

# ISO

PRODUCT CATALOGUE **2015**



Quick facts about SPV Spintec's hydraulic chucks!

- High clamping torque, 320 Nm at a  $\varnothing 20$  mm shank in a standard hydraulic chuck.
- Runout accuracy better than 0,003 mm. (see below).
- Quick assembly method of the tool. No special equipment needed.
- Balanced for 10 000 RPM (G 6.3) as standard - can be supplied fine balanced up to 30 000 RPM (G 2.5).
- The widest range of hydraulic chucks on the market. Available for all applications.
- If our standard assortment isn't enough we will design a chuck according to your needs!

Why should you use SPV Spintec's hydraulic chucks?

- Up to 50 % longer lifetime of the tool compared to conventional tool holder systems.
- Increased surface finish, thanks to the solid fastening of the tool.
- Permits machining with much closer tolerances.
- Quicker and simpler tool changes.

Runout accuracy

*All of our hydraulic chuck models are made with runout accuracy better than 0,003 mm.*

*This means that you can machine to closer tolerances and tool lifetime is extended - giving you better overall economy.*



Our different types of hydraulic chucks



- Type HCF / HCF+  
Short standard chuck



- Type HCFL / HCFL+  
Extended standard chuck



- Type HCP+  
Pen-chuck in two different lengths



- Type HCPK+  
Long tapered chuck

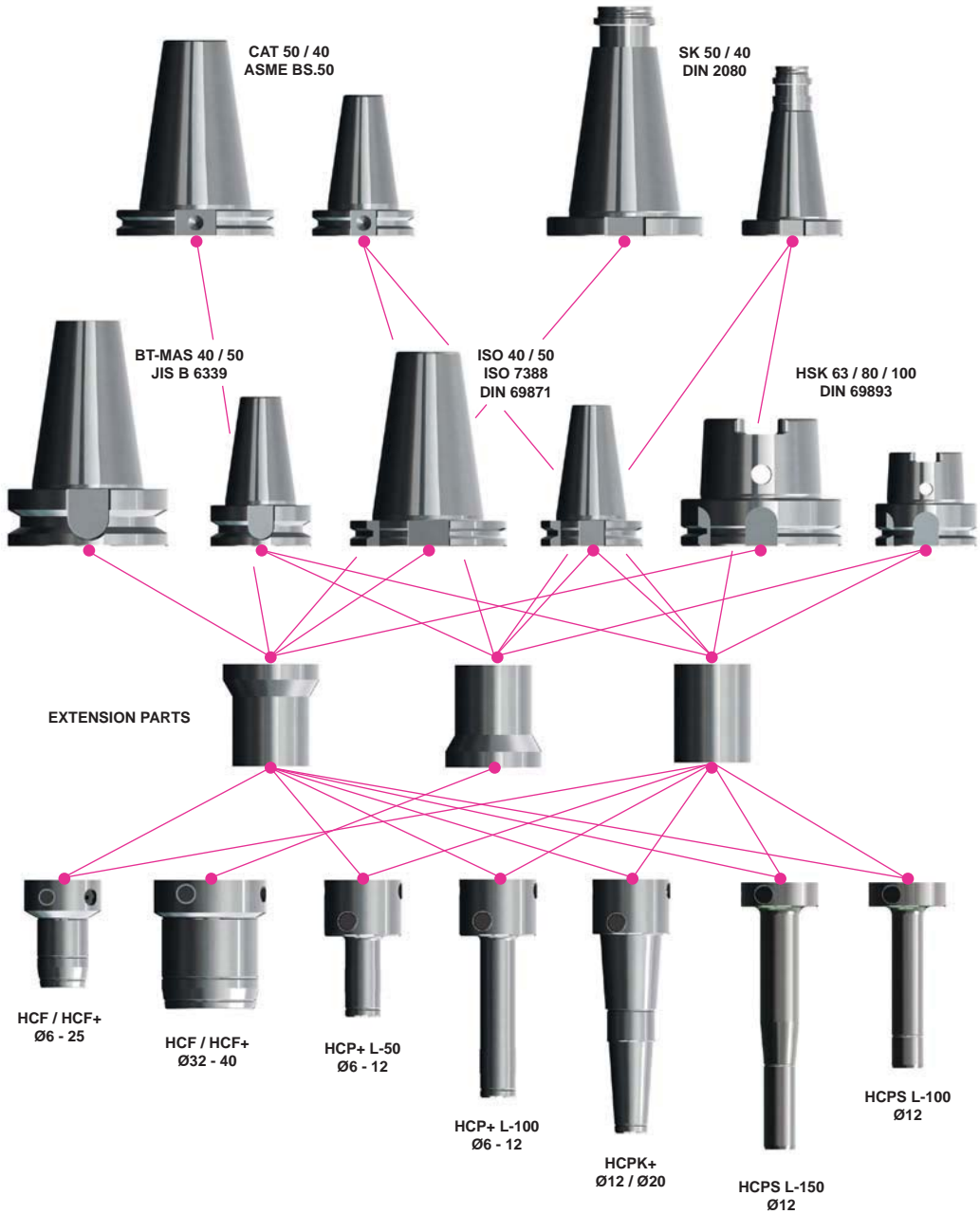


- Type HCK+  
Extra short chuck



- Type HCPS  
Extra long and slim pen-chuck

Optional combinations for our hydraulic chucks



## The Plus-membrane [+]

Facts about SPV Spintec's developed milling-membrane - The Plus-membrane [+]

*SPV Spintec's hexagonal milling membrane (+membrane)*

*permits though, vibration-free milling. A highly stable tool anchorage makes it possible to machine at greater feed rates and with greater axial and radial depths of cut than normally recommended.*

Limitations of conventional hydraulic chucks

The limitation in the use of hydraulic chucks has frequently been the use of recommended cutting data for heavy duty milling.

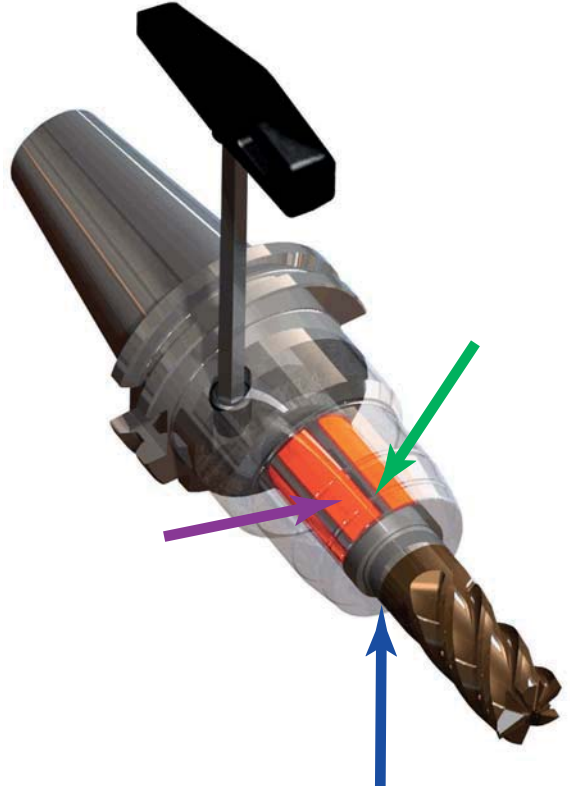
Customers have often been obliged to purchase specially shortened hydraulic milling chucks with increased torque when they have needed to remove a large amount of material in the shortest possible time.

We have eliminated this limitation and offer our customers the opportunity of using our developed hydraulic milling chuck for both drilling and milling, which offers better overall economy.

History of development

The development started when British Aerospace in England had problems with milling vibration, which lead to very short lifetime for their expensive solid metal cutting tools.

BA tried several commercially available retention systems but did not find a satisfactory solution. At that time SPV developed the hexagonal milling membrane which was found in tests at British Aerospace to multiply the period of contact several times over and in some cases, enabled them to double both radial and axial cutting depths.

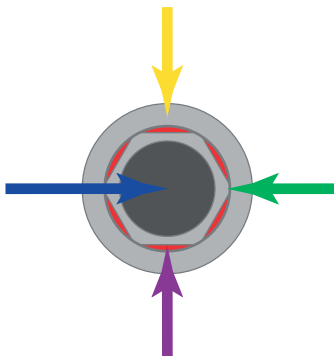


Yellow arrow  
Outer housing, hydraulic chuck

Blue arrow  
Tool (drill, cutter, etc.)

Purple arrow  
Hydraulic chamber which combines with high hydraulic pressure in the chuck to provide stable anchorage, with long, linear, thinwall gripping surfaces which protect the tool from flexing.

Green arrow  
The remaining material between the hydraulic chambers creates - reinforcement ribs - which minimise vibration and stiffen the membrane.



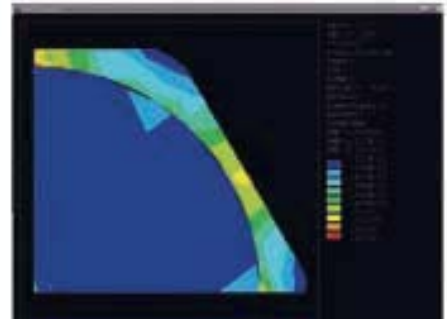
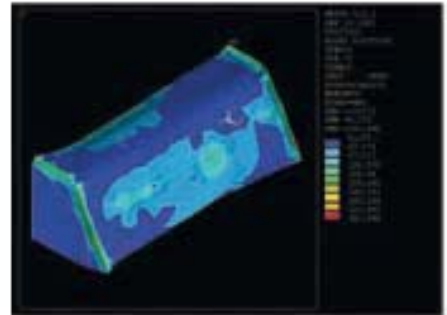
## Analysis

A calculation and simulation of loading cases using the Finite Element Method (FEM) and 3D-models was done in collaboration with Mälardalen University College in Eskilstuna, Sweden to verify the results offered by the new design, and to make a comparison with the traditional cylindrical membrane design in hydraulic chucks.

## Testing

A trial was done in the spring of 2003 at SECO in Fagersta, Sweden in an attempt to verify any limits there might be on cutting data. An extract from the test report (P-1006, 2003-04-29 at SECO, Fagersta) shows the following.

- Test sample:  
Hydraulic chucks, HCF+ with hexagonal membrane.
- Machining tools:  
Solid 3-blade hard metal cutters, made by Jabro, with Tribon coating in dimensions  $\varnothing 10$ ,  $\varnothing 12$  and  $\varnothing 20$  mm.
- Work piece material:  
Square bar, 75x75 mm made from heat treatable steel SS 2244-05, hardness 270 - 315 HB.



## Test summary

The results show that the hydraulic chucks equipped with a hexagonal membrane (+membrane) can manage up to twice the recommended axial and radial cutting depth without tool chipping or vibration which affects surface finish. In practice, this means that the possible swarf yield has been multiplied by four.

- HCF+ chucks:
- Hydraulic chucks, HCF+, with tools  $\varnothing 10$ ,  $\varnothing 12$  and  $\varnothing 20$  can manage the the cutting data in Jabro's recommendation for coarse slab milling.
  - 2 x recommended axial cutting depth is quite OK, without any vibration arising that could damage the tool.
  - 2 x recommended radial cutting depth is quite OK.

## Specifications

### Coarse slab milling with rotational speed and feed rate to Jabro's recommendations:

Recommended depth of cut:  
axial = 1x tool diameter  
radial = 0,4 x tool diameter

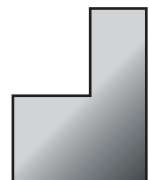
This gives a chip area of:  
 $1 \times D \text{ mm} \times 0,4 \times D \text{ mm} = 0,4 \times D \text{ mm}^2$



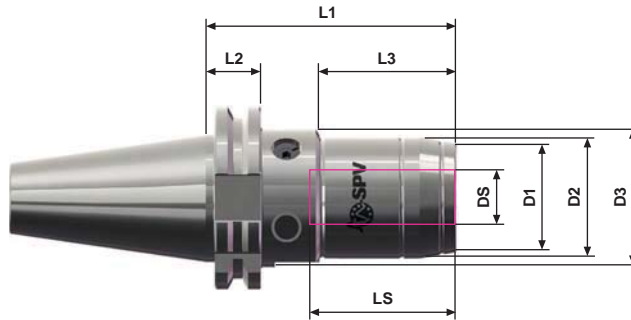
### Coarse slab milling with rotational speed and feed rate to Jabro's recommendations:

HCF+ test with twice the recommended depth of cut, axially and radially.

This gives a chip area of:  
 $2 \times D \text{ mm} \times 0,8 \times D \text{ mm} = 1,6 \times D \text{ mm}^2$



STANDARD CHUCK HCF / HCF+



For milling-membrane (+) specify + after art.no.

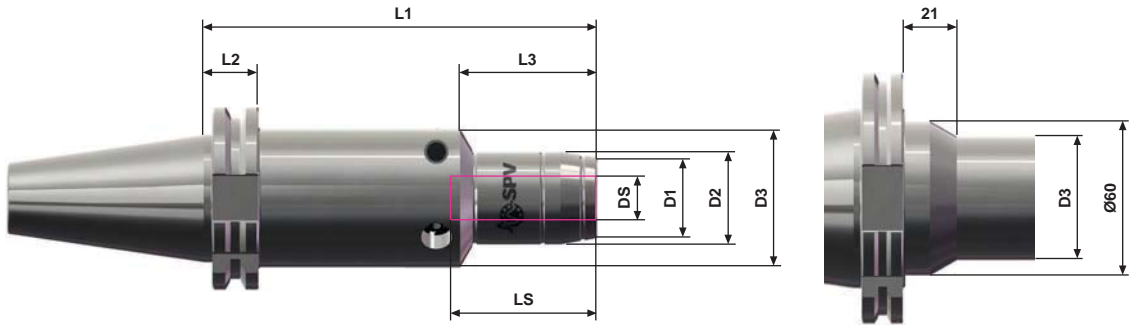
DS Ømm	Mount type	D1 Ømm	D2 Ømm	D3 Ømm	L1 mm	L2 mm	L3 mm	L5 mm	Article- number
6	ISO-40	21,5	26	49,5	80,5	19,1	29,5	37,5	54800
	ISO-50	21,5	26	48	87	19,1	43,5	37,5	56630
8	ISO-40	23,5	28	49,5	80,5	19,1	30	37,5	54801
	ISO-50	23,5	28	48	87	19,1	43,5	37,5	56631
10	ISO-40	25,5	30	49,5	80,5	19,1	31	42,5	54802
	ISO-50	25,5	30	48	87	19,1	43,5	42,5	56632
12 *	ISO-40	27,5	32	49,5	80,5	19,1	31,5	47,5	54803
	ISO-45	27,5	32	48	87	19,1	44,5	47,5	56803
	ISO-50	27,5	32	48	87	19,1	44,5	47,5	56633
14	ISO-40	27,5	32	49,5	80,5	19,1	31,5	47,5	54804
	ISO-50	29,5	34	48	87	19,1	44,5	47,5	56634
16	ISO-40	34,5	38	49,5	80,5	19,1	33	51	54805
	ISO-50	33,5	38	48	87	19,1	47,5	52,5	54835
18	ISO-40	38	42	49,5	80,5	19,1	34	51	54806
	ISO-50	35,5	40	48	87	19,1	47,5	52,5	54836
20 *	ISO-40	38	42	49,5	80,5	19,1	34	51	54807
	ISO-45	37,5	42	48	87	19,1	47,5	52,5	56807
	ISO-50	37,5	42	48	87	19,1	47,5	52,5	56637
25	ISO-40	43,5	48	48	91	19,1	71	55	56628
	ISO-50	43,5	48	48	91	19,1	71	55	56638
32 *	ISO-40	55,5	60	70	120	19,1	57	65	56629
	ISO-50	55,5	60	70	100	19,1	57	65	56639
40 **	ISO-50	65	70	70	105	19,1	86	70	56113+

\* Dimensions that can be used with reduction sleeves. (Reduction sleeves, see p.40.)

Other dimensions with ISO-45 on request.

\*\* Ø40 is only available with ISO-50 and milling-membrane (+).

### EXTENDER STANDARD CHUCK HCFL / HCFL+



ISO-50 appearance Ø6 - Ø25

For milling-membrane (+) specify + after art.no.

DS Ømm	Mount type	D1 Ømm	D2 Ømm	D3 Ømm	L1 mm	L2 mm	L3 mm	LS mm	Article- number
6	ISO-40	21,5	26	50	130	19,1	43,5	37,5	56700
	ISO-40	21,5	26	50	130-480	19,1	43,5	37,5	▲
	ISO-50	21,5	26	50	160	19,1	43,5	37,5	56710
	ISO-50	21,5	26	50	160-445	19,1	43,5	37,5	▲
8	ISO-40	23,5	28	50	130	19,1	43,5	37,5	56701
	ISO-40	23,5	28	50	130-480	19,1	43,5	37,5	▲
	ISO-50	23,5	28	50	160	19,1	43,5	37,5	56711
	ISO-50	23,5	28	50	160-445	19,1	43,5	37,5	▲
10	ISO-40	25,5	30	50	130	19,1	43,5	42,5	56702
	ISO-40	25,5	30	50	130-480	19,1	43,5	42,5	▲
	ISO-50	25,5	30	50	160	19,1	43,5	42,5	56712
	ISO-50	25,5	30	50	160-445	19,1	43,5	42,5	▲
12 *	ISO-40	27,5	32	50	130	19,1	44,5	47,5	56703
	ISO-40	27,5	32	50	130-480	19,1	44,5	47,5	▲
	ISO-45	27,5	32	50	160	19,1	44,5	47,5	56753
	ISO-45	27,5	32	50	160-445	19,1	44,5	47,5	▲
	ISO-50	27,5	32	50	160	19,1	44,5	47,5	56713
	ISO-50	27,5	32	50	160-445	19,1	44,5	47,5	▲
14	ISO-40	29,5	34	50	130	19,1	44,5	47,5	56704
	ISO-40	29,5	34	50	130-480	19,1	44,5	47,5	▲
	ISO-50	29,5	34	50	160	19,1	44,5	47,5	56714
16	ISO-50	29,5	34	50	160-445	19,1	44,5	47,5	▲
	ISO-40	33,5	38	50	130	19,1	47,5	52,5	56705
	ISO-40	33,5	38	50	130-480	19,1	47,5	52,5	▲
16	ISO-50	33,5	38	50	160	19,1	47,5	52,5	56715
	ISO-50	33,5	38	50	160-445	19,1	47,5	52,5	▲

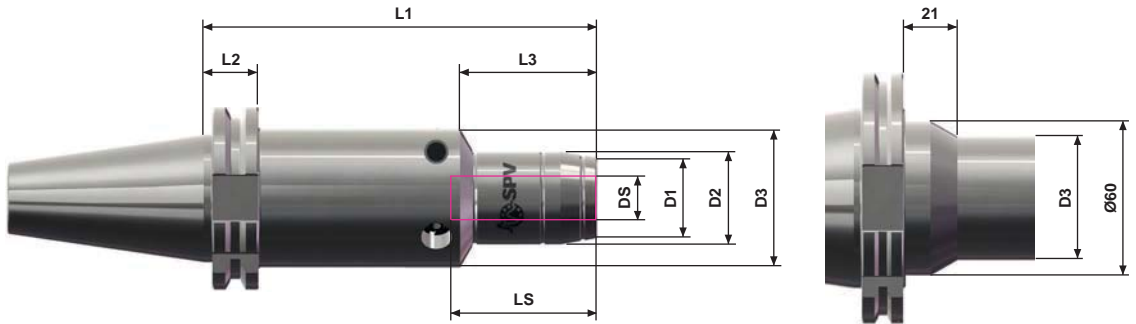
\* Dimensions that can be used with reduction sleeves.  
(Reduction sleeves, see p.40.)

▲ Depending on desired length (L1). Specify art.no / L1 on order.  
Other dimensions with ISO-45 on request.

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EXTENDED STANDARD CHUCK HCFL / HCFL+



ISO-50 appearance Ø6 - Ø25

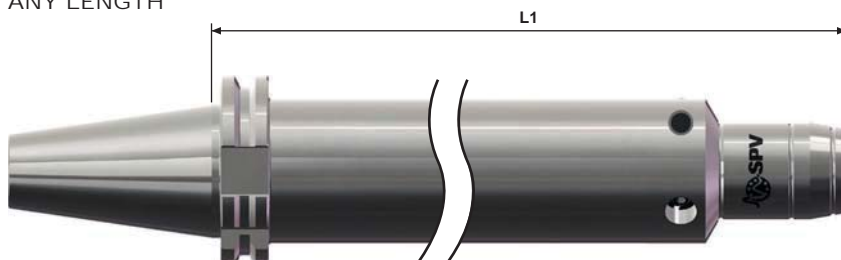
For milling-membrane (+) specify + after art.no.

DS Ømm	Mount type	D1 Ømm	D2 Ømm	D3 Ømm	L1 mm	L2 mm	L3 mm	LS mm	Article- number
18	ISO-40	35,5	40	48	130	19,1	47,5	52,5	56706
	ISO-40	35,5	40	48	130-480	19,1	47,5	52,5	▲
	ISO-50	35,5	40	48	160	19,1	47,5	52,5	56716
	ISO-50	35,5	40	48	160-445	19,1	47,5	52,5	▲
20 *	ISO-40	37,5	42	48	130	19,1	47,5	52,5	56707
	ISO-40	37,5	42	48	130-480	19,1	47,5	52,5	▲
	ISO-45	37,5	42	48	160	19,1	47,5	52,5	56757
	ISO-45	37,5	42	48	160-445	19,1	47,5	52,5	▲
	ISO-50	37,5	42	48	160	19,1	47,5	52,5	56717
	ISO-50	37,5	42	48	160-445	19,1	47,5	52,5	▲
25	ISO-40	43,5	48	48	130	19,1	114	55	56708
	ISO-40	43,5	48	48	130-480	19,1	---	55	▲
	ISO-50	43,5	48	48	160	19,1	123	55	56718
	ISO-50	43,5	48	48	160-445	19,1	---	55	▲
32 *	ISO-40	55,5	60	70	140	19,1	57	65	56709
	ISO-40	55,5	60	70	140-480	19,1	57	65	▲
	ISO-50	55,5	60	70	140	19,1	57	65	56719
	ISO-50	55,5	60	70	140-445	19,1	57	65	▲

\* Dimensions that can be used with reduction sleeves.  
(Reduction sleeves, see p.40.)

▲ Depending on desired length (L1). Specify art.no / L1 on order.  
Other dimensions with ISO-45 on request.

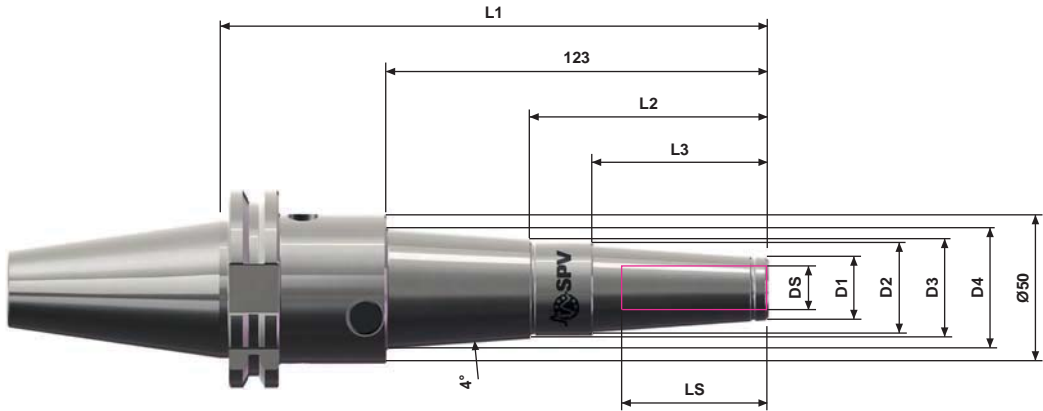
HCFL / HCFL+ IN ANY LENGTH



Ordering example: ISO-40, Ø20, L1 = 290 mm, type HCFL+ Article number: 56707+/290



TAPERED, LONG CHUCK WITH MILLING-MEMBRANE HCPK+

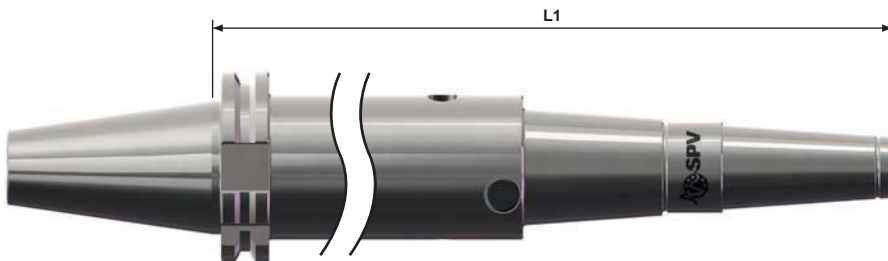


DS Ømm	Fäste typ	D1 Ømm	D2 Ømm	D3 Ømm	D4 Ømm	L1 mm	L2 mm	L3 mm	LS mm	Artikel- nummer
12 *	ISO-40	20	30	32	40,5	177	76,8	57	44	59183+
	ISO-40	20	30	32	40,5	217-480	76,8	57	44	▲
	ISO-50	20	30	32	40,5	177	76,8	57	44	59193+
	ISO-50	20	30	32	40,5	217-445	76,8	57	44	▲
20 *	ISO-40	32	39	42	50,5	177	74,8	55	52	59187+
	ISO-40	32	39	42	50,5	217-480	74,8	55	52	▲
	ISO-50	32	39	42	50,5	177	74,8	55	52	59197+
	ISO-50	32	39	42	50,5	214-445	74,8	55	52	▲

\* Dimensions that can be used with reduction sleeves.  
(Reduction sleeves, see p.40.)

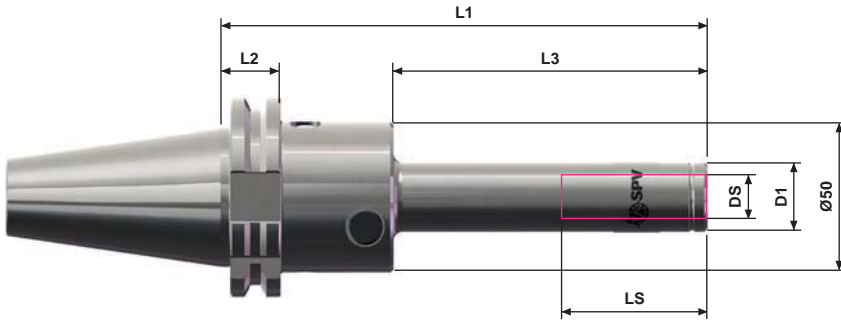
▲ Depending on desired length (L1). Specify art.no / L1 on order.  
Other dimensions with ISO-45 on request.

HCPK+ IN ANY LENGTH



Ordering example: ISO-40, Ø20, L1 = 277 mm, type HCPK+ Article number: 59187+/277

PEN-CHUCK WITH MILLING-MEMBRANE HCP+

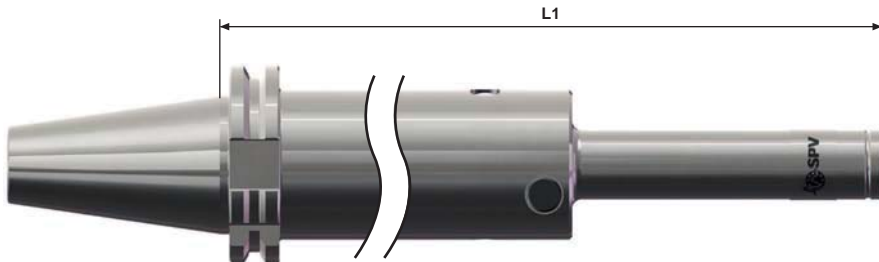


DS Ømm	Mount type	D1 Ømm	L1 mm	L2 mm	L3 mm	L5 mm	Article- number
6	ISO-40	22,5	105	19,1	50	37,5	59000+
	ISO-40	22,5	155	19,1	100	37,5	59010+
	ISO-50	22,5	105	19,1	50	37,5	59050+
	ISO-50	22,5	155	19,1	100	37,5	59060+
8	ISO-40	22,5	105	19,1	50	37,5	59001+
	ISO-40	22,5	155	19,1	100	37,5	59011+
	ISO-50	22,5	105	19,1	50	37,5	59051+
	ISO-50	22,5	155	19,1	100	37,5	59061+
10	ISO-40	22,5	105	19,1	50	42,5	59002+
	ISO-40	22,5	155	19,1	100	42,5	59012+
	ISO-50	22,5	105	19,1	50	42,5	59052+
	ISO-50	22,5	155	19,1	100	42,5	59062+
12 *	ISO-40	22,5	105	19,1	50	44	59003+
	ISO-40	22,5	155	19,1	100	44	59013+
	ISO-50	22,5	105	19,1	50	44	59053+
	ISO-50	22,5	155	19,1	100	44	59063+

\* Dimensions that can be used with reduction sleeves.  
(Reduction sleeves, see p.40.)

ISO-45 on request.

HCP+ IN ANY LENGTH



Ordering example: ISO-40, Ø12, L3 = 50 mm L1 = 290 mm, type HCP+ Article number: 59003+/290

EXTRA LONG, SLIM PEN-CHUCK HCPS

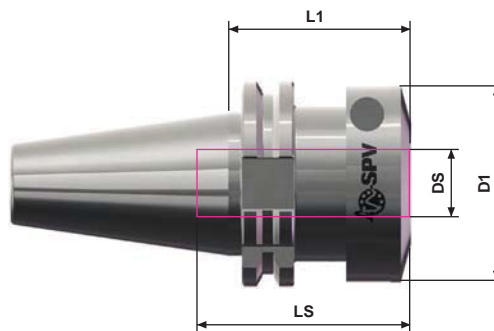


DS Ømm	Mount type	D1 Ømm	D2 Ømm	D3 Ømm	L1 Ømm	L2 Ømm	L3 Ømm	LS Ømm	Article- number
12 *	ISO-40	19,5	----	48	135	100	----	42	59623
	ISO-50	19,5	----	48	135	100	----	42	59633
12 *	ISO-40	19,5	24	48	185	150	52	42	59723
	ISO-50	19,5	24	48	185	150	52	42	59733

\* Dimensions that can be used with reduction sleeves.  
(Reduction sleeves, see p.40.)

Also available as extended chuck. Contact us for more info.  
ISO-45 on request.

EXTRA SHORT MILLING-CHUCK MED PLUS-MEMBRANE HCK+

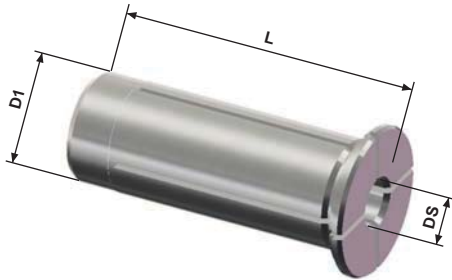


*HCK+ has an extended membrane which provides 600 Nm compared to 320 Nm on a standard chuck. Check the LS dimension!*

DS Ømm	Mount type	D1 Ømm	L1 Ømm	LS Ømm	Article- number
20	ISO-40	61	56	70	66122+

## Reduction sleeves HC

Cylindrical reduction sleeves for hydraulic chucks



*Sealed sleeve with rubber stop.*

*Sleeves can be converted to unsealed by removing the rubber stop.*

*Other dimensions on request.*

REDUCTION SLEEVES D = mm

D Ømm	DS Ømm	L mm	Article- number
12	3	44	90003
	4	44	90004
	5	44	90005
	6	44	90006
	8	44	90008
	10	44	90010
20	3	50	90103
	4	50	90104
	5	50	90105
	6	50	90106
	8	50	90108
	10	50	90110
	12	50	90112
	14	50	90114
	16	50	90116
32	6	63	90206
	8	63	90208
	10	63	90210
	12	63	90212
	14	63	90214
	16	63	90216
	18	63	90218
	20	63	90220
	25	63	90225

REDUCTION SLEEVES D = inch

D Ømm	DS Ømm	L mm	Article- number
3/4"	1/8"		67960
	5/32"		67961
	3/16"		67962
	1/4"		67963
	5/16"		67964
	3/8"		67965
	7/16"		67966
	1/2"		67967
	9/16"		67968
	5/8"		67969
1 1/4"	3/8"		67980
	1/2"		67981
	5/8"		67982
	3/4"		67983
	1"		67984

*We also provide sleeves with custom clamping diameter (DS) on request.*

## Operating instructions

### 1. Working temperature

Ideal and optimised working temperature is between 20° och 50 ° C. Do not store hydraulic chucks where the temperature could exceed 50 ° C.

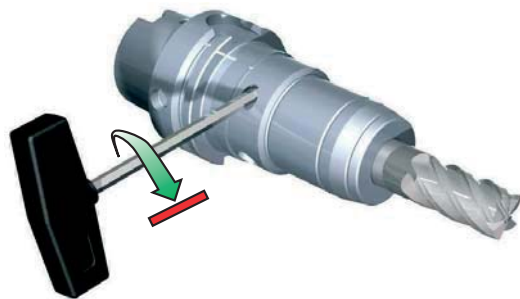


### 2. Cleaning

It is very important that both the tool shank and the inside of the chuck are free from grease and other contamination. Use an alcohol based degreaser.

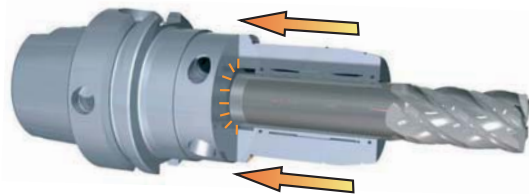
### 3. Tightening the membrane

The screw must always be tightened to the fixed stop. Never tighten the screw without a tool in the chuck, since there is a risk that the hydraulic chamber could be deformed.



### 4. Tool insertion length

The tool must be inserted to a fixed stop, to prevent the hydraulic chamber from being deformed by the pressure. When reduction sleeves are used, at least 60% of the length of the tool shank must be used.



### 5. Service and repair

If you experience that your hydraulic chuck doesn't clamp properly, this can be due to several things. A common explanation is that the hydraulic piston seal is worn out. We always perform service on our hydraulic chucks. Contact us for more information.

Important information about tool-shanks.

■ Standard chucks - **type HCF / HCFL / HCPS**

*In standard chucks from Ø6 up to Ø20, Weldon-shanks can be used directly in the chucks.  
Shank tolerance h6.*

■ Chucks with milling-membrane [+] - **type HCF+ / HCFL+ / HCP+ / HCPK+ / HCK+**

*In chucks with milling membrane (+) only cylindrical shanks can be used directly in the chuck.  
Shank tolerance h6.*

■ Other types of tool-shanks - **all except HCK+**

*Other types of tool shank such as Weldon, Whistlenotch can be used in combination with a  
reduction sleeve in the chuck.*

Torque-table

Tool diameter ØDS mm	HCF / HCF+	HCK+	HCP+	HCPK+	HCPS
6	15 Nm		15 Nm		
8	20 Nm		20 Nm		
10	40 Nm		40 Nm		
12	80 Nm		80 Nm	80 Nm	80 Nm
14	110 Nm				
16	130 Nm				
18	190 Nm				
20	320 Nm	600 Nm		320 Nm	
25	400 Nm				
32	650 Nm	1 200 Nm			
40	1 200 Nm				



**WARNING!**

*Disassembling and assembling a hydraulic chuck requires special tools and equipment.  
Always send the chuck to SPV Spintec representative if it needs to be repaired.*

*SPV Spintec also manufactures hydraulic chucks in fully customized versions for e.g. odd machines that are not equipped with a standard spindle. We meet the customers demands by designing and developing special chucks which fit the customers application. We manufacture special chucks for both internal and external clamping. The chucks can be designed for holding a tool or as a fixture for accurate clamping of a workpiece.*

