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Chapter 281: A New Engine

A racing shuttle, just like a car, consisted of a lot of components grouped into a few.

In a car, using the language suitable for a five year old, the basic grouping consists of the frame, the engine and the power transmission units, supported by tyres.

In a less basic sense, a car consisted of two main parts: the machine portion and the carriage portion. The machine portion includes the chassis and transmission, the engine, and other electrical components like the sensors. On the other hand, the carriage portion was made up of the body, the seats and all those other 'simplistic' parts.

A hover car was just the same albeit with a few major changes. Rather than a typical ICE (Internal Combustion Engine) [1] or a typical electric motor engine, hover cars used a more complex electric engine. In the case of racing shuttles, they used a stellar energy which was powered by stellar energy. Most racing shuttles in lower leagues used electrical energy by converting stellar energy because the vestige-smith skill-set and engineering required for the former was immense. As racing shuttles and hover cars flew, they didn't use electric motors.

For racing shuttles that used stellar energy directly, they had a special type of engine meant just for that. On the other hand, those that utilised stellar energy indirectly, have a power source that was separate from the engine. The power source would then have a transmitter meant for delivering stellar energy to the engine because the two components were too big and complex to be joined together. Depending on the power transmission technique used, one could create a faster racing shuttle.

Power transmission technique was very important to improving the speed of a racing shuttle, as the more stellar energy could be delivered to the engine in record time, the faster the engine would work. This was because it would receive an immense amount of energy at a stable rate, giving it a higher acceleration and speed. Naturally, this was on the condition that the engine was up to the task.

The L2.13o used the famous Linear drive system for power transmission. This system was used both by light-rail trains and starships because it could achieve the fastest delivery speed for energy while simultaneously providing an incredible amount of power. To put it into perspective, it was like a straight-line pipe gushing out water with an immense pressure.

Although this was one of the most powerful designs ever, its problem was obvious; handling. The linear drive system was just too powerful that it was very difficult for drivers to handle in a curved path. This was why it was mostly retained for use in light-rail trains and starships, as those vehicles commonly moved in a straight line with few turns. Even if they needed to do so, it wouldn't be a sharp turn as with racing shuttles.

While the disadvantage of the linear drive system was obvious, Orvel was a genius. By working with the other departments in the Versoa team, he was able to minimise some of the disadvantages of the linear drive system. To be exact, he actually combined two power transmission techniques on the Viper's engine, using the linear drive system for straight paths and switching to a different power system for curvy tracks.

Naturally, this added a bit more burden to the Viper. One power transmission technique already required certain physical parts to work, and two was all the more intensive on the vehicle. But by having the Materials manufacturing department —led by Jovä— develop a suitable alloy, they managed to reduce the original tonnage of the engine.

While there was still an increase in weight, it was 40% less than anticipated. With the combination of two power transmission techniques, compensating for straight line dashes and, drifts and sharp turns, the performance of the Viper was impressive.

The core engine was also a spectacular creation that converted stellar energy to electrical energy at remarkable speed. The drives used were also formidable. All in all, the L2.13o was a marvellous work of engineering and vestige-smithing.

However, in Lucas' eyes, it was riddled with flaws. The problem was...

"I'm too weak." Lucas sighed.

Third level Apertures Opening stage strength wasn't enough to make great improvements on it.

Staring at the projected blueprint model of the L2.13o, Lucas scribbled all over it, ruining the blueprint.

'The only option is to redesign the engine entirely; including the power transmission system, the energy storage and the core engine.'

Even though an engine and a power source were two different components, they were mostly treated as one. After all, the mechanics required in building a power source and the power transmission system wasn't something just anyone could do. But a vestige-smith specialised in engine design could do so.

Moving to the fresh piece of blueprint paper provided by the system on his workbench, Lucas began making his designs.

For the energy storage unit, he planned on making a unit using some of the precious materials for the system. They weren't exaggeratedly expensive and roughly of the same value as the one used on the Viper's energy storage unit. Also, Lucas intended to incorporate a certain power transmission technique into the energy unit. That's right, into the energy unit and not as an independent component.

The energy unit Lucas intended to use was the Triquetra-shaped chamber, which he had used on the Juggernaut during his time at the Black Star team. It was an energy unit design that incorporated power transmission ideology using a unique shape called a triquetra [2].

The advantage of this design was that the stellar energy would constantly be in an active state and once released into the power transmission system, it would already possess a strong characteristic to it. Using an analogy, it was like the difference between water in a swimming pool and water in motion. The water in the pool has no kinetic energy that could be taken advantage of right away, unlike water in a motion, for instance, a river. A river could push an object, but a swimming pool can't.

In the same way, when the energy within the Triquetra-shaped chamber is released, it possesses a unique characteristic similar to the kinetic energy of flowing water, which helps with the flow rate of the energy from the storage unit to the engine. With the added effect for the power transmission system, there would be an even greater boost to the speed of power transmission to the core engine.

For the power transmission system, Lucas ditched the L2.13o's linear drive system and went for a different system; one more suitable for curves and sharp turns.

Even though he could have done like Orvel and utilise two power transmission systems, there was no need for that. The energy unit, the Triquetra-shaped chamber, already performed a similar function to the linear drive system. Having another straight line dash transmission technique was pointless. Also, because the Triquetra-shaped chamber was an energy unit, it wouldn't have the disadvantages of the linear drive system since it could be combined with an opposite type power transmission system.

The power transmission system Lucas used was a V-case drive. It was a self-made power transmission system that took inspiration from Earth's V-type engines. However, this inspiration was only in name and shape, but their functionality and features were very different.

Finally, for the core engine, Lucas went all-out, actually, 60% effort. It was still a stellar-to-electric core engine with an electric propulsion drive system. Although he could make a direct stellar propulsion drive system, no one would believe that Lucas had done so. In that case, he decided to do as the Romans did while in Rome [3].

The best electric propulsion drive system Lucas could design was so powerful that if it were used on a car back on Earth, as long as the exterior was durable enough, it would be a piece of cake for the car to enter space; albeit the basic definition of space [4]. However, for this, he toned it down a lot because there was no need for space travel. Even so, reaching 500km/hr wasn't a problem.

After that came the design for the cooling system, lubricating system, the stabilisers, controls, sensors, and more. Overall, Lucas spent roughly ten hours on this. It might sound much, but truthfully, it was the opposite.

A regular design team took anywhere from two weeks to two months to complete researching and designing a brand new racing shuttle engine. To be able to do the same within ten hours was unbelievable. It just goes to show how much of a genius Lucas was.

With the blueprint now completed, the next course of action was to simulate the design before the actual construction. However, Lucas was confident in his calculations, so he decided to skill the simulation process and dive right into construction.

Even though some said that smithing an engine wasn't as difficulty as designing it, it was still very difficult. Luckily, to Lucas, this wasn't even a problem. He would only just be taking more time for it.