

## Tool Instruction Piston Cope Tool

4328319R1

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Tool Number: 12-146-01



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Figure 1. 12-146-01 Piston Cope Tool.

### Purpose

Essential tool used to assist with piston installation.

### Application(s)

2013 - 2014 Navistar<sup>®</sup> N13 (EPA 10)

2015 Navistar<sup>®</sup> N13 (EPA 10)



**GOVERNMENT REGULATION:** Engine fluids (oil, fuel, and coolant) may be a hazard to human health and the environment. Handle all fluids and other contaminated materials (such as filters or rags) in accordance with applicable regulations. Recycle or dispose of engine fluids, filters, and other contaminated materials according to applicable regulations.

## Application(s) (cont.)




**⚠ WARNING:** To prevent property damage, personal injury, and / or death, read all safety instructions in the “Safety Information” section of the *Engine Service Manual* or *Engine Diagnostic Manual* .

**⚠ WARNING:** To prevent property damage, personal injury, and / or death, park vehicle on hard flat surface, turn the engine off, set the parking brake, and install wheel chocks to prevent the vehicle from moving in either direction.

**⚠ WARNING:** To prevent personal injury and / or death, always wear safe eye protection when performing vehicle maintenance.

## Tool Contents

Table 1

Image	Tool Number	Qty	Description
 <p>0000380623</p>	12-146-01-01	1	Piston Cope
 <p>0000380624</p>	12-146-01-02	1	Adapter
 <p>0000160075</p>	4328319R1	1	Tool Instruction

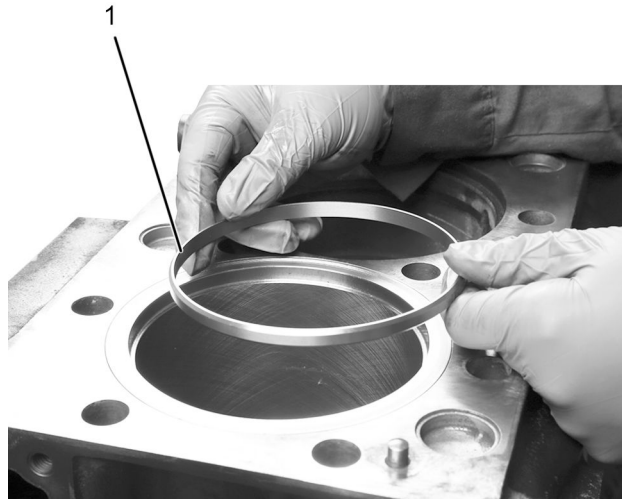
## Instructions

### CYLINDER SLEEVE INSPECTION

1. Bring vehicle into shop, park vehicle on flat surface with wheels straight ahead.
2. Shift transmission to Park or Neutral and set parking brake.
3. Turn vehicle off and allow to thoroughly cool down.

## Instructions (cont.)

4. Install wheel chocks.
5. Remove cylinder head and access cylinder block. Refer to appropriate engine service manual, service bulletin, or equivalent for detailed instruction.



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**Figure 2. Anti Polish Ring (APR) Cylinder Sleeve.**

1. Ring



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**Figure 3. Non-APR Cylinder Sleeve.**

6. Verify cylinder sleeve present in engine:
  - An APR cylinder sleeve will have a removable ring (Figure 2, Item 1). Refer to APR CYLINDER SLEEVE section for detailed procedure steps.
  - A non-APR cylinder sleeve (Figure 3) has no removable components. Refer to NON-APR CYLINDER SLEEVE section for detailed procedure steps.

## Instructions (cont.)

### APR CYLINDER SLEEVE

1. Remove anti polish ring (Figure 2, Item 1) from cylinder sleeve.



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**Figure 4. 12-146-01-01 Piston Cope.**

1. Piston cope
2. Using appropriate clean engine oil, lubricate interior diameter and bottom edge of piston cope (Figure 4, Item 1) as well as interior cylinder sleeve.
3. Gently fit piston cope into cylinder sleeve until flush with top surface of cylinder block.
4. Carefully insert piston / connecting rod assembly into piston cope. Refer to appropriate engine service manual, service bulletin, or equivalent for detailed instruction on piston assembly installation and precautions.
5. Install piston / connecting rod assembly. Refer to appropriate engine service manual, service bulletin, or equivalent for detailed instruction.
6. Carefully remove piston cope by lifting straight up.
7. Align, position and install anti polish ring (Figure 2, Item 1).
8. If necessary, repeat Steps 1 - 7 on remaining cylinders.
9. Install cylinder head. Refer to appropriate engine service manual, service bulletin, or equivalent for detailed instruction.
10. Remove wheel chocks.

## Instructions (cont.)

### NON-APR CYLINDER SLEEVE



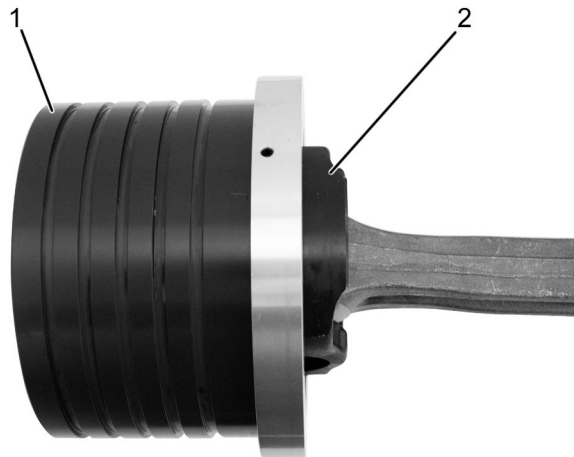
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**Figure 5. 12-146-01-02 Adapter.**

1. Piston cope
2. Adapter

1. Install adapter (Figure 5, Item 2) onto piston cope (Figure 5, Item 1).
2. Using appropriate clean engine oil, lubricate interior diameter of piston cope as well as interior cylinder sleeve.

## Instructions (cont.)



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**Figure 6. Piston / Connecting Rod Assembly Alignment.**

1. Piston cope
2. Piston / connecting rod assembly
3. Carefully insert piston / connecting rod assembly (Figure 6, Item 2) into piston cope (Figure 6, Item 1). Refer to appropriate engine service manual, service bulletin, or equivalent for detailed instruction on piston assembly installation and precautions.
4. Once inserted, push piston / connecting rod assembly through piston cope enough that bottom edge of piston is protruding.

## Instructions (cont.)



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**Figure 7. 12-146-01 Piston Cope Assembly.**

5. Using protruding piston / connecting rod assembly to assist with alignment, gently fit piston cope assembly into cylinder sleeve until flush with top surface of cylinder block (Figure 7).
6. Install piston / connecting rod assembly. Refer to appropriate engine service manual, service bulletin, or equivalent for detailed instruction.
7. Carefully remove piston cope by lifting straight up.
8. If necessary, repeat Steps 1 - 7 on remaining cylinders.
9. Install cylinder head. Refer to appropriate engine service manual, service bulletin, or equivalent for detailed instruction.
10. Remove wheel chocks.

## Contact Information

If you would like to order additional tools or need replacement parts, please refer to the Navistar Service Tool Catalog. If you have questions, concerns, or feedback, please contact Navistar Service Tool Support Center:

- Submit a Service Tool iKNOW Case File.
- Phone: 800-365-0088 (toll free).