

**Note:**

The following instructions in this Conversion Bulletin are valid for all sizes of HMV-02 motors, HMR-02 motors, HPR-02 pumps, and HPV-02 pumps. This Conversion Bulletin should NOT be used for any size of HMF-02 motors. For HMF-02 motors, please refer to Conversion Bulletin "FIXED-PLATE".

**Note:**

All illustrations used in this Conversion Bulletin are from an HPR-02 pump, but all steps are valid for all units specified in the note above.

**This Conversion Bulletin contain instructions to:**

**Procedure A:** Instructions to install the cylinder barrel compression plate for rear bearing removal from the unit.

**Procedure B:** Instructions to measure the lube tubes for correct shimmming.

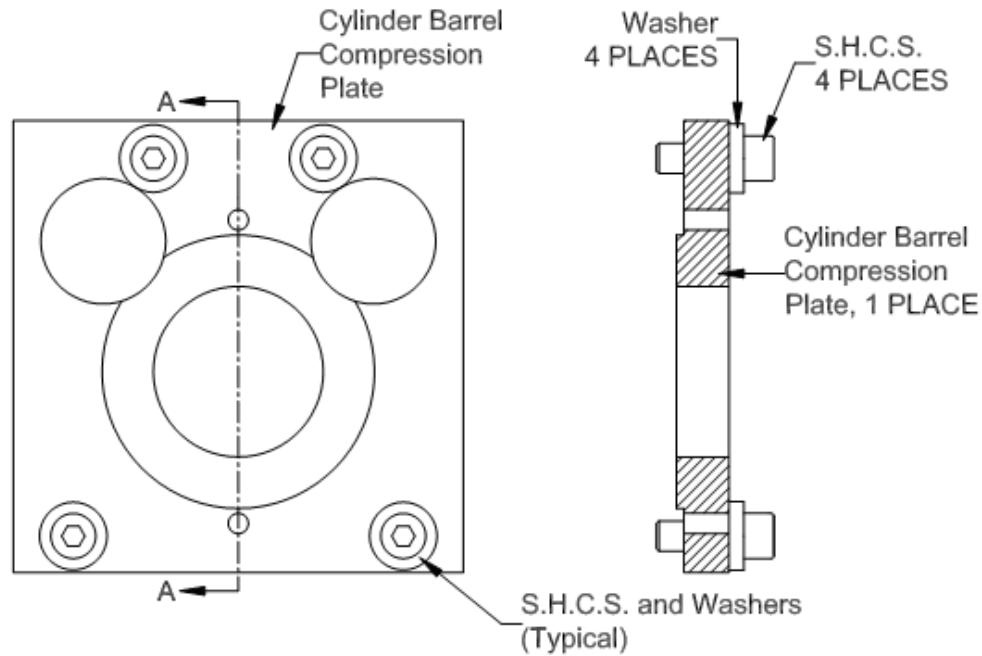
The only tool referenced in this Conversion Bulletin is the *Cylinder Barrel Compression Plate Kit*. Additional tools and material will, of course, be required when doing conversions to the -02 Series units. But keep in mind that this Conversion Bulletin is only intended to instruct the user how to properly use the *Cylinder Barrel Compression Plate Kit*.

Please use the following part numbers to determine which *Cylinder Barrel Compression Plate Kit* is required for the size -02 Series unit you are working on:

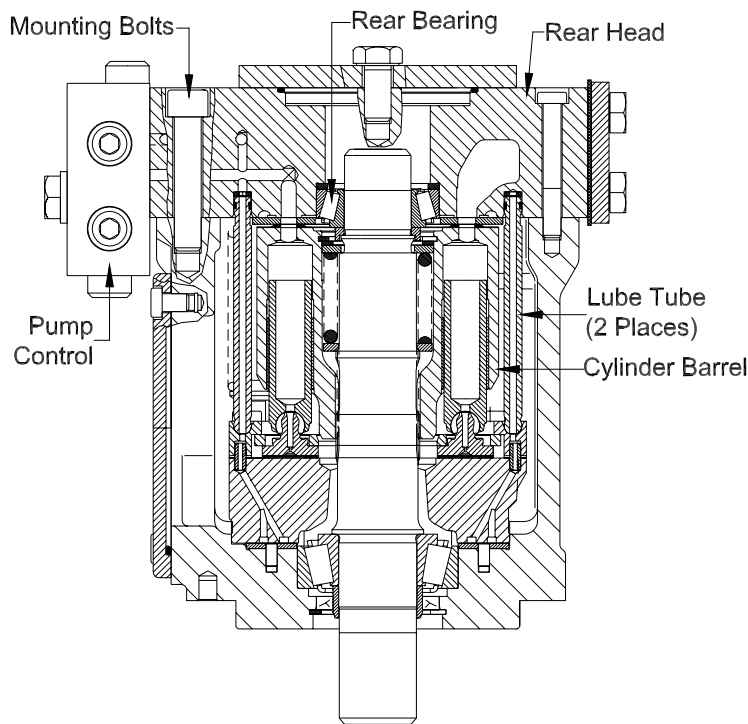
- Linde Part Number 8883035391 for "55 cc/rev" size units
- Linde Part Number 8883034481 for "75 cc/rev" size units
- Linde Part Number 8883034441 for "105 cc/rev" size units
- Linde Part Number 8883034491 for "135 cc/rev" size units

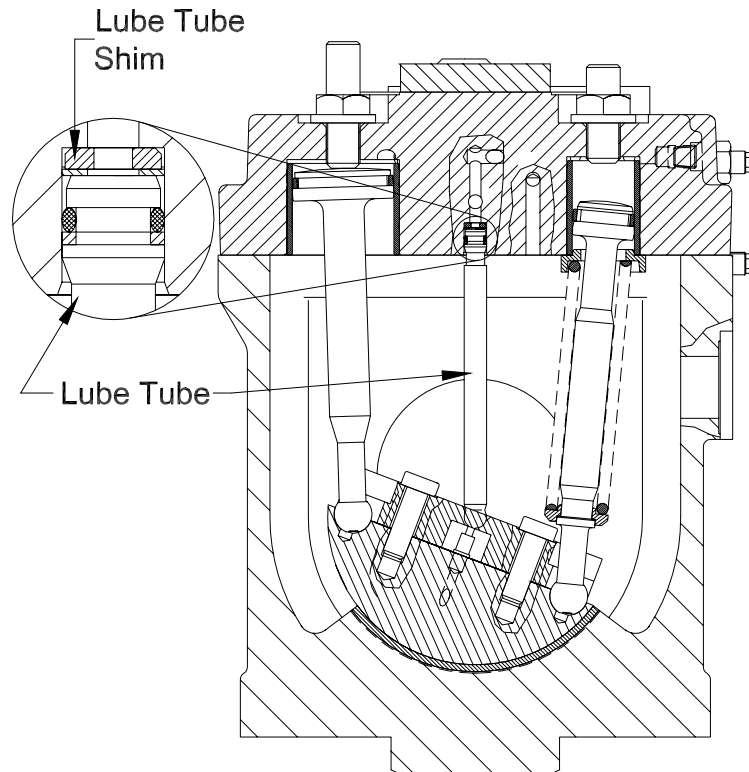
Each Kit contains the following items as illustrated on the following page:

- Cylinder Barrel Compression Plate (1 piece)
- Socket Head Cap Screws (4 pieces)
- Washers (4 pieces)



The following two illustrations highlight some key items that will be reference throughout this Conversion Bulletin:





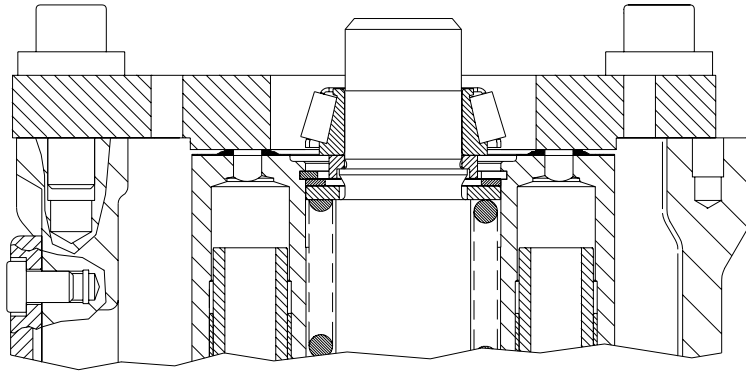
**Procedure "A":**

1. Remove the *Rear Head* and any other ancillary parts as described in the corresponding Linde Conversion Bulletin for the conversion you are doing. For example, use the instructions in Linde Conversion Bulletin "HPV-SHAFT" (procedure to exchange drive shafts in HPV-02 pumps) to remove the *Rear Head*.
2. As illustrated on the following page, orient the *Cylinder Barrel Compression Plate* with the male pilot facing towards the cylinder barrel. Set the *Cylinder Barrel Compression Plate* on top of the unit housing. Match up the threaded holes in the unit housing with the four *S.H.C.S.* on the plate for alignment purposes.

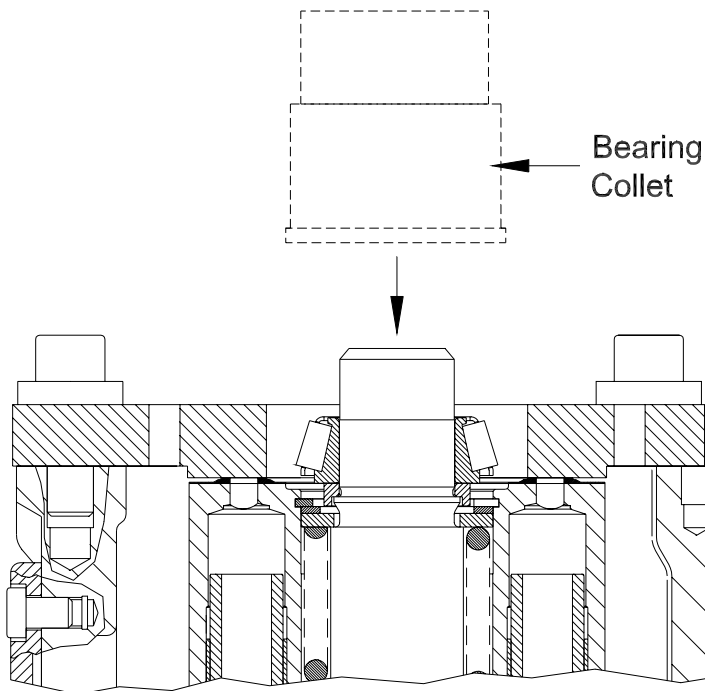
**IMPORTANT:**

Make sure to use the four *Washers* with the *S.H.C.S.* to avoid bottoming the *S.H.C.S.* in the threaded holes in the unit housing.

3. Fasten the *Cylinder Barrel Compression Plate* to the unit housing by tightening the four *S.H.C.S.* **with a hand tool** 1/2 turn at a time while alternating evenly between the four *S.H.C.S.* Continue to turn IN each *S.H.C.S.* at 1/2 turn increments until the *Cylinder Barrel* is fully compressed.



4. As illustrated below, install the appropriate bearing collet onto the *Rear Bearing*. Then use the appropriate bearing puller body to remove the *Rear Bearing* from the drive shaft.



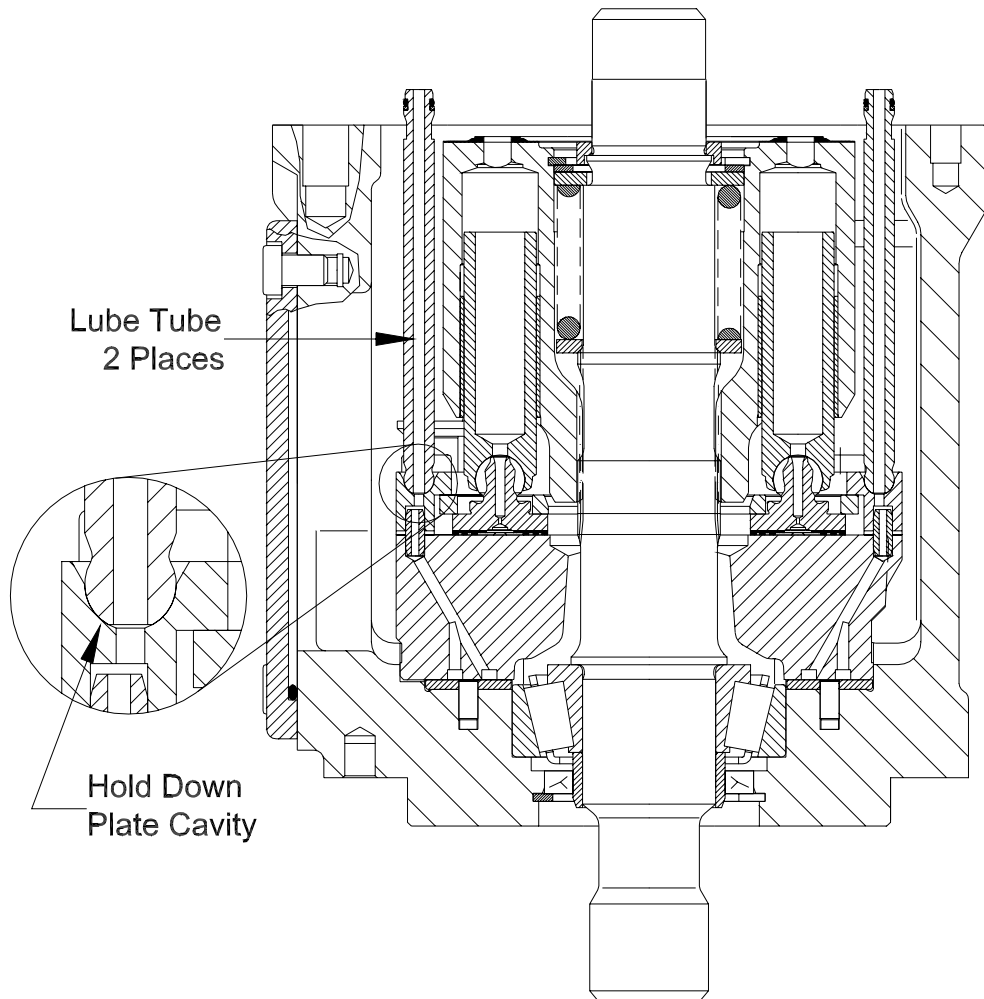
5. Once the *Rear Bearing* is removed, the *Cylinder Barrel Compression Plate* can be removed. To do so, use a **hand tool** to turn OUT each S.H.C.S. at 1/2 turn increments while alternating evenly between them. Continue to turn OUT the four S.H.C.S. at 1/2 turn increments until the *Cylinder Barrel* is no longer compressed. Then remove the *Cylinder Barrel Compression Plate* from the unit housing.

**Procedure "B":**

**Note:**

This procedure can be performed with or without the *Rear Bearing* on the drive shaft. The following illustrates how to measure the *Lube Tube* shimming without the *Rear Bearing* on the drive shaft.

1. Follow step #1 from *Procedure "A"*.
2. As illustrated below, install the two *Lube Tubes* into the unit. Make sure that the two *Lube Tubes* are properly positioned into the *Hold Down Cavity* as shown.



3. Thoroughly clean all surfaces of the *Cylinder Barrel Compression Plate*. Then use a sanding stone and solvent to thoroughly clean the top mounting surface of the unit housing to ensure all sealant material is removed.

- Orient the *Cylinder Barrel Compression Plate* with the male pilot facing away from the cylinder barrel. Set the *Cylinder Barrel Compression Plate* on top of the unit housing. Match up the threaded holes in the unit housing with the four *S.H.C.S.* on the plate for alignment purposes.

**IMPORTANT:**

Make sure to use the four *Washers* with the *S.H.C.S.* to avoid bottoming the *S.H.C.S.* in the threaded holes in the unit housing.

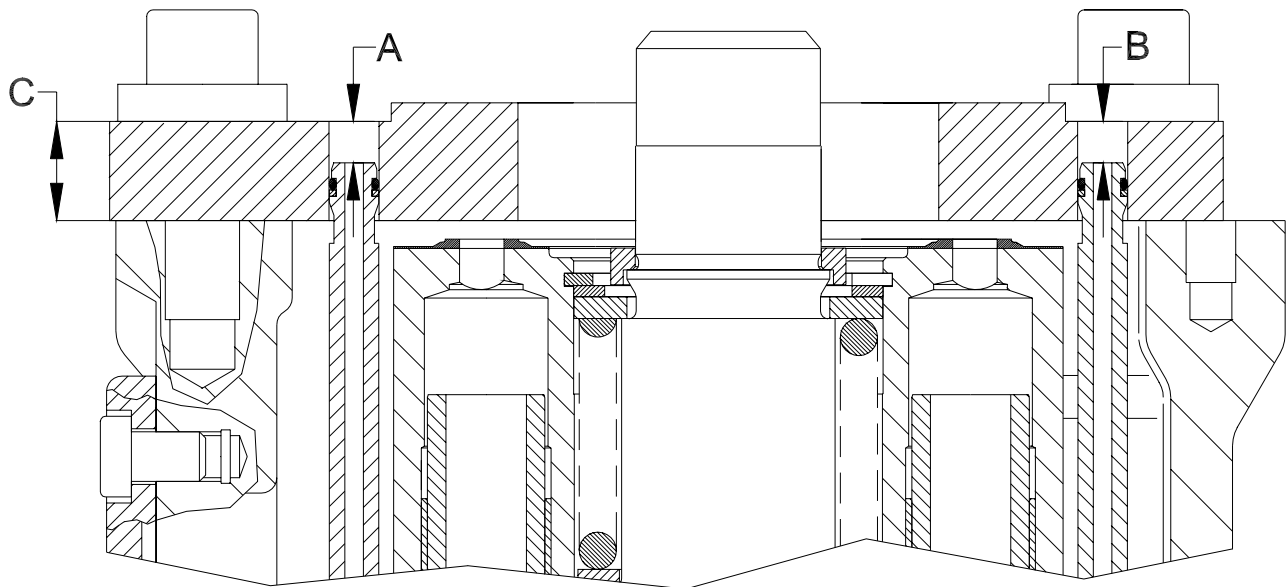
- Fasten the *Cylinder Barrel Compression Plate* to the unit housing by tightening the four *S.H.C.S.* with a hand tool.
- Center the swash plate (to the position of zero displacement) by moving the two actuator pistons. For best results, the swash plate should be at its zero displacement position.

As illustrated below, use depth micrometers to measure Dimensions "A" and "B". Measure Dimensions "A" and "B" to the nearest 0.01mm and record the values below:

Dimension "A" = \_\_\_\_\_ mm

Dimension "B" = \_\_\_\_\_ mm

(Note: Dimension "A" is for the Lube Tube between the two Actuator Pistons)



- Remove the *Cylinder Barrel Compression Plate* from the unit.
- As illustrated above, use a micrometer to measure Dimension "C". Measure Dimension "C" to the nearest 0.01mm and record the value below:

Dimension "C" = \_\_\_\_\_ mm

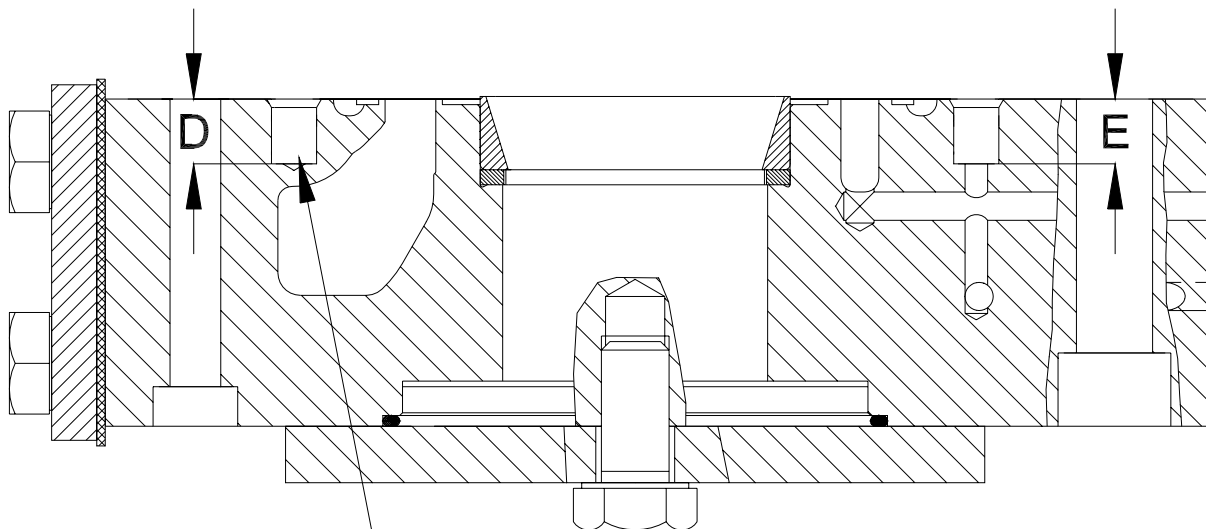
- Use a sanding stone and solvent to thoroughly clean the mounting surface of the *Rear Head* to ensure all sealant material is removed.

- As illustrated below, use depth micrometers to measure Dimensions "D" and "E". Measure Dimensions "D" and "E" to the nearest 0.01mm and record the values below:

Dimension "D" = \_\_\_\_\_ mm

Dimension "E" = \_\_\_\_\_ mm

(Note: Dimension "D" is for the Lube Tube between the two Actuator Pistons)



Cavity Between the  
Two Actuator Pistons

11. Do the following calculations and record the results to the nearest 0.01mm:

Dimension "F" = (Dimension "D") + (Dimension "A") – (Dimension "C")

Dimension "F" = \_\_\_\_\_ mm

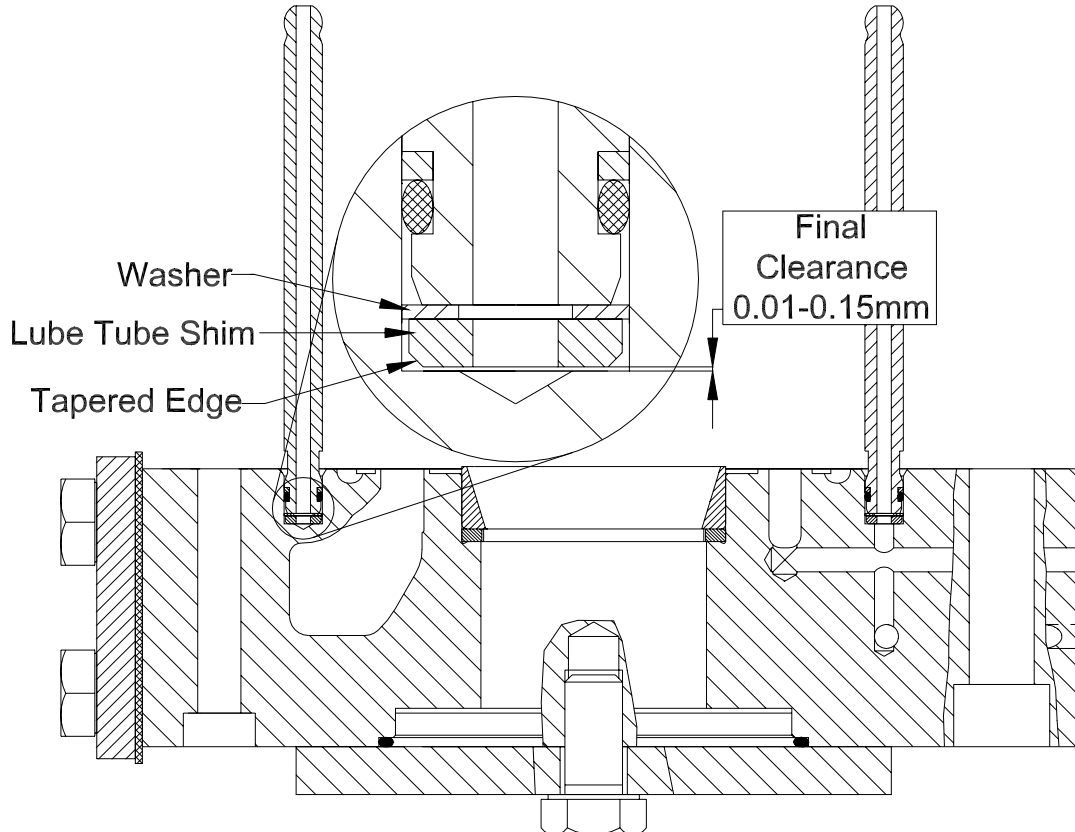
Dimension "G" = (Dimension "E") + (Dimension "B") – (Dimension "C")

Dimension "G" = \_\_\_\_\_ mm

(Note: Dimension "F" is for the Lube Tube Between the Two Actuator Pistons)

Note:

Dimensions "F" and "G" are the clearances between the end of the Lube Tubes and the cavities in the Rear Head. These clearances must be filled with Lube Tube Shims (and Washers as required) to provide a final clearance of 0.01mm to 0.15mm. Please refer to the illustration below and the example on the following page.



Example: HPR105-02 Pump

Dimension "A" = 8.15mm

Dimension "B" = 8.10mm

Dimension "C" = 18.03mm

Dimension "D" = 11.51mm

Dimension "E" = 11.53mm

Dimension "F" = (11.51mm) + (8.15mm) – (18.03mm) = 1.63mm

Dimension "G" = (11.53mm) + (8.10mm) – (18.03mm) = 1.60mm

You must calculate a shim range for each Lube Tube individually:

- For the Lube Tube between the Two Actuator Pistons (for Dimension "F"):

(maximum clearance) = (1.63mm) – (0.15mm) = 1.48mm

(minimum clearance) = (1.63mm) – (0.01mm) = 1.62mm

Select a Lube Tube Shim between 1.48mm and 1.62mm thick

- For the other Lube Tube ( for Dimension "G"):

(maximum clearance) = (1.60mm) – (0.15mm) = 1.45mm

(minimum clearance) = (1.60mm) – (0.01mm) = 1.59mm

Select a Lube Tube Shim between 1.45mm and 1.59mm thick



**\*\*\*\*\*ATTENTION\*\*\*\*\***

**You have been provided information on conversion, repair and/or service of Linde components. Proper application of the information requires specific training and may require use of specialized tooling and equipment. If you choose to proceed with the conversion, repair and/or service of the Linde component(s) absent the necessary training and/or these specialized tools, you do so at your risk.**

**Linde Hydraulics Corporation will accept no claim for warranty or other consideration resulting from deficiencies in the conversion, repair and/or service done in accordance with the guidance offered herein when the necessary training has not been conducted and/or required specialized tooling and equipment has not been utilized.**

**All requests for training must be coordinated through your Linde Account Manager. He can also provide you price and availability of any specialized tooling.**

**Questions regarding the information provided or this disclaimer should be addressed to the Warranty & Service Department, Linde Hydraulics Corporation.**

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