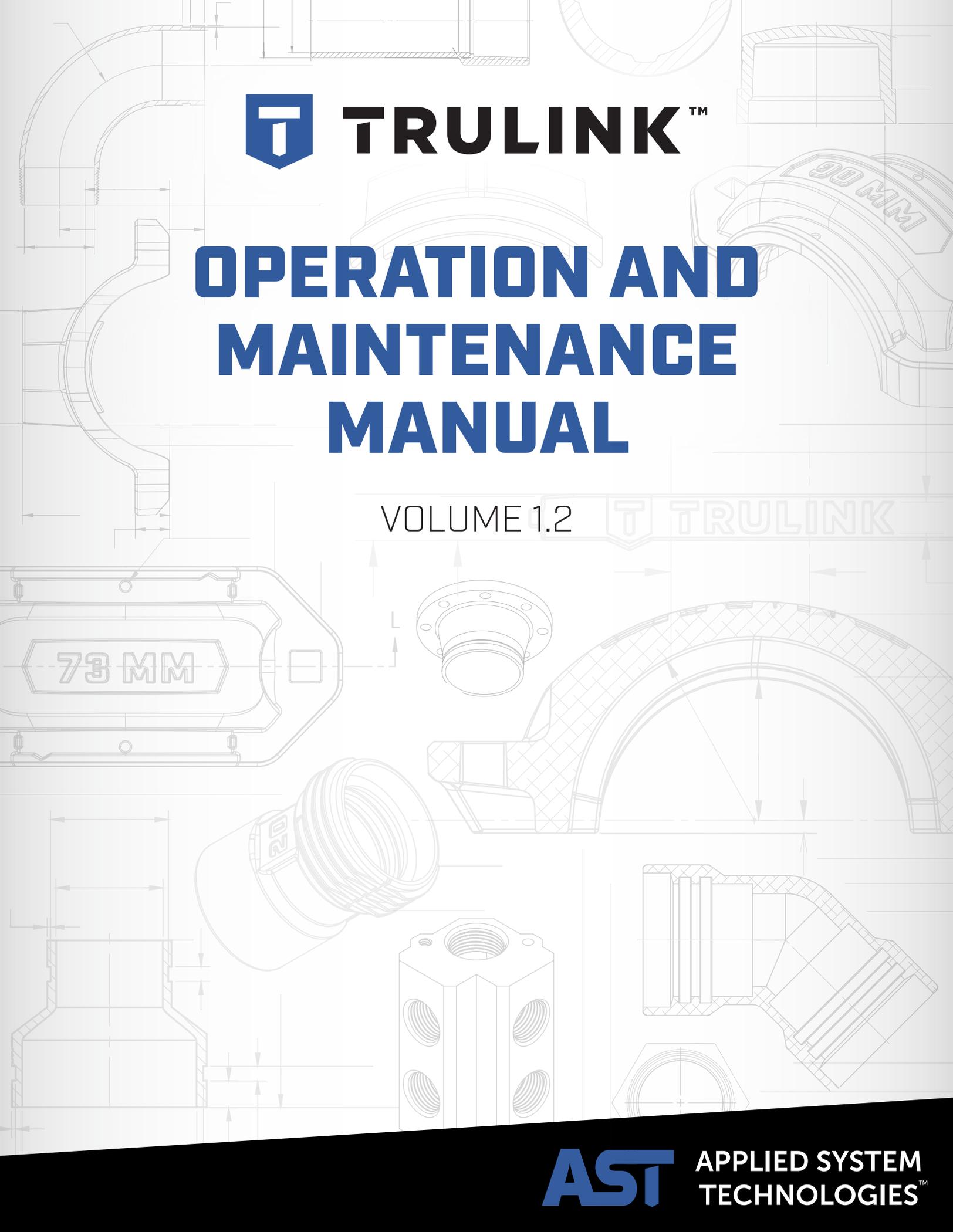




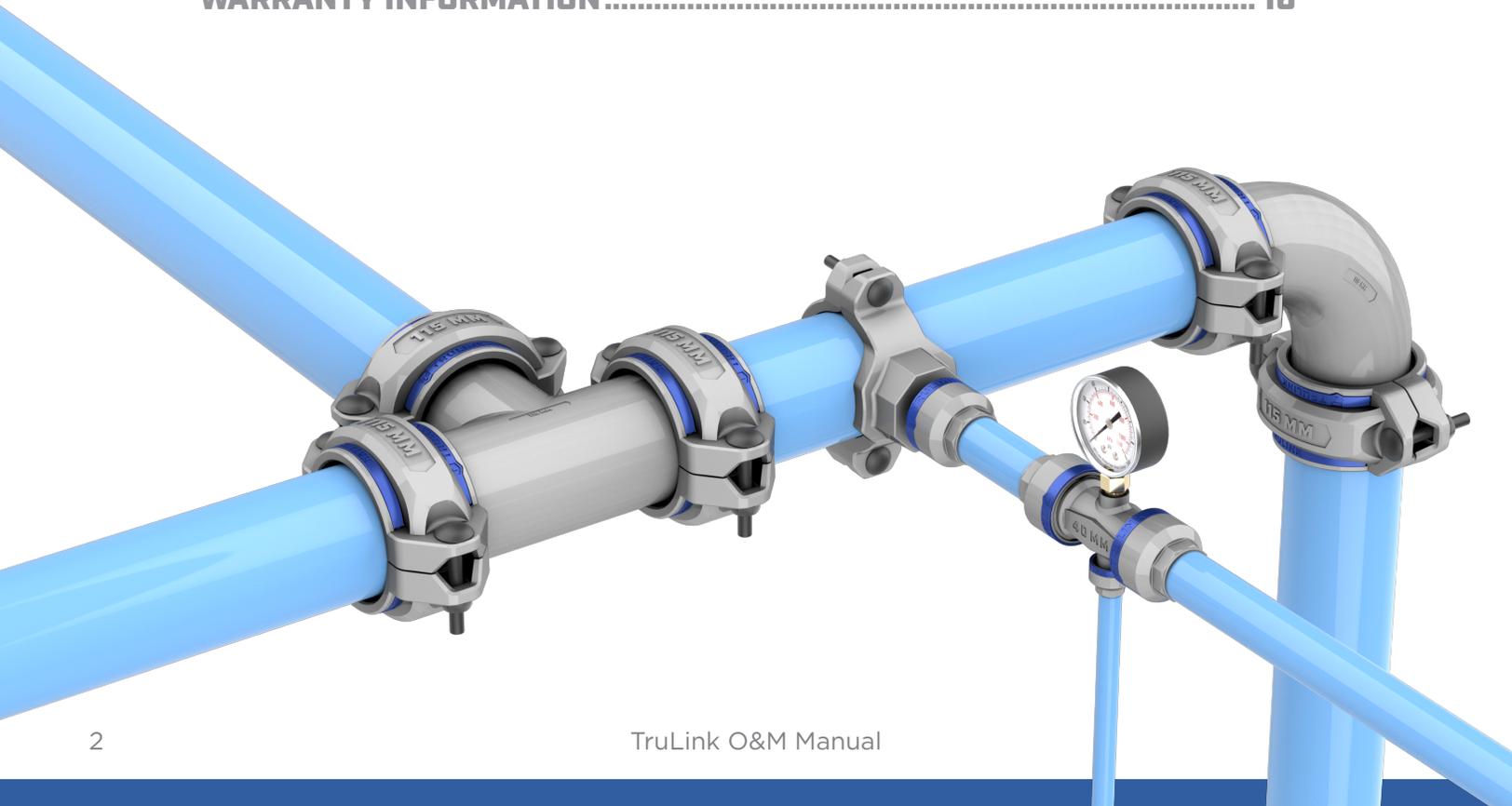
# OPERATION AND MAINTENANCE MANUAL

VOLUME 1.2



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## INTENDED USE

TruLink Piping Systems are engineered and designed for the distribution of

✓ **COMPRESSED AIR**

✓ **VACUUM**

✓ **INERT GASES**

✓ **MINERAL OIL**

✓ **GLYCOL**



### **WARNING:**

TruLink Piping Systems should not be used for flammable gases, fluids or wet or dry media without consulting our factory engineers. Please call us at 704-947-6966 to discuss any application other than compressed air, vacuum, inert gases, condensate, mineral oil or glycol.

## ACCESSORIES

In addition to distribution piping systems, TruLink offers a variety of items to further enhance your compressed air system performance including:

- **SYSTEM FLOW CONTROLLERS**
- **WATER REMOVERS**
- **HOSE REELS**
- **QUICK CONNECT FITTINGS**
- **DRAIN VALVES**
- **OSHA COMPLIANT LOCKABLE AND EXHAUSTING VALVES**
- **CONDENSATE, OIL/WATER SEPARATION SYSTEMS**

Visit [www.appliedsystemtech.com](http://www.appliedsystemtech.com) for more information.



# TECHNICAL SPECIFICATIONS

## PUSH TO CONNECT

MARINE GRADE ALUMINUM



### COMPONENT PARTS & MATERIALS

1	<b>BODY</b> A380 Aluminum, Powder Coated	4	<b>SAFETY RING:</b> Polymer
2	<b>NUT:</b> A380 Aluminum, Powder Coated	5	<b>Clamping Washer</b> AISI 304 Stainless Steel
3	<b>PLUG</b> AISI 304 Stainless Steel (Optional, Ported, Straight Union Connector)	6	<b>Double O-ring Seals</b> HBNR(Hydrogenated Buna Nitrile) Viton (Available Upon Request)

### COMPONENT TECHNICAL DATA

Temperature	Minimum: -4°F [-20°C] Maximum: Viton 300°F [149°C] Maximum: Nitrile 176°F [80°C]
Pressure	Minimum: -29.6Hg [-0.99 bar] Maximum: 230psi [15.8 bar]
Fire Resistance	System does not stoke or propagate fires
Compatibility	Compressed Air, Vacuum, Inert Gases
Male Threads	National pipe thread ISO 228
Female Threads	National pipe thread ISO 228

### COMPONENT PARTS & MATERIALS

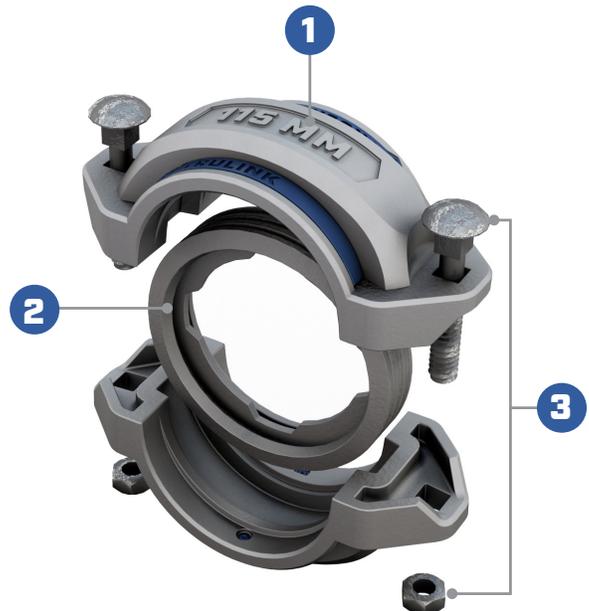
1	<b>BODY:</b> A380 Aluminum, Powder Coated
2	<b>SEAL:</b> Buna N, Viton (Available Upon Request)
3	<b>BOLTS:</b> Carriage / Grade 5 / Zinc Plated

### COMPONENT TECHNICAL DATA

Temperature	Minimum: -4°F [-20°C] Maximum: Viton 300°F [149°C] Maximum: Nitrile 176°F [80°C]
Pressure	Minimum: -29.6Hg [-0.99 bar] Maximum: 230psi [15.8 bar]
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Female Threads	National pipe thread ISO 228

## CLAMP TO CONNECT

MARINE GRADE ALUMINUM



# TECHNICAL SPECIFICATIONS (Continued)

TUBING TECHNICAL DATA			
Pressure: psi/bar	230psi (15.8 bar)	Thermal Conductivity at 77°F	209 W/m-k -1450 BTU-in/hr
Tubing Length	16ft	Expansion Coefficient [Avg @ 68° to 212°F per°F]	23.4 um/m-°C / 13 uin/in-°F
Extruded Aluminum	Aluminum 6063/AA6063-T5	Heat Capacity	0.9 J/g-°C / 0.215 BTU-in/hr-ft <sup>2</sup>
Chemical Composition	Si: 0.2 - 0.6 - Mg: 0.45 ÷ 0.9 - Fe: 0.35	Ultimate Tensile Strength	21.0 ksi / 21,000 psi
Designations	AA 6063 Alloy	Modulus of Elasticity	68.9GPa / 10,000 ksi
Heat Treatment	Thermal Heat Treat "T5"	Tensile Strength	15.0 ksi min / 15,000 psi
Surface Treatment	PPG Duracron Protective Coating	Brinell Hardness	60 ÷ 70 HB
Density	2.7 g/cc - 0.0975 in/in <sup>3</sup>	Melting Point	615°C to 650°C / 1140-1210°F
Electrical Resistivity at 68°F	19 ohm-Cir. Mil/Foot	Percentage Elongation	8%

**DID YOU KNOW?**

Compressed air leaks are one of the greatest sources of energy loss, accounting for up to

**\$3.2 BILLION**

IN WASTED UTILITY PAYMENTS EVERY YEAR

**ELIMINATE THE RISK OF LEAKS WITH TRULINK**



**SCAN HERE**

to begin reducing energy costs at your facility

# TECHNICAL SPECIFICATIONS (Continued)

## THE TRULINK SYSTEM IS COMPATIBLE WITH:

- ✓ Mineral Oil
- ✓ Glycol
- ✓ Compressed Air Condensate
- ✓ Thermal Variations Between -4°F(-20°C) to 300°F(149°C)
- ✓ Pressure Up to 230psi (15.8 bar)
- ✓ UV Radiation (Direct sunlight exposure)

## THE TRULINK SYSTEM IS NOT COMPATIBLE WITH:



Corrosive or reactive chemicals (Please call us if you are unsure your chemical is compatible 704-947-6966)



Water (tap or well water can contain minerals and chemicals that are not compatible)



Thermal variations below -4°F(-20°C) / above 300°F(149°C)



As with any compressed air system, if an impact occurs from people, tools or machinery, the system should be depressurize and checked for damage prior to re-pressurization.

## STANDARDS & APPROVALS:

- RoHS
- ASTM B221
- ASTM B308, B308M
- ASTM B429, B429M
- ASTM B241, B241M
- CRN
- ASME B31.1, B31.3
- ISO 8573
- Food Grade Compliant



# SAFETY WARNINGS



Warning! Compressed air can be inherently dangerous! Do not attempt to install or operate any TruLink product(s) without a complete understanding of the risks involved when working with compressed air. Make sure to read and understand the Installation Instructions of this manual, wear proper PPE (Personal Protective Equipment) at all times and follow Proper Test Procedures prior to operation.

If you would prefer to have a compressed air technician install, test and commission your TruLink product(s), please contact us at 704-947-6966.

# INSTALLATION INSTRUCTIONS

**THESE INSTRUCTIONS MUST BE REVIEWED AND FOLLOWED BEFORE ANY TRULINK TUBING OR FITTING INSTALLATION.**



**! WARNING !**

**Failure to follow instructions and heed warnings could cause system failure, resulting in serious personal injury, property damage and/or death.**

**Every installation of this product is different and may contain certain unique hazards. It is your responsibility to exercise caution and work safely.**

**Applied System Technologies cannot guarantee your safety and recommends all installations be performed by trained installation professionals.**

The following items represent the minimum amount of Personal Protective Equipment required during installation. Additional site-specific safety equipment may be required. Always wear safety glasses, gloves, a hard hat, protective footwear and hearing protection. Never work alone.



Footwear



Safety Glasses



Gloves



Hard Hat



Face Shield



Hearing Protection

# INSTALLATION INSTRUCTIONS (Continued)

1. Inspect TruLink tubing and fittings to ensure they are free from damage prior to starting installation.
2. Fitting and tube damage can occur during shipping or from rough handling. Special care should be given to protect the end of the tubing and the outer edge of the fittings from damage. If you suspect any damage has occurred to your TruLink fittings or tubing prior to installation, call your local distributor where the products were purchased or contact us directly at 704-947-6966.
3. The TruLink System should be supported every 8'. As installations vary greatly, additional supports may be required when adding multiple fittings within close proximity. Local codes will always supersede the manufacturer's recommendation.

## PUSH TO CONNECT

TruLink 20mm - 40mm fitting nuts are factory pre-torqued and should not be loosened prior to installation. 50mm and 63mm fitting nuts are loosened for ease of installation and should be tightened to specifications after completion of step 4 and 5 (see page 10 for details).

*Note: Torquing the fitting nuts does not have an affect on sealing, rather it engages the bite ring which holds the tubing into fitting.*

4. Deburr/chamfer the outer edge of tubing (20mm-63mm) using TruLink part #TP MANUAL-DB(manual) or #TP DRILL ADAPTER-DB(drill-operated) deburring tools.



5. Mark the end of the tubing using a pencil or marker to indicate the proper insertion depth into the fitting using the TruLink depth-marking gauge part # TP-DEPTH GAUGE (20mm-63mm) or depth of insertion marks on fitting body(see page 14 for details).

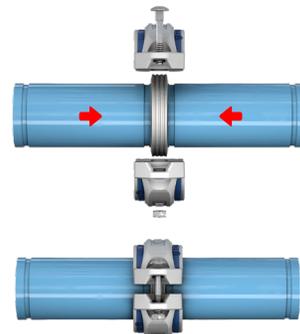


## CLAMP TO CONNECT

6. All 73mm-220mm tubing comes factory pre-grooved in 16' lengths. If shorter lengths are required, use a tubing cutter or a chop saw with an aluminum cutting blade to ensure straight, 90-degree ends. Never cut tubing with reciprocating, band saws or cut-off wheels designed for steel piping.
7. After making a cut, a groove will need to be applied using the TruLink manual groove tool part# TC-GROOVE TOOL M. If you are unfamiliar with Manual Groove Tool operation, please call us for additional assistance and instructions at 704-947-6966. For 8" (220mm) and 10" (273mm) larger grooving tools are required. (Rentals available)

Torque coupling bolts using a torque wrench and deep-well socket to final torque specifications as indicated on Page 10.

TruLink 73mm-220mm clamp-to-connect couplings should be installed over and around the tube and/or grooved fitting end. TruLink couplings 73mm-220mm are provided slightly loosened in the installation-ready position. Apply a small amount of petroleum-based lubricant part# TPC-LUBE to the lip of each coupling seal before installation. Use the TruLink clamp-to-connect depth-marking gauge, part #TC-DEPTH GAUGES (73mm-220mm) to mark the tubing or grooved end fitting to ensure proper depth of insertion.



8. Inspect completed connection to ensure that the fitting and nuts are not loosened and are in a completed, torqued position as described.
9. Ensure that tubing and fittings are supported every 8'.

## NPT THREADED FITTING INSTALLATION INSTRUCTIONS:

All Trulink piping threads are provided in National Pipe Taper(NPT). Fittings such as Point-of-use Manifolds and Threaded Adapters are the most common.

### THE FOLLOWING INSTRUCTIONS WILL GREATLY INCREASE YOUR SUCCESS IN THE INSTALLATION OF NPT FITTINGS:

Properly installing NPT fittings start with an application of a high quality liquid thread sealant such as our offered, Jomar White Stuff (Part Number: PC-TC-SEAL-FG), Henkle Loc-tite 567, Rector Seal 5, or any other quality anaerobic thread sealant.



Sealants such as Teflon (PTFE) tape are not recommended as it does not fill the small voids in the NPT connection as thoroughly as liquid Sealants and can become dislodged causing contamination within the air stream. Liquid Sealants also provide lubrication that makes metal thread installation more manageable, and they help prevent galling.



Apply a thin layer of liquid thread sealant to the male threads ensuring that the threads are filled completely. Smooth the sealant around the threads as to leave no voids.

Place manifolds and ball valve kits into a vice to create a solid work platform for tightening the connection without being overly tight which can cause fitting damage. Never put Trulink fitting nuts in a vice. Never tighten NPT connections using the fitting nut. Always use the wrench flats provided on the fitting body for tightening NPT connections.



**REMINDER: WE STRONGLY RECOMMEND VICE/BENCH BUILDING ALL MANIFOLDS AND BALL VALVE KITS, PRIOR TO SYSTEM INSTALLATION TO PREVENT DAMAGE AT THE FINAL INSTALLATION LOCATION.**

Finger or hand tighten the Male NPT connection then apply torque to complete wrench tight. Wrench tight will vary depending on the size of the connection. A simple rule of thumb for installing NPT thread is finger tight plus 2-3 turns with a wrench. Be cautious of over tightening NPT connections, especially in smaller sizes. Never back off an installed fitting to get the correct alignment. Loosening installed NPT fittings disrupts the sealant, which can cause leaking.

NPT taper can also act as a wedge. It is relatively easy to over tighten and permanently distort threads or even split or crack a female connection. Instead of torque measurement, it is hand tight plus the proper wrench tight engagement that produces a good, leak-proof connection.

**NOTE: DO NOT USE TORQUE AS A REFERENCE FOR INSTALLING NPT THREADED COMPONENTS BECAUSE THERE WILL ALWAYS BE VARIATIONS IN FITTING MANUFACTURERS.**

### **REUSING NPT THREADED FITTINGS:**

Finger or hand tighten the Male NPT connection then apply torque to complete wrench tight. Wrench tight will vary depending on the size of the connection. A simple rule of thumb for installing NPT thread is finger tight plus 2-3 turns with a wrench. Be cautious of over tightening NPT connections, especially in smaller sizes. Never back off an installed fitting to get the correct alignment. Loosening installed NPT fittings disrupts the sealant, which causes leaking.

NPT taper can also act as a wedge. It is relatively easy to over tighten and permanently distort threads or even split or crack a female connection. Instead of torque measurement, it is hand tight plus the proper wrench tight engagement that produces a good, leak-proof connection.

### **FINISHED NPT THREADED CONNECTION LEAKING?**

Depressurize the system, remove the fitting, clean off thread sealant, inspect thread for damage and reapply new sealant. Return to finger tight and then complete to wrench tight. Continuing to tighten rarely increases the sealing properties once pressure has been applied. Additional tightening can cause damage.

# INSTALLATION TEST

To test your completed system, please follow these safety and testing procedures:

**Disclaimer:** This guide is intended to provide the user with basic safe practices for pressure testing TruLink Piping Systems. It is not intended to be an exhaustive treatment on the subject and should never be used as a substitute for reading and complying with Occupational Safety and Health Administration (OSHA) and American Society of Mechanical Engineers (ASME) Piping Standards. Further, it is not intended to provide legal advice.

Pneumatic Testing (use of inert or compressed air to pressurize a system before commissioning to ensure it is leak free)

Pneumatic testing presents many hazards due to the potential for a sudden, unintended release of stored energy. The risk of injury from an improperly fixed connection presents dangers such as flying objects, flying shrapnel, flying dust and debris and many other hazards not mentioned here. If at any time you lack knowledge or are uncomfortable with Pneumatic Testing, please contact us so we can connect you with a TruLink distributor who can provide professional on-site assistance and help you complete the installation and testing process.

1. Inspect the system to be tested to ensure all connections are properly joined and that all sections of the system that are not involved in the test are isolated. We recommend following the Lock-Out/Tag-Out OSHA procedure with all equipment and valves within the system.
2. Ensure the area/all rooms containing TruLink Piping Systems that will be tested are evacuated.
3. Installation of a calibrated gauge and safety relief valve (set at 230psi max) should be a part of every system before testing.
4. Connect inert gas or compressed air to the system, increasing pressure in 15 psi increments.
5. Hold the test at the facility's intended working pressure. For most facilities, this is typically 75-125 psi. Never hold a test at more than 230psi (15.8 bar).
  - a. A new system pressurized with hot/warm air will slowly decrease pressure as the air cools. Time should be allowed for temperature to stabilize and pressure to stabilize if discharge air is hotter than ambient.
6. If leaks are suspected during testing, walk the area without touching the system and listen for leaks (hissing sound).
  - a. If the leak is very small, you may not hear an audible hiss. You may choose to spray a gentle wash of a soap and water mixture on the connections. Bubbles will appear where leaks are evident.
  - b. Never touch, attempt to fix, adjust or repair a pressurized system.
  - c. Leaks are most common around standard NPT (National Pipe Thread) connections. These are typically found in and around equipment and tank connections as well as point-of-use areas, such as manifolds.
7. Visually identify the leak area(s) and depressurize the system.
8. Re-install the affected connection, retest the system starting at Step 1.
9. Once the system pressure is stable and no leaks are revealed, pressurize the system to facility working pressure (not to exceed 230psi / 15.8 bar).

# FITTING TORQUE REQUIREMENTS

## PUSH-TO-CONNECT (20mm - 63mm)

	FITTING SIZE	TORQUE SPEC IN-LBS	FACTORY PROVIDED
1.	20mm Nut	50	Pre-Torqued
2.	25mm Nut	75	Pre-Torqued
3.	32mm Nut	95	Pre-Torqued
4.	40mm Nut	100	Pre-Torqued
5.	50mm Nut	140	Requires Torque
6.	63mm Nut	150	Requires Torque

## OUTLET SADDLE CLAMP (25mm - 220mm)

	FITTING NAME	SIZE (MM>IN)	DRILL SIZE (MM)	GUIDE	TORQUE SPEC FT-LBS
1.	Outlet Saddle Clamp [NPT]	25 > 1/2	19	Y	5
2.	Outlet Saddle Clamp [NPT]	32 > 1/2	19	Y	5
3.	Outlet Saddle Clamp [NPT]	40 > 1/2	22	Y	5
4.	Outlet Saddle Clamp [NPT]	50 > 1/2	22	Y	5
5.	Outlet Saddle Clamp [NPT]	63 > 1/2	22	Y	5
6.	Outlet Saddle Clamp [NPT]	73 > 1/2	47	N	10
7.	Outlet Saddle Clamp [NPT]	73 > 3/4	47	N	10
8.	Outlet Saddle Clamp [NPT]	73 > 1	47	N	10
9.	Outlet Saddle Clamp [NPT]	73 > 1-1/2	47	N	10
10.	Outlet Saddle Clamp [NPT]	90 > 3/4	63	N	10
11.	Outlet Saddle Clamp [NPT]	90 > 1	63	N	10
12.	Outlet Saddle Clamp [NPT]	90 > 1-1/2	63	N	10
13.	Outlet Saddle Clamp [NPT]	90 > 2	63	N	10
14.	Outlet Saddle Clamp [NPT]	115 > 3/4	63	N	10
15.	Outlet Saddle Clamp [NPT]	115 > 1	63	N	10
16.	Outlet Saddle Clamp [NPT]	115 > 1-1/2	63	N	10
17.	Outlet Saddle Clamp [NPT]	115 > 2	63	N	10
18.	Outlet Saddle Clamp [NPT]	168 > 1-1/2	93	N	20
19.	Outlet Saddle Clamp [NPT]	168 > 2	93	N	20
20.	Outlet Saddle Clamp [NPT]	220 > 2	93	N	20
21.	Outlet Saddle Clamp [PTC]	32 > 20	19	Y	10
22.	Outlet Saddle Clamp [PTC]	32 > 25	19	Y	10
23.	Outlet Saddle Clamp [PTC]	40 > 20	22	Y	10
24.	Outlet Saddle Clamp [PTC]	40 > 25	22	Y	10
25.	Outlet Saddle Clamp [PTC]	50 > 20	22	Y	10
26.	Outlet Saddle Clamp [PTC]	50 > 25	22	Y	20
27.	Outlet Saddle Clamp [PTC]	63 > 20	22	Y	20
28.	Outlet Saddle Clamp [PTC]	63 > 25	22	Y	20
29.	Outlet Saddle Clamp [CTC]	168 > 90	93	N	20
30.	Outlet Saddle Clamp [CTC]	168 > 115	93	N	20
31.	Outlet Saddle Clamp [CTC]	220 > 73	93	N	20
32.	Outlet Saddle Clamp [CTC]	220 > 90	93	N	20
33.	Outlet Saddle Clamp [CTC]	220 > 115	93	N	20

## CLAMP-TO-CONNECT (73mm - 220mm)

	FITTING SIZE	TORQUE SPEC FT-LBS	MAX TORQUE FT-LBS
1.	73mm	22	31
2.	90mm	22	31
3.	115mm	55	75
4.	168mm	55	75
5.	220mm	100	150

NOTE: Wrenches, Crows Foot Adapters, Drills and Guides are available for installation convenience.

# PRODUCT OPERATION

TruLink products are engineered and designed to enhance your compressed air system.

When pressurizing a TruLink system, care should be given to increase pressure in increments of no more than 15 psi until the full working pressure is achieved (230psi (15.8 bar) Max).



## WARNING!

Valves should never be opened quickly, as this will cause rapid pressure gains that can result in damage to property, personal injury or death.

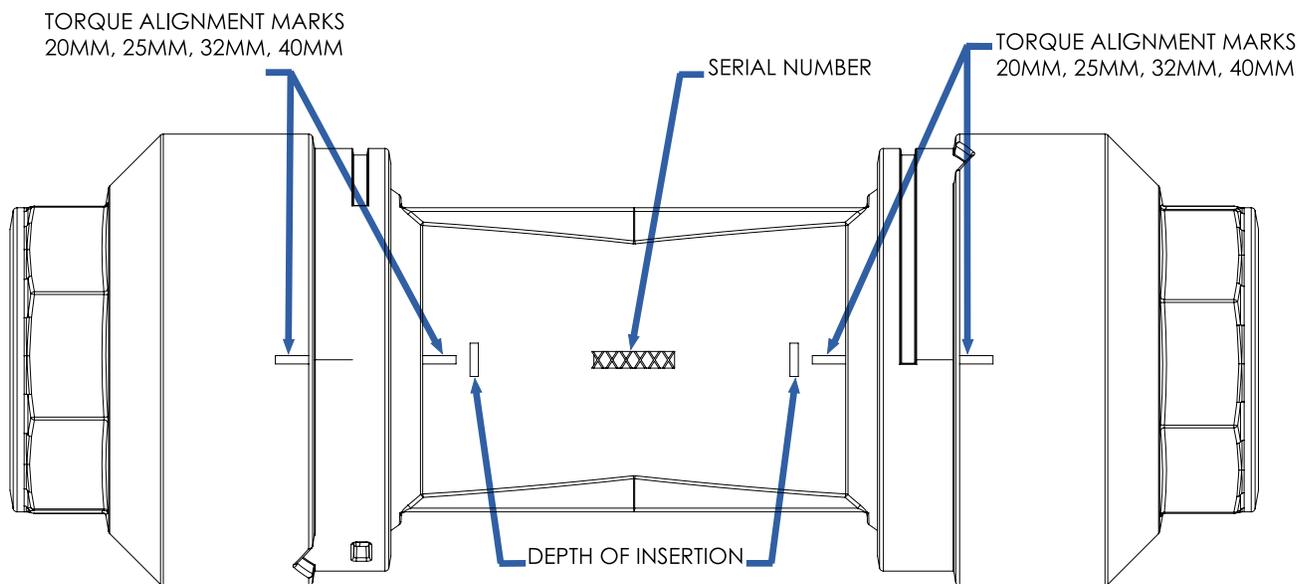
# TROUBLESHOOTING

ISSUE	SOLUTION
Difficulty inserting tube into fitting	Ensure tubing ends have been properly deburred.
Tube and fitting area leaking	Depressurize the system, uninstall the fitting by loosening the nut slightly and pulling the fitting with nut from the tubing end. Mark the tubing using the TruLink Depth Insertion Gauge to ensure full/proper insertion. Reinstall the fitting onto tubing. Re-torque Push-to-Connect fittings using TruLink crows foot wrench and torque wrench according to Fitting Torque Requirements on Page 8. For Clamp-to-Connect fittings, use a deep well socket and torque wrench according to Fitting Requirements on Page 10.
Unable to hold system pressure	Check all fittings for leaks, especially those with NPT threads using soapy water in a spray bottle. Identify the leaking areas. Depressurize the system, then remove and reinstall the fittings as described above. (Note: NPT threaded fittings do require thread sealant, not provided with the fitting) Ensure compressed air is not being consumed by equipment during pressure test.
Low point in air system (sagging)	It is recommend to support your TruLink System at a maximum of 8' spans. If you have filters or other accessories, they should be supported individually in addition to tubing supports.
Equipment not receiving adequate pressure	Check compressor to ensure proper settings and operation. Ensure system is sized properly for compressor output or air volume usage at the given pressure.
Corrosion on fittings or pipe	TruLink should not be used in applications that come in direct contact with chemicals corrosive to aluminum in a dry or wetted state. If you are not sure if your application involves chemicals corrosive to aluminum, please call our Technical Team for assistance at 704-947-6966.
Leaking saddle clamp	Use only TruLink saddle clamp drills when installing saddle clamps. Use TruLink saddle clamp drill guide where applicable (see Page 10). Snug all saddle clamps onto tubing ensuring not to over tighten as to crush the tubing. Never exceed maximum torque. (see Page 10).

# LASER MARKS

All pre-torqued fittings 20mm, 25mm, 32mm and 40mm sizes have **Torque Alignment Markings** these markings should align ensuring fitting and nuts are torqued properly. If any pre-torqued fittings are loosed for any reason, they should be retightened during installation making sure the marks on both nut and body are aligned. We do not recommend swapping nuts and bodies as the **Torque Alignment Markings** may no longer align properly.

All fittings 20mm, 25mm, 32mm, 40mm, 50mm and 63mm sizes include an **Insertion Depth Marking** each fitting body. This marking is recommended to be utilized to mark depth on the tubing to ensure full insertion and proper engagement. Additionally, the **Insertion Depth Marking** can be utilized to determine exact tubing lengths required between fittings.



# GLOSSARY

TERM	DEFINITION
Compressed Air	Air that has been compressed to a pressure higher than atmospheric pressure.
Inert Gas	A gas that does not undergo chemical reactions under a set of given conditions. The noble gases often do not react with many substances and were historically referred to as the inert gases.
Vacuum	Evacuation of air from a closed volume by creating a pressure differential from the closed volume to some vent, the ultimate vent being the open atmosphere.
Compressed Air Condensate	A byproduct of all compressors. It is a mixture of mostly water with ambient particulates, airborne hydrocarbons and traces of compressor fluids that have been concentrated during the compression process.
Pounds Per Square Inch (psi)	Pound-force per square inch (symbol: lbf/in <sup>2</sup> ; abbreviation: psi) is a unit of pressure or of stress. It is the pressure resulting from a force of pound-force applied to an area of one square inch.
Personal Protective Equipment (PPE)	Personal protective equipment is protective clothing, helmets, goggles, or other garments or equipment designed to protect the wearer's body from injury or infection. The hazards addressed by protective equipment include physical, electrical, heat, chemicals, biohazards, and airborne particulate matter.
Recycle	The process of collecting and processing materials that would otherwise be thrown away as trash and turning them into new useable products.
Torque	A force applied perpendicularly to a lever multiplied by its distance from the lever's fulcrum.
NPT	American National Standard Pipe Thread standards, often called national pipe thread standards for short, are U.S. national technical standards for screw threads used on threaded pipes and pipe fittings.
OSHA	Occupational Safety and Health Administration, an agency of the US government under the Department of Labor with the responsibility of ensuring safety at work and a healthful work environment.

## OUR COMMITMENT TO THE ENVIRONMENT

TruLink tubing and fittings are designed with the environment in mind and engineered to last a lifetime. Our tubing and fittings are made of 100% recyclable aluminum, which means that if you ever need to dispose of the product, it can be taken to a local aluminum recycling facility. TruLink packaging is made of recyclable cardboard, which can be recycled by your local cardboard recycling facility.



**RECYCLABLE  
ALUMINUM**



**RECYCLABLE  
CARDBOARD**

## NO MAINTENANCE REQUIRED

Our TruLink Piping Systems are designed to endure the test of time. You will never have to service fittings, fitting seals, tubing or other system components. We are so confident in our product, we back it up with a Lifetime Warranty.

## WARRANTY INFORMATION

This Limited Lifetime Warranty is effective as of November 1, 2023 (the “Effective Date”). The warranted products include all Applied System Technologies (“AST”) **TruLink™** fittings and tubing sold by AST after the Effective Date (and excluding TruLink™ accessories such as, but not limited to, valves, hose reels, and flow controllers), (all such warranted products being referenced hereafter as the “Lifetime Products”). Subject to the terms and conditions of this Limited Lifetime Warranty, the Lifetime Products are warranted to be free from any material defects in manufacture and to conform to published industry standards in effect at the time of sale and referenced by AST in its written documentation for the relevant Lifetime Product (the “Published Standards”), in each case **for the life of such Lifetime Products from the date of delivery** (the “Limited Lifetime Warranty”).

AST’s sole obligation, and purchaser’s sole remedy,

**under this Limited Lifetime Warranty is, at AST’s discretion, the repair or replacement of a defective Lifetime Product that is returned to AST at AST’s designated facility by the original purchaser of the Lifetime Product from AST or any AST reseller or distributor.**

With respect to Lifetime Products purchased through an authorized AST distributor, the party making the warranty claim must also deliver to AST reasonable evidence of the date of purchase. If the original Lifetime Product is no longer manufactured by AST with equivalent specifications, a replacement product substitutable for such Lifetime Product may be selected by AST in its reasonable discretion. If AST discontinues the Lifetime Product and no substitutable replacement product is available, AST reserves the right to reimburse the purchaser for an amount equal to the original



## WARRANTY INFORMATION (Continued)

purchase price of the Lifetime Product. All costs for the removal and installation of defective Lifetime Products shall be at the purchaser's expense, and in no event will AST be liable for any indirect, incidental, consequential, or similar damages, including, but not limited to, lost profits or business interruption losses. As a further condition to AST's obligations under this Limited Lifetime Warranty, the purchaser or claimant shall offer its reasonable cooperation and assistance with AST's review of any warranty claim.

**THIS LIMITED LIFETIME WARRANTY IS AST'S SOLE WARRANTY WITH RESPECT TO THE LIFETIME PRODUCTS, AND AST DISCLAIMS ANY OTHER WARRANTY, INCLUDING WITHOUT LIMITATION, ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.**

In no event will AST be liable for breach of warranty or other claim under this Limited Lifetime Warranty if the Lifetime Products:

1) are not properly installed in good and workmanlike manner (including excessive tightening or over-torquing of fittings and inadequate support) in conformance with the the installation instructions and operating guidelines published by AST, including those hose in its Operations & Maintenance Manual (the "AST Documentation")

<https://appliedsystemtech.com/wp-content/uploads/2023/11/22-OM-Manual-1.2-.pdf>

as well as applicable industry standards and plumbing, fire and building codes ("Applicable Standards and Codes");

2) are used for any purpose other than their intended purpose as limited by the AST

Documentation and Applicable Standards and Codes;

3) are used in systems or with products that are: (a) defective or not adequately designed, manufactured, engineered, or installed; (b) do not meet Applicable Standards and, or (c) not compatible with the Lifetime Products; 4) have been the subject of modification, misuse, refurbishment, misapplication, improper maintenance or repair, neglect, extreme conditions, or damage caused by the acts, fault or negligence of anyone other than AST.

**Purchasers must initiate all claims under this Limited Lifetime Warranty by sending an email to [customerservice@appliedsystemtech.com](mailto:customerservice@appliedsystemtech.com), including contact name, phone number, proof of purchase from AST or an authorized AST distributor, and a brief description of the issue with the Lifetime Product. All warranty claims should be submitted promptly and are subject to review and approval by AST. Failure to follow this warranty claim procedure will result in denial of claims, including denial of claimed costs for repairs or replacements performed prior to AST's authorization.**

Any Limited Lifetime Warranty replacement products will be replaced F.O.B. point of original delivery.

No employee, agent or distributor of AST is authorized to make any warranty other than that which is specifically set forth herein. This Limited Warranty may only be modified in writing signed by an officer of AST.

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