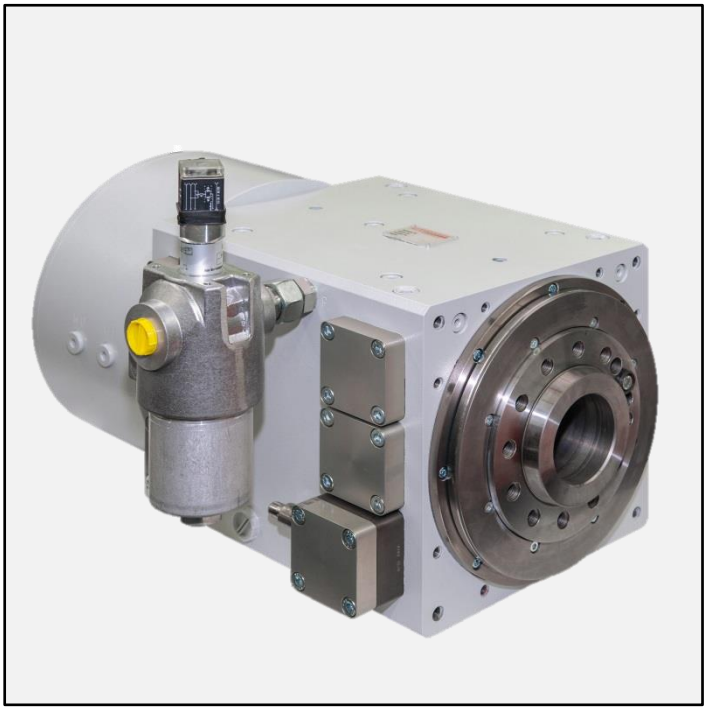
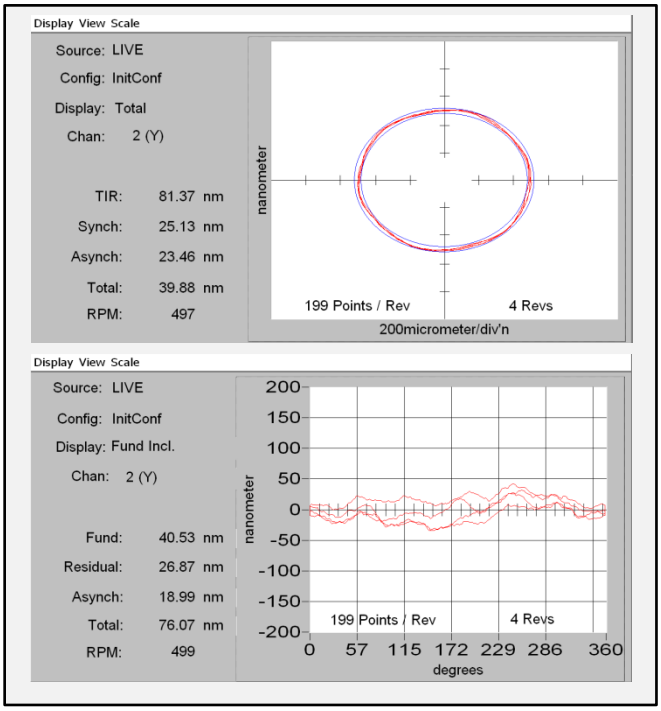
Max. Precision at work piece!

HYPROSTATIK a schunk company
Spindle technic

Hydrostatic work head





Why using hydrostatic work head in cylindrical grinder?

- ✓ Runout < 0,2µm, at work piece <<0,5 µm (see measurement of axial and radial runout above).
- ✓ Excellent damping for best surfaces, high form precision and high cutting power.
- ✓ Wear free hydrostatic bearings keeps grinding quality at highest level.
- ✓ Very high load capacity and stiffness by high rigid hydrostatic bearings with PM-flow controller for heavy work pieces.
- ✓ With torque motor for smooth run, torque stiff and wear free drive of work head.
- ✓ With magnetic or optical angle measurement system, useful also for C-axis grinding.

size square	100 mm	130 mm	180 mm	250 mm	320 mm
Max. speed [1]	900-9000 rpm	800-6000 rpm	500-3000 rpm	300-2000 rpm	250-1000 rpm
Max. torque [2]	5-10 Nm	8 - 20 Nm	20 - 159 Nm	50 - 500 Nm	130 – 1000 Nm
Max. radial force [3]	500 N	1.000 N	2.500 N	5.000 N	10.000 N
Max. axial force [3]	+/- 500 N	+/-1.000 N	+/-2.000 N	+/-4.000 N	+/-5.000 N
Max. tilt torque [3]	100 Nm	200 Nm	400 Nm	1000 Nm	2000 Nm
Radial stiffness [4]	400 N/µm	600 N/µm	800 N/µm	1200 N/µm	2000 N/µm
axial stiffness [4]	300 N/µm	500 N/µm	600 N/µm	1000 N/µm	1500 N/µm
oil flow at visc. VG32, 30°C	3 l/min (max. 3000 rpm)	3,5 l/min (max. 2000 rpm)	5 l/min (max. 1000 rpm)	4 l/min (max.500 rpm)	5 l/min (max. 350 rpm)

[1] Oil flow and oil viscosity will be adapted to max. speed [2] Nm values at S1: 100% - you can select max. torque out of the range.
[3] Radial force, axial force and tilt torque can be applied together on the spindle nose. Values can be adapted to application
[4] Gaps stiffness in bearing. Stiffness on spindle nose is lower.

HYPROSTATIK Schönfeld GmbH
Felix-Hollenberg-Str. 3; D-73035 Göppingen

Tel: 07161/965959-0
e-mail: info@hyprostatik.de

Better precision and liability with

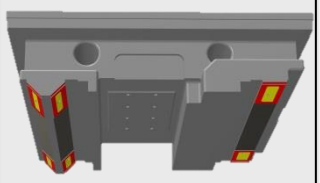
hydrostatic components

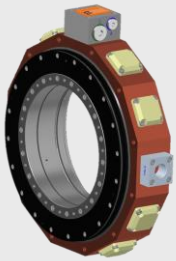
HYPROSTATIK®

Spindle technic

Hydrostatic linear guide

- ✓ Friction free at low speed => steps with less than 0,1µm possible.
- ✓ Wear free => precision of axis keeps unchanged.
- ✓ Excellent damping => highest surface and form quality at work piece.
- ✓ High stiffness and load capacity => highest precision at work piece.



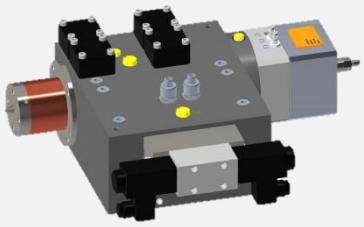


Hydrostatic center spindle

- ✓ For central shaft clamping and grinding both side, with axial and radial runout up to < 0,2µm.
- ✓ Left and right side diameters with coaxiality better than 1µm.
- ✓ Useful as hollow center for inner grinding of long shafts.
- ✓ With rotary joint for oil pressure transfer for unclamping of chuck.

Hydrostatic tailstock with rotating center

- ✓ For runout better than 0,3µm on all shafts diameters.
- ✓ Easier grinding of heavy shafts with low work on centers.
- ✓ Grinding of shafts, which need very precise axial clamping force to avoid change of geometry.
- ✓ With or without drive, sure supervised hydraulic clamping.

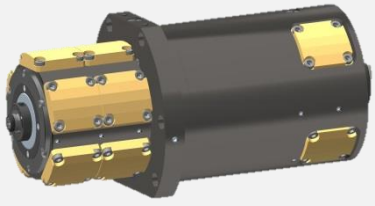


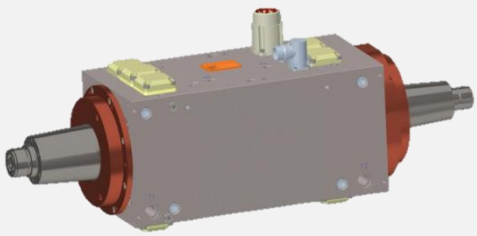
Hydrostatic B-axis

- ✓ With torque motor and positioning 1“ by optical angle measurement system.
- ✓ Hydrostatic bearings with precise clamping.
- ✓ Central oil return for hydrostatic grinding spindles on top.

Hydrostatic inner grinding spindles

- ✓ Wear free hydrostatic bearings.
- ✓ Best grinding power and surface quality by excellent damping, runout and balance quality.
- ✓ Significant reduced heat and much better thermal stability





Hydrostatic external grinding spindle

- ✓ Wear free hydrostatic bearings.
- ✓ High form precision and best surface quality at work piece by excellent damping and runout and balance quality < G0,4.
- ✓ Motor 10-40kW in between or behind bearings.

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