AVK multi-turn electric actuators

1150/EMD

AVK EMD series multi-turn electric actuator is an actuator with an output angle greater than 360°. It is suitable for valves with mti-turn stroke for linear travel, such as gate valves, globe valves, regulating valves and others. It can also be paired with 90° gearbox to achieve quarter turn travel for valves such as butterfly valves, ball valves, plug valves and others.

Product description:

The product housing use die-cast aluminum alloy, multistage reduction gear, copper alloy worm wheel and high strength alloy worm transmission structure. Actuator output clearance is small, stroke repetition deviation within ±1°, high control accuracy, for buildings and civil construction and other industries to provide quality solutions.

Design standards:

- JB/T8219-2016
- Output Flange drilling to ISO5211

Features:

- Power standard 380VAC/220VAC 50/60Hz*
- Modulating control/feedback 4-20mA/0-10V, Basic version doesn't have this Modulation function.
- IP protection IP67/IP68
- high NEMA motor protection class F,Multi- thermal protection
- Ambient T °C -30~70°C
- Standard offering is EMD-INTEGRATION which have full function, as below is integration and above feature.
- LCD display and remote control, set the position through absolute encoder conduct positioning.
- Feedback signal: 1 * Collective fault feedback, 5 *programable
- Feedback contact：Contact capacity 5A@250Vac
- Standard Moisture-proof heater and over torque limit
- Fieldbus support: Modbus, Profibus, HART
- *Other power connects with sales to confirm.

Accessories:

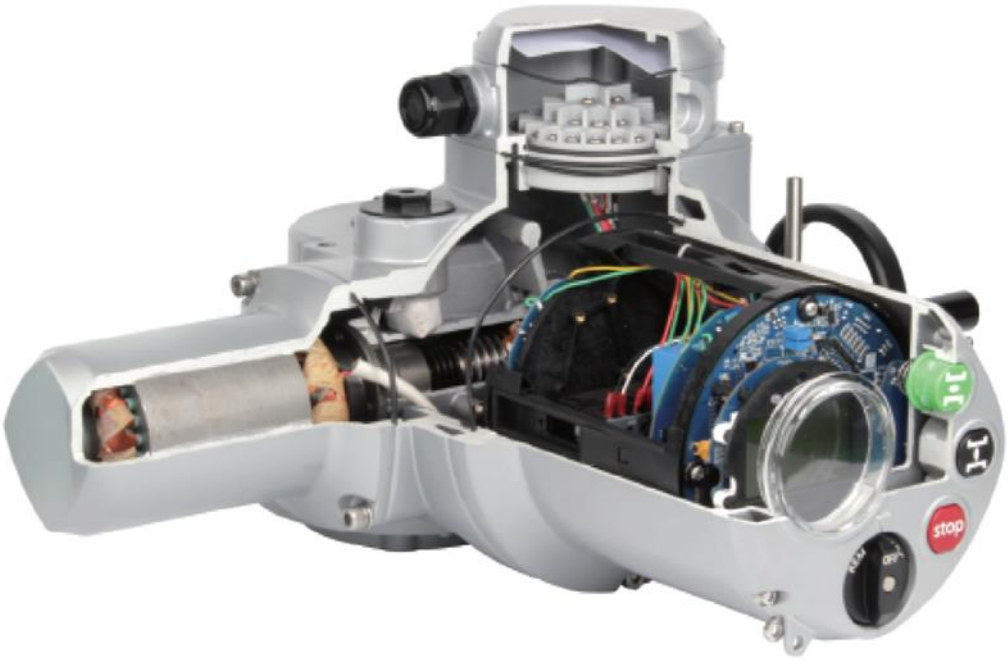
Handwheel

BASIC

INTEGRATION

INTELLIGENT

Expect... AVK



1

EMD series multi-turn electric actuators are designed for multi-turn or linear motion valves such as gate valves, globe valves, control valves and other similar valve applications. It can also be used with a 90° worm gearbox to drive quarter turn valves such as butterfly valves, ball valves, plug valves and other similar valves.

2

The direct output torque of EMD series with a wide range from 50N.m~900N.m, and the output speed is 18~144rpm. Combine with gearbox, it can output more torque to meet the torque requirements of large diameter high torque valve applications.

3

AVK multi-turn EMD series can provide suitable solutions from conventional standard models for basic industrial needs to intelligent models that can perform configuration settings and intelligent feedback for various applications.

4

Aluminum alloy housing

Speed:18~144rpm.

High performance
Stand offer: Integration.
Standard IP68 protection

➢ EMD Series

		BASIC	INTEGRATION	INTELLIGENT
Control	On-Off	√	√	√
	Modulating	—	√	√
Protection	Standard IP67□IP68 optional	√	—	—
	Standard IP68	—	√	√
Display	Mechanical arrow indicator	√	—	—
	Open/Close/Remote/Fault indicator lamp	—	√	√
	LCD digital position percentage display	—	√	√
	LCD digital torque percentage display	—	—	√
Position Limit	Counting gear set	√	—	—
	Absolute encoder	—	√	√
Local Control	Open/Stop/Close botton□Local/Remote/Off	—	√	√
	Remote control	—	√	√
Protection	Over torque	√	√	√
	Motor over heat	√	√	√
	Valve stall	—	√	√
	Loss signal	—	√	√
	Reverse starter	—	√	√
	Loss phase (3 phase only)	—	√	√
	Auto phase correction□3 phase only□	—	√	√
	Non intrusive set up	—	√	√
	Operational data log	—	—	√
	Password	—	√	√
	Anti condensation (Heater)	Optional	√	√
Feedback Signal	Open and close position limit, open and close torque switch, position feedback potentiometer	√	—	—
	1 * Collective fault feedback, 5 *programable feedback contact(Contact capacity 5A@250Vac)	—	√	√
Control Signal	On-Off switch signal	√	√	√
	Analogue signal (4-20mA, 0-10V, 2-10V)	—	√	√
Fieldbus	Modbus,Profibus,HART	—	√	√
Other	Non intrusive position limit set up	—	√	√
	Torque switch limit set up	—	—	√
	Set up of: Deadzone , Reverse signal, Loss signal mode (0%,100%,keep);Feedback contacts,ESD(0%,100%,Keep)	—	√	√
	Power loss display	—	—	√

➢ EMD Series

		BASIC	INTEGRATION	INTELLIGENT
Model Range		EMD05-EMD90		
Speed	50Hz	18,24,36,48,72rpm	18,24,36,48,72,96,144rpm	
	60Hz	21,29,43,57,86rpm	21,29,43,57,86,115,173rpm	
Ambient Temperature		-30°C~70°C		
Noise		≤ 75dB(Within 1 meter)		
Cable Entries		Standard 2-NPT3/4”(2-NPT1” available) Option 3-NPT3/4”(3-NPT1” available)		Standard 2-NPT1” &1-NPT3/4” Optional 3-NPT1” &1-NPT1 1/2”
Ingress Protection		Standard IP67 Optional IP68	Standard IP68	
Mounting		ISO5210(Optional A type or B type)		
Motor		Motor protection: Class F insulation, equipped with double temperature control protector, protection temperature 135°c		
Duty Cycle	On-Off	S2~15min (≤600 starts per hour)		
	Modulating	—	S4-25% (600 starts per hour)	
Standard Voltage (Other voltages can be customized)		3 phase:AC380V(±10%) 1 phase:AC220V(±10%) Frequency:50Hz/60Hz(±5%)		
Input Signal	On-Off	Built in contacts 5A@250Vac	AC/DC 24V input;AC110/220V(optional); optical signal isolation	
	Modulating	—	Input signal: 4 ~ 20 mA;0 ~ 10 V; 2 ~ 10 V Input impedance: 150Ω (4~20 mA);Dead zone: ≤2%	
Feedback Signal	On-Off	▪ Open stroke limit, close stroke limit ▪ Open over torque, cloe over torque ▪ Flash signal(contact capacity: 5 A at 250 V ac) ▪ Psition feedback potentiometer	5 configurable contacts, 1 integrated fault contact)（Contact capacity 5A@250Vac）	
	Modulating	—	Input signal: 4 ~ 20 mA;0 ~ 10 V; 2 ~ 10 V Output impedance: ≤750 Ω (4 ~ 20 mA) (Repeatability and linearity within ±1 % of full valve stroke)	
Fault Signal	On-Off	▪ Integrated fault alarm: Motor overheating, over torque contacts	Collective fault alarm: Power off, motor overheating, lost phase, over torque, lose signal,	
	Modulating	—	Signal Reverse	
Position Display		Mechanical Arrow Indicator	▪ LCD screen display ▪ Position percentage display	▪ 4-level grayscale LCD screen opening indicator ▪ Position percentage display ▪ Torque percentage display

Note:

1.Single-phase only on-off type. EMD90 three-phase only on-off type.

2.IP68 protection level is defined as underwater 7m,72 hours without leakage.

➢ EMD - 3 Phase voltage ON-OFF Control

Model	Speed (rpm)		Torque (N.m)	Handweel Ratio	Max.Stem Diameber (mm)
	50Hz	60Hz			
EMD05	18	21	50	80:1	≤Φ30
	24	29	50	60:1	
	36	43	50	40:1	
	48	57	50	30:1	
	72	86	40	20:1	
EMD10	18	21	100	80:1	≤Φ30
	24	29	100	60:1	
	36	43	100	40:1	
	48	57	100	30:1	
	72	86	70	20:1	
	96	115	50	30:1	
	*144	*173	40	20:1	
EMD15	18	21	150	80:1	≤Φ30
	24	29	150	60:1	
	36	43	150	40:1	
	48	57	120	30:1	
	72	86	100	20:1	
	96	115	75	40:1	
	*144	*173	60	20:1	
EMD20	18	21	200	80:1	≤Φ42
	24	29	200	60:1	
	36	43	200	40:1	
	48	57	200	60:1	
	72	86	170	40:1	
	96	115	150	30:1	
	*144	*173	100	20:1	
EMD30	18	21	300	80:1	≤Φ42
	24	29	300	60:1	
	36	43	300	40:1	
	48	57	250	30:1	
	72	86	200	20:1	
	96	115	170	30:1	
	*144	*173	120	20:1	
EMD40	18	21	400	80:1	≤Φ42
	24	29	400	60:1	
	36	43	350	40:1	
	48	57	300	30:1	
	72	86	250	20:1	
	96	115	230	30:1	
	*144	*173	150	20:1	
EMD50	18	21	500	80:1	≤Φ50
	24	29	500	60:1	
	36	43	500	40:1	
	48	57	500	30:1	
	72	86	400	20:1	
	96	115	300	30:1	
	*144	*173	200	20:1	
EMD60	18	21	610	80:1	≤Φ50
	24	29	610	60:1	
	36	43	610	40:1	
	48	57	550	30:1	
	72	86	450	20:1	
	96	115	330	30:1	
	*144	*173	260	20:1	
EMD90	18	21	900	80:1	≤Φ50
	24	29	900	60:1	
	36	43	750	40:1	
	48	57	600	30:1	
	72	86	480	40:1	
	96	115	350	30:1	

Note:

1. Above torque is maximum torque of actuator.
2. Motor duty cycle S2-15min, 3 phase 380VAC, can be customized.
3. RPM with"*"has higher momental force, not recommended for direct drive of valve.

➢ EMD - 1 Phase 220VAC ON-OFF Control

Model	Speed (rpm)		Torque (N.m)	Handweel Ratio	Max.Stem Diameber (mm)
	50Hz	60Hz			
EMD10	18	21	60	80:1	≤Φ30
	24	29	60	60:1	
	36	43	50	40:1	
	48	57	50	30:1	
	72	86	35	20:1	
EMD40	18	21	150	80:1	≤Φ42
	24	29	150	60:1	
	36	43	130	40:1	
	48	57	100	30:1	
	72	86	50	20:1	
EMD60	18	21	250	80:1	≤Φ50
	24	29	250	60:1	
	36	43	200	40:1	
	48	57	170	30:1	
	72	86	130	20:1	

Note:

1. EMD single-phase only on-off type
2. The above torque is the maximum torque of electric actuator, motor duty is S2-10min, power supply is single-phase 220VAC

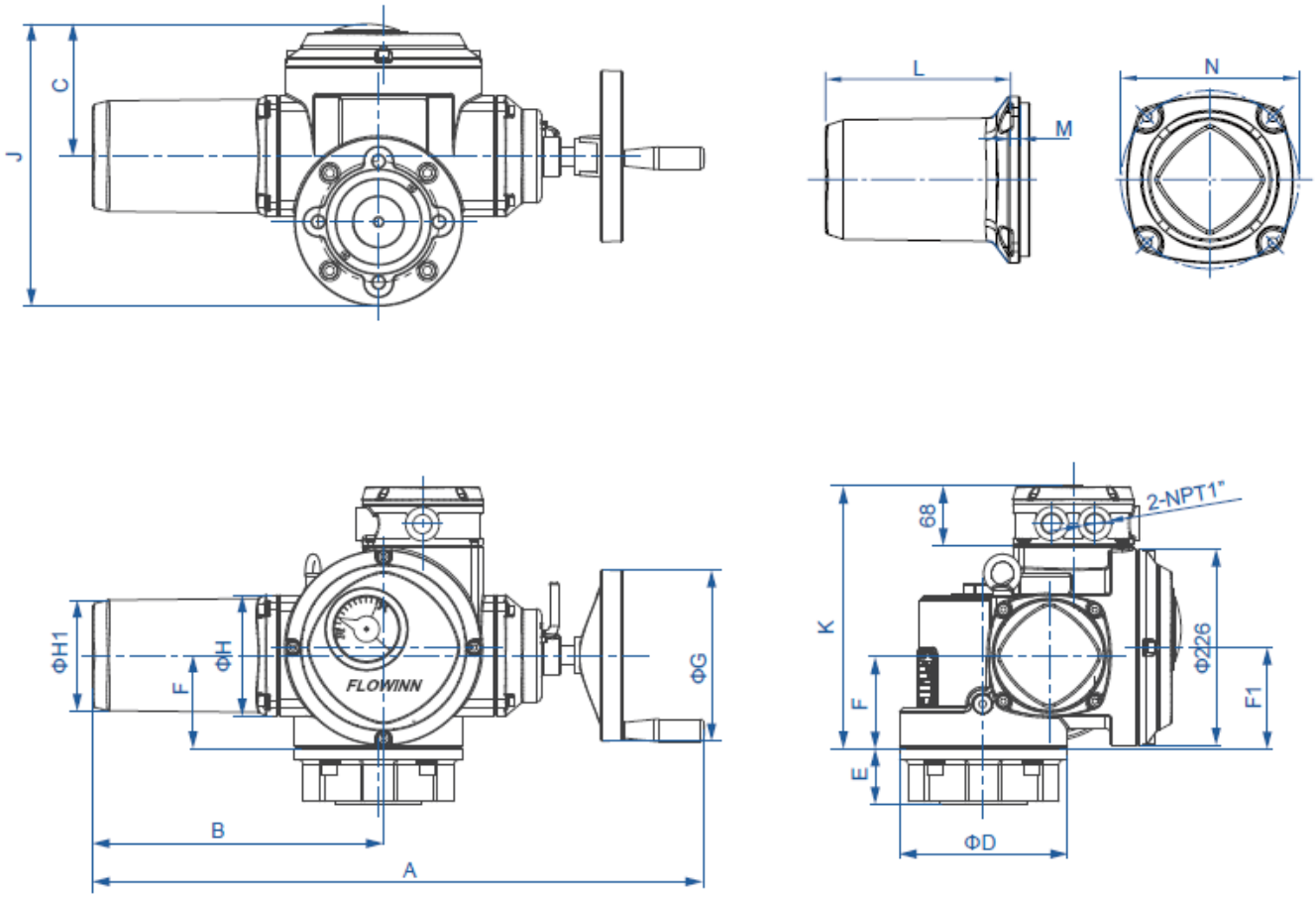
➢ EMD - 3 Phase voltage Modulating Control

Model	Speed (rpm)		Torque (N.m)	Handweel Ratio	Max.Stem Diameber (mm)
	50Hz	60Hz			
EMD05	18	21	50	80:1	≤Φ30
	24	29	50	60:1	
	36	43	50	40:1	
	48	57	50	30:1	
	72	86	40	20:1	
EMD10	18	21	100	80:1	≤Φ30
	24	29	100	60:1	
	36	43	100	40:1	
	48	57	100	30:1	
	72	86	70	20:1	
EMD15	18	21	150	80:1	≤Φ30
	24	29	150	60:1	
	36	43	150	40:1	
	48	57	120	30:1	
	72	86	100	20:1	
EMD20	18	21	200	80:1	≤Φ42
	24	29	200	60:1	
	36	43	200	40:1	
	48	57	200	30:1	
	72	86	170	20:1	
EMD30	18	21	300	80:1	≤Φ42
	24	29	300	60:1	
	36	43	300	40:1	
	48	57	250	30:1	
	72	86	200	20:1	
EMD40	18	21	400	80:1	≤Φ42
	24	29	400	60:1	
	36	43	350	40:1	
	48	57	300	30:1	
	72	86	250	20:1	
EMD50	18	21	500	80:1	≤Φ50
	24	29	500	60:1	
	36	43	500	40:1	
	48	57	500	30:1	
	72	86	400	20:1	
EMD60	18	21	610	80:1	≤Φ50
	24	29	610	60:1	
	36	43	610	40:1	
	48	57	610	30:1	
	72	86	500	20:1	

Note:

1. Above torque is maximum torque of actuator.
2. Motor duty cycle S4-25%, 3 phase 380VAC, can be customized.
3. For modulating model selection torque safety factor up to 1.8-2 must be considered.

➢ EMD - Basic type dimension



Dimension

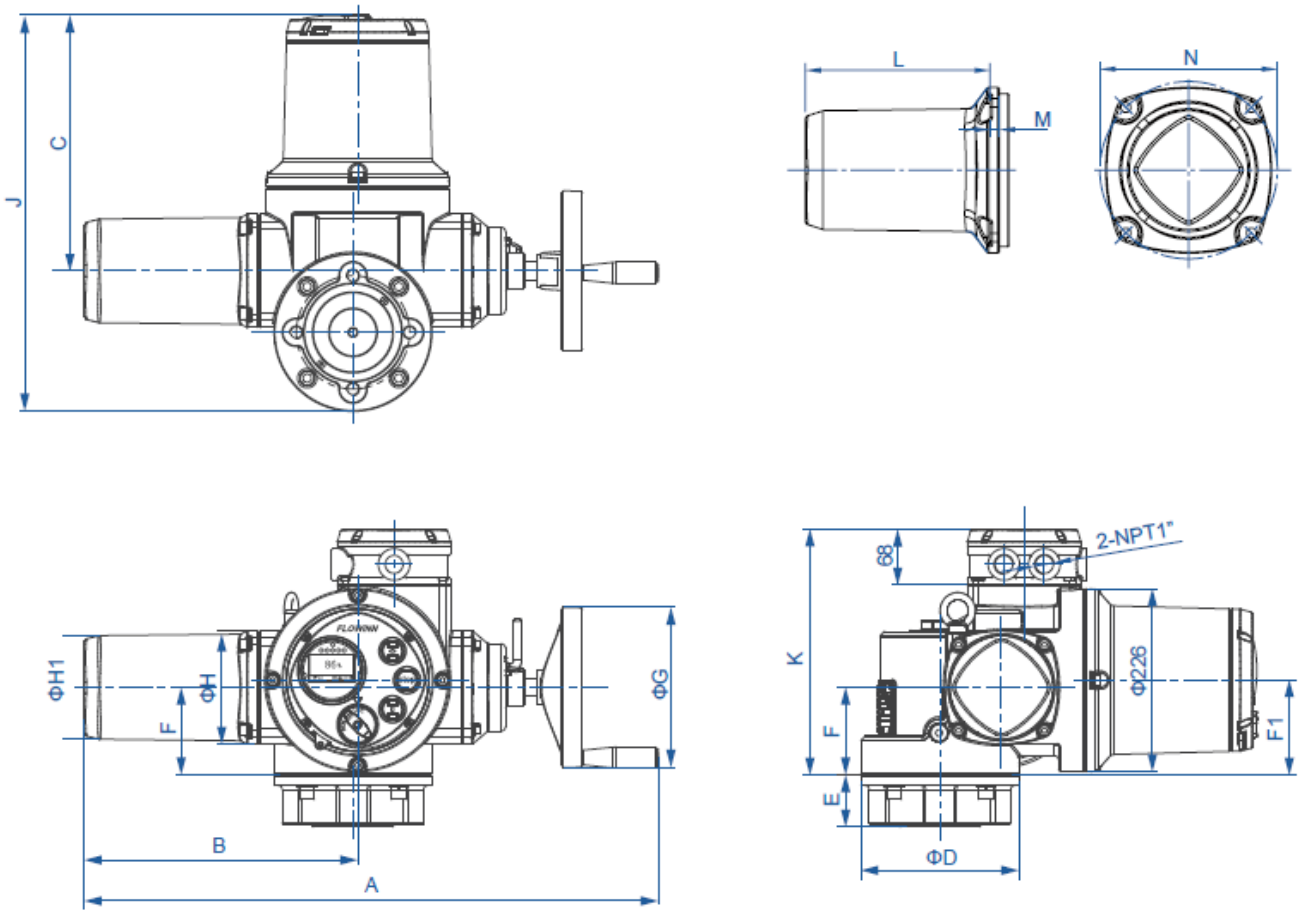
Unit: mm

Model \ Size	A	B	C	ΦD	E			F	F1	ΦG	ΦH	ΦH1	J	K	L	M	N	Weight (KG)
					JB	Type A	Type B											
EMD05/10/15	600	280	132	145	2	50	40	111	120	100	140	98	283	307	156	8	150	30
EMD20/30/40	710	338	153	195	2	65	42	114	117	200	140	128	327	303	204	12	150	36
EMD50/60/90	760	382	160	234	2	65	42	114	118	200	161	148	382	303	221	15	172	47

Note:

1. Above connection size is in comply to ISO5210. For special requirement can be customized.
2. A type is for rising type valve stem; B type is for non-rising type valve stem.
3. Speed is 144rpm without basic type.

➢ EMD - Integration type dimension



Dimension

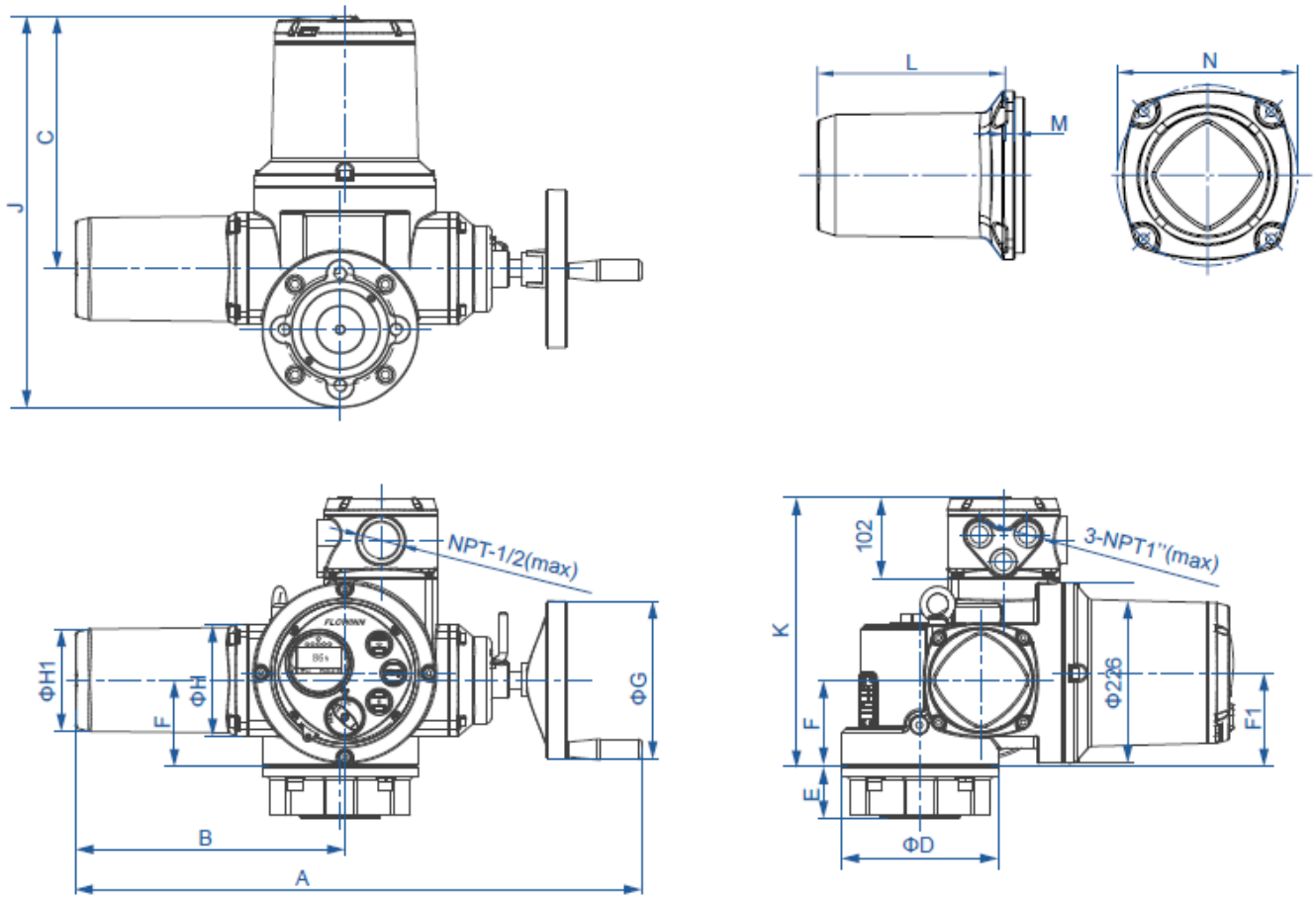
Unit: mm

Model \ Size	A	B	C	ΦD	E			F	F1	ΦG	ΦH	ΦH1	J	K	L	M	N	Weight (KG)
					JB	Type A	Type B											
EMD05/10/15	600	280	316	145	2	50	40	111	120	100	140	98	446	307	156	8	150	30
EMD20/30/40	710	338	316	195	2	65	42	108	117	200	140	128	490	303	204	12	150	36
EMD50/60/90	760	382	332	234	2	65	42	114	118	200	161	148	545	303	221	15	172	47

Note:

1. Above connection size is in comply to ISO5210. For special requirement can be customized.
2. A type is for rising type valve stem; B type is for non-rising type valve stem.

➢ EMD - Intelligent type dimension



Dimension

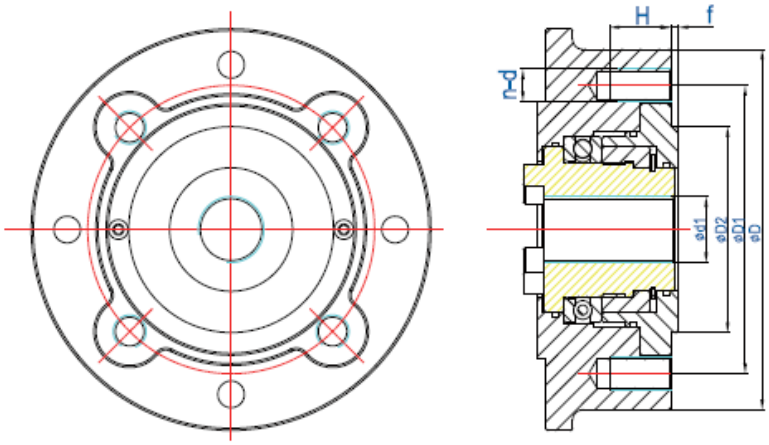
Unit: mm

Model \ Size	A	B	C	ΦD	E			F	F1	ΦG	ΦH	ΦH1	J	K	L	M	N	Weight (KG)
					JB	Type A	Type B											
EMD05/10/15	600	280	316	145	2	50	40	111	120	100	140	98	446	341	156	8	150	30
EMD20/30/40	710	338	316	195	2	65	42	108	117	200	140	128	490	337	204	12	150	36
EMD50/60/90	760	382	332	234	2	65	42	114	118	200	161	148	545	337	221	15	172	47

Note:

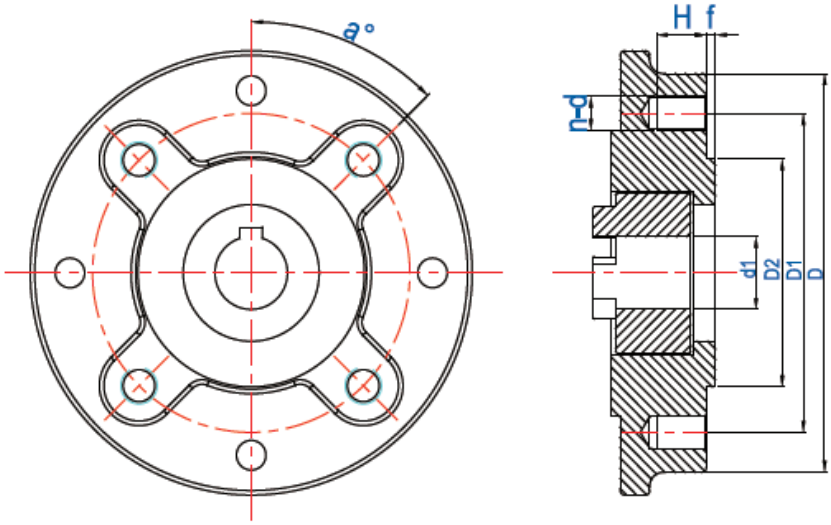
1. Above connection size is in comply to ISO5210. For special requirement can be customized.
2. A type is for rising type valve stem; B type is for non-rising type valve stem.

➢ EMD - A type output (Rising type) - ISO5210



Model \ Size	Flange	ΦD	ΦD1	ΦD2	f	Φd1	n-d	a	H
EMD05/10/15	F10	120	102	70	3	≤Φ30	4-M10	45°	15
EMD20/30/40	F14	175	140	100	4	≤Φ42	4-M16	45°	24
EMD50/60/90	F16	205	165	135	5	≤Φ50	4-M20	45°	30

➢ EMD - A type output (Rising type) - ISO5210



Model \ Size	Flange	ΦD	ΦD1	ΦD2	f	Φd1	n-d	a	H
EMD05/10/15	F10	120	102	70	3	≤Tr30	4-M10	45°	15
EMD20/30/40	F14	175	140	100	4	≤Tr42	4-M16	45°	24
EMD50/60/90	F16	205	165	135	5	≤Tr50	4-M16	45°	30