


Pivot Pins

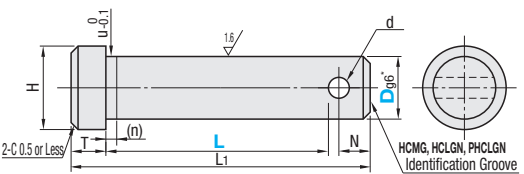
Cotter Pins with Shoulder



Type	Material	Hardness	Surface Treatment	Accessory
HCMG (L Dimension Selectable) HCLGN (L Dimension Configurable)	S45C (HCMG) S45C Equivalent (HCLGN)	-	Black Oxide	Cotter Pin 1 pc.
HCMGH (L Dimension Selectable) HCLGHN (L Dimension Configurable)	S45C (HCMGH) S45C Equivalent (HCLGHN)	40~45HRC	Black Oxide	
- PHCLGN	S45C Equivalent (PHCLGN)	-	Electroless Nickel	M SUS304
- PHCLGHN	S45C Equivalent (PHCLGHN)	40~45HRC	Plating	M SUS304
- GHCLGN	S45C Equivalent (GHCLGN)	Plating Hardness 750HV~	Hard Chrome Plating; Plating Thickness 3µm or more	M SWRM or Low carbon steel
SHCMG (L Dimension Selectable Type is S45C Equivalent) SHCLGN (L Dimension Configurable)	SUS304 Equivalent	45~50HRC	-	M SUS304
- SHCLGHN	SUS440C Equivalent	45~50HRC	Hard Chrome Plating; Plating Thickness 3µm or more	M SUS304
- GSCHLGN	SUS440C Equivalent	45~50HRC	Hard Chrome Plating; Plating Thickness 3µm or more	M SUS304

D Tolerance (g6)

3	-0.002 -0.008
4-6	-0.004 -0.012
8, 10	-0.005 -0.014
12-18	-0.006 -0.017
20-25	-0.007 -0.020



*Dg6 Tolerance is available for L dimensions only. Others are general tolerance.
 There are identification grooves on the side of **HCMG**, **HCLGN** and **PHCLGN** to be distinguished from Hardened Type.
 Relief dimension under the shoulder is for reference.
 For L Dimension, Standard Machining Tolerances (Class: Medium) is used.
 This type may have centering holes depending on dimensions.

L Dimension Selectable

Part Number	Type	D	L Selection	L1	N	u	(n)	d	T	H	Included Cotter Pin	Unit Price
HCMG	3	3	10 12 14 15 16 18 20	L+ 4.4	2.5	2.9	0.8	5.5	5.5	NPNO.8- 8	NSPNO.8- 8	HCMG HCMGH SHCMG
HCMGH (Hardened)	4	4	10 12 14 15 16 18 20	L+ 4.5	3.5	3.9	1	6.5	6.5	NPN1 -10	NSPN1 -10	
	5	5	10 12 14 15 16 18 20	L+ 5.6	4.9	4.9	1.2	8	8	NPN1.2-10	NSPN1.2-10	
	6	6	15 16 18 20 22 24 25 30	L+ 5.8	5.8	5.8	1.5	9	9	NPN1.6-10	NSPN1.6-10	
SHCMG (Stainless Steel)	8	8	18 20 22 24 25 30 35 40 45 50	L+ 7	4	7.8	2	12	12	NP2 -12	NSPN2 -12	
	10	10	18 20 22 24 25 30 35 40 45 50	L+ 8.25	5	9.8	2.5	14	14	NP2.5-15	NSPN2.5-15	
	12	12	22 24 25 30 35 40 45 50	L+10.6	6	11.8	3.2	17	17	NP3.2-20	NSPN3.2-20	

L Dimension Configurable Type (0.1mm Increment)

Part Number	Type	D	L=0.1mm Increment	L1	N	u	(n)	d	T	H	Included Cotter Pin	Unit Price
HCLGN	3	3	5.0~50.0	L+ 4.4	2.5	2.9	0.8	5.5	5.5	NPNO.8- 8	NSPNO.8- 8	
HCLGHN	4	4	5.0~50.0	L+ 4.5	3.5	3.9	1	6.5	6.5	NPN1 -10	NSPN1 -10	
PHCLGN	5	5	10.0~60.0	L+ 5.6	4.9	4.9	1.2	8	8	NPN1.2-10	NSPN1.2-10	
PHCLGHN	6	6	10.0~100.0	L+ 5.8	5.8	5.8	1.6	9	9	NPN1.6-10	NSPN1.6-10	
GHCLGN	8	8	10.0~100.0	L+ 7	4	7.8	2	12	12	NP2 -12	NSPN2 -12	
SHCLGN	10	10	15.0~100.0	L+ 8.25	5	9.8	2.5	14	14	NP2.5-15	NSPN2.5-15	
SHCLGHN	12	12	15.0~200.0	L+10.6	6	11.8	3.2	17	17	NP3.2-20	NSPN3.2-20	
GSCHLGN	13	13	20.0~200.0	L+12	7	14.8	4	18	18	NP4 -20	NSPN4 -20	
	14	14	20.0~200.0	L+12	7	14.8	4	19	19	NP4 -20	NSPN4 -20	
	15	15	20.0~200.0	L+12	7	14.8	4	20	20	NP4 -20	NSPN4 -20	
	16	16	20.0~200.0	L+12	7	14.8	4	21	21	NP4 -20	NSPN4 -20	
	17	17	20.0~200.0	L+12	7	14.8	4	22	22	NP4 -25	NSPN4 -25	
	18	18	20.0~200.0	L+12	7	14.8	4	23	23	NP4 -25	NSPN4 -25	
	20	20	20.0~200.0	L+14.5	8	19.8	5	26	26	NP5 -35	NSPN5 -35	
	22	22	20.0~200.0	L+15.5	9	24.8	6	27	27	NP5 -35	NSPN5 -35	
	25	25	20.0~200.0	L+15.5	9	24.8	6	30	30	NP5 -35	NSPN5 -35	

SHCLGHN and GSCHLGN may be discolored by hardening.


Ordering Example: Part Number - L
 HCMG8 - 30
 HCLGN15 - 120.3

Alterations

Alterations	Cotter Pin Hole Position	Shoulder Thickness	Shoulder Diameter Cut
Code	NC	TC	HC
Spec.	Ordering Code: NC3 D NC (Selection Range) 3 1.5 4 1.5 2 5 1.5 2 2.5 6.8 2 2.5 3 10 2.5 3 4 12 3 4 5 13-18 3 4 5 6 20-25 4 5 6 7 L1=L+NC+d/2+T	Ordering Code: TC3 TC=0.5mm Increment T<TC≤5 L1=L+N+d/2+TC	Ordering Code: HC D=3~10 HC=H/2-1 D=12~25 HC=H/2-2 The positional relationship between the shoulder diameter cut and the cotter pin is established as shown on the drawing below.

Pivot Pins

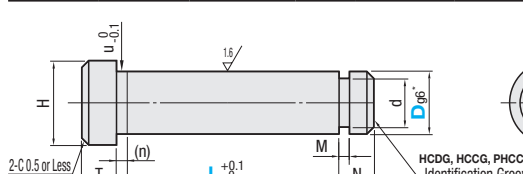
Retaining Ring with Shoulder



Type	Material	Hardness	Surface Treatment	Accessory
HCDG (L Dimension Selectable) HCCG (L Dimension Configurable)	S45C Equivalent (HCDG) S45C (HCCG)	-	Black Oxide	Retaining Ring 1 pc.
HCDGH (L Dimension Selectable) HCCGH (L Dimension Configurable)	S45C Equivalent (HCDGH) S45C (HCCGH)	40~45HRC	Black Oxide	
- PHCCG	S45C Equivalent (PHCCG)	-	Electroless Nickel	M SUS304
- PHCCGH	S45C Equivalent (PHCCGH)	40~45HRC	Plating	M SUS304
- GHCCG	S45C Equivalent (GHCCG)	Plating Hardness 750HV~	Hard Chrome Plating; Plating Thickness 3µm or more	M Spring Steel
SHCDG (L Dimension Selectable Type is S45C Equivalent) SHCCG (L Dimension Configurable)	SUS304	45~50HRC	-	M Spring Steel
- SHCCGH	SUS440C Equivalent	45~50HRC	Hard Chrome Plating; Plating Thickness 3µm or more	M SUS304
- GSCHCCG	SUS440C Equivalent	45~50HRC	Hard Chrome Plating; Plating Thickness 3µm or more	M SUS304

D Tolerance (g6)

2, 3	-0.002 -0.008
4-6	-0.004 -0.012
8, 10	-0.005 -0.014
12-18	-0.006 -0.017
20-25	-0.007 -0.020



*Dg6 Tolerance is available for L dimensions only. Others are general tolerance.
 There are identification grooves on the side of **HCDG**, **HCCG** and **PHCCG** to be distinguished from Hardened Type.
 Relief dimension under the shoulder is for reference.
 For L Dimension, Standard Machining Tolerances (Class: Medium) is used.
 This type may have centering holes depending on dimensions.

L Dimension Selectable

Part Number	Type	D	L Selection	M Tolerance	N	u	(n)	d Tolerance	T	H	Included Retaining Ring Shape/JIS Nominal*	Unit Price
HCDG	3	3	10 12 14 15 16 18 20 22 24 25 30	0.5	2	2.9	2	2 +0.06	5.5	5.5	No. 2	
HCDGH (Hardened)	4	4	10 12 14 15 16 18 20 22 24 25 30	0.7	2	3.9	3	3 0	6.5	6.5	No. 3	
	5	5	15 16 18 20 22 24 25 30 35 40 45 50	0.9	3	4.9	4	4 +0.075	8	8	No. 4	
	6	6	18 20 22 24 25 30 35 40 45 50	1.15	3	5.8	5	5 0	9	9	No. 5	
	8	8	22 24 25 30 35 40 45 50			7.8	7	7 +0.09	12	12	No. 7	
	10	10	22 24 25 30 35 40 45 50			9.6	9	9 0	14	14	No. 9	
	12	12	22 24 25 30 35 40 45 50			11.8	11.5	11.5 -0.11	17	17	No. 11	

* For details, see P2303.

L Dimension Configurable Type (0.1mm Increment)

Part Number	Type	D	L=0.1mm Increment	M Tolerance	N	u	(n)	d Tolerance	T	H	Included Retaining Ring Shape/JIS Nominal*	Unit Price
HCCG	3	3	5.0~ 30.0	0.5	2	1.9	1.5	1.5 +0.06	4.5	4.5	No. 1.5	
HCCGH	4	4	5.0~ 30.0	0.7	2	2.9	2	2 0	5.5	5.5	No. 2	
PHCCG	5	5	10.0~ 60.0	0.9	3	3.9	3	3 0	6.5	6.5	No. 3	
PHCCGH	6	6	10.0~ 60.0	1.15	3	4.9	4	4 +0.075	8	8	No. 4	
GHCCG	8	8	10.0~ 100.0			5.8	5	5 0	9	9	No. 5	
SHCCG	10	10	15.0~ 100.0			7.8	7	7 +0.09	12	12	No. 7	
SHCCGH	12	12	15.0~ 100.0			9.6	9	9 0	14	14	No. 9	
GSCHCCG	13	13	20.0~ 200.0			11.8	11.5	11.5 -0.09	17	17	No. 11	
	14	14	20.0~ 200.0			12.8	12.4	12.4	18	18	No. 13	
	15	15	20.0~ 200.0			13.8	13.4	13.4	19	19	No. 14	
	16	16	20.0~ 200.0			14.8	14.3	14.3	20	20	No. 15	
	17	17	20.0~ 200.0			15.8	15.2	15.2	21	21	No. 16	
	18	18	20.0~ 200.0			16.8	16.2	16.2	22	22	No. 17	
	20	20	20.0~ 200.0			17.8	17	17	23	23	No. 18	
	22	22	20.0~ 200.0			19.8	19	19	26	26	No. 20	
	25	25	20.0~ 200.0			21.8	21	21	27	27	No. 22	
						24.8	23.9	23.9	31	31	No. 25	

* For details, see P2303. SHCCGH and GSCHCCG may be discolored by hardening.

Ordering Example: Part Number - L
 HCDG8 - 30
 HCCG15 - 120.3

Alterations

Alterations	Retaining Ring Groove Position	Shoulder Thickness	Shoulder Diameter Cut
Code	NC	TC	HC
Spec.	Ordering Code: NC3.5 D NC (0.1mm Increment) 2-4 1.5-3 5 1.7-3 6 1.9-4 8 2.4-5 10-18 2.7-5 20-25 2.9-5 Overall Length is L+NC+T.	Ordering Code: TC3 TC=0.5mm Increment T<TC≤5 Overall Length is L+N+TC.	Ordering Code: HC D=2~10 HC=H/2-1 D=12~25 HC=H/2-2