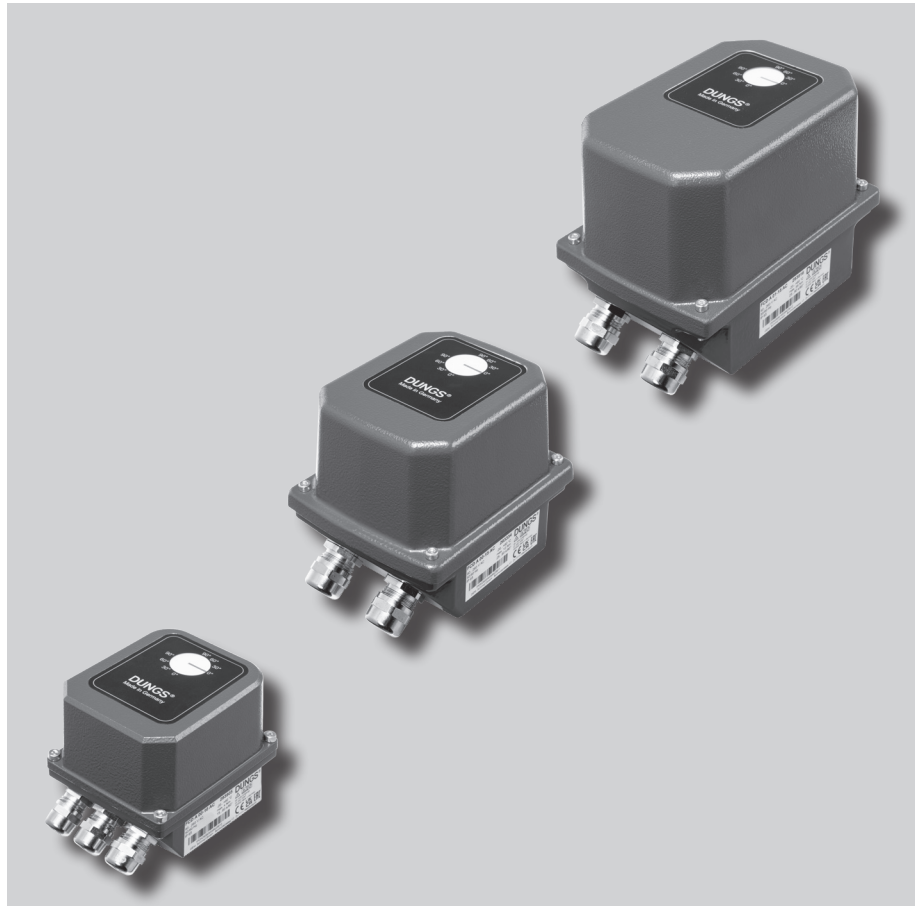


Actuators
FCD A 00-10 xx
FCD A 00-15 xx
FCD A 01-15 xx

DUNGS®
Combustion Controls

ACTUATORS



Technical description

The DUNGS Flow Control Drive actuators are programmable, electronic actuators with 2-point-/3-point step as well as analogue control. The three design sizes cover a torque range up to 35 Nm. Due to the robust die-cast housing with optical position indicator in the cover, the actuators achieve a high protection category. Together with the integrated heating, the actuators are also suitable for extreme ambient conditions.

Application

The Flow Control Drive actuators are used to control motor-driven control and throttle valves.

In combination with the FCV... flow control valves and FCVL flow control valves linear, the FCD actuators provide an ideal combination. Flow rates of air or gas can therefore be precisely controlled.

Certification

CE, UKCA

Direction of rotation actuators

FCD A 00-10 xx

FCD A 00-15 xx

FCD A 01-15 xx

DUNGS®
Combustion Controls



Product description

The DUNGS Flow Control Drive actuators FCD A xx-xx xx are suitable for precise control and adjustment of motor-driven control and throttle valves. In conjunction with an air or gas control valve (FCV G/FCV A) or a comparable actuator, flow rates can be precisely controlled:

- Three design sizes cover torques from 3 Nm to 35 Nm.
 - The integrated step motor in combination with the micro-controller control enables a high-precision control.
 - Device properties and parameters are set directly on the device.
 - Two-point operating mode (open/close) and two-point operating mode with additional intermediate position
 - Switchable between 3-point step and analogue control during operation
 - Analogue position feedback
 - Optical position indicator in the housing cover and electronic position feedback (0/4 - 20 mA or 0/2 - 10 V).
- End positions freely programmable for min. and max. position. End positions are signalled via potential-free relay SPDT contacts.
 - Potential-free relay SPDT contact for evaluation of operational readiness.
 - Depending on the design size, two (only FCD A 00-10 xx) or three additional position cam switches are available.
 - The contacts are wired to the connecting terminals potential-free.
 - The actuators have additional, diverse setting options and features.
 - Simple parametrisation / setting by rotary switch / button directly on the device: rotation time, direction of rotation, ramp times and hysteresis.
 - Robust aluminium housing, protection class IP 65 and integrated heating ensure smooth and continuous operation even under difficult conditions.

Actuators
FCD A 00-10 xx
FCD A 00-15 xx
FCD A 01-15 xx



Certification / Approvals			
2014/35/EU	Low Voltage Directive	Conformity with the requirements for Great Britain (UK).	Conformity with the requirements for the Eurasian Economic Union.
2014/30/EU	EMV directive		
2011/65/EU	RoHS		
DIN EN 16340: 2014-10 DIN EN 60730-1: 2021-06			

Technical data				
		FCD A 00-10	FCD A 00-15	FCD A 01-15
Max. torque (adjustable)	--	4 Nm	12 Nm	35 Nm
	S2	--	6 Nm	18 Nm
	S4	--	3 Nm	9 Nm
Rotation time (adjustable)	--	15 - 60 s / 90°	25 - 90 s / 90°	25 - 90 s / 90°
	S2	--	12 - 45 s / 90°	12 - 45 s / 90°
	S4	--	7,5 - 25 s / 90°	7,5 - 25 s / 90°
Resolution		1000 steps / 90°		
Max. rotation angle		110°		
AC Mains Voltage		90 - 260 VAC, 50/60 Hz		
DC Mains Voltage		18 - 30 VDC		
Power consumption		DC _{24V} : max. 4,8 W	DC _{24V} : max. 6 W	DC _{24V} : max. 11 W
		AC: max. 5 VA	AC: max. 7 VA	AC: max. 15 VA
Protection class		IP65		
Ambient temperature		-20 °C - 60 °C		
Weight		ca. 0,8 kg	ca. 1,6 kg	ca. 2,2 kg
Dimensions (BxHxT)		ca. 114 x 82 x 93 mm	ca. 135 x 108 x 122 mm	ca. 176 x 111 x 142 mm
Cable inlet		3 St. M16 x 1,5 mm Ø 5 - 9 mm	2 St. M20 x 1,5 mm Ø 9 - 13 mm	2 St. M20 x 1,5 mm Ø 9 - 13 mm

Actuators

FCD A 00-10 xx

FCD A 00-15 xx

FCD A 01-15 xx



Technical data			
	FCD A 00-10	FCD A 00-15	FCD A 01-15
Housing	Aluminiumguss		
Shaft connection	7 x 7 x 7,5 mm Internal square	9 x 9 x 9,5 mm Internal square	9 x 9 x 9,5 mm Internal square
Flange connection	F03, LK Ø 30, 4 x M5, LK Ø 50, 2 x M6	F03, F05, LK Ø 4 x M6	F07, LK Ø 50, 4 x M5, LK Ø 50, 4 x M6
Service life	500,000 cycles under full load, 2,000,000 cycles at 60 % load		
Programming / operation	• Operation and programming via switches and keyboard in the device • Control devices can be accessed when the housing is open		
2-Point-step control	• Open & close via potential-free inputs		
2-Point-step control with intermediate position	• Open & close via potential-free inputs • Intermediate position via an additional digital input		
3-Point-step control	• Open & close via potential-free inputs • Control release switches between 3-point step and analogue control • Adjustable start ramp		
Analogue operating mode	• Control release switches between 3-point step and analogue control up to 1,000 steps/90°: • adjustable step size • adjustable averaging for analogue input • adjustable safe position • adjustable ramp		
Analogue control	0/4 - 20 mA	Selectively 0/4 - 20 mA oder 0/2 - 10 V	
Position feedback	0/4 - 20 mA	Selectively 0/4 - 20 mA oder 0/2 - 10 V	
Min./max. end positions	• End positions freely programmable for min. and max. position on the device • End positions are signalled via relay outputs (SPDT)		
Free cam switch	• Two adjustable cam switches • NO or NC selectable via slide switch	• Two adjustable cam switches • Potential-free SPDT contacts	• Three adjustable cam switches • Potential-free SPDT contacts
Status message	• Relay output for reporting operational readiness • Potential-free SPDT contacts		

Actuators
FCD A 00-10 xx
FCD A 00-15 xx
FCD A 01-15 xx

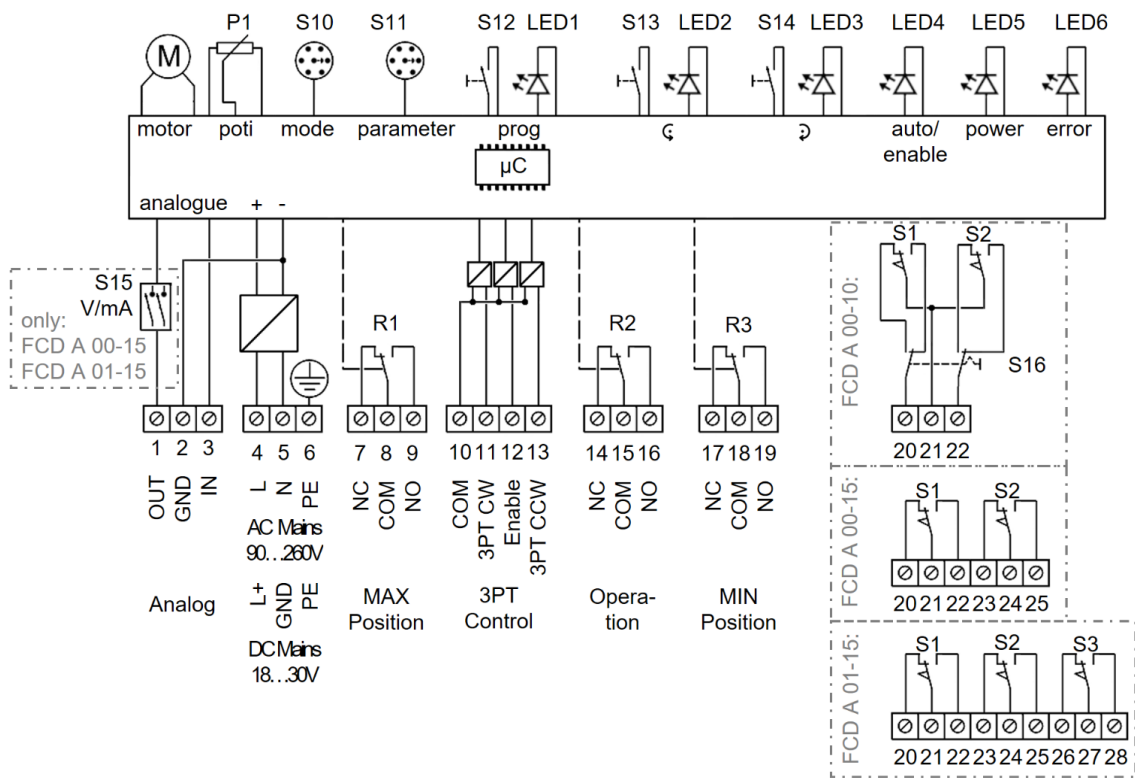


Technical data			
	FCD A 00-10	FCD A 00-15	FCD A 01-15
Electric specifications of the inputs and outputs	Analogue position feedback		
	• Power source: max. 12 V output voltage, load max. 500 Ω • Voltage source: max. 12 V output voltage, max. 30 mA current		
	Analogue setpoint specification		
	• max. input voltage: 12 V, current input, load 500 Ω		
	Relay outputs		
	• Switching load AC: max. 250 V, 500 mA, resistive load • Switching load DC: max. 220 V, 500 mA, resistive load		
	Cam switch		
	• Switching load AC: max. 250 V, 500 mA, resistive load max. 250 V, 250 mA, inductive load		
	• Switching load DC: 30 V, 1,000 mA, resistive load max. 125 V, 100 mA, resistive load 30 V, 500 mA, resistive load max. 125 V, 30 mA, resistive load		
	3-Point-step, release signal for inputs		
	• AC variant: 90 - 260 VAC, max. current 5 mA • DC variant: 18 - 30 VDC, max. current 10 mA		
Other product features	• Mechanical position indicator in the housing cover • Heating unit with thermostat		

Actuators
FCD A 00-10 xx
FCD A 00-15 xx
FCD A 01-15 xx

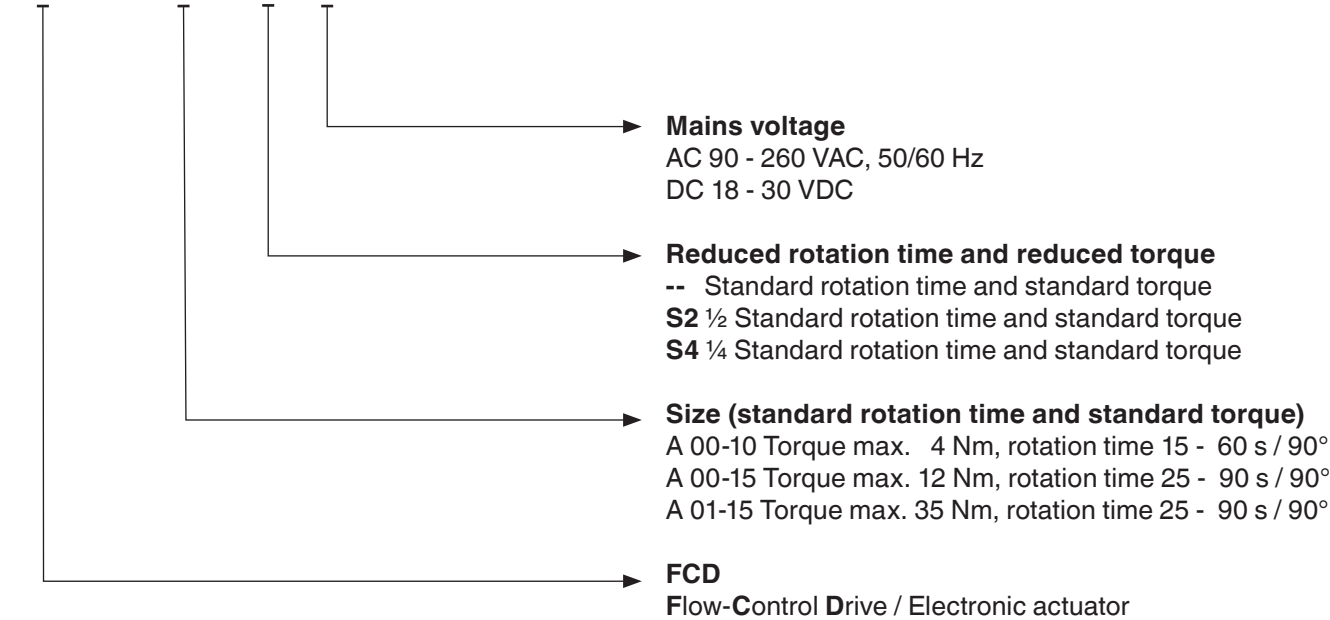


Electrical connection



Type code FCD

FCD X XX-XX XX XX



For example: „FCD A 00-15 S2 AC“

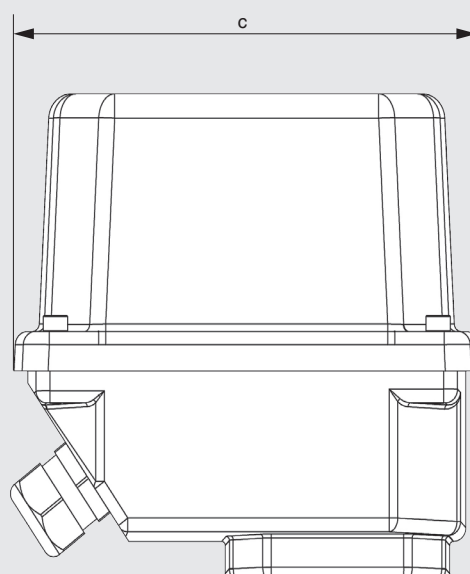
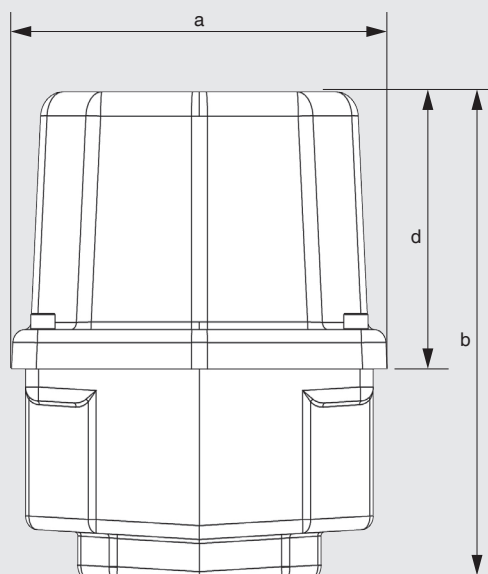
Actuators
FCD A 00-10 xx
FCD A 00-15 xx
FCD A 01-15 xx



Variant / short name	Ordering No.
FCD A 00-10 AC	293905
FCD A 00-10 DC	293907
FCD A 00-15 AC	293334
FCD A 00-15 S2 AC	301619
FCD A 00-15 S4 AC	301620
FCD A 00-15 DC	293911
FCD A 01-15 S2 DC	301621
FCD A 00-15 S4 DC	301622

Variant / short name	Ordering No.
FCD A 01-15 AC	293916
FCD A 01-15 S2 AC	301623
FCD A 01-15 S4 AC	301624
FCD A 01-15 DC	293917
FCD A 01-15 S2 DC	301625
FCD A 01-15 S4 DC	301626

Dimensions [mm]



Type	Dimensions [mm]			
	a	b	c	d
FCD A 00-10 xx	82,6	92,5	101,4	52,5
FCD A 00-15 xx	107,0	122,0	131,0	70,0
FCD A 01-15 xx	112,0	143,0	168,0	85,0

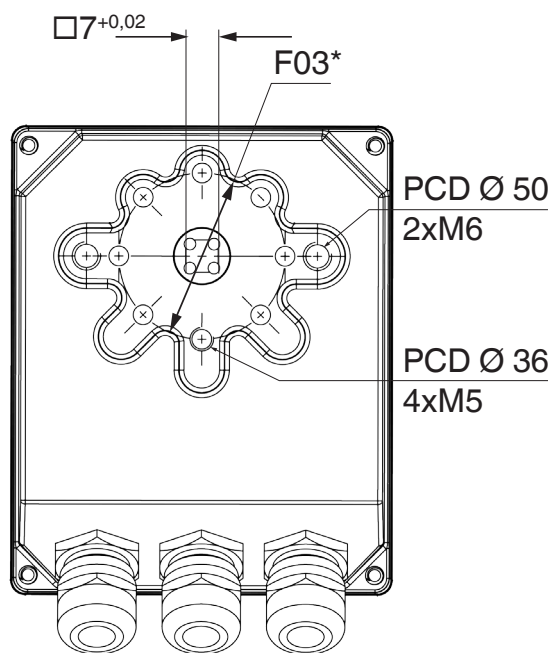
Actuators

FCD A 00-10 xx

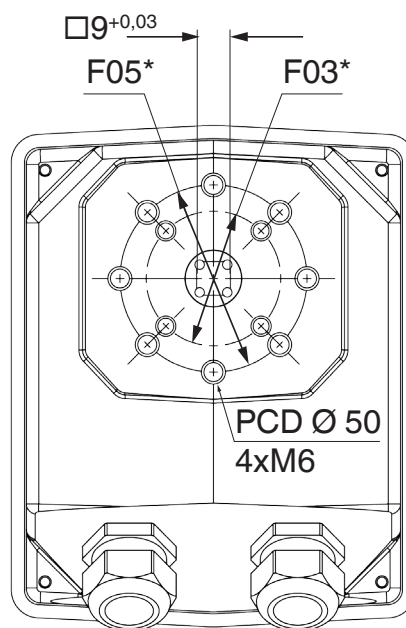
FCD A 00-15 xx

FCD A 01-15 xx

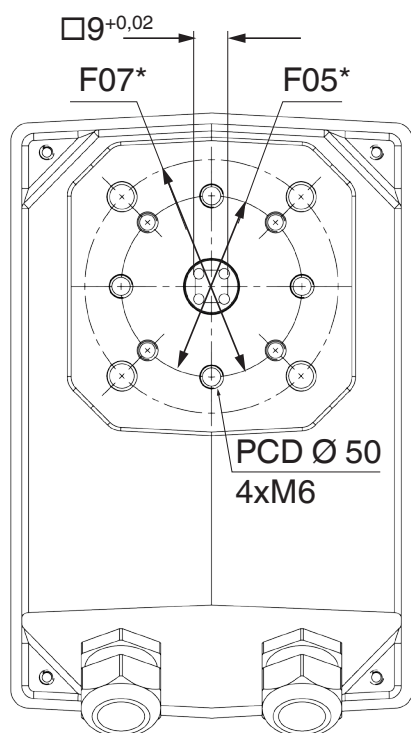
Dimensions of the mechanical fastening



FCD A 00-10



FCD A 00-15



FCD A 01-15

*Details in accordance with ISO 5211

Actuators

FCD A 00-10 xx

FCD A 00-15 xx

FCD A 01-15 xx



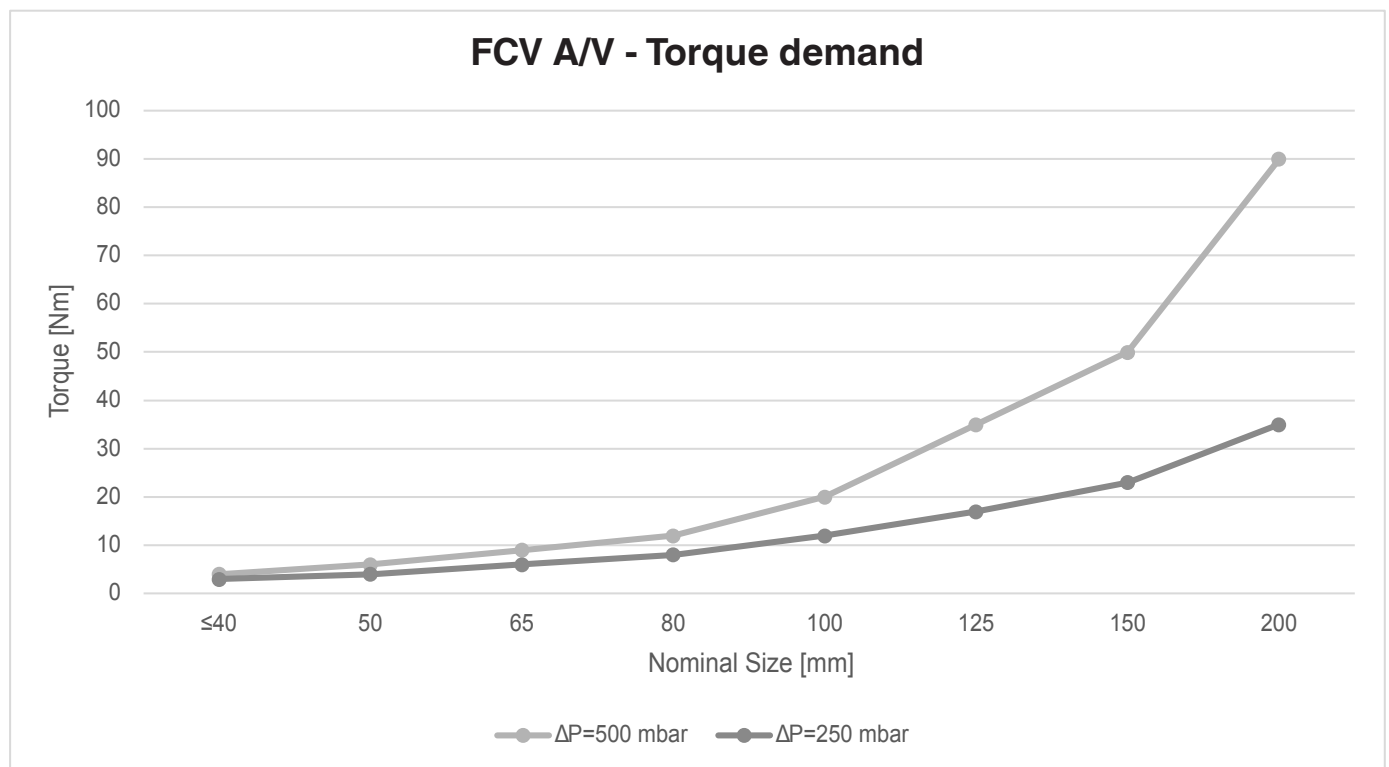
Torque configuration

Operation with FCV A/G flow control valves

For flow control valves in flanged version (DUNGS DMK and FCV A/G), the FCD actuator with size A 00 15 can be used for a nominal size up to and including NW 80. For a nominal width wider than NW 80 up to and including NW 200, the FCD actuator with size A 01-15 is suitable. These specifications apply for a differential pressure of 500 mbar.

For lower differential pressures, it is possible to deviate from the above specifications. The graph below contains information on the torques required by the FCV flow control valves at different differential pressures. The nominal size specified in the graph always corresponds to the nominal flow size of the flow control valves.

The FCD 00-10 actuator is usually used to operate the FCVL linear actuators. This can be mounted directly without any further effort.



Accessories

Operation with DMK Control Valves

The DUNGS Flow Control Drive actuators of the FCD A xx xx x series are of course also suitable for controlling the DUNGS DMK control valves and other flow control valves.

To adapt the FCD actuators to the DMK control valves, the standard flange plate must be replaced. Special shaft flanges are also required to adapt the drive shaft.

The FCD A 00-10 xx actuator is suitable for operating DMK control valves with an Rp thread up to a nominal width of 2".

Actuators
FCD A 00-10 xx
FCD A 00-15 xx
FCD A 01-15 xx



Installation instructions

The FCD A 00-10 actuator is suitable for operating Rp threaded valves (DMK control valves) up to a nominal diameter of 2". For control valves in flanged version, the actuator FCD A 00-15 xx can be used up to a nominal flow diameter of ≤ 80 mm. The FCD A 01-15 xx actuator is suitable for a nominal flow diameter ≥ 100 mm up to and including a nominal flow diameter of 200 mm.

This assignment is based on a maximum differential pressure [Δp_{max}] of 500 mbar.

Accessories

The DUNGS Flow Control Drive actuators of the FCD A xx-xx xx series are naturally also suitable for controlling the DUNGS DMK motor-driven valves and other control valves. To adapt the FCD actuators to the DMK motor-driven valves, the flange plate installed as standard must be replaced. Special shaft flanges are also required to adapt the drive shaft.

Flange plates for mounting on DMK motor-driven valves

In the following, it is apparent which flange plate is required to adapt an FCD actuator to a corresponding DMK control valve.

FCD flange plate with 28 x 28 mm hole pattern Order no. 297477	Order no. DMK	
	221041	252403
	222619	252404
	222620	254011
	222621	254015
	225975	254016
	225978	254018
	225981	254019
	225982	254020
	225983	254719
	225984	254733
	225985	255724
	225986	257088
	225987	258048
	225988	258792
	225989	264382
	225990	264383
	225992	264384
	252400	264385
	252401	264386
	252402	258048
	225987	258792

Actuators
FCD A 00-10 xx
FCD A 00-15 xx
FCD A 01-15 xx

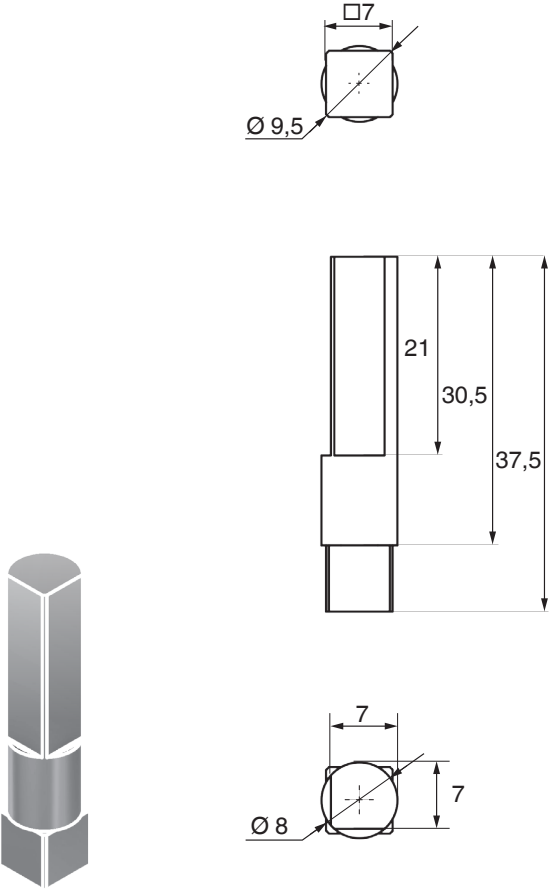


FCD flange plate with 38 x 28 mm hole pattern Order no. 297478	Order no. DMK	
	221047	222615
	221052	222616
	221057	222617
	221352	222618
	222608	237611
	222609	237612
	222610	237613
	222611	270303
	222612	270304
	222613	270305
	222614	270306

Actuators
FCD A 00-10 xx
FCD A 00-15 xx
FCD A 01-15 xx

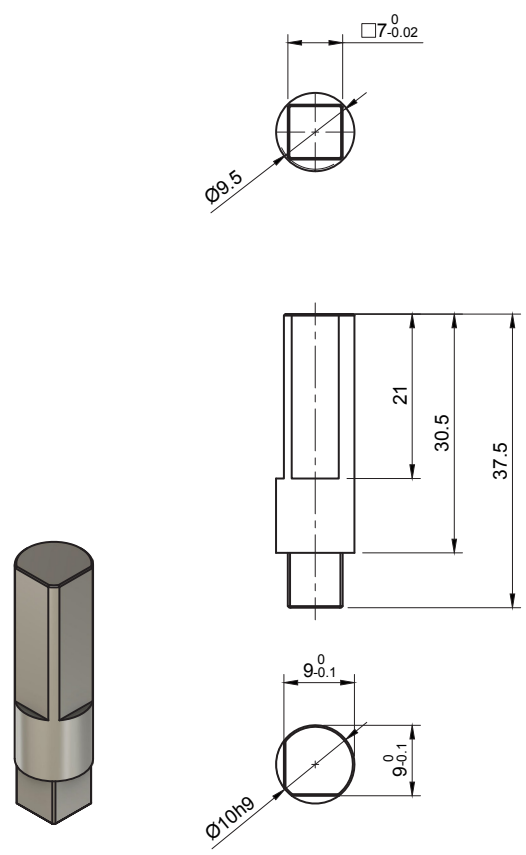


Shaft flanges for mounting on DMK motor-driven valves to adapt an FCD actuator to a corresponding DMK control valve.
 The tables below provide an overview of which shaft flange is required

FCD shaft flange □ 7 mm, Ø 8 mm Order no. 297479	Order no. DMK	DMK Size	FCD Actuator
	221041	Rp ¾ - Rp 2	FCD A 00-10 xx
	221047		
	221052		
	221057		
	221352		
	222608		
	222609		
	222610		
	222611		
	222612		
	222613		
	222614		
	222615		
	222616		
	222617		
	222618		
	222619		
	222620		
	222621		
	237611		
	237612		
	237613		
	270303		
	270304		
	270305		
	270306		

Actuators
FCD A 00-10 xx
FCD A 00-15 xx
FCD A 01-15 xx



FCD shaft flange □ 7 mm, Ø 10 mm Order no. 298012	Order no. DMK	DMK Size	FCD Actuator
	254011	Rp ¾ - Rp 2	FCD A 00-10 xx
	254015		
	254016		

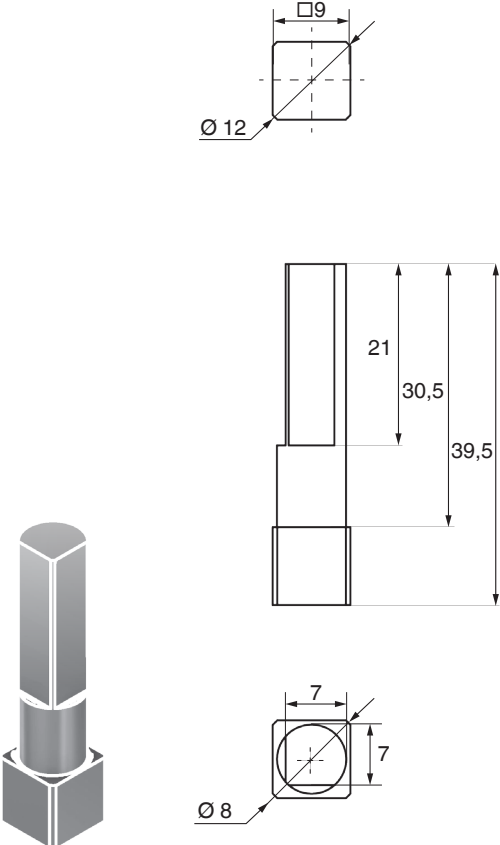
Actuators

FCD A 00-10 xx

FCD A 00-15 xx

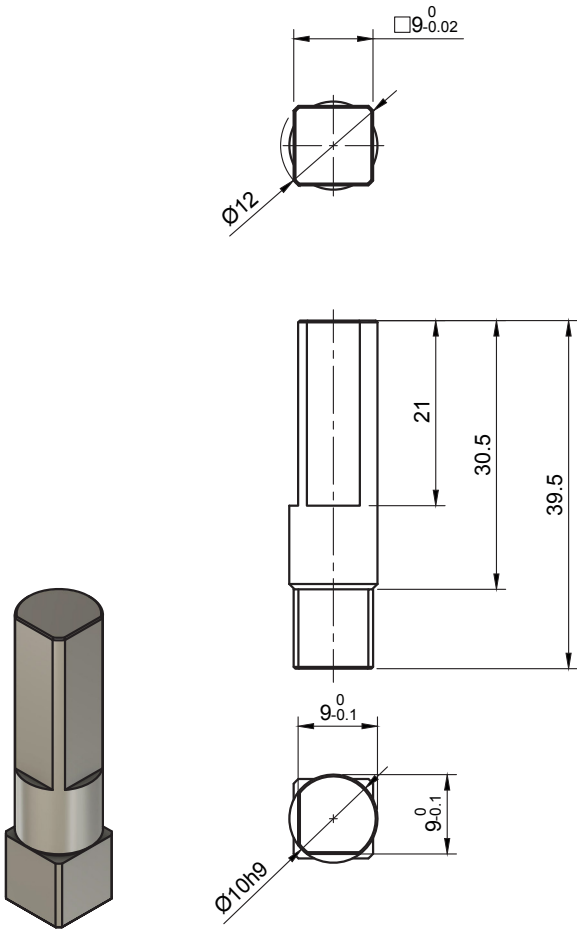
FCD A 01-15 xx

DUNGS®
Combustion Controls

FCD shaft flange □ 9 mm, Ø 8 mm Order no. 297480	Order no. DMK	DMK Nominal flow diameter	FCD Actuator
	225975	40 - 80	FCD A 00-15 xx
	225978		
	225981		
	225982		
	225983		
	225984		
	225985		
	225986		
	252401		
	252402		
	252404		
	254733		
	255724		
	257088		
	225987		
	225988		
	225989		
	225990		
	225992		
	252400	100 - 125	FCD A 01-15 xx
	252403		
	258048		
	258792		

Actuators
FCD A 00-10 xx
FCD A 00-15 xx
FCD A 01-15 xx



FCD shaft flange □ 9 mm, Ø 10 mm Order no. 298013	Order no. DMK	DMK Nominal flow diameter	FCD Actuator
	254018	40 - 80	FCD A 00-15 xx
	254019		
	264382		
	264383		
	264384		
	254020	100 - 125	FCD A 01-15 xx
	254719		
	264385		
	264386		

Actuators

FCD A 00-10 xx

FCD A 00-15 xx

FCD A 01-15 xx



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 • Internet www.dungs.com