



## 20 FT CONTAINERS (HC)

# C32

Drawing: 541-3497

Image shown may not reflect actual configuration.

## 1. General

### 1.1 Purpose

This specification lists the requirements for the design, manufacture, supply and test of a weather protective and sound attenuated enclosure (container) package.

### 1.2 Equipment Provided

The following equipment and services are provided according to the requirements of this specification.

All equipment is new and installed in the packaged container or supplied loose unless noted otherwise in this specification.

- Enclosure / Container
- Engine Cooling and Ventilation System
- Fuel System
- Lubrication System
- Engine Exhaust System
- Decals
- Genset / Engine Control System
- Enclosure Electrical Lighting and Wiring
- Documentation

### 1.3 Sound Level

As standard the sound pressure level to be the following in free field conditions (measured as an 8 point linear average around perimeter of package set, 1.2m above ground level at 100% prime power)

85 dBA at 1m (measured as an 8 point linear average around perimeter of package set, 1.2m above ground level at 100% standby power)

80 dBA at 7m (measured as a 4 point linear average around perimeter of package set, 1.2m above ground level at 100% standby power)

## 1.4 Site Conditions

As the package is suitable for different models of gensets, the maximum ambient capability is dependent on the selected genset engine and configuration as well as altitude.

The output power is based on the kW rating with the Price list mechanical fan, according to Cat® rating guidelines.

Package ambient clearances consider an appropriate heat pick-up inside the package enclosure / container.

Refer to the section on genset selection for indicative figures on ambient clearance capabilities.

## 1.5 References and Standards

Quality Management ISO 9001.

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Genset Design Standard – Safety EN 12601.

Recip. I.C. Engine driven AC generating sets ISO 8528.

Safety of Machinery, Electrical Equipment of Machines IEC / EN 60204.

Low-voltage Switch-gear and Control Assemblies EN 61439.

ISO Cargo Containers, Dimensions, Ratings, Testing and Lifting ISO 668, ISO1496 and ISO 3874.

Convention for Safe Containers CSC:2014

## 1.6 Work Included

Installation.

The work includes supplying a complete integrated generator system packaged in the container. The system consists of a diesel generator set with related component accessories.

## 1.7 Warranty

Refer Caterpillar Service Warranty Bulletin No 3.19

Period for the offered equipment is calculated as 12 months for Prime operation and 24 months for Standby operation from commissioning or/and commercial operation, whatever occurs first.

At the latest, however, maximum offered period of warranty plus 6 months from the date of EXW.

Details on the warranty are according to Caterpillar General Warranty Conditions.

## 2. Generator Set Selection

### 2.1 Genset Packaging Requirements

Free Issue genset supplied to Larne Packaging Centre for Packaging Option.

All genset consists to be Low Voltage, and alternator selection may need to be reviewed to confirm compatibility.

All genset consists to be submitted to Larne Packaging Centre for review and approval before placing order.

Price list open set compatibility with package:

- CE Declaration of Conformity if applicable.

Price list open set incompatibility with package:

- Price list sound attenuated or weather protective enclosure.

Please check genset compatibility on Power Net.

### 2.2 Genset Ratings and Packaged Ambient Clearances

Genset – C32 – Price list C32 PGDG.

Feature Codes as per Price list.

Packaged Ambient Clearance = 43°C with Glycol @ 1400 kVA Standby 50 Hz / 400V.

Packaged Ambient Clearance = 40°C with Glycol @ 1500 kVA Standby 50 Hz / 400V.

Package Ambient Clearances assume LOW BSFC software use, alternative software may adjust the quoted figures.

An additional 3°C ambient capability can be assumed with treated water instead of 50 / 50 Glycol as coolant on the quoted figures.

## 3. Enclosure

### 3.1 Enclosure General Construction and Materials

Enclosure is a robustly constructed walk in type, designed to provide the necessary weather protection and ventilation for the generator.

Enclosure is a complete custom fabricated structure and is not modified from a standard type ISO cargo container.

Enclosure is designed to meet ocean shipping standards.

Enclosure is generally constructed from structural steel to EN 10025, and galv / electro-zinc coated steel sheet to EN 10346 and EN 10152.

All structural steel is shot blasted to SA2.5 before painting.

All welding is carried out in accordance with 3rd Party approved procedures in conjunction with appropriate in-house non-destructive test procedures.

### 3.2 Enclosure Dimensions

ISO 20 ft HC (shipping) – 24 ft HC (installation).

(L) 6058 mm x (W) 2438 mm x (H) 2896 mm (shipping).

(L) 7312 mm x (W) 2438 mm x (H) 2896 mm (installation).

Exclude the external mounted equipment when applicable.

### 3.3 Enclosure Package Weight

Estimate varies and is dependent on configuration and selected genset and final build tolerances.

Typical: 14000 kg.

### 3.4 Lifting Arrangement / Procedure

ISO cargo container fittings are provided on container top and bottom surfaces, providing 4 point lifting capability for full wet weight via an ISO approved lifting method.

### 3.5 Floor

Structural steel floor sheeted with steel chequered pattern sheet for anti-slip finish.

### 3.6 Spill Containment

110% of all on board fluids.

Excludes free standing fuel tank capacities.

### 3.7 Roof

Sheet steel exterior, insulated construction.

Interior surfaces lined with perforated galvanized sheet steel.

### 3.8 Walls

Corrugated form sheet steel exterior, insulated construction.

Interior surfaces lined with perforated galvanized sheet steel.

### 3.9 Doors

Container complete with suitable number of personnel access doors per side fitted with Kason type locks / handles, internal panic release buttons, door check strap and stainless steel hinges. Door handles are at a height to suit operation with the container at ground level. All door locks have 1 key number.

### 3.10 Cable Exits

Power cable entrance / exit via a cut out and gland plate in the enclosure Right hand sidewall. (As viewed from alternator end.)

### 3.11 Enclosure Painting

Standard finished colour of packaged container = EPD White.

Primer / topcoat paint system provided by a high solids Acrylic / Epoxy hybrid paint system providing a gloss finish at a nominal dry film thickness of 150 microns.

Expected time to first maintenance = 5 years.

## 4. Cooling and Ventilation Systems

### 4.1 Engine Cooling System

The price list open set radiator provides the required cooling airflow for the genset engine.

### 4.2 Enclosure Ventilation

The price list open set radiator provides the required cooling airflow genset compartment.

## 5. Fuel System

### Fuel Connections

Right hand sidewall. (As viewed from alternator end.)

Options are available – refer to section 12.

## 6. Lubrication System

### Crankcase Breather System

Crankcase Breather routed to radiator compartment air outlet discharge.

## 7. Engine Exhaust System

### Exhaust Silencer

Externally Mounted Exhaust Silencer.

Silencer is cylindrical and mounted on roof of container. Removed for shipping purposes.

Exterior Surface of silencer is Hot Aluminium Metal sprayed for superior corrosion resistance.

## 8. Decals

3 Caterpillar Decals applied directly to container walls – 1 per side.

## 9. Electrical

### 9.1 Enclosure Lighting and Wiring

#### 230 VAC:

Suitable number of AC LED batten lights located in the engine compartment, with 1 x light switch conveniently located at each side of the enclosure.

#### Emergency Stops:

2 x Exterior Emergency Stop Push-buttons, 1 x per main side of the enclosure, conveniently located to a personnel access door.

### 9.2 Engine Starting System

The batteries are located on the enclosure floor, located in a convenient location

Caterpillar starting batteries are supplied with the genset according to Caterpillar rating guidelines for selected diesel genset.

### 9.3 Earth Connection

2 x M12 earthing bosses located at opposite ends of enclosure exterior.

## 10. Documentation

Submittals.

Documentation is supplied in English language in a non-editable version. Documentation for selected factory based consist according to Caterpillar guidelines.

In addition, the following information is provided:

1. General arrangement dimensional drawings of standard generator set in enclosure.
2. Weight of container unit.
3. Packing list, including any loose items for site up fit if applicable.
4. CE Declaration of Conformity if applicable.

## 11. Testing and Validation

Caterpillar has completed extensive pre-production launch validation testing at the Caterpillar NI facility in Larne and in field conditions on similar units. Validation testing at the Caterpillar factory includes:

- Noise measurement
- Airflow and cooling performance
- Ambient capability
- Water ingress
- Exhaust gas flow analysis and silencer performance
- Vibration analysis
- Safety and serviceability audit
- Technical construction file for CE marking of container assembly when required.

## 12. Options

***Combination of factory fitted options may be available. Refer to sales contact for availability.***

A series of options are available to complement the basic equipment delivery at site.

### 12.1 Optional Fuel Tank

N/A.

### 12.2 Refilling Pump

N/A.

### 12.3 External Fuel Connections

N/A.

### 12.4 Lube Oil Top Up System

Automatic lube oil top up system for the extending running. 40 Litres nominal capacity.

### 12.5 External Lube Oil Drain Connections

Extended to side wall container.

## 12.6 Exhaust Spark Arrestor

As option.

## 12.7 External Radiator Drain Connections

Extended to side wall container.

## 12.8 Space Heating and Motorised Louvres

N/A.

## 12.9 Automatic Fire Detection and Suppression System

N/A.

## 12.10 12.10.1 Single Phase Socket Outlet, 13A RCD or 16A Ceeform

Small power outlet. Please advise type.

### 12.10.2 Emergency Battery Backup Lighting C/W Manual Test Switch

2 x LED Emergency backup lights (5W).

1 x per main side of the enclosure, located above personnel access door located in the engine compartment.

1 x manual test switch conveniently located inside the enclosure.

## 12.11 Generator Controls

Optional generator control systems can be provided according to operating requirements or customer preference and installed on the generator set in place of available EMCP controls.

Optional genset controllers can provide as below:

1. Genset to genset paralleling.
2. Genset to mains utility paralleling.
3. Remote monitoring.
4. Compatibility with existing genset control system.

Refer to sales contact for availability.

## 12.12 Low Ambient Operation

Energy container can be adapted to suit low ambient operating conditions.

Refer to your sales contact for availability.

## 12.13 Unpackaged Container Option

A loose container will be supplied if the purchaser wishes to package a suitable genset.

Refer to sales contact for availability.

## 12.14 Special Paint Colours

A range of RAL colour code available. Metallic colours not available.

## 12.15 Upgraded Paint Specifications 10 / 15 Year

Standard paint system for a 10 year / 15 year durability.

Durability does NOT equate to a guarantee time. Durability relates to the performance duration of the coating system before first major maintenance.

### **12.16 Factory Witness Test**

Customer factory acceptance witness testing is available at the Caterpillar manufacturing plant.

A range of generator set and complete package tests are available including certified noise test.

Refer to sales contact for availability.

### **12.17 Modifications for MV Genset**

All genset consists to be Low Voltage, and alternator selection may need to be reviewed to confirm compatibility.

Refer to sales contact for availability.

### **12.18 Engine Closed Crankcase Ventilation System**

Crankcase fumes rerouted via engine air induction system.

### **12.19 Hand Held Fire Extinguishers**

2x conveniently internally located on personnel access doors. 1 per side.

### **12.20 Shipping Container Certification**

Lloyd's Register Container Certification Scheme LRCCS: 2015.

It is certified by an independent classification society for CSC freight.

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