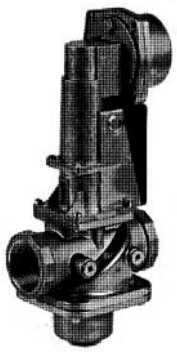
Valves for Cold and Hot Air

for the following maximum temperatures: +60°C, +150°C, +450°C and +600°C

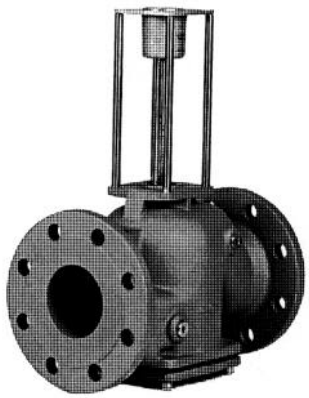
VLG10...,VLG15... VLF45...,VLF60...

For complementary Data Sheets refer to «Actuators»

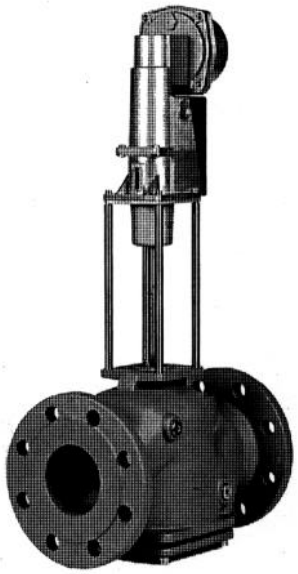
FM739/1



VLG10..., DN50
with SKL90 actuator



VLF..., DN80
without actuator



VLF..., DN80
with SKL90 actuator

Two-port valves, DN40...80, normally closed, suitable for the following maximum temperatures:

+60°C	**die-cast aluminium, with threaded connections**
+150°C	**≤ 2" die-cast aluminium, with threaded connections**
	3" cast iron, with threaded connections
+450°C	**cast iron, with flanged connections**
+600°C	**nodular cast iron, with flanged connections**

Driven by electro-hydraulic actuators type SKL..., SKP..., or SQX...

Application

Shut-off or control valves in the supply air line of industrial combustion plants with or without heat recovery.

Suitable media

Unfiltered but clean air, with no chemical additives.

	Min. / max. temperatures
VLG10...	-15°C...+ 60°C
VLG15...	-15°C...+ 150°C
VLF45...	-15°C...+ 450°C
VLF60...	-15°C...+ 600°C

Technical Data

Max. permissible operating pressure	refer to «Summary of Types»
Min. required flow rates	same as VGG10 or VGF10 of the same size; refer to respective Data Sheets With VLF45, VLG15 and VLF60 the minimum flow rate of valves **without profiled valve plugs** must be used. The values are approx. 1.5 times higher than those with profiled valve plugs.
Max. leakage rates	
• Internally, at Δp 100 mbar	0.3 m^3/h
• Externally, at a medium pressure of 100 mbar	0.7 m^3/h
Media	refer to «Suitable media»
Weight	refer to «Dimensions»
Stroke	approx.
DN40	16 mm
DN50 / 2"	16 mm
DN65	16 mm
DN80 / 3"	18 mm

Summary of Types

DN	Type reference for medium of max.				Max. operating pressure (inlet pressure) mbar		Flow rate of air[1] in m^3/h at Δp = 1 mbar at			Number of connections[2]		
	Internally threaded to ISO R7/1		**Flanged** to ISO 7005							Rp1/4		Rp3/4
	+60°C[4]	**+150°C**	**+450°C**	**+600°C**[5]	≤ 450°C	≤ 600°C	+20°C	+450°C	+600°C	Inlet side[3]	Outlet side[3]	Inlet side[3]
40	VLG10.404	6)	**VLF45.404**	VLF60.404	1500	300	32	50	55	2	2	-
50	VLG10.504	**VLG15.504**	**VLF45.504**	VLF60.504	1500	300	48	75	82	2	2	-
65	6)	6)	**VLF45.654**	VLF60.655	700	300	77	120	132	1	1	2
80	6)	**VLG15.804**	**VLF45.804**	VLF60.805	700	300	82	129	140	1	1	2

1) to DIN3391
2) in addition to medium inlet and outlet
Not valid for VLF60, available on demand
3) in case of two, one on the left and one on the right side
4) **Delivery on inquiry. Instead of VLG10 it is possible to use VGG10 valves.**
5) **VLF60... delivery on inquiry and only after offer had been made.**
Prices strongly depend on piece number: Delivery time 5...10 months.
6) **Not included in range**

Actuators

The VLG... and VLF... valves can be used in connection with the following types of actuators:

Type reference	Data Sheet No.	Function	Special feature
SKL90		ON/OFF with **constant pressure control**	Closing time 4...6 s
SKP10	7641	ON/OFF	Closing time ≤ 1.0 s together **with VG... valves** also suitable for gas
SKP20	7641	ON/OFF with **constant pressure control**	
SKP27 and SQS27	7644	ON/OFF with **pressure control** and **setpoint adjustment** by electric signal	
SKP50	7648	ON/OFF with **ratio control** Signal input: Differential pressure	
SKP70	7651	ON/OFF with **ratio control** Signal input: Static pressure	
SQX31 and AGA60	4551	**Continuous** 3-position **control**	

Design Features

VLG10

Valve body with internally threaded connections for medium.
Auxiliary connections on inlet and outlet side, are closed off with plug and seal.
Slightly **profiled** valve plug with seal between plug and seat.
Valve spindle is guided on both sides of the plug by Teflon bearings.
Return spring in the medium, has a direct effect on valve plug.
Strainer on the inlet side having a mesh dia. < 1 mm.
Actuator is fitted to the valve body by means of four screws, no seal.

VLG15 and VLF...

Valve body with flanged or threaded connections for medium.
Auxiliary connections with plugs on inlet and outlet side, metalic seal closed off.
Flat **non-profiled** valve plug. Valve spindle is guided by a graphite bearing in the valve body and a Teflon bearing in the spring casing.
Reset spring outside the medium, accommodated in a casing which is rigidly connected to the valve body, sitting on four spacers.
Actuator is fitted to the spring casing by means of four screws, no seal.

Materials

	VLG10	VLG15	VLF...
Valve body	die-cast aluminium	≤ 2" die-cast alum. 3" cast iron	...45: GG20 cast iron ...60: GGG40 nodular cast iron
Cover of valve body	same as valve body	same as valve body	same as valve body
Plug for test points	galvanised steel	galvanised steel	galvanised steel
Seal for plug	NBR-caoutchouc	NBR-caoutchouc	NBR-caoutchouc
Valve plug	die-cast aluminium	stainless steel	stainless steel
Valve seal	NBR-caoutchouc	metal-to-metal	metal-to-metal
Strainer	stainless steel wire	–	–
Valve spindle	stainless steel	stainless steel	stainless steel
Spindle seal	O-ring made of Nitrile caoutchouc with porous bearing	graphite bearing	graphite bearing
Spindle bushing	brass	stainless steel	stainless steel
Screws	galvanised steel	galvanised steel	galvanised steel
Reset spring	coated spring steel	galvanised spring steel	galvanised spring steel
Spring casing	–	aluminium sand-casting	aluminium sand-casting
Spacers	–	stainless steel	stainless steel

Ordering

When ordering, please give name and type reference.
For example: **Valve for hot air, 450°C max. DN80**: **VLF45.804**.
The valves are supplied with no seals and no counter-flanges for connection of the medium.
Actuators are to be ordered separately. Valves and actuators are always supplied separately.

Commissioning and Mounting Guide

Arrow on the valve body indicates the recommended direction of flow.
Spindle retracts: Valve opens
Spindle extends: Valve closes

Mounting position:
The valve body may be mounted in any position, but the permissible mounting positions of the respective actuators must be observed.
For details, refer to the relevant Data Sheets.

Application Guide

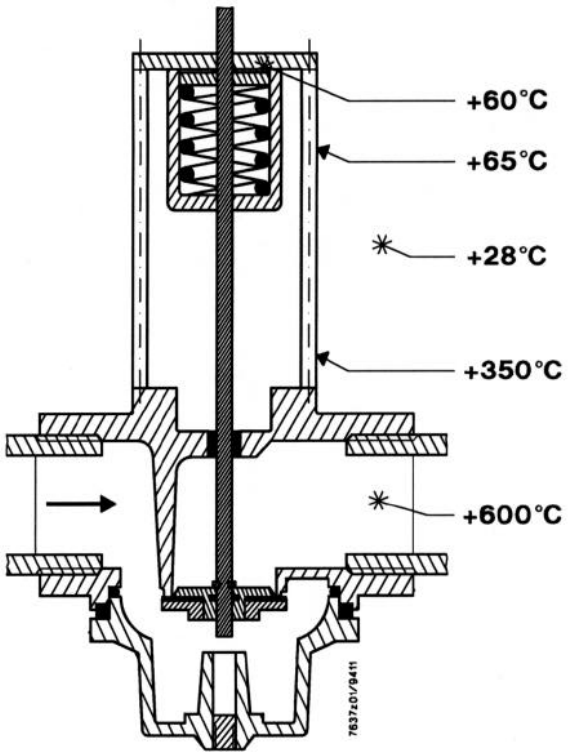
When using media ≥ +80°C

The spacers between the valve body and the spring casing act as heat dissipators and must therefore not be insulated.
If necessary, a mesh or some other protective device should be fitted to prevent burns.
To ensure cooling, the valve body must not be insulated. The actuator must be protected against temperature rises due, for instance, to radiation so that the maximum permissible ambient temperatures will not be exceeded.

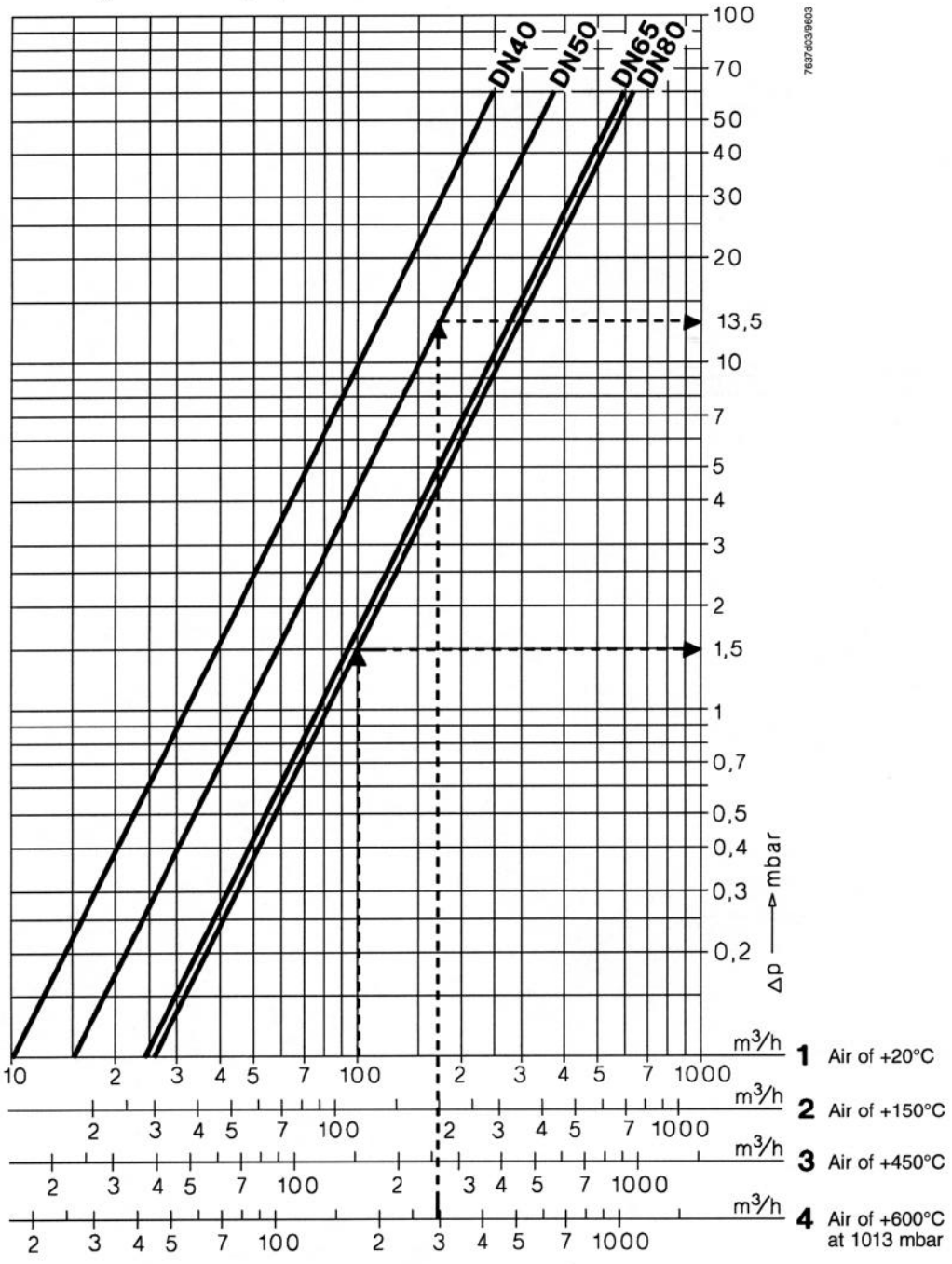
In the case of

- medium temperatures of +600°C
- ambient temperatures of +28°C
- the valve body
  - not being insulated
  - in vertical position

the following temperatures can be expected:



Flow diagram for fully opened valves



Valve selection

1. For hot air temperatures of +150°C, +450°C and +600°C

1.1 Ascertain the hot air volume V̇H

that is required to supply the burner with the same amount of oxygen that would be needed with air of +20°C:

$$\dot{V}H = FH \cdot \dot{V}20°C \qquad \text{with} \qquad FH = \frac{273 + TH}{293}$$

V̇H	(m^3/h)	Combustion volume at the appropriate hot air temperature
V̇20°C	(m^3/h)	Combustion volume at +20°C
TH	(°C)	Hot air temperature
FH	(-)	Factor depending on hot air temperature TH

for TH	is	FH
+150°C		1.5
+450°C		2.5
+600°C		3.0

1.2 Determine pressure drop Δp

with the help of the flow diagram, based on the V̇H from the relevant hot air volume scale.

Example

Required air volume at +20°C air temperature	100 m^3/h
Corresponding air volume V̇H at **+600°C** air temperature: 3.0 x 100 m^3/h	300 m^3/h
From the flow diagram above, using the scale «Air of +600°C»: Δp for a DN 50 valve:	13.5 mbar

2. For other hot air temperatures

Using the flow diagram above, determine the pressure drop Δp20°C of the air volume at +20°C

Using the following formula, calculate the pressure drop ΔpH of the air volume at +20°C after it has been heated up to the hot air temperature.

Formula:

$$\Delta pH = \Delta p20°C \cdot \frac{273 + TH}{293}$$

ΔpH	(mbar)	Pressure drop at hot air temperature
Δp20°C	(mbar)	Pressure drop at +20°C, using the scale «Air of +20°C» of the flow diagram above
TH	(°C)	Hot air temperature

Example:

Valve DN 80, volumetric flow at +20°C = 100 m^3/h, pressure drop at +300°C with the same mass flow as at +20°C?

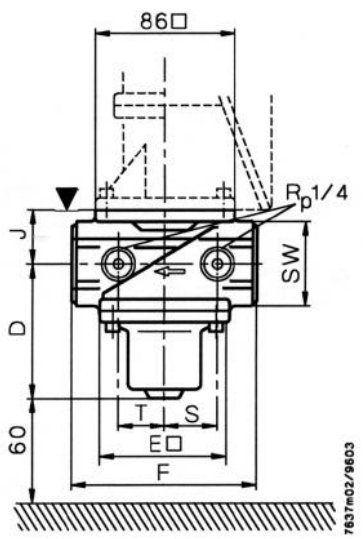
Solution:

$$\Delta pH = 1.5 \text{ mbar} \cdot \frac{273 + 300°C}{293} = \textbf{2.9 mbar}$$

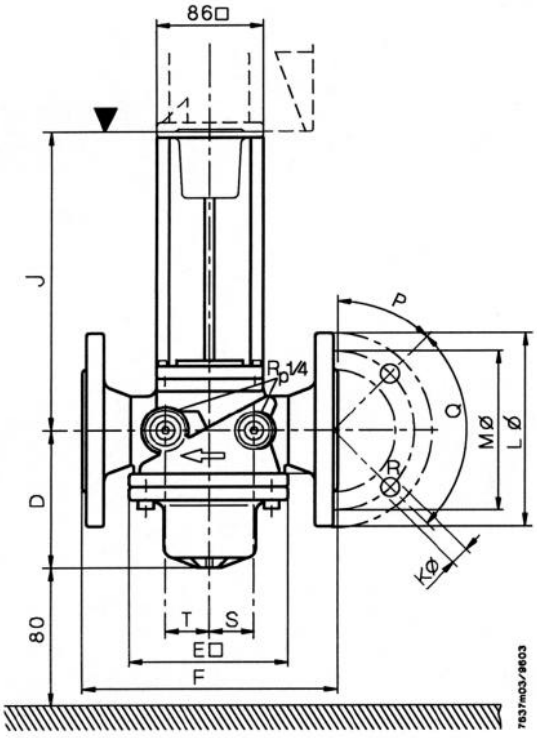
Dimensions

Dimensions in **mm**

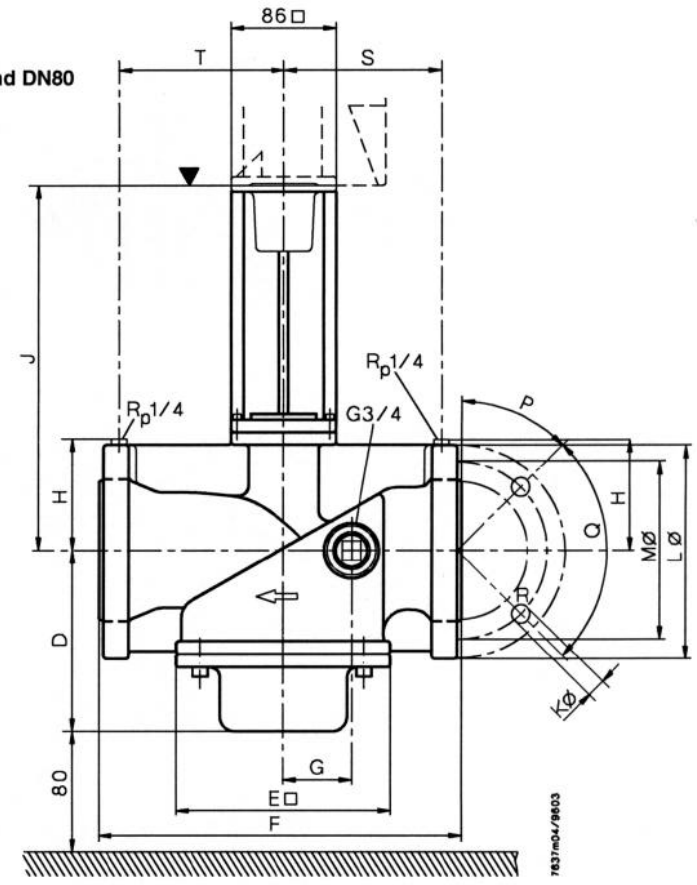
VLG...



VLF DN40 and DN50



VLF DN65 and DN80



Dimensions **not** valid for VLF60,

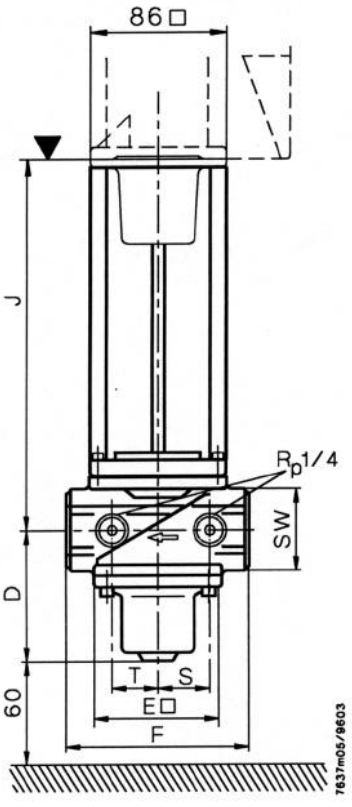
available on demand

▼ Mounting surface actuator SKP/SKL or AGA60 adapter flange

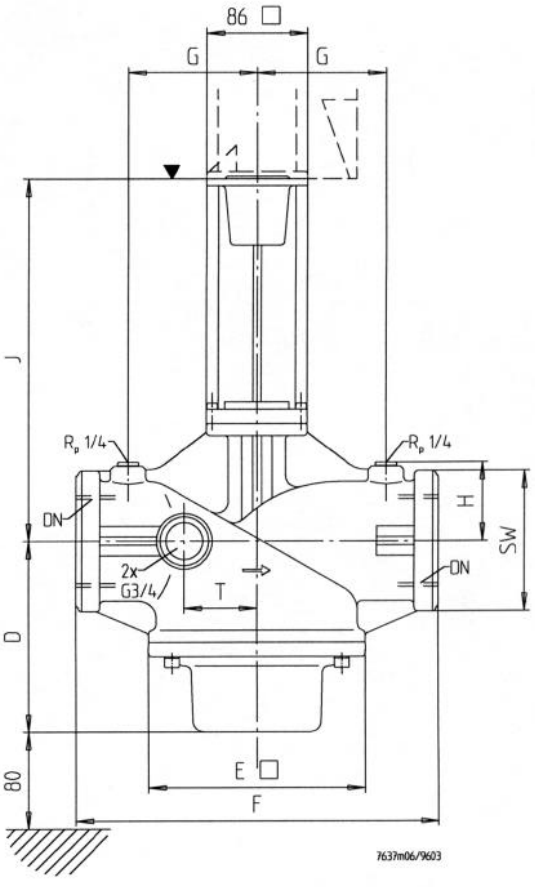
R Number of holes in the flange

Standards for flange and threads, see «Summary of Types»

VLG15 / 2"



VLG15 / 3"



Type	DN	D	E	F	G	H	J	KØ	LØ	MØ	P	Q	SW	R	S	T	kg
VLF...	40	102	126	200	–	–	244	19	150	110	45°	90°	–	4	36	36	6
	50	107	126	230	–	–	253	19	165	125	45°	90°	--	4	42	42	7,5
	65	163	185	290	62	95	295	19	185	145	45°	90°	–	4	108	148	20,5
	80	163	185	310	62	102	303	19	200	160	22,5°	45°	–	8	118	158	22
VLG10	40 ($1^1/_2$")	102	126	150	–	–	41	–	–	–	–	–	60	–	34	34	1,4
	50 (2")	107	126	170	–	–	50	–	–	–	–	–	75	–	34	34	2,0
VLG15	50 (2")	107	126	170	–	–	130	–	–	–	–	–	75	–	34	34	3,5
	80 (3")	163	185	310	110	68	180	–	–	–	–	–	120	–	–	62	15

DN nominal size

SW width across flats

Landis & Gyr Deutschland Produktion GmbH, Berliner Ring 23, D-76437 RASTATT
Landis & Gyr Building Control (UK) Ltd., Hortonwood 30, TELFORD GB-SHROPSHIRE TF1 4ET
Landis & Gyr Building Control (Australia), 15 Nyadale Drive, AUS-SCORESBY, Vic. 3179
Landis & Gyr Intersystem (Japan) Corporation, 4-3-1 Tsuchihashi, Miyamaeku, Japan-KAWASAKISHI 216