Air dampers

Type KB

TROX® TECHNIK

Description

Manual

With actuator

Description

KB dampers are primarily used in ventilation systems for volume flow and pressure control. KB damper is available for rectangular and circular ventilation ducts. The damper can be equipped with a manual control mechanism, a return spring actuator, a two-position actuator, a modulating actuator, etc. In addition, dampers with parallel or opposed blade operation can be manufactured. There are three types of blades: flat with a rigid seal (C1), profiled with a rigid seal (C2), profiled with a silicone seal (C3). Seals C1 and C2 meet the requirements of UL class III, silicone seal C3 meets the requirements of UL class II. Damper housings and sealing materials withstand a temperature of 280 ° C for 1 hour.

For circular duct

KB damper is made of galvanized steel

- The frame and damper blades are made of galvanized sheet steel with a thickness of 1.2 - 2.0 m, which corresponds to the BS2989 Z2 G275M;

- The bearing material is brass, withstands temperatures up to 300 °C;

- The blade is connected by a shaft with a diameter of 12 mm made of carbon galvanized steel;

- Side sealing plate is used to reduce air leaks;

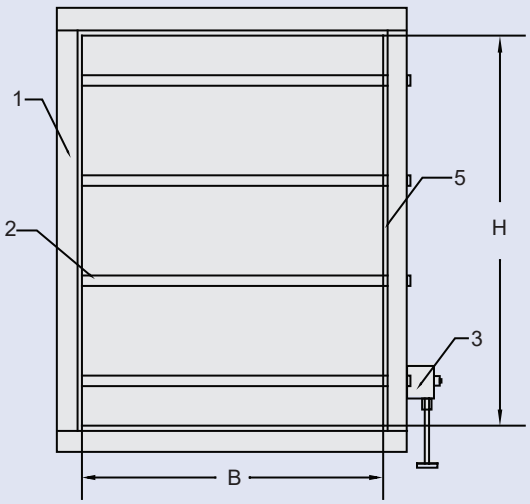
- There are two types of blades rotation: parallel and counter;

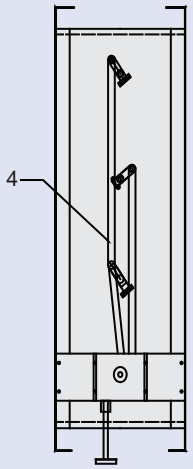
- There are three types of blades: flat with a rigid seal (C 1), profiled with a rigid seal (C 2), profiled with a silicone seal (C3). Silica gel withstands a temperature of 280 ° C for 1 hour;
- Minimum temperature air in the duct is -36 ° C
- equipped with a manual adjustment mechanism, the use of electric actuators with a return spring, modulating, etc.;
- the length of the damper is 210 mm.

KB- E1 (E1L, E2, E2L) is made of stainless steel

- The frame and blades are made of stainless steel with a thickness of 1.2 - 2.0 mm. (E1 - 304 steel; E1L - 304L steel; E2 - 316 steel; E2L - 316L steel);
- The damper bearing is made of the corresponding stainless steel;
- The shaft and connecting rod are also made of the corresponding stainless steel;
- The sealing plate is made of 301 steel;
- Accessories, e.g. screws, made of 304 steel;
- The other elements are the same as the KB damper made of galvanized steel.

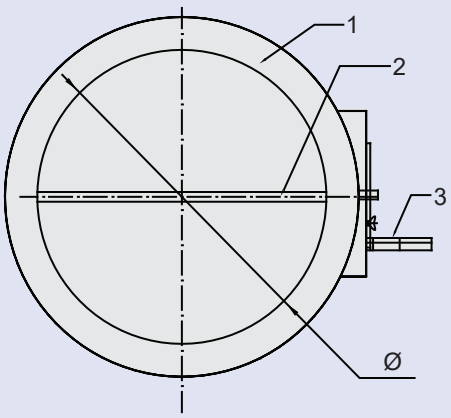
Damper with manual control (rectangular)

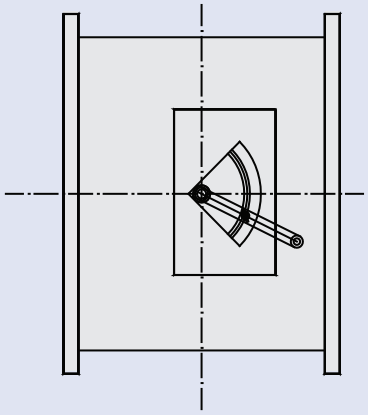




1 case
2 blade
3 manual control accessory
4 traction
5 side seal

Damper with manual control (circular)





1 case
2 blade
3 manual control accessory

Standard sizes

Sizes

Damper body length:L=210 mm;
Flange width selection:

B or H ≤ 1000 mm, W= 30 mm;
B or H ≤ 2000 mm, W = 40 mm;
B or H > 2000 mm, W = 50 mm;

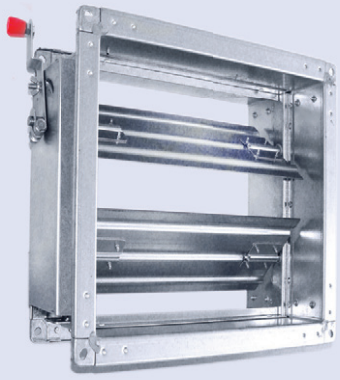
Damper lenght for circular ducts:

Ø≤500, L = 210 mm; Ø>500, the damper is manufactured with a rectangular body and is equipped with transitions of length L = 320 mm

Flange width for **KB** made of galvanized steel																		
Ø	**120**	**140**	**160**	**180**	**200**	**220**	**250**	**280**	**320**	**360**	**400**	**450**	**500**	**560**	**630**	**700**	**800**	**900**	**1000**
	20×4		25×4						25×3							30×4			

Note: Stainless steel flanges KB-E1 (E1L, E2, E2L) are made of the corresponding stainless steel with a thickness of 2 mm, the width corresponds to the valves made of galvanized steel.

KB /...../C1, C2, C3



C1: standard design with flat blades and rigid seal

C2: construction with profiled blades and rigid seal

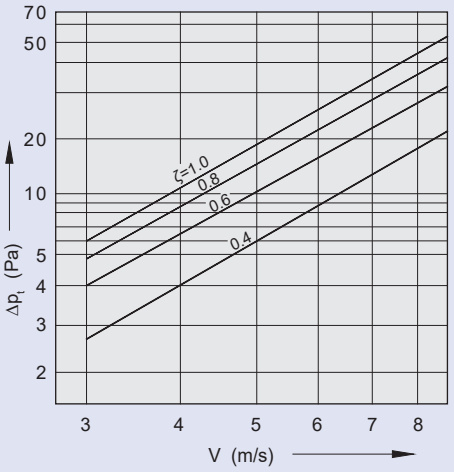
C3：construction with profiled dampers and silicone seal, which meets the requirements of resistance to high temperatures of 280 °C/ 1 h

Technical data

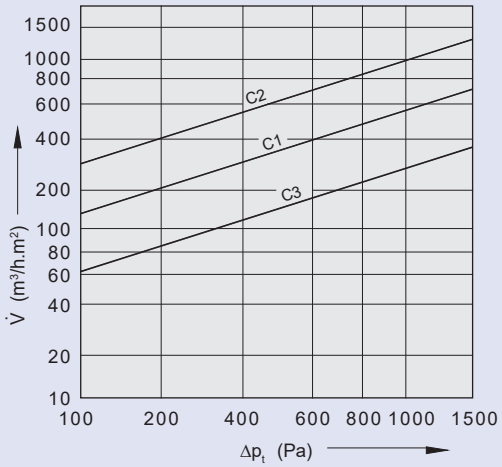
Correction factor ζ												
H	150	200	250	300	350	400	450	500	600	700	800	900-2000
ζ	1.03	0.95	0.9	0.85	0.8	0.76	0.73	0.7	0.65	0.6	0.55	0.5

B mm: width
H mm: heigh
A m^2: cross-sectional area
Δp_t Pa: pressure drop
ζ : correction factor
v m/s: air velocity
$\dot{V}$ $m^3/h.m^2$: air leakage

KB pressure drop at full opening



KB air leakage



Attachments	Name and functions	code
Manual adjustment	five-stage adjustment mechanism	Z01
	manual adjustment sector	Z02
	screw mechanism (turned right)	Z03
	screw mechanism (turned down)	Z04
With spring return (Belimo)	AC 220 V，torque 4 Nm, opening time: actuator 75 s / spring 20 s，IP54，LF230	Z05
	AC 220 V，torque 4 Nm，opening time: actuator 75 s / spring 20 s，IP54，LF230-S with auxiliary switch	Z06
	AC/DC 24 V, torque 4 Nm, opening time: actuator 75 s / spring 20 s，IP54，LF24	Z07
	AC/DC 24 V，torque 4 Nm, opening time: actuator 75 s / spring 20 s IP54A, LF24-S with auxiliary switch	Z08
	AC/DC 24 V,torque 4 Nm, opening time: actuator 150 s / spring 20 s, control signal: DC 2(0)...10 V, feedback signal: DC 2(0)...10 V, IP54, LF24-SR	Z09
	AC 220 V, torque 20 Nm，opening time: actuator 75 s/ spring 20 s，IP54，SFA	Z10
	AC 220 V，torque 20 Nm，opening time: actuator 75 s / spring 20 s，IP54，SFA-S2 with auxiliary switch	Z11
	AC/DC 24 V，torque 20 Nm，opening time: actuator 75 s /spring 20 s，IP54，SFA	Z12
	AC/DC 24 V，torque 20 Nm，opening time: actuator 75 s /spring 20 s，IP54，SFA-S2 with auxiliary switch	Z13
	AC/DC 24 V，torque 20 Nm，opening time: actuator 75 s / spring 20 s，control signal：DC 2(0)…10 V, feedback signal: DC 2(0)…10 V，IP54, SFA-SR	Z14
open / close 3-pos (Belimo)	AC 220 V，opening time: actuator 150 s，IP54， torque LM230A 5 Nm	Z15
	NM230A 10 Nm	Z16
	SM230A 20 Nm	Z17
	GM230A 40 Nm	Z18
	AC 220 V，opening time: actuator 150 s， auxiliary switch，IP54， torque LM230A-S 5 Nm	Z19
	NM230A-S 10 Nm	Z20
	SM230A-S 20 Nm	Z21
	AC/DC 24 V，opening time: actuator 150 s，IP54， torque LM24A 5 Nm	Z22
	NM24A 10 Nm	Z23
	SM24A 20 Nm	Z24
	GM24A 40 Nm	Z25
	AC/DC 24 V，opening time: actuator 150 s，auxiliary switch，IP54， torque LM24A-S 5 Nm	Z26
	NM24A-S 10 Nm	Z27
	SM24A-S 20 Nm	Z28

Accessories

Attachments	Name and functions		code
Modulating actuator (Belimo)	AC 220 V，opening time: actuator 150 s，control signal: DC 2(0)…10 V，feedback signal: DC 2(0)…10V, IP54，torque:	LM230ASR 5 Nm NM230ASR 10 Nm SM230ASR 20 Nm	Z29 Z30 Z31
	AC/DC 24 V，opening time: actuator 150 s，control signal: DC 2(0)…10 V，feedback signal: DC 2(0)…10 V, IP54，torque:	LM24A-SR 5 Nm NM24A-SR 10 Nm SM24A-SR 20 Nm GM24A-SR 40 Nm	Z32 Z33 Z34 Z35
Fast actuator (Belimo)	AC/DC 24 V，IP54，LM24AX：opening time: actuator 35 s，torque 5 Nm NM24AX：opening time 45 s，torque 10 Nm LMQ24A：opening time 2,5 s，torque 4 Nm NMQ24A：opening time 4 s，torque 8 Nm SMQ24A：opening time 7 s，torque 16 Nm		Z36 Z37 Z38 Z39 Z40
	AC 220 V，IP54，LM230AX：opening time 35 s，torque 5 Nm NM230AX：opening time 45 s，torque 10 Nm		Z41 Z42
	AC 220 V，with auxiliary switch, IP54，LM230AX-S: opening time 35 s, torque 5 Nm NM230AX-S：opening time 45 s，torque 10 Nm		Z43 Z44
	AC 220 V，opening time 20 s，IP54，	torque NMD230A 8 Nm SMD230A 16 Nm	Z45 Z46
	AC 220 V，opening time 20 s， with auxiliary switch，IP54，	torque NMD230A+S2A 8 Nm SMD230A+S2A 16 Nm	Z47 Z48
Modulating fast actuator (Belimo)	AC/DC 24 V，control signal: DC2(0)…10V, feedback signal：DC 2(0)... 10 V IP54)	LM24AX-SR: opening time 35 s, torque 5 Nm, NM24AX-SR: opening time 45 s, torque 10 Nm	Z49 Z50
	AC/DC 24 V，control signal:DC 2(0)…10 V，feedback signal:DC 2(0)…10 V,IP54,	LMQ24A-SR: opening time 2,5 s, torque 4 Nm MQ24A-SR: opening time 4 s, torque 8 Nm SMQ24A-SR: opening time 7 s, torque 16 Nm	Z51 Z52 Z53
	AC 220 V，control signal: DC 2(0)...10 V, feedback signal: DC 2(0)…10 V，IP54，	LM230AX-SR: opening time 35 s, torque 5 Nm NM230AX-SR: opening time 45 s,torque 10 Nm	Z54 Z55
Open / close (Siemens)	AC/DC 24 V，3P，opening time 150 s，	torque GDB131.1E 5 Nm GLB131.1E 10 Nm GBB131.1E 25 Nm GIB131.1E 35 Nm	Z60 Z61 Z62 Z63
	AC 220 V，3P，opening time 150 s，	torque GDB331.1E 5 Nm GLB331.1E 10 Nm GBB331.1E 25 Nm GIB331.1E 35 Nm	Z64 Z65 Z66 Z67
	AC 220 V，3P，opening time 150 s， with auxiliary switch，torque:	GDB336.1E 5 Nm GLB336.1E 10 Nm GBB336.1E 25 Nm GIB336.1E 35 Nm	Z68 Z69 Z70 Z71
Modulating actuator (Siemens)	AC/DC 24 V，opening time 150 s，control signal:DC 2(0)…10 V，feedback signal:DC 2(0)…10 V torque:	GDB161.1E 5 Nm GLB161.1E 10 Nm GBB161.1E 25 Nm GIB161.1E 35 Nm	Z72 Z73 Z74 Z75
	AC/DC 24 V，opening time 150 s，control signal:DC 2(0)…10 V，feedback signal:DC 2(0)…10 V，with auxiliary switch， torque:	GDB166.1E 5 Nm GLB166.1E 10 Nm GBB166.1E 25 Nm GIB166.1E 35 Nm	Z76 Z77 Z78 Z79
	Without actuator. With a stand for the actuator and a shaft		Z99

KB table of number and configurations of actuators (KB-A2,20NM)

W*H	H																												
	100	120	160	200	250	300	320	400	500	600	630	650	700	800	900	1000	1100	1200	1250	1300	1400	1500	1600	1700	1800	1900	2000
100	5NM	5NM	5NM	5NM																							
120	5NM	5NM	5NM	5NM																							
160	5NM	5NM	5NM	5NM	5NM	5NM	5NM																				
200	5NM	5NM	5NM	5NM	5NM	5NM	5NM	5NM																			
250	5NM	5NM	5NM	5NM	5NM	5NM	5NM	5NM	5NM																		
300	5NM	5NM	5NM	5NM	5NM	5NM	5NM	5NM	5NM	5NM																	
320	5NM	5NM	5NM	5NM	5NM	5NM	5NM	5NM	5NM	5NM	10NM																
400	5NM	5NM	5NM	5NM	5NM	5NM	5NM	5NM	5NM	5NM	10Nm	10NM	10NM	10NM													
500	5NM	5NM	5NM	5NM	5NM	5NM	5NM	5NM	5NM	5NM	10NM	10NM	10NM	10NM	10NM	10Nm	10NM	10NM	2*10NM	2*10NM	2*10NM	2*10NM	2*10NM	2*10NM	2*10NM	2*10NM	2*10NM
600		5NM	5NM	5NM	5NM	5NM	5NM	5NM	5NM	10NM	10NM	10NM	10NM	10NM	10NM	10Nm	10NM	20NM	2*10NM	2*10NM	2*10NM	2*10NM	2*10NM	2*10NM	2*10NM	2*10NM	2*10NM
630		5NM	5NM	5NM	5NM	5NM	5NM	5NM	5NM	10NM	10NM	10NM	10NM	10NM	10NM	10Nm	20NM	20NM	2*10NM	2*10NM	2*10NM	2*10NM	2*10NM	2*10NM	2*10NM	2*10NM	2*10NM
W 650		5NM	5NM	5NM	5NM	5NM	5NM	5NM	5NM	10NM	10NM	10NM	10NM	10NM	10NM	10Nm	20NM	20NM	2*10NM	2*10NM	2*10NM	2*10NM	2*10NM	2*10NM	2*10NM	2*10NM	2*10NM
700		5NM	5NM	5NM	5NM	5NM	5NM	5NM	10NM	10NM	10NM	10NM	10NM	10NM	10NM	20NM	20NM	20NM	2*10NM	2*10NM	2*10NM	2*10NM	2*10NM	2*10NM	2*10NM	2*10NM	2*20NM
800		5NM	5NM	5NM	5NM	5NM	5NM	5NM	10NM	10NM	10NM	10NM	10NM	10NM	20NM	20NM	20NM	20NM	2*10NM	2*10NM	2*10NM	2*10NM	2*10NM	2*20NM	2*20NM	2*20NM	2*20NM
900		5NM	5NM	5NM	5NM	5NM	5NM	5NM	10NM	10NM	10NM	10NM	10NM	10NM	20NM	20NM	20NM	20NM	2*10NM	2*10NM	2*10NM	2*10NM	2*10NM	2*20NM	2*20NM	2*20NM	2*20NM
1000			5NM	5NM	5NM	5NM	5NM	5NM	10NM	10NM	10NM	10NM	10NM	10NM	20NM	20NM	20NM	20NM	2*10NM	2*10NM	2*10NM	2*10NM	2*10NM	2*20NM	2*20NM	2*20NM	2*20NM
1100			5NM	5NM	10NM	10NM	10NM	10NM	10NM	10NM	20NM	20NM	20NM	20NM	20NM	20NM	2*10NM	2*10NM	2*20NM	2*20NM	2*20NM	2*20NM	2*20NM	2*20NM	2*20NM	2*20NM	2*20NM
1200				5NM	10NM	10NM	10NM	10NM	10NM	20NM	20NM	20NM	20NM	20NM	20NM	20NM	2*10NM	2*20NM	2*20NM	2*20NM	2*20NM	2*20NM	2*20NM	2*20NM	2*20NM	2*20NM	2*20NM
1250				5NM	10NM	10NM	10NM	10NM	10NM	20NM	20NM	20NM	20NM	20NM	20NM	20NM	2*20NM	2*20NM	2*20NM	2*20NM	2*20NM	2*20NM	2*20NM	2*20NM	2*20NM	2*20NM	2*20NM
1500					10NM	10NM	10NM	10NM	20NM	20NM	20NM	20NM	20NM	20NM	2*20NM	2*20NM	2*20NM	2*20NM	2*20NM	2*20NM	2*20NM	2*20NM	2*20NM	2*20NM	3*20NM	3*20NM	3*20NM
1600					10NM	10NM	10NM	10NM	20NM	20NM	20NM	20NM	20NM	20NM	2*20NM	2*20NM	2*20NM	2*20NM	2*20NM	2*20NM	2*20NM	2*20NM	2*20NM	3*20NM	3*20NM	3*20NM	3*20NM
1800						10NM	10NM	10NM	20NM	20NM	20NM	20NM	20NM	20NM	2*20NM	2*20NM	2*20NM	2*20NM	2*20NM	2*20NM	2*20NM	3*20NM	3*20NM	3*20NM	3*20NM	3*20NM	3*20NM
2000						10NM	10NM	10NM	20NM	20NM	20NM	20NM	20NM	20NM	2*20NM	2*20NM	2*20NM	2*20NM	2*20NM	2*20NM	3*20NM	3*20NM	3*20NM	3*20NM	3*20NM	3*20NM	3*20NM
2200						2*10NM	2*10NM	2*10NM	2*10NM	2*10NM	2*20NM	2*20NM	2*20NM	2*20NM	2*20NM	2*20NM	4*10NM	4*10NM	4*20NM	4*20NM	4*20NM	4*20NM	4*20NM	4*20NM	4*20NM	4*20NM	4*20NM
2500						2*10NM	2*10NM	2*10NM	2*10NM	2*20NM	2*20NM	2*20NM	2*20NM	2*20NM	2*20NM	2*20NM	4*20NM	4*20NM	4*20NM	4*20NM	4*20NM	4*20NM	4*20NM	4*20NM	4*20NM	4*20NM	4*20NM
2800						2*10NM	2*10NM	2*10NM	2*20NM	2*20NM	2*20NM	2*20NM	2*20NM	2*20NM	2*20NM	4*20NM	4*20NM	4*20NM	4*20NM	4*20NM	4*20NM	4*20NM	4*20NM	4*20NM	4*20NM	4*20NM	6*20NM
3000						2*10NM	2*10NM	2*10NM	2*20NM	2*20NM	2*20NM	2*20NM	2*20NM	2*20NM	4*20NM	4*20NM	4*20NM	4*20NM	4*20NM	4*20NM	4*20NM	4*20NM	4*20NM	4*20NM	6*20NM	6*20NM	6*20NM

Note: when the width **W<=2000** the actuators are arranged evenly on one side; with a width of **W>2000** the actuators are arranged evenly on both side.
The maximum torque for one actuator is **20 Nm**,max width **W=2000**,suitable for **KB-A2**

KB table of number and configurations of actuators (KB-A1,40NM)

W*H	H																										
	100	120	160	200	250	300	320	400	500	600	630	650	700	800	900	1000	1100	1200	1250	1300	1400	1500	1600	1700	1800	1900	2000
100	5NM	5NM	5NM	5NM																							
120	5NM	5NM	5NM	5NM																							
160	5NM	5NM	5NM	5NM	5NM	5NM	5NM																				
200	5NM	5NM	5NM	5NM	5NM	5NM	5NM	5NM																			
250	5NM	5NM	5NM	5NM	5NM	5NM	5NM	5NM	5NM																		
300	5NM	5NM	5NM	5NM	5NM	5NM	5NM	5NM	5NM	5NM																	
320	5NM	5NM	5NM	5NM	5NM	5NM	5NM	5NM	5NM	5NM	10NM																
400	5NM	5NM	5NM	5NM	5NM	5NM	5NM	5NM	5NM	5NM	10Nm	10NM	10NM	10NM													
500	5NM	5NM	5NM	5NM	5NM	5NM	5NM	5NM	5NM	5NM	10NM	10NM	10NM	10NM	10NM	10Nm	10NM	10NM	2*10NM	2*10NM	2*10NM	2*10NM	2*10NM	2*10NM	2*10NM	2*10NM	2*10NM
600		5NM	5NM	5NM	5NM	5NM	5NM	5NM	5NM	10NM	10NM	10NM	10NM	10NM	10NM	10Nm	10NM	20NM	2*10NM	2*10NM	2*10NM	2*10NM	2*10NM	2*10NM	2*10NM	2*10NM	2*10NM
630		5NM	5NM	5NM	5NM	5NM	5NM	5NM	5NM	10NM	10NM	10NM	10NM	10NM	10NM	10Nm	20NM	20NM	2*10NM	2*10NM	2*10NM	2*10NM	2*10NM	2*10NM	2*10NM	2*10NM	2*10NM
W 650		5NM	5NM	5NM	5NM	5NM	5NM	5NM	5NM	10NM	10NM	10NM	10NM	10NM	10NM	10Nm	20NM	20NM	2*10NM	2*10NM	2*10NM	2*10NM	2*10NM	2*10NM	2*10NM	2*10NM	2*10NM
700		5NM	5NM	5NM	5NM	5NM	5NM	5NM	10NM	10NM	10NM	10NM	10NM	10NM	10NM	20NM	20NM	20NM	2*10NM	2*10NM	2*10NM	2*10NM	2*10NM	2*10NM	2*10NM	2*10NM	2*20NM
800		5NM	5NM	5NM	5NM	5NM	5NM	5NM	10NM	10NM	10NM	10NM	10NM	10NM	20NM	20NM	20NM	20NM	2*10NM	2*10NM	2*10NM	2*10NM	2*10NM	2*20NM	2*20NM	2*20NM	2*20NM
900		5NM	5NM	5NM	5NM	5NM	5NM	5NM	10NM	10NM	10NM	10NM	10NM	10NM	20NM	20NM	20NM	20NM	2*10NM	2*10NM	2*10NM	2*10NM	2*10NM	2*20NM	2*20NM	2*20NM	2*20NM
1000			5NM	5NM	5NM	5NM	5NM	5NM	10NM	10NM	10NM	10NM	10NM	10NM	20NM	20NM	20NM	20NM	2*10NM	2*10NM	2*10NM	2*10NM	2*10NM	2*20NM	2*20NM	2*20NM	2*20NM
1100			5NM	5NM	10NM	10NM	10NM	10NM	10NM	10NM	20NM	20NM	20NM	20NM	20NM	20NM	40NM	40NM	40NM	40NM	40NM	40NM	40NM	2*20NM	2*20NM	2*20NM	2*20NM
1200				5NM	10NM	10NM	10NM	10NM	10NM	20NM	20NM	20NM	20NM	20NM	20NM	20NM	40NM	40NM	40NM	40NM	40NM	40NM	40NM	2*20NM	2*20NM	2*20NM	2*20NM
1250				5NM	10NM	10NM	10NM	10NM	10NM	20NM	20NM	20NM	20NM	20NM	20NM	20NM	40NM	40NM	40NM	40NM	40NM	40NM	40NM	2*20NM	2*20NM	2*20NM	2*20NM
1500					10NM	10NM	10NM	10NM	20NM	20NM	20NM	20NM	20NM	20NM	40NM	40NM	40NM	40NM	40NM	40NM	40NM	40NM	40NM	2*20NM	2*40NM	2*40NM	2*40NM
1600					10NM	10NM	10NM	10NM	20NM	20NM	20NM	20NM	20NM	20NM	40NM	40NM	40NM	40NM	40NM	40NM	40NM	40NM	40NM	2*40NM	2*40NM	2*40NM	2*40NM
1800						10NM	10NM	10NM	20NM	20NM	20NM	20NM	20NM	20NM	40NM	40NM	40NM	40NM	40NM	40NM	40NM	40NM	40NM	2*40NM	2*40NM	2*40NM	2*40NM
2000						10NM	10NM	10NM	20NM	20NM	20NM	20NM	20NM	20NM	40NM	40NM	40NM	40NM	40NM	40NM	40NM	40NM	40NM	2*40NM	2*40NM	2*40NM	2*40NM
2200						2*10NM	2*10NM	2*10NM	2*10NM	2*10NM	2*20NM	2*20NM	2*20NM	2*20NM	2*20NM	2*20NM	2*40NM	2*40NM	2*40NM	2*40NM	2*40NM	2*40NM	2*40NM	2*40NM	4*20NM	4*20NM	4*20NM	4*20NM
2500						2*10NM	2*10NM	2*10NM	2*10NM	2*20NM	2*20NM	2*20NM	2*20NM	2*20NM	2*20NM	2*20NM	2*40NM	2*40NM	2*40NM	2*40NM	2*40NM	2*40NM	2*40NM	4*20NM	4*20NM	4*20NM	4*20NM
2800						2*10NM	2*10NM	2*10NM	2*20NM	2*20NM	2*20NM	2*20NM	2*20NM	2*20NM	2*20NM	2*40NM	2*40NM	2*40NM	2*40NM	2*40NM	2*40NM	2*40NM	2*40NM	4*20NM	4*20NM	4*20NM	4*40NM
3000						2*10NM	2*10NM	2*10NM	2*20NM	2*20NM	2*20NM	2*20NM	2*20NM	2*20NM	2*40NM	2*40NM	2*40NM	2*40NM	2*40NM	2*40NM	2*40NM	2*40NM	2*40NM	4*20NM	4*40NM	4*40NM	4*40NM

Note: when the width **W<=2000** the actuators are arranged evenly on one side**;** with a width of **W>2000** the actuators are arranged evenly on both side**.** The maximum torque for one actuator is 4**0** Nm**,**max width **W=2000**,suitable for **KB-A**1