

DIABIT

GK18B

MITSUBISHI MATERIALS

CASING ADVANCE SYSTEM IN OVERBURDEN DRILLING



MITSUBISHI
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CASING ADVANCE SYSTEM IN OVERBURDEN DRILLING

Introduction

New support systems with advanced injection technology have been lately required in tunneling projects in soft ground formations or rock formations covered with overburden.

MITSUBISHI MATERIALS CORPORATION has developed unique Under-Reaming drilling systems and concentric drilling systems with innovative technology in MITSUBISHI brand rock drilling tools applied in civil engineering and mining sectors in the world since 1960's. Also, laboratory studies and extensive field experiments in every ground formations enabled us to introduce the most consistent, highest quality drilling systems manufactured in the world today.



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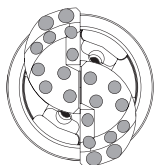
SAFETY WARNING

- Grinding cutting etc. of carbide insert of rock bits can be potentially hazardous.
Use adequate ventilation. Refer to the applicable material safety data sheet.
- Heavy object, take appropriate precautions when handling.
- During use, there is a likelihood of tool failure, take appropriate safety measures.
- Tool must be firmly connected and used properly.
- It is prohibited to use tool for other purposes.

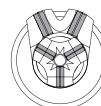
PRODUCTS

UNDER-REAMING SYSTEM

SUPER MAXBIT

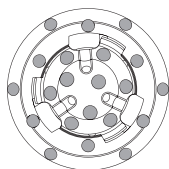


KANTARO BIT



CONCENTRIC DRILLING SYSTEM

ULTRA MAXBIT



MICRO CASING BIT



APPLICABLE GROUND FORMATIONS

○	●					SUPER MAXBIT									
			○	●	●		KANTARO BIT								
○	●	○	○					ULTRA MAXBIT							
				●	●			MICRO CASING BIT							
5"	4"	3.5"	3"	2.5"	2"										
Bit size ● Stocked Size ○ Non-Stocked Size						Soil (20 ≤ N < 40)	Soil (N ≥ 40)	Soft Rock (qu < 5 ~ 20 N/mm²)	Soft Rock (qu = 5 ~ 20 N/mm²)	Medium-Hard Rock (qu = 20 ~ 60 N/mm²)	Hard Rock (qu ≥ 5 ~ 20 N/mm²)	Hard Rock (Fresh Condition)	Sand with Ball (φ75 ~ φ300)	Block (φ75 ~ φ300)	Boulder (φ75 ~ φ300)

ADVANTAGES

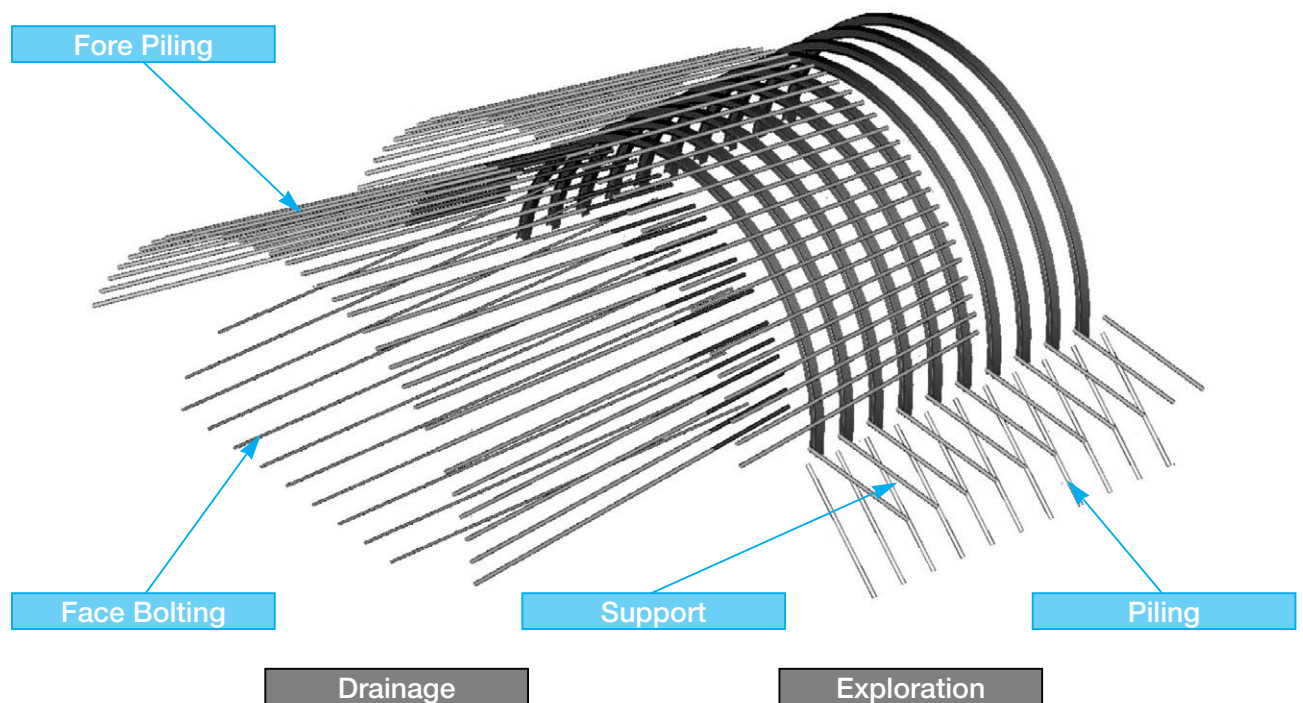


Various System fo Applicable diam-
eter from 2" up 5".
Wide Range of applications dia. 2"-5".

Under-Reaming System : Economic-
al cost per drilled foot in soft forma-
tion or shallow holes in any ground
formations.

Concentrical Drilling System : High
efficiency in drilling hard formation
drilling at any angle without devia-
tion.

APPLICATIONS



SUPER MAXBIT

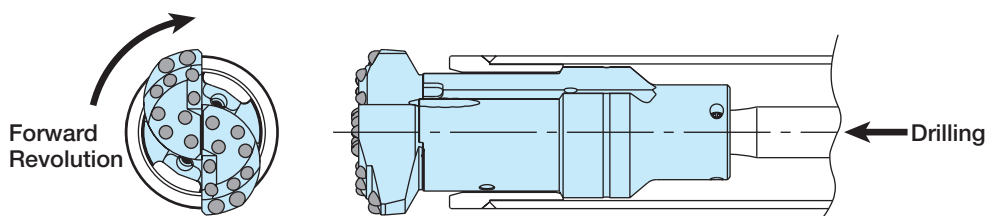


SUPER MAXBIT consists of a bit wing set and a device and its wings keep open while drilling and close position when drill strings are pull out.

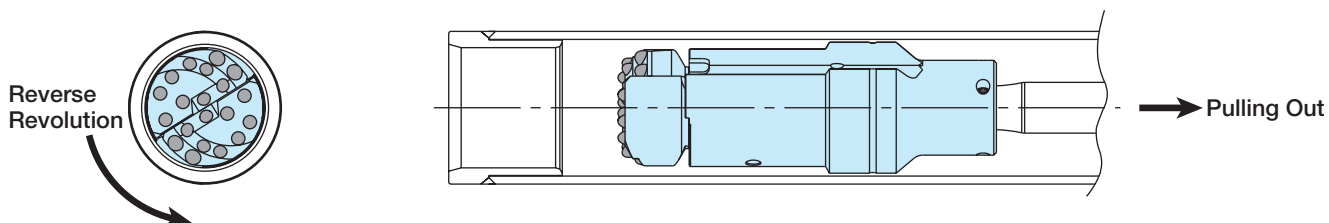
While drilling, the diameter of bit wings is larger than the outside diameter of the casing pipes and the casing pipes are driven down by percussive energy transmitted from the drifter.

SUPER MAXBIT has economical cost per drilled foot for short piles application in soft formation.

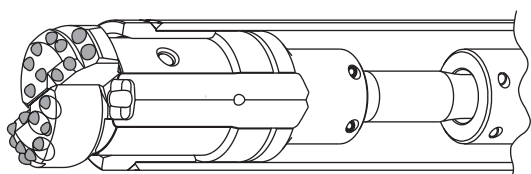
Drilling position (Extended)



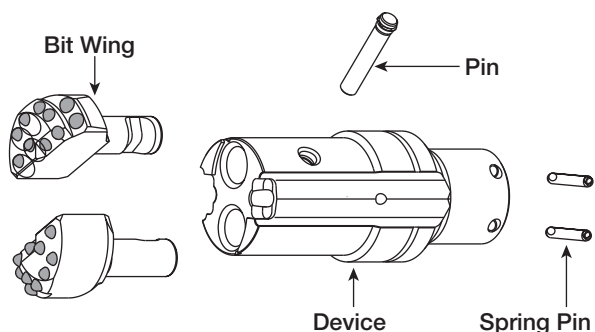
Pull out position (Retracted)



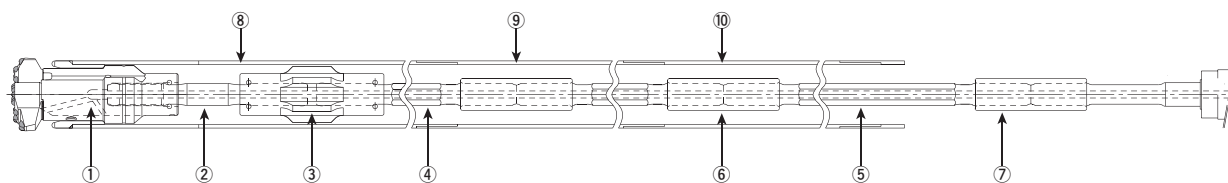
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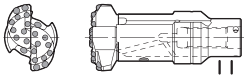
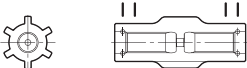
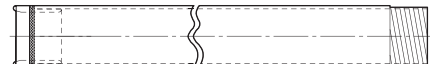
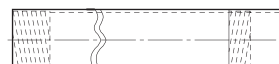


Components



Standard 4" SMB system



① SMB	Part No.	Gauge size		Overall length		Remarks	Approx. weight	
		mm	in	mm	in		kg	lb
	2M38P88 (Spare parts) Bit wing : 2HEADP88 Pin : 2PIN88 Spring pin : SP-8X45	125	4 29/32"	289	11 3/8"	2 pcs / 1 set 1 pce 2 pcs	10.3 2.7 0.08 0.02	22.7 5.9 0.18 0.04
② Short rod	Part No.	Body section		Overall length		Remarks	Approx. weight	
				mm	in		kg	lb
	ER38M38-340	Round38		340	13 25/64"		2.6	5.7
③ Wing sleeve	Part No.	O.D.		Overall length		Remarks	Approx. weight	
		mm	in	mm	in		kg	lb
	CM38FZ2 (Spare parts) Spring pin : SP-8X45	95	3 3/4"	245	10"	4 pcs	6.2 0.04	13.6 0.08
④ First rod	Part No.	Body section		Overall length		Remarks	Approx. weight	
				mm	in		kg	lb
	EH32M38-3660L	Hex.32		3660	12'		21.4	47.1
⑤ Extension rod	Part No.	Body section		Overall length		Remarks	Approx. weight	
				mm	in		kg	lb
	EH32M38-3050L	Hex.32		3050	10'		17.7	38.9
⑥ Middle sleeve	Part No.	O.D.		Overall length		Remarks	Approx. weight	
		mm	in	mm	in		kg	lb
	CM38AG	54	2 1/8"	190	7 15/32"		1.9	4.2
⑦ End sleeve	Part No.	O.D.		Overall length		Remarks	Approx. weight	
		mm	in	mm	in		kg	lb
 Same thread as shank adapter	CR38M38AG CM38AG	60 54	2 3/8" 2 1/8"	195 190	7 43/64" 7 15/32"		2.0 1.9	4.4 4.2
⑧ First casing with shoe	Part No.	O.D.		Overall length/Effective length		Remarks	Approx. weight	
		mm	in	mm	in		kg	lb
	SA114-3770S	114.3	4 2/3"	3840/3770	127 11/64" 12'4 27/64"	Steel pipe	62.0	136.4
⑨ Middle casing	Part No.	O.D.		Overall length/Effective length		Remarks	Approx. weight	
		mm	in	mm	in		kg	lb
	SB114-3050	114.3	4 2/3"	3120/3050	10'2 53/64" 10'	Steel pipe	48.5	106.9
⑩ End casing with cap	Part No.	O.D.		Overall length		Remarks	Approx. weight	
		mm	in	mm	in		kg	lb
	SC114-3050 VC114-3050	114.3 114.0	4 2/3" 4 2/3"	3050 3050	10' 10'	Steel pipe Plastic pipe	49.0 9.3	107.8 20.5

UNDER-REAMING SYSTEM

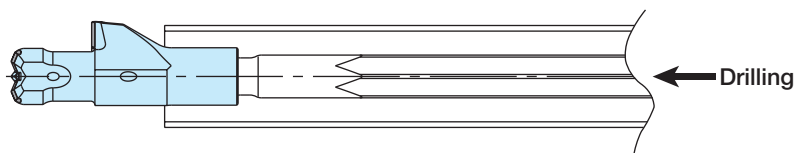
KANTARO BIT

PAT.No. 3382554
PAT.No. 3382555
PAT.No. 3385223

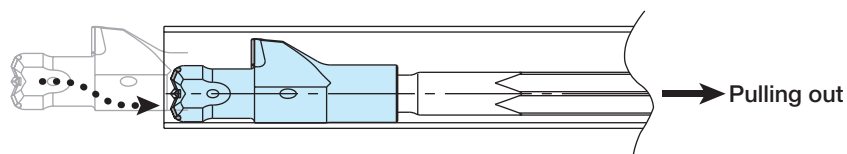


Smallest eccentric reamer system in the world.
Applied for short holes (Less than 6m) with one casing pipe in soft formation.
Easy drilling, Easy-pulling out.

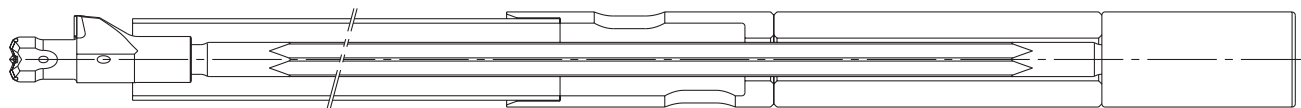
Drilling position



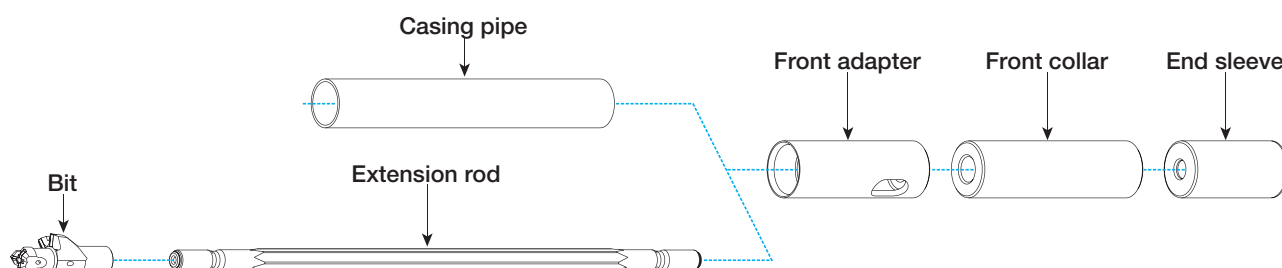
Pull out position



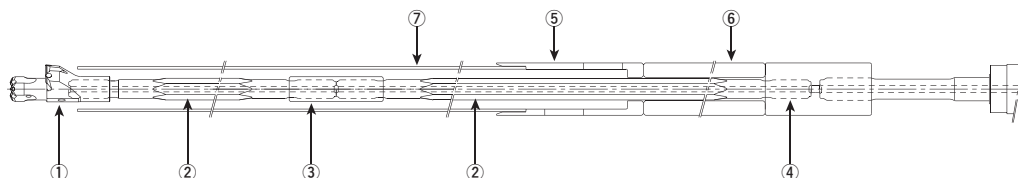
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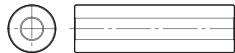
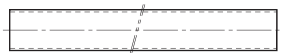


Components



Standard 2" & 2.5" KANTARO system



① Kantaro bit	Part No.	Gauge size		Overall length		Remarks	Approx. weight	
		mm	in	mm	in		kg	lb
	2" WR28ZC63-36Z-B	63	2 15/32"	150	5 29/32"		1.0	2.2
	2.5" WR32ZC82-42Z-B	82.5	6 11/16"	170	6 11/16"		1.5	3.3
② Extension rod	Part No.	Body section		Overall length		Remarks	Approx. weight	
		mm	in	mm	in		kg	lb
	2" EH28R28-3050	Hex.28		3050	10'		15.0	33.0
	2.5" EH32R32-3050	Hex.32		3050	10'		16.5	36.3
③ Sleeve	Part No.	O.D.		Overall length		Remarks	Approx. weight	
		mm	in	mm	in		kg	lb
	2" CR28DNZ2	38	1 1/2"	160	6 19/64"		0.7	1.5
	2.5" CR32DNZ	42	1 21/32"	160	6 19/64"		0.9	2.0
④ End sleeve	Part No.	O.D.		Overall length		Remarks	Approx. weight	
		mm	in	mm	in		kg	lb
	2" CR38R28NZ	73	2 7/8"	181	7 1/8"		2.7	59.
	2.5" CR38R32NZ2	75	2 61/64"	181	7 1/8"		5.6	12.3
⑤ Front adapter	Part No.	O.D.		Overall length		Remarks	Approx. weight	
		mm	in	mm	in		kg	lb
	2" FA-KE60-210	73	2 7/8"	250	9 27/32"		3.5	7.7
	2.5" FA-KE76-212	89	3 1/2"	250	9 27/32"		4.7	10.3
⑥ Front collar	Part No.	O.D.		Overall length		Remarks	Approx. weight	
		mm	in	mm	in		kg	lb
	2" FC-R73/34-211	73	2 7/8"	307	12' 5/64"		7.9	17.4
	2.5" FC-R89/40-213	89	3 1/2"	307	12' 5/64"		11.9	26.2
⑦ Casing pipe	Part No.	O.D.		Overall length		Remarks	Approx. weight	
		mm	in	mm	in		kg	lb
	2"	60.5	2 3/8"	5500	18' 17/32"	Carbon steel pipe (t=3)	29.0	63.8
	2.5"	76.3	3'	5500	18' 17/32"	Carbon steel pipe (t=4)	41.0	90.2

ULTRA MAXBIT

PAT.No. 3709476

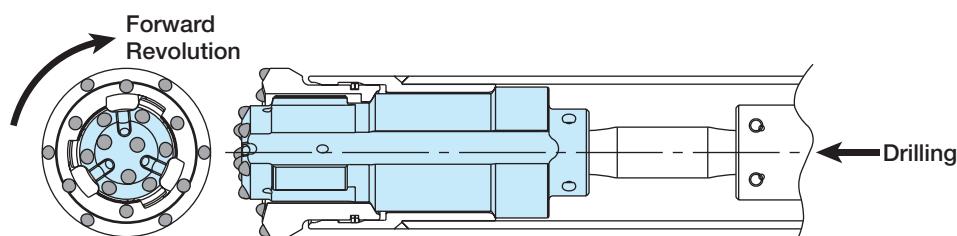


ULTRA MAXBIT consists of a ring bit and a pilot bit.

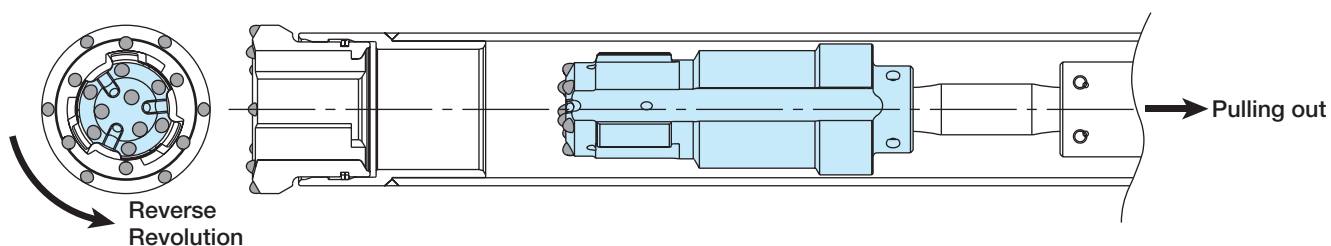
Ring bit has a unique thread connection.

Its strong connection enables easy lock-unlock action and a pilot bit moves independently from a ring bit while flushing cuttings out of a casing pipe.

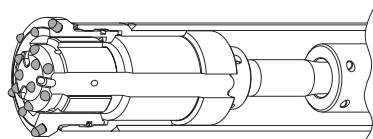
Drilling position (Locked)



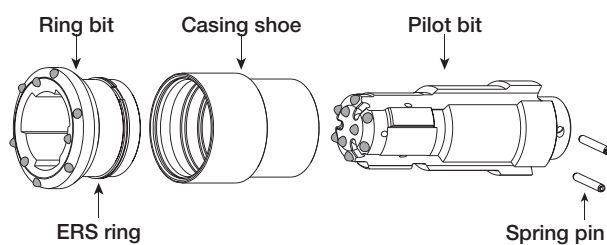
Pull out position



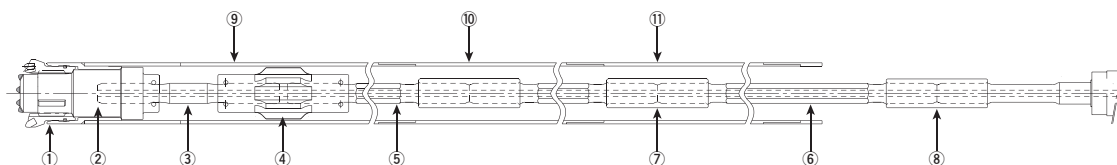
Assembly

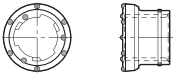
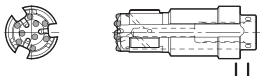
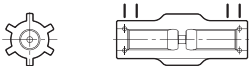
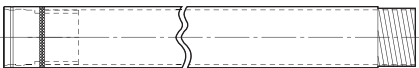


Components



Standard 4" UMB system



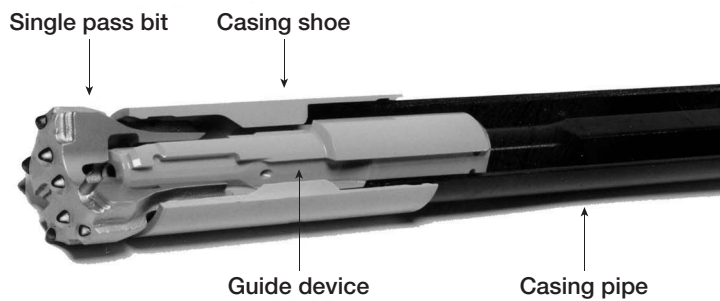
① UMB (Ring bit)	Part No.	Gauge size		Overall length		Remarks	Approx. weight	
		mm	in	mm	in		kg	lb
	Standard : UL125BB76	125	4 29/32"	92	3 5/8"		2.7	5.9
	Heavy duty : UL125R76	125	4 29/32"	92	3 5/8"		2.8	6.2
② UMB (Pilot bit)	Part No.	Guide O.D.		Overall length		Remarks	Approx. weight	
		mm	in	mm	in		kg	lb
	Standard : UD38MP70BB	98	3 55/64"	266	10 15/32"		8.5	18.7
	Heavy duty : UD38MP70R (Spare parts) Spring pin : SP-8×45	98	3 55/64"	266	10 15/32"	2 pcs	0.02	0.04
③ Short rod	Part No.	Body section		Overall length		Remarks	Approx. weight	
		mm	in	mm	in		kg	lb
	ER38M38-340	Round38		340	13 25/64"		2.6	5.7
④ Wing sleeve	Part No.	O.D.		Overall length		Remarks	Approx. weight	
		mm	in	mm	in		kg	lb
	CM38FZ2	95	3 47/64"	245	10"		6.2	13.6
	(Spare parts) Spring pin : SP-8×45					4 pcs	0.04	0.09
⑤ First rod	Part No.	Body section		Overall length		Remarks	Approx. weight	
		mm	in	mm	in		kg	lb
	EH32M38-3660L	Hex.32		3660	12'		21.4	47.1
	※EH32M38-4000L	Hex.32		4000	13'1 31/64"		23.5	51.7
⑥ Extension rod	Part No.	Body section		Overall length		Remarks	Approx. weight	
		mm	in	mm	in		kg	lb
	EH32M38-3050L	Hex.32		3050	10'		17.7	38.9
⑦ Coupling	Part No.	O.D.		Overall length		Remarks	Approx. weight	
		mm	in	mm	in		kg	lb
	CM38AG	54	2 1/8"	190	7 15/32"		1.9	4.2
⑧ End sleeve	Part No.	O.D.		Overall length		Remarks	Approx. weight	
		mm	in	mm	in		kg	lb
	CR38M38AG	60	2 23/64"	195	7 43/64"		2.0	4.8
	CM38AG	54	2 1/8"	190	7 15/32"		1.9	4.2
⑨ First casing with shoe	Part No.	O.D.		Overall length/Effective length		Remarks	Approx. weight	
		mm	in	mm	in		kg	lb
	SA114-3770U	114.3	4 2/3"	3840 3770	127 11/64" 124 27/64"	Steel pipe	62.0	136.4
⑩ Middle casing	Part No.	O.D.		Overall length/Effective length		Remarks	Approx. weight	
		mm	in	mm	in		kg	lb
	SB114-3050	114.3	4 2/3"	3120 3050	10'2 53/64" 10'	Steel pipe	48.5	106.7
⑪ End casing with cap	Part No.	O.D.		Overall length		Remarks	Approx. weight	
		mm	in	mm	in		kg	lb
	SC114-3050	114.3	4 2/3"	3050	10'	Steel pipe	49.0	107.8
	VC114-3050	114.0	4 2/3"	3050	10'	Plastic pipe	9.3	20.5

※in case without ③ and ④

CONCENTRIC DRILLING SYSTEM

MICRO CASINGBIT

PAT.No. 37903881



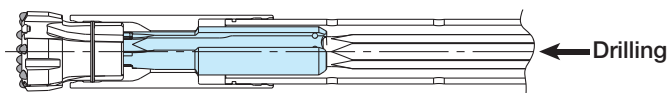
Smallest concentric drilling system in the world.

applies for longer holes such as face bolting, geological survey and drainage holes.

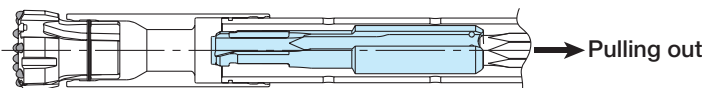
Maximum record : 50m horizontal hole in Japan.

Plastic casing pipes can be used in Multi slide system.

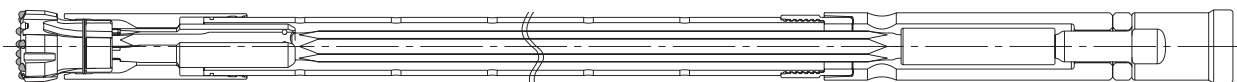
Drilling position (Locked)



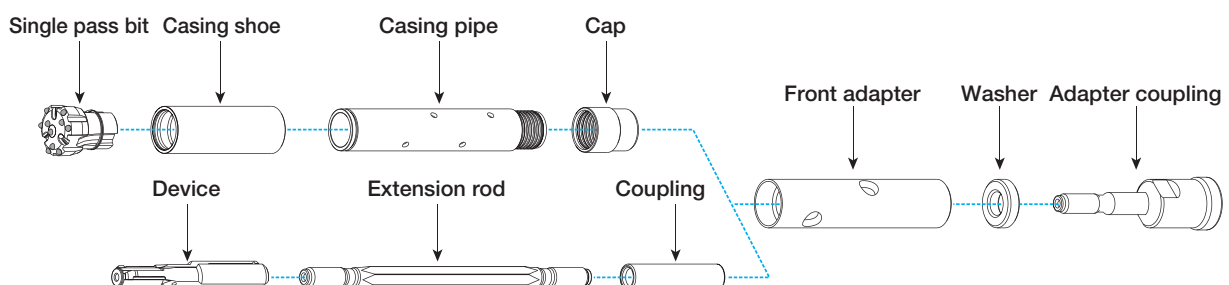
Pull out position (Unlocked)



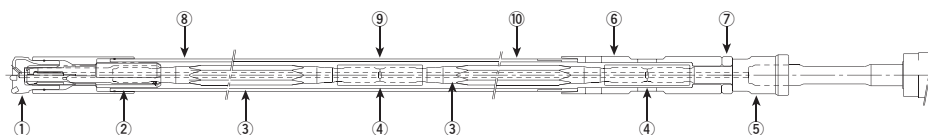
Assembly

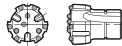
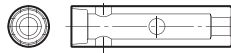
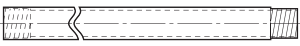
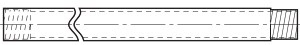


Components

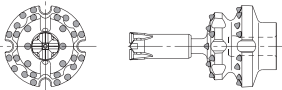
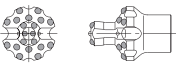
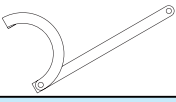
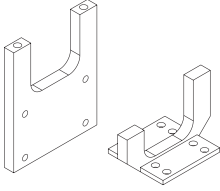
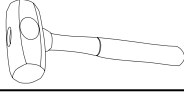
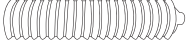
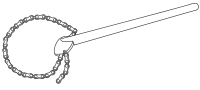


Standard 2" & 2.5" MCB system



① MCB (Single pass bit)	Part No.	Gauge size		Overall length		Remarks	Approx. weight	
		mm	in	mm	in		kg	lb
	2" SP50-37P75	75	2 61/64"	100	3 15/16"		1.5	3.3
	2.5" SP65-47P90	90	3 35/64"	106	4 11/64"		2.6	5.7
② MCB (Device)	Part No.	Guide O.D.		Overall length		Remarks	Approx. weight	
		mm	in	mm	in		kg	lb
	2" SP50M28-37	46.5	1 53/64"	255	10 3/64"		16.	3.5
	2.5" SP65M28-47	57.5	2 17/64"	260	10 15/64"		2.5	3.5
	(Spare parts)					3 pcs	0.01	0.02
	(2") Spring pin : SP-5×25					3 pcs	0.01	0.02
	(2.5") Spring pin : SP-5×28							
③ Extension rod	Part No.	Body section		Overall length		Remarks	Approx. weight	
		mm	in	mm	in		kg	lb
	EH28M28-3050	Hex.28		3050	10'		14.4	31.7
④ Coupling sleeve	Part No.	O.D.		Overall length		Remarks	Approx. weight	
		mm	in	mm	in		kg	lb
	CM28AG	38	1 1/2"	160	6 19/64"		0.7	1.5
⑤ Adapter coupling	Part No.	O.D.		Overall length		Remarks	Approx. weight	
		mm	in	mm	in		kg	lb
	AM28R38TR2	76	3"	265	10 7/16"		3.4	7.5
	AM28M38TR2	76	3"	265	10 7/16"		3.4	7.5
⑥ Front adapter	Part No.	O.D.		Overall length		Remarks	Approx. weight	
		mm	in	mm	in		kg	lb
	2" AKE60-300	76	3"	300	11 13/16"		6.1	13.4
	2.5" AKE76-300Z	89	3 1/2"	300	11 13/16"		8.8	19.4
⑦ Washer	Part No.	O.D.		Overall length		Remarks	Approx. weight	
		mm	in	mm	in		kg	lb
	D70-20	70	2 3/4"	20	25/32"		0.4	0.9
⑧ First casing with shoe	Part No.	O.D.		Overall length/Effective length		Remarks	Approx. weight	
		mm	in	mm	in		kg	lb
	2" SA60-2995	68.1/60.5	2 11/16", 2 3/8"	3040/2995	9' 11 11/16", 9' 9 29/32"	Steel pipe	23	50.6
	VA60-2995	68.1/60.0	2 11/16", 2 23/64"	3040/2995	9' 11 11/16", 9' 9 29/32"	Steel pipe & Plastic pipe	5.5	12.1
	2.5" SA65-2995	85/76.3	3 11/32", 3"	3040/2995	9' 11 11/16", 9' 9 29/32"	Steel pipe	32.5	71.5
⑨ Middle casing	Part No.	O.D.		Overall length/Effective length		Remarks	Approx. weight	
		mm	in	mm	in		kg	lb
	2" SB60-3050	60.5	2 3/8"	3095/3050	10' 1 27/32", 10'	Steel pipe	22.5	49.5
	VB60-3050	60.0	2 23/64"	3095/3050	10' 1 27/32", 10'	Plastic pipe	3.5	7.7
	2.5" SB65-3050	76.3	3"	3095/3050	10' 1 27/32", 10'	Steel pipe	31.5	69.3
⑩ End casing with cap	Part No.	O.D.		Overall length/Effective length		Remarks	Approx. weight	
		mm	in	mm	in		kg	lb
	2i" SC60-3050	60.5	2 3/8"	3095/3050	10' 1 27/32", 10'	Steel pipe	22.5	49.5
	VC60-3050	60.0	2 23/64"	3095/3050	10' 1 27/32", 10'	Plastic pipe	3.5	7.7
	2.5" SC65-3050	76.3	3"	3095/3050	10' 1 27/32", 10'	Steel pipe	31.5	69.3

ACCESSORY

① Reaming equipment (4")	Part No.	Gauge size		Overall length		Remarks	Approx. weight	
		mm	in	mm	in		kg	lb
	WM38P150SAZ-51L	153	6 1/32"	275	10 53/64"		11.5	25.3
② Reaming bit (2" & 2.5")	Part No.	Gauge size		Overall length		Remarks	Approx. weight	
		mm	in	mm	in		kg	lb
	WM28P102-45R	102	4"	104.5	4 7/64"		4.0	8.8
	WR32P102-45R	102	4"	104.5	4 7/64"		4.0	8.8
③ Rod wrench	Part No.	Body section		Overall length		Remarks	Approx. weight	
		mm	in	mm	in		kg	lb
	RW-H28	Hex.28		430	16 59/64"		3.8	8.4
	RW-H32	Hex.32		430	16 59/64"		5.2	11.4
④ Pipe wrench	Part No.	Applicable dia.		Overall length		Remarks	Approx. weight	
		mm	in	mm	in		kg	lb
	PW-114	114.3	4 1/2"			4"	3.3	7.3
	PW-76	76.3	3"			2.5"	1.5	3.3
	PW-60	60.5	3/8"			2"	1.5	3.3
⑤ Protection cap	Part No.	O.D.		Overall length		Remarks	Approx. weight	
		mm	in	mm	in		kg	lb
	4" HC-4	114.3	4 2/3"	120	4 23/32"	t=6.0 (15"/64)	1.1	2.4
⑥ Protection cap	Part No.	O.D.		Overall length		Remarks	Approx. weight	
		mm	in	mm	in		kg	lb
	2" SP50-CAP	65	2 9/16"	75	2 61/64"		0.6	1.3
	2.5" SP65-CAP	76	3"	115	4 1/2"		1.0	2.2
⑦ Centralizer	Part No.	Remarks					Approx. weight	
							kg	lb
	CR-FR	Furukawa Atlas Copco Sandvik Tamrock					17.7	38.9
	CR-AT CR-TM						21.0 31.2	46.2 68.6
⑧ Hammer (Commercial item)	Part No.	Remarks					Approx. weight	
							kg	lb
	WH-295						1.3	2.9
⑨ Molybdenum grease (Commercial item)	Part No.	Remarks					Approx. weight	
							kg	lb
	MG-400	1box (400g cartridge X20pcs)					8.0	17.6
⑩ Chain tongs (Commercial item)	Part No.	Body overall length		Remarks		Remarks	Approx. weight	
		mm	in	mm	in		kg	lb
	CT-51	515			1'8 9/32"		2.7	5.9
⑪ Jig	Part No.	O.D.		Overall length		Remarks	Approx. weight	
		mm	in	mm	in		kg	lb
	PUSHER-5	13	33/64"	120	4 23/32"	φ 5	0.06	0.13
	PUSHER-8	16	5/8"	145	5 45/64"	φ 8	0.11	0.24
⑫ Fishing tool	Part No.	Thread		Overall length		Remarks	Approx. weight	
		mm	in	mm	in		kg	lb
	AM38M38AGFZ	38M		240	9 29/64"		2.6	5.7

Advanced Manufacturing Methods For Consistently Higher Quality





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