

Stratoflex

*193 Hose Products for the
Aerospace Industry*

*Catalog 106-193
May 1998*



The World Standard

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.

Before selecting or using any Parker hose or fittings or related accessories, it is important that you read and follow Parker Safety Guide for Selecting and Using Hoses, Fittings, and Related Accessories (Parker Publication No. 4400-B.1)

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How to Use This Catalog

- If you know the type of part (fitting, hose assembly, etc.), see the Table of Contents on page 1.
- The Stratoflex part numbering system for Hose, Fittings and Hose Assemblies is defined on page 3.
- The Stratoflex Hose and Fitting information tables have international symbols as column heads. The symbols and their meaning are noted below.

SYMBOL	DEFINITION	SYMBOL	DEFINITION
#	Part Number		Vacuum Rating
	Hose Inner Diameter		Crimp Fitting
	Hose Outer Diameter		Field Attachable Fitting
	Working Pressure		Page Number
	Burst Pressure		Thread Size
	Minimum Bend Radius		Hex Size
	Weight		Diameter

Ordering Information for Standard Items

1. HOSE ASSEMBLY:

TYPICAL HOSE ASSEMBLY IS AN6270

STRAIGHT TO STRAIGHT OR STRAIGHT TO SINGLE ELBOW EXAMPLE:

193000-8D-0185

Basic Hose Assembly Number _____ Assembly Length in Inches. Last Digit is Eighths of an Inch.
 Size (1/2" O.D. Tube Size) In 1/16" _____ See Material Note Below

Basic Hose Assembly part numbers may be modified to add a sleeve or coil by the insertion of a code letter between the basic hose number and the configuration. Code letters and accessories described on Pages 8 and 9.

193F000-8D-0185

Basic Part Number with 2650-13 Firesleeve and 10781-4-22CR Clamps

DOUBLE ELBOW EXAMPLE: **193060E0185D180**

Basic Hose Assembly Number _____ Twist Angle (180° - See Page 4)
 Size (1/2" O.D. Tube Size) In 1/16" _____ See Material Note Below
 Assembly Length in Inches. Last Digit is Eighths of an Inch.

SIZE CODE FOR DOUBLE ELBOW HOSE ASSEMBLIES

DASH SIZE	-2	-3	-4	-6	-8	-10
SF CODE LETTER	R	A	B	D	E	F

MATERIAL: Unless otherwise noted, conforms to applicable specifications.

- C or CR - Non-Brazed/Welded Parts - SAE 30304 (AMS5639) D - Non-Brazed Parts - SAE 2024-T6 (AMS4112)
- Brazed/Welded Parts - SAE 30321 (AMS5570 or AMS5645) Brazed Parts - SAE 6061-T6 (AMS4117 or AMS4080)
- CL - Same as CR except lockwire holes in nut DL - Same as D except lockwire holes in nut
- S - All parts SAE 1137 (AMS5024) or SAE 1010 (AMS5050) except socket SAE 2024-T6 (AMS4112)
- SL - Same as S except lockwire holes in nut
- Specify for 193 D only

LENGTH MEASUREMENT - Length is measured along hose centerline from end of nipple to end of nipple

2. HOSE FITTING - EXAMPLE: **311-8D**

Basic Fitting Number _____ Material Designation (See material note above)
 Size (1/2" O.D. Tube Size) in 1/16" _____

3. BULK HOSE, GUARDS & SLEEVES - EXAMPLE: **750 FT. 193-8**

Quantity in Feet _____ Hose Size _____
 Basic Hose Number _____

(Bulk hose furnished in random lengths in accordance with the applicable hose specification.)

4. CUT HOSE, GUARDS & SLEEVES - EXAMPLE: **193-8-18-5/8**

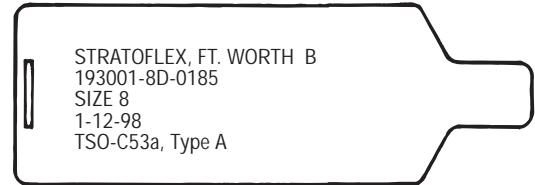
Basic Hose Number _____ Length, 18-5/8 inches _____
 Hose Size _____

Ordering Information for Standard Items

5. IDENTIFICATION BANDS: An example of Identification bands used when required for Hose Assemblies confirming TSO-C42, C53a and C75 follows: N/A for 193.

NOTE: For additional information on special materials or accessories not shown on page 3, contact Stratoflex.

NOTE: Unless otherwise noted, dimensions shown herein are nominal and are subject to change without notice. Contact Stratoflex Engineering for current data.



STRATOFLEX "TWIST ANGLE" INFORMATION

HOW TO MEASURE AND SPECIFY POSITIONING OF FITTINGS WHEN TWO ELBOW FITTINGS ARE REQUIRED ON A HOSE ASSEMBLY



MEASURING: When installations require hose assemblies with elbow fittings on both sides, hold the assembly so that the nearest fitting is pointing in the 6 o'clock position. Measure angle between fitting, counterclockwise. Both fittings pointing to 6 o'clock to be specified as zero degrees (0°)

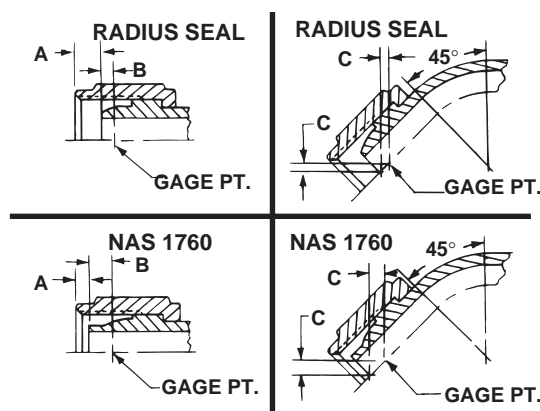
SPECIFYING POSITION: Suffix the hose assembly part number with the number of degrees in the angle. (Example: 193060E0185D180; 180° Twist Angle.)

NOTE: Elbow Hose Fittings shown in this catalog are STRATOFLEX standard type designs. If your installation requires a fitting of a different angle or connection, either submit a print or call Stratoflex Engineering.

MEASUREMENT OF FLARELESS HOSE ASSEMBLIES

NAS 1760 Nipple end design is supplied by Stratoflex on all flareless hose fittings. Flareless hose assembly length "L" is measured from END of nipple to END of nipple. To convert "END to END" to "GAGE POINT to GAGE POINT" measurement, subtract from "L" the appropriate "B or C" dimension shown in table below for each end fitting. The figures and table below give a comparison of NAS 1760 nipple end design and Stratoflex Radius Seal end design.

NOTE: ALL HOSE FITTINGS ARE MEASURED AT THE CENTERLINE FOR LENGTH AND DROP DIMENSIONS.



Dash Size	A			B			C		
	NAS	Radius	Diff.	NAS	Radius	Diff.	NAS	Radius	Diff.
3	.123	.138	.015	.140	.085	.055	.099	.060	.039
4	.176	.207	.031	.155	.062	.093	.110	.044	.066
5	.160	.227	.067	.157	.058	.099	.111	.041	.070
6	.173	.198	.025	.164	.059	.105	.116	.042	.074
8	.191	.217	.026	.189	.064	.125	.134	.045	.089
10	.207	.247	.040	.201	.078	.123	.142	.055	.087
12	.206	.303	.097	.228	.069	.159	.161	.049	.112
16	.141	.329	.188	.297	.132	.165	.210	.093	.117
20	.147	.367	.220	.300	.090	.210	.212	.064	.148
24	.077	.330	.253	.365	.134	.231	.258	.095	.163

193 Hose, Fittings and Assembly

193 Hose



SPECIFICATIONS:

Hose meets or exceeds the requirements of MIL-H-5593.

CONSTRUCTION:

Tube - Seamless Buna-N.

Reinforcement - One braid of high tensile fiber cord.

Cover - Synthetic rubber.

IDENTIFICATION:





LP-MIL-H-5593-size, date of manufacture, manufacturer's code (CAGE) marked on one side of hose. Stratoflex 193-size marked on other side of hose. Yellow markings are repeated every 12 inches.

APPLICATION:

Low pressure air and vacuum instrument systems. Vacuum service 20"Hg sizes -2 thru -6; 10"Hg sizes -8 and -10.

TEMPERATURE RANGE:

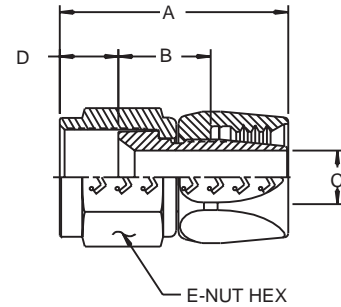
-65 to +165°F (-54 to +74°C)

#	Tube Size Ref.	Hose Size	Nominal	Nominal		Proof Pressure			 LBS LB./IN.
193-2	.125	-2	.125	.35	300	600	2000	2.00	.0038
193-3	.188	-3	.188	.41	250	500	1700	2.00	.0050
193-4	.250	-4	.250	.48	200	400	1250	4.00	.0058
193-6	.375	-6	.375	.60	150	300	1000	4.00	.0079
193-8	.500	-8	.500	.75	150	250	750	6.00	.0115
193-10	.625	-10	.625	.87	150	250	700	6.00	.0138

193 Hose, Fitting and Assembly

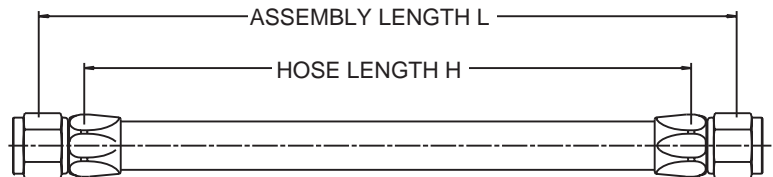
311 Straight Flared Fitting (Field Attachable)

37° Flare AN Swivel MS27404
Mates with MS33656/AS4395 type connectors.



#	Tube Size O.D.	Hose Size		Nominal A	Cut Factor B	Nominal C	Nominal D		
311-2D	.125	-2	.3125-24UNJF-3B	1.09	.39	.06	.34	.38	.009
311-3D	.188	-3	.375-24UNJF-3B	1.18	.46	.13	.32	.44	.011
311-4D	.250	-4	.4375-20UNJF-3B	1.26	.46	.17	.35	.56	.020
311-6D	.375	-6	.5625-18UNJF-3B	1.40	.54	.30	.38	.69	.030
311-8D	.500	-8	.750-16UNJF-3B	1.66	.67	.39	.43	.88	.058
311-10D	.625	-10	.875-14UNJF-3B	1.94	.72	.48	.51	1.00	.083

193 Hose Assemblies



EXAMPLE OF PART NUMBER

193000-8D-0185

Assembly Length (L) in Inches. Last Digit is Eighths of an Inch (End of Nipples).
 Fitting Material Code
 Size (.500 Tube)
 Basic Part No.

193F000

Basic Part No. with 2650 Fire Sleeve and 10781 Clamps.

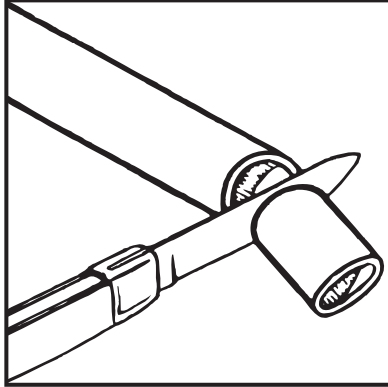
Hose Assemblies with FLARE fittings conform to MIL-H-5593 and AN6270.
Fittings mate with MS33656/AS4395.

#	# Military	Hose	Left Hand Hose Fitting	Right Hand Hose Fitting	H Cut-Factor		12" Ass'y Weight lb
193000-2D-L	AN6270-2D-L	193-2	311-2D	311-2D	L-.78	2.00	.064
193000-3D-L	AN6270-3D-L	193-3	311-3D	311-3D	L-.92	2.00	.081
193000-4D-L	AN6270-4D-L	193-4	311-4D	311-4D	L-.92	4.00	.109
193000-6D-L	AN6270-6D-L	193-6	311-6D	311-6D	L-1.08	4.00	.153
193000-8D-L	AN6270-8D-L	193-8	311-8D	311-8D	L-1.34	6.00	.251
193000-10D-L	AN6270-10D-L	193-10	311-10D	311-10D	L-1.44	6.00	.328

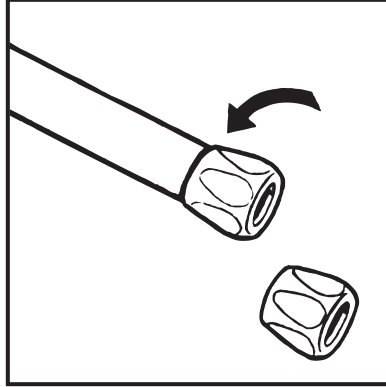
193 Hose Assembly Instructions

ALWAYS USE CURRENT AFP501 AND AFAD 193.

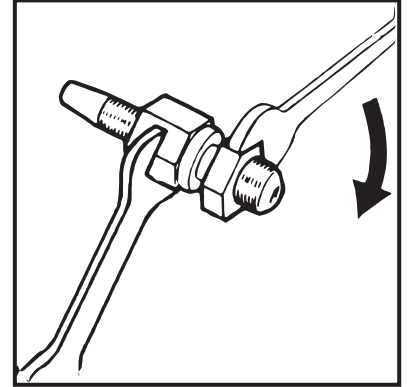
For Assembly and Disassembly of 193 Hose and Standard Hose Fittings Reference



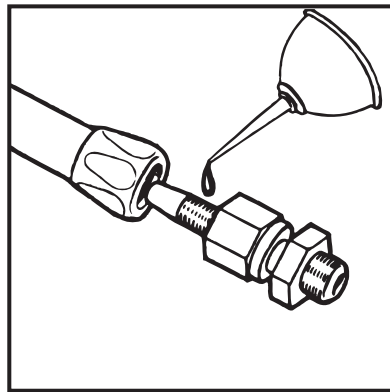
1. Measure hose to desired length and then cut with sharp knife or saw.



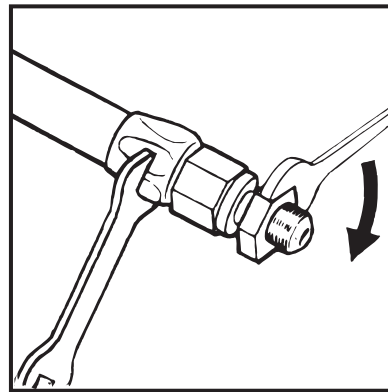
2. Screw hose into socket counterclockwise until it bottoms. Back hose out 1/4 turn.



3. Insert nipple into nut and tighten on mating flared adapter.



4. Oil inside of hose and outside of nipple liberally and insert nipple in socket.



5. Screw nipple into socket and hose by using wrench on hex of adapter. Leave a .005 inch to .031 inch clearance between nut and socket so that nut will swivel freely. Loosen adapter from nut and remove. **DO NOT ALLOW HOSE TO TWIST IN SOCKET.**

6. Clean, inspect and proof test.

7. For detailed assembly instructions, request AFAD-193. For machine assembly instructions, request AFAD-193-XXX (substitute machine number for XXX).

NOTE: To obtain length of Hose, subtract Cut Factors (B dim.) of each Hose Fitting from Hose Assembly length "L".

DISASSEMBLE IN REVERSE ORDER

Coil and Sleeve Accessories

FIRE SLEEVED TYPE HOSE ASSEMBLIES



2650 FIRESLEEVE CODE F
Red Silicone Fiberglass -65° to 450°F (-54° to 232°C)
AS-1072

NOTE: Temperature rating is for Firesleeve only.
Request P-104-29 for assembly instructions.

INTERNALLY SUPPORTED TYPE HOSE ASSEMBLIES



2611 INTERNAL SUPPORT COIL CODE C
Corrosion Resistant Steel SAE 30302/AMS5688

Request P-104-41 for assembly instructions.

TUBULAR ABRASION SLEEVES



2606 CODE V
TRANSLUCENT VINYL
-90° to 158°F (-68° to 70°C)
MIL-I-7444 TYPE I CLASS I



2637-SIZE B CODE T
BLACK TFE
-65° to 450°F (-54° to 232°C)
AS1291-B



2645 CODE R
BLACK NEOPRENE
-65° to 250°F (-54° to 221°C)
AS1295

HEAT SHRINK ABRASION SLEEVES



2629 CODE M
BLACK POLYOLEFIN
-67° to 275°F (-55° to 135°C)
AS1073-B and MIL-I-23053/5



2642 CODE Z
TRANSPARENT FEP TFE
-88° to 392°F (-67° to 200°C)
MIL-I-23053/11

FIRE SLEEVE CLAMP



Fire Sleeve Clamp Versus
Hose Assembly Size

Hose	10781		
	-4-22CR	-4-32CR	-4-48CR
111	-3/-8	-10/-16	-20/-32
112	-4/-8	-10/-12	-16
124	-3/-12	-16Z/-20Z	-24Z
156	-3/-10	-12/-16	-20/-32
170	-3/-10	-12/-16	
171	-3/-10		
193	-2/-10		

SPIRAL WRAP ABRASION SLEEVES



2661-SIZE NB CODE X
BLACK NYLON
-65° to 300°F (-54° to 149°C)
AS1294



2681 CODE U
BLACK TFE
-65° to 450°F (-54° to 232°C)
AS1293

Hand Installation Tool, Part No. T11-151 available.

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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. 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 thereunder shall be free from defects in material or workmanship for a period of 365 days from the date of shipment to Buyer, or 2,000 hours of use, whichever expires first. **THIS WARRANTY COMPRISES THE SOLE AND ENTIRE WARRANTY PERTAINING TO ITEMS PROVIDED HEREUNDER. SELLER MAKES NO OTHER WARRANTY, GAURANTEE, 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 WHOLELY OR PARTIALLY, TO BUYER'S DESIGNS 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 herunder 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 limitation, 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 of 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 in 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 options, 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 judgments 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 the 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.

Stratoflex Products Division Sales Offices

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