



TLD-2500 TUBE TESTING GUNS OPERATING MANUAL

AIR INJECTION GUN

PLUGGING GUN



www.USAIndustries.com

(713) 941-3797 • (800) 456-8721

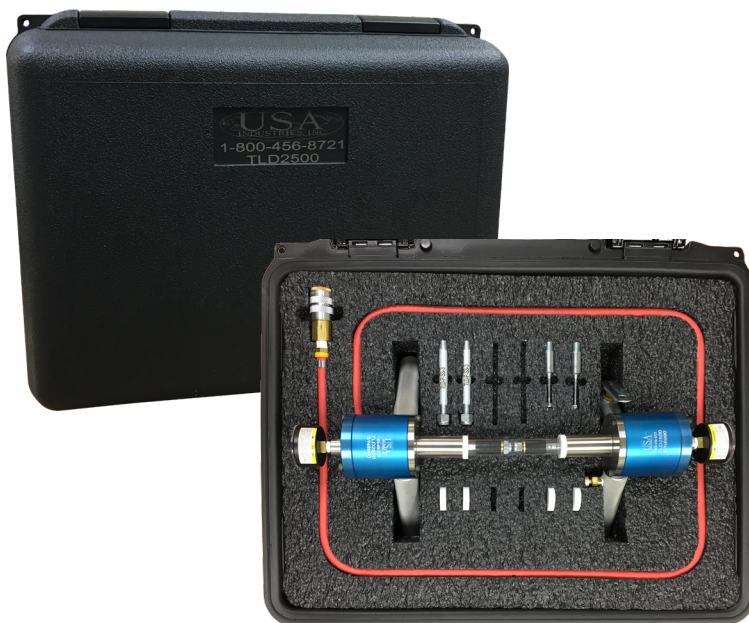
315 State Street • S. Houston, TX 77587



TLD-2500 TUBE TESTING GUNS OPERATING INSTRUCTIONS

Contents

1. Air Injection Gun Illustration and Parts Listings	3
2. Plugging Gun Illustration and Parts Listings	4
3. Operating Procedures	5 - 7
4. TLD-2500 Sizing Chart	8

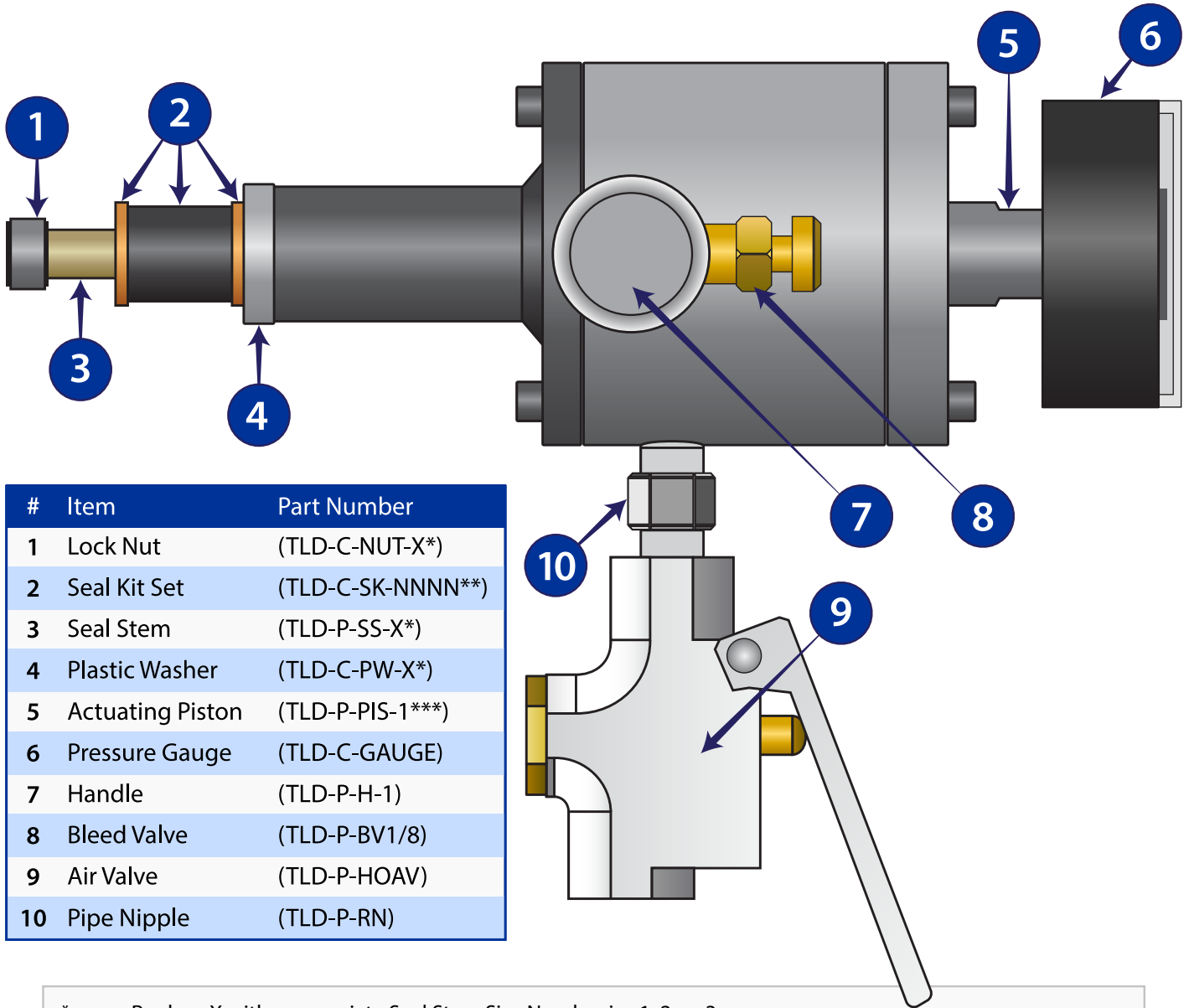


Fully Packaged TLD 2500 Kit in
Custom Case

To order replacement cases or
additional cases for existing TLDs
please contact us directly at www.usaindustries.com.



TLD-2500 AIR INJECTION GUN PARTS



#	Item	Part Number
1	Lock Nut	(TLD-C-NUT-X*)
2	Seal Kit Set	(TLD-C-SK-NNNN**)
3	Seal Stem	(TLD-P-SS-X*)
4	Plastic Washer	(TLD-C-PW-X*)
5	Actuating Piston	(TLD-P-PIS-1***)
6	Pressure Gauge	(TLD-C-GAUGE)
7	Handle	(TLD-P-H-1)
8	Bleed Valve	(TLD-P-BV1/8)
9	Air Valve	(TLD-P-HOAV)
10	Pipe Nipple	(TLD-P-RN)

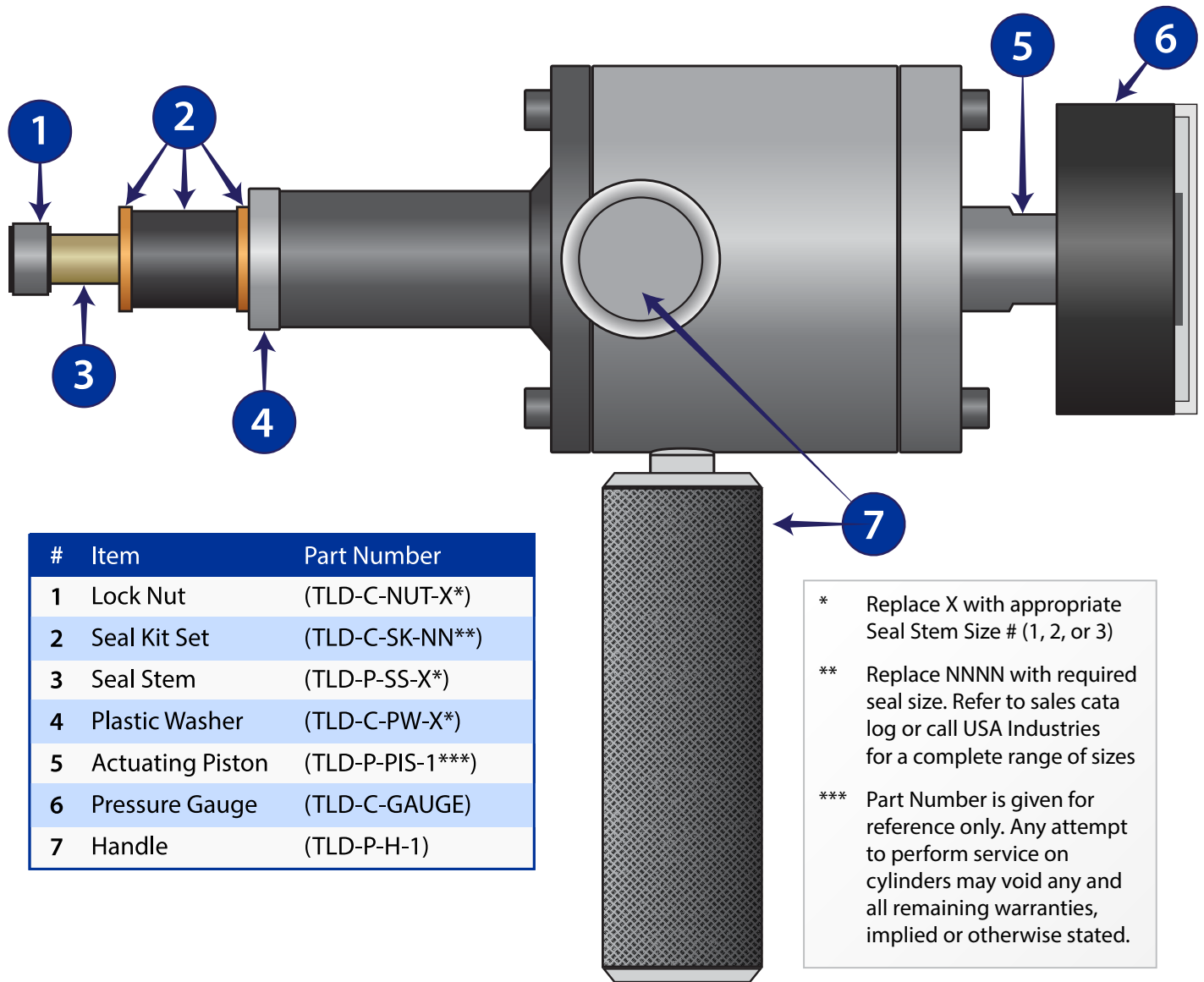
* Replace X with appropriate Seal Stem Size Number i.e. 1, 2, or 3

** Replace NNNN with required seal size.
Refer to sales catalog or call USA Industries for a complete range of sizes

*** Part Number is given for reference only. Any attempt to perform service on cylinders may void any and all remaining warranties, implied or otherwise stated.



TLD-2500 PLUGGING GUN PARTS



#	Item	Part Number
1	Lock Nut	(TLD-C-NUT-X*)
2	Seal Kit Set	(TLD-C-SK-NN**)
3	Seal Stem	(TLD-P-SS-X*)
4	Plastic Washer	(TLD-C-PW-X*)
5	Actuating Piston	(TLD-P-PIS-1***)
6	Pressure Gauge	(TLD-C-GAUGE)
7	Handle	(TLD-P-H-1)

* Replace X with appropriate Seal Stem Size # (1, 2, or 3)

** Replace NNNN with required seal size. Refer to sales catalog or call USA Industries for a complete range of sizes

*** Part Number is given for reference only. Any attempt to perform service on cylinders may void any and all remaining warranties, implied or otherwise stated.



TLD-2500 TUBE TESTING GUNS OPERATING INSTRUCTIONS

1. Prior to Testing

- ⚠ The tubes to be tested should be cleaned and free of any loose deposits or scale. Failure to clean tubes may cause any materials within the tube to be expelled during the testing procedure and could cause damage to the test guns and or injury to the operator(s).
- ⚠ Proper safety equipment should be worn including safety glasses or a face shield to avoid personal injury when testing with the *TLD 2500 Pressure Test Guns*.
- ⚠ Awareness is necessary as to the chemicals used to clean the tube prior to testing to insure seal material will not deteriorate. Different types of rubber, elastomer, or inert seals are available as substitutes.
- ⚠ Make sure the test guns have the correct size replacement *seal* and *washer* sets and that both are the correct size for the tubes being tested. Using seals that are too small can cause advanced seal wear, test gun to stick in tube, or rapid ejection of the test gun from the inside of the tube. Seals and washers outside diameters are considered correct if nominally 0.02”-0.06” (0.5mm-1.5 mm) smaller than the tube’s inside diameter.
- ⚠ Replacement seals for the *TLD 2500 Gun* can be manufactured for any tube ID from 0.28”-1.23” (7.1 mm-31.3mm). For tube inside diameters larger than 1.23” *contact USA Industries at 1-800-456-8721*.
- ⚠ The procedure for replacing the seal and washer sets is further explained on *page 4*.

2. Testing Procedure

1. Never activate the *TLD 2500* when inserted into a tube if the seal washers have to be forcefully pushed to the inside of the tube. Correctly size the *seals* and *washer* sets before use. Failure to do so can result in a stuck gun and/or damaged parts.
2. The *TLD 2500 Guns* are comprised of a pair, an *Air Injection Gun* and a *Plugging Gun*. The *Air Injection Gun* is visibly different in that it contains *an air control valve* and a *bleed valve*. The *Plugging Gun* is a companion gun to the *Air Injection Gun* and will not function without the injection gun being present.
3. Affix *air hose* with *air supply* to *Air Injection Gun*.
4. USA Industries’ *TLD 2500 Test Guns* function on air supplies from 40-125 psi (2.7-8.6 Bar) with a minimum of 5 cubic feet per minute (CFM). These limitations vary due other to pneumatic tools and units that maybe online within your plant environment. If testing inside diameter tube dimensions range from 0.28”-0.48” (7.1MM-12.3 mm) a *regulator assembly* must be attached and the operating pressures must be kept within 40-60 psi. When installing the *regulator assembly* the arrow should be pointed towards the gun and fit onto an air hose attached to the regulator input.



TLD-2500 TUBE TESTING GUNS OPERATING INSTRUCTIONS

5. Insert the *Air Injection Gun* into one tube end and the *Plugging Gun* on the opposite end of the tube being tested. Apply enough pressure to seat the *plastic washer* (Fig. 1 & Fig. 2 Item 4) firmly against the end of the tube. Maintain this pressure throughout the remainder of the test.
6. After ensuring the *Plugging Gun* operator is ready, actuate the *air control valve* on the *Injection Gun* and hold until the *pressure gauge* reading is steady.
7. Release the button on the *air control valve*. It will automatically return to the closed position isolating the tube being tested. The tube is now under pressure.
8. Both *Injection Gun* and *Plugging Gun* operators should monitor their respective pressure gauges. Any decreasing pressure observed on the gauges will be indicative of a tube leak. Press the *bleed valve* on the *Injection Gun* to reduce the air pressure in the tube and reset the *air cylinder seals*. If a leak has been indicated, repeat step 11 to insure leak was not caused by a faulty seal to the tube.
9. Remove the *Test Guns* and relocate to the next tube. Identify each leaking tube for repair with a mark. While actual testing time is approximately 5-10 seconds per tube, this process time may vary depending on verification of a tube leak or amount of time used to create stable applied air pressure.
10. Repeat the previous steps explained here for subsequent tube leak inspection.

3. Installing Replacement Seals:

1. Replacement *seals* for the *TLD 2500 Guns* are furnished with matched size washers. All *seals* and *washers* should be replaced on both guns at the same time.
2. Remove the *lock nut* from the end of the *support shaft tube* and place it to the side.
3. Remove the *seal* and *washer* set from the *support shaft tube* and dispose of if worn. Estimated number of operations per seal and washer set before replacement is approximately 100-500 tubes depending on conditions and operator.
4. Wipe down *shaft* and install replacement *seal* and *washer* on same *shaft*. If the dimensions have changed, you may be required to replace the *support shaft tube*.
5. When replacing the *lock nut* (Fig. 1 & Fig. 2 Item 1) on the *support shaft tube* hand tighten. Do not use a wrench or other mechanical tool. A small gap between the *lock nut* and the *seal washer* is typical. The air cylinder stroke distance will compensate for that space.



TLD-2500 TUBE TESTING GUNS OPERATING INSTRUCTIONS

4. Replacing the Shaft Support Tube Assembly:

The *TLD Test Guns* are shipped from the factory with three sets of *seal stems* (Fig. 1 & Fig. 2 Item 3) tube assemblies. Tube test inside diameters (ID) are:

Stem I - .28" - .48" (7.1 mm – 12.3 mm)

Stem II - .49" - .83" (12.4 mm – 21.2 mm)

Stem III - .84" - 1.23" (21.3 mm – 31.3 mm)

1. Remove all *seal* and *washer* sets as described in “**Installing Replacement Seals**” on page 3.
2. Using an open ended wrench on the wrench flats machined on the *actuating piston* (Fig. 1 & Fig. 2 Item 5) and a pipe wrench on the *seal stem* (Fig. 1 & Fig. 2 Item 3), loosen the tube from the piston inside the cylinder in a counter clockwise manner.
3. Determine the correct size *seal stem* that is required for the tube ID being tested. All three *seal stems* are the same dimension at the cylinder base to fit into the piston. Use PTFE tape or similar product to lubricate and seal threads. Do not over tighten *seal stem* when reinstalling.
4. Inspect the *seal stem* for any scars left from disassembly or reassembly phases. File or sand smooth if any irregularities exist.
5. Reinstall *seal* and *washer* sets per previously outlined procedure in “**Installing Replacement Seals**” on page 3.



Warning! Other Replacement Parts/Repairs

UNDER NO CIRCUMSTANCES SHOULD AN ATTEMPT BE MADE TO SERVICE THE AIR CYLINDERS. ANY ATTEMPT TO PERFORM SERVICE ON CYLINDERS MAY VOID ANY AND ALL REMAINING WARRANTIES, IMPLIED OR OTHERWISE STATED!



TLD-2500 SIZING CHART

Model Number	TUBE I.D. RANGE				Seal O.D.		Washer O.D.		Compression Tube/Nozzle
	Begin		End		inch	(mm)	inch	(mm)	
TLD-30	0.300	(7.62)	0.405	(10.287)	0.295	(7.493)	0.287	(7.290)	1
TLD-37	0.375	(9.525)	0.475	(12.065)	0.354	(8.992)	0.346	(8.788)	
TLD-45	0.480	(12.192)	0.540	(13.716)	0.457	(11.608)	0.449	(11.405)	
TLD-43	0.445	(11.303)	0.515	(13.081)	0.425	(10.795)	0.417	(10.592)	2
TLD-47	0.500	(12.7)	0.570	(14.478)	0.480	(12.192)	0.472	(11.989)	
TLD-53	0.563	(14.3)	0.630	(16.002)	0.543	(13.792)	0.535	(13.589)	
TLD-57	0.626	(15.9)	0.685	(17.399)	0.606	(15.392)	0.598	(15.189)	
TLD-61	0.670	(17.018)	0.735	(18.669)	0.649	(16.485)	0.642	(16.307)	
TLD-69	0.728	(18.491)	0.795	(20.193)	0.708	(17.983)	0.701	(17.805)	
TLD-74	0.795	(20.193)	0.845	(21.463)	0.775	(19.695)	0.768	(19.507)	
TLD-79	0.815	(20.701)	0.866	(21.996)	0.791	(20.091)	0.783	(19.888)	
TLD-65	0.690	(17.526)	0.755	(19.177)	0.669	(16.993)	0.611	(16.789)	3
TLD-73	0.752	(19.101)	0.810	(20.574)	0.732	(18.593)	0.724	(18.390)	
TLD-84	0.874	(22.200)	0.935	(23.749)	0.854	(21.692)	0.846	(21.488)	
TLD-87	0.922	(23.419)	0.980	(24.872)	0.901	(22.885)	0.894	(22.708)	
TLD-89	0.937	(23.8)	1.001	(25.425)	0.917	(23.292)	0.909	(23.089)	
TLD-98	1.010	(25.654)	1.070	(27.178)	0.992	(25.197)	0.984	(24.994)	
TLD-104	1.065	(27.051)	1.120	(28.448)	1.055	(26.797)	1.047	(26.594)	
TLD-109	1.100	(27.94)	1.160	(29.464)	1.082	(27.483)	1.075	(27.305)	
TLD-110	1.160	(29.464)	1.206	(30.632)	1.149	(29.185)	1.142	(29.007)	

Set comprises 2 seals, 4 washers