



MN-PV-CIS-014

1LTC, 2TLE, 3TLE Special Competency Manual

**MN-PV-CIS-014 – 1LTC, 2TLE, 3TLE Special Competency Manual
Rev 3**

Updated: January 10, 2023

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Table of Contents

<u>Table of Contents</u>	1
<u>Training Expectations Letter</u>	2
<u>Aknowledgement</u>	3
<u>Objective</u>	4
<u>General Overview</u>	6
<u>Equipment Overview</u>	9
<u>Safety Considerations</u>	28
<u>1LTC Procedure</u>	31
<u>2TLE Procedure</u>	32
<u>3TLE Procedure</u>	33
<u>Technical Quiz</u>	34
<u>Practical Assessment</u>	35



Training Expectation Letter

It is required that this document is completed prior to the Employee starting training on the 1LTC, 2TLE & 3TLE. This document will serve as formal record that all parties have reviewed and understand the expectations for training on the 1LTC, 2TLE, 3TLE.

Trainee Name:

Date of Discussion:

Expectations of Supervisor/Leader

- Ensuring trainee has scheduled time for training.
- Ensure trainee has reviewed and understand the technical documentation
- Ensure trainee has been provided a demonstration on equipment operation
- Verify field competency sign offs once completed
- Ensure trainee is working with a competent mentor until they are competent themselves
- Provide support for the assessor, mentor, trainer and trainee whenever possible.
- Ensure training documentation is sent to CEDA Training Department

Expectations of Trainer, Mentor, assessor

- Must be qualified in the position for which he/she is training.
- Educate and support trainee with technical review package.
- Ensure trainee has been provided a demonstration on equipment operation
- Review trainee's technical knowledge and verify acceptable understanding
- Educate and support trainee with field tasks identified in the competency check sheet
- Verify trainee has the ability to perform tasks identified in the competency check sheet
- Communicate to Supervisor that the technical review and field competency is complete

Expectations of Trainee

- Complete all prerequisites outlined within the training program.
- Understand the training process outlined in this document.
- Understanding systems and spending time in the field.
- Ensure all lessons and tasks are signed off by the appropriate personnel as indicated on the training documents.
- Inform Supervisor/Leader on progress of training through face to face meetings.
- Will utilize all the materials provided to ensure a comprehensive training program is followed.
- Provide feedback on the training process and any updates that are required to the training material.
- Inform Supervisor/Leader of any training barriers that may exist during the training process.

Training Expectation Acceptance Agreement

I, _____ understand the expectations of me as a trainee as outlined in this document

(Operator Name)

Operator\Trainee

Name

Signature

Date (MM\DD\YY)

Supervisor/Leader

Name

Signature

Date (MM\DD\YY)



Acknowledgement

This manual has been developed using information and knowledge obtained from manufacturer's documentation and input from experienced Operators. Additionally, this manual has been validated by numerous Subject Matter Experts at CEDA. We welcome any comments or suggestions pertaining to this manual and its contents.

Many thanks to those who have demonstrated a clear dedication to CEDA and our values by participating in the creation of this program.





Objective

Welcome to CEDA 1LTC, 2TLE & 3TLE Special Training

This program is designed to provide you with the training necessary to carry out your job in a manner that safeguards yourself, those around you and our environment. Upon Completion of this Module you will be able to:

- Identify Equipment and Components
- Describe the Operation
- Identify Safety considerations when using the 1LTC, 2TLE, 3TLE Tools

Employee(s) will demonstrate knowledge & skill in the proper application of equipment through practical application.

Instructions

All material must be completed in the order presented to ensure that prerequisites are met.

Employees will demonstrate knowledge and skill in the proper application of equipment through practical demonstration and application.

NOTE: All forms and procedures included are those required by CEDA. Work must be performed in accordance with these standards. On Client work sites, there may be additional standards and modified work procedures that will also have to be met.

Description: This is a knowledge and practical skill that requires written material to be reviewed along with the completion of an on-the-job demonstration prior to the test being written.

Whenever possible, the on-the-job demonstration should be completed at a job site or the shop under controlled conditions.

Arrange a time with your Mentor/Supervisor/Trainer to complete the On-the-Job Demonstration, where you will observe the proper operation of the Steamer unit and its components.

Assessment of Competency: Successful completion of this competency requires:

- A score of 100% on the written examination.
- A successful demonstration by trainee requiring a sign-off from Trainer.



Prerequisites

- CEDA Orientation
- CEDA Introduction to High Pressure Water Blasting
- Specific work location Orientation

Below is a list of the learning resources that are included and others you must obtain the most recent version from your Supervisor.

- Site specific documentation
- Job Hazard Analysis for the work
- CEDA FLHA
- Other CEDA procedures and practices that pertain to the job being completed

NOTE: All forms and procedures included are those required by CEDA. Work must be performed in accordance with these standards and can be found in CEDA Health, Safety and Environment Management System (HSEMS) or be requested from your Leader. On Client work sites, there may be additional standards and modified work procedures that will also have to be met.

RENEWAL PERIOD

Absence Period	Renewal Requirement
1 – 6 Months	No Renewal Required
7 – 12 Months	Review of Policy & Procedure Changes
More than 12 Months	Complete Full Competency

General Overview

Federal & Provincial Legislation

All work must be completed in accordance with applicable Municipal, Provincial, & Federal Acts & Regulations, including but not limited to:

Transportation of Dangerous Goods (TDG)

- Vehicle must be DOT Approved and be equipped with appropriate safety devices
- DOT approved vehicles will have sticker on side of unit
- Operator must place appropriate placards on side of vehicle
- Operator must prepare bill of lading prior to transporting materials

The Workplaces Hazardous Materials Information System (WHMIS)

- All CEDA field employees working with or around equipment will have WHMIS and TDG training prior to starting work.

Occupational Health & Safety (OH&S)

Seat Belts

Anytime a vehicle (CEDA owned or personal) is being operated during business hours for business use, or on CEDA property, the occupants must be wearing seatbelts.



Personal Protective Equipment (PPE)

To operate the 1LTC, 2TLE, 3TLE, employees must have and utilize the following personal protective equipment (PPE):

- ✓ CSA Certified Hard Hat with Face Shield
- ✓ CSA Certified Safety Boots
- ✓ Nomex 3 Fire Retardant Coveralls
- ✓ Rain Gear
- ✓ Metatarsal Protection
- ✓ Work gloves
- ✓ Hearing Protection (plugs or muffs)
- ✓ Approved Safety Glasses



Workplace Organization

CEDA's goal is to reduce waste (time, energy and materials) by maintaining an orderly and clean workplace, including our trucks and equipment. We ask that you take pride in the equipment you operate; treat it as if it were your own. A clean and organized vehicle/workspace is a safer vehicle/workspace. There are many ways to eliminate waste:

Allocation & Utilization of Resources: Have the right people and equipment in the right place, at the right time. Use equipment and resources on tasks and activities that are required and add value to our business.

Improve Productivity: Eliminate redundant or unnecessary steps/tasks without negative impact to the safety or quality of our products and services.

Use of Materials: Ensure equipment is stocked with required supplies (filter bags, duct tape etc.) before leaving for jobsite – replace the materials you have used during the shift to ensure that the next crew is adequately stocked. Use the correct materials in the quantities required to do the job safely & correctly.

Preventative Maintenance: Tools and equipment should be assessed as per the performance maintenance schedule to ensure safe operation. Regular maintenance will reduce costly breakdowns in the field.

There are steps we can take to improve our current state and move towards a more productive, organized and safe work environment. Improving workplace organization will reduce costs, improve morale and create a safer work environment. The following steps outline how best to achieve an organized workplace:

Sort, organize and eliminate unnecessary items from the workplace to eliminate clutter. Keep only essential items.

- Tools and equipment that are not utilized for day-to-day operations should be repurposed within the organization or discarded.
- Garbage or loose items should be removed or properly stored.

Prioritize tools, parts and materials based on usage and keep them in easily-accessible places.

- A place for everything and everything in its place.

Create storage areas that are easy to access and clearly laid out:

- Tools and equipment should be stored clean and ready for use.
- Storage areas and stored items should be properly identified using signage, labels or a visual outline.

Set clear standards for workplace organization:

- Hold yourself and others accountable for keeping the work areas clean and safe. Make workplace organization a standard work rule in your area.
- Clean general work areas and equipment after each shift.



- Put clean tools away in the proper place.
- Note any spills, leaks or other messes – clean and report if equipment requires maintenance
- Inspect the area(s) regularly and immediately record and correct any infractions. Handle deviations from work rules in a timely manner.
- Review processes and procedures regularly and adjust as required.



General Equipment Overview

1LTC, 2TLE and 3TLE Special

These devices provide hands free, remotely operated high pressure water cleaning of long, slender tubes or lines such as bundle tubes, condensers, aerial coolers and tube coolers. These tubes or lines are commonly referred to as exchangers.

During normal plant operation, deposits form on the inside walls of the tubes and require cleaning in order to function properly. The 1LTC, 2TLE and 3TLE Special are the names of the devices that are used by CEDA to clean the inside of the exchangers.

Flexible high pressure water lines (flexlances) are fed down the length of each line or tube and the high pressure water removes deposits and hard scale. This high pressure water is provided by high pressure pumps capable of delivering up to 40,000 psi.

- **Single Lance Tube Cleaner = 1LTC**
- **Trans Line Exchanger = 2LTE**
- **Trans Line Exchanger Special = 3TLE**

General Principle

A flexible high pressure hose (flexlance) is set into a drive track that is powered pneumatically. The drive track has frictions blocks installed which are designed to grip the flexlance. The drive track is mounted around a set of gears that are pneumatically driven.

As the gears rotate, the drive track and friction blocks advance the flexlance forwards or backwards through the exchange tubes. The flexlance used will vary in size and will be selected based on the job. The operator will advance and retrieve the hose through the exchanger tube using forward and reverse controls on the device. The end of the high pressure hose is fitted with a nozzle that will provide the most efficient spray for cleaning.

Each device is suited to a particular job. The body of the 1LTC contains the friction blocks that advance and retrieve the flexlance and is manually controlled by the operator. For safety reasons, the 1LTC must always be secured to a mechanically-mounted anti-withdrawal device. In certain

cases where mounting is impossible, the device may be manually held by the operator with management approval and a variance in place.



1LTC

The 2TLE is a larger unit than the 1LTC and is always vertically rigged into position. Although the operator does not have to support the weight of this device, he/ she maneuvers and controls the device while it is in the rigged position. This device is considered to be an automated piece of equipment.



2TLE



2TLE – Vertical Positioning

The 3 TLE Special is an automated unit that is mounted onto a positioning frame. The positioning frame can be configured to allow the lance unit to travel either horizontally or vertically. The lance unit is remotely maneuvered by an operator using a control box. This device is considered to be an automated piece of equipment.



3TLE Special Installed on Positioning Frame



Key Components

The key components of the 1LTC, 2TLE and 3TLE Special will be described in the following section. Please refer to the chart below to determine which components are used with which units. Refer to corresponding operators' manuals for more detail.

	Flexlance(s)	Hose Guide(s)	Friction Blocks	Guide Tube(s)	Controls*	Dump Valve	Mounting Frame & Balancer	Lance Unit	Positioning Frame	Cabinet	Air Supply Box
1LTC	✓	✓	✓	✓	✓	✓					
2TLE	✓	✓	✓	✓	✓	✓	✓				
3TLE Special	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓

* Controls differ for each individual unit.

Flexlance(s)

A flexlance is the high pressure water line that is advanced and retracted by each device. The 1LTC only uses one flexlance while the 2TLE uses two and the 3TLE Special; three.

The end of the flexlance is fitted with a nozzle suited to the particular job and the forward portion fitted with a stinger. The stinger is mounted to the outside of the flexlance and is slim enough to move freely through the guide tube. The stinger provides rigidity to the end of the flexlance and prevents it from bending or reversing inside the exchanger and possibly injuring the operator.



Nozzle and Stinger on end of Flexlance

Hose Stop

A hose stop is fixed to all flexlance(s) and prevents them from traveling beyond the exchanger tube or through the curve in a u-tube.



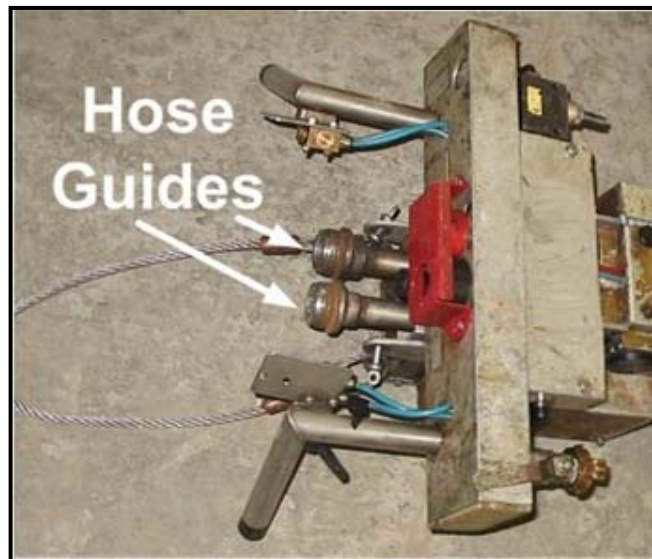
Flexlance with Hose Stop

Hose Guide(s)

Hose guides are located at the rear of the machine where the flexlance(s) enter the friction blocks. The flexlance is inserted through the hose guide with the nozzle facing forward.

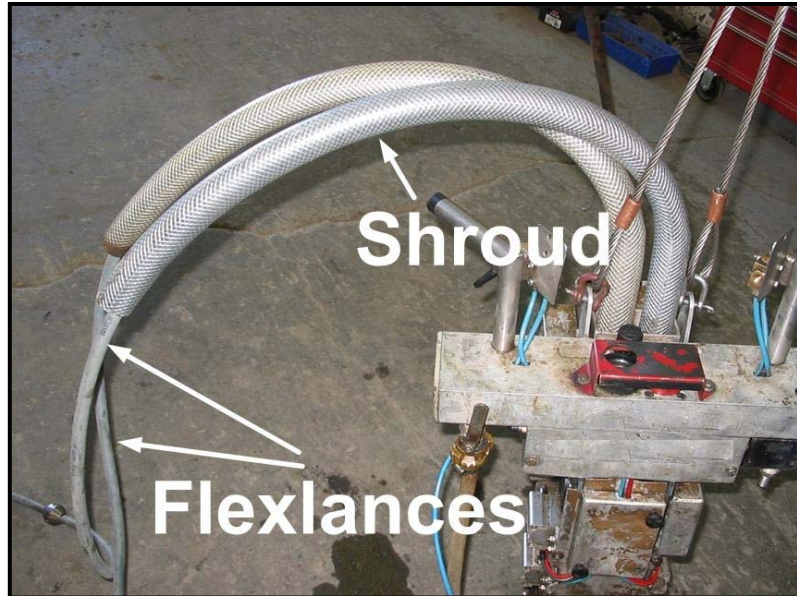


1LTC – Hose Guide



2TLE – Hose Guides

A shroud is added to each hose guide on the 2TLE to prevent the flexlances from contacting the operator. The shroud also protects the operator in case a flexlance ruptures during operation.



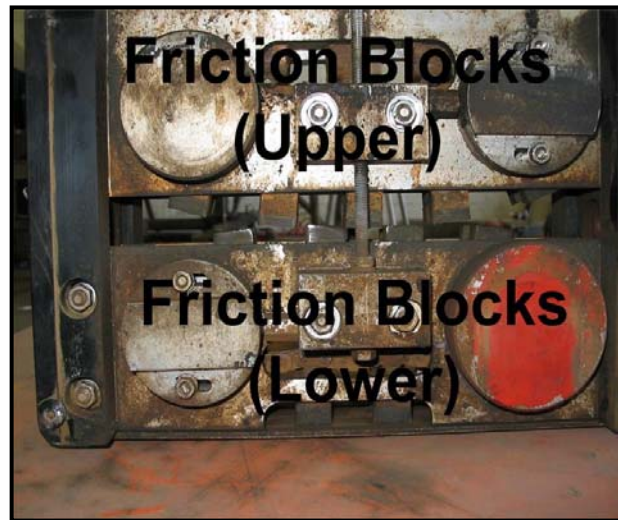
2 TLE with Shroud

Friction Blocks

Friction blocks are designed to advance and retract the flexlance(s). The friction blocks are attached to a chain that moves the blocks forwards and backwards. This component is designed to receive the flexlance(s) and is controlled by the operator.



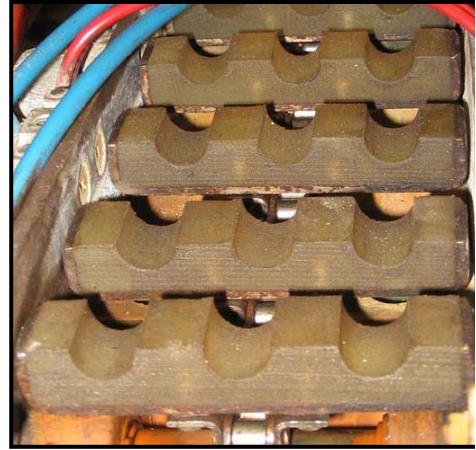
1LTC – Friction Blocks in CLOSED Position



1LTC – Friction Blocks in OPEN Position



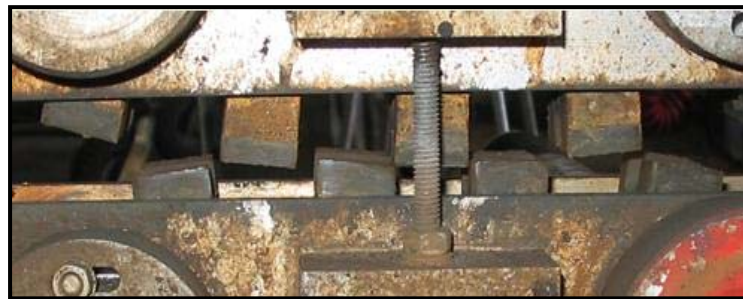
2TLE – Friction Blocks in CLOSED Position



2TLE – Friction Blocks in OPEN Position

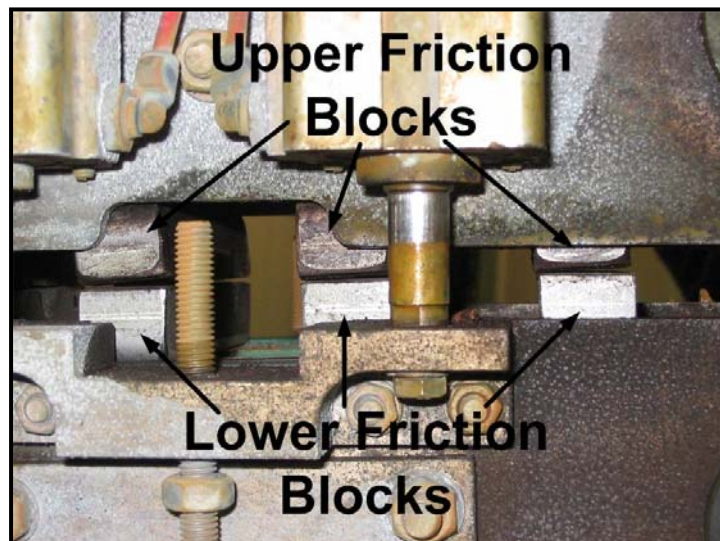
Once the flexlance(s) have been fed into the machine, the operator must ensure the friction blocks are properly positioned.

The friction blocks on the 1LTC must be installed in a manner that prevents the top blocks from mating with the bottom blocks during operation. The offset position is the most common configuration for the 1LTC.



1LTC – Friction Blocks in Offset Position

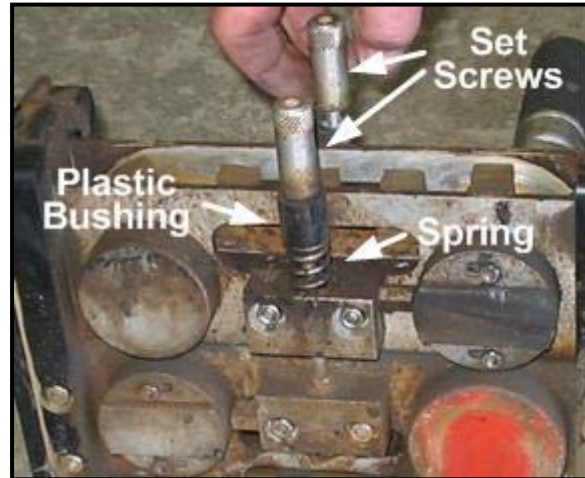
For the 2TLE, the upper and lower friction blocks are positioned in such a way that they mate with each other. The type or size of flexlance used will determine the configuration of the friction blocks. Correct configuration of the friction blocks will ensure proper forward and reverse motion of the flexlances.



2TLE – Friction Blocks in Mating Position

Once the flexlance has been properly positioned in the 1LTC, the operator must tighten the friction blocks into position. The proper amount of tension must be applied to the blocks by tightening or loosening the screws. The correct amount of tension will properly advance and retract the flexlance. If the line does not move when pulled, the operator has achieved the appropriate amount of tension.

It is also important to position the spring, plastic bushing and set screw properly for safe operation of the 1LTC.



Operator Tightening Set Screw

Guide Tubes

Guide tubes direct the flexlance into the tube that requires cleaning. The guide tube has a drain at the bottom which redirects the water away from the operator.

The 1LTC can be fitted with different styles of guide tubes. Some guide tubes are curved, allowing the operator to comfortably position the device during operation. The guide tubes of the 2TLE are built into the device.



Guide Tube Examples

Prior to installing the guide tube a safety hose catcher must be installed. The safety hose catcher prevents the flexlance from reversing through the friction blocks and out the back end of the device during operation. The guide tube cannot be properly installed without a hose catcher.



Safety Hose Catcher



Safety Hose Catcher Mounted onto 1 LTC

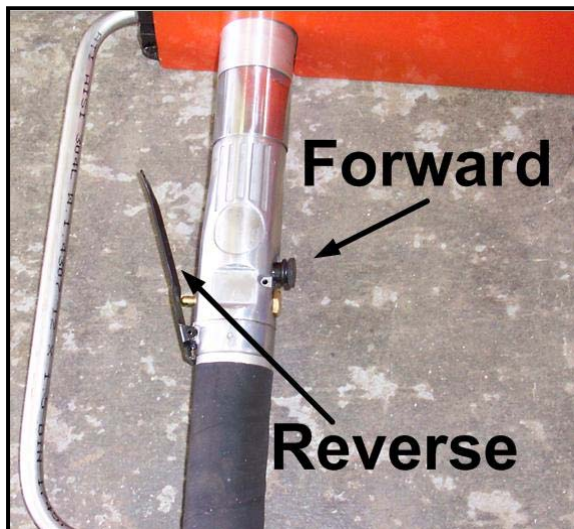
This picture shows the Safety Hose Catcher mounted on the 1LTC. Normally the Safety Hose Catcher is positioned around the flexlance.

Controls

1LTC

The controls on the 1LTC are mounted on a handle to the side of the device consisting of a lever and a button.

At first, pressing the lever will put the unit in reverse. By pressing the button the other side of the handle while still holding the lever down, the flexlance will advance in the forward direction into the exchanger.



1LTC Controls

2TLE

The controls on the 2TLE are mounted on the top of the unit in front of the handles. On each handle is a lever; one controls the forward motion of the flexlances while the other controls the reverse motion.

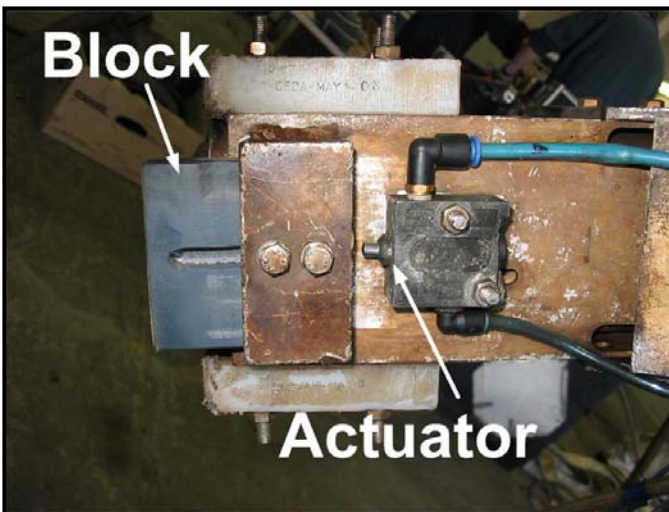
The 2TLE controls will only function if certain conditions are met. For example, the lever that advances the flexlances into the exchanger tube will function only when the 2TLE has been properly positioned over the exchanger tube. An actuator at the bottom of the unit will be depressed automatically when the 2TLE is properly positioned. Once the actuator has been depressed, the advance lever will operate.



2TLE Levers (on either side of device)



2TLE Lever Control Close-Up



Bottom of 2 TLE – Actuator and Block

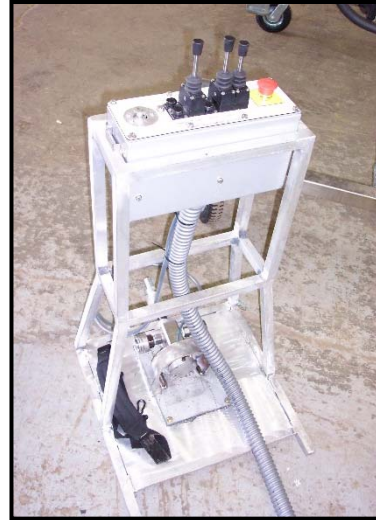


Depressed Actuator

3TLE Special

The control box is connected to the cabinet and consists of buttons, levers and switches that move the lance unit, release the friction blocks for installation of the flexlances and dump the high pressure water.

The lower portion of the stand is where the emergency dump valve is located. This dump valve is used to relieve the high pressure water when the emergency button on the control box is pressed.



Control Box

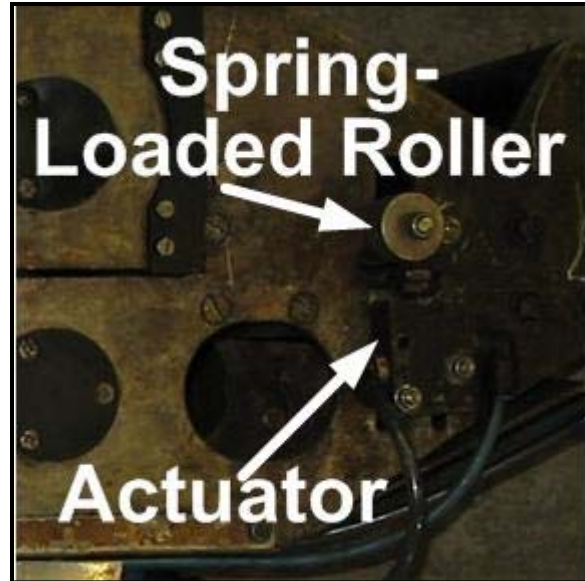


Control Box Lever and Buttons



Emergency Dump Valve

The lever that controls the reversing motion of the flexlances is disabled when the reversing actuator is tripped by the flexlance nozzle. This prevents the flexlances from reversing out of the 2TLE and potentially causing serious injury to the operator.



Reversing Actuator

The controls and gears that advance and reverse the friction blocks for both units are pneumatically operated. An air hose is connected to the side of the unit.

The air pressure can be adjusted through the regulator on the 1LTC to control the forward and reverse speed of the flexlance.



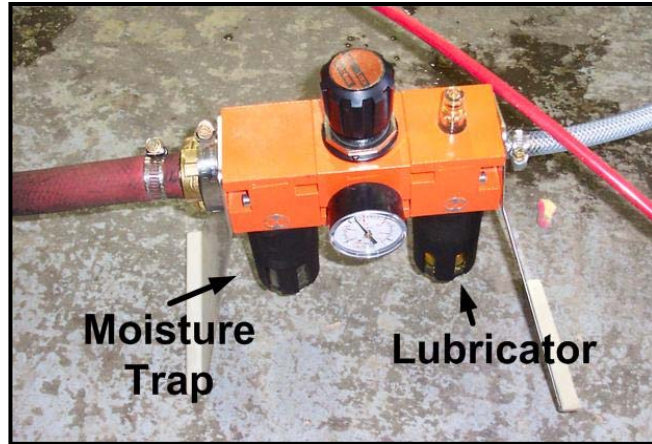
**1LTC – Air Hose
(with whip check)**



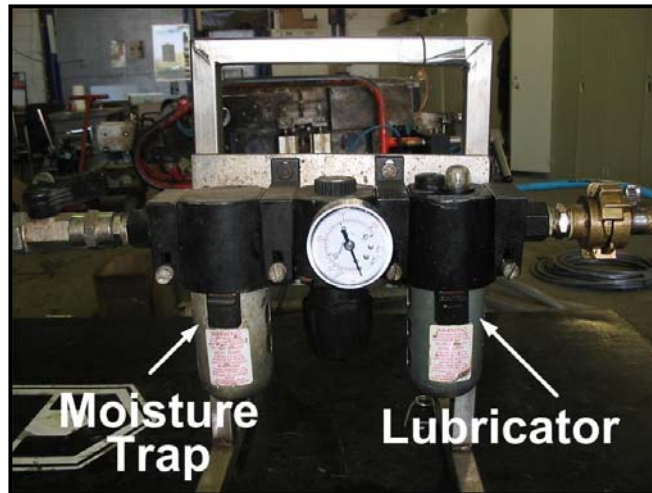
2TLE – Air Hose Connection

One of the most important devices used on the 1LTC and 2TLE is the regulator with moisture trap and lubricator assembly.

The regulator is installed on the air line leading to the device. The left bowl is called the moisture trap and removes moisture from the air line. The right bowl adds oil to the air entering the unit, ensuring proper lubrication of the air motor.



1LTC Regulator



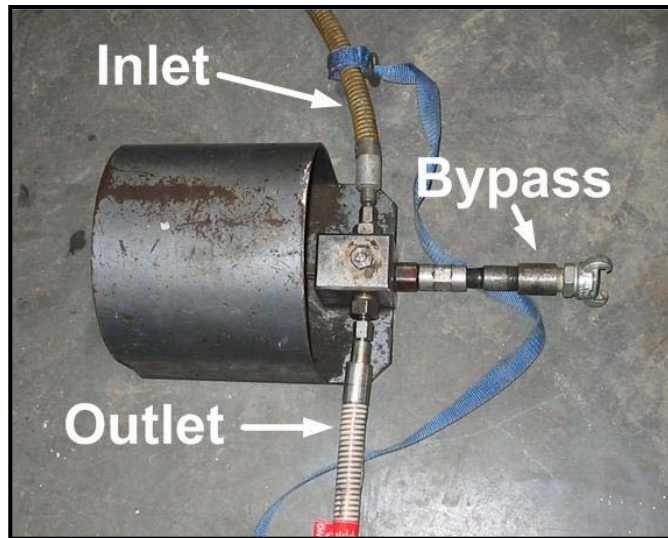
2TLE Regulator

Dump Valve

The dump valve is a very important piece of safety equipment when using high pressure water equipment and is mandatory on every job. It is important to know the type of pump in use so the correct dump valve is used.

A foot dump is used on positive displacement pumps. Once this style of pump is operating, it continuously produces water pressure at the source. When the high pressure water is no longer needed, the operator will completely remove his/her foot from the dump valve. This will divert the high pressure water to the bypass line mounted on the dump valve.

The operator must completely remove his/ her foot from the valve when reversing the flexlance.



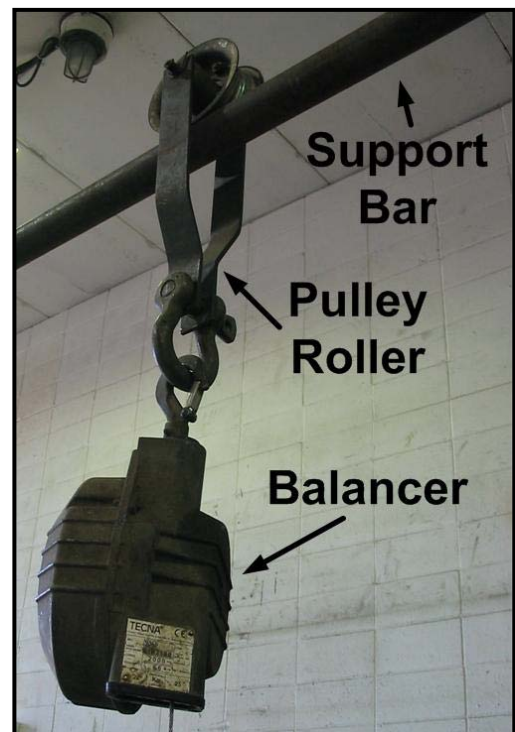
Dump Valve

Mounting Frame and Balancer

The 2TLE is a heavy unit and in order to be properly operated, it should be held in position by a mounting frame. The mounting frame is normally constructed by the client and is designed to receive the pulley roller and balancer.

A support bar can be moved in one plane and the pulley roller can be moved in another. The 2TLE is then mounted onto the balancer and can be maneuvered into position over the exchanger tubes. The balancer is designed to support the weight of the 2TLE allowing the operator to easily position it over the exchanger tubes.

The 2 TLE is rigged into position using the rigging cable fastened to the top of the unit (see next page).



Balancer with Pulley Roller



Rigging Cable



2 TLE Rigged into Position

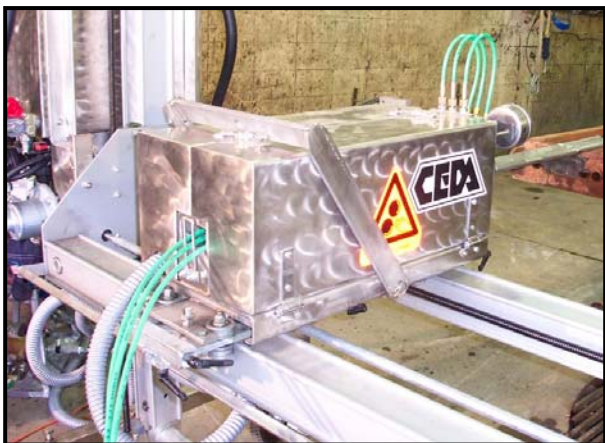
3TLE Special Specific Components

The 3 TLE Special contains flexlances, hose guides, friction blocks and guide tubes as described previously only they are housed within a special unit. The 3TLE also contains the following:

- | | |
|----------------------|-------------------|
| 1. Lance Unit | 3. Cabinet |
| 2. Positioning Frame | 4. Air Supply Box |

1. Lance Unit

The lance unit is the component of the 3 TLE that houses and manages the movement of the flexlances. Up to three flexlances can be fed through this unit, all of which must be fitted with a stinger.

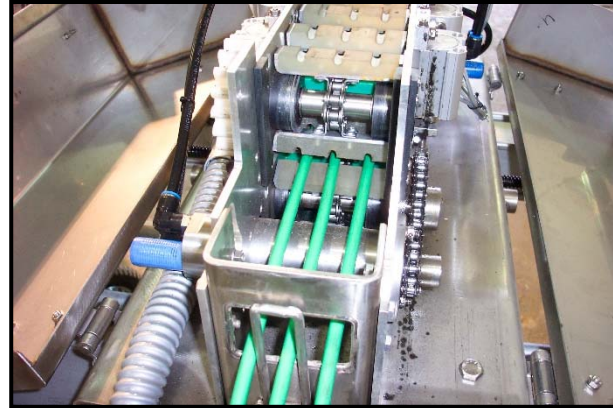


Lance Unit – Safety Covers in the Closed Position



Lance Unit – Safety Covers in the Open Position

The lance unit is mounted onto the positioning frame and house the friction blocks into which the flexlances are installed. The end of the flexlance is fitted with a nozzle suited to the particular job.



Friction Blocks with Flexlances Installed

The front of the lance unit is where the guide tubes are installed.



Guide tubes – Front View



Guide Tubes – Rear View

Once the proper length of the flexlance has been determined, the hose stops can be installed.

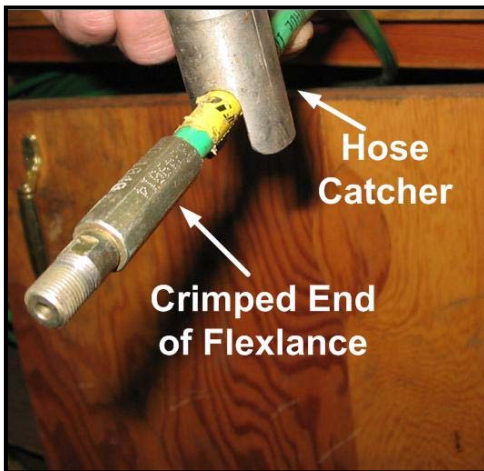


Flexlances with Hose Stops

Once the flexlances have been inserted into the 3TLE Special, the correctly sized safety hose catchers can be installed. The safety hose catchers prevent the flexlances from reversing through the friction blocks and out the back end of the device during operation.



Hose Catchers



Hose Catcher and Flexlance

The crimped end of the flexlance will not pass the hose catcher.



Technician Installing Hose Catcher into 3TLE Special

2. Positioning Frame

The positioning frame is required to support the lance unit and can be easily positioned with the aid of wheels that swivel. Once the frame is properly positioned, it can be lifted off of the wheels with jacks or raised as necessary.



Positioning Frame

A special drive gear is mounted inside the frame and moves the lance unit from side to side.



Drive Gear

3. Cabinet

The cabinet contains the air pressure control valves. One controls the pressure of the friction blocks on the flexlances. The other controls the in and out speed of the flexlances.

The cabinet also contains two timer switches. The time for the in and out strokes can be adjusted.



**Pressure, Speed Controls and Switches
(Outside Panel of Cabinet)**

The panel can be opened to reveal the air actuated switches. Inexperienced operators must never adjust these switches. Only qualified operators shall make adjustments.



Cabinet Control Switches (Inside Cabinet)

4. Air Supply Box

The air supply box provides the air supply for the control valves and lubricating air supply for pneumatic motors.

If the 3TLE Special is left unattended, the air supply to the box must be turned to the OFF position. The air must also be shut off when moving or repairing the 3TLE.



Air Supply Box

Safety Considerations

As mentioned earlier in this element, the 1LTC is considered a manually operated device. Other methods of high pressure water blasting applications must be evaluated and determined to be ineffective before using the 1LTC. For safety reasons, the 1LTC must always be secured to a mechanically-mounted anti-withdrawal device.

If the attachment device cannot be used for the 1LTC a “Pre-Authorization for High Risk High Pressure Waterblasting” form must be complete prior to performing the job. This form can be found on the next page.

Hydraulic Formation

Hydraulic formation is caused when the flexlance enters the exchanger tube or line that has a blockage. The high pressure water that sprays out the side of the nozzle creates a water barrier. High pressure water continues to flow from the tip of the nozzle into a tiny pocket of space created between the blockage and water barrier.

Since a water barrier has formed around the nozzle of the flexlance, the high pressure water that streams from the tip of the nozzle has nowhere to go. The pressure caused by the high pressure water flowing from the tip of the nozzle eventually forces the flexlance to suddenly reverse, which can cause serious injury to the operator if the lance exits the exchanger tube.

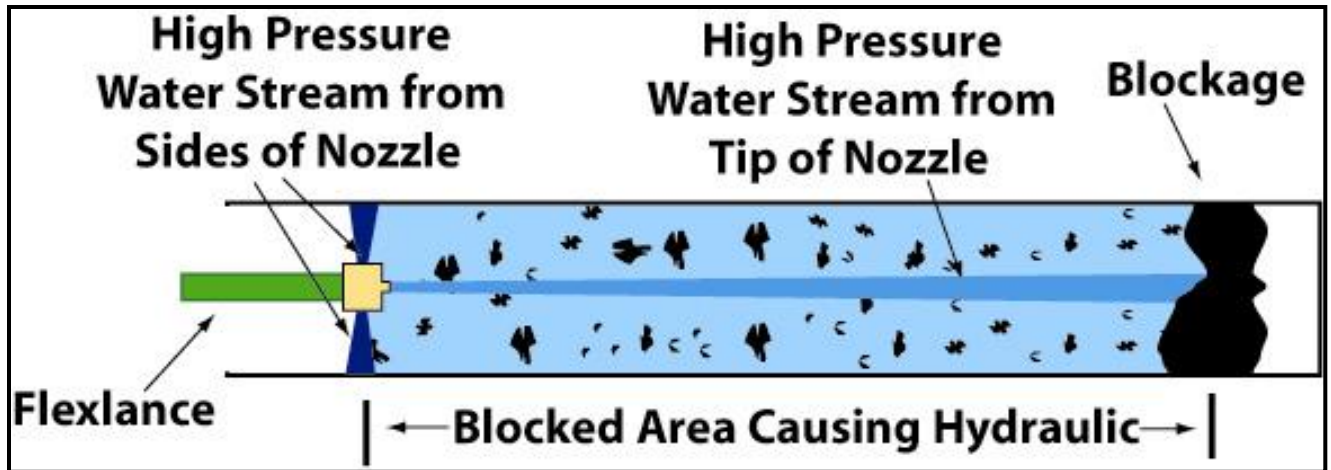


Diagram of Hydraulic

Hydraulic formations can form when operating the 1 LTC, 2 TLE or 3 TLE Special. Experienced operators will notice when blockages in the lines are encountered because the friction blocks will begin to slip against the flexlance(s) and the flexlance(s) will no longer advance. To prevent hydraulic formations, a constant forward and reversing of the flexlance(s) should be performed when blockages are encountered. This forward and reverse action should break-through the blockage.



Pre-Authorization for High Risk High Pressure Waterblasting

This form is required for all Manual High Pressure Waterblasting Applications involving Confined Space Entry and/or all flex lancing throughout the North American Operations of CEDA. High Risk High Pressure Waterblasting Applications are not allowed without this form completed including all of the approvals shown.

Type of Lancing: ☐ Pencil Lining ☐ Moleing ☐ Shotgunning in a Confined Space

Customer and Scope of Work:

Why are the following methods not being used for this project?

CLEANING METHOD	EXPLANATION FOR WHY THESE METHODS CANNOT BE USED
TLE	Has this method been discussed with the client?☐ Yes ☐ No
Roto-Fan	Has this method been discussed with the client?☐ Yes ☐ No
Rotary Lance	Has this method been discussed with the client?☐ Yes ☐ No
Spinning Tool (RJ,BJ,MJ,3D)	Has this method been discussed with the client?☐ Yes ☐ No
Foaming	Has this method been discussed with the client?☐ Yes ☐ No
Chemical Cleaning	Has this method been discussed with the client?☐ Yes ☐ No
Alternative Methods? ie. Chipping, etc.	Has this method been discussed with the client?☐ Yes ☐ No

In addition to all other requirements of the CEDA Code of Practice #11, High Pressure Water Blasting along with the CEDA Code of Practice for Confined Space Entry (when project involves CSE), indicate the following:

FLEX LANCE SAFETY DEVICE	YES ?	NO ?	WHERE APPLICABLE, IF NO, WHY, AND WHAT CONTROL WILL BE USED INSTEAD?
Mechanical Anti- Withdrawal			
Stinger			
Pulling Back Dead Method	?		
Single TLE			

IS THE PROCEDURE SPECIFIC TO THIS PROJECT: ☐ YES ☐ NO, IF NO DO NOT PROCEED

Person Making this Request:

Name _____ Signature _____ Date _____

By my signature above, I acknowledge my responsibility as it applies to this approval and will ensure that all requirements outlined on this form, and in the CEDA Code of Practice #11 High Pressure Water Blasting, and the appropriate Code of Practice for Confined Space Entry (where applicable) are met.

Divisional Managers Approval: ☐ Written ☐ Verbal

Name _____ Signature _____ Date/Time _____



Operate 1LTC Procedure

ACTION	NOTES
1. OBTAIN permit from process permit office.	
2. REVIEW permit and procedure with all employees involved.	
3. COMPLETE Pre-Job Safety Meeting.	
4. SET UP high pressure hose, installing whip checks at each connection.	
5. MOUNT 1LTC on mechanically mounted anti-withdrawal device.	
6. INSTALL hose and hose catcher into 1LTC...	<i>... ensure hose stop on the 1 LTC is in place and functioning.</i>
7. FLUSH hose before installing tip...	<i>... all hoses and fittings to be checked for damage and proper pressure rating.</i>
8. ENSURE lubricator has oil and is functioning.	
9. PRESSURE TEST all hoses and fittings...	<i>... do not exceed pressure rating for hose.</i>
10. FLAG OFF work area with "DO NOT ENTER" flagging.	
11. FEED hose through 1LTC machine until the jet comes through the end of exchanger.	
12. PULL hose back into exchanger tube one foot and hold under pressure until clean water comes out...	<i>... foot pedal must then be released and hose pulled back with no pressure.</i>
13. CONTINUE cleaning until entire exchanger or line is clean.	
14. CLEAN UP work area, and sign off permit.	



Operate 2TLE Procedure

ACTION	NOTES
1. OBTAIN permit from process permit office.	
2. REVIEW permit and procedure with all employees involved.	
3. COMPLETE Pre-Job Safety Meeting.	
4. SET UP high pressure hose, installing whip checks at each connection.	
5. INSTALL hoses into 2TLE...	<i>... ensure hose stops on the 2TLE are in place and functioning.</i>
6. FLUSH hoses before installing tip...	<i>... all hoses and fittings to be checked for damage and proper pressure rating.</i>
7. ENSURE lubricator has oil and is functioning.	
8. PRESSURE TEST all hoses and fittings...	<i>... do not exceed pressure rating for hoses.</i>
9. FLAG OFF work area with "DO NOT ENTER" flagging.	
10. FEED hoses through 2TLE machine until the jet comes through the end of exchanger.	
11. REVERSE hose back through exchanger tube.	
12. CONTINUE cleaning until entire exchanger is clean.	
13. CLEAN UP work area, and sign off permit.	



Operate 3TLE Procedure

ACTION	NOTES
1. OBTAIN permit from process permit office.	
2. REVIEW permit and procedure with all employees involved.	
3. COMPLETE Pre-Job Safety Meeting.	
4. SET UP high pressure hose, installing whip checks at each connection.	
5. INSTALL hose flushing system.	
6. INSTALL hoses and hose catchers into 3TLE...	<i>... ensure hose stops on the 3TLE are in place and functioning.</i>
7. FLUSH hoses before installing tip...	<i>... all hoses and fittings to be checked for damage and proper pressure rating.</i>
8. ENSURE lubricator has oil and is functioning.	
9. PRESSURE TEST all hoses and fittings...	<i>... do not exceed pressure rating for hoses.</i>
10. FLAG OFF work area with "DO NOT ENTER" flagging.	
11. FEED hoses through 3TLE machine until the jet comes through the end of exchanger.	
12. REVERSE hose through exchanger tube.	
13. CONTINUE cleaning until entire exchanger is clean.	
14. CLEAN UP work area, and sign off permit.	
15. CLEAN 3TLE and oil chains.	



Multiple Choice Questions (Technical Quiz)

Complete the following test, and have it graded by your assessor. If any questions are answered incorrectly, your assessor will explain what the correct answer is, and why it is correct. Once you understand the correct answer, both the assessor and students initials are required to indicate that mentoring or coaching has taken place.

Question	Assessor's Initials	Student's Initials
1. The 1 LTC is considered a manual device. a. True b. False		
2. Stingers may be used on the 1 LTC, 2 TLE or 3 TLE special. a. True b. False		
3. A balancer is a device commonly used on the: a. 1 LTC b. 2 TLE c. 3 TLE d. all of the above		
4. A "Pre-Authorization for High Risk High Pressure Waterblasting" form must be completed and a variance in place for operating the 1LTC over the shoulder. a. True b. False		
5. The operator is not permitted to reverse the flexlance under pressure when using which device? a. Unattached 1 LTC b. 2 TLE c. 3 TLE d. all of the above		
6. A shroud is commonly used on which device? a. 1 LTC b. 2 TLE c. 3 TLE d. all of the above		
7. An actuator on the bottom of the 2 TLE prevents the operator from advancing the flexlances if it is not depressed. a. True b. False		
8. A positioning frame is used for the: a. 1 LTC b. 2 TLE c. 3 TLE d. none of the above		
9. Inexperienced operators should never adjust the air actuator switches on the 3 TLE. a. True b. False		
10. When a blockage is encountered, the operator should advance and reverse the flexlances to prevent hydraulic formations. a. True b. False		

Practical Assessment – 1LTC, 2TLE, 3TLE Operations

This form is to be filled out by the assessor as they observe the student successfully demonstrate these items in order to be deemed competent.

Assessment Check List

Section 1: 1LTC			
The following items must be identified and their purpose, inspection requirements, and preventative maintenance must be explained. Failure to successfully explain inspection and maintenance requirements does not constitute a FAIL, but will require a mentorship agreement to bring the employees level of knowledge to an acceptable level.			
ITEM		YES	NO
#	Identify the following...		
1	Flexlance		
2	Hose Guide		
3	Friction Blocks		
4	Guide Tube		
5	Controls		
6	Dump Valve		
7	Stinger		
8	Nozzle		
9	Hose Stop		
10	Safety Hose Catcher		
11	Moisture Trap/ Lubricator Assembly		
Comments:			
The following tasks must be completed in the prescribed sequence. Any exceptions must be noted in the comments section with justification. Assessor will check YES column if the item was actioned satisfactorily, or circle the number in the NO column if it was not. If enough demerits are accumulated			



to warrant a fail, or employee performs an unsafe or dangerous action, the assessment may be terminated immediately. If necessary, all near-miss/incident reporting requirements must be met. <i>*Copies of the completed Daily Inspection, FLHA and Procedure must be attached to the assessment.</i>			
#	Demonstrate...		
1	Obtain permit from process permit office.		
2	Review permit and procedure with all employees involved.		
3	Complete Pre-Job Safety Meeting.		
4	Set up high pressure hose, installing whip checks at each connection.		
5	Mount 1LTC on mechanically mounted anti-withdrawal device.		
6	Install hose and hose catcher into 1LTC.		
7	Flush hose before installing tip.		
8	Ensure lubricator has oil and is functioning.		
9	Pressure Test all hoses and fittings.		
10	Flag off work area with "DO NOT ENTER" flagging.		
11	Feed hose through 1LTC machine until the jet comes through the end of exchanger.		
12	Pull hose back into exchanger tube one foot and hold under pressure until clean water comes out.		
13	Continue cleaning until entire exchanger or line is clean.		
14	Clean up work area, and sign off permit.		
Comments:			
Section 2: 2TLE			
The following tasks must be completed in the prescribed sequence. Any exceptions must be noted in the comments section with justification. Assessor will check YES column if the item was actioned satisfactorily, or circle the number in the NO column if it was not. If enough demerits are accumulated to warrant a fail, or employee performs an unsafe or dangerous action, the assessment may be terminated immediately. If necessary, all near-miss/incident reporting requirements must be met. <i>*Copies of the completed Daily Inspection, FLHA and Procedure must be attached to the assessment.</i>			
TASK		YES	NO



1	Obtain permit from process permit office.		
2	Review permit and procedure with all employees involved.		
3	Complete Pre-Job Safety Meeting.		
4	Set up high pressure hose, installing whip checks at each connection.		
5	Install hoses into 2TLE.		
6	Flush hoses before installing tip.		
7	Ensure lubricator has oil and is functioning.		
8	Pressure test all hoses and fittings.		
9	Flag off work area with "DO NOT ENTER" flagging.		
10	Feed hoses through 2TLE machine until the jet comes through the end of exchanger.		
11	Reverse hose back through exchanger tube.		
12	Continue cleaning until entire exchanger is clean.		
13	Clean up work area, and sign off permit.		

Comments:

Section 3: 3TLE

The following tasks must be completed in the prescribed sequence. Any exceptions must be noted in the comments section with justification. Assessor will check YES column if the item was actioned satisfactorily, or circle the number in the NO column if it was not. If enough demerits are accumulated to warrant a fail, or employee performs an unsafe or dangerous action, the assessment may be terminated immediately. If necessary, all near-miss/incident reporting requirements must be met.

**Copies of the completed Daily Inspection, FLHA and Procedure must be attached to the assessment.*

TASK		YES	NO
1	Obtain permit from process permit office.		
2	Review permit and procedure with all employees involved.		



3	Complete Pre-Job Safety Meeting.		
4	Set up high pressure hose, installing whip checks at each connection.		
5	Install hose flushing system.		
6	Install hoses and hose catchers into 3TLE.		
7	Flush hoses before installing tip.		
8	Ensure lubricator has oil and is functioning.		
9	Pressure test all hoses and fittings.		
10	Flag off work area with "DO NOT ENTER" flagging.		
11	Feed hoses through 3TLE machine until the jet comes through the end.		
12	Reverse hose through exchanger tube.		
13	Continue cleaning until entire exchanger is clean.		
14	Clean up work area, and sign off permit.		
15	Clean 3TLE and oil chains.		



Assessment Sign Off

All boxes must be completed before signing an employee competent.

- ☐ Expectation Letter Signed
- ☐ Minimum 100 hours of on the job training completed
- ☐ On the Job Practical Assessment Completed by an approved Assessor
- ☐ Has reviewed and understands the operator manuals
- ☐ Reviewed and understands Procedures and Safety Documentation
- ☐ Technical review and Knowledge Exam complete
- ☐ Training documentation sent to CEDA Training Department

Assessor

I, _____ have taken the below named employee through this Assessment, and he/she has successfully demonstrated competence in the areas identified.

Signature Date

Student

I, _____ have completed this competency, including the on-job demonstration, practical assessment and multiple-choice questions. I understand the information presented and agree to follow all of the rules and procedures set out by CEDA.

Signature Date



Revision Log

Revision Date	Section Affected	Changes Made
January 10, 2023	All	Updated Template, multiple changes throughout.



Training Change Request Form

Date: _____

Location: _____

Name: _____

Contact information: _____

Email/Phone number

Description

Please use the back of this sheet to make additional comments.

Section Name: _____

Page Number: _____

Description of Problem/ Suggested Resolution:
