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EMUGE
SOFTSYNCHRO®



HIGH PERFORMANCE TAP HOLDERS

EMUGE – The Leader in Advanced Tap Holder Technology.



EMUGE-FRANKEN is widely recognized in the industry as the leader in designing and manufacturing exceptionally high performance, quality taps. And with EMUGE's Softsynchro® Tap Holder technology, you can take EMUGE Taps to the next level and beyond with maximum tool life, thread quality, tapping speed and performance.

Having the correct tap for the job is not enough. You need the best tap holder to drive the best taps in the world to their optimum levels.

EMUGE recognized the industry shift to synchronized tapping in the early '90s and developed the first tap holder for this environment. Composed of a two-part construction that physically separates the tap from the spindle via **elastomer springs**, the EMUGE Softsynchro Holder provides minimum tap length compensation that is necessary for exceptional tool life. EMUGE-FRANKEN offers an extensive line of high performance tool holder solutions for a full range of applications.

EMUGE-FRANKEN tooling experts are also available to help guide you through the tool holder selection process. Additional application resources are available at emuge.com.

Triple your tap life and more with EMUGE Softsynchro® Tap Holders!



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Addressing Axial Force in Synchronous Tapping.

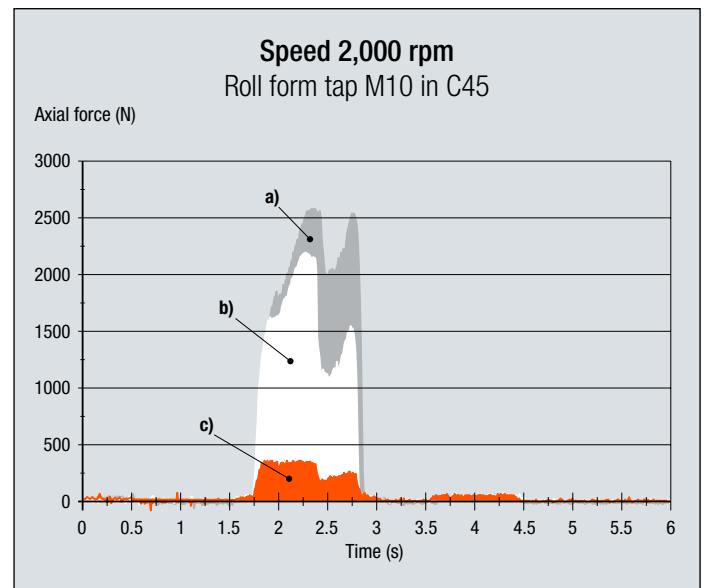
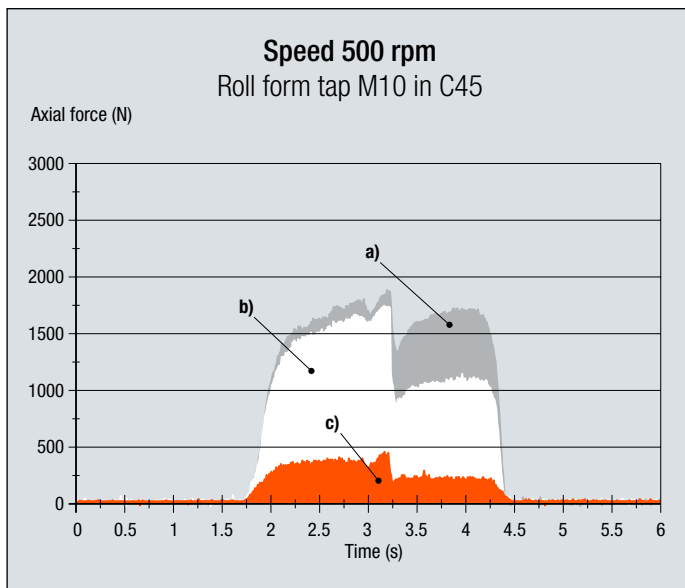
Taps are the only tool in which the feed rate remains static and must be synchronized with the tool's ground pitch. Any deviation from this precise feed rate in a CNC machine can cause many issues, including oversize threads, premature tool wear and tap failure. The following are just a few scenarios that create differences between the actual and programmed cycle:

- **Increasing tool temperatures during the machining process elongates the tap slightly**, causing a difference in length from when the tap was measured at the machine. While small, this difference is enough to cause excessive wear on thread flanks.
- **CNC computers cannot keep pace with rotational accuracy at high speeds**, leading to errors that cause increased axial forces on the tap. (See chart below)
- **Difficult-to-machine materials will increase torque loads** on the cutting teeth, causing them to dull and start pushing material instead of cutting it. This leads to work hardening, further increasing the forces acting on the tap.

All of these small errors have a compounding effect that leads to poor tool life and premature tool failures.

Axial Force Reduction by Speed (rpm) – EMUGE vs. Competitor

As speed increases, so does axial force. Regardless of speed, EMUGE Softsynchro® Holders virtually eliminate axial force to a controlled, bare minimum.



(a) Excess axial forces during rigid tapping

(b) Force reduction of competitor tap holder with synchronous collet adaption

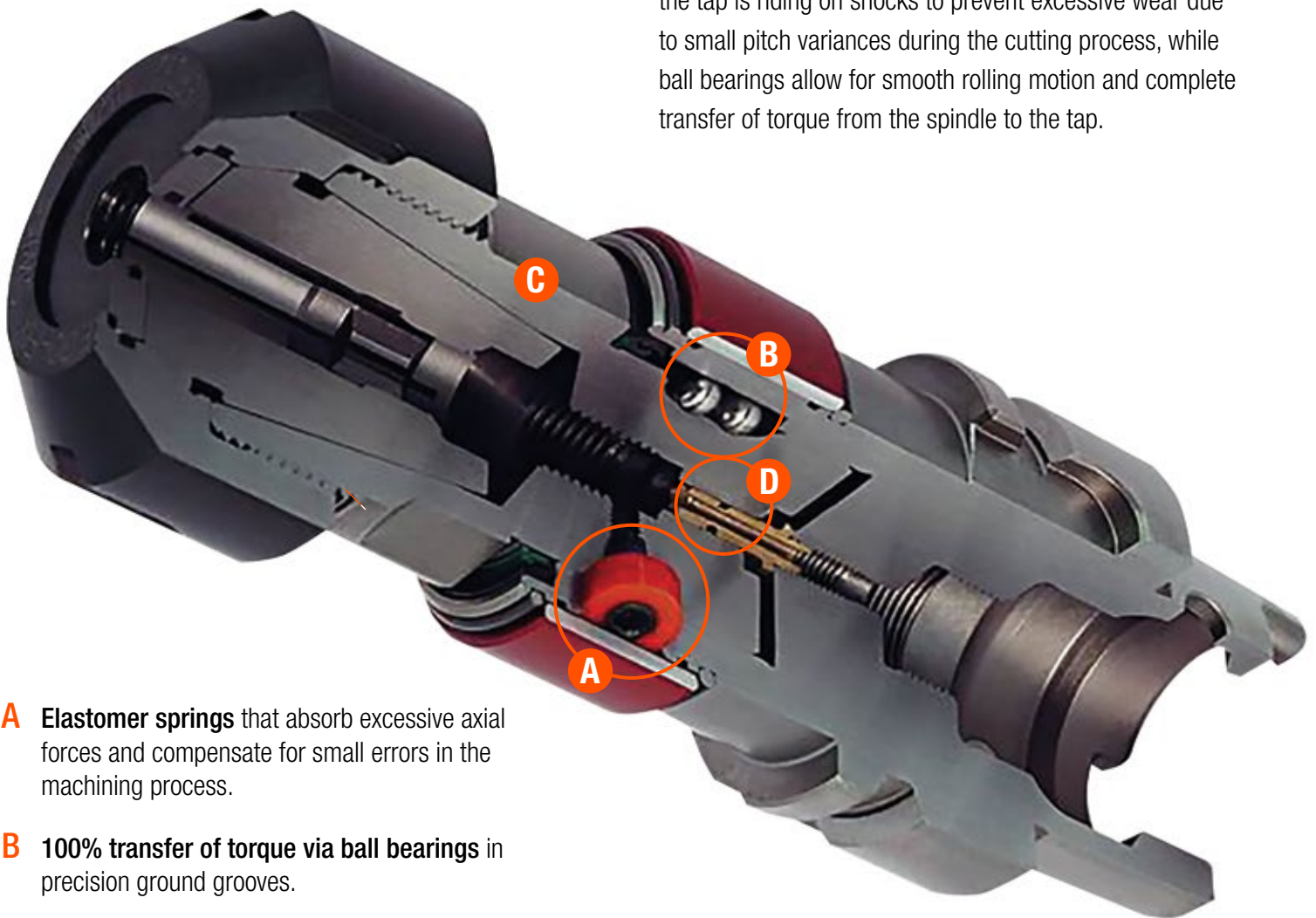
(c) Force levels greatly reduced with EMUGE Softsynchro Tap Holder solution

An Original EMUGE Design Dramatically Reduces Force, Increasing Tool Life, Thread Quality.

The EMUGE Softsynchro® holder design makes optimum use of a synchronous spindle, providing the best possible tool life, performance and thread surface quality. Constructed from two separate, precision-ground sections, the body and shank, **Softsynchro effectively separates the spindle from the tap via elastomer springs** that absorb axial forces, giving the tap an immense boost in tool life and performance.

The Transmission of Torque and Axial Force, Separated.

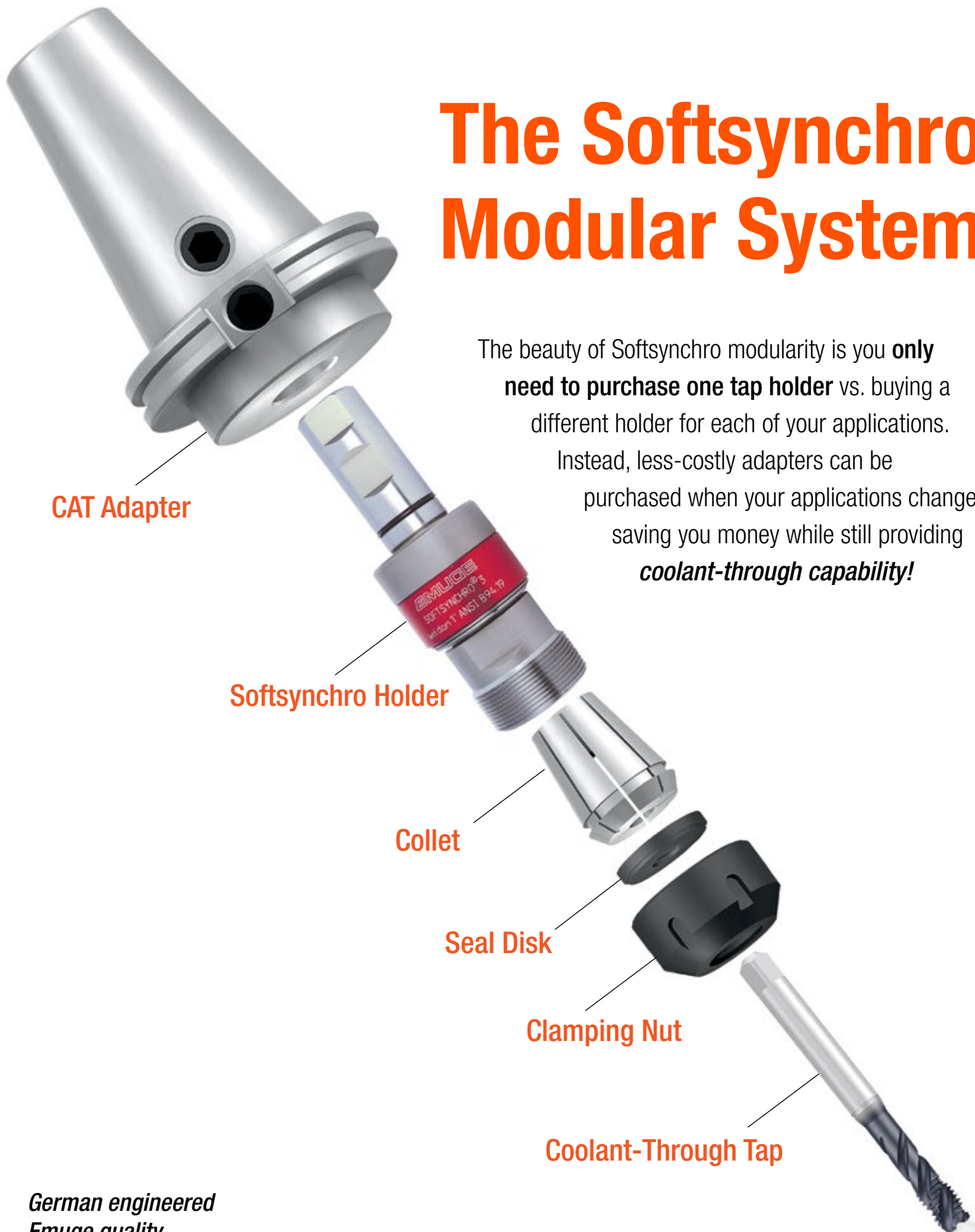
Torque from the spindle is transferred seamlessly to the tap via ball bearings riding in precision ground grooves. These ball grooves minimize rolling friction on the torque transmission balls to guarantee precision micro-correction of lead errors in a rigid tapping cycle, even under the most demanding machining conditions. Effectively, the tap is riding on shocks to prevent excessive wear due to small pitch variances during the cutting process, while ball bearings allow for smooth rolling motion and complete transfer of torque from the spindle to the tap.



- A Elastomer springs** that absorb excessive axial forces and compensate for small errors in the machining process.
- B 100% transfer of torque via ball bearings** in precision ground grooves.
- C Two-part construction** that physically separates the tap from the spindle.
- D Coolant-through capability** is standard on all Softsynchro Tap Holders.

The Softsynchro[®] Modular System

The beauty of Softsynchro modularity is you **only need to purchase one tap holder** vs. buying a different holder for each of your applications. Instead, less-costly adapters can be purchased when your applications change, saving you money while still providing **coolant-through capability!**



*German engineered
Emuge quality*

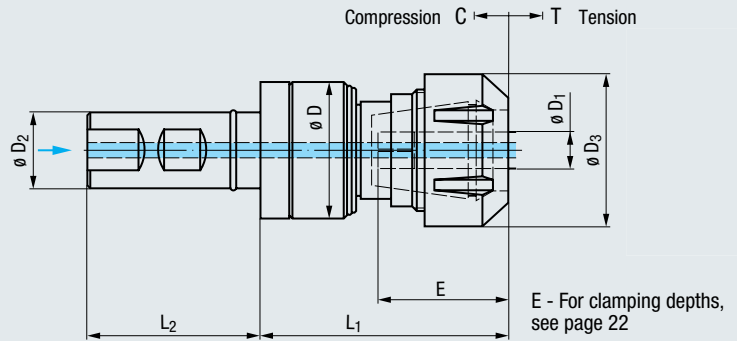
Softsynchro®

Weldon Shank
ASME B94.19



Icon Descriptions (See page 23)

For use on machines
with synchronous spindle



Type	Shank Size	Ø D ₁	ER-GB	Hi-Q/ERM	Shank Size	inch						EDP No.
						Ø D ₂	Ø D	Ø D ₃	L ₁	L ₂	T	
Softsynchro 0	#0 - #10 (M2 - M8)	0.141 - 0.194	ER-GB 11	Hi-Q/ERM 11	1	1.3386	0.6299	2.8622	2.2835	0.01968	0.01968	F3150H36.1.44
Softsynchro 1	#8 - 1/2" (M4 - M12)	0.168 - 0.381	ER-GB 20	Hi-Q/ERC 20	1	1.3386	1.3386	2.8740	2.2835	0.0197	0.0197	F3151H36.1.44
Softsynchro 3	1/4" - 3/4" (M4 - M20)	0.255 - 0.590	ER-GB 32	Hi-Q/ERC 32	1	1.7717	1.9685	3.4370	2.2835	0.0197	0.0197	F3153H36.1.44
Softsynchro 4	7/16" - 1" (M12 - M30)	0.323 - 0.800	ER-GB 40	Hi-Q/ERC 40	1.25	2.4800	2.4800	4.4690	2.2835	0.0276	0.0276	F3154H38.1

Softsynchro 0
Clamping nut without integrated seal is included in the delivery

Softsynchro 1-4
Clamping nut for sealing disks is included in the delivery

Further designs available upon request

Accessories:



CAT adapters

See page 15



Collets type ER-GB

See pages 15-16



Sealing disks type DS/ER and coolant flush disks type KS/ER

See page 16-17



Clamping nut with integrated seal

See page 18



Set of clamping wrenches

See page 19



Assembly device

See page 19



Torque wrenches

See page 20

CAT Adapter Replacement Set Screws



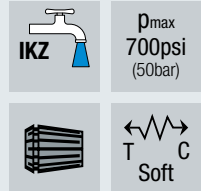
For CAT Adapter Information see page 15

For CAT Adapter Size	Bore Size	CAT Adapter EDP No.	Set Screw EDP No.
CAT 40	1"	F440007.03	EFUS0001
CAT 50	1"	F440007.04	EFUS0002
CAT 50	1.25"	F440007.05	EFUS0003

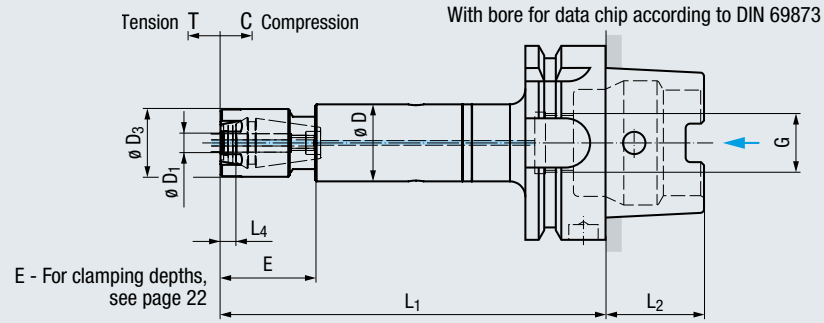
Softsynchro® Slim / IKZ

NEW

HSK-A
DIN 69893-1



Icon Descriptions (See page 23)



For use on machines with synchronous spindle

Type	Collet	$\varnothing D_1$	Collet Type	Spindle	Spindle	mm								EDP No.
						$\varnothing D$	$\varnothing D_3$	L_1	L_2	L_4	G	T	C	
Softsynchro Slim / IKZ	M2 - M8 (#0 - 5/16")	2.5 - 6	ER-GB 11	Hi-Q/ERM 11	HSK-A63	25	16	122.4	32	0.9	M18 x 1	0.5	0.5	F3660C04.XS
					HSK-A63	25	16	147.4	32	0.9	M18 x 1	0.5	0.5	F3660C04.S
					HSK-A63	25	16	172.4	32	0.9	M18 x 1	0.5	0.5	F3660C04.M
					HSK-A63	25	16	197.4	32	0.9	M18 x 1	0.5	0.5	F3660C04.L
					HSK-A100	25	16	122.4	50	0.9	M24 x 1.5	0.5	0.5	F3660C06.XS
					HSK-A100	25	16	147.4	50	0.9	M24 x 1.5	0.5	0.5	F3660C06.S
					HSK-A100	25	16	172.4	50	0.9	M24 x 1.5	0.5	0.5	F3660C06.M
Softsynchro Slim / IKZ 1	M4 - M12 (#8 - 7/16")	4.5 - 9	ER-GB 16	Hi-Q/ERMC 16	HSK-A63	25	22	125	32	5	M18 x 1	0.5	0.5	F3661C04.XS
					HSK-A63	25	22	150	32	5	M18 x 1	0.5	0.5	F3661C04.S
					HSK-A63	25	22	175	32	5	M18 x 1	0.5	0.5	F3661C04.M
					HSK-A63	25	22	200	32	5	M18 x 1	0.5	0.5	F3661C04.L
					HSK-A100	25	22	125	50	5	M24 x 1.5	0.5	0.5	F3661C06.XS
					HSK-A100	25	22	150	50	5	M24 x 1.5	0.5	0.5	F3661C06.S
					HSK-A100	25	22	175	50	5	M24 x 1.5	0.5	0.5	F3661C06.M
					HSK-A100	25	22	200	50	5	M24 x 1.5	0.5	0.5	F3661C06.L

Softsynchro Slim / IKZ
Clamping nut without integrated seal is included in the delivery

Softsynchro Slim / IKZ 1
Clamping nut for sealing disks is included in the delivery

Further designs available upon request

Accessories:

	Collets type ER-GB	See pages 15-16		Set of clamping wrenches	See page 19
	Sealing disks type DS/ER and coolant flush disks type KS/ER	See page 16-17		Assembly device	See page 19
	Clamping nut with integrated seal	See page 18		Torque wrenches	See page 20
	Coolant tubes and wrenches	See page 18			

Softsynchro® Xtension

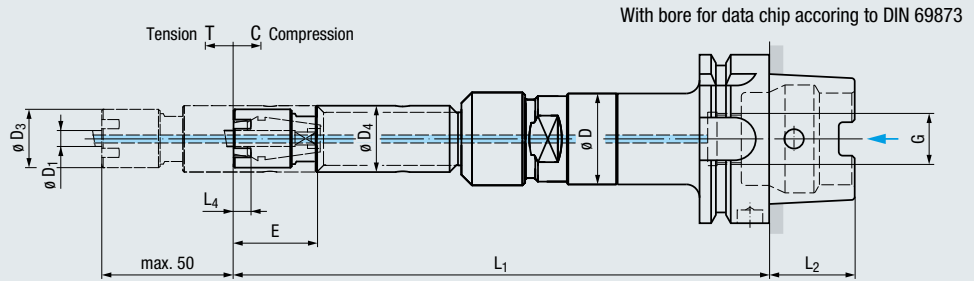
HSK-A
DIN 69893-1



p_{max} 700psi (50bar)
 Tension T / Compression C
 Soft

Icon Descriptions (See page 23)

For use on machines with synchronous spindle



Type		$\varnothing D_1$			mm										EDP No.
					$\varnothing D$	$\varnothing D_3$	$\varnothing D_4$	L_1	L_2	L_3	L_4	G	T	C	
Softsynchro 1 Xtension	M4 - M12 (#8 - 7/16")	4.5 - 9	ER-GB 16	HSK-A63	35	22	25	210	32	124.3	5	M18 x 1	0.5	0.5	F3801C04.1
				HSK-A63	35	22	25	260	32	124.3	5	M18 x 1	0.5	0.5	F3801C04.1.260
				HSK-A100	35	22	25	216.5	50	130.8	5	M24 x 1.5	0.5	0.5	F3801C06.1

Further designs available upon request



Holder can be extended up to 50 mm (2")

Accessories:

- Collets type ER-GB** See pages 15-16
 Set of clamping wrenches See page 19
- Sealing disks type DS/ER and coolant flush disks type KS/ER** See page 16-17
 Assembly device See page 19
- Coolant tubes and wrenches** See page 18
 Torque wrenches See page 20
- Torque roller wrench** See page 20

Softsynchro® QuickLock

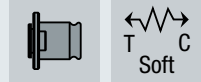
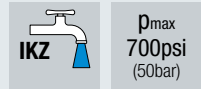
Weldon Shank

ASME B94-19

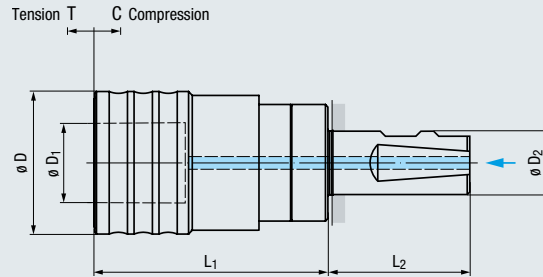
Cylindrical Shank

DIN 1835-1

Form B+E



Icon Descriptions (See page 23)



For use on machines with synchronous spindle

Type			ø D ₂	ø D	ø D ₁	L ₁	L ₂	T	C	EDP No.
Softsynchro 1 QuickLock	#0 - 9/16"	EM 01** QuickLock	1.0" *	1.54"	0.75"	2.64"	2.28"	.020"	.020"	F3601H36.1.44
	M4 - M12		20 mm	39 mm	19 mm	67 mm	51 mm	0.5 mm	0.5 mm	F3601G25.1.44
			25 mm	39 mm	19 mm	67 mm	57 mm	0.5 mm	0.5 mm	F3601G26.1.44
Softsynchro 3 QuickLock	1/4" - 3/4"	EM 03** QuickLock	1.0" *	2.17"	1.22"	3.70"	2.28"	.020"	.020"	F3603H36.1.44
	M8 - M20		25 mm	55 mm	31 mm	94 mm	57 mm	0.5 mm	0.5 mm	F3603G26.1.44

* Weldon Shank

** EM-Z/QuickLock Adapters are also compatible with Softsynchro QuickLock

Further designs available upon request

Features and Benefits:

- Change of the quick-change adapter without additional tool
- Sealed grip sleeve protects the quick-change tap holder against chips and emulsion
- Clamping of the threading tool independent of tool holder
- Threading tools clamped in the quick-change adapter can be changed without tools in the machining center
- Reduced radial backlash between quick-change adapter and quick-change tap holder
- Quick-change tap holder combined with quick-change adapters EM/QuickLock and EM-Z/QuickLock is axially and radially hermetically sealed against dirt
- Quick-change adapter type EM-Z/QuickLock with collet enables a length preadjustment of the threading tools

Accessories:



CAT adapters

See page 15



Quick-change adapters type EM/QuickLock

See page 13



Quick-change adapters type EM-Z/QuickLock

See page 14

Softsynchro® QuickLock

HSK-A

DIN 69893-1



p_{max}
700psi
(50bar)

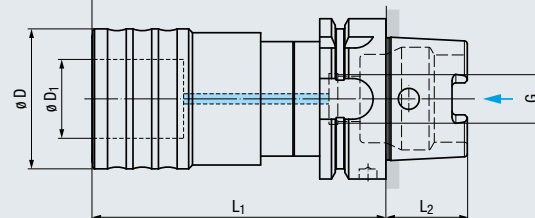


T C
Soft

Icon Descriptions (See page 23)

For use on machines with synchronous spindle

Tension T C Compression With bore for data chip according to DIN 6987



Type	Image 1	Image 2	Image 3	mm							EDP No.
				ø D	ø D ₁	L ₁	L ₂	G	T	C	
Softsynchro 1 QuickLock	M4 - M12 (#0 - 9/16")	EM 01* QuickLock	HSK-A63	39	19	90	32	M18 x 1	0.5	0.5	F3601C04.1
			HSK-A100	39	19	96	50	M24 x 1.5	0.5	0.5	F3601C06.1
Softsynchro 3 QuickLock	M8 - M20 (1/4" - 3/4")	EM 03* QuickLock	HSK-A63	55	31	115	32	M18 x 1	0.5	0.5	F3603C04.1
			HSK-A100	55	31	122	50	M24 x 1.5	0.5	0.5	F3603C06.1

* EM-Z/QuickLock Adapters are also compatible with Softsynchro QuickLock

Further designs available upon request

Accessories:



Quick-change adapters type EM/QuickLock See page 13



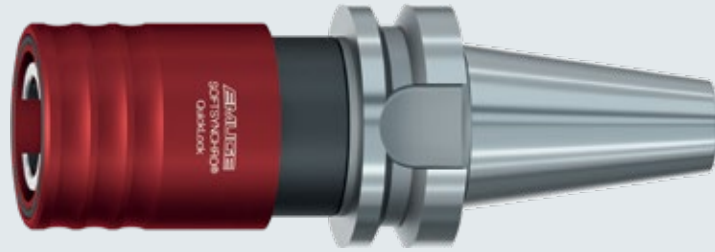
Quick-change adapters type EM-Z/QuickLock See page 14



Coolant tubes and wrenches See page 18

Softsynchro® QuickLock

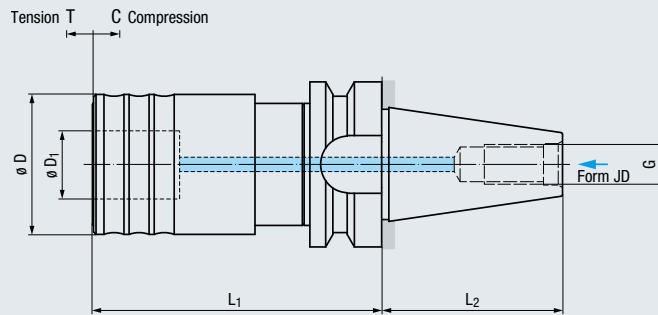
BT
DIN ISO 7388-2
Form JD



p_{max}
700psi
(50bar)

T Soft
C

Icon Descriptions (See page 23)



For use on machines with synchronous spindle

Type				mm							EDP No.
				$\varnothing D$	$\varnothing D_1$	L_1	L_2	G	T	C	
Softsynchro 1 QuickLock	M4 - M12 (#0 - 9/16")	EM 01* QuickLock	BT 30	39	19	82	48.4	M12	0.5	0.5	F3601190.1

* EM-Z/QuickLock Adapters are also compatible with Softsynchro QuickLock

Further designs available upon request

Accessories:



Quick-change adapters type EM/QuickLock See page 13



Quick-change adapters type EM-Z/QuickLock See page 14

EM-QuickLock

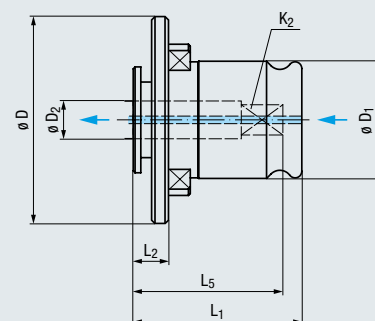
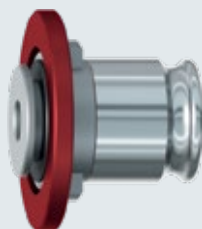
Quick-Change Adapters



p_{max}
700psi
(50bar)



Icon Descriptions (See page 23)



Type	EM 01 / QuickLock	EM 03 / QuickLock
	#0 - 9/16"	1/4" - 3/4"
$\varnothing D$	1.54	2.17
$\varnothing D_1$	0.75	1.22
L_1	1.14	1.77
L_2	0.28	0.39

ASME

$\varnothing D_2$	K_2			EDP No.	L_5	EDP No.	L_5
0.141	0.110	#0 - #6		F4521300.6	.87		
0.168	0.131	#8		F4521301.6	.95		
0.194	0.152	#10		F4521302.6	.95		
0.220	0.165	#12		F4521303.6	.97		
0.255	0.191	1/4		F4521304.6	1.00	F4523304.6	1.34
0.318	0.238	5/16		F4521306.6	1.06	F4523306.6	1.40
0.323	0.242		13/32 + 7/16	F4521307.6	1.10	F4523307.6	1.44
0.367	0.275		1/2	F4521310.6	1.12	F4523310.6	1.46
0.381	0.286	3/8		F4521311.6	1.12	F4523311.6	1.46
0.429	0.322		9/16	F4521313.6	1.10	F4523313.6	1.54
0.480	0.360		5/8			F4523315.6	1.59
0.590	0.442		3/4			F4523319.6	1.71

Type	EM 01 / QuickLock	EM 03 / QuickLock
	M4 - M12	M8 - M20
$\varnothing D$	39	55
$\varnothing D_1$	19	31
L_1	29	45
L_2	7	10

DIN

$\varnothing D_2$	K_2			EDP No.	L_5	EDP No.	L_5
4.5	3.4	M4	M6	F4521104.6	23		
6	4.9	M4.5 - M6	M8	F4521106.6	25		
7	5.5	M7	M9 - M10	F4521107.6	25		
8	6.2	M8	M11	F4521108.6	26	F4523108.6	38
9	7	M9	M12	F4521109.6	27	F4523109.6	39
10	8	M10		F4521110.6	27	F4523110.6	40
11	9		M14			F4523111.6	41
12	9		M16			F4523112.6	41
14	11		M18			F4523113.6	43
16	12		M20			F4523114.6	44

Note: Coolant can be used with taps / cold-forming taps with internal coolant supply

Large ring handle – combined with Softsynchro® Quicklock – enables face sealing

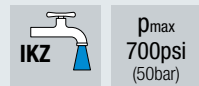
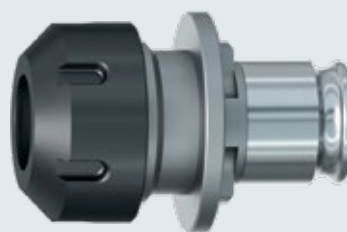
Design with internal coolant-lubricant supply along the tool shank for taps / cold-forming taps without internal coolant-lubricant supply on request

When using solid carbide taps / cold-forming taps we recommend quick-change adapters type EM-Z/QuickLock, see page 13

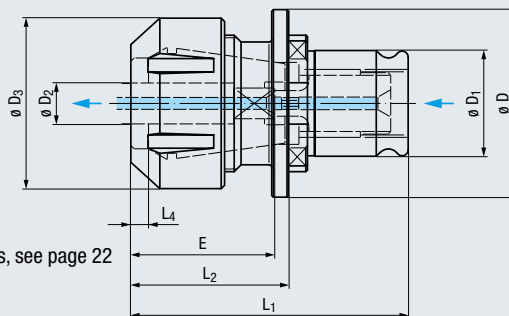
Further sizes available upon request

EM-Z/QuickLock

Quick-Change Adapters



Icon Descriptions (See page 23)



E - For clamping depths, see page 22

Type	Collet	$\varnothing D_2$	Collet	Adapter	mm						EDP No.
					$\varnothing D$	$\varnothing D_1$	$\varnothing D_3$	L_1	L_2	L_4	
EM 01-Z /QuickLock	M4.5 - M10	6 / 7			39	19	34	61	39.5	5	F4511001.6D6
	M8 - M12	8 / 9	ER-GB 20	Hi-Q/ERC 20	39	19	34	61	39.5	5	F4511001.6D8
	M10	10			39	19	34	61	39.5	5	F4511001.6D10
EM 03-Z /QuickLock	M8 - M12	8 / 9			55	31	50	81.5	46.5	5	F4513001.6D8
	M10 - M16	10 - 12	ER-GB 32	Hi-Q/ERC 32	55	31	50	81.5	46.5	5	F4513001.6D10
	M18 - M20	14 - 16			55	31	50	81.5	46.5	5	F4513001.6D14

Note: Coolant can be used with taps / cold-forming taps with internal coolant supply

Further designs available upon request

Length adjustment screw and clamping nut for sealing disks are included in the delivery

Large ring handle – combined with Softsynchro Quicklock enables face sealing

Accessories:



Collets type ER-GB

See pages 15-16



Sealing disks type DS/ER and coolant flush disks type KS/ER

See page 16-17



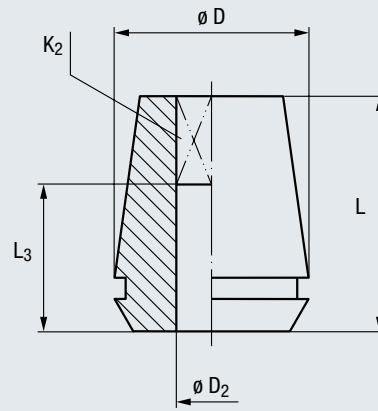
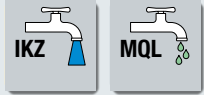
Clamping wrench

See page 19

ER-GB Collets

Inch
ASME
DIN ISO 15488 (DIN 6499)

With square drive



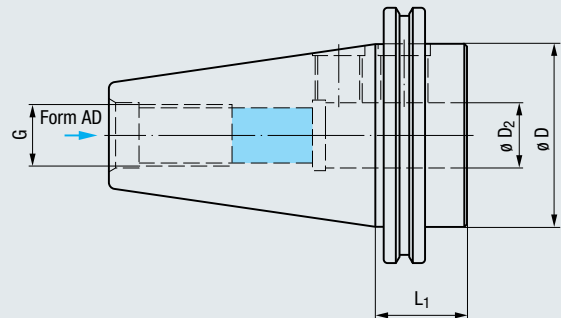
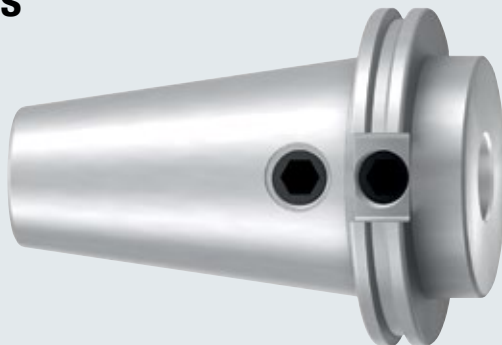
Icon Descriptions (See page 23)

Type	ER-GB 11	ER-GB 20	ER-GB 32	ER-GB 40
	#0 - #6	#8 - 1/2"	1/4" - 3/4"	1/4" - 1"
ø D	0.433	0.787	1.260	1.575
L	0.709	1.240	1.575	1.811

ASME

ø D ₂	K ₂	ASME		EDP No.	L ₃	EDP No.	L ₃	EDP No.	L ₃	EDP No.	L ₃
		Image 1	Image 2								
0.141	0.110	#0 - #6		F0942011.3.58	.55						
0.168	0.131	#8		F0942011.4.27	.55	F0942020.4.27	.71				
0.194	0.152	#10		F0942011.4.93	.55	F0942020.4.93	.71				
0.220	0.165	#12				F0942020.5.59	.71				
0.255	0.191	1/4				F0942020.6.48	.71	F0942032.6.48	.71	F0942040.6.48	.71
0.318	0.238	5/16				F0942020.8.08	.87	F0942032.8.08	.87	F0942040.8.08	.87
0.323	0.242		7/16			F0942020.8.20	.87	F0942032.8.20	.87	F0942040.8.20	.87
0.367	0.275		1/2			F0942020.9.32	.87	F0942032.9.32	.87	F0942040.9.32	.87
0.381	0.286	3/8				F0942020.9.68	.87	F0942032.9.68	.87	F0942040.9.68	.87
0.429	0.322		9/16					F0942032.10.90	.98	F0942040.10.90	.98
0.4375	0.328	1/8 NPT						F0942032.11.11	.98	F0942040.11.11	.98
0.480	0.360		5/8					F0942032.12.19	.98	F0942040.12.19	.98
0.5625	0.421	1/4 NPT						F0942032.14.29	.98	F0942040.14.29	.98
0.590	0.442		3/4					F0942032.14.99	.98	F0942040.14.99	.98
0.697	0.523		7/8							F0942040.17.70	.98
0.800	0.600		1"							F0942040.20.32	1.10

CAT Adapters



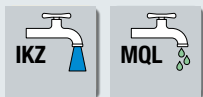
For Replacement Set screws see page 7

Size	Type	Bore Size ø D ₂	ø D	G	L ₁	EDP No.
CAT 40	ASME B5.50 UNC	1"	1.9"	5/8"-11	1.75"	F440007.03
CAT 50	ASME B5.50 UNC	1"	2.75"	1"-8	1.63"	F440007.04
CAT 50	ASME B5.50 UNC	1.25"	2.75"	1"-8	1.63"	F440007.05

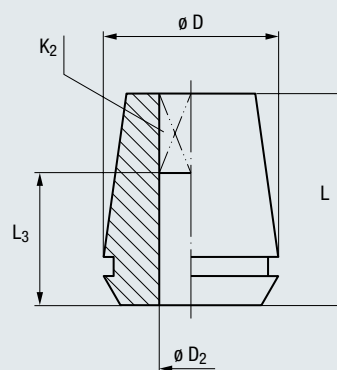
ER-GB Collets

Metric

DIN ISO 15488 (DIN 6499)



Icon Descriptions (See page 23)

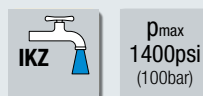


With square drive

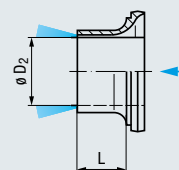
Type	ER-GB 11	ER-GB 16	ER-GB 20	ER-GB 32	ER-GB 40
	M2 - M8	M4 - M12	M4 - M12	M4 - M20	M10 - M30
ø D	11	16	20	32	40
L	18	27.5	31.5	40	46

DIN		DIN		DIN		DIN		DIN		DIN		DIN	
ø D ₂	K ₂			EDP No.	L ₃	EDP No.	L ₃	EDP No.	L ₃	EDP No.	L ₃	EDP No.	L ₃
2.8	2.1	M2 - M2.6	M4	F0942011.2.8	12								
3.5	2.7	M3	M4.5 - M5	F0942011.3.5	14								
4	3	M3.5	M5.5	F0942011.4	14								
4.5	3.4	M4	M6	F0942011.4.5	14	F0942016.4.5	15	F0942020.4.5	15	F0942032.4.5	15		
6	4.9	M4.5 - M6	M8	F0942011.6	14	F0942016.6	18	F0942020.6	18	F0942032.6	18		
7	5.5	M7	M9 - M10			F0942016.7	18	F0942020.7	18	F0942032.7	18		
8	6.2	M8	M11			F0942016.8	22	F0942020.8	22	F0942032.8	22		
9	7	M9	M12			F0942016.9	22	F0942020.9	22	F0942032.9	22	F0942040.9	22
10	8	M10						F0942020.10	25	F0942032.10	25	F0942040.10	25
11	9		M14							F0942032.11	25	F0942040.11	25
12	9		M16							F0942032.12	25	F0942040.12	25
14	11		M18							F0942032.14	25	F0942040.14	25
16	12		M20							F0942032.16	25	F0942040.16	25
18	14.5		M22 - M24									F0942040.18	25
20	16		M27									F0942040.20	28
22	18		M30									F0942040.22	28

KS/ER Coolant Flush Disks



Inch ASME



ASME		KS/ER 20		KS/ER 32	
ø D ₂	Tap Size	EDP No.	L	EDP No.	L
0.168	#8	F0941720.5	.43		
0.194	#10	F0941720.6	.43		
0.220	#12	F0941720.7	.43		
0.255	1/4	F0941720.8	.43	F0941732.7	.43
0.318	5/16	F0941720.9	.43	F0941732.9	.43
0.323	7/16	F0941720.9	.43	F0941732.9	.43
0.367	1/2	F0941720.10	.43	F0941732.10	.43
0.381	3/8	F0941720.11	.43	F0941732.11	.43
0.429	9/16			F0941732.12	.43
0.4375	1/8 NPT			F0941732.12	.43
0.480	5/8			F0941732.14	.43
0.5625	1/4 NPT			F0941732.16	.43
0.590	3/4			F0941732.16	.43

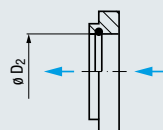
KS/ER Coolant Flush Disks (Continued from previous page)

DIN		Type		KS/ER 11		KS/ER 16		KS/ER 20		KS/ER 32	
$\varnothing D_2$	K ₂			EDP No.	L	EDP No.	L	EDP No.	L	EDP No.	L
2.8	2.1	M2 - M2.6	M4	F0941711.3	5.5						
4	3	M3.5	M5.5	F0941711.4	5.5	F0941716.4	11				
4.5	3.4	M4	M6	F0941711.5	5.5						
6	4.9	M4.5 - M6	M8	F0941711.6	5.5	F0941716.6	11	F0941720.6	11	F0941732.6	11
7	5.5	M7	M9 - M10			F0941716.7	11	F0941720.7	11	F0941732.7	11
8	6.2	M8	M11			F0941716.8	11	F0941720.8	11	F0941732.8	11
9	7	M9	M12			F0941716.9	11	F0941720.9	11	F0941732.9	11
10	8	M10				F0941716.10	2	F0941720.10	11	F0941732.10	11
11	9		M14							F0941732.11	11
12	9		M16							F0941732.12	11
14	11		M18							F0941732.14	11
16	12		M20							F0941732.16	11

DS/ER Sealing Disks

Inch / Metric

ASME / DIN



p_{max}
1400psi
(100bar)

Icon Descriptions (See page 23)

ASME			DS/ER 16	DS/ER 20	DS/ER 32	DS/ER 40
$\varnothing D_2$	Tap Size		EDP No.	EDP No.	EDP No.	EDP No.
0.141	#1 - #6		F0941516.4			
0.168	#8		F0941516.4.5	F0941520.4.5		
0.194	#10		F0941516.5	F0941520.5		
0.220	#12		F0941516.6	F0941520.6	F0941532.6	F0941540.6
0.255	1/4		F0941516.6.5	F0941520.6.5	F0941532.6.5	F0941540.6.5
0.318	5/16		F0941516.8.5	F0941520.8.5	F0941532.8.5	F0941540.8.5
0.323	7/16		F0941516.8.5	F0941520.8.5	F0941532.8.5	F0941540.8.5
0.367	1/2		F0941516.9.5	F0941520.9.5	F0941532.9.5	F0941540.9.5
0.381	3/8		F0941516.10	F0941520.10	F0941532.10	F0941540.10
0.429	9/16				F0941532.11	F0941540.11
0.4375	1/8 NPT				F0941532.11.5	F0941540.11.5
0.480	5/8				F0941532.12.5	F0941540.12.5
0.5625	1/4 NPT				F0941532.14.5	F0941540.14.5
0.590	3/4				F0941532.15	F0941540.15
0.6875	1/2 NPT					F0941540.17.5
0.697	7/8					F0941540.18
0.700	3/8 NPT					F0941540.18
0.800	1"					F0941540.20.5

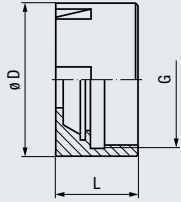
DIN		Type		DS/ER 11	DS/ER 16	DS/ER 20	DS/ER 32	DS/ER 40
$\varnothing D_2$	K ₂			EDP No.	EDP No.	EDP No.	EDP No.	EDP No.
2.8	2.1	M2 - M2.6	M4	F0941511.3				
4	3	M3.5	M5.5	F0941511.4	F0941516.4			
4.5	3.4	M4	M6	F0941511.5	F0941516.4.5	F0941520.4.5	F0941532.4.5	
6	4.9	M4.5 - M6	M8	F0941511.6	F0941516.6	F0941520.6	F0941532.6	
7	5.5	M7	M9 - M10		F0941516.7	F0941520.7	F0941532.7	
8	6.2	M8	M11		F0941516.8	F0941520.8	F0941532.8	
9	7	M9	M12		F0941516.9	F0941520.9	F0941532.9	F0941540.9
10	8	M10			F0941516.10	F0941520.10	F0941532.10	F0941540.10
11	9		M14				F0941532.11	F0941540.11
12	9		M16				F0941532.12	F0941540.12
14	11		M18				F0941532.14	F0941540.14
16	12		M20				F0941532.16	F0941540.16
18	14.5		M22 - M24					F0941540.18
20	16		M27					F0941540.20
22	18		M30					F0941540.22

Hi-Q/ERM

Clamping nut without sealing



p_{max}
1400psi
(100bar)



Icon Descriptions (See page 23)

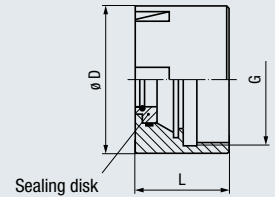
Type	Hi-Q/ERM 11
$\varnothing D$	16
L	12
G	M13 x 0.75
For collet	EDP No.
ER-GB 11	F0940311

Hi-Q/ERMC

Clamping nut for sealing disks



p_{max}
1400psi
(100bar)



Icon Descriptions (See page 23)

Type	Hi-Q/ERMC 16	
$\varnothing D$	22	
L	22	
G	M19 x 1	
For collet	Sealing Disk	EDP No.
ER-GB 16	DS/ER 16	F0943516

Sealing disks are not included in the delivery, please order separately (see page 17)

Hi-Q/ERC

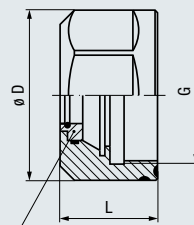
Clamping nuts for sealing disks



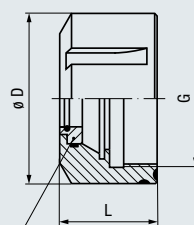
p_{max}
1400psi
(100bar)



Hi-Q/ERC 20



Hi-Q/ERC 32 and 40



Icon Descriptions (See page 23)

Type	Hi-Q/ERC 20	Hi-Q/ERC 32	Hi-Q/ERC 40
$\varnothing D$	34	50	63
L	24	27.5	30.5
G	M25 x 1.5	M40 x 1.5	M50 x 1.5
For collet	Sealing Disk	EDP No.	EDP No.
ER-GB 20	DS/ER 20	F0940720	
ER-GB 32	DS/ER 32	F0940732	
ER-GB 40	DS/ER 40		F0940740

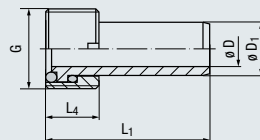
Sealing disks are not included in the delivery, please order separately (see page 17)

Coolant Tubes

For HSK shanks



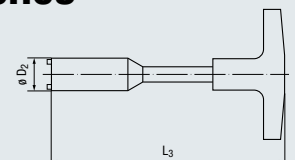
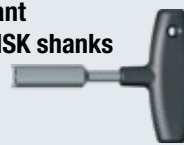
Icon Descriptions (See page 23)



For shank size	$\varnothing D$	$\varnothing D_1$	L_4	L_1	G	EDP No.
HSK-A40	5	8	8	29.5	M12 x 1	F330049.02
HSK-A50	6.4	10	10	33	M16 x 1	F330049.03
HSK-A63	8	12	12	36.5	M18 x 1	F330049.04
HSK-A80	10	14	14	40	M20 x 1.5	F330049.05
HSK-A100	12	16	16	44	M24 x 1.5	F330049.06

Assembly Wrenches

For coolant tubes / HSK shanks



For shank size	$\varnothing D_2$	L_3	EDP No.
HSK-A40	11	111	F330099.02
HSK-A50	15	120	F330099.03
HSK-A63	17	122	F330099.04
HSK-A80	18.5	126	F330099.05
HSK-A100	22	141	F330099.06

Sets of Clamping Wrenches

Softsynchro® 0, Softsynchro® Slim / IKZ, Softsynchro® Slim / IKZ 1, Softsynchro® Xtension



Softsynchro® 1



Softsynchro® 3, Softsynchro® 4



Hi-Q/ERC 32, Hi-Q/ERC 40



Hi-Q/ER 11, Hi-Q/ERC 20



Wrenches for Softsynchro holders		Components	EDP No.
Softsynchro	Softsynchro 0, Softsynchro Slim / IKZ, Softsynchro Xtension	E11M / SW14	F315098.02
	Softsynchro 1	SW30 / SW19	F315198.02
	Softsynchro Slim / IKZ 1	E16M / SW17	F350198.01
	Softsynchro 3	E32 / SW32	F315398.01
	Softsynchro 4	E40 / SW41	F315498.01

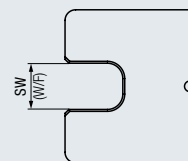
Wrenches for clamping nuts		Components	EDP No.
Hi-Q/ER	Hi-Q/ERM 11	E11M	QB002005.0110
	Hi-Q/ERMC 16	E16M	QB002005.0160
	Hi-Q/ERC 20	SW30	QB002002.00300
	Hi-Q/ERC 32	E32	QB002003.0320
	Hi-Q/ERC 40	E40	QB002003.0400

Softsynchro® Basic Assembly Device



For Softsynchro holders	EDP No.
Softsynchro 0-4, Softsynchro Slim, Softsynchro Xtension	F3151186

Softsynchro® Adapter Plate



For Softsynchro holders	Width across flats SW (W/F)	EDP No.
Softsynchro 0	14	F315050.03
Softsynchro 0/Slim	14	F366050.01
Softsynchro 1	19	F315150.01
Softsynchro 1/Slim, Softsynchro 1/Xtension	17	F366150.01
Softsynchro 3	32	F315350.01
Softsynchro 4	41	F315450.01

HAZET TORCO-FIX Torque Wrenches

For Softsynchro[®], Softsynchro[®] Xtension, Softsynchro[®] Slim



Type	Torque		L ₁		EDP No.
	ft lbs	Nm	in	mm	
HAZET 6280	4 - 18	2 - 10	7.205	183	F0900012
TORCO-FIX 0	7 - 37	5 - 25	11.417	290	F0908002
TORCO-FIX I	10 - 50	10 - 50	13.189	335	F0908005
TORCO-FIX II	30 - 148	40 - 200	18.307	465	F0908020
TORCO-FIX III	44 - 221	60 - 300	22.244	565	F0908060

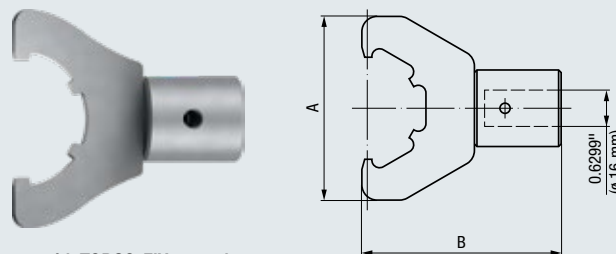
Torque Roller Wrench

For Softsynchro[®] Xtension



Type	EDP No.
Torque roller wrench	F0900006

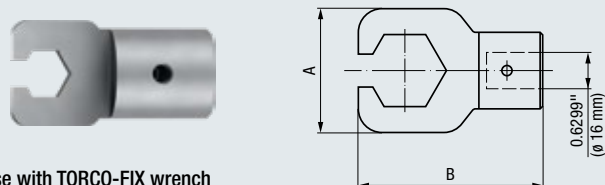
A-E Shell-Type Wrench Heads*



For use with TORCO-FIX wrench

Type	For Clamping Nuts	For TORCO-FIX	inch		EDP No.
			A	B	
A-E 32	Hi-Q/ERC 32	II, III	3.150	2.835	F0908500.AE32
A-E 40	Hi-Q/ERC 40	III	3.780	3.228	F0908500.AE40

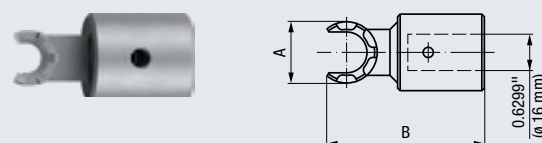
A-EP Shell-Type Wrench Heads*



For use with TORCO-FIX wrench

Type	For Clamping Nuts	For TORCO-FIX	inch		EDP No.
			A	B	
A-E 11 P	Hi-Q/ERC 11 Hi-Q/ER 11	0	1.260	2.402	F0908500.AE11P
A-E 16 P	Hi-Q/ERC 16	I	1.732	2.795	F0908500.AE16P

A-EM Shell-Type Wrench Heads*



For use with TORCO-FIX wrench

Type	For Clamping Nuts	For TORCO-FIX	inch		EDP No.
			A	B	
A-E 20 M	Hi-Q/ERMC 20	I	1.142	2.677	F0908500.AE20M

* Allow 5-10 days for delivery for all Shell-type wrench heads.

Assembly of Seal Disk, Collet and Tap

1. Assembly of seal disk with collets type ER-GB 16 up to ER-GB 40:

Insert the seal disk into the clamping nut as shown in the illustration, and push it forward until you can clearly hear it engaging. After that, the seal disk is flush with the clamping nut.

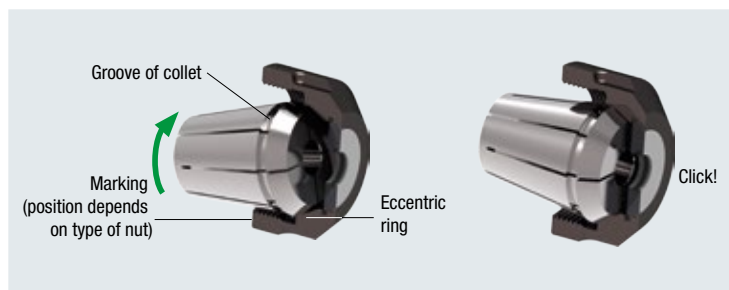
For collets type ER-GB 11 you can use clamping nuts with integrated sealing system – a separate seal disk is not needed then. The clamping nut must be selected in accordance with the clamping diameter used.



2. Assembly of clamping nuts:

Insert the collet into the clamping nut, then tilt it. The groove of the collet must engage in the eccentric ring of the clamping nut at the marked position.

Now, tilt the collet in the opposite direction until you clearly hear it engaging.



3. Screw the clamping nut with the engaged collet onto the thread of the holder.

Important: Only screw on clamping nuts with correctly engaged collet!

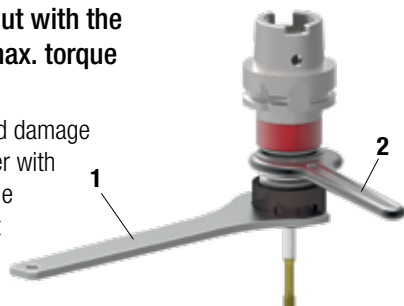


4. Insert tool.

Important: If you use a collet with integrated square, make sure to turn the tool around until it is in a position that allows it to be pushed into the square seat of the collet.

5. Tighten the clamping nut with the wrench. Observe the max. torque values in the table.

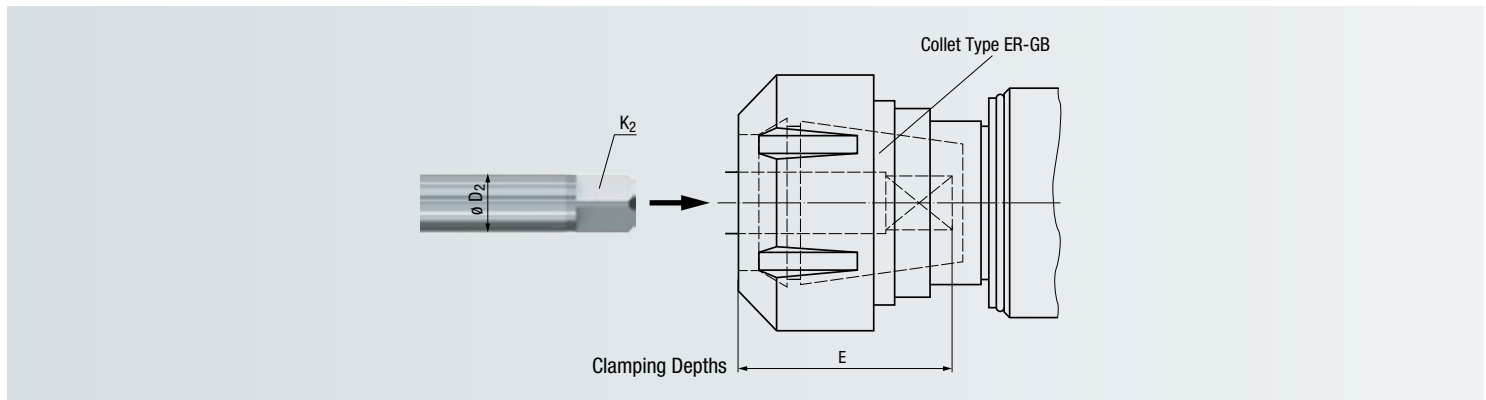
Important: In order to avoid damage to the holder, please counter with open-ended spanner **2** while tightening the clamping nut with wrench **1**.






Type	Recommended Tightening Torque	
	ft lbs	Nm
Hi-Q/ERM 11	9	12
Hi-Q/ERMC 16	17	24
Hi-Q/ERC 20	23	32
Hi-Q/ERC 32	66	90
Hi-Q/ERC 40	132	180

The indicated values apply to collets type ER-GB. The maximum tightening torque must not exceed the recommended value by more than 25%. An excessive tightening torque can result in permanent deformation of the collet holder. For the setting of the correct torque we recommend using an Emuge TORCO-FIX Torque Wrench.

Clamping Depths - Inch / Metric



Collets				ER-GB 11	ER-GB 16	ER-GB 20	ER-GB 32	ER-GB 40
Clamping Nuts				Hi-Q/ERM 11	Hi-Q/ERMC 16	Hi-Q/ERC 20	Hi-Q/ERC 32	Hi-Q/ERC 40
$\varnothing d_2$ (in)	K_2			Clamping Depths E inch				
0.141	0.110	#0 - #6		0.78				
0.168	0.131	#8				1.16		
0.194	0.152	#10				1.16		
0.220	0.165	#12				1.19		
0.255	0.191	1/4				1.22	1.22	1.22
0.318	0.238	5/16				1.45	1.45	1.45
0.323	0.242		7/16			1.48	1.48	1.48
0.367	0.275		1/2			1.51	1.51	1.51
0.381	0.286	3/8				1.51	1.51	1.51
0.429	0.322		9/16				1.68	1.68
0.4375	0.328	1/8 NPT					1.56	1.56
0.480	0.360		5/8				1.74	1.74
0.542	0.406		11/16				1.81	1.81
0.5625	0.421	1/4 NPT					1.62	1.62
0.590	0.442		3/4				1.87	1.87
0.697	0.523		7/8					1.93
0.800	0.600		1					2.11
$\varnothing d_2$ (mm)	K_2			Clamping Depths E mm				
2.8	2.1	M2 - M2.6	M4	18				
3.5	2.7	M3	M4.5 - M5	21				
4	3.0	M3.5	M5.5	21				
4.5	3.4	M4	M6	21				
6	4.9	M4.5 - M6	M8	23	26	26	26	
7	5.5	M7	M9 - M10		31	31	31	
8	6.2	M8	M11		31	31	31	
8	6.2	M8	M11		36	36	36	
9	7	M9	M12		37 / 48 ¹⁾	37	37	37
10	8	M10			43 ¹⁾	41	41	41
11	9		M14				42	42
12	9		M16				42	42
14	11		M18				44	44
16	12		M20				45	45
18	14.5		M22 - M24					47
20	16		M27					52
22	18		M30					54

¹⁾ In combination with collets type ER-GB 16 and Softsynchro 1 for driven tools



Refurbish your Softsynchro® Tap Holders before tool failures happen!

EMUGE-FRANKEN tap holder maintenance offers:

- Available for Softsynchro® 0,1, 3, and 4 holders, in addition to KSN Series 0,1, 3, 4 and 5 holders.
- Cleaning and replacing of critical wear components to return holder to like-new condition.
- One low, baseline price for all eligible holders.
- Included inspection for any other defects, with Repair Program also available.

Icon Descriptions

	<p>Internal Coolant Supply (IKZ)</p>		<p>Minimal length compensation on compression and tension</p>		<p>Coolant pressure at the entry to the holder</p>		<p>Length readjustment</p>	<p>Reinforced Shank</p>
	<p>Minimum-quantity lubrication (MQL)</p>		<p>Tool adaption by means of collets, type ER-GB</p>		<p>Tool adaptation by means of quick-change adapters</p>		<p>Length readjustment 2 mm</p>	<p>Reduced Shank</p>



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EMUGE-FRANKEN has been the product technology and performance leader in their field for over 100 years. EMUGE-FRANKEN manufactures an extensive line of taps, drills, thread mills, end mills, toolholders, clamping devices and other rotary cutting tools, over 40,000 items sold through distributors worldwide.