

BUILT ON TRUST

REVERSE CIRCULATION DRILLING RIG



GÁNDARA

SU EQUIPO EN CIMENTACIÓN

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BUMA CE CO., LTD.
BUMA Construction Equipment

BUILT ON TRUST



BORE PILING FOR BRIDGE & TERMINAL (COAL, OIL & GAS)

BORE PILING FOR JETTY & HARBOUR & DRY DOCKS

BORE PILING FOR BIG STRUCTURE BUILDING

BORE PILING AT ANY OFFSHORE CONDITION

Company

BUMA CE is a leading manufacturer and supplier of foundation equipment in Korea. Since the company was built in 1992, we have been supplying the equipment to all around world with outstanding reputation of not only good quality products but also much knowledge in foundation work.



- Reverse Circulation Drilling (R.C.D) Rig
- Casing Oscillator
- Hammer Grab & Spherical Grab
- Diaphragm Wall Grab (Mechanical & Hydraulic)
- Casing & Casing Joint
- Drilling Tools & Accessories

Our mission is to provide the best solution to customers based on engineering knowhow of many years' experiences.

Reverse Circulation Drilling (R.C.D) Method



Reverse Circulation Drilling System (RCD), also known as air-lift system is that compressed air is injected into the drill pipe below water level just above the drill bit. This reduces the density of the internal water column and starts the circulation. The mixture of water, air and cuttings is then flushed out through the drill pipe into setting tanks.

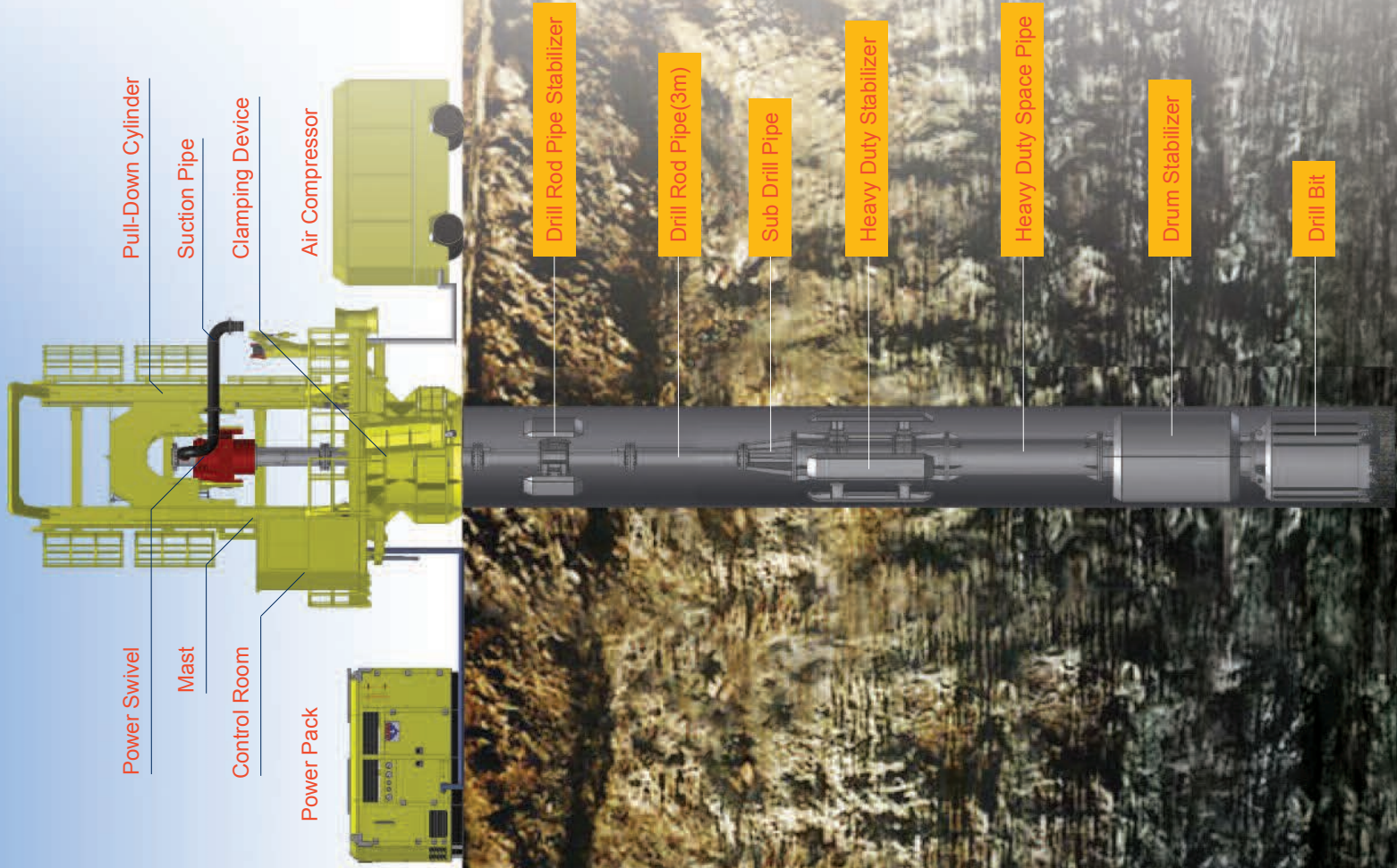
Working with RCD Rigs is highly efficient, safe and environmentally friendly solution for drilling large diameters and depths.

If there are drilling conditions required as follows,

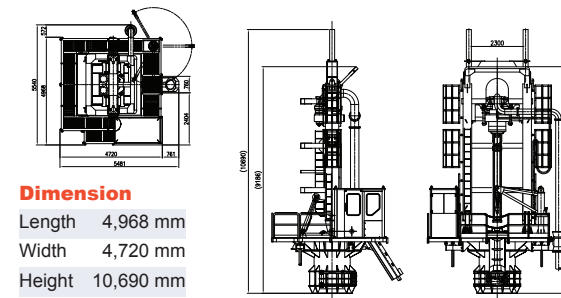
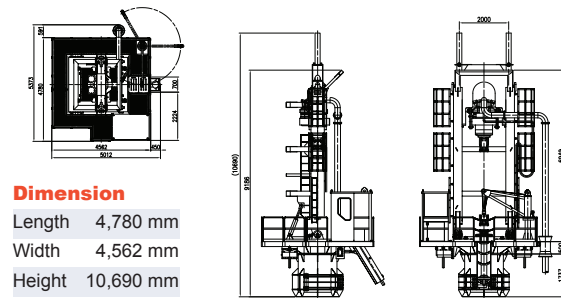
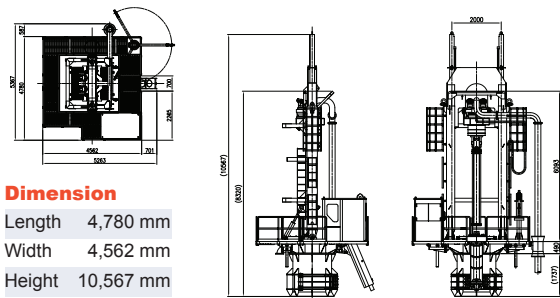
- 1) Large Diameter (more than 800mm)
- 2) Deep Depth (more than 50m)
- 3) Hard Rock Drilling (75Mpa ~ 250Mpa)
- 4) Bore Piling in Marine Condition

Definitely the most suitable equipment is RCD Rig.

Composition



Reverse Circulation Drilling Rig



Max. Drilling Dia. 1.5m

R1315

Max. Drilling Torque	129kN.m
Rotation Speed	0~24rpm
Thrust / Pull-up Force	88ton / 129ton
Mast Tilting	22°
Platform Tilting	16°
Weight(Approx.)	21ton
(Including Clamping Device Dia. 1500mm)	
Drill String	NW200
Power Pack	P2612C / P3618C / P4214D

Max. Drilling Dia. 1.5m

R1815

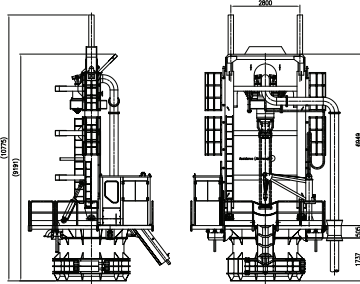
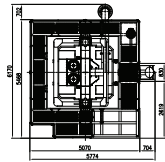
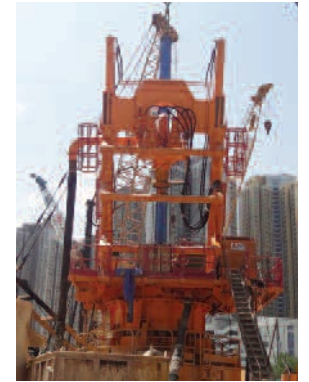
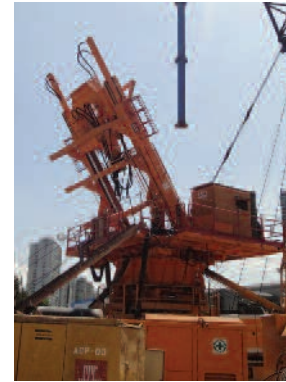
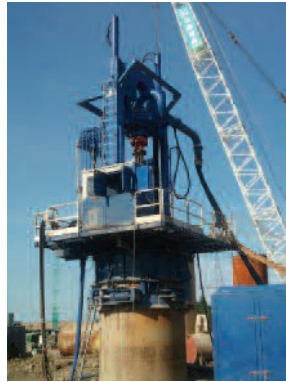
Max. Drilling Torque	180kN.m
Rotation Speed	0~16.2rpm
Thrust / Pull-up Force	88ton / 129ton
Mast Tilting	22°
Platform Tilting	16°
Weight(Approx.)	27ton
(Including Clamping Device Dia. 1500mm)	
Drill String	NW200
Power Pack	P2612C / P3618C / P4214D

Max. Drilling Dia. 2.0m

R1820

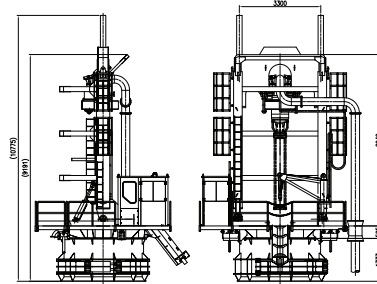
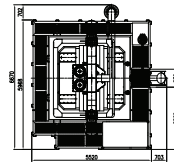
Max. Drilling Torque	180kN.m
Rotation Speed	0~16.2rpm
Thrust / Pull-up Force	88ton / 129ton
Mast Tilting	26°
Platform Tilting	20°
Weight(Approx.)	29.2ton
(Including Clamping Device Dia. 2000mm)	
Drill String	NW200 / NW300
Power Pack	P2612C / P3618C / P4214D

Reverse Circulation Drilling Rig



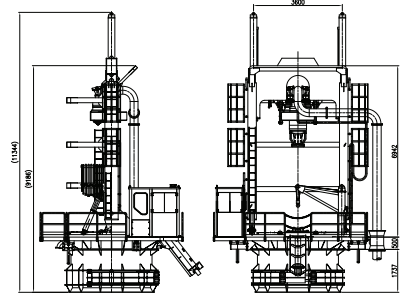
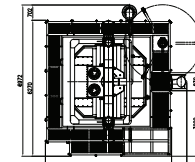
Dimension

Length 5,468 mm
Width 5,070 mm
Height 10,775 mm



Dimension

Length 5,968 mm
Width 5,520 mm
Height 10,775 mm



Dimension

Length 6,270 mm
Width 5,820 mm
Height 11,344 mm

Max. Drilling Dia. 2.5m

R3025

Max. Drilling Torque	300kN.m
Rotation Speed	0~21rpm
Thrust / Pull-up Force	122ton / 201ton
Mast Tilting	30°
Platform Tilting	16°
Weight(Approx.)	34.8ton
(Including Clamping Device Dia. 2500mm)	
Drill String	NW300
Power Pack	P3618C / P5318C / P4218D

Max. Drilling Dia. 3.0m

R3030

Max. Drilling Torque	300kN.m
Rotation Speed	0~21rpm
Thrust / Pull-up Force	122ton / 201ton
Mast Tilting	32°
Platform Tilting	12.5°
Weight(Approx.)	37.2ton
(Including Clamping Device Dia. 3000mm)	
Drill String	NW300
Power Pack	P3618C / P5318C / P4218D

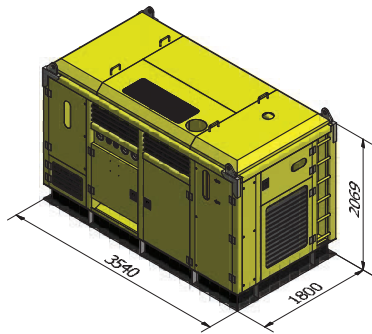
Max. Drilling Dia. 3.3m

R3733

Max. Drilling Torque	370kN.m
Rotation Speed	0~20rpm
Thrust / Pull-up Force	122ton / 201ton
Mast Tilting	35°
Platform Tilting	10.5°
Weight(Approx.)	42.1ton
(Including Clamping Device Dia. 3300mm)	
Drill String	NW300
Power Pack	P6028C

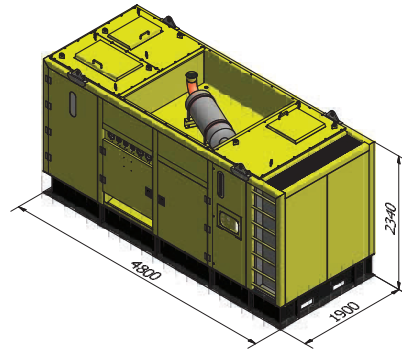
Power Pack

Unit : mm



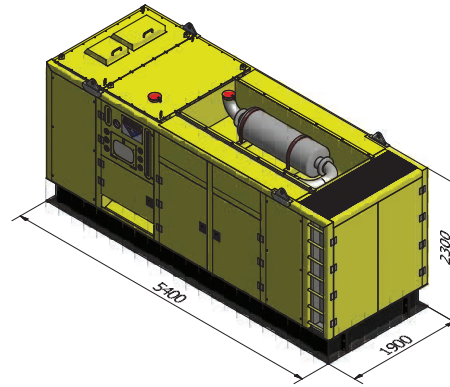
P2612C

Engine	CUMMINS 6CT8.3C (TIER)
	194KW / 260HP / 2200rpm
Hyd. Pump	Max. Flow 228ℓ /min x 2ea
	Operating 250bar / Max. 350bar
Weight(Approx.)	6.5ton



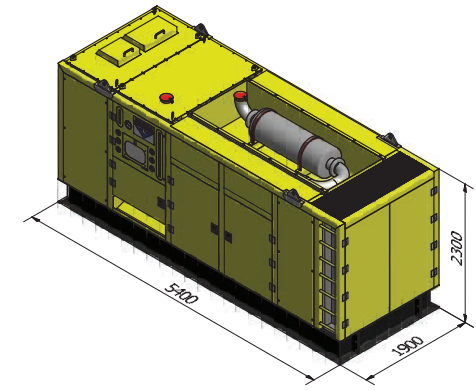
P3618C

Engine	CUMMINS QSM11-360 (TIER)
	268KW / 360HP / 2100rpm
Hyd. Pump	Max. Flow 324ℓ /min x 2ea
	Operating 250bar / Max. 350bar
Weight(Approx.)	8ton



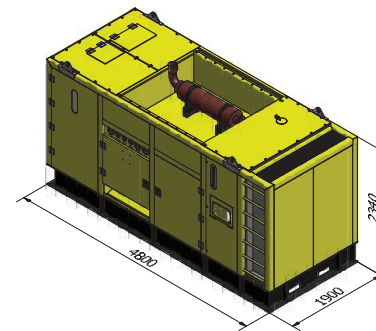
P5318C

Engine	CUMMINS QSX15-535 (TIER)
	399KW / 535HP / 2100rpm
Hyd. Pump	Max. Flow 324ℓ /min x 2ea
	Operating 250bar / Max. 350bar
Weight(Approx.)	11ton



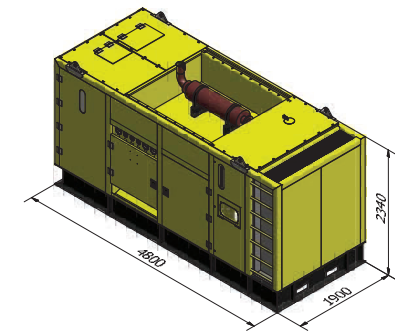
P6028C

Engine	CUMMINS QSX15-600 (TIER)
	447KW / 600HP / 2100rpm
Hyd. Pump	Max. Flow 504ℓ /min x 2ea
	Operating 250bar / Max. 350bar
Weight(Approx.)	11.5ton



P4214D

Engine	DOOSAN P126TI-2 (TIER)
	307KW / 418HP / 1800rpm
Hyd. Pump	Max. Flow 252ℓ /min x 2ea
	Operating 250bar / Max. 350bar
Weight(Approx.)	8.5ton



P4218D

Engine	DOOSAN P126TI-2 (TIER)
	307KW / 418HP / 1800rpm
Hyd. Pump	Max. Flow 324ℓ /min x 2ea
	Operating 250bar / Max. 350bar
Weight(Approx.)	8.5ton

BUMA CE.,LTD.'s

3rd generation Power pack maximizes cooling effect of hydraulic operating oil and minimizes noise level through arduous technical development

**As option, application of different brand engine (Volvo, Caterpillar) is available.

Drill String

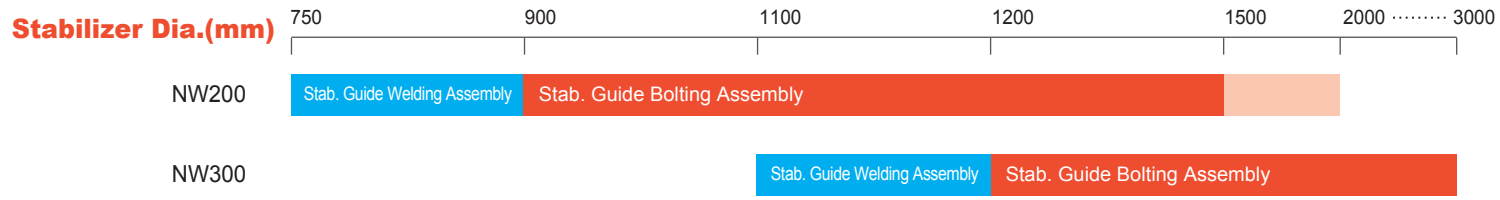
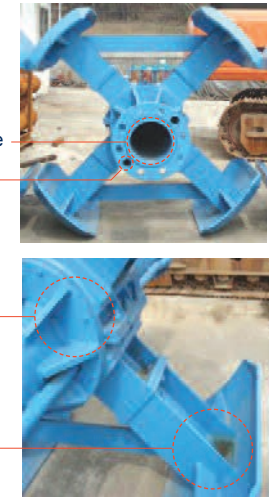
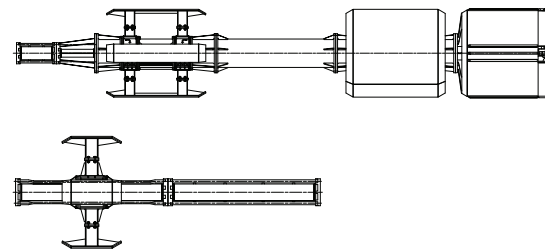
BUMA provides 2 types of Drill String (Drill Pipe) according to internal pipe diameter, NW200 (183mm) and NW300 (302mm). NW200 Drill Pipe can be used up to RCD R1820 because of handling torque limit. Mainly up to drilling dia. 1.5m, NW200 Drill Pipe is recommended.

Basic Drill String

To prevent buckling in bottom part of casing and for better verticality, Basic Drill String is required. The Basic Drill String is composed of Drum Stabilizer, Heavy Duty Space Pipe, Heavy Duty Stabilizer and Reducing Pipe.

Drill Rod Pipe Stabilizer

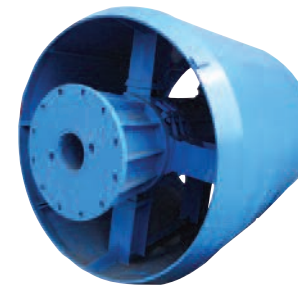
To prevent bending of Drill String and keep verticality, the Drill Rod Pipe Stabilizer is used for every 3 units of Drill Rod Pipe (1 Drill Rod Pipe = 3m).



Drill Rod Pipe Stabilizer



Heavy Duty Stabilizer



Drum Stabilizer

Drill Bit



Suction Hole
Roller Cutter
Saddle
Drill Bit Body



Cutting Dia. 2750mm for 3m Casing

According to strata condition, BUMA provides 2 types of Roller Cutters, Tooth Cutter and TCI Button Cutter.

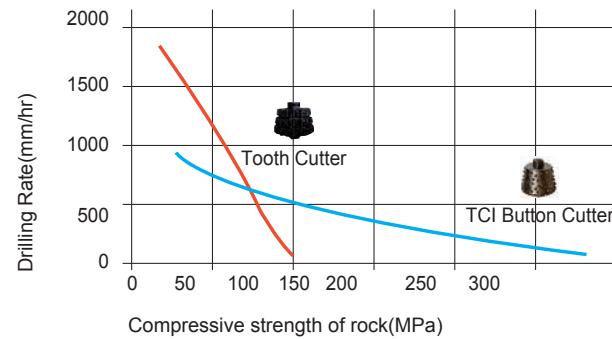
TOOTH CUTTER

It was designed and used for drilling soft soil and soft rock layer (0 ~ 75 Mpa)

TCI BUTTON CUTTER

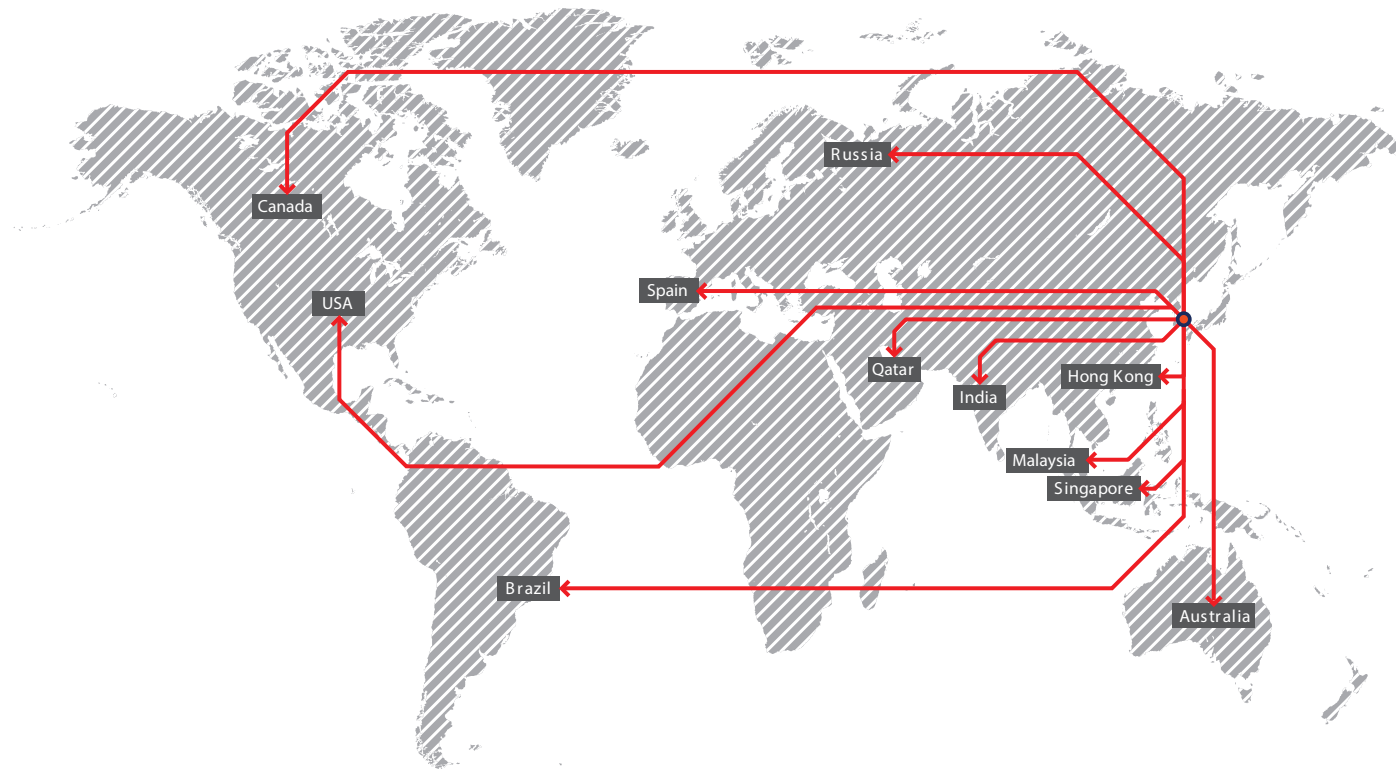
It was designed and used for drilling hard rock layer (80 ~ 250 Mpa)






Drilling Speed Example for Dia. 1500mm drilling












Drill Bit Cutting Dia.	850mm	1050mm	1350mm	1650mm	1830mm	2300mm	2750mm
Drill Bit Length	1500mm	2000mm	2000mm	2000mm	2500mm	2500mm	2500mm
Suction Pipe	NW200	NW200	NW200/NW300	NW300	NW300	NW300	NW300
Roller Cutter	8SER.	8SER.	12SER.	12SER.	12SER.	12SER.	12SER.
-5° Cutter	1	1	1	1	1	1	1
+10° Cutter	2	2	2	3	3	7	11
+20° Cutter	N/A	N/A	N/A	2	2	3	3
+35° Cutter	3	3	N/A	N/A	N/A	N/A	N/A
+40° Cutter	N/A	N/A	3	4	4	5	6
TOTAL	6	6	6	10	10	16	21
Weight	1500kg	2500kg	3500kg	6000kg	7500kg	10350kg	15000kg

Reference



R1815 & R1315	Dia. 1500mm		5set
R1820	Dia. 2000mm		46set
R3025	Dia. 2500mm		17set
R3030	Dia. 3000mm		24set
R3833	Dia. 3300mm		1set
TOTAL			94set

Last Updated : DEC. 31, 2012

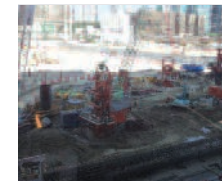
Korea		43set
Hong Kong		24set
Malaysia		13set
Singapore		5set
India		3set
Brazil		3set
USA		1set
Qatar		1set
Spain		1set
TOTAL		94set



RCD R1315
Belo Horizonte, Brazil



RCD R1820
Bandra-Worli Sea Link, India



RCD R3025
Kowloon Station, Hong Kong



RCD R1820
Baltimore, USA



RCD R3030
Kowloon, Hong Kong



RCD R3030
Basohli Bridge, India



RCD R3030
Hyomyong-Myungji Bridge, Korea



RCD R1820
Malaka Gas Terminal, West Malaysia



RCD R3030
Incheon Bridge, Korea



RCD R1815
Limbang, East Malaysia

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