

Swapping the 2016 BMW F22's Engine - what you need to know

1 **WHY DO THEY SWAP THE F22'S ENGINE IN THE FIRST PLACE?**

THE 2016 BMW F22 228I HAS A VERY STURDY CHASSIS. BUT ITS 2.0L N20 FROM FACTORY HAS ITS LIMITS IN POWER, AND IN LONG-TERM RELIABILITY. MANY OWNERS EVENTUALLY REACH THE THRESHOLD WHERE THE UPGRADES, THE REPAIRS, OR THE PERFORMANCE EVENTUALLY DEMAND AN ENGINE SWAP.

IF YOUR N20 HAS BEEN TOO OLD OR YOU ARE PLANNING ON A SERIOUS PERFORMANCE BUILD, THIS BOOK SPELLS OUT, IN CERTAIN TERMS, THE WAY IT CAN BE DONE. WHAT TOOLS YOU'LL NEED, AND WHAT TO EXPECT.



2 CHOICE OF THE ENGINE

WHEN THE ORIGINAL N20 IS TAKEN OUT, THE REPLACEMENT ENGINE HAS TWO MAIN OPTIONS:

A. LIKE FOR LIKE REPLACEMENT (SAME N20 ENGINE):

THIS TYPE OF REPLACEMENT WOULD BE THE ANSWER SHOULD YOU WANT TO BRING THE CAR BACK TO STOCK PERFORMANCE WITHOUT OTHER FINE TUNE MODIFICATIONS. IT IS A STRAIGHT DROP IN WITH SOME REPROGRAMMING REQUIRED.

B. PERFORMANCE UPGRADE (E.G., S55 FROM M3/M4):

THIS IS FOR THOSE WHO WANT REAL GAINS. THE S55 OFFERS NEARLY DOUBLE THE POWER AND FAR MORE TUNING POTENTIAL. BUT IT'S NOT A DROP IN SWAP. YOU'LL NEED CUSTOM PARTS AND A FULL DRIVETRAIN REVIEW.

3 COMPATIBILITY OVERVIEW

A. MOUNTING & FITMENT:

THE N20 AND S55 HAVE DIFFERENT MOUNTING POINTS. IF YOU'RE DOING AN S55 SWAP, CUSTOM ENGINE BRACKETS WILL BE NEEDED. FIREWALL CLEARANCE MUST BE CHECKED. INTAKE AND TURBO PIPING ALSO REQUIRE REROUTING.

B. DRIVETRAIN & TRANSMISSION:

THE STOCK 8-SPEED AUTOMATIC WON'T RELIABLY HANDLE S55 TORQUE. YOU'LL NEED A STRONGER GEARBOX—COMMONLY THE M3'S MANUAL OR DCT. THAT REQUIRES A CUSTOM DRIVESHAFT AND DIFFERENTIAL TUNING.

C. COOLING SYSTEM:

S55 GENERATES MORE HEAT. UPGRADE THE RADIATOR, ADD AN OIL COOLER, AND VERIFY SPACE FOR EXTRA PLUMBING.

3 COMPATIBILITY OVERVIEW

D. FUEL SYSTEM:

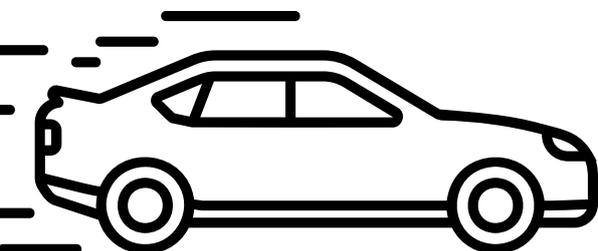
HIGH FLOW FUEL PUMPS AND UPGRADED INJECTORS MAY BE REQUIRED. DON'T SKIP THIS. STARVING THE ENGINE UNDER BOOST WILL LEAD TO FAILURE.

E. ELECTRICAL & ECU:

YOU CAN'T RUN THE S55 ON THE N20'S DME. YOU'LL NEED THE FULL ECU FROM THE DONOR ENGINE, AND IT MUST BE PAIRED WITH THE CAS MODULE AND KEY FROM THE SAME VEHICLE. CODING IS REQUIRED USING BMW ISTA OR E SYS SOFTWARE.

4 TOOLS AND EQUIPMENT REQUIRED

Mechanical Tools:	Fabrication Tools:	Software & Diagnostics:
Engine Hoist	Welder (TIG preferred for brackets)	BMW ISTA+ for fault codes and module sync
Jack stands or lift	Grinder and cutting tools	E Sys + ENET cable for ECU coding
Full socket/ratchet set (metric)	Custom motor mount jig (optional but helps)	Engine HBootmod3 or similar tuning platform
Torque Wrench		
Engine alignment tools		



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STEP BY STEP SWAP SUMMARY

Step 1: Preparation

Disconnect the battery

Drain all fluids

**Remove air intake, radiator,
and front accessories**

**Label and disconnect all
electrical plugs**

5 *STEP BY STEP SWAP SUMMARY*

Step 2: Engine Removal

Unbolt engine mounts

Detach exhaust and
driveshaft

Use hoist to lift engine out
slowly

Set old engine aside

5

STEP BY STEP SWAP SUMMARY

**Step 3: Custom Work for
New Engine**

Fit new brackets

**Test fit engine before final bolt
down**

**Modify wiring harness if
necessary**

**Install upgraded cooling
components**

5 **STEP BY STEP SWAP SUMMARY**

Step 4: Installation

Bolt engine and transmission into place

Route turbo piping and exhaust

Connect all sensors and plugs

Fill fluids (coolant, oil, transmission)

6 COMMON ISSUES TO WATCH FOR

- **CLEARANCE PROBLEMS:** INTAKE, OIL PAN, OR FIREWALL CLEARANCE ISSUES ARE COMMON. ALWAYS TEST FIT FIRST.
- **WIRING CONFUSION:** MIXING DONOR AND ORIGINAL HARNESSSES CAN TRIGGER MULTIPLE ERRORS. DOCUMENT EVERY CONNECTION.
- **ECU MISMATCH:** IF THE DME ISN'T PAIRED WITH THE CAS AND KEY, THE CAR WON'T START.
- **COOLING LEAKS:** AFTERMARKET OR CUSTOM PLUMBING OFTEN LEAKS IF NOT PROPERLY SEALED. PRESSURE TEST BEFORE STARTUP.

7 **TESTING AFTER SWAP**

INITIAL STARTUP:

- CHECK FOR OIL PRESSURE IMMEDIATELY
- WATCH FOR LEAKS DURING IDLE
- MONITOR RPM AND IDLE SMOOTHNESS

FIRST DRIVE:

- DON'T GO FULL THROTTLE
- TEST BRAKING, STEERING, AND SHIFTING
- RECHECK FOR WARNING LIGHTS

DYNO TUNING:

IF YOU'RE RUNNING AN UPGRADED ENGINE LIKE THE S55, GET IT TUNED PROFESSIONALLY. YOU'LL NEED PROPER AFR (AIR FUEL RATIO) ADJUSTMENTS TO AVOID LEAN CONDITIONS.



8 MAINTENANCE AFTER THE SWAP

- CHANGE ENGINE OIL AFTER 500–1000 MILES
- RE TORQUE MOUNT BOLTS AFTER 500 MILES
- MONITOR COOLANT LEVELS DAILY FOR THE FIRST WEEK
- KEEP A SCAN TOOL IN YOUR GLOVE BOX DURING EARLY USE
- RECHECK CODES EVEN IF THE CAR FEELS FINE

9 COST BREAKDOWN (ESTIMATED IN USD)

- N20 USED ENGINE (STOCK SWAP): \$3,000–\$3,500
- S55 USED ENGINE WITH TURBO: \$7,000–\$8,000
- SPECIALLY FABRICATED CUSTOM MOUNTS: \$800–\$1,200
- ECU AND TUNING: \$1,000–\$1,500
- FLUIDS, BELTS, HOSES: \$500–\$700
- TOTAL (STOCK SWAP): ~\$4,000–\$5,000
- TOTAL (PERFORMANCE BUILD): ~\$11,000–\$13,000

10 **FINAL NOTES**

SWAPPING THE ENGINE ON A BMW F22 ISN'T LIGHT WORK. PROPER RESEARCH IS NEEDED BEFORE MAKING ANY DECISION. IF YOU JUST WANT TO USE YOUR CURRENT VEHICLE FOR A LONGER PERIOD, A STOCK USED ENGINE IS ENOUGH. BUT IF YOU WANT THE ENGINE FOR PERFORMANCE PURPOSES, THEN IT IS A DIFFERENT BALL GAME. YOU WILL HAVE TO LOOK MORE CLOSELY IN SUCH CASE.

Need parts you can trust?

CARPARTSSTOREUSA.COM OFFERS TESTED USED ENGINES, COMPLETE SWAP KITS, AND VERIFIED ECUS FOR BMWs LIKE THE F22.

EACH PART IS VIN MATCHED, QUALITY CHECKED, AND BACKED WITH REAL SUPPORT.





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