



RE: 46 series 'Lifting Solenoid Valve'.

We are pleased to announce the release and availability of the 46 Series with Lifting Solenoid technology. Similar to the lifting 35 Series valve, released in 2009, this new development reconfigures the standard 46 Series push type solenoid construction to the Lifting type design originally developed for Bullet Valves®. The new 46 Series lifting technology offers the balanced design, high shifting forces, and speed of the standard 46 Series, while also providing longer life and greater repeatability over that lifetime.

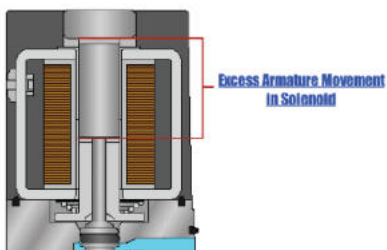
Life

The lifting solenoid construction utilizes fewer parts than a push solenoid type MAC valve. Fewer parts equate to less solenoid wear points, resulting in increased life of the valve.

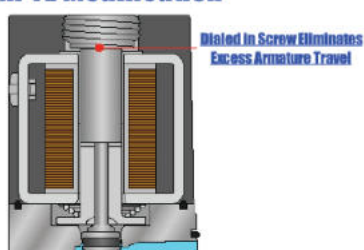
Repeatability

With the 46 push solenoid design, excess armature movement in the solenoid results in slight variations in the response of the valve. For applications where consistent energized response times are critical, a repeatability modification (RPTE) was developed. The RPTE mod introduces a special cap that is set to eliminate any excess travel in the armature by consistently locating it in the optimal shifting position. Since the lifting solenoid design offers a one piece poppet/armature and fixed pole piece there is no excess armature movement, resulting in an inherent RPTE in the design.

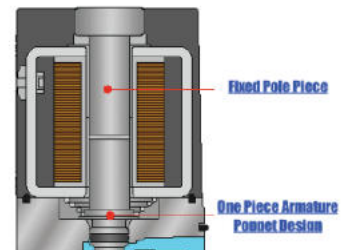
**Current
Solenoid Technology**



**Current
Solenoid Technology
RPTE Modification**



**New Lifting
Solenoid Technology**



Solenoid

Since lifting valves utilize a one piece armature design, an oval armature cannot be utilized. The 46 Series lifting design replaces the standard "J" coil (oval armature) with a "D" coil (round armature). The flow rates of the lifting 46 Series valve are the same as the current model.

Porting

The cylinder and exhaust ports are reversed in the new 46 series lifting valve compared to a standard 46 Series. This is due to the poppet traveling in an opposite direction when energized or de-energized. This valve may be manually operated from the bottom of the valve body. There is an opening to access the bottom of the poppet. This is considered a "1" type operator (non-locking manual operator).

Circuit Bars

The 46 Lifting is 3mm wider (due to the D coil), has a different interface, and reversed porting as compared to the 46 push type; therefore, the same circuit bars cannot be utilized. New circuit bars are developed and included in this release letter.

Originally designed for the high speed dispensing market, the balanced design, increased life and repeatability benefits of 46 Series lifting design will all translate into greater quality and productivity for your customer.

Specifications

46 Series Valve (Lifting Solenoid)

Operating Data

Fluids: Air or Inert Gas

Lubrication: Not required. But if used, select a medium aniline point oil (between 80°C to 100°C).

Safe Operating

Temperature Range: -18°C to 50°C

Pressure Range: Vacuum to 8 bar

Coils: General Purpose Class A, Continuous duty.

Coil Leads: #22 AWG x 18", Other lengths available

Solenoid: Single Operator Only (Double Solenoid is not available)

Flows (in NI/min)
Average of All Ports

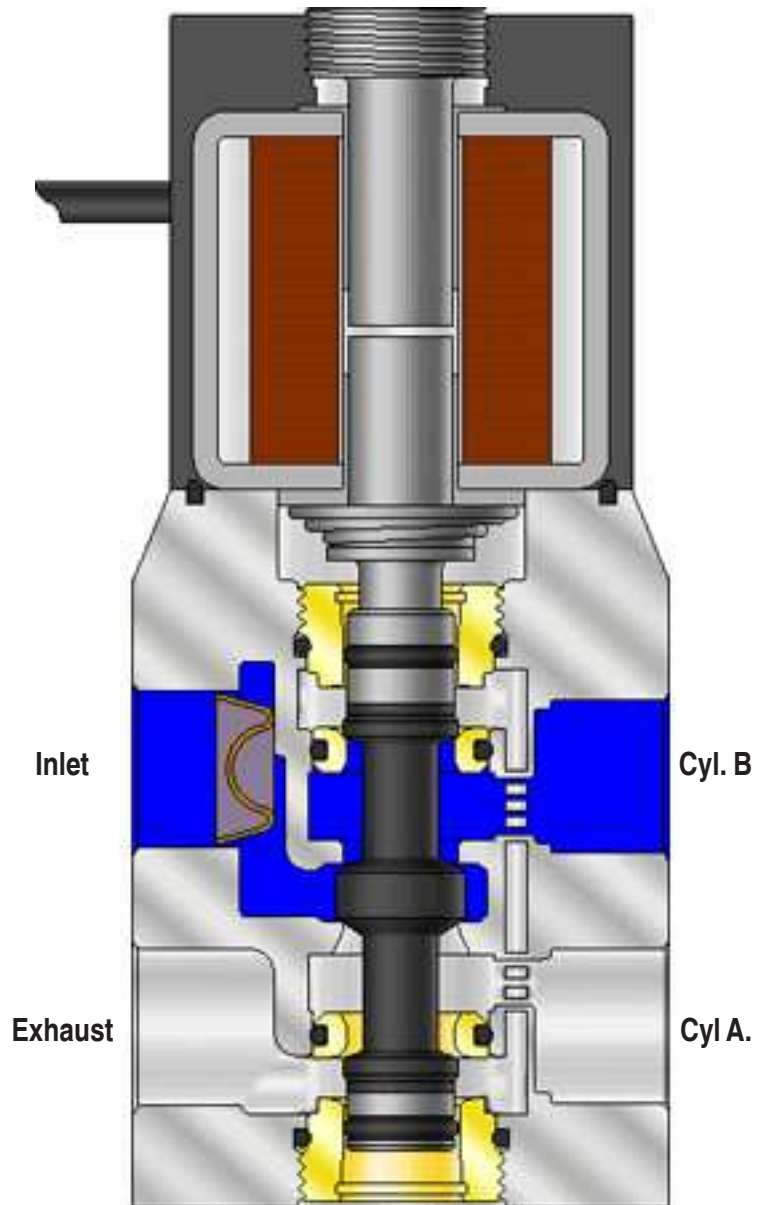
Inline (NI/min)	1.8 w	2.4 w	5.4 w
	200	200	300

Higher flow rates available - Consult Factory

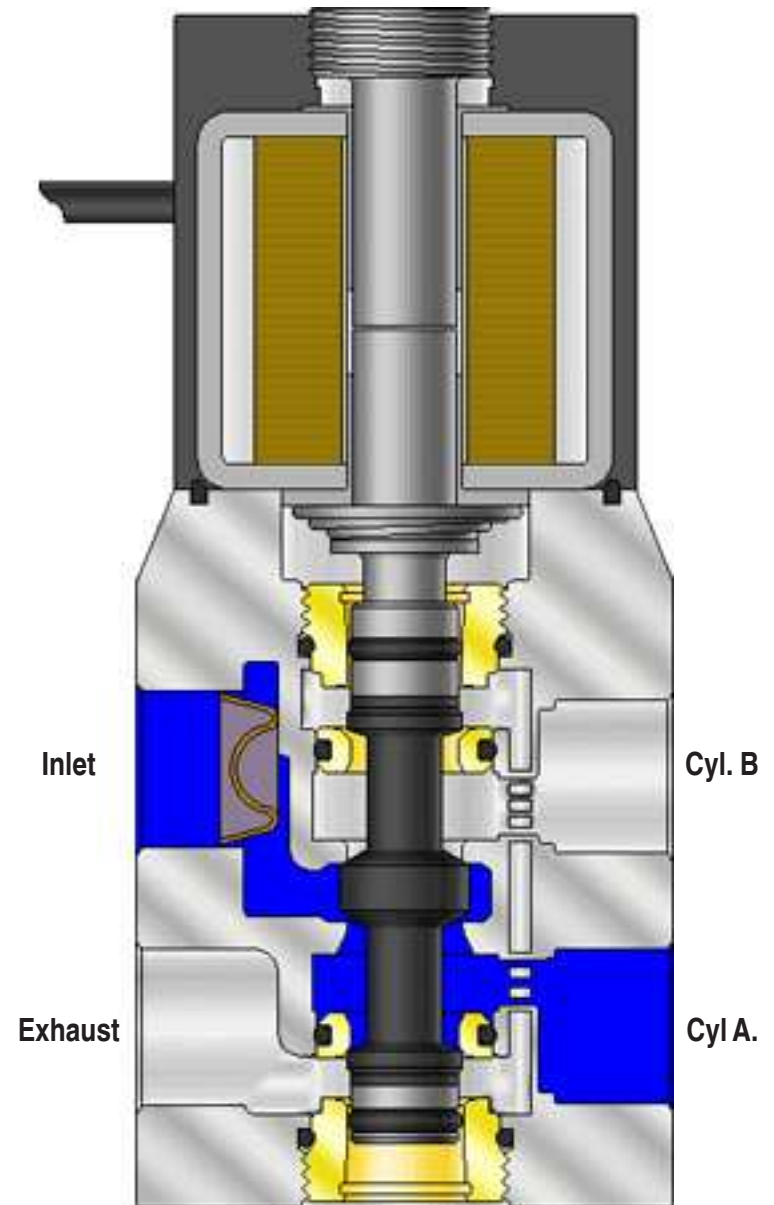
Special Applications

The balanced poppet design facilitates using the same valve for many functions. A valve may be used for pressure and/or vacuum or plugged for 3-Way operation.

MAC 46 Series with Lifting Solenoid



De-Energized



Energized

How to Order 46L Series (Lifting Solenoid)

46LA - X X X - DXXX-XXX

Solenoid Assembly

Body Type	Port Size	Configuration
Inline	0 Base Mount Body	0 Base Mount Body
A 4 Port Body with Side Ports	A 1/8" NPTF	1 Inline Body
C 4 Port Body with Bottom Ports (Available in #10-32 UNF and M5 Only)	B #10 - 32 UNF	2 Inline Body With Flow Controls
D* Bottom O-Ring Mount-All Ports	C 1/8" BSPPL	
F Bottom O-Ring Mount-Cylinder Ports Only (Side Inlet & Exhaust)	D M5 (Metric)	
	E 1/8" BSPTR	
	G* Use with O-Ring Mount Body Option "D"	
Base Mount		
L Base Mount Body		
M Base Mount Body with Gage Port		

Note: Base Mount Body used with
circuit bars

How to Order 46L Series Lifting Solenoid Assembly

D XX X - X XX

Voltage		Lead Wire Length	Manual Operator	
DA 24 VDC (5.4W)	DB 12 VDC (5.4W)	1 R / H D G : L U H 0	No Operator	
DC 12 VDC (7.5W)	DD 24 VDC (7.3W)	\$ F P	1 Non-Locking	BA Grommet (Flying Leads)
DE* 12 VDC (12.7W)	DF* 24 VDC (12.7W)	% F P	Manual Operator	BK Grommet with diode (Flying Leads)
DJ 28 VDC (5.2W)	DK 110 VDC (5.8W)	& F P		BM Plug-in (with leads)
DL 64 VDC (6W)	DM 36 VDC (5.3W)	' F P		BN Plug-in with diode (with leads)
DN 6 VDC (6W)	DP 48 VDC (5.8W)	(F P		CA Conduit 1/2"
DR 90 VDC (6.6W)	DS 110 VDC (7.3W)	) F P		CM Metal conduit 1/2"
DT 75 VDC (5.6W)	EA 12 VDC (6.0W)	- ([W H U Q D O 3 O X J , Q		CN Metal conduit with ground 1/2"
EB 220 VDC (4.2W)	ED 24 VDC (4.2W)	3 3 O X J , Q		FM Plug-in (For ECD Bar)
EE 12 VDC (4.2W)	EJ 24 VDC (9.3W)			FN Plug-in with diode (for ECD Bar)
EM 120 VDC (6.2W)	ES* 12 VDC (9.5W)			JB Rectangular plug-in
ET 24 VDC (3.0W)	EW 24 VDC (8.0W)			JD Rectangular plug-on with light
FA 12 VDC (1.8W)	FB 24 VDC (1.8W)			JM Rectangular male only
FC 10 VDC (2.2W)	FE 12 VDC (2.4W)			KA Mini plug-in
FF 24 VDC (2.4W)	FK 48 VDC (1.9W)			KB Mini plug-in with diode
FL 18 VDC (2.4W)	GD 220 VDC (7.3W)			KD Mini plug-in with light
GE 6 VDC (9.0W)	GF 15 VDC (5.0W)			KE Mini plug-in with light & diode
GG 9 VDC (9.0W)				KG Mini plug-in with LED light & diode
				KJ Mini plug-in male only
				KK Mini plug-in male only with diode
				TA Dual tabs (.110) with receptacles
				TB Dual tabs with diode & receptacles
				TD Dual tabs with light & receptacles
				TE Dual tabs with light, diode & receptacles
				TJ Dual tabs (.110) plain
				TK Dual tabs with diode (no receptacles)
				TM Dual tabs with light (no receptacles)
				TN Dual tabs with light & diode (no receptacles)
				PA Pico

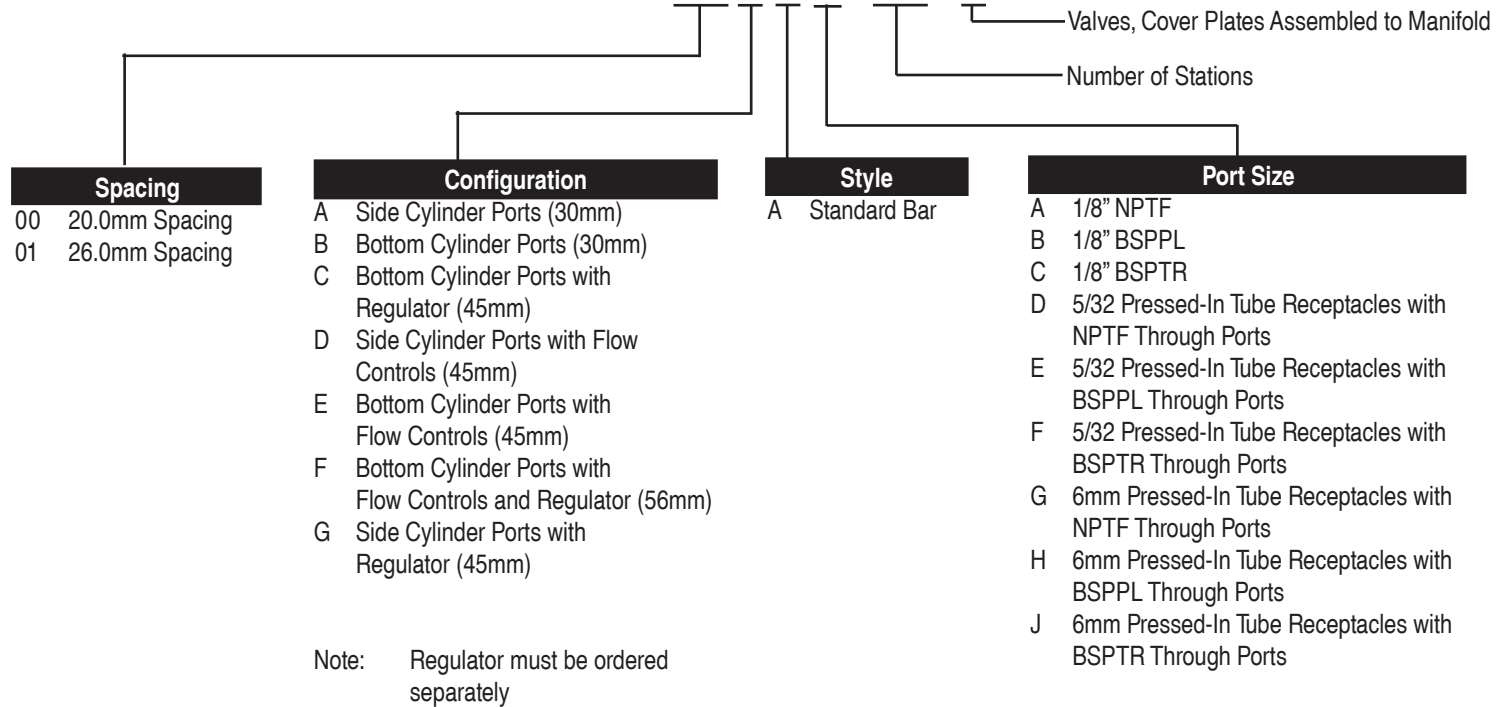
Notes : Use "J" with J, K, T, & P Connectors
Use "P" with FM & FN Connectors

* MOD CLSF

How to Order 46L Series

EBM Circuit Bar (Non Plug-In)

EBM46LA - XX X X X - XX - 9



Note: Regulator must be ordered separately

Dimensions (XXmm) indicate Bar Profile

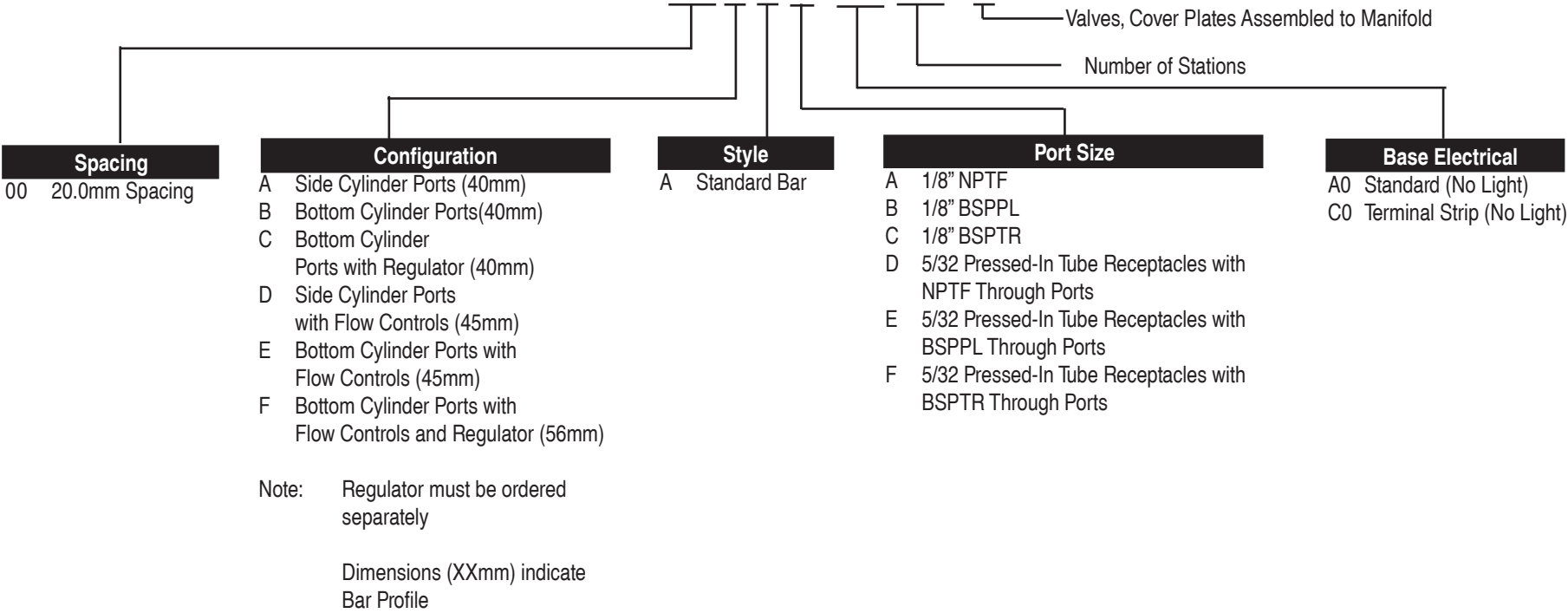
Replacement Parts and Accessories

M-46015 Valve Blanking Plate

How to Order 46L Series

ECD Circuit Bar (Plug-In)

ECD46LA - XX X X X - XX XX - 9

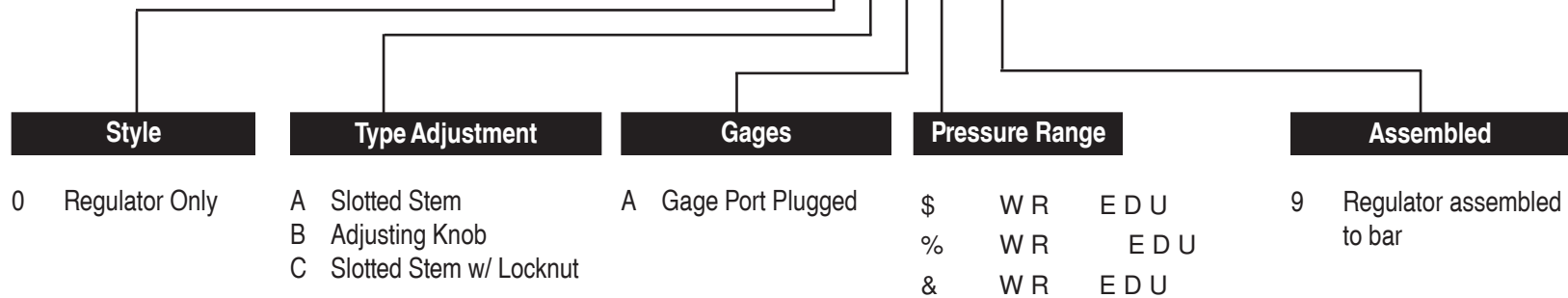


Replacement Parts and Accessories

- 63299 Wire Connector Protector
- M-46015 Valve Blanking Plate

How to Order 46 Series Regulator

PR46A - X X X X - X



46L Series (Lifting Solenoid)

46LA - X X X - D X X V - Y Z Z
 | | | | — | | —
 1 2 3 4 5 6 7 8

1 BODY TYPE

Inline

A	4 port Body with Side Ports.....	27,95
C	4 port Body with Bottom Ports (No Side Port), 10/32 or M5 ONLY.....	34,65
D	Bottom O'ring Mount All Ports (No Side Port).....	34,65
F	Bottom O'ring Mount -Cylinder Ports Only(Side Inlet & Exhaust).....	34,95

Base Mount

L	Base mount body	27,95
M	Base mount body with gage port	31,91

2 PORT SIZE

0	Base Mount Body Only	0
A	1/8 NPT	0
B	10/32 UNF	0
C	1/8 BSPP	0
D	M5	0
G	Use with O-Ring Mount Body Option "D"	0

3 CONFIGURATION

BASE MOUNT

0	Base Mount Body Only.....	0
1	Inline Body No flow controls	0
2	Inline Body With flow controls	8,38

4 SOLENOID OPERATOR

D	Solenoid	16,22
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46L Series (Lifting Solenoid)

46LA - X X X - D XX V - Y ZZ

| | | | — | |
 1 2 3 4 5 6 7 8

5 VOLTAGE

DA	24 VDC (5,4W)	0
DB	12 VDC (5,4W)	0
DC	12 VDC (7,5W)	0
DD	24 VDC (7,3W)	0
DE	12 VDC (12,7W) CLSF	4,80
DF	24 VDC (12,7W) CLSF	4,80
DK	110 VDC (5,8W)	4,80
DL	64 VDC (6W)	0
DM	36 VDC (5,3W)	0
DN	6 VDC (6W)	0
DP	48 VDC (5,8W)	0
DR	90 VDC (6,6W)	4,80
DS	110 VDC (7,3W)	4,80
DT	75 VDC (5,6W)	4,80
EA	12 VDC (6W)	0
EB	220 VDC (4,2W)	9,14
ED	24 VDC (4,2W)	0
EE	12 VDC (4,2W)	0
EJ	24 VDC (9,3W)	4,80
EM	120 VDC 6,2W)	0
ES	12 VDC (9,5W) CLSF	4,80
ET	24 VDC (3,0W)	0
EW	24 VDC (8W)	0
FA	12 VDC (1,8W)	3,20
FB	24 VDC (1,8W)	3,20
FC	10 VDC (2,2W)	0
FE	12 VDC (2,4W)	0
FF	24 VDC (2,4W)	0,00
FK	48 VDC (1,9W)	5,94
FL	18 VDC (2,4W)	0
GD	220 VDC (7,3W)	0
GE	6 VDC (9W)	4,80
GF	15 VDC (5,0W)	4,80
GG	9 VDC (9,0W)	0

6 Lead Wire Length

A	18" - 45 cm Standard	0
B	24" - 60 cm	1,22
C	36" - 90 cm	1,60
D	48" - 120 cm	1,98
E	72" - 180 cm	3,58
F	96" - 240 cm	5,18
J	External Plug-In Connector	0

7 Manual Operator

0	- No Operator	0
1	- Non-Locking Manual Operator	0

46L Series (Lifting Solenoid)

46LA - X X X - D XX V - Y ZZ
 | | | | — | | —
 1 2 3 4 5 6 7 8

8 Electrical Enclosure

BA	Grommet	0
BK	Grommet w/Diode	7,92
BM	2 Pin Plug-In.....	5,94
BN	2 Pin Plug-In + Diode.....	13,48
BP	2 Pin Plug-In + MOV.....	14,24
CA	Conduit 1/2"	3,58
CM	Conduit Metal 1/2"	6,32
CN	Conduit Metal 1/2" with ground.....	7,16
FM	Plug-In Connector.....	8,76
FN	Plug-In Connector w/Diode.....	12,64
JB	Rectangular Plug-In	7,16
JD	Rectangular Plug-In w/Light	14,70
JM	Rectangular Male Only	4,80
KA	Mini Plug-In	7,16
KB	Mini Plug-In w/diode	10,28
KD	Mini PLug-In w/Light	12,64
KE	Mini Plug-In w/Light & Diode	16,22
KG	Mini Plug-In w/LED light & diode.	16,22
KJ	Mini Plug-In Male Only	4,80
KK	Mini Plug-In Male only w/Diode	11,12
TA	Dual Tabs (.110) w/Receptacles	4,80
TB	Dual Tabs + Diode + Receptacles	7,16
TD	Dual Tabs + Light + Receptacles	9,52
TE	Dual Tabs + Light + Diode + Receptacles	11,88
TJ	Dual Tabs (.110) Plain	3,96
TK	Dual Tabs w/Diode without Receptacles	6,32
TM	Dual Tabs +Light without Recept.	8,76
TA	Dual Tabs +Light+Diode without Recept.	11,12
PA	Pico	9,90

46 Lifting Series Circuit Bar Non Plug-In

EBM46LA - XX X X X- X X
 — | | | —
 1 2 3 4 5

1 Spacing		30mm	45mm	56mm
00 20 mm spacing.....	(2) Station Base Price.....	29,17	31,45	32,06
	Each Middle Station.....	7,25	12,18	13,33
01 26 mm spacing.....	(2) Station Base Price.....	30,84	33,13	35,41
	Each Middle Station.....	11,50	12,64	13,78

2 Configuration		Per Station		
A Side Cylinder Ports.....	0			
B Bottom Cylinder Ports.....	0			
C Bottom Cylinder w/ Regulator.....			4,34	
D Side Cylinder Ports w/ Flow Controls.....			13,10	
E Bottom Cylinder w/ Flow Controls.....			13,10	
F Bottom Cylinder Ports w/ Flow Controls & Regulator.....				17,06
G Side Cylinder Ports w/ Regulator.....			4,34	

3 Style				
A Standard.....		0	0	0

4 Port Size & Thread Type		Per Station		
A 1/8" NPTF.....	0	0	0	0
B 1/8" BSPPL.....	0	0	0	0
D 5/32 Pressed-In Tube Receptacles w/ NPTF Through Ports.....	5,20	5,20	5,20	5,20
E 5/32 Pressed-In Tube Receptacles w/ BSPPL Through Ports.....	5,20	5,20	5,20	5,20
G 6mm Pressed-In Tube Receptacles w/ NPTF Through Ports.....	5,20	5,20	5,20	5,20
H 6mm Pressed-In Tube Receptacles w/ BSPPL Through Ports.....	5,20	5,20	5,20	5,20

5 Stations		
Number Of Stations (01, 02, 03,etc).....	0	

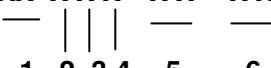
Accessories

M-46015 Blank station Cover Plate.....	16,07
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Note : Regulator must be ordered separately.

Valves or Plates assembled to bar - **3,28** per bar plus **1,70** per station

46 Lifting Series ECD Plug-In Circuit Bar

ECD46LA - XX X X X- X X - X X

1 2 3 4 5 6

1	<u>Spacing</u>		30mm	45mm	56mm
	00	20 mm spacing..... (2) Station Base Price.....	54,68	55,44	57,72
		Each Middle Station.....	22,16	22,54	23,68

2	<u>Configuration</u>		Per Station		
	A	Side Cylinder Ports.....	0		
	B	Bottom Cylinder Ports.....	0		
	C	Bottom Cylinder Ports w/ Regulator	3,58		
	D	Side Cylinder Ports w/ Flow Controls.....		19,80	
	E	Bottom Cylinder Ports with Flow Controls.....		19,80	
	F	Bottom Cylinder Ports w/ Regulator & Flow Controls.....			23,00

3	<u>Style</u>				
	A	Standard.....	0	0	0

4	<u>Port Size & Thread Type</u>		Per Station		
	A	1/8" NPTF.....	0	0	0
	B	1/8" BSPPL.....	0	0	0
	D	5/32 Pressed-In Tube Receptacles w/ NPTF Through Ports	5,20	5,20	5,20
	E	5/32 Pressed-In Tube Receptacles w/ BSPPL Through Ports	5,20	5,20	5,20

5	<u>Base Electrical</u>		Per Station		
	A0	Terminal Strip (No Light)Standard (No Light).....	0	0	0
	C0	Standard (No Light).....	5,56	5,56	5,56

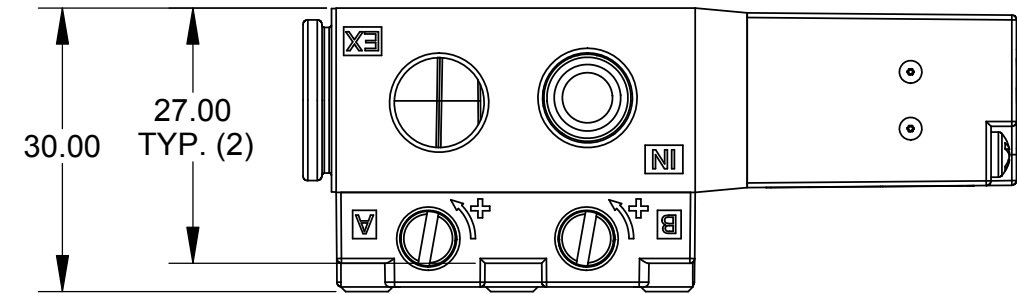
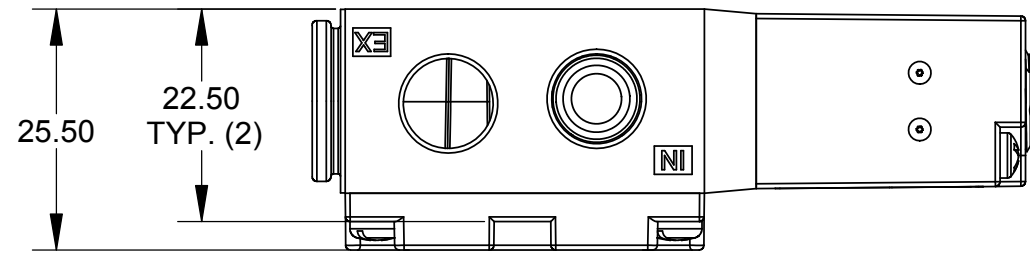
6 **Stations**

Number Of Stations (01, 02, 03,etc)..... **0**

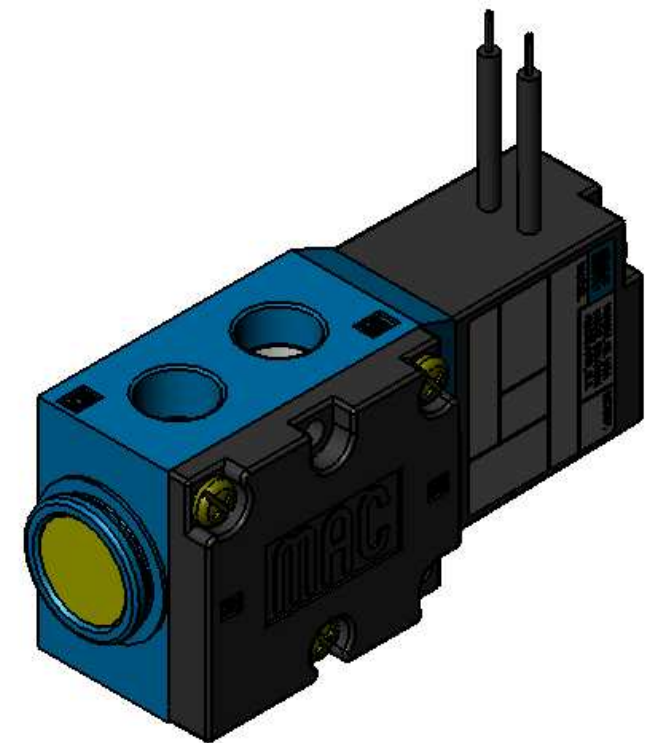
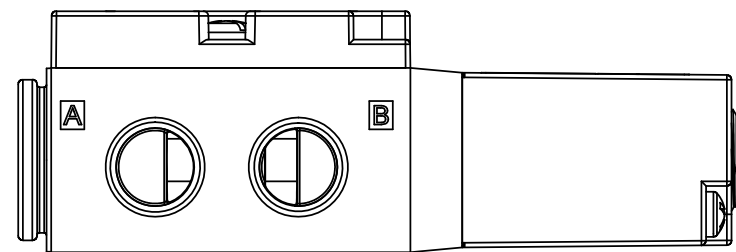
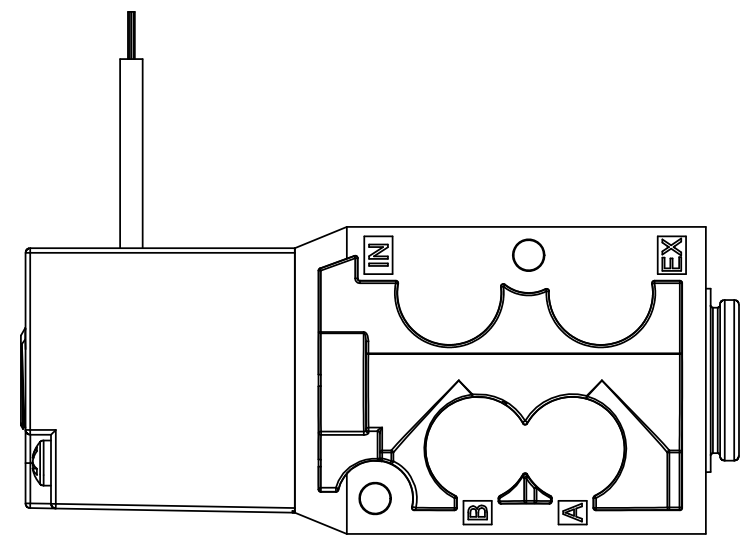
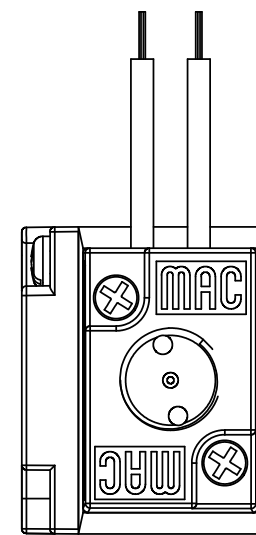
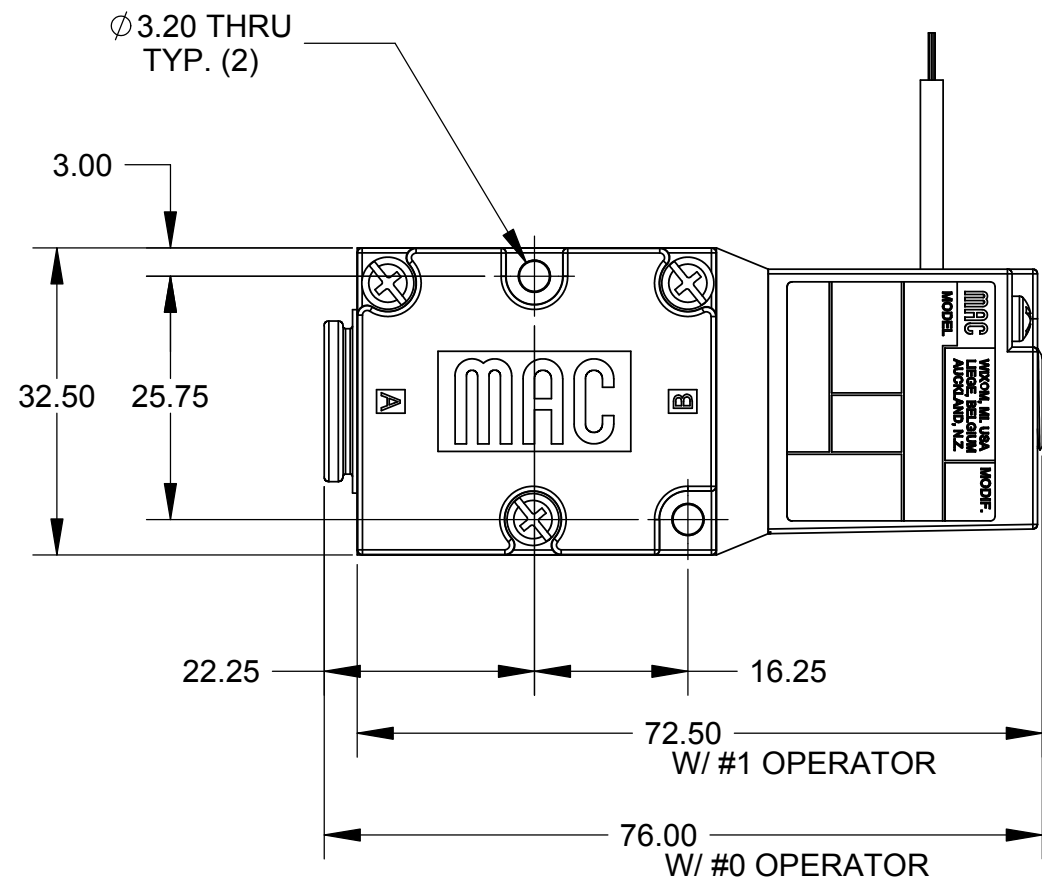
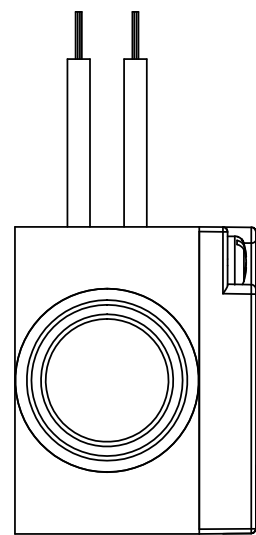
Accessories

63299	Wire Connector Protector.....	8,38
M-46015	Blank station Cover Plate.....	16,07

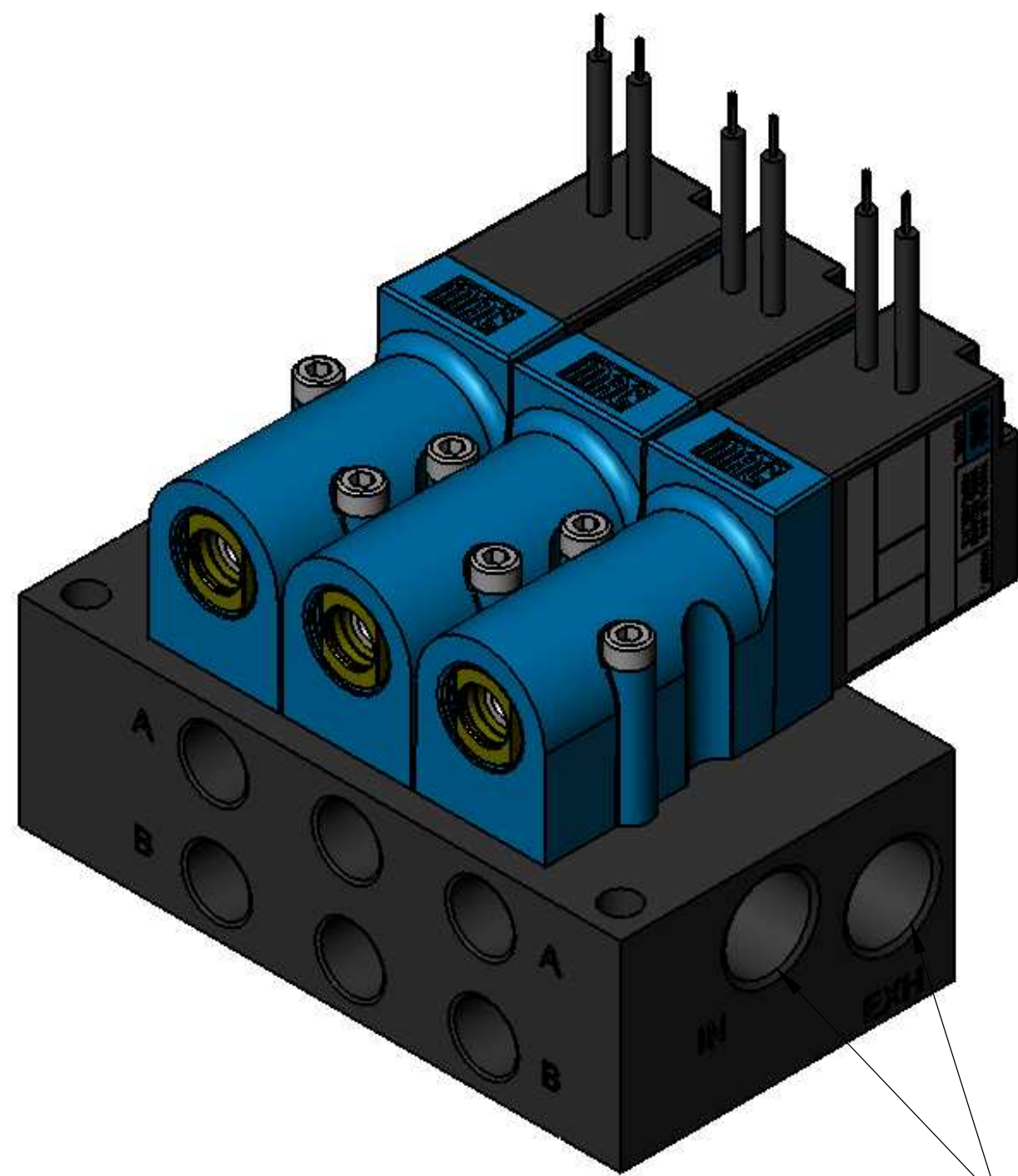
Valves or Plates assembled to bar - **3,28** per bar plus **1,70** per station



SHOWN WITH FLOW CONTROLS

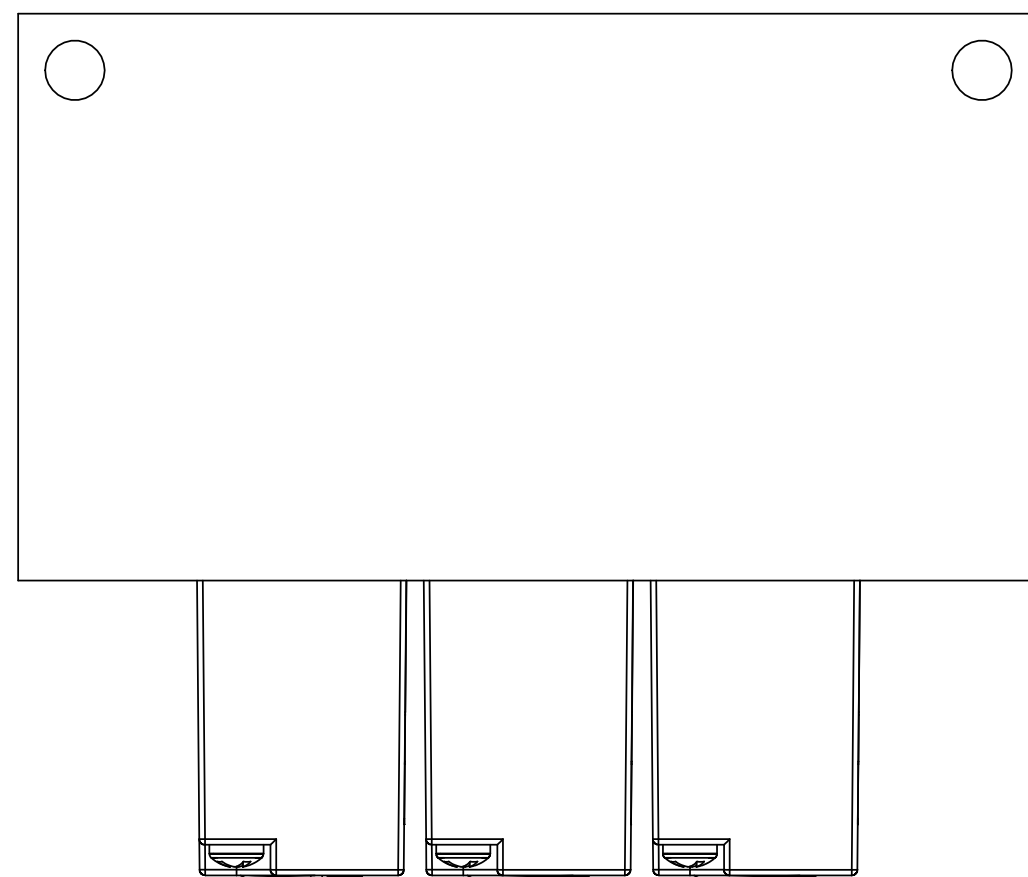
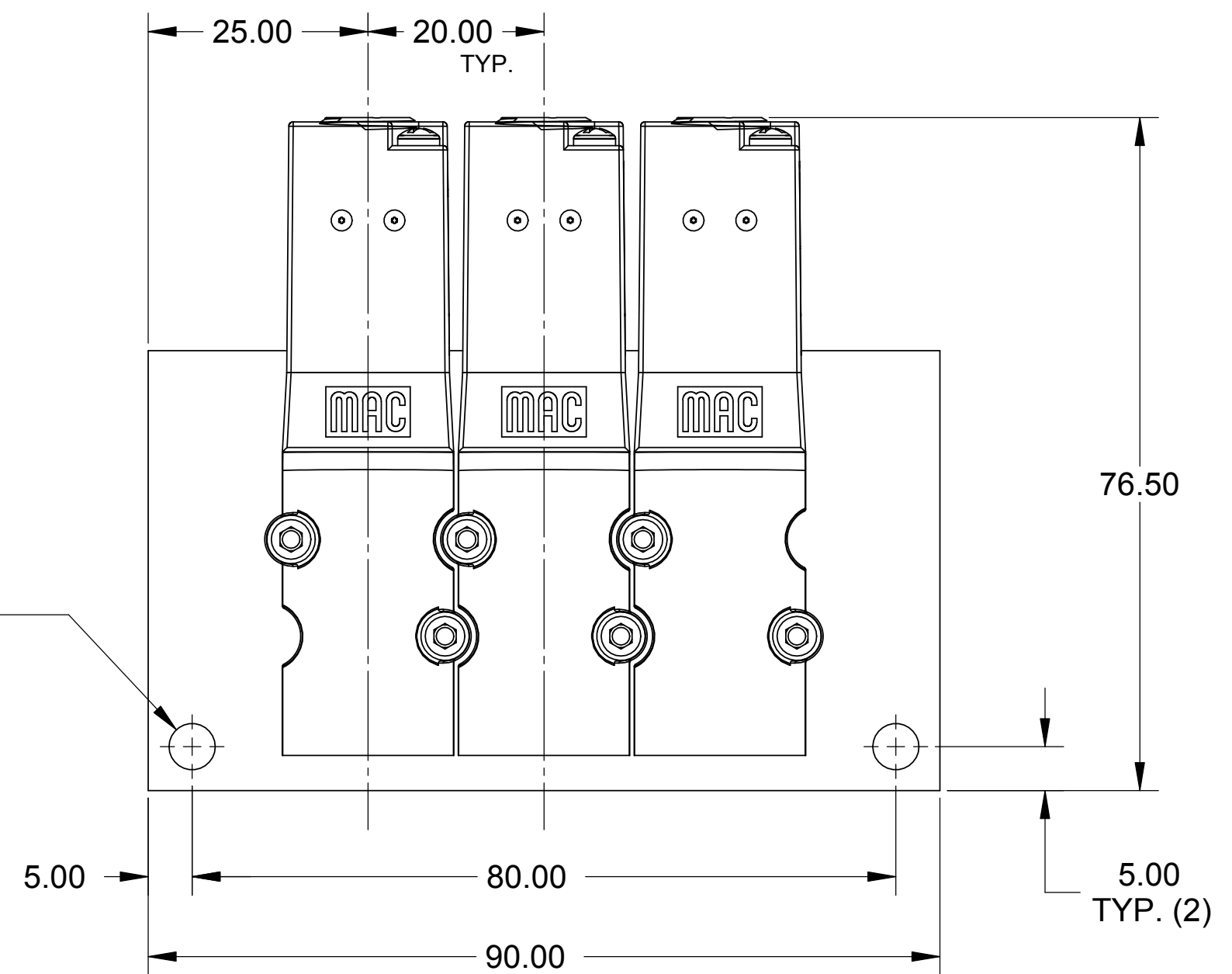


46L INLINE VALVE

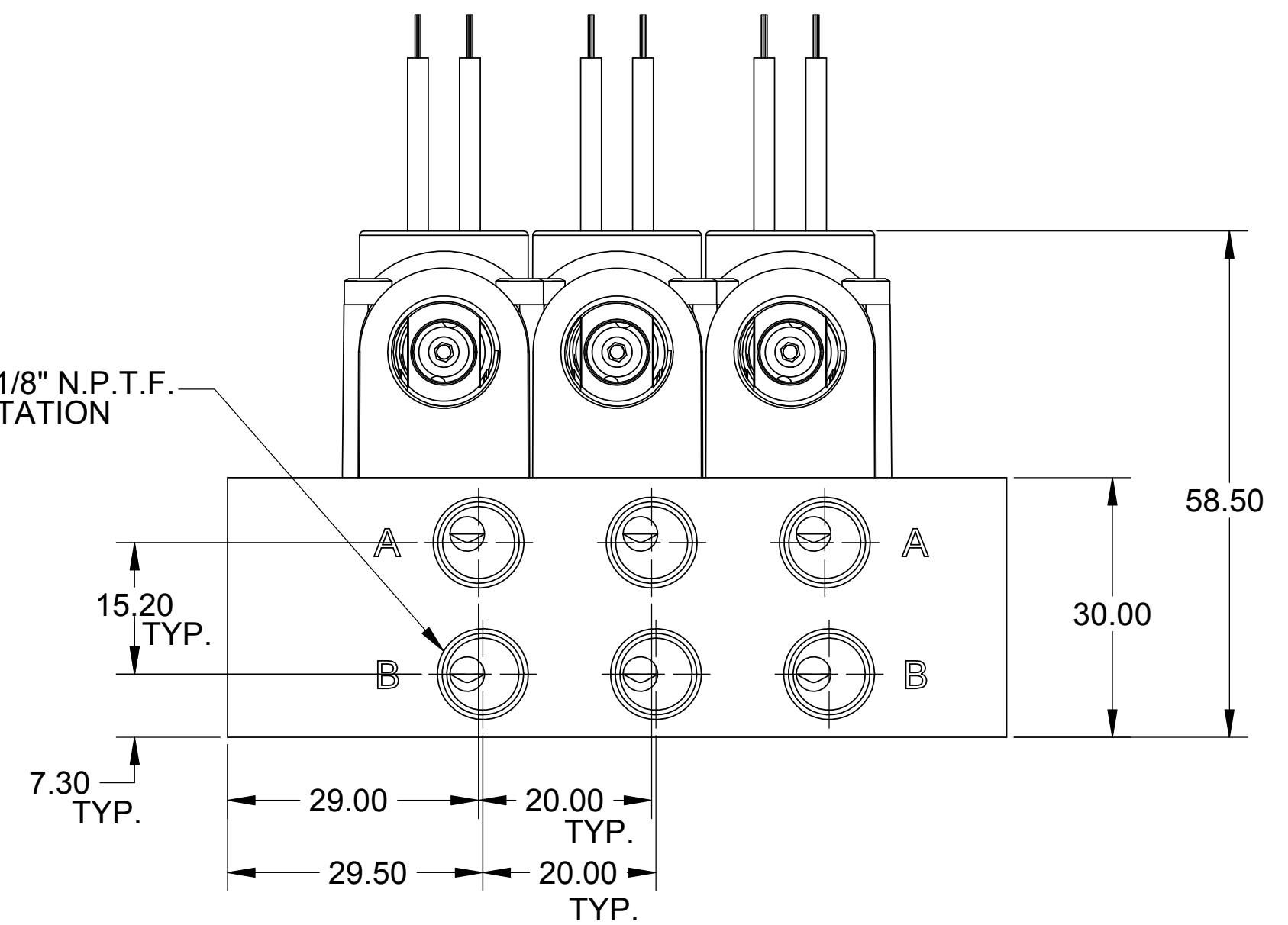


1/4" - 18 N.P.T.F TAP TO GAGE
TYP. (2) BOTH ENDS

Ø 5.25 THRU
TYP. (2)



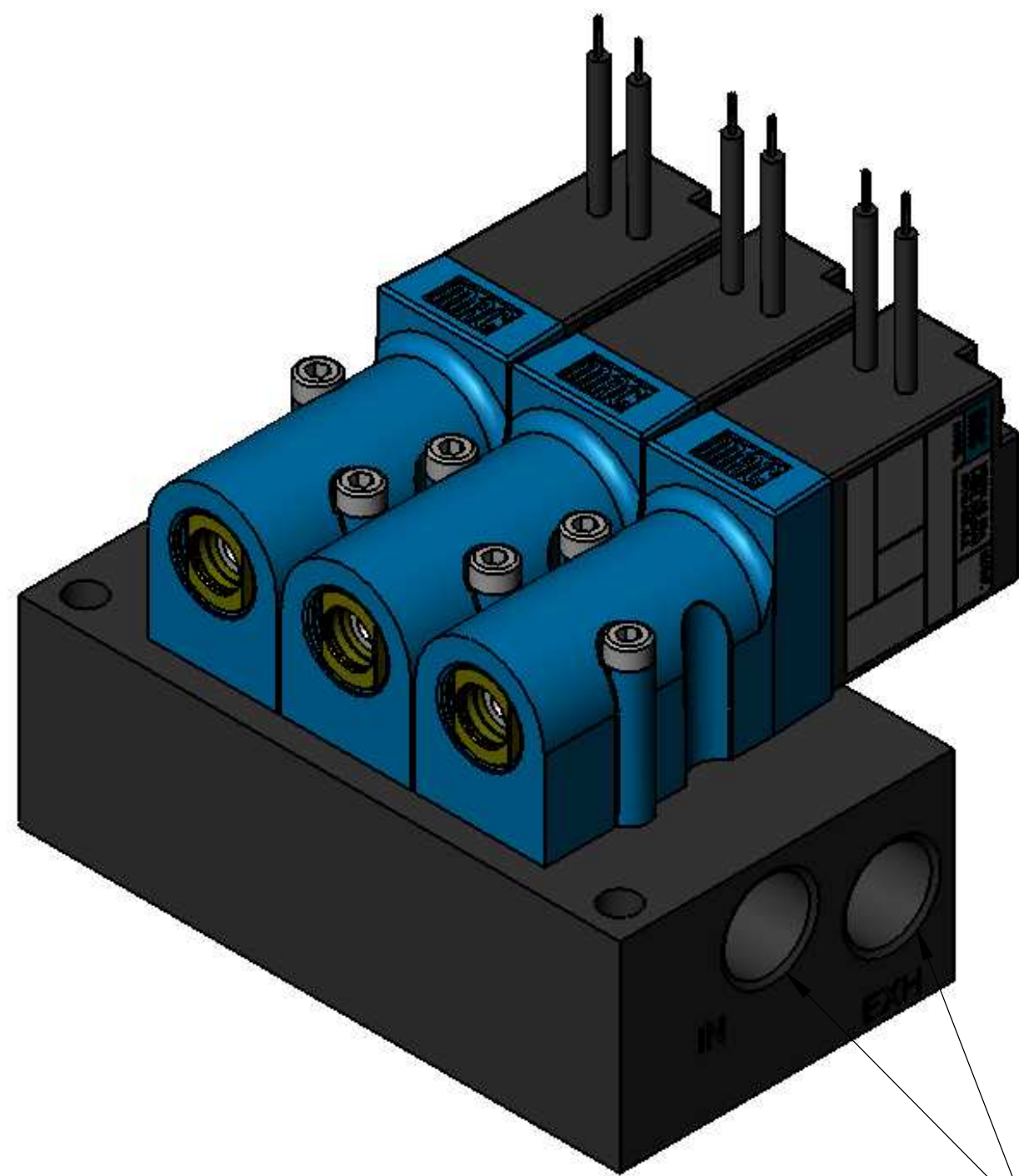
SHOWN WITH 1/8" N.P.T.F.
TYP. (2) PER STATION



EBM46LA-00AAA-XX

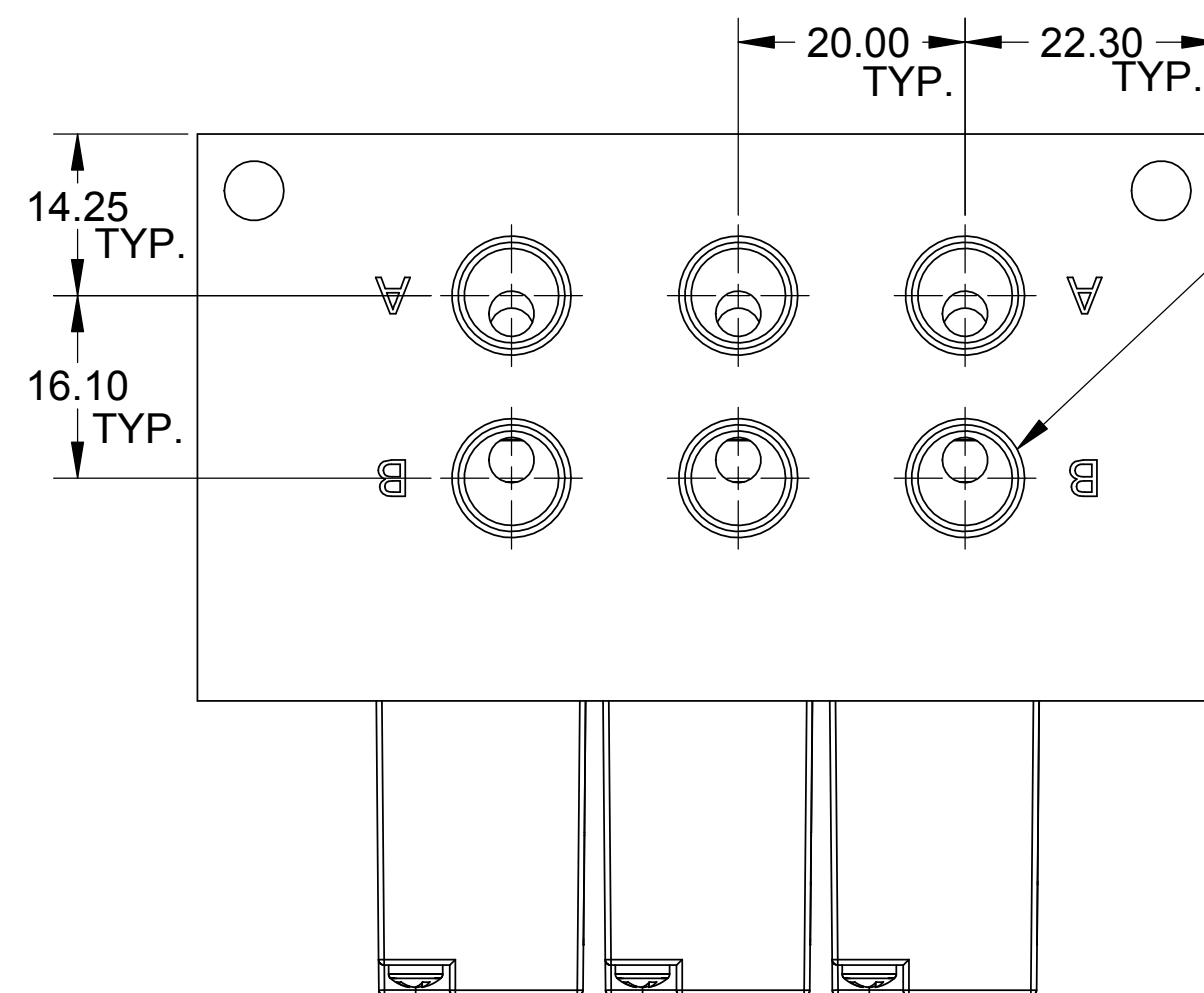
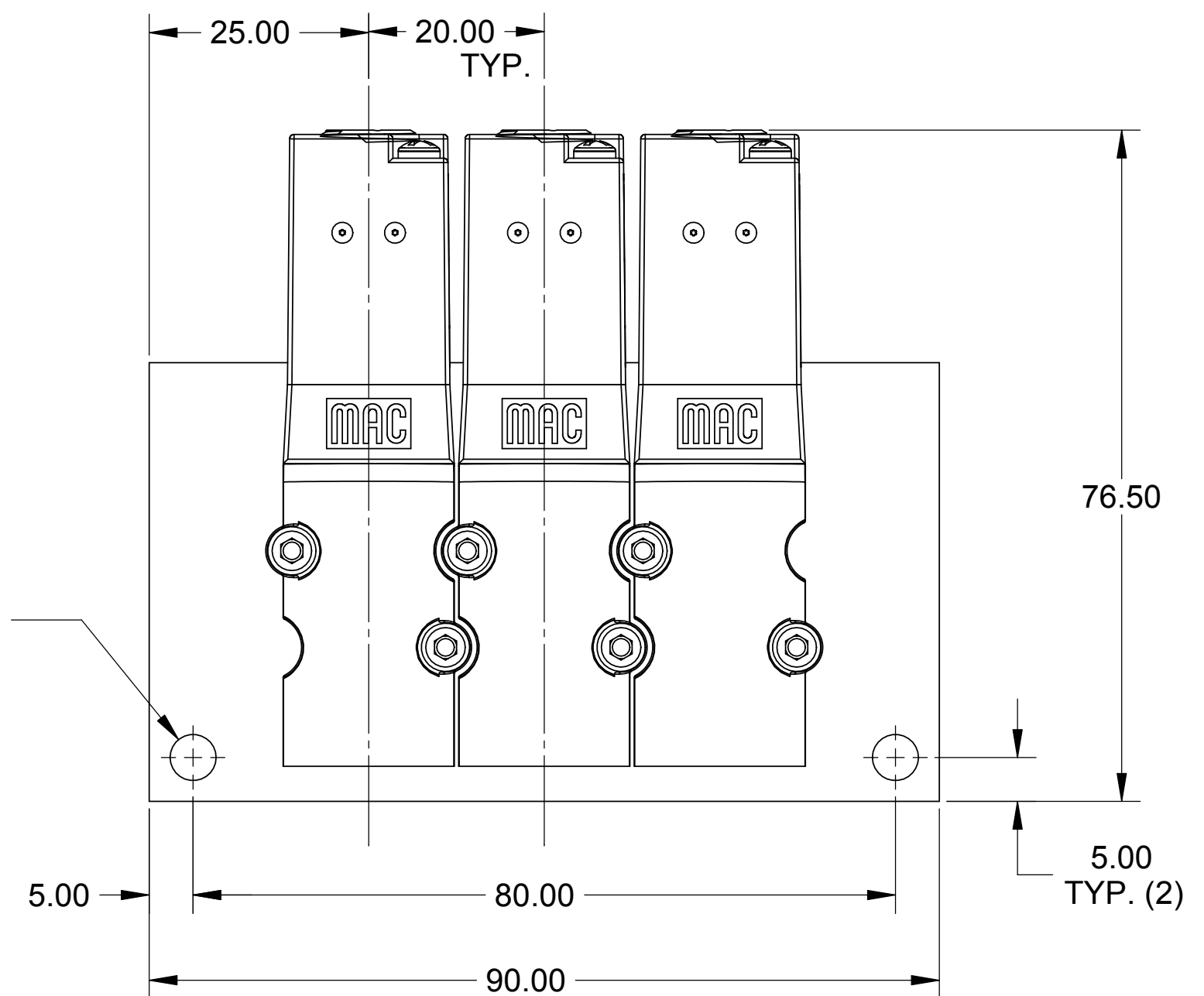
*26mm SPACING AVAILABLE FOR RECTANGULAR CONNECTORS

*SHOWN W/ #1 OPERATOR

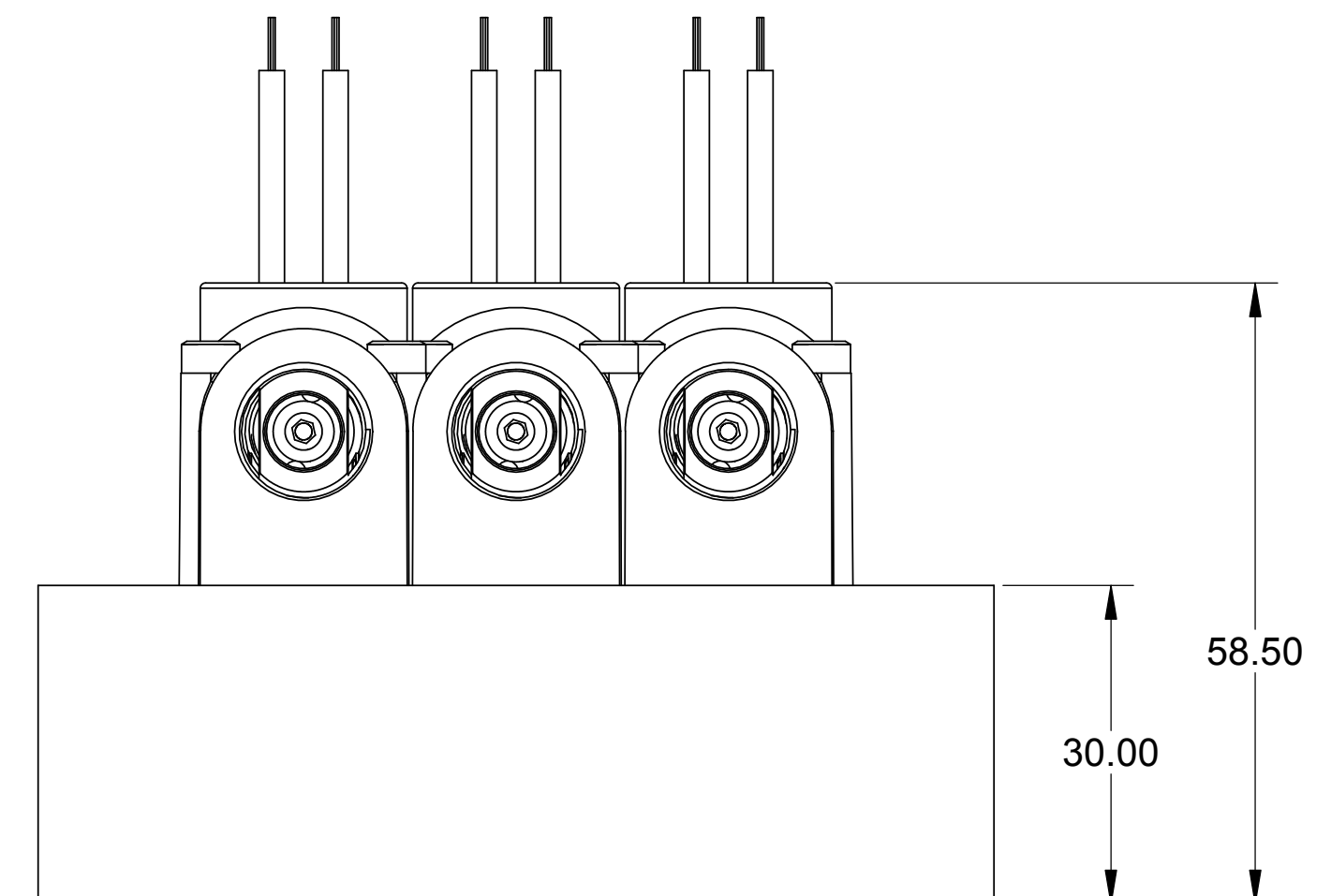


1/4" - 18 N.P.T.F. TAP TO GAGE
TYP. (2) BOTH ENDS

5.25 THRU
TYP. (2)



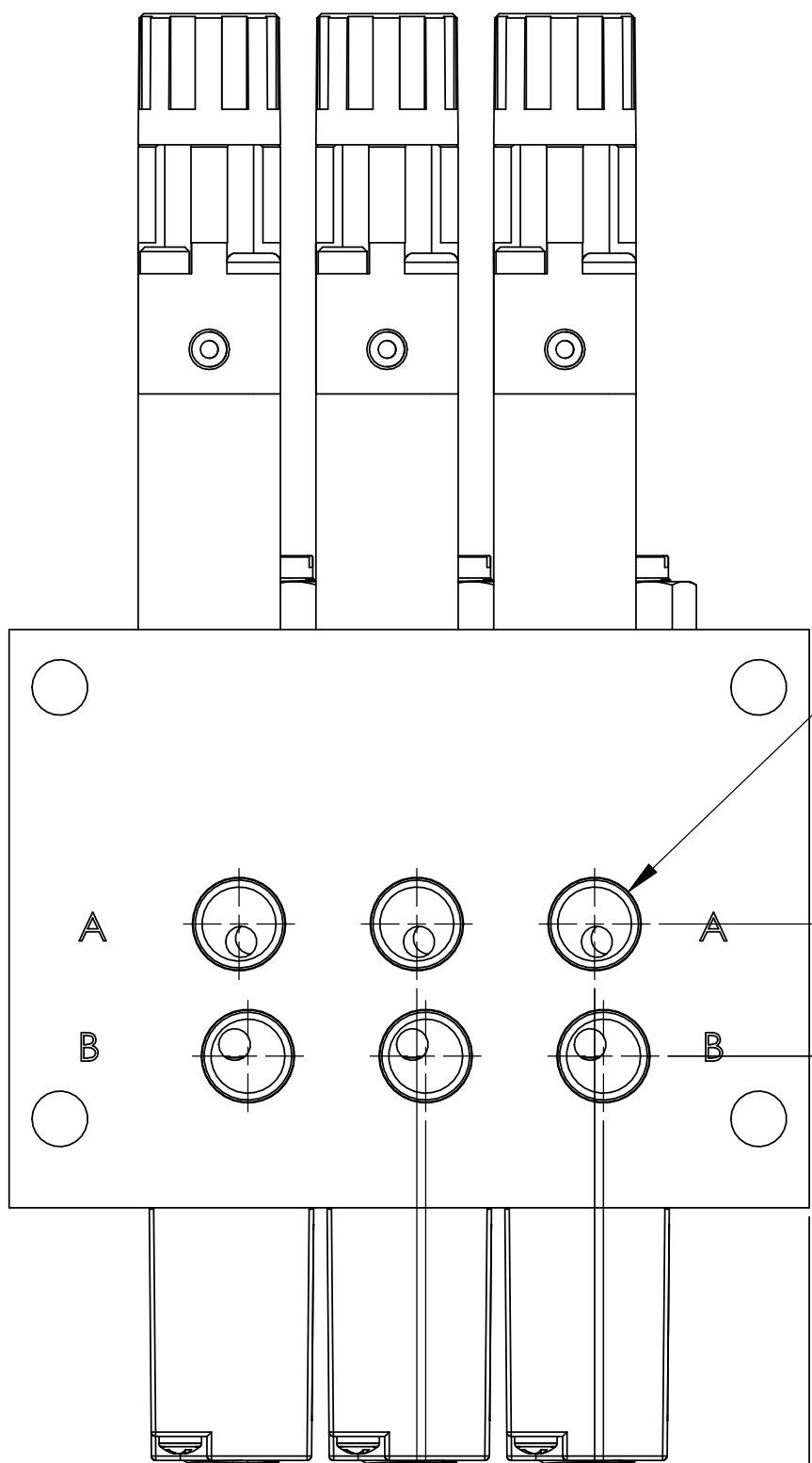
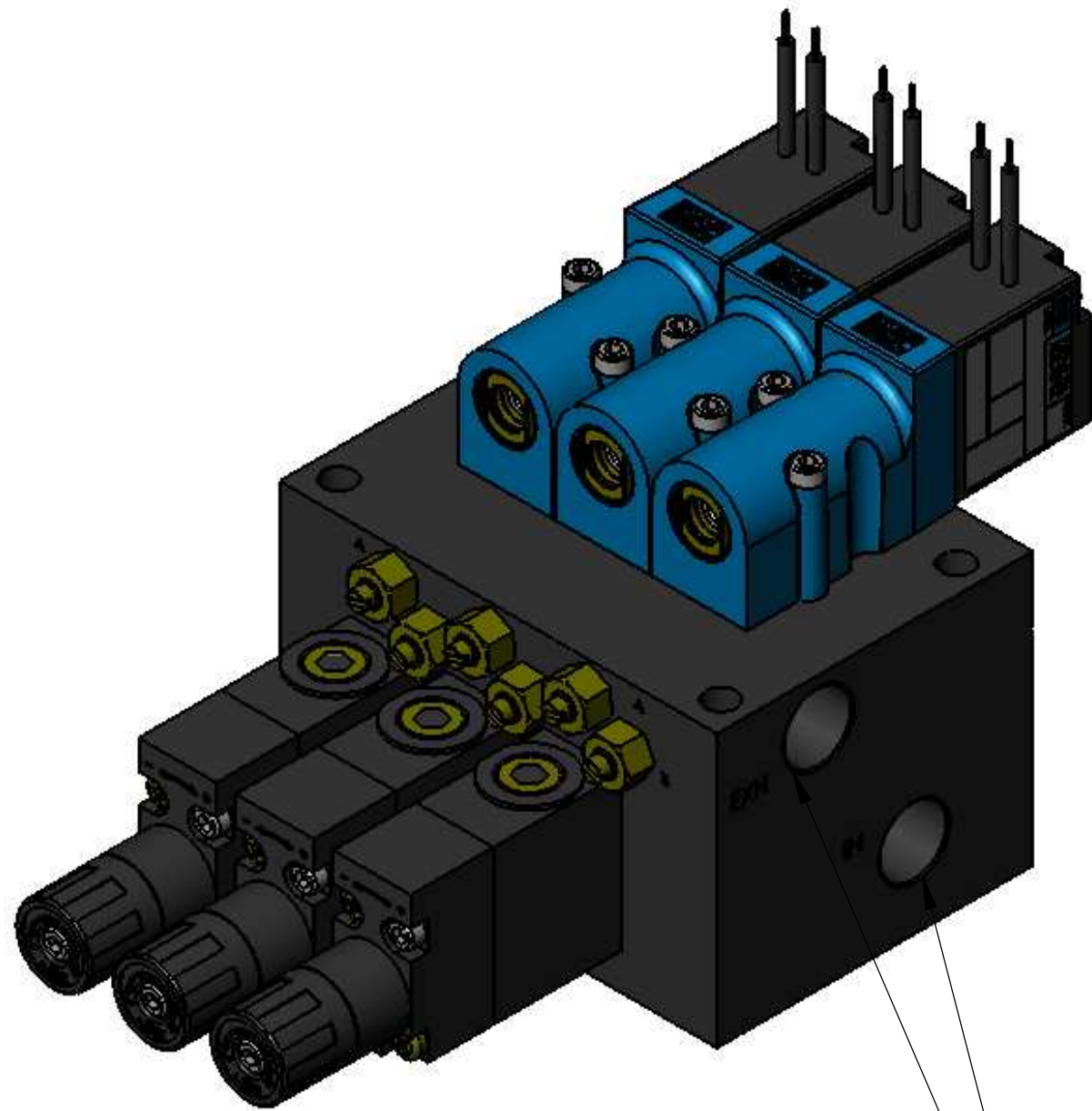
SHOWN WITH 1/8" N.P.T.F.
TYP. (2) PER STATION



EBM46LA-00BAA-XX

* 26mm SPACING AVAILABLE FOR RECTANGULAR CONNECTORS

* SHOWN W/ #1 OPERATOR



20.00
TYP.

23.15

20.00
TYP.

24.15

1/4" - 18 N.P.T.F. TAP TO GAGE
TYP. (2) BOTH ENDS

SHOWN WITH 1/8" N.P.T.F.
TYP. (2) PER STATION

14.85
TYP.

17.05
TYP.

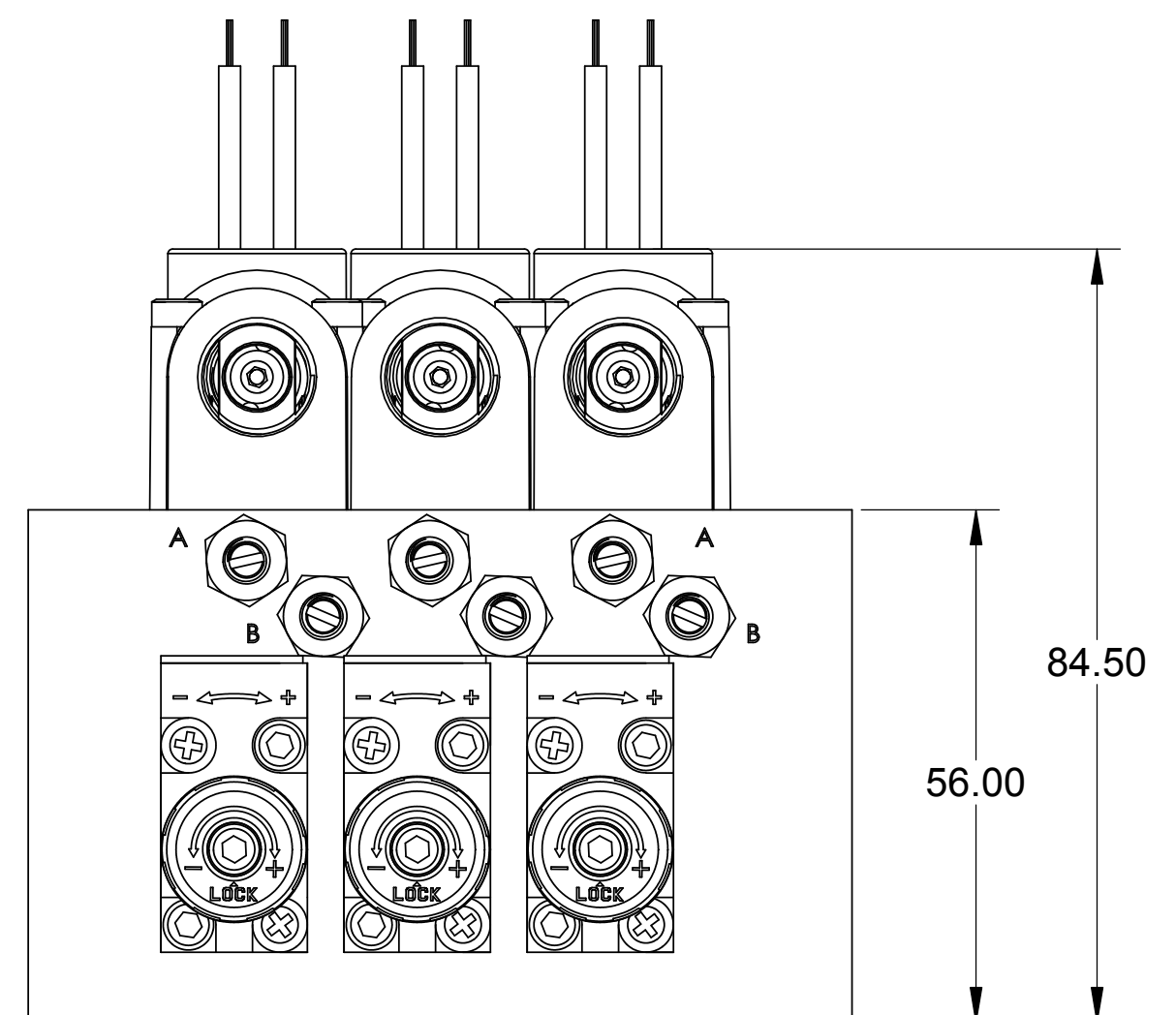
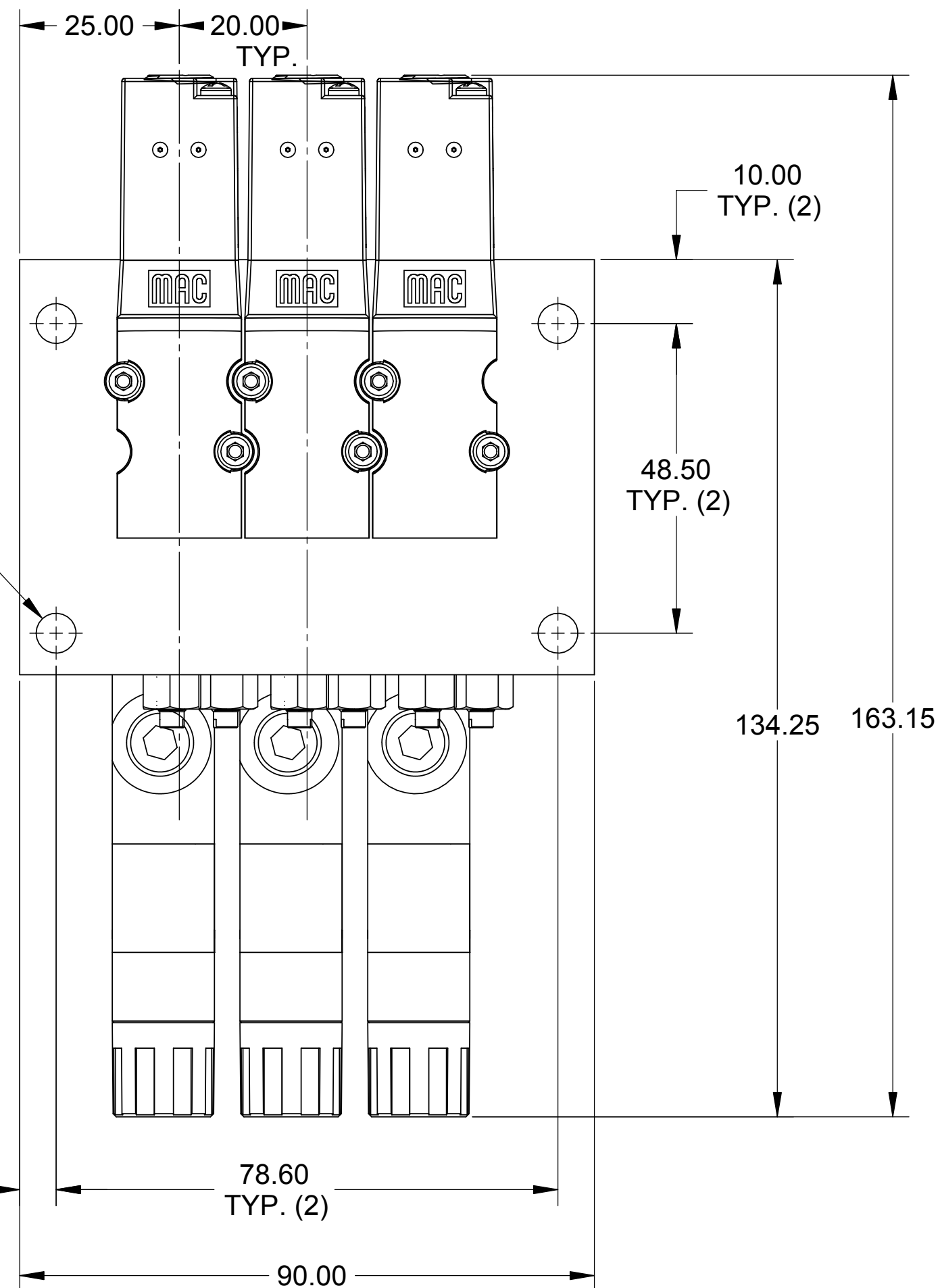
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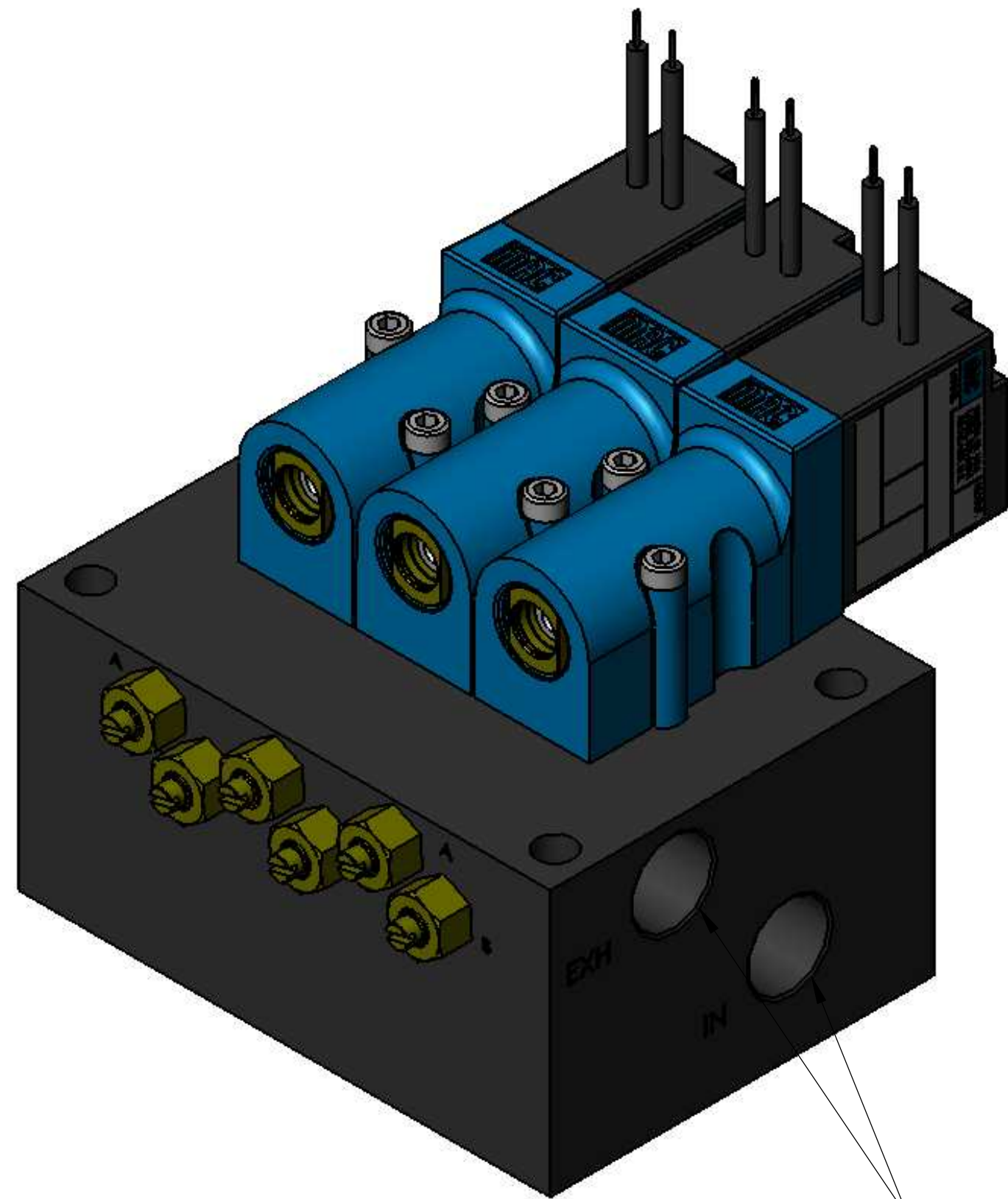
*SHOWN WITH PR46A-0BAA

*26mm SPACING AVAILABLE FOR RECTANGULAR CONNECTORS

*SHOWN W/ #1 OPERATOR

6.25 THRU
TYP. (4)





6.25 THRU
TYP. (4)

1/4" - 18 N.P.T.F. TAP TO GAGE
TYP. (2) BOTH ENDS

5.70
TYP. (2)

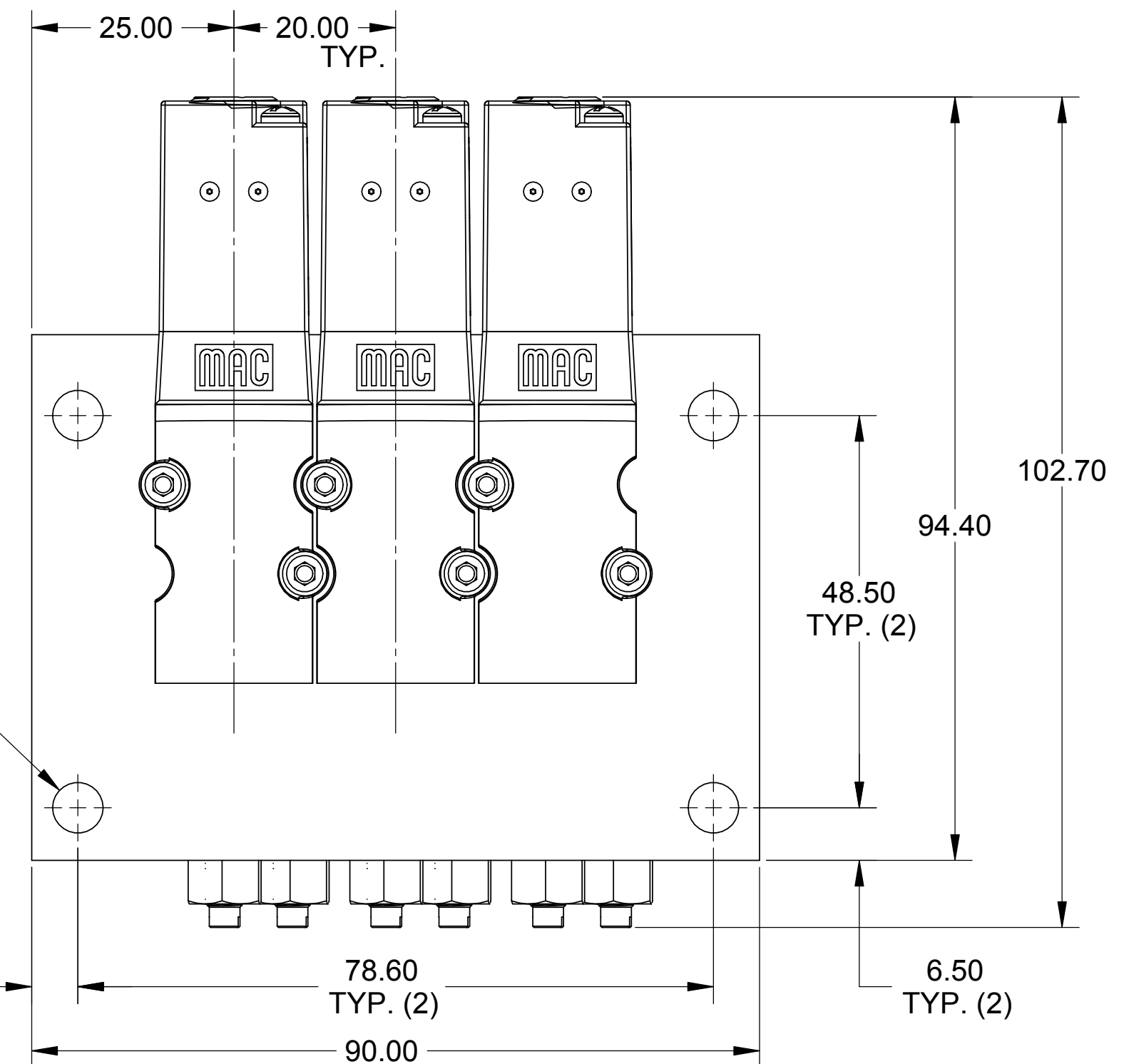
78.60
TYP. (2)

6.50
TYP. (2)

102.70

94.40

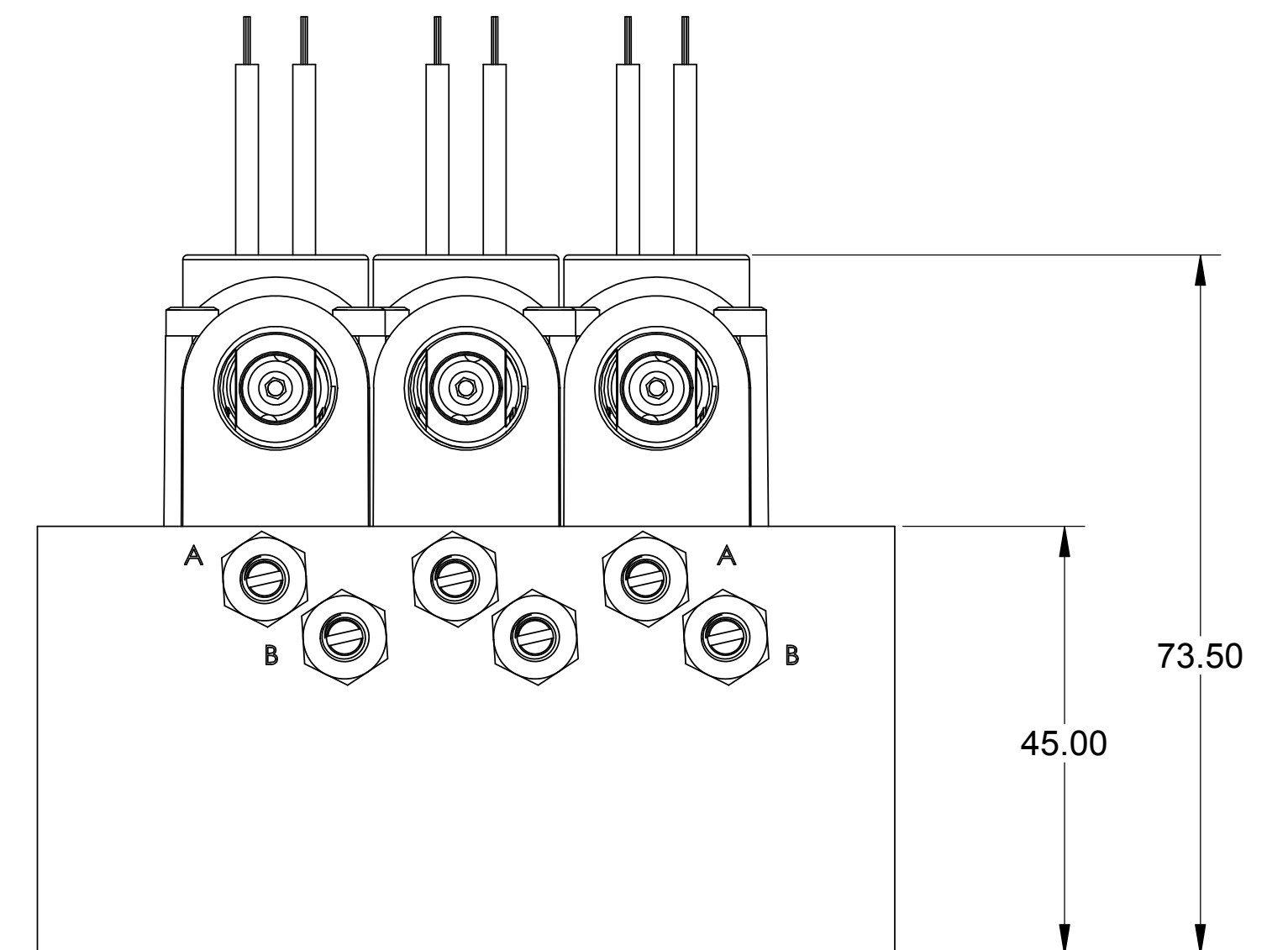
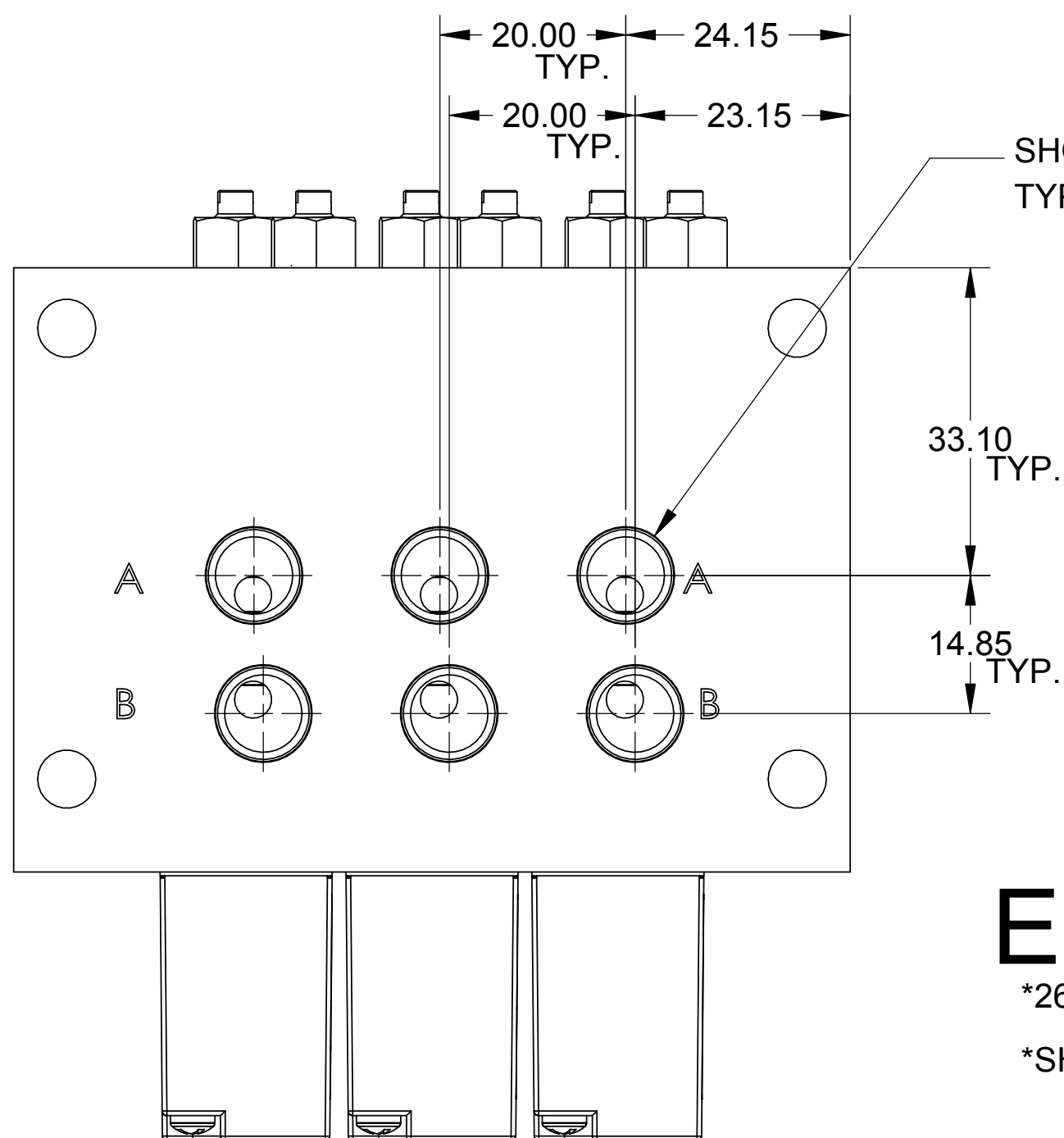
48.50
TYP. (2)



SHOWN WITH 1/8" N.P.T.F.
TYP. (2) PER STATION

33.10
TYP.

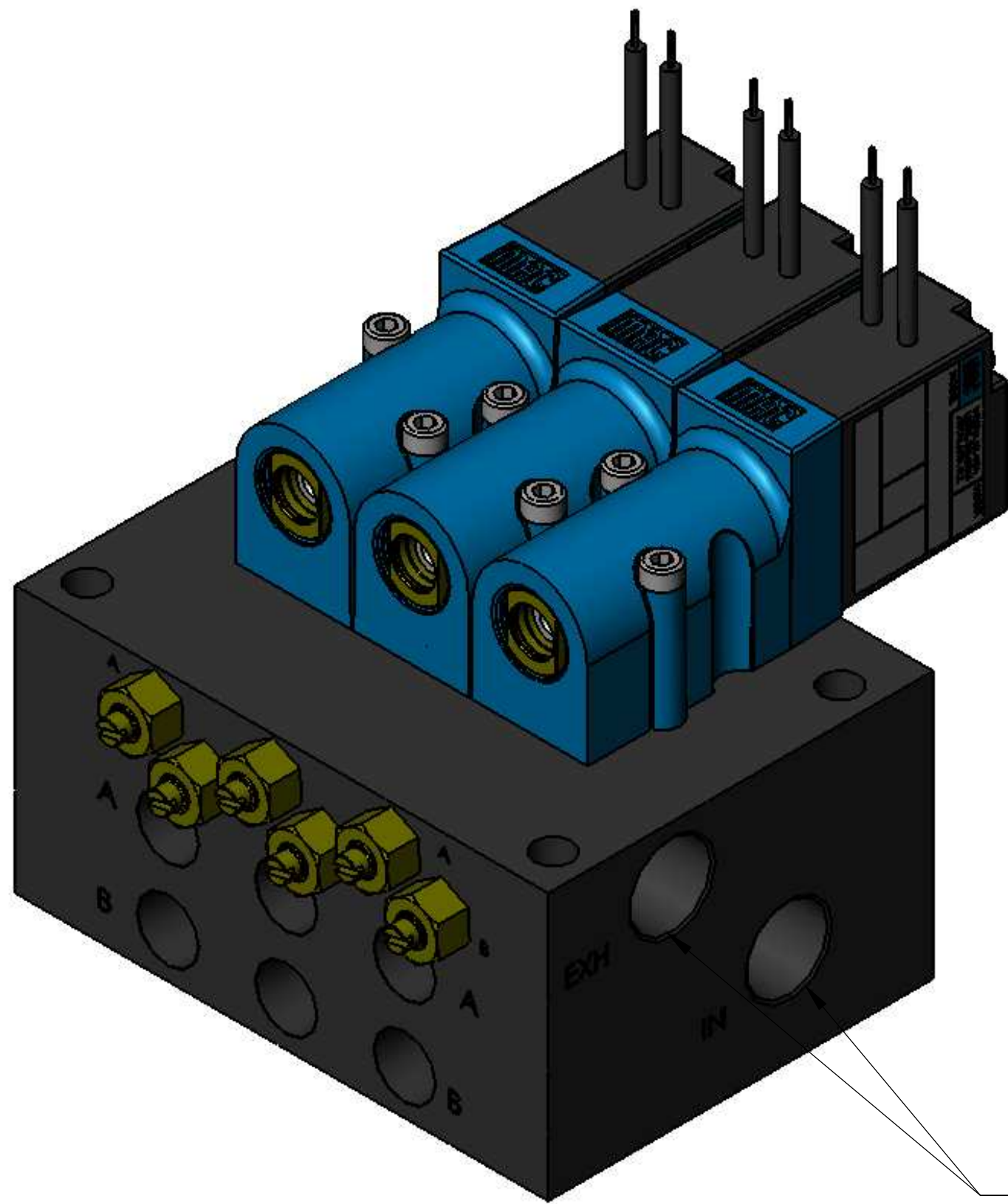
14.85
TYP.



EBM46LA-00EAA-XX

*26mm SPACING AVAILABLE FOR RECTANGULAR CONNECTORS

*SHOWN W/ #1 OPERATOR



1/4" - 18 N.P.T.F. TAP TO GAGE
TYP. (2) BOTH ENDS

6.25 THRU
TYP. (4)

5.70
TYP. (2)

25.00
TYP.

20.00
TYP.

94.40

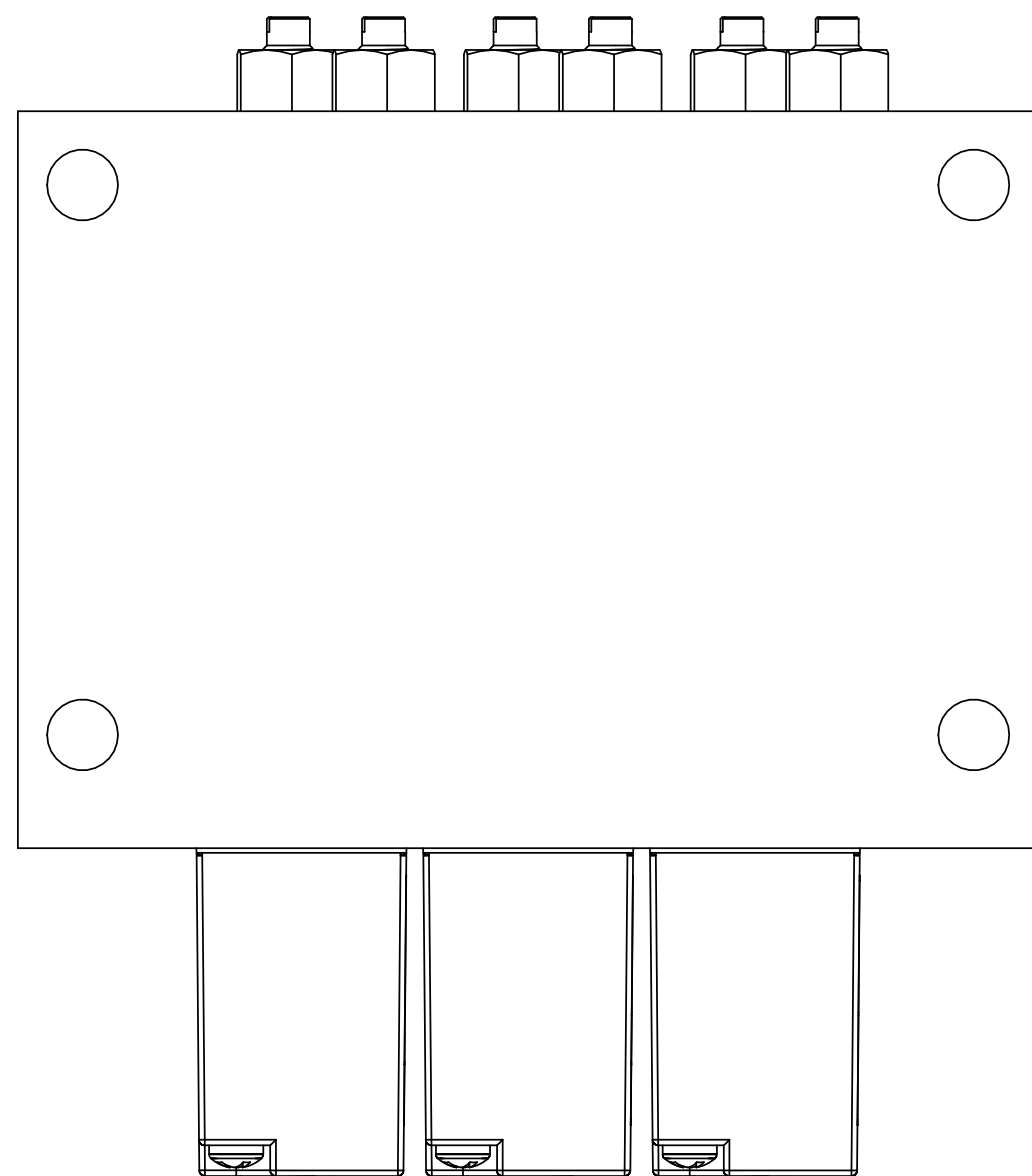
102.70

48.50
TYP. (2)

6.50
TYP. (2)

78.60
TYP. (2)

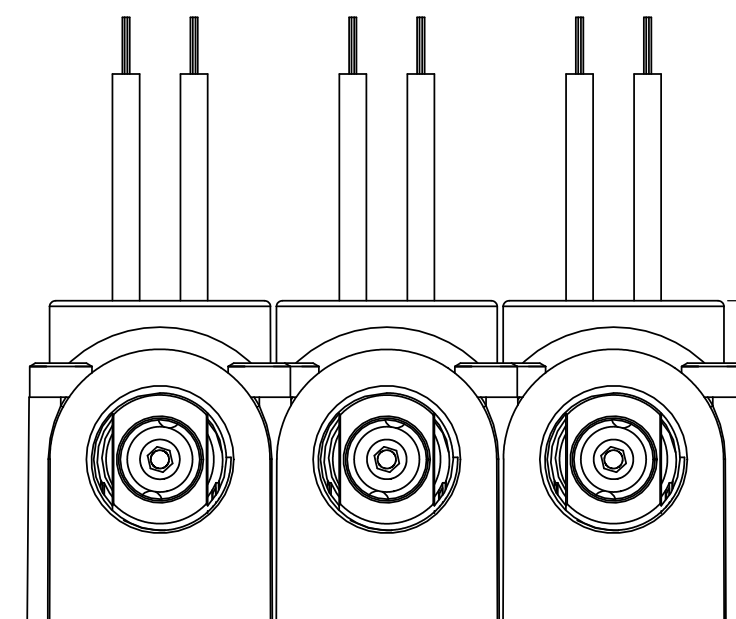
90.00



SHOWN WITH 1/8" N.P.T.F.
TYP. (2) PER STATION

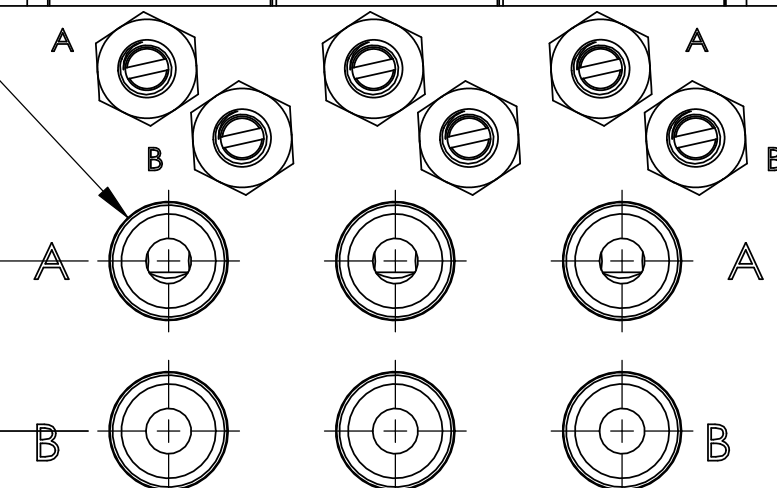
15.00
TYP.

7.50
TYP.



73.50

45.00



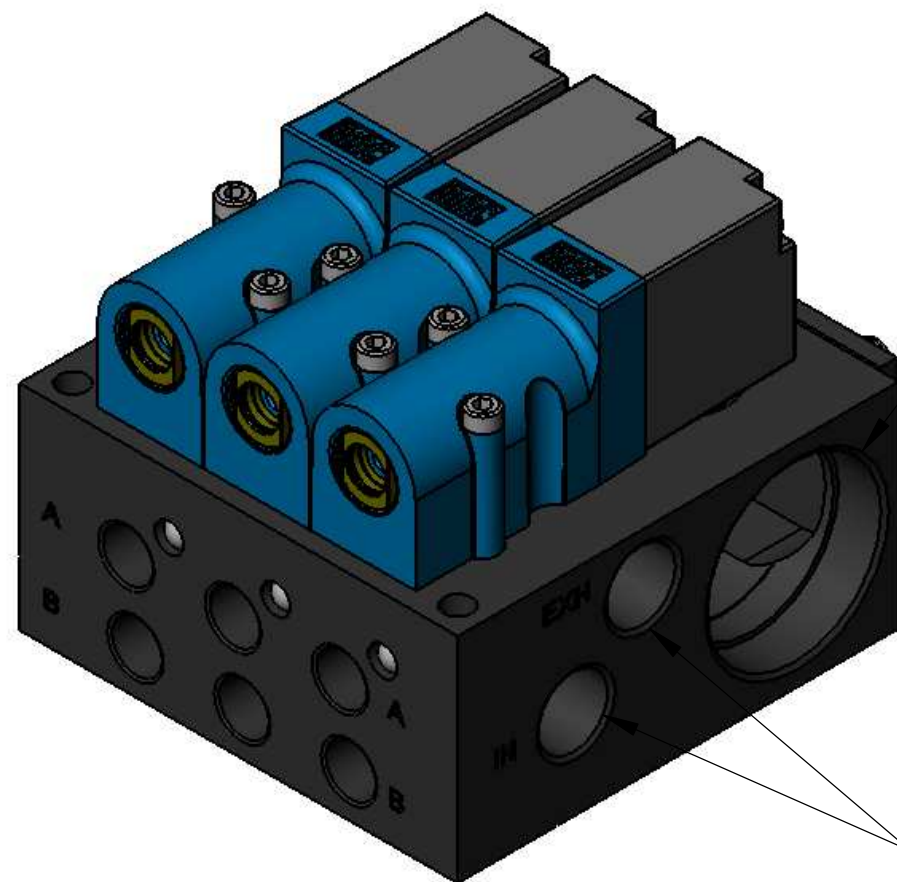
25.75
TYP.

20.00
TYP.

EBM46LA-00DAA-XX

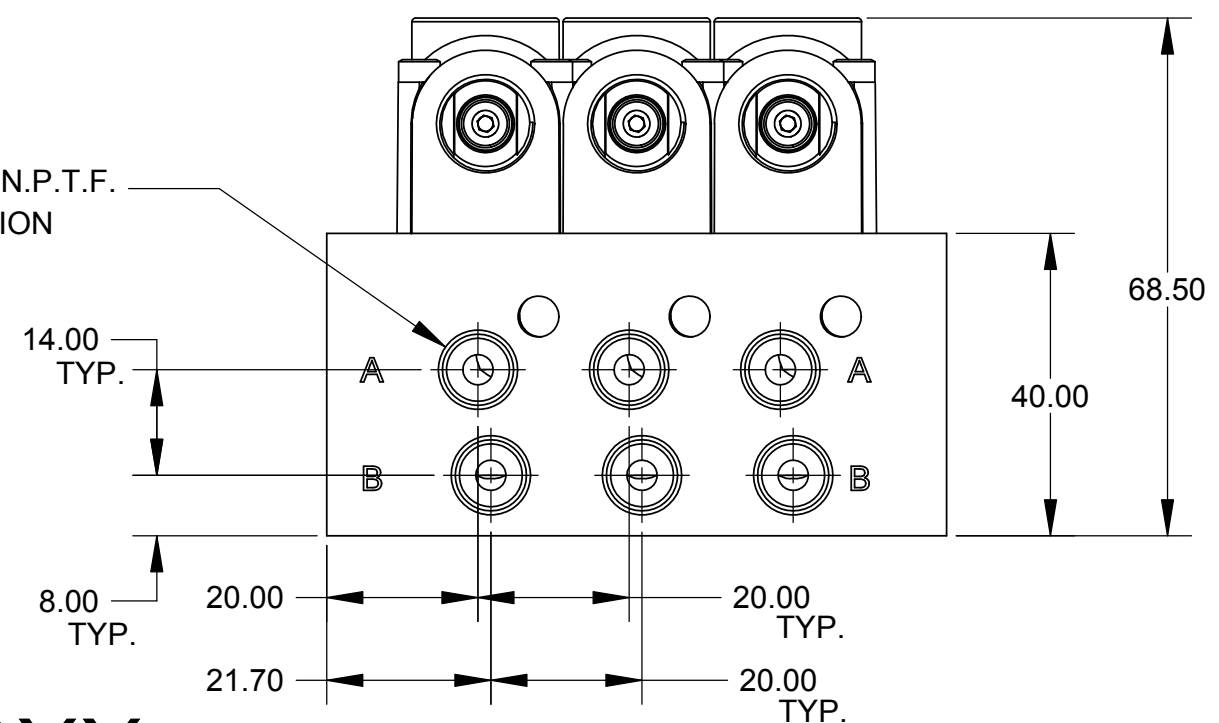
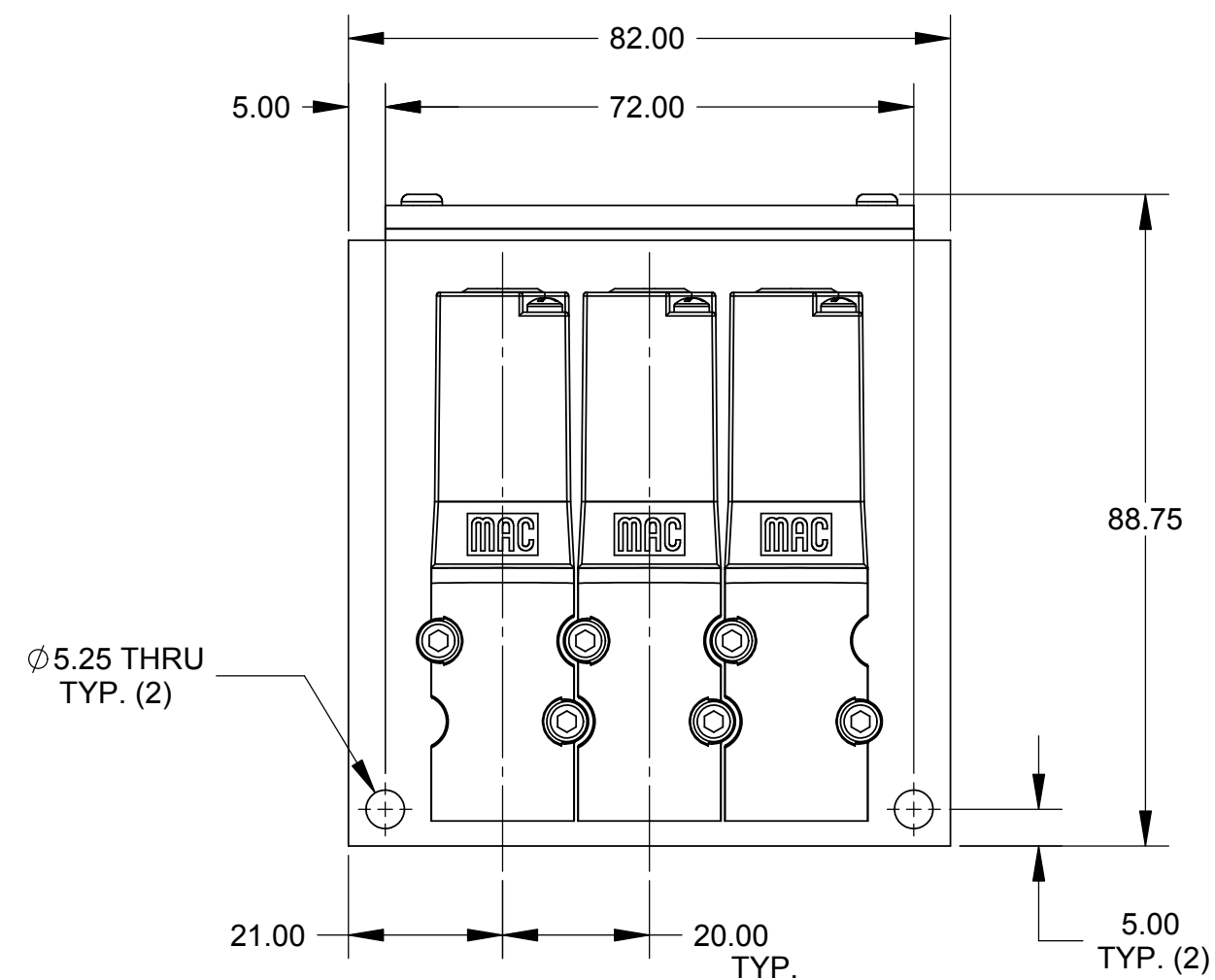
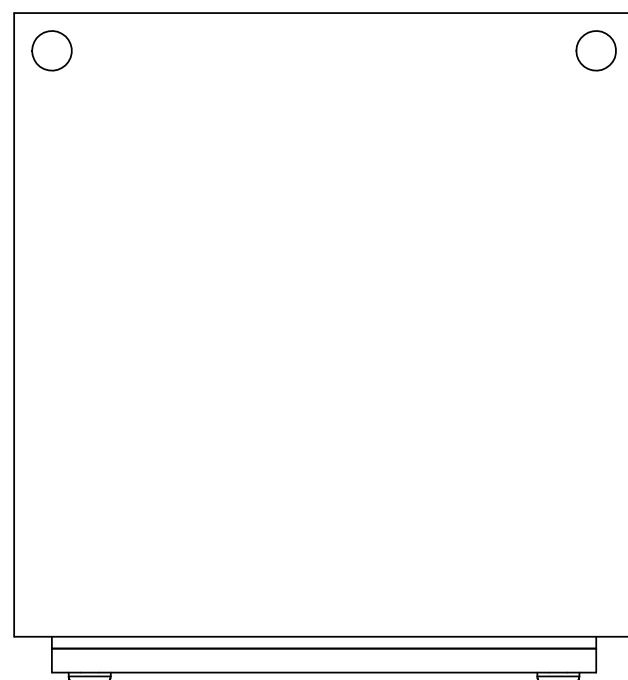
*26mm SPACING AVAILABLE FOR RECTANGULAR CONNECTORS

*SHOWN W/ #1 OPERATOR



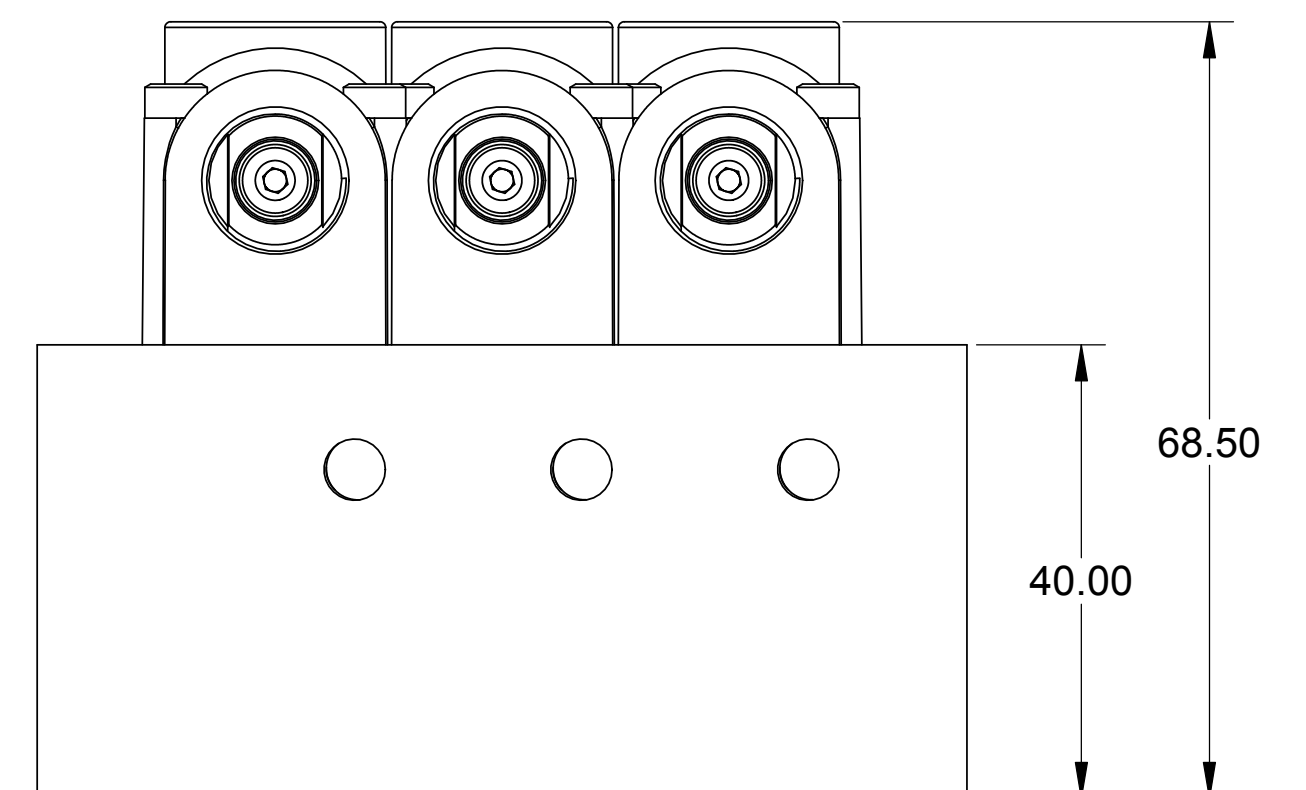
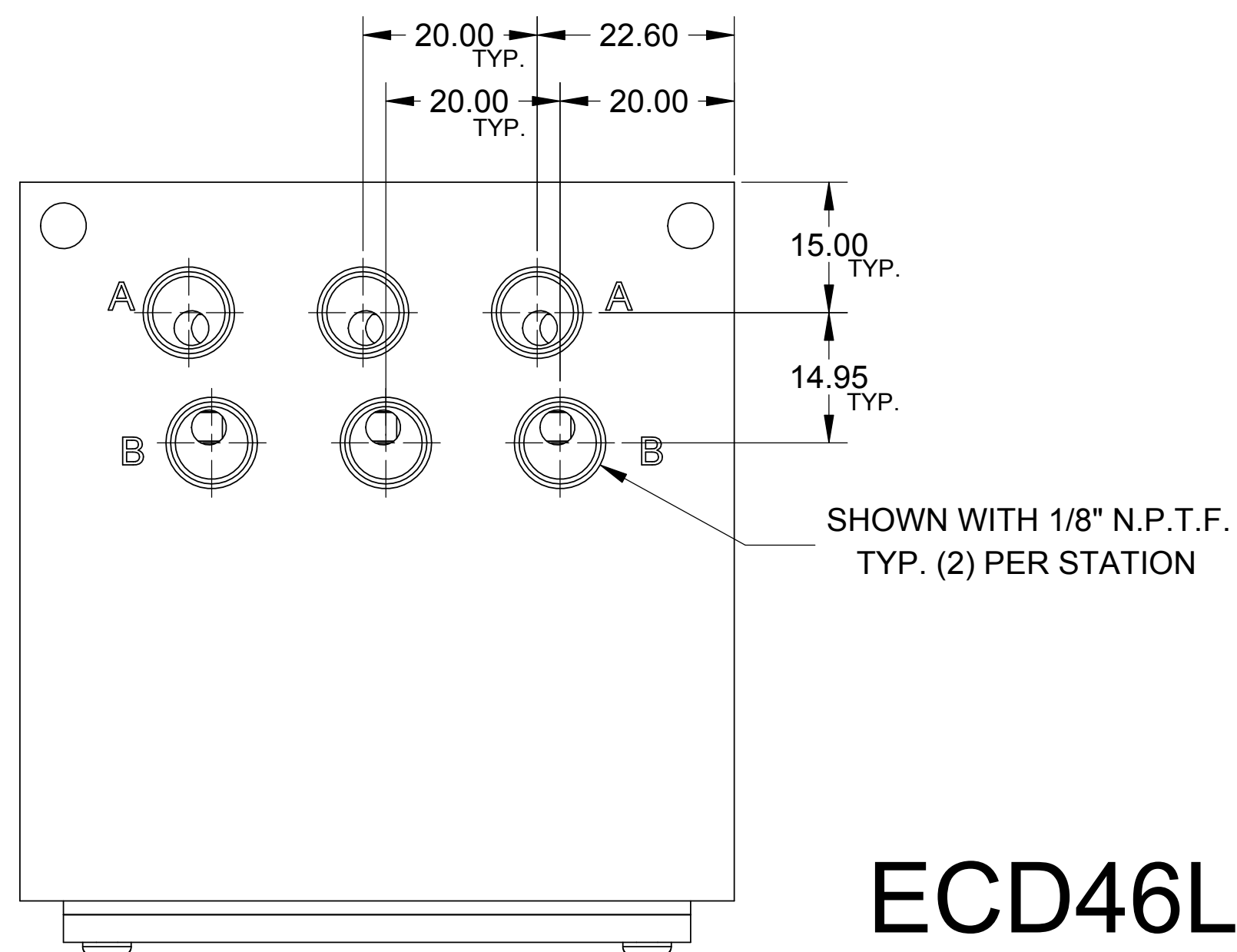
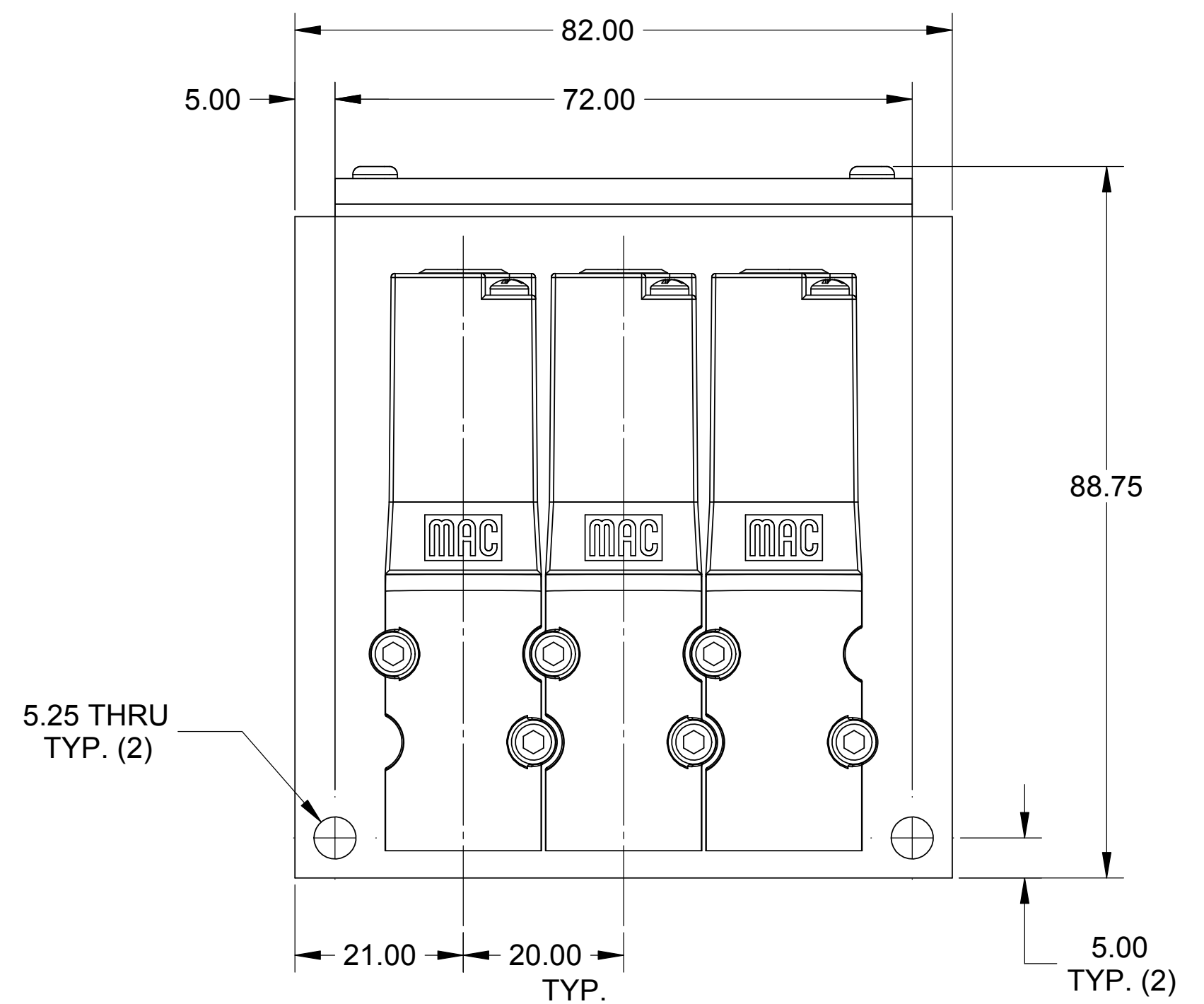
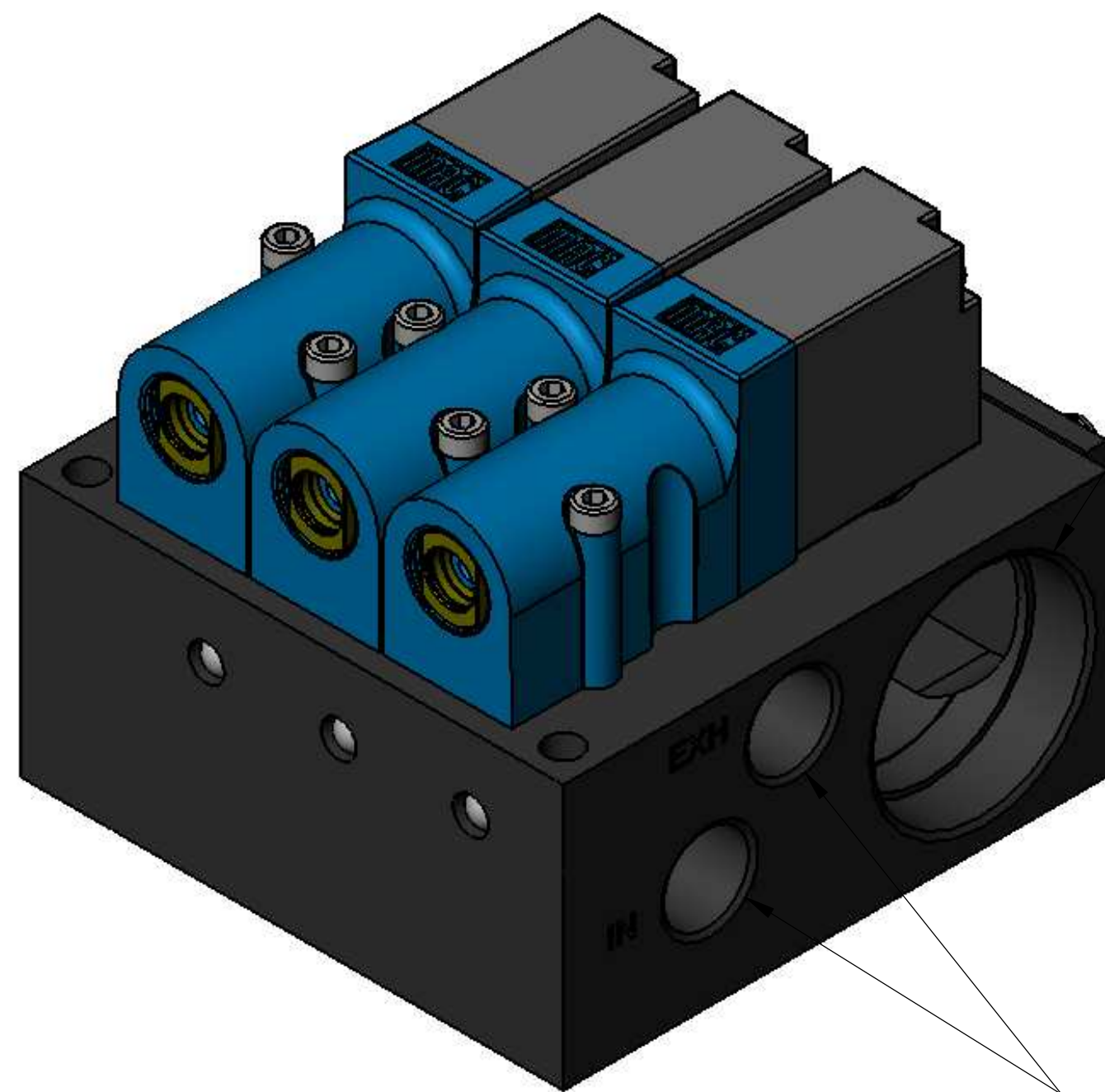
— 1" - 11 1/2 N.P.S.M. TAP
8.5 FULL THREAD DEPTH
TYP. BOTH ENDS

— 1/4" - 18 N.P.T.F. TAP TO GAGE
TYP. (2) BOTH ENDS



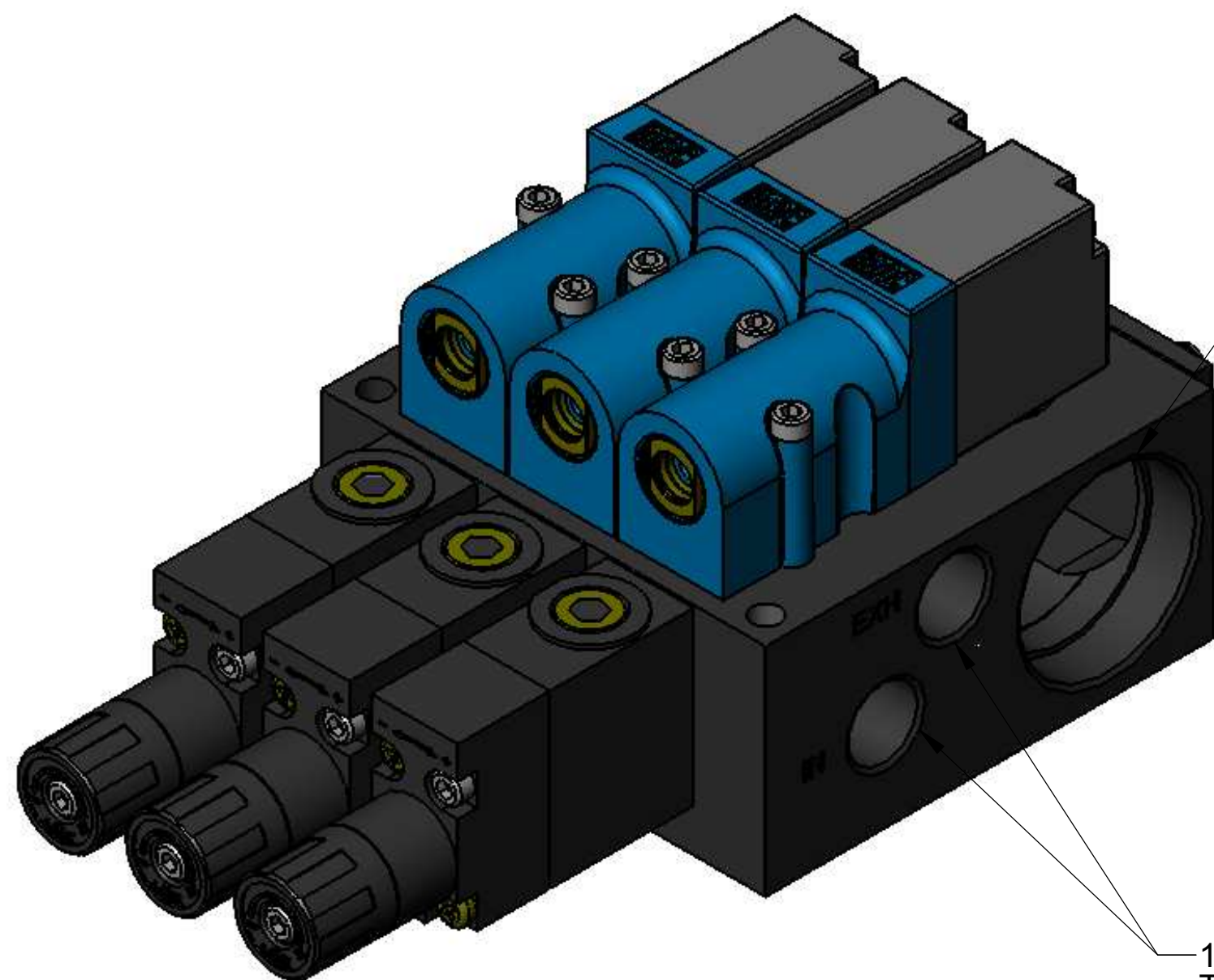
ECD46LA-00AAA-A0XX

*SHOWN W/ #1 OPERATOR



ECD46LA-00BAA-A0XX

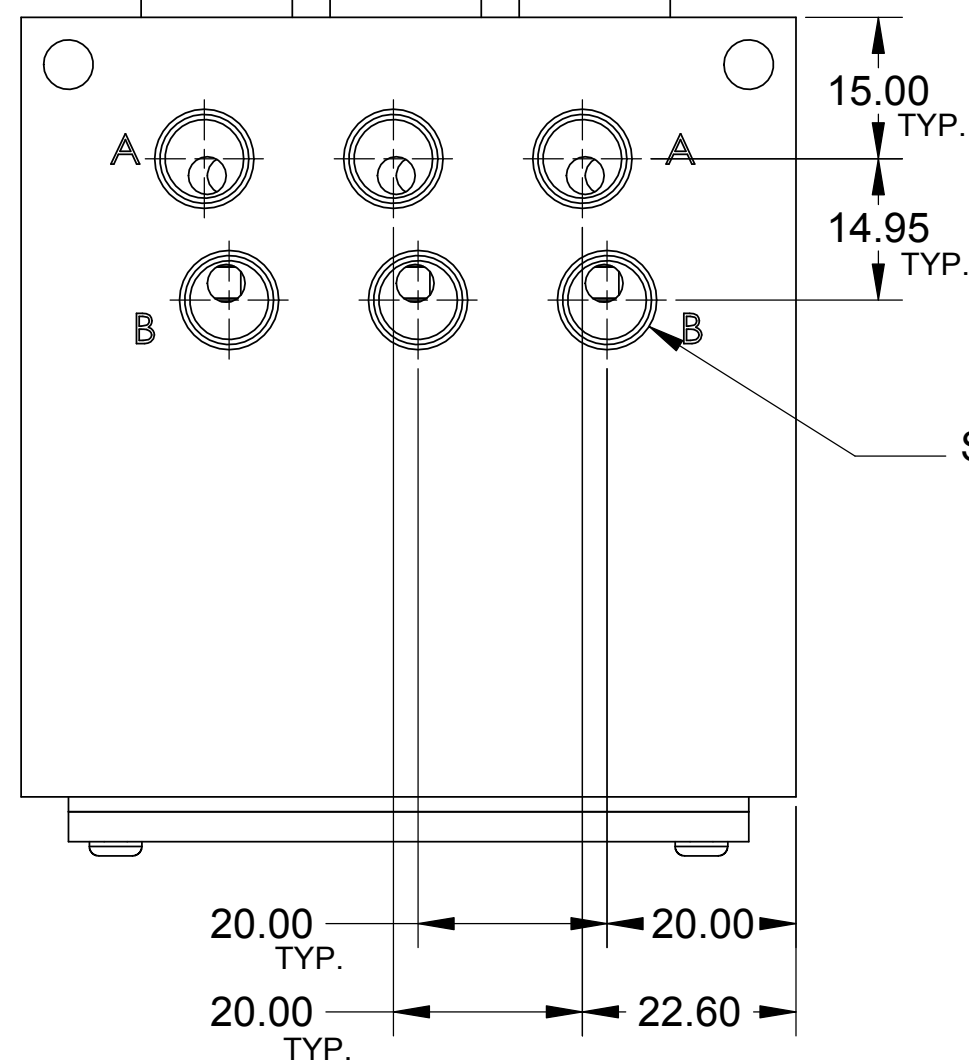
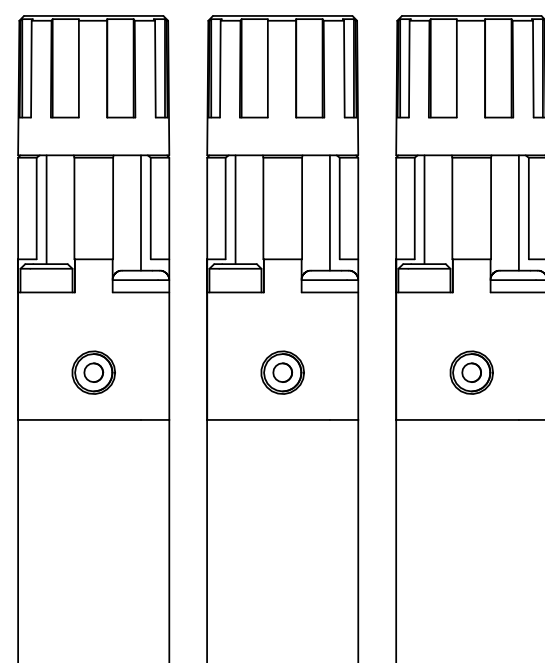
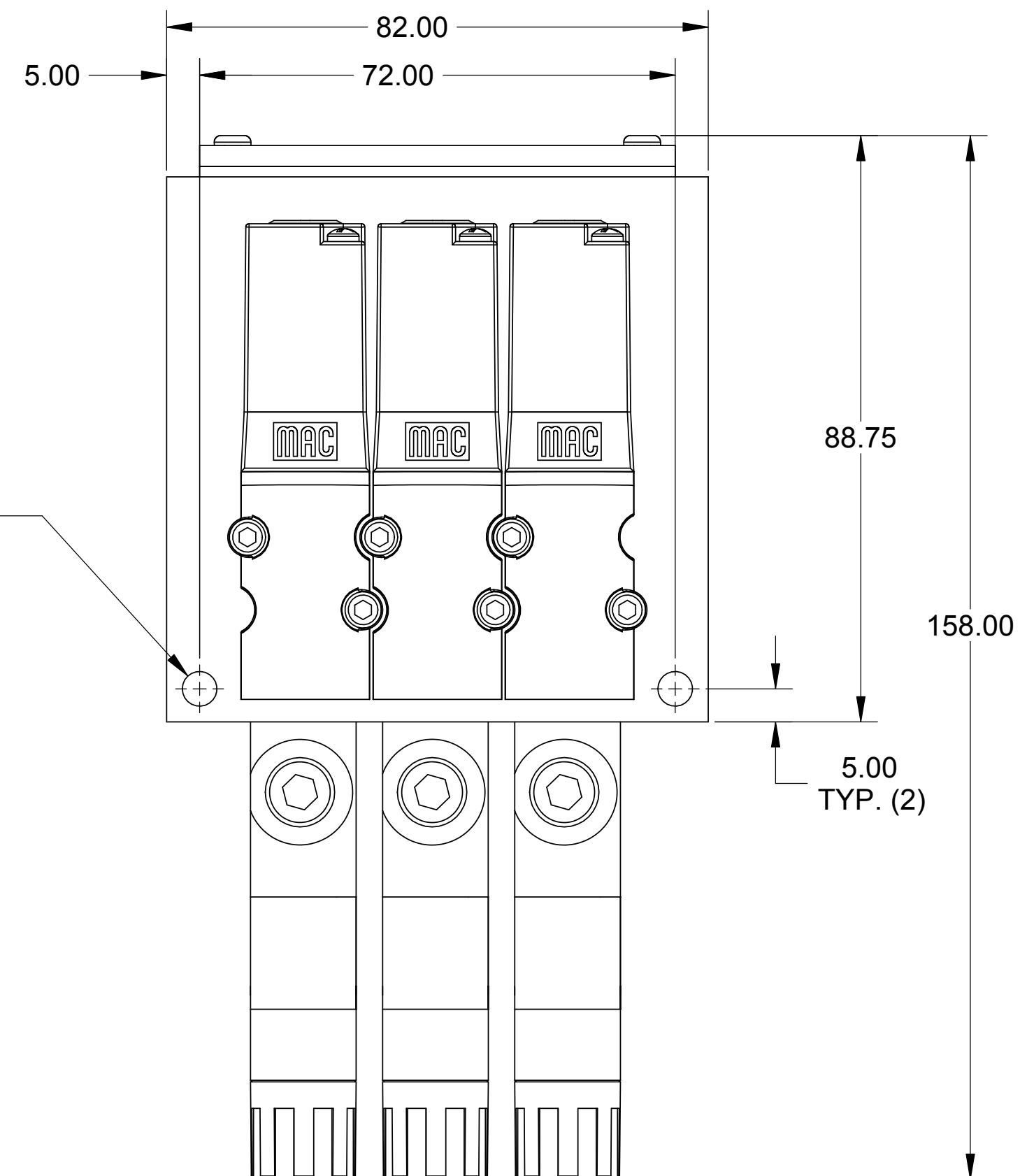
*SHOWN W/ #1 OPERATOR



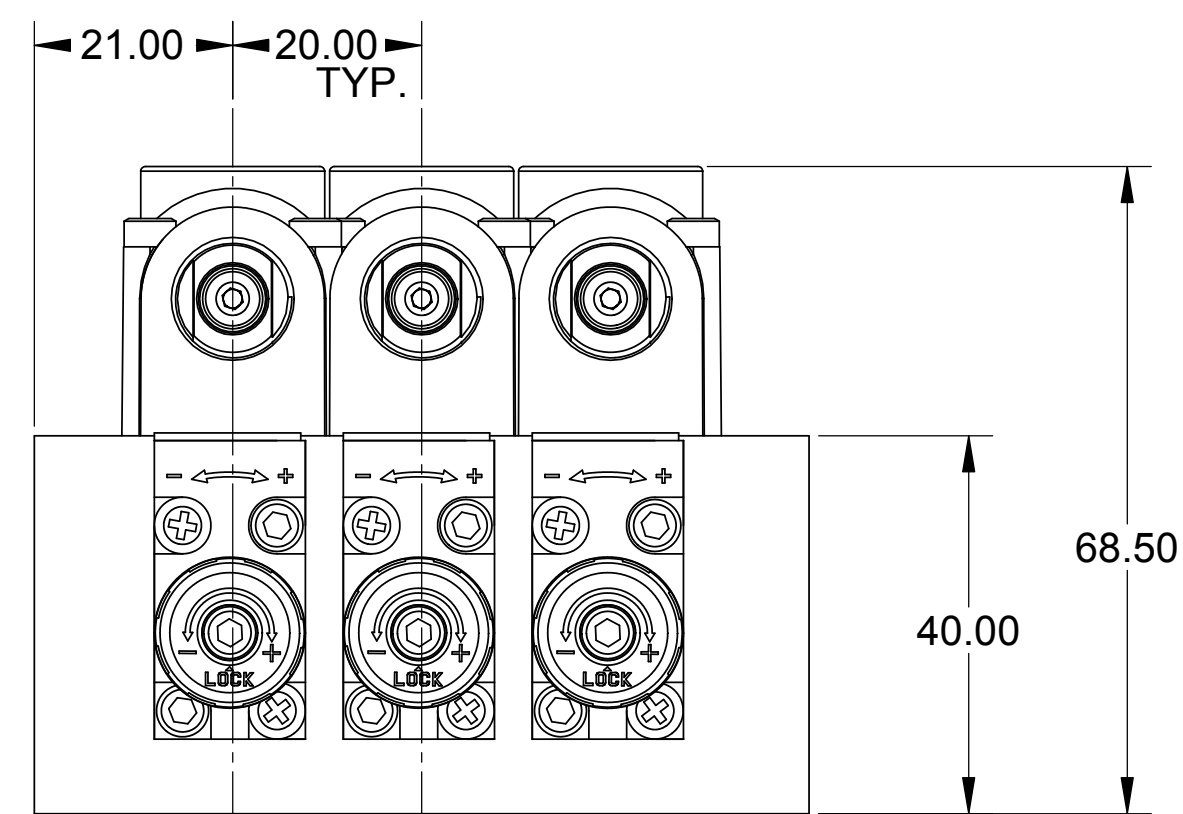
1" - 11 1/2 N.P.S.M. TAP
8.5 FULL THREAD DEPTH
TYP. BOTH ENDS

1/4" - 18 N.P.T.F. TAP TO GAGE
TYP. (2) BOTH ENDS

Ø 5.25 THRU
TYP. (2)



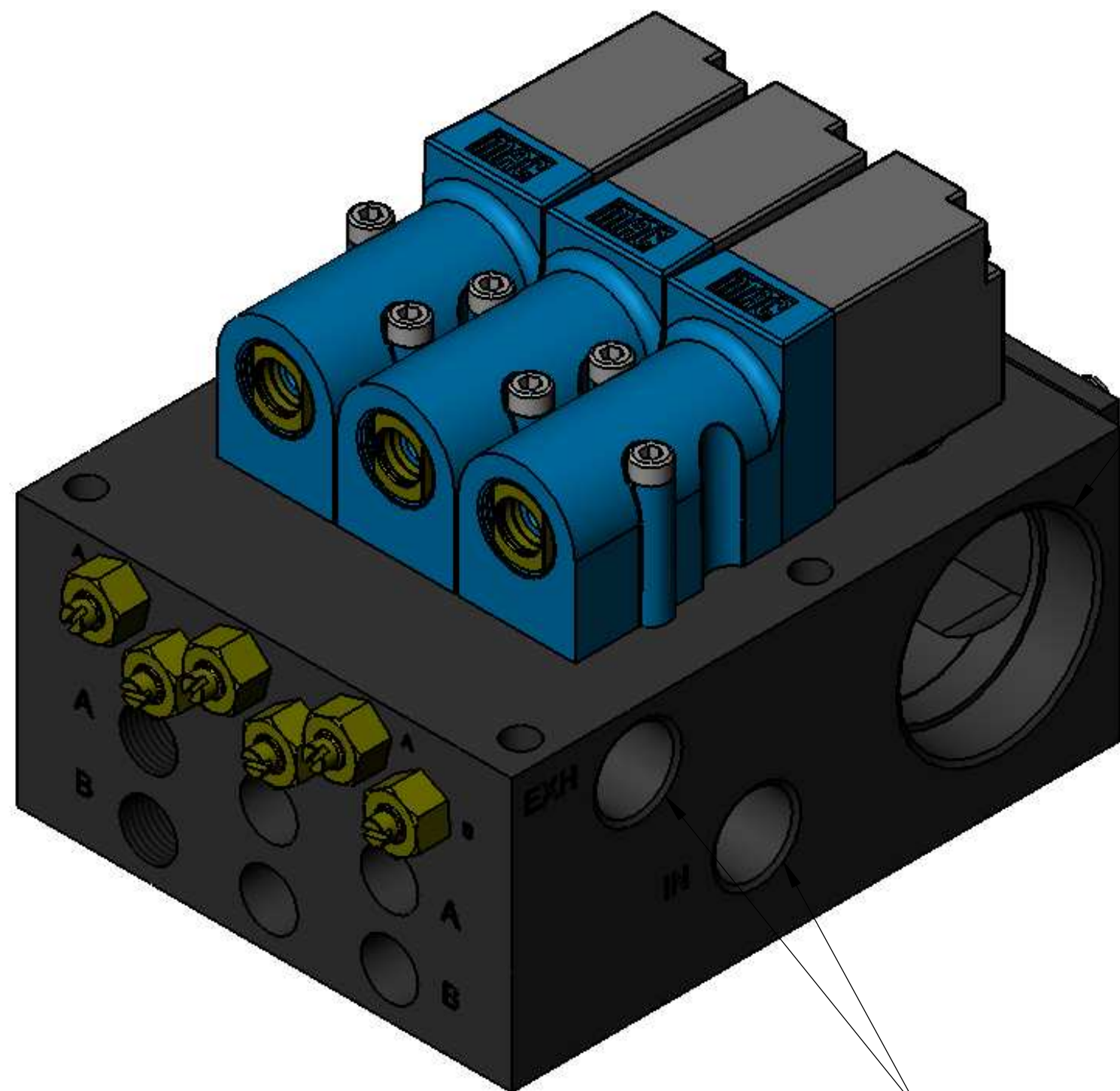
SHOWN WITH 1/8" N.P.T.F.
TYP. (2) PER STATION



ECD46LA-00CAA-A0XX

*SHOWN WITH PR46A-0BAA

*SHOWN W/ #1 OPERATOR



1" - 11 1/2 N.P.S.M. TAP
8.5 FULL THREAD DEPTH
TYP. BOTH ENDS

1/4" - 18 N.P.T.F. TAP TO GAGE
TYP. (2) BOTH ENDS

5.00
TYP. (2)

82.00

72.00
TYP. (2)

107.25

115.55

48.00
TYP. (2)

6.50
TYP. (2)

Ø 5.25 THRU
TYP. (4)

21.00 20.00
TYP.

SHOWN WITH 1/8" N.P.T.F.
TYP. (2) PER STATION

13.00
TYP.

73.50

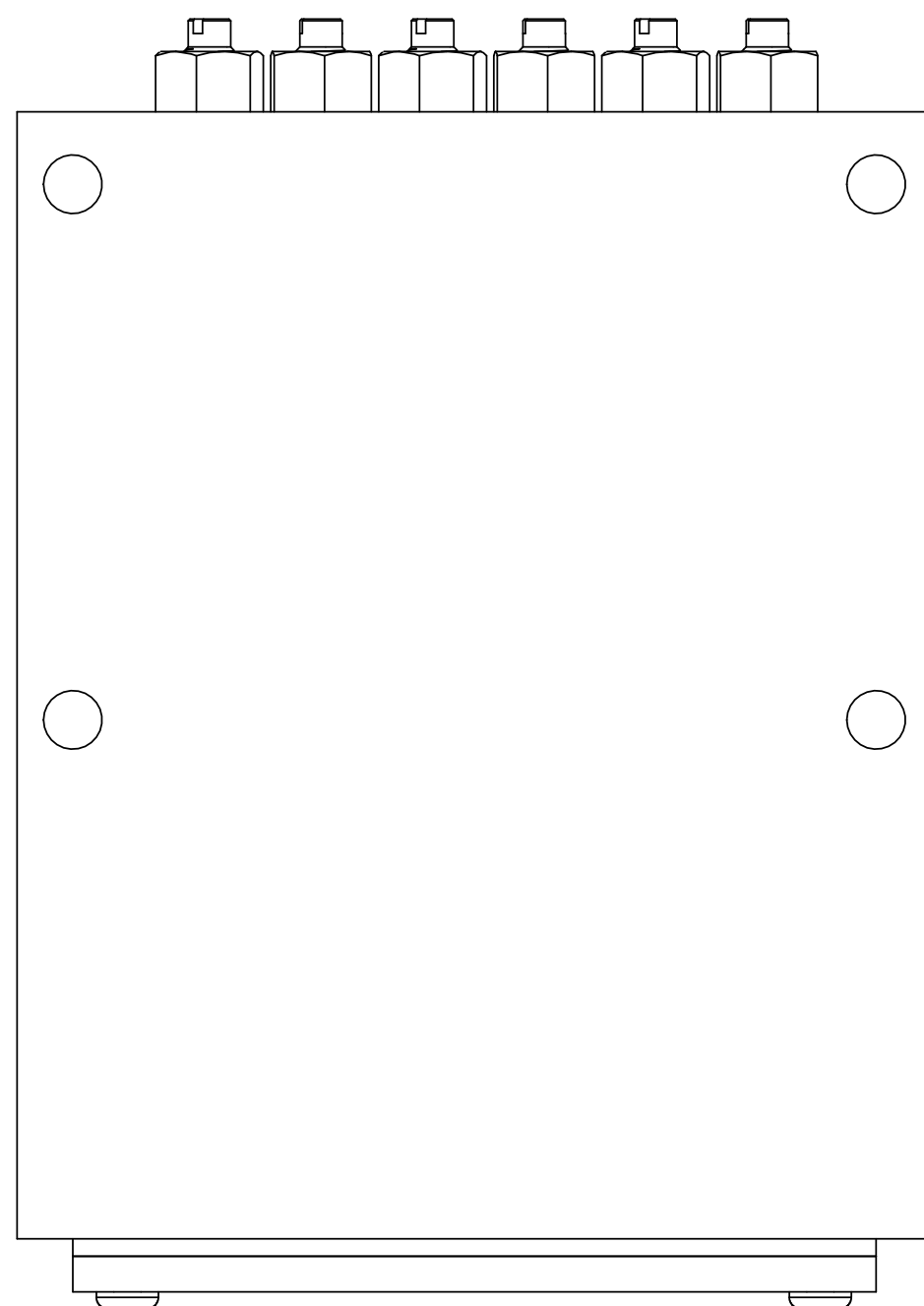
45.00

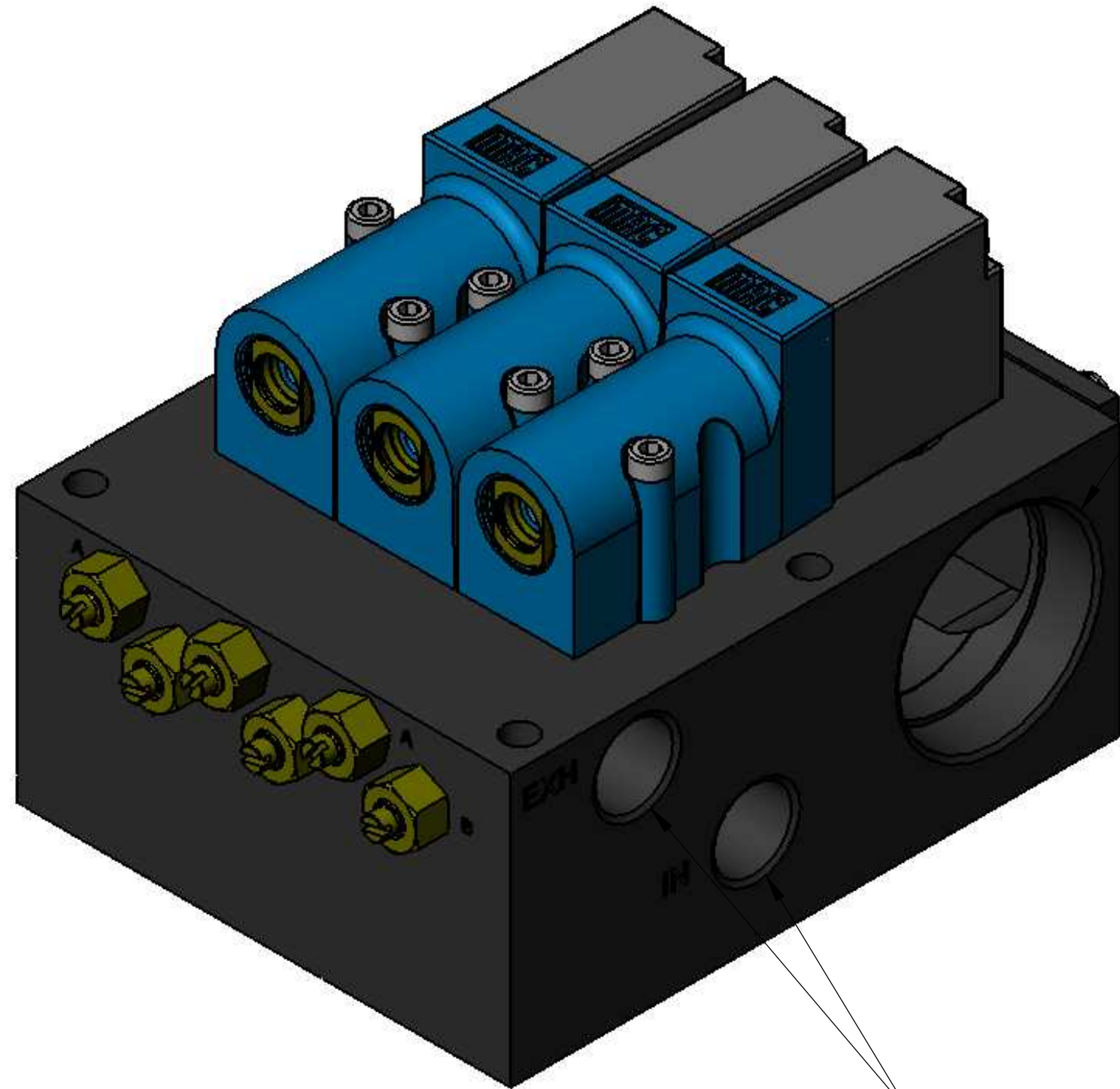
7.50
TYP.

21.76 20.00
TYP. TYP.

ECD46LA-00DAA-A0XX

*SHOWN W/ #1 OPERATOR





1" - 11 1/2 N.P.S.M. TAP
8.5 FULL THREAD DEPTH
TYP. BOTH ENDS

1/4" - 18 N.P.T.F. TAP TO GAGE
TYP. (2) BOTH ENDS

Ø 5.25 THRU
TYP. (4)

5.00
TYP. (2)

72.00
TYP. (2)

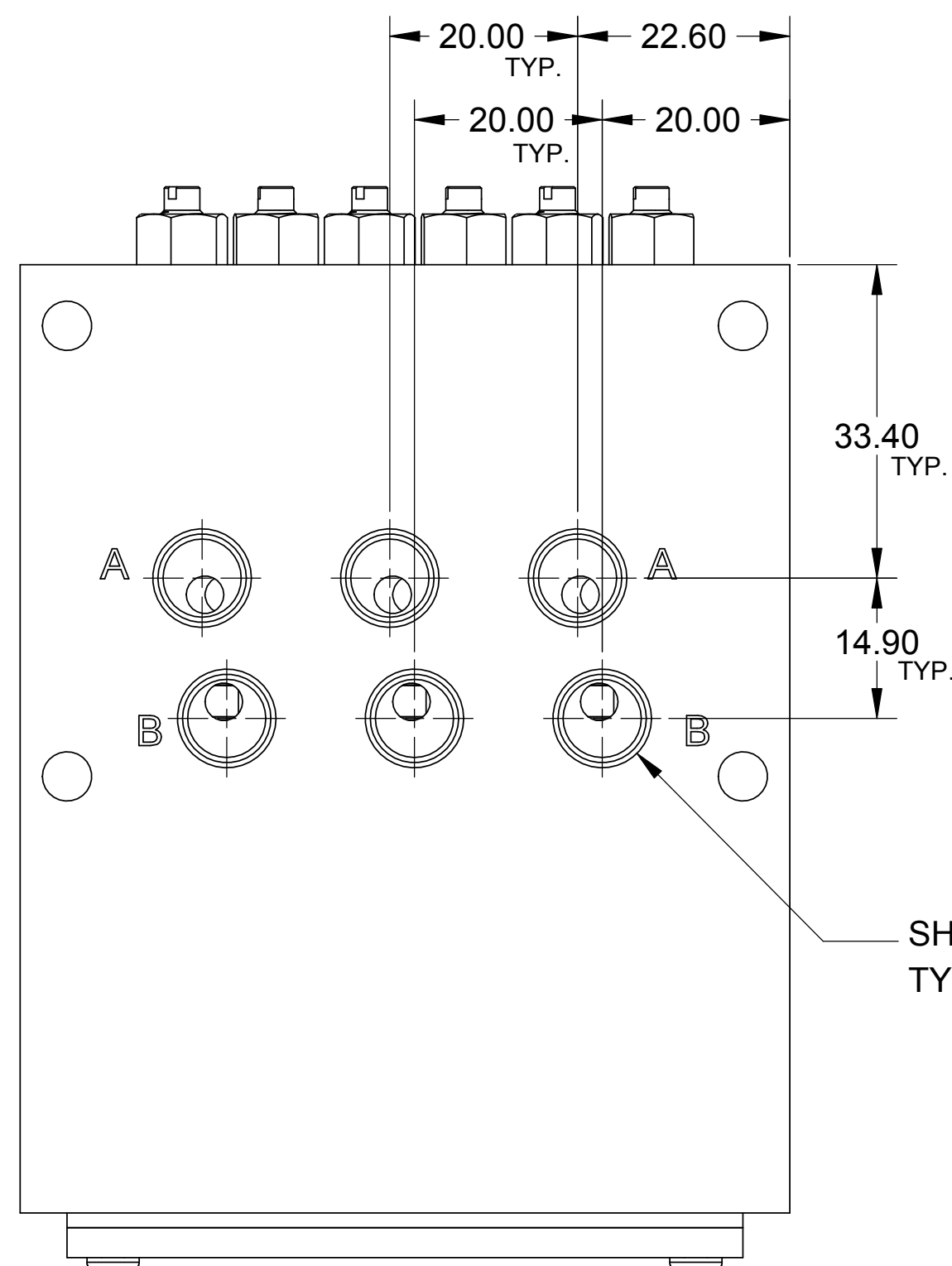
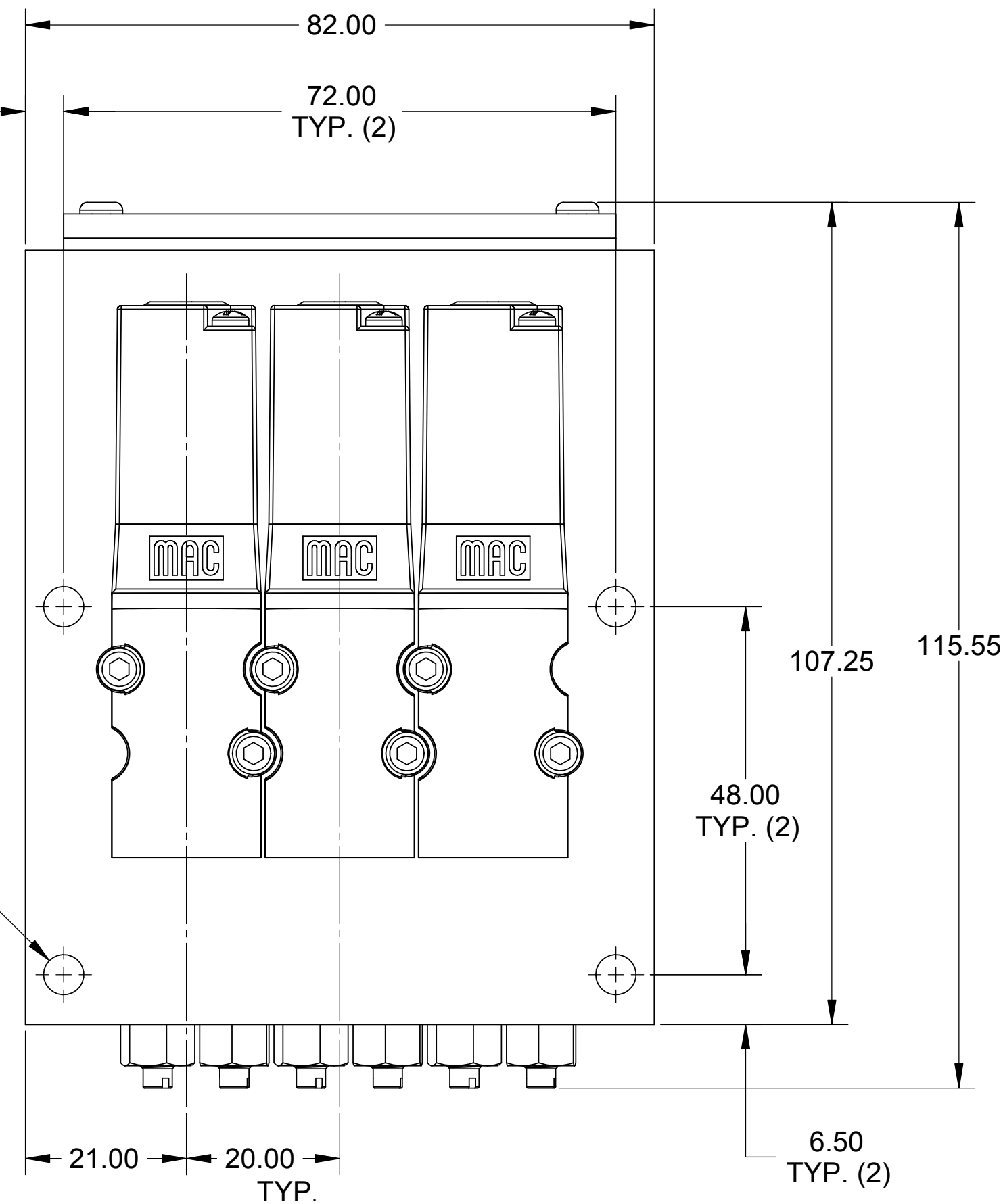
82.00

107.25

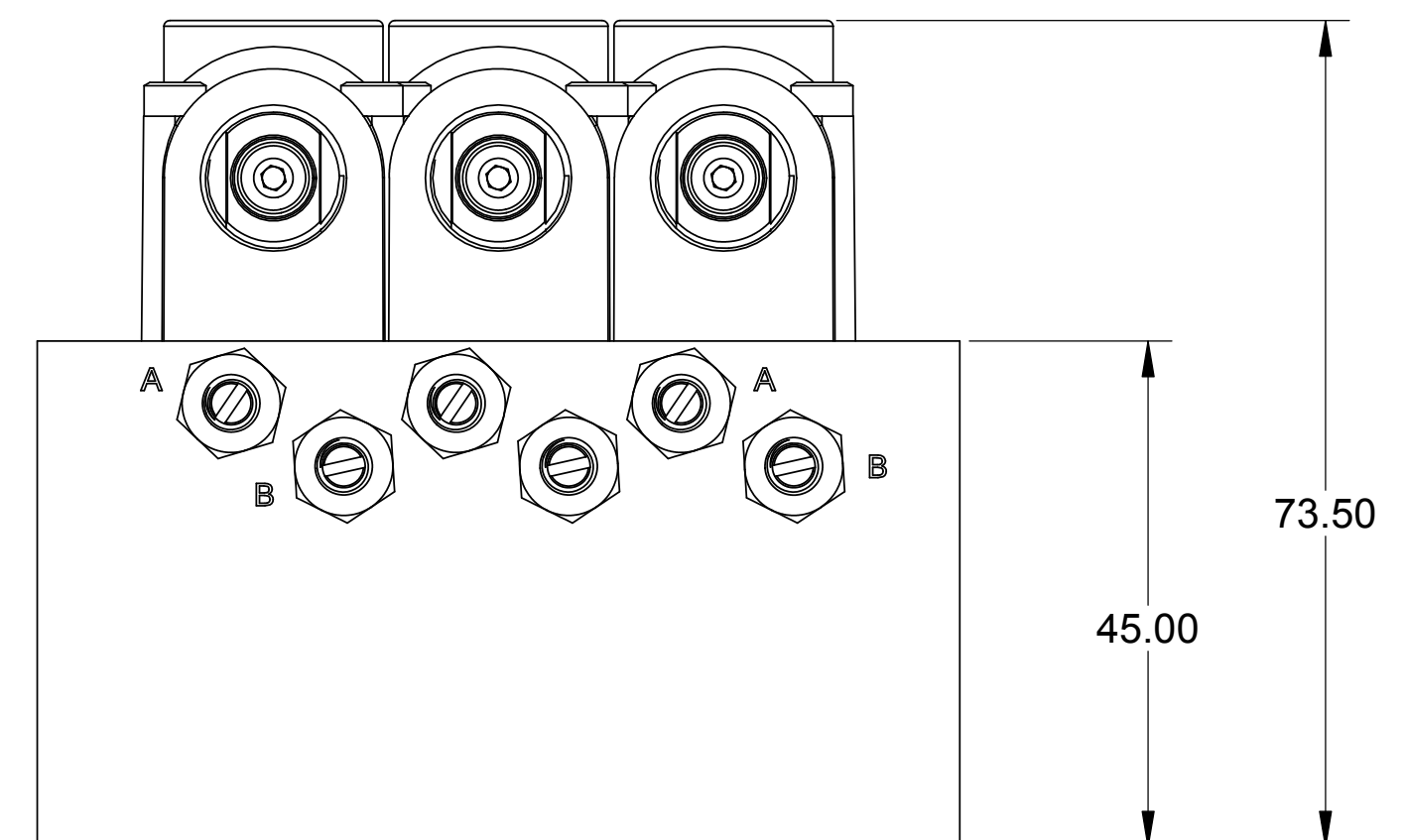
115.55

48.00
TYP. (2)

6.50
TYP. (2)

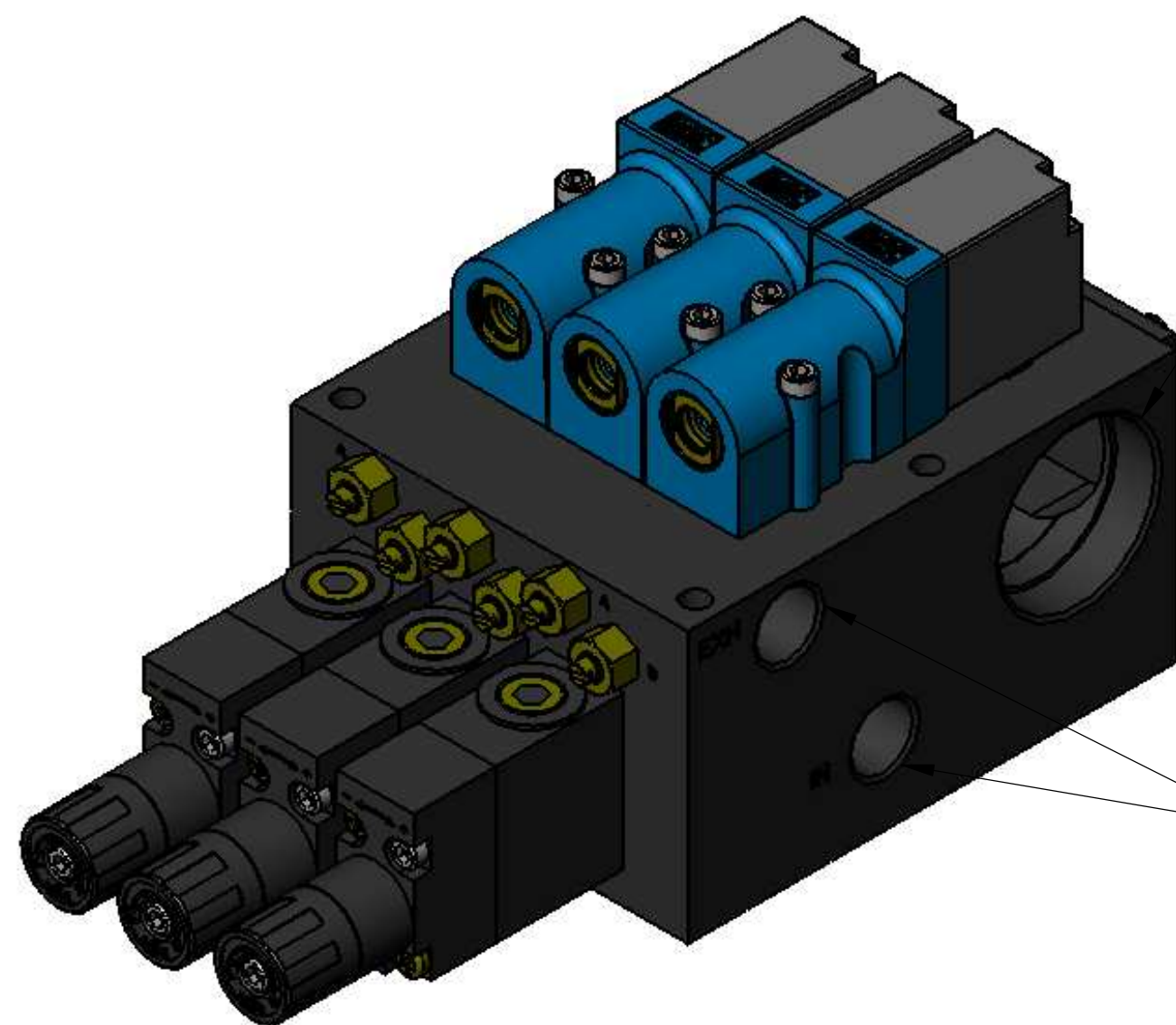


SHOWN WITH 1/8" N.P.T.F.
TYP. (2) PER STATION



ECD46LA-00EAA-A0XX

*SHOWN W/ #1 OPERATOR



1" - 11 1/2 N.P.S.M. TAP
8.5 FULL THREAD DEPTH
TYP. BOTH ENDS

1/4" - 18 N.P.T.F. TAP TO GAGE
TYP. (2) BOTH ENDS

Ø 5.25 THRU
TYP. (4)

5.00
TYP. (2)

82.00

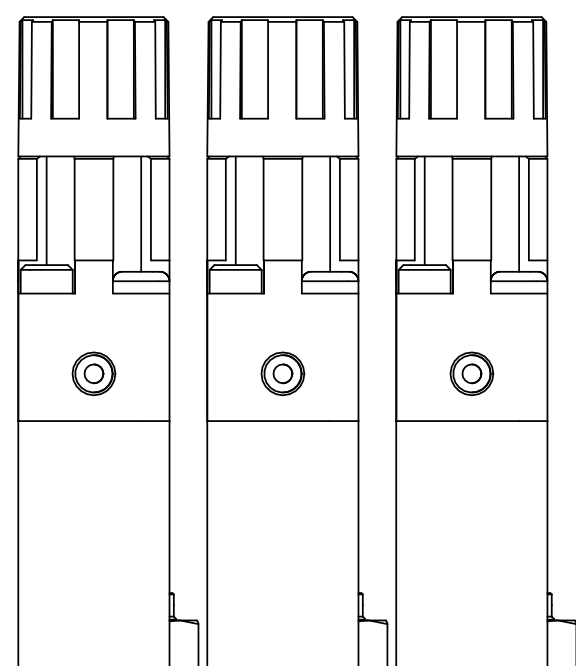
72.00
TYP. (2)

107.25

48.00
TYP. (2)

176.50

6.50
TYP. (2)



33.40
TYP.

14.90
TYP.

SHOWN WITH 1/8" N.P.T.F.
TYP. (2) PER STATION

ECD46LA-00FAA-A0XX

*SHOWN WITH PR46A-0BAA

*SHOWN W/ #1 OPERATOR

20.00
TYP.

20.00 22.60
TYP.

21.00 20.00
TYP.

84.50

56.00

