

Biffi F01 3000

Intelligent, Quarter-Turn Electric Valve Actuator



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General Information

Table 1. General Information

General	Non-intrusive intelligent quarter-turn electric actuator
Starter	Integrated

Specifications

Table 2. Specifications

Enclosure	Aluminum alloy highly resistant to corrosion with few joints.		
Control Enclosure	The enclosure includes logic circuit boards, power boards, reversing contactor, non-intrusive local interface with three push-buttons (for open, stop and close control, and actuator configuration), LED indicators (yellow, green and red), and selector with local, remote and off positions. Standard features included are: Automatic Phase Correction, Phase Failure Detection, Anti-hammer Protection, Jammed Valve Protection, Instantaneous Reversal Protection, ESD, Contactor Failure, Electronic Temperature Warning, Electronic Nameplate, Timer, Double Displays.		
Lubrication	Cut metal teeth gearing runs in oil for high efficiency and low power consumption.		
Manual Operation	Handwheel standard (will not rotate during the electric operation) Handwheel Torque factor Handwheel Turns/90°		48x10 ⁻³ 21
Torque and Position sensor	High-precision and high-resolution torque sensor. Torque detection is based on motor torque vs. speed characteristics, voltage and temperature compensated. Position sensors based on absolute encoder, controlled by a dedicated microprocessor with low power consumption. The Limit Position can be adjusted from 0 to 100% of the open position. The Output Torque can be adjusted from 40 to 100% of the nominal torque.		
Bypass Torque	Torque intervention bypass time function allows the actuator to output its maximum torque at the beginning of the stroke, with a bypass time configurable from 0 to 20%.		
Diagnostics	Data logger, warnings and alarm diagnostic messages available on local display or remotely transmitted for high efficiency preventive maintenance programs and actuator status control. Instantaneous and historical data available.		
Diagnosis and Control	F01 diagnostic software is capable of detecting internal faults in the main functional systems and inhibit operation by actuator. Anomalies are reported locally by the display and via remote control. Using the display and push-button panel, it is possible to navigate through the menu and obtain complete information about the fault and correct identification and interpretation.		
2_Speed_Timer	Software routine to extend the actuator travelling time in opening and/or in closing direction.		
Monitor Relay	One (1) contact signal to indicate when the actuator is not available for remote control due to one or more of the ALARM conditions.		
Remote Output Contacts	Eight (8) voltage-free latching contacts are available for remote indication.		
Terminal Board	Double-sealed for maximum protection.		
Heater	Included (Logic card 0.9 W + Display (2.2 W) + Terminal board (0.9 W) Internal powered.		
Paint Finish	Type	Corrosivity category	Typical Environments
	Standard	ISO 12944:2018 C5 High durability/CX	C5 - Industrial areas with high humidity and aggressive atmosphere, and Coastal and offshore areas with high salinity. CX - Offshore areas with extreme high salinity and Industrial areas with extreme humidity and aggressive atmosphere and tropical atmospheres.
	Special	Upon request	Upon request
Actuator Nameplate	In stainless steel, complete with all the actuator's relevant characteristics. Nameplates in English language.		
Cable Entry Points	Standard	NPT	Number 2 x 1 in. Number 1 x 1-1/2 in.
	Option	NPT	Number 2 x 3/4 in.

Controls

Table 3. Controls (1)

Local Controls	A padlock-able LOCAL/OFF/REMOTE selector switch and OPEN/STOP/CLOSE push-buttons are included for local control of the valve.	
LEDs	LED colors: Green = open/opening Red = close/closing Yellow = alarm/warning Blue = Bluetooth® port active LED colors can be easily changed via the local control interface.	
Bluetooth	Bluetooth port included for easy wireless configuration, diagnostics and control via a PC with Emerson's AManager software.	
Remote Control	4 wires (OP, CL, Stop, C/latched) 3 wires (OP, CL, C/push-to-run or latched with instant reverse) 2 wires (NO contact to open or reverse)	
Control Voltage/ Control Inputs	24 V DC, internal supply Not regulated Maximum 4 W	20 to 125 V DC, external supply 20 to 120 V AC, external supply Maximum 25 mA
Remote Output Contacts	Status Open limit Closed limit Position >=xx % Position <=xx % Closing Opening Motor running blinker Mid-travel position Local selected Remote selected Local stop active ESD signal on Manual operation	Alarms Motor over-temperature Over-torque over torque in OP Over-torque in CL Valve jammed in OP Valve jammed in CL Valve jammed Warnings Low lithium battery (if present) Mid-travel alarm in CL/OP Mains-only AS8
Interlock Controls	Two interlock inputs are available to inhibit actuator movement in open or closed direction	
Emergency Shutdown (ESD)	ESD command makes the actuator perform the relevant programmed action (requires power supply) Selector in LOCAL Selector in OFF Motor temperature alarm Local STOP push-button Torque alarm	2 speed timer Stay put Move to open position Move to close position Move to preset position
Monitor Relay	Loss of power Loss of one phase Electrical contactor failure Local stop activated Local selector switch in LOCAL/OFF Internal temperature alarm Position sensor Hardware error	Motor temperature alarm Torque alarm Jammed valve Mid-travel alarm Speed sensor configuration error Manual operation ESD signal Low battery
Intelligent Protection	Automatic phase correction Phase failure correction Motor thermostat Jammed valve protection Anti-hammer protection Instantaneous reversal protection	Warnings Contactor failure Maximum torque alarm Torque alarm bypass High/low electronic temperature Opto-coupled remote controls

Table 4. Controls (2)

Upper Display	LCD numeric 3-1/2 digit shows the current valve position as a percentage	
Lower Display	OLED graphic 128 x 64 dots (yellow monochromatic)	
Multiple Languages Display	Possible to choose from the following languages: English, Italian, German, French, Portuguese, Spanish, Russian, Turkish, Norwegian, Romanian and Polish.	
Factory Set Display Menu	English	
Battery	Option A (9 V lithium battery included)	- Local position display active (LCD 3-1/2 digit) - Real-time clock (Back-up) - 4 to 20 mA positioner and relays active Above functionality is also available when MAIN POWER SUPPLY OFF
	Option B (No Battery)	- Local position display active (LCD 3-1/2 digit) - Real-time clock - 4 to 20 mA positioner and Relays active Above functionality is available only when MAIN POWER SUPPLY ON

Standards and Directives

Products have been certified in accordance with the following directives:

- ATEX
- IECEX
- China (CCC)
- SIL 2/3

Test Summary

■ Vibration Test

- F01 3000 is in accordance with IEC 60068-2-6- Appendix B (plant induced): frequencies from 1 to 500 Hz (in 3 axes) with 2.0 g peak acceleration. Sweep cycles in each axis: 10 (Performance are guaranteed in case of Anti-vibration Kit option).

■ Seismic Test

- F01 3000 is tested in accordance with IEC 60068-2-57. Frequencies from 1 to 35 Hz (in 3 axes) with maximum 2.0 g peak acceleration. Verification of structural integrity at 5 g. Endurance of oscillogram: 30 s.

■ Salt Spray Test

- F01 3000 external coating is tested for resistance to salt spray for 1,500 hours according to ASTM B117/IEC 68-2-11.

■ Noise Test

- F01 3000 is tested according to EN ISO 1680. Noise level is less than 65 dB (grade A) at 1 m distance.

Applicable Standards and Regulations

■ Electromagnetic compatibility directive (EMC)

- F01 3000 actuators conform to the requirements of EMC Directive 2014/30/EU.

■ Low voltage directive (LV)

- F01 3000 actuators comply with Low Voltage Directive 2014/35/EU.

■ Machinery directive

- F01 3000 actuators comply with the provision of Machinery Directive 2006/42/EC.

■ RED directive

- F01 3000 actuators comply with the RED Directive 2014/53/EU.

■ ATEX directive

- F01 3000 actuators comply with the ATEX Directive 2014/34/EU.

Features and Functions of Actuators

Power Supply Three-Phase AC

Table 5. Open-Close | Inching Duty
S2-15' | S4-25% 60 St/h

Voltage/frequency	220	380	400	415	-	-	-	-	-	AC	Volt
	50	50	50	50	-	-	-	-	-	-	Hz
	440	460	480	-	-	-	-	-	-	AC	Volt
	60	60	60	-	-	-	-	-	-	-	Hz
	440	660	690	-	-	-	-	-	-	AC	Volt
	50	50	50	-	-	-	-	-	-	-	Hz
	220	380	400	575	-	-	-	-	-	AC	Volt
	60	60	60	60	-	-	-	-	-	-	Hz
Type of Duty	Standard		S2-15' S4-25%, 60 St/h Class A and B according to EN15714-2								
	In accordance with IEC 60034_1										
Insulation Class	Standard			Class H							

Table 6. Modulating Duty
S4-50% 1200 St/h

Voltage/frequency	220	230	240	380	400	415	-	-	-	AC	Volt
	50	50	50	50	50	50	-	-	-	-	Hz
	440	460	480	-	-	-	-	-	-	AC	Volt
	60	60	60	-	-	-	-	-	-	-	Hz
Special Voltage/frequency	660	-	-	-	-	-	-	-	-	AC	Volt
	50	-	-	-	-	-	-	-	-	-	Hz
	400	575	-	-	-	-	-	-	-	AC	Volt
	60	60	-	-	-	-	-	-	-	-	Hz
Type of Duty	Standard			S4-50% 1200 St/h,			Class C according to EN15714-2				
	In accordance with IEC 60034_1										
Insulation Class	Standard			Class H							

Power Supply Single-Phase AC

Table 7. Open-Close | Inching Duty
S2-15' | S4-25% 60 St/h

Voltage/frequency	220	230	-	-	-	-	-	-	-	AC	Volt
	50	50	-	-	-	-	-	-	-	-	Hz
	240	-	-	-	-	-	-	-	-	AC	Volt
	60	-	-	-	-	-	-	-	-	-	Hz
Special Voltage/frequency	110	-	-	-	-	-	-	-	-	AC	Volt
	50	-	-	-	-	-	-	-	-	-	Hz
	115	120	-	-	-	-	-	-	-	AC	Volt
	60	60	-	-	-	-	-	-	-	-	Hz
Type of Duty	Standard		S2-15' S4-25%, 60 St/h, Class A and B according to EN15714-2								
	In accordance with IEC 60034_1										
Insulation Class	Standard		Class H								

Table 8. Modulating Duty
S4-50% 1200 St/h

Voltage/frequency	220	230	-	-	-	-	-	-	-	AC	Volt
	50	50	-	-	-	-	-	-	-	-	Hz
	240	-	-	-	-	-	-	-	-	AC	Volt
	60	-	-	-	-	-	-	-	-	-	Hz
Special Voltage/frequency	110	-	-	-	-	-	-	-	-	AC	Volt
	50	-	-	-	-	-	-	-	-	-	Hz
	115	120	-	-	-	-	-	-	-	AC	Volt
	60	60	-	-	-	-	-	-	-	-	Hz
Type of Duty	Standard	S4-50%, 1200 St/h, Class C according to EN15714-2									
	In accordance with IEC 60034_1										
Insulation Class	Standard	Class H									

Power Supply Direct Current

Table 9. Open-Close | Inching Duty
S2-15' | S4-25% 60 St/h

Voltage/frequency	24	-	-	-	-	-	-	-	-	DC	Volt
	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-
Type of Duty	Standard	S4-25' S4-25% 60 St/h, Class C according to EN15714-2									
	In accordance with IEC 60034_1										
Insulation Class	Standard			Class H							

Certification

Table 10. Non-Hazardous/Weatherproof

	Directive Code	Enclosure Code	Extension	Motor Duty	Temperature		
					Standard	Low	Extreme Low
All Models	IEC EN60529	IP66/68	With or Without	Short time maximum 60 St/h Intermittent >60 St/h	-20 to 85 °C / -4 to 185 °F -20 to 65 °C / -4 to 149 °F	-40 to 85 °C / -40 to 185 °F -40 to 65 °C / -40 to 149 °F	-60 to 85 °C / -76 to 185 °F -60 to 65 °C / -76 to 149 °F

**Table 11. Hazardous Area Enclosures
European Hazardous Area Directive – ATEX**

	Directive Code	Enclosure Code	Extension	Motor Duty	Temperature		
					Standard	Low	Extreme Low
All Models	2014/34/EU	Ex db h IIB T4 Gb or Ex db h ia IIB T4 Gb Ex h tb IIIC T135 °C Db IP66/68	With or Without	All	-20 to 85 °C / -4 to 185 °F	-40 to 85 °C / -40 to 185 °F	-50 to 85 °C / -58 to 185 °F
All Models	2014/34/EU	Ex db eb h or db eb h ia IIB T4 Gb Ex h tb IIIC T135 °C Db IP66/68	With or Without	All	-20 to 60 °C / -4 to 140 °F	-	-

Table 12. European Hazardous Area Directive – IECEx

	Directive Code	Enclosure Code	Extension	Motor Duty	Temperature		
					Standard	Low	Extreme Low
All Models	2014/34/EU	Ex db h IIB T4 Gb or Ex db h ia IIB T4 Gb Ex h tb IIIC T135 °C Db IP66/68	With or Without	All	-20 to 85 °C / -4 to 185 °F	-40 to 85 °C / -40 to 185 °F	-50 to 85 °C / -58 to 185 °F
All Models	2014/34/EU	Ex db eb h or db eb h ia IIB T4 Gb Ex h tb IIIC T135 °C Db IP66/68	With or Without	All	-20 to 60 °C / -4 to 140 °F	-	-

Technical Data

Actuator model description is defined by the following coding:

xxx	yyy /	yyy -	zz
Type	Size	Motor type	Operating time
Model Description Example	F01-150-052/15	-	-
F01	150	052	15

F01	3000
Size	150/300/600
Torque	150/300/600
Operating Time	6/12/15/30/45/60 (50 Hz)
	5/10/12/25/37/50 (60 Hz)

Technical Data for Quarter-Turn Actuators

Power Supply Three-Phase AC

Open-Close Duty

Short-Time Duty (S2-15') | Inching Duty (S4-25% | 60 St/h)

Table 13. Modulating Duty
S4-50% 1200 St/h

Type	Output Torque (Nm / lbf-ft)		Operating Time (Seconds/90°)	
	Minimum	Nominal	50 Hz	60 Hz
F01.150-052	60 Nm / 44.2 lbf-ft	150 / 110.6	6	5
F01.150-054	60 / 44.2	150 / 110.6	12	10
F01.150-052	60 / 44.2	150 / 110.6	15	12
F01.150-054	60 / 44.2	150 / 110.6	30	25
F01.150-056	60 / 44.2	150 / 110.6	45	37
F01.150-058	60 / 44.2	150 / 110.6	60	50
F01.300-102	120 / 88.5	300 / 221.2	6	5
F01.300-104	120 / 88.5	300 / 221.2	12	10
F01.300-052	120 / 88.5	300 / 221.2	15	12
F01.300-054	120 / 88.5	300 / 221.2	30	25
F01.300-056	120 / 88.5	300 / 221.2	45	37
F01.300-058	120 / 88.5	300 / 221.2	60	50
F01.600-102	240 / 177	600 / 442.5	15	12
F01.600-104	240 / 177	600 / 442.5	30	25
F01.600-106	240 / 177	600 / 442.5	45	37
F01.600-108	240 / 177	600 / 442.5	60	50

NOTES:

1. Output torque: Adjustable in OPEN and in CLOSED direction from minimum to nominal values.
2. Electric data: Refer to the Electric Data Document.
3. Electric motor: Mxxx (ie. 054) code applied to the Open-Close Duty - Short-Time Duty (S2-15') | Inching Duty (S4-25% | 60 St/h) actuator model.
Txxx (ie. 058) code applied to the Modulating Duty - S4-50% 1200 St/h actuator model.
4. Stall Torque: Will be up to 2 times the Nominal Torque depending on speed and voltage.
Maximum torque that electric actuator develops when the motor is energized and the output drive is locked.

Power Supply Single-Phase AC

Open-Close Duty

Short-Time Duty (S2-15') | Inching Duty (S4-25% | 60 St/h)

Table 14. Modulating Duty
S4-50% 1200 St/h

Type	Output Torque (Nm / lbf-ft)		Operating Time (Seconds/90°)	
	Minimum	Nominal	50 Hz	60 Hz
F01.150-052	60 / 44.2	150 / 110.6	6	5
F01.150-054	60 / 44.2	150 / 110.6	12	10
F01.150-052	60 / 44.2	150 / 110.6	15	12
F01.150-054	60 / 44.2	150 / 110.6	30	25
F01.150-056	60 / 44.2	150 / 110.6	45	37
F01.150-058	60 / 44.2	150 / 110.6	60	50
F01.300-102	120 / 88.5	300 / 221.2	6	5
F01.300-104	120 / 88.5	300 / 221.2	12	10
F01.300-052	120 / 88.5	300 / 221.2	15	12
F01.300-054	120 / 88.5	300 / 221.2	30	25
F01.300-056	120 / 88.5	300 / 221.2	45	37
F01.300-058	120 / 88.5	300 / 221.2	60	50
F01.600-102	240 / 177	600 / 442.5	15	12
F01.600-104	240 / 177	600 / 442.5	30	25
F01.600-106	240 / 177	600 / 442.5	45	37
F01.600-108	240 / 177	600 / 442.5	60	50

NOTES:

1. Output torque: Adjustable in OPEN and in CLOSED direction from minimum to nominal values.
2. Electric data: Refer to the Electric Data Document.
3. Electric motor: Mxxx (ie. 054) code applied to the Open-Close Duty - Short-Time Duty (S2-15') | Inching Duty (S4-25% | 60 St/h) actuator model.
Txxx (ie. 058) code applied to the Modulating Duty - S4-50% 1200 St/h actuator model.
4. Stall Torque: Will be up to 2 times the Nominal Torque depending on speed and voltage.
Maximum torque that electric actuator develops when the motor is energized and the output drive is locked.

Direct Current

Table 15. Open-Close Duty
Short-Time Duty (S2-15') | Inching Duty (S4-25% | 60 St/h)

Type	Output Torque (Nm / lbf-ft)		Operating Time (Seconds /90°)
	Minimum	Nominal	50 Hz
F01.150-052	60 / 44.2	150 / 110.6	5
F01.150-052	60 / 44.2	150 / 110.6	12
F01.300-052	120 / 88.5	300 / 221.2	12

NOTES:

1. Output torque: Adjustable in OPEN and in CLOSED direction from minimum to nominal values.
2. Electric data: Refer to the Electric Data Document.
3. Electric motor: Mxxx (ie., 054) code applied to the Open-Close Duty - Short-Time Duty (S2-15') | Inching Duty (S4-25% | 60 St/h) actuator model.
Txxx (ie., 058) code applied to the Modulating Duty - S4-50% 1200 St/h) actuator model.
4. Stall Torque: Will be up to 2 times the Nominal Torque depending on speed and voltage.
Maximum torque that electric actuator develops when the motor is energized and the output drive is locked.

Controls

Analog Module

Analog Position Transmission Module (APTМ)

This card features a 4 to 20 mA galvanically insulated module for position or torque re-transmission. The said card is easily plugged into the base card without the need for dedicated tools. The module can be configured to the output torque in place of the actuator position.

Position Servo Amplifier Module (PSM)

Module necessary for actuators in modulating and inching duty. It drives the motor through pulses at constant frequency and duration proportional to the position error, following an externally set analogical point signal.

The basic features are:

- Input: 4 to 20 mA or 0 to 20 mA with galvanic insulation.
- Output: 4 to 20 mA with galvanic insulation for position or torque re-transmission.

Bus Control Modules

Table 16. FOUNDATION Fieldbus

Electrical interface	IEC 61158-2, 2-wire communication
Data rate	31.25 kbit/s
Bus type	H1 communication bus, Voltage Mode signaling
Device number	32 devices per segment Maximum 16 devices (best practice) even less in case of many Function Blocks assigned to the microcycle
Bus length:	1900 m per segment
Electrical power:	Bus-powered Maximum voltage 32 V Minimum voltage 9 V Rated current $I_n = 19$ mA Fault current $I_{max} = 24$ mA

Table 17. HART 7

Electrical interface	4 to 20 mA analog loop, 2-wire communication
Data rate	Request/response mode - 2/3 updates per second Optional burst mode - 3/4 updates per second
Bus type	HART® protocol 7.9
Device number	Point-to-point architecture: 1 field device Split ranging: normally 2 field devices Multidrop: 16 field devices
Bus length:	Maximum twisted pair length - 3,048 m / 10,000 ft Maximum multiple twisted pair length - 1,524 m / 5,000 ft
Electrical power:	Actuator powered Maximum voltage 36 V Minimum voltage 0 V

Table 18. Modbus RTU

Electrical interface	2-wire RS-485
Data rate	600 1,200 2,400 4,800 9,600 19,200 38,400 bit/s Redundant type: number 2 separate and configurable channels with dedicated speed
Transmission technology	RS-485, half duplex
Device number	Maximum 32 devices per segment. If more than 32 devices are present on the bus, repeaters should be used Maximum addresses 247
Network topology	Line (bus) structure
Bus length	1,200 m without repeater
Electrical power	Actuator-powered

Table 19. PROFIBUS DP V0/1/2

Electrical interface	2-wire RS-485								
Data rate	9.6 19.2 45.45 93.75 187.5 500 1,500 Kbit/s								
Network topology	Line (bus) structure. With repeaters tree structures can also be realized								
Device number	32 devices per segment without repeater (maximum 126 with repeaters)								
Transmission technology	PROFIBUS DP								
Bus length	Dependent on bus speed selected								
	Bus speed	9.6	19.2	45.45	93.75	187.5	500	1,500	kbit/s
	Length:	1,200				200	200	200	m
Electrical power	Actuator-powered (optional auxiliary external voltage supply)								
Station type	DPV1 and DPV2 (redundancy) slave								

Table 20. LonWorks

Electrical interface	2-wire twisted pair
Data rate	78 Kbps
Network topology	Multi-drop line or loop
Device number	60 devices per segment using specific 16 AWG cable. More segments with repeaters
Transmission technology	LonWorks® FT-10
Bus length	800 m per segment using specific 16 AWG cable. More segments with repeaters
Electrical power	Actuator-powered

Overall Actuator Dimensions

Overall Dimensions - Standard Manual Override

Figure 1. F01-150/300 Model

Notes:

F01-150 AND 300

ACTUATOR WEIGHT: 31 KG

* SPACE FOR COVER OR MOTOR REMOVAL

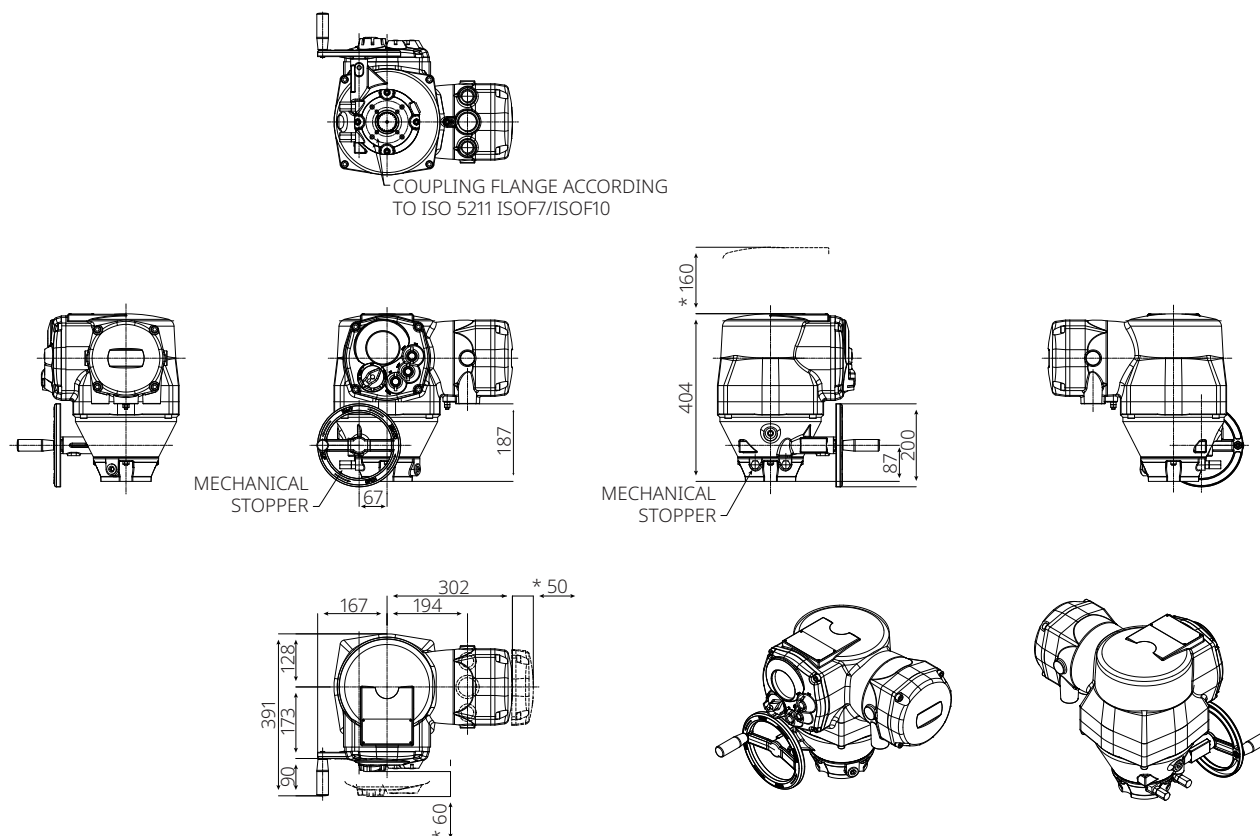
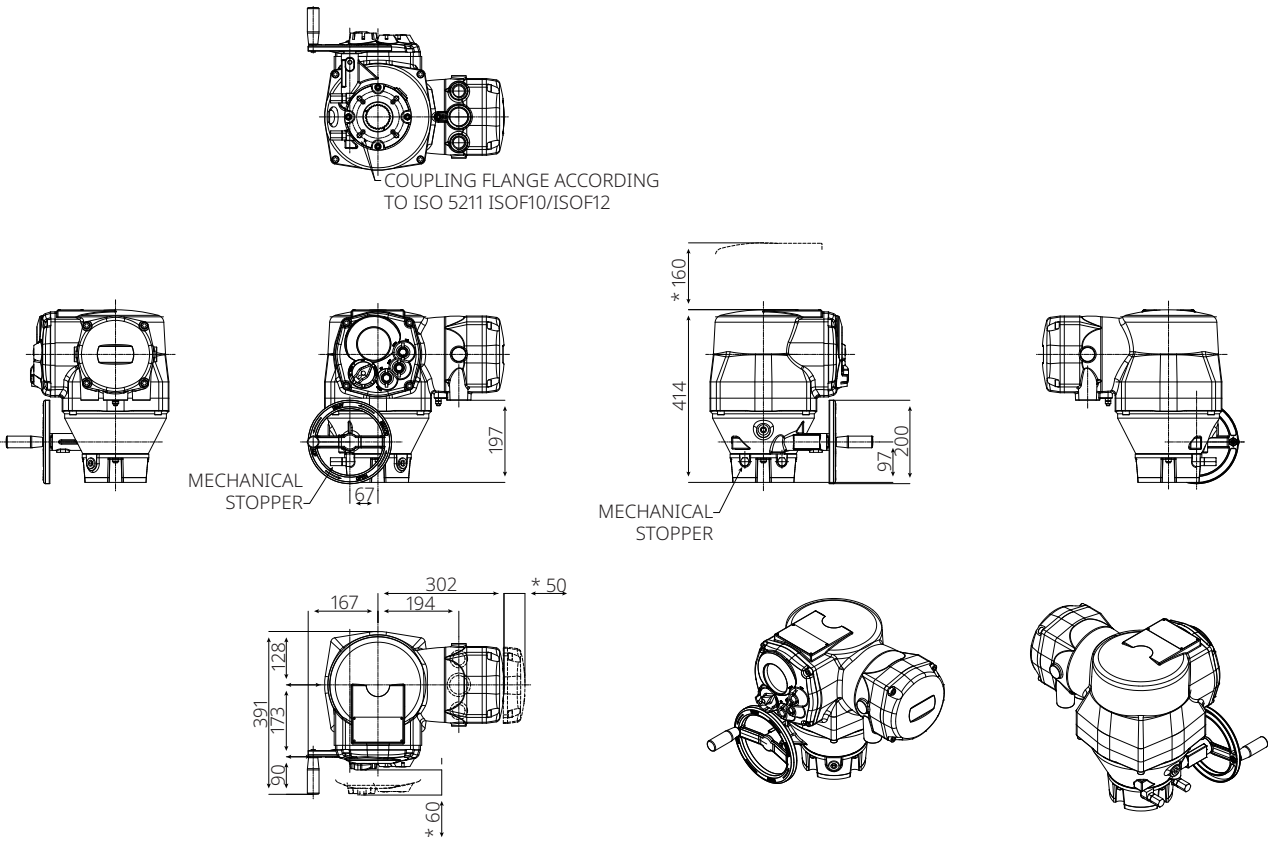


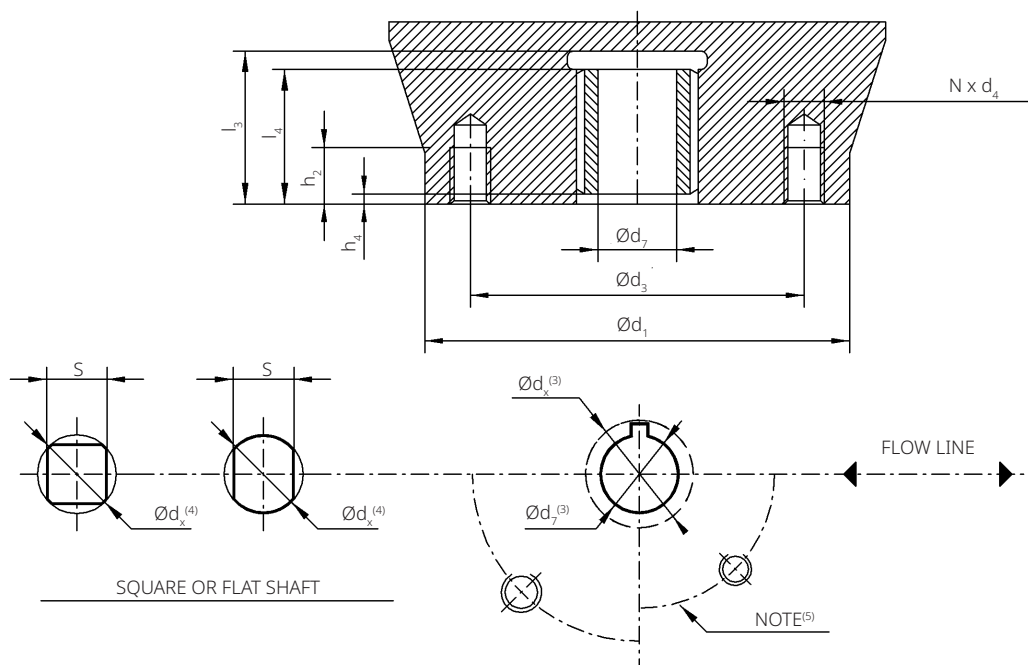
Figure 2. F01-600 Model

Notes:
F01-600-3000
ACTUATOR WEIGHT: 32 KG
* SPACE FOR COVER OR MOTOR REMOVAL



Output Drive Dimensions

Figure 3. QTC-F01 Standard Actuators (TN 1258)



Note:
Output drive types according to ISO 5211.

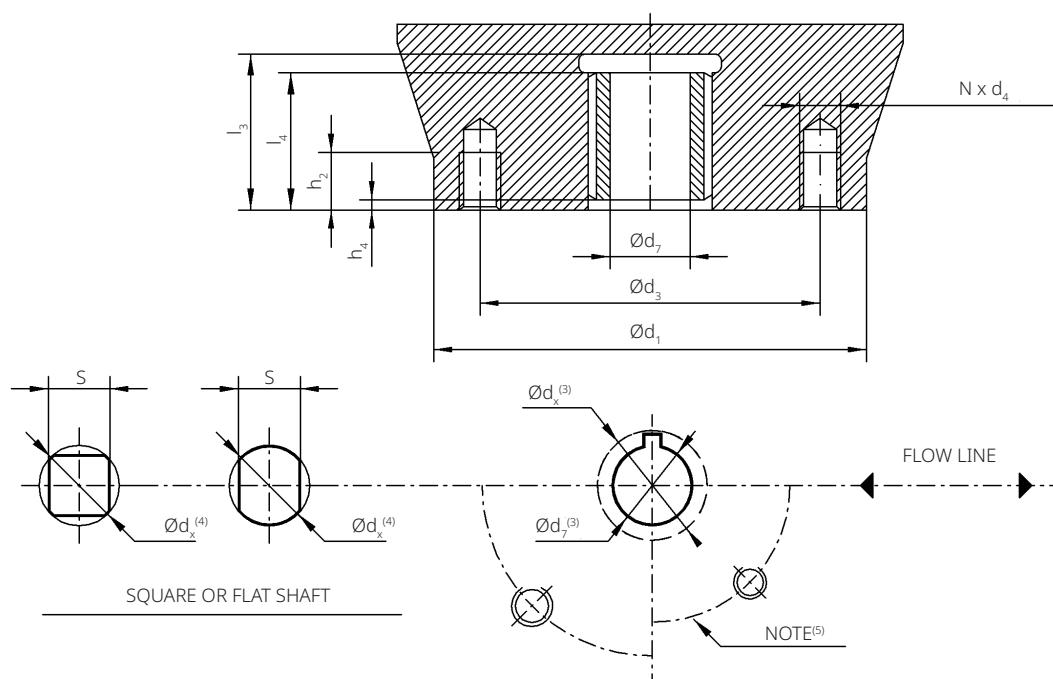
Table 21. TN 1258 (in.)

Actuator Size	Flange Dimensions									Stem Capability ⁽¹⁾			
	ISO 5211	d_1	d_3	$d_4^{(2)}$	N	l_3	l_4	h_2	h_4	d_7 max	S max	d_x max ⁽³⁾	FL ⁽⁵⁾
F01-150	F10	125	102	M10	4	50	48	16	1	Ø28	22	Ø36	F07
F01-300	F10	125	102	M10	4	50	48	16	1	Ø28	22	Ø36	F07
F01-600	F12	150	125	M12	4	60	58	16	1	Ø40	30	Ø48	F10

Notes:

1. Insert bush supplied by Biffi with unmachined bore. Largest bore can be supplied with solid piece bush.
2. Fixing bolts or rods supplied by Biffi only on request; minimum material required ISO class 8.8.
3. d_x : The maximum accepted diameter described by key, square or flat machining.
4. Position of the shaft with the valve closed.
5. Additional ISO PCD is provided as shown on column FL.

Figure 4. QTC-F01 Standard Actuators (TN 1258-1)



Note:
Output drive types according to ISO 5211.

Table 22. TN 1258-1 (in.)

Actuator Size	Flange Dimensions									Stem Capability ⁽¹⁾			
	ISO 5211	d ₁	d ₃	d ₄ ⁽²⁾	N	l ₃	l ₄	h ₂	h ₄	d ₇ max	S max	D _x max ⁽³⁾	FL ⁽⁵⁾
F01-150	F10	4.9	4.0	M10	4	2.0	1.9	0.6	0.04	Ø1.1	0.9	Ø1.4	F07
F01-300	F10	4.9	4.0	M10	4	2.0	1.9	0.6	0.04	Ø1.1	0.9	Ø1.4	F07
F01-600	F12	5.9	4.9	M12	4	2.4	2.3	0.7	0.04	Ø1.6	1.2	Ø1.9	F10

Notes:

1. Insert bush supplied by Biffi with unmachined bore. Largest bore can be supplied with solid piece bush.
2. Fixing bolts or rods supplied by Biffi only on request; minimum material required ISO class 8.8.
3. dx: The maximum accepted diameter described by key, square or flat machining.
4. Position of the shaft with the valve closed.
5. Additional ISO PCD is provided as shown on column FL.

Wiring Diagram Code

Data applicable to the quarter-turn actuator model F01 3000.

Coding Chart											
	Part Number	W	D	7	6	V	T	B	Y1	Y2	
F01 3000 Quarter-Turn Actuator											
Control Type and Motor Duty						V					
Short-time duty (S2-15') Inching duty (S4-25% 60 St/h) Local CONTROL						A					
Short-time duty (S2-15') Inching duty (S4-25% 60 St/h) Local CONTROL 4 to 20 mA OUT						B					
Short-time duty (S2-15') Inching duty (S4-25% 60 St/h) Local CONTROL 4 to 20 mA IN/OUT						C					
Modulating duty (S4-50%) 1200 St/h) Local CONTROL						N					
Modulating duty (S4-50%) 1200 St/h) Local CONTROL 4 to 20 mA OUT						E					
Modulating duty (S4-50%) 1200 St/h) Local CONTROL 4 to 20 mA IN/OUT						M					
Power Supply							T				
Direct Current							C				
Single-Phase							M				
Three-Phase							T				
Control Options								B			
Hard-wired (Basic)								0			
LonWorks								A			
PROFIBUS DP V1								G			
PROFIBUS DP V1 redundant								K			
PROFIBUS DP V2 Redundant								L			
Modbus® redundant								V			
Modbus single channel with repeater								W			
Modbus single channel (RDM ready)								R			
FOUNDATION™ Fieldbus								N			
HART 7								H			
HART 7 - Wireless connectivity								T			
Accessories									Y1	Y2	
Basic									0	0	

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