BI014627

Reliability at work

Operator's Manual

BUCYRUS

BUCYRUS®

FBL-15 LHD/Utility

Serial No: 5003707

SPECIFICATIONS

All specifications are subject to change without notice. Always consult BUCYRUS to obtain current information before applying critical loads.

Capacities

Bucket Payload	12000 kg
RAS forks maximum payload	15000 kg
RAS fixed jib maximum payload	10000 kg
RAS slewing jib maximum payload	8000 kg
RAS belt reeler	12000 kg
Maximum unbraked trailer mass	15000 kg
Maximum braked trailer mass	Consult Bucyrus

Standard Ejector Bucket

Heaped capacity (SAE)	4.5 m^3
Struck capacity	3.5 m^3

Weight

With bucket only	29000 kg
Without bucket	26500 kg

Engine

Type	Diesel, turbocharged, 4 cycle
Cooling system	Water based radiator
Cooling fan	Hydraulic driven fan
Engine make/model	Caterpillar 3126
Displacement	7.2 litre
Maximum power	153 kW @ 2300 RPM

Engine Speeds

Low idle	800 RPM
High idle	2600 RPM

Fuel Consumption

At full power	45 litre/hr
Average mine duty	12-40 litre/hr

Start System

Starter motor type	Air turbine type

Intake Air Cleaner

Type	Dry dual element
Intake flame trap	Bucyrus spiral wound type

Exhaust Conditioner

Type	Flameproof wet type
Make	Bucyrus
Exhaust Filter	Replaceable element
Exhaust flame trap	Wet
After treatment	Catalytic exhaust purifier

Transmission

Type	Power shift with forward/reverse modulation
Speeds, forward and reverse	4

Axles

Type	Outboard planetary
Differential type	Bevel gear and pinion
Differential lock type - front	Posi-Torque
Differential lock type - rear	Posi-Torque

Wheels

Make/model	5 piece (heavy duty)

Tyres - Standard

Size	20.5 x 25
Ply rating	Radial
Inflation media	Air
Inflation pressure	110 psi front, 110 psi rear

Hydraulic Filtration

Bucket system	Return 10 micron replaceable with bypass
Steer/brake system	Pressure10 micron replaceable with bypass

Bucket Pump

Type	Gear open centre
Standard pump output @ 2100 RPM	228 lpm

Steer and Brake Pump

Type	Pressure compensated piston closed centre
Standard pump output @ 2100 RPM	106 lpm

Cooling Fan Pump

Type	Gear open centre

Alternator Drive Pump

Type	Gear open centre

Cylinders

Type	Double acting
Rods	Hard chromed
Counterbalance valves	Lift and tilt
Cushion stops	Steering and tilt

Steering System

Control valve	Closed centre
Actuation	Orbital

Bucket System

Control valve	Open centre
Actuation	Remote hydraulic pilot

Service/Brake Hydraulic System

Type	Reverse modulating
Control valve	Closed centre
Actuation	Foot pedal
Operating pressure	0 to 17.10 MPa

Accumulator - Brakes

Type	Piston
Quantity x capacity	1 x 2 litre

Service Brake

Type	Totally enclosed, liquid cooled Posi-Stop
Application	Spring applied hydraulic release
Location	Each wheel end built into axle

Park Brake

Type	Totally enclosed, liquid cooled Posi-Stop
Application	Spring applied hydraulic release
Location	Each wheel end built into axle

Steering

Type	Centre articulated, hydraulic

Articulation

Bearing type and size	Pin and spherical bearing (top), bush (bottom) fully sealed
Bush material	Hardened steel
Pin material	Hardened steel
Degrees of turn either side	45 degree

Oscillation

Type	Rear axle mounted trunnion
Bush material	Hardened steel
Pin material	Hardened steel
Degrees up and down from horizon	7.5 degree

Seating (Operator)

Type	Cross-seated
Make	Bucyrus
Suspension	Adjustable spring/shock absorption

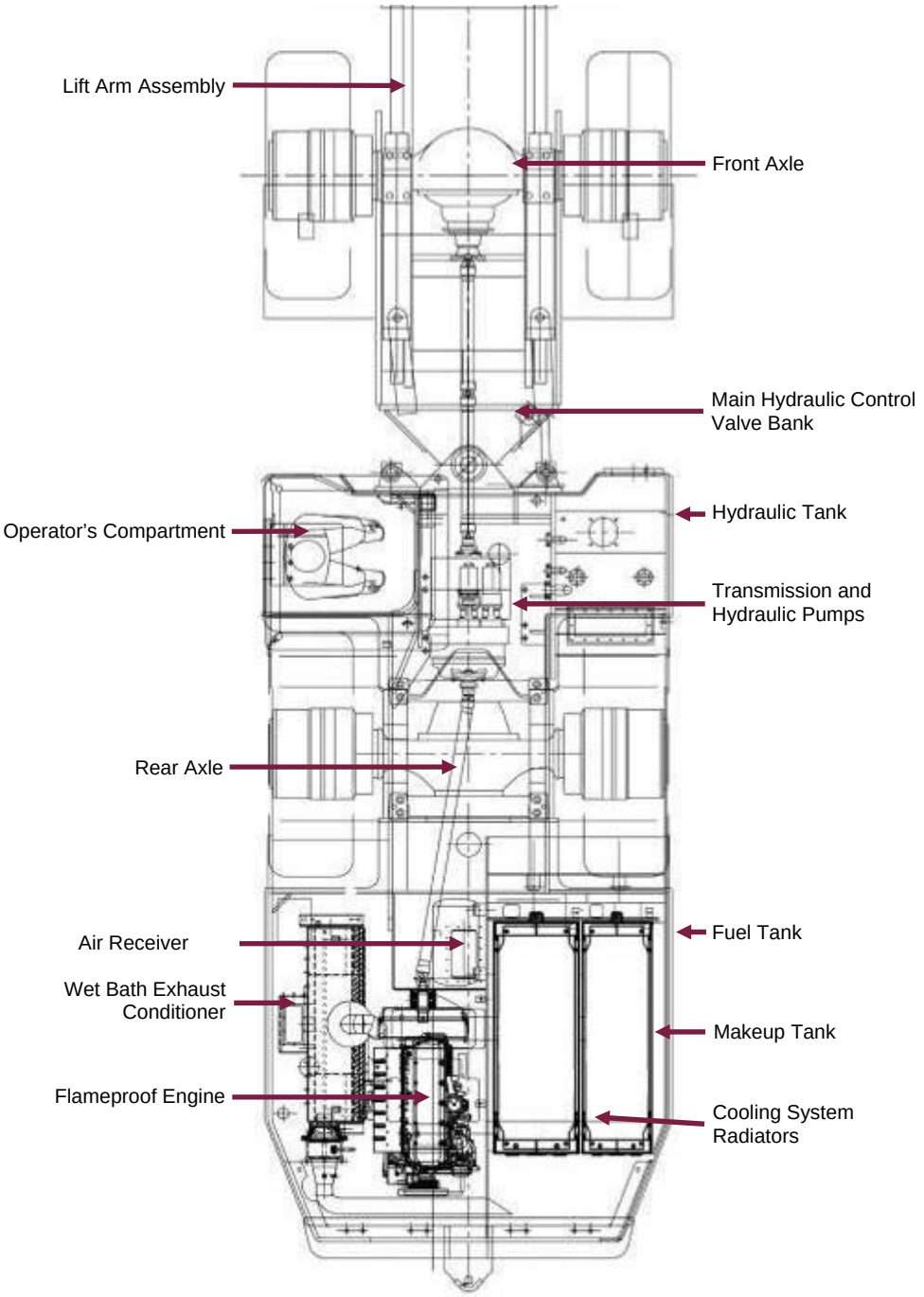
Section **4**

Machine Orientation, Controls and Functions

MACHINE ORIENTATION

BASIC MACHINE LAYOUT

The FBL-15 consists of two main sections a front and rear frame. Housed in the front frame is the lift arm assembly, axle and main hydraulic control valve bank. The rear frame houses the transmission and hydraulic pumps, cooling system radiator, flameproof engine package (which utilises a wet bath exhaust conditioner), the operator's compartment and all the storage reservoirs, (hydraulic, pneumatic, exhaust conditioner make up and fuel tanks).

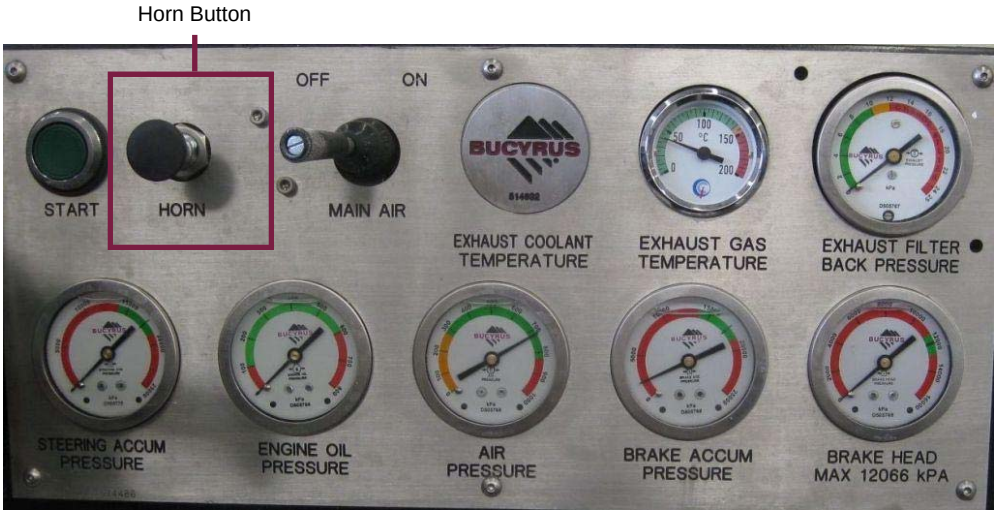


HORN BUTTON

Pushing this button sounds the air horns.

NOTICE

It is good operating procedure to sound the horn 2-3 seconds before an engine start or whenever approaching blind intersection.



RIGHT HAND SIDE OPERATOR'S PANEL

EMERGENCY FUEL SHUT OFF VALVE

This valve is located after the fuel filter/water separator. Closing this valve will stop the flow of fuel to the engine.

This provides a second means of shutting down the engine should the on/off toggle switch fail.

EMERGENCY FUEL SHUT OFF VALVE

HYDRAULIC ISOLATION

To isolate the hydraulic system perform the following procedure:

1. Ensure the area is clear of any obstruction and area is fit for carrying out safe operation and maintenance.
2. Lower the lift arms or any attachment to the ground, shutdown the engine, fit a danger tag to the on/off toggle switch, connect the articulation lock and chock the wheels.
3. Depress the attachment quick connects button located in the operator's compartment. This will remove any residual pressure stored in the PTO lines.
4. Observe both steering and brake pressure gauges located in the operator's compartment. The hydraulic system features a steering and brake accumulator automatic dump off which removes hydraulic pressure from both accumulators once the engine and main air has been stopped. This is immediate. This is done by an air pilot from the air circuit.
5. Remove hydraulic tank pre-charge pressure (50 kPa) by cracking hydraulic tank filler cap.

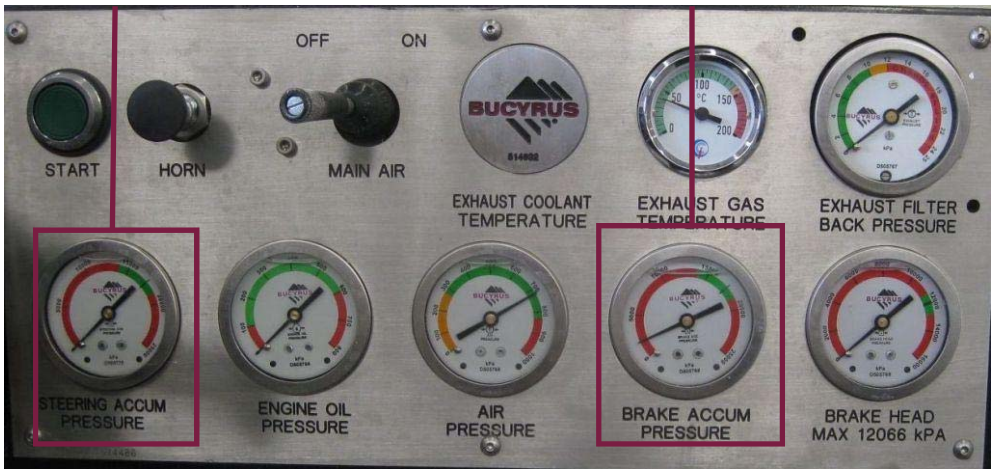
Ensure all loads are mechanically supported before removal of any hydraulic lines. Hydraulic fluid may be hot. Wear personal protective equipment such as safety glasses, long sleeve shirt and gloves.

Always assume there is hydraulic pressure in hydraulic lines or components unless it has been isolated by yourself.

Crack hose end fitting (if pressure is present in line tighten fitting and remove pressure as above) but do not remove till any residual pressure is removed.

Steering Accumulator Pressure Gauge

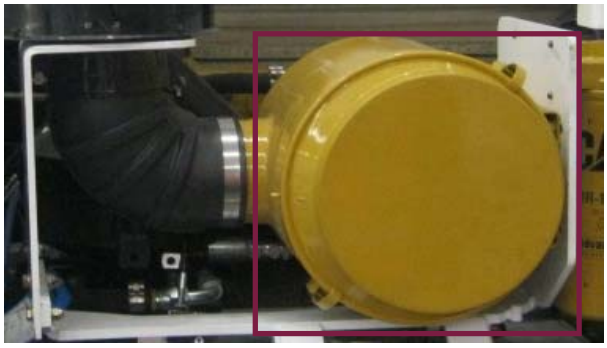
Brake Accumulator Pressure Gauge



RIGHT HAND SIDE OPERATOR'S DISPLAY PANEL

Check the air cleaner (see Section 4):

1. Filter condition indicator.
2. Replace filter element if indicator is in the *red* area.
3. Check intake pipes and hoses for loose or damaged connections.



AIR CLEANER

AIR CLEANER INDICATOR

WARNING

Do not operate the machine with loose intake pipe connection, this will allow particles of dust into engine and cause serious damage.

Check air receiver:

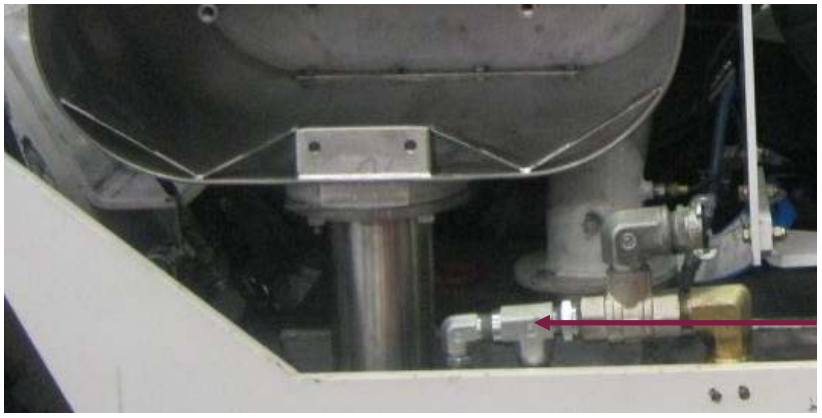
1. For damage.
2. Drain condensate from main air drain valve.

NOTICE

It is important to drain the condensate from the air receiver on a daily basis to stop it contaminating the air circuit and the starter motor.

NOTICE

Personal Protective Equipment must be worn when operating main air drain valve.



MAIN AIR MANIFOLD

Main Supply/Isolation Valve

Low Water Shutdown Test Ball Valve

3. Observe machine taking note of water flow out of the low water shutdown test point when DES shuts down. Ensure the display on the DCS shutdown system indicates both proximity switches/magnetic reed switches are open.
4. Shut low water shutdown ball valve as soon as the DES shuts down and remove top cover from the float chamber
5. Measure the water level from the bottom of the float chamber (this is required to be between 100mm and 110mm) and water must still be coming from low water shutdown test valve when the DES shuts down.

6. Once shutdown water level is achieved refit top cover to float chamber.

Section **12**

Driving on a Ramp

1. Stop and shift into first gear, and check the brakes before travelling up or down a ramp.
2. Always use a low gear when travelling down a ramp.
3. Avoid changing gears while travelling on a steep ramp
4. If you have a mechanical or brake failure:

    a. Immediately apply the brakes.
    b. If the brakes do not function, apply park brake.
    c. If the machine does not stop, turn the machine into the rib.

The machine should not be operated on more than the recommended grades (Section 1).

Operators must be competent in Emergency Stop Procedure.

Section 17
Towing with the Machine

The transmission will not hold the machine when the spring applied park brakes are bypassed by the Porta-Power pressure.

Maximum towing speed is 3 kph.

1. Ensure the machine is parked and isolated prior to connecting the trailer or load, park brake *on*.
2. Attach the load to the rear tow hitch, ensure tow pin is secure.
3. The trailer or load should be secured by 2 x 15 Tonne safety chains in a straight line pull in addition to a rated draw bar for the task.
4. Both chains must be used and adjusted to ensure an even pull.
5. Both chains have a combined loading of 20000 kg in a straight line.
6. Both chains must be used for maximum tractive effort pull.
7. Ensure all connections on the towed piece are in good condition and rated for the maximum pull.
8. Ensure all holding devices and hitches are in good condition and rated for the maximum pull before connecting the machine.
9. Always ensure that the trailer and load are secure before towing, and prior to releasing the park brake.
10. Travel at a speed that is suitable to conditions and load.
11. Ensure trailer or load has wheels chocked prior to removal from the machine.

Always connect the trailer or load before releasing the park brakes. Make sure the park brake is reapplied before the towing machine is disconnected.

For towing of loads greater than 15000 kg the mass must be braked. Prior to towing loads in excess of 15000 kg consult Bucyrus.

Failure to comply to these procedures may result in serious personal injury or damage to the equipment.