

Automotive Timing Chart for Four Cycle Engines

Use this chart to preset diagnostic scope time base to understand timing events with your *Firstlook*[®] Engine Diagnostic Sensor.

Chart indicates time between valve opening events in milliseconds.
Time to complete 1 cycle = 2 engine revolutions.

For a complete discussion for use of this table refer to the Firstlook[®] User's Guide

Engine Speed (rpm)	Time Between Valve Opening Events (milliseconds)							Starting Time Base Reference (ms)
	Time to Complete 1 Cycle in 4 Stroke Engine (ms)	A 2 Cylinder	B 3 Cylinder	C 4 Cylinder	D 5 Cylinder	E 6 Cylinder	F 8 Cylinder	
150	800.0	400.0	266.7	200.0	160.0	133.3	100.0	
175	685.7	342.9	228.6	171.4	137.1	114.3	85.7	Cold Crank
200	600.0	300.0	200.0	150.0	120.0	100.0	75.0	600
225	533.3	266.7	177.8	133.3	106.7	88.9	66.7	
250	480.0	240.0	160.0	120.0	96.0	80.0	60.0	
300	400.0	200.0	133.3	100.0	80.0	66.7	50.0	
350	342.9	171.4	114.3	85.7	68.6	57.1	42.9	
400	300.0	150.0	100.0	75.0	60.0	50.0	37.5	
450	266.7	133.3	88.9	66.7	53.3	44.4	33.3	
500	240.0	120.0	80.0	60.0	48.0	40.0	30.0	
550	218.2	109.1	72.7	54.5	43.6	36.4	27.3	Idle Start
600	200.0	100.0	66.7	50.0	40.0	33.3	25.0	200
650	184.6	92.3	61.5	46.2	36.9	30.8	23.1	
700	171.4	85.7	57.1	42.9	34.3	28.6	21.4	
750	160.0	80.0	53.3	40.0	32.0	26.7	20.0	
800	150.0	75.0	50.0	37.5	30.0	25.0	18.8	
850	141.2	70.6	47.1	35.3	28.2	23.5	17.6	
900	133.3	66.7	44.4	33.3	26.7	22.2	16.7	
950	126.3	63.2	42.1	31.6	25.3	21.1	15.8	
1000	120.0	60.0	40.0	30.0	24.0	20.0	15.0	
1100	109.1	54.5	36.4	27.3	21.8	18.2	13.6	Low RPM
1200	100.0	50.0	33.3	25.0	20.0	16.7	12.5	100
1300	92.3	46.2	30.8	23.1	18.5	15.4	11.5	
1400	85.7	42.9	28.6	21.4	17.1	14.3	10.7	
1500	80.0	40.0	26.7	20.0	16.0	13.3	10.0	
1600	75.0	37.5	25.0	18.8	15.0	12.5	9.4	
1700	70.6	35.3	23.5	17.6	14.1	11.8	8.8	
1800	66.7	33.3	22.2	16.7	13.3	11.1	8.3	
1900	63.2	31.6	21.1	15.8	12.6	10.5	7.9	
2000	60.0	30.0	20.0	15.0	12.0	10.0	7.5	
2100	57.1	28.6	19.0	14.3	11.4	9.5	7.1	
2200	54.5	27.3	18.2	13.6	10.9	9.1	6.8	
2300	52.2	26.1	17.4	13.0	10.4	8.7	6.5	Mid Range RPM
2400	50.0	25.0	16.7	12.5	10.0	8.3	6.3	50



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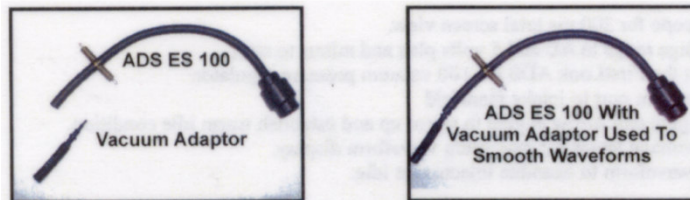
DIAGNOSTIC PULSE SENSORS

Automotive Engine Diagnostic Sensor

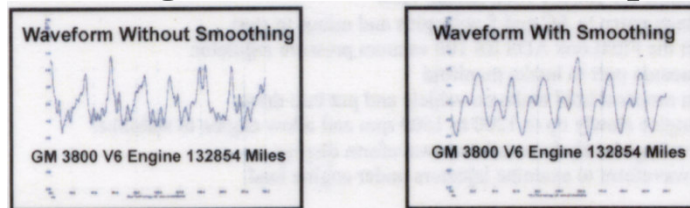
Model ADS ES100

Smoothing a Noisy Signature

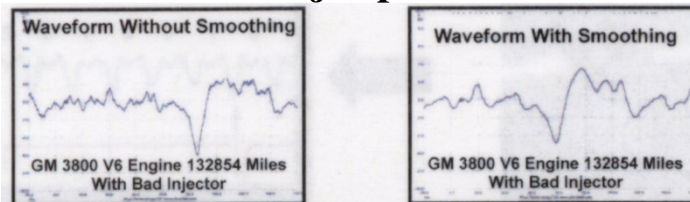
Sometimes the exhaust signal is very noisy. This is usually caused by reflections and resonance in an exhaust system containing many sharp angles and bends. Such a signal can be smoothed considerably by inserting the vacuum line probe into the regular exhaust probe as show below.



Doing this will smooth the signal as shown in the examples below:



Some data will be lost but major problems will remain obvious:



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