FORKLIFT

SERVICE MANUAL

HBF20-7

HYUNDAI

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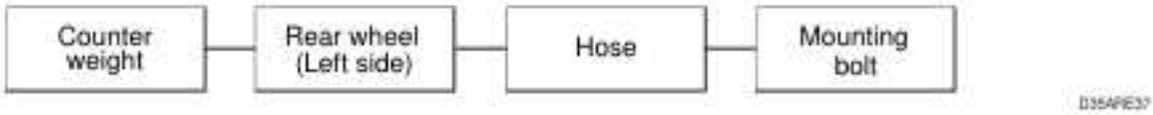
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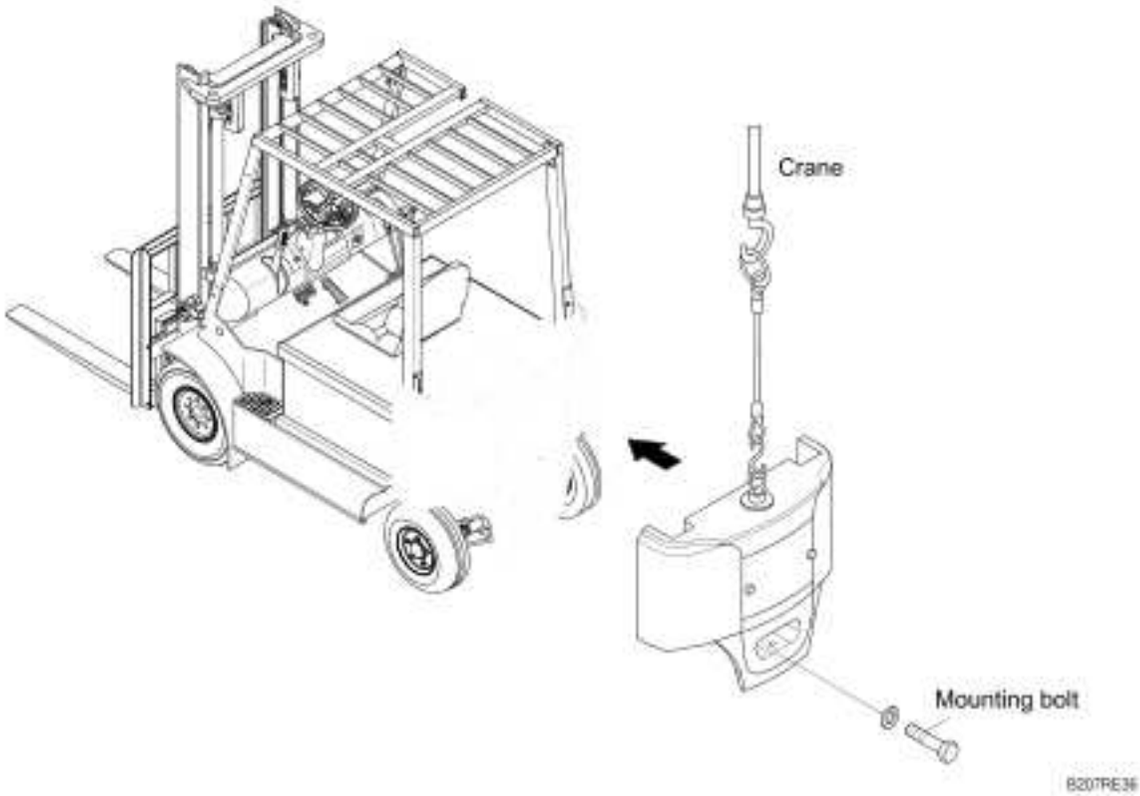
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6. REAR AXLE

1) REMOVAL



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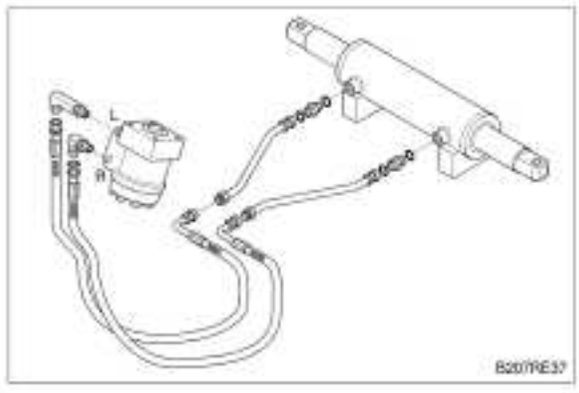
(1) Counterweight

Install a lifting tool in the counterweight, and raise with a crane.
Remove the mounting bolts, raise slightly and move to the rear.

- Weight of counterweight(standard)

HBF20-7 : 650kg(1433lb)	HBF20C-7 : 600kg(1323lb)
HBF25-7 : 920kg(2028lb)	HBF25C-7 : 920kg(2028lb)
HBF30-7 : 1015kg(2238lb)	HBF30C-7 : 1060kg(2337lb)
HBF32-7 : 1140kg(2513lb)	

(2) Hose



B20TRE37

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(14) The controller must be used with a line contactor as indicated in the wiring diagrams.

(15) As blow-out magnets are fitted to contactors(except 24V) ensure that no magnetic particles can accumulate in the contact gaps and cause malfunction. Ensure that contactors are wired with the correct polarity to their power terminals as indicated by the + sign on the top moulding.

(16) The controller must NOT be used with permanently-connected on-board chargers or damage to the system may result.

5) TECHNICAL SPECIFICATIONS

(1) Electrical

① Voltage specifications

Model	Voltage	Nominal Battery	Absolute maximum operating voltage
PP×4×	48V Units	24 - 48V	14.5 - 75V
PP×8×	80V Units	72 - 80V	43.0 - 100V

② Current specifications

Model	Power	Current limit (1 min)	Safe operating area (SOA)	Continuous current 1 hour rating. Unit mounted on an aluminum base-plate 780×380×10mm, at 20°C ambient.
PP344P	48V 450A	450A	30 - 60%	135A
PP246M PP346P	48V 650A	650A	30 - 60%	200A
PP743	48V 350A	350A	30 - 60%	117A
PP784	80V 425A	425A	30 - 60%	167A

③ Switching frequency

16kHz Traction / Regen / Pump Drive and 6kHz plug braking.

④ Electrical isolation

Enclosure to any live part = 1kV. Controller internal insulation specified at > 10MΩ@ 500V DC. Dielectric strength 1000V@50Hz for 1Minute.

⑤ Battery polarity

A Line contactor driven from the keyswitch, with a 2A diode in series with the coil, will prevent line contactor closure if the battery positive and negative connections are reversed.

(2) Environmental

① Protection-logic(Powerpak)

The enclosure is protected to IP66.

1st digit(6) = Protection against dust ingress.

2nd digit(6) = Protection against high pressure jets of water in any direction.

② Protection-power frame(Powerpak)

The enclosure is protected to IP55.

1st digit(5) = Limitted dust ingress permitted.

2nd digit(5) = Protection against low pressure jets of water in any direction. Limited ingress permitted.

③ Vibration

6G, 40-200Hz for 1 hour, in x, y and z planes.

④ Operating temperature

-30°C to +40°C ambient around controller.

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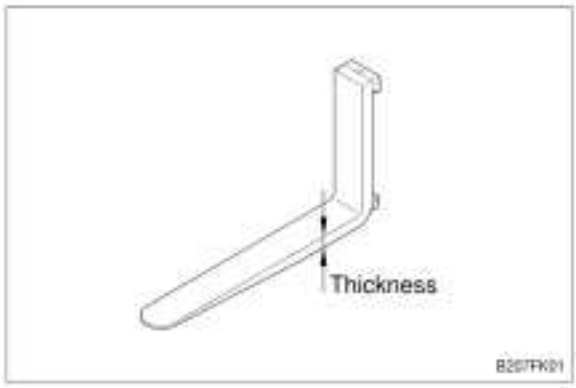
1. OPERATIONAL CHECKS

1) FORKS

(1) Measure thickness of root of forks and check that it is more than specified value.
EX : ℓ =900mm(35.4in)

mm(in)

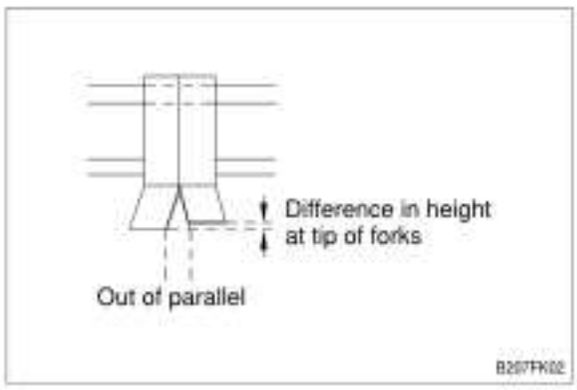
STD Fork assy	Applicable model	Standard	Limit
F173796-01	HBF20(C)-7	45(1.8)	41(1.6)



(2) Set forks in middle and measure out of parallel and difference in height at the top of forks.

mm(in)

Difference in height	15(0.6)
Out-of-parallel	35(1.4)



(3) Most force is concentrated at root of fork and at hook, so use crack detection method to check cracks.

2. MAST

1) Check for cracks at mast stay, tilt cylinder bracket, guide bar, fork carriage and roller shaft weld. Check visually or use crack detection method. Repair any abnormality.
2) Set mast vertical, raise forks about 10cm from ground and check front-to-rear clearance and left-to-right clearance between inner mast and fork carriage, and between outer mast and inner mast. Use these figures to judge if there is any play at roller or rail.
   - Front-to-rear clearance : Within 2.0mm(0.08in)
   - Left-to-right clearance : Within 2.5mm (0.10in)
3) Check that there is an oil groove in bushing at mast support.
4) Set mast vertical, raise forks about 10cm from ground, and push center of lift chain with finger to check for difference in tension.
   If there is any difference in tension, adjust chain stopper bolt.
5) Check visually for abnormalities at thread of chain anchor bolt, and at contact surface between chain wheel and chain.
   Rotate chain wheel by hand and check for any play of bearing.

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(6) Remove 4 bolts on the drive side endbell, using L wrench.



(7) Remove armature and drive-side endbell by lifting up straightly.



Armature assembly, drive side endbell and field & frame assembly after disassembling from motor.



(8) Remove 4 bolts on the commutator side endbell.



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2. MAIN CONTROL VALVE

1) DISASSEMBLY

(1) Remove spool cap.

※ **Put disassembled parts orderly on the clean work bench.**



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(2) Remove socket bolts from the opposite side.



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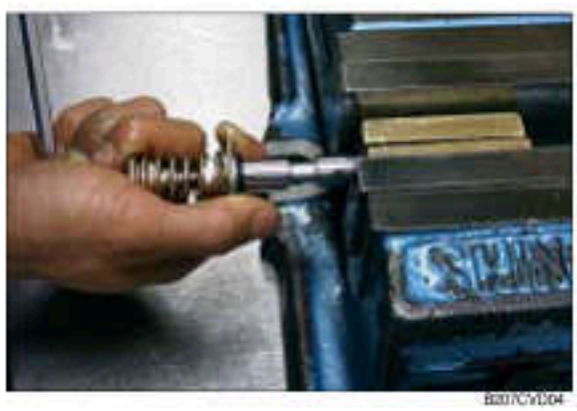
(3) Disassemble spool assembly carefully from the section body.
In case of not being pulled out easily, push it into body again and then pull out smoothly by rotating the assembly.



B207CVD03

(4) Vise a spool assembly, using a jig.
Untighten special bolts and then remove spring seat, spring, seal plate, O-ring and dust wiper.

※ **Put disassembled parts orderly on the clean work bench.**

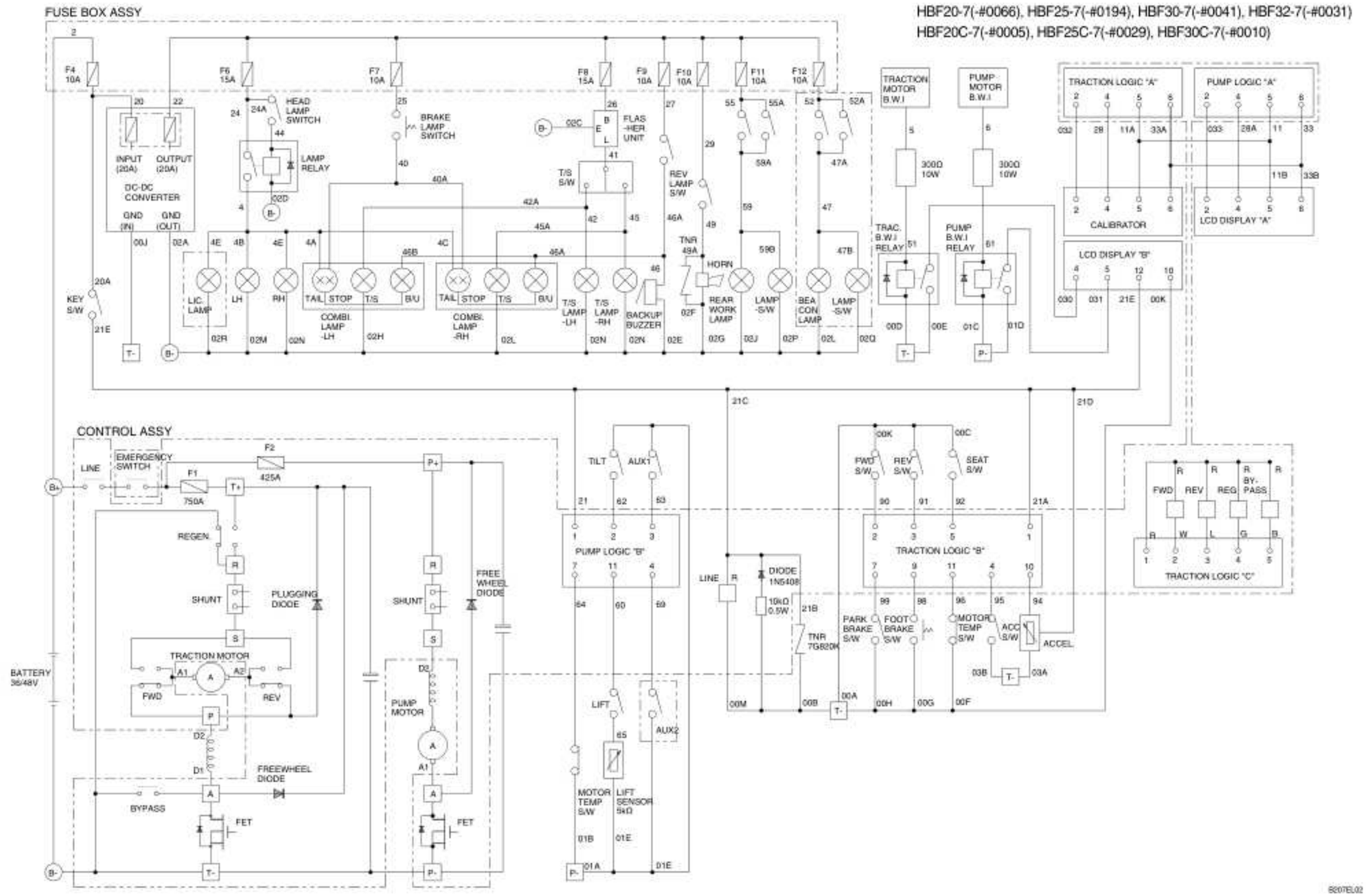


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GROUP 2 ELECTRICAL CIRCUIT

HBF20-7(-#0066), HBF25-7(-#0194), HBF30-7(-#0041), HBF32-7(-#0031)
HBF20C-7(-#0005), HBF25C-7(-#0029), HBF30C-7(-#0010)



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