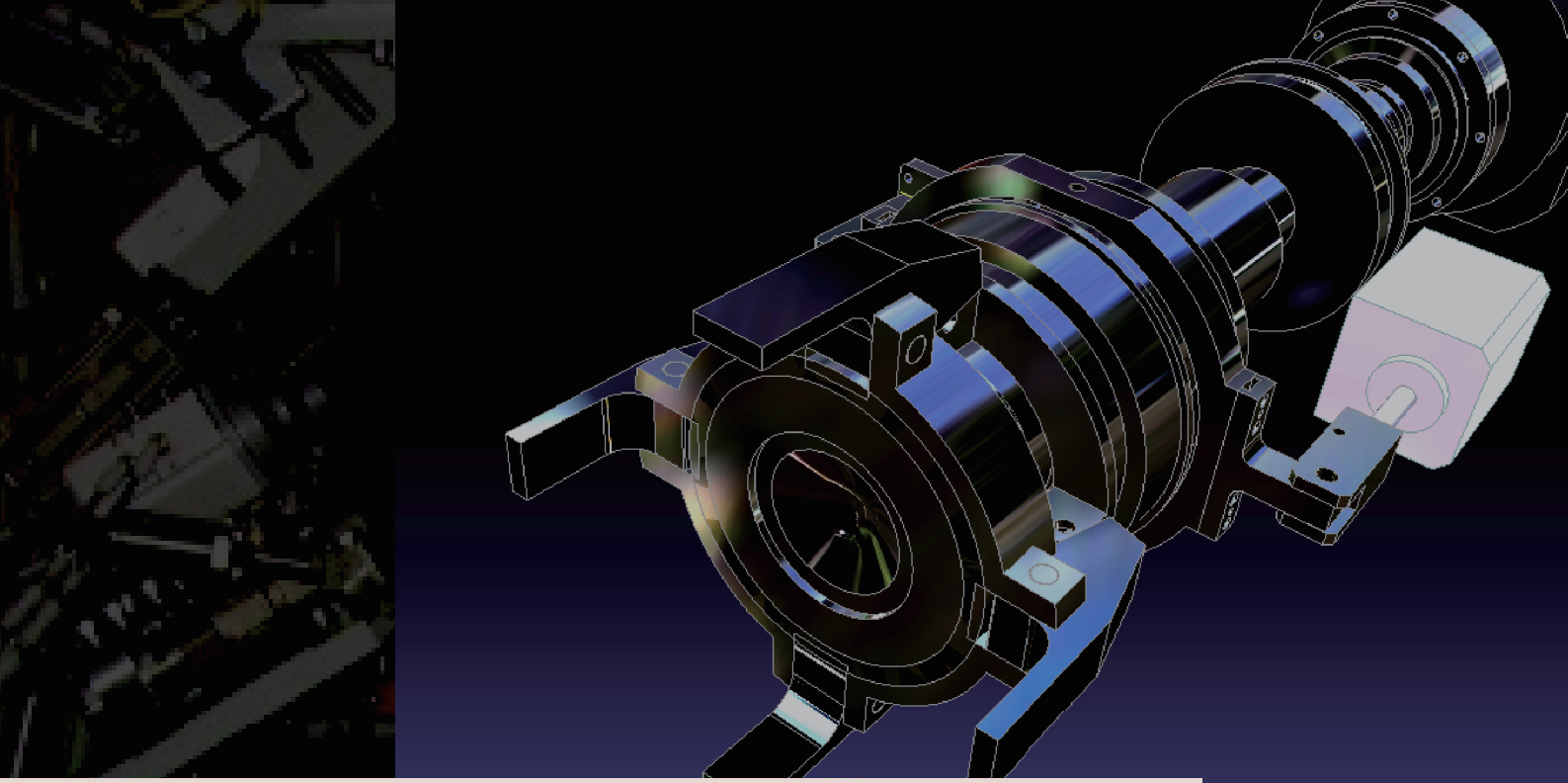
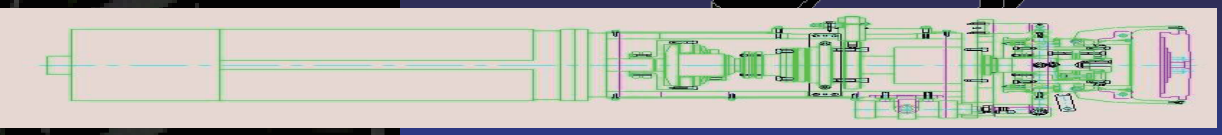
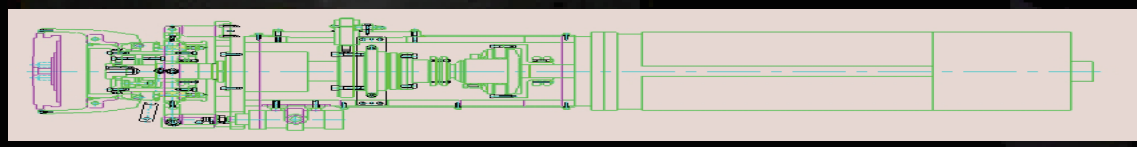
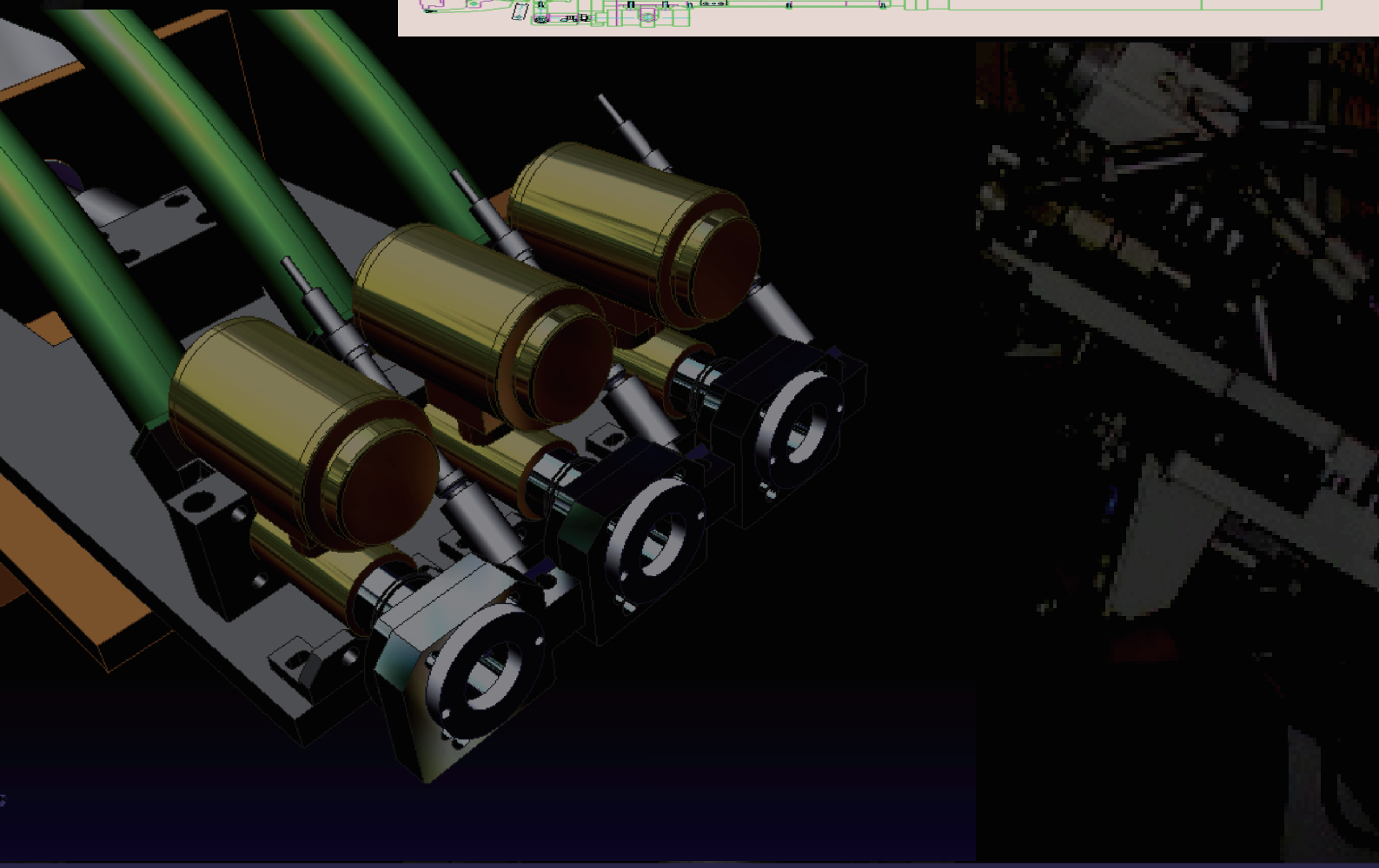
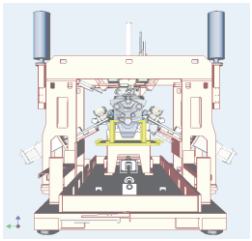




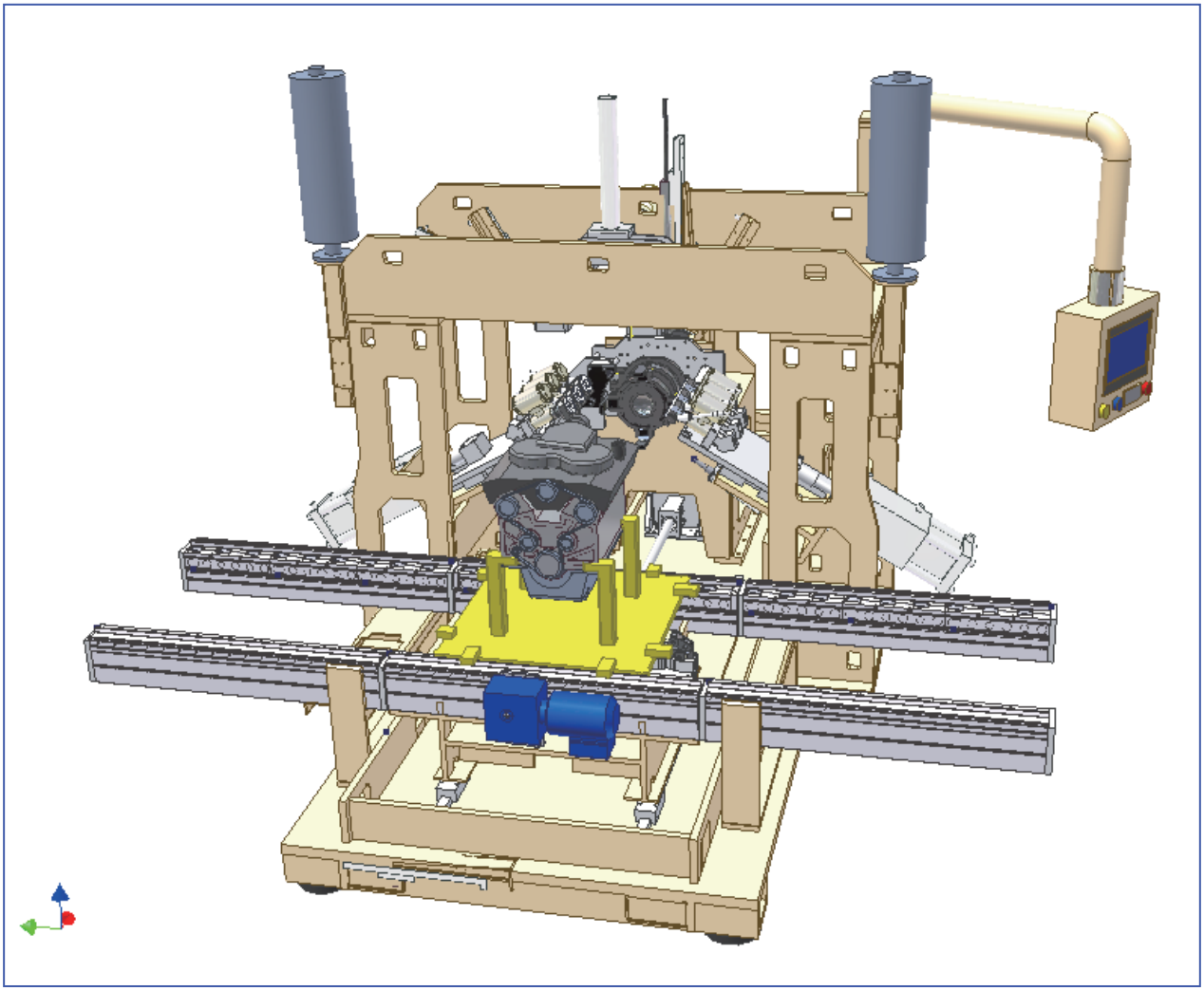
Cold tester

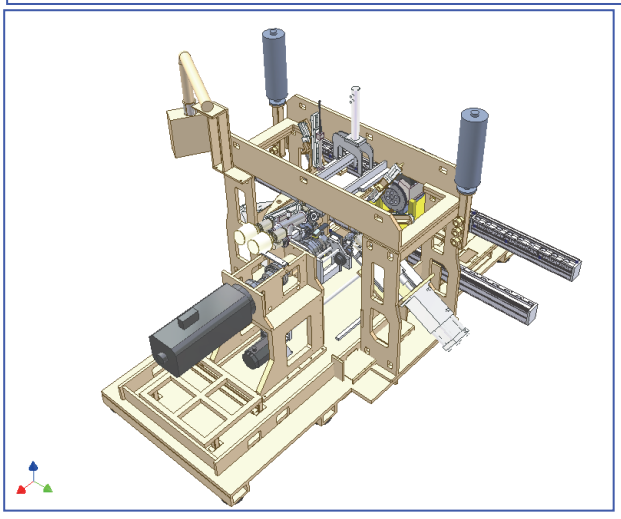


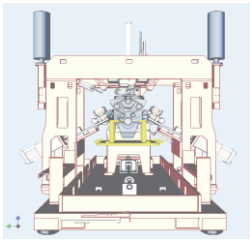




Appearance -------







Equipment Outline -------

・This piece of equipment is an engine cold test equipment which is used for testing engine function during the final process of the engine assembly line.

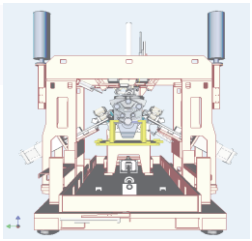
・The equipment performs tests (data sampling and analysis) according to the pallet ID information and is capable of holding the crank at various angles.

・The engine data is sampled and analyzed using the base signals, which are provided by the high frequency pulse encoder and are responsible for maintaining an accurate clock, combined with various output signals such as those for rotation torque, NVH, pressure sensors (for air intake, exhaust and oil), ignition passive speed sensor, engine crank angle sensor, and engine cam position sensor.

・High accuracy testing is achieved by introducing the temperature, humidity, air pressure and engine oil filter temperature values as (environmental) data parameters.

Operation Outline -------

1. ID readout and loading of the pallet with the engine to be tested mounted onto the test area.
2. Engine clamped.
3. Flywheel gear secured and all the instrumentation devices connected.
4. Testing and analysis performed.
5. Crank angle positioning performed.
6. All the instrumentation devices unclamped and then the pallet disengaged.
7. ID write-in and the pallet unloaded; loading of the next pallet.

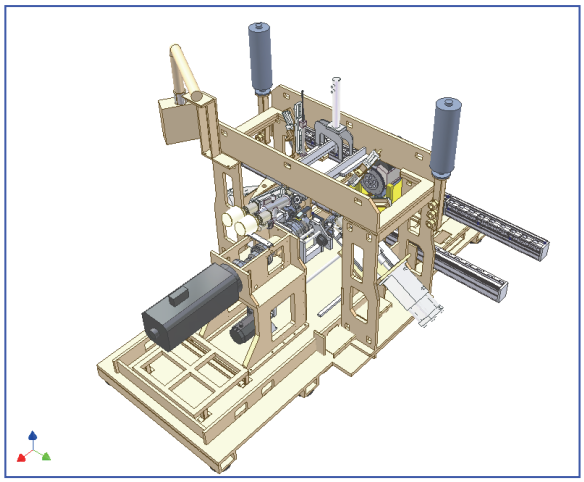


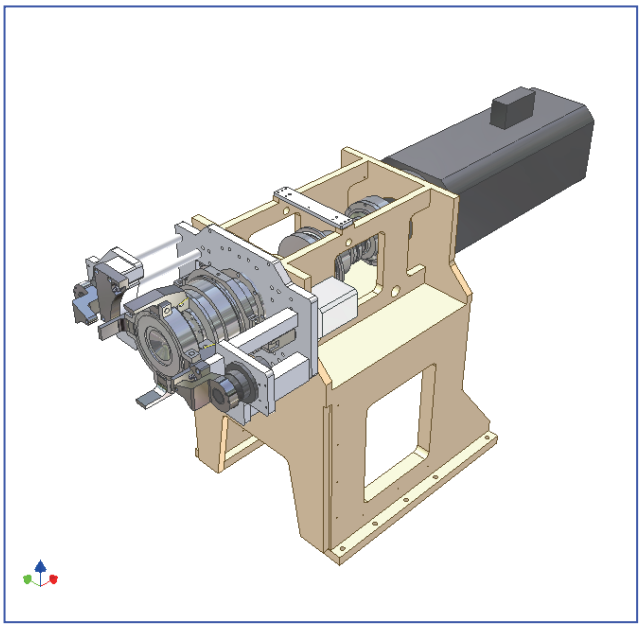
Features -------

High-Frequency Pulse Encoder & High-Torque/High-Speed Rotary Motor

・The encoder used in this equipment is very accurate and is designed to be subject to less noise due to the fact that its output signals are used as the clock for all analog signals.

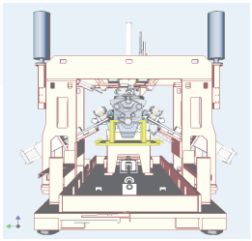
・No reducer is used in the motor in this equipment in order to achieve high-speed, high-torque rotation.





Excellently-Balanced Main Shaft Rotating Head

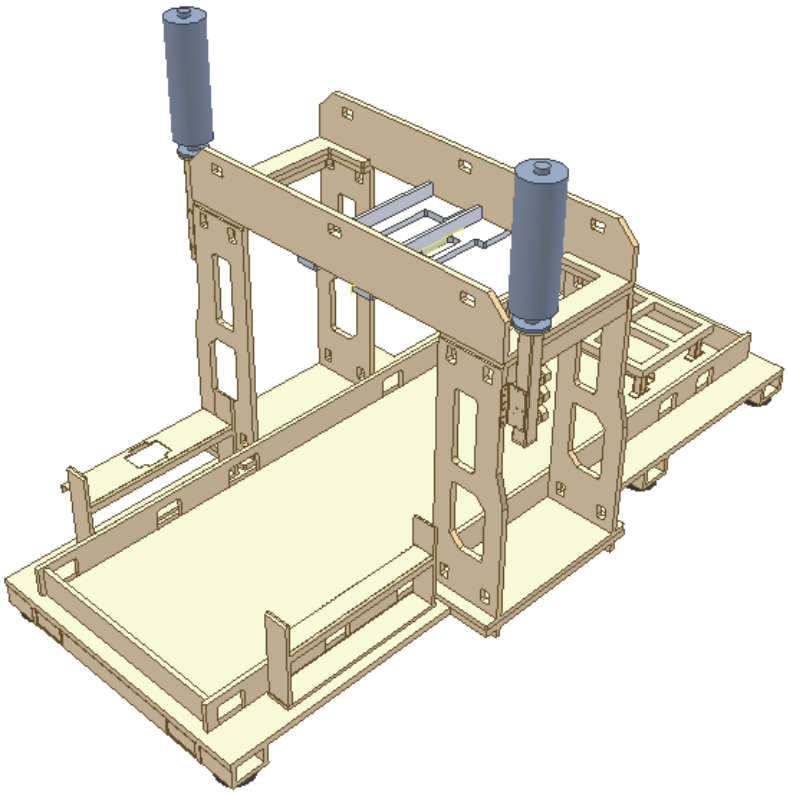
Stricter requirements were adopted for the main shaft balance than for the crank shaft balance. By ensuring the main shaft is perfectly balanced after mounting of the rotating head, we have successfully created a piece of equipment with minimum vibration.



Features -------

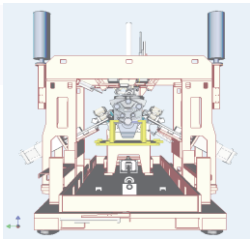
Highly Rigid/Vibration-Resistant Base Structure

Adoption of a box-shaped base design with a low center of gravity that does not resonate with the engine even when the engine is rotating at a very high speed. (The weight of the base is twice the weight of a normal base.)



A Realistic Large Cross-Section Air Intake and Exhaust System

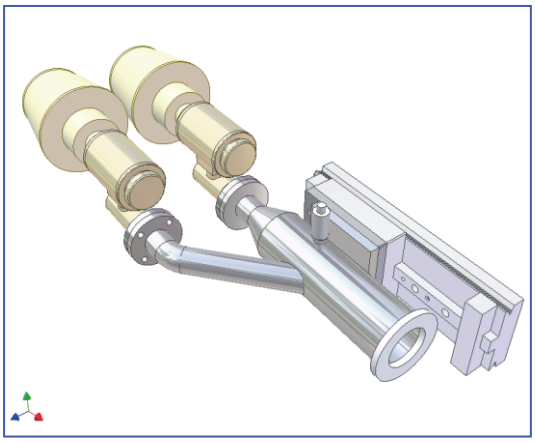
Adoption of a large cross-section piping design that obtains accurate air intake and exhaust pressure for testing. (The cross-section area is equivalent to those of the engine intake and exhaust ports.)



Features -------

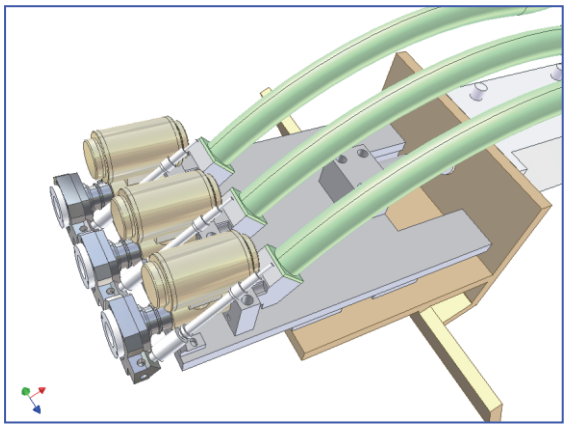
Noise Control 1 (large cross-section air intake)

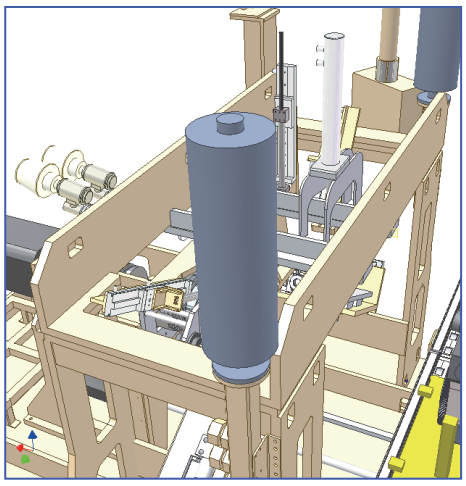
Adoption of a large cross-section air intake design that reduces the air intake whistling sound and achieves correct NVH.

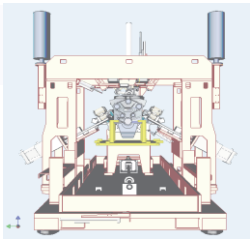


Noise Control 2 (highly rigid exhaust hose and muffler with high exhaust efficiency)

Adoption of a large cross-section hose with low volumetric changes that reduces the continuous bounding sound of the exhaust air, and adoption of the tornado muffler that reduces the exhaust air pressure and noise at the same time.







Features -------

Noise Control 3 (transparent Lexan cover)

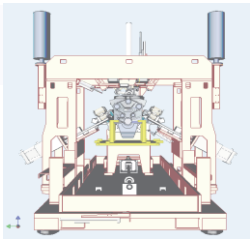
The transparent enforced plastic plate reduces leakage of the sound produced by high-speed rotation, improving the working environment for employees.

Noise-Reducing Wiring

The wire duct structure separates the wires carrying the analog signals susceptible to noise from other wires (power lines in particular).

Profibus Communication for Flexible Control of the Rotation Speed and the Crank Halting Angle

The test mode and the crank halting angle can be controlled as desired for each pallet ID via the Profibus communication.



External Dimensions -------