



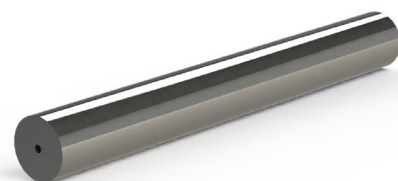
# OUR PRODUCT

C A R B I D E

RODS WITH COOLANT HOLES

— OUR PRODUCT —

## Ground Rods with 1 Straight Coolant Hole



### Ground Rods with 1 Straight Coolant Hole

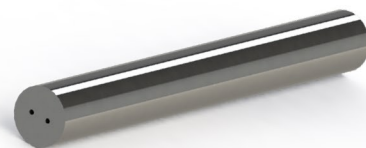
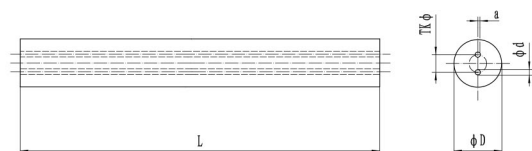
Diameter		Length		Hole Spac		amax(mm)	Grade	
D(mm)	Tolerance	L(mm)	Tolerance	d(mm)	Tolerance		ST20F	ST15D
4.0	h5	330	+2.0~+6.0	0.60	±0.10	0.10	●	○
6.0	h5	330	+2.0~+6.0	1.00	±0.15	0.15	●	○
8.0	h5	330	+2.0~+6.0	1.30	±0.15	0.15	●	○
10.0	h5	330	+2.0~+6.0	2.00	±0.15	0.20	●	○
12.0	h5	330	+2.0~+6.0	2.00	±0.15	0.30	●	○
12.0	h5	330	+2.0~+6.0	3.00	±0.15	0.30	●	○
13.0	h5	330	+2.0~+6.0	2.00	±0.15	0.34	●	○
14.0	h5	330	+2.0~+6.0	2.00	±0.15	0.37	●	○
14.0	h5	330	+2.0~+6.0	3.00	±0.15	0.37	●	○
16.0	h5	330	+2.0~+6.0	2.00	±0.2	0.40	●	○
16.0	h5	330	+2.0~+6.0	3.00	±0.2	0.40	●	○
18.0	h5	330	+2.0~+6.0	3.00	±0.2	0.50	●	○
20.0	h5	330	+2.0~+6.0	2.00	±0.25	0.50	●	○
20.0	h5	330	+2.0~+6.0	3.00	±0.25	0.50	●	○
22.0	h5	330	+2.0~+6.0	3.00	±0.25	0.50	●	○
24.0	h5	330	+2.0~+6.0	4.00	±0.25	0.50	○	○
25.0	h5	330	+2.0~+6.0	4.00	±0.25	0.50	○	○
28.0	h5	330	+2.0~+6.0	4.00	±0.25	0.50	○	○
30.0	h5	330	+2.0~+6.0	5.00	±0.25	0.50	○	○
32.0	h5	330	+2.0~+6.0	5.00	±0.25	0.50	○	○

● Stock

○ Limited stock

◇ Other grades and dimensions on request

## Ground Rods with 2 Straight Coolant Holes

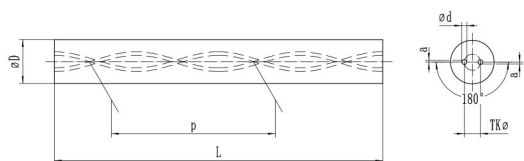


### Ground Rods with 2 Straight Coolant Holes

Diameter		Length		Hole Spacing		Hole sizeH		amax(mm)	Grade	
D(mm)	Tolerance	L(mm)	Tolerance	TK(mm)	Tolerance	d(mm)	Tolerance		ST20F	ST15D
4.0	h5	330	+2.0~+6.0	1.80	+0/-0.15	0.80	±0.10	0.10	○	○
5.0	h5	330	+2.0~+6.0	2.00	+0/-0.15	0.80	±0.10	0.13	○	○
6.0	h5	330	+2.0~+6.0	1.50	+0/-0.20	0.90	±0.10	0.15	○	○
6.0	h5	330	+2.0~+6.0	3.00	+0/-0.20	1.00	±0.10	0.15	○	○
7.0	h5	330	+2.0~+6.0	3.50	+0/-0.20	1.00	±0.15	0.15	○	○
8.0	h5	330	+2.0~+6.0	2.60	+0/-0.30	1.00	±0.10	0.15	○	○
8.0	h5	330	+2.0~+6.0	4.00	+0/-0.30	1.00	±0.15	0.15	○	○
9.0	h5	330	+2.0~+6.0	4.00	+0/-0.30	1.40	±0.10	0.20	○	○
10.0	h5	330	+2.0~+6.0	3.50	+0/-0.30	1.20	±0.10	0.20	○	○
10.0	h5	330	+2.0~+6.0	5.00	+0/-0.30	1.40	±0.15	0.20	○	○
11.0	h5	330	+2.0~+6.0	5.00	+0/-0.30	1.40	±0.15	0.28	○	○
12.0	h5	330	+2.0~+6.0	3.50	+0/-0.30	1.20	±0.15	0.30	○	○
12.0	h5	330	+2.0~+6.0	6.00	+0/-0.30	1.75	±0.15	0.30	○	○
13.0	h5	330	+2.0~+6.0	6.00	+0/-0.30	1.75	±0.15	0.34	○	○
14.0	h5	330	+2.0~+6.0	5.00	+0/-0.30	1.50	±0.15	0.37	○	○
14.0	h5	330	+2.0~+6.0	7.00	+0/-0.30	1.75	±0.15	0.37	○	○
15.0	h5	330	+2.0~+6.0	7.00	+0/-0.30	2.00	±0.15	0.40	○	○
16.0	h5	330	+2.0~+6.0	5.00	+0/-0.30	1.50	±0.15	0.40	○	○
16.0	h5	330	+2.0~+6.0	8.00	+0/-0.30	2.00	±0.20	0.40	○	○
17.0	h5	330	+2.0~+6.0	8.00	+0/-0.30	2.00	±0.20	0.47	○	○
18.0	h5	330	+2.0~+6.0	9.00	+0/-0.30	2.00	±0.20	0.50	○	○
19.0	h5	330	+2.0~+6.0	9.00	+0/-0.30	2.00	±0.20	0.50	○	○
20.0	h5	330	+2.0~+6.0	10.00	+0/-0.40	2.50	±0.25	0.50	○	○
21.0	h5	330	+2.0~+6.0	10.00	+0/-0.40	2.50	±0.25	0.50	○	○
22.0	h5	330	+2.0~+6.0	11.00	+0/-0.40	2.50	±0.25	0.50	○	○
23.0	h5	330	+2.0~+6.0	11.00	+0/-0.40	2.50	±0.25	0.50	○	○
24.0	h5	330	+2.0~+6.0	12.00	+0/-0.50	3.00	±0.25	0.50	○	○
25.0	h5	330	+2.0~+6.0	12.00	+0/-0.50	3.00	±0.25	0.50	○	○
28.0	h5	330	+2.0~+6.0	14.00	+0/-0.50	3.00	±0.25	0.50	○	○
30.0	h5	330	+2.0~+6.0	14.00	+0/-0.50	3.00	±0.25	0.50	○	○
32.0	h5	330	+2.0~+6.0	14.00	+0/-0.50	3.00	±0.25	0.50	○	○

● Stock ○ Limited stock ◇ Other grades and dimensions on request

## Ground Rods with 2 Helix Coolant Holes 30°



### Ground Rods with 2 Helix Coolant Holes 30°

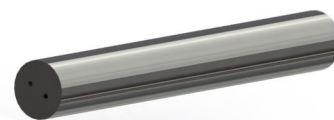
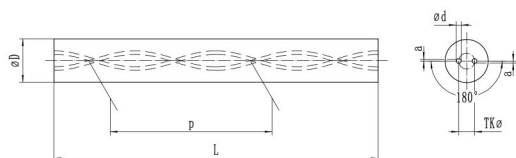
Diameter		Length		Hole Spacing		Hole size		"P (±0.5°)"	amax(mm)	Grade	
D(mm)	Tolerance	L(mm)	Tolerance	TK(mm)	Tolerance	d(mm)	Tolerance			ST20F	ST15D
4.0	h5	330	+2.0~+6.0	2.20	+0/-0.20	0.60	±0.10	21.77 -0.43/+0.45	0.10	●	●
5.0	h5	330	+0.0~+5.0	2.60	+0/-0.40	0.70	±0.10	27.21 -0.54/+0.56	0.13	●	●
6.0	h5	330	+2.0~+6.0	1.90	+0/-0.20	0.70	±0.10	32.65 -0.65/+0.67	0.15	○	○
6.0	h5	330	+2.0~+6.0	2.60	+0/-0.40	0.70	±0.10	32.65 -0.65/+0.67	0.15	●	●
7.0	h5	330	+2.0~+6.0	3.70	+0/-0.40	1.00	±0.15	38.09 -0.76/+0.78	0.15	●	●
8.0	h5	330	+2.0~+6.0	3.30	+0/-0.40	1.00	±0.15	43.53 -0.86/+0.89	0.15	○	○
8.0	h5	330	+2.0~+6.0	4.00	+0/-0.40	1.00	±0.15	43.53 -0.86/+0.89	0.15	●	●
9.0	h5	330	+2.0~+6.0	4.80	+0/-0.60	1.40	±0.15	48.97 -0.97/+1.00	0.20	●	●
10.0	h5	330	+2.0~+6.0	2.70	+0/-0.40	0.80	±0.10	54.41 -1.08/+1.11	0.20	○	○
10.0	h5	330	+2.0~+6.0	4.80	+0/-0.60	1.40	±0.15	54.41 -1.08/+1.11	0.20	●	●
11.0	h5	330	+2.0~+6.0	5.30	+0/-0.80	1.40	±0.15	59.86 -1.19/+1.22	0.28	●	●
12.0	h5	330	+2.0~+6.0	3.70	+0/-0.40	1.00	±0.15	65.30 -1.30/+1.34	0.30	○	○
12.0	h5	330	+2.0~+6.0	5.40	+0/-0.60	1.50	±0.15	65.30 -1.30/+1.34	0.30	○	○
12.0	h5	330	+2.0~+6.0	6.25	+0/-0.80	1.40	±0.15	65.30 -1.30/+1.34	0.30	●	●
13.0	h5	330	+2.0~+6.0	6.50	+0/-0.80	1.75	±0.20	70.74 -1.40/+1.45	0.34	●	●
14.0	h5	330	+2.0~+6.0	4.80	+0/-0.60	1.30	±0.15	76.18 -1.51/+1.56	0.37	○	○
14.0	h5	330	+2.0~+6.0	6.00	+0/-0.60	1.60	±0.20	76.18 -1.51/+1.56	0.37	○	○
14.0	h5	330	+2.0~+6.0	7.10	+0/-0.80	1.75	±0.20	76.18 -1.51/+1.56	0.37	●	●
15.0	h5	330	+2.0~+6.0	7.70	+0/-0.80	1.75	±0.20	81.62 -1.62/+1.67	0.40	●	●
16.0	h5	330	+2.0~+6.0	4.90	+0/-0.60	1.40	±0.15	87.06 -1.73/+1.78	0.40	○	○
16.0	h5	330	+2.0~+6.0	5.70	+0/-0.60	1.50	±0.15	87.06 -1.73/+1.78	0.40	○	○
16.0	h5	330	+2.0~+6.0	8.30	+0/-0.80	1.75	±0.20	87.06 -1.73/+1.78	0.40	●	●
17.0	h5	330	+2.0~+6.0	8.90	+0/-0.80	1.75	±0.20	92.50 -1.84/+1.89	0.47	●	●
18.0	h5	330	+2.0~+6.0	6.30	+0/-0.80	1.70	±0.20	97.95 -1.94/+2.00	0.50	○	○
18.0	h5	330	+2.0~+6.0	9.55	+0/-0.80	2.00	±0.25	97.95 -1.94/+2.00	0.50	●	●
19.0	h5	330	+2.0~+6.0	10.10	+0/-0.80	2.00	±0.25	103.39 -2.05/+2.12	0.50	●	●
20.0	h5	330	+2.0~+6.0	6.00	+0/-0.60	1.00	±0.15	108.83 -2.16/+2.23	0.50	○	○
20.0	h5	330	+2.0~+6.0	10.40	+0/-1.00	2.00	±0.25	108.83 -2.16/+2.23	0.50	●	●

● Stock

○ Limited stock

◇ Other grades and dimensions on request

## Ground Rods with 2 Helix Coolant Holes 40°



### Ground Rods with 2 Helix Coolant Holes 40°

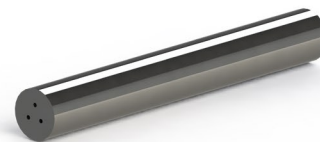
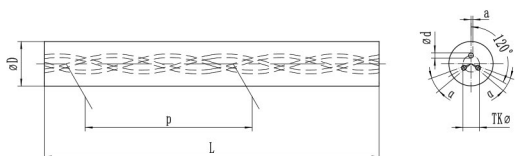
Diameter		Length		Hole Spacing		Hole size		"P" (±0.5°)	amax(mm)	Grade	
D(mm)	Tolance	L(mm)	Tolance	TK(mm)	公差	d(mm)	Tolance			ST20F	ST15D
6.0	h5	330	+2.0~+6.0	1.40	+0/-0.40	0.40	±0.15	22.46 -0.39/+0.40	0.15	○	○
6.0	h5	330	+2.0~+6.0	2.20	+0/-0.40	0.50	±0.15	22.46 -0.39/+0.40	0.15	●	●
7.0	h5	330	+2.0~+6.0	2.40	+0/-0.40	0.70	±0.15	26.21 -0.46/+0.47	0.15	○	○
8.0	h5	330	+2.0~+6.0	1.70	+0/-0.20	0.40	±0.10	29.95 -0.53/+0.54	0.15	○	○
8.0	h5	330	+2.0~+6.0	2.70	+0/-0.60	0.65	±0.15	29.95 -0.53/+0.54	0.15	●	●
9.0	h5	330	+2.0~+6.0	3.20	+0/-0.60	0.75	±0.15	33.70 -0.59/+0.60	0.20	○	○
10.0	h5	330	+2.0~+6.0	2.10	+0/-0.20	0.50	±0.10	37.44 -0.66/+0.67	0.20	○	○
10.0	h5	330	+2.0~+6.0	3.50	+0/-0.80	0.80	±0.15	37.44 -0.66/+0.67	0.20	●	●
11.0	h5	330	+2.0~+6.0	3.70	+0/-0.80	0.80	±0.15	41.18 -0.72/+0.74	0.28	○	○
12.0	h5	330	+2.0~+6.0	2.50	+0/-0.40	0.60	±0.10	44.93 -0.79/+0.80	0.30	○	○
12.0	h5	330	+2.0~+6.0	4.20	+0/-0.80	0.90	±0.20	44.93 -0.79/+0.80	0.30	●	●
13.0	h5	330	+2.0~+6.0	4.40	+0/-0.80	0.90	±0.15	48.67 -0.85/+0.87	0.34	○	○
14.0	h5	330	+2.0~+6.0	2.90	+0/-0.40	0.70	±0.10	52.42 -0.92/+0.94	0.37	○	○
14.0	h5	330	+2.0~+6.0	4.70	+0/-0.80	1.00	±0.20	52.42 -0.92/+0.94	0.37	○	○
15.0	h5	330	+2.0~+6.0	5.10	+0/-0.80	1.10	±0.20	56.16 -0.99/+1.01	0.40	○	○
16.0	h5	330	+2.0~+6.0	3.30	+0/-0.40	0.80	±0.10	59.90 -1.05/+1.07	0.40	○	○
16.0	h5	330	+2.0~+6.0	5.50	+0/-0.80	1.20	±0.20	59.90 -1.05/+1.07	0.40	○	○
18.0	h5	330	+2.0~+6.0	3.70	+0/-0.40	0.90	±0.15	67.39 -1.18/+1.21	0.50	○	○
18.0	h5	330	+2.0~+6.0	6.30	+0/-0.80	1.40	±0.25	67.39 -1.18/+1.21	0.50	○	○
20.0	h5	330	+2.0~+6.0	4.10	+0/-0.40	1.00	±0.15	74.88 -1.31/+1.34	0.50	○	○
20.0	h5	330	+2.0~+6.0	7.10	+0/-1.00	1.50	±0.25	74.88 -1.31/+1.34	0.50	○	○

● Stock

○ Limited stock

◇ Other grades and dimensions on request

## Ground Rods with 3 Helix Coolant Holes 30°



### Ground Rods with 3 Helix Coolant Holes 30°

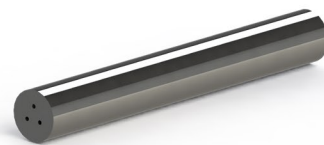
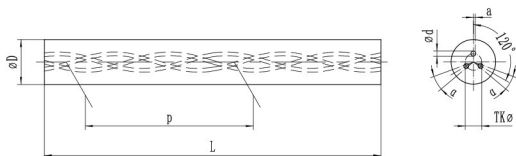
Diameter		Length		Hole Spacing		Hole size		"Thread ( $\pm 0.5^\circ$ )"	$\alpha_{\max}$ - (mm)	Grade	
D(mm)	Tolerance	L(mm)	Tolerance	TK(mm)	Tolerance	d(mm)	Tolerance			ST20F	ST15D
6.0	h5	330	+2.0~+6.0	2.90	+0/0.30	0.50	$\pm 0.10$	32.65 -0.65/+0.67	$\pm 4^\circ$	○	○
8.0	h5	330	+2.0~+6.0	4.00	+0/0.30	0.70	$\pm 0.10$	43.53 -0.86/+0.89	$\pm 4^\circ$	●	●
10.0	h5	330	+2.0~+6.0	5.10	+0/0.30	0.85	$\pm 0.15$	54.41 -1.08/+1.11	$\pm 4^\circ$	●	●
12.0	h5	330	+2.0~+6.0	6.30	+0/0.50	1.10	$\pm 0.15$	65.30 -1.30/+1.34	$\pm 4^\circ$	●	●
14.0	h5	330	+2.0~+6.0	7.30	+0/0.50	1.40	$\pm 0.15$	76.18 -1.51/+1.56	$\pm 4^\circ$	○	○
16.0	h5	330	+2.0~+6.0	8.30	+0/0.50	1.60	$\pm 0.20$	87.06 -1.73/+1.78	$\pm 4^\circ$	○	○
18.0	h5	330	+2.0~+6.0	9.50	+0/0.50	1.70	$\pm 0.20$	97.95 -1.94/+2.00	$\pm 4^\circ$	○	○
20.0	h5	330	+2.0~+6.0	10.20	+0/0.50	1.90	$\pm 0.25$	108.83 -2.16/+2.23	$\pm 4^\circ$	○	○

● Stock

○ Limited stock

◇ Other grades and dimensions on request

## Ground Rods with 3 Helix Coolant Holes 40°



Ground Rods with 3 Helix Coolant Holes 40°

Diameter		Length		Hole Spacing		Hole size		"Thread ( $\pm 0.5^\circ$ )"	$\alpha_{max}$ - (mm)	Grade	
D(mm)	Tolerance	L(mm)	Tolerance	TK(mm)	Tolerance	d(mm)	Tolerance			ST20F	ST15D
6.0	h5	330	+2.0~+6.0	2.20	+0/-0.30	0.50	$\pm 0.15$	22.46 -0.39/+0.40	$\pm 4^\circ$	○	○
8.0	h5	330	+2.0~+6.0	2.70	+0/-0.30	0.65	$\pm 0.15$	29.95 -0.53/+0.54	$\pm 4^\circ$	●	●
10.0	h5	330	+2.0~+6.0	3.50	+0/-0.30	0.80	$\pm 0.15$	37.44 -0.66/+0.67	$\pm 4^\circ$	●	●
12.0	h5	330	+2.0~+6.0	4.20	+0/-0.50	0.90	$\pm 0.20$	44.93 -0.79/+0.80	$\pm 4^\circ$	●	●
14.0	h5	330	+2.0~+6.0	4.70	+0/-0.50	1.00	$\pm 0.20$	52.42 -0.92/+0.94	$\pm 4^\circ$	○	○
16.0	h5	330	+2.0~+6.0	5.50	+0/-0.50	1.20	$\pm 0.20$	59.90 -1.05/+1.07	$\pm 4^\circ$	○	○
18.0	h5	330	+2.0~+6.0	6.30	+0/-0.50	1.40	$\pm 0.25$	67.39 -1.18/+1.21	$\pm 4^\circ$	○	○
20.0	h5	330	+2.0~+6.0	7.10	+0/-0.70	1.50	$\pm 0.25$	74.88 -1.31/+1.34	$\pm 4^\circ$	○	○

● Stock

○ Limited stock

◇ Other grades and dimensions on request

