MAC ATEX Valves

2023-12-22 • MVE-CAT Atex Valves • REV A

MAC Valves Europe, Inc.

ATEX • Electrical Operation

Written & Approved by B. Van Meenen

Valve Series Featured in this Catalogue

35 Series • 45 Series • 52 Series • 53 Series • 54 Series • 400 Series • 92 Series • 93 Series
67 Series • ISO 1 Series • ISO 2 Series • ISO 3 Series

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01. INTRODUCTION

1.1. ATEX Valve

Valve able to operate in a potentially explosive atmosphere (more information to be found in our leaflet called *"Introduction to ATEX"*).

1.2. Marking

The exact nature of the explosive atmosphere where MAC Valves are allowed to operate is given by the ATEX marking on the solenoid and the body (more information to be found in our leaflet called *"Introduction to ATEX")*.

Marking - Solenoid

II 2 G

Zone 1	Potentially flammable atmosphere likely to appear in normal operation occasionally
II	Group II: surface industry, open atmosphere
2	Category 2: potentially flammable atmosphere likely to appear in normal operation occasionally
G	Type of flammable atmosphere: G (gas)

II 2 D

Zone 21	Potentially flammable atmosphere likely to appear in normal operation occasionally
II	Group II: surface industry, open atmosphere
2	Category 2: potentially flammable atmosphere likely to appear in normal operation occasionally
D	Type of flammable atmosphere: D (dust)

Ex db IIC T4 Gb

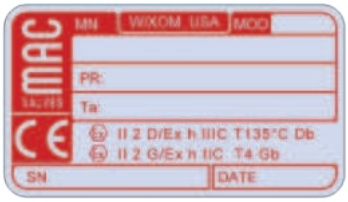
db	Type of protection: db (flameproof gas)
II	Group II: surface industry, open atmosphere
IIC	Gas group: hydrogen - covers also group A (propane) & B (ethylene)
T4	Maximum surface temperature: 135°C
Gb	Explosion protection level

Ex tb IIIC T135C Db

tb	Type of protection: tb (flameproof dust)
II	Group II: surface industry, open atmosphere
IIIC	Dust group: conductive dust - covers also groups A (combustible flyings) & B (non-conductive)
T135C	Maximum surface temperature: 135°C
Db	Explosion protection level

Marking - Body

Large Valve



II 2 G

Zone 1	Potentially flammable atmosphere likely to appear in normal operation occasionally
II	Group II: surface industry, open atmosphere
2	Category 2: potentially flammable atmosphere likely to appear in normal operation occasionally
G	Type of flammable atmosphere: G (gas)

II 2 D

Zone 21	Potentially flammable atmosphere likely to appear in normal operation occasionally
II	Group II: surface industry, open atmosphere
2	Category 2: potentially flammable atmosphere likely to appear in normal operation occasionally
D	Type of flammable atmosphere: D (dust)

Ex h IIC T4 Gb

h	Type of protection: h (non-electrical device)
II	Group II: surface industry, open atmosphere
IIC	Gas group: hydrogen - covers also group A (propane) & B (ethylene)
T4	Maximum surface temperature: 135°C
Gb	Explosion protection level

Ex h IIIC T135C Db

h	Type of protection: h (non-electrical device)
II	Group II: surface industry, open atmosphere
IIIC	Dust group: conductive dust - covers also groups A (combustible flyings) & B (non-conductive)
T135C	Maximum surface temperature: 135°C
Db	Explosion protection level

Small Valve

h Gb

h	Type of protection: h (non-electrical device)
Gb	Explosion Protection Level: Gas

h Db

h	Type of protection: h (non-electrical device)
Db	Explosion Protection Level: Dust

1.3. Protection Type

In order to protect the explosive environment from any ignition source (hot surface, electrical spark) generated by the electrical operator, every electrically operated valve is fitted with a flameproof D solenoid.

This solenoid is consisting of the parts of a standard D solenoid protected by an enclosure and cable gland that prevent any spark coming outside of the solenoid.

The power of the solenoid is also limited to 7.3W in order to limit the temperature of the valve body in standard operation.

1.4. Product Availability

This solution fits every valve operated by a D solenoid & a D pilot valve.

Today, the following valve series are available:

Series:

- 35 Series
- 45 Series
- 52 Series
- 53 Series
- 54 Series
- 400 Series
- 92 Series
- 93 Series
- 67 Series
- ISO 1
- ISO 2
- ISO 3

Mounting:

- All kinds of mounting are theoretically available: individual mounting, individual manifold, stacking, manifold
- As the size of the ATEX solenoid may not allow the use of standard manifolds, please consult factory for assemblies made of many valves

Solenoid options:

- All voltages & powers below 7.3W
- Electrical connections: cable gland

02. MAC 35 SERIES

Technical Data

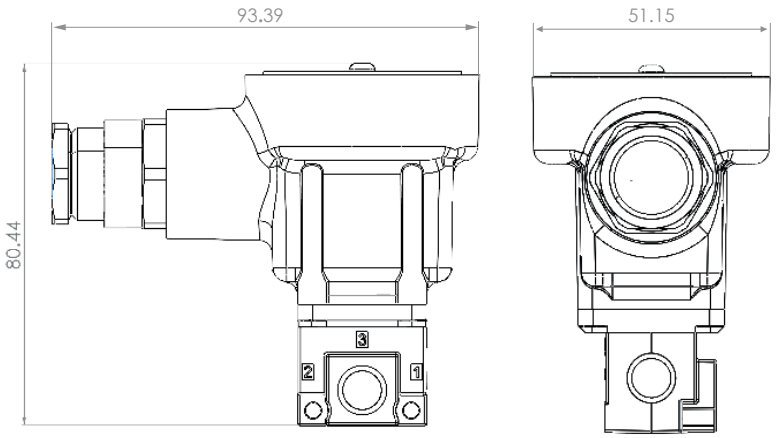
Function	3/2 way, direct operated
Fluid	Compressed air, vacuum, inert gases
Pressure range	Vacuum to 8 bar
Lubrication	Not required, if used select a medium aniline point lubricant (between 80°C and 100°C)
Filtration	40 µm
Temperature range	-18°C to +50°C
Flow (at 6 bar, ΔP = 1 bar)	DC (1.8 W - 2.4 W): 80 Nl/min DC (5.4 W): 150 Nl/min AC & DC (7.2 W): 170 Nl/min
Orifice	DC (1.8 W - 2.4 W): 1.7 mm DC (5.4 W): 2.3 mm AC & DC (7.2 W): 2.5 mm
Coil	Epoxy encapsulated
Voltage range	-15% to +10% of nominal voltage

35A-ACA-DDAE-0EF

For more detailed information about the 35 Series valve, please check the 35 Series catalogue.

Dimensions

All dimensions are metric (in mm).



How to Order

Body Options

35A - X X X - DXXY-0EF

1 2 3

See p.32 for all solenoid options

1. Body Type

A	Individual inline

2. Port Size

A	1/8” NPT
C	1/8” BSPPL
E	1/8” BSPTR

3. Valve Function / Manifold Type

A	Universal 3-way inline
B	3-way normally closed only inline

03. MAC 45 SERIES

Technical Data

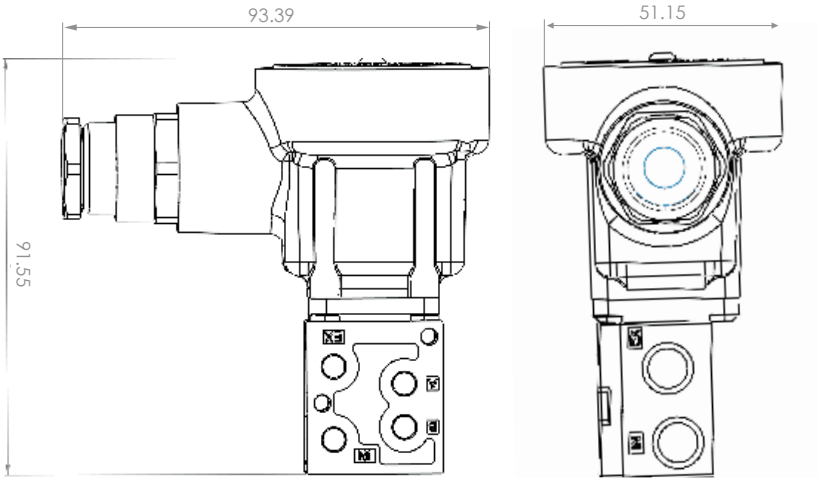
Function	5/2 way, direct operated
Fluid	Compressed air, vacuum, inert gases
Pressure range	Vacuum to 8 bar
Lubrication	Not required, if used select a medium aniline point lubricant (between 80°C and 100°C)
Filtration	40 µm
Temperature range	-18°C to +50°C
Flow (at 6 bar, ΔP = 1 bar)	DC (1.8 W - 2.4 W): 80 Nl/min AC & DC (5.4 W): 150 Nl/min
Orifice	DC (1.8 W - 2.4 W): 1.7 mm AC & DC (5.4 W): 2.3 mm
Coil	Epoxy encapsulated
Voltage range	-15% to +10% of nominal voltage

45A-AC1-DDAE-0EF

For more detailed information about the 45 Series valve, please check the 45 Series catalogue.

Dimensions

All dimensions are metric (in mm).



How to Order

Body Options

45A - X X X - DXXY-0EF

1 2 3 — See p.32 for all solenoid options

1. Body Type

A	4 port body • All side ports
B	5 port body • All side ports
D	4 port body • O ring mount All bottom ports, no side ports
E	5 port body • O ring mount 3 bottom ports inlet and cylinders • All side ports
F	4 port body • O ring mount Bottom cylinder ports only • In & Exh side ports

2. Port Size

A	1/8” NPTF
C	1/8” BSPPL
D	M5, metric
H	O ring mount ports (D body type only)

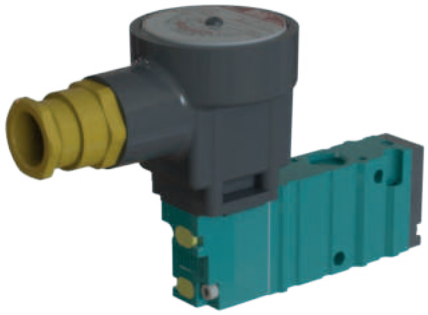
3. Flow Controls • Base Styles

1	No flow control
2	With flow controls

04. MAC 52 SERIES

Technical Data

Function	3/2 way, pilot operated
Fluid	Compressed air, vacuum, inert gases
Pressure range Internal pilot External pilot	 1.3 to 8 bar Vacuum to 8 bar
Pilot pressure	1.3 to 8 bar
Lubrication	Not required, if used select a medium aniline point lubricant (between 80°C and 100°C)
Filtration	40 µm
Temperature range	-18°C to +50°C
Flow (at 6 bar, ΔP = 1 bar)	G 1/8": 1200 Nl/min G 1/4": 1500 Nl/min
Orifice	G 1/8": 6.6 mm G 1/4": 7.3 mm
Coil	Epoxy encapsulated
Voltage range	-15% to +10% of nominal voltage

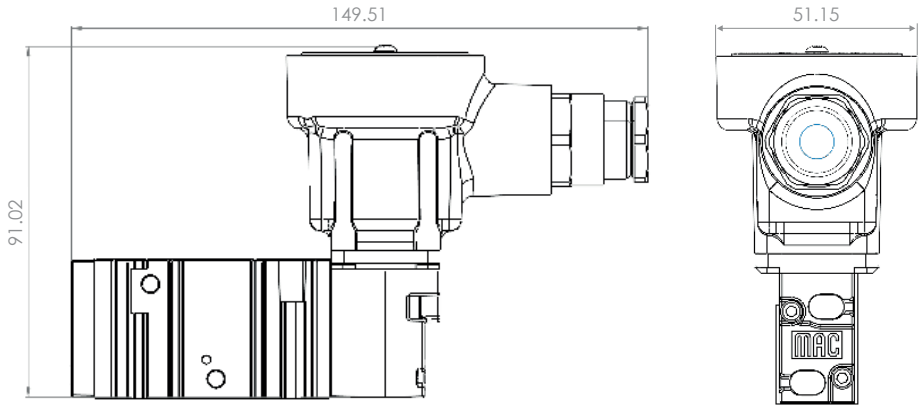


52A-11-D0A-DM-DDAE-0EF

For more detailed information about the 52 Series valve, please check the 52 Series catalogue.

Dimensions

All dimensions are metric (in mm).



How to Order

Body Options

52A - X X - X X X - DM-DXXY-0EF

1 2 3 4 5 6 — See p.32 for all solenoid options

1. Spool Type

1	Single operated NC main
2	Double operated NC main
3	Single operated NO main
4	Double operated NO main

2. Body Options

1	Inline 3 port
3	Manifold body
4	Inline 3 port with memory spring
6	Manifold body with memory spring

3. Port Size & Thread Type In & Cyl.

0	Manifold body
A	1/8 NPTF
B	1/4 NPTF
C	1/8 BSPPL
D	1/4 BSPPL
E	1/8 BSPTR
F	1/4 BSPTR

4. Base Configuration

0	Inline or manifold body

5. Internal / External Pilot

A	Internal pilot
B	External pilot • For inline bodies only
C	Common external pilot

6. Pilot Exhaust Type

DM	Pilot exhaust muffled
DP	Pilot exhaust piped

05. MAC 53 SERIES

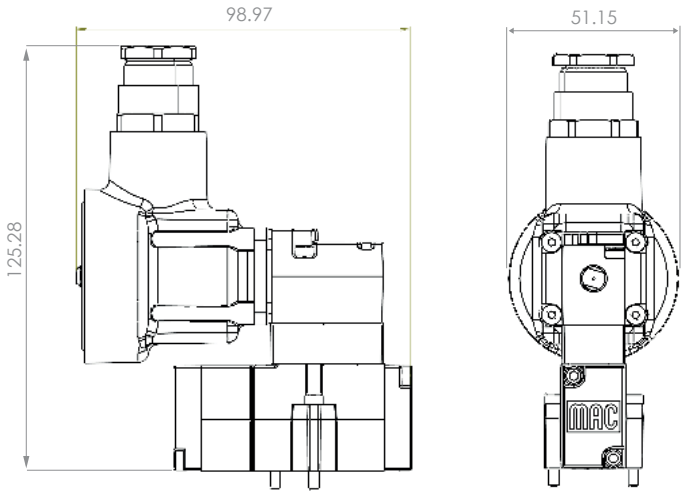
Technical Data

Function	3/2 way, pilot operated
Fluid	Compressed air, vacuum, inert gases
Pressure range Internal pilot External pilot	 1.3 to 8 bar Vacuum to 8 bar
Pilot pressure	1.3 to 8 bar
Lubrication	Not required, if used select a medium aniline point lubricant (between 80°C and 100°C)
Filtration	40 µm
Temperature range	-18°C to +50°C
Flow (at 6 bar, ΔP = 1 bar)	G 1/4": 1700 Nl/min G 3/8": 2000 Nl/min
Orifice	G 1/4": 7.8 mm G 3/8": 8.5 mm
Coil	Epoxy encapsulated
Voltage range	-15% to +10% of nominal voltage

53A-10A-DM-DDAE-0EF

Dimensions

All dimensions are metric (in mm).



How to Order

Body Options

53A - X X X - DM-DXXY-0EF

1 2 3 4 — See p.32 for all solenoid options

1. Spool Type

1	Single operated NC main
2	Single operated NO main
5	Single operated NC main (memory spring)
6	Single operated NO main (memory spring)

2. Pilot Air Options

A	Internal pilot
B	Ext. pilot from 10 end
C	Ext. pilot from 12 end

3. Port Size & Thread Type In & Cyl.

0	Valve only
A	1/4” NPTF
B	3/8” NPTF
C	1/4” BSPPL
D	3/8” BSPPL
E	1/4” BSPTR
F	3/8” BSPTR

4. Pilot Exhaust Type

DM	Pilot exhaust muffled
DP	Pilot exhaust piped

06. MAC 54 SERIES

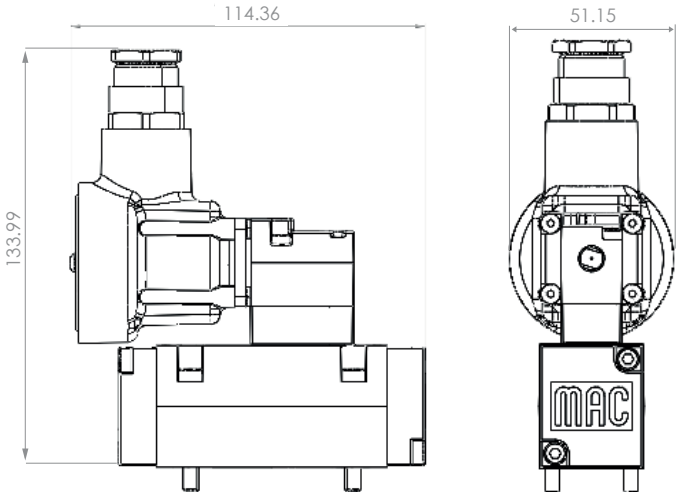
Technical Data

Function	3/2 way, pilot operated
Fluid	Compressed air, vacuum, inert gases
Pressure range Internal pilot External pilot	 1.3 to 8 bar Vacuum to 8 bar
Pilot pressure	1.3 to 8 bar
Lubrication	Not required, if used select a medium aniline point lubricant (between 80°C and 100°C)
Filtration	40 µm
Temperature range	-18°C to +50°C
Flow (at 6 bar, ΔP = 1 bar)	Up to 5100 Nl/min (5.1 Cv)
Orifice	13.6 mm
Coil	Epoxy encapsulated
Voltage range	-15% to +10% of nominal voltage

54A-AA-000-DM-DDAE-0EF

Dimensions

All dimensions are metric (in mm).



How to Order

Body Options

54A - X X - X X X - DM-DXXY-0EF

1 2 3 4 5 6 — See p.32 for all solenoid options

1. Function

A	Single operated NC non plug-in
B	Single operated NO non plug-in

2. Body Type

A	Base mount body - internal pilot
B	Base mount body - external pilot (12 end)
C	Base mount body - external pilot (10 end)

3. Port Size & Thread Type In & Cyl.

0	Base mount valve	E	1/2” BSPPL
A	3/8” NPTF	F	3/4” BSPPL
B	1/2” NPTF	G	3/8” BSPTR
C	3/4” NPTF	H	1/2” BSPTR
D	3/8” BSPPL	J	3/4” BSPTR

4. Base Type and Configuration

0	Base mount valve
1	Individual base, side ports
2	Individual base, bottom cylinder ports (no side cylinder ports)

5. Base Type

0	Base mount valve
A	Non plug-in base

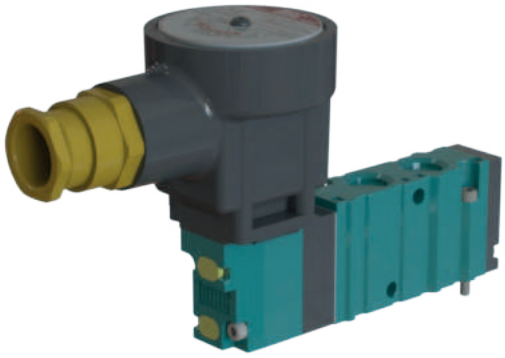
6. Pilot Exhaust Type

DM	Pilot exhaust muffled
DP	Pilot exhaust piped

07. MAC 400 SERIES

Technical Data

Function	5/2 way & 5/3 way, pilot operated
Fluid	Compressed air, vacuum, inert gases
Pressure range Internal pilot External pilot	 1.3 to 8 bar Vacuum to 8 bar
Pilot pressure	1.3 to 8 bar
Lubrication	Not required, if used select a medium aniline point lubricant (between 80°C and 100°C)
Filtration	40 µm
Temperature range	-18°C to +50°C
Flow (at 6 bar, ΔP = 1 bar)	1000 Nl/min (1.0 Cv)
Orifice	6.0 mm
Coil	Epoxy encapsulated
Voltage range	-15% to +10% of nominal voltage

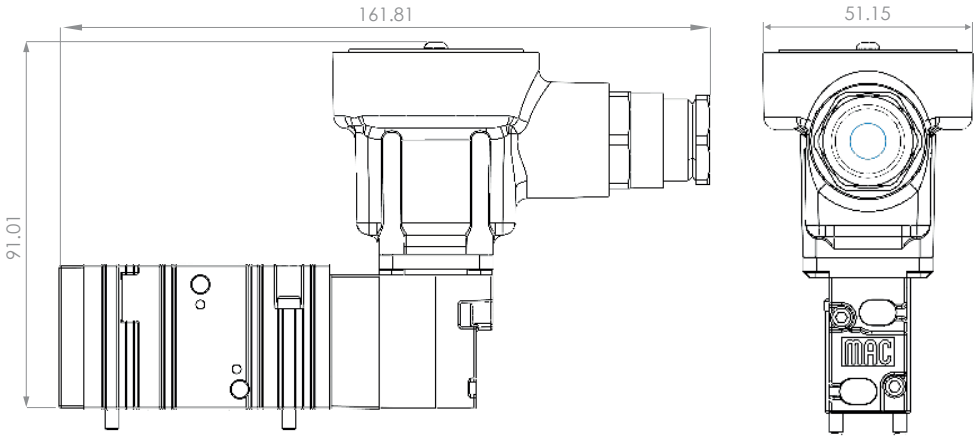


411A-D0A-DM-DDAE-0EF

For more detailed information about the 400 Series valve, please check the 400 Series catalogue.

Dimensions

All dimensions are metric (in mm).



How to Order

Body Options

4 1 1 A - X X X - DM-DXXY-0EF

1 2 3 4 5 6 — See p.32 for all solenoid options

1. Spool Type

1	Single operated, single pressure
2	Double operated, single pressure
4	Double operated, dual pressure
5	3 position, closed center
6	3 position, open center
7	3 position pressure center, single pressure

2. Body Options

1	Inline 5 ports
2	Manifold body

3. Port Size & Thread In. & Cyl.

0	Manifold body
A	1/8 NPTF
B	1/4 NPTF
C	1/8 BSPPL
D	1/4 BSPPL
E	1/8 BSPTR
F	1/4 BSPTR

4. Base Configuration

0	Inline or manifold body
A	Base standard ports
B	Base standard ports with flow controls

5. Internal / External Pilot

A	Internal pilot (on dual press. models pilot press. is from port #5)
B	External pilot (inline body)
C	Internal pilot (on dual press. models pilot press. is from port #3)
D	External & common external pilot (individual base)

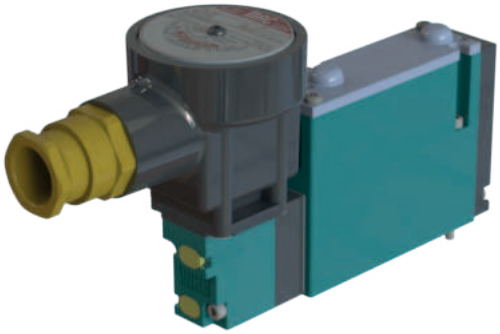
6. Pilot Exhaust Type

DM	Pilot exhaust muffled
DP	Pilot exhaust piped

08. MAC 92 SERIES

Technical Data

Function	3/2 way & 5/3 way, pilot operated
Fluid	Compressed air, vacuum, inert gases
Pressure range Internal pilot External pilot	 1.3 to 8 bar Vacuum to 8 bar
Pilot pressure	1.3 to 8 bar
Lubrication	Not required, if used select a medium aniline point lubricant (between 80°C and 100°C)
Filtration	40 µm
Temperature range	-18°C to +50°C
Flow (at 6 bar, ΔP = 1 bar)	G 1/8": 1000 Nl/min G 1/4": 1100 Nl/min G 3/8": 1200 Nl/min
Orifice	G 1/8": 6.0 mm G 1/4": 6.3 mm G 3/8": 6.6 mm
Coil	Epoxy encapsulated
Voltage range	-15% to +10% of nominal voltage

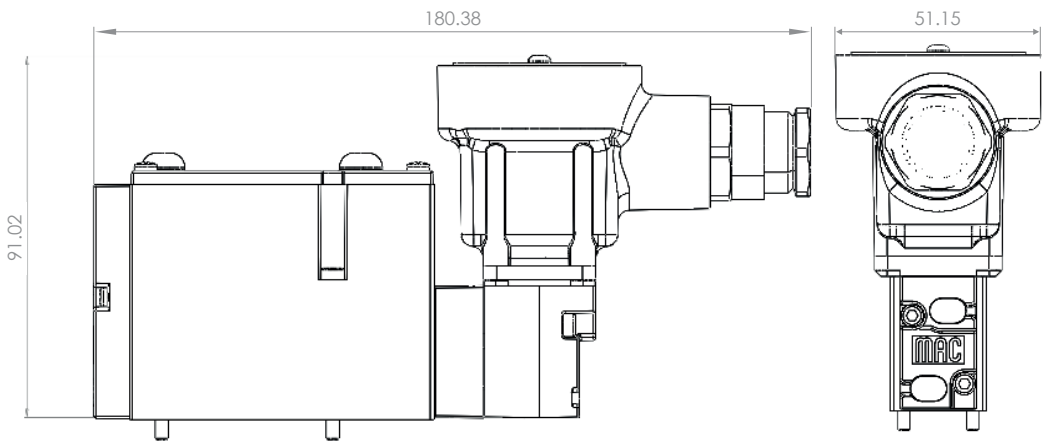


92B-ABA-B0J-DM-DDAE-0EF

For more detailed information about the 92 Series valve, please check the 92 Series catalogue.

Dimensions

All dimensions are metric (in mm).



How to Order

Body Options

92B - X X X - X X X - DM-DXXY-0EF

1 2 3 4 5 6 7 — See p.32 for all solenoid options

1. Valve Function

A	Single operated - Single pressure
B	Double operated - Single pressure
C	Single operated - Dual pressure
D	Double operated - Dual pressure
E	Double operated - 3 position CC
F	Double operated - 3 position OC
G	Double operated - 3 position PC
H	Double operated - 3 position dual pressure, PC
J	Double operated - 3 position dual pressure, CC
K	Double operated - 3 position dual pressure, OC
L	Single operated - Single pressure with memory spring
N	Single operated - Dual pressure with memory spring

2. Body Type & Exhaust Options

B	Non plug-in standard exhaust

3. Body Electrical Options

A	No light in top

4. Port Size - Thread Type

0	Valve only, no base
A	1/8" NPTF
B	1/4" NPTF
C	3/8" NPTF
D	1/8" BSPPL
E	1/4” BSPPL
F	3/8” BSPPL
G	1/8” BSPTR
H	1/4” BSPTR
J	3/8” BSPTR

5. Individual & Manifold Base Part Configuration

0	Valve only

Individual Base

A	Side ports
B	Bottom ports only*
C	Side and bottom ports*
D	Side inlet, side exhaust, bottom cylinder ports*

* 1/8" only.

6. Internal or External Pilot

0	Valve only

Non Plug-in

G	Internal pilot
H	External pilot

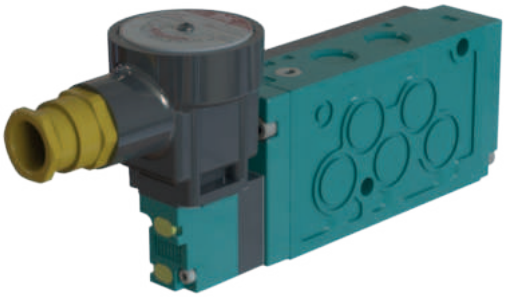
7. Pilot Exhaust Type

DM	Pilot exhaust muffled
DP	Pilot exhaust piped

09. MAC 93 SERIES • INLINE

Technical Data

Function	5/2 way & 5/3 way, pilot operated
Fluid	Compressed air, vacuum, inert gases
Pressure range Internal pilot External pilot	 1.3 to 8 bar Vacuum to 8 bar
Pilot pressure	1.3 to 8 bar
Lubrication	Not required, if used select a medium aniline point lubricant (between 80°C and 100°C)
Filtration	40 µm
Temperature range	-18°C to +50°C
Flow (at 6 bar, ΔP = 1 bar)	3800 Nl/min (3.8 Cv)
Orifice	11.7 mm
Coil	Epoxy encapsulated
Voltage range	-15% to +10% of nominal voltage

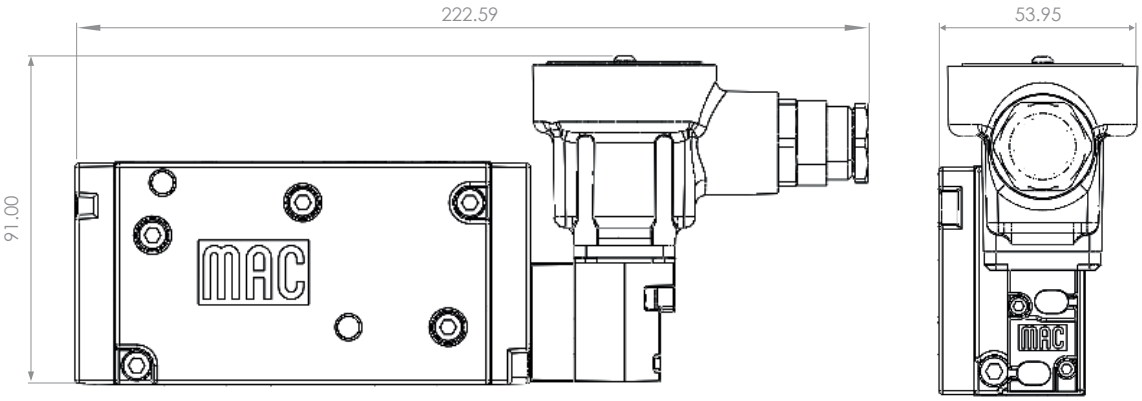


93A-AJ0-B0J-DM-DDAE-0EF

For more detailed information about the 93 Series valve, please check the New Technology catalogue.

Dimensions

All dimensions are metric (in mm).



How to Order

Body Options

93A - X X X - X X X - DM-DXXY-0EF

1 2 3 4 5 6 7 See p.32 for all solenoid options

1. Valve Function

A	Single operated, single pressure
B	Double operated, single pressure
C	Single operated, dual pressure
D	Double operated, dual pressure
E	3 position, closed center
F	3 position, open center
H	3 position dual pressure, pressure center

2. Body Type and Exhaust Option

J	Inline body standard exhaust

3. Body / Electrical Options

0	Inline body

4. Port Size & Thread In. & Cyl.

B	3/8” NPTF
C	1/2” NPTF
E	3/8” BSPPL
F	1/2” BSPPL
H	3/8” BSPTR
J	1/2” BSPTR

5. Port Configuration

0	Inline body

6. Int. / Ext. Pilot

J	Internal pilot
K	External pilot

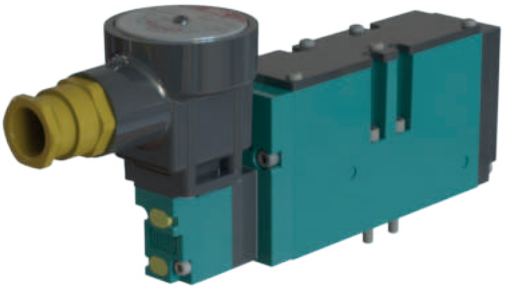
7. Pilot Exhaust Type

DM	Pilot exhaust muffled
DP	Pilot exhaust piped

10. MAC 93 SERIES • MANIFOLD

Technical Data

Function	5/2 way & 5/3 way, pilot operated
Fluid	Compressed air, vacuum, inert gases
Pressure range Internal pilot External pilot	 1.3 to 8 bar Vacuum to 8 bar
Pilot pressure	1.3 to 8 bar
Lubrication	Not required, if used select a medium aniline point lubricant (between 80°C and 100°C)
Filtration	40 µm
Temperature range	-18°C to +50°C
Flow (at 6 bar, ΔP = 1 bar)	3800 Nl/min (3.8 Cv)
Orifice	11.7 mm
Coil	Epoxy encapsulated
Voltage range	-15% to +10% of nominal voltage

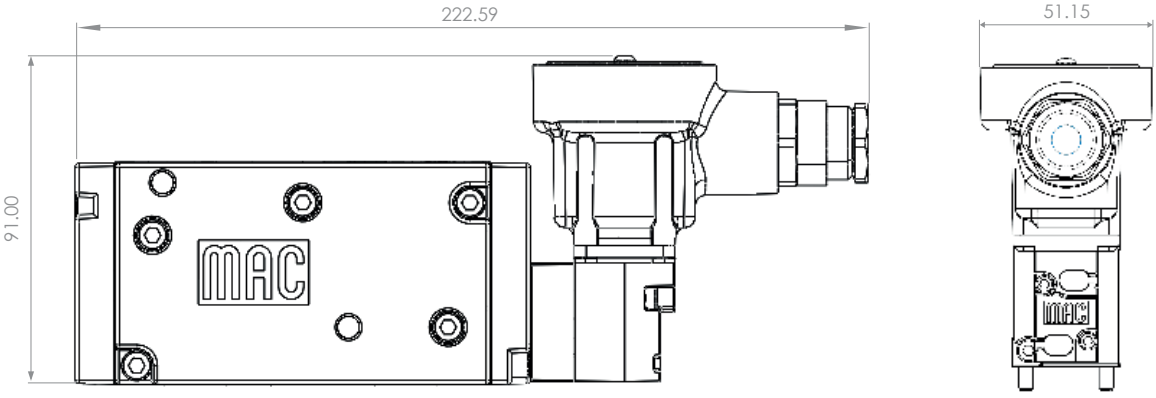


93A-ABA-000-DM-DDAE-0EF

For more detailed information about the 93 Series valve, please check the New Technology catalogue.

Dimensions

All dimensions are metric (in mm).



How to Order

Body Options

93A - X X X - X X X - DM-DXXY-0EF

1 2 3 4 5 6 7 See p.32 for all solenoid options

1. Valve Function

A	Single operated - Single pressure
B	Double operated - Single pressure
C	Single operated - Dual pressure
D	Double operated - Dual pressure
E	Double operated - 3 position CC
F	Double operated - 3 position OC
G	Double operated - 3 position PC
H	Double operated - 3 position dual pressure, PC
J	Double operated - 3 position dual pressure, CC
K	Double operated - 3 position dual pressure, OC
L	Single operated - Single pressure with memory spring
N	Single operated - Dual pressure with memory spring

2. Body Type & Exhaust Options

B	Non plug-in standard exhaust

3. Body Electrical Options

A	No light in top

4. Port Size - Thread Type

0	Valve only, no base
A	1/4” NPTF
B	3/8” NPTF
C	1/2” NPTF
D	1/4” BSPPL
E	3/8” BSPPL
F	1/2” BSPPL
G	1/4” BSPTR
H	3/8” BSPTR
J	1/2” BSPTR

5. Individual & Manifold Base Part Configuration

0	Valve only

Individual Base

A	Side ports (3/8” & 1/2”)
B*	Bottom ports only*
C*	Side and bottom ports*
D*	Side inlet, side exhaust, bottom cylinder ports*

* 1/4 & 3/8” only

6. Internal or External Pilot

0	Valve only

Non Plug-in

G	Internal pilot
H	External pilot

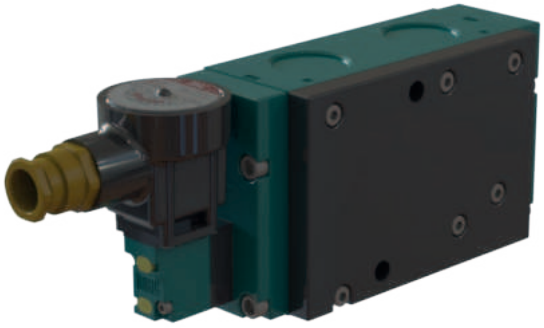
7. Pilot Exhaust Type

DM	Pilot exhaust muffled
DP	Pilot exhaust piped

11. MAC 67 SERIES

Technical Data

Function	3/2 way, pilot operated
Fluid	Compressed air, vacuum, inert gases
Pressure range Internal pilot External pilot	 1.3 to 8.0 bar Vacuum to 8 bar
Pilot pressure	1.3 to 8 bar
Lubrication	Not required, if used select a medium aniline point lubricant (between 80°C and 100°C)
Filtration	40 µm
Temperature range	-18°C to +50°C
Flow (at 6 bar, ΔP = 1 bar)	G 3/4": 14.500 Nl/min G 1": 20.000 Nl/min
Orifice	G 3/4": 22.8 mm G 1": 26.8 mm
Coil	Epoxy encapsulated
Voltage range	-15% to +10% of nominal voltage

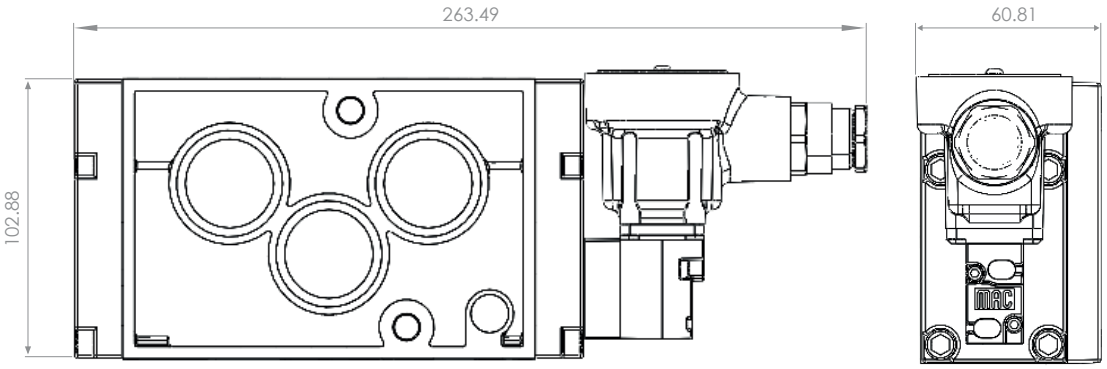


67A-A1-DAB-DM-DDAE-0EF

For more detailed information about the 67 Series valve, please check the New Technology catalogue.

Dimensions

All dimensions are metric (in mm).



How to Order

Body Options

67A - X X X - X X - DM-DXXY-0EF

1 2 3 4 5 6 — See p.32 for all solenoid options

1. Spool Type

A	Single operated NC
B	Double operated NC
C	Single operated NO
D	Double operated NO
G	Single operator - Universal spool
H	Double operator - Universal spool

2. Spool Return

1	Standard return
2	Standard return with memory spring

3. Port Size & Thread Type In & Cyl.

A	3/4” NPTF
B	1” NPTF
C	3/4” BSPPL
D	1” BSPPL
E	3/4” BSPTR
F	1” BSPTR
G	O ring mount

4. Port Configuration

A	Standard pilot exhaust

5. Internal / External Pilot

A	Internal pilot
B	External pilot

6. Pilot Exhaust Type

DM	Pilot exhaust muffled
DP	Pilot exhaust piped

12. MAC ISO 1 SERIES

Technical Data

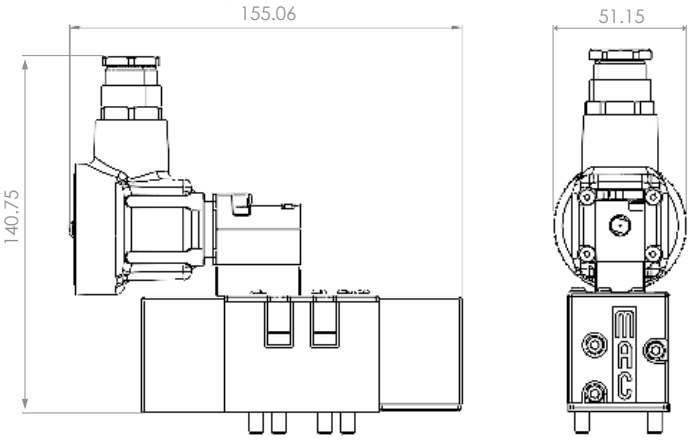
Function	5/2 way & 5/3 way, pilot operated
Fluid	Compressed air, vacuum, inert gases
Pressure range Internal pilot External pilot	 1.3 to 8.0 bar Vacuum to 8 bar
Pilot pressure	1.3 to 8 bar
Lubrication	Not required, if used select a medium aniline point lubricant (between 80°C and 100°C)
Filtration	40 µm
Temperature range	-18°C to +50°C
Flow (at 6 bar, ΔP = 1 bar)	1800 Nl/min
Orifice	8.0 mm
Coil	Epoxy encapsulated
Voltage range	-15% to +10% of nominal voltage

MV-B1A-AAAA-DM-DDAE-0EF

For more detailed information about the ISO 1 Series valve, please check the New Technology catalogue.

Dimensions

All dimensions are metric (in mm).



How to Order

Body Options

MV-B1A - A X X X - DM-DXXY-0EF

1 2 3 4 See p.32 for all solenoid options

1. Valve Function

A	Single operated, single pressure
B	Double operated, single pressure
C	Single operated, dual pressure
D	Double operated, dual pressure
E	3 position, closed center
F	3 position, open center
G	3 position, dual pressure, pressure center
J	Single operated, 2 position, universal spool
K	Double operated, 2 position, universal spool

2. Spool Return Body Electrical

A	Standard return
B	Memory spring

3. Int / Ext. Pilot

A	Internal pilot, single pressure
B	External pilot 12 end single & dual pressure
C	External pilot 14 end single & dual pressure
D	Dual pressure with internal pilot from port #3
E	Dual pressure with internal pilot from port #5

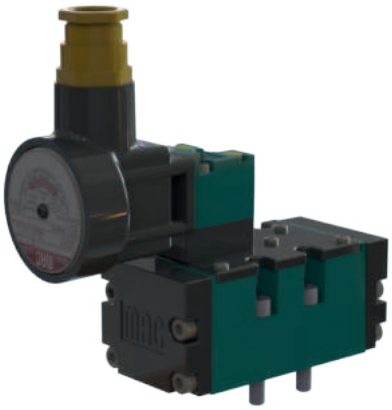
4. Pilot exhaust type

DM	Pilot exhaust muffled
DP	Pilot exhaust piped

13. MAC ISO 2 SERIES

Technical Data

Function	5/2 way & 5/3 way, pilot operated
Fluid	Compressed air, vacuum, inert gases
Pressure range Internal pilot External pilot	 1.3 to 8 bar Vacuum to 8 bar
Pilot pressure	1.3 to 8 bar
Lubrication	Not required, if used select a medium aniline point lubricant (between 80°C and 100°C)
Filtration	40 µm
Temperature range	-18°C to +50°C
Flow (at 6 bar, ΔP = 1 bar)	3000 Nl/min
Orifice	10.4 mm
Coil	Epoxy encapsulated
Voltage range	-15% to +10% of nominal voltage

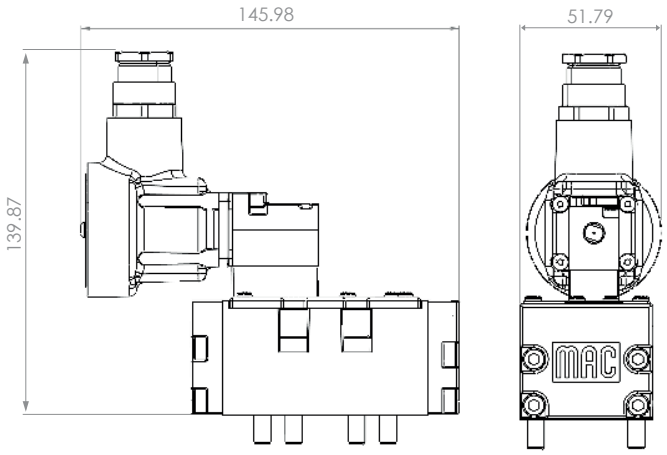


MV-B2A-AAAA-DM-DDAE-0EF

For more detailed information about the ISO 2 Series valve, please check the New Technology catalogue.

Dimensions

All dimensions are metric (in mm).



How to Order

Body Options

MV-B2A - A X X X - DM-DXXY-0EF

1 2 3 4 See p.32 for all solenoid options

1. Valve Function

A	Single operated, single pressure
B	Double operated, single pressure
C	Single operated, dual pressure
D	Double operated, dual pressure
E	3 position, closed center
F	3 position, open center
G	3 position, dual pressure, pressure center
J	Single operated, 2 position, universal spool
K	Double operated, 2 position, universal spool

2. Spool Return Body Electrical

A	Standard return
B	Memory spring

3. Int / Ext. Pilot

A	Internal pilot, single pressure
B	External pilot 12 end single & dual pressure
C	External pilot 14 end single & dual pressure
D	Dual pressure with internal pilot from port #3
E	Dual pressure with internal pilot from port #5

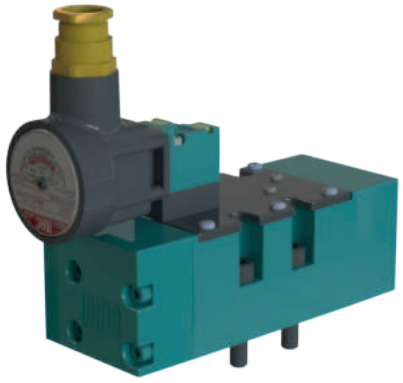
4. Pilot exhaust type

DM	Pilot exhaust muffled
DP	Pilot exhaust piped

14. MAC ISO 3 SERIES

Technical Data

Function	5/2 way & 5/3 way, pilot operated
Fluid	Compressed air, vacuum, inert gases
Pressure range Internal pilot External pilot	 1.3 to 8 bar Vacuum to 8 bar
Pilot pressure	1.3 to 8 bar
Lubrication	Not required, if used select a medium aniline point lubricant (between 80°C and 100°C)
Filtration	40 µm
Temperature range	-18°C to +50°C
Flow (at 6 bar, ΔP = 1 bar)	6100 Nl/min
Orifice	14.8 mm
Coil	Epoxy encapsulated
Voltage range	-15% to +10% of nominal voltage

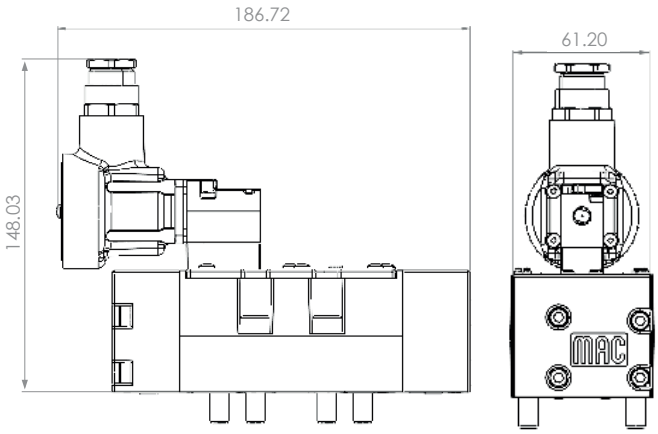


MV-B3A-AAAA-DM-DDAE-0EF

For more detailed information about the ISO 3 Series valve, please check the New Technology catalogue.

Dimensions

All dimensions are metric (in mm).



How to Order

Body Options

MV-B3A - A X X X - DM-DXXY-0EF

1 2 3 4 See p.32 for all solenoid options

1. Valve Function

A	Single operated, single pressure
B	Double operated, single pressure
C	Single operated, dual pressure
D	Double operated, dual pressure
E	3 position, closed center
F	3 position, open center
G	3 position, dual pressure, pressure center
J	Single operated, 2 position, universal spool
K	Double operated, 2 position, universal spool

2. Spool Return Body Electrical

A	Standard return
B	Memory spring

3. Int / Ext. Pilot

A	Internal pilot, single pressure
B	External pilot 12 end single & dual pressure
C	External pilot 14 end single & dual pressure
D	Dual pressure with internal pilot from port #3
E	Dual pressure with internal pilot from port #5

4. Pilot exhaust type

DM	Pilot exhaust muffled
DP	Pilot exhaust piped

15. HOW TO ORDER • SOLENOID OPTIONS

- D XX Y - 0 E F
1 2 3 4 5

1. Voltage

AC Low Wattage • DM & DP Pilot Only

JA	110/50 VAC • 2.9 W	JJ	32/50 VAC • 3.5 W
JB	220/50 VAC • 2.9W	JK	12/50 VAC • 3.9 W
JD	100/50 VAC • 3.6 W	JL	48/50 VAC • 3.3 W
JF	240/50 VAC • 2.8 W	JN	120/50 VAC • 4.4 W
JH	42/50 VAC • 3.2 W		

AC • 35 & 45 Series Only

AA	110/50 VAC • 5.4 W	AL	42/50 VAC • 5.2 W
AB	220/50 VAC • 5.9 W	AM	36/50 VAC • 5.2 W
AE	200/50 VAC • 6.1 W	AN	120/50 VAC • 4.0 W
AF	240/50 VAC • 4.7 W	AU	230/50 VAC • 5.3 W
AG	100/50 VAC • 5.5 W	AV	28/50 VAC • 6.8 W
AH	12/50 VAC • 6.8 W	BA	48/50 VAC • 4.3 W

DC Wattage • 35, 45, DM & DP Pilot

DA	24 VDC • 5.4 W	DT	75 VDC • 5.6 W
DB	12 VDC • 5.4 W	DU	24 VDC • 5.9 W
DJ	28 VDC • 5.7 W	EA	12 VDC • 6.0 W
DK	110 VDC • 5.8 W	EB	220 VDC • 4.2 W
DL	64 VDC • 6.0 W	EC	120 VDC • 5.2 W
DM	36 VDC • 5.8 W	ED	24 VDC • 4.2 W
DN	6 VDC • 6.0 W	EE	12 VDC • 4.2 W
DR	90 VDC • 6.6 W	GL	48 VDC • 4.2 W
DS	110 VDC • 7.3 W		

2. Lead Wire Length

E	2.0 m
M	5.0 m

3. Manual Override

0	No manual override

4. Solenoid

E	ATEX D solenoid

5. Electrical Connection

F	Cable gland

DC Low Wattage • 35, 45, DM & DP Pilot

EP	110 VDC • 2.4 W	FJ	6 VDC • 2.4 W
EU	120 VDC • 2.1 W	FK	48 VDC • 1.9 W
FA	12 VDC • 1.8 W	GN	9 VDC • 2.5 W
FB	24 VDC • 1.8 W	LA	15 VDC • 2.3 W
FC	10 VDC • 2.2 W	LD	80 VDC • 1.8 W
FD	24 VDC • 2.0 W	LE	55 VDC • 1.8 W
FE	12 VDC • 2.4 W	LL	200 VDC • 3.47 W
FF	24 VDC • 2.4 W	LM	36 VDC • 2.5 W

16. WARRANTY

The MAC Valves organisation has established a reputation over many years for fulfilling the needs and requirements of the users of its products. All MAC Valves are quality products specifically designed and built for long and rugged service. For this reason, MAC Valves is able to provide the Buyer a limited warranty.

Warranty

MAC Valves, Inc. hereby warrants to Buyer that, for a period of 18 months from the original date of shipment of each valve from our factory (« Warranty period »), such valve will be free from significant defects in material and workmanship and will conform to all specifications agreed to by MAC Valves, Inc. In addition, MAC Valves, Inc. warrants that the electrical coils on such valves will be free from significant defects in material and workmanship for their normal useful life. Except for these limited warranties, MAC Valves, Inc. expressly disclaims all representations and warranties of any kind (whether express, implied or arising by operation of law) with respect to the valves, including, without limitation, any warranties or representations as to merchantability, fitness for a particular purpose or any other matter. This section survives the expiration, termination or cancellation of any agreements between the parties relating to the purchase of the valves.

Warranty Limitations

This warranty does not apply where the valves have been (i) subjected to abuse, misuse, damage, neglect, negligence, accident, improper testing, improper installation, improper storage, improper handling, abnormal physical stress, abnormal environmental condition, or use contrary to any instructions issued by MAC Valves, Inc. ; (ii) modified, reconstructed, repaired, or altered by persons other than MAC Valves, Inc. or its authorised representative ; or (iii) used with any third-party product, hardware, software or other product that has not been previously approved in writing by MAC Valves, Inc. Additionally, this warranty does not cover claims for labor, material, time or transportation, and does not apply to loss or damage caused by fire, theft, riot, explosion, labor dispute, act of God, or other causes beyond the control of MAC Valves, Inc.

Exclusive Remedy

The Buyer's sole remedy under this warranty is limited to the replacement or rebuilding of any valve which does not conform to the warranties provided herein or, in MAC Valves, Inc.'s sole discretion, refund of the purchase price for the non-conforming valve. Buyer's remedy is conditioned on Buyer's compliance with its obligations under this warranty. Valves that Buyer believes do not conform to this warranty must be returned (with or without bases) transportation prepaid and received at our factory within the warranty period. If MAC Valves, Inc. determines that the valve is non-conforming and is otherwise covered by this warranty, the rebuilt or replaced valve will be returned to the customer at the expense of MAC Valves, Inc., and will carry the same warranties as provided under the Flat Rate Rebuild Program described below. MAC Valves, Inc. will not be responsible for any incidental, special, exemplary or consequential damages, including without limitation direct and indirect lost profits, regardless of whether those damages were foreseeable.