

HYUNDAI

Service
Training



HBF (BH)-3,-

5,-7



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HEAVY INDUSTRIES EUROPE N.V.

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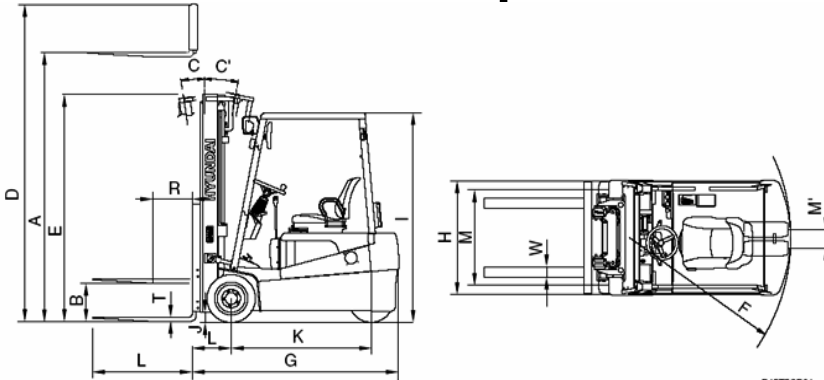
Overview + model specifications. Battery powered forklifts:



- HBF 15/18T-5
- HBF 15/18-III
- HBF 20/25/30/32-7
- HBF 20/25/30BH-7



Models specifications HBF15/18T-5



B15TSSP01

Model		Unit	HBF15T-5	HBF18T-5
Capacity		kg	1500	1750
Load center	R	mm	500	←
Weight		kg	2915	3100
Fork	Lifting height	A	mm	←
	Free lift	B	mm	←
	Lifting speed[Unload/Load]		mm/sec	480/330(375/240)
	Lowering speed[Unload/Load]		mm/sec	450/500
	L × W × T	L,W,T	mm	900 × 100 × 40
Mast	Tilt angle forward/backward	C/C'	degree	5/7
	Max height	D	mm	←
	Min height	E	mm	←
Body	Travel speed[Unload/Load]		km/h	16.0/14.5(12.4/11.4)
	Gradeability[Unload/Load]		degree	11/8.3
	Min turning radius[Outside]	F	mm	1500
ETC	Max hydraulic pressure		kgf/cm ²	←
	Hydraulic oil tank		l	←
	Electrolyte		l	132
Overall length	G	mm	1860	1910
Overall width	H	mm	1070	←
Overhead guard height	I	mm	1950	←
Ground clearance(Mast)	J	mm	85	←
Wheel base	K	mm	1295	←
Wheel tread front/Rear	M	mm	895/205	←

- Full proportional steering.
- Separated controllers. (Hydro – Trac.)
- SEM controller (Separately Excited Motor)
- Full mosfet controlled.
- Improved steering unit (High pres.90bar)
- Improved battery cover, integrated fan.
- Improved drivers seat



Models specifications HBF15/18T-5

(1) CONTROLLER

Item	Unit	D.motor controller	Hydraulic pump motor
Model	-	PP743	PP344P
Type	-	MOSFET	---
Dimension	mm	142 × 142 × 135	---
Current limit	A	SEM 350A/50A	Series 450A
Communication	-	CAN	---

(2) MOTOR

Item	Unit	Drive motor	Hydraulic pump motor
Model	-	203-19-4001	KKDG 4006
Type	-	DC SEM, Self ventilated	DC SEM, Self ventilated
Rated voltage	V	48(36)	48(36)
Output	kW	5.5(4.5)	12.2(8.8)
Brush size	mm	-	14.5 × 25.3 × 38.0
Insulation	-	Class H	Class H

(3) BATTERY= Only if original Korean battery are used!!!

Item	Unit	HBF15/18T-5	
Rated voltage	V	36V	48V
Dimension(W × L × H)	mm	990 × 545 × 635	
Min. Battery weight	kg	630	
Max. Battery weight	kg	1060	
Connector(CE spec)	-	SB 350 (SBE 320)	
Electrolyte	-	Refined dilute sulfuric acid	

(4) CHARGER = Only if original Korean battery are used!!!

Item	Unit	HBF15T	HBF 15T
Type	-	Constant current, constant voltage	
Battery capacity for charge	V·Ah/hr	48V450-520.5	---
AC input	V	Triple phase 410	
		Single phase 220	
		Triple phase 220/380	
		Triple phase 440	
DC output	V	62 ± 1	---
Charge time	hr	8 ± 2	---
Connector	-	SB 350	---

5) GEAR PUMP

Item	Unit	Specification
Type	-	Fixed displacement gear pump
Capacity	cc/rev	22
Maximum operating pressure	bar	210
Rated speed(max/min)	rpm	3000/500

6) STEERING HYDRAULIC MOTOR

Item	Unit	Specification
Model	-	OMRA NA125
Max oil flow	l /min	25
Displacement	cc	125.7
Max pressure	bar	175
Connector size	-	PF 1/2

7) MAIN CONTROL VALVE

Item	Unit	Specification
Type	-	3 spool, 4 spool(opt)
Operating method	-	Mechanical
Main relief valve pressure	bar	135

8) DRIVE UNIT

Item	Unit	Specification
Max drive output	kW	4.5
Max wheel load	kg/lb	2500/5513
Acceleration at the wheel	kgf · m/lbf · ft	1320/974
Braking moment at the wheel	kgf · m/lbf · ft	1700/1254
T/M ratio	-	22
Weight without fluid	kg/lb	28.5/62.8
Oil quantity	l /U.S. · qt	0.35/0.37

Models specifications HBF15/18T-5

9) WHEELS

Item	Specification
Type(front and rear)	Solid(Cushion), Lug, Smooth, Non-marking
Quantity(front/rear)	2/2
Front-drive	18×7-8(18×7×12.125)
Rear-steering	16×6-8(16×6×10.5)

10) STEERING

Item	Specification
Steering	Full hydraulic, power steering
Steering angle	90° to both right and left angle, respectively

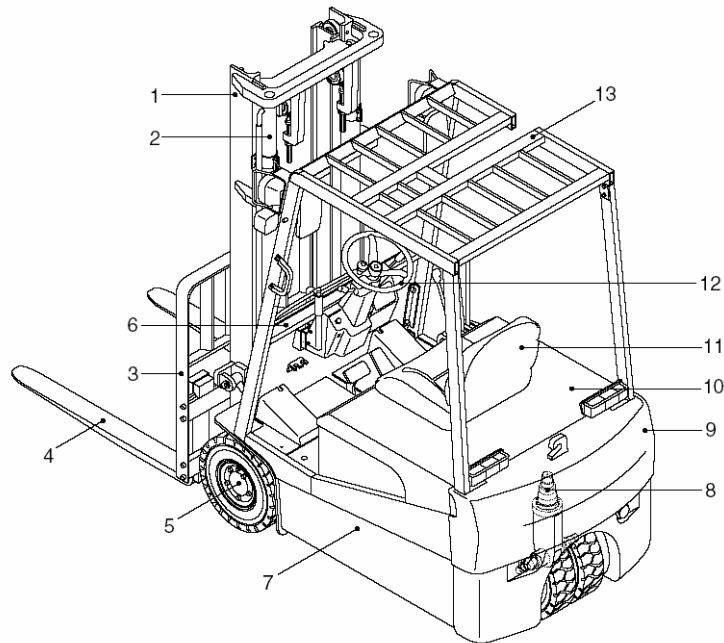
11) BRAKE

Item	Criteria	Unit	Specification
Braking pressure	· At the piston	bar/psi	1/14.513
	· In operation	bar/psi	60-80/871-1161
	· Nominal(max const)	bar/psi	80/1161
	· Limit(peaks)	bar/psi	110/1591
Brake fluid		SAE J1703, DOT 3 and DOT 4	
Volume in the brake cylinder	· In operation	cm ³ /cu.in.	1.71/0.104
	· Upon max wear	cm ³ /cu.in.	3.71/0.226
Cable pull force (Mech · efficiency incl)	· At the brake lever	kgf · m/lbf · ft	6.1/44.3

12) PARKING BRAKE

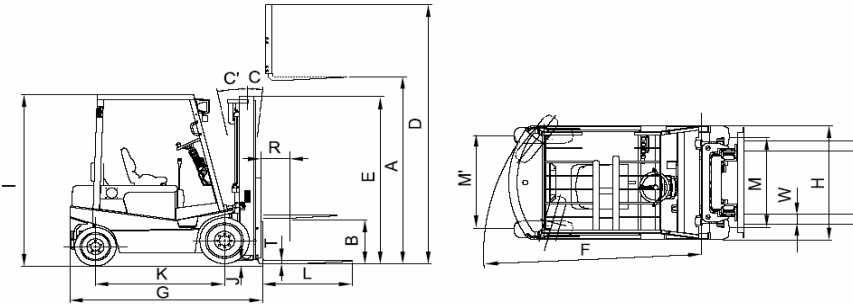
Item	Specification
Type	Ratchet, internal expanding mechanical type
Parking lever stroke	40mm
Parking cable stroke	18.1mm

1. GENERAL LOCATIONS



- | | | |
|-----------------|-----------------|-------------------|
| 1 Mast | 6 Dash board | 11 Seat |
| 2 Lift cylinder | 7 Frame | 12 Steering wheel |
| 3 Backrest | 8 Steering axle | 13 Overhead guard |
| 4 Forks | 9 Counterweight | |
| 5 Drive axle | 10 Battery | |

Models specifications HBF15/18-3



B153GEN02

Model		Unit	HBF 15III	HBF 18III	
Capacity		kg	1500	1750	
Load center	R	mm	500	←	
Weight		kg	3106	3333	
Fork	Lifting height	A	mm	←	
	Free lift	B	mm	←	
	Lifting speed(Unload/Load)		mm/sec	420/340	420/330
	Lowering speed(Unload/Load)		mm/sec	450/500	←
	L × W × T	L,W,T	mm	900 × 100 × 40	←
Mast	Tilt angle forward/backward	C/C'	degree	6/10	
	Max height	D	mm	←	
	Min height	E	mm	←	
Body	Travel speed(Unload/Load)		km/h	14.9/13	
	Gradeability(Load)		degree	13.9	
	Min turning radius(Outside)	F	mm	←	
ETC	Max hydraulic pressure		kg/cm ²	210	
	Hydraulic oil tank		ℓ	26	
	Fuel tank		ℓ	124.8	
Overall length	G	mm	1959	1999	
Overall width	H	mm	1070	←	
Overhead guard height	I	mm	2145	←	
Ground clearance	J	mm	110	←	
Wheel base	K	mm	1250	←	
Wheel tread front/rear	M, M'	mm	912/905	←	

1) MOTOR

Item	Unit	Drive motor	Hydraulic pump motor
Model	-	KRDB 4004	KNAQ 4003
Type	-	DC Series, self ventilated	
Rated voltage	V	48	
Output	kW	7.5	8.5
Brush size	mm	12.5 × 40 × 30	16 × 20 × 25
Insulation	-	Class H	

2) BATTERY= **Only if original Korean battery are used!!!**

Item	Unit	HBF 15III		HBF 18III
Type	-	VCD 450	VCDH 520	VCDH 520
Rated voltage	V	48		
Capacity	AH/hr	450/5	520/5	520/5
Electrolyte	-	Wet/dry		
Dimension(W × D × H)	mm	980 × 700 × 466		
Connector	-	SBE 320		

3) CHARGER= **Only if original Korean battery are used!!!**

Item	Unit	HBF 15III		HBF 18III
Type	-	Auto control, self diagnostic		
Battery capacity for charge	V-AH/hr	48-450/5	48-520/5	48-520/5
AC input	V	Single phase 110		
		Single phase 220		
		Triple phase 220/380		
		Triple phase 440		
DC output	V	Max 65	←	
Charge time	hr	8 ± 1	←	
Connector	-	SBE 320		←

Models specifications HBF15/18-3

4) GEAR PUMP

Item	Unit	Specification
Type	-	Fixed displacement gear pump
Capacity	cc/rev	20.0
Maximum operating pressure	bar	210
Rated speed(max/min)	rpm	3000/500

5) MAIN CONTROL VALVE

Item	Unit	Specification
Type	-	3 spool, 4 spool
Operating method	-	Mechanical
Main relief valve pressure	bar	135

6) DRIVE AXLE

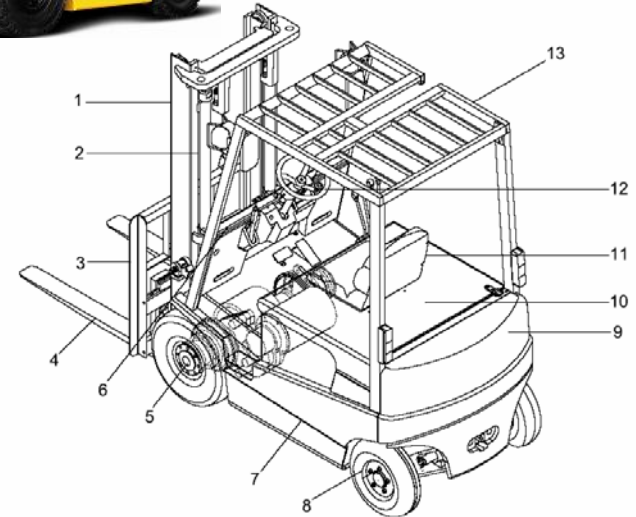
Item	Unit	Specification	
Max input torque	kgf · m	25	
Max input rpm	rpm	3500	
Gear ratio	G2 : G1	-	44 : 17 (2.588 : 1)
	G3 : G2	-	49 : 22 (2.227 : 1)
	G4 : G3	-	50 : 13 (3.846 : 1)
	Total	-	22.172
Oil quantity	ℓ	5.3	

7) WHEELS

Item	Specification
Type(front/rear)	Pneumatic
Quantity(front/rear)	2/2
Front-drive	21×8×9-14PR
Rear-steering	5×8-8PR

8) BRAKES

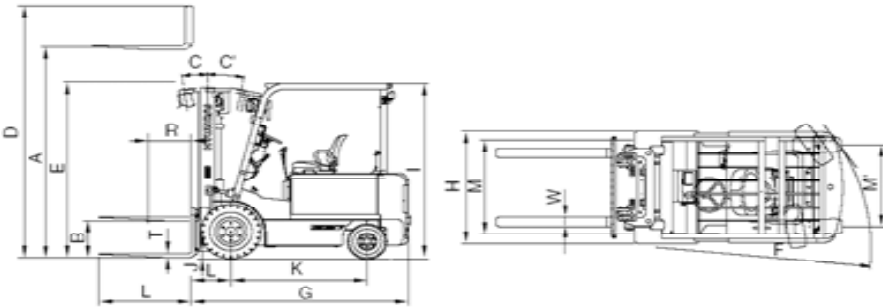
Item	Specification	
Brakes	Travel	Front wheel, duo-servo & auto adjustment type
	Parking	Toggle, internal expanding mechanical type
Steering	Type	Full hydraulic, power steering
	Steering angle	80° to both right and left angle, respectively



- | | | |
|-----------------|-----------------|-------------------|
| 1 Mast | 6 Dash board | 11 Seat |
| 2 Lift cylinder | 7 Frame | 12 Steering wheel |
| 3 Backrest | 8 Steering axle | 13 Overhead guard |
| 4 Forks | 9 Counterweight | |
| 5 Drive axle | 10 Battery | |

Models specifications HBF20/25-7

1) HBF20/25-7



B207SP01

Model		Unit	HBF 20-7	HBF 25-7
Capacity		kg	2000	2500
Load center	R	mm	500	←
Weight(Unloaded)		kg	3965	4290
Fork	Lifting height	A	3300	←
	Free lift	B	155	←
	Lifting speed(Unload/Load)	mm/sec	580/370	580/360
	Lowering speed(Unload/Load)	mm/sec	450/500	←
	L × W × T	L,W,T	mm	1050 × 100 × 45
Mast	Tilt angle (forward/backward)	C/C'	degree	6/10
	Max height	D	mm	4485
	Min height	E	mm	2175
Body	Travel speed(Unload/Load)	km/h	15.8/12.9	15.3/12.1
	Gradeability(Unload/Load)	degree	12.4/14.7	10.6/12.9
	Min turning radius(Outside)	F	mm	1960
ETC	Max hydraulic pressure	kgf/cm ²	190	←
	Hydraulic oil tank	l	24	←
Overall length	G	mm	2267	2322
Overall width	H	mm	1186	←
Overhead guard height	I	mm	2220	←
Ground clearance	J	mm	130	←
Wheel base	K	mm	1420	←
Wheel tread front/rear	M, M'	mm	990/980	←

(1) MOTOR

Item	Unit	Drive motor	Hydraulic pump motor
Model	-	KUDF 4001	KKDG 4005
Type	-	DC Series, self ventilated	
Rated voltage	V	48	
Output	kW	10.3	15.5
Brush size	mm	16 × 28 × 45	14 × 25.3
Insulation	-	Class H	

(2) BATTERY= Only if original Korean battery are used!!!

Item	Unit	HBF 20-7(STD)	HBF 20-7(OPT) HBF 25-7(STD)	HBF 30/32-7 (STD)	HBF 30/32-7 (OPT)
Model	-	VCE 660	VCE 715	VCE 740	VCE 850
Rated voltage(option)	V	48(36)			
Capacity	AH/hr	660/5	715/5	740/5	850/5
Electrolyte	-	WET			
Dimension(W × D × H)	mm	1066 × 796 × 537		1066 × 990 × 537	
Connector(CE spec)	-	SB350(SBE320)			
Weight(Max/Min)	kg	1300/1040	←	1500/1320	←

(3) CHARGER= Only if original Korean battery are used!!!

Item	Unit	HBF 20/25-7	HBF 30/32-7
Type	-	Constant current, constant voltage	
Battery capacity for charge	V-AH	48-660-800	48-845-850
AC input	V	Triple phase 410	
		Single phase 220	
		Triple phase 220/380	
		Triple phase 440	
DC output	V	62 ± 1	←
Charge time	hr	8 ± 2	←
Connector(CE spec)	-	SB 350(SBE320)	←