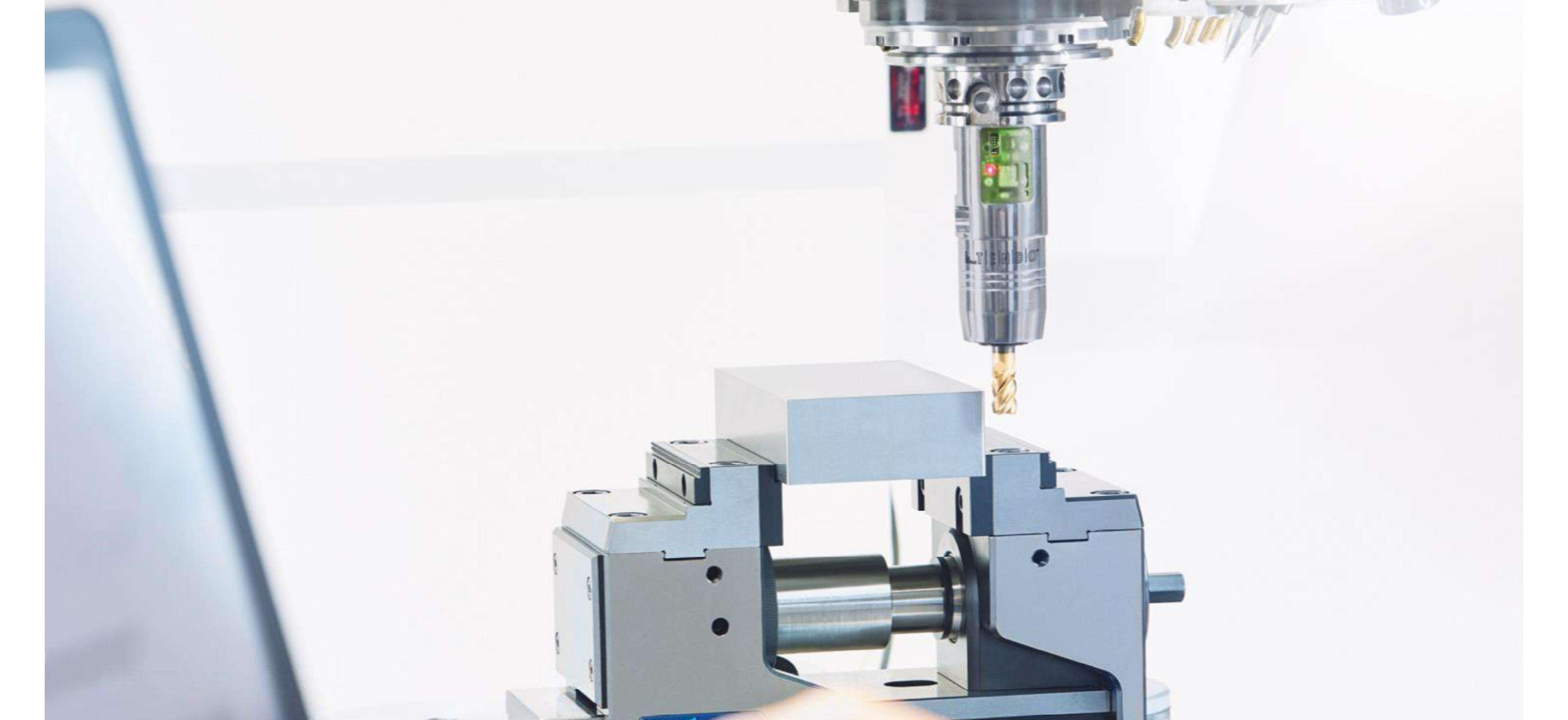




TENDO Slim 4ax – Hydraulic toolholder

Information folder

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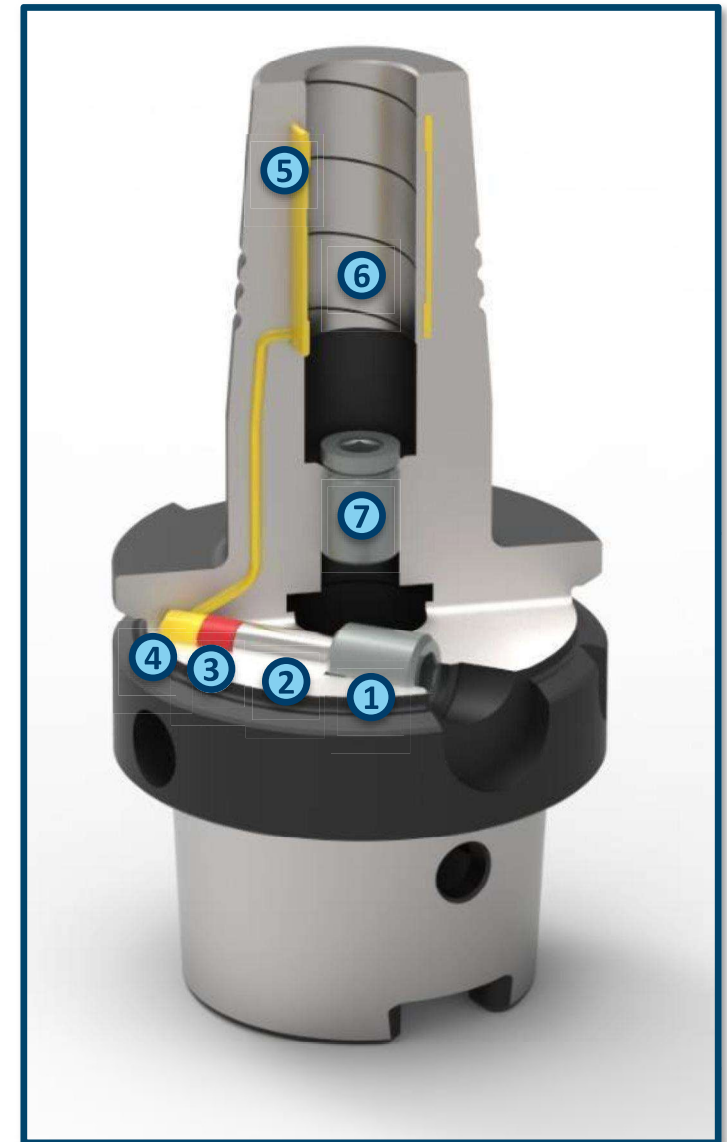


Functionality and sectional view

- ① Clamp screw
- ② Operating piston
- ③ Seal element
- ④ Hydraulic oil
- ⑤ Expansion chamber (circumferential)
- ⑥ Clamping bore (Insertion opening for tool business)
- ⑦ Screw for length presttting

Funktionsprinzip Hydrodehn-Spannfutter

-  About the clamp screw ①, the operating piston ② and the seal element ③ is the hydraulic oil ④ compressed in a closed system.
-  Through the pressure increase in the System deforms the expansion chamber ⑤ in direction clamping bore.
-  Consequently, the diameter of the der clamping bore ⑥ is reduced.
-  In the clamping bore⑥ introduced tools are thus stretched.



Screwing speed and tightening torque

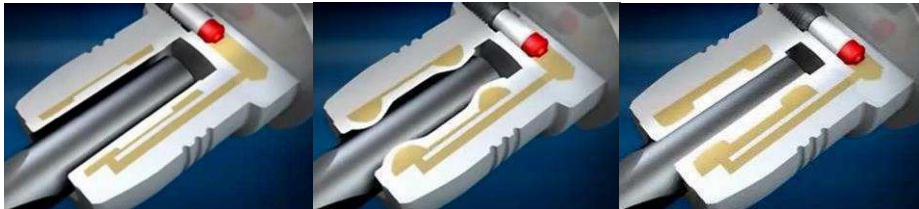
Screwing speed

up to 100 min⁻¹

100 up to 150 min⁻¹

above 150 min⁻¹

- TENDO Slim 4ax may be stretched with a screw speed of max. 100 min⁻¹
- At speeds above 150 min⁻¹ the shaft is no longer correctly centered (concentricity rise) and it arises higher drag oil losses which lead to premature prestressing loss.



to set

centering

clamping

Tightening torque

up to 7 Nm

7 up to 9 Nm

above 9 Nm

- The average tightening torque of the TENDO Slim 4ax clamp screw amount just before touch 6 Nm (5-7 Nm).
- When screwing on touch the tightening torque from 9 Nm shouldn't be exceeded, so that the screw doesn't wear early or get damaged.

Cleaning and washing plant

- The tool holder can be cleaned in a cleaning system with **60 – 70°C**. Cleaning duration about **30 min**.
- When cleaning, the tool holder have to be **expand**.
- Attention!: The clamping screw, plus operating aren't **stunned against falling out**. The clamping screws must not be **interchanged**.
- The cleaning leads to the loss of the lubrication on the clamping screw. It have to be relubricated.
(compare chapter relubricati clamp screw)
- When re-clamping process, the tool holder have to be cooled down **below 25°C**.

Vakuum-Trocknungsverfahren sind derzeit noch in Testphase

Lubrication condition clamp screw SCHUNK TENDO Hydraulic expansion chuck



Optimal lubrication condition
(Condition after clamping)



Relubricate the clamp screw
soon.



Clamp screw have to be
relubricate

Relubricate clamp screw

SCHUNK TENDO Hydraulic expansion chuck

Chuck inside



Inside hexagonal

- If necessary, remove any abrasion from the clamp screw.
- Lay on copper paste on the piston sided flat and the thread until the half screw length.
- Screw the screw back into the chuck

Recommended lubricant:

MOLYKOTE CU 7439

(SCHUNK Identnummer 9247204)

Clamping force test

Approach:

- Insert the test pin into the hydro expansion chuck to the minimum clamping depth.

Clamping-Ø [mm]	Ø 6	Ø 8	Ø 10	Ø 12	Ø 14	Ø 16	Ø 18	Ø 20	Ø 25	Ø 32
At least clamping depth [mm]	27	27	31	36	36	39	39	41	47	51

- Turn clamping screw on stop.
- If the test pin can be pulled out of the hydraulic expansion chuck with two fingers and a little effort the tension isn't enough.

Inspection interval:

Before the first use and after 100 tensions or at the latest after 3 months

Ambient temperature during testing

20°C until 25°C

Don't use a chuck with too low clamping force.

Overview TENDO PW – clamping-test pin

Designation test pin	ID test pin	Nominal -Ø [mm]	For ID TENDO Slim 4ax
PW 6	0200020	6	0206341 (HSK-A 63 Clamping-Ø 6 L 80) 0206351 (HSK-A 63 Clamping-Ø 6 L 120)
PW 8	0200021	8	0206342 (HSK-A 63 Clamping-Ø 8 L 80) 0206352 (HSK-A 63 Clamping-Ø 8 L 120)
PW 10	0200022	10	0206343 (HSK-A 63 Clamping-Ø 10 L 85) 0206353 (HSK-A 63 Clamping-Ø 10 L 120) 1318086 (HSK-A 50 Clamping-Ø 10 L 85)
PW 12	0200023	12	0206344 (HSK-A 63 Clamping-Ø 12 L 90) 0206354 (HSK-A 63 Clamping-Ø 12 L 120) 1318087 (HSK-A 50 Clamping-Ø 12 L 90)
PW 14	0200024	14	0206349 (HSK-A 63 Clamping-Ø 14 L 90) 0206359 (HSK-A 63 Clamping-Ø 14 L 120)
PW 16	0200025	16	0206345 (HSK-A 63 Clamping-Ø 16 L 95) 0206355 (HSK-A 63 Clamping-Ø 16 L 120)
PW 18	0200026	18	0206340 (HSK-A 63 Clamping-Ø 18 L 95) 0206350 (HSK-A 63 Clamping-Ø 18 L 120)
PW 20	0200027	20	0206346 (HSK-A 63 Clamping-Ø 20 L 100) 0206356 (HSK-A 63 Clamping-Ø 20 L 120)
PW 25	0200028	25	0206347 (HSK-A 63 Clamping-Ø 25 L 115)
PW 32	0200029	32	0206348 (HSK-A 63 Clamping-Ø 32 L 120)

(greyed out ID-Number not available yet)



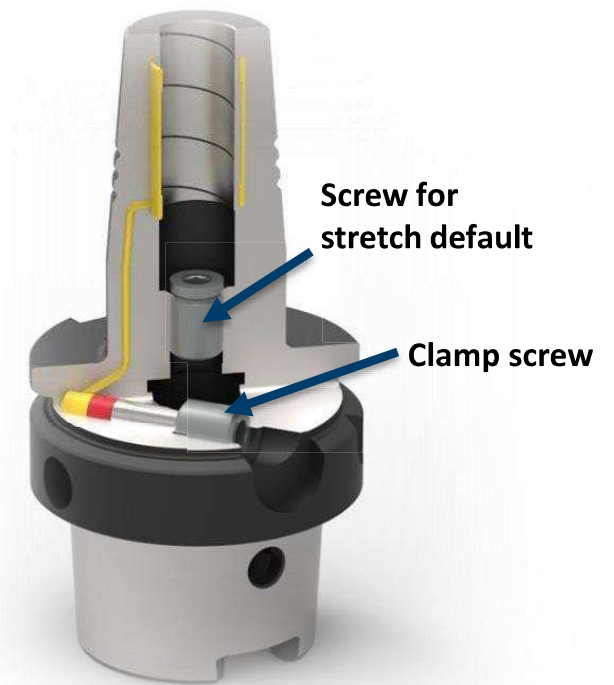
Storage case
for TENDO test pin PW-ABK
ID 0200030

Notes on testing run-out accuracy

- Before each measurement, a waiting time of **30 seconds** must be observed, as temperature compensation and setting processes can still take place in the tool holder after clamping.
- Measurement at a **distance of 2.5 x nominal $\varnothing$ (but max. 50 mm)** from the WZH end face. Values see table.

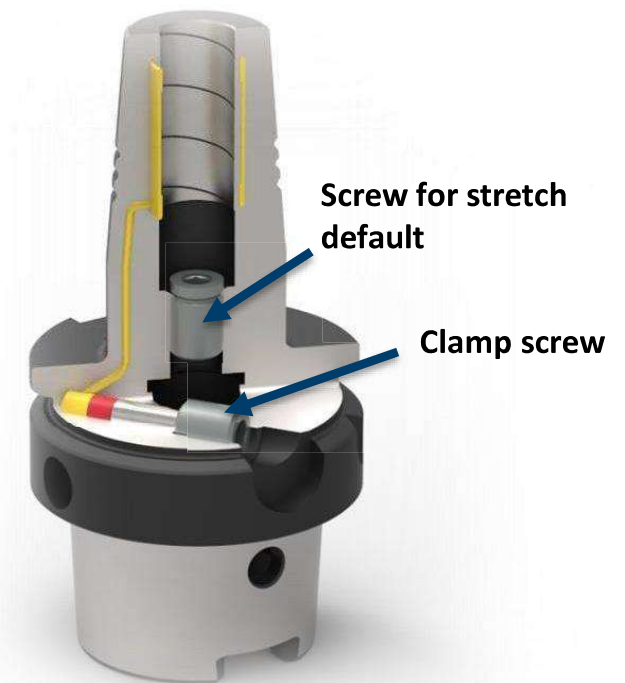
toolholder- $\varnothing$ [mm]	6	8	10	12	14	16	18	20	25	32
distance x [mm]	15	20	25	30	35	40	45	50	50	50

Spare parts TENDO Slim4ax HSK-A 50 variants

[illegible]

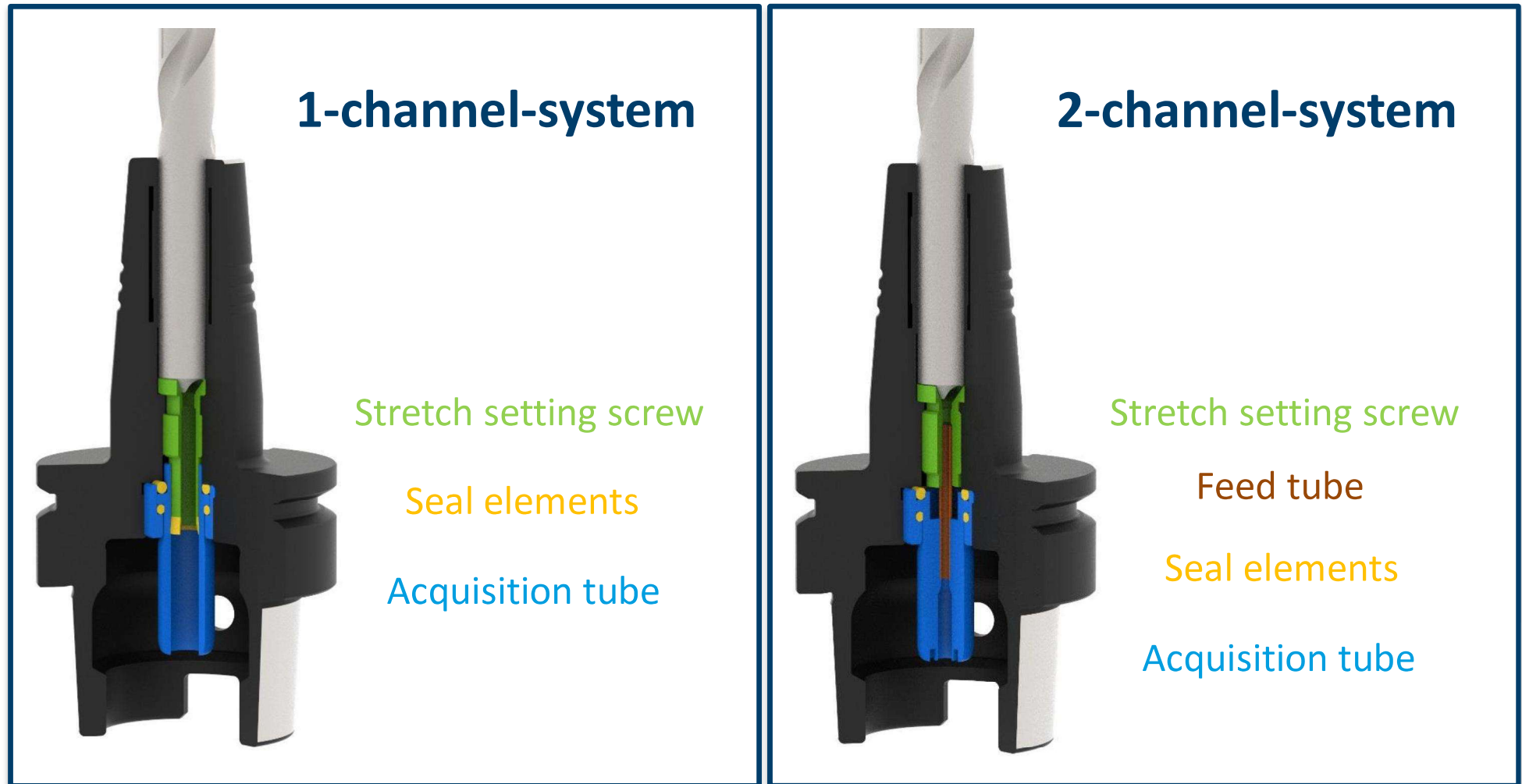
Spare parts TENDO Slim4ax HSK-A 65 variants

TENDO Slim 4ax	TENDO Slim 4ax	Clamp screw	Clamp screw	Screw stretch default	Screw stretch default
Variant	SCHUNK-ID	Variant	SCHUNK-ID	Variant	SCHUNK-ID
HSK-A63 Ø06 L1=80	0206341	M10 L12	9670121	M10x1 Lg20,0	1003984
HSK-A63 Ø08 L1=80	0206342	M10 L12	9670121	M10x1 Lg20,0	1003985
HSK-A63 Ø10 L1=85	0206343	M10 L12	9670121	M10x1 Lg14,5	7000431
HSK-A63 Ø12 L1=90	0206344	M10 L12	9670121	M10x1 Lg14,5	7000431
HSK-A63 Ø14 L1=90	0206349	M10 L12	9670121	M10x1 Lg14,5	7000431
HSK-A63 Ø16 L1=95	0206345	M10 L12	9670121	M12x1 Lg14,0	7000432
HSK-A63 Ø18 L1=95	0206340	M10 L12	9670121	M12x1 Lg14,0	7000432
HSK-A63 Ø20 L1=100	0206346	M10 L12	9670121	M16x1 Lg14,5	7000433
HSK-A63 Ø25 L1=115	0206347	M12x12	9962436	M16x1 Lg14,5	7000433
HSK-A63 Ø32 L1=120	0206348	M12x12	9962436	M16x1 Lg14,5	7000433
HSK-A63 Ø06 L1=120	0206351	M10 L12	9670121	M5 Lg14,0	7000427
HSK-A63 Ø08 L1=120	0206352	M10 L12	9670121	M7x1 Lg14,0	1004013
HSK-A63 Ø10 L1=120	0206353	M10 L12	9670121	M8x1 Lg14,0	7000430
HSK-A63 Ø12 L1=120	0206354	M10 L12	9670121	M10x1 Lg14,5	7000431
HSK-A63 Ø14 L1=120	0206359	M10 L12	9670121	M10x1 Lg14,5	7000431
HSK-A63 Ø16 L1=120	0206355	M10 L12	9670121	M12x1 Lg14,0	7000432
HSK-A63 Ø18 L1=120	0206350	M10 L12	9670121	M12x1 Lg14,0	7000432
HSK-A63 Ø20 L1=120	0206356	M10 L12	9670121	M16x1 Lg14,5	7000433



Minimal quantity lubrication (MMS)

TENDO Slim 4ax with HSK-A-interface are konstruktiv for the use of MMS-mounting parts prepared. Matching mounting parts can be selected from the overview on the following slide.



Compatible MMS-mounting parts

Aufnahme	Spann-Ø	L1-Maß	ID-Nr.	Gühring 1-Kanal Übernehmerrohr	Gühring 1-Kanal Füllstück	Gühring 1-Kanal Längeneinstellschr.	Bielomatik 2-Kanal Übernehmerrohr	Bielomatik 2-Kanal Füllstück	Bielomatik 2-Kanal Längeneinstellschr.	Mapal 1-Kanal Übernehmerrohr	Mapal 1-Kanal Füllstück	Mapal 1-Kanal Längeneinstellschr.	Mapal 2-Kanal Übernehmerrohr	Mapal 2-Kanal Füllstück	Mapal 2-Kanal Längeneinstellschr.
HSK-A 63	6	80	0206341	4939 18,063 (9942733)	4940 18,063 (9942739)	4937 6,100 (9942754)	300 55 130	300 54 865	303 50 382 (9871451)	10083281 (9966222)	10083270 (20056205)	30383941 (20064216)	30384304	30384278	30384039
HSK-A 63	8	80	0206342	4939 18,063 (9942733)	4941 18,063 (9942739)	4937 8,100 (9948110)	300 55 130	300 54 865	303 50 383	10083281 (9966222)	10083270 (20056205)	10083384 (20056207)	30384304	30384278	30384043
HSK-A 63	10	85	0206343	4939 18,063 (9942733)	4942 18,063 (9942739)	4937 10,100 (9942755)	300 55 130	300 54 865	303 50 384	10083281 (9966222)	10083270 (20056205)	10083385 (20056208)	30384304	30384278	30384011
HSK-A 63	12	90	0206344	4939 18,063 (9942733)	4943 18,063 (9942739)	4937 12,100 (9942757)	300 55 135	300 54 867	303 50 392	10083281 (9966222)	10083270 (20056205)	10083386 (20056209)	30284772	30298894 (9871495)	30279400
HSK-A 63	14	90	0206349	4939 18,063 (9942733)	4944 18,063 (9942739)	4937 14,100 (9942758)	300 55 135	300 54 867	303 50 393	10083281 (9966222)	10083270 (20056205)	10083387 (20056210)	30284772	30298894 (9871495)	30279407
HSK-A 63	16	95	0206345	4939 18,063 (9942733)	4945 18,063 (9942739)	4937 16,100 (9942759)	300 55 135	300 54 867	303 50 394	10083281 (9966222)	10083270 (20056205)	10083388 (20056274)	30284772	30298894 (9871495)	30279413
HSK-A 63	18	95	0206340	4939 18,063 (9942733)	4946 18,063 (9942739)	4937 18,100 (9942760)	300 55 135	300 54 867	303 50 395 (1000823)	10083281 (9966222)	10083270 (20056205)	10083389 (20056211)	30284772	30298894 (9871495)	30279420
HSK-A 63	20	100	0206346	4939 18,063 (9942733)	4947 18,063 (9942739)	4937 20,100 (9942761)	300 55 136	300 54 868	303 50 396 (1000822)	10083281 (9966222)	10083270 (20056205)	10083390 (20064217)	30279444	30298895	30279429
HSK-A 63	25	115	0206347	4939 18,063 (9942733)	4948 18,063 (9942739)	4937 25,100 (9942762)	300 55 134 (9873458)	300 54 869	303 50 397 (1000825)	10083281 (9966222)	10083270 (20056205)	10083391 (20056212)	30279444	30298895	30279434
HSK-A 63	32	120	0206348	4939 18,063 (9942733)	4949 18,063 (9942739)	4937 32,100 (9942763)	300 55 134 (9873458)	300 54 869	303 50 398	10083281 (9966222)	10083270 (20056205)	10083392 (20064218)	30279444	30298895	30279441
HSK-A 63	6	120	0206351	4939 18,063 (9942733)	4950 18,063 (9942739)	4937 6,032 (20059356)	300 55 240	300 54 543	303 50 857	10083281 (9966222)	10083270 (20056205)	30383945	30384304	30384278	30384040
HSK-A 63	8	120	0206352	4939 18,063 (9942733)	4951 18,063 (9942739)	4937 8,040 (9942742)	300 55 240	300 54 543	303 50 281	10083281 (9966222)	10083270 (20056205)	10083394	30384304	30384278	30384044
HSK-A 63	10	120	0206353	4939 18,063 (9942733)	4952 18,063 (9942739)	4937 10,050 (9942749)	300 55 242	300 54 545	303 50 299	10083281 (9966222)	10083270 (20056205)	10083401 1339026)	30384304	30384278	30384012
HSK-A 63	12	120	0206354	4939 18,063 (9942733)	4953 18,063 (9942739)	4937 12,100 (9942757)	300 55 245	300 54 548	303 50 392	10083281 (9966222)	10083270 (20056205)	10083409	30284772	30298894 (9871495)	30279402
HSK-A 63	14	120	0206359	4939 18,063 (9942733)	4954 18,063 (9942739)	4937 14,100 (9942758)	300 55 245	300 54 548	303 50 393	10083281 (9966222)	10083270 (20056205)	10083410	30284772	30298894 (9871495)	30279408
HSK-A 63	16	120	0206355	4939 18,063 (9942733)	4955 18,063 (9942739)	4937 16,100 (9942759)	300 55 248	300 54 551	303 50 394	10083281 (9966222)	10083270 (20056205)	10086411	30284772	30298894 (9871495)	30279414
HSK-A 63	18	120	0206350	4939 18,063 (9942733)	4956 18,063 (9942739)	4937 18,100 (9942760)	300 55 248	300 54 551	303 50 395 (1000823)	10083281 (9966222)	10083270 (20056205)	10083412	30284772	30298894 (9871495)	30279422
HSK-A 63	20	120	0206356	4939 18,063 (9942733)	4957 18,063 (9942739)	4937 20,100 (9942761)	300 55 251	300 54 554	303 50 396 (1000825)	10083281 (9966222)	10083270 (20056205)	10083413	30279444	30298895	30279430
HSK-A 50	10	85	1318086	4939 16,050 (9942732)	4940 16,050 (9942738)	4937 10,050	300 55 122	300 54 857	303 50 299	10083280	10083269 (20046407)	10083378	30384303	30384276	30384004
HSK-A 50	12	90	1318087	4940 16,050 (9942732)	4941 16,050 (9942738)	4937 12,050	300 55 123	300 54 859	303 50 291	10083280	10083269 (20046407)	10083379	30297305	30298891	30279400
HSK-A 50	12	120	1338636	4941 16,050 (9942732)	4942 16,050 (9942738)	4937 12,050	300 55 173 ¹	300 54 909 ²	303 50 291	10083280	10083269 (20046407)	10083402	30297305	30298891	30302854

Bei den angegebenen Artikelnummern handelt es sich um Herstellerangaben. Falls vorhanden, sind SCHUNK-Identnummern in Klammern angegeben.

¹ Sonderlänge / Bestellung bei Bielomatik mit L1=76.5mm; L2=43.9mm

² Sonderlänge / Bestellung bei Bielomatik mit L1=54.2mm; L2=43.9mm

Superior Clamping and Gripping



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