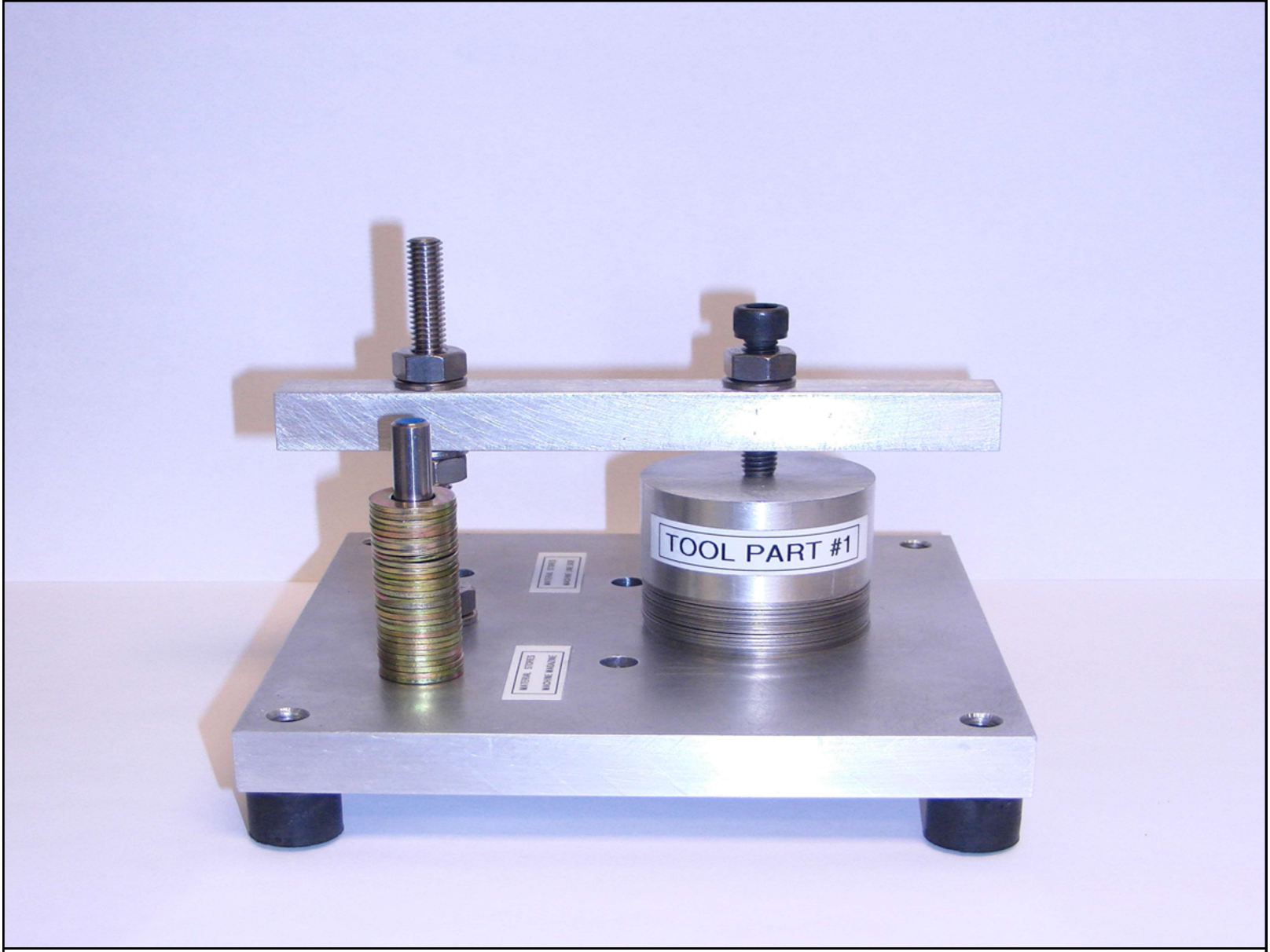
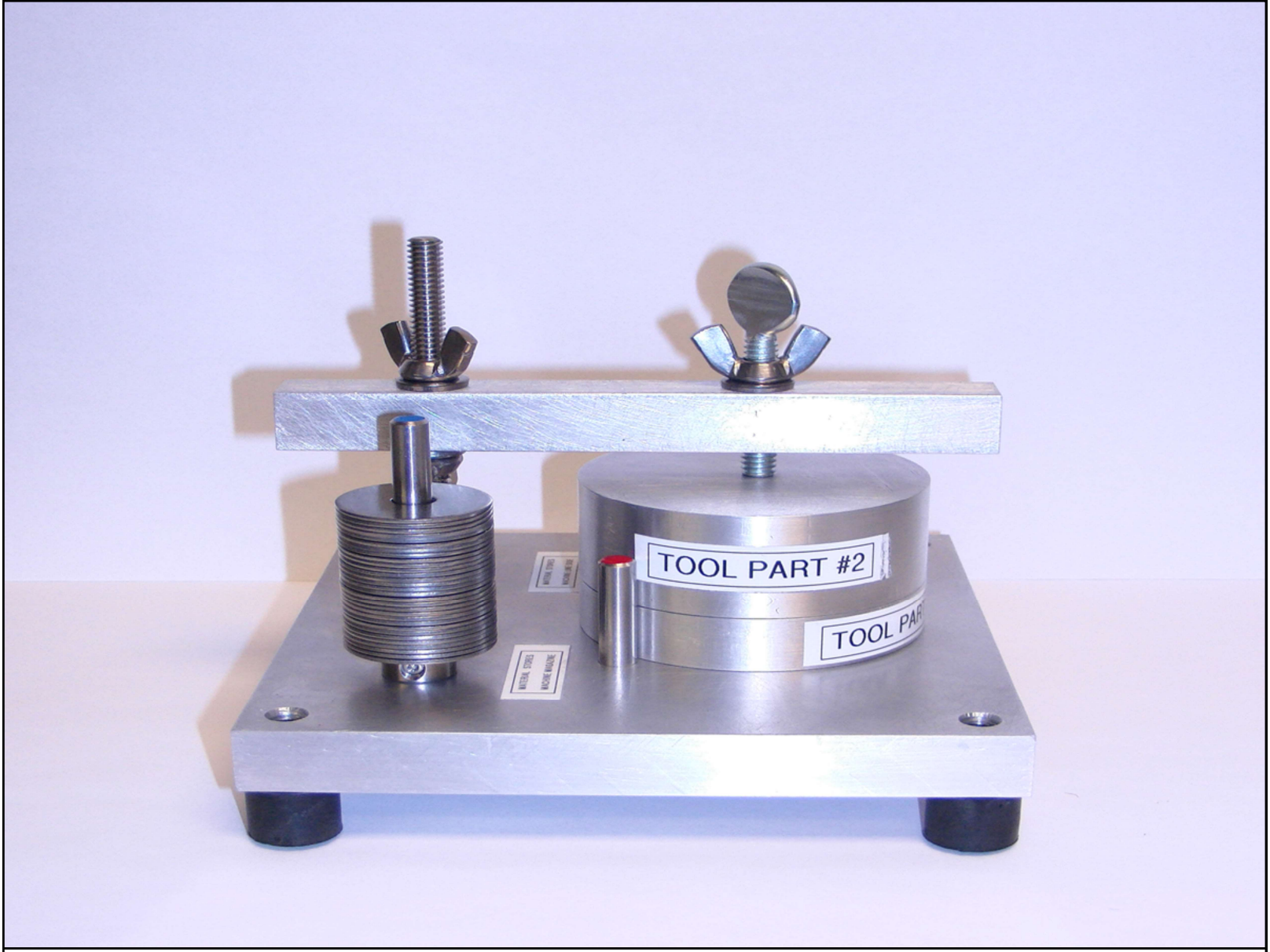


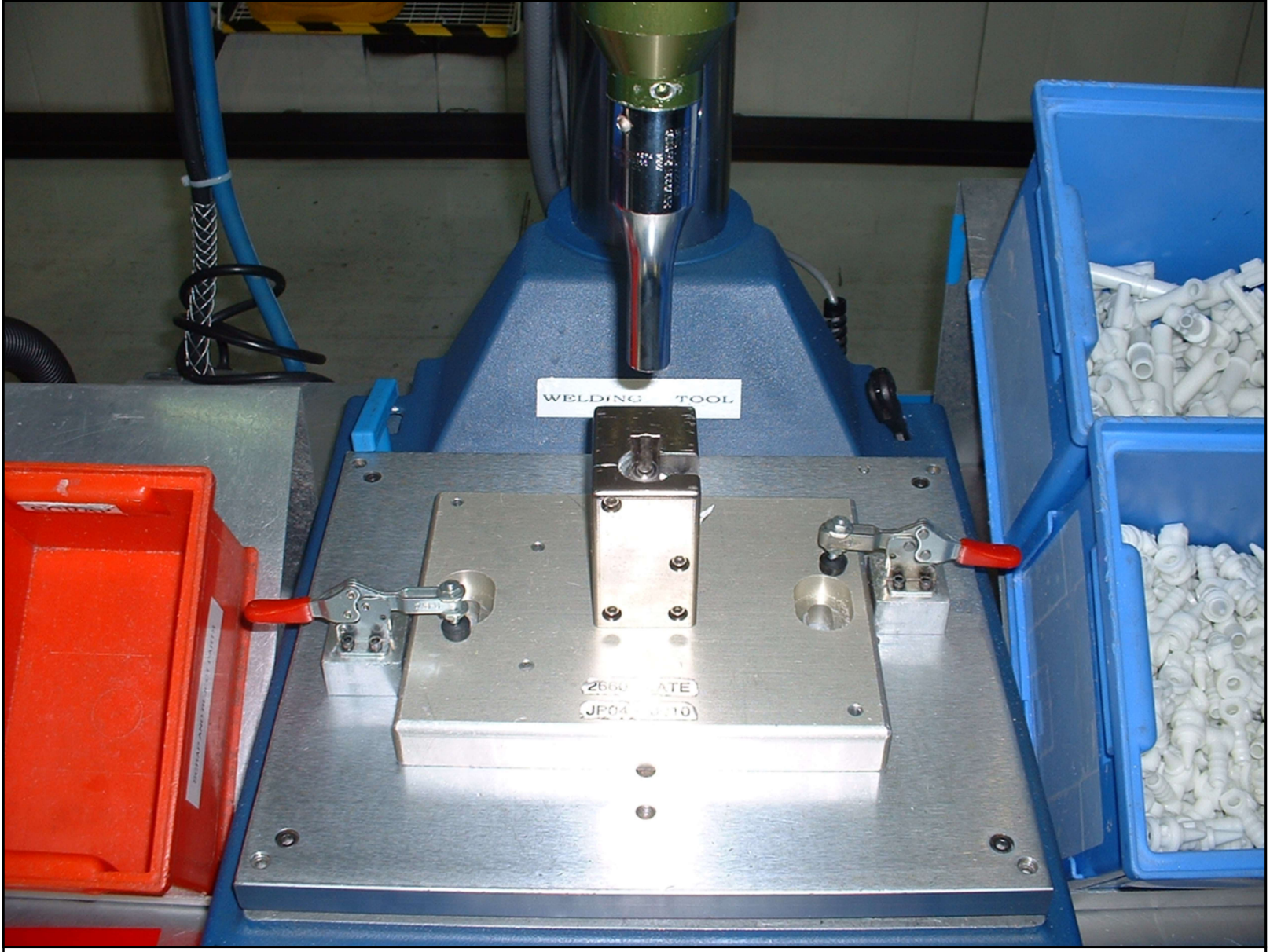
This is a picture of SMED setup time reduction training model that I designed and made myself to use when training people the techniques and methods of SMED.

This picture shows the model in the initial configuration as is with no modifications and improvements made - changeover time at this stage is between 20 to 30 minutes…



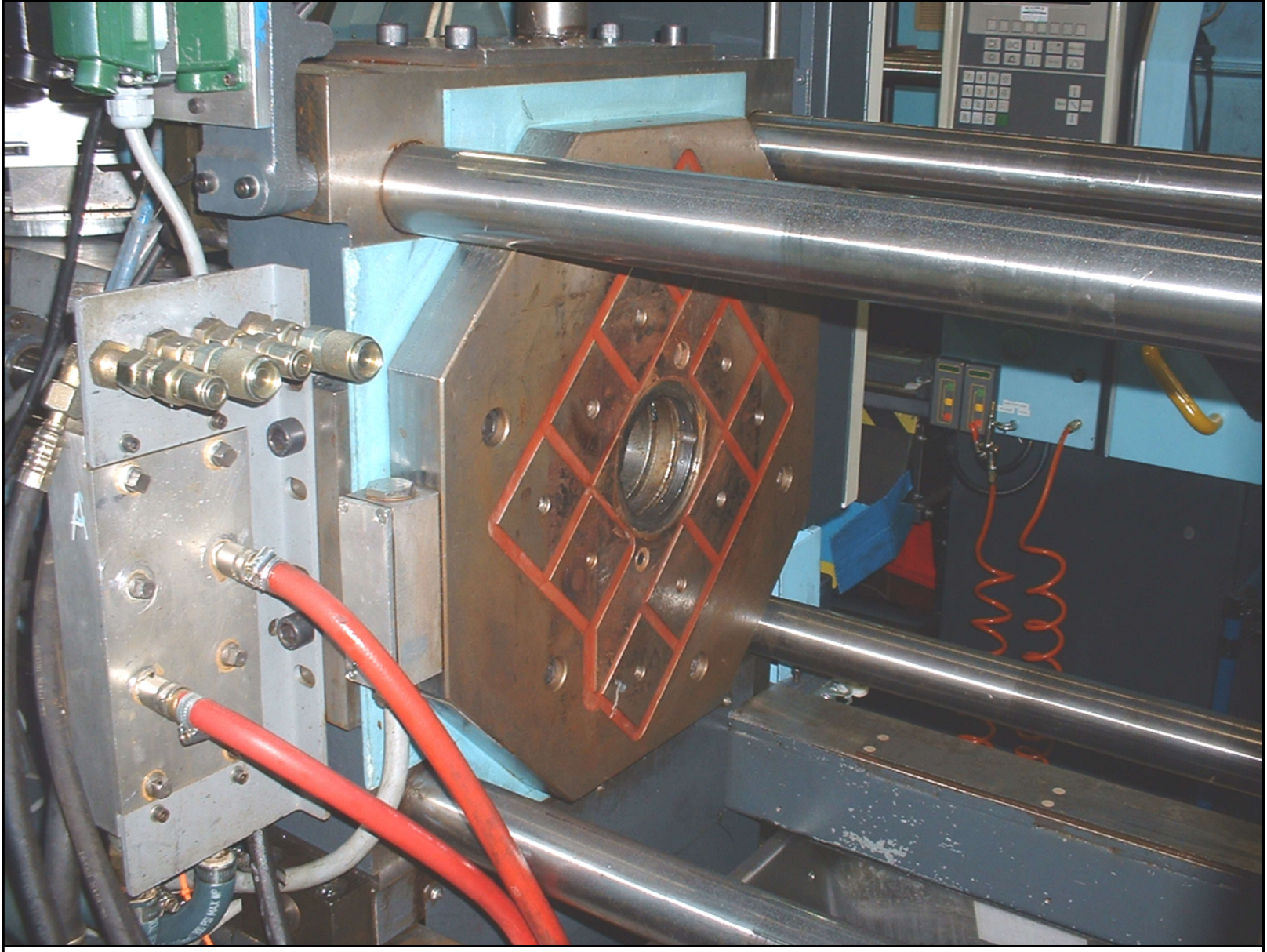
This is a picture of SMED setup time reduction training model that I designed and made myself to use when training people the techniques and methods of SMED.

This picture shows the model in the final configuration with all the modifications and improvements made - changeover time at this stage is between 10 to 15 seconds…



I teach SMED and changeover time is all relevant whether it's changing a 10 thousand tons die press from 48 hours to less than 10 minutes to this picture showing a tool nest on a ultrasonic welder base that I improved the changeover time from 5 minutes to 30 seconds…

An example of use elimination and method substitution by eliminating the need for nuts, bolts, wrenches and other hand tools. The use of toggle clamps instead of using bolts, washers and hand tools to secure tooling in place.



Installation of a magnetic clamp eliminates the enemy of SMED - Bolts…

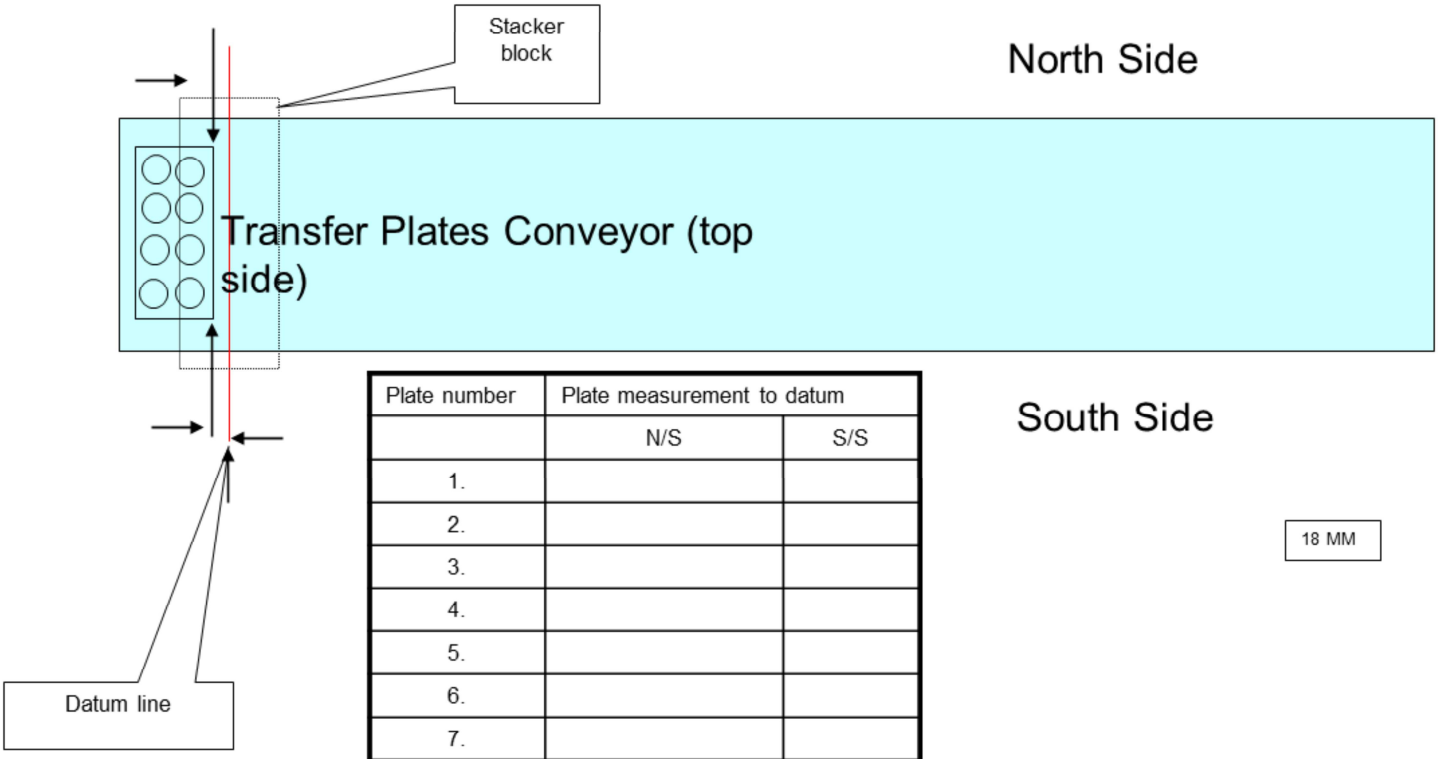
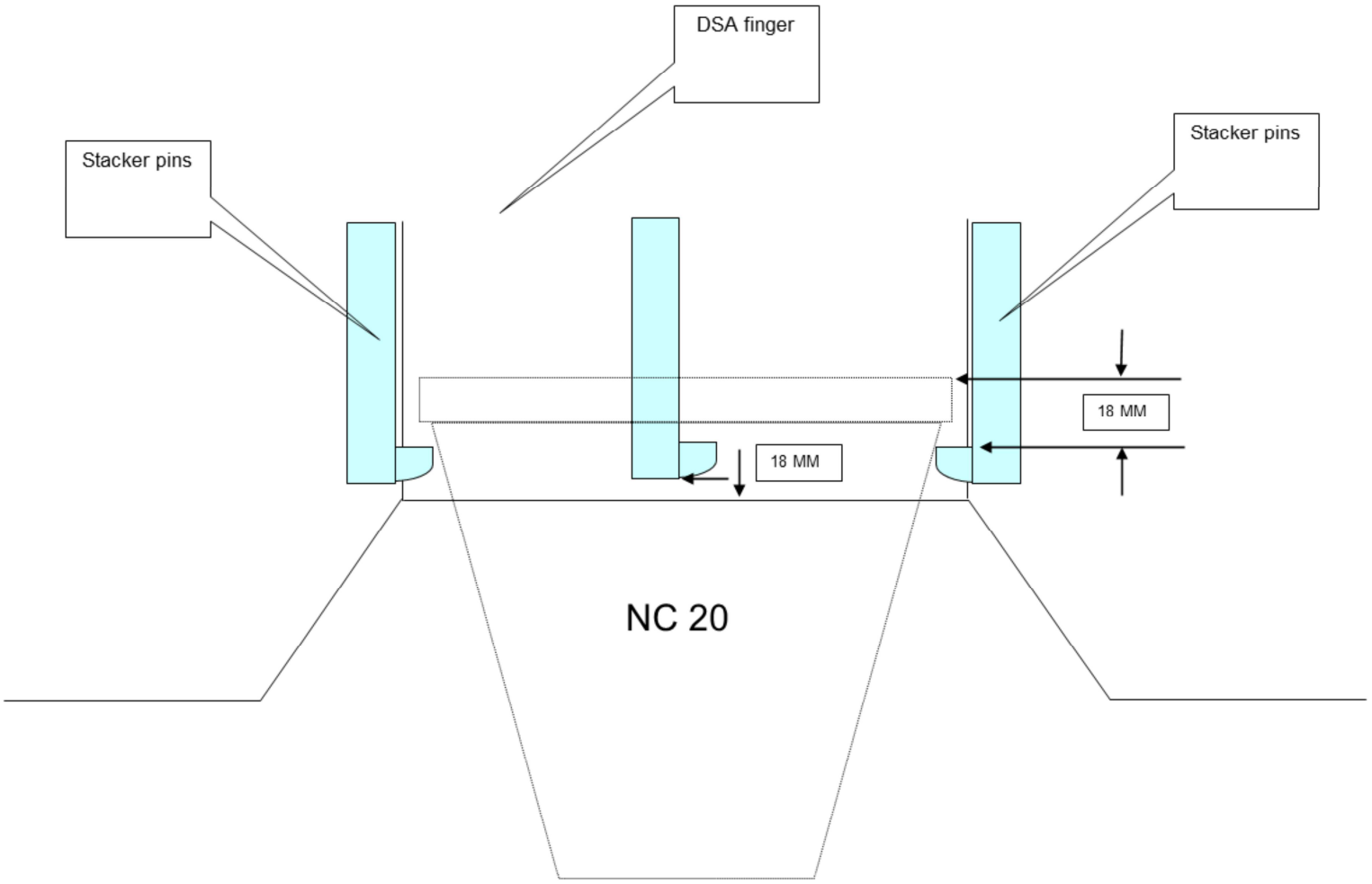
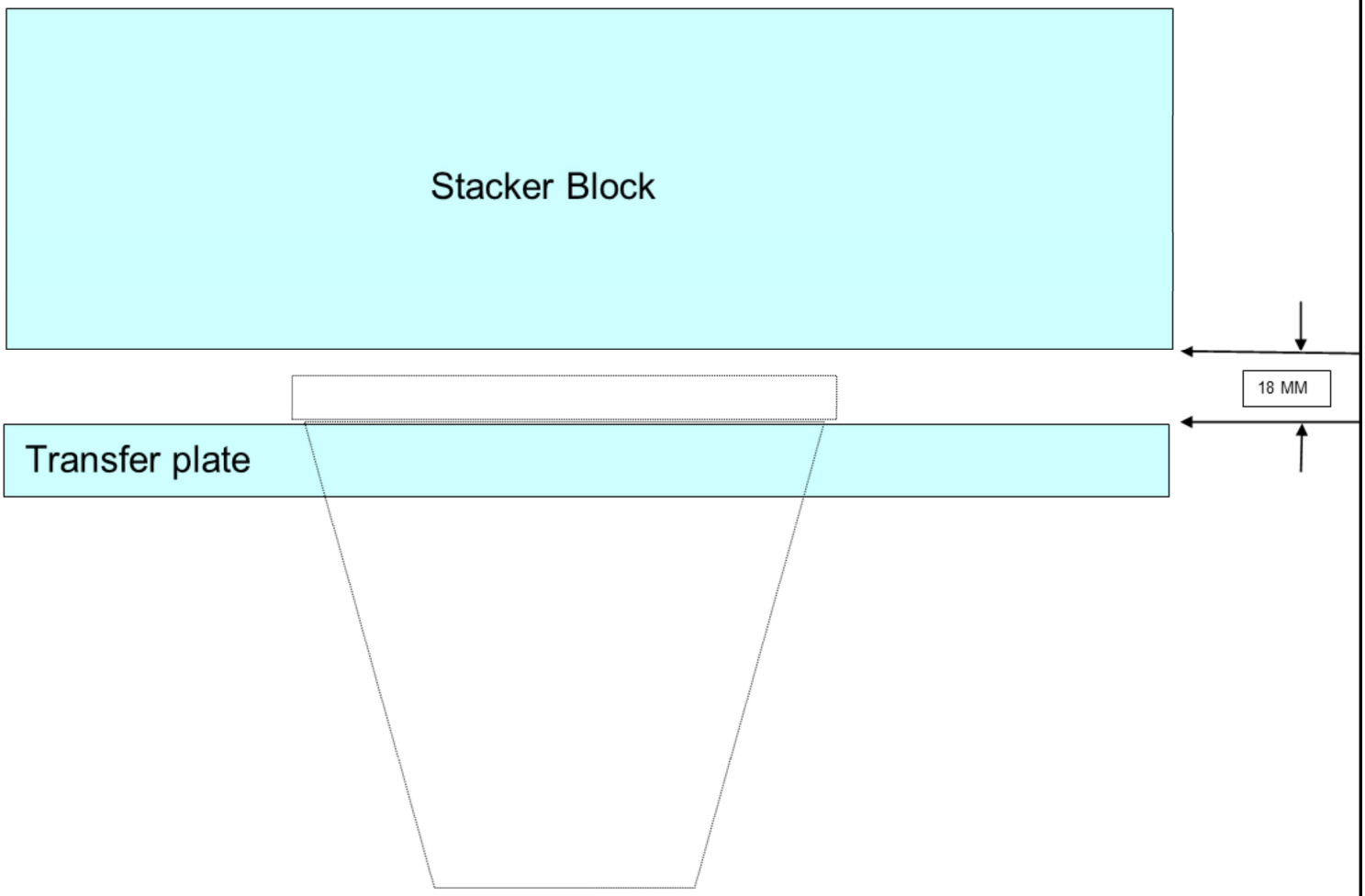


Plate number	Plate measurement to datum	
	N/S	S/S
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		
10.		
11.		
12.		
13.		
14.		
15.		
16.		

The next series of diagrams I drew up to make an transfer alignment centering tool pin that would pass through to an lifting station. Problems and time delays were encountered as the alignment was done by eye with a combination of using a product sample to make this critical alignment. This tool would save time.



Product sample being used for alignment.



Alignment through transfer plate.

Picture showing the stacker block.

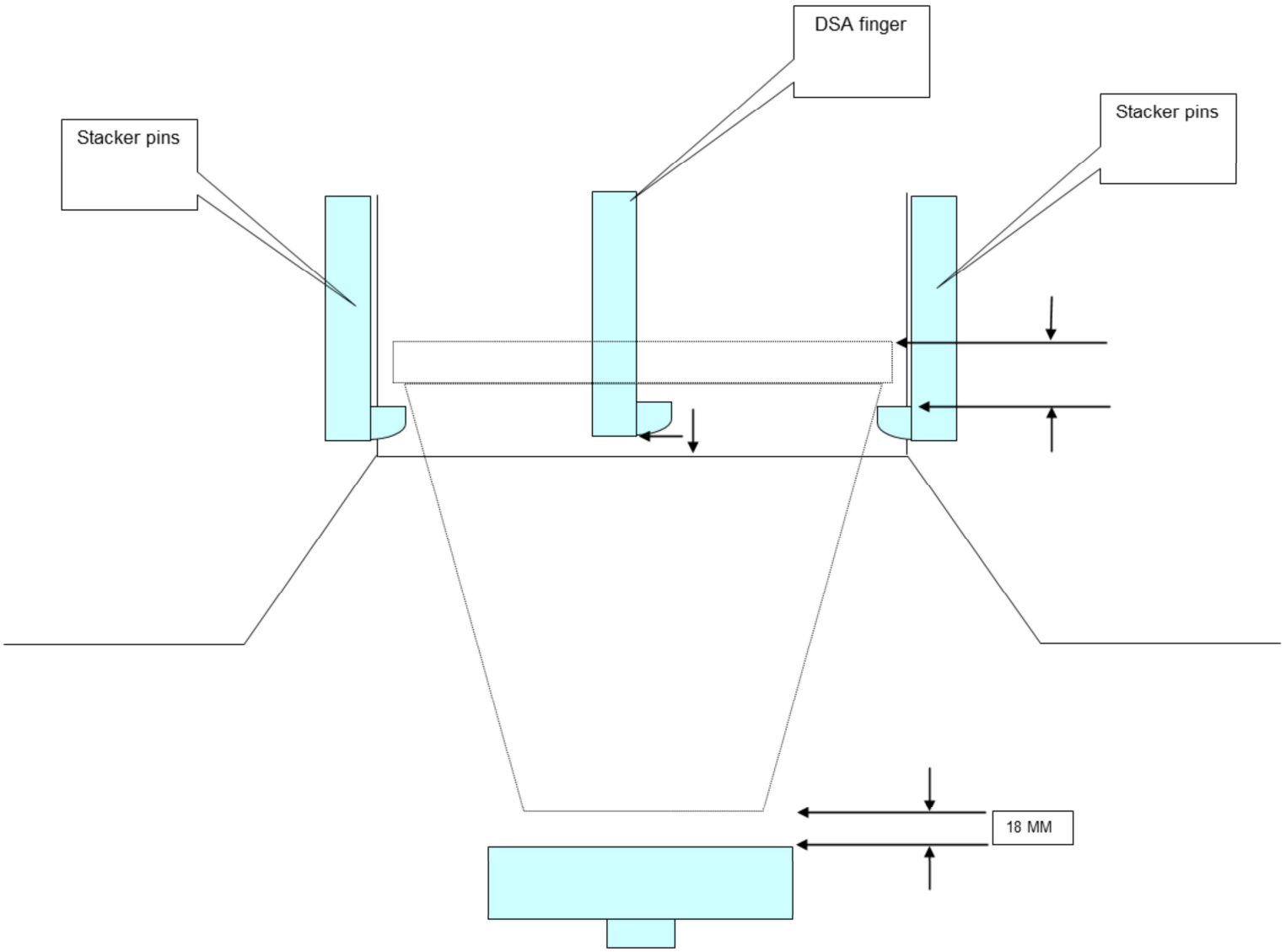


Diagram showing lifting station.

Picture showing the lifting station through the transfer plate.

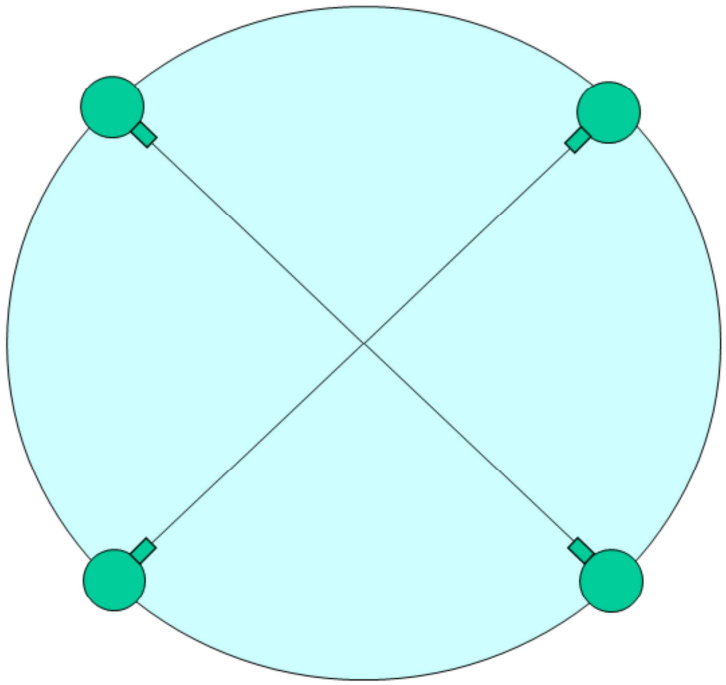


Diagram showing Z axis looking down through the top of the stacker block.

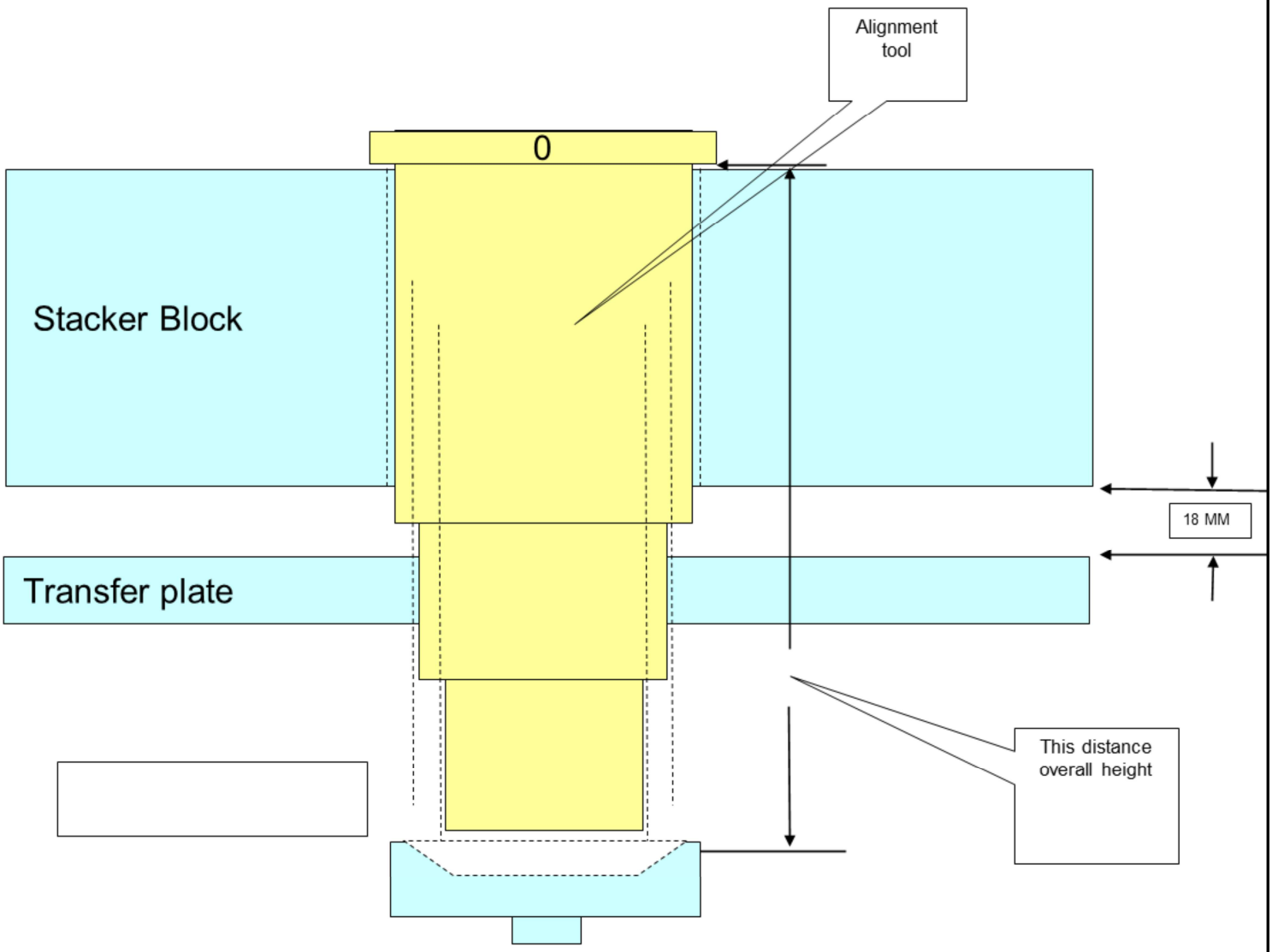
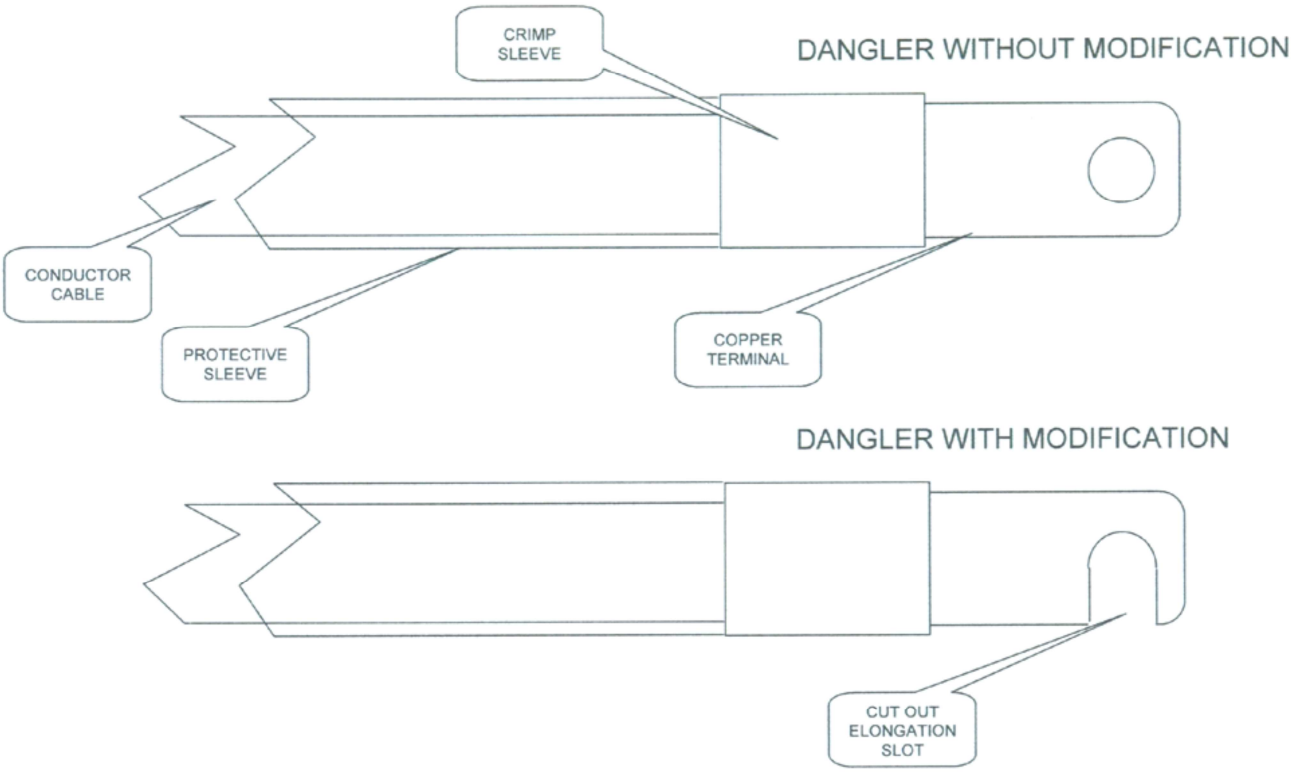


Diagram showing the alignment tool installed to make the necessary alignment of the components.

A big part that plays in SMED is 5S and having your tooling organized and stored as close as possible to where the tool is going to be used. Here I have stored interchangeable tooling point of use storage actually on the machine.

This of course is not always possible in every situation.



NAME	ELECTROPLATING BARREL DANGLER		
VERSION No.			
DRAWING No.		SCALE	
DRAWING BY	FRED WEBBERKING		

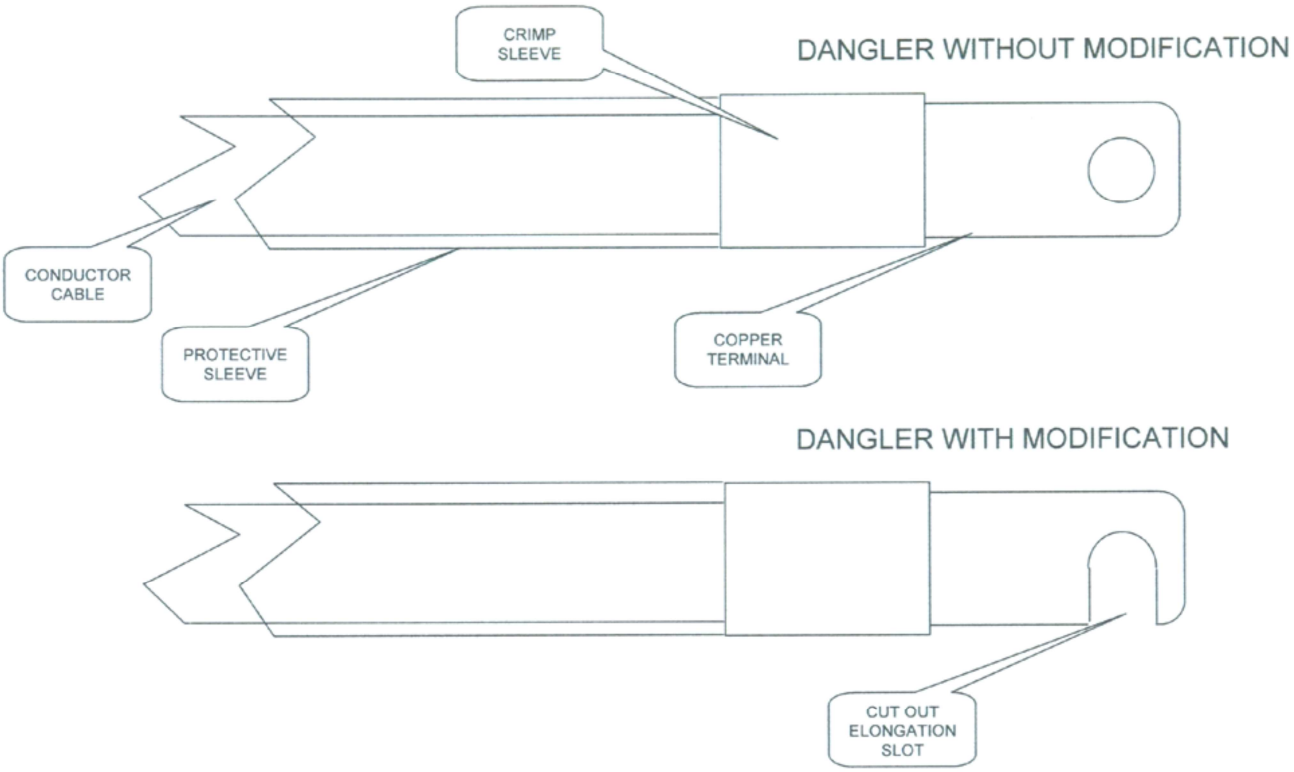
In case you are wondering what this is, it's a dangler… I'll explain, a dangler is a flexible 1 ¼" inch thick cable that is about 5' feet in length, has a copper terminal on one end of it and an electrode on the other. They are used in the electroplating industry as anode + and cathode - conductors which are inserted in through the ends of a rotating barrel, anode in one end of the barrel and the cathode in the other end.

Items to be electroplated are filled into the barrel and it is then processed through a series of electroplating bath tanks. There are many barrels to a processing line, up to 18, each having two of these danglers dangling inside of them.

Because they are dangling in the barrel - see insert - which rotates to ensure an even coating of the parts, the danglers are flexing around, twisting around and buffeted by the parts they are in contact with. They are also subjected to corrosive chemicals as the barrels are immerged in the series of electroplating baths tanks. So, they have a definite life and need to be replaced frequently.

I lead a SMED setup time reduction workshop on the changing out of the danglers. As I have said before, it doesn't matter if it's 12 hours or 12 seconds, tool changing and setup time reduction can always be improved.

As it turned out replacing a dangler took 10 minutes, but through the SMED approach this was cut by 60% percent. If you have a lot of danglers to change out, that's a significant time saving. As a teacher It's always a joy for me to witness people that I have taught, adopt the methods I teach and come up with creative ways of their own to change something for the better. In this particular SMED workshop the participants had no storage of good ideas. If the student hasn't learned; the teacher hasn't taught...



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This was my contribution to the many refinements that helped reduce the dangler replacement time to 4 minutes. I modified the dangler terminal ends by elongating the mounting eyelet holes and using a large sized wing nut. Tools are the enemy of SMED, by doing this we did away with having to use wrenches. It was also not necessary for the person changing out the dangler to completely remove the terminal nut as now the wing nut need only be loosened sufficiently to pull out the dangler terminal end made possible by the elongation modification.

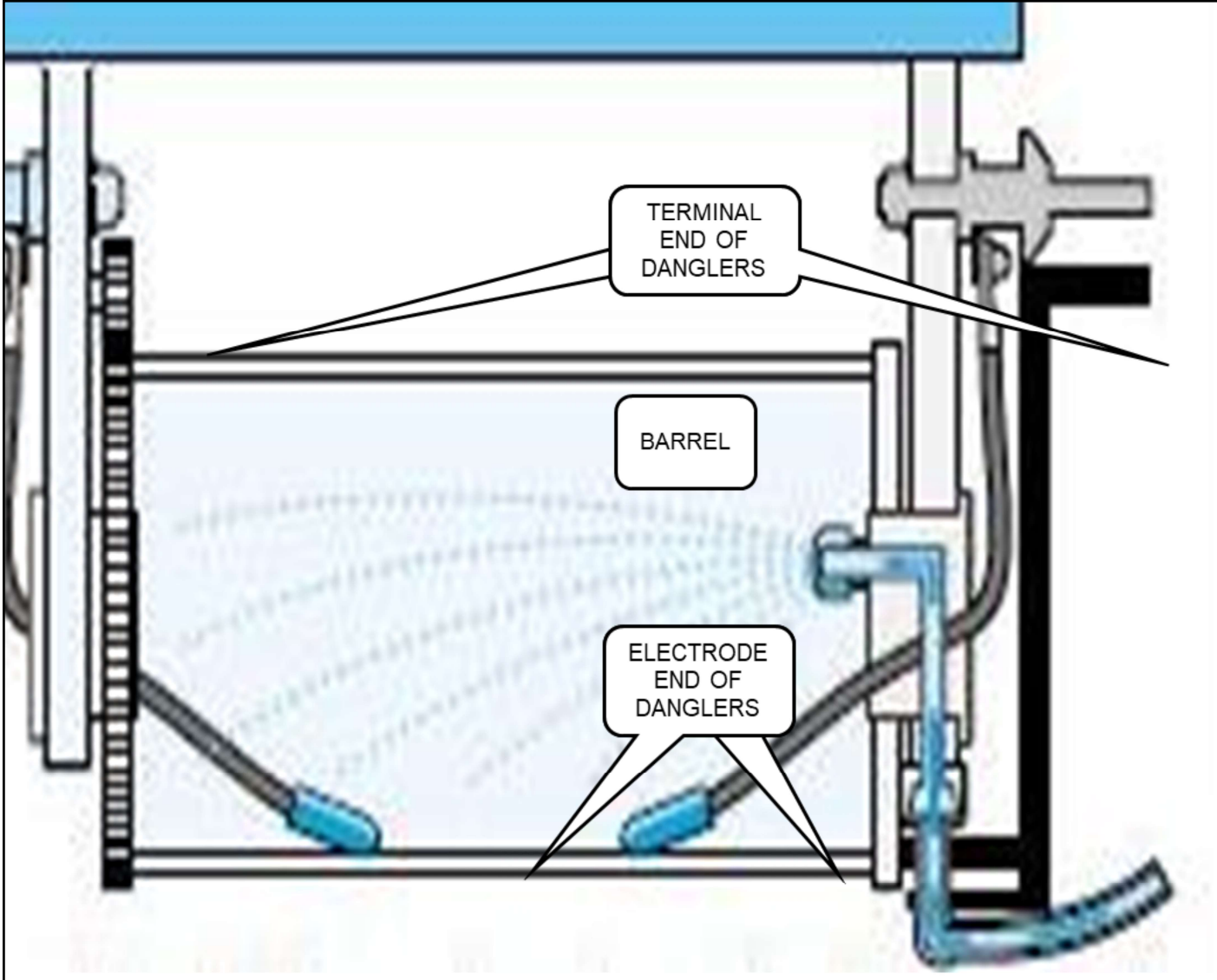
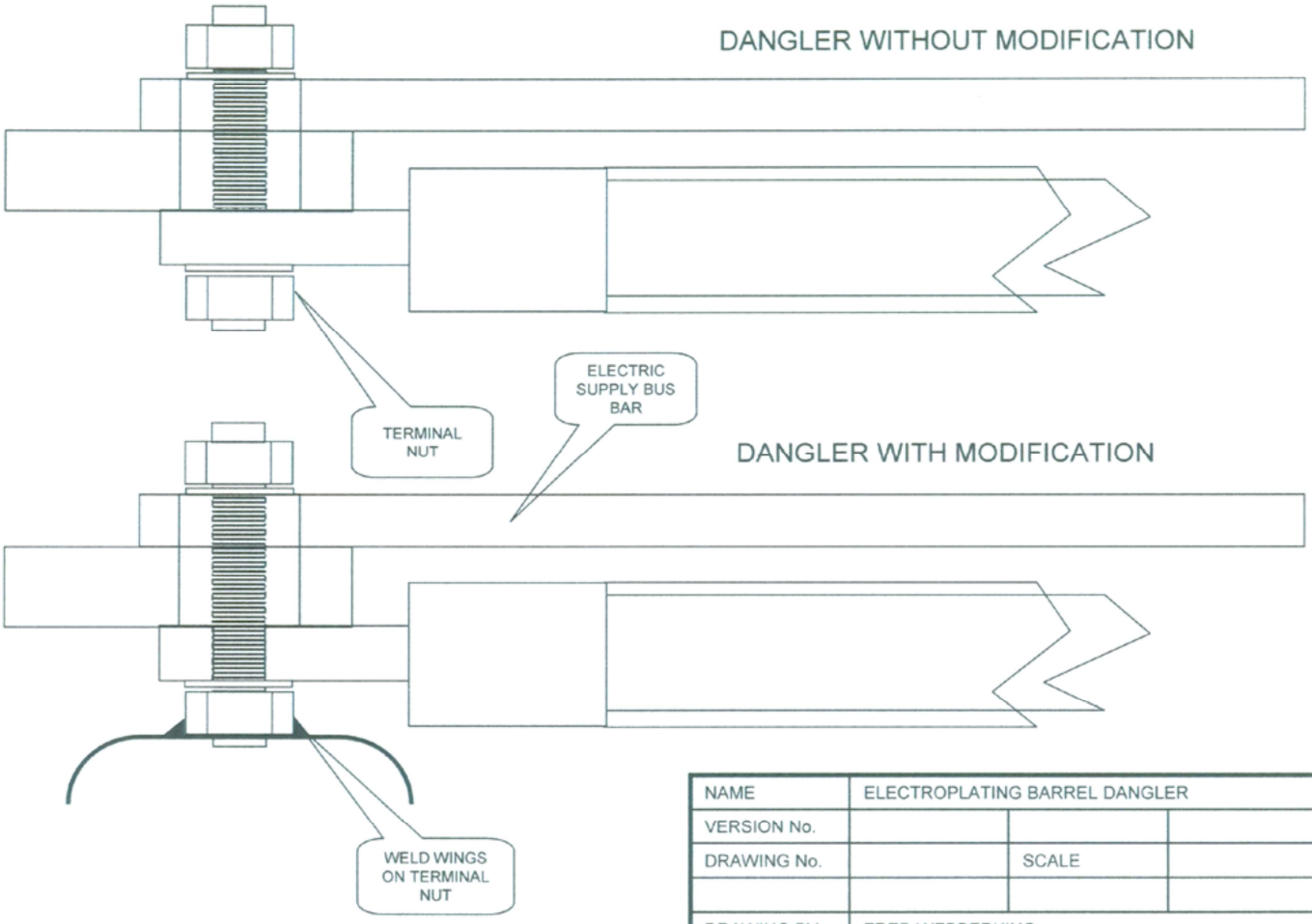


Illustration showing how the danglers are used and installed in the electroplating barrels.



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DRAWING BY	FRED WEBBERKING		

Drawing illustrating the modification made to the terminal nut by welding oversized wings on it for better torque tightening by hand - no tools required…

In case you are wondering what danglers really look like, see inset below…