N54 Tune Comparison	JB3 2.0/BT	PROcede v4	Standback™ 2 EMS	Eurocharged (Stage 1)	GIAC Flash (Stage 1)	Dinan Flash (Stage 2)	Definitions
Retail Price (Data as of 9/1/2010)	$699.00	$1095 / $945†	$901.98	$499.00	$800.00	$2,199.00 requires oil cooler	Price of tune
Requirements							Requirements before installation
Installation Time	30 - 45 min	30 - 45 min	30 - 45 min	< 1 hour	< 1 hour	< 1 hour	Time it takes to install
Installation (Home/Dealer)	Home	Home	Home	Home/Dealer	Dealer	Dealer	Place of installation
Installs through	ECU	ECU	ECU	OBD2 port	OBD2 port	OBD2 port	Installs through ECU or OBD2
Type of Tune	Piggyback (PnP)	Piggyback (PnP)	Piggyback (PnP)	Flash	Flash	Flash	Piggyback = Hardwire / Flash = Software
Compatible with AT/MT/DCT/XDrive	✓	✓	✓	✓	✓	✓	Compatible Drivetrains
Maps							
Diagnostic invisibility	✓	✓	✓	†† Handheld Programmer			Dealer detection of tune installed
Store/Preset Maps/Stages	13	3	2	1	1 (Future 4)	1	Number of maps stored in unit memory
Map/Stage Selection	Progressive (100)	Progressive (100)	Unlimited	-	-	-	Defines the maximum boost level of any given map
Custom Adjustable Mapping				-	-	-	Adjust different parameters in a given map
Time it takes to switch map	7 - 10 seconds	1 - 2 seconds	1 - 10 seconds	-	-	-	Amount of time it takes to switch a map
Map Switching	Before engine start*	On-the-fly	On-the-fly	†† Handheld Programmer	(FLASHLOADER)†††	-	How to change a map of the tune
User Software Interface				-	-	-	Windows software interface
Power							
Average Power Gains HP (Stock)	60-80	60-80	60-80	45-50	40-50	50-60	Average horse power gains over stock
Average Power Gains TQ (Stock)	65-80	65-80	65-75	50-60	50-60	60-70	Average torque power gains over stock
Dynojet numbers RWHP (dci, 91 oct)	367 (map 5)	356 (stage 1)	330 (14psi)	327	329	332	Dynoed numbers with a dci & 91 octane
Dynojet numbers RWHP (Full mods, 91 oct)	385 (map 7)	390 (stage 3)	360 (14psi)	351	350	359	Dynoed numbers with full mods, 91 octane
Dynojet numbers RWHP NITROUS (Full mods, race gas)	542HP	564TQ	485HP	520TQ	-	-	-	-	Dynoed numbers with full mods & Nitrous
Turbo boost psi peak	22	20	User defined	12	13.7	13.2	Peak psi each tune makes depending on mods
Number of reported cars in the 11s	20	5	0	0	0	0	Cars running ¼ mile in less than 12 seconds
Features							
CPS Offsetting		✓	✓	n/a	n/a	n/a	Phases shifting of the crank position sensor waveform to induce timing retard/advance
Full boost control	✓	✓	✓	✓	✓	✓	A tune's absolute control over the boost control solenoid and boost set-point (boost target)
Full fuel control	✓	✓	✓	✓	✓	✓	A tune's ability to achieve any given AFR under any given condition
Methanol Integration/Compatible	Both	Both	Both	Compatible	Compatible	Compatible	Use of Methanol with tune
Nitrous Integration/Compatible	Both	Both	Compatible	Compatible	Compatible	Compatible	Use of Nitrous with tune
Progressive methanol mapping	-	✓	-	-	-	-	The more meth flows, the more aggressive the map settings will become
Overboost Protection and other safety features	✓	✓	✓	✓	✓	✓	Protects turbos against over-spooling
Laptop connectivity, datalogging, & custom tuning	✓	✓	✓	Dealer	Dealer	Dealer	Use of laptop to data-log and custom tune
IN-DASH Boost Gauge	(Future)	✓	✓	-	-	-	Display Boost/Information on your dash board
Instantaneous data display in graph	-	-	✓	-	-	-	Display instantaneous real-time data on laptop
Diagnostic code read/clear ECU codes	BT Tool **	✓	✓	BT Tool **	BT Tool **	BT Tool **	Read & Clear ECU codes
Clear tuner codes	BT Tool **	✓	BT Tool **	BT Tool **	BT Tool **	BT Tool **	Clears tuner codes from ECU
Compatible with BT Cable	✓	(Valet Mode)	✓	✓	✓	✓	Use the Bavarian Technic Diagnostic Tool for BMW
Removes speed limiter	(BMS SLD) ***	✓	✓	-	✓	✓	Removes the governor to increase top speed
Drivability							
Enhanced throttle reaction	✓	✓	✓	✓	✓	✓	Improved response on throttle
Smooth power transitions	✓	✓	✓	✓	✓	✓	Puts down more power to wheels
Higher rev limiter	-	-	-	-	-	-	Removes the 7000 RPM Rev Limiter
Optional Downpipes/FMIC/DCI/Exhaust	✓	✓	✓	✓	✓	✓	Installation of mods
Engine Parameter Reads							
02 VOLTAGE		✓	✓	✓	✓	✓	Signal from the o2 sensor. In this case, the 0-1v signal from the rear (post cat) o2 sensors. Also called post cat lambda sensor.
AFR Monitor		✓	✓	✓	✓	✓	Air/Fuel ratio monitoring of either the rear o2 sensor voltage or the actual nominal lambda signal from the CAN network
AMBIENT PRESSURE	✓	✓	✓	✓	✓	✓	Pressure at the TMAP sensor. Basically atmospheric pressure
APPLIED TPS	✓	✓	✓	✓	✓	✓	Throttle position / Gas pedal sensor
BOOST	✓	✓	✓	✓	✓	✓	Increase in pressure (psi)
DME BOOST ACTUAL	✓	✓	✓	✓	✓	✓	The DME's value for boost. i.e., what it is seeing
DME BOOST TARGET		✓	✓	✓	✓	✓	The DME's value for boost target. i.e., what it wants to see
FUEL PRESSURE	✓	✓	✓	✓	✓	✓	Flow of fuel
IAT	✓	✓	✓	✓	✓	✓	Inlet air temp (Air intake temperature)
IGNITION ADVANCE		✓	✓	✓	✓	✓	Actual ignition advance angle
KNOCK STATUS		✓	✓	✓	✓	✓	Active Knock Monitoring
MANIFOLD PRESSURE		✓	✓	✓	✓	✓	The amount of pressure in the manifold (upstream of the throttle). This can be vacuum (when below ambient pressure) or boost (when above it)
O2 Simulator		✓	✓	-	-	-	A feature designed to adjust rear o2 sensor voltage so that the DME sees normal voltage swings that it would associate with a fully catted exhaust system
OIL TEMP SENSOR		✓	✓	✓	✓	✓	Monitors oil temperature
ROADSPEED (MPH)		✓	✓	✓	✓	✓	Monitors how fast car is traveling in MPH
RPM	✓	✓	✓	✓	✓	✓	Engine Speed in revolutions per minute
System Voltage		✓	✓	✓	✓	✓	System voltage
THROTTLE BLADE POSITION		✓	✓	✓	✓	✓	The angle of the actual throttle blade. This is controlled by the DME

	JB3	Vishnu	CP-E	Eurocharged	Giac	Dinan	
[WASTEGATE DC](#)	✔	✔	✔	✔	✔	✔	The relative "open" time of the boost control solenoids. 100% is full open. 0% is full closed. 50% is pulsing open and closed in equal intervals
WATER TEMP		✔		✔	✔	✔	Measures car water temperature
User Adjustable Parameters							
02 Modifier	[(BMS DPFIX)](#)	✔	-	-	-	-	Suppress catalytic conversion/inefficiency codes
Barometric Compensation		✔	-	-	-	-	Boost targets are reduced as a function of barometric pressure
Bog Fix	✔	Built-in		-	-	-	Option to hold more boost through high RPM shifts
Boost	✔	✔	✔	-	-	-	Maximum allowable boost on the current map
CanClear	-	✔	-	-	-	-	It prevents "tuner" codes from ever triggering dashboard lights
Cold Start	✔	Built-in		-	-	-	JB3 will switch to map 0 each time you start the car
Fuel	✔	Built-in	✔	-	-	-	Amount of fuel enrichment being added
Future Use	✔	✔		-	-	-	Setting for tuner to implement for future use
IAT Decay	✔			-	-	-	Boost taper based on air intake temperature
Ign Correction		✔	✔	-	-	-	The amount of positive or negative ignition timing/advance adjustment the tune/dme is inducing at any given time
Lag Fix	✔	Built-in	Built-in	-	-	-	Controls the default wastegate position during cruise
Pedal Target	✔	-	-	-	-	-	Adjusts how aggressive you want the throttle response
Speed Delimiter		✔		-	-	-	Removes factory top speed limit
Throttle Response/Gain	✔	✔	✔	-	-	-	Controls how aggressively the tune attempts to meet the boost
Torque	✔	✔	✔	-	-	-	Increase in low-end boost
Traction Assistance	✔	✔		-	-	-	Designed to reduce power off the line or in low gears
Wastegate Position	✔	✔	✔	-	-	-	The position of the wastegate actuator/flapper door
Company							
Money back satisfaction guarantee	**14 days**	**15 days**	**18% restocking fee**	**None**	**30 days**	**30 days**	Return policy
Manufacture's Websites	www.burgertuning.com	www.vishnutuning.com	www.cp-e.com	www.eurocharged.com	www.giacusa.com	www.dinancars.com	Website
Manufacture's software download	www.n54tech.com	www.vishnutuningforum.com	-	-	-	-	Download page
Free downloadable software/map updates	✔	✔	-	-	-	-	Free software and map updates
Staff technical support number	**(805) 660-6227**	**(866) 584-7531**	**(301) 576-6142**	**(630) 496-8660**	**(949) 724-0014**	**(800) 341-5480**	Phone number
Staff technical support email	terry@burgertuning.com	sales@vishnutuning.com	support@cp-e.com	sales@eurocharged.com	sales@giacusa.com	-	Email address

Do-it-Yourself

		Mods for N54
[Procede v4 USB Cable Through Firewall into Glove box](#)	[JB3 2.0 USB Cable install for through the firewall](#)	[FMIC - Front mounted intercooler](#)
[Vishnu "PnP" Methanol kit installation ($875)](#)	[BMS Methanol kit installation ($599)](#)	[Catless DPS - Catless downpipes](#)
[† e90post Price](#)	[†† Handheld Programmer](#) [††† GIAC Flashloader](#)	[DCI - Dual Cone Intake](#)
* On the fly switching available via Laptop, hardwired switch, or P3 vent gauge		[Oil Catch Can](#)
[** BAV TECH BMW SCAN TOOL](#)		[LSD - Limited slip differential](#)
[*** BMS Speed Limit Defeat removes speed limiter ($150)](#)	[BMS Downpipe Fix ($80)](#)	[Index of E90/E92/E93_DIY](#)

User Software Interface is windows compatible. Mac user will have to run: [Boot Camp ($0)](#)   [Parallels 5 ($79.99)](#)   [VMWARE 3.1 ($79.99)](#)

JB3 2.0 Extra Features

Adjustable Bogfix - Increases the amount of boost held through fast manual shift

Adjustable pedal target - 0% = stock boost until 75% throttle, while 100% = full boost target at 50% throttle input. Settings of 30-70 seem to work best. 50 is default.

Cold start - When enabled the JB3 will switch itself to map 0 each time you start the car and remain there until you reach desire throttle position

Full P3 vent gauge compatibility - Store 4 maps to switch from the vent gauge

Traction Assist - Designed to reduce power off the line or in low gears

JB3 Safety System

Boost limit - User adjustable maximum allowable boost. Exceeding this value will result in an automatic switch to the stock map.

Fuel pressure limit - Minimum allowable Fuel pressure at full throttle. exceeding this value will result in an automatic switch to the stock map.

Load resistors - Limits the maximum allowable duty cycle preventing the tune (even if misadjusted by the user) from exceeding a specific duty cycle. Exceeding the limit will result in a 30FF underboost code.

PWM limit - Maximum allowable duty cycle before user receives a 30FF underboost code.

Interface:

Fully netbook compatible screen resolution.

Single file firmware/mapping for each update. No chance of mismatched firmware/maps and no need to upload new maps for different stages or transmissions.

User adjustable air intake temperature decay. Can double as software based methanol safety.

User adjustable air/fuel ratios.

User adjustable boost control parameters (throttle gain, pid gain, etc)

User adjustable lagfix (wastegate position during cruise)

User adjustable low end and high end boost.

User adjustable top end boost taper.

Map switch differences:
13 maps + stock map accessible from drivers seat without use of laptop.
Compatible with hardwire map switch ($2 switch) for 3 map selection and confirmation from glove box.
Fully compatible with P3 vent gauge for on the fly map switching with user selectable maps for each of the four map positions.
Map switching via laptop interface.
Optional "cold start" mode - auto map switch out of map 0 when getting on the throttle.

PROcede v4 Extra Features

1st and 2nd gear User Torque Adjustable (0-100%) - Same as above. But specific to gear selection. Reducing this setting in 1st gear can greatly improve traction in some conditions.

6MT CANshift - Accelerate the time it takes for the actual throttle to ramp back up to 100% after a shift. It also prevents the throttle from closing fully during quick shifting. Which means that it is *very* easy to hold 6-10psi of boost between shifts.

Active Dash Display Map - Keep track/display active map number.

Adjustable Learning Gain (Future Use 2 adjustable) - Not exactly new but some of you may not know what it does and why it is useful to adjust it. To learn what it does and how to set it for you particular car, please go The Basic v4 Custom Tuning Guide. Dialing this value in properly will make your car faster and more enjoyable. The Default value is 45.

AutoTuning - The Procede, not only offers timing control, it also has the ability to quantify how aggressive the tune, at any given condition/moment, by monitoring knock control activity through its CANbus integration. With a few hundred lines of clever code logic the Procede has the ability to AUTOMATICALLY adjust Fuel, Timing and Boost settings as a function of how the engine is running. This means that it will AUTOMATICALLY compensate for changes in conditions, changes in modifications, changes in fuel qualities, etc,.

Built-in Code Reading/Clearing - The Procede also gives you the ability to read and clear all DME diagnostic codes. This means that there is no need to purchase an expensive third party diagnostic tool! Clearing codes doesn't even require the use of a laptop. Very simple to use.

CANbus Integration - By reading CAN data directly, the PROcede can monitor (in real-time) things like boost target, boost error, manifold pressure, actual throttle position, etc.

CANclear Catalyst - The CANfeature that actively prevents can inefficiency codes from triggering when running catless exhaust systems. With this approach, there is no need to modify the rear o2 sensor signals-- which has unwanted side-effects.

CANclear Tuner - This means all the usual codes typically associated with running a tune such as all 3 tuner codes, fuel pump plausibility and the "burn out" code triggered by doing a burn out at the drag strip
Note: The CANclear feature automatically disables itself when any codes, other than the ones mentioned above, are triggered. This is so that any other potential problem does not go unnoticed.

Dual Bank Wideband AFR Monitoring - Reads & monitors ACTUAL Air/Fuel Ratio channels. The Procede actively monitors BOTH these channels every time the engine goes on boost. If AFR ever goes leaner than the desired threshold, it triggers a self-protective valet mode accompanied by a single SES light flash every 5 seconds indicating a Leanrun fault condition.

Global learning gain - The scale that dictates the range of active boost control learning. Adjustable depending on the relative stiffness of the wastegate actuators.

In-Dash Boost/Information display - Display Boost/Information on your dash board

Launch Control - It allows up to 8-9psi to be built while brake torquing for 2-3 seconds. Without this feature, the engine bogs down after just a moment of doing this. With launch control, you can also define an ignition retard amount to be induced during this brake torque/boost build period that will reduce strain on the drivetrain/rear wheels so you are not fighting the car at the launch.

Lean Cruise - Built into the maps. It activates automatically during extended cruise conditions. It just targets a slightly leaner AFR while, at the same time, bumping up ignition advance slightly to keep engine torque constant. You will see a mpg improvement.

Nitrous/staged Methanol CANtroller - The Procede's built-in nitrous control system which prevents nitrous from triggering until a certain set of engine conditions are met. Big benefits to safety and drivability.

On-the-fly mapswitching - Toggle through the maps by simply double clicking the DTC button while driving.

PROcede Clear Codes - Ability to clear all OBD and BMW extended codes through the PROcede User Software. This means that it will erase all present and historical/shadow codes.

Progressive Mapping Strategy - There are only 2 maps. One for 6AT. And one for 6MT. Now, the map is progressively adjustable from 0 to 100% as defined in the User Torque entry. An entry of 0% will result in a very conservative 11psi peak boost. Whereas a setting of 100% will result in a 20psi peak boost.

Progressive Methanol Mapping - The Procede monitors the actual 0-5v analog methanol flow signal from your injection failsafe device (not the on/off 12v trigger signal). As such, it can constantly modify your tune settings according to actual meth flow. This means that there are no discrete map changes or abrupt transitions. By adjusting the tune settings as a function of actual methanol flow, there is no concern with methanol hardware failure.

Switchable Barometric Pressure compensations - Can be enabled/disabled with the not-so-aptly named "Lagfix" user adjustable. A setting of "0" turns it OFF. A setting of "1" turns it ON. With it ON, those running at higher altitude will run less boost. The default setting is OFF.

Upshift Softening Adjustable (0-50) - In 6AT applications, this setting determines the amount of throttle closure that occurs during moderate to full boost up-shifting. The less throttle closure, the more mid-shift boost spike. The larger the value, more throttle blade closure and less mid-shift boost spike. The smaller the value, the less closure and more mid-shift boost spike. In 6MT applications, this setting doesn't do much.

PROcede Safety System

Excessive Wastegate DC - If boost DC is higher than the user definable limit for longer than the time delay, then a valet mode is triggered.

Fuel Pressure Failure - If a minimum fuel pressure voltage is not maintained for longer than the given delay, above 10psi of boost, then a valet is triggered.

Leanrun - If AFR is leaner than 13.5:1 at full boost, above 4500rpm for a period longer than the user definable delay, then a valet mode is triggered.

IAT based boost compensations - Boost targets are gradually reduced as intake air temperature starts to rise above 140deg F.

Oil temp based boost compensations - Boost targets are reduced when the engine oil temperature is low. By approximately 170deg F, full boost potential is achieved. Above 260 deg F, boost begins to taper downwards abruptly for engine safety.

Overboost - If boost exceeds the user definable overboost limit for a period longer than the user definable amount of time (delay), then a valet mode is triggered.

To provide the user with info as to what fault triggered the valet mode, the SES will flash the following code every 5 seconds.
Procede Fault List
# of SES light flashes
1= leanrun fault
2= overboost fault
3= wastegate overDC fault
4= fuel pressure fault