

# Motorised butterfly valve for air FCV...

Nominal diameter  
DN 40 - DN 200

**DUNGS**<sup>®</sup>  
Combustion Controls

## MOTORISED BUTTERFLY VALVE

## AIR

Manufacturer / owner of the EC  
type-examination certificate

Schimpf Antriebstechnik  
Waldenbuch / Germany



### Technical description

The DUNGS motorised butterfly valve FCV... is a control element without zero shut-off according to EN 13611.

The intermediate flange design allows space-saving installation upstream of the burner on pressure regulators and other actuators.

### Application

The DUNGS motorised butterfly valve FCV... is used to regulate the air supply to air-consumption devices. The motorised butterfly valve is suitable for air up to 100 °C. Only non-flammable, inert media are permitted.

### Certification

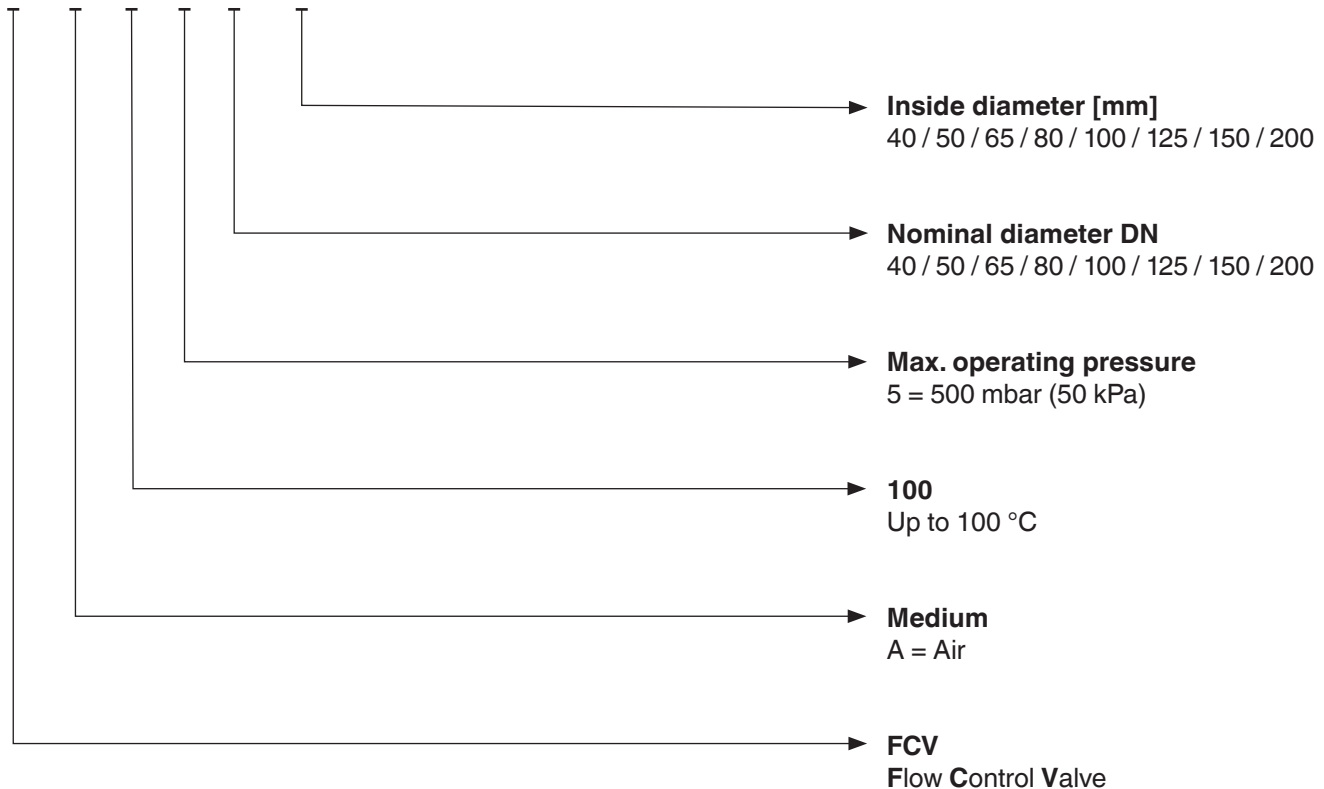
EU type-examination certificate as per EU pressure equipment directive.

# Motorised butterfly valve for air FCV...

Technical data	
Nominal diameters Flange	DN 40 - DN 200 EN 1092-1
Max. operating pressure	500 mbar (50 kPa)
Differential pressure	≤ DN 100: 500 mbar ≥ DN 125: max. 250 mbar
Medium	Luft / Air
Ambient temperature	-20 °C to +70 °C
Medium temperature	-20 °C to +100 °C
Materials of the gas-carrying parts	Housing: aluminium Shaft: steel Valve disk: steel Seals: NBR
Installation position	Vertically upright to lying horizontally
Drive adoption	External square 9 x 9 mm More on request

## Type code FCV

### FCV-A 100 XYYY/ZZ



For example: "FCV-A 100 5065/40"

## Motorised butterfly valve for air FCV...

### Function

The motorised butterfly valve FCV is used to adjust the air supply volume to air-consumption devices.


The valve is an automatic actuator operated with auxiliary energy. The corresponding electromechanical actuator determines the position of the valve. The part-load and full-load setting of the valve is determined by adjusting the corresponding switching cams of the actuator. The actuating time is determined by the actuator drive. If the operating voltage (auxiliary energy) is interrupted, the actuator remains in its current position.


For higher control accuracy, control


valves with reduced nominal diameter (reduced by one or two nominal diameters) can be used. This means that reducing adapters can be dispensed with.

The desired volume flow is set via the valve position with an opening angle between 0° and 90°.

The air volume control valve has a smooth-running, knocking valve disc.

 **Avoid direct contact between the motorised butterfly valve and dried masonry, concrete walls or floors!**

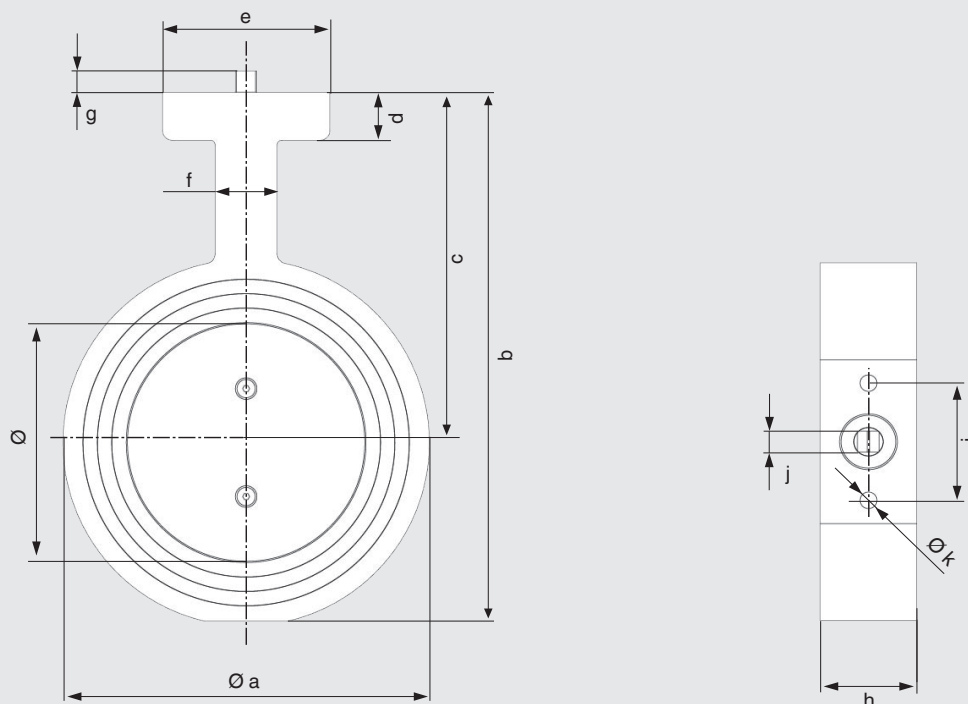
 **Only set the nominal pressure on the pressure regulator. Any output-related restriction should only be performed using the motorised butterfly valve.**

 **Check for leaks and function after installation!**

Type	Ordering No.	Nominal diameter	Inside diameter [mm]	Gewicht [kg]	Max. operating pressure	Differential pressure		
FCV-A 100 5040/25	293942	DN 40	25	1,00	500 mbar	500 mbar		
FCV-A 100 5040/32	293943		32	0,90				
FCV-A 100 5040/40	293944		40	0,85				
FCV-A 100 5050/32	293947	DN 50	32	1,10				
FCV-A 100 5050/40	293948		40	1,05				
FCV-A 100 5050/50	293949		50	1,00				
FCV-A 100 5065/40	293950	DN 65	40	1,45				
FCV-A 100 5065/50	293951		50	1,40				
FCV-A 100 5065/65	293952		65	1,25				
FCV-A 100 5080/50	293953	DN 80	50	1,70			500 mbar	250 mbar
FCV-A 100 5080/65	293954		65	1,60				
FCV-A 100 5080/80	293333		80	1,50				
FCV-A 100 5100/65	293955	DN 100	65	2,00				
FCV-A 100 5100/80	293956		80	1,90				
FCV-A 100 5100/100	293957		100	1,80				
FCV-A 100 5125/80	293958	DN 125	80	2,75				
FCV-A 100 5125/100	293959		100	2,60				
FCV-A 100 5125/125	293960		125	2,30				
FCV-A 100 5150/100	293961	DN 150	100	3,40				
FCV-A 100 5150/125	295962		125	3,00				
FCV-A 100 5150/150	293963		150	2,75				
FCV-A 100 5200/125	293964	DN 200	125	6,70				
FCV-A 100 5200/150	293965		150	6,20				
FCV-A 100 5200/200	293966		200	4,40				

# Motorised butterfly valve for air FCV...

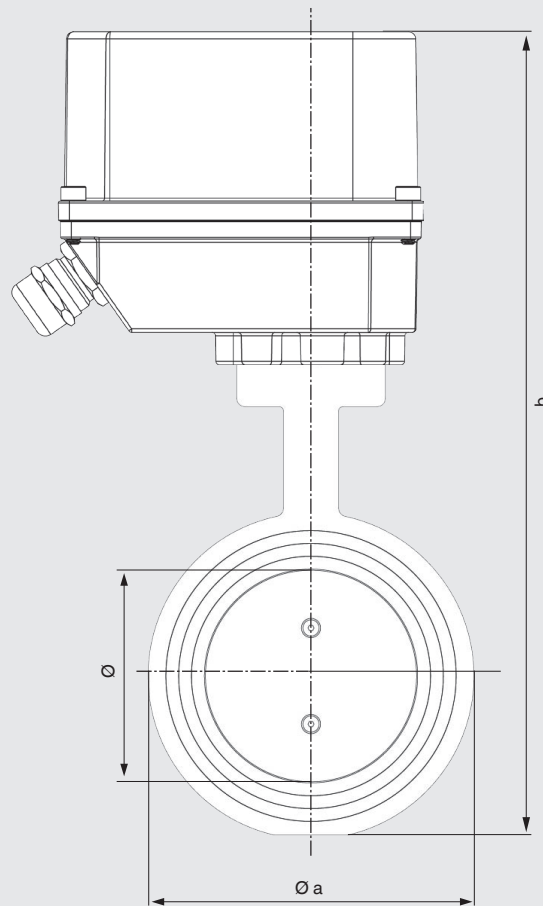
Dimensions [mm]



Type	Nom- inal diame- ter	$\varnothing$ Inside [mm]	Dimensions [mm]										
			$\varnothing a$	$b$	$c$	$d$	$e$	$f$	$g$	$h$	$i$	$j$	$\varnothing k$
FCV-A 5040	DN 40	40/32/25	87	155.0	113.5	20	70	26	9	40	50	9	7
FCV-A 5050	DN 50	50/40/32	97	165.0	118.5	20	70	26	9	40	50	9	7
FCV-A5065	DN 65	65/50/40	117	182.5	126.0	20	70	26	9	40	50	9	7
FCV-A 5080	DN 80	80/65/80	133	200.5	136.0	20	70	26	9	40	50	9	7
FCV-A 5100	DN 100	100/80/65	153	220.5	146.0	20	70	26	9	40	50	9	7
FCV-A 5125	DN 125	125/100/80	183	248.0	158.5	20	70	26	9	40	50	9	7
FCV-A 5150	DN 150	150/125/100	208	273.0	171.0	20	70	26	9	40	50	9	7
FCV-A 5200	DN 200	200/150/125	263	325.5	196.0	20	70	26	11	40	50	11	7

# Motorised butterfly valve for air FCV...

Dimensions [mm]



Type	Nom- inal diame- ter	Ø Inside [mm]	Ø a Outer [mm]	FCD A 00-15	FCD A 01-15
				b = Total overall height [mm]	
FCV-A 5040	DN 40	40/32/25	87	277.0	297.0
FCV-A 5050	DN 50	50/40/32	97	287.0	307.0
FCV-A 5065	DN 65	65/50/40	117	304.5	324.5
FCV-A 5080	DN 80	80/65/80	133	322.5	342.5
FCV-A 5100	DN 100	100/80/65	153	342.5	362.5
FCV-A 5125	DN 125	125/100/80	183	370.0	390.0
FCV-A 5150	DN 150	150/125/100	208	395.0	415.0
FCV-A 5200	DN 200	200/150/125	263	447.5	467.5

Please note: 2 assembly screws and 4 centring aids are included in the scope of supply.

# Motorised butterfly valve for air FCV...

## K<sub>v</sub>-values of the valves with preferred throat diameter

Valve position	FCV-A 5040		FCV-A 5050		FCV-A 5065		FCV-A 5080		FCV-A 5100		FCV-A 5125		FCV-A 5150		FCV-A 5200	
	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°
Inside Ø																
DN 25	0.1	16.7														
DN 32	0.1	42.5	0.1	33.9												
DN 40	0.2	75.2	0.2	66.4	0.2	58.6										
DN 50			0.3	155.0	0.2	109.9	0.2	97.0								
DN 65					0.5	305.0	0.4	203.5	0.3	170.6						
DN 80							0.8	491.1	0.5	331.0	0.4	263.2				
DN 100									1.1	795.7	0.8	553.7	0.6	416.2		
DN 125											1.5	1267.0	1.1	917.0	0.7	655.0
DN 150													1.8	1839.0	1.5	1374.5
DN 200															2.5	3285.0

### Device selection

The following values must be known for the dimensioning of the FCV:

1. Maximum volume flow  $V_{max}$
2. Pressure loss  $\Delta p$  at maximum volume flow
3. Minimum volume flow  $V_{min}$
4. Differential pressure in the valve closed position ( $= p_e$ )

The valve diameter can be determined either mathematically via the  $K_v$  value or via the flow diagrams 1, 2 and 3.

Check whether the required minimum volume flow is reached when the valve is positioned a 0°.

If the calculated or measured value is below the required minimum volume flow, the valve can be used.

**If the volume flows are small, the pressure loss of upstream devices**

**will fall. This increases the  $\Delta p$  available to the valve.**

**To obtain an optimum control response, always choose the valve with the largest pressure loss ( $\Delta p > 10$  mbar).**

### K<sub>v</sub>-values for motorised butterfly valve FCV

The motorised butterfly valve FCV is limited by the following parameters:

#### Max. operating pressure

500 mbar (50 kPa)

#### Differential pressure

≤ DN 100: 500 mbar (50 kPa)

≥ DN 125: max. 250 mbar (25 kPa)

When the valve is used in subcritical flow states, the following applies:

$V_n$  [m<sup>3</sup> / h]  
volume flow, standard state  
 $\Delta p$  [bar]  
pressure drop across FCV  
 $p_2$  [bar]  
absolute pressure downstream of FCV  
 $\rho_n$  [kg / m<sup>3</sup>]  
standard gas density  
 $T_1$  [K]  
absolute gas temperature upstream of FCV

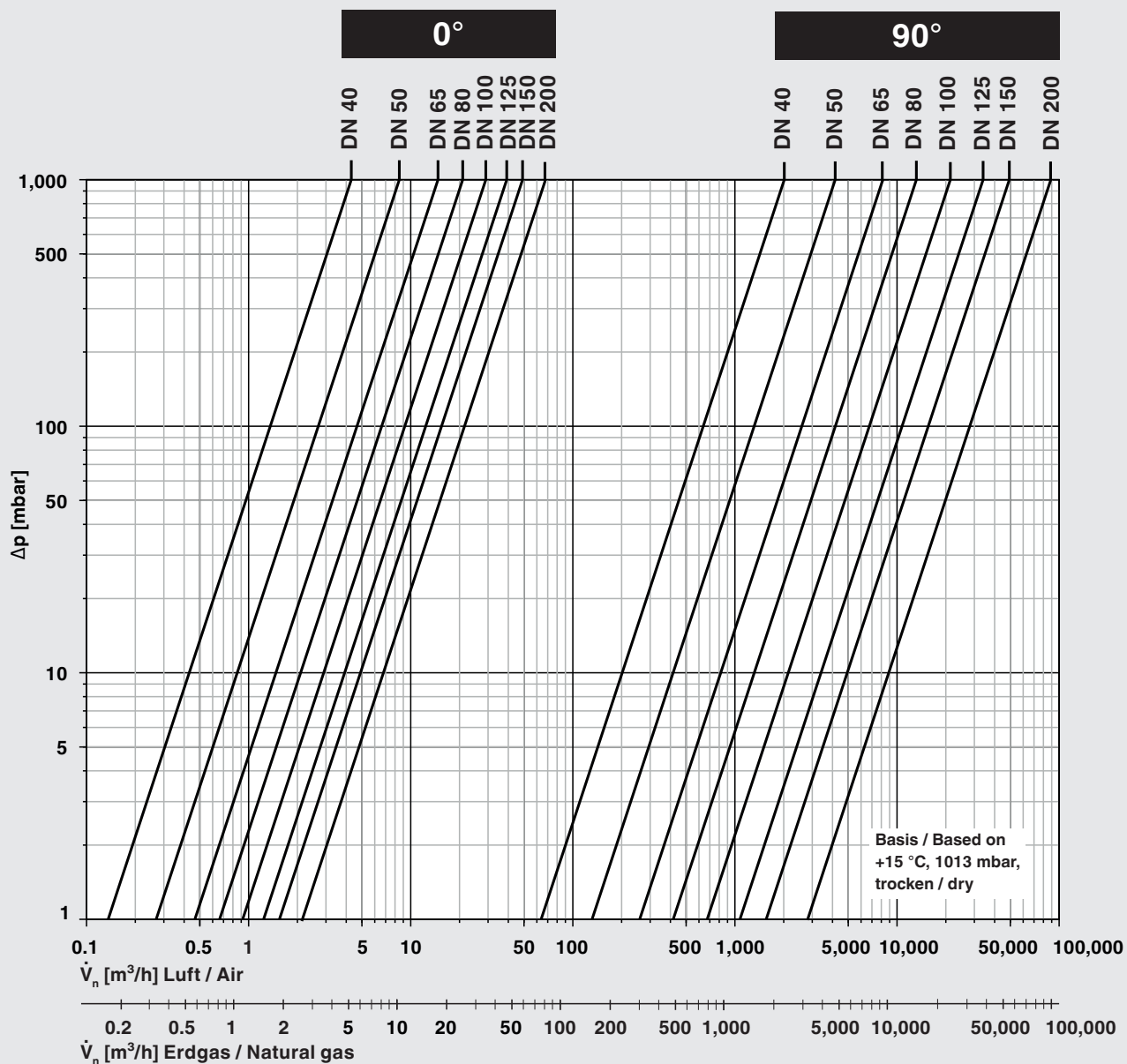
$$V_n = 514 \cdot K_v \cdot \sqrt{\frac{\Delta p \cdot p_2}{\rho_n \cdot T_1}}$$

# Motorised butterfly valve for air FCV...

## Flow diagram 1



Inside diameter corresponds with the nominal diameter, no zero shut-off

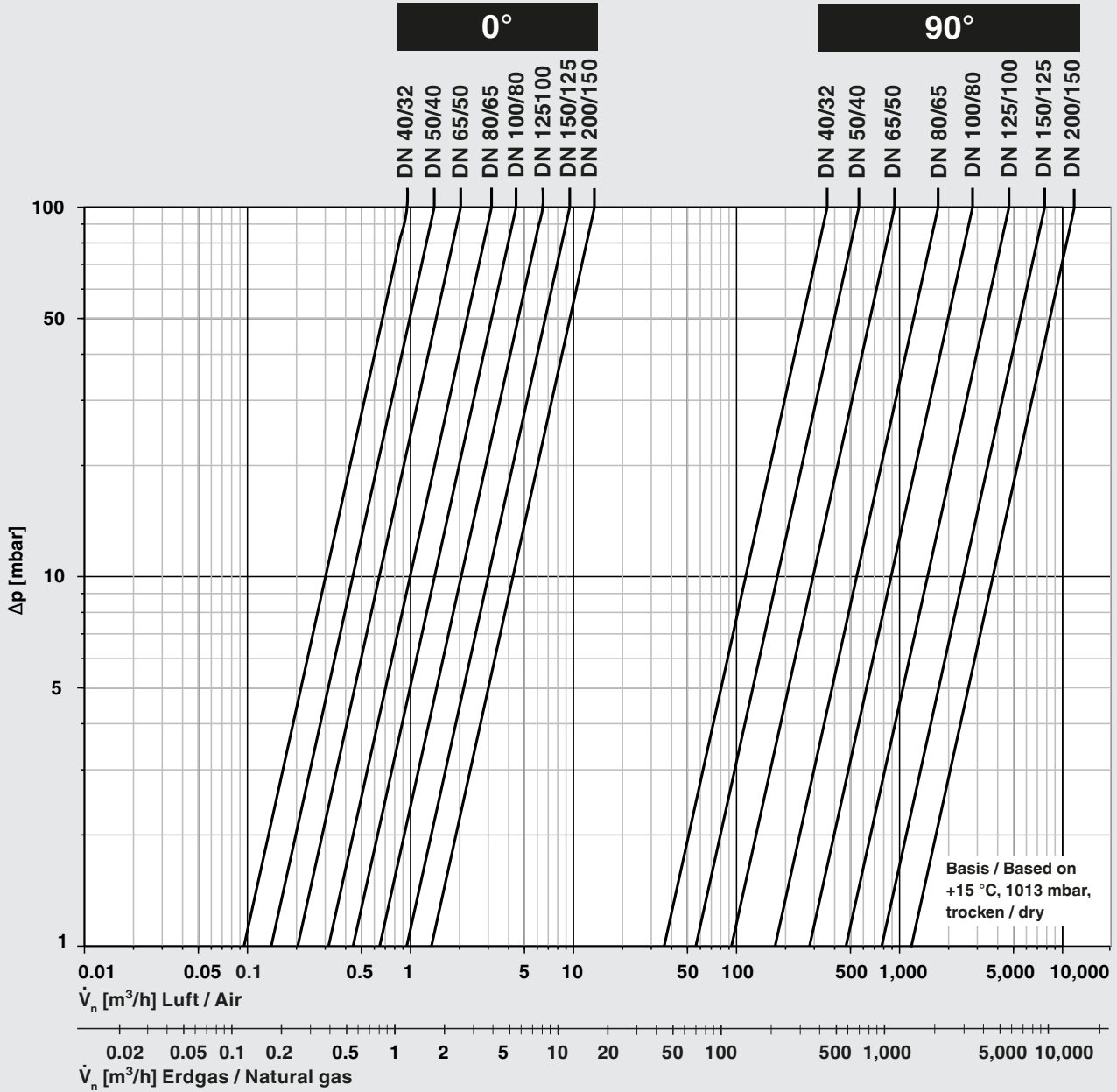


# Motorised butterfly valve for air FCV...

## Flow diagram 2



1-Fold reduced nominal diameter, no zero shut-off



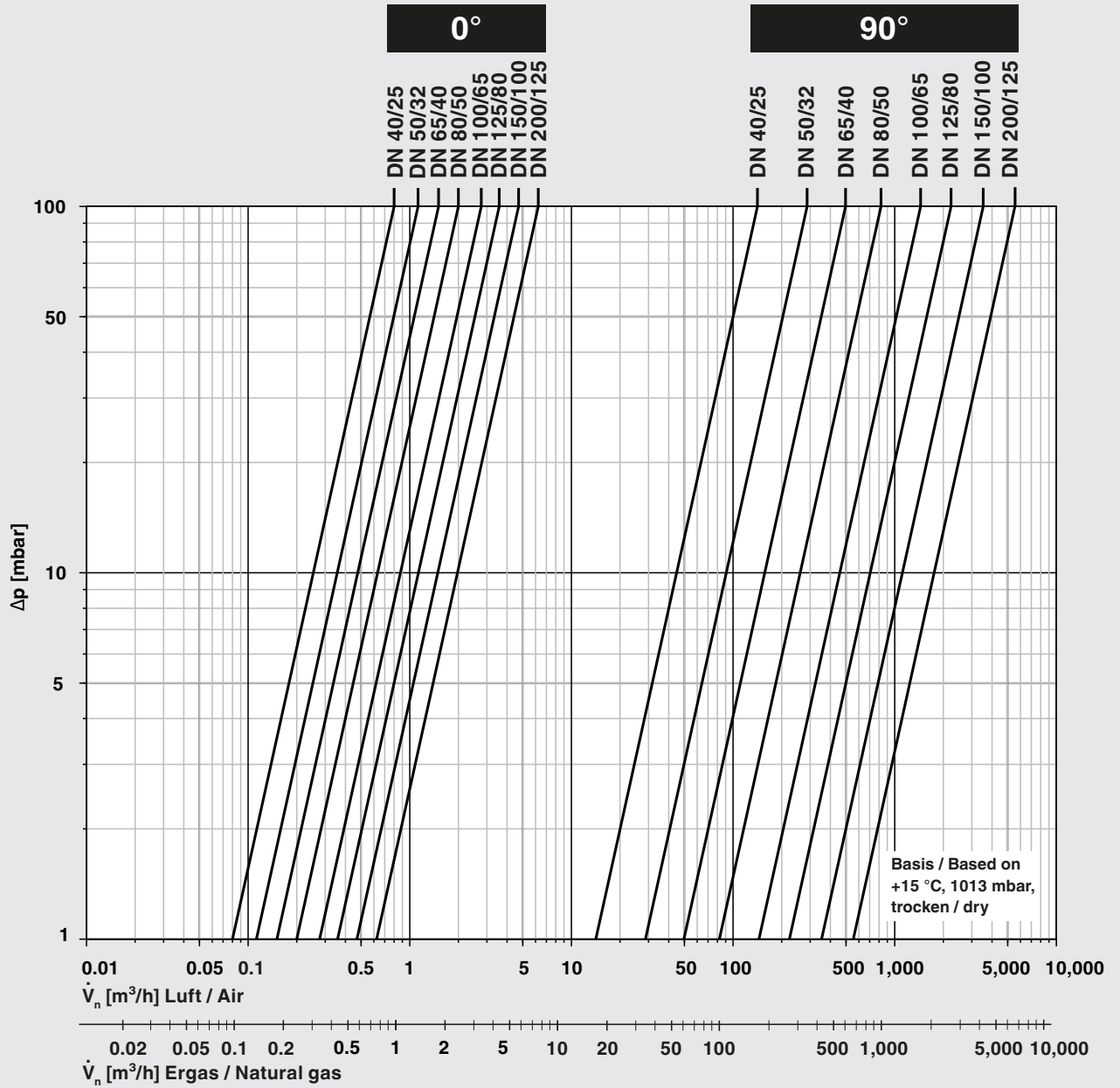


# Motorised butterfly valve for air FCV...

## Flow diagram 3



2-Fold reduced nominal diameter, no zero shut-off



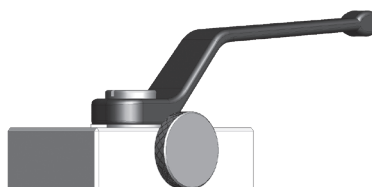
# Motorised butterfly valve for air FCV...

## Recommended combination valve – actuator drive



Type	Ordering No.	Type	AC	DC
FCV-A 5040 / 25	293942	FCD A 00-15 xx	293334	293911
FCV-A 5040 / 32	293943			
FCV-A 5040 / 40	293944			
FCV-A 5050 / 32	293947			
FCV-A 5050 / 40	293948			
FCV-A 5050 / 50	293949			
FCV-A 5065 / 40	293950			
FCV-A 5065 / 50	293951			
FCV-A 5065 / 65	293952			
FCV-A 5080 / 50	293953			
FCV-A 5080 / 65	293954			
FCV-A 5080 / 80	293333			
FCV-A 5100 / 65	293955	FCD A 01-15 xx	293916	293917
FCV-A 5100 / 80	293956			
FCV-A 5100 / 100	293957			
FCV-A 5125 / 80	293958			
FCV-A 5125 / 100	293959			
FCV-A 5125 / 125	293960			
FCV-A 5150 / 100	293961			
FCV-A 5150 / 125	295962			
FCV-A 5150 / 150	293963			
FCV-A 5200 / 125	293964			
FCV-A 5200 / 150	293965			
FCV-A 5200 / 200	293966			

Replacement parts / Accessories	Ordering No.
Handle FCV	297283



# Motorised butterfly valve for air FCV...



# Motorised butterfly valve for air FCV...



**Technical Information based on:**

**Revision:**

Product information

Luft: BA\_SVA\_SVH\_SVHT\_20220329

## Head Offices and Factory

Karl Dungs GmbH & Co. KG • Karl-Dungs-Platz 1 • D-73660 Urbach, Germany

Tel.: +49 7181-804-0 • Fax +49 7181-804-166 • e-mail: [info@dungs.com](mailto:info@dungs.com) • Internet [www.dungs.com](http://www.dungs.com)