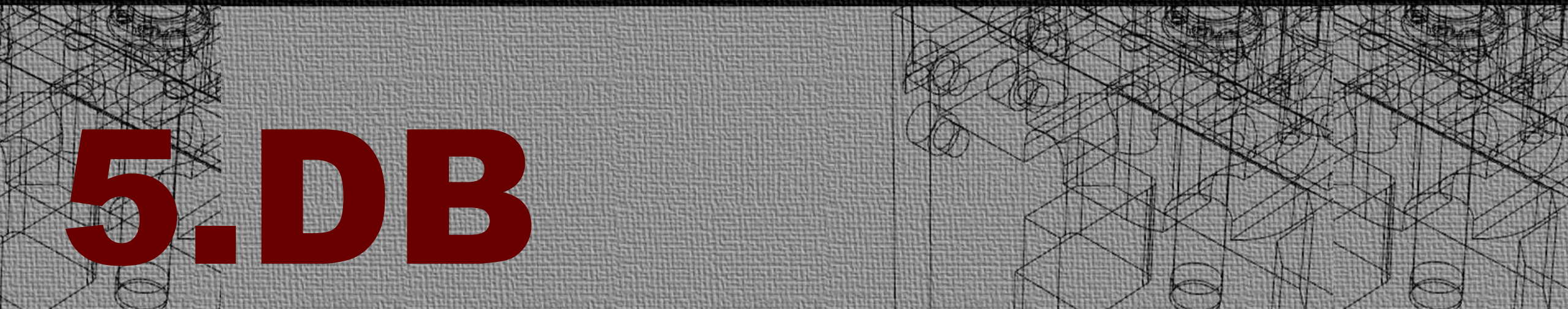




5.D.B

Introductory and Intermediatory Skills to 3D-Modelling
(Chapter 5: A first Project)



5.D.B

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(1) Design Brief Overview → Cam-Shaft Holder

As a new intern at AA-Research you have been tasked to produce a model for the drive-train of a new vehicle that AA-Heavy Industries is producing. Congratulations!

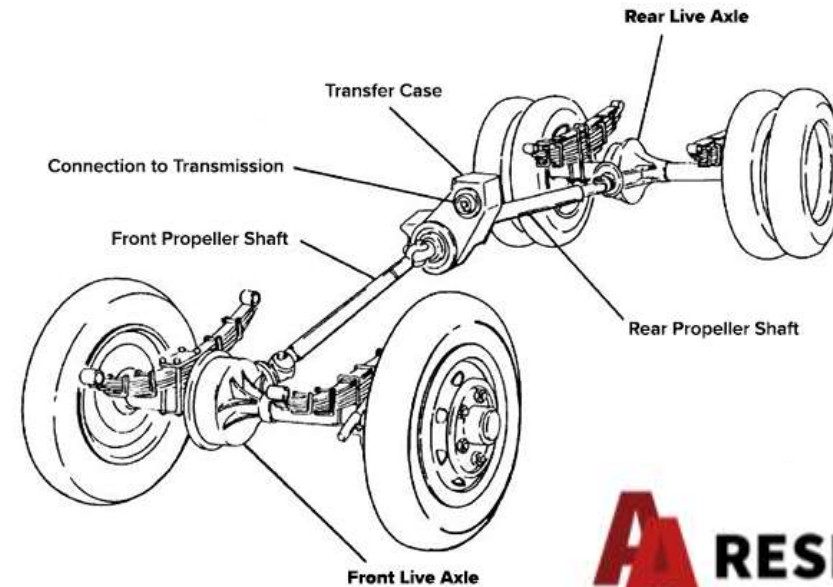
Your part that you will model will play a crucial role in making sure that the drive train of the new vehicle does not suffer from vibrations and oscillations that may perhaps reduce vehicle performance. The part that requires to be modelled has been drafted by a technician on a page but they require you to transfer the model to Fusion 360 reading for CNC cutting machines to cut out the part on the assembly line for the car.

You must ensure you follow all measurements very carefully, as the technician has precisely calculated the stress the part will experience with the given material available for manufacturing (Mild Steel). If you do not follow the measurements carefully you risk part failure and catastrophic failure of the vehicle on the testing track.

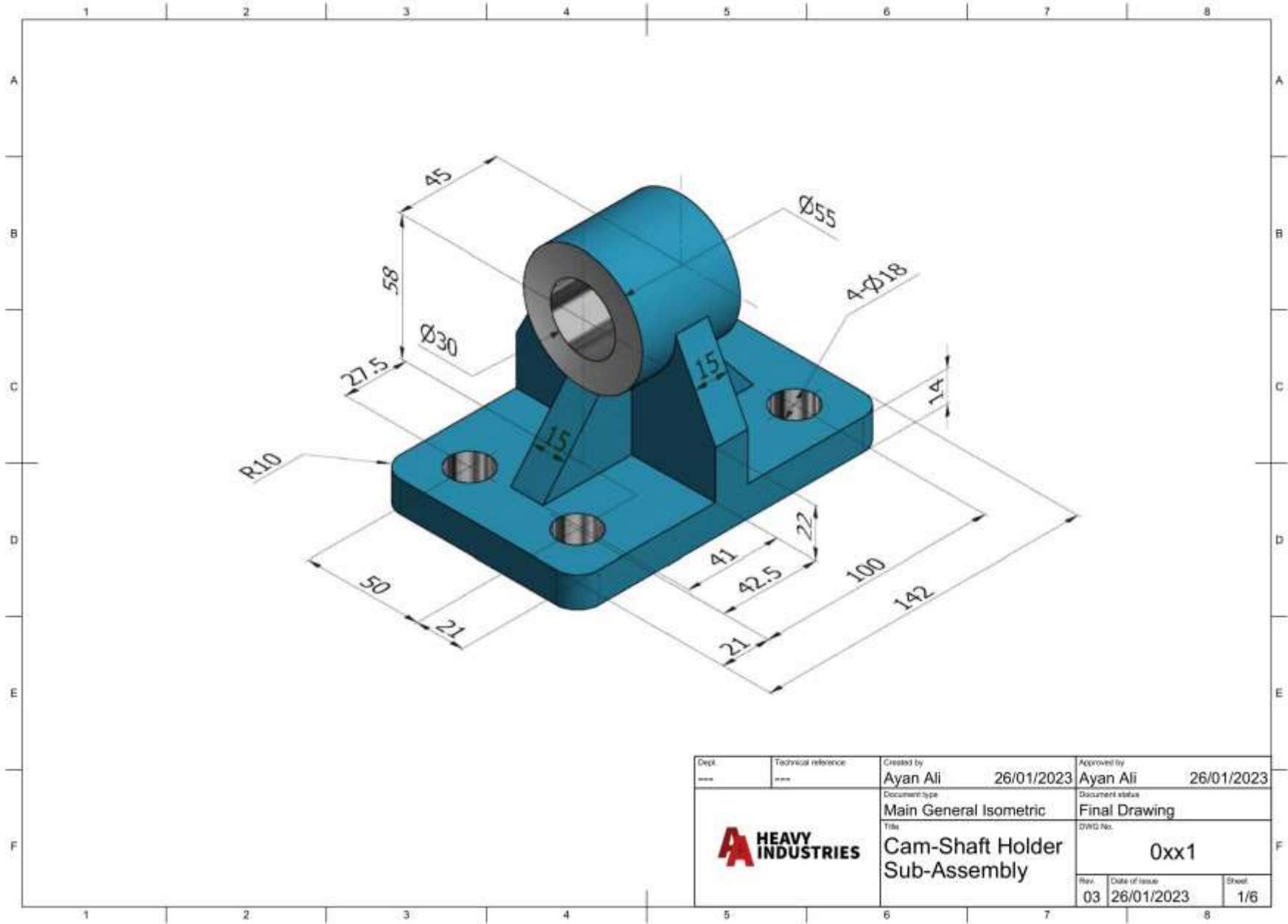
The part contains the following features:

- (1) Four smaller circular holes that will allow it to be bolted to the vehicle's frame.
- (2) A large hole where a ball-bearing will be fit using a hydraulic press and will be held in by friction.

Success in modelling this part will show your manager that you are able to proceed to more advanced models such as in Design Brief (2).



(1) Technical Drawings → Cam-Shaft Holder



(2) Design Brief Overview → Brake Attachment Point

You have been assigned a new part that you must transfer from a technical drawing to Fusion 360 ready for machinists to manufacture.

Your part that you will model will play a crucial role in making sure that the braking and suspension sub-assembly of the car will be able to handle the excess force during tight turns. The part that requires to be modelled has been drafted by a technician on a page but they require you to transfer the model to Fusion 360 reading for CNC cutting machines to cut out the part on the assembly line for the car.

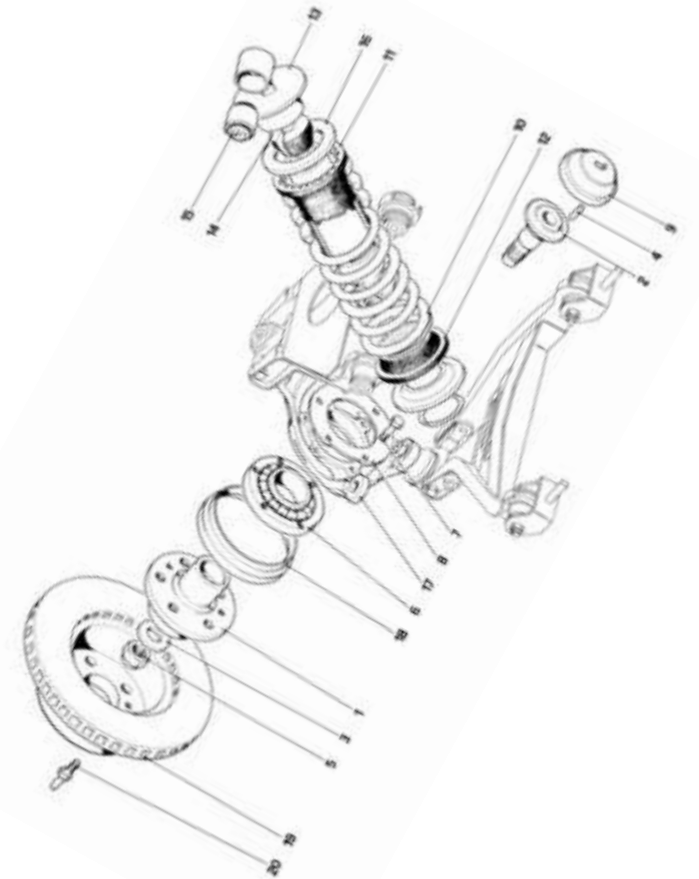
You must ensure you follow all measurements very carefully, as the technician has precisely calculated the stress the part will experience with the given material available for manufacturing (Mild Steel). If you do not follow the measurements carefully you risk part failure and catastrophic failure of the vehicle on the testing track.

The part contains the following features:

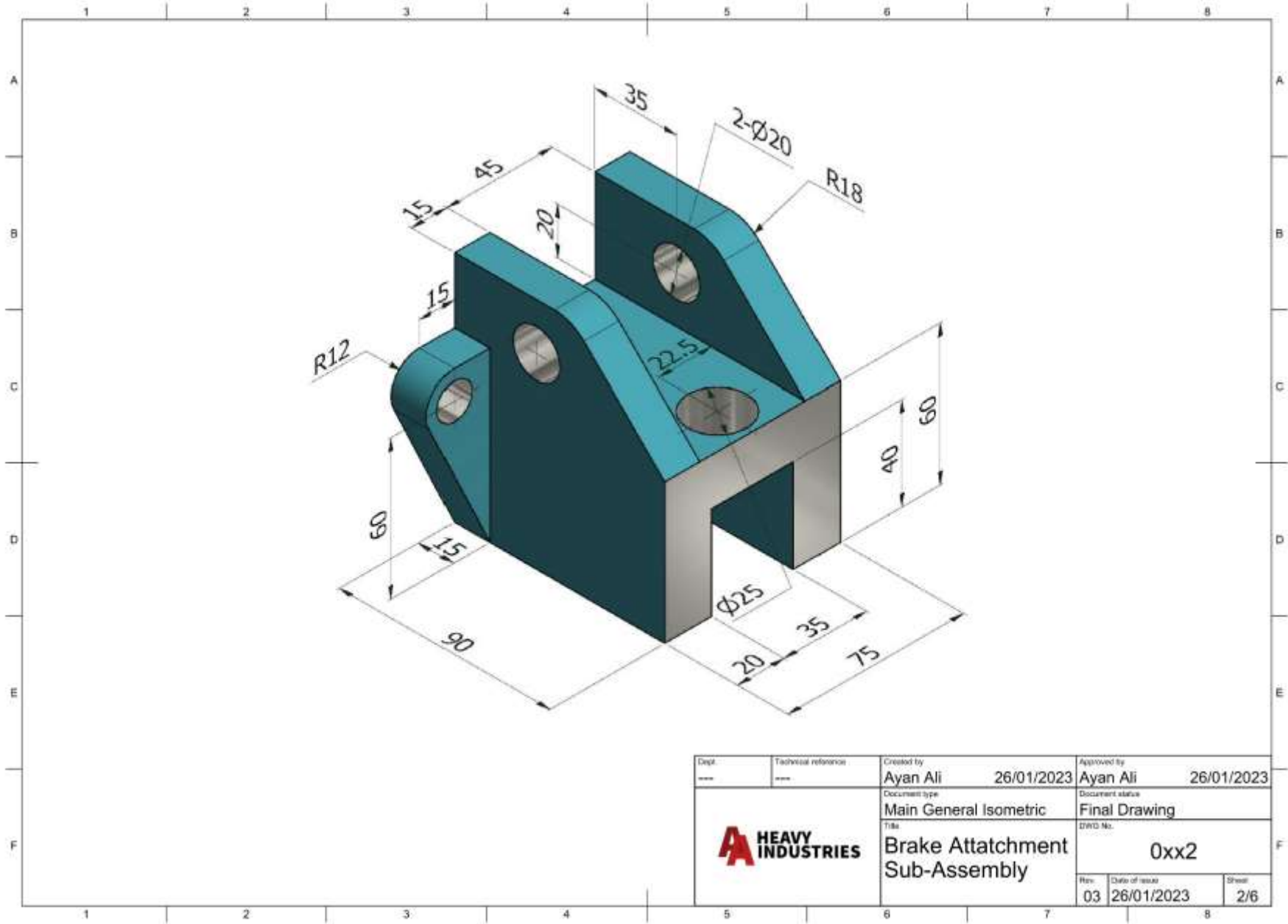
- (1) Two Small holes for mounting the bracket to the car's frame.
- (2) A large hole where a ball-bearing will be fit using a hydraulic press and will be held in by friction.
- (3) Two Small medium sized holes where a metal rod will slide through as part of the rest of the assembly.

Again, make sure measurements are followed precisely otherwise your part will not be able to fit with other designers' work.

Success in modelling this part will show your manager that you are able to proceed to more advanced models such as in Design Brief (3) or (4).



(2) Technical Drawings → Brake Attachment Point



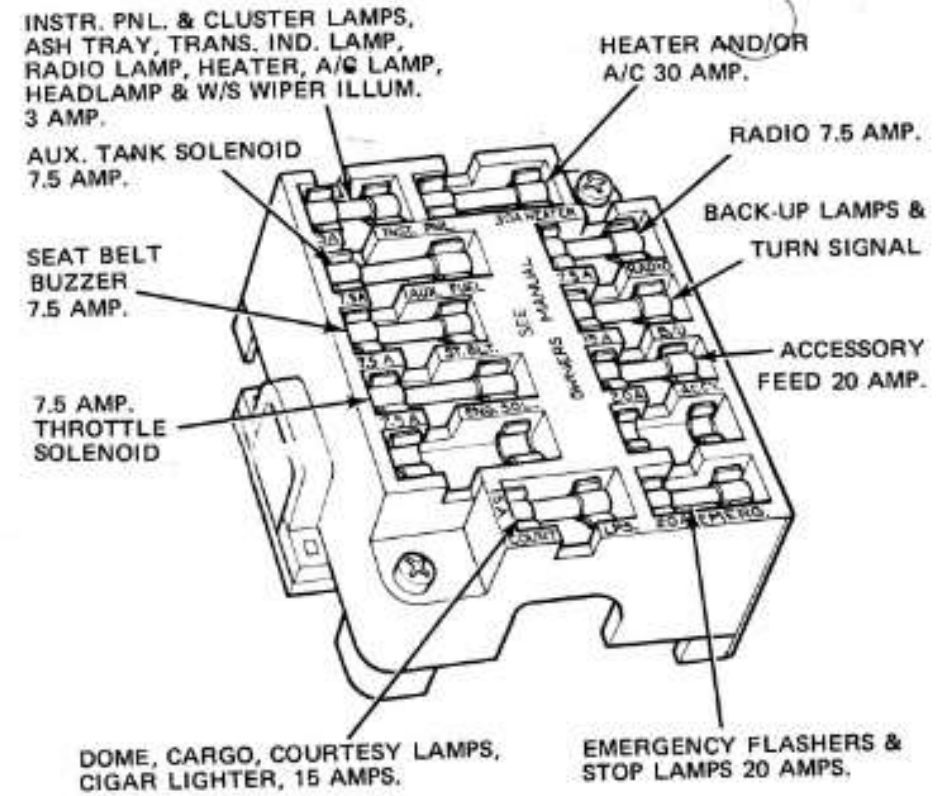
(3) Design Brief Overview → Fuse-box Manifold

After the successful completion of your previous project you have been granted responsibility of transferring a technical drawing of the manifold cover for the Fuse-box.

Such a manifold cover will be used to protect the fragile fuses from bumps and knocks, and will also prevent corrosion on the steel clips that are used to hold the fuses into their respective sockets.

Ensure you follow measurements precisely or you again risk your part not fitting with the parts the other designers in your team have produced.

Success in this endeavor will result in being assigned a final and more complex model that must be transferred to Fusion 360 for CAM.



(3) Technical Drawings → Fuse-box Manifold

Drawing not complete, Placeholder text.

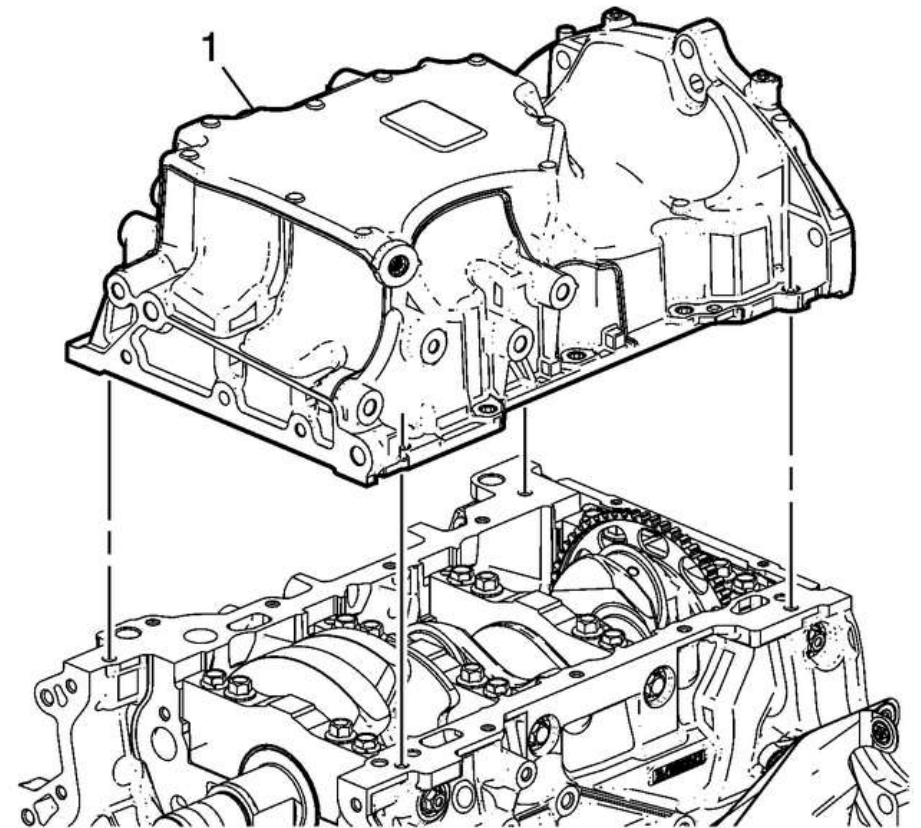
(4) Design Brief Overview → Oil-Cover Manifold

After the successful completion of your previous project you have been offered a permanent position as a technician in AA-Research. Congratulations!

Such a position will involve producing 3D-models from your intuition and grit from a given set of constraints as part of a larger assembly. However, this will only be possible after the Intermediary skills of Fusion 360 are learned, but make sure you are prepared for the challenges that lie ahead!

This part of the engine ensures the oil does not spill everywhere under normal operation of the vehicle, it is used to close up the timing chain and other internal components from the outside elements such as dirt, rain, etc.

Ensure you follow measurements precisely or you risk leaks in this crucial part of the engine. A leak would certainly mean catastrophic failure on the test track as it would result in the engine over-heating due to a loss of oil and seizing up under the track-strain test.



(4) Technical Drawings → Oil-Cover Manifold

Drawing not complete, Placeholder text.