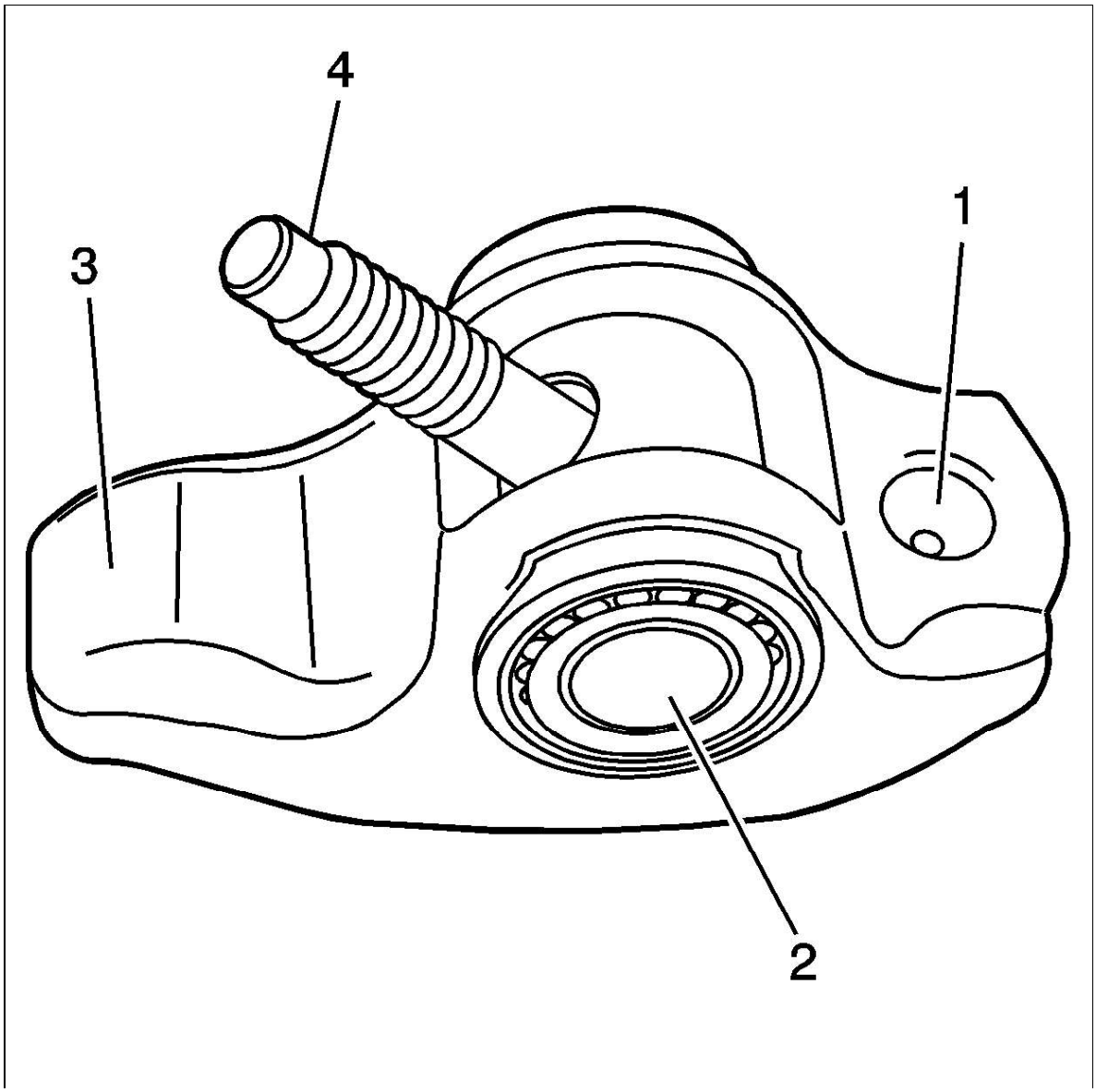
NOTE:

Be sure to keep parts in order. Parts must be reinstalled into the original location and position.

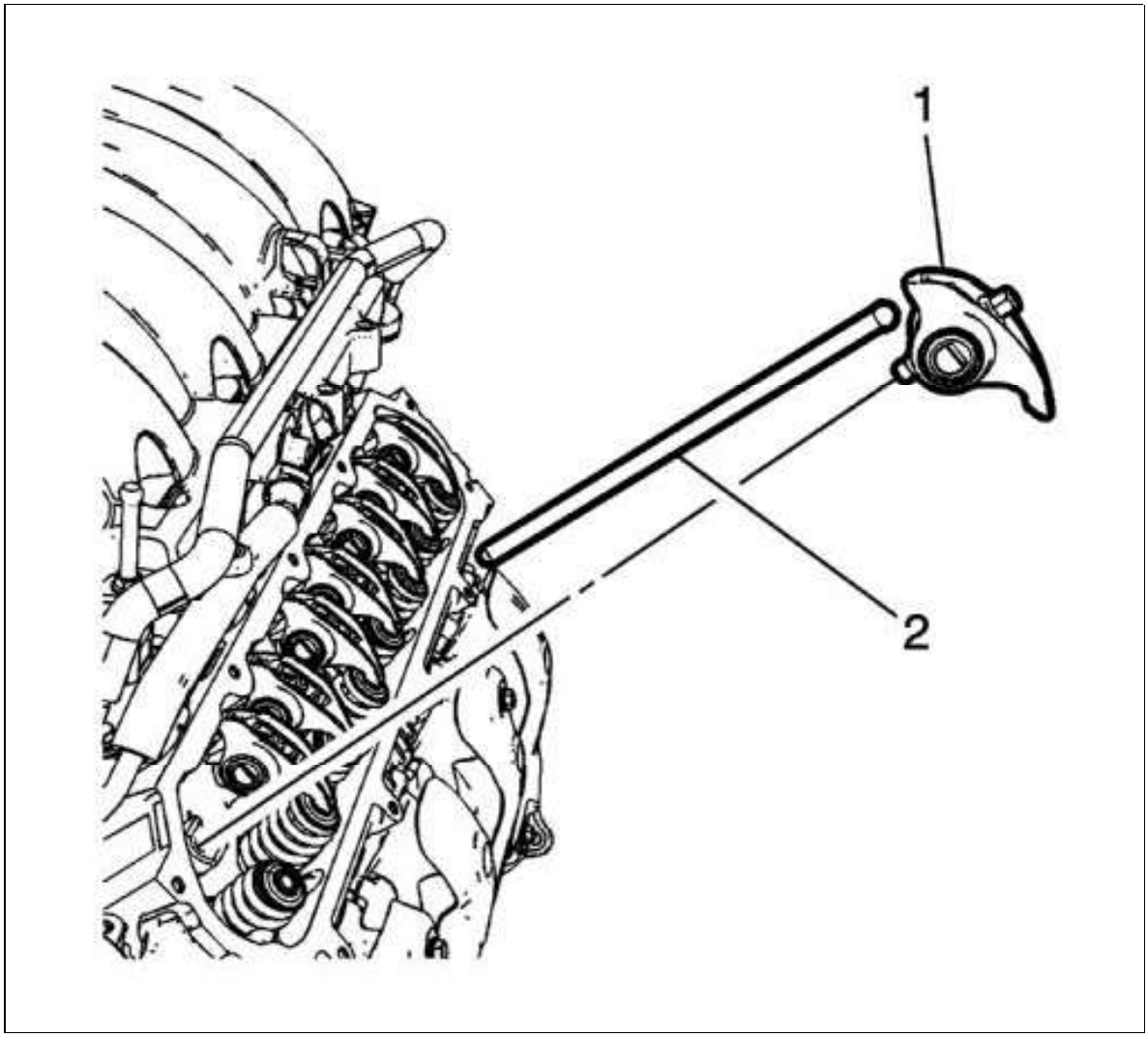
Fig 1: Pushrod Socket, Roller Pivot & Valve Stem Tip



Courtesy of GENERAL MOTORS COMPANY

1. Apply lubricant to the following rocker arm contact surfaces:
    1. Pushrod socket (1)
    2. Roller pivot (2)
    3. Valve stem tip (3)

Fig 2: Valve Rocker Arm And Bolt Assembly And Pushrod



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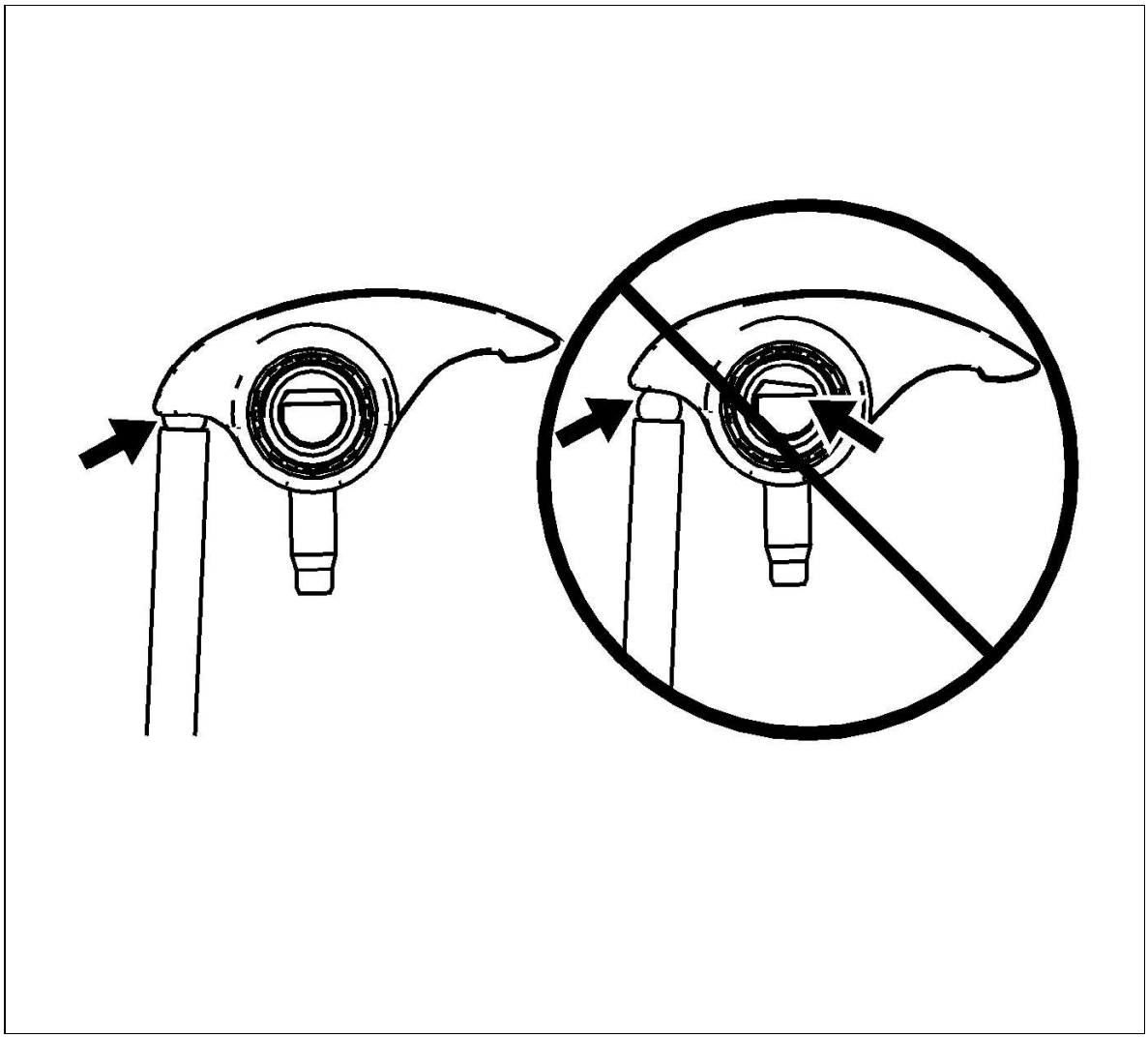
2. Install the pushrod (2).

Fig 3: Proper Seating Of Push Rod



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CAUTION:

Refer to Fastener Caution .

NOTE:

1. *When using the valve train components again, always install the components to the original location and position.*
2. *Valve lash is net build. No valve adjustment is required.*
3. *Lubricate the flange of the valve rocker arm bolts with clean engine oil.*
4. *Lubricate the valve rocker arms and pushrods with clean engine oil.*
5. *Ensure the pushrods seat properly to the valve lifter sockets.*

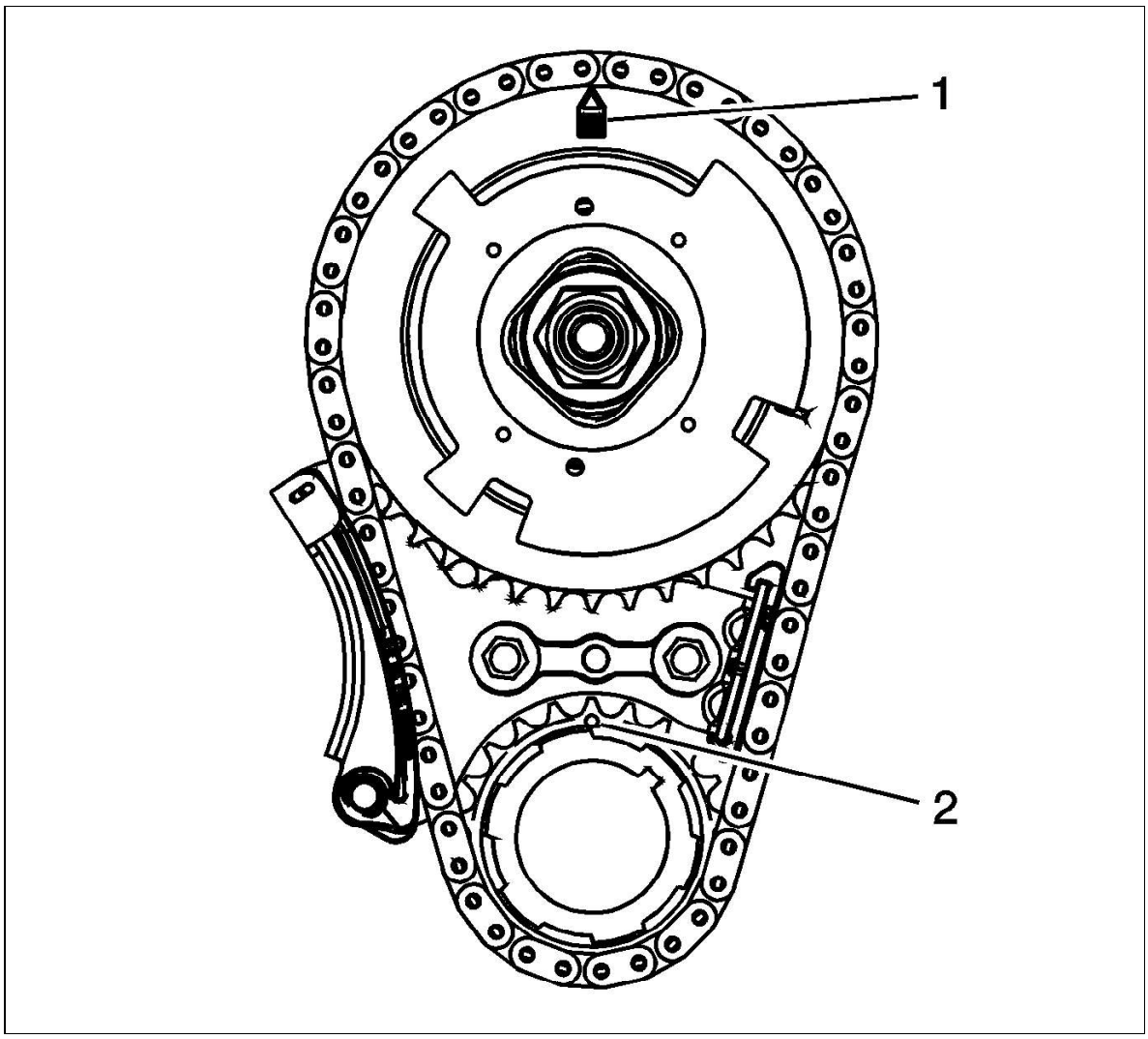
6. The rocker arm bolts are not serviced separately.

7. Ensure the pushrods seat properly to the ends of the rocker arms.

8. DO NOT tighten the rocker arm bolts at this time.

3. Install the rocker arm and bolt assembly.

Fig 4: Camshaft & Crankshaft Sprocket Alignment Marks



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4. Rotate the crankshaft until number 1 piston is at top dead center of compression stroke.

In this position, cylinder number 1 rocker arms will be off lobe lift, and the crankshaft sprocket key will be at the 1:30 position. The camshaft and crankshaft sprocket alignment marks (1, 2) will be in the 12 o'clock position. If viewing from the rear of the engine, the additional crankshaft pilot hole, non-threaded, will be in the 10:30 position.

The engine firing order is 1, 8, 7, 2, 6, 5, 4, 3.

Cylinders 1, 3, 5, and 7 are left bank.

Cylinders 2, 4, 6, and 8 are right bank.

> ⚠ *CAUTION:*
>
> *Refer to Fastener Caution*

5. With the engine in the number 1 firing position, tighten the following valve rocker arm bolts:
    1. Tighten the exhaust valve rocker arm bolts 1, 2, 7, and 8 to 30 N.m (22 lb ft).
    2. Tighten the intake valve rocker arm bolts 1, 3, 4, and 5 to 30 N.m (22 lb ft).
6. Rotate the crankshaft 360 degrees.
7. Tighten the following valve rocker arm bolts:
    1. Tighten the exhaust valve rocker arm bolts 3, 4, 5, and 6 to 30 N.m (22 lb ft).
    2. Tighten the intake valve rocker arm bolts 2, 6, 7, and 8 to 30 N.m (22 lb ft).
8. Install the valve rocker arm cover. Refer to Valve Rocker Arm Cover Replacement - Left Side , or Valve Rocker Arm Cover Replacement - Right Side .

REPAIR INSTRUCTIONS - ON VEHICLE > VALVE STEM OIL SEAL AND VALVE SPRING REPLACEMENT

Special Tools

- **J-22794** Spark Plug Port Adapter
- **J-38606** Valve Spring Compressor

For equivalent regional tools, refer to Special Tools .

REPAIR INSTRUCTIONS - ON VEHICLE > VALVE STEM OIL SEAL AND VALVE SPRING REPLACEMENT > REMOVAL PROCEDURE

1. Remove the valve rocker arms as needed. Refer to Valve Rocker Arm and Push Rod Replacement .
2. Remove the spark plugs as needed. Refer to Spark Plug Replacement .