



***Your Quality Connection***



### ***Hydraulic Hose Safety***

- ***User Responsibility Warning***
- ***Hose Installation Guide***
- ***S-T-A-M-P-E-D Form***
- ***How to Order a Hose Assembly***
- ***Terms of Sale***

# ***User Responsibility Warning***

## **User is Solely Responsible for the Proper Selection and Matching of Hose and Fitting Components.**

### **Matching Hose and Fittings (Proper Selection):**

Assembling a Pressure Connections Corp. (PCC) Fitting on PCC Hose that is not specifically verified by PCC to match that hose is strictly prohibited and voids your warranty. Furthermore, assembling PCC Fittings on another manufacturers hose, or assembling a PCC hose with another manufacturers fitting is strictly prohibited. **Do NOT** Re-Crimp Any Hose Fitting, or any part thereof (nipple, insert, stem), that has already been crimped. Even the stem-insert-nipple is greatly altered during just one crimping process.

### **Examine the Hose and Fittings:**

The hose must be examined for cleanliness and be free of obstructions, blisters, cover looseness, kinks, cracks, cuts or any other visible defects. The fitting must be examined for burrs on the sealing surfaces, nicks, corrosion, or other imperfections. **Do NOT** use any component that displays any signs of nonconformance.

### **Proper Crimp Procedures:**

Only crimp a PCC hose or fitting with an approved crimp machine and die set(s) in accordance with PCC published instructions. Conversely, **Do NOT** crimp another manufacturers fittings with a PCC crimp machine or die(s). Also, be sure you have the latest crimp specifications before crimping the fitting.

### **Functional Test:**

Operate the system at maximum operating pressure and check for possible malfunctions and leaks. Personnel must avoid potential hazardous areas while testing and using the system.

### **Conditions That Require an Immediate Shut-Down/Replacement of the Hose Assembly:**

- Damaged, Cracked, Cut or Abraded Cover -Any Reinforcement Exposed
- Cracked, Damaged, or Badly Corroded Fittings
- Fitting Slippage on the Hose -Working Loose
- Any Leaks, Either in the Hose or the Fitting
- Hard, Stiff, Heat Cracked, or Charred Hose
- Kinked, Crushed, Flattened or Twisted Hose
- Blistered, Soft, Degraded, or Loose Cover

### **Conditions Require an Immediate Shut-Down/Repair (Tighten, Repair, Replace) of the Hose Assembly:**

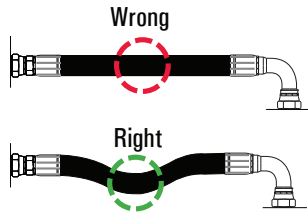
- System Fluid Level, Fluid Contamination, Fluid Type, Air Entrapment
- Anything That Causes Excessive Heat Buildup
- Worn Clamps, Guards, Shields, Etc.
- Leaking Port Conditions
- Excess Dirt Buildup

Hose assemblies fail if they are not replaced at proper time intervals. Hose assemblies and o-ring seals used on hose fittings and adapters will eventually age, harden, wear, and deteriorate under normal thermal cycling and compression set. Hose assemblies and o-ring seals should be inspected and replaced at specific replacement intervals.

### **PLEASE READ:**

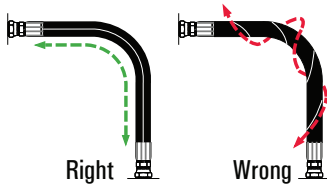
**Extreme Caution** must be exercised when working with fluids under pressure as they can be dangerous and potentially lethal. The failures listed above are the result of some form of misapplication, abuse, wear, or a failure to perform proper maintenance. High pressure fluids inside escape in a stream which may or may not be immediately detectable. Under no circumstances should the user ever attempt to locate a leak by feeling with their hands. Never tighten a fitting or a hose fitting while it is under pressure. Always shut down the system and remove the pressure before tightening a fitting or hose fitting. High pressure fluids can and will penetrate the skin causing severe tissue damage and possibly loss of limb, or even loss of life. Even seemingly minor hydraulic fluid injection injuries must be treated immediately by a physician with knowledge of the tissue damaging properties of hydraulic fluid.

# Hose Installation Guide



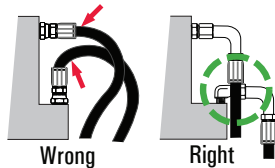
## 1. Provide For Length Change

In straight hose installations, allow enough slack in the hose line to provide for changes in length that will occur when pressure is applied. This change in length can be from +2% to -4%.



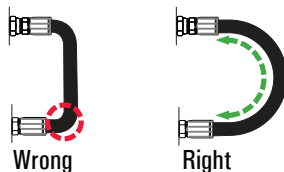
## 2. Avoid Twisting and Orient Properly

Do not twist hose during installation. This can be determined by the printed layline on the hose. Pressure applied to a twisted hose can cause hose failure or loosening of connections.



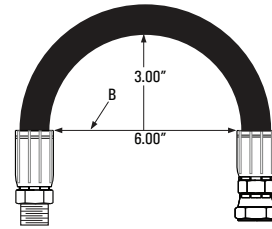
## 3. Avoid Mechanical Strain

Use elbows and adapters in the installation to relieve strain on the assembly and to provide easier and neater installations that are accessible for inspection and maintenance.



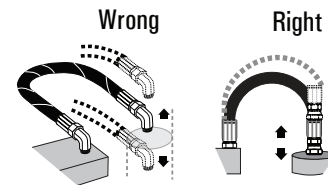
## 4. Use Proper Bend Radius

Keep the bend radius of the hose as large as possible to avoid collapsing of the hose and restriction of flow. Follow catalog specs on minimum bend radii.



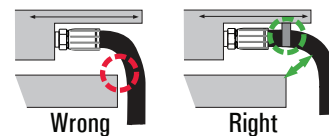
## 5. Use Proper Bend Radius (continued)

Minimum bend radius is measured on the inside bend of the hose. To determine minimum bend, divide the total distance between ends (B length) by 2 ( Example: B=6.00", minimum bend radius=3.00" ).



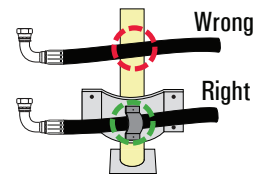
## 6. Avoid Improper Hose Movement

Make sure relative motion of the machine components produces bending rather than twisting of the hose. Hose should be routed so that the flex is in the same plane as the equipment movement.



## 7. Secure For Protection

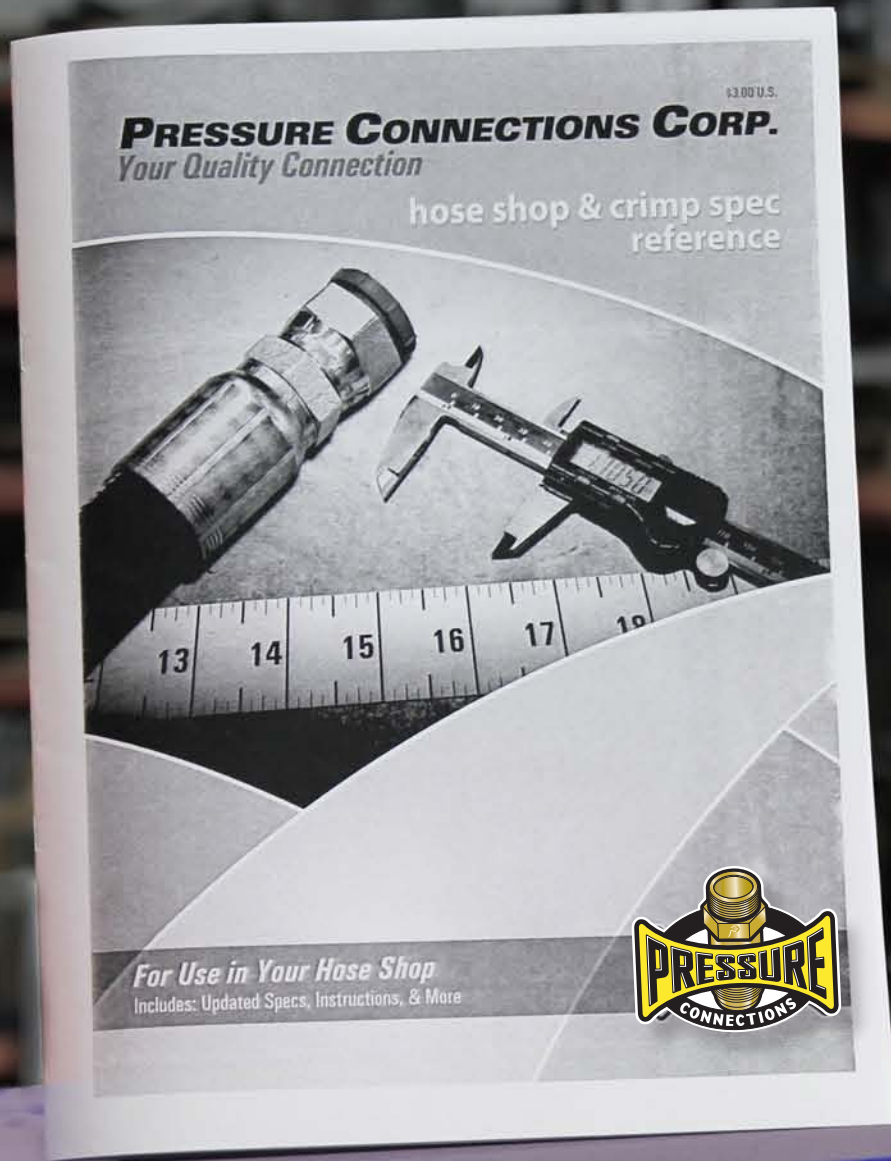
Install hose runs to avoid rubbing or abrasion. Use hose clamps to support long runs of hose or to keep hose away from moving parts. It is important that the clamps not allow the hose to move. This movement will cause abrasion and premature hose failure.



## 8. Protect From Hazardous Environment

Keep hose away from hot parts. High ambient temperature will shorten hose life. If you can not route it away from the heatsource, insulate it.

# ***Crimp Specification & Hose Shop Book***



To get yours, contact your Pressure Connections Sales Representative or visit our website for a FREE download at [www.PressureConnections.com/downloads](http://www.PressureConnections.com/downloads).

# Hose Assembly: S-T-A-M-P-E-D Form

## Customer Information:

Company: \_\_\_\_\_ Fax: \_\_\_\_\_  
 Contact: \_\_\_\_\_ E-mail: \_\_\_\_\_  
 Address: \_\_\_\_\_ P.O. #: \_\_\_\_\_  
 Phone: \_\_\_\_\_ Terms: \_\_\_\_\_

Size (Hose)	I.D.	O.D.	Overall Length (End to End) –Centerline on Elbows	Tolerance
	in.	in.	in.	+/-

mm to inch = divide by 25.4 (100mm = 3.94in) (100/25.4 = 3.94)

Temperature	Material Conveyed		Environmental Temperature	
	Min	Max	Min	Max
	°F	°F	°F	°F

°C to °F = (9/5 x degrees C +32)

Application	Type of Hose (1SN, 2SN, R4)	Hose Cover (Standard, Armor, Shield)	Color of Hose	Type of Use (Environment, Bend Radius)

**Important – The pressure rating is a main factor for selecting the hose type – Know the PSI before selecting the hose.**  
 Refer to the PCC Hose Catalog for hose information.

Material / Media	Material Conveyed (Fluid)		
	Internal Media (Fluid Conveyed)	External Environment	

Pressure	Max Working Pressure	Spikes
	PSI	PSI

Refer to the PCC Hose Catalog for hose pressure ratings (MPA to PSI = multiply MPA by 145.04)

Ends	End Fittings (Part No.)	Hose End Size	Fitting End Size	Thread Callout Codes	Orientation Angle (if 2 elbows)	Special Fitting Options
	1					
	2					

Refer to the PCC Hose Catalog for hose fitting part numbers, thread callout codes, orientation angles, etc.

Delivery	Quantity Required:		Date Required:	
	Customer Part No:		Kit No :	Packspec:
	Pick Up Date:		Ship Via:	
	Testing Required:	Yes No	Type:	
	Certification Required:	Yes No	Type:	

Be sure to note any other Special Requirements: hose guards, sleeves, special markings, etc.



# Hose Assembly: How To Order

<b>Date Required</b>	<b>Quantity</b>			<b>Fitting #1 Type</b>	<b>Fitting #2 Type</b>	<b>Fitting 1 Size</b>																							
/ /																													
<b>Overall Length</b>	<b>Hose Selection</b>																												
inches (see below for detail)	<table border="0"> <tr> <td>1SN</td> <td>4K-FA</td> </tr> <tr> <td>R17-G</td> <td>5K-FA</td> </tr> <tr> <td>R16-2SC</td> <td>6K-FA</td> </tr> <tr> <td>2SN-XD</td> <td>PJH</td> </tr> <tr> <td>2SN-XD-SHIELD</td> <td>R4-G</td> </tr> <tr> <td>2SN-LT</td> <td>R14</td> </tr> <tr> <td>R2AT</td> <td>PL</td> </tr> <tr> <td>3K-FA</td> <td>PL-250-T</td> </tr> <tr> <td>R12-XDP</td> <td>PL-BLU</td> </tr> <tr> <td>R12TC</td> <td>R5</td> </tr> <tr> <td>R15TC</td> <td>R5-HT-BLU</td> </tr> <tr> <td>4SH-XDP</td> <td>Other</td> </tr> </table>	1SN	4K-FA	R17-G	5K-FA	R16-2SC	6K-FA	2SN-XD	PJH	2SN-XD-SHIELD	R4-G	2SN-LT	R14	R2AT	PL	3K-FA	PL-250-T	R12-XDP	PL-BLU	R12TC	R5	R15TC	R5-HT-BLU	4SH-XDP	Other				
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<b>Other Details</b>																													
Temperature, Abrasion, Slewing, Special Features, Environmental Concerns, etc.																													
<b>Fitting Orientation Requirements</b>	<b>Hose Size</b>					<b>Fitting 2 Size</b>																							
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## Measuring the Overall Length of a Hose Assembly

Unless otherwise specified by the customer, the assembly's overall length is measured from the extreme end of one fitting to the extreme end of the other (except for O-Ring Face Seal fittings which are measured from the sealing face). When elbow fittings are used, the measurement is taken from the centerline of the sealing surface of the elbow end. See examples below.

**Straight Fittings**



**Flange Fittings**



**Female Swivel Fittings**



**O-Ring Face Seal Fittings**



## PRESSURE CONNECTIONS CORP. TERMS OF SALE

The following Terms of Sale ("Terms and Conditions") are a part of the sales contract ("Contract") between Pressure Connections Corp. (PCC) and Customer for the sale of Equipment and/or Parts and the provision of any ancillary services (collectively "Equipment" and/or "Parts") described on the face side of this form. The Contract between with Customer consists solely of the form of Quotation received from PCC, if any, PCC's Invoice, these Terms and Conditions, and any other documents expressly incorporated into the Quotation; **The acceptance by Customer of delivery of the Equipment and/or Parts (whether or not Customer signs the acknowledgment on the face hereof) will be Customer's agreement to the Contract and these Terms and Conditions, to the exclusion of any prior, additional or different terms or conditions.**

### 1. Prices and Terms of Payment

- (a) Unless otherwise stated in this Contract, PCC's price quotations are subject to Customer acceptance within thirty (30) days, and may be withdrawn or canceled by PCC at any time after such date or before receipt of written notice of acceptance. Orders will be billed at prices in effect at time of shipment unless otherwise so stated in the Contract.
- (b) This Contract is subject to final approval (including credit approval) and acceptance by PCC's home office and is not binding on PCC until signed by an authorized officer of PCC and such written acceptance is delivered to Customer.
- (c) Prices do not include (and Customer shall pay when due) federal, state or local sales, use, excise, or other taxes, tariffs, or duties.
- (d) Customer shall make all payments, without any setoff or deduction, on the term of 1/2 10, Net 30 Days, interest on any delinquent balance at a rate of the lesser of 1 1/2% for every 30 day period of delinquency or the maximum rate permitted by law. Customer shall pay all attorneys' fees, court costs, and all other costs incurred by PCC in collecting past due accounts, including interest on such amounts at the rate provided above.
- (e) In the event Purchaser cancels the order, all amounts previously paid by Purchaser shall be retained by Seller as liquidated damages.

### 2. Delivery

- (f) Shipping dates are estimates only. PCC will use commercially reasonable efforts to ship by the date specified, but shall not be liable to Customer for any delay in delivering the Equipment and/or Parts (including any resulting incidental or consequential damages). Shipping dates shall in any event be extended for delays, such as but not limited to acts of God, fires, strikes, transportation delays, delays of PCC's vendors, or any other cause beyond PCC's reasonable control. If shipment or delivery of Equipment and/or Parts is delayed by or at the request of Customer, payment will become due in full thirty (30) days from the date such Equipment and/or Parts is ready for shipment. In such event, Customer shall pay on demand storage charges and other incidental expenses incurred by PCC as a result of the delay in addition to any interest on late payment. Shipment from stock is subject to availability.
- (g) Unless otherwise stated in the Contract, the Equipment and/or Parts will be delivered to Customer Ex Works PCC's designated point of shipment, and Customer shall make all arrangements (and shall pay all costs) for transportation, handling and installation of the Equipment and/or Parts after delivery.
- (h) Instructions for any special shipping, packing, or handling services must be given by Customer in writing at the time of placing the order. Customer will pay all costs for such services.

### 3. Cancellation

Customer may cancel the Contract prior to delivery only upon written approval by PCC and upon payment by Customer to PCC of the following charges:

- (a) For Equipment and/or Parts to be fabricated by PCC or its subcontractors, specialty, custom, or made to order Equipment and/or Parts, Customer shall pay to PCC on demand all direct and indirect costs (including without limitation engineering, product development, and allocable overhead and administrative costs) incurred by PCC or such subcontractor in performing under the Contract, as determined by PCC, prior to written notice of cancellation, plus profit in an amount equal to twenty percent (20%) of all such direct and indirect costs; provided that the liability of Customer shall not exceed the purchase price for the Equipment and/or Parts provided in this Contract.
- (b) For stock item, PCC's loss of profit as reasonably determined by PCC.
- (c) Any deposits or progress payments made by Customer on Equipment and/or Parts will be retained by PCC and applied to such cancellation charges. Customer acknowledges that any cancellation charges payable by Customer hereunder are not a penalty but are a reasonable approximation of the economic loss to PCC resulting from cancellation.

### 4. Proprietary Information

All specifications, drawings, designs, manufacturing data and all other data furnished by or belonging to PCC, or pertaining to Equipment and Parts, and all terms of sale ("Information") are trade secrets and proprietary information of PCC. Customer will not use or disclose (and will take steps to prevent its employees and contractors from using or disclosing) the Information except as specifically authorized by PCC.

### 5. Security Interest and Insurance

As security for payment of all amounts due PCC under this Contract, Customer hereby grants to PCC a security interest in the Equipment and/or Parts and all proceeds or products thereof and replacements or substitutions thereof, and PCC shall have all rights of a secured party under the Uniform Commercial Code in effect from time to time in the State of Ohio or any other applicable jurisdiction or any successor law or laws of like effect. Customer shall sign, and/or hereby authorizes PCC to prepare and file all financing statements and other documents which PCC may deem necessary or desirable to perfect such security interest in any public office. Until full and irrevocable payment for the Equipment and/or Parts, Customer shall maintain replacement value insurance covering the Equipment and/or Parts against loss of damage from any cause with PCC named as insured or co-insured to the extent of the unpaid purchase price.

### 6. Governmental Requirements; Industry Standards

PCC does not represent or warrant that the equipment and/or parts comply or will comply with any particular federal, state, or local statutes, regulations, or requirements of any type, including but not limited to occupation safety (e.g., OSHA or MSHA) requirements, environmental requirements, any electrical codes, or any voluntary industry standards. Since applications of the equipment and/or parts vary, customer shall be solely responsible for compliance with all such federal, state, and local statutes, regulations, or requirements of any type, and with any voluntary industry standards, and customer will indemnify and hold PCC harmless from any claims by third parties (including employees of customer) related to such compliance or to operation or use of the equipment and/or parts, including court costs and attorneys' fees.

### 7. Limited Warranty / Exclusive Remedy

PCC warrants to the customer that the equipment and parts (excluding wear parts) will be free from defects in material and workmanship under normal use and service for a period of three hundred sixty-five (365) days after delivery to customer, or 2,000 hours of normal use. Any warranty claims not submitted in writing by customer to PCC within the applicable warranty period and within thirty (30) days of discovery of defect will be deemed waived. The obligation of PCC shall be limited to the repair or replacement ex works facility designated by PCC (excluding shipping costs, to be paid by customer), of the equipment or such parts which PCC determines were defective in material or workmanship

under normal storage, use and service. This warranty applies only to new equipment and parts and expressly excludes wear parts. This warranty shall not apply to items manufactured by others attached to or incorporated in the equipment and/or parts, or to which the equipment and/or parts are attached to or incorporated, and customer's recourse for defects in such equipment and/or parts of others shall be exclusively against the manufacturer of the equipment and/or parts under the terms of the PCC's warranty. This limited warranty does not apply to failures or defects of the equipment components, and/or parts (including wear parts) due to ordinary wear and tear, neglect (including but not limited to improper maintenance and storage), accident, improper installation or operation, or modification not authorized in writing by PCC (including but not limited to use of unauthorized parts or attachments). Any alteration or modification of the equipment or parts, or attaching of any parts or equipment not manufactured by PCC or not intended to be attached to the equipment or parts, or maintenance, use or operation of the equipment or parts contrary to PCC's or the manufacturer's instructions, shall at PCC's election void this warranty. This limited warranty shall extend only to the customer and is not assignable. The exclusive remedy of customer under this warranty or otherwise in connection with the equipment and for parts, shall be repair or replacement of the equipment and/or parts in accordance with this paragraph, PCC's sole and absolute discretion.

### 8. Limitation of Liability

PCC's liability (and the exclusive remedy of customer) under this warranty for any alleged defect or failure of the equipment and/or parts (including results of operation of the equipment and/or parts, and whether resulting from defects, failures, or errors in design, materials or workmanship, or otherwise) is limited as provided in 7 above. PCC shall not be liable to customer for any direct, indirect, or consequential damages in connection with the equipment and/or parts or otherwise in connection with this contract, including but not limited to damages resulting from delays; loss of use of property; results of use of the equipment and/or parts; losses of income, profit or production; or increased costs of operation, or damages to other property arising in connection with the equipment and/or parts.

### 9. Exclusion of Expressed / Implied Warranties

Except as provided in paragraph 7 above, PCC disclaims any and all express and implied warranties in any way relating to the equipment and/or parts, including without limitation any implied warranties of merchantability or fitness for a particular purpose.

### 10. Dispute Resolution / Arbitration Procedure

- (a) Except as provided herein, all disputes relating to this Contract or to the Equipment and/or Parts in any way ("Dispute") shall be resolved by arbitration in accordance with the Commercial Arbitration Rules of the American Arbitration Association ("AAA"), and judgment upon the award rendered in the arbitration may be entered in any court having jurisdiction. The parties also agree that the AAA Optional Rules for Emergency Measures of Protection shall apply to the proceedings. The arbitration shall be conducted and the award made in Franklin County, Ohio before a single arbitrator. The arbitrator shall be selected from a list of approved arbitrators maintained by the Association of Equipment Manufacturers ("AEM") or its successor. If the AAA is unable to furnish a list of potential arbitrators satisfying such requirements, PCC shall supply Customer a list of at least five (5) such persons from which the arbitrator shall be selected by Customer. Any award shall be final and binding on the parties. The arbitrator shall include in the award the costs and attorneys' fees incurred by the prevailing party in the arbitration.
- (b) Notwithstanding the above, the arbitration provisions in Paragraph 10(a) above shall not apply, at PCC's sole option, including in circumstances in which Customer has already served a demand for arbitration upon PCC, to any one or more claims or actions against Customer by PCC in connection with (i) collection of any amounts due PCC by Customer for the Equipment and/or Parts or otherwise under this Contract, including but not limited to interest on such amounts and attorneys' fees as provided above, (ii) enforcement by PCC of any security interest in the Equipment and/or Parts and/or the proceeds thereof under this Contract or otherwise under applicable law, or (iii) exercise by PCC of any and all remedies available to it in law or in equity in connection with actions described in (i) and (ii) above, including without limitation foreclosure and replevin. Any actions described in this Paragraph 10(b) are referred to as "Excluded Actions." PCC may at PCC's option maintain any such Excluded Actions in any state or federal court in the State of Ohio described in Paragraph 12 or in any other court having jurisdiction over Customer, and the parties hereto irrevocably consent to the jurisdiction of such courts in connection with Excluded Actions and agree that any such courts are a proper venue for any such Excluded Actions.

### 11. Entire Agreement

The Contract is the entire agreement of the parties relating to the Equipment and/or Parts and supersedes all prior discussions, correspondence or agreements (whether written or oral). The contract may not be amended nor any terms added, deleted, or changed except in writing signed by the parties and expressly stated to be an amendment. The Contract shall inure to the benefit of and be binding on the parties and their respective successors and assigns. Any execution by PCC of a document submitted by Customer in connection with Equipment and/or Parts shall not constitute acceptance by PCC of any such additional or conflicting terms, or any modification of this Contract, but only acknowledgment of receipt of such document.

### 12. Governing Law; Jurisdiction

This Contract shall be interpreted in accordance with and its performance shall be governed by the laws of the State of Ohio without regard to conflict of laws principles. The parties hereby agree that the state courts located in the State of Ohio or the United States District Court for the Southern District of Ohio, Eastern Division, shall have exclusive jurisdiction over any action or suit between the parties (including any action to compel arbitration or to enforce an arbitration award) in connection with this Contract or the Equipment and/or Parts, and the parties hereto irrevocably consent to the jurisdiction of such courts in connection with such action or suit, and agree that any such courts are a proper venue for any such action or suit. Notwithstanding the above, any Excluded Actions may be maintained by PCC in any state or federal court having jurisdiction over Customer or such Excluded Actions.

## ***PRESSURE CONNECTIONS CORP.***

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[www.PressureConnections.com](http://www.PressureConnections.com)



Looking to Save Money on  
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