

# Light Pumper Hino 816 Crew Cab

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## *Vehicle Information*

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SAFETY FIRST



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# CFA Light Pumper (Production)

## Introduction

In August 2009, CFA released the production version of the Hino Cab Chassis, 2,500 litre pump capacity Light Pumper. This appliance incorporates many new features from the previous Type 2 Pumper manufactured in the early 1980's. Appliances built from March 2010 have an automatic transmission.

These new items include:

- ▶ the crew cabin with seating for five crew; and
- ▶ a fibreglass water tank of 1,200 litres capacity.

The water tank level system uses the Instrotech levelling system as well as the 100 litre foam tank.

The appliance:

- ▶ has been constructed on the Hino 816, two-wheel drive, diesel engine powered crew cab chassis;
- ▶ build-up comprises a steel sub frame complete with aluminium extrusion frame sheeted body;
- ▶ incorporates a 1,200 litre fibreglass water tank and aluminium stowage lockers;
- ▶ has been fitted with a Rosenbauer N25 fire fighting pump set powered from the vehicles engine through a split shaft power take off;
- ▶ incorporates a 100 litre Class B foam tank for use with an inductor outlet fitted in the pump bay area; and
- ▶ has a foam transfer pump fitted to the fill line.



### General Layout

- ▶ Crew cab;
- ▶ Fully enclosed body;
- ▶ Roller doors on side lockers; and
- ▶ Lift up rear door.



Figure 1 – general layout



## Dimensions

Dimension	Measurement
Height over vertical exhaust pipe	2.575 metres
Height over Light Mast (housed)	2.44 metres
Overall Length	6.57 metres
<b>Overall Widths:</b>	
▶ Body	2.28 metres (excluding side mirrors)
▶ Wheelbase	3.87 metres
Turning Circle	12.6 metres (kerb to kerb)
<b>Gross Vehicle Mass:</b>	
▶ Allowable	7.50 Tonnes
▶ Operational	7.40 Tonnes
▶ Front Axle	3.10 Tonnes
▶ Rear Axle	5.50 Tonnes

## Engine and Transmission

### Engine

The appliance is powered by a 4.0 litre, turbo intercooled, direct injection, common rail diesel engine, which has four vertical in-line cylinders.

Engine	RPM
Maximum net torque	404 Nm at 1800 RPM
Maximum net power	114 kW at 2700 RPM

### Fuel

Diesel.

### Transmission

The appliance is fitted with a manual or automatic transmission.

Manual transmission:

- ▶ Six speed overdrive gearbox.
- ▶ All six gears must be used.

Automatic transmission:

- ▶ Hino A860E six-speed.
- ▶ Electronically controlled overdrive.
- ▶ Torque converter lock-up on 2<sup>nd</sup>, 3<sup>rd</sup>, 4<sup>th</sup>, 5<sup>th</sup> and 6<sup>th</sup> gears.



## Power Take Off (PTO)

The appliance has been fitted with a split shaft power take off to allow the vehicle's engine to also power the Rosenbauer pump. With the PTO selected and the vehicle in gear the engine will only power the pump and not the drive wheels.



Figure 2 – power take off lever

The PTO lever is located between the front driver's and passenger's seats.

## Braking

- ▶ Anti-lock braking and electronic brake force distribution. Disc brakes front and rear.
- ▶ Exhaust brake. Used as an aid for heavy braking on long downhill grades. The activation switch is on the wiper/washer control stalk on the LHS of the steering wheel. The exhaust brake is automatically disengaged whilst the appliance is in neutral gear.

## Easy Start system

The vehicle has Easy Start which applies the brakes whenever the vehicle is stationary at traffic lights etc.

- ▶ Easy Start:
  - allows starts on hills without any rolling back or forward;
  - is activated when the brakes are applied when stopped; and
  - is deactivated when the clutch is released.



Figure 3 – Easy Start switch

A beep is heard and the initials 'ES' are illuminated on the dash when Easy Start is engaged. The "easy start" on/off switch is on the lower right dash. A "slow" or "fast" switch alters the time delay.

## Cabin Layout

### Hazard control panel

The cabin centre area instrument panel houses the Hazard Control Panel which includes the following warning lights and switches:

- ▶ Light Mast Not Home warning light – Amber;
- ▶ Locker Open warning light – Red;
- ▶ PTO Engaged light – Green;
- ▶ Switches for the vehicle's warning system. Primary and secondary warning lights and siren;
- ▶ Switches for Alley lights;
- ▶ Air Horn switch; and
- ▶ PA controls.



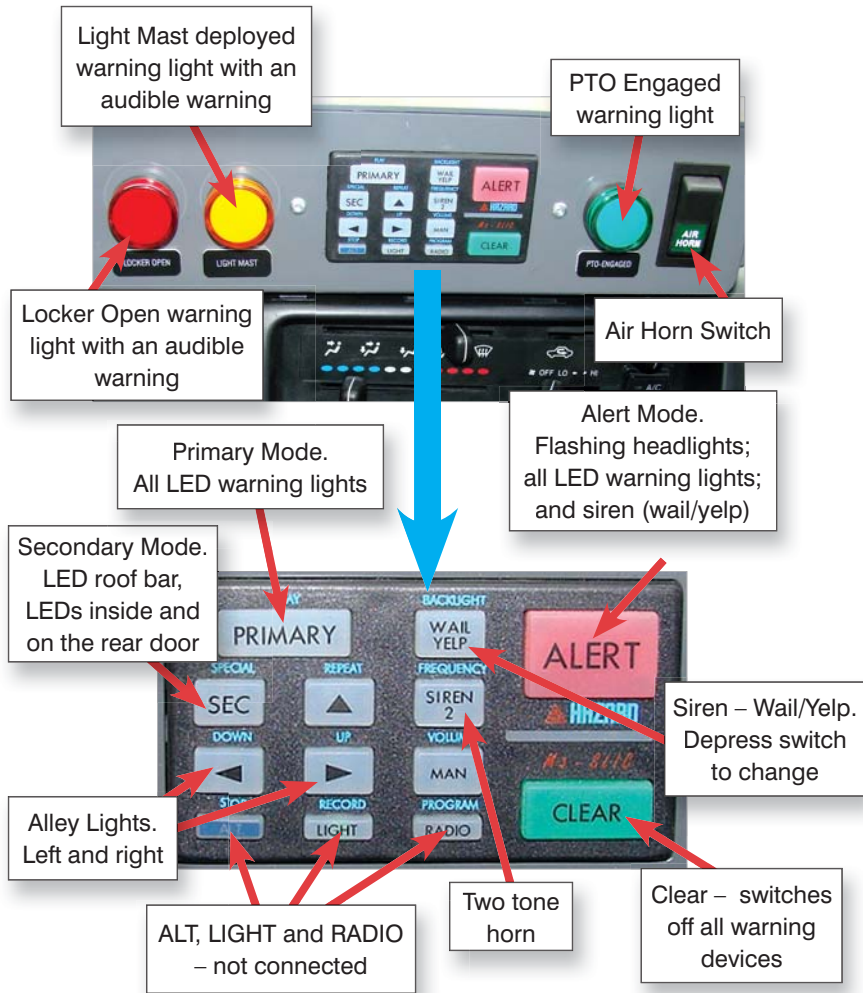


Figure 4 – hazard control panel

### Equipment

The cabin centre area between the front seats contains the following equipment:

- ▶ Map Reading lights;
- ▶ Handheld Spot light (not shown);
- ▶ CFA radio;
- ▶ Rechargeable torch;
- ▶ Hand held radio; and
- ▶ PA microphone.

**Note:** PA microphone is always switched on.



Figure 5 – cabin equipment



Figure 6 – PA microphone



## Stowage

### Near side locker – NS1



Figure 7 – locker NS1

NS1 – Left Hand Side	NS1 – Right Hand Side
<ul style="list-style-type: none"> <li>▶ 1 x 5.0 metre Combination Aluminium Ladder</li> <li>▶ 1 x 7.5 m x 64 mm Delivery Hose</li> <li>▶ 1 x 64 mm Aluminium Service Hydrant with Blank Caps</li> <li>▶ 1 x hydrant/hose spanner</li> </ul>	<ul style="list-style-type: none"> <li>▶ 1 x First Aid Kit</li> <li>▶ 1 x Tool Bag:                             <ul style="list-style-type: none"> <li>• 1 x Stanley Screwdriver Set</li> <li>• 1 x 300 mm Tin Snips</li> <li>• 1 x 300 mm Shift Spanner</li> <li>• 1 x Standard Claw Hammer</li> <li>• 1 x Utility Knife</li> <li>• 1 x Hacksaw and spare blades</li> <li>• 1 x 200 mm Pliers</li> <li>• 1 x Hino Cab Chassis Tools</li> <li>• 1 x Mash Hammer</li> <li>• 2 x 38 mm external lug spanners</li> </ul> </li> </ul>
NS1 – Right Hand Side	
<ul style="list-style-type: none"> <li>▶ 2 x Chemical Splash Suits</li> <li>▶ 2 x Breathing Apparatus (BA) Sets complete</li> <li>▶ 2 x BA Spare Cylinders</li> <li>▶ 1 x CABA Guide Line</li> <li>▶ 2 x pairs Chemical Gloves</li> <li>▶ CABA Control Board and Record Cards</li> </ul>	

## Near side locker – NS2



Figure 8 – locker NS2

NS2 – Left Hand Side	NS2 – Left Hand Side
<ul style="list-style-type: none"> <li>▶ 1 x 600 mm Heavy Duty Bolt Cutters</li> <li>▶ 1 x Large Axe</li> <li>▶ 1 x 600 mm Hooligan Tool</li> <li>▶ 1 x Small Hooligan Tool</li> <li>▶ 1 x Class R Angus 450 Foam In-line Inductor</li> <li>▶ 1 x hand cleaner liquid</li> <li>▶ Assorted 38 mm and 64 mm external lug coupling washers</li> <li>▶ 1 x Suction Wire Basket</li> <li>▶ 1 x Suction Float</li> <li>▶ 1 x 10 m x 12 mm Rope Suction Line</li> <li>▶ 1 x 20 m x 12 mm Rope Suction Line</li> <li>▶ 1 x Class B Foam Pick-up Stick and Line</li> <li>▶ 1 x Class B Foam Pick-up Line</li> <li>▶ 2 x 38 mm Hose Bandages</li> </ul>	<ul style="list-style-type: none"> <li>▶ 2 x 64 mm Hose Bandages</li> <li>▶ Hose on the Bight as follows: <ul style="list-style-type: none"> <li>• 2 x 30 m x 38 mm Delivery Hose</li> <li>• 1 x 15 m x 38 mm Delivery Hose</li> <li>• 2 x 7.5 m x 38 mm Delivery Hose</li> <li>• 1 x 15 m x 64 mm Delivery Hose</li> </ul> </li> </ul> <p><i>Note: Interchangeable to suit local needs.</i></p> <ul style="list-style-type: none"> <li>▶ 1x Drawer. Refer to next page for contents.</li> </ul>
	NS2 – Right Hand Side
	<ul style="list-style-type: none"> <li>▶ 1 x Class B Angus 450 Foam Branch</li> <li>▶ 1 x 38 mm Diffuser Branch</li> <li>▶ 3 x 30 m x 38 mm Delivery Hose (flaked) on tray</li> </ul>



CFA Light Pumper (Production)



Figure 9 – locker NS2 – LHS drawer

#### NS2 – LHS Drawer

- |  |   |
|--|---|
| ▶ 3 x 64 mm Storz/38 mm External Lug Adaptor | ▶ 1 x 64 mm Storz Dividing Breeching/Collecting Piece |
| ▶ 1 x 64 mm Storz/3 TPI Adaptor              | ▶ 1 x 38 mm External Lug Dividing Breeching Piece     |
| ▶ 1 x 64 mm Storz/5 TPI Adaptor              | ▶ 2 x 64/100 mm Storz Spanners                        |
| ▶ 2 x 5 TPI to 3 TPI Adaptors                |   |
| ▶ 1 x 100 mm to 64 mm Storz Adaptor          |   |
| ▶ 2 x 38 mm Small Town Shut off Branch       |   |

## Rear lockers – R1 and R2

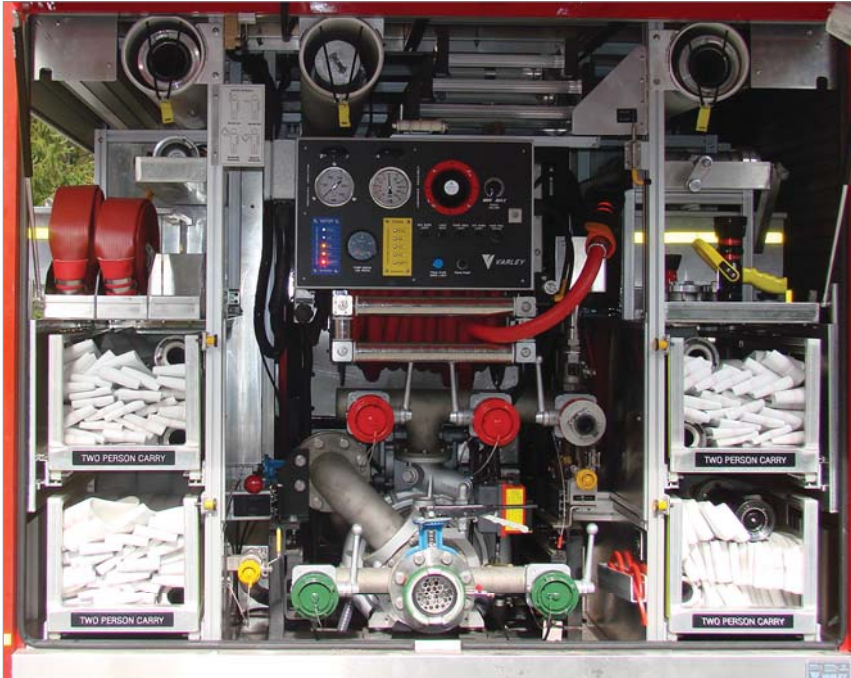


Figure 10 – lockers R1 and R2

R1	R2
<ul style="list-style-type: none"> <li>▶ 2 x 64 mm short hose</li> <li>▶ 3 x 64 mm x 30 m Delivery Hose (flaked) on tray. Used for attack or boost lines.</li> <li>▶ 3 x 64 mm x 30 m Delivery Hose (flaked) on tray. Used for attack or boost lines.</li> </ul>	<ul style="list-style-type: none"> <li>▶ 1 x 38 mm Protek Branch</li> <li>▶ 1 x 64 mm Pistol Grip Adjustable Branch</li> <li>▶ 3 x 64 mm x 3 0m Delivery Hose (flaked) on tray. Used for attack or boost lines.</li> <li>▶ 3 x 64 mm x 30 m Delivery Hose (flaked) on tray. Used for attack or boost lines.</li> <li>▶ 2 x Hose spanners</li> </ul>
<p><i>2 x 64/100 mm Storz spanners are located on the bottom right hand side of the pump area.</i></p>	



## Rear ladder and suction hose stowage

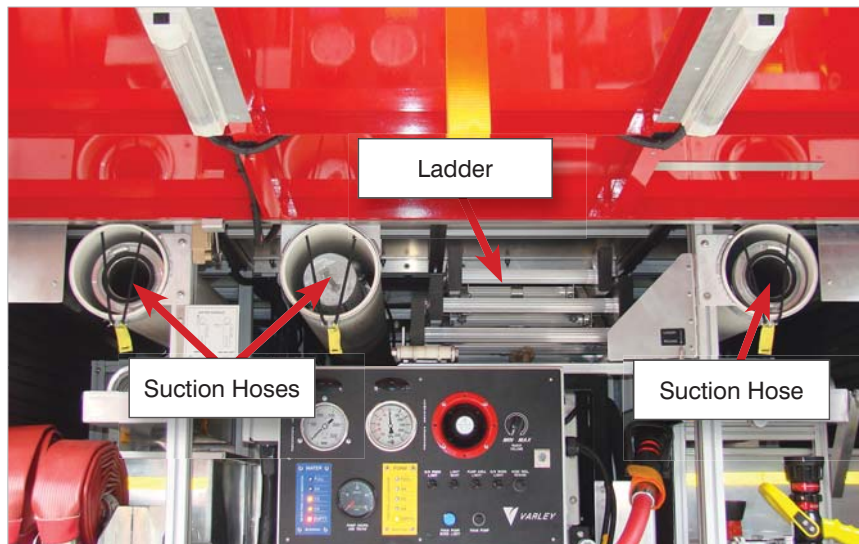


Figure 11 – rear compartment

### Rear Compartment – above water tank

- ▶ 1 x 7 m AS Fire and Rescue triple extension aluminium ladder
- ▶ 2 x 3 m Hard suction hoses
- ▶ 1 x 3 m Hard suction hose with strainer

### Ladder rack

The ladder rack is designed to allow deployment and stowage of the three stage ladder supplied with the appliance by four persons from ground level.

The ladder rack is fitted with a ladder release lever located at the rear off the appliance.

## Off side locker – OS2



Figure 12 – locker OS2

### OS 2

- ▶ 3 x 30 m x 64 mm Delivery Hose (flaked) on tray
- ▶ 1 x Long D Type Handle
- ▶ 1 x Short D Type Handle
- ▶ 1 x Spade Head
- ▶ 1 x Rakehoe Head
- ▶ 1 x Squeegee Head
- ▶ 1 x Broom Head
- ▶ 1 x Mop Head
- ▶ 1 x Ceiling Hook
- ▶ 5 x 900 mm long Fibreglass Screw Handles
- ▶ 1 x Fuel funnel
- ▶ 1 x Set of Warning Triangles
- ▶ 1 x Rewind handle for hose reel
- ▶ 1 x Wheel brace
- ▶ 1 x Jack handle
- ▶ 1 x Vehicle jack
- ▶ 1 x Tarpaulin



Off side locker – OS1



Figure 13 – locker OS1

OS1	
▶ 2 x Fire Blankets	▶ 3 x 31 litre White Plastic Tote Bins with lid
▶ 1 x Mop Bucket	▶ 1 x Positive Pressure Ventilation Fan (PPV)
▶ 1 x 8 litre Fuel Can	▶ 2 x Light Stands
▶ 2 x 4.5 kg Dry Chemical Fire Extinguishers	▶ 2 x Light Heads
▶ 1 x 2.0 kVA Generator	▶ 1 x 31 litre White Plastic Tote Bin with lid
	▶ 1 x RCD protected power board





## Warning Systems

### Lights

The warning lights can be operated in three modes from the Hazard Control Panel:

- ▶ Alert Mode (Red Alert button):
  - Flashing Headlights;
  - All LED warning lights; and
  - Siren.
- ▶ Primary Mode (White Primary button)—All LED warning lights;
- ▶ Secondary Mode (White SEC button):
  - LED roof bar;
  - LEDs inside rear door; and
  - LEDs on the rear door.

### Siren

The siren is controlled from the Hazard Control Panel.

There are two siren modes:

- ▶ wail or yelp; and
- ▶ two tone horn.

### Alley lights

Two alley lights (spot lights) are incorporated into the offside and nearside ends of the LED roof bar. The alley lights are activated via buttons on the Hazard Control Panel.



Figure 14 – alley lights in LED roof bar



## Tanks

### Water tank

- ▶ **Capacity:** 1,200 litres nominal.
- ▶ **Construction:** Moulded fibreglass.
- ▶ **Location:** Centrally situated inside the body.

A removable aluminium cover is fitted above the tank to allow access for maintenance and removal.

The tank incorporates three lateral baffles. This gives the water tank four baffled compartments minimising the effect of water surge in the semi-laden condition.

The water tank is fitted with a removable lid to permit access for cleaning and maintenance purposes.

A water tank level gauge (Instrotech) has been fitted on the pump control panel at the rear of the appliance.

### Tank fill point

The fill point is located on the near side between the cabin and the front locker.



Figure 15 – water tank fill point

### Class B foam tank

- ▶ **Capacity:** 100 litre.
- ▶ **Construction:** Stainless steel.
- ▶ **Location:** Situated behind the water tank.

The foam tank can be filled using the foam transfer pump from the rear pump area.

A foam tank level gauge (Instrotech) has been fitted on the pump control panel at the rear of the appliance.

### 25 mm Inlet and 25 mm outlet

- ▶ **25 mm inlet.** Located on the RHS of pump for filling the tank via an electric pump. The pump automatically cuts out when tank is full.
- ▶ **25 mm outlet.** Located on the LHS of the pump to feed the portable inductor fitted to a 65 mm delivery point.

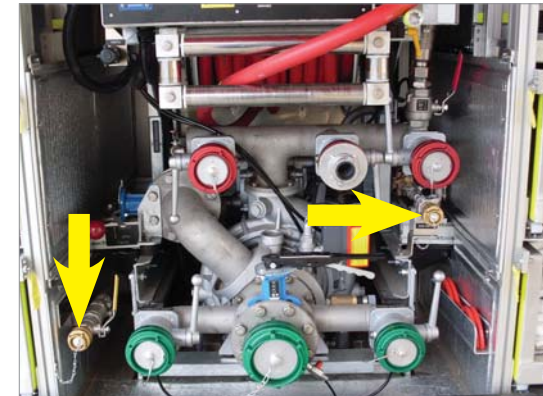


Figure 16 – foam system – 25 mm inlet and outlet



### Overflow hose

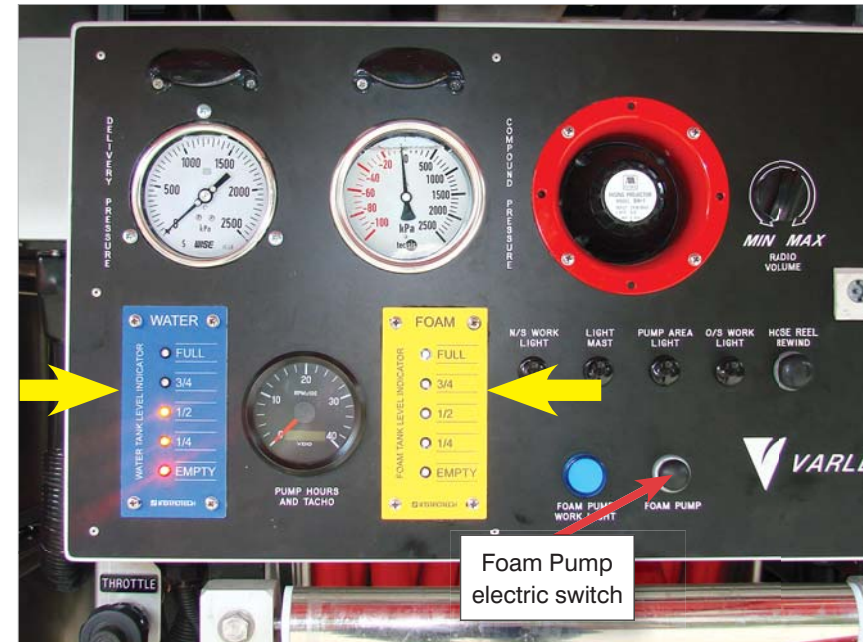
An overflow is connected to the foam tank storing any foam in a clear line running between the back of the vehicle cabin and the front of the body. A valve is on the end of the line to allow any foam to be easily drained out.



Figure 17 – overflow hose

### Electronic fill gauges

Electronic (Instrotech) fill gauges for the water and class B foam tank levels are mounted on the Pump Control Panel.



Foam Pump electric switch

Figure 18 – electronic fill gauges on Pump Control Panel



## Live Hose Reel

A live hose reel is fitted to the rear of the appliance above the pump.

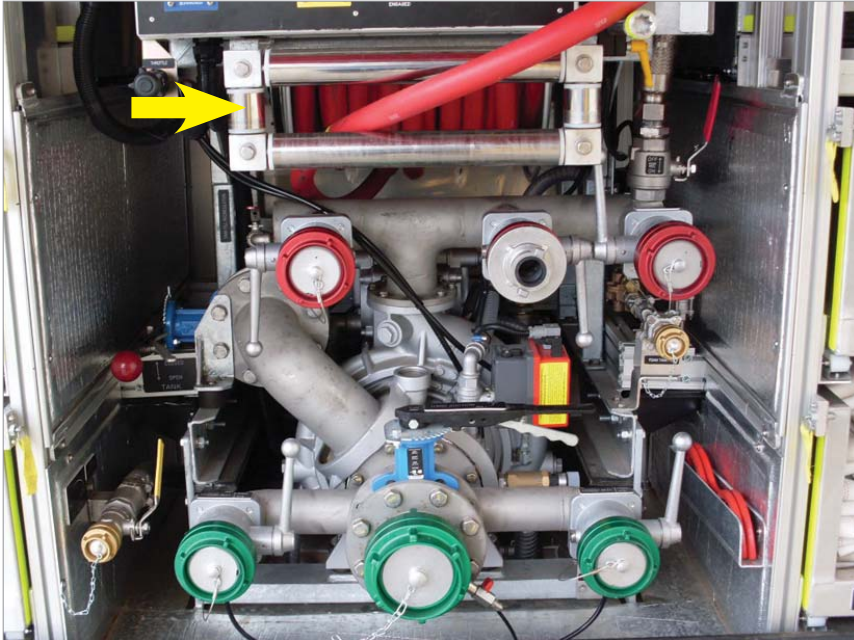


Figure 19 – live hose reel

Live Hose Reel	Data
Hose	45 m x 25 mm inside diameter. Rated at 5,500 kPa.
Akron 1702 nozzle	Variable flow from 50 lpm to 230 lpm.

The live hose reel is directly plumbed to the delivery manifold of the fire pump. An isolator valve is fitted to the delivery manifold located on the offside of the pump.

The reel is fitted with a strangler type brake to prevent over-run. There is an electric rewind function as well as a crank handle for manual rewind purposes.

Guide rolls attached to the live hose reel allow the rubber hose to be easily removed and rewound from the reel. The nozzle holder is located on the right hand side of the pump arrangement with the nozzle being secured by a strap.

## Light Mast

The light mast houses 4 x 70 watt 24 volt lights and is fitted to the front near side of the body.

The light mast is:

- ▶ extended via the hand operated pump located above the tank fill point on the front nearside of the appliance;
- ▶ 5.6 metres above the ground when extended;
- ▶ turned on/off via the light mast switch on the Pump Control Panel (vehicle parkers must be on for the light mast to operate); and
- ▶ retracted to the housed position via the air release cable on the side of the light mast.

There is an audible and visual warning in the cabin when the light mast is deployed.

**Note:** *Be aware of overhead powerlines when extending the light mast.*



Figure 20 – light mast



## Work Lights

Two work lights are fitted on both sides of the body and within the rear locker.

All are operated from the Pump Control Panel and will only operate when the park lights are on.



Figure 21 – near side work lights

## Fire Pump

The appliance is fitted with a Rosenbauer N25 single-stage, centrifugal pump driven by the Hino vehicle engine via a split shaft PTO.

The pump control instrument panel is located at the rear of the appliance in the pump bay area.

In the appliance cabin there is a cable operated lever for the engagement of the Rosenbauer pump.

There is a throttle control for the pump mounted on the rear control panel that allows the operator to regulate the engine speed from the ground at the rear of the appliance.

### Fire pump

The pump comprises of an aluminium body with one gunmetal impeller, and is coupled to the appliance diesel engine via a split shaft PTO on the vehicles drive line.

### Capacity

- ▶ Maximum flow of 2,500 litres per minute at 1000 kPa at 3 metre lift.
- ▶ The pump can develop a closed pump pressure of 1,700 kPa.

### Pump priming system

The Rosenbauer electric priming pump is automatically operated when the pump is engaged and the water pressure drops below 200 KPa.

## Pump control panel

The pump rear control panel is located in the pump bay at the rear of the appliance and comprises the following:

- ▶ Pump Delivery Pressure Gauge (Range 0 to 2500 kPa);
- ▶ Pump Compound Pressure Gauge (Range -100 to 2500 kPa);
- ▶ Pump Throttle Increase/Decrease (Throttle is cable/electronic);
- ▶ Near Side Work Light Switch;
- ▶ Off Side Work Light Switch;
- ▶ Light Mast Switch;
- ▶ Pump Area Light;
- ▶ Foam transfer Pump Switch;
- ▶ Foam Pump Work Light;
- ▶ Water Tank Level Display;
- ▶ Foam Tank Level Display;
- ▶ Engine Tachometer and Hour meter; and
- ▶ CFA Radio Speaker and Volume Control.

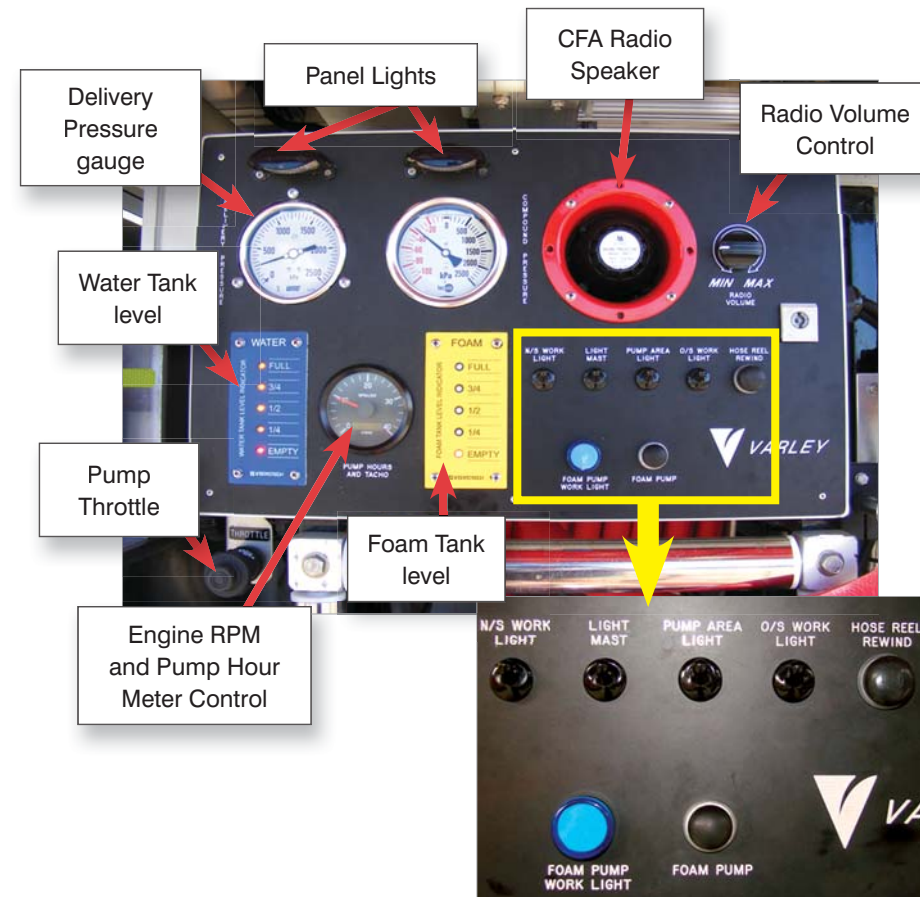


Figure 22 – pump control panel



## Reticulation System

The reticulation system provides the following:

- ▶ Outlets: 3 x 64mm (Rear Delivery Manifold)
- ▶ Inlets: 1 x 100mm Suction (Storz)  
2 x 64mm Soft Suction (Storz)  
1 x 64mm Tank Fill Connection  
(Front Nearside of appliance body)

The reticulation system is made up of the following:

- ▶ Delivery Manifold;
- ▶ Pump Cooling Line (RHS of deliveries);
- ▶ Suction Manifold;
- ▶ Water Tank Fill Line;
- ▶ Tank to Pump Line; and
- ▶ Tank Fill Recirculation Line (LHS of deliveries).

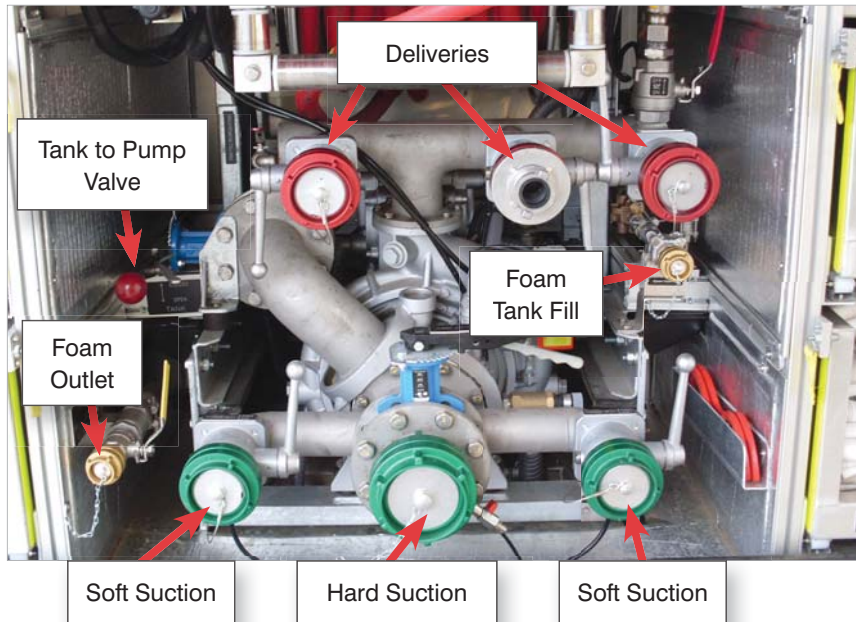


Figure 23 – reticulation system

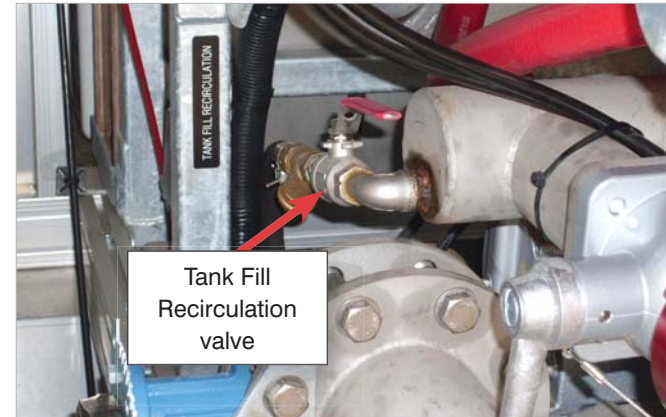


Figure 24 – Tank Fill Recirculation valve

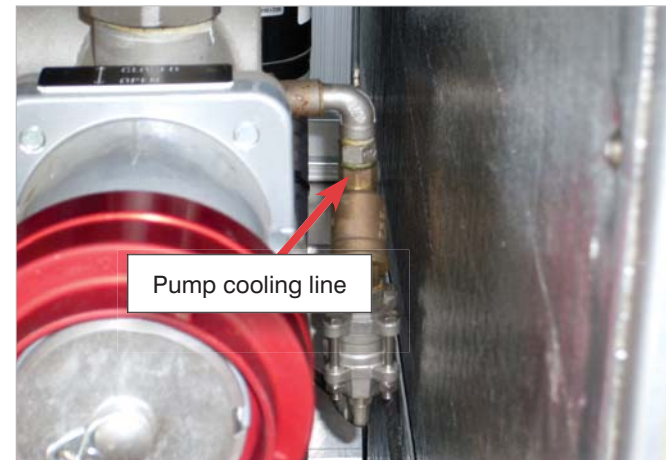


Figure 25 – pump cooling line





## Safety

### Light mast

'Look up and live'. Be aware of overhead powerlines when extending the light mast.

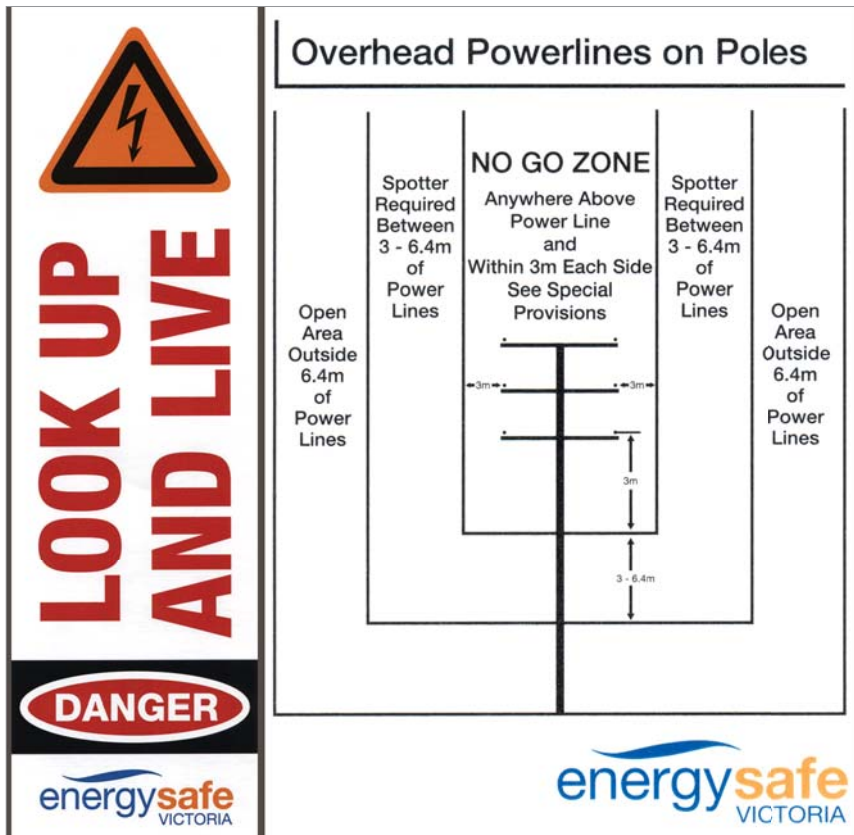


Figure 26 – look up and live



## Summary

Item	Comment
Hino 816	Two-wheel drive, crew cab chassis
Height over vertical exhaust pipe	2.575 metres
Height over Light Mast (housed)	2.44 metres
Overall Length	6.57 metres
Overall Widths:	
▶ Body	2.28 metres (excluding side mirrors)
▶ Wheelbase	3.87 metres
Turning Circle	12.6 metres (kerb to kerb)
Gross Vehicle Mass:	
▶ Allowable	7.50 Tonnes
▶ Operational	7.40 Tonnes
▶ Front Axle	3.10 Tonnes
▶ Rear Axle	5.50 Tonnes
Engine:	4.0 litre diesel engine
▶ Maximum net torque	404 Nm at 1 800 RPM
▶ Maximum net power	114 kW at 2700 RPM
Fuel	Diesel
Transmission	Six speed manual or automatic
Brakes	Disc brakes front and rear. Anti-lock braking.
Exhaust Brake	Yes

Item	Comment
Water Tank:	
▶ Capacity	1,200 litres nominal
▶ Construction	Moulded fiberglass
▶ Location	Centrally situated inside the body.
Class B Foam Tank:	
▶ Capacity	100 litre
▶ Construction	Stainless steel
▶ Location	Situated behind the water tank.
Fire Pump:	Rosenbauer N25 single-stage
▶ Maximum flow	2,500 litres per minute at 1000 kPa at 3 m lift.
▶ Closed pump pressure	1,700 kPa
▶ Priming	Electric priming. Automatic when pump water pressure drops below 200 KPa.



