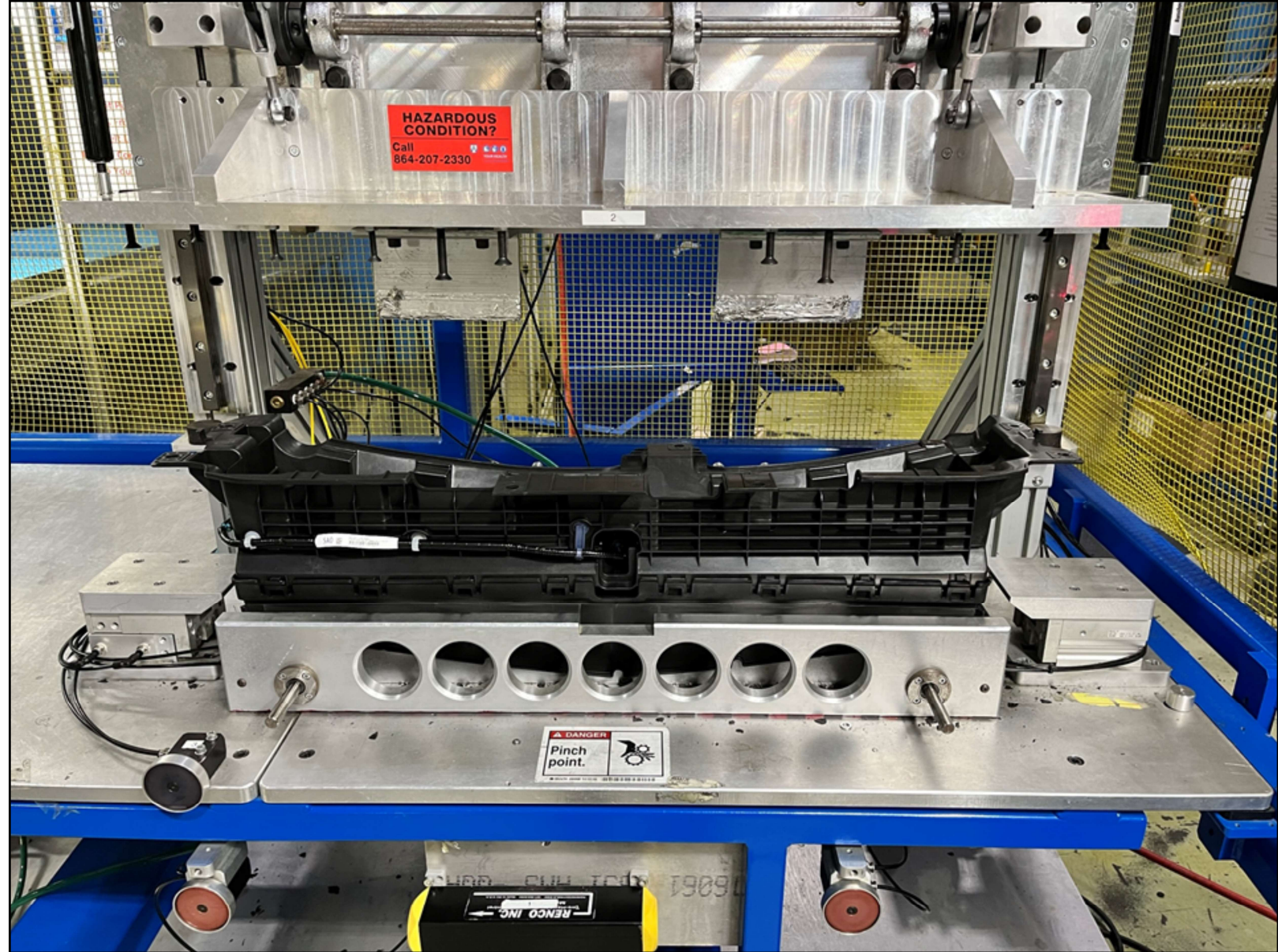


This is a semi-automatic assembly machine that assembles the front AGS (Active Grill Shutter) front frame to the vane body on the Honda MDX program vehicle.

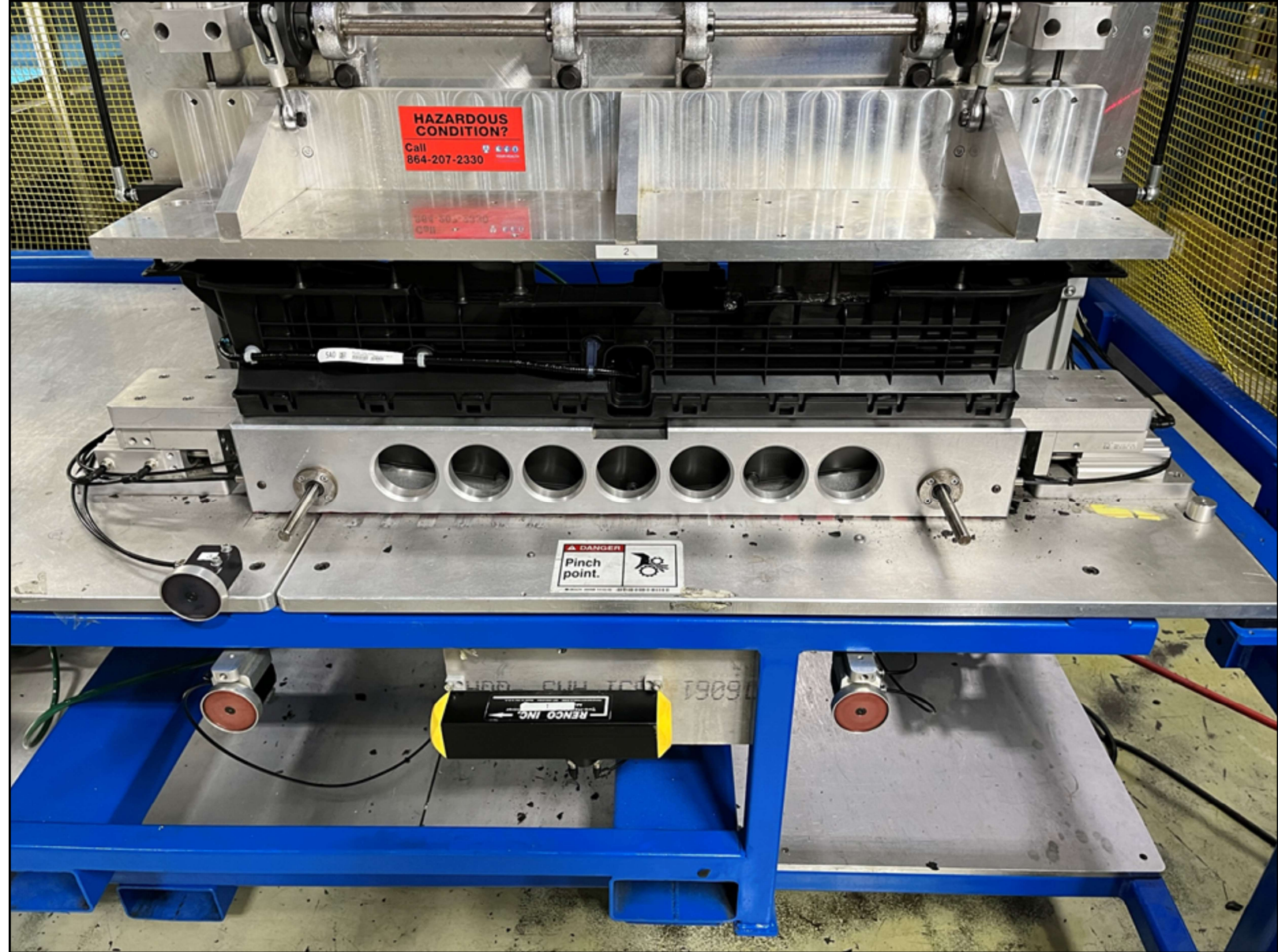
PROBLEM

Not quite enough power being supplied from the top assembly press powered by two SMC 50 Ø mm X 125 mm air cylinder to snap all the locking tabs in the vane body into the front frame. The operators of the production line had to afterwards snap about 6 to 8 of the locking tabs into position by hand – ergonomic issue...

FRONT FRAME IN LOCATION POSITION NEST



VANE BODY LOCATED IN POSITION ON TOP OF FRONT FRAME READY FOR ASSEMBLY

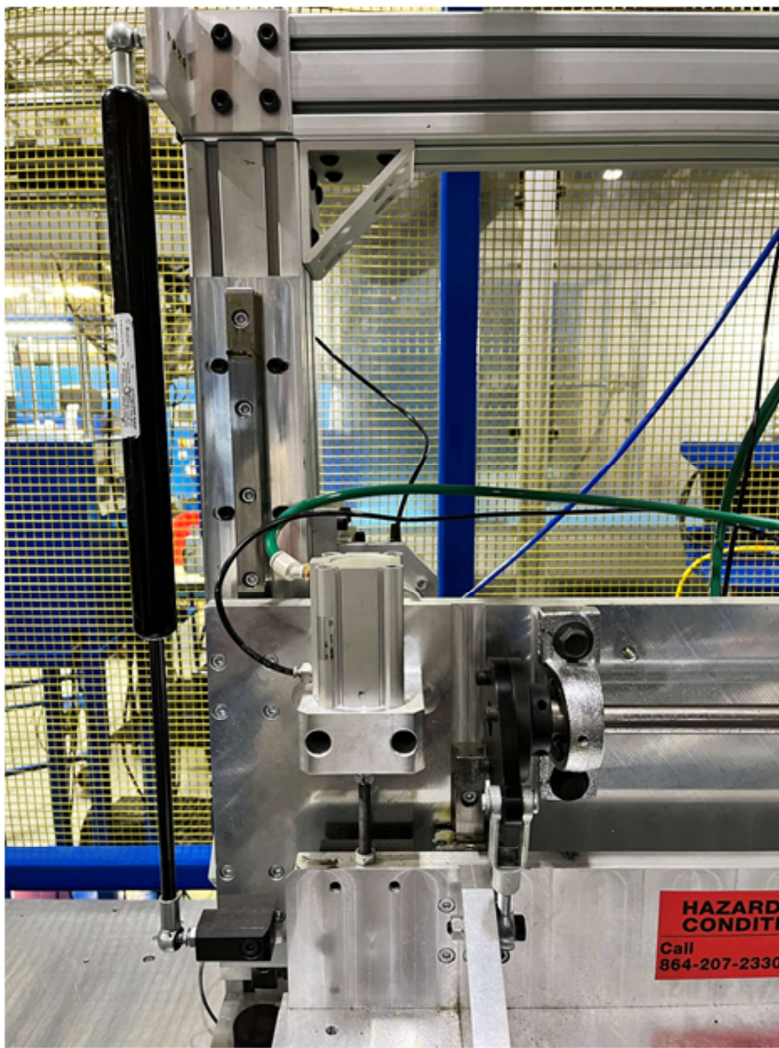


UPPER PRESS LOWER INTO POSITION ON TOP OF THE VANE BODY AND PRESSURE APPLIED



The press is powered by two SMC 50 Ø mm X 125 mm air cylinders linked together by a cam shaft to provide equal downward force, but it wasn't enough.

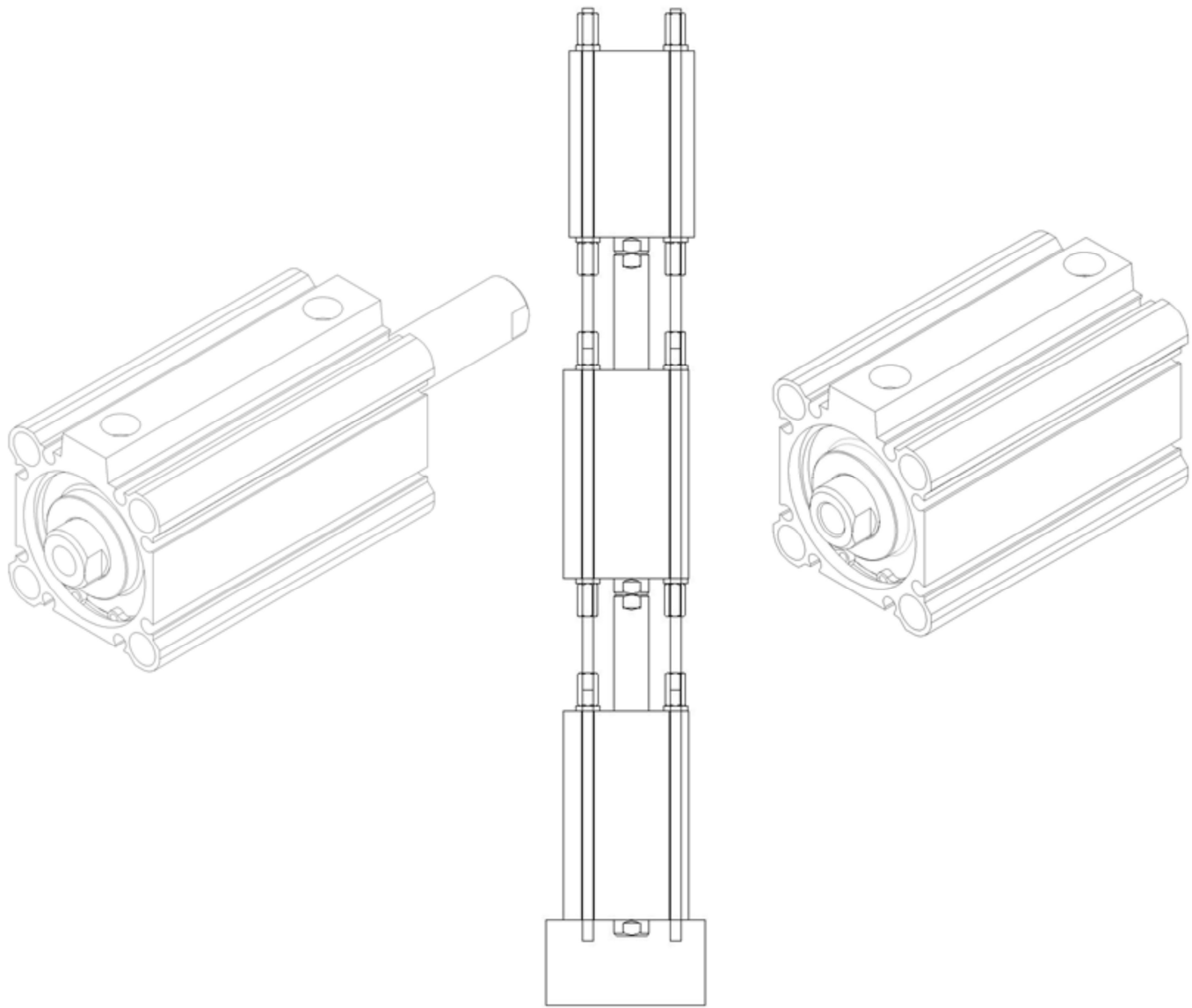
What to do?



Picture showing left hand side and right hand side air cylinders at either end of cam shaft to operate in tandem for equal force.



Thinking about this problem one might have thought that a re-design was in order. But thinking it over I came to the thought of adding two more air cylinders one on top of the other original air cylinders using through piston rod cylinders of the same model type. This would be a relatively easy upgrade of power providing 1 – ½ times more downward force on each side.

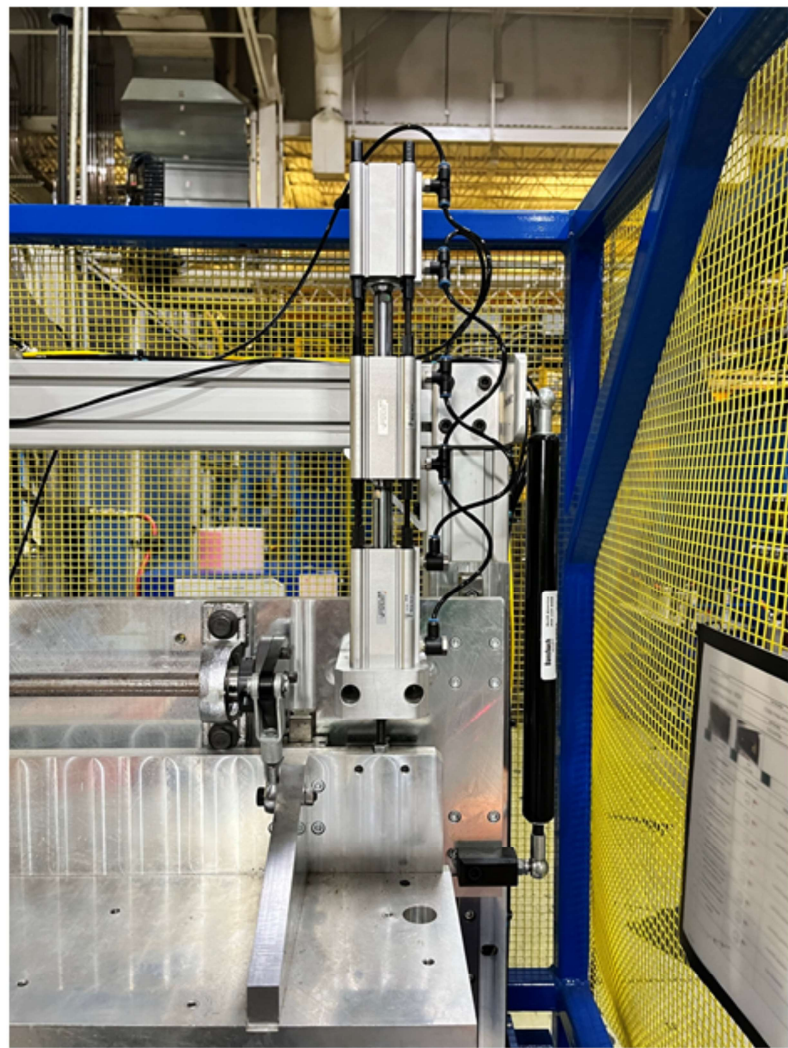
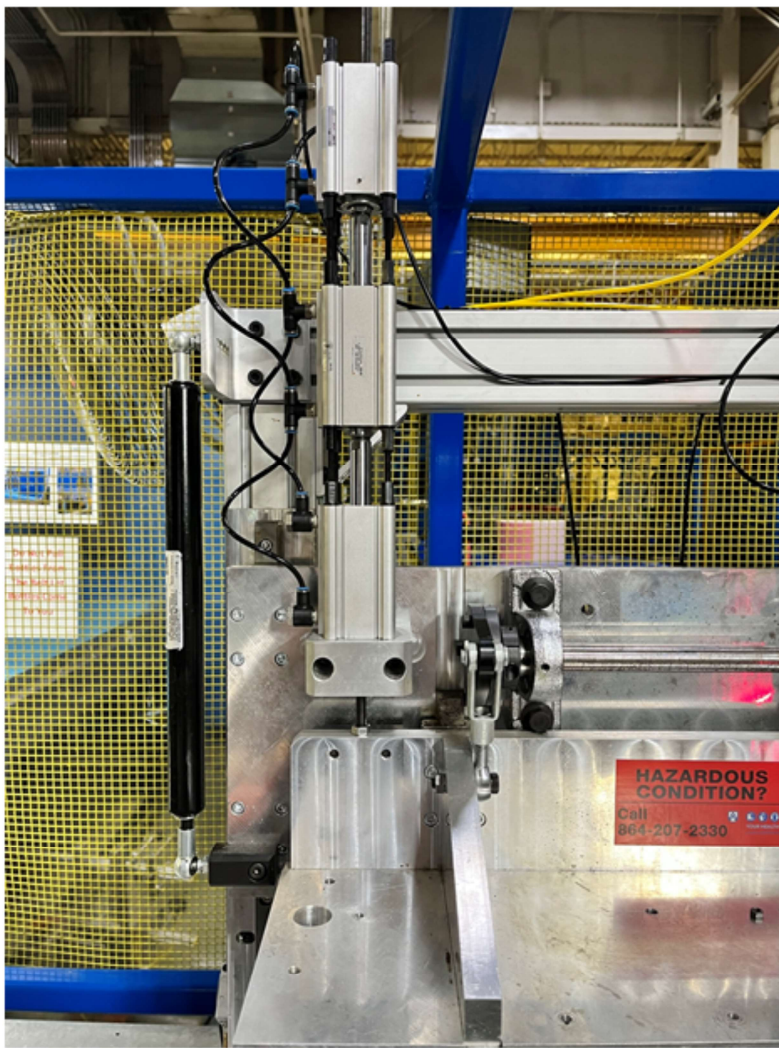


SOLUTION

So, I did some research on finding the through air cylinder piston rods and keeping the original air cylinders to be mounted on the top of the stack of the two other cylinders.

I tied all the cylinders together using M5 all thread rods and coupling nuts and linked the piston rods together using M8 set screw cylinder rod to cylinder rod.

This is my AutoCAD drawing to design all the necessary lengths of the M5 all thread rods end to end with each other.



This picture shows both left hand and right hand all three (3) cylinders installed stacked on top of one another connected together by their piston rods.



Alternate view.

This picture shows both left hand and right hand all three (3) cylinders installed stacked on top of one another connected together by their piston rods.

This worked very well indeed snapping all locking tabs together without the operators having to lock them together manually using their fingers.