MACHINE DRAWING

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Topic: A Single Turbocharger

Objective: Design an efficient, high-performance model that optimizes airflow and withstands high pressures and temperatures. The design enables simulations for airflow, thermal stress, and rotational dynamics, ensuring reliability, durability, and manufacturability for enhanced engine power output in automotive applications.

Description: In this project I learned about cruicial part use in industries that is turbocharger particularly Single turbocharger. I grabbed information's about different components of a single turbocharger and applying some rough assumptions for dimensions and using some references mentioned below I made this model. I even some inbuilt models of SolidWorks like hex nuts in my models. In my model I used many SolidWorks features like swept features, mirror feature, circular pattern feature, boss extrusion feature, extruded and revolved cut feature, reference geometry, Fillets, and camphor. In assembly part I applied mating to connect all parts of turbocharger correctly. The drawing of all parts is drawn and bill of materials is also made in the drawing.

References:

https://amt-turbo.com/knowledge-base/components-of-a-turbocharger/#:~:text=The%20turbocharger%20is%20made%20up%20of%20thr

ee%20main,Turbine%2C%202%20Compressor%2C%203%20Center%20hub%20rotating%20assembly

https://4.bp.blogspot.com/-fXI89d4LCZ8/W7yM5bhAwDI/AAAAAAAAACQ/3DUZJKN2mncqLNksCRNVZUCJMyaDMJbLwCLcBGAs/s640/nI1Ru-min.jpg

https://th.bing.com/th/id/OIP.k0vFHTUhgGHXuzn2aib--QHaEP?rs=1&pid=ImgDetMain

https://sketchfab.com/3d-models/basic-turbo-charger-414dd8615bb24b798807fd187cedfe73

Why this: Designing a turbocharger in SolidWorks enables optimization of power, efficiency, and durability under extreme conditions. Through precise modeling, engineers can analyze airflow, perform thermal and structural tests, and ensure manufacturability, producing a lightweight, cost-effective turbocharger that meets high performance and reliability standards for automotive applications.