S550 & S650 Mustang GT/GT500

2200HP-2700HP Fuel System

Important! Must Read First

Congratulations on the purchase of a KPM Fuel System for your **S550 & S650 Mustang GT/GT500**.

To ensure your fuel system is fitted correctly and operates perfectly and reliably, we advise that this kit is fitted by a KPM Fuel Systems Dealer workshop.

If you are unable to access a KPM Fuel Systems dealer, we **strongly** recommend a professional and experienced fully qualified technician to install your new fuel system.

Ask your qualified installer to contact KPM Fuel Systems on any aspect unclear in the instructions provided.

Email: support@kpmfuelsystems.com

As a wide variety of skills, procedures, special tools, and workshop equipment is needed to install this kit:

- KPM will take NO responsibility or give NO guarantees on the operation of this product for fitment not carried out by a KPM Fuel Systems dealer or experienced qualified technician.
- KPM will take NO responsibility or give NO guarantees on the operation of this product due to not fitting this kit exactly as per the instructions provided.
- Ensure correct workshop safety procedures are carried out in fitment of this kit.
- Please read **ALL** instructions before commencing fitment

Guarantee

On satisfaction that **ALL** instructions have been followed as per this document KPM will warrant this KPM Fuel System against any defects or faults for 12 months from the date of purchase.

Important

This fuel system is engineered to operate perfectly as a complete system, when used with all components as supplied only by KPM Fuel Systems.

Depending on the level of KPM Fuel System you have purchased, included in the kit will be the following;

1) KPM Fuel Module x1 - Primary (for increased flow and capacity).
2) KPM Fuel Module x1 – Secondary (for ultimate flow and capacity).
3) KPM Plug and Play EMI Safe Wiring (for correct and reliable current supply).
4) KPM High Flow Fuel Hose Kit.

- KPM Fuel Systems will take NO responsibility for the operation of this fuelsystem if any of the components listed are not utilized *with this* package.

- KPM Fuel Systems will take NO responsibility for the operation of this fuel system if any of the components listed are replaced with a non-KPM approved component.

- KPM will take NO responsibility for the operation of this fuel system if used on a vehicle NOT fully retrofitted for E85 Ethanol or flex fuel.

Note: E85 Ethanol is highly corrosive on many components.

Please be aware that if your car is NOT built for E85 Ethanol from manufacturer, it may be possible that components **NOT** supplied by KPM Fuel Systems will also need to be replaced or suited for E85 Ethanol. Examples of some possible non-compatible components - are fuel injectors, fuel filters, fuel lines, rubber hoses, fittings etc.

All KPM Fuel System components are 100% Ethanol and Gasoline compatible

IMPORTANT NOTE – The 2200 and 2700 hp fuel systems require the tank to be filled on first fill before running the secondary pumps, thereafter fill tank as normal.

Before Dismantling

- You will need to reduce residual fuel pressure in the fuel system to 0 kPa to enable disconnection of fuel lines.
- You can do this by removing the fuel pump fuse and running the engine until fuel pressure drops to 0 kPa.
- Disconnect the Battery.

Primary Fuel Module and Secondary Fuel Sender Module Removal

Although the OE primary fuel module and the OE secondary fuel sender module can be accessed from inside the cabin, the fuel tank needs to be removed on the KPM2200 and 2700HP fuel systems. This is to enable the fitment of the KPM external fuel tank connector pipes and high flow fuel hose kit.

1) Drain the fuel tank and remove from vehicle.

2) Carefully remove the fuel lines from the primary fuel module (a quick disconnect tool is recommended for disconnecting fuel lines, take extra care in not crimping/damaging the fuel line on removal).

3) Remove the electrical connector from the primary fuel module.

4) Unscrew the retaining ring holding the primary fuel module to the tank with the correct tool.

5) Lift the fuel module from the tank until you can access and remove the crossover pipe connector at the base of the canister.

6) Carefully lift the fuel module completely from the fuel tank.

7) Disconnect the electrical connector to the secondary fuel sender unit lid.

8) Remove the retaining ring holding the secondary fuel sender unit to the tank with the correct tool.

9) Lift the secondary fuel sender unit from the tank until you can access and remove the crossover pipe connector at the base of the sender unit.

10) Lift the secondary fuel sender unit from the tank until you can access and remove the large vent pipe connector under the sender unit lid.

11) Carefully lift the secondary fuel sender unit completely from the fuel tank.

12) Reach into the fuel tank and unclip the crossover hose saddle clamp found at the top centre of the fuel tank.

13) Remove and discard the factory crossover hose installed in the fuel tank as this will be replaced with the new #KPMFHMUS6 and #KPMFHMUS7 internal crossover hoses.

Primary and Secondary Internal Crossover Pipe Fitment

The KPM 2200HP and 2700HP fuel systems are designed to correctly scavenge fuel from both sides of the Mustang saddle style fuel tank as per the OE system.

KPM have designed an internal crossover system that links both the primary and secondary modules together, ensuring that the fuel modules are always full of fuel even when the fuel tank is near empty. This added insurance ensures the KPM fuel system can supply up to 2700HP of fuel safely, even with a near empty tank.

For correct operation it is important that the crossover pipes are installed correctly and carefully as per the instructions below.

1) Fit the new internal crossover hose (#KPMFHMUS6) into the fuel tank from the PRIMARY fuel module access on the LH side of the tank.
    a. Ensure that the fuel pick up sock end is fed through towards the SECONDARY side.

2) Fit the new internal crossover hose (#KPMFHMUS7) into the fuel tank from the SECONDARY fuel module access on the RH side of the tank.
    a. Ensure that the fuel pick up sock end is fed through towards the PRIMARY side.

3) Pull both the hose ends out of the SECONDARY fuel module opening to gain access to both the fuel sock end (#KPMFHMUS6) and the quick connector fitting end (#KPMFHMUS7)

4) You will need to pull the hoses out far enough to gain access to fit the supplied (#SM-MUS2) hose separator. Fit both the fuel sock and connector fitting together on the separator as shown, securing with the cable ties supplied.

5) Place the secondary side hose and separator assembly back down into the fuel tank.

6) Pull both the hose ends out of the PRIMARY fuel module hole to gain access to both the fuel sock end (#KPMFHMUS7) and the connector fitting end (#KPMFHMUS6)

7) You will need to pull the hoses out far enough to gain access to fit the supplied SM-MUS2 hose separator. Fit both the fuel sock and connector fitting together on the separator as shown, securing with the cable ties supplied.

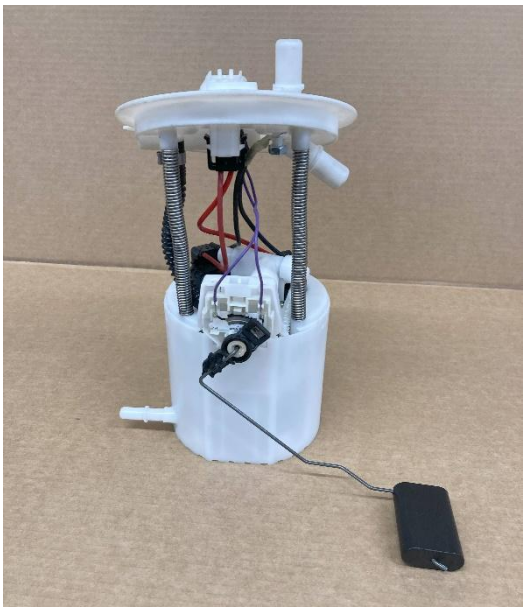
8) Place the PRIMARY side hose and separator assembly back down into the fuel tank.

9) Check both the Primary and Secondary side crossover pipes and separator assemblies sit properly on the bottom of the fuel tank and are ready to be fitted to the respective fuel modules.

KPM Secondary Fuel Module Fitment

1) Remove the fuel sender and float assembly from the OE fuel sender canister.

2) Fit the fuel sender and float assembly to the new KPM secondary fuel module.



3) Pull the crossover hose separator assembly out of the tank far enough to fit to the new KPM secondary module.

4) Place the fuel module as close as possible to the separator assembly and securely connect the (#KPMFHMUS7) hose connector fitting onto the connector at the base of the fuel module.

5) Carefully lower the fuel module into the tank slowly working the float arm, hosing assembly and wiring down.

6) Access and fit the large vent pipe connector under the sender unit lid.

7) Continue to lower the KPM secondary fuel module fully into its correct resting position.

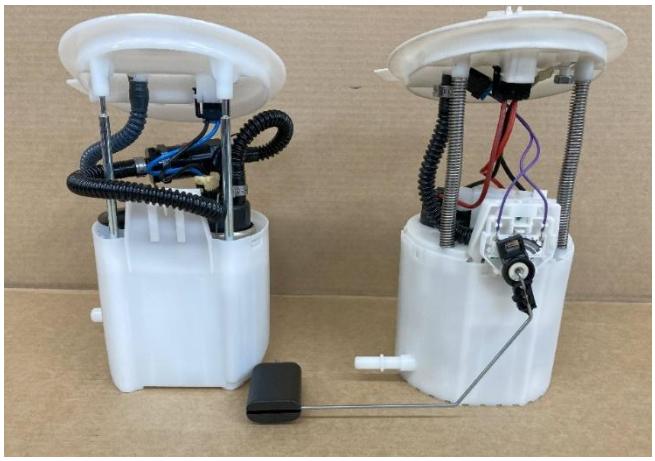
8) Ensure that the crossover separator assembly is sitting correctly at the base of the fuel tank with the filter sock facing the **upwards** direction.

9) Ensure the locating tab on the KPM secondary fuel module is fitted to the position marked **"LOCATOR"** on the fuel tank.

10) Proceed to fit the O-ring new seal and re-tension the lock ring to the secondary module lid.
    a. Ensure module is sitting square and flush on the seal prior to tensioning.

KPM Primary Fuel Module Fitment

1) You will need to remove the fuel sender unit from the standard fuel module for fitment to the upgraded KPM Fuel Module.



2) Reach into the fuel tank and securely clip both the KPM internal crossovers hoses into the saddle clamp found internally at the top centre of the fuel tank.

3) Pull the crossover hose separator assembly out of the tank far enough to fit to the new KPM primary module.

4) Place the fuel module as close as possible to the separator assembly and securely connect the (#KPMFHMUS6) hose connector fitting onto the connector at the base of the fuel module.

5) Ensure the crossover pipe connector clicks fully onto the fuel pump module canister.
6) Carefully lower the new primary fuel module into the tank taking care not to damage the fuel sender and float mechanism while doing so.

7) Ensure that the crossover separator assembly is sitting correctly at the base of the fuel tank with the filter sock facing the downwards direction.

8) Fit the new o ring seal and retention the retaining ring to secure the fuel module into the tank with the correct tool.
    a. Ensure module is sitting square and flush on the seal prior to tensioning.

Fuel Tank Plumbing and Wiring

1) Fit the new KPM fuel line #KPMFHMUS1 and #KPMFHMUS2 on the primary and secondary modules as per the routing pictured below.

2) It is very important that the fuel lines are routed exactly as shown, firmly clicked together and securely held in position with the provided adhesive tape.

3) Please clean the tank surface with the tank-prep supplied before adhering the adhesive.

4) Fit the standard wiring loom sections to the fuel tank.

5) Fit the KPM section wiring looms #Mus5 and #Mus9 respectively to the primary and secondary fuel modules. Be sure to connect the earth wire eyelet to the new fuel modules earth studs by securing the supplied nut and washer.

6) Proceed to refit the fuel tank ensuring that both the primary and secondary fuel module wiring looms are fed through the holes in the floor.

7) Proceed to the KPM PWM and Wiring Instructions for the relevant wiring schematics and wiring fitment instructions.

KPM High Flow Fuel Hose Kit Fitment

The KPM high flow fuel hose kit is made of high-grade stainless steel, mandrel bent to perfectly fit your 2015 - onwards Mustang.

The pipe inside diameter is 13.5mm and designed to support well over 3000hp of fuel supply. KPM also supplies aluminum heatshield sheathing that you can cut to size along the full length of the pipe.

The fuel filter is made of 40-micron stainless steel and is fully re-cleanable for lifetime usage. It is 100% Ethanol and Gasoline compatible. The fuel filter canister has a boss made to perfectly accept the supplied Bosch Fuel Pressure Sensor.

1) Disconnect your fuel supply to fuel rail pipe found under the hood in your engine bay.

2) Undercar, remove the plastic shrouding covering your fuel pipe on the LH side of your chassis rail.

3) Unclip, remove and discard the OE steel fuel supply piping that runs from the rear tank section all the way to your engine bay.

4) Fit the front section #KPMFHMUS4 steel pipe from underneath up into the engine bay area. Temporarily use the factory saddle clamps on the firewall and cable ties to hold it in an approximate position.

5) Fit the rear section #KPMFHMUS3 steel pipe to the quick release pipe fitting coming down the LH side of the fuel tank. Temporarily use cable ties to hold it in an approximate position.

6) Fit the fuel filter to the flared ends of both pipes. Loosely screw on the nuts until they are seated. Ensure the filter is fitted in the correct direction of fuel flow.
    a. Ensure the provisional fuel sensor boss is facing outwards as shown.
    Ensure the provisional fuel sensor boss is facing outwards.
    b. Ensure that the 2 pipe flare O-ring seals are fitted in place (as supplied) on both sides of the filter ends

7) Fit the factory plastic shroud and cut to modify (as shown below) so as to fit the larger KPM fuel piping.

8) Check the piping is in the correct positions in all areas and when satisfied test fit and mark out the positions for the final fitment of the fuel pipe clamps supplied. You will find supplied 4 x 5/8” base clamps.

9) With all the fuel pipes and fitting clamps mapped out, you can now measure and cut your heat shielding to be fitted for a final fitment. Be especially sure to run the heat shielding on any section of fuel line running close to a heat source e.g., headers, exhaust, cats etc.

10) Securely fit all fuel line connectors and tighten the flare nuts at the fuel filter firmly. DO NOT OVERTIGHTEN.

11) Connect the new nylon fuel line #KPMFHMUS2 quick connect fitting that is at the LH front of the fuel tank to the new #KPMFHMUS3 steel pipe section.

12) Fit your final #KPMMUS5 Nylon fuel hose section to the fuel pipe end in the engine bay. Route this fuel hose behind the engine to end at its OE outlet position. Secure as required.

13) Due to the many combinations of manifolds, fuel rails, flex fuel systems, superchargers, turbo etc. positions the end user is required to manufacture their own last piece of fuel supply line to the rail entry. KPM have supplied a quick release 8AN fitting to help you complete and adapt your fuel system using common fittings.

IMPORTANT NOTE – The 2200 and 2700 hp fuel systems require the tank to be filled on first fill before running the secondary pumps, thereafter fill tank as normal.

14) When you have fully finished fitment of your fuel supply system YOU MUST CHECK FOR ANY LEAKS BEFORE START UP. Prime fuel lines while checking for leaks. If all ok start the vehicle and perform a thorough check under vehicle and at all fitting points. Run the vehicle until everything has been warmed and then re-check all fittings and fuel filter nut tensions.

Congratulations! You are ready to go.

Please see your specific vehicle year/model **PWM and Wiring Instructions** to complete you KPM Fuel System installation.