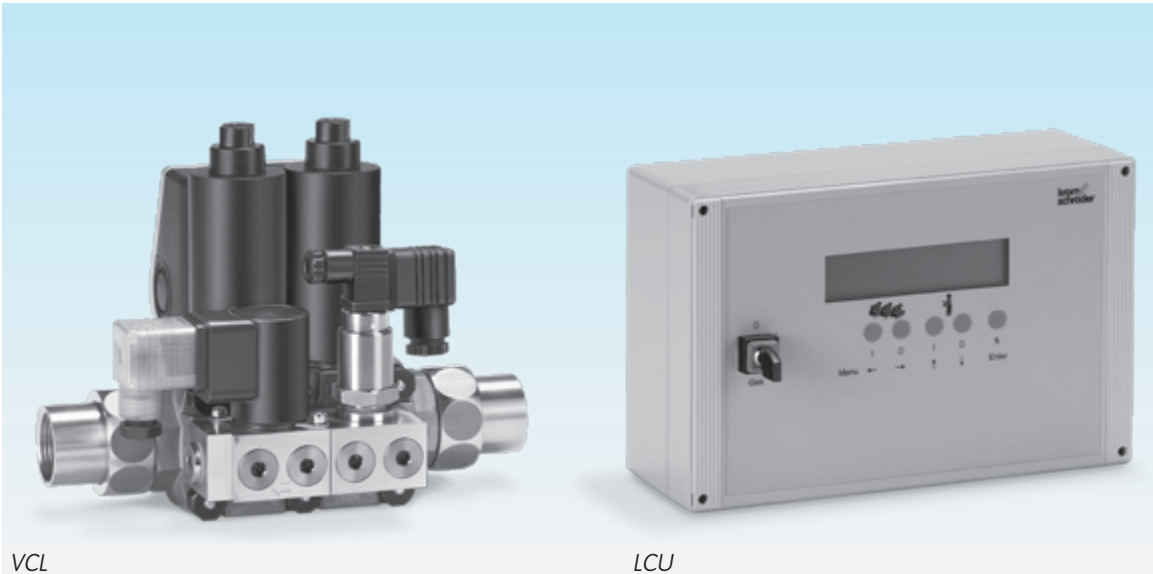
= To be continued



VCL LCU

Laboratory safety valve VCL and laboratory control unit LCU with fully automatic systems leak tightness check

1 Application

Laboratory safety system to safeguard gas taps in laboratory rooms, teaching rooms and technical work rooms in accordance with DVGW Code of Practice G 621 (see "Project planning information") and for protecting commercial kitchens in accordance with DVGW Code of Practice G 634.

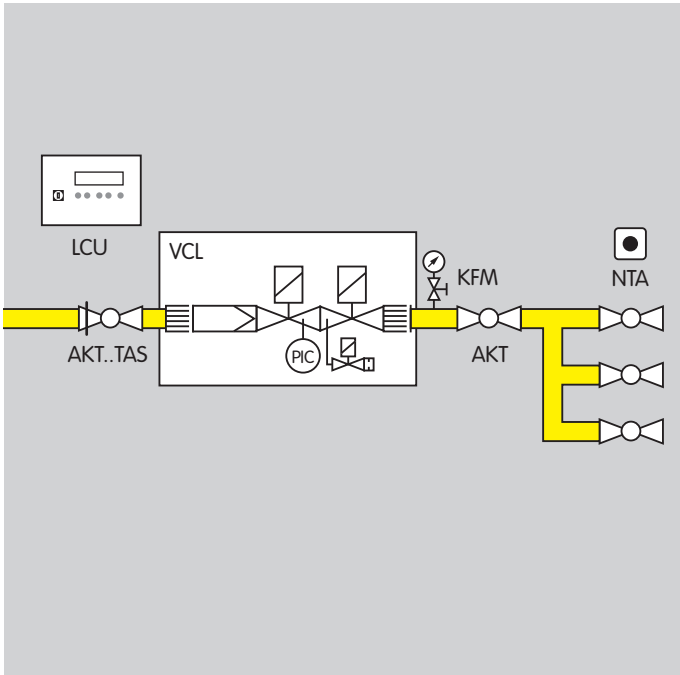
The laboratory safety system comprises the laboratory safety valve VCL and the laboratory control unit LCU. The laboratory safety valve VCL consists of a double solenoid valve VCS, a venting valve VBY, a pressure sensor and a dirt trap.

The laboratory safety system can be used for natural gas and LPG systems. It fully automatically checks the downstream installation for leaks, tight closing of valves and adequate inlet pressure before every system start-up, and protects it against tampering and incorrect use by users.

Fume extract cabinet

Laboratory work-benches

Teaching room



Legend:

AKT..TAS = Manual valve with thermal equipment trip,
VCL = Laboratory safety valve,
KFM = Pressure gauge with shut-off valve,
AKT = Manual valve,
LCU = Laboratory control unit,
NTA = Emergency Stop button.

1.1 Examples of application

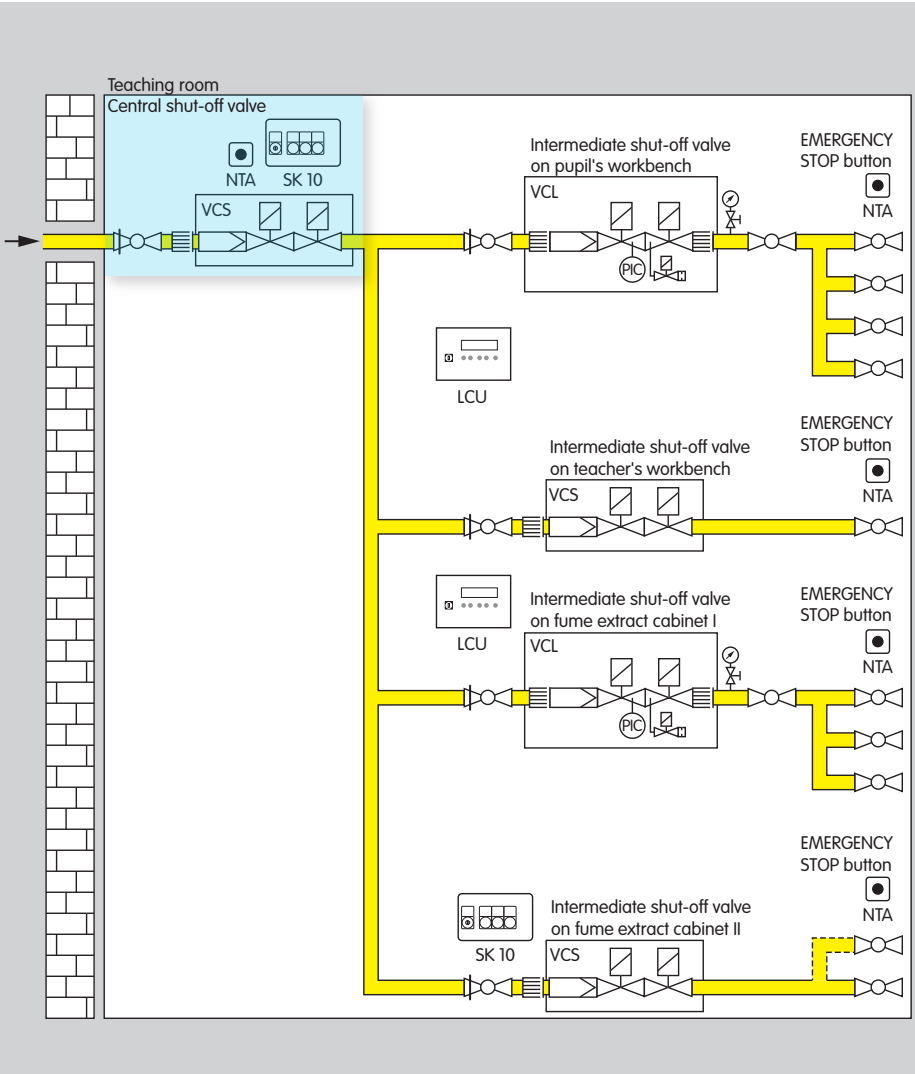
The laboratory safety system consists of the laboratory safety valve VCL and the laboratory control unit LCU. It ensures that no non-combusted gas enters the rooms when a tapping point is open – see installation examples for teaching rooms, laboratories and kitchen safety equipment.

The downstream system is checked automatically for leaks, tight closing of valves and adequate inlet pressure before every system start-up. When this check has been successfully completed, the laboratory control unit LCU issues an Enable signal and the system is then ready for operation. The double solenoid valve of the laboratory safety valve VCL opens. If there is a power or gas shortage, the gas supply is shut off automatically.

The laboratory safety valve VCL can be controlled remotely using the laboratory control unit LCU. The LCU has an activation lock using a key-operated switch (except LCU..M).

When used in combination with a manual valve with thermal equipment trip AKT..TAS (pursuant to TRGI), the laboratory safety system as a gas safety system features enhanced fire protection.

In this application (figure), the gas supply can be shut off manually at the inlet using manual valve AKT..TAS and at the outlet using manual valve AKT. The integral strainer in the laboratory safety valve VCL protects downstream equipment from dirt. The gas outlet pressure is displayed on a pressure gauge with a shut-off valve.



1.1.1 Installation example for teaching rooms

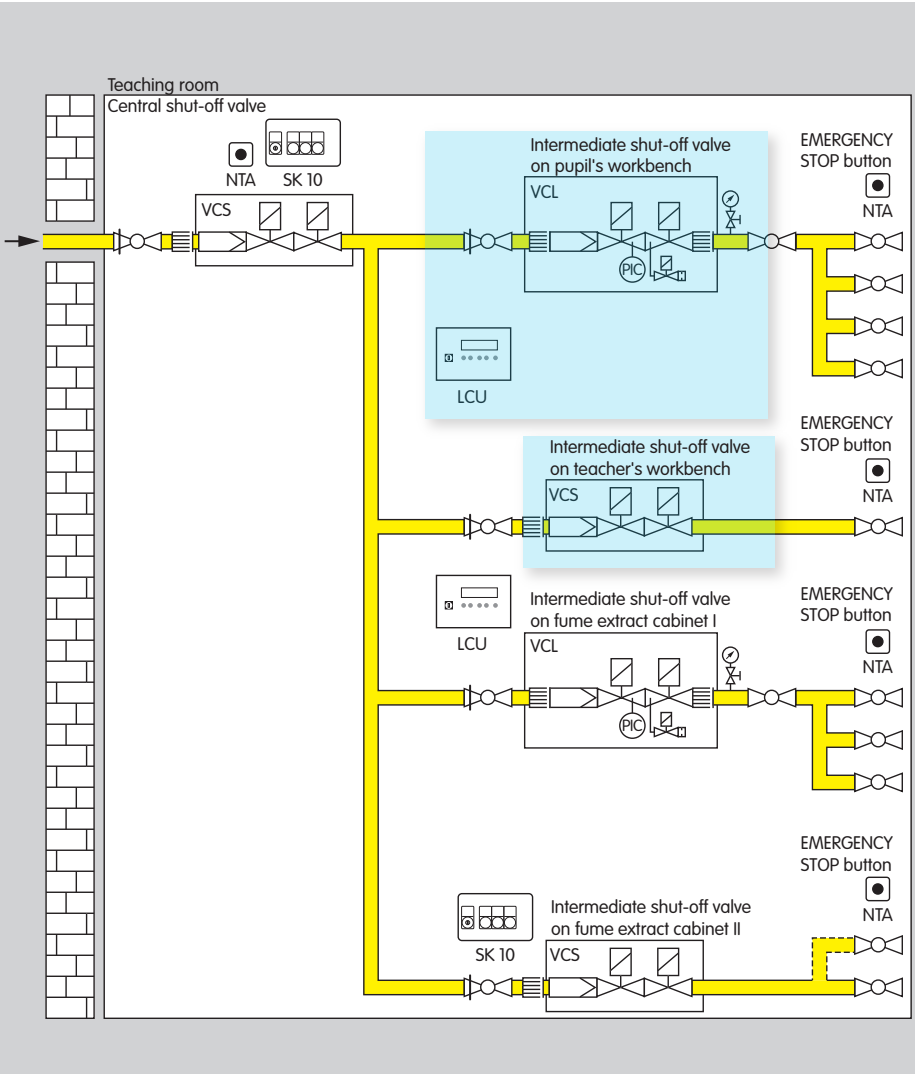
The DVGW Code of Practice G 621 requires that a central shut-off valve be fitted upstream of the entire installation in a teaching room and that a separate intermediate shut-off valve with safety device be fitted on pupils' workbenches. An intermediate shut-off valve must be fitted for all areas which are accessible to pupils (e.g. Fume extract cabinet I).

Central shut-off valve

The central shut-off valve VCS, positioned inside or outside the teaching room, shuts off the gas supply safely if there is a power shortage.

It can be controlled remotely using switch box SK 10. The switch box SK 10 itself should be positioned inside the teaching room at an easily accessible point (for example teacher's workbench). It has an activation lock using a key-operated switch.

A gas pressure control system with gas filter can be installed upstream of the central shut-off valve if the local pressure situation so requires or downstream controls must be protected from dirt.



Intermediate shut-off valve Pupil's workbench/Fume extract cabinet I

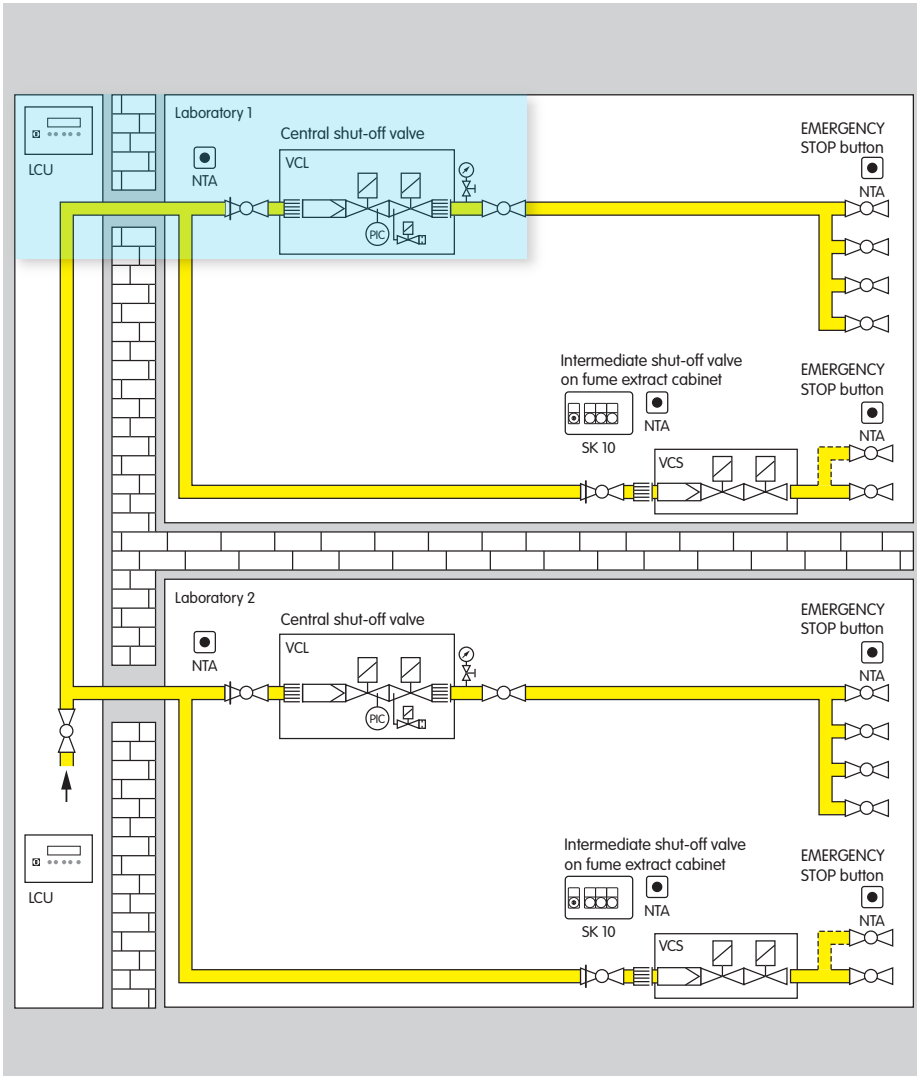
Before every system start-up, the laboratory control unit LCU automatically checks the entire installation on the pupils' workbenches, upstream of the laboratory safety valve VCL, for leaks, tight closing of valves and adequate inlet pressure. The laboratory control unit LCU only issues the Enable signal once all tapping points are closed and the pupils' workbenches are ready for use. If there is a power or gas shortage, the gas supply is shut off automatically.

This also applies to Fume extract cabinet I. This area is accessible to pupils.

Intermediate shut-off valve Teacher's workbench/Fume extract cabinet II

The intermediate shut-off valve VCS on the teacher's workbench can be controlled remotely using the laboratory control unit LCU. It shuts off the valves safely if there is a power shortage.

This also applies to Fume extract cabinet II. This area is only accessible to teachers.



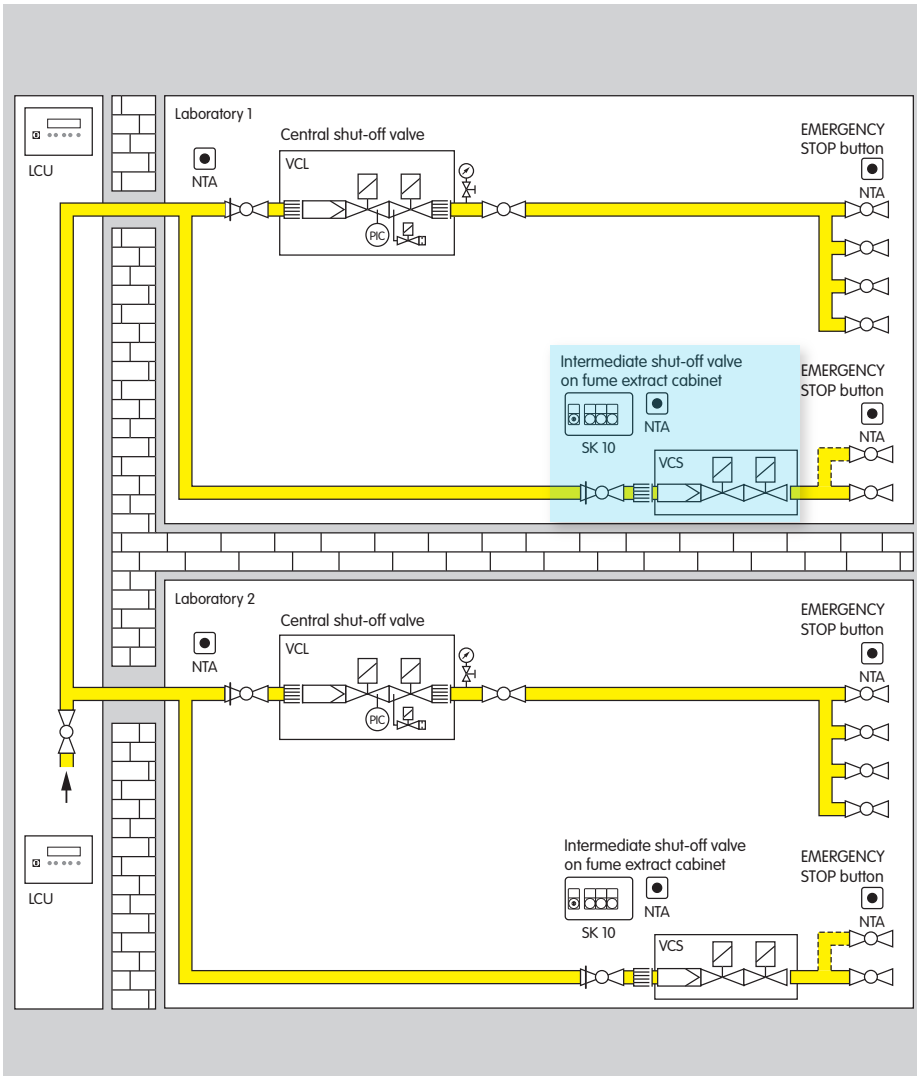
1.1.2 Installation example for laboratories

A laboratory is to be operated by qualified or instructed persons. The DVGW Code of Practice G 621 requires that a central shut-off valve with safety device be fitted to protect laboratories.

Central shut-off valve

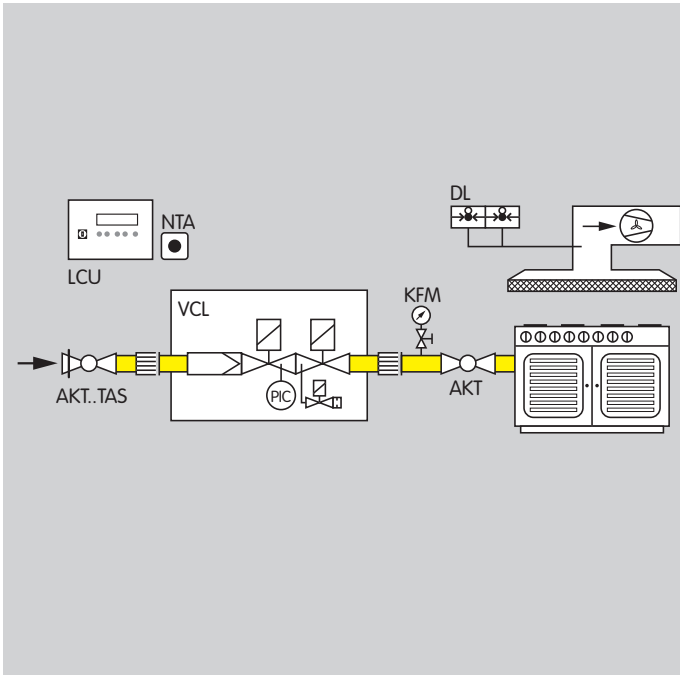
Before every system start-up, the laboratory control unit LCU automatically checks the entire installation upstream of the laboratory safety valve VCL for leaks, tight-closing valves and adequate inlet pressure. The laboratory control unit LCU only issues the Enable signal once all tapping points are closed and the system is ready for operation. If there is a power or gas shortage, the gas supply is shut off automatically.

The central shut-off valve VCL can be positioned inside or outside the room. The laboratory control unit LCU itself should be installed at an easily accessible point outside the laboratory but close to it.



Intermediate shut-off valve on Fume extract cabinet:

The intermediate shut-off valve VCS can be controlled remotely and can be operated using the laboratory control unit LCU, instead of switch box SK 10. It shuts off the valves safely if there is a power shortage.



Legend:
AKT..TAS = Manual valve with thermal equipment trip,
VCL = Laboratory safety valve,
KFM = Pressure gauge with shut-off valve,
AKT = Manual valve,
LCU = Laboratory control unit,
NTA = Emergency Stop button,
DL = Air pressure switch combination.

1.1.3 Kitchen safety equipment for commercial kitchens

The DVGW Code of Practice G 634 requires that an automatic shut-off valve be fitted in the gas path to ensure extraction by extractor hoods for type B devices (cooker systems).

In addition, the intermediate shut-off valve ensures that the double solenoid valve of the laboratory safety valve VCL remains closed when the gas supply to the cooker system is open. If the flue air extraction system or filter fails, the air pressure switch combination closes the laboratory safety valve VCL.

The downstream system is checked automatically for leaks, tight closing of valves and adequate inlet pressure before every system start-up. When this check has been successfully completed, the laboratory control unit LCU issues an Enable signal and the system is then ready for operation. The laboratory safety valve VCL opens. If there is a power or gas shortage, the gas supply is shut off automatically.

When a manual valve with thermal equipment trip AKT..TAS (pursuant to TRGI) is installed, the gas safety system features enhanced fire protection.

In this application (figure), the gas supply can be shut off manually at the inlet using manual valve AKT..TAS and at the outlet using manual valve AKT. The integral strainer in the laboratory safety valve VCL protects downstream equipment from dirt. The gas outlet pressure is displayed on a pressure gauge with a shut-off valve.

CE

2 Certification

VCL

The laboratory safety valve VCL consists of a double solenoid valve VCS, a venting valve VBY, a pressure sensor and a dirt trap.

EC type-tested and certified

pursuant to

– Gas Appliances Directive (90/396/EEC) in conjunction with EN 161 and EN 13611.

LCU

EC type-tested and certified

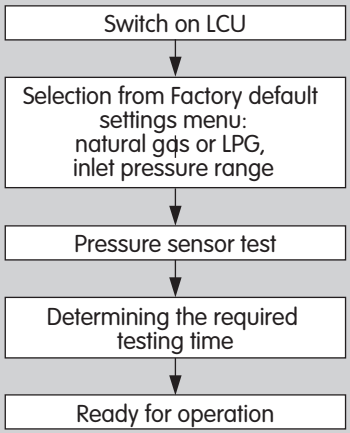
pursuant to

– Gas Appliances Directive (90/396/EEC) in conjunction with EN 298, EN 13611, EN 13611-A1, EN 1643.

VCL and LCU

are designed for applications pursuant to DVGW Codes of Practice G 621 and G 634. They comply with the requirements of the following directives and standards:

– Low Voltage Directive 2006/95/EC in conjunction with the relevant standards,
– Electromagnetic Compatibility Directive 2004/108/EC in conjunction with the relevant standards..



3 Function

3.1 Program sequence

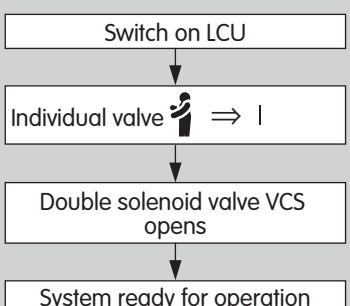
3.1.1 Commissioning

Commissioning is to be carried out by a fitter/authorised personnel. He selects the gas type with the associated inlet pressure range.

Commissioning is conducted just once. If the pipe volume (on-site installation), the inlet pressure range or the gas type changes, or if the pressure sensor, the venting valve VBY, the laboratory control unit LCU or the laboratory safety valve VCL are replaced, commissioning must be carried out again by the fitter/authorised personnel.

Once the pressure sensor has been tested, the laboratory control unit LCU determines the required testing time for the tightness and closed position check.

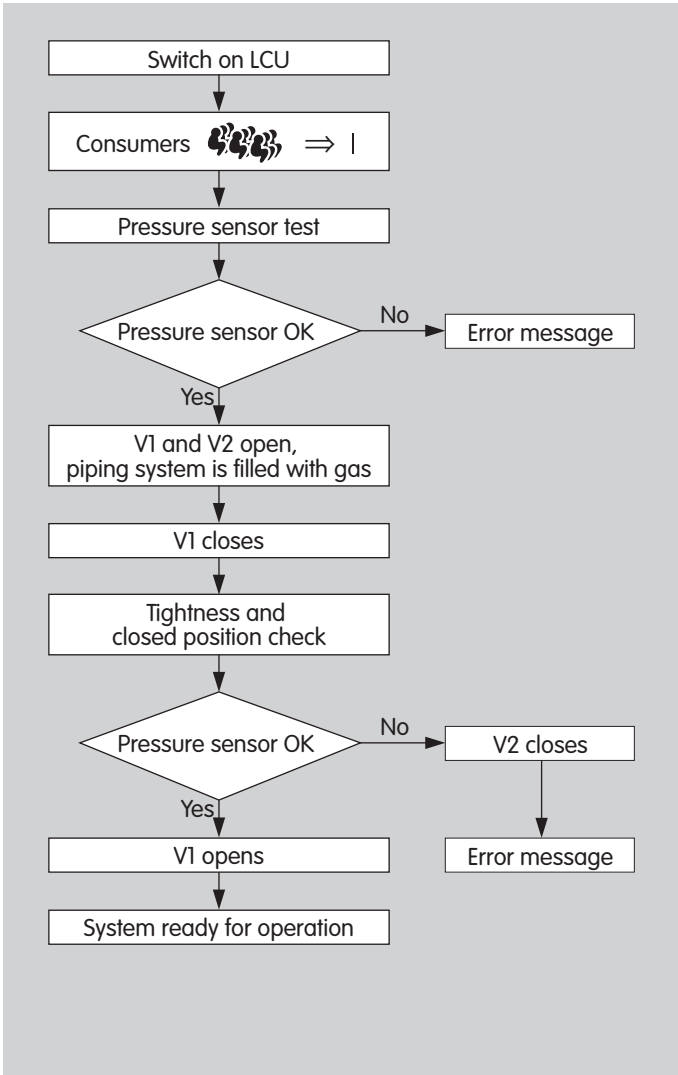
The downstream system is ready for operation.



3.1.2 Individual valve operation

Once the laboratory control unit LCU has been switched on and the "Individual valve on" button has been pressed, the double solenoid valve VCS or another gas solenoid valve opens.

The downstream system is ready for operation.



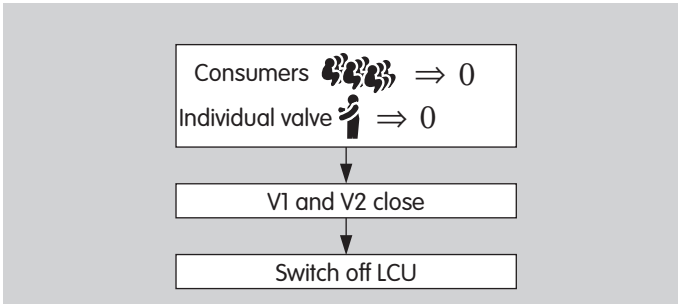
3.1.3 Consumer operation

Once the laboratory control unit LCU has been switched on and the "Consumers on" button has been pressed, the pressure sensor is checked.

V1 and V2 of the laboratory safety valve VCL then open. The downstream piping system is filled with gas. The first gas solenoid valve V1 closes again. The tightness and closed position check is carried out.

If this check is successful, the first valve V1 opens and releases the gas. The system is ready for operation.

In the event of a fault or leak, the first gas solenoid valve V1 remains closed. The second gas solenoid valve V2 closes in less than 1 second and an error message is shown on the display of the laboratory control unit LCU.



3.1.4 System shut-down

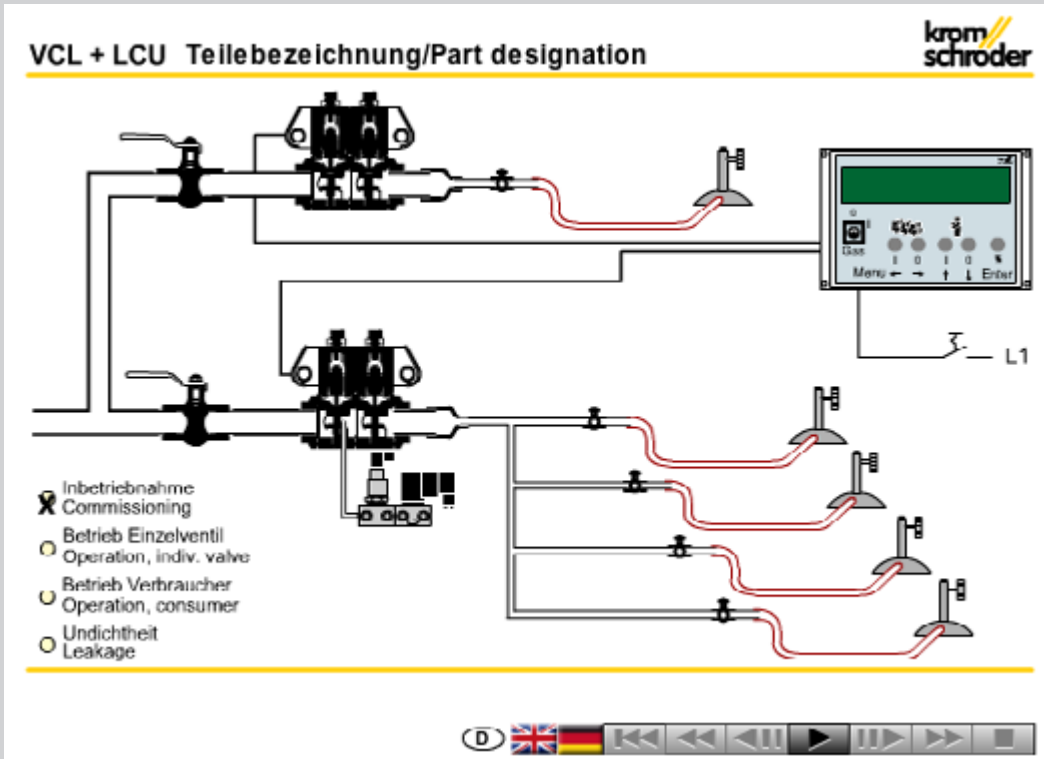
Once the "Consumers off" or "Individual valve off" buttons have been pressed, both gas solenoid valves V1 and V2 close in less than 1 second.

3.1.5 Power failure

After a power failure during operation, all valves close in less than 1 second. Once the power supply has been switched on again, the laboratory control unit LCU shows the default setting "Consumers off/Individual valve off".

3.1.6 Timeout

If the program display is not confirmed after the power supply and the laboratory control unit LCU have been switched on, the LCU automatically shows the program status "Timeout" after 60 minutes. In order to be able to use the LCU again after this, the laboratory control unit LCU must be switched off and on again using the key-operated switch. The default setting "Consumer off/Individual valve off" is displayed.



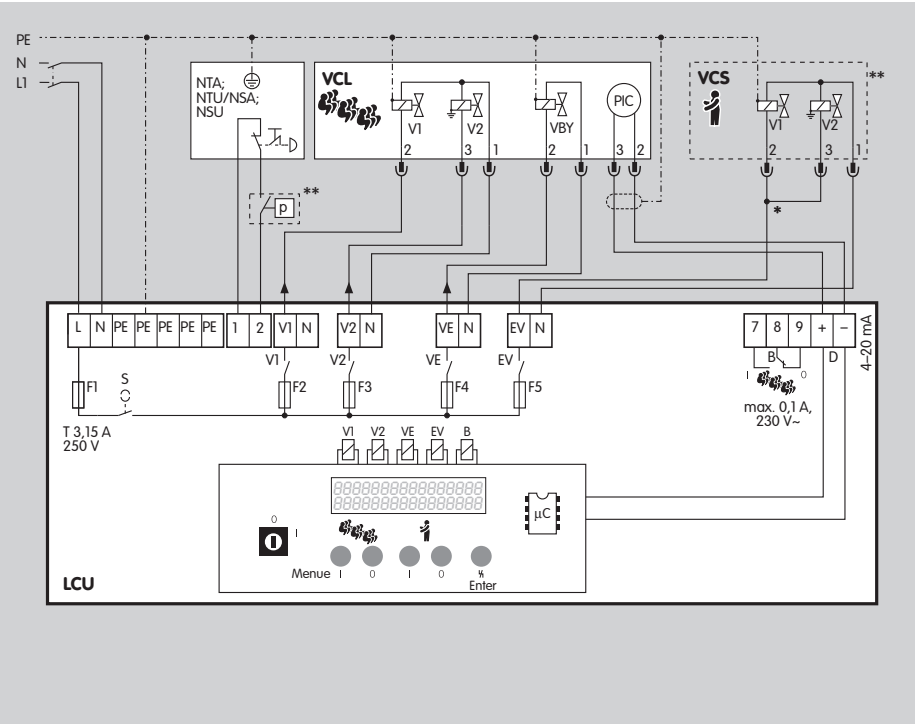
3.2 Animation

The interactive animation shows the function of the laboratory safety system VCL + LCU.

Click on the picture. The animation can be controlled using the control bar at the bottom of the window (as on a DVD player).

To play the animation, you will need Adobe Reader 7 or a newer version. If you do not have Adobe Reader on your system, you can download it from the Internet. Go to www.adobe.com, click on "Get Adobe Reader" and follow the instructions.

If the animation does not start to play, you can download it from the document library (Docuthek) as an independent application.



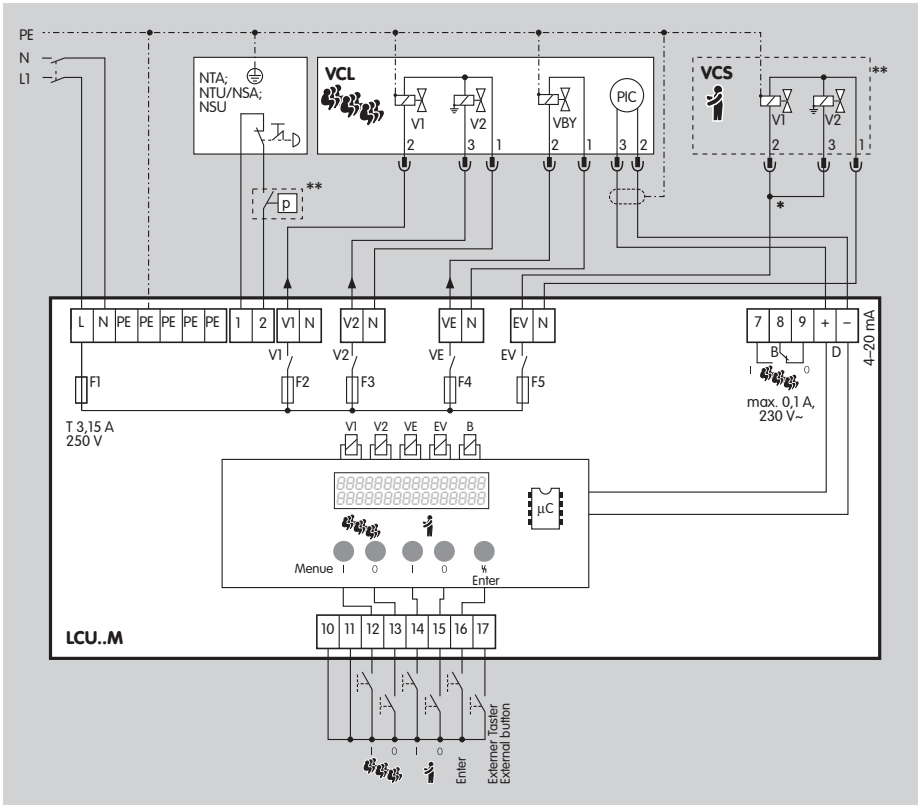
Legend		
88	Display	
V1	Gas valve V1 into Laboratory safety valve VCL	V1
V2	Gas valve V2 into Laboratory safety valve VCL	V2
VE	Venting valve VBY	VBY
EV	Gas valve V2 into Individual valve VCS	V1/V2
B	Floating operation signalling contacts	
	Key-operated switch	
	Air pressure switch	P
	Pressure sensor	PIC
	EMERGENCY STOP button	
	Bridging contact for VCS	*

3.3 Connection diagram

3.3.1 LCU with key-operated switch

*If the double solenoid valve VCS (EV) is fitted at a later point, the bridging contact must be inserted for wiring – see Accessories.

**The double solenoid valve VCS and the air pressure switch can be connected as an option. When using air pressure switch combinations to protect commercial kitchens, the contacts must be connected in series.



Legend		
88	Display	
V1	Gas valve V1 into Laboratory safety valve VCL	V1
V2	Gas valve V2 into Laboratory safety valve VCL	V2
VE	Venting valve VBY	VBY
EV	Gas valve V2 into Individual valve VCS	V1/ V2
B	Floating operation signalling contacts	
	Air pressure switch	
	Pressure sensor	
	EMERGENCY STOP button	
	Bridging contact for VCS	*

3.3.2 LCU..M without key-operated switch, with auxiliary board

with connection for external buttons.

*If the double solenoid valve VCS (EV) is fitted at a later point, the bridging contact must be inserted for wiring – see Accessories.

**The double solenoid valve VCS and the air pressure switch can be connected as an option. When using air pressure switch combinations to protect commercial kitchens, the contacts must be connected in series.

4 Parameters

The following parameters can be called up by users on the laboratory control unit LCU:

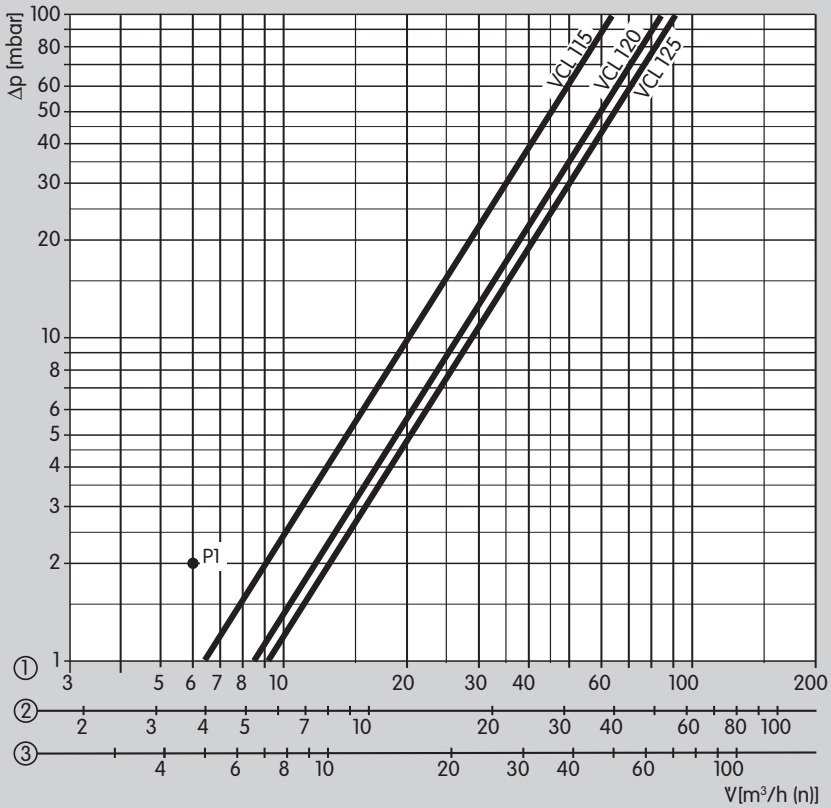
DISPLAY	Description
20 MBAR PRESSURE SENSOR	Current inlet pressure p_e between V1 and V2 (interspace pressure)
0.0 MS TIME T2	Testing time from t1 to t2 (venting time tE for pressure differential Δp)
0.0 MBAR PRESSURE P0 (T0)	Interspace pressure P0 at time t0 (before opening of venting valve VBY)
0.0 MBAR PRESSURE P1 (T1)	Interspace pressure P1 at time t1 (during opening of venting valve VBY)
0.0 MBAR PRESSURE P2 (T2)	Interspace pressure P2 at time t2 (approx. 205 ms after opening of venting valve VBY)
0.00 MIN. GRADIENT	Minimum calculated gradient (pressure/time) for the pressure sensor test
0.00 CURRENT GRADIENT	Current gradient (pressure/time) of the pressure sensor test. Must be between min. and max. gradient.
0.00 MAX. GRADIENT	Maximum calculated gradient (pressure/time) for the pressure sensor test
0.852 DENSITY	Calibration factor (√density ratio) on/following commissioning. Must be between min. and max. calibration factor – see "Calibration factor" table.

4.1 Calibration factor

Type of gas	Calibration factor	
	min.	max.
Natural gas	0.74	0.87
LPG	1.19	1.51
Air	0.88	1.12

The factory default settings can be called up or set by the fitter/authorised personnel:

DISPLAY	Description
SWITCH OFF IN 0 HOURS	Countdown is set at the factory to 0 hours: Consumer valves remain open. Countdown can be changed in the "Factory default settings" menu. 10 minutes before the end of the countdown, an audible warning will be issued. The audible warning can be switched off by pressing the "Consumers on" button and the Countdown will start again.
100 MBAR PRESSURE SENSOR	Pressure range of the pressure sensor
NATURAL GAS 10 – 30 MBAR	Gas type with inlet pressure range
1,100 MS TIME DELTA TE	Venting time t_E for pressure differential Δp
0.802 DENSITY	Default specification (calibration factor as reference value)
2,720 LCU COUNTER	Number of mains on for the laboratory control unit LCU
2,720 CONSUMER COUNTER	Number of consumer switch-ons
LCU V_._ _DATE	Version display



① = Natural gas (ρ = 0.80 kg/m³)
② = Propane (ρ = 2.01 kg/m³
③ = Air (ρ = 1.29 kg/m³)

The characteristic flow rate curves have been measured with the specified flanges and a fitted strainer.

5 Flow rate

5.1 Selection example for VCL 1

To calculate the total consumption of teaching rooms/laboratories, an average consumption of 200 – 300 l/h of natural gas per Bunsen burner can be assumed.

Example for VCL 1:

Natural gas,
30 Bunsen burners each with
$\dot{V}$ = 0.2 m³/h flow rate,
Inlet pressure p_e = 20 mbar,
Outlet pressure p_a = 18 mbar,
Δp = 2 mbar.

Flow rate $\dot{V}_{max}$ =
30 x 0.2 m³/h = 6 m³/h,
➔ Point P1.
We recommend that the next biggest size be selected.
➔ selected VCL 115.

6 Selection

6.1 Selection table Laboratory safety valve VCL

	1	15	20	25	V	01	W	Z*
VCL	●	●	●	●	●	●	●	○

Order example

VCL 125V01W

if "none", this specification is omitted

● = *standard*, ○ = *available*

6.1.1 Type code Laboratory safety valve VCL

Code	Description
VCL	Laboratory safety valve
1	Size 1
15	DN 15
20	DN 20
25	DN 25
V	Rp thread with coupling
01	Max. inlet pressure $p_{e\ max.}$ 100 mbar
W	Mains voltage 230 V AC, 50/60 Hz
Z*	Special version

6.2 Selection table Laboratory control unit LCU

	100	E	A	U	I	D	GB	W	R	M*	Z*
LCU	●	●	●	●	○	●	●	●	●	○	○

Order example

LCU 100ADW

if "none", this specification is omitted

● = *standard*, ○ = *available*

6.2.1 Type code Laboratory control unit LCU

Code	Description
LCU	Laboratory control unit
100	Series
E	Plastic housing for installation
A	Plastic housing for surface-mounting
U	Plastic housing for concealed installation
I	Non-enclosed
D	Menu language German
GB	Menu language English
W	Mains voltage 230 V AC
R	Main voltage 115 V AC
M*	External electrical connections
Z*	Special version

7 Project planning information

7.1 DVGW Code of Practice G 621

The DVGW Code of Practice G 621 describes the safety requirements for teaching rooms and laboratories with safety connection fittings for gas pursuant to DIN 3383, Part 4, and with laboratory fittings pursuant to DIN 12918, Part 2.

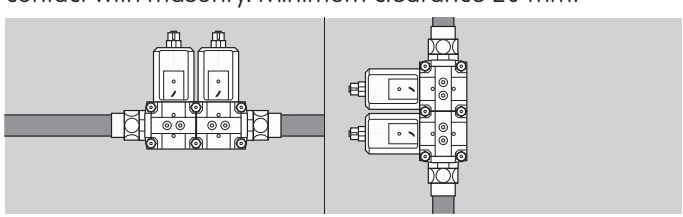
7.2 DVGW Code of Practice G 634

The DVGW Code of Practice G 634 describes safety equipment for commercial kitchens.

7.3 Installation

7.3.1 Installation position

Laboratory safety valve VCL: black solenoid actuator in the vertical position or tilted up to the horizontal, not upside down. Laboratory control unit LCU: any. The housing must not be in contact with masonry. Minimum clearance 20 mm.



7.3.2 Filter

To keep the laboratory safety system free of dirt, we recommend that a filter be installed upstream of the system. A soiled laboratory safety system may cause incorrect measurements.

7.3.3 EMERGENCY STOP button NTA

If EMERGENCY STOP buttons are installed, we recommend that the gas and power are shut down in the entire room in the event of activation (Accident Prevention Regulation GUV-R 120 para. 3.6.1, edition 10/1993 – previously GUV 16.17).

7.4 Commissioning

The system volume is limited to maximum 60 litres (≙ 105 m pipeline of a nominal diameter DN 25).

The minimum system volume downstream of the VCL is 0.2 litres (≙ 0.4 m pipeline of a nominal diameter DN 25).

System volume V_P is calculated from the valve volume V_V, added to the volume of the pipe V_R for each additional metre in length L ($V_P = V_V + L \times V_R$).

Valves	DN	Valve volume V_V [l]	Volume of the pipe per metre V_R [l/m]
VCL 115/VCS 115	15	0.05	0.2
VCL 120/VCS 120	20	0.05	0.3
VCL 125/VCS 125	25	0.05	0.5

If the pipe volume (on-site installation), the inlet pressure range or the gas type changes, or if the pressure sensor, the venting valve VBY, the laboratory control unit LCU or the laboratory safety valve VCL are replaced, commissioning must be carried out again by the fitter/authorised personnel.

7.4.1 Setting for commissioning:

Type of gas	Inlet pressure range p_e [mbar]
Natural gas	10 – 30
LPG	10 – 30
LPG	25 – 60
Air	10 – 30

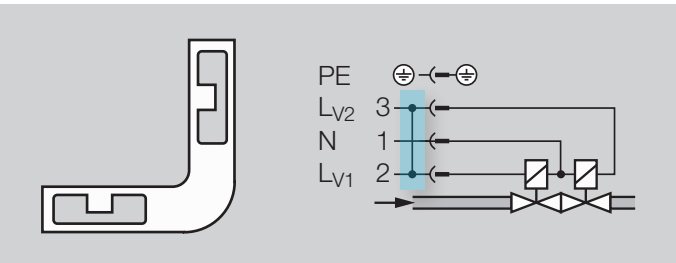
In the event of deviating inlet pressures (even for brief pressure deviations), the settings for the pressure regulator already available on site must be corrected, or alternatively an additional pressure regulator must be inserted directly upstream of the laboratory safety valve VCL.

The operating principle of the laboratory safety system VCL and LCU is based on the density measurement of the gas used. Before commissioning, the entire upstream and downstream system must therefore be vented and tight in order to ensure fault-free operation.

8 Accessories

8.1 Bridging contact for double solenoid valve VCS

A bridging contact is required to wire the central shut-off valve with double solenoid valve VCS to the laboratory control unit LCU – see LCU connection diagram, LCU..M



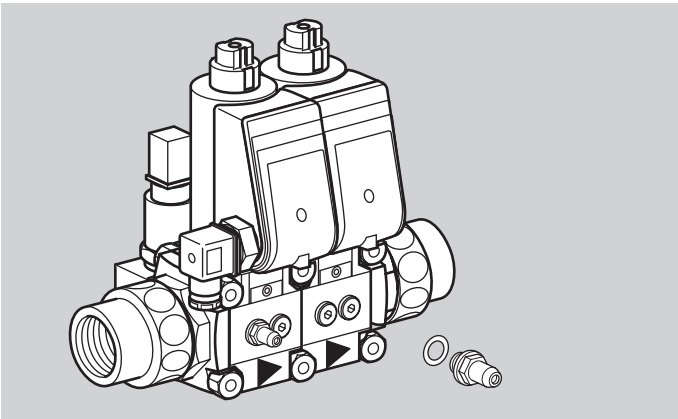
Order No.: 35448988

When ordering gas safety system FSA from Elster Kromschröder dealers, the bridging contact is included in the delivery.

8.2 Pressure test points

To vent the piping system upstream of the laboratory safety valve VCL in a controlled way, a pressure test point can be installed at the inlet of the first valve V1 of the VCL. The inlet pressure p_e can be displayed with a pressure gauge connected to this pressure test point.

In order to be able to check the external tightness, nitrogen is supplied via the pressure test point.



Order No.: 74918602

9 Technical data

9.1 VCL

Types of gas: natural gas, LPG (gaseous) and air.
The gas must be dry in all temperature conditions and must not contain condensate.

Inlet pressure p_e max.: 100 mbar.

Ambient temperature:
0 – 40°C, no condensation permitted.

Mains voltage:
230 V AC, +10/-15%, 50/60 Hz;
120 V AC, +10/-15%, 50/60 Hz.

Power consumption: 70 W.

Opening time:
Quick opening: ≤ 0.5 s.

Closing time:
Quick closing: < 1 s.

Safety valve:
Class A to EN 161.

Electrical connection:
plug with socket to EN 175301-803.

Enclosure: IP 54.

Duty cycle: 100%.

Power factor of the solenoid coil: cos φ = 1.

Switching frequency: any.

Valve housing: aluminium.

Valve seal: NBR.

Connection flange with internal thread:

Rp to ISO 7-1.

9.1.1 Pressure sensor

Prefabricated electrical connection:
plug with socket to EN 175301-803-C,
socket: GDSN 307 black,
enclosure: IP 65,
number of pins: 2 + screen,
cable gland: PG 7,
cable type: length 5 m, LIYCY, max. 2 x 0.75 mm^2, screened.
Cable ends and shield with wire end ferrules prepared for connection to the LCU.

Connect the shield to one side of the LCU only.

9.2 LCU

Type of gas	Inlet pressure range p_e [mbar]
Natural gas	10 – 30
LPG	10 – 30
LPG	25 – 60
Air	10 – 30

Mains voltage:
LCU 100..R: 115 V AC, 50/60 Hz;
LCU 100..W: 230 V AC, 50/60 Hz.

Protection class: 1.

Power consumption: approx. 20 VA.

Ambient temperature: 0 – 60°C.

Enclosure: IP 54.

Housing colour: RAL 7035 light grey.

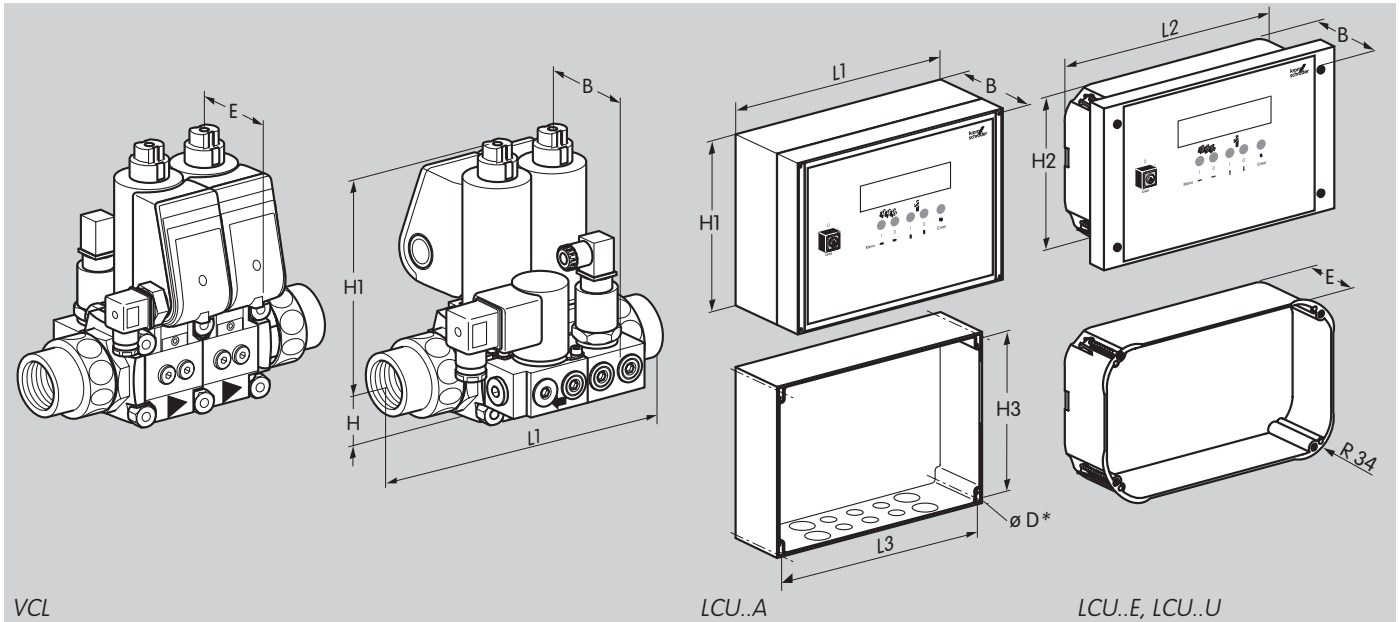
Floating operation signalling contact:

max. 0.1 A, 230 V AC.

3 valve outputs for VCL:
Electrical current: 315 mA,
1 valve output for VCS:
Electrical current: 500 mA,
Voltage: 115 V AC, 230 V AC.

LCD display for status and faults:
2x 16 characters.

Activation lock using a key-operated switch (except LCU..M).

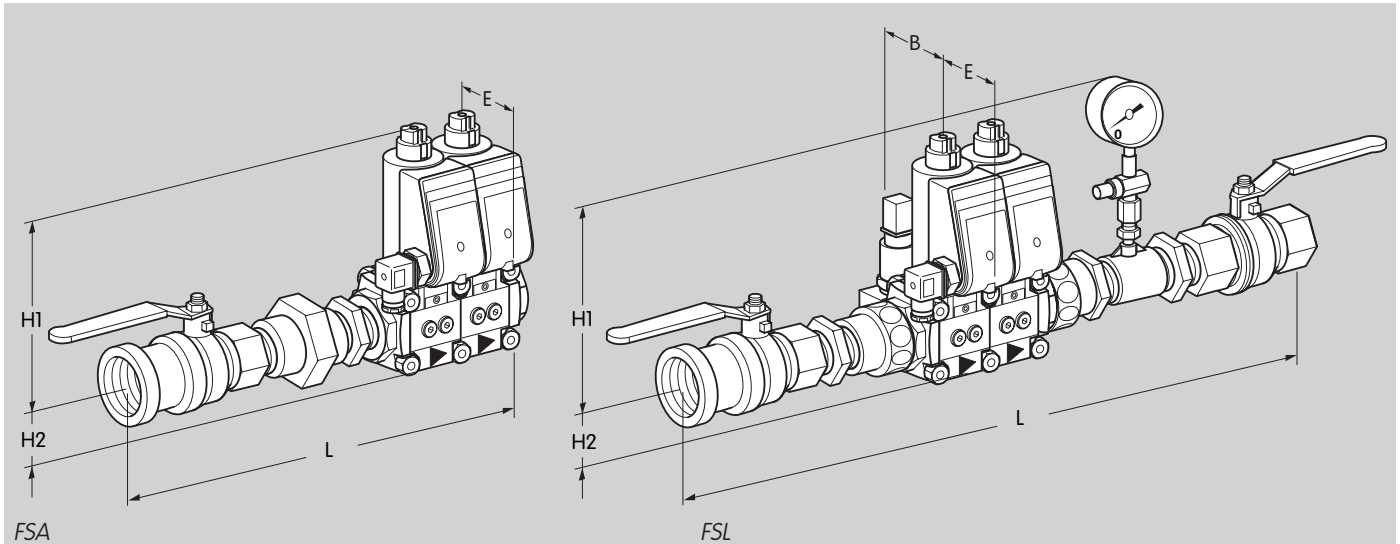


VCL *LCU..A* *LCU..E, LCU..U*

9.3 Dimensions VCL, LCU

	DN	L1 [mm]	L2 [mm]	L3 [mm]	H [mm]	H1 [mm]	H2 [mm]	H3 [mm]	B [mm]	E [mm]	D [mm]	Weight [kg]	V_{air} with Δp = 1 mbar [m^3/h]	k_V
VCL 115	15	220	–	–	32	140	–	–	70	75	–	4.3	5.4	6
VCL 120	20	220	–	–	32	140	–	–	70	75	–	4.3	7.1	8
VCL 125	25	230	–	–	32	140	–	–	70	75	–	4.3	7.6	8.5
LCU..A	–	240	–	226	–	160	–	145	90	–	5	1.4	–	–
LCU..E	–	250	239	–	–	150	140	–	90	70	–	1.6	–	–
LCU..U	–	250	240	–	–	150	140	–	97	87	–	1.7	–	–
LCU..I**	–	–	–	218	–			87	–	–	3.5	0.7	–	–

* Retaining screws ø 3.5 x 25 mm are recommended to mount the laboratory control unit LCU..A.
**Non-enclosed LCU..I.

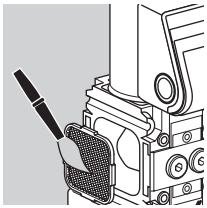


FSA FSL

9.4 Dimensions FSA, FSL

Central shut-off valve or intermediate safety valve FSA
Central shut-off valve with safety device FSL

	L [mm]	H1 [mm]	H2 [mm]	E [mm]	B [mm]	Weight [kg]
FSA 15	275	140	32	75	–	3.4
FSA 20	310	140	32	75	–	3.8
FSA 25	345	140	32	75	–	4.3
FSA 40	460	164	47	88	–	10.2
FSA 50	545	229	59	96	–	18.0
FSL 15	495	166	32	75	70	5.5
FSL 20	520	168	32	75	70	6.0
FSL 25	570	173	32	75	70	7.0



10 Maintenance cycles

VCL

Check for internal and external tightness once a year. Clean the nozzles in venting valve VBY and the pressure sensor once a year. If the fl ow rate drops, clean the strainer at the inlet of the double solenoid valve.

LCU

The LCU requires little servicing.

Feedback

Finally, we are offering you the opportunity to assess this "Technical Information (TI)" and to give us your opinion, so that we can improve our documents further and suit them to your needs.

Clarity

- ○ Found information quickly
- ○ Searched for a long time
- ○ Didn't find information

  What is missing? _____
- ○ No answer

Comprehension

- ○ Coherent
- ○ Too complicated
- ○ No answer

Scope

- ○ Too little
- ○ Sufficient
- ○ Too wide
- ○ No answer

Use

- ☐ To get to know the product
- ☐ To choose a product
- ☐ Planning
- ☐ To look for information

Navigation

- ○ I can find my way around
- ○ I got "lost"
- ○ No answer

My scope of functions

- ○ Technical department
- ○ Sales
- ○ No answer

Remarks

(Adobe Reader 7 or higher required)

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