

AUSSIE SAFE BLASTING



AUSSIE RAPTOR

Engine Drive Hydro-Blasters

AS/NZS4233.1

CLASS B
machine

Refer standard
for more details

JULY 2019

SAFE OPERATOR INSTRUCTION MANUAL



SAFETY NO.1

**Read this manual
before using this
blaster**

Covers:

Raptor 16

Raptor 18

REF: ARAPENG_MANVER3

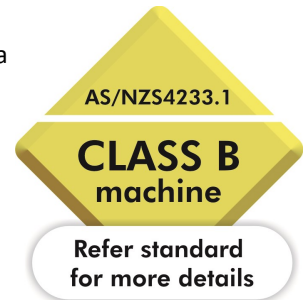
Aussie Pumps

AUSSIE HIGH PRESSURE BLASTER RISK ASSESSMENT

MODELS:

In line with the National Occupation Health & Safety Commission's requirements the data below applies to the following Aussie high pressure water blaster models:

- Raptor 16 (Class B)
- Raptor 18 (Class B)



DESCRIPTION:

Engine drive hydro-blasters designed for professional cleaning applications.

MATERIAL CONSTRUCTION:

Aussie Raptor pressure washers are mounted on heavy duty trolley mounted frames. They consist of a quality internal combustion petrol engine driving a triplex style three piston high pressure pump. The machines are supplied with wheels for ease of portability and manoeuvrability. The machines can be supplied with hose reels and up to 45 metres of high pressure hose to increase operator convenience.

RISK RANKING METHOD:

Risk is the combination of the likelihood of a specific unwanted event and the potential consequences if it should occur.

RISK RANKING TABLE:

The consequences (loss outcomes) are combined with the likelihood (of those outcomes) in the risk ranking table to identify the risk rank of each loss event (e.g. a consequence of 'Moderate' with a likelihood of 'Likely' yields a risk rank of 17).

The table yields a risk rank from 1 to 25 for each set of probabilities and consequences. A rank of 25 is the highest magnitude of risk that is a highly likely, very serious event.

A rank of 1 represents the lowest magnitude of risk, an almost impossible very low consequence event.

Controls must be taken to either eliminate or minimise the risk.

Likelihood	Use the matrix to determine the risk	Consequences				
		Insignificant	Minor	Moderate	Major	Catastrophic
Almost certain		High 11	High 16	Extreme 20	Extreme 23	Extreme 25
Likely		Moderate 7	High 12	High 17	Extreme 21	Extreme 24
Possible		Low 4	Moderate 8	High 13	High 18	Extreme 22
Unlikely		Low 2	Low 5	Moderate 9	High 14	High 19
Rare		Low 1	Low 3	Moderate 6	High 10	High 15



Risks associated with operating a high pressure cleaner ... for use in daily **SAFE WORK METHOD STATEMENT**

Hazard	Risk	Risk Rating	Controls
Entanglement with hose (tripping, falling)	Personal injury of the operator or bystanders	13	<ul style="list-style-type: none"> Warning stickers hose reel option Ensure firm footing before operating machine
Injury from high pressure water	Personal injury of the operator or bystanders	1	<ul style="list-style-type: none"> Warning notice on blaster Wear eye protection & PPE Use high pressure resistant gloves Always point spray jet at area to be cleaned Use barriers to keep bystanders away from work area Stop if persons enter working area Never leave machine unattended Never point lance at any person or animal Never put your hand over the spray nozzle when operating Stop operating if a malfunction occurs
Suffocation	Fatality is the risk	15	<ul style="list-style-type: none"> Do not operate engine without suitable ventilation Operator training in working in confined spaces
Ergonomic lifting or movement on site,	Personal injury	13	<ul style="list-style-type: none"> Operator's Manual Staff training
High temperature (from engine muffler and other components)	Burns from muffler	15	<ul style="list-style-type: none"> Warning sticker on machine Keep clear of hot engine parts
Battery exploding if not charged correctly	Acid burns	12	<ul style="list-style-type: none"> Warning sticker on battery Wear eye & face protection when working near battery
Fire or explosion	Serious injury, burns	18	<ul style="list-style-type: none"> Do not operate in explosive atmosphere Turn off engine & allow engine to cool before refuelling
Unsecured machine, moves unattended	Cause of accidents and/or injury	18	<ul style="list-style-type: none"> Use of chocks behind wheels or ute mounting kit
Noise	Hearing damage	19	<ul style="list-style-type: none"> Use of ear protection
Dislodged particles in atmosphere	Sight damage	17	<ul style="list-style-type: none"> Never clean asbestos with high pressure water Use of eye protection
Slipping on wet surface	Personal injury	17	<ul style="list-style-type: none"> Use of proper footwear
Contact with chemical cleaners used to clean surfaces	Skin contact could result in burns, skin irritation etc. Fumes from some chemicals may lead to respiratory problems	22	<ul style="list-style-type: none"> Chemical cleaners to only be used as a last resort when other methods have failed. Areas to be kept well ventilated. Staff to follow manufacturers' instructions at all times for use, storage & disposal. Staff to wear the appropriate PPE Respiratory protection when required

AUSSIE ECO CLEAN RAPTOR OPERATOR & MAINTENANCE INSTRUCTIONS

Contents:

Blaster Risk Assessment	2	Troubleshooting	10
Warranty	4	Personal Protective Equipment	11
Safety precautions	5	Operator's Hand signals	12
Specifications	5	Accident Reporting	12
Assembly & preparation for use	6	Emergency Medical Information	12
Machine preparation	6	Parts identification & Replacement parts	13
Hose connections	7	Resetting the safety valve	14
Before starting the machine	7	Pump parts	15
Starting the engine	7	Warnings	16
Stopping the machine	7	Pressure cleaner daily checks	16
Care & Maintenance	8	Three monthly regular service	16
Grit Blaster Instructions (optional accessory)	9		

CONGRATULATIONS on the purchase of an Aussie Raptor professional high pressure water blaster. These top of the range machines have been designed to be easy to use, simple to service and offer reliability and performance.

Before attempting to operate your machine please read this Instruction Manual thoroughly following all directions carefully. By doing so you will ensure safe operation of the unit and will enjoy long and trouble free service from your heavy duty water blaster.

GUARANTEE ... EXCLUSIVE 4 YEAR PUMP WARRANTY

This Aussie Eco Clean product is guaranteed against faults in manufacture for **two years** from purchase. The Bertolini pump has a **four year warranty**, but must be serviced by an authorised service agent every six months to maintain this warranty. Keep your receipt as proof of purchase and all service receipts. This guarantee is invalid if the product is found to have been abused in any way, or not used for the purpose for which it was intended.



Routine maintenance is the owner's responsibility. Failure to maintain the machine in line with the services outlined on the back page will invalidate warranty. High pressure accessories carry a 3 month warranty.

Where possible return faulty goods to the place of purchase. No products can be returned to us without our prior permission. The reason for return must be clearly state.

N.B. Warranty is not transferrable to third parties in the event of sale of the machine within the warranty period. Please note that any parts used in warranty repairs are guaranteed for a period limited by the original warranty of the parent product.

Engine warranty is the responsibility of the engine manufacturer. Unit must be returned to authorised engine dealer for evaluation of engine warranty. (Refer to engine handbook).

Battery warranty is covered by Federal/Ryde Batteries, call (02) 9879 5422 for your nearest outlet.

Our goods come with guarantees that cannot be excluded under the Australian Consumer Law. You are entitled to a replacement or refund for a major failure and for compensation for any other reasonably foreseeable loss or damage. You are also entitled to have the goods repaired or replaced if the goods fail to be of acceptable quality and the failure does not amount to a major failure.

The benefits under the Aussie Pump warranty are in addition to other rights under Australian Consumer Law.

**SAFETY PRECAUTIONS - IMPORTANT**

NEVER direct the spray jet at any surface that may contain asbestos material.

1. **NEVER** direct the spray jet at any person or animal. Keep hands and feet clear of the cleaning nozzle at all times.
2. **NEVER** hold a finger over the high pressure nozzle.
3. **NEVER** direct the spray jet at the machine itself or any electrical equipment.
4. After use, release the pressure in the high pressure hose by operating the gun trigger.
5. **DO NOT** attempt any mechanical repair. If you have a problem with your machine contact your local Aussie Eco Clean Service Division, phone (02) 8865 3500.
6. **NEVER** supply any liquid other than water to the pump inlet.
7. **DO NOT** run dry
8. **NEVER** pull the high pressure hose if it has formed kinks or nooses.
9. **NEVER** pull the hose over sharp objects.
10. **DO NOT** attempt to disconnect any hose or coupling with pressure still in the hose.
11. **DO NOT** join hoses together to extend the length (buy an extra long hose)
12. **DO NOT** operate the machine whilst standing on ladders, use a platform tower or scaffolding.
13. **DO NOT operate** if there is a chance ice has formed in the pump or hose. Thaw first.
14. Operate in well ventilated areas only.
15. **DO NOT** fill the fuel tank while engine is running or hot
16. **DO NOT** try to repair a leak in the hose or connection while the system is under pressure.
17. **DO NOT** substitute any component part on this machine. Use of incorrect parts could cause serious personal injury.
18. Children must **NOT** be allowed to use the machine.
19. **Always use safety goggles** and steel cap boots when using the machine.

**SPECIFICATIONS**

Model	Stock code	Engine	Pump Model	Pump Pressure (psi)	Flow rate (lpm)	Pump rpm
Raptor 16	ABSSRAP/VAN16L	Vanguard 31HP	RA1650	7,300 PSI	16	1450
Raptor 18	ABSSRAP/VAN18L	Vanguard 35HP	RA1850	7,300 PSI	18	1450



Note: Certification of the operator is mandatory for Class B machines ... refer to AS/NZS4233.1.

AS/NZS4233.1

**CLASS B
machine**Refer standard
for more details

ASSEMBLY AND PREPARATION FOR USE

Before proceeding with assembly of your new Aussie Eco Raptor high pressure blaster, check that all parts listed below are included.

- 1 x 500 bar gun lance assembly
- 1 x 500 bar high pressure hose
- 1 x high pressure hose restraint
- 1 x 500 bar protective apron



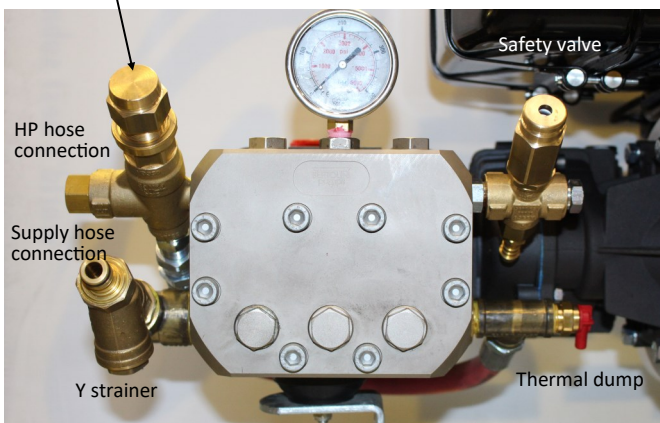
Gun/hose/restraint Set Up:

- Slide hose protector over the hose end.
- Screw on the hose to gun nipple
- Attach restraint to attachment plate



Aussie Safety Protection Kit

Unloader - factory set, DO NOT adjust



A. Machine Preparation (initial start-up)

1. Check the oil in the pump and gearbox. Note separate reservoirs. With the machine on a level surface the oil level should cover the red spot in the oil level sight glass on the side of the machine. If necessary, top up pump with SAE 75W-90. Do not mix different grades of oil as this may affect the machines performance. If alternative oil is used, first empty out oil by unscrewing drain plug in bottom of machine.



2. Ensure breather plug is fitted to pump. **WARNING:** Before operation ensure top mounted travel plug is replaced by breather plug. Failure to fit breather and keep clean can result in over pressuring of oil chamber (crank case) and can blow oil seals. This will void warranty.
3. Note that the gearbox has a separate oil reservoir. Gearbox oil is SAE 90 gear oil.
4. Connect battery leads .



5. Check oil level in engine, check engine manual for details of oil to use.
6. Check fuel level and fill if necessary. (unleaded petrol)

UNLOADER SETTING

The high pressure unloader on the machine is factory set to operate the pump at it's rated pressure.

DO NOT ADJUST. Tampering with the unloader will void warranty and can be dangerous.

B. Hose Connections

1. Connect high pressure hose to machine outlet.
2. Connect gun/lance assembly to high pressure hose. Use hose shroud to cover the coupling.

NOTE: Safety Standard AS/NZS 4233.1 requires a hose restraint to be used on coupling between gun and hose on Class B machines.

3. Check inlet water filter is clean then connect water supply hose to machine. Use a 25mm (minimum) hose. Flush out hose before connecting to remove any obstructions.

Incoming water supply must deliver double the flow of the machine. If questionable, check supply at machine. If supply is insufficient, do not operate from this outlet. For residential use, the outlet closest to the meter will usually deliver the highest flow rate. Connect only to clean town water supply.



Warning: Do not operate from tank or pond. Doing so will cavitate the pump causing damage. Cavitation or pump starvation is not covered by warranty. Cavitation is a phenomenon causing vacuum pockets to form within the pump that eventually implode under pressure pitting the internal pump surfaces.

C. Before starting the machine

OPERATE IN WELL VENTILATED AREAS **ONLY**.

1. Ensure machine is level
2. Turn on water supply.

D. Starting the engine

1. Check the emergency stop button has been reset.
2. Hold the gun trigger on.



3. Turn key through first to second position.
4. After engine starts, release the gun trigger.
5. Warm up engine for 3 minutes without load.

KEEP THE MACHINE OUT OF MOISTURE LADEN ATMOSPHERES

NOTE: Check the system for water leaks, fuel leaks, oil leaks, hose kinks, etc. Correct any problems before proceeding.

G. Stopping the machine

1. Allow machine to run for 1 minute without load to cool before stopping.
2. Turn engine key to OFF
3. This blaster is fitted with an emergency stop button. After activation, turn engine key to off and reset stop button by rotating until it pops out.
4. Battery isolator can be locked off to prevent blaster from operating.
5. Turn off water supply.
6. Pull gun trigger to release all pressure in the system, then LOCK THE TRIGGER.
7. Hoses may now be disconnected from the machine.

Emergency Stop Button



All Class B machines are fitted with a mandatory emergency stop, as per safety standard AS/NZS4233.1.

This should only be used in an emergency.

Australian Pump recommends de-throttling the engine and running with no load before shutting off the engine by turning the key.

If the emergency stop button has been used, it will need to be reset before the engine will start again. To reset, turn the button clockwise.

WARNING Immediately after activating the E-stop turn the ignition key to the OFF position. **Failure to do so could result in a flat battery and shortened battery life.**



Failure to release pressure before disconnecting the hose quick coupler will result in the quick coupler o-ring seal blowing out. This o-ring must be replaced before operating machine.

CARE AND MAINTENANCE:

AFTER EACH USE

If cleaning agents have been mixed with the incoming water, it is essential to flush the machine with clean water after use.

If there is a danger of freezing anti-freeze should be mixed with the flush water or the machine must be completely drained.

After the final flush stop the machine. DO NOT allow the machine to idle for more than 15 seconds. This is particularly important when there is a danger of freezing. Do not run for longer without water supply.

STORAGE

Store the washer in an upright position, preferably drained of water if there is a danger of freezing (or fill with anti-freeze).

PUMP CRANKCASE LUBRICATION

Proper pressure washer pump crankcase lubrication will help extend the working life of the machine. Follow these important guidelines. We recommend keeping a simple service log book.

- ♦ Change pump oil every 40 hours of use high quality oil. (SAE 75W-90)
- ♦ Pump oil level can be checked with the dip stick under the breather cap or by viewing the oil sight gauge where fitted. The oil level is correct if level is

in the centre of the gauge. If oil level is low, fill to correct level with recommended oil (SAE 75W-90). **DO NOT OVERFILL CRANKCASE!**

- ♦ Replace oil in gearbox (separate chamber) with SAE 90 gear oil every three months.

PREVENTATIVE MAINTENANCE

- ♦ **Rinse filter** in supply hose connection regularly.
- ♦ **Use correct size nozzles** for machine and replace when worn, check serial tag for correct size.
- ♦ **Drain water** from pressure hoses, gun/lance assembly and accessories after use.
- ♦ **Protect pump from freezing.** Failure to remove water from the pump in freezing temperatures will result in damaged pump manifold.
- ♦ Use ONLY injector of the size and type designed for this model.
- ♦ **DO NOT** tamper with unloader valve adjustment or alter engine speed.
- ♦ **DO NOT** siphon chemicals through the pump, it is designed for water only.
- ♦ Incoming water supply must not exceed 60°C, otherwise pumps seal damage could result
- ♦ Follow engine manufactures guidelines for engine maintenance. (see engine manual)



DO NOT RUN EXCESSIVE BY-PASS

SWITCH MACHINE OFF WITHIN TWO MINUTES OF CEASING OPERATION AS EXCESSIVE BY-PASS CAN CAUSE HEAT BUILD UP IN PUMP AND SUBSEQUENT DAMAGE.

EXCESSIVE BY PASS RUNNING VOIDS WARRANTY!!



HIGH PRESSURE SPRAY CAN PENETRATE THE SKIN & CAUSE SERIOUS INJURY!

Never point the spray gun at yourself, other people or animals.

Should the spray penetrate the skin **SEEK MEDICAL ATTENTION IMMEDIATELY!**



WARNING: CHECK NOZZLES AND REPLACE IF WORN

If pressure drops off, check nozzle for wear. Nozzles should be replaced every 40 hours. Using the machine with the incorrect nozzle size or worn nozzle will void warranty and can be dangerous to the operator.

AUSSIE GRIT BLAST INSTRUCTIONS (optional accessory)

WARNING: To reduce the risk of injury, always protect eyes and face with safety glasses and mask, and hands and arms with heavy work gloves when spraying abrasive materials.

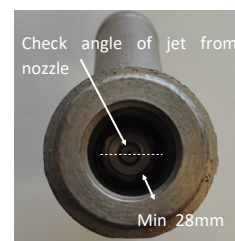
1. Fit grit blast gun/lance kit at end of high pressure hose, in place of normal gun/lance assembly.
2. Lodge sand probe into sand bag. Note the sand must be dry.
3. Connect and open the water supply line to the blaster before starting the pressure washer.
4. Squeeze the gun trigger to bleed air as normal keeping the tip of the gun pointing down.
5. Turn on the pressure washer and squeeze the gun trigger to activate the spray.
CAUTION: Always test spray on a scrap of similar material first! The high pressure spray could damage the surface if the grit blaster is held too close.
6. To determine best distance for grit blasting, start with the spray nozzle a metre away from the surface and gradually move closer, frequently checking the surface for damage.
7. Always point the nozzle downward when not spraying. This prevents water from entering the sand supply. If water does get into the sand supply hose, remove the probe from the sand, hold the gun trigger open, and let the hose air dry. Always be sure the sand hose is dry before using.
8. Keep the sand covered to prevent the overspray from wetting the sand. Do not allow small pieces of the sand bag to fall into the sand supply as they could prevent the flow of sand.



GRIT BLAST HEAD SET UP INSTRUCTIONS



1. Unwind the tail coupling and remove top of the blast head. Screw in the nozzle to the tail.
2. Replace the tail and ensure that the tip of the nozzle is a minimum of 28mm from leading edge of body and a maximum of 36mm. The fan spray from the nozzle should be perpendicular to the sand intake tail. Mark the top side of the hexagonal coupling for reference.
3. Line up the dimple in the ceramic nozzle perfectly with the sand intake tail and hold in place with the holder. Screw down the head locking nut.
4. The fan produced by the two nozzles must be aligned.
5. Connect grit blast head to hp gun/lance and activate the gun with the high pressure blaster running. Check the fan jet leaving the nozzle is the full width of the slot. Adjust by rotating hexagonal tail coupling, ensuring that the marked side of the tail always finishes on top.
6. With the high pressure washer turned off, connect the sand hose to the sand intake tail and secure with hose clips.





TROUBLE SHOOTING GUIDE (for engine troubleshooting refer to engine manual)

FAULT	CAUSE	REMEDY
Pump running normally but pressure low on installation	Pump sucking air Valves sticking Unloader valve seat faulty Nozzle incorrectly sized Worn piston packing	Check water supply & possibility of air ingress. Check & clean or replace if necessary Check & replace Check & replace Check & replace
Fluctuating Pressure	Valves worn Valves blocked Pump sucking air Worn piston packing	Check & replace Check & replace Check water supply & air ingress at joints in suction line Check & replace
Pressure low after period of normal use	Nozzle worn Check valves worn Check valves blocked Unloader valve seat worn Worn piston packing Pistons cracked as a result of dry running	Check & replace Check & replace Check & clean Check & replace Check & replace Replace pistons
Pump Noisy	Air in suction Broken or weak suction or delivery valve spring Foreign matter in valves Worn bearing Excessive temperature of liquid	Check water supply & connections on suction line Check & replace Check & clean Check & replace Reduce temperature
Presence of water in oil	Oil seal worn High humidity in air Piston packing worn	Check & replace Check & change oil twice as often Check & replace
Water dripping below pump	Safety valve activated due to pressure spike Thermal dump activated Piston packing worn O.R plunger retainer worn	Reset safety valve (see page 11), if it keeps activating replace unloader Activates if water temperature exceeds 60°C. Should self reset once water in pump cools. If not, replace Check & replace Check & replace
Oil Dripping	Travel plug in use on pump Oil seal worn	Replace with breather plug Check & replace if necessary
Unloader switches repeatedly when gun is off	Leaking gun &/or pressure pipe. Leaky sleeve Worn out kick-back valve body Leaky seals	Renew gun, seal pressure pipe Renew sleeve Check & renew as necessary kick-back valve plate & seat Renew seals
Leaky piston rod	Defective O-Ring/Support Ring	Renew piston rod seals & examine surfaces in guide case
Leaky by-pass at nominal pressure	Nozzle too small, too much water. Worn out by-pass valves	Install larger nozzle Examine & renew as necessary
Pressure gauge shows high pressure fluctuations when shutting off gun	Valve set too high above operating pressure Dirty valve	Adjust the unloader at the operating pressure. Clean valve (removing lime deposits etc). Grease parts before installing.
Pressure in supply line when running on by-pass	Dirty or worn low pressure valves	Remove & clean or replace low pressure valves
Engine will not start	Out of fuel Engine defect	Fill tank with petrol/diesel Return to engine service agent

Personal Protective Equipment ... STAY SAFE

Appropriate personal protective equipment should be worn where:

- hazards cannot be otherwise prevented or suitably controlled, e.g. by engineering or administration controls, total enclosure or substitution; and/or
- complete protection is essential, e.g. in some occupational environments with uncertain levels of hazards.

The provision and use of personal protective equipment does not reduce or replace the need for proper Occupational Health and Safety prevention measures, such as engineering or administrative controls to be undertaken. Recommendations of such preventative measures should always be fully explored before considering issue of personal protective equipment. Where personal protective equipment is issued, instruction and training should be provided regarding its correct use and maintenance.

■ Head Protection.

Where appropriate suitable head protection complying with AS/NZS 1801 should be worn.

■ Eye Protection.

Eye protection complying with AS/NZS 1337 (adequate for the purpose and of adequate fit on the person) should be worn at all times when in the vicinity of water blasting operations. Where liquid is liable to cause eye damage, full visor and goggles are recommended.

■ Body Protection.

All persons should wear suitable waterproof clothing complying with AS/NZS 3765.1 (or AS/NZS 3765.2 if working with hazardous chemicals), having regard to the type of work being undertaken. Liquid or chemical-resistant suits should be worn where there is an assessed risk to health or of injury that can be prevented by such equipment.

■ Hand Protection.

Adequate hand protection complying with the recommendation/s of AS/NZS 2161.2, AS/NZS 2161.3 or AS/NZS 2161.5 should be worn when there is an assessed risk of injury that can be prevented by such equipment.

■ Foot Protection.

All persons should wear appropriate occupational protective footwear complying with AS/NZS 2210.2. A lower leg guard should be used by water blasting operators where it is assessed that the risk of foot injury could be prevented by such equipment. AS/NZS 2210.1 provides guidance for the selection of footwear.

■ Hearing Protection.

Suitable hearing protection complying with AS/NZS 1270 should be worn at all times when the noise levels exceed limits set by regulatory authorities.

Comfort, function & Safety ... at an affordable price

Aussie Pumps supply a full range of personal safety protection gear rated to 500 BAR (7,300 psi)... call for details or check online ... www.aussiepumps.com.au



OPERATOR'S HAND SIGNALS

This section provides a set of hand signals for communication when carrying out water jetting operations.

Pressurise System

Thumb pointing upwards, the rest of the hand closed. From the shoulder height the arm moves up and down.



Depressurise System.

Form a fist. Move the arm back and forth at shoulder height.



Raise Pressure.

First finger pointing up, the rest of the hand closed. The hand is moved in a circular motion.



Lower Pressure.

First finger pointing down, the rest of the hand closed. The hand is moved in a circular motion.



Medical Recommendation.

If an accident occurs where pressurised water penetrates or appears to have penetrated the skin, medical assistance should be sought immediately.

Immediate First Aid.

Where medical examination is not immediately possible (e.g. in remote situations), appropriate basic first aid measures should be applied and the patient observed closely until medical treatment is available.

Medical Alert Card.

All operators engaged in commercial and industrial water blasting operations should carry out an immediately accessible, waterproof medical alert card. This card should:

- outline the possible nature of injuries and post-accident infections that can be caused by high pressure water blasting;
- provide details of immediate first-aid treatment until medical treatment can be arranged; and
- provide the name or names of medicos (and contact phone numbers) who should be contacted for expert medical advice for the treatment of high pressure water blasting injuries.

In addition, the card may also:

- identify the worker; and
- outline medical information about the worker; e.g. blood type, allergies and conditions, such as asthma.

ACCIDENT REPORTING

Reporting.

All accidents or injuries, whether resulting in "lost time" or "no lost time" injuries, should be recorded in accordance with the recommendations of AS 1885.1.

Incidents that result in "near misses" should also be recorded as a means of providing a record of significant incidents that have the potential to result in serious injury at the workplace, so appropriate measures can be implemented to minimise or eliminate these potential hazards.

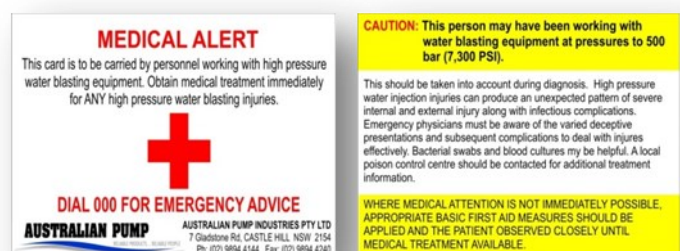
Personal Injuries.

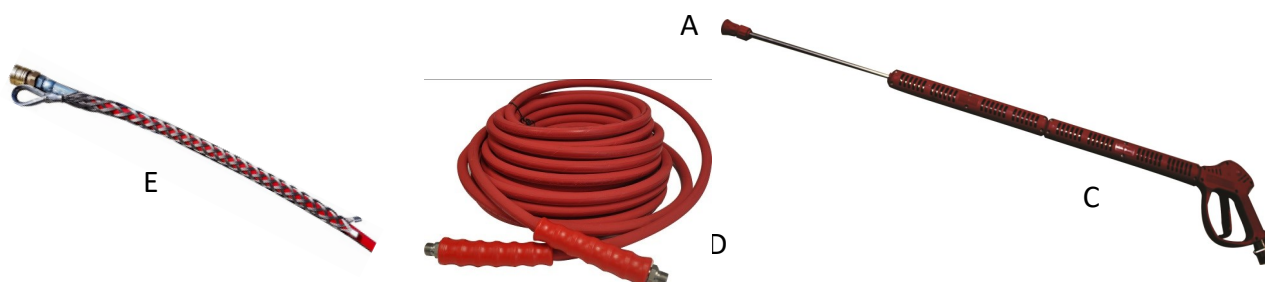
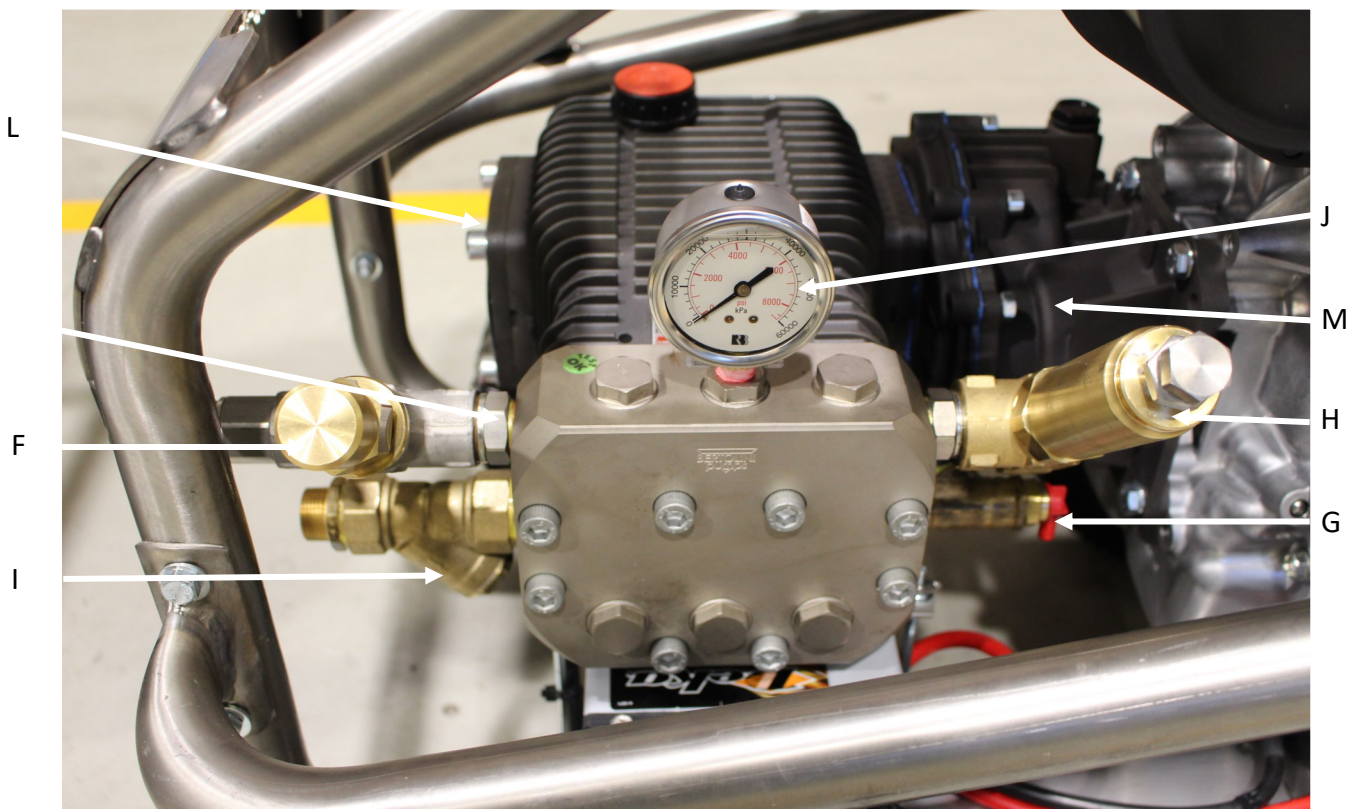
In the event that a person is injured by the impact of a water jet, the injury caused may appear insignificant and give little indication of the extent of the injury beneath the skin and the damage to deeper tissues. Although only a small hole may be present, quantities of water may have penetrated the skin and entered the flesh and organs causing serious injury.

EMERGENCY MEDICAL INFORMATION

Immediate hospital attention should be given to personnel who sustain equipment related injuries while operating the system. In such cases, it is vital that medical personnel be apprised of all facts relevant to such injuries.

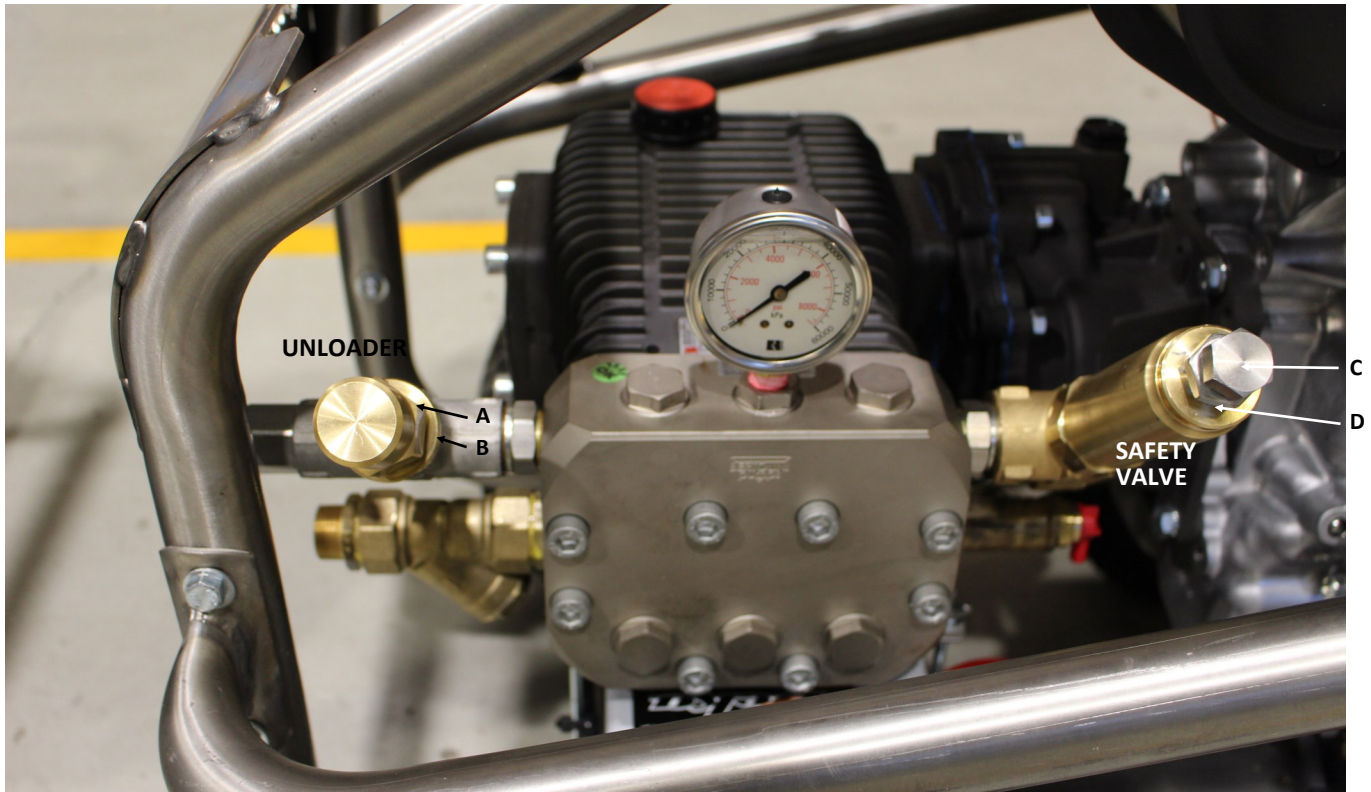
Therefore, all operating personnel should be provided with waterproof emergency medical tags or cards describing the nature of their work and the possibility of injury inherent in the use of a water blasting device. The tag or card should also bear the following standard notice:



PARTS IDENTIFICATION & REPLACEMENT PARTS

Position	Part No	Description	Raptor 16	Raptor 18
Nozzles				
A	M0124006210	HP CERAMIC TIP NOZZLE (15°ANGLE, TIP SIZE 030)	x	x
Gun/lance				
C	MPA30473000	500 BAR GUN LANCE ASSEMBLY	x	x
Hose & Restraint				
D	A3641443109	10 MTR HP HOSE (500 BAR)	x	x
E	AD HRSS10	HOSE RESTRAINT	x	x
Unloader				
F	BVB53	UNLOADER VALVE (8000 PSI)	x	x
Thermal Dump Valve				
G	MPA60063070	1/2" THERMAL DUMP VALVE	x	x
Safety Valves				
H	MPA60520000	VS500 SAFETY VALVE	x	x
Inlet Strainer				
I	AYSTRAINER1"	BRASS STRAINER 1"	x	x
Gauge				
J	AGAUGE600BAR	600 BAR GAUGE	x	x
Pump				
L	BRA1650	BERTOLINI PUMP (7,200 PSI, 16 LPM)	x	
	BRA1850	BERTOLINI PUMP (7,200 PSI, 18 LPM)		x
Gearbox				
M	B318880973	GEARBOX (30mm)	x	x
Wheel				
	A400016	STEEL WHEEL WITH PNEUMATIC TYRE	x	x
Engine Mounts				
	AENGMountBB300	ENGINE MOUNTS (4 NEEDED)	x	x

Resetting the Safety Valve ... ONLY TO BE CARRIED OUT BY QUALIFIED SERVICE TECHNICIAN

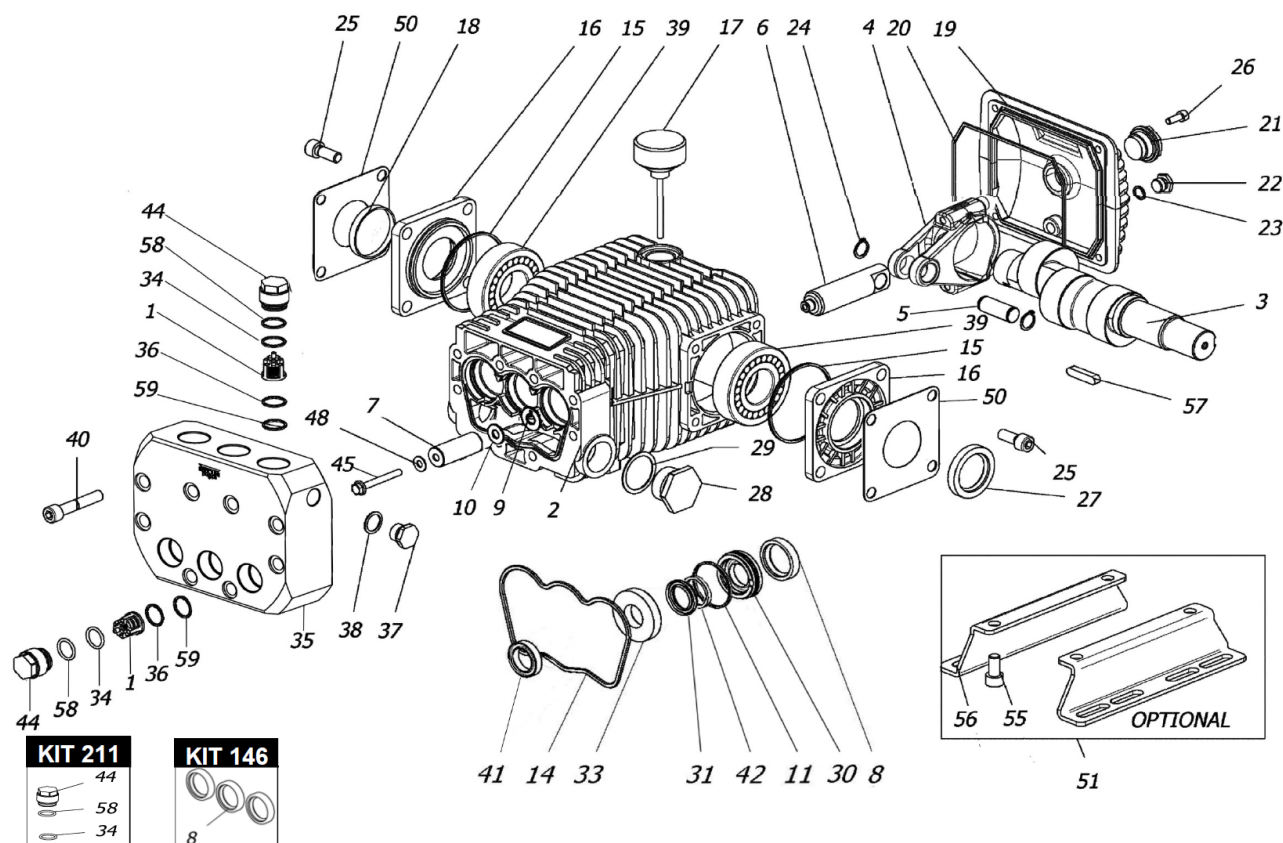


The **safety valve** prevents damage to the pump seals and valves caused by a pressure spike.

The safety valve should only be reset after checks to ensure the unloader valve is working correctly. **If in doubt contact, your nearest Aussie Eco-clean service centre.**

The following steps should be taken to reset the safety valve, with the unit running.

1. Unscrew the lock nut (C) on the safety valve and the adjusting the hex knob (D), it should be screwed in all the way.
2. Loosen the lock nut (B) on the unloader and wind the unloader knob (A) in gradually until the required pressure is obtained whilst the trigger is pulled and water is running through the pump. Do not exceed the maximum rated pressure of the pump.
3. The lock nut (B) should then be wound up to meet the adjusting nut. The small grub screw in the locking ring should be screwed in to secure.
4. Paint mark across the nut and knob to identify any tampering with the setting.
5. With the pump running at the required pressure, the adjusting screw (D) on the safety valve should be wound out until there is a slight drip. Screw it in one quarter of a turn, or until the drip stops, this will set the safety valve 10% over the required pressure. The lock nut (C) should then be locked off. Paint mark to identify any tampering.
6. Repeat running with the trigger open and then closed two or three times to ensure safety valve doesn't blow off pressure.
7. If safety valve continues to trip contact your nearest Aussie Eco-clean service centre.

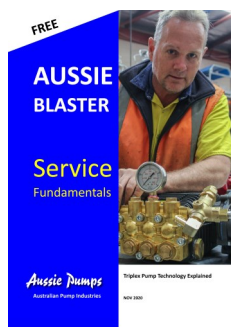
PUMP PARTS RA1650, RA1850 PREMIUM SERIES

KIT 277	KIT 276	KIT 209	KIT 210

Order the right part first time ...
specify the pump model number when ordering parts.

Full parts breakdowns available online ... www.aussiepumps.com.au

s/code	Description	Pieces
BKIT210	Oil Seal & Sight Glass Kit	10
BKIT209	Valve Kit	18
BKIT277	Seal Kit Minor	13
BKIT276	Seal Kit Major	19
BKIT146	Oil Seal Kit	3
BKIT211	Valve Cap Kit	12
B080070182	Ceramic pistons 20mm	3



BERTOLINI®
pumps
4 year warranty



WARNINGS

OVERSPEEDING

Do not operate machine at over 3200 rpm (engine speed). Over speeding can cause serious pump damage.

HIGH PRESSURE SETTING

The high pressure pump is factory set to operate at its rated pressure. DO NOT ADJUST. Tampering with the pressure regulator will void warranty and can be DANGEROUS.

EXCESSIVE BYPASS

Do not run on excessive by-pass. Switch machine off within five minutes of ceasing operation as excessive by-pass can cause heat build up in pump and subsequent damage. Excessive bypass running voids warranty.

CHECK NOZZLE MONTHLY

If pressure drops off check nozzle for wear. Nozzles should be replaced on a regular basis (every month for machines in regular use, every three months for machines used intermittently). Using the machine with the incorrect nozzle size or worn nozzle will void warranty and can be DANGEROUS to the operator.

PRESSURE CLEANER DAILY CHECKLIST

1. Check pump & gearbox oil level
2. Check engine oil level
3. Check nozzle for wear
4. Check all high pressure components for leaks, damage, wear or corrosion.
 - a. gun/lance
 - b. High pressure hose
 - c. all fittings
5. Check water filter and clean regularly
6. Check unloader, safety valve and thermal dump for leaks



THREE MONTHLY REGULAR SERVICE

All professional machines need to be thoroughly serviced every three months. Use an approved and qualified Aussie service agent. The service should include the engine manufacturer's recommendations (see separate Engine Manual) and the following:

1. Change pump & gearbox oil
2. Check filter for foreign debris
3. Check unloader, safety valve and thermal dump for leaks
4. Check all HP components for leaks: Gun/lance, HP hose and all fittings
5. Replace nozzles
6. Check gearbox to engine key for wear, and replace as required. NB Damage generated by worn keys is not covered by warranty.



BEWARE of abrasions on hose and replace if damaged
... **STAY SAFE**

SERVICE ADJUSTMENTS

Note only qualified approved technicians should carry out adjustments or major service work on these pumps.



Australian Pump Industries Pty Ltd

7 Gladstone Road, Castle Hill NSW 2154

Ph: (02) 8865 3500 Fax: (02) 9894 4240

www.aussiepumps.com.au info@aussiepumps.com.au