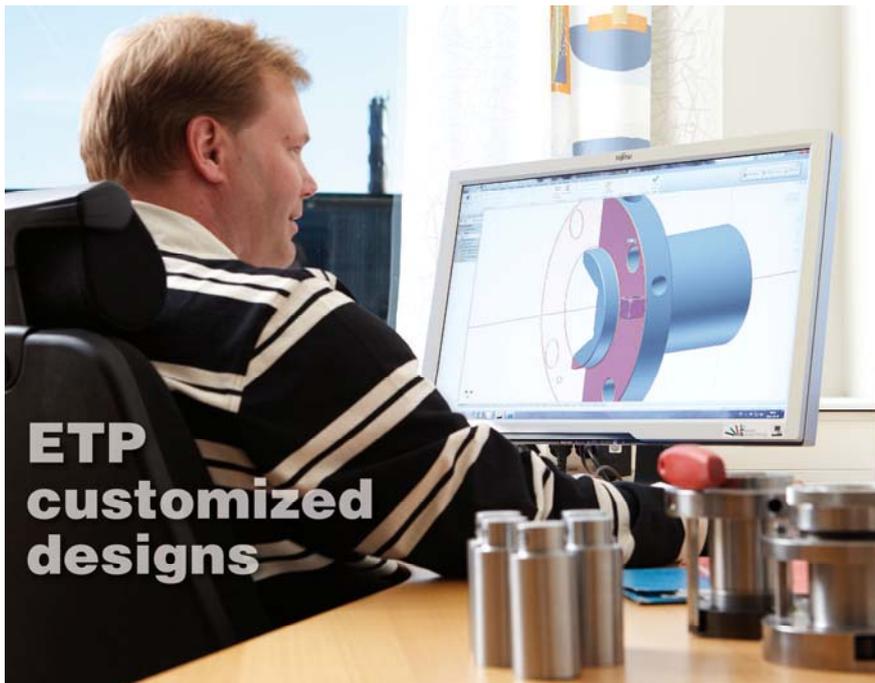


Technical Manual

ETP customized designs



Content

ETP's resources to develop, test and manufacture customized designs	2
Some interesting ETP customized designs.....	5
FAQ	9

ETP’s resources to develop, test and manufacture customized designs

Development

All development starts with establishing a technical requirement specification together with the customer. The whole process will be a teamwork with the customer, the ETP-Representative and us.

As a start sometimes the “Application data form” on our homepage is sent to us. This is a very important process. It contains listing the loads and other surrounding factors influencing the application.

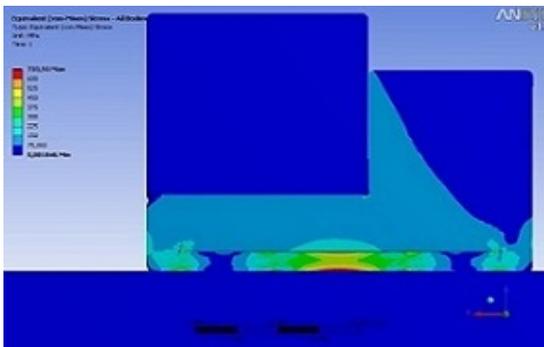
At this stage ETP makes some principal drawings which are discussed with the customer.

Normally one design is agreed to and put priority on, until there might be reasons to change it. If so the process starts over again.

In house we have the latest CAD software and FEM calculation capacity.

For production we have the for the quality of the final product most important machinery in house, like welding machines of different kinds: conventional, laser and electron beam welding. Other important operations are grinding – if needed, filling of pressure medium, quality control (with ultra-sound for the weld) and accurate turning. All conventional machining operations are done at for that particular operation best suitable sub-contractor of ours. It happens frequently that we have to look for new sub-contractors for a new product.

We are not bound to use are own machines if they are not feasible. When developing products its important to be free in the design and not locked to certain machine tools.



FEM calculations can easily be used to see the effect of design changes when the calculation model is built up.

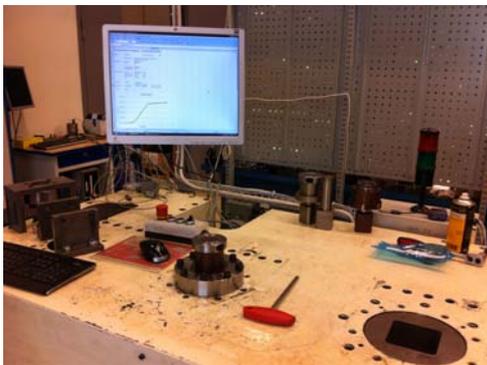


One of our high precision electron beam welding machines.

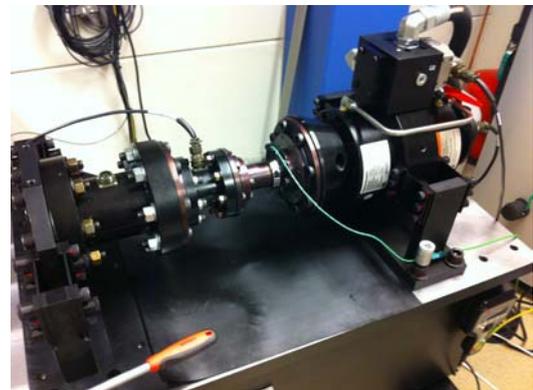
Prototypes

Some samples are made for tests by the customer and by us. We have resources to make at least the following tests:

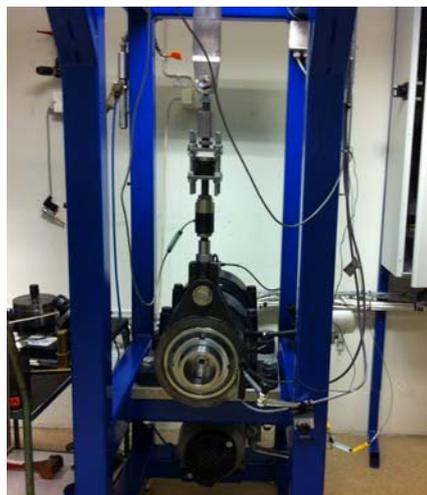
- Slip torque
- Alternating, pulsating fatigue torque tests at a frequency of up to 50 Hz
- Radial loads and bending torque
- Number of mountings



Slip torque test machine



Fatigue torque test machine



Radial loads and bending torque fatigue test machine

Evaluation

Evaluation meetings regularly with the customer. Possible design changes or changes of the technical specification. It sometimes involves starting all over again.

Field tests by the customer

Parallel with continued internal tests at the customer and us, the product finally, in many cases, has to be validated through tests in the real application at an end-user. At this test often non-technical suggestions dealing with the use of the product comes up and will be solved.

Final design and deliveries

A final design is agreed to between all parties. It is also agreed how to handle continuous deliveries, how to carry inventory, quality checks a.s.o.

Continuous improvement and development

After some time in operation often small but even bigger improvements have to be made. ETP and the ETP-Representative always stay in close contact with its ETP customers, to make sure the ETP products are developed to fulfill its purpose when the machine is changed.

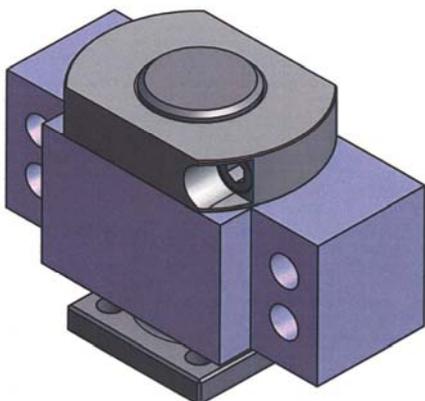
Some interesting ETP customized designs



ETP-AXPRESS with the pressure screw in the axial direction. Is designed for fastening & centering of decoration roller for printing on the outside of beverage cans. The tightening is done with a screw with a flange. The flange makes sure the screw is not overtightened. The tightening has to be in the axial direction because of the design of the machine. All unnecessary material is machined away on the flange part to reduce weight.



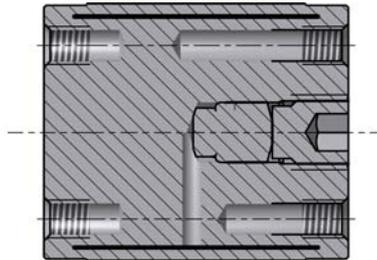
Machine for cold forming of steel tubes. ETP-OCTOPUS locks the pistons of hydraulic cylinders, one for each cylinder, in a certain position when forming different sizes of tubes. The position is changed rather often. The locking with ETP-OCTOPUS can be done all at the same time from a central located hydraulic pump. ETP-OCTOPUS is plated in the bore with aluminium bronze to reduce wear.



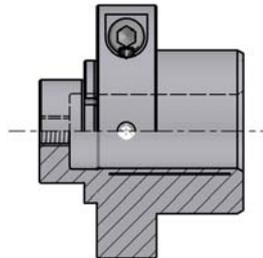
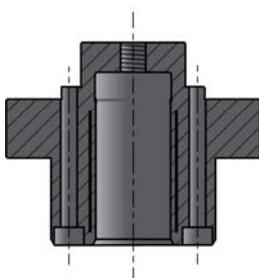
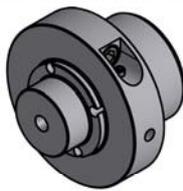
Slightly modified flange of a standard ETP-EXPRESS 40, to make it fit better in the customers machine.



High precision bigger size of ETP-TECHNO used in the printing industry for centering of a printing roller. The radial and also axial run out on the side of the flange has to be only some μm .

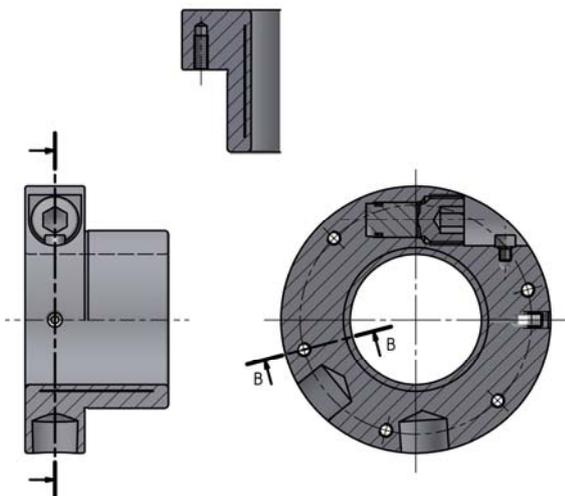


ETP-EXPAND, a very compact design without flange and the pressure setting mechanism integrated in the center. Used for frequent and quick positioning of a hub in the health care industry.

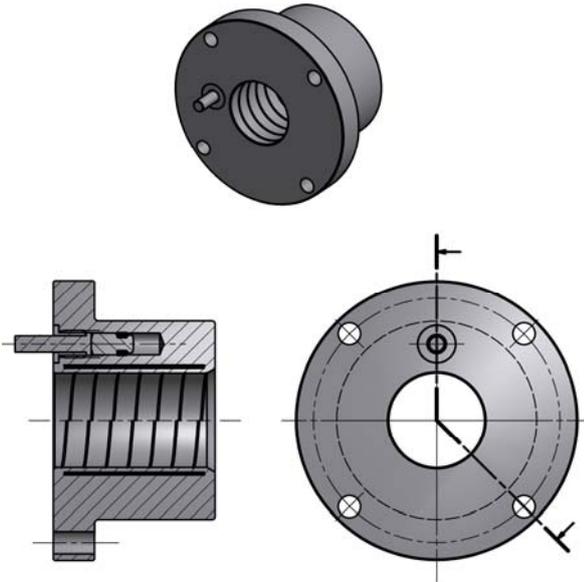


ETP product for accurate locking of a component in the machine tool industry. The component is accurately locked to the flange with screws then centered when tightening the screw.

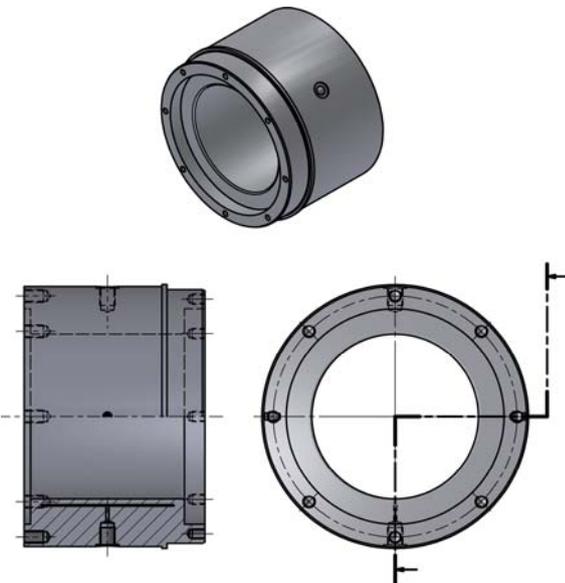
B-B



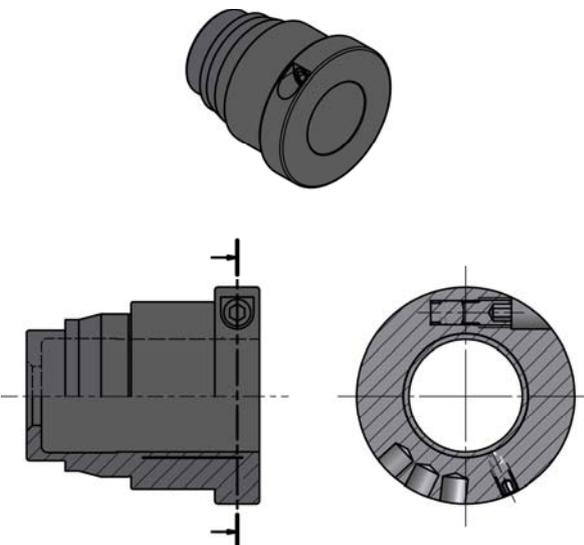
ETP product with reduced surface pressure to the hub because of low yield strength. Hub just centered with the ETP products then locked with screws through the flange.



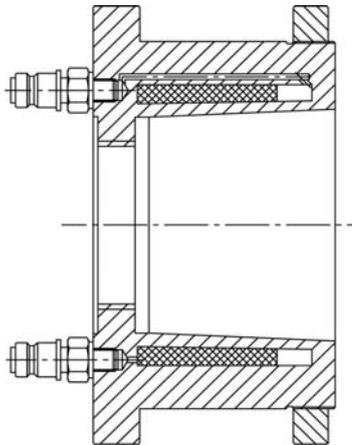
ETP-AXPRESS, for frequent and quick clamping a pin is moved to push the piston. A hydraulic cylinder is used to create the force on the pin. ETP-AXPRESS only clamps to the inside. Spiral tracks on the inner diameter makes the clamping surfaces less sensitive for impurities.



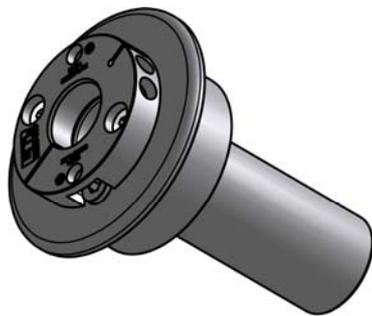
ETP-OCTOPUS with hydraulic connection on the outer diameter. The parts to fix and move are locked with a screw joint to the ends of ETP-OCTOPUS. One hydraulic connection on each side in order to reach one easily.



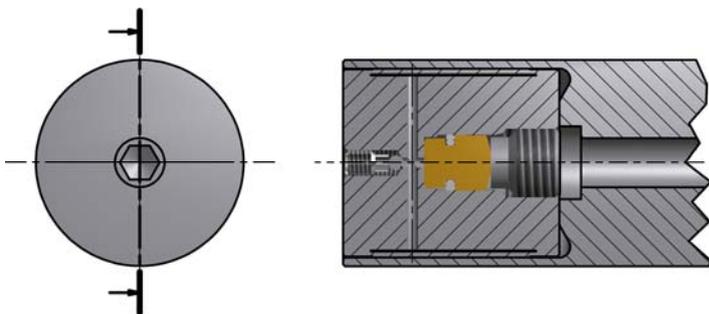
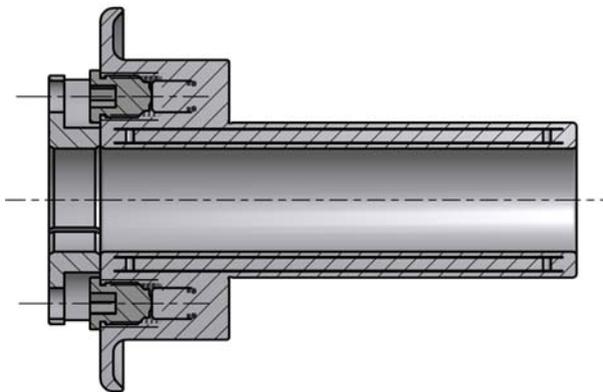
ETP-EXPRESS only clamping to the inside. On the outside different components are fixed.



*ETP-HYLOC only clamping to the inside.
A component is locked with a nut onto the
shoulder on the outside diameter.*



*ETP product with fixed inner/outer
diameter due to customers machine
design. Safety locking ring included if
pressurizing is forgotten – also works
as a stop for the tightening screws.
Flange for easy lifting and protection of
the hub.*



*ETP-EXPAND with pressure setting
through the customers hollow shaft,
clamping only to the outside.*

FAQ

Do we have to pay for design- development time and prototypes made by you for making a customized product for us?

We work with customized designs for OEM companies, where the volume is enough to reach an acceptable price level for us and for the customer. At the early stage of a project we estimate the final price for serial production and decide if continue or not with the customer.

If we can see an interesting future for the project we continue at no charge for our time spent. Prototypes are charged and tested at the cost of the customer. We make tests of the prototypes in house in our test equipments free of charge. The most important are field tests made by the customer.

Do we have to pay for manufacturing tools needed to produce the final product?

If more expensive tools or other parts which are unique for the final product are needed they have to be paid as a one time start up cost.

Do we have direct contact with you or through the ETP-Representative?

Both, we try to work as a team. The ETP Representative is close to you and have the "daily contact". For working meetings we all meet, most of the time at your company but also in Sweden all three parties.

We do not want to tell all unique design features of our products, how do we do?

The same is valid for us and "the secrets" behind the ETP-Products. In sensitive cases we together sign a non disclosure agreement.

How quick can you help us?

We know how important it is to try to keep the many dead lines in a development project where maybe the final product tested and in stock should be shown at a trade exhibition. Therefore a rough time schedule made by you is important to know. Our target is to do our work and follow your plan.

Will you put the final product in stock for us?

In most cases we will not, but the ETP-Representative which is geographical closer to you will be glad to make an arrangement together with you.

Whom should we contact to get a project started?

Contact the ETP-Representative in your country for a first meeting. Address could be found on the homepage. If there is no representative listed for your country, please contact us.