

Instruction Manual for CP Compressor  
English

CPS 185 - 100 KoD

Engine KDI 1903 TCR

**CALIFORNIA Proposition 65**

 **WARNING**

Breathing diesel engine exhaust exposes you to chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.

- Always start and operate the engine in a well-ventilated area.
- If in an enclosed area, vent the exhaust to the outside.
- Do not modify or tamper with the exhaust system.
- Do not idle the engine except as necessary.

For more information go to [www.P65warnings.ca.gov/diesel](http://www.P65warnings.ca.gov/diesel).



# **Instruction Manual for CP Compressor**

## **CPS 185 - 100 KoD**

**Original instructions**

Printed matter No.  
1317 0080 10  
05/2023



---

CHICAGO PNEUMATIC - PORTABLE ENERGY DIVISION  
[www.cp.com](http://www.cp.com)

---

### **Warranty and Liability Limitation**

Use only authorized parts.

Any damage or malfunction caused by the use of unauthorized parts is not covered by Warranty or Product Liability.

The manufacturer does not accept any liability for any damage arising from modifications, additions or conversions made without the manufacturer's approval in writing.

Neglecting maintenance or making changes to the setup of the machine can result in major hazards, including fire risk.

While every effort has been made to ensure that the information in this manual is correct, American Pneumatic Tool does not assume responsibility for possible errors.

Copyright 2023, Construction Equipment North America LLC, RockHill, SC USA.

Any unauthorized use or copying of the contents or any part thereof is prohibited.

This applies in particular to trademarks, model denominations, part numbers and drawings.

## Preface

*Please read the following instructions carefully before starting to use your compressor.*

*It is a solid, safe and reliable machine, built according to the latest technology. Follow the instructions in this booklet and we guarantee you years of trouble free operation.*

*Always keep the manual available near the machine.*

*In all correspondence always mention the compressor type and serial number, shown on the data plate.*

*The company reserves the right to make changes without prior notice.*

## Table of contents

|          |                                                   |           |
|----------|---------------------------------------------------|-----------|
| <b>1</b> | <b>Safety precautions .....</b>                   | <b>7</b>  |
| 1.1      | Introduction .....                                | 7         |
| 1.2      | General safety precautions .....                  | 7         |
| 1.3      | Safety during use and operation .....             | 8         |
| 1.4      | Safety during maintenance and repair .....        | 9         |
| 1.5      | Tool applications safety.....                     | 9         |
| 1.6      | Specific safety precautions .....                 | 9         |
| <b>2</b> | <b>Leading particulars .....</b>                  | <b>12</b> |
| 2.1      | General description.....                          | 12        |
| <b>3</b> | <b>Main parts .....</b>                           | <b>14</b> |
| <b>4</b> | <b>Overview.....</b>                              | <b>16</b> |
| 4.1      | Compressor regulating system (load condition). .. | 16        |
| 4.2      | Air flow .....                                    | 18        |
| 4.3      | Oil system .....                                  | 18        |
| 4.4      | Continuous regulating system .....                | 18        |
| <b>5</b> | <b>Electrical system .....</b>                    | <b>20</b> |
| <b>6</b> | <b>Operating instructions .....</b>               | <b>24</b> |
| 6.1      | Parking, towing and lifting instructions .....    | 24        |
| 6.1.1    | Drawbar preparations for towing.....              | 24        |
| 6.1.2    | Parking instructions .....                        | 25        |
| 6.1.3    | Towing instructions .....                         | 25        |
| 6.1.4    | Lifting instructions .....                        | 25        |
| 6.2      | Shipping the compressor .....                     | 26        |
| 6.2.1    | Fixation tools .....                              | 27        |
| 6.2.2    | Securing the unit to the shipping vehicle .....   | 28        |
| 6.3      | Install the Battery cable .....                   | 29        |
| 6.4      | Before starting .....                             | 29        |
| 6.5      | Starting / stopping.....                          | 29        |
| 6.5.1    | Emergency stop .....                              | 30        |
| 6.6      | Controller XC1004 .....                           | 31        |
| 6.6.1    | Control panel .....                               | 31        |
| 6.6.2    | Overview screen icons.....                        | 32        |
| 6.6.3    | Starting .....                                    | 35        |
| 6.6.4    | Stopping.....                                     | 35        |

|           |                                                   |           |
|-----------|---------------------------------------------------|-----------|
| 6.6.5     | View types .....                                  | 36        |
| 6.6.6     | Fault codes.....                                  | 38        |
| <b>7</b>  | <b>Maintenance.....</b>                           | <b>39</b> |
| 7.1       | Use of service packs .....                        | 39        |
| 7.2       | Preventive maintenance schedule.....              | 39        |
| 7.3       | QR code .....                                     | 39        |
| 7.4       | Oil specifications .....                          | 41        |
| 7.4.1     | Lubrication oils .....                            | 41        |
| 7.5       | Oil level check .....                             | 42        |
| 7.5.1     | Check engine oil level .....                      | 42        |
| 7.5.2     | Check compressor oil level .....                  | 42        |
| 7.5.3     | Engine oil and oil filter change .....            | 42        |
| 7.5.4     | Compressor oil and oil filter change .....        | 42        |
| 7.6       | Cleaning coolers .....                            | 43        |
| 7.7       | Battery care.....                                 | 43        |
| 7.7.1     | Electrolyte .....                                 | 43        |
| 7.7.2     | Recharging a battery.....                         | 43        |
| 7.7.3     | Battery maintenance .....                         | 43        |
| 7.8       | Storage.....                                      | 43        |
| <b>8</b>  | <b>Adjustments and servicing procedures ..</b>    | <b>44</b> |
| 8.1       | Adjustment of the continuous regulating system .. | 44        |
| 8.2       | Air Filter engine/compressor.....                 | 45        |
| 8.2.1     | Main parts.....                                   | 45        |
| 8.2.2     | Cleaning the dust trap.....                       | 45        |
| 8.2.3     | Replacing the air filter element .....            | 46        |
| 8.2.4     | Air filter maintenance.....                       | 46        |
| 8.3       | Air receiver.....                                 | 46        |
| 8.4       | Safety valve .....                                | 46        |
| 8.5       | Fuel system.....                                  | 46        |
| <b>9</b>  | <b>Problem solving .....</b>                      | <b>47</b> |
| 9.1       | Problem solving chart.....                        | 47        |
| 9.2       | Alternator precautions .....                      | 47        |
| <b>10</b> | <b>Technical specifications .....</b>             | <b>49</b> |
| 10.1      | Torque values .....                               | 49        |
| 10.1.1    | General torque values.....                        | 49        |
| 10.1.2    | Critical torque values .....                      | 49        |
| 10.2      | Compressor /engine specifications .....           | 50        |

10.2.1 Reference condition ..... 50

10.2.2 Limitations ..... 50

10.2.3 Altitude unit performance curve..... 51

10.2.4 Performance data (133)..... 52

10.3 Design data ..... 53

10.3.1 Compressor ..... 53

10.3.2 Engine ..... 53

10.3.3 Unit ..... 53

**11 Disposal..... 54**

11.1 General ..... 54

11.2 Disposal of materials ..... 54

**12 Maintenance log ..... 55**

# Safety precautions



**To be read attentively and acted accordingly before towing, lifting, operating, performing maintenance or repairing the compressor.**

## INTRODUCTION

The policy of Chicago Pneumatic is to provide the users of their equipment with safe, reliable and efficient products. Factors taken into account are among others:

- the intended and predictable future use of the products, and the environments in which they are expected to operate,
- applicable rules, codes and regulations,
- the expected useful product life, assuming proper service and maintenance,

Before handling any product, take time to read the relevant instruction manual. Besides giving detailed operating instructions, it also gives specific information about safety, preventive maintenance, etc.

These precautions are general and some statements will therefore not always apply to a particular unit.

When handling, operating, overhauling and/or performing maintenance or repair on Chicago Pneumatic equipment, the mechanics are expected to use safe engineering practices and to observe all relevant local safety requirements and ordinances. The following list is a reminder of special safety directives and precautions mainly applicable to Chicago Pneumatic equipment.

This brochure applies to machinery processing or consuming air. Processing of any other gas requires additional safety precautions typical to the application and are not included herein.

All responsibility for any damage or injury resulting from neglecting these precautions or by non-observance of ordinary caution and due care required in handling, operating, maintenance or repair, also if not expressly mentioned in this instruction manual, is disclaimed by Chicago Pneumatic.

If any statement does not comply with local legislation, the stricter of the two shall be applied. Statements in this manual should not be interpreted as suggestions, recommendations or inducements that it should be used in violation of any applicable laws or regulations.

## GENERAL SAFETY PRECAUTIONS

- 1 The owner is responsible for maintaining the unit in a safe operating condition. Unit parts and accessories must be replaced if missing or unsuitable for safe operation.
- 2 Use only lubricating oils and greases recommended or approved by Chicago Pneumatic or the machine manufacturer. Ascertain that the selected lubricants comply with all applicable safety regulations, especially with regard to explosion or fire risk and the possibility of decomposition or generation of hazardous gases.
- 3 The supervisor, or the responsible person, shall at all times make sure that all instructions regarding machinery and equipment operation and maintenance are strictly followed and that the machines with all accessories and safety devices, as well as the consuming devices, are in good repair, free of abnormal wear or abuse, and are not tampered with.
- 4 Maintenance, overhaul and repair work shall only be carried out by adequately trained personnel; if required, under supervision of someone qualified for the job.
- 5 Whenever there is an indication or any suspicion that an internal part of a machine is overheated, the machine shall be stopped but no inspection covers shall be opened before sufficient cooling time has elapsed; this to avoid the risk of spontaneous ignition of oil vapour when air is admitted.
- 6 Maintenance work, other than routine attention, shall only be undertaken when the machine is turned off.
- 7 Before dismantling any pressurized component, the compressor or the equipment shall be effectively isolated from all sources of pressure and be completely vented to atmosphere. In addition, a warning sign bearing a legend such as "work in progress; do not open" shall be attached to each of the isolating valves.
- 8 Before a machine is being repaired, steps shall be taken to prevent inadvertent starting. In addition, a warning sign bearing a legend such as "work in progress; do not start" shall be attached to the starting equipment. The battery shall be disconnected and removed or the terminals covered by insulating caps.
- 9 Normal ratings (pressures, temperatures, speeds, etc.) shall be durably marked.
- 10 Never operate a machine or equipment beyond its rated limits (pressure, temperature, speed, etc.).
- 11 Maintenance and repair work should be recorded in an operator's logbook for all machinery. Frequency and nature of repairs can reveal unsafe conditions.
- 12 The machinery and pneumatic equipment shall be kept clean, i.e. as free as possible from oil, dust or other deposits.
- 13 To prevent an increase in working temperature, inspect and clean heat transfer surfaces (cooler fins, intercoolers, water jackets, etc.) regularly. For every machine establish a suitable time interval for cleaning operations.
- 14 All regulating and safety devices shall be maintained with due care to ensure that they function properly. They may not be bypassed.
- 15 Care shall be taken to avoid damage to safety valves and other pressure relief devices, especially to avoid plugging by paint, oil coke or dirt accumulation, which could interfere with the functioning of the device.
- 16 Pressure and temperature gauges shall be checked regularly with regard to their accuracy. They shall be replaced whenever outside acceptable tolerances.
- 17 Parts shall only be replaced by genuine Chicago Pneumatic replacement parts.
- 18 Safety devices shall be tested as described in the maintenance schedule of the instruction book(s) to determine that they are in good operating condition.
- 19 Never use flammable solvents or carbon tetrachloride for cleaning parts. Take safety precautions against toxic vapors when cleaning parts in or with cleaning products.
- 20 Observe scrupulous cleanliness during maintenance and repair. Keep away dirt by covering the parts and exposed openings with clean cloth, paper or tape.
- 21 Protect the engine, alternator, air intake filter, electrical and regulating components, etc. to prevent moisture ingress, e.g. when steam-cleaning.

- 22 When performing any operation involving heat, flames or sparks on a machine, the surrounding components shall first be screened with non-flammable material.
- 23 Never use a light source with open flame for inspecting the interior of a machine, pressure vessel, etc.
- 24 On portable units, support the drawbar and axle(s) securely if working underneath the units or when removing a wheel. Do not rely on jacks.
- 25 Prior to stripping a compressor, engine or other machine or undertaking major overhaul on it, prevent all movable parts with a mass exceeding 15 kg (30 lbs) from rolling over or moving.
- 26 When repair has been completed, make sure that no tools, loose parts or rags are left in, or on, the machine, the prime mover or the driving gear. The machine shall be barred several revolutions to ensure that there is no mechanical interference within the machine or driver.

## SAFETY DURING USE AND OPERATION

To lift a unit, all loose or pivoting parts, e.g. doors shall first be securely fastened. Do not attach cables, chains or ropes directly to the lifting eye; apply a crane hook or lifting shackle meeting local safety rules.

Helicopter lifting using the lifting eye is forbidden.

It is strictly forbidden to dwell or stay in the risk zone under a lifted load. Never lift the unit over people or residential areas.

Lifting acceleration and retardation shall be kept within safe limits.

### 1 Before towing the unit:

- ascertain that the pressure vessel is depressurized,
  - check the drawbar, the brake system (if equipped) and the towing eye. Also check the coupling of the towing vehicle,
  - check that the pivot wheel or stand leg is safely locked in the raised position,
  - ascertain that the towing eye can swivel freely on the hook,
  - check that the wheels are secure and that the tires are in good condition and inflated correctly,
  - connect the signal cable, check all lights and connect the pneumatic brake couplers (if equipped),
  - attach the safety break-away cable to the towing vehicle,
  - remove wheel chocks, if applied, and disengage the parking brake (if equipped).
- Apply safety chains to tow vehicle.

- 2 If the unit is to be backed up by the towing vehicle, disengage the overrun brake mechanism (if equipped).
- 3 Never exceed the maximum towing speed of the unit.
- 4 Place the unit on level ground and chock the wheels before disconnecting the unit from the towing vehicle. Unclip the safety break-away cable
- 5 When the unit has to operate in a fire-hazardous environment, each engine exhaust has to be provided with a spark arrestor to trap incendiary sparks.
- 6 The exhaust contains carbon monoxide which is a lethal gas. When the unit is used in a confined space, conduct the engine exhaust to the outside atmosphere by a pipe of sufficient diameter (min. 4 inches); do this in such a way that no extra back pressure is created for the engine. If necessary, install an extractor.
- 7 When operating in a dust-laden atmosphere, place the unit so that dust is not carried towards it by the wind. Operation in clean surroundings considerably extends the intervals for cleaning the air intake filters and the cores of the coolers.
- 8 Locate the unit away from walls. Take all precautions to ensure that hot air exhausted from the engine and driven machine cooling systems cannot be recirculated. If such hot air is taken in by the engine or driven machine cooling fan, this may cause overheating of the unit; if taken in for combustion, the engine power will be reduced.
- 9 No external force may be exerted on the air outlet valves, e.g. by pulling on hoses or by installing auxiliary equipment directly to a valve, e.g. a water separator, a lubricator, etc.
- 10 Distribution pipework and air hoses must be of correct size and suitable for the working pressure. Never use frayed, damaged or deteriorated hoses. Replace hoses and flexibles of which the lifetime expired. Use only the correct type and size of hose end fittings and connections. Install safety pins on quick type hose connections. A hose connected to a 2 inch (50 mm) valve must be provided with a safety wire (8 mm) fixed to the hose for effective pressures as from 145 psi (10 bar) up, although it is recommended to apply such safeguard already from (60 psi) 4 bar up.

The safety wire ends have to be attached, one to the eye provided next to the compressor air outlet valve, the other one to a point near to the air inlet of the applied equipment. Finally a wire mesh hose can be fixed over

the hose ends to dampen the blast in case a connection starts leaking or should become undone.

Close the compressor air outlet valve before connecting or disconnecting a hose. Ascertain that a hose is fully depressurized before disconnecting it.

When blowing through a hose or air line, ensure that the open end is held securely. A free end will whip and may cause injury.

Never play with compressed air. Never apply it to your skin or direct an air stream at people. Never use it to clean dirt from your clothes. When using it to clean down equipment, do so with extreme caution and use eye protection.

- 11 Never move a unit when external lines or hoses are connected to the outlet valves, to avoid damage to valves and/or manifold and hoses.
- 12 Never refill fuel while the unit is running. Keep fuel away from hot parts such as air outlet pipes or the engine exhaust. Do not smoke when fueling. When fueling from an automatic pump, a ground cable should be connected to the unit to discharge static electricity. Never spill nor leave oil, fuel, coolant or cleansing agent in or around the unit.
- 13 Never operate the unit in surroundings where there is a possibility of taking in flammable or toxic fumes.
- 14 Never operate the unit at pressures or speeds below or in excess of the limit ratings stated on the Principal Data sheet.
- 15 On liquid-cooled engines with closed cooling circuit: allow the unit to cool before removing a pressure cap.
- 16 All doors shall be shut during operation so as not to disturb the cooling air flow inside the body-work and/or render the silencing less effective. A door should be kept open for a short period only, e.g. for inspection or adjustment
- 17 Wear ear protectors when environmental noise can reach or exceed 85 dB(A). Beware of long-time exposure to noise.
- 18 Periodically check that:
  - all safety equipment is in good working order,
  - all guards and air conducting baffles are in place and securely fastened,
  - all hoses and/or pipes inside the unit are in good condition, secure and not rubbing,

- there are no fuel, oil or coolant leaks,- all fasteners are tight
- all electrical leads are secure and in good order,
- the engine exhaust system is in good condition,
- air outlet valves and manifold, hoses, couplings, etc. are in good repair, free of wear or abuse,
- the wheel nuts are tightened to the proper torque.

When more than one compressor is connected to a common header, be sure each compressor has a non-return valve (check valve) to prevent reverse rotation when stopping.

## SAFETY DURING MAINTENANCE AND REPAIR

Maintenance, overhaul and repair work shall only be carried out by adequately trained personnel; if required, under supervision of someone qualified for the job.

- 1 Use only the correct tools for maintenance and repair work, and only tools which are in good condition.
- 2 Parts shall only be replaced by genuine spare parts.
- 3 All maintenance work, other than routine attention, shall only be undertaken when the unit is stopped. Ensure that the unit cannot be started inadvertently
- 4 Before removing any pressurized component, the compressor or equipment shall be effectively isolated from all sources of pressure and the entire system shall be relieved of pressure. Do not rely on non-return valves (check valves) to isolate pressure systems.
- 5 Never use flammable solvents for cleaning (fire-risk). Take safety precautions against toxic vapours of cleaning liquids.
- 6 Scrupulously observe cleanliness during maintenance and when performing repairs. Keep dirt away by covering the parts and exposed openings with a clean cloth, paper or tape.
- 7 Never weld on or perform any operation involving heat near the fuel or oil systems. Fuel and oil tanks must be completely purged, e.g. by steam-cleaning, before carrying out such operations. Never weld on, or in any way modify, pressure vessels. Disconnect the alternator cables during arc welding on the unit.
- 8 Support the drawbar and the axle securely if working underneath the unit or when removing a wheel. Do not rely on jacks.
- 9 Make sure that no tools, loose parts or rags are left in or on the unit.
- 10 Before clearing the unit for use after maintenance or overhaul, check that operating pressures, temperatures

and speeds are correct and that the control and shutdown devices function correctly.

- 11 Do not remove any of, or tamper with, the sound damping material. Keep the material free of dirt and liquids such as fuel, oil and cleansing agents.
- 12 Protect the electrical and regulating components, the air filter, etc. to prevent moisture from entering them, e.g. when steam cleaning.

## TOOL APPLICATIONS SAFETY

Apply the proper tool for each job. With the knowledge of correct tool use and knowing the limitations of tools, along with some common sense, many accidents can be prevented.

Special service tools are available for specific jobs and should be used when recommended. The use of these tools will save time and prevent damage to parts.

- 1 Use only wrenches or sockets whose size fits the fastener.
- 2 Apply an open-end wrench only in the place of the fastener head, square to the thread axis.
- 3 Do not use a pipe or other improvised leverage extensions on handles.
- 4 Do not hammer on wrenches or other tools which are not specially designed for it.
- 5 Always support the ratchet head when using socket extensions.
- 6 Discard any wrench with broken or battered points or edges.
- 7 Never use hand type sockets on power or impact tools.
- 8 Select only heavy-duty impact sockets for use with pneumatic or electric impact tools.
- 9 Replace sockets showing cracks or wear; keep sockets clean.
- 10 Never use screwdrivers for prying, punching, chiselling, scoring or scraping.
- 11 Use the correct type and size of screwdriver for the job. The bit must match the fastener.
- 12 A screwdriver with rounded edges will slip; it needs to be redressed or discarded.
- 13 Never use a screwdriver or any other tool near a live wire or electrical component. Plastic covering of handles is for comfort and grip only. They are not

intended to act as insulation if such is not clearly marked by the manufacturer.

- 14 Never strike a hammer against a hardened object; use a soft drift against the object and strike against the drift.
- 15 Strike the object with the full face of the hammer.
- 16 Never use a hammer with a loose head.
- 17 Discard a hammer with chipped or mushroomed face.
- 18 Never use a chisel or punch with a chipped or mushroomed striking face.
- 19 Always pull on a wrench or socket handle, if possible, and adjust your stance to prevent a fall if something lets go.
- 20 Wear approved eye protection when using percussion tools or when scraping, chipping, shaving or grinding.
- 21 Wear protective gloves when holding a chisel or punch.

## SPECIFIC SAFETY PRECAUTIONS

### Batteries

When servicing batteries, always wear protecting clothing and glasses.

- 1 The electrolyte in batteries is a sulphuric acid solution which is fatal if it hits your eyes, and which can cause burns if it contacts your skin. Therefore, be careful when handling batteries, e.g. when checking the charge condition.
- 2 Install a sign prohibiting fire, open flame and smoking at the post where batteries are being charged.
- 3 When batteries are being charged, an explosive gas mixture forms in the cells and might escape through the vent holes in the plugs. Thus an explosive atmosphere may form around the battery if ventilation is poor, and can remain in and around the battery for several hours after it has been charged. Therefore:
  - never smoke near batteries being, or having recently been, charged,
  - never break live circuits at battery terminals, because a spark usually occurs.
- 4 When connecting an auxiliary battery (AB) in parallel to the unit battery (CB) with booster cables: connect the + pole of AB to the + pole of CB, then connect the - pole of CB to the mass of the unit. Disconnect in the reverse order. Incorrect connection will damage alternator.

## Ether fuel Systems

Ether fuel systems are used for diesel cold starting.

- 1 Do not use ether as a starting aid in conjunction with other starting aids (i.e. glow plug, air intake heater etc.) as an explosive condition may result in severe engine damage or personal injury.
- 2 This type of fuel is extremely flammable, toxic and poisonous. Avoid contact with eyes or skin and breathing the fumes. If accidentally swallowed, do not induce vomiting but call a physician immediately.
- 3 If fuel enters or fumes irritate the eyes, flush the latter with large quantities of clean water and call for medical aid.
- 4 Before operating ether cold starting aids, read the instructions and the container label.
- 5 Never operate ether cold starting aids while the engine is running as this can cause severe damage.
- 6 When maintenance, tests or repair has to be performed, do so in a well-ventilated area only, away from heat, open flame or sparks. Ascertain that the area is clearly marked out with signs prohibiting fire, open flame and smoking.
- 7 Wear eye protection when testing a system. Make sure that openings of a spray container, valve, tube or atomizer are pointed away from yourself and others while testing.
- 8 Do not store ether containers in temperatures above 160 °F (70°C),
- 9 Do not incinerate, puncture or attempt to remove the center core valve, side safety valve or any other part of an ether container.

## Pressure vessels

Maintenance/installation requirements:

- 1 The vessel can be used as pressure vessel or as separator and is designed to hold compressed air for the following application:
  - pressure vessel for compressor,
  - medium AIR/OIL,and operates as detailed on the data plate of the vessel:
  - the maximum working pressure is in psi (bar),
- 2 The pressure vessel is only to be used for the applications as specified above and in accordance with the technical specifications. Safety reasons prohibit any other applications.

- 3 National legislation requirements with respect to re-inspection must be complied with.
- 4 No welding or heat treatment of any kind is permitted to those vessel walls which are exposed to pressure.
- 5 The vessel is provided and may only be used with the required safety equipment such as manometer, overpressure control devices, safety valve, etc.
- 6 Draining of condensate shall be performed daily when vessel is in use.
- 7 Installation, design and connections should not be changed.
- 8 Bolts of cover and flanges may not be used for extra fixation.

## Safety valves

All adjustments or repairs are to be done by an authorized representative of the valve supplier.

Following checks must be carried out:

- 1 A check of the opening of the lifting gear, 1 or 2 times a year. This can be done by lifting the ring or lever.
- 2 A check of the set pressure once a year according to the local regulations, if required. This check may not be done with the compressor supplying the air pressure and must be carried out on a proper test bench.

## Injury Prevention

- 1 Stationary housing guards are provided on all rotating or reciprocating parts not otherwise protected and which may be hazardous to personnel. Machinery shall never be put into operation, when such guards have been removed, operate only when guards are securely reinstalled.
- 2 Do not open electrical cabinets, cubicles or other equipment while voltage is supplied. If such cannot be avoided, e.g. for measurements, tests or adjustments, have the action carried out by a qualified electrician only, with appropriate tools, and ascertain that the required bodily protection against electrical hazards is applied.
- 3 Noise, even at reasonable levels, can cause irritation and disturbance which, over a long period of time, may cause severe injuries to the nervous system of human beings.

When the sound pressure level, at any point where personnel normally has to attend, is:

- below 70 dB(A): no action needs to be taken,  
above 70 dB(A): noise-protective devices should be provided for people continuously being present in the room,  
below 85 dB(A): no action needs to be taken for occasional visitors staying a limited time only,  
above 85 dB(A): room to be classified as a noise-hazardous area and an obvious warning shall be placed permanently at each entrance to alert people entering the room, for even relatively short times, about the need to wear ear protectors,  
above 95 dB(A): the warning(s) at the entrance(s) shall be completed with the recommendation that also occasional visitors shall wear ear protectors,  
above 105 dB(A): special ear protectors that are adequate for this noise level and the spectral composition of the noise shall be provided and a special warning to that effect shall be placed at each entrance.
- 4 Insulation or safety guards of parts the temperature of which can be in excess of 80 °C (175 °F) and which may be accidentally touched by personnel shall not be removed before the parts have cooled to room temperature.
  - 5 When hot parts have to be handled, e.g. shrink fitting, special heat-resistant gloves shall be used and, if required, other body protection shall be applied.
  - 6 If the working process produces fumes, dust or vibration hazards, etc., take the necessary steps to eliminate the risk of personnel injury.
  - 7 Before lifting machines, all loose parts which could be liable to fall down shall be removed or secured; pivoting parts such as doors, etc. shall be safely immobilized.
  - 8 To lift heavy parts, a hoist of ample capacity, tested and approved according to local safety regulations, shall be used.
  - 9 When lifting machinery, only hooks or shackles meeting local safety regulations shall be applied. Never shall cables, chains or ropes be applied directly on or through lifting eyes. Never allow sharp bends in lifting cables, chains or ropes.
  - 10 Lifting hooks, eyes, shackles, etc. shall never be bent and shall only have stress in line with their design load axis. The capacity of a lifting device diminishes when

the lifting force is applied at an angle to its load axis.

- 11 For maximum safety and efficiency of the lifting apparatus all lifting members shall be applied as near to perpendicular as possible. If required, a lifting beam shall be applied between hoist, and load.
- 12 When heavy parts are being lifted with a hoist, it is strictly forbidden to dwell or pass under the load or in the space which is liable to be hit if the load or part of it should topple over or come loose. Never leave a load hanging on a hoist. Lifting acceleration and retardation shall be kept within safe limits.
- 13 A hoist has to be installed in such a way that the object will be lifted perpendicular. If that is not possible, the necessary precautions must be taken to prevent load-swinging, e.g. by using two hoists, each at approximately the same angle not exceeding 30deg from the vertical.
- 14 When using compressed air or inert gas to clean down equipment, do so with caution and use the appropriate protection, at least safety glasses, for the operator as well as for any bystander. Do not apply compressed air or inert gas to your skin or direct an air or gas stream at people. Never use it to clean dirt from your clothes.
- 15 Before blowing compressed air or inert gas through a hose, ensure that the open end is held securely, so that it cannot whip and cause injury.
- 16 When washing parts in or with a cleaning solvent, provide the required ventilation and use appropriate protection such as a breathing filter, safety glasses, rubber apron and gloves, etc.
- 17 Safety shoes should be compulsory in any workshop and if there is a risk, however small, of falling objects, wearing of a safety helmet should be included.
- 18 If there is a risk of inhaling hazardous gases, fumes or dust, the respiratory organs must be protected and, depending on the nature of the hazard, so must the eyes and skin.
- 19 Remember that where there is visible dust, the finer, invisible particles will almost certainly be present too; but the fact that no dust can be seen is not a reliable indication that dangerous, invisible dust is not present in the air.
- 20 When using cartridge type breathing filter equipment, ascertain that the correct type of cartridge is used and that its useful service life is not surpassed.

## Leading particulars

### Description of Safety Pictograms Used in this Manual

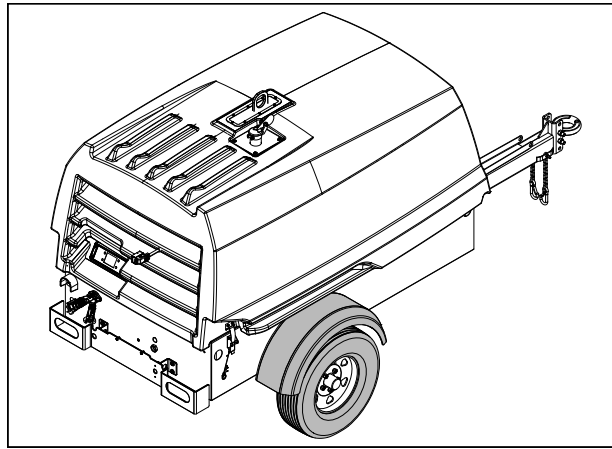


This symbol draws your attention to dangerous situations. The operation concerned may endanger persons and cause injuries.



This symbol is followed by supplementary information.

### GENERAL DESCRIPTION



The CPS 185 - 100 KoD is a silenced, single-stage, oil-injected screw compressor, built for an effective working pressure of 100 psi (7 bar).

#### Engine

The compressor is driven by a liquid-cooled diesel engine. The engine's power is transmitted to the compressor through a flexible coupling.

#### Compressor

The compressor casing houses two screw-type rotors, mounted on ball and roller bearings. The male rotor, driven by the engine, drives the female rotor. The male rotor has four lobes and the female rotor has six flutes. Thus, the male rotor revolves at 1 1/2 times the speed of the female rotor. The element delivers pulsation-free air. Injected oil is used for sealing, cooling and lubricating purposes.

#### Compressor oil system

The oil is boosted by air pressure. The system has no oil pump. The oil is removed from the air, in the air/oil vessel first by centrifugal force, second through the oil separator element. The vessel is provided with an oil level indicator.

#### Regulation

The compressor is provided with a continuous regulating system and a blow-down valve. The valve is closed during operation by outlet pressure of the compressor element and opens by air receiver pressure when the compressor is stopped.

When the air consumption increases, the air receiver pressure will decrease and vice versa.

This receiver pressure variation is sensed by the regulating valve which, by means of control air to the unloader and engine speed regulator, matches the air output to the air consumption. The air receiver pressure is maintained between the pre-selected working pressure and the corresponding unloading pressure

#### Cooling system

Engine and compressor are provided with a radiator and oil cooler. The cooling air is generated by a fan, driven by the engine.

#### Safety devices

A thermal shut-down sensor protects the compressor against overheating. The air receiver is provided with a safety valve. The engine is equipped with low oil pressure and high coolant temperature shut-down sensors and an alternator/V-belt protection system.

## Frame and axles

The compressor/engine unit is supported by rubber buffers in the frame.

The standard air compressor is equipped with a adjustable drawbar with a towing eye and road lighting.

As an option, the unit can be equipped with electric or hydraulic braking systems.

When driving backwards the hydraulic brake is not engaged automatically.

## Bodywork

The bodywork has a clamshell canopy that provides access for maintenance and service operations when opened.

## Lifting eye

A lifting eye protrudes through the canopy at the top of the unit.

## Control panel

The control panel is located at the rear of air compressor.

## Data plate

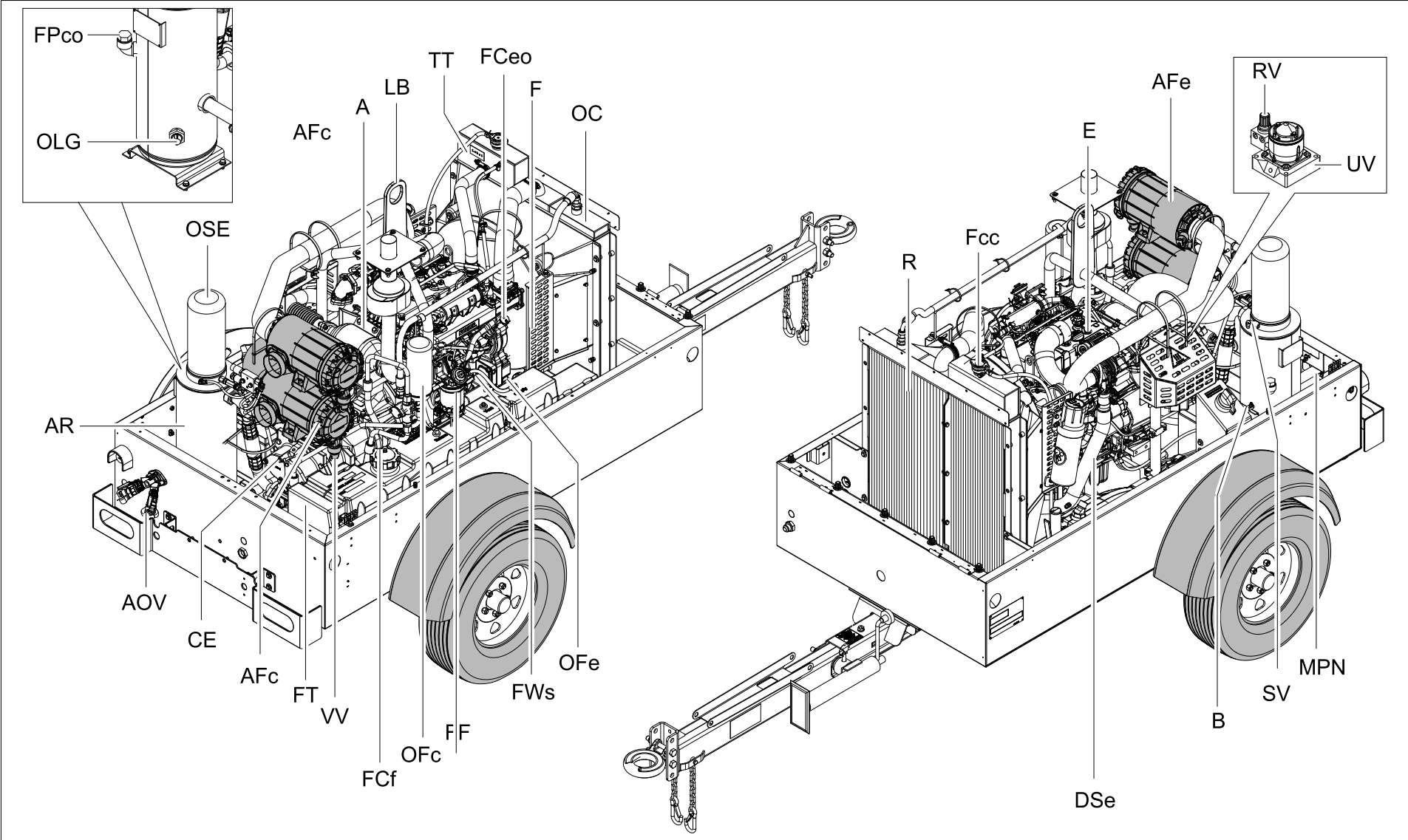
The compressor is furnished with a data plate located on the front, drivers side of the unit showing the compressor type, serial number, maximum final pressure and normal working pressure.

| MANUFACTURED BY / FABRIQUÉ PAR POWER TECHNIQUE NORTH AMERICA, LLC |                                                                 |
|-------------------------------------------------------------------|-----------------------------------------------------------------|
| MONTH/YEAR OF MANUFACTURE-MOIS/ANNÉE DE FABRICATION               |                                                                 |
| GVWR (LB/KG)                                                      | MAX. FINAL PRESSURE/ <b>PRESSION FINALE MAXIMALE</b> (PSIG)     |
| GAWR (LB/KG)                                                      | TIRE SIZE/LA TAILLE DES PNEUS (IN)                              |
| VIN                                                               | WHEEL SIZE (IN)/TAILLE DES ROUES                                |
| PORTABLE AIR COMPRESSOR/COMPRESSEUR D'AIR PORTABLE                | COLD INFLATION PRESS (PSIG)/PRESSION D'INFLATION À FROID (PSIG) |
| MODEL/MODÈLE                                                      | COLOR/COULEUR                                                   |
| PRODUCT NUMBER/NUMÉRO DE PRODUIT                                  |                                                                 |
| SERIAL NUMBER/NUMÉRO DE SÉRIE                                     |                                                                 |

THIS VEHICLE CONFORMS TO ALL APPLICABLE U.S. FEDERAL MOTOR VEHICLE SAFETY STANDARDS AND CANADIAN MOTOR VEHICLE PRESCRIBED UNDER THE SAFETY REGULATIONS ON THE DATE OF MANUFACTURE SHOWN./ CE VÉHICULE CONFORME À TOUTES LES NORMES DE SÉCURITÉ DES VÉHICULES AUTOMOBILES DES ÉTATS-UNIS FÉDÉRAUX APPLICABLES ET AUX VÉHICULES AUTOMOBILES CANADIENS PRESCRITS EN VERTU DES RÈGLEMENTS DE SÉCURITÉ À LA DATE DE FABRICATION INDIQUÉE.

ROCK HILL, SC USA  
1310921703

Main parts



| Reference | Name                            |
|-----------|---------------------------------|
| A         | After treatment                 |
| AFc       | Air Filter (Compressor element) |
| AFe       | Air Filter (Engine)             |
| AOV       | Air Outlet Valve                |
| AR        | Air Receiver                    |
| B         | Battery                         |
| CE        | Compressor Element              |
| DSe       | Dip Stick (Engine)              |
| E         | Engine                          |
| F         | Cooling Fan                     |
| FCc       | Filler Cap (Coolant)            |
| FCeo      | Filler Cap (Engine oil)         |
| FCf       | Filler Cap (Fuel)               |
| FF        | Fuel Filter                     |
| FPco      | Filler Plug (Compressor oil)    |
| FT        | Fuel Tank                       |
| FWs       | Fuel Water (Separator)          |
| LB        | Lifting Bale                    |
| MPN       | Minimum Pressure Nozzle         |
| OC        | Oil Cooler                      |
| OFc       | Oil Filter (Compressor)         |
| OFe       | Oil Filter (Engine)             |
| OLG       | Oil Level Gauge                 |
| OSE       | Oil Separator Element           |
| R         | Radiator                        |
| RV        | Regulating Valve                |
| SV        | Safety Valve                    |
| TT        | Top Tank                        |
| UV        | Unloading Valve                 |
| VV        | Vacuuator Valve                 |

## COMPRESSOR REGULATING SYSTEM (LOAD CONDITION)



| Reference | Name                    |
|-----------|-------------------------|
| AFc       | Air Filter (Compressor) |
| AFe       | Air Filter (Engine)     |
| AFE       | Air Filter Element      |
| AR        | Air Receiver            |
| AOV       | Air Outlet Valve        |
| BPV       | By-Pass Valve           |
| CE        | Compressor Element      |
| CH        | Coupling Housing        |
| CP        | Control Panel           |
| CV        | Check Valve             |
| DP        | Drain Plug              |
| E         | Engine                  |
| EW        | Electrical Wiring       |
| F         | Cooling Fan             |
| MPN       | Minimum Pressure Nozzle |
| OC        | Oil Cooler              |
| OFc       | Oil Filter (Compressor) |
| RV        | Regulating Valve        |
| SC        | Safety Cartridge        |
| SL        | Scavenge Line           |
| TS        | Temperature Switch      |

## AIR FLOW

### The system comprises:

|       |                                       |
|-------|---------------------------------------|
| AF    | Air filter                            |
| AR/OS | Air receiver/oil separator            |
| CE    | Compressor element                    |
| UA/UV | Unloader assembly with unloader valve |
| BDV   | Blow-down valve                       |
| MPV   | Minimum pressure valve                |
| LV    | Loading Valve                         |

Air drawn through the airfilter (AF) into the compressor element (CE) is compressed. At the element outlet, compressed air and oil pass into the air receiver/oil separator (AR/OS).

In the air receiver/oil separator (AR/OS), most of the oil is removed from the air/oil mixture: the remaining oil is removed by the separator element. The oil collects in the receiver and on the bottom of the separator element.

The oil collects in the receiver and on the bottom of the separator element.

The air leaves the receiver via the minimum pressure nozzle (MPN) which prevents the receiver pressure from dropping below the minimum working pressure, even when the air outlet valves are open. This ensures adequate oil injection and prevents oil consumption.

A temperature switch (TS) and a working pressure gauge (PG) are comprised in the system.

A blow-down valve (BDV) is fitted in the unloader assembly to automatically de pressurize the air receiver (AR) when the compressor is stopped.

## OIL SYSTEM

### The system comprises:

|       |                                 |
|-------|---------------------------------|
| AR/OS | Air receiver/oil separator      |
| RV/UA | Regulation Valve/Unloader Valve |
| OC    | Oil cooler                      |
| OF    | Oil filter                      |

The lower part of the air receiver (AR) serves as oil tank. Air pressure forces the oil from the air receiver/oil separator (AR/OS) through the oil cooler (OC) and oil filter (OF) to the compressor element (CE).

The compressor element has an oil gallery in the bottom of its casing. The oil for rotor lubrication, cooling and sealing is injected through holes in the gallery.

Lubrication of the bearings is ensured by oil injected into the bearing housings.

The injected oil, mixed with the compressed air, leaves the compressor element and re-enters the air receiver, where it is separated from the air as described in section 2.4. The oil that collects in the bottom of the oil separator element is returned to the system through scavenging line (SL), which is provided with a flow restrictor (FR).

The oil filter by-pass valve opens when the pressure drop over the filter is above normal because of a clogged filter. The oil then by-passes the filter without being filtered. For this reason, the oil filter must be replaced at regular intervals.

## CONTINUOUS REGULATING SYSTEM

### The system comprises:

|    |                  |
|----|------------------|
| RV | Regulating valve |
| UA | Unloader Valve   |
| SR | Speed regulator  |

The compressor is provided with a continuous regulating system. This system is provided with a blow-down valve (BDV) which is integrated in the unloader assembly (UA). The valve is closed during operation by outlet pressure of the compressor element and opens by air receiver pressure when the compressor is stopped.

When the air consumption increases, the air receiver pressure will decrease and vice versa. This receiver pressure variation is sensed by the regulating valve which, by means of control air to the unloader, matches the air output to the air consumption. The air receiver pressure is maintained between the pre-selected working pressure and the corresponding unloading pressure. When starting the compressor, the unloader valve (UV) is kept open by spring force, the engine runs at maximum speed. The compressor element (CE) takes in air and pressure builds up in the receiver. The unloader valve is closed.

The air output is controlled from maximum output (100%) to no output (0%) by:

1. Speed control of the engine between maximum load speed and unloading speed (the output of a screw compressor is proportional to the rotating speed).
2. Air inlet throttling.
3. Blow off valve (BOV).

If the air consumption is equal to or exceeds the maximum air output, the engine speed is held at maximum load speed and the unloading valve is fully open.

If the air consumption is less than the maximum air output, the regulating valve supplies control air to unloader valve (UV) to reduce the air output and holds air receiver pressure between the normal working pressure and the

corresponding unloading pressure of approx. 21.75 psi (1.5 bar) above the normal working pressure.

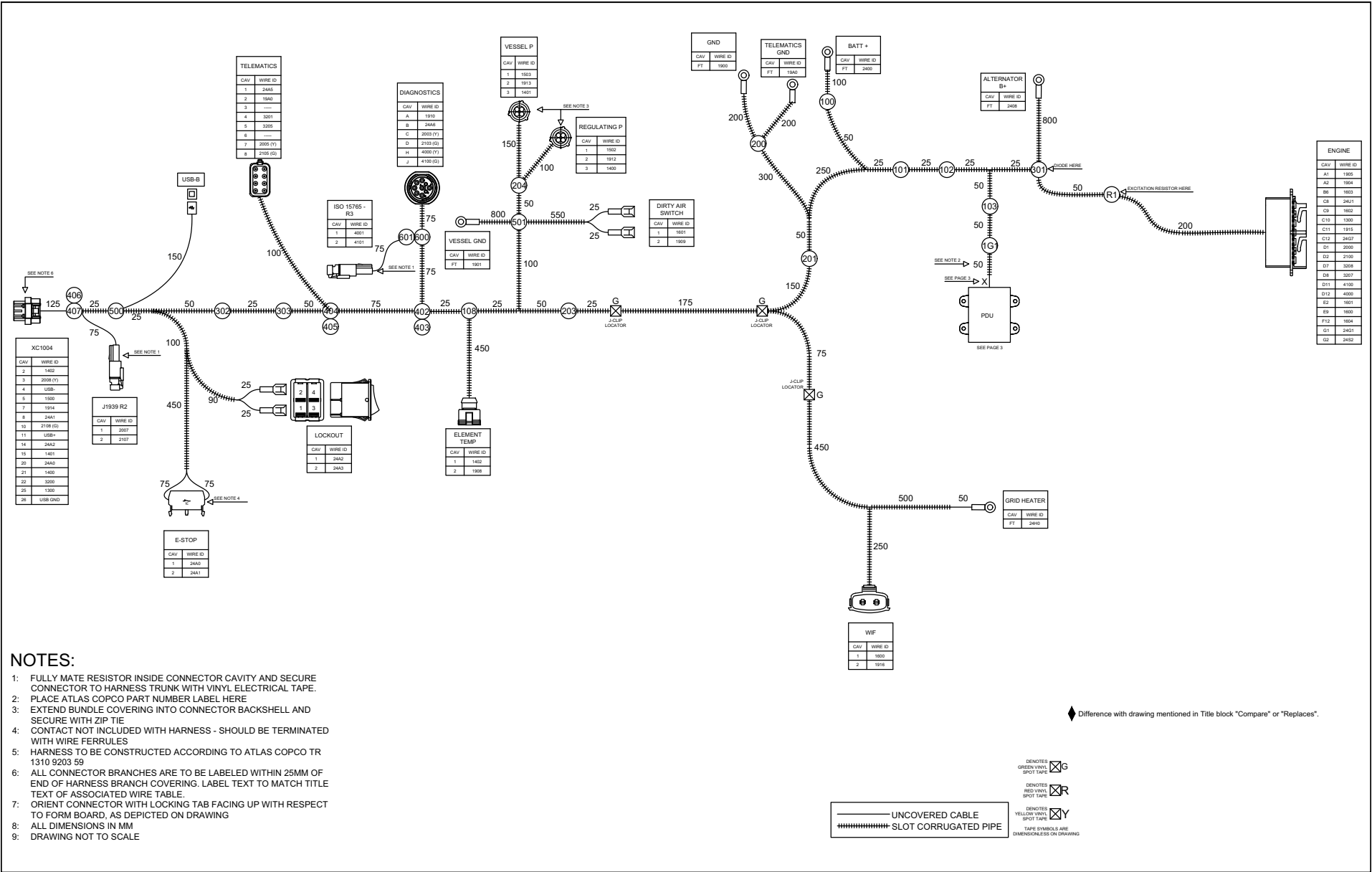
When the air consumption is resumed, the unloader valve gradually opens the air intake and the speed regulator increases the engine speed.

The construction of the regulating valve is such that any increase (decrease) of the air receiver pressure above the pre-set valve opening pressure results in a proportional increase (decrease) of the control pressure to the unloading valve.

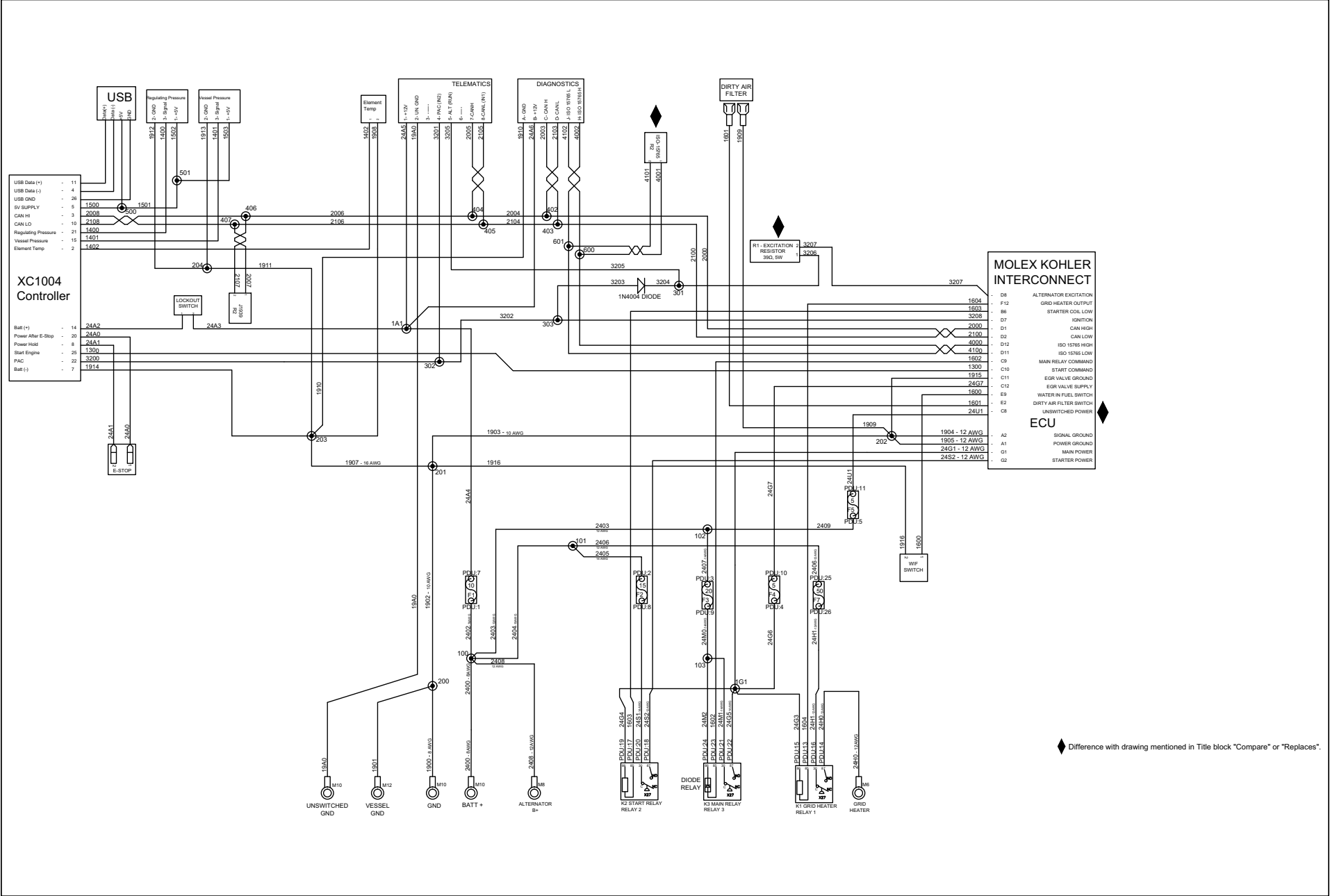
Part of the control air is vented to atmosphere, and any condensate discharged, through the vent holes (VH).

Electrical system

Wiring Diagram - 1316 1843 00 R02



Circuit Diagram - 1316 1843 00 R02



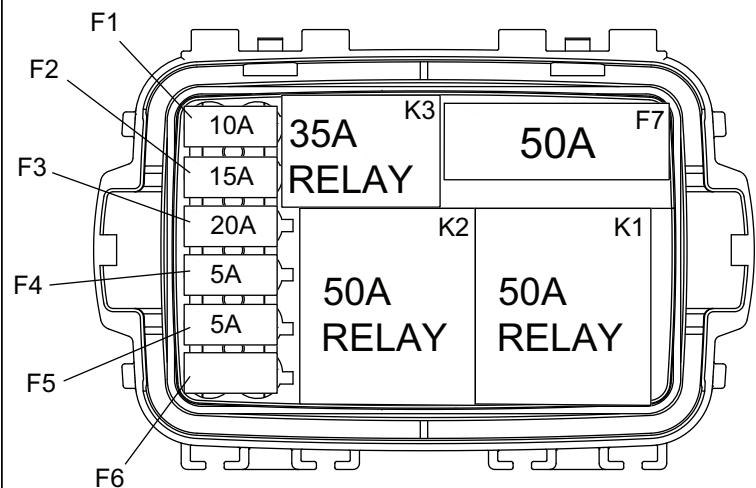


FIG. 1 - PDU COMPONENT PLACEMENT VIEW (COVER-SIDE ORIENTATION)

| PDU CONTENTS |     |                    |
|--------------|-----|--------------------|
| ID           | VAL | DESCRIPTION        |
| F1           | 10A | Xc1004             |
| F2           | 15A | STARTER            |
| F3           | 20A | MAIN               |
| F4           | 5A  | EGR                |
| F5           | 5A  | ECU UNSWITCHED PWR |
| F6           |     |                    |
| F7           | 50A | GRID HEATER        |
| K1           | 50A | GRID HEATER RELAY  |
| K2           | 50A | START RELAY        |
| K3           | 35A | MAIN RELAY         |

\*PDU CONTENTS TABLE (LEFT) TO BE PRINTED AS A LABEL (50mm X 80mm) AND APPLIED TO INSIDE OF PDU COVER

| PDU WIRE TABLE |         |                   |
|----------------|---------|-------------------|
| CAV            | WIRE ID | X <sub>(mm)</sub> |
| 1              | 2402    | 75                |
| 2              | 2405    | 75                |
| 3              | 2407    | 75                |
| 4              | 24G6    | 75                |
| 5              | 2409    | 75                |
| 6              |         |                   |
| 7              | 24A4    | 75                |
| 8              | 24S1    | 75                |
| 9              | 24M0    | 75                |
| 10             | 24G7    | 75                |
| 11             | 24U1    |                   |
| 12             |         |                   |
| 13             | 1604    | 75                |
| 14             | 24H0    | 75                |
| 15             | 24G3    | 75                |
| 16             | 24H1    | 75                |
| 17             | 1603    | 75                |
| 18             | 24S2    | 75                |
| 19             | 24G4    | 75                |
| 20             | 24S1    | 75                |
| 21             | 24M1    | 75                |
| 22             | 24G5    | 75                |
| 23             | 1602    | 75                |
| 24             | 24M2    | 75                |
| 25             | 2406    | 75                |
| 26             | 24H1    | 75                |

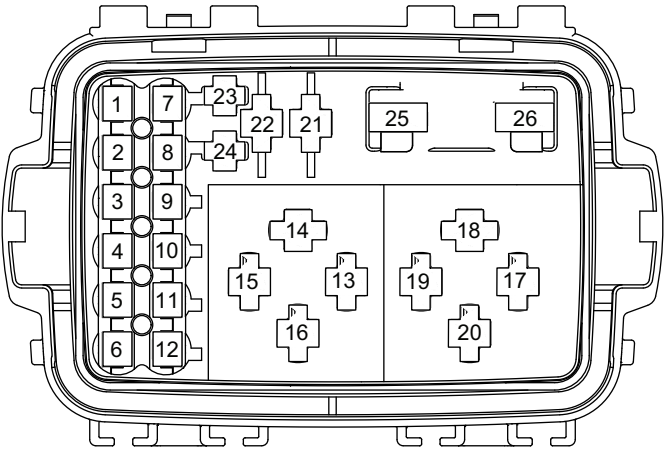
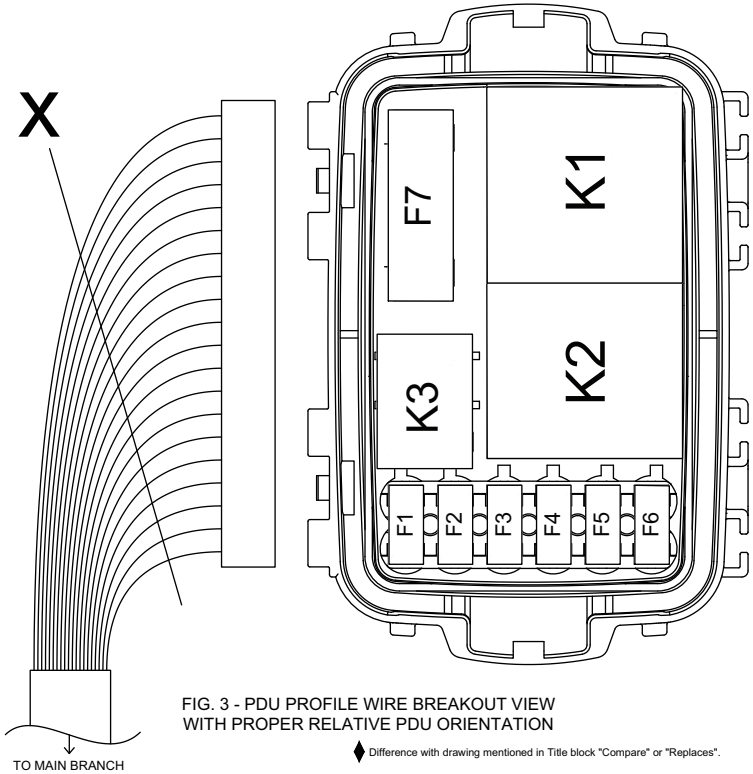
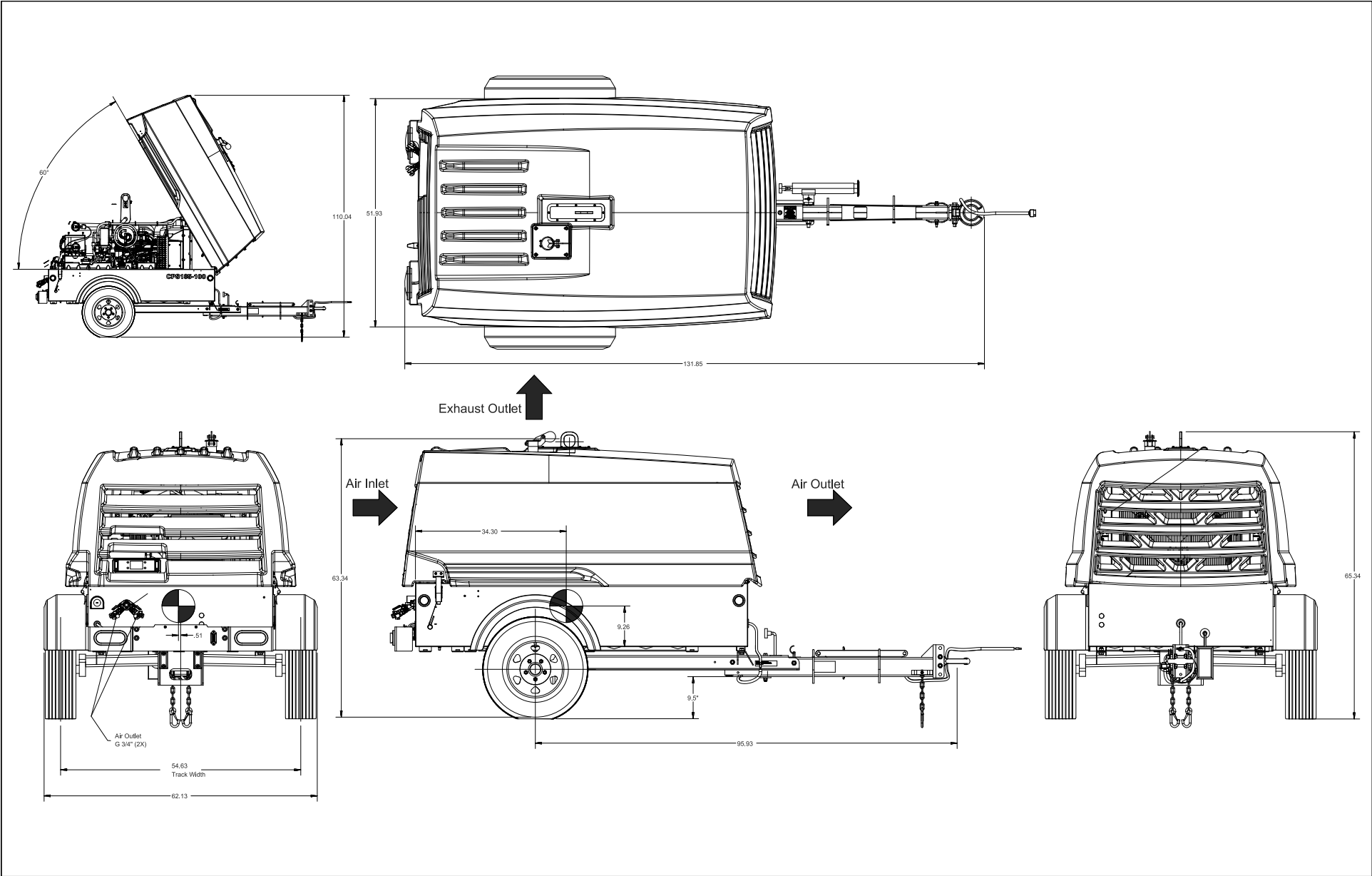


FIG. 2 - PDU CAVITY VIEW (COVER-SIDE ORIENTATION)



Dimension drawing

1310 9091 96



# Operating instructions

## PARKING, TOWING AND LIFTING INSTRUCTIONS

### Safety precautions



The operator is expected to apply all relevant Safety precautions.

### Attention



Check and re-tighten the wheel nuts and drawbar bolts to the specified torque. See section Technical specifications.

### DRAWBAR PREPARATIONS FOR TOWING

Chicago Pneumatic air compressor may be supplied to a customer with a folded drawbar. The drawbar is positioned in it's upright position for shipping purposes only. When the compressor is received by the end customer, the drawbar will need to be put into it's operating position. To do this:

1. With the weight of the compressor still on the drawbar, pull the pin on the jacking device (prop or nose wheel) and move it into the down position. Be sure to re-insert the pin to keep the jack locked in place.
2. Use the jack to support the compressor in a level position by turning the handle at the top of the jack.
3. Using the appropriate tools, remove the shipping bracket and fold the drawbar into it's down position. Discard locknut.

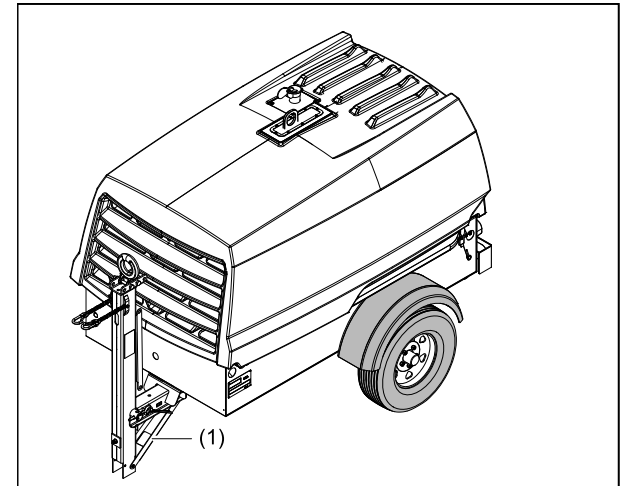
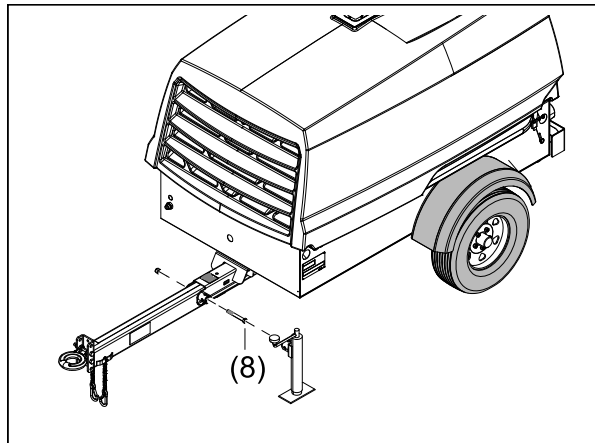
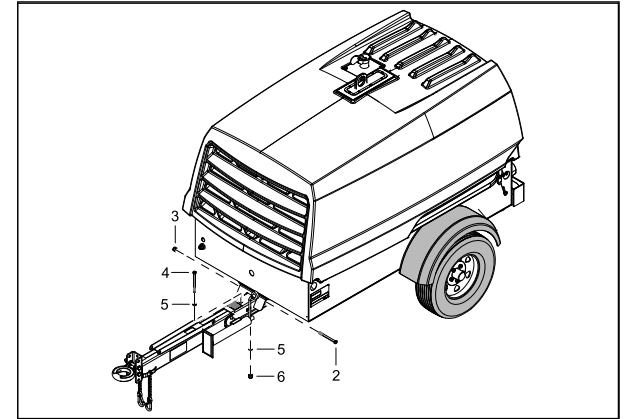
**Note:** take the necessary precautions as to not pinch the wire harness that runs through the drawbar during the unfolding process. Pull the excess harness out through the front of the drawbar.

4. Reuse the shipping bracket bolt to secure the drawbar by reinserting the bolt through both drawbar halves (item 2, 3). Secure and tighten with the locknut supplied in the shipping bag. Torque the nut and bolt to 130 ft-lbs.
5. Using a jack stand or by blocking, support the end of the draw bar. With the compressor properly sup-

ported remove the prop or nose wheel and tighten the pivot nut/bolt. Torque the nut and bolt to 130 ft-lbs.

6. Re-attach the prop to the draw bar in the down position and install keeper pin. Jack the unit up with the prop to remove the blocking.
7. Using the bolt (4), washers (5) and the locknut (6) from shipping bag, insert bolt through hole on top of draw bar using washers and secure with locknut. Torque nut and bolt to 130 ft-lbs.
8. Discard any remaining hardware and the shipping bracket.
9. Re torque the all drawbar attachment bolts to their specified value after 5-10 hours of use.

**Note:** the pivoting feature of the drawbar is for shipping purpose only. The drawbar is to remain in the down position after it's initial setup. Reuse of locknuts is strictly prohibited by Chicago pneumatic.



## PARKING INSTRUCTIONS

When parking a compressor, secure prop (1) or nose wheel to support the compressor in a level position. Place the compressor as level as possible; however, it can be operated temporarily in an out-of-level position not exceeding 15°. If the compressor is parked on sloping ground, immobilize the compressor by placing wheel chocks in front of or behind the wheels. Locate the compressor upwind, away from contaminated wind streams and walls. Avoid recirculation of exhaust air from the engine. This causes overheating and engine power decrease.

## TOWING INSTRUCTIONS

Before towing the compressor, make sure that the towing equipment of the vehicle matches the towing eye or ball connector

The drawbar should be as level as possible and the compressor and towing eye end in a level position. Secure nose prop (1) in the highest position. Attach safety chains/cables in a crisscross manner to the tow vehicle. This will help prevent the towbar from contacting ground in event of a breakaway. Connect road lights when applicable.

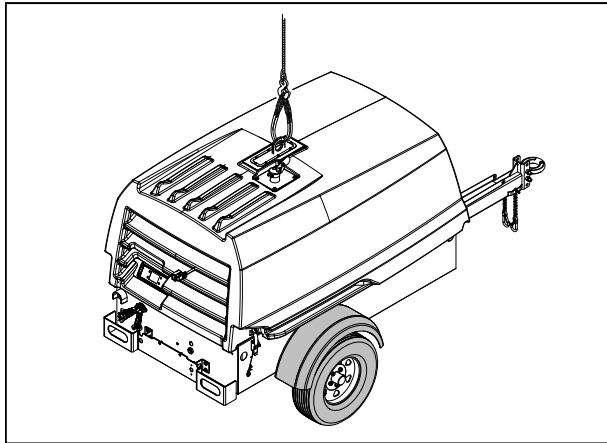
## LIFTING INSTRUCTIONS

When lifting the compressor, the hoist has to be placed in such a way that the compressor, which must be placed level, will be lifted vertically. Use the lifting bale provided to lift the unit



**Lifting acceleration and retardation must be kept within safe limits (maximum 2 kg).**

**Helicopter lifting is not allowed.**



**Drain any standing water from frame before lifting.**

## SHIPPING THE COMPRESSOR

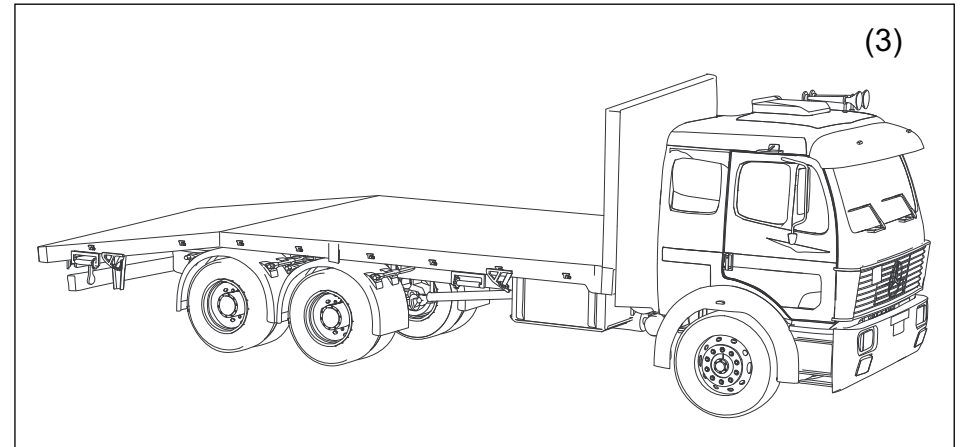
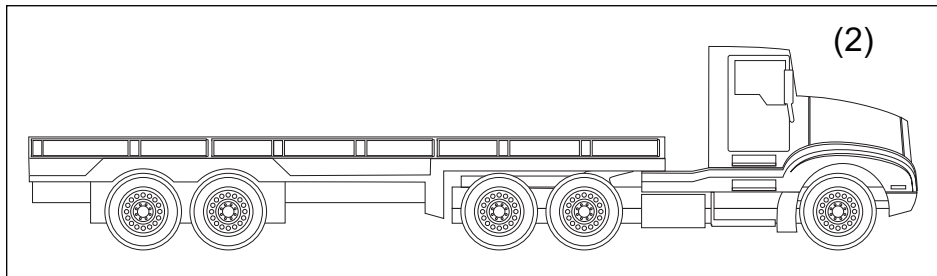
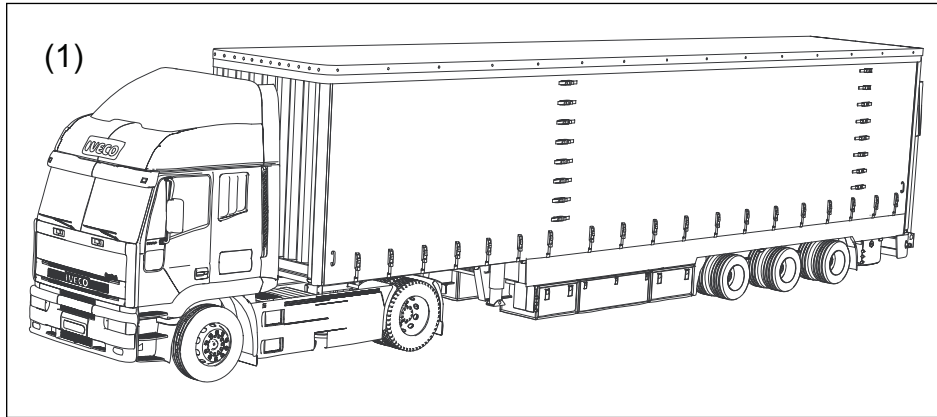
### Specified shipping vehicle

Use only these shipping vehicles to transport the unit to the required location:

1. Curtain Trailers
2. Open Trailers
3. Winch Trucks



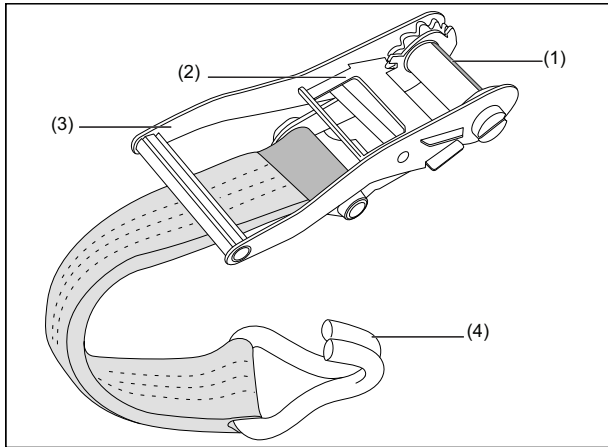
**Make sure to place the unit sideways or facing forward when it is loaded on a truck.**



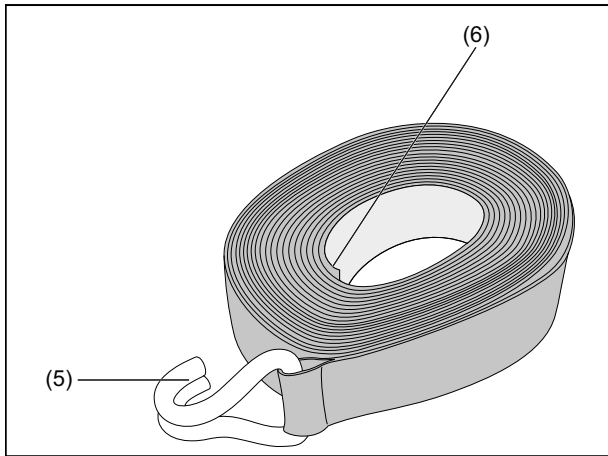
## FIXATION TOOLS

Use only CE-approved lashing belts (ratchet straps).

The lashing belts (ratchet straps) must be of type LC 2000 daN and Stf 350 daN.



Fixed belt



Adjusting belt

The lashing belt set has two separate belts, the fixed belt and the adjusting belt.

| Reference | Description                 |
|-----------|-----------------------------|
| 1         | Slot for adjusting belt     |
| 2         | Ratchet locking tool (Pawl) |
| 3         | Ratchet handle              |
| 4         | Hook of fixed belt          |
| 5         | Hook of adjusting belt      |
| 6         | Open end of adjusting belt  |

### Fixing The Lashing Belts

1. Fix the hook of the fixed belt (4) to an eye on the shipping vehicle. Open the ratchet handle (3) on the fixed belt. Raise and lower the ratchet handle (3) till the slot (1) is visible and accessible (as shown in the figure).
2. Fix the hook of the adjusting belt (5) to an eye on the unit. Pass the open end of the adjusting belt (6) through the slot (1) from the bottom to the top.
3. Pull out the open end (6) such that a loop is formed. The open end (6) must be pulled till there is no slack in the adjusting belt.
4. Raise and lower the ratchet handle (3) till the force required to add tension to the belt becomes too great.
5. Push the ratchet handle (3) down to lock the belts in place.

### Removing the Lashing belts

1. Open the ratchet handle (3).
2. Pull the ratchet locking tool (2) towards the grip of the ratchet handle (3) to free the tension on the adjusting belt.
3. Pull out the open end of the adjusting belt (6) from the slot (1).
4. Unhook the fixed and adjusting belts from the eyes where they had been fitted.
5. Keep the lashing belts in a safe area.

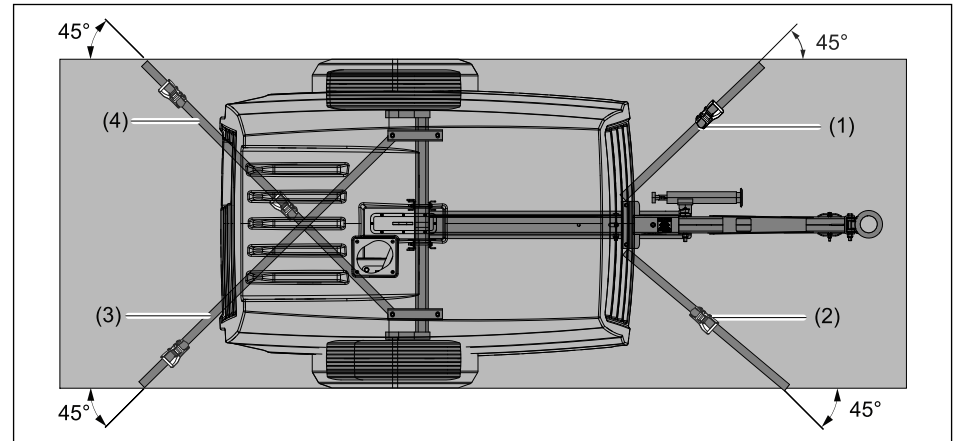
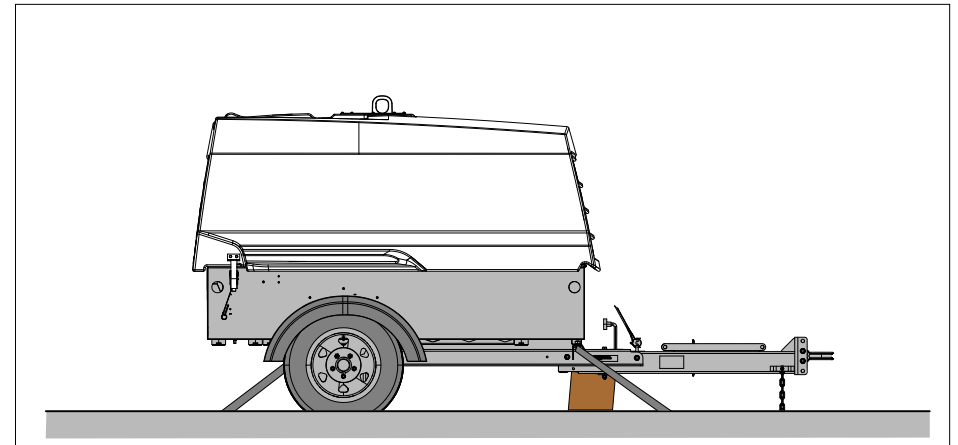
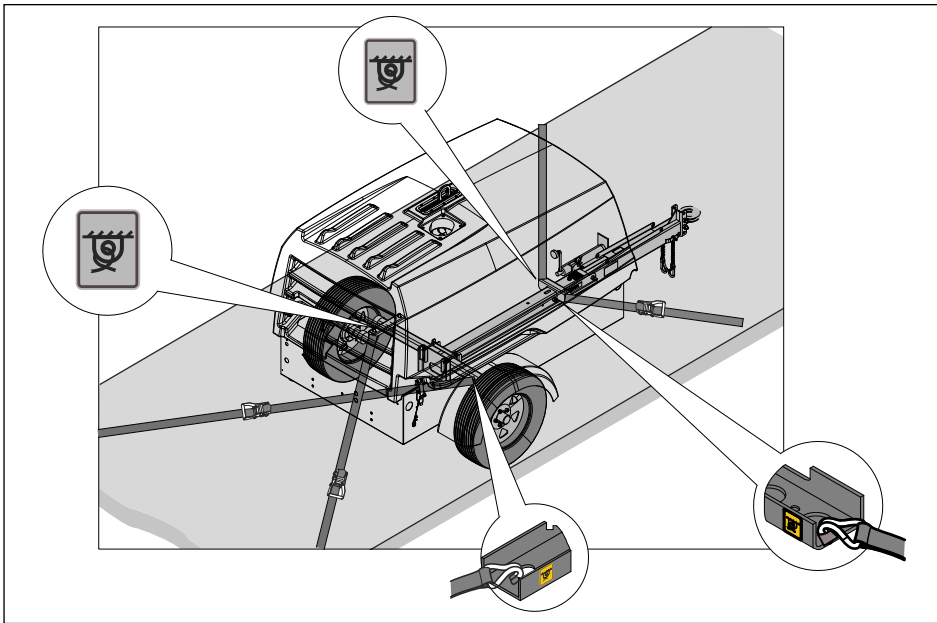
## SECURING THE UNIT TO THE SHIPPING VEHICLE

1. Place the unit in centre position into the shipping vehicle so that the canopy is parallel to the edges of the shipping vehicle.
2. For tie points 1 to 4, hook the four adjusting belts to the eyes of the unit and four fixed belts to the eyes on the shipping vehicle.



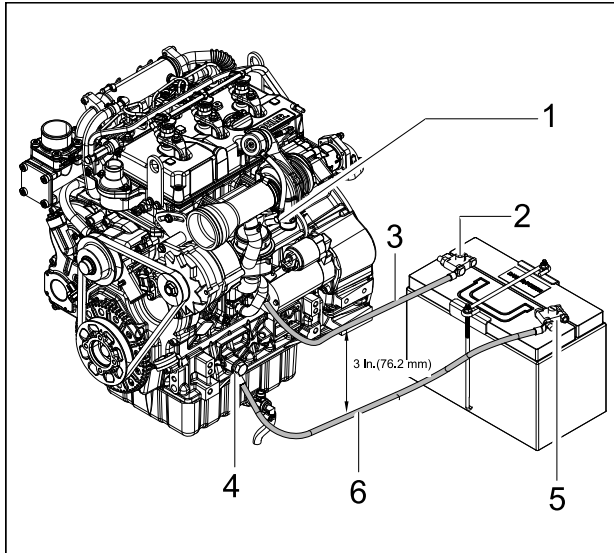
**When the engine is running, the air outlet valves (ball valves) must always be in a fully opened or fully closed position.**

3. Place a wooden block below the tow bar to make sure that the floor is not damaged. It is recommended to keep minimum height of 10 cm.
4. Fasten the adjusting belts to the fixed belts, refer to **Fixing The Lashing Belts**. Make sure that an angle of 45° is maintained between the above fitted lashing belts and the horizontal sides of the shipping unit.
5. For tie point 5, fit the hooks of the adjusting belt and the fixed belt to eyes opposite to one another on the shipping vehicle.
6. Fasten the adjusting belt to the fixed belt so that the towing bar is tied down. For the fastening procedure, refer to **Fixing The Lashing Belts**.



**These are the only two method of shipping.**

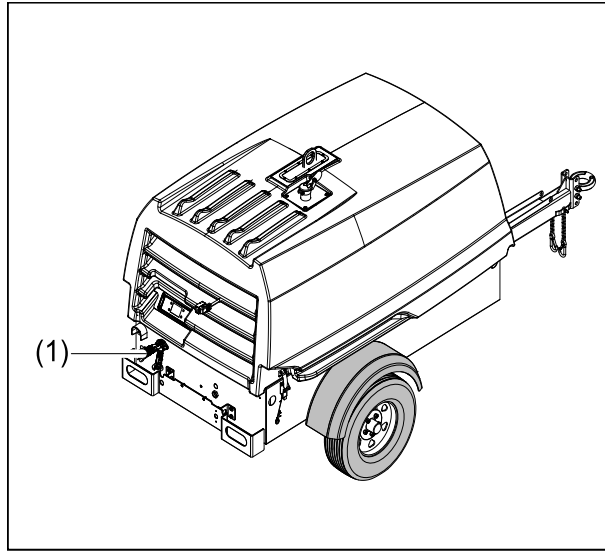
## INSTALL THE BATTERY CABLE



**Do not cross the positive and negative cables while routing.**

1. Connect the positive cable (3) to the positive pole (2) of the battery. Another end of cable is already connected to the engine (1).
2. Secure the positive cable with a zip tie (7).
3. Connect the negative cable (6) to the negative pole (5) of the battery. Another end of cable is already connected to the engine (4).
4. Zip tie the negative cable to the battery J bolt.
5. The clearance between both the cables must be 3 in. (76.2 mm).

## BEFORE STARTING



**If the compressor is to be connected to a common compressed air system, fit an appropriate check valve between compressor outlet and air system. Observe the right mounting position/direction.**

1. Before initial start-up, prepare battery for operation if not already done.
2. With the compressor standing level, check the level of the engine oil. Add oil, if necessary, to the upper mark on dipstick. Consult the Engine Operation Manual for the type and viscosity grade of the engine oil.
3. Check the level of the compressor oil. The pointer of oil level gauge (OLG) should register in the green range. Add oil if necessary.
4. Check that the fuel tank contains sufficient fuel. Top up, if necessary. Consult the Engine Operation Manual for the type of fuel.
5. Check coolant level in overflow bottle. Top up coolant if necessary. Consult engine's operation manual for water/coolant specifications.
6. Drain any water and sediment from the fuel filter until clean fuel flows from the drain cock.

7. Press vacuator valve (VV) of the air filter to remove dust.
8. Open an air outlet valve (AOV) (1) to allow air flow to the atmosphere. For dual hose reel option, open the center air outlet valve.

## STARTING / STOPPING

### Safety precautions



**Do not disconnect power supply to control box in any way when the control box is switched on. This will result in loss of controller data.**

**Do not switch off the circuit breaker when the control box is switched on. This will result in loss of controller data.**

### Battery switch

If the compressor is equipped with a battery switch:

When the compressor is not in use this switch must always be in the "OFF" position.

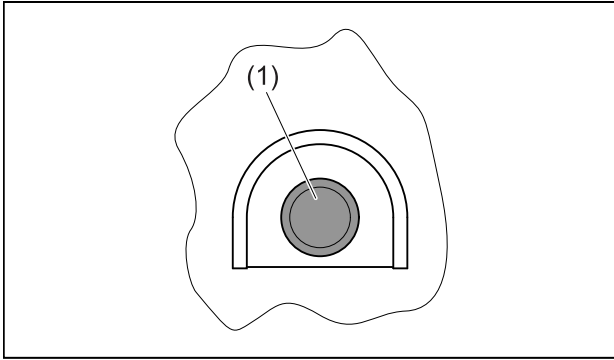
Do not use the battery switch as an emergency switch or for stopping the compressor. It will damage the control unit.

Always first shut off the control unit and wait until the display is dark before switching the battery switch to position "OFF".



**Please be aware that the (optional) preheater unit is still "live" with the battery switch in "OFF" position.**

## EMERGENCY STOP



**The emergency stop button is only to be used in emergency situations; not for stopping procedures.**

When an emergency stop button (1) is pressed, power to all outputs is terminated, by the emergency stop itself (hardware) as well as by the software.

When the emergency stop button (1) is pressed the operator can unlock the emergency stop by turning it counter-clockwise.

## CONTROLLER XC1004

The controller is operated through local control panel. It has following functions:

- Controls the compressor
- Monitors the compressor

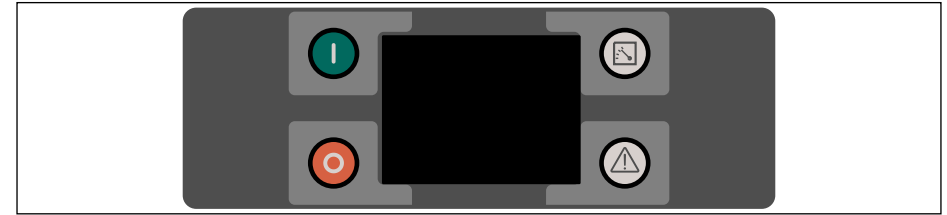
### Controls the compressor

The controller controls the engine to reach the nominal working pressure.

### Monitors the compressor

Several sensors are provided into the compressor. If one of the measured signal exceeds the limits, a warning/shutdown sign will show on the controller screen as a active alarm. See the section **Fault codes** for all the signals.

## CONTROL PANEL

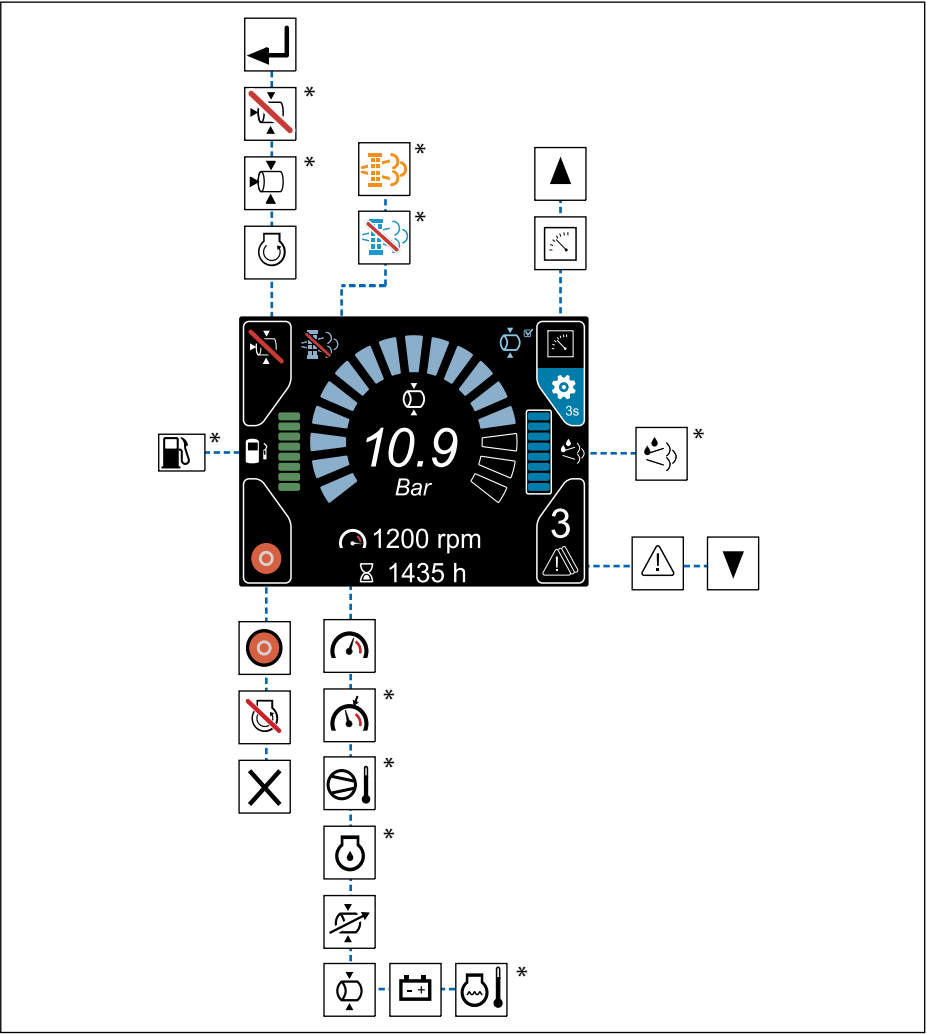


| Icon | Button      | Function                                                                                                                                                                                                                                                                                                                                                           |
|------|-------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|      | Start       | Start button is used to power up the controller. This button can also be used for the below functions: <ul style="list-style-type: none"><li>• to initiate the starting sequence</li><li>• re-enter the running sequence when cooling down. *</li><li>• to toggle between the load/noload. *</li><li>• to act as Enter/Edit/Save button in setting view.</li></ul> |
|      | Stop        | Stop button is used to power down the controller. This button can also be used for the below functions: <ul style="list-style-type: none"><li>• to cool down the engine. *</li><li>• stop the engine.</li><li>• to act as Cancel/back button in setting view.</li></ul>                                                                                            |
|      | Measurement | Measurement button is used to cycle through all the measurements in main view. This button can also be used for the below functions: <ul style="list-style-type: none"><li>• to enter the settings menu when pressed for 3 seconds.</li><li>• to act as up arrow.</li></ul>                                                                                        |
|      | Alarm       | Alarm button is used for the below functions: <ul style="list-style-type: none"><li>• to cycle through all the active alarms.</li><li>• to act as down arrow in the setting view.</li></ul>                                                                                                                                                                        |



**Button can have different functions depending on the context. The display will indicate the exact function.**

OVERVIEW SCREEN ICONS



Note: Mark " \* " indicates that the information is dependent on the machine type and options.

| Reference          | Name             |
|--------------------|------------------|
| Start Button       |                  |
|                    | Start icon       |
|                    | Load icon *      |
|                    | No load icon *   |
|                    | Enter/edit icon  |
| Stop Button        |                  |
|                    | Engine stop icon |
|                    | Power down icon  |
|                    | Cancel/back icon |
| Measurement Button |                  |
|                    | Settings icon    |
|                    | Up arrow icon    |
| Alarm Button       |                  |
|                    | Alarm Icon       |
|                    | Down arrow icon  |

| Reference                                                                           | Name                         |
|-------------------------------------------------------------------------------------|------------------------------|
| <b>Measurement Icons</b>                                                            |                              |
|    | Engine rpm *                 |
|    | Requested engine rpm *       |
|    | Vessel pressure              |
|    | Regulating pressure          |
|    | Engine coolant temperature * |
|    | Engine oil pressure *        |
|    | Element temperature *        |
|    | Fuel level *                 |
|    | Def level *                  |
|    | Battery voltage              |
| <b>Alarm Icons</b>                                                                  |                              |
|   | Start failure                |
|  | Stop failure                 |
|  | Run failure                  |
|  | Preheat failure *            |

| Reference                                                                           | Name                         |
|-------------------------------------------------------------------------------------|------------------------------|
|    | Communication failure *      |
|    | Sensor circuit failure *     |
|    | Charge failure               |
|    | Overspeed alarm *            |
|    | Coolant level *              |
|    | Engine coolant temperature * |
|    | Engine oil pressure *        |
|    | Element temperature *        |
|    | Vessel pressure              |
|    | Fuel level *                 |
|    | Def level *                  |
|   | Initial overhaul             |
|  | Minor overhaul               |
|  | Major overhaul               |
|  | Universal alarm icon         |

| Reference                                                                             | Name                             |
|---------------------------------------------------------------------------------------|----------------------------------|
| <b>Timer Icons</b>                                                                    |                                  |
|    | Engine resting                   |
|    | Engine preheat *                 |
|    | Cooldown*                        |
|    | Purge timer *                    |
| <b>Status Icons</b>                                                                   |                                  |
|    | Regen needed *                   |
|    | Generator function active *      |
|    | Inhibit regeneration *           |
|    | Element temperature test active  |
|    | Static pressure test active      |
|    | Overspeed test active            |
|   | High vessel pressure test active |
|  | Safety valve test active         |
|  | Hest lamp *                      |

Note: Mark " \*" indicates that the information is dependent on the machine type and options.

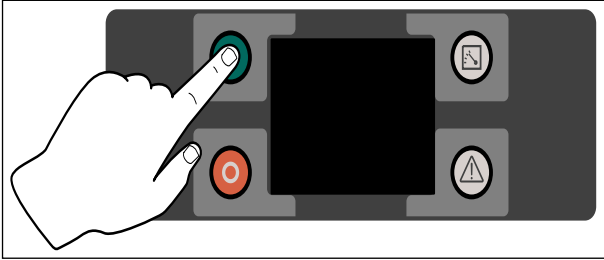
| Reference                                                                           | Name                       |
|-------------------------------------------------------------------------------------|----------------------------|
| <b>Settings Menu Icons</b>                                                          |                            |
| Bar / PSI                                                                           | Pressure unit selection    |
| °C / °F                                                                             | Temperature unit selection |
|    | Diagnostic Mode            |
|    | Overrule ECU alarm *       |
|    | Regeneration *             |
|    | Initial overhaul reset     |
|    | Minor overhaul reset       |
|    | Major overhaul reset       |
|    | Running hours offset       |
|    | Download parameters        |
|  | Upload parameters          |
|  | E-stop counter             |

| Reference                                                                         | Name                      |
|-----------------------------------------------------------------------------------|---------------------------|
| <b>Production Test Icons</b>                                                      |                           |
|  | Element temperature test  |
|  | Static pressure test      |
|  | Over-speed test           |
|  | High vessel pressure test |
|  | Safety valve test         |

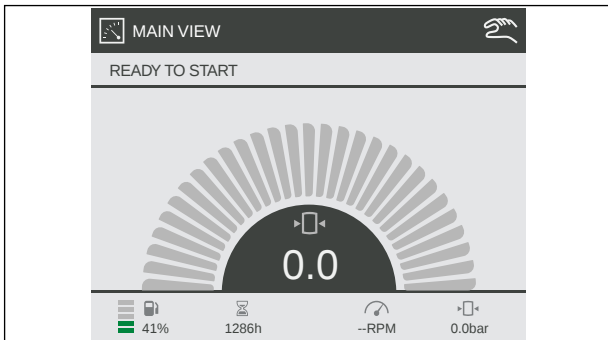
Note: Mark " \* " indicates that the information is dependent on the machine type and options.

## STARTING

Press the start button to power up the compressor.



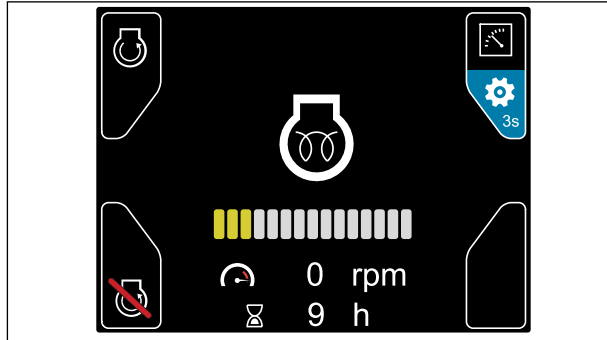
The control panel performs a self-test. The following display is shown and the controller is initialized.



Press the start button again to initiate the starting sequence:

- preheat \*
- warming up \*
- start

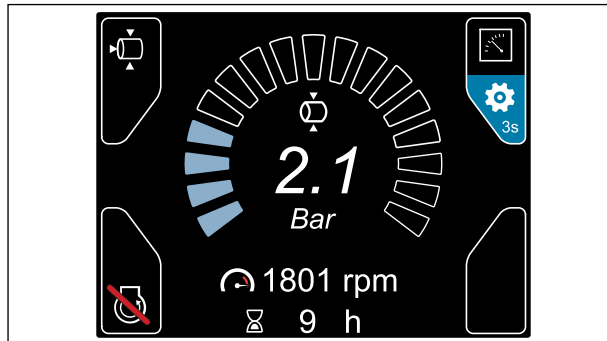
Note: Mark " \* " indicates that the information is dependent on the machine type and options.



This icon indicates that the start button is used for preheating and loading/unloading the compressor if a loading valve is installed.

Press the start button to load the compressor. \*

The measurement button is used to go through all the measurements.



## STOPPING

Press the start button to unload the compressor if a loading valve is installed. \*

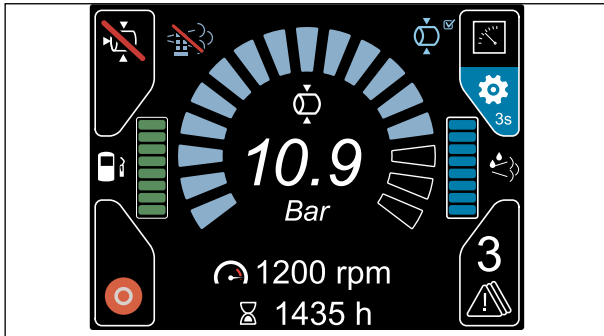
The 'Engine stop' icon indicates that the stop button is used to stop the engine.

Let the engine cool down for few seconds.

Press the stop button to power off the controller.

## VIEW TYPES

### Main View



The main view shows all the basic information:

- Status icon \*
- Fuel level indicator \*
- Measurement
- Running hours
- Vessel pressure indicator
- Activated alarms
- Def indicator \*

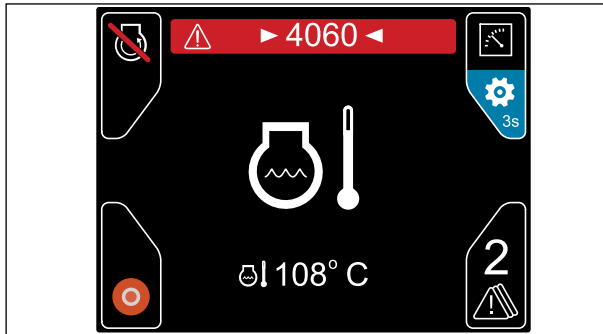
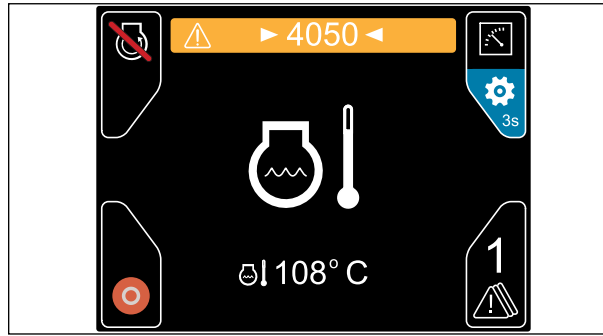
The start button is used to load/unload the compressor.

The measurement button is used to change the measurements. For example, the rpm indication to vessel pressure indication.

Above the pressure indicator, there are two locations that are used to show status Icons. When more than one icon is active at the same time, the latest active icon is visible.

 **Above informations are depend on the machine type and options.**

### Alarm View



The number in the right bottom shows the active alarms. Go to the alarm view by pressing alarm button.

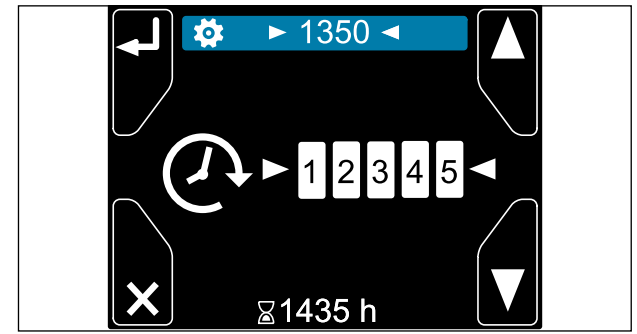
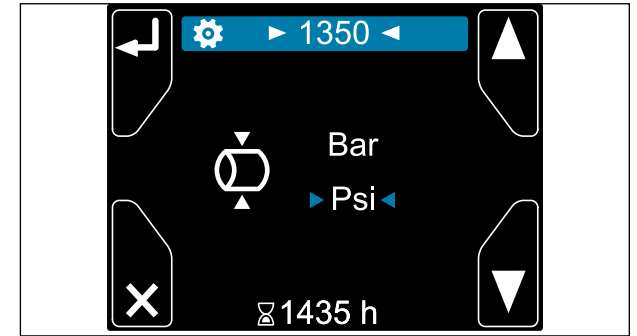
Alarm header contains the alarm code. There are two signs of alarm:

- Orange color, indicates the warning
- Red color, indicates the compressor shutdown.

Only one alarm code is shown at once.

The alarm button is used to scroll through the alarms. When all the active alarms are shown, the controller switches back to the "Main View".

### Setting View



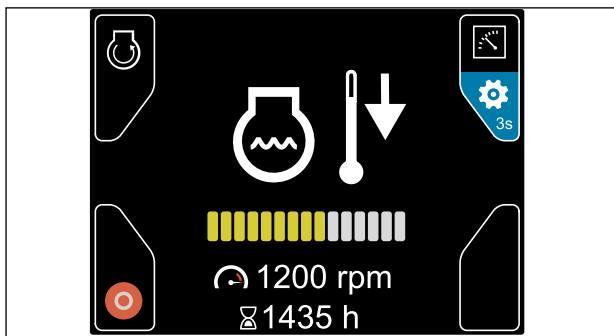
Press the measurement button for 3 seconds to go to the 'Setting view'. The function of the buttons gets changed to the arrows, enter and cancel.

The new functions are indicated as follows:

- Use arrow (up and down) to select the parameter.
- Use enter to edit the parameter.
- Use arrow to change the values.
- Use enter to save the setting.
- Use 'X' to cancel the setting.

Note: Mark " \* " indicates that the information is dependent on the machine type and options.

## Timer View \*



Timer view is activated during:

- Warming up
- Cooling down
- Preheat
- Purging power down prevention

Note: Mark " \* " indicates that the information is dependent on the machine type and options.

## FAULT CODES

| ALARM CODE | ALARM TEXT                               | FAILCLASS       |
|------------|------------------------------------------|-----------------|
| 1500       | INITIAL OVERHAUL ALARM                   | WARNING         |
| 1521/1522  | MINOR OVERHAUL                           | WARNING         |
| 1551/1553  | COMPRESSOR OIL CHANGE                    | WARNING         |
| 1552/1554  | MAJOR OVERHAUL                           | WARNING         |
| 2000       | EMERGENCY STOP                           | SHUTDOWN        |
| 2910       | MPU INPUT                                | SHUTDOWN        |
| 2010       | COOLANT TEMPERATURE                      | CONTROLLED STOP |
| 2020       | ENGINE OIL PRESSURE                      | SHUTDOWN        |
| 2030       | ENGINE COOLANT LEVEL                     | SHUTDOWN        |
| 2040       | COMPRESSOR ELEMENT TEMPERATURE           | SHUTDOWN        |
| 3000       | FUEL LEVEL LOW 1                         | WARNING         |
| 3010       | FUEL LEVEL LOW 2                         | CONTROLLED STOP |
| 3050       | VESSEL PRESSURE HIGH WARNING             | WARNING         |
| 3060       | VESSEL PRESSURE HIGH SHUTDOWN            | SHUTDOWN        |
| 3080       | VESSEL PRESSURE SENSOR CIRCUIT           | SHUTDOWN        |
| 3130       | REGULATING PRESSURE SENSOR CIRCUIT       | SHUTDOWN        |
| 3450       | BATTERY LOW ALARM                        | WARNING         |
| 3460       | BATTERY HIGH ALARM                       | WARNING         |
| 3020/4990  | FUEL LEVEL SENSOR CIRCUIT                | WARNING         |
| 4000       | LOW PRESSURE ELEMENT TEMP 1              | WARNING         |
| 4010       | LOW PRESSURE ELEMENT TEMP 2              | CONTROLLED STOP |
| 4020       | LOW PRESSURE ELEMENT TEMP 3              | SHUTDOWN        |
| 4040       | LOW PRESSURE ELEMENT TEMP SENSOR CIRCUIT | SHUTDOWN        |
| 4050       | ENGINE COOLANT TEMP 1                    | WARNING         |
| 4060       | ENGINE COOLANT TEMP 2                    | CONTROLLED STOP |
| 4070       | ENGINE COOLANT TEMP SENSOR CIRCUIT       | CONTROLLED STOP |
| 4990       | VDO SENSOR CIRCUIT                       | WARNING         |
| 6309       | ENGINE PREHEAT FAILURE                   | WARNING         |
| 6327       | START FAILURE                            | SHUTDOWN        |
| 6420       | STOP FAILURE                             | SHUTDOWN        |
| 6426       | UNINTENTIONAL RUN                        | SHUTDOWN        |
| 6427       | RUN FAILURE                              | SHUTDOWN        |
| 7000       | ECU COMMUNICATION ERROR                  | SHUTDOWN        |
| 7007       | ECU RED LAMP                             | SHUTDOWN        |
| 7008       | ECU AMBER LAMP                           | WARNING         |

| ALARM CODE | ALARM TEXT          | FAILCLASS       |
|------------|---------------------|-----------------|
| 7009       | ECU PROTECT LAMP    | WARNING         |
| 7020       | ENGINE SPEED ALARM  | SHUTDOWN        |
| 7030       | ENGINE COOLANT TEMP | CONTROLLED STOP |
| 7040       | ENGINE OIL PRESSURE | SHUTDOWN        |
| 7150       | DEF TANK LEVEL 1    | WARNING         |
| 7160       | DEF TANK LEVEL 2    | CONTROLLED STOP |

# Maintenance

## USE OF SERVICE PACKS

Service Packs include all genuine parts needed for normal maintenance of both compressor and engine. Service Packs minimize downtime and keep your maintenance budget low. You may order Service Packs from your local Chicago Pneumatic dealer.

Consult your Chicago Pneumatic representative before use.

## PREVENTIVE MAINTENANCE SCHEDULE

The schedule contains a summary of the maintenance instructions.

Read the respective section before taking maintenance measures.

When servicing, replace all disengaged packings, e.g. gaskets, O-rings, washers.

For engine maintenance refer to Engine Operation Manual.

The maintenance schedule has to be seen as a guideline for units operating in a duty environment typical to compressor applications. Maintenance schedule can be adapted depending on application environment and quality of maintenance.

## QR CODE

Scan the QR code to access into the Chicago Pneumatic Spare Part list.



CPS 185 - 100 KoD

| Maintenance Table Sections And Sequences | Maintenance Schedule                       | Daily | Initial 50 hours | Every 500 hours / Half yearly | Every 1000 hours / 2 Yearly | Note |
|------------------------------------------|--------------------------------------------|-------|------------------|-------------------------------|-----------------------------|------|
| Daily Operational Checks                 | Check Fuel Level                           | Check |                  |                               |                             |      |
|                                          | Check Compressor Oil Level                 | Check |                  |                               |                             |      |
|                                          | Check Coolant Level                        | Check |                  |                               |                             |      |
|                                          | Check Fan Belt                             | Check |                  |                               |                             |      |
|                                          | Fuel Filter Water Drain                    | Empty |                  |                               |                             |      |
|                                          | Air Filter Dust Valve                      | Empty |                  |                               |                             |      |
|                                          | Air Intake Hose                            | Check |                  |                               |                             |      |
|                                          | Flexible Hoses                             | Check |                  |                               |                             |      |
|                                          | Check Tire Pressure                        | Check |                  |                               |                             |      |
|                                          | Electrolyte Level And Terminals Of Battery |       | Check            | Check                         | Check                       |      |

| Maintenance Table Sections And Sequences | Maintenance Schedule                               | Daily | Initial 50 hours | Every 500 hours / Half yearly | Every 1000 hours / 2 Yearly | Note          |
|------------------------------------------|----------------------------------------------------|-------|------------------|-------------------------------|-----------------------------|---------------|
| Reading Equipment Checks                 | Jack Stand                                         | Check |                  |                               |                             |               |
|                                          | Torque Wheel Nuts                                  |       | Check            | Check                         | Check                       |               |
|                                          | Inspect Tires for Cuts or Damage                   | Check |                  |                               |                             |               |
|                                          | Service Wheel Bearings                             |       |                  |                               | Inspect                     |               |
|                                          | Safety Chains                                      | Check |                  | Check                         |                             |               |
|                                          | Safety Decals Condition                            | Check |                  | Check                         |                             |               |
| Safety Equipment Checks                  | Inspect Safety Valve Operation                     |       |                  |                               | Check                       |               |
|                                          | Inspect Shutdown switch operation                  |       |                  |                               | Check                       |               |
|                                          | Leaks in Air, Oil or Fuel System                   |       | Check            | Check                         | Check                       |               |
| Engine Preventative Maintenance          | Change Engine Oil                                  |       |                  | Replace                       | Replace                     |               |
|                                          | Replace Engine Oil Filter                          |       |                  | Replace <sup>(1)</sup>        | Replace <sup>(1)</sup>      |               |
|                                          | Replace Fuel Filter <sup>(2)</sup>                 |       |                  | Replace <sup>(1)</sup>        | Replace <sup>(1)</sup>      |               |
|                                          | Clean Engine Cooler / Radiator                     |       |                  | Clean                         | Clean                       |               |
|                                          | Clean Water Jacket and Radiator Interior           |       |                  |                               | Check                       |               |
|                                          | Replace Engine Coolant                             |       |                  |                               |                             | Every 5 Years |
|                                          | Replace Fan Belt                                   |       |                  | Replace <sup>(1)</sup>        | Replace <sup>(1)</sup>      |               |
| Air Filter Service                       | Change Air Filters                                 |       |                  | Replace <sup>(1)</sup>        | Replace <sup>(1)</sup>      |               |
| Compressor Service                       | Change Compressor Oil                              |       |                  |                               | Replace                     |               |
|                                          | Replace Compressor Oil Filter                      |       |                  |                               | Replace <sup>(1)</sup>      |               |
|                                          | Replace Air / Oil Separator Filter                 |       |                  |                               | Replace <sup>(1)</sup>      |               |
| Inspections and Disclaimers              | Inspection by Chicago Pneumatic Service Technician |       |                  |                               | Inspect                     |               |

- 1: Included within Chicago Pneumatic Service Kit.
- 2: When biodiesel fuel is used, change the fuel filter cartridge, fuel hose and clamp bands with new ones at intervals half of the usual ones.
- When the battery is used for less than 100 hours in a year, check its electrolyte yearly. (for refillable battery's only)
- Consult Kohler Engine Manual for more in depth service information regarding Detailed Engine Service Procedures
- The items in the engine manual marked \*3 are registered as emission related critical parts by Kohler in the U.S. EPA non road emission regulation. As the

engine owner, you are responsible for the performance of the required maintenance on the engine according to the above instruction. Please see the warranty statement in detail.

- The items listed above are not necessary to keep the emission-related warranty valid.
- Failure to perform the maintenance will cause problems that will significantly degrade Machine and Engine performance.



**When changing or inspecting, be sure to level and stop the engine.**



**Changing interval of engine oil:**

| Models       | Interval        |
|--------------|-----------------|
| KDI 1903 TCR | Every 500 hours |

API service classification: CJ-4 grade or above

Ambient temperature: below 35 °C (95 °F)

## OIL SPECIFICATIONS



\* Keep the bolts of the housing, the lifting eye, the towbar and the axle securely tightened. Refer to Compressor/Engine Specifications for the torque values.

### LUBRICATION OILS

It is strongly recommended to use Chicago Pneumatic branded lubrication oils for compressor.

#### Compressor oil

| GENOIL - S               |              |
|--------------------------|--------------|
|                          | Order number |
| 5 gallon (20 Liter) pail | 1630 0175 00 |

#### Engine oil

| GENOIL E PERFORMANCE            |              |
|---------------------------------|--------------|
|                                 | Order number |
| 1.3 gallon (5 Liter) Container: | 1626 2262 00 |
| 5 gallon (20 Liter) Pail:       | 1626 2263 00 |

| GENOIL E PLUS                   |              |
|---------------------------------|--------------|
|                                 | Order number |
| 1.3 gallon (5 Liter) Container: | 1626 2258 01 |
| 5 gallon (20 Liter) Pail:       | 1626 2259 01 |

#### Engine coolant

| GENCOOL - EG          |              |
|-----------------------|--------------|
|                       | Order number |
| 1.3 gallon container: | 1626 2255 01 |
| 5 gallon pail:        | 1626 2256 01 |

| Temperature Range             | Type of Oil |                             |
|-------------------------------|-------------|-----------------------------|
|                               | Compressor  | Engine                      |
| Below -13°F (-25°C)           | GENOIL S    | 0W-40                       |
| 14°F (-10°C) and 104°F (40°C) |             | 15W-40                      |
| Above 104°F (40°C)            |             | See Engine Operation Manual |

(1) Additional equipment is needed to run the compressor below 14°F (-10°C). Please contact Chicago Pneumatic for more information about Cold Weather Packages.



Operation of compressor in ambient temperatures lower than 14°F (-10°C) without the correct type of oil will void your warranty and may result in element failure and/or fire.

## OIL LEVEL CHECK



**Never mix oils of different brands or types.**

### CHECK ENGINE OIL LEVEL

Consult also the Engine Operation Manual for the oil specifications, viscosity recommendations and oil change intervals. See **Preventive maintenance schedule**.

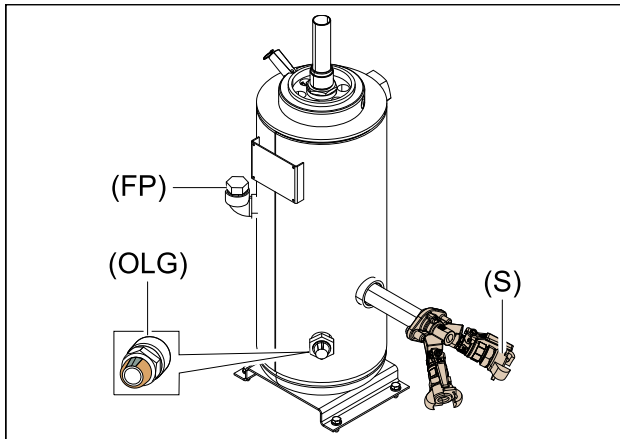
Check engine oil level according to the instructions in the Engine Operation Manual and top up with oil if necessary.

### CHECK COMPRESSOR OIL LEVEL

With the unit standing level, engine stopped, check the level of the compressor oil. The pointer of the oil level gauge (OLG) must register in the upper extremity of the green range. Add oil via the oil fill plug (FP) if necessary.



**Before removing oil filler plug, ensure that the pressure is released by opening an air outlet valve.**



## ENGINE OIL AND OIL FILTER CHANGE

Consult also the Engine Operators Manual for oil and oil filter

- (1) Change intervals.
- (2) Oil types.

## COMPRESSOR OIL AND OIL FILTER CHANGE

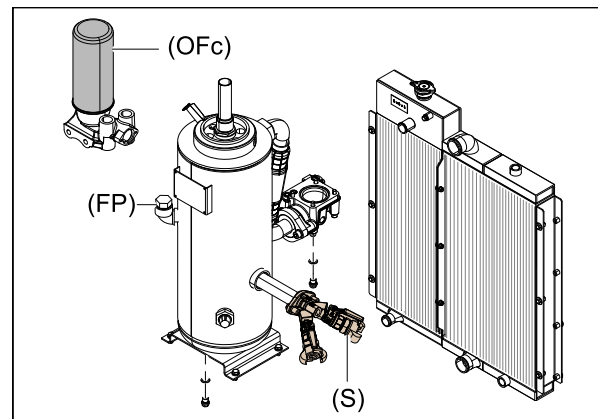
The quality and the temperature of the oil determine the oil change interval.

The prescribed interval is based on an oil temperature of up to 100°C (212°F) and normal operating conditions.

When operating in high ambient temperatures, in very dusty or high humidity conditions, it is recommended to change the oil more frequently.



**In this case, contact Chicago Pneumatic.**



1. Run the compressor until warm. Close the outlet valve(s) and stop the compressor. Wait until the pressure is released through the automatic blow-down valve. Unscrew the oil filler plug (FP) one turn. This uncovers a vent hole, which permits any pressure in the system to escape.
2. Drain the oil by removing all drain plugs. Drain plugs are located at the oil tank, discharge manifold, and oil injection manifold vessel. Catch the oil in a

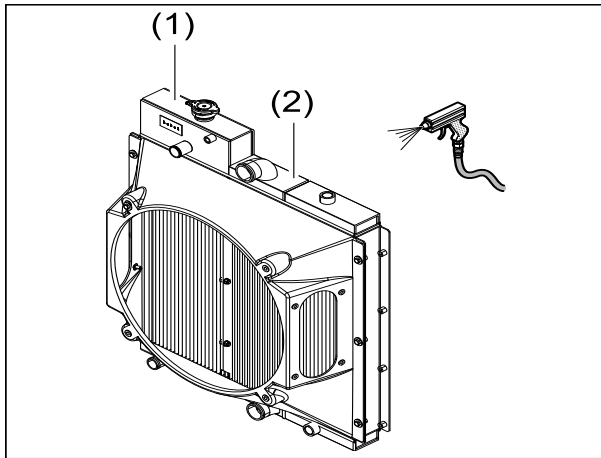
drain pan. Screw out the filler plug to speed up draining. Tighten the plugs after draining.

3. Remove the oil filter (OFc), e.g. by means of a special tool. Catch the oil in a drain pan.
4. Clean the filter seat on the manifold, taking care that no dirt drops into the system. Oil the gasket of the new filter element. Screw it into place until the gasket contacts its seat, then tighten one half turn only.
5. Fill the air receiver until the pointer of the oil level gauge (OLG) registers in the upper extremity of the green range. Take care that no dirt drops into the system. Reinstall and tighten the filler plug.
6. Run the unit at no load for a few minutes to circulate the oil and to evacuate the air trapped in the oil system.
7. Stop the compressor. Let the oil settle for a few minutes. Check that the pressure is released by opening an air outlet valve (AOV). Screw out filler plug (FP) and add oil until the pointer of the oil level gauge (OLG) again registers in the upper extremity of the green range. Reinstall and tighten the filler plug.



**Never add more oil. Overfilling results in oil consumption.**

## CLEANING COOLERS



Keep the coolers clean to maintain the cooling efficiency. Front cooler baffle is removable for access by unscrewing 4 bolts.



**Remove any dirt from the coolers with a fiber brush. Never use a wire brush or metal objects.**

When cleaning by air jet, blow air through the cooler in reverse direction of normal flow.

If the dirt is oily, wash the coolers with degreaser or a cleansing agent.



**Protect the electrical and controlling equipment, air filters etc. against penetration of moisture.**

A spray gun should preferably be used to apply the solvent to the fins. Rinse the blocks by means of a water jet maximum 100 psi at 2 inch distance after a soaking-in period. Steam cleaning may also be applied.



**To avoid damaging the coolers, angle between water jet and coolers should be approx. 90°.**



**Never leave spilled liquids such as fuel, oil, water and cleansing agents in or around the compressor.**

## BATTERY CARE



**Before handling batteries, read the relevant safety precautions and act accordingly.**

An ASB (Service Bulletin) dealing elaborately with batteries and due care is available on request.

If the battery is still dry, it must be activated as described in **Battery maintenance**.

The battery must be in operation within 2 months from being activated; if not, it needs to be recharged first.

## ELECTROLYTE



**Read the safety instructions carefully.**

Electrolyte in batteries is a sulphuric acid solution in distilled water.

The solution must be made up before being introduced into the battery.

## RECHARGING A BATTERY

Before and after charging a battery, always check the electrolyte level in each cell; if required, top up with distilled water only. When charging batteries, each cell must be open, i.e. plugs and/or cover removed.



**Use a commercial automatic battery charger according to manufacturers instructions.**

Apply with preference the slow charging method and adjust the charge current according to the following rule of thumb: battery capacity in Ah (amp hours) divided by 20 gives safe charging current in Amps.

## BATTERY MAINTENANCE

Keep the battery clean and dry

- Keep the electrolyte level at 10 to 15 mm above the plates or at the indicated level; top up with distilled water only.
- Keep the terminals and clamps tight, clean, and lightly covered petroleum jelly.

## STORAGE

Run the compressor regularly, e.g. twice a week, until warm.

Load and unload the compressor a few times to operate the unloading and regulating components. Close the air outlet valves after stopping.



**If the compressor is going to be stored without running from time to time, protective measures must be taken as described in a separate Service Bulletin (ASB), which may be obtained on request. Consult Chicago Pneumatic.**

## ADJUSTMENT OF THE CONTINUOUS REGULATING SYSTEM



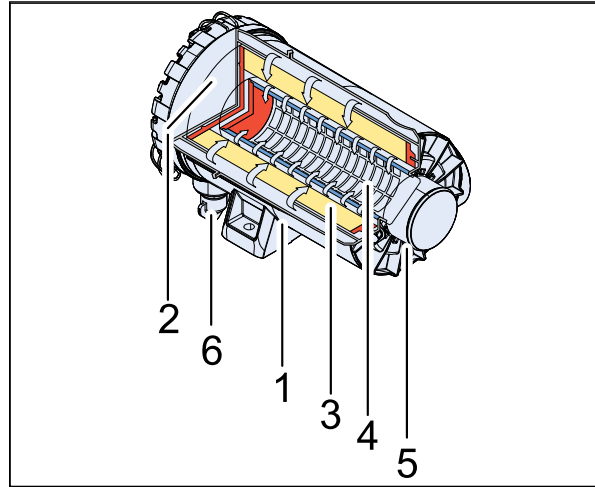
The working pressure is determined by the tension of the spring in the regulating valve (RV). This tension can be increased to raise the pressure and decreased to lower it by turning the adjusting wheel clockwise and counter-clockwise respectively.

To adjust the normal working pressure, proceed as follows:

1. Start and warm up the engine.
2. With the outlet valves (AOV) closed, loosen the regulating valve's locknut and adjust the regulating valve (RV) until you reach the desired pressure of 123 psig/8.5 bar(e).
3. Open an outlet valve just enough to let the engine run at maximum speed. The working pressure must be 102 psig/ 7 bar(e). Adjust if necessary with regulating valve (RV).
4. Close the outlet valves, check that the pressure is between 120-126 psig/ 8.3-8.7 bar(e). Lock the regulating valve by fixing the locknut.

## AIR FILTER ENGINE/COMPRESSOR

### MAIN PARTS



- |   |                             |
|---|-----------------------------|
| 1 | Snap clips                  |
| 2 | Dust trap                   |
| 3 | Filter element              |
| 4 | Safety cartridge (Optional) |
| 5 | Filter housing              |
| 6 | Vacuator valve              |

### Recommendations



**The Chicago Pneumatic air filters are specially designed for the application. The use of non-genuine air filters may lead to severe damage of engine and/or compressor element.**

**Never run the compressor without air filter element.**

New elements must also be inspected for tears or punctures before installation.

Discard the element (3) when damaged.

In heavy duty applications it is recommended to install a safety cartridge.

A dirty safety cartridge (4) is an indication of a malfunctioning air filter element. Replace the element and the safety cartridge in this case.

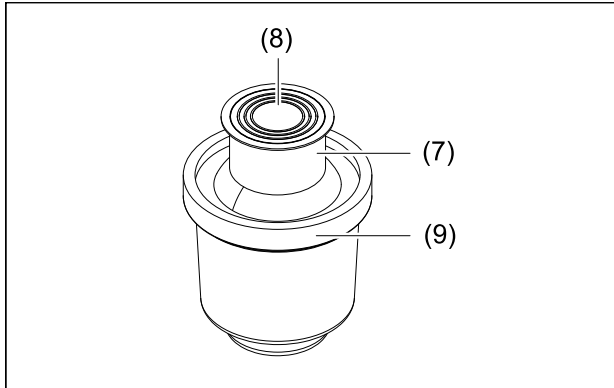
Replace the safety cartridge together with the filter element. The safety cartridge cannot be cleaned.

### CLEANING THE DUST TRAP

To remove dust from the dust trap pinch the vacuator valve (6) several times.

## REPLACING THE AIR FILTER ELEMENT

1. Release the snap clips (1) and remove the dust trap (2). Clean the trap.
2. Remove the element (3) from the housing (5). If the element is to be serviced for immediate re-use, reinstall the dust trap to protect the air intake system while cleaning the element.
3. Reassemble in reverse order of dismantling.
4. Inspect and tighten all air intake connections.



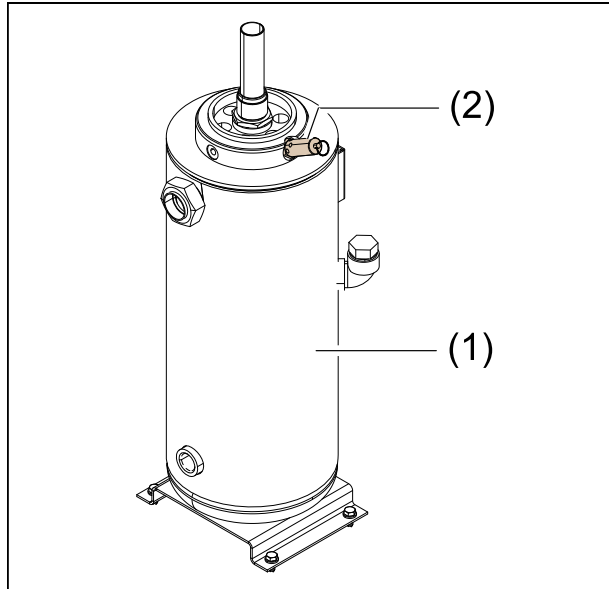
- 7 Air filter contamination indicator
- 8 Reset button
- 9 Red indicator

## AIR FILTER MAINTENANCE

- More frequently when operating in a dusty environment.
- Replace the element when the pressure drop exceeds 11 psi.
- Refer to the Kohler instruction manual.
- Compressor element indicator is set for 6.2 kpa (25" water).
- The engine indicator is set for 5 kpa (20" water).

## AIR RECEIVER

The air receiver is tested according to official standards. Regularly have inspections carried out in conformity with local regulations.



## SAFETY VALVE

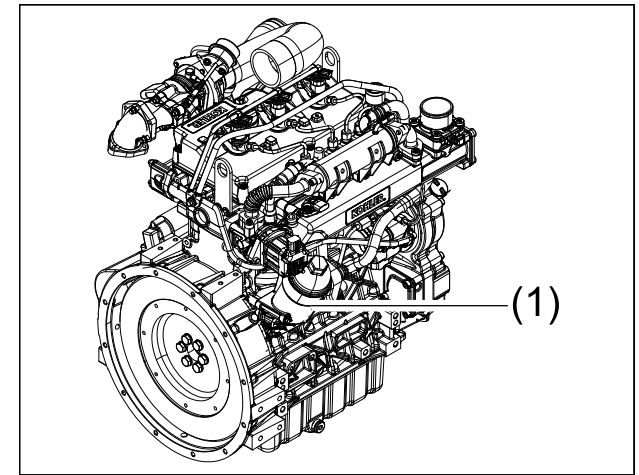


**All adjustments or repairs are to be done by an authorized representative of the valve supplier.**

Following checks must be carried out:

- a check of the opening of the lifting gear, twice a year. This can be done by lifting the ring or lever.
- a check of the set pressure once a year according to the local regulations. This check cannot be done on the machine and must be carried out on a proper test bench.

## FUEL SYSTEM



Replacing the filter element:

1. Unscrew the final filter element from the adapter head.
2. Clean the adapter head sealing surface. Lightly oil the gasket of the new element and screw the latter onto the header until the gasket is properly seated, then tighten with both hands.
3. Do not fill with fuel before assembling new filter. Filling the fuel filter introduces dirty (unfiltered) fuel to the injectors.
4. After replacing the final filter's element, prime fuel system with manual prime bulb located below the fuel filter's housing.
5. Check for fuel leaks once the engine has been restarted.

## Problem solving

### PROBLEM SOLVING CHART

Use the chart on the following pages to help solve mechanical problems.

It is assumed that the engine is in good condition, that there is adequate fuel flow to the filter and injection equipment, and compressor/engine maintained with the recommended oil.



**An electrical fault must be traced by an electrician.**

Make sure that the wires are not damaged and that they are clamped tight to their terminals.

**Problem: Compressor capacity or pressure below normal.**

| Possible faults                                     | Corrective actions                                                                                                                                                                 |
|-----------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Air consumption exceeds capacity of compressor.     | Check equipment connected.                                                                                                                                                         |
| Choked air filter elements (AF).                    | Remove and inspect elements. Clean or replace, if necessary.                                                                                                                       |
| Regulating valve (RV) defective.                    | Have regulating valve removed and inspected by an Chicago Pneumatic Service representative.                                                                                        |
| Blow down valve stuck in open position.             | Check and correct as necessary.                                                                                                                                                    |
| Loading valve (LV) leaking past O-ring.             | With compressor running at maximum load speed, disconnect hose leading to unloader. If air leaks from the hose, remove and inspect loading valve. Replace damaged or worn O-rings. |
| Oil separator element clogged.                      | Have element removed and inspected by an Chicago Pneumatic Service representative.                                                                                                 |
| Air intake throttle valve remains partially closed. | Check unloader and identify reason for open valve; if possible: solve; else: contact Chicago Pneumatic.                                                                            |
| Safety valve (SV) leaking.                          | Remove and inspect. Replace if not airtight after re-installation.                                                                                                                 |
| Blow-off valve leaking.                             | Remove and inspect. Replace if necessary.                                                                                                                                          |

**Problem: Pressure in air receiver rises above maximum and causes safety valve to blow.**

| Possible faults                                                          | Corrective actions                                                                                      |
|--------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|
| Regulating valve (RV) opens too late or its ball valve spring is broken. | Have regulating valve removed and inspected by an Chicago Pneumatic Service representative.             |
| Air leaks in regulating system.                                          | Check hoses and their fittings. Stop leaks; replace leaking hoses.                                      |
| Air intake throttle valve does not close for some reason.                | Check unloader and identify reason for open valve; if possible: solve; else: contact Chicago Pneumatic. |
| Minimum pressure valve malfunctioning.                                   | Remove and inspect valve.                                                                               |
| Blow-off valve malfunctioning.                                           | Remove and inspect valve.                                                                               |

### ALTERNATOR PRECAUTIONS

1. Never reverse the polarity of the battery or the alternator.
2. Never break any alternator or battery connections while the engine is running.
3. When recharging the battery, disconnect it from the alternator. Before using booster cables to start the engine, be sure of the polarity and connect the batteries positive to positive, negative to negative.
4. Never operate the engine without the main or voltage sensing cables connected in the circuit.

**Problem: After working some time, the unit stops through a shutdown switch.**

| Possible faults                       | Corrective actions                               |
|---------------------------------------|--------------------------------------------------|
| Engine oil pressure too low.          | Refer to the engine instruction manual.          |
| Compressor or engine overheating.     | See corrective actions “Compressor overheating”. |
| Fuel tank contains insufficient fuel. | Fill fuel tank.                                  |
| Low coolant level.                    | Top up cooling system.                           |

**Problem: Air and oil mist expelles from air filters immediately after stopping.**

| Possible faults                | Corrective actions                                                                                                                                                                                           |
|--------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Check valve at element outlet. | Remove and inspect. Replace if necessary. Replace air filter elements and safety cartridges. Check the oil level and add oil if necessary. Run the compressor for a few minutes, stop and recheck oil level. |

**Problem: Compressor overheating.**

| Possible faults                                            | Corrective actions                                                                               |
|------------------------------------------------------------|--------------------------------------------------------------------------------------------------|
| Insufficient compressor cooling.                           | Locate compressor away from walls; when banked with other compressors, leave space between them. |
| Oil cooler clogged externally.                             | Clean oil cooler. Refer to section <b>Cleaning coolers</b> .                                     |
| Oil cooler clogged internally.                             | Consult Chicago Pneumatic.                                                                       |
| Oil filters clogged.                                       | Replace oil filters.                                                                             |
| Oil level too low.                                         | Check oil level. Top up with recommended oil if necessary.                                       |
| Thermostatic by-pass valve remains stuck in open position. | Remove valve and check for proper opening and closing. Replace if out of order.                  |
| Fan blade(s) broken.                                       | Check and correct if necessary.                                                                  |
| Oil separator element (OS) clogged.                        | Have element removed and inspected by an Chicago Pneumatic Service representative.               |

# Technical specifications

## TORQUE VALUES

### GENERAL TORQUE VALUES

The following tables list the recommended torques applied for general applications at assembly of the compressor.

#### For hexagon screws and nuts with strength grade 8.8

| Thread size | Torque value (Nm / lbf.ft) |
|-------------|----------------------------|
| M6          | 8 (6) +/-25 %              |
| M8          | 20 (15) +/-25 %            |
| M10         | 40 (30) +/-25 %            |
| M12         | 69 (51) +/-25 %            |
| M14         | 109 (80) +/-25 %           |
| M16         | 171 (126) +/-25 %          |

#### For hexagon screws and nuts with strength grade 12.9

| Thread size | Torque value (Nm / lbf.ft) |
|-------------|----------------------------|
| M6          | 14 (10) +/-25 %            |
| M8          | 34 (25) +/-25 %            |
| M10         | 68 (50) +/-25 %            |
| M12         | 116 (86) +/-25 %           |
| M14         | 185 (136) +/-25 %          |
| M16         | 288 (212) +/-25 %          |

## CRITICAL TORQUE VALUES

| Assemblies                                                        | Torque value |               | Variance |
|-------------------------------------------------------------------|--------------|---------------|----------|
| <b>Axles to frame:</b>                                            | <b>Nm</b>    | <b>ft.lbf</b> |          |
| Bolts, axle/frame                                                 | 205          | 151.20        | +/-10 %  |
| <b>Compressor to frame:</b>                                       |              |               |          |
| Bolts, elements/gear casing                                       | 48           | 35.40         | +/-10 %  |
| Bolts, gear casing/buffer                                         | 25           | 18.44         | +/-10 %  |
| Bolts, buffer/frame                                               | 25           | 18.44         | +/-10 %  |
| <b>Engine to frame:</b>                                           |              |               |          |
| Bolts, engine/support                                             | 140          | 103.25        | +/-10 %  |
| Bolts, support/buffer                                             | 25           | 18.44         | +/-10 %  |
| Bolts, buffer/frame                                               | 46           | 33.92         | +/-10 %  |
| <b>Lifting beams to frame:</b>                                    |              |               |          |
| Bolts, lifting beams, Frames                                      | 83           | 61.22         | +/-10 %  |
| <b>Hose clamps:</b>                                               |              |               |          |
| Worm Type                                                         | 4            | 2.95          | +/-10 %  |
| Constant Torque Types                                             | 4            | 2.95          | +/-10 %  |
| Heavy Duty Constant Torque Type                                   | 10           | 7.37          | +/-10 %  |
| <b>Wheel lug nuts to be torqued in 3 steps in a star pattern:</b> |              |               |          |
| 1st step                                                          | 27-34        | 19.91-25.07   | -        |
| 2nd step                                                          | 47-54        | 34.66-39.82   | -        |
| 3rd step                                                          | 81-102       | 59.07-75.23   | -        |



Secure the drain cock and tank cap of the fuel tank handtight.

## COMPRESSOR /ENGINE SPECIFICATIONS

### REFERENCE CONDITION

| Designation                       | Unit | CPS 185 - 100 KoD |
|-----------------------------------|------|-------------------|
| Absolute inlet pressure           | bar  | 1                 |
|                                   | psi  | 14.7              |
| Relative air humidity             | %    | 0                 |
| Air inlet temperature             | °C   | 25                |
|                                   | °F   | 77                |
| Normal effective working pressure | bar  | 7                 |
|                                   | psi  | 100               |

The inlet conditions are specified at the air inlet grating outside the canopy.

### LIMITATIONS

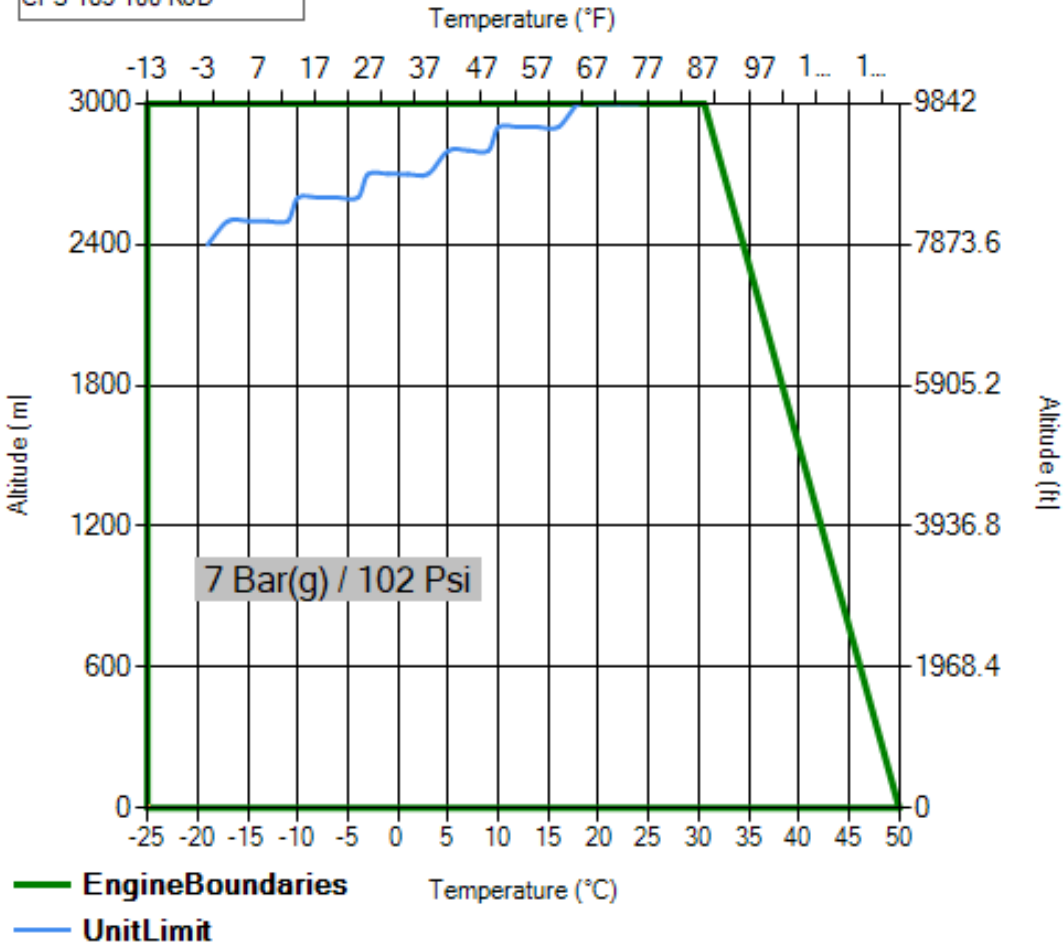
| Designation                                              | Remarks | Unit              | CPS 185 - 100 KoD |
|----------------------------------------------------------|---------|-------------------|-------------------|
| Minimum effective receiver pressure                      |         | bar               | 3                 |
|                                                          |         | psi               | 43                |
| Maximum effective receiver pressure, compressor unloaded |         | bar               | 8.6               |
|                                                          |         | psi               | 125               |
| Maximum ambient temperature at sea level                 | 138     | °C                | 52.5              |
|                                                          |         | °F                | 126.5             |
| Minimum starting temperature                             | 138     | °C                | -10               |
|                                                          |         | °F                | 14                |
| Altitude capability                                      |         | see graph section |                   |

ALTITUDE UNIT PERFORMANCE CURVE

Maximum allowable working pressure as  
a function of altitude and ambient temperature

Unit Name:

CPS 185-100 KoD



## PERFORMANCE DATA (133)

| Designation                                                        |                      | Remarks | Unit     | CPS 185 - 100 KoD |
|--------------------------------------------------------------------|----------------------|---------|----------|-------------------|
| Engine shaft speed, normal                                         |                      |         | rpm      | 2500              |
| Engine shaft speed, maximum                                        |                      |         | rpm      | 2500              |
| Engine shaft speed, compressor unloaded                            |                      |         | rpm      | 1800              |
| Free air delivery                                                  |                      | 130     | l/s      | 82.18             |
|                                                                    |                      |         | cfm      | 180               |
| Fuel consumption at                                                | 100% FAD (full load) |         | gal/hr   | 2.6               |
|                                                                    | 75% FAD              |         | gal/hr   | 2.48              |
|                                                                    | 50% FAD              |         | gal/hr   | 1.92              |
|                                                                    | 25% FAD              |         | gal/hr   | 1.58              |
|                                                                    | 0% FAD               |         | gal/hr   | 0                 |
| Specific fuel consumption at 100% FAD                              |                      |         | lb/hp-hr | 0.38              |
| Noise Sound Pressure Level (Lp) (dB(A)) @ 100% FAD (full load), 7m |                      |         | dB(A)    | 79.9              |
| (Lp) measured according to                                         |                      |         |          | ISO 2151          |
| Fuel Tank Capacity                                                 |                      |         | gal      | 22.37             |
|                                                                    |                      |         | l        | 84.67             |
| Fuel Autonomy at 100% FAD, full load                               |                      |         | hrs      | 8.62              |

## DESIGN DATA

### COMPRESSOR

| Designation                  | All units |
|------------------------------|-----------|
| Number of compression stages | 1         |

### ENGINE

| Designation                           | Unit  | CPS 185 - 100 KoD |
|---------------------------------------|-------|-------------------|
| Make                                  |       | Kohler            |
| Type                                  |       | KDI 1903 TCR      |
| Coolant                               |       | Ethelyne-Glycol   |
| Number of cylinders                   |       | 3                 |
| Bore                                  | in    | 3.46              |
|                                       | mm    | 87.88             |
| Stroke                                | in    | 4.02              |
|                                       | mm    | 102.1             |
| Swept volume                          | cu.in | 113.57            |
|                                       | l     | 1.86              |
| Power output at normal shaft speed    | hp    | 49                |
|                                       | kW    | 36.53             |
| Output according to                   |       | ISO 14396         |
| - Load factor                         | %     | 98                |
| Capacity of oil sump : - Initial fill | l     | 8.5               |
|                                       | qts   | 9                 |

### UNIT

| Designation                       | Unit | All units |
|-----------------------------------|------|-----------|
| Capacity of compressor oil system | l    | 9.74      |
|                                   | qts  | 10.3      |
| Net capacity of air receiver      | l    | 18.01     |
|                                   | gal  | 4.76      |
| Capacity of standard fuel tanks   | l    | 84.67     |
|                                   | gal  | 22.37     |

### REMARKS

125- Air required for engine and compressor cooling, combustion and for compression.

126-With filter change.

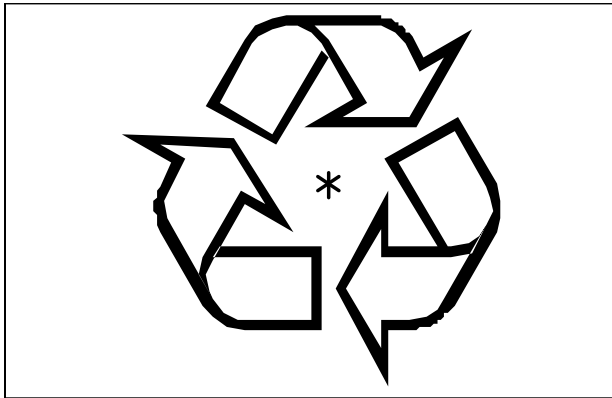
130- Free Air Delivery guaranteed according ISO 1217 ed. 4 2009 annex D with tolerance of +/-5% for (25l/s)(53cfm) < FAD < (250l/s)(530cfm) and +/-4% for (250l/s)(530cfm) < FAD.

133- At reference conditions unless otherwise stated.

138- Coldstart (below 14°F (-10°C)): compressor: GENOIL S; engine: GENOIL 5W30 i.s.o. 15W40.

# Disposal

## GENERAL



When developing products and services, Chicago Pneumatic tries to understand, address, and minimize the negative environmental effects that the products and services may have, when being manufactured, distributed, and used, as well as at their disposal.

Recycling and disposal policy are part of the development of all Chicago Pneumatic products. Chicago Pneumatic company standards determine strict requirements.

Selecting materials the substantial recyclability, the disassembly possibilities and the separability of materials and assemblies are considered as well as the environmental perils and dangers to health during the recycling and disposal of the unavoidable rates of not recyclable materials.

Your Chicago Pneumatic compressor consists for the most part of metallic materials, that can be remelted in steelworks and smelting works and that is therefore almost infinite recyclable. The plastic used is labelled; sorting and fractioning of the materials for recycling in the future is foreseen.



**This concept can only succeed with your help. Support us by disposing professionally. By assuring a correct disposal of the product you help to prevent possible negative consequences for environment and health, that can occur with an inappropriate waste handling.**

**Recycling and re-usage of material helps to preserve natural resources.**

## DISPOSAL OF MATERIALS

Dispose contaminated substances and material separately, according to local applicable environmental legislations.

Before dismantling a machine at the end of its operating lifetime drain all fluids and dispose of according the applicable local disposal regulations.

Remove the batteries. Do not throw batteries into the fire (explosion risk) or into the residual waste. Separate the machine into metal, electronics, wiring, hoses, insulation and plastic parts.

Dispose all components according to the applicable disposal regulations.

Remove spilled fluid mechanically; pick up the rest with absorbing agent (for example sand, sawdust) and dispose it according the applicable local disposal regulations. Do not drain into the sewage system or surface water.

## Maintenance log

Compressor Customer.....

**Serial number**.....

[illegible]

## Maintenance log

**Compressor Customer.....**

**Serial number**.....

[illegible]



Scan the QR code to access into the Chicago Pneumatic Spare Part list.



CPS 185 - 100 KoD