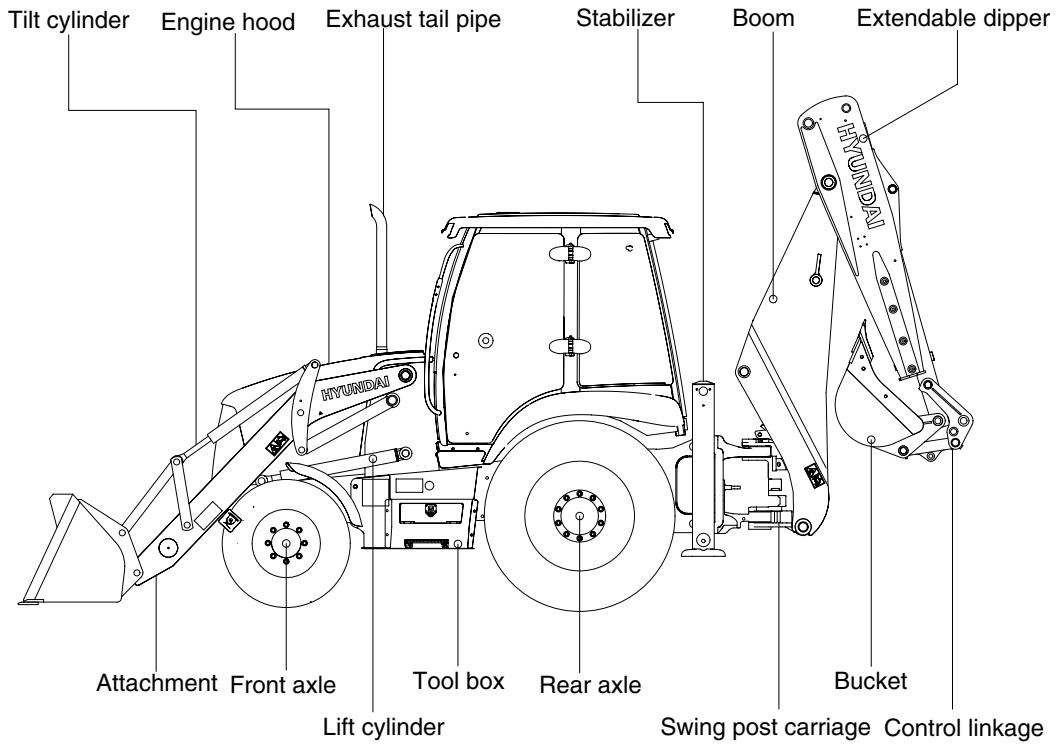
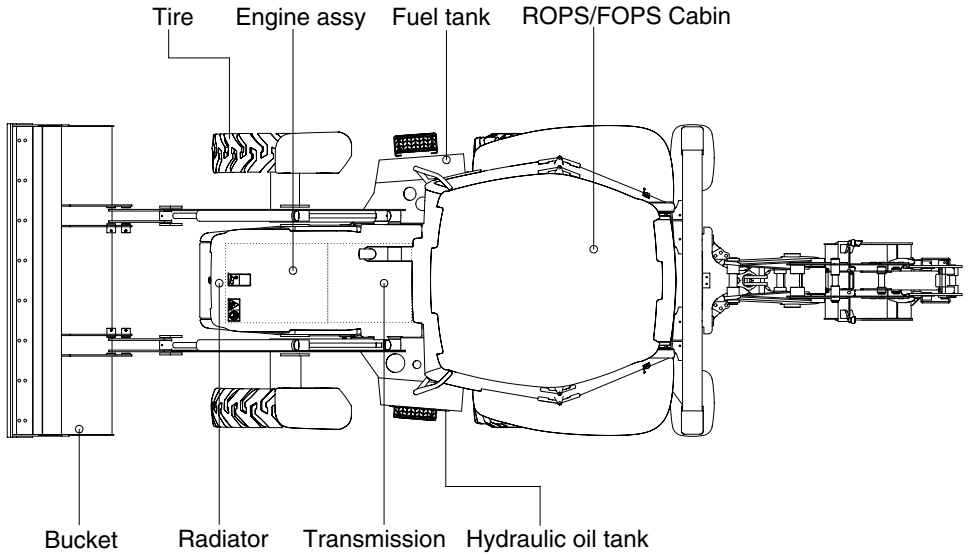


GROUP 2 SPECIFICATION

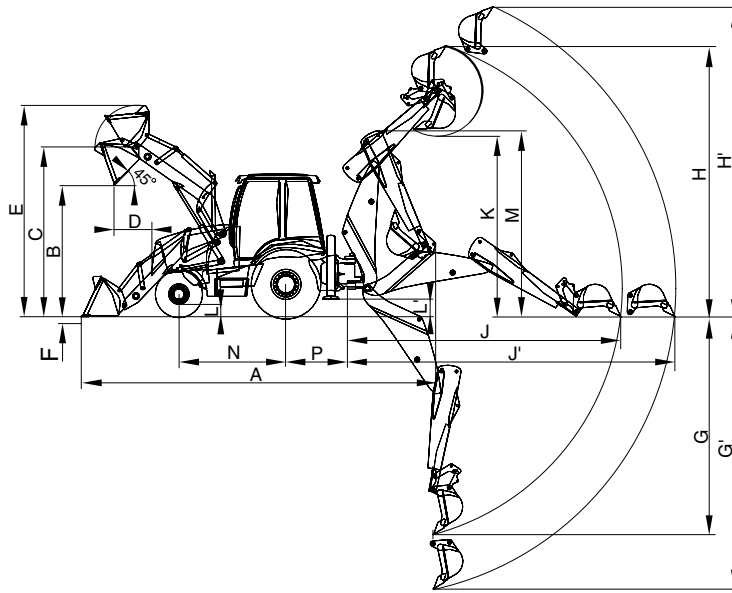
1. MAJOR COMPONENT



HB1002SP01

2. SPECIFICATIONS

1) HB100/HB90



HB1002SP02

Description			Unit	Specification	
				HB100	HB 90
Operating weight	Standard dipper and GP bucket		kg (lb)	7900 (17420)	7830 (17260)
	Extendible dipper and MP bucket		kg (lb)	8500 (18740)	8440 (18610)
Transport length	GP bucket			5800 (19' 0")	5800 (19' 0")
	MP bucket			5850 (19' 2")	5850 (19' 2")
Transport height	Standard dipper			3650 (12' 0")	3450 (11' 4")
	Extendible dipper			3700 (12' 2")	3500 (11' 6")
Transport width	GP bucket			2350 (7' 9")	2350 (7' 9")
	MP bucket				
Loader data	Overall length	A	mm (ft-in)	7350 (24' 1")	7350 (24' 1")
	Dump clearance	B		2735 (9' 0")	2735 (9' 0")
	Hinge pin height	C		3530 (11' 7")	3530 (11' 7")
	Dump reach	D		785 (2' 7")	785 (2' 7")
	Max loading height	E		4380 (14' 4")	4380 (14' 4")
	Depth of bucket down	F		105 (0' 4")	105 (0' 4")
Backhoe data	Max digging depth (STD)	G		4455 (14' 7")	4250 (13' 11")
	Max digging depth (EXT)	G'		5665 (18' 7")	5470 (17' 11")
	Max digging height (STD)	H		5570 (18' 3")	5370 (17' 7")
	Max digging height (EXT)	H'		6390 (20' 12")	6190 (20' 4")
	Max digging reach (STD)	J		5550 (18' 3")	5350 (17' 7")
	Max digging reach (EXT)	J'		6665 (21' 10")	6480 (21' 3")
	Max loading height	K		3720 (12' 2")	3520 (11' 6")
	Minimum ground clearance	L	350 (1' 2")	350 (1' 2")	
	Height of outrigger	L'	363 (1' 3")	363 (1' 3")	
	Dumping height	M	3860 (12' 8")	3660 (12' 0")	

3. SPECIFICATION FOR MAJOR COMPONENTS

1) ENGINE

Item	Specification	
	HB100	HB90
Manufacture	FPT (IVECO)	
Model	F4GE9484F*J	F4GE9454J*J
Type	4-stroke, turbocharged and charge air-cooled	4-stroke, turbocharged
Non-road emission standards	Certified to EPA Tier 3 / EU stage III-A	
Piston displacement	4.5 l (1.2 U.S.gal)	
Fuel	Diesel	
Rated horse power (Gross)	99 hp (74 kW) at 2200 rpm	89 hp (66 kW) at 2200 rpm
Maximum torque at 1250 rpm (Net)	44 kgf · m (318 lbf · ft)	41 kgf · m (297 lbf · ft)
Alternator	90 amp	
Battery	12V	

2) MAIN PUMP

Item	Specification		
	HB100	HB90	
Type	Fixed displacement double gear pump		
Capacity	Steering	40 cc/rev	35 cc/rev
	Attachment	35 cc/rev	35 cc/rev
Maximum operating pressure	250 kgf/cm ² (3560 psi)		
Rated oil quantity	Steering	88 l /min (23.3 U.S.gpm)	77 l /min (20.3 U.S.gpm)
	Attachment	77 l /min (20.3 U.S.gpm)	77 l /min (20.3 U.S.gpm)
Rated speed	2200 rpm		

3) MAIN CONTROL VALVE FOR LOADER

Item	Specification	
Type	2 spool (OPT : 3 spool)	
Operating method	Manual control	
Main relief valve pressure	250 kgf/cm ² (3560 psi)	
Unloading relief valve pressure	220 kgf/cm ² (3130 psi)	
Overload relief valve pressure	Bucket out	175 kgf/cm ² (2490 psi)
	Bucket in	300 kgf/cm ² (4270 psi)

4) MAIN CONTROL VALVE FOR BACKHOE

Item		Specification
Type		6 spool (OPT : 7 spool)
Operating method		Hydraulic pilot control
Main relief valve pressure		250 kgf/cm ² (3560 psi)
Overload relief valve pressure	Boom up	300 kgf/cm ² (4270 psi)
	Boom down	300 kgf/cm ² (3980 psi)
	Swing LH, RH	240 kgf/cm ² (3410 psi)
	Bucket in	300 kgf/cm ² (4270 psi)
	Bucket out	300 kgf/cm ² (4270 psi)
	Dipper in	300 kgf/cm ² (4270 psi)
	Dipper out	300 kgf/cm ² (4270 psi)

5) STEERING UNIT

Item		Specification
Type		Dual displacement load sensing, dynamic signal, non reaction
Displacement		156 cc/rev + 59 cc/rev
Relief valve pressure		248 kgf/cm ² (3530 psi)
Overload relief valve pressure		303 kgf/cm ² (4310 psi)

6) PILOT SUPPLY UNIT

Item		Specification
Reducing & relief valve pressure		30 kgf/cm ² (430 psi)
Safety solenoid valve	Voltage	DC 12V
	Ampere	1.8 A

7) ACCUMULATOR

Item	Specification	
	Ride control (OPT)	Pilot supply
Type	Nitrogen	
Capacity	1.5ℓ	0.35ℓ
Precharge pressure	30 kgf/cm ² (430 psi)	15 kgf/cm ² (215 psi)
Max working pressure	350 kgf/cm ² (4980 psi)	170 kgf/cm ² (2420 psi)

8) REMOTE CONTROL VALVE

Item		Specification	
		For backhoe	For stabilizer
Type		Pressure reducing type	
Operating	Minimum	6.5 kgf/cm ² (93 psi)	5.5 kgf/cm ² (78 psi)
	Maximum	25 kgf/cm ² (356 psi)	26 kgf/cm ² (370 psi)
Single operation angle		19 degree	23.5 degree

9) LINE FILTER

Item	Specification
Filtration rating	10 μ m
Max working pressure	280 kgf/cm ² (3980 psi)
Bypass cracking pressure	7 kgf/cm ² (100 psi)

10) DOUBLE PILOT CHECK VALVE FOR STABILIZER

Item	Specification
Max working pressure	350 kgf/cm ² (4980 psi)
Cracking pressure	4.5 kgf/cm ² (64 psi)
Pilot ratio	1 : 5.5

11) TIRES

Item	Specification
Front	4WD-12.5/80-18
Rear	4WD-18.4-26 (STD)
	4WD-16.9-28 (OPT)
	4WD-21L-24 (OPT)

12) POWERTRAIN

Item	Specification			
Transmission	4-Speed helical-cut gears, full powershift with hydraulic control standard, electric clutch cutoff on loader lever			
Maximum travel speed with standard (18.4-26 tire)				
Gear	1st	2nd	3rd	4th
Forward (km/hr)	5.9	10.9	22.0	37.5
Reverse (km/hr)	7.5	13.7	21.7	N/A
Torque converter (ratio)	1 : 2.526			
Differential lock	Front : Conventional Rear : Hydraulic lock (push-button activation)			
Steering	Hydrostatic power and emergency steering			
Brake	Service	Hydraulic wet disc, mounted inboard, self-adjusting and self-equalizing		
	Parking	Spring applied, hydraulically releases, wet, multi disc independent of service brakes with electric switch control		

13) BUCKET

Item	Capacity (liters)	Width (mm)	Weight (kg)
Loader GP	1000	2350	425
Loader MP	1000	2350	790
Trenching	170	630	140
Trenching	200	720	150

14) RECOMMENDED LUBRICANTS

Use only oils listed below or equivalent.
Do not mix different brand oil.

Service point	Kind of fluid	Capacity l (U.S. gal)	Ambient temperature °C (°F)						
			-20 (-4)	-10 (14)	0 (32)	10 (50)	20 (68)	30 (86)	40 (104)
Engine oil pan	Engine oil	12 (3.2)	SAE 30						
			SAE 10W						
			SAE 10W-30						
			SAE 15W-40						
Torque converter Transmission	Engine oil	18 (4.6)	SAE 10W-30						
			SAE 15W-40						
Axle	UTTO	Front : 8 (2.1) Rear : 16 (4.2)	UTTO						
Hydraulic tank	Hydraulic oil	Tank: 60 (15.9) System: HB100 : 115 (30.4) HB90 : 110 (29.1)	ISO VG 32						
			ISO VG 46						
			ISO VG 68						
Fuel tank	Diesel fuel	160 (42.3)	ASTM D975 NO.1						
			ASTM D975 NO.2						
Fitting (grease nipple)	Grease	As required	NLGI NO.1						
			NLGI NO.2						
Radiator	Mixture of antifreeze and water 50 : 50	19 (5.0)	Ethylene glycol base permanent type						

- SAE : Society of Automotive Engineers
- API : American Petroleum Institute
- ISO : International Organization for Standardization
- NLGI : National Lubricating Grease Institute
- ASTM : American Society of Testing and Material
- UTTO : Universal Tractor Transmission Oil