Idle Entries   02 August 2016

Groups/STANDARD MAPPING/IDLE SPEED CONTROL WITH IGNITION:

Target Idle Speed

> This map is used to set the desired idle speed. Idle speed
> is controlled by ignition angle correction and an air bypass
> valve (if configured).
>
> The current value can be viewed as "abv_target" on the dashboard.

Road Toad

Matrix: Target Idle Speed (rpm)

ECT (°C)

TRUN (s)	-20.0	0.0	10.0	20.0	30.0	40.0	50.0	60.0	70.0	80.0	100.0	120.0
2	1500	1500	1400	1350	1250	1150	1100	1100	1100	1100	1100	1100
5	1500	1500	1400	1350	1250	1150	1050	1050	1050	1050	1050	1050
10	1500	1500	1400	1350	1250	1150	1050	1050	1050	1050	1050	1050
20	1500	1500	1400	1350	1250	1150	1050	1050	1050	1050	1050	1050
40	1450	1450	1350	1200	1150	1100	1050	1050	1050	1050	1050	1050
60	1450	1450	1350	1200	1150	1100	1050	1050	1050	1050	1050	1050

Bullett:

Matrix: Target Idle Speed (rpm)

ECT (°C)

| TRUN (s)	-20.0	0.0	10.0	20.0	30.0	40.0	50.0	60.0	70.0	80.0	100.0	120.0
2	1500	1500	1500	1500	1450	1420	1400	1380	1350	1300	1300	1300
5	1500	1500	1500	1500	1450	1420	1400	1380	1350	1300	1300	1300
10	1500	1500	1500	1500	1450	1420	1400	1380	1350	1300	1300	1300
20	1500	1500	1500	1500	1450	1420	1400	1380	1350	1300	1300	1300
40	1500	1500	1500	1500	1450	1420	1400	1380	1350	1300	1300	1300
60	1500	1500	1500	1500	1450	1420	1400	1380	1350	1300	1300	1300

Closed Loop Idle Control Enable Speed:

Closed Loop idle speed control is only enabled below this engine speed.
This speed threshold is also used to select the rate at which the idle speed
control strategy is executed.

See "Air Bypass Valve Idle Speed Service Time", and
"Air Bypass Valve High Speed Service Time".

Scalar: Closed Loop Idle Control Enable Speed (rpm)

Closed Loop Idle Control Enable Speed (rpm)	2000
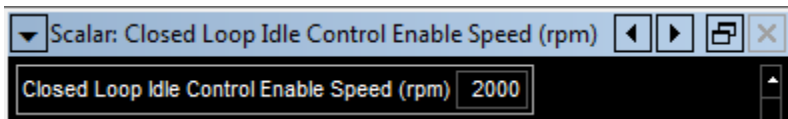
Closed Loop Idle Control Enable Manifold Pressure:

Closed Loop idle speed control is only enabled above this pressure

Scalar: Closed Loop Idle Control Enable Manifold Pressure (mbar)

Closed Loop Idle Control Enable Manifold Pressure (mbar)	100
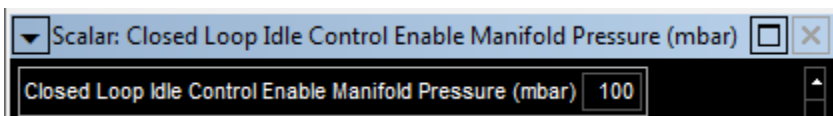
Closed Loop Idle Control Enable Car Speed:

Idle Speed strategy will only be enabled if you are below this speed.

This is intended to stop unintentional triggering of the strategy whilst at high speed.

Scalar: Closed Loop Idle Control Enable Car Speed (kph)

Closed Loop Idle Control Enable Car Speed (kph)	10.0
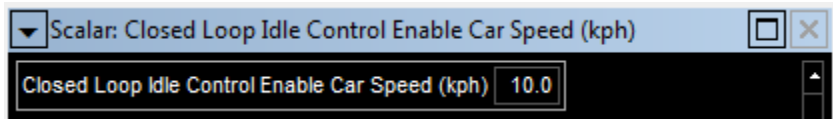
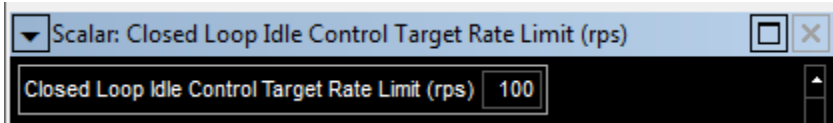Closed Loop Idle Control Target Initial Offset:

When closed loop idle control is initiated an offset is applied
to the target speed. This offset decays to zero at a rate set
in the "Closed Loop Idle Control Target Rate Limit". This feature
is used to slow the return to the target idle speed.

Scalar: Closed Loop Idle Control Target Initial Offset (rpm)

Closed Loop Idle Control Target Initial Offset (rpm)	200

Closed Loop Idle Control Target Rate Limit:

```
When closed loop idle control is initiated an offset is applied
to the target speed. This offset decays to zero at a rate set
in the "Closed Loop Idle Control Target Rate Limit". This feature
is used to slow the return to the target idle speed.
```

▼ Scalar: Closed Loop Idle Control Target Rate Limit (rps)	🔲 ✕
Closed Loop Idle Control Target Rate Limit (rps) 100	

Closed Loop Idle Control Target Base Offset:

The engine speed by which the target idle speed is offset.

▼ Scalar: Closed Loop Idle Control Target Base Offset (rpm)   ◀ ▶ 🔲 ✕
Closed Loop Idle Control Target Base Offset (rpm)   0

Idle Ignition Adder (Positive Error):

▼ Matrix: Idle Ignition Adder (Positive Error) (°)   🔲 ✕

♂ abv_error (rpm)

10	25	50	100	200	400
0.00	-1.00	-2.50	-5.25	-7.50	-9.25

Idle Ignition Adder (Negative Error):

▼ Matrix: Idle Ignition Adder (Negative Error) (°)   🔲 ✕

♂ abv_error (rpm)

10	25	50	100	200	400
0.00	2.00	4.00	5.75	8.50	9.00

Closed Loop Idle View Select:

```
If an Air Bypass Valve digital output is configured, it will always be used
for idle speed control.

If an Air Bypass Valve digital output is NOT configured and Fly-by-Wire
is enabled, then the Fly-by-Wire throttle will be used for idle speed control.

This map only controls access to ABV maps or FBW maps for closed-loop
idle control within CalTool.
```

▼ Scalar: Closed Loop Idle View Select   ◀ ▶ 🔲 ✕
Closed Loop Idle View Select SHOW_FBW ▼
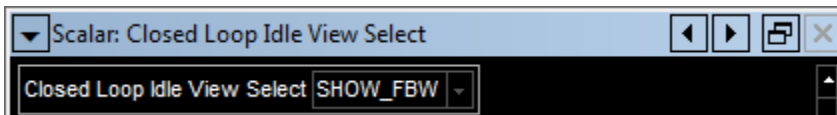
Closed Loop Idle FBW Throttle Demand Maximum:

This is the maximum throttle angle demand that is generated by the Closed loop idle.

This angle should be set to the smallest acceptable maximum throttle demand for correct closed-loop idle operation. This will help prevent unanticipated large throttle openings in the event of a poor calibration.

Scalar: Closed Loop Idle FBW Throttle Demand Maximum (°)

Closed Loop Idle FBW Throttle Demand Maximum (°)	10.0

Closed Loop Warmup FBW Throttle Demand Offset:

This map is used to increase the base closed loop idle throttle demand during starting and warmup.

This map is for closed-loop idle control with a Fly-by-Wire throttle only.

Matrix: Closed Loop Idle Warmup FBW Throttle Demand Offset (°)

ECT (°C)

TRUN (s)	-20.0	0.0	10.0	20.0	30.0	40.0	50.0	60.0	70.0	80.0	100.0	120.0
2	2.1	1.9	1.8	1.6	1.5	1.3	1.2	0.4	0.2	0.2	0.2	0.2
5	2.1	1.9	1.8	1.6	1.5	1.3	1.2	0.4	0.2	0.2	0.2	0.2
10	2.0	1.9	1.8	1.6	1.5	1.3	1.1	0.4	0.2	0.2	0.2	0.2
20	1.9	1.8	1.7	1.5	1.4	1.2	1.0	0.2	0.0	0.0	0.0	0.0
40	1.9	1.8	1.6	1.5	1.3	1.2	0.9	0.0	0.0	0.0	0.0	0.0
60	1.9	1.8	1.6	1.5	1.3	1.1	0.9	0.1	0.0	0.0	0.0	0.0

Closed Loop Idle Rate of Change of Throttle Demand Limit:

This map is used to limit the rate of change of throttle demand when it is decreasing.

This map is for closed-loop idle control with a Fly-by-Wire throttle only.

Matrix: Closed Loop Idle Rate of Change of Throttle Demand Limit (°/s)

gear_pos

	REVERSE	NEUTRAL	FIRST	SECOND	THIRD	FOURTH	FIFTH	SIXTH	SEVENTH	EIGHTH
	12.50	12.50	12.50	12.50	12.50	12.50	12.50	50.03	50.03	50.03

Closed Loop Idle FBW Throttle Demand in Crank: 0 to 10 degrees

This map is for closed-loop idle control with a Fly-by-Wire throttle only.

Scalar: Closed Loop Idle FBW Throttle Demand in Crank (°)

Closed Loop Idle FBW Throttle Demand in Crank (°)	2.5

Closed Loop FBW Throttle Demand Correction f(ACT):

```
This adder is used to correct the throttle demand for changes in air
temperature.

The current value can be viewed as "cli_tps_T_air" on the dashboard.

This map is for closed-loop idle control with a Fly-by-Wire throttle only.
```

Matrix: Closed Loop Idle FBW Throttle Demand Correction f(ACT) (°)

ACT (°C)

-30	-20	-10	0	10	20	30	40	50	60	70	80	90	100	110	120	130
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Closed Loop Idle FBW Throttle Demand Correction f(BAP):

```
This adder is used to correct the throttle demand for changes in
ambient pressure.

The current value can be viewed as "cli_tps_P_baro" on the dashboard.

This map is for closed-loop idle control with a Fly-by-Wire throttle only.
```

Matrix: Closed Loop Idle FBW Throttle Demand Correction f(BAP) (°)

BAP (mbar)

600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200	1250	1300	1350	1400
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Closed Loop Idle FBW Throttle Demand Correction f(VBAT):

```
This map is used to correct the closed loop throttle demand for
changes in battery voltage

The current value can be viewed as "cli_tps_V_bat" on the dashboard.

This map is for closed-loop idle control with a Fly-by-Wire throttle only.
```

Matrix: Closed Loop Idle FBW Throttle Demand Correction f(VBAT) (°)

VBAT (V)

8.00	8.50	9.00	9.50	10.00	10.50	11.00	11.50	12.00	12.50	13.00	13.50	14.00	14.50	15.00	15.50	16.00
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Closed Loop Idle Air Con FBW Throttle Demand Offset:

```
When the air conditioning output is active ("ac_relay_on" on the dashboard), then
this map provides an offset to the closed loop idle throttle demand.

This map is for closed-loop idle control with a Fly-by-Wire throttle only.
```

Scalar: Closed Loop Idle Air Con FBW Throttle Demand Offset (°)

Closed Loop Idle Air Con FBW Throttle Demand Offset (°)	0.0

Closed Loop Idle Air con Engine Speed Target Adder:

```
When the air conditioning output is active ("ac_relay_on" on the dashboard), then
this map provides an engine speed adder which is applied to the Closed Loop Idle
target engine speed.

This map is for closed-loop idle control with a Fly-by-Wire throttle only.
```

Scalar: Closed Loop Idle Air Con Engine Speed Targ...

Closed Loop Idle Air Con Engine Speed Target Adder (rpm)	0
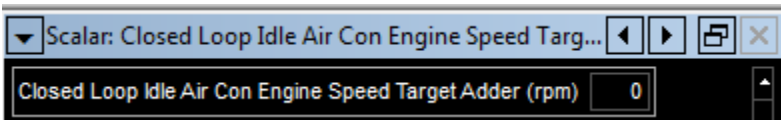
Air Bypass Valve Mode When Stopped:

```
If ENABLED, when the engine is stopped, the output duty used will be the first
cell in "Air Bypass Valve Transfer Function".

If DISABLED, when the engine is stopped, the output duty will be zero.
```

Scalar: Air Bypass Valve Mode When Stopped

Air Bypass Valve Mode When Stopped	DISABLED
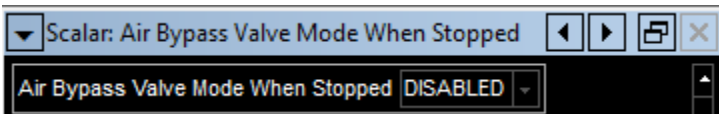
Closed Loop Fuel Adder:

```
This Fuel Adder will add fuel to the base fuel map as a function of
thottle demand and throttle position.
Note: This feature should be calibrated with the closed loop lambda disabled.

The current value can be viewed as "cli_inj_add" on the dashboard.

This map is for closed-loop idle control with a Fly-by-Wire throttle only.
```

| Matrix: Closed Loop Idle Fuel Adder (ms) | ◀ | ▶ | 日 | × |

cli_tps_dem_init (°)

TPS (°)	0.0	1.0	2.0	3.0	4.0	5.0	6.0	7.0
50.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
40.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7.5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Closed Loop Idle FBW Throttle Rate Limits: Decimal 0.0 to 1000.0

```
This map allows the selection of the electronic throttle rise, fall and exiting
rate limits by the closed loop idle strategy.

Care must be taken when calibrating these parameters as they affect the
performance of the throttle whilst the closed loop idle strategy is active,
but also, due to the exiting rate limit, they affect the performance as the current
throttle position is blended into the next strategy. Setting this exiting rate
too low can result in poor throttle response until the driver's request is matched.


A rate of change value of zero is a request for no rate limiting to be applied.
```

| Matrix: Closed Loop Idle FBW Throttle Rate Limits (°/s) | ◀ | ▶ | 日 | × |

Rate_Limit

	RISING	FALLING	EXITING
	100.0	100.0	50.0

Closed Loop Idle Base FBW Throttle Demand:

```
This map determines the base closed loop idle throttle demand.

The desired demand is calculated by applying various
corrections to the demand.

  cli_tps_dem_init =  cli_tps_base      : base demand
                    + cli_tps_ac        : air conditioner offset
                    + cli_tps_offset    : starting correction
                    + cli_tps_T_air     : air charge temperature correction
                    + cli_tps_P_baro    : ambient pressure correction
                    + cli_tps_V_bat     : battery voltage correction
                    + cli_P             : closed loop proportional term
                    + cli_I             : closed loop integral term

The current value can be viewed as "cli_tps_base" on the dashboard.

This map is for closed-loop idle control with a Fly-by-Wire throttle only.
```

Matrix: Closed Loop Idle Base FBW Throttle Demand (°)

RPM (rpm)

TPS (°)	600	800	1000	1200	1600	2000	4000	6000
50.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
40.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
30.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
20.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
7.5	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
5.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
3.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0

Groups/STANDARD MAPPING/IDLE SPEED CONTROL WITH IGNITION/CLOSED LOOP PARAMETERS:

Integrator Enable Error:

This map is for closed-loop idle control with a Fly-by-Wire throttle only.

Scalar: Integrator Enable Error (rpm)

Integrator Enable Error (rpm)	500

Integrator Enable Engine Run Time:

Integral Control is only enabled when the engine has been running for
longer than this time.

This map is for closed-loop idle control with a Fly-by-Wire throttle only.

Scalar: Integrator Enable Engine Run Time (s)

Integrator Enable Engine Run Time (s)	5.00

Integrator Gain (Negative Error):

This map is for closed-loop idle control with a Fly-by-Wire throttle only.

Matrix: Integrator Gain (Negative Error) (°)

cli_error (rpm)

10	25	50	100	200	400
0.1	0.2	0.3	0.5	0.8	1.1

Integrator Gain (Positive Error):

This map is for closed-loop idle control with a Fly-by-Wire throttle only.

Matrix: Integrator Gain (Positive Error) (°)

cli_error (rpm)

10	25	50	100	200	400
0.0	-0.1	-0.1	-0.2	-0.3	-0.5

Integrator Maximum:

This map is for closed-loop idle control with a Fly-by-Wire throttle only.

Scalar: Integrator Maximum (°)

Integrator Maximum (°)	1.5

Integrator Minimum:

This map is for closed-loop idle control with a Fly-by-Wire throttle only.
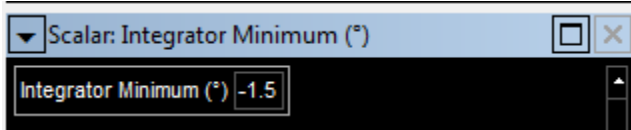
Scalar: Integrator Minimum (°)

Integrator Minimum (°) -1.5

Proportional Gain (Negative Error):

This map is for closed-loop idle control with a Fly-by-Wire throttle only.

Matrix: Proportional Gain (Negative Error) (°)

cli_error (rpm)

	10	25	50	100	200	400
	0.0	0.0	0.0	0.0	0.0	0.0
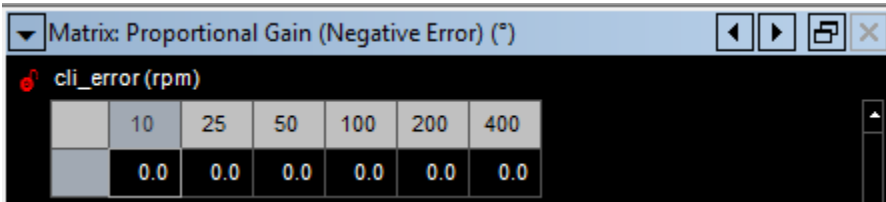
Proportional Gain (Positive Error):

This map is for closed-loop idle control with a Fly-by-Wire throttle only.

Matrix: Proportional Gain (Negative Error) (°)

cli_error (rpm)

	10	25	50	100	200	400
	0.0	0.0	0.0	0.0	0.0	0.0
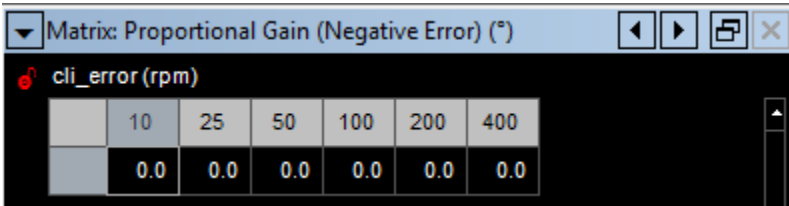
Groups/STANDARD MAPPING/IDLE SPEED CONTROL WITH IGNITION/CLOSED LOOP PARAMETERS/IDLE LEARNING FUNCTIONS:

Idle Learning Engine Speed Window:

The idle learning function is only enabled when the engine speed is within this distance of the closed loop target.

Scalar: Idle Learning Engine Speed Window (rpm)
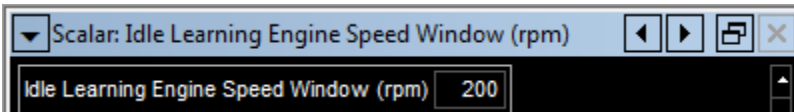
Idle Learning Engine Speed Window (rpm)   200

Idle Learning Enable Time:

The idle learning function is updated if the idle speed has
remained within the "Idle Learning Engine Speed Window" of the
closed loop target for this time.

Scalar: Idle Learning Enable Time (s)

Idle Learning Enable Time (s)   2.00
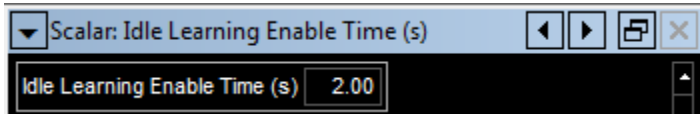
Idle Learning Water Temperature Disable:

The idle learning function is disabled if the engine coolant
temperature exceeds this threshold.

Scalar: Idle Learning Water Temperature Disable (°C)

Idle Learning Water Temperature Disable (°C)   100.0
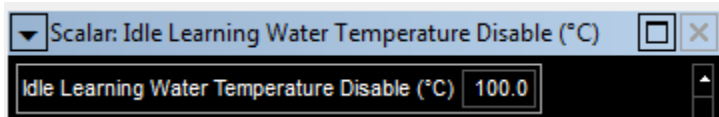
Idle Learning Water Temperature Enable:

The idle learning function is only enabled if the engine coolant
temperature is above this threshold.

Scalar: Idle Learning Water Temperature Enable (°C)

Idle Learning Water Temperature Enable (°C)   50.0
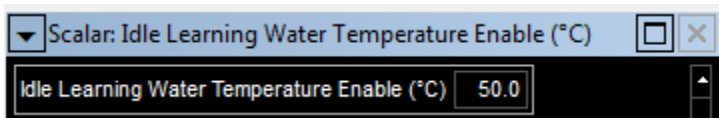
Idle Learning Integrator Target:

This map is for closed-loop idle control with a Fly-by-Wire throttle only.
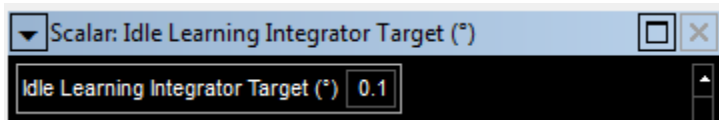
Scalar: Idle Learning Integrator Target (°)

Idle Learning Integrator Target (°)   0.1

Idle Learning Maximum Correction:

This map is for closed-loop idle control with a Fly-by-Wire throttle only.

Scalar: Idle Learning Maximum Correction (°)

Idle Learning Maximum Correction (°)   0.5

Idle Learning Minimum Correction:

This map is for closed-loop idle control with a Fly-by-Wire throttle only.
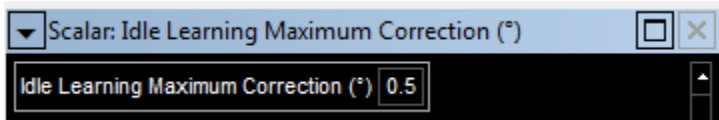
Scalar: Idle Learning Minimum Correction (°)

Idle Learning Minimum Correction (°) -0.5
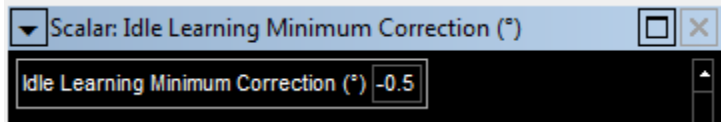
Idle Learning Update Rate:

This map is for closed-loop idle control with a Fly-by-Wire throttle only.

Scalar: Idle Learning Update Rate (deg/Update)

Idle Learning Update Rate (deg/Update) 0.03