

Installation Procedure IP SV 55

REVISION HISTORY

Revision	Date	Change
A	5/18/2022	Initial Release
B	3/14/2024	Update formatting

Installation Procedure, Lee 5.5 mm Shuttle Valve

FACTORY INSTALLATION PROCEDURE

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1. Overview

This procedure is intended to provide process guidelines for proper installation of Lee 5.5 mm Shuttle Valve product. Section 2 provides an overview of the hole requirements. Section 3 contains the installation procedure. Section 4 contains a diagram of proper orientation and position of the product with respect to the installation hole and installation tool.

Compliance with this installation procedure will ensure optimal product performance. Please contact your local Lee Company Sales Representative regarding questions concerning the installation of Lee Company products.

2. Installation Hole Requirements

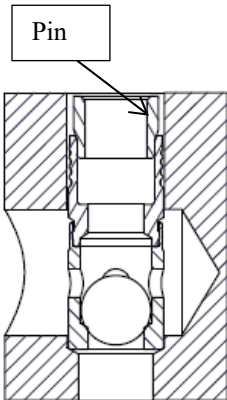
The Lee 5.5 mm Shuttle Valve product is purposely designed to perform well under adverse conditions. Therefore, the installation hole specifications outlined in this section should be followed precisely to ensure proper function of the shuttle valve's expansion sealing features. Installation forces and pressure ratings are based on installations in aluminum housings or manifolds.

Installation hole specifications, as found on Lee Drawing 1INST032617S (Appendix B), will ensure proper performance of the Lee 5.5 mm Shuttle Valve Product. The hole should be clean, dry and free of burrs. Surface finish should be 1.6µm (Ra) Maximum with no longitudinal surface defects. Surface finish requirements must be given special attention. The nose and the expansion section of the shuttle valve seal and retain the shuttle valve in the hole. A smooth machined surface where the shuttle valve interacts with the hole is needed to seal and retain the shuttle valve properly. The installation hole must be finish machined after the cross hole to ensure that the installation hole is burr free.

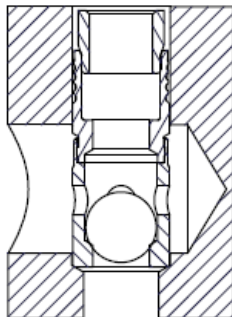
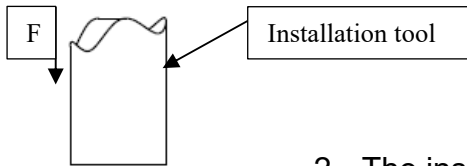
The Lee Company does not recommend the use of coatings or surface treatments in the area of the installation hole where the Lee 5.5 mm Shuttle Valve product is to be installed. These may reduce shuttle valve retention.

3. Installation

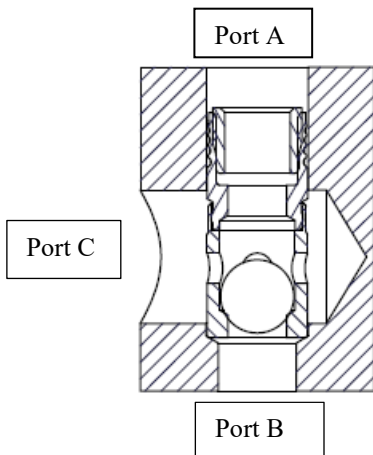
Installation Overview – All 5.5 mm Shuttle Valves use a pin to expand a grooved section of the insert's body into the housing wall to affect a seal and retain the component. The pin, which has been preinstalled, is driven into the body. All 5.5 mm Shuttle Valves are pre-lubricated to reduce friction and allow the pin to be driven to its correct position relative to the shuttle valve. Do not clean prior to installation.



1. The Lee 5.5 mm Shuttle Valve is inserted into the installation hole with the pin end up as shown.



2. The installation tool (p/n CCRT0900120S) which is aligned with the installation hole, approaches the hole and contacts the back of the pre-installed pin. The tool drives the pin into the shuttle valve body until a force of 5338 to 6227 Newtons is achieved. Using friction and penetration, the lands bite into the housing material.



3. When the installation tool is retracted, the installed Shuttle Valve can be inspected by measuring the depth of the pin relative to the valve body. This distance should be flush to within 0.25 mm above flush. Port A is sealed by the expansion of the body outwardly into the hole and Port B is sealed by the nose of the valve seating into the bottom chamfered surface of the installation hole.

3.1. Installation Equipment

The Lee 5.5 mm Shuttle Valve product has been designed to be installed using pneumatic, hydraulic, or electric servo-press equipment. An electric servo-press system is recommended for high volume production as it provides detailed feedback for better in process controls of the installation process. The housing in which the component is to be installed should be held stationary on a solid surface. The Shuttle Valve is expanded by the insertion of the pre-installed and lubricated expansion pin using an installation tool under load. Adjust the press stroke to eliminate over-travel as this will damage the Shuttle Valve. Adjust the press supply pressure to limit the maximum force to 6227 Newtons and check to make sure that a minimum force of 5338 Newtons has been met.

Installation should be done using Lee Installation Tool P/N CCRT0900120S (see Appendix C). The installation tool and the installation hole need to be concentric, see diagram in Appendix A. See Appendix D for further information about the recommended electric servo-press system from Promess, Inc.

3.2. Standard Factory Installation (see Appendix A)

1. Firmly support the housing or manifold in which the valve is to be installed.
2. Insert Lee 5.5 mm Shuttle Valve product into installation hole, pin end up, until the valve is seated on the shoulder of the installation hole.
3. Apply an installation force between 5338 and 6227 Newtons using Lee Installation Tool P/N CCRT0900120S. The tool can approach the Lee Shuttle Valve at a rate of 20-35 mm/sec. The maximum speed of the tool during installation should be limited to 3 mm/sec.
4. Inspect the Lee 5.5 mm Shuttle Valve product for proper installation by measuring the installed position of the expansion pin relative to the top of the Shuttle Valve body. The pin should be flush to within 0.25 mm above flush as shown in section 4.1.
5. Retract tool and follow the procedure above for all additional installations.

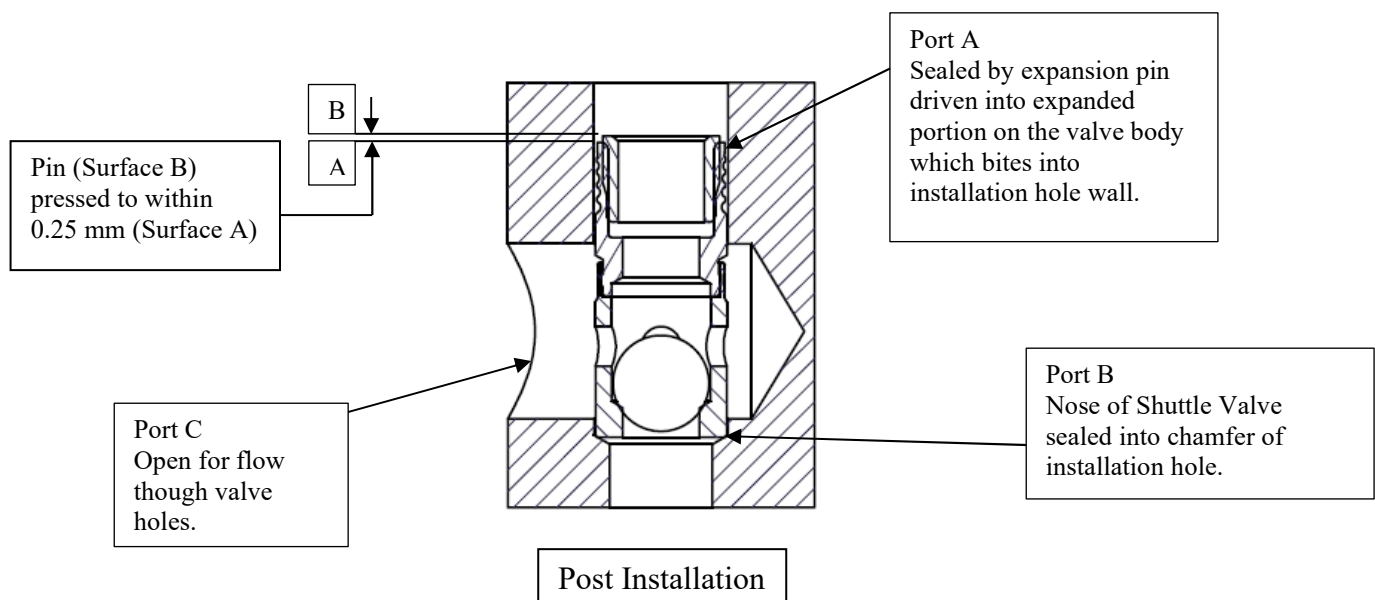
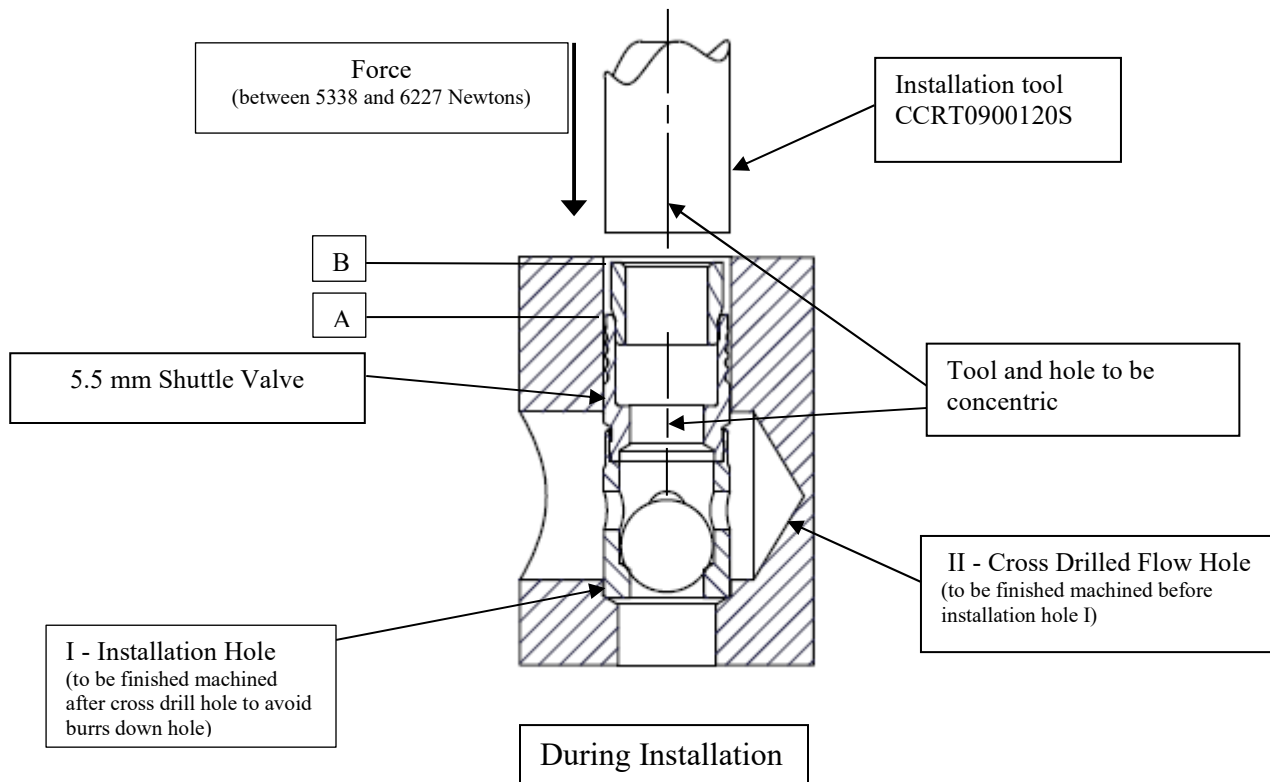
Factory Best Practices:

1. Examine the condition of the Installation Tool at appropriate intervals and replace if damaged or chipped.
2. Clean feed bowls once per day.
3. Turn off vibratory feed bowl when the assembly station is idle, or if the feed rail is full of parts.
4. Use the minimum vibration setting to advance valves in the feed bowl.
5. If the valve is blown into the assembly area from the feed rail, minimize the air pressure at which the valve is blown into the assembly area to prevent possible damage.

4. Appendices:

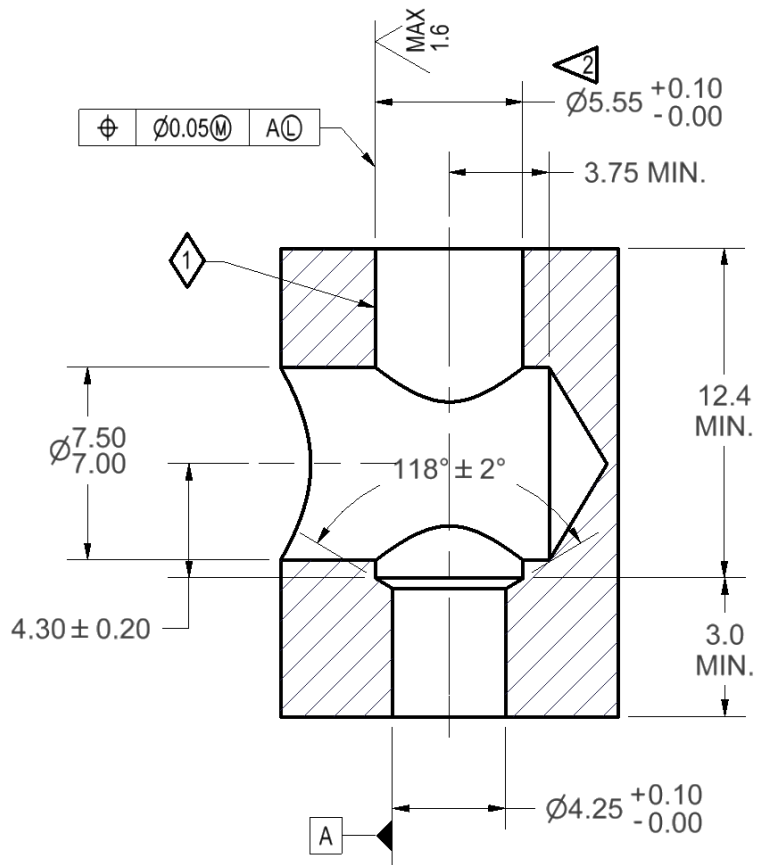
4.1 Appendix A: Diagram of Factory Installation

(Section View of Hole, 5.5mm Shuttle Valve and Installation Tool)



4.2 Appendix B: Installation Hole Dimensions

Refer to Lee Drawing No. 1INST032617S for complete specifications.

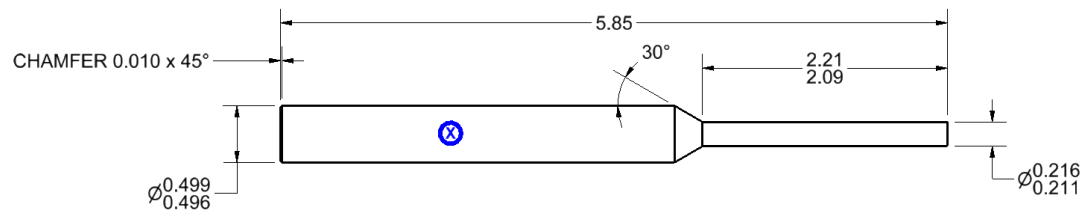


- NOTES:
1. 5.55 DIAMETER MUST BE BURR FREE THE ENTIRE LENGTH PRIOR TO INSTALLATION OF VALVE.
 2. FINISH MACHINE THIS HOLE LAST.

Dimensions are in millimeters. Hole should be clean, dry and free of burrs. No longitudinal surface defects permitted. No coatings or surface treatments in the area of the installation hole where the product is to be installed.

4.3 Appendix C: Installation Tool Dimensions

Refer to Lee Drawing No. CCRT0900120S for complete specifications.



Dimensions are in inches. Marked with part number and revision letter. (X)

4.4 Appendix D Promess, Inc. Press Information

Contact:

Promess, Inc.
11429 Grand River Road
Brighton, MI 48116
Phone: (810) 229-9334
Web: www.promessinc.com

Press Information:

EMAP 8kN/200mm – FEMP8/200MP includes the following:

- Press w/ integrated load cell, motor mounting plate and Motor
- PreAmplifier (Connected to the Press Load Cell and Prox Switch)
- MotionPRO Servo Amplifier
- Motor Power Cable
- Motor Encoder Cable
- PreAmplifier Cable
- MotionPRO software

