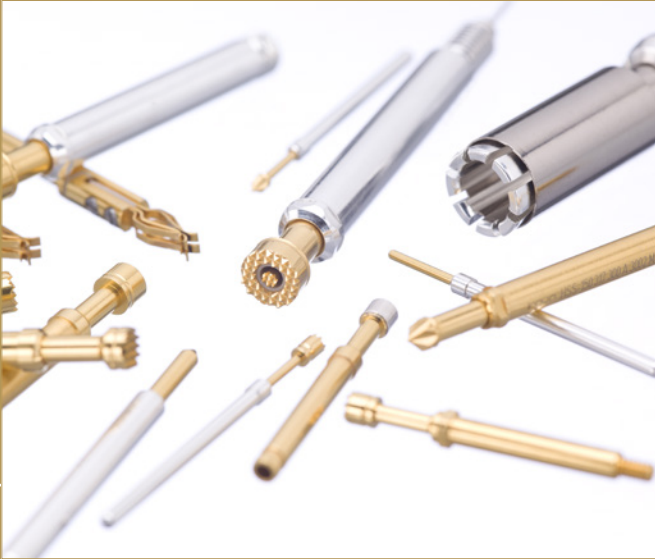




ingun[®]

Test Probes · Test Fixtures

INGUN
High Current Test Probes
High current rating
Low internal resistance



INGUN High Current Test Probes

Power for your industry

INGUN high current test probes are used by our customers in a variety of industries. Depending on the series, the HSS can transmit 400 A of continuous current.

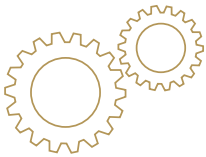
Your solution is not included?

Please contact us and we'll develop and manufacture your customized solution - tailor made for your requirements.

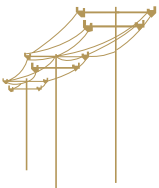
Automotive



Engineering



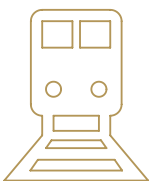
Energy Supply



Aviation and Space Technology



Railway Technology



Benefits and properties of INGUN high current test probes

- high current rating for small dimension (up to 400 A)
- minimal internal resistance for minimal warming and precise measurement (low Ohm test probe)
- high temperature endurance
- durability due to optimal material selection, plating and proven manufacturing processes
- highly robust against side loads

Diverse uses

- high current transmission in function test
- precise measurements and signal transmission
- stress test (burn-in and run-in test)
- power-supply inspection
- direct and alternate current
- mounted permanent contact element
















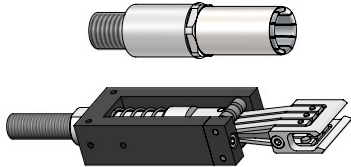


Area of application

- in test field and in production
- test fixtures and in-line systems
- standardised interface solutions
- as mounted permanent contact element
- machinery and plant engineering



INGUN offers an unrivaled range of high current test probes of quality proven a million times over – Made in Germany.

The portfolio contains high current test probes for standard applications, customer-specific applications, as well as tool solutions designed specifically for assembly.

	Series	Max. Current	Image	Page
Standard HSS (metric standard) approved design, suitable for most applications	HSS-118 / M	20 A		5/6
	HSS-120 / M	30 A		7/8
	HSS-150 / M	50 A		9/10
	HSS-621 M	75 A		11
	HSS-623 M	100 A		12
Short stroke HSS short stroke and small dimensions	HSS-827 M	20 A		13
	HSS-520 / M HSS-552	30 A 50 A		14 15
Long stroke HSS (long contact distance)	HSS-150 MH	50 A		15
International Standard	HSS-005	40 A		16
Robust HSS for harsh environmental conditions and possible side loads	HSS-2259 - 2532	25-400 A		17
High current clip for flat connectors and posts	KK-541	20 A		18
	HKR-612 M	100 A		19
Four-wire clip and Dipole HSS for four-wire measurement	VK-541	10 A		20
	HSS-624 M	100 A		21
Compatible GKS probes for HSS probes	GKS-xxx	5-8 A		22
High current clip for round and flat contacts	Diverse	Diverse		23
High current contact tips	HK-2501 HK-2504	50 A 100 A		23
High current clips for flat contacts	HKF-615	225 A		24
Insertion tools to plug in HSS test probes	SW-GKS SW-KS-xxx	-		25
Torque wrench and insertion bits to screw in HSS test probes	DW-X-S DW-X BIT-GKS-xxx	-		26

Information

Standard Applications

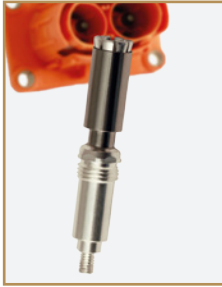
Customer-spec. Applications

Tools

Industries and applications

INGUN high current test probes are used in many industries and applications with high currents, such as measurement and testing in production as well as mounted contact

elements. A further application field is precise measurements, where test probes with the lowest possible internal resistance are needed.



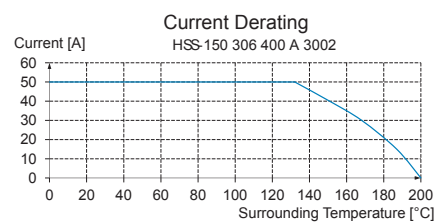
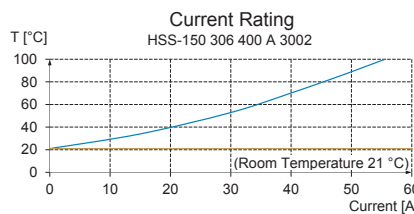
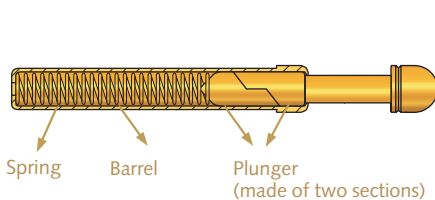
Function, construction and current rating

For secure transmission of high currents, the plunger of the INGUN high current test probes is divided into two parts. During the stroke motion both plunger parts are deflected away from each other in a radial direction. This causes the plunger parts to press against the barrel and the internal resistance (R_i) is reduced. Using this principle, high current transfers with minimal heat generation are possible. The power loss in heat is calculated using the formula $P_V = R_i \cdot I^2$. The permitted current rating for each test probe can be taken from the current rating charts. The maximum permitted

ambient temperature at nominal current can be read from the current de-rating charts.

Remark: the measurements for the charts were conducted using test probes with tip style 06 (serrated) and spring force 1.5 N. Using other tip styles with smaller resulting contact surfaces reduces the nominal current rating. Furthermore, spring forces < 1.5 N are not recommended for high current applications.

Example: HSS-150



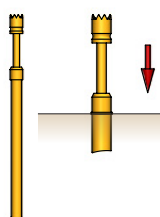
Mounting and connecting

Depending on the application and the HSS test probe, various installation options are available. These are either plugged or screwed into the receptacle. Likewise, the assembly of HSS is possible without the receptacle. We recommend using a screw-in HSS for applications with vibrations and overhead installation, and where there is a danger of the probe falling out of the receptacle (snapping effect).

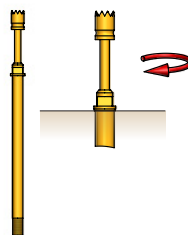
Product numbers for screw-in probes end with the abbreviation "M".

The electrical connection is made through a solder-cup or thread for eyelet rings.

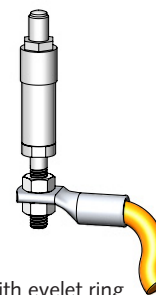
The tools suitable for assembling high current test probes are listed on pages 25/26.



HSS pressed-in



HSS screwed-in



HSS with eyelet ring

Overview of INGUN high current test probes

<div style="text-align: center;">Technical features of high current test probes</div> Style und application notes	Series / Range	Max. current (A)	Grid (mm)	Stroke (mm)	Max. Stroke (mm)	Thread (Y/N)	Diameter (mm)	Length (mm)	Installation height with KS (mm)	Page	Information
Standard HSS (metric standard) approved design, suitable for most applications	HSS-118	20	2,54	4	5,3	N	2,0	32,3	10,5	5	Standard Applications
	HSS-118 M	20	2,54	4	5,3	Y	2,3	35,8	10,5	6	
	HSS-120	30	4,00	4	5,3	N	3,0	27,3	10,5	7	
	HSS-120 M	30	4,00	4	5,3	Y	3,6	28,3	10,5	8	
	HSS-150	50	5,08	4,4	5,5	N	4,0	38,5	10,8	9	
	HSS-150 M	50	5,08	4,4	5,5	Y	4,0	43,1	10,8	10	
	HSS-621 M	75	6,35	4,4	5,5	Y	5,6	43,1	10,8	11	
	HSS-623 M	100	7,60	4,4	5,5	Y	6,4	52,1	10,8	12	
Short stroke HSS short stroke and small dimensions	HSS-827 M	20	2,54	3,5	4,5	Y	2,0	19,5	8,7	13	
	HSS-520 / M	30	4,00	2,8	3,5	N/Y	3,0	15,1	7,3	14	
	HSS-552 M	50	5,08	2,0	2,5	Y	4,0	17,1	7,5	15	
Long stroke HSS (long contact distance)	HSS-150 MH	50	5,08	7,4	8,5	Y	4,0	46,1	13,8	15	
International Standard	HSS-005	40	4,75	4,4	6,35	N	3,2	36,1	16,5	16	
Robust HSS for harsh environmental conditions and possible side loads	HSS-2259	25	10	7,0	9,5	Y	9,0	57,5	37,5	17	
	HSS-2513	35	14	7,0	11	Y	13	79,5	52,5	17	
	HSS-2516	100	17	7,0	12	Y	16	81,2	54,2	17	
	HSS-2526	200	27	7,0	11	Y	26	90	63	17	
	HSS-2532	400	33	7,0	11	Y	32	114	63	17	
High current clip for flat connectors and posts	KK-541	20	3,5	3,5	6,5	Y/N	4,0	36,4	16,6	18	
	HKR-612 M	100	12	4,4	5,5	Y	11	57	29	19	
Four-wire clip and Dipole HSS for four-wire measurement	VK-541	10	3,5	3,5	6,5	Y	4,0	53,4	18,9	20	
	HSS-624 M	100	7,6	4,4	5,5	Y	6,4	61,8	10,8	21	
Compatible GKS probes for HSS probes	GKS-xxx	5-8	-	-	-	Y/N	-	-	-	22	
High current clip for round and flat contacts	Diverse	-	-	-	-	Y/N	-	-	-	23	
High current contact tips	HK-250x	-	-	-	-	Y	-	-	-	23	
High current clip for flat contacts	HKF-615	225	-	15	18	Y	-	-	-	24	
Insertion tools to plug in HSS test probes	SW-GKS SW-KS-xxx	-	-	-	-	-	-	-	-	25	
Torque wrench and insertion bits to screw in HSS test probes	DW-X-S DW-X BIT-GKS-xxx	-	-	-	-	-	-	-	-	26	

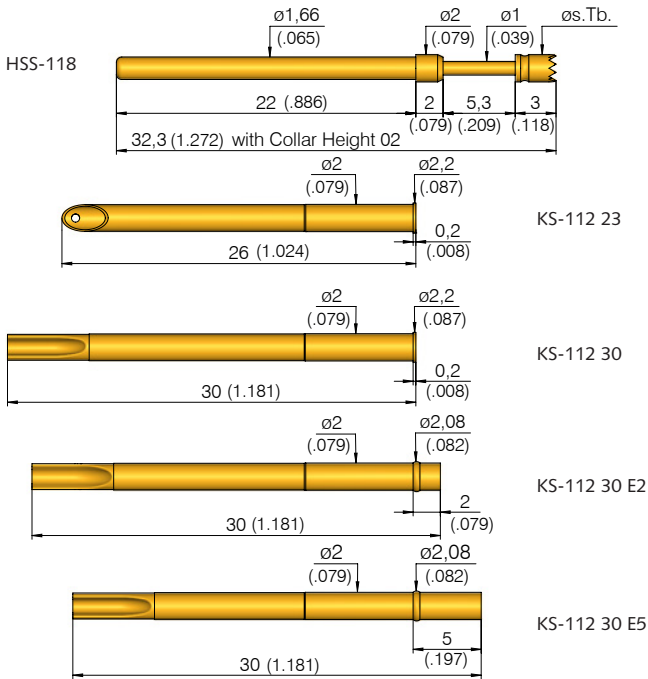
HSS 118

High current probe up to 20 A
Plug-in test probe

Grid:
≥ 2,54 mm
≥ 100 Mil

Installation height without KS: 10,3 resp. 18,3 mm (.406/ .720)
Recommended stroke: 4,0 mm (.157)

Mounting and Functional Dimensions



Available Tip Styles

Material	Tip Style	Plating	Further Versions	
			ϕ	ϕ (inch)
3 02		A		
3 03		A		
3 05		A	0,65	(.026)
3 05		A		
3 05*		S		
3 06		A	1,30 1,60 1,80 2,50 3,50	(.051) (.063) (.071) (.098) (.138)
2 14		A		
3 17		A	2,00	(.079)
3 19		A		
3 53**		S		

* pressed-in silver stud
** pressed-in silver stud, tip length 3,5 mm (.138)
installation height plus 0,5 mm (.020)

HSS-118 Variants

Alternative collar heights in mm:

02, 03, 04, 05, 06, 07, 08, 09, 10

Compatible GKS:

GKS-112 (assembled in same receptacle)

Materials

Plunger: BeCu or steel, gold-plated

Barrel: brass, silver-plated

Spring: stainless steel, gold-plated

Receptacle: brass, gold-plated

Operating Temperature

Standard: -100° up to +200° C

Mounting Hole Size

for KS-112 xx

in CEM1: ϕ 1,98 - 2,00 mm (.0780 - .0787)

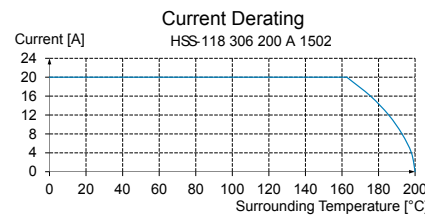
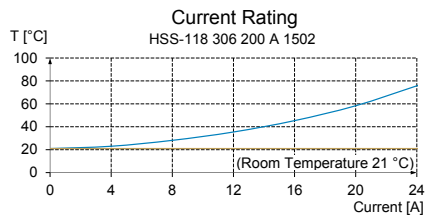
in FR4: ϕ 1,99 - 2,01 mm (.0783 - .0791)

Tools see Page 25

Electrical Data

Current rating (at room temp.): max. 20 A
with spring force $\geq 1,5$ N and plunger of BeCu
(*** spring force $< 1,5$ N are not recommended for high current applications!)

R_i typical: < 10 m Ω



Mechanical Data

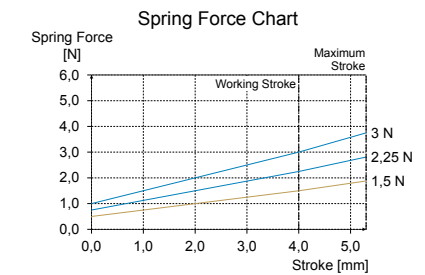
Working stroke: 4,0 mm (.157)

Maximum stroke: 5,3 mm (.209)
for tip styles with diameter ≤ 1 mm (.039)

Maximum stroke: 8,0 mm (.315)

Spring force at work. stroke: 1,5 N (5.4oz)

Alternative: 0,8 N (2.9oz)***,
2,25 N (8.1oz); 3,0 N (10.8oz)



Note:

A complete overview of available receptacles is located in the current test probe catalogue.

Ordering example

Series Tip Material Tip Style Tip Diameter (1/100 mm) Plating Spring Force (dN) Collar Height (mm)

2 = Steel 3 = BeCu A = Gold S = Silver

Test probe:

H S S 1 1 8 3 0 6 2 0 0 A 1 5 0 2

Receptacles for HSS-118:

K S - 1 1 2 2 3 K S - 1 1 2 3 0 K S - 1 1 2 3 0 E 2 / E 5

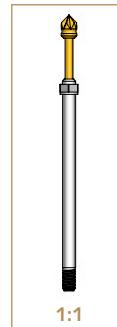
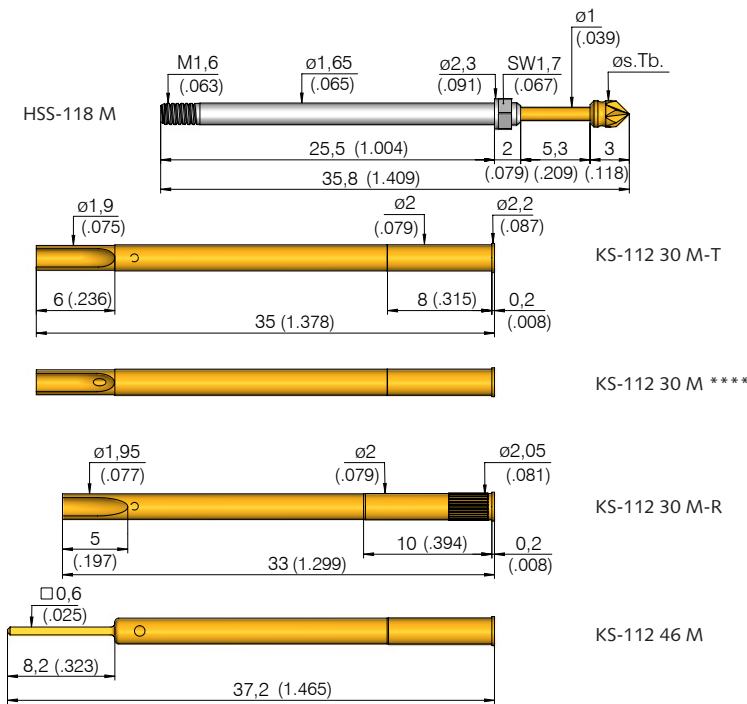
HSS 118 M

High current probe up to 20 A
Screw-in test probe

Grid:
≥ 2,54 mm
≥ 100 Mil

Installation height with KS: 10,5 mm (.413)
Recommended stroke: 4,0 mm (.157)

Mounting and Functional Dimensions



**** axially positioned through-hole for leakage test. Attention: when not assembled correctly, then solder can flow inside the receptacle.

Available Tip Styles

Material	Tip Style	Plating	Further Versions	
			ϕ	ϕ (inch)
3 02		A		
3 03		A		
3 05		A	0,65	(.026)
3 05		A		
3 05 **		S		
3 06		A	1,30 1,60 1,80 2,50 3,50	(.051) (.063) (.070) (.098) (.138)
2 14		A		
3 17		A	2,00	(.079)
3 19		A		
3 53 ***		S		

** pressed-in silver stud ;
*** pressed-in silver stud; tip length 3,5 mm (.138), installation height plus 0,5 mm (.020)

Compatible GKS

GKS-112 M (assembled in same receptacle)

Materials

Plunger: BeCu or steel, gold-plated
Barrel: brass, silver-plated
Spring: stainless steel, gold-plated
Receptacle: brass, gold-plated

Operating Temperature

Standard: -100° up to +200° C

Mounting Hole Size

for KS-112 xx M
in CEM1 and FR4: $\phi 1,99$ mm (.0783)
for KS-112 xx M-R
in CEM1 and FR4: $\phi 2,00 - 2,02$ mm (.0787 - .0795)

Recommended Screw-in Torque

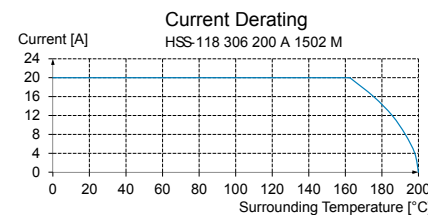
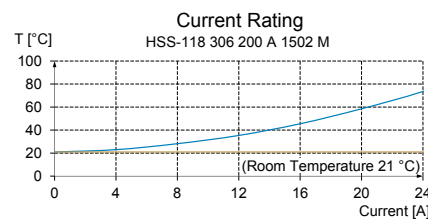
Min. 3 cNm / Max. 5 cNm

Tools see Page 26

Electrical Data

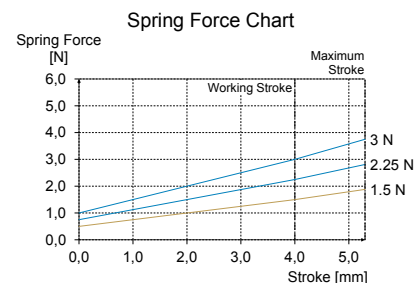
Current rating (at room temp.): max. 20 A with spring force $\geq 1,5$ N and plunger of BeCu (***) spring force $< 1,5$ N are not recommended for high current applications!

R_i typical: < 10 m Ω



Mechanical Data

Working stroke: 4,0 mm (.157)
Maximum stroke: 5,3 mm (.209) for tip styles with diameter ≤ 1 mm (.039)
Maximum stroke: 8,0 mm (.315)
Spring force at work. stroke: 1,5 N (5.4oz)
Alternative: 0,8 N (2.9oz) ***; 2,25 N (8.1oz); 3,0 N (10.8oz)



Ordering example

Series	Tip Material 2 = Steel 3 = BeCu	Tip Style	Tip Diameter (1/100 mm)	Plating A = Gold S = Silver	Spring Force (dN)	Collar Height (mm)	Type
Test probe:	HSS	118	306	200	A	1502	M
Receptacles for HSS-118 M:	KS-11230M / M-R / M-T		KS-11246M				

HSS 120

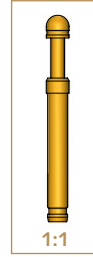
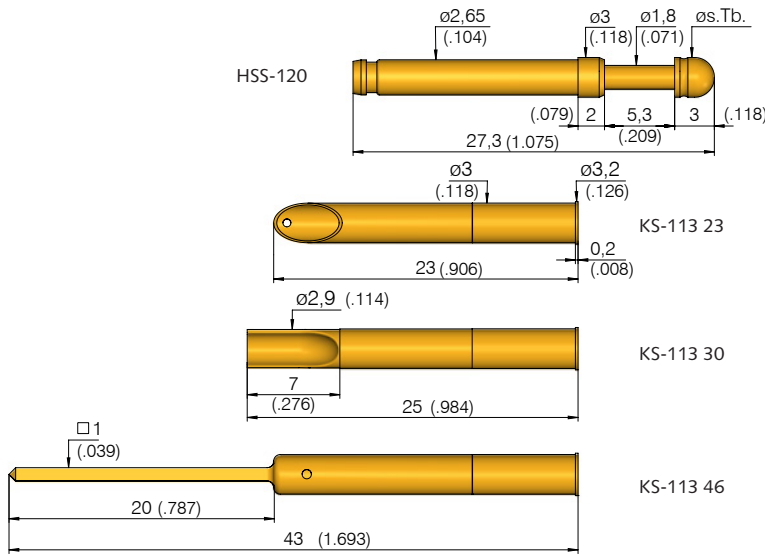
High current probe up to 30 A
Plug-in test probe

Grid:

≥ 4,00 mm
≥ 160 Mil

Installation height with KS: 10,5 / 13,5 / 18,5 mm (.413 / .531 / .728)
Recommended stroke: 4,0 mm (.157)

Mounting and Functional Dimensions



Available Tip Styles

Material	Tip Style	Plating	Further Versions	
			\varnothing	\varnothing (inch)
3 02		A	4,00	(.157)
3 03		A		
3 05		A		
3 05		A	3,00	(.118)
3 05**		S		
3 06		A	3,00 4,00	(.118) (.157)
3 17		A		
3 19		A		
2 51*		A		
3 53***		S		
3 55*		A		

* tip length 5 mm (.197) - installation height with collar height 02: 12,5 mm (.492)
** pressed-in silver stud
*** pressed-in silver stud, tip length 3,5 mm (.138) installation height plus 0,5 mm (.020)

HSS-120 Variants

Alternative collar height in mm: 02, 05, 10
Compatible GKS:
GKS-113 (assembled in same receptacle)

Materials

Plunger: BeCu or steel, gold-plated
Barrel: brass, silver-plated
Spring: stainless steel, gold-plated
Receptacle: brass, gold-plated

Operating Temperature

Standard: -100° up to +200° C

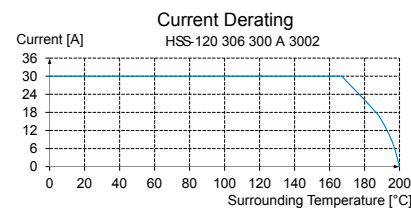
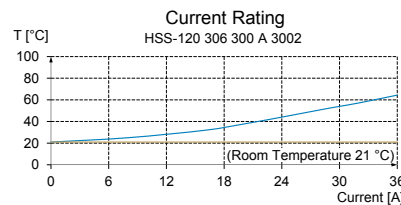
Mounting Hole Size

for KS-113 xx:
in CEM1 and FR4: $\varnothing 2,98 - 2,99$ mm
(.1173 - .1177)

Tools see Page 25

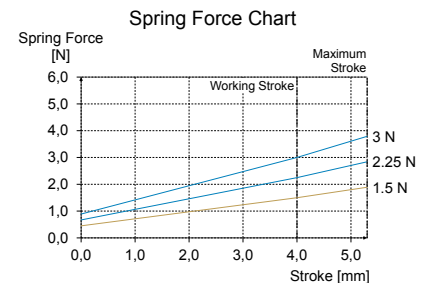
Electrical Data

Current rating (at room temp.): max. 30 A with spring force $\geq 1,5$ N and plunger of BeCu (**** spring force $< 1,5$ N are not recommended for high current applications!)
R_j typical: < 10 m Ω



Mechanical Data

Working stroke: 4,0 mm (.157)
Maximum stroke: 5,3 mm (.209)
Spring force at work. stroke: 1,5 N (5.4oz)
Alternative: 1,0 N (3.6oz)****; 2,25 N (8.1oz); 3,0 N (10.8oz)



Ordering example

Series	Tip Material 2 = Steel 3 = BeCu	Tip Style	Tip Diameter (1/100 mm)	Plating A = Gold S = Silver	Spring Force (dN)	Collar Height (mm)
HSS	3	06	300	A	15	02
KS-113	30	23	KS-113	46		

Test probe:

Receptacles for HSS-120:

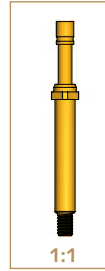
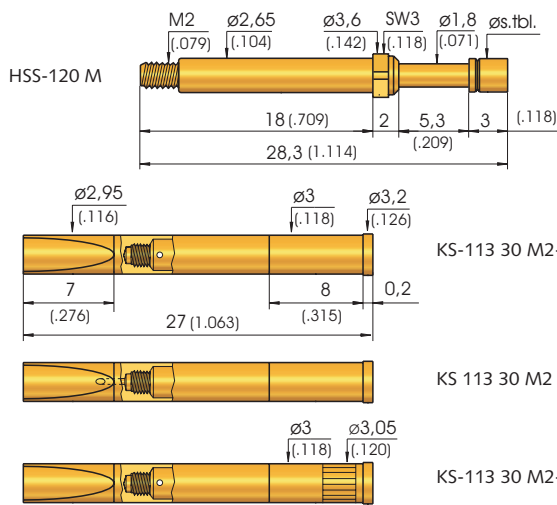
HSS 120 M

High current probe up to 30 A
Screw-in test probe

Grid:
≥ 4,00 mm
≥ 160 Mil

Installation height with KS: 10,5 mm (.413)
Recommended stroke: 4,0 mm (.157)

Mounting and Functional Dimensions



**** axially positioned through-hole for leakage test. Attention: when not assembled correctly, then solder can flow inside the receptacle.

Available Tip Styles

Material	Tip Style	Plating	Further Versions	
			\varnothing	\varnothing (inch)
3 02		A	4,00	(.157)
3 03		A		
3 05		A		
3 05		A	3,00	(.118)
3 05***		S		
3 06		A	3,00 4,00	(.118) (.157)
3 17		A		
3 19		A		
2 51**		A		
3 53**		S		
3 55**		A		

** tip length 5 mm (.197) - installation height with collar height 02: 12,5 mm (.492)
*** pressed-in silver stud
**** pressed-in silver stud, tip length 3,5 mm (.138) installation height plus 0,5 mm (.020)

Compatible GKS

GKS-113 M (assembled in same receptacle)

Materials

Plunger: BeCu or steel, gold-plated
Barrel: brass, silver-plated
Spring: stainless steel, gold-plated
Receptacle: brass, gold-plated

Operating Temperature

Standard: -100° up to +200° C

Mounting Hole Size

for KS-113 30 M2 in CEM1 and FR4: $\varnothing 2,99$ mm (.1177)
for KS-113 30 M2-R in CEM1 and FR4: $\varnothing 3,00 - 3,02$ mm (.1181 - .1189)

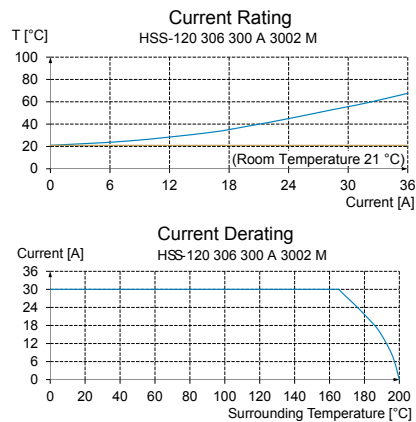
Recommended Screw-in Torque

Min. 10 cNm / Max. 20 cNm

Tools see Page 26

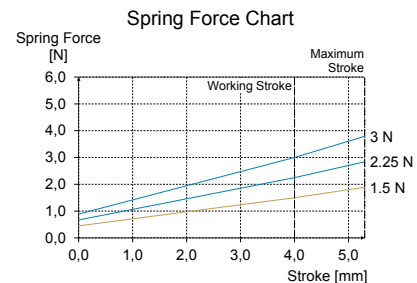
Electrical Data

Current rating (at room temp.): max. 30 A with spring force $\geq 1,5$ N and plunger of BeCu (*spring force $< 1,5$ N are not recommended for high-current applications!)
R_i typical: < 10 m Ω

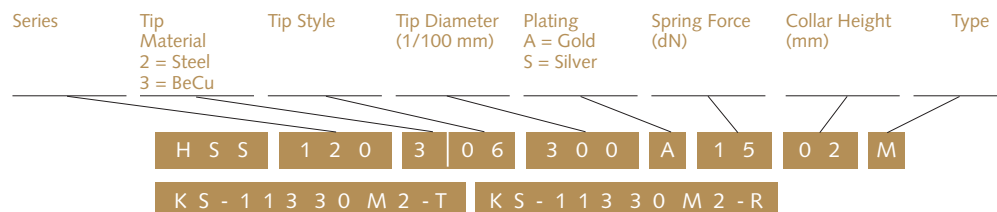


Mechanical Data

Working stroke: 4,0 mm (.157)
Maximum stroke: 5,3 mm (.209)
Spring force at work. stroke: 1,5 N (5.4oz)
Alternative: 1,0 N* (3.6oz); 2,25 N (8.1oz); 3,0 N (10.8oz)



Ordering example



HSS 150

High current probe up to 50 A
Plug-in test probe

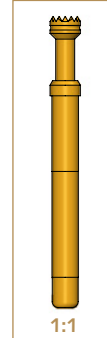
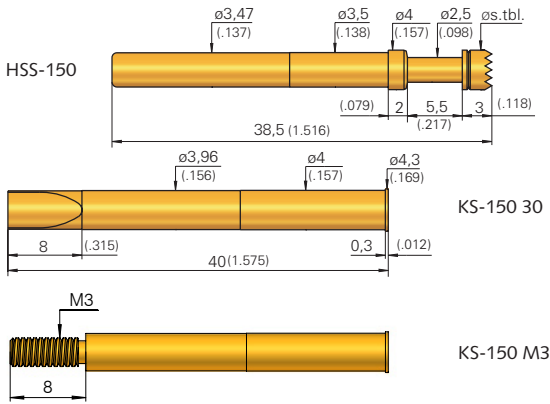
Grid:

≥ 5,08 mm
≥ 200 Mil

Installation height with KS: 10,8 mm (.425)

Recommended stroke: 4,4 mm (.173)

Mounting and Functional Dimensions



Available Tip Styles

Material	Tip Style	Plating	Further Versions	
			ϕ	ϕ (inch)
3 02		A	$\phi 4,00$ (.157)	
3 03		A	$\phi 4,00$ (.157)	
3 05*		S	$\phi 4,00$ (.157)	
3 06		A	$\phi 4,00$ (.157)	3,00 (.118)
3 17		A	$\phi 3,00$ (.118)	
3 19		A	$\phi 4,00$ (.157)	

* pressed-in silver stud

Compatible GKS

GKS-854 (assembled in same receptacle)

Materials

Plunger: BeCu, gold-plated or silver stud
Barrel: brass, silver-plated
Spring: stainless steel, gold-plated
Receptacle: brass, gold-plated

Operating Temperature

Standard: -100° up to +200° C

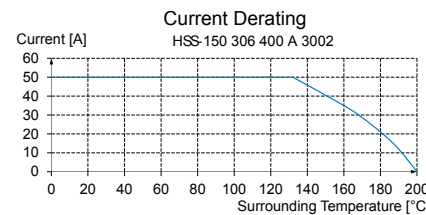
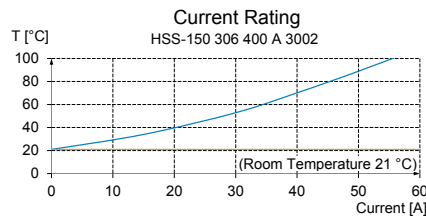
Mounting Hole Size

for KS-150:
in CEM1 and FR4: $\phi 3,98 - 3,99$ mm
 (.1567 - .1571)

Tools see Page 25

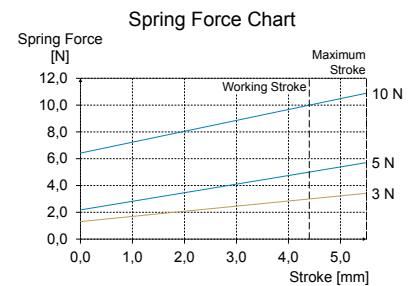
Electrical Data

Current rating (at room temp.): max. 50 A
R_i typical: < 10 m Ω



Mechanical Data

Working stroke: 4,4 mm (.173)
Maximum stroke: 5,5 mm (.217)
Spring force at work. stroke: 3,0 N (10.8oz)
Alternative: 5,0 N (18.1oz);
 10 N (36 oz) („99“ in ordering number)



Ordering example

Series	Tip Material	Tip Style	Tip Diameter (1/100 mm)	Plating	Spring Force (dN)	Collar Height (mm)
HSS	3 = BeCu	150	306	A = Gold S = Silver	400	A 30 02
Test probe: HSS 150 306 400 A 30 02						
Receptacles for HSS-150: KS-150 30 KS-150 M3						

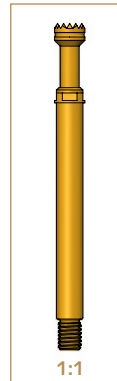
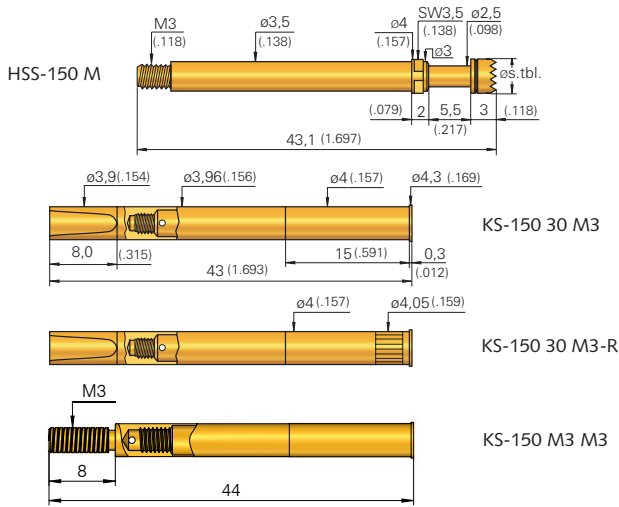
HSS 150 M

High current probe up to 50 A
Screw-in test probe

Grid:
≥ 5,08 mm
≥ 200 Mil

Installation height with KS: 10,8 mm (.425)
Recommended stroke: 4,4 mm (.173)

Mounting and Functional Dimensions



Available Tip Styles

Material	Tip Style	Plating	Further Versions	
			∅	∅ (inch)
3 02		A	∅ 4,00 (.157)	
3 03		A	∅ 4,00 (.157)	
3 05*		S	∅ 4,00 (.157)	
3 06		A	∅ 4,00 (.157)	3,00 (.118)
3 17		A	∅ 3,00 (.118)	
3 19		A	∅ 4,00 (.157)	

* pressed-in silver stud

Compatible GKS

GKS-854 M (assembled in same receptacle)

Materials

Plunger: BeCu, gold-plated or silver stud
Barrel: brass, silver-plated
Spring: stainless steel, gold-plated
Receptacle: brass, gold-plated

Operating Temperature

Standard: -100° up to +200° C

Mounting Hole Size

for **KS-150 30 M3 + KS-150 M3 M3**
 in CEM1 and FR4: ∅ 3,99 mm (.1571)
 for **KS-150 30 M3 - R**
 in CEM1 and FR4: ∅ 4,00 - 4,02 mm (.1575 - .1583)

Recommended Screw-in Torque

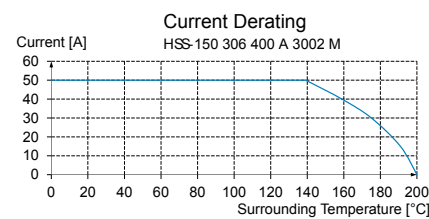
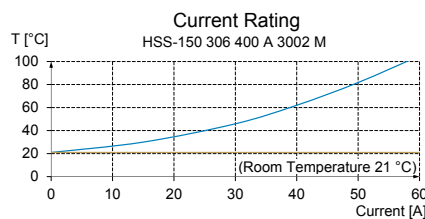
Min. 10 cNm / Max. 20 cNm

Tools see Page 26

Electrical Data

Current rating (at room temp.): max. 50 A
 (for short loads up to 80 A)

R_i typical: < 10 mΩ



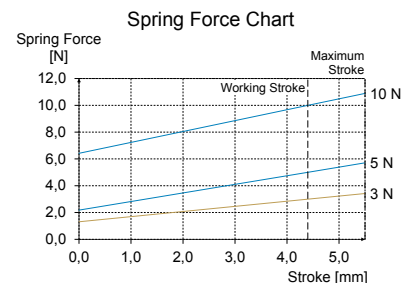
Mechanical Data

Working stroke: 4,4 mm (.173)

Maximum stroke: 5,5 mm (.217)

Spring force at work. stroke: 3,0 N (10.8oz)

Alternative: 5,0 N (18.1oz);
 10 N (36oz) („99“ in ordering number)



Ordering example

Series Tip Material Tip Style Tip Diameter (1/100 mm) Plating Spring Force (dN) Collar Height (mm) Type

3 = BeCu

Test probe:

H S S 1 5 0 3 0 6 4 0 0 A 3 0 0 2 M

Receptacles for HSS-150 M:

K S - 1 5 0 3 0 M 3 K S - 1 5 0 3 0 M 3 - R K S - 1 5 0 M 3 M 3

HSS 621 M

High current probe up to 75 A
Plug-in test probe

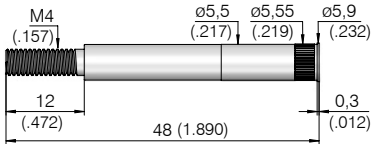
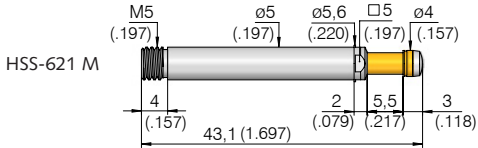
Grid:

≥ 6,35 mm
≥ 250 Mil

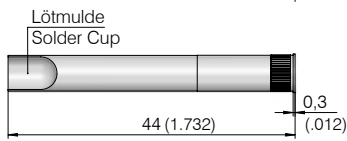
Installation height with KS: 10,8 mm (.425)

Recommended stroke: 4,4 mm (.173)

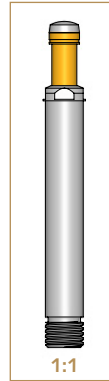
Mounting and Functional Dimensions



KS-621 M4 M5-R



KS-621 30 M5-R



Available Tip Styles

Material	Tip Style	Plating	Further Versions	
			∅	∅ (inch)
3 05*		S	∅ 4,00 (.157)	
3 06		A	∅ 5,00 (.197)	

* pressed-in silver stud

Note:

The new screw-in high current probe HSS-621 M is a market driven development to test increasingly smaller getting power components. They can safely transfer up to 75 A at a grid of 6,35 mm.

With its robust construction the high current probe is ideally suited for harsh environmental conditions.

Materials

Plunger: BeCu, gold-plated or silver stud
Barrel: brass, silver-plated
Spring: stainless steel
Receptacle: brass, gold-plated

Electrical Data

Current rating (at room temp.): max. 75 A
R_j typical: < 5 mΩ

Mechanical Data

Working stroke: 4,4 mm (.173)
Maximum stroke: 5,5 mm (.217)
Spring force at work. stroke: 5,0 N (18.1oz)
Alternative: 10,0 N (36oz)

Operating Temperature

Standard: -100° up to +200° C

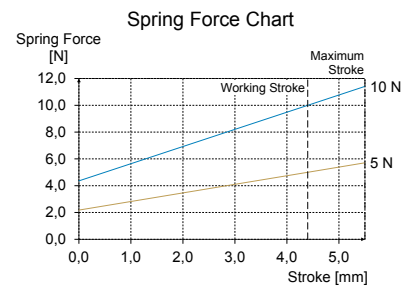
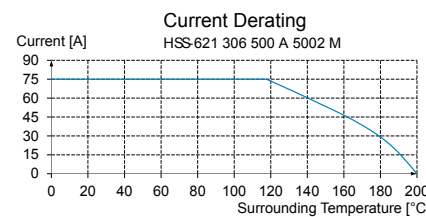
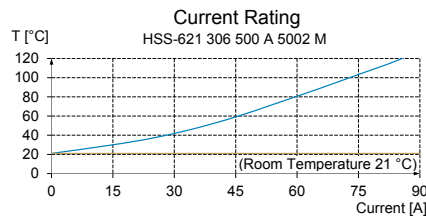
Mounting Hole Size

for KS-621 xx M5-R
in CEM1 and FR4: ∅ 5,5 mm (.217)

Recommended Tightening Torque

HSS-621 M in KS-621: 40 cNm
Cable at KS-621: 2 Nm
Solder connection KS-621
for cable with wire cross section: ≤ 10 mm²

Tools see Page 26



Ordering example

Series	Tip Material	Tip Style	Tip Diameter (1/100 mm)	Plating A = Gold S = Silver	Spring Force (dN)	Collar Height (mm)	Type
HSS	3 = BeCu	06	500	A	50	02	M
KS-621 M4 M5-R				KS-621 30 M5-R			

Test probe:

Receptacles for HSS-621 M:

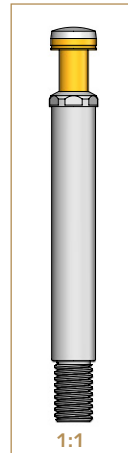
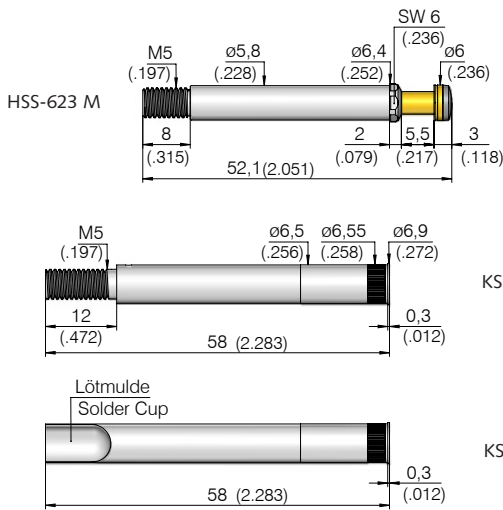
HSS 623 M

High current probe up to 100 A
Screw-in test probe

Grid:
≥ 7,60 mm
≥ 300 Mil

Installation height with KS: 10,8 mm (.425)
Recommended stroke: 4,4 mm (.173)

Mounting and Functional Dimensions



Available Tip Styles

Material	Tip Style	Plating	Further Versions	
			∅	∅ (inch)
3	05*	S	∅ 6,00 (.236)	
3	06	A	∅ 6,00 (.236)	

* pressed-in silver stud

Note:

The HSS-623 M is designed for testing power components that are getting smaller and smaller. Due to the small internal resistance, currents of up to 100 A in a grid size of 300 Mil (7,6 mm (.299)) can be transferred safely and reliably.

Due to its hard-wearing design, this high current probe is also ideally suitable for rough production environments.

Materials

Plunger: BeCu, gold-plated or silver stud
Barrel: brass, silver-plated
Spring: stainless steel
Receptacle: brass, gold-plated

Operating Temperature

Standard: -100° up to +200° C

Mounting Hole Size

for KS-623 xx M5-R
 in CEM1 and FR4: ∅ 6,5 mm (.2559)

Recommended Tightening Torque

HSS-623 M in KS-623: 40 cNm
 Cable at KS-623: 4 Nm
Solder connection KS-623
 for cable with wire cross section: ≤ 16 mm²

Tools see Page 26

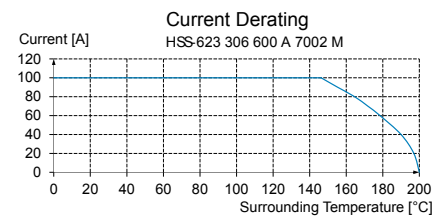
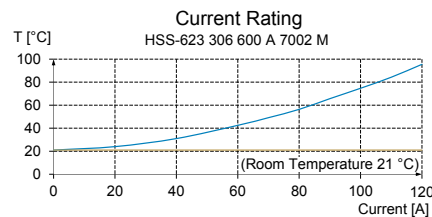
Hexagon socket wrench: 6 mm (.236)

Electrical Data

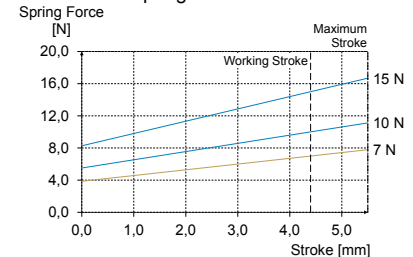
Current rating (at room temp.): max. 100 A
R_i typical: < 5 mΩ

Mechanical Data

Working stroke: 4,4 mm (.173)
Maximum stroke: 5,5 mm (.217)
Spring force at work. stroke: 7,0 N (25.2oz)
Alternative: 10,0 N (36oz); 15,0 N (54oz)



Spring Force Chart



Ordering example

Series	Tip Material	Tip Style	Tip Diameter (1/100 mm)	Plating	Spring Force (dN)	Collar Height (mm)	Type
3	BeCu			A = Gold			
8	Silver			S = Silver			

Test probe:

HSS 623 3 06 600 A 70 02 M

Receptacles for HSS-623 M:

KS-623 M5 M5-R KS-623 30 M5-R

All specifications are subject to change without prior notification

HSS 827 M

High current probe up to 20 A
Screw-in test probe

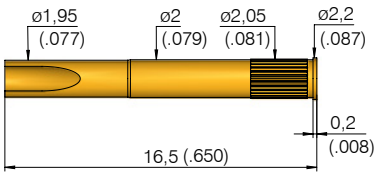
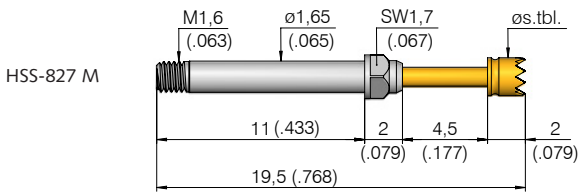
Grid:

≥ 2,54 mm
≥ 100 Mil

Installation height with KS: 8,7 mm (.343)

Recommended stroke: 3,5 mm (.138)

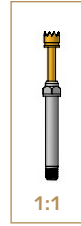
Mounting and Functional Dimensions



KS-427 30 M-R

Available Tip Styles

Material	Tip Style	Plating	Further Versions	
			∅	∅ (inch)
3 02 *		S		
3 06		A		



* pressed-in silver stud

Compatible GKS

GKS-427 M (assembled in same receptacle)

Materials

Plunger: BeCu, gold-plated or silver stud
Barrel: brass, silver-plated
Spring: stainless steel, gold-plated
Receptacle: brass, gold-plated

Operating Temperature

Standard: -100° up to +200° C

Mounting Hole Size

for KS-427 30 M-R
in CEM1 and FR4: ∅ 2,00 - 2,02 mm
(.0787 - .0795)

Recommended Screw-in Torque

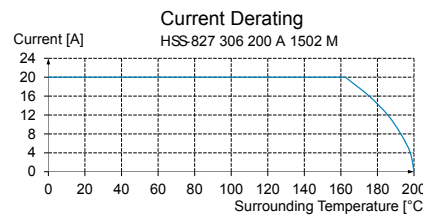
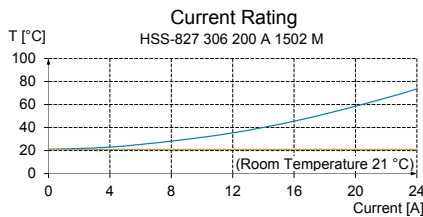
Min. 3 cNm / Max. 5 cNm

Tools see Page 26

Electrical Data

Current rating (at room temp.): max. 20 A

R_i typical: < 10 mΩ



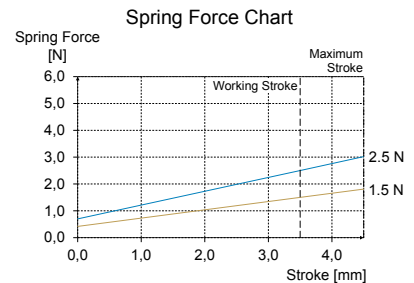
Mechanical Data

Working stroke: 3,5 mm (.138)

Maximum stroke: 4,5 mm (.177)

Spring force at work. stroke: 1,5 N (5.4oz)

Alternative: 2,5 N (9.0oz)



Ordering example

Series	Tip Material 2 = Steel 3 = BeCu	Tip Style	Tip Diameter (1/100 mm)	Plating A = Gold S = Silver	Spring Force (dN)	Collar Height (mm)	Type
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Test probe:

H S S 8 2 7 3 0 6 2 0 0 A 1 5 0 2 M

Receptacle for HSS-827 M:

K S - 4 2 7 3 0 M - R

HSS 520/HSS 520 M

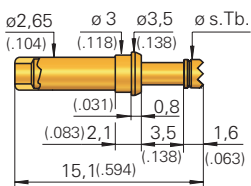
High current probe up to 30 A
Short-stroke probe for plug-in and screw-in

Grid:
≥ 4,0 mm
≥ 160 Mil

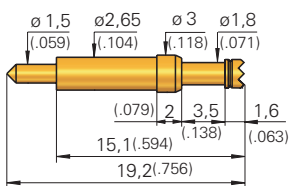
Installation height with KS: 7,4 mm (.291)
Recommended stroke: 2,8 mm (.110)

Mounting and Functional Dimensions

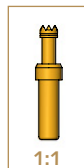
HSS-520



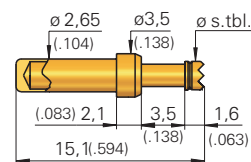
Type 0



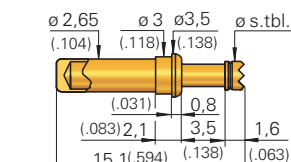
Type 1



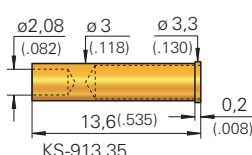
1:1



Type S

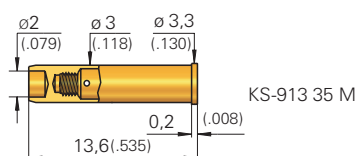
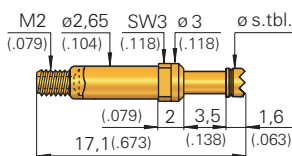


Type Z

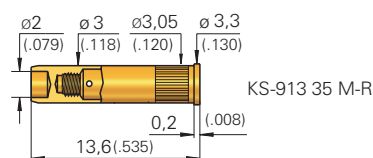


KS-913 35

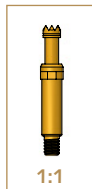
HSS-520 M



KS-913 35 M



KS-913 35 M-R



1:1

Available Tip Styles

Material	Tip Style	Plating	Further Versions	
			∅	∅ (inch)
3	06	A	3,50	(.138)

Compatible GKS

GKS-913 (to plug-in)
GKS 913 M (to screw-in)

Materials

Plunger: BeCu, gold-plated
Barrel: brass, gold-plated
Spring: stainless steel, gold-plated
Receptacle: brass, gold-plated

Operating Temperature

Standard: -100° up to +200° C

Mounting Hole Size

for KS-913 35 and KS-913 35 M

in CEM1 and FR4: ∅ 2,98 - 2,99 mm
(.1173 - .1177)

for KS-913 35 M-R

in CEM1 and FR4: ∅ 3,00 - 3,02 mm
(.1181 - .1189)

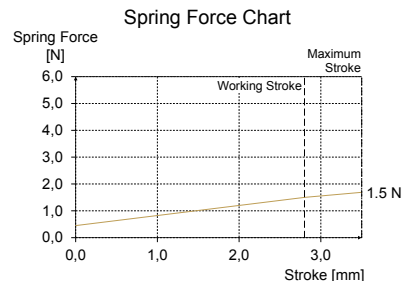
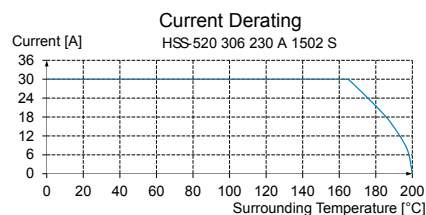
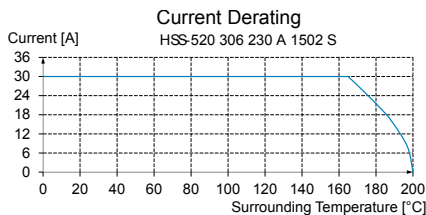
Tools see Pages 25/26

Electrical Data

Current rating (at room temp.): max. 30 A
R_i typical: < 20 mΩ

Mechanical Data

Working stroke: 2,8 mm (.110)
Maximum stroke: 3,5 mm (.138)
Spring force at work. stroke: 1,5 N (5.4oz)



Ordering example

Series Tip Material Tip Style Tip Diameter (1/100 mm) Plating A = Gold Spring Force (dN) Collar Height (mm) Type 1, 0, S, M, Z

Test probe:

H S S 5 2 0 3 0 6 2 3 0 A 1 5 0 2 M

Receptacles:

K S - 9 1 3 3 5 K S - 9 1 3 3 5 M K S - 9 1 3 3 5 M - R

HSS 552 M/HSS 150 MH

High current probe up to 50 A
Short-stroke and long-stroke test probes
for screw-in

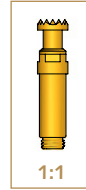
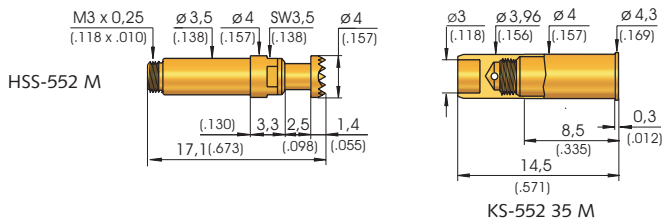
Grid:

≥ 5,08 mm
≥ 200 Mil

Installation height with KS: 7,5 mm (.295) / 13,8 mm (.543)

Recommended stroke: 2,0 mm (.079) / 7,4 mm (.291)

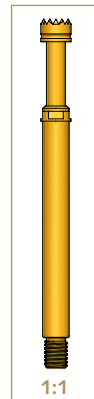
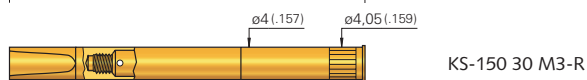
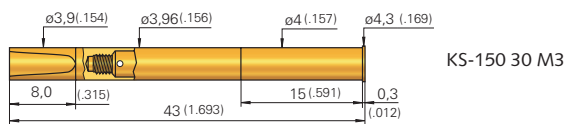
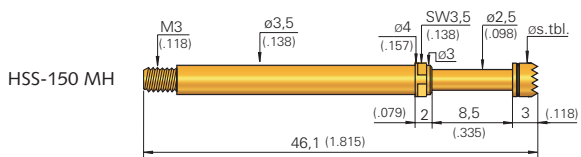
Mounting and Functional Dimensions



Available Tip Styles HSS-552 M

Material	Tip Style	Plating	Further Versions	
			\varnothing	\varnothing (inch)
3 02		A	$\varnothing 4,00$ (.157)	
3 06		A	$\varnothing 4,00$ (.157)	

NEW



Available Tip Styles Special Version HSS-150 MH

Material	Tip Style	Plating	Further Versions	
			\varnothing	\varnothing (inch)
3 02		A	$\varnothing 4,00$ (.157)	
3 05*		S	$\varnothing 4,00$ (.157)	
3 06		A	$\varnothing 4,00$ (.157)	
3 17		A	$\varnothing 4,00$ (.157)	

NEW

NEW

NEW

Total length 46,1 mm (1.815), special designation „MH“
* pressed-in silver stud

Materials

Plunger: BeCu, gold-plated or silver stud
Barrel: brass, gold-plated
Spring: stainless steel
Receptacle: brass, gold-plated

Operating Temperature

Standard: -100° up to +200° C

Mounting Hole Size

for KS-150 xx M3 + KS-552 35 M
 in CEM1 and FR4: $\varnothing 3,99$ mm (.1571)
 for KS-150 30 M3-R
 in CEM1 and FR4: $\varnothing 4,00 - 4,02$ mm (.1575 - .1583)

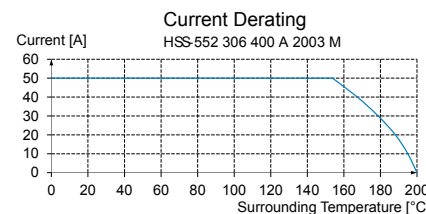
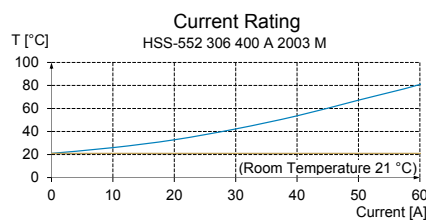
Recommended Screw-in Torque

Min. 10 cNm / Max. 20 cNm

Tools see Page 26

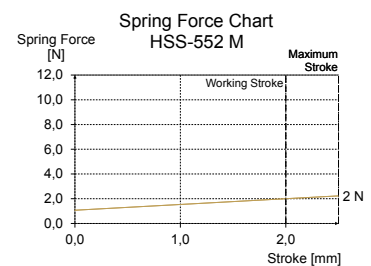
Electrical Data

Current rating (at room temp.): max. 50 A
R_j typical: < 10 m Ω



Mechanical Data

Working stroke: 2,0 mm (.079)
Maximum stroke: 2,5 mm (.098)
Spring force at work. stroke: 2,0 N (7.2oz)



Mechanical Data

Working stroke: 7,4 mm (.291)
Maximum stroke: 8,5 mm (.335)
Spring force at work. stroke: 3,0 N (10.8oz)
Alternative: 5,0 N (18.1oz); 10 N (36oz) ("99" in ordering number)

Diagrams for HSS-150 MH on request.

Ordering example

Series	Tip Material	Tip Style	Tip Diameter (1/100 mm)	Plating	Spring Force (dN)	Collar Height (mm)	Type M, MH
	3 = BeCu			A = Gold S = Silver			

Test probe:

H S S 1 5 0 3 0 6 4 0 0 A 3 0 0 2 M H

Test probe:

H S S 5 5 2 3 0 6 4 0 0 A 2 0 0 3 M

Receptacles for HSS-150 MH:

K S - 1 5 0 3 0 M 3 K S - 1 5 0 3 0 M 3 - R K S - 1 5 0 M 3 M 3

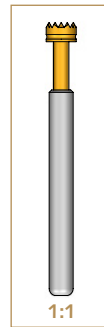
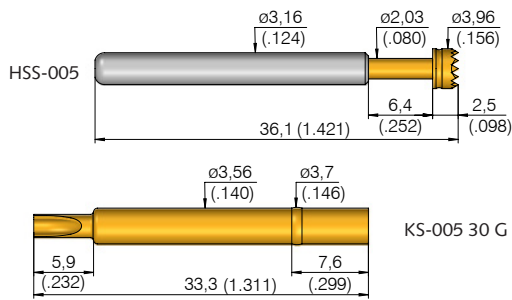
Receptacle for HSS-552 M:

K S - 5 5 2 3 5 M

Grid:
≥ 4,75 mm
≥ 187 Mil

Installation height with KS: 16,5 mm (.650)
Recommended stroke: 4,4 mm (.173)

Mounting and Functional Dimensions



Available Tip Styles

Material	Tip Style	Plating	Further Versions	
			\varnothing	\varnothing (inch)
3 06		A	$\varnothing 3,96$ (.160)	
3 13		A	$\varnothing 2,03$ (.080)	

Materials

Plunger: BeCu, gold-plated
Barrel: brass, gold-plated
Spring: stainless steel
Receptacle: nickel-silver, silver-plated

Electrical Data

Current rating (at room temp.): max. 40 A
R_i typical: < 5 m Ω

Mechanical Data

Working stroke: 4,4 mm (.173)
Maximum stroke: 6,35 mm (.250)
Spring force at work. stroke: 3,0 N (10.8oz)
Alternative: 5,0 N (18.1oz)

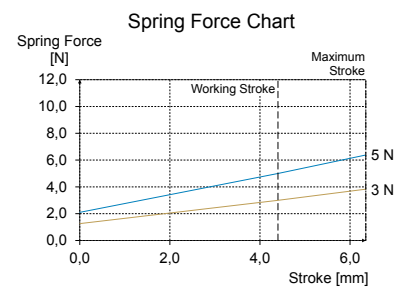
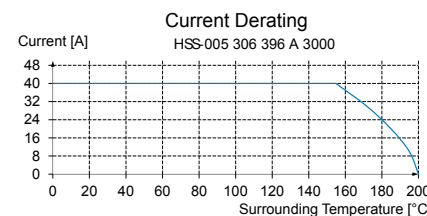
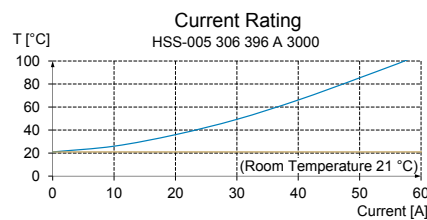
Operating Temperature

Standard: -100° up to +200° C

Mounting Hole Size

for KS-005 30 G
in CEM1 and FR4: $\varnothing 3,54$ mm (.1399)

Tools see Page 25



Ordering example

Series	Tip Material	Tip Style	Tip Diameter (1/100 mm)	Plating	Spring Force (dN)	Collar Height (mm)
HSS	005 3 = BeCu	3 06	396	A = Gold S = Silver	30	00
KS-005 30 G						

Test probe:

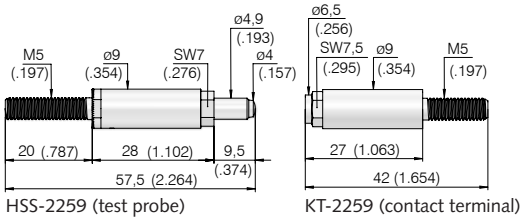
Receptacle for HSS-005:

HSS 2259-2532

High current probe from 25 up to 400 A
Strengthened / robust HSS

Installation heights: see drawings below
Recommended stroke: 7,0 mm (.276)

Mounting and Functional Dimensions



HSS-2259 (test probe)

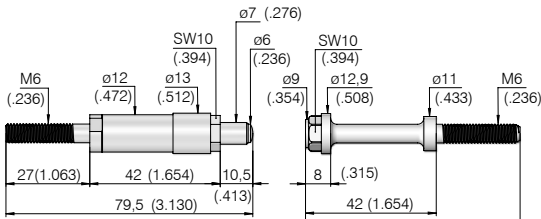
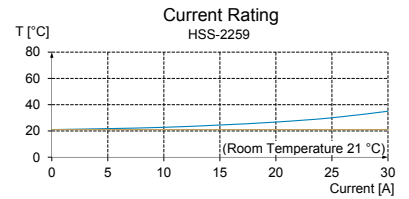
KT-2259 (contact terminal)

Electrical Data

Max. current rating: 25 A
R_i typical: < 1 mΩ

Mechanical Data

Working stroke: 7,0 mm (.276)
Maximum stroke: 9,5 mm (.374)
Spring force at work. stroke: 10 N (36oz)



HSS-2513 (test probe)

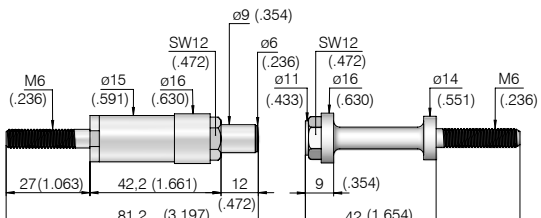
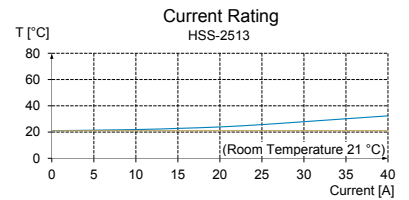
KT-2513 (contact terminal)

Electrical Data

Max. current rating: 35 A
R_i typical: < 1 mΩ

Mechanical Data

Working stroke: 7,0 mm (.276)
Maximum stroke: 10,5 mm (.413)
Spring force at work. stroke: 12 N (43.2oz)



HSS-2516 (test probe)

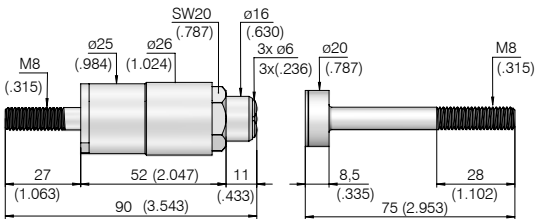
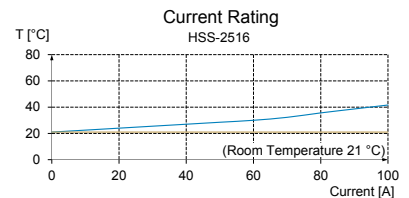
KT-2516 (contact terminal)

Electrical Data

Max. current rating: 100 A
R_i typical: < 1 mΩ

Mechanical Data

Working stroke: 7,0 mm (.276)
Maximum stroke: 12 mm (.472)
Spring force at work. stroke: 17 N (61.2oz)



HSS-2526 (test probe)

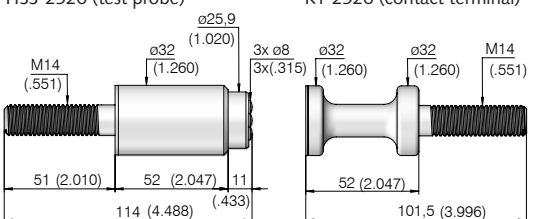
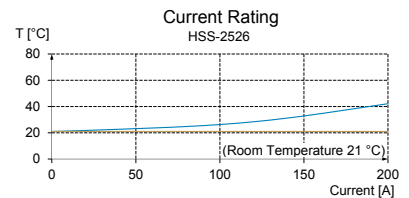
KT-2526 (contact terminal)

Electrical Data

Max. current rating: 200 A
R_i typical: < 1 mΩ

Mechanical Data

Working stroke: 7,0 mm (.276)
Maximum stroke: 11 mm (.433)
Spring force at work. stroke: 58 N (208.8oz)



HSS-2532 (test probe)

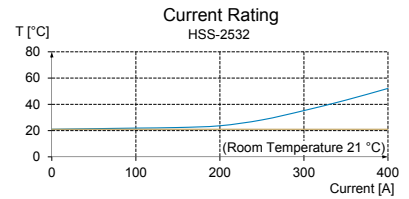
KT-2532 (contact terminal)

Electrical Data

Max. current rating: 400 A
R_i typical: < 1 mΩ

Mechanical Data

Working stroke: 7,0 mm (.276)
Maximum stroke: 11 mm (.433)
Spring force at work. stroke: 116 N (417.6oz)



Materials

Plunger: brass, silver-plated
silver plating on the contact surface
Barrel: brass, silver-plated
Spring: stainless steel

Operating Temperature

Standard: +1° up to +80° C

The high current test probes HSS-2259 to HSS-2532 are designed for applications with high permanent currents. Their robust construction makes them equally suitable for harsh environmental and possible side loads.

Ordering example

Test probe:

HSS - 2259 HSS - 2513 HSS - 2516 HSS - 2526 HSS - 2532

Contact terminal:

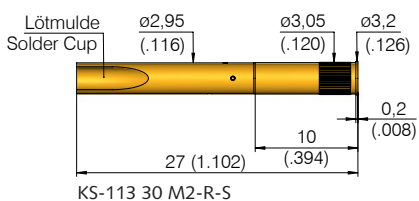
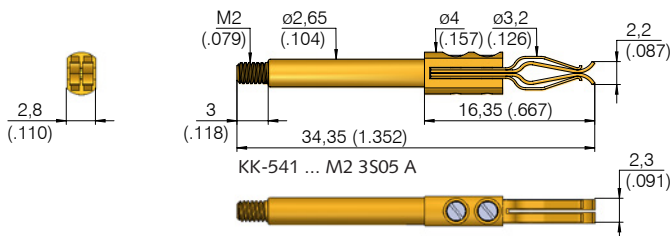
KT - 2259 KT - 2513 KT - 2516 KT - 2526 KT - 2532

Grid:
≥ 3,50 mm
≥ 140 Mil

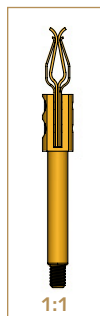
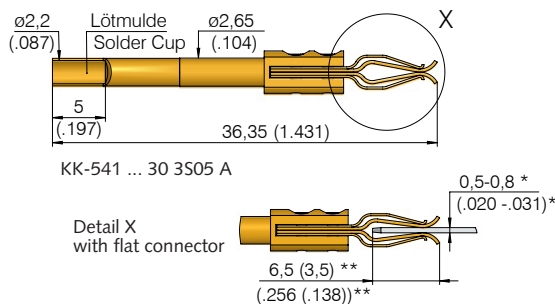
Installation height with KS: 16,6 mm (.654)
Recommended stroke: 5,0 mm (.197)

Mounting and Functional Dimensions

KK-541 to screw-in

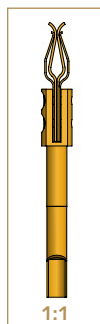


KK-541 to press-in



Note:

The contact clip **KK-541** offers reliable contacting of flat connectors on the outer surface. Even under rough testing conditions with vibration, contamination and longer test cycles, the **KK-541** proves it is most suitable due to its double spring clip design.



Materials

Spring clip: BeCu, gold-plated
Barrel: brass, gold-plated
Receptacle: brass, gold-plated

Electrical Data

Current rating (at room temp.): max. 20 A
 R_j typical: < 5 m Ω

Flat connector to be contacted

Min. length: 3,5 mm (.138)
Thickness flat connector*: 0,5 - 0,8 mm (.020 - .031)

Operating Temperature

Standard: -100° up to +200° C

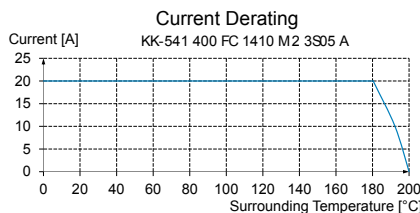
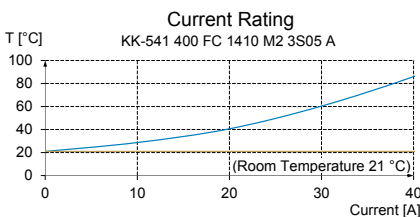
Mounting Hole Size

for KS-113 30 M2-R-S in CEM1 and FR4: \varnothing 3,00 - 3,02 mm (.1181 - .1189)
for KK-541 to press-in: \varnothing 2,64 mm (.1043)

Recommended tightening torque

KK-541 in KS-113: 10 cNm

Tools see Page 26



Mechanical Data

Min. immersion depth**: 3,5 mm (.138)
Max. immersion depth**: 6,5 mm (.256)

Ordering example

Contact clip (with receptacle):

KK 541 4 00 FC 1410 M2 3S05 A

Receptacle:

KS-113 30 M2-R-S

Contact clip (with press-fit):

KK 541 4 00 FC 1410 30 3S05 A

HKR 612 M

High current clip up to 100 A

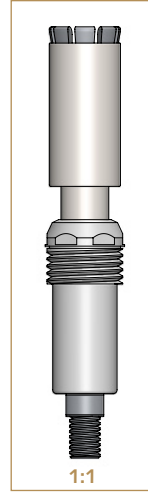
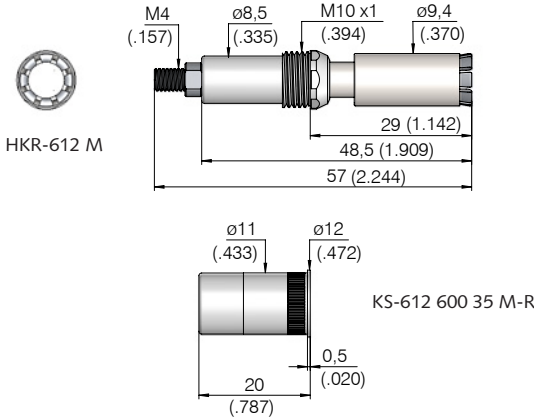
Grid:

- ≥ 13,0 mm
- ≥ 500 Mil

Installation height with KS: 29,5 mm (1.161)

Recommended stroke: 4,4 mm (.173)

Mounting and Functional Dimensions



Note:

The high current clip **HKR-612 M** enables the reliable contacting of round posts and threads up to 100 A. When contacting, the contact lamellas are pressed on the bolt without scratching it. The high current clip is especially recommended for round contacts which can't be contacted from top because of a contact protection.

The **HKR-612 M** is also ideal for rough testing conditions with vibrations, contaminations and longer testing cycles because of its robust design.

Note:

See also product information "HKR-Series" for further available versions.

Materials

Plunger:	BeCu, silver-plated
Barrel:	brass, silver-plated
Spring:	stainless steel
Receptacle:	brass, silver-plated

Operating Temperature

Standard: -100° up to +200° C

Mounting Hole Size

for KS-612 600 35 M-R
in CEM1 and FR4: \varnothing 11 mm (.4331)

Recommended Tightening Torque

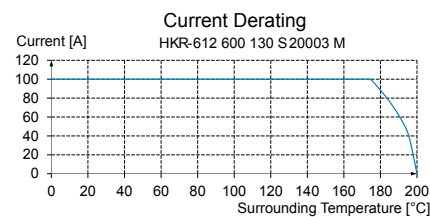
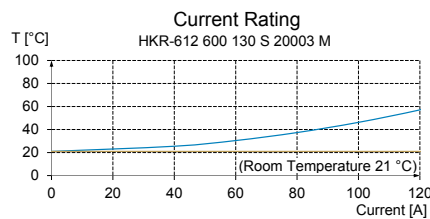
HKR-612 M in KS-612:	60 cNm
Cable at HKR-612 M:	2 Nm

Tools see Page 26

Hexagon socket wrench: 10 mm (.394)

Electrical Data

Current rating (at room temp.): max. 100 A



Round post to be contacted

Min. immersion depth bolt:	13 mm (.512)
Round post- \varnothing :	6,0 mm \pm 0,2 mm (.236 \pm .008)

Mechanical Data

Working stroke:	4,4 mm (.173)
Max. working stroke:	5,5 mm (.217)
Spring force at working stroke:	20 N (72oz)
Contact force at round post:	approx. 80 N (8 x 10 N)

Ordering example

High-current clip:

H K R 6 1 2 6 0 0 1 3 0 S 2 0 0 0 3 M

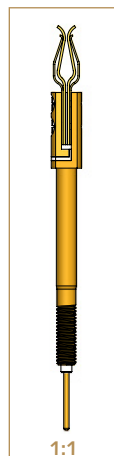
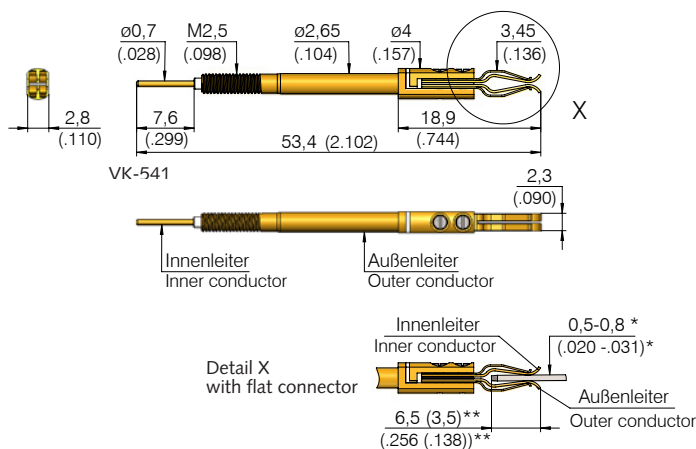
Receptacle for HKR-612 M:

K S - 6 1 2 6 0 0 3 5 - M - R

Grid:
 ≥ 3,50 mm
 ≥ 140 Mil

Installation height with KS: 19,1 mm (.752)
 Recommended stroke: 5,0 mm (.197)

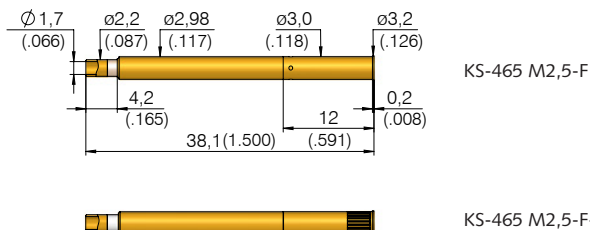
Mounting and Functional Dimensions



Note:

The four-wire clip **VK-541** extends our product range of the already available contact clip **KK-541**. In addition to the reliable contacting of flat connectors on the outer surface the **VK-541** enables a four-wire measurement. Hence the voltage can be measured directly on the contacting area and thus the resistance determined.

Because of the double spring clip, the **VK-541** is ideal for rough test conditions i.e. vibrations, contaminations and longer testing cycles.



Materials

Spring clip: BeCu, gold-plated
Barrel: brass, gold-plated
Receptacle: brass, gold-plated

Operating Temperature

Standard: -100° up to +200° C

Mounting Hole Size

for KS-465 M2,5-F in CEM1 and FR4: \varnothing 2,98 - 2,99 mm (.1173 - .1177)
for KS-465 M2,5 F-R: \varnothing 3.00 - 3,02 mm (.1181 - .1189)

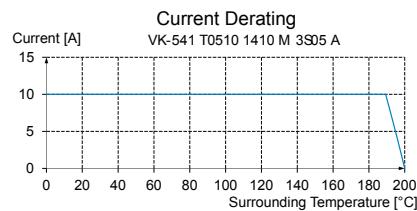
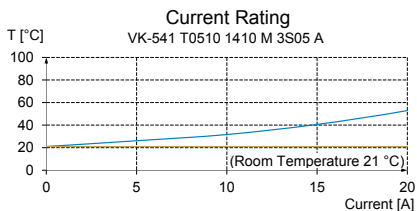
Recommended Tightening Torque

KK-541 in KS-465: 3 cNm

Tools see Page 26

Electrical Data

Max. allowed current outer cond.: 10 A
Max. allowed current inner cond.: 1 A
R_i outer conductor: < 5 mΩ
R_i inner conductor: < 10 mΩ



Flat connector to be contacted

Min. Length: 3,5 mm (.138)
Thickness flat connector*: 0,5 - 0,8 mm (.020 - .031)

Mechanical Data

Min. immersion depth:** 3,5 mm (.138)
Max. immersion depth:** 6,5 mm (.256)

Ordering example

Four-wire clip:

V K 5 4 1 T 0 5 1 0 1 4 1 0 M 3 S 0 5 A

Receptacle for VK-541:

K S - 4 6 5 M 2 , 5 - F K S - 4 6 5 M 2 , 5 - F - R

HSS 624 M

Dipole probe up to 100 A

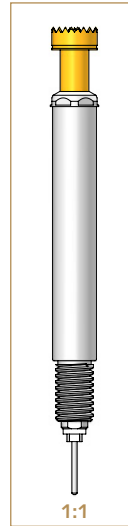
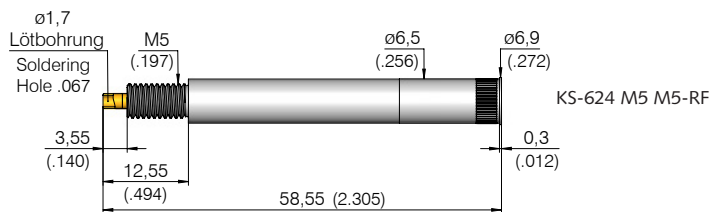
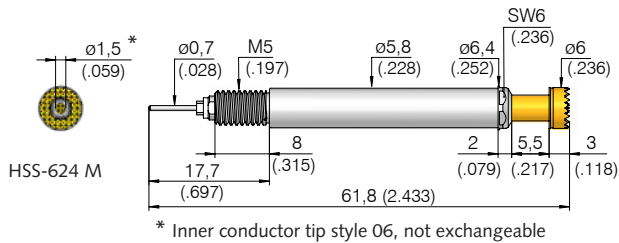
Grid:

≥ 7,60 mm
≥ 300 Mil

Installation height with KS: 10,8 mm (.425)

Recommended stroke: 4,4 mm (.173)

Mounting and Functional Dimensions



Note:

The new screw-in dipole probe HSS-624 M is a market-driven development for transferring high-currents and, at the same time, carrying out a voltage measurement directly on the contact pads (4 pole measurement).

Due to the design and the small internal resistance, currents of up to 100 A can be safely and reliably transferred in small spacing (grid size 300 Mil = 7,6 mm (.299)).

Materials

Plunger:	BeCu, gold-plated
Barrel:	brass, silver-plated
Spring:	stainless steel
Receptacle:	brass, silver-plated

Electrical Data

Max. allowed current outer Cond.:	100 A
Max. allowed current inner Cond.:	1 A
R _i outer conductor:	< 5 mΩ
R _i inner conductor:	< 20 mΩ

Mechanical Data

Working stroke:	4,4 mm (.173)
Max. stroke:	5,5 mm (.217)
Spring-force at work. stroke:	9,0 N (32.5oz)

Operating Temperature

Standard: -100° up to +200° C

Mounting Hole Size

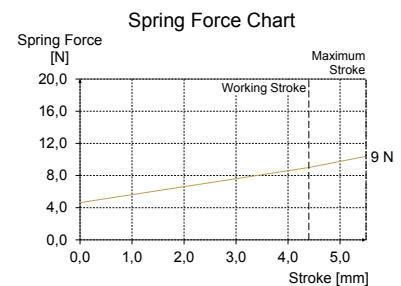
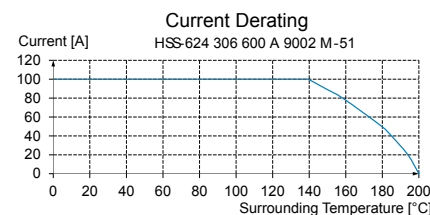
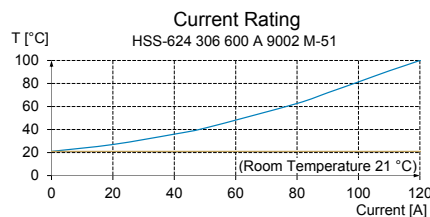
for KS-624
in CEM1 and FR4: ø 6,5 mm (.2559)

Recommended Tightening Torque

HSS-624 M in KS-624: 40 cNm
Cable at KS-624: 4 Nm

Tools see page 26

Hexagon socket wrench: 6 mm (.236)



Ordering example

Series	Tip Material 3 = BeCu	Tip Style	Tip Diameter (1/100 mm)	Plating A = Gold S = Silver	Spring Force (dN)	Collar Height (mm)	Type
--------	--------------------------	-----------	----------------------------	-----------------------------------	----------------------	-----------------------	------

Test probe:

H S S 6 2 4 3 0 6 6 0 0 A 9 0 0 2 M - 5 1

Receptacle for HSS-624 M:

K S - 6 2 4 M 5 M 5 - R F

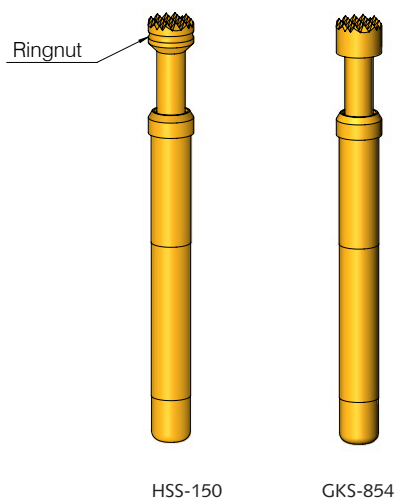
Compatible GKS to HSS

Many INGUN high current test probes are compatible with various GKS test probes. This offers the advantage that HSS and GKS probes can be combined together entirely according to the customer's requirements.

The GKS test probe can be exchanged for a HSS test probe if the current rating or measurement precision after construction needs to be more accurate.

The assembly takes place in the same receptacle - see following table.

HSS Test Probes	GKS Test Probes	KS Receptacles
HSS-118	GKS-112	KS-112
HSS-118 M	GKS-112 M	KS-112 M
HSS-120	GKS-113	KS-113
HSS-120 M	GKS-113 M	KS-113 M
HSS-150	GKS-854	KS-150
HSS-150 M	GKS-854 M	KS-150 M
HSS-827 M	GKS-427 M	KS-427
HSS-520	GKS-913	KS-913
HSS-520 M	GKS-913 M	KS-913 M
HSS-552 M	-	KS-552 M
HSS-005	GKS-005	KS-005



Note:

To easily differentiate the GKS test probe from the HSS test probe, the HSS is labeled with a ring groove around the tip (only when tip - \varnothing > plunger- \varnothing).

Customised test solutions

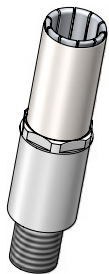
INGUN offers customised test solutions for continuously evolving customer requirements in the area of high current and high voltage. Customised Quality – Made in Germany.

Thereby, challenges such as high current, high voltage, size requirement, reliable contacting, connector-specific features, as well as ambient conditions, are brought together in reliable test solutions by the INGUN development engineers.

The most common customer requests are:

- contacting of round and flat connectors in various diameters and thicknesses
- conductors, both male and female
- Kelvin- or four-wire measurement
- finger protection test, remove when necessary
- non-destructive contacting
- and many more...

Examples of contacting solutions that have already been implemented:



HKR-672 M

Round contact male
with and without protection cap
UUT-Ø: 8 / 10 / 12 mm (.315/.394/.472)
Current: max. 200 A, depends on variant

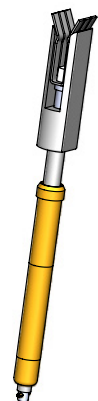
The test probe closes around the terminal and grips on to the sides. This enables a non-destructive contact.



T-785 M

Round contact female
UUT-Ø: 2,1 - 3,4 mm (.083/.134)
Current: max. 16 A, depends on variant

This test probe opens like a flower. It contacts the terminal from the inside without damaging it.



HKF-617

Flat contact male
UUT thickness: 0,8 - 1,0 mm (.031 / .039)
Current: max. 20 - 40 A, depends on variant

The terminal is also clamped here, as soon as the terminal reaches the base. Uninterrupted contact is ensured.

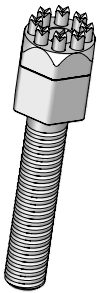


GKS-854

Flat contact female
UUT thickness: 1,8 mm (.071)
Current: max. 25 A, depends on variant

When contacting the flat contact jack, the contact head dips into the terminal.

Customised test solutions

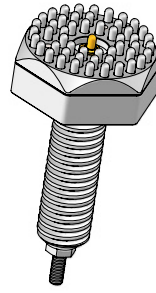


HK-2501

HK-2501: Independent of contact surface

Current: max. 50 A (permanent load)

The high current contact head **HK-2501** was developed for uneven and oblique contact surfaces. All eight spring-loaded test probes fit optimally on the contact surface.



HK-2504

HK-2504: Independent of contact surface

Current: max. 100 A (permanent load)

The high current contact head **HK-2504** was developed for uneven and oblique contact surfaces. The optionally available inner conductor also enables a four-wire measurement.

Example of customer request:

Contacting a flat connector that is used to transmit high current up to 225 A in the automotive sector.

The flat connector normally has a protector cap, which means it is covered with a plastic clip so that contact under load cannot accidentally endanger anyone. This must be moved away for secure contacting.

➤ INGUN solution: Contact clip HKF-615

With the developed high current clip **HKF-615** for flat connectors, the protection cap is pushed down on approach. This is achieved by a metal clip, which unlocks the protection cap and pushes it down.

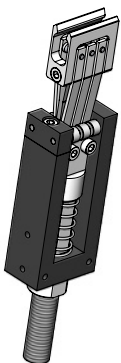
Then the spring clip with six contacts (silver rivets) is positioned over the flat connector without scratching it and then closed. The closing process occurs over a stopper as soon as the contacts are in the correct position.

The protection cap is pulled back into its original position upon removal of **HKF-615**.

➤ Customer value:

For contacting (push away protection cap, contacting, move protection cap into starting position) only one work step is needed, which saves an additional work station and thereby related costs and time. This is achieved by a combined design of unlocking tool and a contact clip.

The **HKF-615** is already approved and often used by satisfied customers.



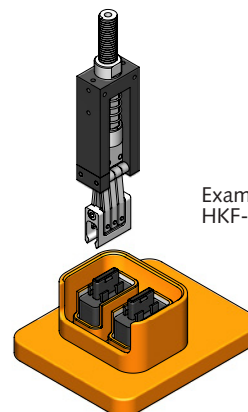
HKF-615

Flat contact male

UUT thickness: 1,8 - 2,2 mm (.071 / .087)

Current: max. 350 A, depends on variant

The high current clip **HKF-615** is designed to contact high current flat connectors without scratching them. Also optionally available with unlocking tools for protection caps.



Example of application:
HKF-615

Tools

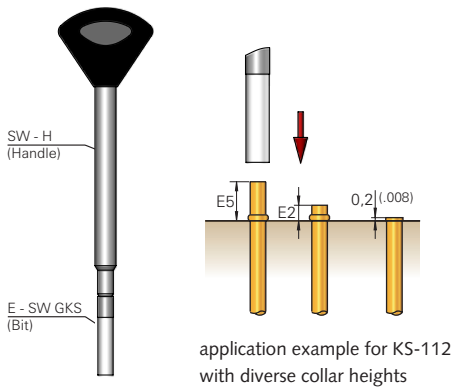
INGUN tools make an important contribution to safe and precise testing. Only with an optimally mounted test probe, smooth production and testing can be realised.

Depending on the receptacle and test probe, various tools and insertion bits for pressing-in, screwing-in and dismounting are available.

Tools for receptacles

Insertion tool

Universal insertion tool **SW-GKS** for receptacles with block. The block determines the height of the collar.



Tools to press-in HSS test probes (without thread)

Insertion tool

Insertion tool SW-GKS for HSS with tip-Ø > shaft-Ø.

Insertion and extraction tool SW-ZW-GKS-xxx for HSS with tip-Ø > shaft-Ø and tip-Ø ≤ shaft-Ø.



Note:
To avoid damage, the HSS with tip-Ø ≤ shaft-Ø should only be mounted with the SW-ZW-GKS tool.

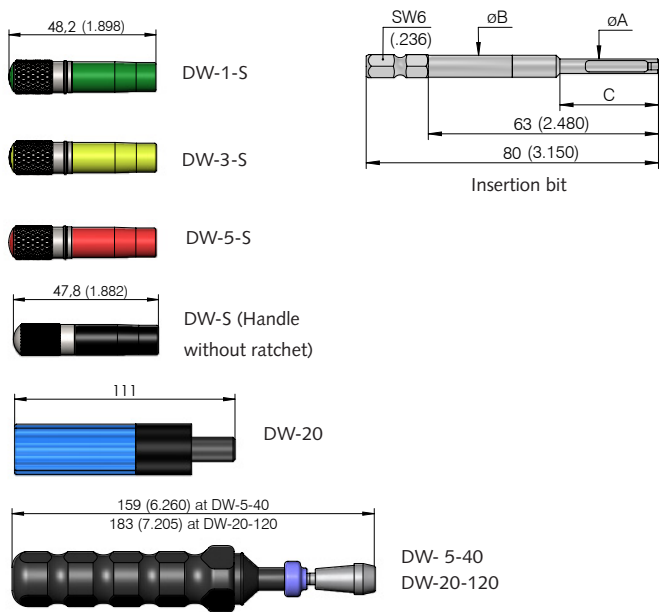
Test probes to plug in	Insertion tools for HSS	Insertion and extraction tools for HSS head-Ø > shaft-Ø	Insertion tools KS
HSS-118		SW-ZW-GKS-112	SW-KS-112
HSS-120		SW-ZW-GKS-103	SW-KS-113
HSS-150	SW-GKS		

Tools to screw-in HSS test probes (with thread)
Torque wrench and insertion bits

Depending on the tip style and the recommended screw-in torque, a variety of tools for the correct mounting of HSS test probes with thread are available.

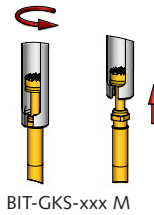
Torque wrench

The preset wrench has a ratchet to limit the torque. The respective rated torque is included in the article description, e.g. DW-1-S with M = 1 cNm.



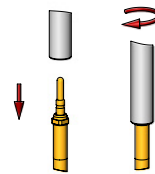
Insertion bits

Depending on head Ø of HSS-probe - various insertion bits are available.



Example of application:
 HSS-120 M (tip-Ø ≤ 4,2 mm)
 with BIT-GKS-113 M

Note:
 The insertion bits **BIT-GKS-xxx M** are the standard tools for HSS probes, especially if the tip-Ø is bigger than the four-sided end of the probe.



Example of application:
 HSS-120 M (tip-Ø ≤ 3,0 mm)
 with BIT-GKS-113 M-B

Note:
 The insertion bits **BIT-GKS-xxx M-B** are for all HSS with tip-Ø smaller than the four-sided end of the probe. Especially for mounting HSS probes with small probe spacing (small grid).

Series	Plunger Tip-Ø	Bit tool	Ø A (mm)	Ø B (mm)	Ø C (mm)	Torque Key			Recommended Torque		Insertion tools for receptacles
						pre-set	freely adjustable		Mmin	Mmax	
HSS-118 M	≤ 2,0 mm	BIT-GKS-112 M-B	2,7	5	30	DW-5-S	DW-5-40	-	3 cNm	5 cNm	SW-KS-112
HSS-118 M	≤ 3,5 mm	BIT-GKS-112 M	4,3	6	27	DW-5-S	DW-5-40	-	3 cNm	5 cNm	SW-KS-112
HSS-120 M	≤ 3,0 mm	BIT-GKS-113 M-B	4,8	48	-	DW-20	DW-5-40	DW-20-120	10 cNm	20 cNm	SW-KS-113
HSS-120 M	≤ 4,2 mm	BIT-GKS-113 M	5,3	6	27	DW-20	DW-5-40	DW-20-120	10 cNm	20 cNm	SW-KS-113
HSS-150 M	≤ 3,0 mm	BIT-HSS-150 M-300	5,5	6	28	DW-20	DW-5-40	DW-20-120	10 cNm	20 cNm	SW-GKS
HSS-150 M	≤ 4,0 mm	BIT-HSS-150 M	5,5	6	28	DW-20	DW-5-40	DW-20-120	10 cNm	20 cNm	SW-GKS
HSS-520 M	≤ 3,0 mm	BIT-GKS-913 M-B	4,8	48	-	DW-5-S	DW-5-40	-	5 cNm	10 cNm	SW-KS-113
HSS-520 M	≤ 3,6 mm	BIT-GKS-913 M	5,3	6	27	DW-5-S	DW-5-40	-	5 cNm	10 cNm	SW-KS-113
HSS-552 M	≤ 4,0 mm	BIT-HSS-150 M	5,5	6	28	DW-20	DW-5-40	DW-20-120	10 cNm	20 cNm	SW-GKS
HSS-827 M	≤ 2,0 mm	BIT-GKS-112 M-B	2,7	5	30	DW-5-S	DW-5-40	-	3 cNm	5 cNm	SW-KS-112
HSS-621 M	≤ 5,0 mm	BIT-HSS-621 M-500	6,4	6	30	-	DW-5-40	DW-20-120	40 cNm		-
HSS-623 M	≤ 6,0 mm	BIT-HSS-623 M-600	7,6	6	30	-	DW-5-40	DW-20-120	40 cNm		-
KK-541	-	BIT-KK-541 M	5,0	6	25	DW-5-S	DW-5-40	-	5 cNm		SW-KS-113
VK-541	-	BIT-KK-541 M	5,0	6	25	DW-5-S	DW-5-40	-	5 cNm		-
HSS-624 M	≤ 6,0 mm	BIT-HSS-623 M-600	7,6	6	30	-	DW-5-40	DW-20-120	40 cNm		-
HKR-612 M	-	Hexagon socket wrench	-	-	-	-	-	-	60 cNm		-

Ordering example

Bit tool for screw-in probe:

BIT - GKS - 112 M - B

Handle without ratchet:

DW - S

Torque keys pre-set:

DW - 1 - S DW - 3 - S DW - 5 - S DW - 20

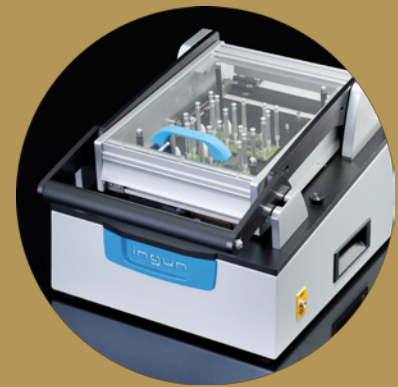
Torque keys freely adjustable:

DW - 5 - 40 DW - 20 - 120

All specifications are subject to change without prior notification



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