

Butler Tactical Parachute Systems

**S M A R T**

Small-unit Modular Aerial Re-supply Technology

**C H U T E**

Roanoke, Virginia USA



## **SYSTEM AND COMPONENT CATALOG**

**Updated January 1, 2003**

# The SMART CHUTE™ System OVERALL DESCRIPTION

The Butler **SMART CHUTE™ System** is designed to provide you with an affordable, easy to use, airdrop system to meet your increasing need for aerial delivery of general cargo, tactical supplies, disaster relief and rescue equipment.

The acronym itself (**S**mall **M**odular **A**erial **R**e-supply **T**echnology) tells you the basic concept. Thus, many of the **SMART CHUTE™ System** components are designed to be interchangeable, easily assembled and installed with minimal skill in parachute rigging and aerial delivery.

To further reduce the logistics burden and the skill level required in the field, pre-packed assemblies (canopy, bag, container, riser, static line) are available. The pre-packed assemblies require only the ability to open the plastic shipping bag, hook the static line to airplane and the riser to the payload. If needed, training in basic airdrop procedures is available from Butler Parachute Systems.

**NOTE:** As always, prices, minimum order quantities and specifications are subject to change without notice. Please contact Butler Parachute Systems for pricing information on items of interest to you.



*AirCargoBag™*



# The SMART CHUTE™ System Barrel Specifications & Prices



**Open Head Barrels (bulk cargo)**



**Closed Head Barrels (liquids)**



**PAK 383 – 95 GAL OVERPACK  
“Porcupine Barrel”**

The **SMART CHUTE™ System** barrels are offered in several styles and sizes which take into consideration the ease of handling by a small crew and the volume limitations inside aircraft. The **Open Head Barrels** (left above) are used for bulk cargo and miscellaneous equipment. They are made of rugged polyethylene and have a removable watertight lid with a band clamp and an over-center locking latch. The tapered sides of the open head barrels allow nesting for higher storage density. These particular barrels are stocked in blue (with white lids); however, we can make these barrels in different colors for a minimum run of 400 pieces.

The **Closed Head Barrels** (above right) are for dropping liquids (water and fuel for example) and are available in 15, 30 & 55 gallon drums. These are available in yellow, green, black, and blue. A large 95 gallon PAK-383 **OverPAK Barrel** (see next page) is available for bulk cargo drops (not recommended for liquids due to weight). The PAK-383 is available in black for a minimum order of 25 barrels.

Currently available barrels are listed below. Please remember that dimensions and specifications are approximate!

**Minimum Order Quantity May Apply To These Items**

BARREL PART #	BARREL TYPE	BARREL SIZE	VOLUME	EMPTY WEIGHT	BOTTOM DIAMETER	TOP DIAMETER	HEIGHT	FRESHWATER DISPLACEMENT
4012	Open Head	14 GAL	1.9 FT <sup>3</sup>	8 lb.	13"	14"	26"	117 lb.
4013	Open Head	30 GAL	4.0 FT <sup>3</sup>	13 lb.	18"	20"	30"	250 lb.
4014	Open Head	55 GAL	7.4 FT <sup>3</sup>	21 lb.	20"	23"	38"	458 lb..
4029	Closed Head	15 GAL	2.0	8 lb.	16"	16"	23"	125 lb.
4027	Closed Head	30 GAL	4.0	15 lb.	20"	20"	30"	250 lb.
4028	Closed Head	55 GAL	7.4	23 lb.	24"	24"	37"	458 lb.
4040	OverPAK-383	95 GAL	12.7	57 lb.	25"	32"	38"	792 lb.

# The **SMART CHUTE™** System Barrel Slings



Because not all supply drops consist of large heavy objects dropped from high speed aircraft, BPS has designed two different **SMART CHUTE™** barrel slings. For heavy items such as water, fuel, machine parts and ammunition, the Type "A" sling has an extended upper sling to better distribute the parachute opening shock around the barrel. The Type "A" is also recommended for use when dropping supplies into water since the sling can remain attached to the barrel after the parachute is released thus making it easier to retrieve the cargo from the water. All of the Type A slings have four legs with the exception of the PAK-383 95-gallon barrel which has six legs. The Type A slings are designed for a maximum opening shock load of 6,000 lb. or less.

When dropping lighter weight items such as clothing, tents, and rations onto land, the Type "B" sling may be used. The Type B slings are designed for a maximum opening shock load of 3,000 lb. or less. Both slings are constructed of MIL-W-4088, Type 8, nylon webbing, and quickly attach to the barrel.

**Minimum Order Quantity Applies To These Items.**

BARREL PART #	BARREL TYPE	BARREL SIZE	Type "A" Sling Part Number	Type "B" Sling Part Number
4012	Open Head	14 GAL	3227	3228
4013	Open Head	30 GAL	3208	3224
4014	Open Head	55 GAL	3209	3225
4026	Closed Head	15 GAL	4035	N/A
4027	Closed Head	30 GAL	4036	N/A
4028	Closed Head	55 GAL	4037	N/A
4030	Small Liquid	7 GAL	N/A	
4029	Small Liquid.	15 GAL	4038	
4025	Over-PAK-401	95 GAL	4001	N/A
4040	Over-PAK-383	95 GAL	4039	N/A

# The SMART CHUTE™ System

## AirCargoBag™



**Above** – View into box showing sample loading with jugs.

**Left** – Overall view of **AirCargoBag™** as packed.

The Smart Chute System **AirCargoBag™** is another of the many useful innovations from Butler Parachute Systems. The **AirCargoBag™** uses a triple-wall, corrugated cardboard box inside a protective bag and sling assembly to provide a convenient way to organize, protect and deliver your cargo.

The photograph at the above left shows an **AirCargoBag™** (with the box inside) with a Type B sling (Type A slings are also available but are usually not required). Notice that the sides of the bag extend up over the top of the box and are laced together to retain the box and protect the cargo. The protective bag itself is made from two layers of Nylon Parapack reinforced with the load bearing webbing of the sling. Also note that the design of the components allows **extremely efficient storage density** because the box is not assembled until actually needed for use and the bag itself may be kept folded for storage.

The nominal load capacity of the **AirCargoBag™** is 150 lb. (limited by the crush resistance of the box) and we recommend the use of our Medium Duty 20' Conical Cargo Canopy (or larger) for most general cargo. In the event that you wish to drop liquid containers (or other high-density items such as ammunition or machinery) in the **AirCargoBag™** we recommend that the box be reinforced with ½" plywood panels in the top and bottom. The box shown here (18" x 18" x 28") provides an internal volume of approximately 5.25 cubic feet. Other sizes can be developed upon request. In addition, we can source or develop stronger boxes for heavier payloads.

As an example of the many possible uses (for relief agencies, in particular), we have shown a picture (upper right looking down into the box) with nine standard one-gallon milk jugs arranged in the bottom. As you know, many other commodities (beans, rice, salt, water, soap powder, etc.) can be packaged in these jugs. Note also that the **AirCargoBag™** has been **designed for adaptive reuse** on the ground or water (with or without the box installed). For example, the sling design allows the bag to be slung on a hook, a limb or perhaps over the pommel on a saddle. The lacing top on the bag allows the top to be cinched up to secure the contents. In the water, the **AirCargoBag™** could easily be used as a sea anchor to stabilize the relative heading a vessel in distress.

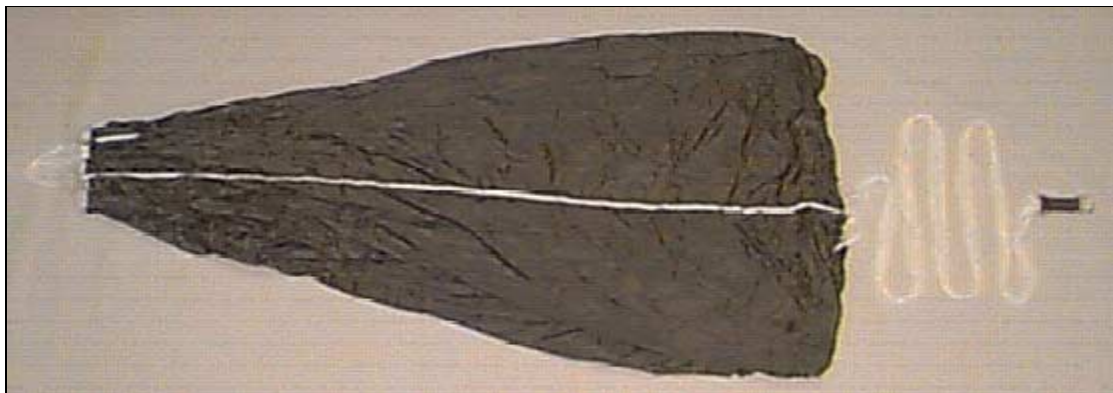
# The **SMART CHUTE™** System Parachute Canopies

All parachute canopies in the **SMART CHUTE™ System** family are designed for a nominal drop speed of 130 knots or less; however, under some conditions, they may be used at higher speeds - please contact our engineering office for guidance for use at higher speeds. The weights listed in the table below are the **maximum recommended** and the **typical operating** weight for each canopy size and will yield rates-of-descent of 25 ft/sec and 20 ft/sec at sea level (respectively). In general, BPS recommends that you try to drop your cargo at 20 ft/sec. or less. However, you may be dropping cargo that is relatively fragile (generators or other machinery for example) and could require a rate of descent significantly lower than 20 ft/sec. and would thus require a larger canopy. The performance chart on the next page will help you select the canopy to use. Don't forget to allow for density altitude factors as well! Additional sizes are available.

Most of the **SMART CHUTE™** System parachute canopies are constructed of MIL-C-7020, Type 1 ripstop cloth, MIL-C-4038 reinforcing tapes and MIL-C-5040, Type 3 (550 lb. tensile strength) suspension lines. All prices are single unit and based on canopy colors currently in stock. Custom colors or color patterns are available for an additional fee.

In addition to the canopies listed below, all of our FAA approved personnel parachute canopies may be used as part of the **SMART CHUTE™ System** although at significantly higher cost. If you have high value cargo contact BPS for guidance on using one of these canopies. See details on our web site concerning the personnel parachutes and the **BAT Sombrero Slider™**. Also see the operating limitations chart on the next page

**NOTE:** BPS also manufactures a wide variety of other cargo parachute equipment. Canopies and associated equipment are available for payload weights up to 3,000 lb. at speeds to 200 knots.



Canopy Trade Name	Average Canopy Weight	P/N	Maximum Recommended Weight	Typical Operating Weight
12' Medium Duty Flat Circular Cargo Canopy	2.3 lb.	3120	64 lb.	40 lb.
17.5' Medium Duty Conical Cargo Canopy	3.1 lb.	3117	122 lb.	75 lb.
20' Medium Duty Conical Cargo Canopy	4.3 lb.	3121	162 lb.	105 lb.
24.5' Medium Duty Conical Cargo Canopy	5.4 lb.	3116	243 lb.	155 lb.
24.5' Medium Duty LoPo Conical Cargo Canopy	5.4 lb.	3119	268 lb.	175 lb.
28' Medium Duty Conical Cargo Canopy	6.8 lb.	3110	322 lb.	220 lb.

# Butler Tactical Parachute Systems

## Personnel Parachute Operating Limitations (General)

Basis for Limitation ->				(US/	(BPS)**	(BPS)**	(BPS)**	(US/FAA)	(BPS)**	(BPS)**	(BPS)**	(BPS)**	(DOD)****	(BPS)**
BPS P/N	BPS Canopy Model	Nominal Diameter (ft)	Advertising Diameter ***	Approx Canopy Weight (lb)	Authorized Under FAA TSO C23 Revision	Maximum Permitted Gross Weight @ 150 KEAS	Maximum Recommended Gross Weight @ 150 KEAS	Maximum Recommended Gross Weight @ 165 KEAS	Maximum Permitted Gross Weight @ 170 KEAS	Maximum Recommended Gross Weight @ 170 KEAS	Maximum Recommended Gross Weight @ 190 KEAS	Maximum Recommended Gross Weight @ 225 KEAS	Maximum Demonstrated Structural Overload	
2101-1	350 LOPo	21.11	23.0	6.0	C23d	220 lb.	175 lb.	175 lb.	n/r	n/r	n/r	n/a	264 lb. @ 180 KIAS	
2101-2	450 LOPo	23.93	26.0	7.0	C23d	285 lb.	235 lb.	235 lb.	n/r	n/r	n/r	n/a	345 lb. @ 180 KIAS	
2101-3	550 LOPo	26.46	29.0	8.0	C23d	350 lb.	300 lb.	300 lb.	n/r	n/r	n/r	n/a	420 lb. @ 180 KIAS	
120	XTG-500	25.23	26.1	9.0	C23c, Cat B	254 lb.	254 lb.	n/r	n/r	n/r	n/r	n/a	300 lb. @ 175 KIAS	
3101	HX-300	19.56	20.3	5.8	C23d	250 lb.	175 lb.	175 lb.	250 lb.	n/r	n/r	n/a	300 lb. @ 180 KIAS	
3102	HX-400	22.58	23.4	6.4	C23d	340 lb.	235 lb.	235 lb.	340 lb.	235 lb.	235 lb.	n/a	400 lb. @ 205 KIAS	
3103	HX-500	25.23	26.1	7.9	C23d	440 lb.	310 lb.	310 lb.	416 lb.	310 lb.	310 lb.	n/a	500 lb. @ 205 KIAS	
3106	HX-500/24	25.23	26.1	8.5	C23d	440 lb.	310 lb.	310 lb.	416 lb.	310 lb.	310 lb.	n/a	500 lb. @ 205 KIAS	
3104	HX-600	27.64	28.6	9.1	C23d	550 lb.	382 lb.	382 lb.	500 lb.	382 lb.	382 lb.	n/a	600 lb. @ 205 KIAS	
n/a	USAF 28'	28.00	28.0	12.5	C23b ***	275 lb.	275 lb.	275 lb.	275 lb.	275 lb.	275 lb.	275 lb.	unknown	

**NOTES:** This information is as accurate as we can make it in a concise format and is only intended to provide a broad overview of the product line. If more detailed information is required, please contact Butler Parachute Systems for assistance.

\*US FAA regulations under TSO C23d allow the parachute to be certificated for any weight up to that which results in a rate-of-descent of 24 ft/sec at sea level. BPS uses this weight to set our requirements for structural overload testing (+20% speed & +20% weight). However, we recommend a lighter maximum gross weight (resulting in 20 ft/sec) in order to reduce the potential for landing injuries.

\*\*BPS recommended weight limits for all canopies (except 28' military) are based on 20 ft/sec. at sea level to reduce the potential for landing injuries. Outside of the US, the manufacturers recommendations become the governing factor. Based on the consistency of our testing results, we feel very comfortable with a demonstrated structural overload test speed at approximately 8% to 10% beyond the recommended maximum deployment speed.

\*\*\*The recommendation for 28' military canopy is based on structural limitations and 24 ft/sec. at sea level (with 4-line release device activated). US Military parachutes are considered by the FAA to be equivalent to C23b, Standard Category.

\*\*\*\*"Advertising Diameter" is provided in order to allow comparison with most competitive products which use twice the measurement from the skirt to the apex as the 'diameter'. note that this is misleading and not used for engineering calculations. For example, under this method, a 15' long windsock could be called a 30' diameter parachute.

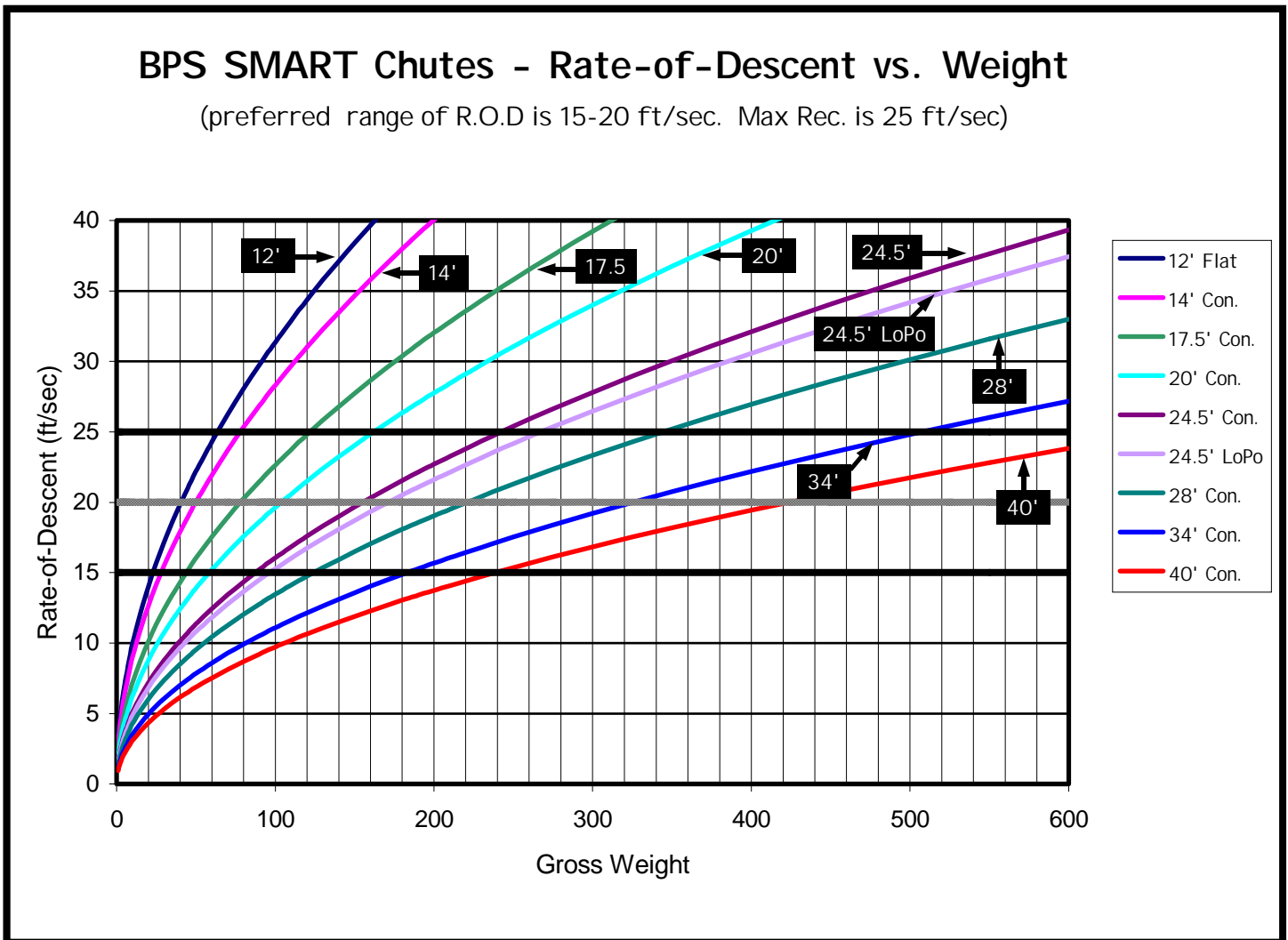
# The SMART CHUTE™ System

## What Size Canopy Do You Need?

Many types of general cargo can be dropped by parachute without damage. The impact velocity that is appropriate varies widely with the item. Bulk food (grain, etc.) and clothing can tolerate nearly any impact under 40 ft/sec (provided the container is appropriate for that). Machinery and electronics (pumps, generators, radios, etc) should generally be dropped at 15 ft/sec or less (on land).

A common (and expensive) mistake often made when air dropping supplies is to use a parachute that is larger than needed. For example, using a 28 foot parachute to drop a 40 pound item when a 12 foot parachute would work fine. With this in mind, BPS offers many different sizes of **SMART CHUTE™** parachute canopies. Remember, matching the correct size parachute to your airdrop item will reduce your overall cost, minimize the damage to your cargo, minimize your aircraft total payload, and allow more predictable and accurate delivery of your cargo.

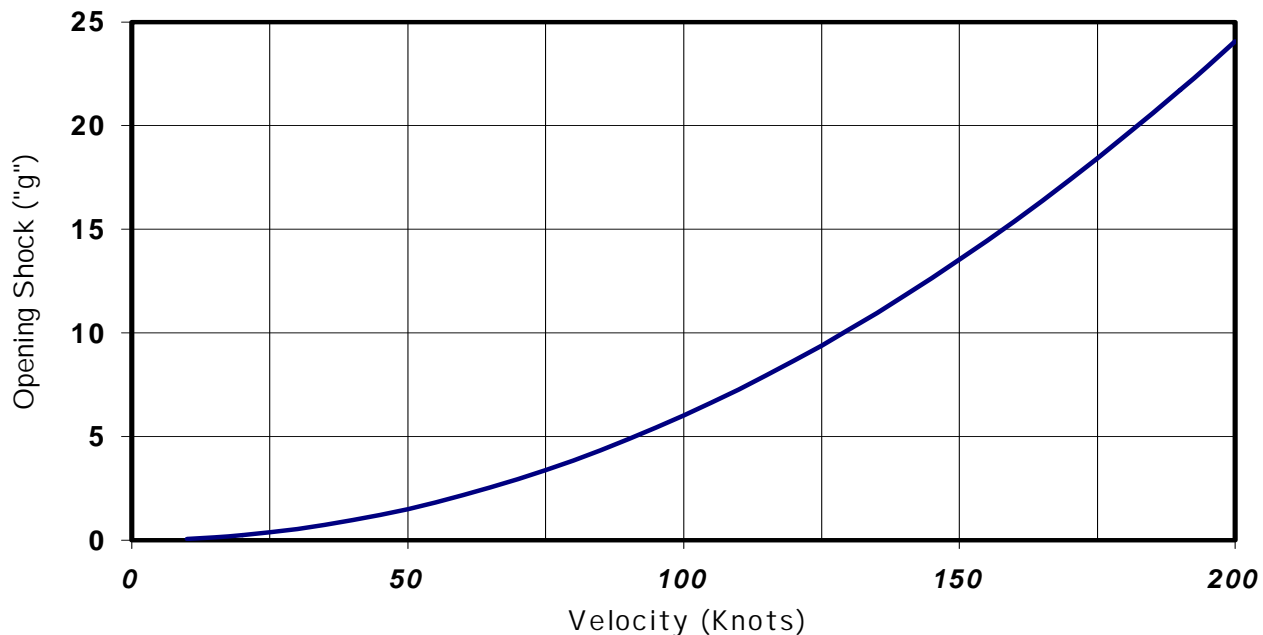
Use the table below to determine the rate of descent at various weights for each of the canopies in **The SMART CHUTE™ System**. If you'd like more detailed guidance, please call Manley Butler or Patrick Sims at BPS for assistance.



### Expected Peak Opening Shock at Canopy Loadings

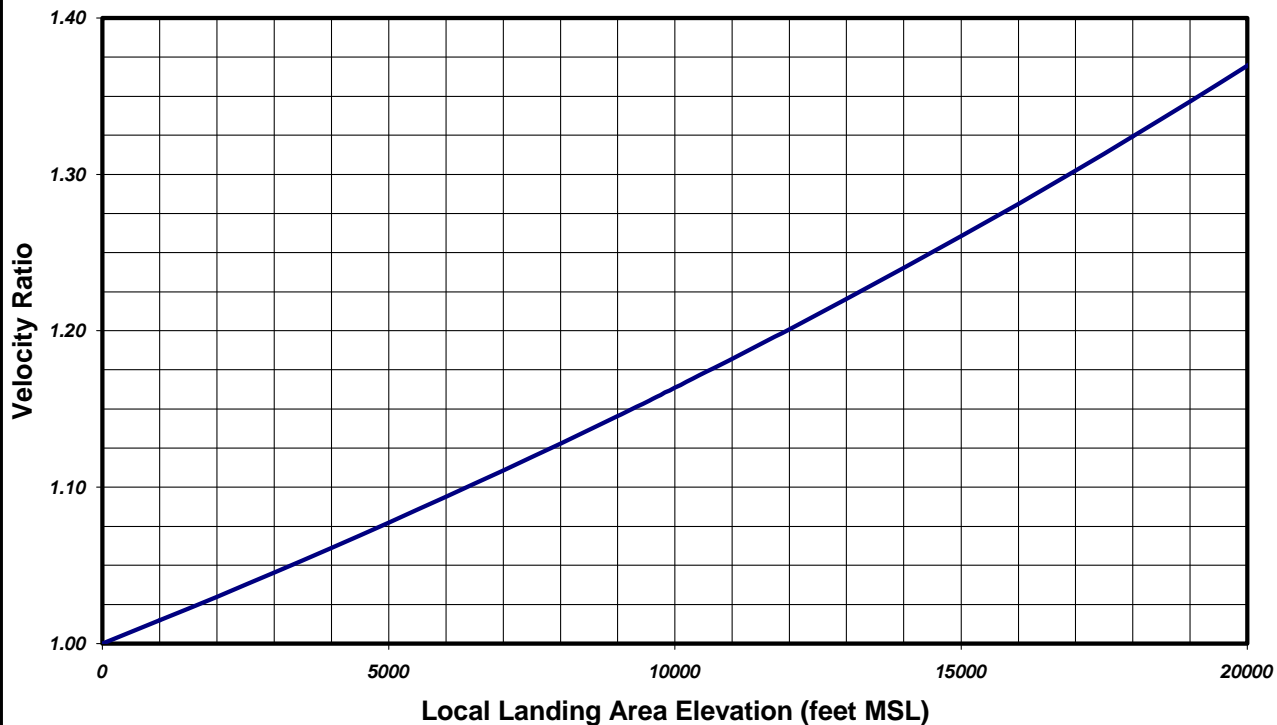
Equivalent to 20 ft/sec. Rate-of-Descent

(valid for BPS Cargo Chute Family Only)



### Velocity Ratio vs. Altitude

(multiply sea level rate-of-descent by ratio at local elevation)



# The SMART CHUTE™ System Containers, Deployment Bags & Static Lines



The **SMART CHUTE™ System** deployment bags and containers are sized to fit each particular canopy size with a loose hand pack. In addition to the sizes listed for the BPS **SMART CHUTE™** canopies, deployment bags and containers are available to accommodate the common US military surplus personnel chutes (the 28' C-9; 35' T-10; 24' T-10R). All D-bags and containers are constructed from 420 denier Nylon parapak. Colors vary depending on stock—color may be specified for a slight additional charge.

In order to accommodate the wide variety of aircraft used in aerial re-supply, BPS designed a dual length static line (alternate lengths are 10 feet and 15 feet) which will allow you to use virtually any aircraft in your fleet for supply drops. The static line is made of MIL-W-4088, Type 17 webbing (2500# tensile) and is equipped with a 1000 lb. snap link for attachment to the aircraft. The snap link may be looped onto either the 10-foot or 15-foot position with a lark's head knot (no sewing required). Colors vary depending on stock—color may be specified for a slight additional charge. Different lengths are available for a slight additional charge. A 20-foot canopy, bag and static line is shown here with riser P/N 4015.



**Minimum Order Quantities Apply To These Items.**

CANOPY SIZE	D-BAG with STATIC LINE P/N	CONTAINER P/N
BPS 12' & 14'	4002	4006
BPS 17.5'	4003	4008
BPS 20' & 24.5'	4004	4007
BPS 28'	4005	4009
USN/USAF C-9 (28')	4016	4018
US ARMY T-10 (35')	4017	4019
US ARMY T-10R(24')	4020	4021

# The SMART CHUTE™ System

## RISER SUB-ASSEMBLIES & RELATED ITEMS

We realize that there are many different payload sizes and shapes that must be accommodated by the parachute system and its related parts. To help you mix and match components that will work for the widest possible variety of situations, BPS is continually developing new components and sub-assemblies such as the risers shown here. We are continually adding components, please check the web site periodically for new products. If you would like us to design something for your particular application, please contact Manley Butler.

All risers shown here are made with MIL-W-4088, T8 webbing (4000# tensile). Primarily because of the rated capacity of the hardware components, the maximum recommended opening load for these components is 3,000# unless otherwise noted. Unless otherwise shown or noted the riser ends are sewn with a 2" loop at the end to allow use with #5 or #6 Rapide Connector Links. The Riser end loops can be "boxed" to allow the use of MS 22021 ("Speed Links") or MS22002 ("L-Bar") links for a slight additional charge.

**NOTE:** Parachute canopies and associated equipment are available for payload weights up to 3,000 lb. and drop speeds up to 200 kts. Contact Manley Butler for additional information.

### Minimum Order Quantities Apply To Some Of These Items.



**P/N 3216    PRICE \$20.00**

4-Leg Riser, 3,000# Capacity  
18" Overall Length  
(Open end for carabiner-type or  
large Rapide Link attachment)



**P/N 3217    PRICE \$32.00**

4-Leg Riser, 3,000# Capacity  
18" Overall Length  
1 ea. B-12 SNAP (MS22044)



3218

**P/N 3218 PRICE \$25.00**

4-Leg Riser, 3,000# Capacity  
18" Overall Length  
1 ea. "D" RING (MS22046)



3219

**P/N 3219 PRICE \$39.00**

2-Leg Riser, 3,000# Capacity  
18" Overall Length  
1 ea. B-12 SNAP (MS 22044) with  
2 ea. "D" RINGS (MS22046)



3220

**P/N 3220 PRICE \$42.00**

2-Leg Riser, 3,000# Capacity  
18" Overall Length  
3 ea. "D" RINGS (MS22046)



3221

**P/N 3221 PRICE \$32.00**

2-Leg Riser, 3,000# Capacity  
18" Overall Length  
1 ea. B-12 SNAP (MS22044)



**P/N 3222    PRICE \$29.00**

2-Leg Riser, 3,000# Capacity  
18" Overall Length  
1 ea. "D" RING (MS22046)



**P/N 3210    PRICE \$19.00**

2-Leg Riser, 3,000# Capacity  
18" Overall Length



**P/N 3213    PRICE \$61.00**

2-Leg Riser, 3,000# Capacity  
24" Overall Length  
1 ea. "D" Ring (MS22046) with  
2 ea. Butterfly Snaps (MS22042)

(Note: Conforms to Standard USCG  
Configuration for Cargo Air Drops)



**P/N 3229    PRICE \$54.00**

2-Leg Riser, 3,000# Capacity  
24" Overall Length  
1 ea. "D" Ring (MS22046) with  
2 ea. B-12 Snaps (MS22044)

(Note: Conforms to Standard USCG  
Configuration for Cargo Air Drops except  
that B-12 Snaps are used instead of  
Butterfly Snaps)

# The SMART CHUTE™ System MISCELLANEOUS HARDWARE

BPS stocks a wide variety of hardware items to assist our customers in assembling and using our products. Depending on which sub-assemblies you are working with some of the pieces shown here will be required. Most of the items we stock are stainless steel, however, many are also available in plated steel. In addition to the items shown here, all the usual MS hardware is available as well.

We also offer several different varieties of riser release devices; the one shown below is based on the well-known 3-ring riser release mechanism. It is shown here with a time-delay pyrotechnic cutter. Please check our web site frequently for updates.



Bow Shackle



Rapide Link



Delta Link



Wide Frame Shackle



MS22046 D-Ring



MS22044 B-12 Snap



MS22042 Butterfly Snap



3-Ring Riser Release with time-delay pyrotechnic cutter for release.  
A water activated pin-pull device is also available.

**Coming Soon!**  
**The MAD System**  
**Maritime Aerial Delivery System**

Cargo air delivery parachute systems complete with flotation devices and 400' trail lines to expedite recovery in the water. MAD Systems will be available completely packaged and ready to drop with capacities up to 600 lb. at 200 knots. Keep an eye on the web site for more details.

**NOTE:**

**The Butler Parachute Systems Group, Inc. and its subsidiaries manufacture a wide variety of recovery systems and equipment. We have extensive experience in the development of specialized systems. When you need engineering and design assistance for your programs, please let us know. We can also provide assistance with test and development programs for these products.**

## **Butler Tactical Parachute Systems, LLC**

1820 Loudon Avenue, N.W.

P.O. Box 6098

Roanoke, VA 24017-0098

Telephone: (540) 342-2501      FAX: (540) 342-4037

E-mail: [info@butlerparachutes.com](mailto:info@butlerparachutes.com)

Web Site: [www.butlerparachutes.com](http://www.butlerparachutes.com)