Boosters, Intensifiers, Reservoirs, & Tanks

Boosters, intensifiers, reservoirs, and tanks all help manage and sometimes improve the air movement inside your pneumatic systems.

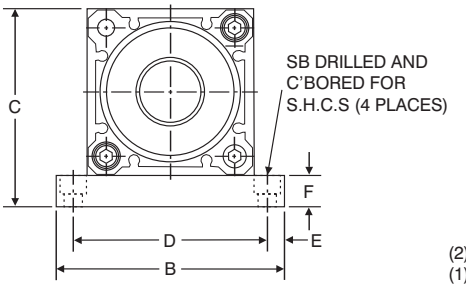
Series: Auto Reciprocating Air Booster – Model Numbers: AB121 & AB221

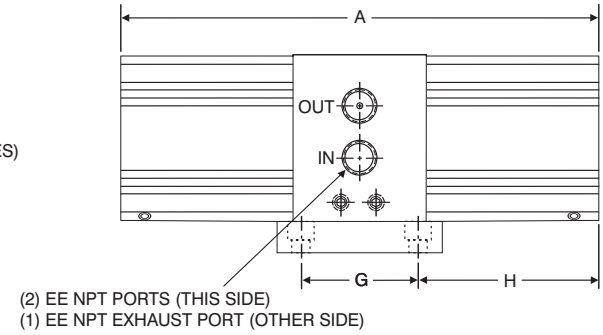
This 2:1 ratio air-to-air booster is compact and self-contained. Unit incorporates integral valve components to perform auto-reciprocating function.

Can amplify inadequate air pressure in the following situations:

Cylinders or Grippers: When space isn't available, a smaller bore or model size can be used with higher input PSI to achieve the desired output or grip force.

Problem Solver: Sometimes a cylinder or gripper was sized for an application, but in use, does not perform up to the production requirements. Increasing the input PSI can provide a quick and cost effective solution.





Auto Reciprocating Air Booster Dimensions

Part No.	A	B	C	D	E	F	G	H	EE NPT	SB Diameter
AB121	7.33	3.50	3.04	2.98	0.26	0.48	1.79	2.77	1/4 NPT	1/4
AB221	14.20	7.00	6.00	5.95	0.53	1.00	3.58	5.31	1/2 NPT	1/2

Engineering Specifications

Maximum Input Pressure: 125 PSI

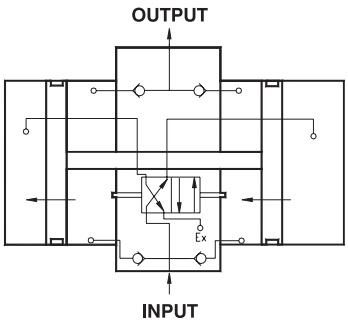
Operating Temperature: 15° to 160°F

Lubrication: HT-99 oil; Pre-lubricated

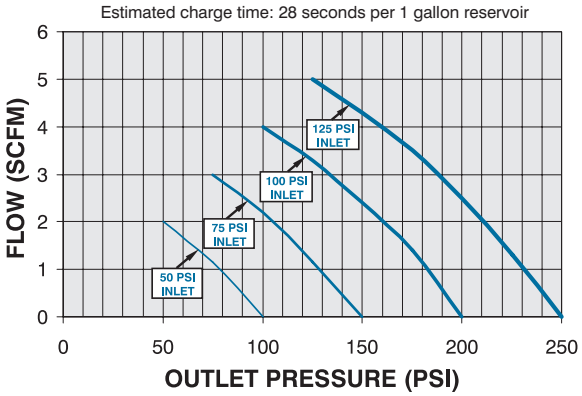
Bodies and Center Section: Aluminum; Hard Coat with PTFE

Mounting Plate: Anodized Aluminum

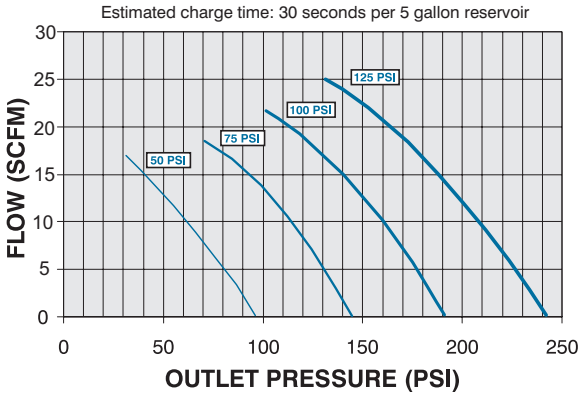
NOTE: Bimba Air Boosters are designed for intermittent duty usage such as maintaining pressure in an air reservoir. Continuous cycling decreases seal life. Max boosted pressure will be 10% to 20% less than 2x input pressure due to system pressure drops.



AB121 Flow Data



AB221 Flow Data



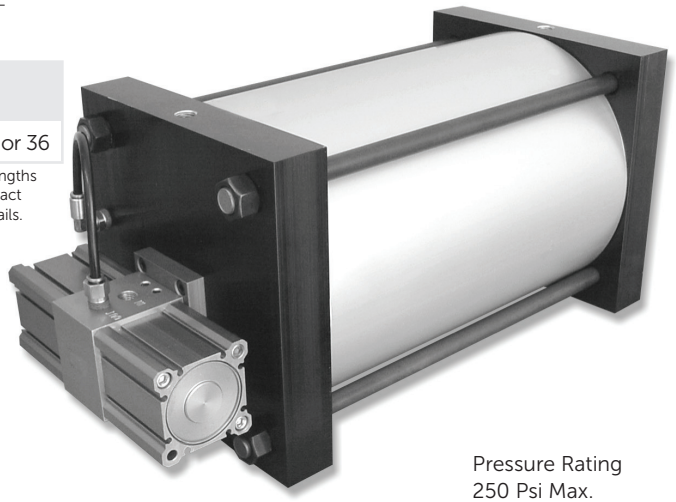
Series: AB121 With Air Reservoir

Model AB121 Air Booster furnished with Air Reservoir. Anodized Aluminum Tube and End Cap construction.

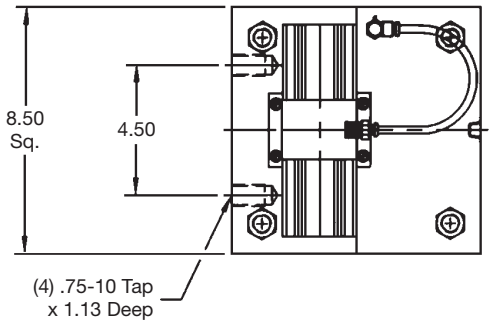
AB121 - ARB 800 x 36

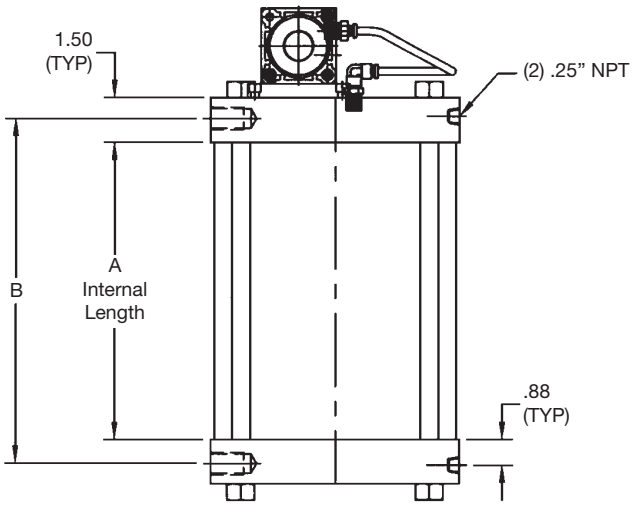
Auto Reciprocating Air Booster	Air Reservoir for Booster	8" Bore Size	Internal Length
			12, 18, 24, or 36

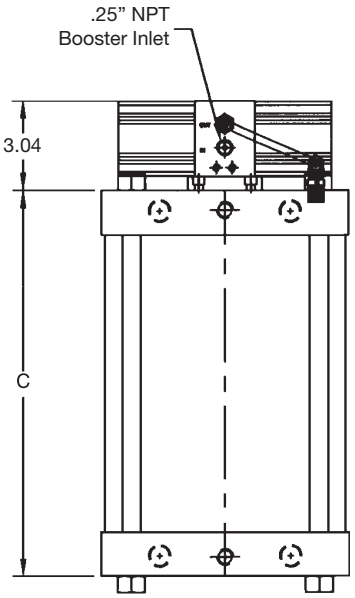
Note: Other lengths available. Contact factory for details.



Pressure Rating
250 Psi Max.







Series AB121-ARB800 X __ – Air Booster Model AB121 Mounted And Piped To ARB800 Air Reservoir

Part Number & Volume					Internal Length (Inches)	Dimensions	
Part No.	Tank Bore	Area	Gal. Per In. Of Tank	Total Cu. Ft. Per Tank *	A	B	C
AB121-ARB800 X 12	8	50.26	.2175	.349	12	13.63	15
AB121-ARB800 X 18	8	50.26	.2175	.523	18	19.63	21
AB121-ARB800 X 24	8	50.26	.2175	.698	24	25.63	27
AB121-ARB800 X 36	8	50.26	.2175	1.047	36	37.63	39

*Internal Volume of reservoir.

Series: Air To Air Intensifier/Air To Hydraulic Intensifiers

Air-to-Air or Air-to-Hydraulic intensifiers are single-shot, one output per stroke design.

Benefits of Air to Air Intensifiers:

- Quick Response
- High Volume Outputs Available
- Simple Design
- Heavy-Duty Construction

Benefits of Air to Hydraulic Intensifiers:

- Quick Response
- High Volume Outputs Available
- Intensified Material Can Be Oil or Other Media
- Can Be Used For Measuring and Dispensing

Series: Air To Air Intensifier and Air To Hydraulic Intensifiers

Cyl. #1 | **Cyl. #2**

AI - TA - MS4 - 5 x 10 - MPR with MX0 - 2.50 x 10 - TH

Air Intensifiers

Series

TA	250 PSI Air
TD	250 PSI Air
SS	Stainless Steel (300 Series)

NFPA Mounts

MX0	No Mount (1.50" - 12.00" Bore)
MF1	Front Flange (1.50"-6.00" Bore)
MS2	Side Lug (1.50"- 4.00" Bore Std., 5.00" & Above Consult Factory)
MS4	Bottom Tapped Holes (1.50"-12.00" Bore)

Bore

Cyl. 1	Cyl. 2
3.25	1.50
4.00	2.00
5.00	2.50
6.00	3.25
8.00	4.00
10.00	5.00
12.00	6.00
–	8.00

Stroke (Cyl. #1)

0" to 50" Made-To-Order

Cylinder #2 Series

Options (Cyl. #1 or Cyl. #2)

	AS	Adjustable Stroke - Retract (Specify Length, Example: AS = 4")
»	B	.25" Urethane Bumper Both Ends
»	BC	.25" Urethane Bumper Cap Only
»	BH	.25" Urethane Bumper Head Only
	BP	BSPP/BSPT Ports - Bumper Piston Seals (1.50" - 8.00" Bore)
	BSPP	British Standard Pipe Taper
	BSPT	British Standard Pipe Parallel
	H	Head Cushion
	C	Cap Cushion
	MA	Micro-Adjust (12" Max. Stroke) Available On Double Rod End Models
	MAB	Micro-Adjust With Sound Dampening Bumper (12" Max. Stroke)
	MPR	Magnetic Piston For Reed Or Solid State Switches (Models: R10, RAC, and MSS)
	OP	Optional Port Location (Example: OP=3,7)
	SAE	SAE Ports (Specify Size, Example: SAE #10)
	SSA	Stainless Steel Piston Rod, Tie Rods & Nuts, and Fasteners
	SSF	Stainless Steel Fasteners
	SSN	Stainless Steel Tie Rod Nuts
	SSP	Solid Stainless Steel Piston
	SSR	Stainless Steel Piston Rod
	SST	Stainless Steel Tie Rods
	TH	400 PSI Hydraulic Non-Shock
	VS	Fluorocarbon Seals
	XX	Special Variation (Specify)

Note: Refer to Options for specifications.
**Bumpers add .25" per end to cylinder length.
» Adds Length To Cylinder - See "Option Length Adder" Chart Below.

About our Part Number System

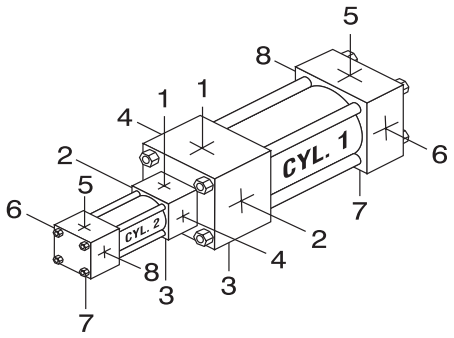
- Simple, easy to understand
- No excessive codes!
- Eliminates mistakes when ordering

Example: Cyl. 1 is a standard 'TA' series, MS4 mount, 5" bore X 10" stroke, with a magnet (for Reed Switches),Air-to-Hydraulic Cylinder. Cyl. 2 is a 'TA' series, MX0 (no mount), 2.50" bore X 10" stroke with "TH" option.

Part Number:
AI - TA - MS4 - 5 x 10- MPR with TA - MX0 - 2.50 x 10 - TH

Standard Port and Cushion Adjustment Positions

- Ports - Positions 1 and 5 (both cylinders)
- Cushion Adjustment - Positions 2 and 6 (Cyl. #1), Positions 4 and 8 (Cyl. #2)
- Specify Non-Standard Positions When Ordering



Air To Air and Air To Hydraulic Intensifier Cylinders

Two (2) strokes must be the same, rods are connected.

Air To Air Intensifiers – Standard Combinations

Cyl. #1		Cyl. #2		Intensifier Ratio	Output (PSI) of Cyl. #2 @ Input Pressure Of:			
Bore	Area	Bore	Area		50	80	100	120
3.25	8.296	1.50	1.767	4.69	235			
		2.00	3.142	2.64	132	211	264	
4.00	12.566	2.00	3.142	4	200			
		2.50	4.909	2.56	128	205	256	
5.00	19.635	2.50	4.909	4	200			
		3.25	8.296	2.37	119	190	237	
6.00	28.274	3.25	8.296	3.41	171			
		4.00	12.566	2.25	113	180	225	
8.00	50.265	4.00	12.566	4	200			
		5.00	19.635	2.56	128	205	256	
		6.00	28.274	1.78	89	143	178	214
10.00	78.54	5.00	19.635	4	200			
		6.00	28.274	2.78	139	223		
12.00	113.10	6.00	28.274	4	200			
		8.00	50.265	2.25	113	180	225	

Note: Cyl. #2 Output Not To Exceed 250 PSI.
Intensifier Ratio = Cyl. #1 Area / Cyl. #2 Area
Output Pressure = Input Pressure X Intensifier Ratio

Note: Usable volume of air-to-air output will not match cylinder #2 volume due to compressibility of air.

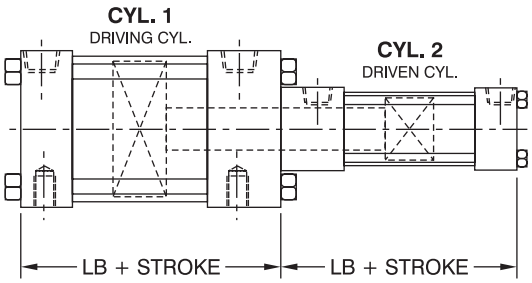
For complete dimensions, refer to 'TA' section of catalog.

Air To Hydraulic Intensifiers – Standard Combinations

Cyl. #1		Cyl. #2		Intensifier Ratio	Output (PSI) Of Cyl. #2 @ Input Pressure Of:			
Bore	Area	Bore	Area		50	80	100	120
3.25	8.296	1.50	1.767	4.69	235	375		
		2.00	3.142	2.64	132	211	264	317
4.00	12.566	1.50	1.767	7.11	356			
		2.00	3.142	4	200	320	400	
		2.50	4.909	2.56	128	205	256	307
5.00	19.635	2.00	3.142	6.25	313			
		2.50	4.909	4	200	320	400	
		3.25	8.296	2.37	119	190	237	284
6.00	28.274	2.50	4.909	5.76	288			
		3.25	8.296	3.41	171	273	341	
		4.00	12.566	2.25	113	180	225	270
8.00	50.265	3.25	8.296	6.06	303			
		4.00	12.566	4	200	320	400	
		5.00	19.635	2.56	128	205	256	307
		6.00	28.274	1.78	89	143	178	214
10.00	78.54	4.00	12.566	6.25	313			
		5.00	19.635	4	200	320	400	
		6.00	28.274	2.78	139	223	278	334
12.00	113.10	5.00	19.635	5.76	288			
		6.00	28.274	4	200	320	400	
		8.00	50.265	2.25	113	180	225	270

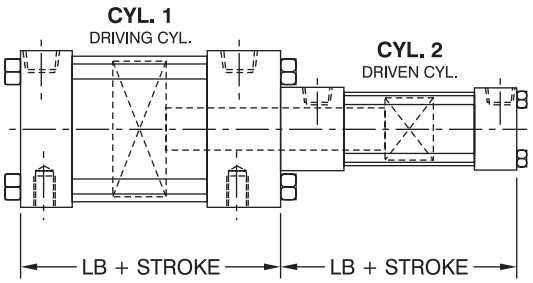
Note: Cyl. #2 Output Not To Exceed 400 PSI Non-Shock.
Intensifier Ratio = Cyl. #1 Area / Cyl. #2 Area
Output Pressure = Input Pressure X Intensifier Ratio

Air To Air Intensifiers – Basic Dimensions



Bore	LB	Bore	LB	Bore	LB
1.50	3.625	4.00	4.250	10.00	6.375
2.00	3.625	5.00	4.500	12.00	6.875
2.50	3.750	6.00	5.000		
3.25	4.250	8.00	5.125		

Air To Hydraulic Intensifiers – Basic Dimensions



Bore	LB	Bore	LB	Bore	LB
1.50	3.625	4.00	4.250	10.00	6.375
2.00	3.625	5.00	4.500	12.00	6.875
2.50	3.750	6.00	5.000		
3.25	4.250	8.00	5.125		

Cylinder Volumes (Per Inch Of Cylinder Stroke)

Bore	Area	Gal. Per In. Of Stroke	Bore	Area	Gal. Per In. Of Stroke	Bore	Area	Gal. Per In. Of Stroke
1.50	1.767	.0076	4.00	12.566	.0054	10.00	78.54	.340
2.00	3.142	.0136	5.00	19.635	.085	12.00	113.10	.4896
2.50	4.909	.0213	6.00	28.274	.122			
3.25	8.296	.0359	8.00	50.265	.2175			

Notes: (To Figure Volumes) Cubic Inches = Area X Stroke Gallons = $\frac{\text{Area X Stroke}}{231}$

Example: 3.25" Bore X 16" Stroke Cylinder = 8.296 X 16 = 132.736 Cu. In. Or .575 Gallons

Cylinder Volumes (Per Inch Of Cylinder Stroke)

Bore	Area	Gal. Per In. Of Stroke	Bore	Area	Gal. Per In. Of Stroke	Bore	Area	Gal. Per In. Of Stroke
1.50	1.767	.0076	4.00	12.566	.0054	10.00	78.54	.340
2.00	3.142	.0136	5.00	19.635	.085	12.00	113.10	.4896
2.50	4.909	.0213	6.00	28.274	.122			
3.25	8.296	.0359	8.00	50.265	.2175			

Notes: (To Figure Volumes) Cubic Inches = Area X Stroke Gallons = $\frac{\text{Area X Stroke}}{231}$

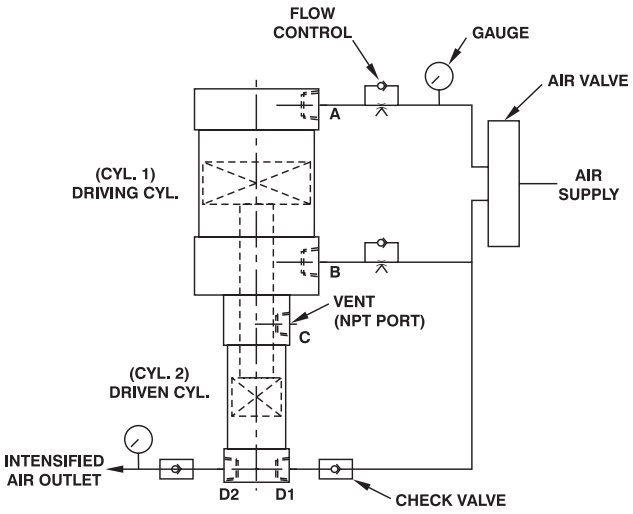
Example: 3.25" Bore X 16" Stroke Cylinder = 8.296 X 16 = 132.736 Cu. In. Or .575 Gallons

Air to Air Intensifiers – Schematics

- Same Stroke In Each Cylinder
- Rods Are Connected

Actuation Sequence:

- Pressure To Ports 'A' Extends Cylinder
- Pressure To Ports 'B' Retracts Cylinder



Example:

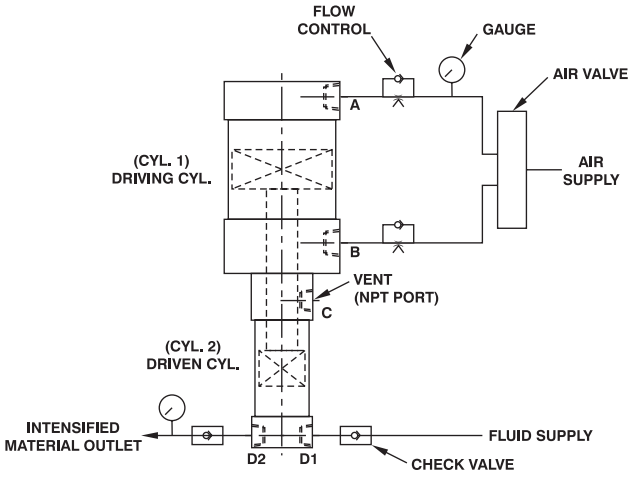
Shown is an air to air intensifier for applications requiring supply to be intensified. Supply air to port 'A' will stroke cylinder and intensified air will exit port 'D2'. To return cylinder supply air to port 'B' two (2) flow controls used to regulate cylinder speed.

Air to Hydraulic Intensifiers – Schematics

- Same Stroke In Each Cylinder
- Rods Are Connected

Actuation Sequence:

- Pressure To Ports 'A' Extends Cylinder
- Pressure To Ports 'B' Retracts Cylinder



Example:

Shown is an air to hydraulic intensifier for applications requiring fluid supply to be intensified. Supply air to port 'A' will stroke cylinder and intensified material will exit port 'D2'. To return cylinder supply air to port 'B' two (2) flow controls used to regulate cylinder speed.

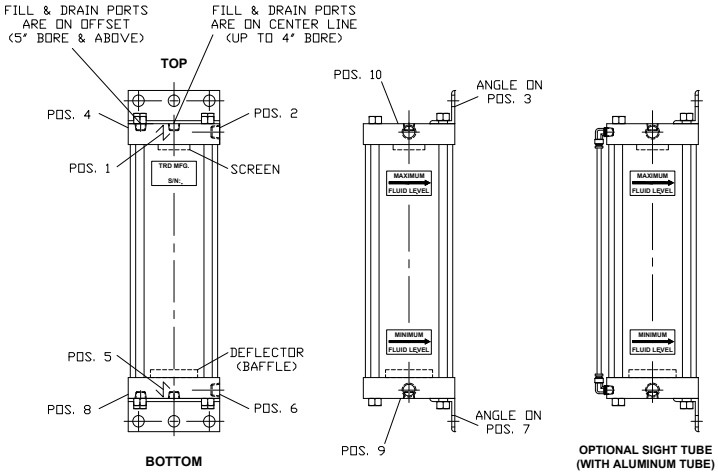
AT – Air/Oil Tanks

Features:

- 250 PSI operating pressure
- Aluminum end caps
- Internal baffles to reduce aeration and foaming
- Fiber wound translucent tube
- Optional aluminum tube with sight glass
- Side lug mount (MS2) optional
- Fill port located in top, drain port in bottom cap
- Optional oversized ports for high flow applications or SAE and BSP ports

The IMI Bimba air/oil system gives you the smooth operation typically associated with hydraulic systems but without the expense. Uses shop air, two air/oil tanks and a cylinder equipped with "TH" (hydraulic seals). Low initial investment and low maintenance to operate.

Tanks need to be mounted above the cylinder but not necessarily by the cylinder. This will create a self-purging oil circuit. It is advisable to size tanks 30-50% larger than cylinder volume in order to prevent the tanks from running dry and to allow for heat expansion.



Plus Internal Length

Sizing Your Air/Oil Tank:

1. Determine the cylinder volume by multiplying the square inches of piston area by the inches of stroke (see Table B). Add 30-50% to determine actual tank size.
2. Find the volume closest to your tank volume requirement in Table C. Note: Tanks of smaller diameters with greater lengths are generally less expensive than larger diameter, short tanks of equal volume.

How To Order:

Specify bore and internal length required.

Example 1: AT250 x 14
(2.50" bore, 14" internal tank length with a usable volume of 52 cubic inches)

Example 2: AT250 x 14 - Aluminum tube and sight glass
(Example 1 with optional sight glass and aluminum tube)

AT - **x**

Air Tank

Bore Size
250 (2.50" Bore)
325 (3.25" Bore)
400 (4.00" Bore)
500 (5.00" Bore)
800 (8.00" Bore)

Internal Length
1" to 120"

AT – Air/Oil Tanks

Part Number & Volume				Plus Internal Length	Tank Dimensions						
Part No.	Bore	Area	Gals Per Inch Tank*	B	AH	C	D	E	F	G	H
AT250	2.50	4.91	.0213	4.000	1.625	3.000	2.250	1.125	0.438	0.375	0.375
AT325	3.25	8.29	.0359	5.000	1.938	3.750	2.750	1.375	0.563	0.500	0.375
AT400	4.00	12.56	.0544	5.000	2.250	4.500	3.500	1.750	0.563	0.500	0.375
AT500	5.00	19.64	.085	5.250	2.750	5.500	4.250	2.125	0.688	0.500	0.375
AT800	8.00	50.26	.2175	6.625	4.250	8.500	7.125	3.563	0.688	0.750	0.750

* This is total internal volume, not recommended usable oil capacity.
** Fill and drain ports located at top & bottom of air oil tank.
! On the AT500 & AT800 the fill & drain ports are not on centerline.
Note: When torquing Air/Oil Tank tie rods, refer to page 280 for specifications.

TYPICAL AIR-OIL CIRCUIT

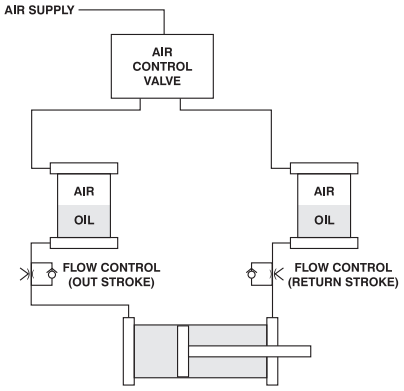


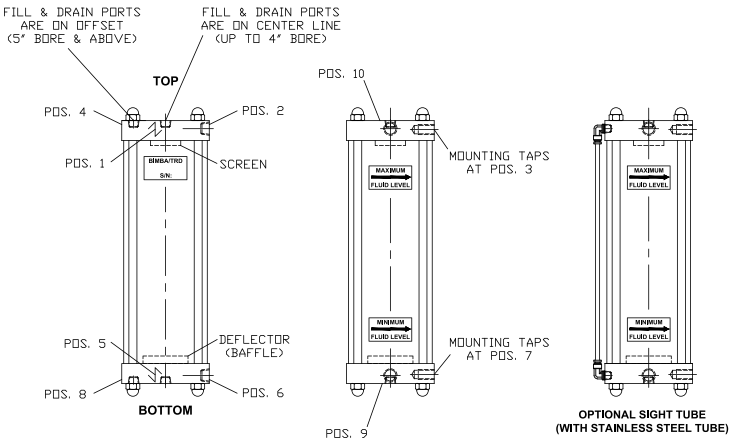
Table B - Cylinder Piston Area	
Cylinder Bore (in.)	Piston Area (sq. in.)
1.50	1.77
2.00	3.14
2.50	4.91
3.25	8.30
4.00	12.57
5.00	19.64
6.00	28.27
8.00	50.27

Table C - Recommended Usable Tank Volume (Cubic Inches) With 30% Safety Factor																	
Bore	Area	Actual Internal Length Of Tank															
		5	6	7	8	9	10	12	14	16	18	20	25	30	35	40	45
2.50	4.91	17	20	24	27	31	34	41	48	55	61	68	86	103	120	137	154
3.25	8.30	29	34	40	46	52	58	69	81	93	104	116	145	174	203	232	261
4.00	12.57	44	52	61	70	79	88	105	123	140	158	176	220	264	308	352	396
5.00	19.64	68	82	96	110	123	137	165	192	220	247	275	343	412	481	550	618
8.00	50.27	176	211	246	281	317	352	422	493	563	633	704	880	1056	1232	1408	1584

SS-AT – Air/Oil Tanks

Features:

- 300 series stainless steel hardware
- 250 PSI operating pressure
- Internal steel baffles to reduce aeration and foaming
- Fiber wound translucent tube (non-FDA material)
- Optional stainless steel tube with sight glass (FDA approved materials)
- Standard mount (MS4; four-tapped mounting holes back side)
- Side lug mount (MS2) optional
- Fill port located in top, drain port in bottom cap
- Optional oversized ports for high flow applications or SAE and BSP ports



The Bimba air/oil system gives you the smooth operation typically associated with hydraulic systems but without the expense. Uses shop air, two air/oil tanks and a cylinder equipped with "TH" (hydraulic seals). Low initial investment and low maintenance to operate.

Tanks need to be mounted above the cylinder but not necessarily by the cylinder. This will create a self-purging oil circuit. It is advisable to size tanks 30-50% larger than cylinder volume in order to prevent the tanks from running dry and to allow for heat expansion.

Sizing Your Air/Oil Tank:

1. Determine the cylinder volume by multiplying the square inches of piston area by the inches of stroke (see Table B). Add 30-50% to determine actual tank size.
2. Find the volume closest to your tank volume requirement in Table C. Note: Tanks of smaller diameters with greater lengths are generally less expensive than larger diameter, short tanks of equal volume.
3. To order, specify bore and internal length required. Example: SS-AT250 x 14 (2.50" bore, 14" internal tank length, with a usable volume of 52 cubic inches).

How To Order:

Specify bore and internal length required.

Example 1: SS-AT250 x 10
(2.50" bore, 10" internal tank length with a usable volume of 52 cubic inches)

Example 2: SS-AT800 x 25
(8" bore, 25" internal tank length with a usable volume of 92 cubic inches)

SS-AT - **x**

Stainless Steel Air Tank

Bore Size
250 (2.50" Bore)
325 (3.25" Bore)
400 (4.00" Bore)
500 (5.00" Bore)
800 (8.00" Bore)

Internal Length
1" to 120"

SS-AT – Air/Oil Tanks

SS-AT Model			Plus Internal Length	Tank Dimensions					
Part No.	Bore	Gals Per Inch Tank*	B	C	D	F	G	EE	EE1
SS-AT250	2.50	0.0213	2.000	3.000	1.250	0.438	3/8-16 x 0.625 DEEP	0.375	0.375
SS-AT325	3.25	0.0359	2.500	3.750	1.500	0.563	1/2-13 x 0.750 DEEP	0.500	0.375
SS-AT400	4.00	0.0544	2.500	4.500	2.063	0.563	1/2-13 x 0.750 DEEP	0.500	0.375
SS-AT500	5.00	0.0850	2.500	5.500	2.688	0.688	5/8-11 x 1.000 DEEP	0.500	0.375
SS-AT800	8.00	0.2175	3.000	8.500	4.500	0.688	3/4-10 x 1.125 DEEP	0.750	0.750

* This is total internal volume, not recommended usable oil capacity.
** Fill and drain ports located at top & bottom of air oil tank.
⚠ On the SS-AT500 & SS-AT800 the fill & drain ports are not on centerline.
Note: When torquing Air/Oil Tank tie rods, refer to page 280 for specifications.

TYPICAL AIR-OIL CIRCUIT

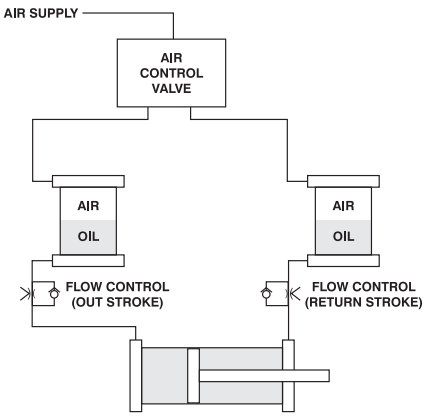


Table B - Cylinder Piston Area

Cylinder Bore (In.)	Piston Area (Sq. In.)
1.50	1.77
2.00	3.14
2.50	4.91
3.25	8.30
4.00	12.57
5.00	19.64
6.00	28.27
8.00	50.27

Table C - Recommended Usable Tank Volume (Cubic Inches) With 30% Safety Factor

Bore	Area	Actual Internal Length Of Tank														
		5	6	7	8	9	10	12	14	16	18	20	25	30	35	40	45
2.50	4.91	17	20	24	27	31	34	41	48	55	61	68	86	103	120	137	154
3.25	8.30	29	34	40	46	52	58	69	81	93	104	116	145	174	203	232	261
4.00	12.57	44	52	61	70	79	88	105	123	140	158	176	220	264	308	352	396
5.00	19.64	68	82	96	110	123	137	165	192	220	247	275	343	412	481	550	618
8.00	50.27	176	211	246	281	317	352	422	493	563	633	704	880	1056	1232	1408	1584

AR Series Air Reservoir

Stand-alone Air Reservoir from 2.50" to 10.00" bore size. Anodized Aluminum Tube and End Cap, Steel Mounting Bracket construction.

Note: Air reservoir is supplemental to existing air only. It is not a long-term storage vessel.

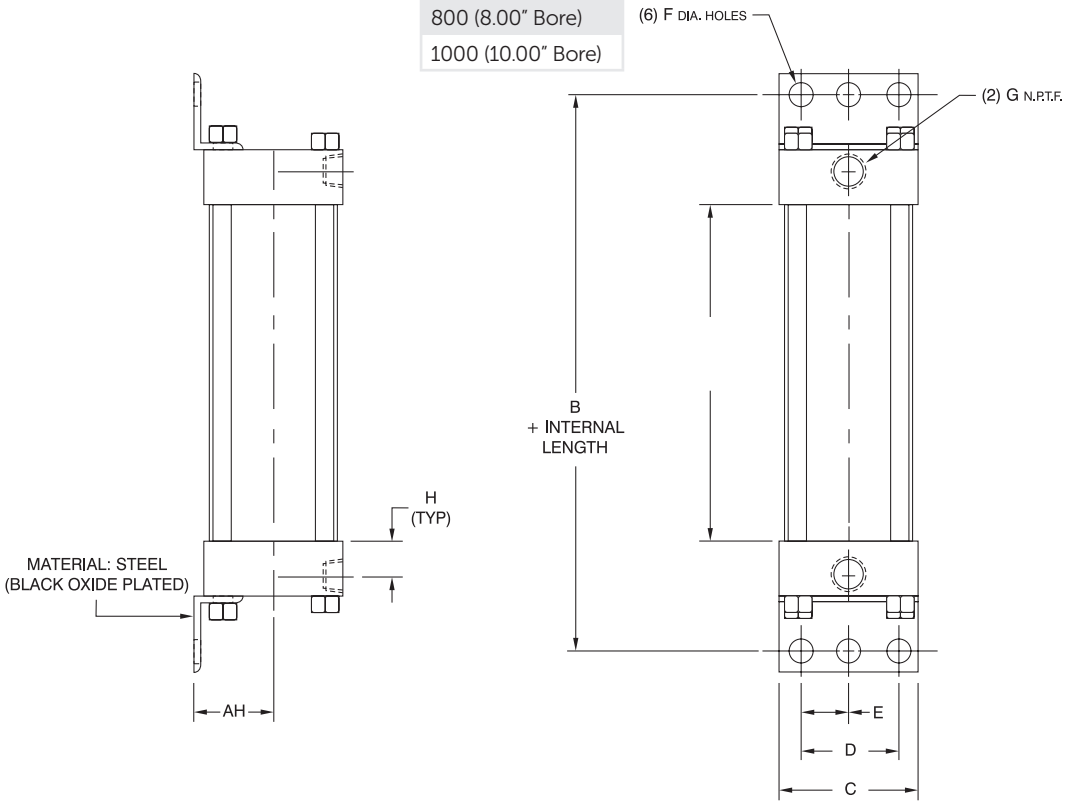
AR - X

Air Reservoir

Bore Size
250 (2.50" Bore)
325 (3.25" Bore)
400 (4.00" Bore)
500 (5.00" Bore)
600 (6.00" Bore)
800 (8.00" Bore)
1000 (10.00" Bore)

Internal Length
1" to 120"

Pressure Rating
250 Psi Max.



Part Number & Volume				Dimensions							
Part Number	Bore	Area	Gallon Per Inch of Reservoir*	Plus Internal Length B	AH	C	D	E	F	G	H
AR-250	2.50	4.909	.0213	4.000	1.625	3.000	2.250	1.125	0.438	0.375	0.625
AR-325	3.25	8.29	.0359	5.000	1.938	3.750	2.750	1.375	0.563	0.500	0.625
AR-400	4.00	12.56	.0544	5.000	2.250	4.500	3.500	1.750	0.563	0.500	0.750
AR-500	5.00	19.64	.085	5.250	2.750	5.500	4.250	2.125	0.688	0.500	0.750
AR-600	6.00	28.27	.122	5.750	3.250	6.500	5.250	2.625	0.813	0.750	0.875
AR-800	8.00	50.26	.2175	6.625	4.250	8.500	7.125	3.563	0.813	0.750	0.875
AR-1000	10.00	78.54	.340	7.625	5.313	10.625	8.625	4.313	0.813	1.000	1.125

*Internal Volume of reservoir.