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SERIES PLK 2-6 LOCATING PIN CLAMP
FIELD TEARDOWN AND ASSEMBLY PROCEDURES

CLAMP TEARDOWN

TOOLS REQUIRED
3 mm hex wrench
4 mm hex wrench
5 mm hex wrench
8 mm hex wrench
Small flat head screwdriver
Small needle-nose pliers
Retaining ring pliers
Small pick
Vice

MATERIALS REQUIRED
Cleaning materials

TEARDOWN PROCEDURE
The following is a procedure to tear down a standard PLK Design 2/6 Clamp.

MANUALLY EXTENDING PIN

1. Using 4 mm hex wrench, remove one socket head screw and loosen other. Rotate rear cover plate as shown in Step 1.
2. Insert small flat screwdriver below dowel pin as shown in Step 2 above.
3. Lift screwdriver as shown in Step 3 above. This will extend locating pin and retract finger. Pin is fully extended when finger is retracted fully into locating pin.

WITH R01 OR R02 OPTION:

1. Locate rod extending on rear cap of cylinder and push as shown in Step 1.
2. Continue pushing until finger fully retracts into locating pin.

For clamps with R01 or R02 option.

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PART SUPPORT REMOVAL

1. Using 4 mm hex wrench, remove 4X Part Support Socket Head Screws as shown in Step 1.
2. Remove Part Support Flange as shown in Step 2.
3. Remove Part Support as shown in Step 3. **Note:** On standard PLK 2-6, if main pin diameter is 25.00 to 30.00 mm, Part Support and Part Support Flange will resemble components shown in Step 3a.
4. Clean components thoroughly.

COVER PLATE REMOVAL

1. Using 4 mm hex wrench, remove 3X Cover Plate Socket Head Screws as shown in Step 1.
2. Remove Cover Plate as shown in Step 2.
3. Clean components thoroughly.
LOCK COMPONENTS REMOVAL

Step 1

1. Using 3 mm hex wrench, remove Lock Adjustment Socket Set Screw as shown in Step 1.
2. Remove Lock Bracket Assembly as shown in Step 2. Note that Tension Spring is attached to both Spring Posts.
3. Carefully remove spring from Spring Post on Locating Pin Housing. Leave other end attached to Lock Bracket Assembly if reusing.
   **Note:** If Tension Spring is damaged when removing from Spring Post on Locating Pin Housing, replace Tension Spring. Failure of unit will occur if Tension Spring is modified in any way and reused.
4. Clean components thoroughly.

DOWEL PIN REMOVAL

1. Using small needle-nose pliers, remove Dowel Pins 1 and 2 from Locating Pin Housing as shown.
2. Clean components thoroughly.
LOCATING PIN REMOVAL

1. With Locating Pin fully extended, push Cam to left as far as possible in Step 1.
2. Rotate Locating Pin Assembly 90° counterclockwise as shown in Step 2.
   **Note:** You may need to continue pushing Cam to left as Pin is being rotated.
3. Continue rotating Locating Pin Assembly until Cam is oriented as shown in Step 3.
4. Using small needle-nose pliers, remove Cam as shown in Step 4.
5. Remove Locating Pin Assembly as shown in Step 5.
6. Set Locating Pin Assembly aside for further disassembly.
7. Clean components thoroughly.
1. With Pin Assembly removed from Clamp Housing, slide Dowel Pin out of Locating Pin as shown in Step 1. 3 mm Hex can be used to assist in removing Dowel Pin.
2. Pull Drive Rod Assembly out of Locating Pin as shown in Step 2. Use small screwdriver or tap Pin Assembly on work surface until Drive Rod Assembly appears below Locating Pin. (Set aside Drive Rod Assembly for further disassembly as required.)
3. Pull or push Finger out of Locating Pin as shown in Step 3.
4. Remove Locating Pin Top from Locating Pin Base as shown in Step 4.
5. Clean all components thoroughly.
SERIES PLK 2-6 LOCATING PIN CLAMP
FIELD TEARDOWN AND ASSEMBLY PROCEDURES

DRIVE ROD DISASSEMBLY

1. Slide Drive Rod Dowel Pin out of Drive Rod Assembly as shown in Step 1.
2. Slide Drive Rod Top out through bottom of Drive Rod Base as shown in Step 2.
3. Clean all components thoroughly.

CYLINDER REMOVAL

1. Using 5 mm hex wrench, loosen and remove 4X Cylinder Socket Head Screws.
2. Remove Cylinder Assembly from Pin Housing Assembly.
3. Clean Pin Housing Assembly thoroughly and set aside for further disassembly.
SERIES PLK 2-6 LOCATING PIN CLAMP
FIELD TEARDOWN AND ASSEMBLY PROCEDURES

CYLINDER DISASSEMBLY

1. Using retaining ring pliers, remove Retaining Rings (as shown in Steps 1 and 2) from each end of Cylinder Assembly.
2. Remove Bushing by pulling Piston and Rod Assembly in direction noted in Step 3. This can be done by pulling on Piston Rod by hand or using Dowel Pin in hole of Piston Rod and pulling in direction shown. Remove Bore Plug by pushing on Plug from inside of Cylinder Body with blunt tool.
3. Pull Bushing off Piston and Rod Assembly as shown in Step 4.
4. Holding Piston Assembly Rod in vise as shown by arrows in Step 5, loosen and remove SHCS using 8 mm hex wrench.
5. Using pick or small straight edge screwdriver, remove Rod Seal from Bushing as shown in Step 6. Be careful not to scratch Bushing.
6. Using pick or small flat head screwdriver, remove Piston Seal from Piston as shown in Step 7. Be careful not to scratch Piston as scratched Piston Seal groove will cause leakage if reusing piston.
7. Using pick or small flat head screwdriver, remove Bore Plug/Bushing O-ring seals from Cylinder Housing indicated in Step 8. Be careful not to scratch seal grooves or bore of the Cylinder Housing.
8. Clean all components thoroughly. Remove old locking compound that has remained on Piston Rod, Piston, and Piston Socket Head Screw.

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MAIN HOUSING DISASSEMBLY

1. Using needle-nose pliers, remove Housing Dowel Pin as shown in Step 1.
2. Using 3 mm hex wrench, remove 2X Steel Insert Socket Head Screws as shown in Step 2. Remove Steel Insert using needle-nose pliers.
3. Using 4 mm Hex wrench, remove 2X Rear Cover Socket Head Screws and Rear Cover as shown in Step 3.
4. Clean all components thoroughly.

Note: Spring Post is not designed to be removed from Pin Housing. If Spring Post is missing or damaged, new Pin Housing Assembly must be ordered before reassembling unit. Unit will not properly lock without Spring Post. (Refer to Detail A on page 4.)

Clamp teardown is now complete.
SERIES PLK 2-6 LOCATING PIN CLAMP
FIELD TEARDOWN AND ASSEMBLY PROCEDURES

CLAMP ASSEMBLY

TOOLS REQUIRED
3 mm hex wrench
4 mm hex wrench
5 mm hex wrench
8 mm hex wrench
Torque wrench
Retaining ring pliers
Vice

MATERIALS REQUIRED
Cylinder lubricant (Magna-Lube G)
Mechanism lubricant (Nye Rheolube 368AX-1)
Thread adhesive (Loctite 222)
Cleaning materials

ASSEMBLY PROCEDURE

Note: Before assembling clamp, ensure that all components are free of all old lubrication, debris, and adhesive. All parts must be clean and dry before reassembly.

The following is a procedure to assemble a PLK 2-6 clamp.

PLK510-2-1550C1-E000-FD4S-PP1-MT20 (as shown on the front cover of manual)

MAIN HOUSING ASSEMBLY

Note: Prior to assembly, ensure that Spring Post as shown in Detail A is present in housing. If missing or damaged, new Pin Housing Assembly is recommended. Add Mechanism Lubricant (Nye Rheolube 368AX-1) to all internal cavities of Main Housing and surface that mates with Rear Cover Plate.

1. Install Rear Cover over back of Housing. Using 4 mm hex wrench, install 2X Rear Cover Socket Head Screws and torque to 44 in-lbs [5.0 Nm].
2. Using 3 mm hex wrench, install 2X Steel Insert Socket Head Screws as shown in Step 2 and torque to 44 in-lbs [5.0 Nm].
3. Install Housing Dowel Pin as shown in Step 3.

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Series PLK 2-6 Locating Pin Clamp
Field Teardown and Assembly Procedures

Note: When setting lock for material thickness, Housing Dowel Pin is designed to be 180° from Adjustment Set Screw for Locking Bracket. Once lock has been set, Housing Dowel Pin should be moved back to position as shown in Step 3 (page 10).

Cylinder O-Ring Seal Installation

Note: It is recommended to order a new seal kit when rebuilding PLK 2-6 cylinder. Contact PHD’s Inside Sales for the seal kit number based on corresponding PLK 2-6 model description.

1. Apply cylinder lubricant (Magna-Lube G) to O-ring Seals, O-ring Seal grooves and Cylinder Bore as shown in Step 1.
2. Install O-ring Seals as shown in Step 2. Note: O-ring Seals to be installed in both ends of Cylinder Body.
3. Set completed Cylinder Assembly aside being careful to keep it clean.

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BUSHING ASSEMBLY

Step 1
1. Lubricate Rod Seal completely with Magna-Lube G.
2. Apply cylinder lubricant (Magna-Lube G) to Rod Seal groove as shown in Step 2.
3. Install Rod Seal into Rod Seal groove as shown in Step 3. **Note orientation of seal and chamfer of bushing.**
4. Set completed assembly aside being careful to keep it clean.

PISTON & ROD ASSEMBLY

Step 1
1. Holding Piston Rod in vise as shown by indication arrows in Step 1, apply thread adhesive (Loctite 222) to threads of Piston Rod, threads of SHCS, and around bottom head of SHCS. **Note orientation of chamfer on piston.** Install SHCS through Piston and into Piston Rod as shown. Using 8 mm hex wrench, torque SHCS to 290 in-lb [33 Nm]. Clean any excess thread adhesive.
2. Apply cylinder lubricant (Magna-Lube G) to Piston Rod O.D. and to Piston Seal groove as shown in Step 2.
3. Lubricate seal completely with Magna-Lube G and install into Piston Seal groove making sure it does not twist. **Note location of seal on Piston.**
4. Set completed assembly aside being careful to keep it clean.
1. Install Bore Plug into Cylinder Assembly (Cylinder with O-ring Seals) and push in direction shown in Step 1 until seated. **Note Cylinder Assembly orientation.**
2. Using retaining ring pliers, install Retaining Ring into Cylinder Assembly as shown in Step 2.
3. Install finished Piston Rod Assembly (including seal) into Cylinder Assembly as shown in Step 3. This may require the Piston Rod Assembly to be wiggled in circular motion as it is being installed to allow Piston Seal to enter Cylinder Bore without folding seal back in wrong direction or being cut. Do not force Piston Rod Assembly. If seals are fitting properly, Piston Rod Assembly should assemble with little force.
4. Noting orientation of Bushing Assembly (Bushing and Rod Seal), install over Piston Rod and push into Cylinder Assembly as shown in Step 4 until properly seated. Use caution when pushing Bushing Assembly over rod to keep Rod Seal from folding back or being cut.
5. Using retaining ring pliers, install Retaining Ring into Cylinder Assembly as shown in Step 5.
6. Set finished Cylinder Assembly aside for further assembly.
SERIES PLK 2-6 LOCATING PIN CLAMP
FIELD TEARDOWN AND ASSEMBLY PROCEDURES

DRIVE ROD ASSEMBLY

1. Slide Drive Rod Top through lower portion of Drive Rod Base as shown in Step 1.
2. Slide Drive Rod Dowel Pin through Drive Rod Base as shown in Step 2. If Dowel Pin does not want to go completely through base, ensure that Drive Rod Top is completely through base as far up as it can go.
3. Add Mechanism Lubricant (Nye Rheolube 368AX-1) to all surfaces of Drive Rod Assembly.
Add Mechanism Lubricant (Nye Rheolube 368AX-1) to inside diameters, outside diameters, and all slots of Locating Pin Base and Top and to entire Finger.

1. Install Locating Pin Top into Locating Pin Base as shown in Step 1.
2. Install Finger into Locating Pin as shown in Step 2. Note orientation of Finger geometry before installing into Locating Pin. Finger must remain partially protruded out of Locating Pin for next step.
3. Ensure Mechanism Lubricant (Nye Rheolube 368AX-1) has been applied to all surfaces of Drive Rod Assembly. Install Drive Rod Assembly as shown in Step 3. Finger cam slot must properly engage Drive Rod boss.
4. Install Dowel Pin into Locating Pin and through Drive Rod Assembly shown in Step 4. Dowel Pin will only install into Locating Pin Base in same direction as Finger window. Note Finger Direction 4 (FD4S) shown.
LOCATING PIN ASSEMBLY VERIFICATION

Upon completion, verify that Pin, Finger, and Drive Rod assemblies are correct. Using 5 mm hex wrench positioned inside dowel hole of Drive Rod and moving it up and down will show if assembly is correct. Pulling wrench down in hole should cause finger to extend out of Pin. Actuating Drive Rod Assembly upward should cause Finger to retract back into Pin.

Note: If Finger extends out of Pin when Drive Rod is actuated upward inside Pin, Finger is not installed properly. See page 15 to ensure correct assembly.
LOCATING PIN INSTALLATION

Ensure Mechanism Lubricant (Nye Rheolube 368AX-1) is present on outside diameter of Locating Pin Assembly and inside cavity of Pin Housing Assembly. Lubricate entire surface of Cam prior to assembly.

1. Install Locating Pin Assembly into Pin Housing Assembly as shown in Step 1 (note orientation of Pin Assembly).
2. Slide Cam into slots of Locating Pin Assembly as shown. Ensure that Cam orientation mark is in proper location as shown in Step 2.
3. Slide Cam into Locating Pin Assembly until Pin Housing stops Cam.
4. Move Locating Pin Assembly upward as shown until housing stops Cam indicated in Step 3. Rotate Locating Pin Assembly 90 degrees clockwise as shown in Step 4.
5. Slide Cam to right as shown in Step 5. Cam should be resting on insert of Pin Housing Assembly.

Note: May be necessary to continue to push on Cam as Locating Pin Assembly is rotated.
1. Install Cylinder Assembly as shown in Step 1. Note orientation of Piston Rod (gold color) before installing Cylinder. Piston Rod must be lined up with Pin and Housing Assembly or unit will not assemble. Note orientation of Cylinder Assembly port locations. (-PP1 Shown)
2. Piston Rod (gold), Drive Rod Assembly (red), Main Pin Assembly (purple) and Cam (gray) must all be oriented as shown in Step 2.
3. Install Cylinder Socket Head Screws as shown in Step 3. Using 5 mm hex wrench, torque to 125 in-lb [14.1 Nm].
1. Add Mechanism Lubricant (Nye Rheolube 368AX-1) and install 2X Dowel Pins as shown in Step 1.
2. After assembling Dowel Pins, verify that all internal components per Step 2 are properly aligned. Dowel Pins (Light Blue), Piston Rod (gold), Drive Rod assembly (red), Main Pin assembly (purple), Cam (gray) and Housing Insert (Brown) must all be oriented as shown in Step 2 for the unit to be in the “Unclamped” condition. Upon verification, apply Mechanism Lubricant (Nye Rheolube 368AX-1) to all visible surfaces inside Main Housing Cavity.
1. Install Lock Adjustment Set Screw as shown in Step 1 to flush or below Locating Pin Housing counterbore. (Exact position of screw will be set with material thickness.)

2. Apply Mechanism Lubricant (Nye Rheolube 368AX-1) to entire Lock Bracket Assembly. Assemble Tension Spring to Spring Post on Locking Bracket Assembly and then to Locating Pin Housing Spring Post. Next, place Locking Bracket Assembly on boss of Locating Pin Assembly as shown in Step 2.

Note: Use caution to not over-extend Tension Spring and loops of Spring that are used to mount Spring to Spring Posts.
1. Apply Mechanism Lubricant (Nye Rheolube 368AX-1) to inside diameter of Part Support and install onto Main Pin Assembly as shown in Step 1. Line up Housing Dowel Pin with slot in Part Support. Flange of Part Support must sit flat against housing counterbore, but will remain slightly above top of Housing.
2. Install Part Support Flange as shown in Step 2.
3. Install 4X Part Support Socket Head Screws. Using 4 mm hex wrench, torque to 44 in-lb [5.0 Nm].
   **Note:** On PLK 2-6, if main pin diameter is 25.00 to 30.00 mm, Part Support and Part Support Flange will resemble components shown in Step 1a.
COVER PLATE INSTALLATION

1. Apply Mechanism Lubricant (Nye Rheolube 368AX-1) to surface of housing that mates with Cover Plate. Install Cover Plate as shown in Step 1.
2. Using 4 mm hex wrench, install 3X Cover Plate Screws and torque to 44 in-lb [5.0 Nm] as shown in Step 2.

PLK510-2-1550C1-E000-FD4S-PP1-MT20 assembly is now complete. Refer to page 47 to set lock for correct panel thickness (-MT20).
PART SUPPORT EXTENSION (-E000 THRU -E300)
The -Exxx option allows for an optional part support extension. The -Exxx is available in 0.5 mm increments from +0.0 mm to +30.0 mm. The -Exxx option is compatible with all body styles.

E000 is standard 27.5 mm
E005 is 0.5 mm taller than standard or 28.00 mm
E150 is 15.0 mm taller than standard or 42.50 mm
E300 is 30.0 mm taller than standard or 57.50 mm

For part support requirements outside the -E000 thru -E300 range, consult PHD.

Note: If changing, the part support extension option (-Exxx) must be the same as the complete pin assembly. For instance, an -E300 part support must be used with a main pin assembly and drive rod assembly that also share the -E300 option. Likewise, a Part Support must share the same compatible diameter as the main pin assembly (18.50 mm pin to use 18.50 mm part support). Any deviation may affect performance, consult PHD for details.

Teardown procedure: If only replacing part support with the same dimensional part support, refer to page 3 for teardown. If changing part support extension height, refer to pages 3 to 7 for teardown.

Assembly: If only replacing part support with the same dimensional part support, refer to page 21 for assembly procedure. If changing part support extension, refer to pages 10 to 22 for complete assembly procedure.
FINGER(S) DIRECTION OPTION (FD4S, FD1S, FD2S, FD3S, FD1D, FD2D)
The -FDxx option provides versatility using a single finger (Pin Diameters 12.00 thru 30.00 mm) or dual fingers (Pin Diameters 15.00 thru 30.00 mm).

SINGLE FINGERS:

FD1S  FD2S  FD3S  FD4S

DUAL FINGERS:

FD1D  FD2D
Any single finger unit may be rotated in 90 degree increments 360 degrees without changing any parts. Any dual finger unit may be rotated 90 degrees without changing any parts.

**HOW TO CHANGE FINGER DIRECTION**

1) With the pin in the unclamped position, remove flange and part support. Carefully slide dowel pin out of pin assembly.

2) Carefully rotate pin top to desired position (90° increments). **Do not lift up on pin top.** Slide dowel pin back into pin. Dowel pin must be parallel to finger pocket.

3) Assemble part support into counterbore in top of body. Align slot in support flange with dowel in body counterbore.

4) Install flange and tighten screws.

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DUAL FINGER TEARDOWN
Prior to tearing down a dual finger PLK 2-6 unit, refer to pages 2 to 5 of this manual.

1. With Pin Assembly removed from clamp housing, slide Dowel Pin out of Locating Pin as shown in Step 1. 3 mm Hex can be used to assist in removing Dowel Pin.
2. Pull Drive Rod Assembly out of Locating Pin as shown in Step 2. Use small screwdriver or tap Pin Assembly on work surface until Drive Rod Assembly appears below Locating Pin.
3. Pull both Fingers out of Locating Pin as shown in Step 3.
4. Remove Locating Pin Top from Locating Pin Base as shown in Step 4.
5. Clean all components thoroughly.

Note: Dual Finger Drive Rod Disassembly is like Single Finger Drive Rod Disassembly. Continue with unit teardown if required per pages 7 to 9.
DUAL FINGER ASSEMBLY
Prior to assembling a Dual Finger PLK 2-6 unit, refer to pages 10 to 14 of this manual.

Step 1
Step 2
Step 3
Step 4

Add Mechanism Lubricant (Nye Rheolube 368AX-1) to inside diameters, outside diameters, and all slots of Locating Pin and to both Fingers.
1. Install Locating Pin Top into Locating Pin Base as shown in Step 1.
2. Install Fingers into Locating Pin as shown in Step 2. Note orientation of Finger geometry on both Fingers before installing into Locating Pin. Fingers must remain partially protruded out of Locating Pin prior to Drive Rod Assembly installation.
3. Add Mechanism Lubricant (Nye Rheolube 368AX-1) to all surfaces of Drive Rod Assembly. Install Drive Rod Assembly as shown in Step 3. Finger cam slots must properly engage Drive Rod bosses.
4. Install Dowel Pin into Locating Pin Assembly and through Drive Rod Assembly as shown in Step 4. Dowel Pin will only install into Locating Pin Base in same direction as Finger window.
LOCATING PIN ASSEMBLY (DUAL FINGER) VERIFICATION

Upon completion, verify that Pin, Finger, and Drive Rod assemblies are correct and are built to desired Finger orientation. Using 5 mm hex wrench positioned inside dowel hole of Drive Rod, moving up and down will show if assembly is correct. Pulling wrench down in hole should cause Fingers to extend out of Pin. Actuating Drive Rod Assembly upward should cause Fingers to retract back into Pin.

**Note:** If Fingers extend out of Pin when Drive Rod is actuated upward inside Pin, Fingers are not installed properly. See pages 26 and 27 to ensure correct assembly.

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PORT POSITION (-PP1 thru -PP4)

NOTE: NUMBER IN HEX INDICATES PORT POSITION IN RELATION TO PIN HOUSING

PORT LOCATION CHANGE (FROM -PP1)

TOOLS REQUIRED
5 mm hex wrench
torque wrench

TEARDOWN AND REBUILD PROCEDURE
The following is a procedure to change the port position from Standard (-PP1)

1. Using 5 mm hex wrench, remove Cylinder SHCS as shown in Step 1.
2. Rotate Cylinder Assembly to desired position as shown in Step 2.
3. Using 5 mm hex wrench, tighten Cylinder SHCS to 125 in-lb [14.1 Nm] as shown in Step 3.

The -PPx option provides alternate port locations for the cylinder providing flexibility and customer convenience. The cylinder can be rotated in the field by removing the cylinder mounting screws and rotating to the desired location in 90° increments.
SERIES PLK 2-6 LOCATING PIN CLAMP
FIELD TEARDOWN AND ASSEMBLY PROCEDURES

PORT FITTINGS (-LAA, -LBB)

FITTINGS MAY SWIVEL 360° FROM LOCATION SHOWN

CLOSE PORT P1 (CLAMP)
OPEN PORT P1 (UNCLAMP)

SELF SEALING SWIVEL MALE ELBOW FOR 1/4" [6 mm] TUBING

PF1 1/8 NPT 1/8 BSPP
PF1 0.629 16.0
PF2 0.885 22.5
PF3 0.472 12.0

OPTION CODE PART NUMBER
LAA 62178-003 62195-005
LBB 71120-001 71121-001

TEARDOWN AND REBUILD PROCEDURE
The following is a procedure to change the port fittings.

TOOLS REQUIRED
12 mm Open-Ended Box Wrench

1. To remove: Using 12 mm boxed end wrench, turn fitting counterclockwise as shown above.
2. To install: Using 12 mm boxed end wrench, turn fitting clockwise as shown above. Torque to 60 in-lb [6.8 Nm].

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This option provides clamp and unclamp sensing by affixing an aluminum housing to the side of the clamp body. The unclamp switch is fixed needing no adjustment. The clamp switch is adjustable throughout the entire clamp stroke. Loosening the M5 screw and sliding it up or down adjusts the clamp switch position. PS positions the S02 switch to sense unclamped and the S01 switch to sense clamped. PR positions the S01 switch to sense unclamped and the S02 switch to sense clamped.

**NOTE:** Connector position 9 is not available with switch option A.
TOOLS REQUIRED
4 mm hex wrench
Small flat screwdriver
Small Phillips head screwdriver
Small needle-nose pliers

MATERIALS REQUIRED
Cleaning Materials

TEARDOWN AND REBUILD PROCEDURE
The following is a procedure to tear down an existing Positional Sensing option for a PLK 2-6 Pin Clamp.

1. Using 4 mm hex wrench, remove Switch Housing Screws as shown in Step 1.
2. Remove Switch Housing Assembly and Cover Plate as shown in Step 2. Note: Switch Box will still be attached to Switch Housing Assembly. Set the Clamp Assembly aside.
3. Remove Cover Plate (Step 3).
4. Remove Target (Step 4).
5. Remove Wire Ties (Step 5).
6. Using 4 mm hex wrench, remove Adjustment Screw and Adjustment Slot Cover as shown in Step 6.
7. Remove Adjustable Chicklet Assembly as shown in Step 7.
8. Using small flat screwdriver between Switch Chicklet and Switch Housing, gently rock Chicklet back and forth until it becomes free from Housing as shown in Step 8.
9. If Chicklet Mounting Pin remains in Switch Housing, gently grip with small needle-nose pliers and pull straight out of Switch Housing being careful not to damage as shown in Detail B.

10. Using small flat screwdriver, gently pry between Switch Chicklet and Adjustment Bar and rock back and forth until it becomes free from Adjustment Bar. **Note:** You can start this process by pressing Adjustment Bar down on table. This allows Chicklet Mounting Pin that is sticking through Adjustment Bar to start to be removed from Adjustment Bar.
11. If Chicklet Mounting Pin remains in Switch Housing, gently grip with small needle-nose pliers and pull straight out being careful not to damage.
SERIES PLK 2-6 LOCATING PIN CLAMP
FIELD TEARDOWN AND ASSEMBLY PROCEDURES

12. Using small Phillips head screwdriver, remove both Plastic Wire Clips from Switch Housing as shown in Step 12.
13. Use 4 mm hex wrench to remove Switch Box Screw and Switch Box from Switch Housing.
14. Clean all components thoroughly.

Position Sensor Disassembly is now complete.

POSITION SENSOR REBUILD

Before installing, both Chicklets of Switch Assembly must be fed through cut-out cavity of Switch Housing in direction shown.

Note: Switch Chicklets or satellites are labeled S01 (S1) or S02 (S2). The following chart is used for sensing clamped and unclamped conditions of pin clamp.

<table>
<thead>
<tr>
<th>Option Code</th>
<th>Chicklet</th>
<th>Unclamped</th>
<th>Clamped</th>
</tr>
</thead>
<tbody>
<tr>
<td>PS1xx</td>
<td>S02 or S2</td>
<td>S01 or S1</td>
<td></td>
</tr>
<tr>
<td>PR1xx</td>
<td>S01 or S1</td>
<td>S02 or S2</td>
<td></td>
</tr>
</tbody>
</table>

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1. Press plastic Chicklet Mounting Pin into both Switch Chicklets as shown in Step 1. Note orientation of Switch Chicklet.

2. For clamped Switch Chicklet, press Adjustment Bar onto Chicklet Mounting Pins until seated against Switch Chicklet. Note orientation of Adjustment Bar on Switch Chicklet.

3. Insert Adjustable Chicklet Assembly into Switch Housing as shown in Step 3.

4. Install Adjustment Slot Cover and Adjustment Screw through Switch Housing and thread into Adjustment Bar as shown in Step 4. Do not torque screw until final switch setting adjustments have been made.

5. Press unclamped Switch Chicklet as shown in Step 5. Holes 1 and 3 are to be used for PLK510 and holes 2 and 4 are to be used for PLK505. Note orientation of both switch satellites.

6. Install Switch Box onto Switch Housing as shown in Step 6. Using 4 mm hex wrench, install Switch Box Screw to Switch Housing and torque to 44 in-lb [5.0 Nm].

7. Insert plastic Wire Clips into positions shown on Switch Housing. Using a Phillips head screwdriver, tighten screws into clips to 10 in-lb [1.1 Nm] as shown in Step 7. Take care not to pinch wires during assembly.

8. Under each plastic Wire Clip, insert one Wire Tie as shown in Step 8.
9. Loop Chicklet Wire around inside Switch Housing as shown and use each Wire Tie to clasp wire firmly to plastic Retainer Clip as shown in Step 9. Ensure that no switch wire enters area indicated.
10. Add Mechanism Lubricant (Nye Rheolube 368AX-1) to shaded region indicated in Step 9. Install Target as shown in Step 10.
11. Align Target surface with end of divider wall as shown in Step 11 for assembly.

```
Step 12
```

12. Add Mechanism Lubricant (Nye Rheolube 368AX-1) to each surface of Cover Plate. Install Cover Plate onto each Spring Pin as shown in Step 12. Verify that no switch cables are pinched during assembly.
13. Ensuring that Target is still located as shown in Step 11 and unit is in clamped position as shown in Step 13, mount Switch Housing assembly to Clamp Housing. Spring Pins of Switch Housing Assembly will mate with holes in Housing. Dowel Pin inside Housing must line up to slot in Target.
14. Using 4 mm hex wrench, install Switch Housing Screws as shown in Step 14 and torque to 44 in-lb [5.0 Nm].

Position Sensor Assembly is now complete. See below for field set-up procedure.

**POSITION SENSING FIELD SET-UP PROCEDURE**

1. Using air pressure, extend Locating Pin. Install switch connection. When power is applied, power indicator LED should be “green.” This light should remain on when power is applied to unit.
   a. For PS1xx option, Extend (Unclamp – Pin up, finger in) LED should be Red.
   b. For PR1xx option, Extend (Unclamp – Pin up, finger in) LED should be Yellow.
2. Using air pressure, retract Locating Pin while clamping onto desired panel thickness.
3. Loosen, but do not remove, Adjustment SHCS (SHCS with large washer).
4. Slide Adjustment Screw in direction of Cylinder until switch turns off.
5. Slide Adjustment Screw in direction of Locating Pin until switch turns on.
   a. For PS1xx option, Clamped LED should be Yellow.
   b. For PR1xx option, Clamped LED should be Red.
6. Align washer under head of screw to cover slot before tightening screw.
7. Tighten Adjustment SHCS to 44 in-lb [5.0 Nm].
8. Using air pressure, extend Locating Pin. Switch extend (unclamp) LED should turn on.
9. Using air pressure, retract (clamp) Locating Pin. Extend (unclamp) LED should turn off and retract (clamp) LED should turn on.
10. Cycle clamp a few times to make sure clamp is working properly.

**Note:** If transferring unit from non-positional sensing to positional sensing unit, ensure that correct length dowel pin is installed into unit to actuate target. Correct length dowel pins are provided in each kit based on body style (flange or -Bxx). Refer to PLK 2-6 catalog for switch kits based on body style.
SENSOR FLAG AND DOUBLE ROD OPTION (-R01, -R02)

**R01 SENSOR FLAG**

Provides an external flag on a piston rod that extends out of the bottom of the clamp. The position of the flag indicates if the pin is extended or retracted. Flag travel varies with the panel thickness. 1 mm min. to 10 mm max. The white composite flag can be seen by optical sensing systems. Manually pushing the flag toward the clamp body will overcome the internal locking feature.

**R02 DOUBLE ROD**

Provides manual unlocking ability from below the clamp. Manually pushing the external rod that extends out the bottom will overcome the internal lock.

CYLINDER TEARDOWN PROCEDURE (-R01 / -R02)

**TOOLS REQUIRED**

- 5 mm hex wrench
- 6 mm hex wrench
- 8 mm hex wrench
- Retaining ring pliers
- Small flat screwdriver
- Vice
- Press

**MATERIALS REQUIRED**

Cleaning materials

**NOTE:** Follow standard teardown and assembly procedure for -R01 and -R02 options except as shown below.

**Note:** Steps 1 and 2 are for -R01 option only. For -R02 option, go to Step 3. If cylinder has not been removed from main pin assembly, refer to pages 3 to 7 of this manual prior to disassembly of cylinder.

1. Using small flat screwdriver, gently remove Flag Retaining Ring from Rod Cylinder Assembly as shown in Step 1. Take care not to deform Retaining Ring if it is to be reused.
2. Remove Flag by gently using press and forcing Piston Rod back through Flag in opposite direction.

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3. Using retaining ring pliers, remove both Retaining Rings as shown in Step 3.
4. Remove Bushing and Piston Assembly as shown in Step 4. This can be done by pulling on Piston Rod by hand or using dowel pin in hole of Piston Rod and pulling or pushing on rod that extends out bottom of cylinder in direction shown.
5. Pull Bushing off Piston and Rod Assembly as shown in Step 5. Set aside for additional disassembly.
6. Using pick, gently remove Rod Seal from inside Bushing. Care must be used to not scratch I.D. of Bushing or Rod Seal groove.
7. Place Piston Rod in vise as indicated by arrows in Step 7. Loosen and remove -R01 / -R02 Piston Rod and Piston Assembly using 6 mm hex wrench at end of Rod.
8. With Piston Rod still in vise, remove Piston Set Screw using 8 mm hex wrench. (See note below.)
9. Using pick, remove Piston Seal from Piston as shown in Step 9. Once again, use care when removing Piston Seal as a scratched piston seal groove will cause leakage if reusing piston.
10. Remove Lower Bushing Assembly as shown in Step 10. Use pick and remove both O-rings on each side of Cylinder utilizing care.
11. Remove Rod Seal from Bushing as shown in Step 11.
12. Clean all components thoroughly. Remove any old locking compound that has remained on Piston Rod, Piston, Piston Socket Head Screw, and -R01 / -R02 Piston Rod.

Note: If set screw remains inside -R01 / -R02 Piston Rod, it is suggested to use new -R01 or -R02 Piston Rod and new Piston Set Screw. Failure to do this may result in leakage inside Cylinder when reassembling.
SERIES PLK 2-6 LOCATING PIN CLAMP
FIELD TEARDOWN AND ASSEMBLY PROCEDURES

CYLINDER REBUILD PROCEDURE (-R01 / -R02)

TOOLS REQUIRED
5 mm hex wrench
6 mm hex wrench
Retaining ring pliers
Small flat screwdriver
Vice
Press

MATERIALS REQUIRED
Cylinder Lubricant (Magna-Lube G)
Mechanism Lubricant (Nye Rheolube 368AX-1)
Thread Adhesive (Loctite 222)

Note: Before assembling clamp, ensure that all components are free of all old lubrication, debris, and adhesive. All parts must be clean and dry before reassembly. It is recommended to order a new seal kit when rebuilding a PLK 2-6 cylinder. Contact PHD's Inside Sales for the seal kit number based on corresponding the PLK 2-6 model description.

The following is a procedure to assemble a PLK 2-6 Cylinder with the -R01 or -R02 option.

CYLINDER O-RING SEAL INSTALLATION

1. Apply cylinder lubricant (Magna-Lube G) to O-ring Seals, O-ring Seal grooves and Cylinder Bore as shown in Step 1.
2. Install O-ring Seals as shown in Step 2. Note: O-ring Seals are to be installed in both ends of Cylinder Body.
3. Set completed Cylinder Assembly aside being careful to keep it clean.

BUSHING ASSEMBLY (2 REQUIRED FOR -R01 / -R02 OPTION)

1. Lubricate Rod Seal completely with Magna-Lube G.
2. Apply cylinder lubricant (Magna-Lube G) to Rod Seal groove as shown in Step 2.
3. Install Rod Seal into Rod Seal groove as shown in Step 3. Note orientation of seal and chamfer of Bushing.
4. Set completed assemblies aside being careful to keep them clean.
PISTON AND ROD ASSEMBLY (-R01/-R02) OPTION

1. Holding Piston Rod in vise as indicated by arrows in Step 1, apply thread adhesive (Loctite 222) to threads of Piston Rod and Piston Set Screw. Install Piston Set Screw into Piston Rod as shown. Using 5 mm hex wrench, torque to 290 in-lb [33.0 Nm]. Wipe off any excess thread adhesive.

2. With Piston Rod Assembly still in vise as indicated by arrow in Step 2, apply thread adhesive (Loctite 222) to threads of -R01/-R02 Piston Rod and Piston Set Screw of Piston Rod Assembly. Install Piston onto Piston Rod Assembly making sure that chamfer of Piston is properly oriented in correct location. Using 6 mm hex wrench, torque -R01/-R02 Piston Rod to 290 in-lb [33.0 Nm]. Clean any excess thread adhesive.

3. Apply cylinder lubricant (Magna-Lube G) to Piston Rod O.D., Piston O.D., and Seal Groove and to entire Piston Seal. Install Piston Seal onto Piston Assembly in location shown in Step 3 ensuring seal is not twisted.

4. Set assembly aside making sure it remains clean for further assembly.
1. Install first Bushing Assembly (Bushing and Rod Seal) into Cylinder Assembly (Cylinder with O-ring Seals) and push in until seated. Note orientation of cylinder ports and orientation of Bushing Assembly.
2. Using retaining ring pliers, install Retaining Ring into Cylinder Assembly as shown in Step 2.
3. Install finished Piston and Rod Assembly into Cylinder Assembly as shown in Step 3. This may require Piston Rod Assembly to bewigged in circular motion as it is being installed to allow Piston Seal to enter Cylinder Bore without folding seal back in wrong direction or being cut. Do not force Piston Rod Assembly. If seals are fitting properly, Piston Rod Assembly should assemble with little force.
4. Install second Bushing Assembly (Bushing and Rod Seal) over Piston Rod Assembly and push into Cylinder as shown in Step 4 until seated. Use caution when pushing Bushing Assembly over rod to keep Rod Seal from folding back or being cut.
5. Using retaining ring pliers, install Retaining Ring into Cylinder Assembly as shown in Step 5.

(If assembling -R01 option, continue Steps 6 and 7. If -R02, Cylinder Assembly is complete.)

6. Using press, gently push Flag onto lower rod until Retaining Ring groove is visible as shown in Step 6.
7. Install Flag Retaining Ring as shown in Step 7 onto groove in Piston Rod.

Cylinder Assembly is now complete. Refer to pages 18 to 22 to continue complete assembly if required.
CYLINDER SWITCH OPTION (-SW00, -SW41, -SW42, -SW51, -SW52)

To use the -SWxx option, the piston must be factory assembled with an internal magnet. If the PLK unit was originally ordered with -SWxx in the ordering data, the internal piston has already been installed. If the pre-existing unit was not ordered with the -SWxx option, a complete cylinder assembly or a magnetic piston assembly must be ordered and assembled to the pin clamp to utilize the -SWxx option.

If ordering a complete cylinder assembly with a magnetic piston already installed (preferred option), refer to a PLK 2-6 catalog and order a cylinder assembly designated with one of the -SWxx options.

If it is determined to only tear down and install a magnetic piston, order the magnetic piston assembly per 80155-02.

For Teardown instructions for a standard cylinder, refer to page 8 of this manual.

For Assembly instructions for a standard cylinder, refer to pages 11 to 13 of this manual and substitute the standard piston with the magnetic piston assembly per 80155-02. Ensure that the piston chamfer is oriented in the noted direction above when assembling.

For Teardown instructions for a cylinder with the -R01 or -R02 option, refer to pages 37 and 38 of this manual.

For Assembly instructions for an -R01 or -R02 option cylinder, refer to pages 39 to 41 of this manual and substitute the -R01 or -R02 option piston with the magnetic piston assembly per 80155-02. Ensure that the piston chamfer is oriented in the noted direction when assembling.
The following are the switches available for the -SWxx option:

**SW41**  
**SW42**  
**SW51**  
**SW52**

### PART NO. DESCRIPTION

<table>
<thead>
<tr>
<th>PART NO.</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>73360-01</td>
<td>Solid State NPN (Sink) 5 - 28 VDC, 165 mm Cable with Quick Disconnect</td>
</tr>
<tr>
<td>73360-02</td>
<td>Solid State PNP (Source) 5 - 28 VDC, 165 mm Cable with Quick Disconnect</td>
</tr>
</tbody>
</table>

### SPECIFICATIONS

**73360-01**

- **SWITCHING LOGIC**: Solid State Output, Normally Open  
- **SENSOR TYPE**: NPN Current Sinking  
- **OPERATING VOLTAGE**: 5 - 28 VDC  
- **SWITCHING CURRENT**: 200 mA max  
- **SWITCHING RATING**: 6 W max  
- **CURRENT CONSUMPTION**: 20 mA @ 24V max (Switch Active)  
- **VOLTAGE DROP**: 0.5V @ 200 mA max  
- **LEAKAGE CURRENT**: 0.01 mA max  
- **INDICATOR**: Red LED  
- **CABLE**: Ø 2.8, 3C, PVC  
- **SENSITIVITY**: 40 Gauss  
- **TEMPERATURE RANGE**: -10° to 70°C  
- **SHOCK**: 50G  
- **VIBRATION**: 9G  
- **ENCLOSURE CLASSIFICATION**: IP67 (NEMA 6)  
- **PROTECTION CIRCUIT**: Power Source Reverse Polarity, Surge Suppression

**73360-02**

- **SWITCHING LOGIC**: Solid State Output, Normally Open  
- **SENSOR TYPE**: PNP Current Sourcing  
- **OPERATING VOLTAGE**: 5 - 28 VDC  
- **SWITCHING CURRENT**: 200 mA max  
- **SWITCHING RATING**: 6 W max  
- **CURRENT CONSUMPTION**: 20 mA @ 24V max (Switch Active)  
- **VOLTAGE DROP**: 0.5V @ 200 mA max  
- **LEAKAGE CURRENT**: 0.01 mA max  
- **INDICATOR**: Green LED  
- **CABLE**: Ø 2.8, 3C, PVC  
- **SENSITIVITY**: 40 Gauss  
- **TEMPERATURE RANGE**: -10° to 70°C  
- **SHOCK**: 50G  
- **VIBRATION**: 9G  
- **ENCLOSURE CLASSIFICATION**: IP67 (NEMA 6)  
- **PROTECTION CIRCUIT**: Power Source Reverse Polarity, Surge Suppression

**SWITCH SLOT LOCATIONS**

When switches are ordered on a unit, they will be installed on side 2.
SERIES PLK 2-6 LOCATING PIN CLAMP
FIELD TEARDOWN AND ASSEMBLY PROCEDURES

Switch Removal:
1. Loosen Switch Set Screw and slide Switch out of the slot in cylinder as shown.

Switch Installation:
2. Slide Switch into slot in Cylinder. Using small flat screwdriver, tighten Switch Set Screw to 1 in-lb [0.11 Nm].

FIELD SET-UP PROCEDURE FOR SWITCH TO SENSE UNCLAMPED (PIN UP / FINGER IN):
1. Install switch into desired slot of cylinder.
2. Apply air to lower port of cylinder and power to switch being set.
3. Loosen switch set screw and slide switch toward top of cylinder until it stops.
4. If switch remains on, hold switch and tighten to 1 in-lb [0.11 Nm].
5. If switch shuts off, slowly slide switch back down until it just turns on.
6. Hold switch making sure not to move it and tighten switch mounting screw to 1 in-lb [0.11 Nm].

TO TEST THE SET UP (UNCLAMPED):
1. Apply power to switch required to sense unclamped (pin up / finger in).
2. Apply air to unit allowing it to actuate between unclamped and clamped conditions.
3. If switch turns on during unclamped operation and stays on, switch is set.
4. If switch turns on intermittently but does not stay on during unclamped operation, switch is not set properly.
5. Using air pressure, unclamp unit.
6. Hold switch not allowing it to slide up or down in switch slot of cylinder.
7. Loosen switch mounting screw.
8. Slowly slide switch back down until it just turns on. Once this occurs, slide switch down additional 0.02 inch [0.5 mm] and tighten screw.
9. Repeat process 1 through 4 as required.

FIELD SET-UP PROCEDURE FOR SWITCH TO SENSE CLAMPED (PIN DOWN / FINGER OUT):
1. Install switch into desired slot of cylinder as far up as possible.
2. Apply air to upper port of cylinder and power to switch being set.
3. Clamp unit on desired panel thickness.
4. Loosen switch set screw and slowly slide switch back down toward bottom of cylinder until switch turns on.
5. If switch remains on, hold switch and tighten to 1 in-lb [0.11 Nm].
6. If switch shuts off, slowly slide switch back down until it just turns on.
7. Hold switch making sure not to move it and tighten switch mounting screw.

TO TEST THE SET UP (CLAMPED):
1. Apply power to switch required to sense clamped (pin down / finger out).
2. Apply air to unit allowing it to actuate between unclamped and clamped conditions.
3. If switch turns on during clamped operation (clamping on desired panel thickness) and stays on, switch is set.
4. If switch turns on intermittently but does not stay on during clamped operation, switch is not set properly.
5. Using air pressure, clamp unit.
6. Hold switch not allowing it to slide up or down in switch slot of cylinder.
7. Loosen switch mounting screw.
8. Slowly slide switch back down until it just turns on. Once this occurs, slide switch down additional 0.02 inch [0.5 mm] and tighten screw.
9. Repeat process 1 through 8 as required.

Notes:
1. When clamping on panel, clamped switch should remain on. If no panel is present, switch may “blip” on and then off once clamp reaches complete stroke.
2. -SWxx options are not recommended to be used in welding environment. For sensing requirements in welding environment, use one of Positional Sensing options (-Px1xx). Information can be found on pages 31 to 36.
SERIES PLK 2-6 LOCATING PIN CLAMP
FIELD TEARDOWN AND ASSEMBLY PROCEDURES

BODY MOUNTING OPTIONS (-B01 THRU -B06)

This option provides for six standard body mounting patterns to suit mounting requirements.

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FIELD TEARDOWN AND ASSEMBLY PROCEDURES

MANUALLY EXTENDING PIN WITH -Bxx OPTION

1. Using 4 mm hex wrench, remove Front Cover Plate Socket Head Screws and remove Front Cover.
2. Insert small flat screwdriver below dowel pin as shown in Step 2 above.
3. Gently lift screwdriver as shown in Step 3 above. This will rotate Locking Bracket, extend Locating Pin, and retract Finger. Pin is completely extended when Finger is retracted fully into Locating Pin.

Note: If unit is equipped with Positional Sensing Option (-Px1xx), Switch Housing and Cover must be removed from unit to unlock. Refer to page 32 for switch removal.

MANUALLY EXTENDING PIN WITH -Bxx & -R01 / -R02 OPTION

1. Locate rod extending on rear cap of cylinder and push as shown in Step 1.
2. Continue pushing until Finger fully retracts into Locating Pin.

Teardown procedure: If replacing housing with same housing, refer to pages 2 to 9 for teardown. Follow instructions on page 9 for main housing disassembly except for Step 3. (Unit does not have rear cover plate).

Assembly: If replacing housing with same housing, refer to pages 10 to 22 for assembly. Remember that unit does not have rear cover plate and Step 1 on page 10 is not required.

If changing PLK 2-6 body from a flange style to a -Bxx style, contact PHD’s Inside Sales for the proper housing sub-assembly.
SERIES PLK 2-6 LOCATING PIN CLAMP
FIELD TEARDOWN AND ASSEMBLY PROCEDURES

MATERIAL THICKNESS ADJUSTMENT (-MT00 THRU -MT40)

MTxx

Provides the clamp with the adjustable lock already set for the maximum material thickness for the application. Specify the thickest material.

Example: 1.6 mm material = MT16

Specify MT16 and the clamp will arrive preset to lock at that material thickness. The sequenced design prevents the finger from retracting until the pin is fully extended. The part can move the amount of clearance between the lock bracket and adjustment screw, but the extended finger keeps the part trapped securely on the pin.

Unless otherwise specified, the factory lock default setting is MT20 = 2.0 mm material.

Ensure that the Housing dowel pin is positioned 180° across from the adjustment screw before setting the lock. If it is not in this orientation, the part support will not line up with the adjustment screw. See page ___ for details.

LOCK SETTING PROCEDURE

Adjustment procedures for plk lock with material specified:

1. Start in the unclamped position, with the pin up, and the finger(s) retracted into the pin.
2. Install the part support (item 5) with the adjustment slot over the adjustment screw (item 8). Install the flange plate over the part support aligning the adjustment screw and two holes as shown. Hand tighten two times (item 7). (See Figures 1 and 2.)
3. Install the shims to match the panel thickness requested. Close the clamp on the shims with air pressure (87 psi [6 bar]).
4. Make sure the lock bracket (item 14) rotates counterclockwise into position under the adjustment screw (see Figure 3). Turn the adjustment screw clockwise until it contacts the top of the lock bracket (see Figure 4).
5. After touching, back the adjustment screw off one full turn to assure clearance so the lock bracket is free to rotate clockwise when the clamp opens (see Figure 5).
6. Unclamp the unit, remove the shim and two fasteners (item 7).
7. Rotate the flange plate (item 6) on the part support and align the four mounting holes as shown. (Figure 6)
8. Add the four screws (item 7) and tighten to 44 in-lbs [5 Nm].

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