

Assembly Instruction

TM Kit BMW E9x M3





Table of Contents

1 Prior to Conversion			1		
	1.1 ECU & DCT1				
	1.2	Parts Lis	st	2	
	1.3	Require	d Tools & Materials	3	
	1.4	Final rer	marks before conversion	3	
2	Removed and replaced BMW parts			4	
3	ASA	Standar	rd Values for Tightening Torques	5	
4	Qua	ality Assu	irance – QA Tools	5	
5	Exp	loded Dr	awings	6	
6	Ass	embly In:	structions	6	
	6.1	Convers	sion Preparation	6	
	6.2	Installat	tion of the Compressor System	11	
		6.2.1	Dismantling of Fuel Rail and Cylinder Head Hood (bank 2/cylinders 5-8)	11	
		6.2.2	Work on Cylinder Head Hood (bank 2/cylinders 5-8)	12	
		6.2.3	Preparations prior to kit assembly	15	
		6.2.4	Assembly of the Oil Supply for the compressor	19	
		6.2.5	Assembly of the Base Plate	21	
		6.2.6	Preparation of the assembling of the air plenum	25	
		6.2.7	Installation of the Intake Plenum	32	
		6.2.8	Installation of the Airflow before compressor	34	
		6.2.9	Preparation prior to the air charge intercooler installation	36	
		6.2.10	Assembly of the Air-to-Air Intercooler	42	
		6.2.11	Assembly of the front	43	
		6.2.12	Finalization of the Airflow before and after the Compressor	45	
		6.2.13	Finalizing operations	47	
7	Annex4			48	
	7.1 CAD Documentation			48	
	7.2	Change	logFehler! Textmarke nicht d	efiniert.	



1 Prior to Conversion

Prior to the conversion of the supercharger kit the following tasks must be performed:

1.1 ECU & DCT

	Done
Engine Control Unit (ECU) software	
If applicable, apply Dual-Clutch Transmission (DCT) unit software	

Ensure that the program(s) are up to date. Please consult your BMW dealer.

You should check the ECUs for errors codes in any case and repair any pending malfunctions before starting the installation of the kit.

Then you have to read the ECU's software version and send it to us via e-mail together with the specification of your kit (SK1, SK2, etc.). Afterwards you get the right software for you supercharger kit. We recommend to do this before starting the work to avoid waiting time after the finished installation. It does not matter if you flash the ECU before or after the supercharger installation.

You can find details on operating I-Flash and the procedure of reading the software version and flashing the ECU at <u>https://gp-infinitas.com/downloads/</u>.



1.2 Parts List

Familiarize yourself with the parts list using the bill of materials and the exploded drawing. Furthermore, ensure the completeness of the kit.

Figure 2 shows an example of the M3 parts kit. Depending on the technical state the parts may possibly vary compared to the figure.



Figure 1: Overview of TM Kit BMW M3 E9X



The TurboMex Kit of BMW M3 E9X is divided into following main assemblies:

- P325-00-XX Main Bill of Materials
- P325-10-XX Belt drive
- P325-20-XX Airflow before compressor
- P325-**30**-XX Compressor
- P325-**40**-XX Compressor Air Duct
- P325-**50**-XX Fluid Management
- P325-**60**-XX Engine Peripherals
- P325-**70**-XX Electrics and Electronics
- P325-**90**-XX Vehicle Peripherals

Please be familiar with the number codes set out below. These appear once again in the assembly instruction.

Example:	Part:	P325-41- 11	(part of sub-assembly 41)
	Sub-assembly:	P325- 41 -02	(sub-assembly of group 40)
	Group:	P325- 40 -02	

In case of future problems it is useful if you describe the problems with the help of the group, assembly and part numbers, respectively.

1.3 Required Tools & Materials

- Step drill (16 30 mm diameter),
- M5 thread cutter
- drill Ø4,2 mm
- spot weld drill 8mm or similar
- 2K metal adhesive: Loctite Hysol 3471A + 3471B Metal Set S1 or LIQUI MOLY Flüssig Metall I + II Art-Nr. 6193

1.4 Final remarks before conversion

The assembly can begin once all previous steps were realized. Please stick necessarily to the instruction and the compulsory tightening torques. It is recommendable to read the entire instruction in whole before starting with the installation.



2 Removed and replaced BMW parts





3 ASA Standard Values for Tightening Torques

These tightening torques are valid for all bolted joints in this kit. Screws are almost exclusively used from strength class 8.8. Exceptions are expressly characterized in the assembly drawings.

Standard values for metric ISO – Regular Threads

M5	6 Nm / 4.4 lb.ft	
M6	10 Nm / 7.4 lb.ft	
M8	25 Nm / 18.4 lb.ft	
M10	49 Nm / 36.1 lb.ft	
M12	86 Nm / 63.4 lb.ft	
ASA		
Oil Inlet Screw	14 Nm / 10.3 lb.ft	
Compressor M10x1		
Hose Clamp	3 Nm / 2.2 lb.ft	
Width 9 mm		
Hose Clamp		
Width 12 mm	0 NIII / 4.4 ID.IL	

4 Quality Assurance – QA Tools

•	Kit Footprint – Overall System	<u>P325-49-01</u>
•	List of Caps	<u>P325-99-11</u>



5 Exploded Drawings

- P325-00-20 Overall Assembly TM Kit
 - P325-00-29 SK1
 - P325-00-30 SK2
 - P325-00-31 SK2CS
- P325-10-00 Belt Drive
- P325-20-11 Airflow before Compressor
- P325-30-00 Compressor
- P325-40-XX Compressor Air Ducts
 - P325-41-00 Compressor Air Ducts
 - P325-46-00 Bypass System Basis
 - P325-46-04 Bypass System
 - P325-46-05 Bypass System
 - P325-46-06 Bypass System
- P325-50-02 Fluid Management
- P325-53-00 Compressor Oil
- P325-55-01 Fuel Supply
- P325-55-02 Fuel Supply
- P325-73-01 Spark Plugs

6 Assembly Instructions

6.1 Conversion Preparation



	 Dismantle the underride guards (left and right) (20 and 23).
	 Remove the front inner wheel arch liners (left and right) (15).
Drill rivets out 4x	 Remove the front bumpers and dismantle the front bumper support (1). Drill the rivets out (4x)



ß	 Dismantle left and right headlights.
	• Remove front wall (1).
	• Removal of Air Filter Housing.



	 Remove red circled rubber buffers and store them safely.
	 <u>If an optional cooler package will be</u> <u>applicated:</u> Remove the fan frame (2)
$\begin{array}{c} 22 \\ 22 \\ 22 \\ 23 \\ 3 \\ 12 \\ 23 \\ 22 \\ 23 \\ 24 \\ 23 \\ 22 \\ 23 \\ 22 \\ 23 \\ 22 \\ 22$	 Remove the micro filter covers (pollen filter) (2, 3, 4, 5 and 17).



	 Remove the left and right strut braces (2).
	 Remove Air Plenum (1) and temperature sensor (10). Store Item (10) for later assembly.
Ĩ	 Seal all openings of the engine attachment parts Review the <u>CHECKLIST P325-99-11</u> checklist



6.2 Installation of the Compressor System

6.2.1 Dismantling of Fuel Rail and Cylinder Head Hood (bank 2/cylinders 5-8)





6.2.2 Work on Cylinder Head Hood (bank 2/cylinders 5-8)

 Use the stencil <u>TEMPLATE P325-59-11</u> in order to position accordingly.
 Create pilot holes using the oil return connector <i>P331-53-02</i>. Drill 2x M5 holes (core hole diameter 4.2 mm). Drill the middle hole using the step drill (16 - 30 mm diameter) to a minimum of 20 mm.

traditionell ohne limit	infinitao
	 Create an adhesive surface. Roughen-up the mating surface with an 80 grit sandpaper. Deburr the edges, clean the threads and remove any metal chips. Clean and thoroughly <i>degrease</i> the cylinder head hood around the adhesive area.
- Constant C	 Mix the two metal bonding components (2 component metal adhesives: Loctite Hysol 3471A + 3471B Metal Set S1 or LIQUI MOLY Liquid Metal I + II Part-No 6193).
	 Apply 2 component metal adhesive to the oil return connector and glue onto the cylinder head hood and tighten with two M5x8 hexagon socket screws (1.5 Nm / 1.1 lb.ft).

 \checkmark

-



 Inspect the inside of the cylinder head hood and remove any excess adhesive.
 Remove the red circled bolts (1x M10 on alternator and 4x M6 on Vanos cover) Replace the Vanos cover with the enclosed one in the kit. Furthermore, change the metal gaskets supplied by the kit.
 While the 2 component adhesive cures, replace the original spark plugs with those provided in the kit (8x) In order to change the spark plugs, refer to <u>DRAWING P325-73-01</u> or follow BMW TIS procedures



6.2.3 Preparations prior to kit assembly





 Right turning steering pump Single sided belt
 Left turning steering pump Double sided belt Go on with next page
 Remove the REAR v-ribbed 6PK belt (1) by releasing tension from the Idler Pulley (2). Replace this 6PK belt with the belt provided with your kit.



 Remove the water pump impeller (13).
 Drill out the bracket as shown in the Figure (right red circle) and position the heater valve set (left red circle).
 Drill out the 3 spot welds that secure the air box bracket using an 8 mm diameter drill bit.



vir Kanoka schilzen	•	Remove the the bracket holder and protect the bare surface from corrosion.
	•	Shorten the mass distributor studs by 6 mm \rightarrow M6 nut must be flush with the stud bolts
	•	Relocation of the connector for the heater valve accessory.



6.2.4 Assembly of the Oil Supply for the compressor





 Modify the oil feed manifold (<i>P325-53-01</i>) with the Oil Pressure Switch adapter (<i>P2010 3712</i>) with the enclosed gasket rings. Torque: 27 Nm / 19.9 lb.ft Reinstall the oil pressure switch to the oil pressure switch adapter with the gasket ring and tighten to 27 Nm / 19.9 lb.ft. Hold/support the oil pressure switch adapter to prevent the oil feed line from being twisted.
 Secure the oil inlet pipe with the pipe clamp (red circle) using the 15 mm upper right bolt of water housing Compressor-side end of the oil feed line is not initially installed and will be connected a later time



6.2.5 Assembly of the Base Plate

• Use <u>Drawing</u> <u>P325-10-00</u>
 Prepare and sort all necessary items and parts.
 Screw the base plate and the compressor together.





F	 Remove the covering flap from the oil return (yellow cap)
	 Mounting of the base plate on the car analogous to <u>Drawing P325-10-00</u>
	• Use <u>Drawing P325-53-00</u> .

traditionell ohne limit	
	 Connect the oil return hose (<i>P325-53-12</i>) to the oil return connector of the cylinder head hood. Tightening torque of the hose clamp: 3 Nm / 2.2 lb.ft
	 Plug the oil supply and clip the bracket. Tightening torque: 14 Nm / 10.3 lb.ft
	 Assemble both pulleys (<i>P325-15-04</i> and <i>P321-15-20</i>) at <i>DRAWING P325-10-00</i> Tightening torque per pulley: 25 Nm / 18.4 lb.ft





6.2.6 Preparation of the assembling of the air plenum



traditionell ohne limit	infinitao
	 Install the hose (Ø5x440mm), T-Connect (Norma TRS 8-6-8) and 2x clamps (Ötiker Ø16) at <u>Drawing P325-46-00</u>
B	 If installing the extra fuel pump (<i>P325-55-10</i>) do this before the next step
	 Route the control hoses (Ø5x440mm) for the bypass valve as seen in the accompanying picture <u>DRAWING P325-46-00</u>. Install T-piece (Norma TRS 6-4-6) and tube (Ø5x60mm) on <u>DRAWING P325-46-00</u> TUBE (Ø3,3x430MM) ON <u>DRAWING P325-46-00</u> will be inserted later into hose nozzle Ø4MM <u>DRAWING P325-20-11</u> This fitting is for checking the boost pressure



 Cap the oil separator line with part (<i>P321-52-03</i>) at <i>DRAWING P325-53-00</i>
 Install the brackets (3x) for the intake plenum. Mount the bracket (<i>P325-41-19</i>) at <i>DRAWING P325-41-00</i> front left (in the direction of travel).
 Install bracket (<i>P325-41-17</i>) on the front right and secure with 2x DIN933 M8x25. Attach and align the 2x rubber buffers.



 Mount bracket (<i>P325-41-17</i>) rear left with hexagonal threaded sleeve (<i>P325- 41-16</i>) and supplied with DIN912 M6x10.
Fix the inlet hose to the secondary air pump with cable ties.
 Cut the connection at the corrugated tube and plug the supplied hose (P325-25-23).



 Use <u>Drawing P325-46-00</u> <u>Drawing P325-46-04</u> <u>Drawing P325-46-05</u> <u>Drawing P325-46-06</u>.
 Insert the O-rings in the provided grooves of the intake plenum and lubricate these with the included grease.
 Mount the vacuum hoses (P325-46-16) on the two valves (P325-46-12).



Mount the vacuum hose (<i>P325-46-19</i>) on the middle valve (<i>P325-46-32</i>). (only SK3 and SK3RR)
 Install the valve (<i>P325-46-12</i>) on the left hole. The next step is to position the bracket (<i>P325-25-35</i>) and install the M5 clipnut
 Install the middle valve (<i>P325-46-32</i>). Apply the bracket (<i>P325-46-14</i>) to the valve Push down the valve and the bracket together IMPORTANT! Press in the valve until the bracket touches the intake plenum! (only SK3 and SK3RR)



 Assemble the valve (<i>P325-46-30</i>) on the right hole; then apply the bracket (<i>P325-46-20</i>). Depending on the kit, 1, 2 or 3 bypass valves are provided. This manual is for the 3-valve kit. If your kit has only one or two valves, blind plugs are provided in their places.
 Ensure that the centers of the valves are on the same height, as shown in the picture besides.
 Tighten the bracket with a tightening torque of 5.7 Nm / 4.2 lb.ft





- Apply the T-connectors and the remaining hoses anologous to the parts list.
- Shown t-connector with hose should already be installed a few steps earlier
- For easier assembly it is helpful to spray the T-connectors with silicon spray.

6.2.7 Installation of the Intake Plenum

 Install intake plenum (<i>P325-41-11</i>): See hose connections. Spray the single throttle body with silicon grease. Insert the temperature sensor from the original airbox into the intake plenum Place the plenum on the throttle bodies. Make adjustments to ensure the correct position of the plenum to the throttle body. To check the right fitment you can touch inside the plenum and feel the throttle body hoses with your fingers
 Position the supporting plate (<i>P325-12-12</i>) between the intake plenum and the base plate according to the image besides.



 Attach plenum to the three holders. Each with a M8x25 screw. Tightening torque: 25 Nm / 18,4 lb.ft.
 Mount the support plate as in <u>Drawing</u> <u>P325-10-10</u>
 Tighten all bolts/clamps of the throttle body (8x). Cross-tighten from the outside inwards. Tightening torque: 1,5 Nm / 1.1 lb.ft Attach idle speed control hose (idling actuator) with the reducer plug to the intake plenum. Check for proper fit.



6.2.8 Installation of the Airflow before compressor

• Use <u>Drawing P325-20-11</u> .
 Assemble the hose (<i>P325-25-25</i>) on the nozzles of the bypass valves analog to <u><i>DRAWING P325-20-10</i></u>. Connect the hose to the nozzles of the flange (<i>P325-25-14</i>) Tighten all clamps with a torque of 3 Nm / 2.2 lb.ft.



 Assemble the air filter and tighten the clamps with a torque of 8 Nm / 5.9 lb.ft.
 Mount the covering plate (<i>P325-25-33</i>). Tightening Torques: M5 with 6 Nm / 4.4 lb.ft M6 with 10 Nm / 7.4 lb.ft
When installing the intake pipe (<i>P325-21-02</i>) and bellow, start the installation from below.



6.2.9 Preparation prior to the air charge intercooler installation









 Final cut is depicted in the accompanying image. GREEN shaded area marks the next machining area
 End result after machining aforementioned marked area.
 <i>Caution: Risk of Injury:</i> Debur all edges! Spray paint all bare surfaces with black matte paint.





 Use <u>TEMPLATE P325-97-07</u>.
 Cut out the stencil template and affix to the fan shroud with double sided adhesive tape. Mark the area and cut and debur all edges carefully. <i>Caution:</i> Do not cut too deep to avoid damage to the fan shroud.
 Mark the hole centers (yellow) using the measurements besides. Create with a 30 mm diameter using a cutting/stamping tool.

traditionell ohne limit	
	• Fit the airflow (up-front) to the machined front wall and mark the appropriate cutting area in GREEN.
Bearbeitung	 Up-front airflow after cutting. Debur all machined edges.
Contraction of the second seco	 Modify the air passage/tube. Remove the identified tabs (4x). Shorten the middle nose by 4-5 mm.



6.2.10 Assembly of the Air-to-Air Intercooler

• Use <u>Drawing P325-41-00</u> .
 Attach the front wall/panel to the vehicle. Attach the upper bolts and nuts slightly. Attach the air-to-air intercooler holders at the bottom. Position the air-to-air intercooler carefully Attach the front bumper carrier.
 Center and secure the front bumper carrier against the front wall with a mortise bolt and tighten the top nuts/bolts.



6.2.11 Assembly of the front



- Assemble the front headlights (2x) analogously to BMW TIS.
- Position the air ducts along the upper front struts with hooks to hold the intercooler.



Bechmuttern aufstecken	 Attach the brackets (<i>P325-41-35</i> and <i>P325-41-36</i>) and secure loosely with the appropriate screws. With the aid of aligning hole centers in the front panel (circled in red), mark drilling holes on the brackets. (<i>P325-41-35</i> and <i>P325-41-36</i>). Drill the front panel holes to a 5.5 mm diameter. Loosen the brackets once again (<i>P325-41-35</i> and <i>P325-41-36</i>) and position for a snug fit. Attach the sheet nuts and secure the brackets on the outside location (red marked) with rivets (2x). Secure the two brackets (<i>P325-41-35</i> and <i>P325-41-36</i>) to the front wall, where the intercooler is mounted. Screw and tighten the screws (3x) and
	 Use <u>Drawing P325-97-08</u> Machine the hook and cut the red marked area. After machining, check the clearance of the hook to the intercooler and adjust the hood if necessary. Attention: before the clearance has not been checked, do not knock the bonnet - > Risk of damage to the intercooler Hint: Remount the bowden cable!



6.2.12 Finalization of the Airflow before and after the Compressor

• Use <u>Drawing P325-41-00</u> .
 Screw together two 70-90 mm clamps to a big one. Attach the screwed clamps and a plain clamp on the expansion sleeve assembly. First push the sleeve onto the intercooler (small aperture) and then on the air intake plenum (large aperture). Tightening torque: 6 Nm / 4.4 lb.ft.
 Remove the protective cap from the compressor prior to the elbow pipe installation.



 Check the air system charge for leaks by means of the special tool. Caution: Always observe safety precautions to avoid damage to the vehicle and person(s).
 Mount the elbow pipe (10) with hoses (12 and 13) and fasten the appropriate clamps (2x 80-100 mm and 2x 70-90 mm clamps). Tightening torque: 6 Nm / 4.4 lb.ft
 Install the support brace/strut (<i>P325-12-01</i>).





- Re-assemble the front of the vehicle (front bumper and front inner wheel arch liners).
- Re-assemble the front underbody.
- Re-assemble the front strut brace and the micro filter cover. Put a washer under each front strut brace.

6.2.13 Finalizing operations

- From at SK2 the precatalytic converter must to be removed. (PICTURE DOKU PRECATALIYTIC CONVERTER REPLACED)
- Adjust the headlights
- Mount the G-Power plague on the air filter box cover and inside the vehicle per <u>Drawing</u> <u>P325-97-11</u>
- Apply ECU sticker per *Drawing P325-97-12*.
- Apply new BMW sticker No. 7-836-567 per Drawing P325-97-14
- Apply sticker tank cap **DRAWING P325-97-15**
- Review <u>CHECKLIST P325-99-10</u> in order to double-check the installation.
- Assemble ECU and DCT. Verify updates to ECU and DCT (if equipped) software per <u>CHECKLIST P321-70-15</u>.

7 Annex

7.1 CAD Documentation

- Drawing P321-70-15
- Drawing P321-95-11
- Drawing P325-00-20
- Drawing P325-10-00
- Drawing P325-20-11
- Drawing P325-30-00
- Drawing P325-41-00
- Drawing P325-46-00
 - o Drawing P325-46-04
 - Drawing P325-46-05
 - Drawing P325-46-06
- Drawing P325-53-00
- Drawing P325-55-01
- Drawing P325-55-02
- Drawing P325-59-11
- Drawing P325-73-01
- Drawing P325-97-03
- Drawing P325-97-04
- Drawing P325-97-05
- Drawing P325-97-06
- Drawing P325-97-07
- Drawing P325-97-08
- Drawing P325-97-11
- Drawing P325-97-12
- Drawing P325-97-14
- Drawing P325-97-15
- Drawing P325-97-16
- Drawing P325-98-01
- Drawing P325-98-21
- Checklist P325-99-10
- Drawing P325-99-11
- Picture doku precataliytic converter replaced