

MAC 400 Series

MAC

400 Series

5-way remote & solenoid pilot operated (5-way pilot)

Available configurations:	Individual inline, individual base mounted or manifold mounted bodies
Port sizes:	1/8", 1/4" ports
Flow:	Up to 1000 NI/min (1.0 Cv)
Pressure range:	Vacuum to 8 bar
Function:	5/2 (single & double operator), 5/3 (closed centre, open centre & pressure centre)
Operation:	Electrical / Remote air
Pilot valve:	DM / DP / DU / GM
Accessories:	Circuit bar / Shut-off valve / Flow controls



Table of contents

- *MAC 400 Series - Solenoid pilot operated valve*
- *MAC 400 Series - Remote air valve*
- *MAC 400 Series - Spool configurations*
- *MAC 400 Series - How to order*
- *MAC 400 Series - References for DM pilot valve*
- *MAC 400 Series - References for GM pilot valve*
- *MAC 400 Series - Codifi cati on electrical connecti on DM pilot valve (coil / connector configurations)*
- *MAC 400 Series - Codifi cati on electrical connecti on GM pilot valve (coil / connector configurations)*
- *MAC 400 Series - Dimensions*
- *MAC 400 Series - Repair kits (main ones)*
- *MAC 400 Series - Circuit bar®*

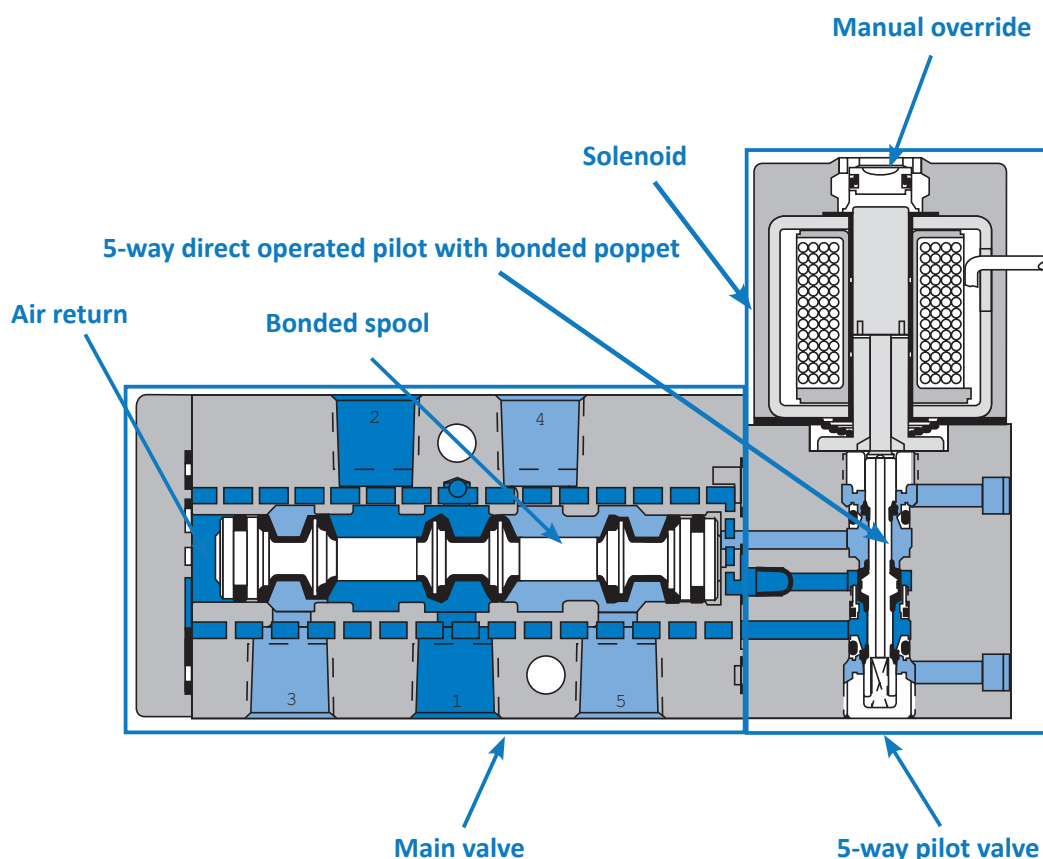
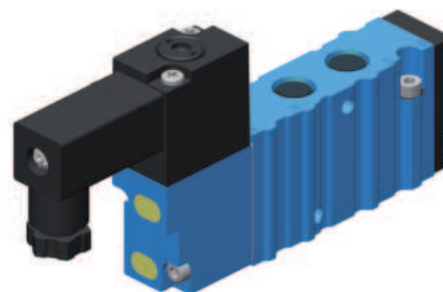
MAC 400 Series

MAC 400 Series - Solenoid pilot operated valve

5-way, 2 and 3 position, spool

Flow up to 1000 NI/min (1.0 Cv)

- ◇ MAC unique patented 5-way direct operating pilot valve
- ◇ The 5-way pilot develops maximum shifting forces both ways
- ◇ Short stroke with high flow
- ◇ Balanced spool, immune to variations of pressure, also provides high flow
- ◇ Bonded spool with minimum friction, shifting in a glass-like finished bore
- ◇ Wiping effect eliminates sticking
- ◇ Long service life
- ◇ Repair kit available for the complete valve



Valve with side ports, single operator, single pressure, internal pilot

Technical data

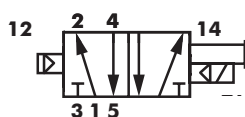
Fluid:	Compressed air, vacuum, inert gases
Pressure range:	Internal pilot - 2 position: 1.3 to 8 bar 3 position: 2.3 to 8 bar External pilot: vacuum to 8 bar
Pilot pressure:	2 position: 1.3 to 8 bar 3 position: 2.3 to 8 bar
Lubrication:	Not required, if used, select a medium aniline point lubricant (between 80°C and 100°C)
Filtration:	40 µ
Temperature range:	-18°C to +50°C
Orifice:	6.2 mm
Flow (at 6 bar, ΔP=1 bar):	1000 NI/min (1.0 Cv)
Coil:	Epoxy encapsulated - Class A wires - 100% ED (mod 0449)
Voltage range:	-15% to +10% of nominal voltage
Protection:	IP54 (GM pilot) - IP65 (DM pilot) (Electrical connection)
Power:	~ Inrush: 10.9 VA Holding: 7.7 VA = 1.8 to 12.7 W
Response times:	24V=5.4W Energize: 7.3 ms De-energize: 5.3 ms 110V~/50Hz Energize: 8-12 ms De-energize: 7-11 ms

Solenoid pilot operated valve

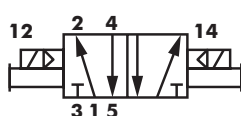
Single pressure models

5/2

Single operator

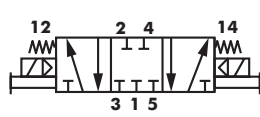


Double operator

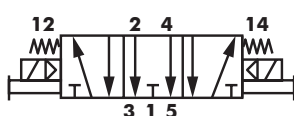


5/3

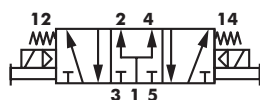
Closed centre



Open centre



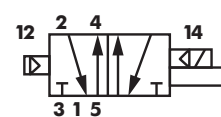
Pressure centre



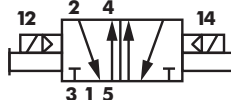
Dual pressure models

5/2

Single operator



Double operator



5/3

Pressure centre



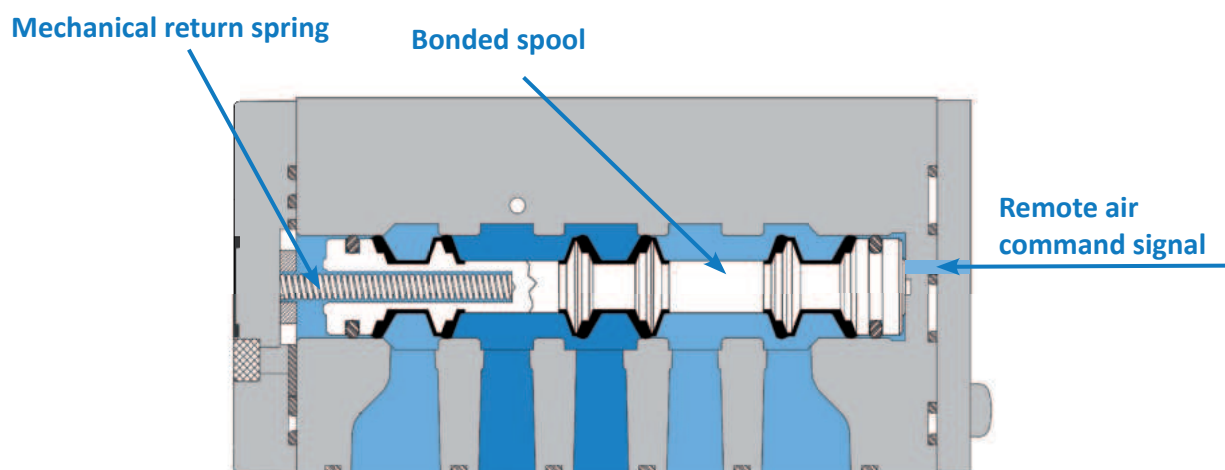
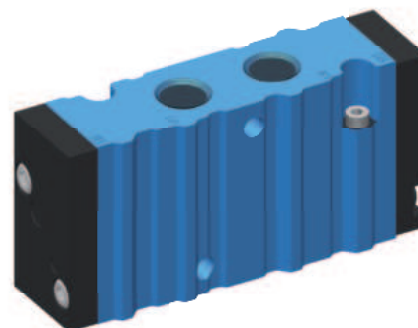
MAC 400 Series

MAC 400 Series - Remote air valve

5-way, 2 and 3 position, spool

Flow up to 1000 NI/min (1.0 Cv)

- ◇ Balanced spool, immune to variations of pressure, also provides high flow
- ◇ Bonded spool with minimum friction, shifting in a glass-like finished bore
- ◇ Short stroke with high flow
- ◇ Wiping effect eliminates sticking
- ◇ Long service life
- ◇ Repair kit available for the complete valve



Valve with single remote operator, single pressure, 2 position, manifold

Technical data

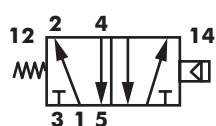
Fluid:	Compressed air, vacuum, inert gases
Pressure range:	Single op.: vacuum to 6.7 bar - Double op.: vacuum to 10 bar
Air signal pressure:	Single op.: 2.7 to 10 bar Double op.: 2 pos.: 1.3 to 10 bar, 3 pos.: 2.3 to 10 bar
Lubrication:	Not required, if used, select a medium aniline point lubricant (between 80°C and 100°C)
Filtration:	40 µ
Temperature range:	-18°C to +50°C
Orifice:	6.2 mm
Flow (at 6 bar, $\Delta P=1$ bar):	1000 NI/min (Cv 1.0)

Remote air valve

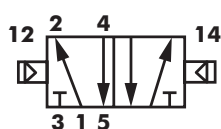
Single pressure models

5/2

Single operator

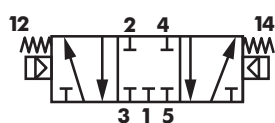


Double operator

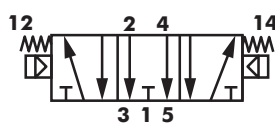


5/3

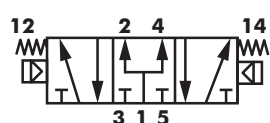
Closed centre



Open centre



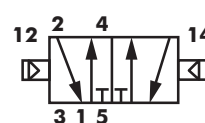
Pressure centre



Dual pressure models

5/2

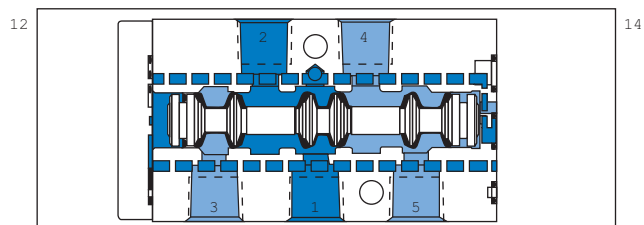
Double operator



MAC 400 Series

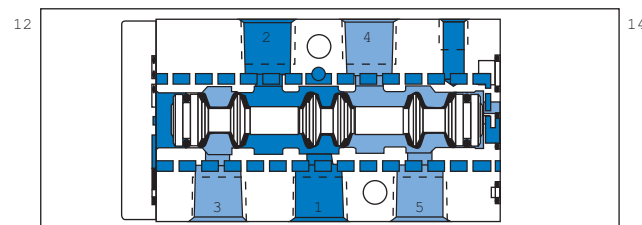
MAC 400 Series - Spool configurations

Internal Pilot



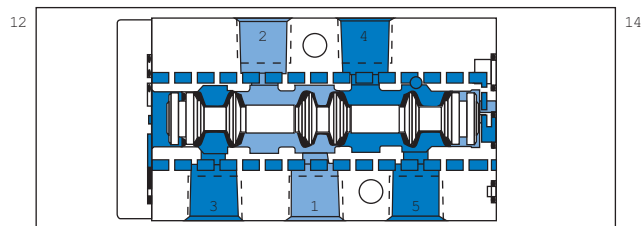
Single operator – Single inlet
Shown with 12 operator energized

Internal Pilot External Pilot Port



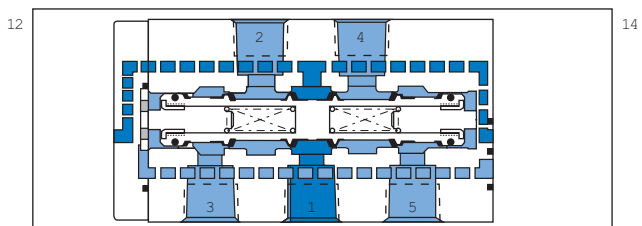
Single operator – Single inlet
Shown with 12 operator energized

Internal Pilot



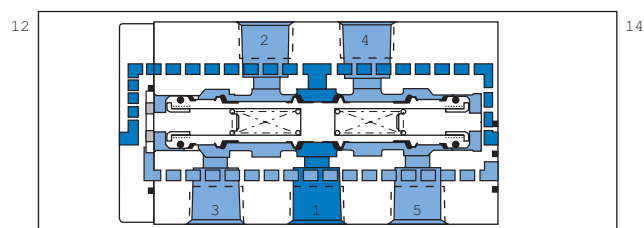
Single operator – Dual inlet
Shown with 12 operator energized

Internal Pilot



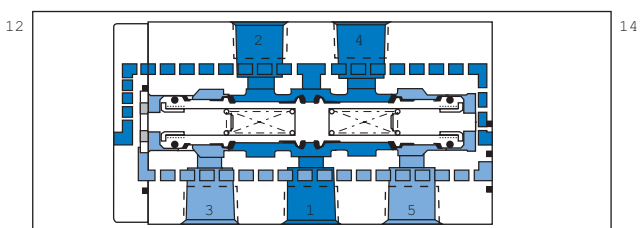
3 Position – Closed centre

Internal Pilot



3 Position – Open centre

Internal Pilot



3 Position – Pressure centre

MAC 400 Series

MAC 400 Series - How to order

How to order electrical version

4 X X A - X X X - X X - X X X X - X X X

REV. PILOT VALVE - See below

SPOOL TYPE	BODY OPTIONS	PORT SIZE & THREAD TYPE IN. & CYL. **	BASE CONFIGURATION	INT./EXT. PILOT
0 Base only 1 Sgl. oper. sgl. pres. 2 Dbl. oper. sgl. pres. 3 Sgl. oper. dual pres. 4 Dbl. oper. dual pres. 5 3 pos. closed centre 6 3 pos. open centre 7 3 pos. sgl. pres. - pres. centre	0 Base only 1 Inline 5 port 3 Manifold body (base mount body) 4 Inline 5 port w/ memory 6 Manifold body w/ memory	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	0 Inline or manifold body A Base standard ports B Base standard ports w/ flow controls	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 & bar manifold)

** Ports 3 & 5 always are G1/8

How to order remote air version

4 X X A - X X X - RA

REV. Remote Air

SPOOL TYPE	BODY OPTIONS	PORT SIZE & THREAD TYPE IN. & CYL. **	BASE CONFIGURATION	PILOT PORT
*1 Sgl. oper. sgl. pres. 2 Dbl. oper. sgl. pres. 4 Dbl. oper. dual pres. 5 3 pos. closed centre 6 3 pos. open centre 7 3 pos. sgl. pres. - pres. centre	1 Inline 5 port 3 Manifold body (base mount body)	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	0 Inline or manifold body A Base standard ports B Base standard ports w/ flow controls	H Pilot port size #10-32 J Pilot port size M5 (Metric)

* Requires MOD 1493

** Ports 3 & 5 always are G1/8

MAC 400 Series

MAC 400 Series - How to order

How to order solenoid operator

DM - D X X X - X X X*

VOLTAGE	LEAD WIRE LENGTH	MANUAL OVERRIDE	ELECTRICAL CONNECTOR*
JA 110 V~ / 50 Hz	O No wires	0 No operator	BA Flying leads
JB 220 V~ / 50 Hz	A 45 cm	1 Non-locking recessed	BK Flying leads with protection diode
JC 24 V~ / 50 Hz	B 60 cm	2 Locking recessed	BL Flying leads with protection varistor
DA 24 V= / 5.4 W	C 90 cm	3 Non-locking extended	JB DIN 43650 - Industrial type B connector (male + female)
DB 12 V= / 5.4 W	D 120 cm	4 Locking extended	JD DIN 43650 - Industrial type B connector with light (male + female)
DC 12 V= / 7.5 W	E 180 cm		JM DIN 43650 - Industrial type B connector (male only)
DD 24 V= / 7.3 W	F 240 cm		KA DIN 43650 - Industrial type C connector
FA 12 V= / 1.8 W	J Connector		KB DIN 43650 - Industrial type C connector with protection diode
FB 24 V= / 1.8 W			KJ DIN 43650 - Industrial type C connector with protection varistor
FE 12 V= / 2.4 W			TA Dual tabs with receptacles
FF 24 V= / 2.4 W			TB TA with protection diode

* Other options available, see page 11

GM - G X X X - X X X*

VOLTAGE	LEAD WIRE LENGTH	MANUAL OVERRIDE	ELECTRICAL CONNECTOR*
DC 24 V= / 1.8 W	O No wires	1 Non locking recessed	BA Flying leads w/o ground wire
DD 24 V= / 2.5 W	A 45 cm	3 Non locking extended	BB Flying leads w/ ground wire
DE 24 V= / 3.0 W	B 60 cm		BT Flying leads with LED light on top (no ground wire)
DF 24 V= / 4.0 W	C 90 cm		KA Plug-in wire assembly (no ground wire)
DJ 12 V= / 1.8 W	D 120 cm		KB Plug-in wire assembly w/ ground wire
DK 12 V= / 2.5 W	E 180 cm		KT Plug-in wire assembly w/ LED light on top
DM 12 V= / 3.0 W	F 240 cm		
DN 12 V= / 4.0 W	G 305 cm		
ED 120 V= / 2.5 W	H 366 cm		

* Other options available, see page 12

MAC 400 Series

MAC 400 Series - References for DM pilot valve

Codification table for voltages / Manual override / Electrical connection

VALVE CODE □ **-DM- XX X-X XX**
1 2 3 4

* From Lead wire length options choose A through F

Note: When coil is above 30 volts, a ground wire is required. Applies to options with flying leads.

1. VOLTAGE

D-XX X-X XX	VOLTAGE
DA	24V~/5,4W
DB	12V~/5,4W
DC	12V~/7,5W
DD	24V~/7,3W
DE	12V~/12,7W
DF	24V~/12,7W
DK	110V~/4,7W
DJ	28V~/5,2W
DL	64V~/6W
DM	36V~/5,3W
DN	6V~/6W
DR	90V~/6,6W
DS	110V~/7,3W
DT	75V~/5,6W
DP	48V~/5,8W
FA	12V~/1,8W
FB	24V~/1,8W
FE	12V~/2,4W
FF	24V~/2,4W
JA	120V~/60Hz, 110V~/50Hz (2,9W)
JB	240V~/60Hz, 220V~/50Hz (2,9W)
JC	24V~/60Hz, 24V~/50Hz (3,7W)
JD	100V~/60Hz, 100V~/50Hz, 110V~/60Hz (3,9W)
JE	220V~/60Hz (3,4W)
JF	240V~/50Hz (2,8W)
JG	200V~/60Hz, 200V~/50Hz (3,9W)

2. WIRE LENGTH

D-XX X-X XX	WIRE LENGTH
0	No wires
A	45 cm – 18"
B	60 cm – 24"
C	90 cm – 36"
D	120 cm – 48"
E	180 cm – 72"
F	240 cm – 96"
J	Connector

3. MANUAL OVERRIDE

D-XX X-X XX	MANUAL OVERRIDE
0	No operator
1	Non-locking recessed
2	Locking recessed
3	Non-locking extended
4	Locking extended

4. ELECTRICAL CONNECTION

D-XX X-X XX	ELECTRICAL CONNECTION
BA*	Flying leads
BK*	BA with protection diode
BL*	BA with protection varistor
CA*	1/2" NPS conduit with flying leads
CM*	1/2" NPS metal conduit with flying leads
CN*	1/2" NPS metal conduit with flying leads & ground
CK	1/2" NPS conduit with diode
CL	1/2" NPS conduit with MOV
HA	MAC JAC plug-in
HB	MAC JAC plug-in with light
HC	MAC JAC plug-in with diode & light
JB	DIN 43650 - Industrial type B connector (male + female)
JD	DIN 43650 - Industrial type B connector with light (male + f.)
JM	DIN 43650 - Industrial type B connector (male only)
JA	DIN 43650 - Industrial type A connector (male + female)
JC	DIN 43650 - Industrial type A connector with light (male + f.)
JJ	DIN 43650 - Industrial type A connector (male only)
KA	DIN 43650 - Industrial type C connector
KB	DIN 43650 - Industrial type C connect. with protection diode
KC	DIN 43650 - Industrial type C conn. with protection varistor
KD	DIN 43650 - Industrial type C connector with light
KE	DIN 43650 - Indust. type C conn. w/ light & protection diode
KF	DIN 43650 - Indust. type C conn. w/ light & protection varistor
KG	DIN 43650 - Industrial type C connector with light & diode
KJ	DIN 43650 - Industrial type C connector (male only)
KK	DIN 43650 - Indust. type C conn. w/ protection diode (male)
KL	DIN 43650 - Indust. type C conn. w/ protection varistor (male)
LA	ISO 15217 standard connector plug-in (male only)
LB	ISO 15217 standard connector plug-in with diode (male only)
LC	ISO 15217 standard connector plug-in with MOV (male only)
LJ	ISO 15217 standard connector plug-in (male only)
LK	ISO 15217 standard connector plug-in with diode (male only)
LL	ISO 15217 standard connector plug-in with MOV (male only)
PA	Pico M8 (male only)
TA	Dual tabs with receptacles
TB	TA with protection diode
TD	TA with light
TE	TA with light and protection diode
TJ	Dual tabs (male only)
TK	TJ with protection diode
TM	TJ with light
TN	TJ with light and protection diode
RA	Euro (M12) - 2 Pin
RB	Euro (M12) - 2 Pin with diode (male only)
RC	Euro (M12) - 2 Pin with MOV
RD	Euro (M12) - 2 Pin with light
RE	Euro (M12) - 2 Pin with diode & light
RF	Euro (M12) - 2 Pin with MOV & light

MAC 400 Series

MAC 400 Series - References for GM pilot valve

Codification table for voltages / Manual override / Electrical connection

VALVE CODE **-GM- XX X-X XX**
1 2 3 4

1. VOLTAGE

G-XX X-X XX	VOLTAGE
DC	24 V =/1.8 W
DD	24 V =/1.8 W
DE	24 V =/3.0 W
DF	24 V =/4.0 W
DJ	12 V =/1.8 W
DK	12 V =/2.5 W
DM	12 V =/3.0 W
DN	12 V =/4.0 W

2. WIRE LENGTH

G-XX X-X XX	WIRE LENGTH
0	No lead wire (use only with "KJ" & "KM" electrical connectors)
A	45 cm - 18"
B	60 cm - 24"
C	90 cm - 36"
D	120 cm - 48"
E	180 cm - 72"
F	240 cm - 96"
G	300 cm - 120"
H	365 cm - 144"

3. MANUAL OVERRIDE

G-XX X-X XX	MANUAL OPERATOR
1	Non-locking recessed
2	Locking recessed
3	Non-locking extended
4	Locking extended

4. ELECTRICAL CONNECTION

G-XX X-X XX	ELECTRICAL CONNECTION
BA	Flying leads
BB	Flying leads with ground wire
BC	Flying leads with LED light parallel to leads
BD	Flying leads with LED light parallel to leads & ground wire
BE	Flying leads with suppression diode
BF	Flying leads with supp. diode & ground wire
BG	Flying leads with supp. diode plus LED light parallel to leads
BH	Flying leads with supp. diode plus LED light parallel to leads & ground wire
BN	Flying leads with supp. diode plus blocking diode
BP	Flying leads w/ supp. diode plus blocking diode & ground wire
BR	Flying leads w/ supp. diode plus blocking diode & LED light parallel to leads
BS	Flying leads with supp. diode plus blocking diode & LED light parallel to leads & Ground Wire

BT	Flying leads with LED light on top
BU	Flying leads with LED light on top & ground wire
BV	Flying leads with supp. diode plus LED light on top
BW	Flying leads w/ supp. diode plus LED light on top & ground wire
BX	Flying leads w/ supp. diode plus blocking diode & LED on top
BY	Flying leads with supp. diode plus blocking diode & LED on top & ground wire

4. ELECTRICAL CONNECTION

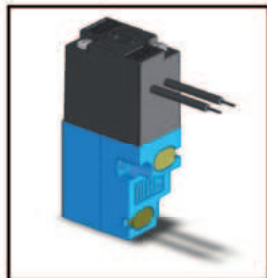
G-XX X-X XX	SOLENOID PLUG-IN CONNECTOR WITH LEADS
GA*	MAC JAC Solenoid plug-in
GB*	MAC JAC Solenoid plug-in with diode
GC*	MAC JAC Solenoid plug-in with MOV
GD*	MAC JAC Solenoid plug-in with light
GE*	MAC JAC Solenoid plug-in with diode & light
GF*	MAC JAC Solenoid plug-in with MOV & light
GG*	MAC JAC Solenoid plug-in with rectifier
GH*	MAC JAC Solenoid plug-in with rectifier & light
GJ*	MAC JAC Solenoid plug-in (male only)
GK*	MAC JAC Solenoid plug-in with diode (male only)
GL*	MAC JAC Solenoid plug-in with MOV (male only)
GM*	MAC JAC Solenoid plug-in with LED (male only)
GN*	MAC JAC Solenoid plug-in with diode & LED (male only)
GP*	MAC JAC Solenoid plug-in with MOV & LED (male only)
GR*	MAC JAC Solenoid plug-in with rectifier (male only)
GS*	MAC JAC Solenoid plug-in with rectifier & LED (male only)
HA	Circuit board plug-in w/ full wave rectifier & LED (w/ ground wire)
HD	Same as "HA" without lead wire assembly
KA	Plug-in wire assembly
KB	Plug-in wire assembly with ground wire
KC	Solenoid plug-in wire assembly with rectifier and LED
KD	Solenoid plug-in wire ass. w/ rectifier and LED w/ ground
KE	Plug-in wire assembly w/ suppression diode
KF	Plug-in wire assembly w/ suppression diode & ground wire
KJ	Plug-in without wire assembly for "KA" above
KM	Plug-in without wire assembly for "KB" above
KN	Plug-in wire assembly w/ suppr. diode plus blocking diode
KP	Plug-in wire ass. w/ suppr. diode + blocking diode & ground wire
KT	Plug-in wire assembly with LED light on top (no ground wire)
KU	Plug-in wire assembly with LED light on top & ground wire
KV	Plug-in wire assembly with supp. diode plus LED light on top
KW	Plug-in wire ass. w/ supp. diode + LED light on top & ground wire
KX	Plug-in wire ass. w/ supp. diode + block. diode & LED light on top
KY	Plug-in wire assembly with suppression diode plus blocking diode & LED light on top & ground wire
PA	Pico
TJ	Dual Tabs - Mini Plug-in

Note: Blocking diode is located in the lead wire

* MAC JAC Connector not available with AC Voltage options

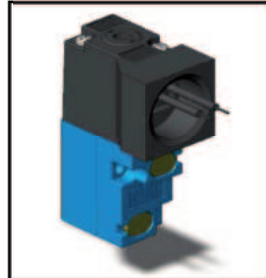
MAC 400 Series

MAC 400 Series - Codification electrical connection DM pilot valve (coil / connector configurations)



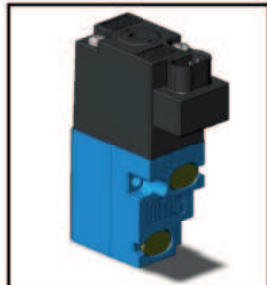
- BA* Flying leads
- BK* BA with protection diode
- BL* BA with protection varistor

* From lead wire length options choose

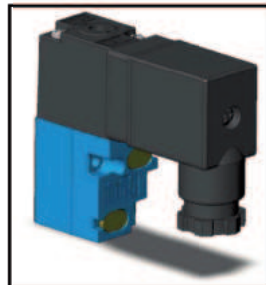


- CA* 1/2" NPS conduit with flying leads
- CM* 1/2" NPS metal conduit with flying leads
- CN* 1/2" NPS metal conduit with flying leads & ground
- CK 1/2" NPS conduit with diode
- CL 1/2" NPS conduit with MOV

* From lead wire length options choose

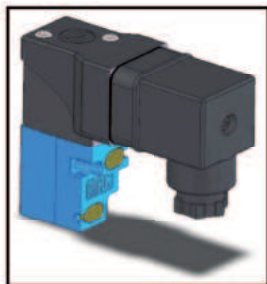


- HA MAC IAC plug-in
- HB MAC IAC plug-in with light
- HC MAC IAC plug-in with diode & light



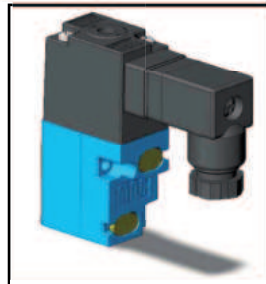
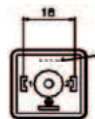
- JB DIN 43650 - Industrial type B connector (male + female)
- JD DIN 43650 - Industrial type B connector with light (male + female)
- JM DIN 43650 - Industrial type B connector (male only)

11mm pin spacing

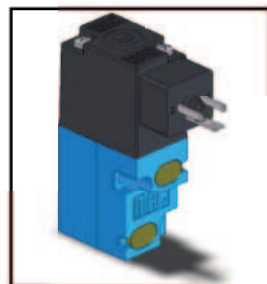


- JA DIN 43650 - Industrial type A connector (male + female)
- JC DIN 43650 - Industrial type A connector with light (male + female)
- JJ DIN 43650 - Industrial type A connector (male only)

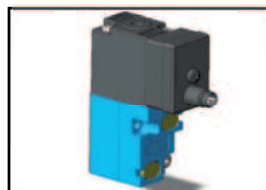
Form A - 18mm pin spacing



- KA DIN 43650 - Industrial type C connector
- KB DIN 43650 - Industrial type C connector with protection diode
- KC DIN 43650 - Industrial type C connector with protection varistor
- KD DIN 43650 - Industrial type C connector with light
- KE DIN 43650 - Industrial type C connector with light and protection diode
- KF DIN 43650 - Industrial type C connector with light and protection varistor
- KG DIN 43650 - Industrial type C connector with light & diode
- KJ DIN 43650 - Industrial type C connector (male only)
- KK DIN 43650 - Industrial type C connector with protection diode (male only)
- KL DIN 43650 - Industrial type C connector with protection varistor (male only)



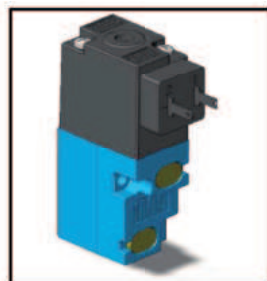
- LA ISO 15217 standard connector plug-in (male only)
- LB ISO 15217 standard connector plug-in with diode (male only)
- LC ISO 15217 standard connector plug-in with MOV (male only)
- LJ ISO 15217 standard connector plug-in (male only)
- LK ISO 15217 standard connector plug-in with diode (male only)
- LL ISO 15217 standard connector plug-in with MOV (male only)



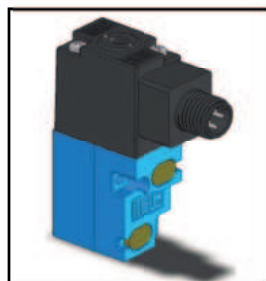
- PA Pico M8 (male only)



M* 2-pin thread or snap fit



- TA Dual tabs with receptacles
- TB TA with protection diode
- TD TA with light
- TE TA with light and protection diode
- TJ Dual tabs (male only)
- TK TJ with protection diode
- TM TJ with light
- TN TJ with light and protection diode



- RA Euro (M12) - 2 Pin
- RB Euro (M12) - 2 Pin with diode (male only)
- RC Euro (M12) - 2 Pin with MOV
- RD Euro (M12) - 2 Pin with light
- RE Euro (M12) - 2 Pin with diode & light
- RF Euro (M12) - 2 Pin with MOV & light

MAC 400 Series

MAC 400 Series - Codification electrical connection GM pilot valve (coil / connector configurations)



BA	Flying leads
BB	Flying leads with ground wire
BC	Flying leads with LED light parallel to leads
BD	Flying leads with LED light parallel to leads & ground wire
BE	Flying leads with suppression diode
BF	Flying leads with supp. diode & ground wire
BG	Flying leads with supp. diode plus LED light parallel to leads
BH	Flying leads with supp. diode plus LED light parallel to leads & ground wire
BN	Flying leads with supp. diode plus blocking diode
BP	Flying leads with supp. diode plus blocking diode & ground wire
BR	Flying leads with supp. diode plus blocking diode & LED light parallel to leads
BS	Flying leads with supp. diode plus blocking diode & LED light parallel to leads & Ground Wire
BT	Flying leads with LED light on top
BU	Flying leads with LED light on top & ground wire
BV	Flying leads with supp. diode plus LED light on top
BW	Flying leads with supp. diode plus LED light on top & ground wire
BX	Flying leads with supp. diode plus blocking diode & LED on top
BY	Flying leads with supp. diode plus blocking diode & LED on top & ground wire

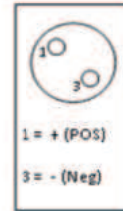


KA	Plug-in wire assembly
KB	Plug-in wire assembly with ground wire
KC	Solenoid plug-in wire assembly with rectifier and LED
KD	Solenoid plug-in wire assembly with rectifier and LED with ground
KE	Plug-in wire assembly w/ suppression diode
KF	Plug-in wire assembly w/ suppression diode & ground wire
KJ	Plug-in without wire assembly for "KA" above
KM	Plug-in without wire assembly for "KB" above
KN	Plug-in wire assembly with suppression diode plus blocking diode
KP	Plug-in wire assembly with suppression diode plus blocking diode & ground wire
KT	Plug-in wire assembly with LED light on top (no ground wire)
KU	Plug-in wire assembly with LED light on top & ground wire
KV	Plug-in wire assembly with supp. diode plus LED light on top
KW	Plug-in wire assembly with supp. diode plus LED light on top & ground wire
KX	Plug-in wire assembly with suppression diode plus blocking diode & LED light on top
KY	Plug-in wire assembly with suppression diode plus blocking diode & LED light on top & ground wire

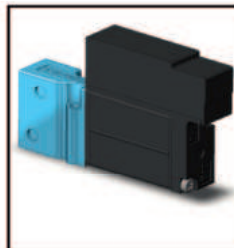


GA*	MAC JAC Solenoid plug-in
GB*	MAC JAC Solenoid plug-in with diode
GC*	MAC JAC Solenoid plug-in with MOV
GD*	MAC JAC Solenoid plug-in with light
GE*	MAC JAC Solenoid plug-in with diode & light
GF*	MAC JAC Solenoid plug-in with MOV & light
GG*	MAC JAC Solenoid plug-in with rectifier
GH*	MAC JAC Solenoid plug-in with rectifier & light
GJ*	MAC JAC Solenoid plug-in (male only)
GK*	MAC JAC Solenoid plug-in with diode (male only)
GL*	MAC JAC Solenoid plug-in with MOV (male only)
GM*	MAC JAC Solenoid plug-in with LED (male only)
GN*	MAC JAC Solenoid plug-in with diode & LED (male only)
GP*	MAC JAC Solenoid plug-in with MOV & LED (male only)
GR*	MAC JAC Solenoid plug-in with rectifier (male only)
GS*	MAC JAC Solenoid plug-in with rectifier & LED (male only)

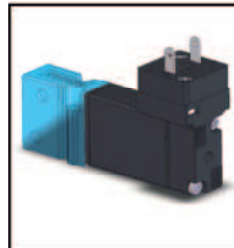
* MAC JAC Connector not available with AC Voltage options



PA	Pico
M* 2-Pin Thread or Snap Fit	
8mm	



HA	Circuit board plug-in with full wave rectifier & LED (with ground wire)
HD	Same as "HA" without lead wire assembly



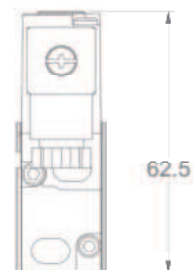
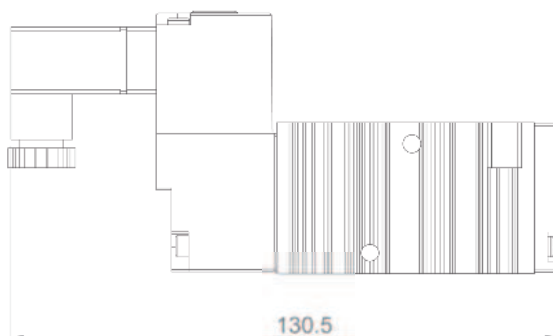
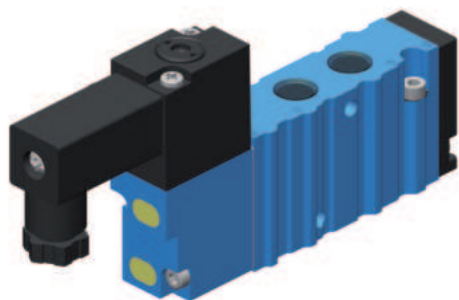
TJ	Dual Tabs - Mini Plug-in
MICRO DIN 43650-Industrial Standard C	
9.4mm Pin Spacing	

MAC 400 Series

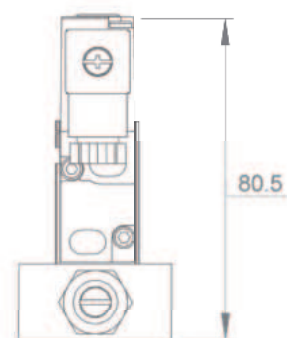
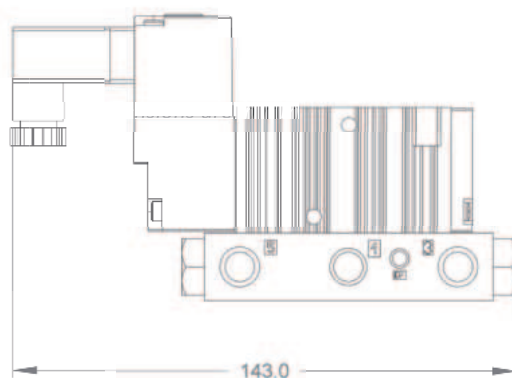
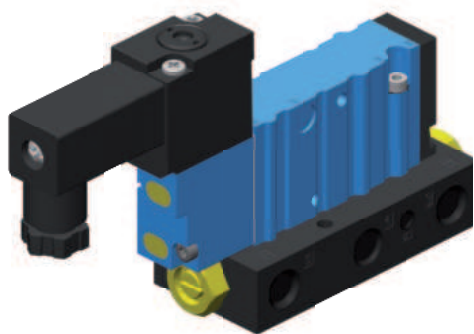
MAC 400 Series - Dimensions

400 Series - Inline valve

All dimensions are in mm



400 Series - Individual base



MAC 400 Series

MAC 400 Series - Repair kits (main ones)

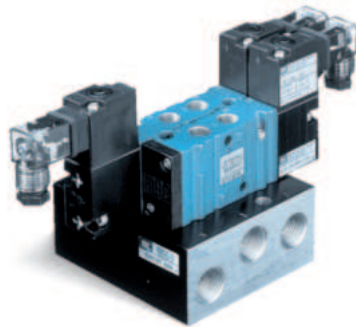
PART REFERENCE	DESCRIPTION
K-04001	Repair kit 2 position, single pressure, single operator
K-04001-01	Repair kit 2 position, single pressure, single operator with memory spring
K-04002	Repair kit 2 position, single pressure, double operator
K-04003	Repair kit 2 position, dual pressure, single operator
K-04003-01	Repair kit 2 position, dual pressure, single operator with memory spring
K-04004	Repair kit 2 position, dual pressure, double operator
K-04005	Repair kit 3 position, closed centre, single pressure
K-04006	Repair kit 3 position, open centre, single pressure
K-04007	Repair kit 3 position, single pressure, pressure centre
S-04001	Spool assembly 2 position, single pressure
S-04002	Spool assembly 2 position, single pressure - memory spring type
S-04003	Spool assembly 2 position dual pressure
S-04004	Spool assembly 2 position dual pressure - memory spring type
S-04005	Spool assembly 3 position, single pressure, closed centre
S-04006	Spool assembly 3 position, single pressure, open centre
S-04007	Spool assembly 3 position, single pressure, pressure centre
DM-D...-...	Complete pilot valve (45 series type)
GM-G...-...	Complete pilot valve (44 series type)
16524	Pressure seal - pilot valve to body
16525	Body to base pressure seal (manifold body)
17013-01	O-Ring (2x) with manifold base (inline body)
17015-01	O-Ring (1x) port seal with manifold base (inline body)

MOST COMMON MODIFICATIONS	DESCRIPTION
1080	Namur interface
T65C	High temperatures
532B	Washdown IP65
0650	Food applications

For other modifications, please consult factory

MAC 400 Series

MAC 400 Series - Circuit bar®



MID PROFILE CIRCUIT BAR
CYLINDER PORTS IN VALVE



ADD-A-UNIT STATIONS
FOR CBM404A BAR

Design description

General

The 400 series circuit bar® is available in five different configurations. The Low Profile version (CBM401A & CBM402A), the Mid Profile version (CBM403A & CBM404A), and the High Profile version (CBM405A). Each bar is machined from a single block extruded black anodized aluminium to provide a common inlet and dual common exhaust. The Mid and High Profile versions offer a common external pilot and an add-on version option which provides a means to attach additional stations to the circuit bar®.

Electrical

Each circuit bar® is a non plug-in bar. All electrical connections are made at the solenoid. Wire and optional prewired cables are available.

Valving

Inline and manifold type valves can be mounted on the circuit bars®. The common inlet and exhausts can be isolated to provide different pressures. Valves using both style pilot valves (44 and 45 series) can be mounted on the same circuit bar®.

Porting

The common inlet and exhausts have a 3/8" tapped port. The Low Profile and Mid Profile bars are available with 1/8" and 1/4" bottom ports only. The High Profile bar is available with 1/8" and 1/4" side ports only.

Accessories

The Low Profile and Mid Profile bars are available with individual exhaust flow controls. Flow controls are not available on the High Profile version. An end plate kit is supplied with the add-on version type bar. A blank station valve cover plate is available for all circuit bars®.

	CBM401	CBM402	CBM403	CBM404	CBM405
Height	32	32	38	38	52
Cylinder ports in valve	Yes	No	Yes	No	No
Cylinder ports in base	No	Yes, bottom	No	Yes, bottom	Yes, side + bottom
Flow controls	Yes	Yes	Yes	Yes	Yes
Common Pilot	Internal	Internal	Internal / External	Internal	Internal / External
Cylinder Port Size	/	1/8	/	1/8 - 1/4	1/8 - 1/4

MAC 400 Series

MAC 400 Series - Circuit bar®

How to order low profile bar (32 mm)

CBM40 1 A - X X X X X - X X - 9

Valves, cover plates assembled to manifold

Number of Stations

BAR PROFILE (HEIGHT)	SPACING	CONFIGURATION	STYLE	PORT SIZE (COMMON PORTS)
1 Low Profile (32 mm)	00 19.5 mm (Standard) 02 26 mm (conduit & rect. DIN type connectors)	A Inline body B Inline body with F.C.	A Standard	A 3/8" NPTF B 3/8" BSPPL C 3/8" BSPTR

Replacement parts & accessories

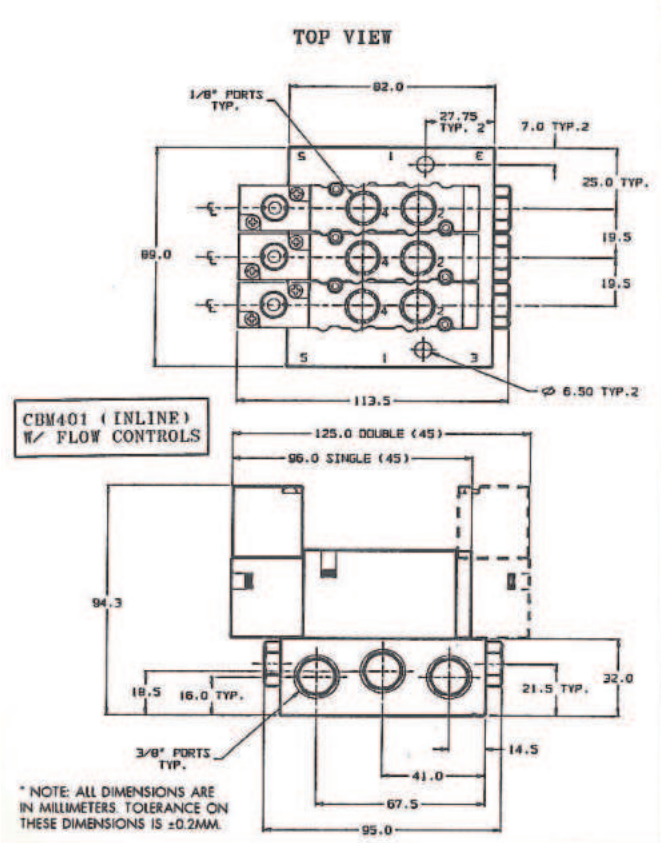
M-04001	Blank station kit for 5-port inline body
N-04001	Flow control assembly (2 per station)
17013-01	O-Ring port seal (2 per station)
17015-01	O-Ring port seal (1 per station)
35043	Body to bar manifold mounting screw (2 per valve)

Ordering example

CBM401A-00BAA-06
Low profile bar, 19.5 mm spacing, for 5-port inline body, with flow controls, 3/8" NPTF common ports, six identical stations.

Dimensions

All dimensions are in mm



Drawing for a low profile bar, cylinder ports in valve

MAC 400 Series

MAC 400 Series - Circuit bar®

How to order low profile bar (32 mm) - For manifold body

CBM40 2 A - X X X X - X X - 9

Valves, cover plates
assembled to manifold

Number of Stations

BAR PROFILE (HEIGHT)	SPACING	CONFIGURATION	STYLE	PORT SIZE (CYLINDER PORTS)
2 Low profile (32 mm) for manifold body	00 19.5 mm (standard) 02 26 mm (conduit & rect. DIN type connectors)	A Manifold body bottom cyl. ports B Manifold body - Bottom cyl. ports & flow controls	A Standard bar	A 1/8" NPTF B 1/8" BSPPL C 1/8" BSPTR

Replacement parts & accessories

M-04002	Blank station kit for manifold body
N-04001	Flow control assembly (2 per station)
16525	Body to base pressure seal, manifold body bar
35043	Body to bar mounting screw (2 per station)

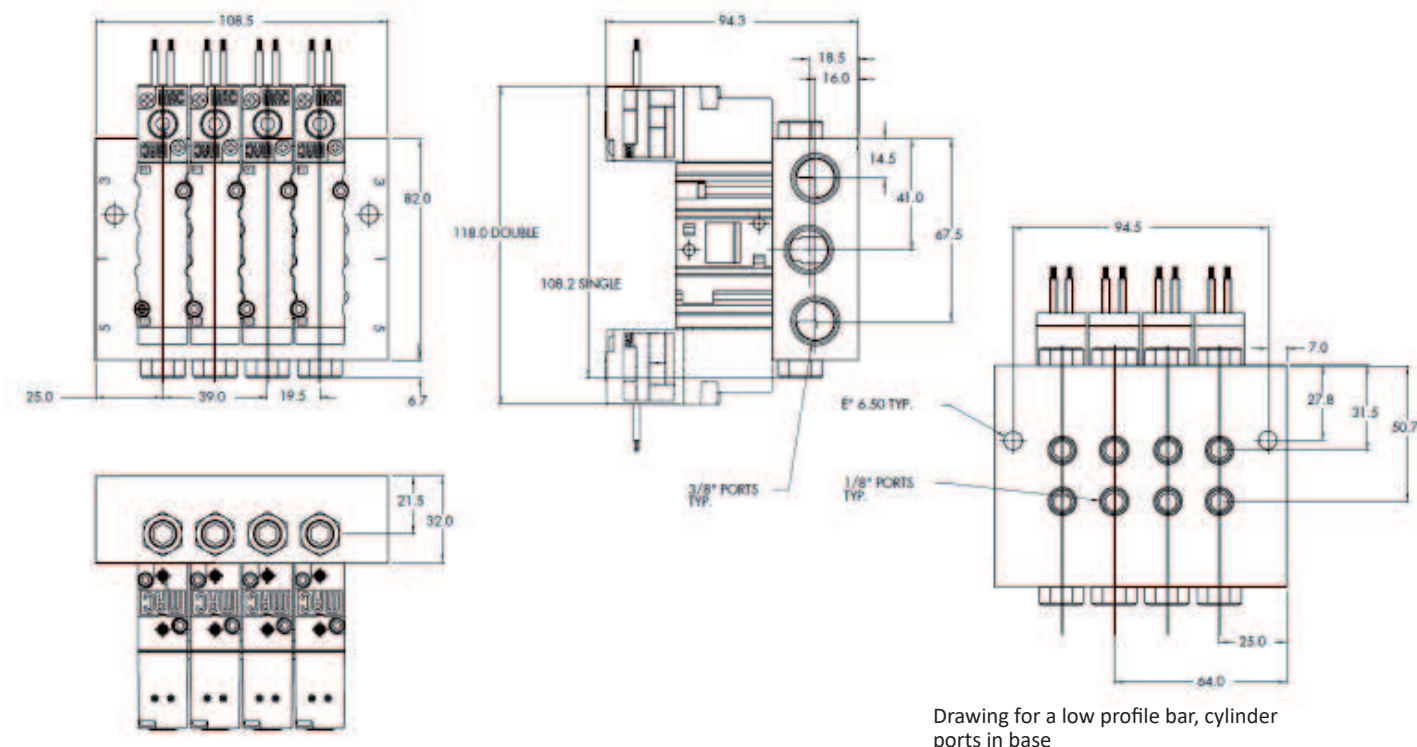
Ordering example

CBM402A-00AAB-06

Low profile bar, 19.5 mm spacing, for manifold bodies, bottom cylinders 1/8" BSPPL, six identical stations.

Dimensions

All dimensions are in mm



Drawing for a low profile bar, cylinder ports in base

MAC 400 Series

MAC 400 Series - Circuit bar®

How to order mid profile bar (38 mm)

CBM40 3 A - X X X X - X X - 9

Valves, cover plates
assembled to manifold

Number of Stations

BAR PROFILE (HEIGHT)	SPACING	CONFIGURATION	STYLE	PORT SIZE (COMMON PORTS)
3 Mid Profile (38 mm)	00 19.5 mm (Standard) 01 21 mm 02 26 mm (conduit & rect. DIN type connectors)	A Inline body B Inline body with F.C. C Inline body Common external pilot D Inline body with F.C. Common external pilot	A Standard bar B Add-on version C Add-on version Common external pilot E Add-on right hand stations (21 mm min.)	A 3/8" NPTF B 3/8" BSPPL C 3/8" BSPTR

Right-hand end plate kit included w/ bar ass'y on "B" & "C" style add-on versions

Replacement parts & accessories

M-04003-01	Right-hand end plate kit, for mid profile bars (NPTF)
M-04003-01P	Right-hand end plate kit, for mid profile bars (BSPPL)
M-04004-01	Right-hand end plate kit, mid profile/ common ext. pilot (NPTF)
M-04004-01P	Right-hand end plate kit, mid profile/ common ext. pilot (BSPPL)
M-04001	Blank station kit for 5-port inline body
N-04001	Flow control assembly (2 per station)
17013-01	O-Ring body port seal (2 per station)
17015-01	O-Ring body port seal (1 per station)
35043	Body to body mounting screw (2 per station)

Ordering examples

CBM403A-00CCA-06

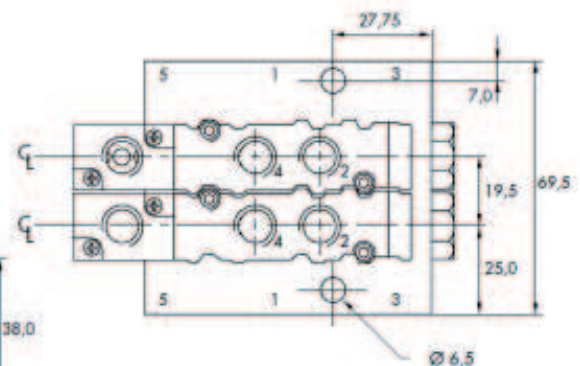
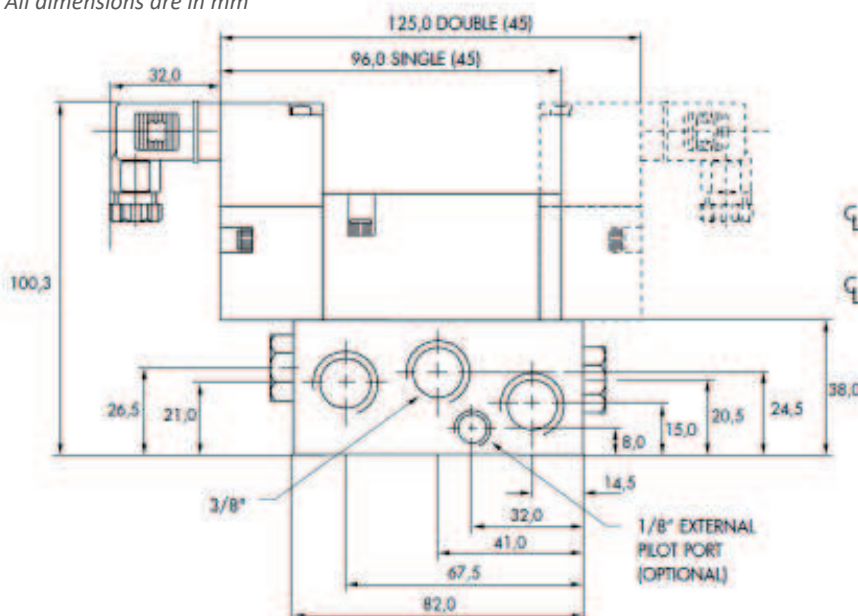
Mid profile bar, 19.5 mm spacing, for 5-port inline body, common external pilot, 3/8" NPTF common ports add-on version, six identical stations.

CBM403A-01CEA-01

Mid profile bar, 21 mm spacing, for 5-port inline body, common external pilot, 3/8" NPTF common ports, single unit for add-on version, can be added to above example bar.

Dimensions

All dimensions are in mm



Drawing for a mid profile bar, cylinder ports in valve

MAC 400 Series

MAC 400 Series - Circuit bar®

How to order mid profile bar (38 mm) - For manifold body

CBM40 4 A - X X X X - X X - 9

Valves, cover plates
assembled to manifold

Number of Stations

BAR PROFILE (HEIGHT)	SPACING	CONFIGURATION	STYLE	PORT SIZE (CYLINDER PORTS)
4 Mid Profile (38 mm) For manifold body	00 19.5 mm (Standard) 01 21 mm 02 26 mm (conduit & rect. DIN type connectors)	A Manifold body Bottom cyl. ports B Manifold body - Bottom cyl. ports & flow controls	A Standard bar B Add-on version E Add-on right hand stations (21 mm min.)	A 1/8" NPTF B 1/8" BSPPL C 1/8" BSPTR D 1/4" NPTF E 1/4" BSPPL F 1/4" BSPTR

Right-hand end plate kit included w/ bar ass'y on "B"
style add-on version

Replacement parts & accessories

M-04003-01	Right-Hand end plate kit, for mid profile bar (NPTF)
M-04003-01P	Right-Hand end plate kit, for mid profile bar (BSPPL)
M-04002	Blank station kit for manifold body
N-04001	Flow control assembly (2 per station)
16525	Body to base pressure seal, manifold body
35043	Body to bar mounting screw (2 per station)

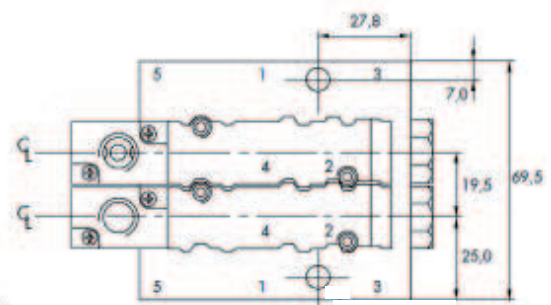
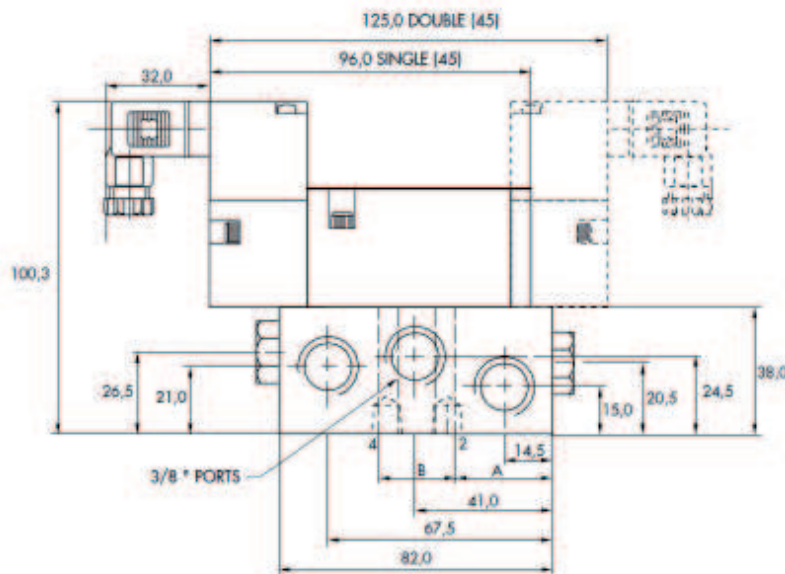
Ordering examples

CBM404A-00ABA-06
Mid profile bar, 19.5 mm spacing, for manifold bodies, bottom cylinders 1/8" NPTF, add-on version, six identical stations.

CBM404A-01AEA-01
Mid profile bar, 21 mm spacing, for manifold body, bottom cyl's 1/8" NPTF, single unit for add-on version, can be added to above example bar

Dimensions

All dimensions are in mm



Drawing for a mid profile bar, cylinder
ports in base

Port size	A	B
1/8"	31.5	19.0
1/4"	32.0	20.0

MAC 400 Series

MAC 400 Series - Circuit bar®

How to order high profile bar (52 mm)

CBM40 5 A - X X X X X - X X - 9

Valves, cover plates
assembled to manifold

Number of Stations

BAR PROFILE (HEIGHT)	SPACING	CONFIGURATION	STYLE	PORT SIZE (CYLINDER PORTS)
5 High Profile (52 mm)	00 19.5 mm (Standard) 01 21 mm 02 26 mm (conduit & rect. DIN type connectors)	A Manifold body Side cyl. ports B Manifold body - Side cyl. ports & common external pilot	A Standard bar B Add-on version C Add-on version Common external pilot E Add-on right hand stations (21 mm min.)	A 1/8" NPTF B 1/8" BSPPL C 1/8" BSPTR D 1/4" NPTF E 1/4" BSPPL F 1/4" BSPTR

Right-hand end plate kit included w/ bar ass'y on "B" & "C" style add-on versions

Replacement parts & accessories

M-04005-01	Right-Hand end plate kit, for high profile bars (NPTF)
M-04005-01P	Right-Hand end plate kit, for high profile bars (BSPPL)
M-04006-01	Right-Hand end plate kit, high profile/common ext. pilot (NPTF)
M-04006-01P	Right-Hand end plate kit, high profile/common ext. pilot (BSPPL)
M-04002	Blank station kit for manifold body
16525	Body to base pressure seal, manifold body
35043	Body to bar mounting screw (2 per station)

Ordering examples

CBM405A-00ABD-06

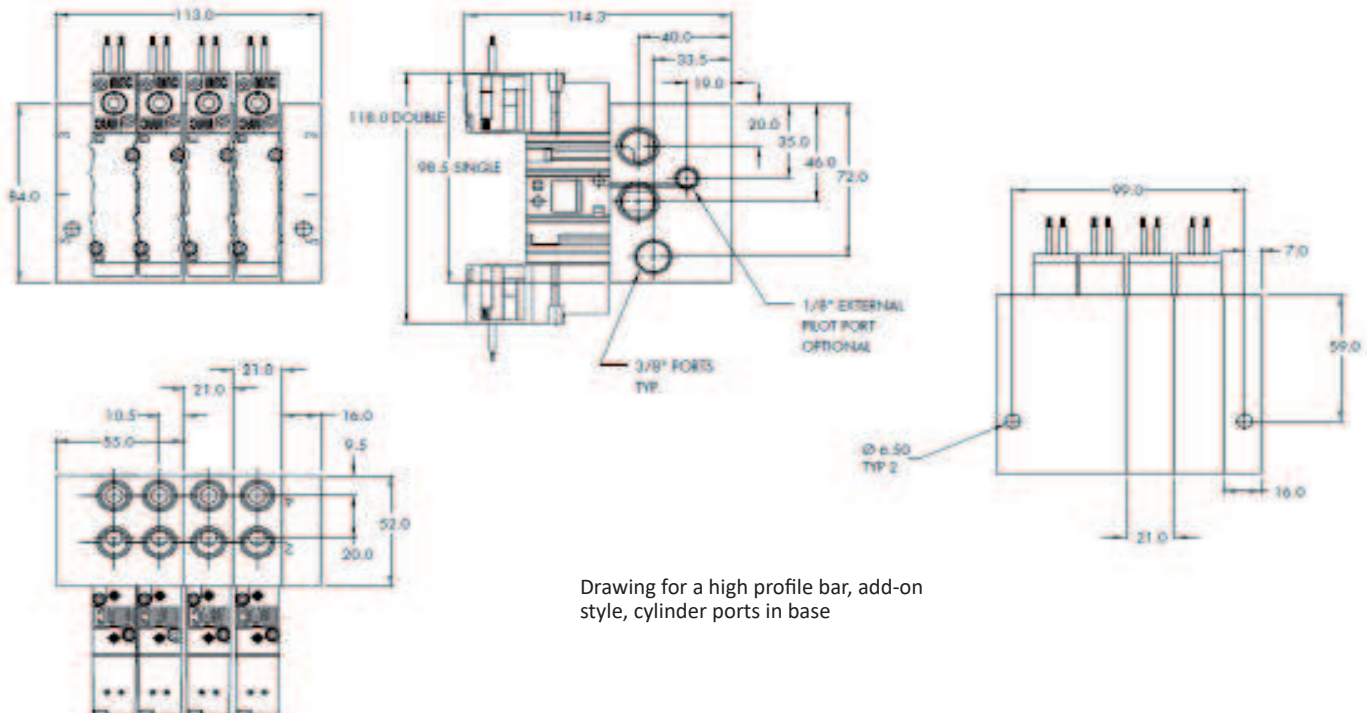
High profile bar, 19.5 mm spacing for manifold body, side cylinders 1/4" NPTF, add-on version, six identical stations.

CBM405A-01AED-01

High profile bar, 21 mm spacing, for manifold body, side cyl's 1/4" NPTF, single unit for add-on version, can be added to above example bar

Dimensions

All dimensions are in mm



Drawing for a high profile bar, add-on style, cylinder ports in base