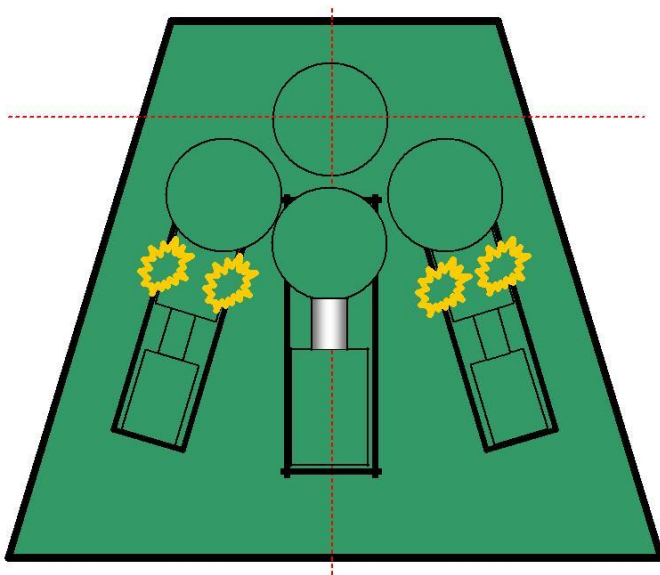


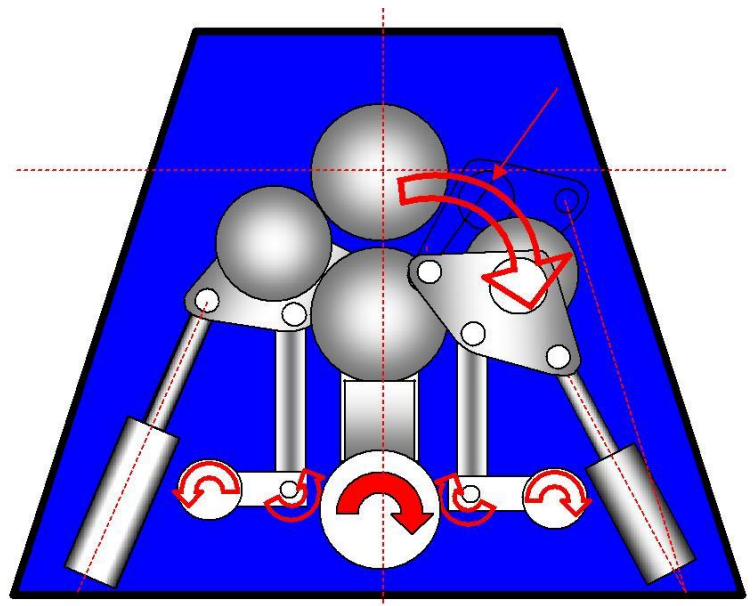


MG swinging arms and parallelism control compared to other systems

Below is a sample of a machine with rectal linear guides (pic.1) and on the right a sample of a MG swinging arms (pic.2). The very first thing that we notice is the machines' design, it looks more complicated but provides us with our unique geometry (pic.2) compared to the very easy and inexpensive version of machine 1 (pic.1).



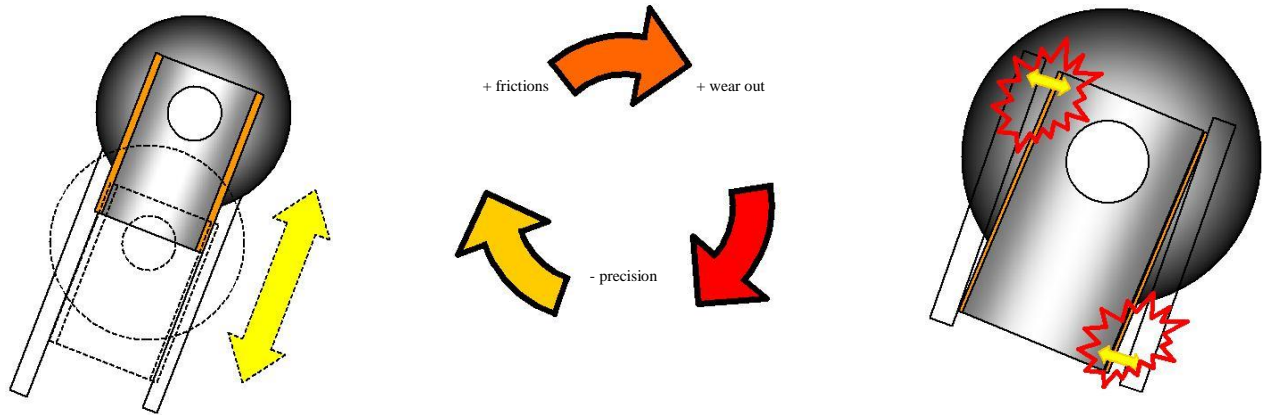
Pic.1



Pic.2

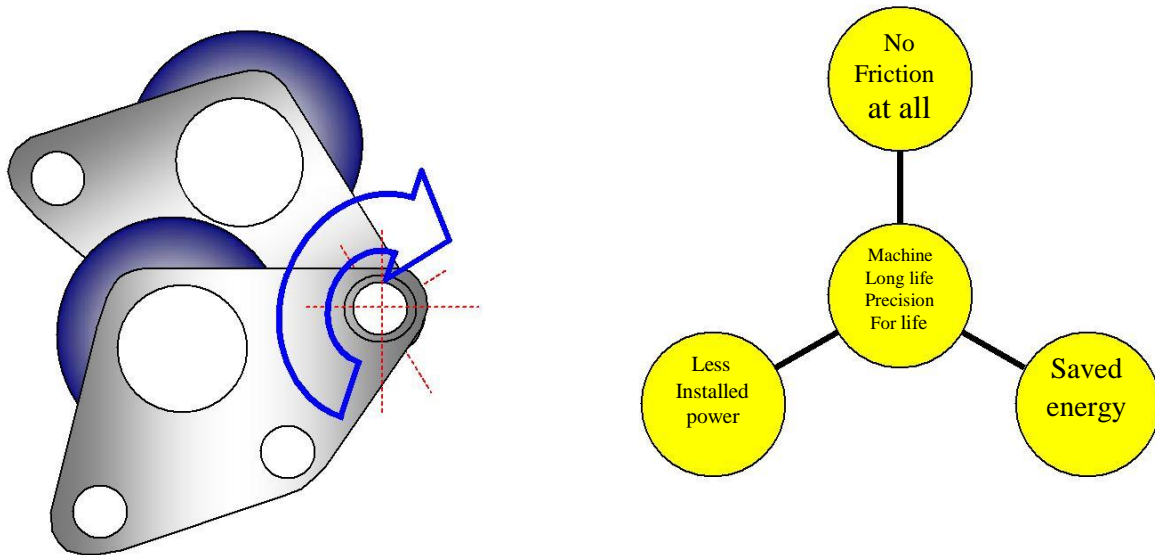
Let's analyze now the different technologies.

- 1) Rectal linear side guides is a system that is accurate when the machine is new and the bronze slides are tightly fixed between the side rolls support and its guides (the yellow bars of the drawing below). It takes power though to move because of the friction that is generated; this is why usually all machines like this need higher installed power.



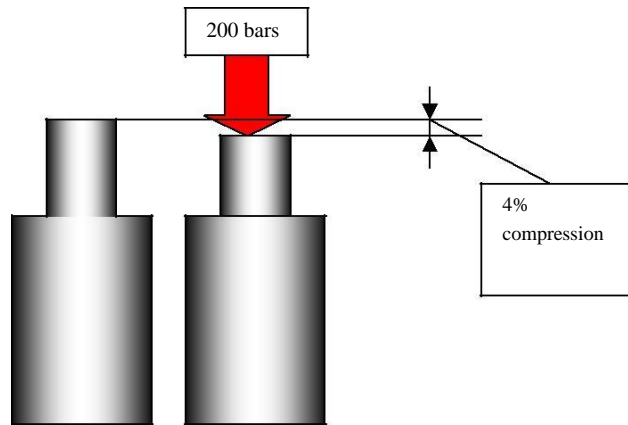
After a running for a period of time the guides will wear and smooth out, When this happens the machine doesn't need the extra power however you will still have to pay for it every month. So, the machine still absorbs the entire power, but it doesn't use it all. It's a loss of power and money? After a certain period of time, the bronze slides wear out and it's here that the machine loses precision, if you look at the second picture of linear side guides sketch above you understand how the support will soon start to move inside the guides and you'll understand as well how the side rolls precision is lost. At this point maintenance is needed to get back to the initial precision.

MG SWINGING ARMS



MG system has a pivot arm swinging around a center fixed by means of a bearing. The MG System is proven and been in service for years without LOSS OF PRECISION. Coupling with shaft and bearing is well known and used worldwide, this is why we can grant the machines precision for years without problems.

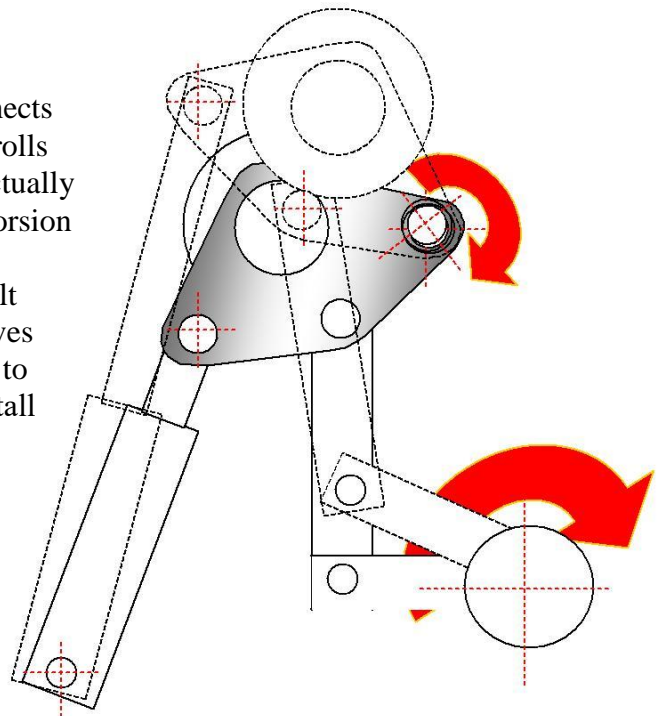
Side rolls parallelism. The basics of electronic parallelism is that one piston, say the left one, moves while the second, the right, follows it by means of a communication between two encoders (set on each hydraulic piston) and an electronic unit. It's requires continuous adjustment that translates in terms of movements to continuously move up and down of the piston to maintain parallelism. You may not see it, but this is how it works. They might say it's like press brake system, but don't forget, they have a very limited stroke, while a plate roll has got a very big one. The electronic system would be fine if the oil did not compress however it does 2% every 100 Bars. Look at the sketch below



For this reason, the electronic or hydraulic parallelism control is a continuously adjusting system because one of the pistons, the one that gets more loaded (when the material is not perfectly in the center of the rolls) drops down because of oil compression and there is nothing they can do to avoid it. This is why this system works on press brakes, in fact less stroke, less quantity of oil, so less compression while a plate rolls has much larger stroke so a large amount of oil traveling results in more compression.

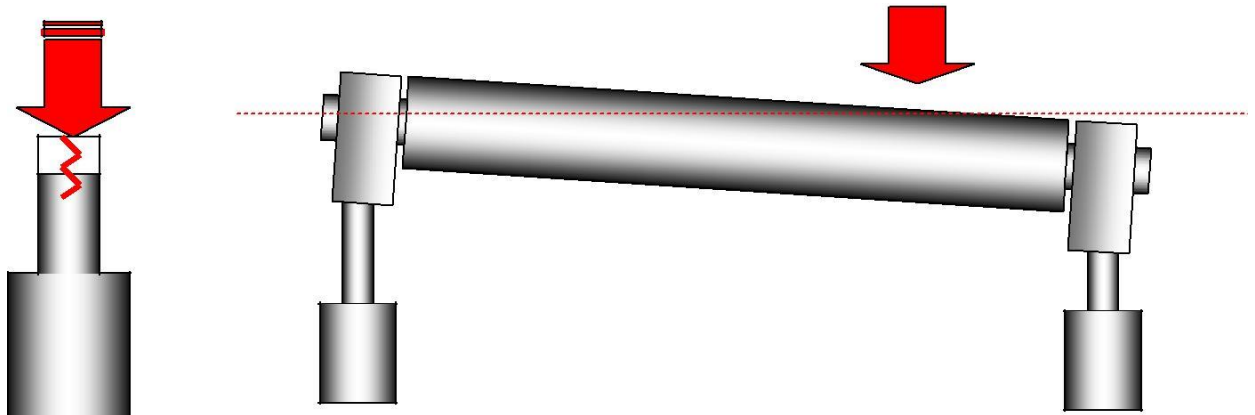
MG TORSION BARS

This system is based on a massive round bar that connects mechanically to the two hydraulic pistons of the side rolls from left to right. This way the two pistons become actually one as they are firmly tied together by means of this torsion bar. Also, the oil compression doesn't matter here because the amount of compression is always the result of the sum of the oil in both pistons. If something moves it is the two pistons and never ever one at a time. Due to the lever generated by the side rolls' arms, we can install smaller pistons and have the same effect, but with the great advantage of less oil traveling and so, again, less oil compression. That's proven to be the most precise and reliable system worldwide and in addition it doesn't need any kind of setting or adjustment for the machine life.



Pic.3

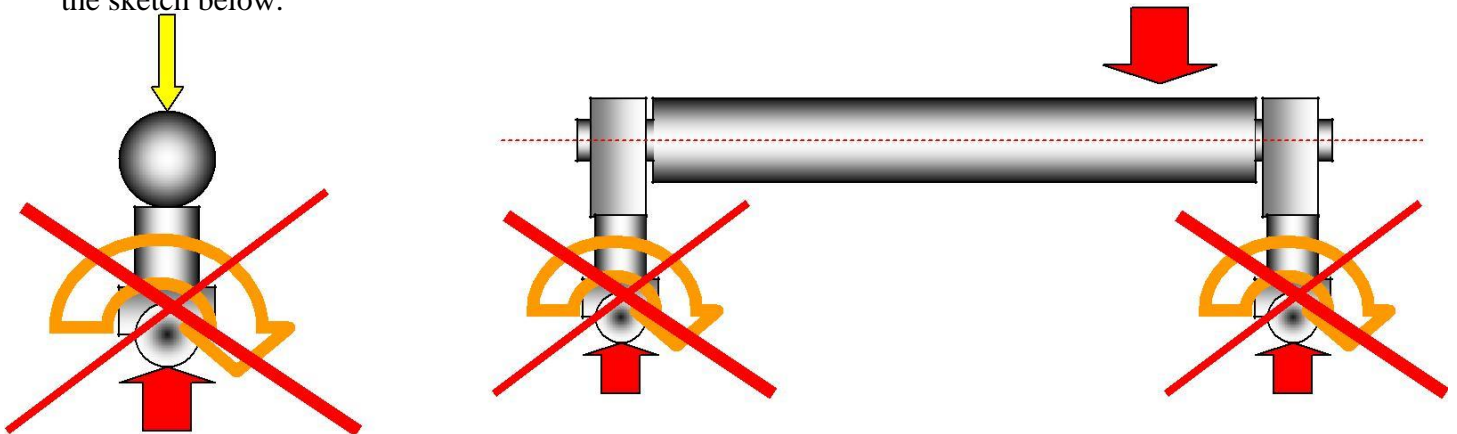
- 3) The lower roll parallelism control. Also in this case we have a strong case, you can see on pic.4 the lower roll of our competitors is directly driven by a two hydraulic pistons. Again, because of the oil compression, there is no way to keep a constant pinch as one side of the roll will always compress down, just a small amount, but enough not to be able to guarantee rolling precision (cone defect) as well as lack of dragging constancy.



Pic.4

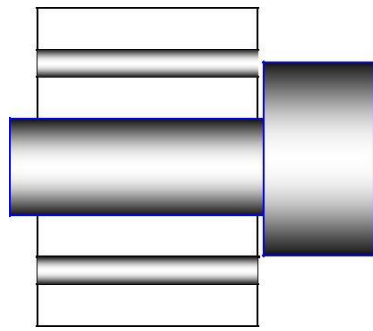
MG TORSION BAR

Our system is based on a roll set on two eccentric wheels driven again by a torsion bar. Look at the sketch below.

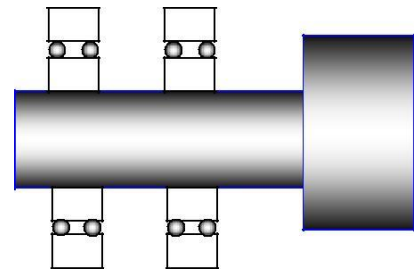


The eccentric is irreversible so there is no way to compress oil under loading. This is why we can guarantee the best precision even when the machine is pushed to the limit.

- 4) Bearings. Here is a comparison between our system and the system adapted by some of our competitors:



MG

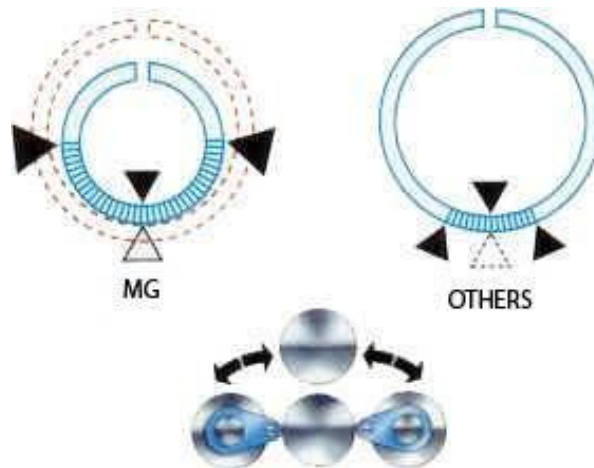


OTHEERS

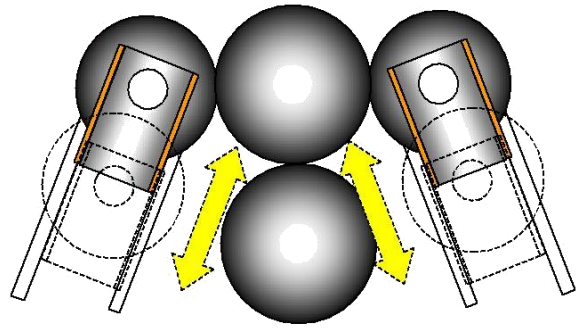
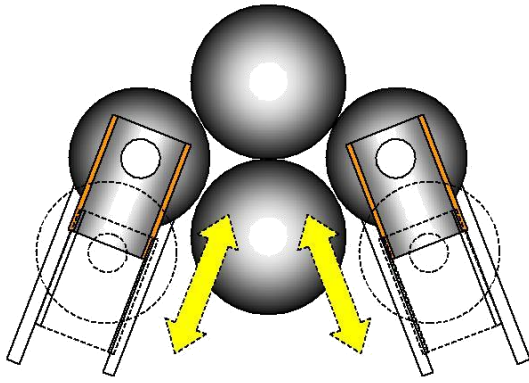
MG technology is to use a large and heavy bottle bearing calculated to work with a large amount of extra tonnage compared to the machines need, instead of just two simple bearings that could be over loaded by accident and in a certain circumstances singularly. That's dangerous. Again we can guarantee the bearings long life as the load is guaranteed the load will always be distributed all over the bearing surface.

MG GEOMETRY

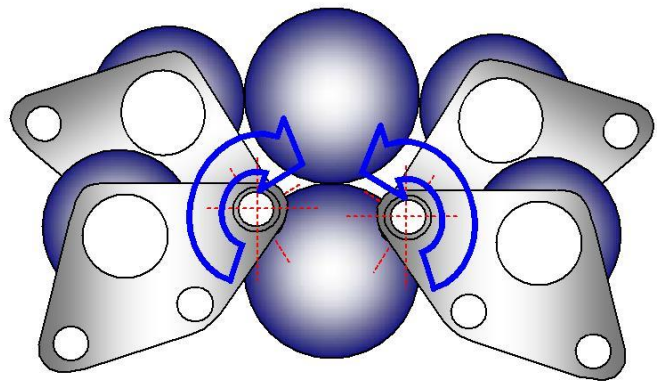
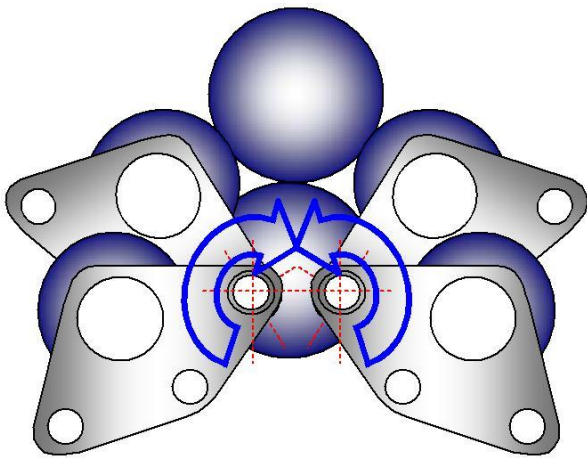
To reach the last goal, the smallest possible bending diameter, MG focuses on the right point of contact between the bending rolls and the top roll. It isn't a matter of power. It's just a matter of knowledge and experience.



If you look at the below sketches you understand how well every system can be adapted to the best geometry, the fact is that MG continuously researches and develops machines while others are still working with machines that have basically been projected 40 years ago. Here it is the geometry



Above is shown as a slide guide system that can't be adapted to different geometries as well as MG system below.



So it's a pure matter of geometry? **Choose the right PARTNER** of whom you can trust and take advantage of the information, capability and experience to make your investment a true investment that will shortly be paid back for.