



Fixture Hydraulic Unit (FHU)

Fixture Automation at a New Level

The Fixture Hydraulic Unit (FHU) is Makino's latest system for adding flexibility and productivity for medium to high volume manufacturing processes. FHU interfaces with hydraulic fixtures and provides superior solutions to reduce maintenance costs and improve part quality. The base configuration includes:

- 800 - 3,000 psi hydraulic supply (global settable pressure range)
- Two high capacity rotary unions (one per fixture)
 - 12-port type on '1-Series' machines
 - 8-port type on 'a40' machines
 - One coolant port per pallet for optional Thru-Fixture Coolant use
- Overhead "react" arms connect to each rotary union
- Two standard hydraulic clamp/unclamp valves per pallet
- Two standard air part seat detection lines per pallet
- Operation panel at the pallet load position including e-stop, pallet ready, auto/manual selector switch, fixture unclamp/clamp, cycle start

Outstanding Features Include:

Economy

- Improve manufacturing efficiencies
- Workholding automation can reduce labor cost
- Easily interfaces with robot loading
- Allows use of full Y-stroke capability of your Makino machine

Reliability

- No disconnects to become contaminated over time / use
- No accumulators, check valves, or sequencing valves require on your fixture
- Elimination of traditional fixture hydraulic unit maintenance

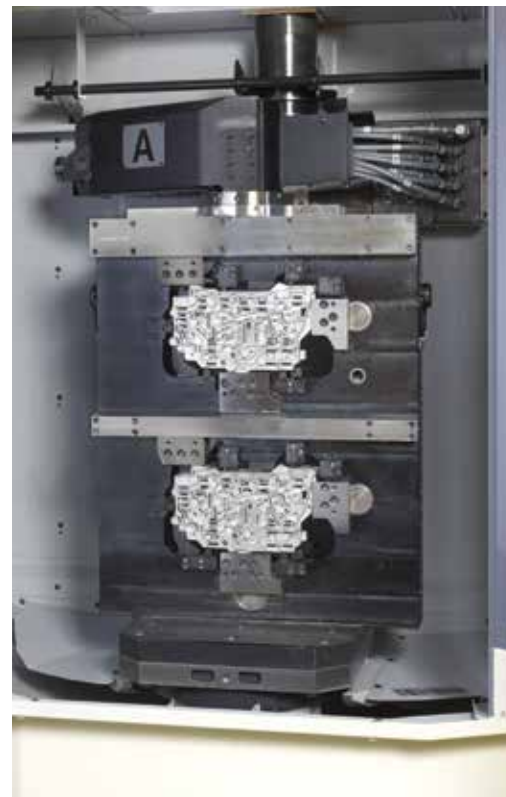
Expandability

- FHU is retrofittable to your existing 1-Series or a40 machining center
- FHU operation and configuration can be customized to solve your specific application requirements for workholding
- Reduce setups by combining operations with "programmable fixtures"

Quality

- Part seat checking can identify a problem before it happens
- "Live hydraulics" inside machine allow clamp actuation via NC program
- Electronic part clamp sequencing improves part process repeatability and flexibility

Window-style Fixtures Cut Operations Required by 50%



Operator User Interface for Manual Load



Robot Interface for Automated Load

Actual Case Study

How FHU Can Improve Your Manufacturing Process



Process Challenge

- Thin walled part tends to deflect, affecting part quality, requiring additional operational control capabilities to minimize processing steps

FHU Simplifies a Quality Process

- Electronic clamping sequence is identical part to part
- Live hydraulics inside machine allows in-process clamp force actuation to relieve stress during the machining process

FHU Simplifies Automation

- FHU integrated to gantry/robot loading for full automation
- Free up labor to perform other critical tasks





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