

Precision meets Motion



EWS . Adjust

Alignment System for Tool Turrets

EWS
Tool Technologies

Product description**The Novel EWS Alignment System for Tool Turrets**

Since there have been turning lathes equipped with driven tools, tool manufacturers deal with the problem of the tool adjustment arising once the cutting edge is in an orthogonal position to the tool shank. In the times of the one-spindle machines, it was only the driven tools for cross-boring that were concerned. With today's opposed spindle machines, which in most cases are equipped with star turrets, this issue applies to all inside machining tools.

The adjustment via 2 screws at a PIN placed in the turret is wide-spread practice. But it is exactly this time-consuming adjustment, especially with machines having 2 turrets (up to 28 tool stations), that degrades the high rapid motion speeds making it insignificant. The gain in process speeds is destroyed by the enormous set-up times.

Regardless of which method you use for adjusting at the pin, you will always need time for adjustment, as the DIN pins generally used never sit in situ of the turret boring. If you imagine that a PIN position is offset at intervals of 56 mm (related to the VDI boring) by 10 μm in Y, you will get already 0,03 mm with a customary boring bar holder at an unclamping length of 100 mm. This consideration does not take the assembly inaccuracy in the machine tool into account.

EWS has tackled this problem by means of the new EWS-adjust system. EWS pursued the aim of getting down to the root of the problem.

In this connection there is only one solution: adjusting the pin at the turret, i.e. at the machine and best in the machining position. For this end, EWS has developed an eccentric pin, which, after removing the standard pin, is inserted into the same boring.

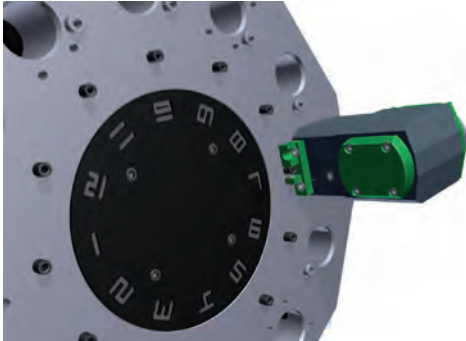
By interacting with a EWS set-up mandrel the pin can be adjusted exactly to match the machining position. The bottom part of the eccentric is an expanding mandrel, which is loaded by means of a headless pin thus ensuring the twisting position.

This is a one-time work to be performed with all turret stations. The tool employed on the turret can be set up externally by means of a device. This step is also required only once, if there are no collisions occurring.

The EWS adjust guide rail is equipped with a fixed component, opposite to which there is placed a counter-screw eliminating the final slackness between guide rail and pin. The system can be retrofitted with nearly all tools supplied by EWS.

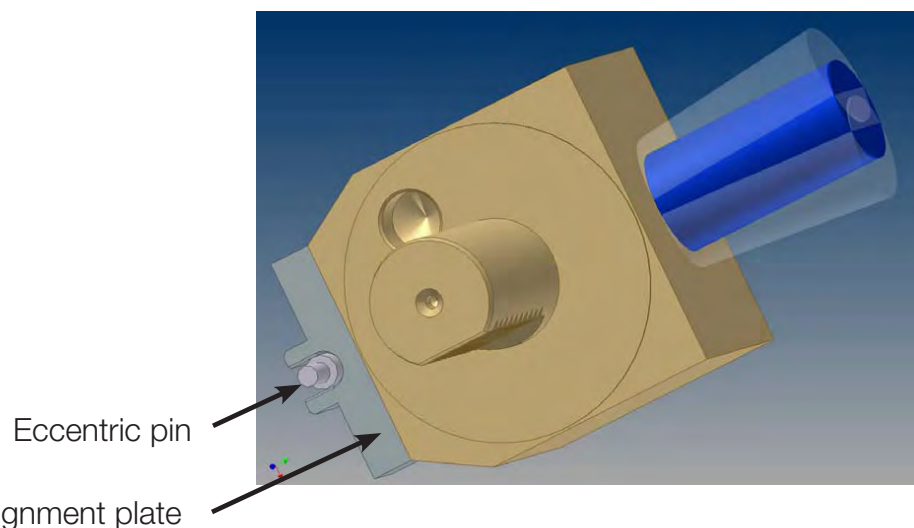
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Product description



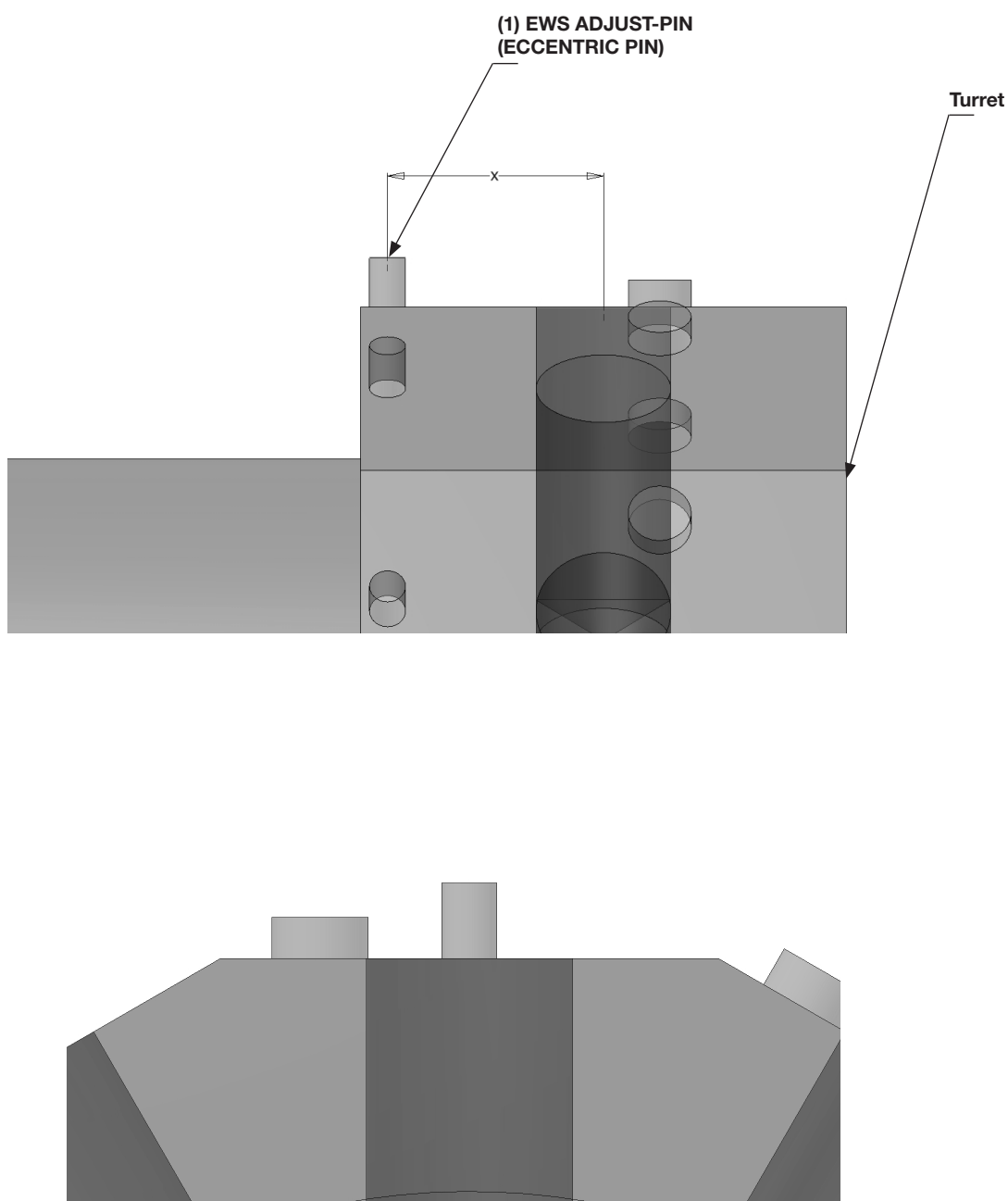
What you should know about EWS.Adjust:

- All tools are equipped with a fixed guide rail without adjustability.
- Fixed guide rails are adjusted and sealed at the tool in the EWS factory.
- The pins in the turret are replaced with eccentric pins which are procured in 0-position, aligned to the fixing hole and clamped by the machine manufacturer or user. (Tolerance compensation)
- EWS offers its customers an adjusting device which is used to check the position of the adjustment rails and to readjust it, if required, prior to the application on the machine. (No impairment of the machine running time!)
- Readjusting on the machine is not required anymore.
- The angle error of the cutting tool is below $20\text{ }\mu\text{m}/100\text{ mm}$. In order to improve the result the tool is built in at 12 o'clock position. (No moment of torsion; load balancing!)
- For high-precision works (e.g. reaming without swivel compensator) the eccentric pin can be used to fine-adjust directly at the turret.
- The EWS Service department will support you with upgrading your turret to the EWS Adjust System.



1. Upgrading the turret to EWS Adjust

- The standard alignment pin of the turret needs to be replaced by the eccentric pin of the EWS-Adjust-System (1).



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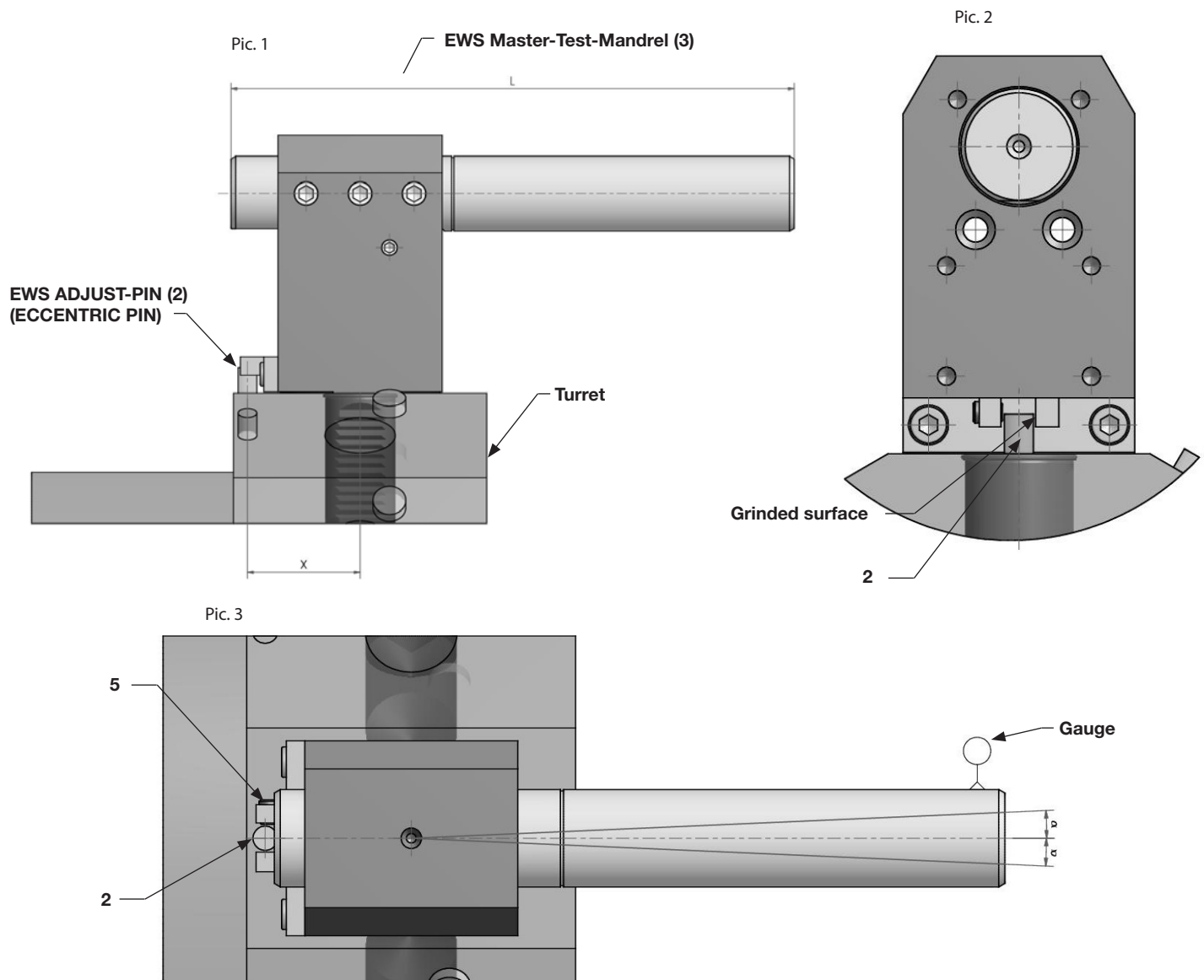
Manual

2. Alignment of the turret station

- The EWS-Master-Test-Mandrel (3) will be placed on the turret station, which needs to be adjusted. (pic. 1)
- At the same time, the grinded surface of the alignment plate will be forced against the EWS-Adjust-Pin (2). (pic. 2)
- Afterwards, the turret clamping bolt (VDI - bolt) is tightened slightly.
- Now the turret station can be adjusted by turning the EWS-Adjust-Pin (2) (pic. 3). The alignment of the turret station can be verified by using a gauge as shown in picture 3.
- The last step will be repeated several times, until the requested result has been achieved.
Afterwards, the screw DIN913 (5) will be tightened to fix the EWS-Adjust-Pin (2) in the current position.

The alignment of the turret station is now complete.

These steps need to be done for all the stations on the turret.





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