

Dispensing Valves Type EFC 11 PPSU

Electronic Flow Control Valve

EFC the new electronic dispensing valve from AVS-Römer

Motorised dispensing valve for regulating the flow volume of liquids and gases.

The position of the precision throttle, which is connected directly to a linear motor, determines the flow rate.

In conjunction with the proven ELSA push-in connectors made from PPSU, this valve is also used in the food industries.

The control electronics integrated in the valve housing allow the setting of the motor via an analog voltage signal, whereby the flow rate can be adjusted almost continuously.

A set position can also be maintained unpowered due to the stepper motor technology.

Other features:

- less dead space
- materials and constructional design especially optimised for food applications
- low hysteresis
- simple control
- easy connection using ELSA plug-in connector

Variations / options:

- other seal materials
- other nominal diameters
- other voltage ranges
- other characteristics of the valve by variation of the stem tip or A/D converter characteristics



CHARACTERISTICS

GENERAL

Constructional design	Motorised precision tapered throttle
Product name	Electronic flow control valve
Product type	EFC-11-958P...-U10-51, EFC-11-955P3...-U10-51
Nominal diameter	DN 0,5 / DN 1 / DN 1,5 / DN 2 / DN 3 / DN 4 / DN 5
Connection	ELSA push-in connectors for pipe/tube OD 4, OD 6 or AD 8
Ambient temperature	0 °C to +60 °C
Medium temperature	0 °C to +80 °C
Body material	PPSU (KTW approved, NSF certified)
Spindle material	1.4404
O-ring material	FKM, or EPDM peroxid curved
Housing material	PPS GF40 (UL94-V0)
Mounting method	via M3 DIN 931 hexagonal bolts in the groove or spring clips with inside diameter 18-22 mm (not included)
Mounting position	Preferably upright
Approval	NSF/ANSI 169

PNEUMATIC - HYDRAULIC

Nominal pressure	PN 8 (DN 0,5-3), PN 6 (DN 4-5)
Pressure range	0 bar to 8 bar (DN 0,5-3), 0 bar to 6 bar (DN 4-5)
Flow rate	KV value, Q _{nn} value according to the table
Medium	Gases or liquids which do not corrode the materials specified.
Contamination	The upstream connection of a filter with a mesh size of 0.1 mm is recommended (e.g. SMF-958-P3-...-100)
Cycle duration	700 ms at 30 % (completely open to completely closed or vice versa)
Response time	< 150 ms (shorter response time on request)
Time delay	After adjustment the valve does not respond until after a 400 ms time delay (shorter on request)

ELECTRIC

Nominal voltage	+24 V DC ±10 %
Control signal	Voltage: 0 V to 10 V sampling rate: 100 ms
Power consumption P _{max}	Approx. 15 W during adjustment, <1 W during standing time
Duty cycle	30 % (corresponds to the proportion of active adjustment time in the overall process time)
Electrical connection	0.75 m, 4-pin screened cable (LiYCY 4 x AWG 24), strand ends pre-tinned.
Protection class	IP65

Caution! PPSU should not be used in contact with aromatic hydrocarbons, oxidising acids, acetone, chlorinated hydrocarbons, ethers or ketones! Also, PPSU should not be placed directly in contact with anaerobic adhesives!

Dispensing Valve - Type EFC 11-958

Price group	630	PN	8	Amb. temp.	T _{min} 0 °C, T _{max} +60 °C
				Med. temp.	T _{min} 0 °C, T _{max} +80 °C

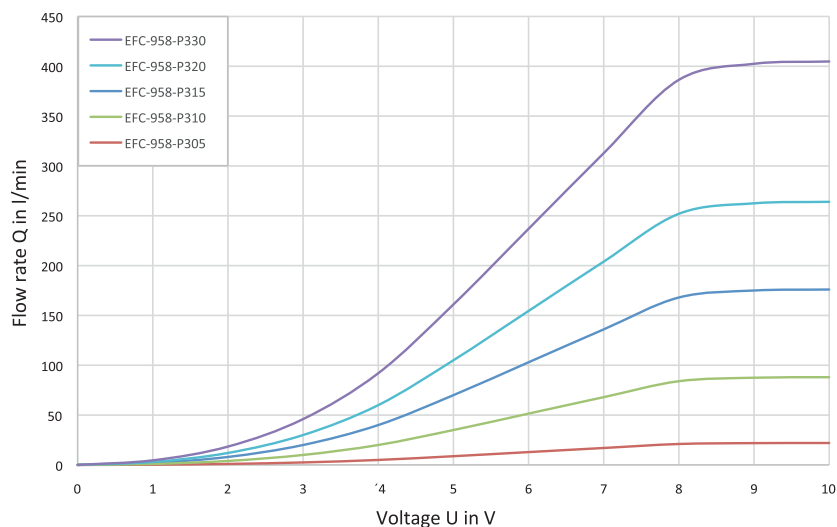


**Plastic
PPSU**

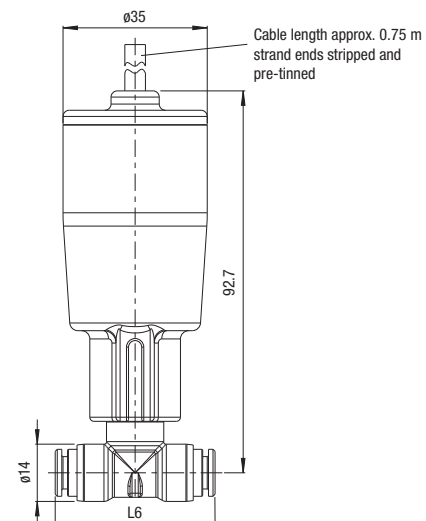
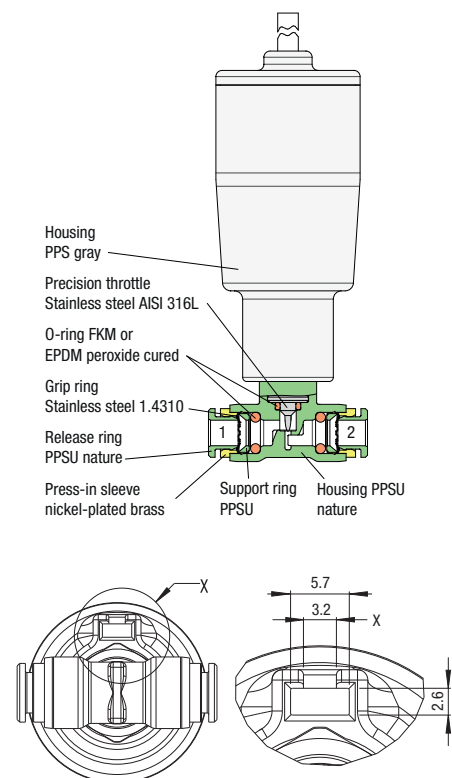
LICYC 4 x AWG 24	red	+24 V	Supply
	black	GND	Supply earth
	brown	0-10 V	Control signal
	orange	GND	Signal earth
	yellow		Cable screen

for tube OD	DN	Kv-value water [l/min]	Qnn value 0-x [l/min]	L6	Sealant material	Type	Order number
4	0.5	0 - 0.25	0 - 15	37.8	FKM	EFC-11-958P305-4FF-U10-51	690531
4	0.5	0 - 0.25	0 - 15	37.8	EPDM peroxid curved	EFC-11-958P305-4PF-U10-51	690529
6	0.5	0 - 0.25	0 - 15	38.6	FKM	EFC-11-958P305-6FF-U10-51	690527
6	0.5	0 - 0.25	0 - 15	38.6	EPDM peroxid curved	EFC-11-958P305-6PF-U10-51	690525
4	1	0 - 0.75	0 - 50	37.8	FKM	EFC-11-958P310-4FF-U10-51	690532
4	1	0 - 0.75	0 - 50	37.8	EPDM peroxid curved	EFC-11-958P310-4PF-U10-51	690530
6	1	0 - 0.75	0 - 50	38.6	FKM	EFC-11-958P310-6FF-U10-51	690528
6	1	0 - 0.75	0 - 50	38.6	EPDM peroxid curved	EFC-11-958P310-6PF-U10-51	690526
4	1.5	0 - 1.35	0 - 85	37.8	FKM	EFC-11-958P315-4FF-U10-51	690510
4	1.5	0 - 1.35	0 - 85	37.8	EPDM peroxid curved	EFC-11-958P315-4PF-U10-51	690507
6	1.5	0 - 1.35	0 - 85	38.6	FKM	EFC-11-958P315-6FF-U10-51	690504
6	1.5	0 - 1.35	0 - 85	38.6	EPDM peroxid curved	EFC-11-958P315-6PF-U10-51	690501
4	2	0 - 1.8	0 - 120	37.8	FKM	EFC-11-958P320-4FF-U10-51	690511
4	2	0 - 1.8	0 - 120	37.8	EPDM peroxid curved	EFC-11-958P320-4PF-U10-51	690508
6	2	0 - 1.8	0 - 120	38.6	FKM	EFC-11-958P320-6FF-U10-51	690505
6	2	0 - 1.8	0 - 120	38.6	EPDM peroxid curved	EFC-11-958P320-6PF-U10-51	690502
6	3	0 - 2.4	0 - 190	38.6	FKM	EFC-11-958P330-6FF-U10-51	690506
6	3	0 - 2.4	0 - 190	38.6	EPDM peroxid curved	EFC-11-958P330-6PF-U10-51	690503

Characteristic Curve: Input Pressure 8 bar, 0 V to 10 V, Medium: Air (open discharge)



Illustration

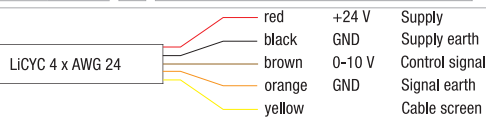


Dispensing Valve - Type EFC 11-955

Price group **630** PN 6 Amb. temp. $T_{min} 0^{\circ}C, T_{max} +60^{\circ}C$
Med. temp. $T_{min} 0^{\circ}C, T_{max} +80^{\circ}C$

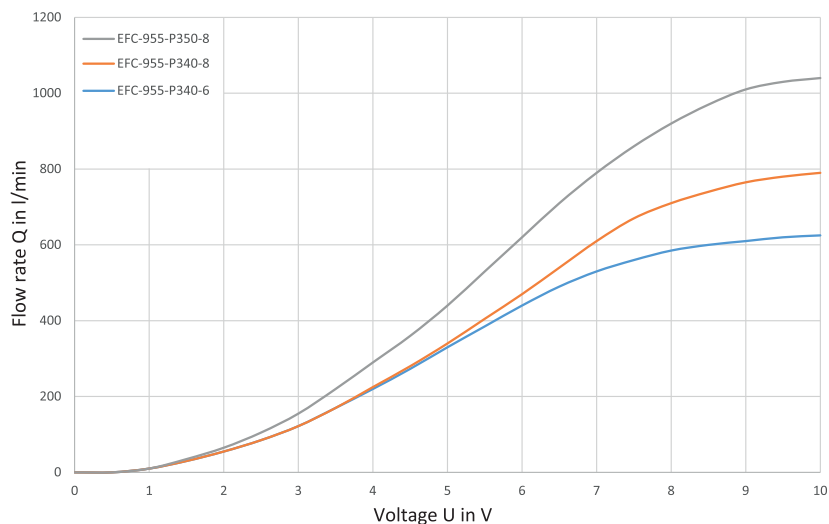


Plastic
PPSU

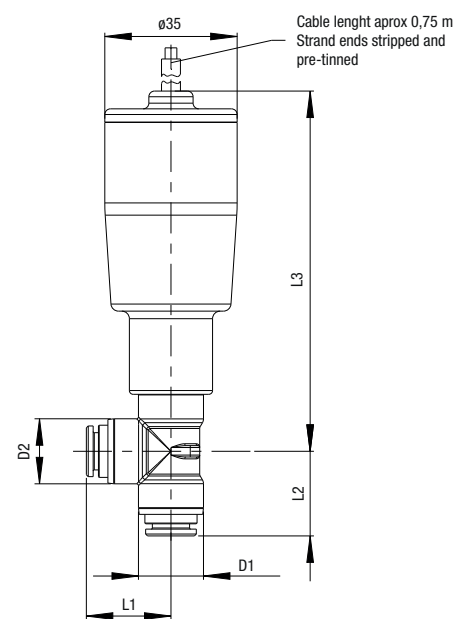
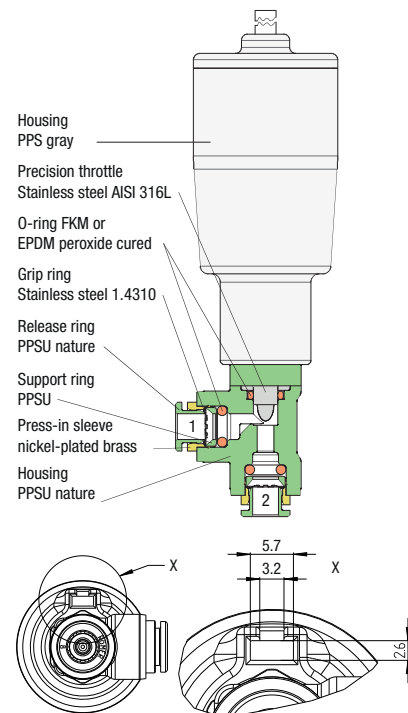


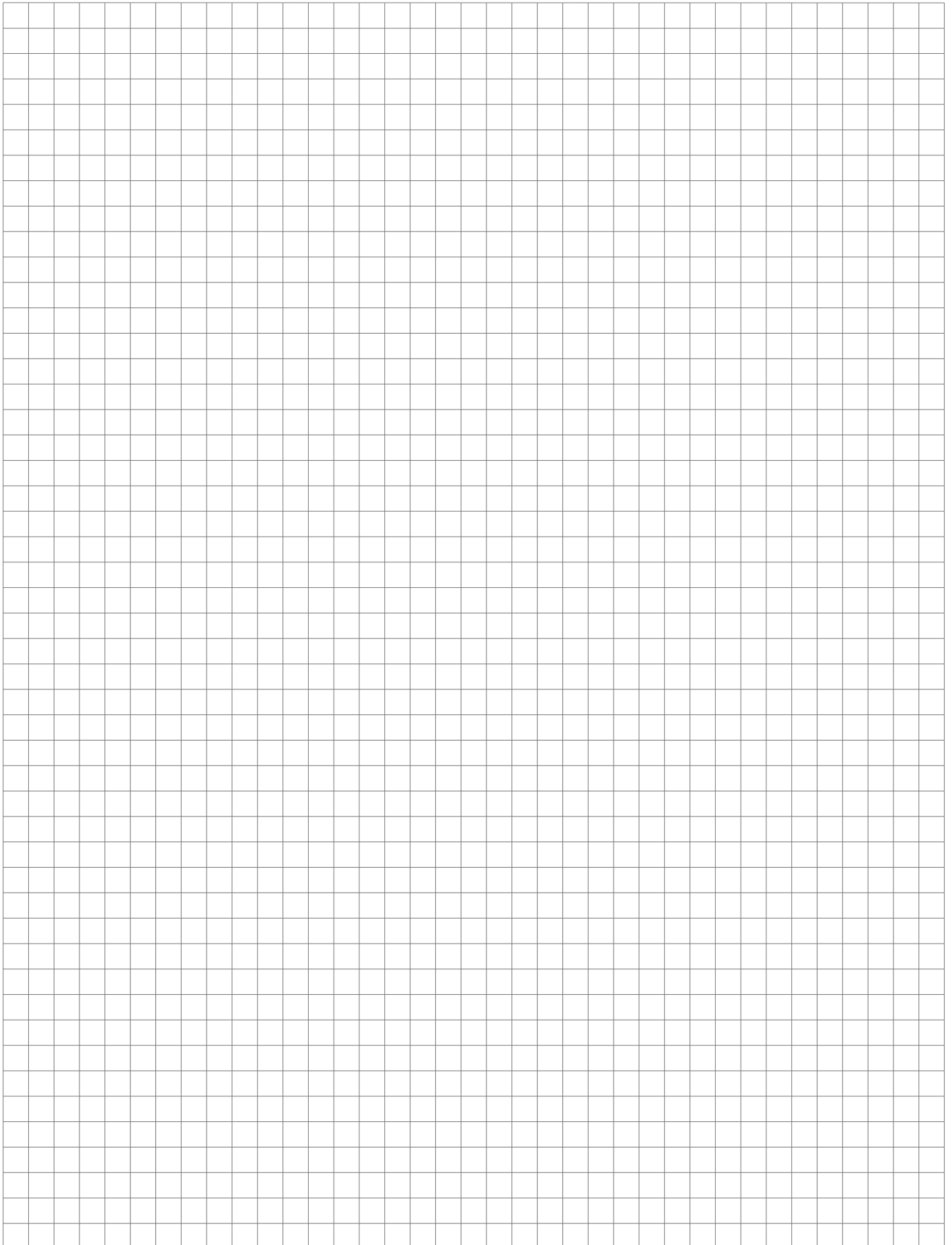
for tube OD	DN	Kv-value water [l/min]	Qnn value 0-x [l/min]	L1	L2	L3	D1	D2	Sealant material	Type	Order number
6	3	0 - 3.7	0 - 220	19.3	19.3	92.7	13.9	13.9	FKM	EFC-11-955P330-6FF-U10-51	690543
6	3	0 - 3.7	0 - 220	19.3	19.3	92.7	13.9	13.9	EPDM peroxid cured	EFC-11-955P330-6PF-U10-51	690544
8	3	0 - 4.2	0 - 245	22.4	22.4	95.3	17.2	17.2	FKM	EFC-11-955P330-8FF-U10-51	690541
8	3	0 - 4.2	0 - 245	22.4	22.4	95.3	17.2	17.2	EPDM peroxid cured	EFC-11-955P330-8PF-U10-51	690542
6	4	0 - 5	0 - 320	21.9	21.9	95.3	17.2	17.2	FKM	EFC-11-955P340-6FF-U10-51	690548
6	4	0 - 5	0 - 320	21.9	21.9	95.3	17.2	17.2	EPDM peroxid cured	EFC-11-955P340-6PF-U10-51	690545
8	4	0 - 7	0 - 400	22.4	22.4	95.3	17.2	17.2	FKM	EFC-11-955P340-8FF-U10-51	690549
8	4	0 - 7	0 - 400	22.4	22.4	95.3	17.2	17.2	EPDM peroxid cured	EFC-11-955P340-8PF-U10-51	690546
8	5	0 - 9.3	0 - 480	22.4	22.4	95.3	17.2	17.2	FKM	EFC-11-955P350-8FF-U10-51	690547
8	5	0 - 9.3	0 - 480	22.4	22.4	95.3	17.2	17.2	EPDM peroxid cured	EFC-11-955P350-8PF-U10-51	690550

Characteristic Curve: Input Pressure 6 bar, 0 V to 10 V, Medium: Air (open discharge)



Illustration





Dispensing Valves Type EFC 20 PPSU



Electronic Flow Control Valve

EFC the new electronic dispensing valve from AVS-Römer

Motorised dispensing valve for regulating the flow volume of liquids and gases.

The separately available cable electronics of the type **XFC** allow the position of the Motor via an analog voltage signal.

The position of the precision throttle, which is connected directly to a linear motor, determines the flow rate.

In conjunction with the proven ELSA push-in connectors made from PPSU, this valve is also used in the food industries.

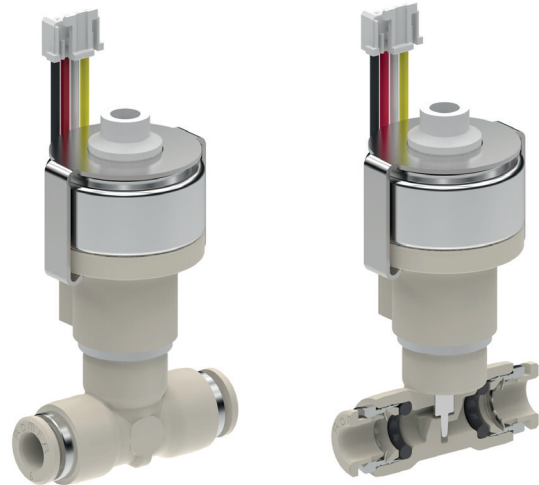
A set position can also be maintained unpowered due to the stepper motor technology.

Other features:

- less dead space
- materials and constructional design especially optimised for food applications
- low hysteresis
- simple control
- easy connection using ELSA plug-in connector

Variations / options:

- other seal materials
- other nominal diameters
- other voltage ranges
- other characteristics of the valve by variation of the stem tip or A/D converter characteristics



CHARACTERISTICS

GENERAL

Constructional design	Motorised precision tapered throttle
Product name	Electronic flow control valve
Product type	EFC-20-958P3... , EFC-20-955P3...
Nominal diameter	DN 0,5 / DN 1 / DN 1,5 / DN 2 / DN 3 / DN 4 / DN 5
Connection	ELSA push-in connectors for pipe/tube OD 4 ,OD 6 or AD 8
Ambient temperature	0° C to +60 °C
Medium temperature	0 °C to +80 °C
Body material	PPSU (KTW approved, NSF certified)
Spindle material	1.4404
O-ring material	FKM, or EPDM peroxid curved
Housing material	PPS GF40 (UL94-V0)
Mounting method	via M3 DIN 931 hexagonal bolts in the groove or spring clips with inside diameter 18-22 mm (not included)
Mounting position	Preferably upright
Approval	NSF/ANSI 169

PNEUMATIC - HYDRAULIC

Nominal pressure	PN 8 (DN 0,5-3), PN 6 (DN 4-5)
Pressure range	0-8 bar (DN 0,5-3), 0-6 bar (DN 4-5)
Flow rate	KV value, Qnn value according to the table
Medium	Gases or liquids which do not corrode the materials specified.
Contamination	The upstream connection of a filter with a mesh size of 0.1 mm is recommended (e.g. SMF-958-P3-...-100)
Cycle duration	700 ms at 30 % (completely open to completely closed or vice versa)
Response time	< 150 ms (shorter response time on request)
Time delay	After adjustment the valve does not respond until after a 400 ms time delay (shorter on request)

ENGINE SPECIFICATION

Operating voltage	5 V DC
Resistance per phase	12.7 Ohm $\pm$ 7 %
Inductance	6 mH $\pm$ 20 %
Current max.	0.39 A
Stroke per step	0.0127 mm
Electrical connection	4 strands AWG28 100 mm, connector Molex 35507-0400
Protection class	IP30

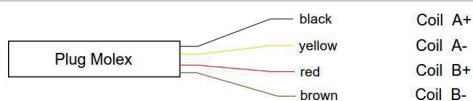
Caution! PPSU should not be used in contact with aromatic hydrocarbons, oxidising acids, acetone, chlorinated hydrocarbons, ethers or ketones! Also, PPSU should not be placed directly in contact with anaerobic adhesives!

Dispensing Valve - Type EFC 20-958

Price group **630** PN 8 Amb. temp. $T_{min} 0^{\circ}C, T_{max} +60^{\circ}C$
Med. temp. $T_{min} 0^{\circ}C, T_{max} +80^{\circ}C$

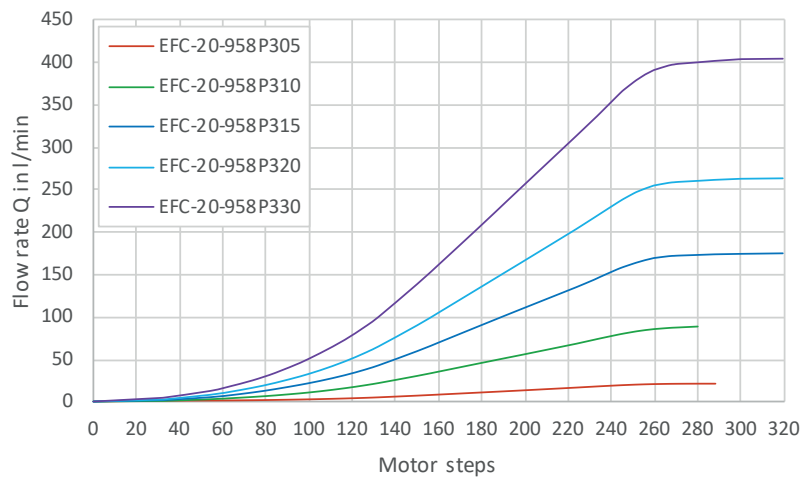


Plastic
PPSU

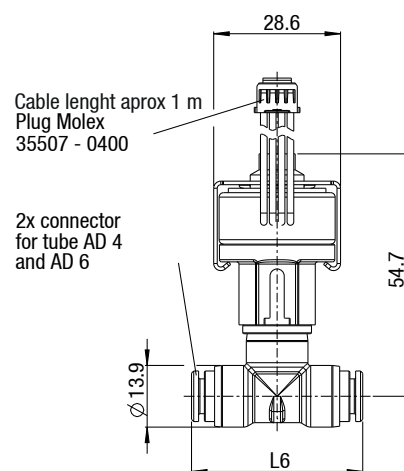
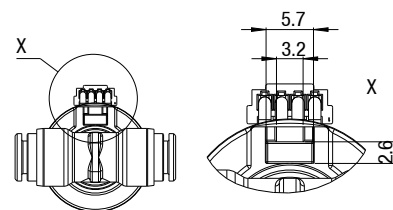
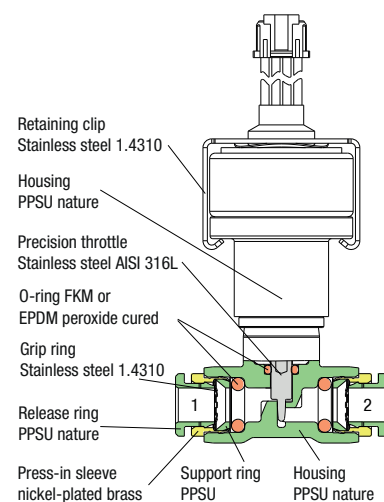


for tube OD	DN	Kv-value water [l/min]	Qnn value 0-x [l/min]	L6	Sealant material	Type	Order number
4	0.5	0 - 0.25	0 - 15	37.8	FKM	EFC-20-958P305-4FF	691800
6	0.5	0 - 0.25	0 - 15	38.6	FKM	EFC-20-958P305-6FF	691801
4	1	0 - 0.75	0 - 50	37.8	FKM	EFC-20-958P310-4FF	691802
6	1	0 - 0.75	0 - 50	38.6	FKM	EFC-20-958P310-6FF	691803
4	1.5	0 - 1.35	0 - 85	37.8	FKM	EFC-20-958P315-4FF	691804
6	1.5	0 - 1.35	0 - 85	38.6	FKM	EFC-20-958P315-6FF	691805
4	2	0 - 1.8	0 - 120	37.8	FKM	EFC-20-958P320-4FF	691806
6	2	0 - 1.8	0 - 120	38.6	FKM	EFC-20-958P320-6FF	691807
6	3	0 - 2.4	0 - 190	38.6	FKM	EFC-20-958P330-6FF	691809

Characteristic Curve: Input Pressure 8 bar, 0-10 V, Medium: Air (open discharge)



Illustration

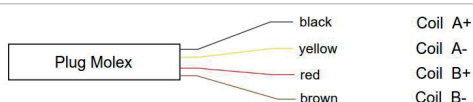


Dispensing Valve - Type EFC 20-955

Price group **630** PN 6 Amb. temp. $T_{min} 0\text{ }^{\circ}\text{C}$, $T_{max} +60\text{ }^{\circ}\text{C}$
Med. temp. $T_{min} 0\text{ }^{\circ}\text{C}$, $T_{max} +80\text{ }^{\circ}\text{C}$

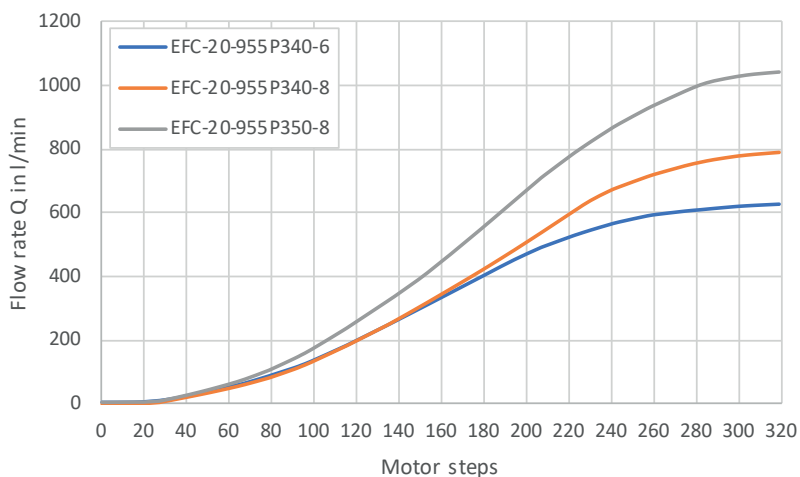


Plastic
PPSU

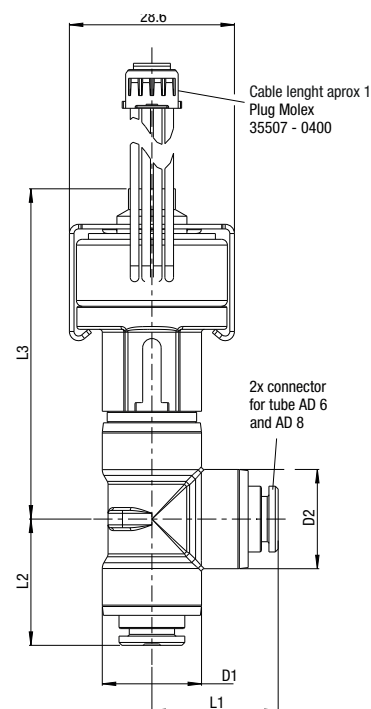
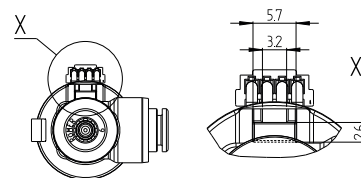
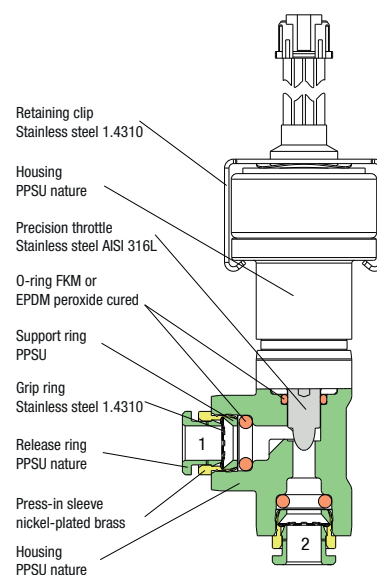


for tube OD	DN	Kv-value water [l/min]	Qnn value 0-x [l/min]	L1	L2	L3	D1	D2	Sealant material	Type	Order number
6	3	0 - 3.7	0 - 220	19.3	19.3	54.7	13.9	13.9	FKM	EFC-20-955P330-6FF	690655
8	3	0 - 4.2	0 - 245	22.4	22.4	57.2	17.2	17.2	FKM	EFC-20-955P330-8FF	690656
6	4	0 - 5	0 - 320	21.9	21.9	57.2	17.2	17.2	FKM	EFC-20-955P340-6FF	690652
8	4	0 - 7	0 - 400	22.4	22.4	57.2	17.2	17.2	FKM	EFC-20-955P340-8FF	690653
8	5	0 - 9.3	0 - 480	22.4	22.4	57.2	17.2	17.2	FKM	EFC-20-955P350-8FF	690654

Characteristic Curve: Input Pressure 6 bar, 0-10 V, Medium: Air (open discharge)



Illustration



Cable electronics XFC for EFC-20 series

Cable with control electronics for Electronic Flow Control Valve

XFC the new cable electronics for controlling electronic dosing valves of the EFC-20 series

The electronics enable analog or digital control of the EFC-20 series by voltage, current, I²C, RS485 or pulse width modulation.

The control electronics allow the position of the motor to be determined using an analog voltage signal. The status query via two integrated LEDs in the Housings also offer visual control at all times.

Other features:

- Little space required for valve housing
- Easy replacement if the mechanics or electronics are damaged
- Simple firmware upgrade when developing special versions

Variations / options:

- Voltage control
(0 V to + 5 V DC, 0 V to + 10 V DC)
- Current control (+ 4 mA to + 20 mA)
- Digital interfaces I²C, Modbus RS 485 (on request)
- PWM control
- Various connector plugs



CHARACTERISTICS

GENERAL

Product name	Cable electronics EFC-20 series		
Product type	XFC-21-...		
Nominal diameter	DN 0,5	DN 1	DN 1,5 / DN 2 / DN 3 / DN 4 / DN 5
Ambient temperature	0 °C to +60 °C		

PNEUMATIC - HYDRAULIC

Response time	< 15 ms
Time delay	after adjustment, the valve only reacts after a dead time of 70 ms

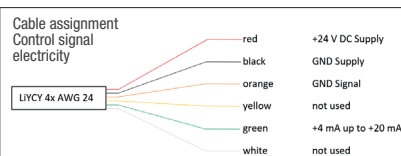
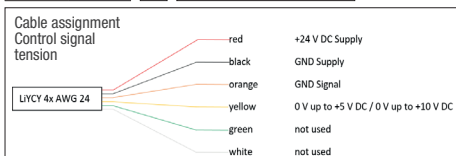
ENGINE SPECIFICATION

Nominal voltage	24 V DC $\pm 10\%$
Control signal	Voltage: 0 V to +5 V DC; 0 V to +10 V DC or current: +4 mA to +20 mA; Sampling rate 10 ms; I ² C, RS485, PWM
Duty cycle	30% ED (corresponds to the proportion of the active adjustment time in the total process time)
Electrical connection	6-pole cable 0.75 m, pre-tinned wire ends (LiYCY 6x AWG 24)
Protection class	IP30

Cable electronics for EFC-20 series

Price group **630**

PN 8

Temperature range
0 °C to +60 °C


For nominal size	Control signal	Typ	Order-number
0,5	0 V bis +5 V DC	XFC-21-05-U05-51	691300
0,5	0 V bis +10 V DC	XFC-21-05-U10-51	691303
0,5	+4 mA bis +20 mA	XFC-21-05-I20-51	691306
1,0	0 V bis +5 V DC	XFC-21-10-U05-51	691301
1,0	0 V bis +10 V DC	XFC-21-10-U10-51	691304
1,0	+4 mA bis +20 mA	XFC-21-10-I20-51	691307
1,5 - 5,0	0 V bis +5 V DC	XFC-21-15-U05-51	691302
1,5 - 5,0	0 V bis +10 V DC	XFC-21-15-U10-51	691305
1,5 - 5,0	+4 mA bis +20 mA	XFC-21-15-I20-51	691308

Illustration

