



## Rocker Arm/Shaft Assembly

### REMOVAL & INSTALLATION

#### Z24i Engine

1. Remove the cylinder head cover. The rocker shaft assembly can be removed by simply unthreading its retaining bolts.

**NOTE: When removing the bolts, DO NOT remove the No. 1 and No. 5 bracket bolts, since the rocker shaft bracket and rocker arm will spring out.**

2. Remove the rocker shaft bracket, then slide the valve rockers and springs off of the rocker shaft. Be absolutely sure to keep all parts in the order in which they were removed; they must be reassembled in the same position and location.

Fig. 1: Rocker shaft assembly — Z24i engine

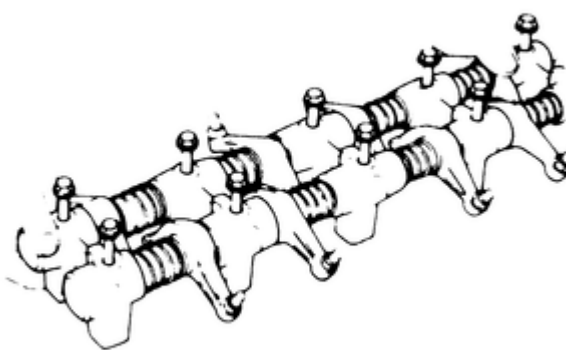


Fig. 2: Rocker arm installation — Z24i engine

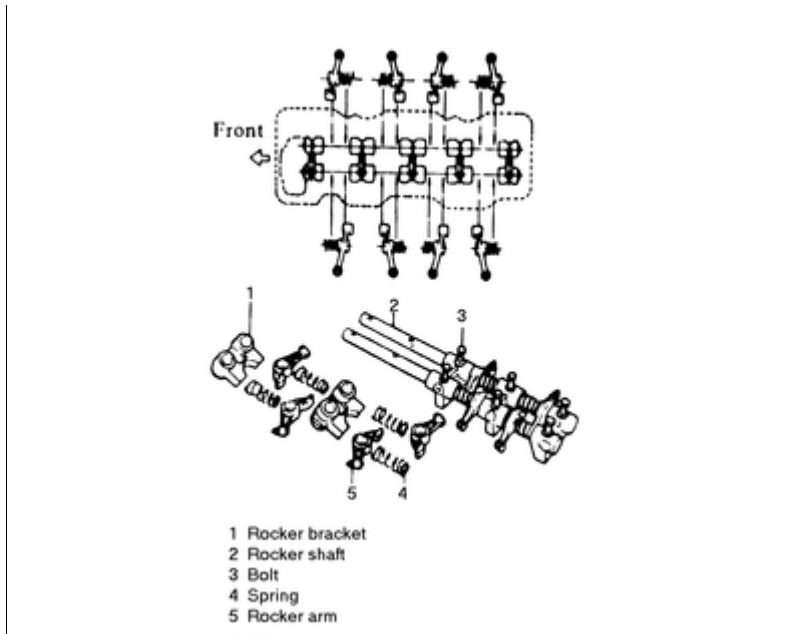


Fig. 3: Rocker shaft installation — Z24i engine

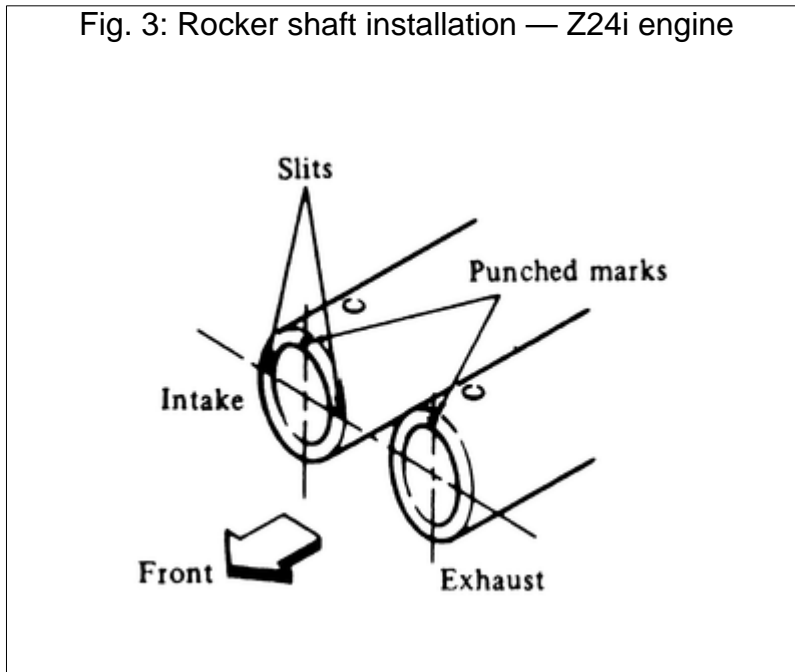


Fig. 4: Rocker shaft/arm identification — Z24i engine

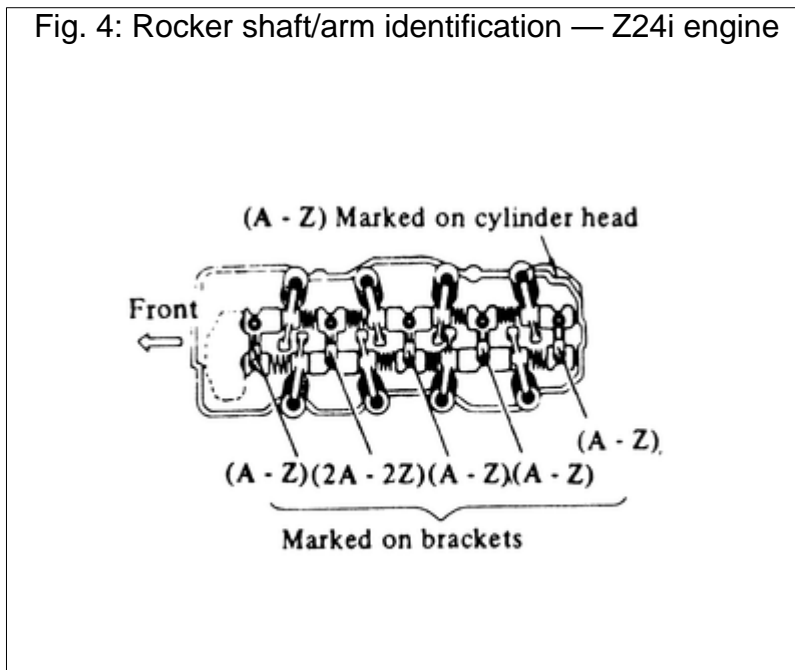
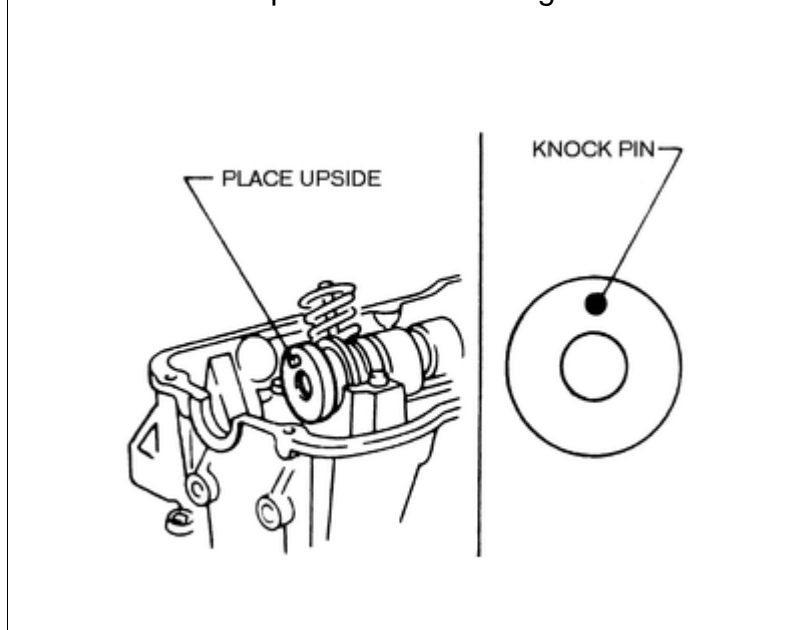


Fig. 5: Make sure that the camshaft knockpin is in the UP position — Z24i engine



3. Inspect the rocker arms and shaft for damage; replace as necessary.

**To install:**

4. Slide the springs and rockers onto the shafts in the order that they were removed.
5. The intake rocker shaft has a slit on its leading edge, but the exhaust shaft does not. Additionally, each shaft has one punch mark on its leading edge. The shafts should be assembled with these marks facing upward, as they are used for oil hole identification.

**NOTE: The intake and exhaust rockers for Cylinders No. 1 and 3 are the same and are identified by the mark "1". The same holds true for the rockers on Cylinders No. 2 and 4; they are identified with a "2".**

6. The rocker shaft brackets are also marked as to their original location; simply match them to the like marks on the cylinder head.
7. At this point, reinsert a bracket bolt into holes for the No. 1 and No. 5 brackets. This will insure that the assembly stays together while you mount it on the head.
8. Mount the rocker shaft assembly on the cylinder head in a manner that accommodates the camshaft knock pin, then tighten the retaining bolts gradually, in two or three stages, to 11–18 ft. lbs. (15–25 Nm).
9. Before installing the cylinder head cover, please refer to Section 2 for valve lash adjustment.

## KA24E Engine

**NOTE: The KA24E engine is unique in that its hydraulic lifters are installed inside the rocker arm assemblies. If a hydraulic lifter is kept on its side, even when installed in the rocker arm assembly, there is the possibility of air entering it. After removal, always set rocker arm assembly straight up.**

1. Remove the cylinder head cover. The rocker shaft assembly can be removed by simply removing its retaining bolts.

**NOTE: When removing the bolts, loosen them in two or three stages, from the outside to the inside, in the proper sequence.**

Fig. 6: Rocker shaft assembly loosening sequence — KA24E engine

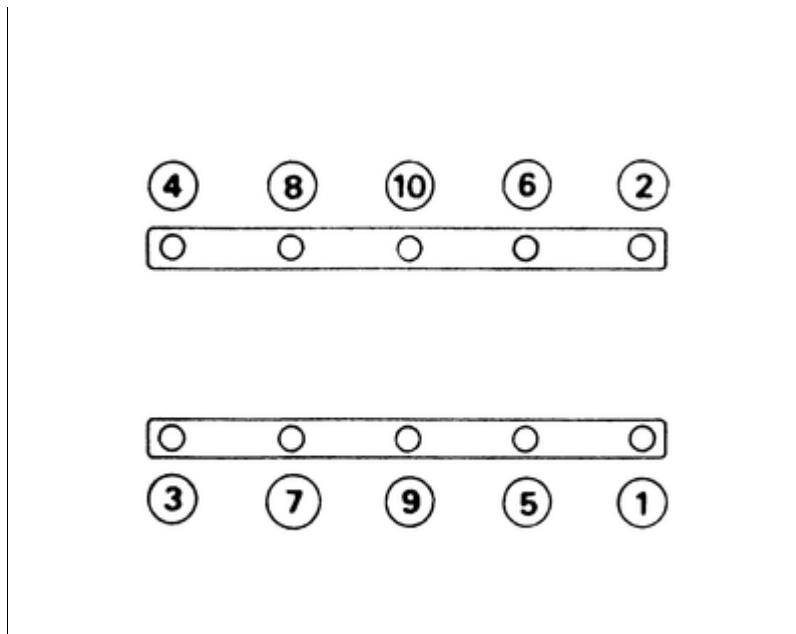


Fig. 7: Rocker shaft identification — KA24E engine

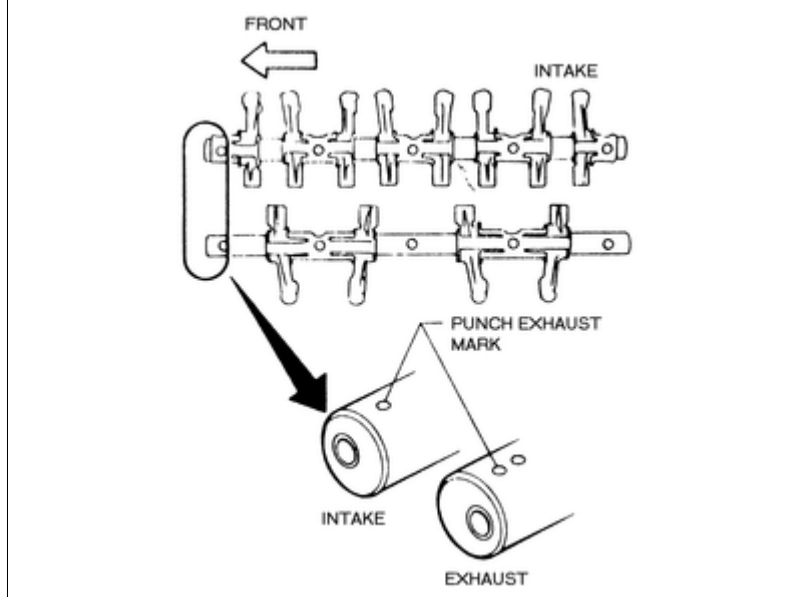
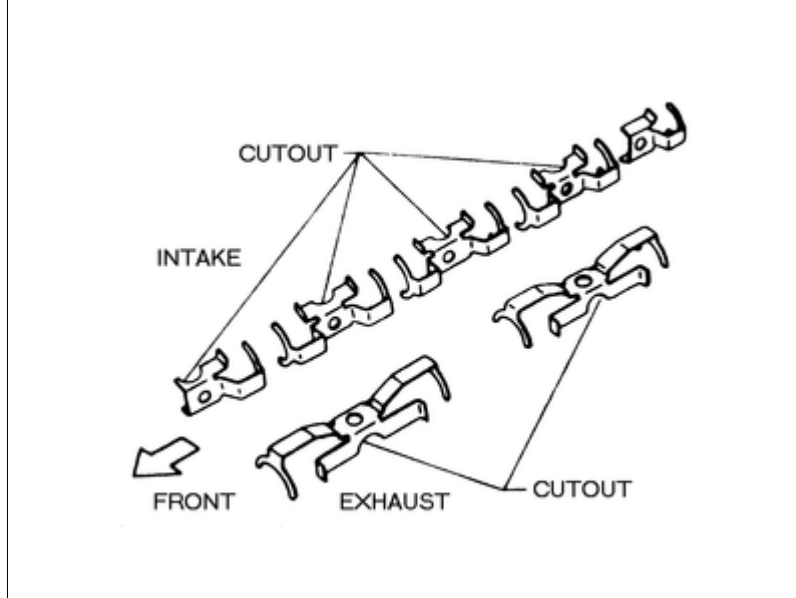
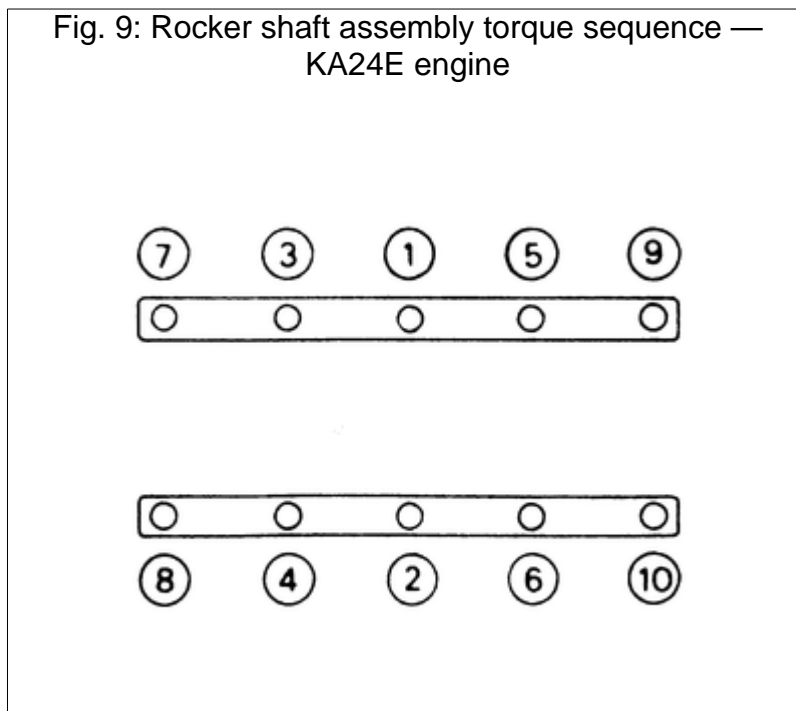


Fig. 8: Rocker arm retainer positioning — KA24E engine





2. Remove the rocker shaft retainers, then slide the valve rockers and springs off of the rocker shaft. Be absolutely sure to keep all parts in the order in which they were removed; they must be reassembled in the same position and location.
3. Inspect the rocker arms and shaft for damage; and replace as necessary.

#### To install:

4. Slide the springs and rockers onto the shafts in the order that they were removed.
5. Install the rocker retainers so that the cutouts are facing in the direction shown in the illustration.
6. The intake rocker shaft has a single punch mark on its leading edge, but the exhaust shaft has two punch marks. The shafts should be assembled with these marks facing upward, as they are used for oil hole identification.
7. The rocker shaft brackets are also marked as to their original location; simply match them to the like marks on the cylinder head.
8. Mount the rocker shaft assembly on the cylinder head in a manner that accommodates the camshaft knock pin, then tighten the retaining bolts gradually, in two or three stages to 27–30 ft. lbs. (37–41 Nm). Follow the tightening sequence shown in the illustration.

### VG30i and VG30E Engines

1. Remove the cylinder head cover(s).
2. Remove the rocker arm shaft-to-cylinder head bolts and lift the rocker arm/shaft assembly from the cylinder head.

Fig. 10: Rocker shaft installation direction — 6-cylinder engines

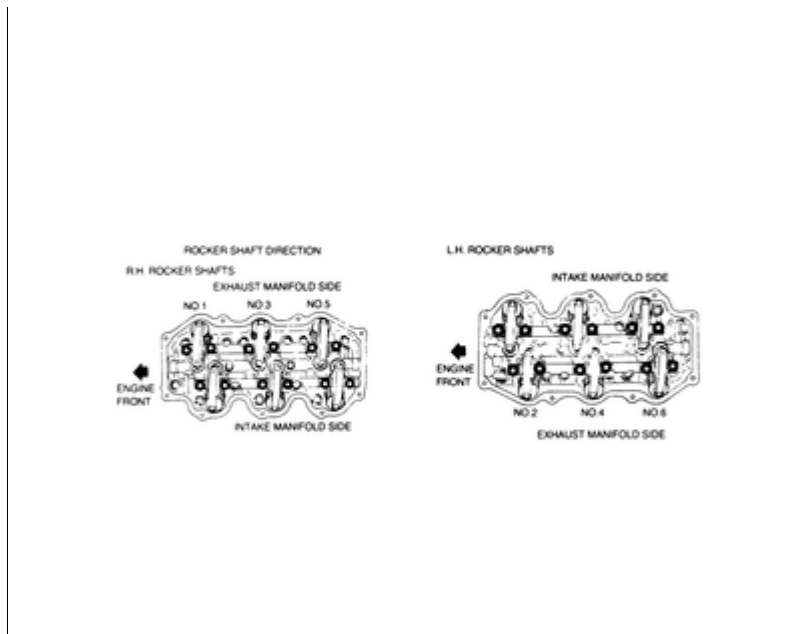


Fig. 11: View of the rocker shaft installed — all 6-cylinder engines are similar



Fig. 12: After removing the rocker shaft assembly, keep all bolts in the proper order if possible



Fig. 13: Use a torque wrench when installing the rocker shaft assembly



3. Separate the rocker arms from the shaft.

**NOTE: When separating the rocker arms from the rocker arm shafts, be sure to keep the parts in order for reinstallation purposes.**

4. Check the rocker arms, the shafts, the valves and the valve lifter for damage. If necessary, replace the damaged components.

**NOTE: When installing the rocker arm shafts, be certain that they are installed in their original positions.**

5. Slide the rocker arms onto the shafts, then install the shaft/arm assemblies onto the cylinder head in their proper positions.
6. Make sure the camshaft knock pin is at the top of the camshaft and that the lobe is not in the lifted position. If servicing the left-side cylinder head, set the No. 1 piston at TDC of its compression stroke, then tighten the rocker shaft bolts for cylinder No. 2, 4 and 6 cylinders. If servicing the right-side cylinder head, set the No. 4 piston at TDC of its compression stroke and tighten the rocker shaft bolts for cylinder No. 1, 3 and 5 cylinder rocker shaft bolts. Tighten all bolts gradually, in two or three stages, to 13–16 ft. lbs. (18–22 Nm).

7. Install the cylinder head cover(s).

