

# 850 Series



*High Performance solenoid multi-valve | 2/2 NC*  
PNEUMATIC DIVISION

**MATRIX**  
mechatronics

# SOLENOID VALVES 850 SERIES • 2/2

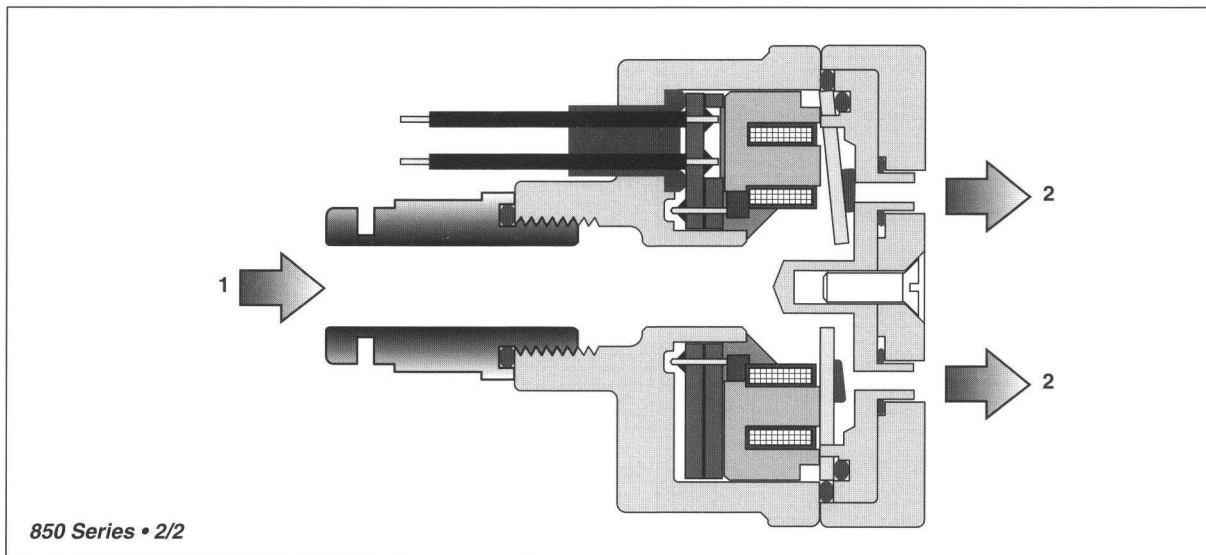
Pneumatic solenoid valves of 850 Series are of the 2/2 NC type.

Their modularity represents the innovation in this Series. Nine independent shutters with common pneumatic feed and with either separate outlets or assembled outlets in order to increment the flow rate. The response time, in milliseconds, is independent from the flow rate value, and its operative life is over 500 millions cycles.

The Series is fit for step change the flow rate (till nine steps in single outlet version), transforming a simple 2/2 into a solenoid valve, having a proportional flow rate and absolute repeatability. Besides, by combining different control techniques (for example, PWN and PNM) the flow rate may vary in linearity. Due to the availability of controls of speed-up type, dynamic features are even more improved.

Consequently, the response time for standard solenoid valves with 24 VDC control results below 5 ms in opening and below 2 ms in closing, while the maximum operating frequency is 200 Hz. The response time for solenoid valve with speed-up control, both in opening and in closing, is below 1 ms, with a maximum operating frequency of 500 Hz.

Besides high speed features, solenoid valves of 850 Series present flow rate values to 1620  $\ell$ /minute (ANR), with a supply pressure from 2 to 8 bar.



## Advantages

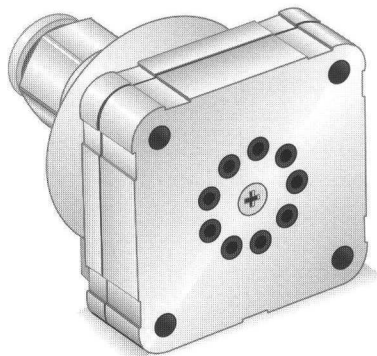
- Compact dimension.
- High duct diameter and flow rate.
- Short response times.
- Insensitivity to frequency work and to vibration.
- Low absorbed power.
- Precision, repetitiveness and flexibility.
- Long operating life.

## Application

- Pressure and flow rate control devices.
- Positioning systems.
- Selection systems.
- Metering systems.
- Biomedical sector.
- Actuator speed control.

## Materials

- Body and flanges in Al.
- Seals in NBR.



CONTROL:

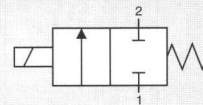
DIRECT

PFM

PNM

PWM

N. 9 NC



GENERAL CHARACTERISTICS

FLUID	Non-lubricated dry air, neutral gases (-10 + 50°C)	
FILTRATION RATING	Min 40 micron	
TEMPERATURE	- 10 + 50°C (Standard version)	
RESPONSE TIME IN OPENING	24 < 5 ms	XX / KK < 1 ms
RESPONSE TIME IN CLOSING	24 < 2 ms	XX / KK < 1 ms
MAXIMUM FREQUENCY	200 Hz	500 Hz
WEIGHT	160 g	
PRODUCT LIFE EXPECTANCY	≥ 500 M/s cycles	
IP RATING	IP 62	

IDENTIFICATION CODE

M X 8 5 0 9 0 0 C 2 24

OUTLETS

0 9 Outlets without interface

SINGLE OUTLET FLOW RATE (at 6 bar)

M	100 Nl / min
N	140 Nl/min (control tension XX   KK)
O	180 Nl/min (control tension XX   KK)

FUNCTION

C NC

TYPE

2 2/2

CONTROL TENSION

24	24 VDC ± 10 %	2.9 W <sup>(1)</sup>
XX	Speed-up in current (48 VDC)	1.3 W <sup>(1)</sup>
KK	Speed-up in tension (24 VDC)	0.8 W <sup>(1)</sup>

<sup>(1)</sup> Single shutter

OPERATING PRESSURE

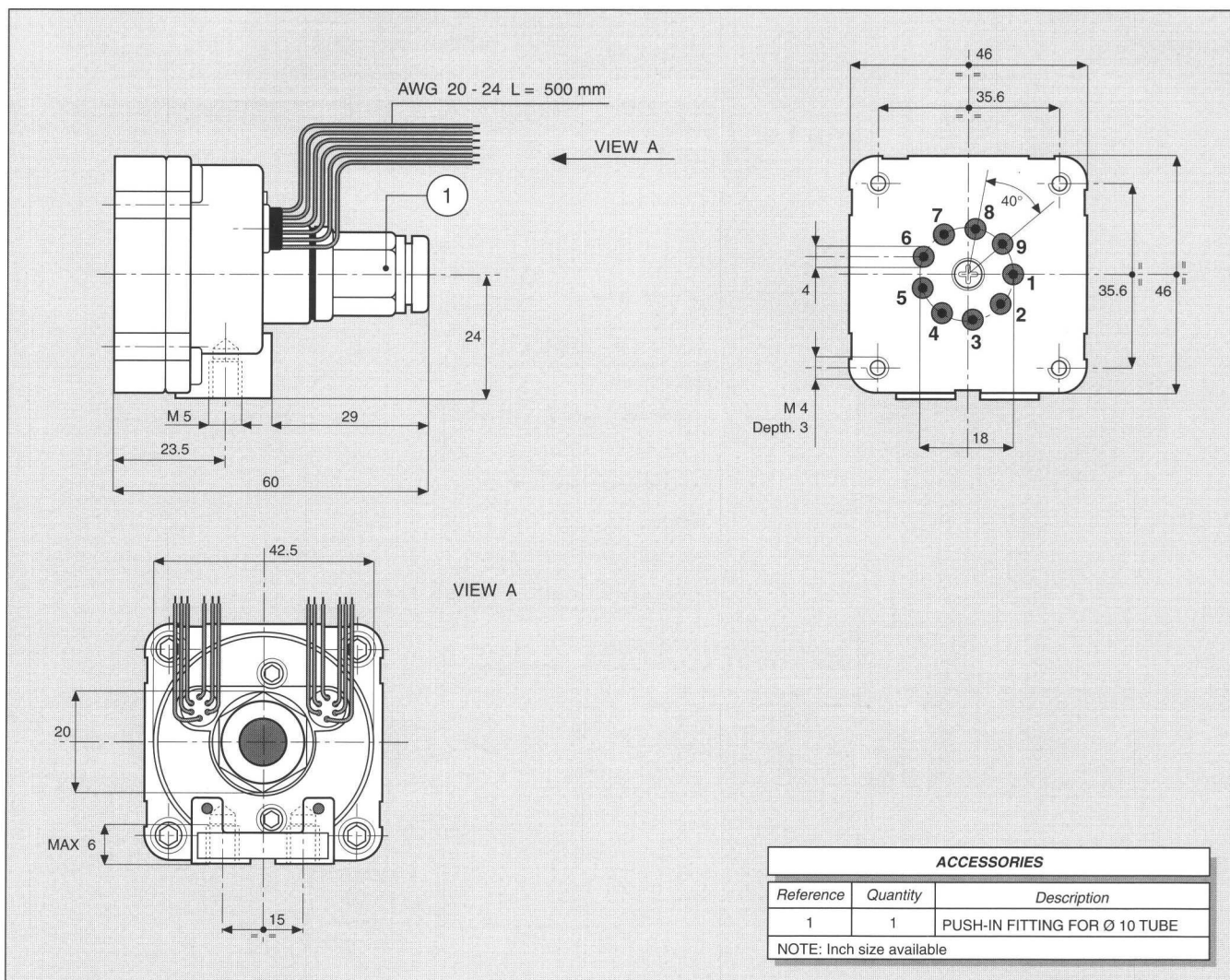
	RANGE	MODELS
0	2 - 8 bar	All

No. ELECTRICAL CONTROLS

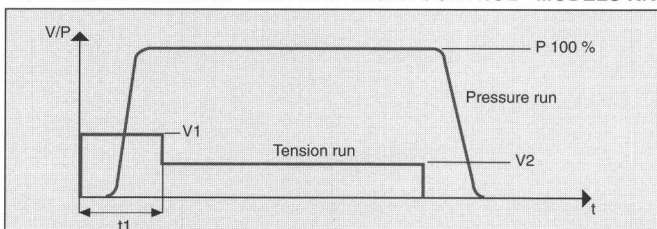
1	1 Control (9 Outlets)
3	3 Controls (3 Outlets)
9	9 Controls (1 Outlet)

PORT CONNECTION

0 Integrated cables IP 62 L = 500 mm



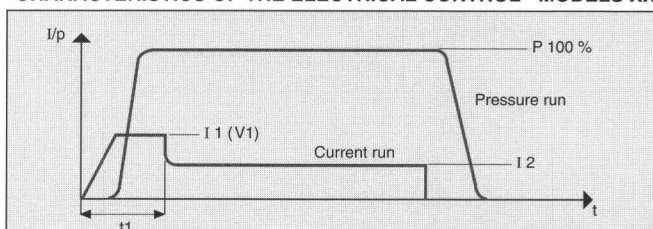
**CHARACTERISTICS OF THE ELECTRICAL CONTROL - MODELS KK**



N.B. KK MODELS ARE CONTROLLED IN TENSION

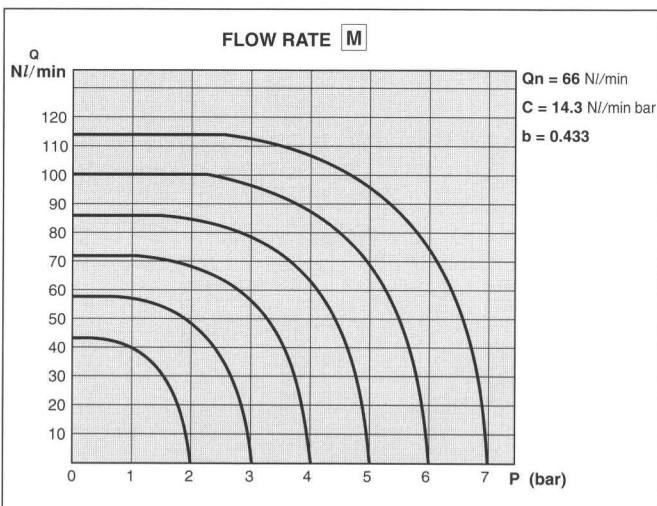
M	V1 = 24 VDC	t1 = 2 ms	V2 = 5 VDC
N	V1 = 24 VDC	t1 = 2 ms	V2 = 5 VDC
O	V1 = 24 VDC	t1 = 3 ms	V2 = 5 VDC

**CHARACTERISTICS OF THE ELECTRICAL CONTROL - MODELS XX**



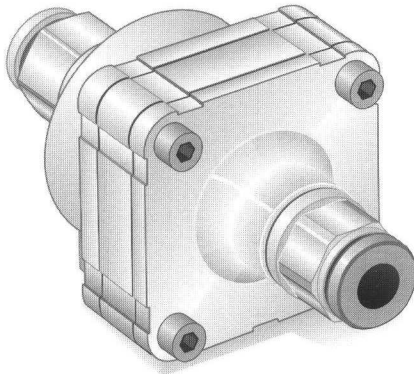
N.B. XX MODELS ARE CONTROLLED IN CURRENT

M	I1 = 0.5 A	t1 = 1.5 ms	I2 = 0.2 A
N	I1 = 0.8 A	t1 = 1.5 ms	I2 = 0.2 A
O	I1 = 1.0 A	t1 = 1.5 ms	I2 = 0.3 A



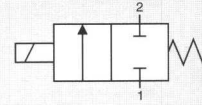
**ELECTRICAL PORT CONNECTION**

COLOUR	1 CONTROL	3 CONTROLS	9 CONTROLS
BLACK	COMMON	COMMON	COMMON
BROWN	—	1 - 2 - 9	1
RED	1 → 9	3 - 4 - 5	2
ORANGE	—	6 - 7 - 8	3
YELLOW	—	—	4
GREEN	—	—	5
BLUE	—	—	6
VIOLET	—	—	7
GREY	—	—	8
WHITE	—	—	9



CONTROL: DIRECT PFM PNM PWM

N. 1 NC



**GENERAL CHARACTERISTICS**

FLUID	Non-lubricated dry air, neutral gases (-10 + 50°C)	
FILTRATION RATING	Min 40 micron	
TEMPERATURE	- 10 + 50°C (Standard version)	
RESPONSE TIME IN OPENING	24 < 5 ms	XX / KK < 1 ms
RESPONSE TIME IN CLOSING	24 < 2 ms	XX / KK < 1 ms
MAXIMUM FREQUENCY	200 Hz	500 Hz
WEIGHT	260 g	
PRODUCT LIFE EXPECTANCY	≥ 500 M/s cycles	
IP RATING	IP 62	

**IDENTIFICATION CODE**

 
M
X
8
5
1
9
0
0
C
2
24

● **OUTLETS**

1 1 Outlet

● **MAXIMUM FLOW RATE** (at 6 bar)

M	900 NI / min
N	1260 NI / min (control tension XX KK)
O	1620 NI / min (control tension XX KK and Electrical control 3 9)

● **FUNCTION**

C NC

● **TYPE**

2 2/2

● **CONTROL TENSION**

24	24 VDC ± 10 %	2.9÷ 26.1W
XX	Speed-up in current (48 VDC)	1.3÷ 12.1W
KK	Speed-up in tension (24 VDC)	0.8÷ 7.6W

● **OPERATING PRESSURE**

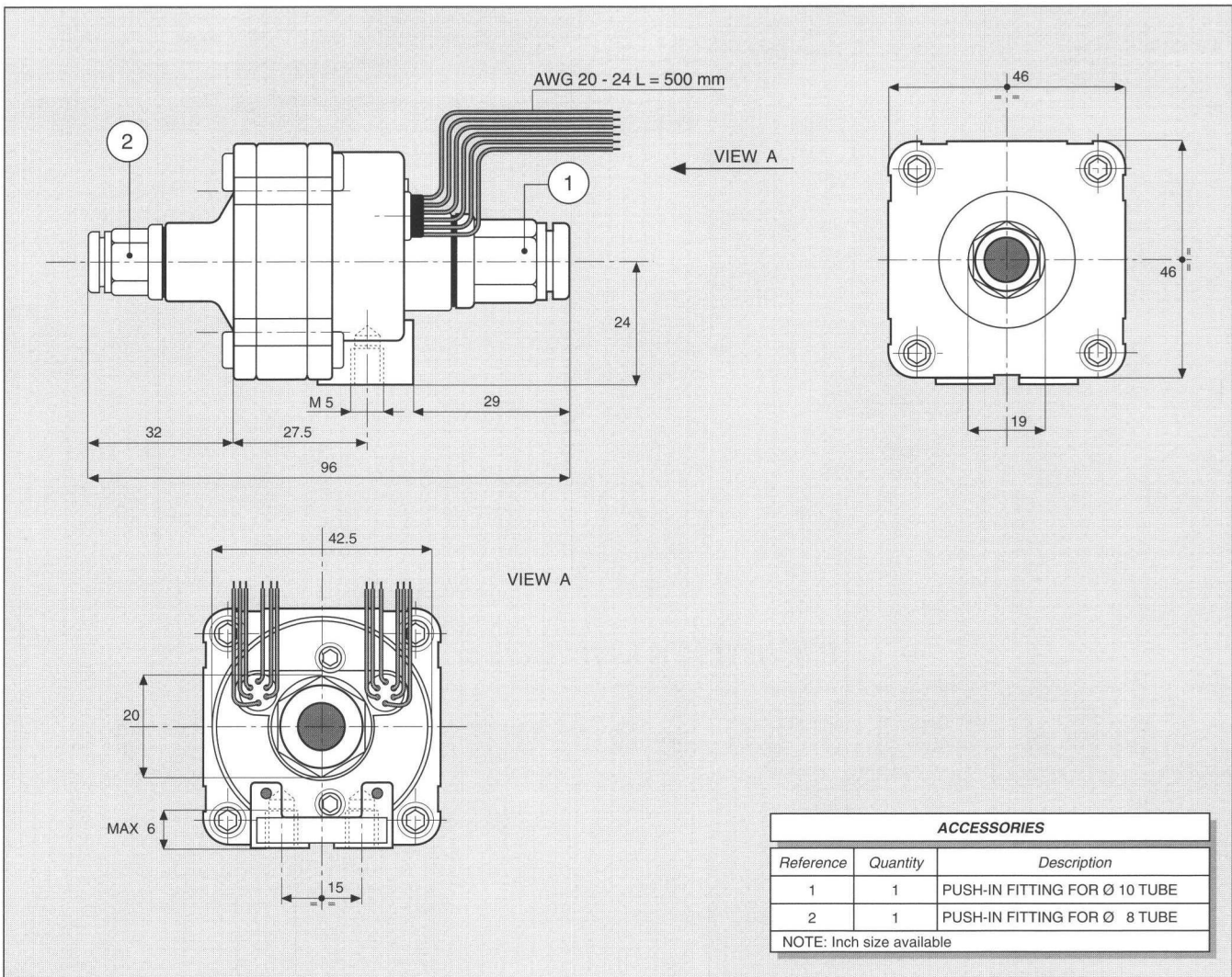
	RANGE	MODELS
0	2 - 8 bar	All

● **No. ELECTRICAL CONTROLS**

1	1 Control
3	3 Controls
9	9 Controls

● **PORT CONNECTION**

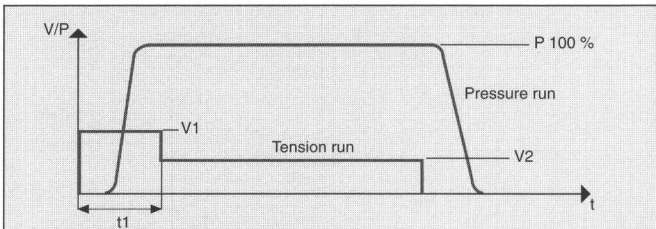
0 Integrated cables IP 62 L = 500 mm



ACCESSORIES		
Reference	Quantity	Description
1	1	PUSH-IN FITTING FOR Ø 10 TUBE
2	1	PUSH-IN FITTING FOR Ø 8 TUBE

NOTE: Inch size available

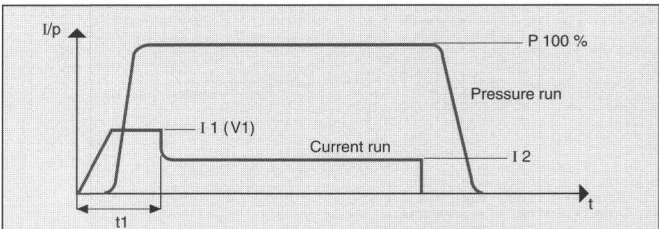
**CHARACTERISTICS OF THE ELECTRICAL CONTROL - MODELS KK**



N.B. KK MODELS ARE CONTROLLED IN TENSION

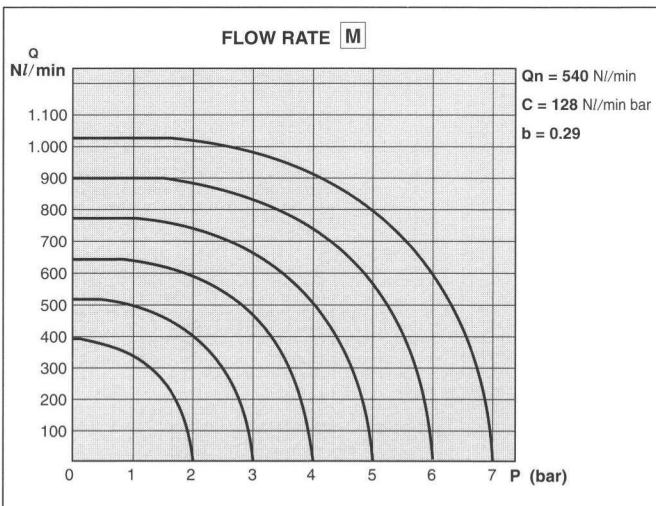
M	V 1 = 24 VDC	t 1 = 3 ms	V 2 = 5 VDC
N	V 1 = 24 VDC	t 1 = 4 ms	V 2 = 5 VDC

**CHARACTERISTICS OF THE ELECTRICAL CONTROL - MODELS XX**

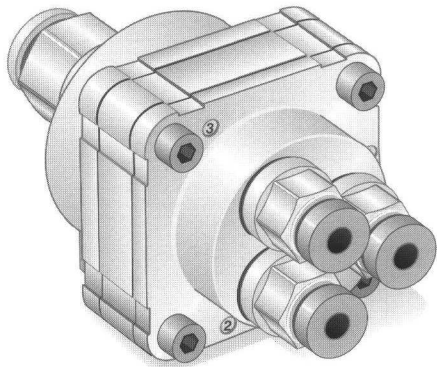


N.B. XX MODELS ARE CONTROLLED IN CURRENT

M	I 1 = 3.5 A	t 1 = 1.5 ms	I 2 = 1 A
N	I 1 = 4.0 A	t 1 = 1.5 ms	I 2 = 1 A



ELECTRICAL PORT CONNECTION			
COLOUR	1 CONTROL	3 CONTROLS	9 CONTROLS
BLACK	COMMON	COMMON	COMMON
BROWN	—	1 - 2 - 9	1
RED	1 → 9	3 - 4 - 5	2
ORANGE	—	6 - 7 - 8	3
YELLOW	—	—	4
GREEN	—	—	5
BLUE	—	—	6
VIOLET	—	—	7
GREY	—	—	8
WHITE	—	—	9



CONTROL:

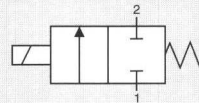
DIRECT

PFM

PNM

PWM

N. 3 NC



GENERAL CHARACTERISTICS

FLUID	Non-lubricated dry air, neutral gases (-10 + 50°C)	
FILTRATION RATING	Min 40 micron	
TEMPERATURE	- 10 + 50°C (Standard version)	
RESPONSE TIME IN OPENING	24 < 5 ms	XX / KK < 1 ms
RESPONSE TIME IN CLOSING	24 < 2 ms	XX / KK < 1 ms
MAXIMUM FREQUENCY	200 Hz	500 Hz
WEIGHT	250 g	
PRODUCT LIFE EXPECTANCY	≥ 500 M/s cycles	
IP RATING	IP 62	

IDENTIFICATION CODE

	M	X	8	5	3	3	0	0	C	2	24
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● **OUTLETS**

3	3 Outlets
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● **MAXIMUM FLOW RATE (at 6 bar)**

<b>M</b>	300 Nl / min
<b>N</b>	420 Nl / min (control tension <b>XX</b>   <b>KK</b> )
<b>O</b>	520 Nl / min (control tension <b>XX</b>   <b>KK</b> )

● **No. ELECTRICAL CONTROLS**

3	3 Controls
9	9 Controls

● **PORT CONNECTION**

0	Integrated cables IP 62 L = 500 mm
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● **FUNCTION**

C	NC
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● **TYPE**

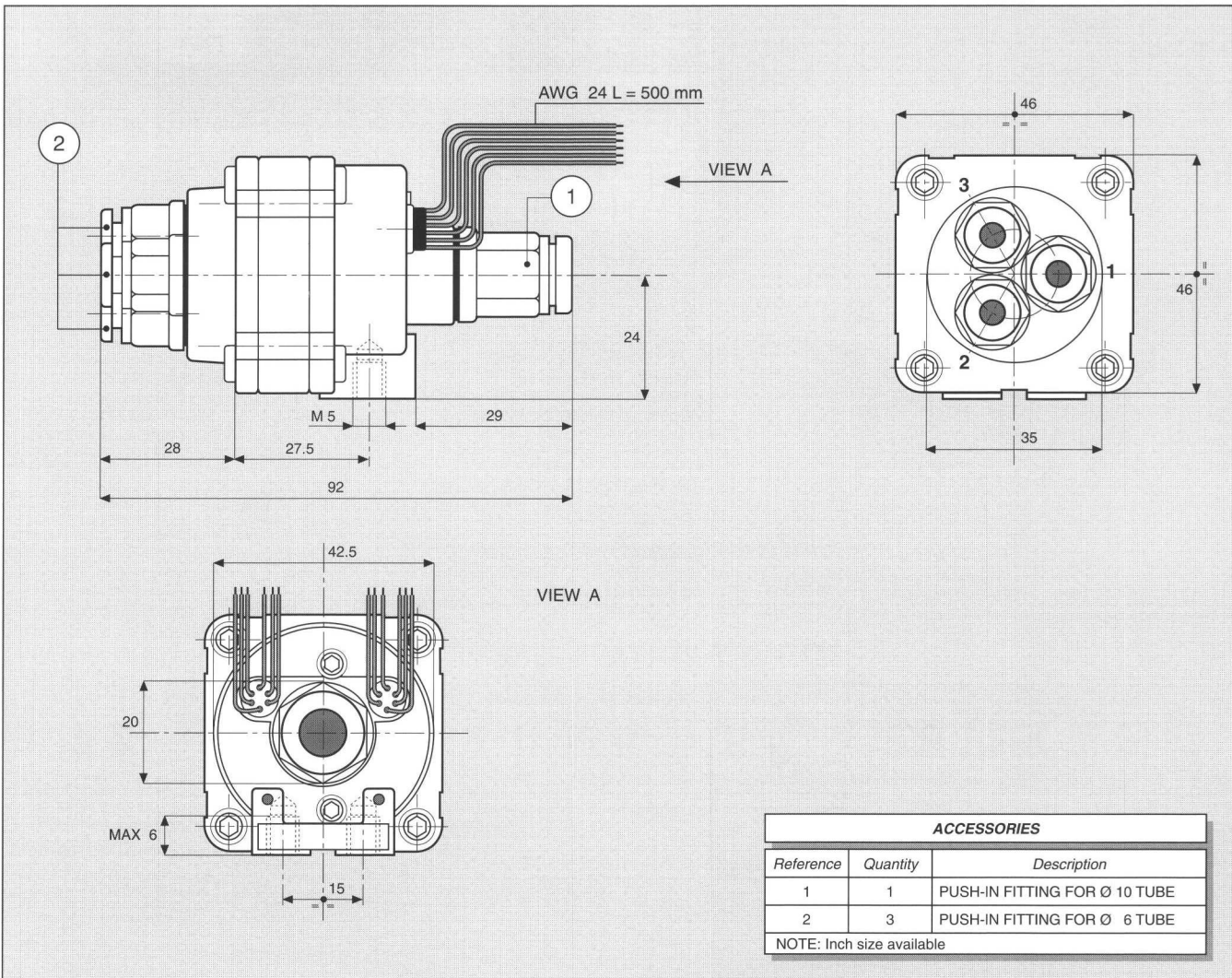
2	2/2
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● **CONTROL TENSION**

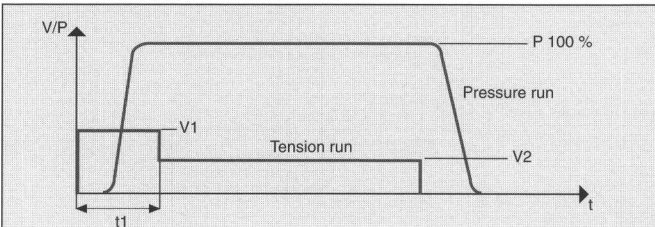
<b>24</b>	24 VDC ± 10 %	2.9 ÷ 8.7W
<b>XX</b>	Speed-up in current (48 VDC)	1.3 ÷ 4.0W
<b>KK</b>	Speed-up in tension (24 VDC)	0.8 ÷ 2.5W

● **OPERATING PRESSURE**

	RANGE	MODELS
0	2 - 8 bar	All



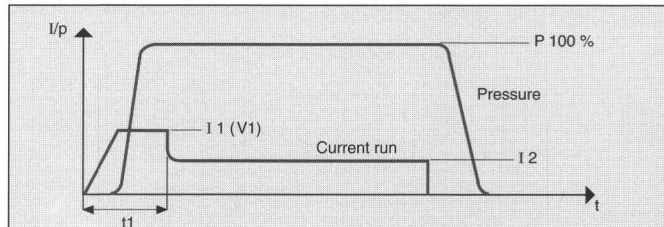
CHARACTERISTICS OF THE ELECTRICAL CONTROL - MODELS KK



N.B. KK MODELS ARE CONTROLLED IN TENSION

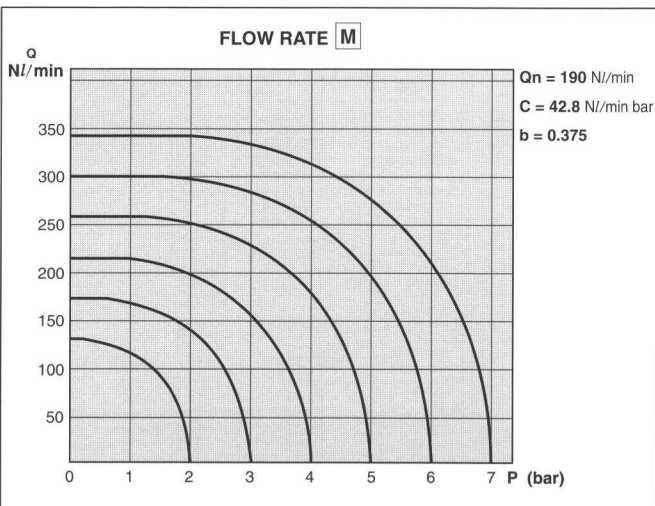
M	V1 = 24 VDC	t1 = 2 ms	V2 = 5 VDC
N	V1 = 24 VDC	t1 = 2.5 ms	V2 = 5 VDC
O	V1 = 24 VDC	t1 = 3.5 ms	V2 = 5 VDC

CHARACTERISTICS OF THE ELECTRICAL CONTROL - MODELS XX



N.B. XX MODELS ARE CONTROLLED IN CURRENT

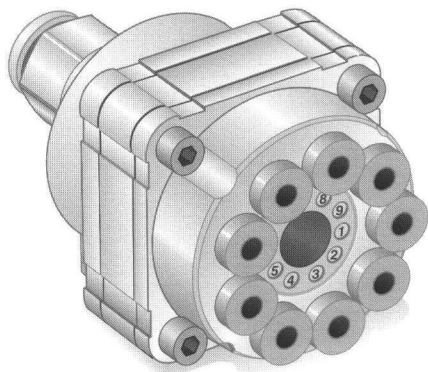
M	I1 = 1 A	t1 = 1.5 ms	I2 = 0.3 A
N	I1 = 1.5 A	t1 = 1.5 ms	I2 = 0.3 A
O	I1 = 2.8 A	t1 = 1.5 ms	I2 = 0.3 A



ELECTRICAL PORT CONNECTION

COLOUR	3 CONTROLS	9 CONTROLS (OUTLET)
BLACK	COMMON	COMMON
BROWN	1	1 (1)
RED	2	2 (1)
ORANGE	3	3 (2)
YELLOW	—	4 (2)
GREEN	—	5 (2)
BLUE	—	6 (3)
VIOLET	—	7 (3)
GREY	—	8 (3)
WHITE	—	9 (1)





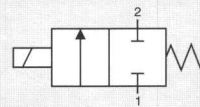
CONTROL:

DIRECT

PFM

PWM

N. 9 NC



GENERAL CHARACTERISTICS

FLUID	Non-lubricated dry air, neutral gases (-10 + 50°C)	
FILTRATION RATING	Min 40 micron	
TEMPERATURE	- 10 + 50°C (Standard version)	
RESPONSE TIME IN OPENING	24 < 5 ms	XX / KK < 1 ms
RESPONSE TIME IN CLOSING	24 < 2 ms	XX / KK < 1 ms
MAXIMUM FREQUENCY	200 Hz	500 Hz
WEIGHT	210 g	
PRODUCT LIFE EXPECTANCY	≥ 500 M/s cycles	
IP RATING	IP 62	

IDENTIFICATION CODE

	M	X	8	5	9	9	0	0	C	2	24
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● **OUTLETS**

9	9 Outlets
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● **FLOW RATE (at 6 bar)**

M	100 Nl / min
N	140 Nl/min (control tension XX   KK )
O	180 Nl/min (control tension XX   KK )

● **No. ELECTRICAL CONTROLS**

9	9 Controls
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● **PORT CONNECTION**

0	Integrated cables IP 62 L = 500 mm
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● **FUNCTION**

C	NC
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● **TYPE**

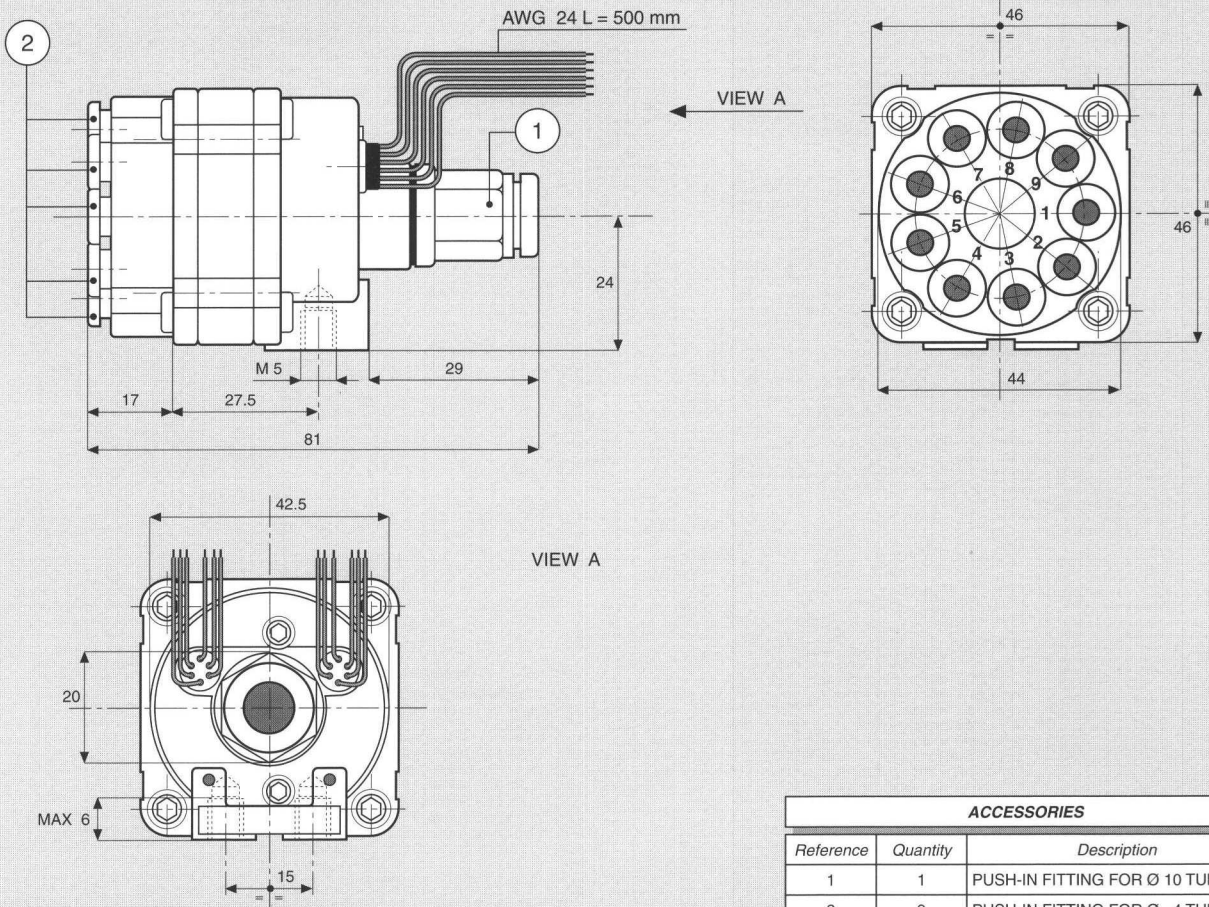
2	2/2
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● **CONTROL TENSION**

24	24 VDC ± 10%	2.9 W
XX	Speed-up in current (48 VDC)	1.3 W
KK	Speed-up in tension (24 VDC)	0.8 W

● **OPERATING PRESSURE**

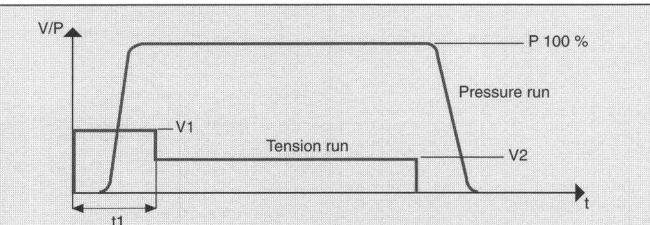
	RANGE	MODELS
0	2 - 8 bar	All



ACCESSORIES		
Reference	Quantity	Description
1	1	PUSH-IN FITTING FOR Ø 10 TUBE
2	9	PUSH-IN FITTING FOR Ø 4 TUBE

NOTE: Inch size available

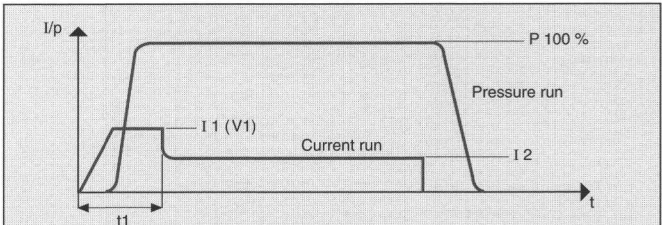
**CHARACTERISTICS OF THE ELECTRICAL CONTROL - MODELS KK**



N.B. KK MODELS ARE CONTROLLED IN TENSION

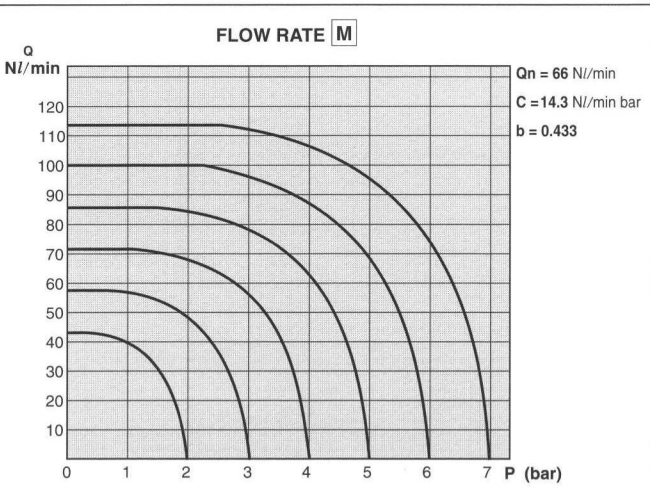
M	V1 = 24 VDC	t1 = 2 ms	V2 = 5 VDC
N	V1 = 24 VDC	t1 = 2 ms	V2 = 5 VDC
O	V1 = 24 VDC	t1 = 3 ms	V2 = 5 VDC

**CHARACTERISTICS OF THE ELECTRICAL CONTROL - MODELS XX**



N.B. XX MODELS ARE CONTROLLED IN CURRENT

M	I1 = 0.5 A	t1 = 1.5 ms	I2 = 0.2 A
N	I1 = 0.8 A	t1 = 1.5 ms	I2 = 0.2 A
O	I1 = 1.0 A	t1 = 1.5 ms	I2 = 0.3 A



**ELECTRICAL PORT CONNECTION**

COLOUR	9 CONTROLS
BLACK	COMMON
BROWN	1
RED	2
ORANGE	3
YELLOW	4
GREEN	5
BLUE	6
VIOLET	7
GREY	8
WHITE	9