

## NISSAN SR20DE(T) 8 HOLE ADJUSTABLE CAM SPROCKETS

### Why do you need an adjustable cam timing sprocket?

Engine modifications, repairs or wear that alters the original crank to camshaft relationship will require an adjustable sprocket to correct the error. This can include resurfacing of the head or block, and chain stretch.

When engines are built for performance, it is critical that all of the valve timing events be optimized for the intended use. Event changes include advancing or retarding the intake cam to optimize cylinder pressure at various RPM ranges, advancing closes the intake valve earlier on the compression stroke to build more compression at lower RPM. Retarding the intake cam allows the intake valve to remain open longer to take advantage of the intake charges inertia to maintain good volumetric efficiency at higher RPM. Overlap is another critical timing event that can only be adjusted with sprockets on engines having separate intake and exhaust cams. Overlap is the time that both intake and exhaust valves are open at the same time. Increasing the overlap period by advancing the intake cam and or retarding the exhaust cam, can increase the scavenging effect of a tuned exhaust, causing the intake charge to flow into the cylinder and out the exhaust. By sacrificing a small part of the intake charge as the exhaust valve closes, a stronger intake flow has been initiated earlier. If this is tuned correctly the net intake charge should be larger at some RPM range, but will probably decrease at another. By experimenting, the RPM range that is important can be optimized.



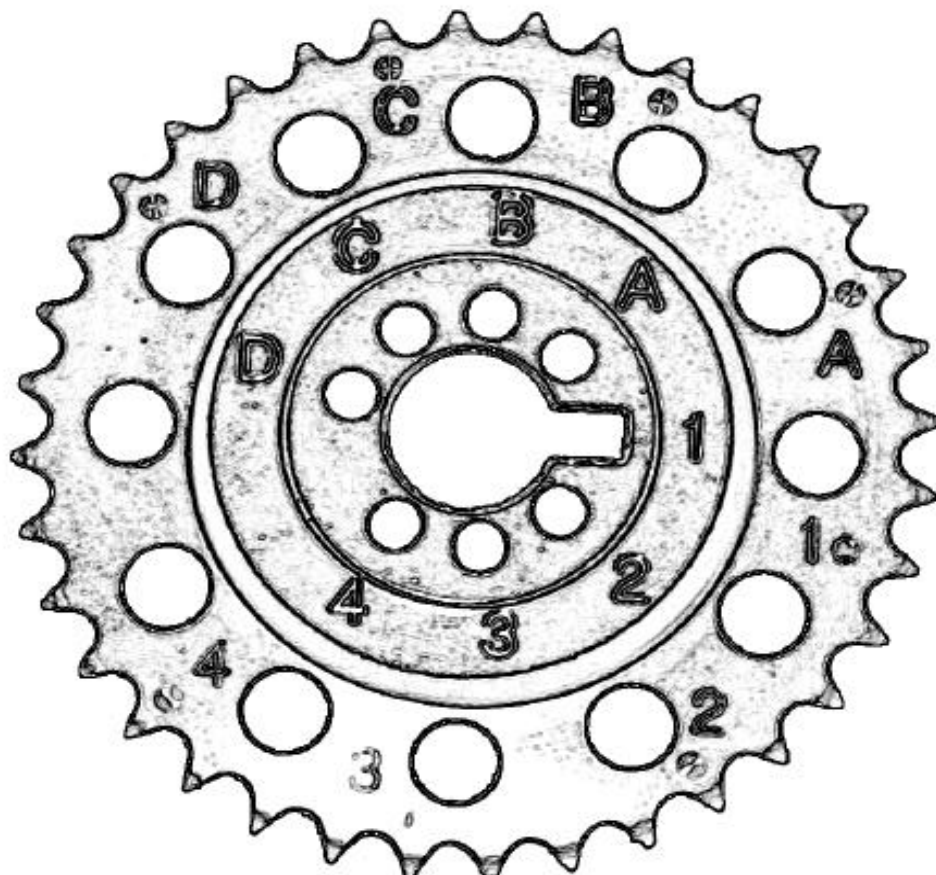
### Advantages of an 8 hole vs. 2 piece slider-type sprockets.

While slider-type sprockets are convenient for doing multiple adjustments during a single dyno run, they are not as reliable or accurate as the multi-hole type. Slider sprockets require up to 4 bolts each to assemble, adding 8 non-safety wired bolts to the inside of the engine! If Loctite is used to secure these bolts, in-service adjustments require that the sprockets be removed and all threads cleaned of oil before reapplying new Loctite. Some engine builders use slider-type sprockets for the initial dyno testing, and install the 8 hole type before racing, to eliminate possible slippage or lost bolts.

### Adjusting cam timing

The sprockets have a total of 8 positions, each position is offset by 2.5 crankshaft degrees. Position #1 is the stock position, #2, #3, and #4 will advance the cam by 2.5, 5.0, and 7.5 crankshaft degrees respectively. Positions #A, #B, #C, and #D will retard the cam by 2.5, 5, 7.5, and 10 crankshaft degrees respectively. It is possible to set cams to any position needed in steps of 2.5 crank degrees using the chart on the other side of this sheet.

To calculate the degrees of advance needed to correct for head or block resurfacing, figure approx. 2.5 crank degrees per .047" removed from the head and block.



TO ADJUST CAM BY:	USE HOLE MARKED:	USE TOOTH DESCRIBED AS:
STOCK	1	1
ADV. 2.5 DEG.	2	2
ADV. 5 DEG.	3	3
ADV. 7.5 DEG.	4	4
ADV. 10 DEG.	D	1 TOOTH LEFT OF TOOTH D
RET. 2.5 DEG.	A	A
RET. 5 DEG.	B	B
RET. 7.5 DEG	C	C
RET. 10 DEG	D	D

**PRECAUTIONS:**

1. Retarding the exhaust cam or advancing the intake cam brings the valve closer to contacting the piston.
2. Sprocket adjustments are only relative to the stock sprocket position and cannot be considered accurate to the crank without using a degree wheel and dial indicator method for adjustment. Once this method is used, these sprockets will maintain perfect timing in all positions.
3. Refer to the Nissan factory manual for the actual sprocket removal procedure.