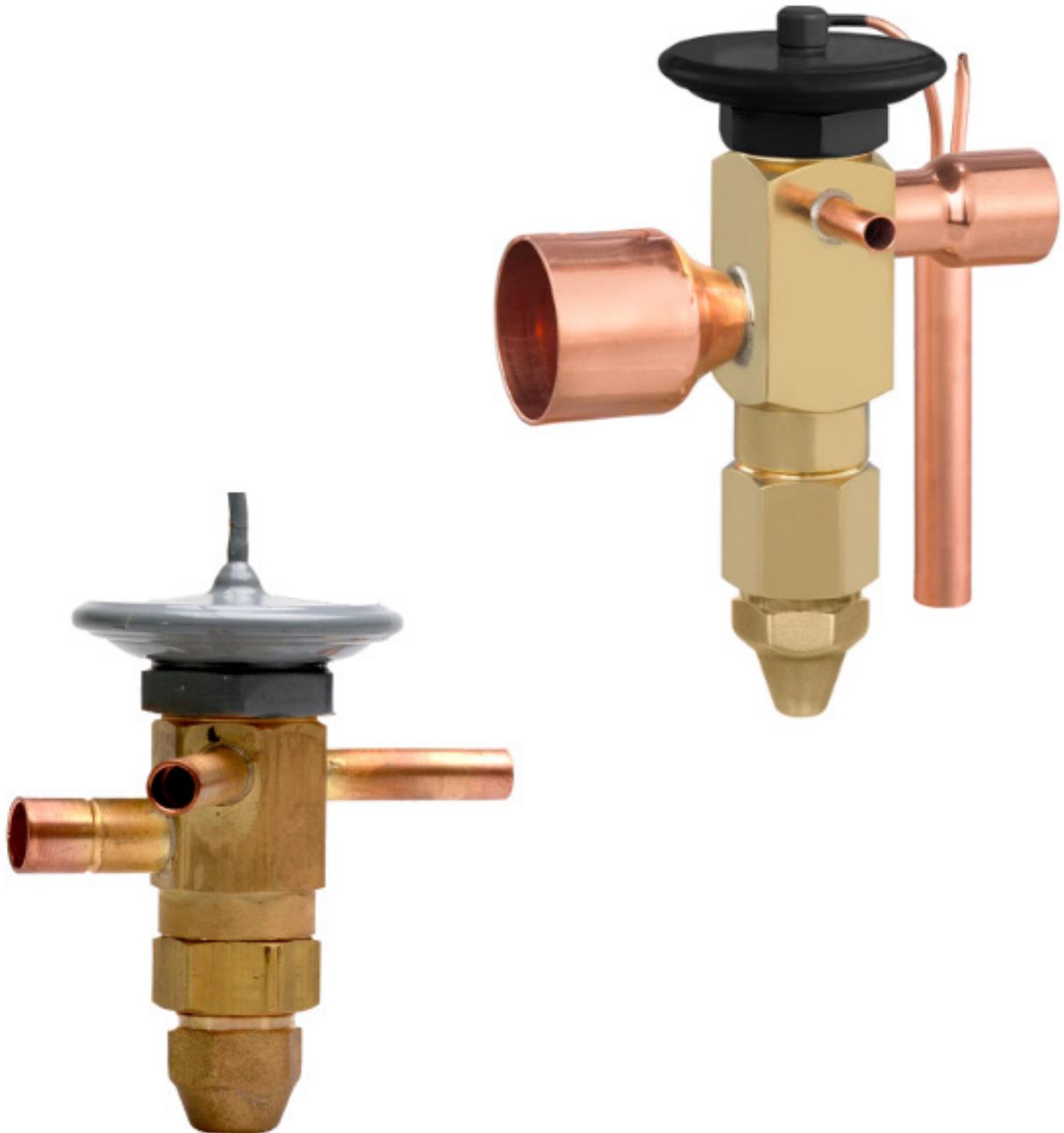


ECE & O Valves

Thermostatic Expansion Valves for A2L Applications

Catalog E-1-1



ENGINEERING YOUR SUCCESS.

EC(E) Series

The EC(E) series features extended ODF solder connections, brass body and balanced port design. It is suited for both refrigeration and air conditioning applications.

Applications

- Small Chillers
- Air Conditioning Units
- Freezers
- Walk-in Boxes
- Refrigerated Cases
- Mobile Refrigeration

Features and Benefits

- Extended ODF connections
- Balanced port design
- 60" capillary tube
- Removable power element
- Field adjustable superheat
- 1/4" ODF external equalizer
- Weight: 1.0 lbs / 0.45 kg



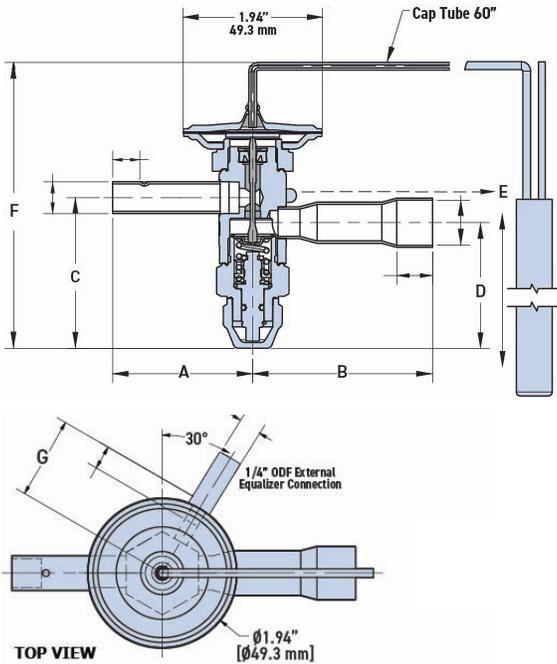
Specifications

Refrigerant	Refrigerant Designation	Orifice Designation	Nominal Capacity (Tons)	Capacity Range of Valve to be Replaced (Tons)	Valve Description		Rainbow Charges™	Connection - (Inches)		External Equalizer Connection (Inches)
					Internally Equalized	Externally Equalized		Bold figures are standard		
								Inlet	Outlet	
R-12 R-134a R-401A R-401B R-1234yf	J	AA	1/4	1/6 to 1/4	EC-AA-J	ECE-AA-J	W X60	1/4 ODF	1/2 ODF	1/4 ODF
		A	1	1/2 to 1	EC-A-J	ECE-A-J		3/8 ODF	1/2 ODF	
		B	2	1 to 2	EC-B-J	ECE-B-J		3/8 ODF	1/2 ODF	
		C	3	2 to 3	EC-C-J	ECE-C-J		3/8 ODF	1/2 ODF	
		D	5	3 to 5	N/A	ECE-D-J		5/8 ODF	7/8 ODF	
R-402A R-402B R-404A R-502 R-507	S	AA	1/4	1/6 to 1/4	EC-AA-S	ECE-AA-S	W Z X110 X35	1/4 ODF	1/2 ODF	1/4 ODF
		A	1	1/2 to 1	EC-A-S	ECE-A-S		3/8 ODF	1/2 ODF	
		B	2	1 to 2	EC-B-S	ECE-B-S		3/8 ODF	1/2 ODF	
		C	3-1/2	2 to 3-1/2	EC-C-S	ECE-C-S		3/8 ODF	1/2 ODF	
		D	6	3-1/2 to 6	N/A	ECE-D-S		5/8 ODF	7/8 ODF	
R-22 R-407C R-422D R-448 R-449	V	AA	1/2	1/3 to 1/2	EC-AA-V	ECE-AA-V	W Z X100 X35	1/4 ODF	1/2 ODF	1/4 ODF
		A	1-1/2	3/4 to 1-1/2	EC-A-V	ECE-A-V		3/8 ODF	1/2 ODF	
		B	3	1-1/2 to 3	EC-B-V	ECE-B-V		3/8 ODF	1/2 ODF	
		C	5	3 to 5	EC-C-V	ECE-C-V		3/8 ODF	1/2 ODF	
		D	8	5 to 8	N/A	ECE-D-V		5/8 ODF	7/8 ODF	
R-410A	Z	AA	1/2	1/3 to 1/2	EC-AA-Z	ECE-AA-Z	X200	1/4 ODF	1/2 ODF	1/4 ODF
		A	1-1/2	3/4 to 1-1/2	EC-A-Z	ECE-A-Z		3/8 ODF	1/2 ODF	
		B	3	1-1/2 to 3	EC-B-Z	ECE-B-Z		3/8 ODF	1/2 ODF	
		C	5	3 to 5	EC-C-Z	ECE-C-Z		3/8 ODF	1/2 ODF	
		D	8	5 to 8	N/A	ECE-D-Z		5/8 ODF	7/8 ODF	
		N/A	12-1/2	8 to 12-1/2	N/A	ECE-12-1/2-Z		5/8 ODF	7/8 ODF	
		N/A	15	12-1/2 to 15	N/A	ECE-15-Z		5/8 ODF	1-1/8 ODF	
R-32	Z	AA	1/2	1/2-1	EC-AA-Z	ECE-AA-Z	X200	1/4 ODF	1/2 ODF	1/4 ODF
		A	1-1/2	1-3	EC-A-Z	ECE-A-Z		3/8 ODF	1/2 ODF	
		B	3	3-5	EC-B-Z	ECE-B-Z		3/8 ODF	1/2 ODF	
		C	5	5-9	EC-C-Z	ECE-C-Z		1/2 ODF	7/8 ODF	
		D	8	9-14	N/A	ECE-D-Z		5/8 ODF	7/8 ODF	
		N/A	12-1/2	15-18	N/A	ECE-18-Z		5/8 ODF	7/8 ODF	
		N/A	15-1/2	19-21	N/A	ECE-21-Z		5/8 ODF	1-1/8 ODF	
R-454B	Y	AA	1	1/2-1	EC-AA-Y	ECE-AA-Y	X200	1/4 ODF	1/2 ODF	1/4 ODF
		A	2-1/2	1 - 2-1/2	EC-A-Y	ECE-A-Y		3/8 ODF	1/2 ODF	
		B	4-1/2	2-1/2 - 4-1/2	EC-B-Y	ECE-B-Y		3/8 ODF	1/2 ODF	
		C	7	4-1/2 - 7	EC-C-Y	ECE-C-Y		1/2 ODF	7/8 ODF	
		D	11-1/2	7 - 11-1/2	N/A	ECE-D-Y		5/8 ODF	7/8 ODF	
		N/A	15-1/2	11-1/2 - 15-1/2	N/A	ECE-18-Y		5/8 ODF	7/8 ODF	
		N/A	18	15-1/2 - 18	N/A	ECE-21-Y		5/8 ODF	1-1/8 ODF	

EC(E) Series

Dimensions

ECE-AA, -A, -B, -C, -D

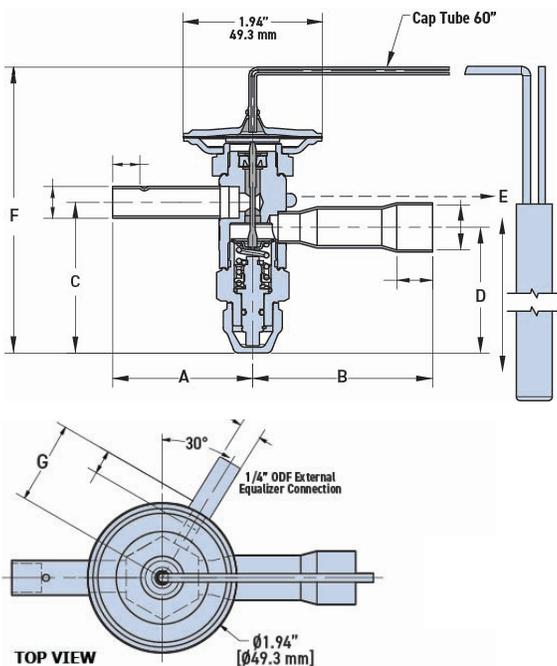


Fitting Size	A	B	C	D	E	F	G
1/4	2.69" 68 mm	—	2.17" 55 mm	—	2.20" 56 mm	3.36" 63 mm	1.71" 63 mm
3/8	2.42" 61 mm	—	2.17" 55 mm	—	—	3.36" 63 mm	—
1/2	2.35" 60 mm	2.51" 64 mm	2.17" 55 mm	1.83" 46 mm	—	3.36" 63 mm	—
5/8	2.35" 60 mm	2.51" 64 mm	2.17" 55 mm	1.83" 46 mm	—	3.36" 63 mm	—
7/8	—	2.51" 64 mm	—	1.83" 46 mm	—	3.36" 63 mm	—

Replacement Elements

Refrigerant Designation	Element
V	KT-47-VW KT-47-VX100
J	KT-47-JW
S	KT-47-SZ KT-47-SW KT-47-SX35
Z	KT-47-ZX200

*For ECE-12-1/2-Z, ECE-15-Z,
ECE-15-1/2-Y and ECE-18-Y only.



Fitting Size	A	B	C	D	E	F	G
1/4	—	—	—	—	2.36" 60 mm	3.79" 96 mm	1.90" 48 mm
5/8	2.48" 63 mm	—	2.30" 58 mm	—	—	3.79" 96 mm	—
7/8	—	2.51" 64 mm	—	1.83" 46 mm	—	3.79" 96 mm	—
1-1/8	—	2.51" 64 mm	—	1.83" 46 mm	—	3.79" 96 mm	—

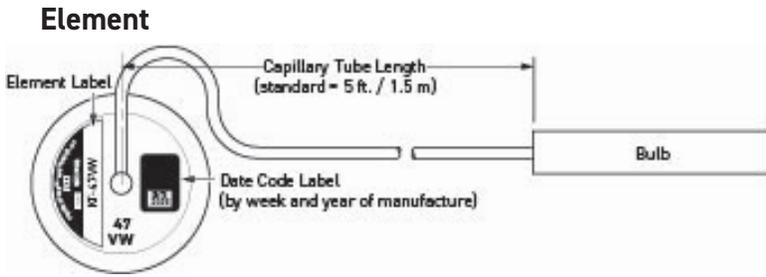
Replacement Elements

Refrigerant Designation	Element
Z	KT-47-5-ZX200*
Y	KT-47-5-YX200**

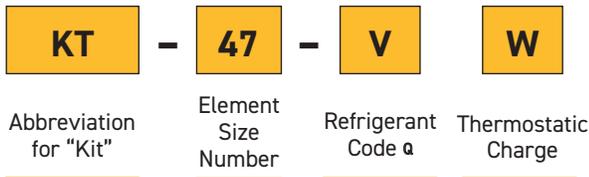
*ECE-12-1/2-Z and ECE-15-Z

**For ECE-15-1/2-Y & ECE-18-Y

EC Series Interchangeable Valve



Element Nomenclature (Example)



Q While many new refrigerants and refrigerant blends have a unique letter code, many use the same thermostatic element as the traditional refrigerant they replace. Refer to the table below to select the correct thermostatic element.

Rainbow Charge Refrigerant Designation

J	R-1234yf R-134a R-401A R-409A R-513A
S	R-402A R-404A R-502 R-507A
V	R-22 R-454C R-455A
N	R-407A R-407C R-407F
O	R-290
T	R-454A
D	R-448A R-449A
Z	R-32 R-410A
Y	R-454B

Refrigerant Color Code			
R22	Green	R408A	Purple
R23	Blue	R409A	Yellow
R32	Teal	R410A	Rose
R124	Blue	R422D	Green
R134a	Blue	R448A	Blue
R290	Red	R449A	White
R401A	Pink	R454A	Gray
R402A	Sand	R454B	Gray
R404A	Orange	R454C	Gray
R407A	Green	R455A	Gray
R407C	Lt. Brown	R502	Purple
R407F	Yellow	R507	Teal

**Application Factors:

1. The Type "X" thermostatic charges have essentially the same characteristics as the conventional Z cross charges with one exception: they produce a pressure limit or MOP. The "X" charges are not intended as replacements for the Z charges - they should only be used where a definite pressure limit is required to prevent motor overloading.
2. All air conditioning and heat pump charges are intended for use with externally equalized valves.
3. For dual temperature applications, use the "W" charge.
4. The "W" charge may be used on applications down to -30°F (-34°C) on R-22, R-404A and R-507.
5. R-410A elements for use with ECE only.

Charge Type

- "W" (all-purpose) liquid charge maintains nearly flat superheat control over a -10°F to +60°F (-23°C to +15°C) evaporator temperature range.
- "Z" (low temperature) charge provides fast pulldown benefits like a gas charge with the non-migrating benefits of a liquid charge; usable over a -40°F to 0°F (-40°C to -18°C) evaporator temperature range.
- "X" (damped response) gas charge provides a pressure limiting (MOP) charge with anti-hunt characteristics over a -40°F to +60°F (-40°C to +15°C) evaporator temperature range.

Notes: M.O.P. not available on "W" or "Z" charge.

1. Maximum operational pressure 500 psig (35 bar) high side and 275 psig (19 bar) low side.
2. Maximum storage temperature 130°F (55°C).
3. Consult Parker for pressure and temperature exceptions.
4. Do not use "W" or "Z" liquid charges in applications where bulb temperatures can exceed 130°F (55°C). For these applications use type "X" MOP gas charge **only**.

Recommended Thermostatic Valve Charges**

Application	Applicable Evaporator Temperature Range	Refrigerants					
		V,N,O,D	J	S	T	Z	Y
Low Temperature Refrigeration	-40F to 0F	VZ	-	SZ	TZ	-	-
Commercial Refrigeration	-30F to 60F	VW	JW	SW	TW	-	-
Low Temperature Pressure Limiting	-40F to 0F	VX35	-	SX35	-	-	-
Commercial Pressure Limiting	-10F to 60F	VX100	JX60	-	-	ZX200	YX200
Air Conditioning	+30F to 60F	VX100	JX60	-	-	ZX200	YX200
Heat Pump	-10F to 60F	VX100	-	-	-	ZX200	YX200

OE Series

The OE series valve utilizes balanced port construction to provide optimum operation on medium to large tonnage air conditioning and refrigeration systems. Two brass body styles with copper ODF connections and a removable thermostatic power element provide the stability and control required in a variety of applications, especially where there are wide changes in load conditions. Body Style 1 has an R-22 nominal capacity up to 30 tons, while Body Style 2 extends the capacity range to 70 tons.



Applications

Air Conditioning
Process Chillers
Commercial Refrigeration

Features and Benefits

Balanced port design
Removable power element
Field adjustable superheat
1/4" sweat external equalizer
60" capillary tube

Specifications

Refrigerant	Refrigerant Designation	Nominal Capacity (Tons)	Valve Description	Rainbow Charges™	Standard Tubing Length Feet (m)	Connection - (Inches)		External Equalizer Connection (Inches)
						Inlet	Outlet	
R-12 R-134a R-401A R-401B 1234yf	J	9	OE-9-J	W	5 (1.5)	7/8 ODF	1-1/8 ODF	1/4 ODF
		12	OE-12-J			1-1/8 ODF	1-3/8 ODF	
		16	OE-16-J					
		23	OE-23-J					
		32	OE-32-J					
40	OE-40-J							
R-402A R-402B R-404A R-502 R-507	S	9	OE-9-S	W Z X35	5 (1.5)	7/8 ODF	1-1/8 ODF	1/4 ODF
		12	OE-12-S			1-1/8 ODF	1-3/8 ODF	
		21	OE-21-S					
		30	OE-30-S					
		35	OE-35-S					
45	OE-45-S							
R-22 R-407C R-422D R-448 R-449	V	15	OE-15-V	W X110	5 (1.5)	7/8 ODF	1-1/8 ODF	1/4 ODF
		20	OE-20-V			1-1/8 ODF	1-3/8 ODF	
		30	OE-30-V					
		40	OE-40-V					
		55	OE-55-V					
70	OE-70-V							
R-410A	Z	20	OE-20-Z	X200	5 (1.5)	7/8 ODF	1-3/8 ODF	1/4 ODF
		25	OE-25-Z					
		35	OE-35-Z					
		50	OE-50-Z					
R-32	Z	25	OE-20-Z	X200	5 (1.5)	7/8 ODF	1-3/8 ODF	1/4 ODF
		35	OE-25-Z					
		45	OE-35-Z					
		70	OE-50-Z					
R-454B	Y	20	OE-20-Y	X200	5 (1.5)	7/8 ODF	1-3/8 ODF	1/4 ODF
		25	OE-25-Y					
		35	OE-35-Y					
		55	OE-55-Y					
70	OE-70-Y							

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2. Price; Payment. Prices stated on Seller's offer, proposal or quote ("Quote") are valid for 30 days, except as explicitly otherwise stated therein, and do not include any sales, use, or other taxes or duties unless specifically stated. Subject to credit approval, payment for all purchases is due 30 days from the date of invoice (or such date as may be specified by Seller's Credit Department). Unpaid invoices beyond the specified payment date incur interest at the rate of 1.5% per month or the maximum allowable rate under applicable law.

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4. Warranty. Seller warrants that the Products sold hereunder shall be free from defects in material or workmanship for a period of twelve months from the date of delivery or 2,000 hours of normal use, whichever occurs first. All prices are based upon the exclusive limited warranty stated above, and upon the following disclaimer: **DISCLAIMER OF WARRANTY: THIS WARRANTY COMPRISES THE SOLE AND ENTIRE WARRANTY PERTAINING TO PRODUCTS PROVIDED. SELLER DISCLAIMS ALL OTHER WARRANTIES, EXPRESS AND IMPLIED, INCLUDING DESIGN, MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.**

5. Claims; Commencement of Actions. Buyer shall promptly inspect all Products upon receipt. No claims for shortages will be allowed unless reported to the Seller within 10 days of delivery. No other claims against Seller will be allowed unless asserted in writing within 30 days after delivery. Buyer shall notify Seller of any alleged breach of warranty within 30 days after the date the defect is or should have been discovered by Buyer. Any claim or action against Seller based upon breach of contract or any other theory, including tort, negligence, or otherwise must be commenced within 12 months from the date of the alleged breach or other alleged event, without regard to the date discovered.

6. LIMITATION OF LIABILITY. IN THE EVENT OF A BREACH OF WARRANTY, SELLER WILL, AT ITS OPTION, REPAIR OR REPLACE A DEFECTIVE PRODUCT, OR REFUND THE PURCHASE PRICE WITHIN A REASONABLE PERIOD OF TIME. **IN NO EVENT IS SELLER LIABLE FOR ANY SPECIAL, INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF, OR AS THE RESULT OF, THE SALE, DELIVERY, NON-DELIVERY, SERVICING, USE OR LOSS OF USE OF THE PRODUCTS OR ANY PART THEREOF, OR FOR ANY CHARGES OR EXPENSES OF ANY NATURE INCURRED WITHOUT SELLER'S WRITTEN CONSENT, EVEN IF SELLER HAS BEEN NEGLIGENT, WHETHER IN CONTRACT, TORT OR OTHER LEGAL THEORY. IN NO EVENT SHALL SELLER'S LIABILITY UNDER ANY CLAIM MADE BY BUYER EXCEED THE PURCHASE PRICE OF THE PRODUCTS.**

7. User Responsibility. The user, through its own analysis and testing, is solely responsible for making the final selection of the system and Product and assuring that all performance, endurance, maintenance, safety and warning requirements of the application are met. The user must analyze all aspects of the application and follow applicable industry standards and Product information. If Seller provides Product or system options, the user is responsible for determining that such data and specifications are suitable and sufficient for all applications and reasonably foreseeable uses of the Products or systems.

8. Loss to Buyer's Property. Any designs, tools, pat-

terns, materials, drawings, confidential information or equipment furnished by Buyer or any other items which become Buyer's property, will be considered obsolete and may be destroyed by Seller after two consecutive years have elapsed without Buyer ordering the items 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. Special Tooling. A tooling charge may be imposed for any special tooling, including without limitation, dies, fixtures, molds and patterns, acquired to manufacture Products. 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 Products, even if such apparatus has been specially converted or adapted for such manufacture and notwithstanding any charges paid by Buyer. Unless otherwise agreed, Seller has the right to alter, discard or otherwise dispose of any special tooling or other property in its sole discretion at any time.

10. Buyer's Obligation; Rights of Seller. To secure payment of all sums due or otherwise, Seller retains a security interest all Products delivered to Buyer and this agreement is deemed to be a Security Agreement under the Uniform Commercial Code. Buyer authorizes Seller as its attorney to execute and file on Buyer's behalf all documents Seller deems necessary to perfect its security interest.

11. Improper use and Indemnity. Buyer shall indemnify, defend, and hold Seller harmless from any claim, liability, damages, lawsuits, and costs (including attorney fees), whether for personal injury, property damage, patent, trademark or copyright infringement or any other claim, brought by or incurred by Buyer, Buyer's employees, or any other person, arising out of: (a) improper selection, improper application or other misuse of Products purchased by Buyer from Seller; (b) any act or omission, negligent or otherwise, of Buyer; (c) Seller's use of patterns, plans, drawings, or specifications furnished by Buyer to manufacture Product; or (d) Buyer's failure to comply with these terms and conditions. Seller shall not indemnify Buyer under any circumstance except as otherwise provided.

12. Cancellations and Changes. Buyer may not modify or cancel any order for any reason, except with Seller's written consent and upon terms that will indemnify, defend and hold Seller harmless against all direct, incidental and consequential loss or damage. Seller may change product features, specifications, designs and availability with notice to Buyer.

13. Limitation on Assignment. Buyer may not assign its rights or obligations under this agreement without the prior written consent of Seller.

14. Force Majeure. Seller does not assume the risk and is not liable for delay or failure to perform any of Seller's obligations by reason of events or circumstances beyond its reasonable control (hereinafter "Events of Force Majeure"). Events of Force Majeure shall include without limitation: accidents, strikes or labor disputes, acts of any government or government agency, acts of nature, delays or failures in delivery from carriers or suppliers, shortages of materials, or any other cause beyond Seller's reasonable control.

15. Waiver and Severability. Failure to enforce any provision of this agreement will not invalidate that provision; nor will any such failure prejudice Seller's right to enforce that provision in the future. Invalidation of any provision of this agreement by legislation or other rule of law shall not invalidate any other provision herein. The remaining provisions of this agreement will remain in full force and effect.

16. Termination. Seller may terminate this agreement for any reason and at any time by giving Buyer thirty (30) days advance written notice. Seller may immediately terminate this agreement, in writing, if Buyer: (a) commits a breach of any provision of this agreement (b) appoints a trustee, receiver or custodian for all or any part of Buyer's property (c) files a petition for relief in bankruptcy on its own behalf, or by a third party (d) makes an assignment for the benefit of creditors, or (e) dissolves or liquidates all or a majority of its assets.

17. Governing Law. This agreement and the sale and delivery of all Products are deemed to have taken place in, and shall be governed and construed in accordance with, the laws of the State of Ohio, as applicable to contracts executed and wholly performed therein and without regard to conflicts of laws principles. Buyer irrevocably agrees and consents to the exclusive jurisdiction

and venue of the courts of Cuyahoga County, Ohio with respect to any dispute, controversy or claim arising out of or relating to this agreement.

18. Indemnity for Infringement of Intellectual Property Rights. Seller is not liable for infringement of any patents, trademarks, copyrights, trade dress, trade secrets or similar rights except as provided in this Section. Seller will defend and indemnify Buyer against allegations of infringement of U.S. patents, U.S. trademarks, copyrights, trade dress and trade secrets ("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 a Product sold pursuant to this agreement 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 a Product 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 the Product, replace or modify the Product so as to make it noninfringing, or offer to accept return of the Product and return the purchase price less a reasonable allowance for depreciation. Notwithstanding the foregoing, Seller is not liable for claims of infringement based on information provided by Buyer, or directed to Products 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 Product sold hereunder. The foregoing provisions of this Section constitute Seller's sole and exclusive liability and Buyer's sole and exclusive remedy for infringement of Intellectual Property Rights.

19. Entire Agreement. This agreement contains the entire agreement between the Buyer and Seller and constitutes the final, complete and exclusive expression of the terms of sale. All prior or contemporaneous written or oral agreements or negotiations with respect to the subject matter are herein merged.

20. Compliance with Law, U. K. Bribery Act and U.S. Foreign Corrupt Practices Act. Buyer agrees to comply with all applicable laws and regulations, including both those of the United Kingdom and the United States of America, and of the country or countries of the Territory in which Buyer may operate, including without limitation the U. K. Bribery Act, the U.S. Foreign Corrupt Practices Act ("FCPA") and the U.S. Anti-Kickback Act (the "Anti-Kickback Act"), and agrees to indemnify and hold harmless Seller from the consequences of any violation of such provisions by Buyer, its employees or agents. Buyer acknowledges that it is familiar with the provisions of the U. K. Bribery Act, the FCPA and the Anti-Kickback Act, and certifies that Buyer will adhere to the requirements thereof. In particular, Buyer represents and agrees that Buyer will not make any payment or give anything of value, directly or indirectly to any governmental official, any foreign political party or official thereof, any candidate for foreign political office, or any commercial entity or person, for the purpose of influencing such person to purchase products or otherwise benefit the business of Seller.

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- Payment Terms: Subject to credit approval, 1% 10th-Prox; Net 30 days
- Freight prepaid on \$1,500 net order value

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- To the extent that Parker or its subsidiaries or authorized distributors provide component or system options based upon data or specifications provided by the user, the user is responsible for determining that such data and specifications are suitable and sufficient for all applications and reasonably foreseeable uses of the components or systems.

