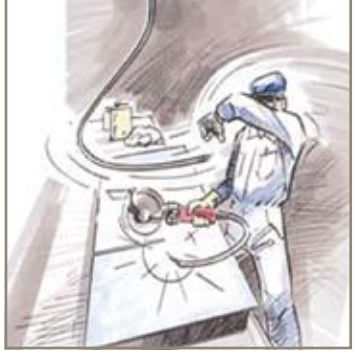




aerospace
climate control
electromechanical
filtration
fluid & gas handling
hydraulics
pneumatics
process control
sealing & shielding

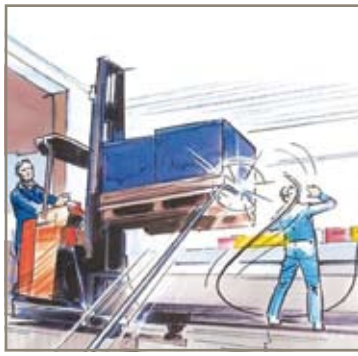





# AirGuard Protection System

## Airfuse - protection of personnel, machinery and equipment

Catalog 0726-E



Parker

ENGINEERING YOUR SUCCESS.

## ⚠ CAUTION:

Polycarbonate bowls and sight domes, being transparent and tough, are ideal for use with Filters and Lubricators. They are suitable for use in normal industrial environments, but should not be located in areas where they could be subjected to direct sunlight, an impact blow, nor temperatures outside of the rated range. As with most plastics, some chemicals can cause damage. Polycarbonate bowls and sight domes should not be exposed to chlorinated hydro-carbons, ketones, esters and certain alcohols. They should not be used in air systems where compressors are lubricated with fire-resistant fluids such as phosphate ester and di-ester types.

Metal bowls are recommended where ambient and/or media conditions are not compatible with polycarbonate bowls. Metal bowls resist the action of most such solvents, but should not be used where strong acids or bases are present or in salt laden atmospheres. Consult the factory for specific recommendations where these conditions exist.

**TO CLEAN POLYCARBONATE COMPONENTS USE MILD SOAP AND WATER ONLY! DO NOT** use cleansing agents such as acetone, benzene, carbon tetrachloride, gasoline, toluene, etc., which are damaging to this plastic.

**Metal bowl guards are recommended for all applications.**

## ⚠ WARNING

FAILURE OR IMPROPER SELECTION OR IMPROPER USE OF THE PRODUCTS AND/OR SYSTEMS DESCRIBED HEREIN OR RELATED ITEMS CAN CAUSE DEATH, PERSONAL INJURY AND PROPERTY DAMAGE.

This document and other information from Parker Hannifin Corporation, its subsidiaries and authorized distributors provide product and/or system options for further investigation by users having technical expertise. It is important that you analyze all aspects of your application including consequences of any failure, and review the information concerning the product or system in the current product catalog. Due to the variety of operating conditions and applications for these products or systems, the user, through its own analysis and testing, is solely responsible for making the final selection of the products and systems and assuring that all performance, safety and warning requirements of the application are met.

The products described herein, including without limitation, product features, specifications, designs, availability and pricing, are subject to change by Parker Hannifin Corporation and its subsidiaries at any time without notice.

## Offer of Sale

The items described in this document are hereby offered for sale by Parker Hannifin Corporation, its subsidiaries or its authorized distributors. This offer and its acceptance are governed by the provisions stated on the separate page of this document entitled “Offer of Sale”.

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Pneumatic Division
Richland, Michigan
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# Protect your most important assets: your employees and their equipment!

The AirGuard offers simple but efficient protection to pneumatic systems in the event of a broken compressed-air hose or pipe. The air supply is immediately shut off by the AirGuard, should the volume of air exceed a set value. This “value” is factory preset and is set to allow normal air consumption when using air tools.

Should the air consumption exceeds the set value, e.g. the air line is severed, then the internal piston instantly shuts off the main flow. An integral bleed hole allows some air to flow though. This enables the line pressure to automatically reset the AirGuard once the main line break is repaired.




## Product Features:

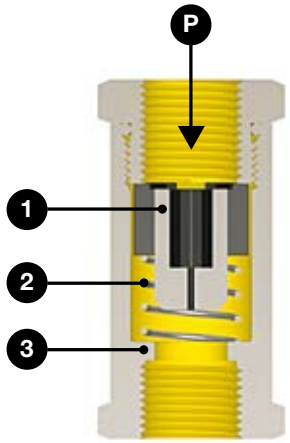
- **Maintenance Friendly**
  Repair possible while plant is still operating.
- **Economic**
  Competitive pricing.
- **Complies with EU Standard**
  EN 983 - § 5.3.4.3.2.
- **Reliable and Tamperproof**
  No adjustment necessary.
- **Complies with ISO Standard**
  4414 - § 5.4.5.11.1
- **Complies with MSHA Regulation**
  30CFR 56.13021, 57.13021 and 57.1730
- **Lightweight**
  Compact size.
- **Compatible with all Pneumatic Systems**
- **Can be used as a Flow Blocker**
- **TUV Approval**
  No. 01-02-0145
- **EU Registered Utility**
  Model No. 0025 73 525
- **Complies with OSHA Regulation Standard**
  29CFR 1926.302 (Partial)



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## Function:

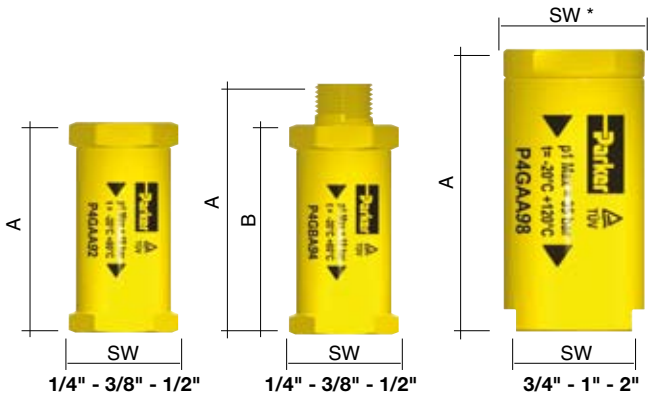
(P) is the inlet. Air passes the piston (1) and continues through the seat (3).
The air flow, passing the piston, is slowed down by means of length wise grooves on the outer side of the piston. If the flow is too high, the air cannot pass the piston quickly enough, and the piston is forced against the spring (2) and towards the seat. The maximum flow is shown in the graph. If the value indicated is exceeded e.g. if the hose suddenly breaks - the air supply is automatically shut off. An integral bleed hole allows some air to flow though. This enables the line pressure to automatically reset the AirGuard once the main line break is repaired.




## Weight and Dimensions metric (imperial)

| Thread Connection | Dimensions mm (inch) | | | Weight g (oz.) | Max. Inlet Pressure | Temp. Range | Material | P1 Inlet Thread | P2 Outlet Thread | Part Number NPT | Part Number BSP |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | A | B | SW | | | | | | | | |
| 1/4" | 48 (1.89) | - | 22 (.87) | 30 (1.06) | (18 bar) 255 PSIG | -20°C to 80°C (-4°F to 176°F) | Housing: Aluminum Piston: Polyacetal | Female | Female | P4GAA92 | P4GAA12* |
| 1/4" | 58 (2.28) | 49 (1.93) | 22 (.87) | 36 (1.27) | | | | Male | Female | P4GBA92 | P4GBA12* |
| 3/8" | 59 (2.32) | - | 28 (1.10) | 58 (2.05) | | | | Female | Female | P4GAA93 | P4GAA13* |
| 3/8" | 71 (2.80) | 59 (2.32) | 28 (1.10) | 62 (2.19) | | | | Male | Female | P4GBA93 | P4GBA13* |
| 1/2" | 65 (2.56) | - | 31 (1.22) | 78 (2.75) | | | | Female | Female | P4GAA94 | P4GAA14* |
| 1/2" | 80 (3.15) | 65 (2.56) | 31 (1.22) | 85 (3.00) | | | | Male | Female | P4GBA94 | P4GBA14* |
| 3/4" | 76 (2.99) | - | 30/36* (1.18/1.42*) | 107 (3.77) | (35 bar) 500 PSIG | -20°C to 120°C (-4°F to 248°F) | Housing: Aluminum Piston: Aluminum | Female | Female | P4GAA96 | P4GAA16* |
| 1" | 100 (3.94) | - | 41/50* (1.61/1.97*) | 300 (10.58) | | | | Female | Female | P4GAA98 | P4GAA18* |
| 2" | 130 (5.12) | - | 70/80* (2.76/3.15*) | 775 (27.34) | | | | Female | Female | P4GAA9C | P4GAA1C* |

*** Note: BSP Threads Available Upon Request.**

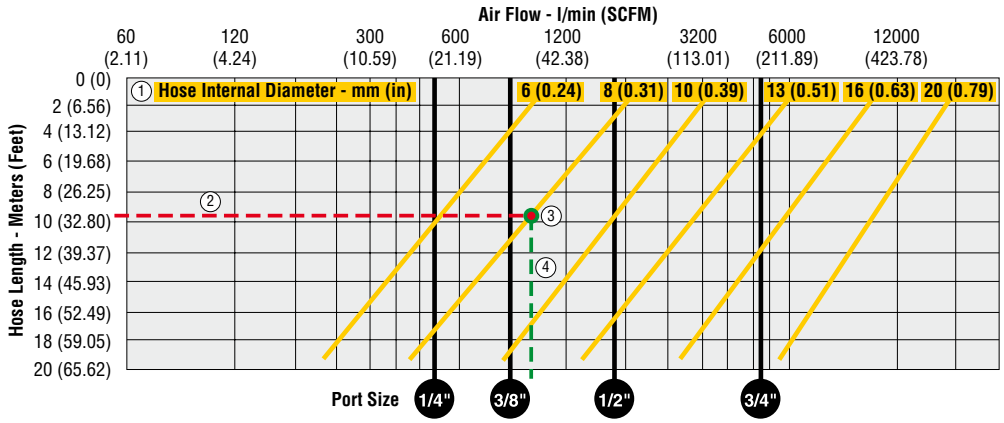





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# How to Select the Optimal Size of an AirGuard

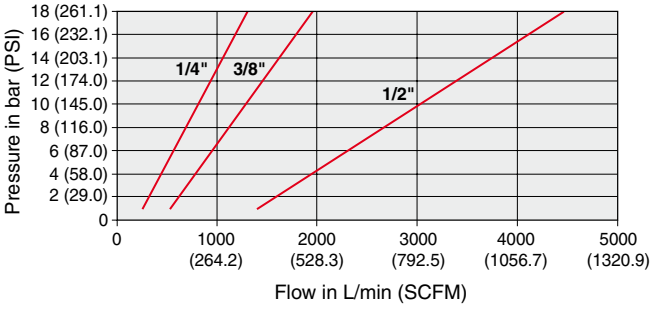
**Information based on an inlet pressure of 7 bar (100 PSIG)**



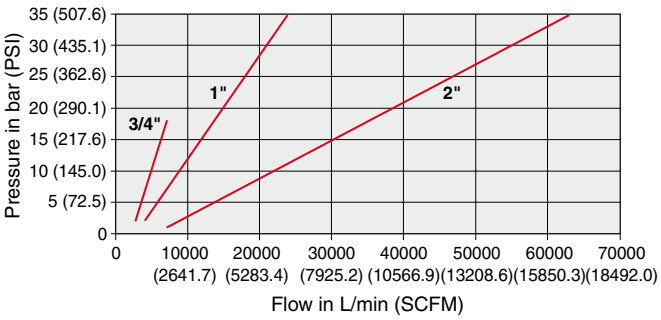

a. Determine the internal diameter of the hose, tube or pipe being used ① (see specification Hose-internal Diameter in yellow box, yellow diagonal line).
b. Determine the length of the hose, tube or pipe ② (Hose length in meters).
c. Define the intersection of point a and b, and mark a vertical line downwards. ③ - ④ (In the example the red/green dot and the green dashed line).
d. The next vertical black line, left of the intersection line ④ (example: green dashed) tells the correct AirGuard size (in inches).
e. Important: Every flow value to the right of the respective vertical line (black) would activate the AirGuard in case of a bursting hose, pipe or tube. All AirGuard sizes right of the intersection line (green) are too big and will not close up.
**f. Example:** Which air fuse should be used for a hose, pipe or tube bearing 8 mm inner diameter and 10 meters of length - follow the 10 meter line (red ② ) to the intersection point (red/green dot ③ ). Now the next left black line marks the correct size.
g. Result: The correct size in our example is the AirGuard 3/8"

# Closing Flow Graphs

### 1/4", 3/8" and 1/2" Flow Rates




### 3/4", 1" and 2" Flow Rates




### Dimensioning of Compressed Air Hoses and Equipment

| Connection Size | Hose Length 0 to 10 meters (0 to 32.8 ft) | | | Hose Length 10 to 20 meters (32.8 to 65.6 ft) | | |
|---|---|---|---|---|---|---|
| | Inner Diameter Minimum mm (in) | Minimum Pressure bar (PSI) | Flow at 6 bar l/min (GPM) | Inner Diameter Minimum mm (in) | Minimum Pressure bar (PSI) | Flow at 6 bar l/min (GPM) |
| 1/4" | 7 (.28) | 4 (58) | 480 (127) | 8 (.31) | 4 (58) | 480 (127) |
| 3/8" | 10 (.39) | 4 (58) | 1100 (291) | 12 (.47) | 4 (58) | 1100 (291) |
| 1/2" | 12 (.47) | 4 (58) | 2000 (528) | 14 (.55) | 4 (58) | 2000 (528) |
| 3/4" | 18 (.71) | 4 (58) | 3800 (1004) | 20 (.79) | 4 (58) | 3800 (1004) |
| 1" | 24 (.94) | 4 (58) | 6500 (1717) | 26 (1.02) | 4 (58) | 6500 (1717) |
| 2" | 45 (1.77) | 4 (58) | 16000 (4227) | 50 (1.97) | 4 (58) | 16000 (4227) |

If the pressure is lower than stated in the table, a hose with a larger internal diameter must be used.

To select the correct size AirGuard, the pneumatic tool or equipment must have a maximum flow requirement to the left of the red line.

e.g.: 15 bar @20000 L/m = 2" size AirGuard
8 bar @1000 L/m = 3/8" size AirGuard



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The Push-Lok Plus line is the most versatile general purpose hose available. It can be used in numerous applications where low-pressure media is used.

## Features and Benefits

- Widest fluid compatibility and application range
- Broadest size range (1/4" thru 1")
- Highest working pressure in all sizes in the industry

## Construction

- Inner tube: Synthetic Rubber
- Reinforcement: One Fiber Braid
- Cover: Synthetic Rubber, MSHA Accepted

## Temperature

- Petroleum base hydraulic fluids, lubricating oils, and antifreeze solutions -40°F to +257°F (-40°C to +125°C)
- Water, water / oil emulsion, and water / glycol fluids up to +185°F (+85°C)
- Air up to +158°F (+70°C)

## Water Service

Water, water/oil emulsion, and water/glycol hydraulic fluids up to +185°F (+85°C). Air up to +158°F (+70°C).

## Fitting Recommendations

Use only with Push-on Hose Fittings and Quick Couplers with Push-lock Hose Barb.

**Note:** Push-Lok hose is recommended for vacuum applications but not for cooling lines in air conditioners and heat pumps, nor for hydraulic applications where extreme pulsations are encountered. Push-Lok is not recommended for any fuel.

## Nomenclature

Part numbers are constructed from symbols that identify the style and size of the hose. Numbers identify the hose I.D. in 1/16's of an inch.

**Example:**

801 – 4 – GRA – RL

- 801 Series
- Size 1/4" I.D. (4/16)
- Color
- Length

**Note:** 801-10-GRN-RL Not Available

## Available Cover Colors

- GRA = gray
- RED = red
- YEL = yellow
- BLU = blue
- GRN = green
- BLK = black

## Hose Length

| Hose Type | I.D. | Reel Length |
|---|---|---|
| **801-4** | 1/4" | 600 feet |
| **801-6** | 3/8" | 450 feet |
| **801-8** | 1/2" | 300 feet |
| **801-10** | 5/8" | 250 feet |
| **801-12** | 3/4" | 200 feet |
| **801-16** | 1" | 200 feet |

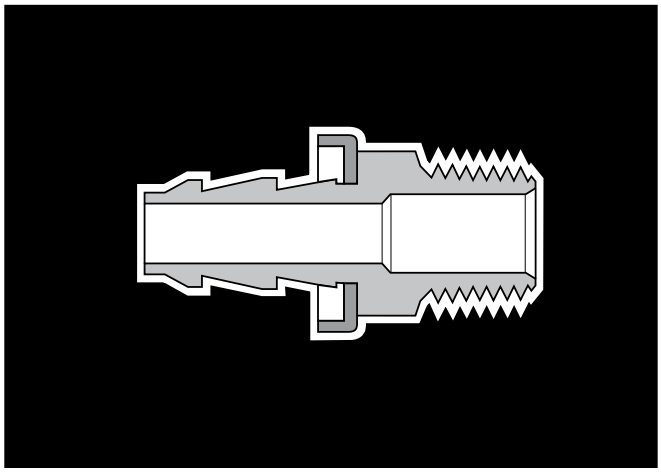
## Push-on Hose 801 Push-Lok Plus

| # | Hose I.D. | | Hose O.D. | | Working Pressure | | Burst Pressure | | Minimum Bend Radius | | Weight | | Vacuum Rating | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Part No. | Inch | mm | Inch | mm | PSI | MPa | PSI | MPa | Inch | mm | lbs/ft | kg/m | Inches of Hg | kPa |
| 801-4 | 1/4 | 6,3 | 0.50 | 12,7 | 350 | 2.4 | 1000 | 6,8 | 2-1/2 | 65 | 0.09 | 0.13 | 28 | 95 |
| 801-6 | 3/8 | 10 | 0.63 | 15,9 | 350 | 2.4 | 1000 | 6,8 | 3 | 75 | 0.11 | 0.16 | 28 | 95 |
| 801-8 | 1/2 | 12,5 | 0.78 | 19,8 | 300 | 2.1 | 1000 | 6,8 | 5 | 125 | 0.18 | 0.27 | 28 | 95 |
| 801-10 | 5/8 | 16 | 0.91 | 23,0 | 300 | 2.1 | 1000 | 6,8 | 6 | 150 | 0.19 | 0.28 | 15 | 51 |
| 801-12 | 3/4 | 19 | 1.03 | 26,2 | 300 | 2.1 | 1000 | 6,8 | 7 | 180 | 0.24 | 0.36 | 15 | 51 |
| 801-16 | 1 | 25 | 1.28 | 32,6 | 200 | 1.4 | 700 | 4,8 | 10 | 250 | 0.37 | 0.55 | 15 | 51 |



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## Advantages
Push-on Hose Fittings are machined from the highest quality brass or stainless steel. The barbs are specifically engineered to work in conjunction with the I.D. and braid angle of Push-on Hose, ensuring a tight connection **without clamps.**

## Assembly
Push-on Hose Fittings are designed only for use with Push-on Hose. Do not use with any other style or manufacturer of hose.

## Temperature Range
-40°F to 180°F (-40°C to 82°C)

Limited by media through hose assembly.

## Pressure Range
Limited by hose I.D.

## Assembly Instructions:
1. Cut hose cleanly and squarely to length.
2. Lubricate hose I.D. and barbs with light oil or soapy water.
3. Push the hose onto the fitting until it bottoms against the yellow stop ring. This ensures that all of the barbs are engaged with the hose and will also help keep the end of the hose from fraying.
4. ⚠ **CAUTION: Use of clamps may damage sealing integrity of Hose and Fitting Assembly.**

## Visual Index

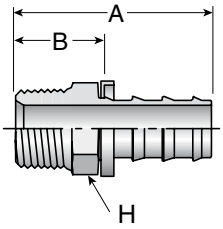
| | | | | | |
|---|---|---|---|---|---|
| ***NPTF Pipe*** | 30182 Page 6<br>Male – Rigid | 31382 Page 6<br>Male – Swivel | 30282 Page 6<br>Female – Rigid | ***NPSM Pipe*** | 37G82 Page 7<br>Female – Swivel Gasket Joint |
| ***JIC 37°*** | 30382 Page 7<br>Male – Rigid | 30682 Page 7<br>Female – Swivel | ***SAE*** | 30482 Page 8<br>Male – Rigid | 30882 Page 8<br>Female – Swivel |
| ***Union*** | 38282 Page 8<br>Push-Lok Union | | | | |



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## 30182 Push-on Hose Barb to Male Pipe

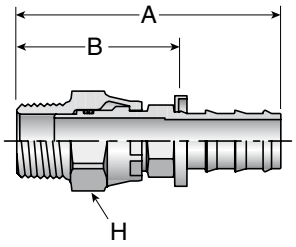
| # Part No. | Thread Inch | | Hose Size Inch | | A Inch | A mm | H Inch | B Inch | B mm |
|---|---|---|---|---|---|---|---|---|---|
| 30182-2-4B | 1/8 x 27 | -2 | 1/4 | -4 | 1.39 | 35 | 7/16 | .64 | 16 |
| 30182-4-4B | 1/4 x 18 | -4 | 1/4 | -4 | 1.57 | 40 | 9/16 | .82 | 21 |
| 30182-4-6B | 1/4 x 18 | -4 | 3/8 | -4 | 1.78 | 45 | 9/16 | .88 | 22 |
| 30182-6-6B | 3/8 x 18 | -6 | 3/8 | -6 | 1.78 | 45 | 11/16 | .88 | 22 |
| 30182-8-6B | 1/2 x 14 | -8 | 3/8 | -6 | 2.03 | 52 | 7/8 | 1.13 | 29 |
| 30182-6-8B | 3/8 x 18 | -6 | 1/2 | -8 | 1.93 | 49 | 11/16 | .88 | 22 |
| 30182-8-8B | 1/2 x 14 | -8 | 1/2 | -8 | 2.18 | 55 | 7/8 | 1.13 | 29 |
| 30182-12-8B | 3/4 x 14 | -12 | 1/2 | -8 | 2.21 | 56 | 1-1/16 | 1.16 | 29 |
| 30182-8-10B | 1/2 x 14 | -8 | 5/8 | -10 | 2.58 | 66 | 7/8 | 1.13 | 29 |
| 30182-12-12B | 3/4 x 14 | -12 | 3/4 | -12 | 2.61 | 66 | 1-1/16 | 1.16 | 29 |




## 31382 Push-on Hose Barb to Male Pipe Swivel

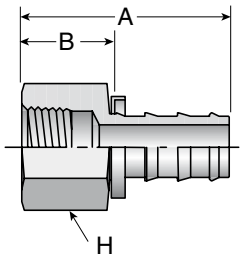
| # Part No. | Thread Inch | | Hose Size Inch | | A Inch | A mm | H Inch | B Inch | B mm |
|---|---|---|---|---|---|---|---|---|---|
| 31382-4-4 | 1/4 x 18 | -4 | 1/4 | -4 | 1.6 | 41 | 9/16 | .85 | 22 |
| 31382-6-6 | 3/8 x 18 | -6 | 3/8 | -6 | 1.79 | 45 | 11/16 | .89 | 23 |
| 31382-8-8* | 1/2 x 14 | -8 | 1/2 | -8 | 2.2 | 56 | 7/8 | 1.15 | 29 |

* Steel




## 30282 Push-on Hose Barb to Female Pipe

| # Part No. | Thread Inch | | Hose Size Inch | | A Inch | A mm | H Inch | B Inch | B mm |
|---|---|---|---|---|---|---|---|---|---|
| 30282-4-4B | 1/4 x 18 | -4 | 1/4 | -4 | 1.56 | 40 | 3/4 | .81 | 21 |
| 30282-6-6B | 3/8 x 18 | -6 | 3/8 | -6 | 1.82 | 46 | 7/8 | .92 | 23 |
| 30282-8-8B | 1/2 x 14 | -8 | 1/2 | -8 | 2.16 | 55 | 1-1/16 | 1.11 | 28 |

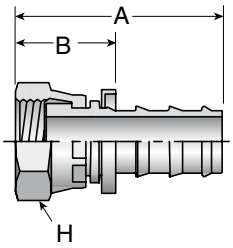





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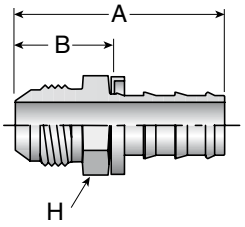
## 37G82 Push-on Hose Barb to Female Pipe (NPSM) Swivel with Gasket

| # Part No. | Gasket | Thread Inch | | Hose Size Inch | | A Inch | A mm | H Inch | B Inch | B mm |
|---|---|---|---|---|---|---|---|---|---|---|
| 37G82-4-4 | 07G-4 | 1/4- 18 | -4 | 1/4 | -4 | 1.55 | 39 | 11/16 | 0.80 | 20 |
| 37G82-4-6 | 07G-4 | 1/4- 18 | -4 | 3/8 | -6 | 1.7 | 43 | 11/16 | 0.80 | 20 |
| 37G82-6-6 | 07G-6 | 3/8- 18 | -6 | 3/8 | -6 | 1.75 | 44 | 7/8 | 0.85 | 22 |
| 37G82-8-8 | 07G-8 | 1/2- 14 | -8 | 1/2 | -8 | 2.07 | 53 | 1 | 1.02 | 26 |
| 37G82-8-10 | 07G-8 | 1/2- 14 | -8 | 5/8 | -10 | 2.47 | 63 | 1 | 1.02 | 26 |
| 37G82-12-12 | 07G-12 | 3/4- 14 | -12 | 3/4 | -12 | 2.54 | 65 | 1-1/4 | 1.09 | 28 |



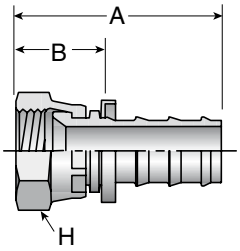

## 30382 Male JIC 37° Rigid

| # Part No. | Thread Inch | | Hose I.D Inch | A Inch | A mm | H Inch | B Inch | B mm |
|---|---|---|---|---|---|---|---|---|
| 30382-4-4 | 1/4 | 7/16x20 | 1/4 | 1.56 | 40 | 1/2 | 0.81 | 21 |
| 30382-5-6 | 5/16 | 1/2x20 | 1/4 | 1.59 | 40 | 9/16 | 0.84 | 21 |
| 30382-6-6 | 3/8 | 9/16x18 | 3/8 | 1.78 | 45 | 5/8 | 0.88 | 22 |
| 30382-8-8 | 1/2 | 3/4x16 | 1/2 | 2.06 | 52 | 3/4 | 1.01 | 26 |
| 30382-10-10 | 5/8 | 7/8x14 | 5/8 | 2.62 | 67 | 7/8 | 1.17 | 30 |
| 30382-12-12 | 3/4 | 1-1/16x12 | 3/4 | 2.72 | 69 | 1-1/8 | 1.27 | 32 |




## 30682 Push-on Hose Barb to Female SAE JIC 37° Swivel

| # Part No. | Thread Inch | | | Hose Size Inch | | A Inch | A mm | H Inch | B Inch | B mm |
|---|---|---|---|---|---|---|---|---|---|---|
| 30682-4-4B | 1/4 | 7/16 x 20 | -4 | 1/4 | -4 | 1.52 | 39 | 9/16 | 0.77 | 20 |
| 30682-5-4B | 5/16 | 1/2 x 12 | -5 | 1/4 | -4 | 1.58 | 40 | 5/8 | 0.83 | 21 |
| 30682-6-6B | 3/8 | 9/16 x 18 | -6 | 1/4 | -4 | 1.61 | 41 | 11-16 | 0.86 | 22 |
| 30682-8-6B | 1/2 | 3/4 x 16 | -8 | 3/8 | -6 | 1.87 | 47 | 7/8 | 0.97 | 25 |
| 30682-8-8B | 1/2 | 3/4 x 16 | -8 | 1/2 | -8 | 2.02 | 51 | 7/8 | 0.97 | 25 |
| 30682-10-8B | 5/8 | 7/8 x 14 | -10 | 1/2 | -8 | 2.14 | 54 | 1 | 1.09 | 28 |
| 30682-10-10B | 5/8 | 7/8 x 14 | -10 | 5/8 | -10 | 2.54 | 65 | 1 | 1.09 | 28 |
| 30682-12-12B | 3/4 | 1-1/16 x 12 | -12 | 3/4 | -12 | 2.65 | 67 | 1-1/4 | 1.2 | 30 |

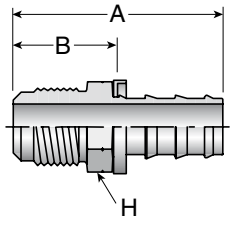





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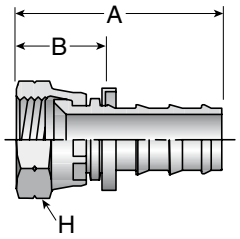
## 30482 Push-on Hose Barb to Male SAE 45°

| # Part No. | Thread Inch | | | Hose Size Inch | | A Inch | A mm | H Inch | B Inch | B mm |
|---|---|---|---|---|---|---|---|---|---|---|
| 30482-4-4B | 1/4 | 7/16 x 20 | -4 | 1/4 | -4 | 1.51 | 38 | 7/16 | 0.76 | 19 |
| 30482-5-4B | 5/16 | 1/2 x 20 | -5 | 1/4 | -4 | 1.61 | 41 | 9/16 | 0.86 | 22 |
| 30482-6-6B | 3/8 | 5/8 x 18 | -6 | 3/8 | -6 | 1.84 | 47 | 5/8 | 0.94 | 24 |
| 30482-8-8B | 1/2 | 3/4 x 16 | -8 | 1/2 | -8 | 2.15 | 55 | 3/4 | 1.1 | 28 |



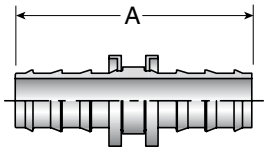

## 30882 Push-on Hose Barb to Female SAE 45° Swivel

| # Part No. | Thread Inch | | | Hose Size Inch | | A Inch | A mm | H Inch | B Inch | B mm |
|---|---|---|---|---|---|---|---|---|---|---|
| 30882-4-4B | 1/4 | 7/16 x 20 | -4 | 1/4 | -4 | 1.52 | 39 | 9/16 | 0.76 | 19 |
| 30882-5-4B | 5/16 | 1/2 x 20 | -5 | 1/4 | -4 | 1.58 | 40 | 5/8 | 0.83 | 21 |
| 30882-6-6B | 3/8 | 5/8 x 18 | -6 | 3/8 | -6 | 1.81 | 46 | 3/4 | 0.91 | 23 |
| 30882-8-6B | 1/2 | 3/4 x 16 | -8 | 3/8 | -6 | 1.87 | 47 | 7/8 | 0.97 | 25 |
| 30882-8-8B | 1/2 | 3/4 x 16 | -8 | 1/2 | -8 | 2.02 | 51 | 7/8 | 0.97 | 25 |
| 30882-10-8B | 5/8 | 7/8 x 14 | -10 | 1/2 | -8 | 2.14 | 54 | 1 | 1.09 | 28 |
| 30882-10-10B | 5/8 | 7/8 x 14 | -10 | 5/8 | -10 | 2.54 | 65 | 1 | 1.09 | 28 |
| 30882-12-12B | 3/4 | 1-1/16 x 14 | -12 | 3/4 | -12 | 2.65 | 67 | 1-1/4 | 1.19 | 30 |




## 38282 Push-on Hose Barb Union

| # Part No. | Hose Size Inch | | A Inch | A mm |
|---|---|---|---|---|
| 38282-4-4B | 1/4 | -4 | 1.80 | 46 |
| 38282-6-6B | 3/8 | -6 | 2.15 | 55 |
| 38282-8-8B | 1/2 | -8 | 2.51 | 64 |






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## ISO Standard

**ISO 4414 – § 5.4.5.11.1 states:**
"When failure of a hose assembly or plastic piping constitutes a whiplash hazard, it shall be restrained or shielded by suitable means and/or an air fuse for compressed air shall be mounted".

## MSHA (Mine Safety and Health Administration) Regulations

**30 CFR Sections §56.13021 and 57.13021 High-pressure hose connections states:**
"Except where automatic shut-off valves are used, safety chains or other suitable locking devices shall be used at connections to machines of high pressure hose line of 3/4" inside diameter or larger, and between high-pressure hose lines 3/4" inside diameter or larger, where a connection failure would create a hazard."

**30 CFR Sections §57.1730 Compressed air; general; compressed air systems states:**
(e) "Safety chains, suitable locking devices, or automatic cut-off valves shall be used at connections to machines of high pressure hose lines of 3/4" inside diameter or larger, and between high pressure hose lines of 3/4" inside diameter or larger, where a connection failure would create a hazard. For purposes of this paragraph, high-pressure means pressure of 100 psi or more".

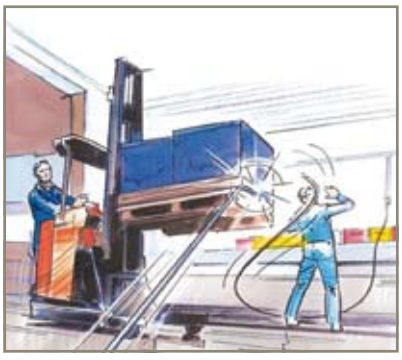
## OSHA Regulations

**Standards – 29 CFR, 1926.302 (partial) states:**
(b) (7) All hoses exceeding 1/2" inside diameter shall have a safety device at the source of supply or branch line to reduce pressure in case of hose failure.

## EU Standard

**EN983-1996 §5.3.4.3.2 states:**
"Failure of flexible hose assemblies and plastic piping: If failure of a flexible hose assembly constitutes a whiplash hazard or a fluid ejection hazard, it shall be restrained or shielded".







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# Safety Guide For Selecting And Using Pneumatic Division Products And Related Accessories

## ⚠ WARNING:

**FAILURE OR IMPROPER SELECTION OR IMPROPER USE OF PNEUMATIC DIVISION PRODUCTS, ASSEMBLIES OR RELATED ITEMS ("PRODUCTS") CAN CAUSE DEATH, PERSONAL INJURY, AND PROPERTY DAMAGE. POSSIBLE CONSEQUENCES OF FAILURE OR IMPROPER SELECTION OR IMPROPER USE OF THESE PRODUCTS INCLUDE BUT ARE NOT LIMITED TO:**

- Unintended or mistimed cycling or motion of machine members or failure to cycle
- Work pieces or component parts being thrown off at high speeds.
- Failure of a device to function properly for example, failure to clamp or unclamp an associated item or device.
- Explosion
- Suddenly moving or falling objects.
- Release of toxic or otherwise injurious liquids or gasses.

Before selecting or using any of these Products, it is important that you read and follow the instructions below.

**1. GENERAL INSTRUCTIONS**

**1.1. Scope:** This safety guide is designed to cover general guidelines on the installation, use, and maintenance of Pneumatic Division Valves, FRLs (Filters, Pressure Regulators, and Lubricators), Vacuum products and related accessory components.

**1.2. Fail-Safe:** Valves, FRLs, Vacuum products and their related components can and do fail without warning for many reasons. Design all systems and equipment in a fail-safe mode, so that failure of associated valves, FRLs or Vacuum products will not endanger persons or property.

**1.3 Relevant International Standards:** For a good guide to the application of a broad spectrum of pneumatic fluid power devices see: ISO 4414:1998, Pneumatic Fluid Power – General Rules Relating to Systems. See www.iso.org for ordering information.

**1.4. Distribution:** Provide a copy of this safety guide to each person that is responsible for selection, installation, or use of Valves, FRLs or Vacuum products. Do not select, or use Parker valves, FRLs or vacuum products without thoroughly reading and understanding this safety guide as well as the specific Parker publications for the products considered or selected.

**1.5. User Responsibility:** Due to the wide variety of operating conditions and applications for valves, FRLs, and vacuum products Parker and its distributors do not represent or warrant that any particular valve, FRL or vacuum product is suitable for any specific end use system. This safety guide does not analyze all technical parameters that must be considered in selecting a product. The user, through its own analysis and testing, is solely responsible for:

- Making the final selection of the appropriate valve, FRL, Vacuum component, or accessory.
- Assuring that all user's performance, endurance, maintenance, safety, and warning requirements are met and that the application presents no health or safety hazards.
- Complying with all existing warning labels and / or providing all appropriate health and safety warnings on the equipment on which the valves, FRLs or Vacuum products are used; and,
- Assuring compliance with all applicable government and industry standards.

**1.6. Safety Devices:** Safety devices should not be removed, or defeated.

**1.7. Warning Labels:** Warning labels should not be removed, painted over or otherwise obscured.

**1.8. Additional Questions**: Call the appropriate Parker technical service department if you have any questions or require any additional information. See the Parker publication for the product being considered or used, or call 1-800-CPARKER, or go to www.parker.com, for telephone numbers of the appropriate technical service department.

**2. PRODUCT SELECTION INSTRUCTIONS**

**2.1. Flow Rate:** The flow rate requirements of a system are frequently the primary consideration when designing any pneumatic system. System components need to be able to provide adequate flow and pressure for the desired application.

**2.2. Pressure Rating:** Never exceed the rated pressure of a product. Consult product labeling, Pneumatic Division catalogs or the instruction sheets supplied for maximum pressure ratings.

**2.3. Temperature Rating:** Never exceed the temperature rating of a product. Excessive heat can shorten the life expectancy of a product and result in complete product failure.

**2.4. Environment:** Many environmental conditions can affect the integrity and suitability of a product for a given application. Pneumatic Division products are designed for use in general purpose industrial applications. If these products are to be used in unusual circumstances such as direct sunlight and/or corrosive or caustic environments, such use can shorten the useful life and lead to premature failure of a product.

**2.5.** Lubrication and Compressor Carryover: Some modern synthetic oils can and will attack nitrile seals. If there is any possibility of synthetic oils or greases migrating into the pneumatic components check for compatibility with the seal materials used. Consult the factory or product literature for materials of construction.

**2.6. Polycarbonate Bowls and Sight Glasses: To avoid potential polycarbonate bowl failures:**

- Do not locate polycarbonate bowls or sight glasses in areas where they could be subject to direct sunlight, impact blow, or temperatures outside of the rated range.
- Do not expose or clean polycarbonate bowls with detergents, chlorinated hydro-carbons, keytones, esters or certain alcohols.
- Do not use polycarbonate bowls or sight glasses in air systems where compressors are lubricated with fire resistant fluids such as phosphate ester and di-ester lubricants.



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**2.7. Chemical Compatibility:** For more information on plastic component chemical compatibility see Pneumatic Division technical bulletins Tec-3, Tec-4, and Tec-5

**2.8. Product Rupture:** Product rupture can cause death, serious personal injury, and property damage.
- Do not connect pressure regulators or other Pneumatic Division products to bottled gas cylinders.
- Do not exceed the maximum primary pressure rating of any pressure regulator or any system component.
- Consult product labeling or product literature for pressure rating limitations.

**3. PRODUCT ASSEMBLY AND INSTALLATION INSTRUCTIONS**

**3.1. Component Inspection:** Prior to assembly or installation a careful examination of the valves, FRLs or vacuum products must be performed. All components must be checked for correct style, size, and catalog number. DO NOT use any component that displays any signs of nonconformance.

**3.2. Installation Instructions:** Parker published Installation Instructions must be followed for installation of Parker valves, FRLs and vacuum components. These instructions are provided with every Parker valve or FRL sold, or by calling 1-800-CPARKER, or at www.parker.com.

**3.3. Air Supply:** The air supply or control medium supplied to Valves, FRLs and Vacuum components must be moisture-free if ambient temperature can drop below freezing

**4. VALVE AND FRL MAINTENANCE AND REPLACEMENT INSTRUCTIONS**

**4.1. Maintenance:** Even with proper selection and installation, valve, FRL and vacuum products service life may be significantly reduced without a continuing maintenance program. The severity of the application, risk potential from a component failure, and experience with any known failures in the application or in similar applications should determine the frequency of inspections and the servicing or replacement of Pneumatic Division products so that products are replaced before any failure occurs. A maintenance program must be established and followed by the user and, at minimum, must include instructions 4.2 through 4.10.

**4.2. Installation and Service Instructions:** Before attempting to service or replace any worn or damaged parts consult the appropriate Service Bulletin for the valve or FRL in question for the appropriate practices to service the unit in question. These Service and Installation Instructions are provided with every Parker valve and FRL sold, or are available by calling 1-800-CPARKER, or by accessing the Parker web site at www.parker.com.

**4.3. Lockout / Tagout Procedures:** Be sure to follow all required lockout and tagout procedures when servicing equipment. For more information see: OSHA Standard – 29 CFR, Part 1910.147, Appendix A, The Control of Hazardous Energy – (Lockout / Tagout)

**4.4. Visual Inspection:** Any of the following conditions requires immediate system shut down and replacement of worn or damaged components:
- Air leakage: Look and listen to see if there are any signs of visual damage to any of the components in the system. Leakage is an indication of worn or damaged components.
- Damaged or degraded components: Look to see if there are any visible signs of wear or component degradation.
- Kinked, crushed, or damaged hoses. Kinked hoses can result in restricted air flow and lead to unpredictable system behavior.
- Any observed improper system or component function: Immediately shut down the system and correct malfunction.
- Excessive dirt build-up: Dirt and clutter can mask potentially hazardous situations.

**Caution: Leak detection solutions should be rinsed off after use.**

**4.5. Routine Maintenance Issues:**
- Remove excessive dirt, grime and clutter from work areas.
- Make sure all required guards and shields are in place.

**4.6. Functional Test:** Before initiating automatic operation, operate the system manually to make sure all required functions operate properly and safely.

**4.7. Service or Replacement Intervals:** It is the user's responsibility to establish appropriate service intervals. Valves, FRLs and vacuum products contain components that age, harden, wear, and otherwise deteriorate over time. Environmental conditions can significantly accelerate this process. Valves, FRLs and vacuum components need to be serviced or replaced on routine intervals. Service intervals need to be established based on:
- Previous performance experiences.
- Government and / or industrial standards.
- When failures could result in unacceptable down time, equipment damage or personal injury risk.

**4.8. Servicing or Replacing of any Worn or Damaged Parts:** To avoid unpredictable system behavior that can cause death, personal injury and property damage:
- Follow all government, state and local safety and servicing practices prior to service including but not limited to all OSHA Lockout Tagout procedures (OSHA Standard – 29 CFR, Part 1910.147, Appendix A, The Control of Hazardous Energy – Lockout / Tagout).
- Disconnect electrical supply (when necessary) before installation, servicing, or conversion.
- Disconnect air supply and depressurize all air lines connected to system and Pneumatic Division products before installation, service, or conversion.
- Installation, servicing, and / or conversion of these products must be performed by knowledgeable personnel who understand how pneumatic products are to be applied.
- After installation, servicing, or conversions air and electrical supplies (when necessary) should be connected and the product tested for proper function and leakage. If audible leakage is present, or if the product does not operate properly, do not put product or system into use.
- Warnings and specifications on the product should not be covered or painted over. If masking is not possible, contact your local representative for replacement labels.

**4.9. Putting Serviced System Back into Operation:** Follow the guidelines above and all relevant Installation and Maintenance Instructions supplied with the valve FRL or vacuum component to insure proper function of the system.


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# Offer of Sale

**The items described in this document and other documents or descriptions provided by Parker Hannifin Corporation, its subsidiaries and its authorized distributors, are hereby offered for sale at prices to be established by Parker Hannifin Corporation, its subsidiaries and its authorized distributors. This offer and its acceptance by any customer ("Buyer") shall be governed by all of the following Terms and Conditions. Buyer's order for any such item, when communicated to Parker Hannifin Corporation, its subsidiaries or an authorized distributor ("Seller") verbally or in writing, shall constitute acceptance of this offer.**

**1. Terms and Conditions of Sale:** All descriptions, quotations, proposals, offers, acknowledgments, acceptances and sales of Seller's products are subject to and shall be governed exclusively by the terms and conditions stated herein. Buyer's acceptance of any offer to sell is limited to these terms and conditions. Any terms or conditions in addition to, or inconsistent with those stated herein, proposed by Buyer in any acceptance of an offer by Seller, are hereby objected to. No such additional, different or inconsistent terms and conditions shall become part of the contract between Buyer and Seller unless expressly accepted in writing by Seller. Seller's acceptance of any offer to purchase by Buyer is expressly conditional upon Buyer's assent to all the terms and conditions stated herein, including any terms in addition to, or inconsistent with those contained in Buyer's offer. Acceptance of Seller's products shall in all events constitute such assent.

**2. Payment:** Payment shall be made by Buyer net 30 days from the date of delivery of the items purchased hereunder. Amounts not timely paid shall bear interest at the maximum rate permitted by law for each month or portion thereof that the Buyer is late in making payment. Any claims by Buyer for omissions or shortages in a shipment shall be waived unless Seller receives notice thereof within 30 days after Buyer's receipt of the shipment.

**3. Delivery:** Unless otherwise provided on the face hereof, delivery shall be made F.O.B. Seller's plant. Regardless of the method of delivery, however, risk of loss shall pass to Buyer upon Seller's delivery to a carrier. Any delivery dates shown are approximate only and Seller shall have no liability for any delays in delivery.

**4. Warranty:** Seller warrants that the items sold hereunder shall be free from defects in material or workmanship for a period of 18 months from date of shipment from Parker Hannifin Corporation. THIS WARRANTY COMPRISES THE SOLE AND ENTIRE WARRANTY PERTAINING TO ITEMS PROVIDED HEREUNDER. SELLER MAKES NO OTHER WARRANTY, GUARANTEE, OR REPRESENTATION OF ANY KIND WHATSOEVER. ALL OTHER WARRANTIES, INCLUDING BUT NOT LIMITED TO, MERCHANTABILITY AND FITNESS FOR PURPOSE, WHETHER EXPRESS, IMPLIED, OR ARISING BY OPERATION OF LAW, TRADE USAGE, OR COURSE OF DEALING ARE HEREBY DISCLAIMED.

NOTWITHSTANDING THE FOREGOING, THERE ARE NO WARRANTIES WHATSOEVER ON ITEMS BUILT OR ACQUIRED WHOLLY OR PARTIALLY, TO BUYER'S DESIGN OR SPECIFICATIONS.

**5. Limitation of Remedy:** SELLER'S LIABILITY ARISING FROM OR IN ANY WAY CONNECTED WITH THE ITEMS SOLD OR THIS CONTRACT SHALL BE LIMITED EXCLUSIVELY TO REPAIR OR REPLACEMENT OF THE ITEMS SOLD OR REFUND OF THE PURCHASE PRICE PAID BY BUYER, AT SELLER'S SOLE OPTION. IN NO EVENT SHALL SELLER BE LIABLE FOR ANY INCIDENTAL, CONSEQUENTIAL OR SPECIAL DAMAGES OF ANY KIND OR NATURE WHATSOEVER, INCLUDING BUT NOT LIMITED TO LOST PROFITS ARISING FROM OR IN ANY WAY CONNECTED WITH THIS AGREEMENT OR ITEMS SOLD HEREUNDER, WHETHER ALLEGED TO ARISE FROM BREACH OF CONTRACT, EXPRESS OR IMPLIED WARRANTY, OR IN TORT, INCLUDING WITHOUT LIMITATION, NEGLIGENCE, FAILURE TO WARN OR STRICT LIABILITY.

**6. Changes, Reschedules and Cancellations:** Buyer may request to modify the designs or specifications for the items sold hereunder as well as the quantities and delivery dates thereof, or may request to cancel all or part of this order, however, no such requested modification or cancellation shall become part of the contract between Buyer and Seller unless accepted by Seller in a written amendment to this Agreement. Acceptance of any such requested modification or cancellation shall be at Seller's discretion, and shall be upon such terms and conditions as Seller may require.

**7. Special Tooling:** A tooling charge may be imposed for any special tooling, including without limitations, dies, fixtures, molds and patterns, acquired to manufacture items sold pursuant to this contract. Such special tooling shall be and remain Seller's property notwithstanding payment of any charges by Buyer. In no event will Buyer acquire any interest in apparatus belonging to Seller which is utilized in the manufacture of the items sold hereunder, even if such apparatus has been specially converted or adapted for such manufacture and notwithstanding any charges paid by Buyer. Unless otherwise agreed, Seller shall have the right to alter, discard or otherwise dispose of any special tooling or other property in its sole discretion at any time.

**8. Buyer's Property:** Any designs, tools, patterns, materials, drawings, confidential information or equipment furnished by Buyer, or any other items which become Buyer's property, may be considered obsolete and may be destroyed by Seller after two (2) consecutive years have elapsed without Buyer placing an order for the items which are manufactured using such property. Seller shall not be responsible for any loss or damage to such property while it is in Seller's possession or control.

**9. Taxes:** Unless otherwise indicated on the face hereof, all prices and charges are exclusive of excise, sales, use, property, occupational or like taxes which may be imposed by any taxing authority upon the manufacture, sale or delivery of the items sold hereunder. If any such taxes must be paid by Seller or if Seller is liable for the collection of such tax, the amount thereof shall be in addition to the amounts for the items sold. Buyer agrees to pay all such taxes or to reimburse Seller therefore upon receipt of its invoice. If Buyer claims exemption from any sales, use or other tax imposed by any taxing authority, Buyer shall save Seller harmless from and against any such tax, together with any interest or penalties thereon which may be assessed if the items are held to be taxable.

**10. Indemnity For Infringement of Intellectual Property Rights:** Seller shall have no liability for infringement of any patents, trademarks, copyrights, trade dress, trade secrets or similar rights except as provided in this Part 10. Seller will defend and indemnify Buyer against allegations of infringement of U.S. patents, U.S. trademarks, copyrights, trade dress and trade secrets (hereinafter "Intellectual Property Rights"). Seller will defend at its expense and will pay the cost of any settlement or damages awarded in an action brought against Buyer based on an allegation that an item sold pursuant to this contract infringes the Intellectual Property Rights of a third party. Seller's obligation to defend and indemnify Buyer is contingent on Buyer notifying Seller within ten (10) days after Buyer becomes aware of such allegations of infringement, and Seller having sole control over the defense of any allegations or actions including all negotiations for settlement or compromise. If an item sold hereunder is subject to a claim that it infringes the Intellectual Property Rights of a third party, Seller may, at its sole expense and option, procure for Buyer the right to continue using said item, replace or modify said item so as to make it noninfringing, or offer to accept return of said item and return the purchase price less a reasonable allowance for depreciation. Notwithstanding the foregoing, Seller shall have no liability for claims of infringement based on information provided by Buyer, or directed to items delivered hereunder for which the designs are specified in whole or part by Buyer, or infringements resulting from the modification, combination or use in a system of any item sold hereunder. The foregoing provisions of this Part 10 shall constitute Seller's sole and exclusive liability and Buyer's sole and exclusive remedy for infringement of Intellectual Property Rights.

If a claim is based on information provided by Buyer or if the design for an item delivered hereunder is specified in whole or in part by Buyer, Buyer shall defend and indemnify Seller for all costs, expenses or judgements resulting from any claim that such item infringes any patent, trademark, copyright, trade dress, trade secret or any similar right.

**11. Force Majeure:** Seller does not assume the risk of and shall not be liable for delay or failure to perform any of Seller's obligations by reason of circumstances beyond the reasonable control of Seller (hereinafter "Events of Force Majeure"). Events of Force Majeure shall include without limitation, accidents, acts of God, strikes or labor disputes, acts, laws, rules or regulations of any government or government agency, fires, floods, delays or failures in delivery of carriers or suppliers, shortages of materials and any other cause beyond Seller's control.

**12. Entire Agreement/Governing Law:** The terms and conditions set forth herein, together with any amendments, modifications and any different terms or conditions expressly accepted by Seller in writing, shall constitute the entire Agreement concerning the items sold, and there are no oral or other representations or agreements which pertain thereto. This Agreement shall be governed in all respects by the law of the State of Ohio. No actions arising out of sale of the items sold hereunder or this Agreement may be brought by either party more than two (2) years after the cause of action accrues.



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