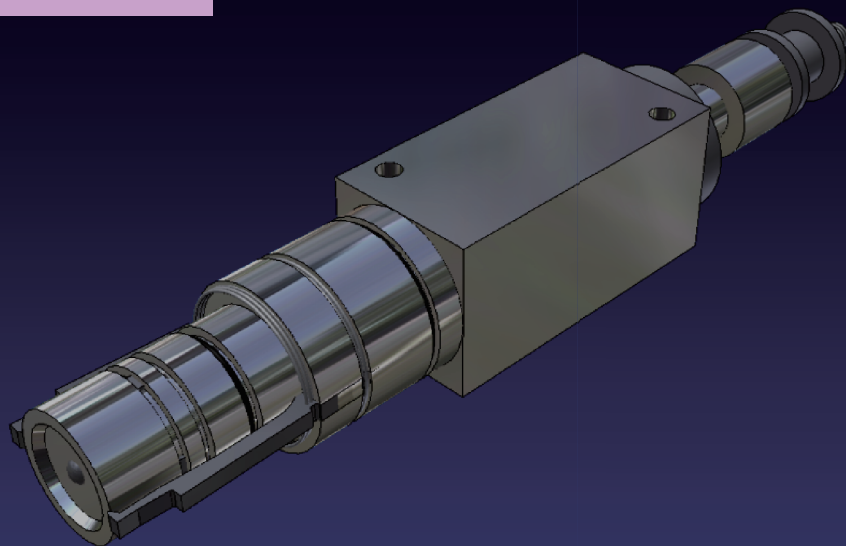
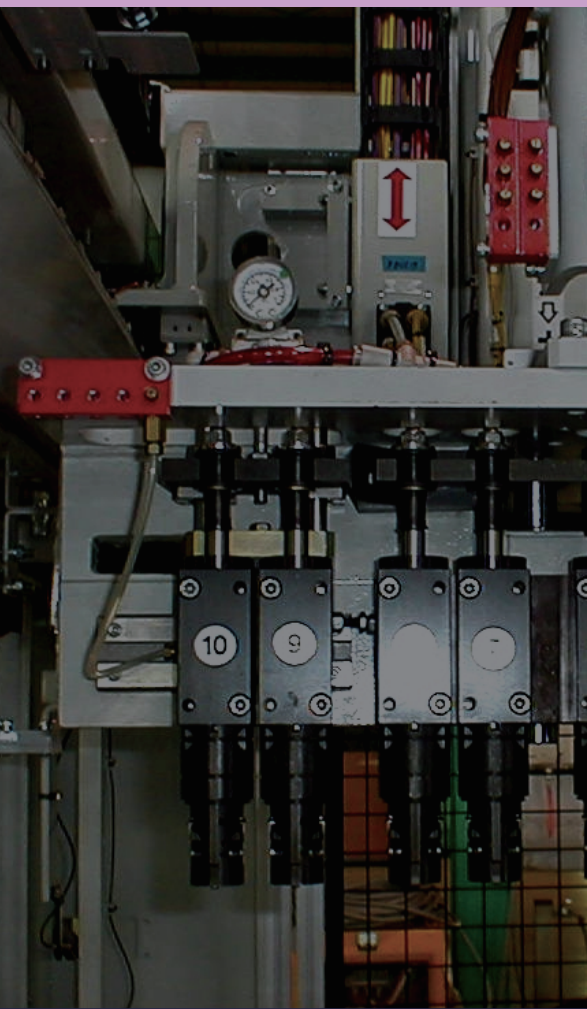
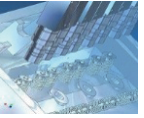
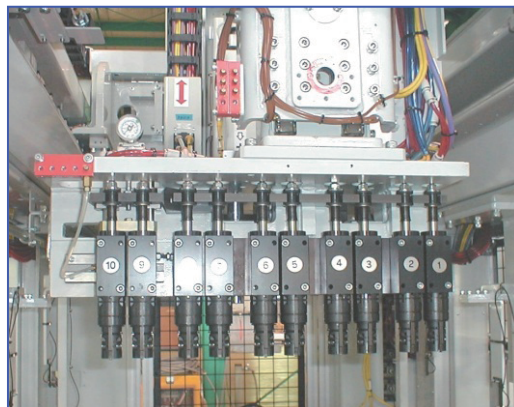
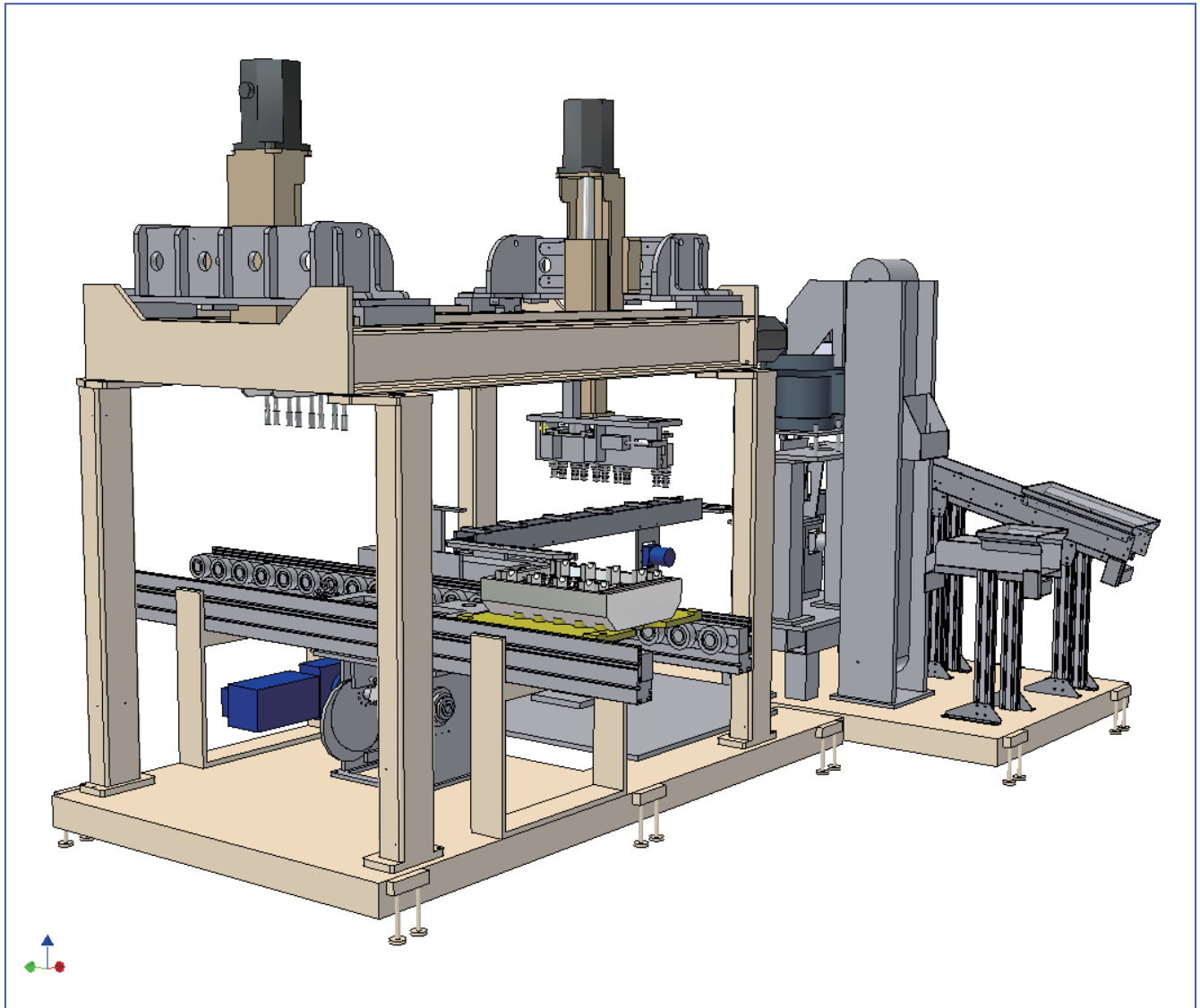


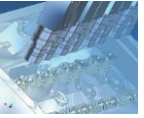
Key-up machine





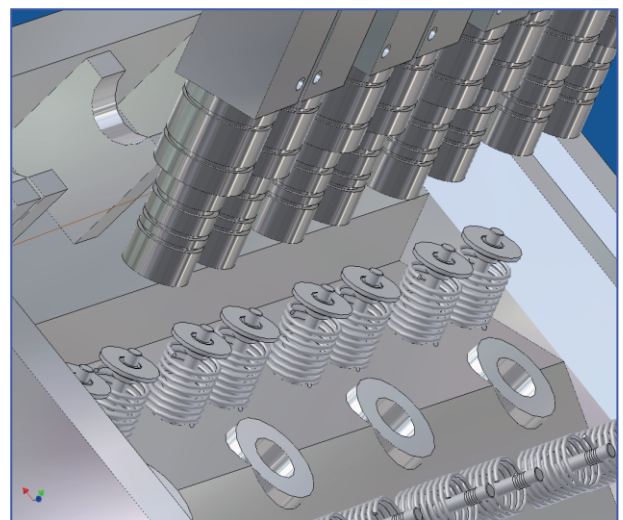
Appearance





Equipment Outline -----

- This piece of equipment joins the retainer and the cotter and installs them in the valve stem of the cylinder block.
- This equipment is the remarkable product of the mechatronics technology and machining technology that we established in our work with many production facilities. It is the core equipment that Hirata Corporation offers for the engine cylinder assembly line.
- The newly-developed robot head makes it possible to install cotters with multiple (3) grooves securely, which was considered very difficult using conventional methods.
- By installing multiple pairs of joined cotters and retainers at the same time, this equipment achieves a substantial reduction in tact time compared to conventional equipment.
- The spring detection unit included in the equipment guarantees accurate installation.

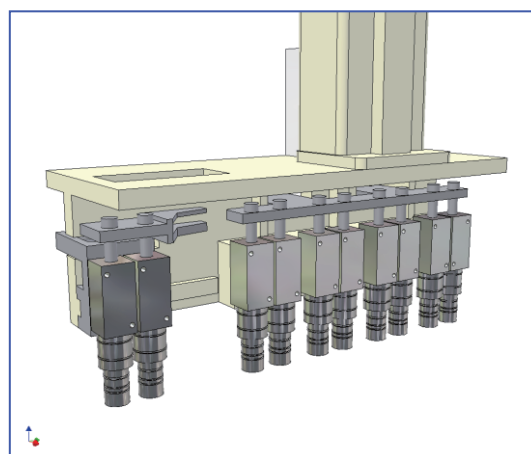
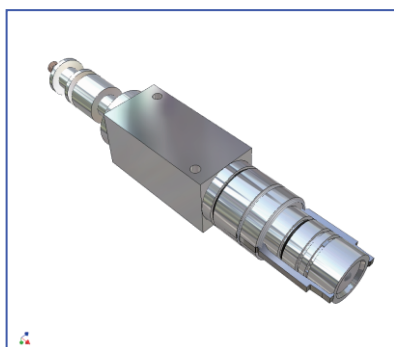


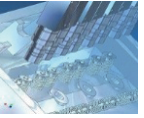


Features -----

Newly-Developed Installation Robot Head

- The newly-developed installation robot head is capable of installing multiple pairs of combined cotters and retainers at once in a short period of time and also of installing multiple groove-type cotters accurately.
- With conventional equipment, it was necessary to provide the cotter and the retainer separately. This resulted in complicated equipment and extra assembly processes, leading to low productivity. Moreover, since the cotter was engaged at the groove by sliding the cotter along the circumference of the valve stem, cotters with multiple grooves could not be installed.
- The newly-developed installation robot head includes an elevating head, a gripper arm, a camshaft, a guide pin, etc. inside its housing. By carefully coordinating all of these units, the whole process is performed including the separation of the retainer from the cotter and the setting of the cotter to the groove of the inserted valve stem, providing a secure installation process even for the multiple groove type.

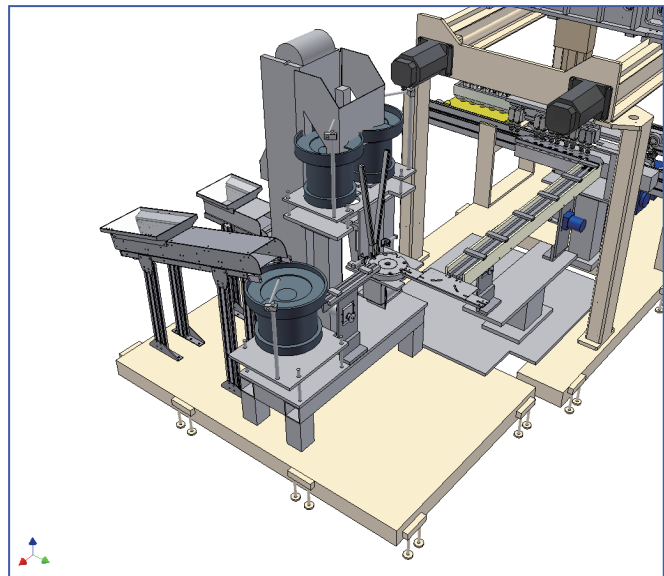
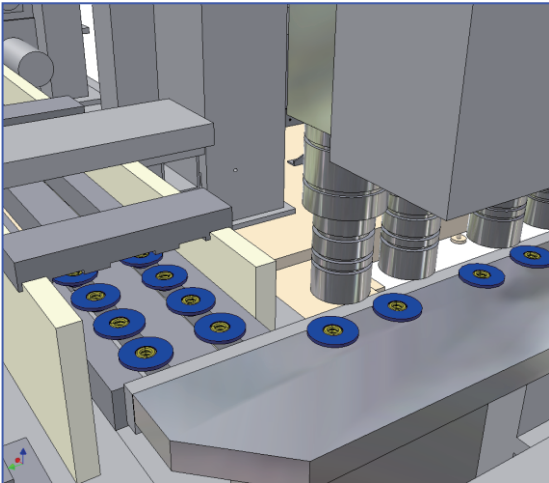


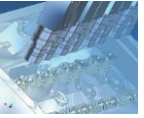


Features -----

Substantial Tact Time Reduction

- The products supplied from each of the retainer feeder and the cotter feeder are joined up on the index table, and the joint pair is placed on the escapement unit.
- The installation robot head picks up several pairs of the joint retainers and cotters and installs all of them at the same time to the valve stem inside the cylinder head.
- The tact time from the time of reception from the escapement until the time when the installation to the valve stem is completed is reduced substantially compared to conventional equipment.

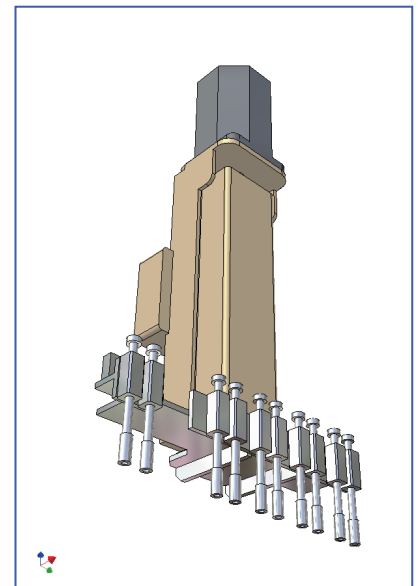
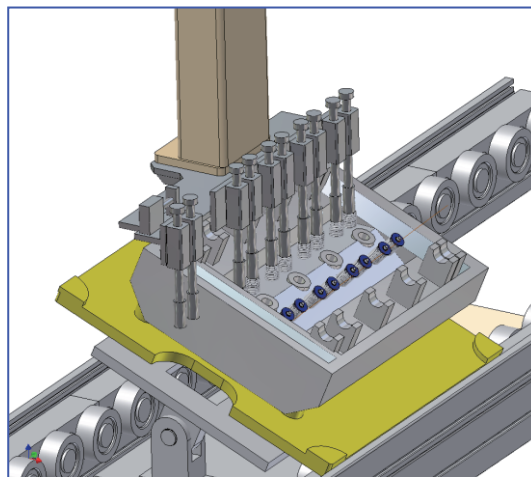


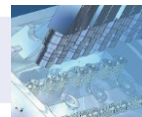


Features -----

Spring Detection Unit

- Inspection of the existence and orientation of springs prior to the installation guarantees accurate installation.





External Dimensions -----

