



**DESIGNED to be DIFFERENT,
with Results that DELIVER!**



RIGS DESIGNED FOR HARD DRILLING CONDITIONS



RIGS DESIGNED TO DRILL MANY DIFFERENT APPLICATIONS



DELMAG DRILLING RIGS

DELMAG HISTORY

Delmag in Germany has been manufacturing construction equipment since 1922 and drilling rigs for over forty years. The experience gained, along with customer input, has resulted in a job site tested, multi-purpose rig with many different applications for the shoring and foundation industry.

DELMAG MASTS

Mast crowd and pullback are created through winches mounted parallel to the mast, to reduce friction and increase the life of the kelly and crowd/pullback ropes



Drive under obstacles in minutes



Mast folds down and re-erects under obstacles



Large batter pile angles



DELMAG FEATURES



Control panel mounted to obtain an unobstructed view from the cabs, which increase productivity and safety



Up to 58ft mast stroke for CFA or full displacement piles



If required, counter weights are removable for transport, using the rig's own power & rigging

An additional 20ft stroke Kelly extension can be added for CFA, soil mixing, or full displacement work



Telescopic, reinforced undercarriage, oscillator hookup ready

KELLY DRILLING APPLICATIONS



Drill
up to
15,000
PSI
hard
rock with
an auger



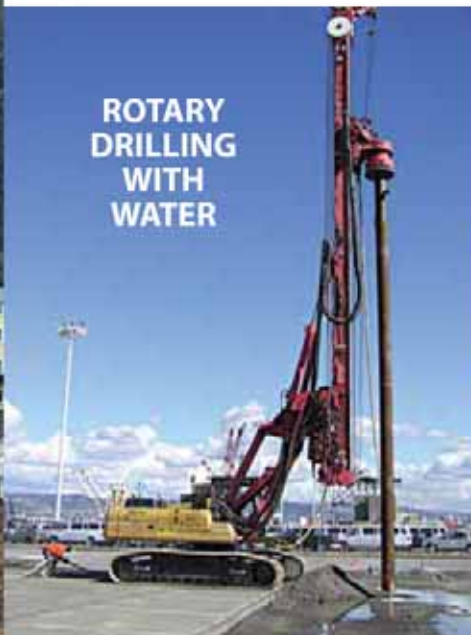
VERY LARGE
DIAMETER



DRILLING APPLICATIONS NO KELLY

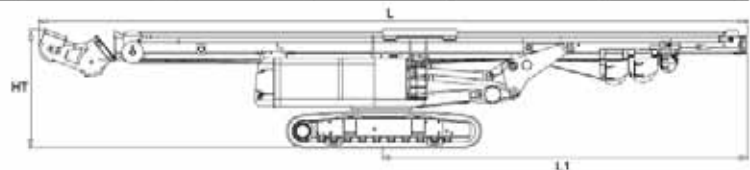
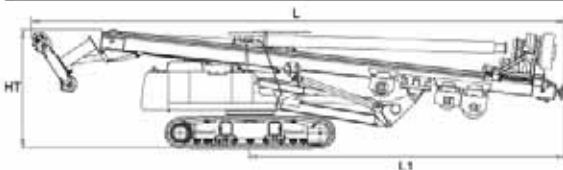


The long strokes up to 58ft and 78ft with extensions, allow drilling with many different tools from soft, collapsing soils to hard rock, with a varying amount of spoils



MODELS AND SPECIFICATIONS

DESCRIPTION		RH 12	RH 16	RH 20	RH 28	RH 32
MAST						
Inclination forward/backward	degree	5/14°	3.8/14°	3.8/14°	3.8/14°	3.8/14°
Inclination right/left	degree	3/9.5°	9.5/9.5°	9.5/9.5°	9.5/9.5°	9.5/9.5°
CROWD WINCH						
Extraction force	kN lbs	160 35,200	260 58,000	300 67,000	420 94,000	420 94,000
Crowd force up/down	kN lbs	160/100 35,200/22,000	260/150 58,000/33,700	300/200 67,000/45,000	420/330 94,000/74,000	420/330 94,000/74,000
Rapid speed up-down	m/min ft/min	30 98	25 82	25 82	20 65	28.5 93
Working speed up-down	m/min ft/min	12 39	7 22	7 22	5.5 18	5.5 18
KELLY WINCH						
Line pull standard/optional	kN lbs	100 22,400	150 33,700	150 33,700	210/250 47,200/56,200	250 56,200
Cable diameter	mm inch	19 0.75	24 0.94	24 0.94	28 1.10	34 1.34
Cable speed	m/min ft/min	60 196	61 200	70 229	57/70 187/229	50/65 164/213
AUXILIARY WINCH						
Line pull standard	kN lbs	42 9,400	55 40,535	75 16,800	75 16,800	100 22,400
Cable diameter	mm inch	16 0.63	15 0.59	18 0.71	18 0.71	20 0.79
Cable speed/optional	m/min ft/min	40 131	30 98	30 98	30 98	30 98
CARRIER UNIT						
Power	kW HP	187 250	209 280	261 350	261 350	403 540
Standard track shoe width	mm ft	650 25.59	700 27.56	750 29.53	800 31.50	800 31.50
Track speed	km/hr m/hr	2 1.24	1.5/3.1 0.9/1.92	2 1.24	1.6/2.5 1/1.5	1.2/2.0 0.75/1.24
TRANSPORT WEIGHT & DIMENSIONS						
Bare rig with counterweight (approx.)	kg lbs	43,800 96,360	57,600 126,720	59,500 130,900	78,000 171,600	87,300 192,000
Bare rig without counterweight (approx.)	kg lbs	30,000 66,000	38,700 85,140	49,000 107,800	64,000 140,800	72,700 160,000
Length without/with long mast foot (L)	mm ft	16,950 55.61	18,750 61.52	20,100/21,900 66/71.82	21,850/23,650 71.68/77.59	21,850/24,350 71.68/79.88
Length rig center to front (L1)	mm ft	7,980 26.18	9,200 30.18	11,080 36.35	11,200 36.75	11,200 36.75
Height (HT)	mm ft	3,400 11.15	3,400 11.15	3,550 11.65	3,650 11.98	3,690 12.11
Track width transport/operational (telescopic)	mm ft	2,550/3,000 8.36/9.84	3,000/4,400 9.84/14.43	3,000/4,450 9.84/14.43	3,300/4,700 10.82/15.42	3,300/4,700 10.82/15.42



DRILL HEAD & KELLY BAR SPECIFICATIONS

DESCRIPTION		RH 12	RH 16	RH 20	RH 28	RH 32
DRILL HEAD FOR KELLY BAR/CFA						
Torque, gear 1	kNm ft. lbs	120 88,440	160 117,920	200 147,400	280 206,360	320 235,840
Torque, gear 2	kNm ft. lbs	N/A N/A	66 48,642	95 70,015	135 99,495	150 110,550
Max speed, gear1/gear2	RPM	0-46	30/60	36/60	25/55	26/55
Weight	kg lbs	3,100 6,820	4,550 10,010	4,500 9,900	7,500 16,500	7,950 17,490
Height	mm ft	1,840 6.04	2,085 6.84	1,945 6.38	2,320 7.61	2,430 7.97
Width	mm ft	1,070 3.51	1,250 4.10	1,265 4.22	1,360 4.53	1,380 4.53
Depth	mm ft	1,400 4.59	1,330 4.36	1,595 5.23	1,810 5.94	1,930 6.33
Distance from mast to drill center	mm inch	845 33.3	875 34.4	1,045 41.1	1,100 43.3	1,220 48
DRILL HEAD (DOUBLE HEAD)		Not separable			Separable heads	
Lower drill head - Casing Drive		Not separable			Separable heads	
Torque, max.	kNm ft. lbs	60 44,220	60 44,220	160 117,920	160 117,920	200 147,400
Max speed	RPM	15	15	25	25	39
Center hole through lower drill head	mm inch	100 3.9	100 3.9	630 24.8	630 24.8	830 32.7
Upper drill head - Auger Drive						
Torque, max.	kNm ft. lbs	35 44,220	35 44,220	80 44,220	80 44,220	120 44,220
Max speed	RPM	30	30	43	43	34
Height	mm ft	3,370 11.06	3,370 11.06	3,400 11.15	3,400 11.15	4,350 14.27
Width	mm ft	880 2.89	880 2.89	1,300 4.27	1,300 4.27	1,730 5.68
Depth	mm ft	795 2.61	795 2.61	1,400 4.59	1,400 4.59	1,600 5.25
Stoke between lower & upper drill heads	mm inch	300 11.81	300 11.81	500 19.69	500 19.69	500 19.69
KELLY BARS						
Standard 3 part kelly used with casing	m ft	15 49.215	21 68.901	24 78.744	27 88.587	33 108.273
Longest kelly bar, 3 part	m ft	23 75.463	30 98.44	30 98.44	40 131.24	40 131.24
Longest kelly bar, 4 part, reduced torque	m ft	N/A N/A	N/A N/A	N/A N/A	44 144.364	44 144.364

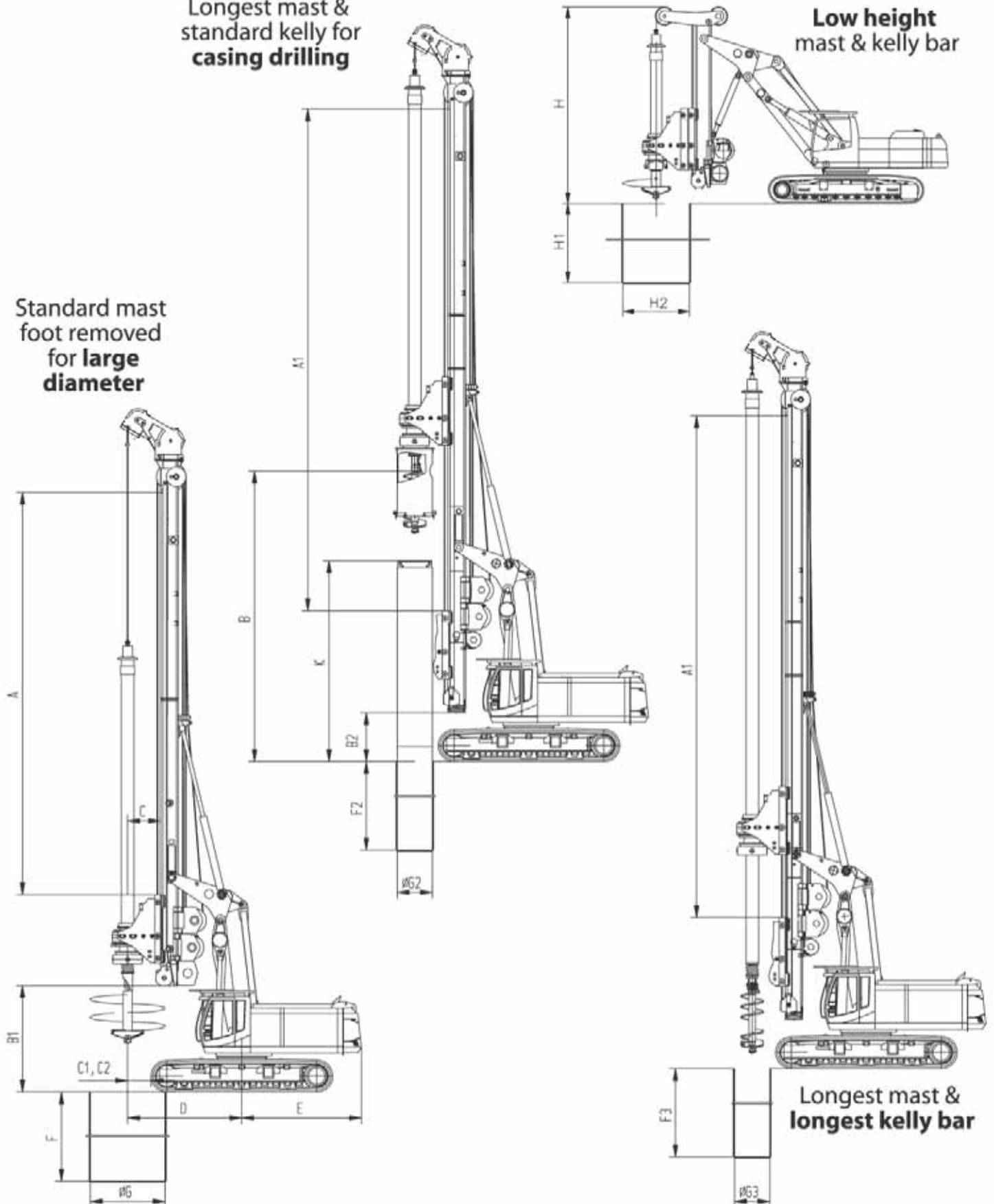


KELLY DRILLING WORKING DIMENSIONS

Longest mast & standard kelly for casing drilling

Low height mast & kelly bar

Standard mast foot removed for large diameter



* Figures in ft. are approximate as they are converted from metric dimensions.

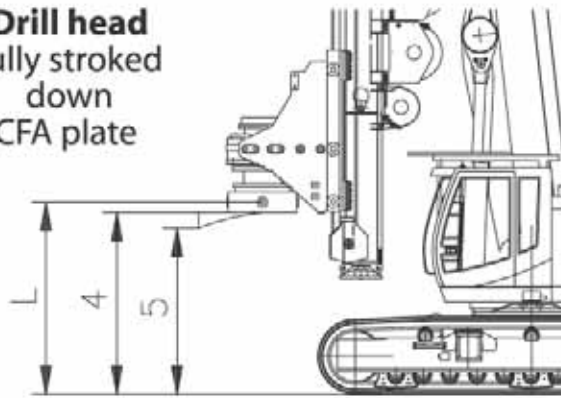
DESCRIPTION OF DIMENSIONS

KELLY BAR DRILLING			RH 12	RH 16	RH 20	RH 28	RH 32
Mast stroke, standard mast, short mast foot	mm ft	A	11,200 36.75	11,650 38.22	11,690 38.35	13,110 43.01	13,110 43.01
Length of mast extension (RH 10 no extra stroke)	mm ft		N/A N/A	N/A N/A	1,800 5.91	1,800 5.91	2,500 8.20
Maststroke with extended mast, long mast foot	mm ft	A1	12,000 39.37	12,500 41.01	15,700 51.51	16,800 55.12	17,500 57.41
Max. length from floor to standard kelly bar	mm ft	B	Kelly 15m 9,450 27.72	Kelly 18m 10,200 33.46	Kelly 24m 9,140 29.99	Kelly 27m 9,720 31.89	Kelly 33m 7,475 24.52
Length from floor to short mast foot	mm ft	B1	2,150 7.05	2,640 8.66	3,450 11.32	3,510 11.52	3,550 11.65
Max. length from floor to long mast foot	mm ft	B2	1,265 4.15	1,570 5.15	1,240 4.07	1,620 5.31	1,670 5.48
Centerline drill to mast	mm ft	C	845 2.77	875 2.87	1,045 3.43	1,100 3.61	1,220 4.00
Front of tracks to centerline drill, mast closest to rig	mm ft	C1	640 2.10	575 1.89	1,100 3.61	940 3.08	900 2.95
Front of tracks to centerline drill, mast farthest from rig	mm ft	C2	1,280 4.20	1,410 4.63	1,630 5.35	1,690 5.54	1,860 6.10
Turning radius front, mast closest to rig	mm ft	D	3,430 11.25	3,650 11.98	4,260 13.98	4,515 14.81	4,635 15.21
Turning radius rear	mm ft	E	2,970 9.74	3,350 10.99	3,620 11.88	4,040 13.25	4,360 14.30
Max. drill depth with 6 ft long auger	mm ft	F	15,200 49.87	21,200 69.55	24,200 79.40	27,700 90.88	33,200 108.92
Max drilled diameter within drill parameters	mm ft	G	3,200 10.50	3,200 10.50	4,100 13.45	4,100 13.45	4,300 14.11
Max. depth casing w/standard kelly bar & 20 ft casing	mm ft	F2	15,200 49.87	21,200 69.55	24,200 79.40	27,700 90.88	33,200 108.92
Max. free space in front of the mast crowd pullys	mm ft	-	1,450 4.76	1,600 5.25	1,830 6.00	1,960 6.43	2,200 7.22
Max. OD casing	mm ft	G2	1,000 3.28	1,200 3.94	1,500 4.92	1,500 4.92	1,800 5.91
Max. depth, longest 3 part kelly bar with 6 ft auger	mm ft	F3	23,200 76.12	24,200 79.40	30,200 99.08	40,500 132.87	40,200 131.89
Max. depth, longest 4 part kelly bar with 1/2 torque	mm ft	F3	N/A N/A	N/A N/A	N/A N/A	44,500 146.00	44,200 145.01
Max. OD hole, with 6 ft auger	mm ft	G3	1,200 3.94	1,400 4.59	1,600 5.25	1,800 5.91	2,000 6.56
Max length casing w/standard kelly bar & 6 ft auger without mast extension (w/extension add 5 ft)	mm ft	K	6,000 19.69	6,000 19.69	6,000 19.69	6,000 19.69	4,000 13.12
Floor to CFA plate, drill head fully stroked down	mm ft	L	1,980 6.50	2,500 8.20	2,000 6.56	2,510 8.23	2,550 8.37
LOW HEIGHT KELLY BAR DRILLING							
Floor to top of drill rig	mm ft	H	7,600 24.93	-	-	-	-
Max. drill depth with short bar, 5 fold, 24 ft headroom	mm ft	H1	18,000 59.06	-	-	-	-
Max. drill diameter	mm ft	H2	1,400 4.59	-	-	-	-

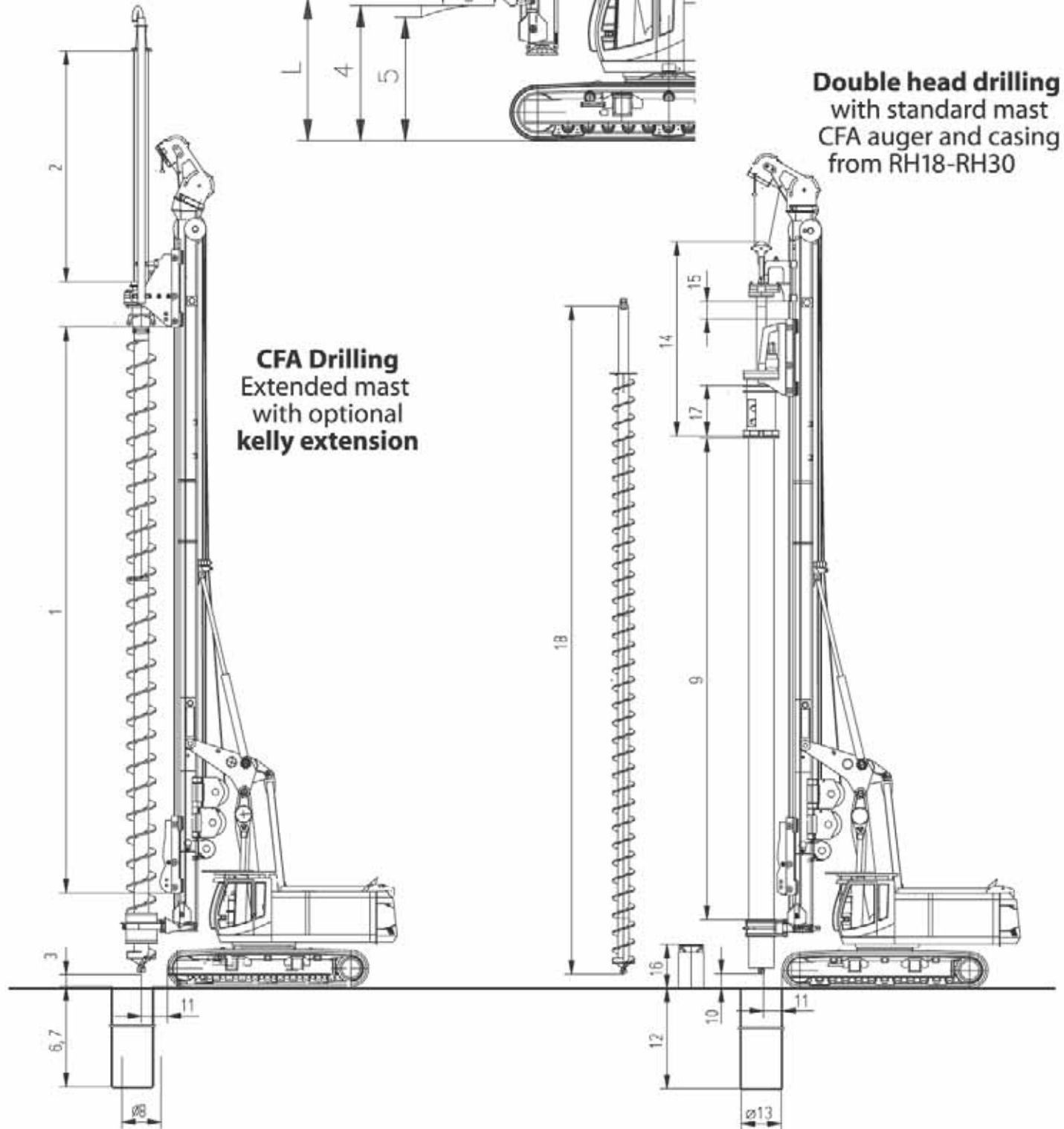


CFA & DOUBLE HEAD DRILLING WORKING DIMENSIONS

**Drill head
fully stroked
down
CFA plate**



**Double head drilling
with standard mast
CFA auger and casing
from RH18-RH30**



* Figures in ft. are approximate as they are converted from metric dimensions.

DESCRIPTION OF DIMENSIONS

CFA, part & full displacement auger			RH 12	RH 16	RH 20	RH 28	RH 32
Stroke with mast extensions and long mast foot	mm ft	1	12,000 39.37	12,500 41.01	15,700 51.51	16,800 55.12	17,500 57.41
Kelly extension (add to 1)	mm ft	2	2,000 6.56	4,000 13.12	4,000 13.12	5,500 18.04	6,000 19.69
Max. length from floor to auger, mast closest to rig	mm inch	3	300 0.98	300 0.98	300 0.98	300 0.98	300 0.98
Height of auger above ground, 0 stroke, mast close	mm ft	4	1,780 5.84	2,300 7.55	1,800 5.91	2,310 7.58	2,350 7.71
Height of auger above ground, 0 stroke, mast far	mm ft	5	1,715 5.63	2,190 7.19	1,800 5.91	2,145 7.04	2,075 6.81
Drill depth without kelly extension, position 4	mm ft	6	11,700 38.39	12,200 40.03	15,400 50.52	16,500 54.13	17,200 56.43
Drill depth with kelly max. extension	mm ft	7	13,700 44.95	16,200 53.15	19,400 63.65	22,000 72.18	23,500 77.10
Max. drill diameter	mm ft	8	1,200 3.94	1,400 4.59	1,600 5.25	1,800 5.91	2,000 6.56

FULL DISPLACEMENT PILES

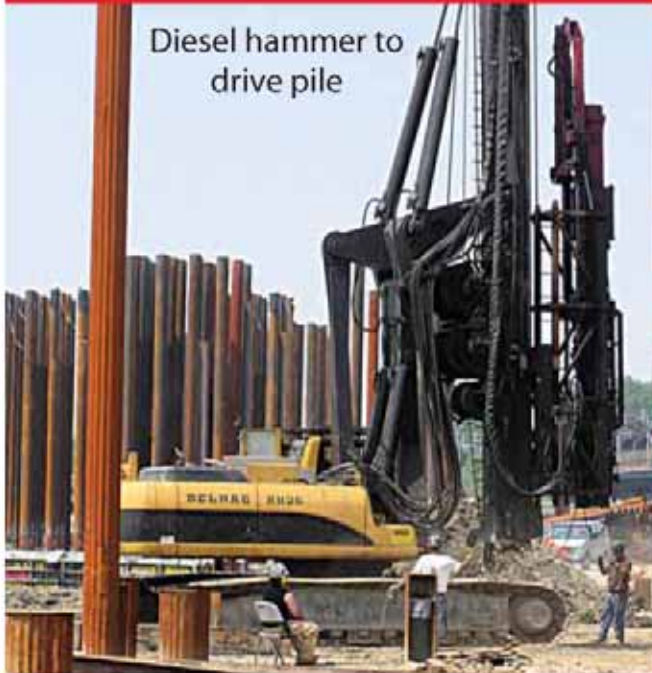


Double Head Drilling			RH 12	RH 16	RH 20	RH 28	RH 32
Max. stroke with mast extension	mm ft	9	Please contact your dealer		14,500 47.57	16,200 53.15	16,200 53.15
Max. length from floor to auger, mast closest to rig	mm ft	10	Please contact your dealer		300 0.98	300 0.98	300 0.98
Reach in front of tracks	mm ft	11	Please contact your dealer		980 3.22	765 2.51	605 1.98
Max. drill depth, double head system w/mast extension	mm ft	12	Please contact your dealer		13,800 45.28	15,300 50.20	15,300 50.20
Max OD casing diameter	mm ft	13	Please contact your dealer		700 2.30	700 2.30	880 2.89
Length of double head	mm ft	14	Please contact your dealer		4,860 15.94	4,860 15.94	5,400 17.72
Relative stroke between head when connected	mm ft	15	Please contact your dealer		500 1.64	500 1.64	500 1.64
Length casing sticks out of ground	mm ft	16	Please contact your dealer		1,100 3.61	1,530 5.02	1,580 5.18
Length of casing drive adapter	mm ft	17	Please contact your dealer		1,460 4.79	1,460 4.79	1,560 5.12
Length of auger/inner drill rod w/mast extension	mm ft	18	Please contact your dealer		16,700 54.79	18,400 60.37	20,300 66.60



OTHER ATTACHMENTS

Diesel hammer to drive pile



Hydraulic press to push/pull sheet pile



BACKUP AND SERVICE

Part of H&S's yard in Benicia, California



- Trained technicians to service the rigs
- Huge parts inventory for fast delivery
- Experienced personnel to consult
 - In-stock tooling for hard rock
- Fabrication facilities for adapters & other tooling such as CFA
- CAT engines & Rexroth Hydraulics make obtaining spare parts & maintenance easier



HAMMER & STEEL LOCATIONS

SANDWICH, MA
(508) 280-5244

MINNEAPOLIS, MN
(952) 469-6060



BENICIA, CA
(877) 224-3356

ST. LOUIS, MO (HQ)
(800) 325-7453

HOUSTON, TX
(281) 852-1136

KANSAS CITY, MO
(913) 681-9295

RESERVE, LA
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