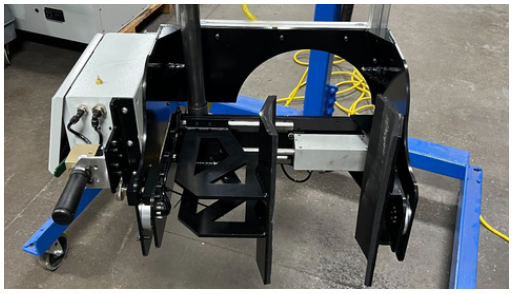
How We Engineered a Safer Way to Handle Heavy Cylindrical Parts

Some challenges in manufacturing can feel like hitting a brick wall until the right solution comes along. That was the case for a Michigan-based manufacturer struggling to move heavy cylindrical parts from a vertical storage position to a horizontal lathe for machining. Their current setup wasn't cutting it, and safety was becoming a concern.

That's when they turned to Donald Engineering. They needed power, precision, and most importantly, a safer way to get the job done.



The Problem: A Heavy-Lifting Headache

Picture this: A shop floor filled with large, heavy cylindrical parts, some weighing up to 150 lbs.

The goal?

Move them smoothly and safely into a CNC machine for processing. But there were a few challenges:

- **Not enough gripping force:** The existing angular gripper lacked the power to lift the heaviest parts.
- **Rotating the part:** The process required flipping the parts 90 degrees, but there was no smooth system in place.
- **Inefficient and risky:** Handling was inefficient with potential safety hazards.
- **Stay in budget:** Needed a cost-effective solution without compromising quality.
- **Safety was a top priority:** Keeping the operator's hands away from danger during handling was a priority.

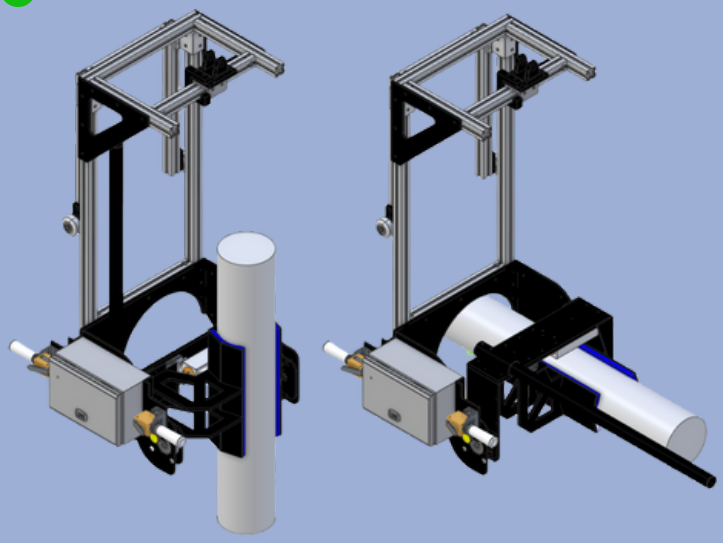
It was clear that a better system was needed, one that offered both power and protection.

The Donald Engineering Solution:
Pneumatic Logic

Donald Engineering delivered a precise and cost-effective pneumatic solution tailored to their needs. While this application could have been solved with hydraulics, electronics, or robotics our pneumatics solution was the best fit for our customer's budget, application constraints, and force requirements.

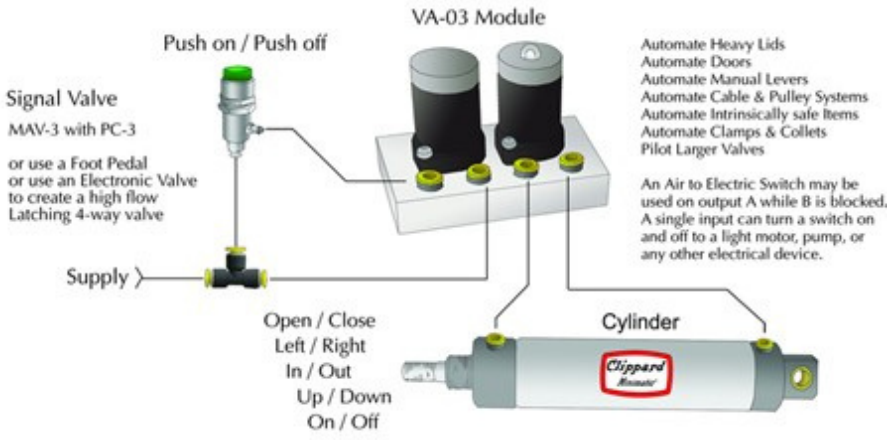
Our team engineered a custom control box and circuit that:

- Picked up heavy cylindrical parts of varying sizes (up to 150 lbs) with ease
- Rotated them 90 degrees for seamless placement into the CNC
- Kept operators safe with a built-in two-hand control system
- Built-in controls to not drop the parts
- Cost-effective pneumatic logic solution



The **secret sauce** to this solution is Clippards pneumatic logic modules, these are off-the-shelf components with predetermined functions that can be applied similar to PLC logic, but with **AIR**!

Binary Redirect Module (VA-03) – Ensured smooth, controlled motion without unnecessary complexity and it controls the logic for clamping and unclamping the part by hitting the same button.

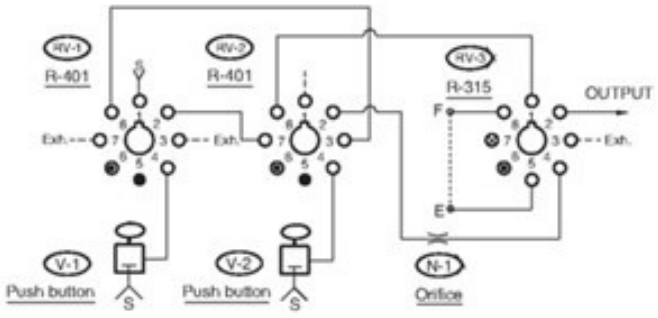


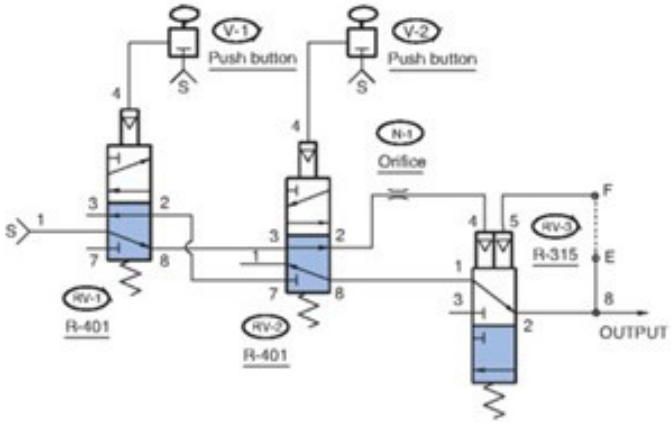
But we didn't stop at just function, we built safety into the system by integrating Clippard's modular valve technology featuring:

Two-Hand, No Tie-Down (THNTD) Circuit (VA-023) – Required operators to engage the system using both hands, keeping them away from dangerous moving parts. The magic to this system is that it requires a timed sequence, so you can't tie one button down and operate the other, both buttons need to be activated in unison.

The Result?

A streamlined, safer, and more efficient process without the high price tag. The use of the THNTD also prevented accidental hand placement in dangerous areas, creating a safer work environment without sacrificing speed or productivity.





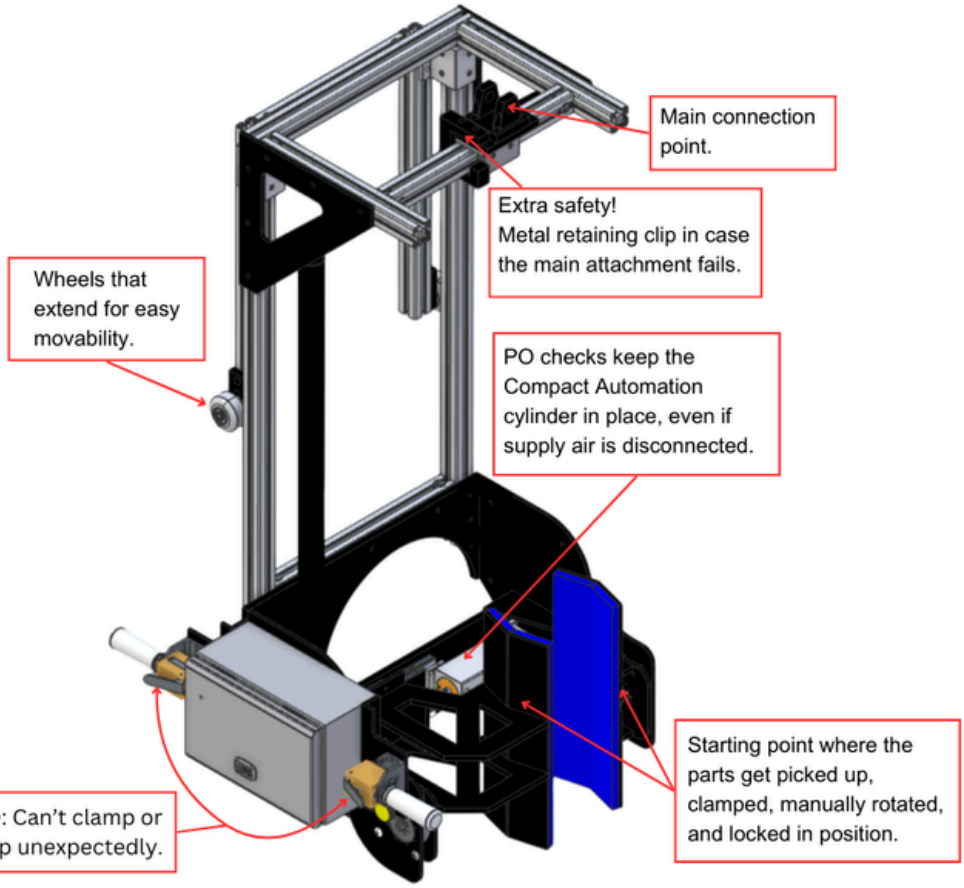
The Impact: Speed, Safety, and a Competitive Edge

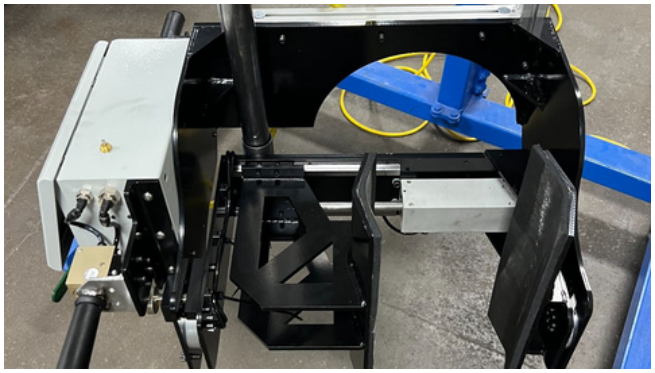
With our solution in place, the customer immediately saw results:

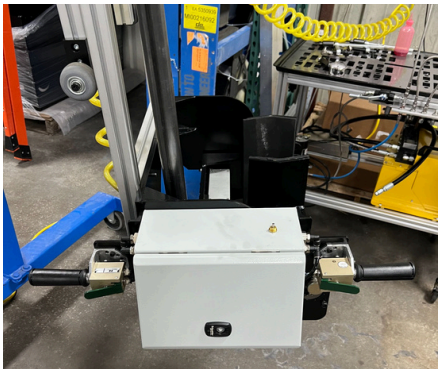
✅ **Faster turnaround times** – Just in time for their recent production increase.

✅ **Improved safety** – Operators could work confidently and efficiently without unnecessary risk.

✅ **Cost-effective automation** – A high-quality solution that fit within budget constraints.







One more Safety Feature...can you spot it?

We've covered the highlights, but there's still one more crucial safety feature we built into this system.

Think you know what it is?
Contact us today and let's talk shop!

Contact us today to discuss your automation challenges, and let's find a solution that works for you.

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