



**超 金 刚**  
Super Diamond

# HIGH AIR PRESSURE WITHOUT FOOT VALVE DTH HAMMER AND BIT



**Changsha Chaojingang(CJG) Machinery Manufacturing Co., Ltd**

Sales Manager : Celia Zeng

Mobile / Wechat / Whatsapp: +86 15111106005

Email: [cjg04@cjgdrill.com](mailto:cjg04@cjgdrill.com) Web: [www.cjgdrill.com](http://www.cjgdrill.com)

Add: FengYuBei Road, LiuYang High-tech Industrial Development  
Zone, ChangSha City, HuNan Province, China.

# COMPANY PROFILE

Changsha Chaojingang (CJG) Machinery Manufacturing Co., Ltd ( Super Diamond ) is a modern high-tech enterprise, which is specialized in researching and manufacturing rock drilling machine and pneumatic tools . The company has rich experiences for scientific research and production. using the high-quality raw materials, advanced production technology and rigorous testing methods, to produce products with superior performance and stable and reliable quality. "Super Diamond" brand rock drilling and pneumatic series products are sold well all over the country due to their superior performance, stable and reliable quality. They have been exported in batches to more than 20 countries and regions, such as Korea, Russia , Brazil, Australia and South Africa, and are well received by users.

The company is located in Liuyang, Changsha, a beautiful fireworks city. It covers an area of 26600 square meters. Its production plant covers 22,000 square meters. It has nearly 100 employees, 26 engineers and technicians, and 8 senior engineers. There are nearly 400 sets of professional equipment for research, manufacture and testing of rock drilling machinery and pneumatic tools. The company develops and manufactures the most advanced positive and negative circulation DTH hammers; reverse circulation hammers; various positive and negative circulation DTH drills; eccentric follow-up pipe drilling tools, centerline follow-up pipe drilling tools, slider type follow-up pipe drilling tools, double follow-up pipe drilling tools for follow-up drilling in overburden and loose rock strata; various thread drills; It is widely used in earthwork engineering, mining, water well engineering and construction engineering, geothermal drilling, municipal engineering and other fields. Adhering to the spirit of excellent innovation, the company provides high-quality products, advanced technology, comprehensive service, the pursuit of customer-centered, quality-oriented, to provide overall rock drilling solutions as the development goal, sincerely hope to work with old and new friends to win-win and create a better tomorrow.



**26000+**

26600m<sup>2</sup> area and  
22000m<sup>2</sup> workshop.

**20+**

20+ years  
experience.

**8+**

8 senior engineers,  
26 specialized  
technicians.

**300+**

300+ customers  
all over the world.

# The Characteristics Of High Air Pressure DTH Hammers without foot valve

It is a kind of high air pressure DTH Hammer without footvalve, our latest design. It is also one of the most advanced DTH Hammers in the world.

## IT HAS THE FOLLOWING advantages

- Avoid the trouble of foot valve fracture and expansion and contraction.
- Lower energy consumption and higher impact frequency. The drilling speed is 15%-30% higher than the one with foot valve.
- Simple structure, reliable parts, easy and cheap maintenance.
- Lower air and oil consumption. The oil consumption is about 10% lower than the one with foot valve.
- High hardness, long service life and low failure rate.
- Support add foot valve , it can be used normally with or without adding it.

Definition of High Air Pressure DTH Hammer without foot valve.

For Example:CD45A

CD45A C—Chaojingang(Our company name)  
D—DHD Bit Shank  
4—4” hammer  
5—The Fifth Generation Hammer  
A—Bit without foot valve

For Example:CQL50A

CQL50A C—Chaojingang(Our company name)  
QL50—QL50 Bit Shank  
A—Bit without foot valve

S—Smaller size than general DTH Hammer

## Description of drill bit parameters:

The number of buttons is for reference only. Our engineers will adjust the number of button according to different designs of customers, which is generally more than the reference number.



# Bit Face Shape Selection



**Drop Center** For high penetration rates in soft to medium hard and fissured rock formations. Low to medium air pressures. Maximum hole deviation control.



**Concave Face** The all-round application bit face special for medium hard and homogeneous rock formations. Good hole deviation control and good flushing capacity.



**Convex Face** For high penetration rates in soft to medium-hard with low to medium air pressures. It is the most resistance to steel wash, and may reduce the load and wear on the gauge buttons, but poor hole deviation control.



**Flat Face** This kind of face shape is suitable for very hard and abrasive rock formations in applications with high air pressures. Good penetration rates and resistance to steel wash.



**Double Gauge Face** This kind of face shape is suitable for fast penetration rates in medium to hard rock formations. Designed for high air pressures and good resistance to steel wash step gauge bit.

# Carbide Button Shape Options



## Domed / Spherical Button

Domed /Spherical Buttons are usually used as gauge buttons of DTH Bits, suitable for very abrasive and very hard formations.



## Parabolic/Semi-Ballistic Buttons

Parabolic Buttons are usually used as gauge buttons and front buttons of DTH Bits, suitable for medium abrasive and hard formations.



## Ballistic Button

Ballistic Buttons are usually used as front buttons of DTH Bits, suitable for medium abrasive and medium hard formations. They can also be used as gauge buttons if the rock is soft.



## Sharp Button

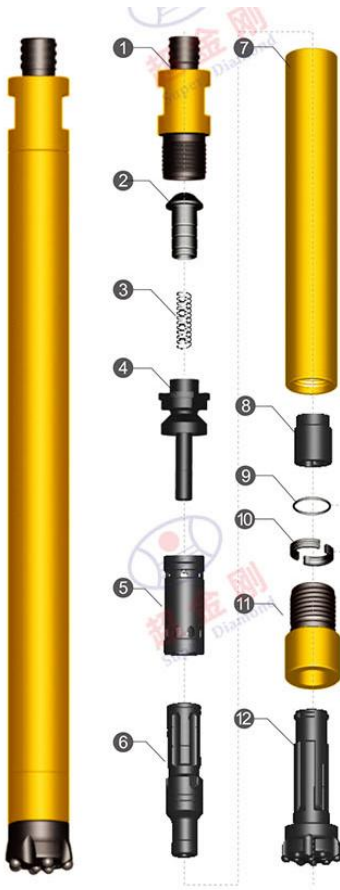
Sharp Buttons are usually used as front buttons of DTH bits for soft formations where fast penetration rates are possible and button breakage is minimal.



## Flat Button

Flat buttons are usually used as protection buttons to reduce wear on rubbing surfaces of DTH Bits.

# 2 INCH DTH HAMMER - CD25A BR2



Technical Parameters Refere To CD25A DTH Hammer .

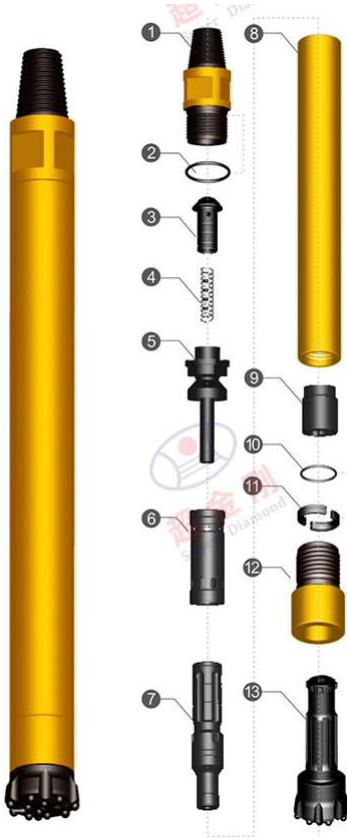
Part Description	Weight (Kg)	Part Number
① Top Sub	3.10	CD25A-01
② Check Valve	0.10	CD25A-02
③ Spring	0.05	CD25A-03
④ Air Distributor	0.60	CD25A-04
⑤ Internal Cylinder	0.80	CD25A-05
⑥ Piston	3.80	CD25A-06
⑦ External Cylinder	6.30	CD25A-07
⑧ Guided Sleeve	0.60	CD25A-08
⑨ "O" Ring of Stop Ring	0.005	CD25A-09
⑩ Stop Ring	0.10	CD25A-10
⑪ Drive Chuck	1.40	CD25A-11
⑫ Drill Bit		CD25A-12

Length (Without Bit)	Weight (Without Bit)	External Diameter	Bit Shank	Hole Range	Connection Thread
872mm	16.9kg	Φ71mm	CD25A	Φ76-Φ90mm	T42x10x1.5 T48x10
Working Pressure	Impact rate at 1.5Mpa	Recommended rotation speed		Air Consumption	
1.0-1.5Mpa	25HZ	22-35r/min		1.0Mpa	1.5Mpa
				4m³/min	6m³/min

2" BIT Data Refere to CD25 Flat Face Bit

Diameter		No x Button diameter, mm		Button angle°	Flushing holes	Weight (Kg)	Part No
mm	inch	Gauge Buttons	Front Buttons				
76	3	6xΦ13	4xΦ10	38	2xΦ12	3.5	CD25-76
80	3 1/8"	6xΦ14	4xΦ11	38	2xΦ12	3.8	CD25-80
82	3 1/4"	6xΦ14	4xΦ11	38	2xΦ12	3.9	CD25-82
90	3 9/16"	8xΦ12	5xΦ12	38	2xΦ12	4.3	CD25-90

# 3 INCH DTH HAMMER - CD35A DHD3.5 Mission30 COP32 QL30



Technical Parameters Refere To CD35A DTH Hammer .

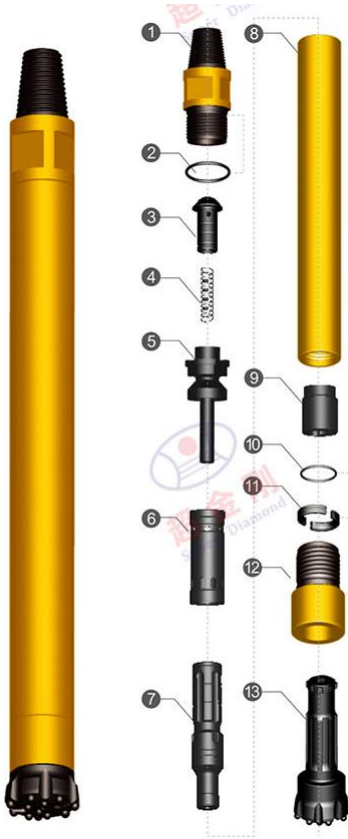
Part Description	Weight (Kg)	Part Number
① Top Sub	4.20	CD35A-01
② "O" Ring of Top Sub	0.01	CD35A-02
③ Check Valve	0.20	CD35A-03
④ Spring	0.02	CD35A-04
⑤ Air Distributor	0.80	CD35A-05
⑥ Internal Cylinder	1.30	CD35A-06
⑦ Piston	5.50	CD35A-07
⑧ External Cylinder	10.00	CD35A-08
⑨ Guided Sleeve	1.00	CD35A-09
⑩ "O" Ring of Stop Ring	0.005	CD35A-10
⑪ Stop Ring	0.15	CD35A-11
⑫ Drive Chuck	1.90	CD35A-12
⑬ Drill Bit		CD35A-13

Length (Without Bit)	Weight (Without Bit)	External Diameter	Bit Shank	Hole Range	Connection Thread
888mm	25kg	Φ82mm	CD35A	Φ90mm-Φ105mm	API 2 3/8" Reg
Working Pressure	Impact rate at 1.5Mpa	Recommended rotation speed		Air Consumption	
1.0-1.5Mpa	25HZ	25-40r/min		1.0Mpa	1.5Mpa
				3.8m³/min	7.5m³/min

3" BIT Data Refere to CD35 Flat Face Bit

Diameter		No x Button diameter, mm		Button angle°	Flushing holes	Weight (Kg)	Part No
mm	inch	Gauge Buttons	Front Buttons				
90	3 9/16"	6xΦ14	4xΦ12	38	2xΦ14	4.5	CD35-90
92	3 5/8"	6xΦ14	4xΦ12	38	2xΦ14	4.6	CD35-92
95	3 3/4"	6xΦ14	4xΦ13	38	2xΦ14	4.7	CD35-95
100	3 15/16"	6xΦ14	5xΦ13	38	2xΦ14	4.8	CD35-100
105	4 1/8"	6xΦ14	5xΦ13	38	2xΦ14	5.0	CD35-105
110	4 5/16"	8xΦ14	6xΦ13	38	2xΦ14	5.5	CD35-110

# 4 INCH DTH HAMMER-CD45A DHD340 COP44 SD4 Mission40 QL40



Technical Parameters Refere To CD45A DTH Hammer .

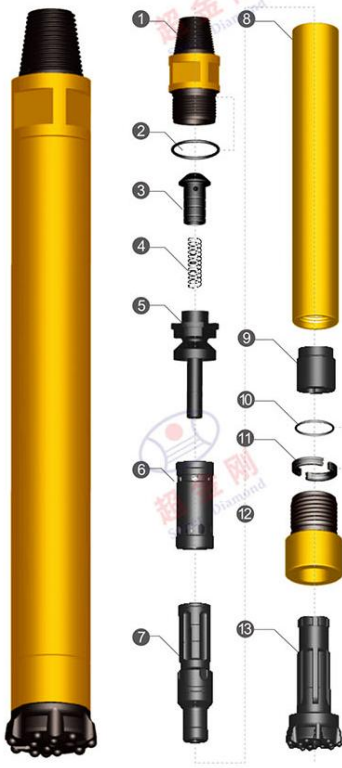
Part Description	Weight (Kg)	Part Number
① Top Sub	6.50	CD45A-01
② "O" Ring of Top Sub	0.01	CD45A-02
③ Check Valve	0.35	CD45A-03
④ Spring	0.05	CD45A-04
⑤ Air Distributor	1.20	CD45A-05
⑥ Internal Cylinder	2.10	CD45A-06
⑦ Piston	8.50	CD45A-07
⑧ External Cylinder	15.20	CD45A-08
⑨ Guided Sleeve	1.30	CD45A-09
⑩ "O" Ring of Stop Ring	0.01	CD45A-10
⑪ Stop Ring	0.30	CD45A-11
⑫ Drive Chuck	3.40	CD45A-12
⑬ Drill Bit		CD45A-13

Length (Without Bit)	Weight (Without Bit)	External Diameter	Bit Shank	Hole Range	Connection Thread
1011mm	38.9kg	Φ99mm	CD45A DHD340 COP44	Φ110mm-Φ130mm	API 2 3/8" Reg
Working Pressure	Impact rate at 1.7Mpa	Recommended rotation speed	Air Consumption		
			1.0Mpa	1.8Mpa	2.4Mpa
1.0-2.5Mpa	30HZ	22-35r/min	6m³/min	10m³/min	15m³/min

4" BIT Data Refere to CD45 Flat Face Bit

Diameter		No x Button diameter, mm		Button angle°	Flushing holes	Weight (Kg)	Part No
mm	inch	Gauge Buttons	Front Buttons				
105	4 1/8"	6xΦ14	5xΦ13	38	2xΦ18	7.5	CD45-105
110	4 5/16"	7xΦ14	6xΦ13	38	2xΦ18	7.8	CD45-110
115	4 1/2"	7xΦ14	7xΦ13	38	2xΦ18	8.5	CD45-115
120	4 3/4"	8xΦ14	7xΦ13	38	2xΦ18	8.8	CD45-120
125	4 15/16"	8xΦ14	7xΦ13	38	2xΦ18	9.0	CD45-125
130	5 1/8"	8xΦ14	7xΦ14	38	2xΦ18	9.4	CD45-130

# 5 INCH DTH HAMMER -CD55A DHD350 COP54 SD5 Mission 50 QL50



Technical Parameters Refere To CD55A DTH Hammer .

Part Description	Weight (Kg)	Part Number
① Top Sub	13.70	CD55A-01
② "O" Ring of Top Sub	0.015	CD55A-02
③ Check Valve	0.70	CD55A-03
④ Spring	0.10	CD55A-04
⑤ Air Distributor	2.00	CD55A-05
⑥ Internal Cylinder	2.80	CD55A-06
⑦ Piston	15.00	CD55A-07
⑧ External Cylinder	22.30	CD55A-08
⑨ Guided Sleeve	2.60	CD55A-09
⑩ "O" Ring of Stop Ring	0.01	CD55A-10
⑪ Stop Ring	0.50	CD55A-11
⑫ Drive Chuck	6.50	CD55A-12
⑬ Drill Bit		CD55A-13

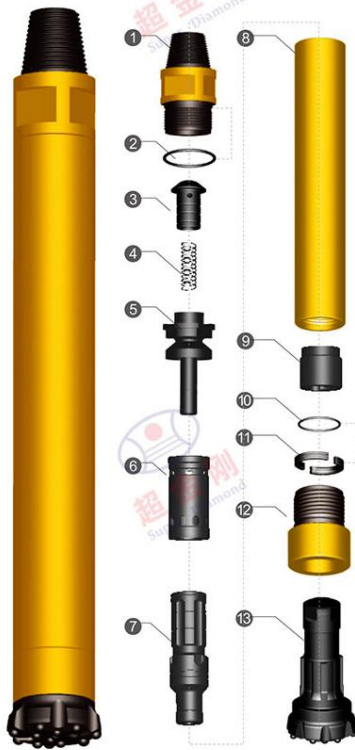
Length (Without Bit)	Weight (Without Bit)	External Diameter	Bit Shank	Hole Range	Connection Thread
1110mm	67kg	Φ125mm	CD55A DHD350 COP54	Φ135mm- Φ155mm	API 2 3/8" Reg API 3 1/2" Reg
Working Pressure	Impact rate at 1.7Mpa	Recommended rotation speed	Air Consumption		
			1.0Mpa	1.8Mpa	2.4Mpa
1.0-2.5Mpa	28HZ	20-35r/min	7m <sup>3</sup> /min	14m <sup>3</sup> /min	19m <sup>3</sup> /min

5" BIT Data Refere to CD55 Flat Face Bit

Diameter		No x Button diameter, mm		Button angle°	Flushing holes	Weight (Kg)	Part No
mm	inch	Gauge Buttons	Front Buttons				
130	5 1/8"	7xΦ16	7xΦ14	38	2xΦ20	15.0	CD55-130
135	5 1/4"	7xΦ18	7xΦ14	38	2xΦ20	15.5	CD55-135
140	5 1/2"	8xΦ16	8xΦ14	38	2xΦ20	16.0	CD55-140
146	5 3/4"	8xΦ18	8xΦ15	38	2xΦ20	16.5	CD55-146
150	5 7/8"	8xΦ18	8xΦ15	38	2xΦ20	16.7	CD55-150
152	6"	8xΦ18	8xΦ15	38	2xΦ20	16.8	CD55-152
156	6 1/8"	8xΦ18	8xΦ16	38	2xΦ20	17.0	CD55-156



# 6 INCH DTH HAMMER -CD65A DHD360 COP64 SD6 Mission 60 QL60



Technical Parameters Refere To CD65A DTH Hammer .

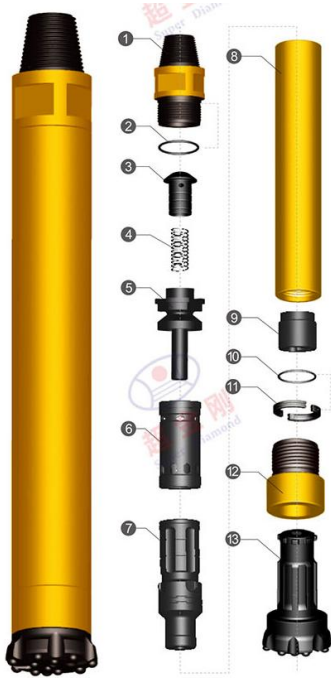
Part Description	Weight (Kg)	Part Number
① Top Sub	20.00	CD65A-01
② "O" Ring of Top Sub	0.02	CD65A-02
③ Check Valve	0.70	CD65A-03
④ Spring	0.10	CD65A-04
⑤ Air Distributor	3.50	CD65A-05
⑥ Internal Cylinder	4.20	CD65A-06
⑦ Piston	23.00	CD65A-07
⑧ External Cylinder	40.10	CD65A-08
⑨ Guided Sleeve	6.50	CD65A-09
⑩ "O" Ring of Stop Ring	0.01	CD65A-10
⑪ Stop Ring	0.60	CD65A-11
⑫ Drive Chuck	6.00	CD65A-12
⑬ Drill Bit		CD65A-13

Length (Without Bit)	Weight (Without Bit)	External Diameter	Bit Shank	Hole Range	Connection Thread
1238mm	105kg	Φ148mm	CD65A DHD360 COP64	Φ155mm- Φ190mm	API 3 1/2" Reg
Working Pressure	Impact rate at 1.7Mpa	Recommended rotation speed	Air Consumption		
			1.0Mpa	1.8Mpa	2.4Mpa
1.0-2.5Mpa	25HZ	20-30r/min	9m³/min	18m³/min	26m³/min

## 6" BIT Data Refere to CD65 Concave Face Bit

Diameter		No x Button diameter, mm		Button angle°	Flushing holes	Weight (Kg)	Part No
mm	inch	Gauge Buttons	Front Buttons				
152	6"	8xΦ18	4xΦ16 + 4xΦ14	38	2xΦ26	23.0	CD65-152
156	6 1/8"	8xΦ18	4xΦ16 + 4xΦ14	38	2xΦ26	23.5	CD65-156
160	6 1/4"	8xΦ18	4xΦ16 + 4xΦ14	38	2xΦ26	23.7	CD65-159
165	6 1/2"	8xΦ18	8xΦ16	38	2xΦ26	24.0	CD65-165
171	6 3/4"	8xΦ18	10xΦ16	38	2xΦ26	25.0	CD65-171
185	7 1/4"	9xΦ18	10xΦ16	38	3xΦ22	27.0	CD65-185
190	7 1/2"	10xΦ18	13xΦ16	38	2xΦ26	28.0	CD65-190
203	8"	10xΦ18	14xΦ16	38	2xΦ26	31.0	CD65-203

# 8 INCH DTH HAMMER -CD85A DHD380 COP84 SD8 Mission 80 QL80



Technical Parameters Refere To CD85A DTH Hammer .

Part Description	Weight (Kg)	Part Number
① Top Sub	34.00	CD85A-01
② "O" Ring of Top Sub	0.015	CD85A-02
③ Check Valve	1.20	CD85A-03
④ Spring	0.10	CD85A-04
⑤ Air Distributor	6.00	CD85A-05
⑥ Internal Cylinder	6.50	CD85A-06
⑦ Piston	42.50	CD85A-07
⑧ External Cylinder	60.00	CD85A-08
⑨ Guided Sleeve	5.30	CD85A-09
⑩ "O" Ring of Stop Ring	0.10	CD85A-10
⑪ Stop Ring	1.20	CD85A-11
⑫ Drive Chuck	17.50	CD85A-12
⑬ Drill Bit		CD85A-13

Length (Without Bit)	Weight (Without Bit)	External Diameter	Bit Shank	Hole Range	Connection Thread
1359mm	175kg	Φ185mm	CD85A DHD380 COP84	Φ195mm-Φ254mm	API 4 1/2" Reg
Working Pressure	Impact rate at 1.7Mpa	Recommended rotation speed	Air Consumption		
			1.0Mpa	1.8Mpa	2.4Mpa
1.0-3.0Mpa	22HZ	15-25r/min	12m <sup>3</sup> /min	22m <sup>3</sup> /min	28m <sup>3</sup> /min

8" BIT Data Refere to CD85 Concave Face Bit

Diameter		No x Button diameter, mm		Button angle°	Flushing holes	Weight (Kg)	Part No
mm	inch	Gauge Buttons	Front Buttons				
200	7 7/8"	10xΦ18	8xΦ18 + 6xΦ16	38	2xΦ30	46	CD85-200
203	8"	10xΦ18	8xΦ18 + 6xΦ16	38	2xΦ30	47	CD85-203
216	8 1/2"	10xΦ18	8xΦ18 + 6xΦ16	38	2xΦ30	53	CD85-216
219	8 5/8"	10xΦ18	8xΦ18 + 6xΦ16	38	2xΦ30	54	CD85-219
222	8 3/4"	10xΦ18	8xΦ18 + 6xΦ16	38	2xΦ30	55	CD85-222
225	8 7/8"	10xΦ18	8xΦ18 + 6xΦ16	38	2xΦ30	56	CD85-225
229	9"	10xΦ18	8xΦ18 + 7xΦ16	38	2xΦ30	57	CD85-229
235	9 1/4"	12xΦ18	20xΦ16	38	2xΦ30	58	CD85-235
241	9 1/2"	12xΦ18	20xΦ16	38	2xΦ30	59	CD85-241
254	10"	12xΦ19	8xΦ18 + 18xΦ16	38	2xΦ30	61	CD85-254
270	10 5/8"	12xΦ19	8xΦ18 + 19xΦ16	38	2xΦ30	62	CD85-270
280	11"	12xΦ19	9xΦ18 + 21xΦ16	38	3xΦ26	67	CD85-280

# 10 INCH DTH HAMMER -CSD10A NUMA100 SD10



Technical Parameters Refere To CSD10A DTH Hammer .

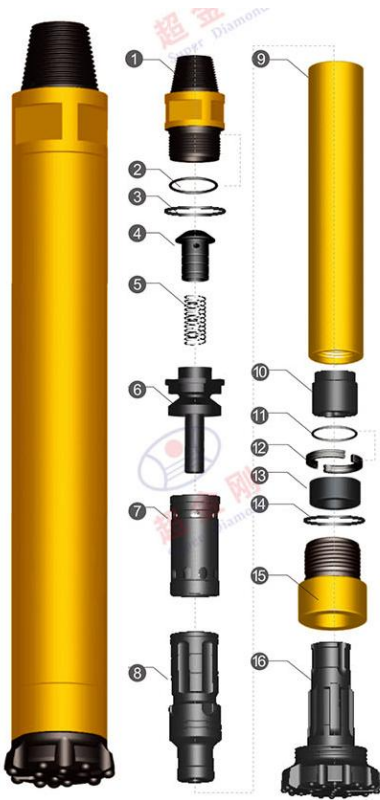
Part Description	Weight (Kg)	Part Number
① Top Sub	59.00	CSD10A-01
② "O" Ring of Top Sub	0.03	CSD10A-02
③ Breakout Ring of Top Sub	0.50	CSD10A-03
④ Check Valve	1.40	CSD10A-04
⑤ Spring	0.30	CSD10A-05
⑥ Air Distributor	10.50	CSD10A-06
⑦ Internal Cylinder	12.50	CSD10A-07
⑧ Piston	77.00	CSD10A-08
⑨ External Cylinder	110.00	CSD10A-09
⑩ Guided Sleeve	11.50	CSD10A-10
⑪ "O" Ring of Stop Ring	0.01	CSD10A-11
⑫ Stop Ring	1.50	CSD10A-12
⑬ Guidance Package	10.50	CSD10A-13
⑭ Breakout Ring of Drive Chuck	0.50	CSD10A-14
⑮ Drive Chuck	31.50	CSD10A-15
⑯ Drill Bit		CSD10A-16

Length (Without Bit)	Weight (Without Bit)	External Diameter	Bit Shank	Hole Range	Connection Thread
1525mm	316kg	Φ225mm	SD10 CSD10A	Φ254mm- Φ311mm	API 6 5/8" Reg
Working Pressure	Impact rate at 1.7Mpa	Recommended rotation speed	Air Consumption		
			1.0Mpa	1.8Mpa	2.4Mpa
1.0-3.0Mpa	20HZ	15-25r/min	22m <sup>3</sup> /min	40m <sup>3</sup> /min	65m <sup>3</sup> /min

10" BIT Data Refere to SD10 Concave Face Bit

Diameter		No x Button diameter, mm		Button angle°	Flushing holes	Weight (Kg)	Part No
mm	inch	Gauge Buttons	Front Buttons				
254	10"	12xΦ19	8xΦ18 + 18xΦ16	38	2xΦ30	85	SD10-254
280	10 5/8"	12xΦ19	9xΦ18 + 20xΦ16	38	3xΦ26	88	SD10-280
292	11 5/8"	15xΦ19	27xΦ18 + 9xΦ16	38	3xΦ26	93	SD10-292
305	12"	15xΦ19	27xΦ18 + 9xΦ16	38	3xΦ26	97	SD10-305
311	12 1/4"	15xΦ19	27xΦ18 + 9xΦ16	38	3xΦ26	98	SD10-311
315	12 3/8"	15xΦ19	27xΦ18 + 9xΦ16	38	3xΦ26	101	SD10-315
325	13"	15xΦ19	27xΦ18 + 9xΦ16	38	3xΦ26	110	SD10-325

# 12 INCH DTH HAMMER -CSD12A DHD1120 NUMA125A NUMA120 SD12



Technical Parameters Refere To CSD12A DTH Hammer .

Part Description	Weight (Kg)	Part Number
① Top Sub	70.00	CSD12A-01
② "O" Ring of Top Sub	0.04	CSD12A-02
③ Breakout Ring of Top Sub	0.80	CSD12A-03
④ Check Valve	2.00	CSD12A-04
⑤ Spring	0.10	CSD12A-05
⑥ Air Distributor	16.00	CSD12A-06
⑦ Internal Cylinder	25.00	CSD12A-07
⑧ Piston	113.00	CSD12A-08
⑨ External Cylinder	175.00	CSD12A-09
⑩ Guided Sleeve	25.00	CSD12A-10
⑪ "O" Ring of Stop Ring	0.01	CSD12A-11
⑫ Stop Ring	4.50	CSD12A-12
⑬ Guidance Package	9.50	CSD12A-13
⑭ Breakout Ring of Drive Chuck	0.80	CSD12A-14
⑮ Drive Chuck	48.00	CSD12A-15
⑯ Drill Bit		CSD12A-16

Length (Without Bit)	Weight (Without Bit)	External Diameter	Bit Shank	Hole Range	Connection Thread
1860mm	480kg	Φ275mm	SD12 CSD12A	Φ305mm-Φ445mm	API 6 5/8" Reg
Working Pressure	Impact rate at 1.7Mpa	Recommended rotation speed	Air Consumption		
			1.0Mpa	1.8Mpa	2.4Mpa
1.0-3.0Mpa	20HZ	15-25r/min	28m <sup>3</sup> /min	50m <sup>3</sup> /min	71m <sup>3</sup> /min

12" BIT Data Refere to SD12 Concave Face Bit

Diameter		No x Button diameter, mm		Button angle°	Flushing holes	Weight (Kg)	Part No
mm	inch	Gauge Buttons	Front Buttons				
305	12"	15xΦ19	9xΦ16	38	3xΦ32	130	SD12-305
311	12 1/4"	15xΦ19	9xΦ16	38	3xΦ32	132	SD12-311
330	13"	15xΦ19 + 12xΦ19	31xΦ16	38	3xΦ32	145	SD12-330
350	13 3/4"	15xΦ19	27xΦ18 + 16xΦ16	38	3xΦ32	158	SD12-350
356	14"	16xΦ19 + 16xΦ19	28xΦ18 + 20xΦ16	38	4xΦ28	162	SD12-356
381	15"	16xΦ19 + 12xΦ19	42xΦ18	38	4xΦ28	187	SD12-381