

**CARDEV**

Oil Filtration and Coolant Handling Specialists



# CCS-500

## COOLANT CLEANING STATION

***Cleans Contaminated Coolant  
For Re-Use***

***Removes Particles And Tramp  
Oil***

***Controls Bacterial Growth***

***Provides A Constant Supply Of  
Recycled Coolant***

***Compact And Easy To Operate***



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# CCS-500 500 LITRE COOLANT CLEANING STATION



Industrial Filtration



Biodegradable Lubricants

## INTRODUCTION

The coolant cleaning station has been designed to re-cycle used or contaminated coolant extracted from machine tool sumps or waste/swarf skips.

The CCS500 consists of five sections, namely the **used coolant IBC**, **cleaning tank**, **coalescer**, **ozone tank**, and **clean coolant IBC**. The tanks are designated as follows:

- Tank No 1 – Used Coolant IBC
- Tank No 2 – Cleaning Tank
- Tank No 3 – Ozone Tank
- Tank No 4 – Clean Coolant IBC.

Used coolant is collected from the machine sumps and delivered to the used coolant IBC.

Cardev can supply if required a vacuum pump module which will remove coolant from the machine sumps via a pipe work system, and pump it into the used coolant IBC via the 300micron filter bag.

Coolant is transferred from the used coolant IBC, via a 200 micron pre-filter, to the cleaning tank. Once the cleaning tank is full then an adjustable timed period of continual coalescing starts which will remove the tramp/slideways oil. The length of this period depends on the contamination levels in the coolant.

After the coalescing period, the coolant is transferred to the holding tank, where it is treated by ozone diffusion to kill bacteria in the coolant. The length of the ozone process can be adjusted to suit contamination levels.

After ozone treatment the coolant is transferred to the clean coolant IBC, where it is available for reuse either locally through the dispensing gun or via a distribution pipe-work system direct to the sumps. Whilst in the IBC the coolant is continuously filtered through 15 micron polypropylene filters.

In the event of no coolant being available for use from the CCS500 and there is a requirement for top up coolant from the machine sumps, then Cardev can supply a CMS300/1000 Coolant Mixing Station linked to the holding tank to ensure that a minimum level of coolant is always available for distribution

## OPERATING PROCEDURE

Before operating the system for the first time after installation, the coalescer should be filled to the weir level with clean coolant. Similarly, the cleaning tank and ozone tank, should each be filled to the 100 litre level with clean coolant, The 100 litre level is a depth of 180mm, measured from the base of the tank.

1. Turn on the air supply at the filter-regulator (FR1) and set the pressure to 6 bar.
2. Turn on the dry air supply to the regulator (R1) and set the pressure to 3 bar.
3. Set valves V1 and V2 to the half – open position.
4. Set the ozone generator output control to the mid position. This control is a knob scaled 0 to 10, located on the under side of the generator.
5. Turn the isolator (red/yellow handle) on the control panel to the ON position.
6. Press the SYSTEM START button, which should illuminate.
7. Turn the FILTRATION SYSTEM switch to the ON position.
8. Provided that the level in the used coolant IBC is above 700 litres, a 475 litre batch of coolant is

transferred to the cleaning tank for a timed period of circulation through the coalescer. If the header tank is not filling, or filling very slowly, adjust valve V2, i.e. close the valve very slightly. The correct position will be found by experience.

9. Immediately after the start of the TANK 1 – 2 FILL CYCLE adjust valve V1 to give a pressure of 2 bar on the pressure gauge PG1. This must be done within 2 minutes of starting. Once the valve is set, the procedure does not need repeating, unless the valve setting is disturbed.

10. After a timed period of circulation between the cleaning tank and coalescer, the 475 litre batch of coolant is now transferred to the ozone tank.

11. At the start of the OZONE CYCLE, as shown by the indicator on the control panel, check the flow rate shown by the flow-meter on the front of the ozone generator. This should be set to 10 litres per minute by means of regulator R1. This setting will remain the same for subsequent cycles but should be periodically checked. The output control may also be re-adjusted at this stage. The correct setting will be found by experience.

12. After a timed period of ozone treatment, the 475 litre batch is transferred to the clean coolant IBC.

13. The oil collected in the waste oil tank is automatically discharged by a pump when the level reaches maximum.

## **FILTER CHANGE PROCEDURE**

Used coolant IBC filter.

At regular intervals the used coolant IBC filter bag (FLT1) should be cleaned or replaced. To remove the filter bag for cleaning or replacement proceed as follows.

1. Ensure that no used coolant is flowing in to the filter bag.
2. Remove the clip and filter bag.
3. Clean (or replace) the filter bag
4. Replace the bag and re-fit the clip.

### **Fill pump filter.**

At regular intervals the fill pump filter bag (FLT2) should be cleaned or replaced. This should be carried out while the fill pump is not running. To remove the filter bag for cleaning or replacement proceed as follows.

1. Remove the hand nuts securing the filter cover.
2. Clean (or replace) the filter bag.
3. Replace the filter bag and cover.
4. If the pump has stopped due to filter FLT2 being blocked, the FILL PUMP PRE-FILTER

# CCS-500



BLOCKED button will be illuminated. Press the button to re-set the system.

Clean Coolant IBC filter.

The filter cartridges (FLT3) should be periodically replaced, the period of use will be found by experience. To replace the cartridges proceed as follows:

1. Turn the FILTRATION SYSTEM switch to the OFF position.
2. Remove the tee handled nuts securing the filter covers and remove the covers.
3. Remove the filter cartridges by means of the attached tapes.
4. Replace the cartridges, also replace the seals in the covers.
5. Replace the covers and tighten the tee handled nuts.
6. If the pump has stopped due to filter FLT3 being blocked, the TANK 4 FILTER BLOCKED button will be illuminated. Press the button to re-set the system.
7. Turn the FILTRATION SYSTEM switch to the ON position.

## COALESCER MAINTENANCE

In order to maintain the performance of the coalescer, valve V6 (black handle) at the side of the coalescer, should be periodically opened to allow air to pass through the media. The valve should only require partial opening and this should be done slowly.

## INSTALLATION

Refer to the drawings No G1243, M1267, M1268, E1445

The equipment should be installed upon a firm and level foundation.

The hose connections to the IBC's require connecting in accordance with drawing No M1267.

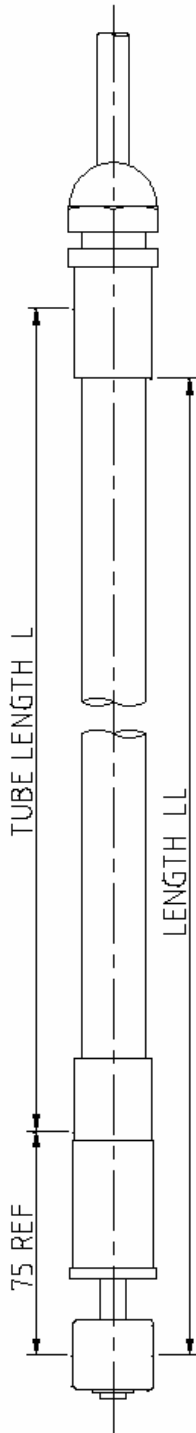
The level switches in the used coolant IBC and clean coolant IBC require connecting to the control panel by means of the 6-way plugs. Ensure that the lead from used coolant IBC is connected to the socket at the right hand side of the control panel and the lead from the clean coolant IBC is connected to the socket at the left hand side of the control panel.

The level switches in the clean coolant IBC also require connecting to the coolant mixing system by means of the 3-way plug. This plug must only be connected to the coolant mixing system control panel, and not the main control panel. (The 3-way socket on the main control panel is a pressure switch connection).

The sockets on the coolant mixing system control panel are 2-way and 3-way, thereby preventing an incorrect connection.

The following services are required:

1. A 230V, 50Hz, single phase electrical supply, fused with 32A motor rated fuses.
2. A 0.25" minimum, compressed air supply at a pressure of 7 bar.
3. A 0.25" minimum, compressed dry air supply with a minimum dew point of -40 deg C.



USED COOLANT IBC - TANK No 1					
LEVEL-LITRES	REF	LLmm	Lmm	CONTACTS TO CLOSE ON:-	CABLE LENGTH mm
100	LSL1	960	905	RISE	750
700	LSH1	435	380	RISE	750

CLEAN COOLANT IBC - TANK No 4					
LEVEL-LITRES	REF	LLmm	Lmm	CONTACTS TO CLOSE ON:-	CABLE LENGTH mm
75	LSL6	985	930	FALL	750
100	LSL4	960	905	RISE	750
150	LSH4	915	860	RISE	750
450	LSL5	655	600	RISE	750

TITLE  
LEVEL SWITCH DETAILS FOR 500  
LITRE COOLANT CLEANING SYSTEM.



DRAWN GMR MAT \_\_\_\_\_

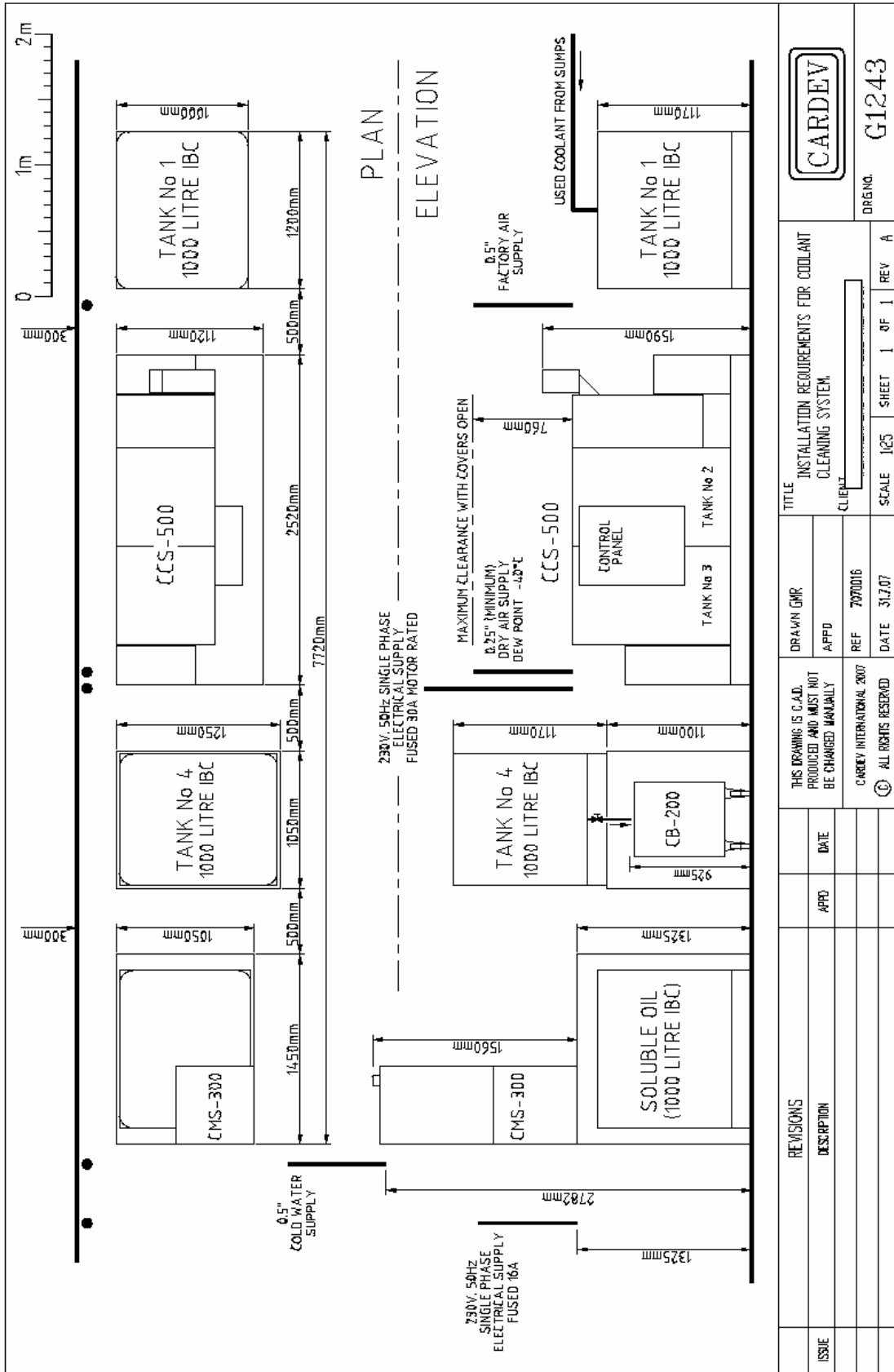
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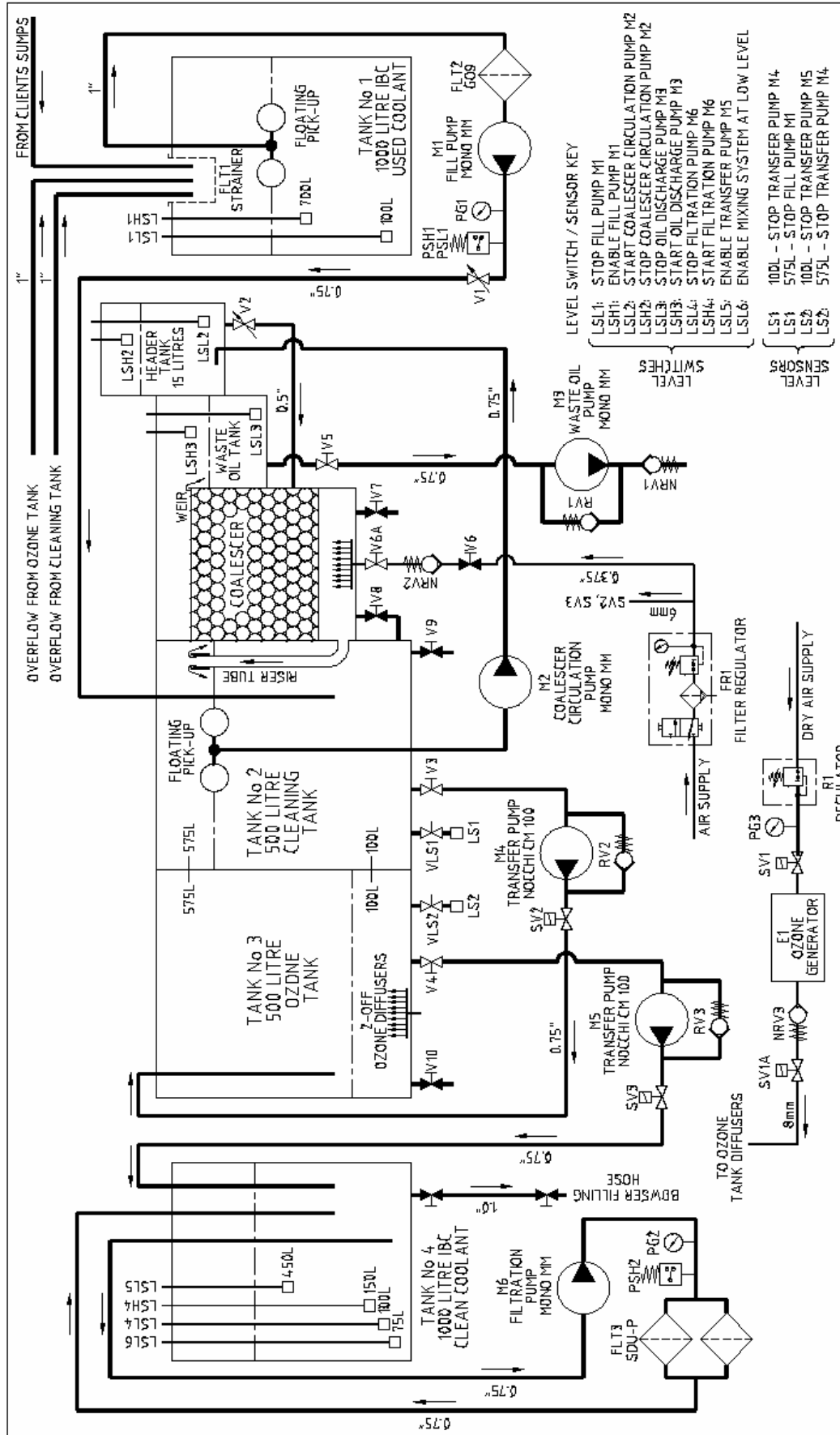
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DRG.NO. E1445

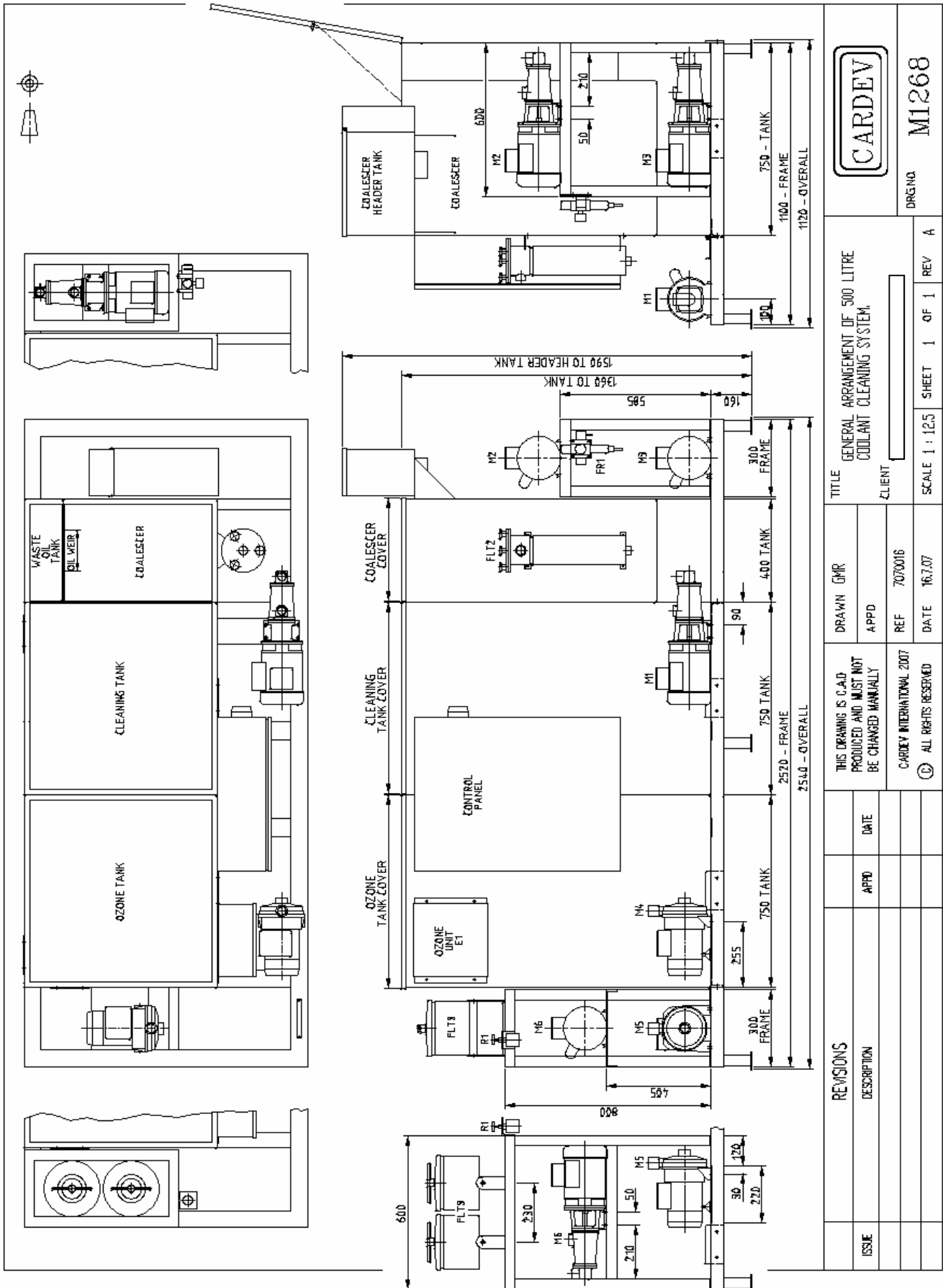
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DATE 16.7.07 REF 7070016 SCALE 1:2 SHEET 1 OF 1 REV A





		Dwg No. M1267	
TITLE: SCHEMATIC DIAGRAM OF 500 LITRE COOLANT CLEANING SYSTEM.		SCALE: NTS	
DRAWN: GMR		SHEET: 1 OF 1	
PRODUCED AND MUST NOT BE CHANGED MANUALLY		REV: A	
APPD:		CLIENT:	
REF: 7070016		DATE: 16.7.07	
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REVISIONS		DATE	
DESCRIPTION		APPD	
ISSUE		DATE	



DRGNO. M1268

TITLE: GENERAL ARRANGEMENT OF 500 LITRE COOLANT CLEANING SYSTEM  
CLIENT: [REDACTED]

DRAWN: GMR  
APPD: [REDACTED]  
REF: 7070016  
DATE: 16.7.07

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SCALE: 1:125 SHEET 1 OF 1 REV A

ISSUE	DESCRIPTION	APPD	DATE

## CARDEV INTERNATIONAL LIMITED

CONSUMABLE ITEMS

500 LITRE COOLANT CLEANING STATION

REF	QTY	DESCRIPTION	PART CODE
FLT1	2	FILTER BAG	GO1NM300
FLT2	2	FILTER BAG	GO9NM300
FLT3	6	POLYPROPYLENE SUPER DUTY CARTRIDGE	SDFC-P
COALESCER	1	COALESCER MEDIA	CCSMED

### RECOMMENDED SPARES - ELECTRICAL

REF	QTY	DESCRIPTION	PART CODE
KM1-KM6	2	CONTACTOR 24V AC	CON1B24V
FF1, 2, 3, 6	1	OVERLOAD RELAY 3-5A	TOR5
F4, 5	1	OVERLOAD RELAY 4.5-7.5A	TOR75
F1, 2, 3, 6	8	FUSE 10 X 38 6A aM	C10M6
F4, 5	4	FUSE 10 X 38 10A aM	C10M10
F7	2	FUSE 10 X 38 4A gL	C10G4
F8	2	FUSE 10 X 38 6A gL	C10G6
F9	2	FUSE 10 X 38 2A gL	C10G2
KA1-10	2	RELAY 4PCO 24V AC	CR/REL4P24V
P1-P5	1	TIMER 4PCO 24V AC, ON DELAY	85.04.0.024.0000
P6	1	TIMER 2PCO 24V AC, MULTIFUNCTION	87.02.0.240.0000
LR1, LR2	1	POWER SUPPLY / SWITCHING AMPLIFIER	DN0200
H1-H12	20	FILAMENT BULB BA9s 1.2W	LM2T ALA024
H13	1	BEACON 24V AC RED	BEA24

### RECOMMENDED SPARES - MECHANICAL

REF	QTY	DESCRIPTION	PART CODE
M1-M3, M6	2	MECHANICAL SEAL FOR MONO MM PUMP	MSMM
M1-M3, M6	2	STATOR FOR MONO MM PUMP	MMSK
M1-M3, M6	2	ROTOR FOR MONO MM PUMP	MMR
M4, M5	1	NOCCH1 PUMP TYPE CM 100/36-M	CM 100/36-M
E1	1	OZONE GENERATOR	TOG C2B
SV1, SV1A	1	¼" 2/2 SOLENOID VALVE ASSY 24V AC	JA + ¼ + DV+ 24V / 50Hz + 10W
SV2, SV3	1	¾" 2/2 VALVE WITH PNEUMATIC ACTUATOR	70004605
SV2, SV3	1	SOLENOID CONTROL VALVE 24V AC	55100229C
SV2, SV3	2	EXHAUST SILENCER	T40B2800
PSL1 / PSH1, PSH2	1	PRESSURE SWITCH 0.5 - 10 BAR, ¼" BSP	PS2381CE
PG1, PG2	1	PRESSURE GAUGE 0-10 BAR	PG160F
PG3, FR1	1	PRESSURE GAUGE 0-10 BAR	18-013-989
LSL1,H1,L4,H4,L5	2	LEVEL SWITCH N/O POLYPROP M12	FSW-CCS
LSL2, H2, L3, H3	1	1/8" BSP 90 DEG LEVEL SWITCH	RFS-4-2 SUS 316 1/8PF
LS1, LS2	1	ELECTRONIC PRESSURE SENSOR	PN2028
LS1, LS2	1	ELECTRONIC PRESSURE SENSOR CABLE	E10900