




METHOD STATEMENT

FOR

REFRIGERANT AND WASTE COMPRESSOR OIL RECOVERY (ELVs)

DATE:	29 TH JULY 2021	AUTHOR:	ING. FERDINANDO SIGONA
ERA REF:	EP0077/19		[REDACTED]
OUR REF:	MS ELA/1.5 290721		[REDACTED]
SITE:	ELA LTD. 31, WIED GHAMMIEQ ROAD KALKARA.		[REDACTED]
CLIENT:	Ms. ENZO ATTARD O.B.O. ELA LTD		
SIGNATURE:			

REVISION HISTORY			
DATE	VERSION	REVISED BY	NOTES
06/02/2020	1.0	Ing. F. Sigona	Documented Created
26/02/2020	1.1	Ing. F. Sigona	Update to number of ELVs on site and state. Update to degassing method statement
18/05/2021	1.2	Ing. F. Sigona	Yearly review with client
16/06/2021	1.3	Ing. F. Sigona	Update waste codes
14/07/2021	1.4	Ing. F. Sigona	Update waste codes
29/07/2021	1.5	Ing. F. Sigona	Highlighting hazardous items

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Scope

This document is being compiled as per Subsidiary Legislation 549.36 pertaining to the waste management of end of life vehicles with particular reference to the recovery of refrigerant gases and extraction of waste compressor oil from ELVs air conditioning circuits. This document and method statement form part of the improvement programme related to Environmental Permit EP0077/19 and requested by the issuing Authority.

References

1. Environmental Permit EP0077/19
2. S.L. 549.36 - WASTE MANAGEMENT (END OF LIFE VEHICLES) REGULATIONS
3. European Waste Catalogue and Hazardous Waste List (EPA - 2002)

Preamble

The ELV facility at ELA Ltd typically handles waste with European Waste Catalogue code listed in the table below: -

<i>Waste Category</i>	<i>European Waste Catalogue Code</i>	<i>Disposal Facility</i>
ELVs	16 01 04*	Authorised waste management facility
ELVs, containing neither liquids nor other hazardous components	16 01 06	Authorised waste management facility
Ferrous Metal	16 01 17	Authorised waste management facility
Non-Ferrous Metal	16 01 18	Authorised waste management facility
ELV tyres	16 01 03	Authorised waste management facility
Plastic	16 01 19	Authorised waste management facility
Glass	16 01 20	Authorised waste management facility
Components not otherwise specified	16 01 22	Authorised waste management facility
Lead batteries	16 06 01*	Authorised waste management facility
Chlorofluorocarbons, HCFC, HFC	14 06 01*	Authorised waste management facility
mineral based non-chlorinated hydraulic oils	13 01 10*	Authorised waste management facility
synthetic hydraulic oils	13 01 11*	Authorised waste management facility
mineral-based non-chlorinated insulating and heat transmission oils	13 03 07*	Authorised waste management facility
Oily water from oil/water separators	13 05 07*	Authorised waste management facility
fuel oil and diesel	13 07 01*	Authorised waste management facility
Petrol	13 07 02*	Authorised waste management facility

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other fuels (including mixtures)t	13 07 03*	Authorised waste management facility
tanks for liquefied gas	16 01 16	Authorised waste management facility
upholstery	16 01 99	Authorised waste management facility
Discarded equipment containing chlorofluorocarbons, HCFC, HFC	16 02 11*	Authorised waste management facility
hazardous component from WEEE	16 02 15*	Authorised waste management facility
components from WEEE	16 02 16	Authorised waste management facility
Aqueous liquid wastes containing hazardous substances	16 10 01*	Authorised waste management facility
Vehicle Oils, Fuel & Fluids	16 01 13* 16 01 21* 13 02 04* 13 02 05* 13 02 06*	Authorised waste management facility
Spent catalysts containing gold, silver, rhenium, rhodium, palladium, iridium or platinum	16 08 01	Authorised waste management facility
Spent catalysts containing hazardous transition metals or hazardous transition metal compounds	16 08 02*	Authorised waste management facility
Spent catalysts containing transition metals or transition metal compounds not otherwise specified	16 08 03*	Authorised waste management facility
Explosive components (Air bags)	16 01 10*	Authorised waste management facility
Electronic Components (PCBs)	16 01 09*	Authorised waste management facility
Other	16 01 07* 16 01 08* 16 01 11* 16 01 12 16 01 14* 16 01 15	Authorised waste management facility
Parts for Resale	16 01 XX	Stored temporarily on site

Table 1 - EU Waste Categories (hazardous properties*)**

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The current average storage capacity for depolluted ELVs is 450 at any given time with a processing capacity of 10 ELVs per day. Vehicles accepted on site are depolluted on the same day. The facility is operated from Monday to Friday: 07:00 to 16:00hrs.

Operating Procedure

The operational procedure for the treatment of ELVs is as follows:

(Note that items 1 to 4 will be carried out as soon as the vehicle arrives on site, whereas items 5 to 9 will be carried out when the vehicle is processed)

1. ELV is transported to facility using company tow truck/loader or brought on site by owner.
2. ELV is lifted onto Lift/Platform + canopy and sump using company fork-lift.
3. All batteries are adequately removed.
4. Vehicle oils (engine oil, gear oil, hydraulic fluids, engine coolant) and fuel (petrol/diesel) are drained appropriately into adequately labelled containers.
5. Catalytic converters are cut out using hand scissors for recycling.
6. Air conditioning fluids are recovered as per method statement below.
7. Possible explosive components such as air bags are removed and/or neutralised.
8. The remaining parts of the vehicle are manually dismantled, separated and stored on appropriate racks/storage areas or disposed of as per the categories listed in table above.
9. All parts/fluids are eventually transferred to respective disposal facility as per table above.

(Note: All parts/fluids will be taken to the disposal facility by the ELA Ltd.)

Method Statement

The method statement ensures that the personnel carrying out the task/s do so in a structured and controlled manner. The personnel must understand the hazards and risks associated with each sequence of the work and use the controls specified to reduce the risk of injury, ill health or damage to the surroundings and environment.

Activity Details

Number of workers: 1 - 2

Details: Recovery of vehicle air-conditioning fluids (refrigerants and compressor oils) from ELVs prior to dismantling any part of the air-conditioning circuit or components. The direct recovery method will be used.

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Tools:

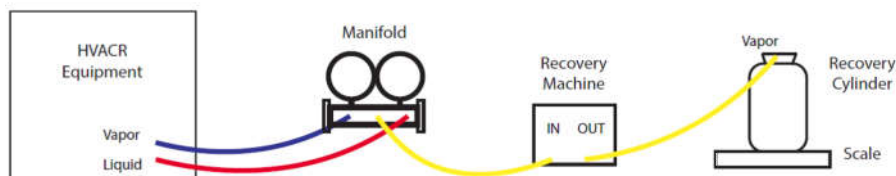
- Refrigerant Recovery Machine – (XtractR AC GRS)
- Refrigerant Hoses
- Refrigerant Scale
- Recovery Cylinder R12 – Clearly marked via engraving
- Recovery Cylinder R134a – Clearly marked via engraving
- General workshop tools
- Bund Tray
- Funnel
- Oil holding tank

Safety Equipment:

- Safety shoes
- Safety goggles
- Fluoroelastomer Gloves

Activity Procedure

1. Vehicle to be emptied from air-conditioning fluids is moved to the depollution shed
2. Bonnet/Hood is opened/removed and refrigerant service ports (1/4" SAE HVAC or Quick coupler fittings) are located
3. Recovery machine and related equipment are moved to close proximity of the vehicle to be emptied
4. Check the type and the maximum amount of refrigerant charge for the vehicle in question
5. Connect the recovery equipment as per diagram below: -



6. The appropriate clearly marked recovery cylinder must be connected to the recovery equipment. Currently only R12 and R134a are handled at the scrapyards facility.
7. Start with all valves closed (recovery cylinder, recovery machine, manifold & hoses)
8. Zero/Tare the refrigerant scale
9. Open hose valves, core removal tool valves or service valves
10. Set the recovery machine to "recover mode"

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11. Open the low-side of the manifold for vapour recovery and open the high-side manifold for liquid recovery
12. Purge hoses of air by loosening and unseating the hose connected to the recovery tank until refrigerant is present (3-4s)
13. Retighten the hose connected to the recovery tank
14. Fully open the vapour line on the recovery cylinder
15. Turn on the recovery machine
16. Adjust manifold high-side valve to throttle refrigerant flow to the recovery machine to avoid liquid slugging
17. Monitor manifold gauge pressures and verify that pressures are decreasing accordingly
18. Recovery machine will turn off once system reaches vacuum pressure indicating the operation is complete and vehicle is depleted of refrigerant.
19. Wait 5 minutes and confirm gauge pressures on manifold remain in vacuum
20. Set the recovery machine to “purge mode”
21. Purge the recovery machine
22. Close all valves
23. Disconnect recovery equipment
24. Move recovery equipment away from vehicle
25. Remove the AC compressor from the vehicle
26. Move AC compressor to the bund tray
27. Place funnel in oil holding tank and in bund tray
28. Open AC compressor drain valve
29. Empty AC compressor oil via funnel to the oil holding tank
30. Let drip for a minimum of 15 mins
31. Close AC compressor oil drain valve
32. Move AC compressor to associated waste type after confirmation that all fluid has been removed and after the unit has been dismantled further if necessary.

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33. Complete any other depollution operations
34. Vehicle leaves depollution shed
35. Any full (80%) recovery cylinders will be disposed or resold as per Table 1 above.

Control and Preventive Measures

- Recovery cylinders should be clean and in good condition prior to first and consecutive uses.
- Recovery cylinders should be evacuated to 500 microns or less prior to first use
- Recovery cylinders should not be filled beyond 80% of their rated capacity to allow for refrigerant expansion
- Recovery cylinders for different gases should be clearly marked and stored in designated area. Only R12 and R134a gases are currently handled by the scrapyard.
- Standard hoses with no restrictions are to be used and are to be as short as is practically possible
- Cooling of the recovery tank via fan is recommended during operation
- Filter / drier to be installed as part of the recovery external circuit (inlet side)
- Fluid transfer should only be performed in bunded areas with secondary storage tray installed for the eventuality of small spills during oil draining
- Recovered fluids are to be immediately placed in dedicated temporary holding tanks and held in designated storage areas with clear markings as indicated above.
- Refrigerant R1234F is currently not handled at the scrap yard. Should future demand require recovery of this type of refrigerant and associated lubrication oils a separate recovery machine will be brought on site with separate recovery storage tanks which are clearly marked as per R1234F requirements.

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