

# Engine Build Process & FAQ

RK Autowerks Engines				
	M5 & M6 - F1x   X5M X6M - E70/1 & F85/6		M5 M8 - F9x   X5M X6M - F95/6	
	Stock	Forged	Stock	Forged
<b>Price</b>	\$9,499	\$12,499	\$10,999	\$14,999
<b>Ship Cost</b>	\$400 * 2 <sup>1</sup>	\$400 * 2 <sup>1</sup>	\$400 * 2 <sup>1</sup>	\$400 * 2 <sup>1</sup>
<b>Ship Time</b>	2-7 Business Days	14-21 Business Days	2-7 Business Days	14-21 Business Days
<b>Installation Price</b>	\$5000	\$5000	\$5000	\$5000
<b>Install Time</b>	2-3 Weeks <sup>2</sup>	3-4 Weeks <sup>2</sup>	2-3 Weeks <sup>2</sup>	3-4 Weeks <sup>2</sup>
<b>Power Limits</b>	Stock Power	<1000 Wheel Torque (ft lbs) <sup>3</sup>	Stock Power	<1000 Wheel Torque (ft lbs) <sup>3</sup>
<b>Warranty</b>	2 Years/24k mi - Parts	None	2 Years/24k mi - Parts	None
<b>Payment</b>	Certified Funds	Certified Funds	Certified Funds	Certified Funds
<b>Rods</b>	Stock	Forged - Carrillo	Stock	Forged - Carrillo
<b>Bearings</b>	Stock	Coated Race - ACL	Stock	Coated Race - ACL
<b>Head Studs - Pro Series</b>	--	\$1,000	--	\$1,000
<b>Cylinder Sleeves - Darton</b>	--	\$5,000	--	\$5,000
<b>Upgraded Exhaust Cams - RK</b>	--	\$1,800	--	\$1,800
<b>Fire Rings - RK Autowerks</b>	--	\$1,000	--	\$1,000

<sup>1</sup> \$400 fully insured each direction (RK engine to you and core back to RK). Total \$800.

<sup>2</sup> Estimate for engine install only. If we are installing other mods or tuning the vehicle, expect a build time of around 3-5 weeks.

<sup>3</sup> Approx limit without other engine options, like block sleeving, etc.

Change Page Below

## Core Process:

- All engine sales require a rebuildable core.
- If your engine has damage, that doesn't mean you will lose the full core deposit.
- The parts below are what we are looking for that will incur a charge if they are damaged.

### Parts that will incur a charge if damaged - S63TU - F1x M5/6 | F85/6 X5/6M:

- Engine Block - no deep cylinder scoring or holes can be present - \$3000
- Cylinder Heads - \$900 per bank
- Oil Pump - \$700
- Upper Oil Pan - \$1500
- Lower Oil Pan - \$500
- Crankshaft spun beyond 0.010 repair - \$1250

### Parts that will incur a charge if damaged - S63TU4 - F9x M5 M8 | F95/6 X5/6M:

- Engine Block - no deep cylinder scoring or holes can be present. If the block can be saved with cylinder sleeves, the charge is \$5000.
- If the block has more damage than sleeves can save, the charge will be \$10k
- Cylinder Heads - \$3000 per bank
- Oil Pump - \$700
- Upper Oil Pan - \$1500
- Lower Oil Pan - \$600
- Irreparable Crank Damage - \$1250

### Parts with no charge:

- Rods
- Pistons

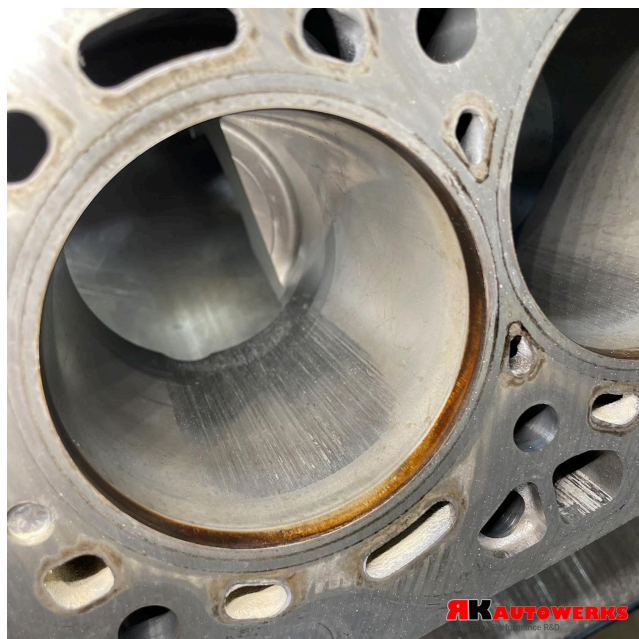
### Core Deposits by Vehicle:

- F1x M5 M6 - 2012-2016 - \$8,000.00
- F9x M5 M8 - 2018+ - \$10,000.00
- E70/1 X5/6M - 2012-2014- \$6,000.00
- F85/6 X5/6M - 2015-2019 - \$6,000.00
- F95/6 X5/6M - 2021+ - \$10,000.00

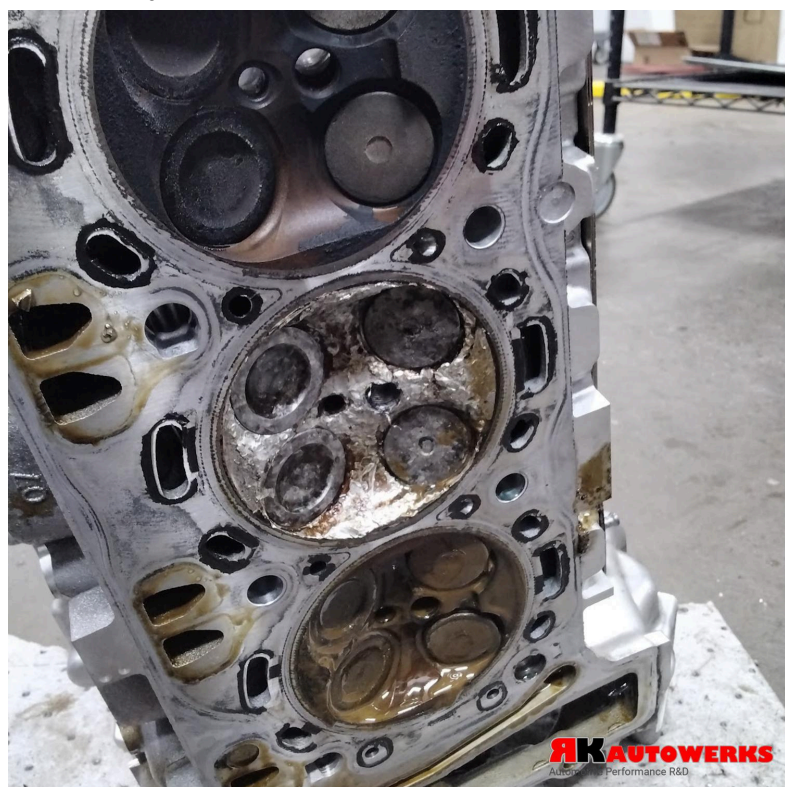
When you're ready to ship the core back, email [sales@rkautowerks.com](mailto:sales@rkautowerks.com) with your invoice number. We'll set the pickup and send the bill of lading.

## Damaged Examples:

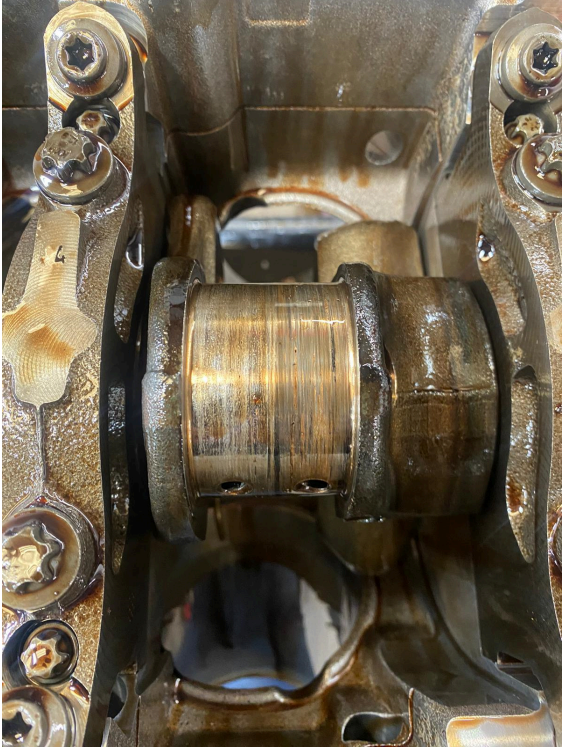
### Cylinder Scoring:



### Damaged Cylinder Head:



### Damaged Crankshaft:



## RK Autowerks Rebuild Process - Stock & Forged Rebuilds

- Complete Engine Disassembly
- All reusable parts are cleaned to like new condition
- Key parts are inspected to ensure they are within spec
- Cylinder heads are rebuilt, including removing carbon from the valves and installing the latest revision of OE BMW Valve seals
- The oil pump is disassembled and rebuilt to ensure proper functionality
- Wearable engine parts (gaskets, seals, stretch bolts) are replaced with OE BMW parts, purchased directly from BMW.

## Forged Engine Parts & Options

Our forged engines include everything from the stock engines plus the following parts:

- Carrillo Forged Rods
- ACL Coated Rod Bearings
- CP Forged Pistons - \$2500 Option

# Should I go with a stock or forged rebuild?

## Stock Rebuild

- For stock power levels

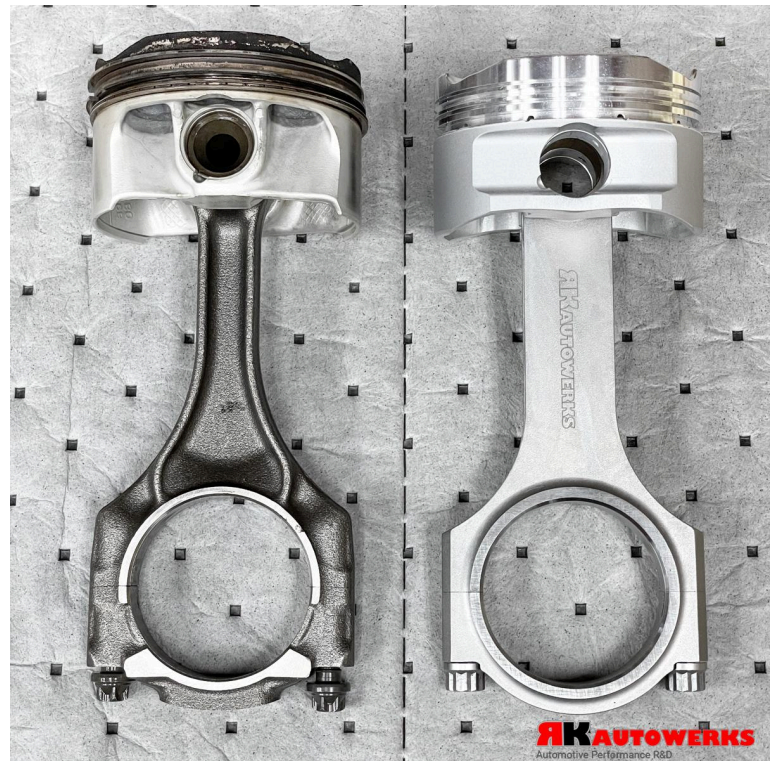
## Forged Rebuild

- For: Individuals planning on running more power than stock

## Rods & Pistons:

- Left - Stock rod and piston
- Right - RK Forged rod and piston
- Forged rods allow you to run more power than stock without the worry of bending a rod, which would cause an engine failure.

**Left: Stock | Right: Forged**



## Rod Bearings:

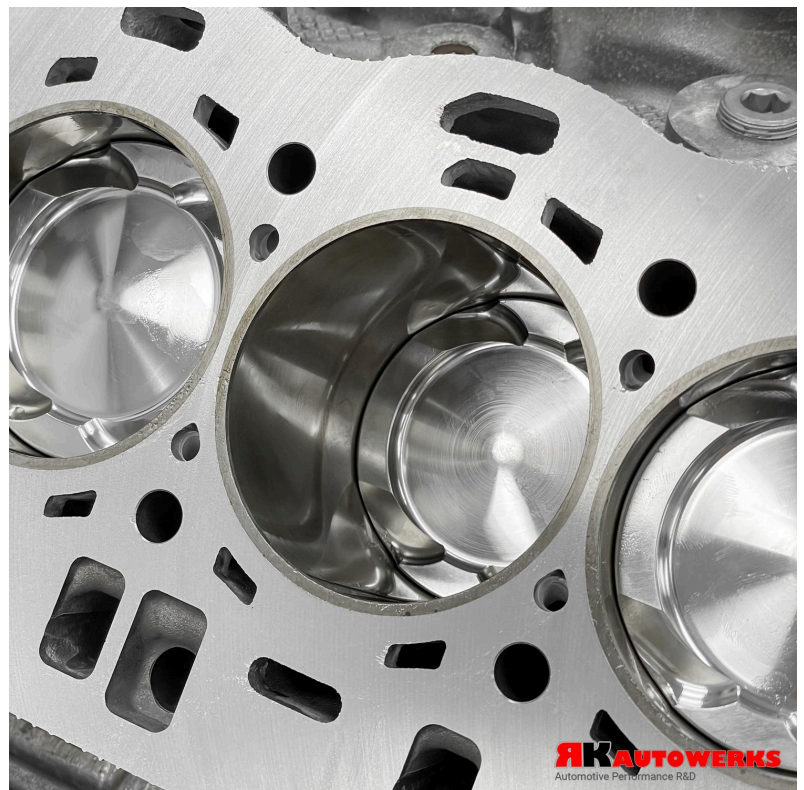
To get you set off with your best foot forward, we use coated race bearings for maximum durability. The bearings are coated steel and are far more durable than the stock aluminum bearings.

**Left:** Coated Steel | **Right:** Stock BMW Aluminum →



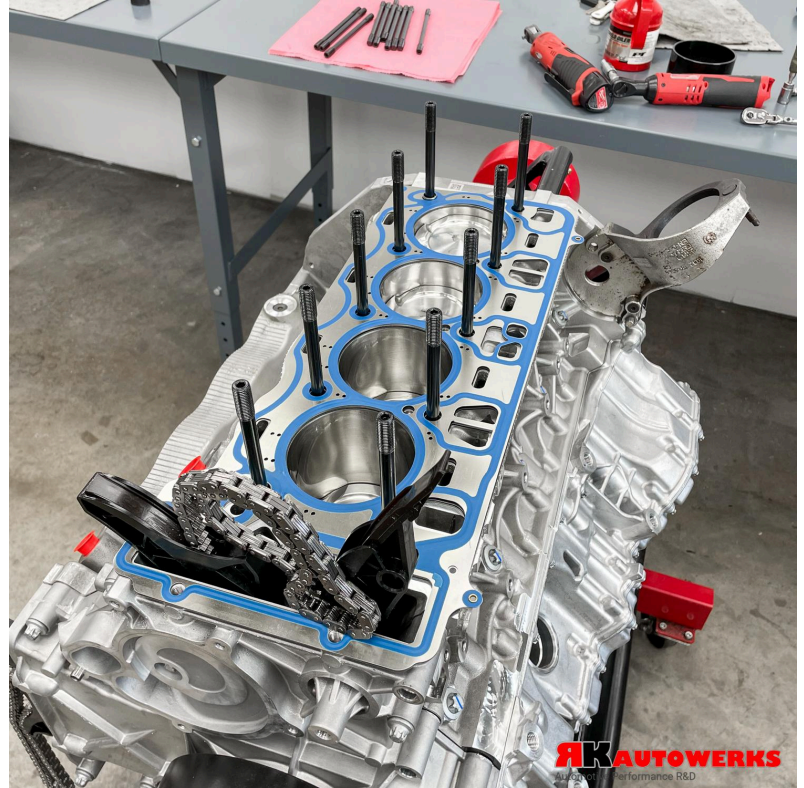
## Option: Cylinder Sleeves

- Cylinder sleeves reinforce the cylinders to allow for more boost pressure than the stock block can handle
- For: Customers looking for more than 1000whp
- Can sometimes be used to repair damaged cylinders



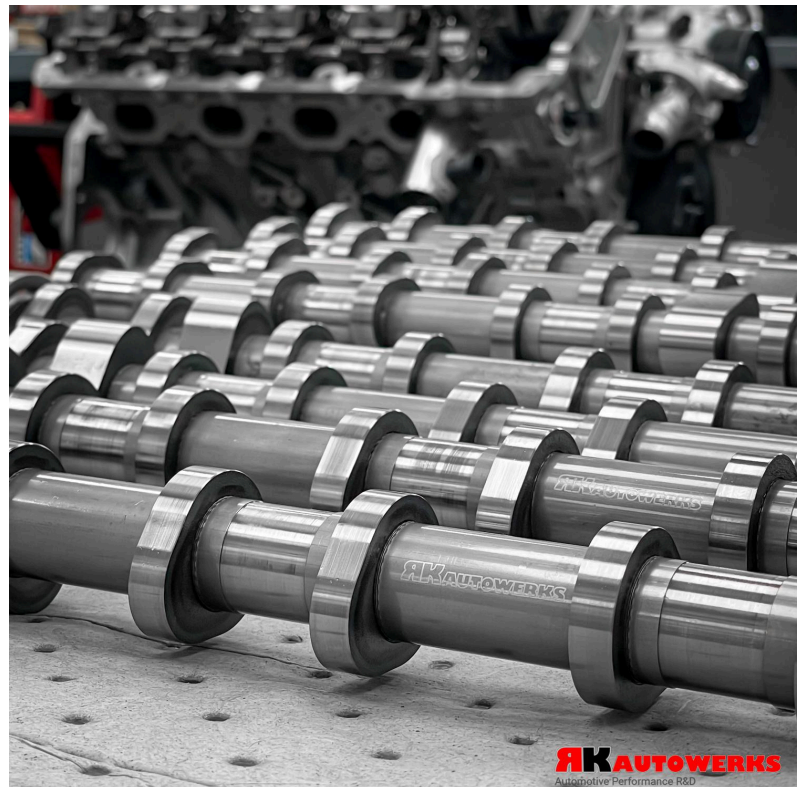
## Option: Upgraded Head Studs

- Upgraded head studs allow for more clamping force between the cylinder head and block to reduce the risk of lifting a head and potentially causing an engine failure
- For: Customers planning to run more than 1000whp



## Option: Upgraded Exhaust Cams

- Increased fuel flow resulting in increased power
- Eliminates fuel pressure drop at high RPMs on high horsepower builds
- Allows you to run full E85 (F9x M5 M8)
  - F1x M5 M6 cars must have the upgraded F9x high pressure fuel pumps, as well.
- Further info - [LINK](#)



## What's included with the engines?

- Assembled Long Block (See Picture to right)
- No external accessories (turbos, sensors, etc) are not included

## Shipping

### Domestic

- All engines are shipped via freight and are fully insured.
- The shipping cost is a flat \$400 per trip, so the total cost is \$800 (rebuilt engine and core back to RK).
- It is still the customer's responsibility to secure the engine appropriately. If the engine becomes damaged during shipping as a result of inadequate packing, this is the customers responsibility. This is not covered under insurance because it falls under packing negligence.

### International

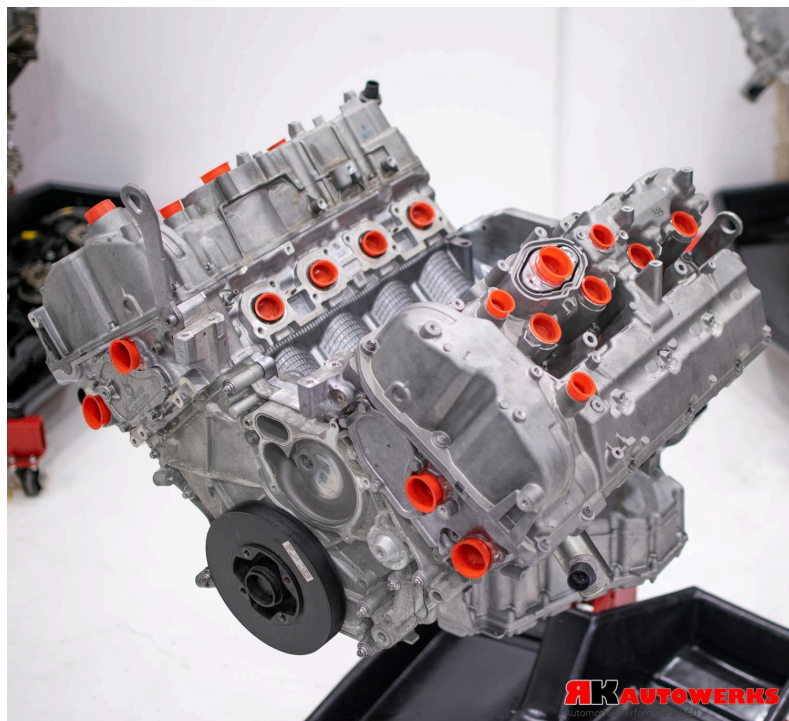
We can offer shipping options via DHL Express or DHL Global Forwarding. You are free to use your own shipping company if those options do not work for you.

#### DHL Express

- Fast shipping - 2-10 days, depending on destination
- Not the cheapest option

#### DHL Global Forwarding

- 2-4+ weeks, depending on destination
- Less than \$2k to most destinations



## Do you offer engine installation services?

- Yes, for the F1x and F9x M5, M6, and M8
- Stock or forged engine installation - \$5000
- Stage 3 Installation - \$7500
- Shop location - Fort Worth, Texas
- We do not offer vehicle shipping services. Most customers use uShip.
  - Shipping must be between business hours Monday-Friday 9-6PM

## Warranty

### STOCK -

- 2 years/24k mi, whichever comes first, on the engine internal parts.
- The warranty works similarly to BMW's powertrain warranty.
- If your car is tuned or has other power adding parts (except for intake or exhaust mods), the warranty is void.
- Please see our [Legal Page](#) for more details.
- LABOR AND SHIPPING ARE NEVER COVERED UNDER ANY SITUATION

**FORGED** - There is no official warranty on our forged engines due to the amount of variables in parts and tunes that can be applied to the engines. Any warranty is goodwill based and is to not be expected. Pricing

**M5 | F10 | 2012-2016**

**M6 | F06 F12 F13 | 2012-2019**

**X5/6M | F85 F86 | 2015-2019**

**ALL THE PRICING IS SUBJECT TO CHANGE WITHOUT NOTICE, THIS IS ONLY A ROUGH ESTIMATE TO ASSIST YOU WITH DETERMINING WHAT YOU'D LIKE TO DO. ACCURATE PRICING WILL BE PROVIDED ON A FORMAL INVOICE. THIS PDF IS NOT A BINDING DOCUMENT, ONLY FOR YOUR REFERENCE.**

<b>S63TU Configuration</b>			<b>Pricing</b>
RK S63TU - Stock Rebuild Configuration			\$9,499
RK S63TU - Forged Rebuild Configuration			\$12,499
<b>F1x Forged Engine Options</b>			<b>Pricing</b>
RK x Pro Series Head Stud Kit			\$800
RK Sleeved Block - Darton Sleeves			\$5,000
RK Upgraded Exhaust Cams			\$1,800
RK Cylinder Head Fire Rings			\$1,000

Below are the performance parts we have available for the S63TU cars at MSRP. We offer package pricing when purchasing the full Stage 3 package.

<b>S63TU Part Options</b>		<b>MSRP</b>
New Injectors, Plugs, Coils - <b>Recommended for all builds</b>		\$1,499
<a href="#">RK CF Intakes</a>		\$2,249
<a href="#">RK Downpipes</a>		\$1,349
<a href="#">RK Stage 2+ Turbos</a>		\$4,749
<a href="#">RK Billet Differential Brace - F1x M5 M6 Only</a>		\$1,649
RK Methanol Injection System		\$2,499
<a href="#">RK Billet Port Injection Intake Manifolds - F1x M5 M6 Only</a>		\$3,249

### **Stage 3 Package (Map/Tune and Install not Included)**

<b>Forged Stage 3 Package</b>	<b>MSRP</b>	<b>S3 Discounts</b>	<b>S3 Price</b>
<a href="#">RK Forged S63TU</a>	\$12,499		\$12,499
New Injectors, Plugs, Coils - Req for S3	\$1,500		\$1,500
<a href="#">RK Stage 2+ Turbos</a>	\$4,750	-\$500	\$4,250
SSP Spec - X Clutches	\$3,000		\$3,000
<a href="#">RK CF Intakes</a>	\$2,250	-\$750	\$1,500
RK Downpipes	\$1,350	-\$550	\$800
F90 Upgraded HPFP	\$1350		\$1350
S63TU - Core Deposit/Charge	\$8,000		\$8,000
Turbos - Core Deposit/Charge	\$2,500		\$2,500

Part Freight - \$400 each direction (new and core)	\$800		\$800
<b>Total Due before Shipping</b>			<b>\$36,199</b>
Refundable Core Deposit (once cores received at RK)			-\$10,500
<b>Final Price with Rebuildable Core</b>			<b>\$25,699</b>

**M5 | F90 | 2018+**

**M8 | F91 F92 F93 | 2019+**

**X5M X6M | F95 F96 | 2020+**

<b>S63TU4 Engines</b>	<b>Pricing</b>
RK S63TU4 - Stock Rebuild Configuration	\$10,999
RK S63TU4 - Forged Rebuild Configuration	\$14,999
<b>F1x Engine Options</b>	<b>Pricing</b>
RK x Pro Series Head Stud Kit	\$1000
RK Sleeved Block - Darton Sleeves	\$5,000
RK Upgraded Exhaust Cams	\$1,800

Below are the performance parts we have available for the S63TU4 cars at MSRP. We offer package pricing when purchasing the full Stage 3 package.

<b>S63TU4 Part Options</b>	<b>MSRP</b>
<a href="#">RK Stage 2+ Turbos - Bolt-on</a>	\$4,750
<a href="#">RK Downpipes</a>	\$1,450
<a href="#">RK Methanol Injection System w/Billet Adapters</a>	\$2,500
<a href="#">RK Billet Intake Manifolds</a>	\$4,250
<a href="#">Wagner Tuning Charge Coolers</a>	\$2990

### Stage 3 Package

<b>Forged Stage 3 Package - F9x M5/8</b>	<b>MSRP</b>	<b>S3 Discounts</b>	<b>S3 Pricing</b>
<a href="#">RK Forged S63TU4</a>	\$14,999		\$14,999
S63TU4 Core Deposit - See Below	\$15,000		\$15,000
<a href="#">RK Stage 2+ Turbos - Bolt-on</a>	\$4,750	-\$750	\$4,000
Turbo Core Deposit/Charge - See Below	\$5,000		\$5,000
<a href="#">New NGK 97506 - Req for S3</a>	\$200		\$200
<a href="#">Wagner Tuning Charge Coolers</a>	\$2,990		\$2,990
<a href="#">RK Downpipes</a>	\$1,450	-\$450	\$1,000
Engine Freight - Both Directions	\$800		\$800

<b>Total Due before Shipping</b>	\$45,139		\$43,989
Refundable Core Deposit(s) (once core(s) received at RK)			-\$20,000
<b>Final Price with Rebuildable Core</b>			<b>\$23,989</b>

## Payment

All engine/build purchases must be paid via bank wire transfer, check, or cash.

**Shipping** - Full Payment must be made before the engine ships.

**Installations** - A \$5k deposit is required to set aside the parts and to secure your build slot. The remainder is due once we complete the installation.

## Buying Process

1. Read through the engine building process and FAQ
2. Fill out the engine ordering form
3. We'll send the invoice and T&C agreement to be signed
4. Send payment, read through, and sign the T&C doc through DocuSign
5. We'll confirm payment and give you your estimated shipping date
6. We ship the engine and provide tracking
7. Your shop completes the swap, prepares the core for shipping, and notifies us to set the pickup
8. We receive, disassemble, and inspect the core (please allow 1-2 weeks for disassembly)
9. We'll send back the appropriate core deposit amount back via wire transfer or check

## FAQ:

**Q: How do I place my engine order?**

**A:** Please fill out the engine inquiry/order form above we'll send you all the necessary information.

**Q: How long does it take to ship an engine after payment?**

**A:** If we don't have an engine ready on shelf, normally it will take about 1-2 weeks to ship for stock engines. Forged engines can be 3-5 weeks, depending on our current workload.

**Q: What payment methods are accepted for engine/build purchases?**

**A:** All engine/build purchases must be paid via bank wire transfer, check, or cash.

**Q: How does a typical engine purchasing process work?**

**A:** Place the order and send a wire transfer or check for the purchase amount > We ship the engine > You ship back the core engine within 2 weeks of the new engine arriving at your shop > We disassemble the engine to check for damage > The appropriate core deposit refund is returned.

**Q: Is shipping included in the engine purchase price?****A:** No

Domestic Freight - The total engine freight for both the rebuilt engine shipping to you and core coming back to us is a flat \$800, or \$400 each direction. Every shipment is fully insured and shipped in an enclosed box/crate. Engines must be shipped to a commercial address for that pricing. If we need to ship to a residential address, we will have to run a custom quote and the pricing is much more expensive. You are free to use your own shipping company/account if you already have it set up.

International Freight - Due to the various customs and tax regulations in each country, it is ideal if you can facilitate the shipping process. If you need assistance with the international freight, we can ship with either DHL Express (very quick, but not the most cost-effective) or DHL Global Forwarding (2-6 weeks, between \$1k-\$3.5k depending on destination)

**Q: What is included with your engines?**

**A:** Our engines ship as ready long blocks, meaning everything internal from the valve covers down to the lower oil pan. No external accessories are included. You or your shop will need to transfer all external engine parts from your old engine to the new one.

**Q: Do I need to send my engine in to be rebuilt?**

**A:** In most cases, no. To minimize downtime, typically we will ship our rebuilt engine with a core deposit, first. You do not need to send your engine in to be rebuilt unless you do not want to pay the core deposit.

**Q: How do I avoid the core deposit?**

**A:** If you don't want to pay the core deposit up front, ship us your core engine first. We will disassemble your core to check for damage. There is no core charge if there is no damage to the block, cylinder heads, oil pump, or oil pans. If there is damage to the block, cylinder heads, oil pump, or oil pans, the appropriate core charge will need to be paid before we ship the new engine.

**Q: Do you offer installation services?**

**A:** Yes, we can take care of the installation on the F1x M5 & M6 and F9x M5 & M8. We are not currently offering installation on any X5/6M generation.

**Q: What is the warranty on your engines?**

**A:** STOCK - 2 years/24k mi, whichever comes first, on the engine internal parts. The warranty works similarly to BMW's powertrain warranty. If your car is tuned or has other power adding parts (except for intake or exhaust mods), the warranty is void. Please see our [Legal Page](#) for more details.

FORGED - There is no official warranty on our forged engines due to amount of variables in parts and tunes that can be applied to the engines

**Q: Can your stock rebuild engines handle more power than the stock engines from BMW?**

**A:** No, our stock rebuilds are rebuilt with all BMW OE parts, including the rods.

**Q: Do your forged engines make more power than stock alone?**

**A:** No, the forged engines include forged rods and pistons that can withstand higher boost pressures than stock. To make more power, you need to run more boost. To maximize your forged engine purchase, pair it with our upgraded turbos, methanol injection kit, or more boost.

**Q: How much power are your forged engines capable of handling?**

**A:** Our base forged engine setups (forged rods, pistons, and upgraded rod and main bearings) are enough to handle about 1000whp. After that, the block can crack along the coolant jackets. If you have a turbo setup that is able to go past that, we recommend going with our forged and sleeved engine.

**Q: What is the compression ratio on your forged engines?**

**A:** Our forged engines run a 10:1 compression ratio.

**Q: Can I run full E85 on my BMW M Car?**

**A:** Without running a port fuel injection kit, we do not recommend doing so. We do not offer PI kits for the S63 variants, but do have billet intake manifolds for the F1x M5 or M6 that have ports for fuel injectors.

**Q: Will I need to upgrade my high pressure fuel pumps to reach 900 whp or more?**

**A:** Sometimes, depending on the state of your current fuel pumps. To be on the safe side, we do recommend upgrading your HPFPs to the F90 fuel pumps on our forged builds.

**Q: Can I use parts I already have installed on my car in conjunction with one of your packages?**

**A:** Yes, most parts are able to be used with our builds.

**Q: Can you tune my car remotely?**

**A:** No, we don't offer remote tuning. Utku at Utku Noa Performance does all of our shop tunes and most of our customer's tunes. You can reach him via email at [utkunoa@gmail.com](mailto:utkunoa@gmail.com) or on Instagram at [@utkunoaperformance](https://www.instagram.com/utkunoaperformance).

**Q: What if I get my car and I have an issue, how does the warranty work?**

**A:** Labor and diagnostics are not covered under warranty in any situation. You will need to get a professional diagnostic to establish what is going on. For out of state customers, shipping is also not covered under any circumstances. We will try to assist as best as we can, but you need to have a reputable shop who can help you with your build once it's back in your possession.

## **Replacement options:** Should I go with a new engine from BMW, a junkyard engine, or rebuilt engine?

### **New BMW Engine:**

Replacing your engine with a brand new crate engine from BMW is a very costly option. Current pricing for a new S63TU long block from BMW is about \$38,000, not including tax or installation labor.

### **Junkyard Engine:**

Junkyard engines, or engines pulled from wrecked cars, are a pretty large gamble with these vehicles, given how expensive they are plus the cost of installation. With the S63TU, regular maintenance is more important than many other engines due to the issues with rod bearings. Buying an engine with an unknown history is a bit of a gamble.

### **Rebuilt Engine:**

For peace of mind and protecting your investment, a rebuild is the best option of the three. All of our engines are completely disassembled, cleaned, inspected, and rebuilt in house. We give the cylinder heads an overhaul by cleaning the valves and replacing the valve stem seals with the latest revision from BMW, every oil pump is rebuilt to function like new or replaced, and all wearable parts (gaskets, seals, stretch bolts) are replaced with OE BMW parts. Our rebuilt engines are about as close as you can get to purchasing a new engine from BMW.