REAMING
INSERT REAMERS

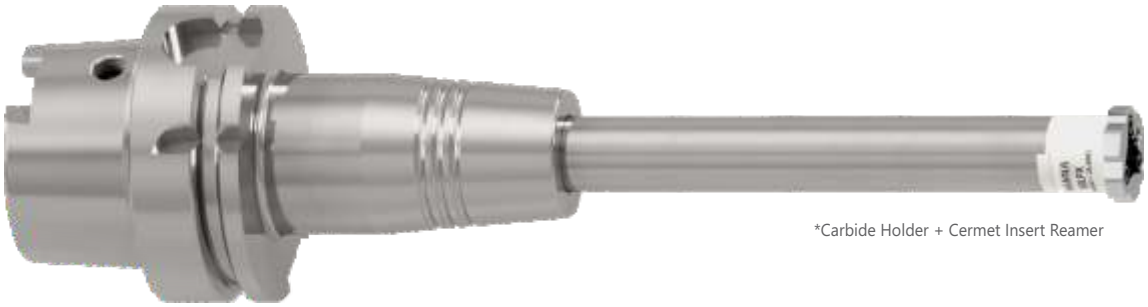
HANNA® Tools

HR Reamer Series:



*Modular HMS Holder + Coated Carbide Insert Reamer

- High-speed cutting: (Vc) up to 200 m/min
- Easy Insert Replacement: Reduced Downtime
- Wide compatibility: Our inserts and holders are 100% market compatible.
- Minimal cut edge length: Reduced biting and tearing increasing tool life
- Versatile: Hanna Modular System (HMS®) Tool holder system:
  With one tool it is possible to machine several diameters, simply by replacing the insert.

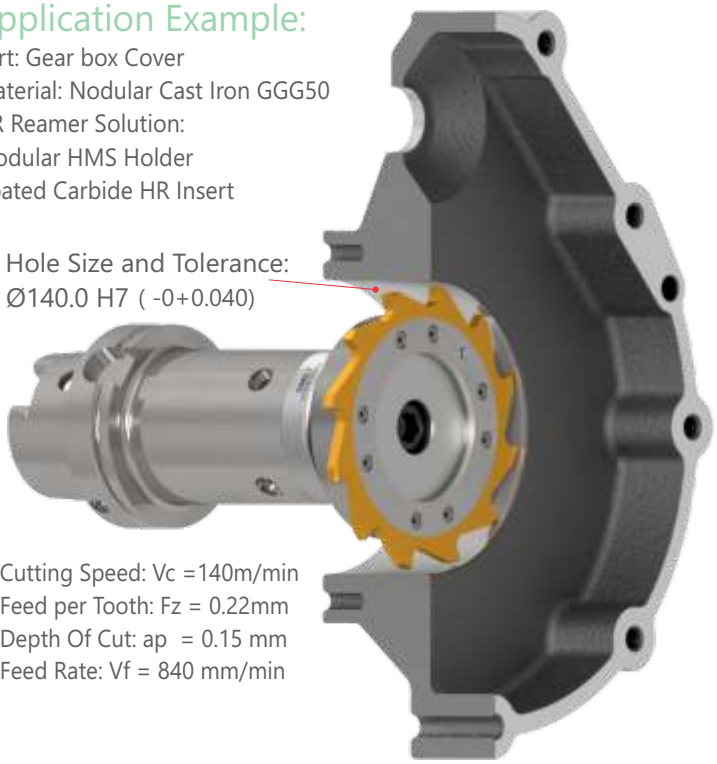


*Carbide Holder + Cermet Insert Reamer

Application Example:

Part: Gear box Cover
Material: Nodular Cast Iron GGG50
HR Reamer Solution:
Modular HMS Holder
Coated Carbide HR Insert

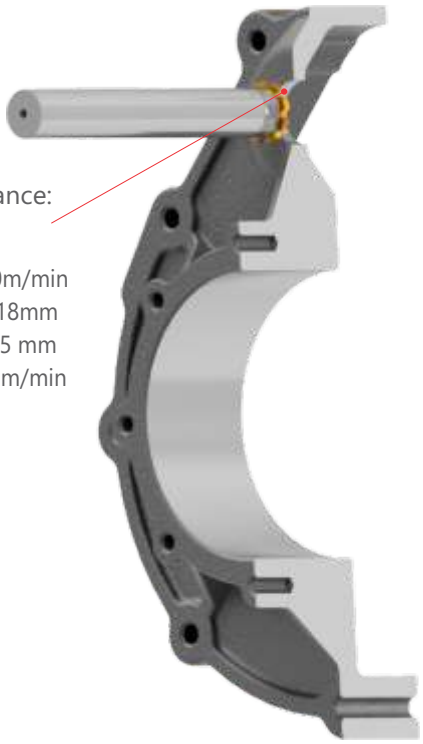
Hole Size and Tolerance:
Ø140.0 H7 (-0+0.040)



Cutting Speed: Vc =140m/min
Feed per Tooth: Fz = 0.22mm
Depth Of Cut: ap = 0.15 mm
Feed Rate: Vf = 840 mm/min

Hole Size and Tolerance:
Ø32.6 H6 (-0+0.016)

Cutting Speed: Vc =120m/min
Feed per Tooth: Fz = 0.18mm
Depth Of Cut: ap = 0.15 mm
Feed Rate: Vf = 1688 mm/min



HR System Assembly:

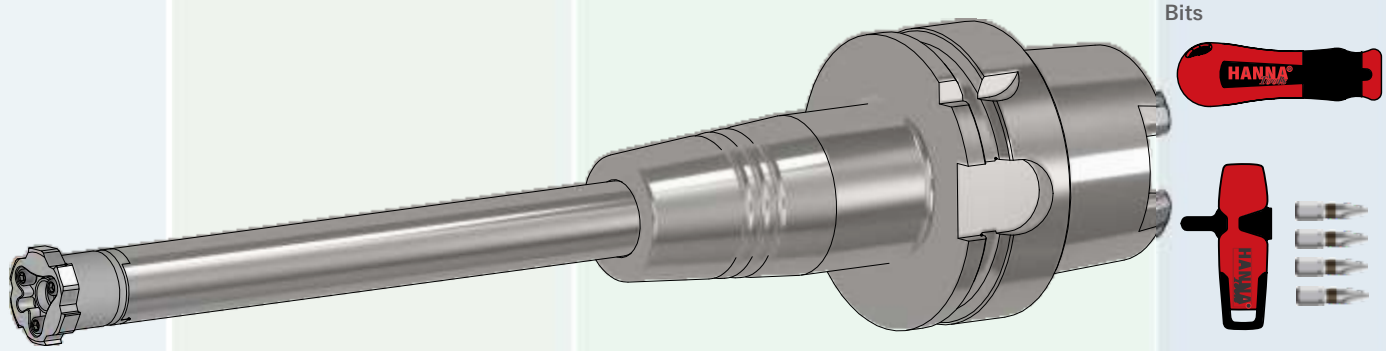
ø18.600 to 35.599

INSERTS pg. 3
Geometry
Codification

INSERT HOLDERS pg. 4
Short Insert Holders
Long Insert Holders
Carbide Insert Holders

TOOL HOLDERS (ARBOR)
Hydraulic Chuck Holders pg. 8
Hydraulic Chuck Collets
Floating Compensation Devices pg. 9

ACCESSORIES pg. 10
Torque Control
Srewdrivers
Screws
Bits



ø35.600 to 140.600

INSERTS pg. 3

INSERT HOLDERS pg. 4

SHANKS pg. 6

EXTENSIONS (Optional) pg. 7

TOOL HOLDERS (ARBOR) HMS pg. 6

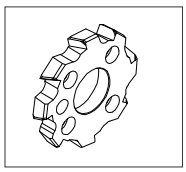
ACCESSORIES pg. 10
Torque Control
Srewdrivers
Screws Bits



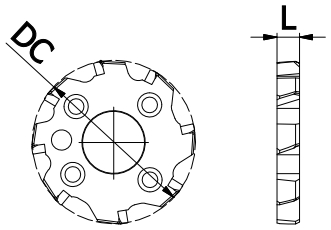


INSERT REAMER
HR Reamer Series

HANNA® Tools



HR Insert
(ø18.6 to 140.6):



DC	L	Z
ø18.600 ~ 23.600	4.3	6
ø23.601 ~ 43.600	4.3	8
ø43.601 ~ 60.600	4.3	10
ø60.601 ~ 100.600	4.3	12
ø100.601 ~ 140.600	5.3	12



HR N 34.6 H7 H X B M1
1 2 3 4 5 6 7 8

Order example, using hole diameter and ISO tolerance.

HR N 34.6 +0-42 H X B M1
1 2 3 4 5 6 7 8

Order example, using hole diameter and desviation. (µm)

HR N 34.585 D +/-003 H X B M1
1 2 3 4 5 6 7 8

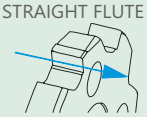
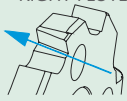
Order example, using reamer diameter and desviation. (µm)

1: HR Series Reamer.
2: Flute Geometry.
3: Hole Diameter.
4: Tolerance µm +/- , ISO Standard, or reamer nominal Ø (Using letter "D").
5: Material Grade.
6: Coating Grade.
7: Lead Geometry.
8: Cutting Edge Nano Finishing.

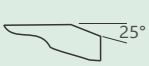
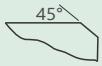
Material Grades and Coating:

Material Grade:	Symbol:	Suitable for:
Ultra Fine Carbide	H	Hardened cast alloys, Non Ferrous
Fine Carbide	N	Cast alloys, Non Ferrous
Cermet	M	Cast Irons, Steel
Coating Grade:	**Symbol:**	**Suitable for:**
Titanium Nitride (TiN)	X	Steel, Cast Iron, Powder Metal
Titanium Aluminum Nitride (TiAlN)	F	Cast Iron, Stainless Steel
Aluminum Chromiun Nitride (AlCrN)	A	Steel, Cast Iron

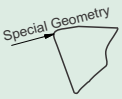
Flute Geometry:

L	S	R
LEFT FLUTE	STRAIGHT FLUTE	RIGHT FLUTE
		
Trought Holes Steel Alloys Parts	Blind and Trought Holes Aluminum and Cast Iron Parts	Blind Holes All types of materials

Lead Geometry:

A	B	Z
		
Steel Alloys Parts	Cast Iron, Bronze	Non Ferrous Alloys

Microfinish Geometry (Honning):

M0	M1	M2	ME
			
Light Honning	Medium Honning	Heavy Honning	Special Honning

ESG

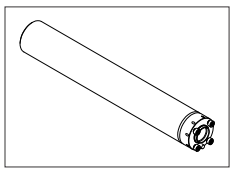
E.S.G. Tooling Services - Advantages of Inserts Repair:

In an increasingly ESG-driven global market, sustainability has become a priority for companies aiming to align with market demands.

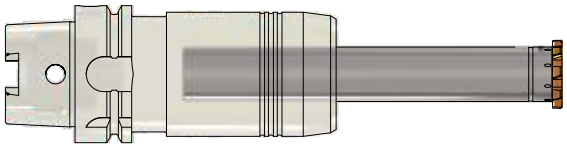
One of the key advantages of tool repairing rather than purchasing new ones is the significant reduction of waste. The manufacturing of new tools consumes large amounts of natural resources and emits pollutants during the production process.

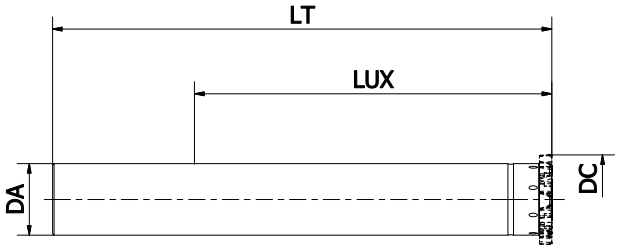
By repairing tools, their lifespan is extended, preventing premature disposal and, consequently, reducing the need for new resources to manufacture more tools. This approach positively impacts the environment by decreasing the demand for materials and reducing the amount of waste, while also offering a considerable financial saving. Discover HANNA repair services.
We can restore your Inserts, bringing them back to life while contributing to planet preservation.

INSERT REAMER
HR Reamer Series



Insert Holders (ø18.6 to 35.6):





Short Holders - Steel Body:

SYSTEM	DC RANGE	L	LUX	DA	CODE (TROUGHT HOLE)	CODE (BLIND HOLE)
0	18.601 - 23.600	128	80	16	S0CRT	S0CRB
1	23.601 - 28.600	145	95	20	S1CRT	S1CRB
2	28.601 - 35.600	170	110	25	S2CRT	S2CRB

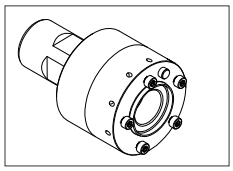
Long Holders - Steel Body:

SYSTEM	DC RANGE	L	LUX	DA	CODE (TROUGHT HOLE)	CODE (BLIND HOLE)
0	18.601 - 23.600	208	160	16	S0LRT	S0LRB
1	23.601 - 28.600	240	190	20	S1LRT	S1LRB
2	28.601 - 35.600	274	214	25	S2LRT	S2LRB

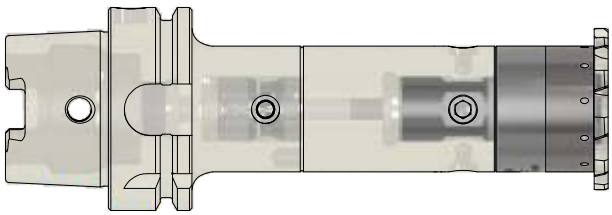
Long Holders Xtreme - Carbide Body:

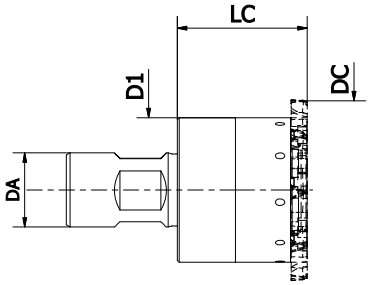


SYSTEM	DC RANGE	L	LUX	DA	CODE (TROUGHT HOLE)	CODE (BLIND HOLE)
0	18.601 - 23.600	208	160	16	S0LRTX	S0LRBX
1	23.601 - 28.600	240	190	20	S1LRTX	S1LRBX
2	28.601 - 35.600	274	214	25	S2LRTX	S2LRBX



Insert Holders (ø35.601 to 140.6):

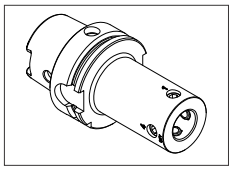




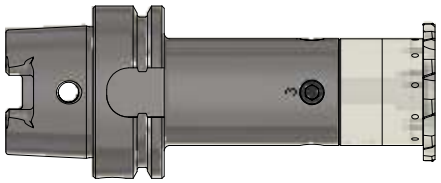
SYSTEM	DC RANGE	LC	D1	DA	CODE (TROUGHT HOLE)	CODE (BLIND HOLE)
3	35.601 - 43.600	30	32	18	S3CRT	S3CRB
4	43.601 - 51.600	35	39	20	S4CRT	S4CRB
5	51.601 - 60.600	40	46	25	S5CRT	S5CRB
6	60.601 - 80.600	50	56	32	S6CRT	S6CRB
7	80.601 - 100.600	60	76	40	S7CRT	S7CRB
8	100.601 - 120.600	60	76	40	S8CRT	S8CRB
9	120.601 - 140.600	60	76	40	S9CRT	S9CRB

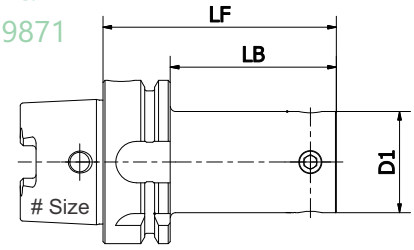
INSERT REAMER
HR Reamer Series

HANNA® Tools



Adaptors:
With Integrated Radial Adjustment:
DIN 69893 HSK / JIS 6339 MAS-BT / DIN 69871





DIN 69893 HSK:

CUTTING Ø RANGE	# Size	LF	LB	D1	CODE
35.601 - 43.600	HSK 63	85	59	32	A HSK63 S3 85
43.601 - 51.600	HSK 63	90	64	39	A HSK63 S4 90
51.601 - 60.600	HSK 63	100	74	46	A HSK63 S5 100
60.601 - 80.600	HSK 63	105	79	56	A HSK63 S6 105
80.601 - 140.600	HSK 63	120	94	76	A HSK63 S7 120
35.601 - 43.600	HSK 100	90	61	32	A HSK100 S3 85
43.601 - 51.600	HSK 100	95	66	39	A HSK100 S4 90
51.601 - 60.600	HSK 100	100	71	46	A HSK100 S5 100
60.601 - 80.600	HSK 100	120	91	56	A HSK100 S6 105
80.601 - 140.600	HSK 100	130	101	76	A HSK100 S7 120

DIN 69871-AD:

CUTTING Ø RANGE	# Size	LF	LB	D1	CODE
35.601 - 43.600	SK 40	65	46	32	A SK 40 S3 65
43.601 - 51.600	SK 40	65	46	39	A SK 40 S4 65
51.601 - 60.600	SK 40	75	56	46	A SK 40 S5 75
60.601 - 80.600	SK 40	80	61	56	A SK 40 S6 80
80.601 - 140.600	SK 40	95	76	76	A SK 40 S7 95
35.601 - 43.600	SK 50	65	46	32	A SK 50 S3 65
43.601 - 51.600	SK 50	65	46	39	A SK 50 S4 65
51.601 - 60.600	SK 50	75	56	46	A SK 50 S5 75
60.601 - 80.600	SK 50	80	66	56	A SK 50 S6 80
80.601 - 140.600	SK 50	95	76	76	A SK 50 S7 95

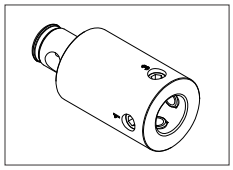
DIN 69871-B:

CUTTING Ø RANGE	# Size	LF	LB	D1	CODE
35.601 - 43.600	SK 40	65	46	32	A SKB 40 S3 65
43.601 - 51.600	SK 40	65	46	39	A SKB 40 S4 65
51.601 - 60.600	SK 40	75	56	46	A SKB 40 S5 75
60.601 - 80.600	SK 40	80	61	56	A SKB 40 S6 80
80.601 - 140.600	SK 40	95	76	76	A SKB 40 S7 95
35.601 - 43.600	SK 50	65	46	32	A SKB 50 S3 65
43.601 - 51.600	SK 50	65	46	39	A SKB 50 S4 65
51.601 - 60.600	SK 50	75	56	46	A SKB 50 S5 75
60.601 - 80.600	SK 50	80	66	56	A SKB 50 S6 80
80.601 - 140.600	SK 50	95	76	76	A SKB 50 S7 95

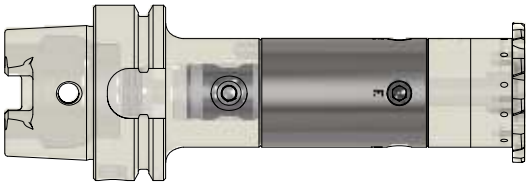
JIS 6339 MAS-BT

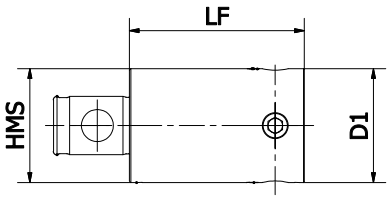
CUTTING Ø RANGE	# Size	LF	LB	D1	CODE
35.601 - 43.600	BT 40	60	33	32	A BT 40 S3 60
43.601 - 51.600	BT 40	65	38	39	A BT 40 S4 65
51.601 - 60.600	BT 40	70	43	46	A BT 40 S5 70
60.601 - 80.600	BT 40	80	53	56	A BT 40 S6 80
80.601 - 140.600	BT 40	95	65	76	A BT 40 S7 95
35.601 - 43.600	BT 50	65	27	32	A BT 50 S3 65
43.601 - 51.600	BT 50	65	27	39	A BT 50 S4 65
51.601 - 60.600	BT 50	75	37	46	A BT 50 S5 75
60.601 - 80.600	BT 50	85	47	56	A BT 50 S6 85
80.601 - 140.600	BT 50	95	57	76	A BT 50 S7 95

INSERT REAMER
HR Reamer Series



Shanks:
HMS X Integrated Radial Adjustment



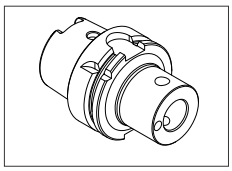


Short Size:

CUTTING Ø RANGE	HMS	LF	D1	CODE
35.601 - 43.600	HMS 32	55	32	A HMS32 S3 55
43.601 - 51.600	HMS 40	60	39	A HMS40 S4 60
51.601 - 60.600	HMS 50	70	46	A HMS50 S5 70
60.601 - 80.600	HMS 50	80	56	A HMS50 S6 80
80.601 - 140.600	HMS 63	100	76	A HMS63 S7 100

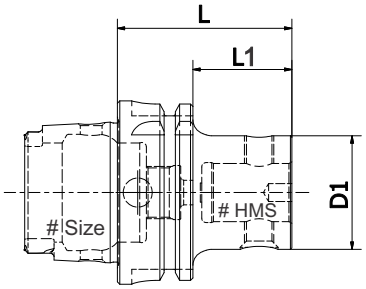
Long Size:

CUTTING Ø RANGE	HMS	LF	D1	CODE
35.601 - 43.600	HMS 32	80	32	A HMS32 S3 80
43.601 - 51.600	HMS 40	100	39	A HMS40 S4 100
51.601 - 60.600	HMS 50	120	46	A HMS50 S5 120
60.601 - 80.600	HMS 50	140	56	A HMS50 S6 140
80.601 - 140.600	HMS 63	160	76	A HMS63 S7 160



Tool Holders HMS: (Hanna Modular System)
DIN 69893 HSK - JIS 6339 MAS-BT - DIN 69871





DIN 69893 HSK

# SIZE	HMS	L	L1	D1	CODE
HSK-50	HMS 40	65	40	42	TH40 HSK50 65
HSK-63	HMS 32	60	35	32	TH32 HSK63 60
HSK-63	HMS 40	65	24	40	TH40 HSK63 65
HSK-63	HMS 50	70	45	50	TH50 HSK63 70
HSK-63	HMS 63	80	50	63	TH63 HSK63 80
HSK-100	HMS 32	60	35	32	TH32 HSK100 60
HSK-100	HMS 40	80	40	50	TH40 HSK100 80
HSK-100	HMS 50	80	40	63	TH50 HSK100 80
HSK-100	HMS 63	80	50	80	TH63 HSK100 80
HSK-100	HMS 80	90	55	90	TH80 HSK100 90

DIN 69871 AD/B

# SIZE	HMS	L	L1	D1	CODE
SK-40	HMS 32	50	31	32	TH32 SK**40 50
SK-40	HMS 40	35	16	40	TH40 SK**40 35
SK-40	HMS 40	50	31	40	TH40 SK**40 50
SK-40	HMS 50	50	31	50	TH50 SK**40 50
SK-40	HMS 63	65	46	63	TH63 SK**40 65
SK-50	HMS 32	60	41	32	TH32 SK**50 60
SK-50	HMS 40	60	41	40	TH40 SK**50 60
SK-50	HMS 50	60	41	50	TH50 SK**50 60
SK-50	HMS 63	60	41	63	TH63 SK**50 60
SK-50	HMS 80	70	52	80	TH63 SK**50 70

(Specify the variation AD or B Replacing "**" with the desired model ex: TH32SKAD4050 for DIN 69871-AD or TH32SKB4050 for 69871-B)

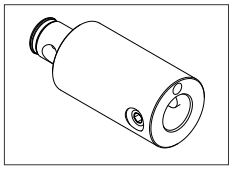
INSERT REAMER
HR Reamer Series

HANNA® Tools

Tool Holders HMS: (Hanna Modular System)

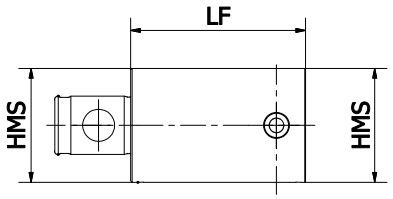
JIS 6339 MAS-BT

# SIZE	HMS	L	L1	D1	CODE
SK-40	HMS 32	50	31	32	TH32 SK**40 50
SK-40	HMS 40	35	16	40	TH40 SK**40 35
SK-40	HMS 40	50	31	40	TH40 SK**40 50
SK-40	HMS 50	50	31	50	TH50 SK**40 50
SK-40	HMS 63	65	46	63	TH63 SK**40 65
SK-50	HMS 32	60	41	32	TH32 SK**50 60
SK-50	HMS 40	60	41	40	TH40 SK**50 60
SK-50	HMS 50	60	41	50	TH50 SK**50 60
SK-50	HMS 63	60	41	63	TH63 SK**50 60
SK-50	HMS 80	70	52	80	TH63 SK**50 70



Extensions HMS: (Hanna Modular System)





Short Extensions:

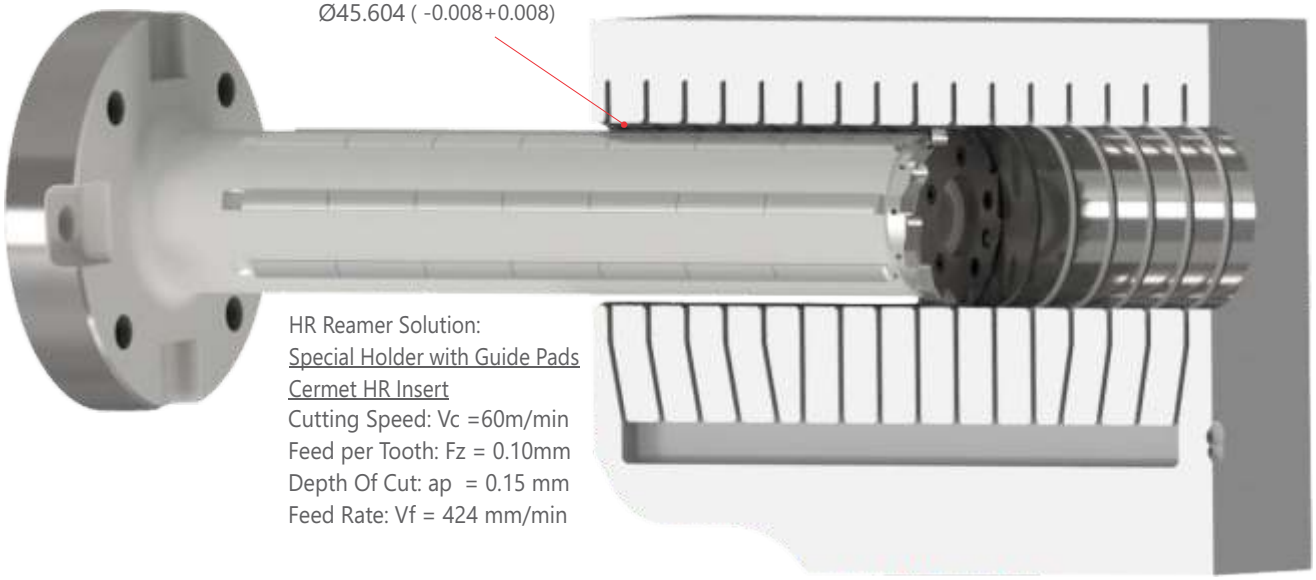
HMS	LF	CODE
HMS 32	35	E HMS32 L35
HMS 40	45	E HMS40 L45
HMS 50	55	E HMS50 L55
HMS 63	65	E HMS63 L65
HMS 80	80	E HMS80 L80

Long Extensions:

HMS	LF	CODE
HMS 32	70	E HMS32 L70
HMS 40	80	E HMS40 L80
HMS 50	100	E HMS50 L100
HMS 63	125	E HMS63 L125
HMS 80	150	E HMS80 L150

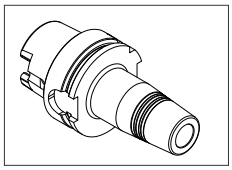
Application Example:

Part: Hydraulic System
Material: Hardened Forged Steel 58HRC
Hole Size and Tolerance:
Ø45.604 (-0.008+0.008)



HR Reamer Solution:
Special Holder with Guide Pads
Cermet HR Insert
Cutting Speed: Vc =60m/min
Feed per Tooth: Fz = 0.10mm
Depth Of Cut: ap = 0.15 mm
Feed Rate: Vf = 424 mm/min

INSERT REAMER
Tool Holders

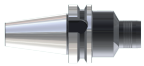


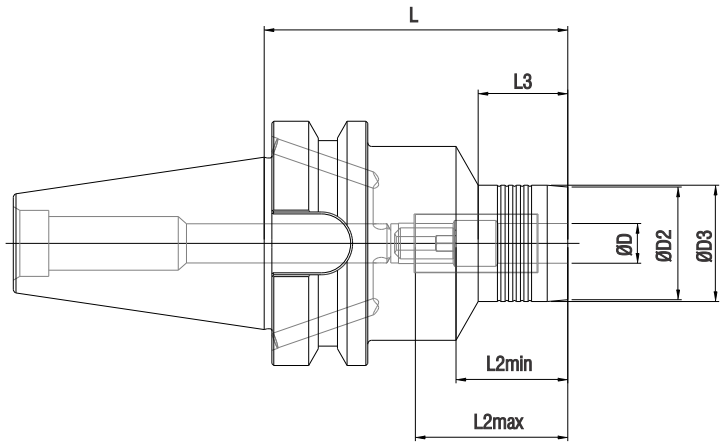
Tool Holders:
Hydraulic Chuck Holders
JIS 6339 MAS-BT / DIN 69871

HANNA´s Hydraulic Expansion Chucks are used in several operations like Milling, Drilling, Reaming, etc. The high repeatability and versatility in the tools holding assures a fast and precise manufacturing process.

- Balancing G2,5 to 10.000 RPM.
- Repeatability smaller than 5µm.
- Special configurations upon request.

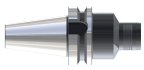
Hydraulic Expansion Chuck DIN69871-AD+B

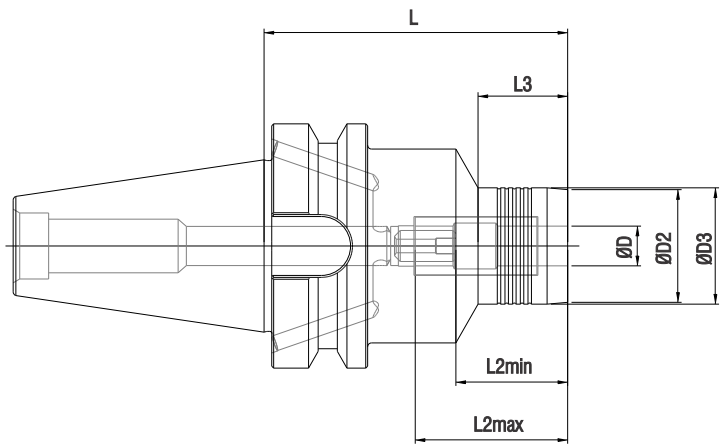




ISO	ØD	ØD2	ØD3	L	L2 min	L2 max	L3	Code
40	6,0	22,0	26,0	65	27,5	37,5	23	075.01314-0000
40	8,0	24,0	28,0	65	27,5	37,5	23	075.01315-0000
40	10,0	26,0	30,0	65	32,5	42,5	23	075.01316-0000
40	12,0	28,0	32,0	65	37,5	47,5	23	075.01317-0000
40	16,0	34,0	38,0	65	42,5	52,5	23	075.01318-0000
40	20,0	38,0	42,0	65	42,5	52,5	23	075.01319-0000
50	6,0	22,0	26,0	90	27,5	37,5	30	075.01381-0000
50	8,0	24,0	28,0	90	27,5	37,5	30	075.01382-0000
50	10,0	26,0	30,0	90	32,5	42,5	32	075.01383-0000
50	12,0	28,0	32,0	90	37,5	47,5	32	075.01384-0000
50	16,0	34,0	38,0	90	42,5	52,5	34	075.01385-0000
50	20,0	38,0	42,0	90	42,5	52,5	34	075.01386-0000

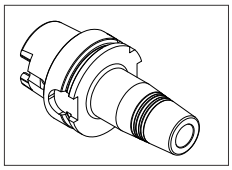
Hydraulic Expansion Chuck JIS B339 (BT)





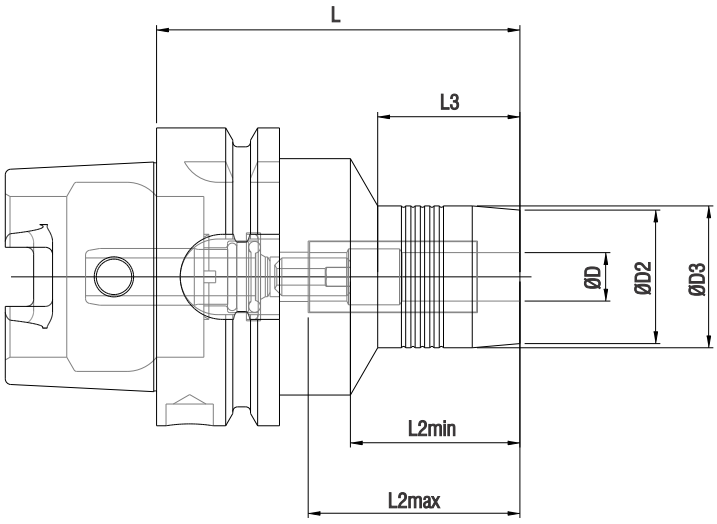
BT	ØD	ØD2	ØD3	L	L2 min	L2 max	L3	Code
40	6,0	22,0	26,0	65	27,5	37,5	23	075.01390-0000
40	8,0	24,0	28,0	65	27,5	37,5	23	075.01391-0000
40	10,0	26,0	30,0	65	32,5	42,5	23	075.01364-0000
40	12,0	28,0	32,0	65	37,5	47,5	23	075.01348-0000
40	16,0	34,0	38,0	65	42,5	52,5	23	075.01347-0000
40	20,0	38,0	42,0	65	42,5	52,5	23	075.01363-0000
40	25,0	55,0	59,0	100	51,0	61,0	25	075.01362-0000
40	32,0	58,0	62,0	105	55,0	65,0	25	075.01392-0000
50	6,0	22,0	26,0	90	27,5	37,5	30	075.01393-0000
50	8,0	24,0	28,0	90	27,5	37,5	30	075.01394-0000
50	10,0	26,0	30,0	90	32,5	42,5	32	075.01301-0000
50	12,0	28,0	32,0	90	37,5	47,5	32	075.01395-0000
50	16,0	34,0	38,0	90	42,5	52,5	34	075.01303-0000
50	20,0	38,0	42,0	90	42,5	52,5	34	075.01353-0000
50	25,0	55,0	59,0	105	51,0	61,0	36	075.01396-0000
50	32,0	58,0	62,0	115	55,0	65,0	36	075.01397-0000

INSERT REAMER
Tool Holders



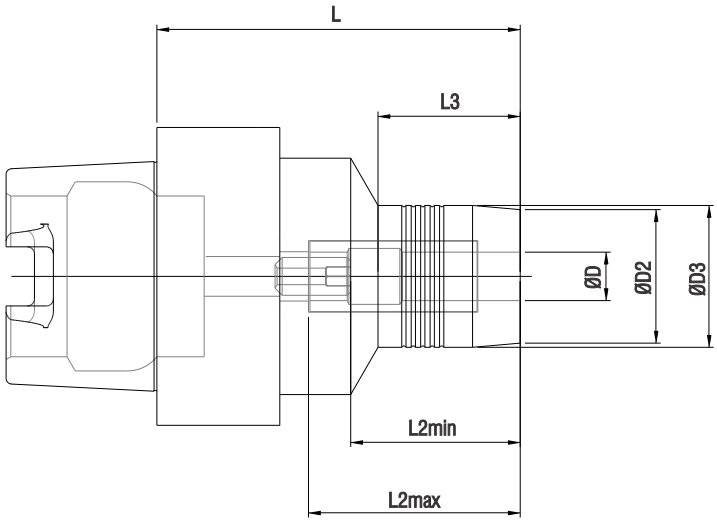
Tool Holders:
Hydraulic Chuck Holders
DIN 69893 HSK / Flange R-A

Hydraulic Expansion Chuck DIN69893-A (HSK-A)



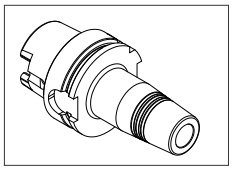
HSK-A	ØD	ØD2	ØD3	L	L2 min	L2 max	L3	Code:
40	6,0	22,0	26,0	70	27	37	36	075.01320-0000
40	8,0	24,0	28,0	70	27	37	36	075.01321-0000
40	10,0	26,0	30,0	75	31	41	42	075.01322-0000
40	12,0	28,0	32,0	80	36	46	48	075.01323-0000
50	6,0	22,0	26,0	70	27	37	28	075.01398-0000
50	8,0	24,0	28,0	70	27	37	28	075.01399-0000
50	10,0	26,0	30,0	75	31	41	34	075.01400-0000
50	12,0	28,0	32,0	85	36	46	44	075.01401-0000
50	14,0	30,0	34,0	85	36	46	44	075.01402-0000
50	16,0	34,0	38,0	90	39	49	30	075.01403-0000
50	18,0	36,0	40,0	90	39	49	30	075.01404-0000
50	20,0	38,0	42,0	90	39	49	29	075.01405-0000
63	6,0	22,0	26,0	70	27	37	24	075.01324-0000
63	8,0	24,0	28,0	70	27	37	24	075.01325-0000
63	10,0	26,0	30,0	80	31	41	35	075.01305-0000
63	12,0	28,0	32,0	85	36	46	40	075.01306-0000
63	14,0	30,0	34,0	85	36	46	40	075.01406-0000
63	16,0	34,0	38,0	90	39	49	46	075.01267-0000
63	18,0	36,0	40,0	90	39	49	47	075.01407-0000
63	20,0	38,0	42,0	90	41	51	48	075.01268-0000
63	25,0	53,0	57,0	120	47	57	59	075.01408-0000
63	32,0	60,0	64,0	125	51	61	63	075.01409-0000
100	6,0	22,0	26,0	75	27	37	26	075.01410-0000
100	8,0	24,0	28,0	75	27	37	26	075.01411-0000
100	10,0	26,0	30,0	90	31	41	42	075.01412-0000
100	12,0	28,0	32,0	95	36	46	47	075.01413-0000
100	14,0	30,0	34,0	95	36	46	47	075.01414-0000
100	16,0	34,0	38,0	100	39	49	53	075.01372-0000
100	18,0	36,0	40,0	100	39	49	53	075.01415-0000
100	20,0	38,0	42,0	105	41	51	59	075.01416-0000
100	25,0	53,0	57,0	110	47	57	62	075.01417-0000
100	32,0	60,0	64,0	110	51	61	62	075.01418-0000

Hydraulic Expansion Chuck DIN69893-C (HSK-C)

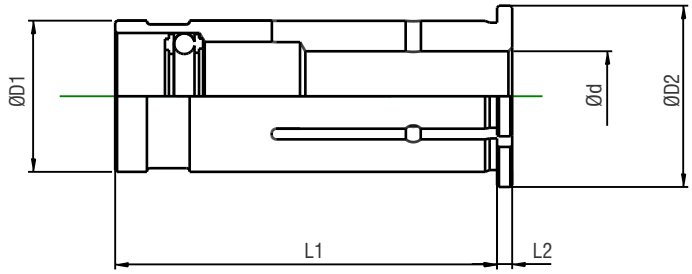


HSK-C	ØD	ØD2	ØD3	L	L2 min	L2 max	L3	Code:
40	6,0	22,0	26,0	60	27	37	35	075.01419-0000
40	8,0	24,0	28,0	60	27	37	36	075.01420-0000
40	10,0	26,0	30,0	65	31	41	41	075.01421-0000
40	12,0	28,0	32,0	70	36	46	47	075.01422-0000
50	6,0	22,0	26,0	60	27	37	30	075.01423-0000
50	8,0	24,0	28,0	60	27	37	30	075.01424-0000
50	10,0	26,0	30,0	65	31	41	35	075.01425-0000
50	12,0	28,0	32,0	75	36	46	44	075.01426-0000
50	14,0	30,0	34,0	75	36	46	46	075.01427-0000
50	16,0	34,0	38,0	80	39	49	51	075.01428-0000
50	18,0	36,0	40,0	80	39	49	51	075.01429-0000
50	20,0	38,0	42,0	80	41	51	52	075.01430-0000
63	6,0	22,0	26,0	60	27	37	25	075.01431-0000
63	8,0	24,0	28,0	60	31	41	25	075.01432-0000
63	10,0	26,0	30,0	65	31	41	31	075.01433-0000
63	12,0	28,0	32,0	75	36	46	41	075.01434-0000
63	14,0	30,0	34,0	75	36	46	42	075.01435-0000
63	16,0	34,0	38,0	80	39	49	48	075.01436-0000
63	18,0	36,0	40,0	80	39	49	48	075.01437-0000
63	20,0	38,0	42,0	80	41	51	49	075.01438-0000
63	25,0	53,0	57,0	95	47	57	63	075.01439-0000
63	32,0	59,0	63,0	100	51	61	63	075.01440-0000

INSERT REAMER
Tool Holders



Tool Holders:
Hydraulic Chuck Holders
Reduction Collets



ØD1	ØD2	L1	L2	Ød	CODE:
12	16	44,5	2	3,0	075.01441-0000
				4,0	075.01442-0000
				5,0	075.01443-0000
				6,0	075.01444-0000
				8,0	075.01445-0000
20	24	50,5	2	3,0	075.01307-0000
				4,0	075.01446-0000
				5,0	075.01447-0000
				6,0	075.01308-0000
				7,0	075.01448-0000
				8,0	075.01449-0000
				9,0	075.01450-0000
				10,0	075.01451-0000
				11,0	075.01452-0000
				12,0	075.01453-0000
				13,0	075.01454-0000
				14,0	075.01455-0000
				15,0	075.01456-0000
				16,0	075.01457-0000
				17,0	075.01458-0000
32	36	60,5	3	6,0	075.01459-0000
				8,0	075.01460-0000
				10,0	075.01461-0000
				12,0	075.01462-0000
				14,0	075.01463-0000
				16,0	075.01464-0000
				18,0	075.01465-0000
				20,0	075.01466-0000
				25,0	075.01467-0000

