



SHERMAC

Engineered Equipment
Transitions

RS1500 / RS2000 OPERATORS MANUAL



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Introduction and General

The purpose of this Instruction Manual is to provide the necessary information to familiarise the owner with the equipment. Correct instruction and training of responsible operators in the applicable safety precautions, operating instructions and maintenance procedures will ensure many years of reliable and dependable service under demanding conditions, if adhered to.

This Instruction Manual must be read in conjunction with the specific Proprietary Components and Operators Manuals prior to the equipment being placed in service.

Shermac is hereinafter referred to as the manufacturer, and the purchaser of the equipment as the owner or original user.

Manufacturer's Warranty

This warranty is to be read in conjunction with Shermac's warranty policy PM 03. The manufacturer's warrant that, subject to the conditions specified below, the service trailer supplied is free from any defect in material and manufacture, under normal use and service.

The manufacturer's obligations under this Warranty are limited to correcting without charge at its factory or by one of its authorised dealers, with the manufacturer's approval, any parts thereof within 12 months from the date of purchase by the original user, and which upon examination prove to the manufacturer's satisfaction, to have been originally defective.

Correction of such defects by repair to, or supplying of replacements for the defective parts, shall constitute fulfilment of all obligations toward the original user. The manufacturer shall not be liable for any consequential loss or expenses, damage or injury arising directly or indirectly from the use of its equipment, or from any other cause whatever. Defective parts shall be returned freight paid by the original user to the manufacturer.

This warranty shall not apply to any parts requiring replacement because of normal wear and tear, or which have been subject to misuse or abuse, negligence or accident, or which have been repaired or altered other than at manufacturer's factory, unless authorised by the manufacturer. This warranty shall not be construed as a free facility during the warranty period.

No person or company, agent or dealer is authorised to give any other warranties on behalf of the manufacturer, or to assume any other liability for the manufacture in connection with any of its equipment.

Safety Precautions

Safety is primary importance to the owner and operator, manufacturer and dealer of the Multiserve series service trailer. In accordance with the Occupational Health and Safety Act and Regulations, the manufacturer has constructed the equipment to reduce as far as is practicable, exposure of the operator to possible risks and hazards associated with operation and maintenance.

Safe operation and maintenance of the equipment are the sole responsibility of the owner and operator and the onus is upon them to take every reasonable care, and implement all necessary measures to ensure their own safety and that of others. Failure to adhere to the instructions and precautions, misuse or damage to the equipment, and modification or alteration to the design or components, will invalidate the manufacturer's warranty.

Compliance with the following safety precautions is mandatory.

- Minimum age limit for operation by responsible person is 18 years. Driving of this vehicle must be by persons of eligible age with an adequate licence to drive this vehicle.
- Children are strictly not permitted on service trailer or in immediate vicinity during operation and maintenance, or any other time.
- No other persons except those that have a seatbelt provided within towing vehicle cabin are permitted on or in service trailer during operation.
- Ensure that all road wheels have equal tyre pressures as specified.
- Never leave service trailer unattended while in operation.
- Never use access ladders while equipment is in motion, and exercise caution at all other times when climbing.
- It is the owner's responsibility to ensure towing vehicle size is adequate.

Warning Signs

The owner and operator must be aware at all times of potential hazards, and the location of warning signs as indicated below. Safety decals must be kept in good readable condition and replaced if necessary.

Operating Instructions

Operator of the equipment is limited to responsible persons instructed and trained in the use of the equipment, and who have carefully read and understood the safety precautions, operating instructions and maintenance procedures applicable to the specific truck. Working with unfamiliar equipment can lead to accidents, resulting in harm or injury.

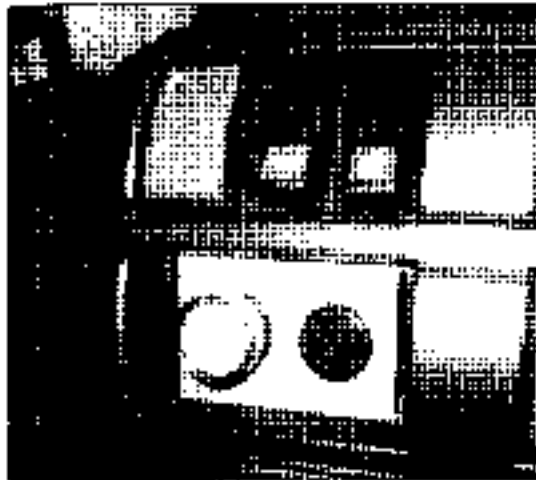
As standard practice the equipment is delivered by the manufacturer or dealer to the owner, fully assembled and adjusted, lubricated and ready for use.

WARNING! – Do not engage PTO with engine exceeding 1000rpm. PTO may be engaged while truck is moving.

WARNING!! Do not water run pump without sufficient water in the tank.

Note: All functions will only work when ignition key is in the on position.

Control Switches Located in Truck Cabin



Function Switches



System Control Panel

Operation Of Tank Ports

Function	Valve 1	Valve 2	Valve 3	Valve 4	Valve 5
Fill tank via connection point 1 from pressure fed source	Open	Closed	Closed	N/a	Closed
Fill tank via connection point 2 from pressure fed source	Closed	Open	Closed	N/a	Closed
Fill tank via pump (attach supply hose to connection point 1)	Closed	Open	Closed	N/a	Closed
Fill tank via connection point 3 from pressure fed source	N/a	Closed	Open	N/a	Closed
Out load via pump (attach delivery hose to connection point 2)	Open	Closed	Closed	N/a	Closed
Draw from tank via connection point 1	Open	Closed	Closed	N/a	Closed
Outload from tank via connection point 4	Open	Closed	Closed	N/a	Open
Operation of hose reel	Open	Closed	Closed	Open	Closed



- CONNECTION POINT 2
- VALVE 2
- CONNECTION POINT 1
- VALVE 1



- VALVE 3
- CONNECTION POINT 3

- VALVE 4
- VALVE 5
- CONNECTION POINT 4

Water Tank Drain Point



Water tank drain point location

Maintenance Procedures

Routine maintenance of the Roadserve Water Cart must only be undertaken by a qualified persons instructed and trained in the use of the equipment, and who have carefully read and understood the maintenance procedures, recommended lubricants and replacement parts. Failure to implement a proper maintenance programme can not only lead to component damage or failure, but also cause accidents and injury to operators and other persons.

Regular maintenance of each component in good working order will ensure many years of trouble-free service of your water cart, if adhered to. It is imperative that the correct standard of special tools are utilised for each dismantling, adjustment or assembly procedure. Also that the correct specification and grade oils, greases and other lubricants are stocked and used. Worn or damaged propriety equipment or components must only be replaced with recommended genuine parts. All proprietary and fabricated components are readily available from the manufacturer for replacement parts or spare stock – holding purposes.

Visual inspection of all moving parts, safety guard and protection covers must be done daily prior to commencing operations, and any missing, damaged or worn components replaced.

MAINTENANCE ITEMS

Check hydraulic oil level

(Ensure oil level is in between upper and lower level windows.)



Oil level indicator

Replace hydraulic oil & filter
(Remove breather from fill port to add oil.)

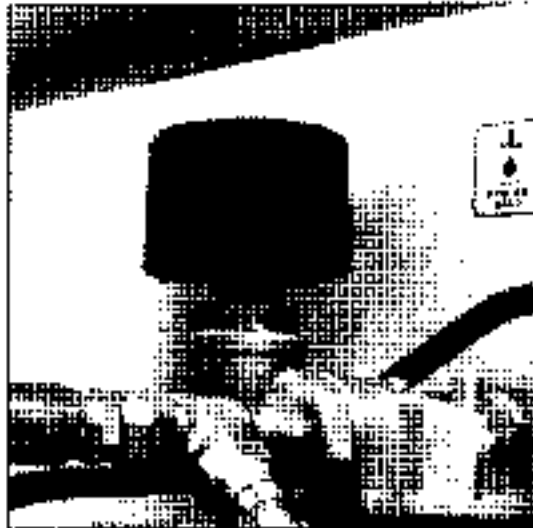
SERVICE INTERVALS

Daily



Oil tank drain point

Annually



Oil tank fill point

Check all bolt tensions

250 Hours

Check tank mounting bolt tension
(Tension spring to 70mm as per diagram)

250 Hours

Mounting bolt tension

Recommended Lubricants

Use 68 grade viscosity hydraulic oil – 190 litres.

Product Support

In order for a claim to be processed, the following details are required;

- 1.1.1. Serial number of the product (refer to image below).
- 1.1.2. Best contact person for Shermac service person to communicate with.
- 1.1.3. Phone number for best contact person.
- 1.1.4. Email address for best contact person.
- 1.1.5. Delivery address, carrier name and account number to ship parts etc. to.
- 1.1.6. As much detail as possible about the fault (Photos etc.).

For express response to the issue, claims or complaints including the details above can be submitted by any of the methods below;

Online: <http://www.shermac.com.au/product-support/>

Email: support@shermac.com.au

Facsimile: +61 8 96612300

Phone: 1300 799 943 (Australia)
+61 8 9661 2330 (International)

It is recommended that photographs are used wherever possible in lieu of lengthy written statements to describe failures or problems. Photographs/sketches can be uploaded to the support portal on the website, or emailed to the above address.

Serial Number Location



Shermac Group Pty Ltd
15 Deacon Street
Dalwallinu
Western Australia
6609
Ph: 1300 799 943
Int Ph: +61 8 9661 2330
Email: support@shermac.com.au
Web: www.shermac.com.au



SHERMAC

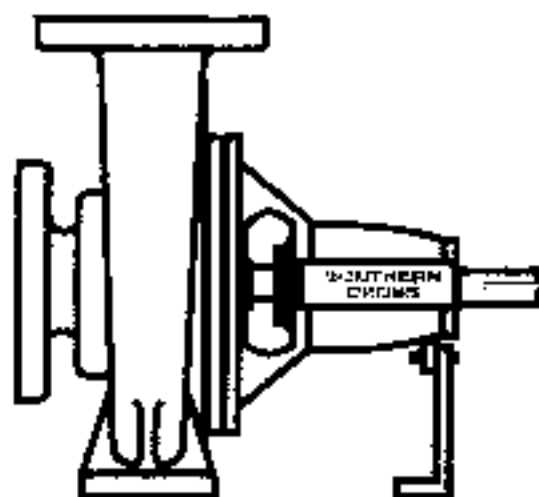
Engineered Equipment
Transitions

SOUTHERN CROSS ISO PUMP MANUAL

PART NO.0334 0002

INSTALLATION
AND
OPERATING INSTRUCTIONS
FOR
SOUTHERN CROSS

SO
Overseign
PUMPS



Southern Cross

LOW FLOW CONSUMPTION TOO HIGH

1. Tighten and replace the pump head using high pressure water.
2. Repair the pump head seal or replace the head seal with a new one.
3. Check the pump head seal.
4. Check the pump head seal.
5. Check the pump head seal.
6. Check the pump head seal.

EXCESSIVE VIBRATION

1. Adjust the pump head.
2. Tighten the pump head seal.
3. Check the pump head seal.
4. Check the pump head seal.
5. Check the pump head seal.

EXCESSIVE WEAR AND TEAR OF PUMP

1. Check the pump head seal.
2. Check the pump head seal.
3. Check the pump head seal.

NOISY OPERATION

1. Check the pump head seal.
2. Check the pump head seal.
3. Check the pump head seal.
4. Check the pump head seal.
5. Check the pump head seal.

DISMANTLING PROCEDURE

NOTE: Always use eye protection when working with pump parts. Always use the proper disassembly procedure to avoid injury.

1. Use the correct disassembly procedure to avoid injury.
2. Use the correct disassembly procedure to avoid injury.

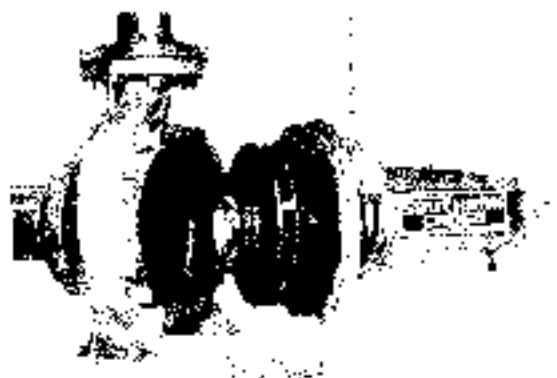


Fig. 10-10

1. Use the correct disassembly procedure to avoid injury.
2. Use the correct disassembly procedure to avoid injury.



Fig. 10-11

3. Use the correct disassembly procedure to avoid injury.
4. Use the correct disassembly procedure to avoid injury.

NOTE: Always use eye protection when working with pump parts. Always use the proper disassembly procedure to avoid injury.

1. Use the correct disassembly procedure to avoid injury.
2. Use the correct disassembly procedure to avoid injury.
3. Use the correct disassembly procedure to avoid injury.



Always use eye protection when working with pump parts. Always use the proper disassembly procedure to avoid injury.

RE ASSEMBLY PROCEDURE

Always use eye protection when working with pump parts. Always use the proper disassembly procedure to avoid injury.

1. Use the correct disassembly procedure to avoid injury.
2. Use the correct disassembly procedure to avoid injury.

NOTE: Always use eye protection when working with pump parts. Always use the proper disassembly procedure to avoid injury.

1. Use the correct disassembly procedure to avoid injury.
2. Use the correct disassembly procedure to avoid injury.
3. Use the correct disassembly procedure to avoid injury.
4. Use the correct disassembly procedure to avoid injury.
5. Use the correct disassembly procedure to avoid injury.

SHANNER SIZES AND RECOMMENDED TORQUES

No. 1 SHAFT MODULE

1.25" (31.75 mm) shaft diameter
 1.25" (31.75 mm) shaft length
 1.25" (31.75 mm) shaft diameter
 1.25" (31.75 mm) shaft diameter

No. 2 SHAFT MODULE

1.5" (38.1 mm) shaft diameter
 1.5" (38.1 mm) shaft length
 1.5" (38.1 mm) shaft diameter
 1.5" (38.1 mm) shaft diameter

No. 3 SHAFT MODULE

1.75" (44.45 mm) shaft diameter
 1.75" (44.45 mm) shaft length
 1.75" (44.45 mm) shaft diameter
 1.75" (44.45 mm) shaft diameter

No. 4 SHAFT MODULE

2.0" (50.8 mm) shaft diameter
 2.0" (50.8 mm) shaft length
 2.0" (50.8 mm) shaft diameter
 2.0" (50.8 mm) shaft diameter

ORDERING PARTS

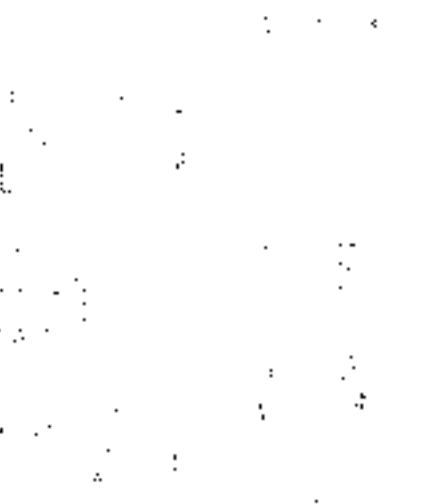
Ordering parts for the pump is simple. Just specify the pump size, the shaft size, the impeller diameter, the motor horsepower, and the motor voltage. For example, a No. 1 shaft pump with a 1.25" shaft, a 1.25" impeller, a 1/2 HP motor, and a 240V motor would be ordered as follows: 1.25" shaft, 1.25" impeller, 1/2 HP, 240V.

SOUTHERN CROSS	
SERIAL No.	12345678
SIZE	1.25" (31.75 mm)
IMPELLER DIAM mm	125
MODEL	CONSTRUCTION CODE
Q	1
P	1

WARRANTY

Warranty on the pump is 1 year. The pump is warranted to be free from defects in material and workmanship under normal use and service. The warranty is void if the pump is used for any purpose other than that for which it was designed.

Nos. 1, 2 and 3 SHAFT PUMP



No. 4 SHAFT PUMP



ITEM NO.	DESCRIPTION	QTY	LOCATION	ITEM NO.	DESCRIPTION
1	Impeller	1	1	1	Impeller
2	Shaft	1	1	2	Shaft
3	Pump Housing	1	1	3	Pump Housing
4	Motor	1	1	4	Motor
5	Motor Mounting Bracket	1	1	5	Motor Mounting Bracket
6	Motor Mounting Bolt	1	1	6	Motor Mounting Bolt
7	Motor Mounting Nut	1	1	7	Motor Mounting Nut
8	Motor Mounting Washer	1	1	8	Motor Mounting Washer
9	Motor Mounting Spacer	1	1	9	Motor Mounting Spacer
10	Motor Mounting Lock Washer	1	1	10	Motor Mounting Lock Washer
11	Motor Mounting Lock Nut	1	1	11	Motor Mounting Lock Nut
12	Motor Mounting Bolt	1	1	12	Motor Mounting Bolt
13	Motor Mounting Nut	1	1	13	Motor Mounting Nut
14	Motor Mounting Washer	1	1	14	Motor Mounting Washer
15	Motor Mounting Spacer	1	1	15	Motor Mounting Spacer
16	Motor Mounting Lock Washer	1	1	16	Motor Mounting Lock Washer
17	Motor Mounting Lock Nut	1	1	17	Motor Mounting Lock Nut

Southern Cross

1901 West 10th
 Los Angeles, California 90007
 (213) 746-1000

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SHERMAC

Engineered Equipment
Transitions

MAGNUM RM65H MANUAL

PART NO.0365 0003



MAGNUM AUSTRALIA

ANAO NOMINEES PTY LTD ACN 031 824 884

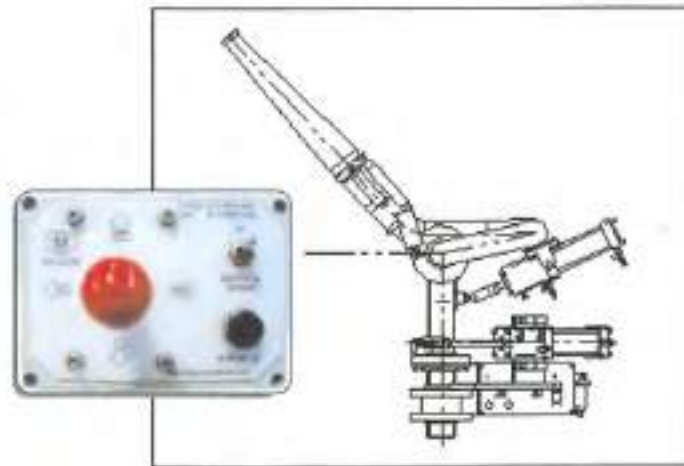
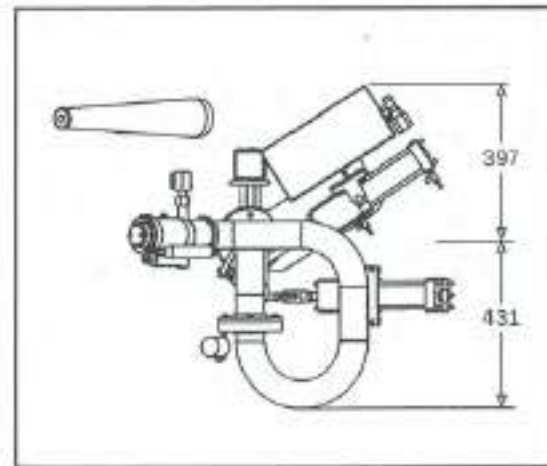
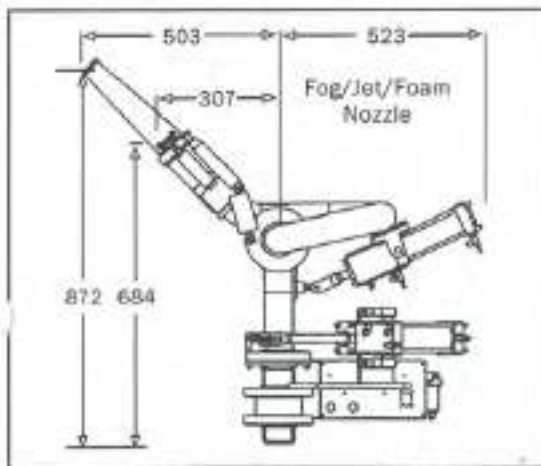
Water Cannon RM65H (Hard Wired)

Installation and Maintenance Manual

RM65H Brochure	1 Page
Explanation of Magnum Part Number	1 Page
Exploded View / Spare Parts	1 Page
Installation Instructions	2 Pages
Maintenance Schedule	1 Page
Hydraulic Schematic / Hydraulic Information.	4 Pages
Electric Schematic / Electrical Information.	3 Pages

RM65-H - Hydraulic Driven Remote Monitor

- Hydraulic cylinders control Left / Right Slew action.
- Automatic grease lubrication optional
- 90° slew (maximum)
- 70° Elevation (as standard)
(45° above horizontal, 25° below horizontal)
- Electric 8-way Joystick controller supplied
- Hydraulic manifold fitted with pressure relief valve and flow control valve
- Unit pre-set to correct settings and tested prior to final packaging and dispatch
- 12v or 24v solenoid valves optional
- Mounting flange with fasteners included
- Actuated air valve included to control on/off with electric solenoid wired
- Optional hydraulic on/off available
- Optional remote foam/fog nozzle available
- Optional Radio Frequency (R.F.) Control available
- 65mm (2½") ANSI 150lb flanged inlet connection
- Director nozzle supplied as standard - 28mm (1½") orifice. 60 metres water throw at 7 bar



hydraulic driven remote monitor **RM65-H**



MAGNUM AUSTRALIA

AN&I/D NOMINEES PTY LTD ACN 004 924 994

Explanation of Magnum Cannon Part Number

Magnum RM65H is water cannon whose movement is driven by high pressure hydraulic oil. The movement is controlled by an electrical system from the cab of the vehicle. The cannon, when installed, will be mounted on a 65 mm (2 $\frac{1}{2}$ ") ANSI 150 LB Flange. The following is a typical part number for a Magnum Water Cannon.

RM65H-4V-KG-FJF-12V-PPACK-RF

The following is an explanation of the Magnum Part Number

RM65H	Water Cannon with slew driven by hydraulic cylinder (90 degrees possible), elevation operated by hydraulic cylinder mounted on 65 mm (2 $\frac{1}{2}$ ") ANSI 150 LB flange.
2V	2 Valve Section Hydraulic Manifold.
3V	3 Valve Section Hydraulic Manifold.
4V	4 Valve Section Hydraulic Manifold.
	These are the number of directional control valve slices used to make up the hydraulic manifold. All manifolds are fitted with flow control valve, pressure relief valve and relevant number of directional control valves.
AA	Water supply is turned on / off by an Air Actuated Butterfly Valve
KG	Water supply is turned on / off by a Hydraulic Actuated Knife Gate Valve,
HBFLY	Water supply is turned on / off by a Hydraulic Actuated Butterfly Valve,
SN	Standard Director Nozzle
FJF	Foam/Fog/Jet Nozzle with 3% Foam Induction capabilities.
12 V or 24 V	Control Voltage for the Water Cannon. Can be 12 or 24 Volt
PPACK	Unit is supplied with self contained hydraulic Power Pack.
RF	Cannon controlled by radio remote

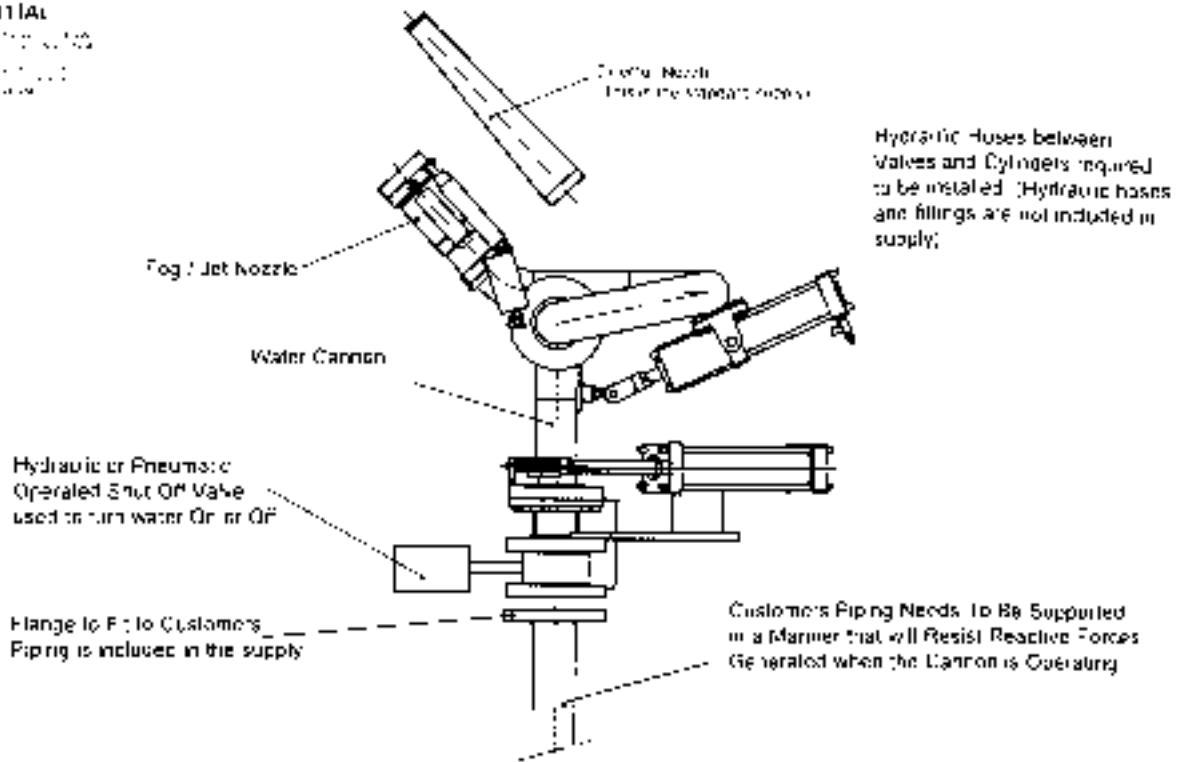
35 PARKHURST DRV, KNOXFIELD, VICTORIA, AUSTRALIA
MEMBER OF THE HAVILAND GROUP OF COMPANIES
Procedure

RM65-Service Maintenance

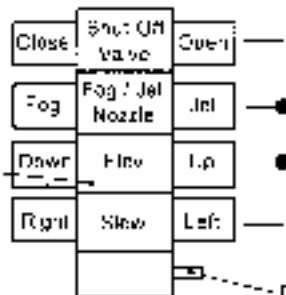
www.magnumaustralia.com
[e-mail: tanks@magnumaustralia.com](mailto:tanks@magnumaustralia.com)

CONFIDENTIAL

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No Part To Be Reproduced



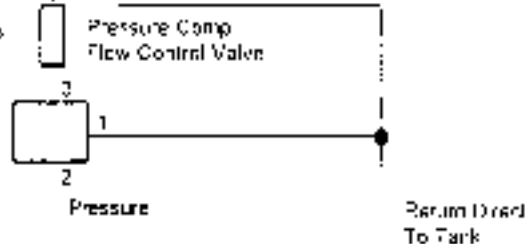
Active Hydraulic Manifold will change based on configuration purchased. (Ports on Manifold are 1/2" BSPP)



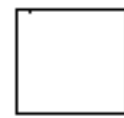
Electrical Cable between Cabin Box and Hydraulic Control Valves

Hydraulic Hoses between Valves and Actuators required to be installed. (Hydraulic Hoses and fillings are not supplied)

Pressure Reducing Valve



24 - 12 Volt From Ignition Switch



Plug is located in the cab

DRAWN TO AS 1100

SURFACE FINISH

MATERIAL

DRAWN	DATE	APP'D

EXCEPTIONS NOTED
ALL DIMENSIONS
IN MILLIMETERS

SHEET SIZE: A3



TOLERANCES UNLESS NOTED	
ANGLE DIMENSIONS	±0.5°
ONE DECIMAL PLACE	±0.25
TWO DECIMAL PLACES	±0.10
ANGLES	±3'



MAGNUM AUSTRALIA

SCALE	NTS
DRAWN	
CHECKED	
DATE	

35 PARKHURST DRIVE KNOXFIELD
MURCH 1180
PHONE 0821 8433 FAX 0821 5440

Installation of KNECH Hydraulic Operated Water Cannon Using Hard Wired Control System

SHEET 1 OF 1
1 SHEETS

RM55H-INSTALL



Water Cannon Installation Instructions

- 1 Weld the flange supplied in the kit to the water cannon supply pipe.
- 2 Mount the cannon (monitor) and water on / off valve onto the flange using bolts and nuts supplied in the kit. Stabilisers and gussets may be required to ensure that the mounting is secure and rigid. The water on /off valve should be located between the flanges of the water cannon and the mounting flange welded to supply piping. Ensure the monitor is correctly mounted so it CANNOT direct water at the cabin of the vehicle.
- 3 Activate the Auto Lube grease capsule located on the Monitor Bearings to 12-month grease injection setting.
- 4 Screw the nozzle to the threaded end of the water cannon. Director Nozzle is standard supply. Foam induction Fog Nozzle (RFIN) is available as an option.
- 5 Mount the Joystick Cabin Controller Box (electric) in a position that is ergonomic for operator to use.
- 6 Mount the hydraulic valve manifold in a desired position (external to vehicle cabin). Note: Generally mounted close to the water cannon monitor to allow for short length of hydraulic hoses between the manifold and the cannon.
- 7 Run the electrical cable (6 metres supplied as standard, 6 metre optional extension cable is available if required) from the Cabin Control Box to the Main Control Box. Cut the cable to the desired length and connect up the plugs.
- 8 Connect the cable from the Main Control Box to the hydraulic valves on the manifold. Cut the cable to the desired length allowing for neat installation of the wiring to the solenoids. Connect the electrical cables to the solenoid valves using the Hirschmann Plugs supplied and the electric schematic diagram. Ensure all plugs are properly sealed against moisture ingress.
- 9 Connect the power wire as per the electric schematic.
- 10 Ensure the hydraulic pressure reducing valve is fitted into the hydraulic system circuit – refer to the system hydraulic circuit.
- 11 Connect the hydraulic hoses from supply oil to hydraulic valve manifold using 3/8 hoses. See the hydraulic schematic.
- 12 Connect the hydraulic hoses from hydraulic valve manifold to the return on the tank. See the hydraulic schematic.
- 13 Connect the required hydraulic hoses as per the hydraulic schematic from the hydraulic manifold to the water cannon. 2 hoses are required for each function.
14. Your Remote Control Water Cannon is now ready for operations.
15. Turn on the vehicle power and air to the unit.
16. Check that all air fittings are correctly fitted and there are no air leaks evident.
17. Check that all hydraulic hoses and fittings are correctly installed and no hydraulic leaks are evident.
18. Check all bolts are securely tightened and no water leaks are evident.
19. Now test the unit with the water pump operating and passing water through the nozzle.
20. Monitor slew and elevation speed can be adjusted to suit your desired operating speed. The speed adjusters (hydraulic needle valves) are located on the piston end of each hydraulic cylinder fitted to the water cannon. Screw them clockwise (in) to slow the unit, or anti-clockwise (out) to increase the speed of operation.
21. A comprehensive parts book has been supplied for your service assistance.



MAGNUM AUSTRALIA

ANA D NOMINEES PTY LTD ACN 024 924 994

ABN 85 004 924 994

WATER CANNON / MONITOR - MAINTENANCE SCHEDULE

1 Initial Service

- 1.1 The upper and lower bearings have been filled with grease in the factory at the time of assembly. We use Multi-Purpose EP Type Grease on the bearings. (4 pumps of grease from a grease gun should be sufficient if you need to install a new bearing.)
- 1.2 Set the automatic lubrication canister supplied with the cannon to 12. This activates the lubricator.
- 1.3 Lubricate the rod ends (mounting for cylinders) using Multi-Purpose EP Type Grease. (1 pump of grease from a grease gun should be sufficient.)
- 1.4 Reference RM50 and RM80. Smear the gears with grease equivalent to Molybond Opal Pin & Bush
- 1.5 Check the operation of the Cannon, slew and elevation

2 Daily Service (This refers to cannons driven by air)

- 2.1 Drain the air reservoir on the truck
- 2.2 Drain the filter on the spray valve / cannon filter regulator

3 Quarterly Service

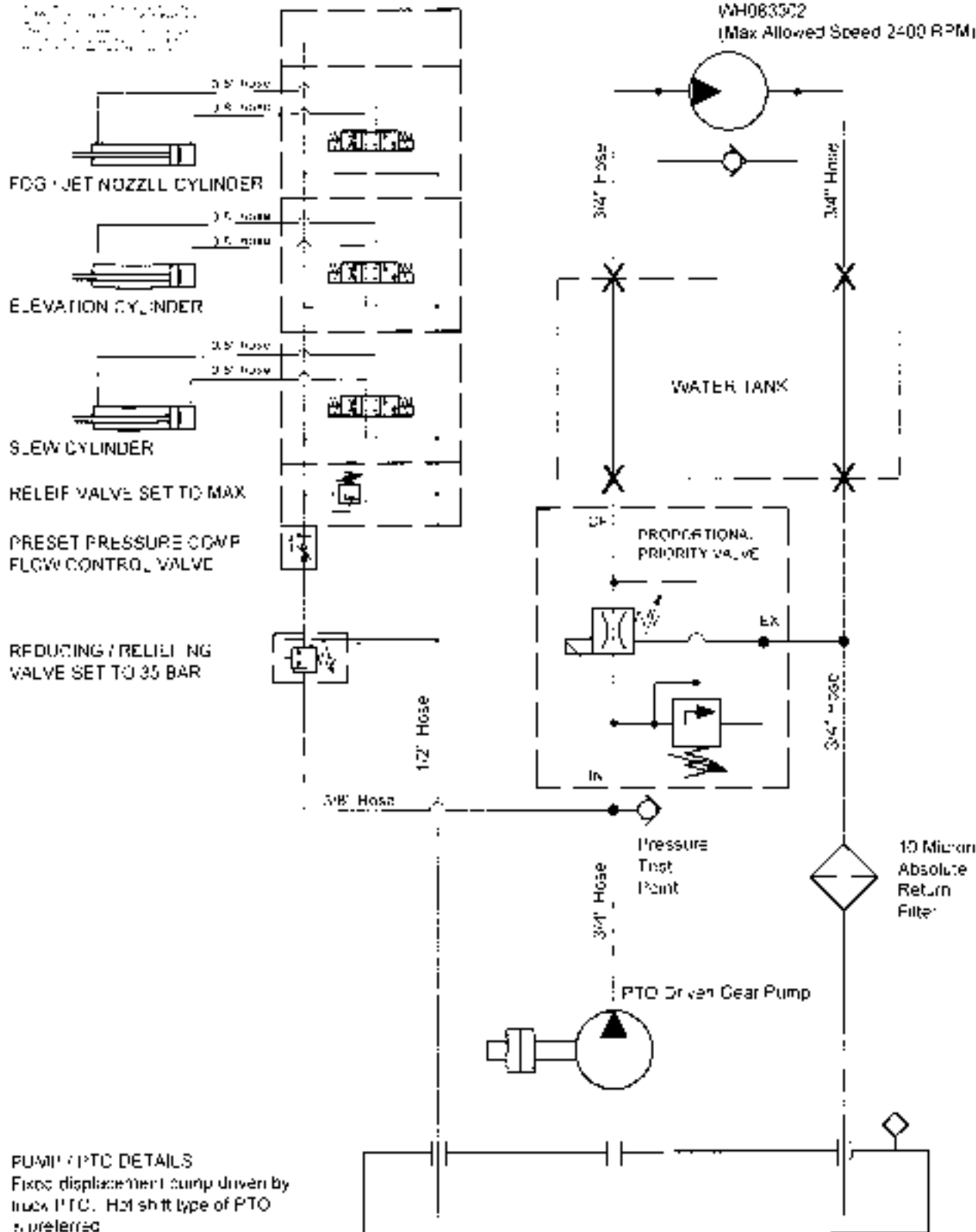
- 3.1 Check the condition of the swivel bearings by holding the pipe firmly and shaking it vigorously. There should be no play in the swivel bearing. Replace the seals and wear rings in the swivel bearings if there is any play
- 3.2 Check the cannon for leaks. If there is a leak, it will occur at the swivel bearings. Replace the seals and wear rings in the swivel bearings if there is a leak on the cannon
- 3.3 Lubricate the rod ends (mounting for cylinders) using Multi-Purpose EP Type Grease. (1 pump of grease from a grease gun should be sufficient.)
- 3.4 Check the automatic lubrication canister. The canister has been initially set up for 1 year. If the ambient temperature is above 40 degrees centigrade, the life of the canister may be reduced. Replace the canister if there is no sign of grease in it. Set the automatic lubrication canister to 12. This activates the lubricator.
- 3.5 In the case of air driven cannons, check and change if necessary the filter in the spray valve / cannon filter regulator
- 3.6 Reference RM50 and RM80. Smear the gears with grease equivalent to Molybond Opal Pin & Bush.
- 3.7 Check the operation of the Cannon, slew and elevation.

4 Annual Service

- 4.1 Strip and inspect the swivel bearing on the cannon. Replace the wear rings and the seals.
- 4.2 Install a new automatic lubrication canister. (Also refer to 3.4 above). Set the automatic lubrication canister to 12. This activates the lubricator.

CONFIDENTIAL

HYDRAULIC MOTOR
WH083372
(Max Allowed Speed 2400 RPM)



PUMP / PTO DETAILS
Fixed displacement pump driven by truck PTO. H21 shift type of PTO is preferred

(DRAWN TO AS 1100)

SURFACE
FINISH

MATERIAL

DRAWN DATE APPD

EXCEPT WHERE NOTED
ALL DIMENSIONS
IN MILLIMETRES



MAGNUM
AUSTRALIA

21 PARKERS DRIVE KNOX BLD
VIC 3084 1140
PHONE 041 5403 FAX 040 3257

SHEET SIZE A3

TOLERANCES UNLESS NOTED
DIMENSIONS ±0.20
ONE DECIMAL PLACE ±0.25
TWO DECIMAL PLACES ±0.10
ANGLES ±1.0

SCALE N:1
DATE 26.7.04
CHECKED
DATE

TYPICAL HYDRAULIC CIRCUIT FIXED
DISPLACEMENT PUMP FOR ON
ROAD WATER TANKER

SHEET 01 OF 04
4 SHEETS MRT-15-A

NOTES ON HYDRAULIC SYSTEMS FOR MAGNUM CANNONS

Water Cannons

It is possible to operate RM65H at a pressure between 35 bar (500 PSI) and 140 bar (2000 PSI). The Hydraulic cylinders, valves and hoses are rated at 140 bar.

RM50H and RM80 must not be run above 40 bar (600 PSI). The drive gears used on the slew drive of the RM50H and RM80 have a limited torque capability.

Needle Valves are fitted to control the overall operating speed of a water cannon movement – left / right / up / down. These valves are fitted directly to the operating hydraulic cylinder / hydraulic motor of the water cannon. The needle valve is fitted to control the orifice size of the oil inlet – a smaller orifice = less flow = slower speed of movement.

1 Hydraulic Supply is tapped out of an existing system.

- The pressure must be limited to 35 bar (500 PSI) (See note above).
- Pressure control by a Pressure Reducing / Relieving valve is required if the pressure in the system is going to be above 40 bar (in the case of RM50H and RM80 and 140 bar (2000 PSI) in the case of RM65H.
- Pressure compensated flow control valve is always required to be installed into the system.
- Recommended hose size is 3/8" or larger.
- The Tank line from the hydraulic control manifold MUST be piped directly back to the system oil tank separately from the return line of the system. Failure to correctly plumb the return oil hydraulic system MAY result in incorrect operation of the system.

2 Hydraulic Supply is taken from a powerpack supplied by Magnum.

- It is possible to run 1 powerpack with RM65H and double acting spray valves. Two separate powerpacks will be required if you run double acting spray valves with RM50H and RM80. The reason for this is RM65H and double acting spray valves can both run at 140 bar (2000 PSI). RM50H and RM80 are required to run at a maximum pressure of 40 bar and double acting spray valves will require pressure greater than 40 bar. (Pressure up to 140 bar may be needed to close the double acting spray valves under certain operating conditions.)
- Pressure control will be by means of the relief valve on the powerpack. The relief valve is located inside the oil reservoir.
- Recommended hose size is 3/8" or larger.
- The Tank line from the hydraulic control manifold MUST be piped directly back to the system oil tank separately from the return line of the system. Failure to correctly plumb the return oil hydraulic system MAY result in incorrect operation of the system.

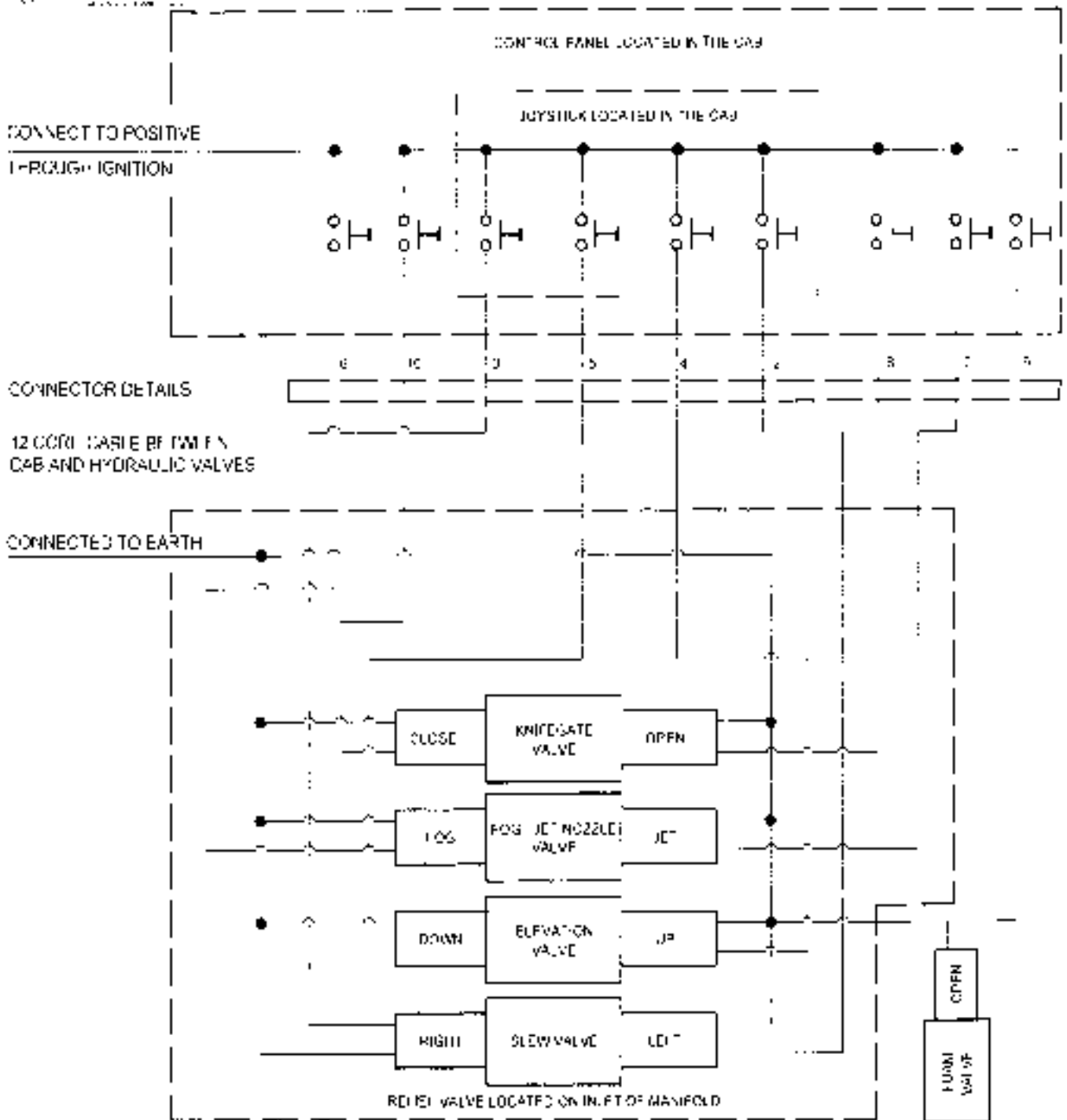
NOTES ON MAGNUM HYDRAULIC DIRECTIONAL CONTROL VALVE ASSEMBLY



- Generally, the double solenoid valves are used on cannon functions and the single solenoid are used on spray valve functions.
- It is important when support is required from Magnum that we are supplied with all the part numbers between A & B starting from the relief valve, which in the photo above, is located on the left hand side of the assembly.
- Magnum use Parallel and Series valves. Valves are identified by the part number stamped between the A & B on the valve label. Generally, series valves would be used on a powerpack system and all other systems would use parallel valves. Parallel and series valves must not be used on the same assembly.
- There are two series valves used in our assemblies. The first section (nearest the relief valve) must be Part No # CDC3E04 xx PT1. All sections after the first section are Part No # CDC3E04. All series valves have 2 solenoids on them.
- There are two parallel valves used in our assemblies. These are a double solenoid valve Part No CDC3E01 xx and a single solenoid valve Part No CDC3E16 xx
- All ports on the manifold assembly are 3/8" BSPP. It is important that the correct parallel fittings are used in the valve ports. If tapered fittings are used, it is possible to distort the valve body resulting in the spool jamming and the valve not working. Part numbers for adaptors that suit this style of ports are Ryco S74-0609 Parker Triple-Lok 6-6F40MX-S Aeroquip GG106-NP0606 or equivalent
- All valves come standard with manual override. These are located in the centre of the tube holding the solenoid to the valve. You will need an Allen Key or small star screwdriver in order to operate the valve using the manual override. If a function happens using the manual override and it does not happen with the solenoid, it is quite safe to assume that the coil has failed. Electrical coils are easily tested by a person with electrical knowledge using a multi-meter.
- Contamination can jam a valve. If there is a need to strip and clean a valve, cleanliness is most important. It is recommended that the parts from a valve are cleaned using a suitable solvent and those parts are dried using compressed air. No cloth should be used to dry the valve. The valve should be assembled using clean hydraulic fluid.
- It is important that a torque wrench is used to tighten the tie rods when a manifold bank is assembled. The tightening torque to be used is 5 Nm (44 inch lbs). Over tightening the tie rods will result in the valves jamming and failing to operate.

CONFIDENTIAL

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ELECTRICAL SCHEMATIC FOR HYDRAULIC CANNON USING HYDRAULIC KNIFEGATE / BUTTERFLY VALVE TO TURN WATER ON AND OFF

DRAWN TO AS 1118

SURFACE FINISH

PARTIAL

DRAWN DATE APPD.

EXCEPT WHERE NOTED
ALL DIMENSIONS
IN MILLIMETRES



MAGNUM AUSTRALIA

14 PARCHEST LANE KNOXFIELD
VICTORIA 3190
PHONE 1801 8433 FAX 5500 5240

SHEET SIZE A1

ALL DIMENSIONS UNLESS NOTED
WHOLE DIMENSIONS ±0.25
ONE DECIMAL PLACE ±0.25
TWO DECIMAL PLACES ±0.10
ANGLES ±1°

SCALE 1:10
DRAWN VL
DATE 13/01/13
CHECKED
DATE

ELECTRICAL SCHEMATIC FOR
HYDRAULIC CANNON

SHEET 1 OF 4
4 SHEETS

FL100-RM-01

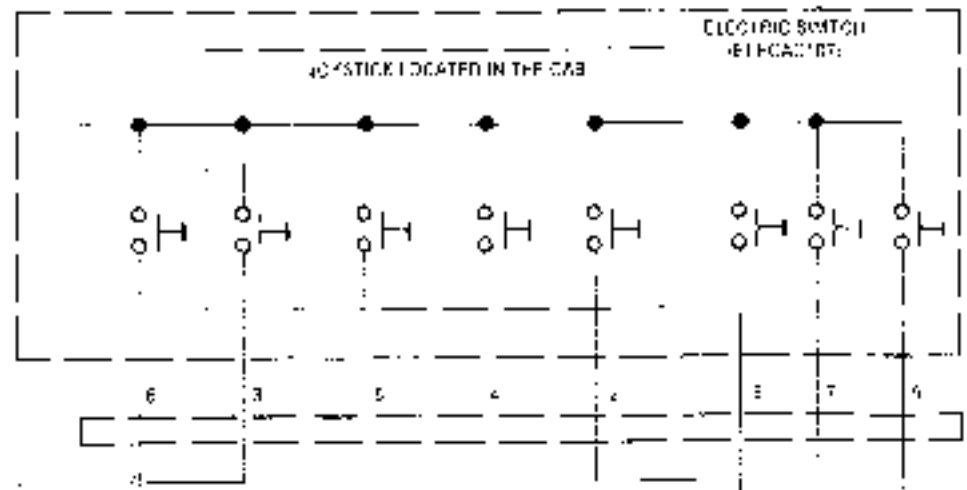
CONFIDENTIAL

CONTROL PANEL LOCATED IN THE CAB

ELECTRIC SWITCH
RELOCATED

JOYSTICK LOCATED IN THE CAB

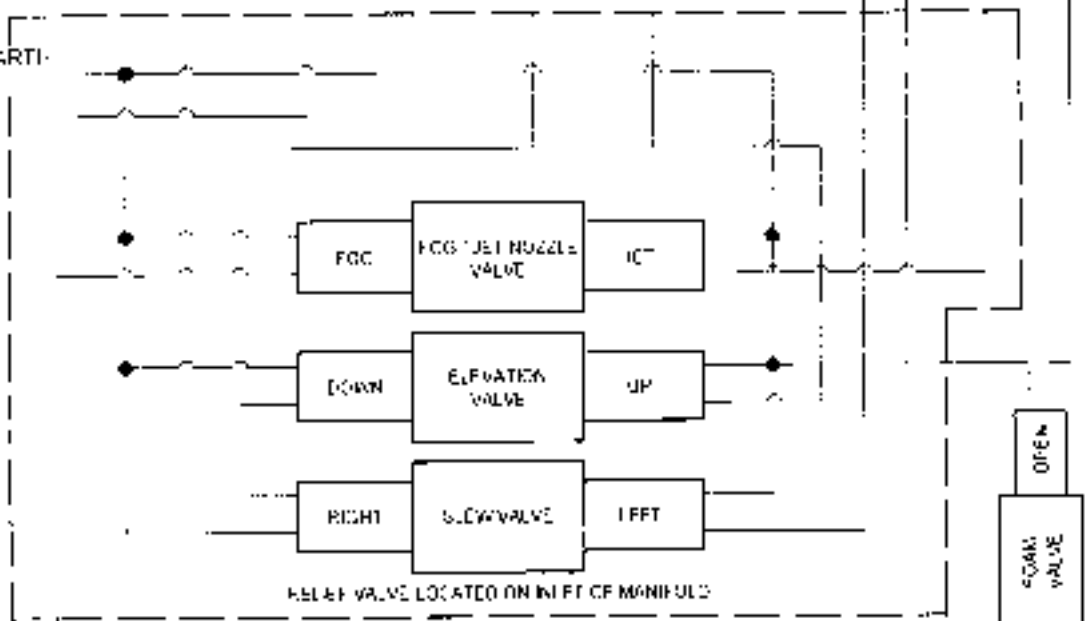
CONNECT TO PGM 11M
THROUGH GUN



CONNECTOR DETAILS

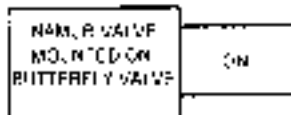
12 CORE CABLE IS 11M EN
CAB AND HYDRAULIC VALVES

CONNECTED TO EARTH



CONNECTED TO EARTH

NITROGEN SOLENOID VALVE IS
MOUNTED ONTO THE ACTUATOR
DRIVING THE BUTTERFLY VALVE



ELECTRICAL SCHEMATIC FOR HYDRAULIC CANNON USING AIR OPERATED BUTTERFLY VALVE TO TURN WATER ON AND OFF

DRAWN TO AS 1110

SHRIMP
EN 31

MATERIAL

ISSUE DATE APPR.

EXCEPT WHERE NOTED
ALL DIMENSIONS
IN MILLIMETERS



**MAGNUM
AUSTRALIA**

35 DARRHIRST DR W/ KNOXHILL
VIC 3048
PHONE 9001 6450 FAX 9500 3240

SHEET SIZE A1

TOLERANCES UNLESS NOTED

ANGLES UNLESS NOTED

ONE ULTIM. PLACE ±0.25

TWO ULTIM. PLACES ±0.10

ANGLES ±30

SCALE NTS
DRAWN TH
DATE 25/11/01
CHECKED
DATE

ELECTRICAL SCHEMATIC FOR
HYDRAULIC CANNON

SHEET 1 OF
4 SHEETS

MRT-13-A



SHERMAC

Engineered Equipment
Transitions

DONALDSON BREATHER

PART NO.0392 0001



NEW T.R.A.P.™ Breather Part Number P564669

Eliminates Water & Dirt from Hydraulic Reservoirs Faster Than Silica Gel Breathers!



- Rated Airflow: 75 SCFM Max.
- Operating temperature range -40°F to +150°F / -40°C to 66°C

Features and Benefits

- **Patented Media**
Reduces dewpoint temperatures to prevent condensation inside tanks and reservoirs to help prevent corrosion, maintain fluid quality, and extend fluid life.
- **Reversible Flow**
Reversible flow through media allows moisture to exit the tank or reservoir.
- **Visual Indicator**
Actuated by pressure differential, flashes red to indicate change out is needed. Indicator setting, 1 PSID
- **Highly Efficient**
Stops particle sizes down to 3µm @ 97%.
- **Easy To Install**
Lightweight...simply hand tighten.
- **Rugged Design**
Effective to -40°F. Robust housing protects media. Because it withstands high vibration, T.R.A.P. is suitable for both stationary and mobile applications.

NEW! Donaldson Breathers with Thermally Reactive Advanced Protection (T.R.A.P.) provide fast-acting protection for hydraulic reservoirs against airborne moisture and particulate contamination.

Patented Donaldson T.R.A.P. technology eliminates moisture condensation in hydraulic system reservoirs. Moisture is prevented from entering and is actually "pumped" out with each flow cycle.

For more detailed specifications see page 191.

Spin-On Breather Filters

Donaldson Part No.	Use with Adapter	Micron Rating	Length (in./mm)	Diameter (in./mm)	Flow (scfm/gpm)
P564424	P562627 or P562628	10 micron nom.	3.6/91	3.7/94	15/112
P566005	P562627 or P562628	10 micron nom.	5.4/137	3.7/94	23/172
P567198	P173544	10 micron nom.	5.4/137	3.7/94	23/172
P565069	P173544	10 micron nom.	7.9/200	3.7/94	28/216
P560683	P173544	10 micron abs.	5.4/137	3.7/94	23/172
P564357	P173544	5 micron abs.	7.9/200	3.7/94	28/216
P179089	P173544	10 micron abs.	7.9/200	3.7/94	28/216
P185430	P173545	3 micron abs.	6.7/170	5.0/127	35/262
P187837	P173545	3 micron abs.	10.7/272	5.0/127	42/314
P560386	P173545	3 micron nom.	6.7/170	5.0/127	35/262
P560250	P173545	3 micron nom.	10.7/272	5.0/127	42/314
P187162	P173545	5 micron abs.	6.7/170	5.0/127	58/440
P185762	P173545	5 micron abs.	10.7/272	5.0/127	64/479
P560388	P173545	10 micron nom.	6.7/170	5.0/127	58/440
P560251	P173545	10 micron nom.	10.7/272	5.0/127	64/479
P185875	P173545	10 micron abs.	6.7/170	5.0/127	58/440
P186876	P173545	10 micron abs.	10.7/272	5.0/127	64/479

T.R.A.P.™ Breather Specifications

New breather technology eliminates moisture and dirt from hydraulic reservoirs

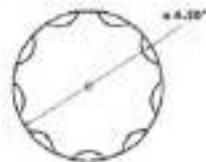


P565616
P566156 (no indicator version)

Available with or without electronic indicator

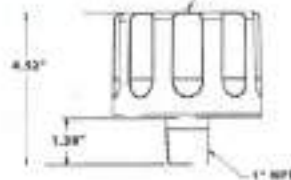


Top View

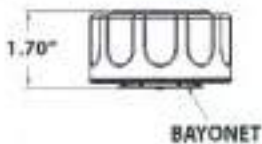


P564669
P566151 (no indicator version)

Available with or without electronic indicator



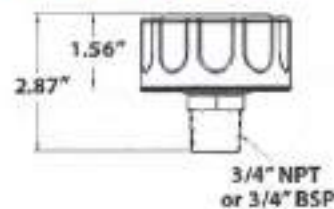
P565858



Top View

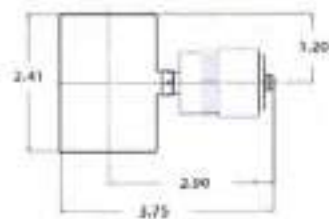
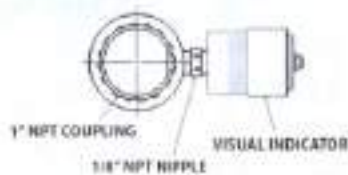


P565857 (3/4" NPT version)
P566037 (3/4" BSP version)



Mechanical Indicator Kit P566168

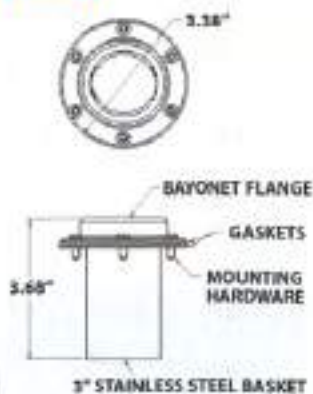
Suitable for use with P566151 and P565857*
*Requires additional 3/4" x 1" reducer bushing (supplied by customer)



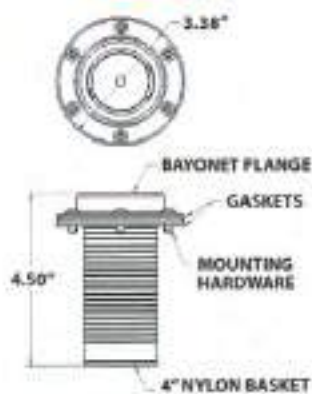
Bayonet Style Filler Basket/Flange Kits

Use with any bayonet style T.R.A.P. Breather

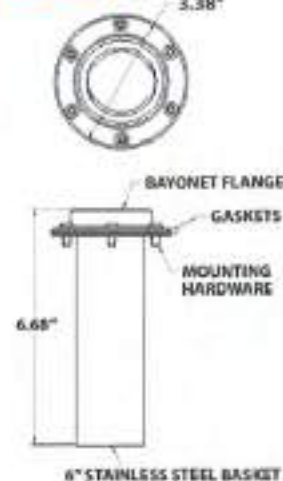
P566321



P563874



P563453



Donaldson

Technical Features

• Particulate Filter

Highly efficient pleated particulate filter stops particle sizes down to 3 μm at 97%.

• Operating Temperature Range

-40°F to +200°F / -40°C to 66°C

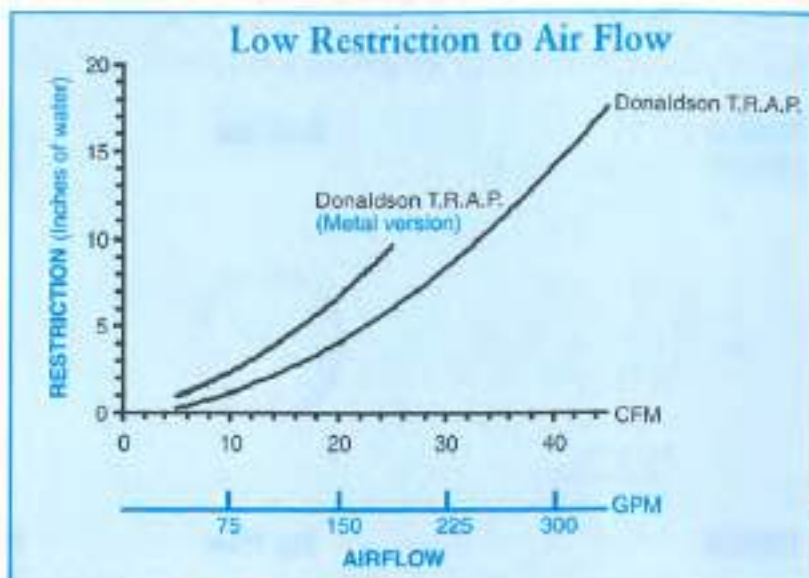
• Electronic Indicator

Actuated by pressure differential, flashes red to indicate change out is needed. Indicator setting, 1 PSID.

Indicator power source:
3V lithium battery CR2032

• Mechanical Indicator Kit

Install kit between reservoir and T.R.A.P. breather. Lock-up style indicator with manual reset. Highly visible, bright red band shows when restriction limit is reached. Indicator setting, 20" H₂O.



Apply T.R.A.P. based on fluid exchange rate, not reservoir size.

T.R.A.P. Breather... Moisture meets its match.

Part Number	Construction	Connection	Airflow	Indicator*
P566151	Glass-filled ABS	1" NPT	45 CFM Max.	Optional mechanical
P566156	Glass-filled ABS	Bayonet	45 CFM Max.	No
P564669	Glass-filled ABS	1" NPT	45 CFM Max.	Electronic
P565616	Glass-filled ABS	Bayonet	45 CFM Max.	Electronic
P565857	Epoxy Coated Steel	3/4" NPT	25 CFM Max.	Optional mechanical
P565858	Epoxy Coated Steel	Bayonet	25 CFM Max.	No
P566037	Epoxy Coated Steel	3/4" BSP	25 CFM Max.	No

*In environments with combustible dusts or fuel vapors, use non-electrical indicator T.R.A.P. models only.

Suggested service interval for models without indicator is 6 months.



Donaldson
Airtex • Kalflex

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Industrial Hydraulics
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Minneapolis, MN
55440-1299 U.S.A.

Tel: 800.846.1846 (USA)
Fax: 952.703.4652
hydraulicfilters@mail.donaldson.com
www.donaldson.com

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Brochure No. HYD-211

ITEM	QTY	PART No.	MANUFACTURER	SYSTEM
Mudflaps	4	5094-6002	SHERMAC	BODY
Stair strut	1	5014-2062		BODY
Toolbox	1	5092-0013		BODY
Fire extinguisher	1	5053-0903		BODY
Fire extinguisher bag	1	5053-9022		BODY
Fire extinguisher bracket	1	5053-5033		BODY
Rotating Beacon	1	3018-0033		ELECTRICAL
Top Tail Lights	2	3013-4003	HELLA	ELECTRICAL
Bottom Tail Lights	2	3013-4013	HELLA	ELECTRICAL
Clearance lamps	4	3012-5022	HELLA	ELECTRICAL
Number plate lamp	1	3012-6002	HELLA	ELECTRICAL
Battery isolator	1	3065-0002		ELECTRICAL
Start isolator	1	3065-0002		ELECTRICAL
Battery isolator lockout	1	3067-5023	LOCKSAFE	ELECTRICAL
Start isolator lockout	1	3067-5113	LOCKSAFE	ELECTRICAL
Jump start receptacle	1	3035-0013	CAT	ELECTRICAL
Power Take Off drive shaft	1	SAE1410 - 1 1/4" 385MM		HYDRAULIC
Hydraulic Pump	1	1025-0004		HYDRAULIC
Hydraulic Motor	1	1021-0033		HYDRAULIC
Hyd. Pressure Relief Valve	1	1037-0003		HYDRAULIC
Hydraulic Oil Filter	1	2022-0013		HYDRAULIC
Hydraulic Oil	1	GRADE 68 HYDRAULIC OIL		HYDRAULIC
Cannon Control Valve Module	1	1033-0014		HYDRAULIC
Hydraulic oil tank breather	1	2022-0002		HYDRAULIC
Water Pump	1	2074-0064	SOUTHERN CROSS	WATER
Spray valves	4	2052-0013		WATER
Spray heads	3	2069-1003	SHERMAC	WATER
Fill & discharge point valve	2	2052-1013		WATER
Water Cannon	1	2069-3104	MAGNUM	WATER
Lube Cartridges (Water Cannon)	2	2001-0002		WATER
Water pump coupling element	1	8091-1003		WATER
Water pump coupling hub	2	8091-1013		WATER
Coupling taper bush - Motor	1	8091-1502		WATER
Coupling taper bush - Pump	1	8091-1522		WATER
Hose Reel	1	2047-0014		WATER
Fire nozzle	1	2069-4003		WATER
Valve 2, 3 and 5	3	2052-1013		WATER
Valve 1	1	2052-1023		WATER