



Rockford Air Devices Inc.

Power and Force Division



**HIGH PRESSURE
AIR-TO-OIL
500-5000 PSI HYDRAULIC**

**LOW PRESSURE
AIR-TO-AIR & AIR-TO-OIL
135-480 PSI**



BOOSTERS

135 to 5000 PSI with 80 PSI Air

HIGH PRESSURE BOOSTERS

500 - 5000 PSI OIL FROM 80 PSI AIR

RATIOS = 6.25:1 Through 64:1

A booster is a fluid power device which converts a large volume of inexpensive low pressure air into a smaller volume of high pressure fluid, usually hydraulic oil.

Boosters are usually air-to-oil units, but also can be oil-to-oil units.

Their main function is to provide relatively small quantities of high pressure oil , such as in clamping or other intermittent high pressure requirements. A booster is not meant to replace a hydraulic pump operation that requires a constant flow of high pressure oil.

Any application for holding high pressure for long periods of time is well suited to use of boosters. This eliminates the waste of energy by a pump constantly running and dumping excess oil over a relief valve.

Other advantages of boosters are the mobility and flexibility that uses existing air pressure as an energy source rather than a large and costly hydraulic unit that can cost 5 to 10 times more.

In conclusion, boosters do require some thought and innovation, but the results can be rewarding by reducing the noise level and cost of operation.

BOOSTER SELECTION CHART

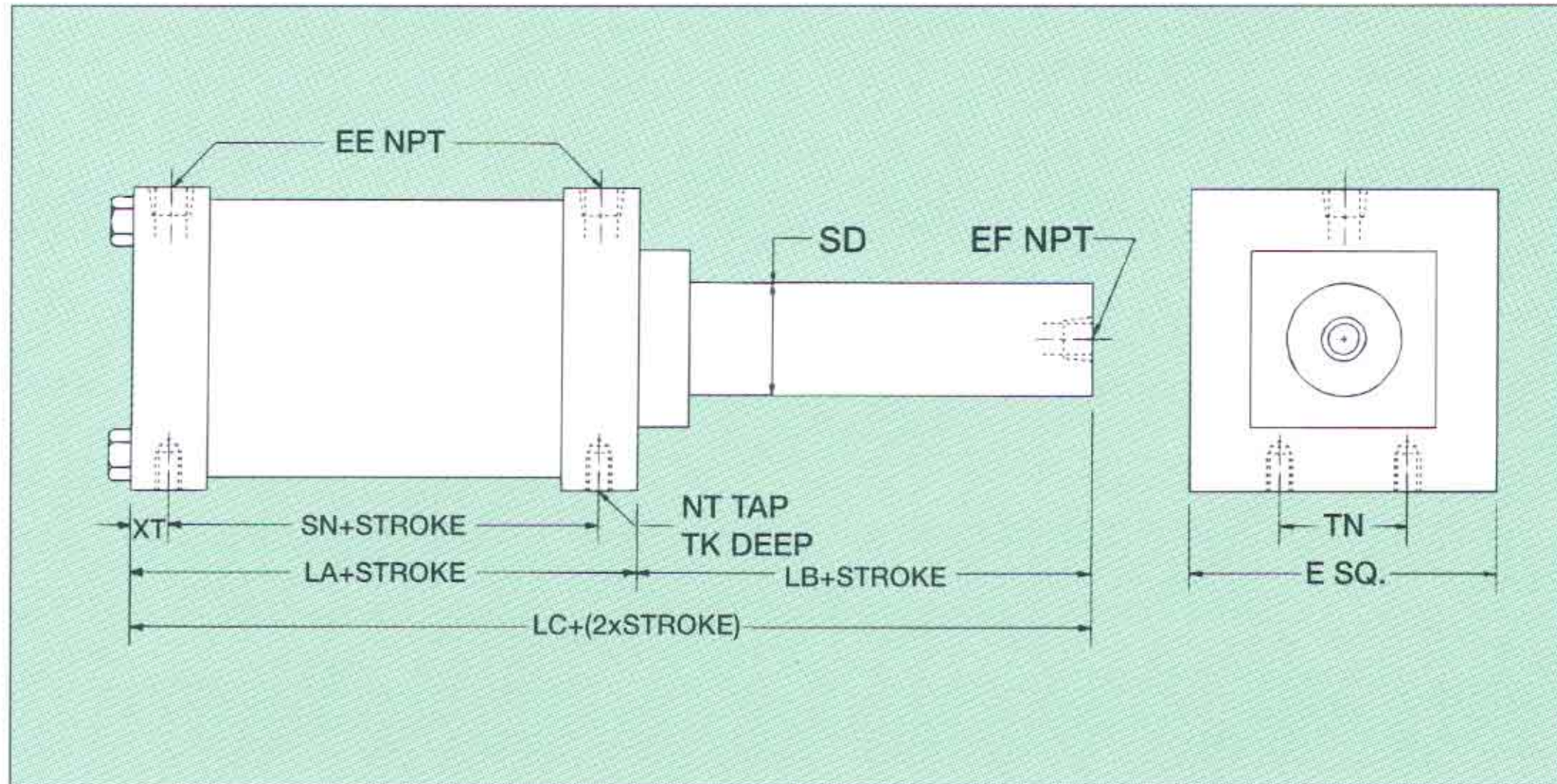
PART NO.	BORE	ROD DIA.	RATIO	HYD. PSI AT 80 PSI	*CU. INCH DISP. PER INCH OF STK
SPB-1	2 1/2	1	6.25	500	.785
SPB-2	3 1/4	1	10.57	840	.785
SPB-3	5	1 3/8	13.22	1050	1.485
SPB-4	4	1	16.00	1280	.785
SPB-5	8	2	16.00	1280	3.14
SPB-6	6	1 3/8	19.00	1520	1.485
SPB-7	5	1	25.00	2000	.785
SPB-8	8	1 3/8	33.84	2640	1.485
SPB-9	6	1	36.00	2880	.785
SPB-10	8	1	64.00	5120	.785

ORDERING EXAMPLE

PART # STROKE
↓ ↓
SPB-1 x 6

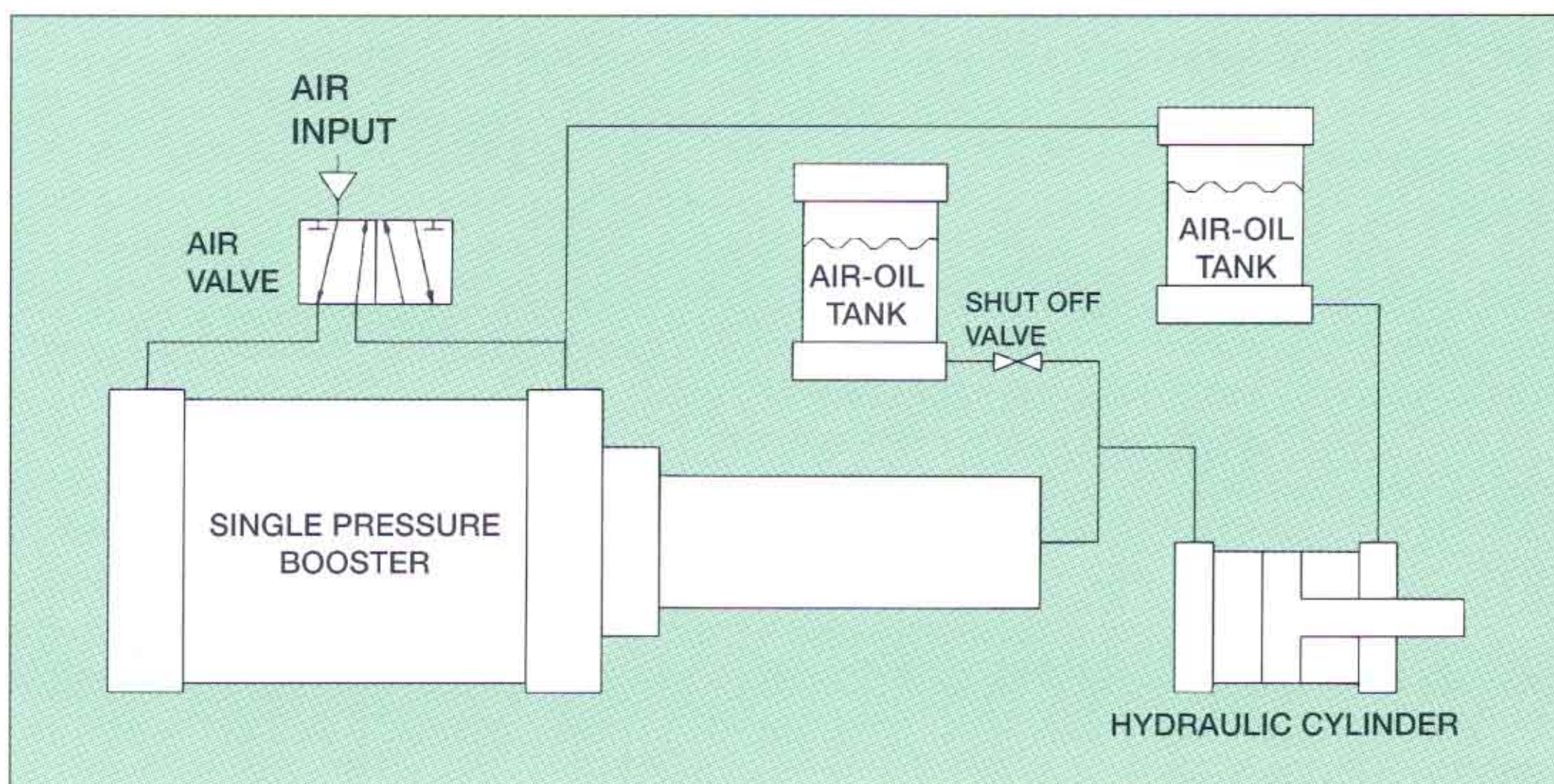
* For strokes greater than 12 inches, consult factory.

SINGLE PRESSURE BOOSTER



PART #	E	EE	EF	LA	LB	LC	NT	SD	SN	TK	TN	XT
SPB-1	3	1/8	3/8	2 1/4	2 1/4	4 1/2	5/16 - 18	2	1 9/16	1/2	1 1/4	11/32
SPB-2	3 3/4	1/4	3/8	3	2 1/4	5 1/4	3/8 - 16	2	2	5/8	1 1/2	1/2
SPB-3	5 1/2	3/8	3/8	3 1/4	2 1/4	5 1/2	1/2 - 13	2 1/4	2 1/4	3/4	2 11/16	1/2
SPB-4	4 1/2	1/4	3/8	3	2 1/4	5 1/4	3/8 - 16	2	2	5/8	2 1/16	1/2
SPB-5	8 1/2	3/8	3/8	3 7/8	2 1/2	6 3/8	5/8 - 11	3	2 3/8	1	4 1/2	1/2
SPB-6	6 1/2	3/8	3/8	3 7/8	2 1/4	6 1/8	5/8 - 11	2 1/4	2 3/8	1	3 1/4	1/2
SPB-7	5 1/2	3/8	3/8	3 1/4	2 1/4	5 1/2	1/2 - 13	2	2 1/4	3/4	2 11/16	1/2
SPB-8	8 1/2	3/8	3/8	3 7/8	2 1/4	6 1/8	5/8 - 11	2 1/4	2 3/8	1	4 1/2	1/2
SPB-9	6 1/2	3/8	3/8	3 3/8	2 1/4	5 5/8	5/8 - 11	2	2 3/8	1	3 1/4	1/2
SPB-10	8 1/2	3/8	3/8	3 3/8	2 1/4	5 5/8	5/8 - 11	2	2 3/8	1	4 1/2	1/2

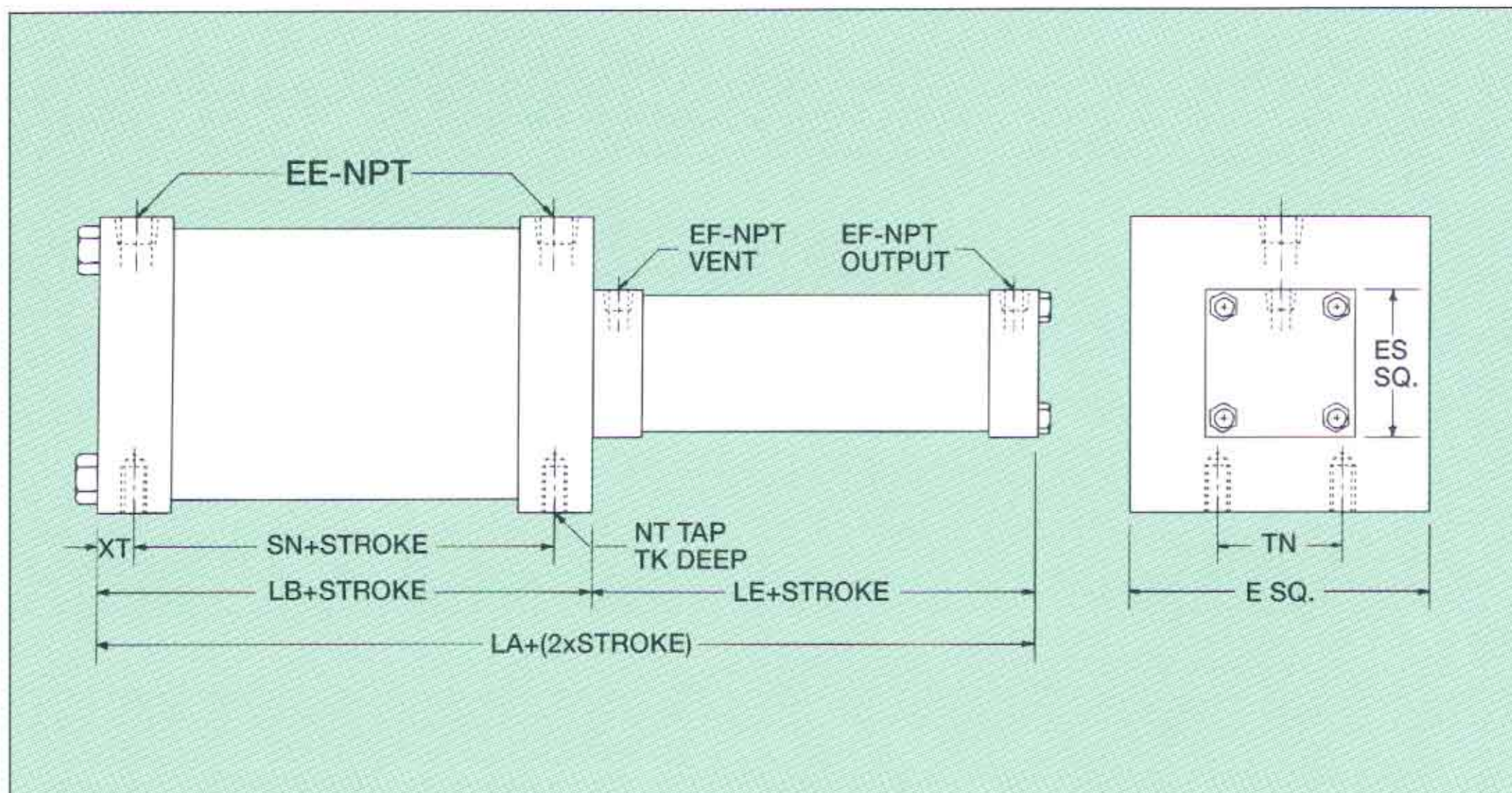
Single pressure boosters operate in a completely closed loop. If there is a loss of high pressure fluid, it must be replenished by an external make up tank through a shut off valve. Single pressure boosters are used in circuits in which the hydraulic cylinder requires high pressure for the entire stroke.



LOW PRESSURE BOOSTERS

CYLINDER TO CYLINDER CONSTRUCTION

RATIOS = 1.69:1 Through 6.05:1



PART #	E	EE	EF	ES	LA	LB	LE	NT	SN	TK	TN	XT
AOB-1 or AAB-1	3 3/4	1/4	1/8	3	5 1/4	3	2 1/4	3/8 - 16	2	5/8	1 1/2	1/2
AOB-2 or AAB-2	6 1/2	3/8	1/4	4 1/2	6 7/8	3 7/8	3	5/8 - 11	2 3/8	1	3 1/4	1/2
AOB-3 or AAB-3	5 1/2	3/8	1/4	3 3/4	6 1/4	3 1/4	3	1/2 - 13	2 1/4	3/4	2 11/16	1/2
AOB-4 or AAB-4	4 1/2	1/4	1/8	3	5 1/4	3	2 1/4	3/8 - 16	2	5/8	2 1/16	1/2
AOB-5 or AAB-5	3 3/4	1/4	1/8	2 1/2	5 1/4	3	2 1/4	3/8 - 16	2	5/8	1 1/2	1/2
AOB-6 or AAB-6	3	1/8	1/8	2	4 1/2	2 1/4	2 1/4	5/16 - 18	1 9/16	1/2	1 1/4	11/32
AOB-7 or AAB-7	6 1/2	3/8	1/4	3 3/4	6 7/8	3 7/8	3	5/8 - 11	2 3/8	1	3 1/4	1/2
AOB-8 or AAB-8	4 1/2	1/4	1/8	2 1/2	5 1/4	3	2 1/4	3/8 - 16	2	5/8	2 1/16	1/2
AOB-9 or AAB-9	8 1/2	3/8	1/4	4 1/2	6 7/8	3 7/8	3	5/8 - 11	2 3/8	1	4 1/2	1/2
AOB-10 or AAB-10	8 1/2	3/8	1/4	3 3/4	6 7/8	3 7/8	3	5/8 - 11	2 3/8	1	4 1/2	1/2

LOW PRESSURE BOOSTERS

AIR-TO-OIL & AIR-TO-AIR

RATIOS = 1.69:1 Through 6.05:1

Low pressure boosters can be designed and built as cylinder-to-cylinder units because of their relatively low pressure.

Air-to-oil units are simple to calculate using the assumption that oil is relatively not compressible at these low pressures. The volumes of oil given in the air-to-oil charts do not take the compressibility of oil into account, which is approximately 1/2 of 1 percent per 1000PSI.

Air-to-air units obviously must take the compressibility of air into account. Boyles law, which is $P_1V_1 = P_2V_2$, is merely a simple way of stating that if you take 10 cubic inches of air at 100 PSI and compress it to 5 cubic inches, you will end up with a pressure of 200 PSI.


Mathematically we should consider that atmospheric air at sea level is 14.7 PSI. However, the length of hose, the expansion of flexible hose and other factors urge you to be extremely conservative in calculating the volume of high pressure air needed.

LOW PRESSURE AIR-TO-OIL BOOSTERS

Cylinder to Cylinder Oil Booster (Air-To-Oil)

PART NUMBER	RATIO	DRIVING CYLINDER	DRIVEN CYLINDER	CU. INCH DISPLACED PER INCH OF STROKE (Oil)	"OIL" PSI AT 80 PSI AIR
AOB-1	1.69:1	3 1/4	2 1/2	4.91	135.2
AOB-2	2.25:1	6	4	12.56	180.0
AOB-3	2.36:1	5	3 1/4	8.30	188.8
AOB-4	2.55:1	4	2 1/2	4.91	204.0
AOB-5	2.64:1	3 1/4	2	3.14	211.2
AOB-6	2.79:1	2 1/2	1 1/2	1.76	223.2
AOB-7	3.40:1	6	3 1/4	8.30	272.0
AOB-8	4.00:1	4	2	3.14	320.0
AOB-9	4.00:1	8	4	12.56	320.0
AOB-10	6.05:1	8	3 1/4	8.30	484.0

ORDERING EXAMPLE

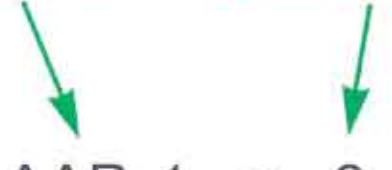
PART # STROKE

 AOB-1 x 6

LOW PRESSURE AIR-TO-AIR BOOSTERS

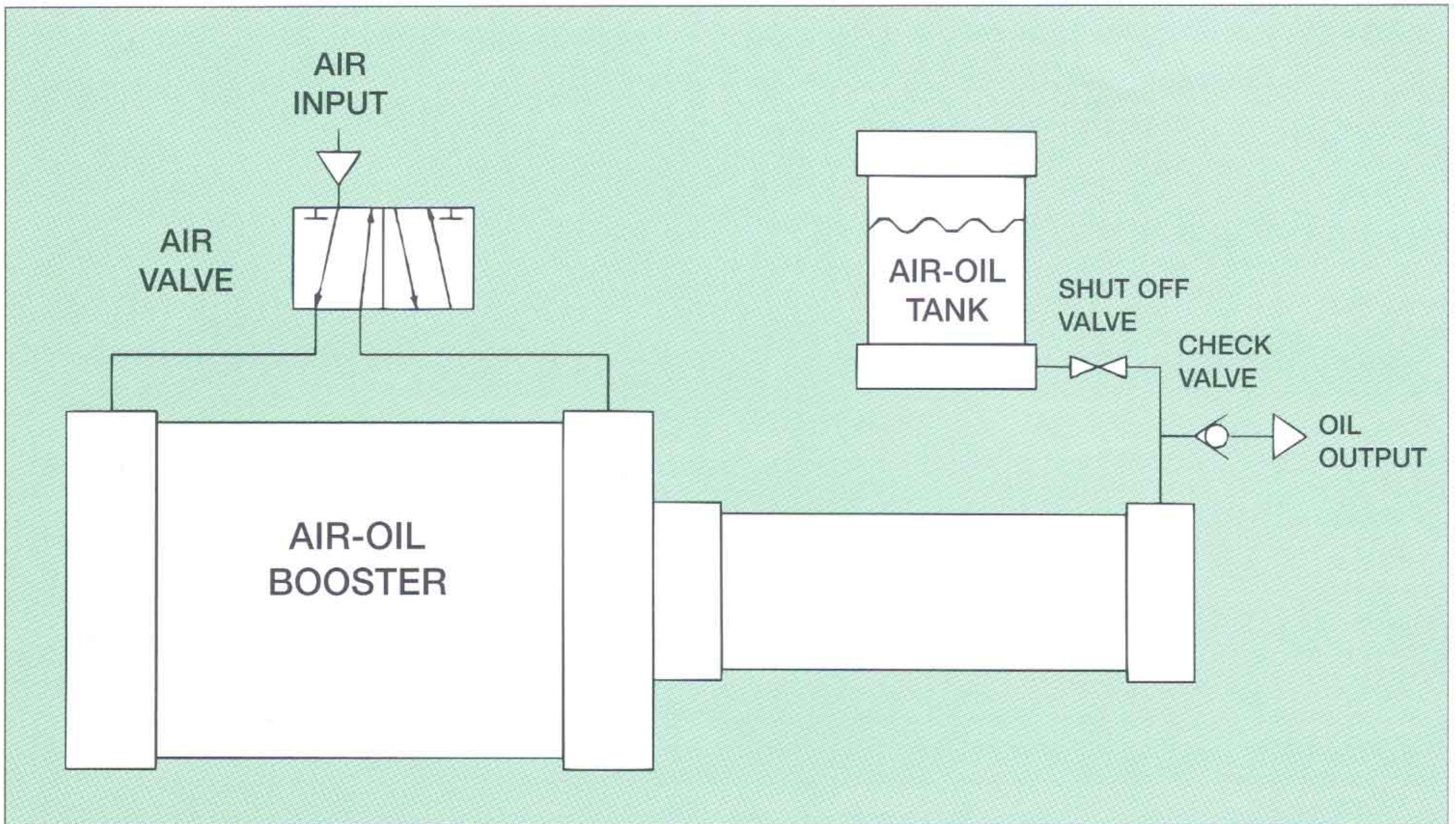
Cylinder to Cylinder Air Booster (Air-To-Air)

PART NUMBER	RATIO	DRIVING CYLINDER	DRIVEN CYLINDER	CU. INCH DISPLACED PER INCH OF STROKE (Air)*	"AIR" PSI AT 80 PSI AIR
AAB-1	1.69:1	3 1/4	2 1/2	2.90	135.2
AAB-2	2.25:1	6	4	5.58	180.0
AAB-3	2.36:1	5	3 1/4	3.51	188.8
AAB-4	2.55:1	4	2 1/2	1.92	204.0
AAB-5	2.64:1	3 1/4	2	1.19	211.2
AAB-6	2.79:1	2 1/2	1 1/2	.63	223.2
AAB-7	3.40:1	6	3 1/4	2.44	272.0
AAB-8	4.00:1	4	2	.78	320.0
AAB-9	4.00:1	8	4	3.14	320.0
AAB-10	6.05:1	8	3 1/4	1.37	484.0

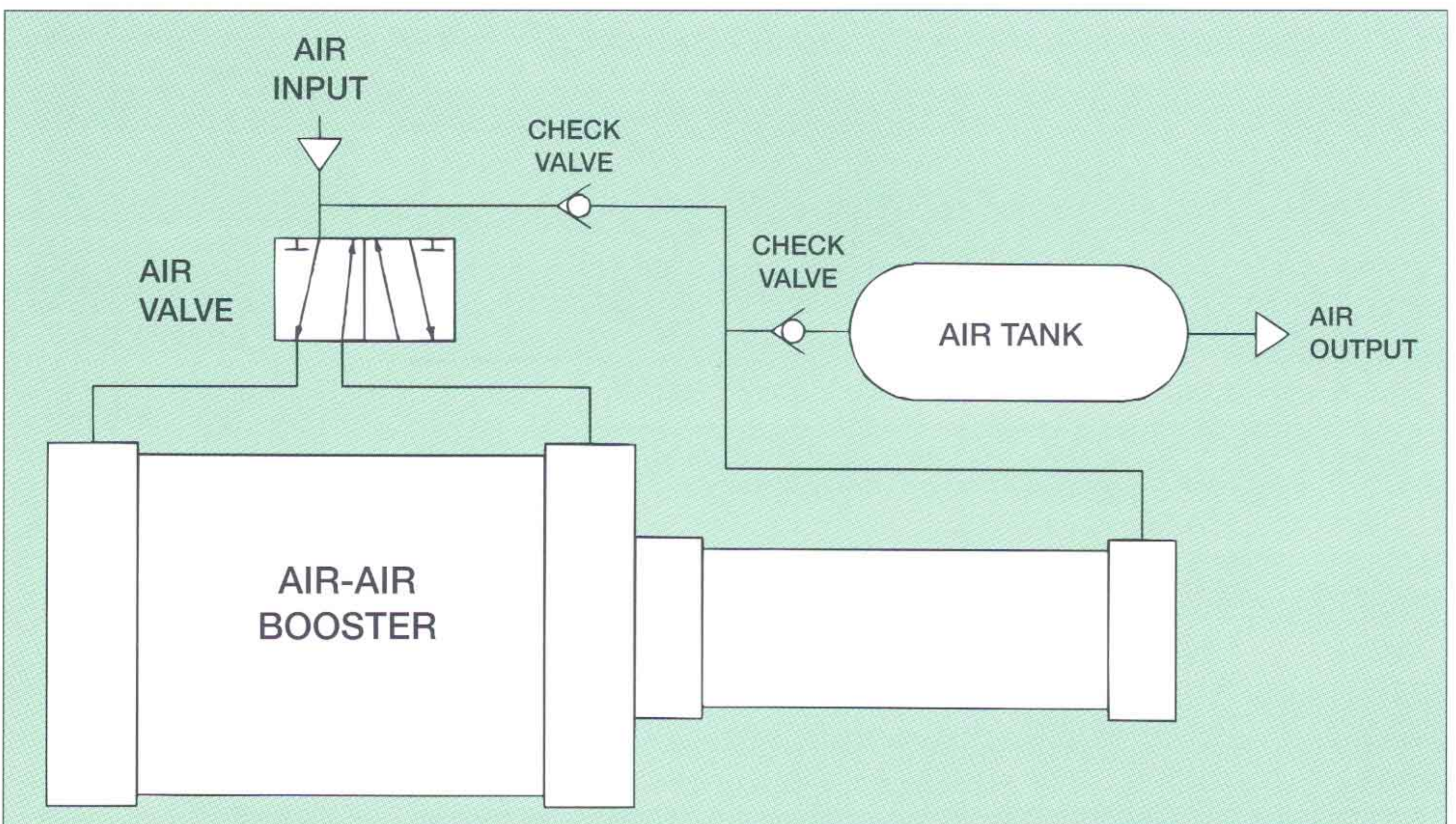
ORDERING EXAMPLE

PART # STROKE

 AAB-1 x 6

*Based on air in compressed area being prefilled at 80 PSI. (Same as driving pressure.)



CYLINDER TO CYLINDER AIR-TO-OIL BOOSTER

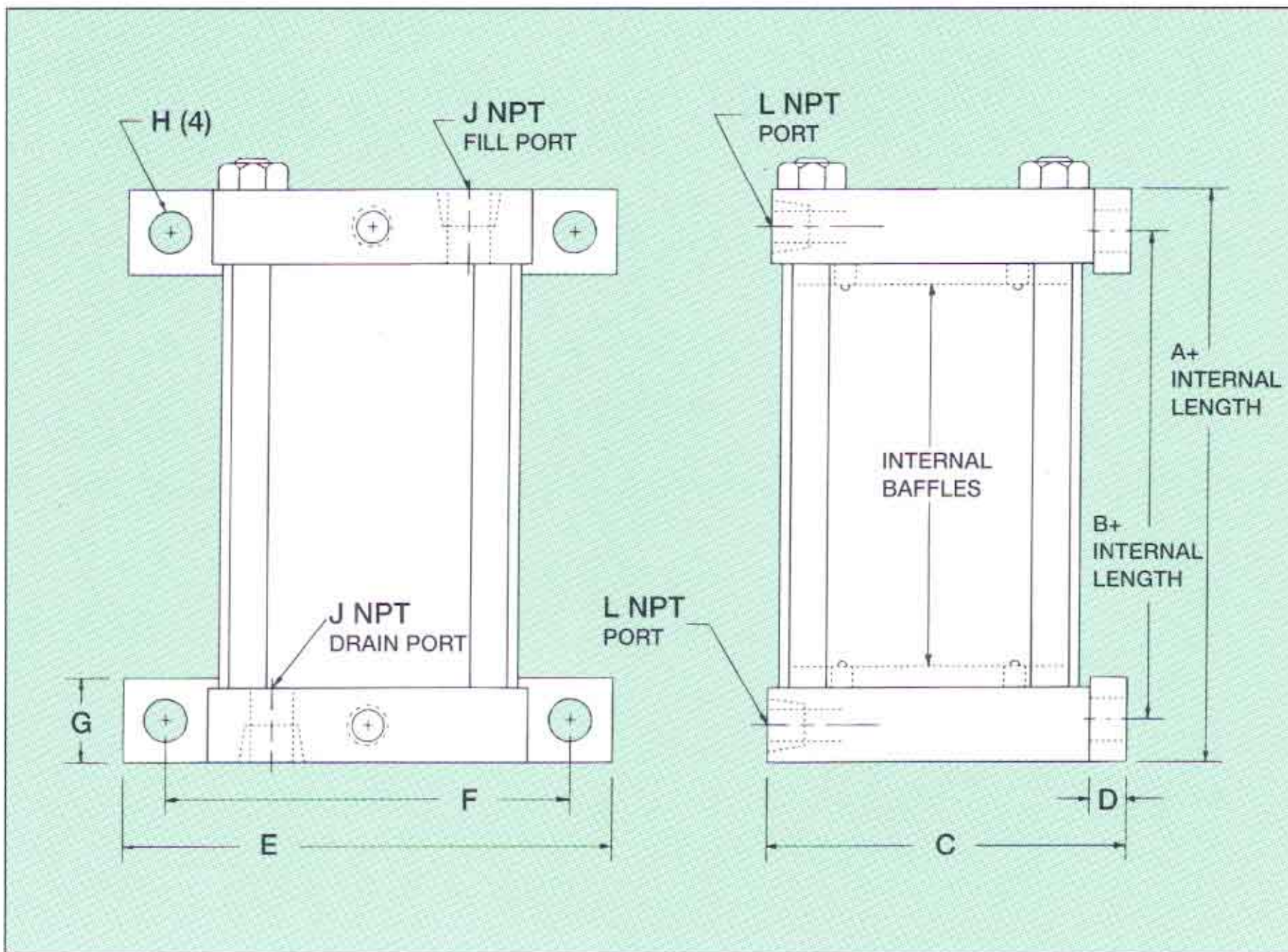


CYLINDER TO CYLINDER AIR-TO-AIR BOOSTER

AIR - OIL TANKS

150 PSI AIR

Aluminum end caps, translucent fiberglass tube allows easy viewing of oil height from any position.



DIMENSIONS OF AIR-OIL TANKS

PART NO.	DIA.	A	B	C	D	E	F	G	H	J	L
AOT	2 1/2	1 1/4	9/16	3 5/16	5/16	4 1/2	3 3/4	3/4	3/8	1/4	1/8
AOT	3 1/4	1 3/4	3/4	4 1/4	1/2	5 3/4	4 3/4	1	1/2	3/8	1/4
AOT	4	1 3/4	3/4	6	1/2	6 1/2	5 1/2	1	1/2	3/8	1/4
AOT	5	2	1	6	1/2	7 1/2	6 1/2	1	1/2	1/2	3/8
AOT	6	2	1	7	1/2	8 1/2	7 1/2	1	1/2	3/4	3/8
AOT	8	2	1	9	1/2	10 1/2	9 1/2	1	1/2	3/4	3/8

USEABLE VOLUME

Useable volume of oil in an Air-Oil Tank should be 50-75% of its volume, depending on its length. Short tanks should have a maximum useable volume of 50%. Taller tanks can use up to 75% of their total volume for oil.

MAXIMUM USEABLE VOLUME

DIA.	AREA	INTERNAL LENGTH OF TANK							
		6	8	10	12	14	16	18	20
2 1/2	4.9	15	24	33	42	51	60	69	78
3 1/4	8.30	26	41	56	71	86	101	116	131
4	12.56	38	62	84	108	130	153	174	198
5	19.64	57	92	128	163	199	234	269	305
6	28.27	84	131	184	237	285	340	388	436
8	50.26	146	236	327	417	507	597	687	778

NOTE: Other internal lengths are available. Please consult factory.

ORDERING EXAMPLE

AIR-OIL TANK LENGTH IN INCHES
 DIAMETER
 AOT — 3-1/4" x 6"

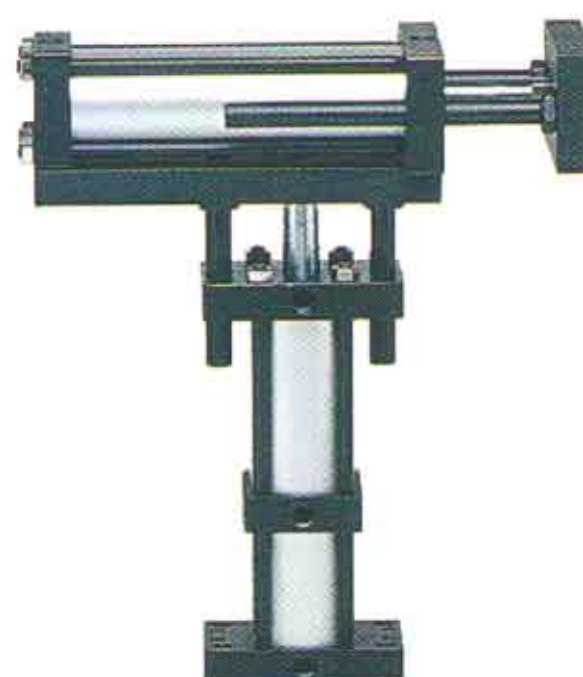
OTHER PRODUCTS MADE BY ROCKFORD AIR DEVICES



BOOSTER CYLINDERS



POWER MULTIPLIERS



2-AXIS MODULE



AIR-OIL TANK



**NON-ROTATING
CYLINDERS**



L-SERIES CYLINDERS



S-SERIES CYLINDERS



ADJUSTABLE-RETRACTABLE

PRECAUTIONS

Rockford Air Devices products are manufactured exclusively for use in industrial applications by trained personnel who possess the experience necessary to provide adequate safeguards to prevent injury or damage in the event there is a failure of any component in the system.

WARRANTY

Rockford Air Devices, Inc. warrants to customers who purchase products for resale that such products are free from defects in material and workmanship. The company will repair or replace, at its option, any product found to be defective after inspection. Rockford Air Devices, Inc. shall not be liable for any incidental or consequential damages, including downtime, for breach of any express or implied warranty, and shall not be liable or responsible for injuries or damage to persons or property arising out of the use or operation of Rockford Air Devices, Inc. products.



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