



COUNTRY FIRE AUTHORITY

OPERATING MANUAL

**CFA MEDIUM PUMPER TANKER
BY SEM FIRE AND RESCUE
2009 BUILD**

**Hino Ranger PRO 9 (4 x 2)
Hino Ranger PRO 8Z (4 x 4)**

**Fitted with GAAM Mk. 450 2 Stage Fire Pump / Hatz 4L41C Diesel Engine
Quenchmaster CF700CFA Class 'A' Foam System
Rosenbauer RVM80 Class 'B' Foam System**



FEBRUARY 2009

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Amendments to this Manual

The person inserting amended pages should initial the amendment block.

Amendment Number	Page	Sections Affected	Effective Date	Officer's Initials
0 1		Initial Issue All	December 2007 February 2009	

INDICATES NEW OR REVISED INFORMATION

Part 1- Introduction

1.1 This Manual

This Manual details specifications relating to the performance and operation of the Medium Pumper Tanker manufactured by SEM Fire and Rescue for the Country Fire Authority.

This information is provided to enable Brigades to gain a basic understanding of the appliance and to develop sound operating procedures that will ensure that high standards of efficiency are maintained throughout the life of the vehicle.

This manual has been produced in a multi-ring binder to permit future amendments to be inserted, thereby maintaining an up-to-date reference document on the appliance.





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Part 2 - Copyright Information

Information and drawings contained in this manual remain the property of SEM Fire and Rescue Pty. Ltd. (SEM).

SEM grants CFA the ability to use and reproduce the information contained within this manual for training, operation and maintenance purposes. This information must not be provided to other parties without the written permission of SEM.

SEM acknowledges that original equipment manufacturers (OEM) information provided in this manual remains the property of the respective OEM.

Part 3 - Safety Information

SEM Fire and Rescue provides this manual as a guide and recommended practices, and is not liable for injury or damage caused by misuse or negligence.

The following warnings appear throughout the manual.

⚠ DANGER **Danger:** Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury. This signal word is to be limited to the most extreme situations.

⚠ WARNING **Warning:** Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

⚠ CAUTION **Caution:** Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices.

The following information must be read prior to operating the appliance

- Only trained and competent personnel should operate this appliance.
- Read the cab chassis, pump and equipment manuals prior to operating the appliance and equipment.
- Ensure that the appliance and equipment is correctly maintained. Report any faults or damage immediately to your relevant Officer.
- Ensure that all equipment used in conjunction with this appliance has been suitably maintained and tested and meets the required performance and safety requirements.
- Ensure that the appliance is driven in a safe manner in line with State Regulations, CFA and Brigade's Standard Operating Procedures (SOP). Drivers require as minimum, a current Medium Rigid driver's licence.
- Seat belts must be worn by all crew members when the vehicle is in motion.
- Do not travel on the deck of the appliance unless working on the fire ground, and the appliance is being operated in accordance with CFA operating procedures.
- Care must be taken when operating the appliance on rough terrain, cross slopes and cornering under high speed.
- When positioning the appliance at an incident, consider the safety of the crew and vehicle from all dangers such as structure collapse, falling trees or limbs, traffic, access, escape routes etc.
- Enter and exit from the cabin and deck safely, always ensuring 3 points of contact.
- Ensure all doors, lockers, ladder gantry etc. are closed or housed correctly before moving the appliance.
- Do not drink the water from the main water tank or fresh water tank.
- Ensure safe fuel and foam handling methods are used.
- Wash away any fuel or foam spillage immediately.
- Ensure correct manual handling methods are used. Utilise multiply person-lifting techniques with equipment over 20kg.
- Ensure that all equipment is securely stowed in the cabin or body.

- Drivers must not operate mobile communication devices (i.e. mobile phones, CFA radio etc) while the vehicle is in motion.
- Ensure the vehicle is clear of overhead hazards when removing or restowing the ladder and suction hoses.
- No modifications are to be made to the vehicle without prior written approval through the relevant chain of command.
- Only approved personnel are permitted to service the equipment.
- Do not exceed the pressure rating of the fire hoses in operation. Ensure all fire hoses are tested regularly.
- Adhere to the warning labels provided on the vehicle.

Part 4 - General Overview

4.1 Introduction

In February 2009, the Country Fire Authority introduced an updated version of the Medium Pumper Tanker. Continued development of this vehicle has resulted in an updated body design providing additional stowage capacity, and the inclusion of a number of additional operational and safety features. New crew safety features include crew protection sprays, deck area crew protection canopy, and cabin crew protection curtains. Standard features include a monitor riser, new design ladder stowage arrangements, live hose reel, and a light mast.

The CFA Medium Pumper Tanker is produced in both 4x2 and 4x4 versions. Three of the 4x2 appliances are fitted with an Allison automatic transmission. The 4x2 version is constructed on the Hino FG1JPPB Ranger PRO-9 diesel engine powered crew cab chassis. The 4x4 version is constructed on the Hino GT1JKPA Ranger PRO-8Z four-wheel drive diesel engine powered crew cab chassis. Both versions have provision for seating five crew within the cabin.

The appliance build-up comprises a one piece fully galvanised steel tray frame complete with aluminium chequer plate floor panels, a 2700 litre fibreglass water tank, fibreglass heat shielding body panels, fabricated aluminium stowage lockers, and a roll over protection frame located behind the cabin.

The CFA Medium Pumper Tanker is fitted with a fire fighting pump set comprising a four cylinder, 44 kW Hatz silent-pack air-cooled diesel engine which is close-coupled to a GAAM Mk. 450 two-stage fire fighting pump.

The appliance is fitted with the Class 'A' Foam Quenchmaster CF700CFA Around the Pump Proportioning System which delivers Class 'A' foam to each pump delivery. Water is delivered from the discharge side of the pump into the proportioner and metered across a venturi. This creates a vacuum and foam concentrate is then drawn through the proportioner, mixes with the water, returns to the pump inlet, and further mixes with water passing through the pump and on to deliveries being used on the Pumper Tanker. The Class 'A' foam concentrate is stored in a 50 litre tank which is filled using an on board transfer pump.

The Class 'B' Foam system uses a Rosenbauer RVM 80 Around the Pump Proportioning System which delivers Class 'B' foam to each pump delivery. Class 'B' foam can also be delivered via a single hose line by using an in line foam inductor. The Class 'B' foam concentrate is stored in a 200 litre tank which is filled using an on board transfer pump.

4.2 Operational Uses

The Medium Pumper Tanker can:

- Convey a crew of five and the necessary fire fighting equipment to the fire ground where it can be used to pump water from its tank, from an open water source and from street mains.
- Produce Class 'A' foam solution.
- Produce Class 'B' foam solution to deliveries and the deck mounted monitor.





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4.3 General Data

4.3.1 4x4 and 4x2 Models

- Cab Over with five individual bucket seats
- Air conditioning
- Air assisted hydraulic brakes
- 200 litre fuel tank
- Aluminium bull bar
- Front and rear recovery hitches
- Internal 'B' pillar stiffener
- 4250mm wheel base
- Engine: Hino 7.961 litre Turbocharged and Intercooled 6 cylinder diesel

4.3.2 Hino FJ1JPPB Ranger Pro-9 (4x2)

- GVM: 15,100 kg (Medium Rigid Licence)
- Power: 191 kW @ 2500 RPM
- Torque: 745Nm @ 1500 RPM
- Transmission: 6 speed Manual or Allison Automatic

4.3.3 Hino Pro-Ranger 8Z (4x4)

- GVM: 13,900kg (Medium Rigid Licence)
- Power: 158 kW @ 2500 RPM
- Torque: 608Nm @ 1500 RPM
- Transmission: 6 speed Manual
- Part time Four Wheel Drive
- High and Low range transfer case

4.4 Firefighting Body and Equipment

- 2700 litre centrally mounted baffled fibreglass water tank
- One piece fully galvanized steel tray frame
- Fully integrated roll over protection bar at front of tray frame
- Fibre glass heat shielding
- Fabricated aluminium stowage lockers above the tray
- Class 'A' Quenchmaster CF700CFA Around the Pump Proportioning System with a 50 litre Class 'A' foam concentrate tank
- Class 'B' Rosenbauer RVM 80 Around the Pump Proportioning System or Angus in-line foam inductor system with a 200 litre Class 'B' foam concentrate tank
- Rosenbauer 60 metre high pressure live hose reel with electric rewind and complete with 25mm inside diameter delivery hose c/w Akron 1702 pistol grip nozzle
- Deck area mounted Elkhart Sidewinder monitor fitted with a 0-460 l/min select flow nozzle
- 50 litre fresh water tank
- Werner MT22 4-in-1 5.1 metre multi-function ladder stowed between the vehicle cabin and the deck area on the near side
- SEM Hystow ladder gantry system
- Batteries on slide out battery carrier

- LED Vector Pod beacons fitted to the cab (Red/Blue/White)
- Front and rear LED Red/Blue Hazard and Intersection lights
- Headlight Flashing Unit
- LTS Siren (Yelp/Wail/Mix) and PA unit
- Crew Intercom system
- 24/12V reducer for 12V equipment use
- 3 x Flexible map lights
- Centre mounted switch / radio console
- Diamond grade reflective striping
- Colour coding of steps and grab rails
- 2 x 3m x 100mm suction hose stowage on slide and tilt stowage bracket
- 'Storm King Mountain' cabin radiant heat protection curtains
- Working platform drop down radiant heat protection awning
- Independent pump controls mounted:
 - Cabin
 - Deck Area
 - Rear Panel

4.5 Pump

- GAAM Mk 450 two stage centrifugal pump close coupled to a Hatz 44 kW Diesel Engine
- 'Darley oil less rotary vane primer
- Suction Inlets - 2 x 64mm and 1 x 100mm Storz
- Pump inlet bleed lines
- Near side deliveries – 2 x 64mm under tray at rear and 1 x 38mm external lug under tray front
- Off side deliveries – 2 x 64mm under tray at rear and 1 x 38mm external lug under tray front
- Deck area deliveries – 2 x 38mm external lug
- Pump cooling bleed line
- Tank fill via pump
- Tank fill via 64mm side inlet

4.6 General Data

The following provides general specifications. Further information about the cabin and chassis may be found in the vehicle Owners Manual.

	Hino FG1JPPB Ranger PRO-9 4x2	Hino GT1JKPA Ranger PRO-8Z 4x4
Height Over Beacons	TBA metres	3.1 metres
Overall Length	TBA metres	7.75 metres
Overall Width	2.46 metres (body) 3.00 metres (mirrors)	2.46 metres (body) 3.00 metres (mirrors)
Wheel Base	4,250mm	4,250mm
Turning Circle	TBA metres (kerb to kerb) TBA metres (swept)	19.80 metres (kerb to kerb) 21.25 metres (swept)

	Hino FG1JPPB Ranger PRO-9 4x2	Hino GT1JKPA Ranger PRO-8Z 4x4
Gross Vehicle Mass	15.10 tonnes (allowable) TBA tonnes (operational)	13.90 tonnes (allowable) 13.29 tonnes (operational)
Front Axle	6.50 tonnes (allowable) TBA (operational)	4.80 tonnes (allowable) 4.54 (operational)
Rear Axle	10.00 tonnes (allowable) TBA tonnes (operational) Fitted with 'No-Spin' differential	9.20 tonnes (allowable) 8.75 tonnes (operational) Fitted with 'No-Spin' differential
Engine	Hino J08-UK six (6) cylinder diesel 7.961 litre Turbocharged and Intercooled 4 valves per cylinder 191kW at 2500 rpm 745Nm at 1500 rpm Maximum engine speed 2900 rpm	Hino J08C-UM six (6) cylinder diesel 7.961 litre Turbocharged and Intercooled 4 valves per cylinder 158kW at 2500 rpm 608Nm at 1500 rpm Maximum engine speed 2900 rpm
Engine Oil	As determined by DMO	
Manual Transmission	Hino MF06S Six (6) forward and One (1) reverse Synchronesh on 2nd to 6th	Hino LX06S Six (6) forward and One (1) reverse Synchronesh on 2nd to 6th
Automatic Transmission	Allison MD360PR TBA speed	
Transfer Case		Hino MA12C High ratio 1:1 Low ratio 2.224:1
Brakes	Full air	Air assisted hydraulic Air dryer equipped
Park Brake	Spring actuated – air released on rear wheels	
Steering	Power assisted	
Wheels and Tyres	Ten (10) stud single front and dual rear Tyres 275/70R22.5 Inflation Pressures 725kPa front and rear Tyre inflation kit provided	Eight (8) stud single front and dual rear Tyres 9.00R20 Inflation Pressures 725kPa front and rear Tyre inflation kit provided
Fuel Tank	200 litres (diesel)	
Electrical	24 volts (2 x 12 volts in series) 24 to 12 volts reducer for CFA radio and portable charger	
Fuse Panels	Original by manufacturer Centre console by SEM Rear pump bay by SEM	

4.7 Modification of Appliances

It is reasonable to assume that modifications of the appliance may be required in the future. Brigades may also consider that some alterations or additions to the vehicle could result in improved appliance operational capability.

Modifications and additions will only be considered by the Chief Officer on written application through the chain-of-command. Officers-in-Charge of Brigades are to ensure that there is no breakdown of this directive.

⚠ WARNING Due to weight carrying limitations any additional or non-standard equipment **MUST NOT** be carried on the vehicle without prior written approval.

A complete list of standard equipment is included as an Appendix to this Manual.

Part 5 - Driving the CFA Medium Pumper Tanker

This Part details the more important aspects about the operation of the Medium Pumper Tanker and is split into three Sections covering:

- All versions (4x2 and 4x4)
- 4x4 versions
- Automatic transmission

Further information about the cabin and chassis may be found in the vehicle Owners Manual or for added components by the supplier or installer.

SECTION 1 – CFA Medium Pumper Tanker – All Versions

This section is applicable to both 4x2 and 4x4 versions of the CFA Medium Pumper Tanker

5.1 Driving and Operating the Appliance

Driving and operating the CFA Medium Pumper Tanker is to be performed in accordance with the relevant **Owner's Manual** which is supplied with the vehicle.

5.2 Drivers Seat Adjustment

Modern truck seats provide a range of adjustments to suit different drivers and driving conditions. To ensure the driver can maintain effective control of the appliance, an air suspension seat lock can be engaged when operating on rough terrain.

⚠ CAUTION Drivers must be familiar with the range of seat adjustments and ensure the seat is adjusted correctly.

5.3 Rear View Camera

The rear view camera provides vision to the rear of the appliance. **⚠ CAUTION** The camera does NOT remove the need for a guide to be used when reversing the appliance.

5.4 Engine Tachometer

The engine tachometer indicates the engine speed in revolutions per minute (RPM). Lower gear changes will be easier in manual transmission models if the engine rpm is limited to that necessary to match the next highest gear. The red coloured zone represents the critical engine speed and the green coloured zone represents the most efficient engine operating speed. **⚠ WARNING** Never operate the vehicle with the tachometer needle in the red zone. Continued operation with the tachometer needle in the red zone can lead to serious engine damage. When the tachometer needle enters this range an over running buzzer sounds.

5.5 Engine Idle

When operating this vehicle do not leave the engine idling for long periods of time. If the vehicle is required to idle for a long period, use the vehicle's hand throttle and increase the engine's revolutions per minute until a reading of 1200rpm is registered on the vehicle's tachometer.



5.6 The 'No-Spin' Differential

A 'No-Spin' differential is fitted to the rear axles and provides positive drive to both rear wheels, but allows differential action when required. **▲ WARNING** The performance of the vehicle equipped with the 'No-Spin' may be different from that of a standard differential. For example:

- When turning a corner, the outside wheel must rotate faster than the inside wheel, otherwise serious tyre scuffing will occur. When driving around a turn, the 'No-Spin' clutch driving the outside wheel is automatically disengaged, permitting this wheel to rotate freely until the turn is completed, at which time it is re-engaged.
- While the turn is being made there will be a series of clicking sounds resulting from the alternate disengagement of the differential clutch teeth on the outside clutch. These clicking sounds are normal in the 'No-Spin'.
- When driving straight ahead, a continuous click may be heard if the tyres are not equal in rolling radii due to unequal wear or unequal inflation. Tyre pressures should be checked for correct pressure and adjusted if necessary. Any further noise whilst driving in a straight line should be reported to the District Mechanical Officer.
- If the vehicle pulls to the right or left in straight forward driving, check the tyre pressures and rolling radii of the rear tyres. They should be the same.
- Vehicle under steer or push characteristics are occasionally experienced when making a turn under power. By letting off the throttle for an instant, the torque to the rear wheels will be reduced and permit the truck to go into a turn.
- When alternately accelerating or decelerating during a turn, an occasional snapping noise may be heard as the torque is being alternated from 'driving' torque on the inside wheel to 'braking' torque from the outside wheel.
- Because of the 'No-Spin' features, it is possible the vehicle may continue to drive whilst it has a broken axle. **▲ WARNING** Continuing to drive the vehicle in this condition will cause serious damage to the differential. Drivers should be familiar with all signs that could indicate a broken axle. Indications of a broken axle:
 - Pulling of the vehicle to either left or right under straight line acceleration and deceleration.
 - Unusual grinding or bumping sounds from within the axle assembly whilst the vehicle is moving. This may require a person to walk beside the vehicle whilst this test is being carried out. Any foreign noise should be reported to the District Mechanical Officer for immediate attention. The vehicle **MUST NOT** be driven or towed until inspected by the District Mechanical Officer.

5.7 Wheels and Tyres

Tyres must always be maintained at the correct inflation pressure. **▲ CAUTION** Where possible, wheel changing should be undertaken by professional tyre company personnel, or under the guidance of the CFA District Mechanical Officer. **▲ WARNING** Vehicle jacking and wheel changing procedures **MUST** be undertaken in accordance with the vehicle manufacturers directions as shown in the Owners Manual provided with the appliance.

5.8 Exhaust Brake

The exhaust brake is controlled by electro-pneumatics and consists of a butterfly valve in the vehicle's exhaust pipe. The exhaust brake is used as an aid for heavy braking and for long downhill grades. The activation switch for the exhaust brake is located on the wiper/washer control stalk (left hand side of the steering wheel). The exhaust brake can remain on for the complete operation of the appliance, as the Pumper Tanker features automatic exhaust brake disengagement, whilst the vehicle is in neutral. The exhaust brake does not need to be manually disengaged at the control stalk. The exhaust brake will not operate whilst the vehicle is in neutral. The exhaust brake indicator light comes on when the exhaust brake system is in operation.

5.9 Vehicle Amber Hazard Warning Lights

The activation switch is located on the left-hand side of the steering wheel. When the switch lever is pushed down, all of the turn signal lights and turn signal indicator lights will flash at the same time. To turn off the hazard warning lights raise the switch lever again. Use the hazard warning lights to caution other drivers any time your vehicle becomes a traffic hazard day or night. Avoid stopping on the roadway if at all possible.

5.10 Parking Brake Indicator Light

The parking brake indicator light comes on when the spring parking brake lever is pulled up with the ignition switch 'ON'. The indicator light does not indicate the action of the parking brake. Be sure to pull the parking brake lever fully on after parking the vehicle.

5.11 Oil Pressure Warning Light and Buzzer

The oil pressure warning light comes on when the ignition switch is turned to the 'ON' position and goes off when the engine is started. If the oil pressure warning light and buzzer comes on while driving it indicates that the oil pressure is dangerously low. Stop the engine immediately and check the oil level in the engine. If the oil level is normal, have the lubricating system checked by the District Mechanical Officer.

⚠ CAUTION Do not run the engine when the light is illuminated.

5.12 Alternator Warning Light

The alternator warning light comes on when the ignition switch is turned to the 'ON' position and goes off when the engine is started and the alternator circuit is brought into normal function. If the alternator warning light comes on while driving, check to ensure the alternator drive belt is not loose or broken.

5.13 Air Pressure Gauges – Front and Rear Systems

The air pressure gauges indicate the pressure in the brake air tanks. While driving, the pressure gauge readings should be within the range of 7.4 to 8.4 kg/cm² (740 to 840 kPa/107 to 121 psi). When the pressure falls below 6 kg/cm² (588 kPa/85 psi), the air pressure warning light on the instrument panel operates simultaneously with the warning buzzer. Ensure the air pressure in the tank is higher than 6 kg/cm² before starting off. The warning buzzer will not sound when the parking brake is applied.

5.14 Brake Air Pressure Warning Light

The air pressure warning light comes on when the air pressure in the air tank is lowered to a critical level. **⚠ CAUTION** If the air pressure warning light comes on while driving, stop the vehicle and check to locate the cause of the trouble and avoid driving with the warning light on. Repeated applications of the service brakes could cause temporary lowering of the air pressure.

5.15 Brake Air Pressure Warning Buzzer

The air pressure warning buzzer is operated simultaneously with the air pressure warning light. The buzzer stops when the spring parking brake lever is pulled up, but the warning light will remain on. **⚠ CAUTION** When the warning light comes on the air pressure in the air tank is insufficient and the brakes will not operate to their full capacity. Park the vehicle in a safe place and run the engine at a medium speed to increase the air pressure.

NOTE: As a safety feature, when stationary the Park Brake cannot be released until the brake air pressure rises above the minimum operating level and the warning buzzer stops sounding.

5.16 Brake Adjust Warning Light and Buzzer

The brake system warning light and buzzer comes on when the brake pedal is depressed with leaks in the brake hydraulic circuits, or an excess clearance exists between the brake linings and brake drums. If the warning light comes on, stop the vehicle immediately and check the brake system. To stop the buzzer, engage the parking brake. The District Mechanical Officer must be advised.

5.17 Brake Fluid Level Warning Light and Buzzer

The brake fluid level warning light and buzzer comes on when the brake pedal is depressed with the level of the brake fluid in the reservoir being too low. **⚠ CAUTION** If the warning light and buzzer comes on, stop the vehicle immediately and check the brake system. To stop the buzzer, engage the parking brake. The District Mechanical Officer must be advised.

5.18 High Water Temperature Gauge, Warning Lamp and Buzzer

The water temperature gauge indicates the engine coolant temperature when the ignition switch is turned 'ON'. The letters 'C' and 'H' on the dial represent 'cold' and 'hot' respectively. If the gauge needle reaches the red zone, it indicates an engine overheating condition.

A warning light located on the centre console indicates high engine coolant temperature. If this light illuminates while the engine is running, check the level of the coolant in the reserve tank. **⚠ DANGER** Avoid the possibility of hot water burns. If required replenish the coolant in the reserve tank to the 'FULL' line and check to see if there are any leakages in the cooling system. **⚠ CAUTION** Continued operation of an overheated engine can result in serious engine damage.

5.19 Fuel Gauge

The fuel gauge indicates the level of fuel within the fuel tank. The letters 'F' and 'E' represent 'Full' and 'Empty' respectively. Diesel fuel is the only fuel to be used in this appliance. The diesel fuel must be kept clean and free from impurities, particularly water. The appliance should always be refuelled prior to the vehicle being returned to the station. A 'Full' fuel tank will help prevent condensation, thus reducing the possibility of damage being caused to the injector pump and injectors.

5.20 Fog Light Switch

The fog light switch is located in the dashboard on the right hand side of the steering wheel. This switch illuminates the fog lights located within the vehicle headlamps. The headlight lighting switch must be turned to the first or second stops for the fog lights to operate. The fog lamps can be turned off by either pressing the fog lamp switch to 'OFF' or by turning off the lighting switch.



5.21 Vehicle Documents

The following documents are to remain in the centre console compartment of the appliance:

- CFA Log Book.
- Medium Pumper Tanker Operating Manuals.
- The cab-chassis Owner's and Driver's Manual.
- Manuals provided by the suppliers of other equipment fitted to the appliance.
- VASS Certificate describing approved vehicle modifications

The ready access to the completed information in the Log Book and Service Record will greatly assist the District Mechanical Officer in maintaining the appliance and identifying any faults.

SECTION 2 – Four Wheel Drive Versions

This section is applicable to 4x4 versions of the CFA Medium Pumper Tanker

5.22 Four Wheel Drive Selector Switch

This switch is used to either select 4x2 (driving power is transmitted to the rear wheels only), or 4x4 (driving power is transmitted to all four wheels). When the switch is pressed the transfer alternates between 4x2 and 4x4. This switch should be operated after stopping the vehicle, and there is no need to depress the clutch pedal.

Switching 'OFF' the front drive control switch when the transfer HIGH/LOW switch is in the 'LOW' range position will not release the all-wheel drive. When releasing all-wheel drive, be sure to set the transfer HIGH/LOW switch in the 'HIGH' position. **⚠ CAUTION**

Driving on hard surfaces in 4x4 drive may cause serious damage to drive line components. To prevent problems be sure to drive with the all-wheel drive released.



5.23 Transfer Case

Two (2) controls are fitted to facilitate the operation of the transfer case. The transfer control is used to select 'HIGH' or 'LOW' speed range of the transfer case, whilst the front drive controls act to engage the front axle for four-wheel drive operation. It should be noted that by engaging 'LOW' range with the transfer control, four-wheel drive will automatically be engaged regardless of the front drive control position. The 'HIGH' range position indicator light comes on when the transfer gear position is in 'HIGH' range. The 'LOW' range position indicator light comes on when the transfer gear position is in 'LOW' range. The four-wheel drive indicator light comes on when the 4x4 selector switch is activated.



5.24 Transfer Case Gear Operating Guidelines

When operating on a normal flat surface, drive with the front-wheel drive gears disengaged and the 'HIGH' / 'LOW' switch in the 'HIGH' range position. When driving in mud, sand, or on rough surfaces engage the front-wheel drive as necessary. Shift the 'HIGH' / 'LOW' switch into the 'LOW' range position when greater traction is needed, when operating in steeper terrain or operating at low speeds.

5.25 Operating In Sand

Improved performance may be achieved when driving in sand by lowering the tyre pressures to 300kPa. **⚠ CAUTION** Drive at reduced speeds when operating with lowered tyre pressure. The appliance is equipped with an air hose and a gauge which connects to the air fitting located on the back of the air tank. As the air is supplied from the braking system compressor the vehicle engine must be running whilst inflating the tyres. **⚠ CAUTION** Tyres must be inflated to the correct pressures once sand driving is completed.

SECTION 3 – Automatic Transmission

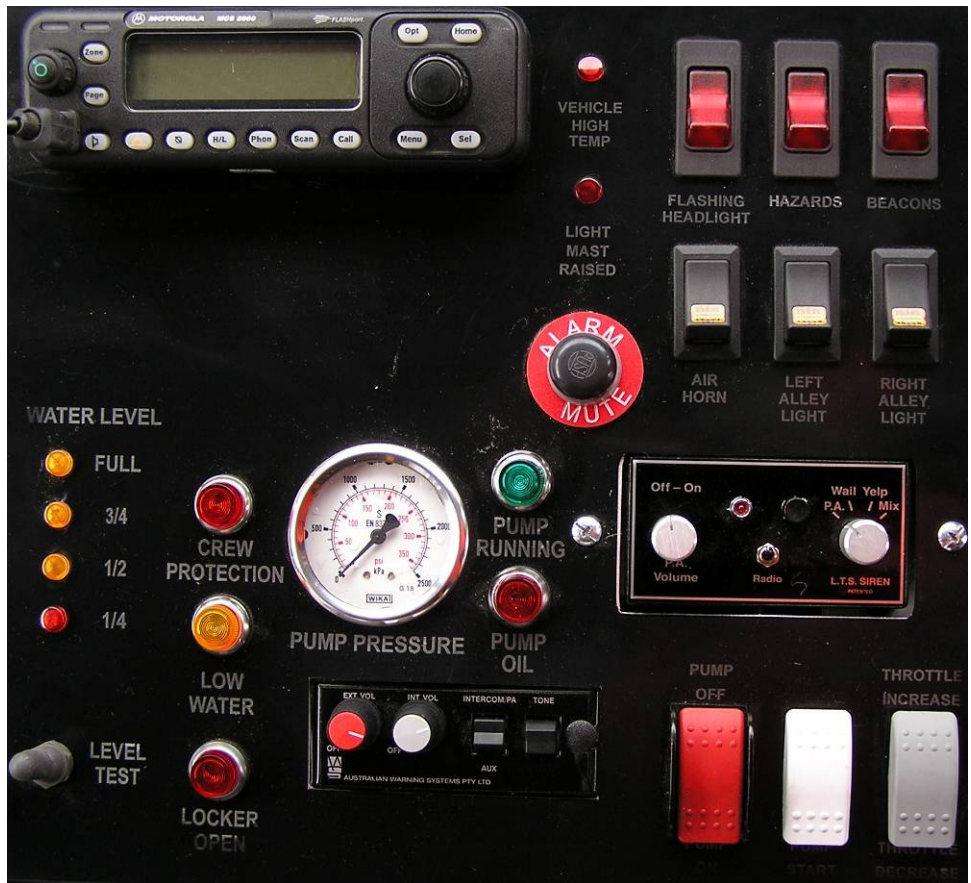
This section is applicable to 4x2 versions of the CFA Medium Pumper Tanker fitted with the Allison Automatic transmission.

To be added

Part 6 - Operating the CFA Medium Pumper Tanker

6.1 Cabin Centre Console

The centre console includes switches, gauges and lights associated with the operational use of the appliance. The switch panel is back lit via the park light switch for night time operations.



6.2 Centre Console Switches

6.2.1 Emergency Beacons Light Switch

This switch controls the combination red/blue/white LED Vector Pod's on the cabin roof and individual red and blue pod on the rear of the vehicle.

6.2.2 Emergency Hazards Light Switch

This switch controls the alternating red and blue hazard lights, and the white lights fitted on the front aluminium bull bar.



6.2.3 Flashing Headlight Switch

This switch controls the flashing unit which causes the low beam headlights to flash and the white cabin mounted LED Vector Pod lights and front bull bar mounted LED flashing lights to operate. This function is disabled when the park or headlights are switched 'ON'.

6.2.4 Air Horn Switch

When switched 'ON', the air horn will operate via the vehicle horn switch.

6.2.5 Alley Lights Switches

Separate switches are provided for the alley lights mounted on each side of the appliance.

6.3 Siren Controls

The siren controls are located in the central console. The settings on the siren controls are Wail, Yelp, Mix and Off. A PA system can be used via the siren using the microphone. Siren 'Yelp' should be used when travelling at lower speeds or on approach to an intersection in heavy traffic situations. 'Wail' should be used when travelling at higher speeds.



6.4 Crew Intercom Controls

The crew intercom controls are located centrally on the centre console.

To operate the intercom system from the cabin:

- Rotate the 'EXT VOL' switch clockwise one click to turn on the main power.
- The internal microphone is always 'open' when the unit is switched on.
- Rotate the 'INT VOL' switch clockwise one click to turn on the internal speaker control.
- Push the rocker switch to the 'INTERCOM/PA' position.
- Push the 'TONE' switch to active a call tone to the external speaker.
- Speak slowly and clearly towards the microphone located above the drivers window.
- Adjust the external speaker volume as required.



To operate the intercom system from the deck area:

- Press and hold the external push to talk switch mounted on the pump control panel.
- Speak slowly and clearly towards the speaker.
- Adjust the internal speaker volume as required.
- Push to talk switch must be released to receive transmission from cabin.

6.5 Operational Water Tank Level Indicator Lights

The water tank level indicator lights are located on the rear pump mimic panel, and the cabin centre console. The four lights indicate the level of water within the tank. The levels are FULL, $\frac{3}{4}$, and $\frac{1}{2}$, (**AMBER** lights) and $\frac{1}{4}$ (**RED** light). The **RED** light flashes when the operational water has been used. These lights operate on the 2700 litres of 'fire fighting' water. The $\frac{1}{4}$ level contents indicators include an **AMBER** strobe light on the top of the live hose reel frame, an **AMBER** warning light in the cabin. The lights will automatically reset when the tank is refilled to the $\frac{3}{4}$ level. At the $\frac{1}{4}$ level, approximately 700 litres of water remains in the tank.

6.6 Water Tank Level and Siren Test Push-Button Switches

The water tank level test button is located in the cabin centre console. Pressing this switch will illuminate the water tank level indicators and activate the audible alert to enable checking without having to actually empty the water tank.

6.7 Pump Controls

The pump is capable of being operated from the cabin, deck area or rear control panel. Pump controls / displays include:

- Pump pressure gauge (0 - 2500kPa)
- Pump running indicator light (Green)
- Pump oil pressure warning indicator light (Red)
- Pump 'ON' / 'OFF' switch (Red)
- Pump 'START' switch (White)
- Throttle 'INCREASE' / 'DECREASE' switch (Grey)

To start and operate the pump

- Ensure that pump suction has a sufficient supply of water (i.e. water from tank)
- Press the 'PUMP ON' switch (lower section)
- Press the 'PUMP START' switch (lower section) until the pump starts. The green 'PUMP RUNNING' light will illuminate and the pump pressure gauge will indicate water pressure in the pump
- Operate the throttle 'INCREASE' / 'DECREASE' switch to achieve the desired pump pressure

⚠ CAUTION Do not operate the pump without water.

To stop the pump

- Reduce the pump engine speed to idle
- Press the 'PUMP OFF' switch (upper section) to stop the pump

6.8 Fire Pump

The Medium Pumper Tanker is fitted with a GAAM Mk. 450 two-stage centrifugal pump. The nominal capacity of pump is a maximum flow of 2000 litres per minute at 700 kPa or 600 litres per minute at 1800 kPa. Control panels are located at the rear of the appliance, in the deck area and on the cabin centre console. The rear control panel contains pump engine controls, the Class 'A' foam and Class 'B' foam controls, a delivery pressure gauge, and a compound inlet pressure gauge. The cabin and deck area panels contain the pump engine controls and a delivery pressure gauge.

The pump drive shaft sealing is achieved by carbon and ceramic wear faces along

with nitrile 'O' rings. This form of seal requires no adjustment. The seal is lubricated by the water being pumped hence the pump must not be run dry as this will result in damage to the seal.

6.9 Pump Priming System

The priming system for the fire pump is performed by an electrically driven oil less rotary vane priming pump. The primer is activated by pulling the 'T' pull handle located on the rear bumper.

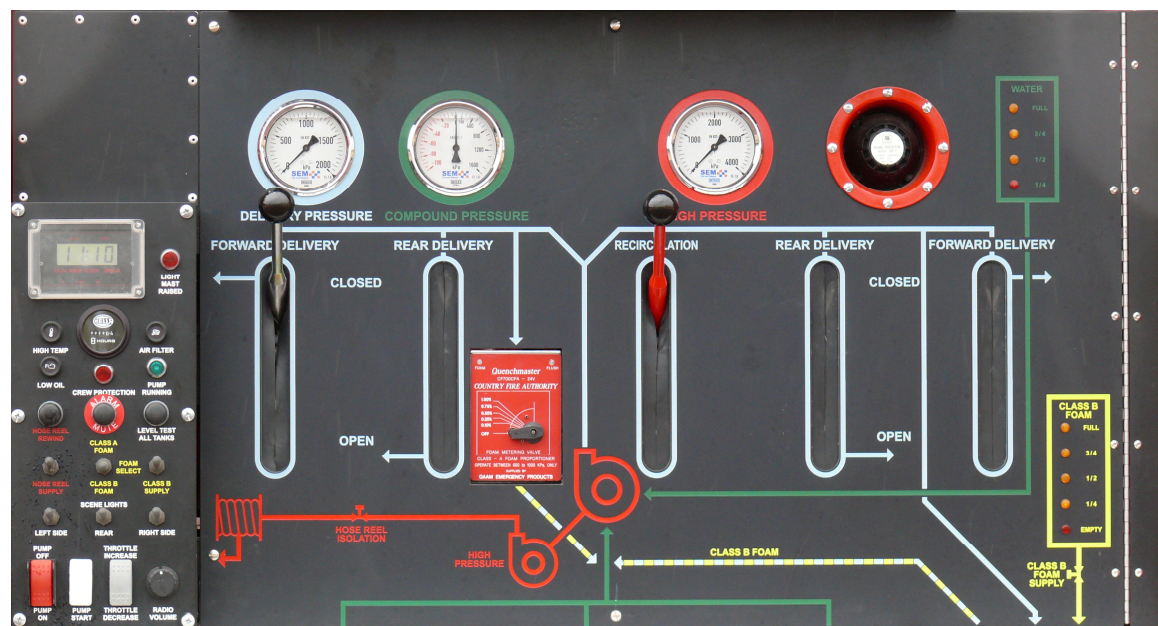


6.10 Pump Engine

The fire pump is driven by a 3.4 litre, four cylinder, four stroke, Hatz silent-pack air-cooled diesel engine which develops 44 kW of power at an engine speed of 3000 RPM. The diesel engine is fitted with a 24 volt electric starter. The Hatz diesel engine is fitted with a deep oil sump enabling it to operate if the appliance is on a 60% incline in any direction. Diesel fuel is supplied to the pump engine's injection pump by a 13 litre gravity-fed fuel tank. The fuel tank is supplied with diesel fuel from the cab chassis fuel tank. This closed system does not require the pump engine fuel tank to be refilled by the operator as the diesel fuel is drawn directly from the vehicle's engine diesel fuel system. To ensure fuel supply, the pump engine should not be operated for lengthy periods without the appliance engine running. Should the pump engine run out of fuel, the fuel system can be primed using the manual priming lever located on the fuel pump of the Hatz engine within the silent-pack noise suppression cowling. One of the fuel lines at the injectors should be loosened to bleed entrapped air whilst priming.

A CAV fuel filter located in the pump bay area is installed in the fuel line before the diesel engine injection pump. The Hatz diesel engine is equipped with an automatic engine cut-out if the air cooling fan belt fails.

6.11 Rear Control Panel



The rear control panel comprises the following:

- Pump delivery pressure gauge (range 0 to 2000 kPa)
- Pump inlet (compound) pressure gauge (range -100 to 2500 kPa)
- Pump high pressure delivery pressure gauge (range 0 to 4000 kPa)
- Class 'A' foam system controls
- Class 'B' foam system controls
- Pump engine hours meter
- Pump 'ON/OFF' switch (Red)
- Pump 'START' switch (White)
- Pump throttle 'INCREASE' / 'DECREASE' switch (Grey)
- Pump running indicator light (Green)
- Water tank level indicator lights
- Hose reel water supply switch
- Hose reel rewind switch
- Class 'B' foam concentrate level indicator lights
- Crew protection alarm mute switch
- Crew spray protection system indicator light
- Scene lights switches
- Light mast controls switch
- Low oil pressure warning light (pump engine)
- High engine temperature warning light (pump engine)
- Air cleaner restriction warning light (pump engine)
- Radio volume control
- 24 hour clock

6.12 Deck Area Control Panel

The deck area pump control and instrument panel comprises the following:

- Pump delivery pressure gauge (range 0 to 2000 kPa)
- Pump 'ON/OFF' switch (Red)
- Pump 'START' switch (White)
- Pump throttle 'INCREASE' / 'DECREASE' switch (Grey)
- 'PUMP RUNNING' indicator light (Green)
- Crew protection alarm mute switch
- Crew spray protection system indicator light
- Cabin intercom system 'PUSH TO TALK' button
- Low oil pressure warning light (pump engine)
- Deck area lighting switch



6.13 Live Hose Reel

A live hose reel is fitted to the rear of the appliance above the rear control panel. The hose reel is fitted with 60 metres of 25mm inside diameter rubber hose connected to the Akron 1702 pistol grip nozzle. The live hose reel is directly plumbed to the high pressure stage of the two-stage pump. A hose reel isolation switch located on the rear pump panel must be operated to allow water to be supplied to the reel. The reel is equipped with electric rewind. Guide rolls attached to the live hose reel allow the rubber hose to be easily removed and rewound from the reel.

6.14 Water Tank

The moulded fibreglass water tank is centrally located. The tank has a nominal capacity of 2700 litres with 2000 litres for operational use and 700 litres for the crew protection sprays. The tank incorporates longitudinal and lateral baffles. This gives the water tank baffled compartments which minimises the effect of water surge in the semi-laden condition. A liquid level sight tube is fitted within the deck area. Water tank level indicator lights have also been fitted in the cabin and on the rear pump panel. **⚠ CAUTION** Any decision to use the crew protection water must be made in accordance with CFA Operating Procedures.

6.15 Filling the Water Tank

The water tank hydrant fill inlet is located on the near side on the front of the body. The tank overflow is fitted with a spring-loaded pressure relief valve which limits the internal pressure during filling operations. The water tank has a cap to allow filling from an overhead gantry, and can be filled by the use of the 'Recirculation Valve' when draughting. **⚠ CAUTION** Over-pressurising of the water tank is to be avoided.

6.16 Reticulation System

The reticulation system provides the following:

Inlets

- 1 x 100mm Rear Suction (Storz)
- 2 x 64mm Rear Hydrant Boost
- 1 x 64mm Near Side Tank Fill Connection

Deliveries:

- 4 x 38mm comprising:
 - 2 x 38mm Deck Area;
 - 2 x 38mm Under Tray
- 4 x 64mm (2 each side rear under tray)
- 2 x 12mm (Front Tyre Sprays)
- 1 x deck mounted monitor riser

6.17 Tank Fill from Draught Plumbing

The tank fill from draught plumbing (recirculation valve) originates from the delivery plumbing and is controlled by a 50mm manually-operated ball valve. This valve is operated by a lever located on the rear pump panel with 'OPEN in the down position and 'CLOSED' in the up position.

6.18 Front Delivery Plumbing Isolation

The front delivery plumbing originates from both ends of the delivery manifold with two lines running forward along each side of the chassis rails supplying water to the remainder of the appliance, including the deck area, below tray deliveries, and the front tyre protection sprays. Each line can be isolated by closing a ball valve located behind the rear wheels. If a rubber delivery hose which supplies the front delivery plumbing is damaged or burnt, the relevant isolation valve can be closed, thus allowing the delivery manifold to still be operated.

6.19 Pump Suction

The pump suction lever is located beside the suction inlet. Water can be drawn from either:

- the hard suction using the 100 mm Storz inlet and suction hoses
- the appliance water tank using a 75 mm nominal bore pipe and check valve (The check valve is to prevent this line from being used for the filling of the water tank).

⚠ CAUTION Ensure the 100mm blank cap is fitted prior to selecting 'Tank Supply'.

6.20 Boosting

The pump can be used to 'boost' water pressure from a town mains supply using either or both of the 64mm boost connections located at the rear of the vehicle. Each inlet is fitted with a bleed valve to allow air to be bled from hose lines prior to boosting, and to allow water pressure to be released from hose lines when making up. The green handled isolating valve must be in the 'OPEN' or down position.

6.21 Crew Protection Sprays Plumbing

The Crew Protection Spray plumbing is connected to the pump delivery manifold. An isolation valve is fitted and secured in the 'open' position. A filter flush line is provided.

6.22 Front Tyre Protection Plumbing

The front tyre sprays are fitted to cool burnt ground over which the appliance may be driven. The sprays are operated by opening the control valve mounted on the cabin floor. An isolation valve is fitted immediately behind the cabin (under the tray frame on the driver's side of the appliance).

6.23 Class 'A' and 'B' Foam Systems

The Medium Pumper Tanker is fitted with separate Around the Pump Proportioning Systems for the production of Class 'A' and Class 'B' foam. The Class 'A' system is a Quenchmaster CF700CFA-24V and the Class 'B' system is a Rosenbauer RVM80 system. Where hose lines are delivering water and Class 'B' foam is also required, an in line foam inductor can be utilised. **⚠ CAUTION** Only one foam system can be used at a time.

6.23.1 Around-The-Pump Foam Proportioning Systems

The 'Around the Pump-The-Pump Proportioning System' is a simple way to add foam capability to all pump deliveries including the high pressure hose reel. A selector switch on the rear pump panel is used to select the Class 'A' or Class 'B' foam system as required. Operation of the switch diverts 'DRIVE WATER' (a portion of the water pump's output from the discharge side of the pump) and sends it through an eductor. A vacuum is created at the eductor's foam concentrate inlet, and this vacuum draws foam concentrate through the metering valve and into the eductor. This foam/water mixture is then sent to the suction side of the water pump where it mixes with the incoming water and is distributed throughout the pump discharge piping. All deliveries will have foam and water at the same time. The system will function properly from the tank or draft.

⚠ CAUTION In hydrant or relay pumping operations, the pump inlet pressure must be limited to a maximum of 50 kPa. **⚠ CAUTION** The 'PUMP RECIRCULATE' valve must be in the closed position when the Proportioning System is being used to prevent foam entering the first aid tank. **⚠ CAUTION** Operators should be aware that if delivery nozzles are shut down for any prolonged period, the foam percentage metering valve should be set to the 'OFF' position. This is necessary to prevent the foam solution from being drawn into the system during the shut down period. Whilst the amount of foam concentrate used during the period of shut down is minimal, it is good policy to adopt this procedure at all times. Delivery nozzles should be opened regularly to allow the foam solution to flow for a short period, to ensure that overheating of the pump does not occur. **⚠ CAUTION** All equipment must be flushed with clean water after use. Clean up any spill of foam concentrate by washing down with clean water.

6.23.2 Selecting a Foam System

The required foam system can be selected via the 3 position 'FOAM SELECT' toggle switch located on the rear pump panel. In the centred position, no foam is delivered. In the 'UP' position Class 'A' foam is selected and in the 'DOWN' position Class 'B' is selected. In either of these positions, the pump bleed line is closed automatically preventing foam from entering the water tank. The relevant foam 'drive water' drive line is opened automatically with foam percentage controlled by the relevant metering controls. The Class 'B' supply valve must also be used to open the supply of concentrate from the tank.



6.23.3 Foam System Metering Valves

Independent metering valves are provided for the Class 'A' and Class 'B' foam systems. The metering valves are used to select the percentage ratio of foam concentrate to water.



The Quenchmaster CF700CFA-24V has an accuracy of $\pm 10\%$ when operating between 600 KPa to 1000 KPa pressure with flow rates varies from 200 to 400 l/min. This model can proportion foam (rich mixture) down to 20 l/min for blacking out purposes. The Class 'A' foam manual metering valve can be adjusted for percentage rates between 0% and 1%.

The Class 'B' foam manual metering valve can be adjusted for percentage rates between 1% and 6%.

6.23.4 Operating the Foam Proportioning Systems

To deliver Class 'A' or Class 'B' foam follow the following start up and shut down sequence.

Start Up

1. Set up the foam branch and deliver water.
2. Set the pump pressure to at least 600kPa (700 is optimum) but do not exceed 1000kPa.
3. Ensure 'TANK RECIRCULATION' valve is 'CLOSED'.
4. Select 'FOAM SELECT' to 'CLASS 'A' or 'CLASS 'B' as required.
5. Switch 'ON' the 'CLASS 'B' SUPPLY (Class 'B' foam operation only)
6. Set the foam system metering valve to the required percentage setting.

Shut Down

1. Reduce the pump speed to idle.
2. Switch the 'FOAM SELECT' switch to the centre position
3. Set the foam system metering valve to zero percentage setting.
4. Switch 'OFF' the 'CLASS 'B' SUPPLY (Class 'B' foam operation only)

6.23.5 Class 'A' Foam Application Ratios

APPLICATION	FOAM RATIO
Mop up	0.1% to 0.25%
Initial suppression	0.25% to 0.5%
Back burning	0.5% to 0.75%
Exposure protection and structural attack	0.75% to 1.0%

6.23.6 Operating the Class 'B' In Line Foam Inductor

Where hose lines are delivering water and Class 'B' foam is also required, the in line foam inductor can be utilised using a pump delivery located on the off (drivers) side of the appliance. The foam concentrate for the inline inductor can be sourced from the 'CLASS B FOAM OUTLET' located adjacent to the 64mm delivery. A foam concentrate pick up stick is also provided at the rear, adjacent to the metering valve, to allow foam concentrate to be sourced from drum supply.



6.23.7 Foam Concentrates

Class 'A' foam concentrate is supplied from a 50 litre tank mounted on the off side deck area. Class 'B' foam concentrate is supplied from a 200 litre tank mounted on top of the water tank.

6.23.8 Filling the Foam Concentrate Tanks



Separate Storz couplings and push button switches are used to fill the foam concentrate tanks using on board electric pumps for each tank. The Class 'A' foam inlet is located with the near side deliveries. The Class 'B' foam inlet is located with the off (drivers) side deliveries. A tank level switch will stop the pump when the tank is full. **CAUTION** Never mix different types of foam concentrate.

6.24 Crew Protection Sprays



Sprays are located around the appliance cabin, over the deck and rear pump controls and inside the front and rear mudguards for protection of the tyres. The crew protection sprays operate at a flow rate of approximately 130 l/min and are designed to operate correctly with the pump operating at idle. Thus 700 litres of water remaining when the tank is $\frac{1}{4}$ full will provide nearly 5 minutes of continuous operation. However, all available water from the appliance water tank can be used for the crew



protection sprays, not just the final 700 litres. The sprays are activated by the operation of a lever located at the front of the deck area, or from the cabin by a lever located between the centre control console and the driver seating position.

⚠ WARNING Operational activation and routine testing of the Crew Protection Sprays MUST be in accordance with CFA operating procedures.

6.25 Crew Protection Curtains

The Pumper Tanker is fitted with 'Storm King Mountain' radiant heat crew protection curtains. To deploy the curtains, release the 'Velcro' retaining straps and roll down the curtains. Ensure curtains cover glass area and secure with 'Velcro'.

⚠ WARNING Operational activation and routine testing of the Crew Protection Curtains MUST be in accordance with CFA operating procedures.



6.26 Deck Area Crew Protection Awning

The appliance is fitted with a deck area mounted 'Storm King Mountain' radiant heat crew protection awning, stowed in a self contained enclosure. The awning is easily deployed by releasing two catches and lowering the hinged enclosure into its working position.

Once the awning is lowered into position, the awning material is secured to the front wall of the water tank with 'Velcro' strips.

⚠ WARNING Operational activation and routine testing of the crew protection awning **MUST** be in accordance with CFA operating procedures.



6.27 24 Volt Electrical System

The 24 volt electrical system is the primary means of power for the appliance and is supplied by two 12 volt heavy duty batteries in series and is charged by an alternator. Apart from the normal requirements of the cab chassis, this system also supplies power for the lighting requirements of the body section, visual warning devices, and audible warning device. The main fuse panel for the cab chassis electrical components is located in the glove box compartment. Fuse and circuit breaker panels for the bodywork and fire fighting functions are located in the centre console and the rear of off side Locker 2.

6.28 12 Volt Reducer

The reducer system operates from the vehicle 24-volt system and supplies 12-volt power for the CFA radio, an auxiliary radio (if fitted) and portable radio charging. Electrical circuit diagrams are included as an Appendix to this Manual.

6.29 Fresh Water Tank

A separate 50 litre water tank has been installed for the washing of hands, face, etc. The 50 litre tank is to be filled with fresh water only and is fitted with a combined snap fitting fill-point and an outlet complete with ball valve. The top of the tank is fitted with a 50mm overhead filler cap located on the left-hand side and the tank is appropriately labelled 'FRESH WATER ONLY'.

6.30 Double Extension Ladder and Ladder Stowage



The CFA Medium Pumper Tanker is stowed with a 5.2 metre double extension 'Oldfields' aluminium ladder stowed on a SEM Hystow ladder gantry system.

6.30.1 Removing the Ladder

- Position the appliance clear of overhead power lines or obstructions and with approximately four metres clear at the rear to allow removal of the ladder.
- Release ladder gantry lock by squeezing the release lever on the handle.
- Pull handle down and to the rear.
- Raise the ladder locking mechanism and allow the ladder to slide out slowly.
- Utilising 2 personnel, slide the ladder out until the feet of the ladder can be placed on the ground.
- **⚠ CAUTION** Take additional precautions when removing or restowing the ladder when the appliance is parked on sloping ground.
- Remove ladder completely and carry to required location, utilising 2 or more personal.
- House the ladder gantry until the ladder needs to be restowed.

6.30.2 Restowing the Ladder

- Release ladder gantry lock by squeezing the release lever on the handle
- Pull handle down and to the rear
- Ensure the ladder locking mechanism is raised.
- Carry the ladder to the rear of the appliance utilising 2 or more personal
- Place the top of the ladder on the first roller of the ladder gantry.
- Push the ladder along the raised gantry, until the ladder reaches the stop
- Lower the ladder locking mechanism, taking care that the ladder does not slide backwards.
- House the ladder gantry

⚠ DANGER "LOOK UP & LIVE". Ensure ladder gantry and ladder is clear of overhead power lines and obstructions.

⚠ CAUTION Do not drive the appliance with the ladder gantry raised. Weight of the ladder is approx 30kg – Ensure correct manual handling methods and multiple person lifting is used. Be aware of pinch points

6.31 Multi Function Ladder and Stowage

The Pumper Tanker is stowed with a 5.1 metre Werner MT22 4-in-1 ladder stowed between the vehicle cabin and the deck area on the off-side. The ladder is stowed in a fixed bracket and secures in place with a Velcro strap. **⚠ CAUTION** Do not remove or stow the ladder whilst being held vertically. It must be tipped via the front feet. **⚠ WARNING** The ladder MUST only be used in accordance with the manufacturer's directions.

6.32 Suction Hose Locker

The CFA Medium Pumper Tanker is stowed with two suction hoses fitted in a slide and tilt locker located on top of the off side lockers.

6.32.1 Removing the Suction Hoses

- Position the appliance clear of overhead power lines or obstructions and with approximately four metres clear at the rear to allow tilting of the suction hose locker.
- Release locker lock by squeezing the release lever on the handle.
- Pull handle down and to the rear.
- Undo the locker door and release the Velcro strap retaining the suction hoses.
- **⚠ CAUTION** Take additional precautions when removing or restowing the suction hoses when the appliance is parked on sloping ground.
- Remove the suction hoses completely and carry to required location.
- House the locker until the suction hoses need to be restowed.



6.32.2 Restowing the Suction Hoses

- Release locker by squeezing the release lever on the handle.
- Pull handle down and to the rear.
- Open the locker door.
- Feed the suction hoses into the stowage tubes one at a time.
- Secure the Velcro strap and close the locker door.
- House the suction hose locker and ensure the locker is locked and the T handle is correctly stowed.

⚠ DANGER "LOOK UP & LIVE". Ensure suction hose locker is clear of overhead power lines and obstructions.

⚠ CAUTION Do not drive the appliance with the suction hose locker in the raised position.

6.33 Telescopic Mast Light

A pneumatically operated light mast is located on the body of the appliance. The operating switch is located on the rear control panel. The light will illuminate when raised if the appliance parks lights are switched 'ON'. **⚠ DANGER** Check for overhead wires or hazards BEFORE raising the light mast. **⚠ CAUTION** Do not

drive the appliance with the ladder gantry raised. A warning lamp located on the instrument panel at the rear and in the cabin console will illuminate when the mast is in the raised position.



6.34 Live Hose Reel Brake

The live hose reel is fitted with a drum brake. The brake is released by pulling on the handle located below the rear pump controls panel.



6.35 Stowage of Equipment

Provision has been made for the stowage of items of equipment normally associated with the operation of the appliance. Equipment additional to that for which stowage is provided shall not be carried on the appliance, unless approval is first obtained. A complete list of equipment for which stowage provision has been made, and the locker in which these facilities may be found, is attached as Appendix to this Manual.

Part 7 - Maintenance

7.1 Inspection

The following should be inspected WEEKLY for faults and also following the use of the vehicle:

- Paintwork and Upholstery
- Body Panels
- Tyres
- Locker Catches
- Hose Reel
- Instruments, Cabin and Pump Panel
- Windows and Mirrors
- Equipment Inventory

Any faults or problems should be immediately rectified or reported so that they can be attended to.

7.2 Weekly Vehicle Check

In addition to the items covered above, the following must be tested or checked WEEKLY:

Test:

- Warning Devices
- All Lighting
- All Instruments and Warning Lights
- Radio
- Fire Pump Performance

Check:

- Crew Protection Sprays
- Crew Protection Curtains

Check for:

- Oil and water leaks under vehicle.

Correct levels:

- Vehicle Engine Oil
- Pump Engine Oil
- Radiator Coolant Level
- Check clutch master cylinder reservoir for correct level.
- Vehicle Fuel
- Brake Fluid (except full air brakes)
- Correct battery electrolyte levels and ensure terminals are clean
- Check or fill windscreen washer reservoir

Tyres:

- Correct pressure (725 kPa)
- Visually inspect all tyres for abnormal wear, cuts, etc.

7.3 Vehicle Road Test

- Test under normal driving conditions, checking engine performance, transmission, steering and braking, listening for abnormal noises.
- With diesel-powered vehicles, the weekly run and other driving is important.
- Vehicles must travel a minimum of 30km per week and that this distance is continuous (one trip).
- Vehicles should always be refuelled prior to the appliance being returned to the station. Full fuel tanks will help prevent condensation, thus reducing the possibility of severe damage being caused to the injector pump and injectors.
- Diesel fuel must be kept clean and free from impurities, particularly water.

The driving technique to be adopted for diesel-powered vehicles with manual transmissions is extremely important for gaining reliable service:

- Do not over-rev engine.
- The vehicle should be firmly driven throughout each gear range.
- Do not labour the engine.
- The vehicle should not be driven for long distances at low engine RPM.

Engine Idling

- When a vehicle is left idling for extended periods (in excess of 5 minutes), engine revs must be increased to approx 1200 RPM by use of the hand throttle.
- Return hand throttle to idle prior to driving.

7.4 Raising the Cabin

- Park appliance on level surface.
- Ensure all loose items in the cabin are secured or removed.
- Close all cabin doors.
- Ensure adequate clear space in front and above the cabin.
- Remove bull bar eyebolts and lower bulbar.
- Release the cabin locking lever at the rear of the cabin – Warning buzzer will now activate.
- Access cabin tilt switch located below the locking lever (under plastic cover).
- Push cab tilt switch 'UP' to raise cabin
- At full extension, lower the cab safety stay and place in holder.
- Briefly push the cab tilt switch 'DOWN' to lower the safety stay into the holder – the buzzer should now stop.

▲ DANGER Do not work beneath the cabin unless the cabin support safety stay is securely in place.

7.5 Engine Compartment Check

On return from the vehicle test, park the appliance on a level surface, switch off the engine, raise the cab and carry out the following in accordance with the manufacturer's procedures:

- Inspect all drive belts for wear, damage and tension.
- Inspect all cables and wiring for loose connections or damage.
- Inspect engine for any loose or damaged hoses, control cables and engine components.
- Inspect radiator core to ensure that it is free of foreign material.

7.6 ,Lowering the Cabin

- Ensure all loose items are removed from under the cabin.
- Ensure all personal are clear of the cabin.
- Briefly push cab tilt switch 'UP' to raise the safety stay out of the holder.
- Replace safety stay in the housed position – the warning buzzer will activate.
- Push the cab tilt switch 'DOWN' to lower the cabin.
- Lock the cabin locking lever at the rear of the cabin – Warning buzzer will now stop.
- Raise bull bar and replace bull bar eyebolts
- Replace loose items back into cabin.

7.7 Cleaning the Appliance

Apply only mild detergent in warm water to clean. Hose off and wipe down with a chamois. Do not wash the appliance in direct sunlight during hot weather.

7.8 Radiator Core Blockage

When operating the Pumper Tanker in stubble, dusty and ash-laden areas the radiator core can become blocked from foreign materials thus causing the vehicle's engine to overheat. To stop this problem from occurring regular checks for radiator core blockages should be made during, and particularly after, any fire operations. If necessary, the radiator should be washed out (back to front) with a hose.

APPENDIX A - STOWAGE LIST

Provision has been made for the stowage of equipment as follows:

▲ WARNING Due to weight carrying limitations any non-standard equipment must ***not*** be carried on the vehicle without prior written approval.

Locker NS 1 (Nearside forward full height roller shutter locker) – Branches & Adaptors	
Description	Comment
Upper slide out tilt shelf	
1 x Angus UNI-450 in-line inductor	
1 x Ø25mm foam pick-up tube (loose)	
1 x Ø64mm dividing piece	
Upper middle slide out/tilt shelf	
1 x Phoenix R200 Medium expansion Class “A” Foam Branch with Ø38mm external lug coupling	
Ø64mm & Ø38mm external coupling washers	On RHS wall
Ø64mm Ø38mm hose bandages	On RHS wall
2 x shut-off branches with Ø38mm external lug couplings	
2 x SL150 diffuser branches with Ø38mm external lug coupling	
2 x Unifire V12 branches with Ø38mm external lug coupling	
1 x select flow nozzle with Ø38mm external lug coupling	
1 x branch aspirator with Ø38mm external lug coupling	
2 x Ø32mm (f) to Ø38mm external lug coupling	
1 x Ø32mm (f) to Ø38 mm (m)	
2 x Storz 65mm/75mm short handled coupling spanners	On LHS wall
1 x Foamlite B65 Low Expansion Class “A” Foam Branch with Ø38mm external lug coupling	On rear wall
1 x Angus R200 Low Expansion Class “A” Foam Branch with Ø38mm external lug coupling	On rear wall
Lower middle slide out shelf	
1 x Ø64mm 3TPI blank cap with blow off	
1 x Ø64mm 3TPI blank cap	
1 x 5 TPI blank cap	
2 x Ø64mm 5TPI (m) to 3TPI loose nut (f) matching piece	
1 x Ø64mm 3TPI (m) to 5TPI loose nut (f) matching piece	
2 x Ø64mm 3TPI (f) to Ø38mm external lug coupling	
2 x Ø64mm 3TPI (m) to Ø38mm external lug coupling	
2 x Ø64mm 3TPI loose nut (f) to Ø75mm Storz	
1 x Ø64mm 3TPI (f) to Ø64mm Storz	
1 x Ø64mm 3TPI (m) to Ø64mm Storz	
1 x Ø64mm 3TPI loose nut (f) to Ø100mm Storz	
2 x Ø6mm tips for small town branches	

Locker NS 1 (Nearside forward full height roller shutter locker) – Branches & Adaptors	
Description	Comment
Lower slide out shelf	
2 x 10m lengths of Ø64mm RRL hose on bite	
1 x Ø64mm collecting piece – Ø100mm Storz	
1 x Ø64mm collecting piece	
1 x Ø38mm breeching piece	

Locker NS 2 (Nearside centre above tray roller shutter locker) – BA	
Description	Comment
2 x SEM BA Pantograph sets c/w 3 position drop down bracket, 4 x cylinder tilt brackets, 2 x BA control board	

Locker NS 3 (Nearside rear above tray roller shutter locker) - Miscellaneous Hoses	
Description	Comment
Upper slide out tilt shelf	
Miscellaneous loose items	
Lower shelf	
4 x 30m lengths of Ø38mm flaked canvas hose	
1 x Ø38mm select flow nozzle	

Locker NS 4 (Nearside rear under tray fabricated locker) - Flaked Hose	
Description	Comment
3 x 30m lengths of Ø64mm flaked canvas hose	
1 x Ø64mm select flow nozzle	

Locker OS 1 (Offside forward above tray fabricated locker)	
Description	Comment
Rear wall	
1 x axe	
1 x chimney mirror	
1 x aluminium hydrant	
RHS wall	
1 x 60cm bolt cutters	
1 x crow bar	
LHS wall	
2 x small town (MFB) hose spanners	
1 x Hooligan tool	
On Floor	
Firelighter	

Locker OS 2 (Offside middle above tray roller shutter locker) - Salvage Gear	
Description	Comment
Upper Shelf	All loose fitted
1 x Tyre inflation kit c/w pressure gauge and quick release coupling	
1 x suction float complete with chain & "D" shackle	
2 x 20m lengths x Ø12mm synthetic rope	
1 x Hoenig basket strainer	
1 x set of warning triangles	
4 x sets splash suits and gumboots	
1 x plastic 3 in 1 funnel set	
2 x 15L collapsible knapsacks	
1 x Emergency class A foam kit	
1 x electrical gloves	
Floor Level (RHS)	
2 x 4.5kg ABE Chubb extinguishers - Part No. 2046/01	On slide out tray
Floor Level (Centre)	
Break-a-Part" tools including: <ul style="list-style-type: none"> ◆ 6 x handles ◆ 2 x broom heads ◆ 2 x rake hoe heads ◆ 2 x ceiling hooks 	On rear wall On RHS partition On LHS partition On RHS/LHS partition
1 x vehicle jack	
1 x vehicle jack handle, wheel nut spanner & spare wheel winch handle	On rear wall
1 x bucket of "sockerol"	Loose
1 x set of MVA tools (loose)	Loose, including tools supplied with cab chassis and pump
1 x mop head (loose)	Loose
1 x First aid kit	
Floor Level (LHS)	All loose fitted
4 x traffic cones (in green bag)	
4 x eflares (in yellow bag)	
1 x Air Viva	
2 x torches	
1 x tote bin c/w miscellaneous small gear	
Misc. tapes	

Locker OS 3 (Offside rear above tray roller shutter locker) - Miscellaneous Hoses	
Description	Comment
4 x 30m length x Ø64mm RRL delivery hose (on bite)	In Adjustable Dividers
4 x 30m length x Ø38mm RRL delivery hoses (on bite)	In Adjustable Dividers

Locker OS 4 (Offside rear under tray fabricated locker) – Flaked Hose	
Description	Comment
4 x 30m lengths of Ø38mm flaked hose	In pull-out flaked hose bin
2 x Ø38mm select flow nozzles	

Locker OS 0 (Front of Bodywork - Offside) – Between Cabin and Body	
Description	Comment
1 x spade	

Locker NS 0 (Front of Bodywork - Nearside) – Between Cabin and Body	
Description	Comment
1 x 5.1m “Werner” MT22 4 in 1 multi function ladder	
1 x Ø64mm aluminium hydrant	Mounted forward of ladder bracket

Blanket Locker (Tray accessed top opening fabricated mounted on top of NS1 locker)	
Description	Comment
2 x fire blankets	

Suction Hose Locker (Slide and tilt mounted above offside lockers rearward deployed)	
Description	Comment
2 x 3m lengths Ø100mm suction hose c/w 100mm Storz couplings	

Miscellaneous Body	
Description	Comment
2 x handheld spot lights	Mounted off roll bar c/w additional “slave” stowage brackets
2 x hose ramp overs	Stowed behind rear wheels
1 x Rosenbauer electric rewind live hose reel (Model No. 800) c/w 60m length of Ø25mm ID rubber delivery hose & 1 x Ø38mm Akron 1702 pistol grip nozzle	
2 x 3m lengths of Ø38mm Duraline delivery hose, c/w: 1 x diffuser nozzles & 1 x shut-off branch	Stowed in tank mounted hose tray
1 x 5.2m double extension ladder	Fitted to SEM hystow ladder bracket above NS lockers
1 x removable stainless steel tank strainer	
1 x Elkhart monitor c/w TSFLO select low nozzle & 244S aeration tube	Stowed on OS deck area

Cabin	
Description	Comment
1 x Maglight torch	
1 x momentary on hand-held spotlight	
Map books etc	In centre consol

Cabin	
Description	Comment
1 x Motorola RLN4884B Travel Charger	
1 x CFA portable radio	Single bracket
1 x MFB radio	Double bracket - if required
Min 5 x CFA helmets	Stowage: <ul style="list-style-type: none"> ◆ 2 off grab rail – forward facing ◆ 2 between rear centre and outboard seats (wildfire helmets only) ◆ 2 x 2 under rear outboard seats
3 x Fire blankets	behind rear seats
2 x three 600mL drink bottles	between rear seats
Personal Items	

APPENDIX B - USER FEEDBACK

BRIGADE:.....

Vehicle Type: Medium Pumper Tanker (2009 Build)

Registration Number

Odometer readings StartKms. Date: / /

Finish.....Kms. Date: / /

1. Cab-Chassis Performance

Indicate either good, average or poor in the terrain that the appliance was operated in.





















	Good	Average	Poor
Highway Operation			
Off Road Operation <ul style="list-style-type: none"> • Steep Forested • Steep Grassed • Steep Rocky • Undulating Sandy 			
Gradeability			
Appliance Speed			
Engine Performance			
Transmission Usability			
Braking			
Cabin Size			
Cabin Visibility			

General Comments

.....

2. Pump Performance










Indicate opinion by marking the appropriate comment.

Pump Starting	Easy 	Difficult 
Pumping Capacity	Adequate 	Inadequate 
Pump Controls		
Rear Panel	Good 	Poor 
Deck Panel	Good 	Poor 
Cabin	Good 	Poor 
Pump Noise Level	Acceptable 	Unacceptable 
Pump Delivery Points		
Locations	Good 	Poor 
Number off	Adequate 	Inadequate 
Pump Suction Points		
Location	Good 	Poor 
Pump Priming System	Good 	Poor 
General Comments		

.....
.....

3. Crew Accommodation

Indicate opinion by marking the appropriate comment.

Deck Area	Adequate 	Inadequate 
Operating Space	Good 	Poor 
Access Doors	Good 	Poor 
Hand Railing	Good 	Poor 
Access Steps	Good 	Poor 

Communication with Cabin Good ✍ Poor ✍

General Comments

.....

4. Equipment Stowage

Indicate opinion by marking the appropriate comment.

Lockers

Capacity	Adequate ✍	Inadequate ✍
Locations	Good ✍	Poor ✍

Cabin Stowage

Location	Good ✍	Poor ✍
Securing	Good ✍	Poor ✍

Suction Hoses

Length	Adequate ✍	Inadequate ✍
Location	Good ✍	Poor ✍

Hose Reel

Location	Good ✍	Poor ✍
Capacity	Adequate ✍	Inadequate ✍

Ladder

Location	Good ✍	Poor ✍
Ease of Removal / Restow	Good ✍	Poor ✍
Length	Adequate ✍	Inadequate ✍

General Comments







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5. Safety Features

Indicate opinion by marking the appropriate comment.





Crew Protection Sprays

Activation Control Cabin	Good 	Poor 
Activation Control Deck	Good 	Poor 
Sprays Performance	Good 	Poor 





Crew Protection Spray Water Level Alerts

Water Level Indication	Good 	Poor 
Audible Warning Alert	Good 	Poor 

Crew Protection Curtains

Ease of Deployment	Good 	Poor 
Ease of Restowing	Good 	Poor 

Crew Protection Deck Awning

Ease of Deployment	Good 	Poor 
Ease of Restowing	Good 	Poor 

After adequate appraisal time please forward to:

The Engineer
CFA Engineering Services
P.O. Box 701
Mount Waverley 3149
Victoria

Signed by Brigade Representative.....

Date Phone Contact Details.....

APPENDIX D - ELECTRICAL SCHEMATICS

APPENDIX F – SPARE PARTS (DMO COPY ONLY)