FLY BY WIRE SETTINGS: Entries in red, except for charts (18 September 2014)

GROUPS/OUTPUT FUNCTIONS/FBW:

FBW Enabled: ENABLED

FBW Control Frequency: 5000Hz (13Hz to 10000Hz)

FBW Control Minimum Duty: -100%

FBW Control Maximum Duty: 100%

TPS Target Limit Margin: 1.5 Degrees

TPS Closed Value: 8.0 Degrees

TPS Open Value: 90 Degrees

FBW Engine Stopped Timeout: 60000 Ms

PID Integral Reset: DISABLED

DEMANDED TPS RATE OF CHANGE:

Demanded TPS Maximum Rate of Change

Matrix: Demanded TPS Maximum Rate of Change (°/s)

Direction

Condition

	MAX_DEC	MAX_INC
CAL1	0	0
CAL2	0	0
CAL3	0	0
CAL4	0	0
CAL_POT_CAL_CHANGE	500	500
GEAR_POS_CAL_CHANGE	0	0
P2P_CAL_CHANGE	0	0

Demanded TPS Strategy Priority

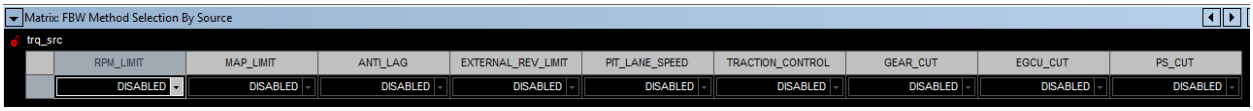
Matrix: Demanded TPS Strategy Priority

Highest_Strategy

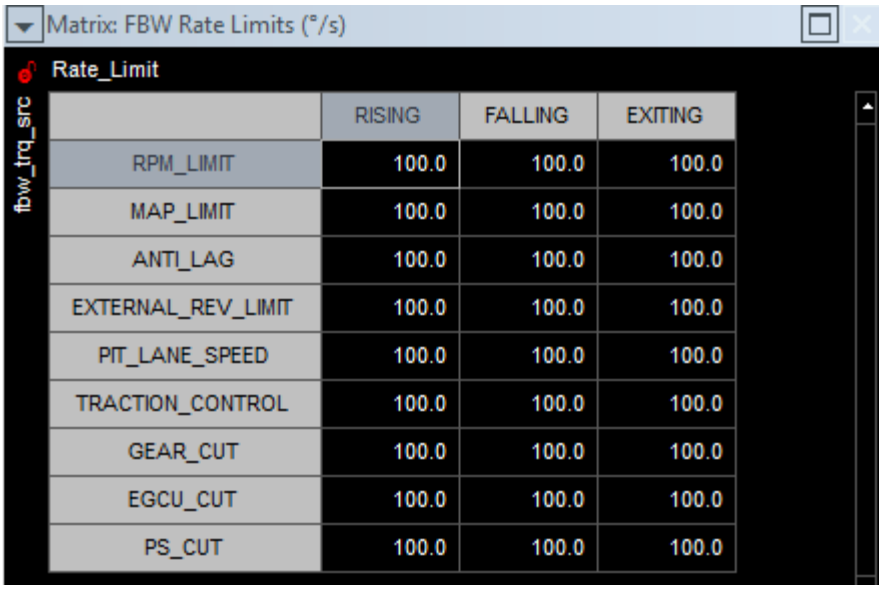
SRC_ALS_BLIP	SRC_TRANSM_BLIP	SRC_ISC	SRC_EBC
USE_LOWEST	USE_LOWEST	USE_LOWEST	USE_LOWEST

TORQUE REDUCTION STRATEGY RATE LIMITS:

FBW Method Selection By Source



FBW Rate Limits

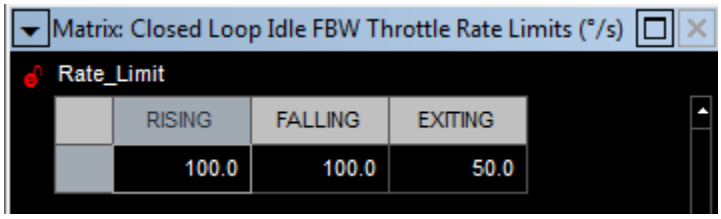


ALS STARTUP BLIP RATE LIMIT:

ALS Startup Blip Ramp-out Rate: 100 Degrees per second

CLOSED LOOP IDLE RATE LIMITS:

Closed Loop Idle FBW Throttle Rate Limits:



PPS DIFFERENCE ERRORS:

Maximum PPS Difference: 5.0 Degrees

PPS Failure Time: 1.00 Second

TPS DIFFERENCE ERRORS:

Maximum TPS Difference: 7 Degrees

TPS Failure Time: 1.00 Second

TPS FEEDBACK ERRORS:

FBW Error Margin: 15 Degrees

FBW Max Out-Of-Margin Time: 1000 Ms

PPS NOISE ERRORS:

PPS Error Decrement Rate: 100.0 Degrees

PPS Noise Threshold: 40.0 degseconds

TPS NOISE ERRORS:

TPS Error Decrement Rate: 100.0 degrees

TPS Noise Threshold: 40.0 degseconds

H-BRIDGE ERRORS:

Half Bridge and PWM Temperature Maximum Threshold Deg C: 125.0

Half Bridge and PWM Temperature Error Time: 3.00 seconds

VOLTAGE REGULATOR ERRORS:

Regulated Excitation Voltage Error Test Enable: DISABLED

Regulated Excitation Voltage Error Time: 0.10 seconds

AUTO-CALIBRATION:

Auto-Cal Enabled: DISABLED

Auto-Cal Trigger: 0h HEX VALUE

Auto-Cal Closed Duty: -45 percent

Auto-Cal Open Duty: 80 percent

Auto-Cal Open Time: 1.00 seconds

Auto-Cal Close Time: 1.00 seconds

Autocal PPS1 Angle at Minimum Voltage: 0.0 degrees

Auto-Cal PPS1 Angle at Maximum Voltage: 100.0 degrees

Auto-Cal PPS2 Angle at Minimum Voltage: 100.0 degrees

Auto-Cal PPS2 Angle at Maximum Voltage: 0.0 degrees

TPS Closed Value: 8.0 degrees

TPS Open Value: 90.0 degrees

RANGE CHECKING:

Auto-Cal Maximum Curve Difference: 10.0 degrees

Auto-Cal PPS1 Maximum Low Voltage: 0.491 volts

Auto-Cal PPS1 Minimum High Voltage: 4.465 volts

Auto-Cal PPS2 Maximum Low Voltage: 0.490 volts

Auto-Cal PPS2 Minimum High Voltage: 4.465 volts

Auto-Cal TPSx1 Maximum Low Voltage: 0.812 volts

Auto-Cal TPSx1 Minimum High Voltage: 4.167 volts

Auto-Cal TPSx2 Maximum Low Voltage: 0.684 volts

Auto-Cal TPSx2 Minimum High Voltage: 4.297 volts

SERIAL DASH DIAGNOSTICS:

Auto-Cal Serial Dash Codes:

FAILURE ACTION:

FBW Kill Engine on Fail: DISABLED

FBW REV Cut on Fail: 6500 RPM

FBW Rev Cut Reinstate on Fail: 5500 RPM

FBW Shutdown Ramp Enable: ENABLED

PID SETTINGS:

FBW PID Mode: LEGACY

LEGACY PID MODE:

PID A SETTINGS:

FBW Integral Minimum A: -100.0 percent

FBW Integral Maximum A: 100.0 percent

FBW Proportional Term A:

Matrix: FBW Proportional Term A (%)

fbwErrA (°)

-25.0	-23.4	-21.9	-20.3	-18.7	-17.2	-15.6	-14.1	-12.5	-10.9	-9.4	-7.8	-6.2	-4.7	-3.1	-1.6	-0.0
-100.0	-96.7	-93.3	-90.0	-86.7	-83.3	-80.0	-76.7	-73.3	-70.0	-66.7	-63.3	-60.0	-56.7	-53.3	-50.0	0.0

1.6	3.1	4.7	6.2	7.8	9.4	10.9	12.5	14.1	15.6	17.2	18.7	20.3	21.9	23.4	25.0
50.0	53.2	56.4	59.6	62.8	66.0	69.3	72.5	75.7	78.9	82.1	85.3	88.5	91.7	94.9	98.1

FBW Integral Gain A:

Matrix: FBW Integral Gain A (%/s)

fbwErrA (°)

-25.0	-23.4	-21.9	-20.3	-18.7	-17.2	-15.6	-14.1	-12.5	-10.9	-9.4	-7.8	-6.2	-4.7	-3.1	-1.6	-0.0
-20.0	-20.0	-20.0	-20.0	-20.0	-20.0	-20.0	-20.0	-20.0	-20.0	-20.0	-20.0	-20.0	-20.0	-15.0	-12.0	0.0

/s)

1.6	3.1	4.7	6.2	7.8	9.4	10.9	12.5	14.1	15.6	17.2	18.7	20.3	21.9	23.4	25.0
8.0	15.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0

FBW Derivative Term A:

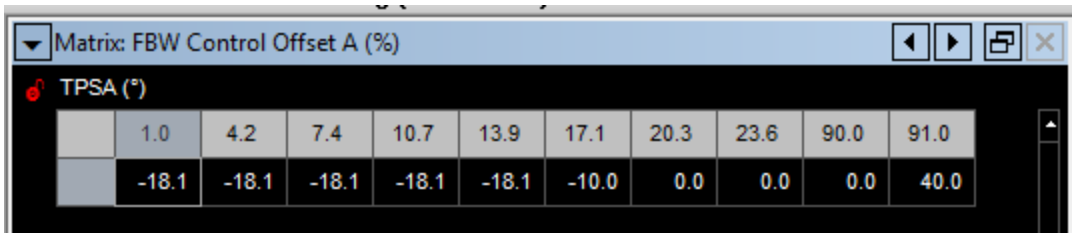
Matrix: FBW Derivative Term A (%)

fbwDeltaErrA (°)

-25.0	-23.4	-21.9	-20.3	-18.7	-17.2	-15.6	-14.1	-12.5	-10.9	-9.4	-7.8	-6.2	-4.7	-3.1	-1.6	-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	0.0

1.6	3.1	4.7	6.2	7.8	9.4	10.9	12.5	14.1	15.6	17.2	18.7	20.3	21.9	23.4	25.0
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

FBW Control Offset A:

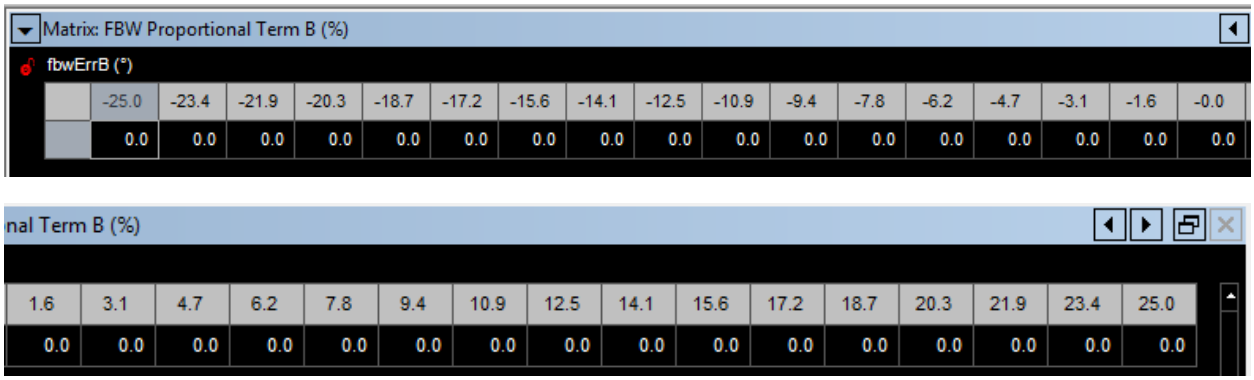


PID B SETTINGS:

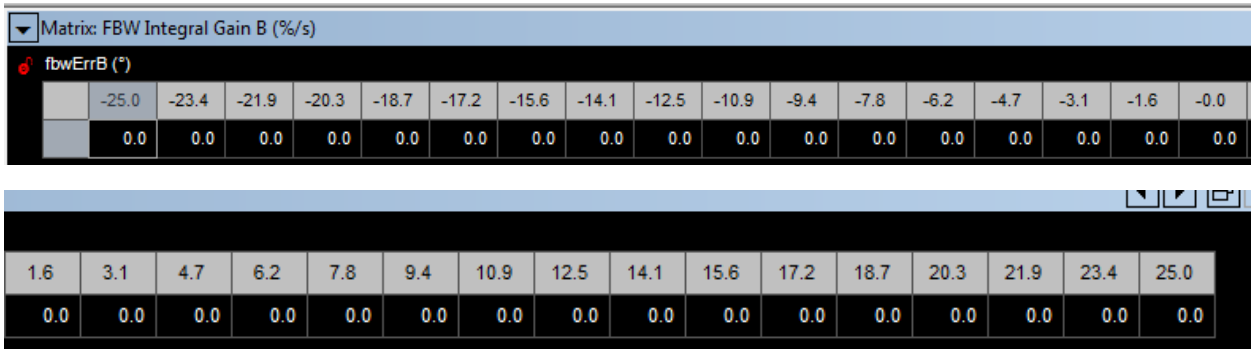
FBW Integral Minimum B: -100.0 percent

FBW Integral Maximum B: 100.0 percent

FBW Proportional Term B:



FBW Integral Gain B:



FBW Derivative Term B:

Matrix: FBW Derivative Term B (%)

fbwDeltaErrB (°)

-25.0	-23.4	-21.9	-20.3	-18.7	-17.2	-15.6	-14.1	-12.5	-10.9	-9.4	-7.8	-6.2	-4.7	-3.1	-1.6	-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	0.0

1.6	3.1	4.7	6.2	7.8	9.4	10.9	12.5	14.1	15.6	17.2	18.7	20.3	21.9	23.4	25.0
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

FBW Control Offset B:

Matrix: FBW Control Offset B (%)

TPSB (°)

0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1
-100.0	-100.0	-100.0	-100.0	-100.0	-100.0	-100.0	-100.0	-100.0	-100.0

ADVANCED PID MODE:

PID A SETTINGS:

FBW Integral Minimum A: -100.0 percent

FBW Integral Maximum A: 100.0 percent

FBW Position Based Proportional Term A:

Matrix: FBW Position Based Proportional Term A (%)

fbwErrA (°)

TPSA (°)	-100.0	-87.5	-75.0	-62.5	-50.0	-37.5	-25.0	-12.5	0.0	12.5	25.0	37.5	50.0	62.5	75.0	87.5	100.0
1.0	-94.6	-89.3	-79.0	-65.0	-53.8	-48.2	-46.9	-46.0	-30.0	-25.0	-20.2	-12.1	-1.8	18.8	34.3	44.6	60.0
4.2	-92.8	-85.7	-72.9	-57.0	-49.0	-45.0	-44.0	-40.1	-30.0	-7.0	15.0	-10.0	0.0	20.0	35.0	45.0	60.0
7.4	-83.9	-73.5	-65.0	-55.0	-50.0	-44.0	-40.0	-35.0	-20.0	10.0	35.0	42.5	50.0	55.0	66.0	70.4	71.8
10.7	-55.0	-50.0	-45.0	-40.0	-30.0	-24.0	-14.0	-5.0	5.0	34.0	37.0	42.5	50.0	55.2	66.2	70.6	72.0
13.9	-55.3	-38.2	-26.9	-9.8	12.9	24.3	27.1	28.8	30.0	35.0	55.0	62.5	69.0	62.1	66.9	71.5	73.0
17.1	-56.1	-38.9	-27.5	-10.3	12.6	24.0	26.9	28.6	30.6	36.6	55.0	62.5	69.9	65.2	69.1	74.1	75.8
20.3	-56.9	-39.2	-27.4	-9.7	13.8	25.6	28.5	30.3	32.3	38.3	55.0	62.5	70.0	68.3	71.3	76.8	78.7
23.6	-57.6	-39.7	-27.8	-9.9	14.0	26.0	29.0	30.7	33.0	38.7	55.0	62.5	70.0	71.5	73.5	79.4	81.5
90.0	-58.4	-40.3	-28.2	-10.0	14.2	26.3	29.3	31.2	33.6	39.2	55.0	62.5	70.0	74.6	75.7	82.1	84.3
91.0	-60.0	-41.4	-28.9	-10.3	14.6	27.0	30.2	32.0	35.0	40.0	55.0	62.5	70.0	75.0	80.2	87.4	90.0

FBW Integral Gain A (%/s)

Matrix: FBW Integral Gain A (%/s)

fbwErrA (°)

-100.0	-87.5	-75.0	-62.5	-50.0	-37.5	-25.0	-12.5	0.0	12.5	25.0	37.5	50.0	62.5	75.0	87.5	100.0
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	0.0

FBW Derivative Term A (%):

Matrix: FBW Derivative Term A (%)

fbwDeltaErrA (°)

-10.0	-8.8	-7.5	-6.2	-5.0	-3.8	-2.5	-1.2	0.0	1.2	2.5	3.8	5.0	6.2	7.5	8.8	10.0
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	0.0

FBW Derivative Delta Period A (ms): 10 ms

PID B SETTINGS:

FBW Integral Minimum B (%): -100 percent

FBW Integral Maximum B (%): 100.0 percent

FBW Position Based Proportional Term B:

Matrix: FBW Position Based Proportional Term B (%)

fbwErrB (°)

TPSB (°)

	-100.0	-87.5	-75.0	-62.5	-50.0	-37.5	-25.0	-12.5	0.0	12.5	25.0	37.5	50.0	62.5	75.0	87.5	100.0
1.0	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	0.0
4.2	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
7.4	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
10.7	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
13.9	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
17.1	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
20.3	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
23.6	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
90.0	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	0.0
91.0	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	0.0

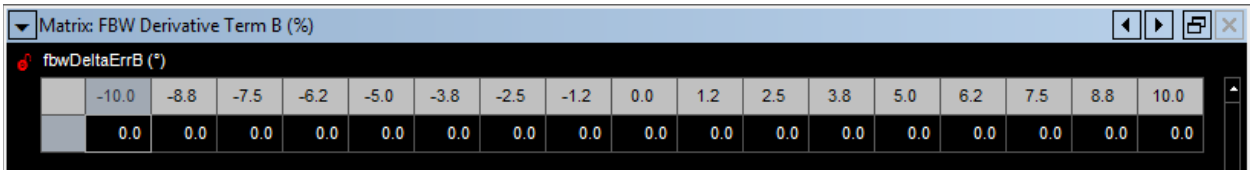
FBW Integral Gain B (%/s):

Matrix: FBW Integral Gain B (%/s)

fbwErrB (°)

-100.0	-87.5	-75.0	-62.5	-50.0	-37.5	-25.0	-12.5	0.0	12.5	25.0	37.5	50.0	62.5	75.0	87.5	100.0
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	0.0

FBW Derivative Term B (%):



FBW Derivative Delta Period B (ms): 10 ms

PART-RANGE THROTTLE:

TPSA:

TPS A Part Range Throttle Enable: DISABLED

TPS A Part-Range Threshold Angle: 60 degrees

TPS A Part-Range Headroom Angle: 2.0 degrees

TPS B:

TPS B Part-Range Throttle Enable: DISABLED

PART-RANGE THROTTLE: TPS B; TPS B Part-Range Threshold Angle: 60 degrees

PART-RANGE THROTTLE: TPS B; TPS B Part-Range Headroom Angle: 2.0 degrees

FBW PWM OUT:

FBW Output Function PWM Frequency: 50 Hz

FBW PWM OUT: FBW Output Function Service Time (ms): 100 ms

GROUPS/ANALOG SENSOR SETUP/CONTROL SENSORS/

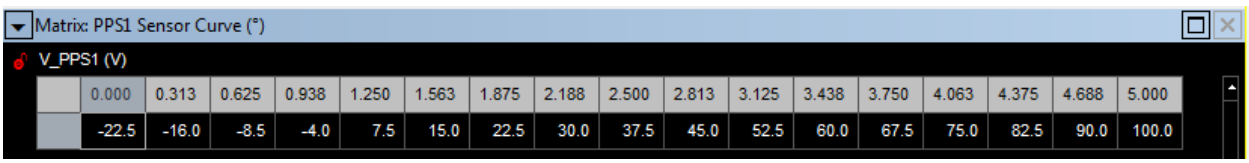
PEDAL POSITION SENSOR (PPS):

Pedal Position Sensors Input Select: ANALOG INPUT

PPS1 SENSOR

PPS1 SENSOR: PPS1 Sensor Type: USER_DEFINED

PPS1 SENSOR: PPS1 Sensor Curve: PPS #01; Bullett SpeedWeek 2016



PPS1 SENSOR: PPS1 Sensor Curve: PPS #02; Road Toad

Matrix: PPS1 Sensor Curve (°)

V_PPS1 (V)

0.000	0.313	0.625	0.938	1.250	1.563	1.875	2.188	2.500	2.813	3.125	3.438	3.750	4.063	4.375	4.688	5.000
-25.0	-16.7	-8.3	-2.0	3.5	10.5	20.0	30.0	38.0	47.0	56.0	63.0	73.0	81.0	90.0	97.5	108.3

PPS1 SENSOR: PPS1 Sensor Curve: PPS #03; Test Bench

Matrix: PPS1 Sensor Curve (°)

V_PPS1 (V)

0.000	0.313	0.625	0.938	1.250	1.563	1.875	2.188	2.500	2.813	3.125	3.438	3.750	4.063	4.375	4.688	5.000
-25.0	-16.7	-10.0	-5.0	2.0	12.0	22.5	33.3	42.0	52.0	60.0	71.0	81.0	89.0	95.0	100.0	107.0

PPS1 SENSOR: Minimum PPS1 Position: 0.0 degrees

PPS1 SENSOR: Maximum PPS1 Position: 120.0 degrees

PPS1 SENSOR: Minimum PPS1 Voltage: 0.021 volts

PPS1 SENSOR: Maximum PPS1 Voltage: 4.935 volts

PPS1 SENSOR: Failed PPS1 Position: 2.0 degrees

PPS1 SENSOR: PPS1 Failure Time (ms): 1000 ms

PPS1LINEAR POT SETUP

PPS1 Voltage 1: 0.256 volts

PPS1 Position 1: 0.0 degrees

PPS1 Voltage 2: 4.700 volts

PPS1 Position 2: 100.0 degrees

PPS2 SENSOR

PPS2 Sensor Type: USER_DEFINED

PPS2 Sensor Curve: PPS #01; Bullett SpeedWeek 2016

Matrix: PPS2 Sensor Curve (°)

V_PPS2 (V)

0.000	0.313	0.625	0.938	1.250	1.563	1.875	2.188	2.500	2.813	3.125	3.438	3.750	4.063	4.375	4.688	5.000
97.5	90.0	82.5	75.0	67.5	60.0	52.5	45.0	37.5	30.0	22.5	15.0	7.5	-3.0	-10.5	-17.5	-22.5

PPS2 Sensor Curve: PPS #02 ; Road Toad

Matrix: PPS2 Sensor Curve (°)

V_PPS2 (V)

0.000	0.313	0.625	0.938	1.250	1.563	1.875	2.188	2.500	2.813	3.125	3.438	3.750	4.063	4.375	4.688	5.000
109.1	103.5	96.0	85.3	74.7	63.6	54.5	45.5	36.4	27.3	18.2	9.1	2.0	-10.0	-20.0	-30.0	-40.0

PPS2 Sensor Curve: PPS #03; Test Bench

Matrix: PPS2 Sensor Curve (°)

V_PPS2 (V)

0.000	0.313	0.625	0.938	1.250	1.563	1.875	2.188	2.500	2.813	3.125	3.438	3.750	4.063	4.375	4.688	5.000
105.0	98.0	94.0	85.3	74.7	63.6	54.5	44.5	36.4	27.3	18.2	9.1	0.0	-10.0	-20.0	-30.0	-40.0

Minimum PPS2 Position: 0.00 degrees

Maximum PPS2 Position: 105.0 degrees

Minimum PPS Voltage: 0.020 volts

Maximum PPS2 Voltage: 4.935 volts

Failed PPS2 Position: 2.0 degrees

PPS2 Failure Time: 1000.0 milliseconds

PPS2 LINEAR POT SETUP

PPS2 Voltage 1: 4.700 volts

PPS2 Position 1: 0.0 degrees

PPS2 Voltage 2: 0.254 volt

PPS2 Position 2: 100.0 degrees

CLOSED PPS SETUP

Initial PPS Minimum: 3.5 degrees

Closed PPS Window: 0.5 degrees

Closed PPS Hysteresis: 0.5 degrees

GROUPS/ANALOG SENSOR SETUP/CONTROL SENSORS/

THROTTLE POSITION SENSOR (TPS):

TPSA1 SENSOR

TPSA1 SENSOR: Throttle Position Type: USER_DEFINED

TPSA1 SENSOR: Throttle Position Software Filter: 30.0 percent

TPSA1 SENSOR: Throttle Position Sensor Curve: Bullett SpeedWeek 2016

Matrix: Throttle Position Sensor Curve (°)

V_TPS (V)

0.000	0.313	0.625	0.938	1.250	1.563	1.875	2.188	2.500	2.813	3.125	3.438	3.750	4.063	4.375	4.688	5.000
-1.0	5.5	12.0	18.9	25.8	32.7	39.6	46.5	53.5	60.4	67.3	74.4	81.1	88.0	94.9	101.8	108.7

Bench:

Matrix: Throttle Position Sensor Curve (°)

V_TPS (V)

0.000	0.313	0.625	0.938	1.250	1.563	1.875	2.188	2.500	2.813	3.125	3.438	3.750	4.063	4.375	4.688	5.000
-6.9	0.5	9.0	15.5	22.9	30.4	37.8	45.3	52.7	60.2	67.6	75.1	82.5	90.0	97.5	104.9	112.4

TPSA1 SENSOR: Throttle Position Sample Rate: 200 Hz

TPSA1 SENSOR: Minimum Throttle Position: 0.0 degrees

TPSA1 SENSOR: Maximum Throttle Position: 105.0 degrees

TPSA1 SENSOR: Minimum Throttle Voltage: 0.184 volts

TPSA1 SENSOR: Maximum Throttle Voltage: 4.796 volts

TPSA1 SENSOR: Failed Throttle Position: 14.0 degrees

TPS A1 SENSOR: Failure Time (ms): 1000 ms

TSPA1 LINEAR POT SETUP

TPSA1 Voltage 1: 0.498 volts

TPSA1 Position 1: 8.0 degrees

TPSA1 Voltage 2: 4.482 volts

TPSA1 Position 2: 90.0 degrees

ANALOG SENSOR SETUP/CONTROL SENSORS/THROTTLE POSITION SENSOR (TPS):

TPSA2 SENSOR

TPSA2 SENSOR: TPSA2 Sensor Type: USER_DEFINED

TPSA2 SENSOR: TPSA2 Sensor Curve:

Matrix: TPSA2 Sensor Curve (°)

V_TPSA2 (V)

0.000	0.313	0.625	0.938	1.250	1.563	1.875	2.188	2.500	2.813	3.125	3.438	3.750	4.063	4.375	4.688	5.000
112.4	104.9	97.5	90.0	82.5	75.1	67.6	60.2	52.7	45.3	37.8	30.4	22.9	15.5	8.0	0.6	-6.9

Bench:

Matrix: TPSA2 Sensor Curve (°)

V_TPSA2 (V)

0.000	0.313	0.625	0.938	1.250	1.563	1.875	2.188	2.500	2.813	3.125	3.438	3.750	4.063	4.375	4.688	5.000
112.4	104.9	97.5	90.0	82.5	75.1	67.6	60.2	52.7	45.3	37.8	30.4	22.9	15.0	7.8	0.5	-6.9

TPSA2 SENSOR: Minimum TPSA2 Position: 0.0 degrees

TPSA2 SENSOR: Maximum TPSA2 Position: 105.0 degrees

TPSA2 SENSOR: Minimum TPSA2 Voltage: 0.380 volts

TPSA2 SENSOR: Maximum TPSA2 Voltage: 4.943 volts

TPSA2 SENSOR: Failed TPSA2 Position: 14.0 degrees

TPSA2 SENSOR: TPSA2 Failure Time (ms): 1000 ms

TPSA2 LINEAR POT SETUP

TPSA2 Voltage 1: 4.620 volts

TPSA2 Position 1: 8.0 degrees

TPSA2 Voltage 2: 0.361 volts

TPSA2 Position 2: 90.0 degrees

TPSB2 SENSOR: We do not have a second TPS.

PPS1/PPS2: I measured these two ways: (1) With a separate 5VDc Power supply direct to PPS assembly and (2) with CalTool 3.6
through the wiring harness:

(1) With 5VDc Power Supply to PPS:

PPS1 Fully Closed	0.25VDc	PPS2 Fully Closed	4.75VDc
PPS 1 Rest Position	1.0VDc	PPS2 Rest Position	4.00VDc
PPS 1 Fully Open	4.75VDc	PPS2 Fully Open	0 .250VDc

(2) Via Sq6M/CalTool 3.4

PPS1 Fully Closed	0.256VDc	PPS2 Fully Closed	4.700VDc
PPS1 Rest Position	1.050VDc	PPS2 Rest Position	3.938VDc
PPS1 Fully Open	4.700VDc	PPS2 Fully Open	0.254VDc

TPSA1/TPSA2: I measured these two ways: (1) With a separate 5VDc Power supply direct to Bosch FBW assembly and (2) with CalTool 3.6 through the wiring harness:

(1) With 5VDc Power Supply to Bosch FBW:

TPSA1 Fully Closed	0.490VDc	TPSA2 Fully Closed	4.53VDc
TPSA1 Rest Position	0.757VDc	TPSA2 Rest Position	4.27VDc
TPSA1 Fully Open	4.660VDc	TPSA2 Fully Open	0.35VDc

(2) Via SQ6M/CalTool 3.4

TPSA1 Fully Closed	0.498VDc	TPSA2 Fully Closed	4.482VDc
TPSA1 Rest Position	0.748VDc	TPSA2 Rest Position	4.230VDc
TPSA1 Fully Open	4.620VDc	TPSA2 Fully Open	0.361VDc

Gradual Opening (Degrees)

PPS1: 1.0 2.6 5.7 10.0 18.6 26.2 34.9 44.9 58.2 68.7 77.7 87.8 95.4 100
PPS2: 1.0 2.6 5.7 10.0 18.5 25.8 35.7 45.6 58.2 68.4 77.7 87.5 94.9 100

TPSA1: 9.0 14.6 22.8 30.5 39.8 47.0 64.1 74.5 84.5 85.6
TPSA2: 10.1 16.2 22.7 30.2 39.6 47.0 64.1 74.2 83.8 85.4

PPS to TPS Mapping Calibration1 (same for Cal1-Cal4)

Matrix: PPS to TPS Demand Mapping Cal 1 (°)

PPS (°) / RPM (rpm)

RPM (rpm)	0.0	4.1	8.3	12.5	16.6	20.8	25.0	29.1	33.3	37.5	41.6	45.8	50.0	54.1	58.3	62.5	66.6	70.8	75.0	79.1	83.3	87.5	91.6	95.8	100.0
875	10.0	11.0	12.5	17.5	22.0	26.1	29.5	34.5	37.7	41.0	44.1	47.4	50.6	53.8	57.0	60.3	63.4	66.7	69.8	77.0	82.0	86.0	87.0	88.0	89.0
1250	10.0	11.0	12.5	17.5	22.0	28.1	31.3	34.5	37.7	41.0	44.1	47.4	50.6	53.8	57.0	60.3	63.4	66.7	69.9	77.0	82.0	86.0	87.0	88.0	89.0
1625	10.0	11.0	12.5	17.5	22.0	28.1	31.3	34.5	37.7	41.0	44.1	47.4	50.6	53.8	57.0	60.3	63.4	66.7	69.9	77.0	82.0	86.0	87.0	88.0	89.0
2000	10.0	11.0	12.5	17.5	22.0	28.1	31.3	34.5	37.7	41.0	44.1	47.4	50.6	53.8	57.0	60.3	63.4	66.7	69.9	77.0	82.0	86.0	87.0	88.0	89.0
2375	10.0	11.0	12.5	17.5	22.0	28.1	31.3	34.5	37.7	41.0	44.1	47.4	50.6	53.8	57.0	60.3	63.4	66.7	69.9	77.0	82.0	86.0	87.0	88.0	89.0
2750	10.0	11.0	12.5	17.5	22.0	28.1	31.3	34.5	37.7	41.0	44.1	47.4	50.6	53.8	57.0	60.3	63.4	66.7	69.9	77.0	82.0	86.0	87.0	88.0	89.0
3125	10.0	11.0	12.5	17.5	22.0	28.1	31.3	34.5	37.7	41.0	44.1	47.4	50.6	53.8	57.0	60.3	63.4	66.7	69.9	77.0	82.0	86.0	87.0	88.0	89.0
3500	10.0	11.0	12.5	17.5	22.0	28.1	31.3	34.5	37.7	41.0	44.1	47.4	50.6	53.8	57.0	60.3	63.4	66.7	69.9	77.0	82.0	86.0	87.0	88.0	89.0
3875	10.0	11.0	12.5	17.5	22.0	28.1	31.3	34.5	37.7	41.0	44.1	47.4	50.6	53.8	57.0	60.3	63.4	66.7	69.9	77.0	82.0	86.0	87.0	88.0	89.0
4250	10.0	11.0	12.5	17.5	22.0	28.1	31.3	34.5	37.7	41.0	44.1	47.4	50.6	53.8	57.0	60.3	63.4	66.7	69.9	77.0	82.0	86.0	87.0	88.0	89.0
4625	10.0	11.0	12.5	17.5	22.0	28.1	31.3	34.5	37.7	41.0	44.1	47.4	50.6	53.8	57.0	60.3	63.4	66.7	69.9	77.0	82.0	86.0	87.0	88.0	89.0
5000	10.0	11.0	12.5	17.5	22.0	28.1	31.3	34.5	37.7	41.0	44.1	47.4	50.6	53.8	57.0	60.3	63.4	66.7	69.9	77.0	82.0	86.0	87.0	88.0	89.0
5375	10.0	11.0	12.5	17.5	22.0	28.1	31.3	34.5	37.7	41.0	44.1	47.4	50.6	53.8	57.0	60.3	63.4	66.7	69.9	77.0	82.0	86.0	87.0	88.0	89.0
5750	10.0	11.0	12.5	17.5	22.0	28.1	31.3	34.5	37.7	41.0	44.1	47.4	50.6	53.8	57.0	60.3	63.4	66.7	69.9	77.0	82.0	86.0	87.0	88.0	89.0
6125	10.0	11.0	12.5	17.5	22.0	28.1	31.3	34.5	37.7	41.0	44.1	47.4	50.6	53.8	57.0	60.3	63.4	66.7	69.9	77.0	82.0	86.0	87.0	88.0	89.0
6500	10.0	11.0	12.5	17.5	22.0	28.1	31.3	34.5	37.7	41.0	44.1	47.4	50.6	53.8	57.0	60.3	63.4	66.7	69.9	77.0	82.0	86.0	87.0	88.0	89.0

The attached files are from my 126CID (2064cc) Test bike. It mimmicks the Bonneville

bike in terms of sensors.

Variances between the two bikes:

1. The Bonneville bike is 139CID (2277cc). My test bike is 126CID (2064cc). Both have 32-2 crank sensors. Both are batch fire. Neither have any cam sensor, only the crank tooth sensor.

2. The Bonneville bike has (2) EV14 ID2000cc injectors. My test bike has (2) EV14 ID1300cc.

3. My test bike has a 60 tooth front wheel sensor and a 4th Gear Transmission sensor (computes to 68 teeth).

4. The Bonneville Bike has one 60 tooth sensor on front wheel and reads the rear wheel speed via 4th gear 41T transmission sensor (w/jackshaft computes to 49.74T)

5. Traction Control/Gearing: Hz signal F/R Wheels: Calculated @ 3000 RPM in 5th Gear:
Test Bike Front 1081Hz Rear 1233Hz
Bonneville Bike Front 2951Hz Rear 1534Hz Note: Bonneville Bike is geared for 302 mph @6500 rpm in 5th gear.

6. Both are setup for phase anti-phase. There is no need to run more than about 2.33 Bar Boost.

7. The race bike and the Bonneville bike both have 5 speed transmissions but the gear ratios are different

Test Bike: 3.21; 2.21; 1.57; 1.23; 1.0

Race Bike: 2.91; 1.93, 1.31; 1.0; .867

8. At Bonneville a 10% slip F/R in high gear is normal. The surface varies all over the place…salt, wet salt etc.
