

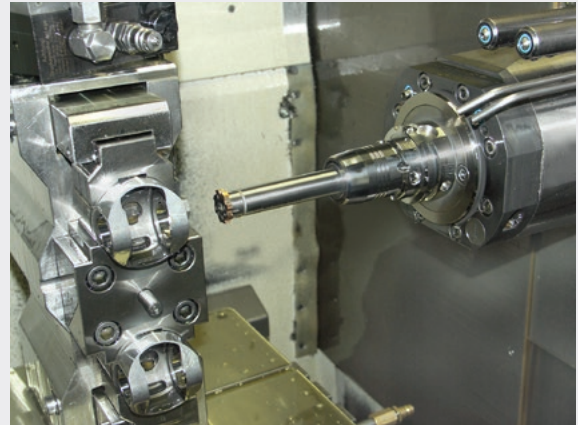


T|E|N|D|O[®] Zero

**Process-reliable. Efficient.
Precise.**

The TENDO Zero hydraulic expansion toolholder is the pro for tight tolerances when reaming, fine-drilling and finish boring – or wherever perfect run-out accuracy is essential. This enables even minimal run-out errors with tools, mountings, and the machine spindles to be individually compensated.

For reaming and exact drilling



Advantages – Your benefits

- + Adjustable run-out accuracy of 0 µm possible**
Run-out errors of toolholders and tools can be compensated by using four lateral set-screws
- + Low maintenance**
The completely closed system ensures a long service life
- + Dirt grooves for reliable torque transmission**
The enormous clamping pressure of the TENDO Zero hydraulic expansion toolholder creates a displacement of oil, grease, or lubricant residues into the groove, as a result of which the clamping surfaces remain dry.
- + Fine-balanced by default**
Suitable for high speeds and HSC machining with a balancing grade of G2.5 at 25,000 RPM
- + Micron-precise tool change within seconds without peripheral equipment**
Time saving through reduction of set-up time and no investment and energy costs due to additional clamping devices
- + Excellent vibration damping**
Micro-blowouts are prevented, optimal workpiece surfaces, machine spindle protection, increased tool service life resulting in a reduction of costs
- + Exact length preadjustment**
Length adjustment in the range of 0.01 mm accuracy, with adjustment travel of 10 mm
- + Comprehensive compatibility**
Can be ideally combined with TRIBOS SVL tool extensions
- + All commercially available tool shank types can be clamped**
Form A: with smooth cylindrical shank, shank form A in accordance with DIN 1835 and DIN 6535 HA Form AB: with flat face and cylindrical shank with pulling face, shank form B in accordance with DIN 1835 and DIN 6535 HB Form B: with lateral pulling faces, shank form B in accordance with DIN 1835 Form E: with inclined clamping face, shank form E in accordance with DIN 1835 and DIN 6535 HE

**1 Adjusting screw**

TENDO Zero has an adjustable run-out accuracy. Run-out errors of toolholders and tools can be compensated by using four lateral set-screws.

2 Clamping screw

The clamping screw is used to actuate the clamping piston. Clamp the clamping screw to dead stop using an Allen key. A torque wrench is not needed.

3 Length-setting screw

For fast and easy tool presetting.

4 Base body

The machine-side interface is located on the base body.

5 Expansion sleeve and oil chamber

The expansion sleeve evenly expands against the tool shank. The tool shank is centered first and then clamped powerfully and uniformly over the entire surface during this clamping process. When the chamber system is filled with hydraulic fluid, it has a damping effect on the clamped tool. Wear on the cutting edge is minimized and service life increases by up to 40%.

6 Dirt groove

The enormous clamping pressure of the TENDO Zero hydraulic expansion toolholder creates a displacement of oil, grease, or lubricant residues into the groove, as a result of which the clamping surfaces remain dry.

Adjustable run-out accuracy of 0 µm possible

Run-out errors of toolholders and tools can be compensated using four lateral set-screws, which allow a run-out accuracy of 0 µm.

1 Adjusting screw



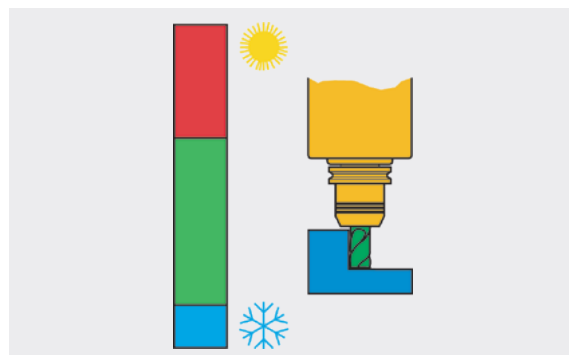
Clamping force test

The clamping force in the clamping system can be tested at any time in a matter of seconds by using a test shaft.



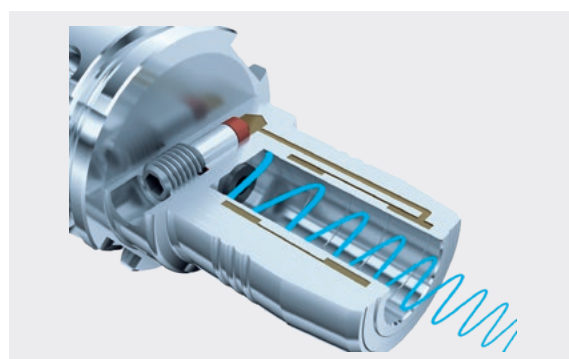
Optimum temperature range

All technical data in the catalog applies to a normal temperature range between 20 – 25°C. The optimum operating temperature range is between 20 and 50 °C. Higher temperature ranges are possible upon request.



Excellent vibration damping

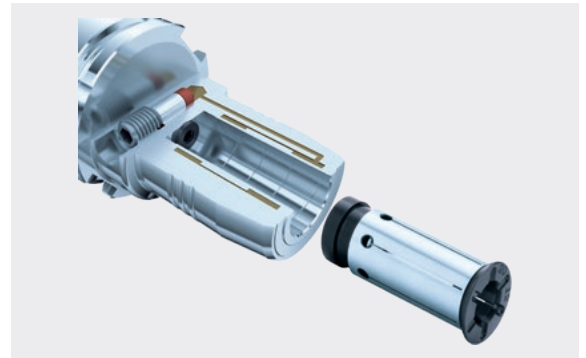
Micro-blowouts on the cutting edge of the tool are prevented, thus achieving optimum workpiece surfaces. The spindle performance will be enhanced, the tool service life is considerably increased and costs reduced.



High flexibility due to the use of intermediate sleeves

The application of slotted or coolant-proof intermediate sleeves enables clamping of different tool diameters using the same toolholder. This is why a toolholder can be used flexibly within the clamping range.

The run-out accuracy of the intermediate sleeve is ≤ 0.003 mm.



Dirt grooves for reliable torque transmission

The enormous clamping pressure of the TENDO hydraulic expansion toolholder creates a displacement of oil, grease, or lubricant residues into the dirt groove. This results in the clamping face remaining dry and reliable torque transmission is guaranteed.



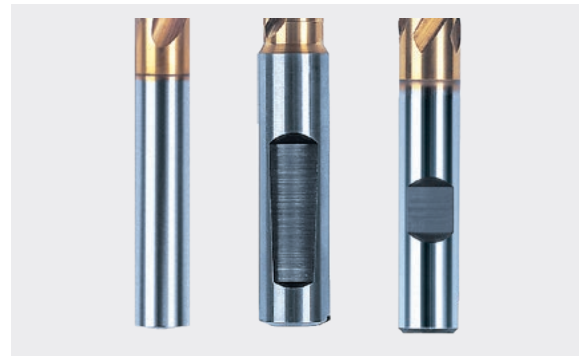
All commercially available tool shank types can be clamped

Form A: with smooth cylindrical shank, shank form A in accordance with DIN 1835 and DIN 6535 HA

Form AB: with flat face and cylindrical shank with pulling face, shank form B in accordance with DIN 1835 and DIN 6535 HB

Form B: with lateral pulling faces, shank form B in accordance with DIN 1835

Form E: with inclined clamping face, shank form E in accordance with DIN 1835 and DIN 6535 HE



Dirt resistance for a long-lasting functional reliability

The completely enclosed TENDO system prevents the penetration of dirt, chips, coolants, and grease. The clamping range is not damaged, functionality and perfect tool clamping system remain fully preserved. TENDO hydraulic expansion toolholders are low-maintenance and enjoy a long service life.



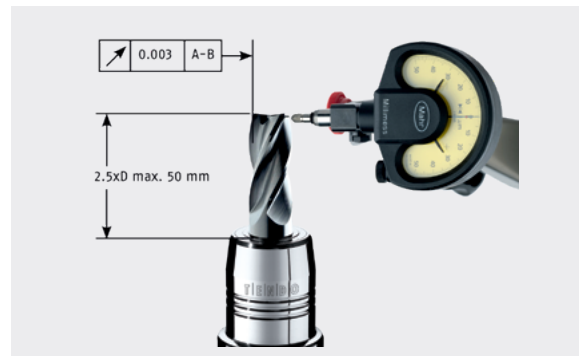
Micron-precise tool change within seconds without peripheral equipment

With a few simple actions, the tool can be changed quickly and process reliably. Time savings due to reduced set-up times and no investment costs for additional clamping devices.

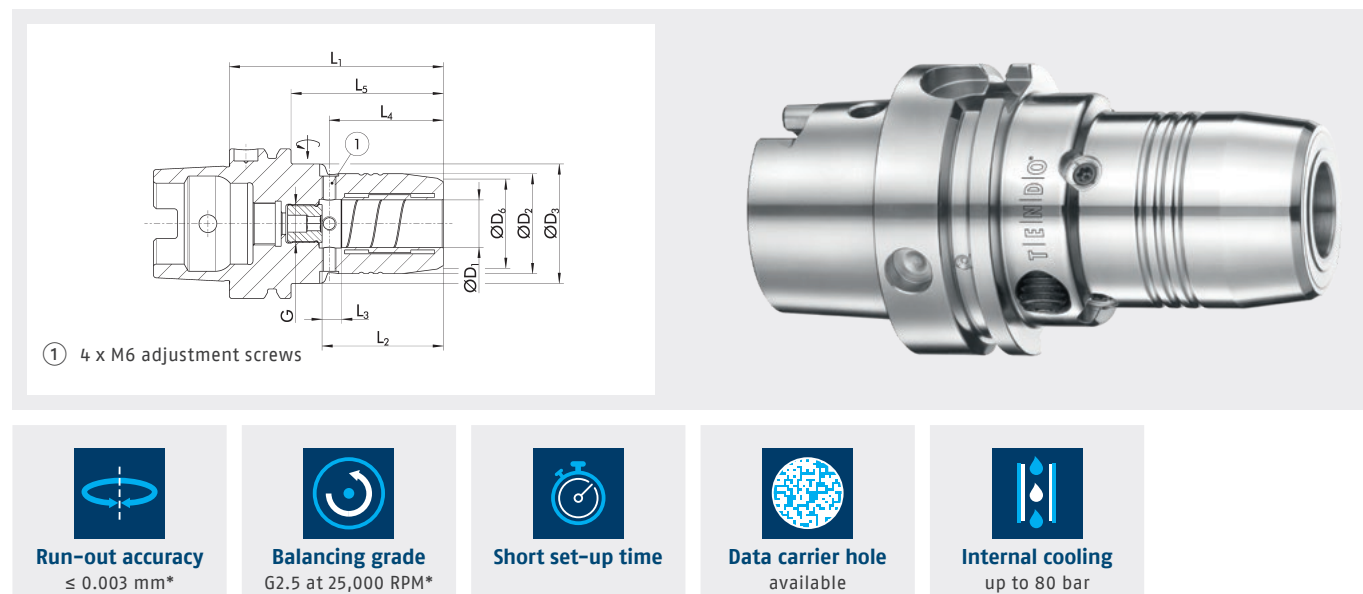


Run-out and repeat accuracy

Highest, permanent run-out and repeat accuracy of < 0.003 mm ensure an even cutting action. This minimizes wear to the cutting edges of the tool, increases tool service life considerably, and reduces the costs incurred for regrinding or buying new tools.



TENDO Zero HSK-A 63



Technical data

ID	D1 [mm]	D2 [mm]	D3 [mm]	D6 [mm]	L1 [mm]	L2 [mm]	L3 [mm]	L4 [mm]	L5 [mm]	G	Mmin [Nm]	Weight [kg]	
0204054Z	12	32	50	28	85	46	10	40	59	M10x1	90	1.1	9205650
0204059Z	14	34	50	30	85	46	10	40	59	M10x1	110	1.1	9205650
0204055Z	16	38	50	34	90	49	10	46	64	M12x1	185	1.2	9205650
0204056Z	20	42	50	38	90	51	10	48	64	M16x1	330	1.3	9205650
0204057Z	25	57		53	120	57	10	94		M16x1	400	2.2	9205660
0204058Z	32	62		58	125	61	10	99		M16x1	650	2.7	9205660

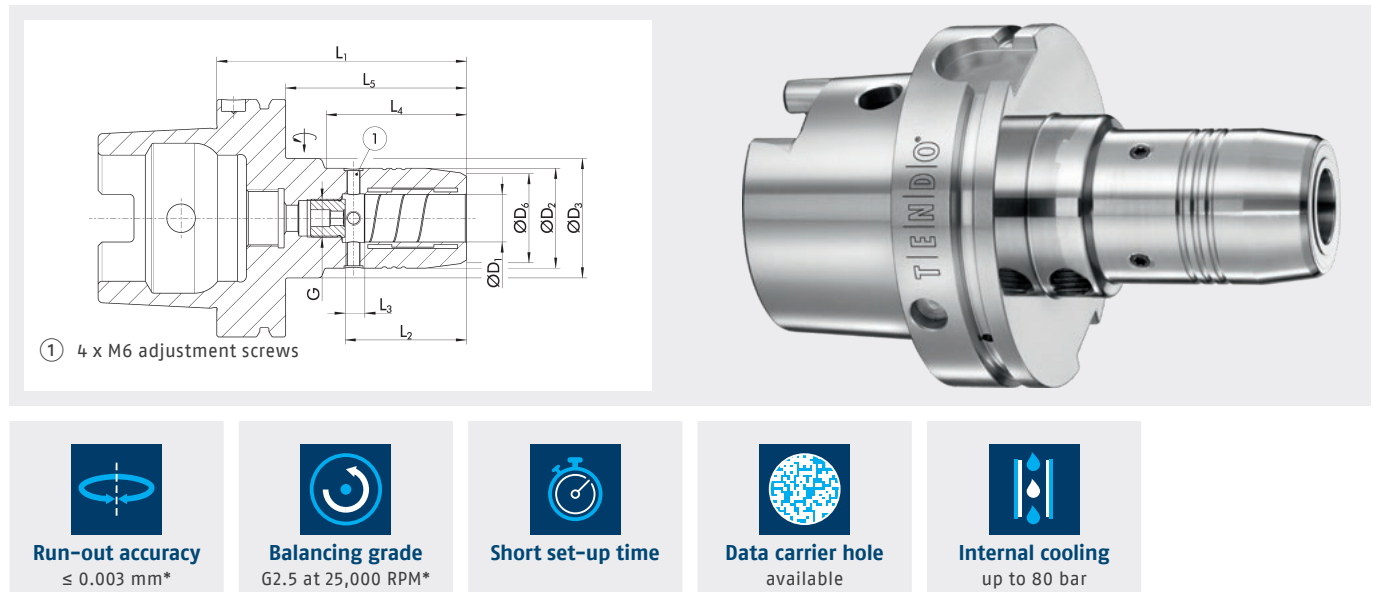
*Run-out accuracy: at 2.5 x D; run-out accuracy of 0 microns, adjustable

*Balancing grade: or Umax < 1 gmm

Additional sizes and customized designs are available upon request

Additional shank diameters can be clamped using intermediate sleeves

TENDO Zero HSK-A 100



Technical data

ID	D1 [mm]	D2 [mm]	D3 [mm]	D6 [mm]	L1 [mm]	L2 [mm]	L3 [mm]	L4 [mm]	L5 [mm]	G	Mmin [Nm]	Weight [kg]	
0204064Z	12	32	50	28	95	46	10	47	66	M10x1	90	2.6	9205650
0204066Z	20	42	50	38	105	51	10	59	76	M16x1	330	2.8	9205650
0204067Z	25	57	63	53	110	57	10	62	81	M16x1	400	2.8	9205660
0204068Z	32	64	75	60	110	61	10	62	81	M16x1	650	3.8	9205660

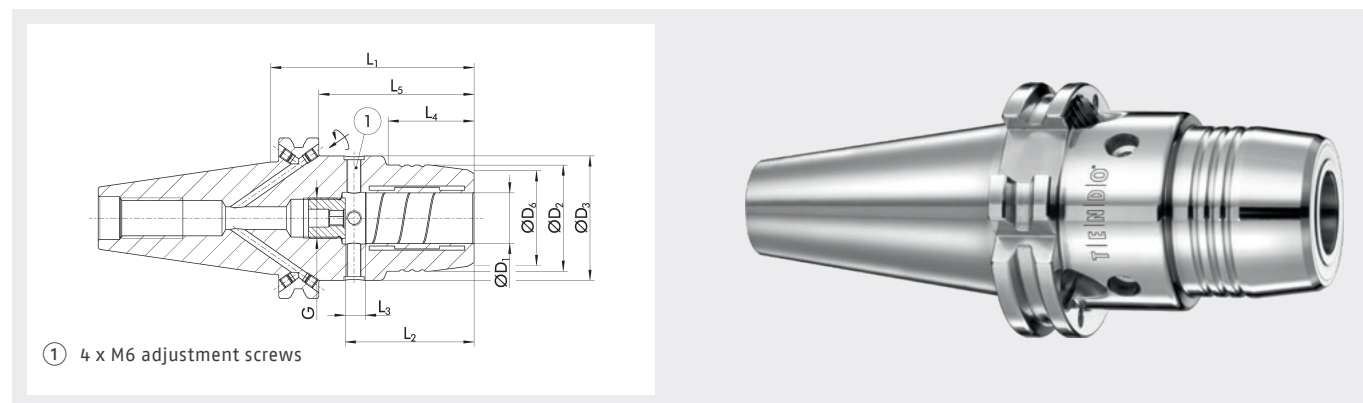
*Run-out accuracy: at 2.5 x D; run-out accuracy of 0 microns, adjustable

*Balancing grade: or Umax < 1 gmm

Additional sizes and customized designs are available upon request

Additional shank diameters can be clamped using intermediate sleeves

TENDO Zero SK 40



Run-out accuracy
≤ 0.003 mm*



Balancing grade
G2.5 at 25,000 RPM*



Short set-up time



Data carrier hole
optionally possible



Internal cooling
up to 80 bar

Technical data

ID	D1 [mm]	D2 [mm]	D3 [mm]	D6 [mm]	L1 [mm]	L2 [mm]	L3 [mm]	L4 [mm]	L5 [mm]	G	Mmin [Nm]	Weight [kg]	
0204264Z	12	32	49.5	28	80.5	46	10	31.5	61.5	M10x1	90	1.4	9205650
0204265Z	16	38	49.5	34	80.5	49	10	33	61.5	M12x1	185	1.4	9205650
0204266Z	20	42	49.5	38	80.5	51	10	34	61.5	M16x1	330	1.4	9205650
0204267Z	32	63	80	60	80.5	61	10	25.5	61.5	M16x1	650	2	9205660

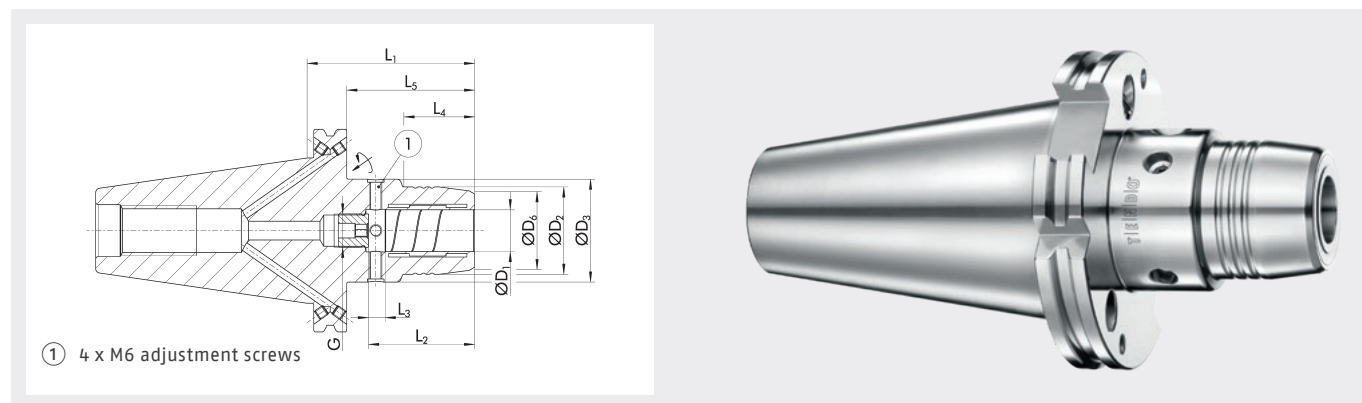
*Run-out accuracy: at 2.5 x D; run-out accuracy of 0 microns, adjustable

*Balancing grade: or Umax < 1 gmm

Additional sizes and customized designs are available upon request

Additional shank diameters can be clamped using intermediate sleeves

TENDO Zero SK 50



Run-out accuracy
≤ 0.003 mm*

Balancing grade
G2.5 at 25,000 RPM*

Short set-up time

Data carrier hole
optionally possible

Internal cooling
up to 80 bar

Technical data

ID	D1 [mm]	D2 [mm]	D3 [mm]	D6 [mm]	L1 [mm]	L2 [mm]	L3 [mm]	L4 [mm]	L5 [mm]	G	Mmin [Nm]	Weight [kg]	
0204246Z	20	42	49.5	38	80.5	51	10	34	61.4	M16x1	330	3.3	9205650
0204247Z	32	64	70	60	103.2	61	10	62.5	84.1	M16x1	650	4.4	9205660

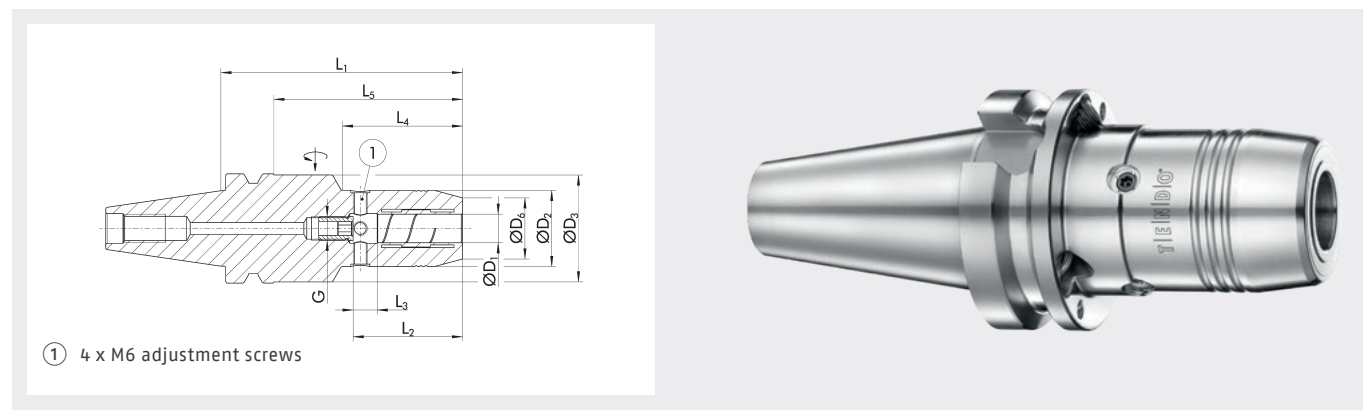
*Run-out accuracy: at 2.5 x D; run-out accuracy of 0 microns, adjustable

*Balancing grade: or Umax < 1 gmm

Additional sizes and customized designs are available upon request

Additional shank diameters can be clamped using intermediate sleeves

TENDO Zero JIS-BT 30



Run-out accuracy
≤ 0.003 mm*

Balancing grade
G2.5 at 25,000 RPM*

Short set-up time

Data carrier hole
optionally possible

Internal cooling
up to 80 bar

Technical data

ID	D1 [mm]	D2 [mm]	D3 [mm]	D6 [mm]	L1 [mm]	L2 [mm]	L3 [mm]	L4 [mm]	L5 [mm]	G	Mmin [Nm]	Weight [kg]	
0205635Z	16	38	44.5	34	90	49	10	50	68	M12x1	185	1.5	9205650
0205636Z	20	42	44.5	38	90	51	10	50	68	M16x1	330	1.5	9205650

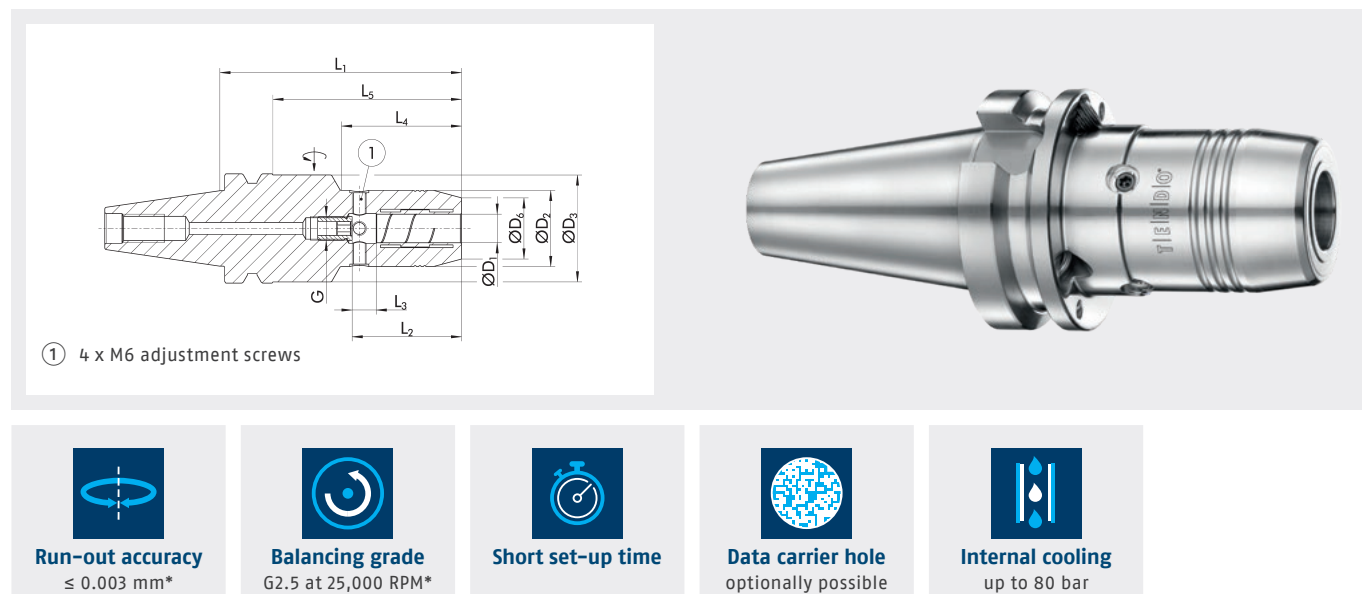
*Run-out accuracy: at 2.5 x D; run-out accuracy of 0 microns, adjustable

*Balancing grade: or Umax < 1 gmm

Additional sizes and customized designs are available upon request

Additional shank diameters can be clamped using intermediate sleeves

TENDO Zero JIS-BT 30 L₁ = 4"



Technical data

ID	D1 [mm/Inch]	D2 [mm]	D3 [mm]	D6 [mm]	L1 [mm]	L2 [mm]	L3 [mm]	L4 [mm]	L5 [mm]	G	Mmin [Nm]	Weight [kg]	
0205654Z	12	32	45	26	101.6	46	10	56.7	79.6	M10x1	90	2	9205650
0205656Z	20	42	45	36	101.6	51	10	60	79.6	M10x1	330	2	9205650
0205666Z	3/4"	42	45	36	101.6	51	10	60	79.6	M10x1	310	2	9205650

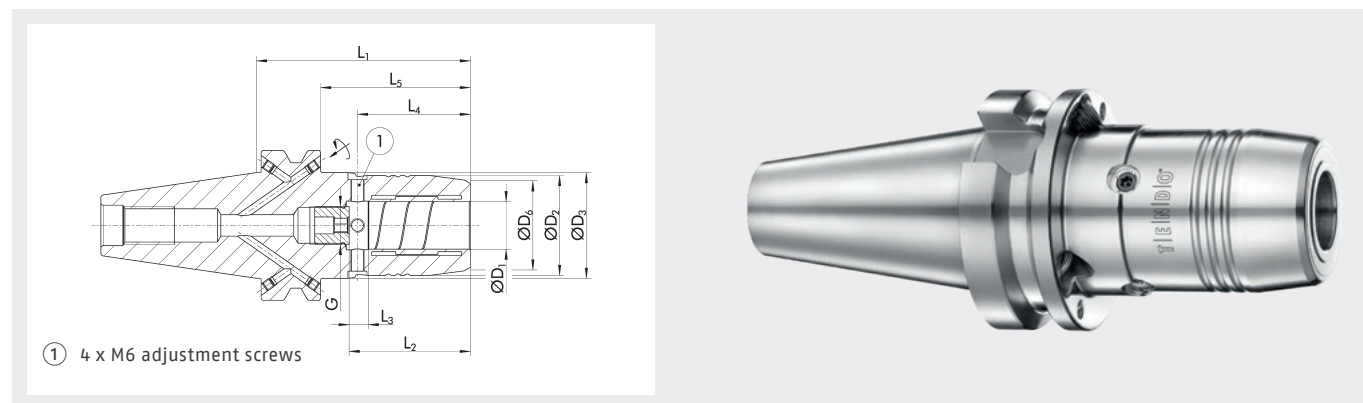
*Run-out accuracy: at 2.5 x D; run-out accuracy of 0 microns, adjustable

*Balancing grade: or U_{max} < 1 gmm

Additional sizes and customized designs are available upon request

Additional shank diameters can be clamped using intermediate sleeves

TENDO Zero JIS-BT 40



Run-out accuracy
≤ 0.003 mm*



Balancing grade
G2.5 at 25,000 RPM*



Short set-up time



Data carrier hole
optionally possible



Internal cooling
up to 80 bar

Technical data

ID	D1 [mm]	D2 [mm]	D3 [mm]	D6 [mm]	L1 [mm]	L2 [mm]	L3 [mm]	L4 [mm]	L5 [mm]	G	Mmin [Nm]	Weight [kg]	
0204443Z	12	32	44.5	28	90	46	10	44.5	63	M10x1	90	1.4	9205650
0204445Z	20	42	44.5	38	90	51	10	47.5	63	M16x1	330	1.5	9205650

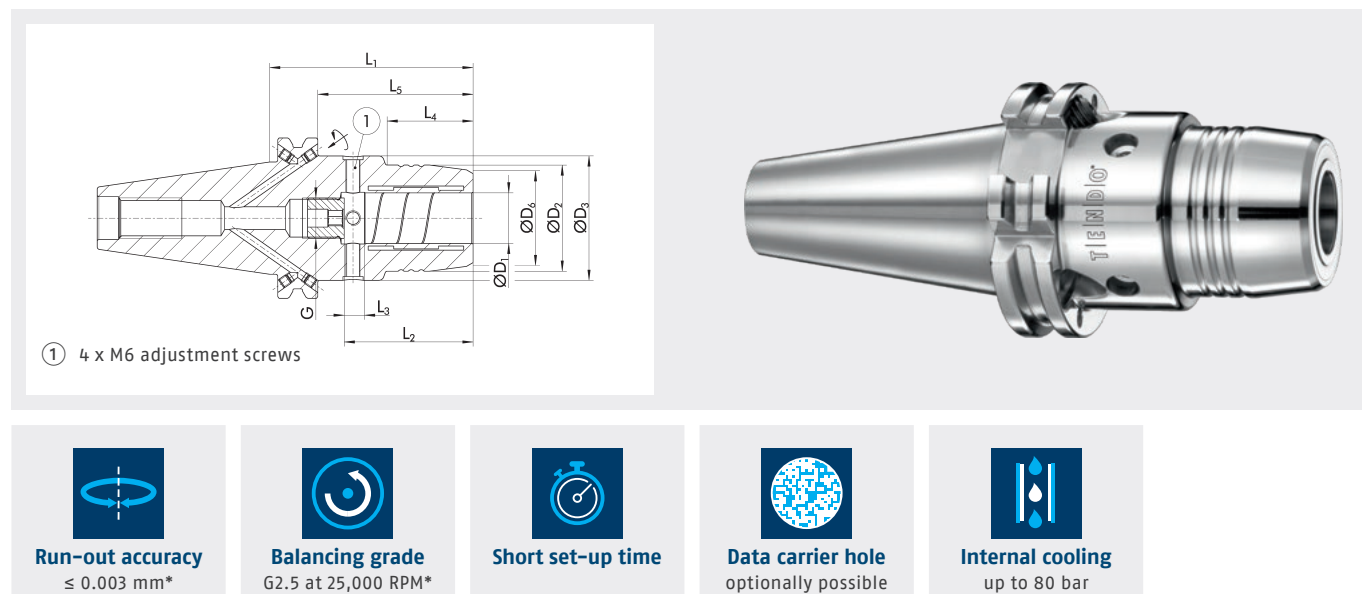
*Run-out accuracy: at 2.5 x D; run-out accuracy of 0 microns, adjustable

*Balancing grade: or Umax < 1 gmm

Additional sizes and customized designs are available upon request

Additional shank diameters can be clamped using intermediate sleeves

TENDO Zero CAT 40



Technical data

ID	D1 [mm/Inch]	D2 [mm]	D3 [mm]	D6 [mm]	L1 [mm]	L2 [mm]	L3 [mm]	L4 [mm]	L5 [mm]	G	Mmin [Nm]	Weight [kg]	
0203664Z	12	32	44.45	27.5	101.6	46	10	42	82.55	M10x1	90	2	9205650
0203666Z	20	42	44.45	37.5	101.6	51	10	50	82.55	M16x1	330	2.2	9205650
0203653Z	1/2"	32	44.45	27.5	101.6	46	10	42	82.55	M10x1	95	2	9205650
0203655Z	3/4"	42	44.45	37.5	101.6	51	10	50	82.55	M10x1	310	2.2	9205650

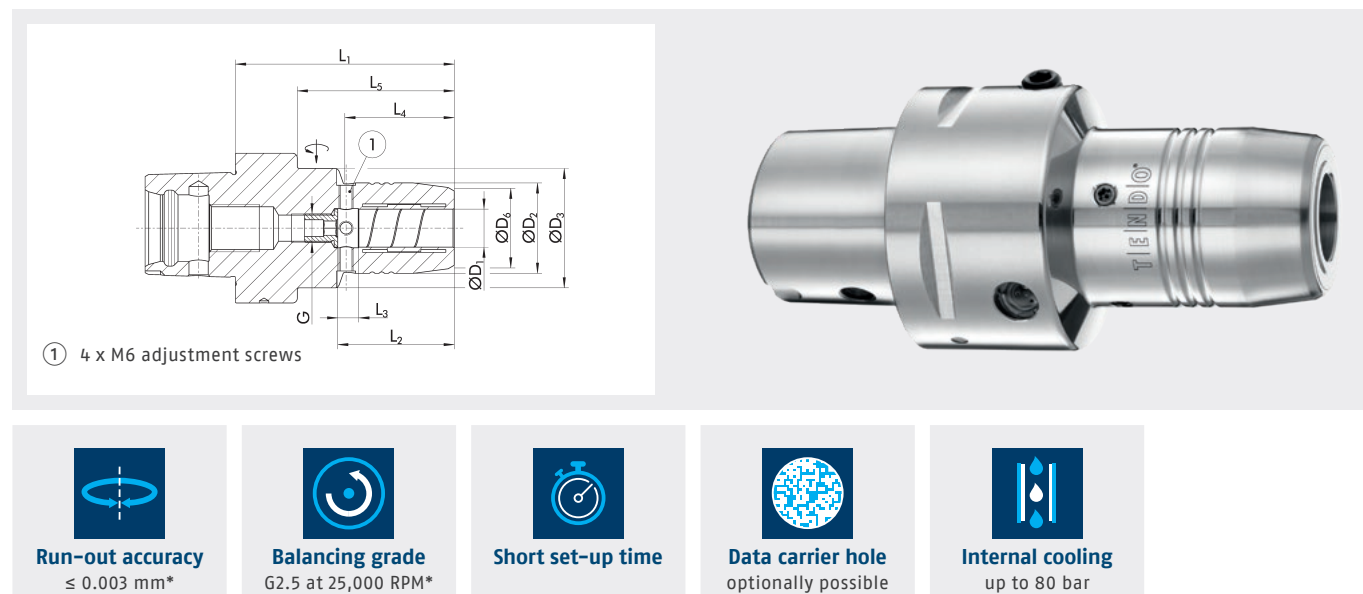
*Run-out accuracy: at 2.5 x D; run-out accuracy of 0 microns, adjustable

*Balancing grade: or Umax < 1 gmm

Additional sizes and customized designs are available upon request

Additional shank diameters can be clamped using intermediate sleeves

TENDO Zero SCHUNK CAPTO C6



Technical data

ID	D1 [mm]	D2 [mm]	D3 [mm]	D6 [mm]	L1 [mm]	L2 [mm]	L3 [mm]	L4 [mm]	L5 [mm]	G	Mmin [Nm]	Weight [kg]	
0201854Z	12	32	50	28	87	46	10	39	61	M10x1	90	1.3	9205650
0201856Z	20	42		38	97	51	10	55		M16x1	330	1.6	9205650
0201858Z	32	62.5		59	110	61	10	62		M16x1	650	2.8	9205660

*Run-out accuracy: at 2.5 x D; run-out accuracy of 0 microns, adjustable

*Balancing grade: or Umax < 1 gmm

Additional sizes and customized designs are available upon request

Additional shank diameters can be clamped using intermediate sleeves



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