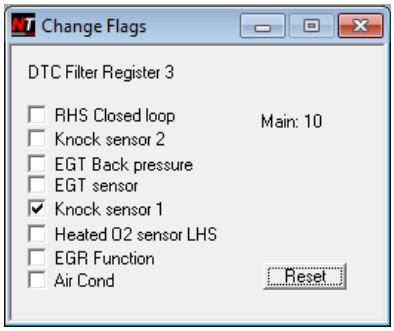
Nistune Knock Reporting Guide for SR20 and NEO ECUs

(34) KNOCK SENSOR DTC code

This is reported when the ECU detects the knock sensor voltage is out of range. Raises this fault code

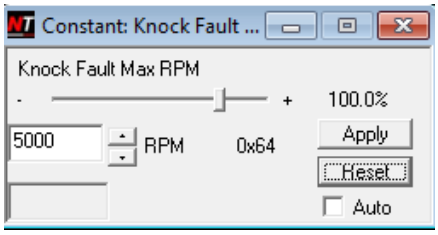


Turning this filter off will remove the DTC code and potentially also the Check Engine Light. However it will not stop further knock failure operations including timing retard. To disable knock retard, then following needs to be performed:

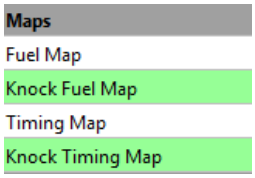
When a knock DTC fault is detected

Explanation:

1. ECU needs to detect this fault below the maximum fault RPM. If the fault is detected above this RPM then it is reported as a DTC but no timing is pulled and knock maps are not accessed.

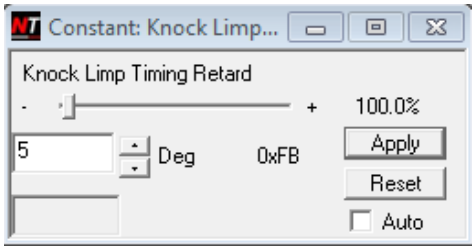


2. ECU will access knock maps:



Highlighted maps in 'green' are those detected by Nistune as being used by the ECU by probing the ECU frequently

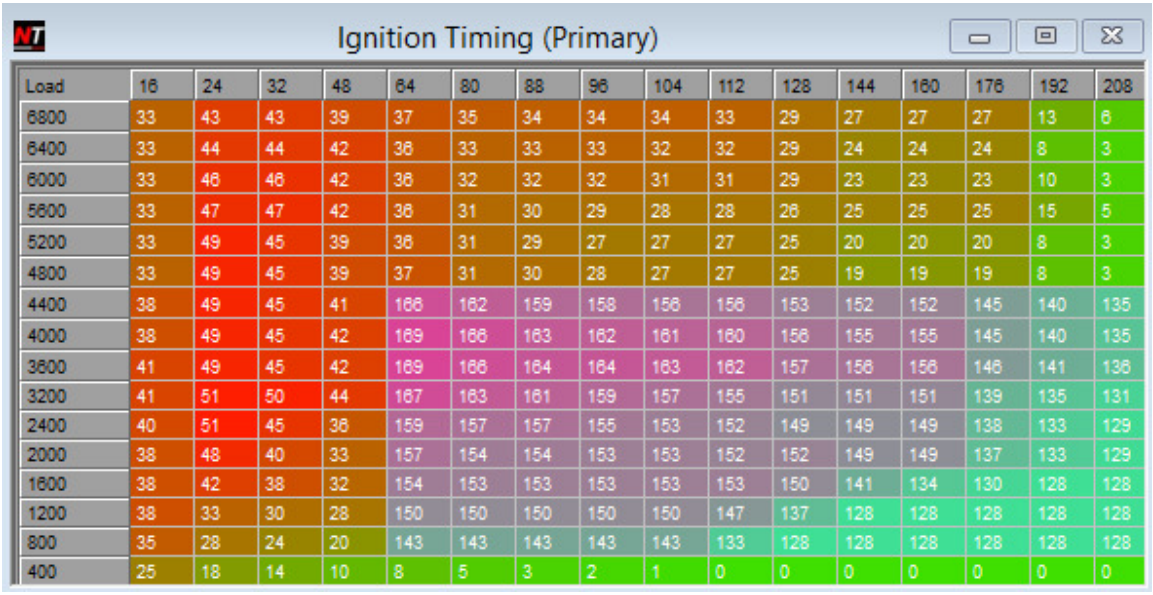
3. When the ECU is in the 'knock reporting' area of the timing map (this is highlighted aqua with 128+timing value), then additional timing will be removed when the DTC fault is active. The amount of timing retarded can be changed here:



Disable Knock Limp

To disable limp timing from being removed from the map, find the knock highlighted part of the map. This will be an aqua colour if you have ‘knock highlighting’ enabled. Right click the map to enable ‘knock highlighting’

Knock flag areas are above 128 + normal timing value as seen in this R34 map below:



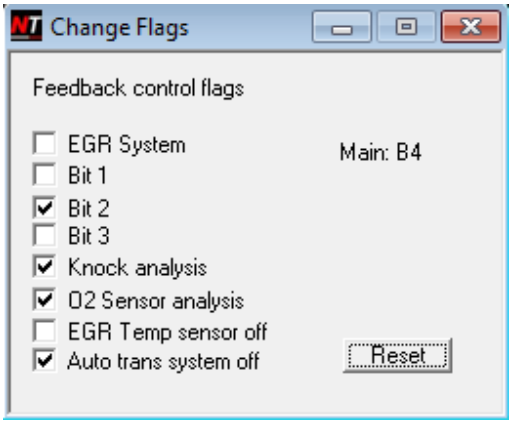
Load	16	24	32	48	64	80	88	96	104	112	128	144	160	176	192	208
6800	33	43	43	39	37	35	34	34	34	33	29	27	27	27	13	6
6400	33	44	44	42	36	33	33	33	32	32	29	24	24	24	8	3
6000	33	46	46	42	36	32	32	32	31	31	29	23	23	23	10	3
5600	33	47	47	42	36	31	30	29	28	28	26	25	25	25	15	5
5200	33	49	45	39	36	31	29	27	27	27	25	20	20	20	8	3
4800	33	49	45	39	37	31	30	28	27	27	25	19	19	19	8	3
4400	38	49	45	41	166	162	159	158	156	156	153	152	152	145	140	135
4000	38	49	45	42	169	166	163	162	161	160	156	155	155	145	140	135
3600	41	49	45	42	169	166	164	164	163	162	157	156	156	146	141	136
3200	41	51	50	44	167	163	161	159	157	155	151	151	151	139	135	131
2400	40	51	45	36	159	157	157	155	153	152	149	149	149	138	133	129
2000	38	48	40	33	157	154	154	153	153	152	152	149	149	137	133	129
1600	38	42	38	32	154	153	153	153	153	153	150	141	134	130	128	128
1200	38	33	30	28	150	150	150	150	150	147	137	128	128	128	128	128
800	35	28	24	20	143	143	143	143	143	133	128	128	128	128	128	128
400	25	18	14	10	8	5	3	2	1	0	0	0	0	0	0	0

To disable: Select the entire knock area and then use the ‘K’ key on your keyboard to disable the knock area.

Disabling Knock Retard

1, Turning off the knock cells in the timing map can remove this offset being used
2. Setting the retard value to 0 also has the same effect

However the knock maps will still be used, so these methods are not advised. Instead, disable knock analysis:



Disabling 'Knock Analysis' in the feedback flags will prevent any checking of the knock sensor connectivity. Turning off this flag will also result in access to normal fuel and timing maps without needing to 'stub' out the knock sensor lines on SR20 engines.

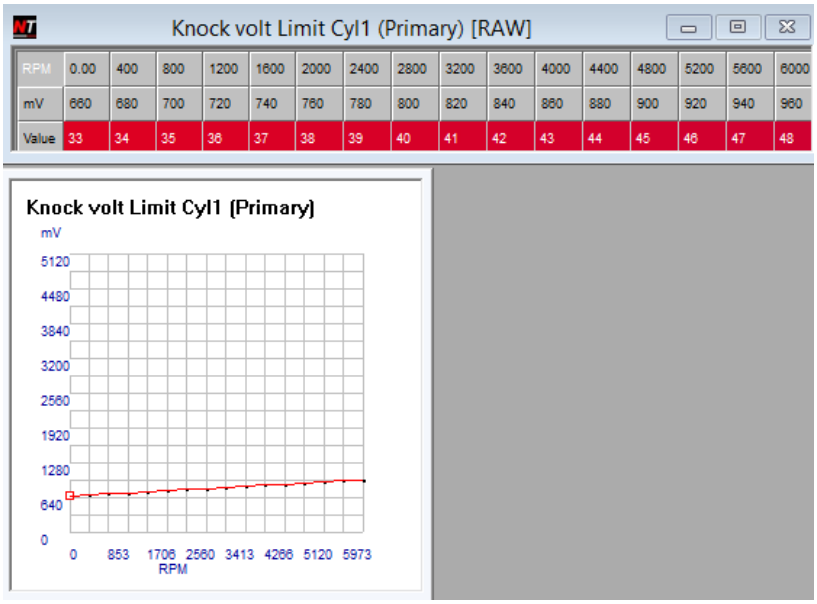
ECU needs to be restarted when knock analysis is disabled for the main maps to be accessed again. The knock fault code will still be reported until the DTC filter is cleared.

Note: This only disables knock analysis. If the knock sensor was still connected and reporting knock then the knock counting may still pull timing.

Also disabling the diagostic detection by setting Knock Fault Max RPM to 0 will prevent any action (if Knock Analysis was enabled)

Adjusting Knock Sensitivity

Each cylinder monitors a set voltage from the knock sensor at each RPM. These limits can be increased to reduced knock sensitivity for particular cylinders



Timing Retard Adjustment

The maximum amount of timing retarded when knock is active is determined by the following table. Indexed by load and RPM