

SB Series Bladder Accumulators

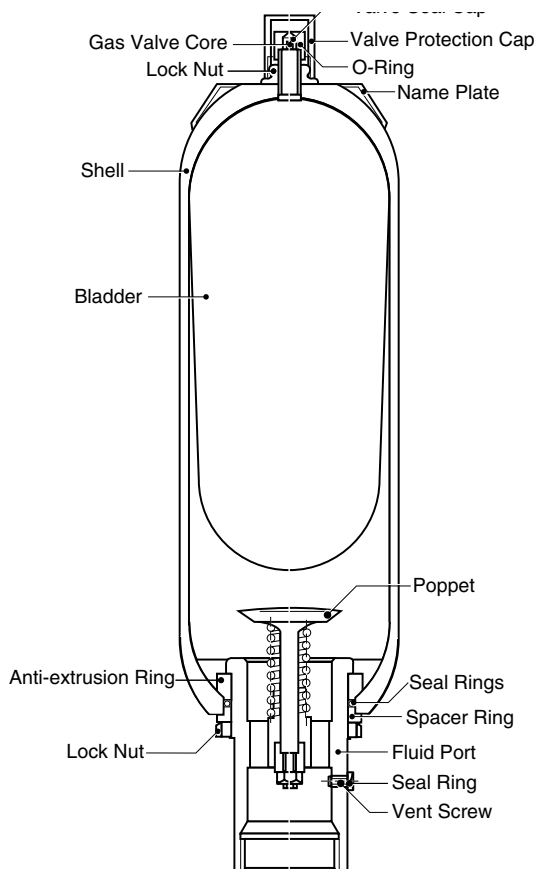


Description

The bladder accumulator consists of a fluid section and a gas section, with the bladder acting as a gas-proof screen. The fluid around the bladder is connected with the hydraulic circuit, so that the bladder accumulator draws in fluid when the pressure increases thus compressing the gas. When the pressure drops, the compressed gas expands and forces the stored fluid into the circuit.

Construction

HYDAC bladder accumulators consist of a welded or forged pressure vessel (*shell*), a bladder and ports for gas and fluid inlet. The gas and fluid sides are separated by the bladder.



Bladder Materials

Not all fluids are compatible with every elastomer at all temperatures. Therefore, HYDAC offers the following choice of elastomers:

- NBR (*Standard Nitrile*)
- LT-NBR (*Low Temperature Nitrile*)
- ECO (*Epichlorohydrin*)
- IIR (*Butyl*)
- FPM (*Fluorelastomer*)
- others (*available upon request*)

To determine which material is appropriate...

ALWAYS REFER TO FLUID MANUFACTURER'S RECOMMENDATION

Corrosion Protection

For use with certain aggressive or corrosive fluids, or in a corrosive environment, HYDAC offers protective coatings and corrosive resistant materials (i.e. stainless steel) for the accumulator parts that come in contact with the fluid, or are exposed to the hostile environment.

Mounting Position

HYDAC bladder accumulators can be installed vertically, at any angle, or horizontally depending upon the application. When installing vertically or at an angle, the fluid port must be at the bottom. On certain applications listed below, specific positions are preferable:

- Energy Storage:
vertical
- Pulsation Damping:
any position from vertical to horizontal
- Maintaining Constant Pressure:
any position from vertical to horizontal
- Volume Compensation:
any position from vertical to horizontal

System Mounting

HYDAC bladder accumulators are designed to be screwed directly onto the system. We also recommend the use of our mounting components, which are detailed on page 33, to minimize risk of failure due to system vibrations.

Applications

Some common applications of bladder accumulators are:

- Agricultural Machinery & Equipment
- Forestry Equipment
- Oil Field & Offshore
- Machine Tools
- Mining Machinery & Equipment
- Mobile & Construction Equipment
- Off- Road Equipment

For specific examples of applications using bladder accumulators, please see page 45.

Bladder Accumulators **HYDAC**

Model Code

SB 330 - 20 A 1 / 112 S - 210 C

Series

- SB 330 = Bladder accumulator (3000 psi)
- SB 600 = Bladder accumulator (5000 psi)

Design

- (omit) = Standard (bottom repairable)
- N = Modified Flow (396 gpm)
- H = High Flow (480 gpm)
- TR = Standard (top repairable)
- NTR = Modified Flow (396 gpm) (top repairable)

Size (see dimension tables on following pages for most common sizes)

- 1 = 1 quart
- 4 = 1 gallon
- 6 = 1.5 gallons
- 10 = 2.5 gallons
- 20 = 5 gallons
- 32 = 10 gallons
- 42 = 11 gallons
- 54 = 15 gallons

Line Connection

- A = Threaded
- F = Flanged

Gas Port

- 1 = Standard model, HYDAC gas valve version 4 (8V1 - ISO 4570)

Material Code

Depending on Application

- 112 = Standard for oil service (mineral oil)

Fluid Port

- 0 = Synthetic coated carbon steel (internal & external for water service)
- 1 = Carbon steel
- 2 = Stainless steel (high strength)
- 3 = Stainless steel (corrosion resistance)
- 4 = Chemically plated carbon steel (internal & external for water service)
- 6 = Low temperature carbon steel (<-40°F)

Shell

- 0 = Synthetic coated carbon steel (internal & external for water service)
- 1 = Carbon steel
- 2 = Chemically plated carbon steel (internal & external for water service)
- 6 = Low temperature carbon steel (<-40°F)
- 7 = Others available on request

Bladder Compound

- 2 = NBR (Buna N)
- 3 = ECO (Hydrin)
- 4 = IIR (Butyl)
- 5 = LT-NBR (low temp. Buna)
- 6 = FPM (Fluoro-elastomer)
- 7 = Others (available on request)

Compound	Oper. Temp Range	Typical Fluids
NBR	5° to 180°F	mineral oils
	32° to 180°F	water & water-glycols
LT-NBR	-50° to 180°F	mineral oils
ECO...113...	-20° to 250°F	mineral oils
ECO...663...	-40° to 200°F	mineral oils (with low temperature CS shell)
IIR	-20° to 200°F	phosphate esters & brake fluids
FPM	5° to 300°F	chlorinated hydrocarbons

Country of Installation

- S = USA
 - W1 = ABS Type Approval
 - W3 = DNV Type Approval
- (for other countries see page 2 for proper code designation)

Maximum Working Pressure

- 210 = 3000 psi
- 345 = 5000 psi

Fluid Port Connection

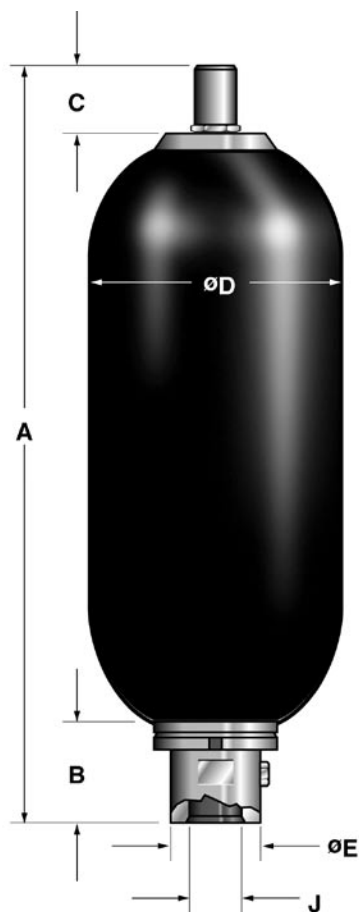
- Threaded
 - A = BSPP (ISO 228)
 - B = Metric (DIN 13)
 - C = SAE (ANSI B1.1)
 - D = NPT (ANSI B1.2)
- Flanged
 - E = SAE 2" - 3000 psi (Code 61)
 - F = SAE 1 1/2" - 6000 psi (Code 62)
 - G = SAE 1 1/4" - 3000 psi (Code 61)
 - H = SAE 1" - 6000 psi (Code 62)

Model Codes containing red selections are non-standard items – Minimum quantities may apply - Contact HYDAC for information and availability
Not all combinations are available

Note: For Oil, Gas & Marine specific bladder accumulators please refer to page 48

HYDAC Bladder Accumulators

SB Series Bottom Repairable

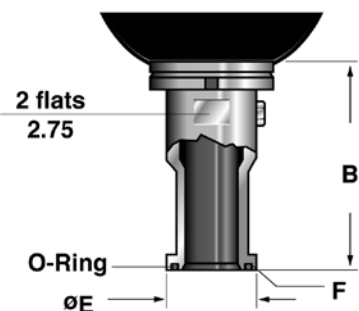


SB 330... (3000 psi)

Size	Nom. Vol. gal.	Eff. Gas Vol. in ³	Weight	A	B ⁽¹⁾	C	ØD	ØE	Thread J SAE NPTF	Q ² gpm
1	1/4	66	10 (4.5)	12.0 (303)	2.0 (51)	2.3 (58)	4.6 (117)	1.4 (36)	1 1/16-12 UN 3/4"	60
4	1	226	30 (14)	16.3 (415)	2.6 (66)	2.3 (58)	6.6 (168)	2.1 (53)	1 5/8-12 UN 1 1/4"	160
6	1 1/2	340	33 (15)	20.5 (521)	2.6 (66)	2.3 (58)	6.6 (168)	2.1 (53)	1 5/8-12 UN 1 1/4"	160
10	2 1/2	566	86 (39)	22.0 (559)	3.1 (80)	2.3 (58)	9.1 (231)	3.0 (76)	1 7/8-12 UN 2"	240
20	5	1125	140 (63)	34.5 (876)	3.1 (80)	2.3 (58)	9.1 (231)	3.0 (76)	1 7/8-12 UN 2"	240
32	10	2080	226 (102)	54.7 (1390)	3.1 (80)	2.3 (58)	9.1 (231)	3.0 (76)	1 7/8-12 UN 2"	240
42	11	2320	270 (123)	60.2 (1530)	3.1 (80)	2.3 (58)	9.1 (231)	3.0 (76)	1 7/8-12 UN 2"	240
54	15	3205	330 (150)	78.3 (1990)	3.1 (80)	2.3 (58)	9.1 (231)	3.0 (76)	1 7/8-12 UN 2"	240

SB 600... (5000 psi)

Size	Nom. Vol. gal.	Eff. Gas Vol. in ³	Weight	A	B ⁽¹⁾	C	ØD	ØE	Thread J SAE	Q ² gpm
1	1/4	66	17 (7.7)	13.2 (335)	2.4 (62)	2.3 (58)	4.8 (122)	2.1 (53)	1 5/8-12 UN	160
4	1	226	33 (15)	16.3 (415)	2.5 (64)	2.3 (58)	6.8 (173)	2.1 (53)	1 5/8-12 UN	160
10	2 1/2	566	114 (52)	22.4 (568)	3.1 (80)	2.8 (70)	9.1-9.7 (232-247)	3.0 (76)	1 7/8-12 UN	240
20	5	1125	162 (73)	35.0 (888)	3.1 (80)	2.8 (70)	9.1-9.7 (232-247)	3.0 (76)	1 7/8-12 UN	240
32	10	2080	250 (113)	55.2 (1402)	3.1 (80)	2.8 (70)	9.1-9.7 (232-247)	3.0 (76)	1 7/8-12 UN	240
54	15	3180	370 (168)	78.8 (2002)	3.1 (80)	2.8 (70)	9.1-9.7 (232-247)	3.0 (76)	1 7/8-12 UN	240



Split Flange Connection (sizes 10 - 54)

Series	B	ØE	F Split Flange Connection	Q ² gpm
SB 330 SB 330 T ³	4.1 (104)	2.8 (71.4)	SAE 2" - 3000 psi Code 61	240
SB 600 SB 600 T ³	5.5 (140)	2.5 (63.5)	SAE 1 1/2" - 5000 psi Code 62	240

Dimensions are for general information only, all critical dimensions should be verified.
Dimensions are in inches/(mm) and lbs/(kg)

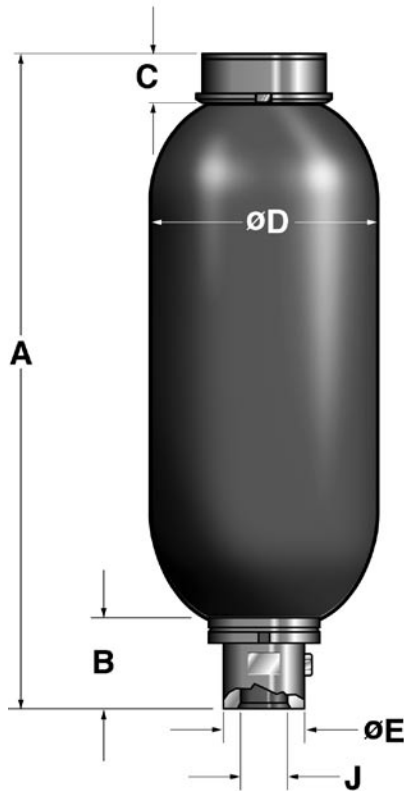
NOTE: Higher pressure may be available. Please consult HYDAC for more information.

1) Applies to SAE thread type only. For Split Flange, see separate chart and illustration.

2) Maximum discharge flow rate recommended for vertically mounted accumulators.

3) sizes 20 to 54 only.

SB Series Top Repairable and High Flow



SB 330 TR... (3000 psi)

Size	Nom. Vol. gal.	Eff. Gas Vol. in ³	Weight	A	B ¹⁾	C	ØD	ØE	Thread J		Q ²⁾ gpm
									SAE	NPTF	
10	2 1/2	566	94 (43)	21.3 (540)	3.1 (80)	1.6 (40)	9.1 (231)	3.0 (76)	1 7/8-12 UN	2"	240
20	5	1125	140 (63)	34.8 (883)	3.1 (80)	1.6 (40)	9.1 (231)	3.0 (76)	1 7/8-12 UN	2"	240
32	10	2080	226 (102)	55.0 (1397)	3.1 (80)	1.6 (40)	9.1 (231)	3.0 (76)	1 7/8-12 UN	2"	240
42	11	2320	270 (123)	60.2 (1530)	3.1 (80)	1.6 (40)	9.1 (231)	3.0 (76)	1 7/8-12 UN	2"	240
54	15	3205	330 (150)	78.6 (1997)	3.1 (80)	1.6 (40)	9.1 (231)	3.0 (76)	1 7/8-12 UN	2"	240

SB 600 TR... (5000 psi)

Size	Nom. Vol. gal.	Eff. Gas Vol. in ³	Weight	A	B ¹⁾	C	ØD	ØE	Thread J		Q ²⁾ gpm
									SAE		
20	5	1125	172 (78)	33.5 (851)	3.1 (80)	1.6 (40)	9.1-9.7 (232-247)	3.0 (76)	1 7/8-12 UN		240
32	10	2080	260 (118)	53.7 (1364)	3.1 (80)	1.6 (40)	9.1-9.7 (232-247)	3.0 (76)	1 7/8-12 UN		240
54	15	3205	380 (172)	77.3 (1964)	3.1 (80)	1.6 (40)	9.1-9.7 (232-247)	3.0 (76)	1 7/8-12 UN		240

SB 330 NTR... (3000 psi, High Flow)

Size	Nom. Vol. gal.	Eff. Gas Vol. in ³	Weight	A	B ¹⁾	C	ØD	ØE	Thread J		Q ²⁾ gpm
									SAE		
20	5	1125	161 (73)	36.0 (914)	5.3 (135)	1.6 (40)	9.1 (232)	3.8 (97)	2 1/2-12 UN		396
32	10	2080	247 (112)	57.2 (1409)	5.3 (135)	1.6 (40)	9.1 (232)	3.8 (97)	2 1/2-12 UN		396
54	15	3205	352 (160)	79.8 (2027)	5.3 (135)	1.6 (40)	9.1 (232)	3.8 (97)	2 1/2-12 UN		396

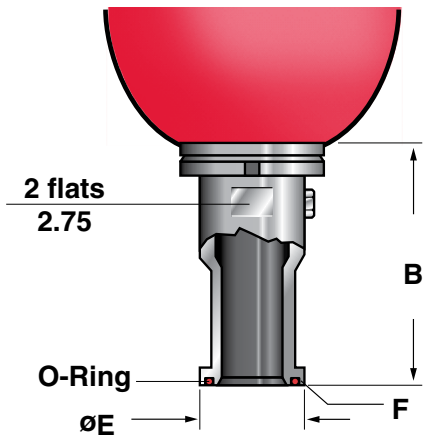
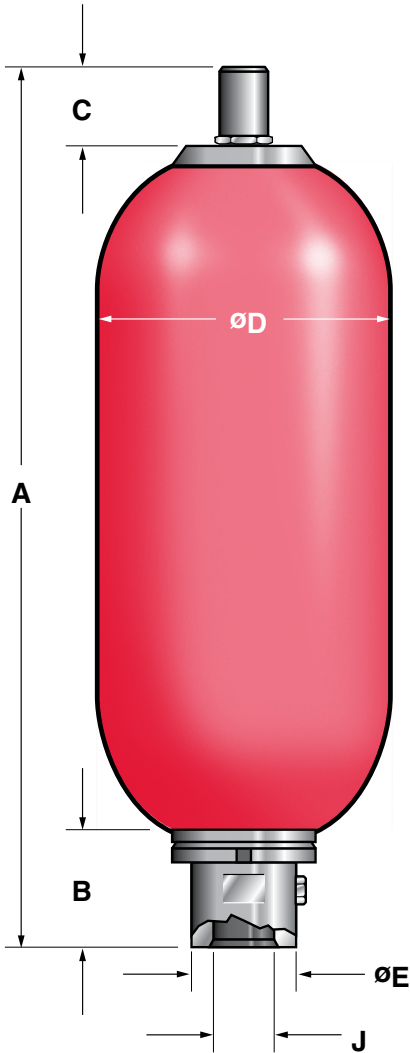
Dimensions are for general information only, all critical dimensions should be verified.
Dimensions are in inches/(mm) and lbs/(kg)

1) Applies to SAE thread type only. For Split Flange, see chart and illustration on previous page.

2) Maximum discharge flow rate recommended for vertically mounted accumulators.

SB Series

Bottom Repariable Bladder Accumulators for the Oil, Gas & Marine Markets



SB 330... (3000 psi)

Size	Nom. Vol. gal.	Eff. Gas Vol. in ³	Weight lbs./ (kg)	A	B	C	ØD	ØE	Thread J NPTF	Q ¹ gpm
10	2 1/2	566	86 (39)	22.0 (559)	3.1 (80)	2.3 (58)	9.1 (231)	3.0 (76)	1 1/4 2"	240
20	5	1125	140 (63)	34.5 (876)	3.1 (80)	2.3 (58)	9.1 (231)	3.0 (76)	1 1/4 2"	240
32	10	2080	226 (102)	54.7 (1390)	3.1 (80)	2.3 (58)	9.1 (231)	3.0 (76)	1 1/4 2"	240
42	11	2320	270 (123)	60.2 (1530)	3.1 (80)	2.3 (58)	9.1 (231)	3.0 (76)	1 1/4 2"	240
54	15	3205	330 (150)	78.3 (1990)	3.1 (80)	2.3 (58)	9.1 (231)	3.0 (76)	1 1/4 2"	240

SB 600... (5000 psi)

Size	Nom. Vol. gal.	Eff. Gas Vol. in ³	Weight lbs./ (kg)	A	B	C	ØD	ØE	Thread J NPTF	Q ¹ gpm
10	2 1/2	566	114 (52)	22.4 (568)	3.1 (80)	2.8 (70)	9.1 (232)	3.0 (76)	1 1/4 2"	240
20	5	1125	162 (73)	35.0 (888)	3.1 (80)	2.8 (70)	9.1 (232)	3.0 (76)	1 1/4 2"	240
32	10	2080	250 (113)	55.2 (1402)	3.1 (80)	2.8 (70)	9.1 (232)	3.0 (76)	1 1/4 2"	240
54	15	3180	370 (168)	78.8 (2002)	3.1 (80)	2.8 (70)	9.1 (232)	3.0 (76)	1 1/4 2"	240

Split Flange Connections (sizes 10 - 54)

Series	B	ØE	Split Flange Connection F	Q ¹ gpm
SB 330 SB 330 T ²	4.1 (104)	2.8 (71.4)	SAE 2" - 3000 psi Code 61	240
SB 600 SB 600 T ²	5.5 (140)	2.5 (63.5)	SAE 1 1/2" - 5000 psi Code 62	240

Dimensions are for general information only,

all critical dimensions should be verified.

Dimensions are in inches/(mm) and lbs/(kg)

1) Maximum discharge flow rate recommended for vertically mounted accumulators.

2) sizes 20 to 54 only

SB Series

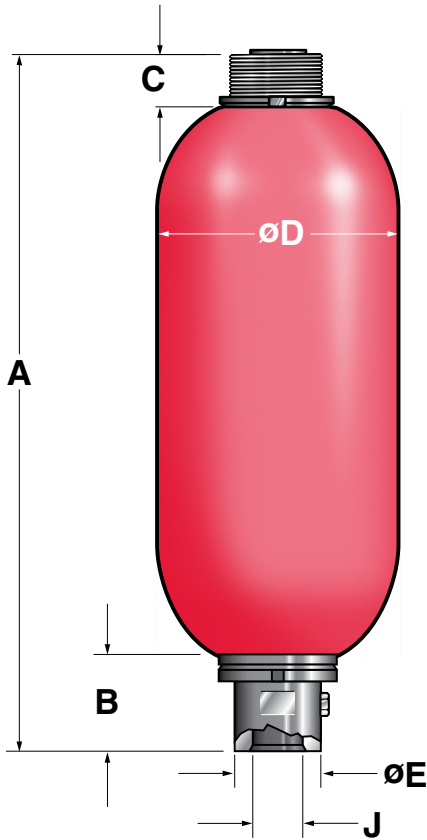
Top Repairable Bladder Accumulators for the Oil, Gas & Marine Markets

SB 330 TR... (3000 psi)

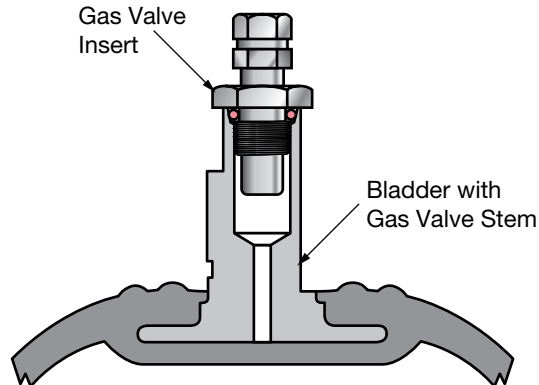
Size	Nom. Vol. gal.	Eff. Gas Vol. in ³	Weight	A	B	C	ØD	ØE	Thread J	NPTF	Q ¹ gpm
10	2 1/2	566	94 (43)	21.3 (540)	3.1 (80)	1.6 (40)	9.1 (231)	3.0 (76)	1 1/4	2"	240
20	5	1125	140 (63)	34.8 (883)	3.1 (80)	1.6 (40)	9.1 (231)	3.0 (76)	1 1/4	2"	240
32	10	2080	226 (102)	55.0 (1397)	3.1 (80)	1.6 (40)	9.1 (231)	3.0 (76)	1 1/4	2"	240
42	11	2320	270 (123)	60.2 (1530)	3.1 (80)	1.6 (40)	9.1 (231)	3.0 (76)	1 1/4	2"	240
54	15	3205	330 (150)	78.6 (1997)	3.1 (80)	1.6 (40)	9.1 (231)	3.0 (76)	1 1/4	2"	240

SB 600 TR... (5000 psi)

Size	Nom. Vol. gal.	Eff. Gas Vol. in ³	Weight	A	B	C	ØD	ØE	Thread J	NPTF	Q ¹ gpm
20	5	1125	172 (78)	33.5 (851)	3.1 (80)	1.6 (40)	9.1 (232)	3.0 (76)	1 1/4	2"	240
32	10	2080	260 (118)	53.7 (1364)	3.1 (80)	1.6 (40)	9.1 (232)	3.0 (76)	1 1/4	2"	240
54	15	3205	380 (172)	77.3 (1964)	3.1 (80)	1.6 (40)	9.1 (232)	3.0 (76)	1 1/4	2"	240



2 Piece Gas Valve



Dimensions are for general information only, all critical dimensions should be verified.
Dimensions are in inches/(mm) and lbs/(kg)

1) Maximum discharge flow rate recommended for vertically mounted accumulators.

Model Code

SB 330 - 20 S 11 / 112 S - 210 C

Series

- SB 330 = 3000 psi
- SB 600 = 5000 psi

Design

- (omit) = Standard (bottom repairable)
- TR = Top Repairable

Size (see dimension tables on the previous pages for most common sizes)

- 10 = 2.5 gallons
- 20 = 5 gallons
- 32 = 10 gallons
- 42 = 11 gallons
- 54 = 15 gallons

Line Connection

- S = Threaded (SAE Lock Nut)
- F = Flanged (SAE Lock Nut)

Gas Port

- 11 = 2 Piece Gas Valve

Material Code

Depending on Application

- 112 = Standard for oil service (mineral oil)

Fluid Port

- 0 = Synthetic coated carbon steel (internal & external for water service)
- 1 = Carbon steel
- 2 = Stainless steel (high strength)
- 3 = Stainless steel (corrosion resistance)
- 4 = Chemically plated carbon steel (internal & external for water service)
- 6 = Low temperature carbon steel (<-40°F)
- 7 = Others available on request

Shell

- 0 = Synthetic coated carbon steel (internal & external for water service)
- 1 = Carbon steel
- 2 = Chemically plated carbon steel (internal & external for water service)
- 6 = Low temperature carbon steel (<-40°F)
- 7 = Others available on request

Bladder Compound

- 2 = NBR (Buna N)
- 3 = ECO (Hydrin)
- 4 = IIR (Butyl)
- 5 = LT-NBR (low temp. Buna)
- 6 = FPM (Fluoro-elastomer)
- 7 = Others (available on request)

Compound	Oper. Temp Range	Typical Fluids
NBR	5° to 180°F	mineral oils
	32° to 180°F	water & water-glycols
NBR	-50° to 180°F	mineral oils
ECO...113...	-20° to 250°F	mineral oils
ECO...663...	-40° to 200°F	mineral oils (with low temperature CS shell)
IIR	-20° to 200°F	phosphate esters & brake fluids
FPM	5° to 300°F	chlorinated hydrocarbons

Country of Installation

- S = USA
 - W1 = ABS Type Approval
 - W3 = DNV Type Approval
- (for other countries see page 2 for proper code designation)

Maximum Working Pressure

- 210 = 3000 psi
- 345 = 5000 psi
- 414 = 6000 psi

Fluid Port Connection

Threaded

- C = SAE (ANSI B1.1)
- D = NPT (ANSI B1.2)

Flanged

- E = SAE 2" - 3000 psi (Code 61)
- F = SAE 1 1/2" - 6000 psi (Code 62)

*Model Codes containing red selections are non-standard items – Contact HYDAC for information and availability
Not all combinations are available*

Note: For the full line of bladder accumulators please refer to page 5