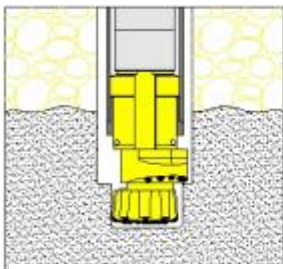
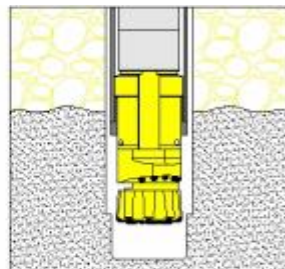


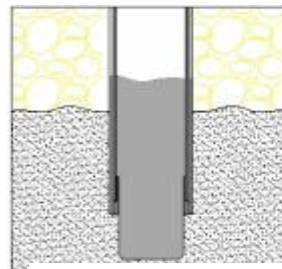
Eccentric systems with casing drilling step-by-step:



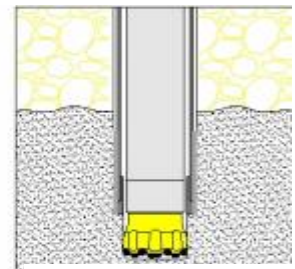
When drilling , the reaming bits wings out and drills a hole wide enough for the casing tube to slide down behind the reamer.



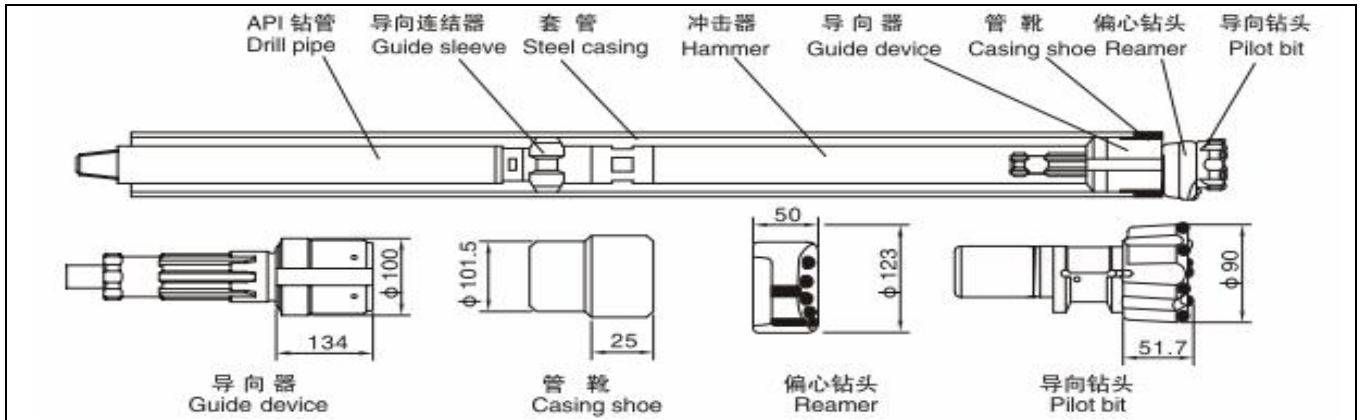
When required depth is reached , the drill is reversed and the reamer swings in , allowing the bit to pass through the casing.



Casing tubes that are to be left in the bore holes should be sealed at the bottom of the hole by means of cement grout or some other sealing agent



Drilling continues to the desired depth using conventional DTH drilling equipment.

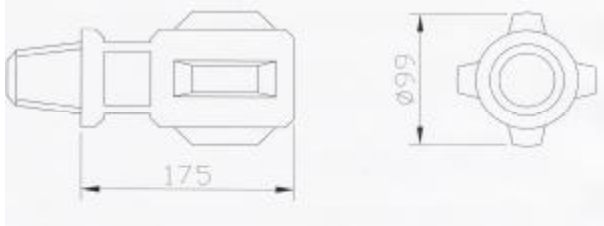

Part No.: PGZ90-3.5-114/6


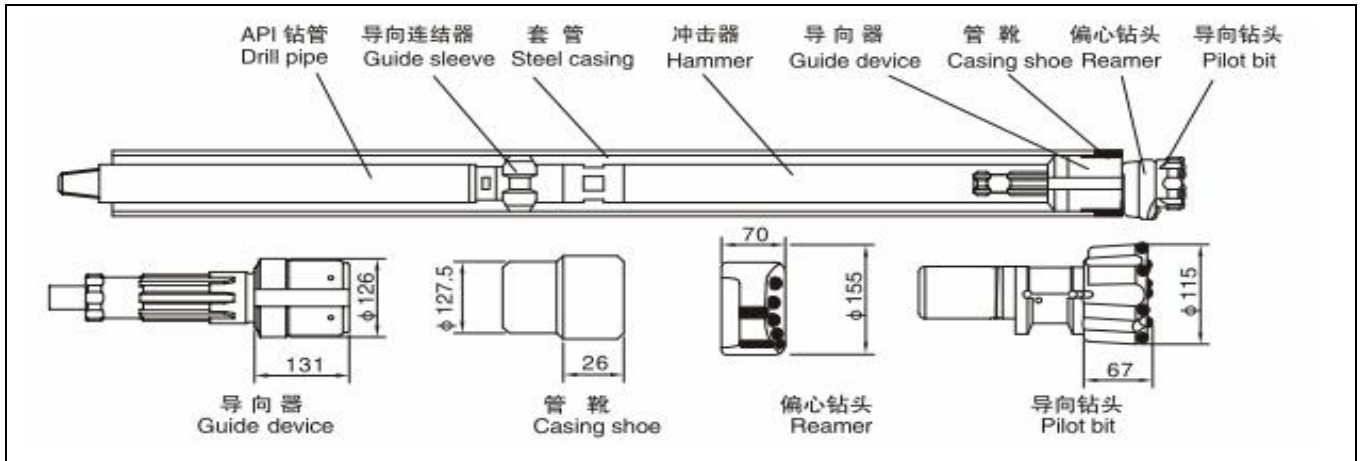
Alternative casing may be used:

maximum outside diameter -----115mm

Minimum inside diameter -----102mm

Wall thickness-----6mm

Description	Weight In kgs	Part No.
PGZ90-3.5-115/6 shank for DHD3.5 DTH hammer		
Guide Device -----	7.8	DXQ903.5
Casing Shoe-----	1.1	GX90
Eccentric Reamer -----	1.35	PZT90123
Pilot Bit-----	3.6	DZT90
Guide sleeve API 2-3/8 " REG/wrench flat 65mm 	5.8	DLQ90
Guide Device Locking Kit, comprising: Three complete sets of 2 pilot bit pins, 2 self-locking spring pins 8 locking balls. One pusher for pilot-bit pins and spring-pins. A Pilot bit pin -----(9.85×51mm) 1 piece B self-locking spring pin -----(Φ10.5×15) 1 piece C Pusher for pilot-bit pin -----(Φ7.8×140mm) 1 piece D Locking balls -----(9.5mm) 1 piece 	0.02 0.02 0.04 0.01	PGZ90-01 PGZ90-02 PGZ90-03 PGZ90-04

Part No.: PGZ115-44-146/8


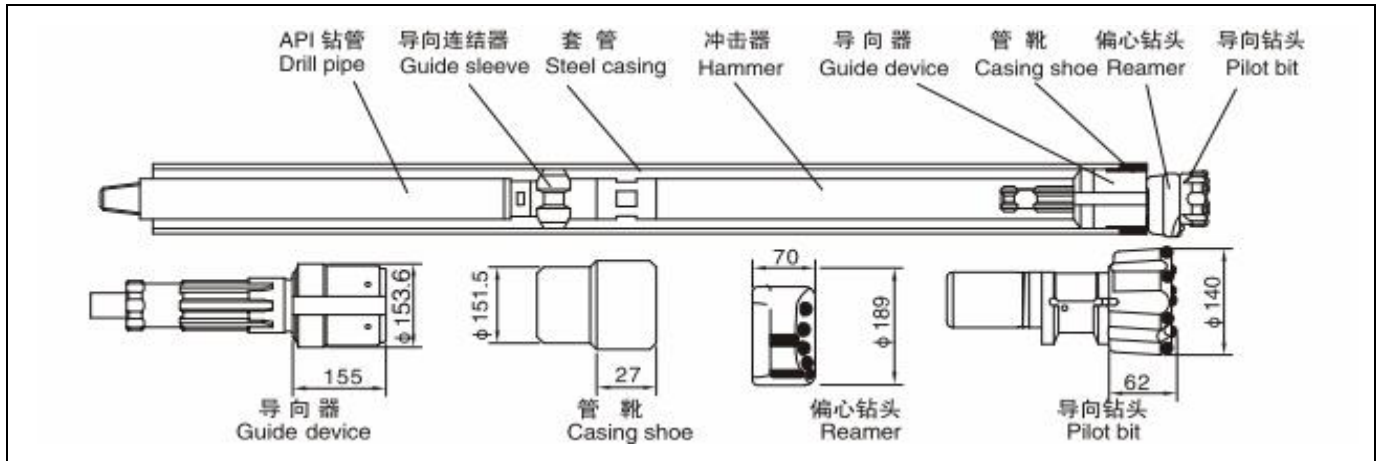
Alternative casing may be used:

Maximum outside diameter-----142mm

Minimum inside diameter-----125mm

Wall thickness-----7mm

Description	Weight in kgs	Part No.
PGZ115-44-140/7 shank for DHD340, SD4, QL40 or Mission 40 DTH hammer		
Guide Device -----	11.7	DXQ11544
Casing Shoe-----	1.6	GX115
Eccentric Reamer-----	2.6	PKZT115151
Pilot Bit-----	7.8	DZT115
Guide sleeve API 2-3/8 " REG/ wrench flat 65mm 	8.5	DLQ115
Guide Device Locking Kit comprising: Three complete sets of 2 pilot bit pins, 2 self-locking spring pins 8 locking balls. One pusher for pilot-bit pins and spring-pins. A Pilot bit pin-----($\phi 11.5 \times 60\text{mm}$) 1 piece B self-locking spring pin-----($\phi 12.5 \times 20$) 1 piece C Pusher for pilot-bit pin-----($\phi 10 \times 150\text{mm}$) 1 piece D Locking balls----- (11mm) 1 piece 	0.03 0.02 0.4 0.01	PGZ115-01 PGZ115-02 PGZ115-03 PGZ115-04

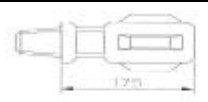
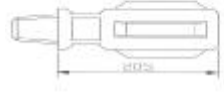

Part No.: PGZ140-54-168/6.5


Alternative casing may be used

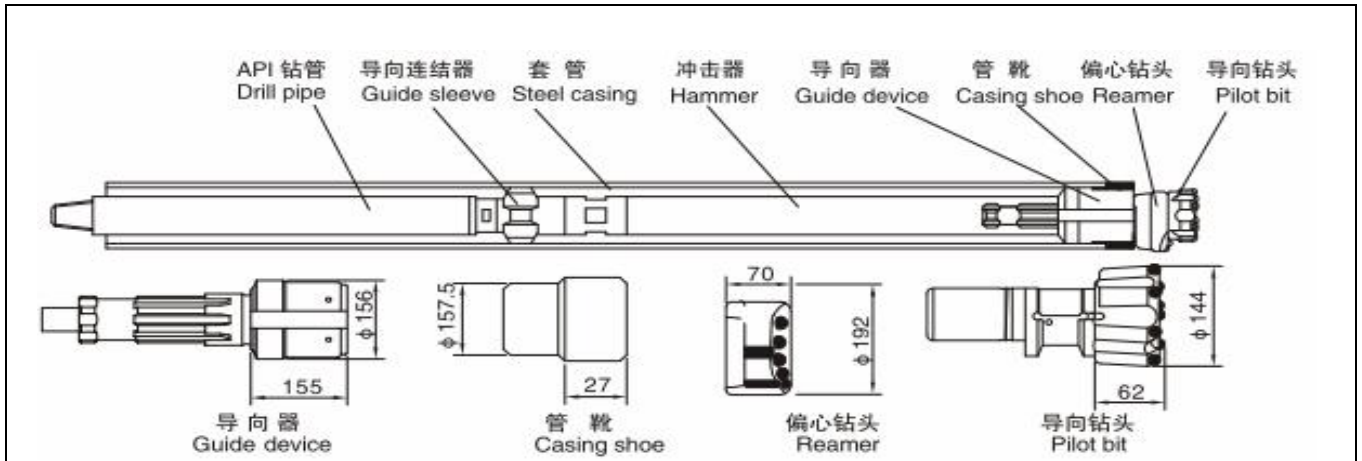
Maximum outside diameter----- 168mm

Minimum inside diameter-----152mm

Wall thickness ----- 8mm

Description	Weight In kgs	Part No.
PGZ140-54-168/8 shank for DHD350R, SD5, QL50 or Mission 50 DTH hammers		
Guide Device -----	19.7	DXQ14054
Casing Shoe-----	2.4	GX140
Eccentric Reamer -----	4.1	PZT140189
Pilot Bit-----	11	DZT140
Guide sleeve wrench flat 65mm  API 2-3/8" REG	9	DLQ140
wrench flat 95mm  API 3-1/2" RE	16.4	DLQ140-I
Guide Device Locking Kit comprising: Three complete sets of 2 pilot bit pins, 2 self-locking spring pins 8 locking balls. One pusher for pilot-bit pins and spring-Pins.		
A Pilot bit pin ----- (φ 11.5×75mm) 1 piece	0.03	PGZ140-01
B self-locking spring pin----- (φ 12.5×20) 1 piece	0.02	PGZ140-02
C Pusher for pilot-bit pin ----- (φ 10×160mm) 1 piece	0.4	PGZ140-03
D Locking balls ----- (11mm) 1 piece	0.01	PGZ140-04
		

Part No. : PGZ144-54-178/9

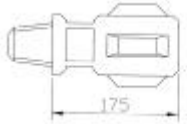
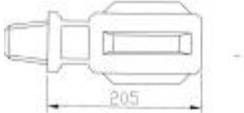



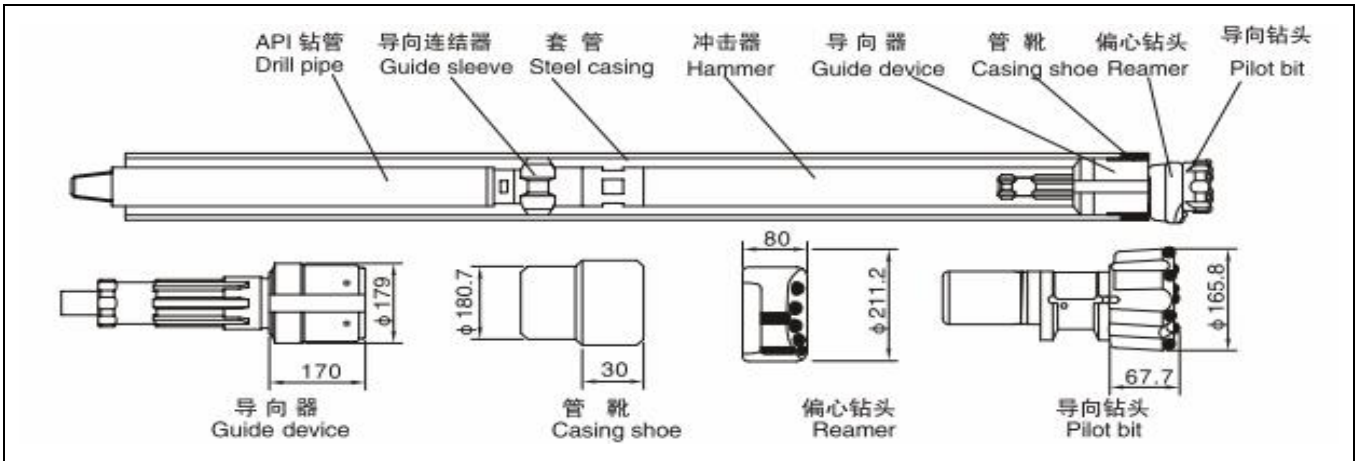
Alternative casing may be used:

Maximum outside diameter -----178mm

Minimum inside diameter -----160mm

Wall thickness ----- 9mm

Description	Weight In kgs	Part No.
PGZ144-54-178/9 shank for DHD350R, SD5, QL50 or Mission 50 DTH hammers		
Guide Device -----	20.5	DXQ14454
Casing Shoe-----	2.6	GX144
Eccentric Reamer-----	4.5	PZT144189
Pilot Bit-----	12	DZT144
Guide sleeve		
wrench flat 65mm  API 2-3/8" REG	9	DLQ144
wrench flat 95mm  API 3-1/2" REG	16.4	DLQ144- I
Guide Device Locking Kit comprising: Three complete sets of 2 pilot bit pins, 2 self-locking spring pins 8 locking balls. One pusher for pilot-bit pins and spring-Pins.		
A Pilot bit pin ----- $\phi 11.5 \times 75\text{mm}$ 1 piece	0.03	PGZ140-01
B self-locking spring pin----- ($\phi 12.5 \times 20$) 1 piece	0.02	PGZ140-02
C Pusher for pilot-bit pin ----- ($\phi 10 \times 160\text{mm}$) 1 piece	0.4	PGZ140-03
D Locking balls ----- (11mm) 1 piece	0.01	PGZ140-04
		

Part No.: PGZ165-64-195/6.5


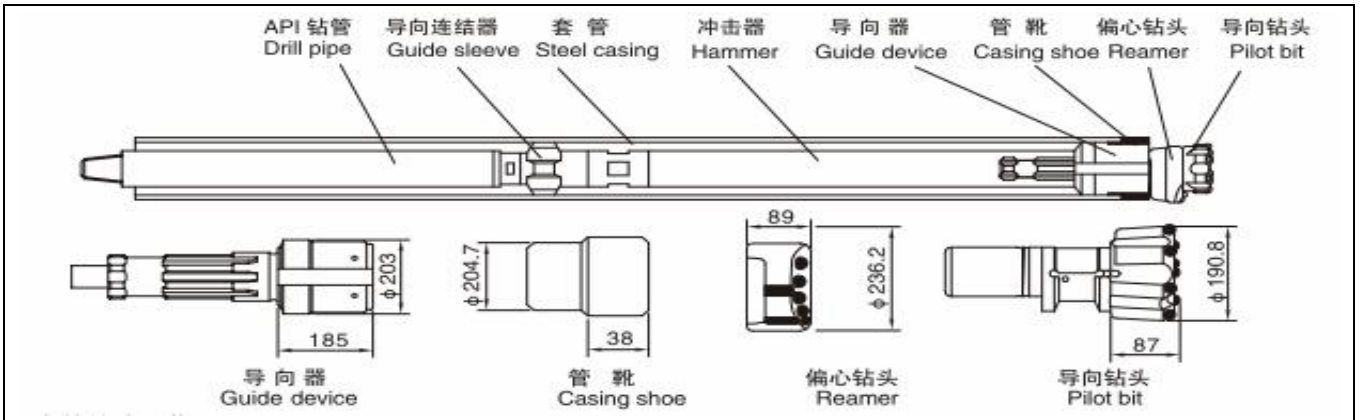
Alternative casing may be used:

maximum outside diameter-----195mm

Minimum inside diameter-----182.5mm

Wall thickness-----6mm

Description	Weight in kgs	Part No.
PGZ165-64-195/6.5 shank for DHD360, SD6, QL60 or Mission 60 DTH hammers		
Guide Device -----	33.5	DXQ16564
Casing Shoe -----	3.2	GX165
Eccentric Reamer -----	7.0	PZT165211
Pilot Bit-----	17	DZT165
Guide sleeve API 3-1/2 " REG/ wrench flat 95mm 	21.5	DLQ165
Guide Device Locking Kit comprising: Three complete sets of 2 pilot bit pins, 2 self-locking spring pins 8 locking balls. One pusher for pilot-bit pins and spring-pins. A Pilot bit pin-----($\phi 11.5 \times 90$ mm) 1 piece B self-locking spring pin -----($\phi 12.5 \times 26$) 1 piece C Pusher for pilot-bit pin -----($\phi 10 \times 160$ mm) 1 piece D Locking balls -----(11 mm) 1 piece 	0.03 0.02 0.4 0.01	PGZ165-01 PGZ165-02 PGZ165-03 PGZ165-04

Part No.: PGZ190-64-219/7


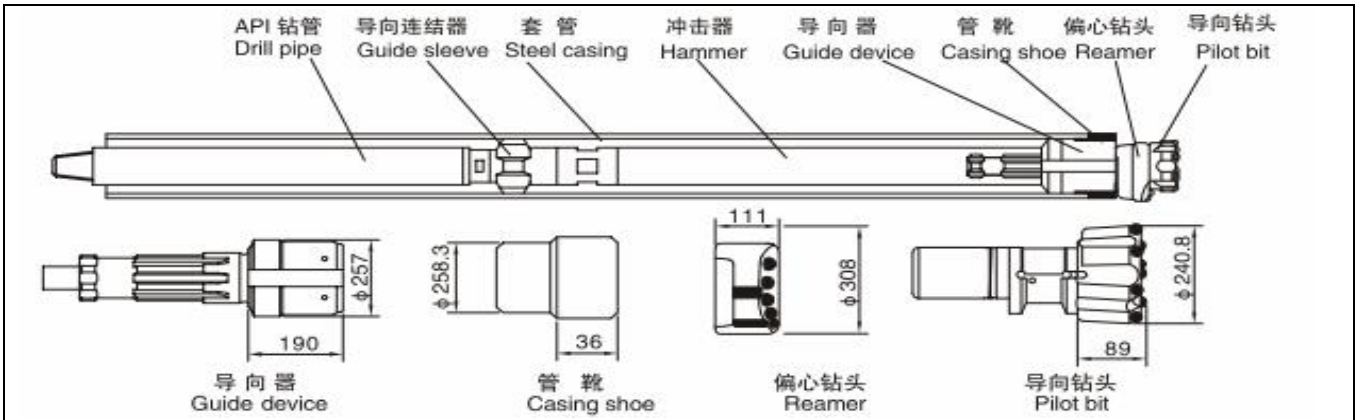
Alternative casing may be used:

Maximum outside diameter-----219mm

Minimum inside diameter-----205mm

Wall thickness -----7mm

Description	Weight In kgs	Part No.
GGZ190-64-219 shank for DHD360, SD6, QL60 or Mission 60 DTH hammers		
Guide Device -----	44	DXQ19064
Casing Shoe -----	4.0	GX190
Eccentric Reamer -----	10.0	PZT190232
Pilot Bit-----	23.7	DZT190
Guide sleeve API 3-1/2 " REG/wrench flat 95mm 	25	DLQ190
Guide Device Locking Kit comprising: Three complete sets of 2 pilot bit pins, 2 self-locking spring pins 8 locking balls. One pusher for pilot-bit pins.		
A Pilot bit pin -----($\phi 13.5 \times 95\text{mm}$) 1 piece	0.05	PGZ190-01
B self-locking spring pin -----($\phi 14 \times 25$) 1 piece	0.02	PGZ190-02
C Pusher for pilot-bit pin -----($\phi 10 \times 160\text{mm}$) 1 piece	0.4	PGZ190-03
D Locking balls -----(13mm) 1 piece	0.01	PGZ190-04

Part No.: PGZ240-84-273/11.5


Alternative casing may be used:

Maximum outside diameter-----273mm

Minimum inside diameter-----250mm

Wall thickness-----11.5mm

Description	Weight In kgs	Part No.
PGZ230-84-273/11.5 shank for DHD380, SD8, or Mission 80 DTH hammers		
Guide Device-----	67	DXQ24084
Casing Shoe-----	6.8	GX240
Eccentric Reamer-----	18	PZT240286
Pilot Bit-----	47	DZT240
Guide sleeve API 3-1/2" REG/wrench flat 95mm 	25	DLQ240
Guide Device Locking Kit comprising: Three complete sets of 2 pilot bit pins, 2 self-locking spring pins 8 locking balls. One pusher for pilot-bit pins and spring-pins. A Pilot bit pin -----($\phi 13.5 \times 120\text{mm}$) 1 piece 0.05 PGZ240-01 B self-locking spring pin -----($\phi 14 \times 25$) 1 piece 0.02 PGZ240-02 C Pusher for pilot-bit pin -----($\phi 10 \times 160\text{mm}$) 1 piece 0.4 PGZ240-03 D Locking balls ----- (13mm) 1 piece 0.01 PGZ240-04 		