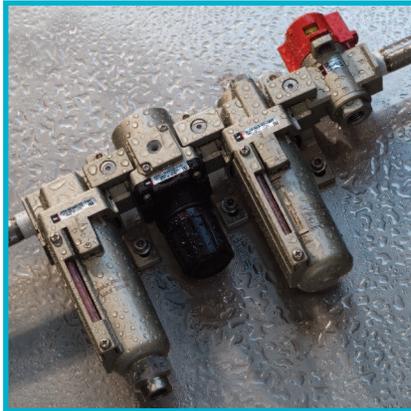**SMC Corporation of America**
10100 SMC Boulevard
Noblesville, IN 46060

www.smcusa.com

P.G. Information

Epoxy Coated F.R.L. Units

*AC21/31/41-***-*-X2217*
*AF20/30/40-***-*-X480*
*AR20/30/40-***-*-X48*
*AL20/30/40-***-*-X480*
*AW20/30/40-***-*-X48*
*VHS20/30/40-***-*-X513*
Y20/30/40-T4*

Application: Air preparation in an environment that requires enhanced corrosion protection.

Feature 1:   Die cast aluminum components are epoxy coated for improved chemical resistance.

Feature 2:   Steel external hardware is replaced with stainless steel for improved chemical resistance.

Comparison with Standard Product:

1) Functional performance is equivalent to standard product.

2) Product withstood salt spray testing per ASTM B117-07A with excellent results (See test results on page 12). Improved performance vs. other chemicals is anticipated but has not been verified.

Applications:

- Marine environments
- Water splash zone in various processes
- Washdown in food plants (non-food or splash zone only)

Related Products:

- KQG Series - 316 SUS One-touch Fittings - Coming Soon: KQG2
- KQB2 Series - Ni plated brass One-touch Fittings (Coming Soon)
- ASG Series - 316 SUS One-touch Speed Controls
- CG5 Series - repairable 304 SUS Cylinder
- NCM Series with X6009 option - crimped body 304 SUS Cylinder, domestic interchange
- CJ5 Series - crimped body 304 SUS Cylinder
- HY Series - Aluminum body Hygienic Design Actuators

How To Order

AC 31 B – N 03 D – V – 8 Y Z - X2217

- **Air Combination Unit**

- **Body Size**

Symbol	Size
21	1/8
31	3/8
41	1/2

- **Model Combination**

Symbol	Model / Assembly Order
Nil	AF + AR + AL
A	AW + AL
B	AF + AR

- **NPT Threads**

- **Port Size**

Symbol	Port Size	Applicable Body Size
02	1/4	21
03	3/8	31
04	1/2	41

Note: Other sizes, thread forms, options, etc. may be possible, please contact SMC for availability.

- **With External Epoxy Coating, Stainless Fasteners**

- **Name Plate, Caution Plate On Bowl in psi, °F**

- **Regulator Handle Orientation**

Symbol	Description
Nil	Downward Handle
Y	Upward Handle

- **Bowl**

Symbol	Description	Applicable Body Size
2	Metal Bowl	21
8	Metal Bowl With Sight Glass	31, 41

- **Residual Pressure Relief Valve**

Symbol	Description	Applicable Model Combo
Nil	Without Valve	All
V	With Downstream Valve	All

- **Accessories**

Symbol	Description	Applicable Body Size
Nil	None	All
C	Float Auto Drain (N.C.)	31, 41
D	Float Auto Drain (N.O.)	31, 41

Specifications

Body size	21	31	41
Operating specifications	Same as standard - see catalog ES40-42D or NC160A		
Port size	1/4" NPT	3/8" NPT	1/2" NPT
Auto drain port (AF, AW)	N/A	1/4" NPT	
Bowl type (AF, AL, AW)	Metal	Metal with sight gauge	
Body material	Die cast aluminum		
Bowl material (AF, AL, AW)	Die cast aluminum		
Body, Bowl surface treatment	Epoxy resin coating		
Bonnet (AR, AW)	Polyacetal		
Manual drain (AF, AW)	POM		
External screws	Stainless steel 410		
Individual mounting brackets	Epoxy coated steel		
Panel mount nut (AR, AW)	POM		
Connector brackets (AC)	Die cast zinc (epoxy coated)		
Fill plug (AL)	Stainless steel 304		
Sight dome (AL)	Polycarbonate		
Sight glass hardware (AF, AL, AW)	Stainless steel 304		

Dimensions - Refer to drawings on page 3

mm

| AC	A*	AA**	B	C	E	F	G	J	K	M	N	Q	U	V	W
AC21	140	190	160	73	—	45.5	40	26	5	30	51	24	5	33	—
AC31	181	245	220	86	30	58.5	55	29.5	3.5	41	64	35	7	45	34.5
AC41	238	322	239	92	38	75.5	80	37.5	1.5	50	81	40	7	50	41

* Without relief valve option   ****** With relief valve option

mm

| AC-A	A*	AA**	B	C	E	F	G	J	K	M	N	Q	U	V	W
AC21A	90	140	160	73	—	45.5	40	26	5	30	51	24	5	33	—
AC31A	117	181	220	86	30	58.5	55	29.5	3.5	41	64	35	7	45	34.5
AC41A	154	238	239	92	38	75.5	80	37.5	1.5	50	81	40	7	50	41

* Without relief valve option   ****** With relief valve option

mm

AC-B	A*	AA**	B	C	E	F	G	J	K	M	N	Q	U	V	W
AC21B	90	140	160	73	—	45.5	40	26	5	30	51	24	5	33	—
AC31B	117	181	220	86	30	58.5	55	29.5	3.5	41	64	35	7	45	34.5
AC41B	154	238	239	92	38	75.5	80	37.5	1.5	50	81	40	7	50	41

* Without relief valve option   ****** With relief valve option

AC

AC-A

Bowl Detail (AF20/AW20)

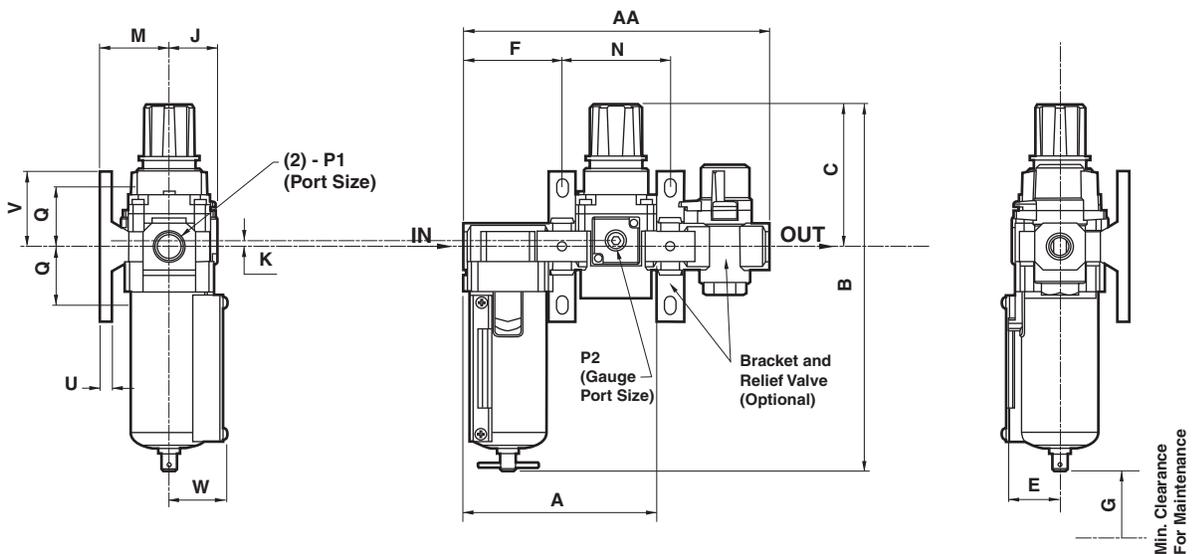
Note: Sight glass not applicable to all size 20 bowls.
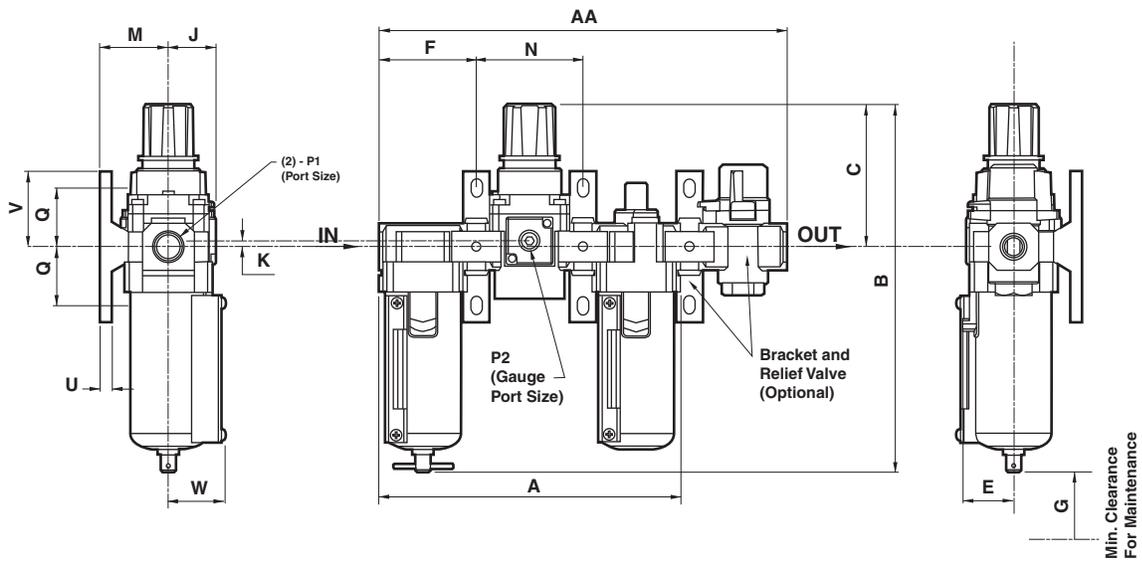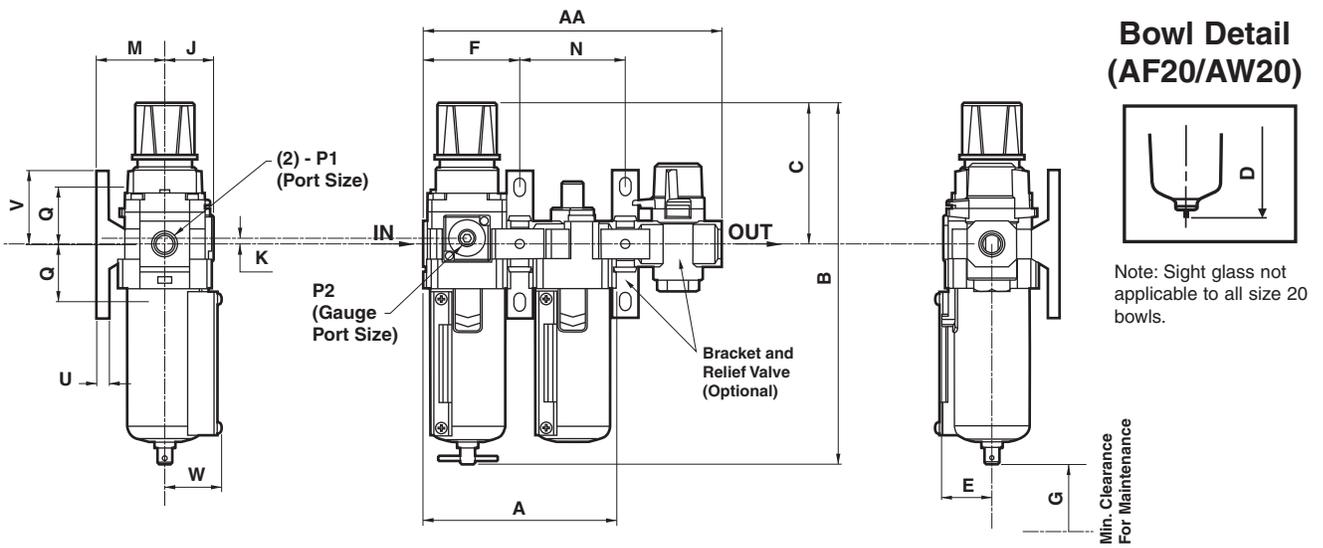
AC-B

Notes: Filter & Filter Regulator Bowls depict manual drain, see individual sections for details with auto-drain options.

How To Order

AF **30** — N **03** **D** — **8** Z - X480

Filter

Body Size

Symbol	Size
20	1/8
30	3/8
40	1/2

NPT Threads

Port Size

Symbol	Port Size	Applicable Body Size
02	1/4	20
03	3/8	30
04	1/2	40

Note: Other sizes, thread forms, options, etc. may be possible, please contact SMC for availability.

With External Epoxy Coating, Stainless Fasteners

Name Plate, Caution Plate On Bowl in psi, °F

Bowl

Symbol	Description	Applicable Body Size
2	Metal Bowl	20
8	Metal Bowl With Sight Glass	30, 40

Accessories

Symbol	Description	Applicable Body Size
Nil	None	All
B*	Mounting Bracket	All
C	Float Auto Drain (N.C.)	30, 40
D	Float Auto Drain (N.O.)	30, 40

*Note: Bracket is not assembled and is supplied loose at time of shipment.

Specifications

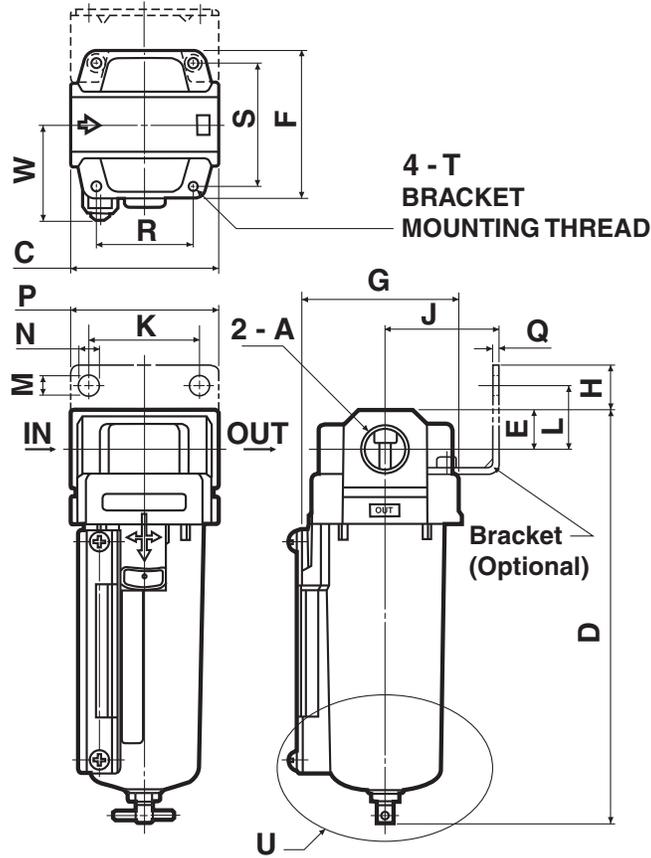| Body size	20	30	40
Operating specifications	Same as standard - see catalog ES40-42D or NC160A		
Port size	1/4" NPT	3/8" NPT	1/2" NPT
Auto drain port	N/A	1/4" NPT	
Bowl type	Metal	Metal with sight gauge	
Body material	Die cast aluminum		
Bowl material	Die cast aluminum		
Body, Bowl surface treatment	Epoxy resin coating		
Manual drain (AF, AW)	POM		
External screws	Stainless steel 410		
Individual mounting brackets	Epoxy coated steel		
Sight glass hardware	Stainless steel 304		

Dimensions - Refer to drawings on page 5

Standard
mm

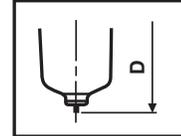| Model	Port Size A	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	T	W	Mounting Bracket Kit (Optional)
AF20	NPT 1/4	40	97	10	40	—	18	30	27	22	5.4	8.4	40	2.3	26	32	M4 X 0.7	—	AF20P-050AS-X480
AF30	NPT 3/8	53	149	14	53	57	16	41	40	23	6.5	8	53	2.3	35	44	M4 X 0.7	34.5	AF30P-050AS-X480
AF40	NPT 1/2	70	185	18	70	73	17	50	54	26	8.5	10.5	70	2.3	47	60	M5 X 0.8	41	AF40P-050AS-X480

Auto Drain
mm

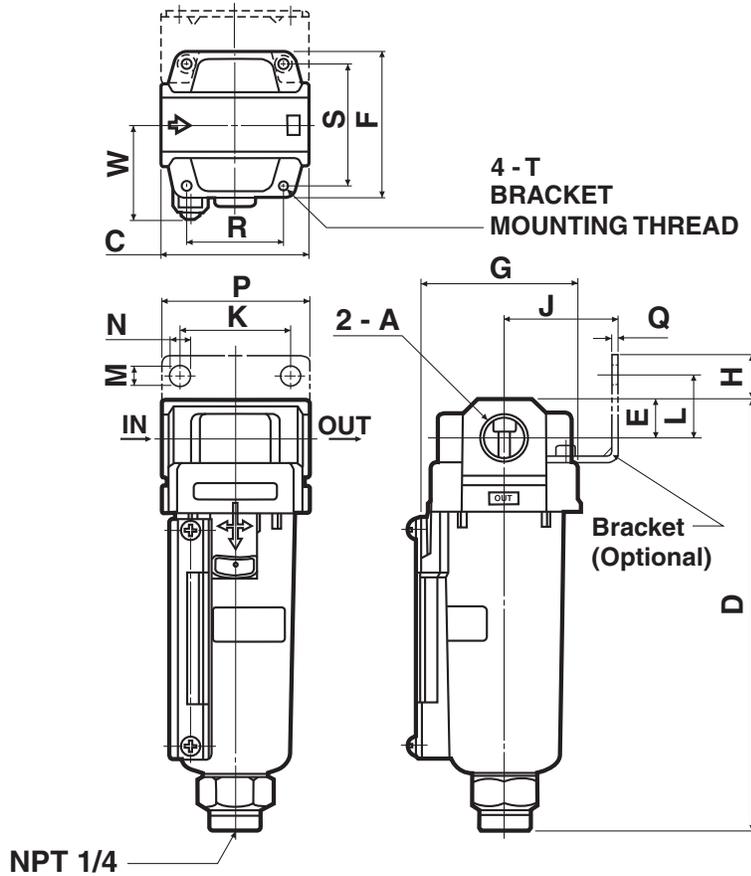| Model	Port Size A	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	T	W	Mounting Bracket Kit (Optional)
AF30	NPT 3/8	53	158	14	53	57	16	41	40	23	6.5	8	53	2.3	35	44	M4 X 0.7	34.5	AF30P-050AS-X480
AF40	NPT 1/2	70	194	18	70	73	17	50	54	26	8.5	10.5	70	2.3	47	60	M5 X 0.8	41	AF40P-050AS-X480

**Standard
(Manual Drain)**

4 - T
BRACKET
MOUNTING THREAD

P

N

M

IN   OUT

2 - A

G

J

Q

H

E

L

**Bracket
(Optional)**

**Bowl Detail U
(AF20)**

Note: Sight glass not
applicable to AF20.

U

With Auto Drain

4 - T
BRACKET
MOUNTING THREAD

N

M

IN   OUT

2 - A

G

J

Q

H

E

L

**Bracket
(Optional)**

NPT 1/4

How To Order

AW **30** — N **03** **D** — **8** **Z** - **X48**

- **Filter - Regulator**
- **Body Size**

Symbol	Size
20	1/8
30	3/8
40	1/2

- **NPT Threads**
- **Port Size**

Symbol	Port Size	Applicable Body Size
02	1/4	20
03	3/8	30
04	1/2	40

Note: Other sizes, thread forms, options, etc. may be possible, please contact SMC for availability.

- **With External Epoxy Coating, Stainless Fasteners**
- **Name Plate, Caution Plate On Bowl in psi, °F**
- **Bowl**

Symbol	Description	Applicable Body Size
2	Metal Bowl	20
8	Metal Bowl With Sight Glass	30, 40

- **Accessories**

Symbol	Description	Applicable Body Size
Nil	None	All
B*	Mounting Bracket	All
C	Float Auto Drain (N.C.)	30, 40
D	Float Auto Drain (N.O.)	30, 40
H*	Panel Mount Nut	All

*Note: Bracket and/or panel mount nut are not assembled and are supplied loose at time of shipment.

Specifications

Body size	20	30	40
Operating specifications	Same as standard - see catalog ES40-42D or NC160A		
Port size	1/4" NPT	3/8" NPT	1/2" NPT
Auto drain port	N/A	1/4" NPT	
Bowl type	Metal	Metal with sight gauge	
Body material	Die cast aluminum		
Bowl material	Die cast aluminum		
Body, Bowl surface treatment	Epoxy resin coating		
Bonnet	Polyacetal		
Manual drain (AF, AW)	POM		
External screws	Stainless steel 410		
Individual mounting brackets	Epoxy coated steel		
Panel mount nut	POM		
Sight glass hardware	Stainless steel 304		

Accessories

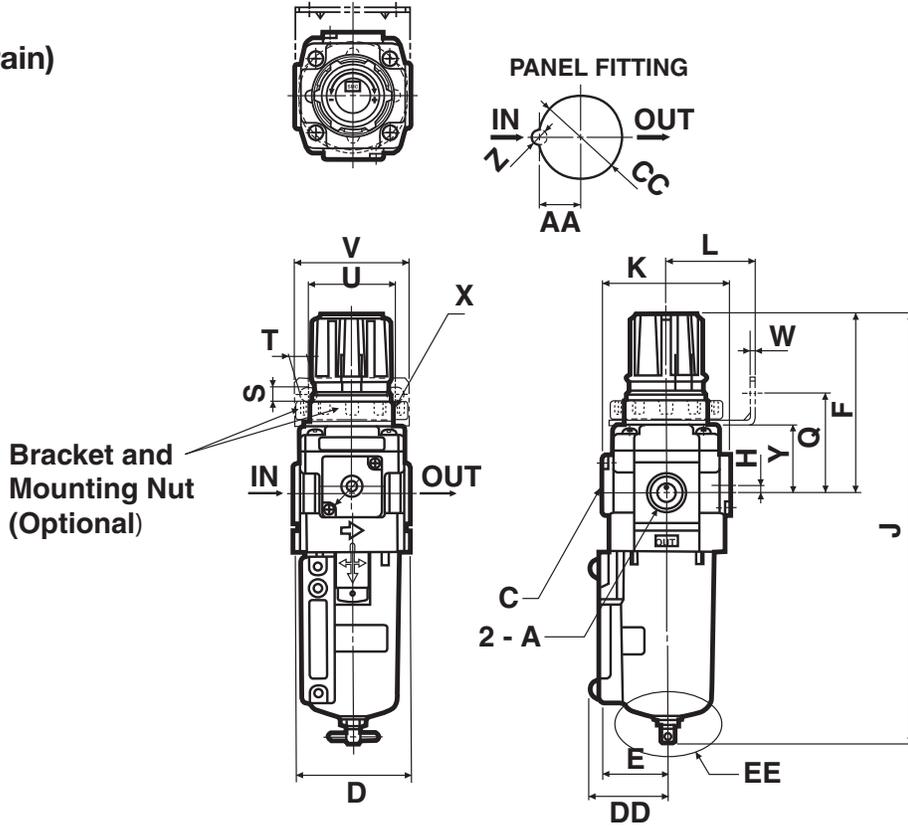| Model	Mounting Bracket Kit (Optional)	Panel Mounting Nut (Optional)
AW20	AW20P-270AS-X480	AR20P-260S
AW30	AR30P-270AS-X480	AR30P-260S
AW40	AR40P-270AS-X480	AR40P-260S

Dimensions - Refer to drawings on page 7

Standard
mm

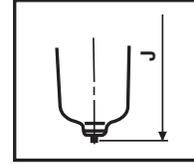| Model	Port Size A	Gauge Port C	D	DD	E	F	H	J	K	L	Q	S	T	U	V	W	X	Y	Z	AA	CC
AW20	NPT 1/4	NPT 1/8	40	—	—	70(max.73)	5	157(max.160)	52	30	44	5.4	15.4	34	55	2.3	M28 X 1	30	6	14	28.5
AW30	NPT 3/8	NPT 1/8	53	34.5	30	83(max.86)	3.5	218(max.221)	59	41	46	6.5	8	40	53	2.3	M38 X 1.5	31	7	19	38.5
AW40	NPT 1/2	NPT 1/4	70	41	38	88(max.92)	1.5	255(max.259)	75	50	54	8.5	10.5	54	70	2.3	M42 X 1.5	35.5	7	21	42.5

Auto Drain
mm

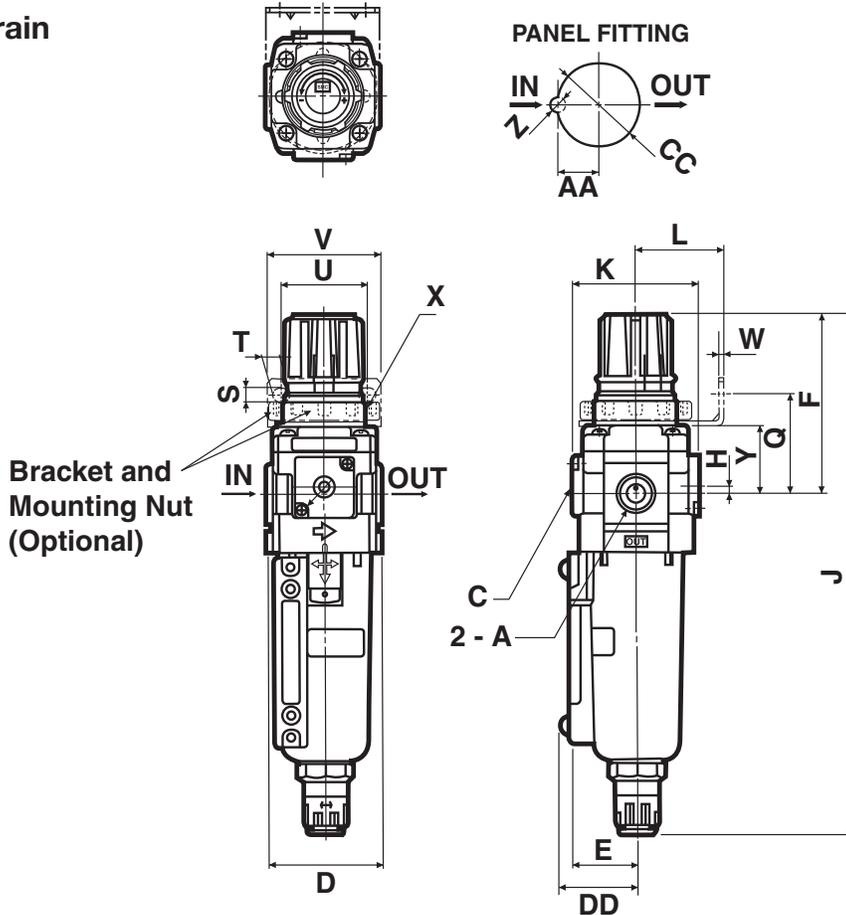| Model	Port Size A	Gauge Port C	D	DD	E	F	H	J	K	L	Q	S	T	U	V	W	X	Y	Z	AA	CC
AW30	NPT 3/8	NPT 1/8	53	34.5	30	83(max.86)	3.5	239(max.242)	59	41	46	6.5	8	40	53	2.3	M38 X 1.5	31	7	19	38.5
AW40	NPT 1/2	NPT 1/4	70	41	38	88(max.92)	1.5	276(max.280)	75	50	54	8.5	10.5	54	70	2.3	M42 X 1.5	35.5	7	21	42.5

Standard
(Manual Drain)

PANEL FITTING

IN / OUT

AA

Bowl Detail EE
(AW20)

Note: Sight glass not
applicable to AW20.

**Bracket and
Mounting Nut
(Optional)**

V
U
T
S
X
IN   OUT
D

K
L
W
F
Q
H
Y
J
C
2 - A
E
EE
DD

With Auto Drain

PANEL FITTING

IN / OUT

AA

CC

**Bracket and
Mounting Nut
(Optional)**

V
U
T
S
X
IN   OUT
D

K
L
W
F
Q
H
Y
J
C
2 - A
E
DD

How To Order

AR 20 — N 02 B — Y Z - X48

- **Regulator** ●

- **Body Size** ●

Symbol	Size
20	1/8
30	3/8
40	1/2

- **NPT Threads** ●

- **Port Size** ●

Symbol	Port Size	Applicable Body Size
02	1/4	20
03	3/8	30
04	1/2	40

- **With External Epoxy Coating, Stainless Fasteners**

- **Name Plate, Caution Plate On Bowl in psi, °F**

- **Handle Orientation**

Symbol	Description
Nil	Handle Down
Y	Handle Up

Note: Other sizes, thread forms, options, etc. may be possible, please contact SMC for availability.

- **Accessories**

Symbol	Description
Nil	None
B*	Mounting Bracket
H*	Panel Mount Nut

*Note: Bracket and/or panel mount nut are not assembled and are supplied loose at time of shipment.

Specifications

Body size	20	30	40
Operating specifications	Same as standard - see catalog ES40-42D or NC160A		
Port size	1/4" NPT	3/8" NPT	1/2" NPT
Body material	Die cast aluminum		
Body, Bowl surface treatment	Epoxy resin coating		
Bonnet	Polyacetal		
Individual mounting brackets	Epoxy coated steel		
Panel mount nut	POM		

Dimensions

mm

Model	Port Size	Gauge Port	Dimensions																	
	A	C	D	E	F	H	J	K	L	M	P	Q	S	T	U	V	W	X	Y	Z	AA
AR20	NPT 1/4	NPT 1/8	40	57	26.5	-2	91(max.94)	30	65	37.5	44	5.4	15.4	34	55	2.3	M28 X 1	6	14	28.5	25
AR30	NPT 3/8	NPT 1/8	53	59	31	3.5	113(max.116)	41	66	37.5	46	6.5	8	40	53	2.3	M38 X 1.5	7	19	38.5	31
AR40	NPT 1/2	NPT 1/4	70	68	36	3.5	124(max.128)	50	74	42.5	54	8.5	10.5	54	70	2.3	M42 X 1.5	7	21	42.5	35.5

Accessories

Model	Mounting Bracket Kit (Optional)	Panel Mounting Nut (Optional)
AR20	AR20P-270AS-X48	AR20P-260S
AR30	AR30P-270AS-X48	AR30P-260S
AR40	AR40P-270AS-X48	AR40P-260S

IN **OUT**

D **C** **E** **2 - A**

S **W** **T** **U** **Q** **F** **H** **AA** **P** **J** **V** **K**
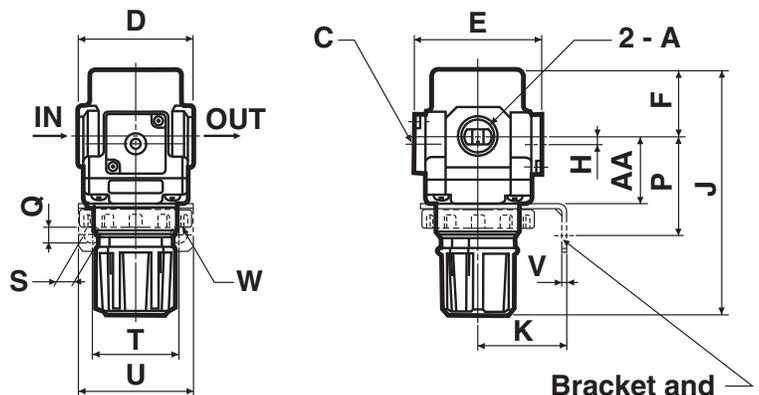
Bracket and Mounting Nut (Optional)

PANEL FITTING

IN **OUT** **Y**
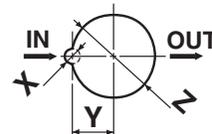
Plate Thickness
AR20, 30: Max 3.5
AR40: Max 5

How To Order

AL 20 — N 02 B — 2 Z - X480

- Lubricator •
- Body Size •

Symbol	Size
20	1/8
30	3/8
40	1/2

- NPT Threads •
- Port Size •

Symbol	Port Size	Applicable Body Size
02	1/4	20
03	3/8	30
04	1/2	40

- With External Epoxy Coating, Stainless Fasteners
- Name Plate, Caution Plate On Bowl in psi, °F
- Bowl

Symbol	Description	Applicable Body Size
2	Metal Bowl	20
8	Metal Bowl With Sight Glass	30, 40

- Accessories

Symbol	Description	Applicable Body Size
Nil	None	All
B*	Mounting Bracket	All

*Note: Bracket is not assembled and is supplied loose at time of shipment.

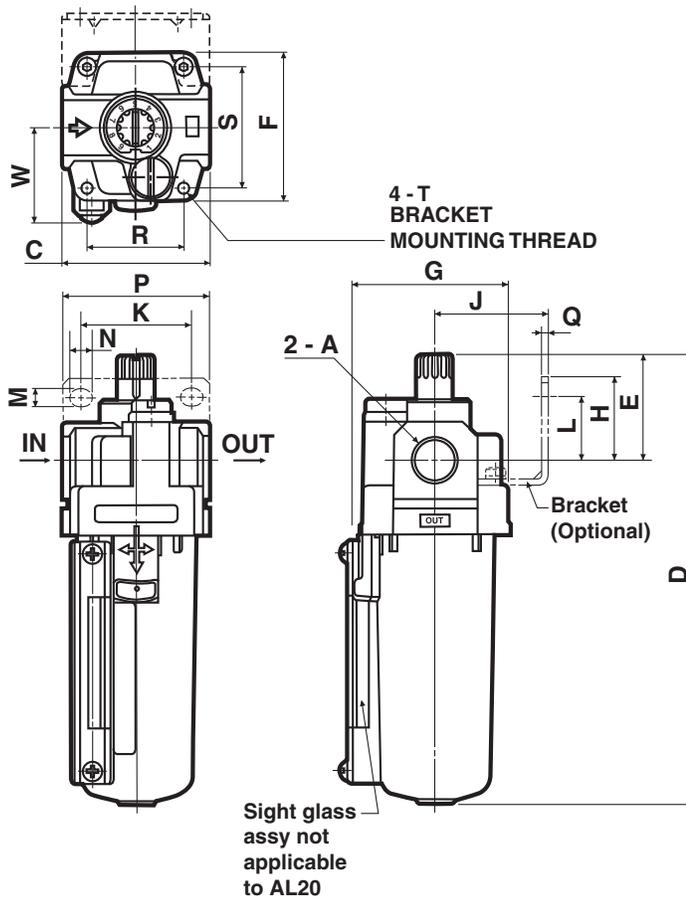Note: Other sizes, thread forms, options, etc. may be possible, please contact SMC for availability.

Specifications

Body size	20	30	40
Operating specifications	Same as standard - see catalog ES40-42D or NC160A		
Port size	1/4" NPT	3/8" NPT	1/2" NPT
Bowl type	Metal	Metal with sight gauge	
Body material	Die cast zinc	Die cast aluminum	
Bowl material	Die cast aluminum		
Body, Bowl surface treatment	Epoxy resin coating		
Individual mounting brackets	Epoxy coated steel		
Fill plug	Stainless steel 304		
Sight dome	Polycarbonate		
Sight glass hardware	Stainless steel 304		

Dimensions

mm

Model	Port Size A	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	T	W	Mounting Bracket Kit (Optional)
AL20	NPT 1/4	40	121	36	40	—	28	30	27	22	5.4	8.4	40	2.3	26	32	M4 X 0.7	—	AF20P-050AS-X480
AL30	NPT 3/8	53	162	38	53	57	30	41	40	23	6.5	8	53	2.3	35	44	M4 X 0.7	34.5	AF30P-050AS-X480
AL40	NPT 1/2	70	196	40	70	73	35	50	54	26	8.5	10.5	70	2.3	47	60	M5 X 0.8	41	AF40P-050AS-X480

4 - T
BRACKET
MOUNTING THREAD

2 - A

IN   OUT

Bracket (Optional)

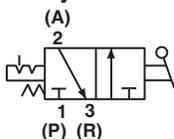Sight glass assy not applicable to AL20

Accessories

Residual Pressure Relief 3 Port Valve (V)

With the use of a 3 port valve for residual pressure release, pressure left in the line can be easily exhausted.

JIS Symbol

Lockable at the time of exhaust

Model	Port Size		Effective area mm² (Cv)	
	IN, OUT	EXH	IN to OUT	OUT to EXH
VHS20	1/4	1/8	14 (0.76)	16 (0.87)
VHS30	3/8	1/4	31 (1.68)	29 (1.57)
VHS40	1/2	3/8	55 (2.98)	42 (2.28)

Paint color (Standard) Handle: Red Body: Platinum silver
Use an air filter on the IN side for operating protection.

How To Order

VHS 30 — N 02 — Z - X513

Residual Pressure Relief 3 Port Valve

Body Size

Symbol	Applicable Model
20	AC21
30	AC31
40	AC41

Thread Type

N	NPT

Body Size

Symbol	Port Size	Body Size		
		20	30	40
02	1/4	●		
03	3/8		●	
04	1/2			●

● With External Epoxy Coating, Stainless Fasteners

● Name Plate In Imperial Units (PSI, °F)

Note: Other sizes, thread forms, options, etc. may be possible, please contact SMC for availability.
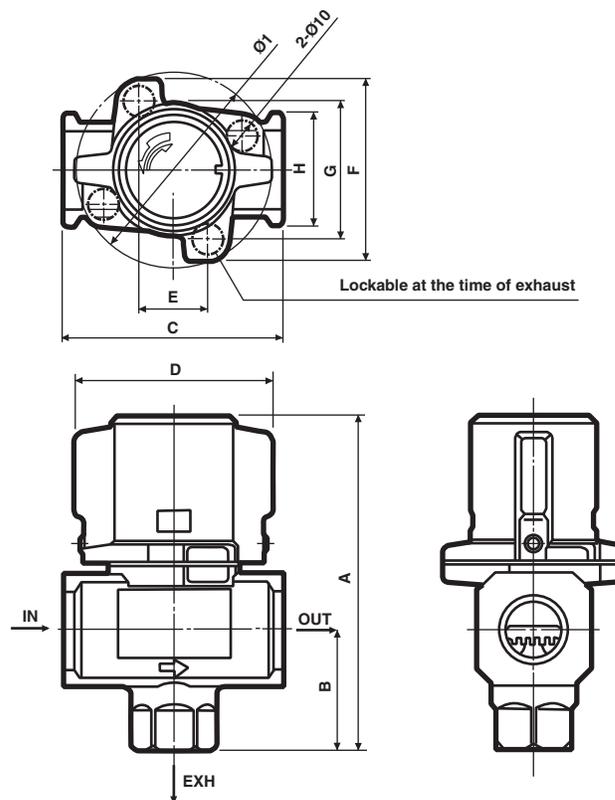
Dimensions
mm

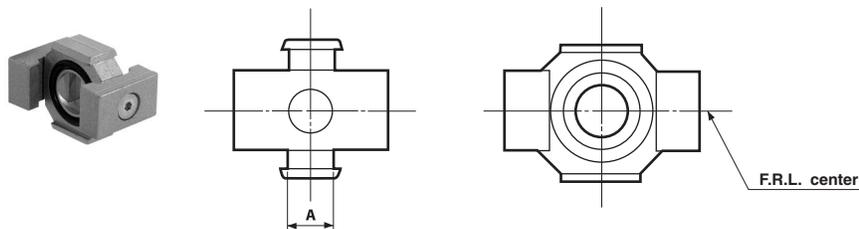| Model	A	B	C	D	E	F	G	H	I
VHS20	59	20	40	34	—	45	33	28	45
VHS30	78	29	53	46	—	55	42	30	55
VHS40	107	39	70	63	22	58	44	36	63

Caution

● If a stop valve or a silencer is connected to the exhaust port of VHS20/30, the effective sectional area should be larger than the figure indicated in the following table, to prevent malfunction caused by back pressure. (This is not applicable to VHS40)

Model	Effective area (mm²)
VHS20	5
VHS30	5

● If unit is to be used in a washdown application, avoid directing fluid into the exhaust port.

Spacer
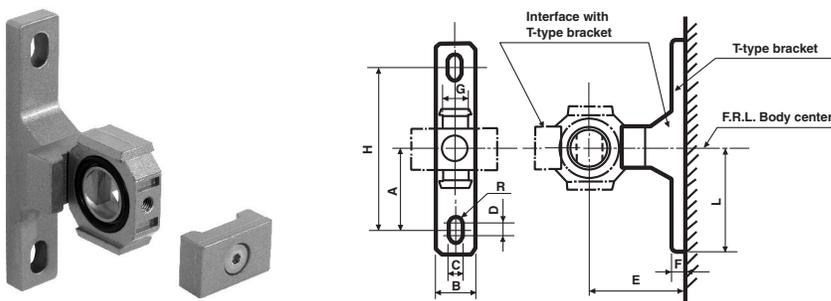
Epoxy Coated Aluminum,
Stainless Screws,
NBR Seals

F.R.L. center

Dimensions
mm

Model	A
Y20-T4	10
Y30-T4	11
Y40-T4	14

Interface With T Bracket

Epoxy Coated Aluminum, Stainless Screws,
NBR Seals

Interface with
T-type bracket

T-type bracket

F.R.L. Body center

Dimensions
mm

Interface With T Bracket	A	B	C	D	E	F	G	H	R	L	Applicable Models
Y20T-T4	24	15	5.5	3	30	5	10	48	2.75	33	AC21*-X2217
Y30T-T4	35	16	7	4	41	7	11	70	3.5	45	AC31*-X2217
Y40T-T4	40	22	9	4	50	7	14	80	4.5	50	AC41*-X2217

Other Available Air Line Products with Epoxy Coating/Stainless Hardware

Series	Description	Option Code
(N)AV	Soft Start Valve	X480
AMG	Water Removal Filter	X229
AR20-60	Regulator with Stainless T-handle, aluminum bonnet for UV resistance	X480
AVL	Soft Start Valve with Pilot Lock-Out	X480
AW20-40	Filter-Regulator with Stainless T-handle, aluminum bonnet for UV resistance	X480
E*00	Piping Adapter	X480
Y*10	T Interface	X480
Y*4	Cross Interface	T3

Please contact SMC for ordering information

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Salt Spray Test Results (for reference)

1. Test Conditions

1) Method: In compliance with ASTM B117-07a (JIS Z 2371), leave parts in a salt spray test chamber, and compare rust generation.

2) Conditions: Temperature: 95℉ (35℃) Salt Water Concentration: 5%

3) Time: 1000 hours [Frequency: 0hr, 24hrs, 48hrs, 72hrs, 96hrs, 168hrs, 240hrs, 480hrs, 720hrs, 1000hrs]

4) Samples: Parts for AF and AW30 (See Figure 1.)

• Part descriptions: 4 parts (1) Body (2) Drain cock (3) Small screw for level gauge (4) Bonnet screw

• Types: 2 Types A) Standard B) Special X480 (Coated with epoxy resin [External metal parts are made of SUS])

• Refer to Table 1 for part materials and treatments. *Quantity; 2 pieces for each

2. Test Results   Table 1 Salt spray resistance test results

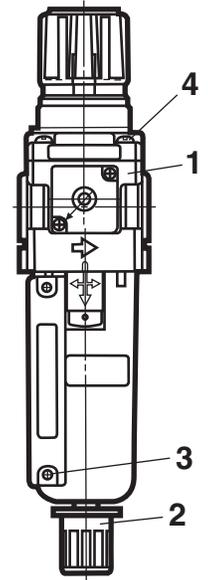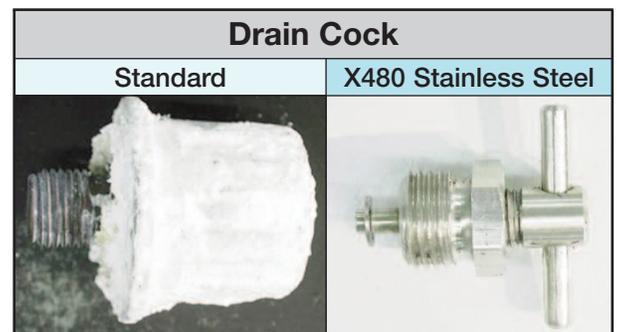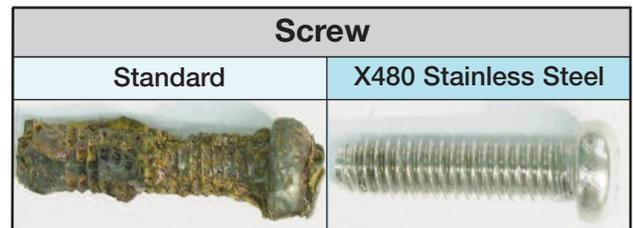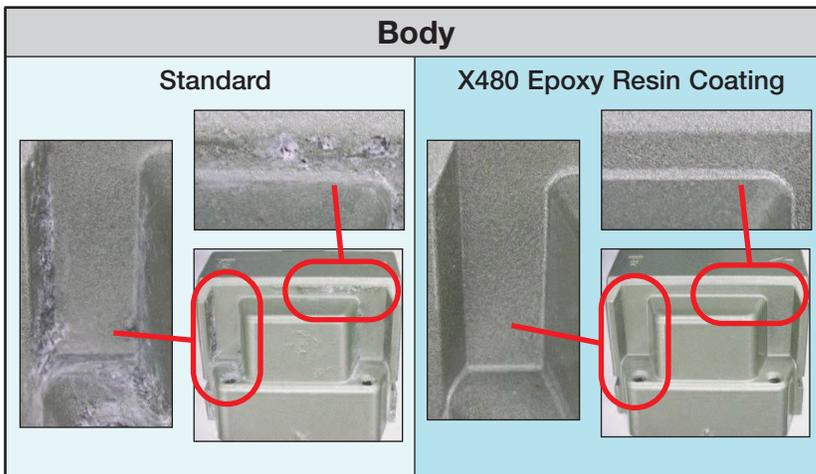| No.	Description	Type		Material & Treatment	Results
1	Body	A	Standard	Material: Die Cast Aluminum Treatment: Platinum Coating	Rusted in 480hrs Part of coating swelled
		B	Special X480	Material: Die Cast Aluminum Treatment: Platinum & Epoxy Coating	Not rusted in 1000hrs Part of coating swelled
2	Drain cock	A	Standard	Material: Die Cast Aluminum Treatment: Zinc Chromate	Rusted in 24hrs
		B	Special X480	Material: SUS	Not rusted in 1000hrs
3	Cross recessed round head screw for metal bowl with level gauge	A	Standard	Material: Steel Treatment: Nickel Plating	Rusted in 24hrs
		B	Special X480	Material: SUS	Not rusted in 1000hrs
4	Self-tapping screw for AR and AW bonnet	A	Standard	Material: Steel Treatment: Zinc Chromate	Rusted in 24hrs
		B	Special X480	Material: SUS	Not rusted in 1000hrs

Figure 1

Body	
Standard	X480 Epoxy Resin Coating

Screw	
Standard	X480 Stainless Steel

Drain Cock	
Standard	X480 Stainless Steel

⚠ **Caution!** To ensure the safest possible operation of this product, please be sure to read thoroughly the "Safety Instructions" in our "Best Pneumatics" catalog before use.